

UTILITY CONTACTS

✧ <u>NSIGHT TELSERVICES</u>	✧ <u>WE ENERGIES</u>	✧ <u>CHARTER COMMUNICATIONS</u>
COMMUNICATION RYAN HOOD 1133 MAIN ST. NIAGARA, WI 54151	GAS & ELECTRIC BRIAN CORNELIA 800 INDUSTRIAL PARK DRIVE IRON MOUNTAIN, MI 49801	COMMUNICATION SCOTT BEASTER 385 WOODWARD AVE. KINGSFORD, MI 49802
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✧ DENOTES UTILITIES THAT ARE DIGGERS HOTLINE MEMBERS



CONSULTANT CONTACT

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SPONSOR CONTACT

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DNR LIAISON

DEPARTMENT OF NATURAL RESOURCES
NORTH CENTRAL DISTRICT
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GENERAL NOTES

ELEVATIONS SHOWN ON THE PLAN ARE REFERENCED TO NAV 88.

WHEN THE QUANTITY OF BASE AGGREGATE OR ASPHALTIC SURFACE IS MEASURED FOR PAYMENT BY THE TON, THE DEPTH OR THICKNESS OF THE LAYER SHOWN ON THE PLANS IS APPROXIMATE AND THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER.

THE LOCATION OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS IS APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

NO TREES OR SHRUBS ARE TO BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

CURVE DATA IS BASED ON THE ARC DEFINITION.

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, ARE TO BE 4-INCH SALVAGED TOPSOILED/TOPSOILED, FERTILIZED, AND SODDED/SEEDED AND MULCHED. FINISHED SODDED SURFACE SHALL BE 1-INCH BELOW THE TOP OF ADJACENT CONCRETE.

BEARINGS SHOWN ON THE PLANS ARE GRID BEARINGS TO THE NEAREST SECOND.

THE LOCATION OF ALL DRIVEWAYS WILL BE DETERMINED BY THE ENGINEER.

A VERTICAL SAWCUT SHALL BE MADE THROUGH EXISTING DRIVEWAYS AND PAVEMENTS AT REMOVAL LIMITS.

EXCAVATION BELOW SUBGRADE (EBS) IS NOT USED TO BALANCE YARDAGE AND IS NOT SHOWN ON THE CROSS SECTIONS BUT IS MEASURED AND PAID FOR AS COMMON EXCAVATION.

SILT FENCE IS TO BE PLACED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER, AND IN PLACE PRIOR TO REMOVALS.

UTILITY REFERENCE LINES ON THE CROSS SECTIONS ARE FOR HORIZONTAL REFERENCE ONLY.

EROSION CONTROL FEATURES AS SHOWN IN THE PLANS ARE AT SUGGESTED LOCATIONS, EXACT LOCATIONS WILL BE DETERMINED BY THE E.C.I.P AND APPROVED BY THE ENGINEER IN THE FIELD.

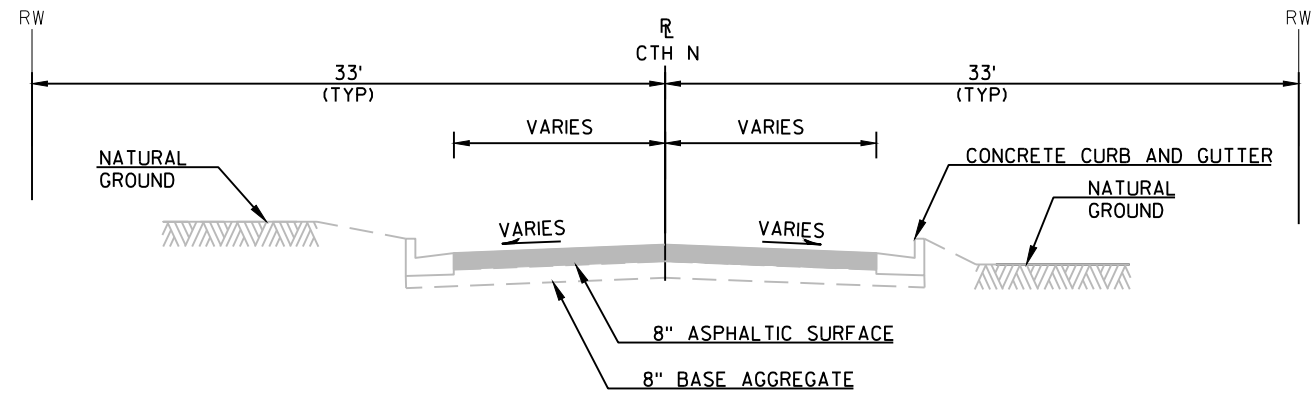
IN PULVERIZE AND RELAY SECTIONS, 2" BASE AGGREGATE DENSE 1 ¼ - INCH LAYER SHALL BE PLACED PRIOR TO PULVERIZING OPERATION AND MIXED WITH EXISTING MATERIAL.

RUNOFF COEFFICIENT TABLE

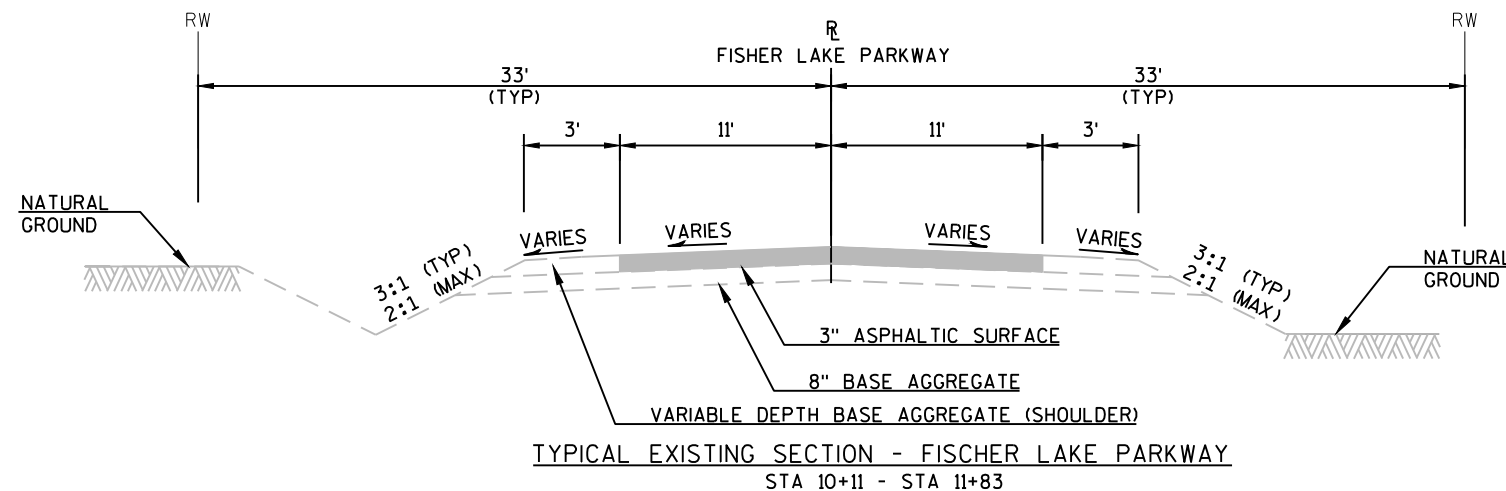
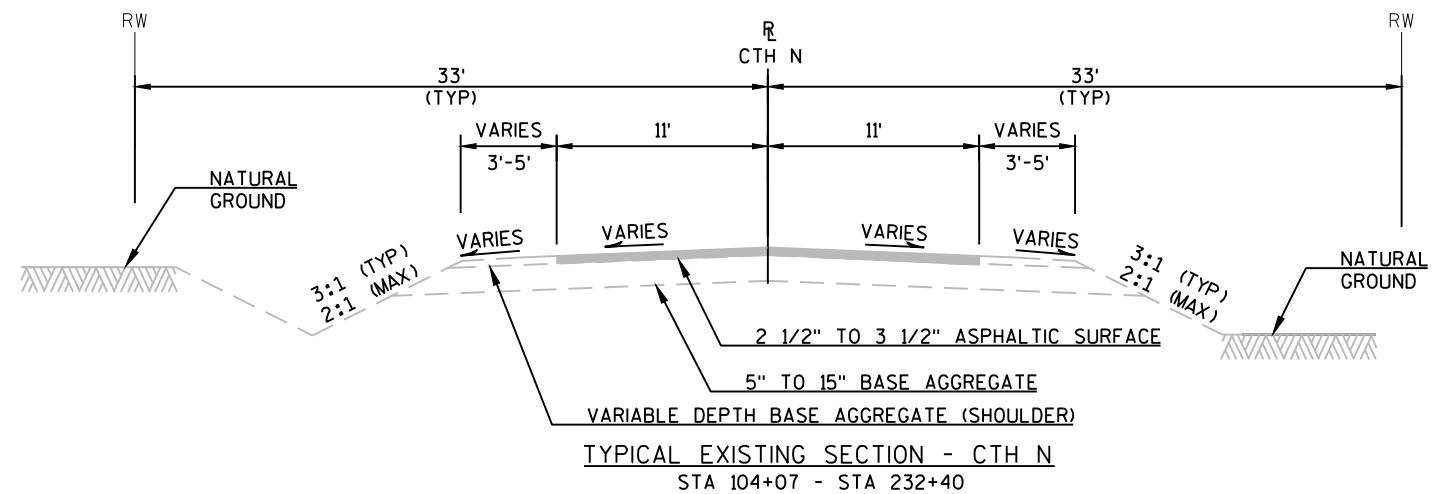
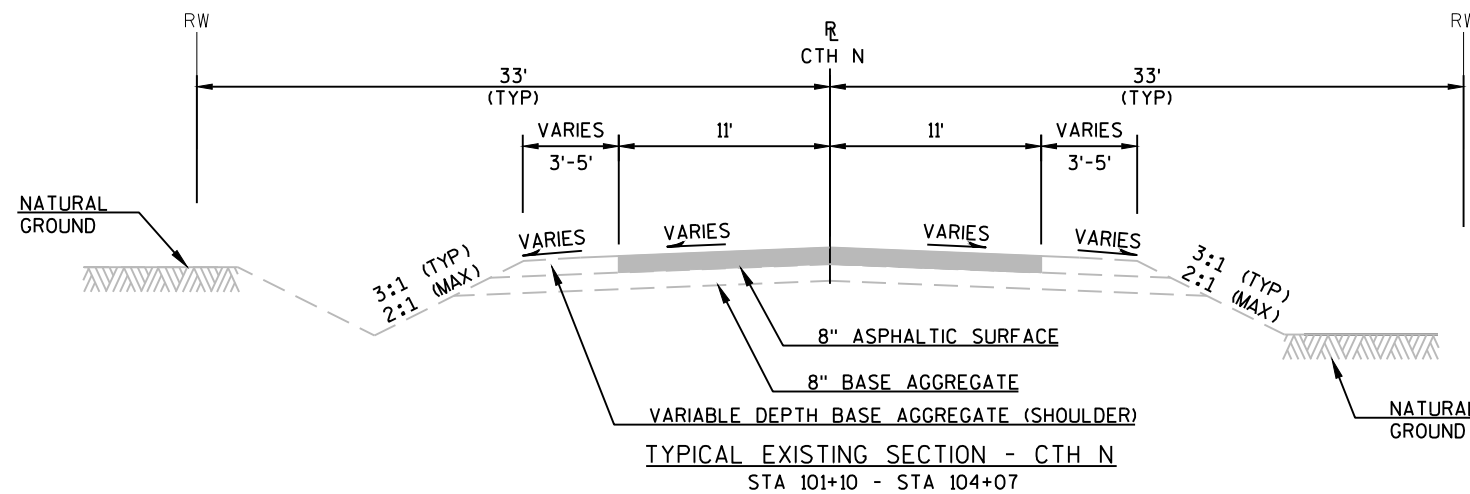
	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
LAND USE:	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER
ROW CROPS	.08 .22	.16 .30	.22 .38	.12 .26	.20 .34	.27 .44	.15 .30	.24 .37	.33 .50	.19 .34	.28 .41	.38 .56
MEDIAN STRIP-TURF	.19 .24	.20 .26	.24 .30	.19 .25	.22 .28	.26 .33	.20 .26	.23 .30	.30 .37	.20 .27	.25 .32	.30 .40
SIDE SLOPE-TURF			.25 .32			.27 .34			.28 .36			.30 .38
PAVEMENT:												
ASPHALT	.70 - .95											
CONCRETE	.80 - .95											
BRICK	.70 - .80											
DRIVES, WALKS	.75 - .85											
ROOFS	.75 - .95											
GRAVEL ROADS, SHOULDERS	.40 - .60											

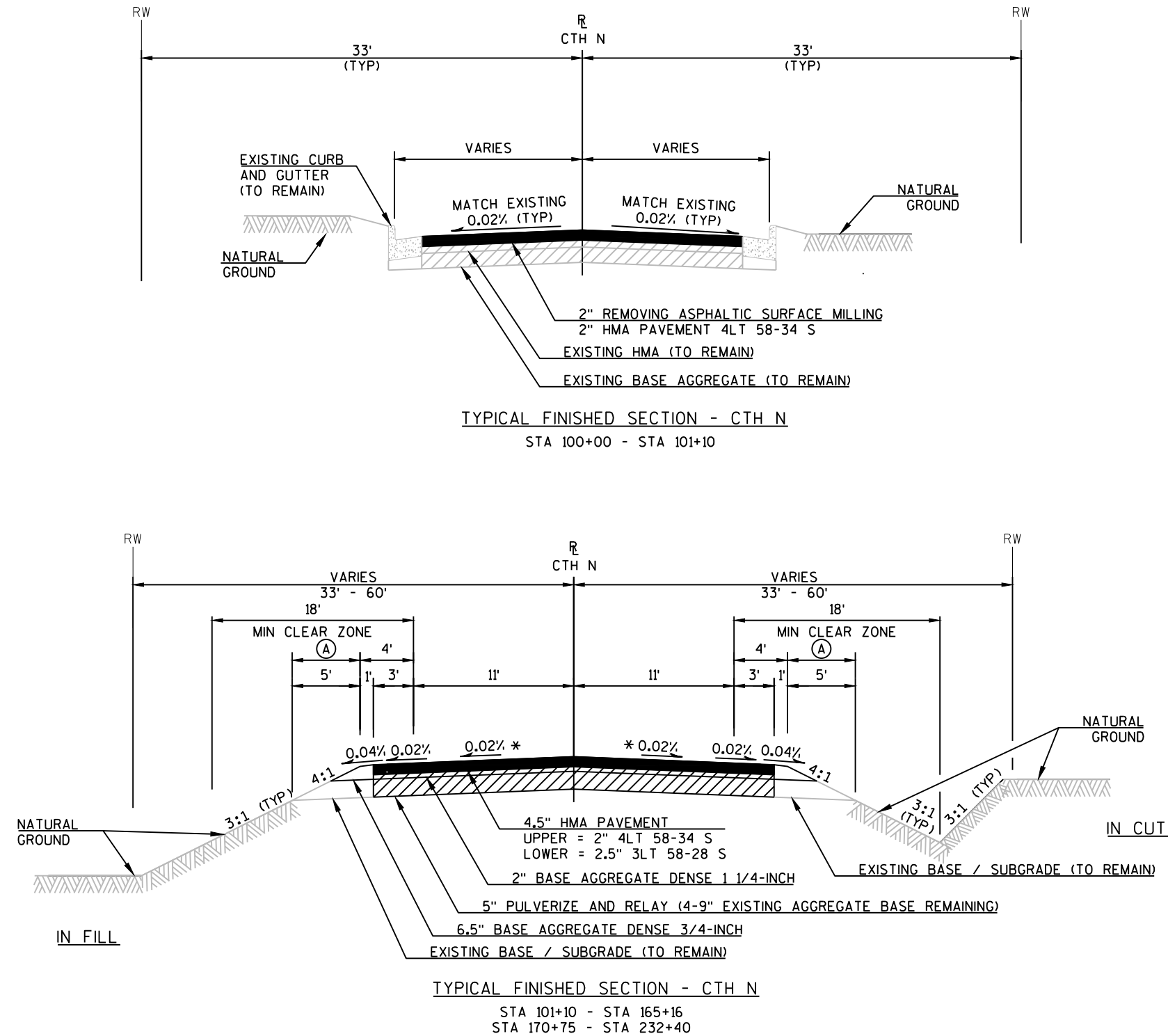
TOTAL PROJECT AREA = 20.0 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 14.0 ACRES





TYPICAL EXISTING SECTION - CTH N
STA 100+00 - STA 101+10





Ⓐ FERTILIZER TYPE B; SEEDING MIXTURE
NO. 20; SEEDING TEMPORARY
* SEE SUPERELEVATION TABLES

PROJECT NO: 9324-02-71

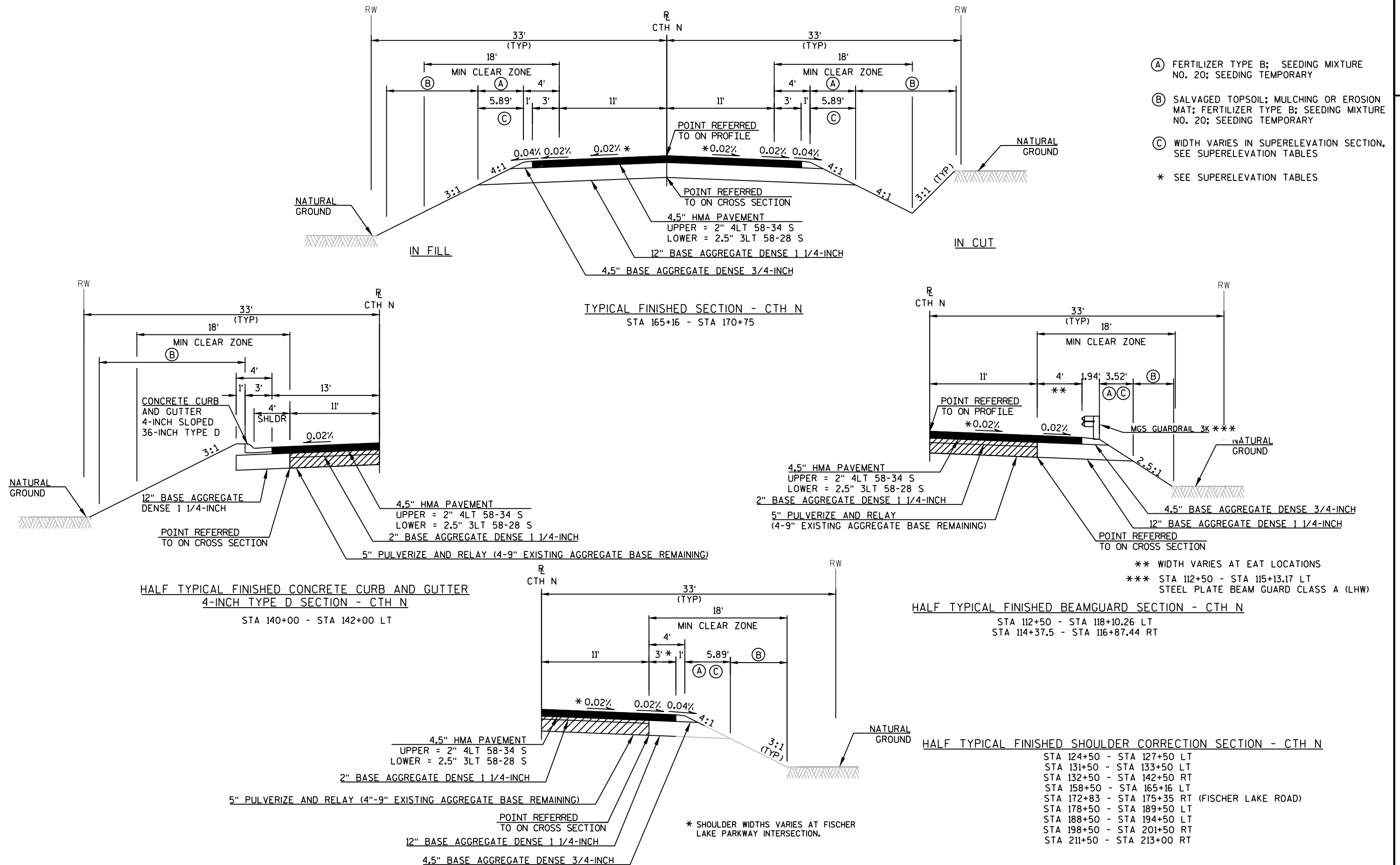
HWY: CTH N

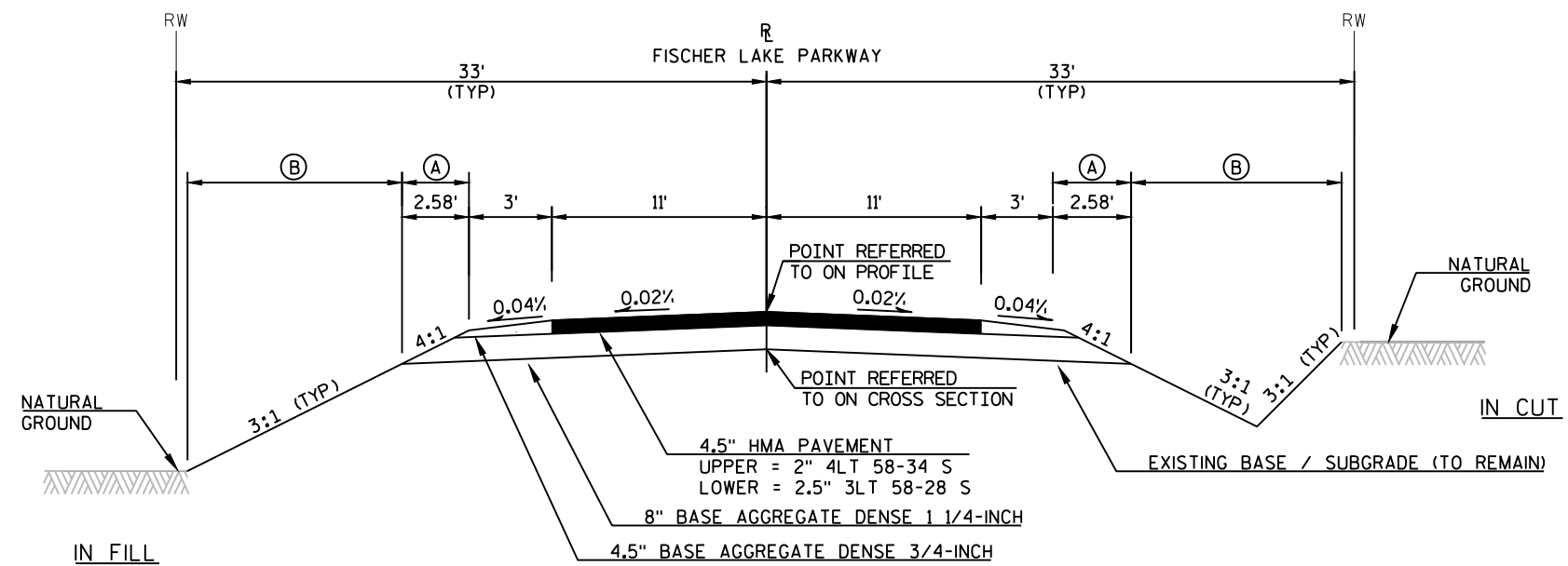
COUNTY: FLORENCE

TYPICAL SECTIONS

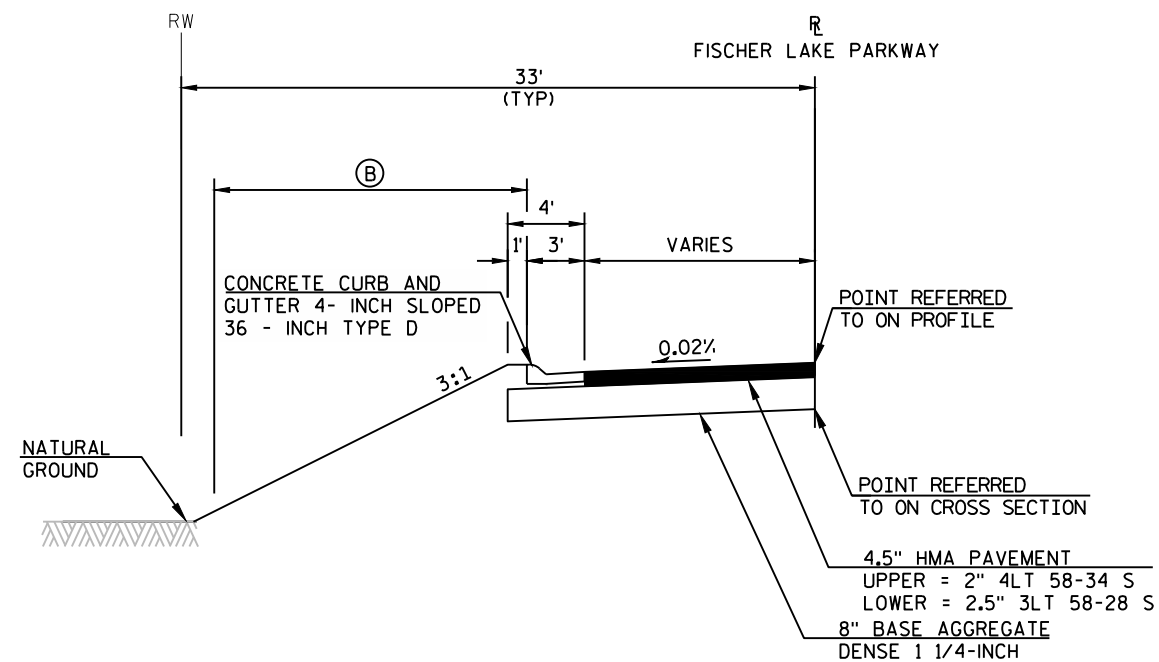
SHEET

E





TYPICAL FINISHED SECTION - FISCHER LAKE PARKWAY
STA 11+23.92 - STA 11+83



HALF TYPICAL FINISHED CONCRETE CURB AND GUTTER
30-INCH TYPE G OR J SECTION - FISCHER LAKE PARKWAY
STA 10+11 - STA 11+23.92

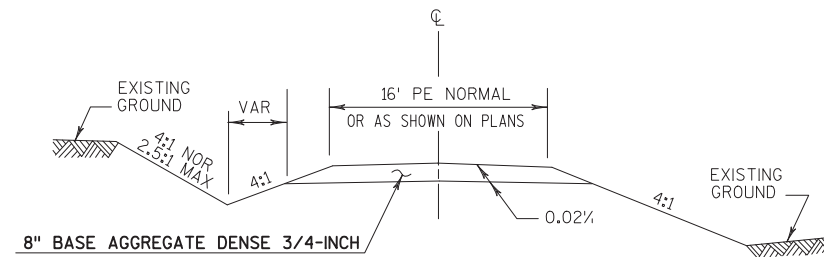
- (A) FERTILIZER TYPE B; SEEDING MIXTURE
NO. 20; SEEDING TEMPORARY
- (B) SALVAGED TOPSOIL; MULCHING OR EROSION MAT;
FERTILIZER TYPE B; SEEDING MIXTURE
NO. 20; SEEDING TEMPORARY

SUPER ELEVATION TRANSITION EVENT POINTS		RATE			
LOCATION	STATION	LEFT OF CROWN LINE		RIGHT OF CROWN LINE	
		LEFT SHOULDER	LEFT LANE	RIGHT LANE	RIGHT SHOULDER
CURVE 1					
MILLING AREA MATCH EXISTING					
CURVE 2					
BEGIN NORMAL SHOULDER	106+95.98	-4.00%	-2.00%	-2.00%	-4.00%
END NORMAL CROWN	107+14.69	-4.00%	-2.00%	-2.00%	-4.00%
LEVEL CROWN	107+80.69	-4.00%	0.00%	-2.00%	-4.00%
REVERSE CROWN	108+12.08	-4.00%	2.00%	-2.00%	-4.00%
BEGIN FULL SUPER	108+59.60	-4.00%	4.10%	-4.10%	-4.10%
LOW SHOULDER MATCH	108+70.12	-4.00%	4.00%	-4.00%	-4.00%
END FULL SUPER	113+20.24	-4.00%	4.10%	-4.10%	-4.10%
CURVE 3					
PRC	113+90.24	-4.00%	0.00%	0.00%	-4.00%
BEGIN FULL SUPER	114+60.24	-4.80%	-4.80%	4.80%	-4.00%
END FULL SUPER	117+82.34	-4.80%	-4.80%	4.80%	-4.00%
LOW SHOULDER MATCH	118+19.30	-4.00%	-4.00%	4.00%	-4.00%
BEGIN/END NORMAL CROWN	119+34.34	-4.00%	-2.00%	-2.00%	-4.00%
CURVE 4					
REVERSE CROWN	120+34.05	-4.00%	2.00%	-2.00%	-4.00%
LOW SHOULDER MATCH	120+42.95	-4.00%	4.00%	-4.00%	-4.00%
BEGIN FULL SUPER	121+02.34	-4.00%	5.60%	-5.60%	-5.60%
END FULL SUPER	125+09.13	-4.00%	5.60%	-5.60%	-5.60%
LOW SHOULDER MATCH	125+41.59	-4.00%	4.00%	-4.00%	-4.00%
REVERSE CROWN	125+50.49	-4.00%	2.00%	-2.00%	-4.00%
LEVEL CROWN	126+33.33	-4.00%	0.00%	-2.00%	-4.00%
CURVE 5					
LEVEL CROWN	126+74.53	-4.00%	0.00%	-2.00%	-4.00%
REVERSE CROWN	127+57.20	-4.00%	2.00%	-2.00%	-4.00%
LOW SHOULDER MATCH	127+66.10	-4.00%	4.00%	-4.00%	-4.00%
BEGIN FULL SUPER	127+98.53	-4.00%	5.60%	-5.60%	-5.60%
END FULL SUPER	133+35.90	-4.00%	5.60%	-5.60%	-5.60%
LOW SHOULDER MATCH	133+68.33	-4.00%	4.00%	-4.00%	-4.00%
REVERSE CROWN	133+77.23	-4.00%	2.00%	-2.00%	-4.00%
LEVEL CROWN	134+59.90	-4.00%	0.00%	-2.00%	-4.00%
BEGIN NORMAL CROWN	135+03.90	-4.00%	-2.00%	-2.00%	-4.00%
BEGIN NORMAL SHOULDER	135+68.69	-4.00%	-2.00%	-2.00%	-4.00%
CURVE 6					
END NORMAL SHOULDER	137+63.54	-4.00%	-2.00%	-2.00%	-4.00%
END NORMAL CROWN	138+26.76	-4.00%	-2.00%	-2.00%	-4.00%
LEVEL CROWN	138+70.76	-4.00%	-2.00%	0.00%	-4.00%
REVERSE CROWN	139+52.09	-4.00%	-2.00%	2.00%	-4.00%
LOW SHOULDER MATCH	139+63.17	-4.00%	-4.00%	4.00%	-4.00%
BEGIN FULL SUPER	139+92.76	-5.50%	-5.50%	5.50%	-4.00%
END FULL SUPER	143+84.21	-5.50%	-5.50%	5.50%	-4.00%
LOW SHOULDER MATCH	144+13.79	-4.00%	-4.00%	4.00%	-4.00%
REVERSE CROWN	144+24.88	-4.00%	-2.00%	2.00%	-4.00%
LEVEL CROWN	145+06.21	-4.00%	-2.00%	0.00%	-4.00%
BEGIN NORMAL CROWN	145+50.21	-4.00%	-2.00%	-2.00%	-4.00%
BEGIN NORMAL SHOULDER	146+13.43	-4.00%	-2.00%	-2.00%	-4.00%
CURVE 7					
END NORMAL SHOULDER	147+52.11	-4.00%	-2.00%	-2.00%	-4.00%
END NORMAL CROWN	148+28.45	-4.00%	-2.00%	-2.00%	-4.00%
LEVEL CROWN	148+69.45	-4.00%	-2.00%	0.00%	-4.00%
REVERSE CROWN	148+85.45	-4.00%	-2.00%	2.00%	-4.00%
LOW SHOULDER MATCH	149+52.11	-4.00%	-4.00%	4.00%	-4.00%
BEGIN FULL SUPER	149+93.45	-6.00%	-6.00%	6.00%	-4.00%
END FULL SUPER	152+97.05	-6.00%	-6.00%	6.00%	-4.00%
LOW SHOULDER MATCH	153+38.38	-4.00%	-4.00%	4.00%	-4.00%
REVERSE CROWN	154+05.05	-4.00%	-2.00%	2.00%	-4.00%
LEVEL CROWN	154+21.05	-4.00%	-2.00%	0.00%	-4.00%

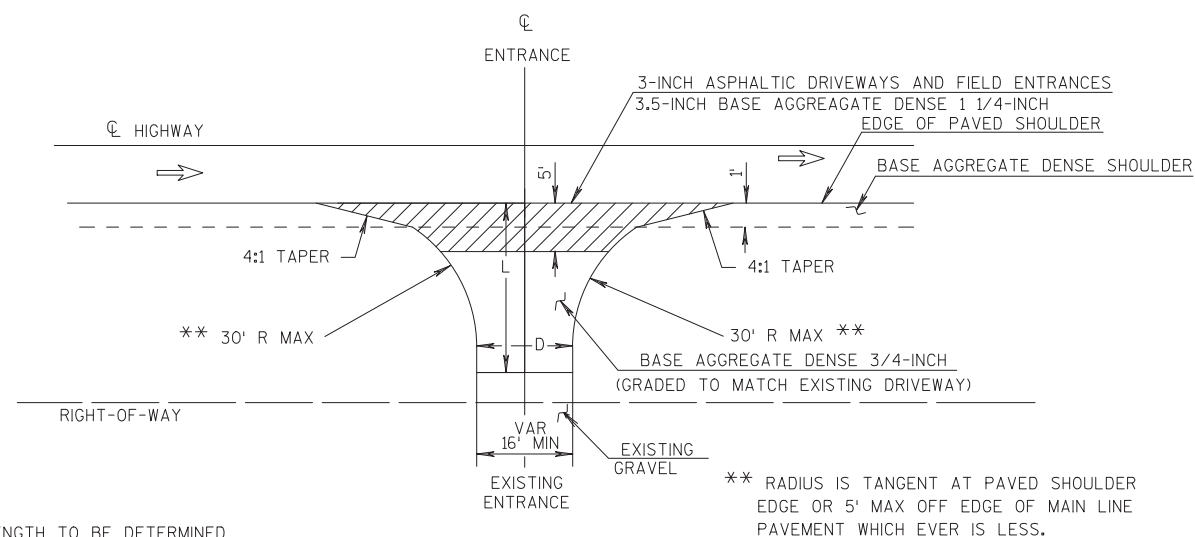
SUPER ELEVATION TRANSITION EVENT POINTS		RATE			
LOCATION	STATION	LEFT OF CROWN LINE		RIGHT OF CROWN LINE	
		LEFT SHOULDER	LEFT LANE	RIGHT LANE	RIGHT SHOULDER
BEGIN NORMAL CROWN	154+62.05	-4.00%	-2.00%	-2.00%	-4.00%
BEGIN NORMAL SHOULDER	155+38.38	-4.00%	-2.00%	-2.00%	-4.00%
CURVE 8					
END NORMAL SHOULDER	155+45.81	-4.00%	-2.00%	-2.00%	-4.00%
END NORMAL CROWN	156+09.48	-4.00%	-2.00%	-2.00%	-4.00%
LEVEL CROWN	156+54.48	-4.00%	0.00%	-2.00%	-4.00%
REVERSE CROWN	156+79.14	-4.00%	2.00%	-2.00%	-4.00%
LOW SHOULDER MATCH	157+45.81	-4.00%	4.00%	-4.00%	-4.00%
BEGIN FULL SUPER	157+81.48	-4.00%	5.70%	-5.70%	-5.70%
END FULL SUPER	161+68.84	-4.00%	5.70%	-5.70%	-5.70%
LOW SHOULDER MATCH	162+04.51	-4.00%	4.00%	-4.00%	-4.00%
REVERSE CROWN	162+71.18	-4.00%	2.00%	-2.00%	-4.00%
LEVEL CROWN	162+95.84	-4.00%	0.00%	-2.00%	-4.00%
BEGIN NORMAL CROWN	163+40.44	-4.00%	-2.00%	-2.00%	-4.00%
BEGIN NORMAL SHOULDER	164+04.51	-4.00%	-2.00%	-2.00%	-4.00%
CURVE 9					
END NORMAL SHOULDER	169+91.32	-4.00%	-2.00%	-2.00%	-4.00%
END NORMAL CROWN	170+69.00	-4.00%	-2.00%	-2.00%	-4.00%
LEVEL CROWN	171+10.00	-4.00%	-2.00%	0.00%	-4.00%
REVERSE CROWN	171+24.66	-4.00%	-2.00%	2.00%	-4.00%
LOW SHOULDER MATCH	171+91.32	-4.00%	-4.00%	4.00%	-4.00%
BEGIN FULL SUPER	172+32.00	-6.00%	-6.00%	6.00%	-4.00%
END FULL SUPER	179+33.11	-6.00%	-6.00%	6.00%	-4.00%
LOW SHOULDER MATCH	179+45.11	-5.40%	-5.40%	5.40%	-4.00%
CURVE 10					
BEGIN FULL SUPER	179+57.11	-4.80%	-4.80%	4.80%	-4.00%
END FULL SUPER	184+51.85	-4.80%	-4.80%	4.80%	-4.00%
LOW SHOULDER MATCH	184+60.86	-4.00%	-4.00%	4.00%	-4.00%
REVERSE CROWN	185+27.53	-4.00%	-2.00%	2.00%	-4.00%
LEVEL CROWN	185+58.85	-4.00%	-2.00%	0.00%	-4.00%
BEGIN NORMAL CROWN	186+03.85	-4.00%	-2.00%	-2.00%	-4.00%
BEGIN NORMAL SHOULDER	186+60.86	-4.00%	-2.00%	-2.00%	-4.00%
CURVE 11					
END NORMAL SHOULDER	187+72.96	-4.00%	-2.00%	-2.00%	-4.00%
END NORMAL CROWN	188+33.64	-4.00%	-2.00%	-2.00%	-4.00%
LEVEL CROWN	188+77.64	-4.00%	0.00%	-2.00%	-4.00%
REVERSE CROWN	189+06.29	-4.00%	2.00%	-2.00%	-4.00%
LOW SHOULDER MATCH	189+72.96	-4.00%	4.00%	-4.00%	-4.00%
BEGIN FULL SUPER	189+90.64	-4.00%	5.10%	-5.10%	-5.10%
END FULL SUPER	194+09.65	-4.00%	5.10%	-5.10%	-5.10%
LOW SHOULDER MATCH	194+46.32	-4.00%	4.00%	-4.00%	-4.00%
REVERSE CROWN	195+12.99	-4.00%	2.00%	-2.00%	-4.00%
LEVEL CROWN	195+41.64	-4.00%	0.00%	-2.00%	-4.00%
BEGIN NORMAL CROWN	195+85.64	-4.00%	-2.00%	-2.00%	-4.00%
BEGIN NORMAL SHOULDER	196+46.32	-4.00%	-2.00%	-2.00%	-4.00%
CURVE 12					
END NORMAL SHOULDER	197+61.04	-4.00%	-2.00%	-2.00%	-4.00%
END NORMAL CROWN	198+17.56	-4.00%	-2.00%	-2.00%	-4.00%
LEVEL CROWN	198+61.56	-4.00%	-2.00%	0.00%	-4.00%
REVERSE CROWN	198+94.08	-4.00%	-2.00%	2.00%	-4.00%
LOW SHOULDER MATCH	199+60.60	-4.00%	-4.00%	4.00%	-4.00%
BEGIN FULL SUPER	199+63.56	-4.60%	-4.60%	4.60%	-4.00%
END FULL SUPER	202+70.59	-4.60%	-4.60%	4.60%	-4.00%
LOW SHOULDER MATCH	202+73.55	-4.00%	-4.00%	4.00%	-4.00%
REVERSE CROWN	203+40.07	-4.00%	-2.00%	2.00%	-4.00%
LEVEL CROWN	203+72.59	-4.00%	-2.00%	0.00%	-4.00%

SUPER ELEVATION TRANSITION EVENT POINTS		RATE			
LOCATION	STATION	LEFT OF CROWN LINE		RIGHT OF CROWN LINE	
		LEFT SHOULDER	LEFT LANE	RIGHT LANE	RIGHT SHOULDER
BEGIN NORMAL CROWN	204+16.59	-4.00%	-2.00%	-2.00%	-4.00%
BEGIN NORMAL SHOULDER	204+73.12	-4.00%	-2.00%	-2.00%	-4.00%
CURVE 13					
END NORMAL SHOULDER	205+72.70	-4.00%	-2.00%	-2.00%	-4.00%
END NORMAL CROWN	206+35.93	-4.00%	-2.00%	-2.00%	-4.00%
LEVEL CROWN	206+77.93	-4.00%	-2.00%	0.00%	-4.00%
REVERSE CROWN	207+05.80	-4.00%	-2.00%	2.00%	-4.00%
LOW SHOULDER MATCH	207+72.34	-4.00%	-4.00%	4.00%	-4.00%
BEGIN FULL SUPER	208+01.93	-5.50%	-5.50%	5.50%	-4.00%
END FULL SUPER	215+89.64	-5.50%	-5.50%	5.50%	-4.00%
LOW SHOULDER MATCH	216+19.23	-4.00%	-4.00%	4.00%	-4.00%
REVERSE CROWN	216+85.77	-4.00%	-2.00%	2.00%	-4.00%
LEVEL CROWN	217+11.64	-4.00%	-2.00%	0.00%	-4.00%
BEGIN NORMAL CROWN	217+55.64	-4.00%	-2.00%	-2.00%	-4.00%
BEGIN NORMAL SHOULDER	218+18.86	-4.00%	-2.00%	-2.00%	-4.00%
CURVE 14					
END NORMAL CROWN	219+44.20	-4.00%	-2.00%	-2.00%	-4.00%
END NORMAL SHOULDER	219+86.04	-4.00%	-2.00%	-2.00%	-4.00%
LEVEL CROWN	220+88.20	-4.00%	0.00%	-2.00%	-4.00%
REVERSE CROWN	221+19.66	-4.00%	2.00%	-2.00%	-4.00%
LOW SHOULDER MATCH	221+86.47	-4.00%	4.00%	-4.00%	-4.00%
BEGIN FULL SUPER	221+92.20	-4.00%	4.70%	-4.70%	-4.70%
END FULL SUPER	230+45.24	-4.00%	4.70%	-4.70%	-4.70%
LOW SHOULDER MATCH	230+50.96	-4.00%	4.00%	-4.00%	-4.00%
REVERSE CROWN	231+17.77	-4.00%	2.00%	-2.00%	-4.00%
LEVEL CROWN	231+49.24	-4.00%	0.00%	-2.00%	-4.00%
BEGIN NORMAL CROWN	231+93.24	-4.00%	-2.00%	-2.00%	-4.00%

2



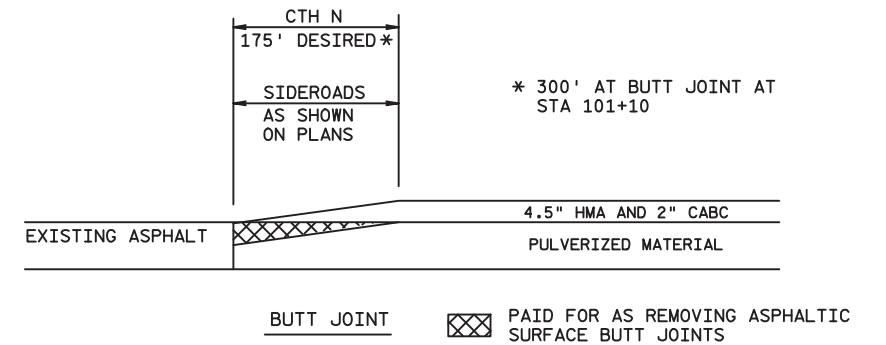
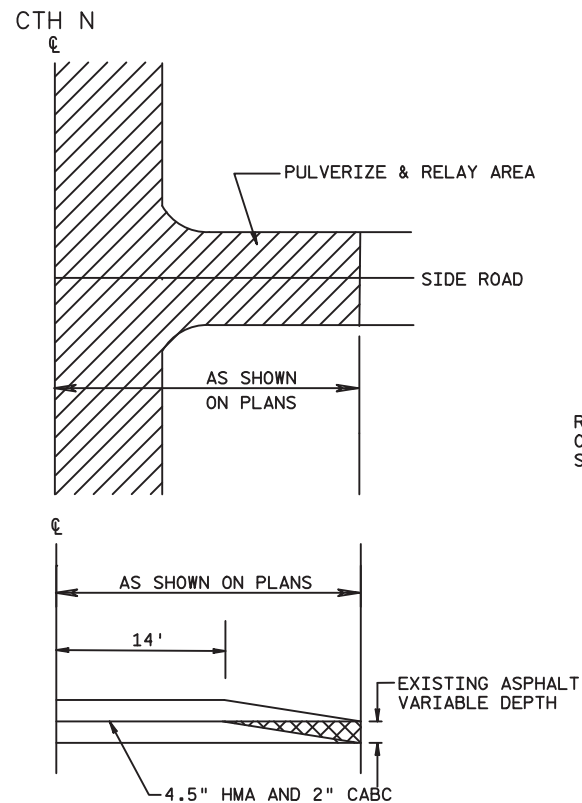
TYPICAL DRIVE RECONSTRUCTION CROSS SECTION
STA 167+30, RT AND STA 169+22, RT



L=VARIABLE, EXACT LENGTH TO BE DETERMINED
IN THE FIELD BY THE ENGINEER.
BLEND BACK ON THE ENTRANCE FAR
ENOUGH TO GET A SMOOTH PROFILE.

D=DRIVEWAY WIDTH
D=20'TYP (PE's & FE's) (16'MIN-24'MAX)

GRAVEL DRIVEWAY INTERSECTION DETAIL (PE)

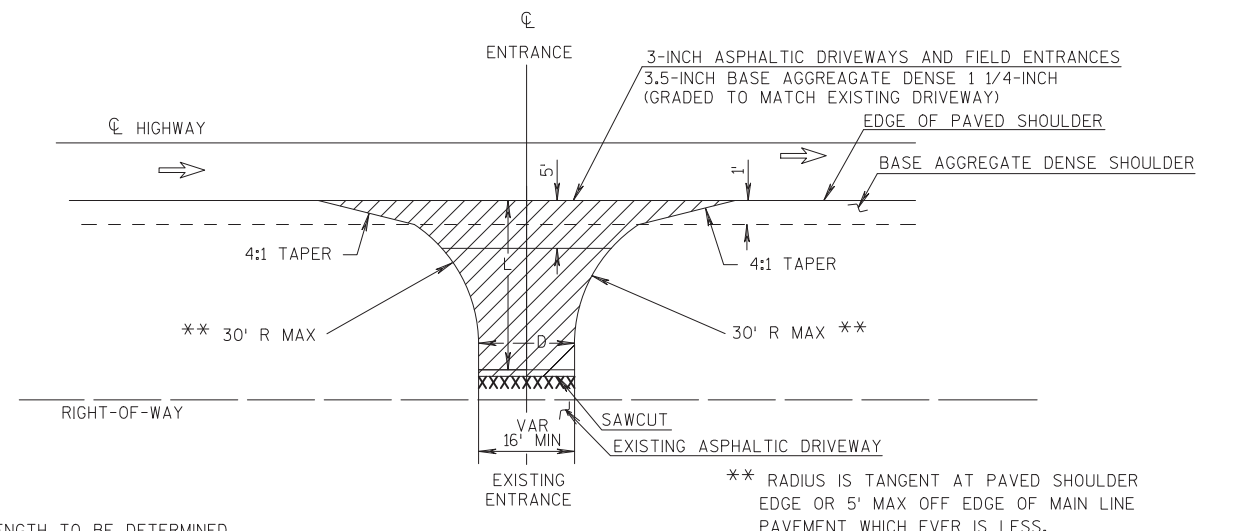


REQUIRED AT BEGIN AND END
OF PAVING LOCATIONS.
SEE PLAN AND PROFILE.

☒ REMOVE MATERIAL UNDER ITEM 'REMOVING ASPHALT SURFACE , BUTT JOINTS'
MATERIAL SHALL NOT BE REMOVED UNDER THIS ITEM UNTIL 24 HOURS
BEFORE SIDEROAD PAVING.

SIDEROAD PAVEMENT DEPTH SHALL MATCH AT MAINLINE PAVEMENT
EDGE AND BE TAPERED TO 3" MINIMUM AT JOINT

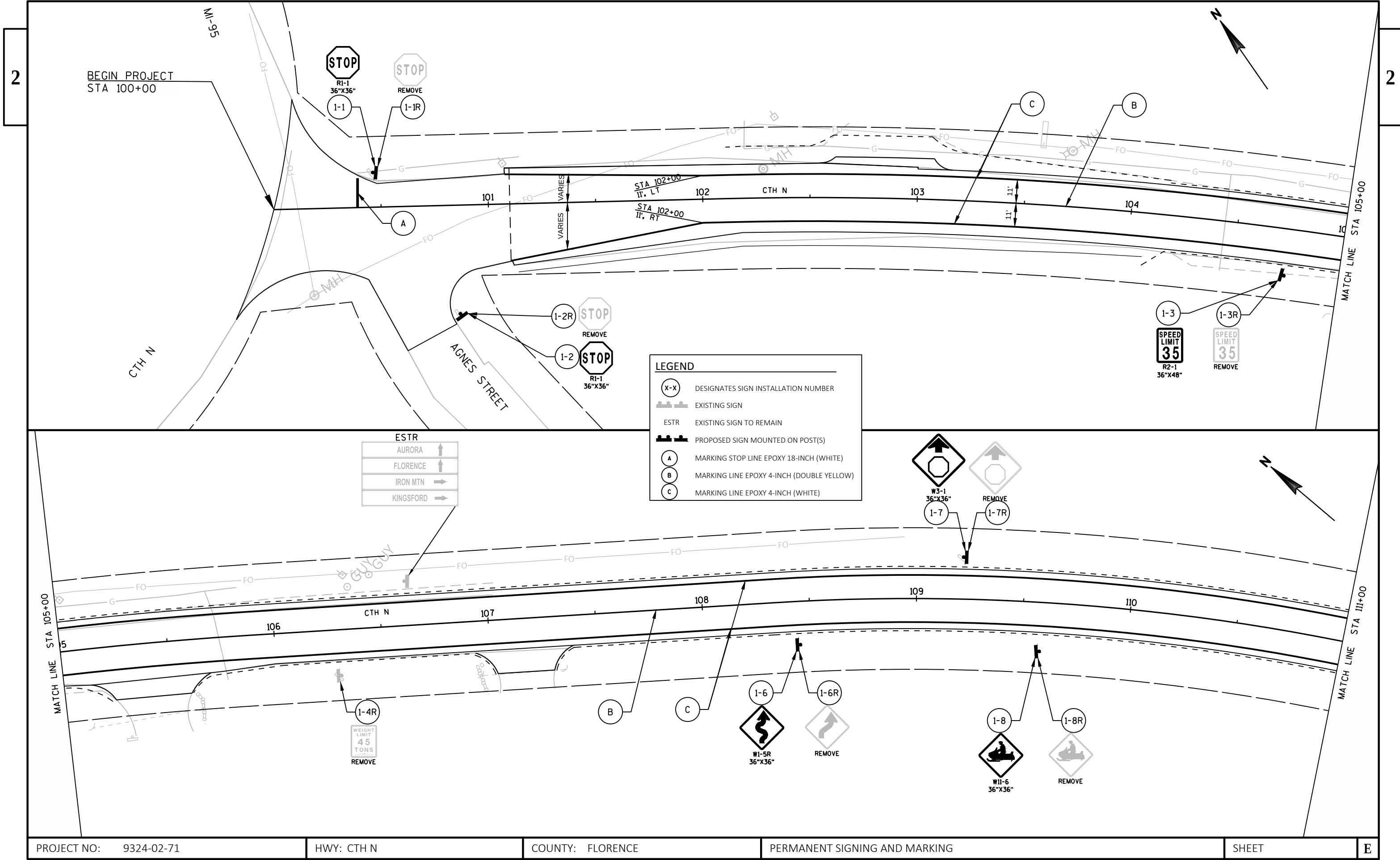
PAVEMENT TRANSITION
NOT TO SCALE

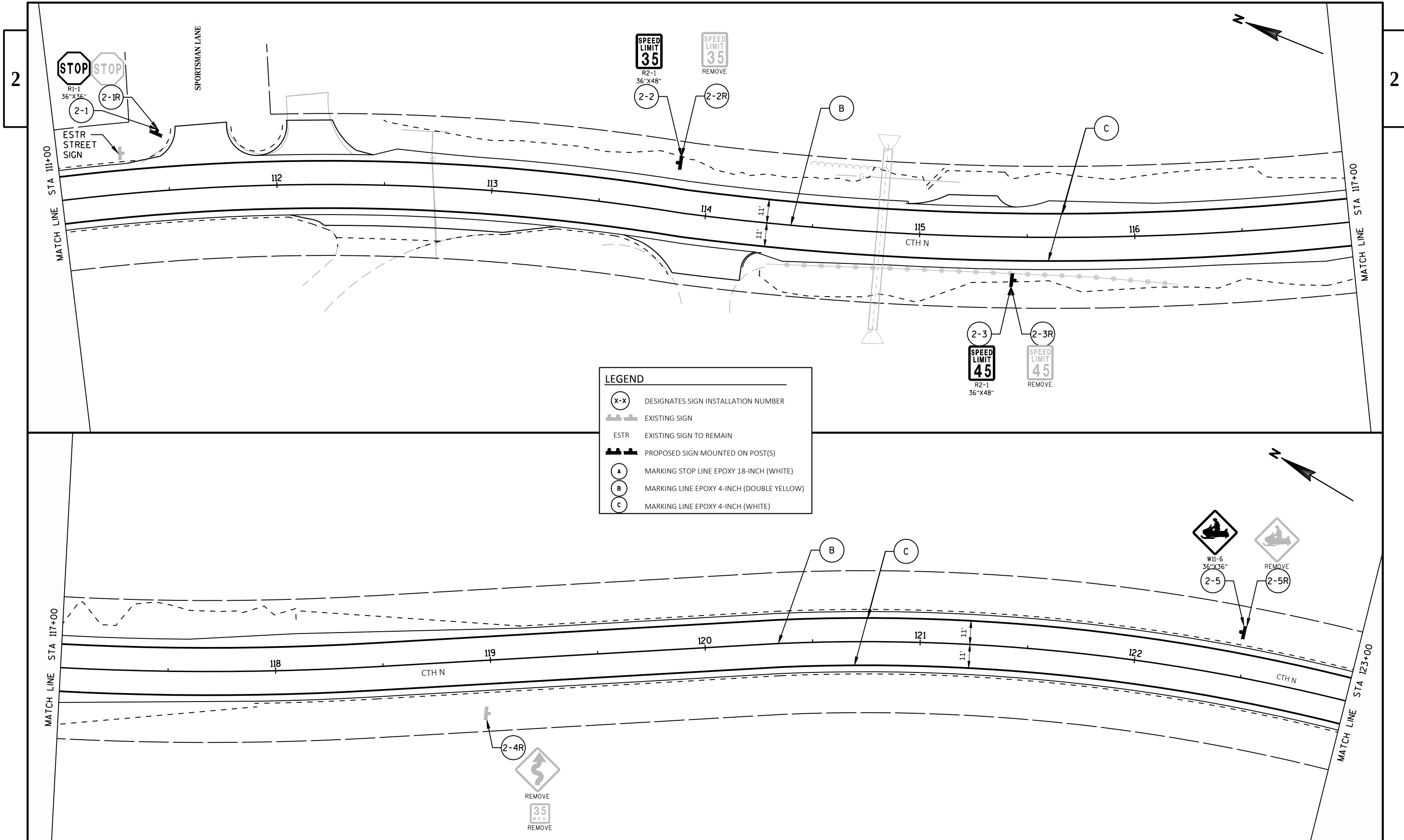


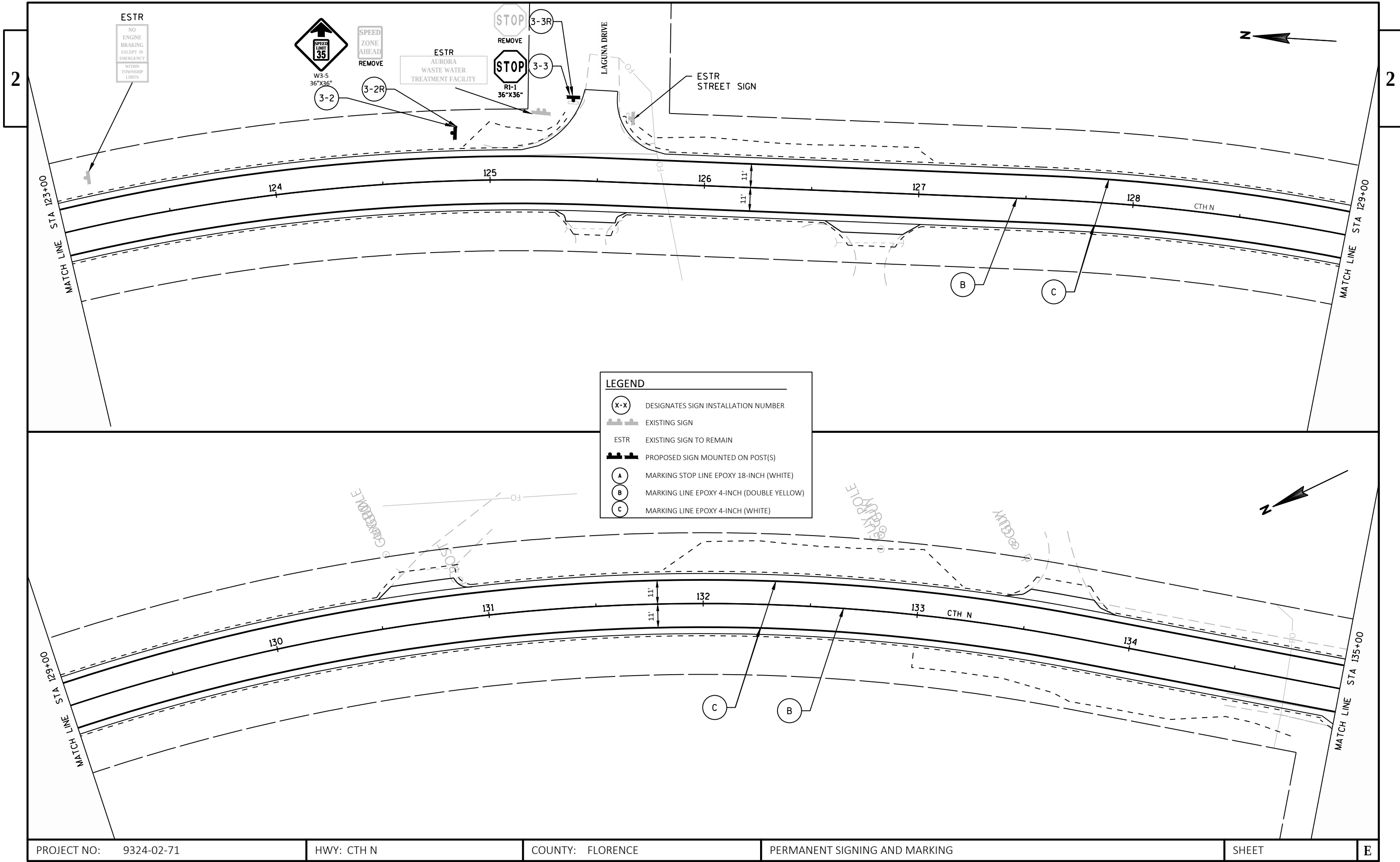
L=VARIABLE, EXACT LENGTH TO BE DETERMINED
IN THE FIELD BY THE ENGINEER.
BLEND BACK ON THE ENTRANCE FAR
ENOUGH TO GET A SMOOTH PROFILE.

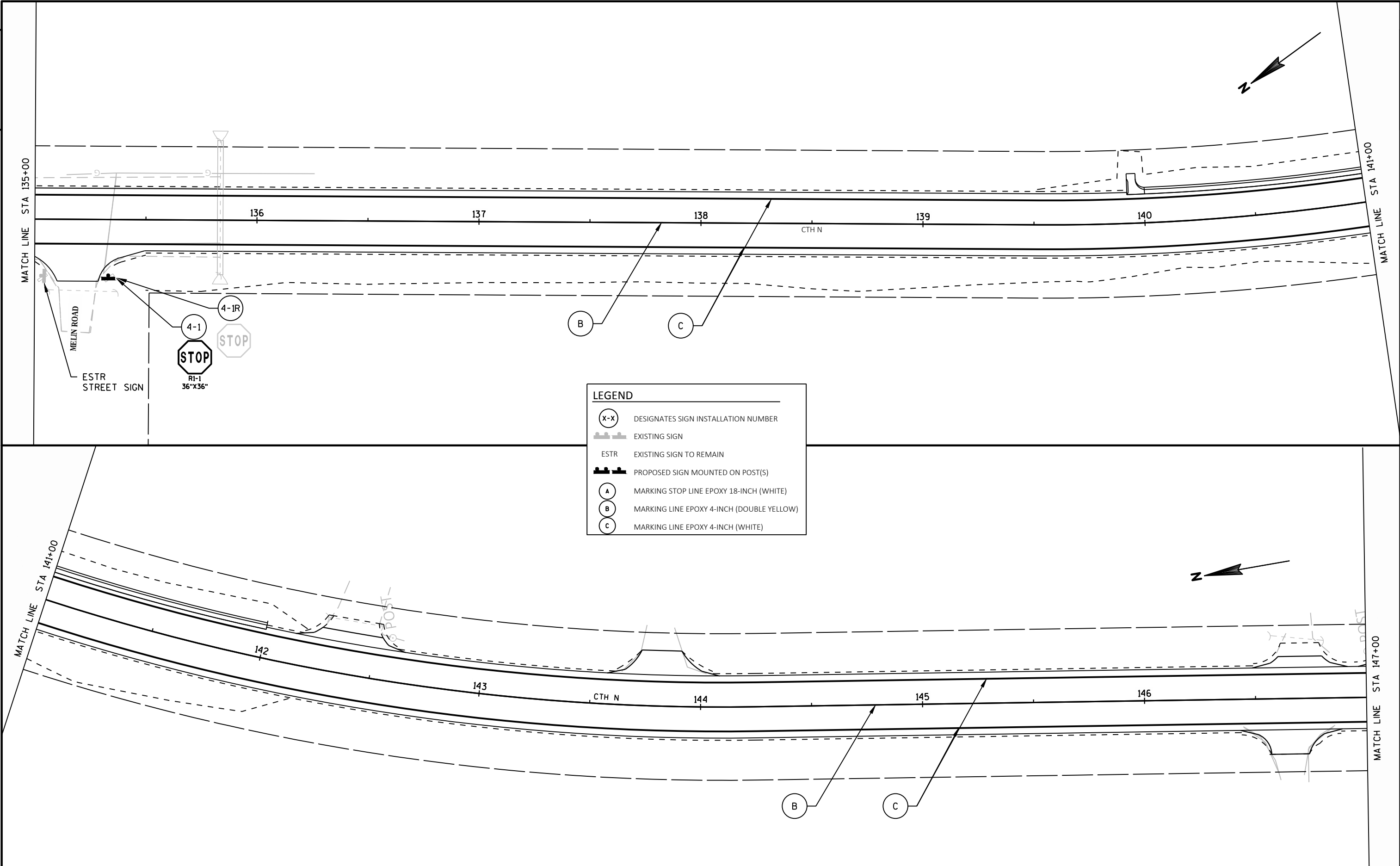
D=DRIVEWAY WIDTH
D=20'TYP (PE'S & FE'S) (16'MIN-24'MAX)

ASPHALTIC DRIVEWAY INTERSECTION DETAIL
(PE)

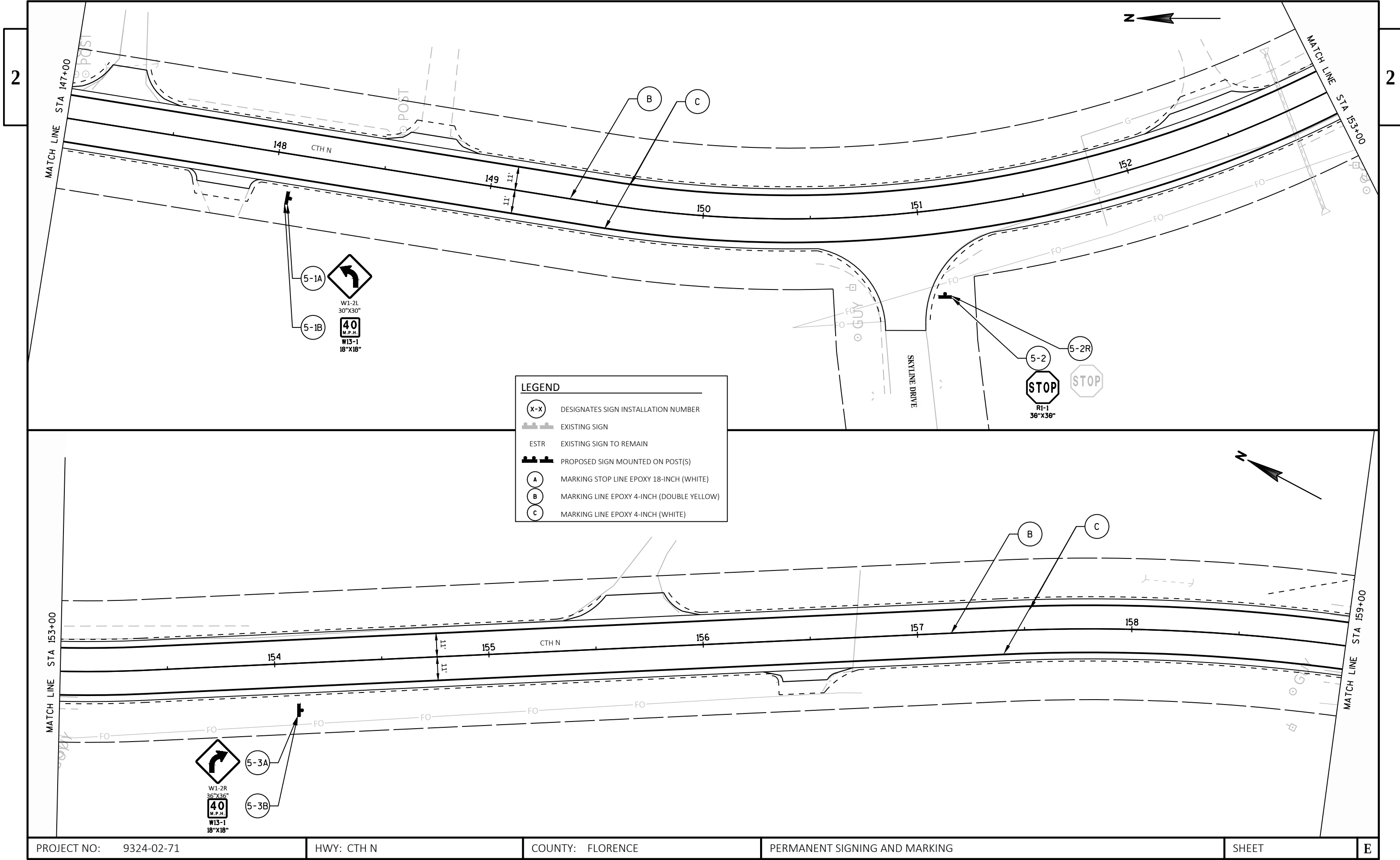


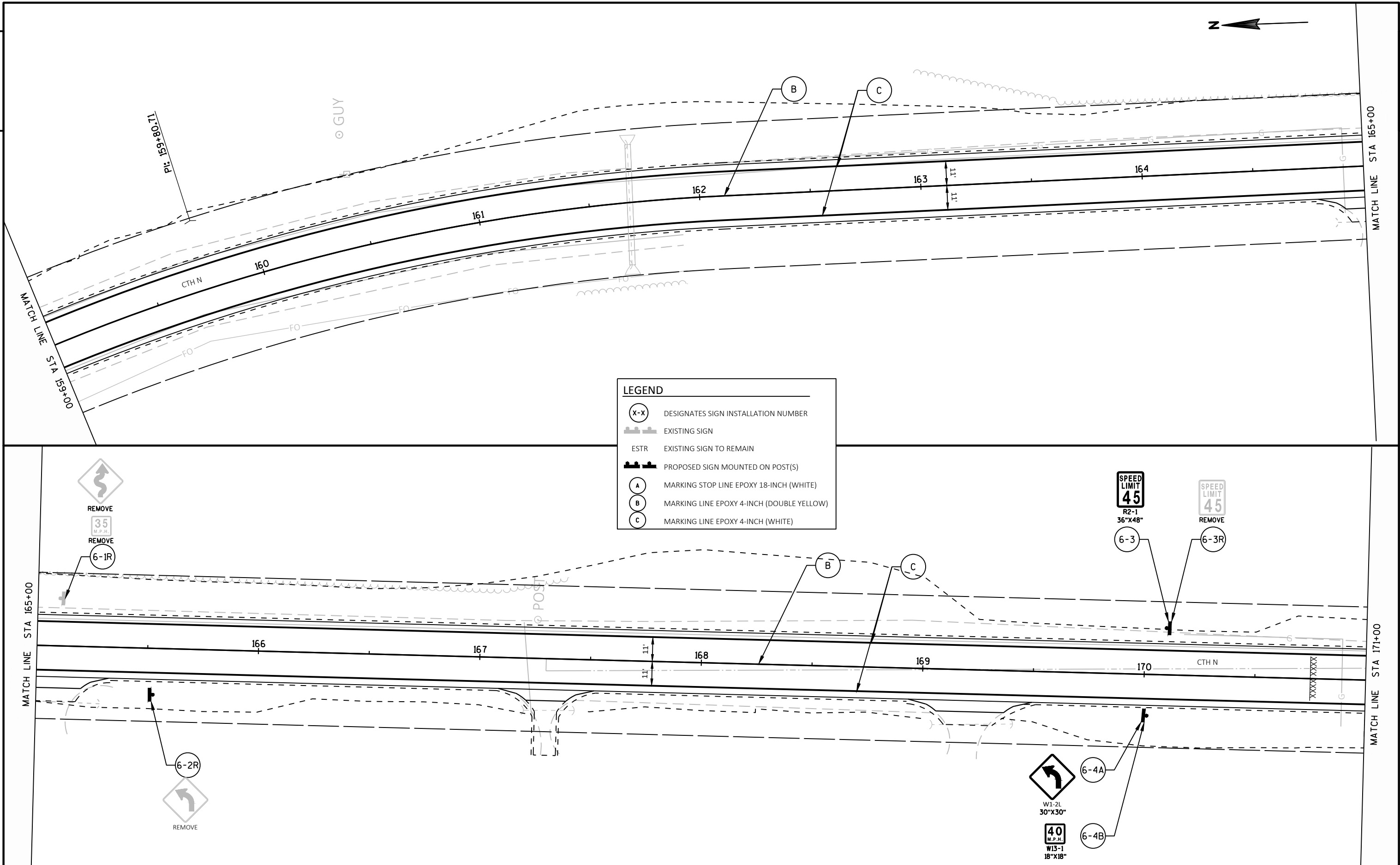




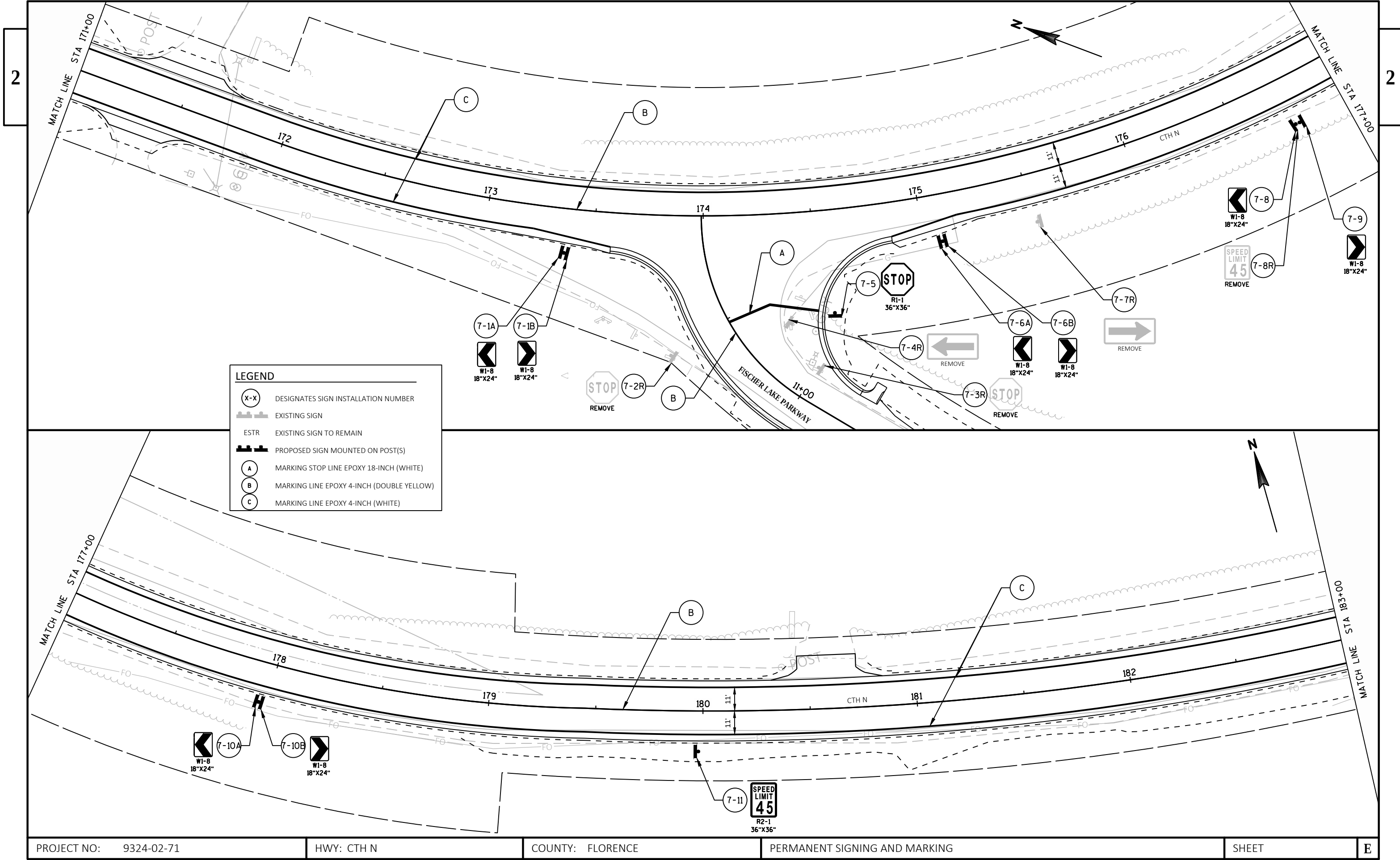


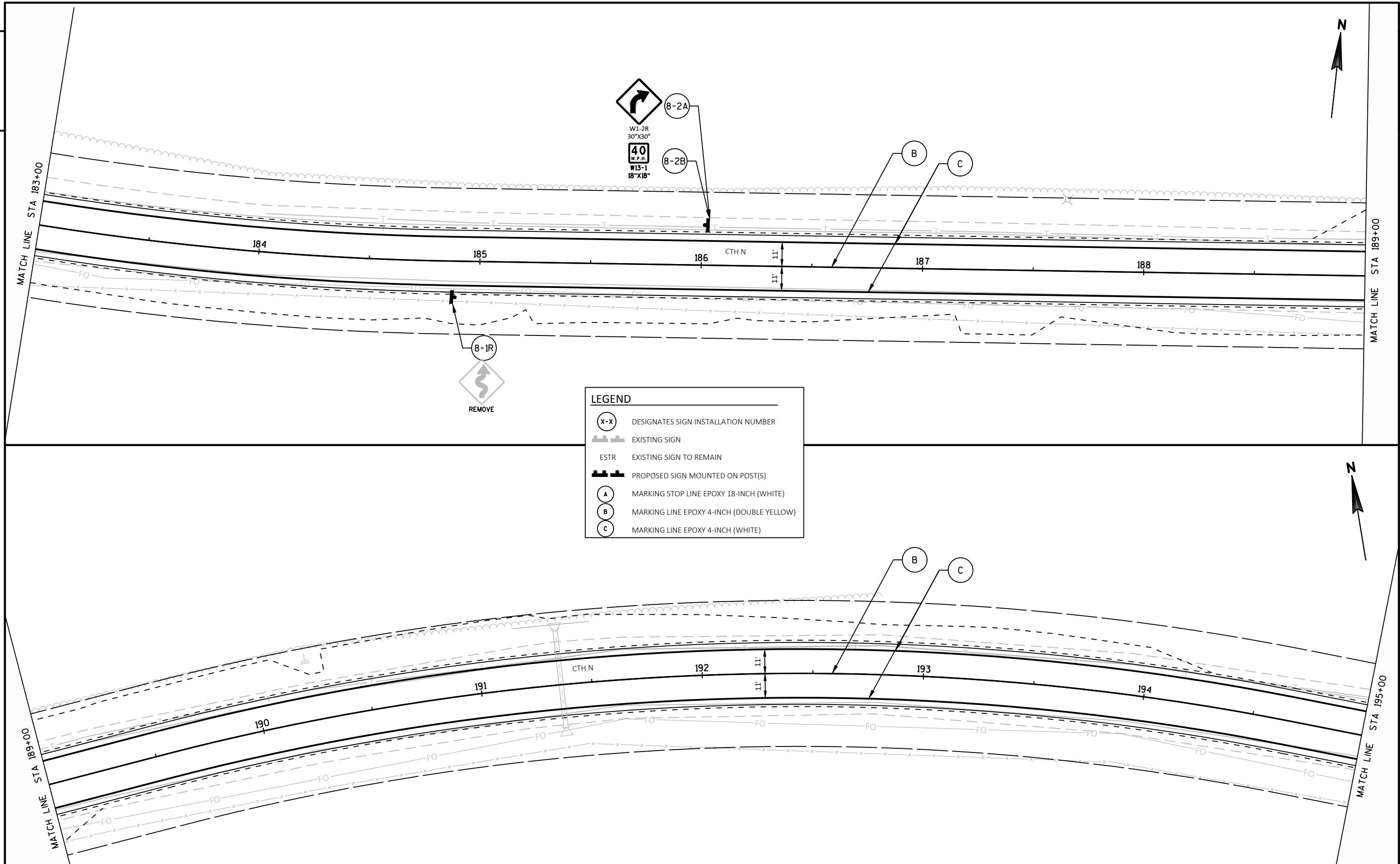
PROJECT NO: 9324-02-71	HWY: CTH N	COUNTY: FLORENCE	PERMANENT SIGNING AND MARKING	SHEET	E
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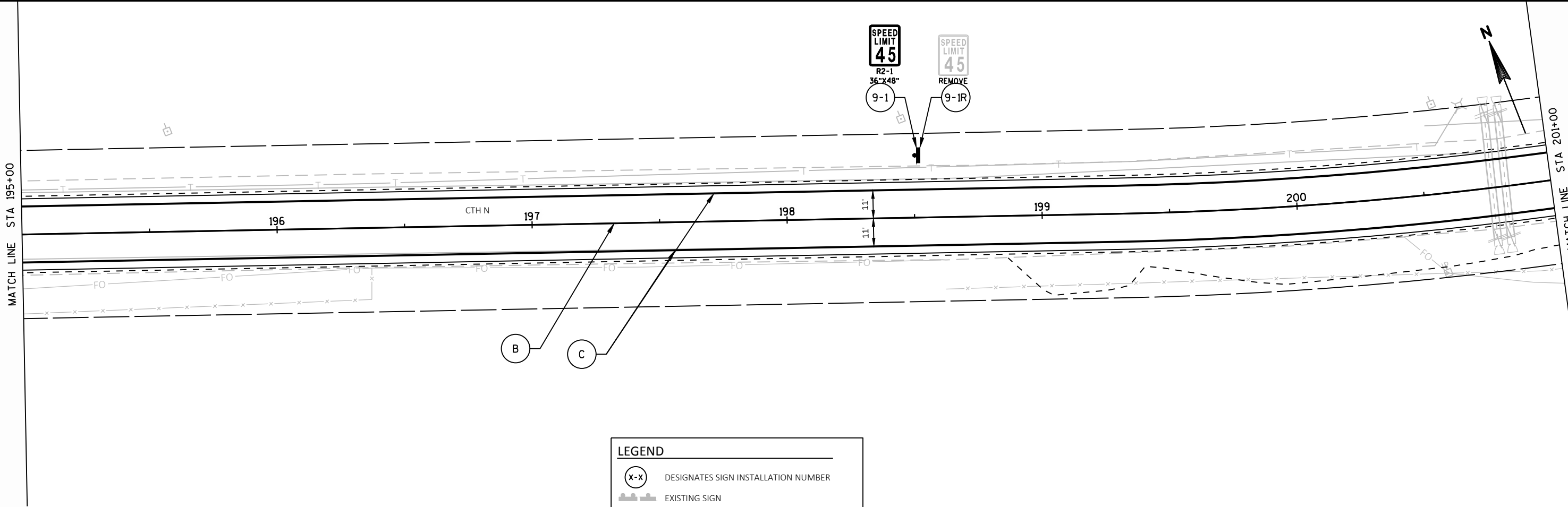




PROJECT NO: 9324-02-71	HWY: CTH N	COUNTY: FLORENCE	PERMANENT SIGNING AND MARKING	SHEET	E
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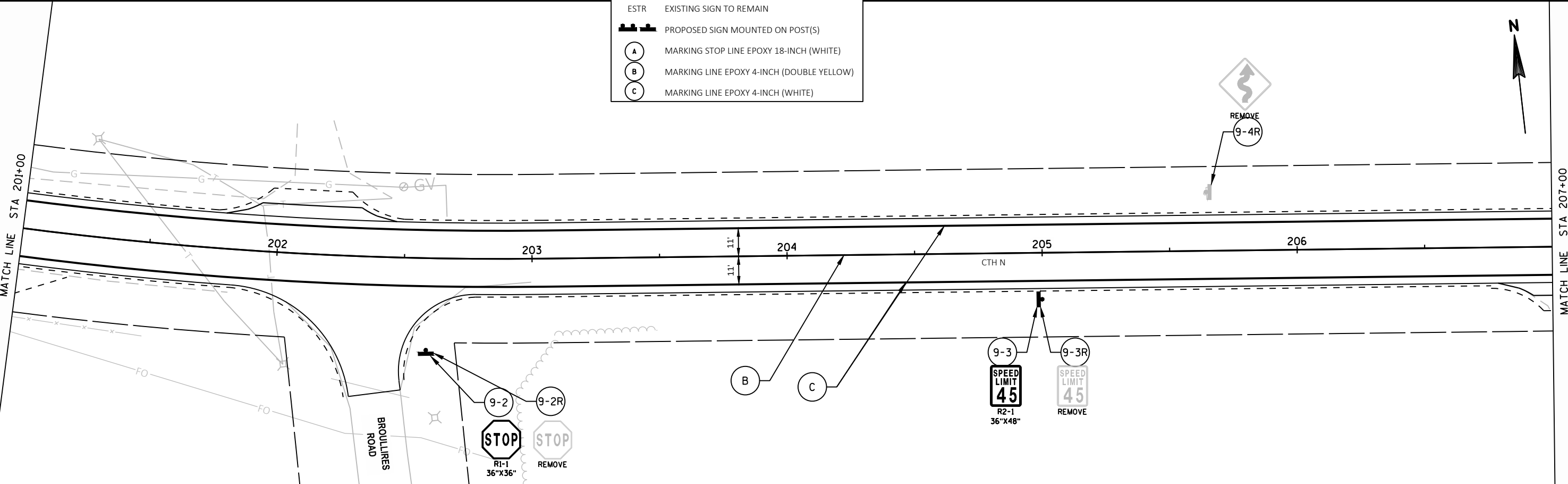


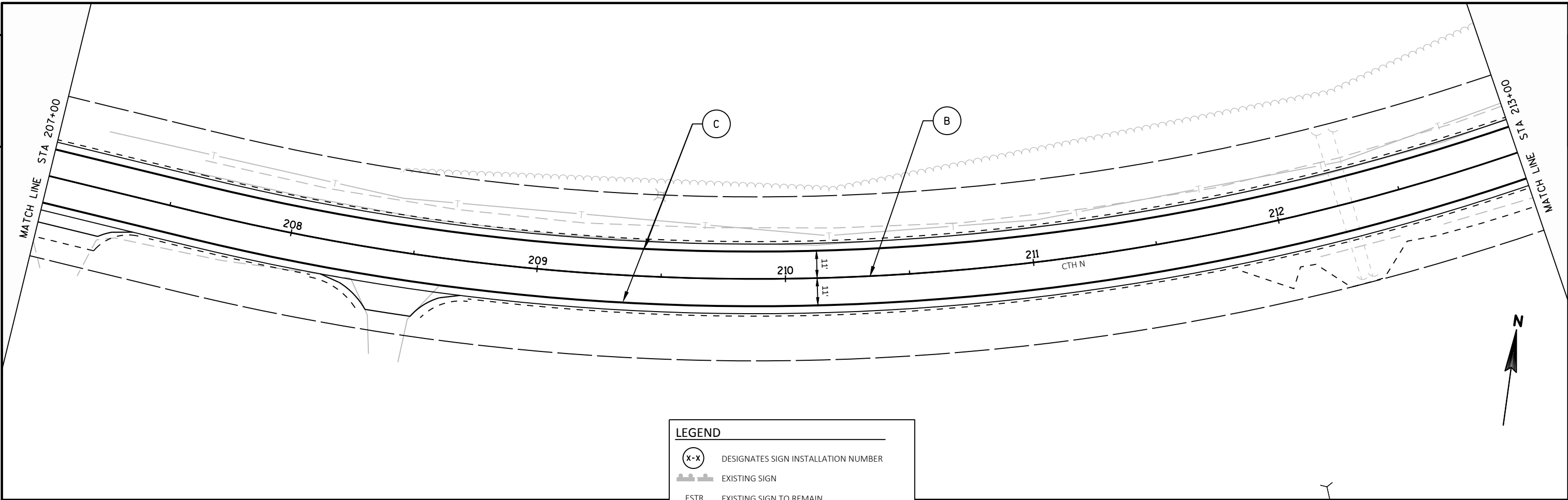




LEGEND

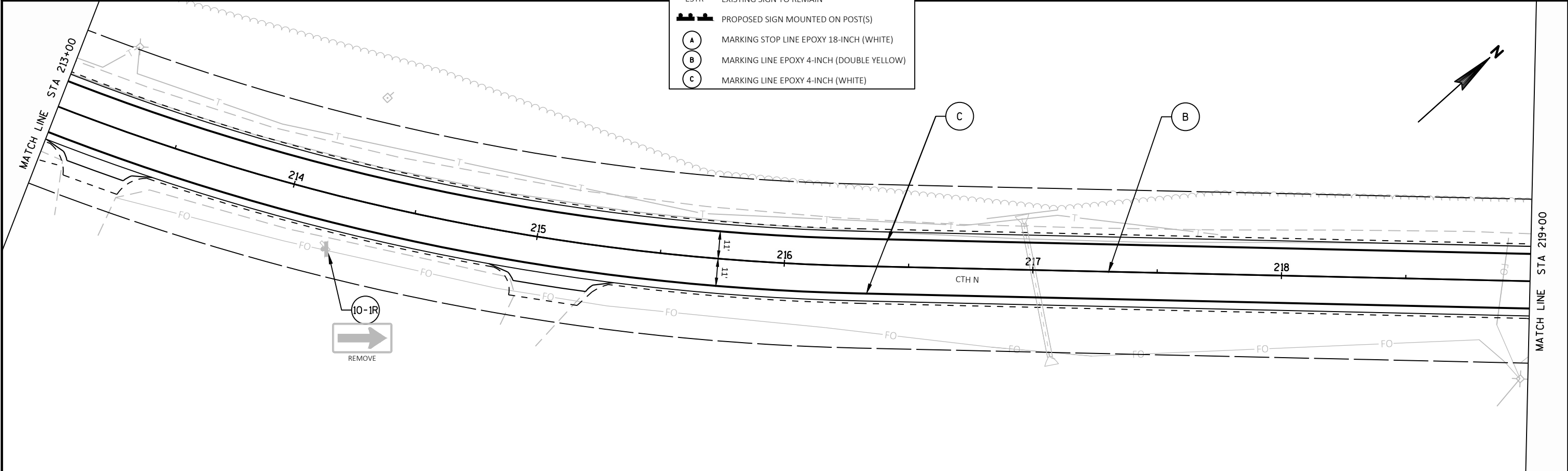
- (X-X) DESIGNATES SIGN INSTALLATION NUMBER
- EXISTING SIGN
- ESTR EXISTING SIGN TO REMAIN
- PROPOSED SIGN MOUNTED ON POST(S)
- (A) MARKING STOP LINE EPOXY 18-INCH (WHITE)
- (B) MARKING LINE EPOXY 4-INCH (DOUBLE YELLOW)
- (C) MARKING LINE EPOXY 4-INCH (WHITE)

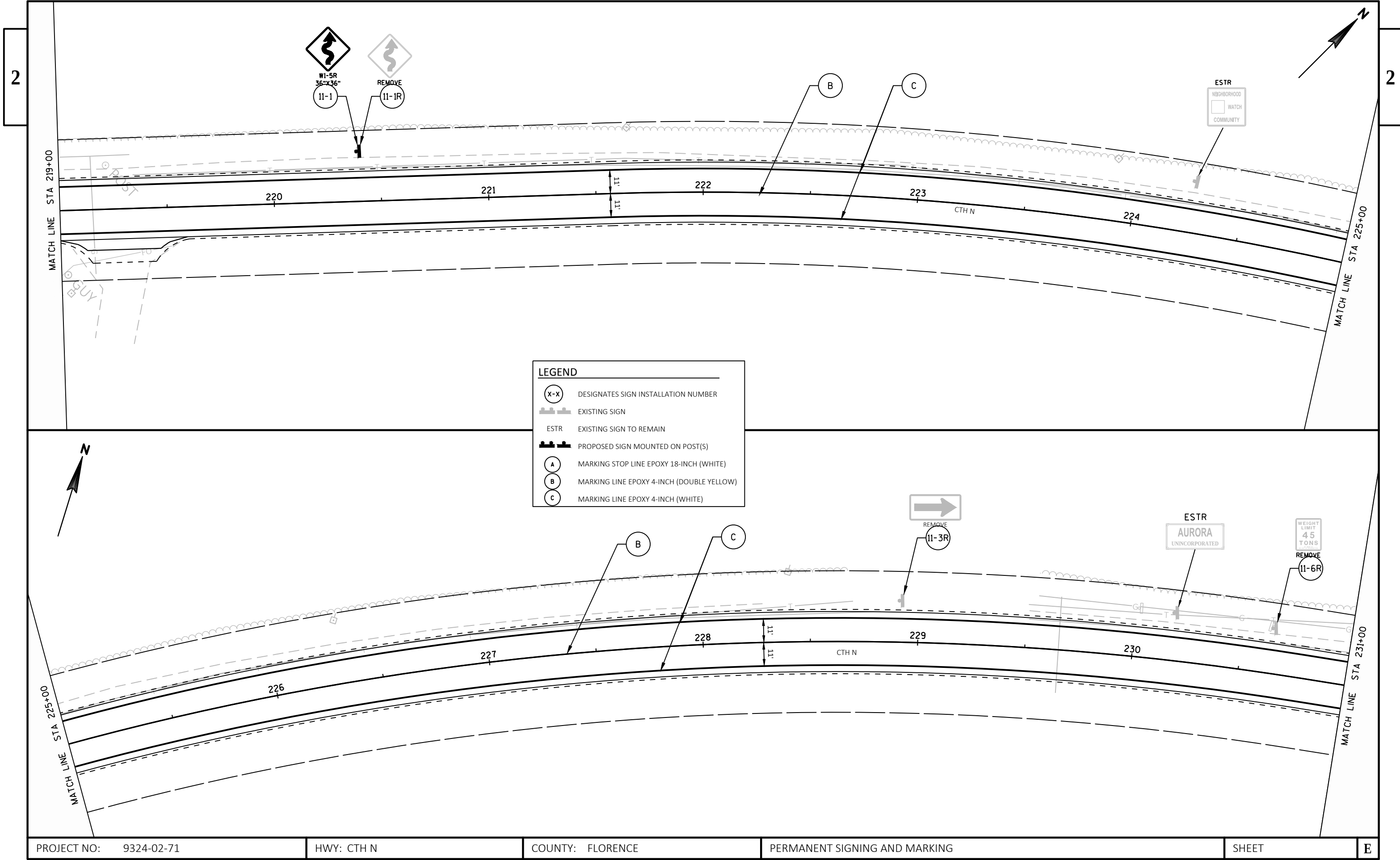


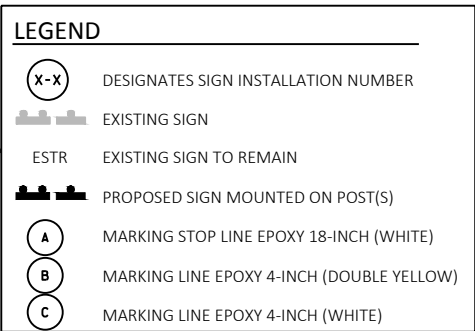


LEGEND

- (X-X) DESIGNATES SIGN INSTALLATION NUMBER
- [Symbol] EXISTING SIGN
- ESTR EXISTING SIGN TO REMAIN
- [Symbol] PROPOSED SIGN MOUNTED ON POST(S)
- (A) MARKING STOP LINE EPOXY 18-INCH (WHITE)
- (B) MARKING LINE EPOXY 4-INCH (DOUBLE YELLOW)
- (C) MARKING LINE EPOXY 4-INCH (WHITE)







Estimate Of Quantities

9324-02-71

Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	21.000	21.000
0004	201.0205	Grubbing	STA	21.000	21.000
0006	203.0100	Removing Small Pipe Culverts	EACH	2.000	2.000
0008	204.0110	Removing Asphaltic Surface	SY	1,020.000	1,020.000
0010	204.0115	Removing Asphaltic Surface Butt Joints	SY	1,970.000	1,970.000
0012	204.0120	Removing Asphaltic Surface Milling	SY	740.000	740.000
0014	204.0165	Removing Guardrail	LF	190.000	190.000
0016	205.0100	Excavation Common	CY	958.000	958.000
0018	208.0100	Borrow	CY	3,640.000	3,640.000
0020	213.0100	Finishing Roadway (project) 01. 9324-02-71	EACH	1.000	1.000
0022	305.0110	Base Aggregate Dense 3/4-Inch	TON	2,020.000	2,020.000
0024	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	9,410.000	9,410.000
0026	325.0100	Pulverize and Relay	SY	37,940.000	37,940.000
0028	374.1020.S	QMP Pulverize and Relay Compaction	SY	37,940.000	37,940.000
0030	440.4410	Incentive IRI Ride	DOL	10,040.000	10,040.000
0032	455.0605	Tack Coat	GAL	1,080.000	1,080.000
0034	460.2000	Incentive Density HMA Pavement	DOL	6,930.000	6,930.000
0036	460.5223	HMA Pavement 3 LT 58-28 S	TON	5,955.000	5,955.000
0038	460.5244	HMA Pavement 4 LT 58-34 S	TON	4,860.000	4,860.000
0040	465.0120	Asphaltic Surface Driveways and Field Entrances	TON	260.000	260.000
0042	465.0315	Asphaltic Flumes	SY	9.000	9.000
0044	521.1018	Apron Endwalls for Culvert Pipe Steel 18-Inch	EACH	4.000	4.000
0046	521.3118	Culvert Pipe Corrugated Steel 18-Inch	LF	60.000	60.000
0048	522.0124	Culvert Pipe Reinforced Concrete Class III 24-Inch	LF	92.000	92.000
0050	522.1024	Apron Endwalls for Culvert Pipe Reinforced Concrete 24-Inch	EACH	4.000	4.000
0052	601.0553	Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type D	LF	450.000	450.000
0054	606.0200	Riprap Medium	CY	6.000	6.000
0056	614.2330	MGS Guardrail 3 K	LF	487.500	487.500
0058	614.2350	MGS Guardrail Short Radius	LF	12.500	12.500
0060	614.2610	MGS Guardrail Terminal EAT	EACH	5.000	5.000
0062	614.2630	MGS Guardrail Short Radius Terminal	EACH	1.000	1.000
0064	618.0100	Maintenance And Repair of Haul Roads (project) 01. 9324-02-71	EACH	1.000	1.000
0066	619.1000	Mobilization	EACH	1.000	1.000
0068	624.0100	Water	MGAL	100.000	100.000
0070	625.0500	Salvaged Topsoil	SY	4,940.000	4,940.000
0072	627.0200	Mulching	SY	360.000	360.000
0074	628.1504	Silt Fence	LF	6,575.000	6,575.000
0076	628.1520	Silt Fence Maintenance	LF	6,575.000	6,575.000

Estimate Of Quantities

9324-02-71

Line	Item	Item Description	Unit	Total	Qty
0078	628.1905	Mobilizations Erosion Control	EACH	4.000	4.000
0080	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0082	628.2004	Erosion Mat Class I Type B	SY	4,815.000	4,815.000
0084	629.0210	Fertilizer Type B	CWT	12.300	12.300
0086	630.0120	Seeding Mixture No. 20	LB	586.000	586.000
0088	630.0200	Seeding Temporary	LB	291.000	291.000
0090	634.0614	Posts Wood 4x6-Inch X 14-FT	EACH	12.000	12.000
0092	634.0616	Posts Wood 4x6-Inch X 16-FT	EACH	18.000	18.000
0094	637.2210	Signs Type II Reflective H	SF	143.680	143.680
0096	637.2230	Signs Type II Reflective F	SF	112.000	112.000
0098	638.2602	Removing Signs Type II	EACH	33.000	33.000
0100	638.3000	Removing Small Sign Supports	EACH	33.000	33.000
0102	642.5001	Field Office Type B	EACH	1.000	1.000
0104	643.0300	Traffic Control Drums	DAY	1,540.000	1,540.000
0106	643.0420	Traffic Control Barricades Type III	DAY	1,540.000	1,540.000
0108	643.0705	Traffic Control Warning Lights Type A	DAY	3,080.000	3,080.000
0110	643.0900	Traffic Control Signs	DAY	1,925.000	1,925.000
0112	643.5000	Traffic Control	EACH	1.000	1.000
0114	645.0120	Geotextile Type HR	SY	9.000	9.000
0116	646.1020	Marking Line Epoxy 4-Inch	LF	52,960.000	52,960.000
0118	646.6120	Marking Stop Line Epoxy 18-Inch	LF	60.000	60.000
0120	650.4500	Construction Staking Subgrade	LF	5,769.000	5,769.000
0122	650.5000	Construction Staking Base	LF	5,769.000	5,769.000
0124	650.5500	Construction Staking Curb Gutter and Curb & Gutter	LF	450.000	450.000
0126	650.8000	Construction Staking Resurfacing Reference	LF	12,681.000	12,681.000
0128	650.9910	Construction Staking Supplemental Control (project) 01. 9324-02-71	LS	1.000	1.000
0130	650.9920	Construction Staking Slope Stakes	LF	5,769.000	5,769.000
0132	690.0150	Sawing Asphalt	LF	726.000	726.000
0134	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	300.000	300.000
0136	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	600.000	600.000

3

CLEARING AND GRUBBING ITEMS

			201.0105	201.0205
			CLEARING	GRUBBING
STATION - STATION	LOCATION		STA	STA
CATEGORY CODE 0010				
132+00 - 133+00	LT		1	1
139+00 - 142+00	LT		3	3
161+00 - 164+00	LT		3	3
167+00 - 170+00	LT		3	3
174+00 - 175+00	RT		1	1
181+00 - 189+00	RT		8	8
199+00 - 201+00	RT		2	2
TOTALS			21	21

REMOVING SMALL PIPE CULVERTS

		203.0100		
STATION	LOCATION	EACH	COMMENTS	
CATEGORY CODE 0010				
167+30	RT	1	18"	CMP
169+21	RT	1	18"	CMP
TOTALS		2		

REMOVING ASPHALTIC SURFACE

		204.0110
		REMOVING ASPHALTIC SURFACE (SY)
CATEGORY CODE 0010		
101+08 - 102+11	LT	140
101+11 - 104+07	RT	450
105+42	RT	40
107+16	RT	40
112+15	LT	50
114+03	RT	60
143+82	LT	40
146+65	RT	30
147+25	LT	40
155+69	LT	50
180+58	LT	40
208+43	RT	40
TOTAL		1,020

3

REMOVING ASPHALTIC SURFACE BUTT JOINTS

		204.0115
		REMOVING ASPHALTIC SURFACE BUTT JOINTS (SY)
CATEGORY CODE 0010		
101+10 - 104+10	CTH N	1130
111+66	SPORTMAN LN	55
134+90	MELIN ROAD	45
150+90	SKYLINE DRIVE	150
202+40	BROULLIRES ROAD	160
230+65 - 232+40	CTH N	430
TOTAL		1,970

REMOVING ASPHALTIC SURFACE MILLING

		204.0120
		REMOVING ASPHALTIC SURFACE MILLING (SY)
CATEGORY CODE 0010		
100+00 - 101+10	---	740
TOTAL		740

REMOVING GUARDRAIL

		204.0165
		REMOVING GUARDRAIL (LF)
CATEGORY CODE 0010		
114+30 - 116+20	RT	190
TOTAL		190

3

Division	STATION - STATION	LOCATION	COMMON EXCAVATION (1) (item #205.0100)		SALVAGED/ UNUSABLE PAVEMENT MATERIAL	AVAILABLE MATERIAL (5)	Reduced EBS in Fill (9)	Expanded EBS Backfill (11)	UNEXPANDED FILL	EXPANDED FILL (13) FACTOR	MASS ORDINATE +/- (14)	(item #208.0100) BORROW
			CUT (2)	EBS EXCAVATION (3)			Factor 0.80	Factor 1.30		1.25		
1	112+55 - 118+10 LT	CTH N	134	0	0	134	0	0	29	36	98	
	114+38 - 116+87 RT	CTH N	49	0	0	49	0	0	20	25	23	
	124+50 - 127+50 LT	CTH N	42	0	0	42	0	0	30	38	4	
	131+50 - 133+50 LT	CTH N	4	0	0	4	0	0	73	91	-88	
	132+50 - 142+50 RT	CTH N	113	0	0	113	0	0	290	362	-249	
	140+00 - 142+00 LT	CTH N	26	0	0	26	0	0	56	70	-45	
	158+50 - 165+16 LT	CTH N	22	0	0	22	0	0	784	980	-958	
	165+16 - 170+75	CTH N	211	0	114	97	0	0	1,498	1,873	-1,775	
	173+00 - 175+00 RT	CTH N	128	0	32	96	0	0	0	0	96	
	178+50 - 189+50 RT	CTH N	70	0	0	70	0	0	317	395	-325	
	188+50 - 194+50 LT	CTH N	19	0	0	19	0	0	291	363	-344	
	198+50 - 201+50 RT	CTH N	36	0	0	36	0	0	153	191	-155	
	211+50 - 213+00 RT	CTH N	10	0	0	10	0	0	6	7	3	
	11+00 - 11+84	FISCHER LAKE	94	0	17	77	0	0	2	2	75	
Division 1 Subtotal			958	0	163	795	0	0	3,549	4,433	-3,640	3,640
	GRAND TOTALS =		958	0	163	795	0	0	3,549	4,433	-3,640	3,640
	TOTAL COMMON EXCAVATION =		958									

1) COMMON EXCAVATION IS THE SUM OF THE CUT AND EBS EXCAVATION COLUMNS. ITEM NUMBER 205.0100

2) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.

3) EBS EXCAVATION TO BE BACKFILLED WITH CUT MATERIAL OR BORROW.

5) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSABLE PAVEMENT MATERIAL.

9) REDUCED EBS IN FILL - EXCAVATED EBS MATERIAL IS USABLE IN FILLS OUTSIDE THE 1:1 SLOPE. EBS IN FILL REDUCTION FACTOR = 0.8.

11) EXPANDED EBS BACKFILL TO BE FILLED WITH CUT MATERIAL OR BORROW. EBS BACKFILL FACTOR = 1.3.

13) EXPANDED FILL FACTOR = 1.25

EXPANDED FILL = UNEXPANDED FILL * FILL FACTOR

14) THE MASS ORDINATE +/- QTY CALCULATED FOR THE DIVISON. + QUANTITY INDICATES AN EXCESS OF MATERIAL WITH THE DIVISION. - INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.

3

BASE AGGREGATE DENSE 1 1/4-INCH

305.0120
BASE AGG
DENSE
1 1/4-INCH

STATION - STATION	LOCATION	TON	COMMENTS
CATEGORY CODE 0010			
101+10 - 165+16	MAINLINE	2,120	OVER PULVERIZING
165+16 - 170+75	MAINLINE	1,400	RECONSTRUCTION
170+75 - 232+40	MAINLINE	2,040	OVER PULVERIZING
112+50 - 118+10	LT	320	GUARDRAIL WIDENING
114+37 - 116+87	RT	140	GUARDRAIL WIDENING
124+50 - 127+50	LT	190	SHOULDER CORRECTION
131+50 - 133+50	LT	120	SHOULDER CORRECTION
132+50 - 142+50	RT	620	SHOULDER CORRECTION
140+00 - 142+00	LT	90	CURB & GUTTER WIDENING
158+50 - 165+16	LT	410	SHOULDER CORRECTION
178+50 - 189+50	LT	680	SHOULDER CORRECTION
188+50 - 194+50	LT	370	SHOULDER CORRECTION
198+50 - 201+50	RT	190	SHOULDER CORRECTION
211+50 - 213+00	RT	90	SHOULDER CORRECTION
111+66	LT	10	SPORTSMAN LANE
125+50	LT	10	LAGUNA DRIVE
134+90	RT	10	MELIN ROAD
150+90	RT	10	SKYLINE DRIVE
174+00	RT	450	FISCHER LAKE PARKWAY
202+40	RT	10	BROULLIRES ROAD
-- - --	DRIVEWAYS	130	--
TOTAL:		9,410	

PULVERIZE AND RELAY

STATION - STATION	LOCATION	325.0100 PULVERIZE AND RELAY (SY)	374.1020.S QMP COMPACTION (SY)
CATEGORY CODE 0010			
101+10 - 165+16	CTH N	19,150	19,150
170+75 - 232+40	CTH N	18,380	18,380
111+66	SPORTMAN LANE	55	55
134+90	MELIN ROAD	45	45
150+90	SKYLINE DRIVE	150	150
202+40	BROULLIRES ROAD	160	160
TOTAL		37,940	37,940

BASE AGGREGATE DENSE 3/4-INCH

305.0110
BASE AGG
DENSE
3/4-INCH

STATION - STATION	LOCATION	TON	COMMENTS
CATEGORY CODE 0010			
101+10 - 232+40	MAINLINE	1,850	GRAVEL SHOULDER
-- - --	SIDEROADS	100	--
-- - --	DRIVEWAYS	70	--
TOTAL:		2,020	

ASPHALTIC ITEMS

460.5223 460.5244 465.0120
HMA HMA ASPHALTIC SURFACE
PAVEMENT PAVEMENT DRIVEWAYS & FIELD
3 LT 58-28 S 4 LT 58-34 S TACK ENTRANCES
COAT TON TON COMMENTS

STATION - STATION	LOCATION	TON	TON	GAL	TON	COMMENTS
CATEGORY CODE 0010						
101+10 - 106+00	CTH N	250	--	--	--	LOWER LIFT
100+00 - 106+00	CTH N	--	280	60	--	UPPER LIFT
106+00 - 232+40	CTH N	5,520	--	--	--	LOWER LIFT
106+00 - 232+40	CTH N	--	4,420	985	--	UPPER LIFT
111+66	SPORTSMAN LANE	10	10	2	--	--
125+50	LAGUNA DRIVE	10	10	1	--	--
134+90	MELIN ROAD	10	10	2	--	--
150+90	SKYLINE DRIVE	20	20	5	--	--
174+00	FISCHER LANE PARKWAY	115	90	20	--	--
202+40	BROULLIRES ROAD	20	20	5	--	--
-- - --	DRIVEWAYS	--	--	--	260	DRIVEWAYS
TOTALS		5,955	4,860	1,080	260	

3

3

ASPHALT FLUMES			
465.0315 ASPHALTIC FLUMES			
STATION	LOCATION	SY	COMMENTS
CATEGORY CODE 0010			
140+00	LT	3	CTH N
11+24	RT	3	FISCHER LAKE PARKWAY
11+24	LT	3	FISCHER LAKE PARKWAY
TOTALS		9	

CONCRETE CURB AND GUTTER				
601.0553 650.5500				
CONCRETE CURB & GUTTER 4-INCH SLOPED 36-INCH TYPE D			CONSTRUCTION STAKING CURB GUTTER & CURB AND GUTTER	
STATION	LOCATION	LF	LF	COMMENTS
CATEGORY CODE 0010				
140+00 - 142+00	LT	200	200	CTH N
10+16 - 11+24	RT	150	150	NW QUAD OF FISCHER LAKE INT.
10+16 - 11+24	LT	100	100	SE QUAD OF FISHER LAKE INT.
TOTALS		450	450	

RIPRAP & GEOTEXTILE FABRIC			
606.0200 645.0120			
		RIPRAP MEDIUM	GEOTEXTILE FABRIC TYPE HR
STATION	LOCATION	CY	SY
CATEGORY CODE 0010			
140+00	LT	2	3
11+24	LT	2	3
11+24	RT	2	3
TOTALS		6	9

MGS GUARDRAIL ITEMS						
		614.2330 GUARDRAIL 3 K	614.2610 TERMINAL EAT EACH	614.2350 MGS GUARDRAIL SHORT RADIUS LF	614.2630 MGS GUARDRAIL SHORT RADIUS TERMINAL EACH	
STATION -	STATION	LOCATION	LF			
CATEGORY CODE 0010						
112+55.45 -	113+05.45	LT	---	1	---	---
113+05.45 -	114+92.95	LT	187.5	---	---	---
114+92.95 -	115+04.43	LT	---	---	12.5	---
115+04.43 -	115+13.17	LT	---	---	---	1
114+37.50 -	114+87.50	RT	---	1	---	---
114+87.50 -	116+37.44	RT	150.0	---	---	---
116+37.44 -	116+87.44	RT	---	1	---	---
115+60.00 -	116+10.00	LT	---	1	---	---
116+10.00 -	117+60.26	LT	150.0	---	---	---
117+60.26 -	118+10.26	LT	---	1	---	---
TOTALS			487.5	5	12.5	1

WATER		
624.0100 WATER		
STATION -	STATION	LOCATION
CATEGORY CODE 0010		
UNDISTRUBUTED	--	100
TOTALS		100

3

3

LANDSCAPING ITEMS

			625.0500		629.0210	630.0120	630.0200	REMARKS
			SALVAGED	627.0200	FERTILIZER	SEED MIX	SEEDING	
STATION -	STATION	LOCATION	TOPSOIL	MULCHING	TYPE B	NO. 20	TEMPORARY	
CATEGORY CODE 0010			SY	SY	CWT	LBS	LBS	
100+00 -	165+16	LT & RT	---	---	3.5	150	75	5FT SHOULDER RE-SEEDING
170+75 -	232+40	LT & RT	---	---	3.5	150	75	5FT SHOULDER RE-SEEDING
165+16 -	170+75	LT & RT	970	325	1.0	45	23	RECONSTRUCTION SECTION
112+50 -	118+10	LT	420	---	0.4	17	9	SHOULDER GRADING
114+37 -	116+87	RT	215	---	0.2	9	4	SHOULDER GRADING
124+50 -	127+50	LT	100	---	0.1	4	2	SHOULDER GRADING
131+50 -	133+50	LT	100	---	0.1	5	3	SHOULDER GRADING
132+50 -	142+50	RT	600	---	0.8	35	17	SHOULDER GRADING
140+00 -	142+00	LT	170	---	0.1	5	3	SHOULDER GRADING
158+50 -	165+16	LT	900	---	0.9	40	20	SHOULDER GRADING
172+83	175+35	RT	280	---	0.2	8	4	FISCHER LAKE INTERSECTION
178+50 -	189+50	LT	420	---	0.7	30	15	SHOULDER GRADING
188+50 -	194+50	LT	350	---	0.5	20	10	SHOULDER GRADING
198+50 -	201+50	RT	130	---	0.2	9	4	SHOULDER GRADING
211+50 -	213+00	RT	50	---	0.1	4	2	SHOULDER GRADING
UNDISTRIBUTED			235	35	0.0	55	25	
TOTALS			4,940	360	12.3	586	291	

SILT FENCE ITEMS

			628.1504	628.1520
			SILT FENCE	MAINTENANCE
STATION -	STATION	LOCATION	LF	LF
CATEGORY CODE 0010				
112+40 -	115+15	LT	275	275
114+30 -	118+00	RT	370	370
115+50 -	119+00	LT	350	350
124+80 -	125+30	LT	50	50
125+70 -	127+00	LT	130	130
131+70 -	133+20	LT	150	150
132+80 -	134+70	RT	190	190
135+40 -	142+20	RT	680	680
139+50 -	142+00	LT	250	250
158+60 -	171+30	LT	1,270	1,270
169+30 -	171+20	RT	190	190
178+80 -	189+30	RT	1,050	1,050
188+50 -	194+30	LT	580	580
198+50 -	201+30	RT	280	280
211+50 -	213+10	RT	160	160
UNDISTRIBUTED			600	600
TOTALS			6,575	6,575

MOBILIZATIONS EROSION CONTROL

	628.1905	628.1910
	EROSION	EMERGENCY
	CONTROL	EROSION CONTROL
	EACH	EACH
CATEGORY CODE 0010		
ID 9324-02-71	4	2
TOTAL	4	2

EROSION MAT

EROSION MAT CLASS I TYPE B 628.2004		
STATION - STATION	LOCATION	SY
CATEGORY CODE 0010		
165+16 - 170+75	LT & RT	670
112+50 - 118+10	LT	420
114+37 - 116+87	RT	215
124+50 - 127+50	LT	100
131+50 - 133+50	LT	100
132+50 - 142+50	RT	600
140+00 - 142+00	LT	170
158+50 - 165+16	LT	900
178+50 - 189+50	LT	420
188+50 - 194+50	LT	350
198+50 - 201+50	RT	130
211+50 - 213+00	RT	50
10+00 - 11+84	FISCHER LAKE	250
UNDISTRIBUTED		440
TOTALS		4,815

DRIVEWAY CULVERT PIPES

STATION LOCATION		521.3118 CULVERT PIPE CORRUGATED STEAL 18-INCH LF	521.1018 APRON ENDWALL FOR CULVERT PIPE STEAL 18-INCH EACH	WALL THICKNESS INCHES
CATEGORY CODE 0010				
167+30	RT	24	2	0.064
169+22	RT	36	2	0.064
TOTALS		60	4	

CULVERT PIPE REINFORCED CONCRETE

STATION LOCATION		522.0124 CLASS III 24-INCH LF	522.1024 APRON ENDWALL 24-INCH EACH
CATEGORY CODE 0010			
212+24	CTH N	46	2
212+31	CTH N	46	2
TOTALS		92	4

SIGNING ITEMS											
SIGN NO.	STATION	LOCATION	SIGN CODE	SIZE	638.2602	638.3000	637.2210	637.2230	634.0614	634.0616	REMARKS
					REMOVING SIGNS TYPE II EACH	REMOVING SMALL SIGN SUPPORTS EACH	SIGNS TYPE II REFLECTIVE H SF	SIGNS TYPE II REFLECTIVE F SF	POSTS WOOD 4X6X14 EACH	POSTS WOOD 4X6X16 EACH	
CATEGORY CODE 0010											
1-1	100+45	LT	R1-1	36 x 36	--	--	7.46	--	--	1	STOP
1-1R	100+45	LT			1	1	--	--	--	--	STOP
1-2	AGNES ST	RT	R1-1	36 x 36			7.46	--	--	1	STOP
1-2R	AGNES ST	RT			1	1	--	--	--	--	STOP
1-3	104+70	RT	R2-1	36 x 48	--	--	12.00	--	1	--	SPEED LIMIT 35 MPH
1-3R	104+70	RT			1	1	--	--	--	--	SPEED LIMIT 35 MPH
1-4R	106+25	RT			1	1	--	--	--	--	WEIGHT LIMITS
1-6	108+40	RT	W1-5R	36 x 36	--	--	--	9.00	--	1	CURVE
1-6R	108+40	RT			1	1	--	--	--	--	CURVE
1-7	109+20	LT	W3-1	36 x 36	--	--	--	9.00	--	1	STOP AHEAD
1-7R	109+20	LT			1	1	--	--	--	--	STOP AHEAD
1-8	109+55	RT	W11-6	36 x 36	--	--	--	9.00	--	1	SNOWMOBILE CROSSING
1-8R	109+55	RT			1	1	--	--	--	--	SNOWMOBILE CROSSING
2-1	SPORTSMAN LN	LT	R1-1	36 x 36	--	--	7.46	--	--	1	STOP
2-1R	SPORTSMAN LN	LT			1	1	--	--	--	--	STOP
2-2	113+85	LT	R2-1	36 x 48	--	--	12.00	--	1	--	SPEED LIMIT 35 MPH
2-2R	113+85	LT			1	1	--	--	--	--	SPEED LIMIT 35 MPH
2-3	115+40	RT	R2-1	36 X 48	--	--	12.00	--	1	--	SPEED LIMIT 45 MPH
2-3R	115+40	RT			1	1	--	--	--	--	SPEED LIMIT 45 MPH
2-4R	118+95	RT			1	1	--	--	--	--	35 MPH CURVE
2-5	122+50	LT	W11-6	36 x 36	--	--	--	9.00	--	1	SNOWMOBILE CROSSING
2-5R	122+50	LT			1	1	--	--	--	--	SNOWMOBILE CROSSING
3-2	124+80	LT	W3-5	36 x 36	--	--	--	9.00	--	1	SPEED LIMIT AHEAD
3-2R	124+80	LT			1	1	--	--	--	--	SPEED ZONE AHEAD
3-3	LAGUNA DR	RT	R1-1	36 x 36	--	--	7.46	--	--	1	STOP
3-3R	LAGUNA DR	RT			1	1	--	--	--	--	STOP
4-1	MELIN RD	RT	R1-1	36 x 36	--	--	7.46	--	--	1	STOP
4-1R	MELIN RD	RT			1	1	--	--	--	--	STOP
5-1A	148+05	RT	W1-2L	30 x 30	--	--	--	6.25	--	1	CURVE
5-1B	148+05	RT	W13-1	18 x 18	--	--	--	2.25	--	--	40 MPH
5-2	SKYLINE DR	RT	R1-1	36 x 36	--	--	7.46	--	--	1	STOP
5-2R	SKYLINE DR	RT			1	1	--	--	--	--	STOP
5-3A	154+10	RT	W1-2R	36 x 36	--	--	--	6.25	--	1	CURVE
5-3B	154+10	RT	W13-1	18 x 18	--	--	--	2.25	--	--	40 MPH
6-1R	165-10	LT			1	1	--	--	--	--	CURVE AND ADVISORY
6-2R	165+50	RT			1	1	--	--	--	--	CURVE
TOTALS					CONTINUED						

SIGNING ITEMS											
SIGN NO.	STATION	LOCATION	SIGN CODE	SIZE	638.2602	638.3000	637.2210	637.2230	634.0614	634.0616	REMARKS
					REMOVING SIGNS TYPE II EACH	REMOVING SMALL SIGN SUPPORTS EACH	SIGNS TYPE II REFLECTIVE H SF	SIGNS TYPE II REFLECTIVE F SF	POSTS WOOD 4X6X14 EACH	POSTS WOOD 4X6X16 EACH	
6-3	170+10	LT	R2-1	36 x 48	--	--	12.00	--	1	--	SPEED LIMIT 45 MPH
6-3R	170+10	LT			1	1	--	--	--	--	SPEED LIMIT 45 MPH
6-4A	170+00	RT	W1-2R	30 x 30	--	--	--	6.25	--	1	CURVE
6-4B	170+00	RT	W13-1	18 x 18	--	--	--	2.25	--	--	40 MPH
7-1A	173+35	RT	W1-8	18 x 24	--	--	--	3.00	1	--	CHEVRON
7-1B	173+35	RT	W1-8	18 x 24	--	--	--	3.00	--	--	CHEVRON
7-2R	FISCHER LAKE PRKY	LT			1	1	--	--	--	--	STOP
7-3R	FISCHER LAKE PRKY	RT			1	1	--	--	--	--	STOP
7-4R	FISCHER LAKE PRKY	RT			1	1	--	--	--	--	ARROW
7-5	FISCHER LAKE PRKY	RT	R1-1	36 x 36	--	--	7.46	--	--	1	STOP
7-6A	175+05	RT	W1-8	18 x 24	--	--	--	3.00	1	--	CHEVRON
7-6B	175+05	RT	W1-8	18 x 24	--	--	--	3.00	--	--	CHEVRON
7-7R	175+50	RT			1	1	--	--	--	--	ARROW
7-8	176+75	RT	W1-8	18 x 24	--	--	--	3.00	1	--	CHEVRON
7-8R	176+75	RT			1	1	--	--	--	--	SPEED LIMIT 45 MPH
7-9	176+75	RT	W1-8	18 x 24	--	--	--	3.00	1	--	CHEVRON
7-10A	178+00	RT	W1-8	18 x 24	--	--	--	3.00	1	--	CHEVRON
7-10B	178+00	RT	W1-8	18 x 24	--	--	--	3.00	--	--	CHEVRON
42927	180+00	RT	R2-1	36 x 48	--	--	12.00	--	1	--	SPEED LIMIT 45 MPH
8-1R	184+85	RT			1	1	--	--	--	--	CURVE
8-2A	186+00	LT	W1-2R	30 x 30	--	--	--	6.25	--	1	CURVE
8-2B	186+00	LT	W13-1	18 x 18	--	--	--	2.25	--	--	40 MPH
9-1	198+50	LT	R2-1	36 x 48	--	--	12.00	--	1	--	SPEED LIMIT 45 MPH
9-1R	198+50				1	1	--	--	--	--	SPEED LIMIT 45 MPH
9-2	BROULLIRES RD	RT	R1-1	36 x 36	--	--	7.46	--	--	1	STOP
9-2R	BROULLIRES RD	RT			1	1	--	--	--	--	STOP
9-3	205+00	RT	R2-1	36 x 48	--	--	12.00	--	1	--	SPEED LIMIT 45 MPH
9-3R	205+00	RT			1	1	--	--	--	--	SPEED LIMIT 45 MPH
9-4R	205+65	LT			1	1	--	--	--	--	CURVE
10-1R	214+20	RT			1	1	--	--	--	--	ARROW
11-1	220+40	LT	W1-5R	36 x 36	--	--	--	9.00	--	1	CURVE
11-1R	220+40	LT			1	1	--	--	--	--	CURVE
11-3R	228+90	LT			1	1	--	--	--	--	ARROW
11-6R	230+60	LT			1	1	--	--	--	--	WEIGHT LIMITS
TOTALS					33	33	143.68	112.00	12	18	

3

TRAFFIC CONTROL ITEMS

LOCATION	643.0300	643.0420	643.0705	643.0900
	TRAFFIC	BARRICADES	WARNING	TRAFFIC
	CONTROL	TYPE III	LIGHTS	CONTROL
	DRUMS	TYPE III	TYPE A	SIGNS
	DAYS	DAYS	DAYS	DAYS
CATEGORY CODE 0010				
BEGIN PROJECT	--	385	770	539
END PROJECT	--	539	1,078	462
AGNES ST.	--	154	308	231
SKYLINE DR.	--	154	308	231
FISCHER LAKE PARKWAY	--	154	308	231
BROULLIRES RD.	--	154	308	231
UNDISTRIBUTED	1,540	--	--	--
	1,540	1,540	3,080	1,925

MARKING ITEMS

		646.1020 EPOXY 4-INCH		646.6120 STOP LINE EPOXY 18-INCH	
STATION	- STATION	LOCATION	WHITE LF	YELLOW LF	LF
CATEGORY CODE 0010					
100+00	- 232+40	CL	---	26,480	15
100+00	- 232+40	EDGE LINE	26,480	---	---
FISCHER LAKE PARKWAY		---	---	---	45
TOTALS			26,480	26,480	60
			52,960		

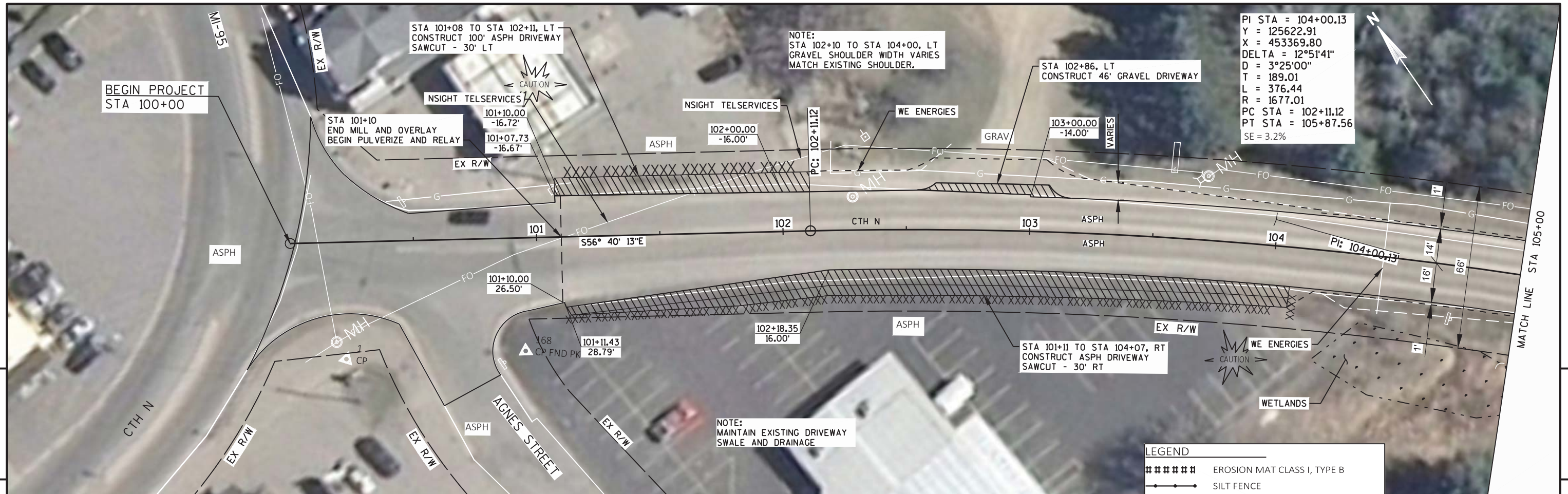
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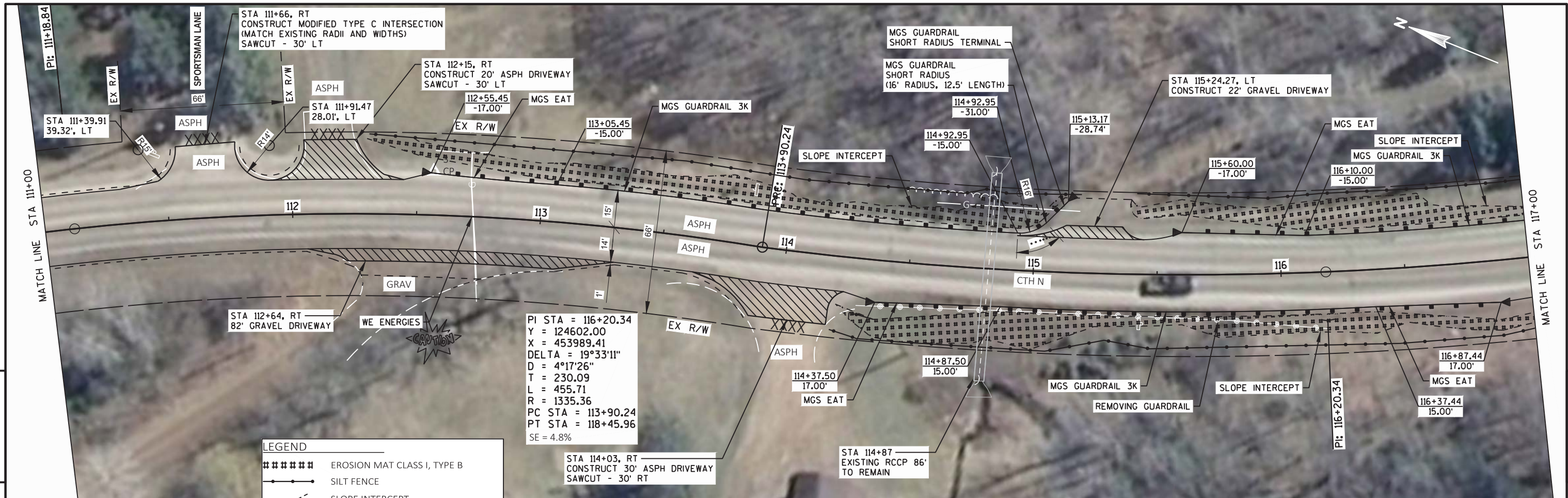
CONSTRUCTION STAKING ITEMS

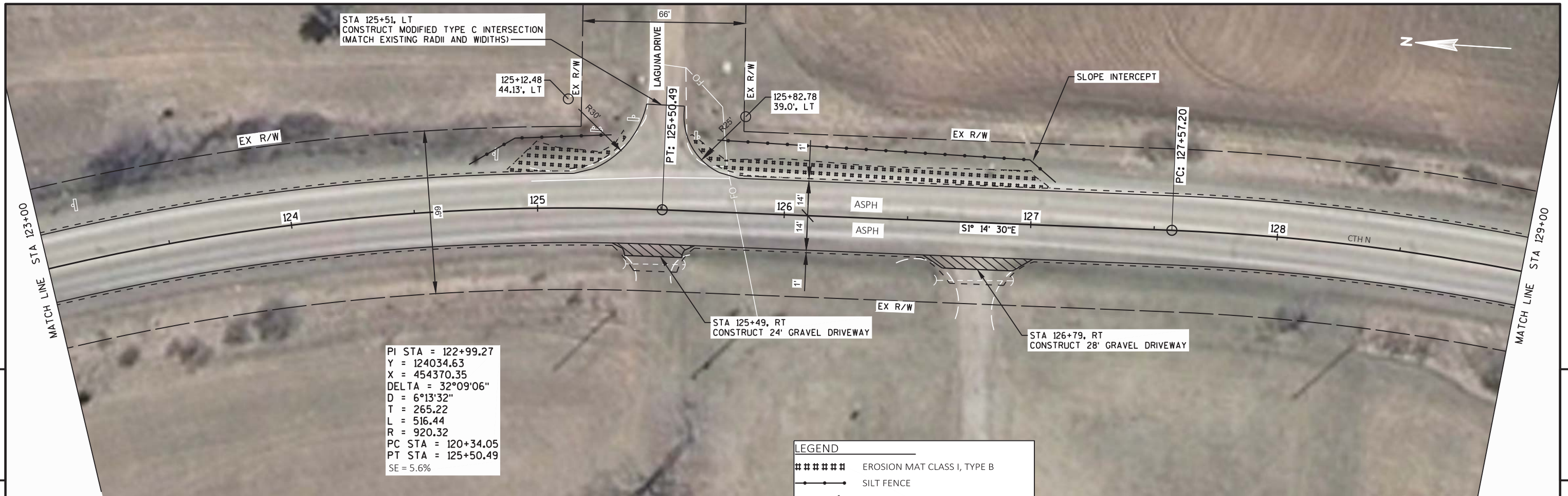
STATION	- STATION	LOCATION	650.4500	650.5000	650.8000	650.9910	650.9920
			SUBGRADE	BASE	RESURFACING	SUPPLEMENTAL	SLOPE
			LF	LF	REFERENCE	CONTROL	STAKES
					LF	LS	LF
CATEGORY CODE 0010							
100+00	- 165+16	MAINLINE	--	--	6,516	1	--
165+16	- 170+75	MAINLINE	559	559	--	--	559
170+75	- 232+40	MAINLINE	--	--	6,165	--	--
112+50	- 118+10	LT	560	560	--	--	560
114+37	- 116+87	RT	250	250	--	--	250
124+50	- 127+50	LT	300	300	--	--	300
131+50	- 132+50	LT	100	100	--	--	100
132+50	- 133+50	LT & RT	100	100	--	--	100
133+50	- 140+00	RT	650	650	--	--	650
140+00	- 142+50	LT & RT	250	250	--	--	250
158+50	- 165+16	LT	666	666	--	--	666
178+50	- 189+50	LT	1,100	1,100	--	--	1,100
188+50	- 194+50	LT	600	600	--	--	600
198+50	- 201+50	RT	300	300	--	--	300
211+50	- 213+00	RT	150	150	--	--	150
10+00	- 11+84	FISCHER LAKE PARKWAY	184	184	--	--	184
TOTALS			5,769	5,769	12,681	1	5,769

SAWING PAVEMENT ITEMS

690.0150 ASPHALT			
STATION	LOCATION	LF	COMMENTS
CATEGORY CODE 0010			
101+50	LT	100	DRIVEWAY
102+50	RT	290	DRIVEWAY
105+41	RT	35	DRIVEWAY
107+16	RT	25	DRIVEWAY
112+15	RT	20	DRIVEWAY
114+03	RT	30	DRIVEWAY
--	CL	20	MELIN ROAD
143+82	LT	18	DRIVEWAY
146+70	LT	16	DRIVEWAY
147+25	LT	16	DRIVEWAY
--	CL	20	SKYLINE DRIVE
155+69	LT	26	DRIVEWAY
--	CL	24	FISCHER LAKE PARKWAY
180+58	LT	26	DRIVEWAY
--	CL	20	BROULLIRES ROAD
208+43	RT	18	DRIVEWAY
232+40	CL	22	END OF PROJECT
TOTALS		726	



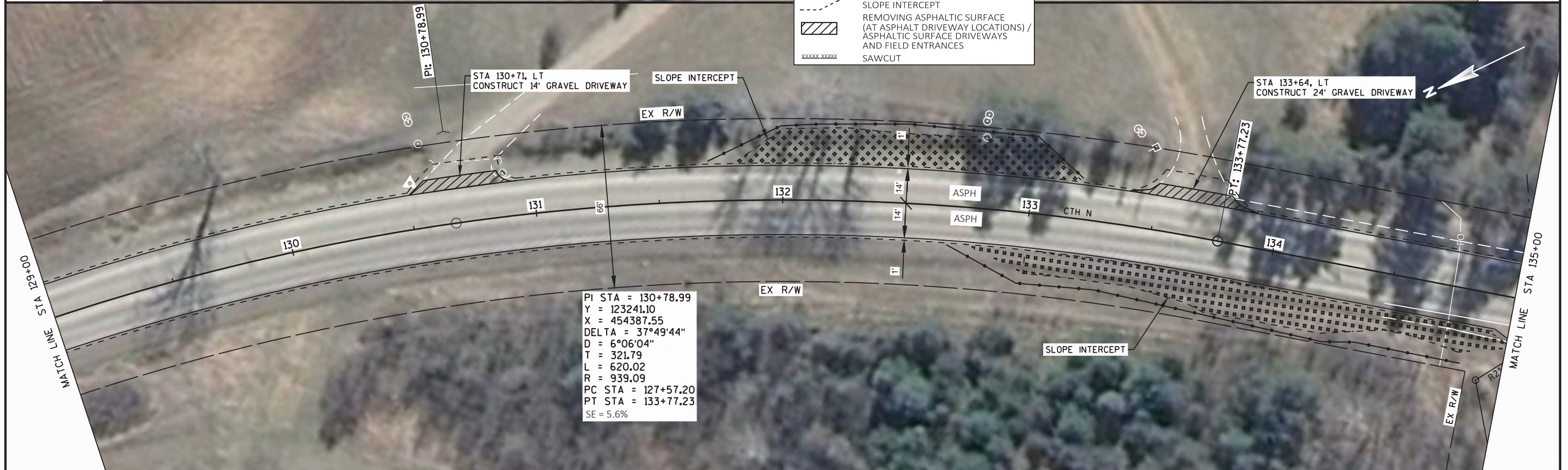




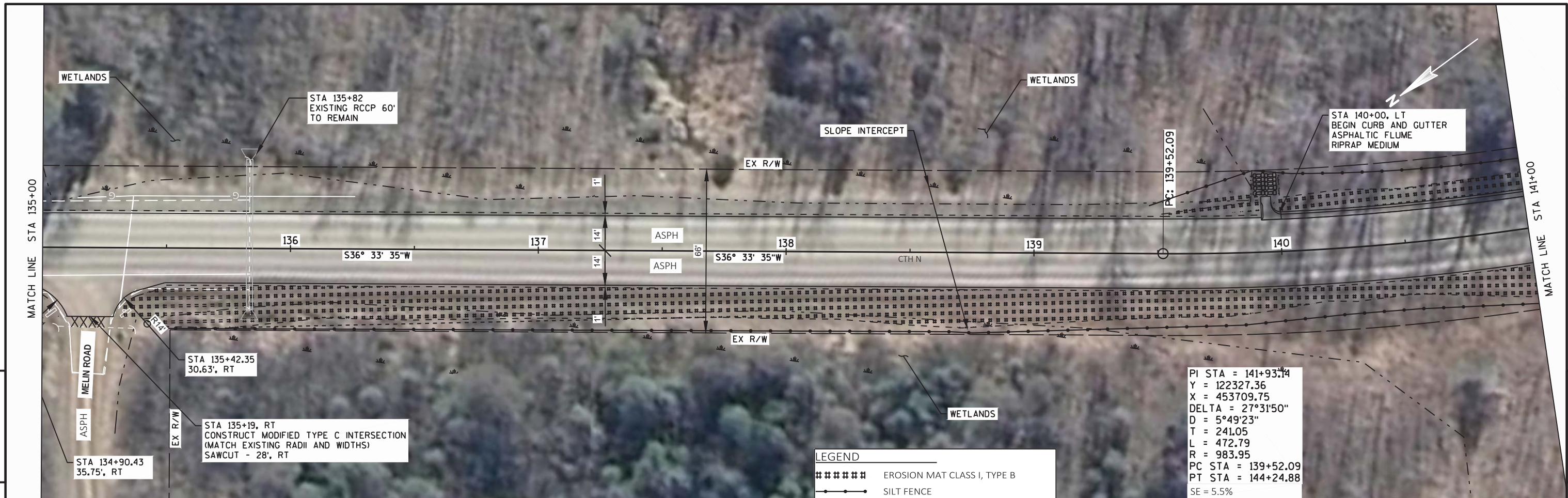
PI STA = 122+99.27
Y = 124034.63
X = 454370.35
DELTA = 32°09'06"
D = 6°13'32"
T = 265.22
L = 516.44
R = 920.32
PC STA = 120+34.05
PT STA = 125+50.49
SE = 5.6%

LEGEND

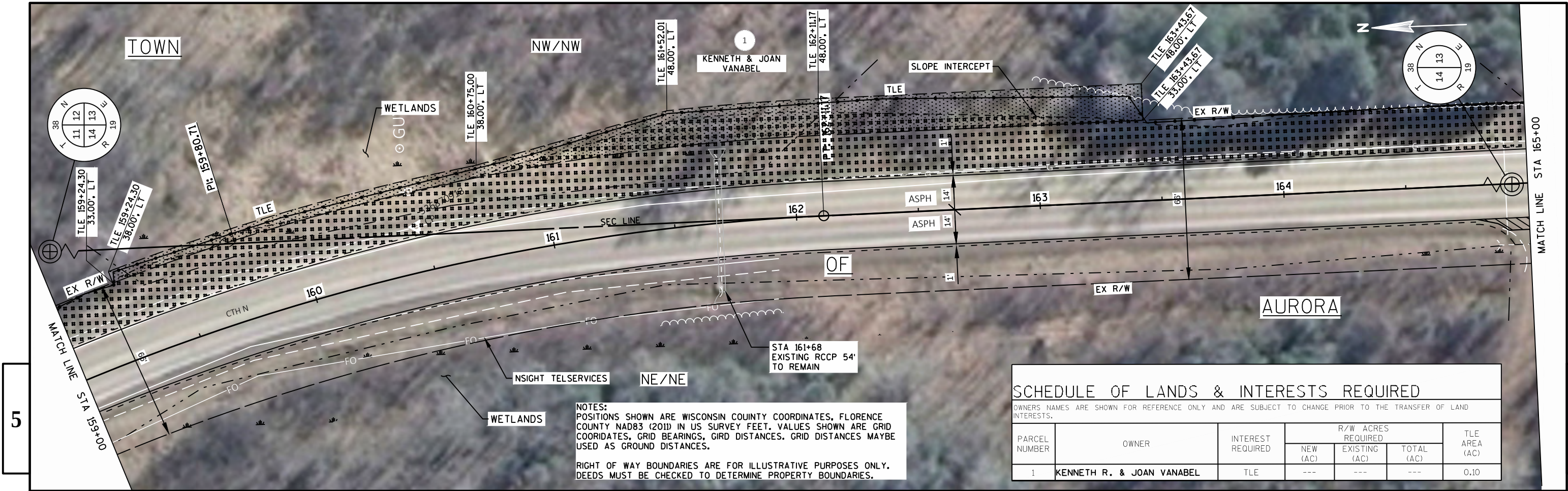
- ##### EROSION MAT CLASS I, TYPE B
- SILT FENCE
- - - SLOPE INTERCEPT
- /// REMOVING ASPHALTIC SURFACE (AT ASPHALT DRIVEWAY LOCATIONS) / ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES
- xxxxx SAWCUT



PI STA = 130+78.99
Y = 123241.10
X = 454387.55
DELTA = 37°49'44"
D = 6°06'04"
T = 321.79
L = 620.02
R = 939.09
PC STA = 127+57.20
PT STA = 133+77.23
SE = 5.6%







R/W PROJECT NO: 9324-02-01

PROJECT NO: 9324-02-71

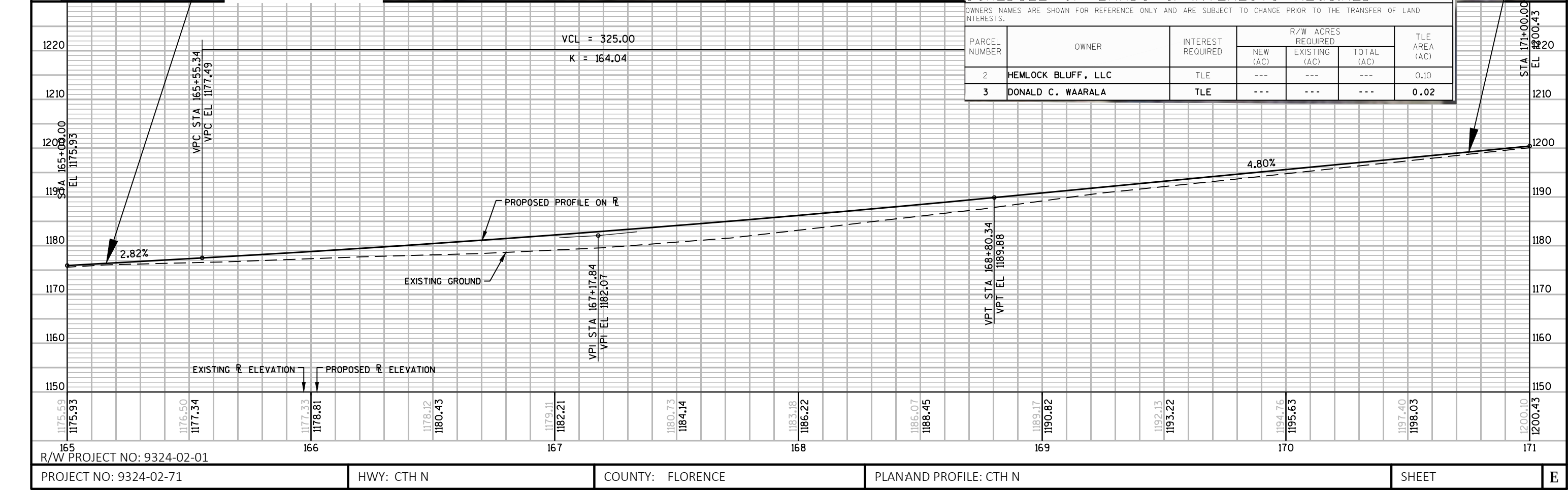
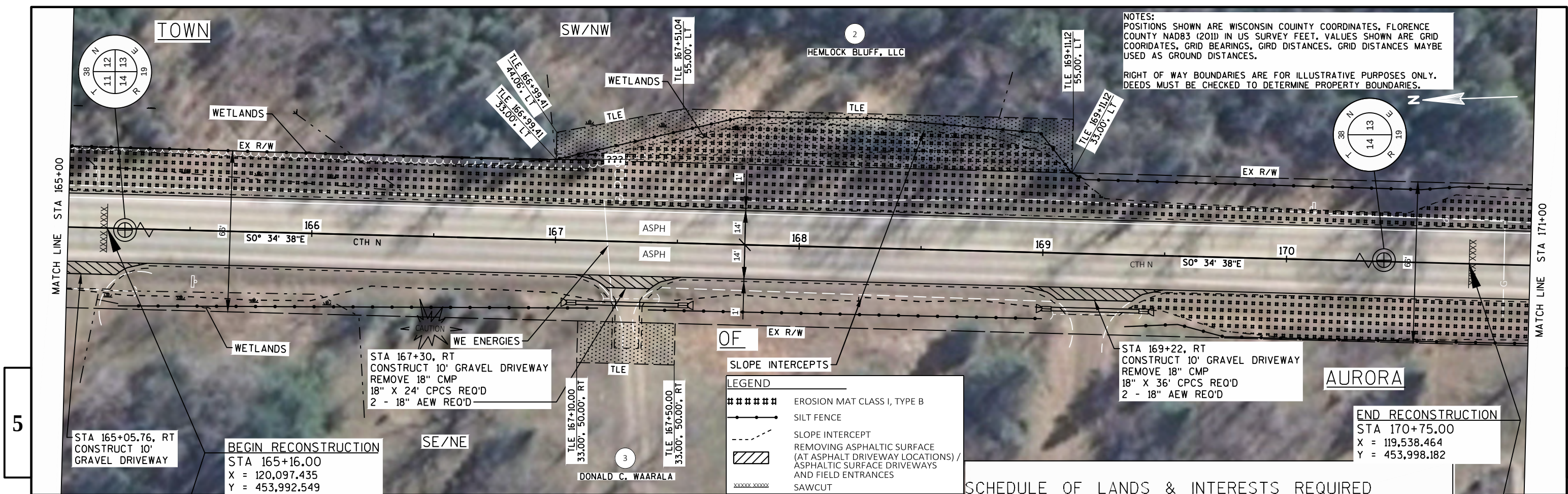
HWY: CTH N

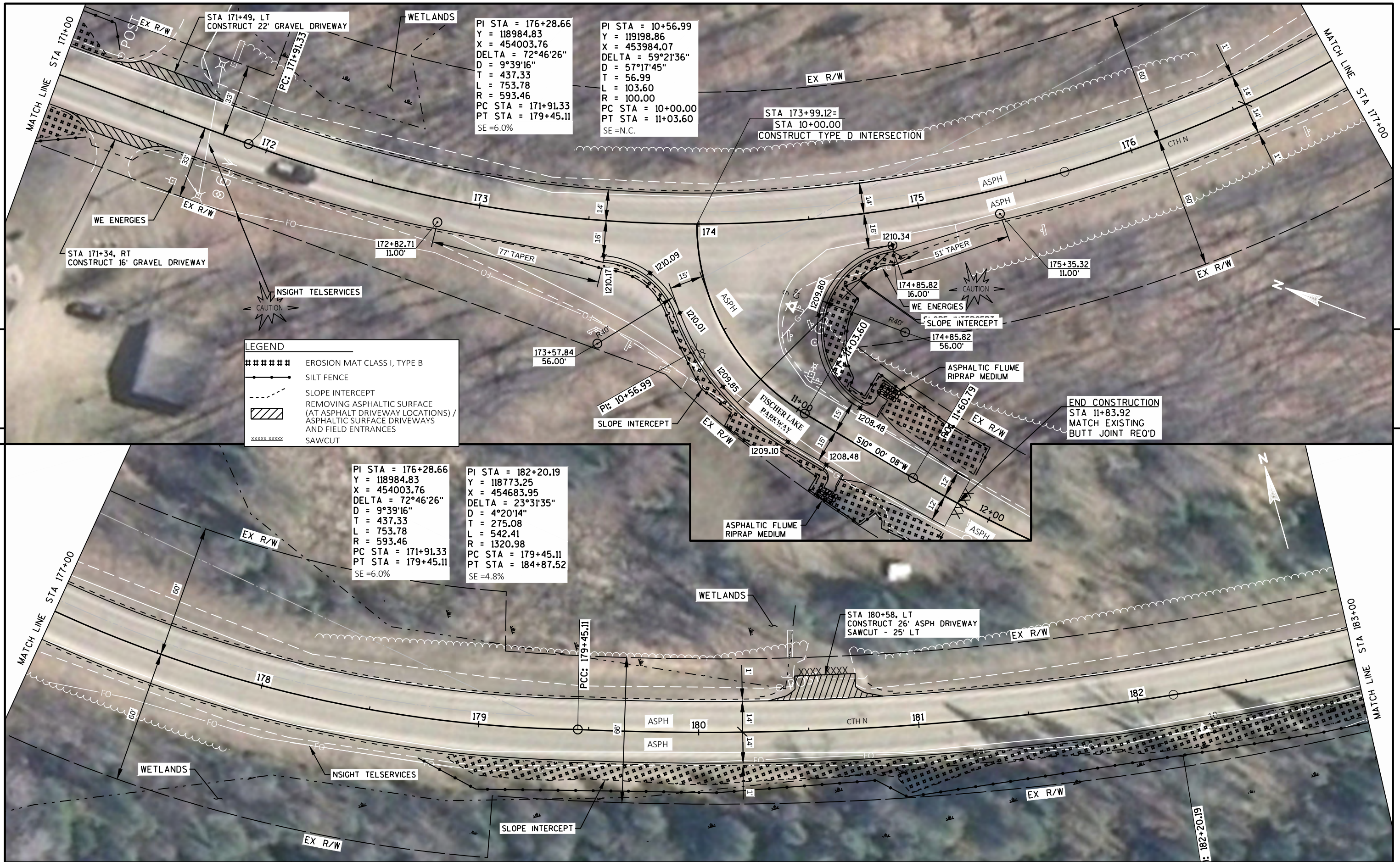
COUNTY: FLORENCE

PLAN: MAINLINE

SHEET

E





PROJECT NO: 9324-02-71

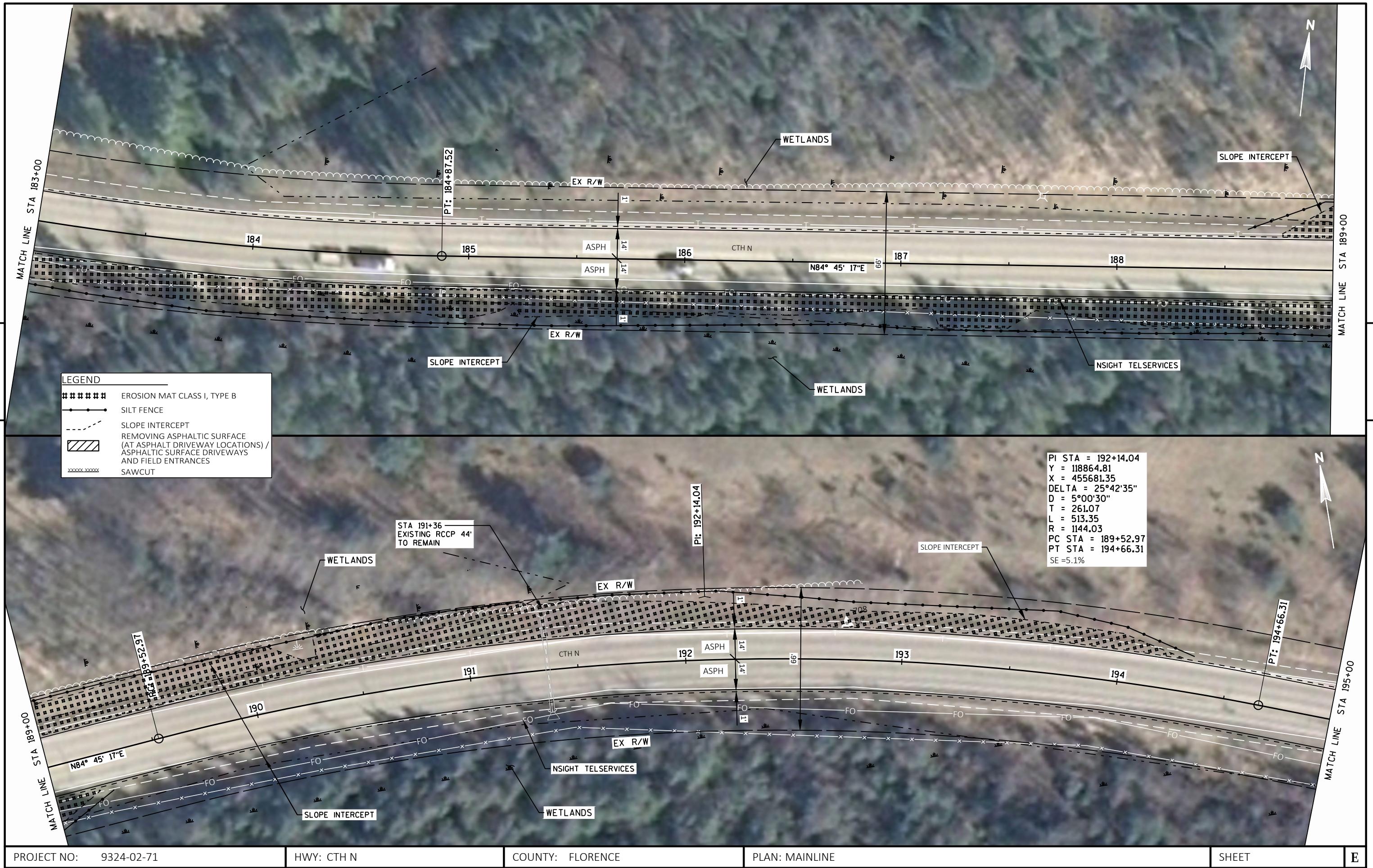
HWY: CTH N

COUNTY: FLORENCE

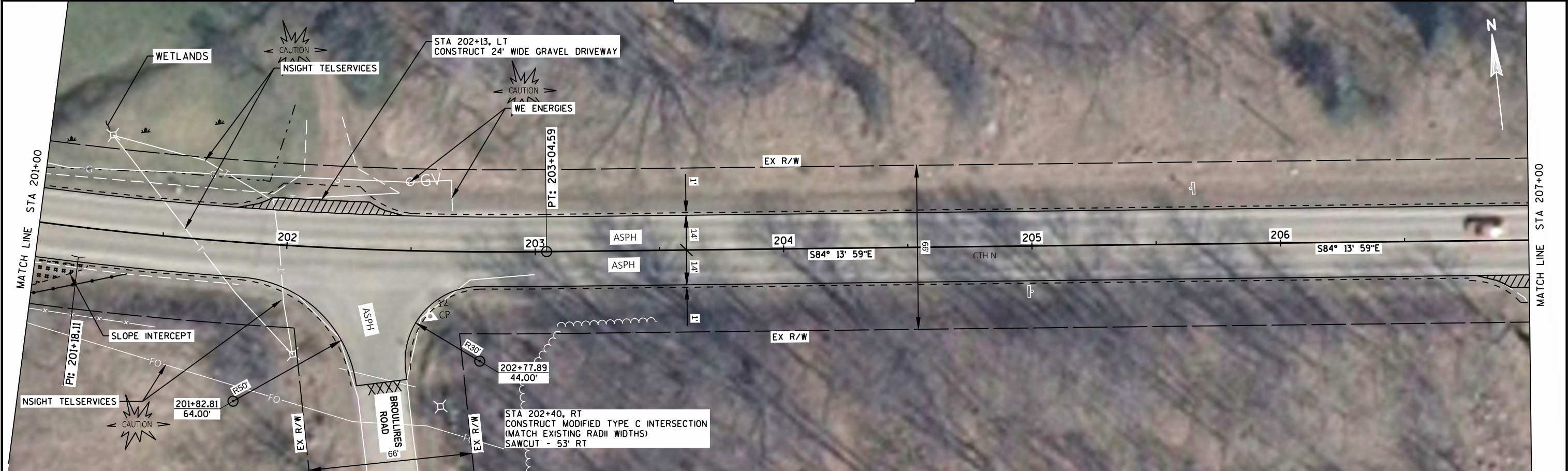
PLAN: MAINLINE

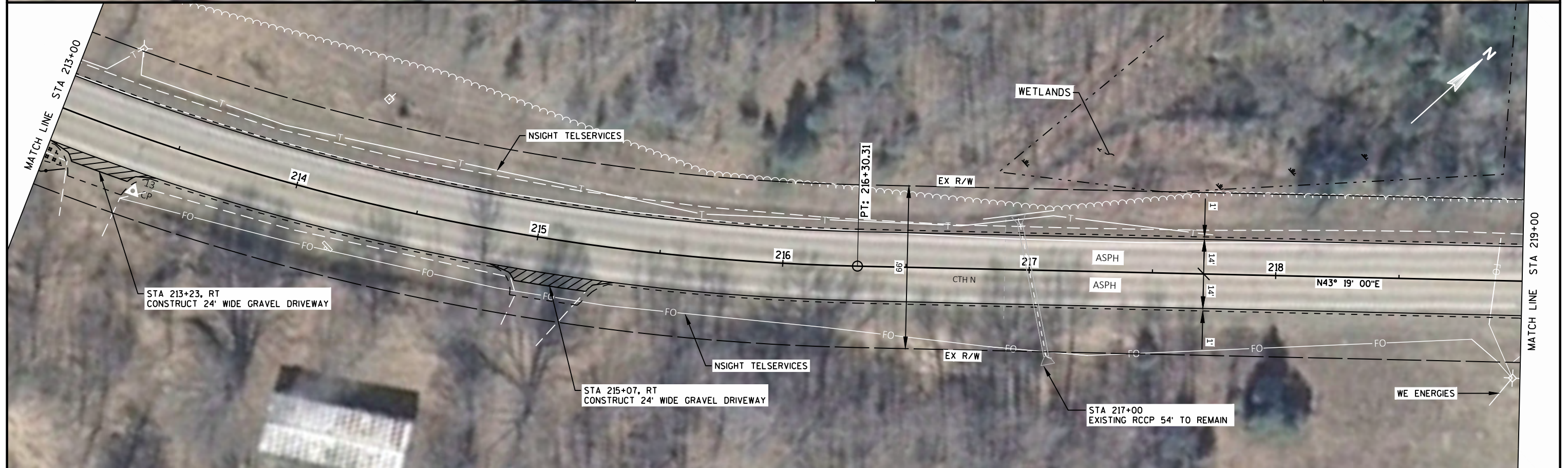
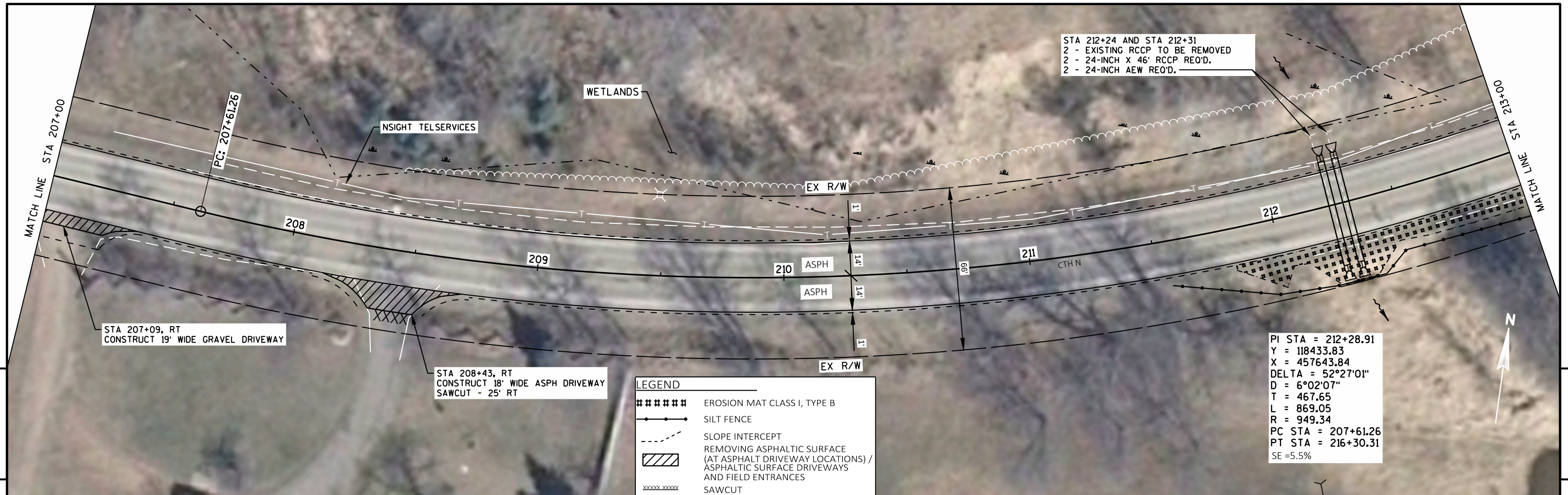
SHEET

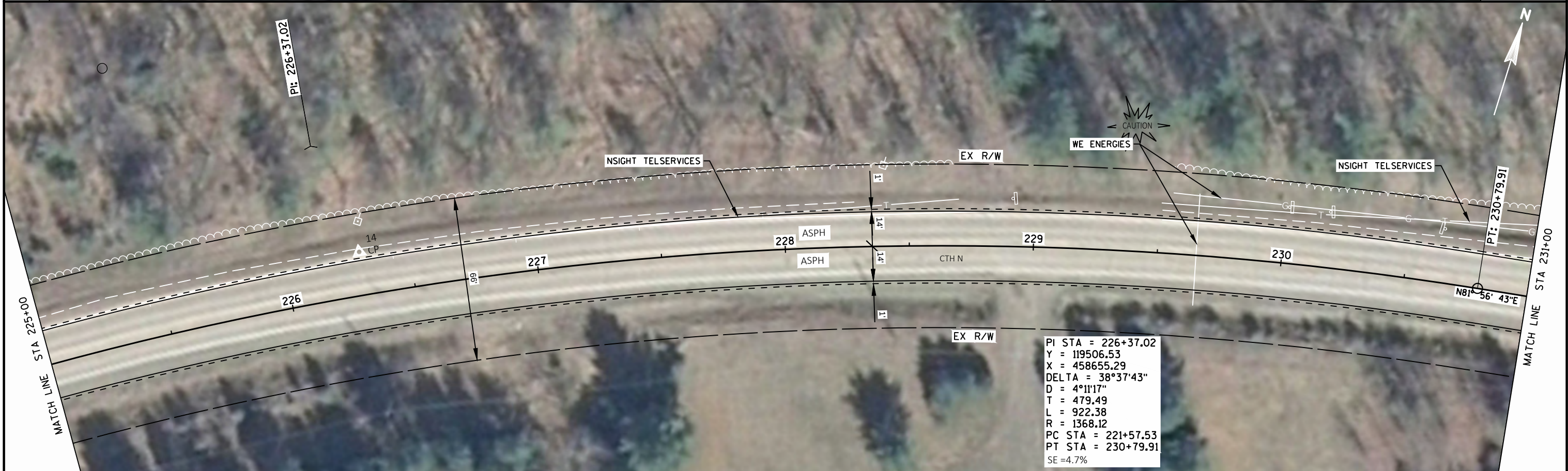
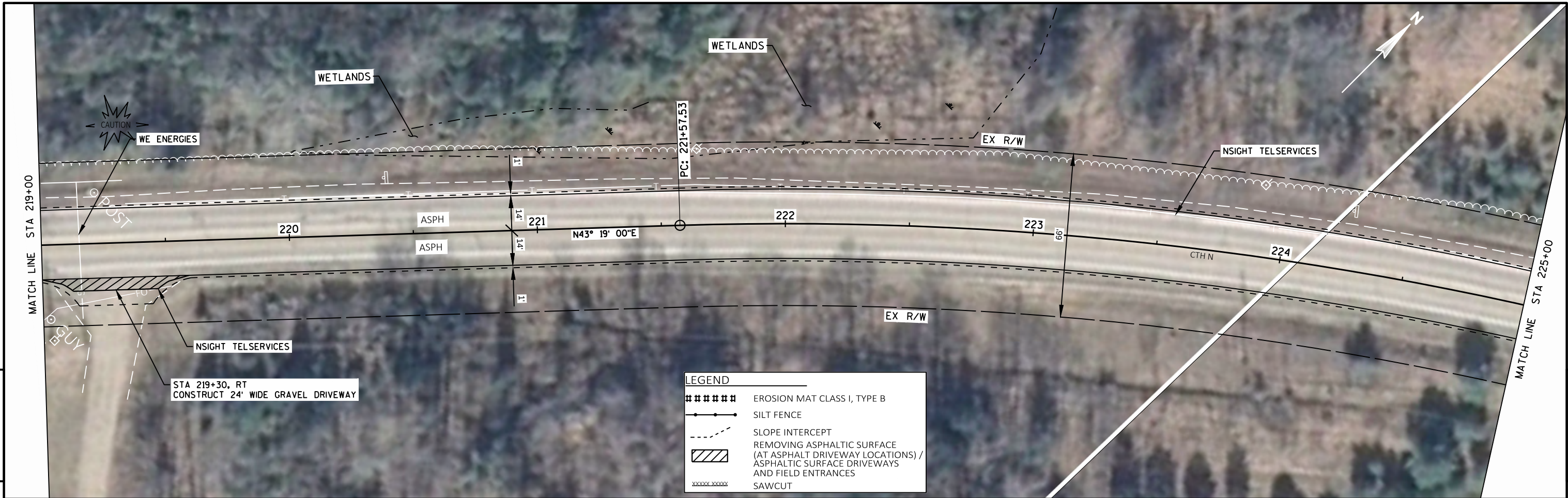
E



PROJECT NO: 9324-02-71	HWY: CTH N	COUNTY: FLORENCE	PLAN: MAINLINE	SHEET	E
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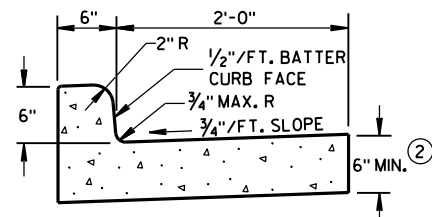




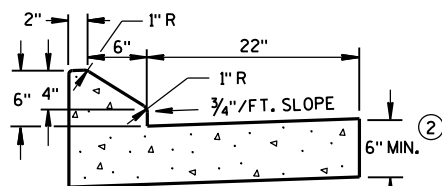


Standard Detail Drawing List

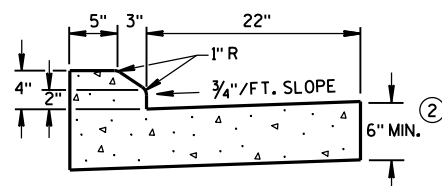
08D01-19	CONCRETE CURB, CONCRETE CURB AND GUTTER AND TIES
08D04-05	CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES
08E09-06	SILT FENCE
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
09A01-13A	AT-GRADE SIDE ROAD INTERSECTION, TYPES "B1", "B2", "C" AND D AND TEE INTERSECTION BYPASS LANE
14B15-09A	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-09B	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-09C	STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS
14B24-08A	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-08B	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-08C	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B27-01A	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B27-01B	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B27-01C	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B42-04A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-04B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-04C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-02A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
15C02-06A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C03-03	BARRICADES AND SIGNS FOR SIDEROAD CLOSURES
15C08-17A	LONGITUDINAL MARKING (MAINLINE)
15C33-02	STOP LINE AND CROSSWALK PAVEMENT MARKING



TYPES A & D ①

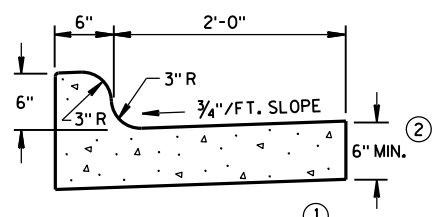


6" SLOPED CURB TYPES G & J ①



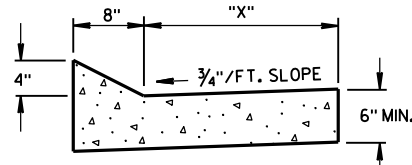
4" SLOPED CURB TYPES G & J ①

CONCRETE CURB & GUTTER 30"



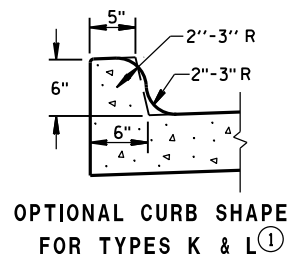
TYPES K & L ①

CONCRETE CURB & GUTTER 30"

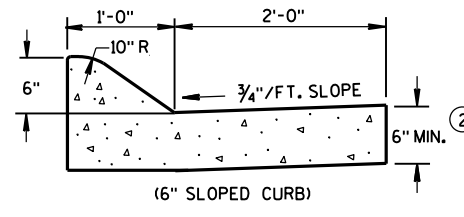


TYPES TBT & TBTT ①
CONCRETE CURB & GUTTER

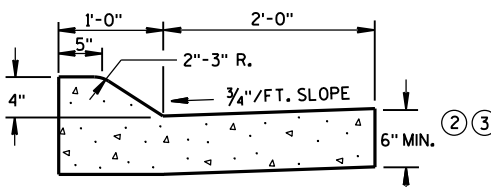
TBT & TBTT	"X"
30"	22"
36"	28"



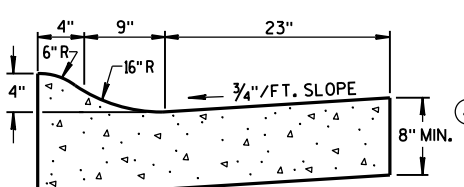
OPTIONAL CURB SHAPE
FOR TYPES K & L ①



(6" SLOPED CURB)



(4" SLOPED CURB)
TYPES A & D ①



4" SLOPED CURB TYPES R & T ① ⑤
CONCRETE CURB & GUTTER 36"

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

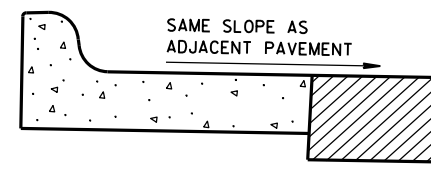
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

INTEGRAL CURB & GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB & GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE. A LONGITUDINAL CONSTRUCTION JOINT IS NOT REQUIRED WITH INTEGRAL CURB AND GUTTER.

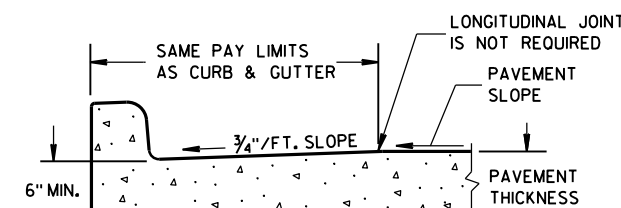
WHERE THE TRANSVERSE JOINTS IN THE PAVEMENT ARE REQUIRED TO BE SEALED, THE JOINTS IN THE INTEGRAL CURB AND GUTTER SHALL BE SEALED TO THE FACE OF CURB WITH THE SAME TYPE OF SEALANT. THE COST OF FURNISHING AND INSTALLING THIS SEALANT SHALL BE INCIDENTAL TO THE ITEM CONCRETE CURB AND GUTTER.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2'-0" BEHIND THE BACK OF CURBS.

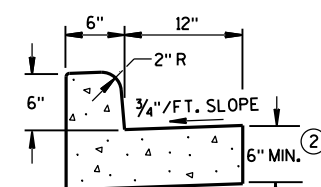
- TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G, K, R AND TBTT.
- THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.
- THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- THE FACE OF CURB IS 6" FROM THE BACK OF CURB.
- WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.



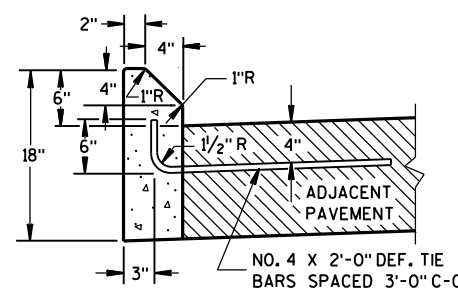
REVERSE SLOPE GUTTER
(TYPICAL FOR ALL CURB & GUTTER TYPES)



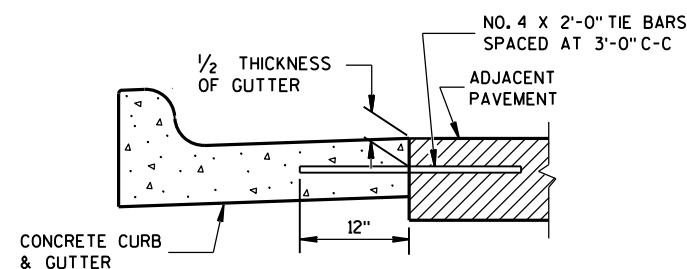
PARTIAL SECTION OF PAVEMENT
WITH INTEGRAL CURB & GUTTER



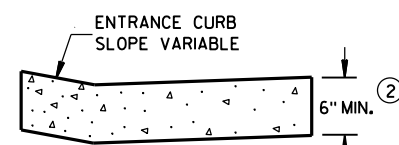
TYPES A & D
CONCRETE CURB & GUTTER 18"



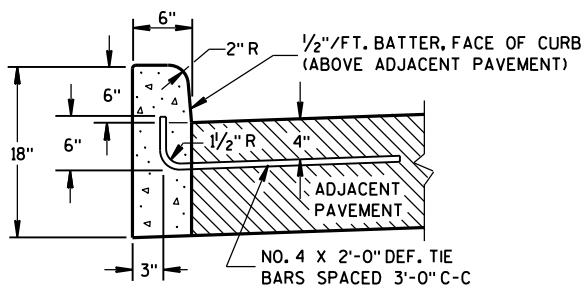
TYPES G & J



TYPICAL TIE BAR LOCATION ①

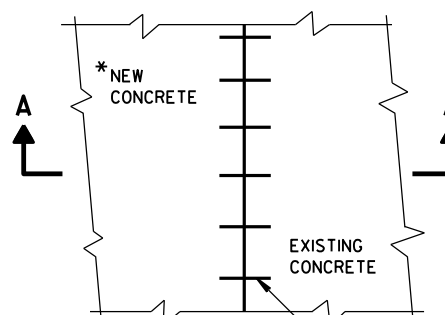


DRIVEWAY ENTRANCE CURB
(WHEN DIRECTED BY THE ENGINEER)



TYPES A & D

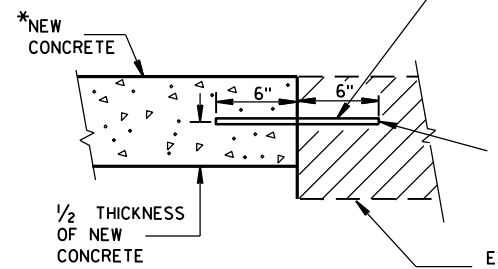
CONCRETE CURB



PLAN VIEW

* NEW CURB & GUTTER,
SURFACE DRAINS,
CONCRETE PAVEMENT
OR OTHER NEW CONCRETE.

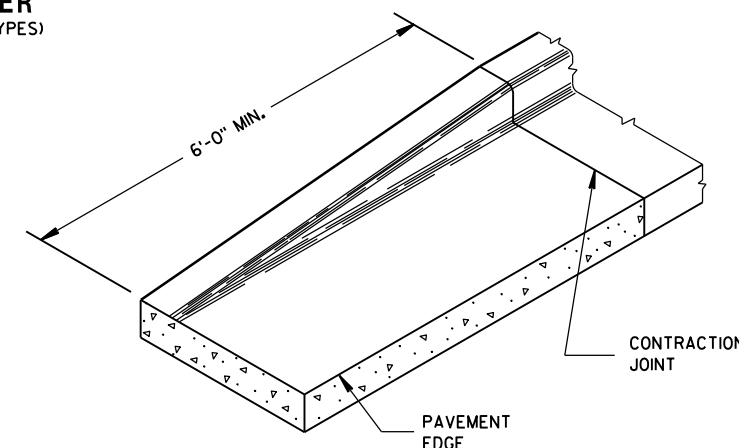
NO. 6 TIE BARS SPACED 2'-6" C-C,
INSTALLED PERPENDICULAR
TO THE LONGITUDINAL JOINT.



SECTION A-A
TIE BARS DRILLED
INTO EXISTING PAVEMENT

MAXIMUM DRILL HOLE
SIZE IS 1/8" GREATER
THAN TIE BAR DIAMETER

EXISTING CONCRETE



END SECTION CURB & GUTTER

CONCRETE CURB, CONCRETE
CURB & GUTTER AND TIES

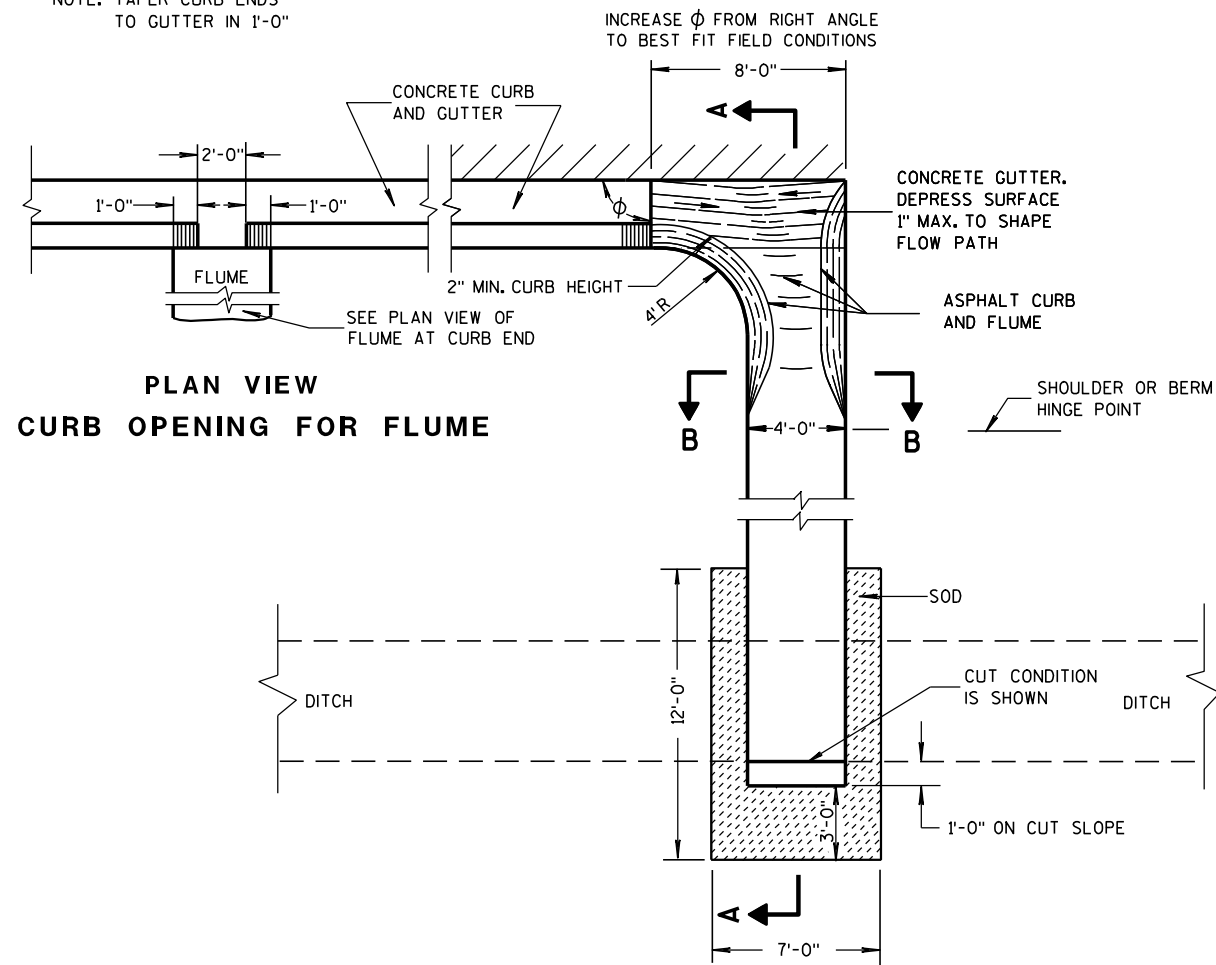
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2016
DATE
FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

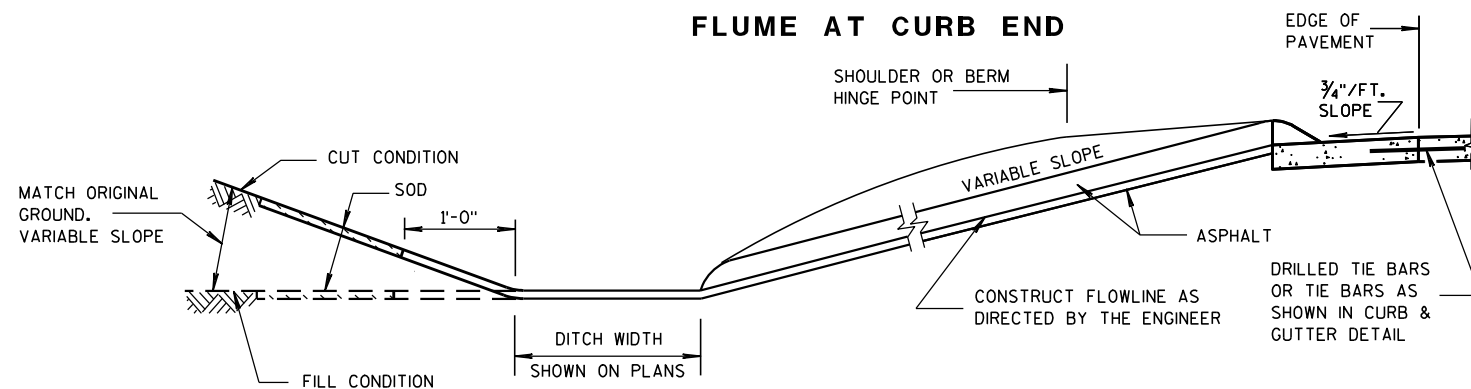
ASPHALTIC FLUME

NOTE: TAPER CURB ENDS
TO GUTTER IN 1'-0"

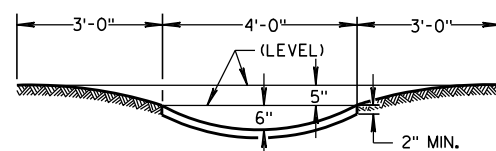


PLAN VIEW
CURB OPENING FOR FLUME

PLAN VIEW
FLUME AT CURB END



SECTION A-A



SECTION B-B

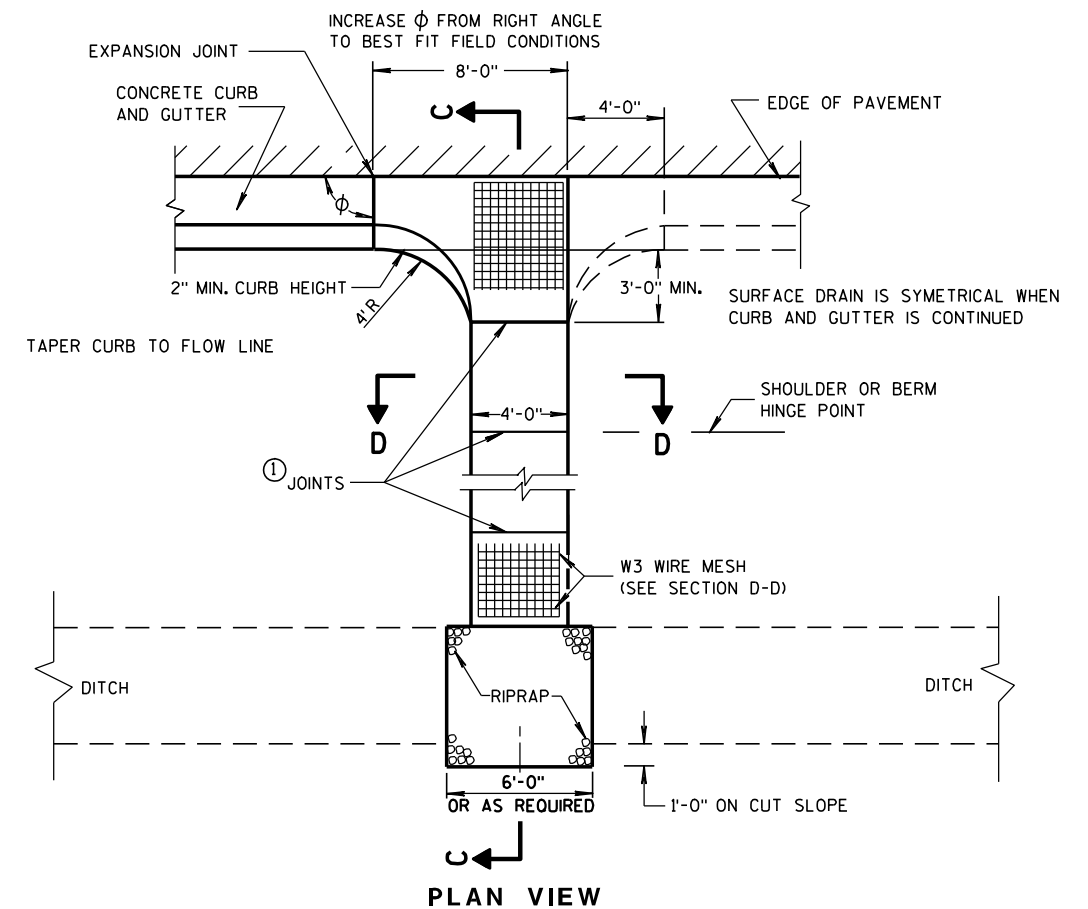
GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

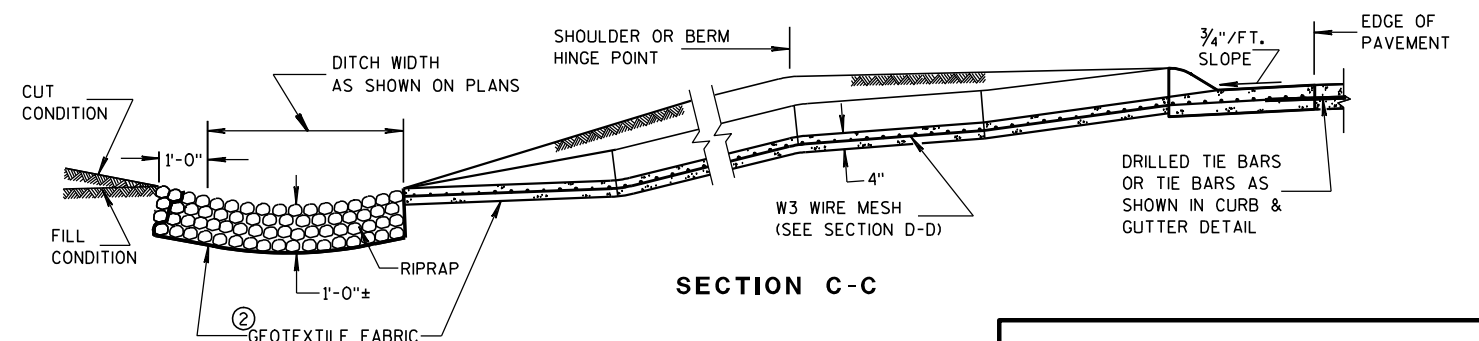
WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

- ① JOINTS SHALL BE 1/8" TO 1/4" INCH WIDE BY 1 1/2" INCHES DEEP AND SPACED AT UNIFORM INTERVALS OF APPROXIMATELY 4 FEET.
- ② GEOTEXTILE FABRIC TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.
- ③ CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED

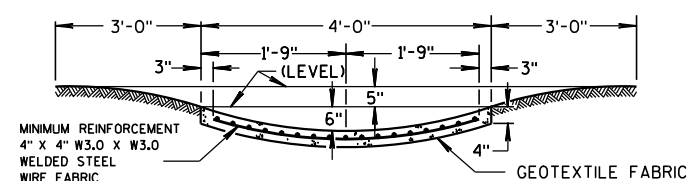
③ CONCRETE SURFACE DRAIN



PLAN VIEW



SECTION C-C



SECTION D-D

CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES

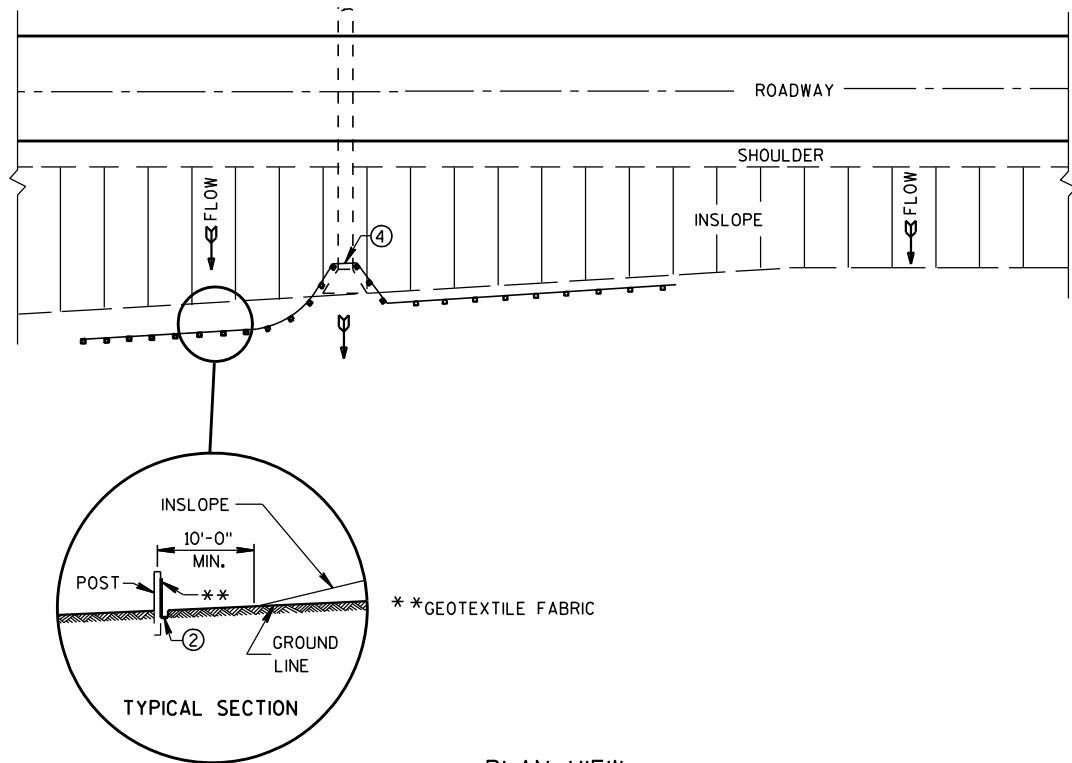
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

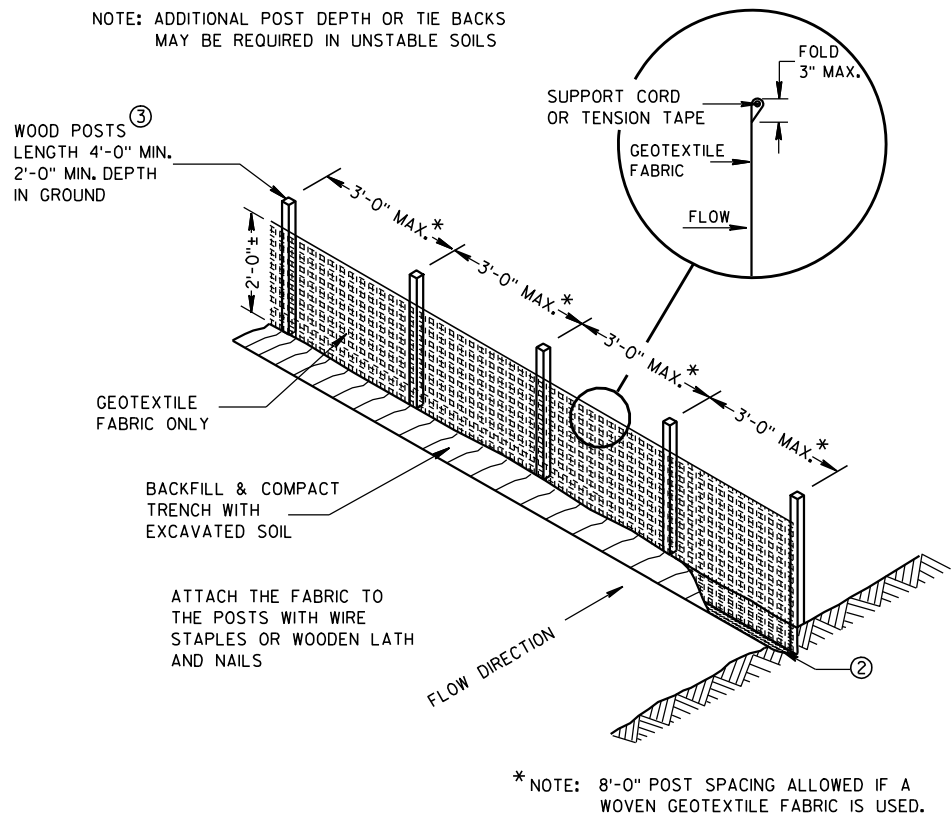
9-4-08
DATE

FHWA

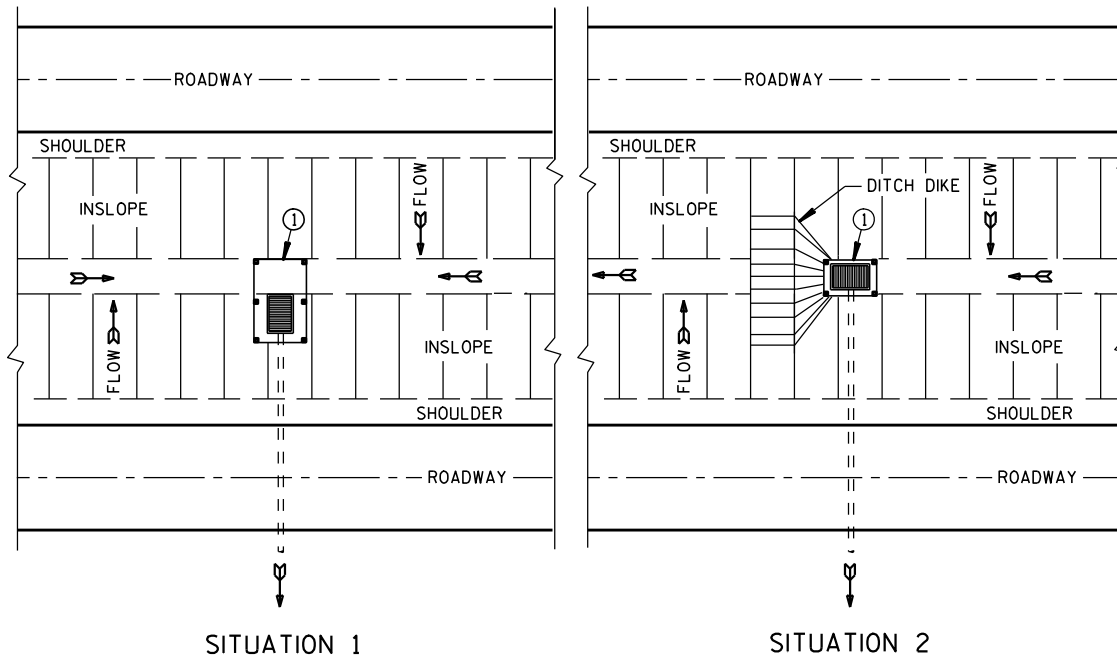
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER



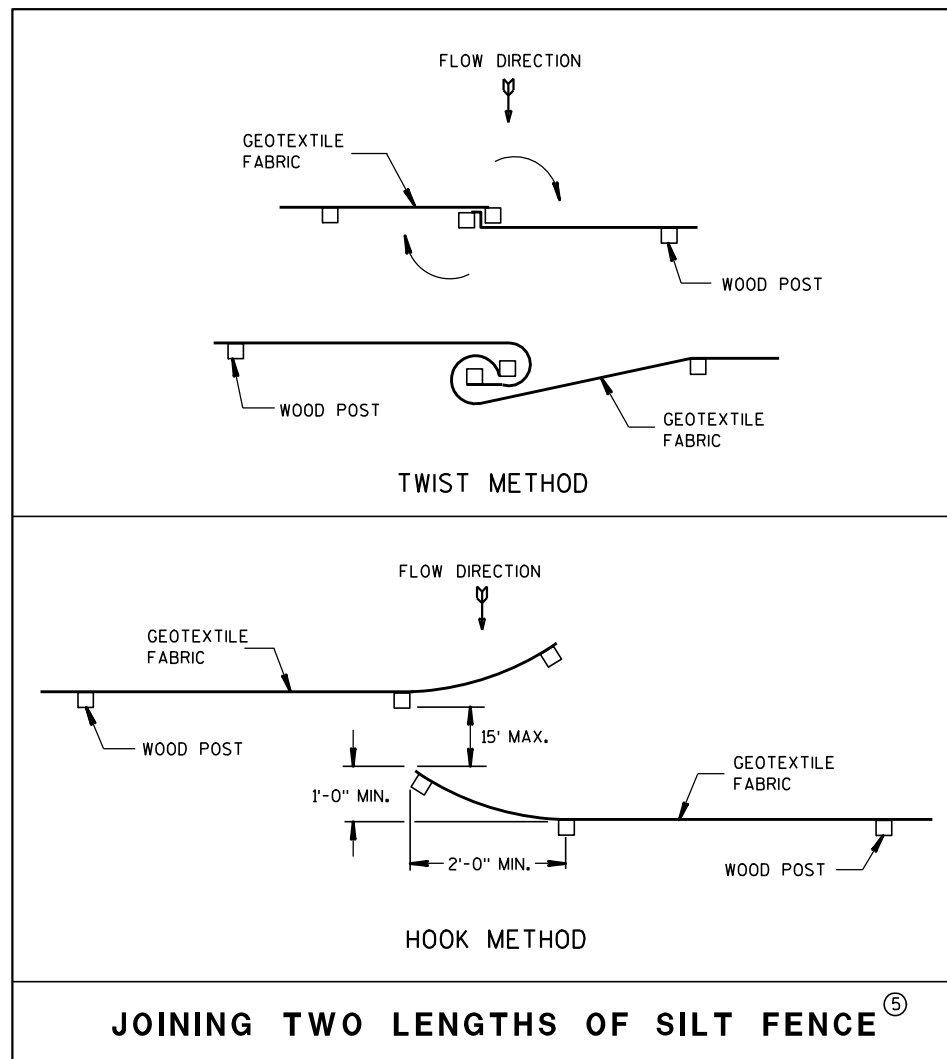
PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE



SILT FENCE



PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS

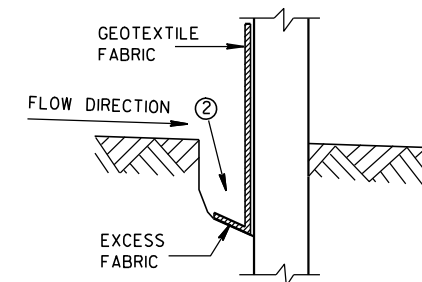


JOINING TWO LENGTHS OF SILT FENCE^⑤

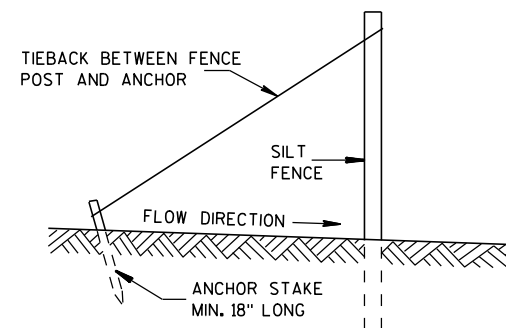
GENERAL NOTES

DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

- ① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
- ② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- ③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1 1/8" X 1 1/8" OF OAK OR HICKORY.
- ④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
- ⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



TRENCH DETAIL

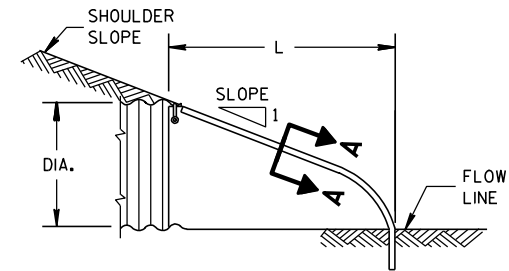
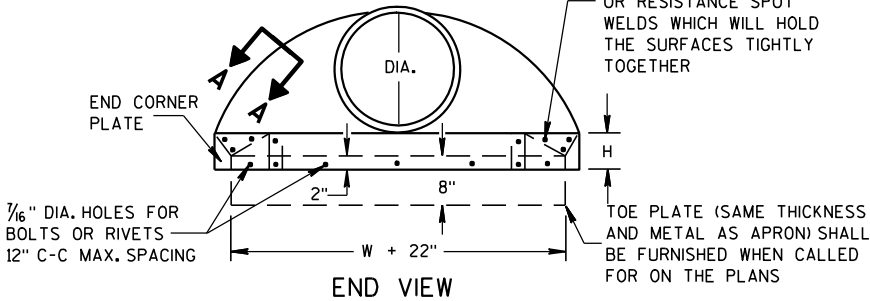
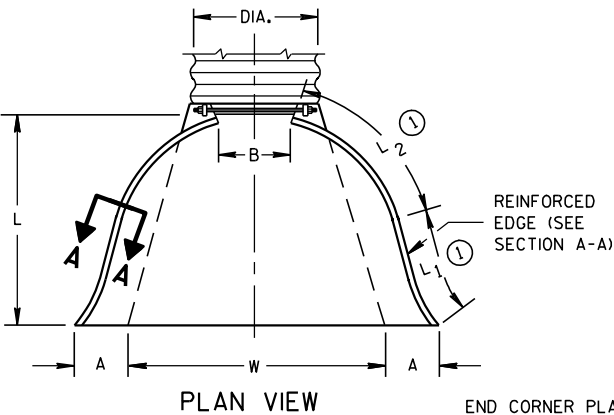


SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 4-29-05 DATE	/S/ Beth Canestra CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	

METAL APRON ENDWALLS												
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE		BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")			
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1		1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1		1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to 1		1 Pc.
21	.064	.060	9	12	6	36	18	29 5/8	42	2 1/2 to 1		1 Pc.
24	.064	.075	10	13	6	41	18	37 1/4	48	2 1/2 to 1		1 Pc.
30	.079	.075	12	16	8	51	18	52 1/4	60	2 1/2 to 1		1 Pc.
36	.079	.105	14	19	9	60	24	59 3/4	72	2 1/2 to 1		2 Pc.
42	.109	.105	16	22	11	69	24	75 5/8	84	2 1/2 to 1		2 Pc.
48	.109	.105	18	27	12	78	24	81	90	2 1/4 to 1		3 Pc.
54	.109	.105	18	30	12	84	30	85 1/2	102	2 1/4 to 1		3 Pc.
60	.109x	.105x	18	33	12	87	—	—	114	2 to 1		3 Pc.
66	.109x	.105x	18	36	12	87	—	—	120	2 to 1		3 Pc.
72	.109x	.105x	18	39	12	87	—	—	126	2 to 1		3 Pc.
78	.109x	.105x	18	42	12	87	—	—	132	1 1/2 to 1		3 Pc.
84	.109x	.105x	18	45	12	87	—	—	138	1 1/2 to 1		3 Pc.
90	.109x	.105x	18	37	12	87	—	—	144	1 1/2 to 1		3 Pc.
96	.109x	.105x	18	35	12	87	—	—	150	1 1/2 to 1		3 Pc.

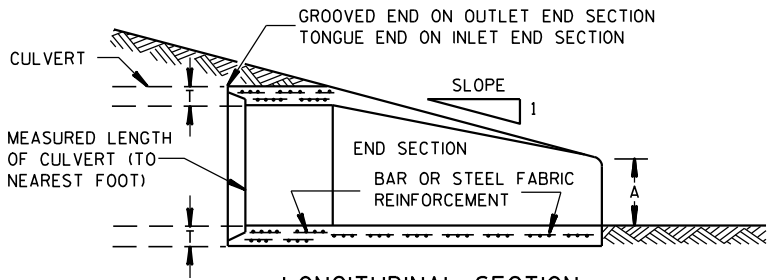
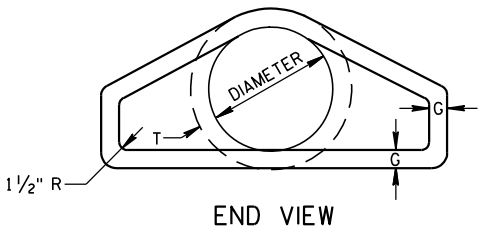
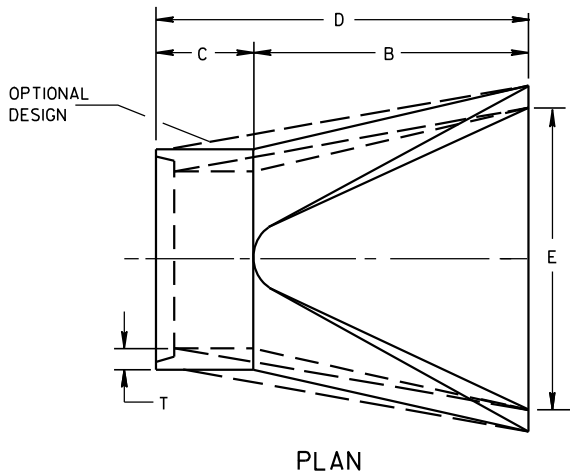
* EXCEPT CENTER PANEL
SEE GENERAL NOTES



METAL ENDWALLS

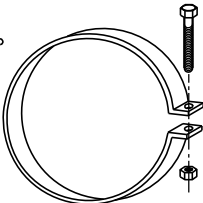
REINFORCED CONCRETE APRON ENDWALLS												
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE				
	T	A	B	C	D	E	G					
12	2	4	24	48 1/8	72 1/8	24	2	3 to 1				
15	2 1/4	6	27	46	73	30	2 1/4	3 to 1				
18	2 1/2	9	27	46	73	36	2 1/2	3 to 1				
21	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	3 to 1				
24	3	9 1/2	43 1/2	30	73 1/2	48	3	3 to 1				
27	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	3 to 1				
30	3 1/2	12	54	19 3/4	73 1/2	60	3 1/2	3 to 1				
36	4	15	63	34 3/4	97 3/4	72	4	3 to 1				
42	4 1/2	21	63	35	98	78	4 1/2	3 to 1				
48	5	24	72	26	98	84	5	3 to 1				
54	5 1/2	27	65	33 1/4	98 1/4	90	5 1/2	2 1/2 to 1				
60	6	30-35	60	39	99	96	5	2 to 1				
66	6 1/2	24-30	72-78	21-27	99	102	5 1/2	2 to 1				
72	7	24-36	78	21	99	108	6	2 to 1				
78	7 1/2	24-36	78	21	99	114	6 1/2	2 to 1				
84	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2 to 1				
90	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	1 1/2 to 1				

* MINIMUM
** MAXIMUM

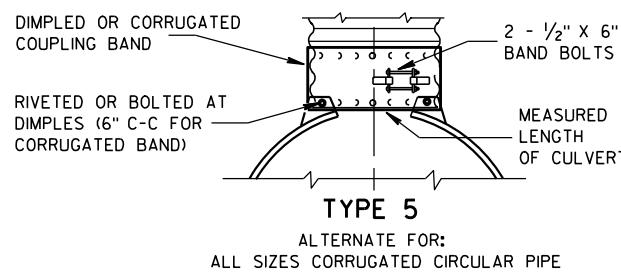
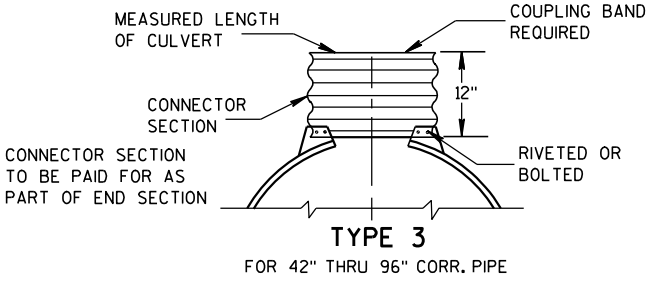
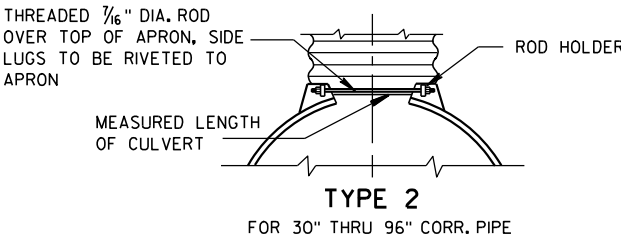
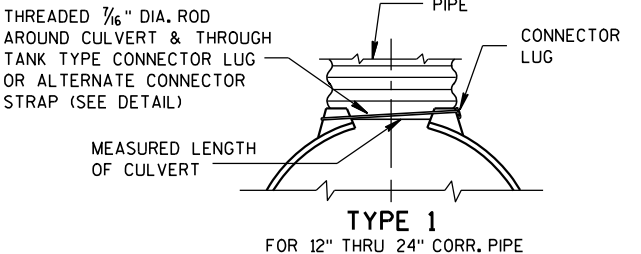


CONCRETE ENDWALLS

1" WIDE, 12 GA. (0.109" THICK) GALVANIZED STRAP WITH STANDARD 6" X 1/2" BAND BOLT AND NUT



ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



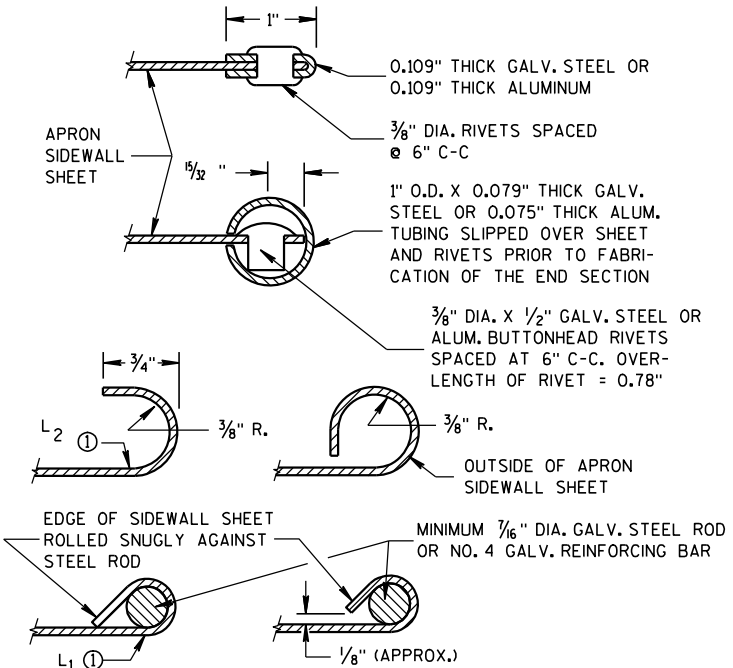
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5 AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO CIRCUMFERENTIAL CORRUGATIONS AT EACH END USE ENDWALL CONNECTION DETAILS 1, 2 OR 3.

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR VISE VERSA. GALVANIZED STEEL OR ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE OF THE SAME METAL.

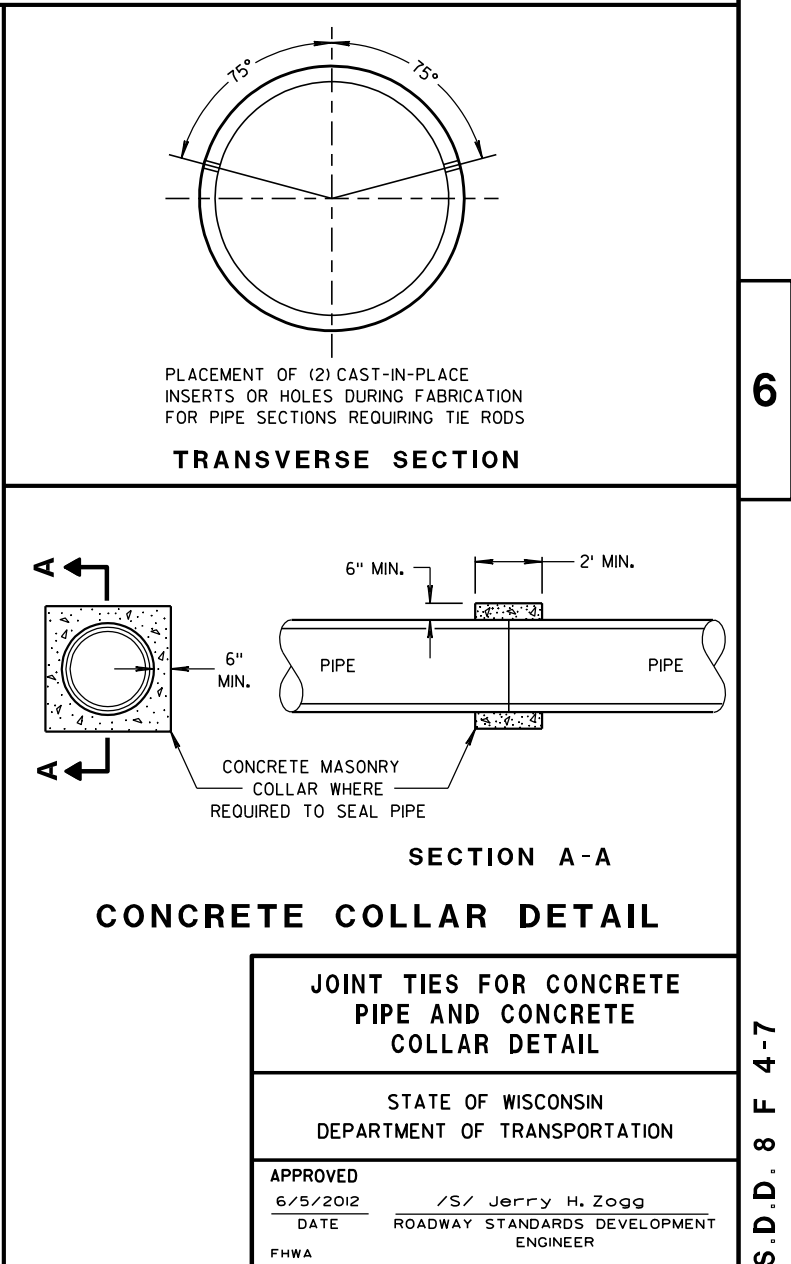
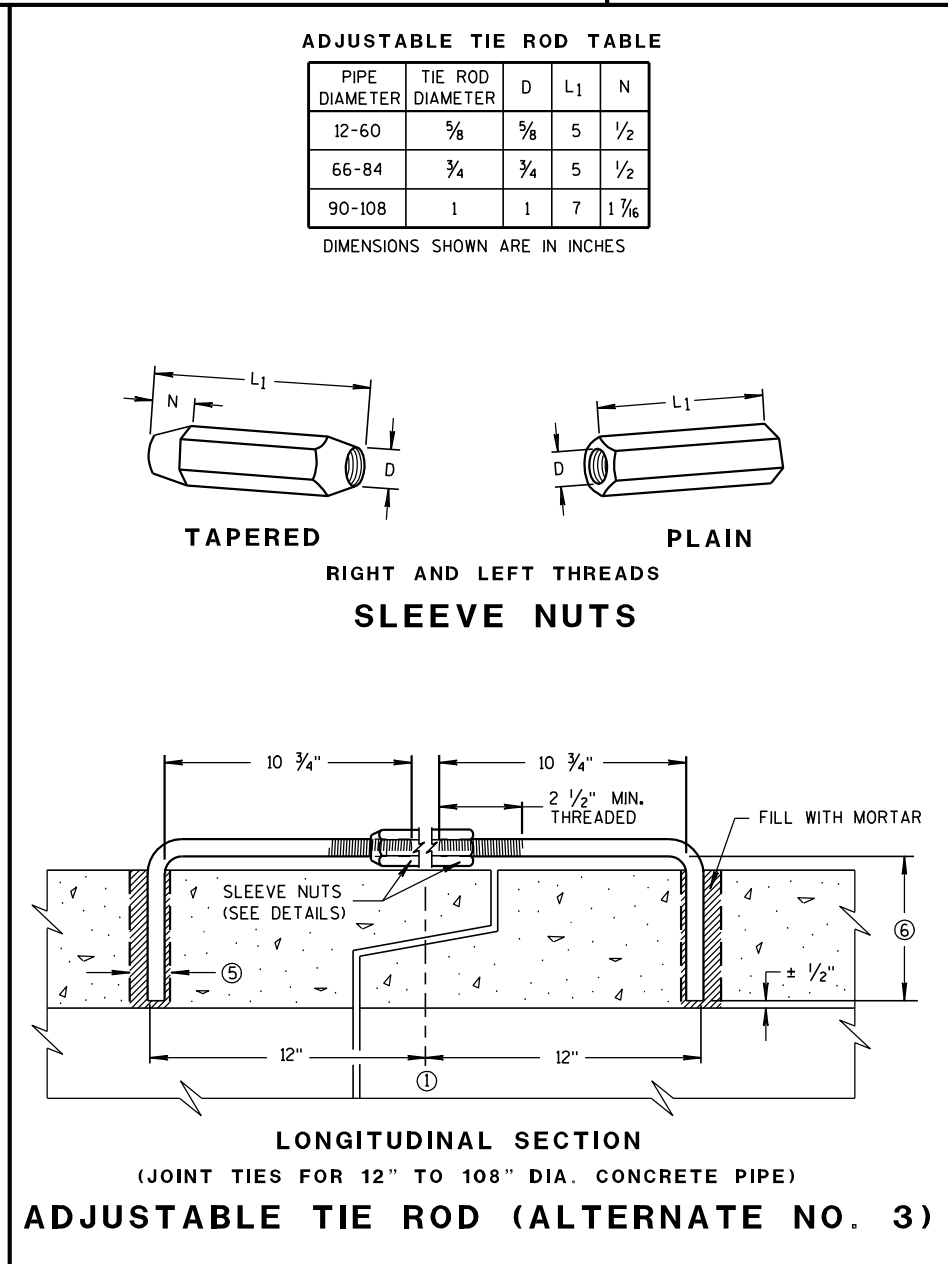
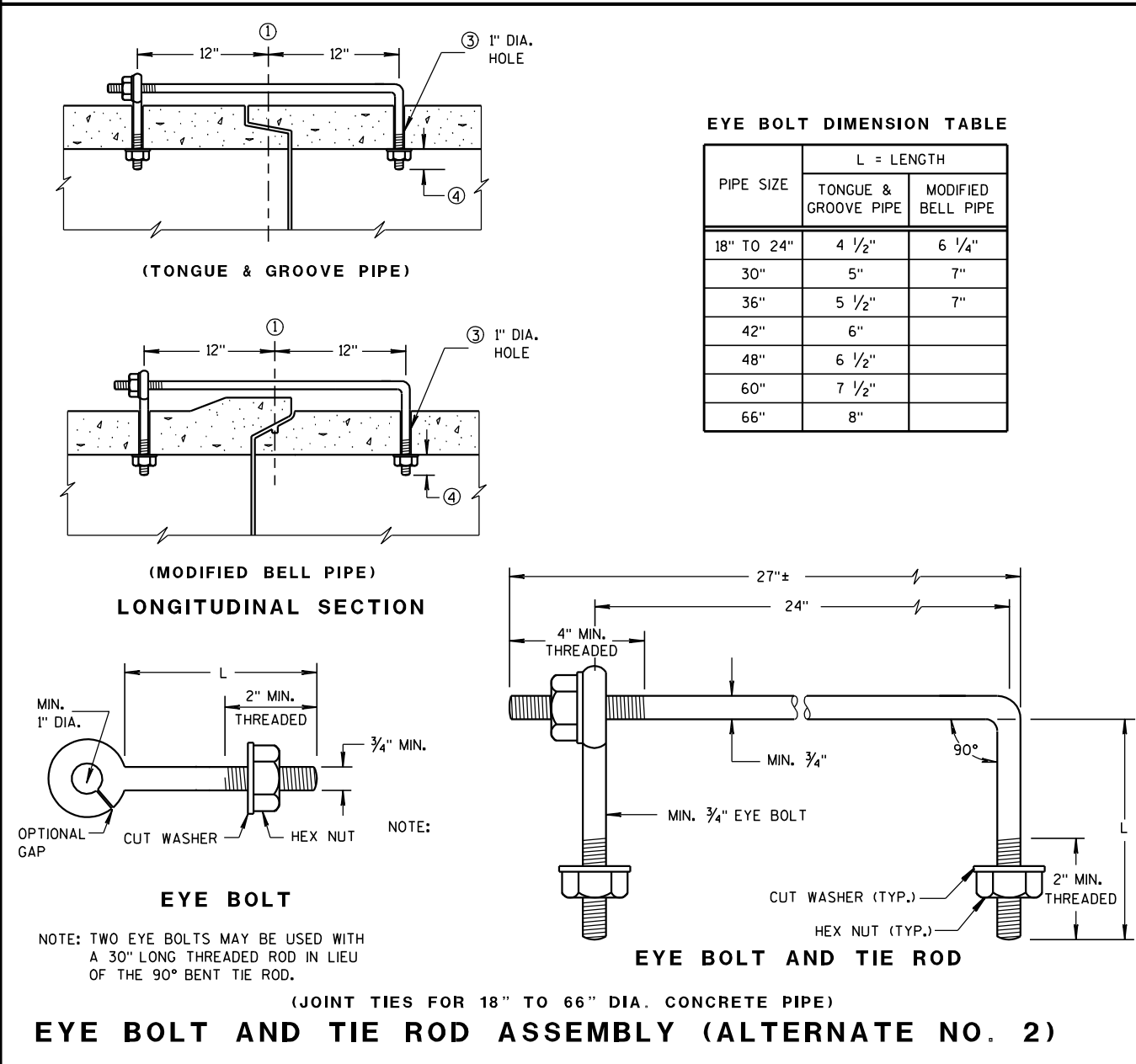
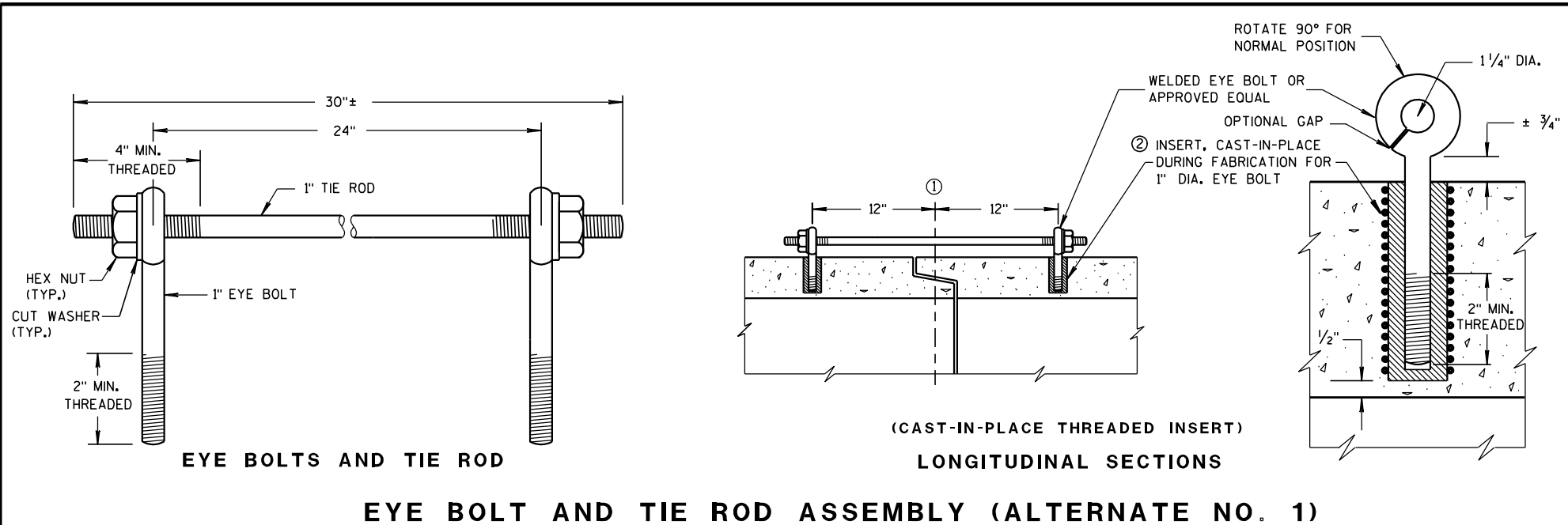
ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE PERIMETER.

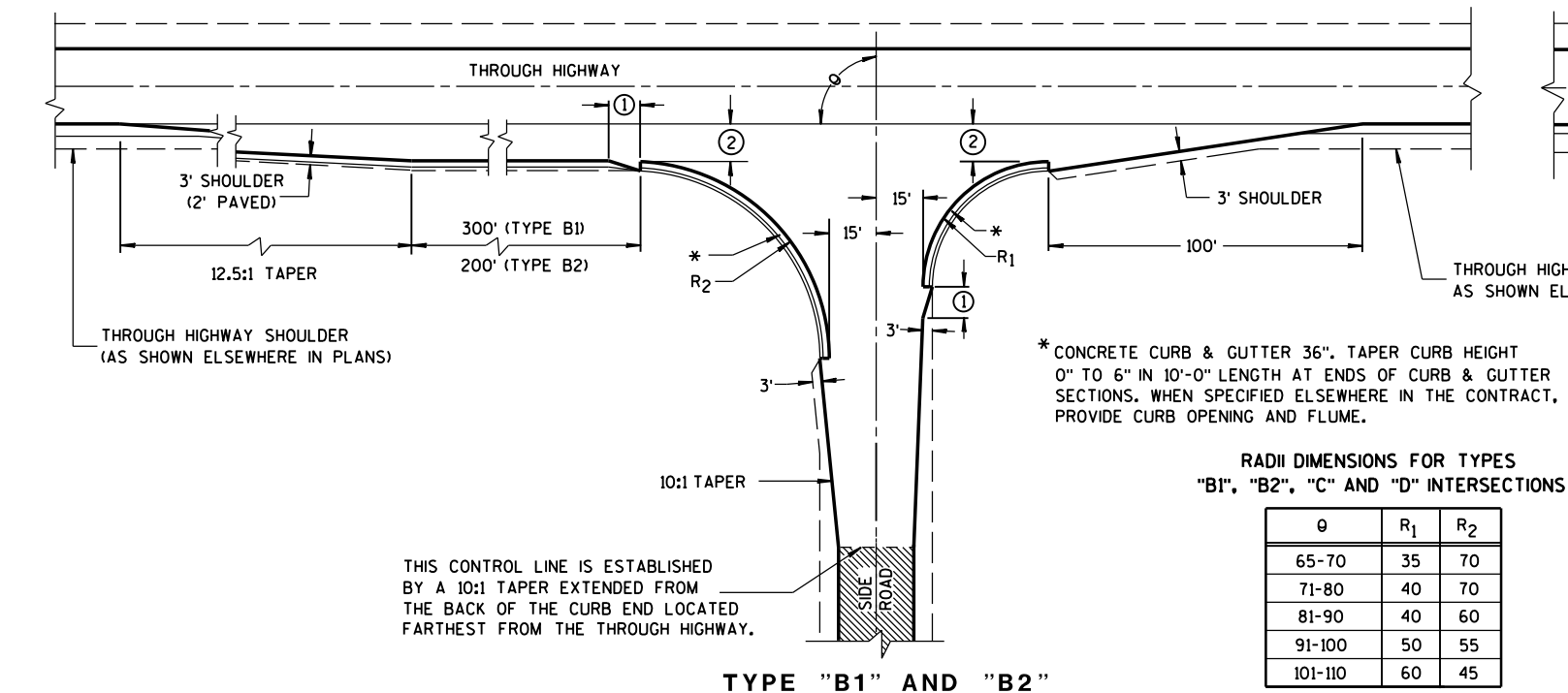
LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.

WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR CULVERT PIPE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 11/30/94 DATE	/S/ Rory L. Rhinesmith CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	





GENERAL NOTES

DESIGNS MAY BE USED INTERCHANGEABLY IN COMBINATION OR SEPARATELY FOR ANY ONE COMPLETE INTERSECTION DEPENDING UPON INTERSECTION ANGLE AND SURFACING OF EACH APPROACH ROADWAY.

SIDE ROAD SURFACING NOTE

WHEN THE SIDE ROAD IS NOT PRESENTLY PAVED, PAVEMENT SHALL BE PLACED TO THE LIMITS SHOWN UNLESS OTHERWISE PROVIDED IN THE CONTRACT. WHERE THE CONSTRUCTION LIMITS ARE BEYOND THE PAVING LIMITS, CRUSHED AGGREGATE SURFACING SHALL BE PLACED BETWEEN THE PAVING LIMITS AND CONSTRUCTION LIMITS.

WHEN THE SIDE ROAD IS PRESENTLY PAVED, NEW PAVEMENT SHALL BE PLACED TO THE LIMITS OF DESIGN AS SHOWN AND BEYOND, IF NECESSARY, TO MEET EXISTING PAVEMENT.

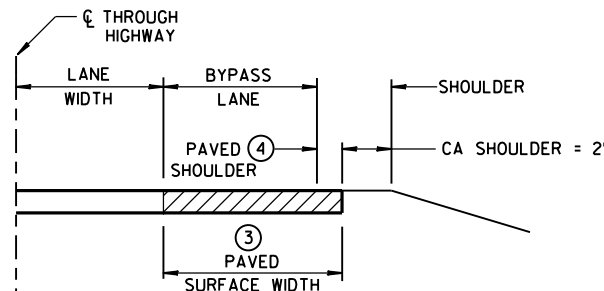
WHEN THE SIDE ROAD IS THE CONSTRUCTION PROJECT, THE INTERSECTION SURFACING SHALL BE THE SAME AS FOR THE PROJECT.

EXISTING PAVED SURFACE

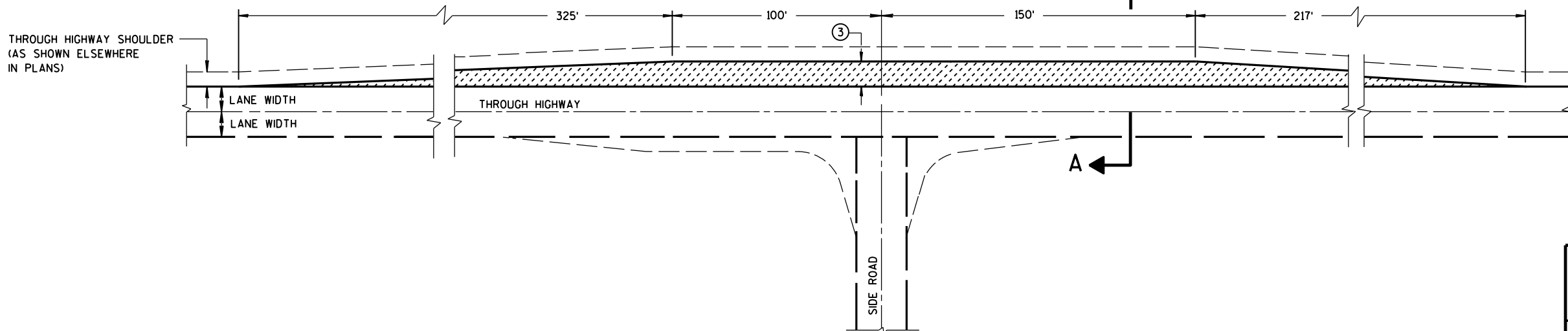
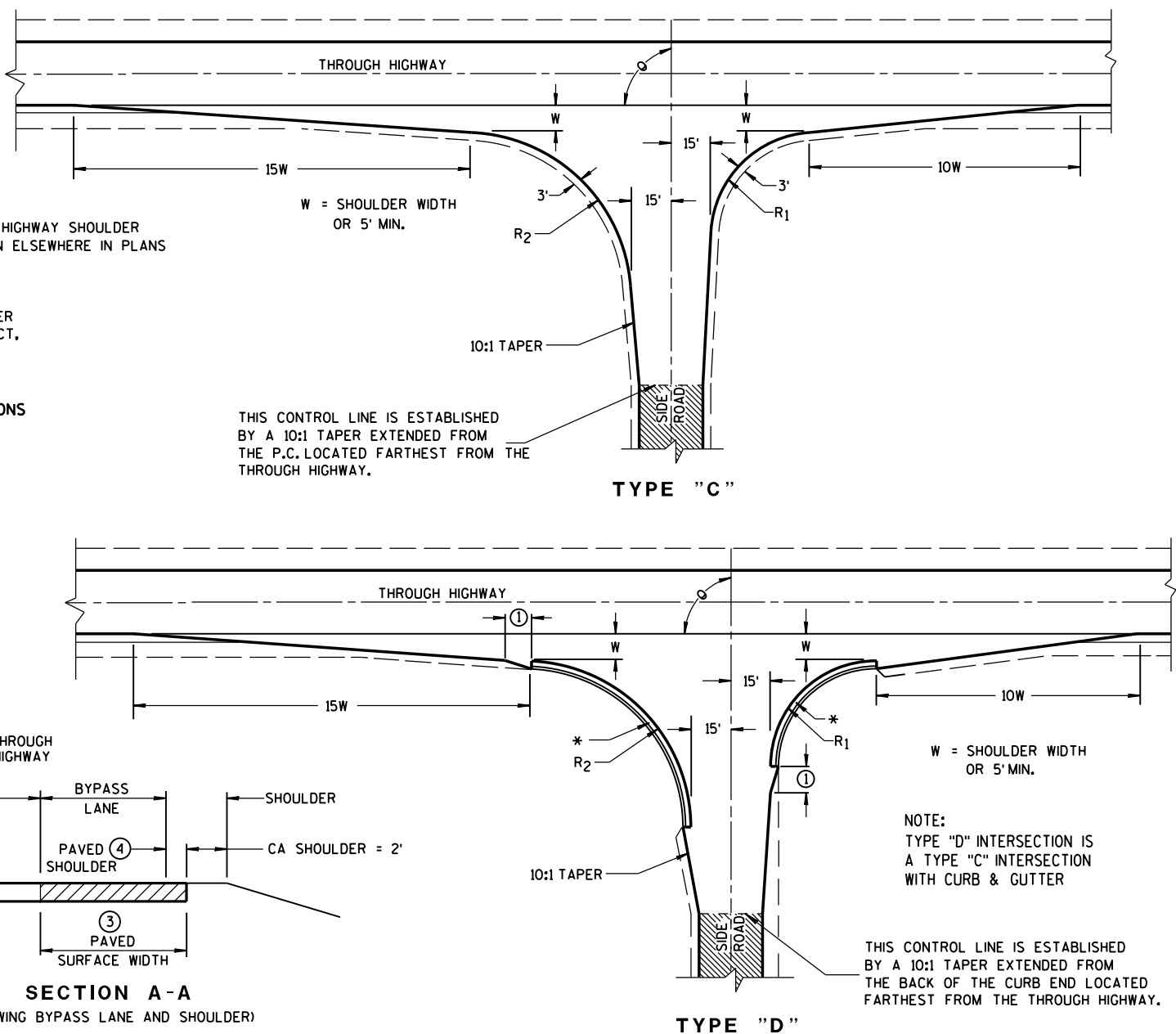
BYPASS LANE

- 10-FT TYPICAL.
- 12-FT** PLUS ADDITIONAL WIDTH FOR BIKE LANE IF SHOWN ELSEWHERE IN THE PLAN.

**10-FT MAY BE USED ON TYPE B2 ON RESURFACING PROJECTS IF SPECIFIED IN THE CONTRACT.
- BYPASS LANE PAVED SURFACE WIDTH OUTSIDE OF TRAVEL LANE
-ASPHALT = 12-FT PLUS PAVED SHOULDER WIDTH.
-PC CPNCRETE = 13-FT PLUS PAVED SHOULDER WIDTH.
- BYPASS LANE PAVED SHOULDER WIDTH = THE GREATER OF 1-FT OR THE PAVED SHOULDER WIDTH OF THE THROUGH HIGHWAY.



SECTION A-A
(SHOWING BYPASS LANE AND SHOULDER)



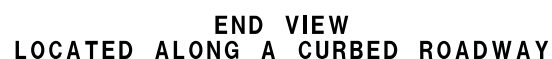
TEE INTERSECTION BYPASS LANE DETAIL

AT-GRADE SIDE ROAD
INTERSECTION, TYPES "B1", "B2",
"C" AND "D" AND TEE
INTERSECTION BYPASS LANE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

- S.D.D. 14 B 15-9a

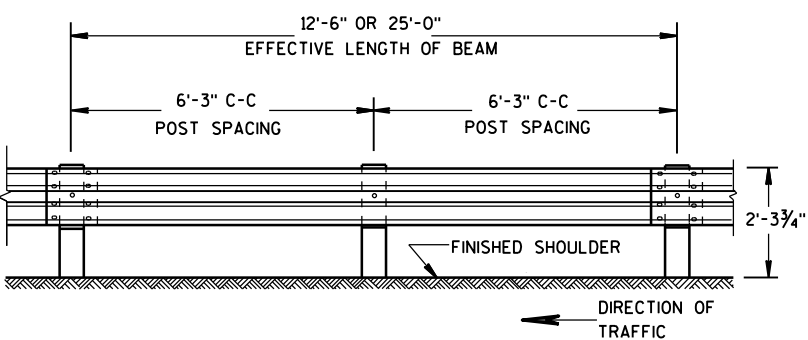


TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD



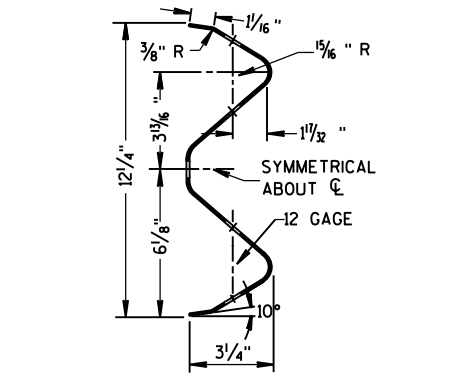
STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

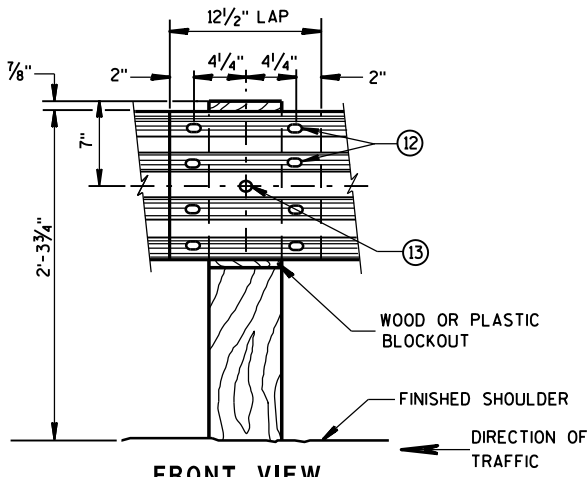


FRONT VIEW

POST SPACING STANDARD INSTALLATION



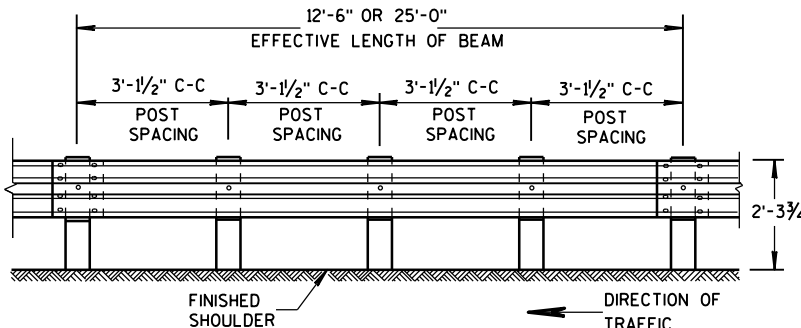
SECTION THRU W BEAM



FRONT VIEW
BEAM SPLICE AT WOOD POST
AND POST MOUNTING DETAIL

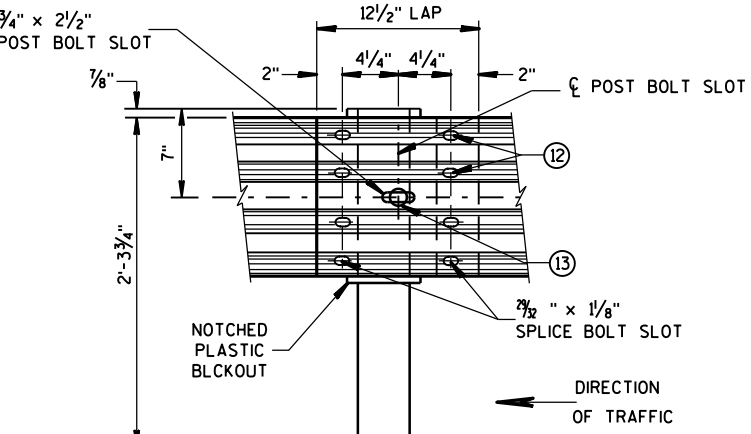
GENERAL NOTES

- ⑧ PROVIDE SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH YELLOW REFLECTIVE SHEETING. SHEETING IS TYPE H. SEE STANDARD SPECIFICATION 637.
- ⑨ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
- ⑩ REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.
- ⑪ PROVIDE AN ANGLE OF BEND OF $90^\circ \pm 1^\circ$ FOR TWO-SIDED REFLECTORS.
- ⑫ 8 - 5/8" ϕ X 2" BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.
- ⑬ 5/8" DIA. BUTTON HEAD BOLT AND RECESS NUT WITH 5/8" DIA. F844 FLAT WASHER UNDER NUT.

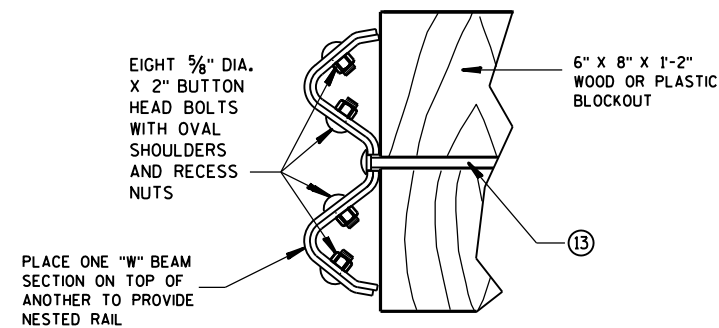


FRONT VIEW

POST SPACING FOR LONGER POST AT HALF POST SPACING W BEAM (LHW)



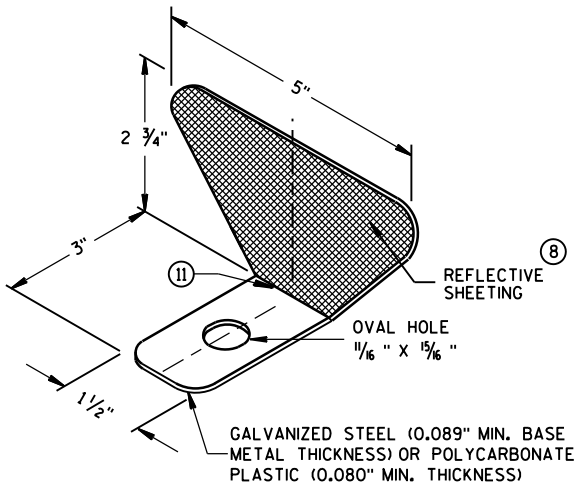
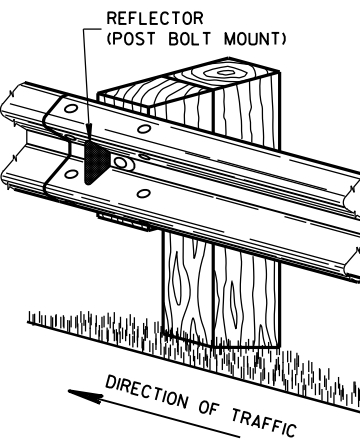
FRONT VIEW
BEAM SPLICE AT STEEL POST
TYPICAL SPLICING DETAILS
OF STEEL PLATE BEAM GUARD



NESTED W BEAM (NW)
USE ALL OTHER STANDARD BEAM GUARD DETAILS FOR
CONSTRUCTING NESTED W BEAM (NW)

REFLECTOR SPACING ⑨

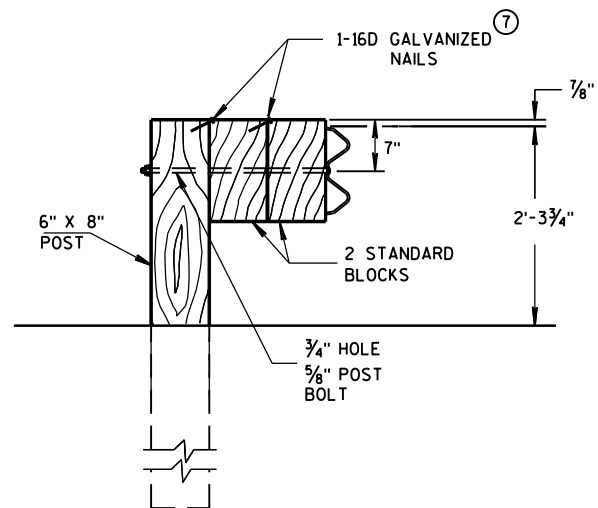
	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200'	50' C-C	1	3
	> 200'	100' C-C	1	
TWO WAY TRAFFIC	< 200'	25' C-C	1 ⑩	6
	> 200'	50' C-C	1	
TWO WAY TRAFFIC	< 200'	50' C-C	2 ⑪	3
	> 200'	100' C-C	2	



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

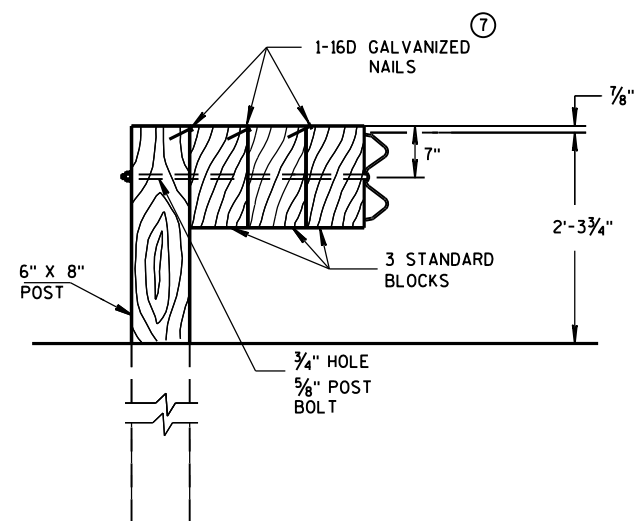
STEEL PLATE BEAM GUARD,
CLASS "A",
INSTALLATION & ELEMENTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR DOUBLE BLOCKS

THE NUMBER OF DOUBLE BLOCK POSTS
WITHIN A BARRIER RUN IS UNLIMITED

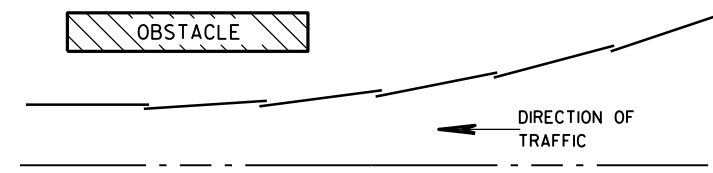


DETAIL FOR TRIPLE BLOCKS

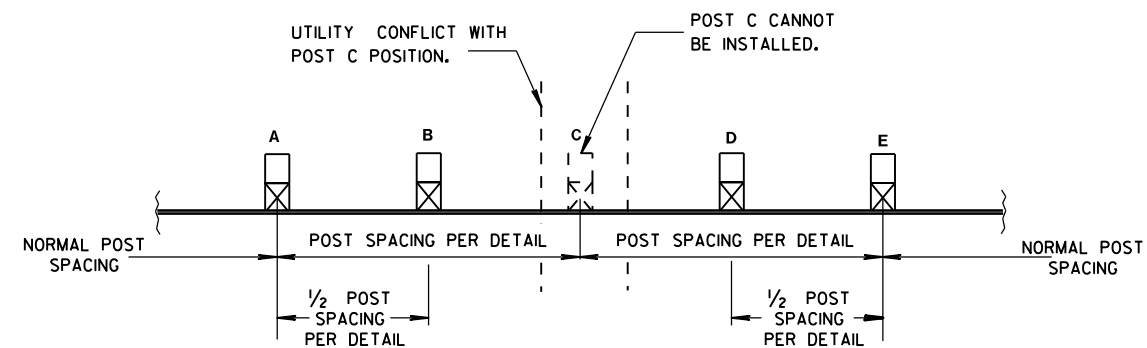
TRIPLE BLOCK DETAIL IS LIMITED TO ONE
LOCATION WITHIN A BEAM GUARD RUN.

NOTES: USE DOUBLE OR TRIPLE BLOCKS WHEN UNDERGROUND OBSTACLES
PREVENT THE POST FROM BEING INSTALLED.

DO NOT USE EXTRA BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND
SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION
DISTANCE OF THE BARRIER.



PLAN VIEW BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION

STEEL PLATE BEAM GUARD,
CLASS "A",
INSTALLATION & ELEMENTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June 2016
DATE

FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

BILL OF MATERIALS

NOTE NO.	QTY.	DESCRIPTION
①	4	WOOD BREAKAWAY TERMINAL POST: 5 1/2" X 7 1/2" X 3'-9"
②	**	STEEL TUBE: OPTION 1 - QUANTITY OF 4 TS 8" X 6" X 0.188", 4'-6" LONG OR OPTION 2 - QUANTITY OF 2 TS 8" X 6" X 0.188", 6'-0" AND 2 TS 8" X 6" X 0.188", 4'-6" LONG
③	2	SOIL PLATE: 2'-0" X 1'-6" X 1/4" **
④	4	WOOD BREAKAWAY CRT POST: 6" X 8" X 6'-0"
⑤	6	WOOD OFFSET BLOCKS: 6' X 8" X 1'-2"
⑥	1	PIPE SLEEVE: 2" X 5 1/2" STANDARD PIPE
⑦	1	BEARING PLATE
⑧	1	BCT CABLE ASSEMBLY
⑨	1	CABLE ANCHOR BOX
⑩	1	STRUT & YOKE
⑪	1	STEEL PLATE BEAM, END PANEL 12 GA. 13'-6 1/2" LONG FOR SKT-350, ET-2000 AND ET-2000 PLUS
⑫	3	STEEL PLATE BEAM: 12 GA. 13'-6 1/2"
⑬	1	ET-2000/ET-2000 PLUS GUARDRAIL EXTRUDER OR SKT-350 IMPACT HEAD: AS FURNISHED BY MANUFACTURER
⑭	1	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE F PER SECTION 637 OF THE STANDARD SPECIFICATIONS
⑮	1	E.A.T. MARKER POST

GENERAL NOTES

FOLLOW MANUFACTURE'S BOLTING RECOMMENDATIONS, IF NONE ARE AVAILABLE, INSTALL 3/8" ϕ X 1'-6" BUTTON HEAD BOLTS AT ALL POSTS EXCEPT FOR POST 1.

(A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL), AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.

(B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.

(C) THE 13 SLOT FIRST RAIL PANEL MAY BE USED IN LIEU OF THE 3 SLOT RAIL PANEL ON SKT-350 ONLY.

(D) THE TOP OF THE STEEL TUBE ON POSTS 1 THROUGH 4 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.

(E) THE CENTER OF THE UPPER 3/2" DIAMETER HOLE ON POST 5 THROUGH 8 SHALL BE 3/4" ABOVE THE FINISHED GROUND LINE.

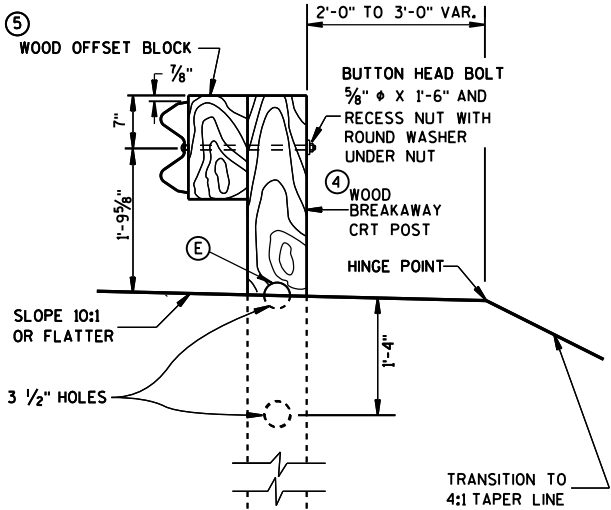
(F) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS, ONE SCREW PER CORNER.

STEEL POSTS SHALL NOT BE ALLOWED FOR USE WITH ENERGY ABSORBING TERMINALS.

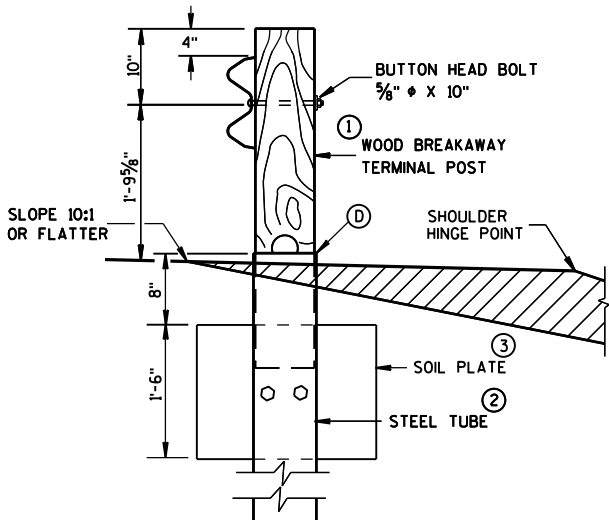
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

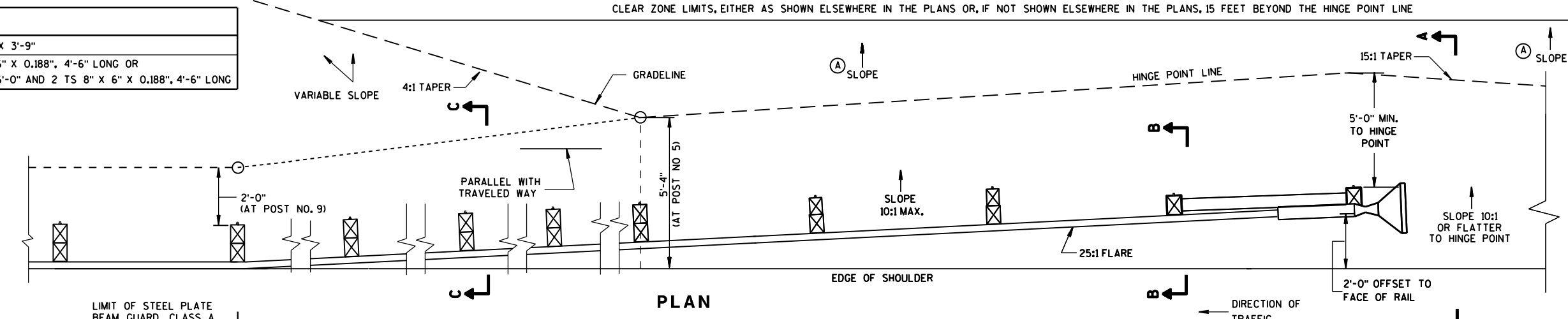
** SDD SHOWS 4 - 54 INCH STEEL TUBES WITH SOIL PLATES INSTALLED ON POST 1 AND POST 2. POST 3 AND 4 DO NOT NEED SOIL PLATES. AN ALTERNATIVE INSTALLATION WOULD CONSIST OF 2 - 72 INCH STEEL TUBES ON POST 1 AND POST 2 AND 54 INCH SOIL TUBES ON POSTS 3 AND 4. THE ALTERNATIVE INSTALLATION DOES NOT REQUIRE SOIL PLATES.



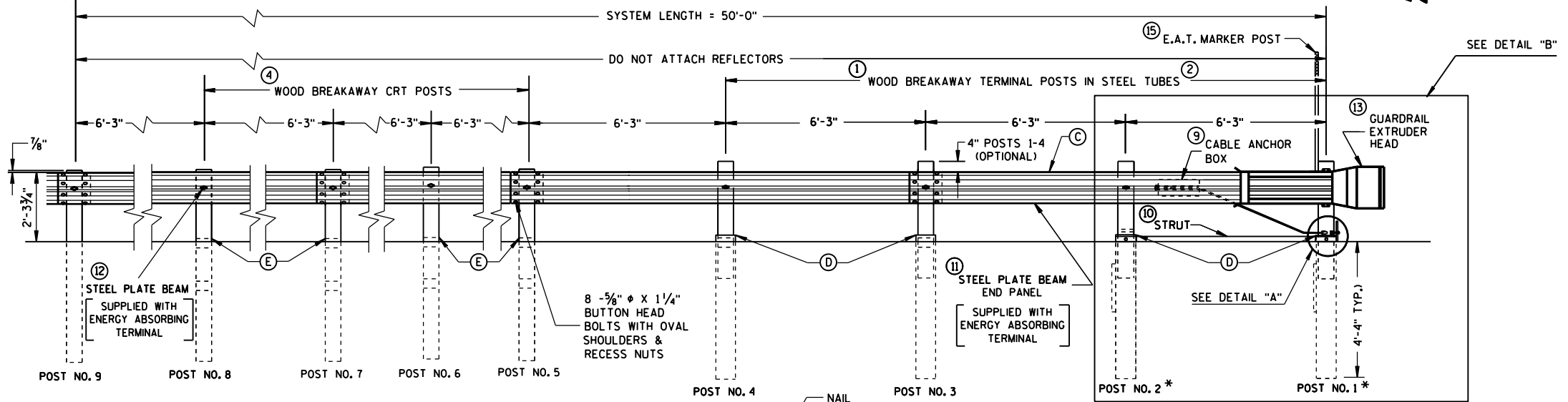
SECTION C-C
TYPICAL AT POST NOS. 6, 8



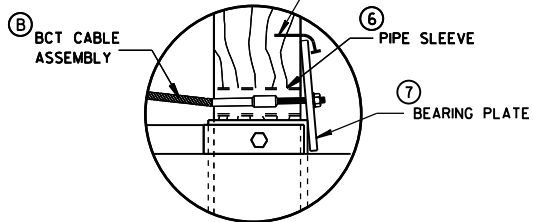
SECTION B-B
TYPICAL AT POST NO. 2 *



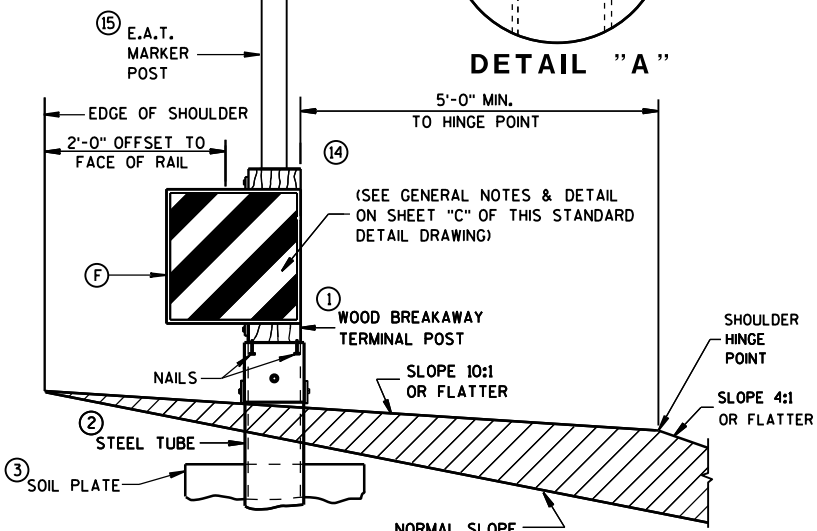
PLAN



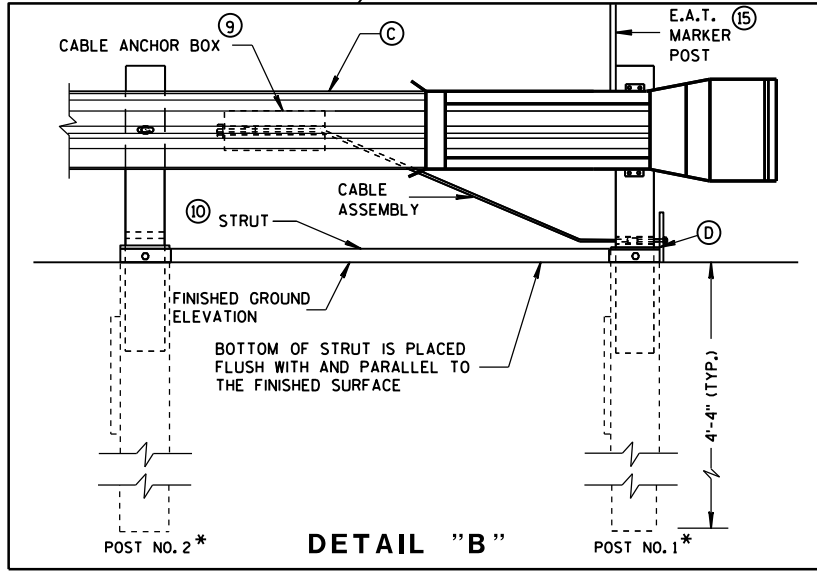
ELEVATION



DETAIL "A"



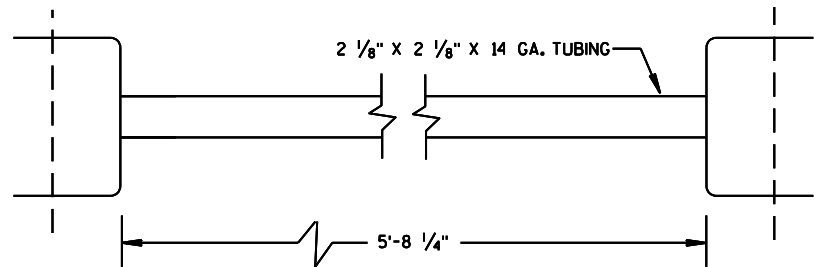
SECTION A-A
TYPICAL AT POST NO. 1 *



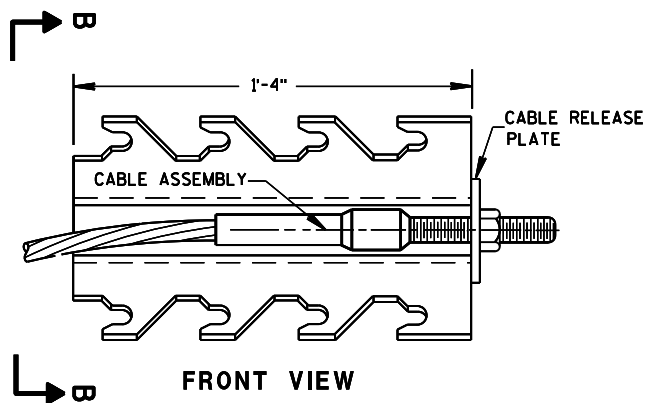
DETAIL "B"

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

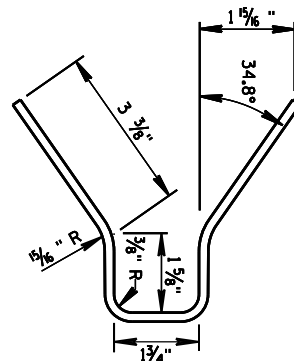
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



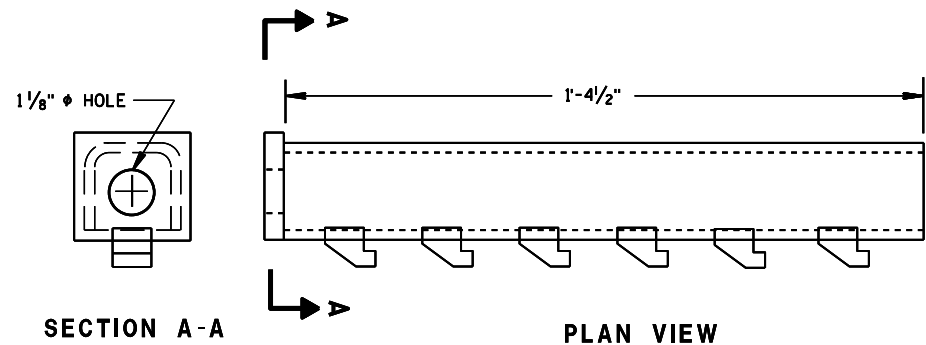
⑩ STRUT DETAIL (SKT-350)



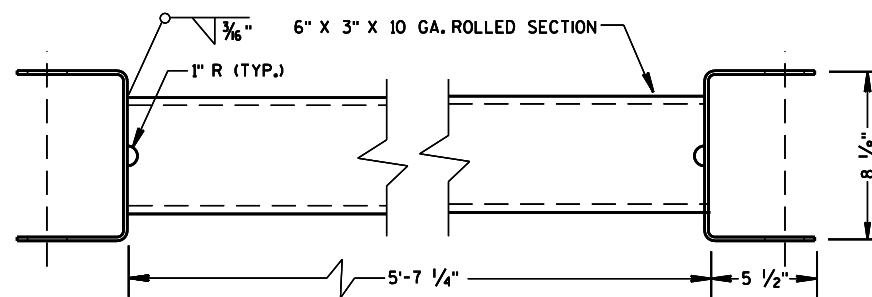
⑨ CABLE ANCHOR BOX (SKT-350)
(SKT-350)



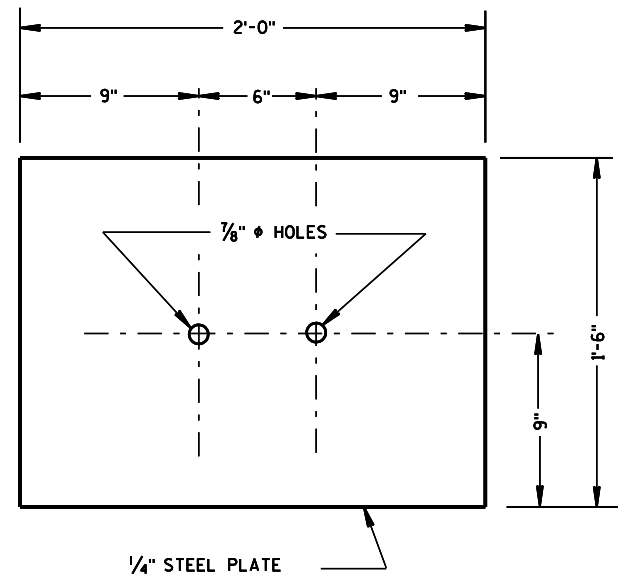
SECTION B-B



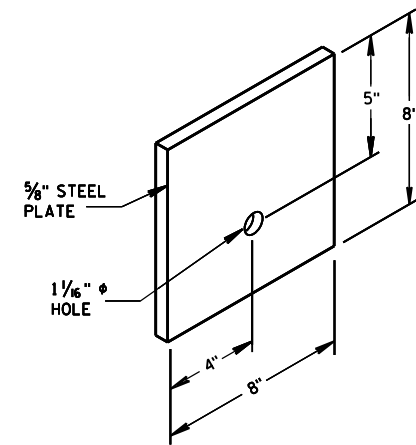
⑨ CABLE ANCHOR BOX (ET-2000/ET-2000 PLUS)



⑩ STRUT DETAIL (ET-2000/ET-2000 PLUS)
(ET-2000/ET-2000 PLUS)



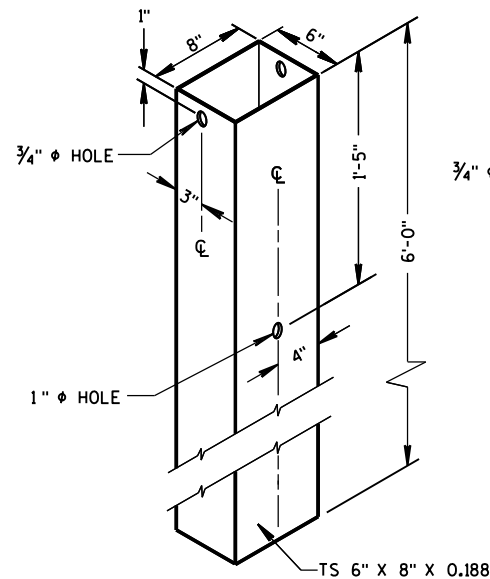
③ SOIL PLATE
(SKT-350, ET-2000/ET-2000 PLUS)



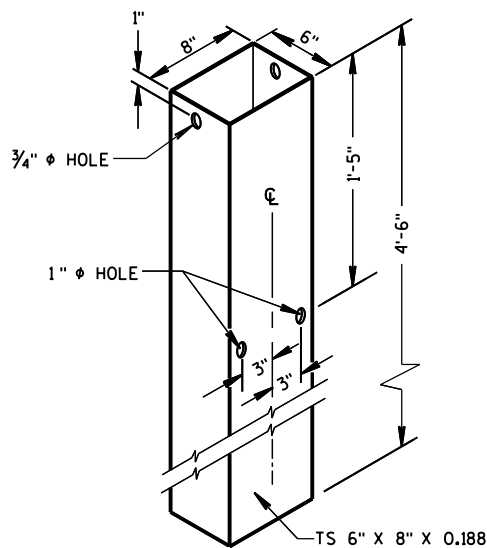
⑦ STEEL BEARING PLATE
(SKT-350, ET-2000/ET-2000 PLUS)

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

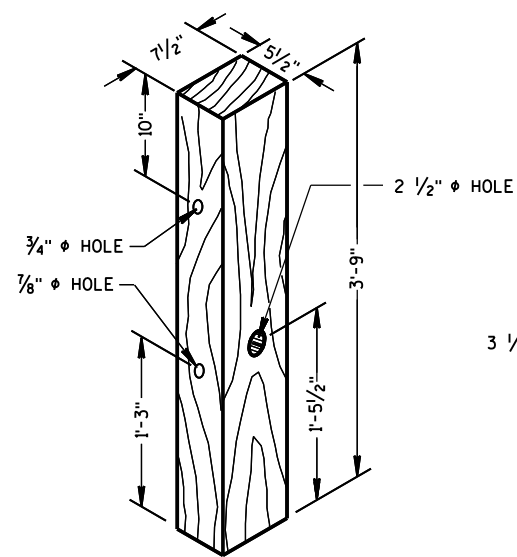
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



② **72" STEEL TUBE**
(POSTS NO. 1-4)

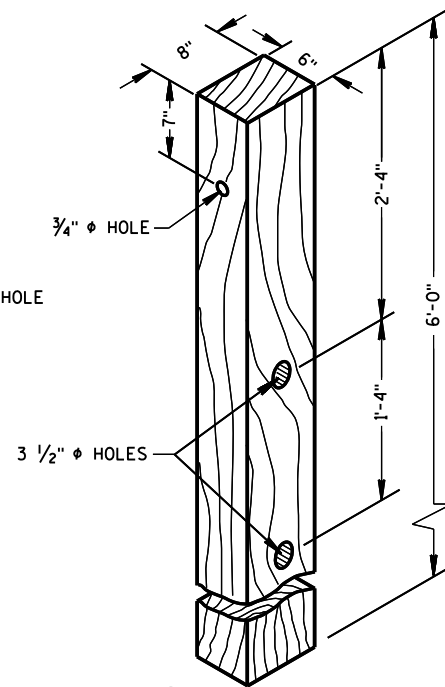


② **54" STEEL TUBE**
(POSTS NO. 1-4)



① **TERMINAL POST**
(POSTS NO. 1-4)

WOOD BREAKAWAY POSTS



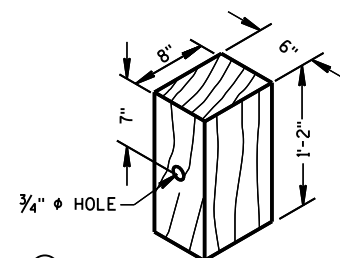
④ **CRT POST**
(POSTS NO'S 5-8)

GENERAL NOTES

WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 12 INCH DIA. POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL SHALL BE PLACED IN THE BOTTOM OF THE HOLE APPROXIMATELY 2 1/2" INCHES DEEP TO PROVIDE DRAINAGE. THE SOIL TUBES SHALL BE FIELD CUT TO LENGTH, PLACED IN THE HOLE AND BACKFILLED WITH ADEQUATELY COMPACTED MATERIAL EXCAVATED FROM THE HOLE.

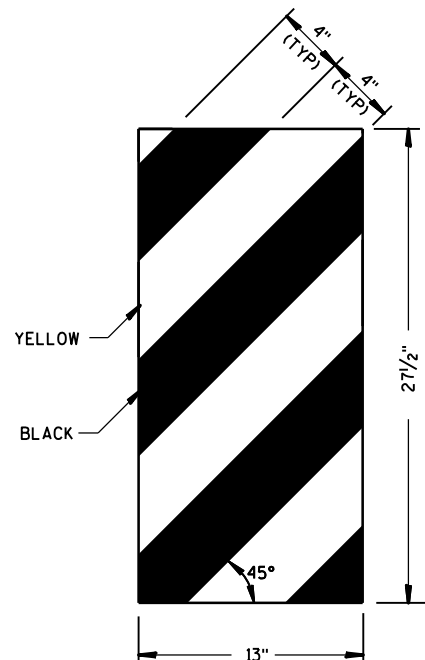
SEE APPROVED PRODUCTS LIST FOR ACCEPTABLE E. A. T. MARKER POST.

ⓐ 1/2" DIA. X 3" LAG BOLT WITH WASHER.

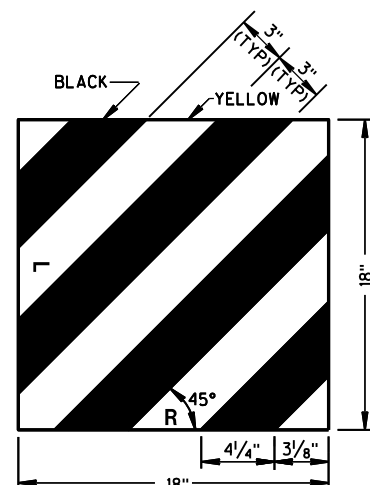


⑤ **WOOD OFFSET BLOCK**
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2

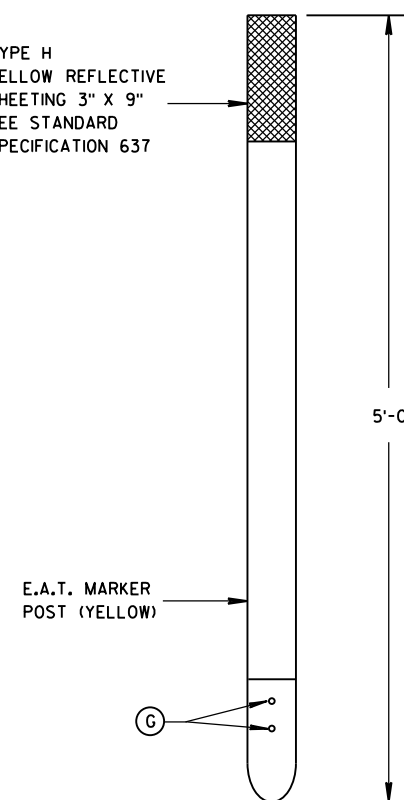
TYPE H
YELLOW REFLECTIVE
SHEETING 3" X 9"
SEE STANDARD
SPECIFICATION 637



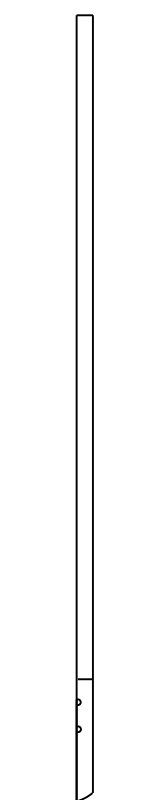
ET-2000 PLUS ONLY



ET-2000 AND SKT-350

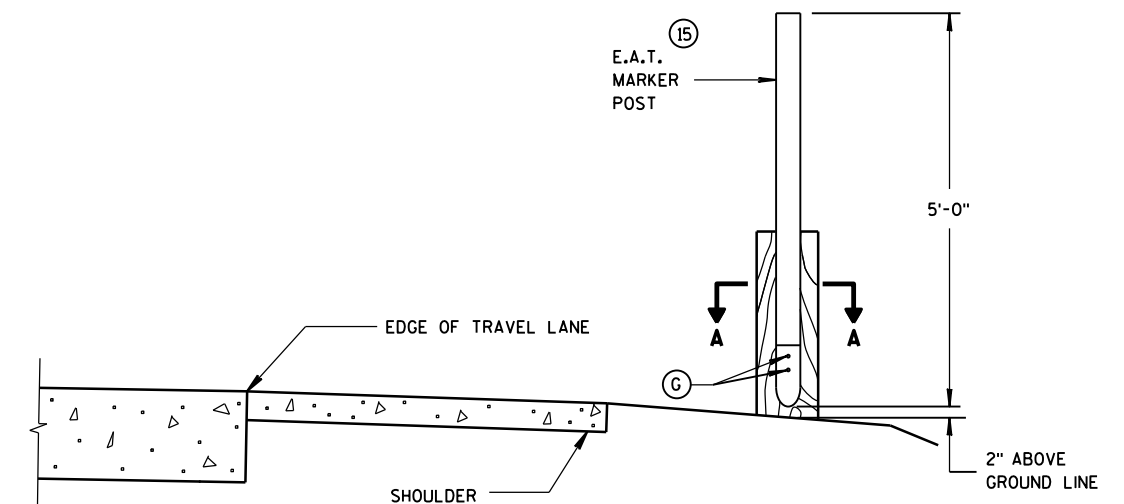


FRONT VIEW

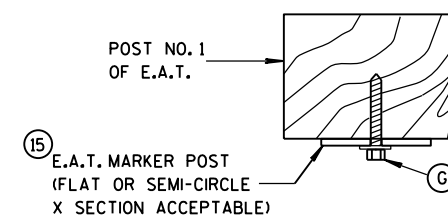


SIDE VIEW

⑮ **E.A.T. MARKER POST**



TYPICAL INSTALLATION OF E.A.T. MARKER POST BACKSIDE OF POST NO. 1
(E.A.T. AND RAIL REMOVED FOR CLARITY)

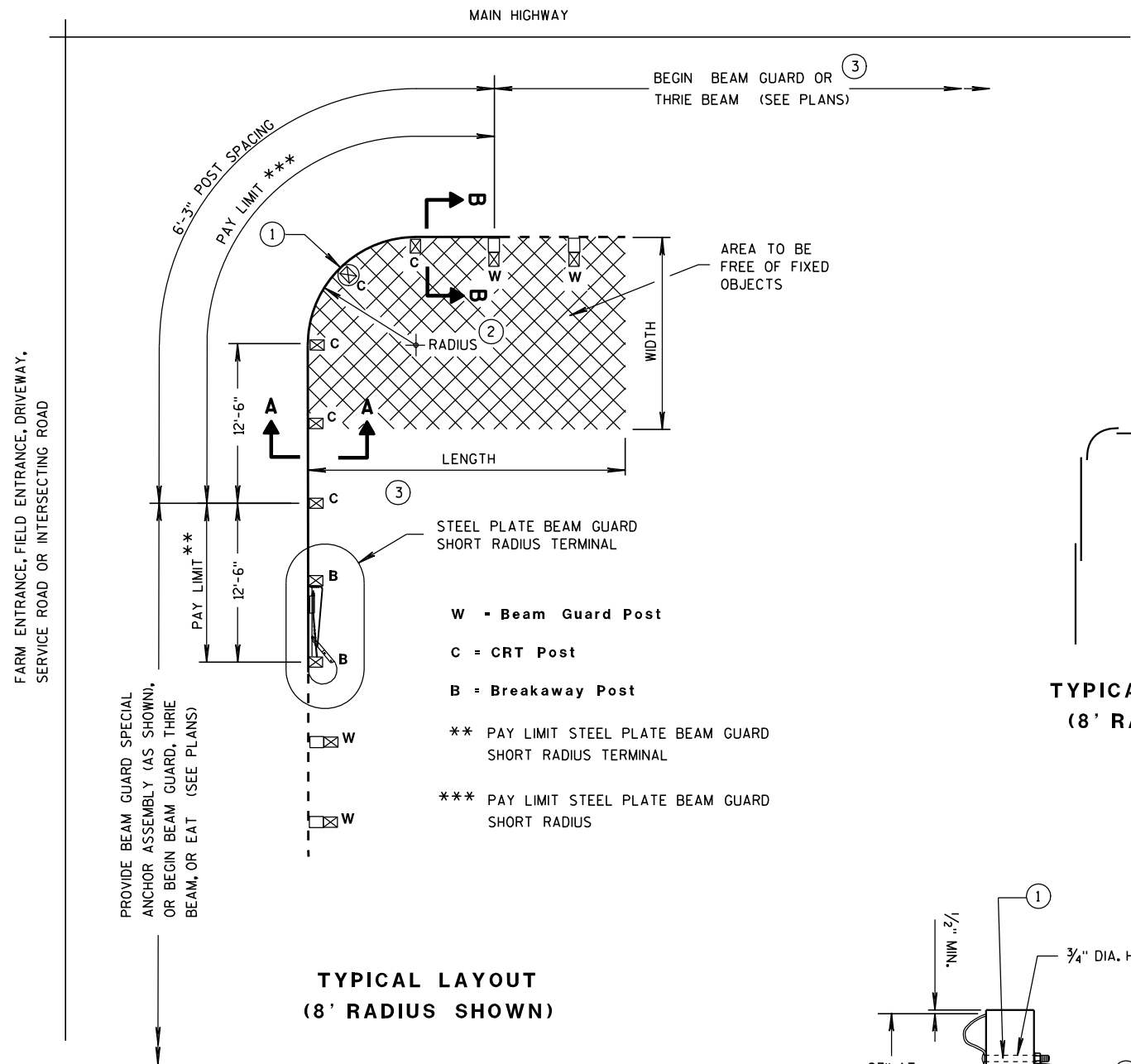


SECTION A-A

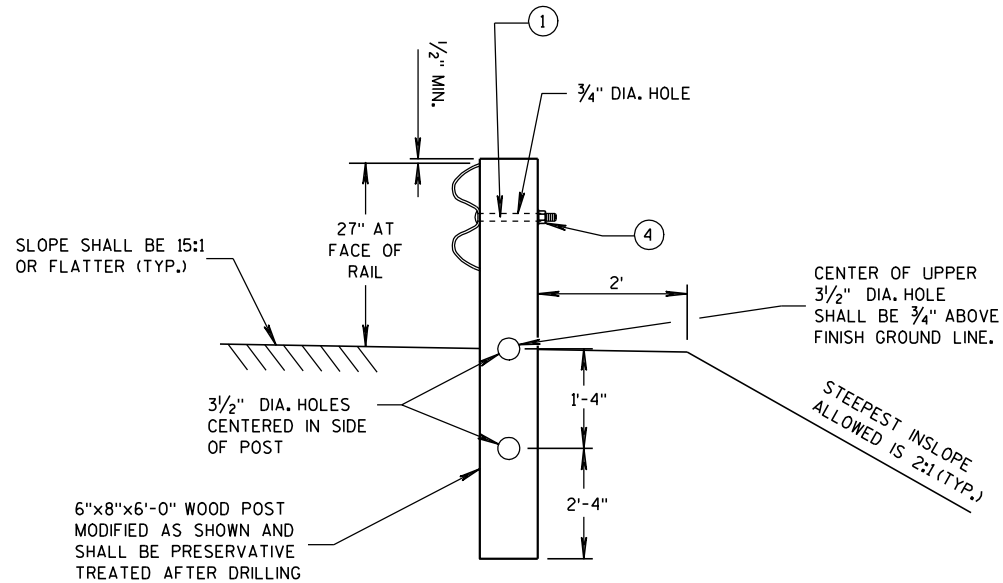
**STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL**

**STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION**

APPROVED
June 2014 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA ENGINEER



TYPICAL LAYOUT
(8' RADIUS SHOWN)



SECTION A-A
(CRT POST)

TYPICAL LAP SPLICES
(8' RADIUS SHOWN)

GENERAL NOTES

ALL ANGLES, CHANNELS, AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36 AND THE STRUCTURAL TUBING SHALL CONFORM TO ASTM A 500. WELDING SHALL MEET THE CURRENT REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE ANSI/AWS D1.1. ALL STRUCTURAL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A 123. PUNCHING, DRILLING, CUTTING, OR WELDING WILL NOT BE PERMITTED AFTER GALVANIZING. FURNISH AND INSTALL HARDWARE PER STANDARD SPECIFICATION 614.2, UNLESS NOTED OTHERWISE.

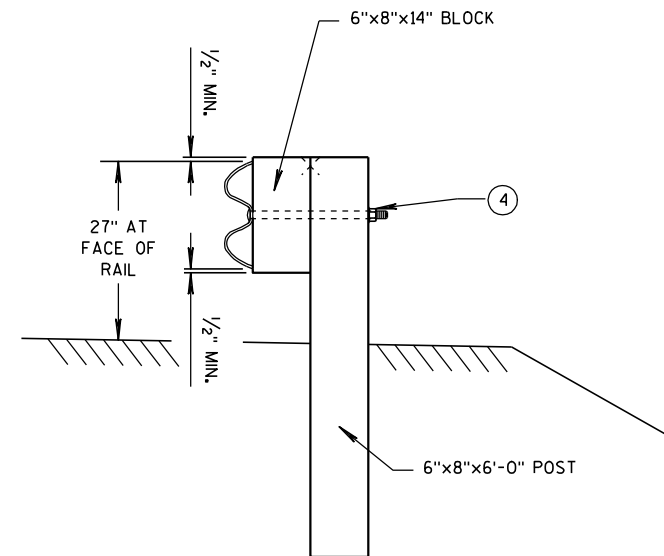
SHOP BEND CURVED RAIL SECTIONS.

SEE STANDARD DETAIL DRAWING 14 B 15 FOR OTHER DETAIL.

- 1 ON THE 8 FOOT RADIUS INSTALLATION, DO NOT INSTALL BUTTON HEAD BOLT AT CENTER CRT POST.
- 2 RADIUS FROM 8' - 36'. SEE PLAN.
- 3 HEIGHT TRANSITION MAY BE REQUIRED. SEE PLAN OR PROJECT ENGINEER.
- 4 5/8" ϕ X 1'-6" BUTTON HEAD BOLT AND RECESS NUT WITH ROUND WASHER UNDER NUT.

RADIUS	NUMBER OF CRT POSTS	*NUMBER AND LENGTH OF CURVED RAILS	REQUIRED AREA FREE OF FIXED OBJECTS (LENGTH x WIDTH)
8'	5	1 at 12.5'	25' x 15'
16'	7	1 at 25'	30' x 15'
24'	9	1 at 25' and 1 at 12.5'	40' x 20'
32'	11	2 at 25'	50' x 20'

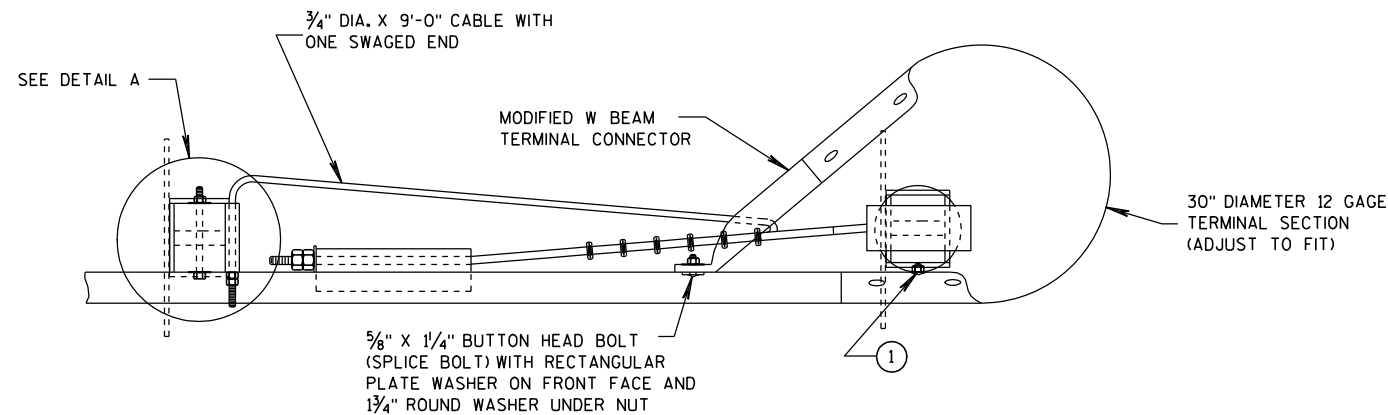
* THE NUMBER OF RAILS IS BASED ON A 90° INTERSECTION. SEE PLAN FOR NON 90° INSTALLATIONS.



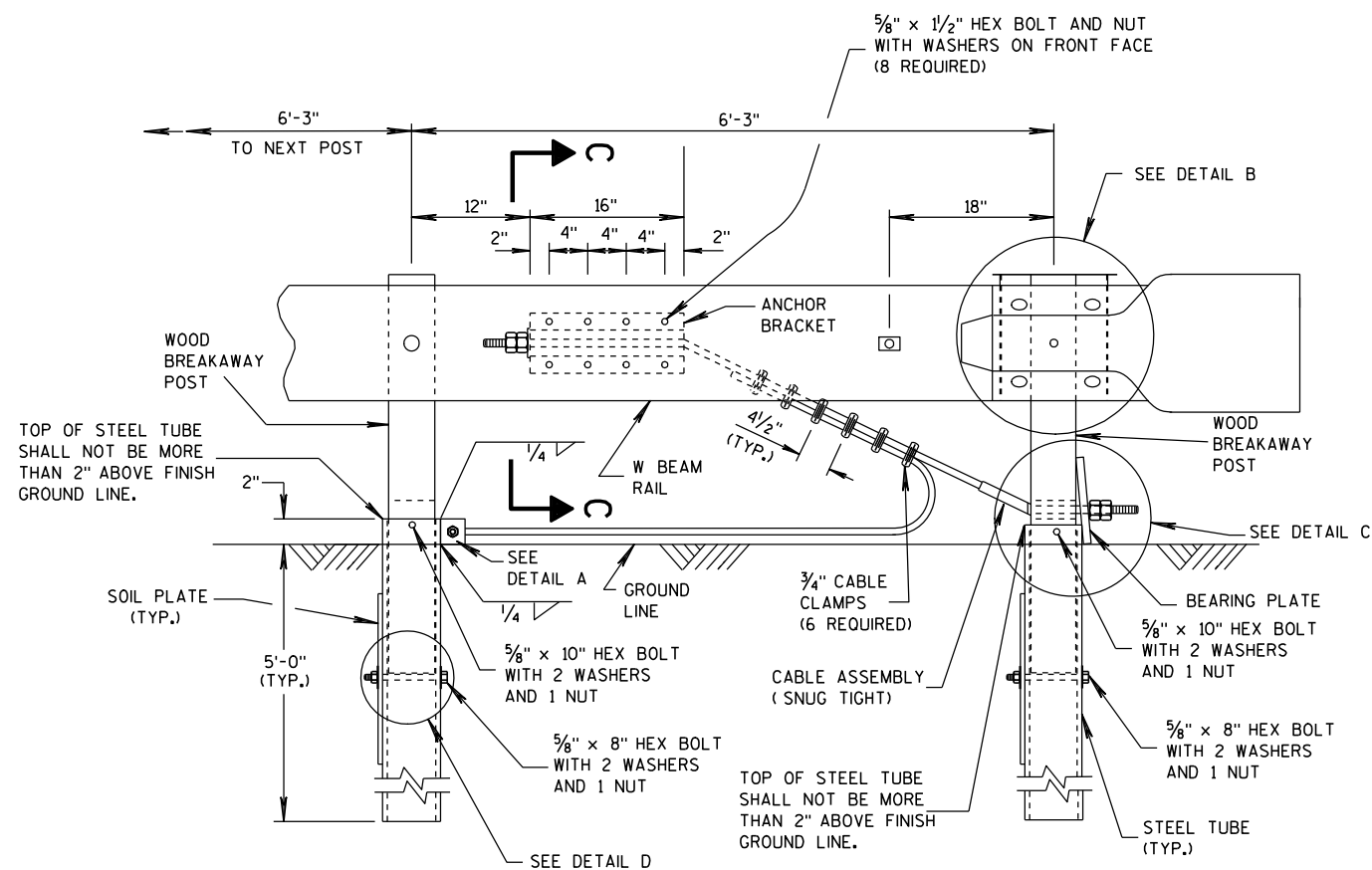
SECTION B-B
(BEAM GUARD POST)

STEEL PLATE BEAM GUARD
SHORT RADIUS TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



PLAN VIEW

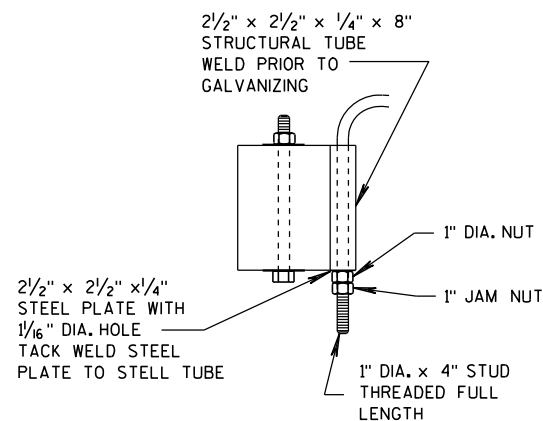


ELEVATION VIEW

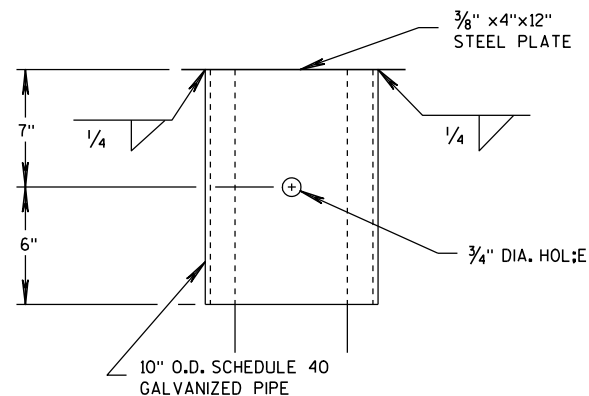
STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

GENERAL NOTES

- ATTACH W BEAM RAIL TO THE STEEL PIPE WITH A 5/8" X 2" BUTTON HEAD BOLT WITH NO WASHER. CONNECTION TO THE POST IS NOT REQUIRED.
- INSTALL GALVANIZED 3/4" (6X19) PREFORMED WIRE OR INDEPENDENT WIRE ROPE CORE CONFORMING TO AASHTO M 30. MANUFACTURE WIRE ROPE OUT OF IMPROVED PLOW STEEL WITH A MINIMUM BREAKING STRENGTH OF 42,800 PSI.



DETAIL A

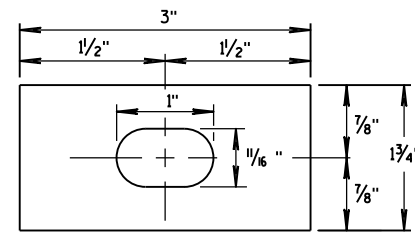


DETAIL B

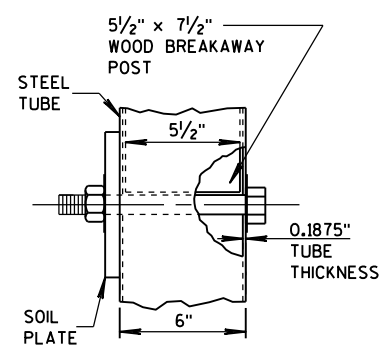
(BEAM GUARD AND TERMINAL SECTION NOT SHOWN)

STEEL PLATE BEAM GUARD
SHORT RADIUS TERMINAL

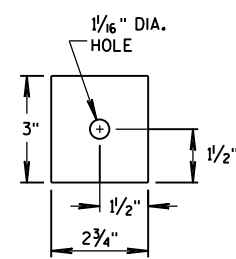
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



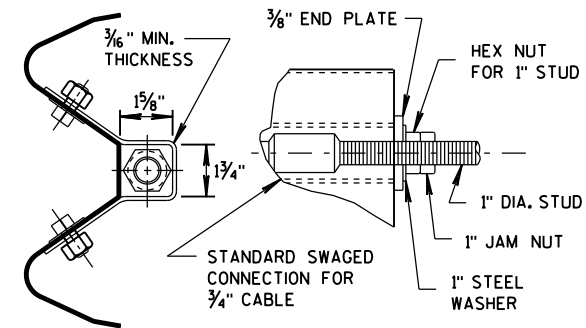
RECTANGULAR PLATE WASHER



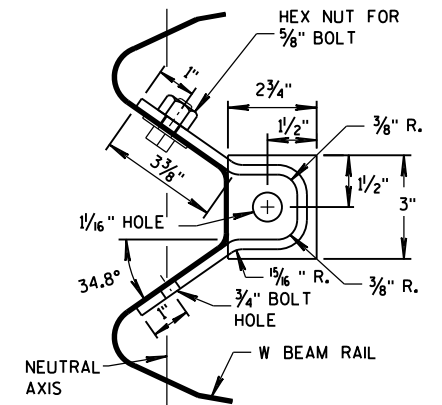
DETAIL D



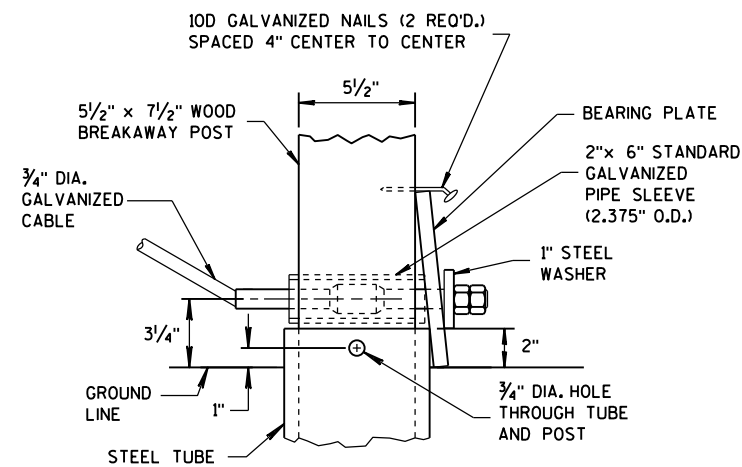
END PLATE



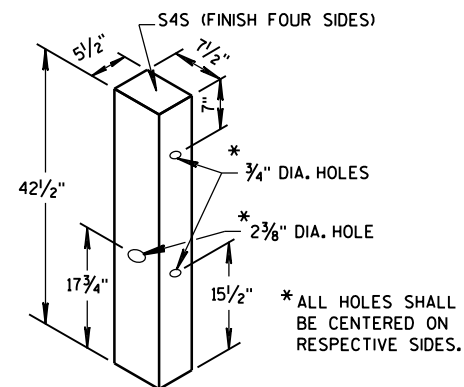
SECTION C-C
(END PLATE REMOVED)



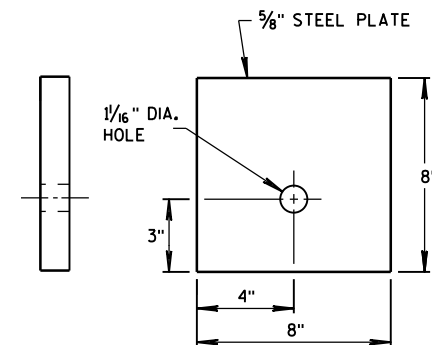
ANCHOR BRACKET



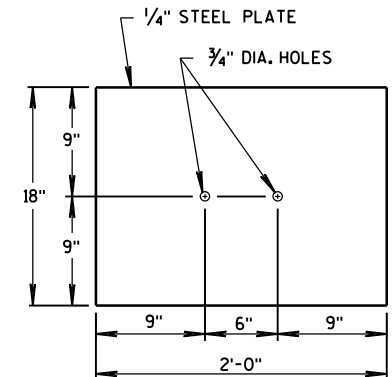
DETAIL C



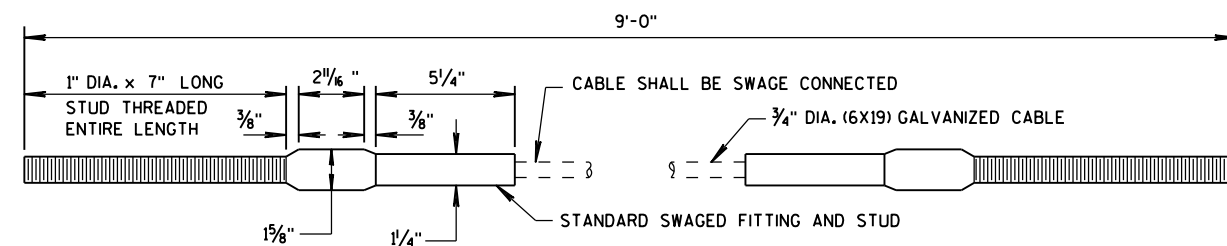
WOOD BREAKAWAY POST



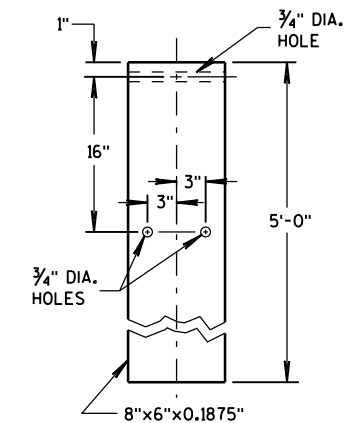
BEARING PLATE



SOIL PLATE



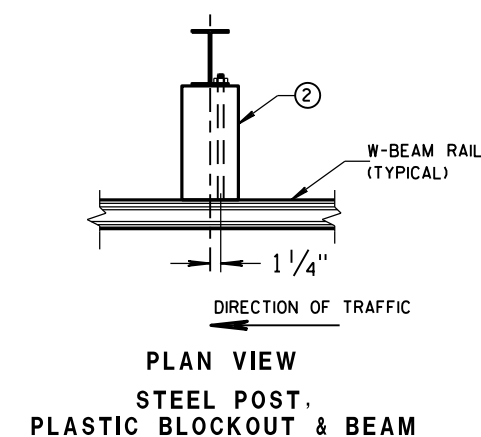
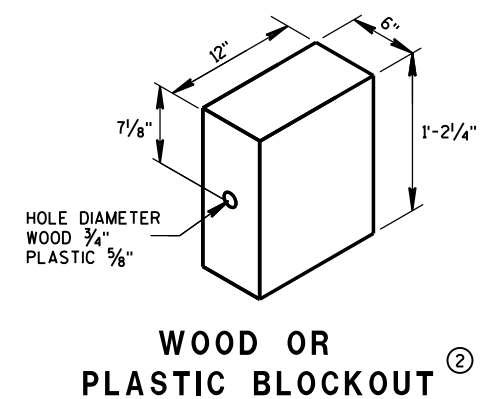
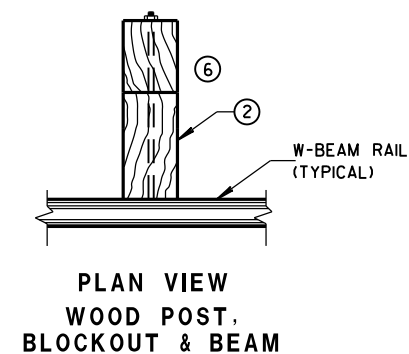
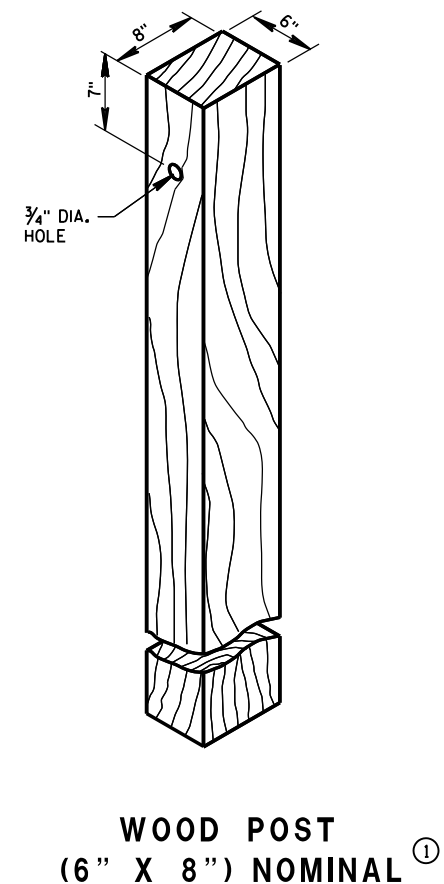
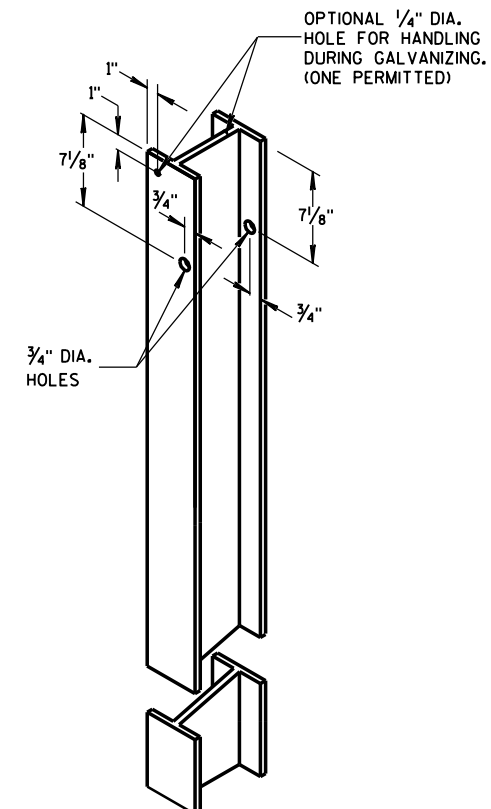
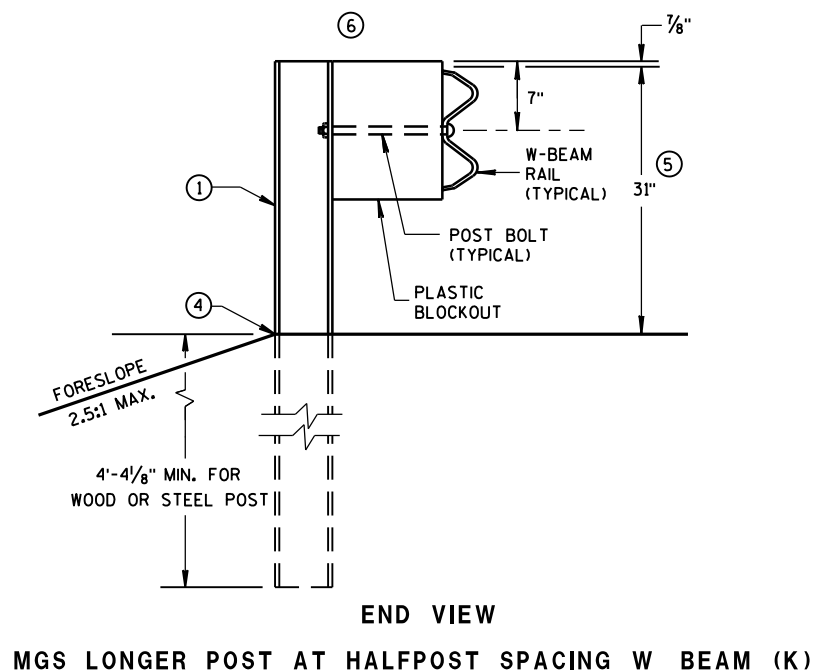
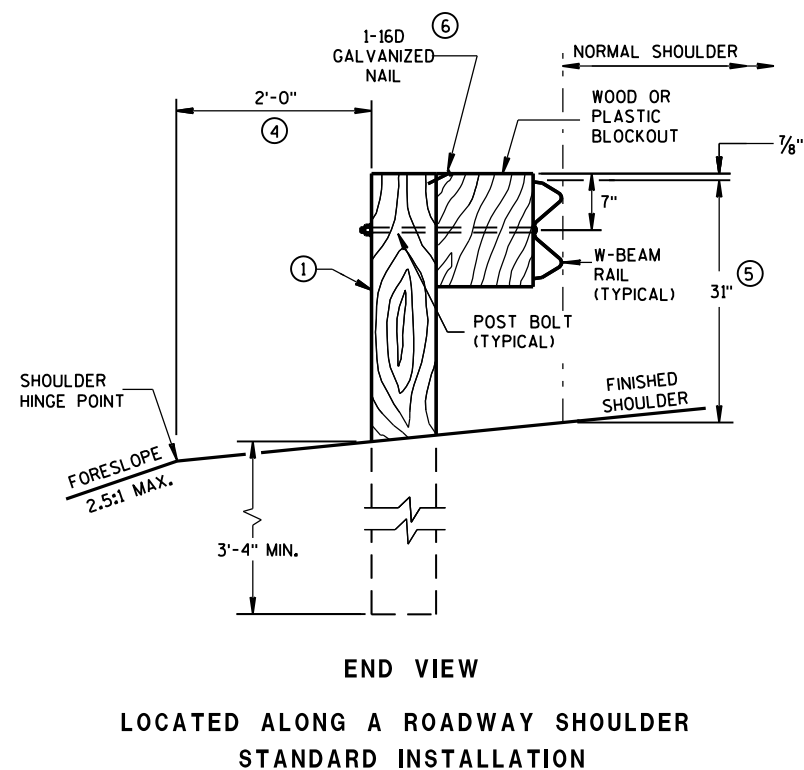
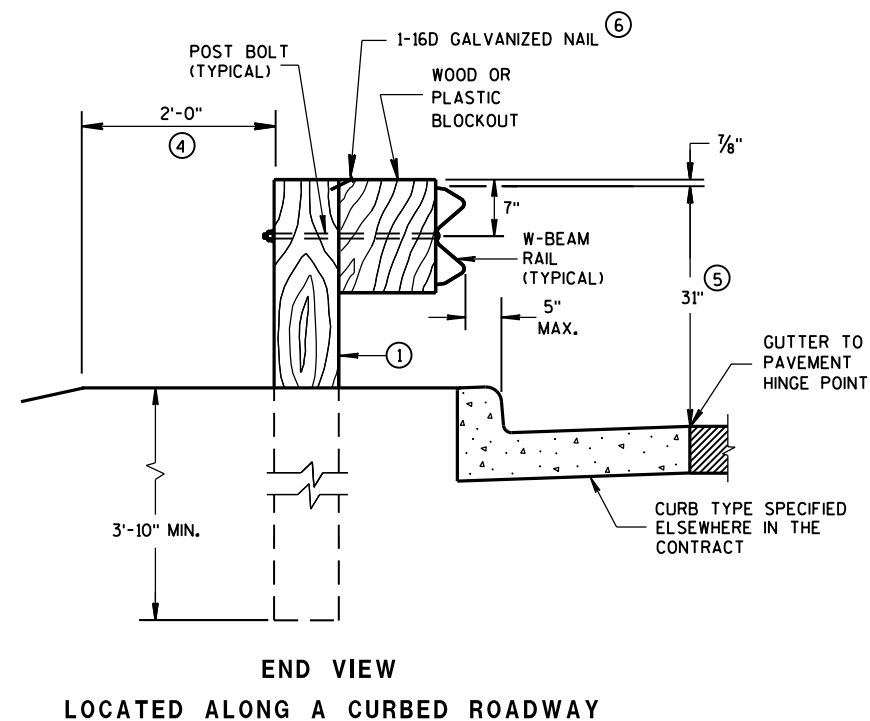
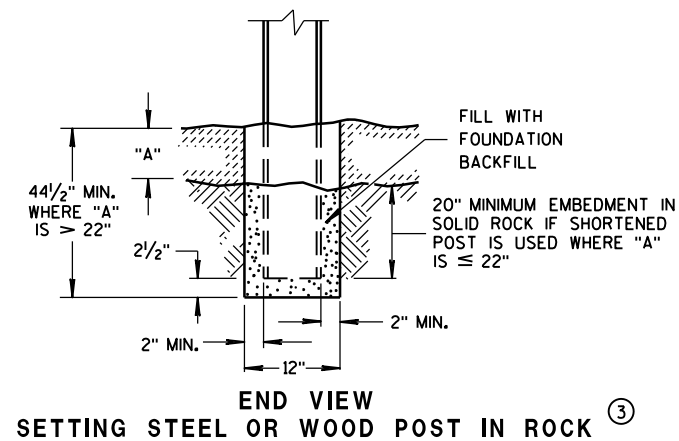
CABLE ASSEMBLY



STEEL TUBE

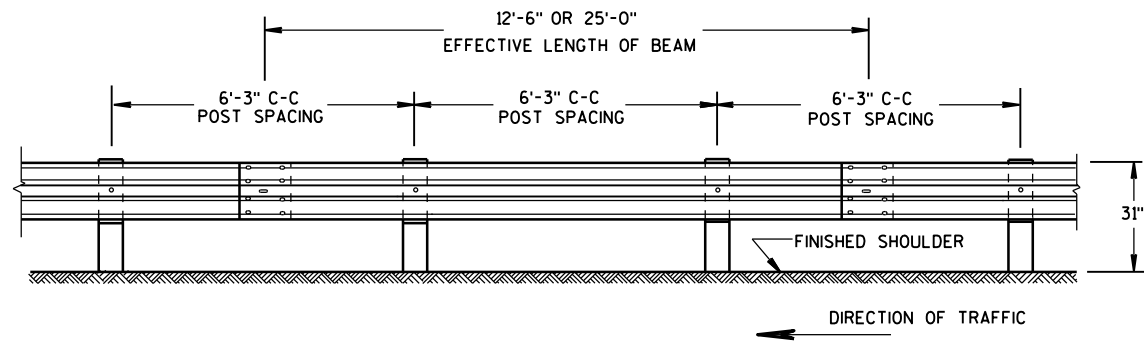
STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 12/18/08 DATE	/S/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	

- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.
- ③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2½ INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS TO THE LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- ④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- ⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".
- ⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



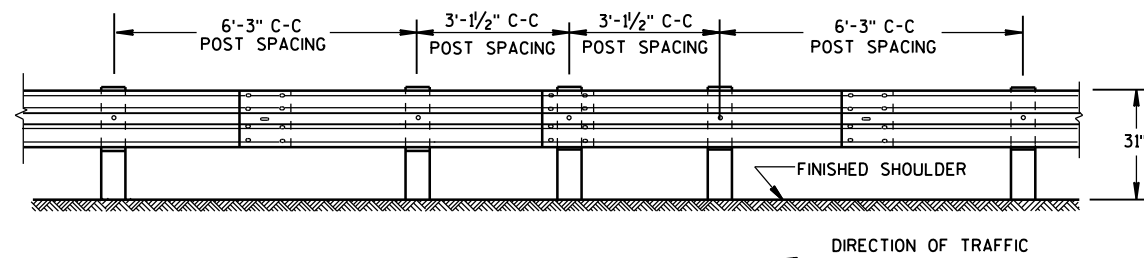
**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



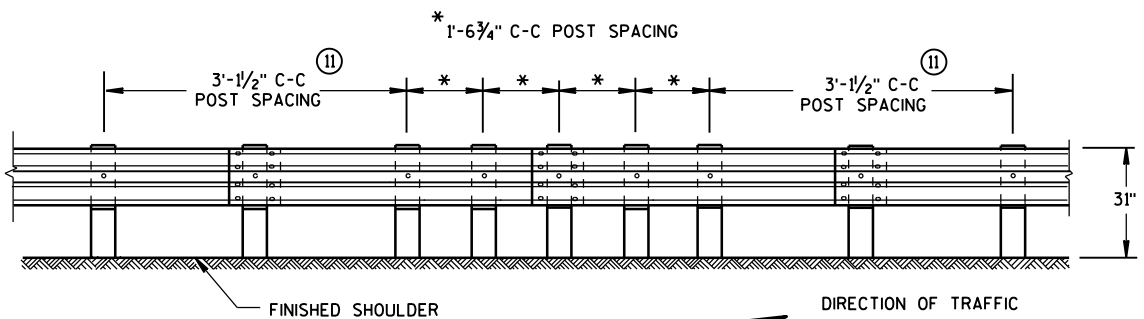
FRONT VIEW

POST SPACING STANDARD INSTALLATION



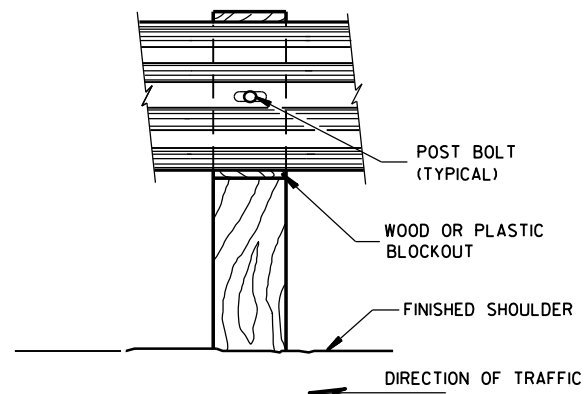
FRONT VIEW

HALF POST SPACING (HS) AND HALF POST SPACING WITH LONGER POSTS (K)

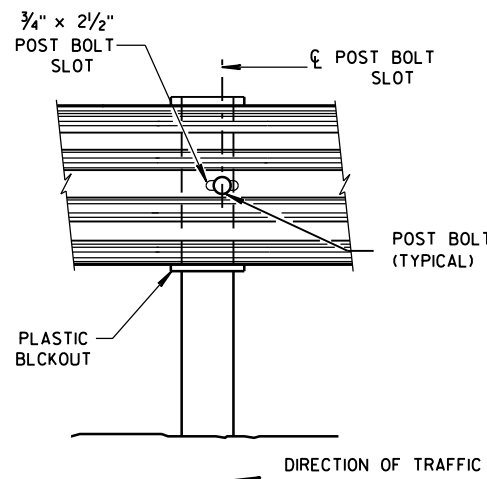


FRONT VIEW

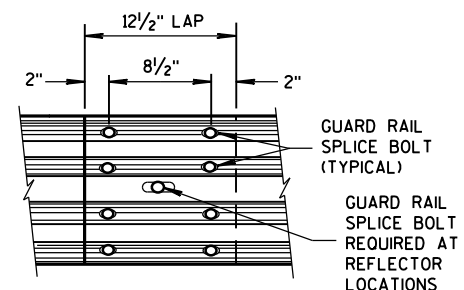
QUARTER POST SPACING (QS)



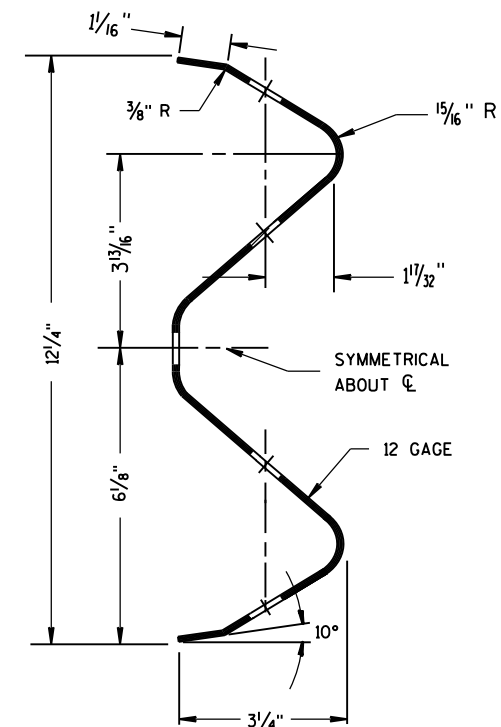
FRONT VIEW AT WOOD POST



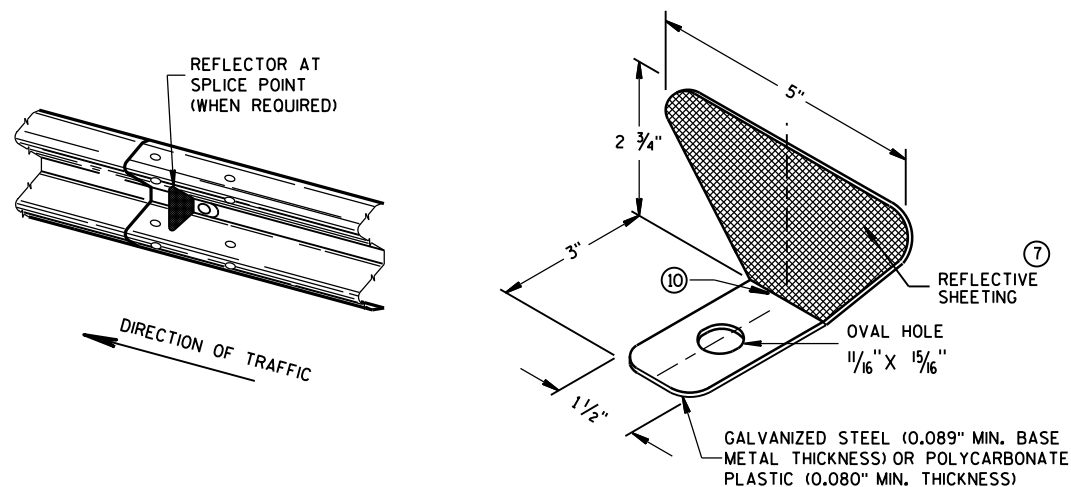
FRONT VIEW AT STEEL POST



FRONT VIEW
MID-SPAN BEAM SPLICE



SECTION THRU W-BEAM RAIL



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

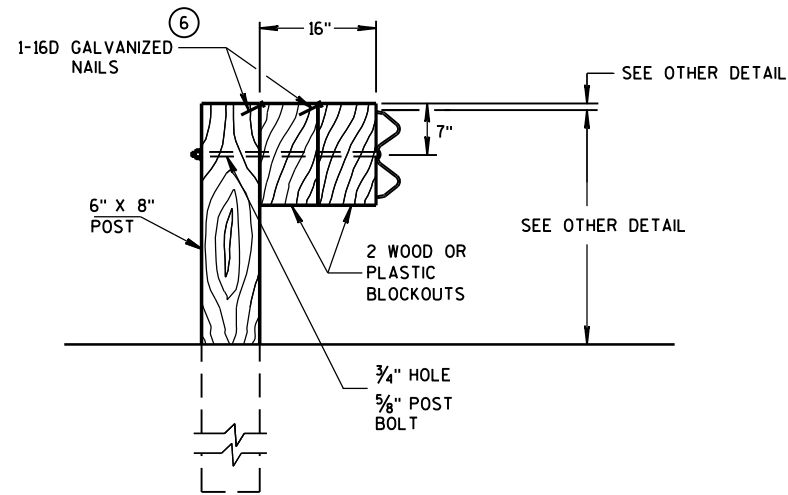
- ⑦ PROVIDE SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH YELLOW REFLECTIVE SHEETING. SHEETING IS TYPE H. SEE STANDARD SPECIFICATION 637.
 - ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
 - ⑨ REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.
 - ⑩ PROVIDE AN ANGLE OF BEND OF $90^\circ \pm 1^\circ$ FOR TWO-SIDED REFLECTORS.
 - ⑪ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A $\frac{5}{8}$ " DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES $\frac{5}{8}$ " DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND $\frac{5}{8}$ " DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.
- GUARD RAIL SPLICE BOLTS ARE A $\frac{5}{8}$ " DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES $\frac{5}{8}$ " DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

REFLECTOR SPACING

	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200'	50' C-C	1	3
	> 200'	100' C-C	1	
TWO WAY TRAFFIC	< 200'	25' C-C	1 ⑨	6
	> 200'	50' C-C	1	
TWO WAY TRAFFIC	< 200'	50' C-C	2 ⑩	3
	> 200'	100' C-C	2	

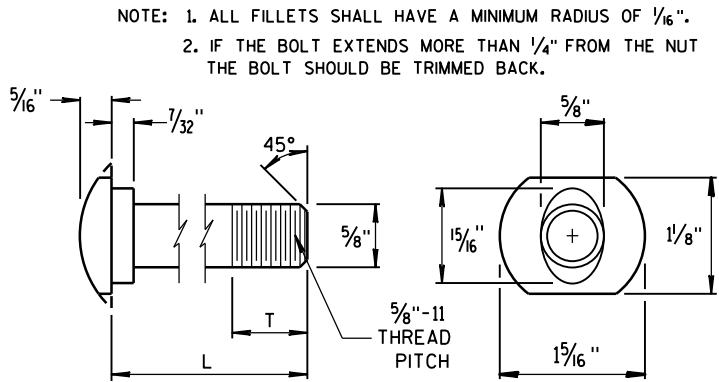
MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

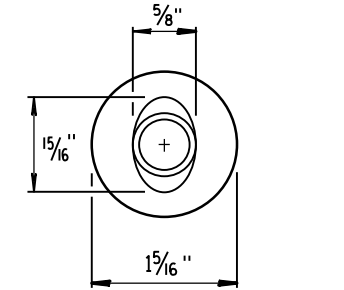


DETAIL FOR 16" BLOCKOUT DEPTH

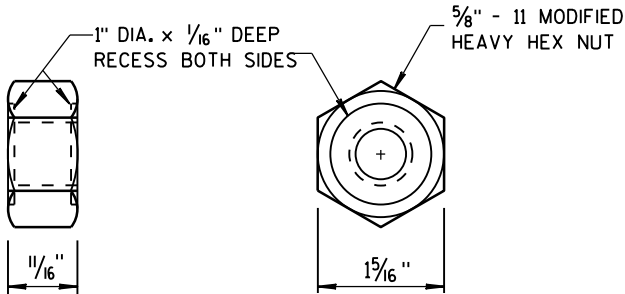
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



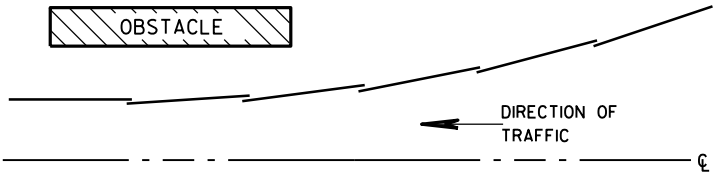
POST BOLT TABLE



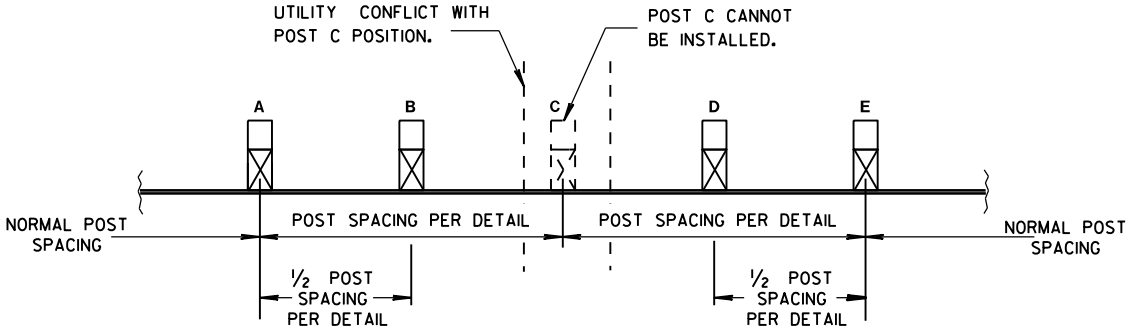
ALTERNATE BOLT HEAD



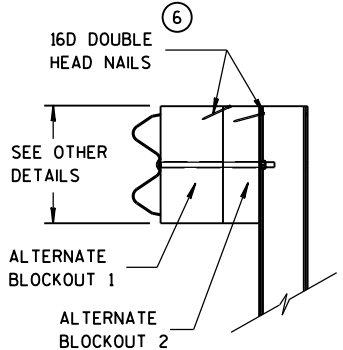
POST BOLT, SPLICE BOLT AND RECESS NUT



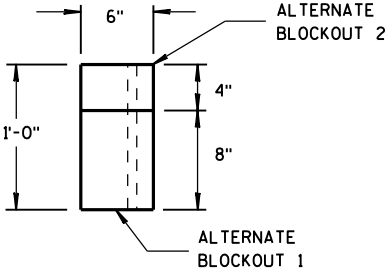
PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.

DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2016 DATE	/S/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	

GENERAL NOTES

- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL), AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.
- (C) DIFFERENT MANUFACTURES REQUIRE DIFFERENT PERFORATED W-BEAM RAIL END PANELS. SEE MANUFACTURES INFORMATION.
- (D) THE TOP OF THE STEEL TUBE ON POST 1 AND POST 2 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.
- (E) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS, ONE SCREW PER CORNER.
- (G) 1/2" DIAMETER X 3" LONG LAG BOLT AND WASHER.
- (H) HARDWARE VARIES BETWEEN DIFFERENT MANUFACTURES. SEE MANUFACTURE'S DRAWING FOR INFORMATION.
- (I) DIMENSIONS MAY VARY. SEE MANUFACTURE'S INFORMATION.

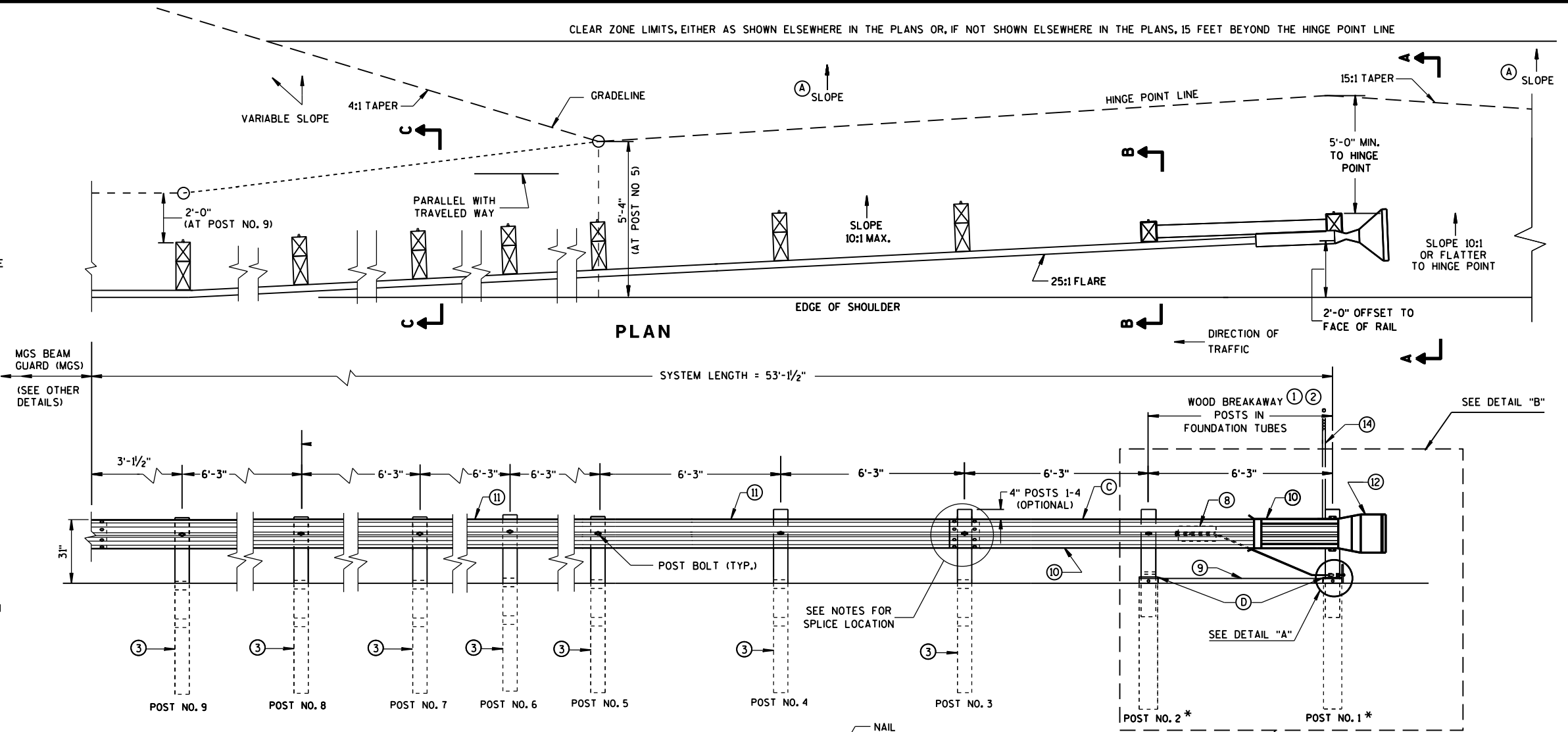
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

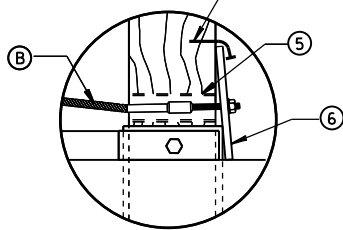
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

W-BEAM RAIL SPLICES ARE LOCATED AT POST NUMBER 3, AND BETWEEN POST 5 AND 6, BETWEEN POSTS 7 AND 8, AND MIDDLE OF THE SPAN AFTER POST 9.

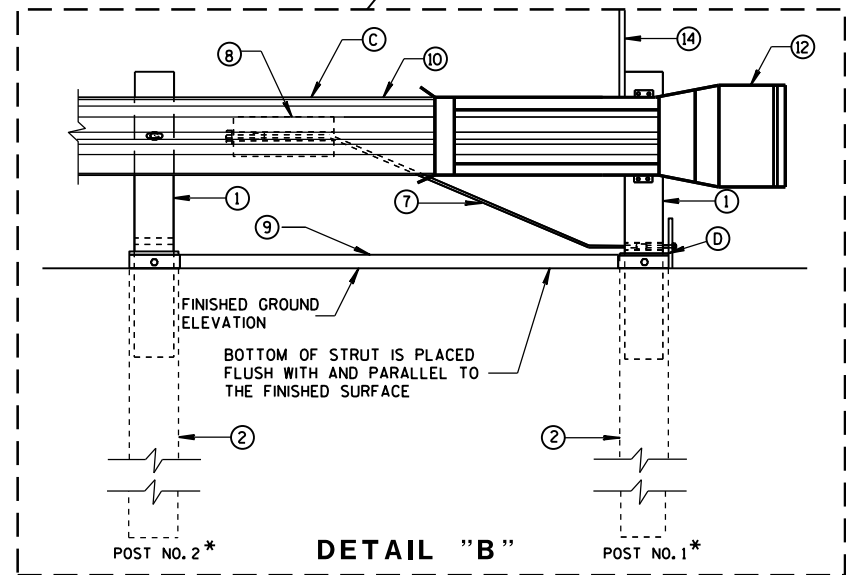
THE CENTER OF THE UPPER 3/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE.



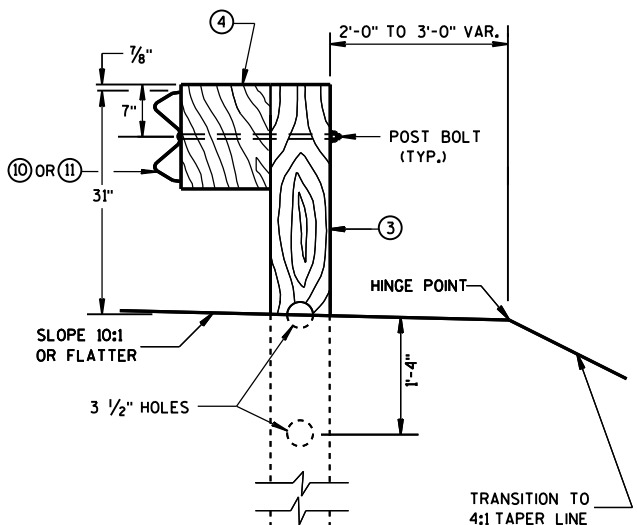
ELEVATION



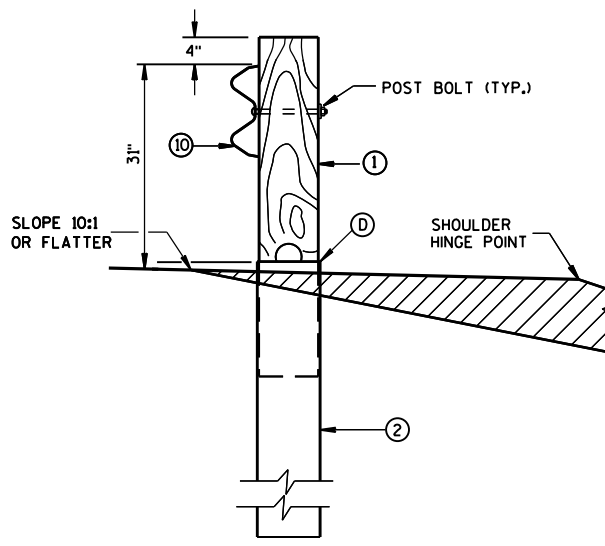
DETAIL "A"



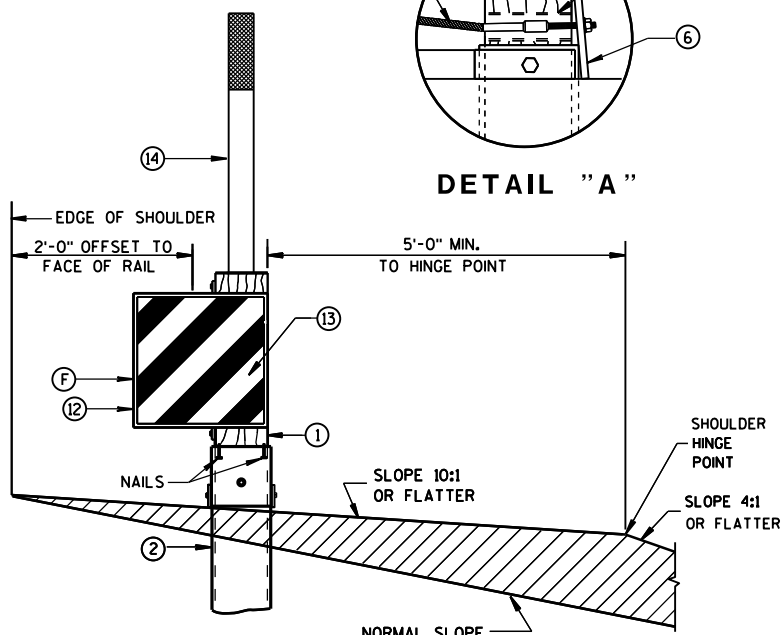
DETAIL "B"



SECTION C-C
TYPICAL AT POST NOS. 3-9



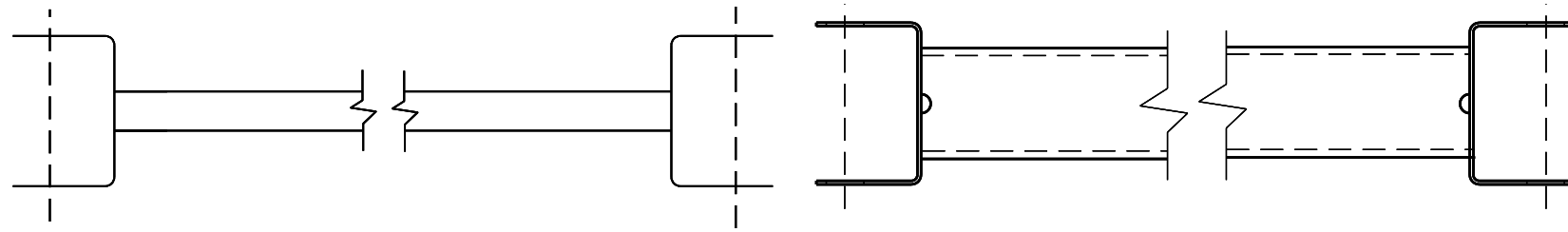
SECTION B-B
TYPICAL AT POST NO. 2*



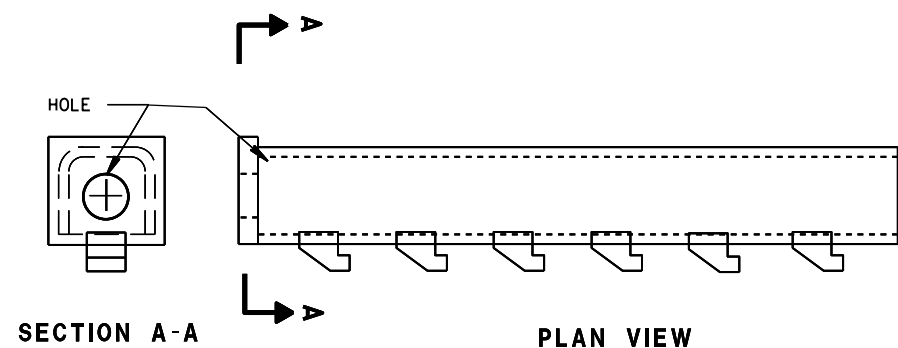
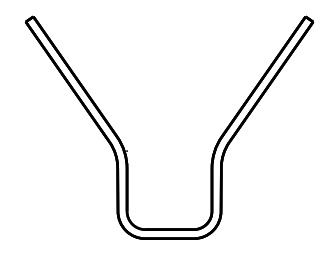
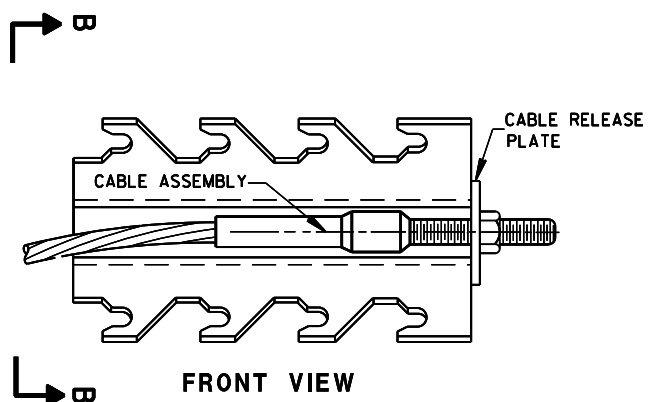
SECTION A-A
TYPICAL AT POST NO. 1*

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



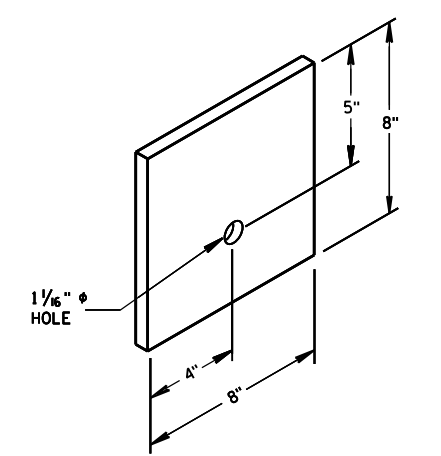
9 H
GENERIC GROUND STRUT



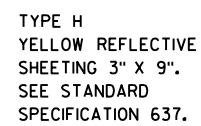
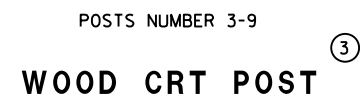
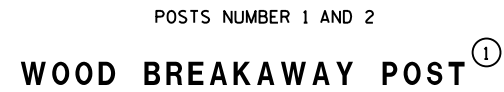
8 H
GENERIC ANCHOR CABLE BOX

BILL OF MATERIALS

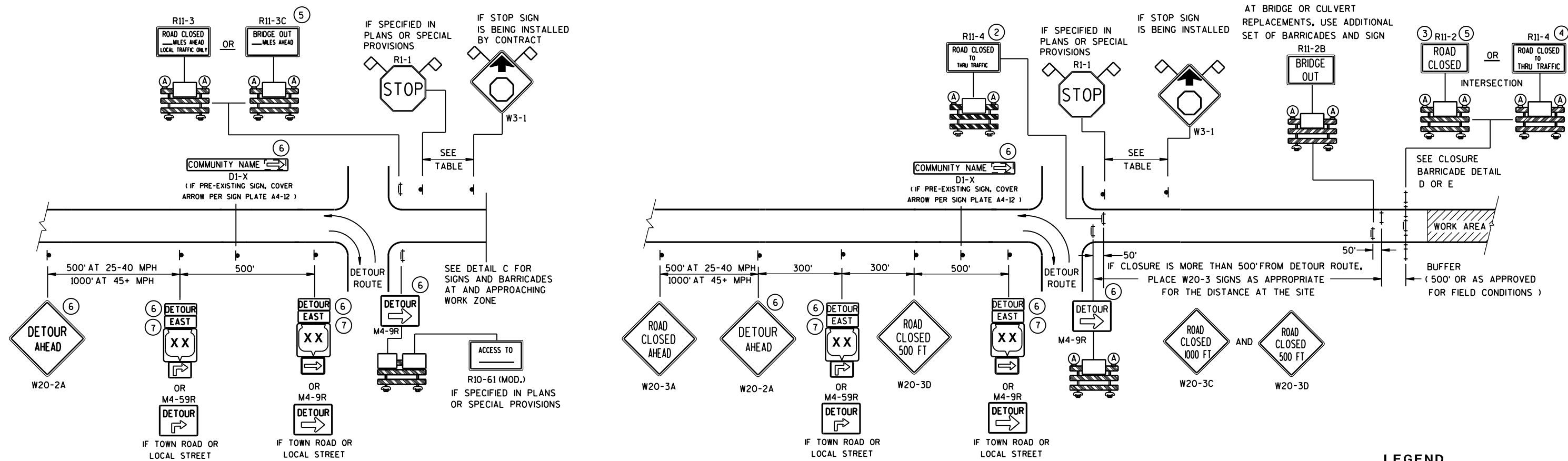
PART NO.	DESCRIPTION
MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.	
①	WOOD BREAKAWAY POST
②	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED W-BEAM RAIL END PANEL, 12'-6" LONG.
⑪	STANDARD W-BEAM RAIL. MULTIPLE SECTIONS REQUIRED. SECTIONS VARY IN LENGTH.
⑫	END SECTION EAT
⑬	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE F PER SECTION 637 OF THE STANDARD SPECIFICATIONS
⑭	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)



6
BEARING PLATE



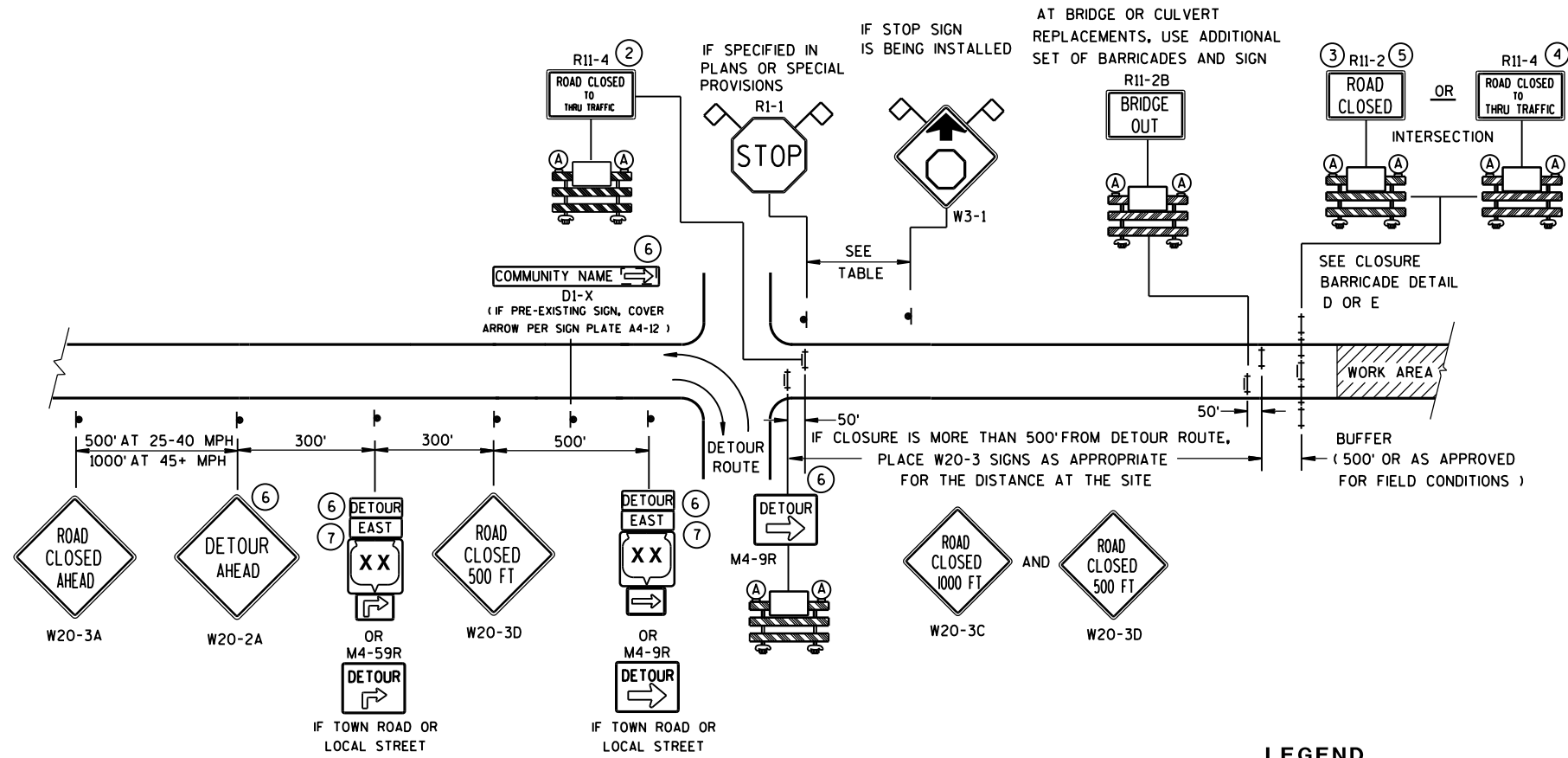
MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2014	/S/ Jerry H. Zogg
DATE	ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	



DETAIL A

MAINLINE CLOSURE WITH POSTED DETOUR

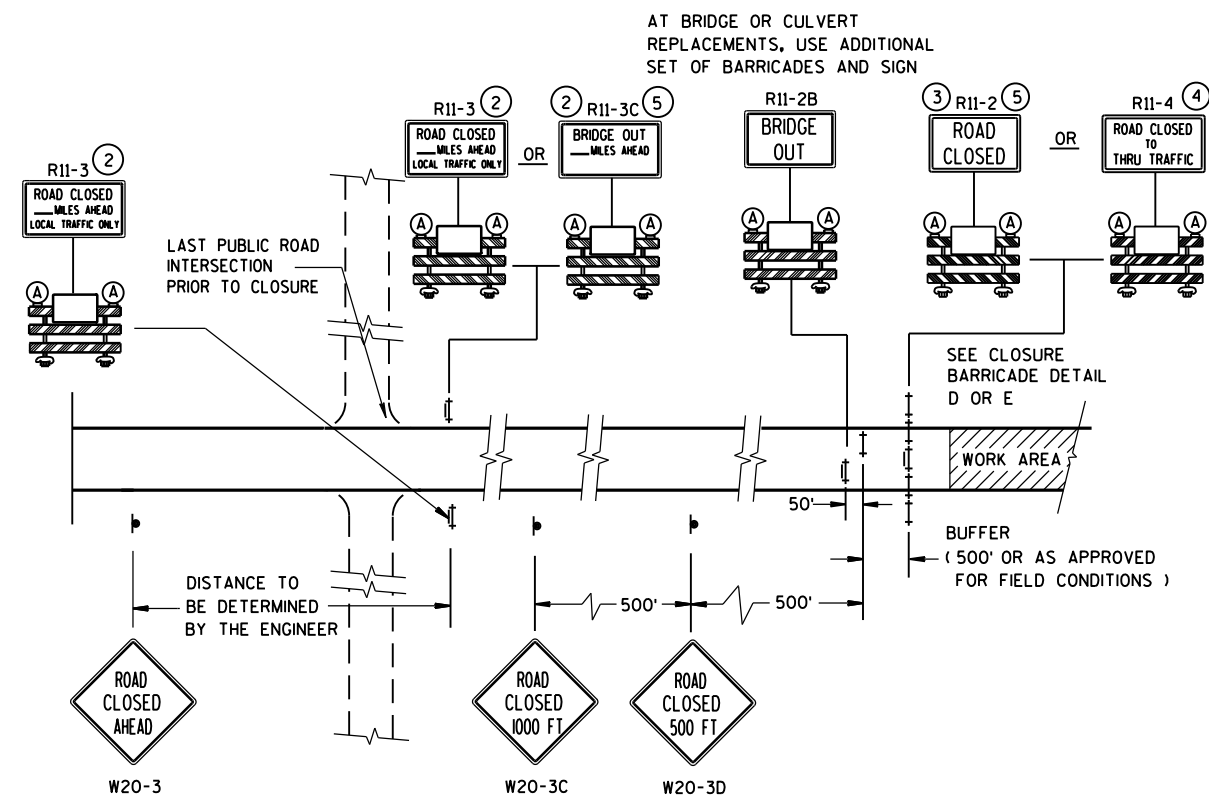
WORK ZONE GREATER THAN 1/2 MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL B

MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE LESS THAN 1/2 MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

LEGEND

- | | |
|---|---------------------------------------|
|  | SIGN ON PERMANENT SUPPORT |
|  | TYPE III BARRICADE |
|  | TYPE III BARRICADE WITH ATTACHED SIGN |
|  | TYPE "A" WARNING LIGHT (FLASHING) |

 WORK AREA

 M4-8
 M3-X
 M1-4
OR
 M1-5A
OR
 M1-6

 OR 

M05-1 M06-1

 FLAGS, 16" X 16" MIN., (ORANGE)

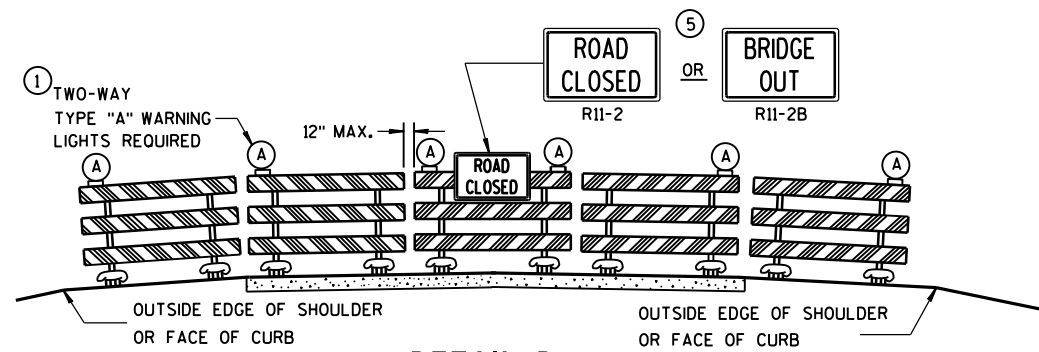
SPEED LIMIT (MPH)	"STOP AHEAD" ADVANCE WARNING DISTANCE (F T)
25	200
30	200
35	350
40	350
45	500
50	550
55	750

SEE SDD 15C2-SHEET "b"
FOR GENERAL NOTES
AND FOOTNOTES (1) THROUGH (7)

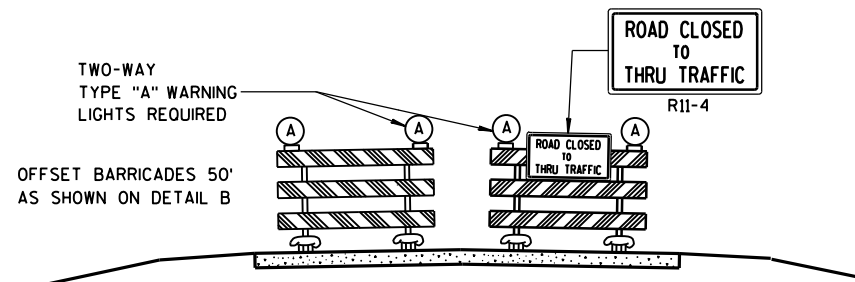
BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

Sept. 2015	/S/ Peter Amakobe Atepe
DATE	STATEWIDE WORK ZONE TRAFFIC
FHWA	SAFETY ENGINEER



DETAIL D
ROAD CLOSURE BARRICADE DETAIL
APPROACH VIEW



DETAIL E
LANE CLOSURE BARRICADE DETAIL
APPROACH VIEW

SEE SDD 15C2-SHEET "a" FOR LEGEND

GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND BARRICADES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

BARRICADES THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION OR, FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

ALL TYPE III BARRICADES SHALL HAVE RAILS REFLECTORIZED ON BOTH FACES. STRIPES SHALL BE PROPERLY SLOPED DOWN TOWARD THE TRAFFIC SIDE OR AS SHOWN IN THE ROAD CLOSURE BARRICADE DETAIL D FOR FULL ROAD CLOSURES.

TYPE "A" LOW-INTENSITY FLASHING WARNING LIGHTS SHALL BE VISIBLE ON BOTH SIDES OF THE BARRICADE.

THE R11-2, R11-3, M4-9, R11-4 AND R10-61 SIGNS PLACED ON BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE OR BOTTOM RAILS.

"WO" AND "MO" SIGNS ARE THE SAME AS "W" AND "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:

R11-2 SHALL BE 48" X 30".

R11-3, R11-4 AND R10-61 SHALL BE 60" X 30".

M4-9 SHALL BE 30" X 24".

M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)

M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)

M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)

M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)

D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

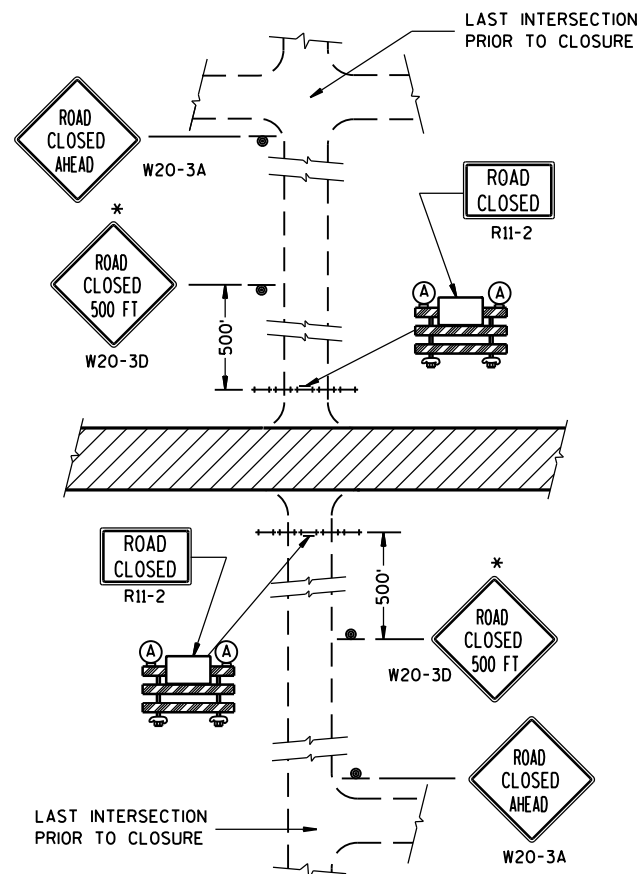
R1-1 SHALL BE 36" X 36".

- 1 TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8-FOOT LIGHT SPACING).
- 2 THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT INTERSECTION.
- 3 FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL D.
- 4 FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE LANE CLOSURE BARRICADE DETAIL E.
- 5 FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11-2 AND R11-3 SIGNS.
- 6 INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.
- 7 "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

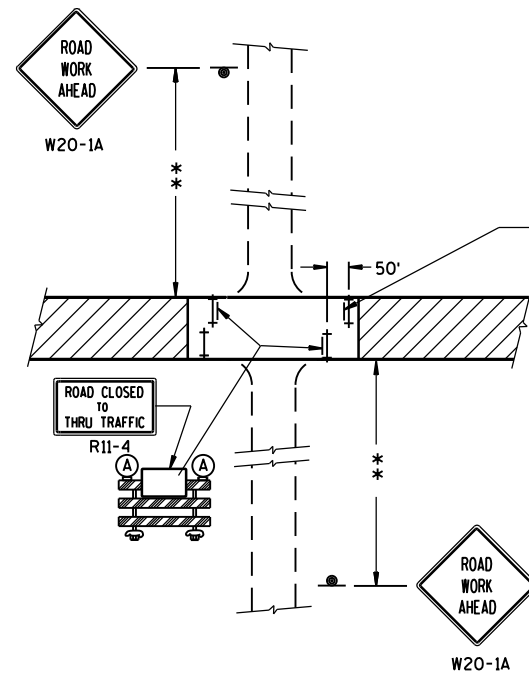
BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

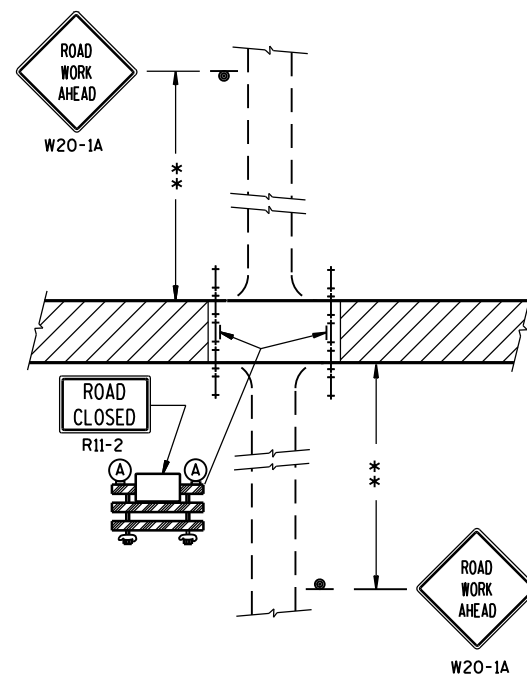
Sept. 2015 /S/ Peter Amokobe Atepe
DATE STATEWIDE WORK ZONE TRAFFIC
FHWA SAFETY ENGINEER



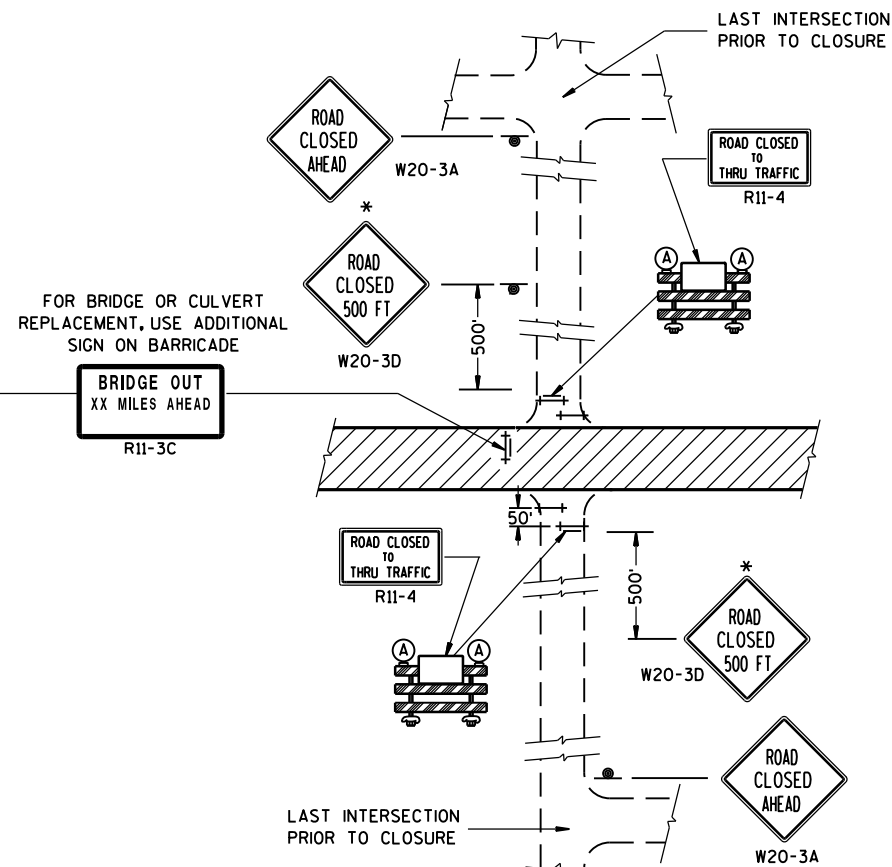
DETAIL 1
(NO ACCESS TO PROJECT)



DETAIL 3
(PUBLIC CROSS-TRAFFIC MAINTAINED. CONTRACTOR, LOCAL BUSINESS AND RESIDENT ACCESS).



DETAIL 2
(PUBLIC CROSS-TRAFFIC MAINTAINED.
NO ACCESS TO PROJECT).



DETAIL 4
(CONTRACTOR, LOCAL BUSINESS AND
RESIDENT ACCESS TO PROJECT)

GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND BARRICADES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

IF A "STOP" SIGN MUST BE REMOVED FOR A WORK OPERATION, A TEMPORARY "STOP" SIGN SHALL BE PLACED PRIOR TO THE SIGN REMOVAL, OR A FLAGGER SHALL BE PROVIDED UNTIL THE SIGN IS RE-ESTABLISHED.

BARRICADES THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION OR, FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

ALL TYPE III BARRICADES SHALL HAVE RAILS REFLECTORIZED ON BOTH FACES. STRIPES SHALL BE PROPERLY SLOPED DOWN TOWARD THE TRAFFIC SIDE OR AS SHOWN IN THE ROAD CLOSURE BARRICADE DETAIL D FOR FULL ROAD CLOSURES.

TYPE "A" LOW-INTENSITY FLASHING WARNING LIGHTS SHALL BE VISIBLE ON BOTH SIDES OF THE BARRICADE.

THE R11-2, R11-3 AND R11-4 SIGNS PLACED ON BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE OR BOTTOM RAILS.

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:

R11-2 SHALL BE 48" X 30".

R11-4 AND R11-3 SHALL BE 60" X 30".

*OMIT THE "ROAD CLOSED 500 FT." SIGN IF THE LAST INTERSECTION IS 500 FT. OR LESS FROM THE WORK ZONE.

**500' MAX. OR AT LAST INTERSECTION WHICHEVER IS CLOSER.

LEGEND

- ⊙ SIGN ON PERMANENT SUPPORT
- ⊥ TYPE III BARRICADE
- ⊥ TYPE III BARRICADE WITH ATTACHED SIGN
- Ⓐ TYPE "A" WARNING LIGHT (FLASHING)
- ▨ WORK AREA

BARRICADES AND SIGNS FOR SIDEROAD CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

Sept. 2015

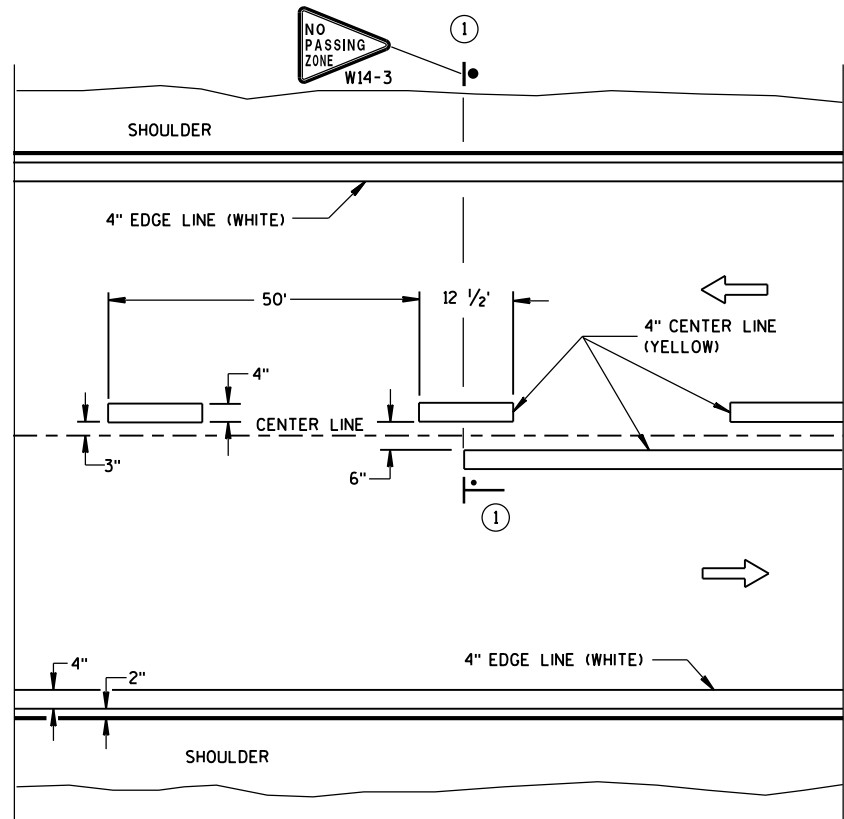
DATE

FHWA

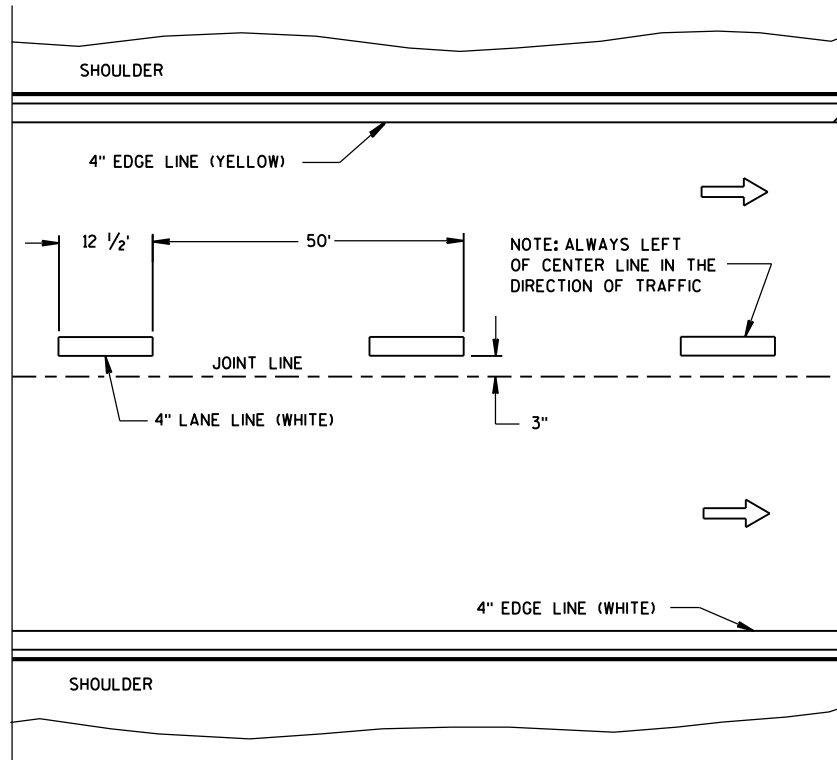
/S/ Peter Amakobe Atepe

STATEWIDE WORK ZONE TRAFFIC

SAFETY ENGINEER

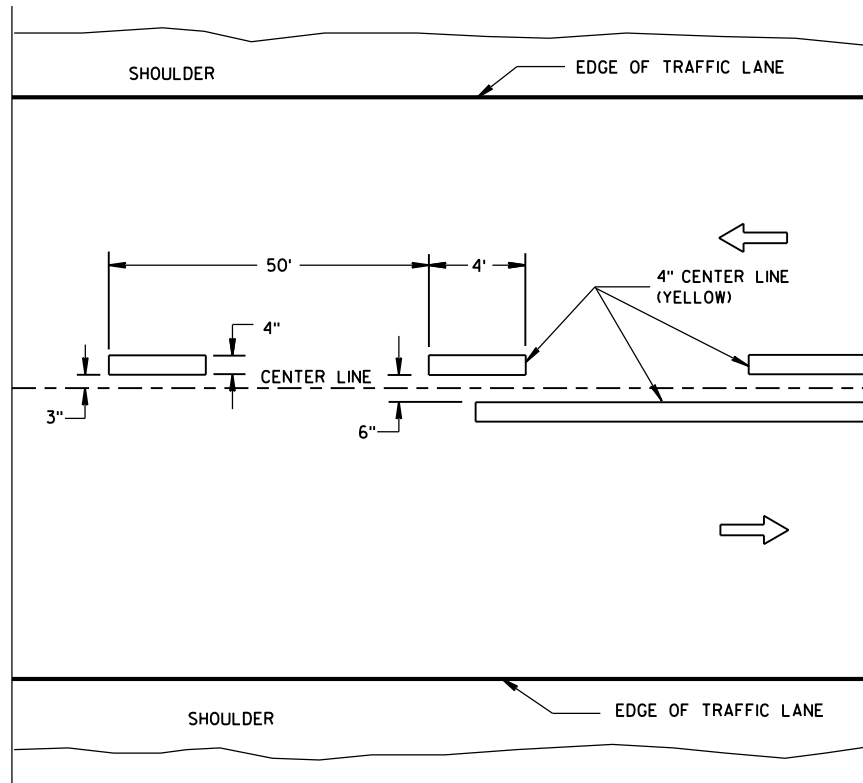


TWO WAY TRAFFIC

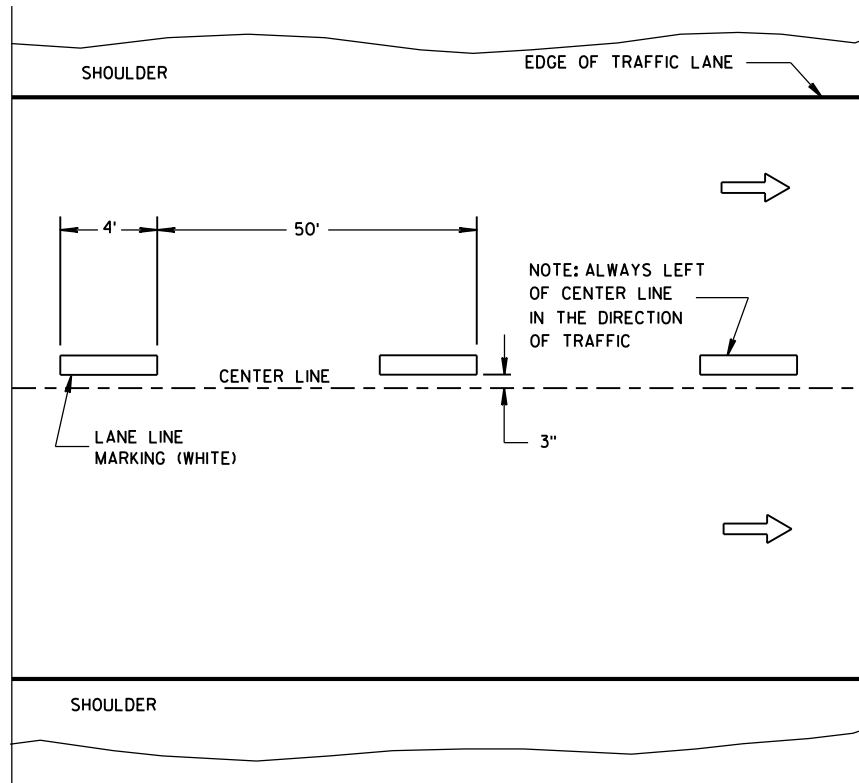


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

GENERAL NOTES

DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

① NO PASSING ZONE W14-3 SIGN SHALL BE LOCATED WITHIN 50 FEET OF THE "T" MARKING.

NOTE

ARROW SYMBOL (→) SHOWS DIRECTION OF TRAVEL

LEGEND

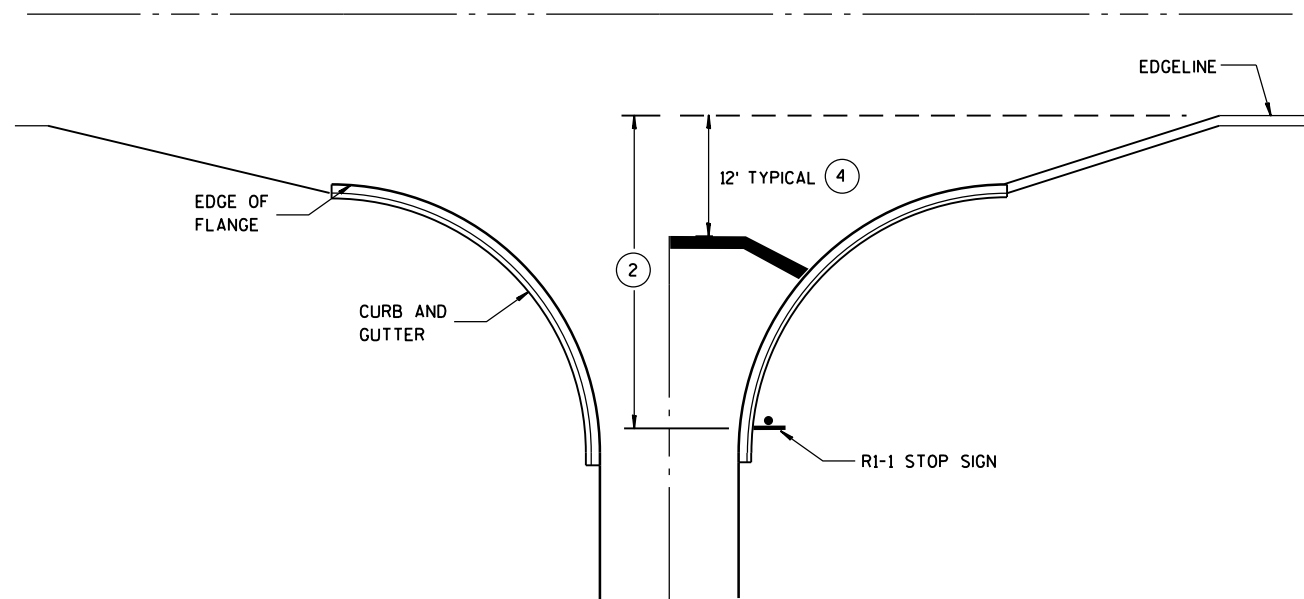
—●— "T" MARKING

● POST MOUNTED SIGN

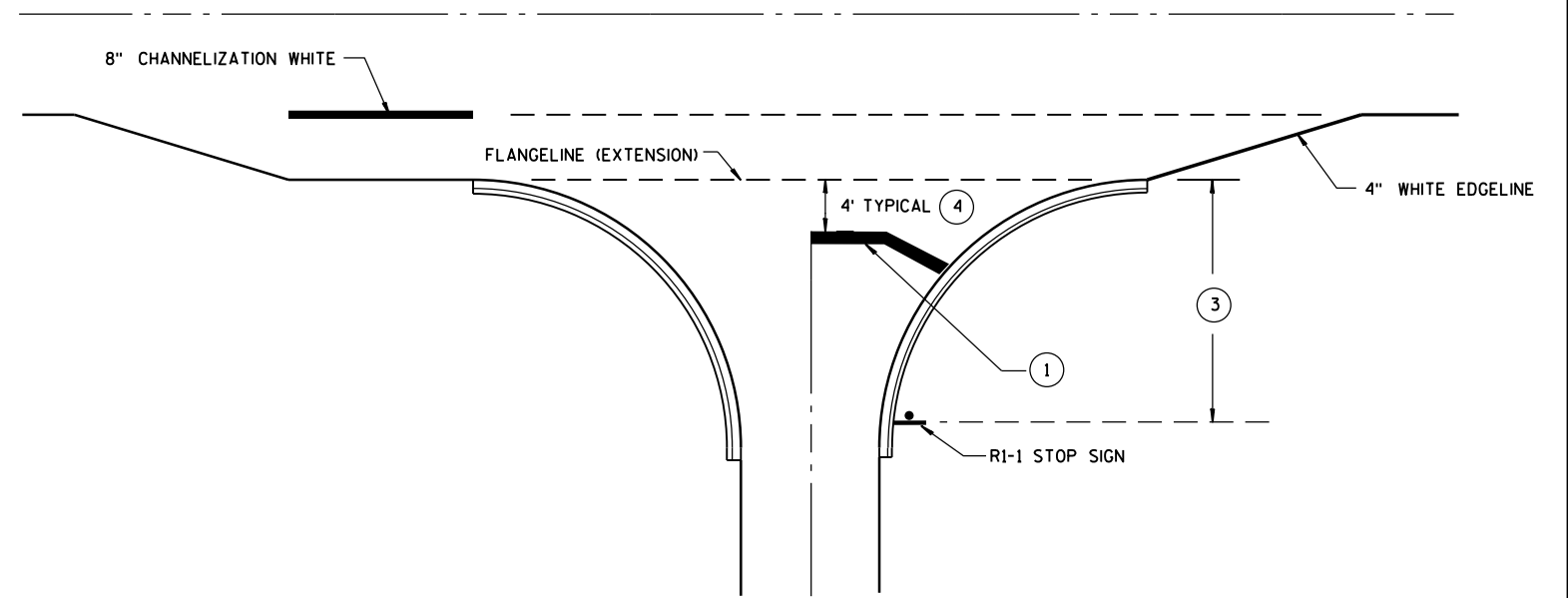
LONGITUDINAL MARKING
(MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

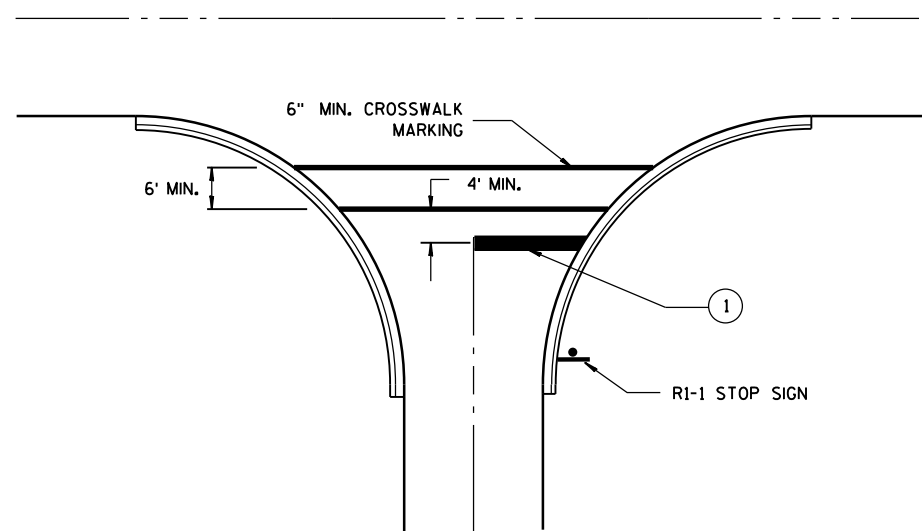
APPROVED
Sept., 2016 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MARKING ENGINEER
FHWA



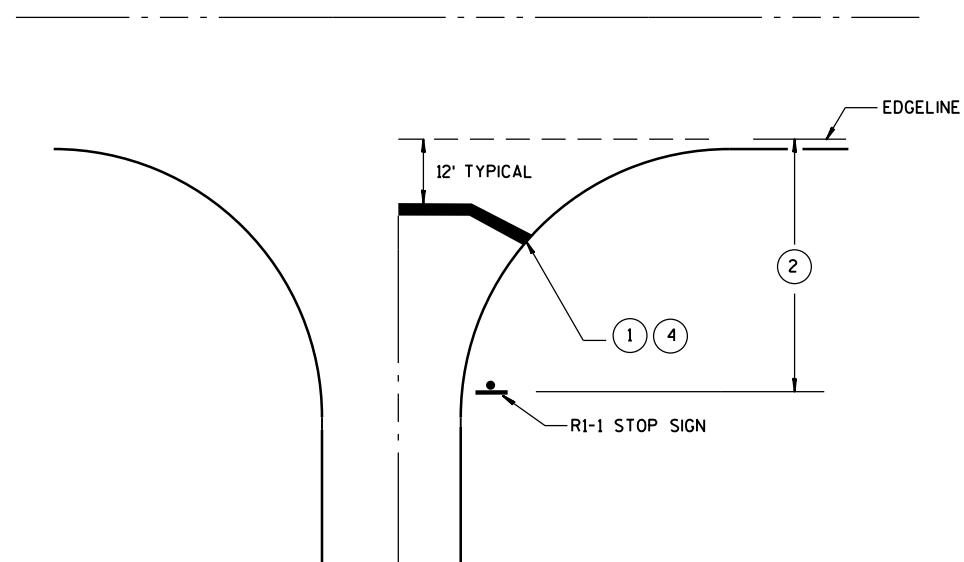
**TYPICAL STOP LINE PAVEMENT MARKING
WITH CURB AND GUTTER**



**TYPICAL STOP LINE PAVEMENT MARKING
FOR SIDEROADS WITH RIGHT TURN LANE**



**TYPICAL STOP LINE PAVEMENT MARKING
FOR SIDEROADS WITH CROSSWALK MARKING**



**TYPICAL STOP LINE PAVEMENT MARKING
WITHOUT CURB AND GUTTER**

GENERAL NOTES

- ① 18-INCH STOP LINES MAY BE DELETED OR ADDED BY THE PROJECT ENGINEER BASED ON VISIBILITY AND SIGHT LINES.
- ② IF STOP SIGN IS LESS THAN OR EQUAL TO 40 FEET FROM THE EDGE LINE THAN NO STOP LINE IS REQUIRED.
- ③ IF STOP SIGN IS LESS THAN OR EQUAL TO 30 FEET FROM THE FLANGELINE EXTENSION THAN NO STOP LINE IS REQUIRED.
- ④ MOVE CLOSER TO EDGE OF TRAVEL LANE AS NEEDED FOR VISIBILITY AND SIGHT LINES. (NO CLOSER THAN 4 FEET).

**STOP LINE AND CROSSWALK
PAVEMENT MARKING**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

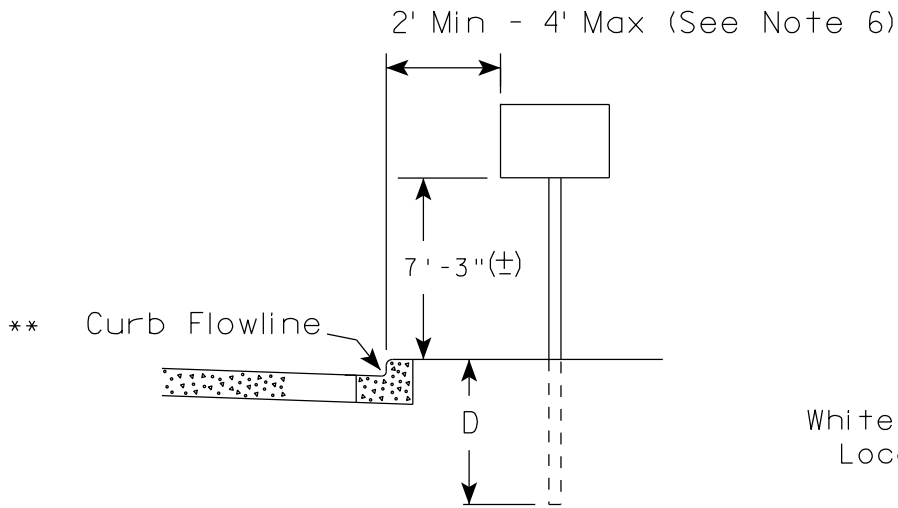
APPROVED

4-18-2016
DATE

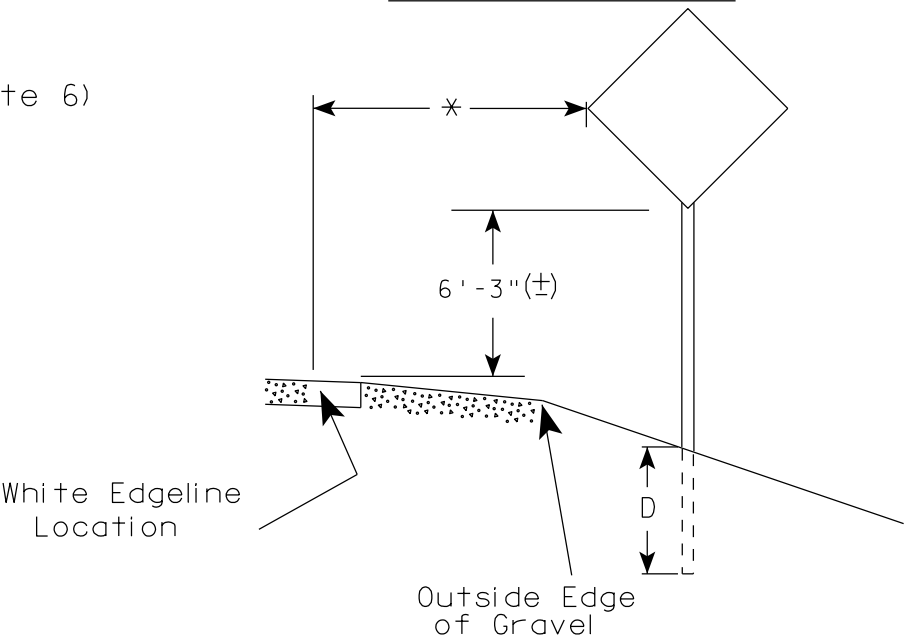
FHWA

/S/ Matthew R. Rauch
STATE SIGNING AND MARKING ENGINEER

URBAN AREA

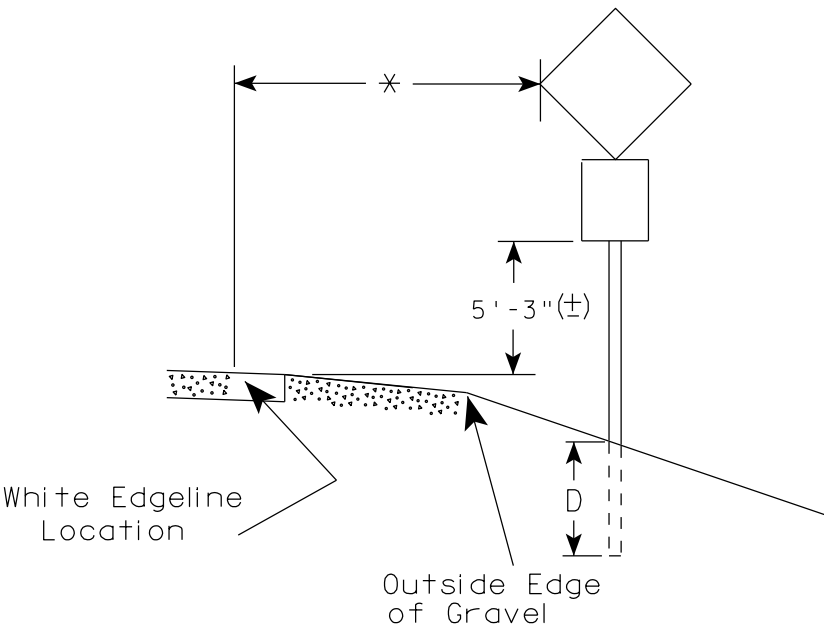
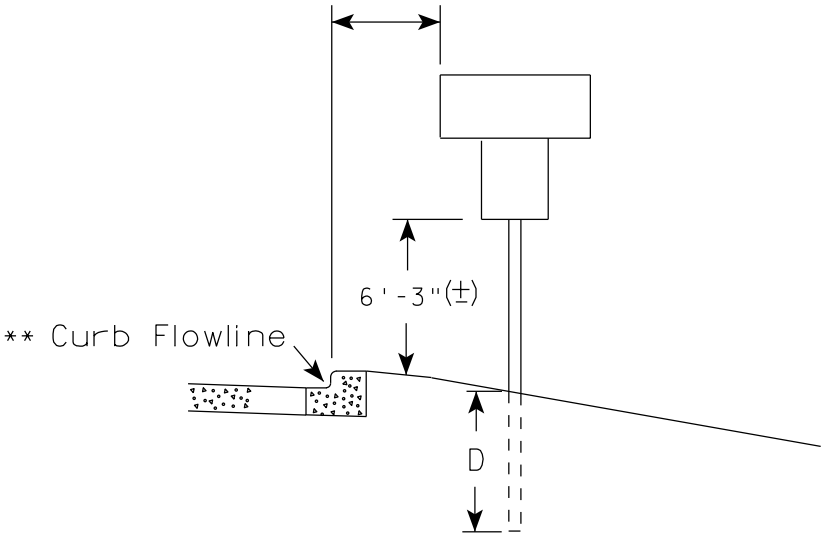


RURAL AREA (See Note 2)



- GENERAL NOTES
1. Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
 2. If signs are mounted on barrier wall, see A4-10 sign plate.
 3. For expressways and freeways, mounting height is 7'- 3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
 4. Minimum mounting height for J assemblies (A2-1S) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
 5. Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±).
 6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
 7. The (±) tolerance for mounting height is 3 inches.
 8. Folding signs shall be mounted at a height of 5'-3" (±) or as directed by the Engineer.
 9. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Enhanced Reference Markers, Clearance Markers (W5-52), Mile Markers (D10 series), In Road Object Markers (W5-54) & End of Road Markers (W5-56) shall be mounted at a height of 4'-3" (±).

2' Min - 4' Max (See Note 6)



POST EMBEDMENT DEPTH

Area of Sign Installation (Sq.Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

* * The existence of curb and gutter does not in itself mandate the vertical clearance illustrated. That height is typically measured where there is sidewalk adjacent to the roadway or parking is permitted. In the absence of sidewalk vertical clearance is measured from the top of the curb. Offset of signs is measured from the flow line.

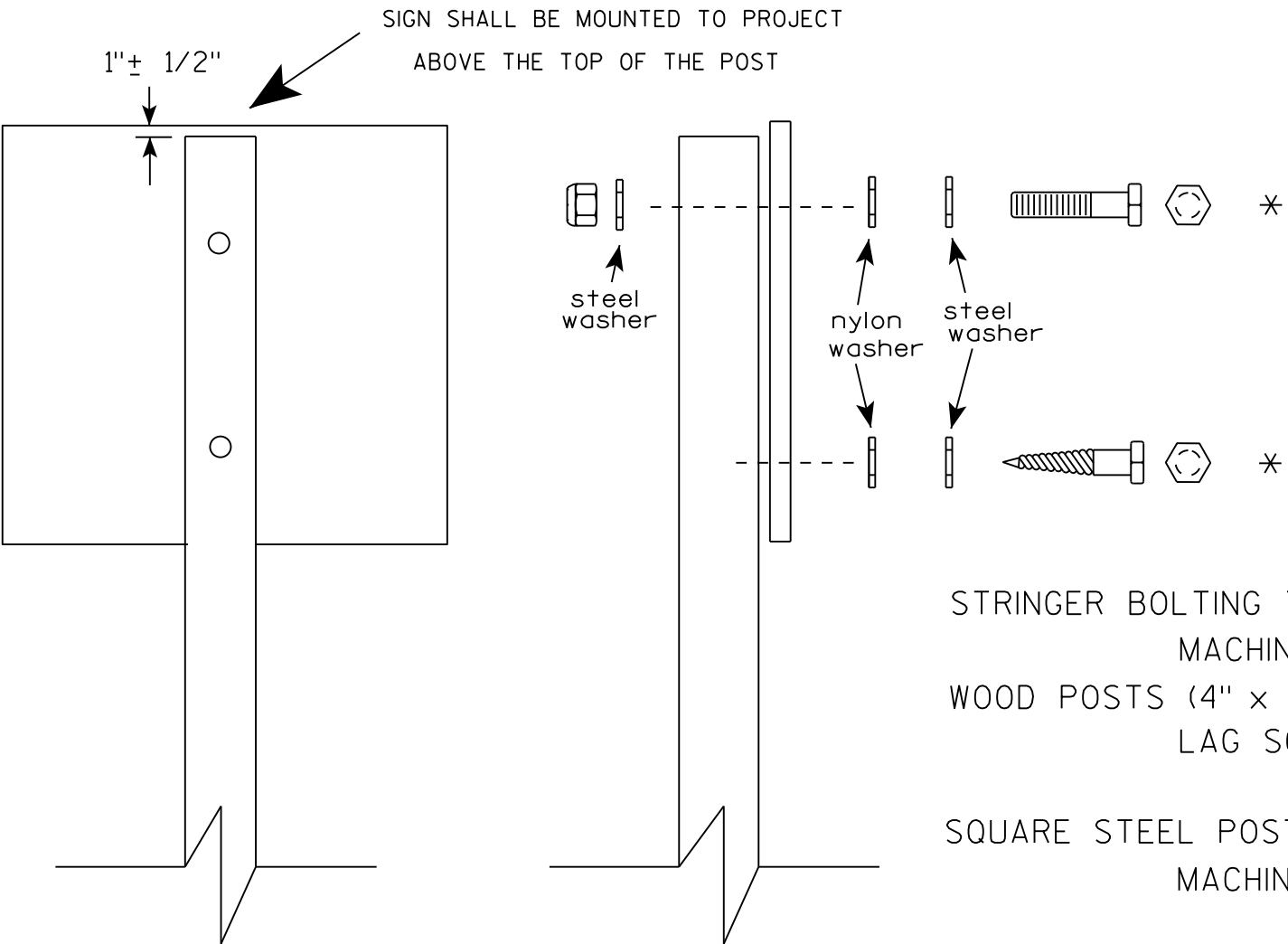
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 7/23/15 PLATE NO. A4-3.20



Nuts, bolts and lags used for mounting signs shall have hexagonal heads and shall be either :

- a. Hot dip galvanized in accordance with ASTM Designation: A 153, Class D, or SC 3
- b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

- STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)
- MACHINE BOLTS - $\frac{5}{16}$ " X 1-3/4" Length w/ lock nuts
- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - $\frac{3}{8}$ " X 3" (NO STRINGERS ON BACK OF SIGN)
 - $\frac{3}{8}$ " X 4" (STRINGERS ON BACK OF SIGN)
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - $\frac{3}{8}$ " X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
 - $\frac{3}{8}$ " X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)
- RIVETS - $\frac{9}{32}$ " (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
- O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH
- WASHERS (ALL POSTS) -
- 1-1/4" O.D. X $\frac{3}{8}$ " I.D. X $\frac{1}{16}$ " STEEL
 - 1-1/4" O.D. X $\frac{3}{8}$ " I.D. X .080 NYLON

* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require the use of 3 fasteners.

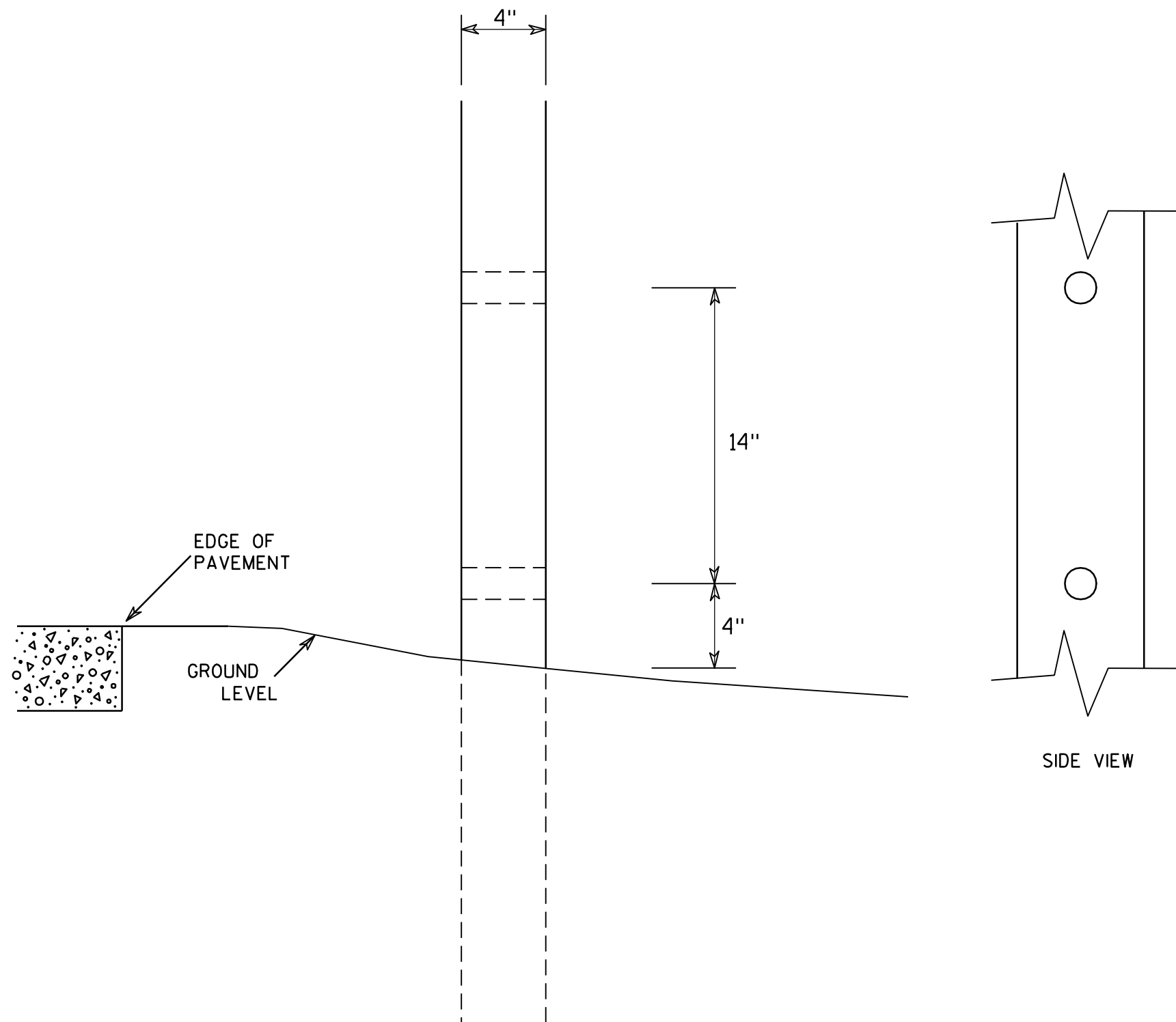
ATTACHMENT OF SIGNS
TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 8/11/16 PLATE NO. A4-8.8

7



GENERAL NOTES

1. All 4 x 6 Wood Posts shall be modified by having two 1½" diameter holes drilled perpendicular to the roadway centerline.

7

4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Chester J. Spang
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

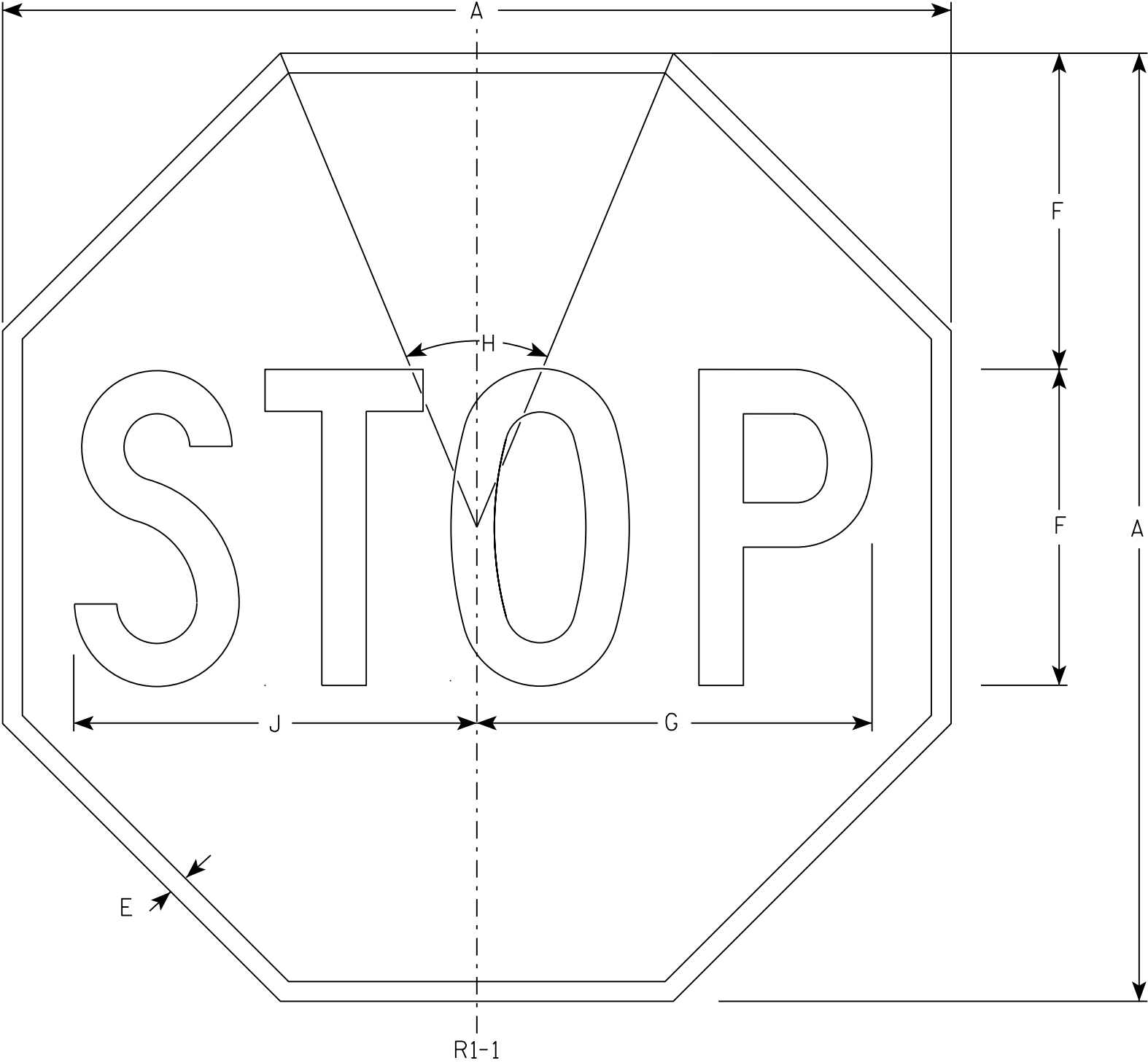
HWY:

COUNTY:

SHEET NO:

E

7



NOTES

- 1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color:
Background - Red
Message - White
- 3. Message Series - C

7

R1-1

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	30				5/8	10	12 1/2	45°		12 3/4																	5.18
2S	30				5/8	10	12 1/2	45°		12 3/4																	5.18
2M	36				3/4	12	15	45°		15 3/8																	7.46
3	36				3/4	12	15	45°		15 3/8																	7.46
4	48				1	16	20	45°		20 1/2																	13.25
5	48				1	16	20	45°		20 1/2																	13.25
6	18				3/8	6	7 3/4	45°		7 3/4																	1.86
7	12				1/4	4	5	45°		5 1/8																	0.78

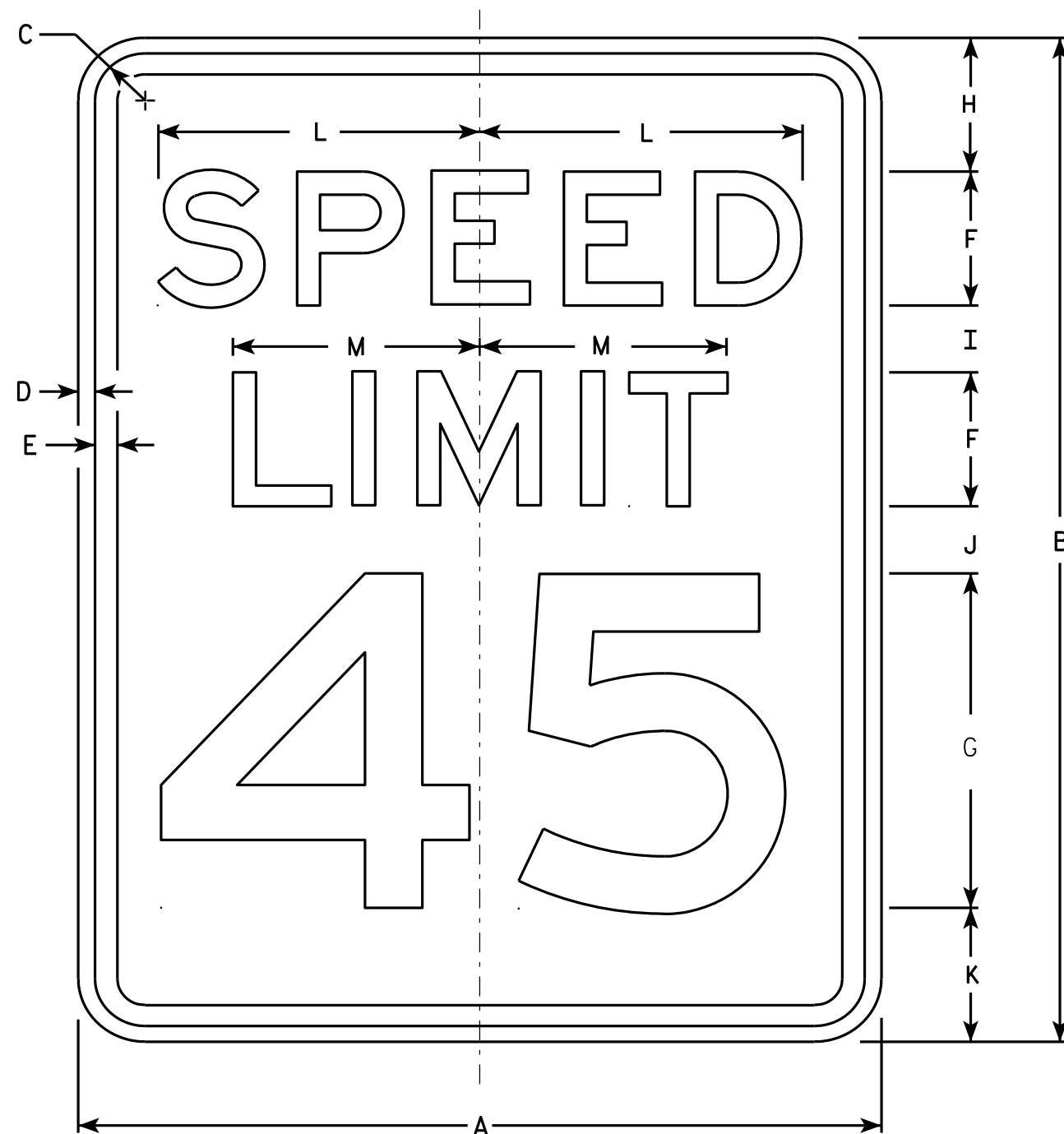
STANDARD SIGN

R1 - 1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 11/12/15 PLATE NO. R1-1.13



R2-1

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White
Message - Black
3. Message Series - E
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Substitute appropriate numerals and optically adjust spacing to achieve proper balance.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	18	24	1 1/8	3/8	1/2	3	8	3	2	2	3	7 1/4	5 1/2														3.0
2S	24	30	1 1/8	3/8	1/2	4	10	3	2 1/4	3 3/8	3 3/8	9 5/8	7 3/8														5.0
2M	30	36	1 3/8	1/2	5/8	5	12	5	2 1/2	2 1/2	4	12	9 1/4														7.5
3	36	48	1 3/8	1/2	5/8	6	14	6	5	5	6	14 3/8	11														12.0
4	36	48	1 3/8	1/2	5/8	6	14	6	5	5	6	14 3/8	11														12.0
5	48	60	2 1/4	3/4	1	8	20	6	4 1/2	6 3/4	6 3/4	19 1/4	14 5/8														20.0

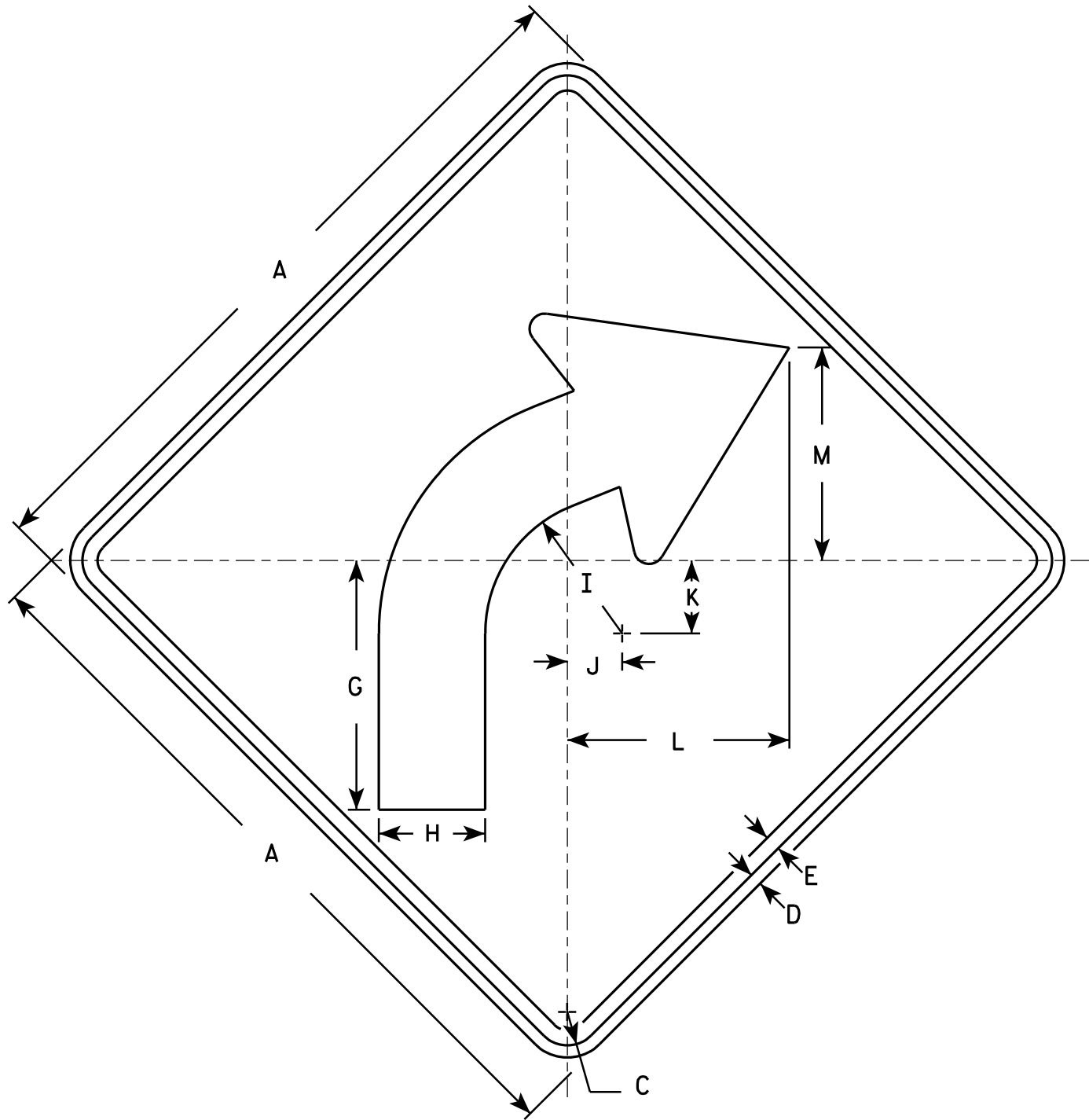
STANDARD SIGN R2-1

WISCONSIN DEPT OF TRANSPORTATION
APPROVED *Matthew R. Rauch*
For State Traffic Engineer
DATE 5/26/10 PLATE NO. R2-1.13

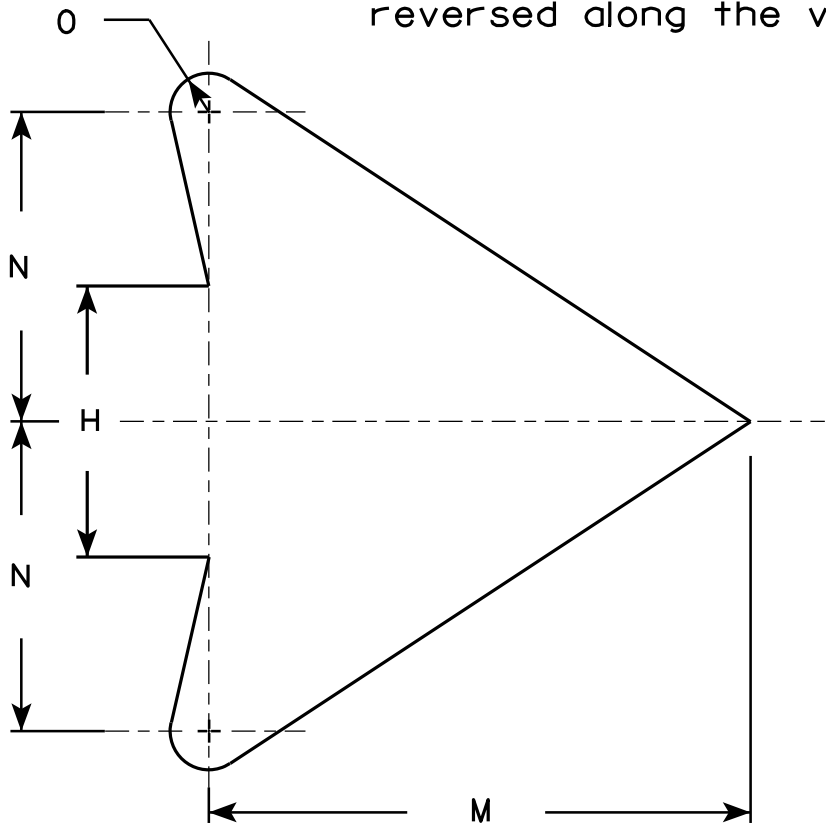
PROJECT NO: HWY: COUNTY: SHEET NO: E

NOTES

1. Sign is Type II - Type F Reflective - reference
WIS DOT Standard Specification for HIGHWAY
and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
Message - Black
3. Corners may be square or rounded when base
material is plywood but borders shall be rounded
as shown. When base material is metal, the
corners and borders shall be rounded.
4. W1-2L is the same as W1-2R except the arrow is
reversed along the vertical centerline.



W1-2R



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24		1 1/8	3/8	1/2		8 1/4	3 1/2	4 1/2	1 3/4	2 3/8	7 1/4	7	4	1/2												4.0
2S	30		1 3/8	1/2	5/8		10 1/4	4 3/8	5 5/8	2 1/4	3	9 1/8	8 3/4	5	5/8												6.25
2M	36		1 5/8	5/8	3/4		12 3/8	5 1/4	6 3/4	2 5/8	3 1/2	10 7/8	10 1/2	6	3/4												9.0
3	36		1 5/8	5/8	3/4		12 3/8	5 1/4	6 3/4	2 5/8	3 1/2	10 7/8	10 1/2	6	3/4												9.0
4	36		1 5/8	5/8	3/4		12 3/8	5 1/4	6 3/4	2 5/8	3 1/2	10 7/8	10 1/2	6	3/4												9.0
5	48		2 1/4	3/4	1		16 1/2	7	9	3 1/2	4 5/8	14 1/2	14	8	1												16.0

STANDARD SIGN
W1-2

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Matthew R. Rauch
for State Traffic Engineer

DATE 5/15/12

PLATE NO. W1-2.10

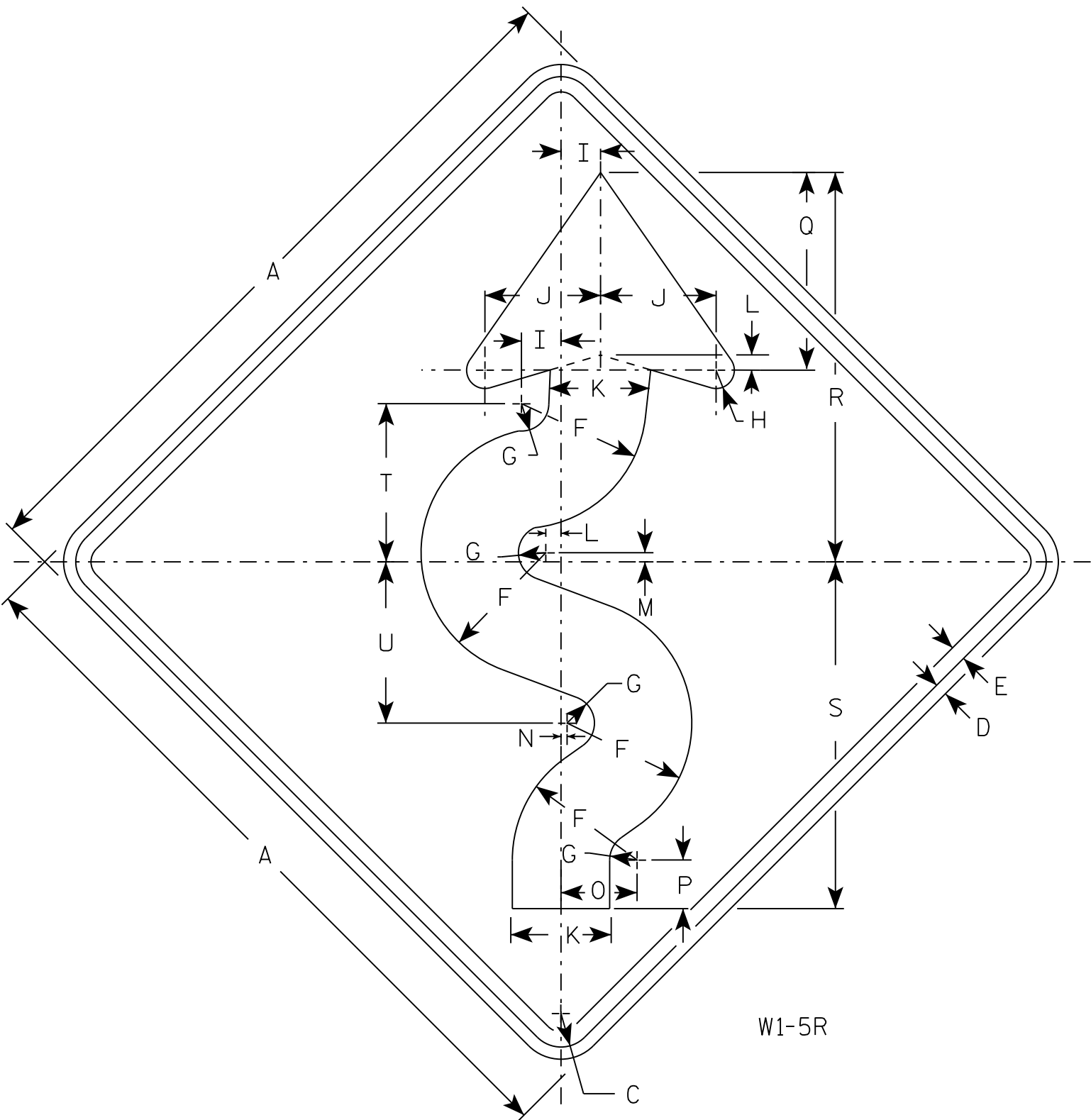
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
Background - Yellow
Message - Black
- 3. W1-5L is the same as W1-5R except the arrow is reversed along the vertical centerline.
- 4. If used with W13-1 of 30 MPH or less, use 36" sign for Size 2S.

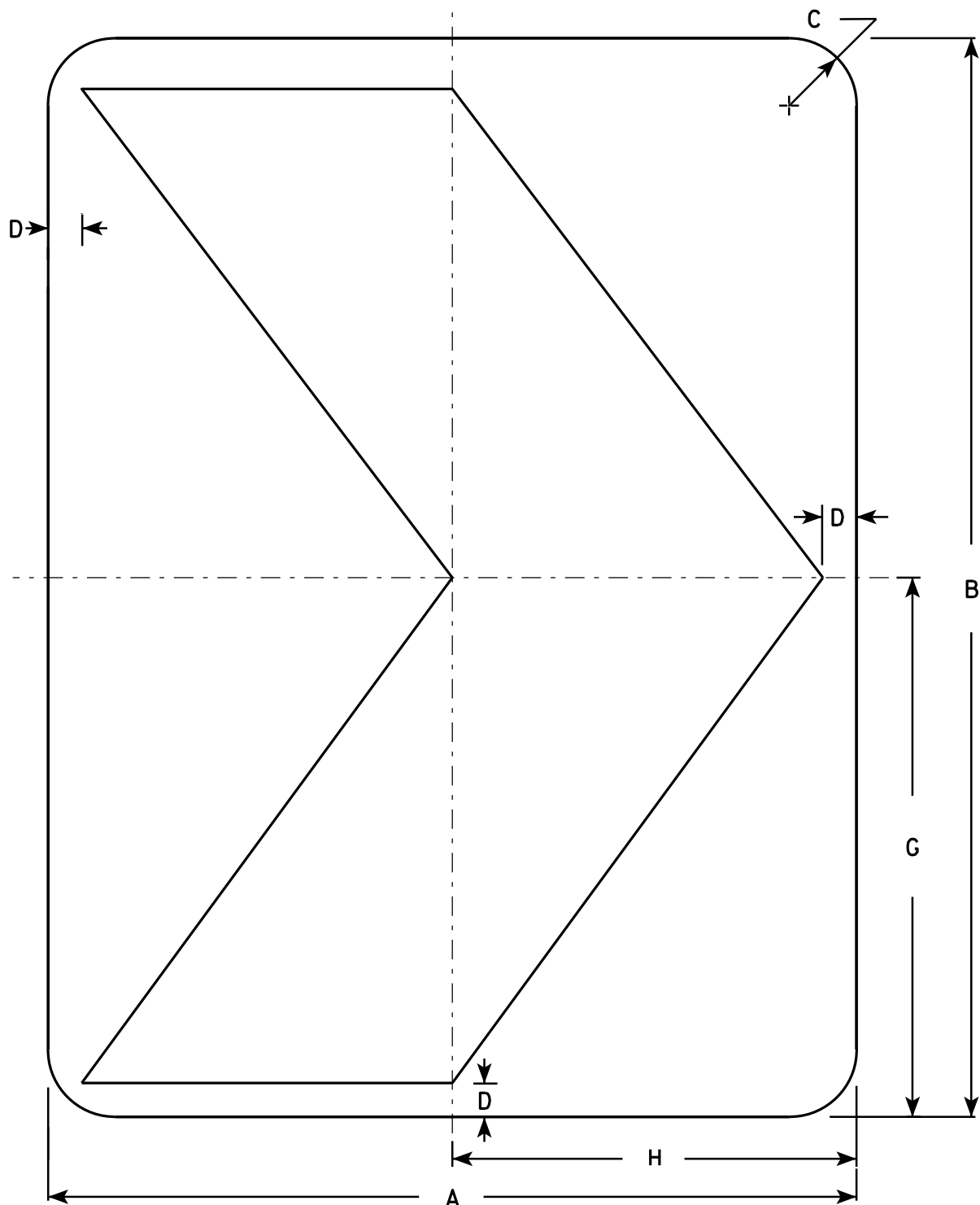
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24		1 1/8	3/8	1/2	4 1/8	7/8	5/8	1 1/4	3 3/4	3 1/4	1/2	1/4	1/8	2 1/2	1 5/8	6 1/2	12 3/4	11 3/8	5 1/4	5 1/4						4.0
2S	30		1 3/8	1/2	5/8	5 1/8	1 1/8	3/4	1 5/8	4 3/4	4 1/8	5/8	3/8	1/4	3 1/8	2	8 1/8	16	14 1/4	6 1/2	6 5/8						6.25
2M	36		1 5/8	5/8	3/4	6 1/4	1 3/8	1	1 7/8	5 5/8	4 7/8	3/4	3/8	1/4	3 3/4	2 7/8	9 3/4	19 1/8	17 1/8	7 3/4	7 7/8						9.0
3	36		1 5/8	5/8	3/4	6 1/4	1 3/8	1	1 7/8	5 5/8	4 7/8	3/4	3/8	1/4	3 3/4	2 7/8	9 3/4	19 1/8	17 1/8	7 3/4	7 7/8						9.0
4	36		1 5/8	5/8	3/4	6 1/4	1 3/8	1	1 7/8	5 5/8	4 7/8	3/4	3/8	1/4	3 3/4	2 7/8	9 3/4	19 1/8	17 1/8	7 3/4	7 7/8						9.0
5	48		2 1/4	3/4	1	8 1/4	1 3/4	1 1/4	2 1/2	7 1/2	6 1/2	1	1/2	3/8	5	3 1/4	13	25 1/2	22 3/4	10 3/8	10 1/2						16.0

STANDARD SIGN
W1-5

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 8/1/16 PLATE NO. W1-5.9



NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
Message - Black
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	12	18	1 1/2	1/2			9	6																			1.5
2S	18	24	1 1/2	3/4			12	9																			3.0
2M	18	24	1 1/2	3/4			12	9																			3.0
3	24	30	1 1/2	1			15	12																			5.0
4	30	36	1 7/8	1 1/4			18	15																			7.5
5	36	48	2 1/4	1 1/2			24	18																			12.0

STANDARD SIGN

W1-8

WISCONSIN DEPT OF TRANSPORTATION

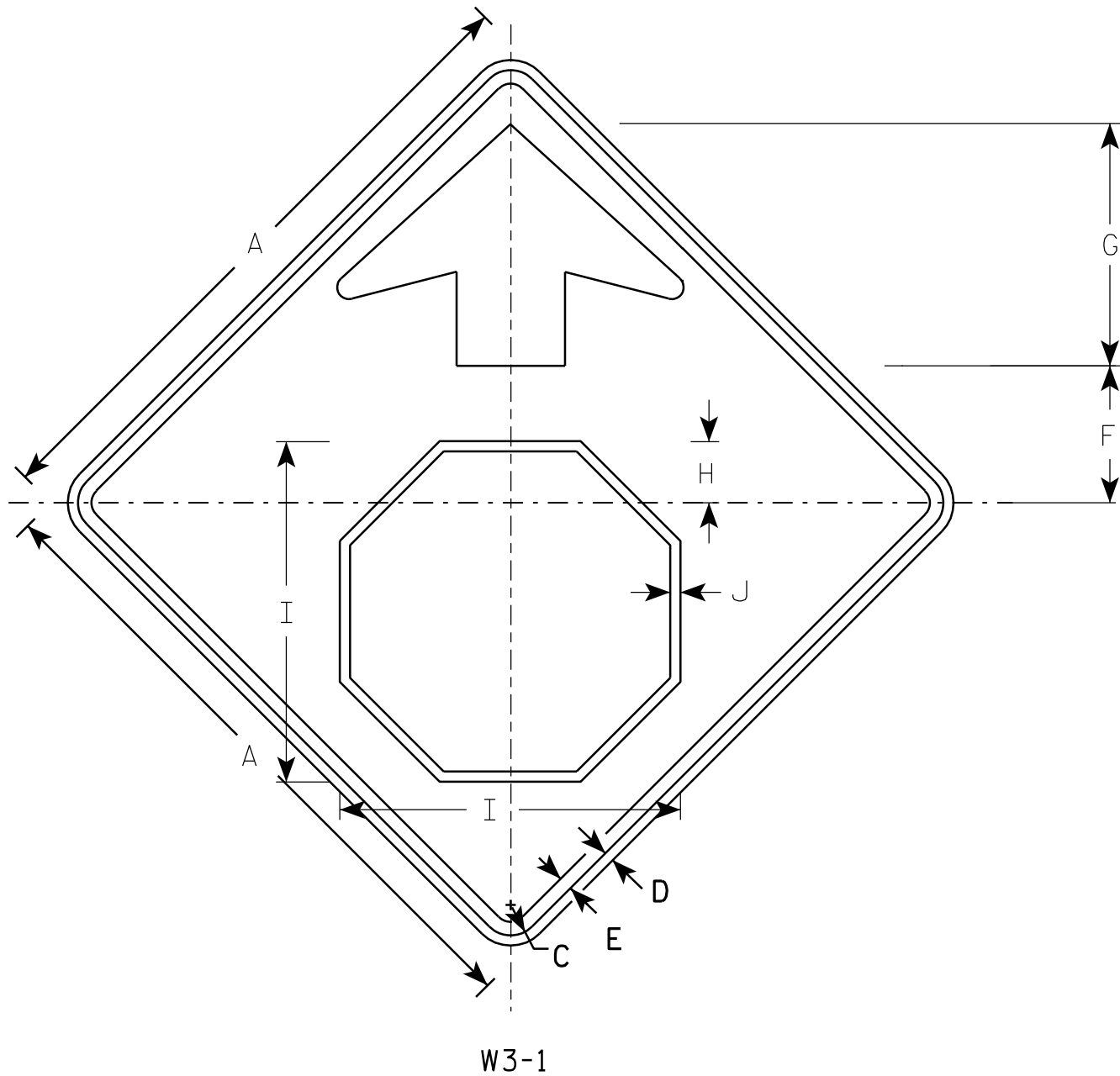
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 6/7/10 PLATE NO. W1-8.6

PROJECT NO:

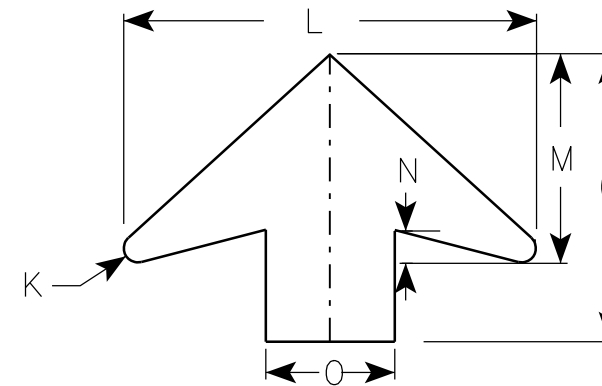
SHEET NO:

E



NOTES

1. All Signs Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
 Background - YELLOW
 Arrow & Border - BLACK
 Stop Symbol - WHITE BORDER ON RED BACKGROUND



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	30		1 ³ / ₈	1/2	5/8	6 1/4	11 1/4	2 7/8	15 3/4	1/2	1/2	16	8	1 1/4	5												6.25
2S	36		1 5/8	5/8	3/4	7 1/2	13 1/2	3 1/2	19	5/8	5/8	19 1/4	9 3/4	1 5/8	6												9.0
2M	36		1 5/8	5/8	3/4	7 1/2	13 1/2	3 1/2	19	5/8	5/8	19 1/4	9 3/4	1 5/8	6												9.0
3	36		1 5/8	5/8	3/4	7 1/2	13 1/2	3 1/2	19	5/8	5/8	19 1/4	9 3/4	1 5/8	6												9.0
4	48		2 1/4	3/4	1	10	17 7/8	4 1/2	25 1/8	3/4	7/8	25 5/8	13	2	8												16.0
5	48		2 1/4	3/4	1	10	17 7/8	4 1/2	25 1/8	3/4	7/8	25 5/8	13	2	8												16.0

PROJECT NO:

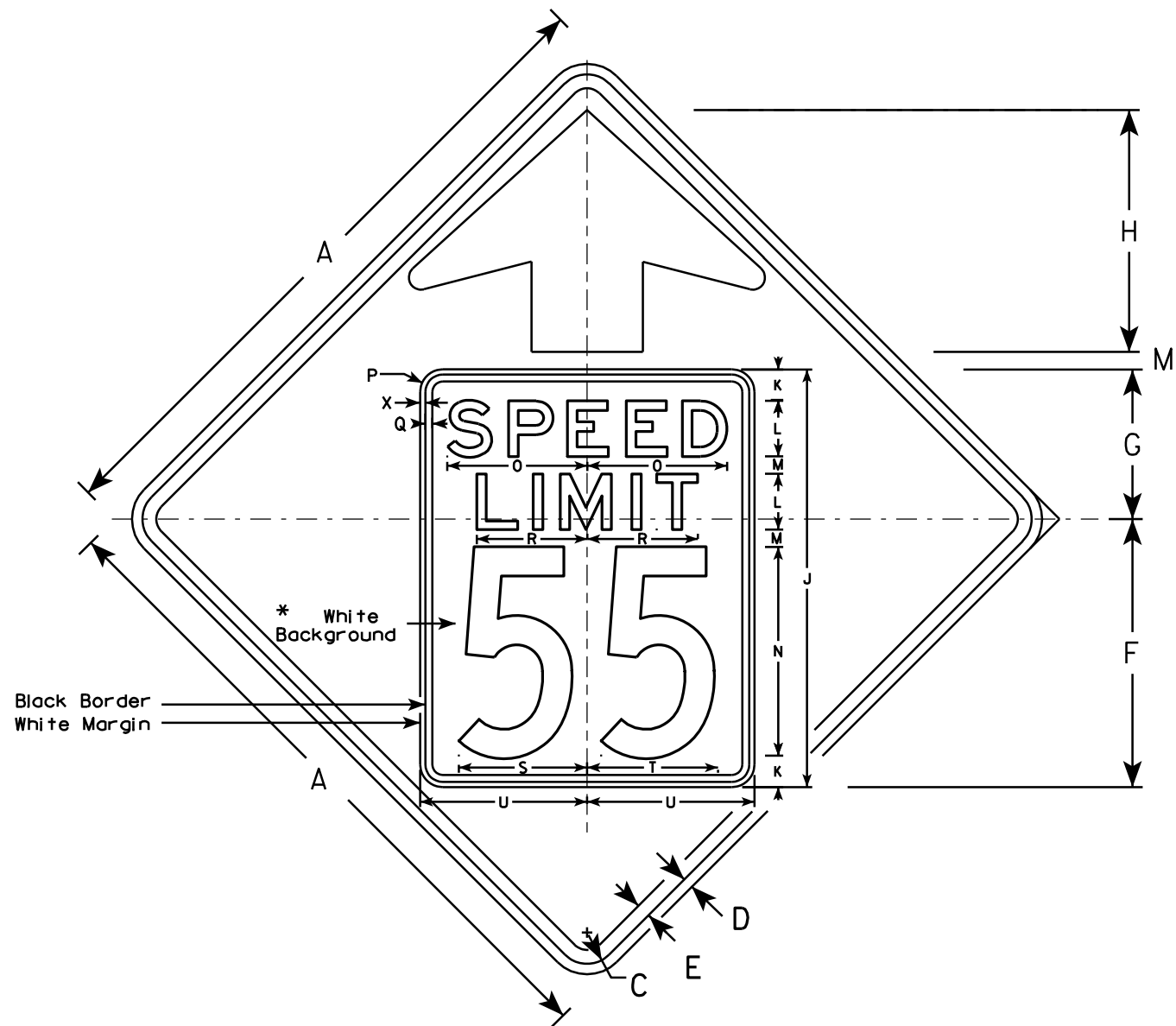
STANDARD SIGN W3-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
 for State Traffic Engineer
 DATE 6/7/10 PLATE NO. W3-1.12

SHEET NO:

E

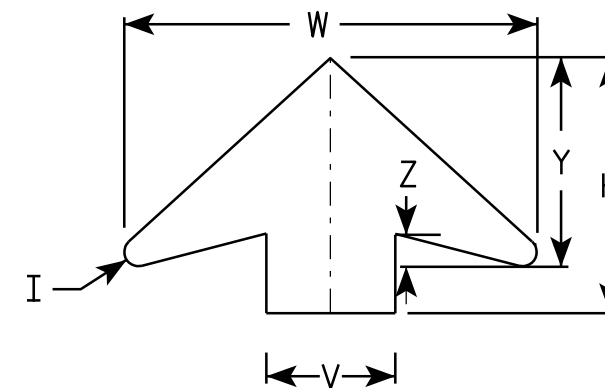


W3-5

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color: *
Background - YELLOW*
Message - BLACK
3. Message Series - C for numbers Series E for wording
4. Substitute appropriate numerals and optically adjust spacing to achieve proper balance

*Speed Limit Sign shall have a White Background



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	36		1 5/8	5/8	3/4	14 1/2	9 1/2	11 1/2	5/8	24	2	3	1	12	7 1/8	1 1/2	3/8	5 3/4	7 1/4	7 1/8	9	6	19 1/4	3/8	9 3/4	1 5/8	9.0
2M	36		1 5/8	5/8	3/4	14 1/2	9 1/2	11 1/2	5/8	24	2	3	1	12	7 1/8	1 1/2	3/8	5 3/4	7 1/4	7 1/8	9	6	19 1/4	3/8	9 3/4	1 5/8	9.0
3	36		1 5/8	5/8	3/4	14 1/2	9 1/2	11 1/2	5/8	24	2	3	1	12	7 1/8	1 1/2	3/8	5 3/4	7 1/4	7 1/8	9	6	19 1/4	3/8	9 3/4	1 5/8	9.0
4	48		2 1/4	3/4	1	19 1/4	10 3/4	17 3/8	7/8	30	2 1/4	4	1 1/4	15	10	1 5/8	1/2	8	9 1/4	9 3/8	12	8	25 5/8	3/8	13	2	16.0
5	48		2 1/4	3/4	1	19 1/4	10 3/4	17 3/8	7/8	30	2 1/4	4	1 1/4	15	10	1 5/8	1/2	8	9 1/4	9 3/8	12	8	25 5/8	3/8	13	2	16.0

STANDARD SIGN

W3-5

WISCONSIN DEPT OF TRANSPORTATION

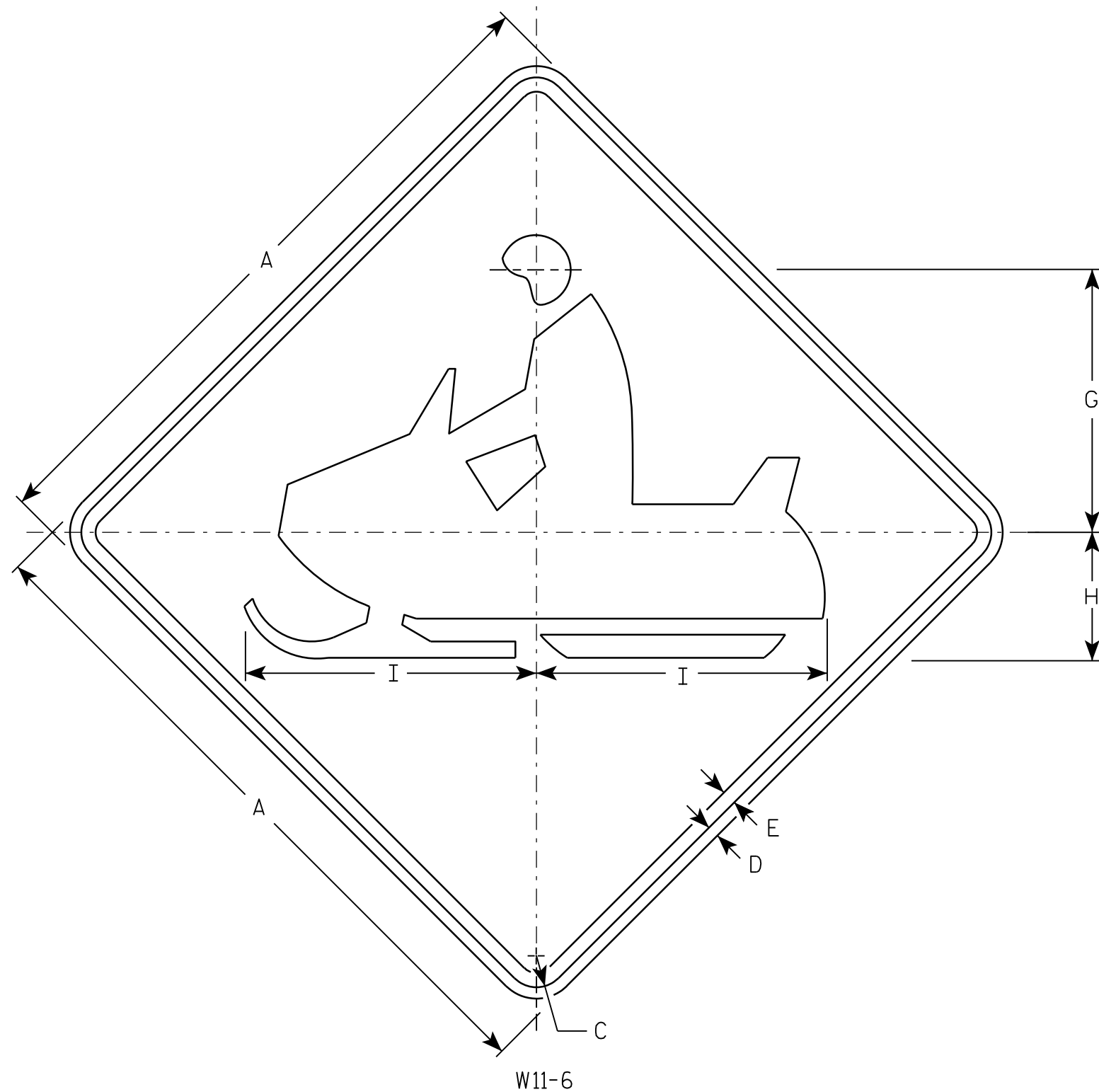
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 5/29/12 PLATE NO. W3-5.5

PROJECT NO:

SHEET NO:

E

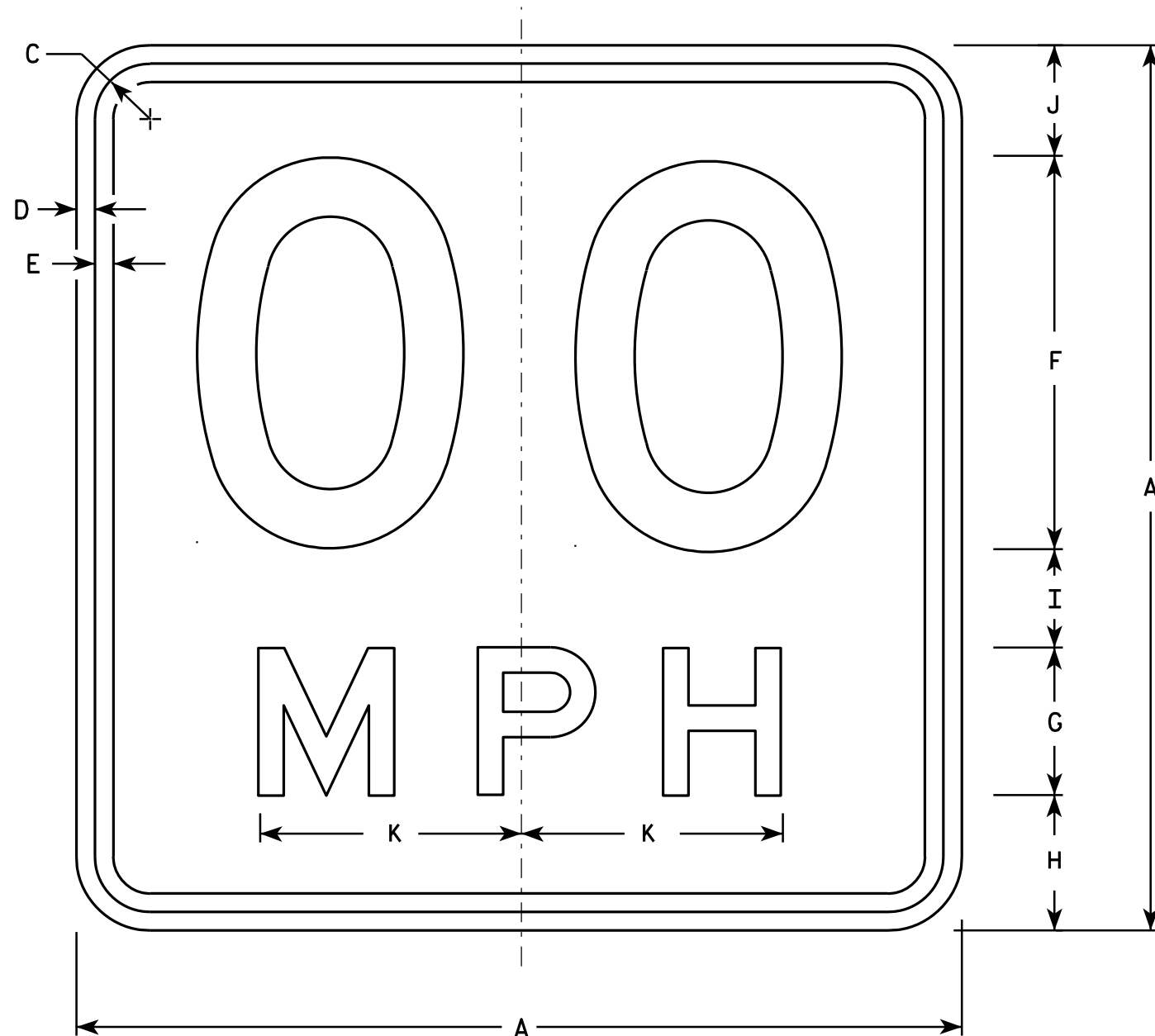


NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
Message - Black
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24		1 1/8	3/8	1/2		9 1/2	4 1/2	10 1/4																		4.0
2S	30		1 3/8	1/2	5/8		11 1/2	5 5/8	12 3/4																		6.25
2M	30		1 3/8	1/2	5/8		11 1/2	5 5/8	12 3/4																		6.25
3	36		1 5/8	5/8	3/4		14 1/8	6 3/4	15 1/4																		9.0
4	48		2 1/4	3/4	1		19	9	20 1/2																		16.0
5																											

STANDARD SIGN W11-6	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> for State Traffic Engineer
DATE 3/13/13	PLATE NO. W11-6.8



NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
Message - Black
3. Message Series - See Note 6
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Substitute appropriate numerals and optically space about centerline to achieve proper balance.
6. Line 1 is Series D
Line 2 is Series E

W13-1

- * For 30" x 30" Warning Signs, use 18" x 18" W13-1 signs.
For 36" x 36" Warning Signs, use 24" x 24" W13-1 signs.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	O	R	S	T	U	v	W	X	Y	Z	Area sq. ft.
1	18		1 1/8	3/8	3/8	8	3	2 3/4	2	2 1/4	5 3/8																2.25
* 2S	18		1 1/8	3/8	3/8	8	3	2 3/4	2	2 1/4	5 3/8																2.25
* 2M	18		1 1/8	3/8	3/8	8	3	2 3/4	2	2 1/4	5 3/8																2.25
3	24		1 1/8	3/8	1/2	10	4	4	2 3/4	3 1/4	6 5/8																4.00
4	36		1 5/8	5/8	3/4	16	6	5 1/2	4	4 1/2	10 5/8																9.00
5	36		1 5/8	5/8	3/4	16	6	5 1/2	4	4 1/2	10 5/8																9.00

STANDARD SIGN

W13-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 5/31/12 PLATE NO. W13-1.16

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E

STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)					Cumulative Vol (CY)				
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS		Cut	Expanded Fill	Expanded EBS Backfill	Reduced EBS in Fill	
Note 1	Note 2	Note 3		1.00 Note 1	1.25	1.30 Note 5	0.80 Note 7	Note 8							
112+55 LT	0.00	5.25	-	1.00	-	-	-	-	-	-	-	-	-	0	
112+80 LT	25.00	5.39	-	1.04	-	5	-	1	-	5	1	-	-	4	
113+05 LT	25.00	2.90	-	1.85	-	4	-	1	-	9	3	-	-	6	
113+50 LT	45.00	4.07	-	1.39	-	6	-	3	-	15	6	-	-	8	
114+00 LT	50.00	6.76	-	0.12	-	10	-	1	-	25	8	-	-	17	
114+50 LT	50.00	7.35	-	0.15	-	13	-	0	-	38	8	-	-	29	
114+93 LT	43.00	8.50	-	-	-	13	-	0	-	50	8	-	-	42	
115+00 LT	7.00	8.01	-	0.02	-	2	-	0	-	52	8	-	-	44	
115+50 LT	50.00	5.10	-	1.51	-	12	-	1	-	65	10	-	-	54	
115+60 LT	10.00	5.07	-	3.01	-	2	-	1	-	66	11	-	-	55	
115+85 LT	25.00	3.00	-	3.13	-	4	-	3	-	70	15	-	-	55	
116+00 LT	15.00	2.41	-	6.94	-	2	-	3	-	72	18	-	-	53	
116+10 LT	10.00	2.27	-	5.75	-	1	-	2	-	73	21	-	-	51	
116+50 LT	40.00	2.61	-	4.52	-	4	-	8	-	76	31	-	-	45	
117+00 LT	50.00	4.11	-	0.02	-	6	-	4	-	82	36	-	-	46	
117+60 LT	50.00	22.58	-	-	-	25	-	0	-	107	36	-	-	71	
117+85 LT	35.00	8.48	-	-	-	20	-	-	-	127	36	-	-	91	
118+00 LT	15.00	6.34	-	0.13	-	4	-	0	-	131	36	-	-	95	
118+10 LT	10.00	5.77	-	1.12	-	2	-	0	-	134	36	-	-	97	

TOTAL =	134	0	29	0
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(NOTE 1) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
(NOTE 2) DOES NOT SHOW UP IN CROSS SECTIONS.
(NOTE 3) DOES NOT INCLUDE UNUSABLE PAVEMENT VOLUME.
(NOTE 5) WILL BE BACKFILLED WITH BORROW.
(NOTE 7) REDUCED EBS IN FILL: EXCAVATED EBS MATERIAL IS USABLE IN FILLS OUTSIDE THE 1:1 SLOPE.
(NOTE 8) THE MASS ORDINATE +/- QTY CALCLATED FOR EACH SECTION. + QTY INDICATES AN EXCESS OF MATERIAL. - INDICATED A SHORTAGE OF MATERIAL. M.O. INCLUDES UNUSABLE MATERIAL.

STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)				Mass Ordinate
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Expanded Fill	Expanded EBS Backfill	Reduced EBS in Fill	
						Note 1	Note 2	Note 3		1.00 Note 1	1.25	1.30 Note 5	0.80 Note 7	Note 8
114+38 RT	0.00	4.57	-	7.27	-	-	-	-	-	-	-	-	-	0
114+50 RT	12.00	3.36	-	10.03	-	2	-	4	-	2	5	-	-	-3
114+62 RT	12.00	2.87	-	10.68	-	1	-	5	-	3	11	-	-	-7
114+88 RT	26.00	3.85	-	1.86	-	3	-	6	-	6	18	-	-	-12
115+00 RT	12.00	3.99	-	2.90	-	2	-	1	-	8	19	-	-	-11
115+50 RT	50.00	5.95	-	0.15	-	9	-	3	-	17	23	-	-	-6
116+00 RT	50.00	6.88	-	-	-	12	-	0	-	29	23	-	-	6
116+37 RT	37.00	5.02	-	0.23	-	8	-	0	-	37	23	-	-	14
116+50 RT	13.00	5.59	-	0.16	-	3	-	0	-	40	23	-	-	16
116+62 RT	12.00	6.64	-	0.81	-	3	-	0	-	43	24	-	-	19
116+87 RT	25.00	6.57	-	2.10	-	6	-	1	-	49	25	-	-	23

TOTAL =	49	0	20	0
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STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)				Mass Ordinate
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Expanded Fill	Expanded EBS Backfill	Reduced EBS in Fill	
						Note 1	Note 2	Note 3		1.00 Note 1	1.25	1.30 Note 5	0.80 Note 7	Note 8
124+50 LT	0.00	-	-	-	-	-	-	-	-	-	-	-	-	0
125+00 LT	50.00	1.04	-	10.21	-	1	-	9	-	1	12	-	-	-11
126+00 LT	100.00	5.99	-	0.44	-	13	-	20	-	14	36	-	-	-22
127+00 LT	100.00	6.00	-	0.14	-	22	-	1	-	36	38	-	-	-2
127+50 LT	50.00	-	-	-	-	6	-	0	-	42	38	-	-	4

TOTAL =	42	0	30	0
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(NOTE 1) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
(NOTE 2) DOES NOT SHOW UP IN CROSS SECTIONS.
(NOTE 3) DOES NOT INCLUDE UNUSABLE PAVEMENT VOLUME.
(NOTE 5) WILL BE BACKFILLED WITH BORROW.
(NOTE 7) REDUCED EBS IN FILL: EXCAVATED EBS MATERIAL IS USABLE IN FILLS OUTSIDE THE 1:1 SLOPE.
(NOTE 8) THE MASS ORDINATE +/- QTY CALCLATED FOR EACH SECTION. + QTY INDICATES AN EXCESS OF MATERIAL. - INDICATED A SHORTAGE OF MATERIAL. M.O. INCLUDES UNUSABLE MATERIAL.

STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)				
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Expanded	Expanded	Reduced EBS	Mass Ordinate
						Note 1	Note 2	Note 3		1.00 Note 1	1.25	1.30 Note 5	0.80 Note 7	
131+50 LT	0.00	-	-	-	-	-	-	-	-	-	-	-	-	0
132+00 LT	50.00	0.82	-	11.42	-	1	-	11	-	1	13	-	-	-12
133+00 LT	100.00	0.46	-	14.87	-	2	-	49	-	3	74	-	-	-71
133+50 LT	50.00	-	-	-	-	0	-	14	-	4	91	-	-	-88

TOTAL =	4	0	73	0
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STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)				
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Expanded	Expanded	Reduced EBS	Mass Ordinate
						Note 1	Note 2	Note 3		1.00 Note 1	1.25	1.30 Note 5	0.80 Note 7	
132+50 RT	0.00	-	-	-	-	-	-	-	-	-	-	-	-	0
133+00 RT	50.00	13.90	-	-	-	13	-	-	-	13	-	-	-	13
134+00 RT	100.00	9.11	-	-	-	43	-	-	-	55	-	-	-	55
135+00 RT	100.00	2.15	-	4.36	-	21	-	8	-	76	10	-	-	66
136+00 RT	100.00	1.02	-	12.47	-	6	-	31	-	82	49	-	-	33
137+00 RT	100.00	2.51	-	9.52	-	7	-	41	-	89	100	-	-	-11
138+00 RT	100.00	2.39	-	4.95	-	9	-	27	-	98	133	-	-	-36
139+00 RT	100.00	1.41	-	11.17	-	7	-	30	-	105	171	-	-	-66
140+00 RT	100.00	0.69	-	6.11	-	4	-	32	-	109	211	-	-	-102
141+00 RT	100.00	0.33	-	19.86	-	2	-	48	-	111	271	-	-	-160
142+00 RT	100.00	0.63	-	13.03	-	2	-	61	-	112	347	-	-	-235
142+50 RT	50.00	-	-	-	-	1	-	12	-	113	362	-	-	-249

TOTAL =	113	0	290	0
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STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)				
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Expanded	Expanded	Reduced EBS	Mass Ordinate
						Note 1	Note 2	Note 3		1.00 Note 1	1.25	1.30 Note 5	0.80 Note 7	
140+00 LT	0.00	4.60	-	4.86	-	-	-	-	-	-	-	-	-	0
141+00 LT	100.00	3.10	-	7.57	-	14	-	23	-	14	29	-	-	-15
142+00 LT	100.00	3.05	-	10.44	-	11	-	33	-	26	70	-	-	-45

TOTAL =	26	0	56	0
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(NOTE 1) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
(NOTE 2) DOES NOT SHOW UP IN CROSS SECTIONS.
(NOTE 3) DOES NOT INCLUDE UNUSABLE PAVEMENT VOLUME.
(NOTE 5) WILL BE BACKFILLED WITH BORROW.
(NOTE 7) REDUCED EBS IN FILL: EXCAVATED EBS MATERIAL IS USABLE IN FILLS OUTSIDE THE 1:1 SLOPE.
(NOTE 8) THE MASS ORDINATE +/- QTY CALCLATED FOR EACH SECTION. + QTY INDICATES AN EXCESS OF MATERIAL. - INDICATED A SHORTAGE OF MATERIAL. M.O. INCLUDES UNUSABLE MATERIAL.

STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)					Cumulative Vol (CY)				
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut 1.00 Note 1	Expanded Fill 1.25	Expanded EBS Backfill 1.30 Note 5	Reduced EBS in Fill 0.80 Note 7	Mass Ordinate Note 8	
158+50 LT	0.00	-	-	-	-	-	-	-	-	-	-	-	-	0	
159+00 LT	50.00	0.23	-	17.72	-	0	-	16	-	0	21	-	-	-20	
160+00 LT	100.00	1.78	-	21.97	-	4	-	74	-	4	112	-	-	-108	
161+00 LT	100.00	0.33	-	51.33	-	4	-	136	-	8	282	-	-	-274	
162+00 LT	100.00	0.02	-	78.50	-	1	-	240	-	8	583	-	-	-574	
163+00 LT	100.00	0.66	-	25.91	-	1	-	193	-	10	824	-	-	-815	
164+00 LT	100.00	2.25	-	8.41	-	5	-	64	-	15	904	-	-	-889	
165+16 LT	116.00	0.99	-	19.90	-	7	-	61	-	22	980	-	-	-958	

TOTAL =	22	0	784	0
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STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)					Cumulative Vol (CY)				
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut 1.00 Note 1	Expanded Fill 1.25	Expanded EBS Backfill 1.30 Note 5	Reduced EBS in Fill 0.80 Note 7	Mass Ordinate Note 8	
165+16	0.00	26.72	5.5	19.90	-	-	-	-	-	-	-	-	-	0	
166+00	84.00	4.62	5.5	37.00	-	49	17.1	89	-	49	111	-	-	-79	
167+00	100.00	-	5.5	108.35	-	9	20.4	269	-	57	447	-	-	-427	
167+30	30.00	-	5.5	190.47	-	-	6.1	166	-	57	655	-	-	-641	
168+00	70.00	-	5.5	178.29	-	-	14.3	478	-	57	1,252	-	-	-1,253	
169+00	100.00	-	5.5	49.02	-	-	20.4	421	-	57	1,778	-	-	-1,799	
169+22	22.00	-	5.5	26.84	-	-	4.5	31	-	57	1,817	-	-	-1,842	
170+00	78.00	34.16	5.5	2.04	-	49	15.9	42	-	107	1,869	-	-	-1,861	
170+75	75.00	41.31	5.5	-	-	105	15.3	3	-	211	1,873	-	-	-1,775	

TOTAL =	211	114	1,498	0
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(NOTE 1) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
(NOTE 2) DOES NOT SHOW UP IN CROSS SECTIONS.
(NOTE 3) DOES NOT INCLUDE UNUSABLE PAVEMENT VOLUME.
(NOTE 5) WILL BE BACKFILLED WITH BORROW.
(NOTE 7) REDUCED EBS IN FILL: EXCAVATED EBS MATERIAL IS USABLE IN FILLS OUTSIDE THE 1:1 SLOPE.
(NOTE 8) THE MASS ORDINATE +/- QTY CALCLATED FOR EACH SECTION. + QTY INDICATES AN EXCESS OF MATERIAL. - INDICATED A SHORTAGE OF MATERIAL. M.O. INCLUDES UNUSABLE MATERIAL.

STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)				Mass Ordinate
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Expanded	Expanded	Reduced EBS	
						Note 1	Note 2	Note 3		1.00 Note 1	1.25	1.30 Note 5	0.80 Note 7	Note 8
173+00 RT	0.00	-	-	-	-	-	-	-	-	-	-	-	-	0
173+58 RT	58.00	7.50	1.5	-	-	8	1.6	-	-	8	-	-	-	6
174+00 RT	42.00	43.80	12.5	-	-	40	10.9	-	-	48	-	-	-	35
174+86 RT	86.00	5.80	-	-	-	79	19.9	-	-	127	-	-	-	95
175+00 RT	14.00	-	-	-	-	2	-	-	-	128	-	-	-	96

TOTAL =	128	32	0	0
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STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)				Mass Ordinate
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Expanded	Expanded	Reduced EBS	
						Note 1	Note 2	Note 3		1.00 Note 1	1.25	1.30 Note 5	0.80 Note 7	Note 8
178+50 RT	0.00	-	-	-	-	-	-	-	-	-	-	-	-	0
179+00 RT	50.00	1.14	-	2.60	-	1	-	2	-	1	3	-	-	-2
180+00 RT	100.00	0.45	-	4.36	-	3	-	13	-	4	19	-	-	-15
181+00 RT	100.00	0.92	-	14.88	-	3	-	36	-	7	64	-	-	-57
182+00 RT	100.00	2.49	-	3.08	-	6	-	33	-	13	105	-	-	-92
183+00 RT	100.00	0.46	-	8.06	-	5	-	21	-	18	131	-	-	-113
184+00 RT	100.00	0.02	-	12.17	-	1	-	37	-	19	178	-	-	-159
185+00 RT	100.00	-	-	23.54	-	0	-	66	-	19	261	-	-	-241
186+00 RT	100.00	8.19	-	-	-	15	-	44	-	34	315	-	-	-281
187+00 RT	100.00	2.10	-	0.70	-	19	-	1	-	53	317	-	-	-263
188+00 RT	100.00	1.41	-	6.71	-	7	-	14	-	60	334	-	-	-274
189+00 RT	100.00	1.27	-	6.77	-	5	-	25	-	65	364	-	-	-299
189+50 RT	150.00	-	-	-	-	5	-	25	-	65	395	-	-	-325

TOTAL =	70	0	317	0
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(NOTE 1) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
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STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)				Mass Ordinate
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Expanded Fill	Expanded EBS Backfill	Reduced EBS in Fill	
						Note 1	Note 2	Note 3		1.00 Note 1	1.25	1.30 Note 5	0.80 Note 7	Note 8
188+50 LT	0.00	-	-	-	-	-	-	-	-	-	-	-	-	0
189+00 LT	50.00	0.65	-	10.98	-	1	-	10	-	1	13	-	-	-12
190+00 LT	100.00	-	-	25.83	-	1	-	68	-	2	98	-	-	-96
191+00 LT	100.00	0.67	-	30.83	-	1	-	105	-	3	229	-	-	-226
192+00 LT	100.00	0.96	-	9.76	-	3	-	75	-	6	323	-	-	-317
193+00 LT	100.00	0.71	-	3.09	-	3	-	24	-	9	353	-	-	-344
194+00 LT	100.00	3.08	-	0.97	-	7	-	8	-	16	362	-	-	-346
194+50 LT	50.00	-	-	-	-	3	-	1	-	19	363	-	-	-344

TOTAL =	19	0	291	0
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STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)				Mass Ordinate
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Expanded Fill	Expanded EBS Backfill	Reduced EBS in Fill	
						Note 1	Note 2	Note 3		1.00 Note 1	1.25	1.30 Note 5	0.80 Note 7	Note 8
198+50 RT	0.00	-	-	-	-	-	-	-	-	-	-	-	-	0
199+00 RT	50.00	12.14	-	-	-	11	-	-	-	11	-	-	-	11
200+00 RT	100.00	0.08	-	29.74	-	23	-	55	-	34	69	-	-	-35
201+00 RT	100.00	0.54	-	15.27	-	1	-	83	-	35	173	-	-	-138
201+50 RT	50.00	-	-	-	-	1	-	14	-	36	191	-	-	-155

TOTAL =	36	0	153	0
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STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)				Mass Ordinate
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Expanded Fill	Expanded EBS Backfill	Reduced EBS in Fill	
						Note 1	Note 2	Note 3		1.00 Note 1	1.25	1.30 Note 5	0.80 Note 7	Note 8
211+50 RT	0.00	-	-	-	-	-	-	-	-	-	-	-	-	0
212+00 RT	50.00	2.88	-	-	-	3	-	-	-	3	-	-	-	3
213+00 RT	100.00	1.19	-	3.13	-	8	-	6	-	10	7	-	-	3

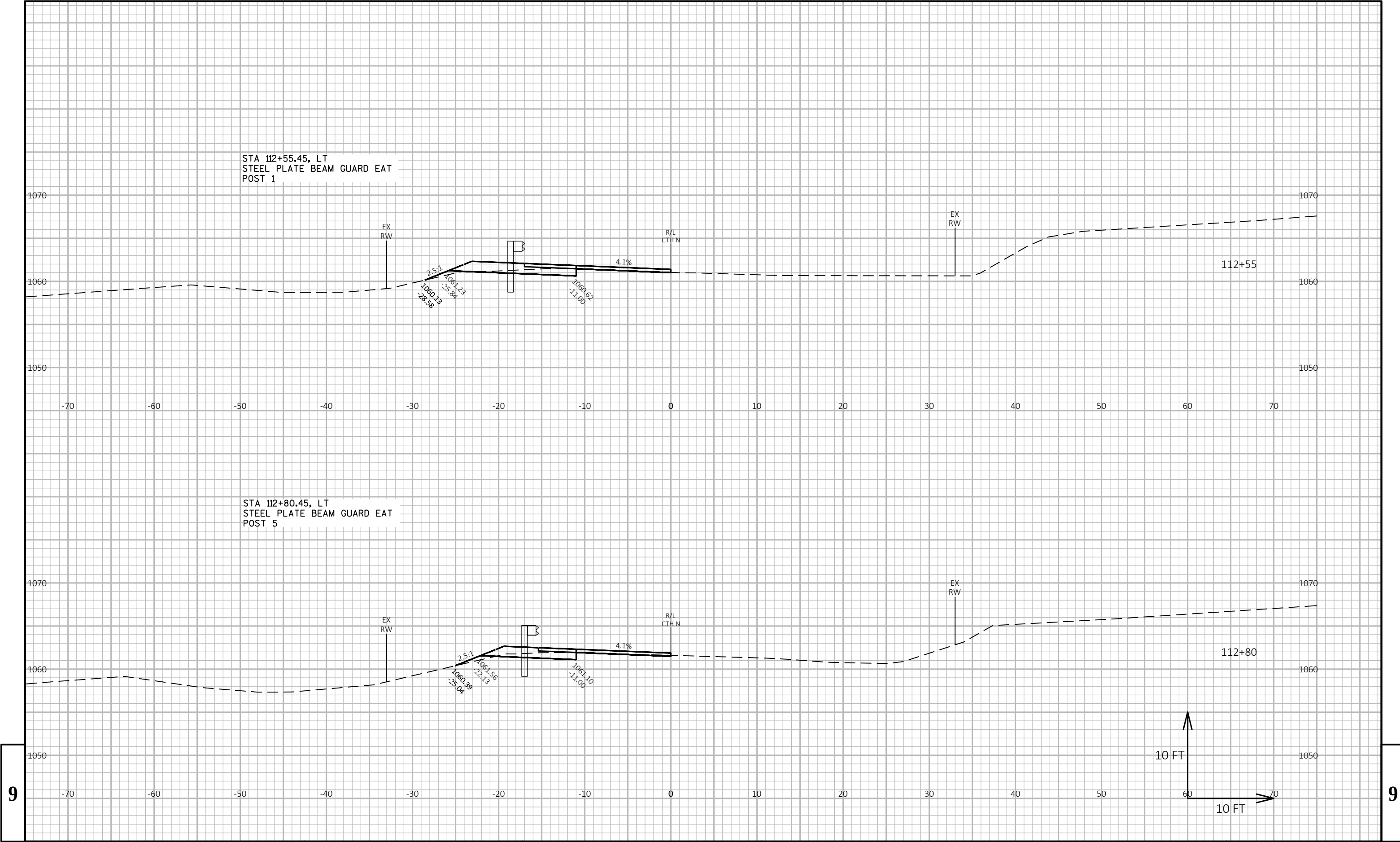
TOTAL =	10	0	6	0
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(NOTE 1) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
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STATION	Distance	AREA (SF)				Incremental Vol (CY) (Unadjusted)					Cumulative Vol (CY)				
		Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut	Salvaged/Unusable Pavement Material	Fill	EBS	Cut 1.00	Expanded Fill 1.25	Expanded EBS Backfill 1.30	Reduced EBS in Fill 0.80	Mass Ordinate	
						Note 1	Note 2	Note 3		Note 1		Note 5	Note 7	Note 8	
11+00	0.00	38.90	5.5	0.27	-	-	-	-	-	-	-	-	-	0	
11+16	16.00	8.56	5.5	1.88	-	14	3.3	1	-	14	1	-	-	10	
11+50	34.00	31.80	5.5	-	-	25	6.9	1	-	39	2	-	-	27	
11+84	34.00	54.95	5.5	-	-	55	6.9	-	-	94	2	-	-	75	

TOTAL =	94	17	2	0
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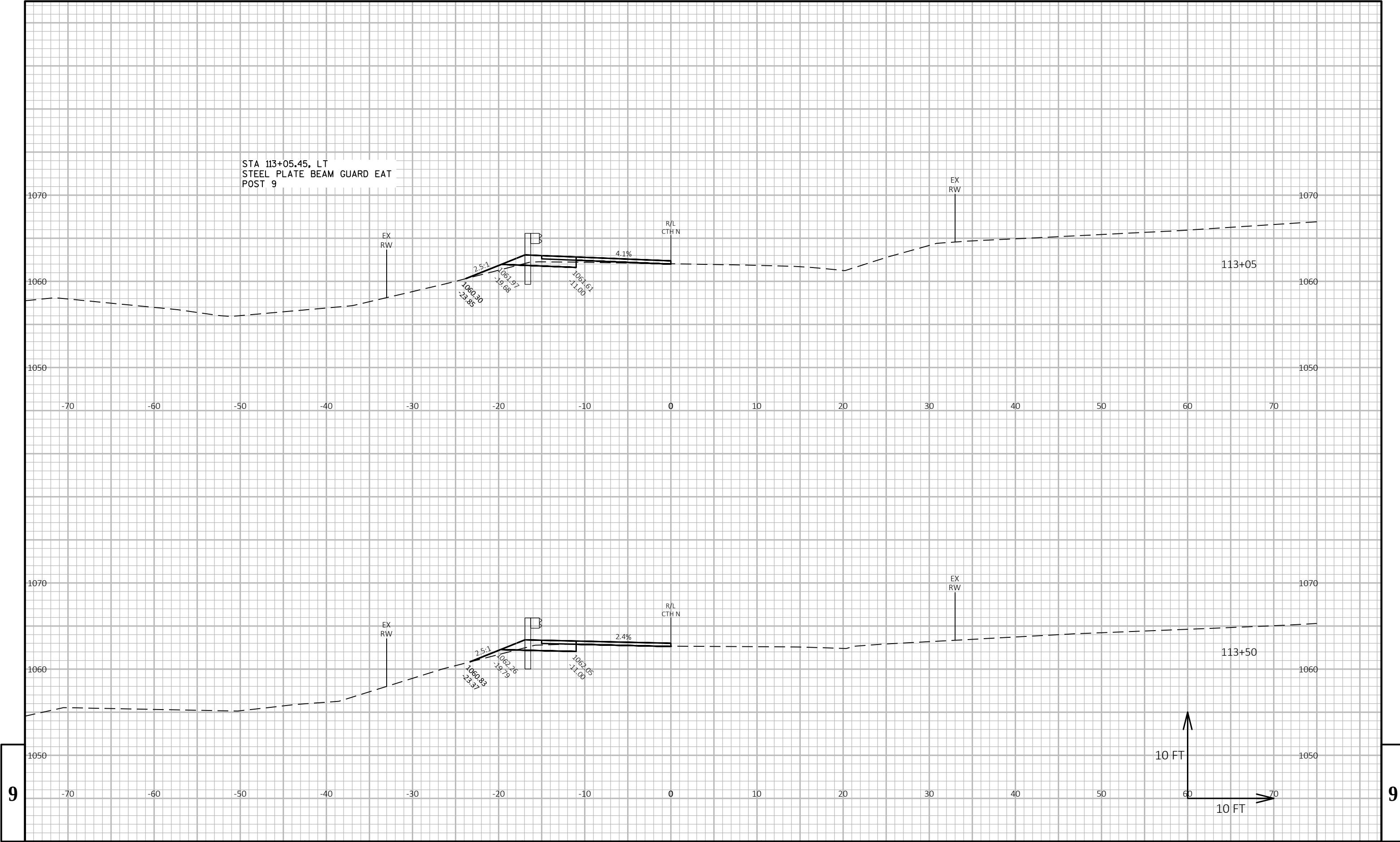
(NOTE 1) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
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9

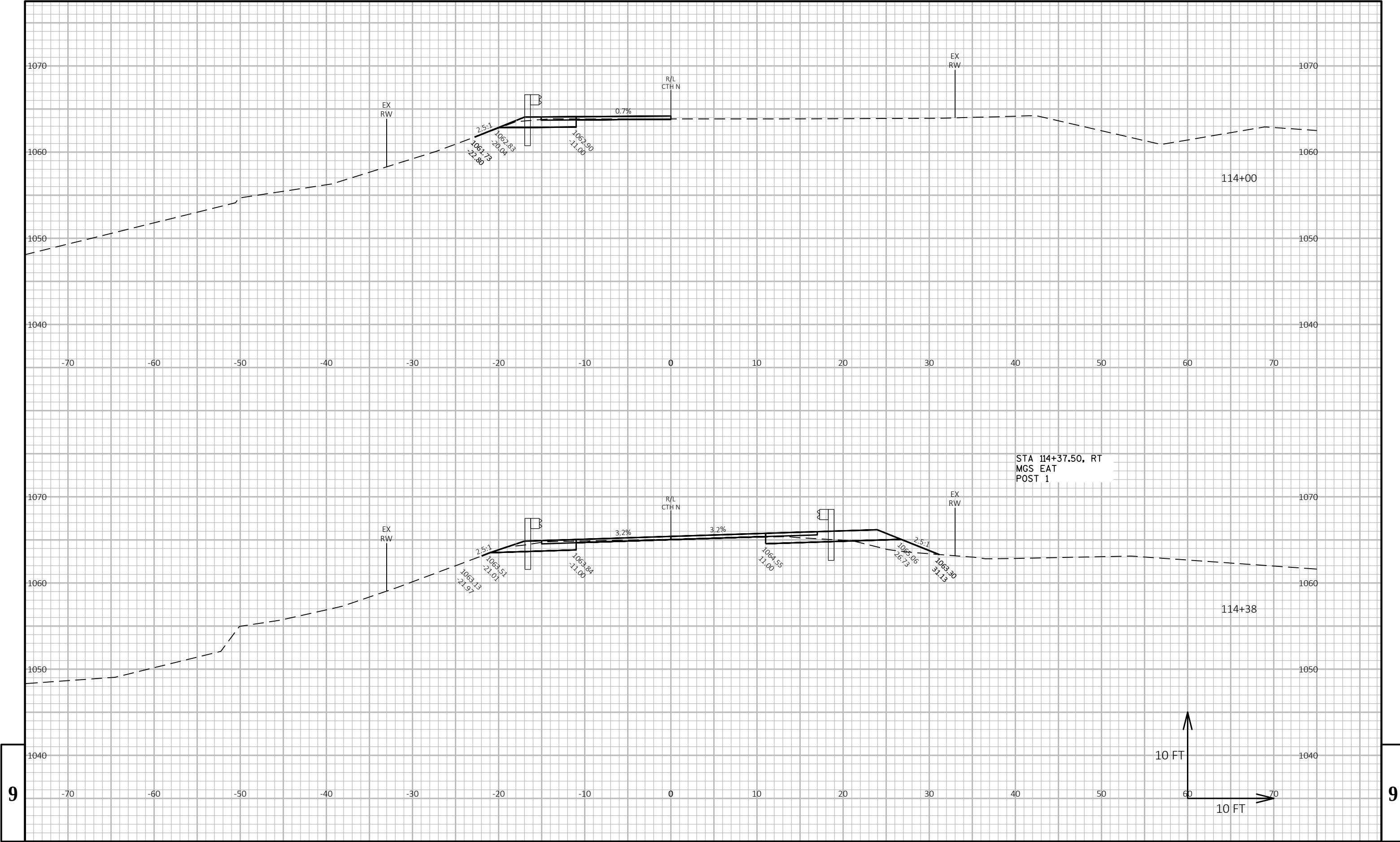
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PROJECT NO: 9324-02-71	HWY: CTH N	COUNTY: FLORENCE	CROSS SECTIONS: MAINLINE	SHEET	E
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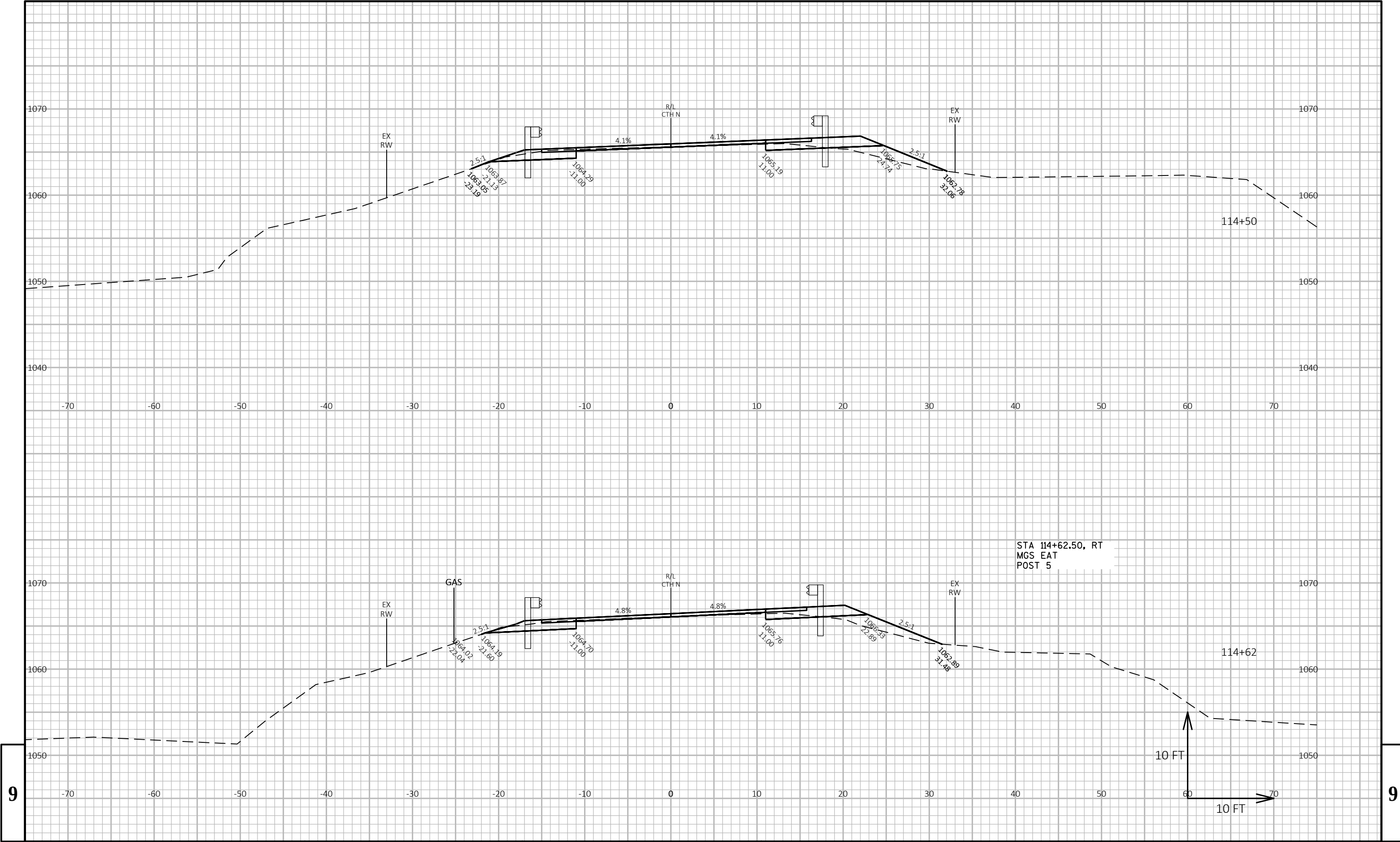
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PROJECT NO: 9324-02-71	HWY: CTH N	COUNTY: FLORENCE	CROSS SECTIONS: MAINLINE	SHEET	E
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PROJECT NO: 9324-02-71

HWY: CTH N

COUNTY: FLORENCE

CROSS SECTIONS: MAINLINE

SHEET

E

FILE NAME : P:\WI - NC REGION\9324-02-01_CTH N_FLORENCE CO\500_CADD\501_C3D_2016\93240201\DESIGN\CORRIDORS\CRDR-CTH N.DWG
LAYOUT NAME - 0901145-xs

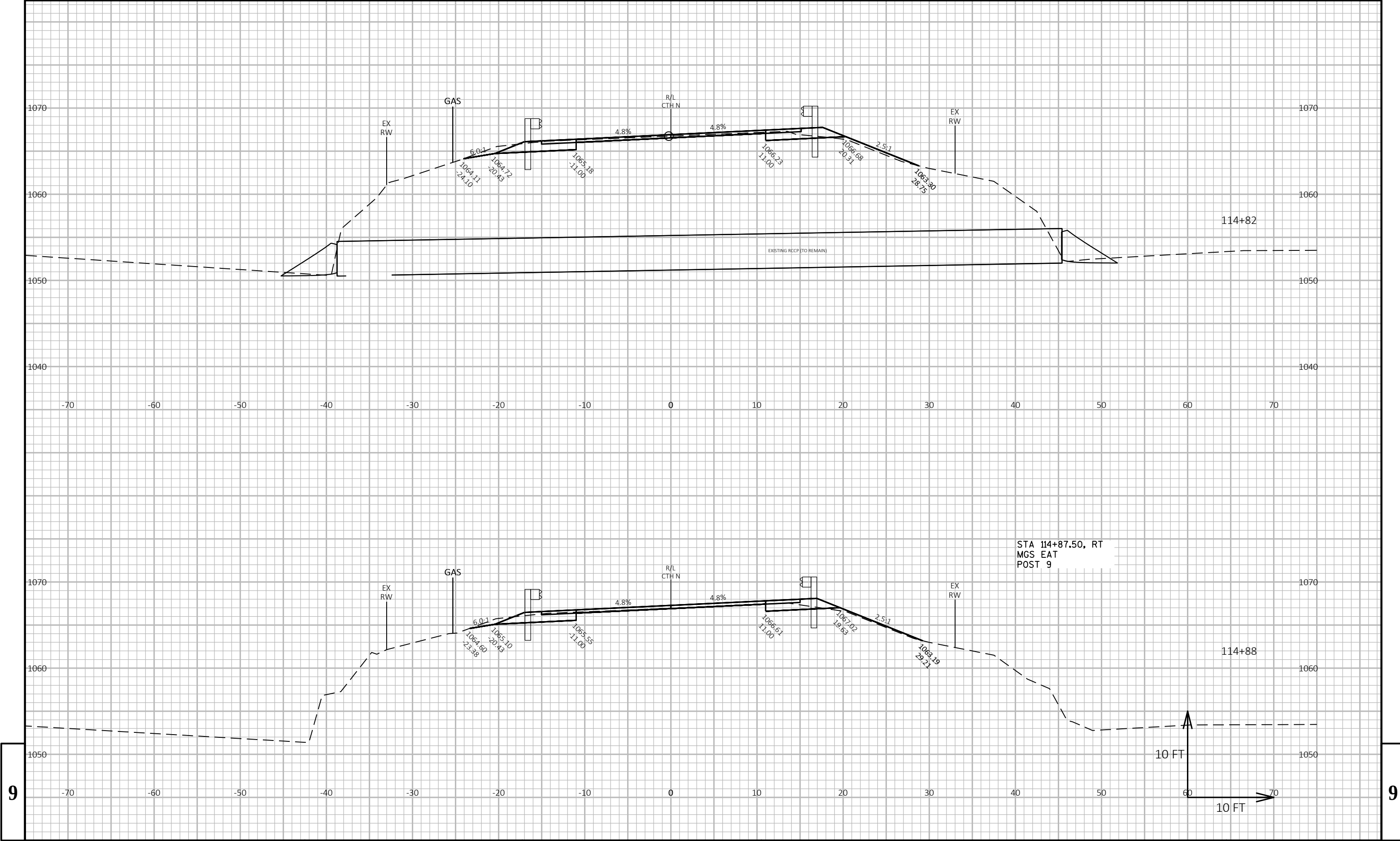
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PLOT BY : BOBBY JONES

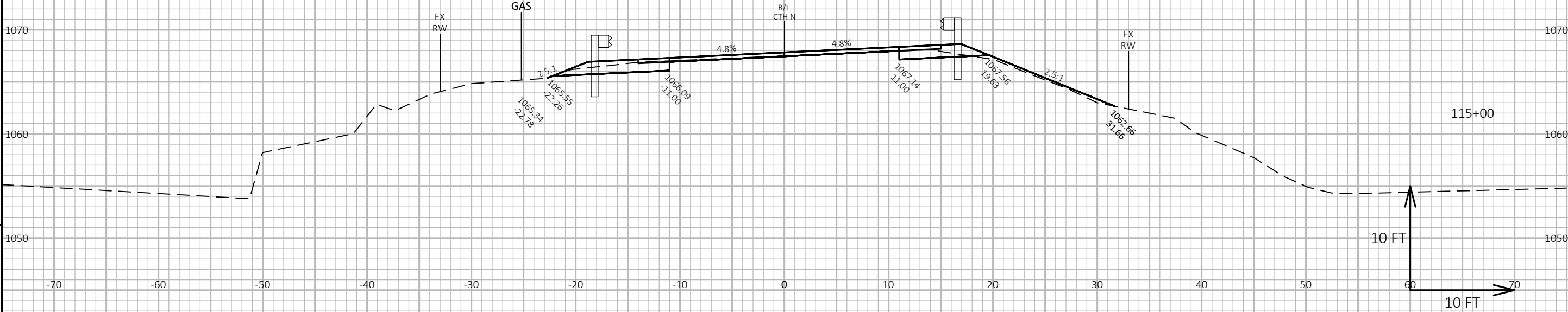
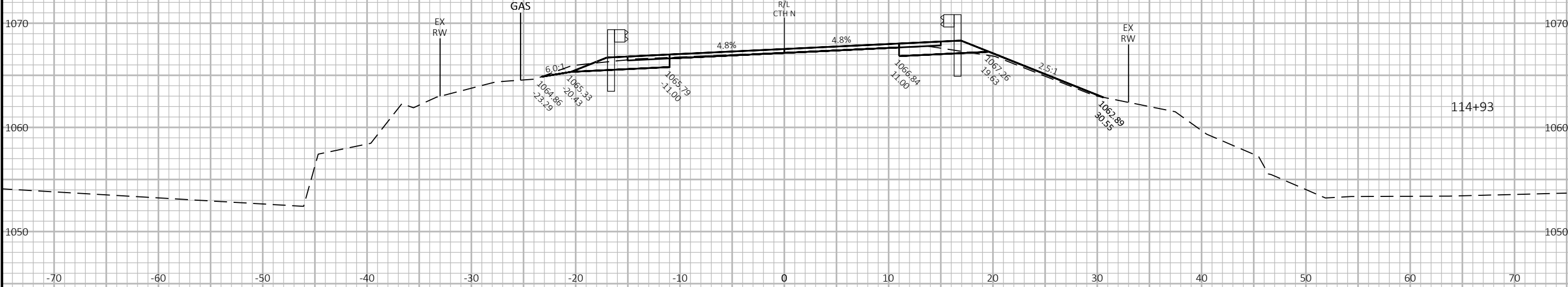
PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADD SHEET 49



STA 114+92.95, LT
STEEL PLATE BEAMGUARD
SHORT RADIUS 12.5', BEND 45°



PROJECT NO: 9324-02-71

HWY: CTH N

COUNTY: FLORENCE

CROSS SECTIONS: MAINLINE

SHEET

E

FILE NAME : P:\WI - NC REGION\9324-02-01_CTH N_FLORENCE CO\500_CADD\501_C3D_2016\93240201\DESIGN\CORRIDORS\CRDR-CTH N.DWG
LAYOUT NAME - 0901147-xs

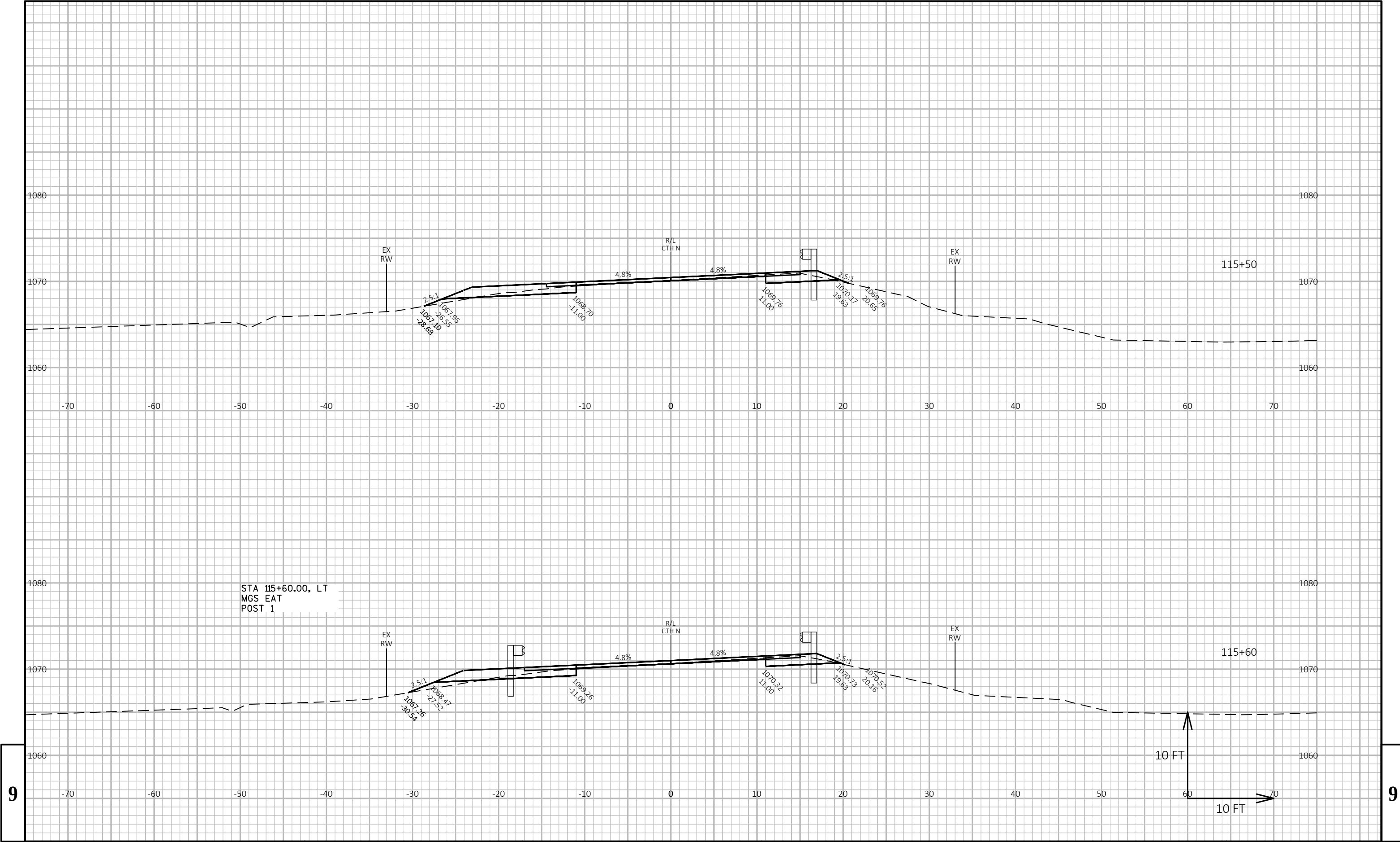
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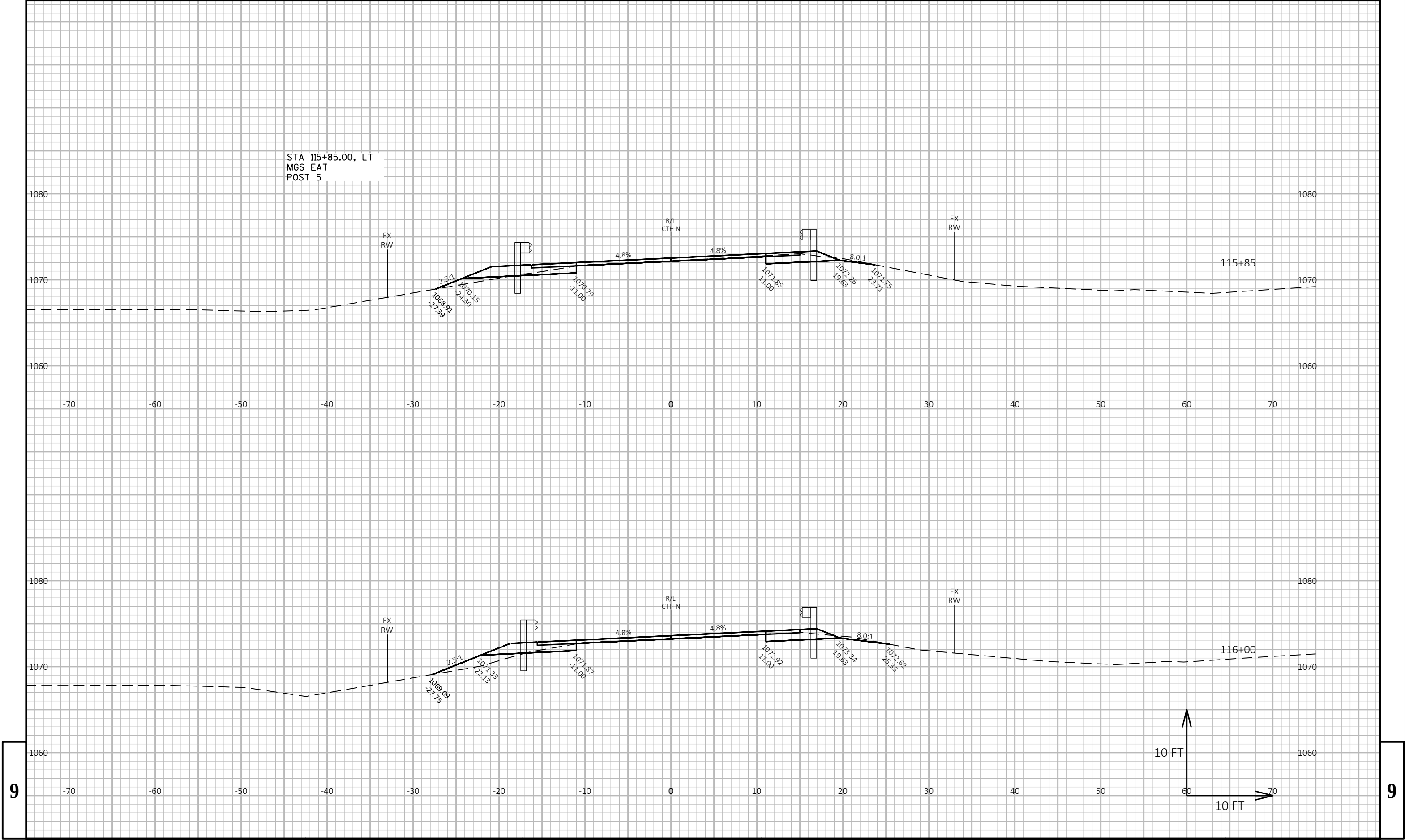
PLOT BY : BOBBY JONES

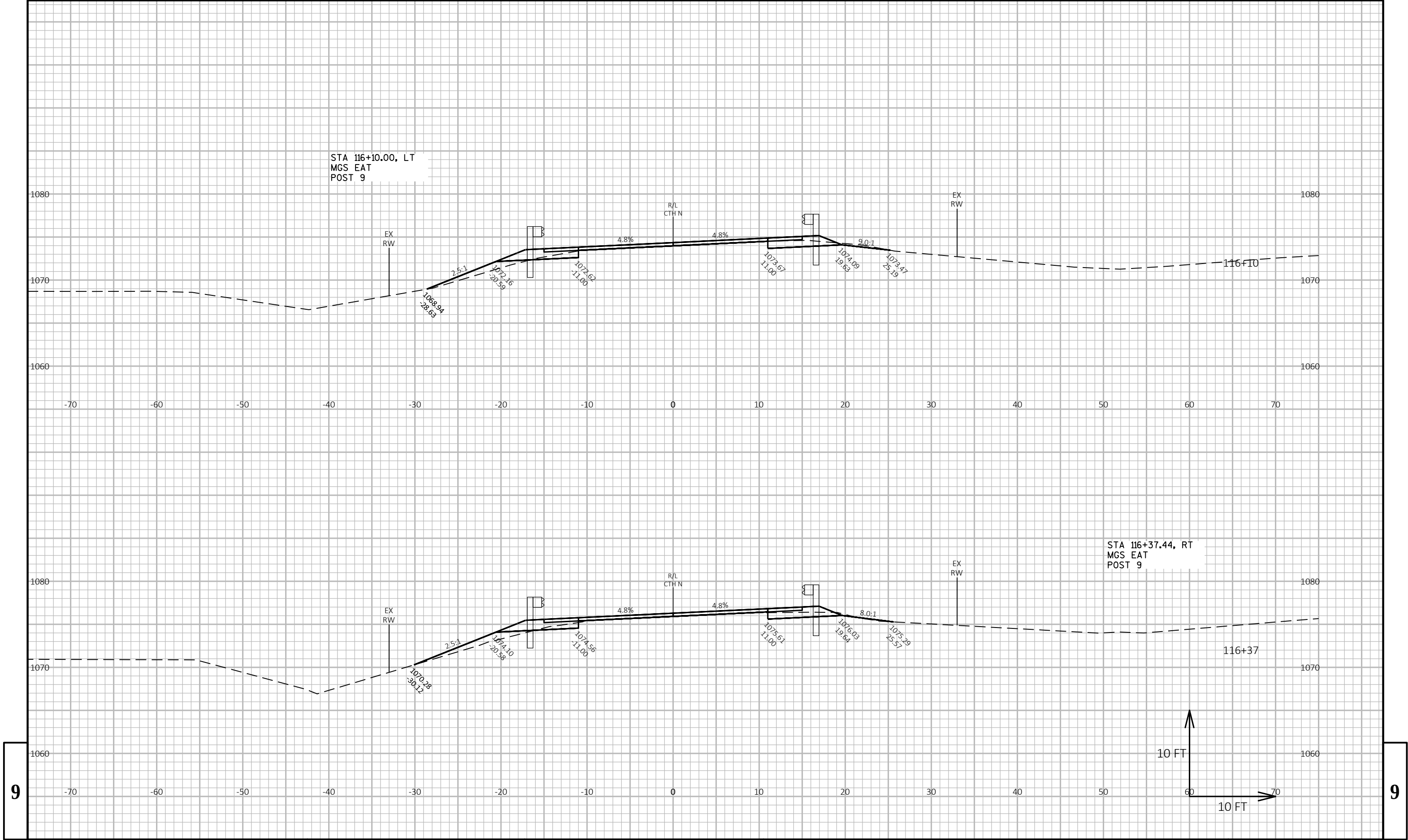
PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDs SHEET 49







PROJECT NO: 9324-02-71

HWY: CTH N

COUNTY: FLORENCE

CROSS SECTIONS: MAINLINE

SHEET

E

FILE NAME : P:\WI - NC REGION\9324-02-01_CTH N_FLORENCE CO\500_CADD\501_C3D_2016\93240201\DESIGN\CORRIDORS\CRDR-CTH N.DWG
LAYOUT NAME - 0901150-xs

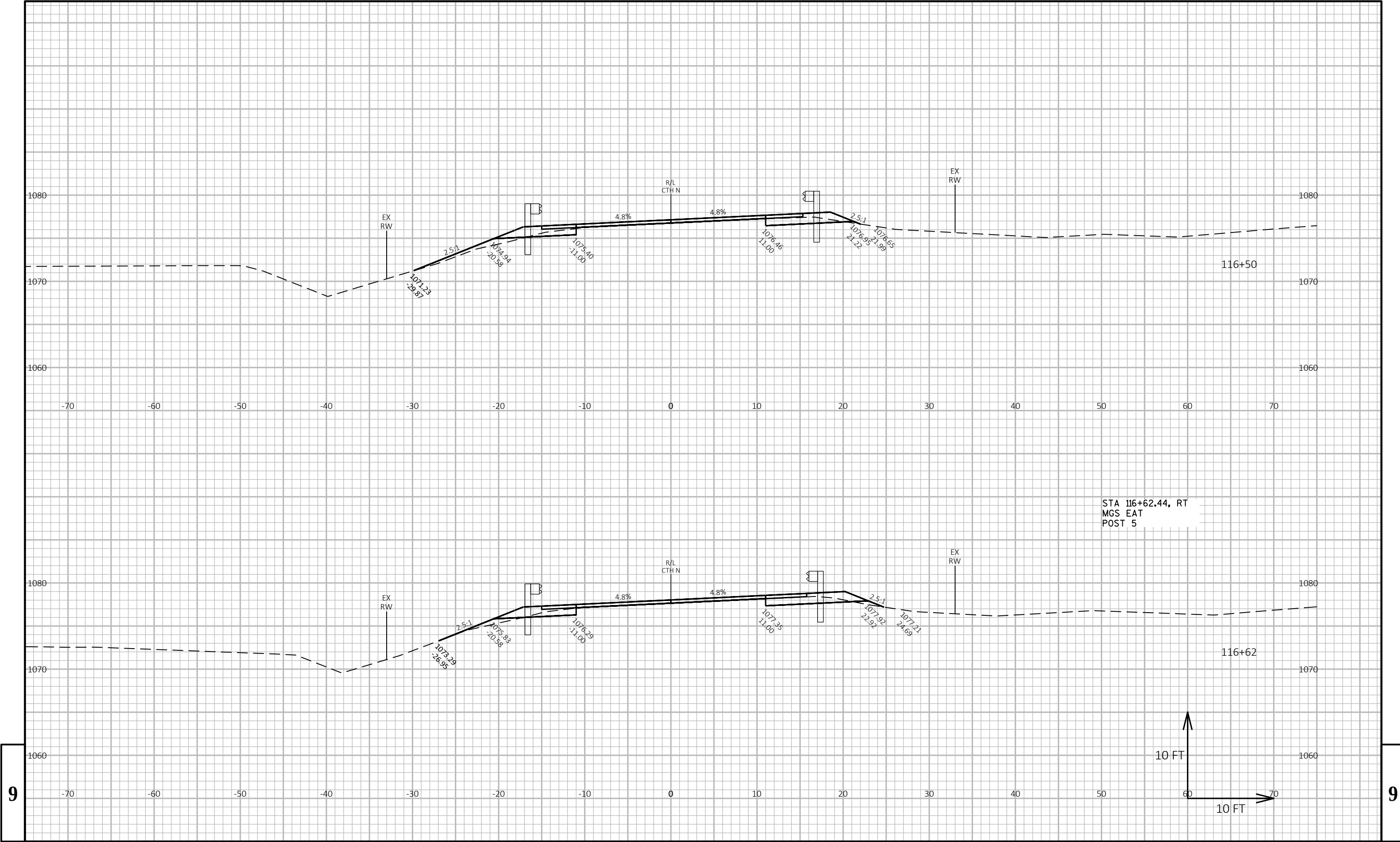
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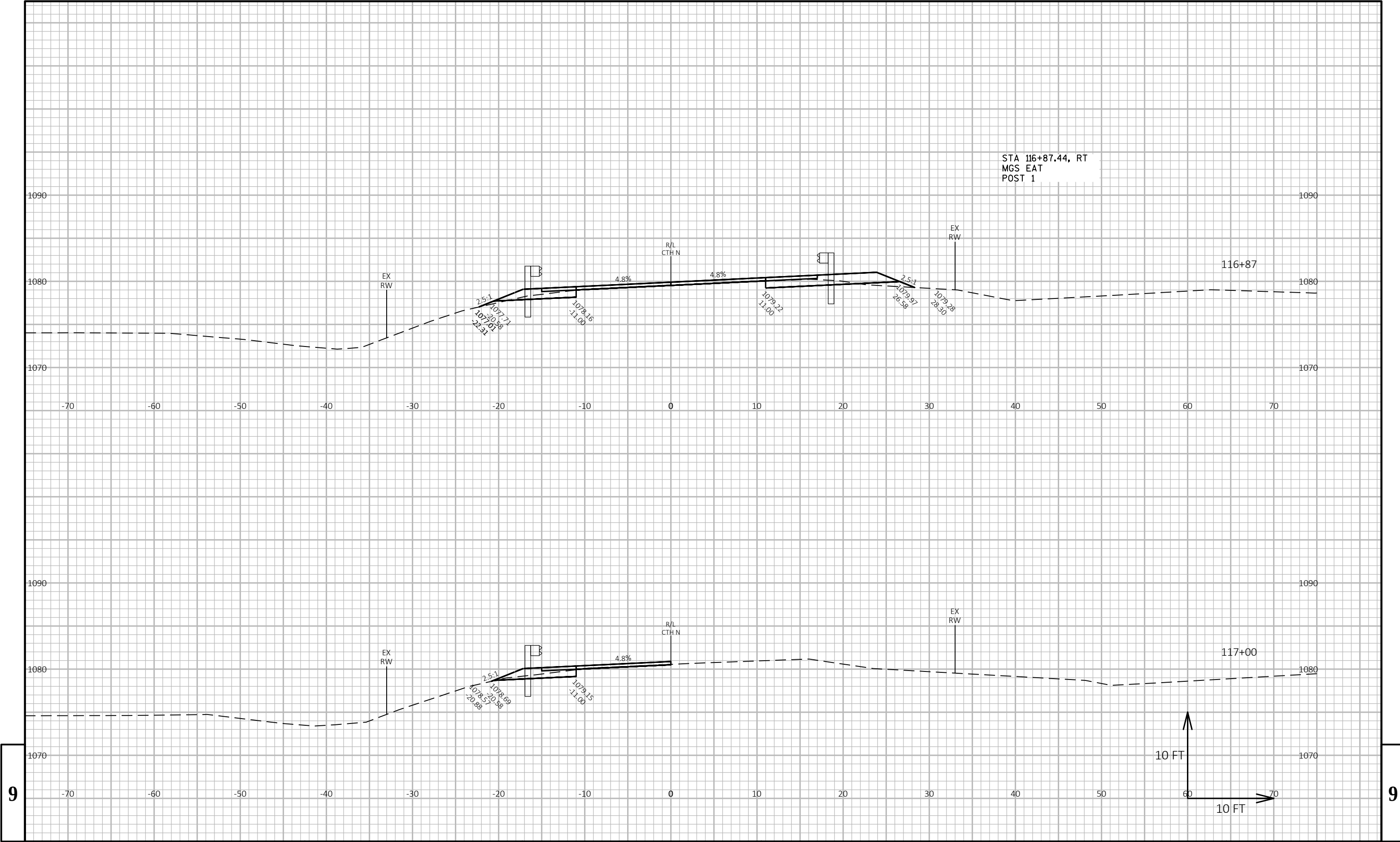
PLOT BY : BOBBY JONES

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADD5 SHEET 49

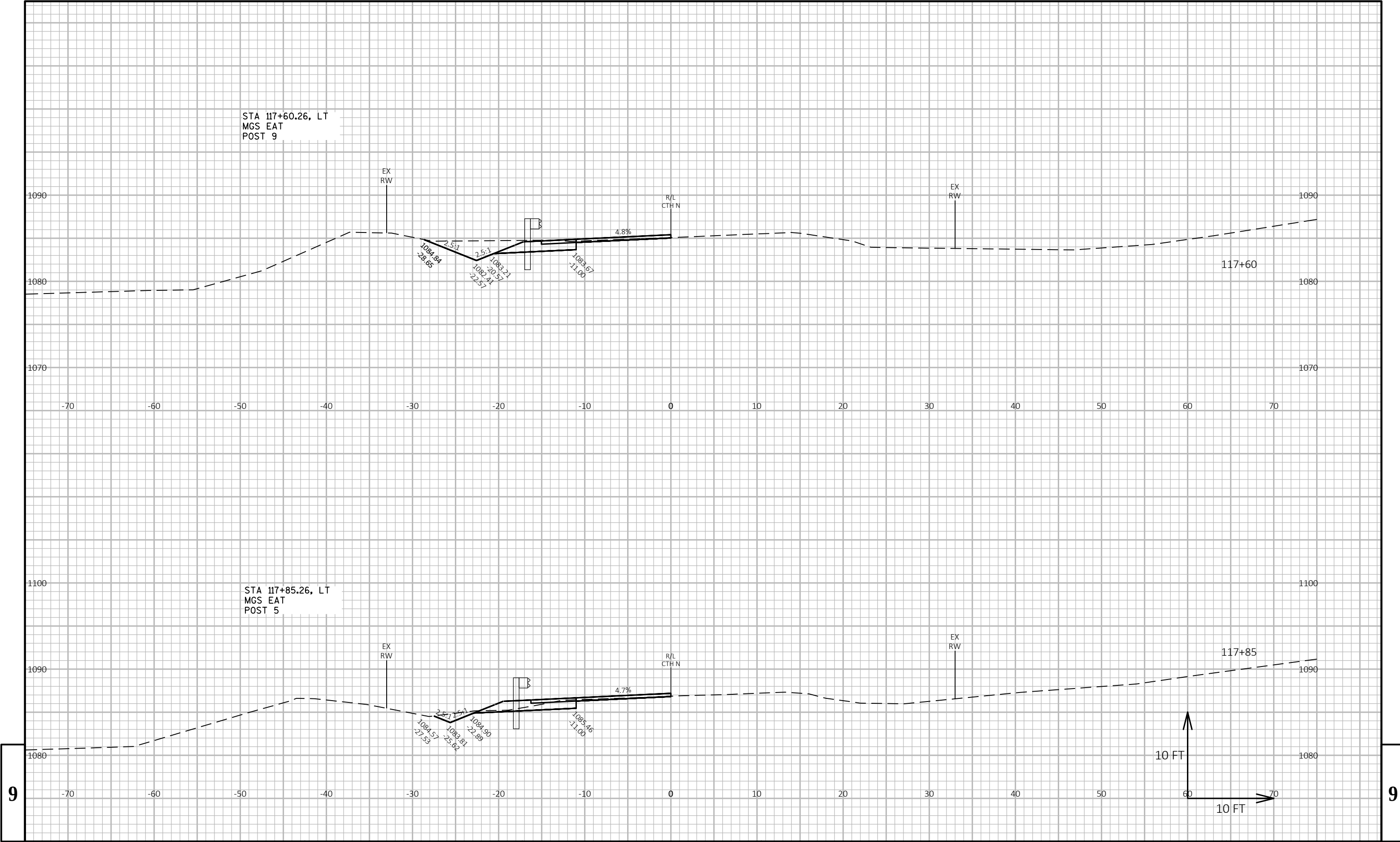




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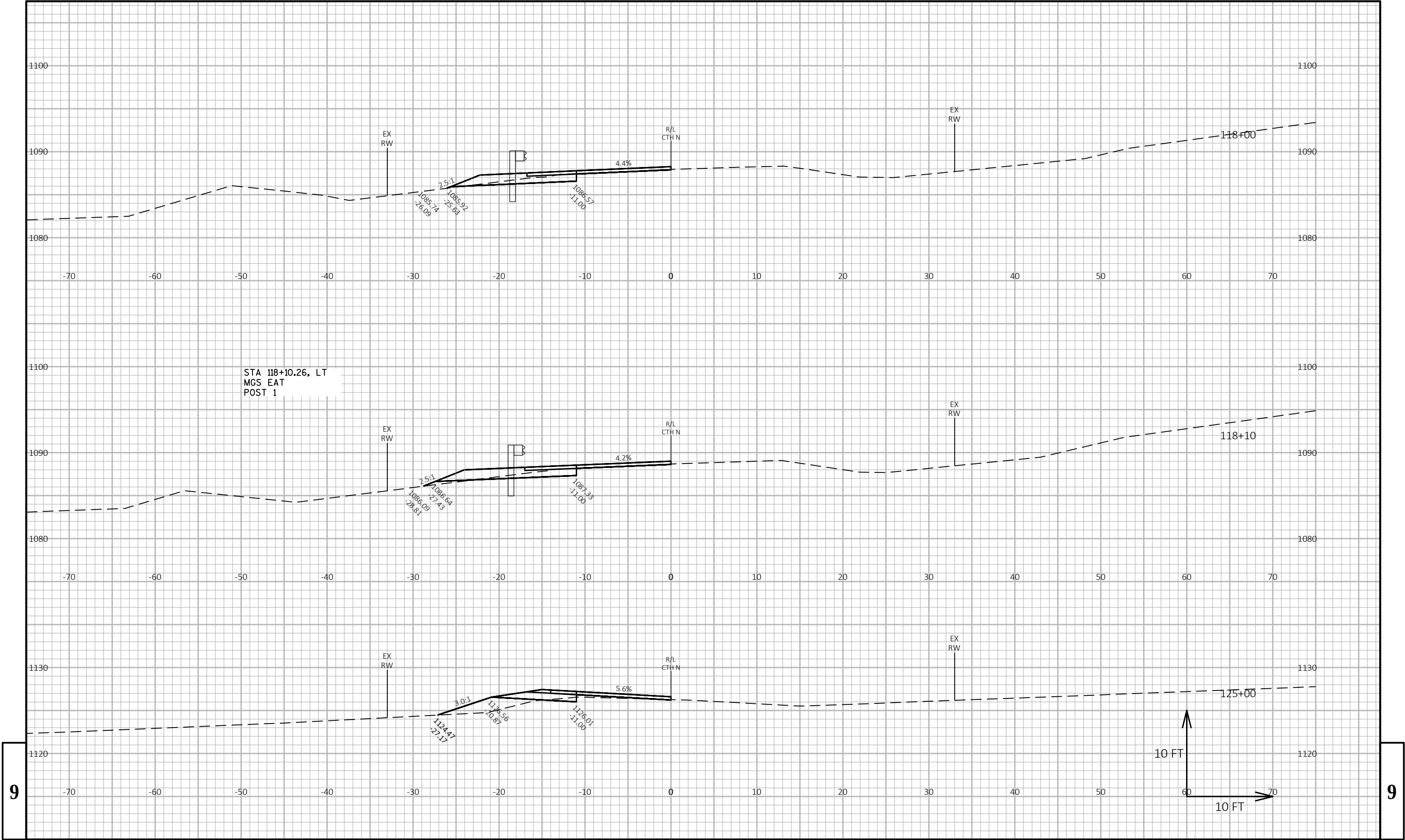
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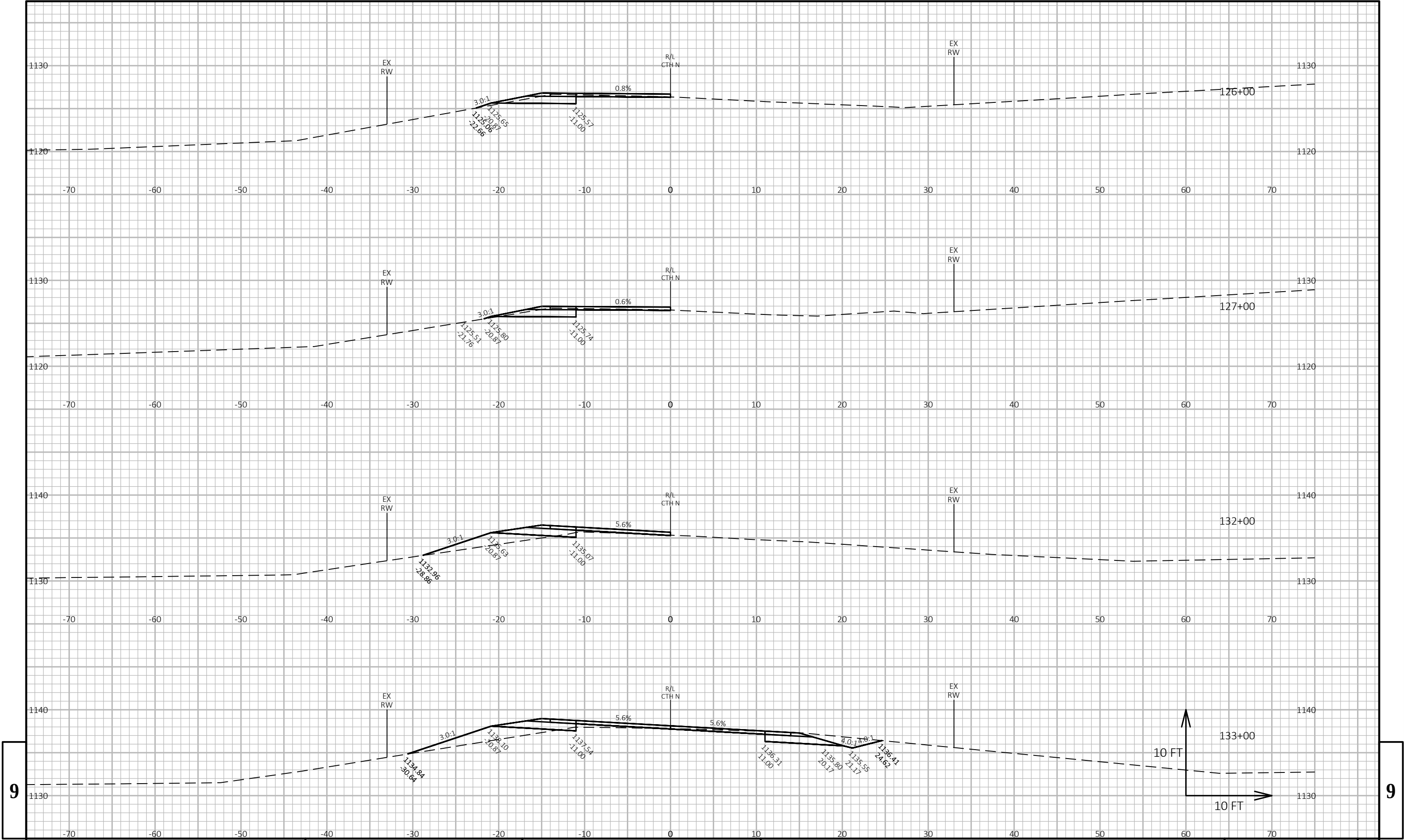


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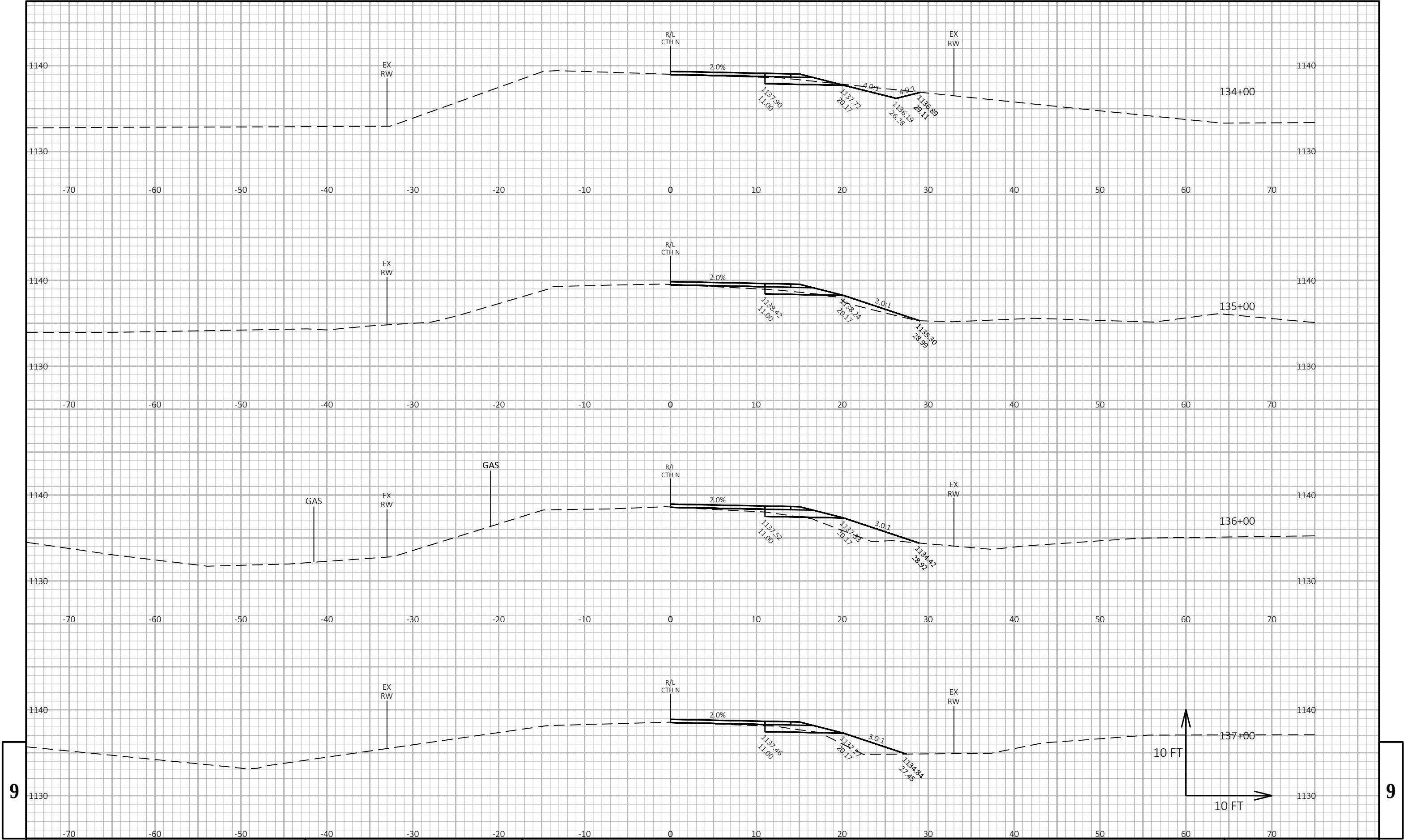
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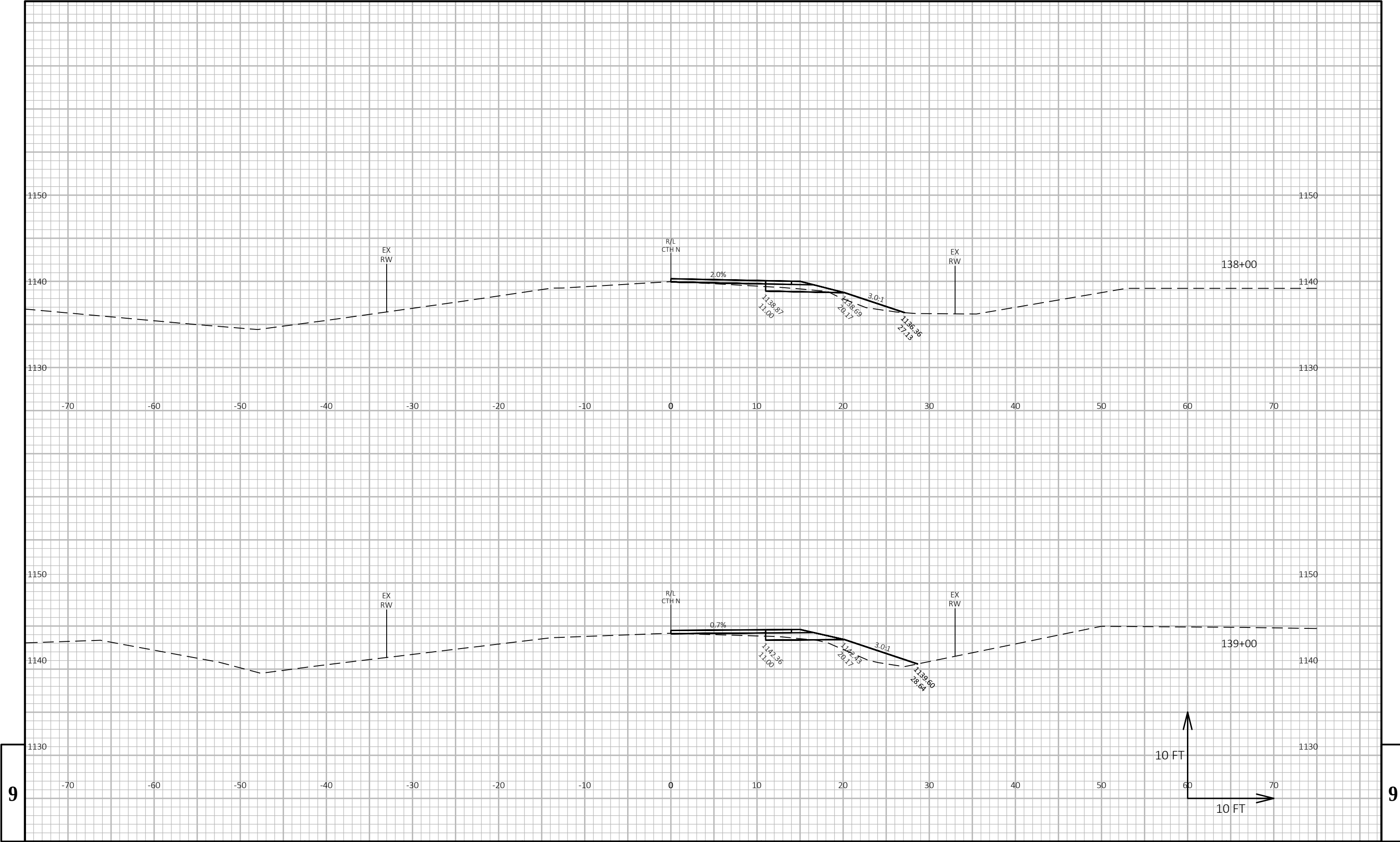
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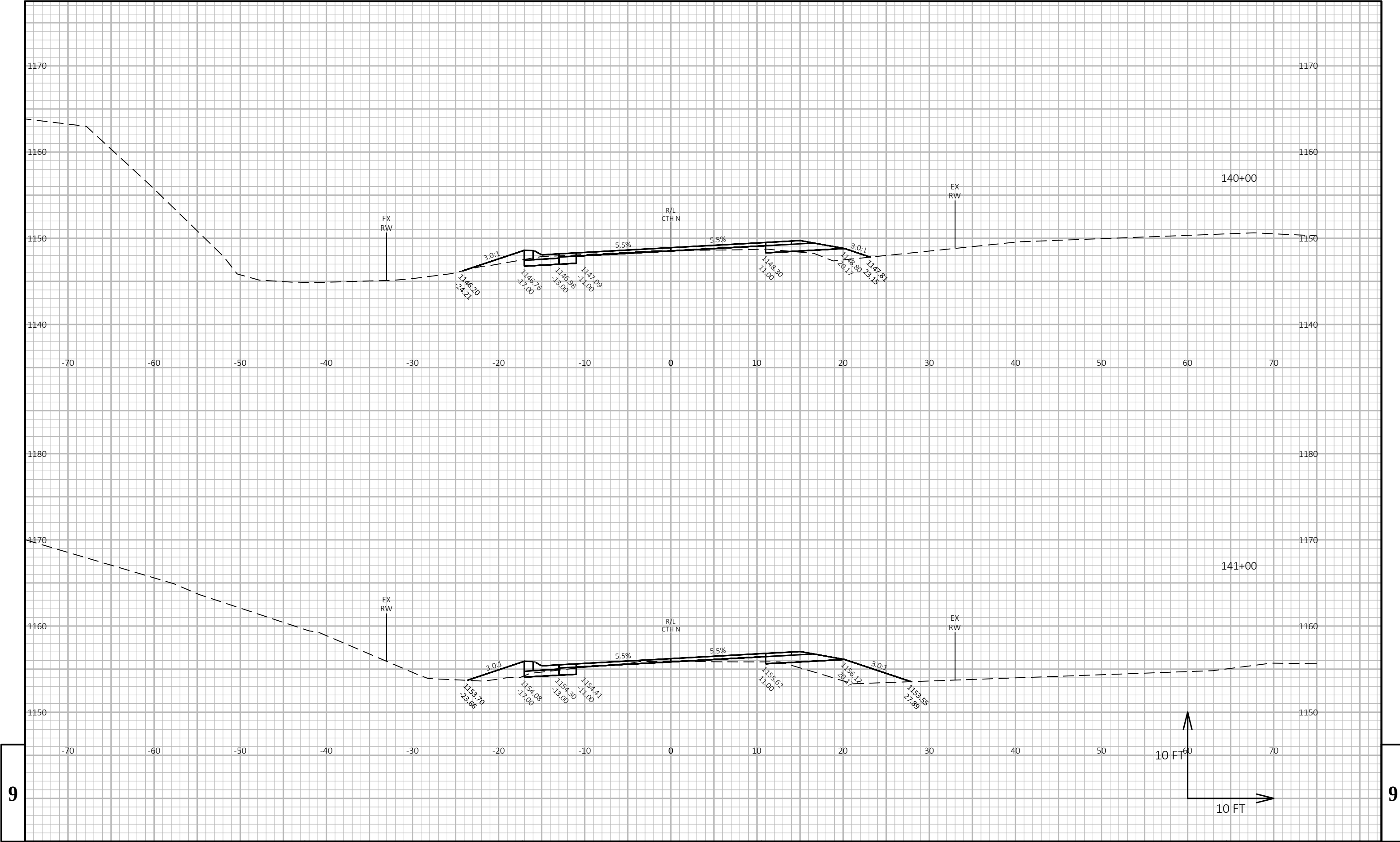
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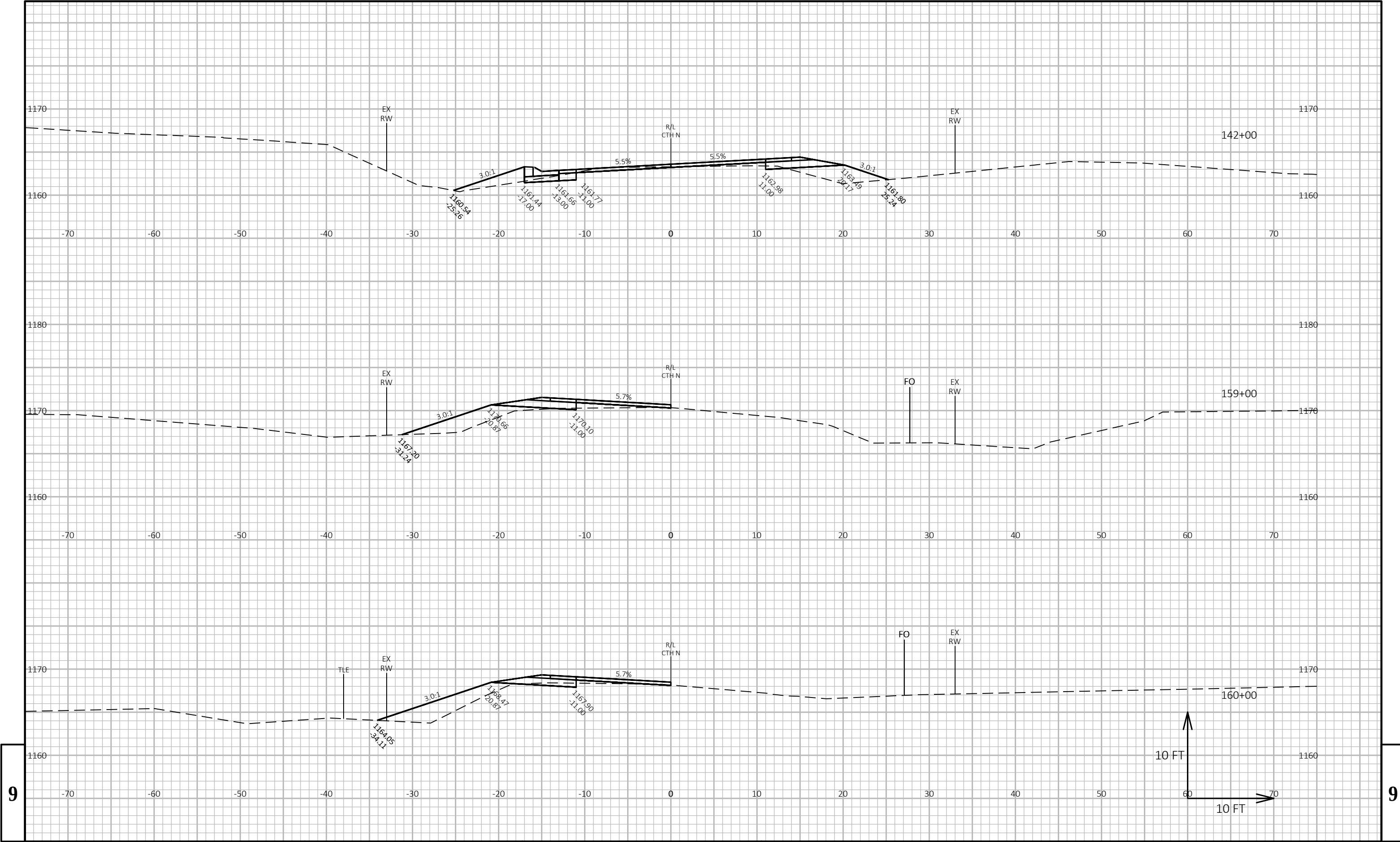




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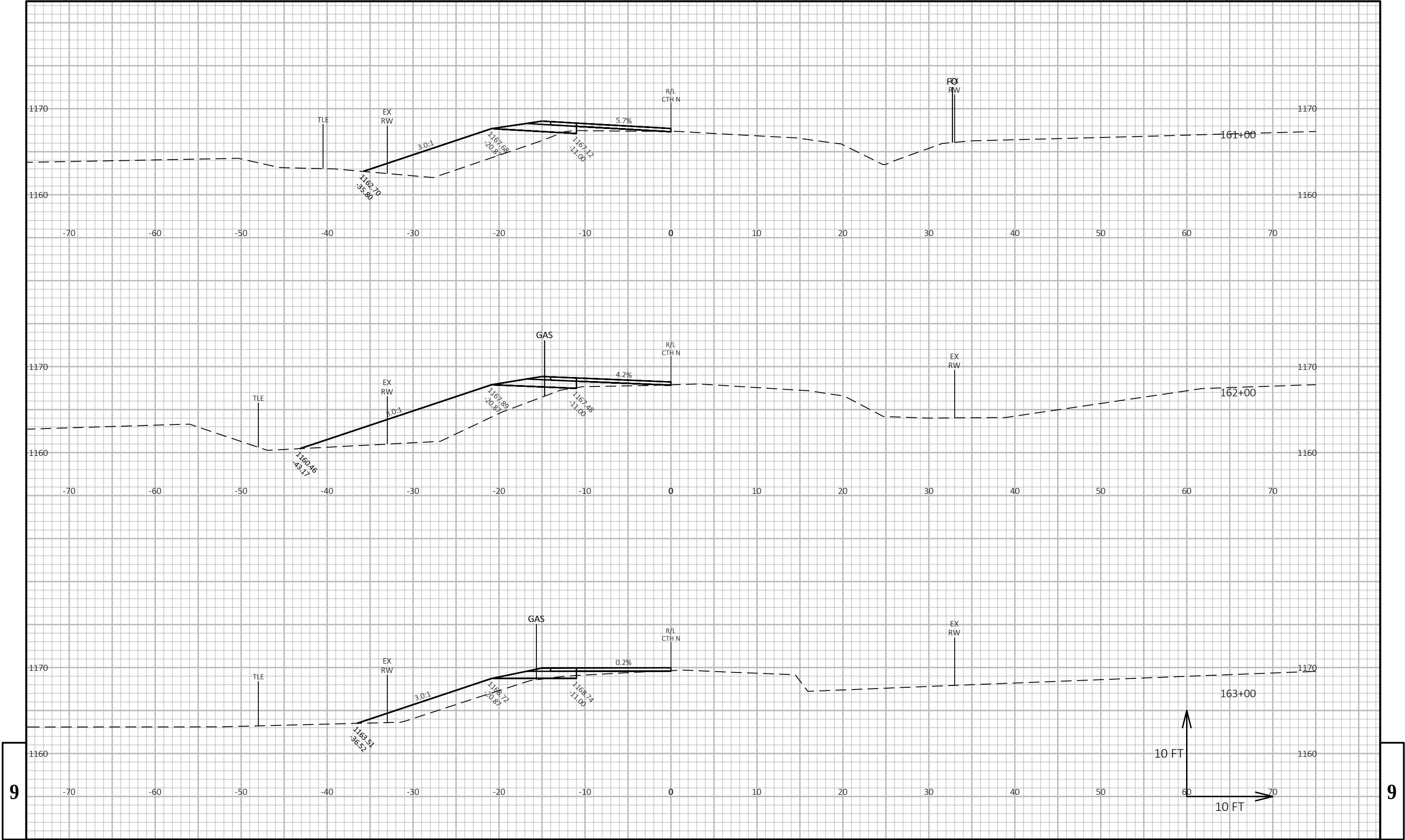
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PROJECT NO: 9324-02-71	HWY: CTH N	COUNTY: FLORENCE	CROSS SECTIONS: MAINLINE	SHEET	E
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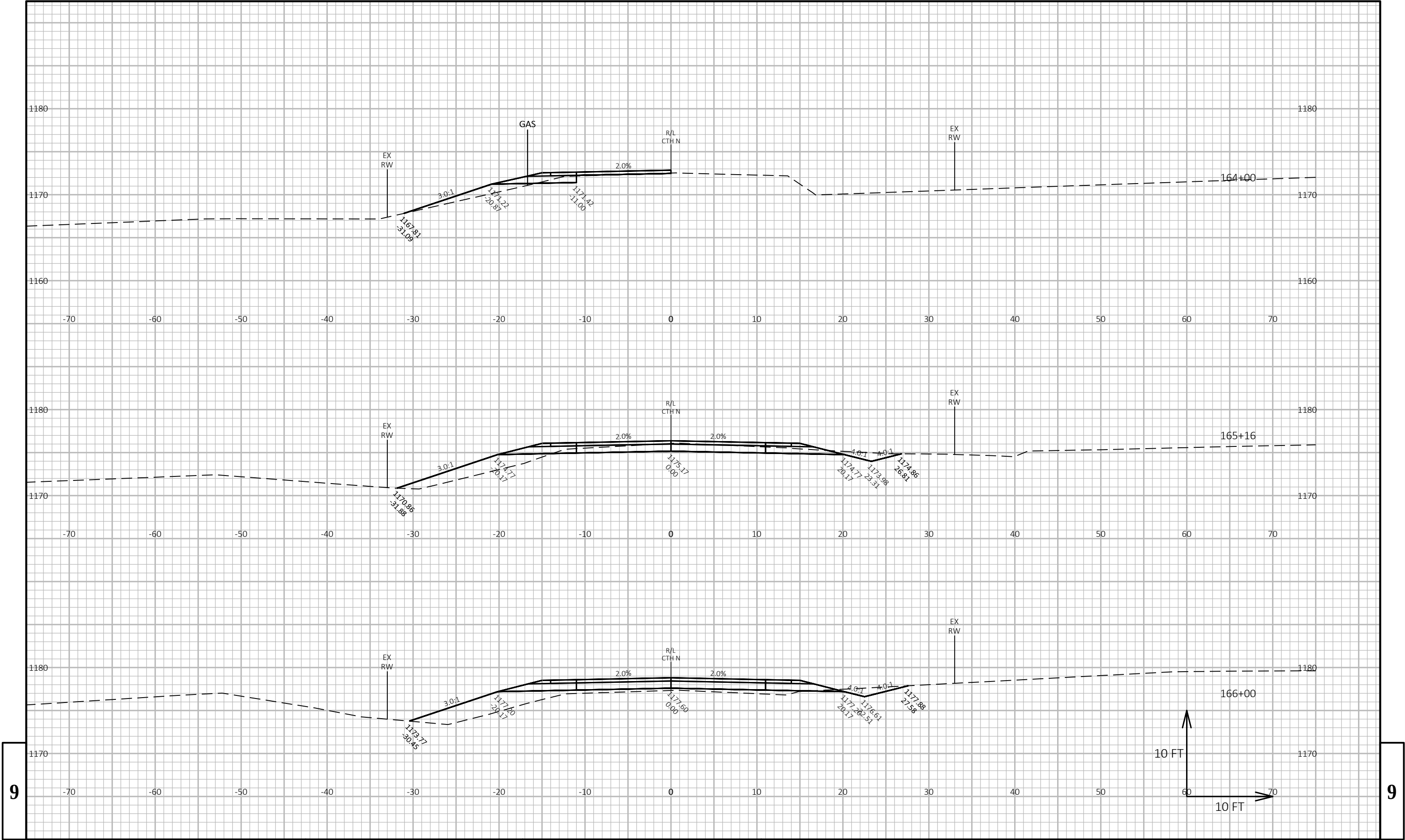


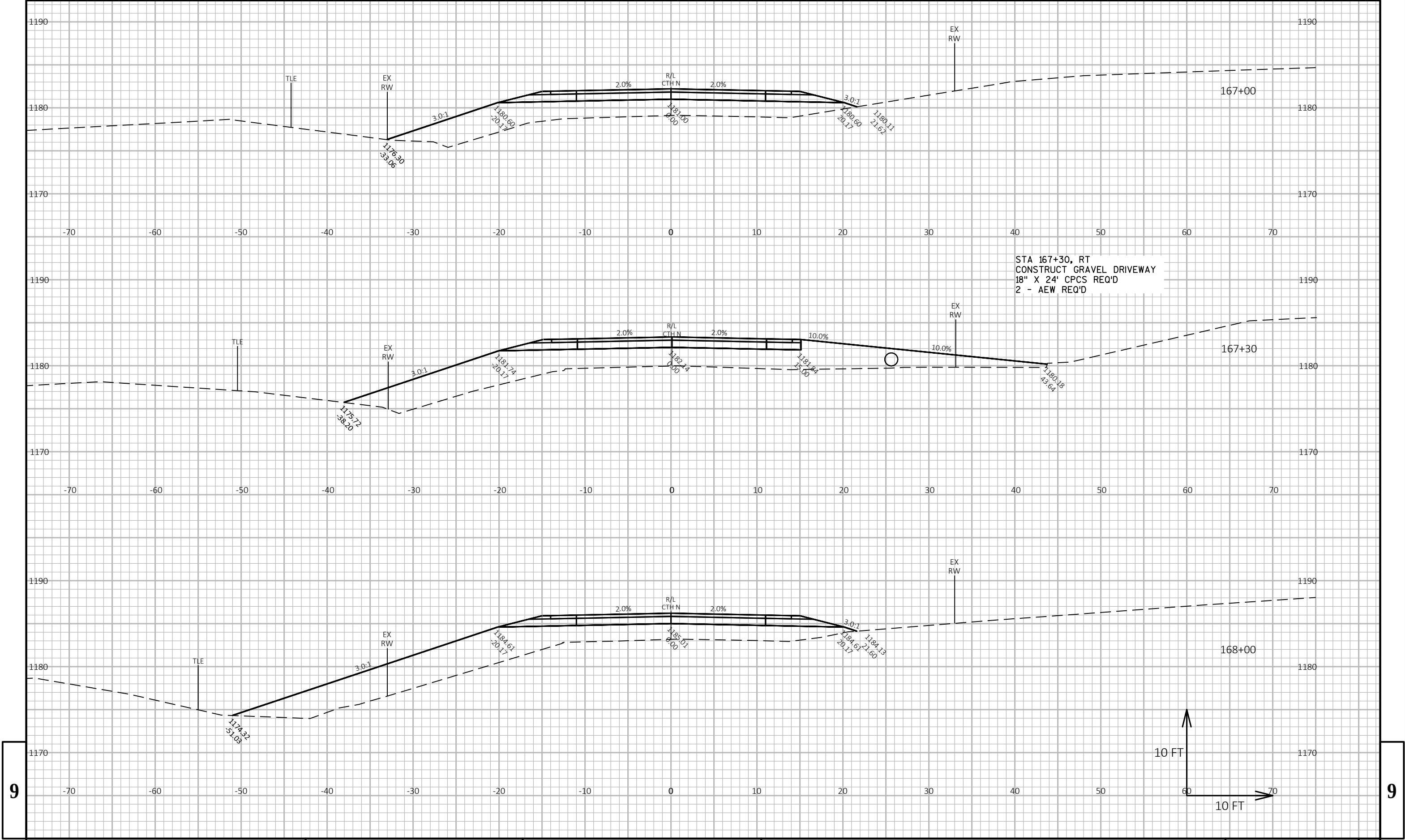
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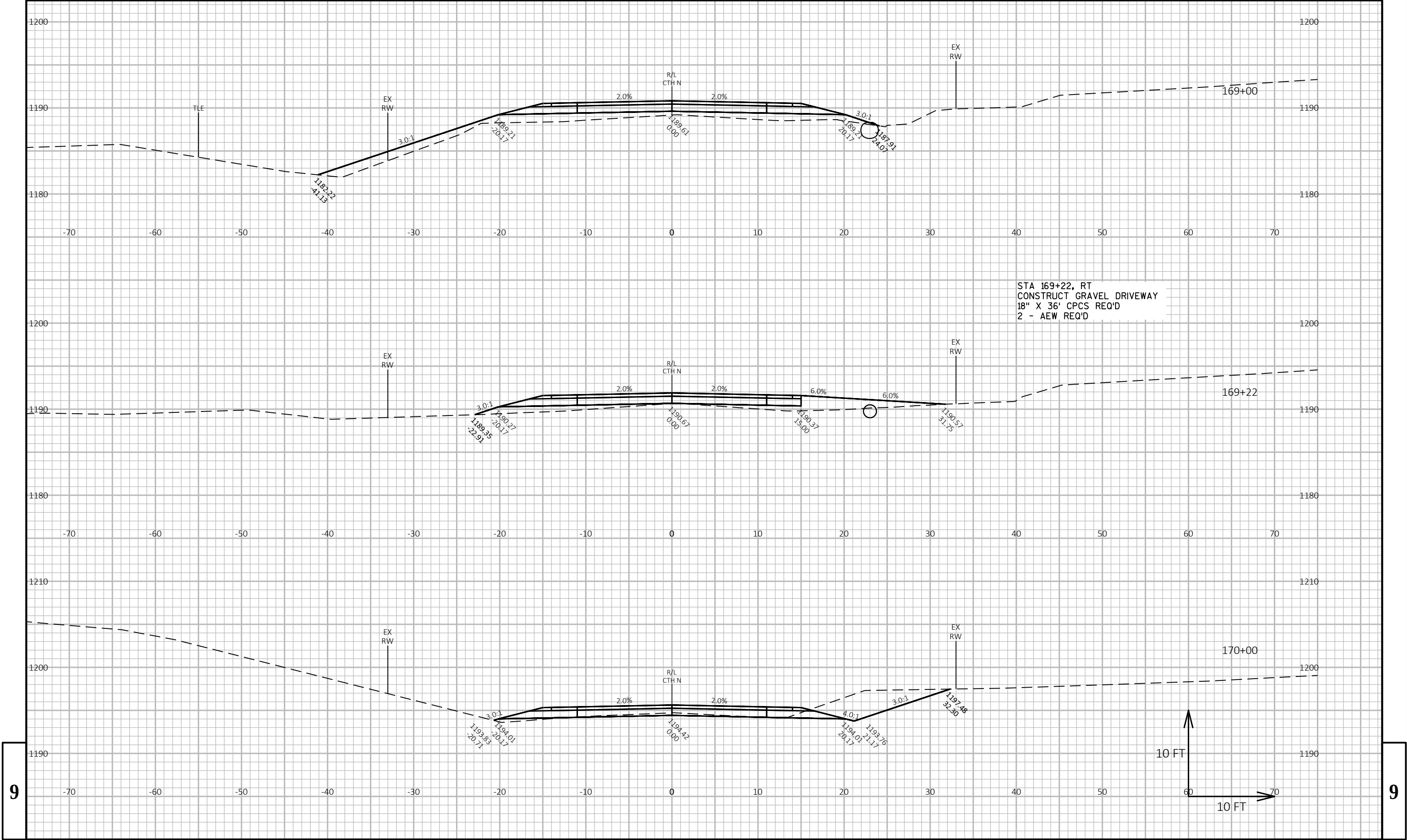
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9	PROJECT NO: 9324-02-71	HWY: CTH N	COUNTY: FLORENCE	CROSS SECTIONS: MAINLINE	SHEET	E
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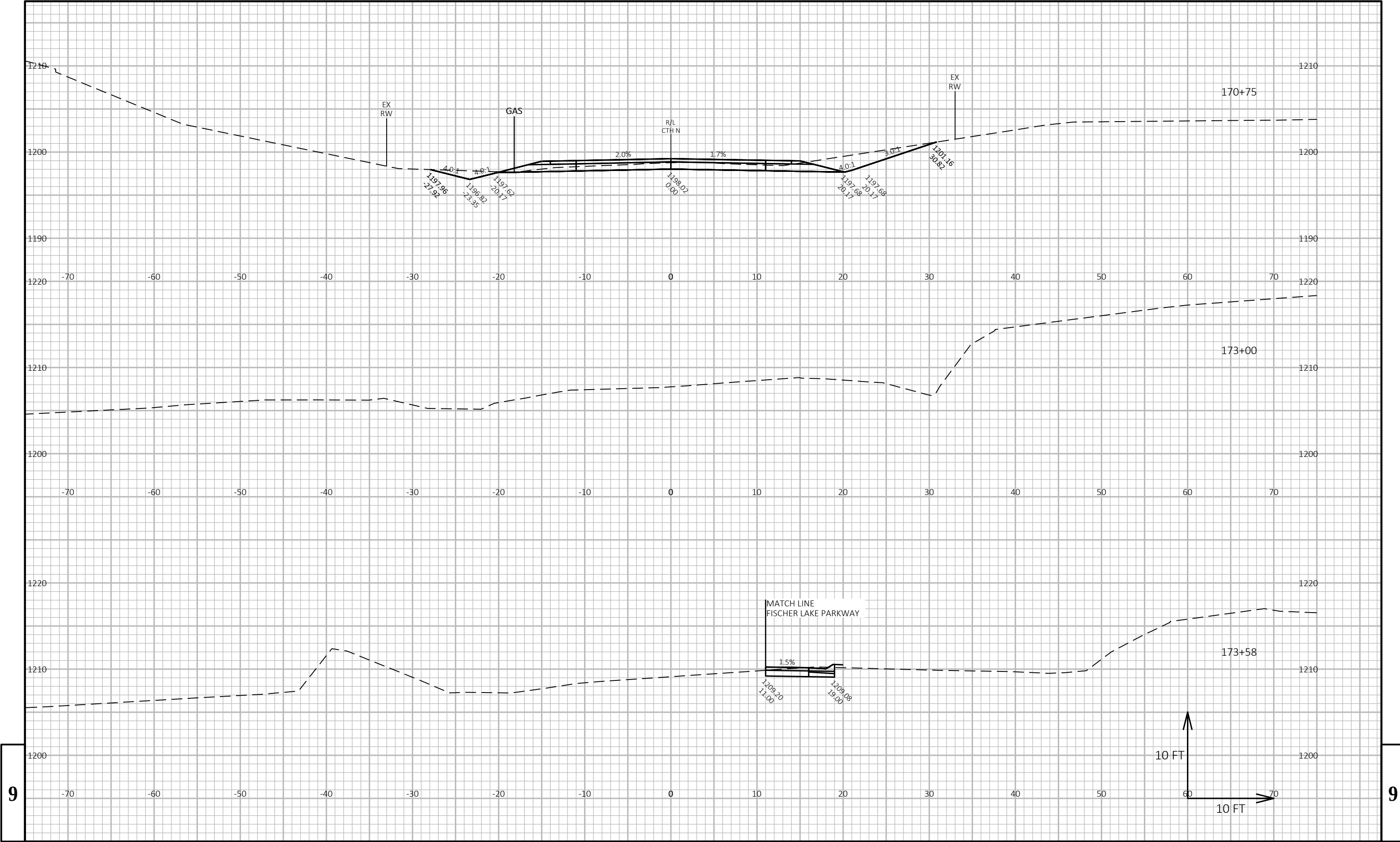




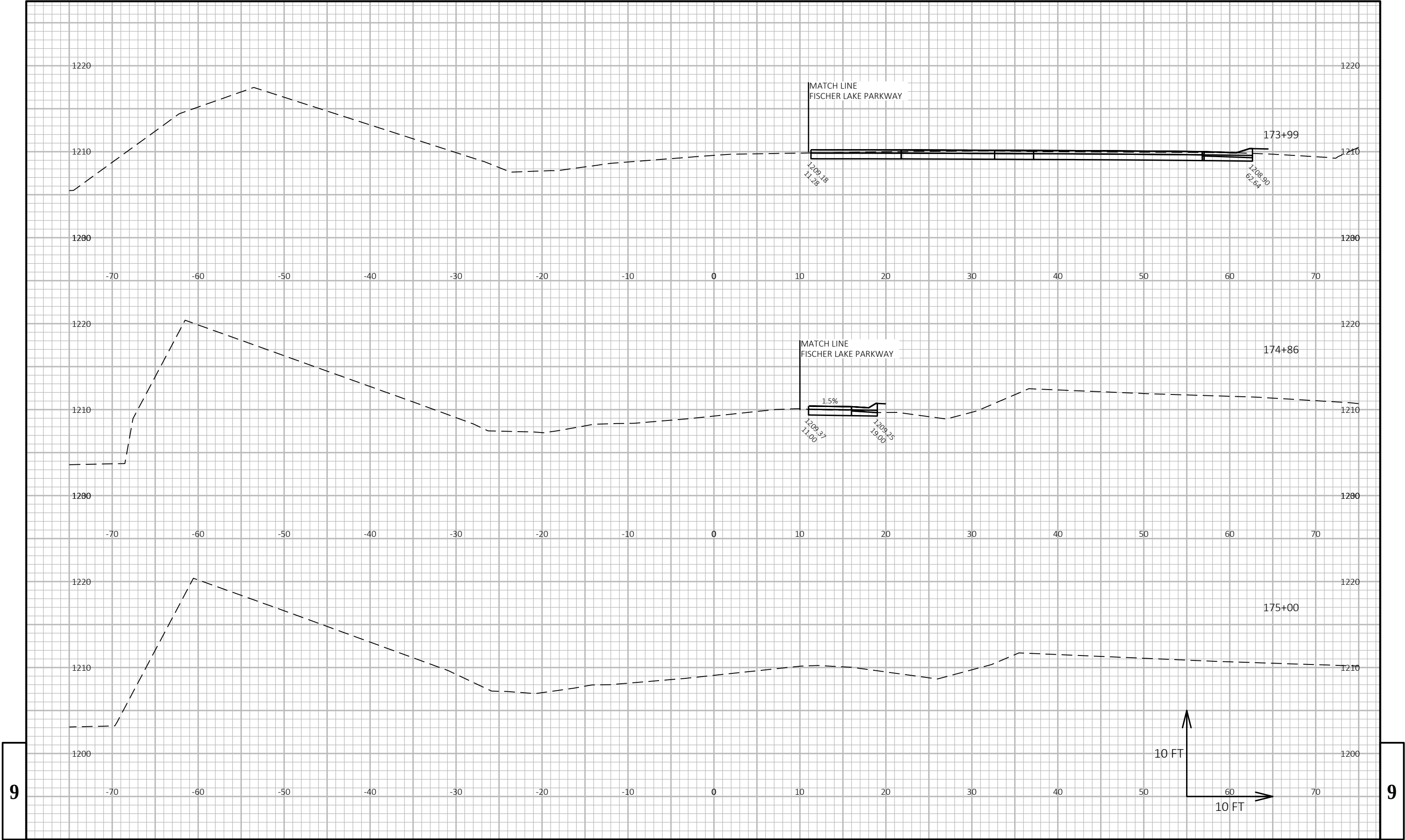
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PROJECT NO: 9324-02-71	HWY: CTH N	COUNTY: FLORENCE	CROSS SECTIONS: MAINLINE	SHEET	E
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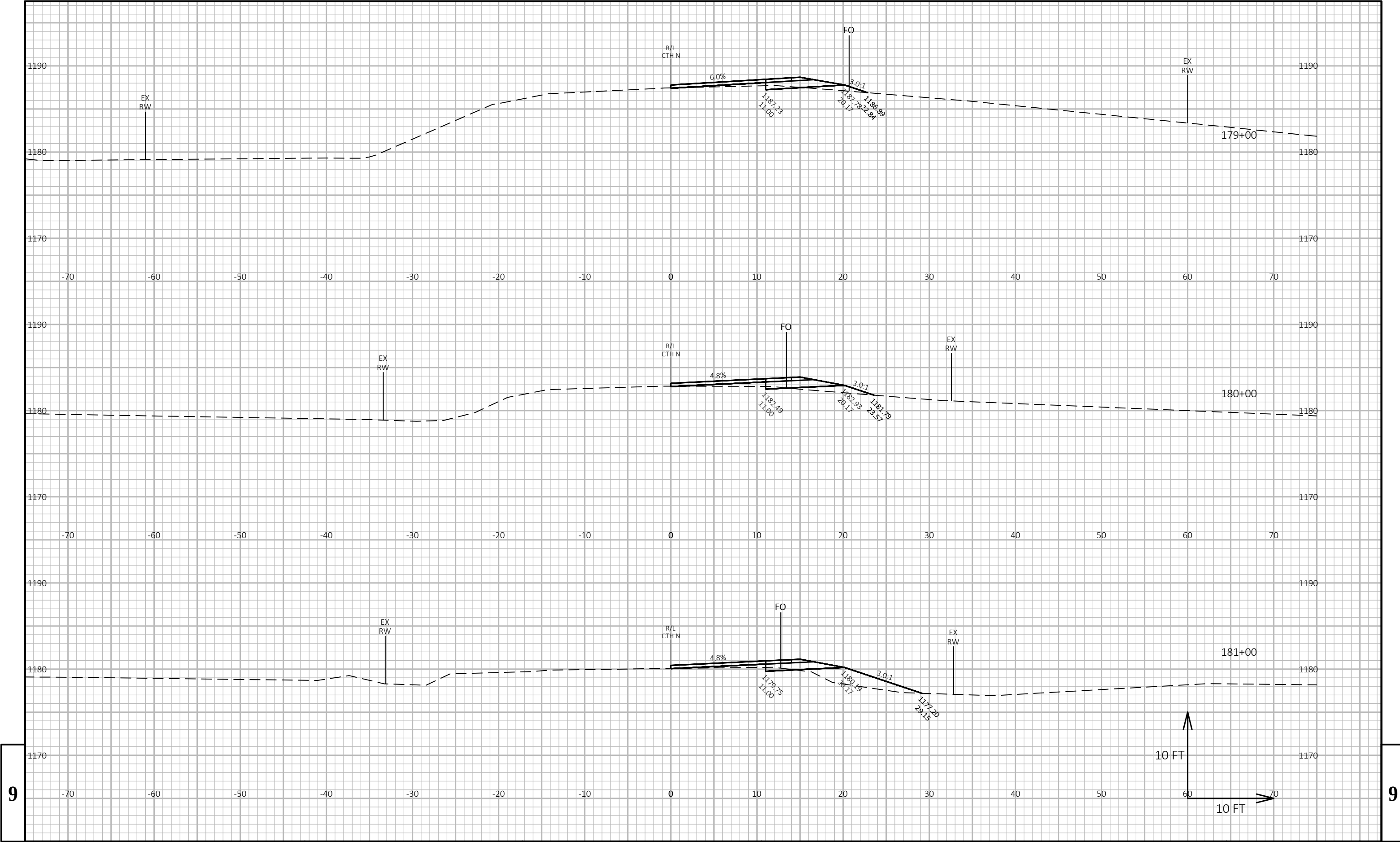
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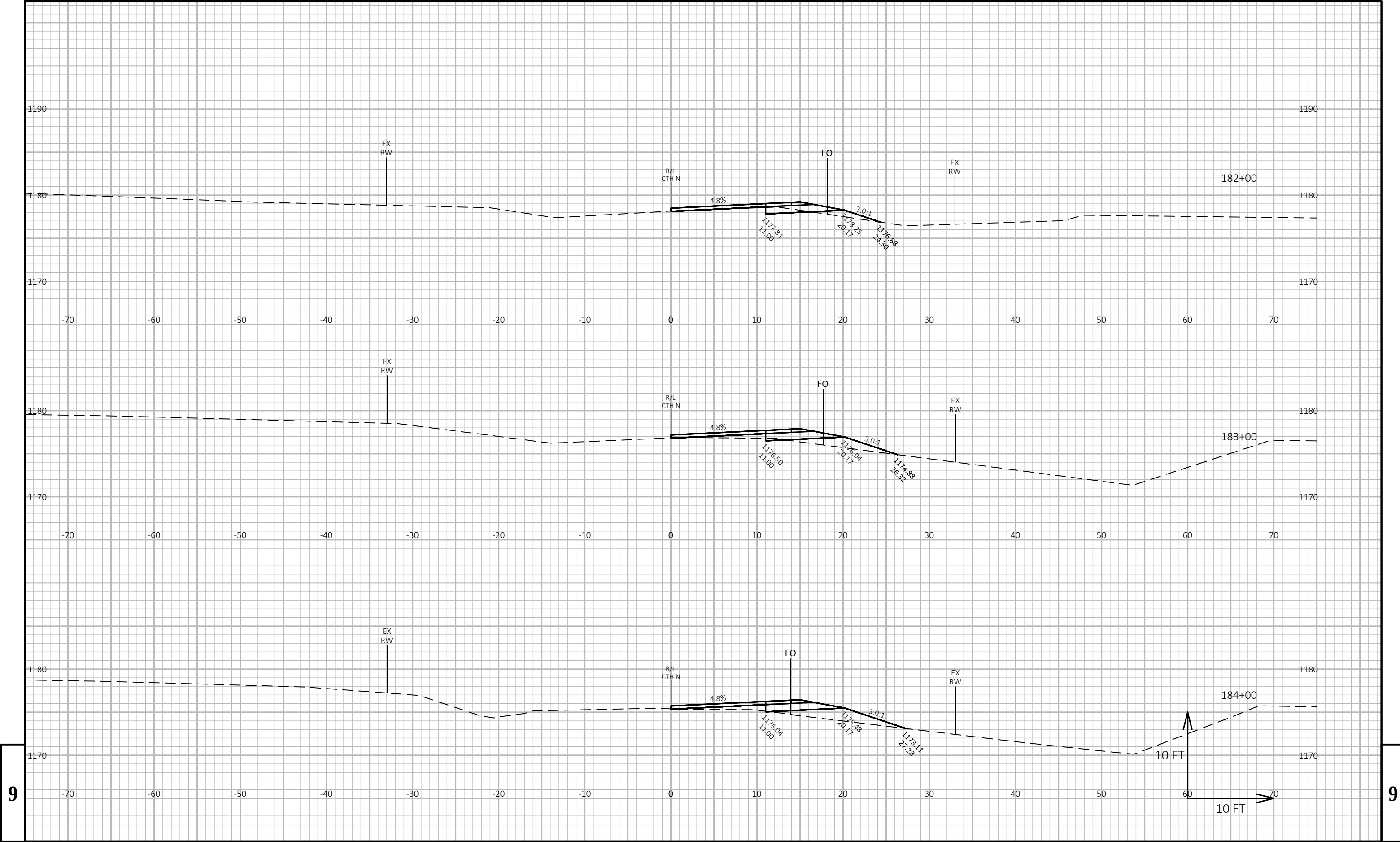


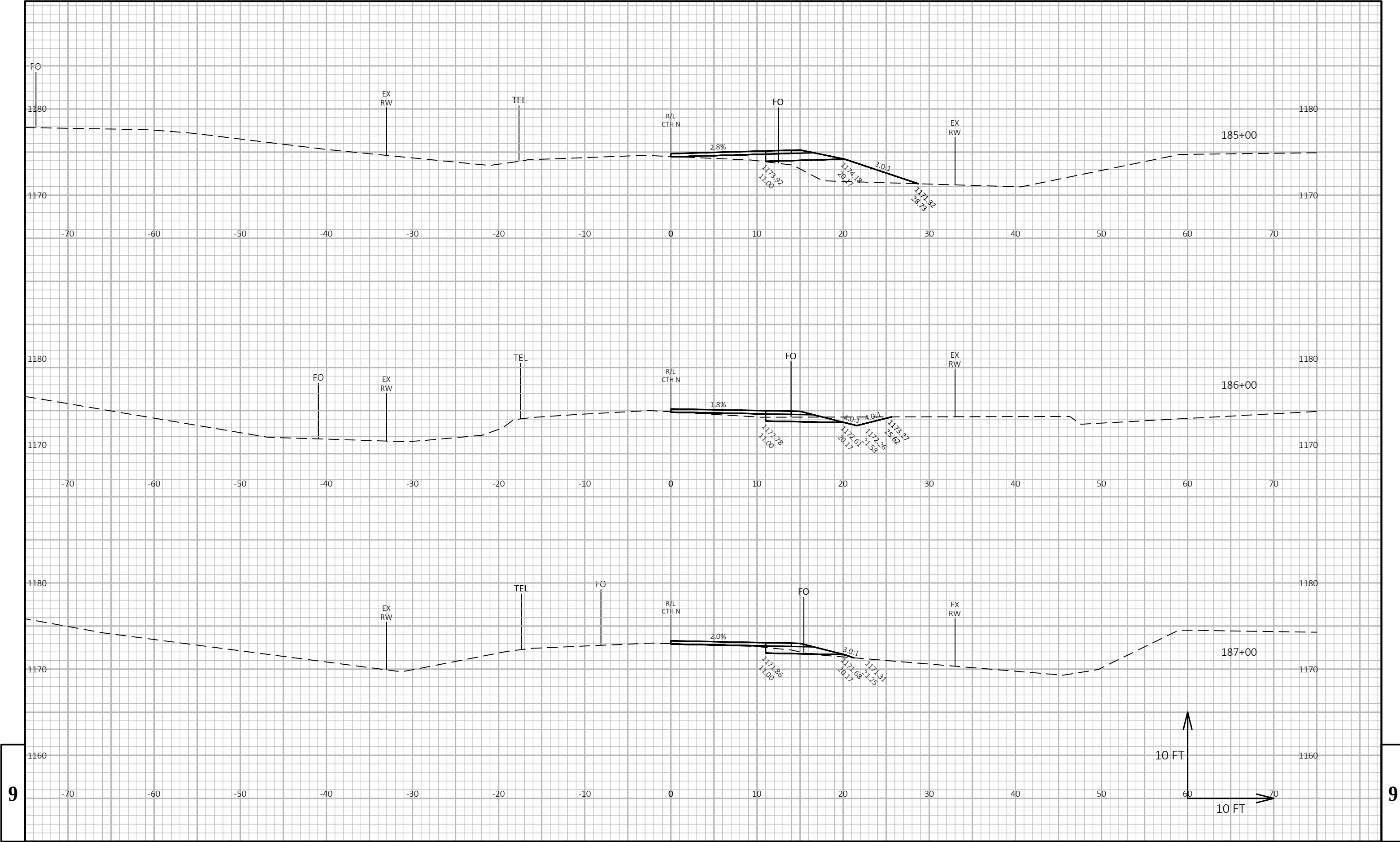
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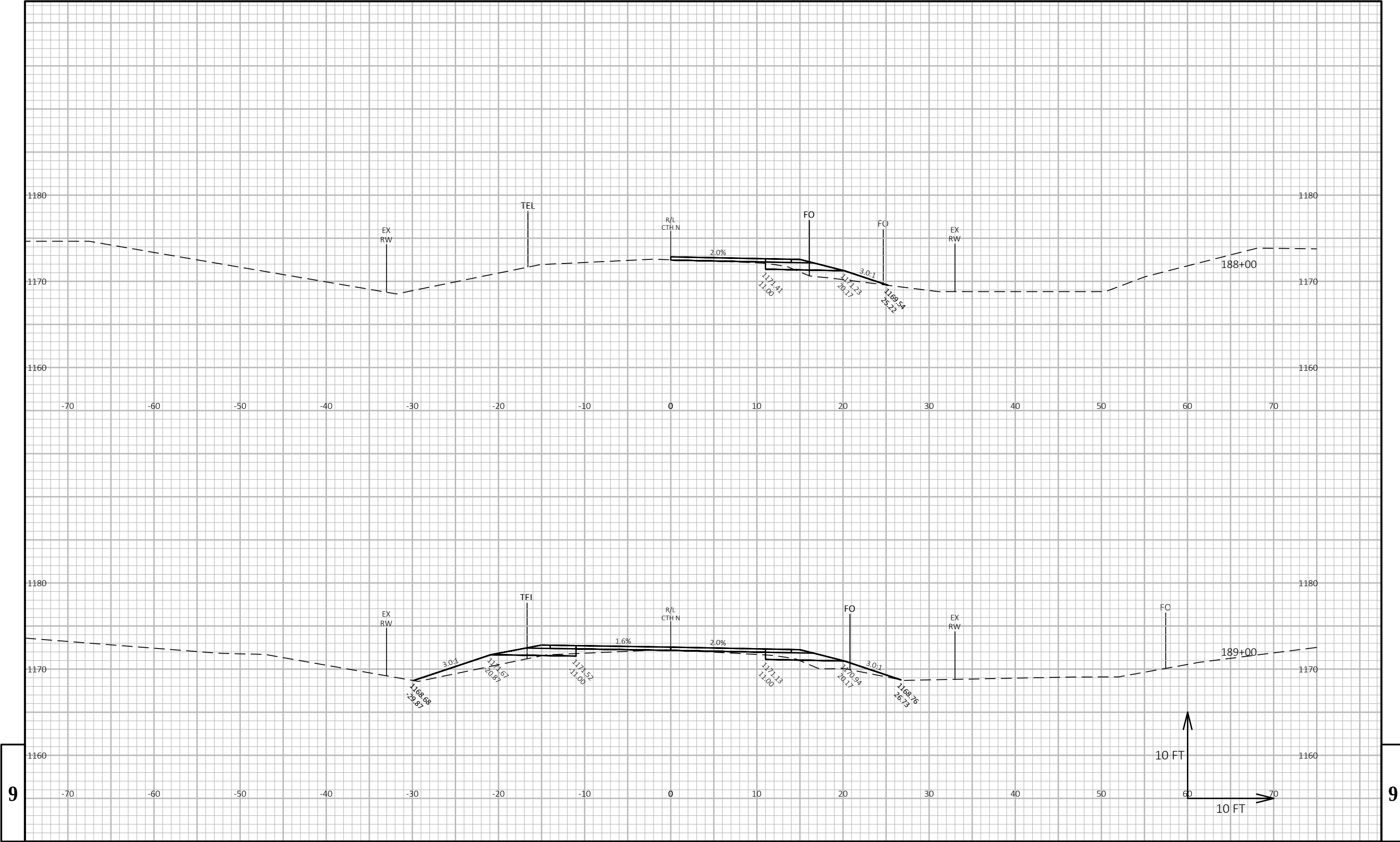
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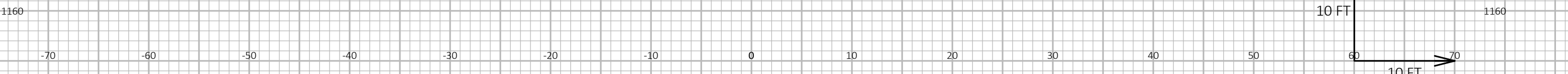
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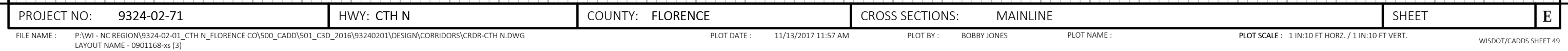
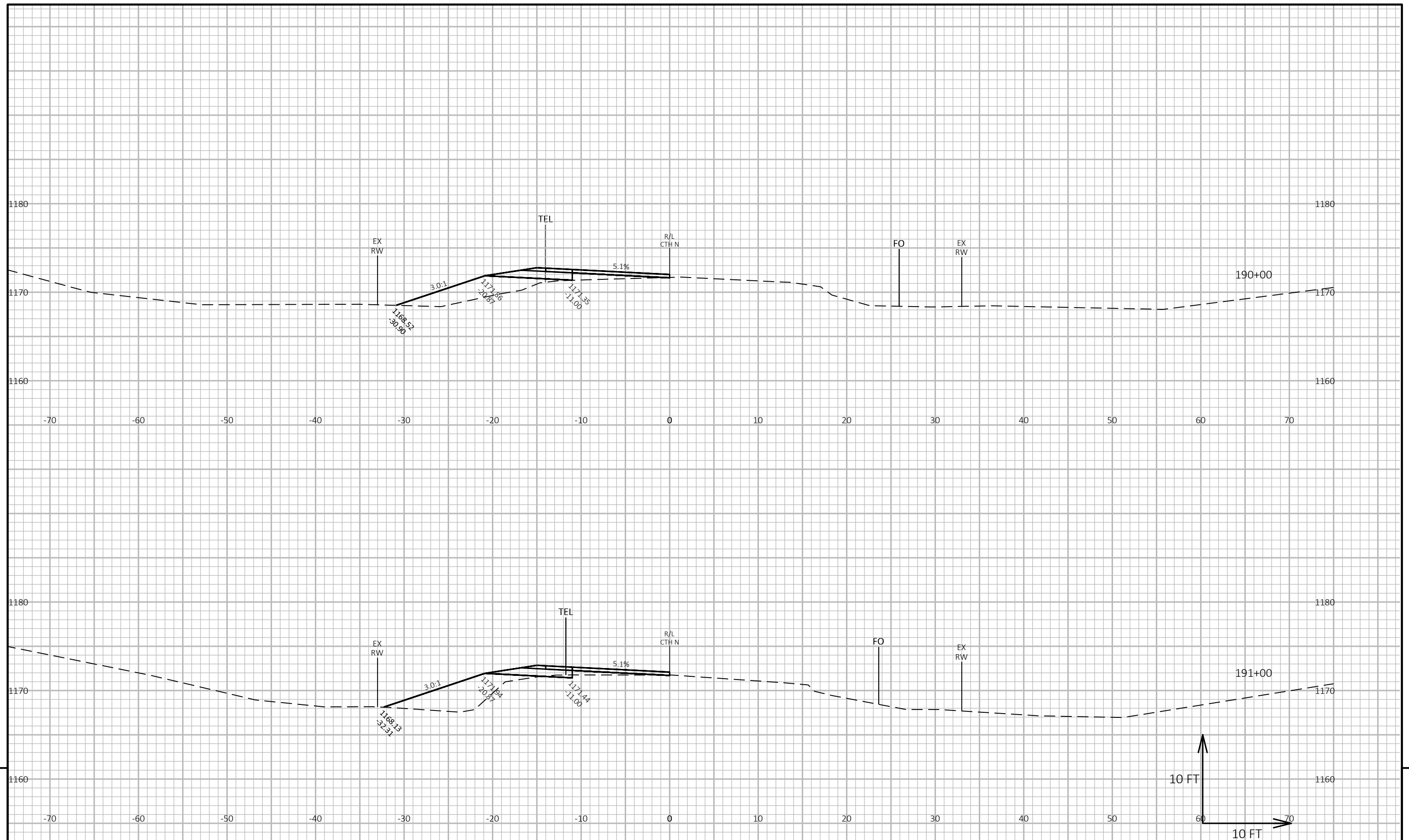


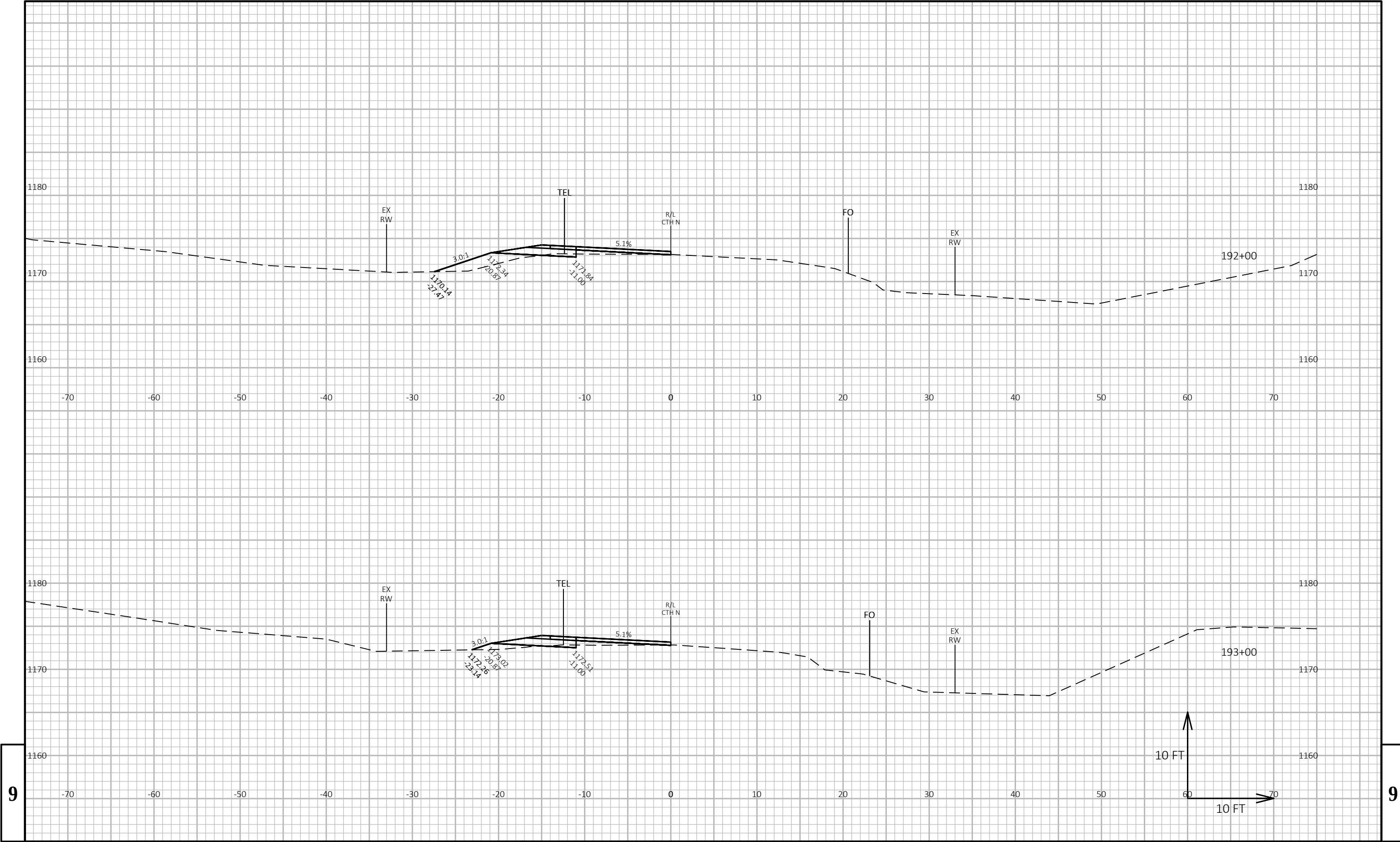




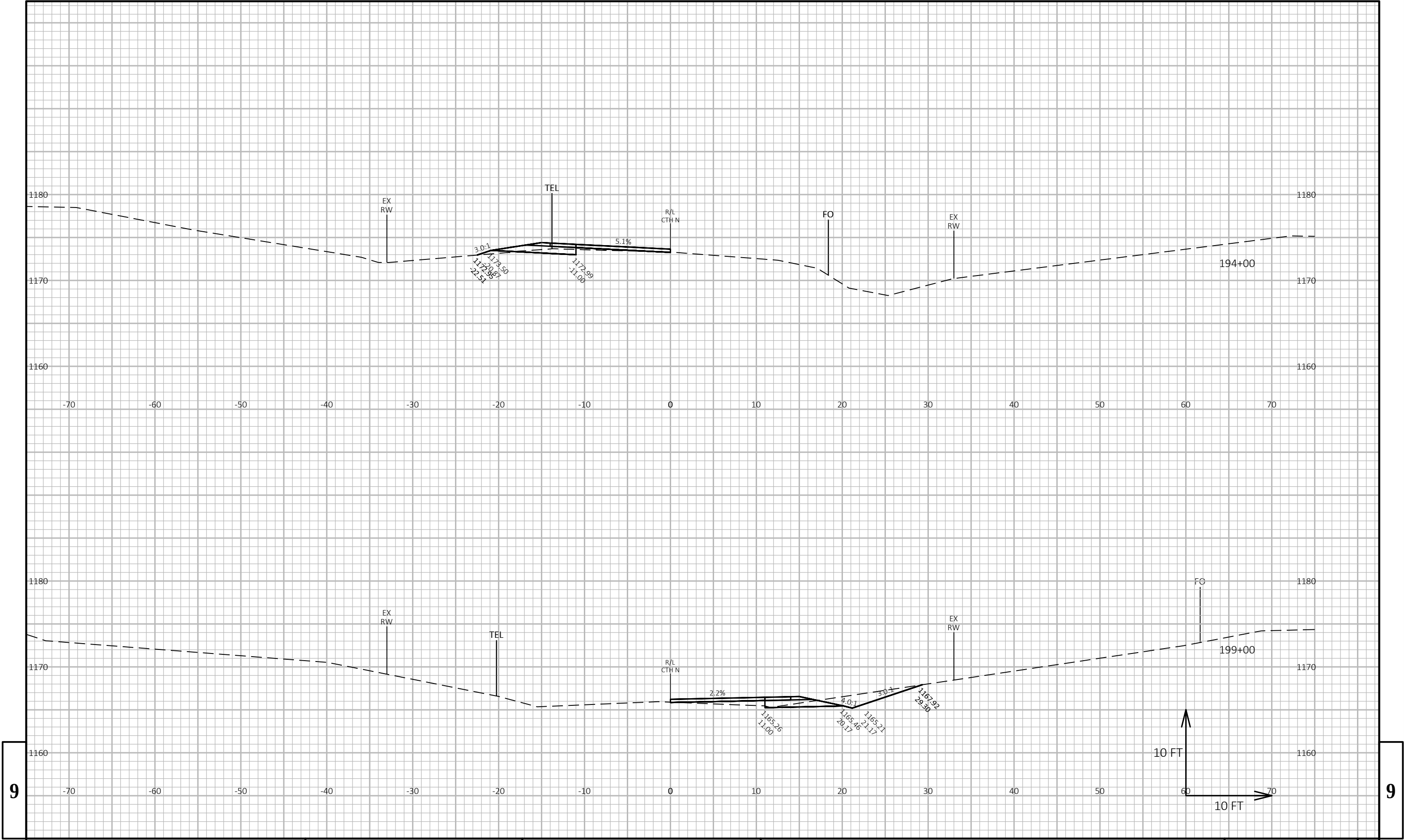


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									E		





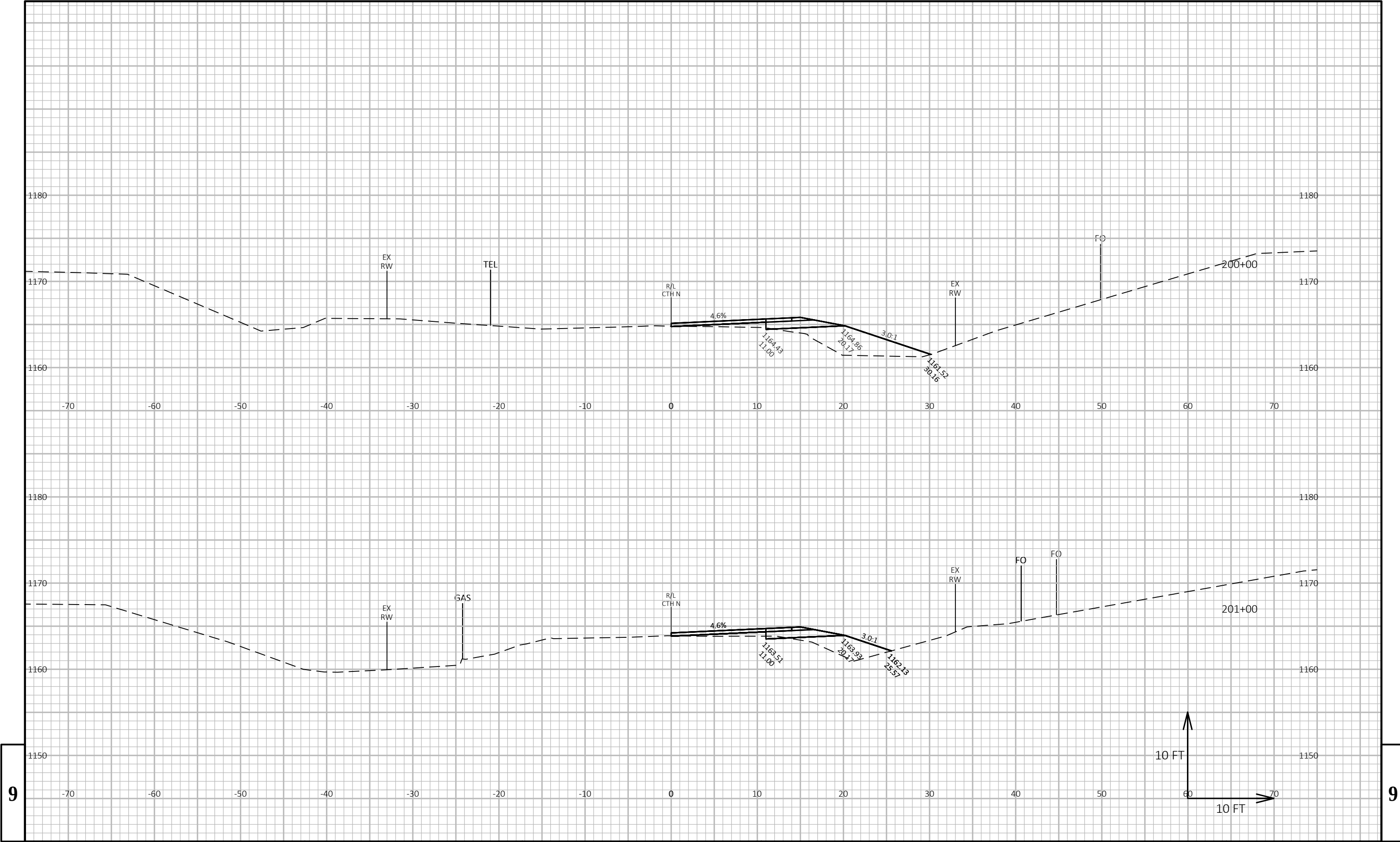
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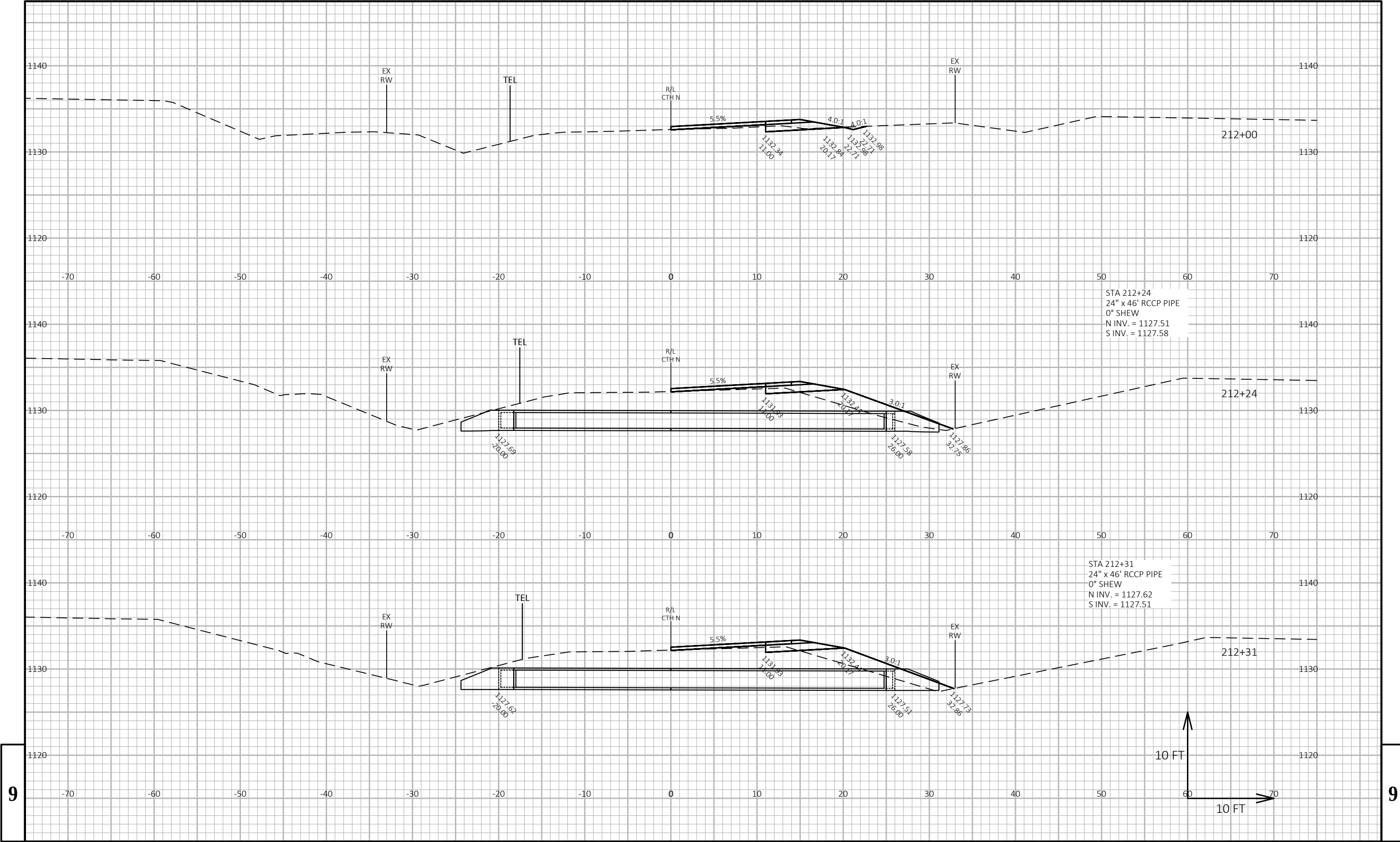


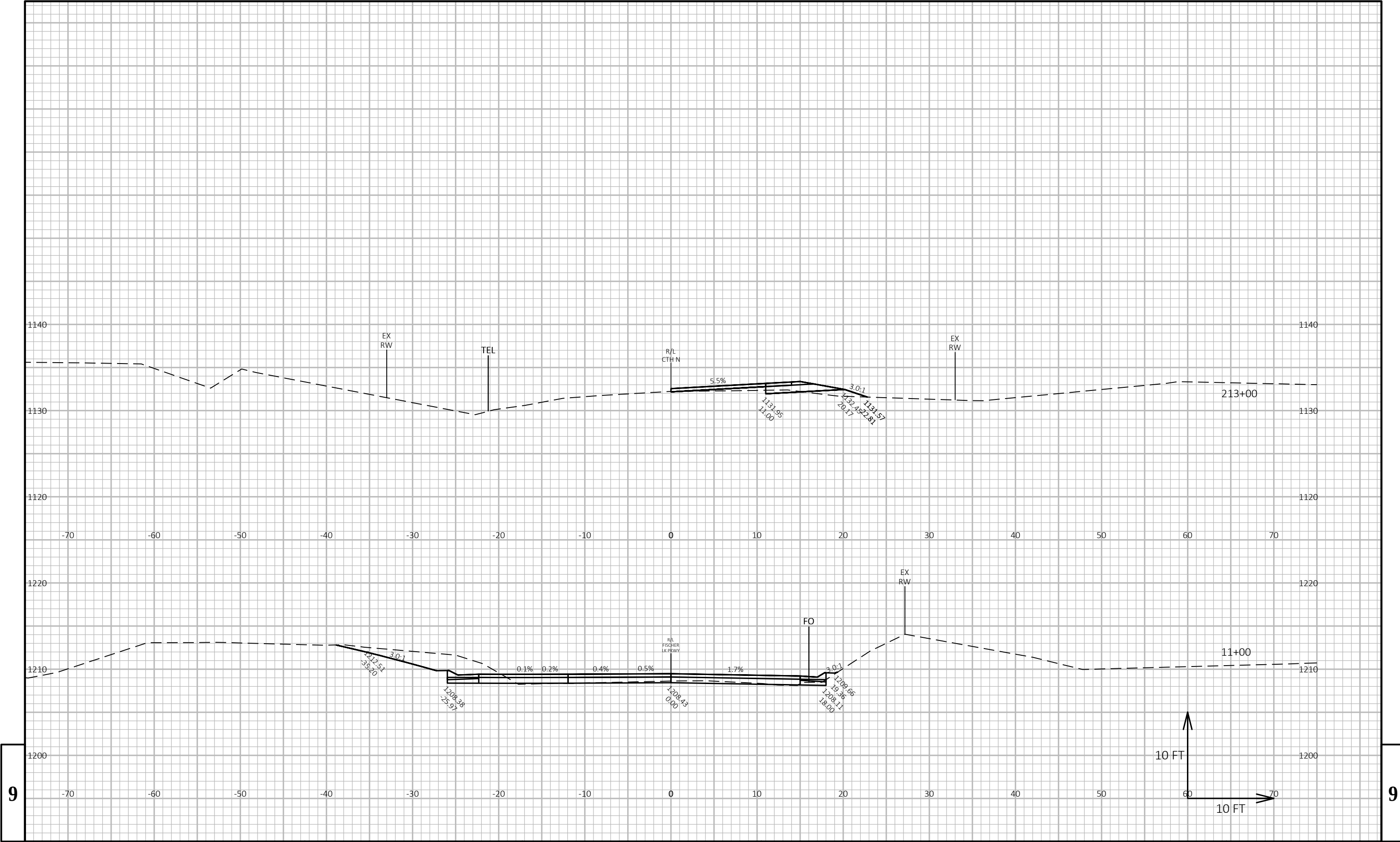
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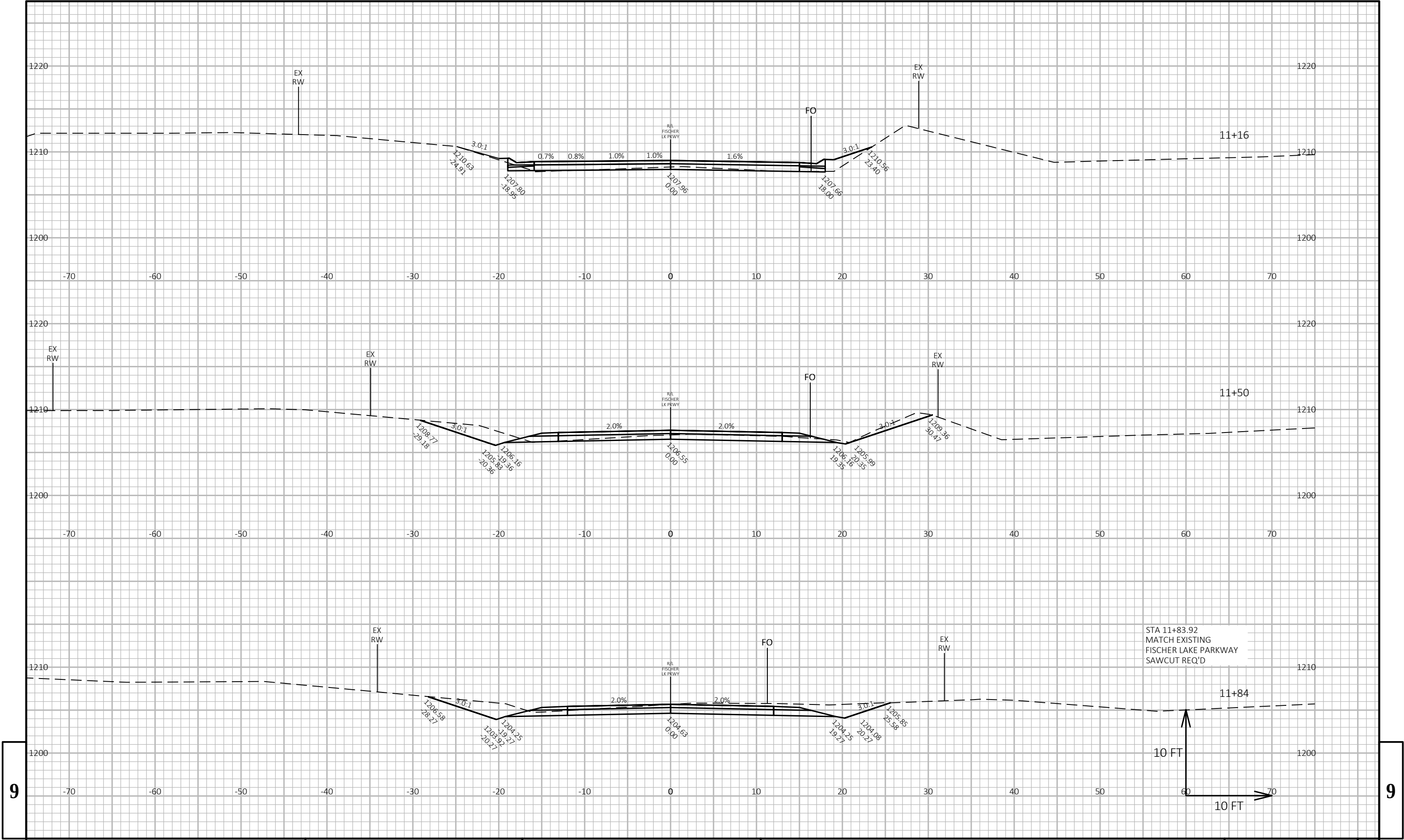
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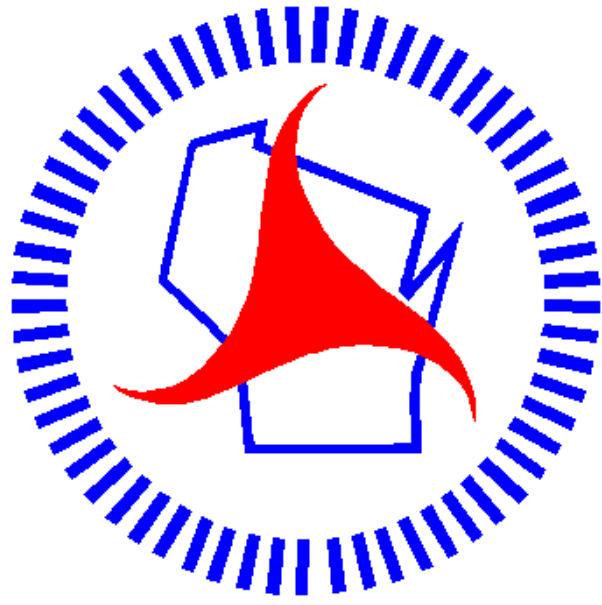






9		PROJECT NO: 9324-02-71		HWY: CTH N		COUNTY: FLORENCE		CROSS SECTIONS: FISCHER LAKE PARKWAY		SHEET		E	
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