

DESIGN DESIGNATION

STA. 100+50 TO STA. 129+22.05

FUNTIONAL CLASSIFICATION

R-VALUE

ΣN-18

NO. & WIDTH OF TRAFFIC LANES

NO. & WIDTH OF PARKING LANES

ADT (PRESENT YEAR) 2026

ADT (PROJECTED YEAR) 2046

HCA DT (PROJECTED YEAR) 2046

DESIGN SPEED

DESIGN LOAD

DESIGN SPEED FOR ROADWAY BASED ON ON STOPPING SIGHT DISTANCE:

HEIGHT OF EYE = 3.5 FT

HEIGHT OF OBJECT = 2.0 FT

BUNKER LAKE BOULEVARD

MINOR COLLECTOR

70

1,581,000

2 & 12 ft

N/A

4390

13780

6.10%

40 mph

10 ton

MINNESOTA DEPARTMENT OF TRANSPORTATION

CITY OF RAMSEY

ANOKA COUNTY, MINNESOTA

CITY IMPROVEMENT PROJECT #26-01

RECLAMATION, GRADING, AGGREGATE BASE, PLANT MIXED BITUMINOUS PAVEMENT, CONCRETE CURB AND GUTTER, ADA IMPROVEMENTS, STORM SEWER, SANITARY SEWER, WATER MAIN ADJUSTMENTS, AND SIGNAL ADJUSTMENTS

CONSTRUCTION PLAN FOR:

SAP 100-121-003 LOCATED ON BUNKER LAKE BOULEVARD FROM 675' WEST OF JACKAL STREET TO ARMSTRONG BOULEVARD

BUNKER LAKE BOULEVARD (SAP 199-121-003)

GROSS LENGTH 3012.00 FEET 0.570 MILES

BRIDGE LENGTH 0.00 FEET 0.000 MILES

EXCEPTION LENGTH 0.00 FEET 0.000 MILES

NET LENGTH 3012.00 FEET 0.570 MILES

LENGTH AND DESCRIPTION BASED UPON PROPOSED BUNKER LAKE BLVD CENTERLINE

STOCKPILE LOCATION:

16600 ST. FRANCIS BOULEVARD NW

VICINITY MAP

INDEX MAP

0 600 1200

SCALE

FEET

TYPICAL PLAN SCALE UNLESS OTHERWISE NOTED:

HORZ. 0 25 50

SCALE

FEET

VERT. 0 5 10

SCALE

FEET

PROJECT LOCATION

CITY: RAMSEY

COUNTY: ANOKA: T32N R25W, S29

DISTRICT: METRO

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

BEGIN PROJECT: SAP 199-121-003 (BUNKER LAKE BLVD)

STA. 100+50

149TH LN NW

148TH LN NW

END PROJECT: SAP 199-121-003 (BUNKER LAKE BLVD)

STA. 129+22.05

147TH AVE NW

ARMSTRONG BOULEVARD (CSAH 83)

HIGHWAY 10

BNSF RAILROAD

RIVERDALE DR NW

CITY HALL

7550 SUNWOOD DRIVE NW

PROJECT DATUM:

HORIZONTAL: ANOKA COUNTY COORDINATES (1996 ADJUSTMENT)

VERTICAL: NGVD 88

RECORD DRAWING INFORMATION

OBSERVER

CONTRACTOR

DATE

DESIGNED ZFL

DRAWN JMB

CHECKED ZFL

CLIENT PROJ. NO. 26-01

ISSUED FOR

DATE

MINN. PROJ. NO.

STATE FUNDS

--- GOVERNING SPECIFICATIONS ---

THE 2025 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATION FOR CONSTRUCTION" SHALL GOVERN.

THE LATEST EDITION OF THE CITY ENGINEERS ASSOCIATION OF MINNESOTA STANDARD SPECIFICATIONS SHALL GOVERN PUBLIC UTILITY INFRASTRUCTURE CONSTRUCTION.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM AND BE INSTALLED IN ACCORDANCE WITH THE LATEST "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD), INCLUDING THE LATEST "FIELD MANUAL" FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

SHEET NUMBER

SHEET TITLE

GENERAL

1 TITLE SHEET

2 LEGEND

3 STATEMENT OF ESTIMATED QUANTITIES

4 TABULATIONS

CIVIL

5-15 TYPICAL SECTIONS & DETAILS

16 ALIGNMENT PLAN & TABULATION

17 TRAFFIC CONTROL PLAN

18-19 REMOVALS PLAN

20-22 STORMWATER POLLUTION PREVENTION PLAN

23-24 EROSION CONTROL PLAN

25-28 CONSTRUCTION PLAN & PROFILE

29-30 STORM SEWER CATCH BASIN LEADS

31-33 INTERSECTION DETAILS

34-35 SIGNAGE & STRIPING PLAN

36-42 TRAFFIC SIGNAL SYSTEM PLAN

43-56 CROSS SECTIONS

THIS PLAN SET CONTAINS 56 SHEETS.

ZACHARY F. LINGL, P.E.

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

Date 1/12/2026 License Number 56344

Approved: City of Ramsey Engineer Date 1/20/2026

Approved: Anoka County Engineer Date

District State Aid Engineer: Reviewed for compliance with State Aid Rules/Policy Date

Approved for State Aid Funding: State Aid Engineer Date

CITY OF RAMSEY, MINNESOTA

2026 BUNKER LAKE BOULEVARD RECONSTRUCTION

STATE AID PROJECT NO. 199-121-003

SHEET 1 OF 56

BOLTON & MENK

7533 SUNWOOD DR NW, SUITE 206

RAMSEY, MN 55303

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Email: Ramsey@bolton-menk.com

www.bolton-menk.com

CITY OF RAMSEY

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EXISTING TOPOGRAPHIC SYMBOLS

	ACCESS GRATE		REGULATION STATION GAS
	AIR CONDITION UNIT		SATELLITE DISH
	ANTENNA		SIGN TRAFFIC
	AUTO SPRINKLER CONNECTION		SIGNAL CONTROL CABINET
	BARRICADE PERMANENT		SOIL BORING
	BASKETBALL POST		SIREN
	BENCH		TELEPHONE BOOTH
	BIRD FEEDER		TILE INLET
	BOLLARD		TILE OUTLET
	BUSH		TILE RISER
	CATCH BASIN RECTANGULAR CASTING		TRANSFORMER-ELECTRIC
	CATCH BASIN CIRCULAR CASTING		TREE-CONIFEROUS
	CURB STOP		TREE-DEAD
	CLEAN OUT		TREE-DECIDUOUS
	CULVERT END		TREE STUMP
	DRINKING FOUNTAIN		TRAFFIC ARM BARRIER
	DOWN SPOUT		TRAFFIC SIGNAL
	ELECTRIC CAR CHARGE STATION		TRASH CAN
	FILL PIPE		UTILITY MARKER
	FIRE HYDRANT		VALVE
	FLAG POLE		VALVE POST INDICATOR
	FLARED END / APRON		VALVE VAULT
	FUEL PUMP		VAULT
	GRILL		VENT PIPE
	GUY WIRE ANCHOR		WATER SPIGOT
	HANDHOLE		WELL
	HANDICAP SPACE		WETLAND DELINEATED MARKER
	IRRIGATION SPRINKLER HEAD		WETLAND
	IRRIGATION VALVE BOX		WET WELL
	LIFT STATION CONTROL PANEL		YARD HYDRANT

PROPOSED TOPOGRAPHIC SYMBOLS

	CLEANOUT
	MANHOLE
	LIFT STATION
	STORM SEWER CIRCULAR CASTING
	STORM SEWER RECTANGULAR CASTING
	STORM SEWER FLARED END / APRON
	STORM SEWER OUTLET STRUCTURE
	STORM SEWER OVERFLOW STRUCTURE
	CURB BOX
	FIRE HYDRANT
	WATER VALVE
	WATER REDUCER
	WATER BEND
	WATER TEE
	WATER CROSS
	WATER SLEEVE
	WATER CAP / PLUG
	RIP RAP
	DRAINAGE FLOW
	TRAFFIC SIGNS

SURVEY SYMBOLS

	BENCHMARK LOCATION		CAST IRON MONUMENT
	CONTROL POINT		STONE MONUMENT
	MONUMENT FOUND		

EXISTING TOPOGRAPHIC LINES

	RETAINING WALL
	FENCE
	FENCE-DECORATIVE
	GUARD RAIL
	TREE LINE
	BUSH LINE

SURVEY LINES

	CONTROLLED ACCESS
	BOUNDARY
	CENTERLINE
	EXISTING EASEMENT LINE
	PROPOSED EASEMENT LINE
	EXISTING LOT LINE
	PROPOSED LOT LINE
	EXISTING RIGHT-OF-WAY
	PROPOSED RIGHT-OF-WAY
	SETBACK LINE
	SECTION LINE
	QUARTER LINE
	SIXTEENTH LINE
	TEMPORARY EASEMENT

EXISTING UTILITY LINES

	FORCEMAIN
	SANITARY SEWER
	SANITARY SERVICE
	STORM SEWER
	STORM SEWER DRAIN TILE
	WATERMAIN
	WATER SERVICE
	RECLAIMED WATER

PROPOSED UTILITY LINES

	FORCEMAIN
	SANITARY SEWER
	SANITARY SERVICE
	STORM SEWER
	STORM SEWER DRAIN TILE
	WATERMAIN
	WATER SERVICE
	PIPE CASING
	TRENCHLESS PIPE (PLAN VIEW)
	TRENCHLESS PIPE (PROFILE VIEW)

GRADING INFORMATION

	EXISTING CONTOUR MINOR
	EXISTING CONTOUR MAJOR
	PROPOSED CONTOUR MINOR
	PROPOSED CONTOUR MAJOR
	PROPOSED GRADING LIMITS / SLOPE LIMITS
	PROJECT LIMITS
	PROPOSED SPOT ELEVATION
	RISE:RUN (SLOPE)

HATCH PATTERNS

	BITUMINOUS		GRAVEL
	CONCRETE		

EXISTING PRIVATE UTILITY LINES

NOTE:
EXISTING UTILITY INFORMATION SHOWN ON THIS PLAN HAS BEEN PROVIDED BY THE UTILITY OWNER. THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY GOPHER STATE ONE CALL, 1-800-252-1166 OR 651-454-0002.

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

	UNDERGROUND FIBER OPTIC
	UNDERGROUND ELECTRIC
	UNDERGROUND GAS
	UNDERGROUND COMMUNICATION
	OVERHEAD ELECTRIC
	OVERHEAD COMMUNICATION
	OVERHEAD UTILITY

UTILITIES IDENTIFIED WITH A QUALITY LEVEL :

LINE TYPES FOLLOW THE FORMAT: UTILITY TYPE - QUALITY LEVEL
EXAMPLE: G-A UNDERGROUND GAS, QUALITY LEVEL A
UTILITY QUALITY LEVEL (A,B,C,D) DEFINITIONS CAN BE FOUND IN CI/ASCE 38-22.

UTILITY QUALITY LEVELS:

QUALITY LEVEL D: PROVIDES THE MOST BASIC LEVEL OF INFORMATION. IT INVOLVES COLLECTING DATA FROM EXISTING UTILITY RECORDS. RECORDS MAY INCLUDE AS-BUILT DRAWINGS, DISTRIBUTION AND SERVICES MAPS, EXISTING GEOGRAPHIC INFORMATION SYSTEM DATABASES, CONSTRUCTION PLANS, ETC.

QUALITY LEVEL C: INVOLVES SURVEYING VISIBLE SUBSURFACE UTILITY STRUCTURES SUCH AS MANHOLES, HAND-HOLES, UTILITY VALVES AND METERS, FIRE HYDRANTS, PEDESTALS AND UTILITY MARKERS, AND THEN CORRELATING THE INFORMATION WITH EXISTING UTILITY RECORDS TO CREATE COMPOSITE DRAWINGS. INCLUDES QUALITY LEVEL D ACTIVITIES.

QUALITY LEVEL B: INVOLVES DESIGNATING THE HORIZONTAL POSITION OF SUBSURFACE UTILITIES THROUGH SURFACE DETECTION METHODS AND COLLECTING THE INFORMATION THROUGH A SURVEY METHOD. INCLUDES QUALITY LEVEL C AND D TASKS.

QUALITY LEVEL A: PROVIDES THE HIGHEST LEVEL OF ACCURACY. IT INVOLVES LOCATING OR POTHOLING UTILITIES AS WELL AS ACTIVITIES IN QUALITY LEVELS B, C, AND D. THE LOCATED FACILITY INFORMATION IS SURVEYED AND MAPPED AND THE DATA PROVIDES PRECISE PLAN AND PROFILE INFORMATION.

ABBREVIATIONS

A	ALGEBRAIC DIFFERENCE	GRAV	GRAVEL	RSC	RIGID STEEL CONDUIT
ADJ	ADJUST	GU	GUTTER	RT	RIGHT
ALT	ALTERNATE	GV	GATE VALVE	SAN	SANITARY SEWER
B-B	BACK TO BACK	HDPE	HIGH DENSITY POLYETHYLENE	SCH	SCHEDULE
BIT	BITUMINOUS	HH	HANDHOLE	SERV	SERVICE
BLDG	BUILDING	HP	HIGH POINT	SHLD	SHOULDER
BMP	BEST MANAGEMENT PRACTICE	HWL	HIGH WATER LEVEL	STA	STATION
BR	BEGIN RADIUS	HYD	HYDRANT	STD	STANDARD
BV	BUTTERFLY VALVE	I	INVERT	STM	STORM SEWER
CB	CATCH BASIN	K	CURVE COEFFICIENT	TC	TOP OF CURB
C&G	CURB AND GUTTER	L	LENGTH	TE	TEMPORARY EASEMENT
CIP	CAST IRON PIPE	LO	LOWEST OPENING	TEMP	TEMPORARY
CIPP	CURED-IN-PLACE PIPE	LP	LOW POINT	TNH	TOP NUT HYDRANT
CL	CENTER LINE	LT	LEFT	TP	TOP OF PIPE
CL	CLASS	MAX	MAXIMUM	TYP	TYPICAL
CLVT	CULVERT	MH	MANHOLE	VCP	VITRIFIED CLAY PIPE
CMP	CORRUGATED METAL PIPE	MIN	MINIMUM	VERT	VERTICAL
C.O.	CHANGE ORDER	MR	MID RADIUS	VPC	VERTICAL POINT OF CURVE
COMM	COMMUNICATION	NIC	NOT IN CONTRACT	VPI	VERTICAL POINT OF INTERSECTION
CON	CONCRETE	NMC	NON-METALLIC CONDUIT	VPT	VERTICAL POINT OF TANGENT
CSP	CORRUGATED STEEL PIPE	NTS	NOT TO SCALE	WM	WATERMAIN
DIA	DIAMETER	NWL	NORMAL WATER LEVEL		
DIP	DUCTILE IRON PIPE	OHW	ORDINARY HIGH WATER LEVEL	AC	ACRES
DWY	DRIVEWAY	PC	POINT OF CURVE	CF	CUBIC FEET
E	EXTERNAL CURVE DISTANCE	PCC	POINT OF COMPOUND CURVE	CV	COMPACTED VOLUME
ELEC	ELECTRIC	PE	PERMANENT EASEMENT	CY	CUBIC YARD
ELEV	ELEVATION	PED	PEDESTRIAN, PEDESTAL	EA	EACH
EOF	EMERGENCY OVERFLOW	PERF	PERFORATED PIPE	EV	EXCAVATED VOLUME
ER	END RADIUS	PERM	PERMANENT	LB	POUND
ESMT	EASEMENT	PI	POINT OF INTERSECTION	LF	LINEAR FEET
EX	EXISTING	PL	PROPERTY LINE	LS	LUMP SUM
FES	FLARED END SECTION	PRC	POINT OF REVERSE CURVE	LV	LOOSE VOLUME
F-F	FACE TO FACE	PT	POINT OF TANGENT	SF	SQUARE FEET
FF	FINISHED FLOOR	PVC	POLYVINYL CHLORIDE PIPE	SV	STOCKPILE VOLUME
F&I	FURNISH AND INSTALL	PVMT	PAVEMENT	SY	SQUARE YARD
FM	FORCEMAIN	R	RADIUS		
FO	FIBER OPTIC	R/W	RIGHT-OF-WAY		
F.O.	FIELD ORDER	RCP	REINFORCED CONCRETE PIPE		
GRAN	GRANULAR	RET	RETAINING		

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.

ZACHARY F. DINGL, P.E.
LIC. NO. 56344 DATE 1/12/2026



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CLIENT PROJ. NO.	26-01		

CITY OF RAMSEY, MINNESOTA		SHEET 2 OF 56
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION		
LEGEND SAP 199-121-003		

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STATEMENT OF ESTIMATED QUANTITIES						SAP 199-121-003		CITY OF RAMSEY
ITEM NO.	MNDOT SPEC NO.	ITEM	NOTES	UNIT	TOTAL QUANTITY	Roadway Quantity	Storm Quantity	Non-Participating Quantity
1	2021.501	MOBILIZATION		LUMP SUM	1	0.78	0.15	0.07
2	2101.505	CLEARING		ACRE	2	2		
3	2101.505	GRUBBING		ACRE	2	2		
4	2102.503	PAVEMENT MARKING REMOVAL		LIN FT	160	160		
5	2102.518	PAVEMENT MARKING REMOVAL		SQ FT	48	48		
6	2104.502	REMOVE PIPE APRON		EACH	11	11		
7	2104.502	REMOVE HYDRANT		EACH	4	4		
8	2104.502	REMOVE GATE VALVE & BOX		EACH	4	4		
9	2104.502	SALVAGE CASTING (SANITARY)		EACH	9	9		
10	2104.502	REMOVE DRAINAGE STRUCTURE		EACH	3	3		
11	2104.502	REMOVE MARKER (UTILITY)		EACH	4	4		
12	2104.502	REMOVE HANDHOLE		EACH	1	1		
13	2104.502	SALVAGE PIPE APRON		EACH	1	1		
14	2104.503	REMOVE SEWER PIPE (STORM)		LIN FT	450	450		
15	2104.503	REMOVE WATER MAIN		LIN FT	125	125		
16	2104.503	REMOVE CURB AND GUTTER		LIN FT	1115	1115		
17	2104.503	REMOVE CONDUIT SYSTEM		LIN FT	240	240		
18	2104.504	REMOVE CONCRETE WALK		SQ YD	330	330		
19	2104.507	REMOVE BITUMINOUS PAVEMENT		SQ YD	100	100		
20	2104.607	SALVAGE RANDOM RIPRAP		CU YD	12	12		
21	2106.507	EXCAVATION - COMMON	(1) (P)(EV)	CU YD	5455	5455		
22	2106.507	COMMON EMBANKMENT	(2)(P)(CV)	CU YD	3250	3250		
23	2106.507	EXCAVATION - SUBGRADE		CU YD	100	100		
24	2106.507	STABILIZING AGGREGATE (CV)		CU YD	100	100		
25	2106.601	DEWATERING		LUMP SUM	1			1
26	2106.607	HAUL AND STOCKPILE BITUMINOUS MATERIAL	(3) EV	CU YD	950	950		
27	2123.610	STREET SWEEPER (WITH PICKUP BROOM)		HOURL	80	80		
28	2211.509	AGGREGATE BASE CLASS 5 MOD		TON	100	100		
29	2215.504	FULL DEPTH RECLAMATION		SQ YD	13260	13260		
30	2360.509	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)		TON	1925	1925		
31	2360.509	TYPE SP 12.5 NON WEARING COURSE MIXTURE (3,C)		TON	2350	2350		
32	2501.502	INSTALL PIPE APRON (SALVAGED)		EACH	1		1	
33	2501.502	15" RC PIPE APRON (W/ TRASH GUARD)		EACH	5		5	
34	2501.502	28" SPAN RC PIPE-ARCH APRON		EACH	1		1	
35	2501.502	44" SPAN RC PIPE-ARCH APRON		EACH	2		2	
36	2503.503	12" RC PIPE SEWER CLASS V		LIN FT	96		96	
37	2503.503	15" RC PIPE SEWER CLASS V		LIN FT	376		376	
38	2503.503	28" SPAN RC PIPE-ARCH SEWER CL IIA		LIN FT	33		33	
39	2503.503	44" SPAN RC PIPE-ARCH SEWER CL IIA		LIN FT	49		49	
40	2503.602	CONNECT TO EXISTING STORM SEWER		EACH	15		15	
41	2503.603	CLEAN AND TELEVISE STORM SEWER		LIN FT	3200		3200	
42	2504.602	CONNECT TO EXISTING WATER MAIN		EACH	4			4
43	2504.602	HYDRANT		EACH	4			4
44	2504.602	6" GATE VALVE AND BOX		EACH	4			4
45	2504.602	ADJUST VALVE BOX		EACH	15			15
46	2504.603	6" WATERMAIN DUCTILE IRON CL 53		LIN FT	75			75
47	2504.608	DUCTILE IRON FITTINGS		POUND	500			500
48	2506.502	INSTALL CASTING (SANITARY)		EACH	9	9		
49	2506.502	CASTING ASSEMBLY (STORM)		EACH	19	19		
50	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL	(4)	LIN FT	29		29	
51	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020		LIN FT	29		29	
52	2511.507	RANDOM RIPRAP CLASS III		CU YD	35		35	
53	2511.607	INSTALL RANDOM RIPRAP		CU YD	12		12	
54	2521.518	4" CONCRETE WALK	(5)	SQ FT	1650	1650		
55	2521.618	CONCRETE CURB RAMP WALK		SQ FT	600	600		
56	2531.503	CONCRETE CURB AND GUTTER DESIGN B618		LIN FT	3485	3485		
57	2531.604	7" CONCRETE VALLEY GUTTER		SQ YD	65	65		
58	2531.618	TRUNCATED DOMES		SQ FT	140	140		
59	2550.502	HANDHOLE TYPE PVC HD COVER		EACH	1	1		
60	2550.503	2" NON-METALLIC CONDUIT		LIN FT	240	240		
61	2563.601	TRAFFIC CONTROL		LUMP SUM	1	0.78	0.15	0.07
62	2565.602	RIGID PVC LOOP DETECTOR 6"x6"		EACH	12	12		
63	2573.501	STABILIZED CONSTRUCTION EXIT		LUMP SUM	1	1		
64	2573.502	STORM DRAIN INLET PROTECTION		EACH	49	49		
65	2573.503	SILT FENCE, TYPE MS		LIN FT	500	500		
66	2573.503	SEDIMENT CONTROL LOG TYPE WOOD FIBER		LIN FT	800	800		
67	2574.507	COMMON TOPSOIL BORROW	(LV)	CU YD	100	100		
68	2574.508	FERTILIZER TYPE 3		POUND	750	750		
69	2575.504	ROLLED EROSION PREVENTION CATEGORY 20		SQ YD	12100	12100		
70	2575.505	SEEDING		ACRE	3	3		
71	2575.505	RAPID STABILIZATION METHOD 2	(6)	ACRE	3	3		
72	2575.505	WEED SPRAYING	(6) (7)	ACRE	2	2		
73	2575.506	WEED SPRAY MIXTURE	(6) (7)	GAL	0.3	0.3		
74	2575.523	WATER	(6)	MGAL	800	800		
75	2575.608	SEED SOUTHERN BOULEVARD		POUND	55	55		
76	2575.608	SEED MESIC INSLOPE		POUND	220	220		
77	2582.503	4" SOLID LINE MULTI- COMPONENT		LIN FT	11000	11000		
78	2582.503	4" BROKEN LINE MULTI -COMPONENT		LIN FT	1000	1000		
79	2582.503	4" DOUBLE SOLID LINE MULTI -COMPONENT		LIN FT	400	400		
80	2582.503	24" SOLID LINE MULTI-COMPONENT		LIN FT	180	180		
81	2582.503	24" SOLID LINE PREFORM THERMO GROUND IN ENHANCED SKID RESISTANCE		LIN FT	50	50		
82	2582.518	CROSSWALK PREFORM THERMO GROUND IN ENHANCED SKID RESISTANCE		SQ FT	300	300		
83	2582.518	PAVEMENT MESSAGE MULTI-COMPONENT		SQ FT	378	378		

- NOTES:
- (1) INCLUDES RECLAIM MATERIAL, TOPSOIL, AND DITCH EXCAVATION
 - (2) SUITABLE COMMON EXCAVATION MATERIALS MAY BE USED FOR COMMON BORROW
 - (3) HAUL EXCESS BITUMINOUS RECLAIM MATERIAL MEETING SPECIFIED GRADATION TO 16600 ST. FRANCIS BLVD NW
 - (4) 2'X3' DRAINAGE STRUCTURE. SEE CONSTRUCTION DETAILS
 - (5) ITEM FOR 4" CONCRETE ROADWAY MEDIAN
 - (6) ITEM FOR TURF ESTABLISHMENT AND DUST CONTROL AS DIRECTED BY THE ENGINEER
 - (7) CLOPYRALID HERBICIDE LABELED FOR RIGHT OF WAY USE AND FORMULATED AT 3 POUNDS ACED EQUIVALENT PER GALLON

STANDARD PLATES	
THE FOLLOWING STANDARD PLATES APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION SHALL APPLY ON THIS PROJECT.	
PLATE NO.	DESCRIPTION
3000M	REINFORCED CONCRETE PIPE (5 SHEETS)
3006H	GASKET JOINT FOR R.C. PIPE (2 SHEETS)
3014L	REINFORCED CONCRETE ARCH PIPE
3100G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3133D	RIPRAP AT RCP OUTLETS
3145G	CONCRETE PIPE OR PRECAST CULVERT TIES
4011E	PRECAST CONCRETE BASE
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
4108F	ADJUSTING RINGS FOR CATCH BASINS AND MANHOLES
4180J	MANHOLE OR CATCH BASIN STEP
7038A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
7100H	CONCRETE CURB & GUTTER (DESIGN B & V)
7113A	CONCRETE APPROACH NOSE DETAIL
7111J	INSTALLATION OF CATCH BASIN CASTINGS (CONCRETE CURB & GUTTER)
8000K	TEMPORARY CHANNELIZERS TYPE A (3 SHEETS)

STANDARD PLANS	
PLAN NO.	DESCRIPTION
5-297.111	RIGHT AND LEFT TURN LANES
5-297.250	PEDESTRIAN CURB RAMP DETAILS
5-297.302	PROTECTION AND RESTORATION OF VEGETATION
5-297.404	PERMANENT EROSION CONTRON - ALONG ROAD, DITCHES, AND FLUMES
5-297.405	TEMPORARY SEDIMENT CONTROL - SILT CURTAIN OR SILT FENCE TYPE TB
5-297.442	STANDARD STORM SEWER BEDDING FOR RIGID AND FLEXIBLE PIPE
5-297.701	STANDARD SIGN PLACEMENT

THE LISTED STANDARD PLANS AND/OR PLATES ARE INCORPORATED BY REFERENCE INTO THE PLAN SET. THE CERTIFICATION ON THIS SHEET SIGNIFIES THE ENGINEER SELECTED THE STANDARD PLANS AND PLATES AS APPROPRIATE FOR USE ON THE PROJECT.

BASIS OF ESTIMATED QUANTITIES	
MATERIAL	UNIT CONVERSION
AGGREGATE BASE	1.8 TONS/CY
BITUMINOUS PAVEMENT	115 LBS/SY-IN
BITUMINOUS TACK COAT	0.05 GAL/SQ YD
SEED TURFGRASS	300 LBS/ACRE
SEED MESIC INSLOPE	98 LBS/ACRE
FERTILIZER TYPE 3	300 LBS/ACRE

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.

ZACHARY F. DINGL, P.E.
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DATE 1/12/2026



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CITY OF RAMSEY, MINNESOTA
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION
STATEMENT OF ESTIMATED QUANTITIES
SAP 199-121-003

SHEET
3
OF
56

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STORM SEWER TABULATION																	
STRUCTURE			LOCATION			DRAINAGE STRUCTURE DESIGN											
NO.	FLOWS TO	SAP	ALIGNMENT	STATION	OFFSET		CONSTRUCT DRAINAGE STRUCTURE DES. SPECIAL (2 X 3)	CONSTRUCT DRAINAGE STRUCTURE DES. 48-4020	CASTING ASSEMBLY	CONNECT TO EXISTING STORM SEWER	12" RC PIPE SEWER CL V	15" RC PIPE SEWER CL V	28" SPAN RC PIPE-ARCH SEWER CL IIA	44" SPAN RC PIPE-ARCH SEWER CL IIA	15" RC PIPE APRON (W/ TRASH GUARD)	28" SPAN RC PIPE-ARCH APRON	44" SPAN RC PIPE-ARCH APRON
					LT	RT											
					FT	FT											
FES 116	CB115	199-121-003	BUNKER LAKE BLVD	104+29.57		36.23				E A	L F	L F	LF	LF	E A	E A	E A
CB 115	EXCB 39	199-121-003	BUNKER LAKE BLVD	104+30		13.7		3.85	R-3067-V	1		10			1		
CB114	EXCB 38	199-121-003	BUNKER LAKE BLVD	106+35.5		13.7	3.62		R-3067-V	1		10					
FES 113	CB112	199-121-003	BUNKER LAKE BLVD	108+37.97		33.96						20			1		
CB 112	EXCB 36	199-121-003	BUNKER LAKE BLVD	108+38.0		13.7		3.84	R-3067-V	1		10					
CB 111	EXCB 35	199-121-003	BUNKER LAKE BLVD	110+38.8		13.7	3.6		R-3067-V	1		10					
FES 110	CB 109	199-121-003	BUNKER LAKE BLVD	112+38.49		33.39						20			1		
CB 109	EXCB 33	199-121-003	BUNKER LAKE BLVD	112+38.4		13.7		3.89	R-3067-V	1		10					
CB 108	EXCB 31	199-121-003	BUNKER LAKE BLVD	114+54.9		13.7	3.67		R-3067-V	1		10					
EX MH - 230	FES 107	199-121-003	BUNKER LAKE BLVD	115+83.68		65.16				1							
FES 106	EXFES 26	199-121-003	BUNKER LAKE BLVD	116+45.67		37.3				1				25			1
FES 105	EXFES 24	199-121-003	BUNKER LAKE BLVD	116+53.68		37.24				1				24			1
FES104	CB 103	199-121-003	BUNKER LAKE BLVD	117+45.50		37				1			23			1	
CB 103	EXCB 19	199-121-003	BUNKER LAKE BLVD	117+49.4		13.7		3.97	R-3067-V	1			10				
CB 102	EXCB 21	199-121-003	BUNKER LAKE BLVD	118+59.2		13.6	3.87		R-3067-V	1		10					
FES 118	FES 117	199-121-003	BUNKER LAKE BLVD	119+72.99		35.23						84			2		
CB101	EXCB 22	199-121-003	BUNKER LAKE BLVD	120+9.90		13.7	3.62		R-3067-V	1		10					
CBMH 120	CBMH 119	199-121-003	BUNKER LAKE BLVD	123+78.6		25.9		3.3	R-3067-V			54					
CBMH 119	CBMH 100	199-121-003	BUNKER LAKE BLVD	124+32.6		26.2		3.1	R-3067-V			28					
CBMH 100	EXMH 13	199-121-003	BUNKER LAKE BLVD	124+32.56	1.42			3.87	R-3067-V	1							
CB 123	CB 124	199-121-003	BUNKER LAKE BLVD	128+16.5		44.5	3.48		R-3067-V			11					
CB 124	EXCB 3	199-121-003	BUNKER LAKE BLVD	128+27.4		44.5	3.57		R-3067-V	1		56					
CB 122	CBMH 121	199-121-003	FERRET ST	60+44.7	19.6		2.64		R-3067-V		41						
CBMH 121	CBMH 120	199-121-003	FERRET ST	60+42.2		21.8		2.83	R-3067-V		55						
TOTALS:							28.07	28.65		15	96	376	33	49	5	1	2

EARTHWORK SUMMARY S.A.P. 199-121-003				
NOTES	ROW INDEX	ITEMS	UNIT	BUNKER LAKE BOULEVARD
UNADJUSTED VOLUMES BASED ON CROSS SECTIONS				
	A	FULL DEPTH RECLAMATION	SQ YD	13260
1,5	B	EXCAVATED RECLAIM MATERIAL GENERATED FOR NEW 4.5" BITUMINOUS SECTION (EV)	CU YD	1655
2,7	C	SOUTH BOULEVARD TOPSOIL STRIPING (EV)	CU YD	1700
3,7	D	REMAINING COMMON EXCAVATION (EV)	CU YD	2100
	E	TOPSOIL REQUIRED (CV) 4" MINIMUM THICKNESS	CU YD	1200
	F	EMBANKMENT MATERIAL REQUIRED (CV)	CU YD	2050
	G	AGGREGATE BASE ROADWAY FOR ROADWAY WIDENING (CV)	CU YD	590
	H	AGGREGATE BASE DRIVEWAY AND WALK (CV)	CU YD	120
GRADING BALANCE				
4	D	COMMON EXCAVATION MATERIAL GENERATED (LV)	CU YD	2210
5	F	EMBANKMENT MATERIAL REQUIRED (LV)	CU YD	2260
	D-F	EXCESS COMMON EXCAVATION MATERIAL (LV)	CU YD	-50
4	B	RECLAIM MATERIAL GENERATED (LV)	CU YD	1740
1,5	G	AGGREGATE BASE (RECLAIMED MATERIAL) REQUIRED FOR ROADWAY (LV)	CU YD	650
1,5	H	AGGREGATE BASE (RECLAIMED MATERIAL) REQUIRED FOR DRIVEWAY AND WALK (LV)	CU YD	140
	G+H	RECLAIM MATERIAL REQUIRED FOR REUSE (LV)	CU YD	790
	B-G+H	EXCESS RECLAIM MATERIAL (LV)	CU YD	950
4	C	TOPSOIL GENERATED (LV)	CU YD	1790
6	E	TOPSOIL REQUIRED (LV)	CU YD	1800
1	C-E	EXCESS TOPSOIL MATERIAL (LV)	CU YD	-10
QUANTITY TO SEQ				
	B+C+D	EXCAVATION - COMMON (CV)	CU YD	5455
	E+F	COMMON EMBANKMENT (CV)	CU YD	3250
	B-G+H	HAUL AND STOCKPILE BITUMINOUS MATERIAL	CU YD	950
8		AGGREGATE BASE CL 5 MOD	TON	100
8		COMMON TOPSOIL BORROW	CU YD	100

- NOTES
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

RECLAIMED MATERIAL SHALL REMAIN IN PLACE OR EXCAVATED FOR ROAD WIDENING, DRIVEWAY, AND WALK AGGREGATE BASE. MATERIAL NOT REQUIRED FOR REUSE SHALL BE HAULED TO 16600 ST. FRANCIS BOULEVARD NW

ASSUMES AN AVERAGE 6" EXISTING TOPSOIL THICKNESS

EXCAVATION BELOW 6" TOPSOIL STRIP

SWELL FACTOR OF 1.05 APPLIED FROM EV TO LV

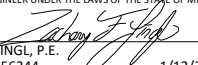
GRANULAR SHRINKAGE FACTOR OF 1.1 APPLIED FROM CV TO LV

TOPSOIL SHRINKAGE FACTOR OF 1.5 APPLIED FROM CV TO LV

CONTRACTOR TO SEPARATE TOPSOIL, GRANULAR MATERIAL AND SELECT GRADING MATERIAL. SELECT GRADING MATERIAL TO BE USED UNDER IMPERVIOUS SURFACE. GRANULAR MATERIAL TO BE USED IN BOULEVARD AREAS AS REQUIRED

MATERIAL FROM SITE SHALL BE USED BEFORE ANY IMPORT BORROW MAY BE HAULED TO THE SITE.

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CITY OF RAMSEY, MINNESOTA

2026 BUNKER LAKE BOULEVARD RECONSTRUCTION

TABULATIONS

SAP 199-121-003

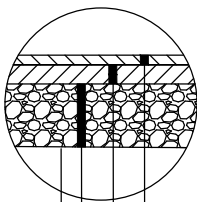
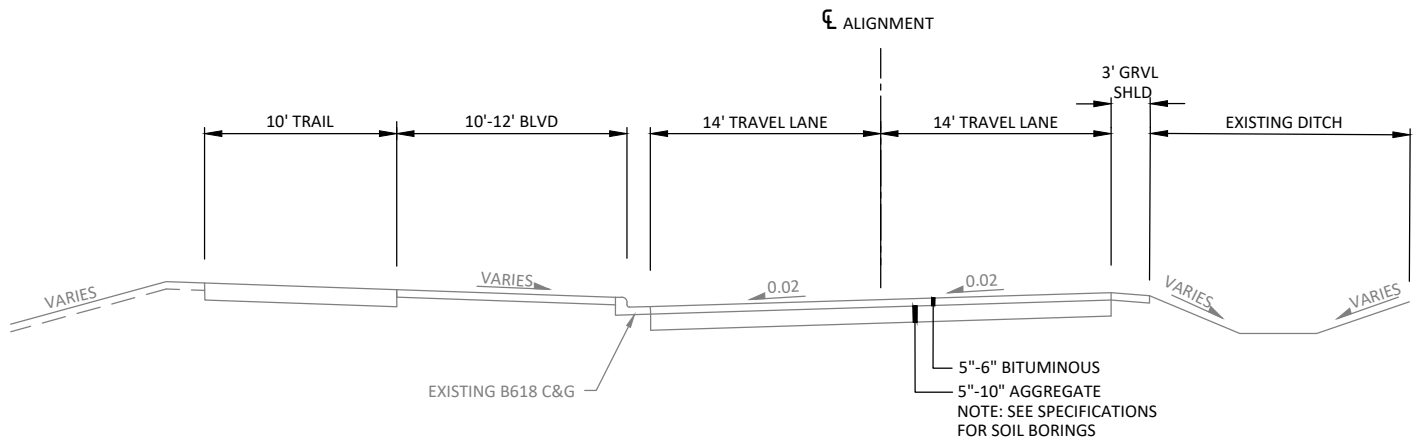
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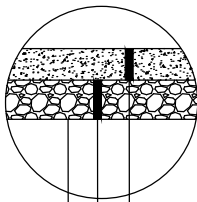
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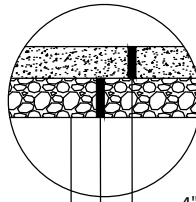
EXISTING BUNKER LAKE BOULEVARD



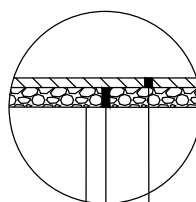
INSET A
ROADWAY SECTION



INSET B
SIDEWALK SECTION AT PEDESTRIAN CURB RAMPS



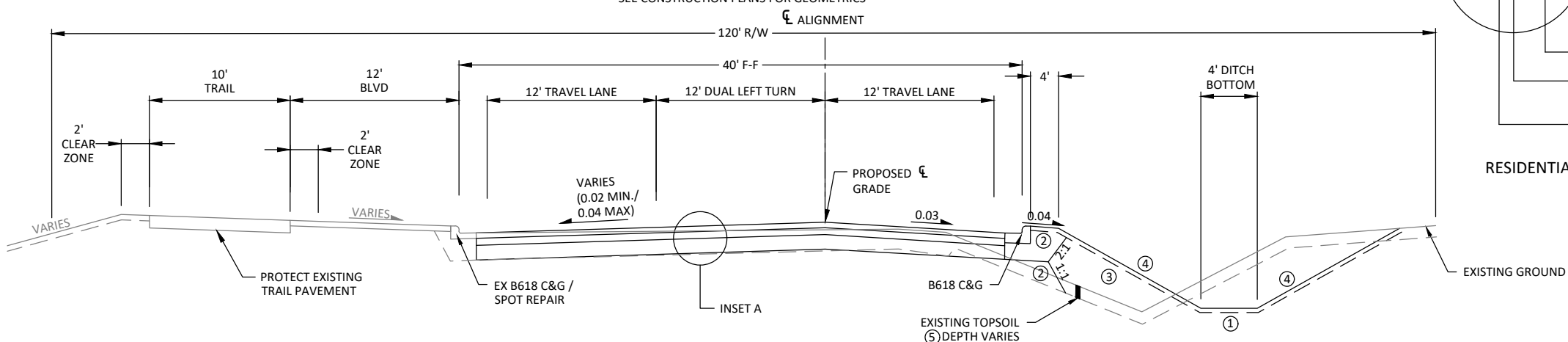
INSET D
MEDIAN PAVEMENT



INSET C
RESIDENTIAL DRIVEWAY SECTION

PROPOSED BUNKER LAKE BOULEVARD

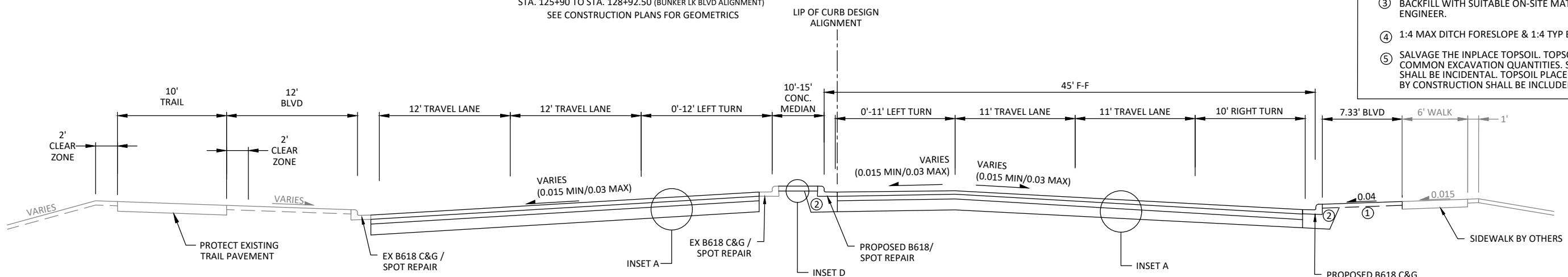
STA. 102+50 TO STA. 123+56 (BUNKER LK BLVD ALIGNMENT)
SEE CONSTRUCTION PLANS FOR GEOMETRICS



- GENERAL NOTES:**
- ALL DIMENSIONS ARE IN FEET, UNLESS OTHERWISE NOTED.
 - ALL CROSS SLOPES ARE FT. PER FT.
 - THE TOP OF GRADING GRADE IS DEFINED AS THE BOTTOM OF THE CLASS 5 AGGREGATE BASE.
 - UNLESS OTHERWISE INDICATED, THE GRADING GRADE AND TOP OF SUBGRADE WILL HAVE THE SAME SLOPE AS THE FINISHED ROAD SURFACE.
 - BITUMINOUS MATERIAL FOR TACK COAT (2357) SHALL BE APPLIED BETWEEN EVERY LIFT OF PAVEMENT UNLESS NOTED OTHERWISE (INCIDENTAL).
- SPECIFIC NOTES:**
- ① MINIMUM 4" SLOPE DRESSING EMBANKMENT.
 - ② EXTEND AGGREGATE BASE 1.5FT BEYOND BACK OF CURB. BACKFILL WITH SELECT GRADING MATERIAL.
 - ③ BACKFILL WITH SUITABLE ON-SITE MATERIAL AS APPROVED BY THE ENGINEER.
 - ④ 1:4 MAX DITCH FORESLOPE & 1:4 TYP BACKSLOPE, 1:3 MAX BACKSLOPE
 - ⑤ SALVAGE THE INPLACE TOPSOIL. TOPSOIL QUANTITY IS INCLUDED IN COMMON EXCAVATION QUANTITIES. STOCKPILING INPLACE TOPSOIL SHALL BE INCIDENTAL. TOPSOIL PLACEMENT ON ALL SLOPES DISTURBED BY CONSTRUCTION SHALL BE INCLUDED IN COMMON EMBANKMENT.

PROPOSED BUNKER LAKE BOULEVARD

STA. 125+90 TO STA. 128+92.50 (BUNKER LK BLVD ALIGNMENT)
SEE CONSTRUCTION PLANS FOR GEOMETRICS



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DATE 1/12/2026



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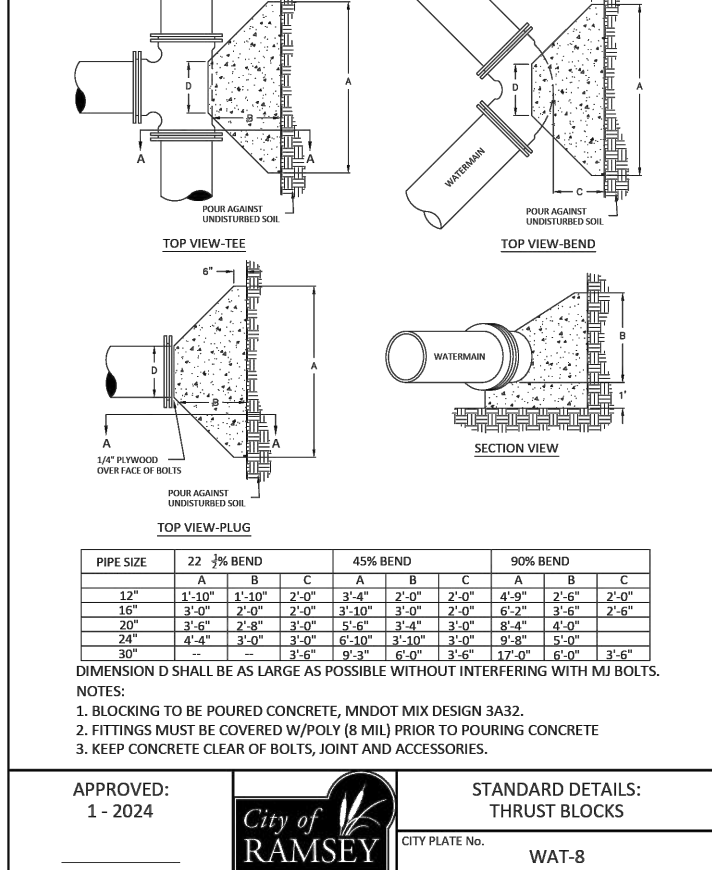
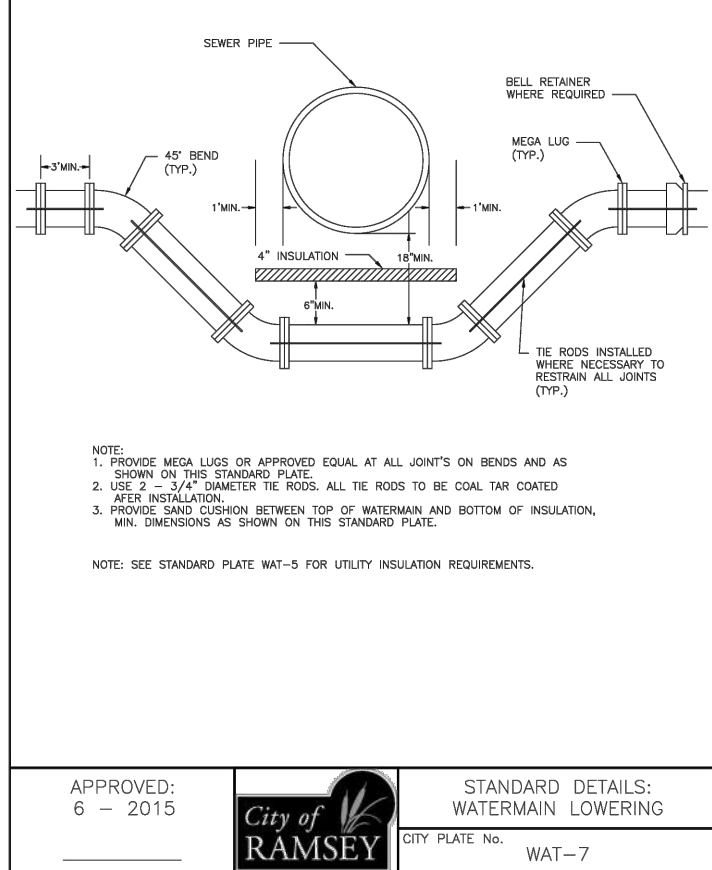
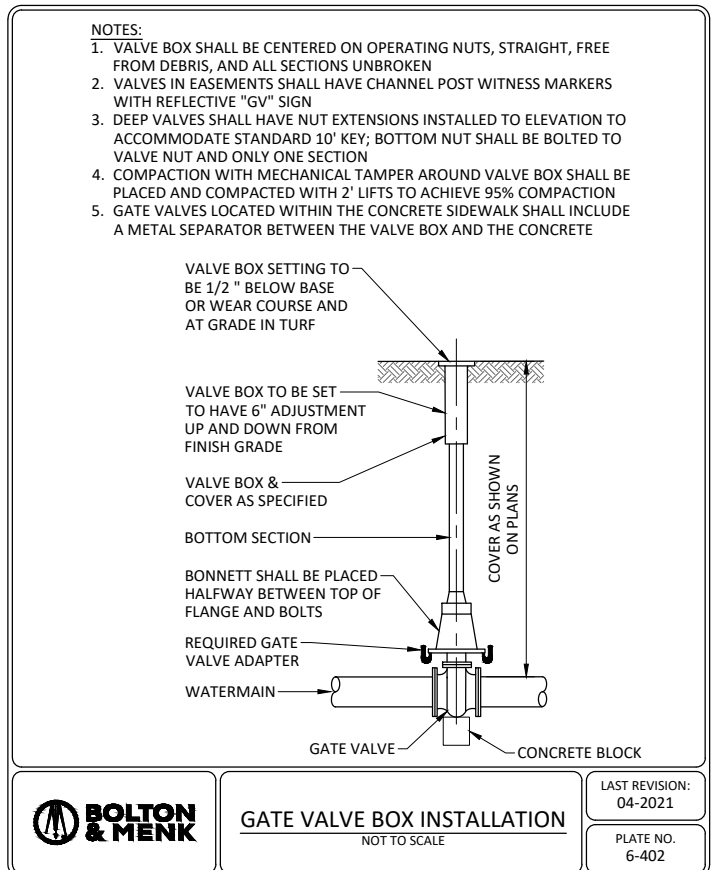
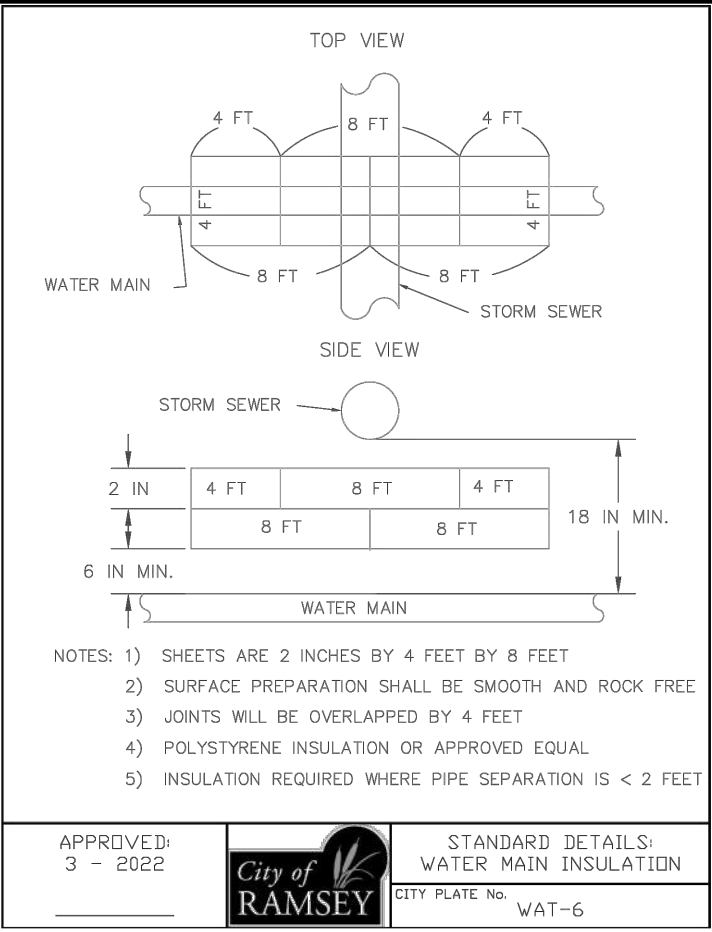
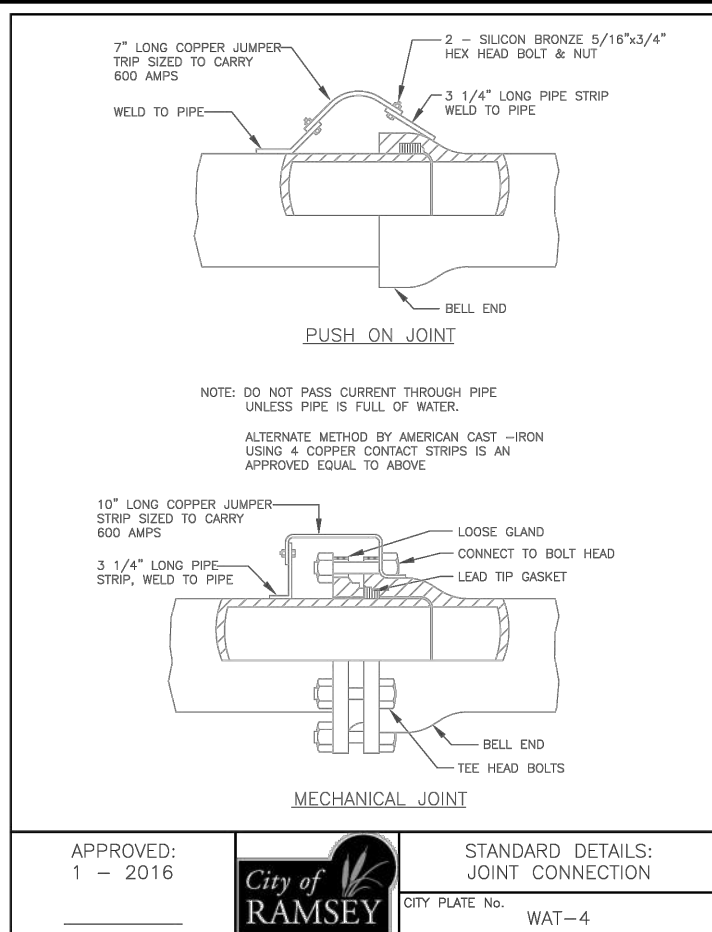
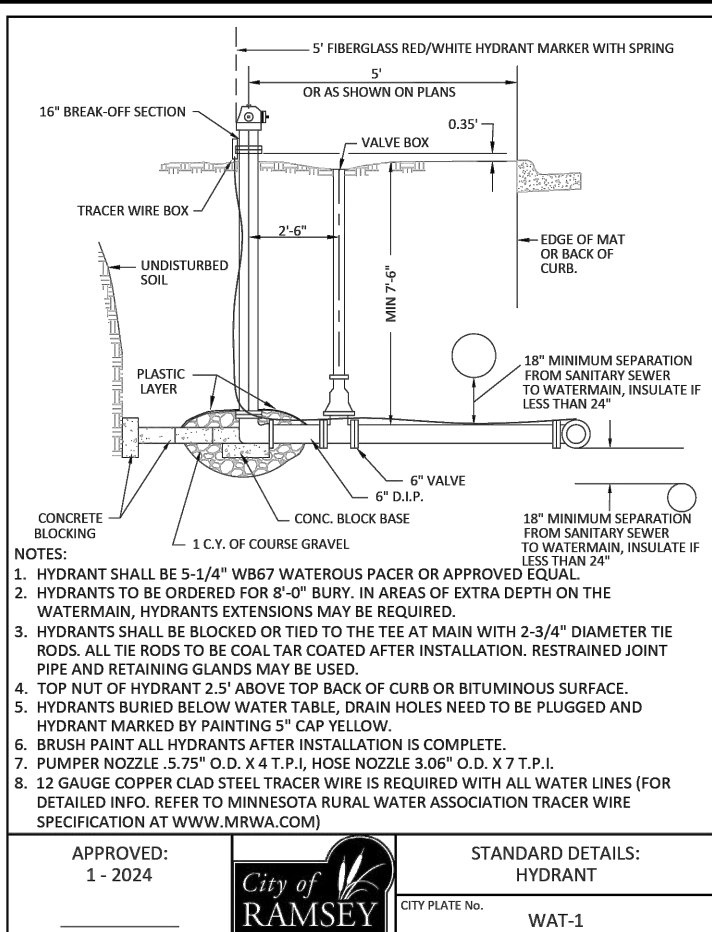
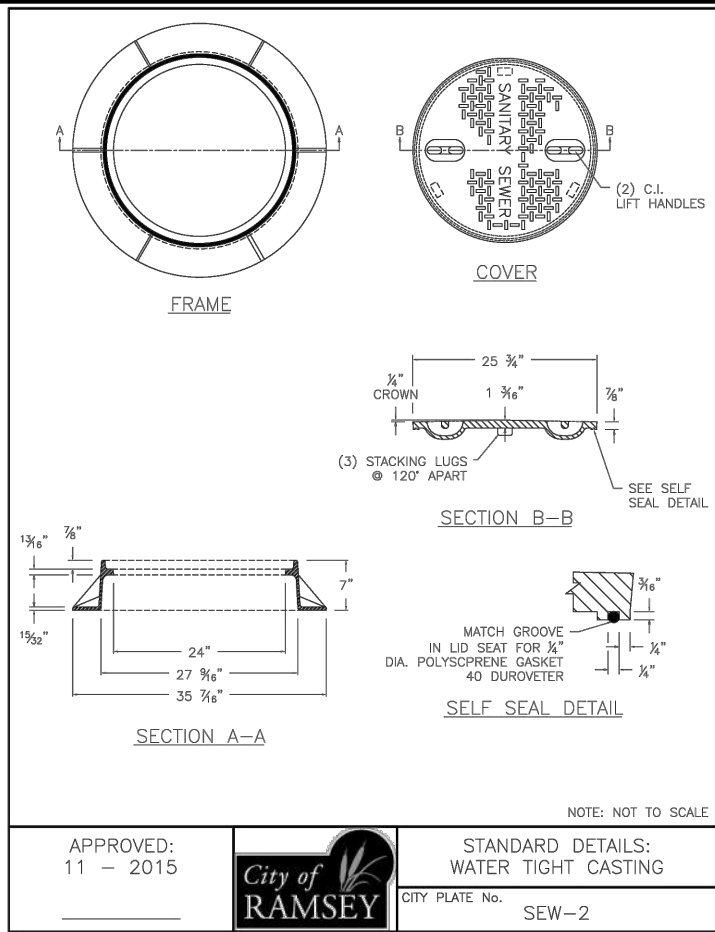


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CITY OF RAMSEY, MINNESOTA	
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION	
TYPICAL SECTIONS	
SAP 199-121-003	

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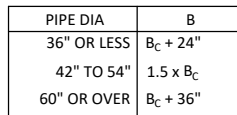
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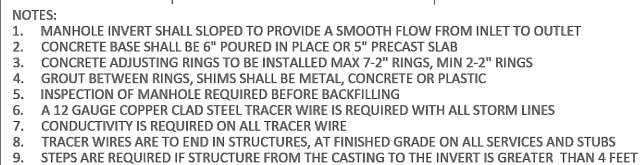


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RC PIPE
CLASS "C" BEDDING
NOT TO SCALE

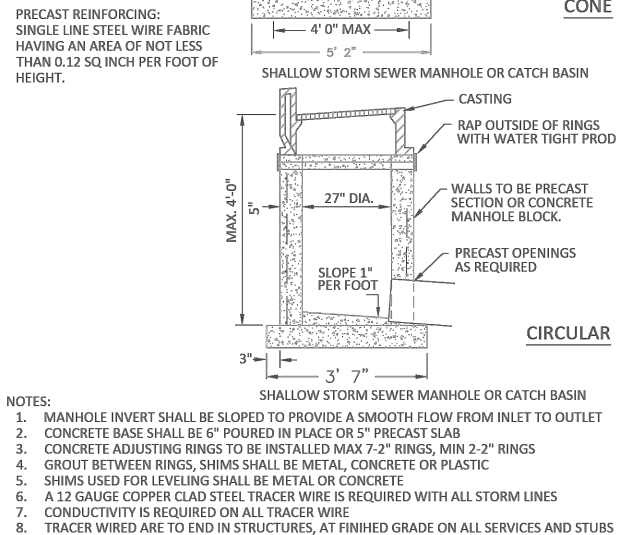
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City of
RAMSEY

CITY PLATE No.

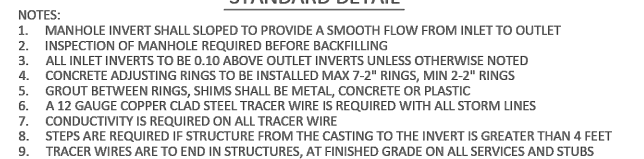
STO-1



City of
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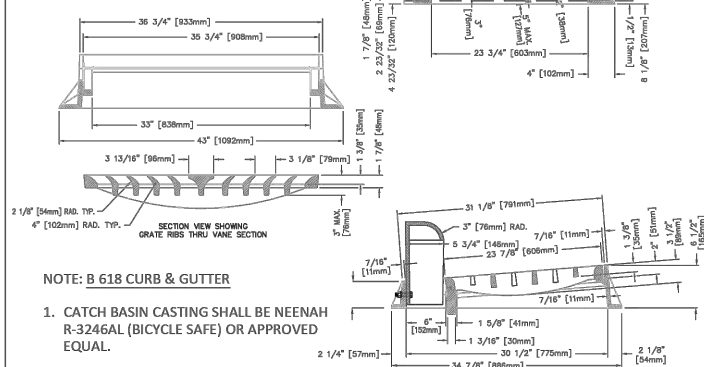
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City of
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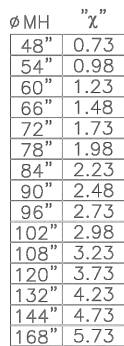


1. CATCH BASIN CASTING SHALL BE NEENAH R-3246AL (BICYCLE SAFE) OR APPROVED EQUAL.

City of
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CITY PLATE No.

STO-4



* BASED ON
NEENAH NO
3246 CSTG

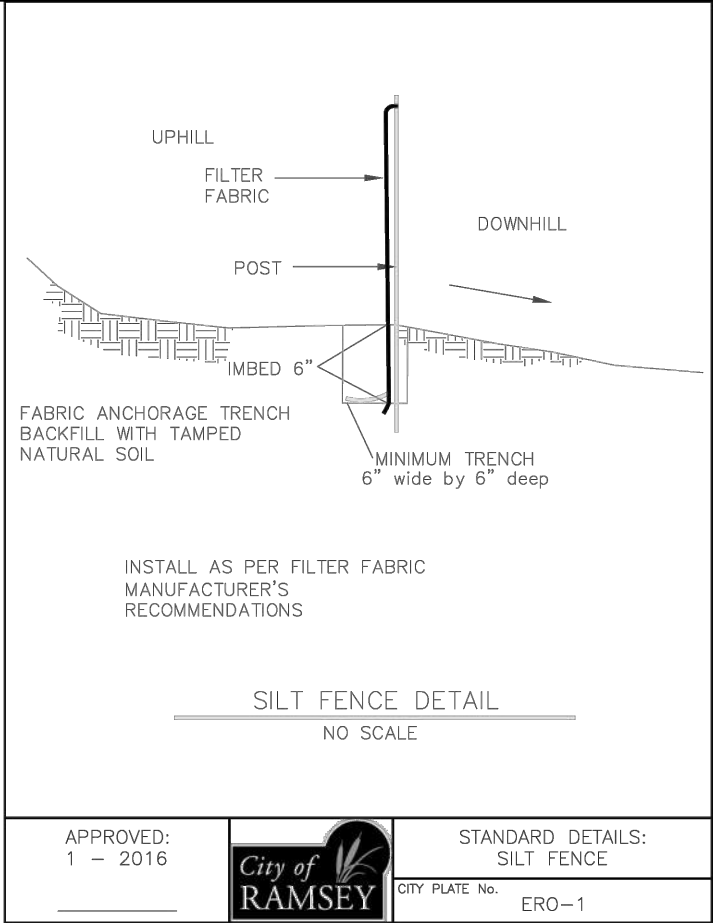
* SEE STD PLATE 4020 FOR
CBMH DETAILS.

** PROVIDE 27" DIA OPENING
FOR STORM MH WITH
R-1733 CASTINGS.

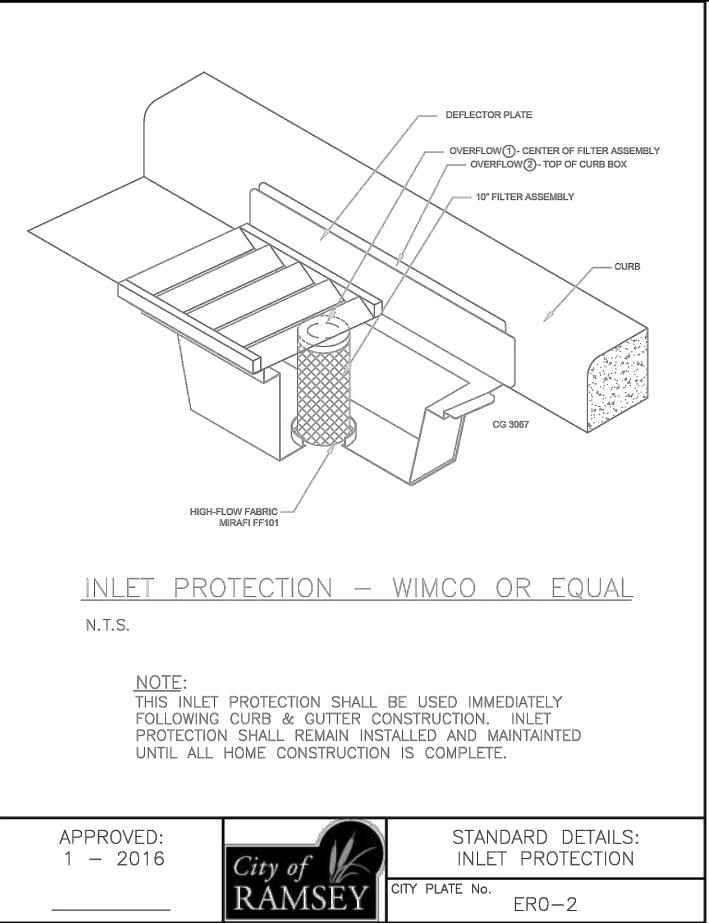
City of
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CITY PLATE No.

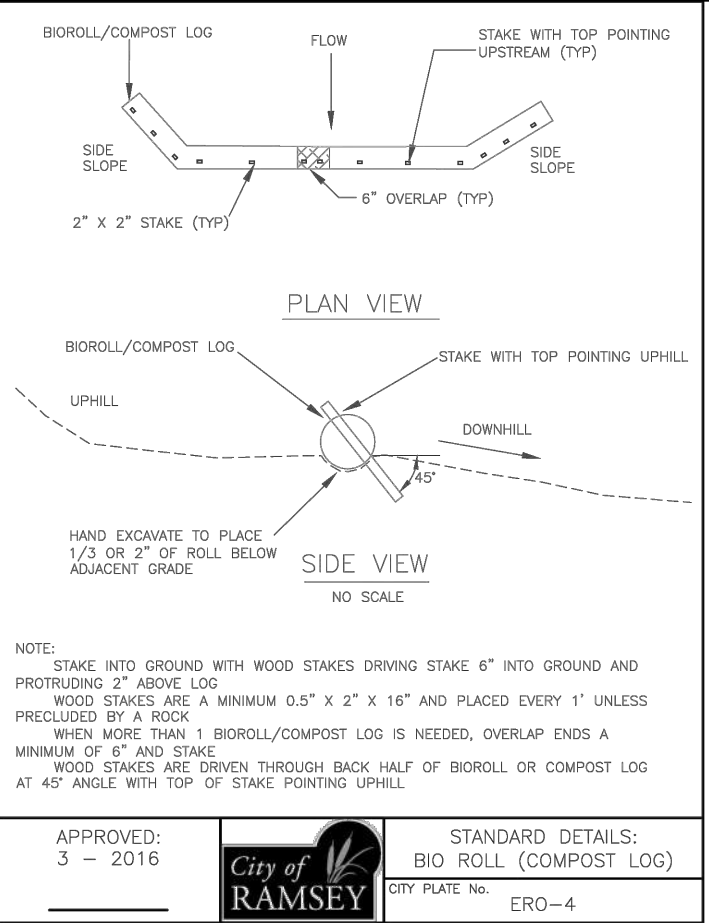
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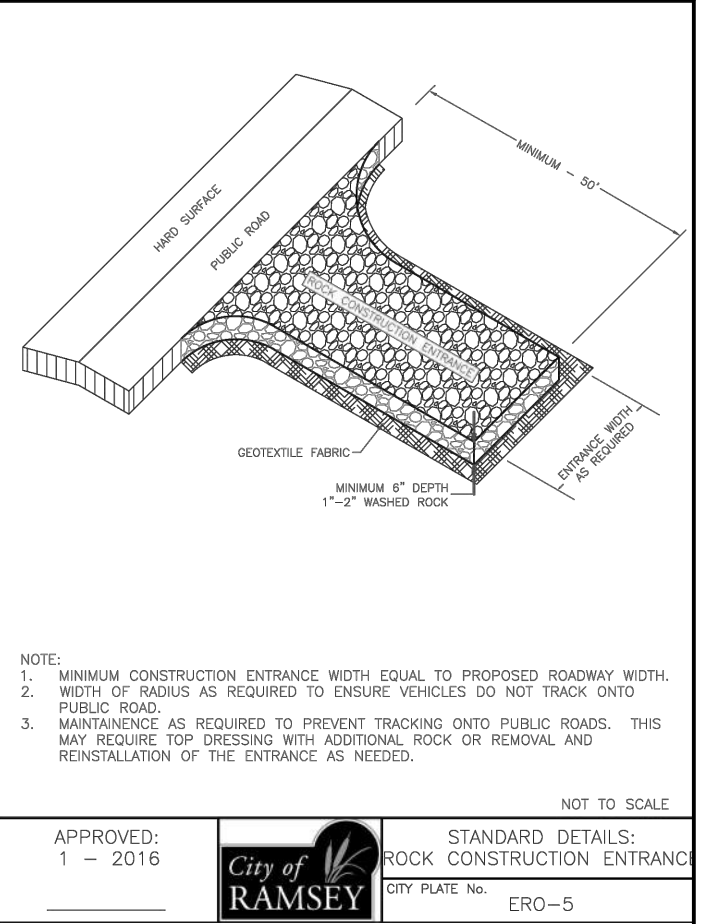
APPROVED: 1 - 2016		STANDARD DETAILS: SILT FENCE
	CITY PLATE No.	ERO-1



APPROVED: 1 - 2016		STANDARD DETAILS: INLET PROTECTION
	CITY PLATE No.	ERO-2



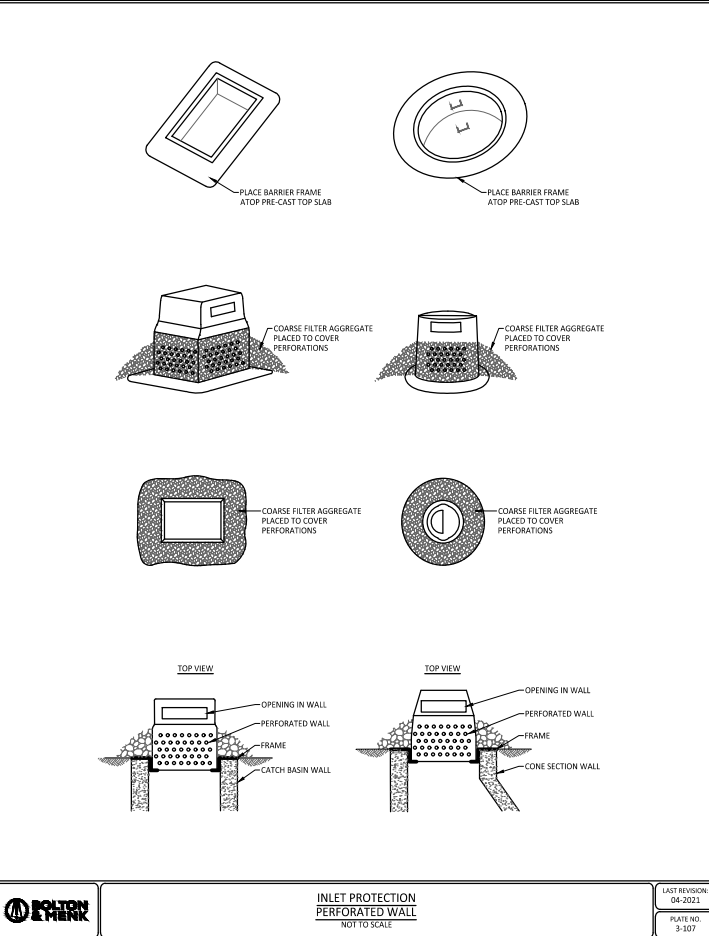
APPROVED: 3 - 2016		STANDARD DETAILS: BIO ROLL (COMPOST LOG)
	CITY PLATE No.	ERO-4



APPROVED: 1 - 2016		STANDARD DETAILS: ROCK CONSTRUCTION ENTRANCE
	CITY PLATE No.	ERO-5

- Notes:
1. INSTALLATION OF 4" OF TOPSOIL REQUIRED ACROSS ALL DISTURBED AREAS.
 2. TOPSOIL IS DEFINED AS BLACK DIRT COMPOSED OF UNCONSOLIDATED MATERIAL, LARGELY UNDECOMPOSED ORGANIC MATTER WHICH IS SUITABLE FOUNDATION FOR VEGETATIVE GROWTH.
 3. THE COMPOSITION OF TOPSOIL SHOULD CONTAIN NO MORE THAN THIRTY-FIVE PERCENT (35%) SAND CONTENT.

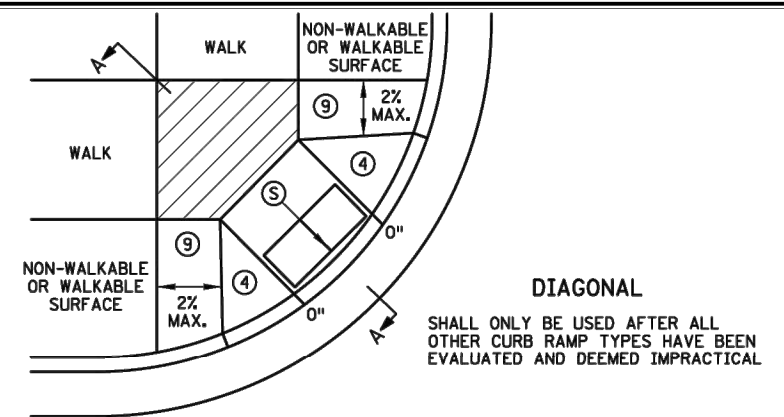
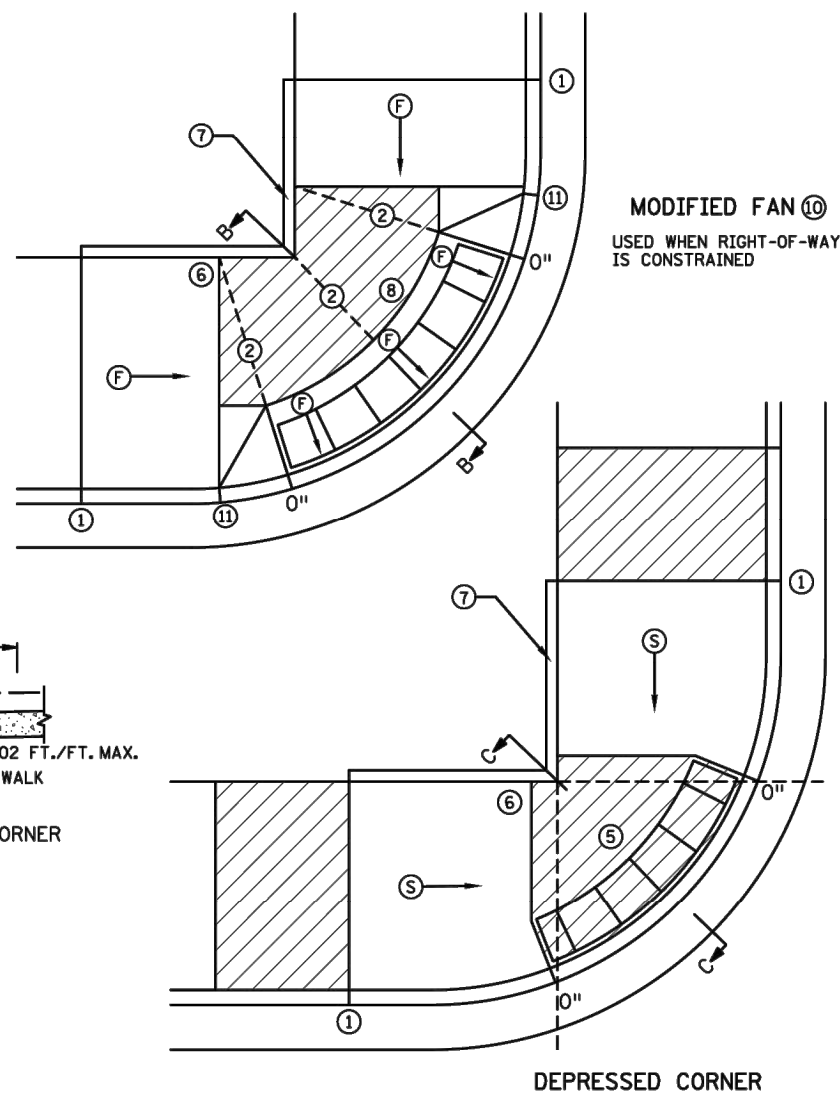
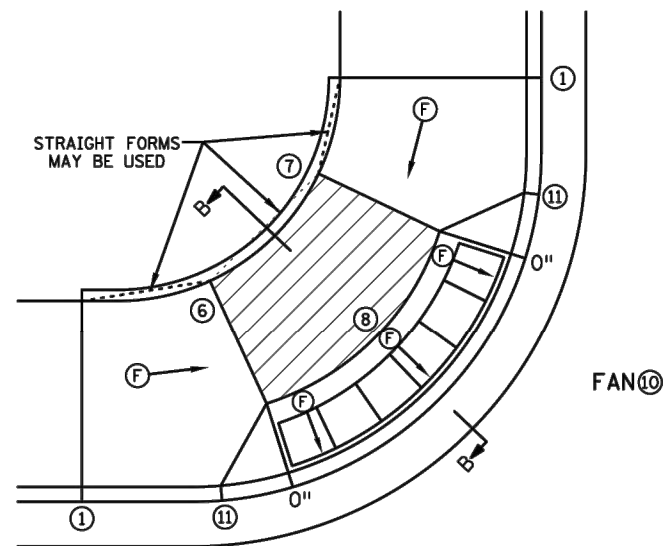
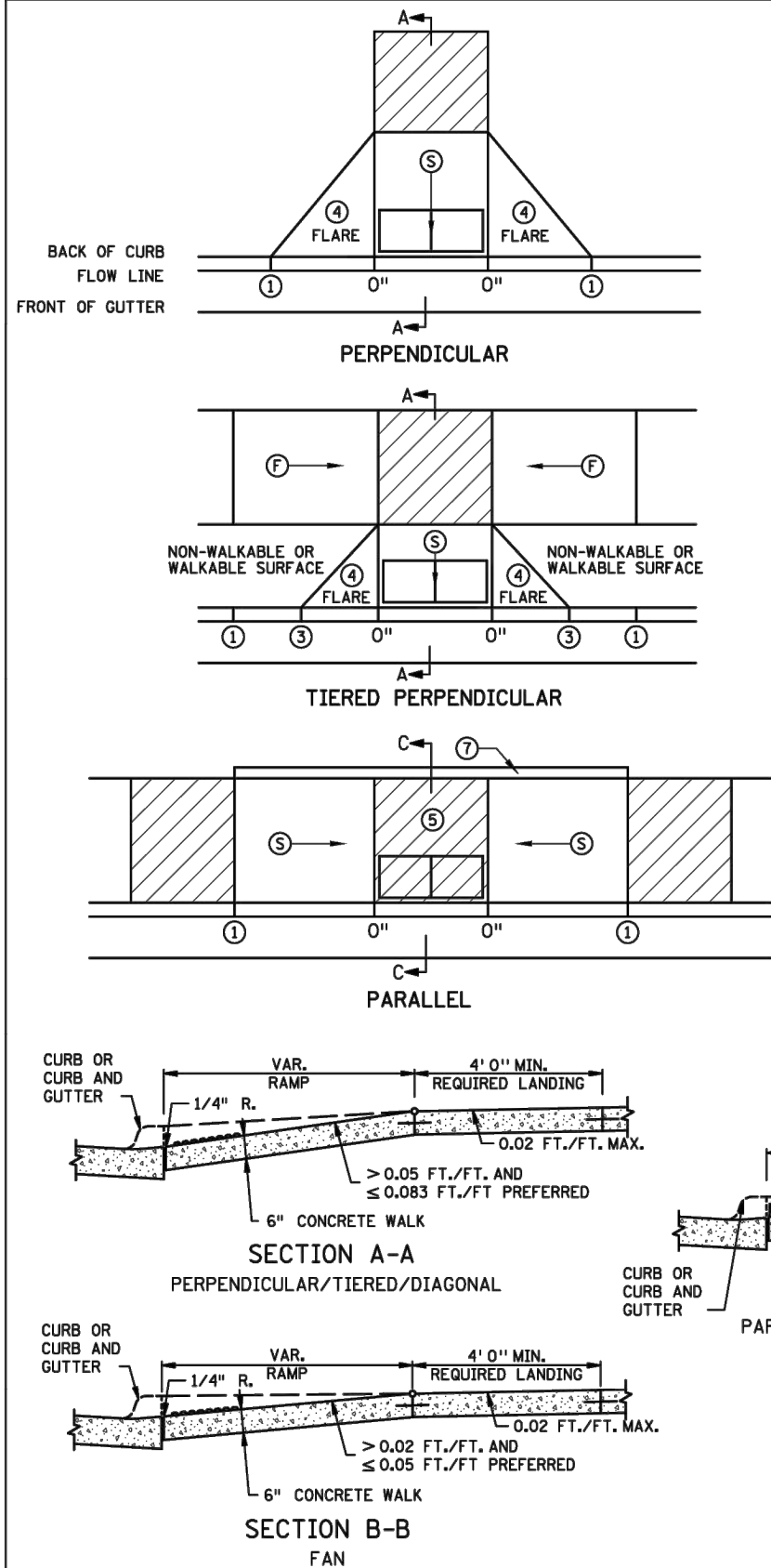
APPROVED: 7 - 2019		STANDARD DETAILS: TOPSOIL REQUIREMENTS
	CITY PLATE No.	ERO-6



	LAST REVISION: 04-2021
	PLATE NO. 9-107

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2026 BUNKER LAKE BOULEVARD RECONSTRUCTION	9
DETAILS	OF
SAP 199-121-003	56



NOTES:

- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMP THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%.
- INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.
- SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30' OF VERTICAL RISE WHEN THE LONGITUDINAL RUNNING SLOPE IS GREATER THAN 5.0%.
- CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.
- ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL, THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH, EXCEPT AS STATED IN 6 BELOW.
- TO ENSURE RAMP AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR, FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 OF 6 FOR ALL SEPARATELY POURED INITIAL LANDINGS.
- WHEN SIDEWALK IS AT BACK OF CURB, TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE. MAINTAIN POSITIVE BOULEVARD DRAINAGE TO TOP OF CURB.
- ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.
- 4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMP. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL, DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF, WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.
- WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.
- RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.

- 1 MATCH FULL HEIGHT CURB.
- 2 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.
- 3 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.
- 4 SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.
- 5 DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.
- 6 THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK, THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)
- 7 WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS LESS THAN 5% RUNNING SLOPE SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
- 8 A 7' MIN TOP RADIUS GRADE BREAK IS REQUIRED TO BE CONSTRUCTIBLE.
- 9 PAVE FULL WALK WIDTH.
- 10 "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.
- 11 INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3" CURB HEIGHT. REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

LEGEND	
THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT, IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.	
(S)	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
(F)	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
[Hatched Box]	LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.
X"	CURB HEIGHT

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION	PEDESTRIAN CURB RAMP DETAILS			APPROVED: 11-04-2021 REVISED:	 THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	1 OF 6		
 DEPARTMENT OF TRANSPORTATION					STANDARD PLAN		STATE PROJ. NO.		SHEET NO.	
							TRUNK HWY.		TOTAL SHEETS	

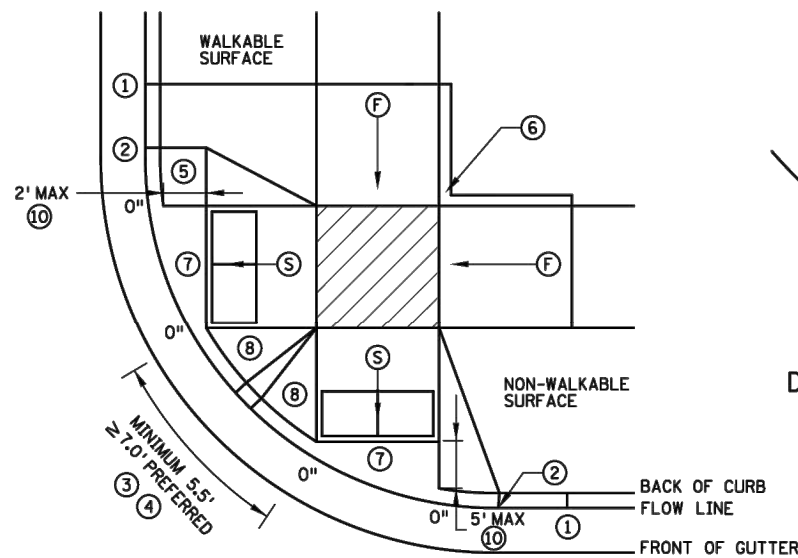


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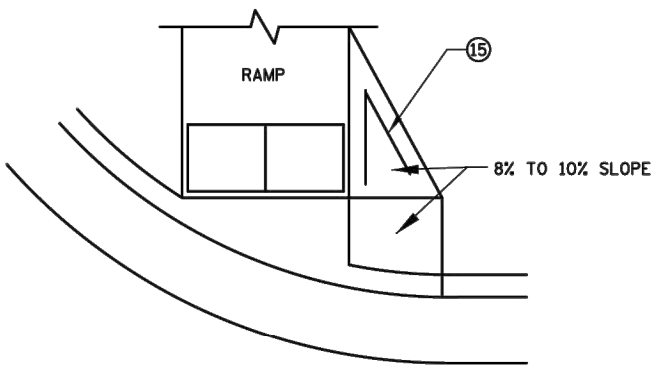


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CLIENT PROJ. NO.	26-01		

CITY OF RAMSEY, MINNESOTA	SHEET 10 OF 56
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION	
PEDESTRIAN RAMP DETAILS	
SAP 199-121-003	

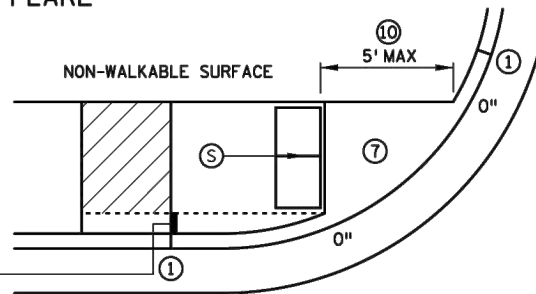


COMBINED DIRECTIONAL

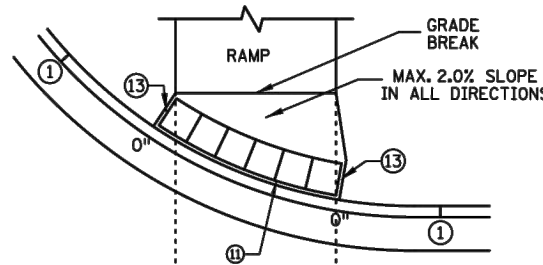


DIRECTIONAL RAMP WALKABLE FLARE

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

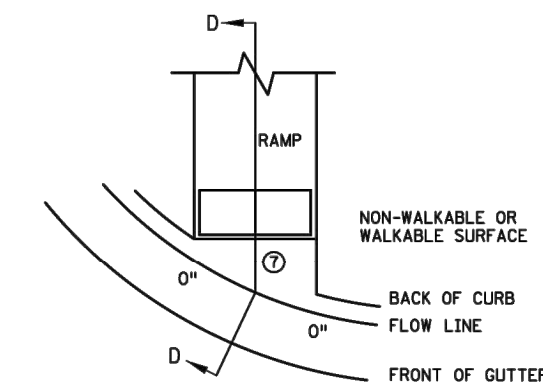
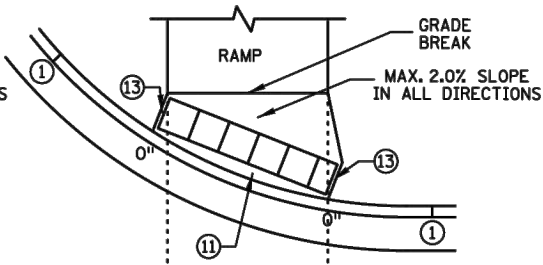


STANDARD ONE-WAY DIRECTIONAL ⑨

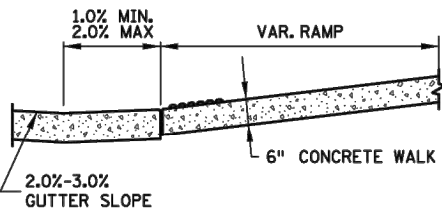


DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫

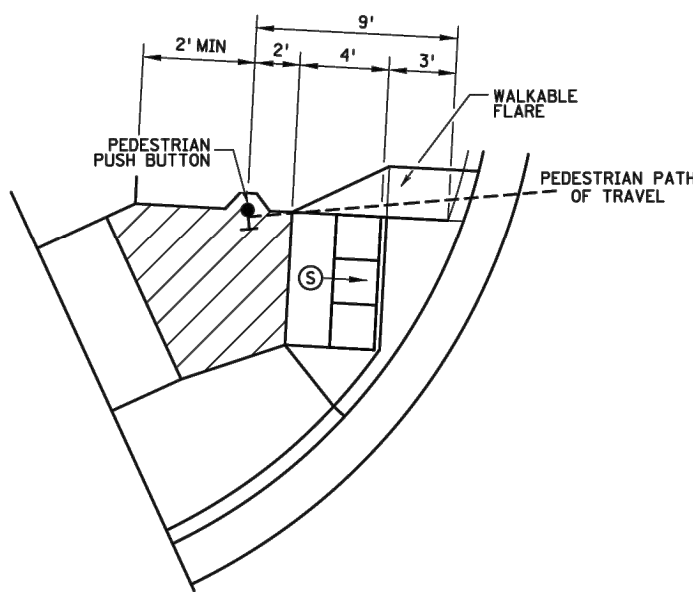
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



CURB FOR DIRECTIONAL RAMPS ⑭



SECTION D-D



SEMI-DIRECTIONAL RAMP ③④⑨

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

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30' OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOP GRADE BREAK OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH.

TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY, FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISION (PROSECUTION OF WORK).

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

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

RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB. SEE NOTES ⑩ & ⑪ FOR INFORMATION REGARDING RECTANGULAR DETECTABLE WARNING PLACEMENT.

① MATCH FULL CURB HEIGHT.

② 3" HIGH CURB WHEN USING A 3' LONG RAMP
4" HIGH CURB WHEN USING A 4' LONG RAMP.

③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)
4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).

④ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.

⑤ WHEN USING CONCRETE PAVED FLARES ON THE OUTSIDE OF DIRECTIONAL RAMPS, AND ADJACENT TO A WALKABLE SURFACE, DIRECTIONAL RAMP FLARES SHALL BE USED. SEE THE DETAIL ON THIS SHEET.

⑥ GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.

⑦ MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.

⑧ 8% TO 10% WALKABLE FLARE.

⑨ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.

⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.

⑪ RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK UP TO 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.

⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.

⑬ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.

⑭ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

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

LEGEND

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



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



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



LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.



X" CURB HEIGHT

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION	PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	 THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	2 OF 6
			STANDARD PLAN	STATE PROJ. NO.	SHEET NO.	
				TRUNK HWY.	TOTAL SHEETS	



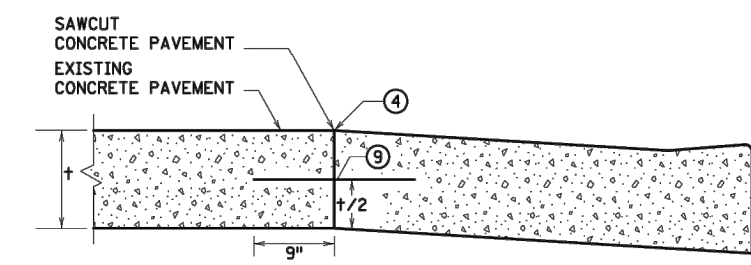
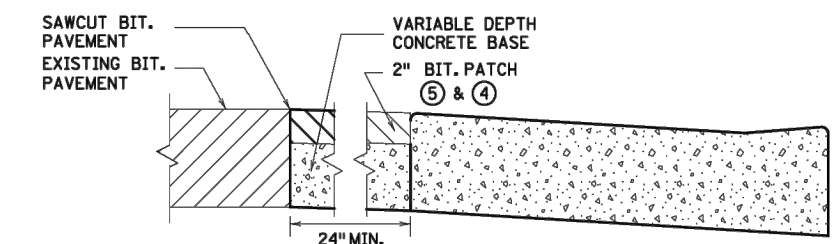
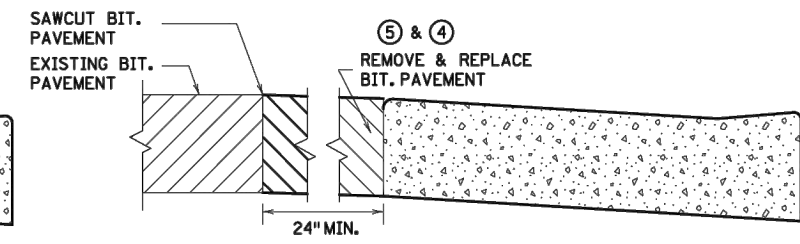
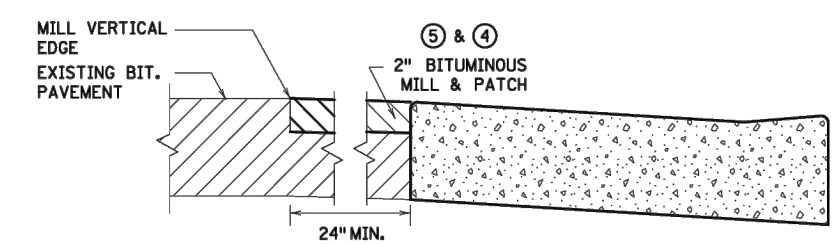
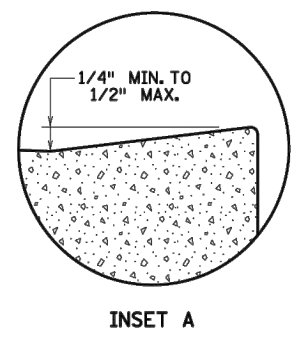
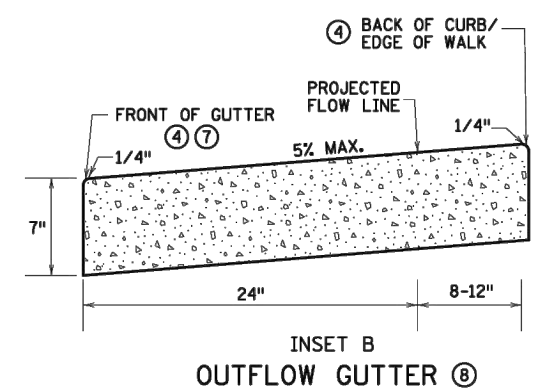
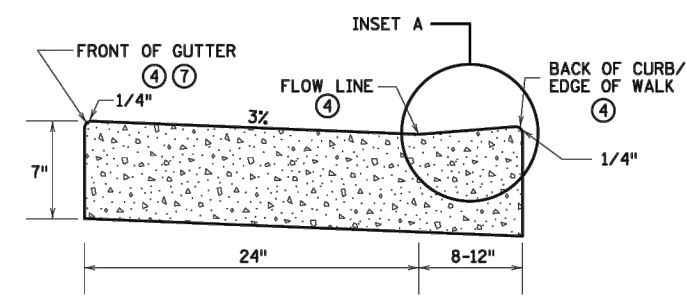
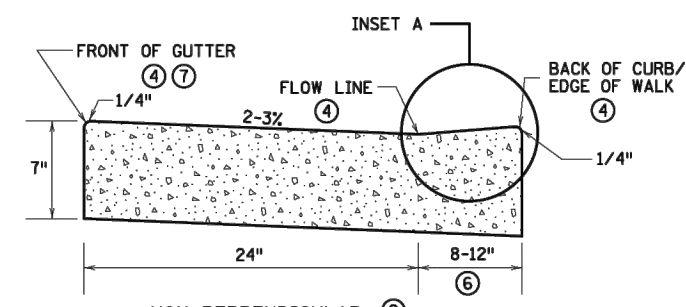
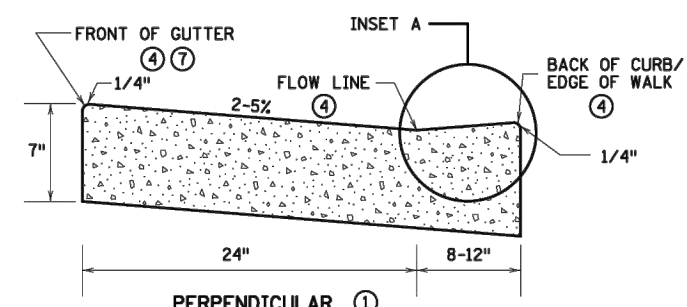
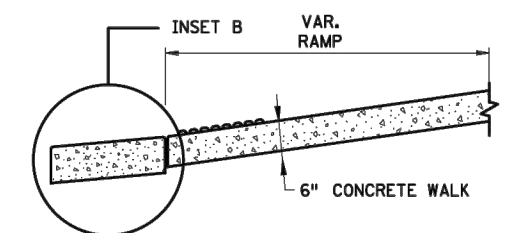
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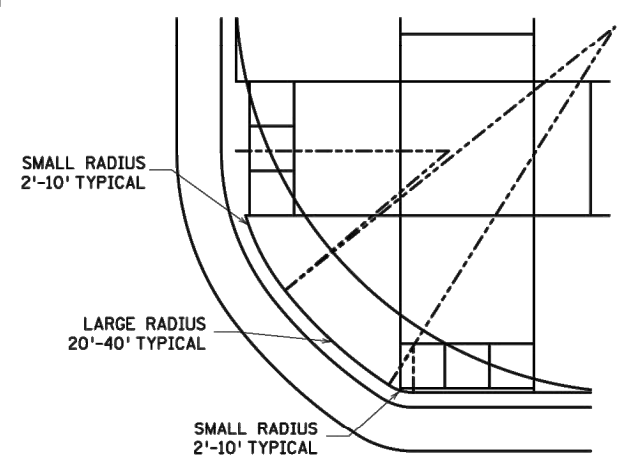
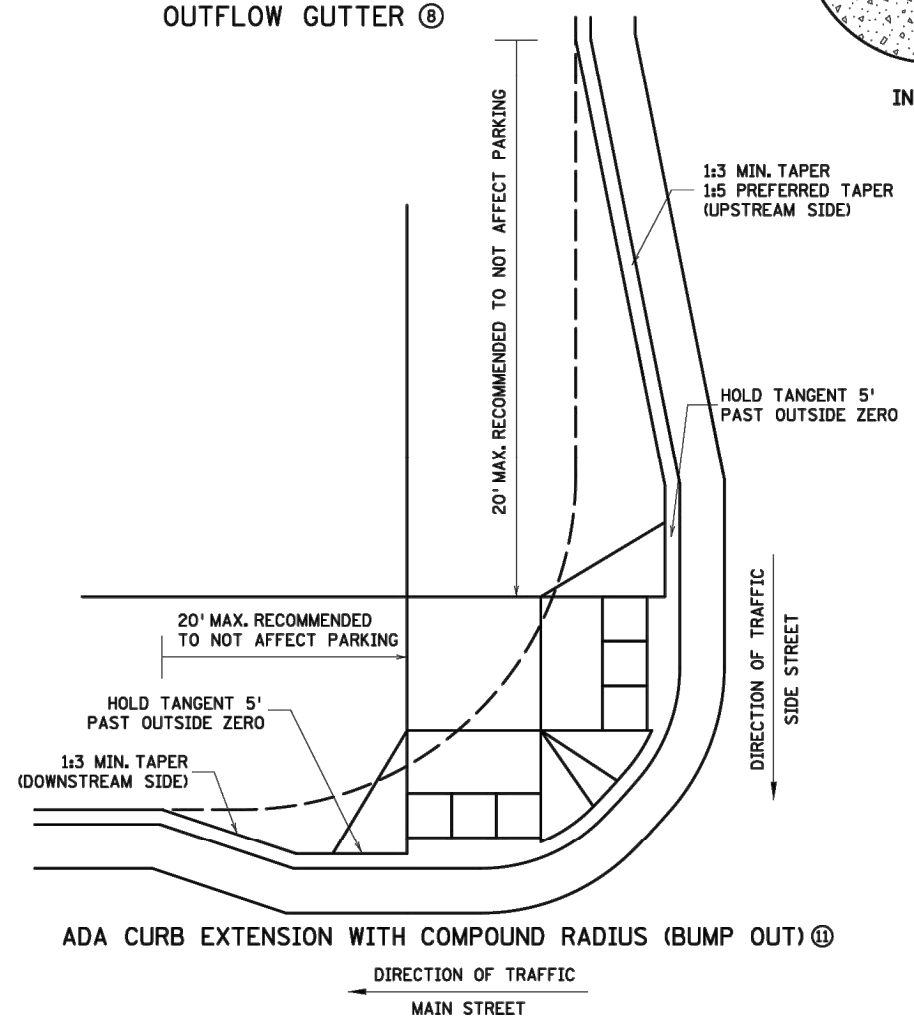
CITY OF RAMSEY, MINNESOTA
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION
PEDESTRIAN RAMP DETAILS
SAP 199-121-003

SHEET
11
OF
56



ONLY ALLOWED PER ENGINEER'S APPROVAL

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



COMBINED DIRECTIONAL (COMPOUND RADIUS)

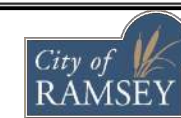
- NOTES:**
- POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM. NO PONDING SHALL BE PRESENT IN THE PAR.
 - ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.
 - FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL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

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION	PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	3 OF 6
m DEPARTMENT OF TRANSPORTATION		STANDARD PLAN		STATE PROJ. NO.	SHEET NO.	
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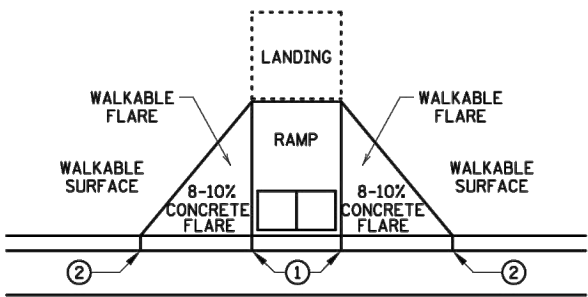
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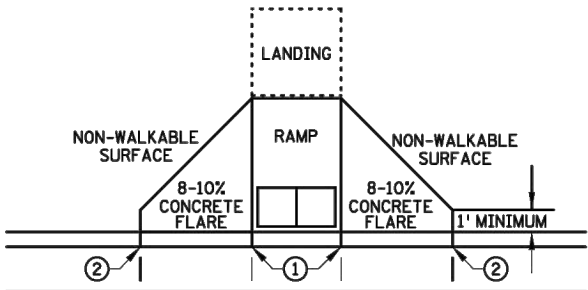
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PEDESTRIAN RAMP DETAILS
SAP 199-121-003

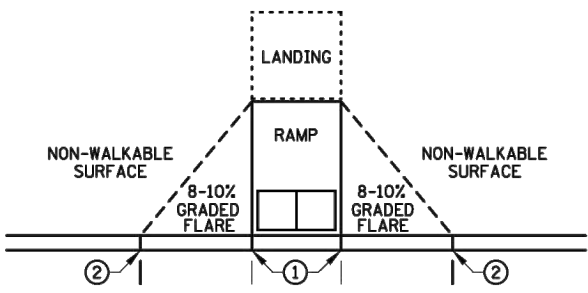
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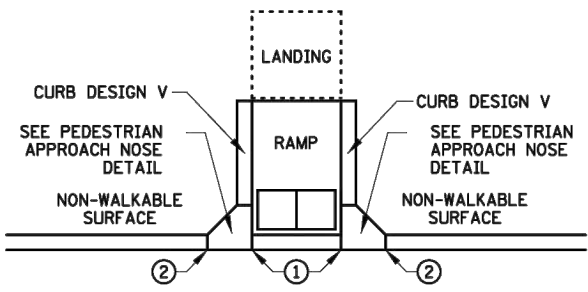
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

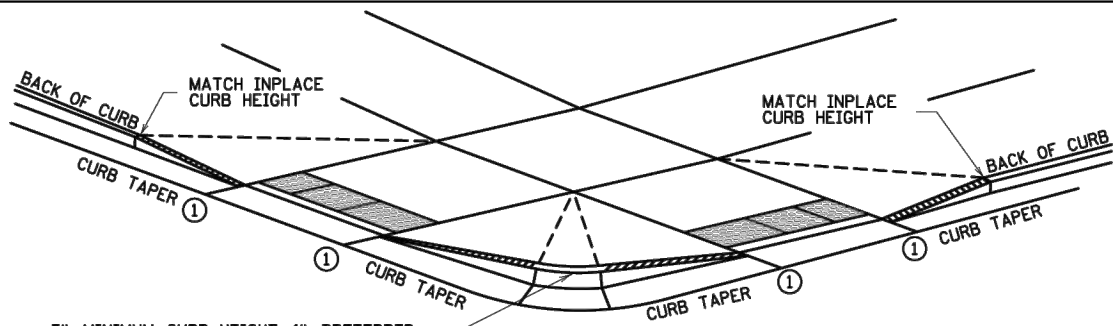


GRADED FLARES



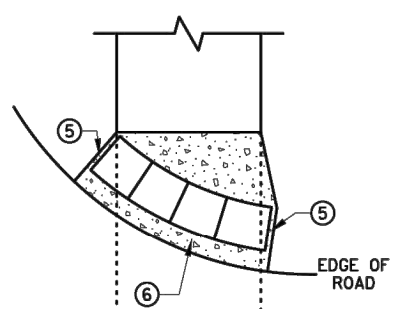
RETURNED CURB ④

TYPICAL SIDE TREATMENT OPTIONS ③ ⑩

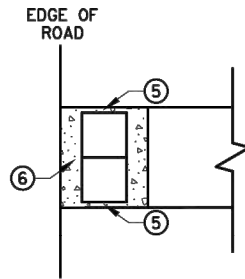


3" MINIMUM CURB HEIGHT, 4" PREFERRED
(MEASURED AT FRONT FACE OF CURB)
FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑦
CURB AND GUTTER

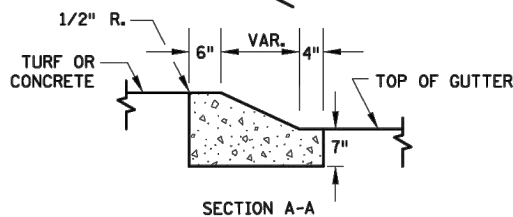
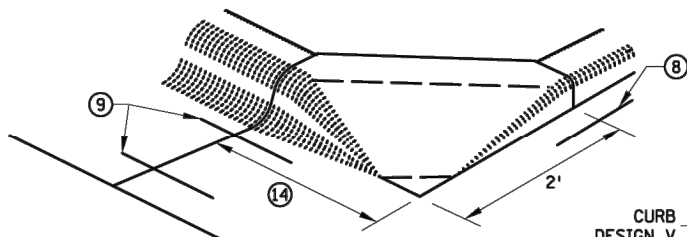


RADIAL DETECTABLE WARNING

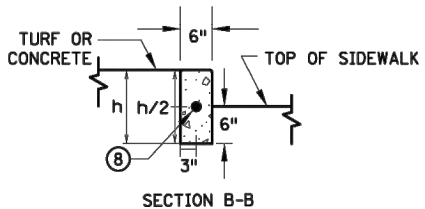


RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

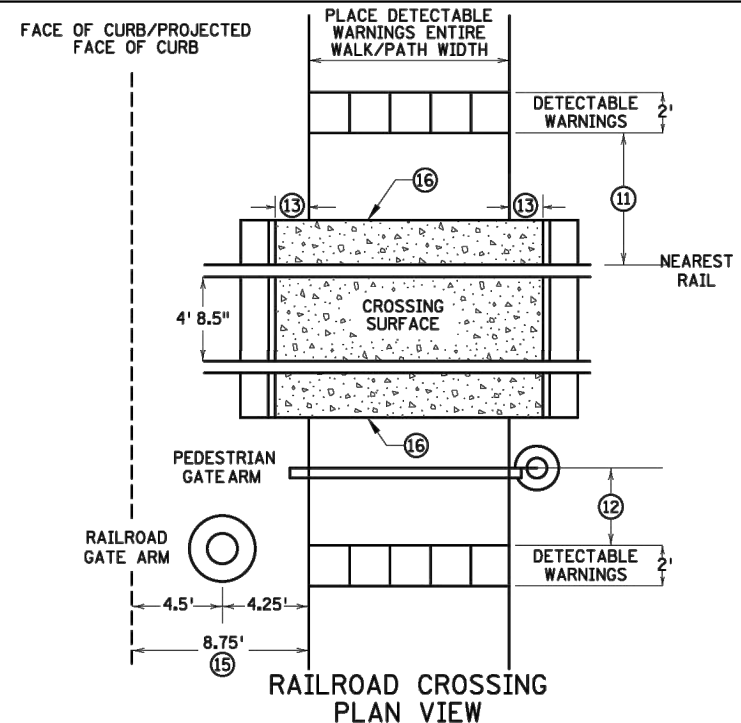


SECTION A-A



SECTION B-B

PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)



RAILROAD CROSSING
PLAN VIEW

NOTES:

- INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3 INCH CURB HEIGHT. INCREASE CURB TAPER LENGTH AT LESS THAN 8% OR REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.
- SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
- A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
- CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.
- 0" CURB HEIGHT. SEE INSET A ON SHEET 3 OF 6.
- FULL CURB HEIGHT.
- SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
- TYPICALLY USED FOR MEDIANS AND ISLANDS.
- WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.
- ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS, AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.
- DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.
- DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.
- SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6" LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE. CONSTRUCT THESE TAPERS AT 0"-3" AT 8-10%, THEN LESS THAN 5% FROM 3" CURB TO FULL CURB HEIGHT.
- NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.
- WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑪.
- CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.
- 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.
- SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.
- CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION	PEDESTRIAN CURB RAMP DETAILS			APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	4 OF 6
m DEPARTMENT OF TRANSPORTATION		STANDARD PLAN			STATE PROJ. NO.	SHEET NO.		
					TRUNK HWY.	TOTAL SHEETS		



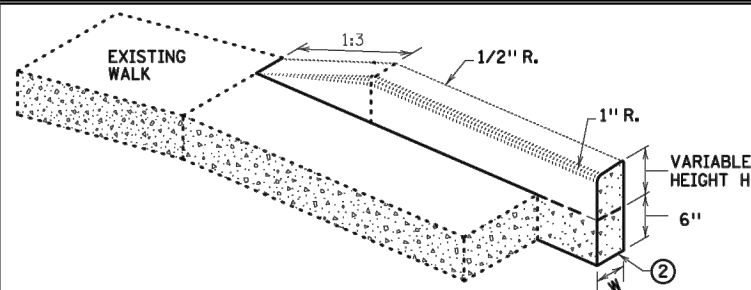
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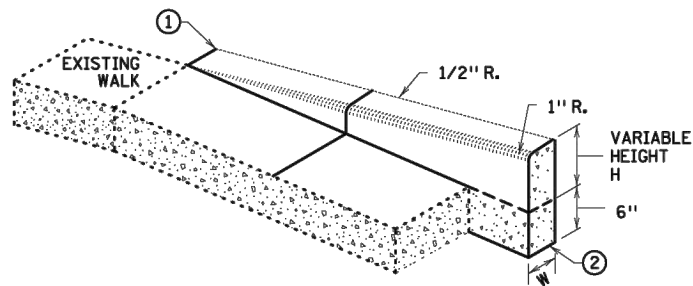
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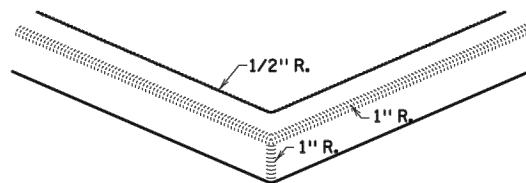
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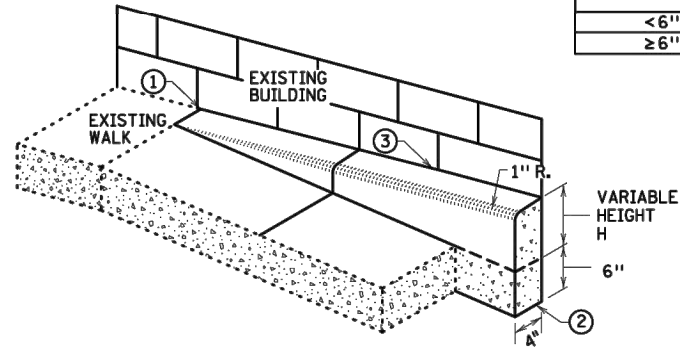
V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS

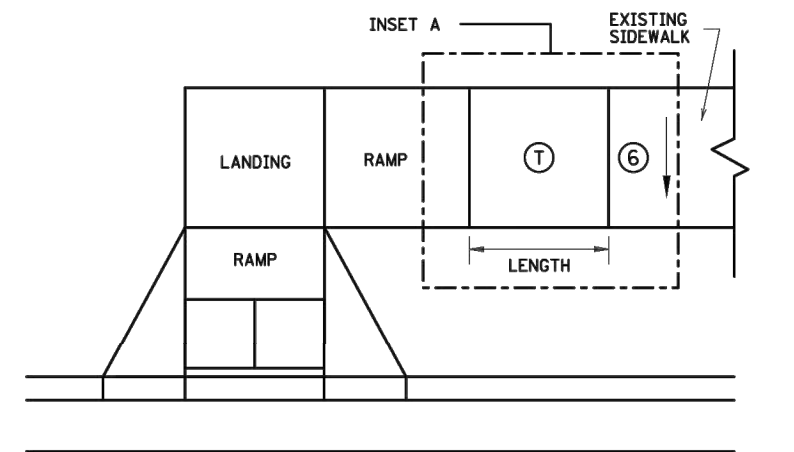


V CURB INTERSECTION

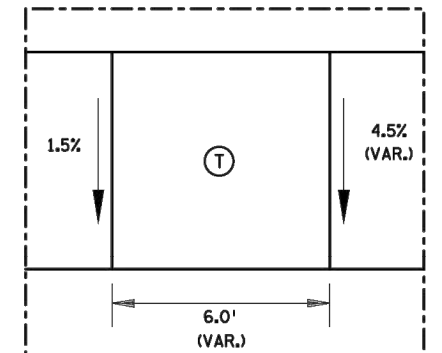


V CURB ADJACENT TO BUILDING
OR BARRIER

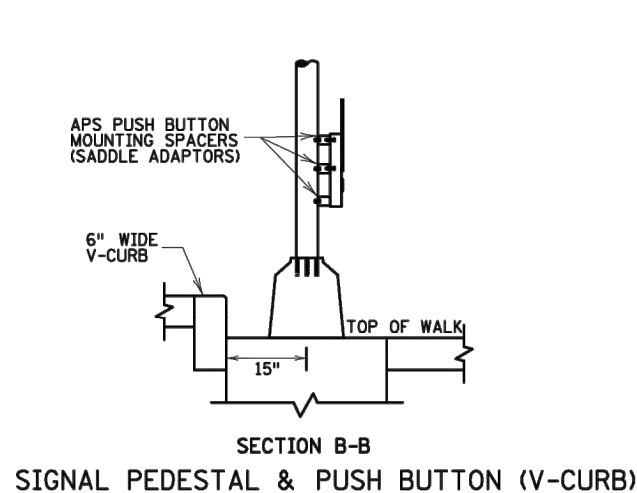
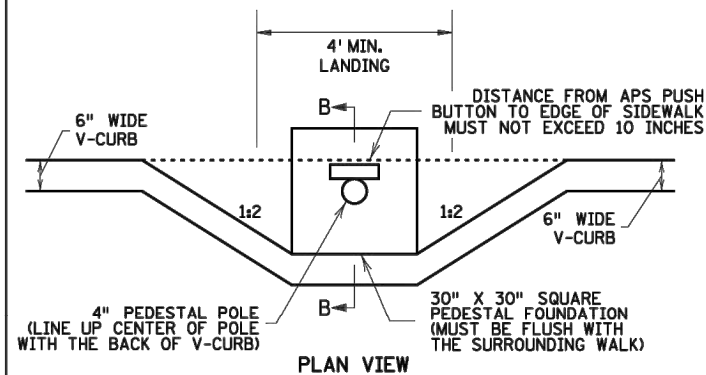
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
<6"	4"
≥6"	6"



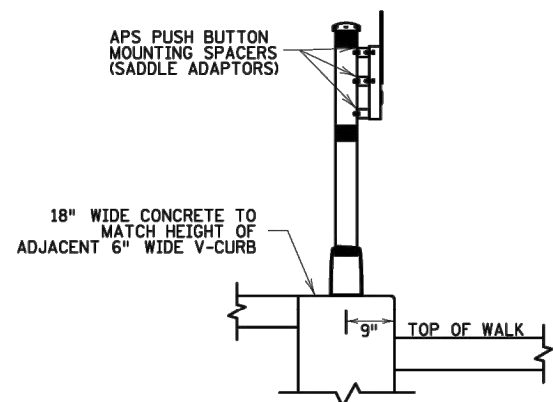
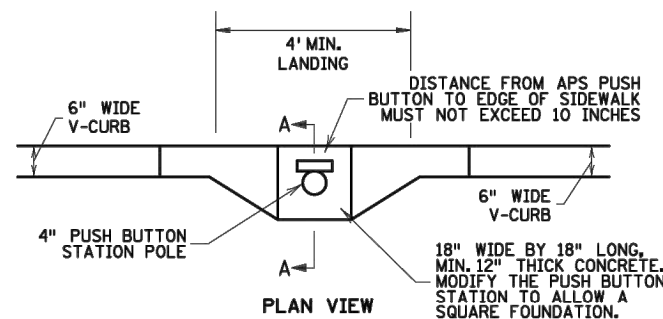
TRANSITION PANEL ④ ⑤



INSET A



SECTION B-B
SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



SECTION A-A
PUSH BUTTON STATION (V-CURB)

NOTES:

A WALKABLE FLARE IS AN 8-10% CONCRETE FLARE THAT IS REQUIRED WHEN THE FLARE IS ADJACENT TO A WALKABLE SURFACE, OR WHEN THE PEDESTRIAN PATH OF TRAVEL OF A PUSH BUTTON TRAVERSES THE FLARE.

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED. GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.

V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.

V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.

- ① END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.
- ② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
- ③ CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM 1/2" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.
- ④ THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE. WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.
- ⑤ TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).
- ⑥ EXISTING CROSS SLOPE GREATER THAN 2.0%.

LEGEND

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

- ⑤ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
- LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
- ① TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1' LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.

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m DEPARTMENT OF TRANSPORTATION		STANDARD PLAN			STATE PROJ. NO.	SHEET NO.		
					TRUNK HWY.	TOTAL SHEETS		



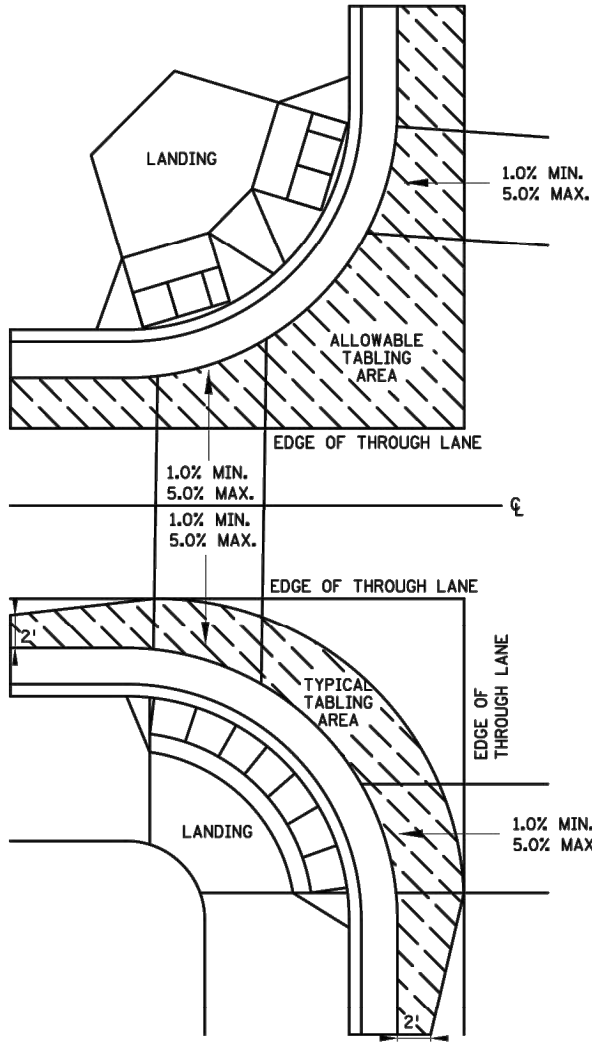
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CURB LINE AND ROAD CROSSING ADJUSTMENTS

GENERAL NOTES:

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

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

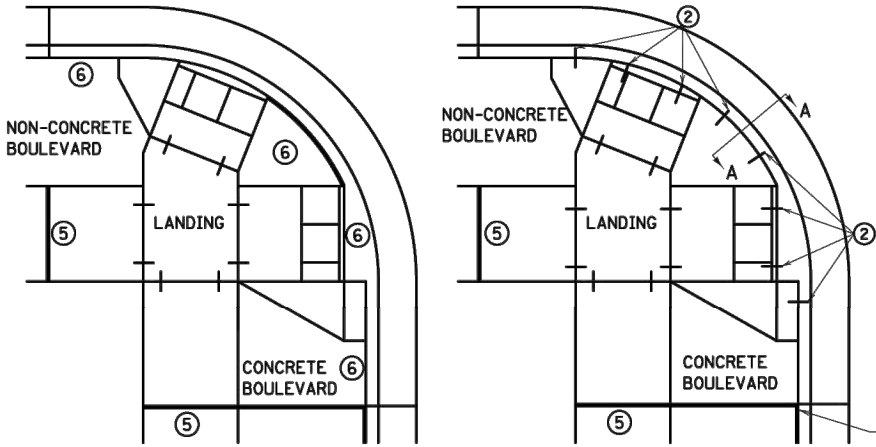
MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2%. WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE. TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:

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

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

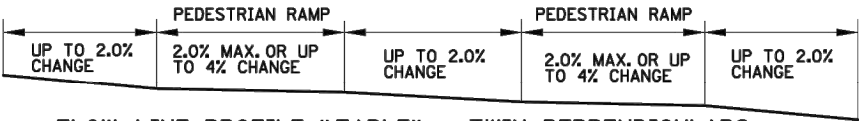
RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:

- 1) 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
- 2) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
- 3) 5.0% RECOMMENDED MAX. FLOW LINE
- 4) LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL

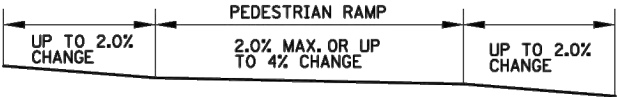


EXPANSION MATERIAL PLACEMENT FOR CONCRETE ROADWAYS

CURB LINE REINFORCEMENT ④ PLACEMENT ON BITUMINOUS ROADWAYS



FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



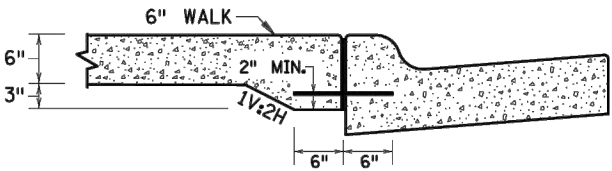
FLOW LINE PROFILE "TABLE" - FAN



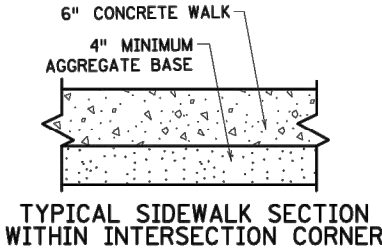
FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS



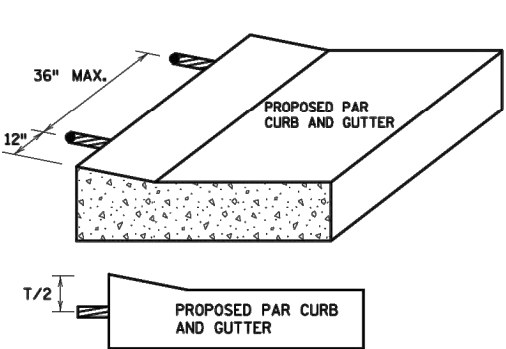
FLOW LINE PROFILE RAISE - FAN



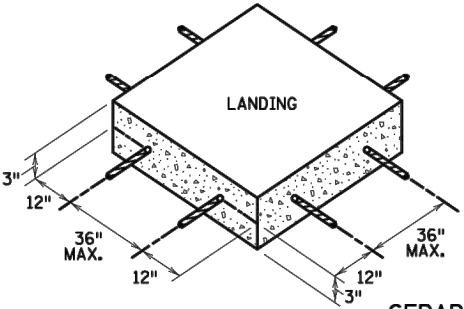
SECTION VIEW A-A THICKENED SECTION THROUGH CURB RAMP FLARES



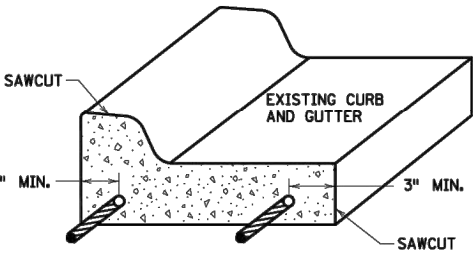
TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER



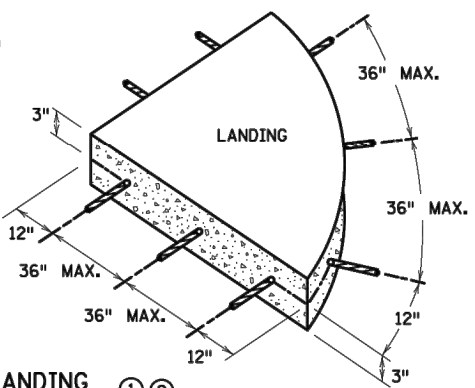
CURB RAMP REINFORCEMENT DETAILS ② ④



SEPARATE LANDING POUR REINFORCEMENT ① ②



CURB AND GUTTER REINFORCEMENT ③



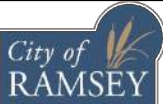
NOTES:

- ① TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET FOR ALL SEPARATELY POURED INITIAL LANDINGS.
- ② DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) AT 36" MAXIMUM CENTER TO CENTER MINIMUM 12" SPACING FROM CONSTRUCTION JOINTS. BARS TO BE ADJUSTED TO MATCH RAMP GRADE. BARS TO BE PAID BY EACH.
- ③ DRILL AND GROUT 2 - NO. 4 X 12" LONG (6" EMBEDDED) REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS. BARS TO BE PAID BY EACH.
- ④ THIS CURB LINE REINFORCEMENT DETAIL SHALL BE USED ON BITUMINOUS ROADWAYS. FOR CONCRETE ROADWAYS, SEE NOTE 6.
- ⑤ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.
- ⑥ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION	PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	6 OF 6
			STANDARD PLAN	STATE PROJ. NO.	SHEET NO.	
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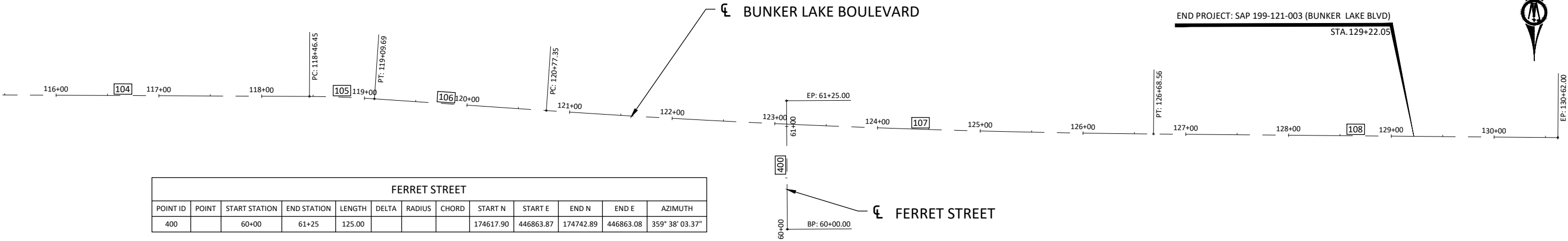
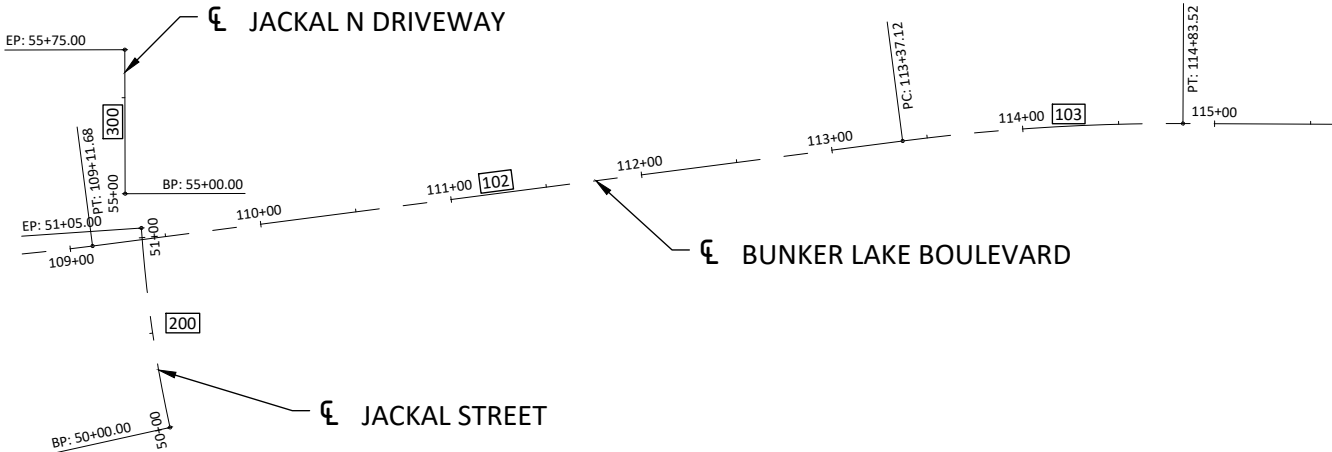
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BEGIN PROJECT: SAP 199-121-003 (BUNKER LAKE BLVD)
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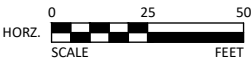
BUNKER LAKE BOULEVARD												
POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
100		100+00	102+87.11	287.11				174900.41	444598.72	174779.22	444859.00	114° 58' 01.75"
101		102+87.11	109+11.68	624.57	32° 21' 19.60"	1106.00	616.30	174779.22	444859.00	174685.05	445468.06	98° 47' 21.95"
102		109+11.68	113+37.12	425.45				174685.05	445468.06	174739.76	445889.98	82° 36' 42.15"
103		113+37.12	114+83.52	146.40	7° 40' 02.22"	1094.00	146.29	174739.76	445889.98	174748.83	446035.98	86° 26' 43.26"
104		114+83.52	118+46.45	362.93				174748.83	446035.98	174747.06	446398.91	90° 16' 44.37"
105		118+46.45	119+09.69	63.24	3° 37' 24.63"	1000.00	63.23	174747.06	446398.91	174744.76	446462.10	92° 05' 26.68"
106		119+09.69	120+77.35	167.65				174744.76	446462.10	174733.35	446629.37	93° 54' 09.00"
107		120+77.35	126+68.56	591.22	3° 23' 14.75"	10000.00	591.13	174733.35	446629.37	174710.56	447220.06	92° 12' 31.62"
108		126+68.56	130+62	393.44				174710.56	447220.06	174707.03	447613.48	90° 30' 54.24"

JACKAL NORTH DWY												
POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
300		55+00	55+75	75.00				174712.27	445485.02	174787.27	445484.84	359° 51' 42.62"

JACKAL STREET												
POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
200		50+00	51+05	105.00	8° 37' 27.78"	697.56	104.90	174590.56	445508.39	174694.40	445493.47	351° 49' 24.24"



FERRET STREET												
POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
400		60+00	61+25	125.00				174617.90	446863.87	174742.89	446863.08	359° 38' 03.37"



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.

ZACHARY F. DINGL, P.E.
LIC. NO. 56344 DATE 1/12/2026



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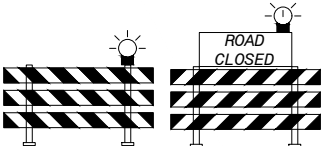


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2026 BUNKER LAKE BOULEVARD RECONSTRUCTION		
ALIGNMENT PLAN & TABULATION SAP 199-121-003		

1. THE ILLUSTRATED TRAFFIC CONTROL PLAN INCLUDED HEREIN SHALL BE USED AS A GUIDE ONLY AND INDICATES THE GENERAL CONSTRAINTS. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN FOR ROADWAYS, TRAILS, AND SIDEWALKS FOR REVIEW PRIOR TO START OF WORK.
2. CONSTRUCTION ZONE SIGNING SHALL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL INCLUDE BUT NOT BE LIMITED TO, SIGNS FOR LANE CLOSURES, BUMP, DIP, MACHINERY AHEAD, LOOSE GRAVEL, ETC. THE NUMBER AND LOCATION OF THESE SIGNS WILL DEPEND ON THE CONTRACTOR'S OPERATIONS. NO ADDITIONAL COMPENSATION WILL BE GRANTED TO MAINTAIN A SAFE CONSTRUCTION ZONE.
3. ALL TRAFFIC CONTROL DESIGN, PHASING, MATERIAL, ERECTION, MAINTENANCE, AND REMOVAL SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR TRAFFIC CONTROL.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DELINEATING TRAFFIC AFTER BITUMINOUS BASE COURSE INSTALLATION AND PRIOR TO BITUMINOUS WEAR COURSE INSTALLATION AND SHALL BE INCIDENTAL.
5. MAINTAIN STREET OPEN TO TRAFFIC AS MUCH AS POSSIBLE.
6. WHEN ROADWAY MUST BE CLOSED FOR UTILITY AND/OR STREET WORK, MAINTAIN ACCESS TO RESIDENTIAL DEVELOPMENT AND COMMERCIAL PROPERTIES AT ALL TIMES. UPON COMPLETING UTILITY WORK AT THE END OF EACH WORKING DAY, RESTORE TO CLASS 5 AGGREGATE BASE AND REOPEN. MOBILIZATIONS AND PHASING REQUIRED TO MAINTAIN ACCESS SHALL BE INCIDENTAL.
7. ALL TRAFFIC CONTROL DEVICES, APPROACH DISTANCES, AND SPACING, SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.
8. CONTRACTOR SHALL MAINTAIN 4 ADDITIONAL TYPE-3 BARRICADES ON PROJECT SITE FOR USE IN AREAS AS DESIGNATED BY THE ENGINEER.

SIGN ASSEMBLY

1 NOTE 7	W20-3 (48 X 48) ROAD CLOSED AHEAD W20-2 (48 X 48) DETOUR AHEAD W21-4 (48 X 48) ROAD WORK AHEAD
2	 TYPE III (R)
3	 TYPE III (R)
4	



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.


ZACHARY F. INGL, P.E.

LIC NO. 56344 DATE 1/12/2026



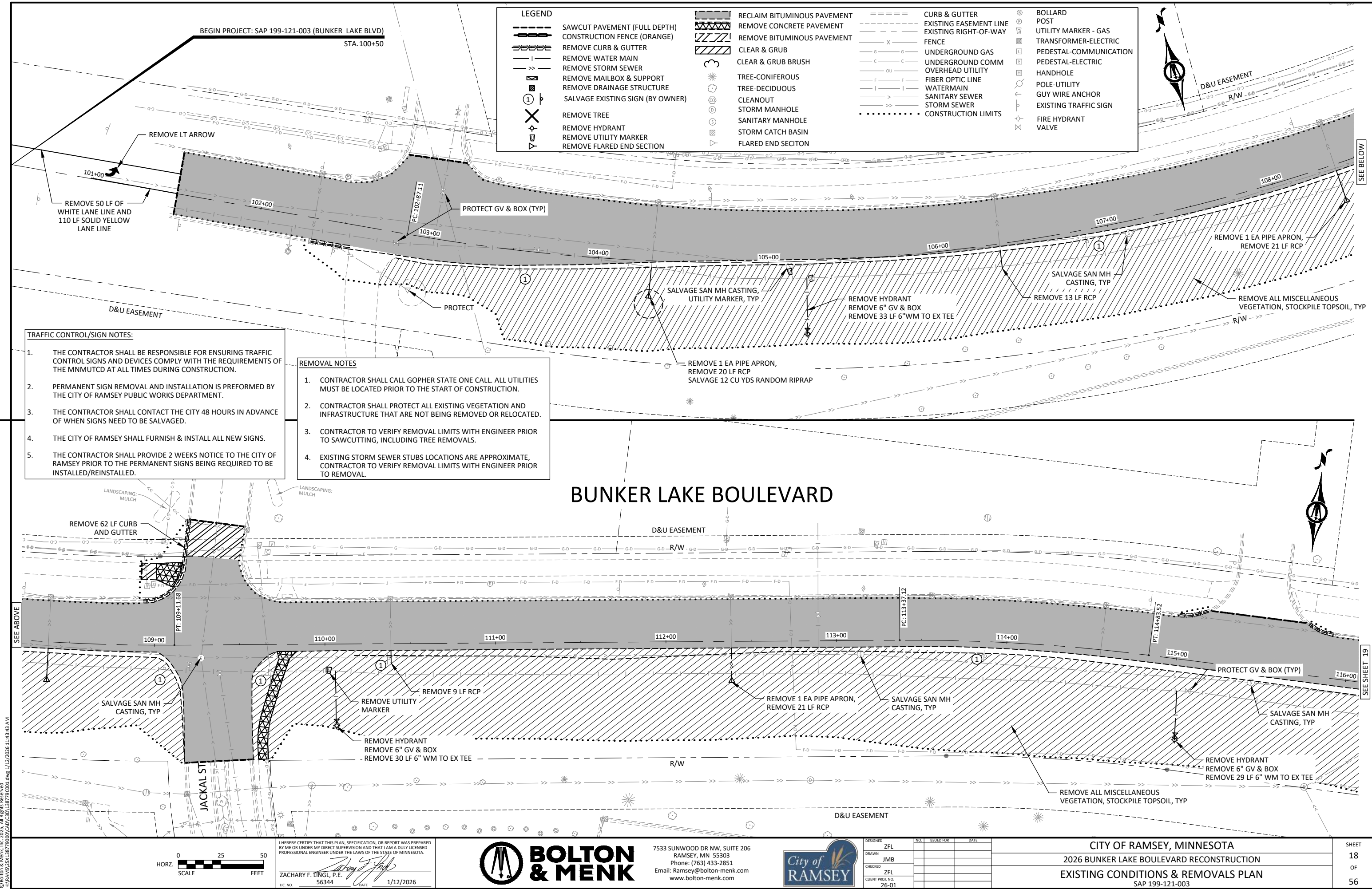
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RAMSEY, MN 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

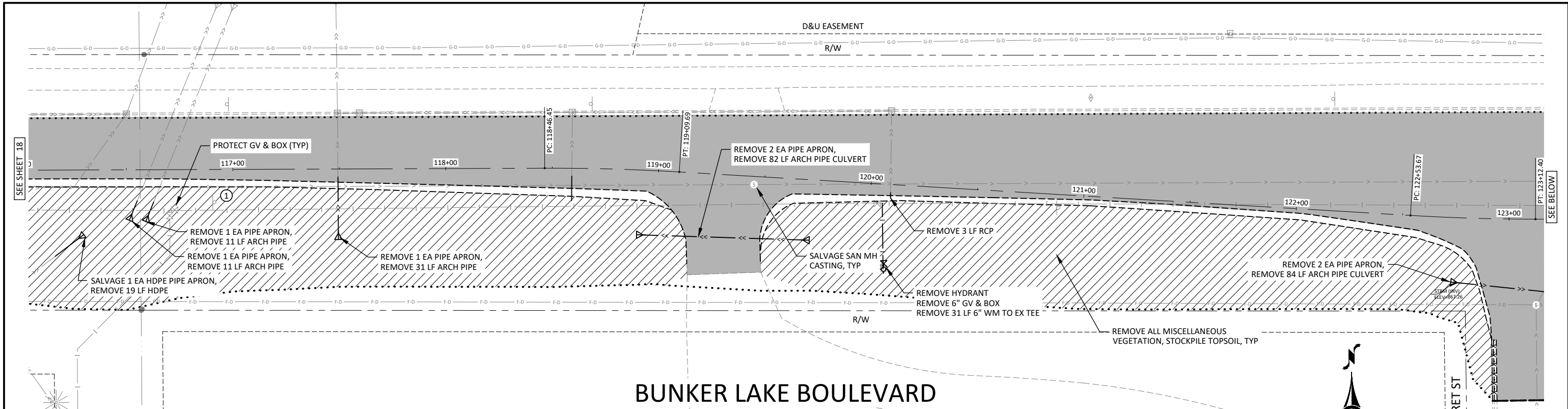


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JMB			
CHECKED			
ZFL			
CLIENT PROJ. NO.			
26-01			

CITY OF RAMSEY, MINNESOTA
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION
TRAFFIC CONTROL PLAN
SAP 199-121-003

SHEET
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OF
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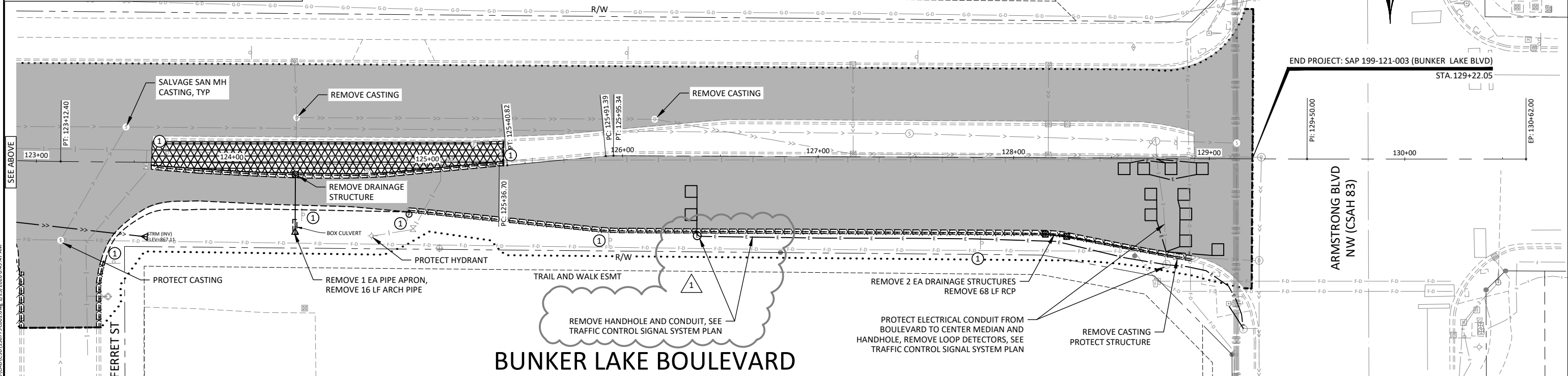




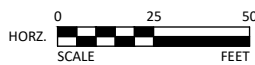
- TRAFFIC CONTROL/SIGN NOTES:**
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING TRAFFIC CONTROL SIGNS AND DEVICES COMPLY WITH THE REQUIREMENTS OF THE MNMUTCD AT ALL TIMES DURING CONSTRUCTION.
 - PERMANENT SIGN REMOVAL AND INSTALLATION IS PERFORMED BY THE CITY OF RAMSEY PUBLIC WORKS DEPARTMENT.
 - THE CONTRACTOR SHALL CONTACT THE CITY 48 HOURS IN ADVANCE OF WHEN SIGNS NEED TO BE SALVAGED.
 - THE CITY OF RAMSEY SHALL FURNISH & INSTALL ALL NEW SIGNS.
 - THE CONTRACTOR SHALL PROVIDE 2 WEEKS NOTICE TO THE CITY OF RAMSEY PRIOR TO THE PERMANENT SIGNS BEING REQUIRED TO BE INSTALLED/REINSTALLED.

LEGEND			
	SAWCUT PAVEMENT (FULL DEPTH)		RECLAIM BITUMINOUS PAVEMENT
	CONSTRUCTION FENCE (ORANGE)		REMOVE CONCRETE PAVEMENT
	REMOVE CURB & GUTTER		REMOVE BITUMINOUS PAVEMENT
	REMOVE WATER MAIN		CLEAR & GRUB
	REMOVE STORM SEWER		CLEAR & GRUB BRUSH
	REMOVE MAILBOX & SUPPORT		TREE-CONIFEROUS
	REMOVE DRAINAGE STRUCTURE		TREE-DECIDUOUS
	SALVAGE EXISTING SIGN (BY OWNER)		CLEANOUT
	REMOVE TREE		STORM MANHOLE
	REMOVE HYDRANT		SANITARY MANHOLE
	REMOVE UTILITY MARKER		STORM CATCH BASIN
	REMOVE FLARED END SECTION		FLARED END SECTION
			CURB & GUTTER
			EXISTING EASEMENT LINE
			EXISTING RIGHT-OF-WAY
			FENCE
			UNDERGROUND GAS
			UNDERGROUND COMM
			OVERHEAD UTILITY
			FIBER OPTIC LINE
			WATERMAIN
			SANITARY SEWER
			STORM SEWER
			CONSTRUCTION LIMITS
			BOLLARD
			POST
			UTILITY MARKER - GAS
			TRANSFORMER-ELECTRIC
			PEDESTAL-COMMUNICATION
			PEDESTAL-ELECTRIC
			HANDHOLE
			POLE-UTILITY
			GUY WIRE ANCHOR
			EXISTING TRAFFIC SIGN
			FIRE HYDRANT
			VALVE

- REMOVAL NOTES**
- CONTRACTOR SHALL CALL GOPHER STATE ONE CALL. ALL UTILITIES MUST BE LOCATED PRIOR TO THE START OF CONSTRUCTION.
 - CONTRACTOR SHALL PROTECT ALL EXISTING VEGETATION AND INFRASTRUCTURE THAT ARE NOT BEING REMOVED OR RELOCATED.
 - CONTRACTOR TO VERIFY REMOVAL LIMITS WITH ENGINEER PRIOR TO SAWCUTTING, INCLUDING TREE REMOVALS.
 - EXISTING STORM SEWER STUBS LOCATIONS ARE APPROXIMATE, CONTRACTOR TO VERIFY REMOVAL LIMITS WITH ENGINEER PRIOR TO REMOVAL.



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ZACHARY F. DINGL, P.E.
LIC. NO. 56344 DATE 1/12/2026



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CLIENT PROJ. NO.	26-01						

CITY OF RAMSEY, MINNESOTA		SHEET 19 OF 56
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION		
EXISTING CONDITIONS & REMOVALS PLAN		
SAP 199-121-003		

STORMWATER
POLLUTION PREVENTION
PLAN (SWPPP)

BUNKER LAKE BOULEVARD
CITY OF RAMSEY
ANOKA COUNTY, MINNESOTA



LEGEND

OR

IMPAIRED, SPECIAL OR PROTECTED WATERS

NATIONAL WETLANDS INVENTORY

RECEIVING WATERS

1-MILE BOUNDARY

PROJECT BOUNDARY

PROJECT AREAS:

Total Project Size (disturbed area) =	5.6	ACRES
Existing area of impervious surface =	2.9	ACRES
Post construction area of impervious surface =	3.4	ACRES
Total new impervious surface area created =	0.5	ACRES

Planned Construction Start Date:	JUNE 2026
Estimated Construction Completion Date:	SEPT 2026

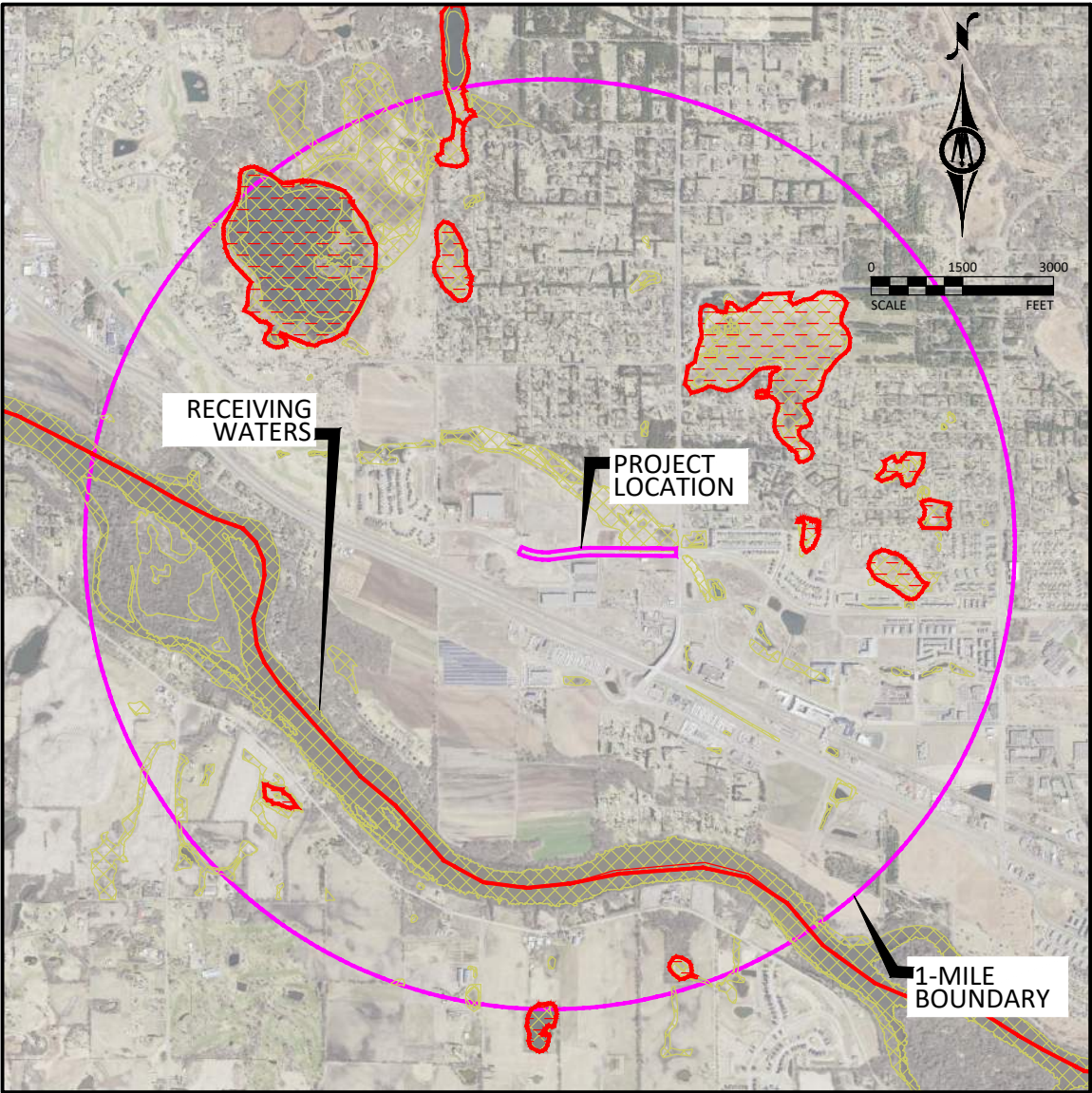
PERMANENT STORMWATER MANAGEMENT SYSTEM:
Type of storm water management used if more than 1 acre of new impervious surface is created:

	Wet Sedimentation Basin
	Infiltration/Filtration
	Regional Pond
X	Permanent Stormwater Management Not Required

PROJECT LOCATION:

COUNTY	TOWNSHIP	RANGE	SECTION	LATITUDE	LONGITUDE
ANOKA	T32N	R25W	29	45.2401°	-93.4742°

SEE SEQ FOR BMP SUMMARY



RECEIVING WATERS:
Receiving waters, including surface water, wetlands, Public Waters, and stormwater ponds, within 1-mile of the project boundary are identified on the USGS 7.5 min quad map above. Receiving waters that are impaired, the impairment, and WLA are listed as follows. All specific BMPs relative to construction activities listed in the permit for special, prohibited, restricted, or impaired have been incorporated into this plan. All specific BMPs listed in approved TMDLs and those BMPs listed for construction related waste load allocations have also been incorporated.

NAME OF WATER BODY	TYPE (ditch, pond, wetland, lake, etc.)	Special, Prohibited, Restricted Water ¹	Flows to Impaired Water Within 1-Mile ²	USEPA Approved Construction Related TMDL ³
MISSISSIPPI RIVER	RIVER	YES	YES	MERCURY IN FISH TISSUE, NUTRIENTS, PCBs IN FISH TISSUE

¹ Special, prohibited, and restricted waters are listed in Section 23 of the MN Construction Stormwater General Permit (MNR100001).
² Identified as impaired under section 303 (d) of the federal Clean Water Act for phosphorus, turbidity, TSS, dissolved oxygen, and/or aquatic biota.
³ Construction Related TMDLs include those related to: phosphorus, turbidity, TSS, dissolved oxygen, and/or aquatic biota.

IMPLEMENTATION SCHEDULE AND PHASING: The Contractor is required to provide an updated schedule and site management plan meeting the minimum requirements of Section 1717 of the Minnesota Standard Specifications for Construction.

- 1) Submit SWPPP Updates to Engineer. Submittal shall include any requested changes to the SWPPP, including but not limited to: Trained Personnel, Locations for Stockpiles, Concrete Washout, Sanitation Facilities, Types and Locations of Erosion & Sediment Control. Failure to submit updates shall be considered acceptance of the SWPPP as designed with no changes.
- 2) Install perimeter sediment control, inlet protection, and construction exit.
- 3) Demo existing pavement.
- 4) Dig trenches for utility improvements.
- 5) Install utility improvements.
- 6) Grade site.
- 7) Install curb and gutter, and re-pave road.
- 8) Add additional temporary BMPs as necessary during construction based on inspection reports.
- 9) Ensure final stabilization measures are complete.
- 10) Provide digital copy of all Field SWPPP Documentation including Inspection Reports and SWPPP Revisions to the Owner.
- 11) Submit Notice of Termination (NOT) to MPCA. NOTE: The NOT must be submitted to MPCA before Final Stabilization is considered complete.

The SWPPP Designer, Construction SWPPP Manager, and BMP Installer must have appropriate training. Documentation showing training commensurate with the job duties and responsibilities is required to be included in the SWPPP prior to any work beginning on the site. Training documentation for the SWPPP Designer is included on the Narrative sheet. The Contractor shall attach training documentation to this SWPPP for the Construction SWPPP Manager and BMP Installer prior to the start of construction. This information shall be kept up to date until the project NOT is filed.

ADDITIONAL COMPENSATION
Payment for all work associated with Erosion and Sediment Control shall be as described in the Project Manual. Unless otherwise authorized by the Owner no additional payment shall be made for any work required to administer and maintain the site erosion and sediment control in compliance with the Minnesota Pollution Control Agency (MPCA) - General Stormwater Permit for Construction Activity (MN R100001) including but not limited to inspection, maintenance, and removal of BMPs or addition of BMPs to accommodate Contractor phasing.

DOCUMENT RETENTION
Permittees must make the SWPPP, including all inspection reports, maintenance records, training records and other information required by this permit, available to federal, state, and local officials within three (3) days upon request for the duration of the permit and for three (3) years following the NOT.

GENERAL STORMWATER DISCHARGE REQUIREMENTS
All requirements listed in Section 5.1 of the Permit for the design of the permanent stormwater management system and discharge have been included in the preparation of this SWPPP. These include but are not limited to:
1. The expected amount, frequency, intensity, and duration of precipitation.
2. The nature of stormwater runoff and run-on at the site
3. Peak flow rates and stormwater volumes to minimize erosion at outlets and downstream channel and stream bank erosion.
4. The range of soil particle sizes expected to be present on the site.

Permanent stormwater treatment systems for this project have been designed in accordance with the guidance in the MN Stormwater Manual in place at the time of bidding. Copies of the design information and calculations are part of this SWPPP and will be provided in digital format upon written request to the Engineer.

DESCRIPTION OF CONSTRUCTION ACTIVITIES AND STORMWATER MANAGEMENT:
Construction activities include: Site grading, temporary erosion and sediment control, and permanent stabilization.

Stormwater currently collected via curb and ditches in gutter into the existing storm sewer network.

After construction is complete stormwater will be routed via curb and gutter to the storm sewer network.

The roadway is to be reconstructed & widened to include a shared left turn lane. Storm water on Bunker Lake Boulevard discharges to the existing ditch system along the south side of the roadway. Then it reaches the infiltration basin north of Bunker Lake Boulevard before ultimately reaching the Mississippi River.

Existing drainage patterns and discharges are proposed to remain in pre-construction conditions. all modifications to this SWPP shall be approved by the Engineer and remain on-site during construction.



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CLIENT PROJ. NO.	26-01		

CITY OF RAMSEY, MINNESOTA
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION
STORMWATER POLLUTION PREVENTION PLAN
SAP 199-121-003

SHEET
20
OF
56

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ZACHARY F. DINGLI, P.E.
LIC. NO. 56344 DATE 1/12/2026

Information contained in this SWPPP narrative sheet summarizes requirements of the GENERAL PERMIT AUTHORIZATION TO DISCHARGE STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM/STATE DISPOSAL SYSTEM PROGRAM - Permit No: MN R100001 (Permit) as they apply to this project. All provisions of the Permit including those not specifically cited herein shall apply to this project. The Contractor is responsible to be familiar with and comply with all conditions of the permit. The full text of the Permit is available at: https://www.pca.state.mn.us/sites/default/files/wq-strm2-80a.pdf

SWPPP AMENDMENTS AND SUBMITTALS

Contractor must prepare and submit to the Engineer a SWPPP amendment as necessary to include additional Best Management Practices (BMPs) to correct problems identified or address the following situations.

- Contact information and training documentation for Construction SWPPP Manager and BMP Installer,
- There is a change in construction method of phasing, operation, maintenance, weather or seasonal conditions not anticipated during the design of the SWPPP including but not limited to:
 - Types and/or Locations of BMPs
 - Material Storage and Spill Response
 - Fueling Plans
 - Locations for Stockpiles, Concrete Washout, and Sanitation Facilities and
 - Project Phasing
- It is determined that the SWPPP is not achieving objectives of minimizing pollutants in stormwater discharges associated with construction activity, or
- The SWPPP is not consistent with the terms and conditions of the permit.

The Contractor may implement SWPPP amendments immediately and is not required to wait for Engineer review of the submittal. The responsibility for completeness of SWPPP amendments and compliance with the Permit lies with the Contractor. Review, comment, or lack of comment by the Engineer on a SWPPP amendment shall not absolve the responsibilities of the Contractor in any way.

If a change order is issued for a design change the SWPPP amendment will be prepared by the Engineer and included in the change order.

In addition to SWPPP amendments, the Contractor shall submit to the Engineer Weekly Erosion and Sediment Control Schedule meeting the requirements of MnDOT 1717.

The Contractor shall keep copies of all SWPPP amendments, Weekly Erosion and Sediment Control Schedules, inspection logs, and maintenance logs with the field copy of the SWPPP. A PDF copy of these documents will be provided along with a copy of the final Field Copy of the SWPPP to the Engineer along with the signed Notice of Termination when final stabilization is complete.

EROSION PREVENTION PRACTICES

Stormwater conveyance channels shall be routed around unstabilized areas. Erosion controls and velocity dissipation devices shall be used at outlets within and along the length of any constructed conveyance channel.

The normal wetted perimeter of all ditches or swales, including storm water management pond slopes, that drain waters from the site must be stabilized within 200' of any property edge or discharge point, including storm sewer inlets, within 24 hours of connection.

Temporary or permanent ditches or swales used as sediment containment during construction do not need to be stabilized during temporary period of use and shall be stabilized within 24 hours after no longer used as sediment containment.

Mulch, hydromulch, tackifier, or similar practice shall not be used in any portion of the wetted perimeter of a temporary or permanent drainage ditch or swale section with a continuous slope of greater than 2 percent.

Energy dissipation shall be installed at all temporary or permanent pipe outlets within 24 hours of connection to a surface water or permanent stormwater treatment system.

The Contractor shall phase construction and use construction methods to the extent practical to minimize exposed soils. The project phasing shall be documented in the Weekly Erosion and Sediment Control Schedule.

SEDIMENT CONTROL PRACTICES

Down gradient BMPs including perimeter BMPs must be in place before up gradient land- disturbing activities begin and shall remain in place until final stabilization.

All BMPs that have been adjusted or removed to accommodate short-term activities shall be re-installed or replaced the earlier of the end of the work day or before the next precipitation event even if the activity is not complete.

Inlet BMPs may be removed for specific safety concerns. The BMPs shall be replaced as soon as the safety concern is resolved. The removal shall be documented in the SWPPP as a SWPPP amendment.

Temporary stockpiles must have sediment control BMPs. The Contractor shall prepare and submit to the Engineer a SWPPP amendment showing the location of temporary stockpiles and the BMPs for each stockpile. The SWPPP amendment must meet the minimum requirements of Section 9 of the Permit.

Soil compaction shall be minimized and topsoil shall be preserved, unless infeasible or if construction activities dictate soil compaction or topsoil stripping.

The use of polymers, flocculants, or other sedimentation treatment chemicals are not proposed as part of this SWPPP as designed by the Engineer. If methods or phasing of construction require the use of any of these chemicals, the Contractor shall prepare and submit to the Engineer a SWPPP amendment that meets the minimum requirements of Section 9 of the Permit.

TEMPORARY SEDIMENTATION BASINS

A temporary sedimentation basin has not been included in this SWPPP as designed by the Engineer. If a basin is later determined to be desirable or necessary the Contractor shall prepare and submit to the Engineer a SWPPP amendment. Temporary sedimentation basins shall meet or exceed the minimum requirements of Section 14 of the Permit and shall include a basin draining plan meeting or exceeding the minimum requirements of Section 10 of the Permit. Where the site discharges to Special and/or Impaired Waters the SWPPP amendment shall also meet or exceed the minimum requirements of Section 23 of the permit.

DEWATERING

A dewatering plan has not been included in this SWPPP as designed by the Engineer. If dewatering is required for this project, the Contractor shall prepare and submit to the Engineer a SWPPP amendment. All dewatering shall meet or exceed the minimum requirements of Section 10 of the Permit.

POLLUTION PREVENTION

Products and materials that have the potential to leach pollutants that are stored on the site must be stored in a manner designed to minimize contact with stormwater. Materials that are not a source of potential contamination to stormwater or that are designed for exposure to stormwater are not required to be covered.

Hazardous materials including but not limited to pesticides, fertilizer, petroleum products, curing compounds and toxic waste must be properly stored and protected from stormwater exposure as recommended by the manufacturer in an access restricted area.

Solid waste must be stored, collected and disposed of in compliance with Minnesota Administrative Rules Chapter 7035.

Portable toilets must be positioned so that they are secure and will not be tipped or knocked over. Sanitary waste must be disposed of properly in accordance with Minn. R. CH 7041.

Exterior vehicle or equipment washing on the project site shall be limited to a defined area of the site. No engine degreasing is allowed on site. A sign must be installed adjacent to each washout facility that requires site personnel to utilize the proper facilities for disposal of concrete and other washout wastes.

The Contractor shall prepare and submit a SWPPP amendment detailing the location and BMPs proposed for storage of materials, solid waste, portable toilets, and exterior vehicle or equipment washing on the site. The SWPPP amendment shall include a spill prevention and response plan that is appropriate for the materials proposed to be on the site. The SWPPP amendment shall meet or exceed the minimum requirements of Section 12 of the Permit.

INSPECTION & MAINTENANCE

A trained person shall routinely inspect the entire construction site at the time interval indicated on this sheet of the SWPPP during active construction and within 24-hours after a rainfall event greater than 0.5 inches in 24 hours. Following an inspection that occurs within 24-hours after a rainfall event, the next inspection must be conducted at the time interval indicated in the Receiving Waters Table found on the SITE PLAN AND INFORMATION SHEET of the SWPPP. The contractor's trained person shall send all inspection reports to owner weekly throughout construction.

All inspections and maintenance conducted during construction must be recorded on the day it is completed and must be retained with the SWPPP. Inspection report forms are available in the Project Specifications. Inspection report forms other than those provided shall be approved by the engineer.

The Contractor may request a change in inspection schedule for the following conditions:

- Inspections of areas with permanent cover to be reduced to once per month,
- Inspections of areas that have permanent cover and have had no construction activity for 12 months to be suspended until construction resumes,
- Inspections of areas where construction is suspended due to frozen ground conditions, inspections to be suspended until the earlier of within 24 hours of runoff occurring, or upon resuming construction.

No change in inspection schedule shall occur until authorized by the Engineer.

Inspections must include:

- All erosion prevention and sediment control BMPs and Pollution Prevention Management Measures to ensure integrity and effectiveness.
- Surface waters, including drainage ditches and conveyance systems for evidence of erosion and sediment deposition.
- Construction site vehicle exit locations, streets and curb and gutter systems within and adjacent to the project for sedimentation from erosion or tracked sediment from vehicles.
- Infiltration areas to ensure that no sediment from ongoing construction activity is reaching the infiltration area and that equipment is not being driven across the infiltration area.

All non-functioning BMPs and those BMPs where sediment reaches one-half (1/2) of the depth of the BMP, or in the case of sediment basins one-half (1/2) of the storage volume, must be repaired, replaced, or supplemented by the end of the next business day after discovery, or as soon as field conditions allow.

Permittees must repair, replace or supplement all nonfunctional BMPs with functional BMPs by the end of the next business day after discovery, or as soon as field conditions allow.

Any sediment that escapes the site must be removed and the area stabilized within 7 calendar days of discovery unless precluded by legal, regulatory, or physical access in which case the work shall be completed within 7 calendar days of authorization. Paved surfaces such as streets shall have any escaped or tracked sediment removed by the end of the day that it is discovered. Sediment release, other than paved surfaces that can be cleaned up with street sweeping shall be reported immediately upon discovery to the Engineer.

PUBLIC WATER RESTRICTIONS:

For public waters that have been promulgated "work in water restrictions" during fish spawning time frames, all exposed soil areas that are within 200 feet of the water's edge, and drain to these waters must complete stabilization within 24-hours during the time period. MN DNR permits are not valid for work in waters that are designated as infested waters unless accompanied by an Infested Waters Permit or written notification has been obtained from MN DNR stating that such permit is not required. There is no exception for pre-existing permits. If a MN DNR Permit has been issued for the project and the water is later designated as infested, the Contractor shall halt all work covered by the MN DNR Permit until an Infested Waters Permit is obtained or that written notification is obtained stating that such permit is not required.

FINAL STABILIZATION

Final Stabilization is not complete until all the following requirements have been met:

- Substantial Completion has been reached and no ground disturbing activities are anticipated.
- Permanent cover has been installed with an established minimum uniform perennial vegetation density of 70 percent of its expected final growth. Vegetation is not required in areas where no vegetation is proposed by this project such as

impervious surfaces or the base of a sand filter.

- Accumulated sediment has been removed from all permanent stormwater treatment systems as necessary to ensure the system is operating as designed.
- All sediment has been removed from conveyance systems
- All temporary synthetic erosion prevention and sediment control BMPs have been removed. BMPs designated on the SWPPP to remain to decompose on-site may remain.
- For residential construction only, permit coverage terminates on individual lots if the structures are finished and temporary erosion prevention and downgradient perimeter control is complete, the residence sells to the homeowner, and the permittee distributes the MPCA's "Homeowner Fact Sheet" to the homeowner.
- For agricultural land only (e.g., pipelines across cropland), the disturbed land must be returned to its preconstruction agricultural use prior to submitting the NOT.

SITE STABILIZATION COMPLETION:

Stabilization of exposed soils shall begin immediately and shall be completed after the construction activity has temporarily or permanently ceased no later than:	7 calendar days
--	-----------------

SITE INSPECTION INTERVAL:

A trained person shall routinely inspect the entire construction site during active construction at an interval of no more than:	7 calendar days
--	-----------------

SPECIAL ENVIRONMENTAL CONSIDERATIONS AND PERMITS:

1)	Was an environmental review required for this project or any part of a common plan of development or sale that includes all or any portion of this project?	NO
2)	Does any portion of the site have the potential to affect threatened or endangered species or their critical habitat?	NO
3)	Does any portion of this site discharge to a Calcareous fen.	NO
4)	Will any portion of the site potentially affect properties listed on the National Register of Historic Places or a known or discovered archeological site?	NO
5)	Have any Karst features have been identified in the project vicinity?	NO
6)	Is compliance with temporary or permanent stormwater management design requirements infeasible for this project?	NO
7)	Has the MN DNR promulgated "work in water restrictions" for any Public Water this site discharges to during fish spawning?	NO

TYPE OF PERMIT	PERMITTING AGENCY	PERMIT STATUS AND CONDITIONS
Construction Stormwater NPDES	MPCA	CONTRACTOR TO OBTAIN

SWPPP DESIGNER TRAINING DOCUMENTATION:

UNIVERSITY OF MINNESOTA

Katelyn E. Younger

Design of Construction SWPPP (May 31 2028)



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CITY OF RAMSEY, MINNESOTA
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION
STORMWATER POLLUTION PREVENTION PLAN - NARRATIVE
SAP 199-121-003

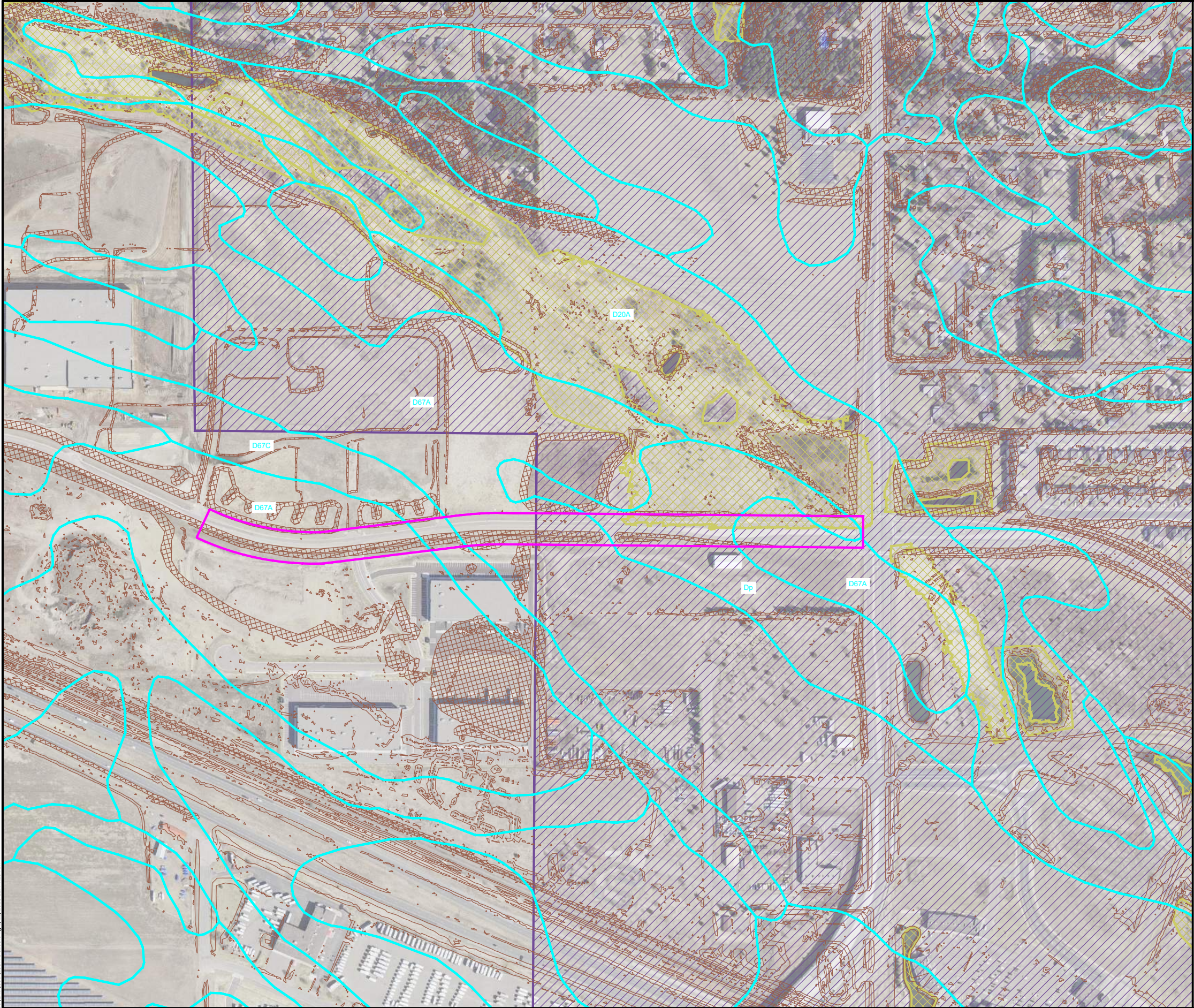
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ZACHARY F. CINGI, P.E.

56344

1/12/2026





LEGEND

PROJECT BOUNDARY

SOIL TYPE

D TYPE SOIL

NATIONAL WETLANDS INVENTORY

DWSMA, LOW VULNERABILITY

STEEP SLOPES (>33.3%)

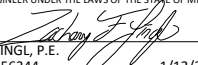
SOIL TYPE SUMMARY		
Map Unit Symbol	Soil Name	Hyd. Soil Group
MUSYM	MUNAME	HYDGRP
D20A	Isan-Isan, frequently ponded, complex, 0 to 2 percent slopes	A/D
D67A	Hubbard loamy sand, 0 to 2 percent slopes	A
D67C	Hubbard loamy sand, 2 to 12 percent slopes	A
Dp	Duelm loamy sand, 0 to 2 percent slopes	A

NHEL - Not Highly Erodible Land
PHEL - Potentially Highly Erodible Land
HEL - Highly Erodible Land

LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN	
DESCRIPTION	SHEET NO.
SITE MAP	1
DIRECTION OF FLOW	23-24
FINAL STABILIZATION	23-24
SOILS	22
DRAINAGE STRUCTURES	4
DRAINAGE TABULATION	4
STORM SEWER PLAN & PROFILE SHEETS	25-30
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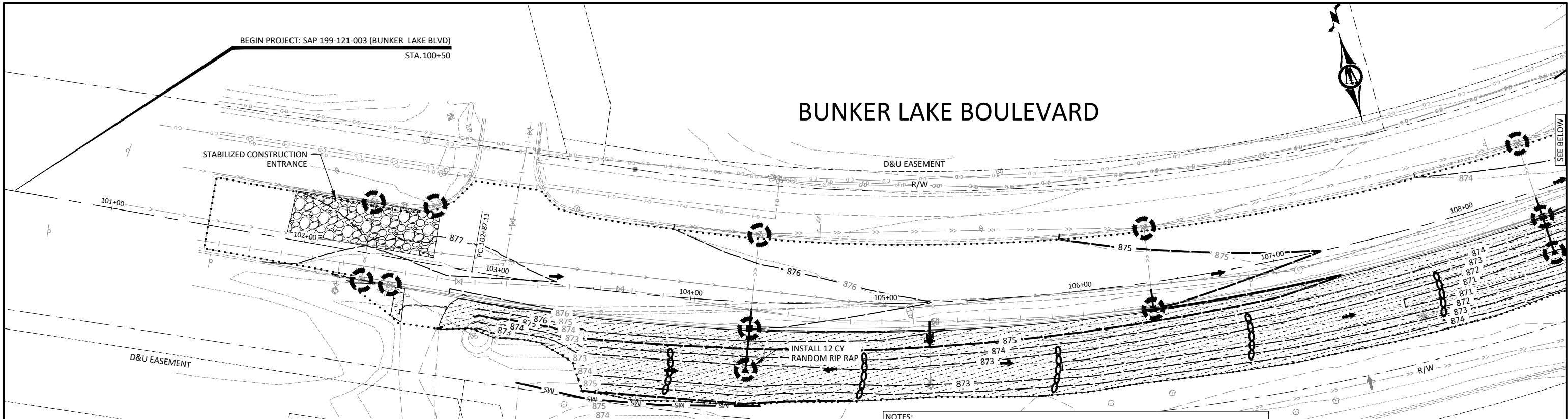

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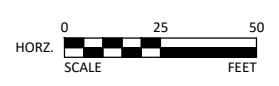
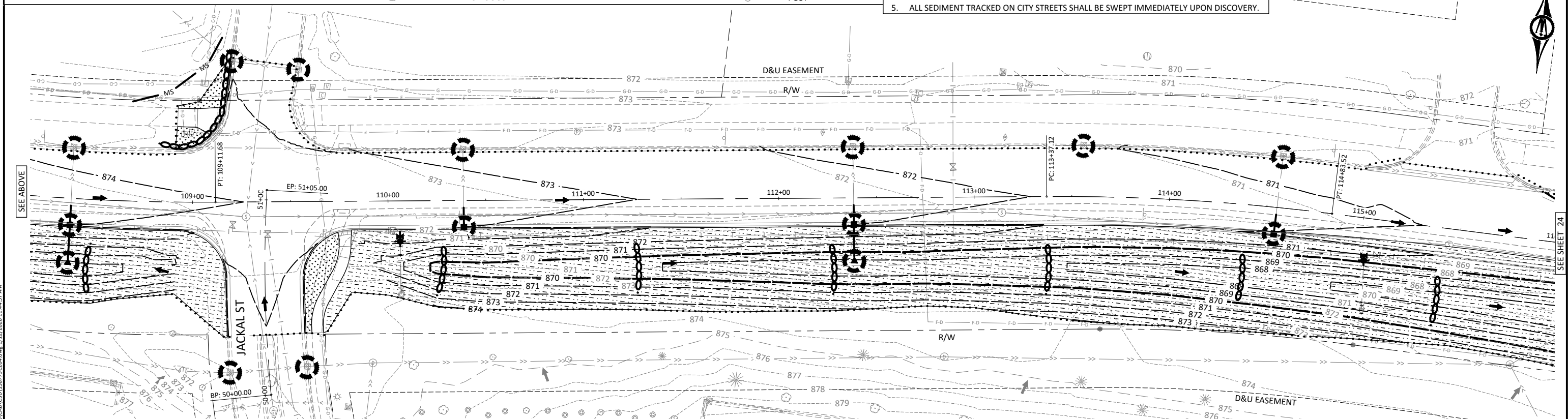
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2026 BUNKER LAKE BOULEVARD RECONSTRUCTION	
STORMWATER POLLUTION PREVENTION PLAN - SOILS	
SAP 199-121-003	

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LEGEND			
	INLET PROTECTION		STABILIZED CONSTRUCTION EXIT
	ROLLED EROSION PREVENTION CAT. 20, SEED SOUTHERN BOULEVARD, FERTILIZER TYPE 3		SILT FENCE, TYPE MS
	ROLLED EROSION PREVENTION CAT. 20, SEED MESIC INSLOPE, FERTILIZER TYPE 3		EXISTING/PROPOSED DRAINAGE FLOW
			PROPOSED CURB & GUTTER
			EXISTING EASEMENT LINE
			EXISTING RIGHT-OF-WAY
			EXISTING CONTOUR MINOR
			EXISTING CONTOUR MAJOR
			PROPOSED CONTOUR MINOR
			PROPOSED CONTOUR MAJOR
			UNDERGROUND GAS
			UNDERGROUND COMM
			OVERHEAD UTILITY
			FIBER OPTIC LINE
			TREE-CONIFEROUS
			TREE-DECIDUOUS
			EXISTING TRAFFIC SIGN
			FIRE HYDRANT
			VALVE
			UTILITY MARKER - GAS
			TRANSFORMER-ELECTRIC
			PEDESTAL-COMMUNICATION
			PEDESTAL-ELECTRIC
			HANDHOLE
			POLE-UTILITY
			GUY WIRE ANCHOR
			CLEANOUT
			STORM MANHOLE
			SANITARY MANHOLE
			STORM CATCH BASIN
			FLARED END SECTION
			WATERMAIN
			SANITARY SEWER
			STORM SEWER
			FENCE
			BOLLARD
			POST

- NOTES:
1. INSTALL EROSION CONTROL MEASURES PRIOR TO COMMENCING CONSTRUCTION.
 2. A STREET SWEEPER MUST BE AVAILABLE WITHIN 3 HOURS UPON NOTICE FROM THE CITY THAT THE STREETS NEED TO BE SWEEPED.
 3. ALL EROSION CONTROL MEASURES TO BE REMOVED ONCE SEED IS ESTABLISHED AS DIRECTED BY THE ENGINEER.
 4. STABILIZED CONSTRUCTION EXIT SHALL INCLUDE A ROCK FILTER BERM AT A MINIMUM TWO FEET IN HEIGHT AND SIDE SLOPES OF 4:1 AT THE SITE EXIT.
 5. ALL SEDIMENT TRACKED ON CITY STREETS SHALL BE SWEEPED IMMEDIATELY UPON DISCOVERY.

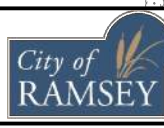


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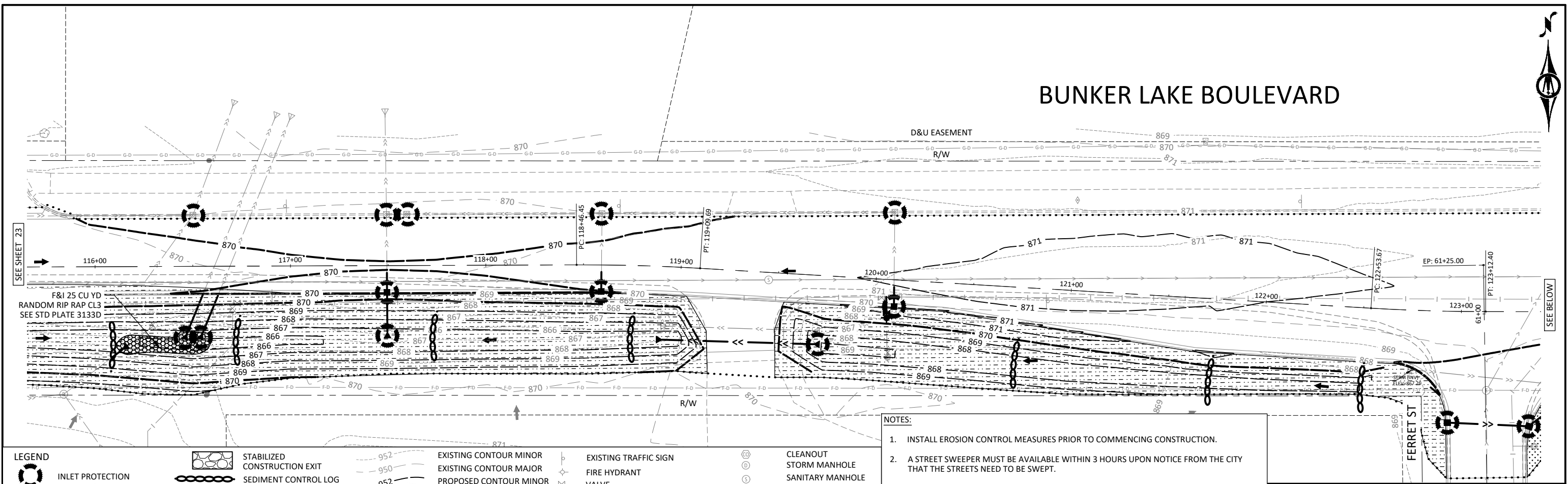


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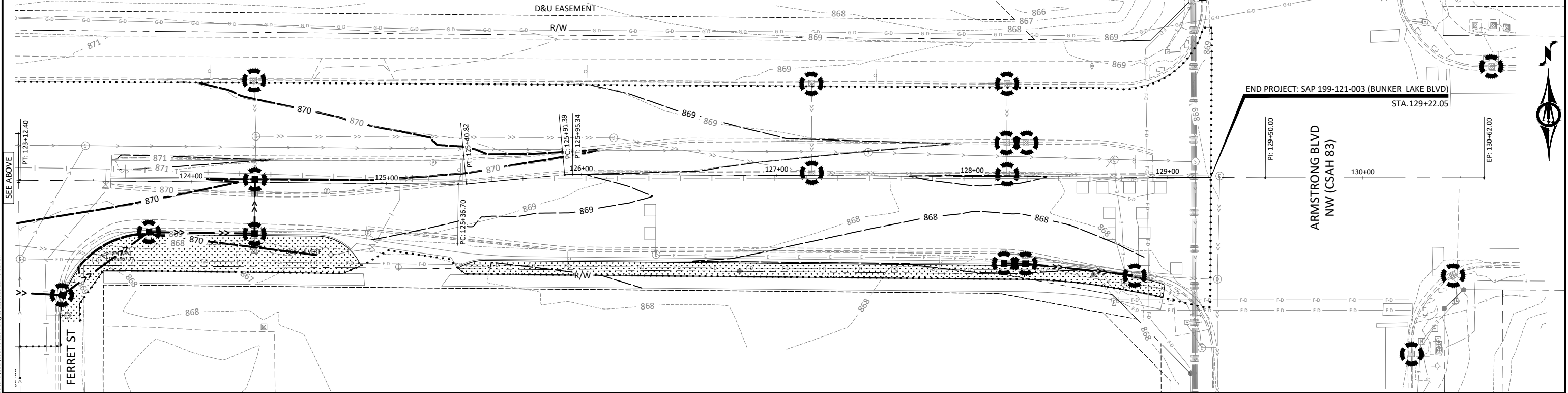
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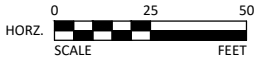


LEGEND					
	INLET PROTECTION		STABILIZED CONSTRUCTION EXIT		EXISTING CONTOUR MINOR
	ROLLED EROSION PREVENTION CAT. 20, SEED SOUTHERN BOULEVARD, FERTILIZER TYPE 3		SILT FENCE, TYPE MS		EXISTING CONTOUR MAJOR
	ROLLED EROSION PREVENTION CAT. 20, SEED MESIC INSLOPE, FERTILIZER TYPE 3		EXISTING/PROPOSED DRAINAGE FLOW		PROPOSED CONTOUR MINOR
			PROPOSED CURB & GUTTER		PROPOSED CONTOUR MAJOR
			EXISTING EASEMENT LINE		UNDERGROUND GAS
			EXISTING RIGHT-OF-WAY		UNDERGROUND COMM
					OVERHEAD UTILITY
					FIBER OPTIC LINE
					TREE-CONIFEROUS
					TREE-DECIDUOUS
					EXISTING TRAFFIC SIGN
					FIRE HYDRANT
					VALVE
					UTILITY MARKER - GAS
					TRANSFORMER-ELECTRIC
					PEDESTAL-COMMUNICATION
					PEDESTAL-ELECTRIC
					HANDHOLE
					POLE-UTILITY
					GUY WIRE ANCHOR
					CLEANOUT
					STORM MANHOLE
					SANITARY MANHOLE
					STORM CATCH BASIN
					FLARED END SECTION
					WATERMAIN
					SANITARY SEWER
					STORM SEWER
					FENCE
					BOLLARD
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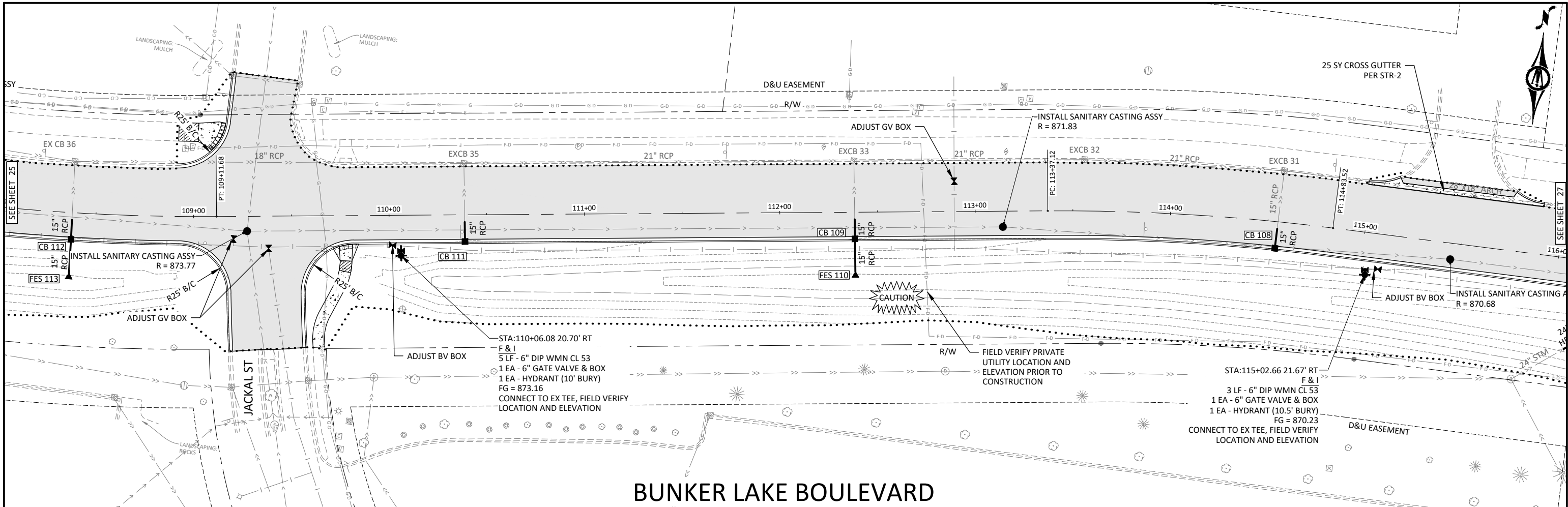
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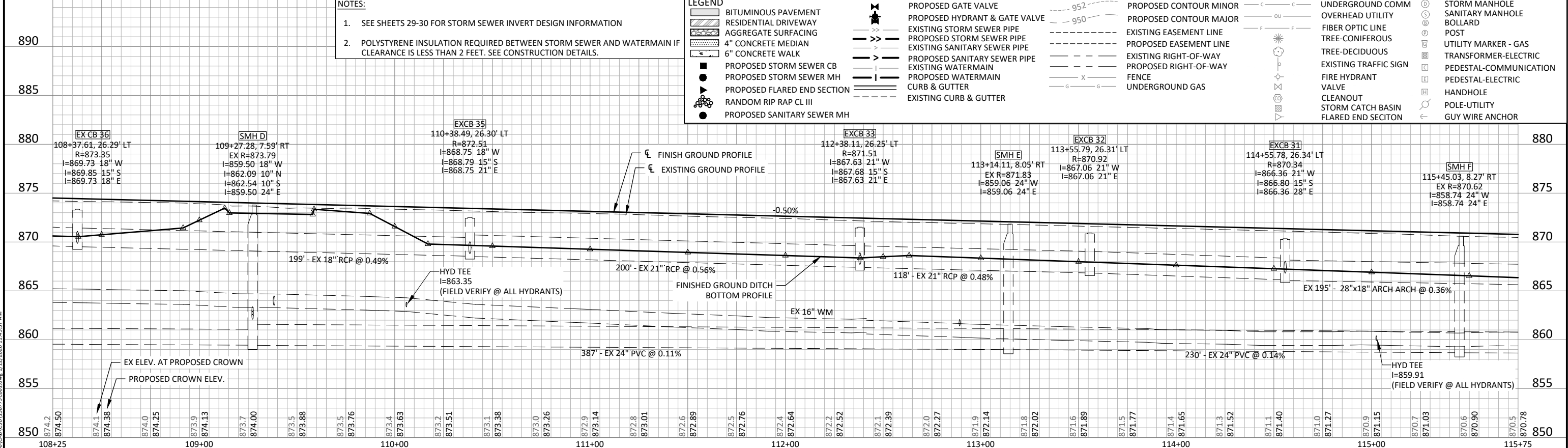
BUNKER LAKE BOULEVARD

NOTES:

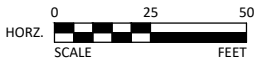
- SEE SHEETS 29-30 FOR STORM SEWER INVERT DESIGN INFORMATION
- POLYSTYRENE INSULATION REQUIRED BETWEEN STORM SEWER AND WATERMAIN IF CLEARANCE IS LESS THAN 2 FEET. SEE CONSTRUCTION DETAILS.

LEGEND

	BITUMINOUS PAVEMENT		PROPOSED GATE VALVE		PROPOSED CONTOUR MINOR		UNDERGROUND COMM
	RESIDENTIAL DRIVEWAY		PROPOSED HYDRANT & GATE VALVE		PROPOSED CONTOUR MAJOR		OVERHEAD UTILITY
	AGGREGATE SURFACING		EXISTING STORM SEWER PIPE		EXISTING EASEMENT LINE		FIBER OPTIC LINE
	4" CONCRETE MEDIAN		PROPOSED STORM SEWER PIPE		PROPOSED EASEMENT LINE		TREE-CONIFEROUS
	6" CONCRETE WALK		EXISTING SANITARY SEWER PIPE		EXISTING RIGHT-OF-WAY		TREE-DECIDUOUS
	PROPOSED STORM SEWER CB		PROPOSED SANITARY SEWER PIPE		PROPOSED RIGHT-OF-WAY		EXISTING TRAFFIC SIGN
	PROPOSED STORM SEWER MH		EXISTING WATERMAIN		FENCE		FIRE HYDRANT VALVE
	PROPOSED FLARED END SECTION		PROPOSED WATERMAIN		UNDERGROUND GAS		CLEANOUT
	RANDOM RIP RAP CL III		PROPOSED CURB & GUTTER				STORM CATCH BASIN
	PROPOSED SANITARY SEWER MH		EXISTING CURB & GUTTER				FLARED END SECTION
							STORM MANHOLE
							SANITARY MANHOLE
							BOLLARD
							POST
							UTILITY MARKER - GAS
							TRANSFORMER-ELECTRIC
							PEDESTAL-COMMUNICATION
							PEDESTAL-ELECTRIC
							HANDHOLE
							POLE-UTILITY
							GUY WIRE ANCHOR



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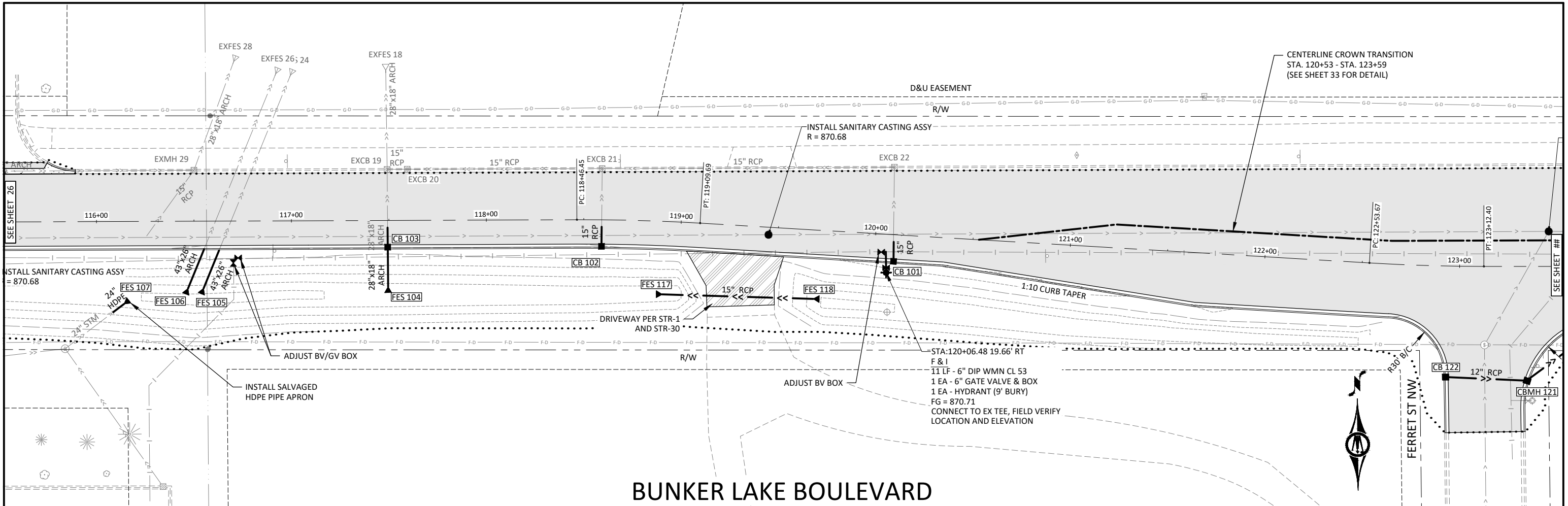
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STREET PLAN & PROFILE
SAP 199-121-003

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BUNKER LAKE BOULEVARD

NOTES:

- SEE SHEETS 29-30 FOR STORM SEWER INVERT DESIGN INFORMATION
- POLYSTYRENE INSULATION REQUIRED BETWEEN STORM SEWER AND WATERMAIN IF CLEARANCE IS LESS THAN 2 FEET. SEE CONSTRUCTION DETAILS.

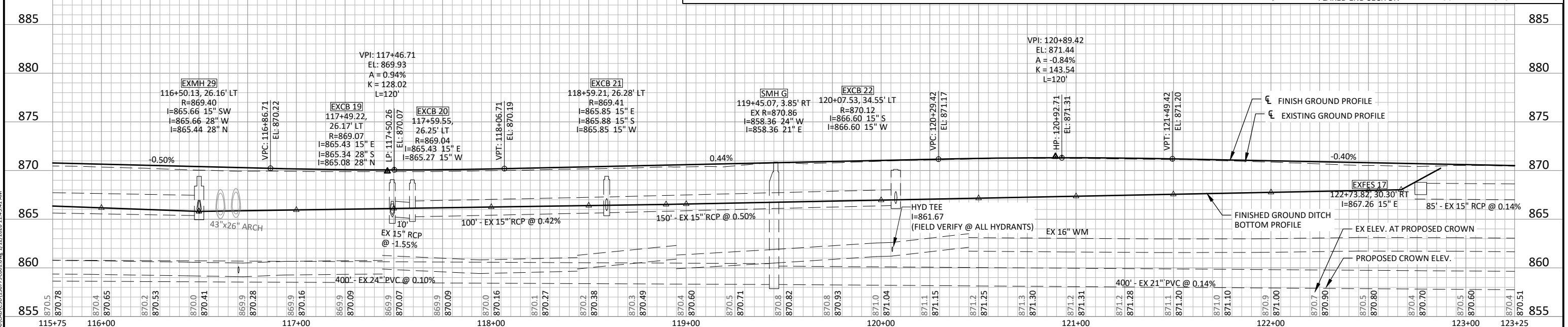
LEGEND

- BITUMINOUS PAVEMENT
- RESIDENTIAL DRIVEWAY
- AGGREGATE SURFACING
- 4" CONCRETE MEDIAN
- 6" CONCRETE WALK
- PROPOSED STORM SEWER CB
- PROPOSED STORM SEWER MH
- PROPOSED SANITARY END SECTION
- RANDOM RIP RAP CL III
- PROPOSED SANITARY SEWER MH

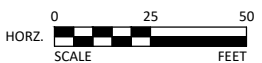
- PROPOSED GATE VALVE
- PROPOSED HYDRANT & GATE VALVE
- EXISTING STORM SEWER PIPE
- PROPOSED STORM SEWER PIPE
- EXISTING SANITARY SEWER PIPE
- PROPOSED SANITARY SEWER PIPE
- EXISTING WATERMAIN
- PROPOSED WATERMAIN
- CURB & GUTTER
- EXISTING CURB & GUTTER

- PROPOSED CONTOUR MINOR
- PROPOSED CONTOUR MAJOR
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- FENCE
- UNDERGROUND GAS

- UNDERGROUND COMM
- OVERHEAD UTILITY
- FIBER OPTIC LINE
- TREE-CONIFEROUS
- TREE-DECIDUOUS
- EXISTING TRAFFIC SIGN
- FIRE HYDRANT
- VALVE
- CLEANOUT
- STORM CATCH BASIN
- FLARED END SECTION
- STORM MANHOLE
- SANITARY MANHOLE
- BOLLARD
- POST
- UTILITY MARKER - GAS
- TRANSFORMER-ELECTRIC
- PEDESTAL-COMMUNICATION
- PEDESTAL-ELECTRIC
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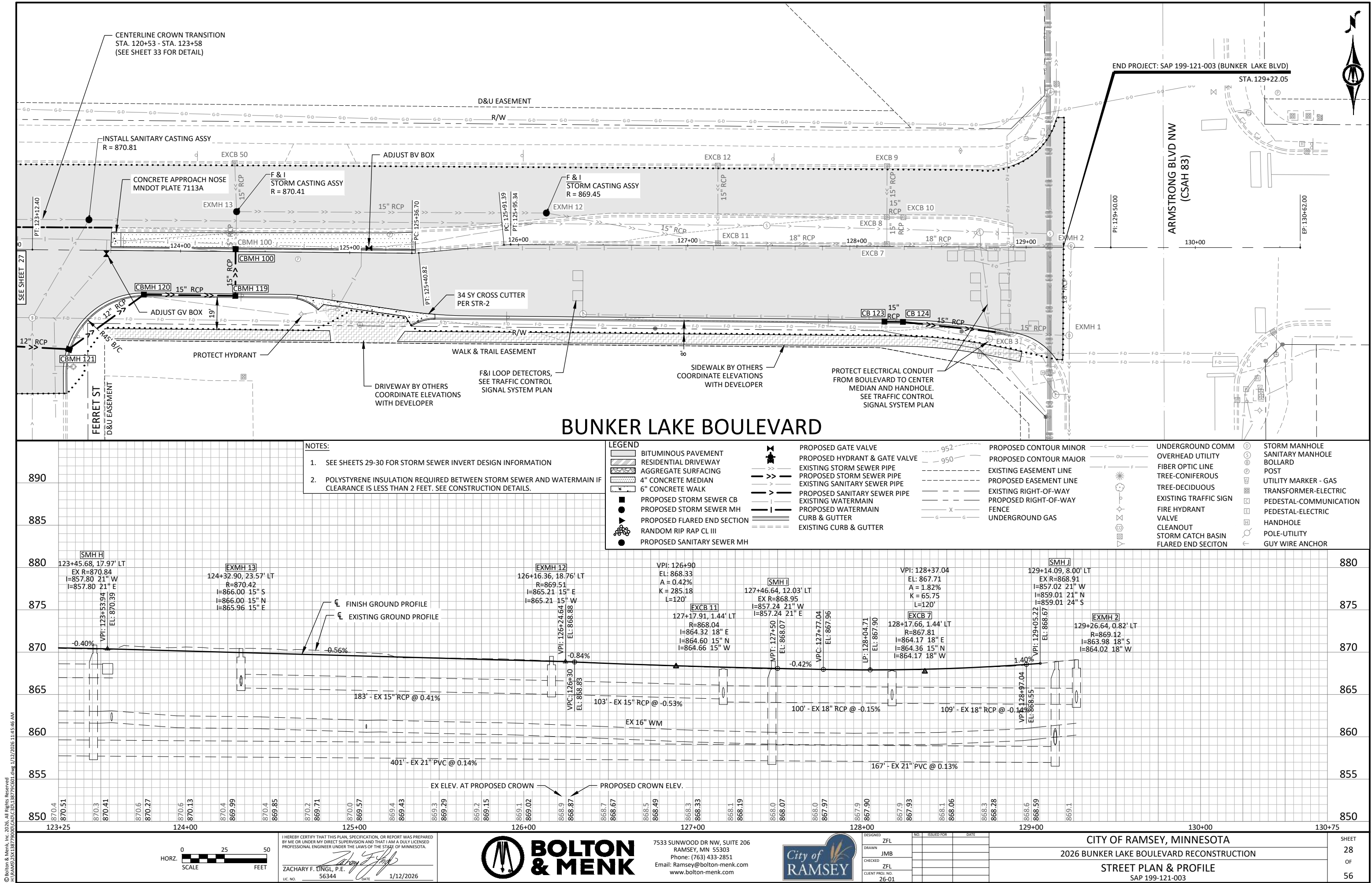
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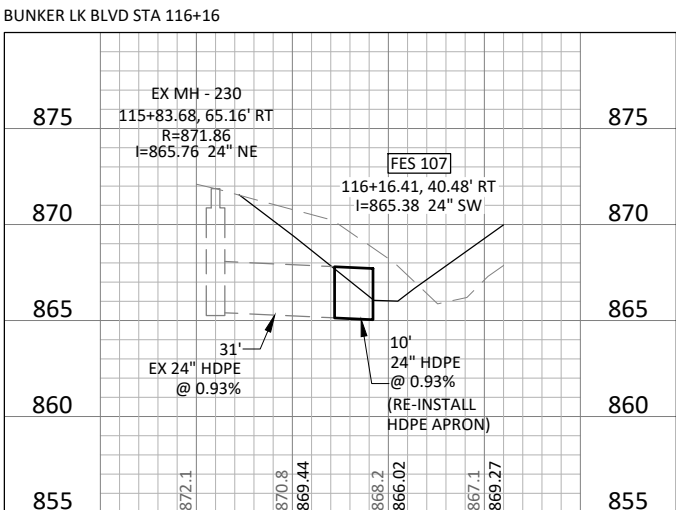
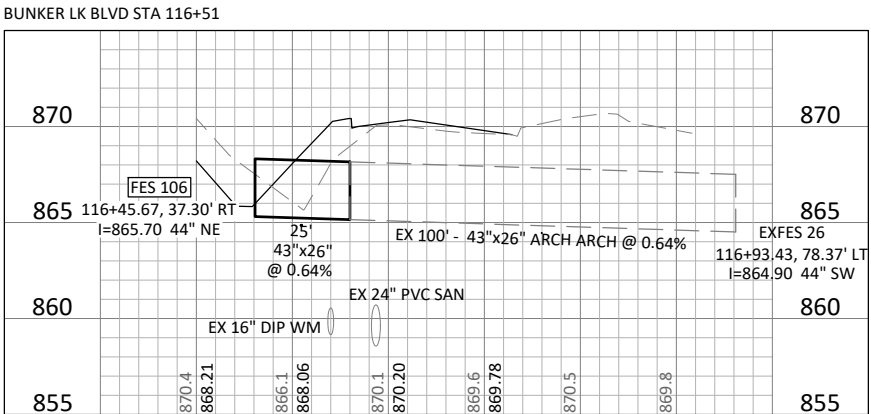
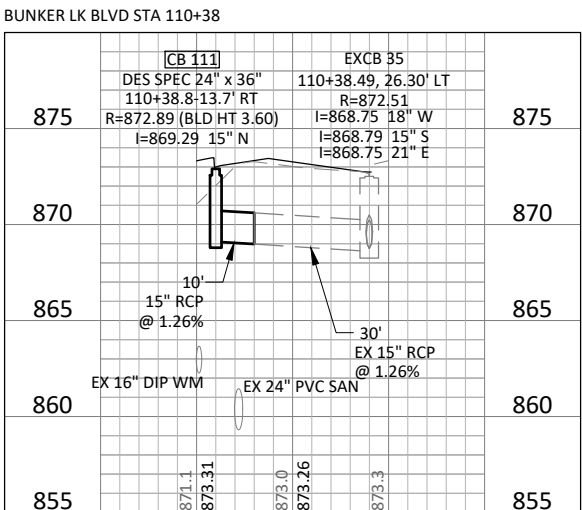
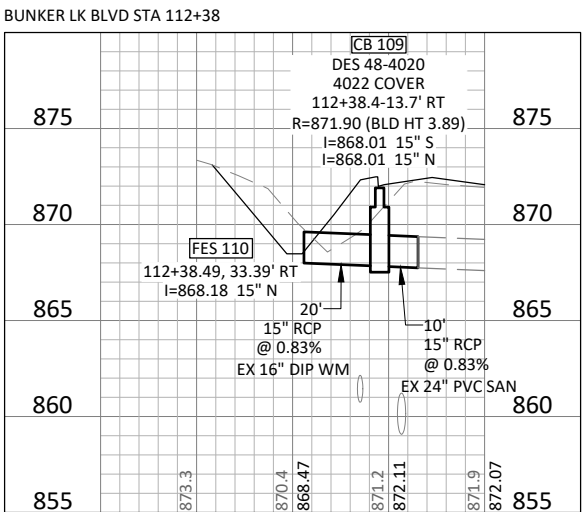
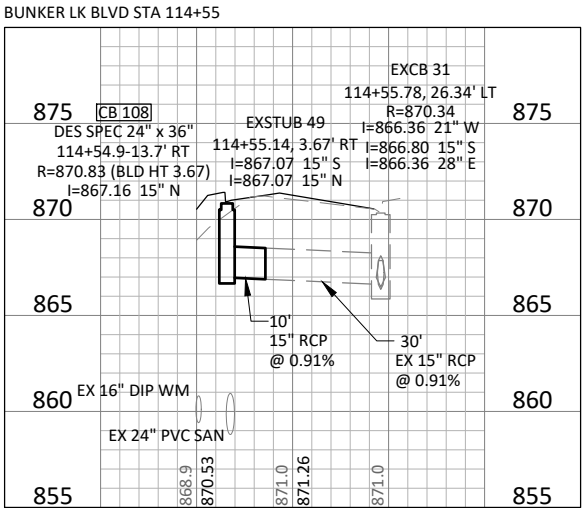
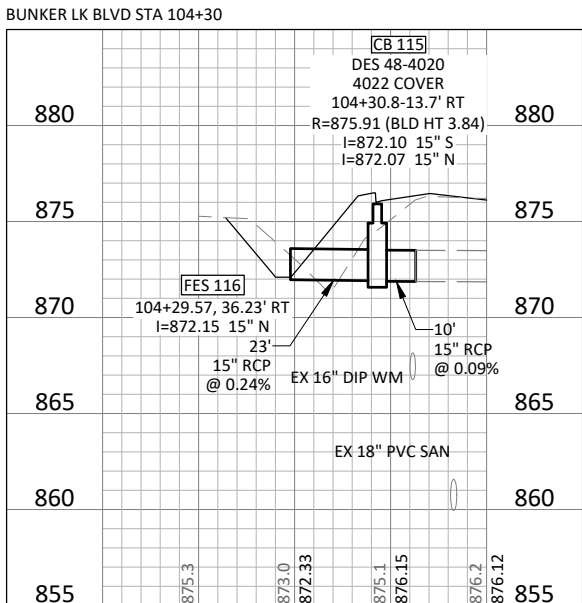
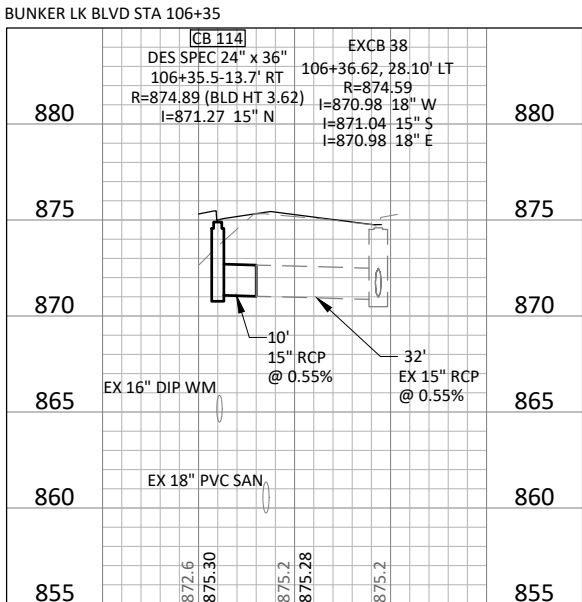
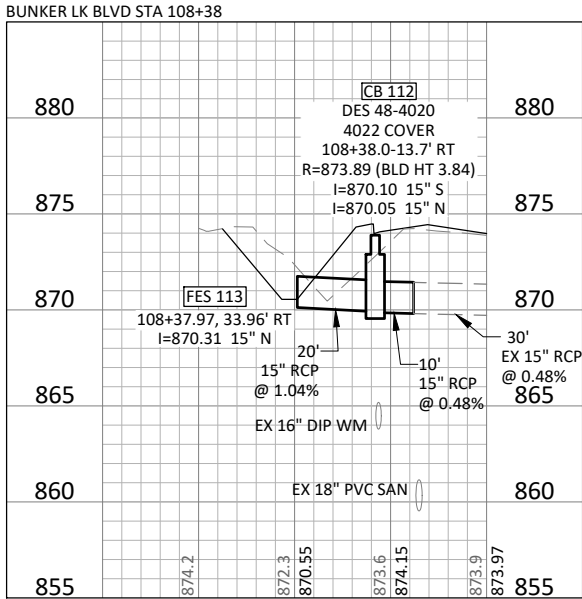


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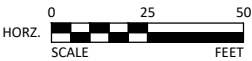
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STREET PLAN & PROFILE
SAP 199-121-003

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- NOTES:
- POLYSTYRENE INSULATION REQUIRED BETWEEN STORM SEWER AND WATERMAIN IF CLEARANCE IS LESS THAN 2 FEET. SEE CONSTRUCTION DETAILS.
 - PIPE LENGTHS SHOWN INCLUDE PROPOSED FES AND ARE MEASURED TO CENTER OF STRUCTURE.



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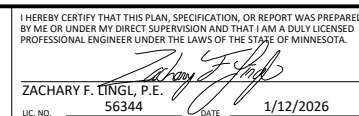
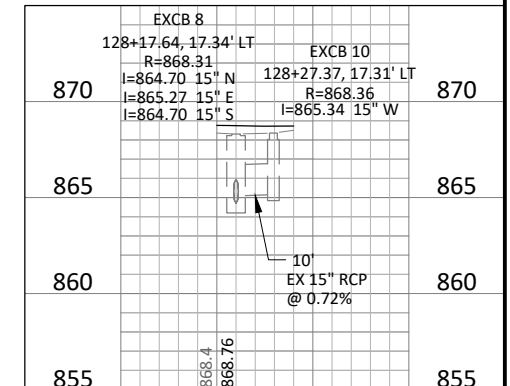
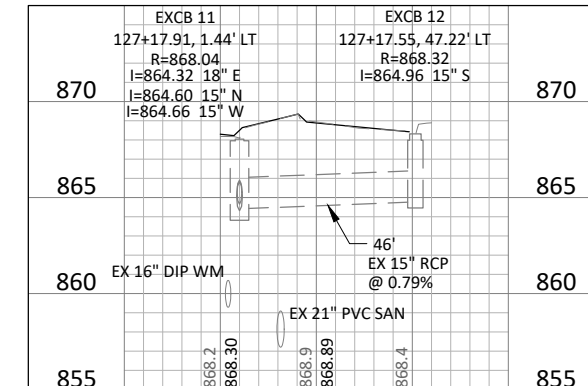
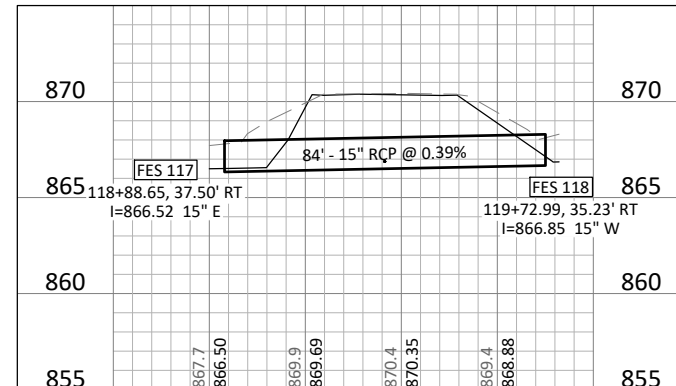
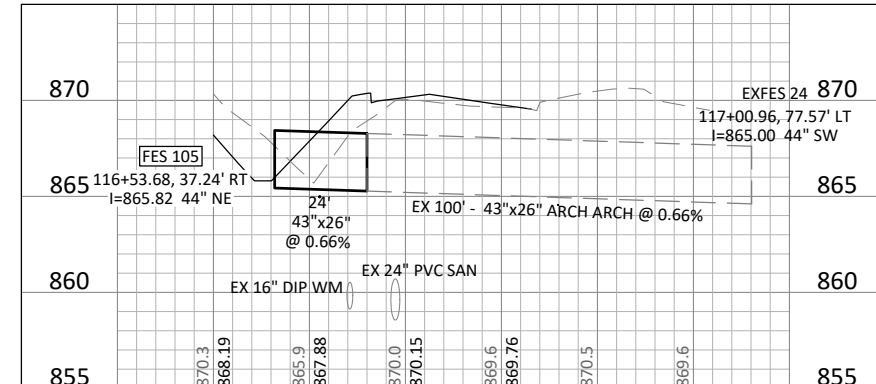
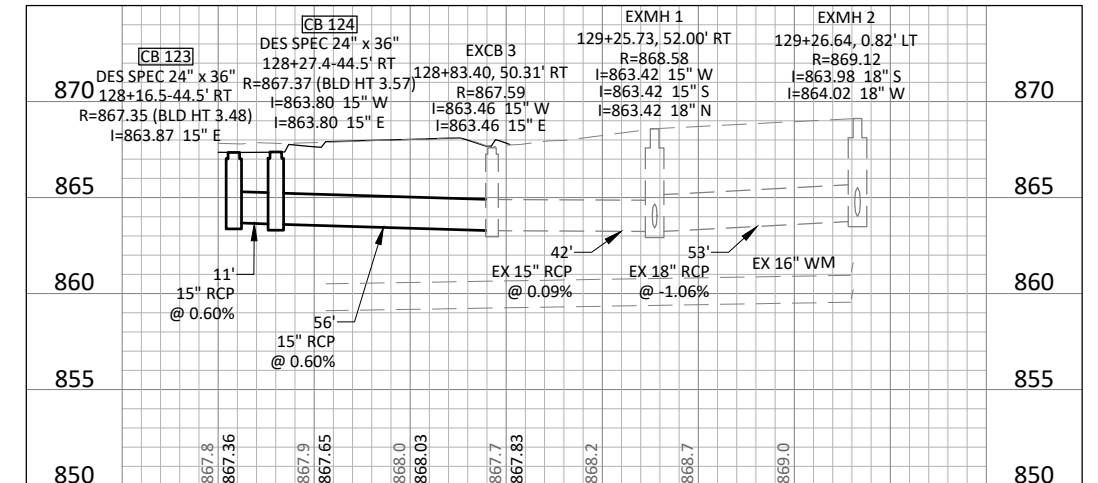
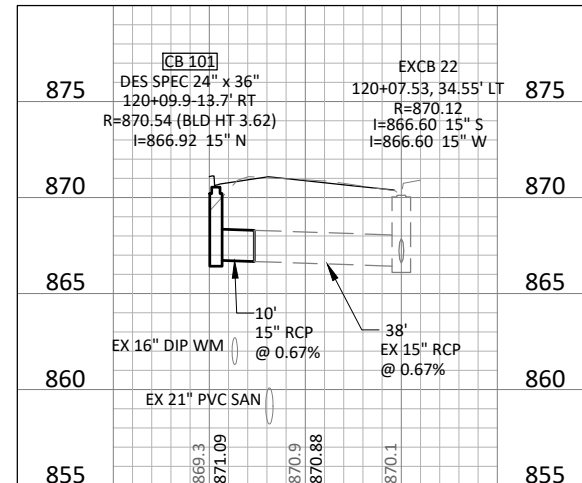
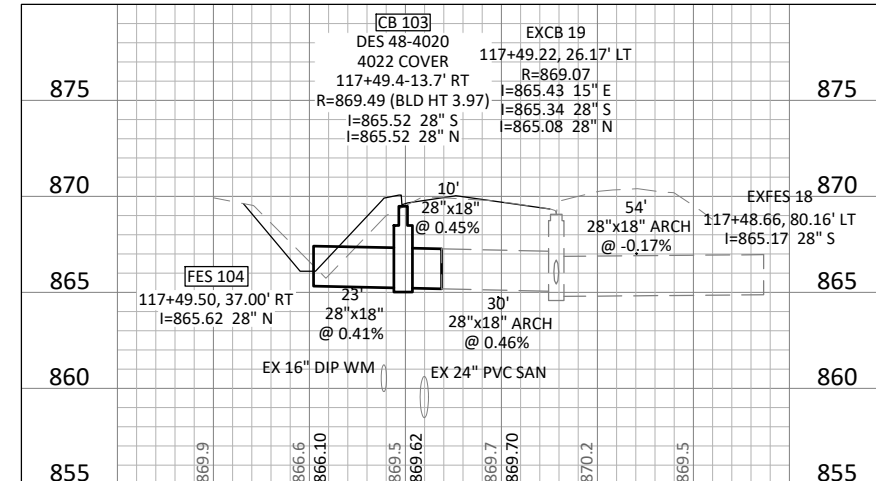
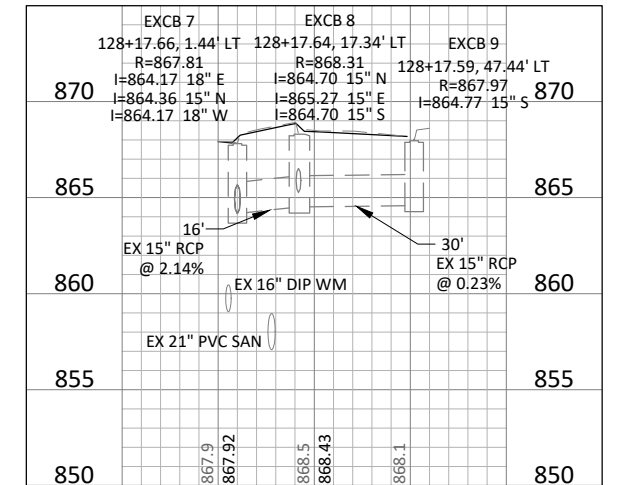
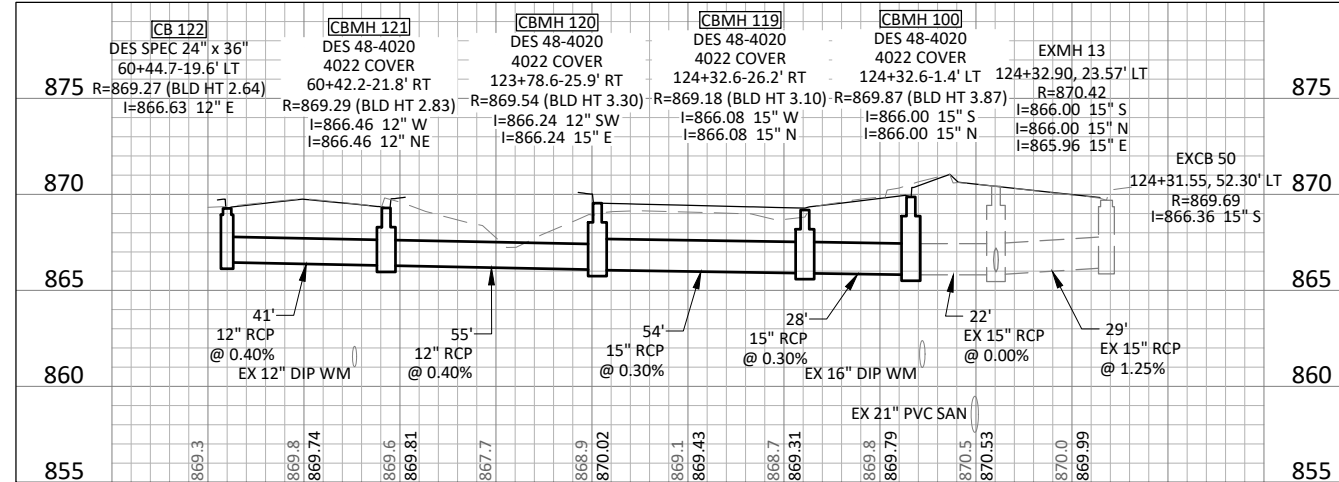
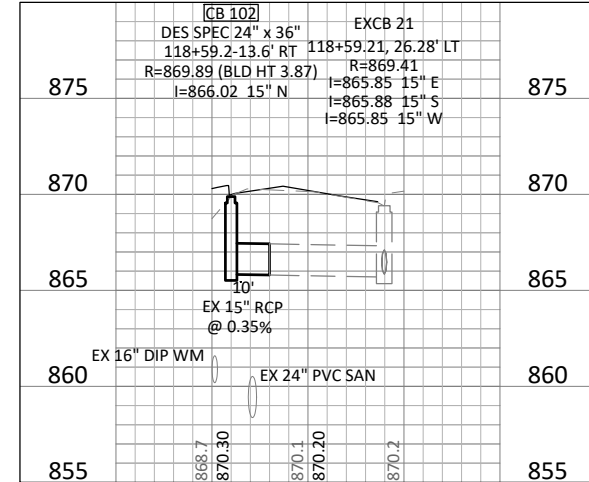


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2026 BUNKER LAKE BOULEVARD RECONSTRUCTION
STORM SEWER CATCH BASIN LEADS DETAILS
SAP 199-121-003

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29
OF
56

1. POLYSTYRENE INSULATION REQUIRED BETWEEN STORM SEWER AND WATERMAIN IF CLEARANCE IS LESS THAN 2 FEET. SEE CONSTRUCTION DETAILS.
2. PIPE LENGTHS SHOWN INCLUDE PROPOSED FES AND ARE MEASURED TO CENTER OF STRUCTURE.



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CONTROL POINTS AT CURB LIP LINE & TOP OF CONCRETE

TRUNCATED DOMES (SEE STANDARD PLATE 7038)

CONSTRUCT CONCRETE CURB & GUTTER

X"

CURB HEIGHT

LANDING AREA - 4' X 4' MIN DIMENSIONS
AND MAX 2.0% SLOPE IN ALL DIRECTIONS

SIDEWALK BY OTHERS

CATCH BASIN

STORM SEWER MANHOLE

S

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

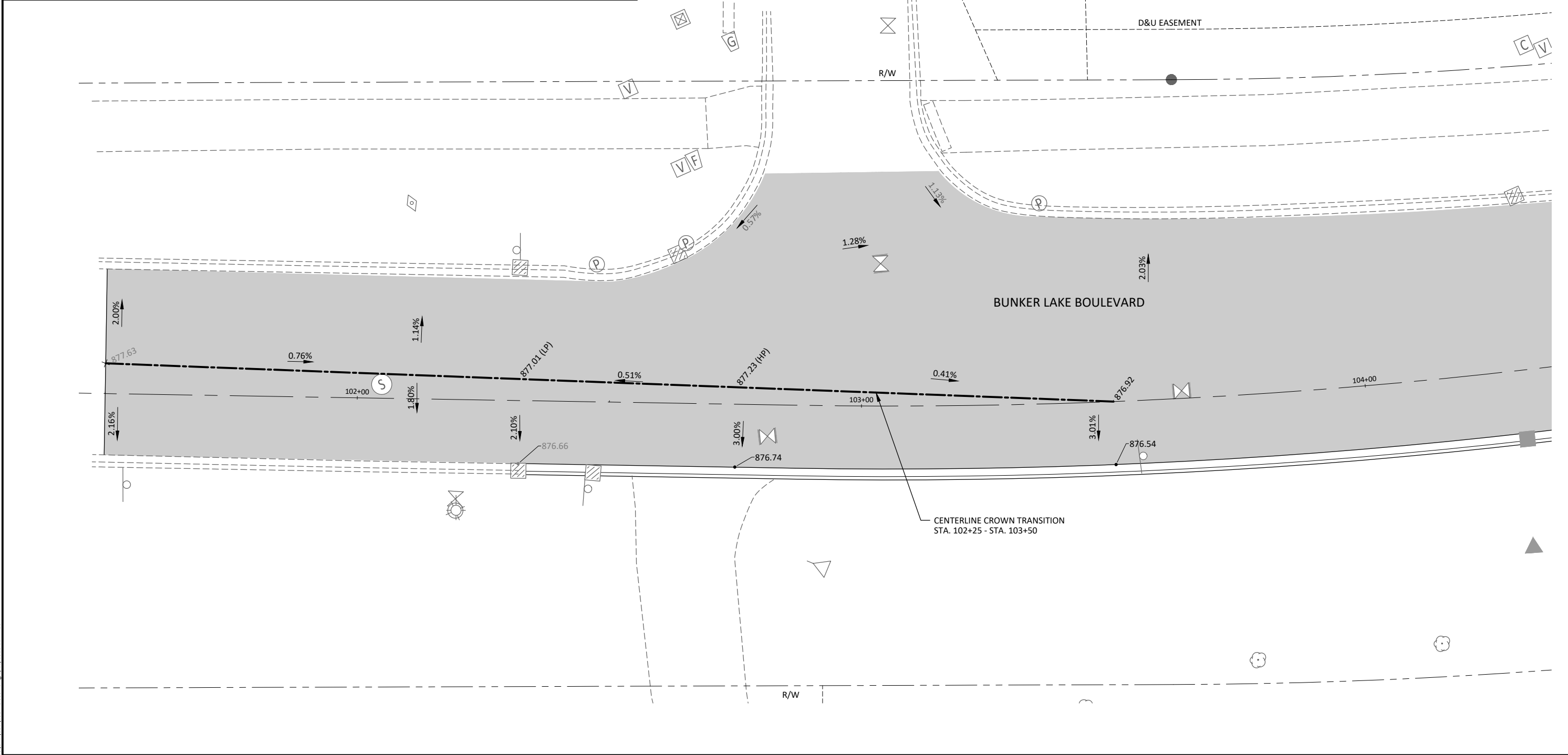
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INDICATES PEDESTRIAN RAMP - SLOPE SHALL
BE GREATER THAN 2.0% AND LESS THAN 5.0%
IN THE DIRECTION SHOWN AND CROSS SLOPE
SHALL NOT EXCEED 2.0%

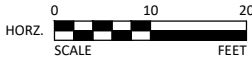
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TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING
THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK
CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5%
PER LINEAR FOOT OF WALK.

DRAINAGE FLOW ARROW



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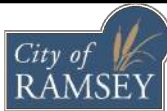


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ZACHARY F. DINGL, P.E.
LIC. NO. 56344 DATE 1/12/2026



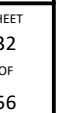
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CITY OF RAMSEY, MINNESOTA	SHEET 31
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION	OF
INTERSECTION DETAILS	56
SAP 199-121-003	

LEGEND	
	CONTROL POINTS AT CURB LIP LINE & TOP OF CONCRETE
	TRUNCATED DOMES (SEE STANDARD PLATE 7038)
	CONSTRUCT CONCRETE CURB & GUTTER
	CURB HEIGHT
	LANDING AREA - 4' X 4' MIN DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
	SIDEWALK BY OTHERS
	CATCH BASIN
	STORM SEWER MANHOLE
	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
	TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER LINEAR FOOT OF WALK.
	DRAINAGE FLOW ARROW



XXX

CONTROL POINTS AT CURB LIP LINE & TOP OF CONCRETE

TRUNCATED DOMES (SEE STANDARD PLATE 7038)

X"

CONSTRUCT CONCRETE CURB & GUTTER

X"

CURB HEIGHT

LANDING AREA - 4' X 4' MIN DIMENSIONS
AND MAX 2.0% SLOPE IN ALL DIRECTIONS

SIDEWALK BY OTHERS

CATCH BASIN

STORM SEWER MANHOLE

S

INDICATES PEDESTRIAN RAMP - SLOPE SHALL
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IN THE DIRECTION SHOWN AND CROSS SLOPE
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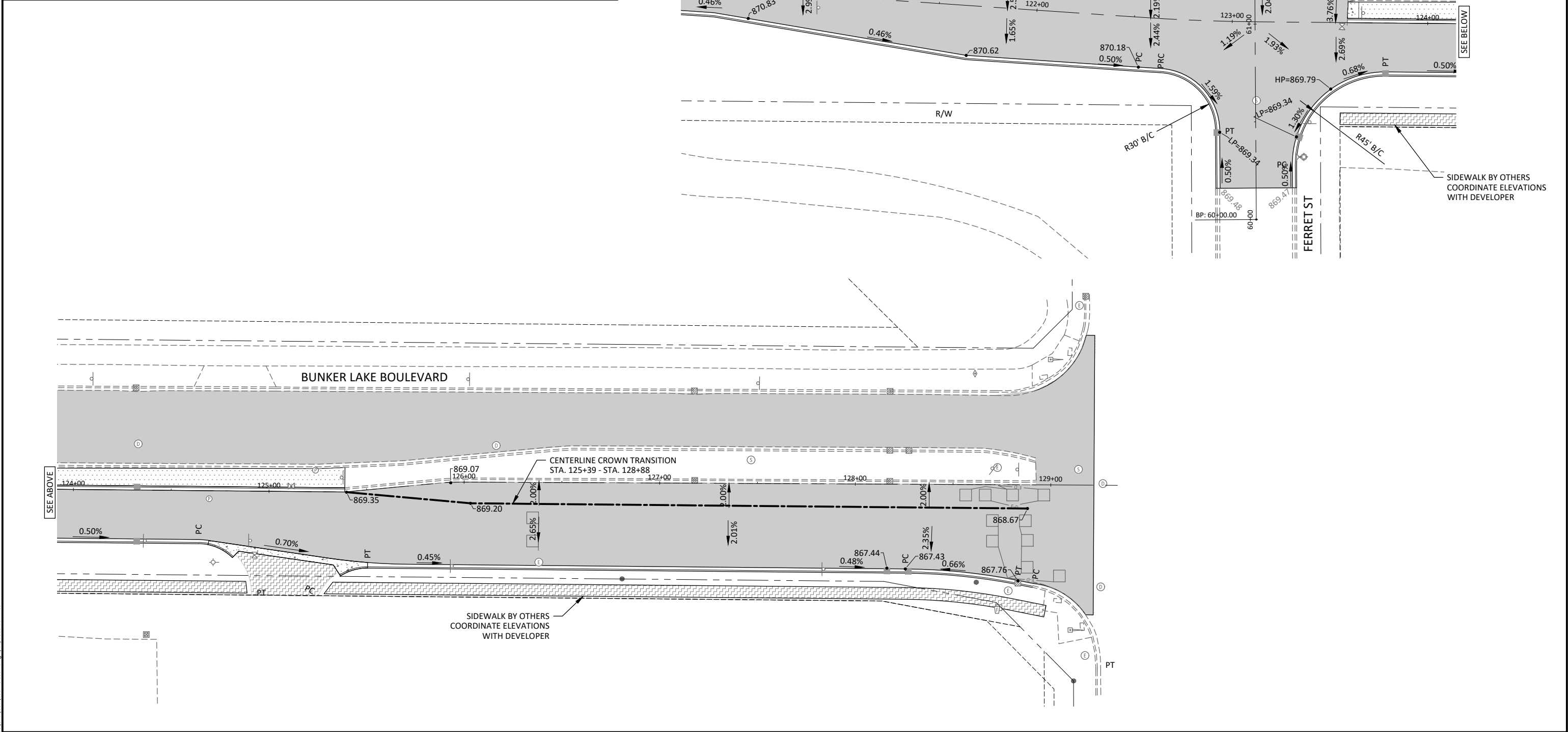
E

INDICATES PEDESTRIAN RAMP - SLOPE SHALL
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T

TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING
THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK
CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5%
PER LINEAR FOOT OF WALK.

DRAINAGE FLOW ARROW



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A:\1919\2026 BUNKER LAKE BOULEVARD\DWG\1919-2026-114705.dwg 1/12/2026 11:47:05 AM



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ZACHARY F. DINGL, P.E.

56344

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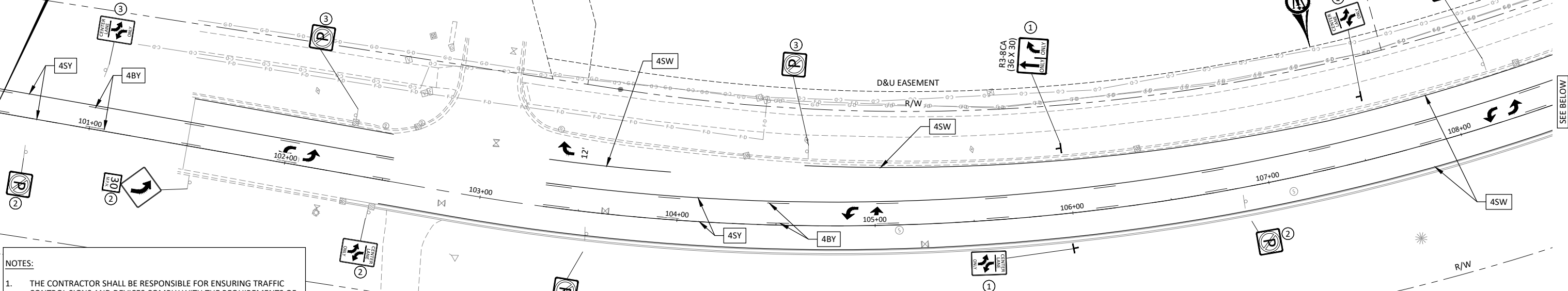


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CITY OF RAMSEY, MINNESOTA	SHEET
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION	33
INTERSECTION DETAILS	OF
SAP 199-121-003	56

BUNKER LAKE BOULEVARD

BEGIN PROJECT: SAP 199-121-003 (BUNKER LAKE BLVD)
STA. 100+50



- NOTES:
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING TRAFFIC CONTROL SIGNS AND DEVICES COMPLY WITH THE REQUIREMENTS OF THE MNMUTCD AT ALL TIMES DURING CONSTRUCTION
 2. THE CITY OF RAMSEY WILL REMOVE, SALVAGE, OR REINSTALL EXISTING SIGNS DURING CONSTRUCTION
 3. THE CITY OF RAMSEY SHALL FURNISH & INSTALL ALL NEW SIGNS
 4. THE CONTRACTOR SHALL CONTACT THE CITY 48 HOURS IN ADVANCE OF WHEN SIGNS NEED TO BE REMOVED, SALVAGED, OR REINSTALLED
 5. THE CONTRACTOR SHALL COVER (BAG) EXISTING SIGNS THAT CONFLICT WITH THE TEMPORARY TRAFFIC CONTROL UNTIL SUCH TIME THAT THE CITY OF RAMSEY REMOVES/SALVAGES THE SIGNS
 6. THE CONTRACTOR SHALL PROVIDE 2 WEEKS NOTICE TO THE CITY OF RAMSEY PRIOR TO THE PERMANENT SIGNS BEING REQUIRED TO BE INSTALLED/REINSTALLED

LEGEND					
	PROPOSED CURB & GUTTER			EXISTING CURB & GUTTER	
	RECTANGLE - MULTI COMP			EXISTING EASEMENT LINE	
	PENTAGON - PREF THERMO GR IN ESR			EXISTING RIGHT-OF-WAY	
	CROSSWALK PREF THERMO GR IN ESR			OVERHEAD UTILITY	
	PAVEMENT MESSAGE MULTI COMP (TYP)			TREE-CONIFEROUS	
	NEW SIGN			TREE-DECIDUOUS	
	REINSTALL EXISTING SIGN			EXISTING TRAFFIC SIGN	
	PROTECT INPLACE SIGN			WET WELL	
				VALVE VAULT	

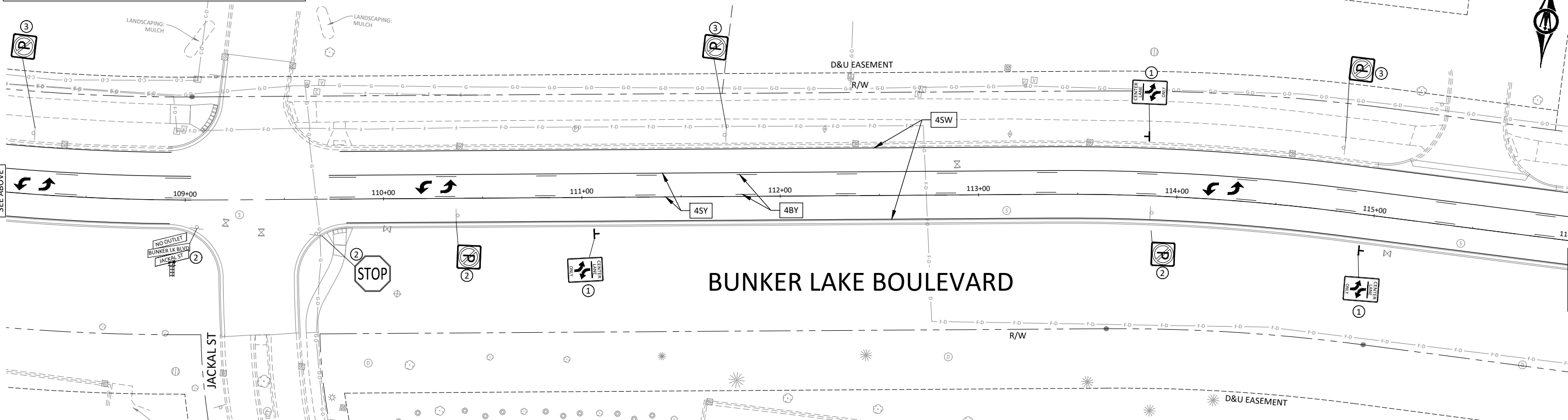
1ST DIGIT(S)
WIDTH
4", 8", ETC.

2ND DIGIT
PATTERN
S - SOLID
B - BROKEN
D - DOTTED/DOUBLE

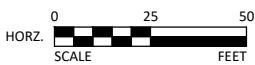
3RD DIGIT
COLOR
W - WHITE
Y - YELLOW
B - BLACK

EXAMPLE: 4SW = 4" SOLID LINE WHITE - MULTI COMP

	FIRE HYDRANT
	VALVE
	TRANSFORMER-ELECTRIC
	PEDESTAL-COMMUNICATION
	PEDESTAL-ELECTRIC
	HANDHOLE
	POLE-UTILITY
	GUY WIRE ANCHOR



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LIC. NO. 56344 DATE 1/12/2026



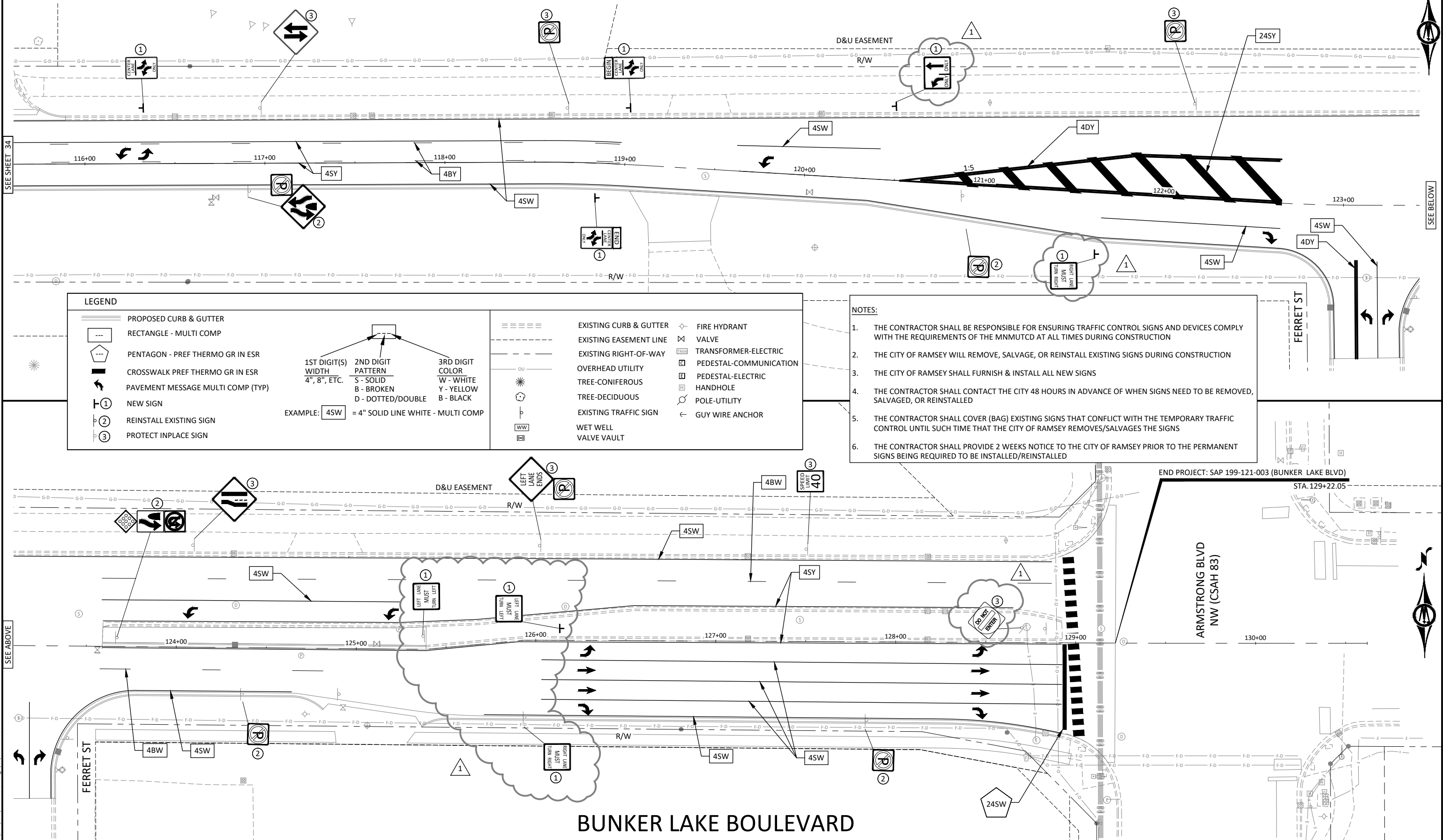
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CITY OF RAMSEY, MINNESOTA		SHEET 34 OF 56
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION		
SIGNAGE AND STRIPING PLAN SAP 199-121-003		

BUNKER LAKE BOULEVARD



LEGEND

	PROPOSED CURB & GUTTER		FIRE HYDRANT
	RECTANGLE - MULTI COMP		VALVE
	PENTAGON - PREF THERMO GR IN ESR		TRANSFORMER-ELECTRIC
	CROSSWALK PREF THERMO GR IN ESR		PEDESTAL-COMMUNICATION
	PAVEMENT MESSAGE MULTI COMP (TYP)		PEDESTAL-ELECTRIC
	NEW SIGN		HANDHOLE
	REINSTALL EXISTING SIGN		POLE-UTILITY
	PROTECT INPLACE SIGN		GUY WIRE ANCHOR

	EXISTING CURB & GUTTER		TREE-CONIFEROUS
	EXISTING EASEMENT LINE		TREE-DECIDUOUS
	EXISTING RIGHT-OF-WAY		EXISTING TRAFFIC SIGN
	OVERHEAD UTILITY		WET WELL
	TREE-CONIFEROUS		VALVE VAULT
	TREE-DECIDUOUS		
	EXISTING TRAFFIC SIGN		
	WET WELL		
	VALVE VAULT		

1ST DIGIT(S) WIDTH 4", 8", ETC.	2ND DIGIT PATTERN S - SOLID B - BROKEN D - DOTTED/DOUBLE	3RD DIGIT COLOR W - WHITE Y - YELLOW B - BLACK
EXAMPLE: 4SW = 4" SOLID LINE WHITE - MULTI COMP		

NOTES:

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LIC. NO. 56344
DATE 1/12/2026



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CITY OF RAMSEY, MINNESOTA
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION
SIGNAGE AND STRIPING PLAN
SAP 199-121-003

ABBREVIATIONS

APS	ACCESSIBLE PEDESTRIAN SIGNAL
AWF	ADVANCE WARNING FLASHER
C.D.	COUNT DOWN
D2-1 (e.g.)	DETECTOR (PHASE 2, NO. 1)
DEG	DEGREES
DWK	DON'T WALK
EQ.G	EQUIPMENT GROUND
EVP	EMERGENCY VEHICLE PRE-EMPTION
F&I	FURNISH AND INSTALL
FL	FLASH/FLASHING
FYA	FLASHING YELLOW ARROW
FYLA	FLASHING YELLOW LEFT ARROW
GLA	GREEN LEFT ARROW
GRN	GREEN INDICATION
GR. RD.	GROUND ROD
GRA	GREEN RIGHT ARROW
GTA	GREEN THRU ARROW
HH	HANDHOLE
HPS	HIGH PRESSURE SODIUM
IND	INDICATION
IMC	INTERMEDIATE METAL CONDUIT
INP	INPLACE
INS. GR.	INSULATED GROUND
JB	JUNCTION BOX
LED	LIGHT EMITTING DIODE
LUM	LUMINAIRE
NEU	NEUTRAL
NMC	NONMETALLIC CONDUIT
P1-1 (e.g.)	PEDESTRIAN INDICATION (PHASE 1, NO.1)
PB	PUSH BUTTON
PB2-1 (e.g.)	PUSH BUTTON (PHASE 2, NO. 1)
PEC	PHOTOELECTRIC CELL
PED	PEDESTRIAN
PVC	POLYVINYL CHLORIDE (CONDUIT)
RED	RED INDICATION
R&S	REMOVE AND SALVAGE
RLA	RED LEFT ARROW
RSC	RIGID STEEL CONDUIT
S&I	SALVAGE AND INSTALL
SOP	SOURCE OF POWER
SPR	SPARE
STA	STATION
WLK	WALK
YEL	YELLOW INDICATION
YLA	YELLOW LEFT ARROW
YRA	YELLOW RIGHT ARROW

SYMBOLS

■	HANDHOLE
●	HANDHOLE SPECIAL
⊕	EQ.G CONNECTION
◀	EVP CONFIRMATORY LIGHT
//>	EVP DETECTOR
//>	EVP DETECTOR AND CONFIRMATORY LIGHT
⬢	FIBER OPTIC VAULT
△	LUMINAIRE NO.
⌒	SIGNAL BASE NO.
◯	SIGNAL FACE NO./FLASHER FACE NO.
BM	BARREL MOUNT BASE NO.
WP	WOOD POLE NO.
●	SPLICE
V---	VIDEO DETECTION
M---	MICROWAVE DETECTION
S---	SONIC DETECTION

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL

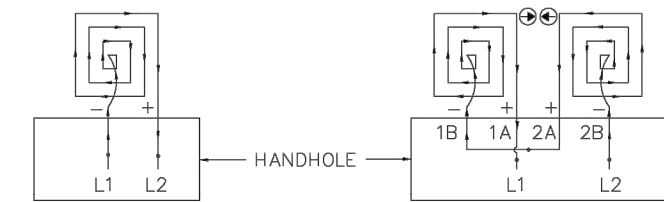
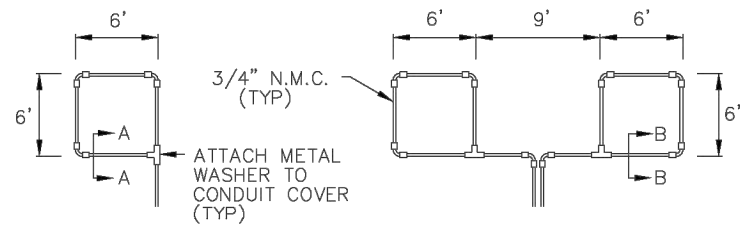
REVISE SIGNAL SYSTEM
BUNKER LAKE BLVD AT ARMSTRONG BLVD



ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY
2104.502	REMOVE HANDHOLE	EACH	1
2104.503	REMOVE CONDUIT SYSTEM	LF	240
2565.602	HANDHOLE	EACH	1
2565.602	RIGID PVC LOOP DETECTOR	EACH	12
2565.603	2" NON-METALLIC CONDUIT	LF	240



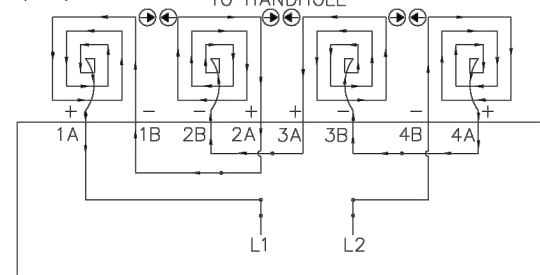
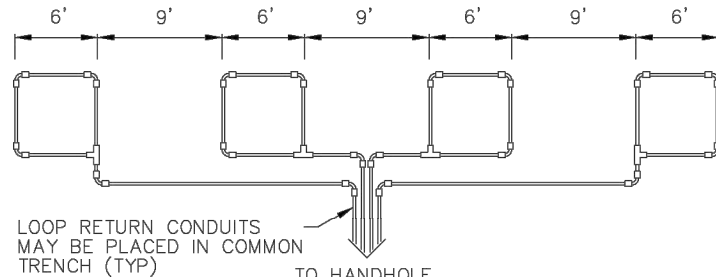


LOOP DETECTOR
DETAIL 'A'
(LOOP PHASING FOR
SINGLE CONNECTION)

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

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

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

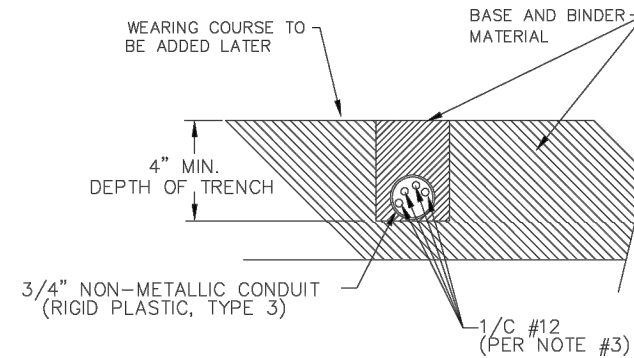


LOOP CONNECTIONS SHALL BE LABELED AND SPLICED
IN THE HANDHOLE AS FOLLOWS:

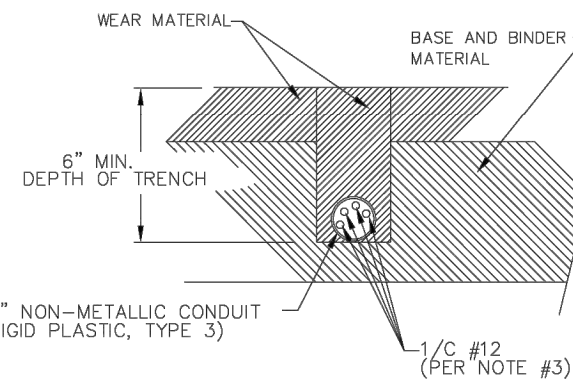
L1 TO 1A 3B TO 4A
1B TO 2A 4B TO L2
2B TO 3A

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

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

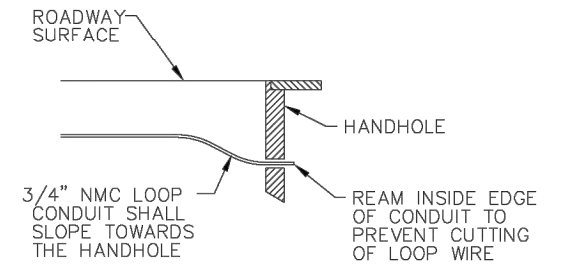


SECTION A-A
DETAIL FOR LOOP INSTALLATION
IN NEW ROADWAY



SECTION B-B

DETAIL FOR LOOP INSTALLATION
IN EXISTING ROADWAY



DRAINAGE DETAIL

LOOP DETECTOR WIRING

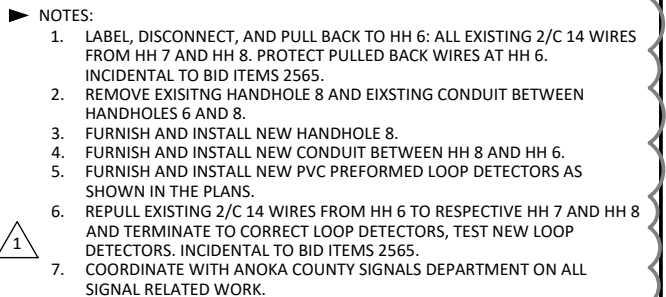
- 1) ALL CORNERS SHALL BE 90° CONDUIT BENDS.
- 2) CONNECT WIRES IN HANDHOLES USING SPLICE KIT METHOD DESCRIBED IN THE SPECIAL PROVISIONS.
- 3) LOOP DETECTOR WIRES SHALL BE #12 AWG CROSSED LINKED POLYETHYLENE (XLP).
- 4) LOOP LEAD IN WIRES SHALL BE TWISTED A MIN. OF (5) TURNS PER FOOT THROUGH THE CONDUIT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

LOOP DETECTORS FUNCTIONS:

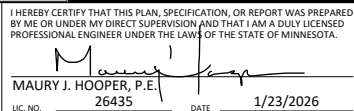
- 1) CALL AND EXTEND
- 3) EXTEND ONLY
- 7) DELAYED CALL, IMMEDIATE EXTEND
- 8) CARRY OVER (STRETCH)

4 INPLACE SIGNAL

6 INPLACE SIGNAL



2 INPLACE SIGNAL



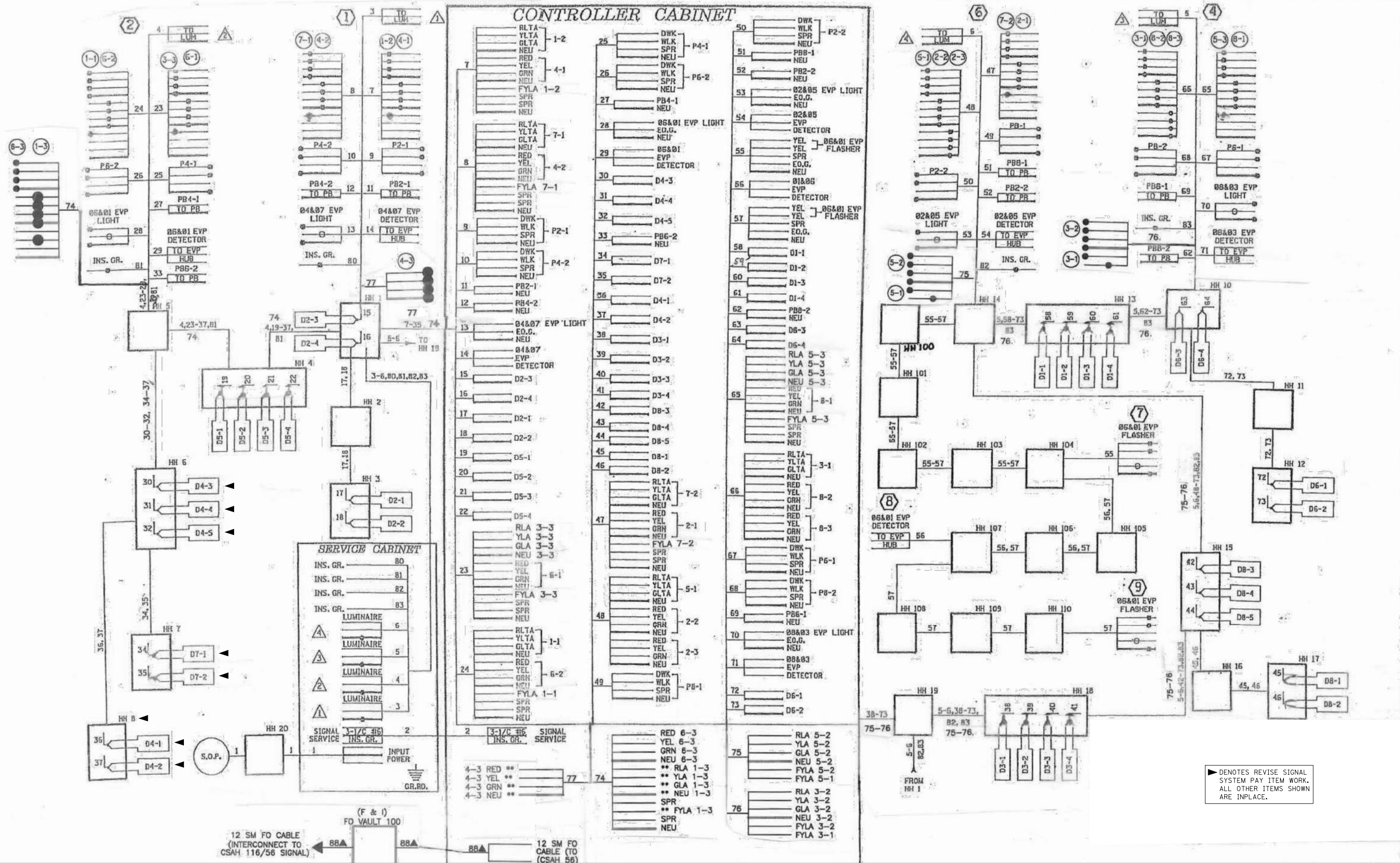
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CITY OF RAMSEY, MINNESOTA
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION
TRAFFIC SIGNAL SYSTEM PLAN
SAP 199-121-003

SHEET
38
OF
56



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MAURY J. HOOPER, P.E.

MAURY J. HOOPER, P.E.
LIC. NO. 26435 DATE 1/23/2026



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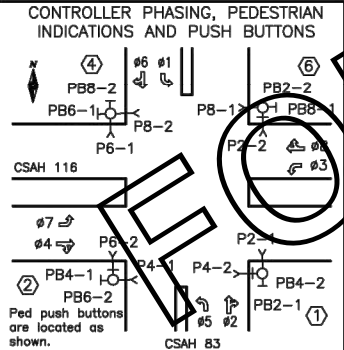
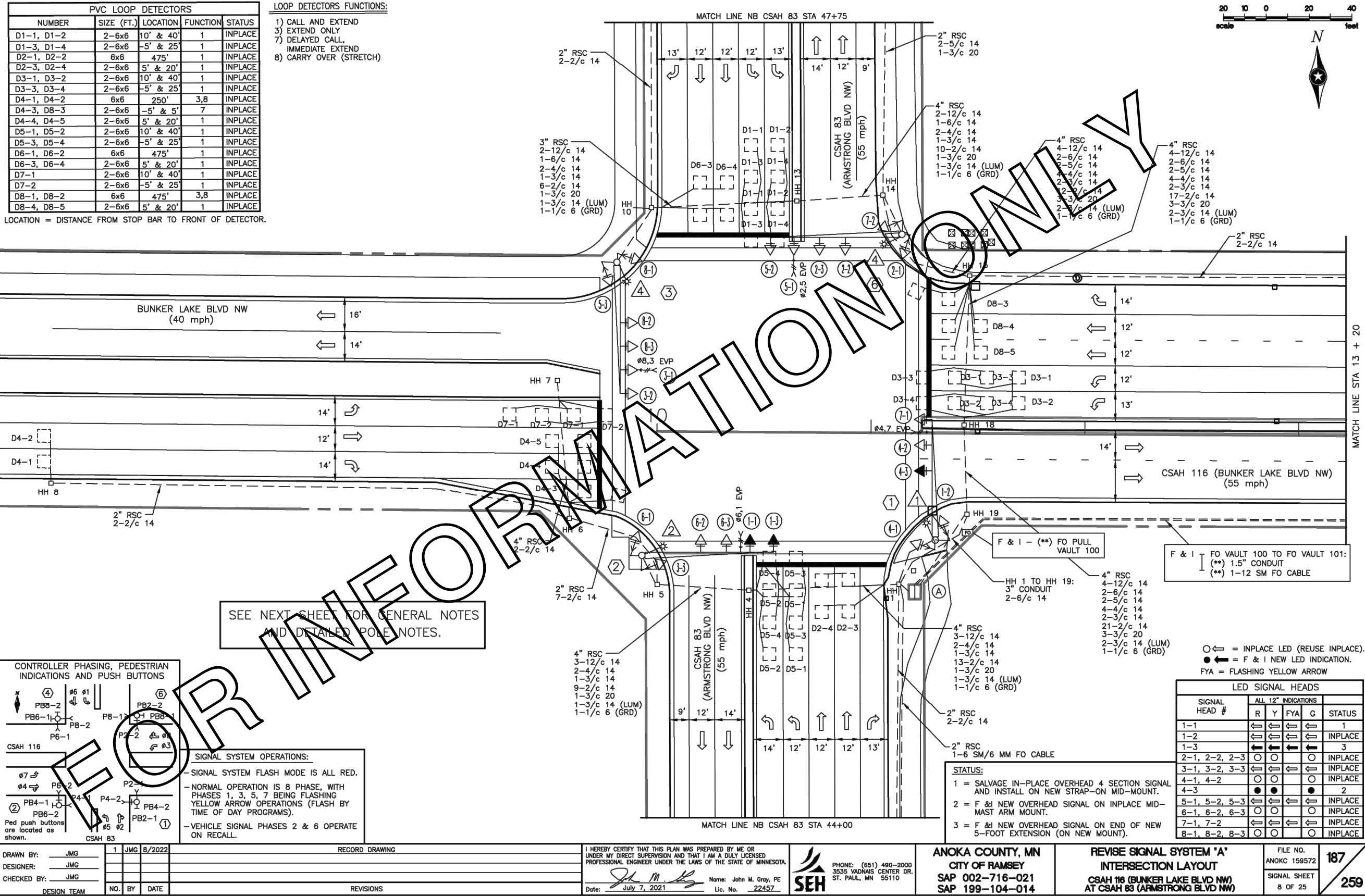
CITY OF RAMSEY, MINNESOTA
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION
TRAFFIC SIGNAL SYSTEM PLAN
SAP 199-121-003

PVC LOOP DETECTORS				
NUMBER	SIZE (FT.)	LOCATION	FUNCTION	STATUS
D1-1, D1-2	2-6x6	10' & 40'	1	INPLACE
D1-3, D1-4	2-6x6	-5' & 25'	1	INPLACE
D2-1, D2-2	6x6	475'	1	INPLACE
D2-3, D2-4	2-6x6	5' & 20'	1	INPLACE
D3-1, D3-2	2-6x6	10' & 40'	1	INPLACE
D3-3, D3-4	2-6x6	-5' & 25'	1	INPLACE
D4-1, D4-2	6x6	250'	3,8	INPLACE
D4-3, D4-4	2-6x6	-5' & 5'	7	INPLACE
D4-5, D4-6	2-6x6	5' & 20'	1	INPLACE
D5-1, D5-2	2-6x6	10' & 40'	1	INPLACE
D5-3, D5-4	2-6x6	-5' & 25'	1	INPLACE
D6-1, D6-2	6x6	475'	1	INPLACE
D6-3, D6-4	2-6x6	5' & 20'	1	INPLACE
D7-1	2-6x6	10' & 40'	1	INPLACE
D7-2	2-6x6	-5' & 25'	1	INPLACE
D8-1, D8-2	6x6	475'	3,8	INPLACE
D8-3, D8-4	2-6x6	5' & 20'	1	INPLACE

LOCATION = DISTANCE FROM STOP BAR TO FRONT OF DETECTOR.

LOOP DETECTORS FUNCTIONS:

- 1) CALL AND EXTEND
- 3) EXTEND ONLY
- 7) DELAYED CALL, IMMEDIATE EXTEND
- 8) CARRY OVER (STRETCH)



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

DRAWN BY:	JMG	1	JMG	8/2022
DESIGNER:	JMG			
CHECKED BY:	JMG			
DESIGN TEAM		NO.	BY	DATE

RECORD DRAWING				
REVISIONS				

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Date: July 7, 2021 Name: John M. Gray, PE Lic. No. 22457



ANOKA COUNTY, MN
CITY OF RAMSEY
SAP 002-716-021
SAP 199-104-014

REVISE SIGNAL SYSTEM 'A'
INTERSECTION LAYOUT
CSAH 116 (BUNKER LAKE BLVD NW)
AT CSAH 83 (ARMSTRONG BLVD NW)

FILE NO.	187
ANOKC 159572	
SIGNAL SHEET	259
8 OF 25	

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MAURY J. HOOPER, P.E.
LIC. NO. 26435 DATE 1/23/2026



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CITY OF RAMSEY, MINNESOTA
2026 BUNKER LAKE BOULEVARD RECONSTRUCTION
TRAFFIC SIGNAL SYSTEM PLAN
SAP 199-121-003

- 1) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, UNLESS OTHERWISE NOTED ON PLANS.
- 2) CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING PVC HANDHOLES (WITH METAL FRAMES AND COVERS) IN THE VICINITY OF CONSTRUCTION, AND SHALL ADJUST HANDHOLE 17 AS NEEDED TO MATCH FINISHED SURROUNDING GRADE AFTER ROAD WORK HAS BEEN COMPLETED. SEE SPECIAL PROVISIONS (INCIDENTAL).
- 3) LOCATION OF FIBER VAULT SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 4) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- 5) ALL LOOP DETECTORS ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE AND OPERATIONAL, EXCEPT AS FOLLOWS: A SEPARATE PAY ITEM HAS BEEN ADDED (2565 - RIGID PVC LOOP DETECTOR 6' x 6') SHOULD ANY EXISTING LOOP DETECTOR BE DAMAGED OR DISTURBED DUE TO CONSTRUCTION OPERATIONS. SEE SPECIAL PROVISIONS FOR FURTHER INFORMATION.
- 6) ANY DAMAGE TO INPLACE TRAFFIC SIGNAL FACILITIES (CONDUIT, CABLES, HANDHOLES, SIGNAL POLES, ETC.), DUE TO TRAFFIC SIGNAL OR ROAD WORK, SHALL BE REPAIRED BY CONTRACTOR TO SATISFACTION OF THE ENGINEER, AT NO EXPENSE TO THE COUNTY.
- 7) CONTRACTOR SHALL MAINTAIN OPERATION OF THE SIGNAL SYSTEM AT ALL TIMES, EXCEPT AS OTHERWISE APPROVED BY ENGINEER.
- 8) ALL NEW VEHICULAR SIGNAL HEADS SHALL HAVE BACKGROUND SHIELDS FURNISHED & INSTALLED BY CONTRACTOR. ALL INPLACE VEHICULAR SIGNAL HEADS BEING REUSED AS PART OF REVISE SIGNAL SYSTEM "A" HAVE BACKGROUND SHIELDS (REUSE AND MAINTAIN INPLACE).
- 9) F & I = NEW, FURNISH AND INSTALL.
S & I = INPLACE, SALVAGE AND INSTALL.
- 10) ALL NEW VEHICULAR SIGNAL HOUSINGS, BACKGROUND SHIELDS AND VISORS SHALL BE FABRICATED USING BLACK POLYCARBONATE MATERIALS. SEE SPECIAL PROVISIONS.
- 11) ALL CABLES AND CONDUCTORS, CONDUIT, HANDHOLES, AND LOOP DETECTORS ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, EXCEPT WHERE BOXED IN AND DENOTED OTHERWISE.
- 12) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 13) SEE SPECIAL PROVISIONS REGARDING WORK TO RAISE OVERHEAD SIGNAL HEADS ON MAST ARM 2 (INCLUDED AS PART OF PAY ITEM FOR ITEM NO. 2565-REVISE SIGNAL SYSTEM A).

F & I | 1-ONE WAY SIGNAL AND STRAIGHT MOUNT-OVERHEAD AT 23'
 (NEW 4-3, ON INPLACE CAPPED MID-MOUNT)
 | 1-4/c 14

4 INPLACE (MAINTAIN INPLACE)

PA100 POLE FOUNDATION
TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
5 FOOT MAST ARM EXTENSION
LUMINAIRE-250 W HPS
4-ONE WAY SIGNALS-OVERHEAD AT -5', 6', 17', 29'
STRAP-ON MID-MAST ARM MOUNT AT 6' (FOR 3-1)
2-ONE WAY SIGNALS-POLE MOUNTED 90/180 DEG
2-SETS CD PED SIGNALS-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)
R10-X12 SIGN PANEL-ADJACENT TO 3-2
TYPE D SIGN PANEL-OVERHEAD AT 32'
2-R6-1 SIGN PANELS-POLE MOUNTED 0/180 DEG
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD AT 6' (FOR 3-1)
3/4" RSC EXTENSION OVER HEAD 3-1 (FOR EVP)
EXTENDED INTO HH 10:
3" RSC
2-12/c 14
1-6/c 14
2-4/c 14
1-3/c 14
1-3/c 20
2-2/c 14
1-3/c 14 (SUM)
1-1/c 6 (GRN)

INPLACE (S & I) ONE WAY SIGNAL AND MOUNT--OVERHEAD AT 0' (DELEGATE TO BA)
ONE WAY EVP DETECTOR & LIGHT AT 10' (#6,1)

F & I 5-FOOT EXTENSION ON END OF MAST ARM
1--ONE WAY SIGNAL AND ANGLE MOUNT--OVERHEAD AT -5' (NEW 1-3)
STRAP--ON MID MAST ARM MOUNT AT 6' (FOR 1-1)
MAST ARM HUB AT 10' FOR EVP
ADJUST MAST ARM/POLE SO THAT ALL OVERHEAD SIGNAL HEADS ARE
AT LEAST 17 FEET ABOVE GROUND LINE TO BOTTOM OF BACKGROUND
SHIELD (CURRENTLY AT 16.5 FEET ABOVE GROUND LINE) (SEE
SPECIAL PROVISIONS).

⑥ PLACE TYPE PA100 POLE FOUNDATION
(MOUNT TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
(INPLACE) 4' FOOT MAST ARM EXTENSION
LUMINAIRE-250 W HPS
4-ONE WAY SIGNALS-OVERHEAD AT -5', 6', 17', 29'
STRAP-ON MID-MAST ARM MOUNT AT 6' (FOR 5-1)
2-ONE WAY SIGNALS-POLE MOUNTED 90/180 DEG
2-SETS CD PED SIGNALS-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)
R10-X12 SIGN PANEL-ADJACENT TO 5-2
TYPE D SIGN PANEL-OVERHEAD AT 32'
2-R6-1 SIGN PANELS-POLE MOUNTED 0/180 DEG
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD AT 6' (#2.5)
3/4" RSC EXTENSION OVER HEAD 5-1 FOR EVP
EXTENDED INTO HH 14:
3" RSC
2-12/c 14
1-6/c 14
2-4/c 14
1-3/c 14
1-3/c 20
2-2/c 14
1-3/c 14 (LUM)
1-1/c 6 (GRD)

(A) INPLACE (MAINTAIN INPLACE)

EQUIPMENT PAD FOUNDATION
CONTROLLER AND CABINET
SIGNAL SERVICE CABINET
CONTROLLER CABINET TO HH 1:
4" RSC
4-12/c 14
4-4/c 14
2-3/c 14
2-3/c 20
19-2/c 14
1-FO CABLE
CONTROLLER CABINET TO HH 19:
4" RSC
4-12/c 14
2-5/c 14
4-4/c 14
2-3/c 14
3-3/c 20
21-2/c 14
CONTROLLER CABINET TO HH 1:
3" RSC STUB OUT (EXTENDED)
1-12/c 14
2-6/c 14

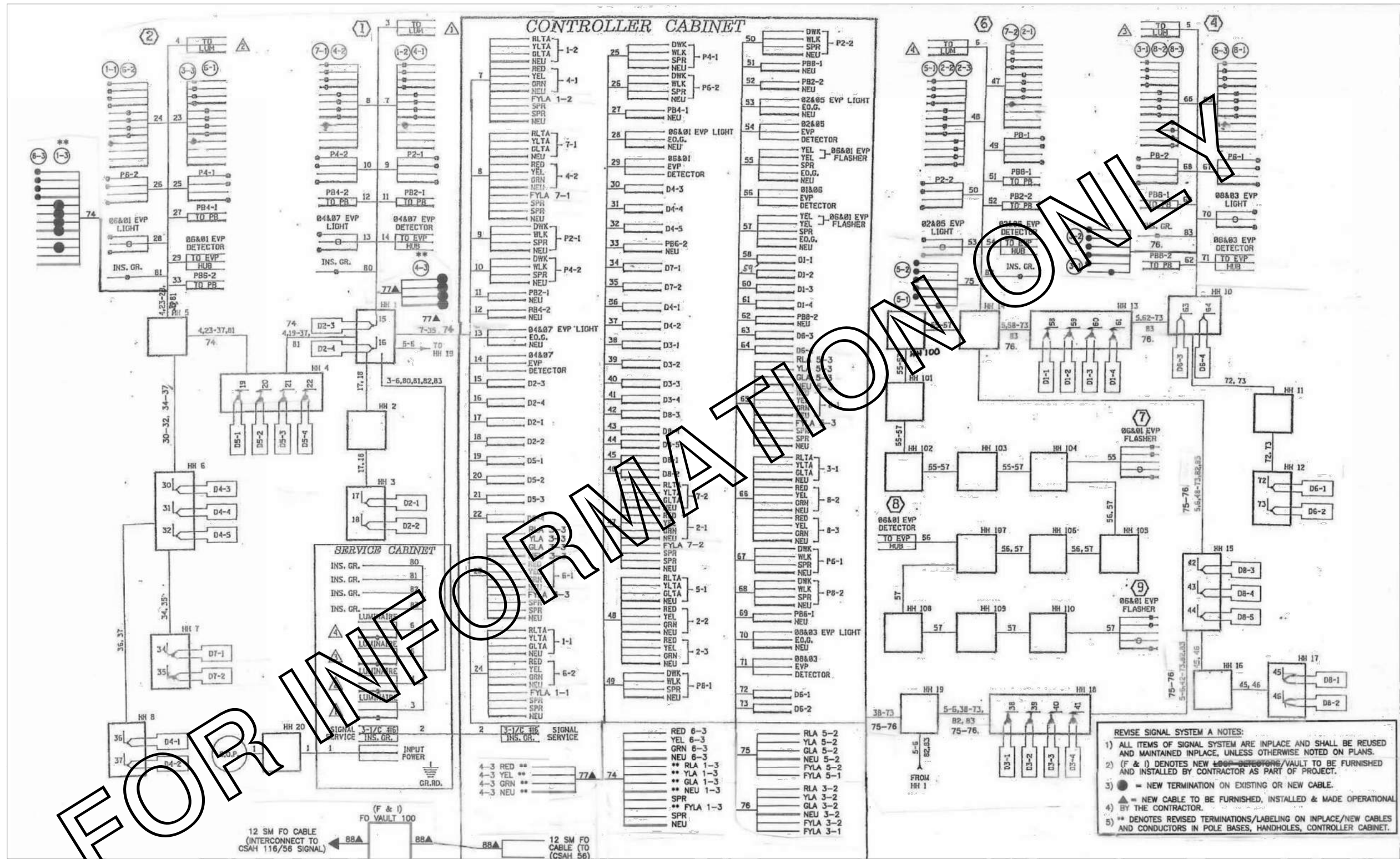
INPLACE (MAINTAIN INPLACE)

SERVICE CABINET TO CONTROLLER CABINET:
2" RSC
3-1/c 6
SERVICE CABINET TO HH 1:
2" RSC
4-3/c 14 (LUM)
SERVICE CABINET TO SOP:
2" RSC
3-1/c 2

F & I - 1-4/c 14

F & I CONTROLLER CABINET TO FO VAULT 100:
 (**) 2" CONDUIT (CORE INTO
 CONTROLLER CABINET FOUNDATION)
 (**) 1-12 SM FO CABLE

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DESIGNER: JMG					SIGNAL SHEET 9 OF 25					
CHECKED BY: JMG										
DESIGN TEAM	NO.	BY	DATE	REVISIONS						

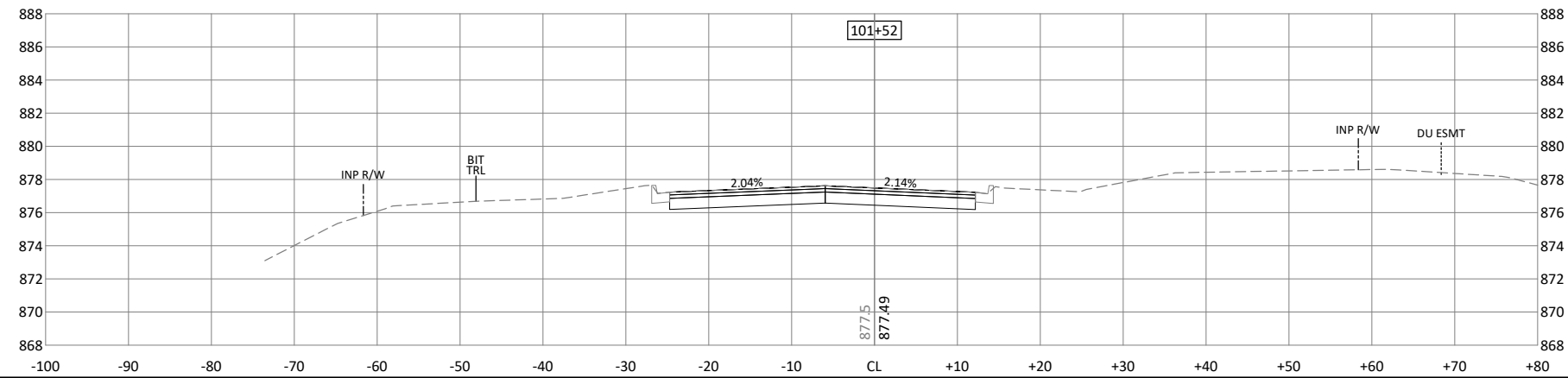
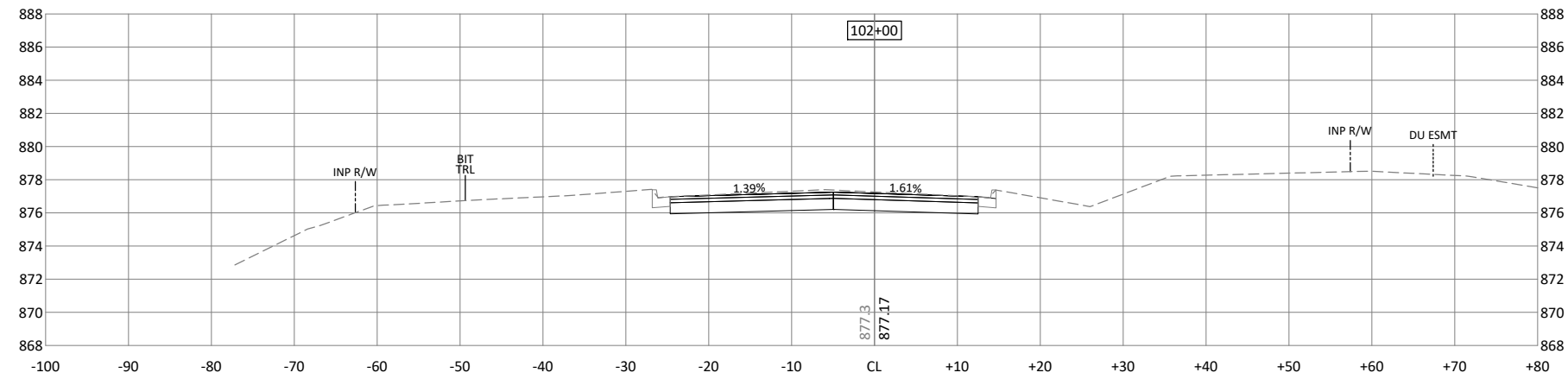
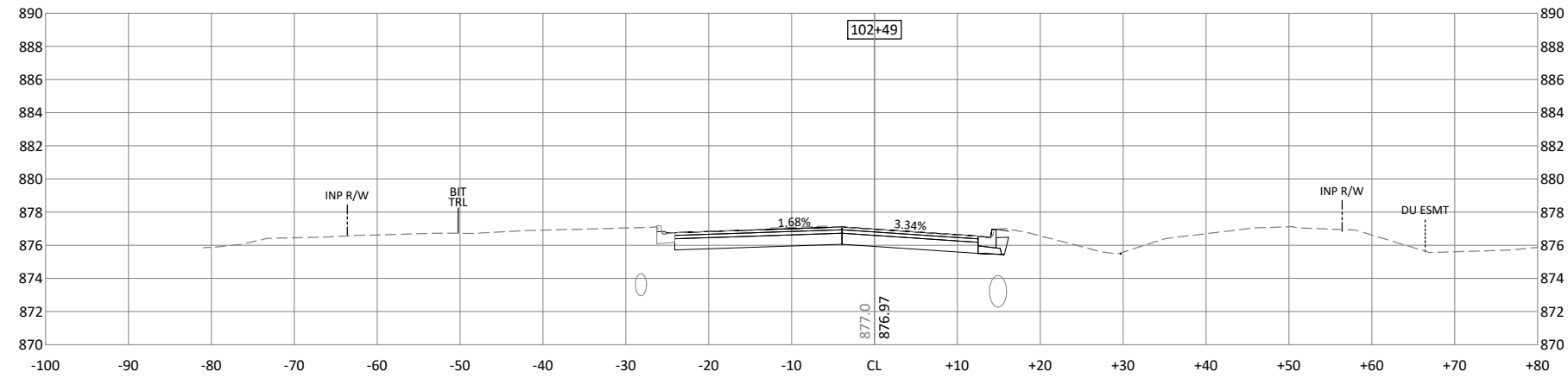
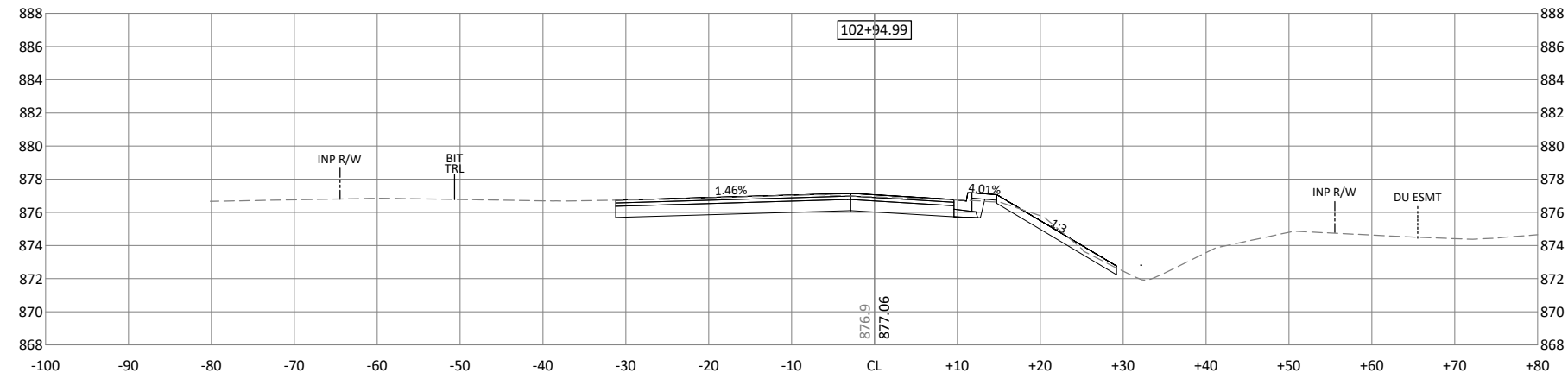


REVISE SIGNAL SYSTEM 'A' NOTES:

- 1) ALL ITEMS OF SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, UNLESS OTHERWISE NOTED ON PLANS.
- 2) (F & I) DENOTES NEW EQUIPMENT/VAULT TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF PROJECT.
- 3) ● = NEW TERMINATION ON EXISTING OR NEW CABLE.
- 4) ▲ = NEW CABLE TO BE FURNISHED, INSTALLED & MADE OPERATIONAL BY THE CONTRACTOR.
- 5) ** DENOTES REVISED TERMINATIONS/LABELING ON INPLACE/NEW CABLES AND CONDUCTORS IN POLE BASES, HANDHOLES, CONTROLLER CABINET.

S:\AE\A\Anoka\Common\signals\116-Sunwood\SIGREC082022.dwg 12/5/2022 12:32 PM jgray

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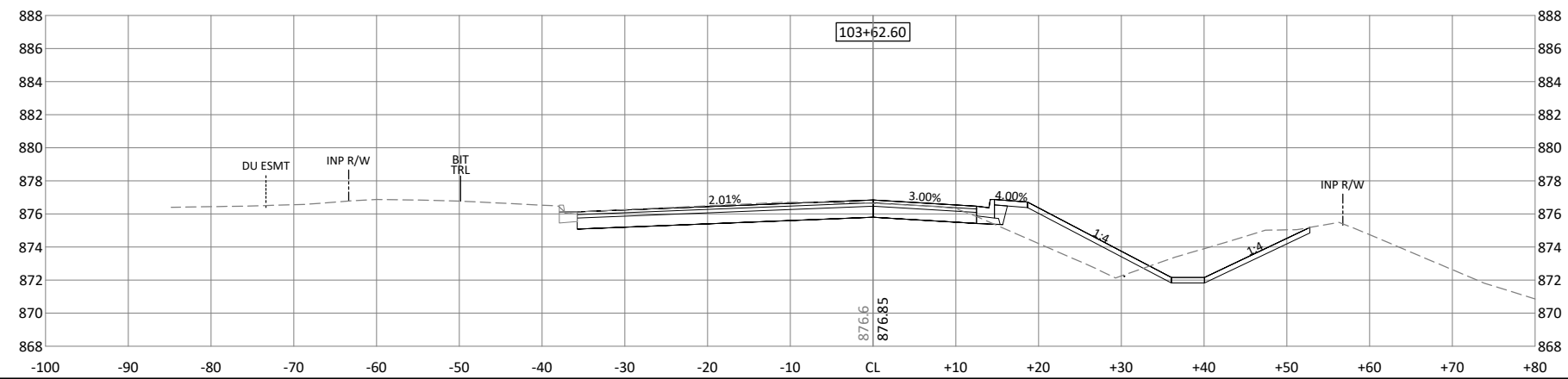
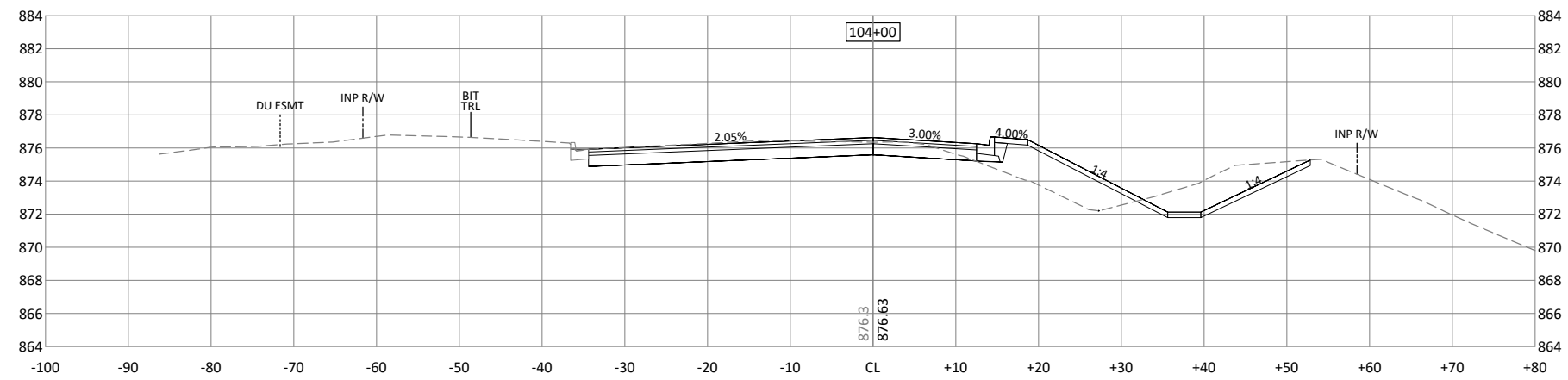
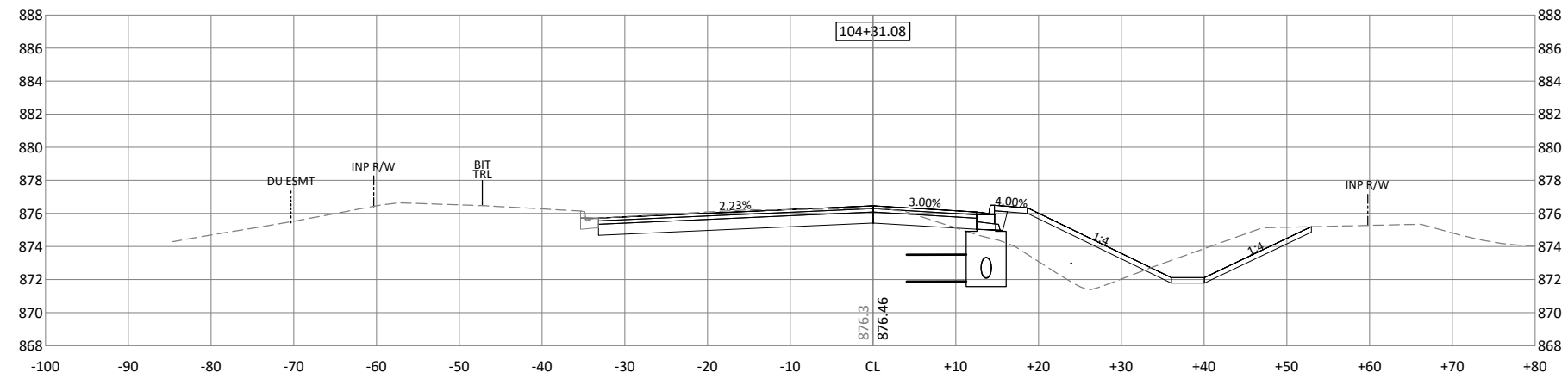
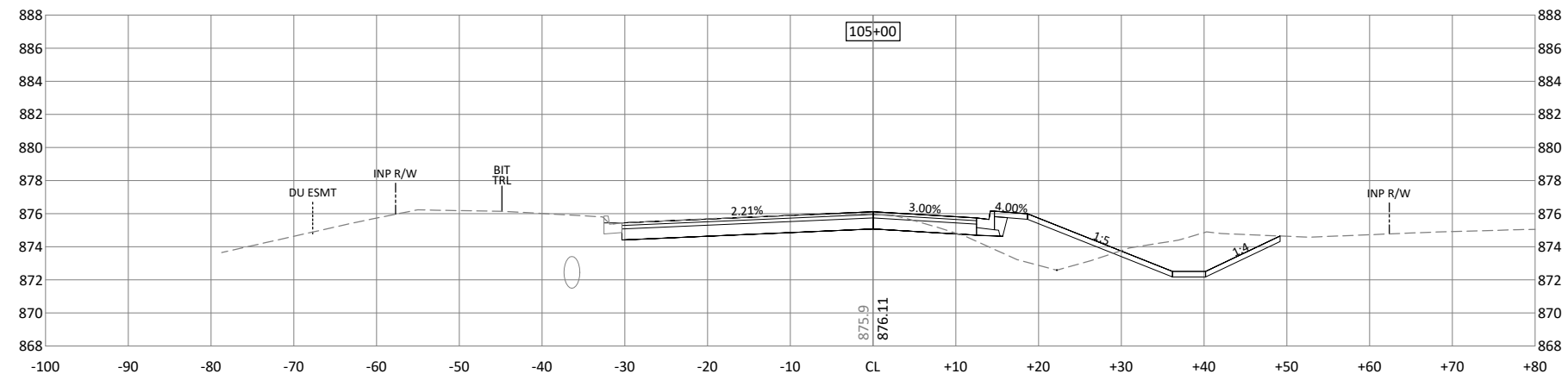


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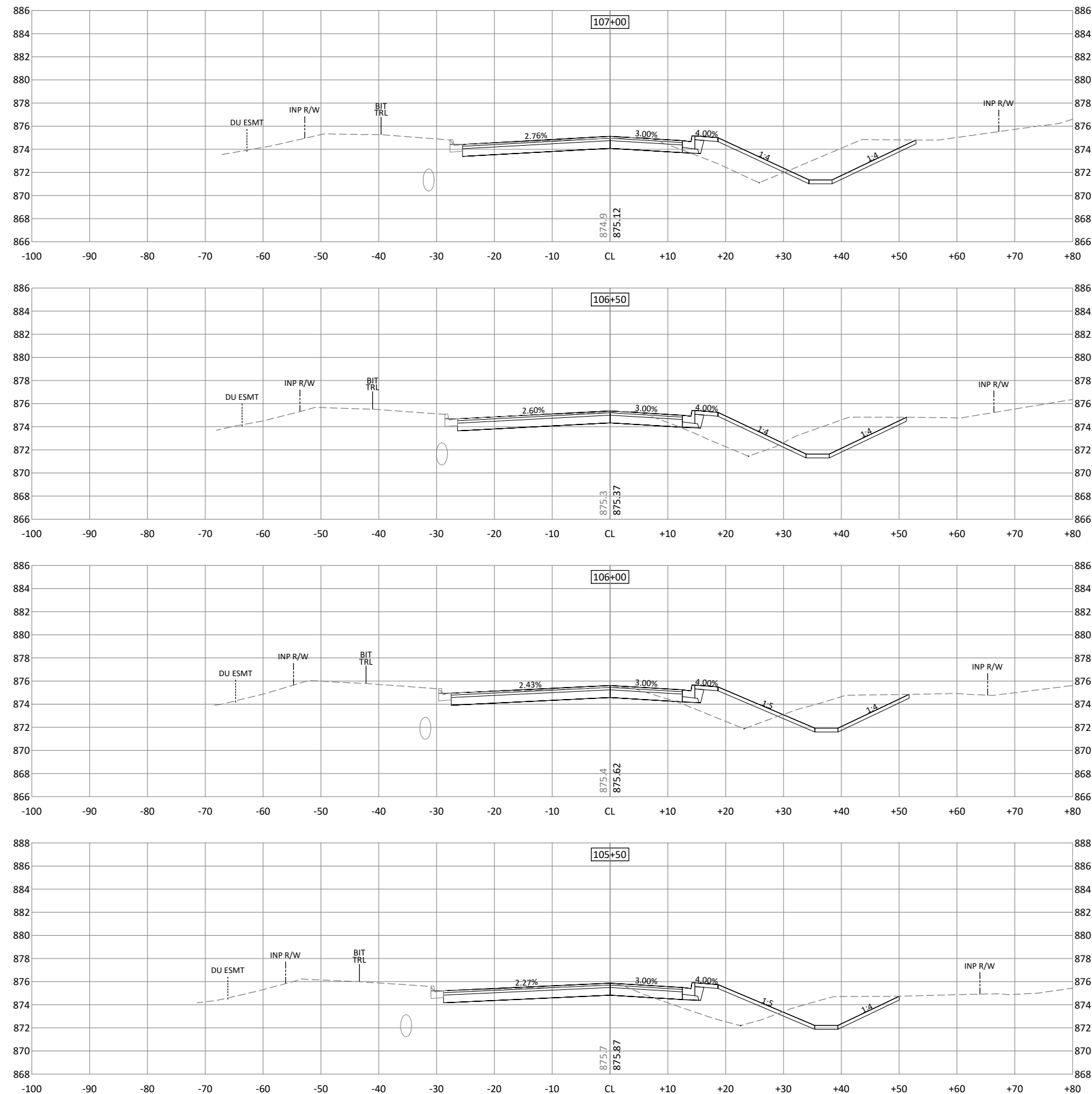


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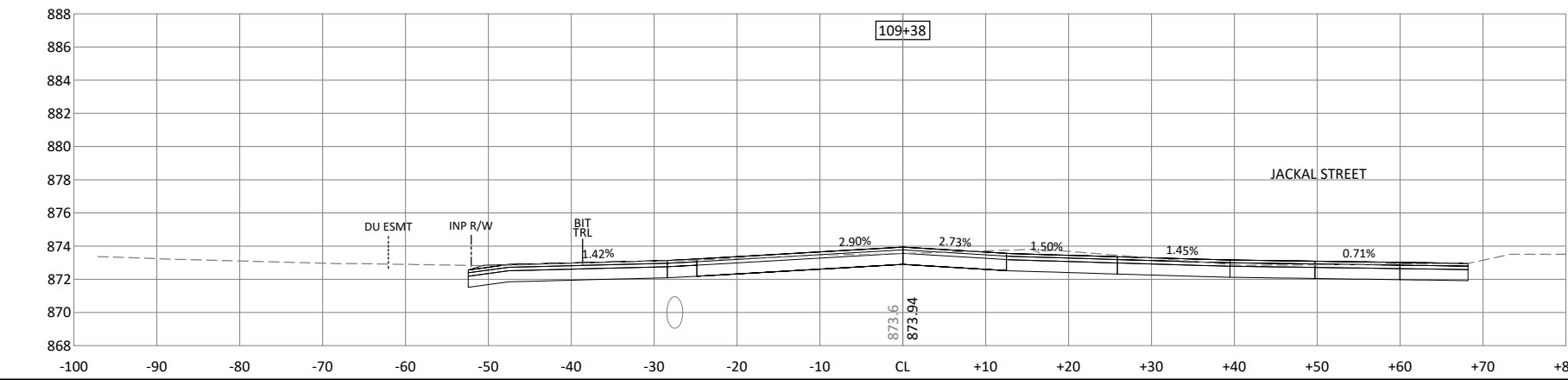
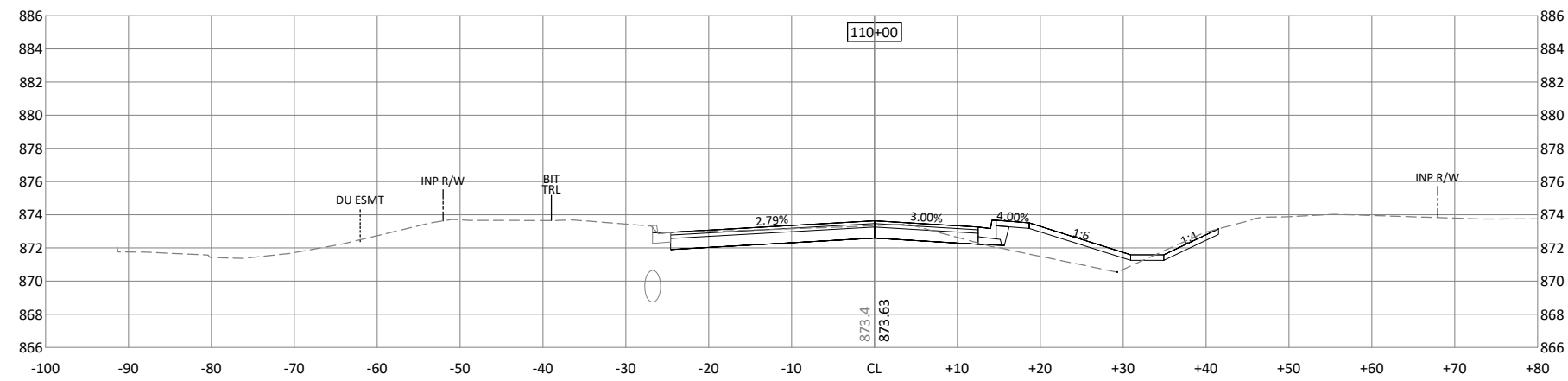
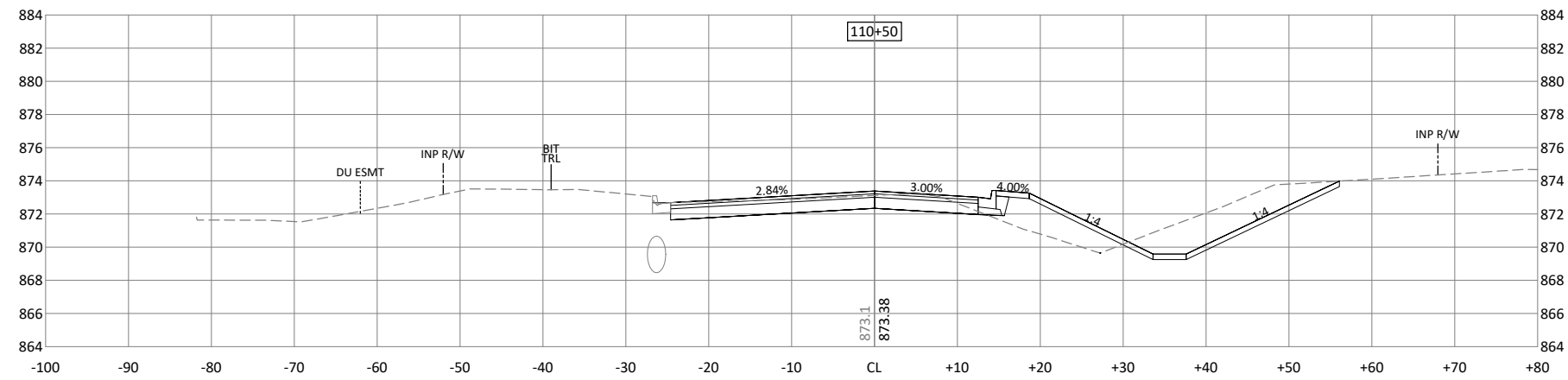
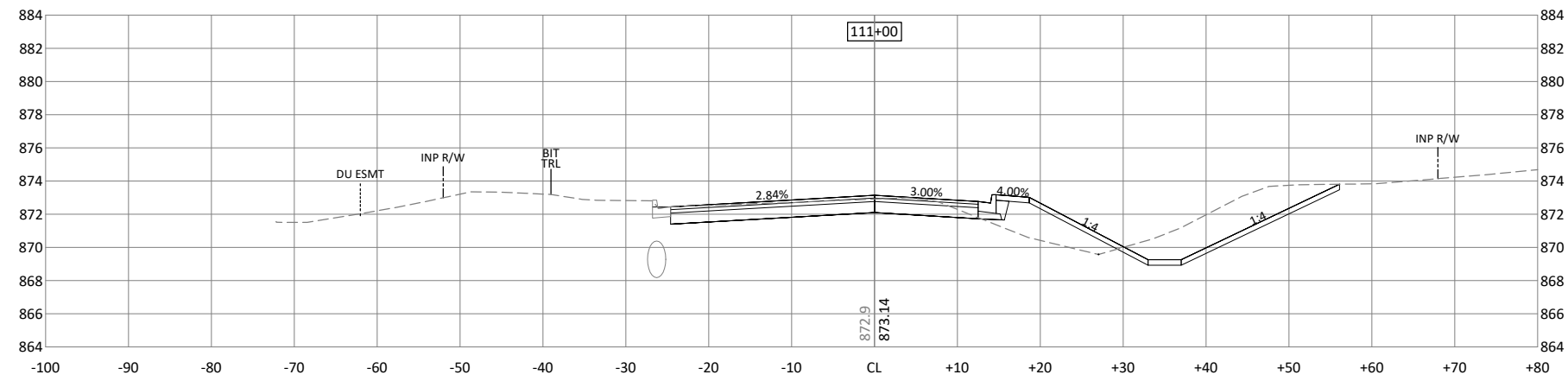


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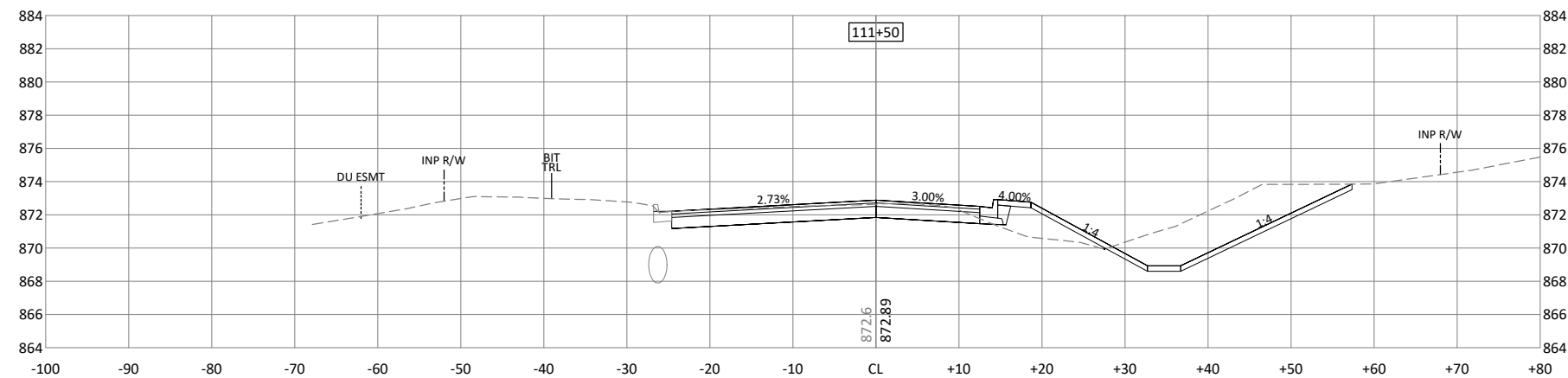
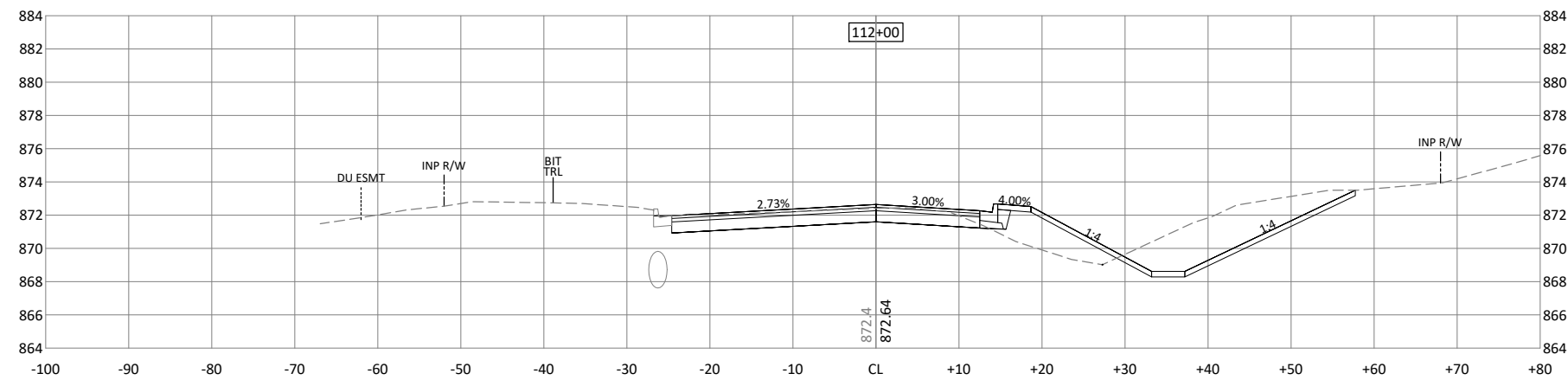
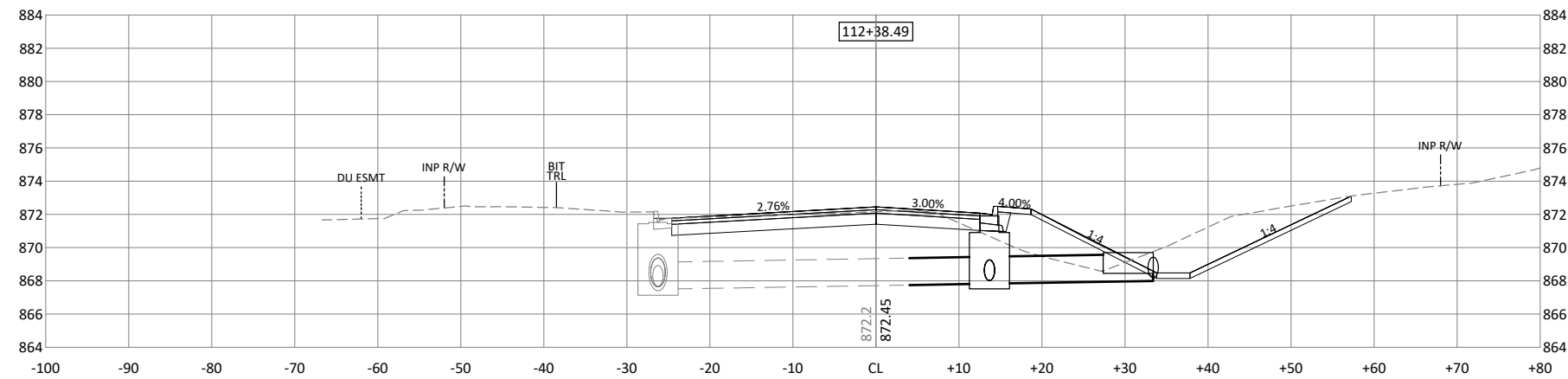
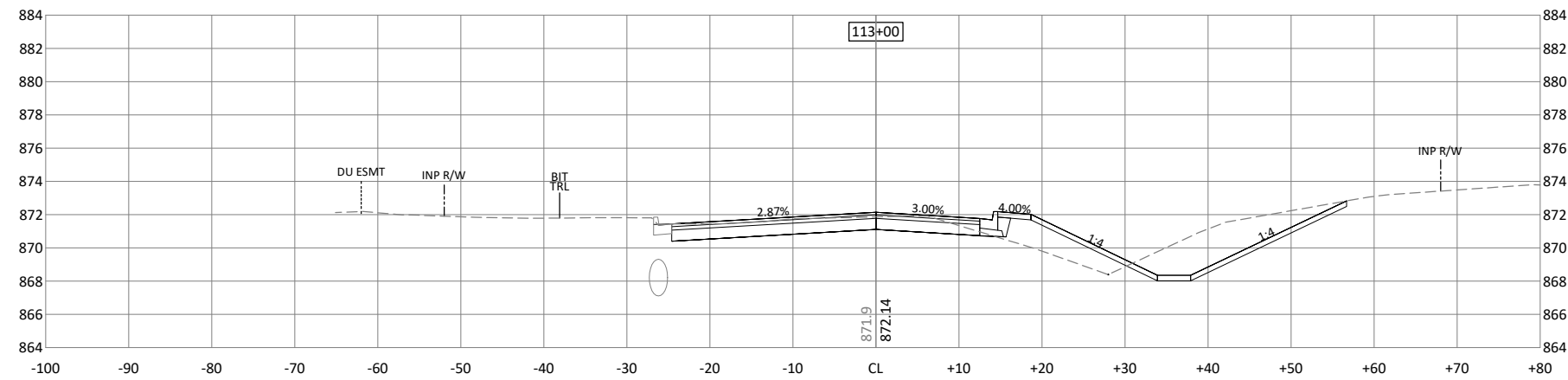


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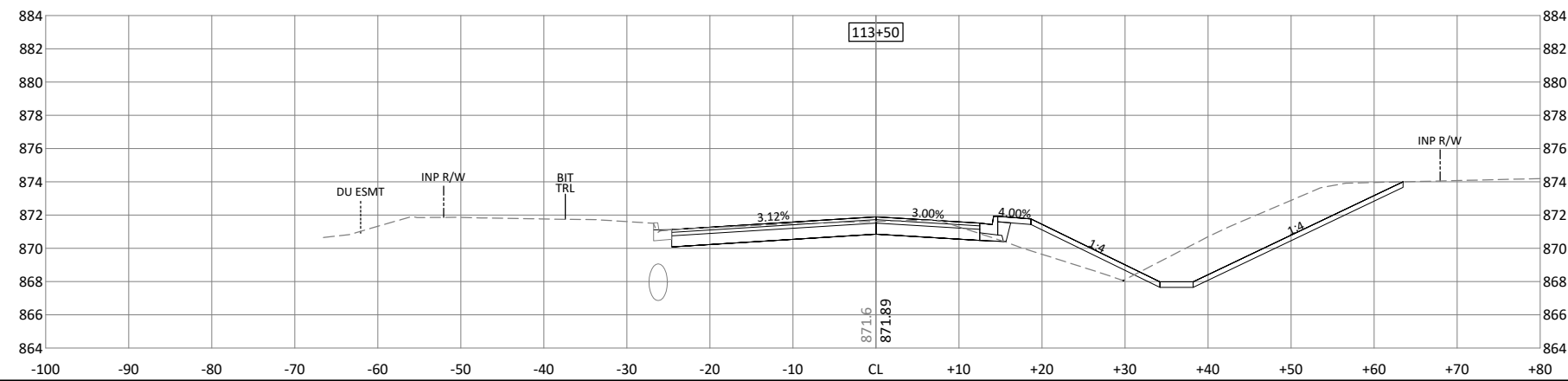
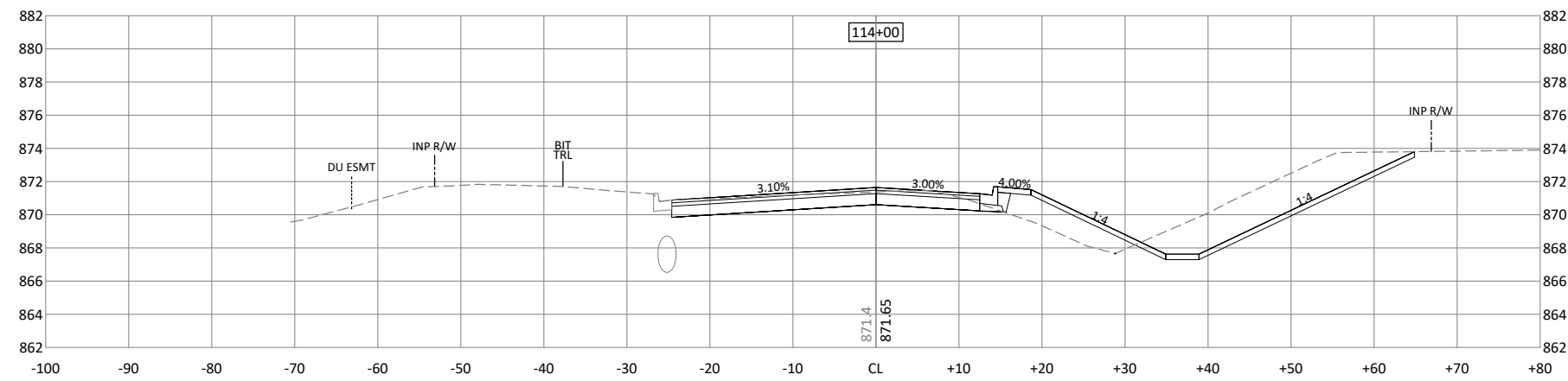
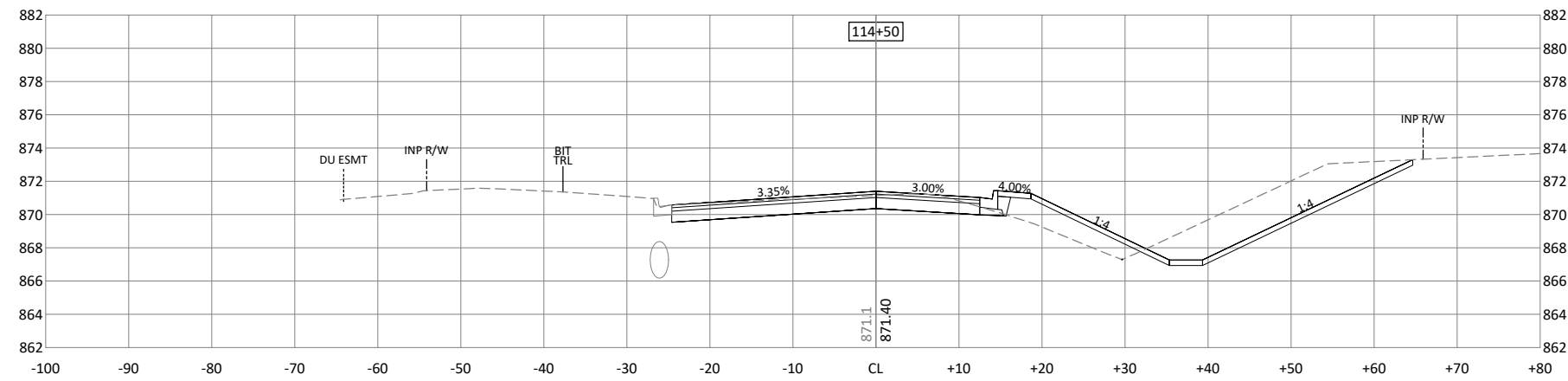
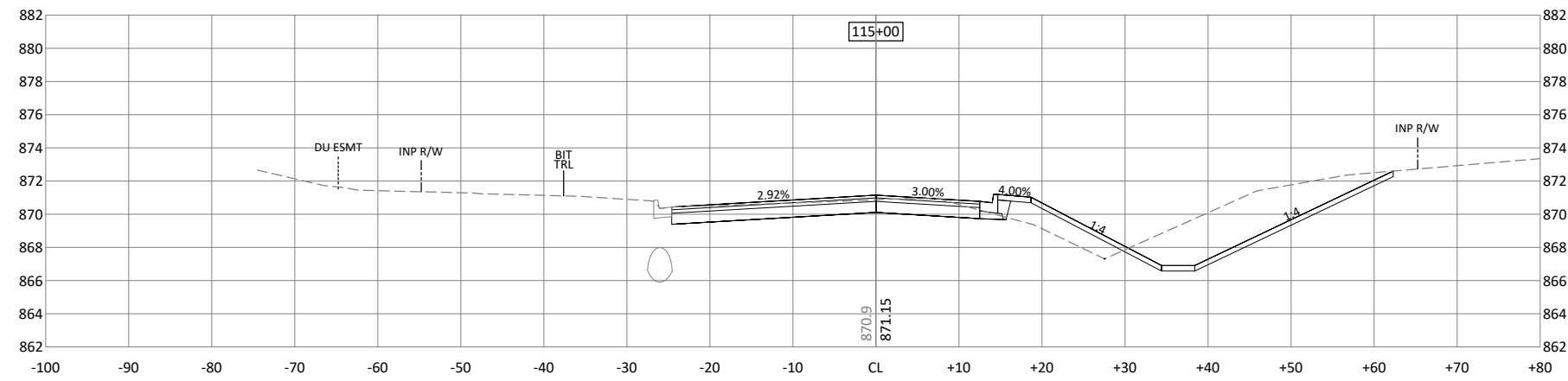


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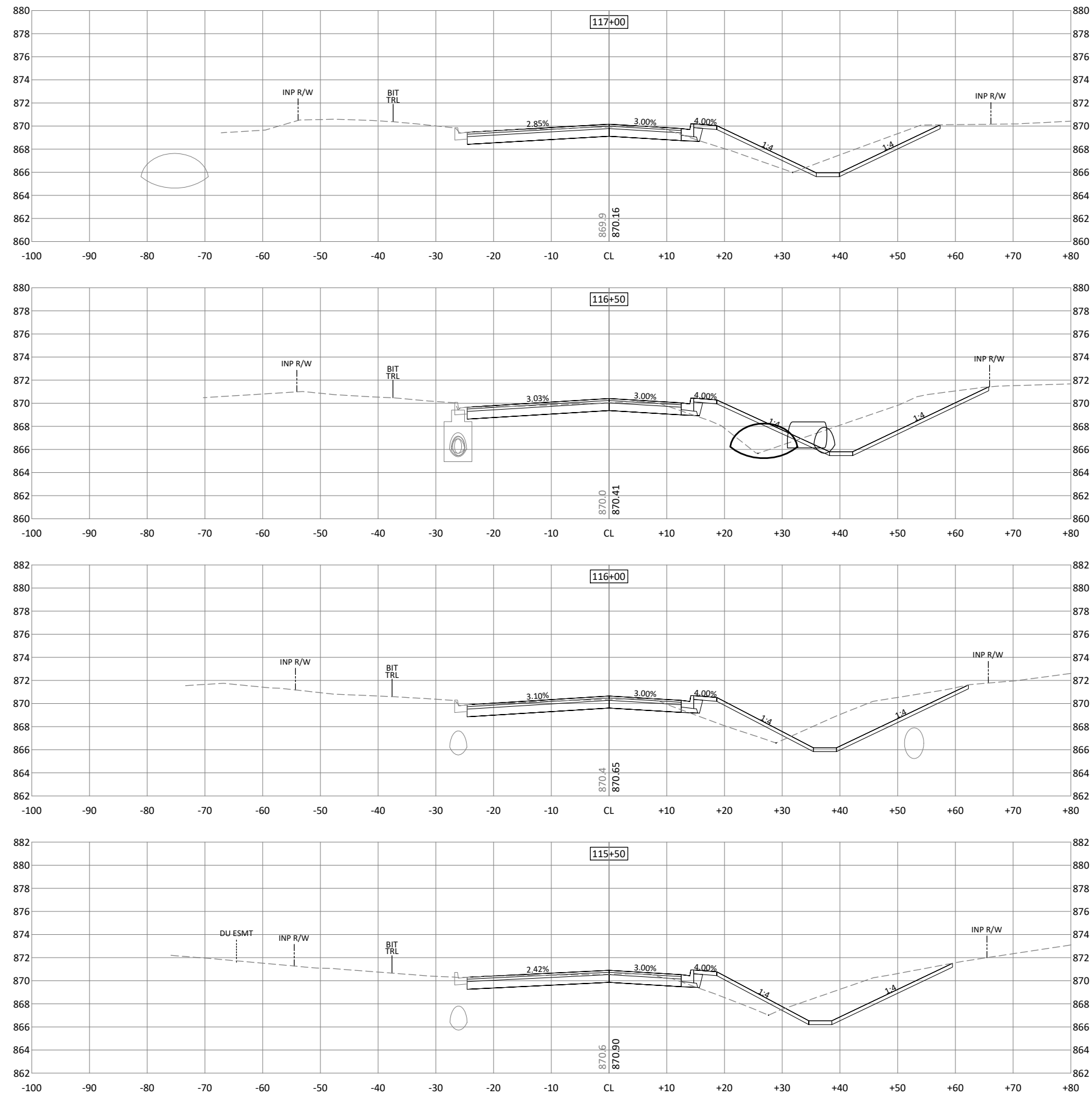


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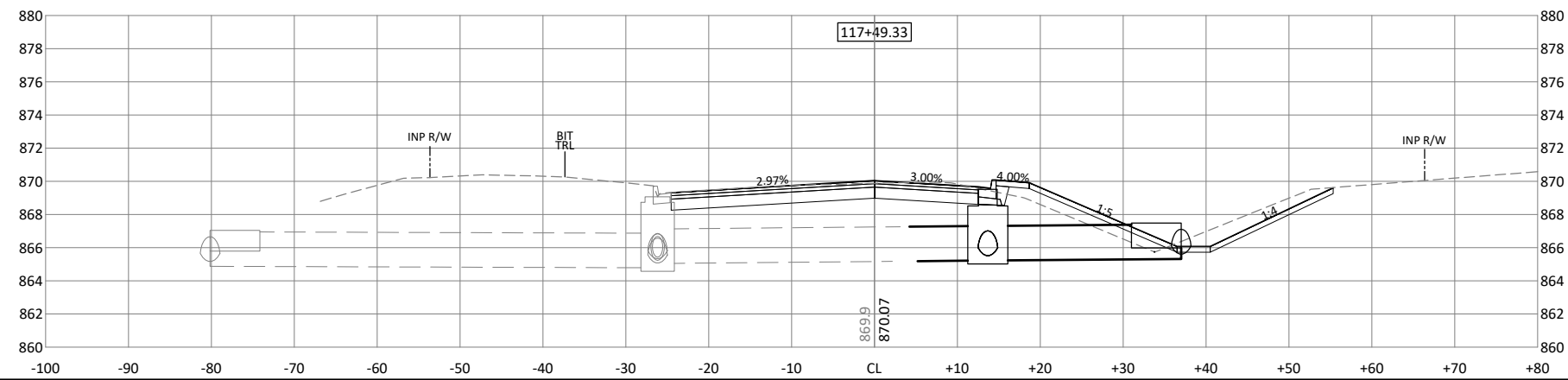
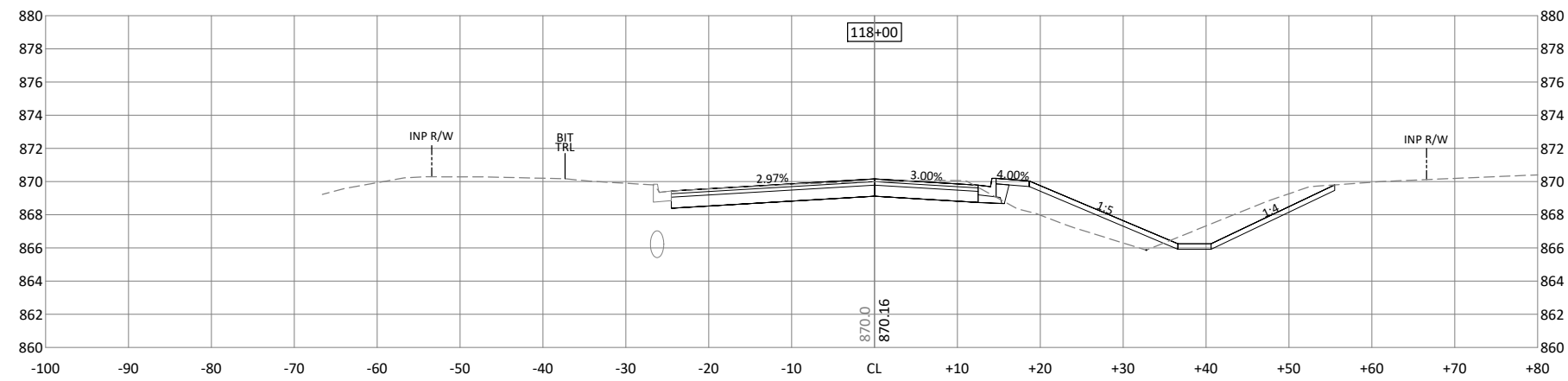
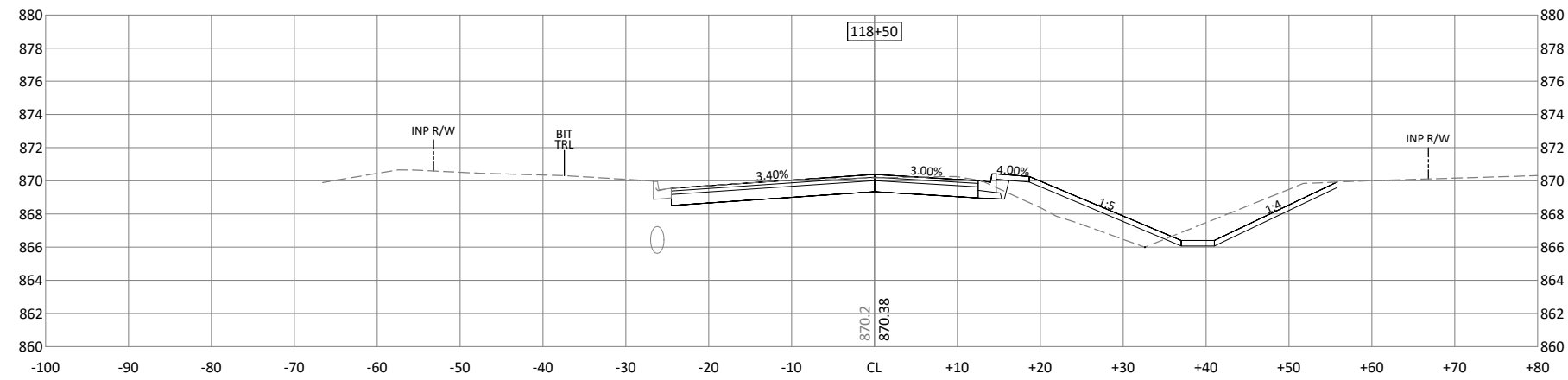
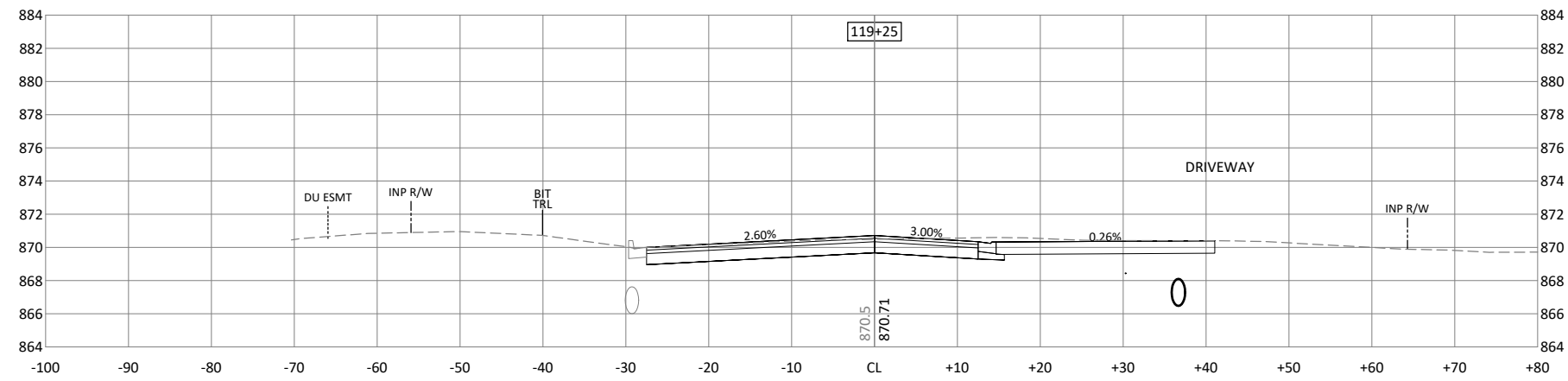


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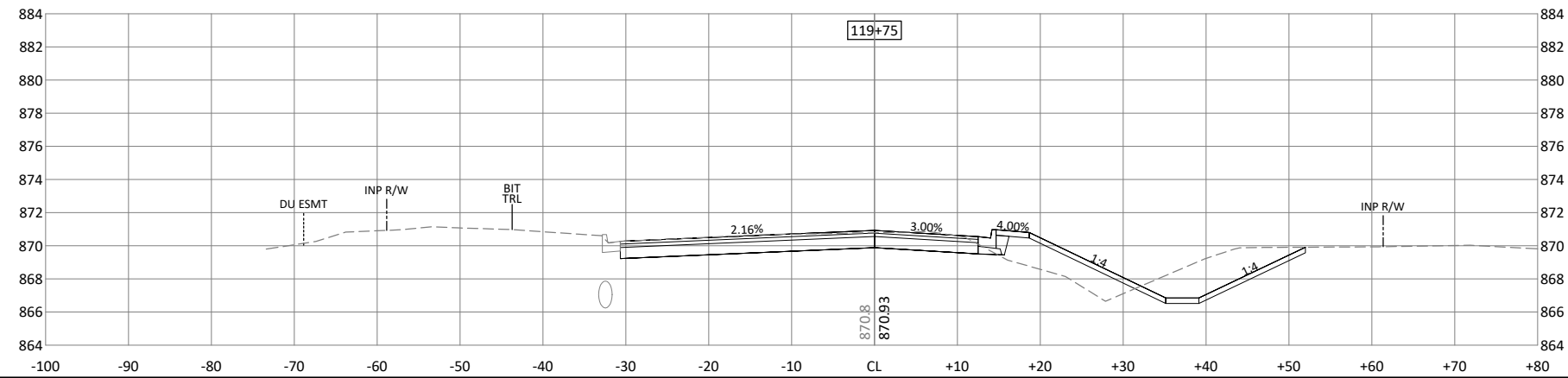
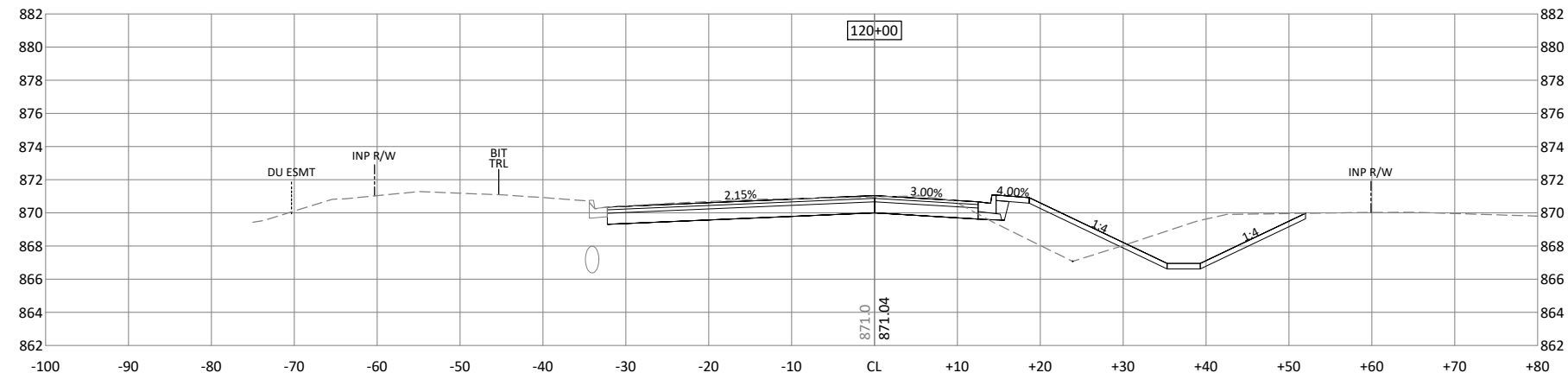
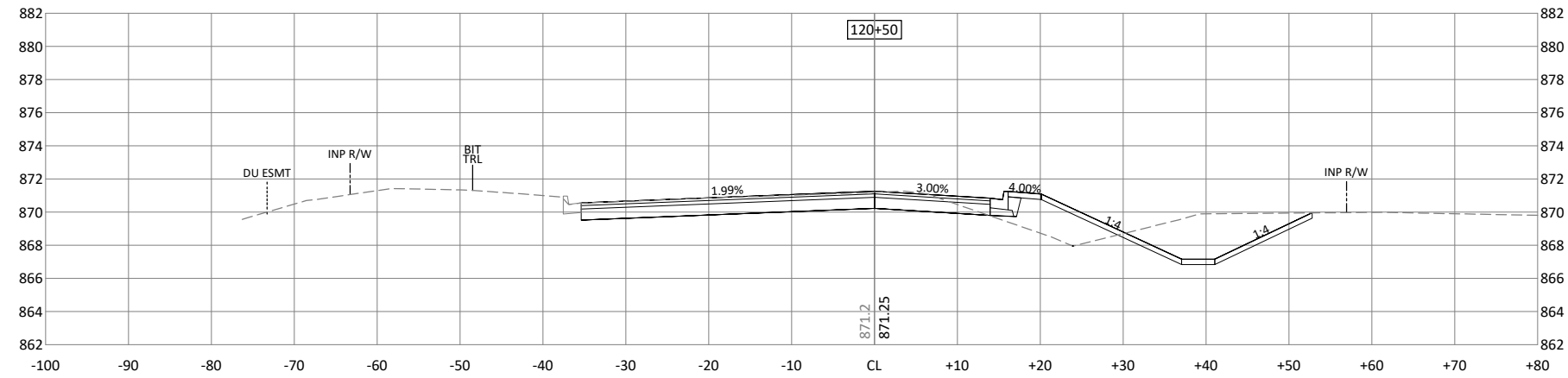
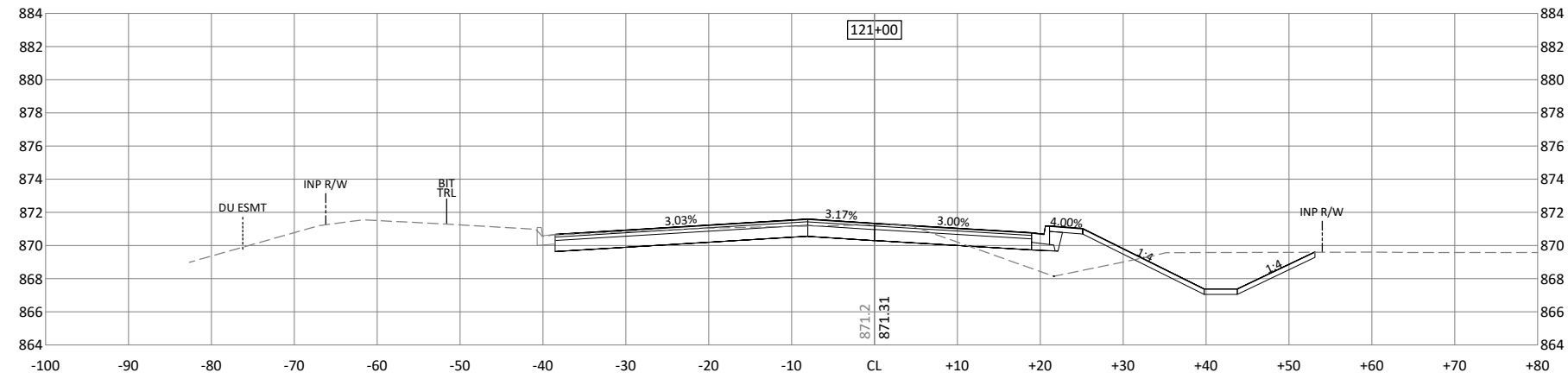


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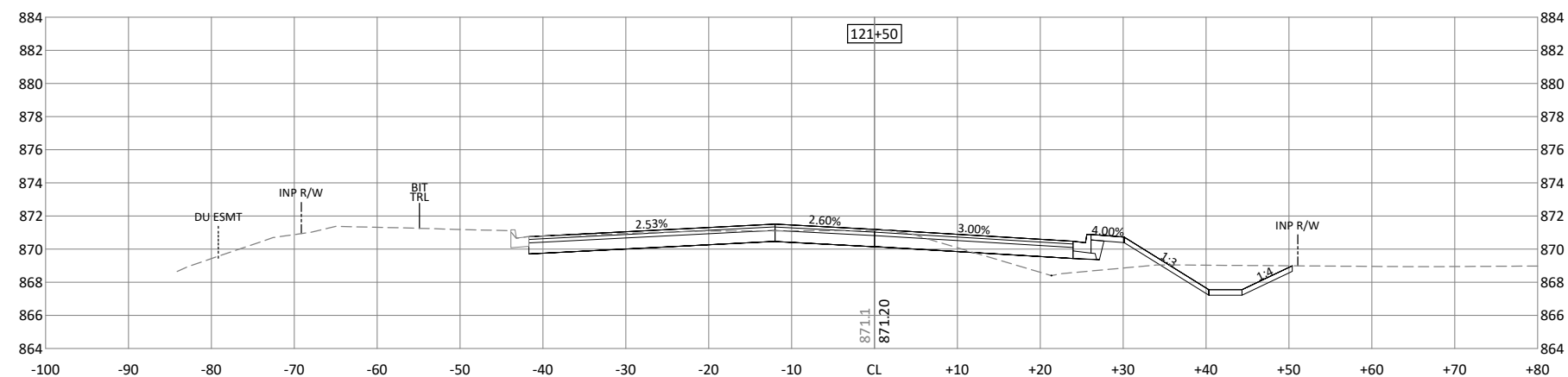
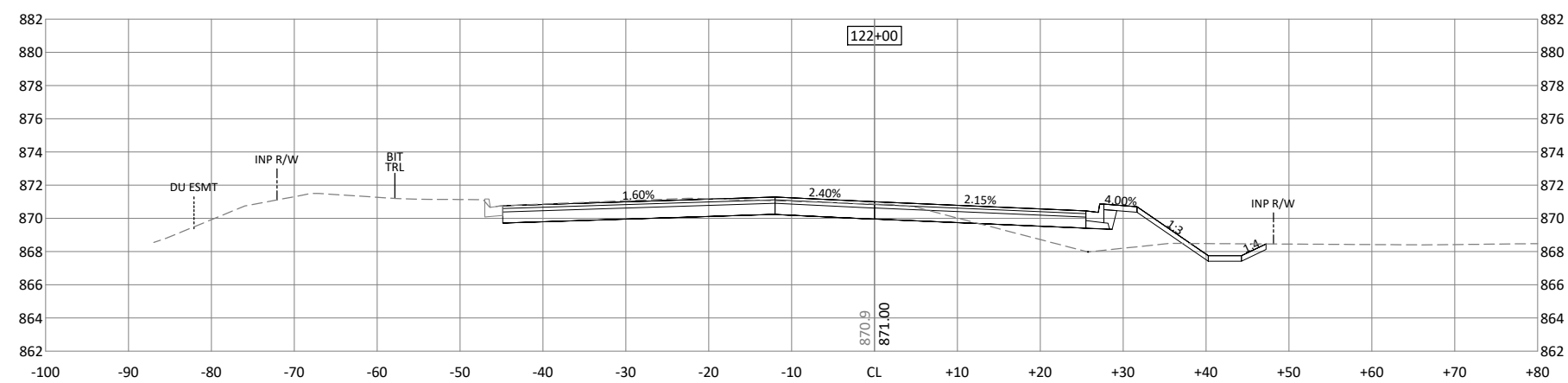
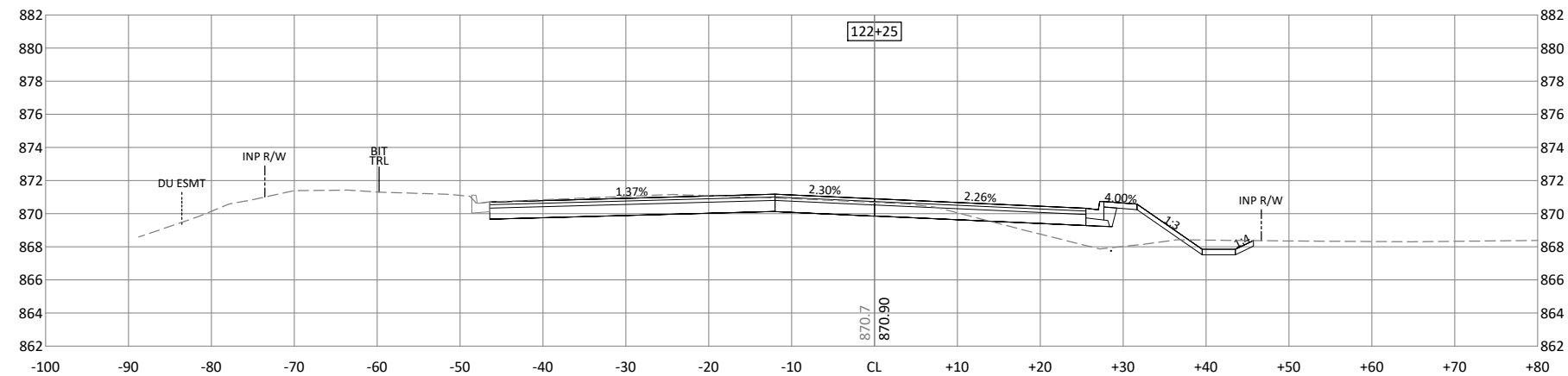
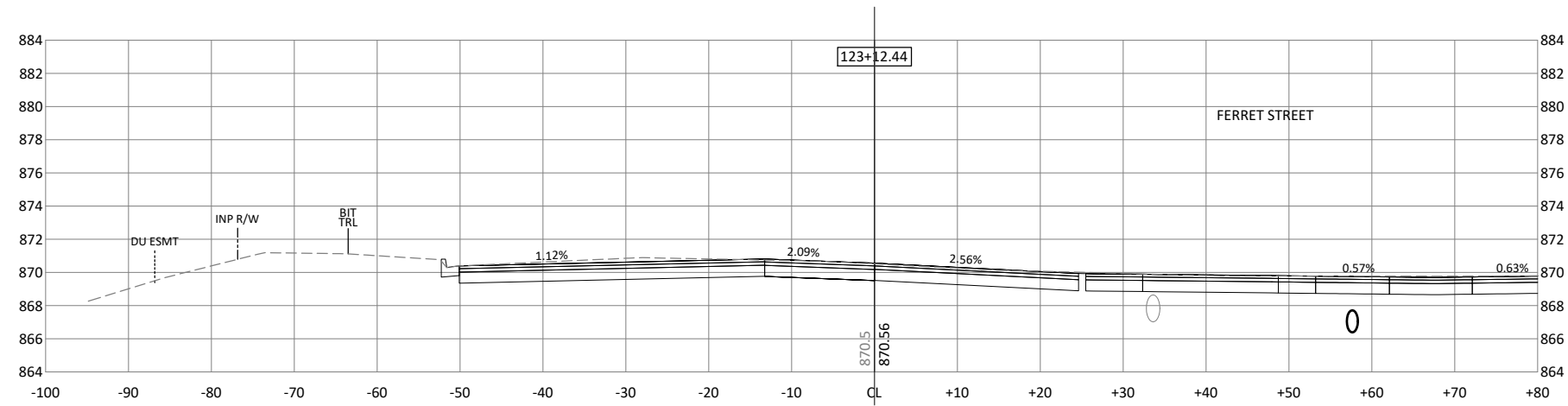


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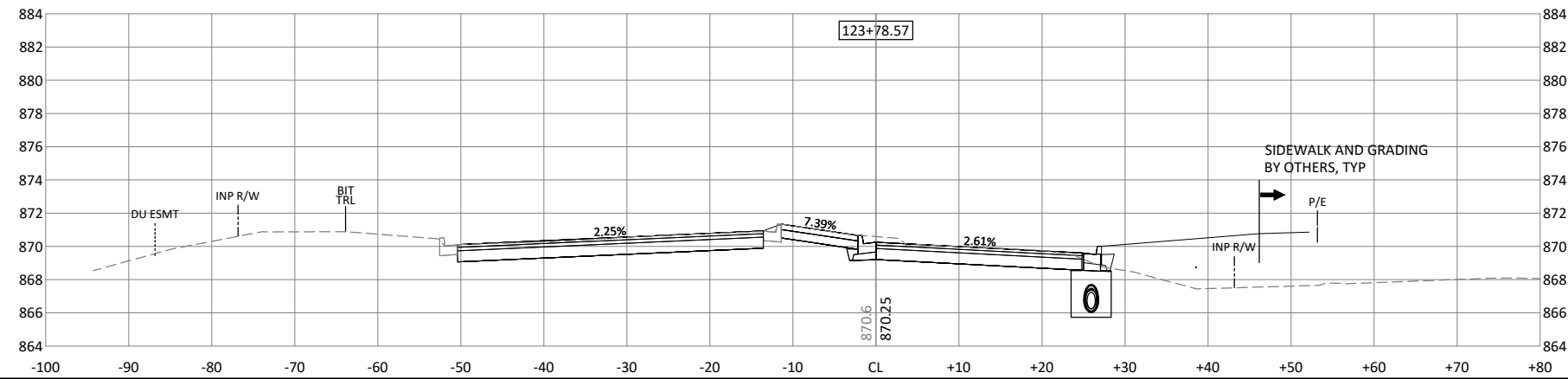
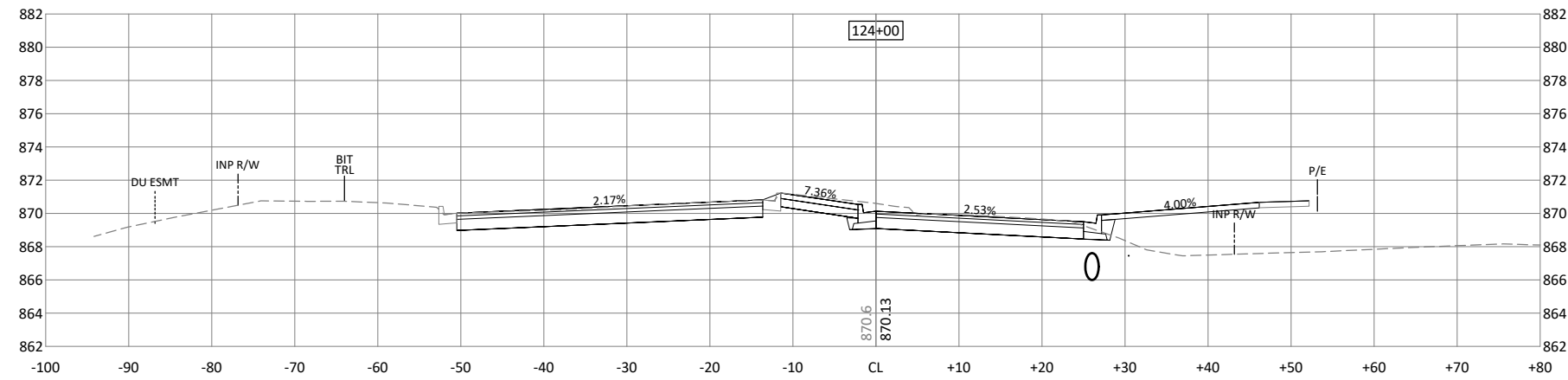
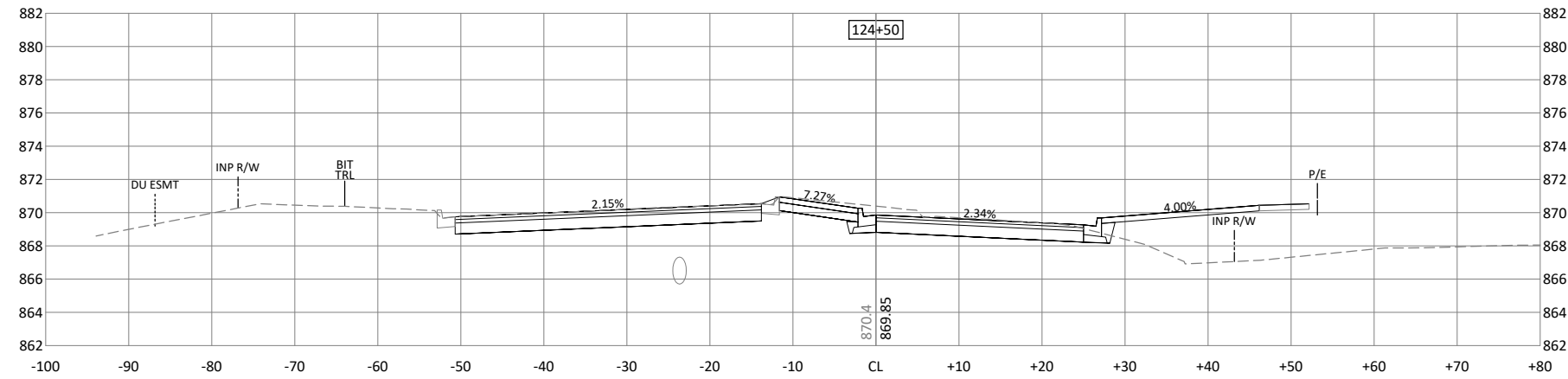
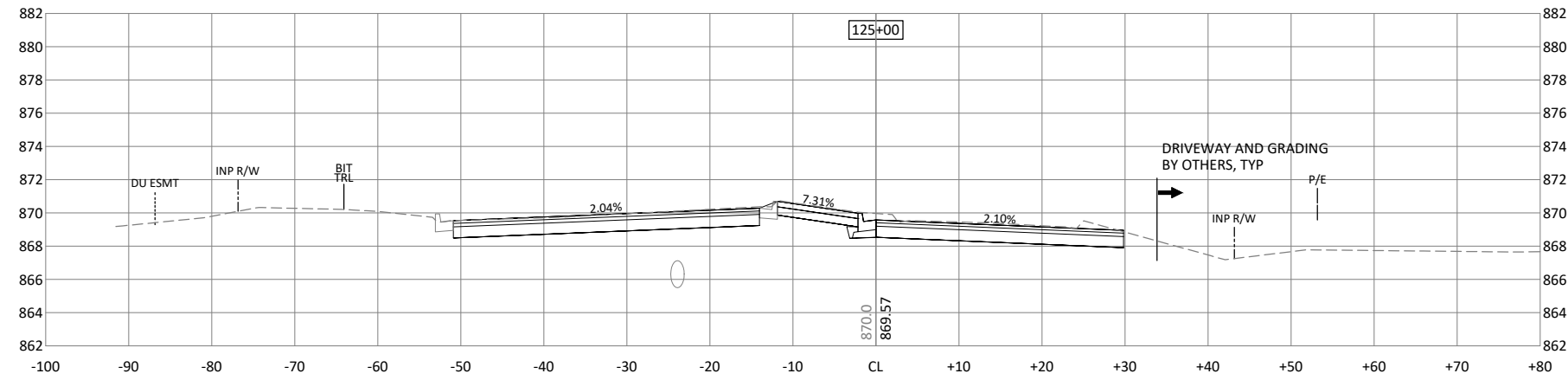


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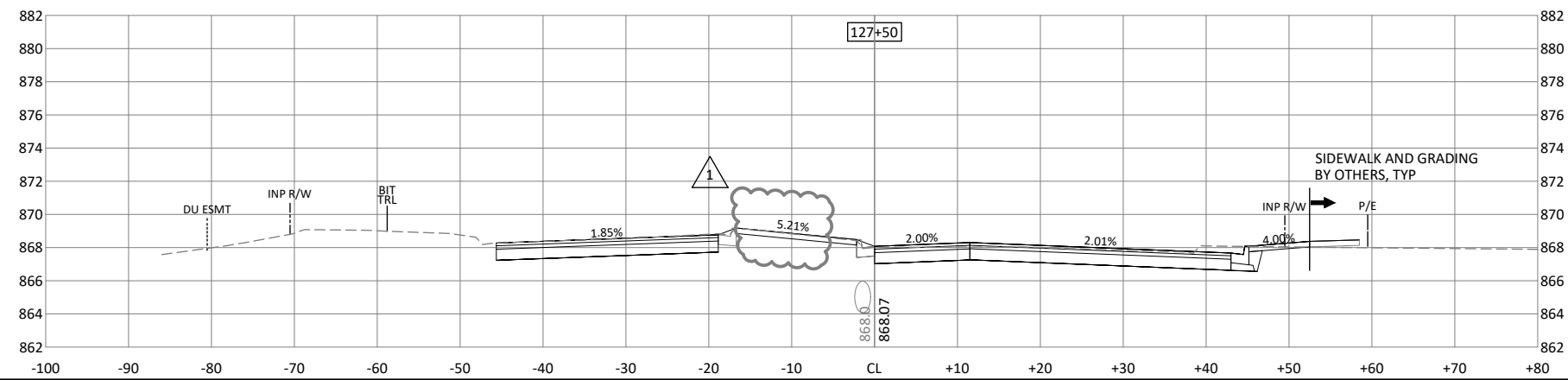
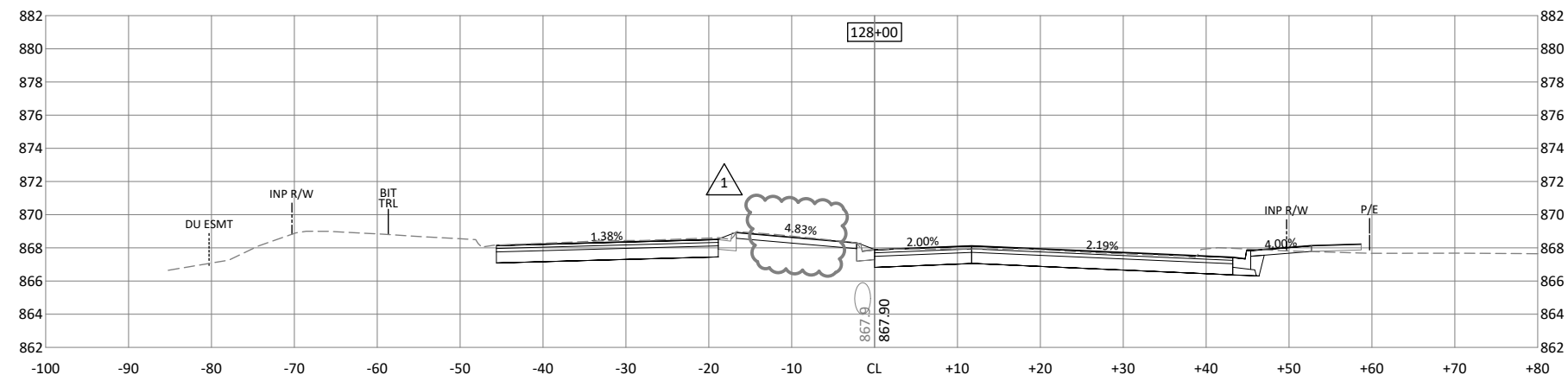
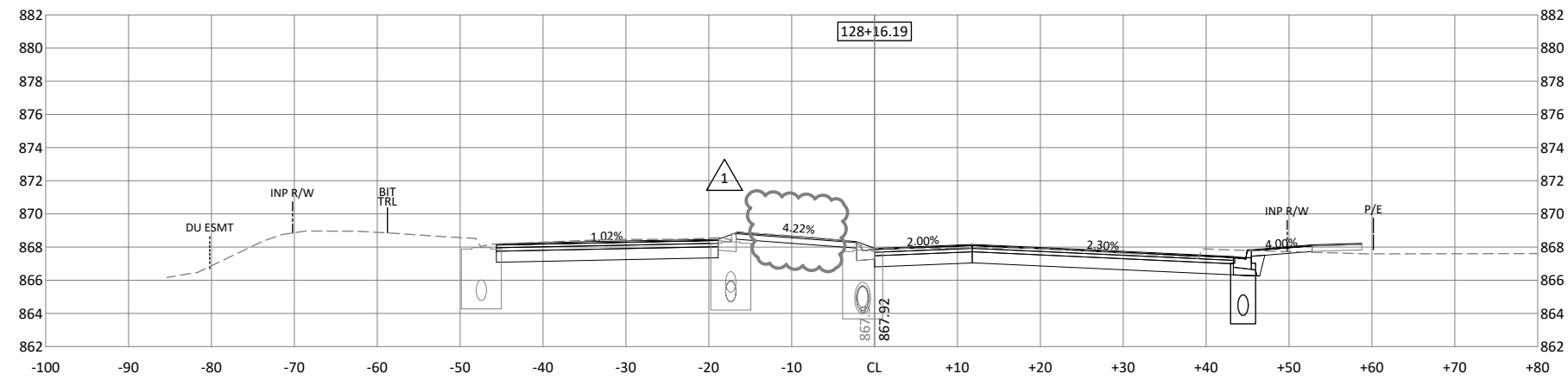
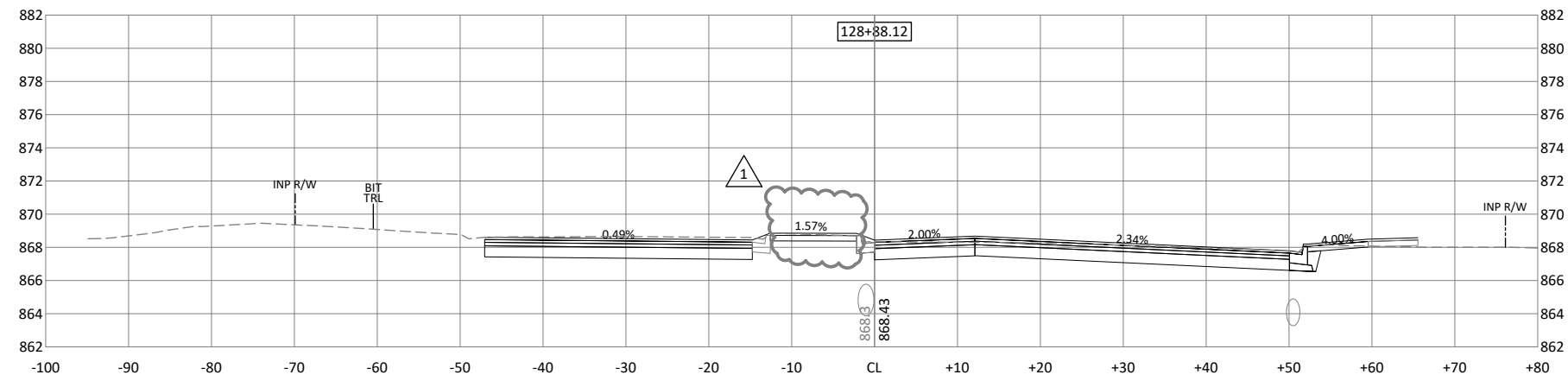


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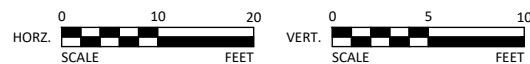
CITY OF RAMSEY, MINNESOTA
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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

ZACHARY F. INGL, P.E.
LIC. NO. 56344 DATE 1/12/2026



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