

EAU PROJECT ID: 1020-00-85 WITH: N/A COUNTY: ST. CROIX

MARCH 2025
ORDER OF SHEETS

Section No.	1	Title
Section No.	2	Typical Sections and Details (Includes Erosion Control)
Section No.	3	Estimate of Quantities
Section No.	3	Miscellaneous Quantities
Section No.	4	Right of Way Plat
Section No.	5	Plan and Profile
Section No.	6	Standard Detail Drawings
Section No.	7	Sign Plates
Section No.	8	Structure Plans
Section No.	9	Computer Earthwork Data
Section No.	9	Cross Sections

TOTAL SHEETS = 98



DESIGN DESIGNATION

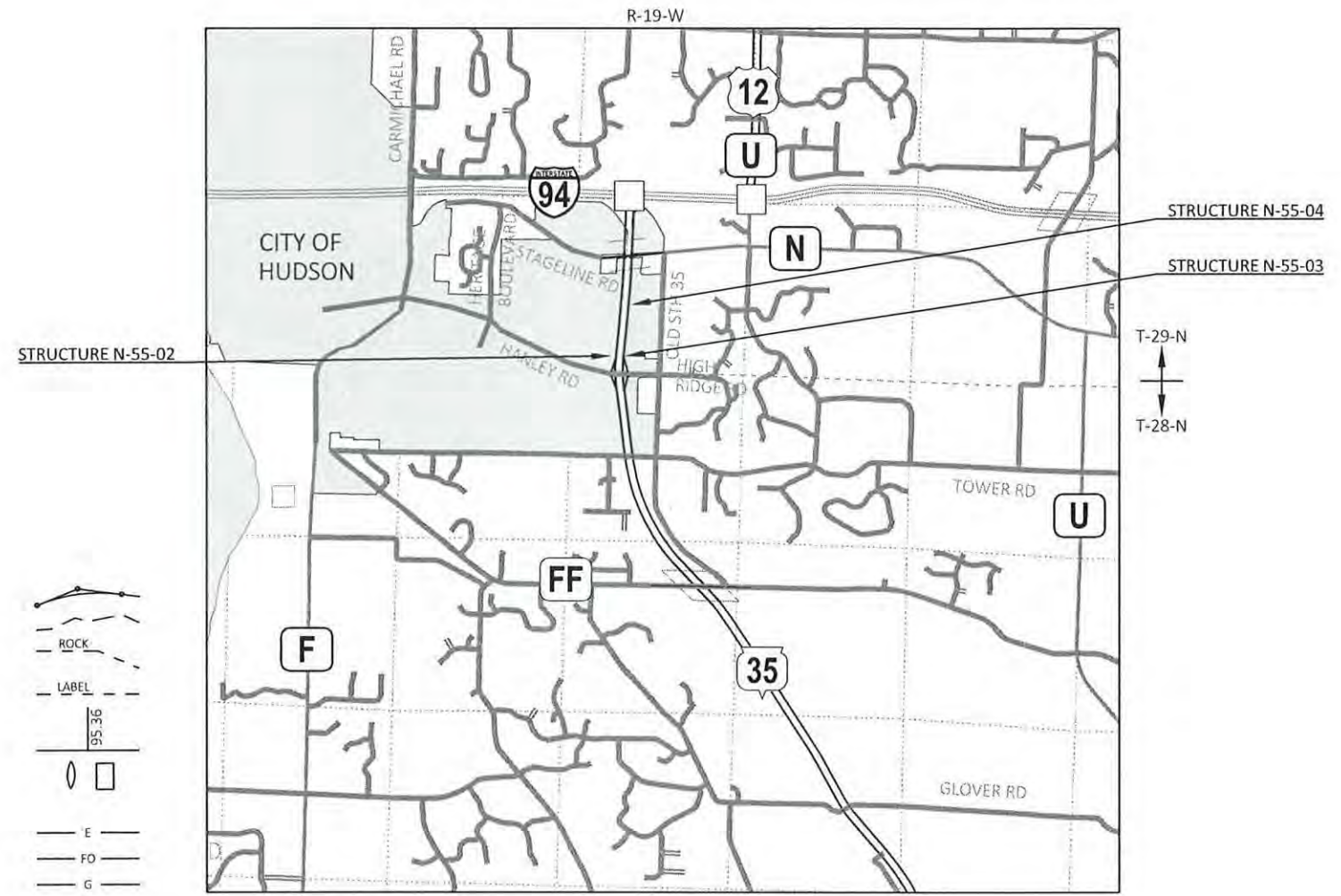
A.A.D.T.	=	N/A
A.A.D.T.	=	N/A
D.H.V.	=	N/A
D.D.	=	N/A
T.	=	N/A
DESIGN SPEED	=	N/A
ESALS	=	N/A

CONVENTIONAL SYMBOLS

PLAN	PROFILE
CORPORATE LIMITS	GRADE LINE
PROPERTY LINE	ORIGINAL GROUND
LOT LINE	MARSH OR ROCK PROFILE (To be noted as such)
LIMITED HIGHWAY EASEMENT	SPECIAL DITCH
EXISTING RIGHT OF WAY	GRADE ELEVATION
PROPOSED OR NEW R/W LINE	CULVERT (Profile View)
SLOPE INTERCEPT	UTILITIES
REFERENCE LINE	ELECTRIC
EXISTING CULVERT	FIBER OPTIC
PROPOSED CULVERT (Box or Pipe)	GAS
COMBUSTIBLE FLUIDS	SANITARY SEWER
	STORM SEWER
	TELEPHONE
	WATER
	UTILITY PEDESTAL
	POWER POLE
	TELEPHONE POLE
MARSH AREA	
WOODED OR SHRUB AREA	

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
PLAN OF PROPOSED IMPROVEMENT
HUDSON - BALDWIN
STH 35 S INTERCHANGE N-55,02,03,04
IH 94
ST. CROIX COUNTY

STATE PROJECT NUMBER
1020-00-85



LAYOUT
SCALE 0 1 MI
TOTAL NET LENGTH OF CENTERLINE = 0.000

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), ST. CROIX COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES.
ELEVATIONS ARE REFERENCED TO NAVD 88 (2016). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 18

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1020-00-85		

ORIGINAL PLANS PREPARED BY:

SA
STRAND ASSOCIATES*
910 WEST WINGRA DRIVE
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WISCONSIN
ELIZABETH C GARFOOT
E-45024
MADISON WI
PROFESSIONAL ENGINEER
Elizabeth C. Garfoot
10-14-24

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	STRAND ASSOCIATES, INC.
Designer	STRAND ASSOCIATES, INC.
Project Manager	DANIEL RAMBO
Regional Examiner	REGIONAL EXAMINER
Regional Supervisor	NICOLE PASSUELLO

APPROVED FOR THE DEPARTMENT

DATE: 10/15/2024 *Daniel Rambo*
(Signature)

E

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***** DENOTES MEMBER OF DIGGERS HOTLINE

ORDER OF SECTION 2 DETAIL SHEETS

- GENERAL NOTES
- PROJECT OVERVIEW
- TYPICAL SECTIONS
- PLAN DETAILS
- EROSION CONTROL
- ADVANCE WARNING

OTHER CONTACTS

WISCONSIN DNR LIAISON

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DESIGN PROJECT MANAGER

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GENERAL NOTES

- THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.
- CONTRACTOR WILL BE RESPONSIBLE FOR RESHAPING AND SEEDING ANY AREAS WHICH ARE DISTURBED BY OPERATIONS, OUTSIDE OF THE NORMAL CONSTRUCTION LIMITS.
- NO TREES OR SHRUBS ARE TO BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.
- THE CONTRACTOR IS TO WORK WITH UTMOST CARE AND PROTECT ALL SURVEY MARKERS. REMOVAL OF ANY SURVEY MARKER IS TO BE WITH THE APPROVAL OF THE ENGINEER.
- EROSION CONTROL FEATURES AS SHOWN IN THE PLANS ARE AT APPROXIMATE LOCATIONS. EXACT LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR'S EROSION CONTROL IMPLEMENTATION PLAN (ECIP) AND APPROVED BY THE ENGINEER. MAINTAIN EROSION CONTROL MEASURES UNTIL SUCH A TIME AS THE ENGINEER DETERMINES THE MEASURE IS NO LONGER NECESSARY.
- TRAFFIC CONTROL DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
- DO NOT DRIVE OR STORE EQUIPMENT, OR STORE CONSTRUCTION MATERIALS IN ENVIRONMENTALLY SENSITIVE AREAS, WETLANDS OR WATERWAYS.

RUNOFF COEFFICIENT TABLE

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

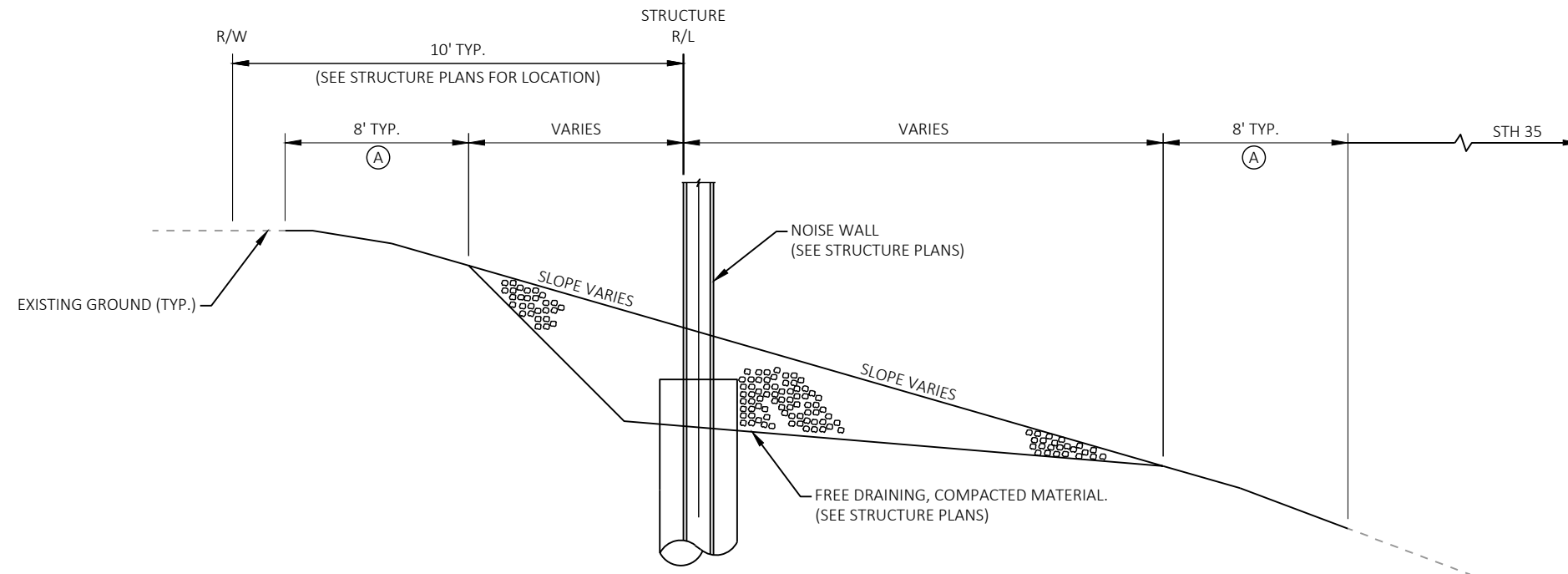
TOTAL PROJECT AREA = 1.51 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 1.16 ACRES





PROJECT NO: 1020-00-85	HWY: IH 94	COUNTY: ST. CROIX	PROJECT OVERVIEW	SHEET 3	E
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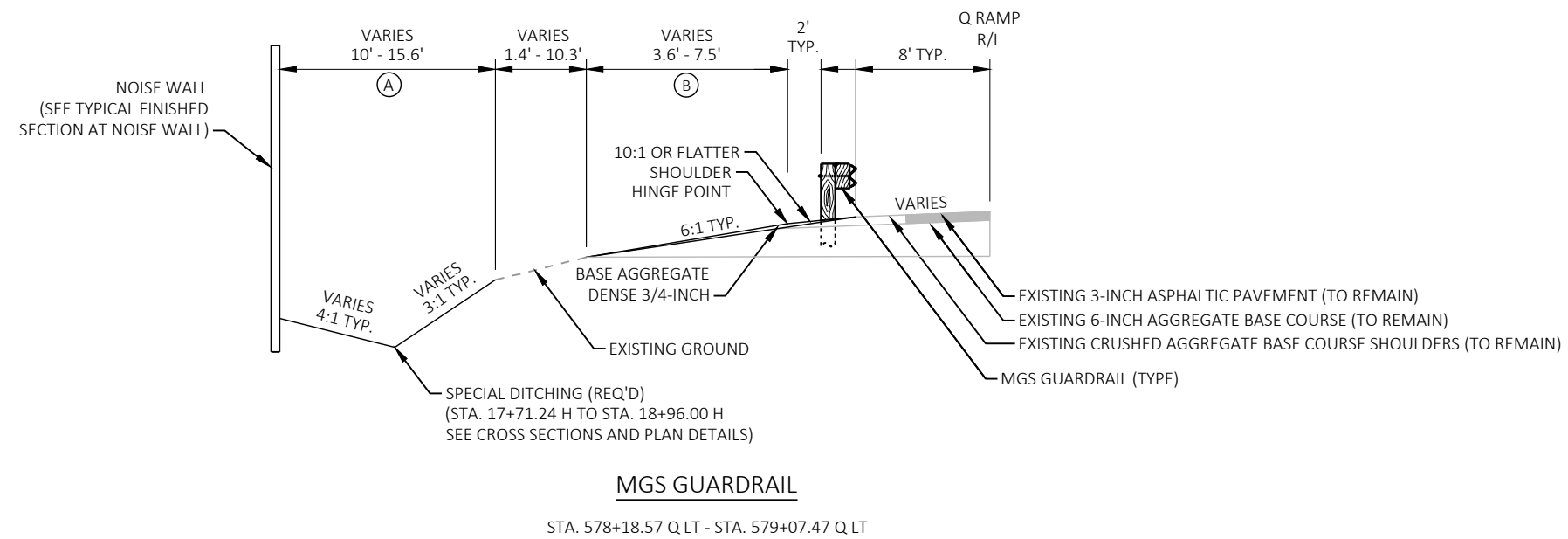
(A) SALVAGED TOPSOIL; FERTILIZER TYPE B; SEEDING MIXTURE NO. 30; EROSION MAT URBAN CLASS 1 TYPE A; AND SOIL STABILIZER TYPE B

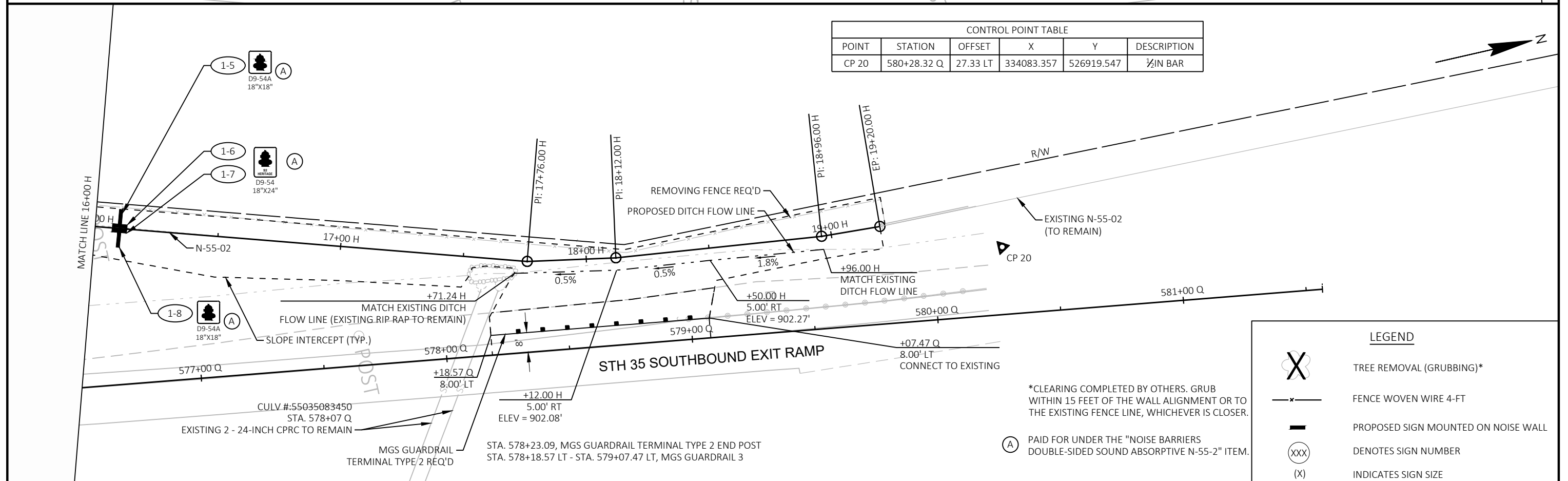
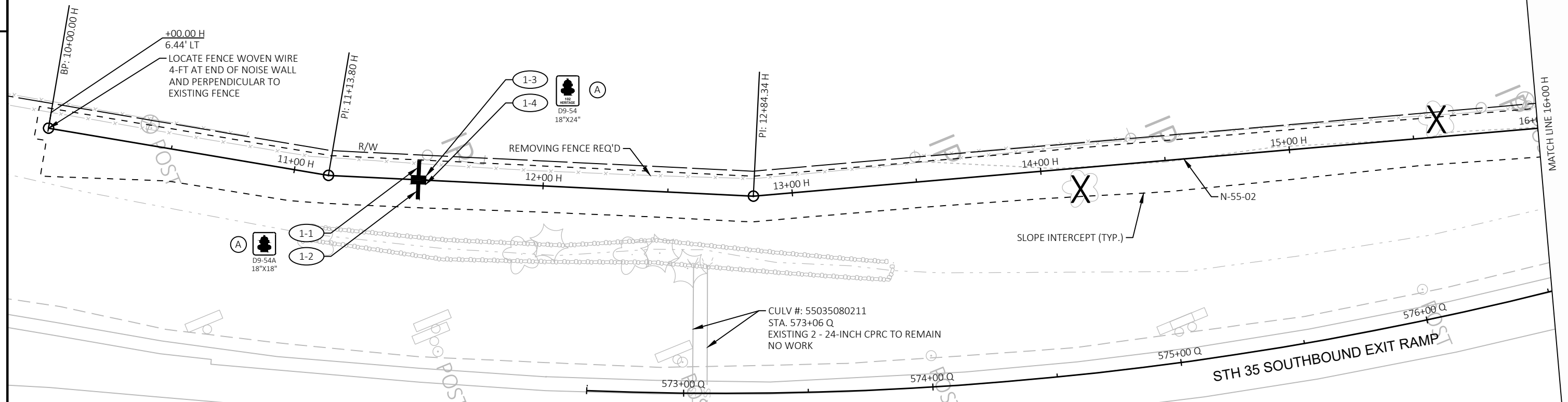


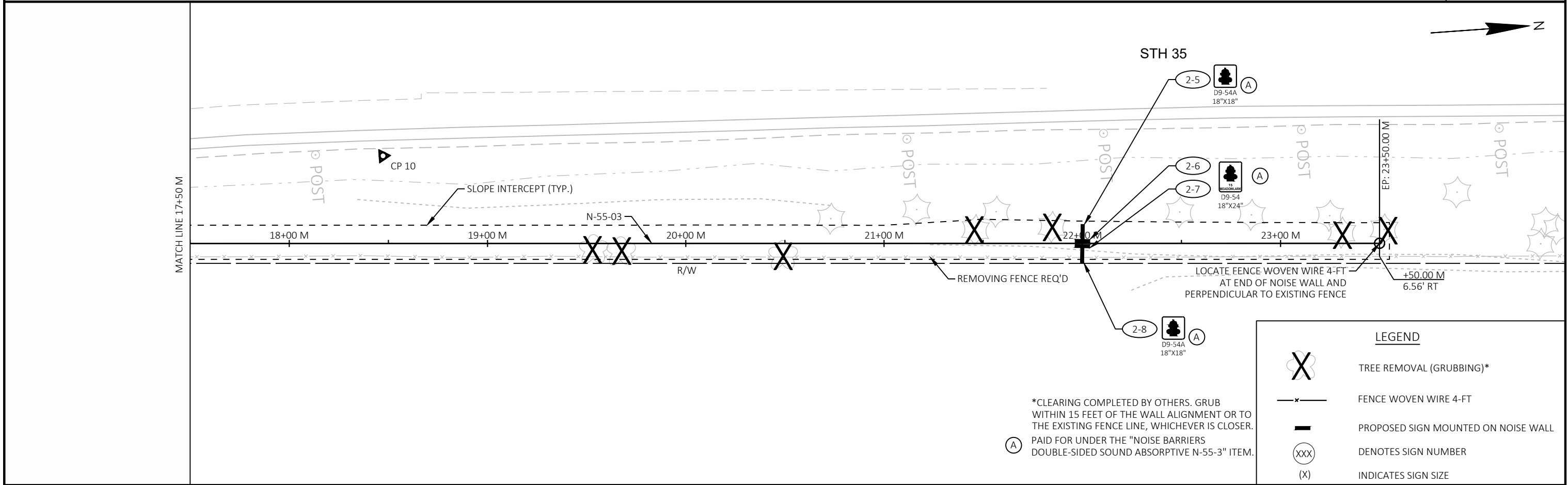
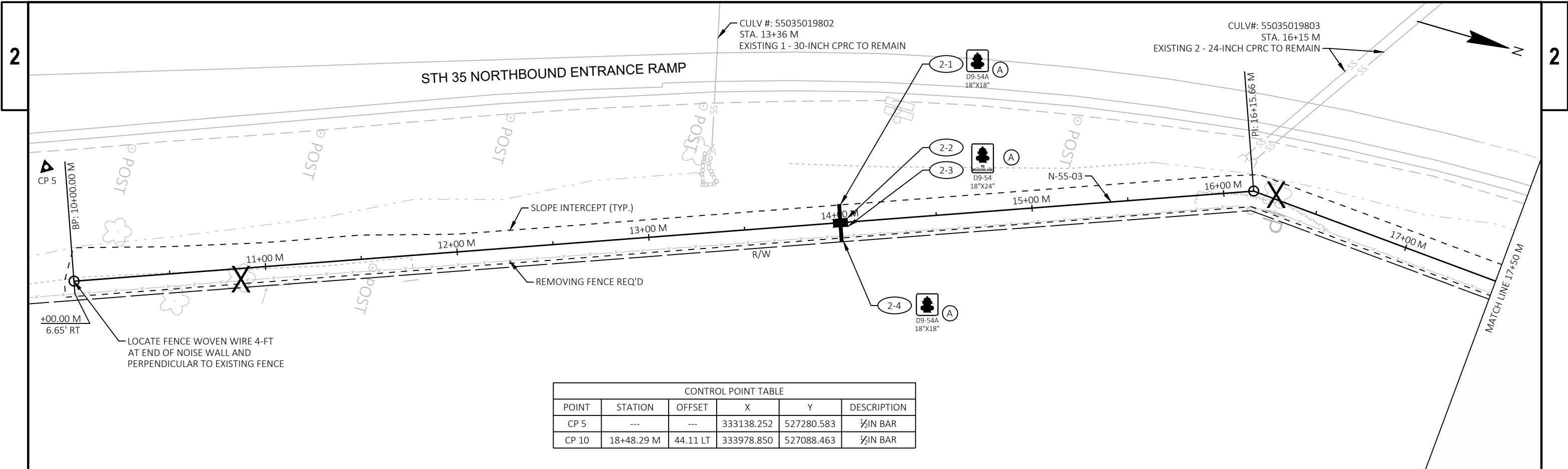
TYPICAL FINISHED SECTION AT NOISE WALL

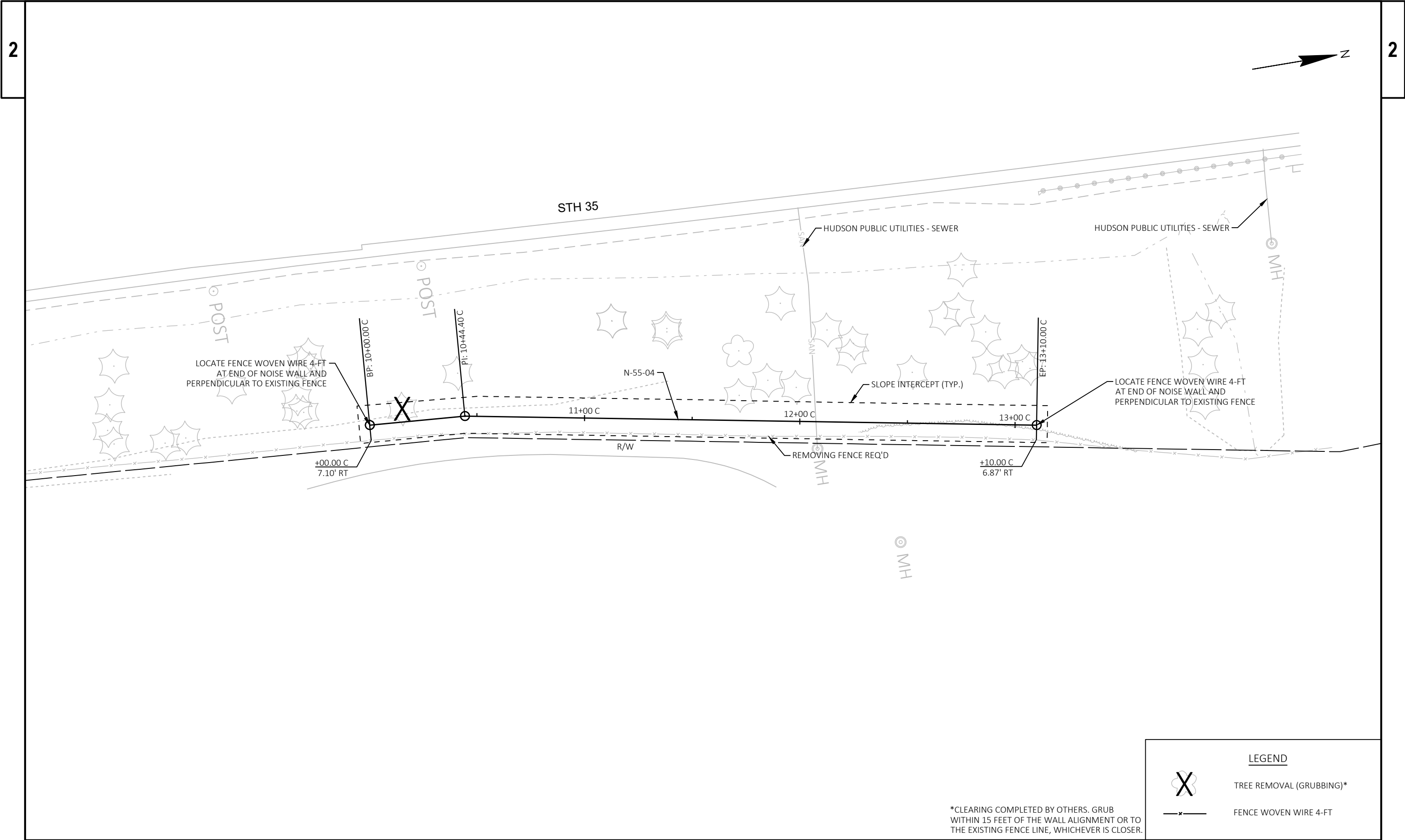
N-55-02
N-55-03 (MIRRORED)
N-55-04 (MIRRORED)

- (A) SALVAGED TOPSOIL; FERTILIZER TYPE B; SEEDING MIXTURE NO. 30; EROSION MAT URBAN CLASS 1 TYPE A; AND SOIL STABILIZER TYPE B
- (B) FERTILIZER TYPE B; SEEDING MIXTURE NO. 30









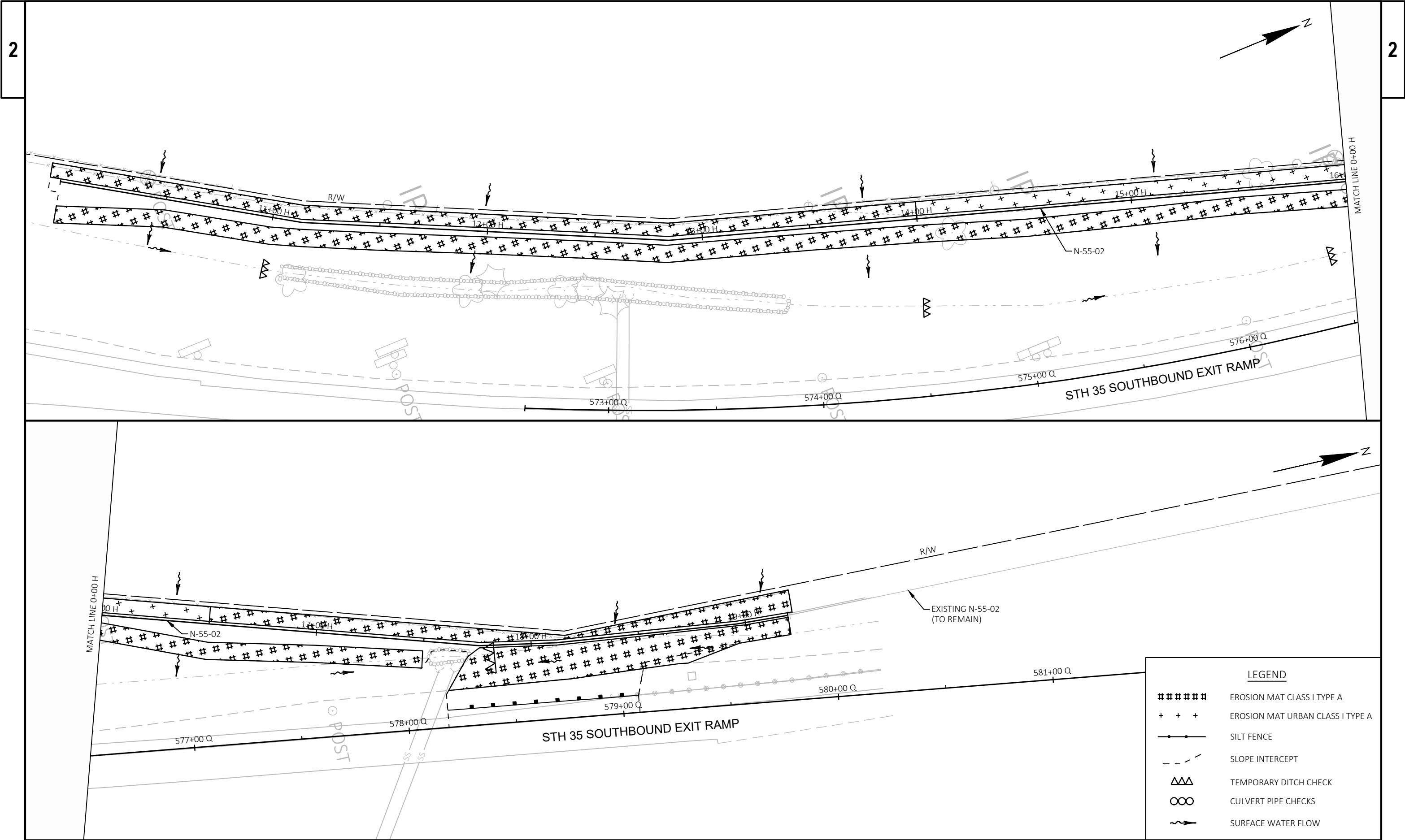


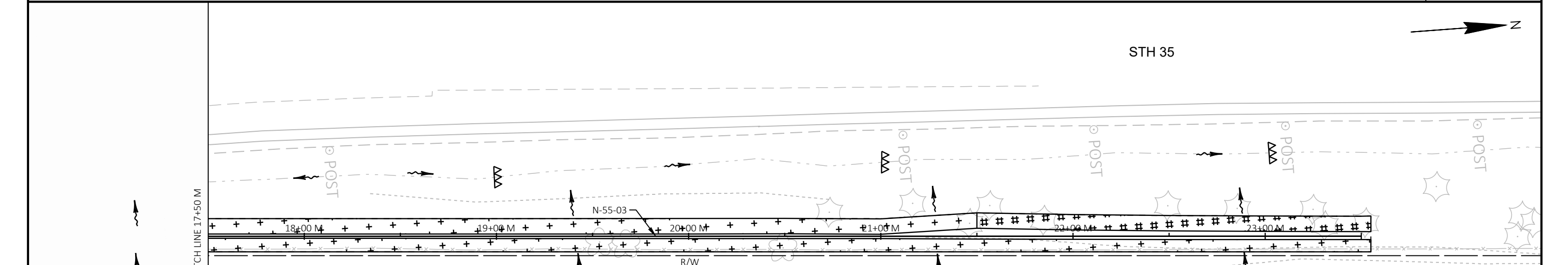
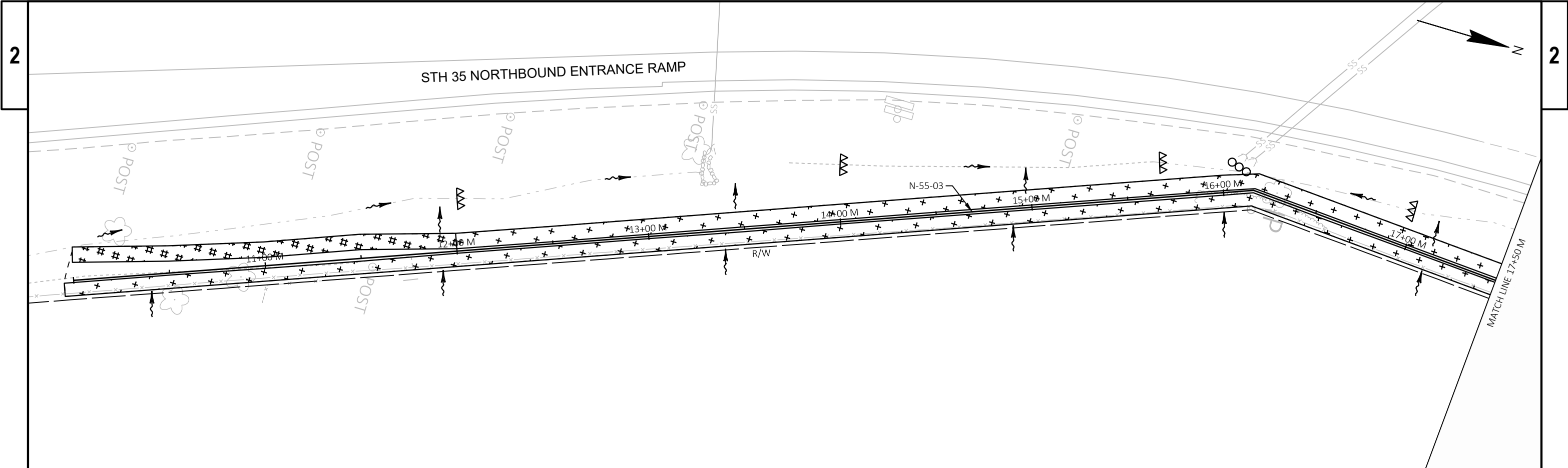
LEGEND

TREE REMOVAL (GRUBBING)*

FENCE WOVEN WIRE 4-FT

*CLEARING COMPLETED BY OTHERS. GRUB WITHIN 15 FEET OF THE WALL ALIGNMENT OR TO THE EXISTING FENCE LINE, WHICHEVER IS CLOSER.





LEGEND	
#####	EROSION MAT CLASS I TYPE A
+ + +	EROSION MAT URBAN CLASS I TYPE A
—●—	SILT FENCE
- - -	SLOPE INTERCEPT
△△△	TEMPORARY DITCH CHECK
○○○	CULVERT PIPE CHECKS
~>	SURFACE WATER FLOW



2

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PROJECT NO:	1020-00-85	HWY:	IH 94	COUNTY:	ST. CROIX	ADVANCE WARNING	SHEET	12	E
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Estimate Of Quantities

1020-00-85

Line	Item	Item Description	Unit	Total	Qty
0002	201.0205	Grubbing	STA	4.000	4.000
0004	201.0220	Grubbing	ID	35.000	35.000
0006	204.0165	Removing Guardrail	LF	14.000	14.000
0008	204.0170	Removing Fence	LF	2,580.000	2,580.000
0010	205.0100	Excavation Common	CY	16.900	16.900
0012	213.0100	Finishing Roadway (project) 01. 1020-00-85	EACH	1.000	1.000
0014	305.0110	Base Aggregate Dense 3/4-Inch	TON	14.000	14.000
0016	541.0300.S	Noise Barriers Double-Sided Sound Absorptive (structure) 01. N-55-02	SF	12,995.000	12,995.000
0018	541.0300.S	Noise Barriers Double-Sided Sound Absorptive (structure) 02. N-55-03	SF	22,875.000	22,875.000
0020	541.0300.S	Noise Barriers Double-Sided Sound Absorptive (structure) 03. N-55-04	SF	3,425.000	3,425.000
0022	614.0400	Adjusting Steel Plate Beam Guard	LF	25.000	25.000
0024	614.2300	MGS Guardrail 3	LF	89.000	89.000
0026	614.2620	MGS Guardrail Terminal Type 2	EACH	1.000	1.000
0028	616.0100	Fence Woven Wire (height) 01. 4-Foot	LF	48.000	48.000
0030	619.1000	Mobilization	EACH	1.000	1.000
0032	624.0100	Water	MGAL	1.000	1.000
0034	625.0500	Salvaged Topsoil	SY	5,400.000	5,400.000
0036	627.0200	Mulching	SY	150.000	150.000
0038	628.1504	Silt Fence	LF	255.000	255.000
0040	628.1520	Silt Fence Maintenance	LF	515.000	515.000
0042	628.1905	Mobilizations Erosion Control	EACH	4.000	4.000
0044	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0046	628.2002	Erosion Mat Class I Type A	SY	2,200.000	2,200.000
0048	628.2006	Erosion Mat Urban Class I Type A	SY	3,100.000	3,100.000
0050	628.6510	Soil Stabilizer Type B	ACRE	0.110	0.110
0052	628.7504	Temporary Ditch Checks	LF	210.000	210.000
0054	628.7555	Culvert Pipe Checks	EACH	8.000	8.000
0056	628.7560	Tracking Pads	EACH	3.000	3.000
0058	629.0210	Fertilizer Type B	CWT	3.600	3.600
0060	630.0130	Seeding Mixture No. 30	LB	258.000	258.000
0062	630.0300	Seeding Borrow Pit	LB	4.000	4.000
0064	630.0500	Seed Water	MGAL	129.000	129.000
0066	642.5201	Field Office Type C	EACH	1.000	1.000
0068	643.0300	Traffic Control Drums	DAY	5,224.000	5,224.000
0070	643.0800	Traffic Control Arrow Boards	DAY	225.000	225.000
0072	643.0900	Traffic Control Signs	DAY	750.000	750.000
0074	643.1050	Traffic Control Signs PCMS	DAY	21.000	21.000
0076	643.5000	Traffic Control	EACH	1.000	1.000
0078	650.6501	Construction Staking Structure Layout (structure) 01. N-55-02	EACH	1.000	1.000
0080	650.6501	Construction Staking Structure Layout (structure) 02. N-55-03	EACH	1.000	1.000
0082	650.6501	Construction Staking Structure Layout (structure) 03. N-55-04	EACH	1.000	1.000
0084	650.9911	Construction Staking Supplemental Control (project) 01. 1020-00-85	EACH	1.000	1.000
0086	650.9920	Construction Staking Slope Stakes	LF	25.000	25.000

GRUBBING				
CATEGORY	STATION - STATION	LOCATION	201.0205 GRUBBING STA	201.0220 GRUBBING ID
0010	10+15 C	LT	---	3
	12+00 - 13+00 C	LT & RT	1	---
	14+15 H	RT	---	6
	15+60 H	LT	---	6
	10+87 M	RT	---	4
	16+00 - 17+00 M	LT	1	---
	19+00 - 20+00 M	RT	1	---
	20+49 M	RT	---	10
	21+46 M	LT	---	3
	21+85 M	LT	---	3
	23+00 - 24+00 M	LT	1	---
	TOTALS		4	35

REMOVING GUARDRAIL				
CATEGORY	STATION - STATION	LOCATION	204.0165 LF	
0010	578+93.57 - 579+07.47 Q	LT	14	

REMOVING FENCE				
CATEGORY	STATION - STATION	LOCATION	204.0170 LF	
0010	10+00 H - 19+20 H	LT	920	
	10+00 M - 23+50 M	RT	1,350	
	10+00 C - 13+10 C	RT	310	
	TOTAL		2,580	

FINISHING ROADWAY			
CATEGORY	PROJECT	213.0100.01 EACH	
0010	1020-00-85	1	

BASE AGGREGATE DENSE 3/4-INCH				
CATEGORY	STATION - STATION	LOCATION	305.0110 TON	
0010	578+18.57 Q - 579+07.47 Q	LT	14	

EARTHWORK SUMMARY												
						205.0100 EXCAVATION COMMON CUT (1)	AVAILABLE STRUCTURE EXCAVATION (2)	AVAILABLE MATERIAL (3)	UNEXPANDED FILL	EXPANDED FILL (4) FACTOR 1.25 CY	MASS ORDINATE +/- (5)	624.0100 WATER (FOR DUST WASTE CONTROL) CY MGAL
CATEGORY	LOCATION	STATION	-	STATION	LOCATION	CY	CY	CY	CY			
0010	NOISE WALL N-55-02 DITCH GRADING	17+76 H	-	18+50 H	RT	16.9	0	17	1	2	15	15 1
	ITEM TOTALS (0010)					16.9						
0020	NOISE WALL N-55-02	10+00 H	-	19+20 H	LT/RT	0.0	64	64	0	0	64	64 0
	ITEM TOTALS (0020)					0.0						
0030	NOISE WALL N-55-03	10+00 M	-	23+50 M	LT/RT	0.0	75	75	0	0	75	75 0
	ITEM TOTALS (0030)					0.0						
0040	NOISE WALL N-55-04	10+00 C	-	13+10 C	LT/RT	0.0	47	47	0	0	47	47 0
	ITEM TOTALS (0030)					0.0						
GRAND TOTALS						16.9	186	203	1	2	201	201 1

- 1) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
- 2) AVAILABLE STRUCTURE EXCAVATION IS FOR INFORMATION ONLY AND IS INCLUDED IN BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-2; N-55-3; AND N-55-4".
- 3) AVAILABLE MATERIAL = CUT + AVAILABLE STRUCTURE EXCAVATION.
- 4) EXPANDED FILL = (UNEXPANDED FILL)* EXPANDED FILL FACTOR. EXPANDED FILL FACTOR = 1.25.
- 5) MASS ORDINATE: MASS ORDINATE = CUT + STRUCTURE EXCAVATION - SALVAGED PAVEMENT MATERIAL - EXPANDED FILL
PLUS MASS ORDINATE QUANTITY INDICATES AN EXCESS OF MATERIAL WITHIN THE DIVISION. MINUS MASS ORDINATE QUANTITY INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.

GUARDRAIL SUMMARY								
			614.0040 ADJUSTING STEEL PLATE BEAM GUARD LF	614.2300 MGS GUARDRAIL 3 LF	614.2620 MGS GUARDRAIL TERMINAL TYPE 2 EACH			
CATEGORY	STATION	-	STATION	LOCATION				
0010	578+18.57 Q	-	579+07.47 Q	LT	25	89	1	

FENCE WOVEN WIRE 4-FOOT				
CATEGORY	STATION	LOCATION	616.0100.01 LF	
0010	10+00 H	LT	10	
	10+00 M	RT	10	
	23+50 M	RT	10	
	10+00 C	RT	10	
	13+10 C	RT	10	
	TOTAL		48	

MOBILIZATION		
CATEGORY	PROJECT	619.1000 EACH
0010	1020-00-85	1

FINISHING ITEMS												
			625.0500 SALVAGED TOPSOIL SY	627.0200 MULCHING SY	628.2002 EROSION MAT CLASS I TYPE A SY	628.2006 EROSION MAT URBAN CLASS I TYPE A SY	628.6510 SOIL STABILIZER TYPE B ACRE	628.7560 TRACKING PADS EACH	629.0210 FERTILIZER TYPE B CWT	630.0130 SEEDING MIXTURE NO. 30 LB	630.0300 SEEDING BORROW PIT LB	630.0500 SEED WATER MGAL
CATEGORY	STATION	LOCATION										
0010	10+00 C - 13+10 C	LT & RT	500	---	---	500	---	---	0.3	25	---	10
	10+00 H - 14+00 H	LT	300	---	300	---	0.01	---	0.2	15	---	5
	14+00 H - 16+50 H	LT	200	---	---	200	---	---	0.1	10	---	5
	16+50 H - 19+20 H	LT	200	---	200	---	0.01	---	0.1	10	---	5
	10+00 H - 19+20 H	RT	900	---	900	---	0.05	---	0.6	40	---	20
	10+00 M - 12+00 M	LT	200	---	200	---	0.01	---	0.1	10	---	5
	12+00 M - 21+50 M	LT	800	---	---	800	---	---	0.6	40	---	20
	21+50 M - 23+50 M	LT	200	---	200	---	0.01	---	0.1	10	---	5
	10+00 M - 23+50 M	RT	1,000	---	---	1,000	---	---	0.7	45	---	25
	578+19 Q - 579+07 Q	LT	---	---	---	---	---	---	0.1	3	---	1
	WASTE SITE	---	---	120	---	---	---	1	0.1	---	3	3
	UNDISTRIBUTED	---	1,100	30	400	600	0.02	2	0.7	50	1	25
	TOTALS		5,400	150	2,200	3,100	0.11	3	3.6	258	4	129

SILT FENCE						
CATEGORY	STATION	-	STATION	LOCATION	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF
0010	10+00 C	-	12+00 C	RT	205	410
			UNDISTRIBUTED	---	50	105
TOTALS					255	515

MOBILIZATIONS EROSION CONTROL		
CATEGORY	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH
0010	4	2

TEMPORARY DITCH CHECKS			
CATEGORY	STATION	LOCATION	628.7504 LF
0010	11+00 H	RT	9
	14+00 H	RT	9
	16+00 H	RT	9
	17+84 H	RT	9
	12+00 M	LT	13
	14+00 M	LT	13
	15+70 M	LT	19
	17+00 M	LT	19
	19+00 M	LT	14
	21+00 M	LT	14
	23+00 M	LT	9
	10+75 C	LT	14
	12+75 C	LT	17
	UNDISTRIBUTED	---	42
TOTAL			210

CULVERT PIPE CHECKS			
CATEGORY	STATION	LOCATION	628.7555 EACH
0010	16+10 M	LT	6
	UNDISTRIBUTED	---	2
TOTAL			8

FIELD OFFICE TYPE C		
CATEGORY	PROJECT	642.5201 EACH
0010	1020-00-85	1

TRAFFIC CONTROL SUMMARY										
CATEGORY	TRAFFIC CONTROL OPERATIONS	DURATION (DAYS)	643.0300 DRUMS		643.0800 ARROW BOARDS		643.0900 SIGNS		643.1050 SIGNS PCMS	
			EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY
0010	PRE-WARN	7	15	105	---	---	---	---	3	21
	ADVANCE WARNING, SHOULDER CLOSURE - STH 35 NB	75	5	375	1	75	2	150	---	---
	ADVANCE WARNING, SHOULDER CLOSURE - STH 35 SB	75	34	2,520	1	75	4	300	---	---
	ADVANCE WARNING, SHOULDER CLOSURE - STH 35 NB ENTRANCE RAMP	75	30	2,224	1	75	4	300	---	---
TOTALS			5,224		225		750		21	

TRAFFIC CONTROL		
CATEGORY	PROJECT	643.5000 EACH
0010	1020-00-85	1

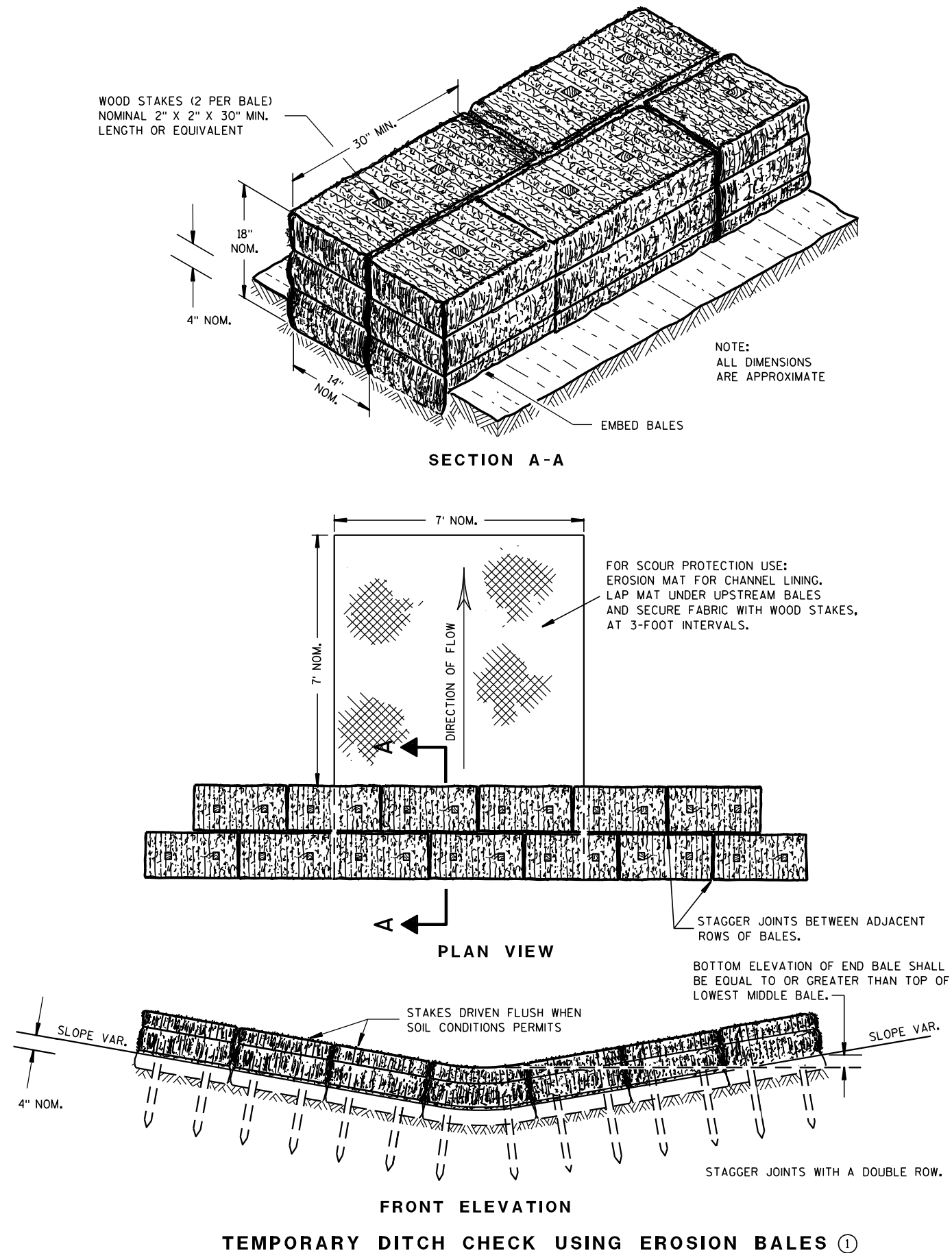
CONSTRUCTION STAKING STRUCTURE LAYOUT			
CATEGORY	STRUCTURE	EACH	REMARKS
0010	N-55-02	1	650.6501.01
	N-55-03	1	650.6501.02
	N-55-04	1	650.6501.03

CONSTRUCTION STAKING SUPPLEMENTAL CONTROL		
CATEGORY	PROJECT	650.9911.01 EACH
0010	1020-00-85	1

CONSTRUCTION STAKING SLOPE STAKES				
CATEGORY	STATION	-	STATION	650.9920 LOCATION LF
0010	17+71 H	-	17+96 H	RT 25

Standard Detail Drawing List

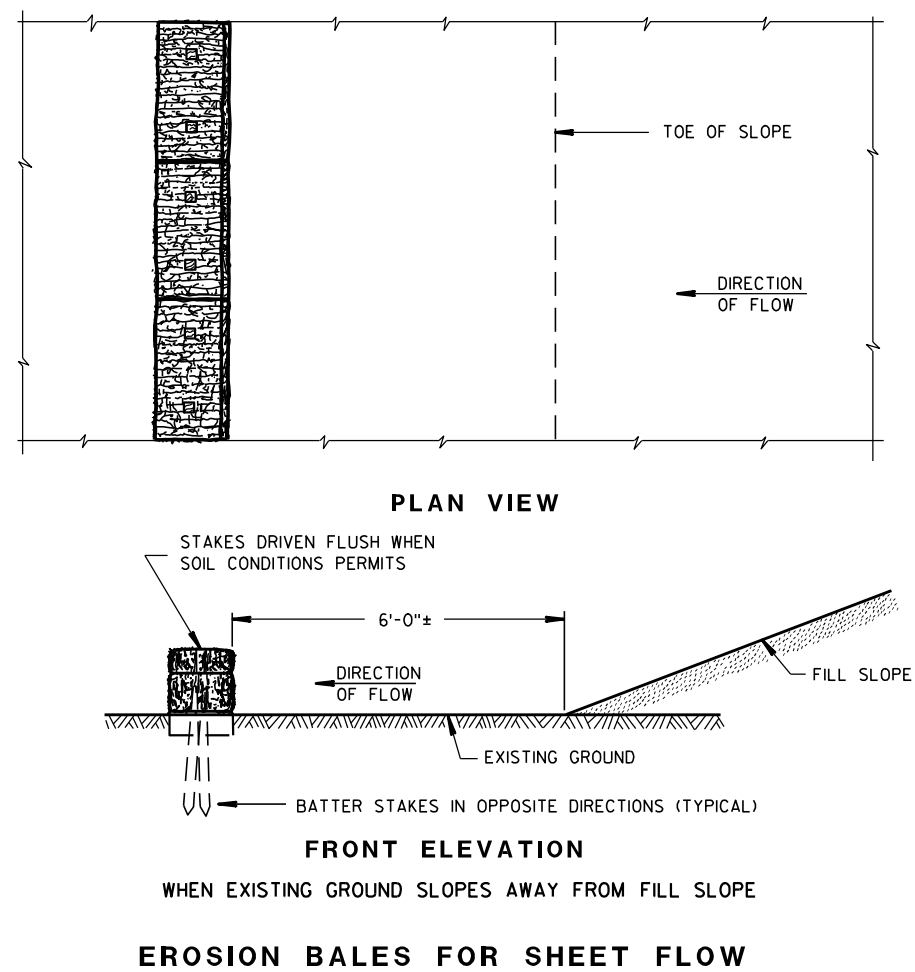
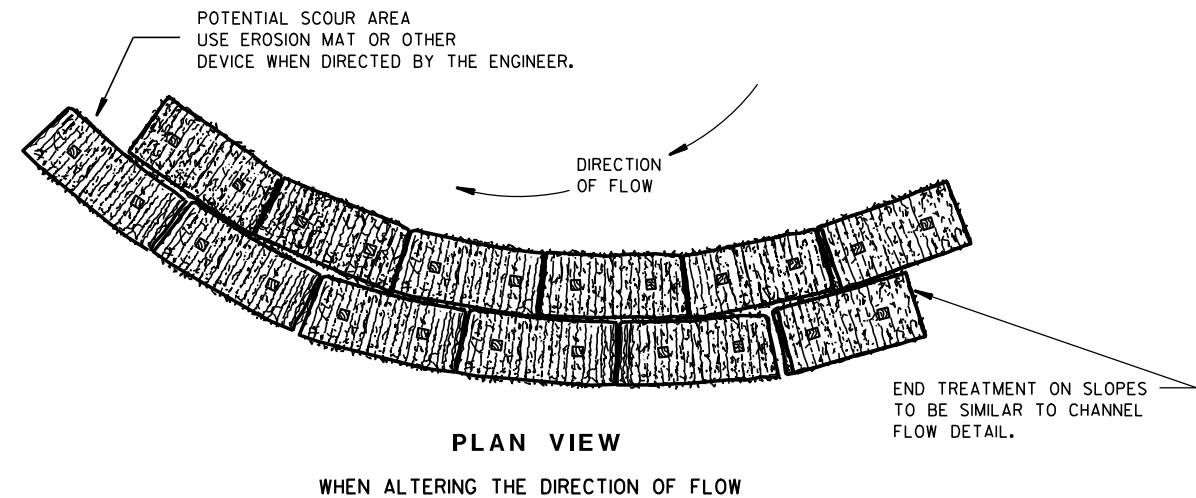
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E14-01	TRACKING PAD
08E15-01	CULVERT PIPE CHECK
12A03-10	NAME PLATE (STRUCTURES)
14B42-07A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B47-05A	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-05B	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-05C	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-05D	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-05E	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-05F	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-05G	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
15B01-08A	FENCE WOVEN WIRE
15B01-08B	FENCE WOVEN WIRE
15C11-10B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15D27-03	TRAFFIC CONTROL, SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH



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.

- ① TEMPORARY DITCH CHECKS EITHER EROSION BALES OR MANUFACTURED SHALL BE PAID FOR UNDER THE BID ITEM OF TEMPORARY DITCH CHECK. THE DEPARTMENT WILL NOT PAY FOR TEMPORARY DITCH CHECKS CONSTRUCTED OF A SINGLE ROW OF EROSION BALES.



TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

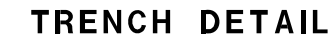
6/04/02
DATE

/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER

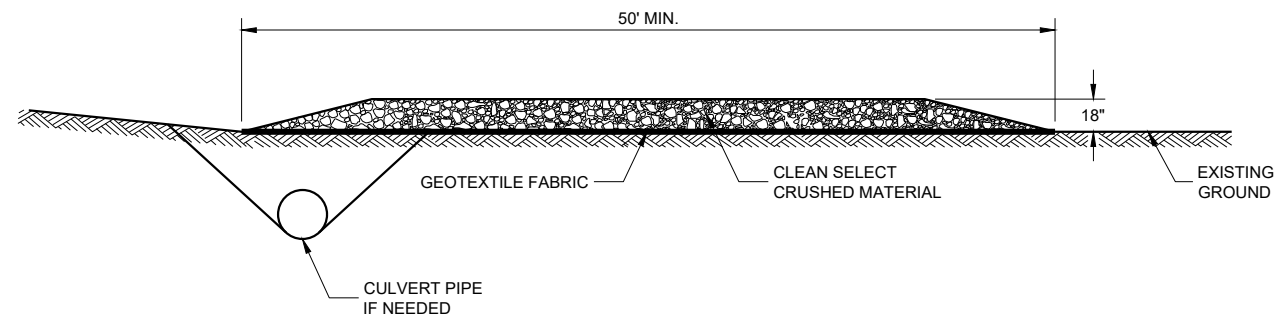
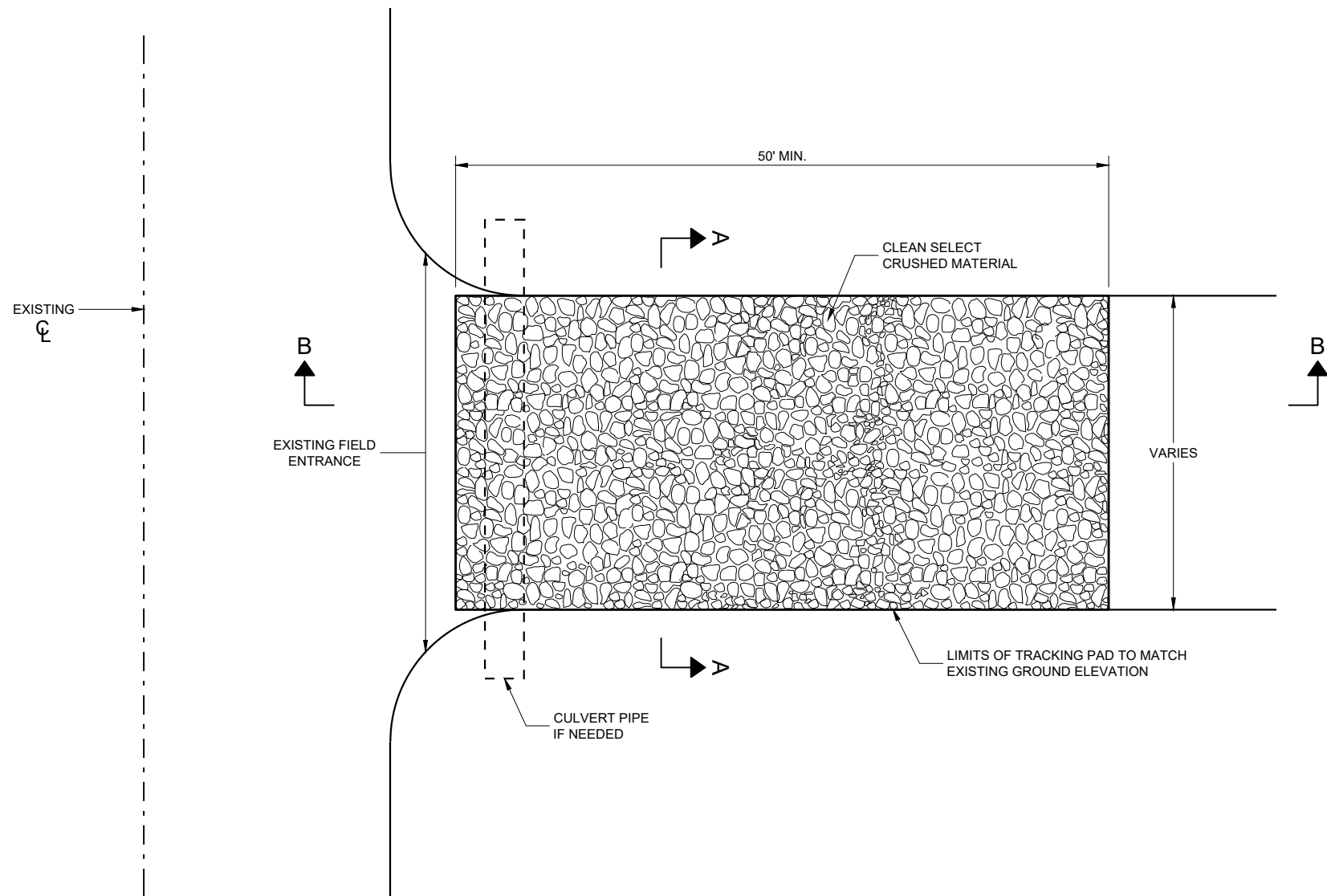
FHWA



- 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.



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



SECTION B - B

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.

TRACKING PAD SHALL BE INSPECTED DAILY. DEFICIENT AREAS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

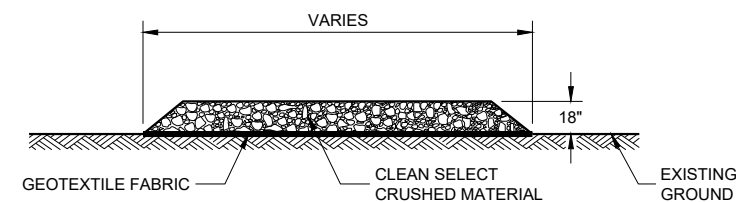
TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT.

SURFACE WATER MUST BE PREVENTED FROM PASSING THROUGH THE TRACKING PAD. FLOWS SHALL BE DIVERTED AWAY, AROUND OR CONVEYED UNDER THE TRACKING PAD.

CULVERT PIPE OR OTHER BMP USED TO DIVERT WATER AWAY, AROUND OR UNDER THE TRACKING PAD SHALL BE DESIGNED TO CONVEY THE 2 YEAR - 24 HOUR EVENT.

THE COST OF ADDITIONAL BMP TO DIVERT WATER ARE INCIDENTAL TO THE TRACKING PAD BID ITEM.



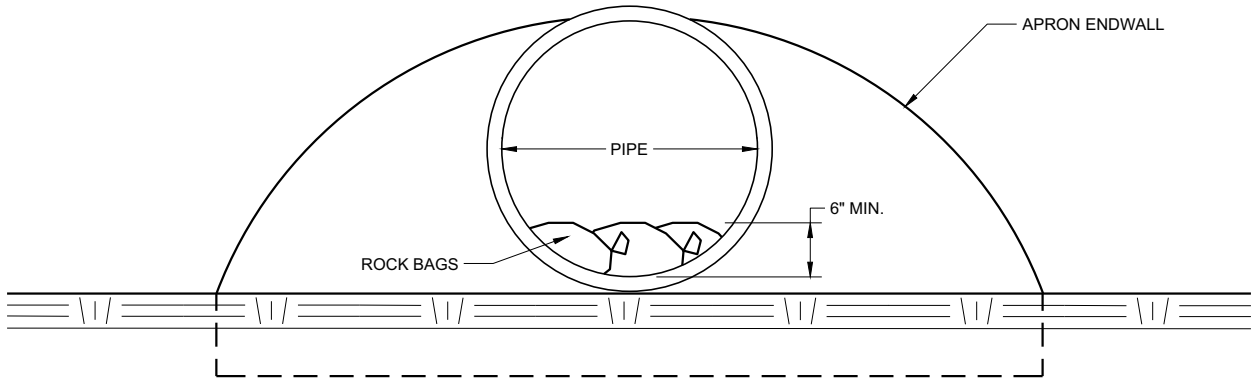
SECTION A - A

TRACKING PAD

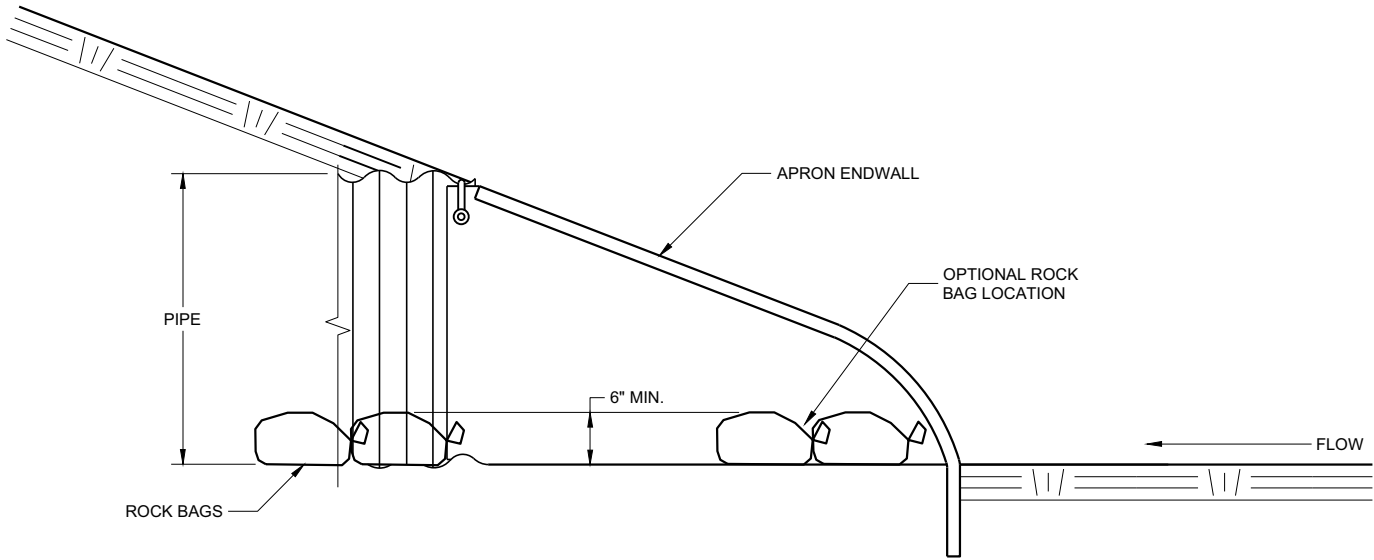
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
3/24/2011
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

FHWA



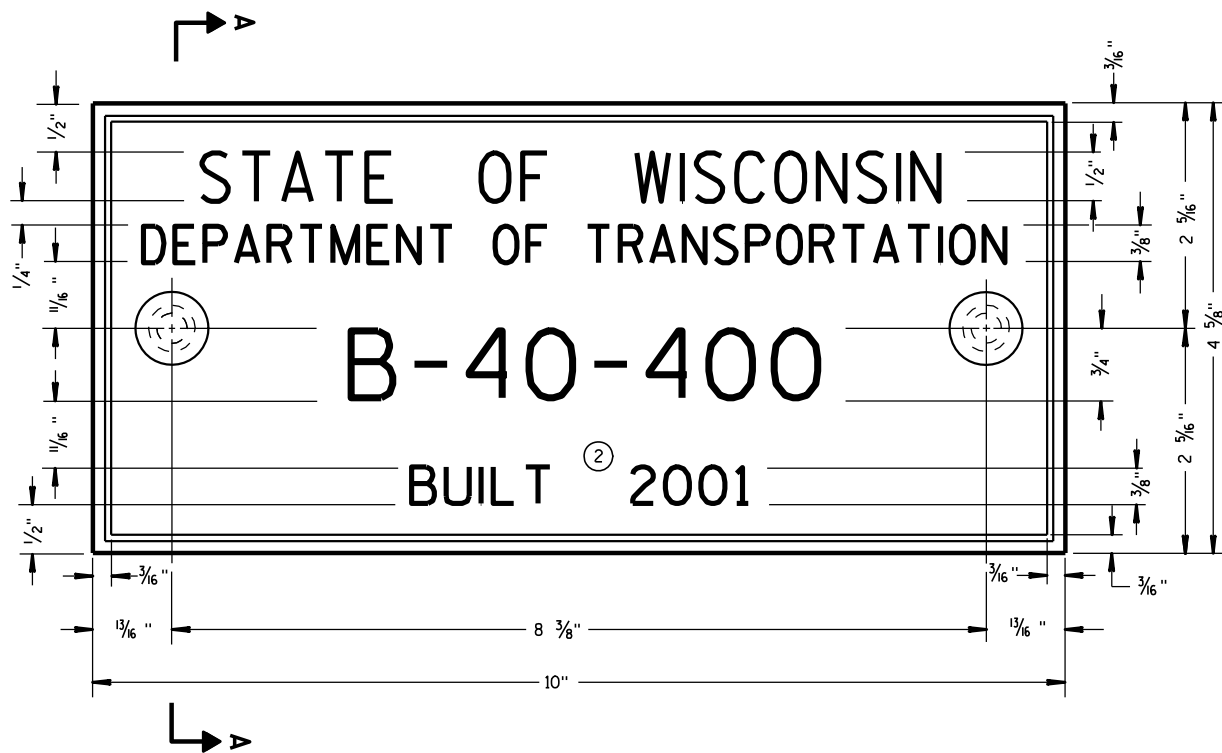
END VIEW



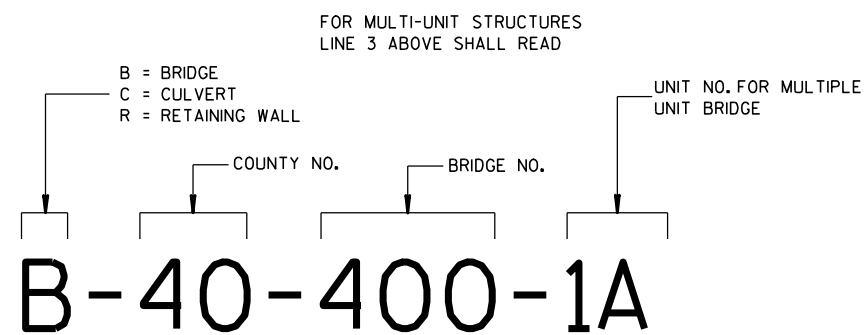
SIDE VIEW

CULVERT PIPE CHECK
(INSTALL ON INLET END ONLY)

CULVERT PIPE CHECK	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2019 DATE	/S/ Daniel Schave EROSION CONTROL ENGINEER
FHWA	



TYPICAL NAME PLATE
(BRIDGES, CULVERTS, AND RETAINING WALLS)



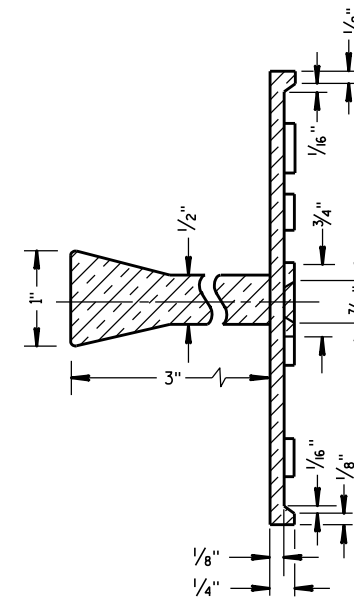
**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

GENERAL NOTES

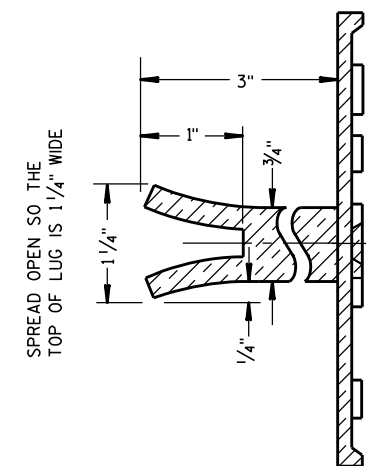
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

- ① EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ② REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.

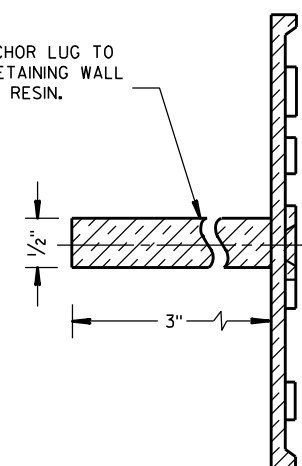


SECTION A-A



ALTERNATE LUG

- ① ADHERE ANCHOR LUG TO PRECAST RETAINING WALL WITH EPOXY RESIN.



ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

**NAME PLATE
(STRUCTURES)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

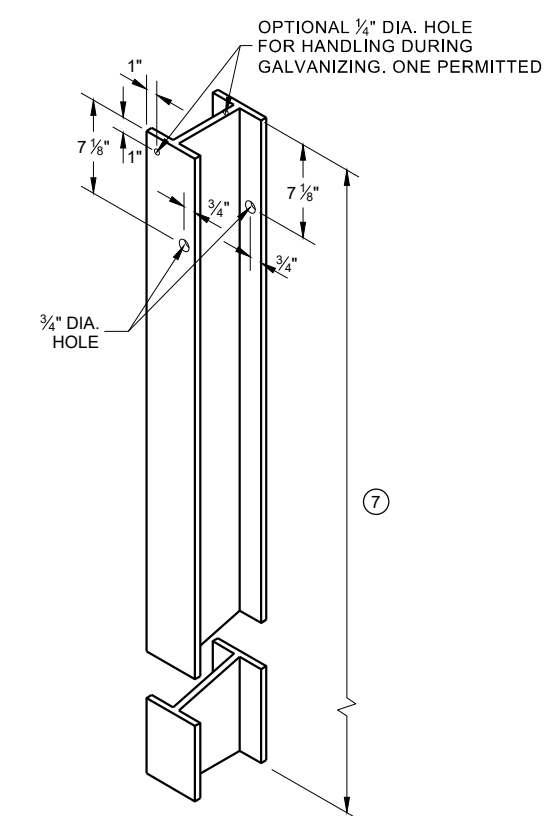
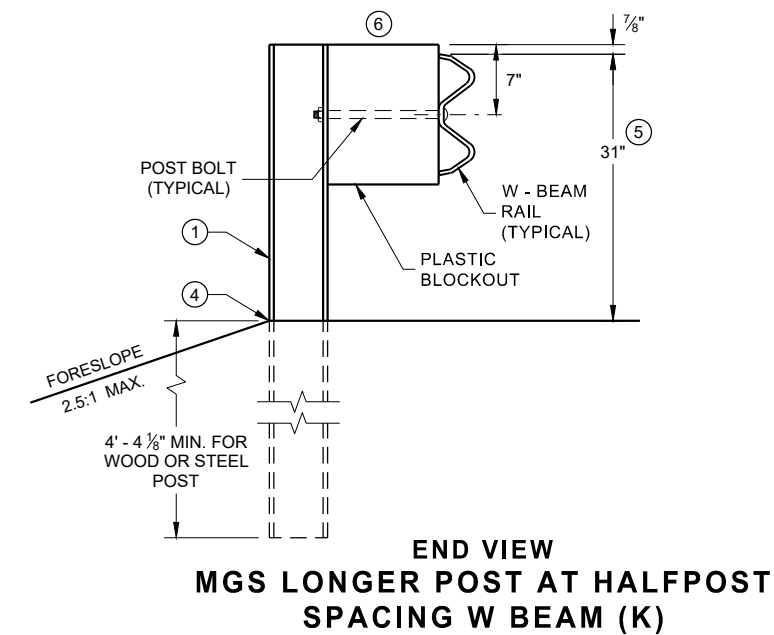
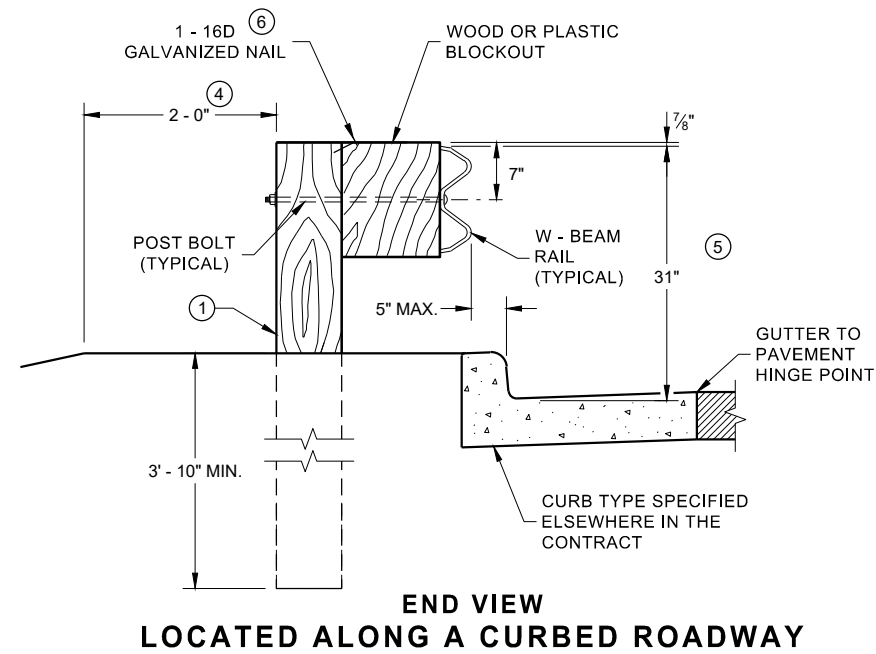
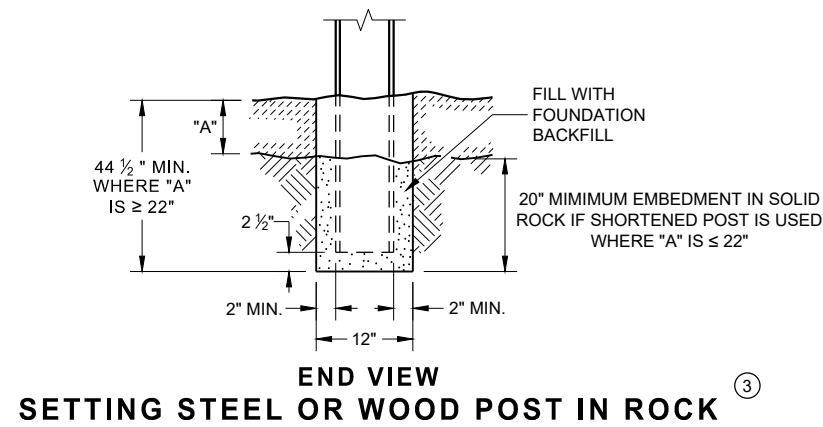
APPROVED

3/26/10
DATE

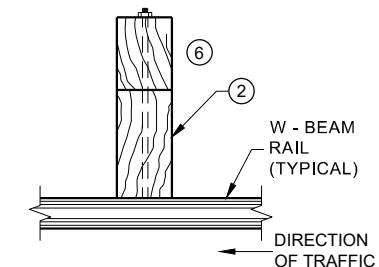
FHWA

/S/ Scot Becker
CHIEF STRUCTURAL DEVELOPMENT ENGINEER

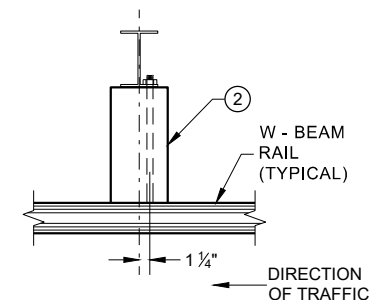
- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. 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 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD 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 $\pm 1"$. FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 3/4" 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.
- ⑦ TOTAL POST LENGTH FOR TYPE K IS 7' - 0". TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".



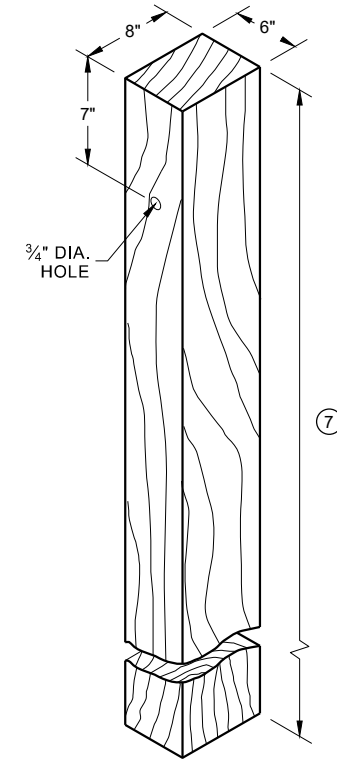
STEEL POST & HOLE PUNCHING DETAIL (W 6 X 9) ①



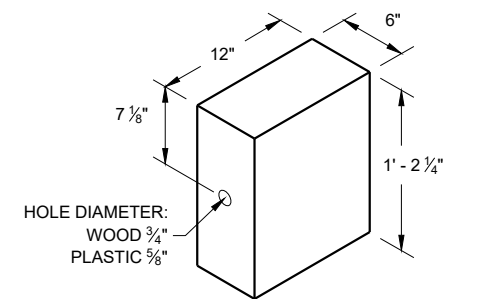
PLAN VIEW WOOD POST, BLOCKOUT & BEAM



PLAN VIEW STEEL POST, PLASTIC BLOCKOUT & BEAM



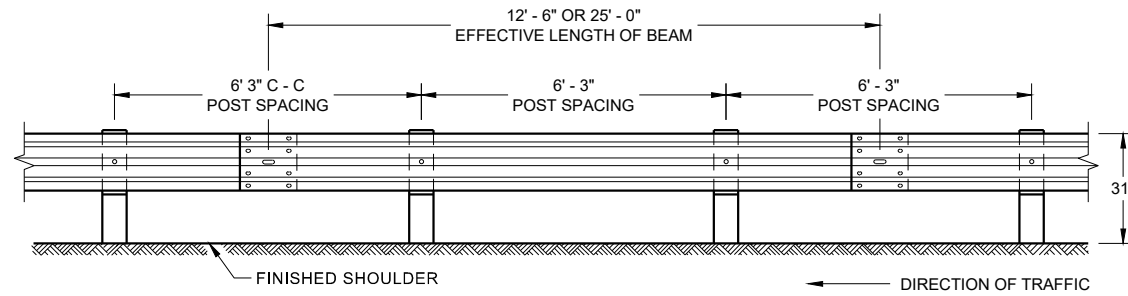
WOOD POST (6" X 8") NOMINAL ①



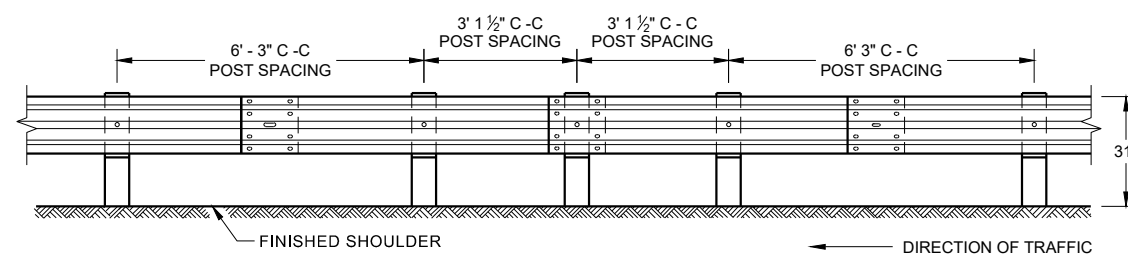
WOOD OR PLASTIC BLOCKOUT ②

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

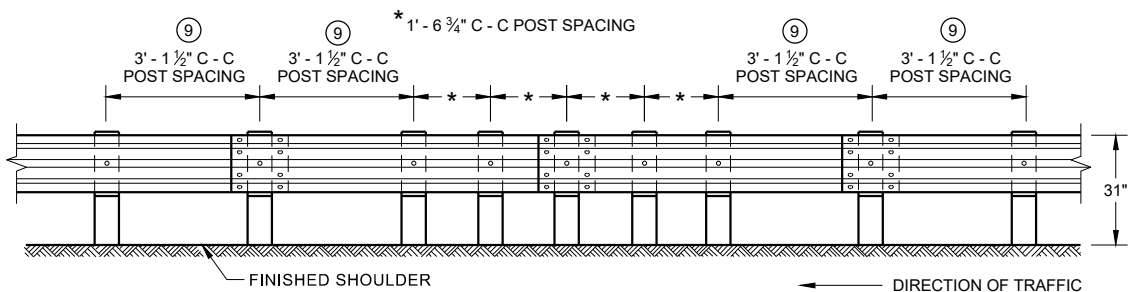
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



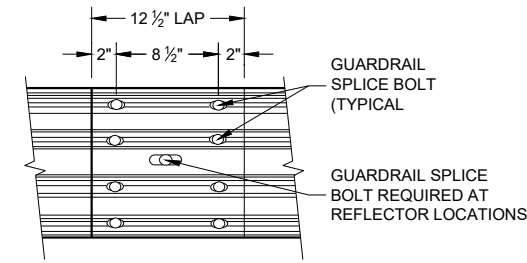
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



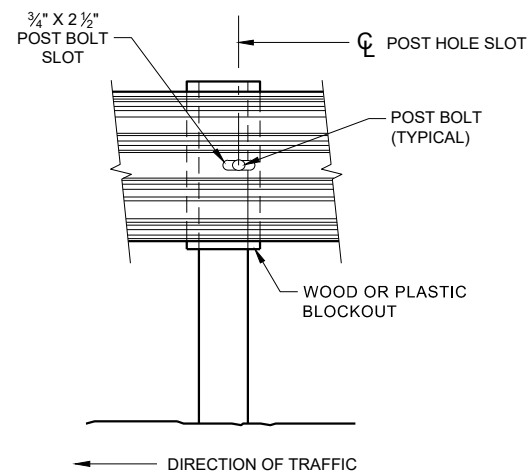
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



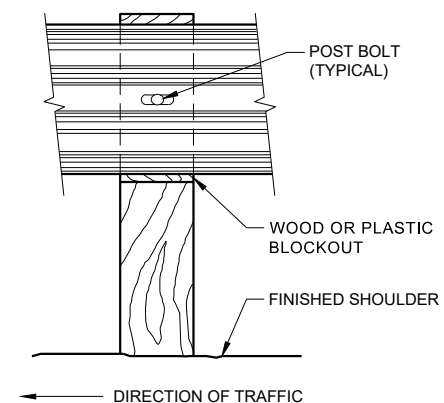
**FRONT VIEW
QUARTER POST SPACING (QS)**



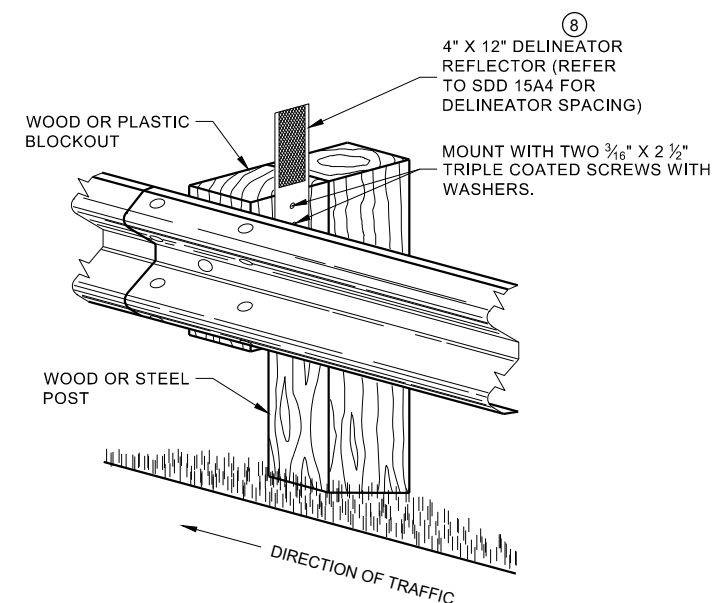
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



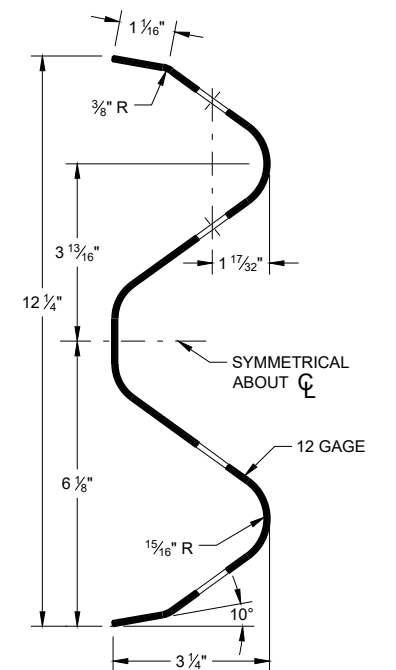
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

- 8 DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
- 9 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 3/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

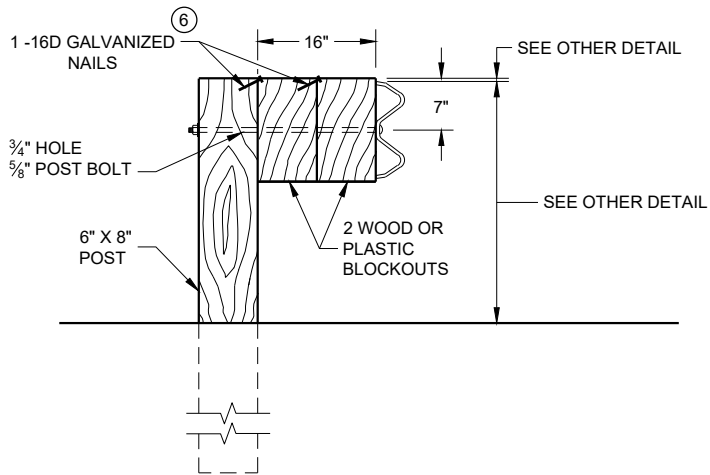
GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

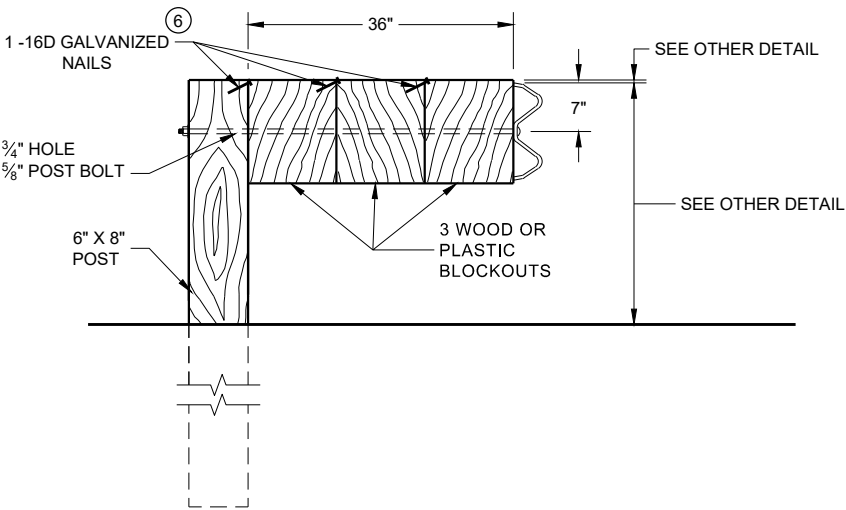
**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

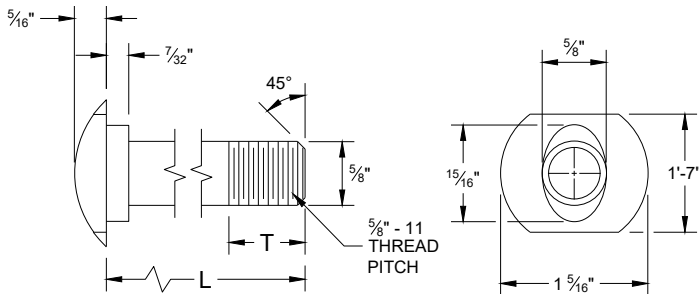
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



DETAIL FOR 36" BLOCKOUT DEPTH

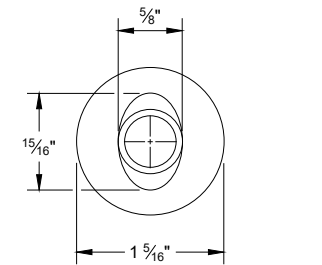
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

- NOTE:
- 1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 3/16".
 - 2. IF THE BOLT EXTENDS MORE THAN 1/4" FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

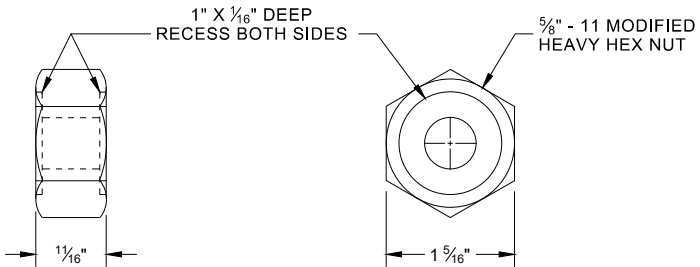


POST BOLT TABLE

L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"

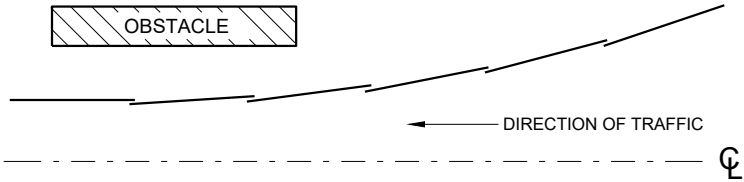


ALTERNATE BOLT HEAD

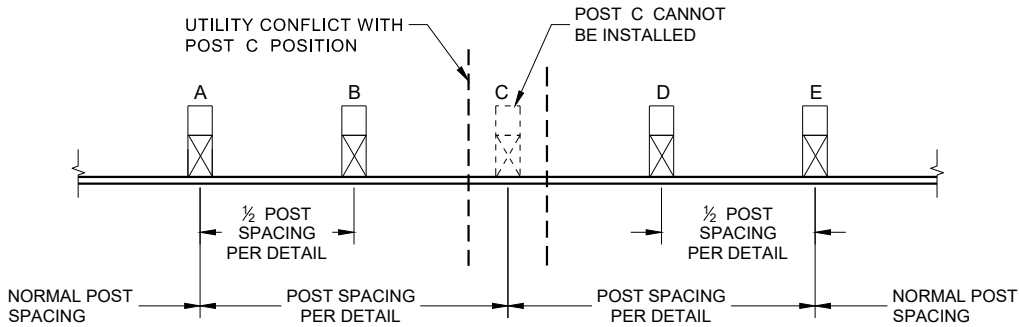


POST BOLT, SPLICE BOLT AND RECESS NUT

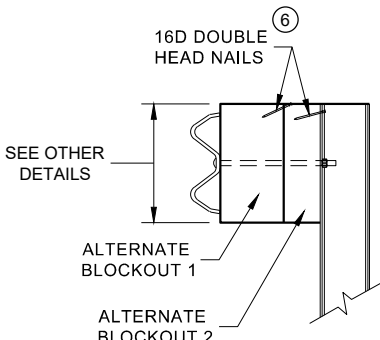
- 6 WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



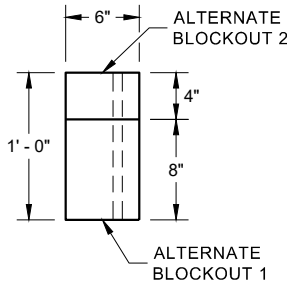
PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



SIDE VIEW

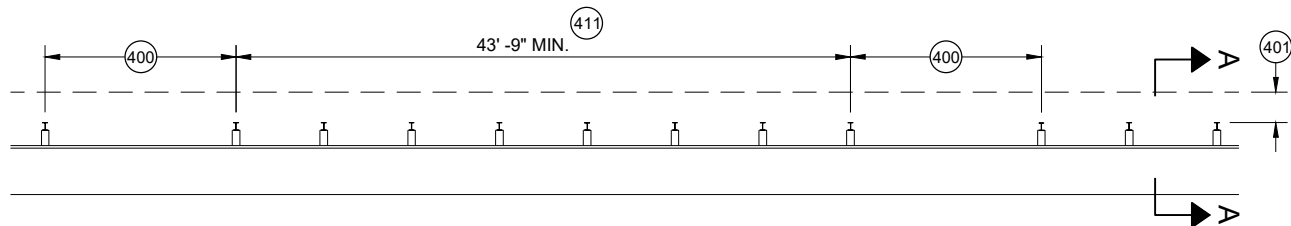


PLAN VIEW

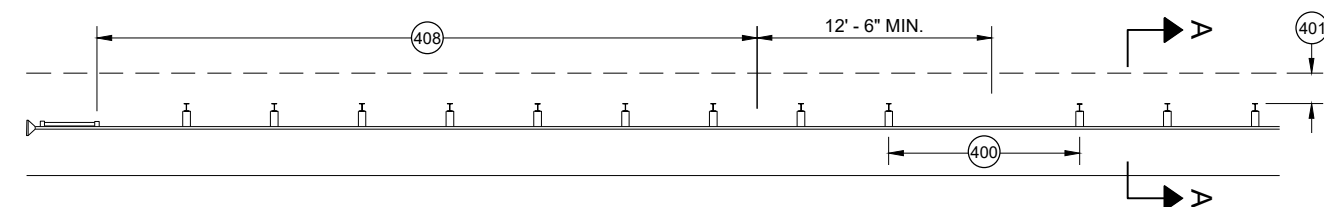
ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

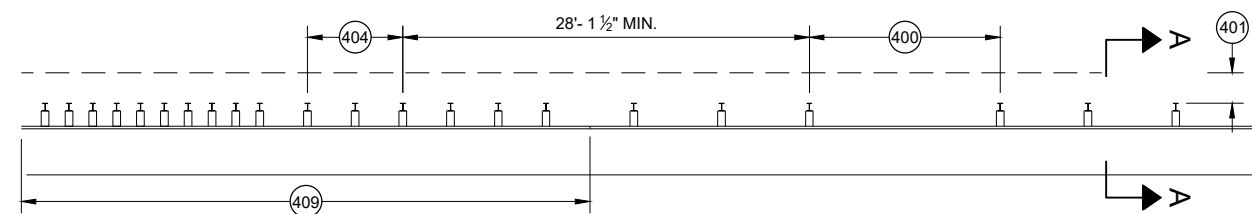
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



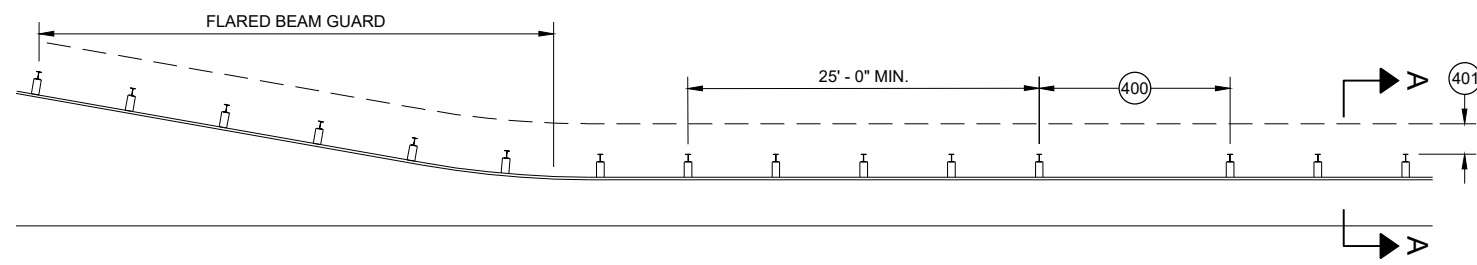
MISSING POST IN MGS GUARDRAIL



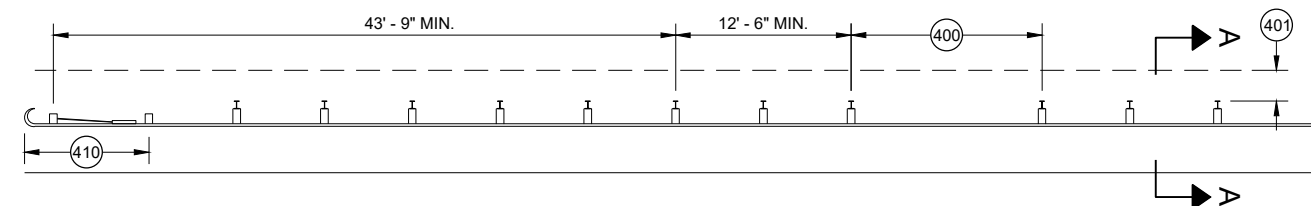
MISSING POST IN MGS GUARDRAIL NEAR EAT



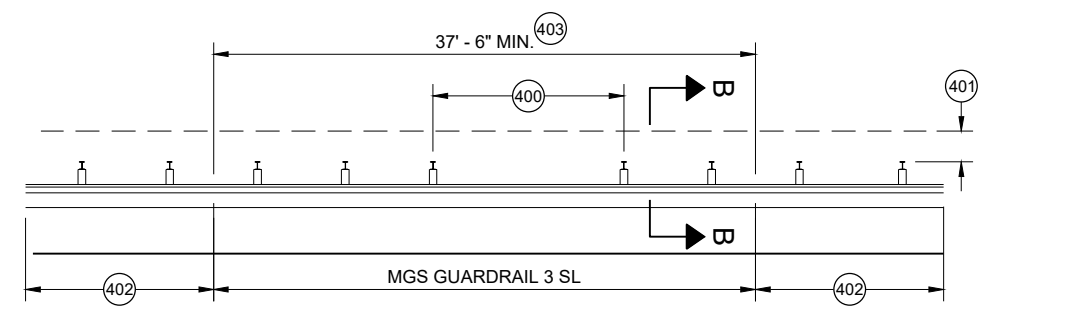
MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD

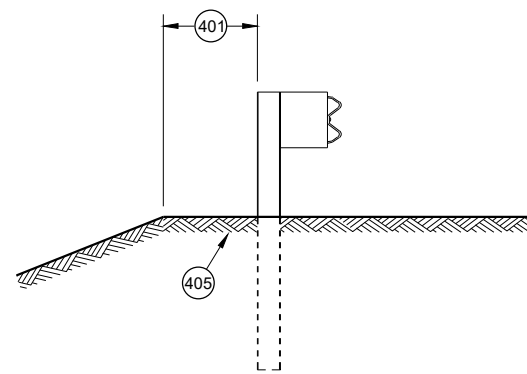


MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL

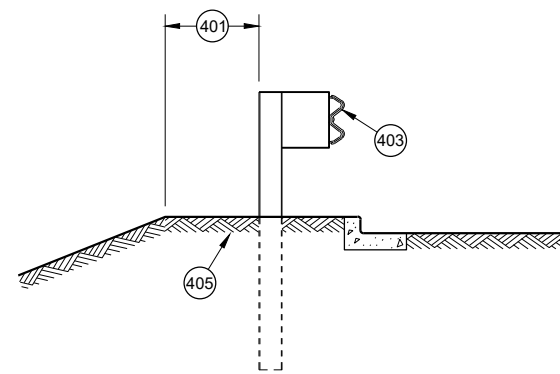


MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)

- (400) MAX SPAN 12' - 6"
- (401) 2' MIN.
- (402) MGS GUARDRAIL 3
- (403) NESTING BEAM GUARD
- (404) ASYMMETRIC TRANSITION
- (405) SOIL WELL DRAINED AND COMPACTED
- (406) SEE OTHER DRAWINGS IN THIS SDD
- (407) SEE OTHER DRAWINGS FOR MIN. SPACING BETWEEN SPANS
- (408) SEE SDD 14B44
- (409) SEE SDD 14B45
- (410) SEE SDD 14B47
- (411) MINIMUM DISTANCE BETWEEN MISSING POST SPANS.



SECTION A - A



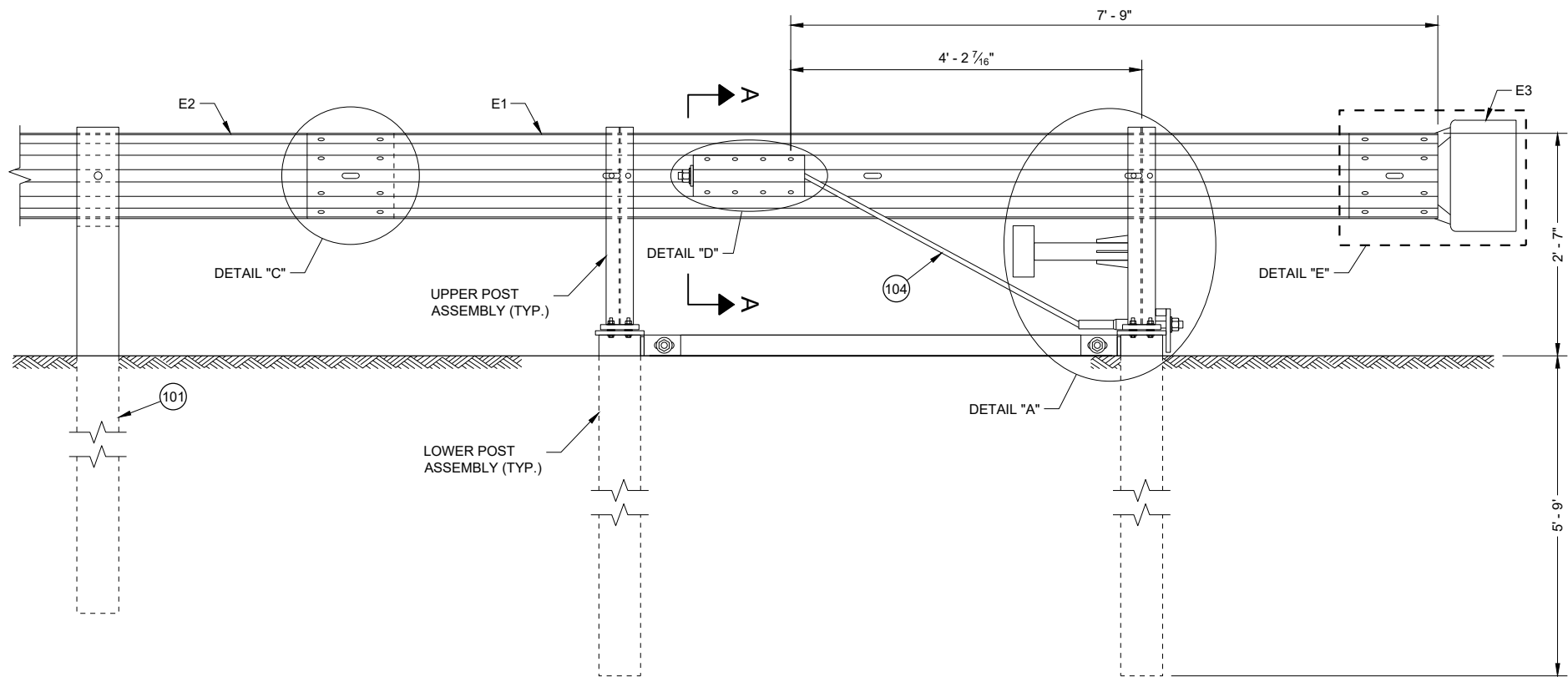
SECTION B - B

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

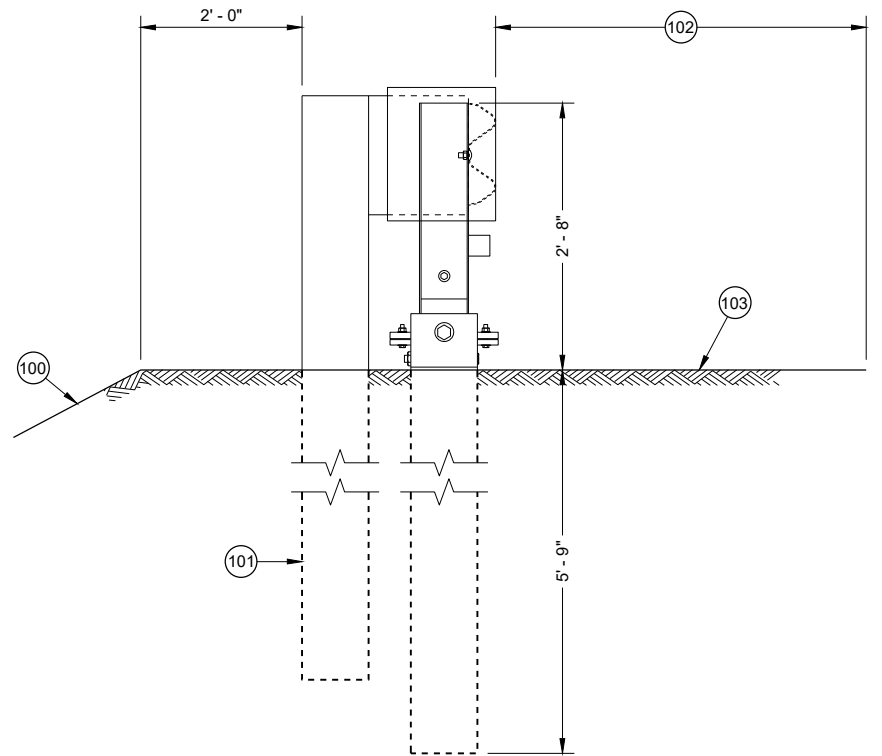
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2021
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

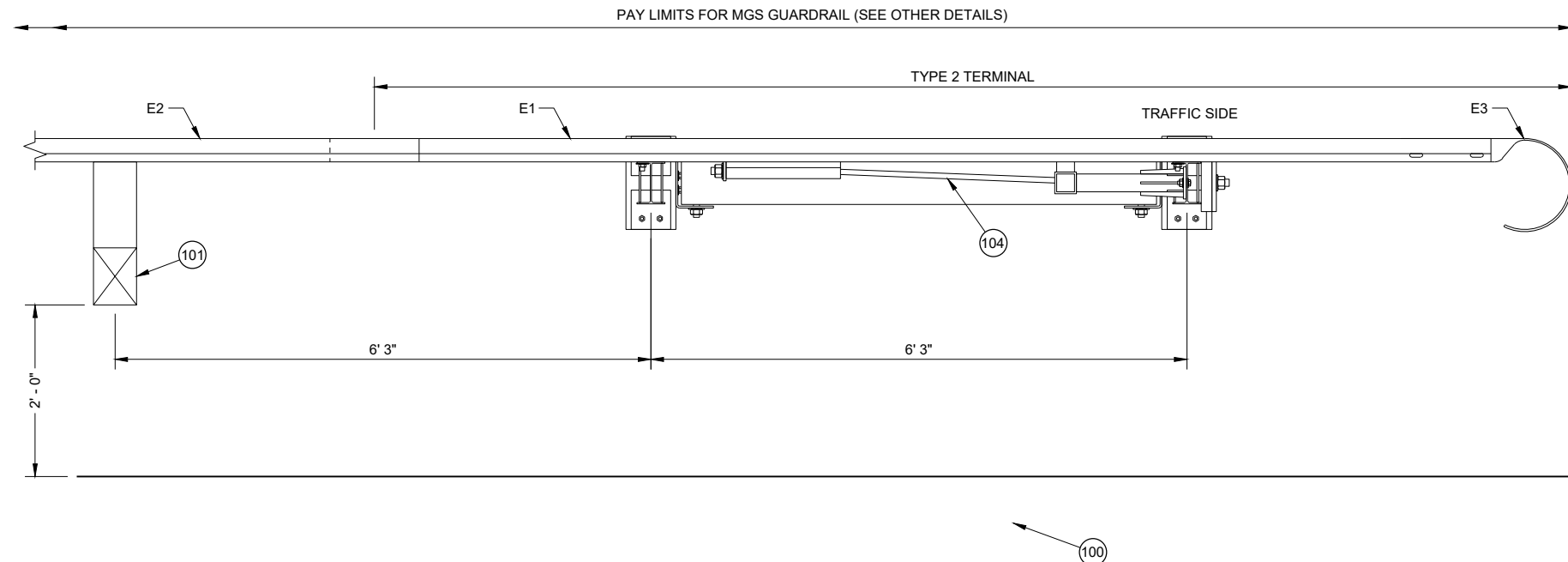
FHWA



BACK VIEW
TYPE 2 TERMINAL



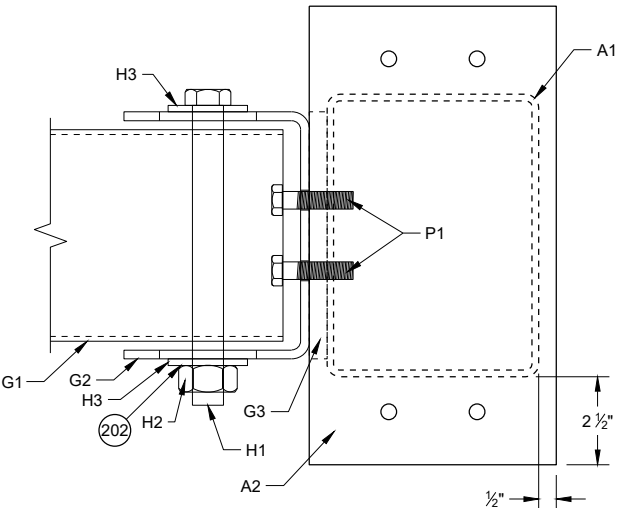
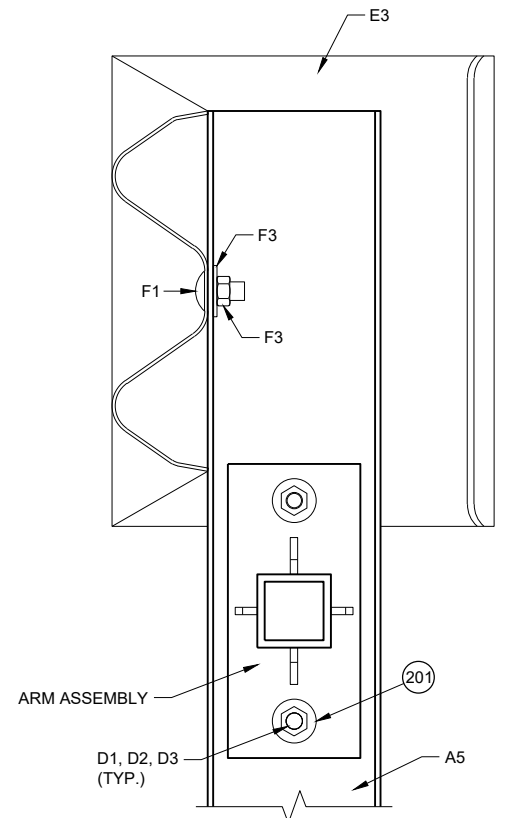
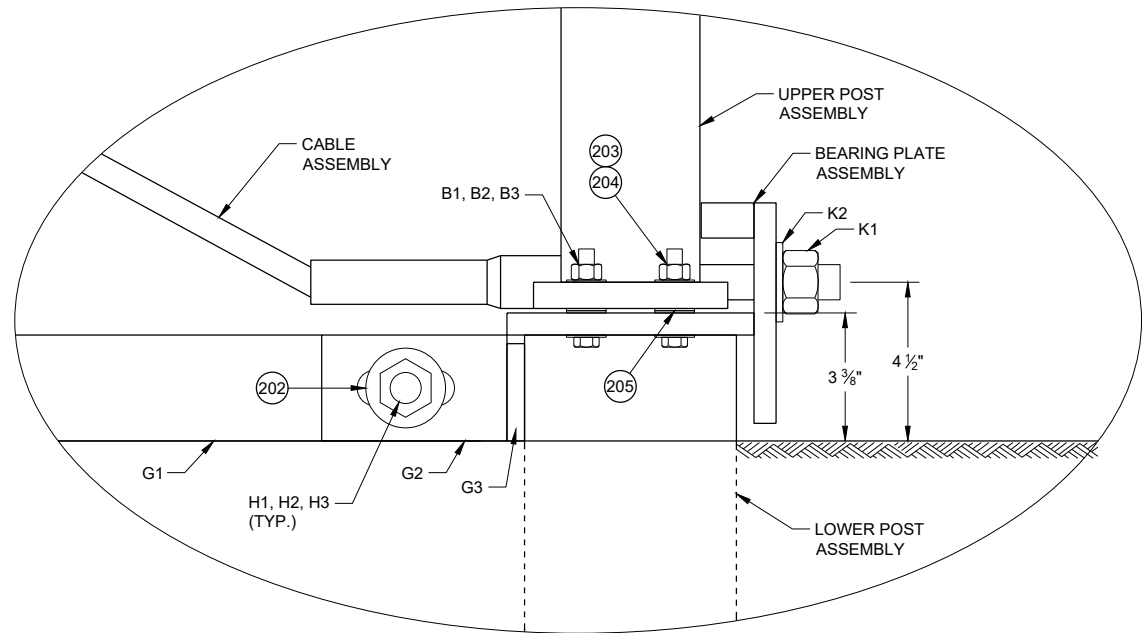
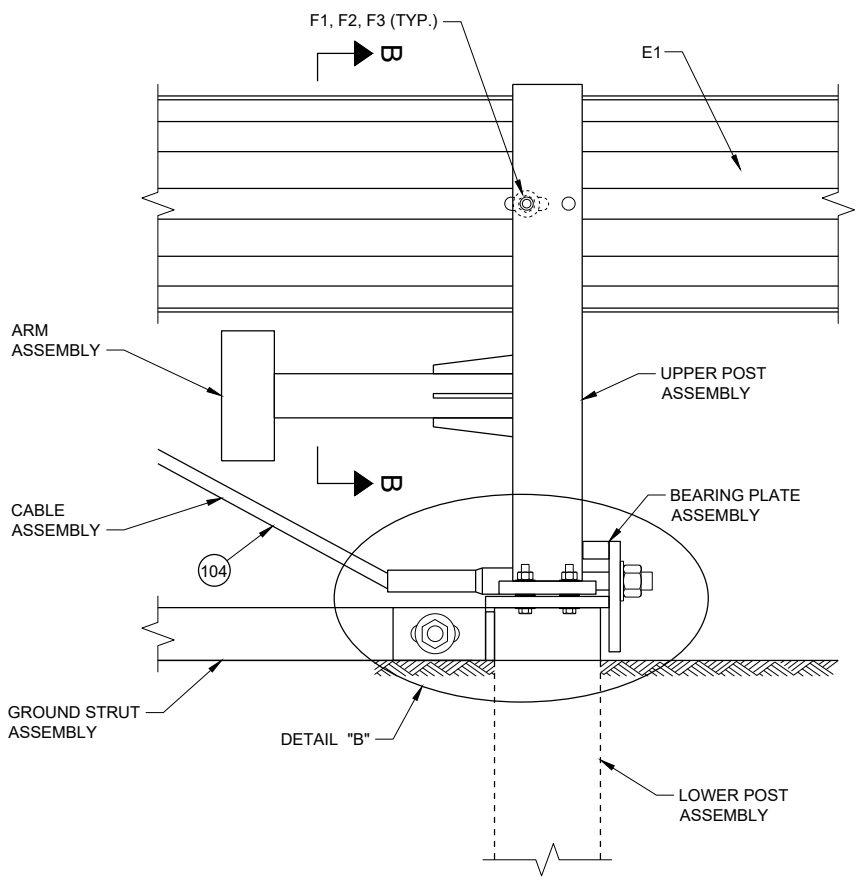
SIDE VIEW
TYPE 2 TERMINAL



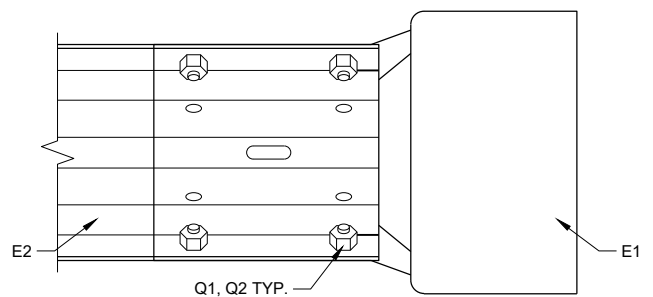
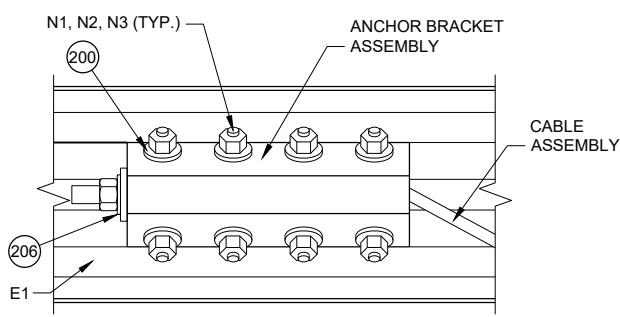
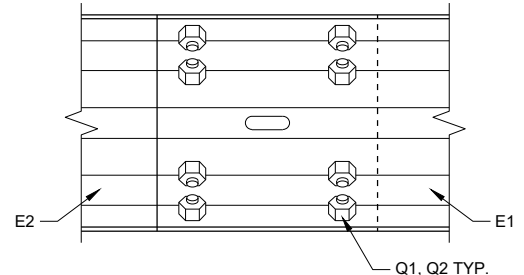
TOP VIEW
TYPE 2 TERMINAL

- GENERAL NOTES**
- 100 MAXIMUM SLOPE IS 2.5:1.
 - 101 SEE SDD 14B42 FOR MORE INFORMATION.
 - 102 SHOULDER
 - 103 MAXIMUM SLOPE IS 10:1.
 - 104 AFTER ASSEMBLY, CABLE IS TO BE TIGHTENED WITHOUT TWISTING THE CABLE.

MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION



TOP VIEW
GROUND STRUT
CONNECTION DETAIL

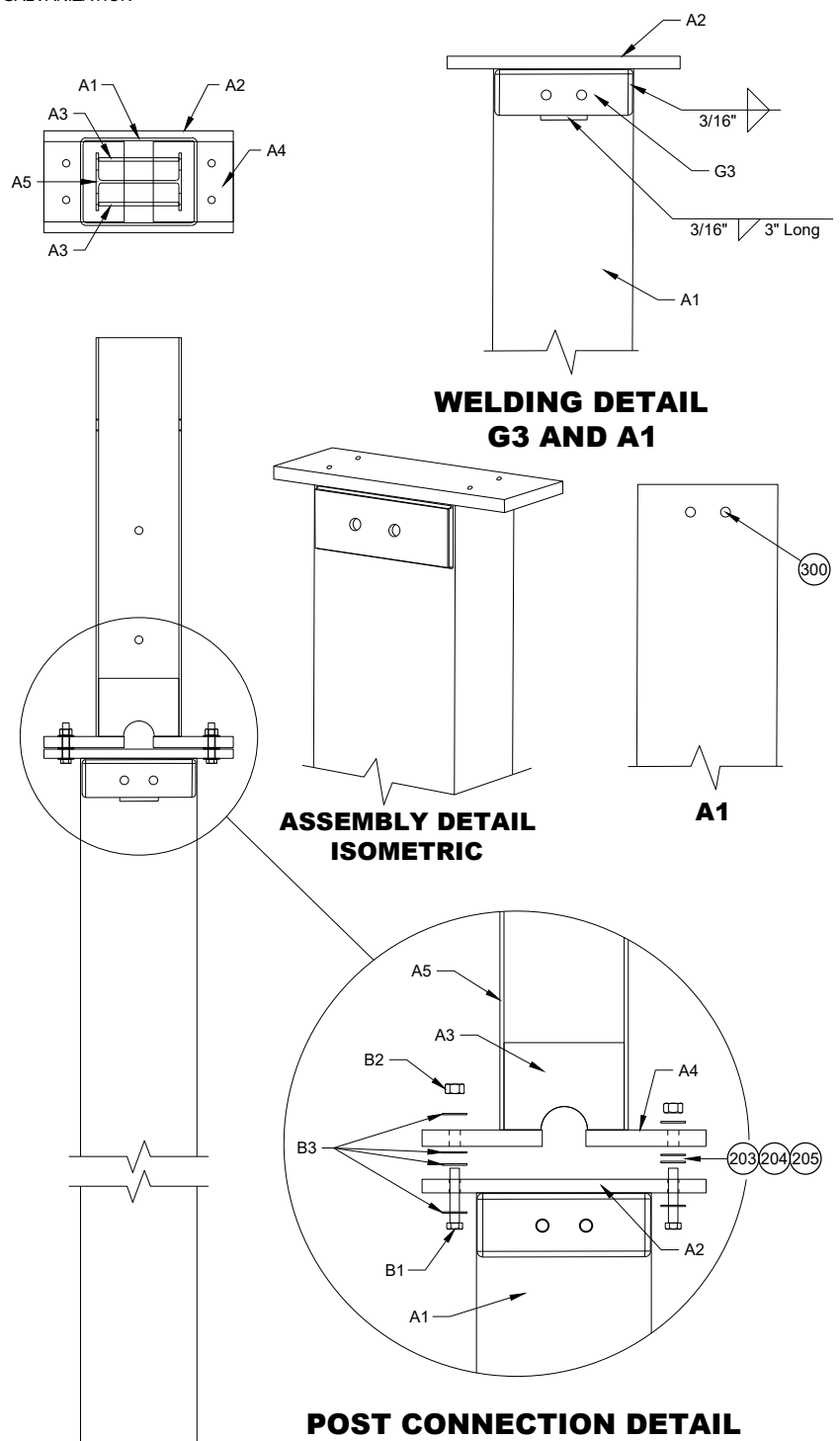
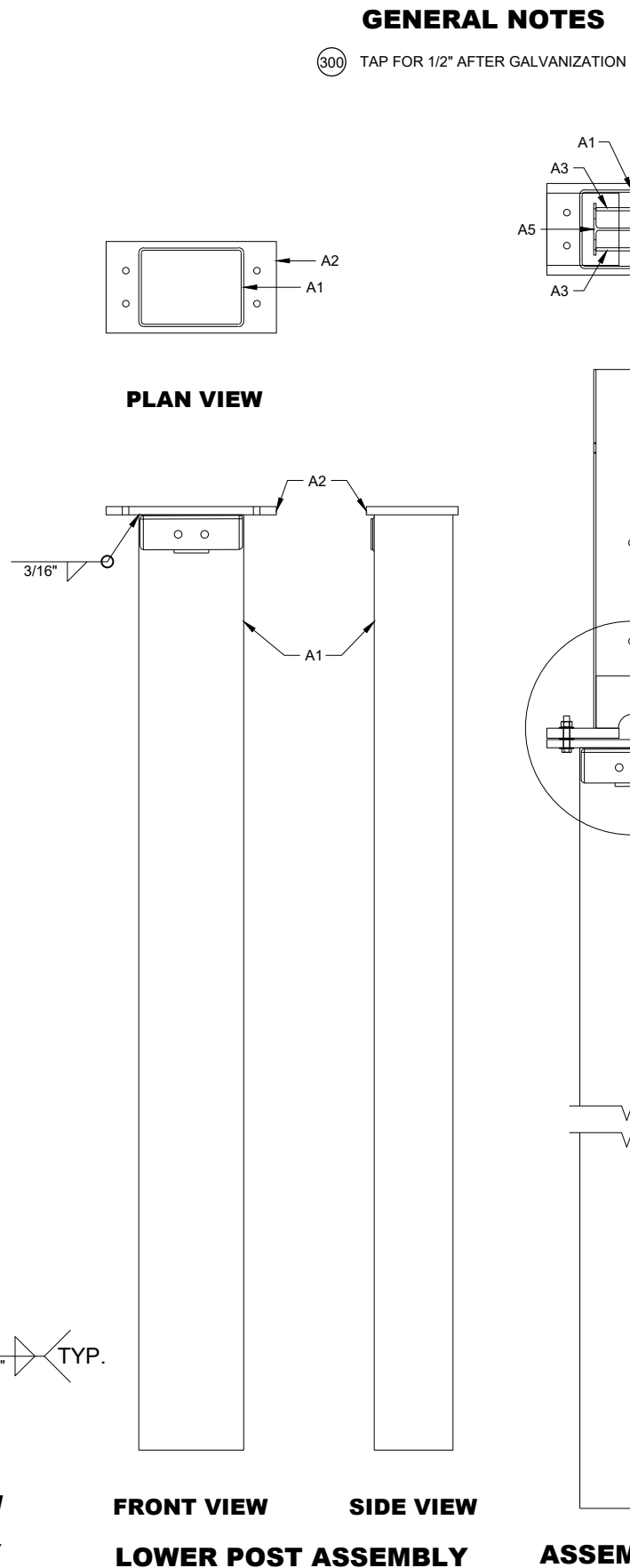
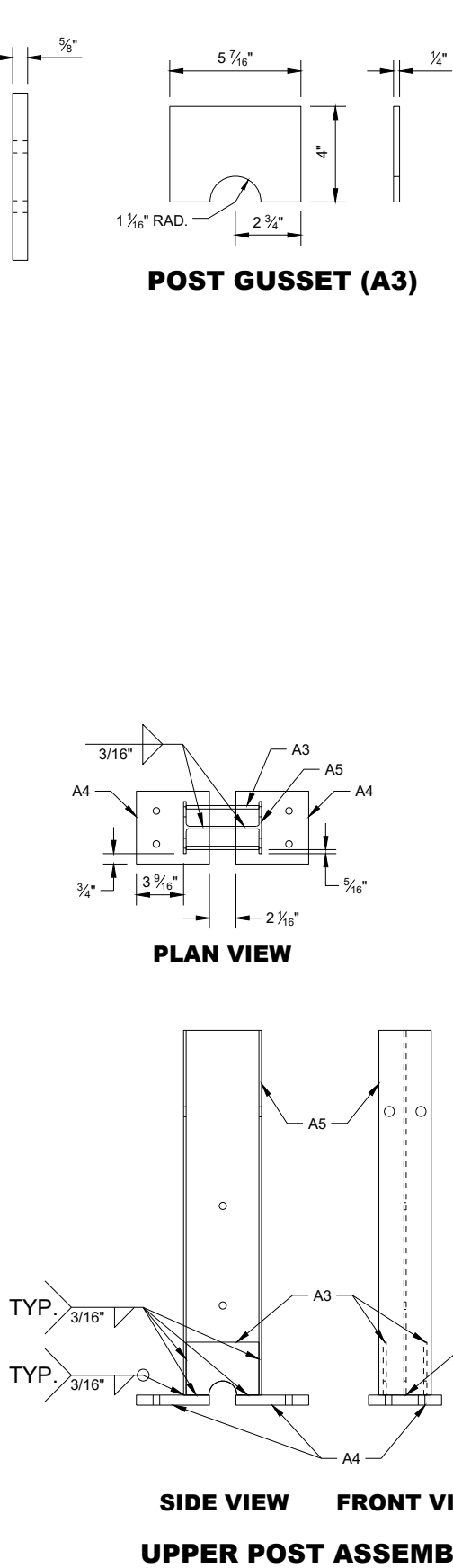
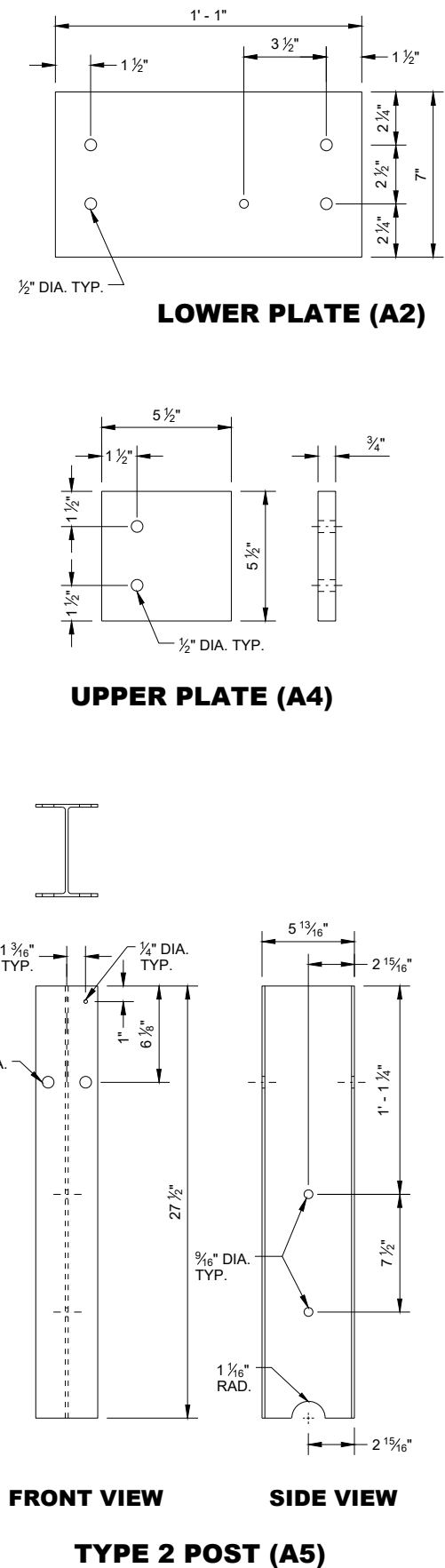
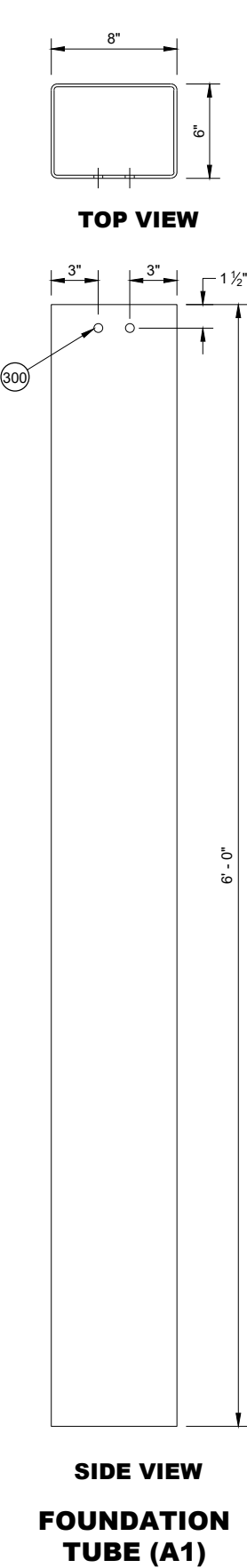


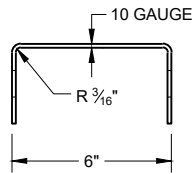
GENERAL NOTES

- 200 INSTALL ONE WASHER UNDER BOLT HEAD AND RAIL AND ON WASHER BETWEEN NUT AND ANCHOR BRACKET ASSEMBLY.
- 201 INSTALL ONE WASHER UNDER BOLT HEAD AND UPPER POST ASSEMBLY AND ONE WASHER BETWEEN NUT AND ARM PLATE.
- 202 INSTALL ONE WASHER UNDER BOLT HEAD AND GROUND STRUT CONNECTOR AND ONE WASHER BETWEEN NUT AND GROUND STRUT CONNECTOR.
- 203 INSTALL ONE WASHER UNDER BOLT HEAD AND LOWER POST ASSEMBLY AND ONE WASHER BETWEEN NUT AND UPPER POST ASSEMBLY.
- 204 TORQUE VALUE IS BETWEEN 60 - 75 FT-LB.
- 205 TWO WASHERS BETWEEN UPPER AND LOWER POST ASSEMBLY.
- 206 INSTALL ONE WASHER BETWEEN NUT AND ANCHOR BRACKET ASSEMBLY.

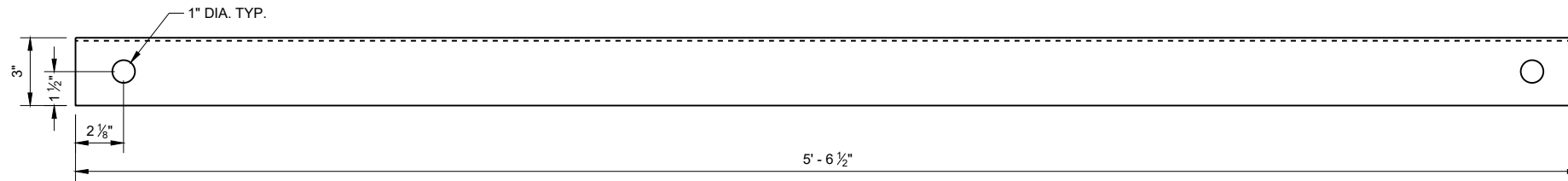
MIDWEST GUARDRAIL
SYSTEM (MGS)
TYPE 2 TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



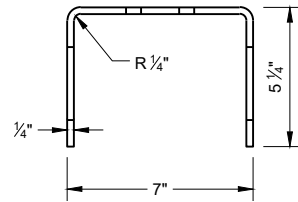


SIDE VIEW

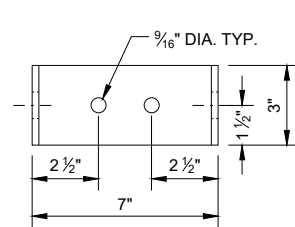


FRONT VIEW

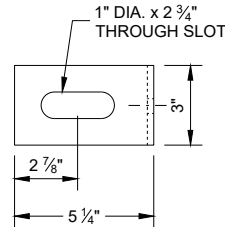
GROUND STRUT CHANNEL (G1)



TOP VIEW

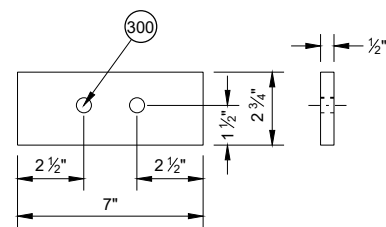


FRONT VIEW

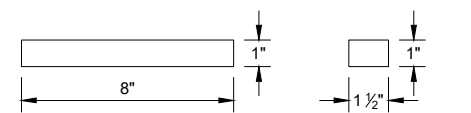


SIDE VIEW

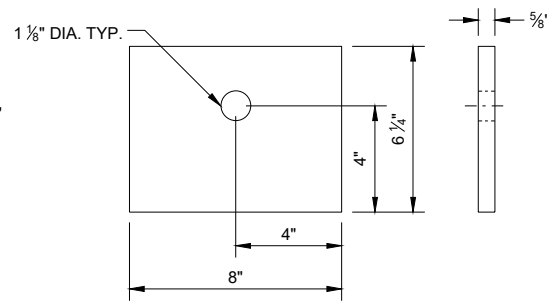
GROUND STRUT CONNECTOR (G2)



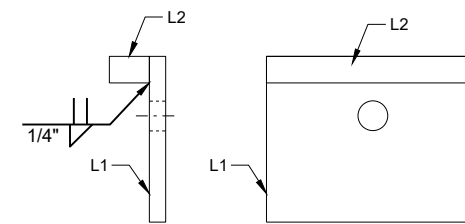
GROUND STRUT PLATE (G3)



BEARING PLATE FLANGE (L2)



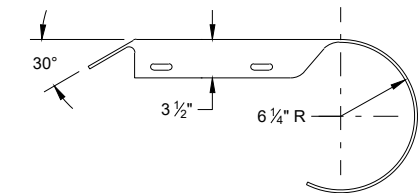
BEARING PLATE (L1)



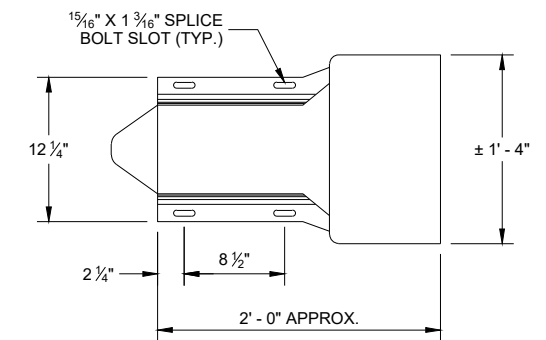
SIDE VIEW

FRONT VIEW

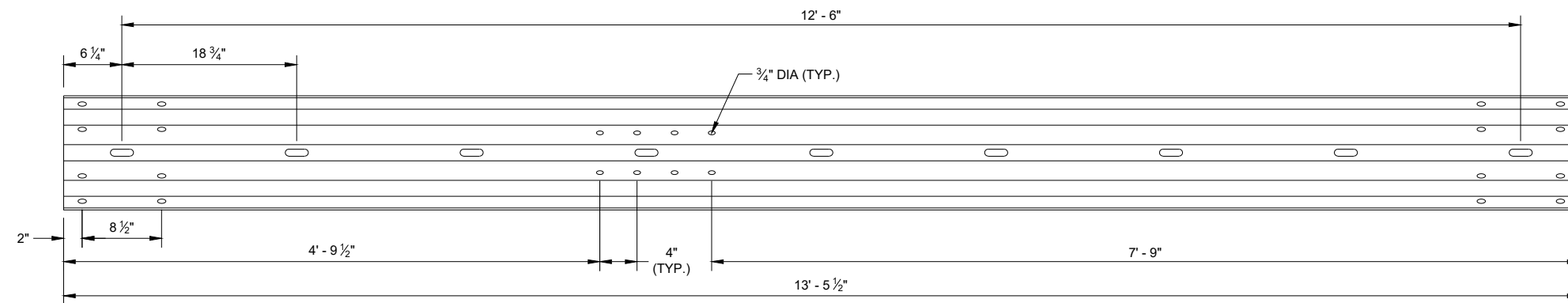
BEARING PLATE ASSEMBLY



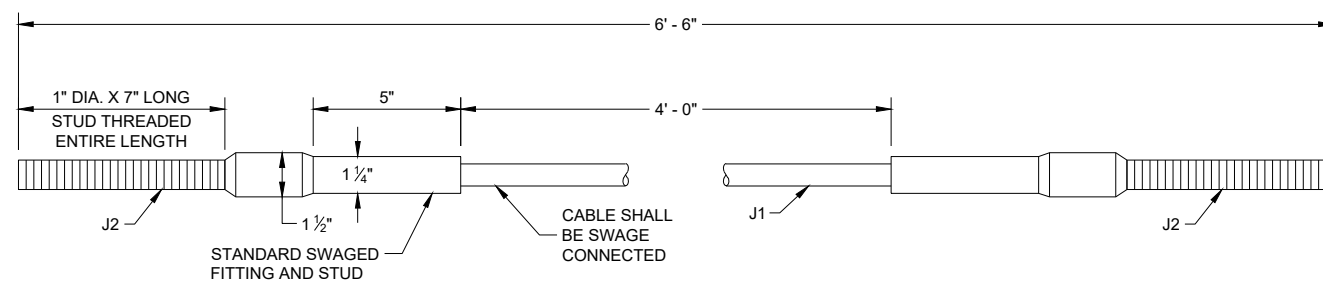
PLAN VIEW



ELEVATION VIEW
ROUNDED BUFFER END (E3)



TYPE 2 GUARDRAIL (E1)



CABLE ASSEMBLY

MIDWEST GUARDRAIL
SYSTEM (MGS)
TYPE 2 TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - TYPE 2 TERMINAL (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
A1	TYPE 2 FOUNDATION TUBE	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 8" x 6" x 3⁄16"
A2	LOWER PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	5⁄8" THICKNESS
A3	POST GUSSET	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1⁄4" THICKNESS
A4	UPPER PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	3⁄4" THICKNESS
A5	TYPE 2 POST	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI, w6x9 or w6x8.5	
B1	BREAKAWAY BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM F3125 GRADE A325 TYPE 1 HEAVY HEX HEAD OR SAE J429 GRADE 5 HEAVY HEX HEAD / ASTM A449 TYPE 1 HEAVY HEX HEAD. BOLTS MAY BE FULLY THREADED . PROVIDE ENOUGH THREADING FOR PROPER TIGHTENING OF BOLT.	7⁄16" DIA.
B2	BREAKAWAY BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	7⁄16" DIA.
B3	BREAKAWAY BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
C1	ARM ASSEMBLY PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	3⁄8" THICKNESS
C2	ARM ASSEMBLY TUBE 1	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 8" x 6" x 3⁄16"
C3	ARM ASSEMBLY TUBE 2	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 3" x 3" x 1⁄4"
C4	ARM ASSEMBLY TUBE 3	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 2 1⁄2" x 2 1⁄2" X 1⁄4"
C5	ARM ASSEMBLY GUSSET PLATE 1	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1⁄4" THICKNESS
C6	ARM ASSEMBLY GUSSET PLATE 2	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1⁄4" THICKNESS
D1	ARM ASSEMBLY BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	1⁄2" DIA.
D2	ARM ASSEMBLY WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	1⁄2" DIA.
D3	ARM ASSEMBLY NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	1⁄2" DIA.
E1	TYPE 2 GUARD RAIL	AASHTO M180 CLASS A TYPE 2 12 GAUGE APPROVED PRODUCER	
E2	BEAM GUARD RAIL	AASHTO M180 CLASS A TYPE 2 12 GAUGE APPROVED PRODUCER	
E3	BEAM GUARD ROUNDED BUFFER END	AASHTO M180 CLASS A TYPE 2 12 GAUGE APPROVED PRODUCER	
F1	POST BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	5⁄8" DIA.
F2	POST BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	5⁄8" DIA.
F3	POST BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
G1	GROUND STRUT CHANNEL	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1⁄2" x 11 3⁄4" x 10 GAUGE
G2	GROUND STRUT CONNECTOR	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1⁄4" THICKNESS
G3	GROUND STRUT PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1⁄2" THICKNESS

MIDWEST GUARDRAIL
SYSTEM (MGS)
TYPE 2 TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - TYPE 2 TERMINAL (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
H1	GROUND STRUT BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	7/8" DIA.
H2	GROUND STRUT BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	7/8" DIA.
H3	GROUND STRUT BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD 5/8" ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	
J1	BCT CABLE	AASHTO M30 / ASTM A741 6 x 19 INDEPENDENT WIRE CORE (IWRC) IMPROVED PLOW STEEL (IPS), 6 x 19 INDEPENDENT WIRE CORE (IWRC) IMPROVED PLOW STEEL (IPS) TYPE II OR IIC, CLASS C ZINC COATED MIN. BREAKING STRENGTH OF 42.7 KIPS	3/4" DIA.
J2	BCT CABLE	UNC 1" ASTM A576 GRADE 1035 SWAGE FITTINGS ARE TO BE FACTORY SWEDGED. MIN BREAKING STRENGTH OF 42.7 KIPS ASME B30.26 "FORGED, CAST, OR DIE STAMPED WITH THE FOLLOWING IN TO CONNECTION: NAME OF MANUFACTURE OR TRADEMARK OF CONNECTION'S MANUFACTURER, SIZE OR RATED LOAD, GRADE FOR ALLOY EYEBOLTS."	
K1	CABLE ASSEMBLY NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	1" DIA.
K2	CABLE ASSEMBLY WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1	1" DIA.
L1	BEARING PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	5/8" THICKNESS
L2	BEARING PLATE FLANGE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1" THICKNESS
M1	BEAM GUARD ANCHOR BRACKET	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	
M2	BEAM GUARD ANCHOR END PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	3/8" THICKNESS
N1	ANCHOR BRACKET BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC AASHTO M180 HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	5/8" DIA.
N2	ANCHOR BRACKET BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	5/8" DIA.
N3	ANCHOR BRACKET BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 /ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
P1	FOUNDATION TUBE BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	1/2" DIA.
Q1	SPLICE BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC AASHTO M180 HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	
Q2	SPLICE NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	5/8" DIA.

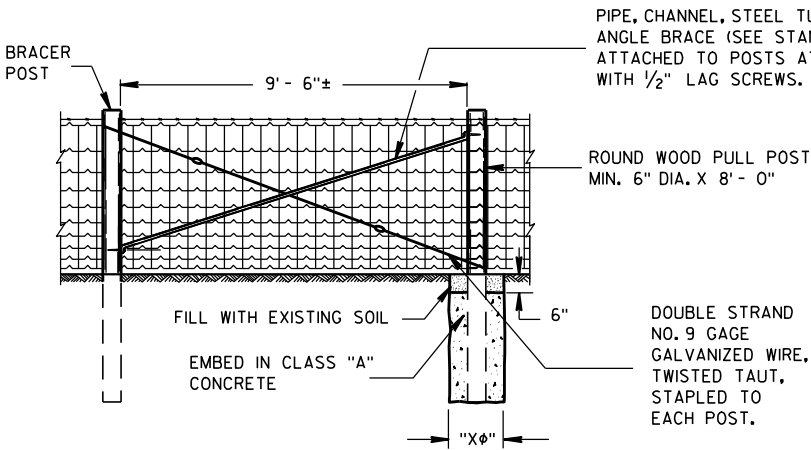
MIDWEST GUARDRAIL
SYSTEM (MGS)
TYPE 2 TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

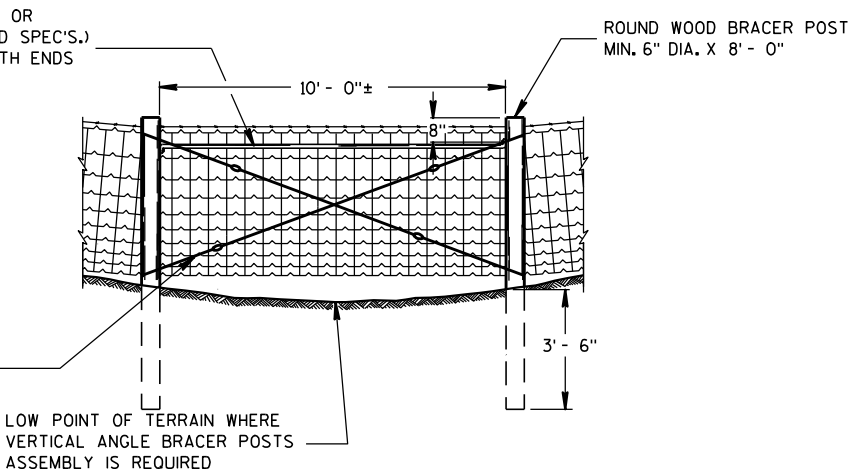
APPROVED
May 2023 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA

NOTE: PULL OR STRETCHER POST ASSEMBLIES SHALL BE PLACED MIDWAY BETWEEN END POSTS AND CORNER POSTS WHERE A RUN OF FENCE EXCEEDS 660' BUT IS LESS THAN 1,320'. FOR RUNS OF FENCE IN EXCESS OF 1,320' MAXIMUM SPACING OF PULL OR STRETCHER POST ASSEMBLIES SHALL BE 660'± C-C.

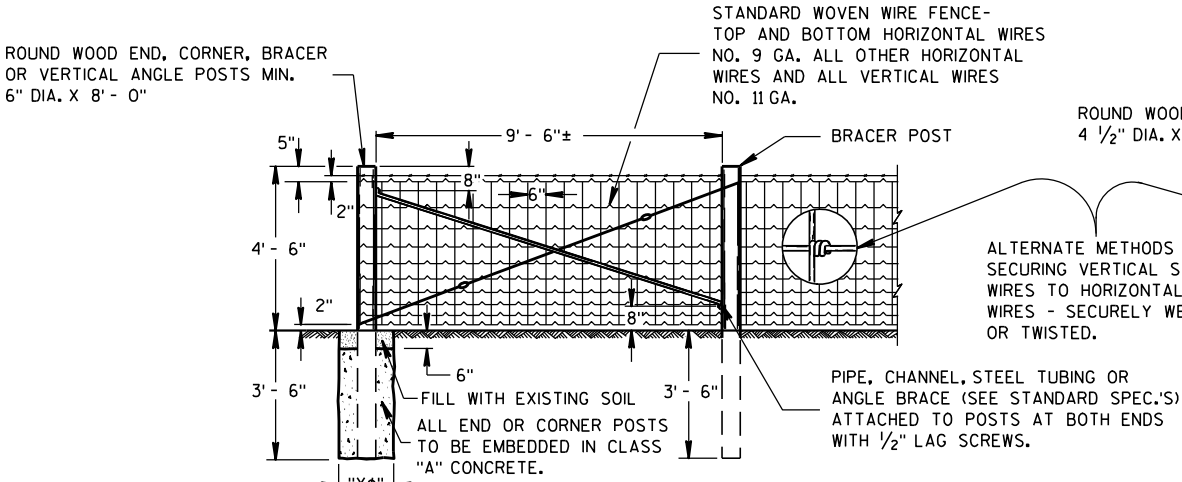
ILLUSTRATION SHOWS POSITION OF STANDARD STEEL BRACE, DOUBLE STRAND GALVANIZED WIRE, AND THE POST TO BE EMBEDDED IN CONCRETE WHEN WIRE FENCE IS INSTALLED FROM LEFT TO RIGHT. THE BRACES SHALL BE POSITIONED ON THE OPPOSITE DIAGONALS AND THE OPPOSITE POST SHALL BE EMBEDDED IN CONCRETE WHEN WIRE FENCE IS INSTALLED FROM RIGHT TO LEFT.



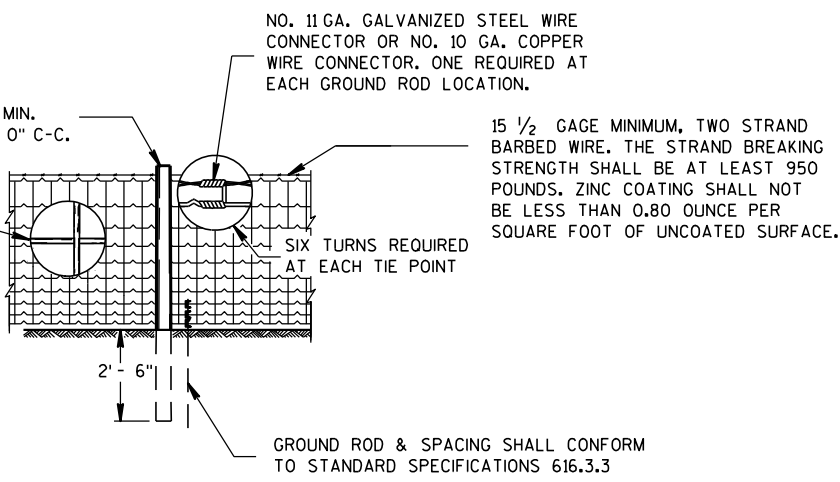
PULL OR STRETCHER POSTS ASSEMBLY



VERTICAL ANGLE BRACER POSTS ASSEMBLY

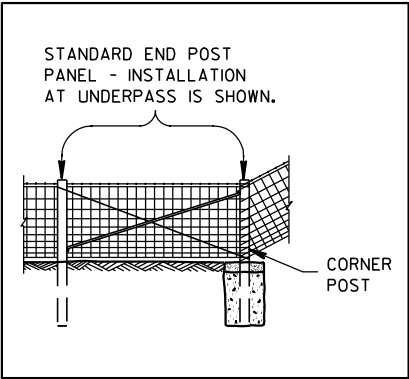


END OR CORNER POSTS ASSEMBLY

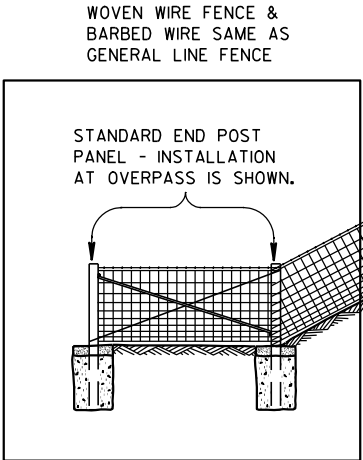


LINE FENCE CONSTRUCTION

GENERAL ROADSIDE VIEW OF WOVEN WIRE FENCE



ALTERNATE FENCE DESIGN AT STRUCTURE



FENCE DESIGN AT STRUCTURE APPROACH

GENERAL NOTES

"Xφ" = DIAMETER OF THE POST PLUS 12".

FENCE STAPLES SHOULD NEVER BE DRIVEN VERTICALLY INTO WOOD POSTS (WITH BOTH LEGS PARALLEL WITH THE WOOD GRAIN). DOING SO CAN SEPARATE THE GRAIN AND SIGNIFICANTLY REDUCE THE HOLDING POWER. ROTATING THE STAPLES SLIGHTLY OFF VERTICAL STRADDLES THE GRAIN AND PROVIDES MORE RESISTANCE TO PULL-OUT.

DO NOT STAPLE WIRE TIGHT TO THE LINE POSTS. ALLOW MOVEMENT OF WIRE FOR EXPANSION AND CONTRACTION. STAPLE ARRANGEMENT SHALL BE THE SAME FOR ALL OTHER POSTS EXCEPT THAT THEY SHALL BE DRIVEN TIGHT TO POSTS. ALL STAPLES SHALL BE 2" X 9 GAGE AND SHALL BE MANUFACTURED FROM GALVANIZED WIRE OR HOT DIP GALVANIZED AFTER FORMING. STAPLES SHALL HAVE SLASH-CUT POINTS.

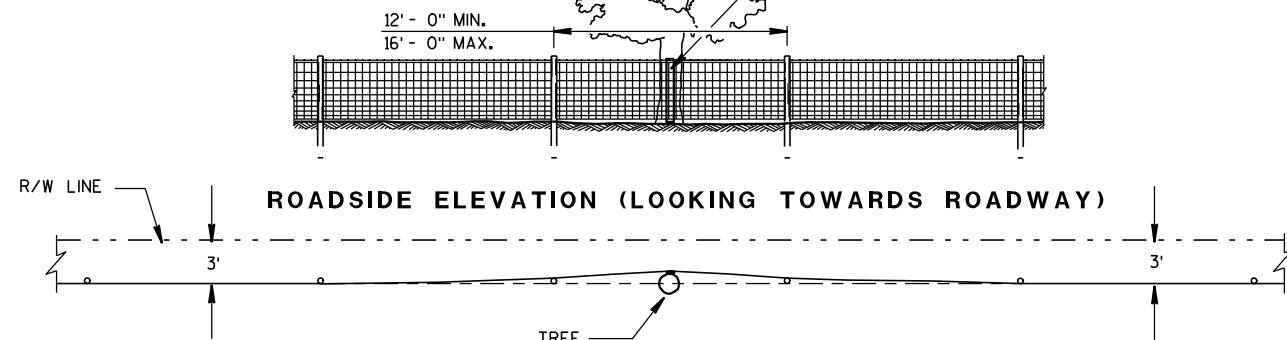
FENCE SHALL BE LOCATED 3'-0" INSIDE THE RIGHT OF WAY LINE UNLESS OTHERWISE INDICATED ON THE PLANS.

FENCE WOVEN WIRE

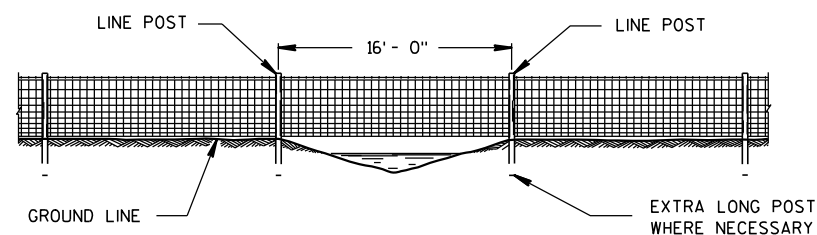
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

NOTE: TREE IN NORMAL FENCE LINE SPECIFICALLY ORDERED BY ENGINEER TO REMAIN IN PLACE.

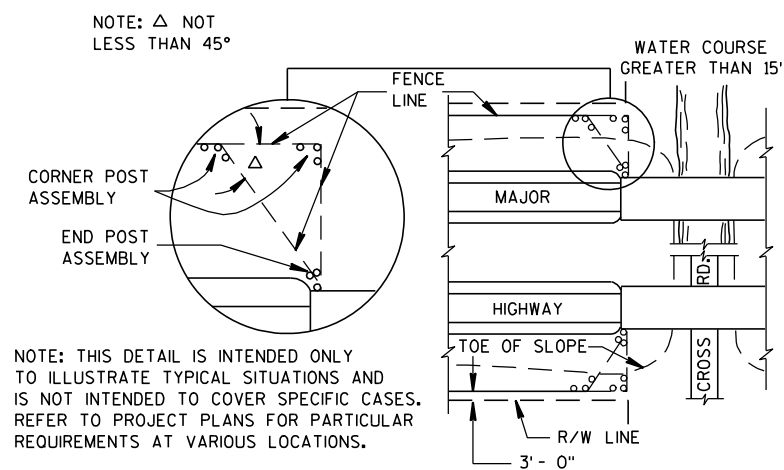
2" X 6" DOUGLAS FIR OR SO. YELLOW PINE PLACED BETWEEN TREE AND WOVEN WIRE FENCE. WOVEN WIRE FENCE AND BARBED WIRE TO BE STAPLED TO 2" X 6" LIKE AS TO LINE POST. 2" X 6" NOT FASTENED TO TREE.



PLAN VIEW
FENCE DESIGN AT TREES REMAINING
IN NORMAL FENCE LINE

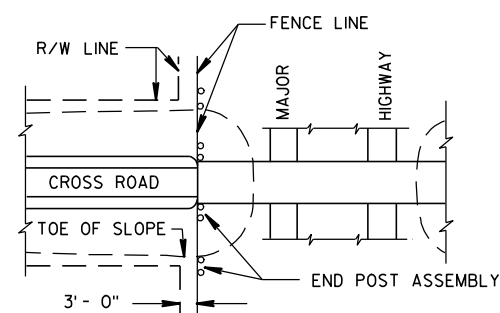


FENCE CONSTRUCTION OVER STREAM
COURSES OF 15 FT. OR LESS IN WIDTH

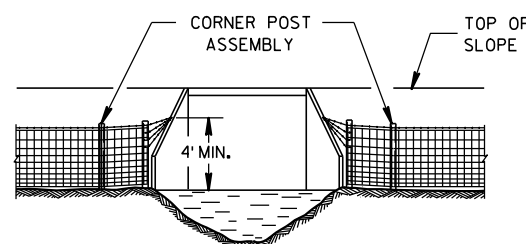


PLAN VIEW
MAJOR HIGHWAY OVERPASS OR STREAM COURSE
CROSSING OF GREATER THAN 15 FT. IN WIDTH

FENCE LOCATION AT STRUCTURES

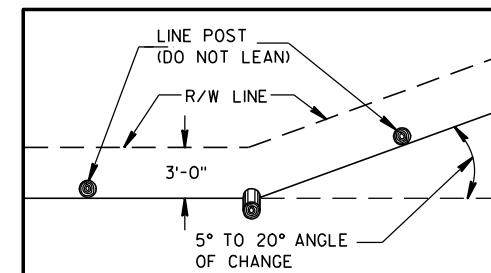
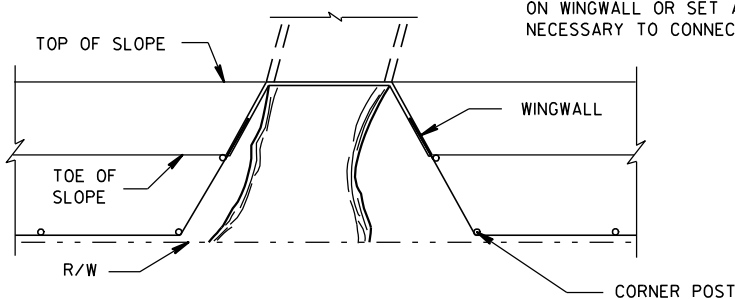


PLAN VIEW
MAJOR HIGHWAY UNDERPASS

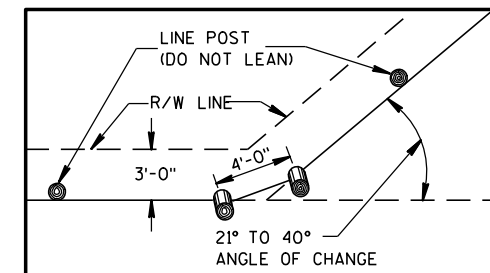


FENCE INSTALLATION TO WINGWALLS

NOTE: PLACE A MINIMUM OF 4 STRANDS OF BARBED WIRE, 6" MAXIMUM CENTERS IN FAN SHAPE CONNECTED TO AN EYE BOLT ON WINGWALL OR SET A LONE POST WHEN NECESSARY TO CONNECT BARBED WIRE.



PLAN VIEW
SINGLE POST CORNER

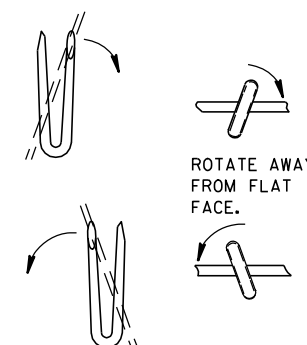


PLAN VIEW
DOUBLE POST CORNER

RIGHT OF WAY LINE CHANGE 40° AND LESS

NOTE: SINGLE AND DOUBLE POSTS SHALL BE A MIN. 6" DIA. X 8'-0" WITH A LEAN OF 4" TOWARD THE OUTSIDE OF THE CURVE.

WHEN THE RIGHT OF WAY LINE CHANGE IS MORE THAN 40° USE THE CORNER OR STRETCHER POSTS ASSEMBLY.



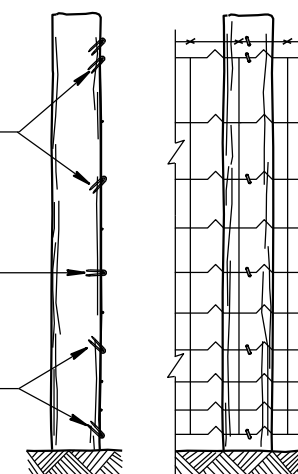
LINE POST

NOTE: WHEN POSTS ARE DRIVEN THE SMALL END SHALL BE DOWN.

STAPLES SLOPED DOWNWARD FOR SUSTAINED GRADES AND OVER KNOLLS.

STAPLES LEVEL FOR LEVEL GROUND.

SLOPE UPWARDS WHEN FENCE TENDS TO LIFT.



END ELEVATION
FARM SIDE ELEVATION
FENCE MOUNTING DETAIL

FENCE WOVEN WIRE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

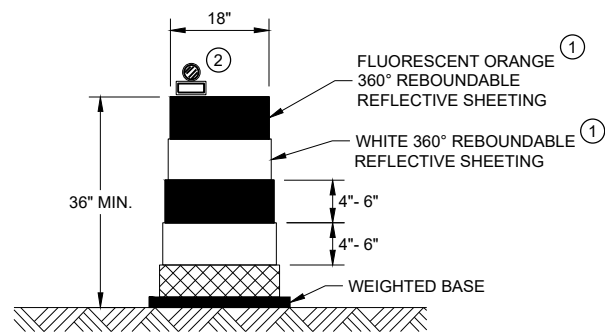
APPROVED

4/4/2008

DATE

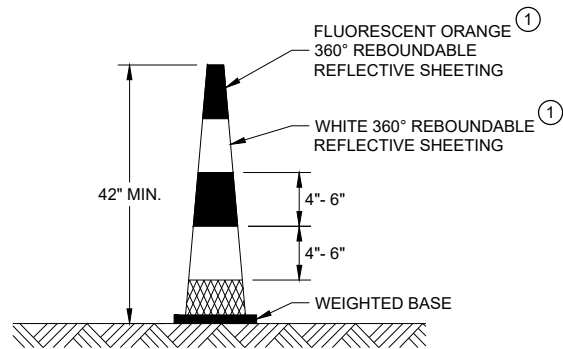
FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER



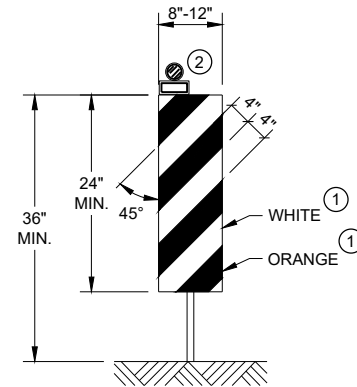
DRUM

BALLAST WIDTHS
RANGE FROM 24"-36"



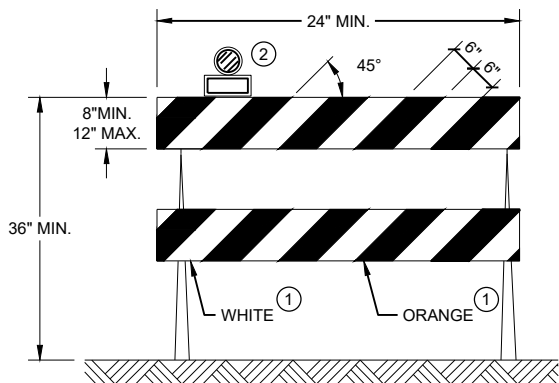
42" CONE

DO NOT USE IN TAPERS
½ SPACING OF DRUMS
BALLAST WIDTHS
RANGE FROM 14"-20"



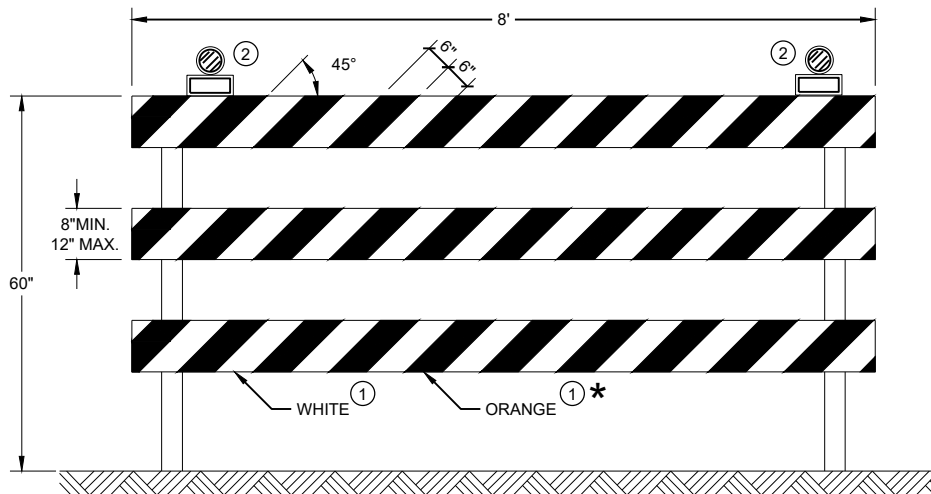
VERTICAL PANEL

THE STRIPES SHALL SLOPE DOWNWARD TO
THE TRAFFIC SIDE FOR CHANNELIZATION.



TYPE II BARRICADE

FOR RAILS LESS THAN 36" LONG, 4" WIDE STRIPES
MAY BE USED. ALL STRIPES SHALL SLOPE DOWNWARD
TO THE TRAFFIC SIDE FOR CHANNELIZATION.



TYPE III BARRICADE

IF SIGN MOUNTED, DO NOT COVER MORE THAN 50% OF THE TOP
TWO RAILS OR 33% OF THE TOTAL AREA OF THE THREE RAILS.

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

GENERAL NOTES

- ① REFLECTIVE SHEETING SHALL FOLLOW THE REQUIREMENTS IN THE APPROVED PRODUCTS LISTING FOR SIGN SHEETING.
- ② LOCATION OF WARNING LIGHTS WHEN SHOWN ON THE PLAN.

**CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2022 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA

LEGEND

- TRAFFIC CONTROL DRUM
- ⦿ SIGN ON PERMANENT SUPPORT
- ➡ DIRECTION OF TRAFFIC
- ⚡➡ FLASHING ARROW BOARD
- ▨ WORK AREA

GENERAL NOTES

THIS DETAIL IS TYPICAL FOR CLOSING THE RIGHT SHOULDER. FOR CLOSING THE LEFT SHOULDER, REVERSE THE TRAFFIC CONTROL.

THIS DETAIL MAY BE USED FOR DIVIDED ROADWAYS WITH ANY NUMBER OF TRAVEL LANES.

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

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FHWA'S MANUAL OF STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

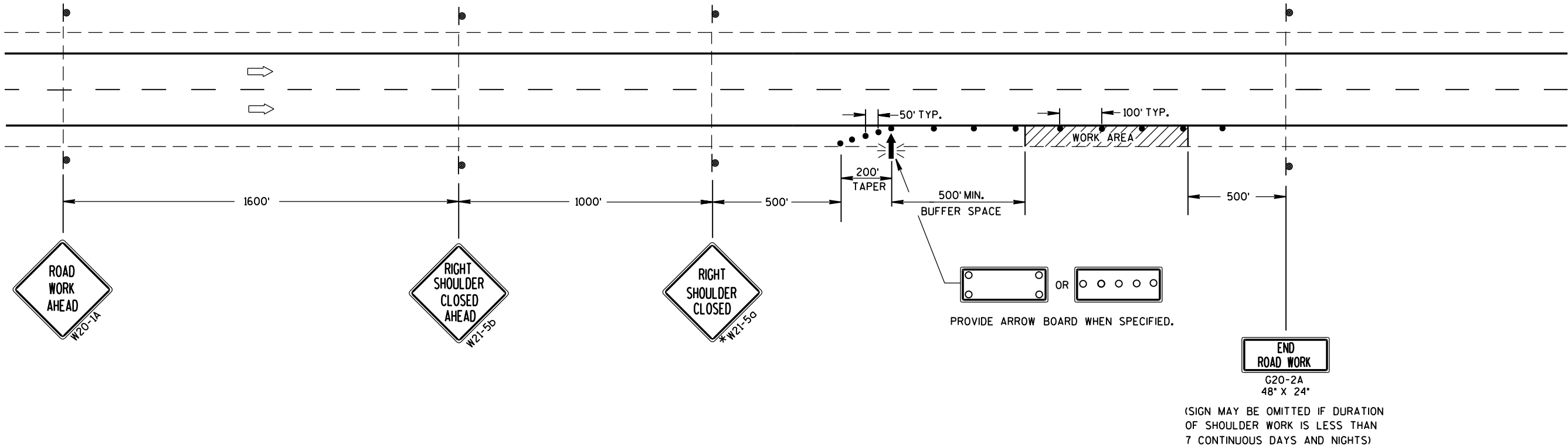
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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.

CHANNELIZING DEVICES PLACED ADJACENT TO THE WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

WHEN A RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

*FOR SHORT DURATION SHOULDER WORK OF LESS THAN ONE HOUR, THE W21-5a SIGN MAY BE OMITTED.

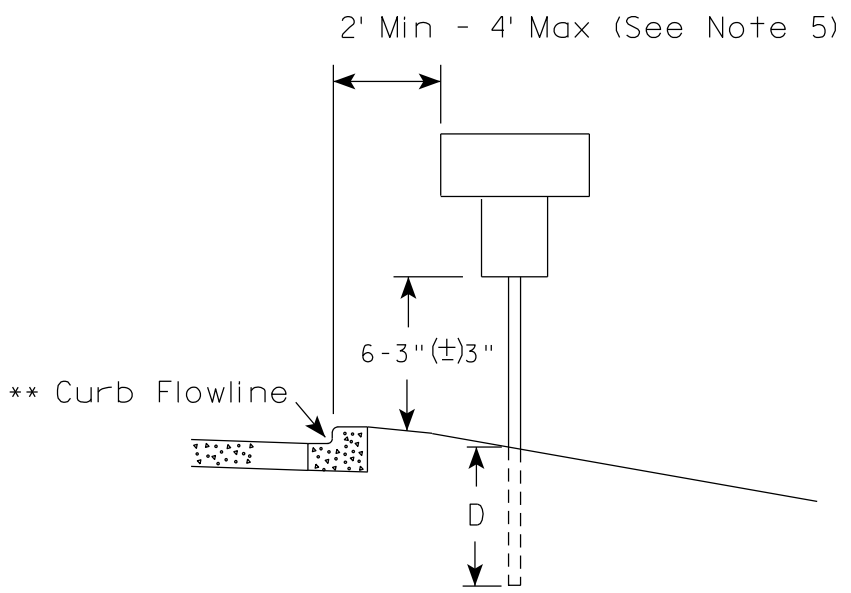
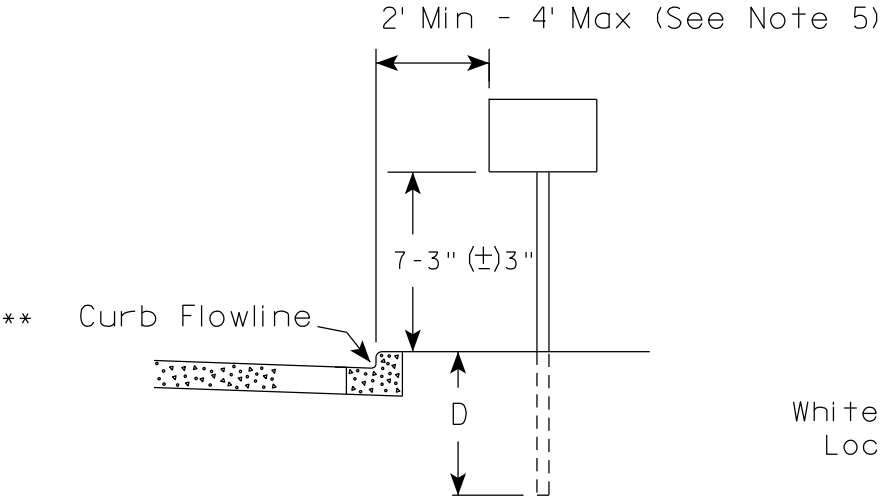


TRAFFIC CONTROL
SHOULDER CLOSURE ON DIVIDED
ROADWAY, SPEEDS GREATER
THAN 40 MPH

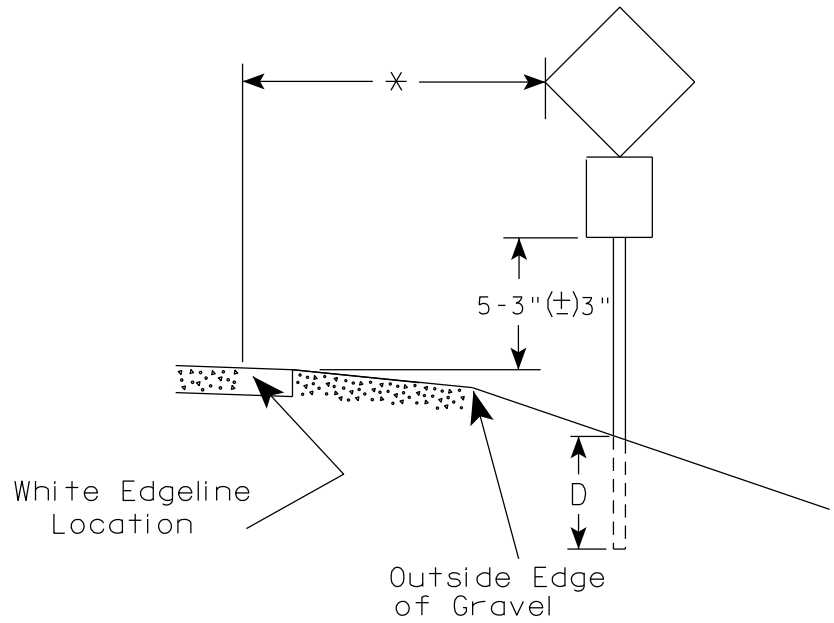
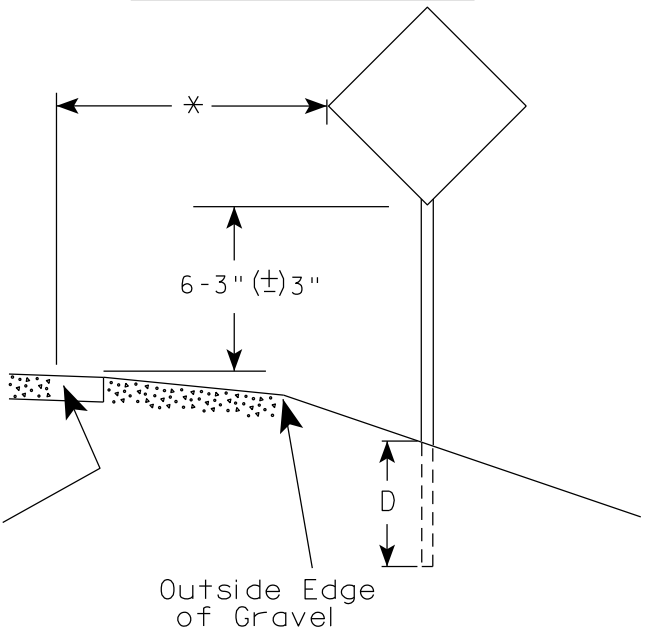
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2016 /S/ Peter Amakobe Atepe
DATE STATEWIDE WORK ZONE TRAFFIC
FHWA SAFETY ENGINEER

URBAN AREA



RURAL AREA (See Note 2)



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

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 or behind barrier wall, see A4-10 sign plate.
The Double Arrow sign (W12-1D) shall be mounted at a height of 2'-3" (±) 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" (±) 3".
3. For expressways and freeways, mounting height is 7'- 3" (±) 3" or 6'-3" (±) 3" depending upon existence of a sub-sign.
4. Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±) 3".
5. Offset distance shall be consistent with existing signs or consistent throughout length of project.
6. Folding signs shall be mounted at a height of 5'-3" (±) 3" or as directed by the Engineer.

* * 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.

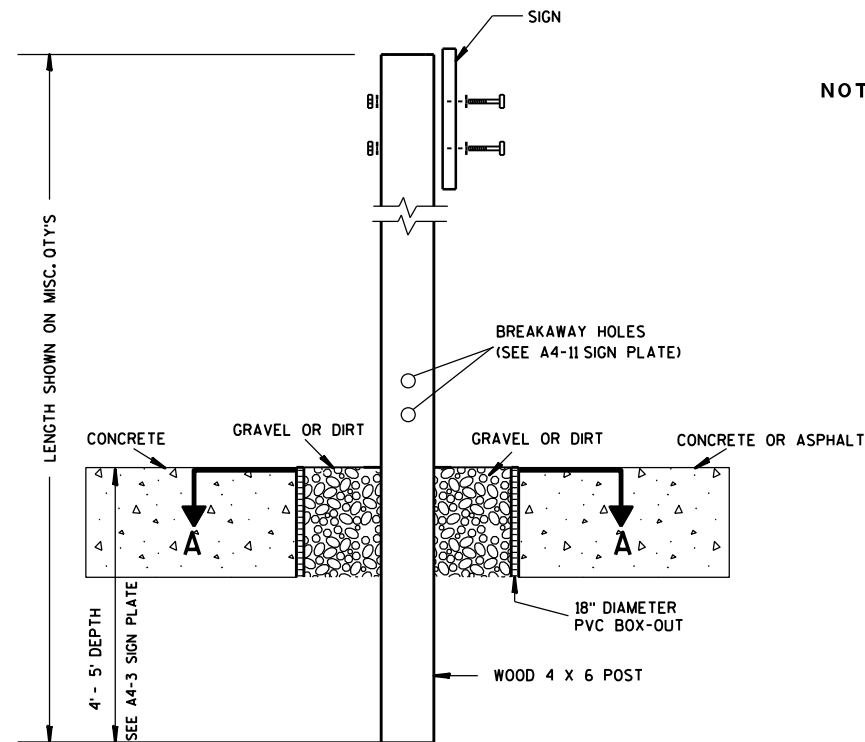
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED 
for State Traffic Engineer

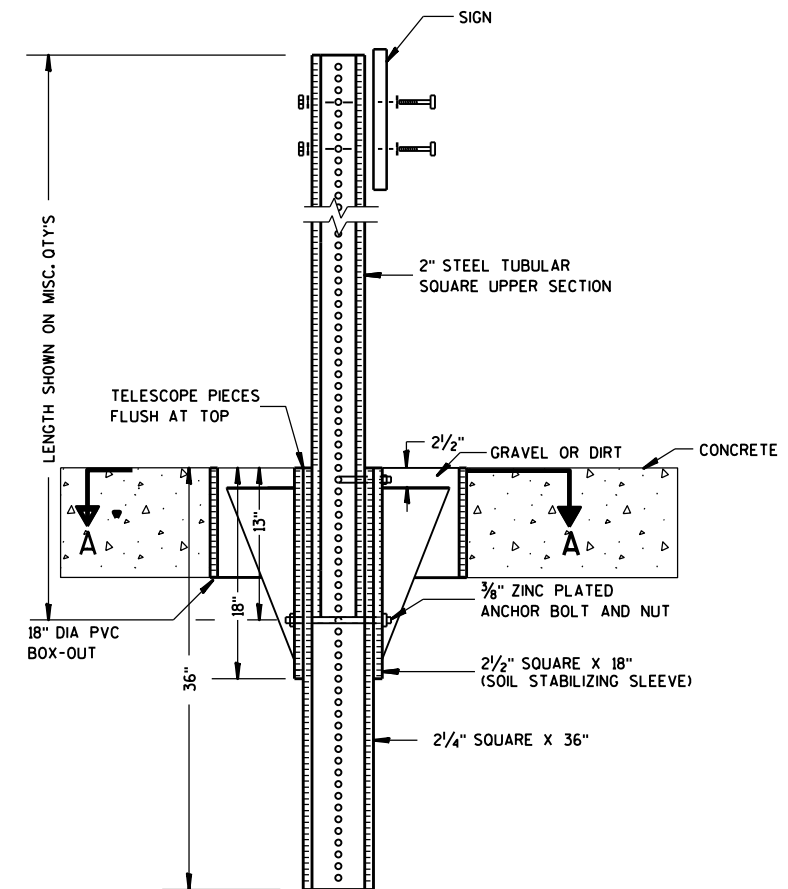
DATE 12/6/23 PLATE NO. A4-3.23



ELEVATION VIEW

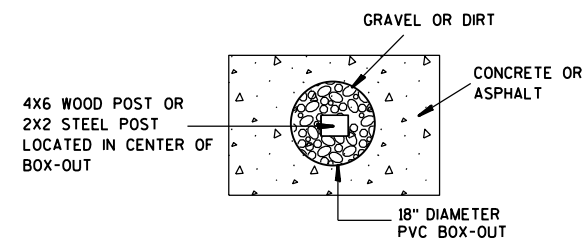
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

- NOTES: 1. ALL MATERIAL TO BE APPROVED BY ENGINEER PRIOR TO INSTALLATION
2. SEE SIGN PLATE A4-8 FOR SIGN HARDWARE REQUIREMENTS
3. 18 INCH X 18 INCH SQUARE BOX-OUTS MAY BE USED FOR INSTALLATIONS IN EXISTING CONCRETE OR ASPHALT LOCATIONS.



ELEVATION VIEW

DETAIL OF STEEL 2 X 2 SIGN POST IN BOX-OUT



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST
BOX-OUTS
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/27/14 PLATE NO. A4-3B.1

PROJECT NO:

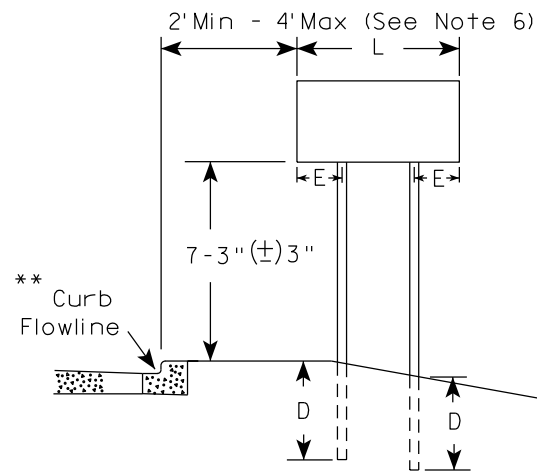
HWY:

COUNTY:

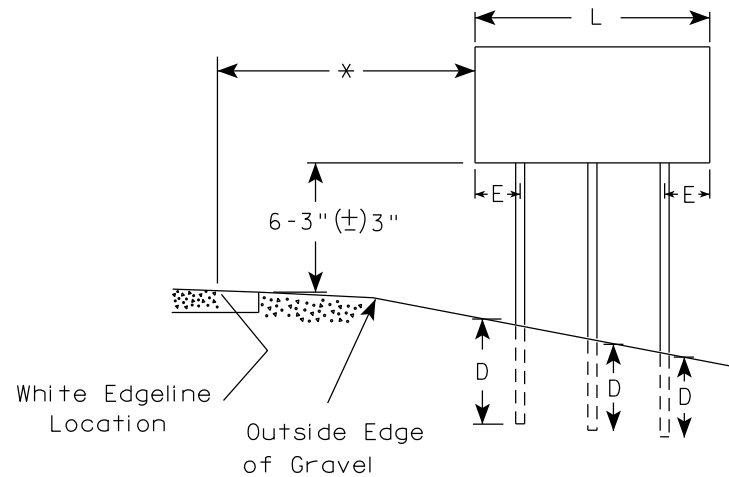
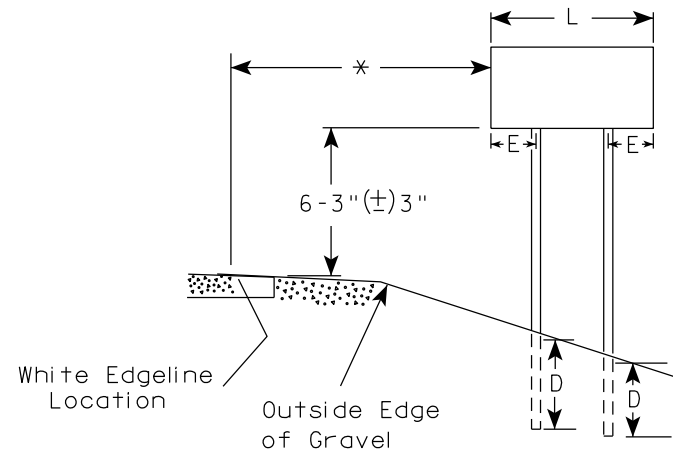
SHEET NO:

E

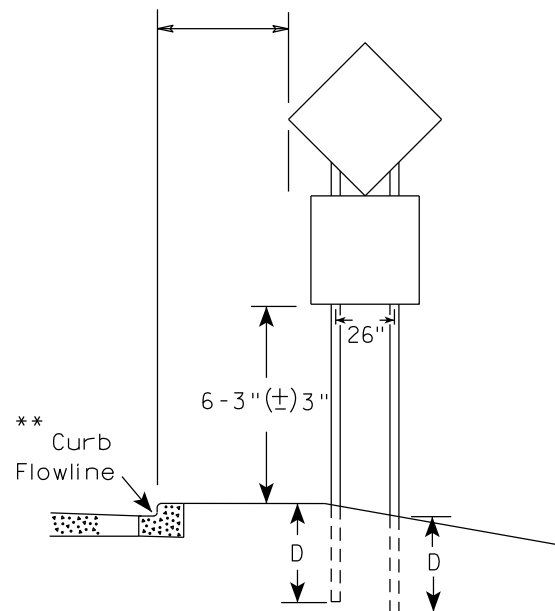
URBAN AREA



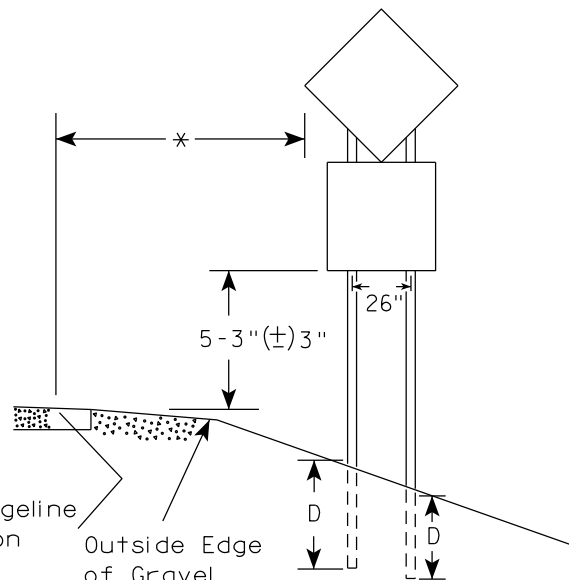
RURAL AREA (See Note 3)



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



48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

SIGN SHAPE OTHER THAN DIAMOND (TWO POSTS REQUIRED)	
L	E
Greater than 48" Less than 60"	12"
60" to 108"	L/5

SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED)	
L	E
Greater than 108" to 144"	12"

POST EMBEDMENT DEPTH

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

GENERAL NOTES

- For 3 or 4 post installations, individual post spacing shall be greater than 3'-6".
- See tables below for required number of posts.
- For expressways and freeways, mounting height is 7'-3" (±) 3" or 6'-3" (±) 3" depending upon existence of sub-sign.
- The (±) tolerance for mounting height is 3 inches.
- J-Assemblies are considered to be one sign for mounting height.
- Offset distance shall be consistent with existing signs or consistent throughout length of project.
- Folding signs shall be mounted at a height of 5'-3" (±) 3" or as directed by the engineer.
- The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±) 3". The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), 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" (±) 3".

* 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.

** 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.

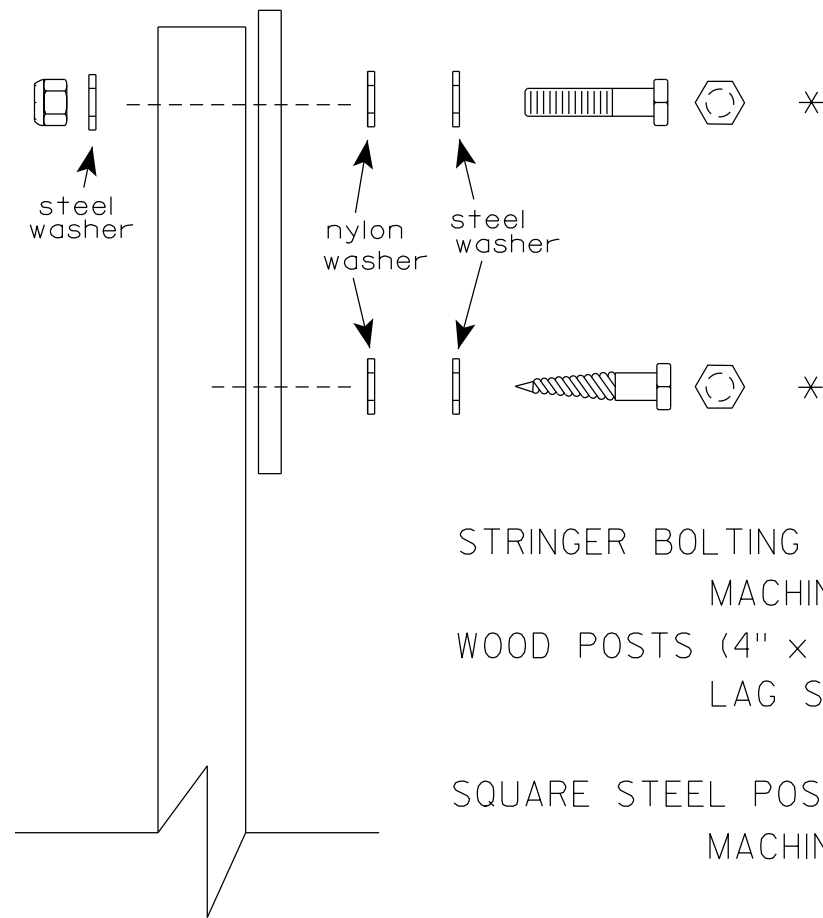
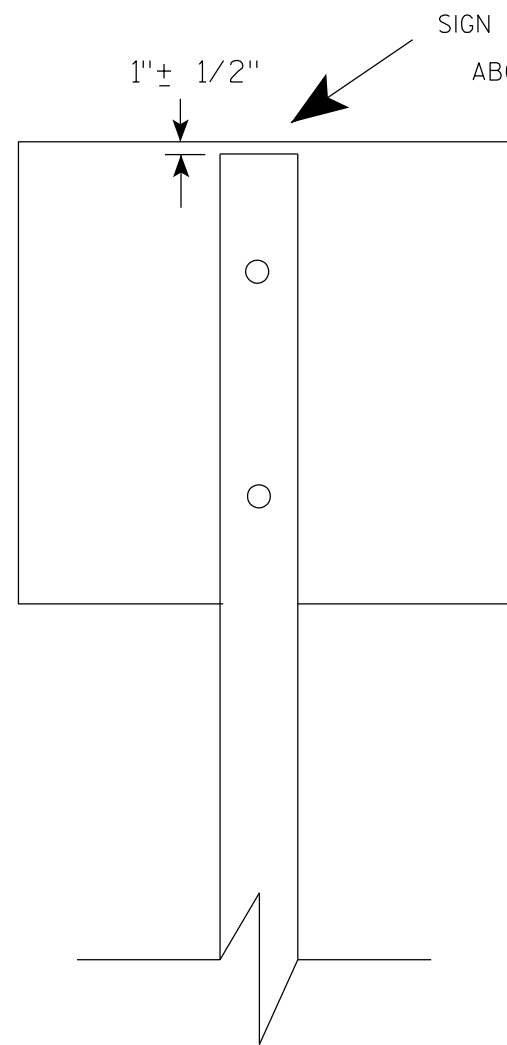
*** See A4-3 sign plate for signs 4' or less in width and less than 20 S.F. in area.

TYPICAL INSTALLATION
OF TYPE II SIGNS
ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 12/6/23 PLATE NO. A4-4.16



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.

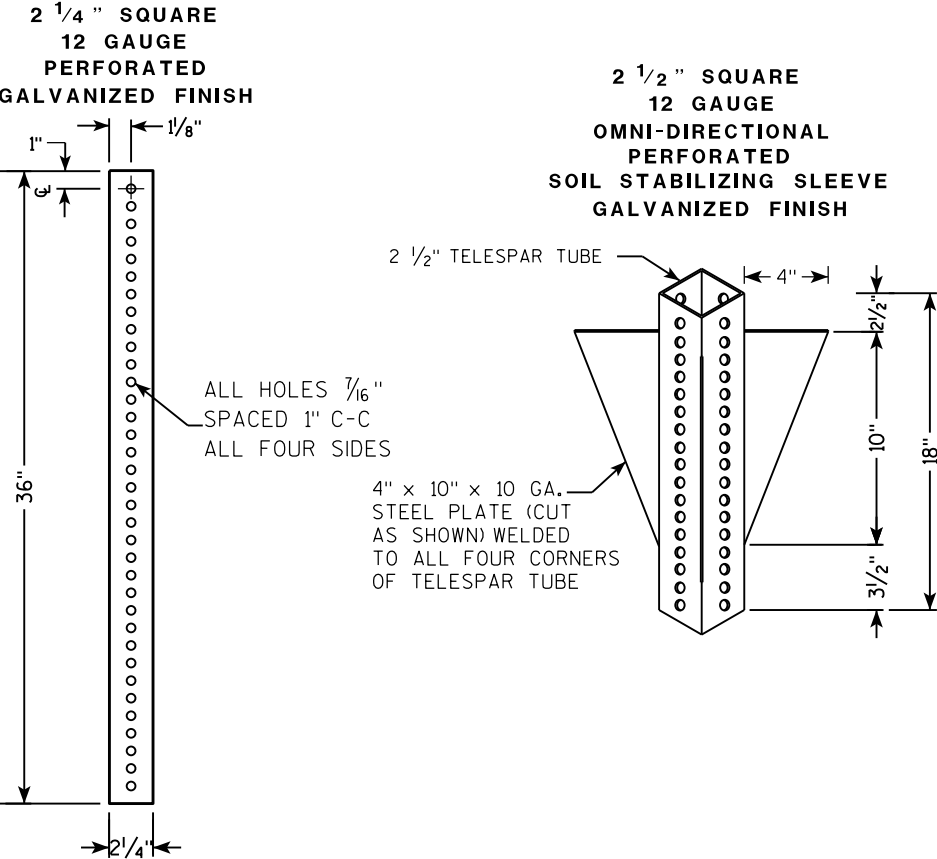
Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

- 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 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

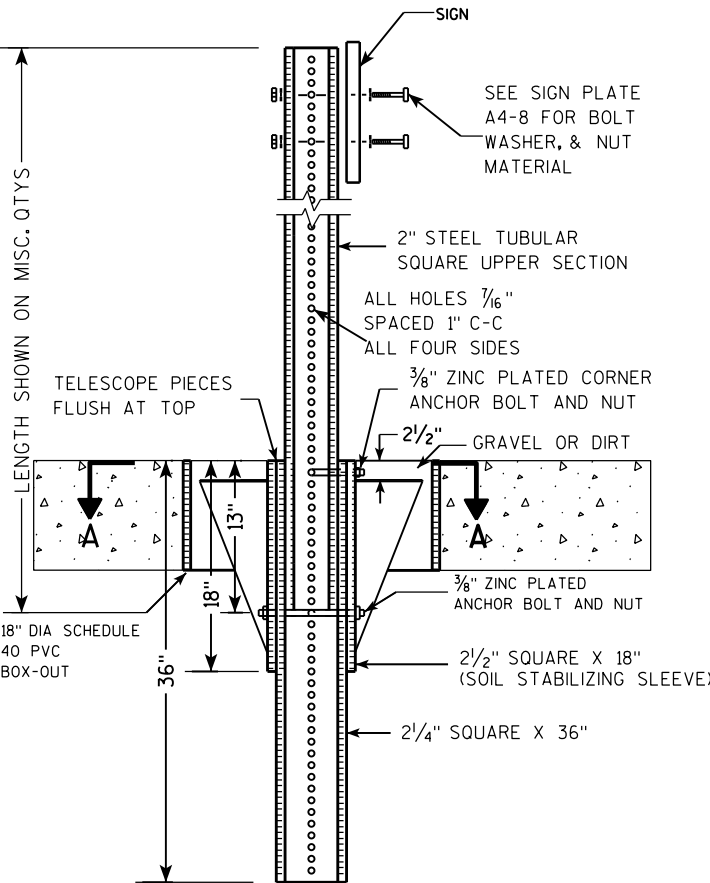
* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require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

ATTACHMENT OF SIGNS TO POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 4/1/2020	PLATE NO. A4-8.9

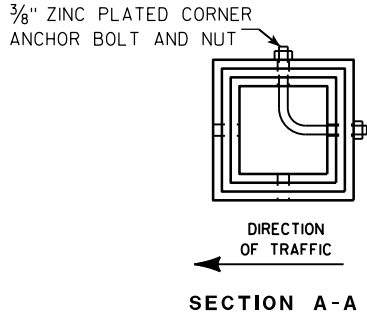
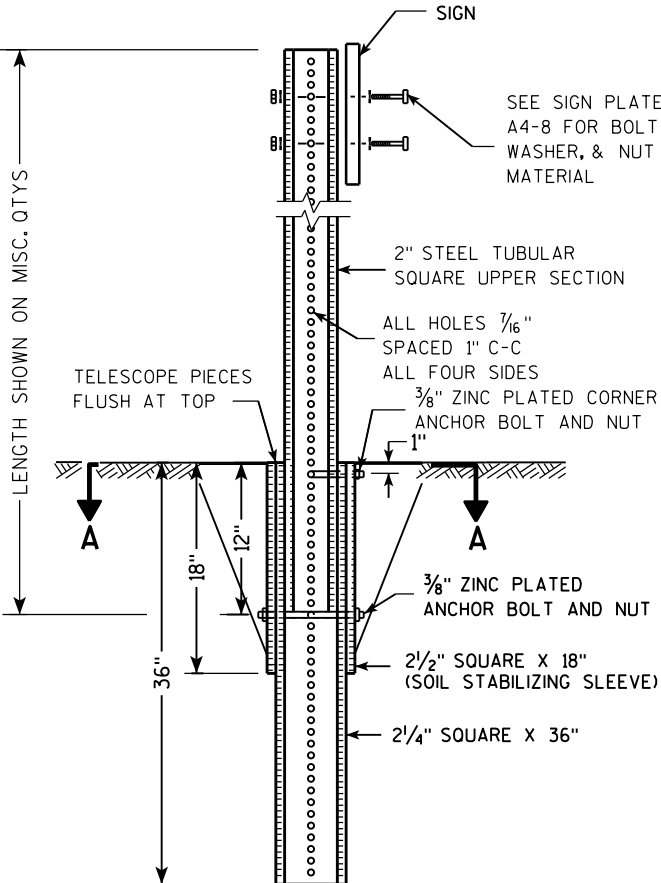
TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM



DETAIL OF TUBULAR STEEL SIGN POST
(IN POURED CONCRETE OR ASPHALT)



DETAIL OF TUBULAR STEEL SIGN POST
(IN LOCATIONS OTHER THAN POURED CONCRETE OR ASPHALT)



Area of Sign Installation (Sq. Ft.)	Number of Required Posts
9 or less	1
Greater than 9 less than or equal to 18	2
Greater than 18 less than or equal to 27	3

Signs wider than 3 feet or larger than 9 sq. ft shall be mounted on multiple posts (see above table).

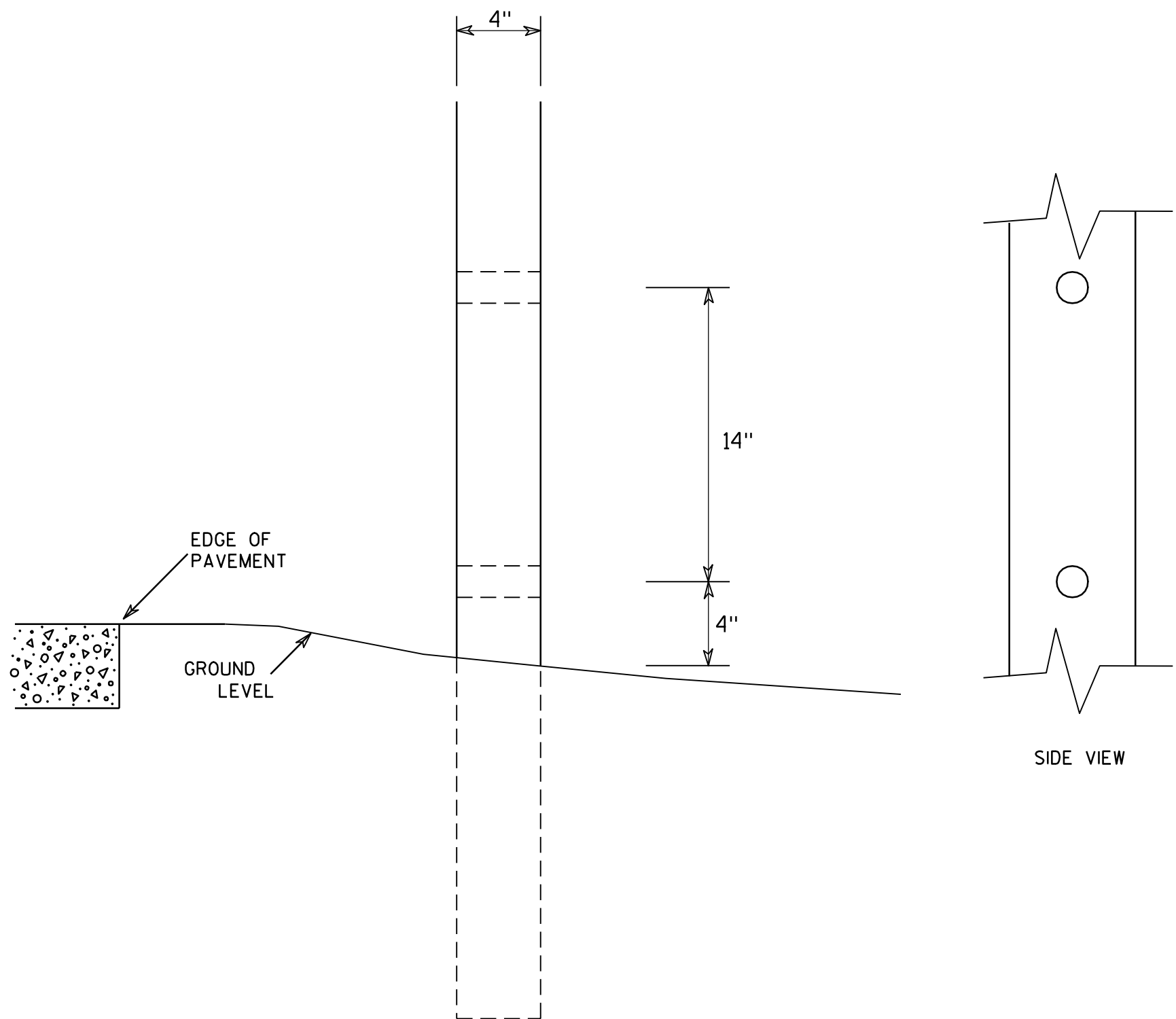
TUBULAR STEEL
SIGN POST
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 2/05/15 PLATE NO. A4-9.9

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

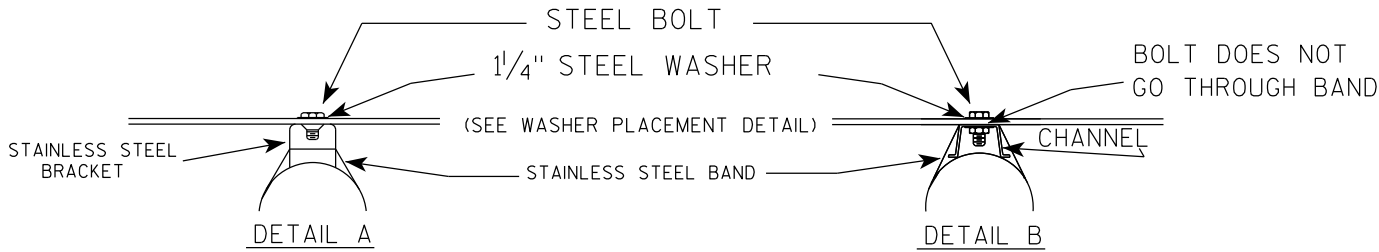
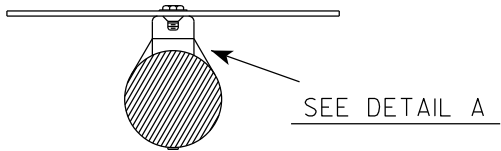
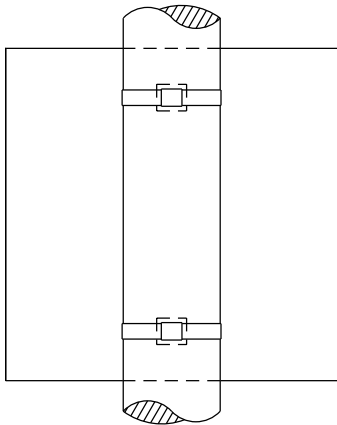
APPROVED *Chester J. Spang*
for State Traffic Engineer

DATE 3/27/97 PLATE NO. A4-11.2

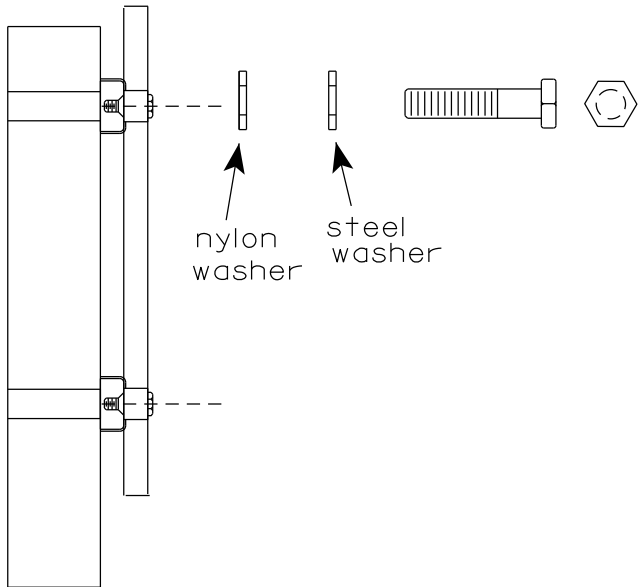
PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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BANDING

SINGLE SIGN



WASHER PLACEMENT

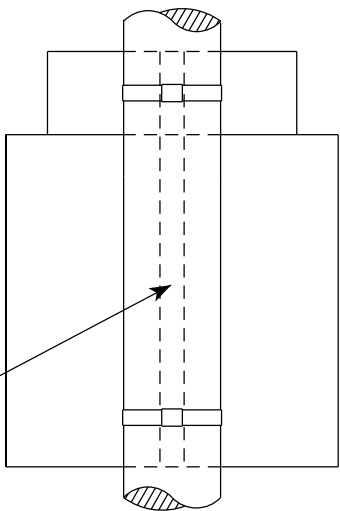


WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON
FOR ALL TYPE H SIGNS

GENERAL NOTES

1. Any sign over 3 feet in width shall use the V-Block banding method. See A5-10 standard plate.
2. Signs 3 feet or greater in height shall have three bracket bands installed. Signs less than 3 feet in height shall have two bracket bands installed.
3. Banding and assembly bracket shall be stainless steel. All bands shall be 3/4" in width and 0.025" thickness.
4. ALL SIGN MOUNTING BOLTS AND WASHERS SHALL BE EITHER:
 - a. Hot dip or mechanically galvanized in accordance with ASTM Designation: A 153, Class D
 - b. Electro-galvanized in accordance with ASTM designation: B 633, Type III, SC 3

"J" ASSEMBLY



CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET

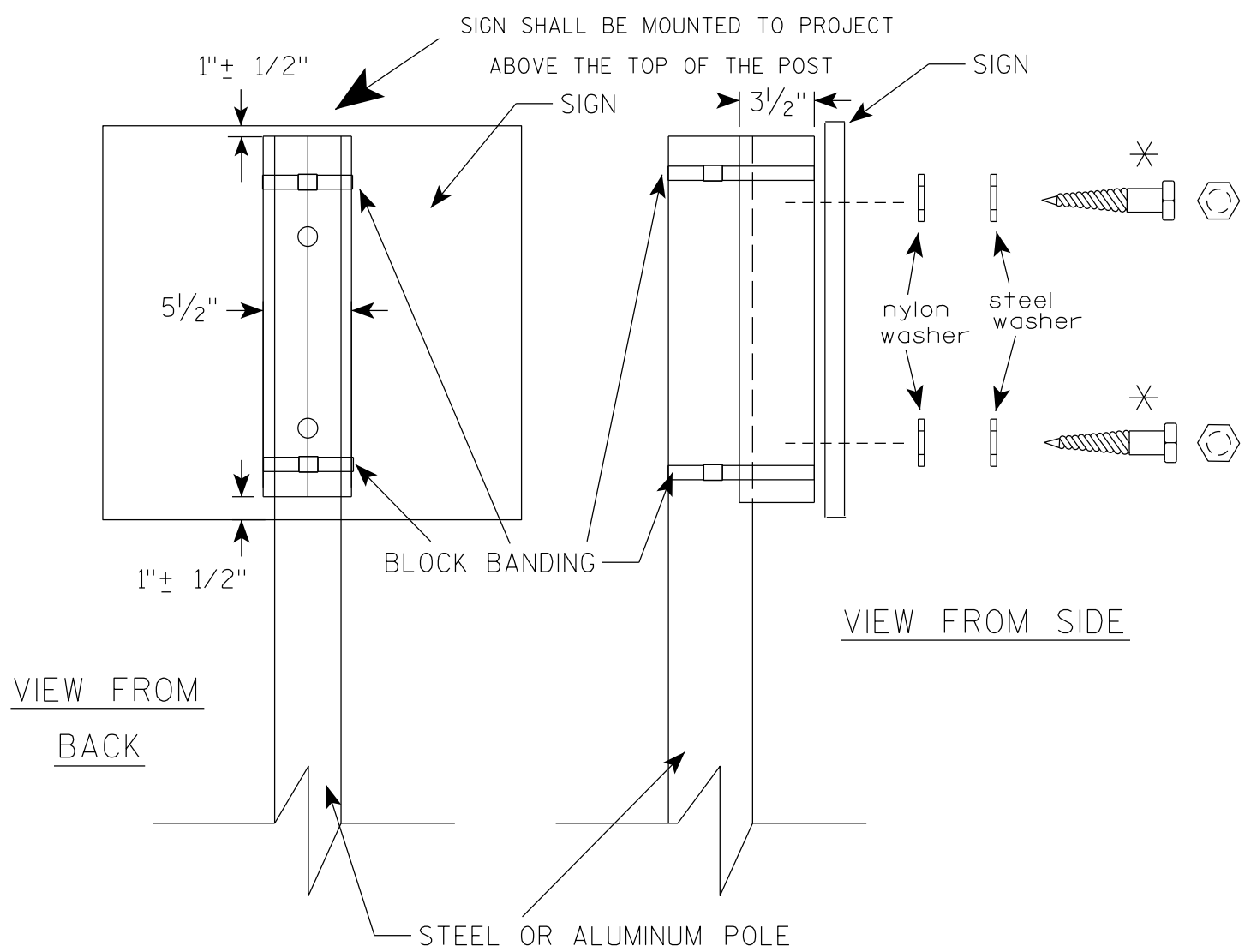
SEE DETAIL B

STANDARD SIGN
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

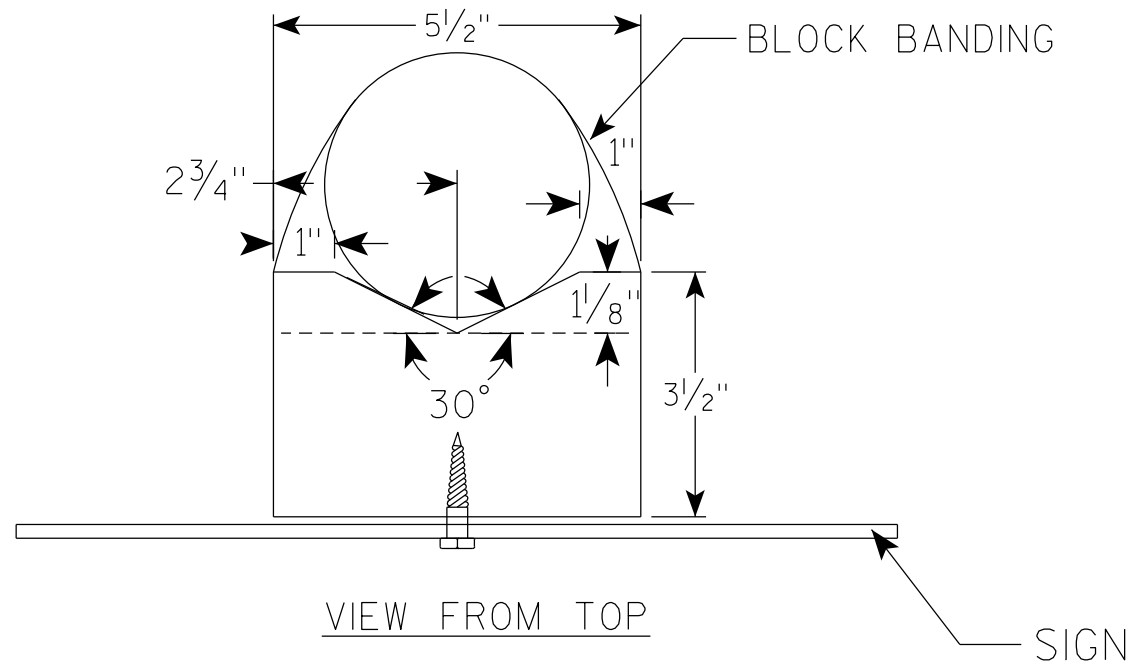
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 6/10/19 PLATE NO. A5-9.4



VIEW FROM
BACK

VIEW FROM SIDE



VIEW FROM TOP

GENERAL NOTES

1. WOOD 4"X6" POST MATERIAL SHALL CONFORM TO 507.2.2 OF THE WISDOT STANDARD SPECIFICATIONS
2. BLOCK BANDING AND CLIPS SHALL BE STAINLESS STEEL, $\frac{3}{4}$ " WIDTH AND 0.025" THICKNESS
3. SIGNS 3' OR GREATER IN HEIGHT SHALL UTILIZE 3 BLOCK BANDS. SIGNS UNDER 3' IN HEIGHT SHALL UTILIZE 2 BLOCK BANDS
4. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA, BUT NORMALLY THERE ARE TWO. FOR SIGNS GREATER THAN 9 S.F. 3 FASTENERS SHALL BE USED.
5. ALL SIGN MOUNTING BOLTS AND WASHERS SHALL BE EITHER:
 - a. Hot dip or mechanically galvanized in accordance with ASTM Designation: A 153, Class D
 - b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3
6. ALL BOLTS SHALL HAVE HEXAGONAL HEADS.
7. STEEL WASHERS SHALL BE $\frac{1}{4}$ " O.D. X $\frac{3}{8}$ " I.D. X $\frac{1}{16}$ "
8. NYLON WASHERS SHALL BE $\frac{1}{4}$ " O.D. X $\frac{3}{8}$ " I.D. X .080 FOR TYPE H OR TYPE F FACE SIGN

✱ LAG BOLTS SHALL BE $\frac{3}{8}$ " X $2\frac{1}{2}$ "

BLOCK BANDING DETAIL
(V-BLOCK OPTION)

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 4/19/2022 PLATE NO. A5-10.3

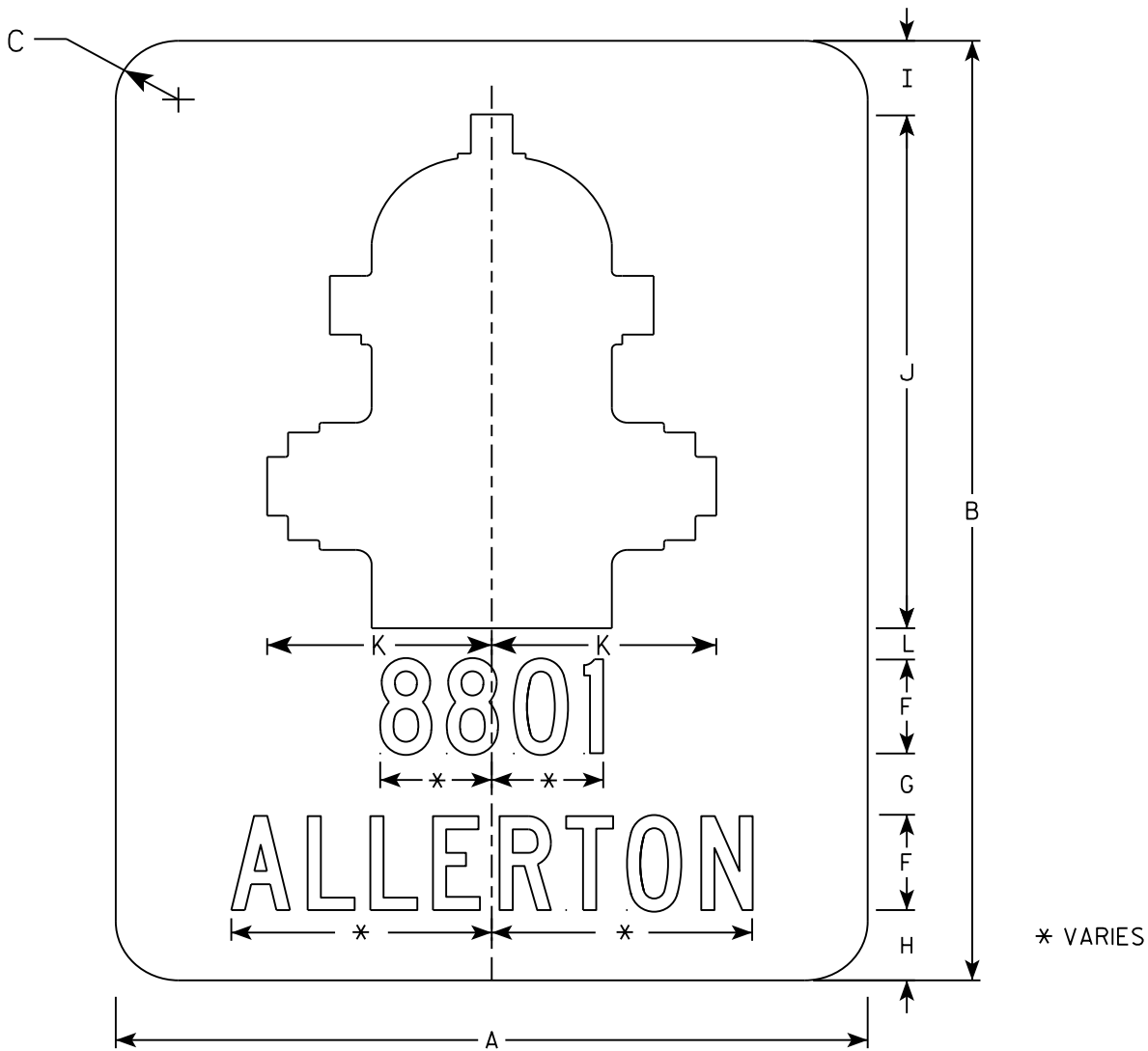
PROJECT NO:

SHEET NO:

E

NOTES

- 1. Sign is Type II - Type H Reflective
- 2. Color:
Background - Green
Message - White
- 3. Message Series - C except Series B if sign will exceed 24" width
- 4. Select appropriate message series and adjust spacing to achieve proper balance.



D9-54

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																											
2	24	30	1 1/2			3	2	2 1/4	2 3/8	16 3/8	7 1/8	1														5.0	
3																											
4																											
5																											

STANDARD SIGN

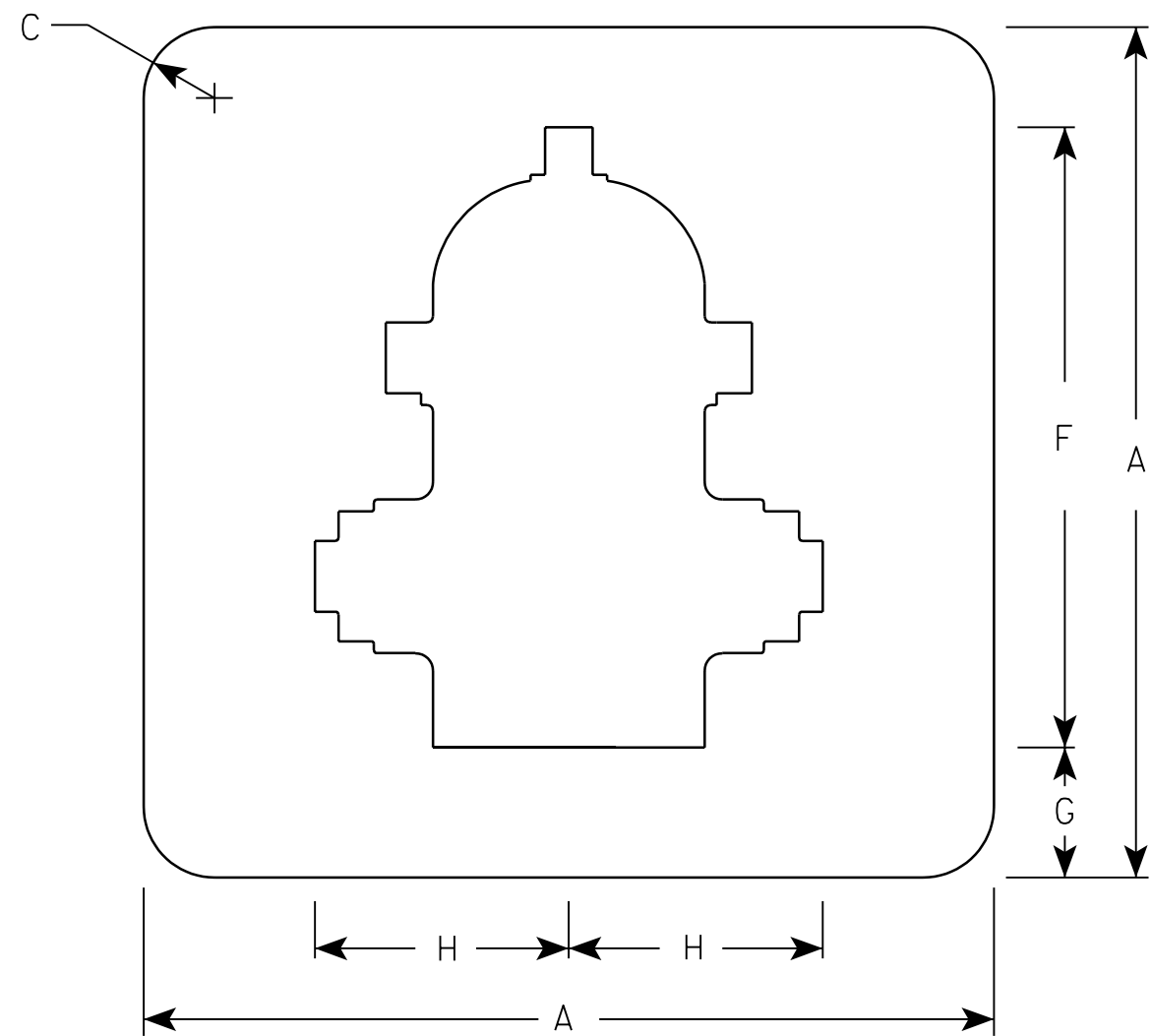
D9-54

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 5/16/18 PLATE NO. D9-54.4

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 - GREEN
Message - WHITE (HYDRANT) TYPE H REFLECTIVE
- 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.

7

Metric equivalent
for this sign is:

SIZE	
1	
2	450 mm X 450 mm
3	
4	
5	

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.	Area m ₂
1																												
2	18		1 1/2			13 1/2	2 3/4	5 3/8																			2.25	0.20
3																												
4																												
5																												

STANDARD SIGN
D9-54A

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 5/01/03 PLATE NO. D9-54A.3

1. GENERAL PLAN
2. GENERAL NOTES, DETAILS
3. SUBSURFACE EXPLORATION

BRIDGE OFFICE:
WILLIAM DREHER, P.E. (608) 266-8489

CONSULTANT CONTACT:
GREG WEYANDT, P.E. (715) 720-6266



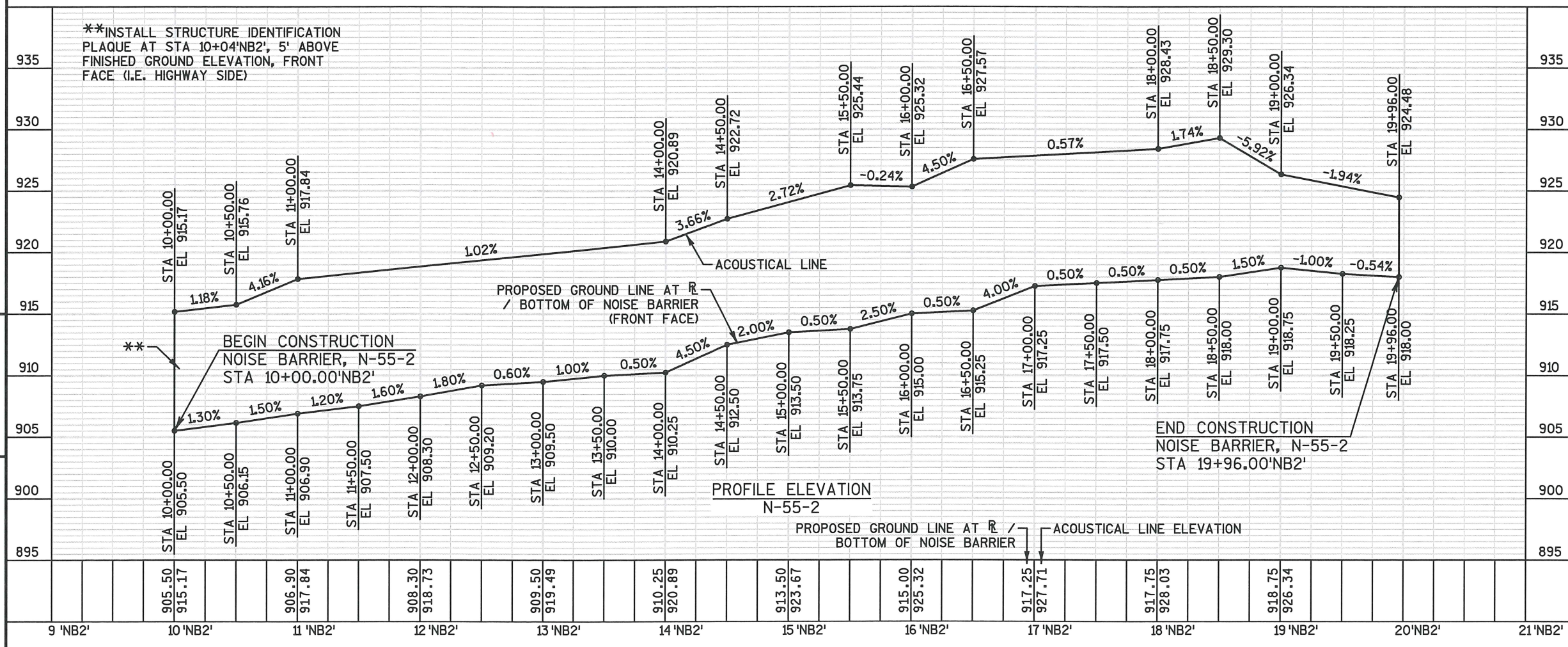
NUMBER	STATION	DESCRIPTION	ELEVATION
68	581+77.93'SB', 60.2'LT	TOP NE BOLT ON E LEG OF HANLEY RD SIGN 35 S	902.91

HORIZONTAL DATUM AND ADJUSTMENT: NAD 83 (2007)
VERTICAL DATUM AND ADJUSTMENT: USGS (NAVD 88)
COORDINATE REFERENCE SYSTEM: WCCS ST CROIX COUNTY (US SURVEY FOOT)

PLAN
N-55-2

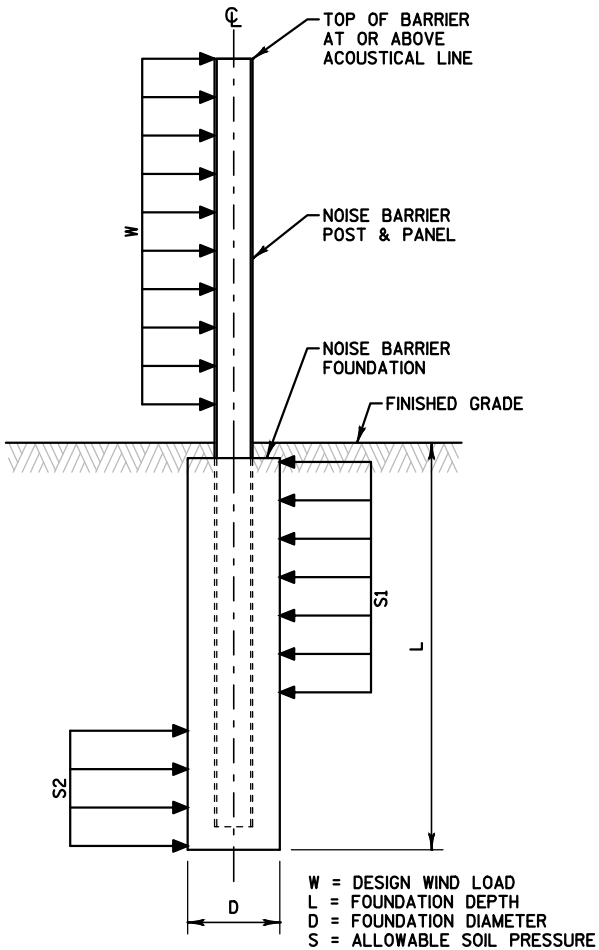
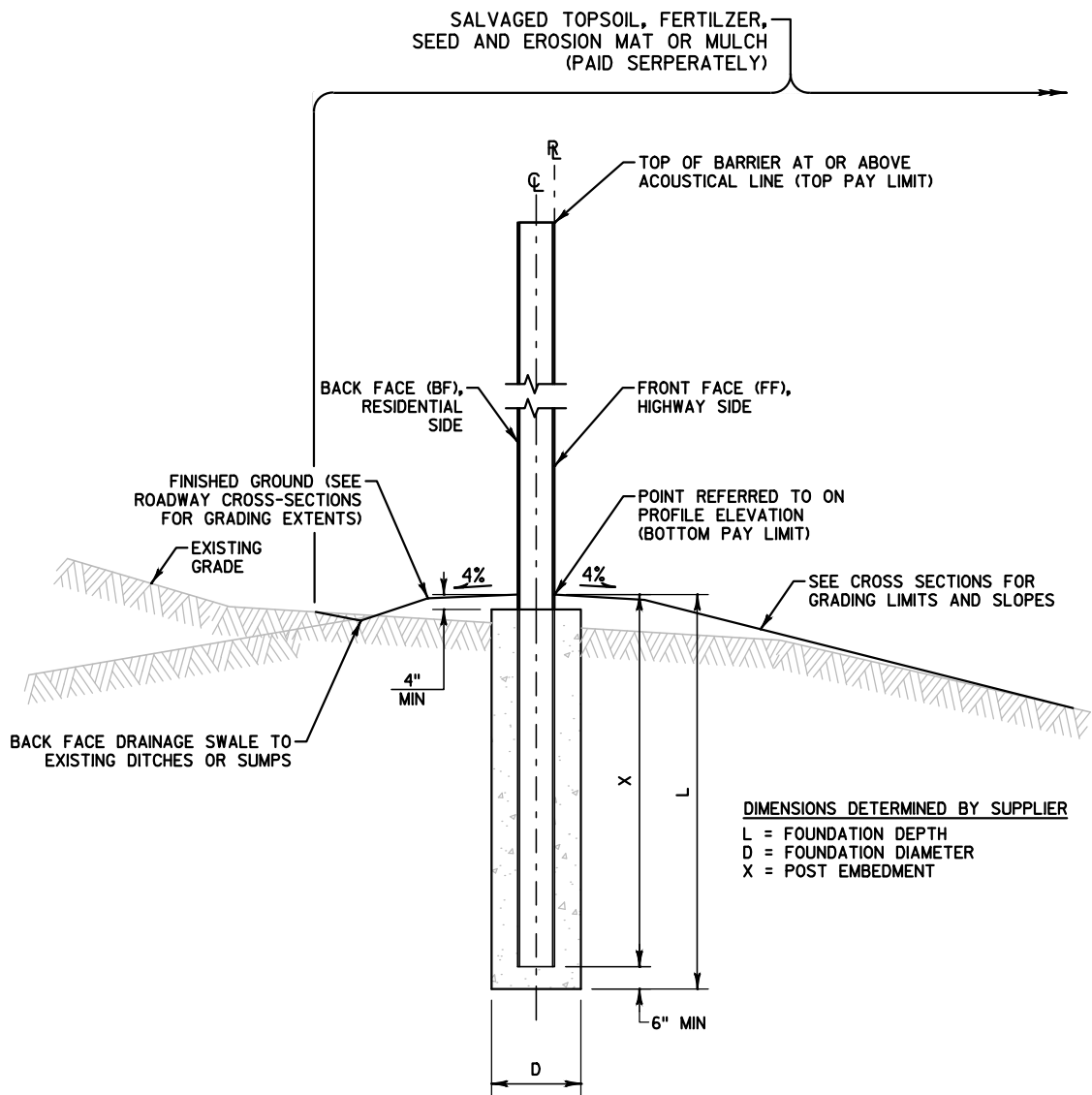
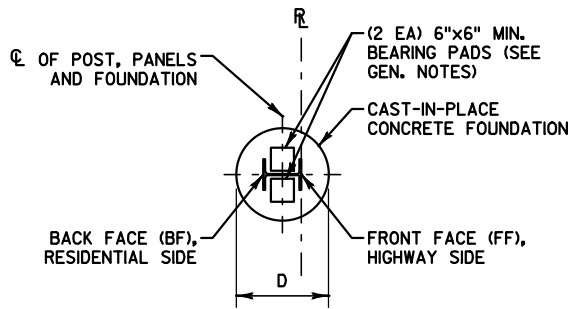
TOTAL ESTIMATED QUANTITIES - N-55-2

BID ITEM NUMBER	DESCRIPTION	UNIT	TOTAL
531.0300.S.002	NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-2	SF	10,200



NO.	DATE	REVISION				BY
 Short Elliott Hendrickson Inc. 10 North Bridge Street Chippewa Falls, WI 54729-2550 715.720.6200 main 888.908.8166 fax 800.472.5881 toll free www.sehinc.com Building a Better World for All of Us.™						
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION						
ACCEPTED	 SDR CHIEF STRUCTURES DESIGN ENGINEER				01/19/17 DATE	
STRUCTURE N-55-2						
NOISE BARRIER-NW RAMP SB STH 35/HANLEY RD						
COUNTY		ST CROIX		TOWN/CITY/VILLAGE		HUDSON
DESIGN SPEC. AASHTO 2002						
DESIGNED BY	DVS	DESIGN CK'D.	CJB	DRAWN BY	GLE	PLANS CK'D. GLW
GENERAL PLAN					SHEET 1 OF 3	

SAVE FOLDER PATH: \\SEHOF1.CST\SEHINC.COM\PROJECTS\UZ\WITTN\124688\5-FINAL-DSGN\50-FINAL-DSGN\40-TRANSHW\CIVIL 3D\10200675\SHEETS\PLAN\SEC 08 STRUCTURE PLANS
FILE NAME : 081002_GP (NOISE WALL DETAILS).DWG
PLOT NAME : 081002_GP (NOISE WALL DETAILS).DWG
PLOT DATE : 1/18/2017 4:05 PM
PLOT BY : SEH INC
LAYOUT NAME : N-55-02
PLOT SCALE : 1.0 IN = ***** FT



NOISE BARRIER LOADING DIAGRAM

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

THE CONTRACTOR SHALL PROVIDE COMPLETE DESIGN, PLANS, DETAILS, SPECIFICATIONS AND SHOP DRAWINGS FOR THE NOISE BARRIER IN ACCORDANCE WITH THE SPECIAL PROVISIONS. THE NOISE BARRIER MANUFACTURER SHALL PROVIDE TECHNICAL ASSISTANCE TO THE CONTRACTOR DURING CONSTRUCTION. THE COST OF FURNISHING THESE ITEMS SHALL BE INCIDENTAL TO THE BID ITEM "NOISE BARRIER DOUBLE-SIDED SOUND ABSORPTIVE N-55-2".

PLANS, ELEVATIONS AND DETAILS SHOWN ARE INTENDED TO INDICATE LOCATIONS, LENGTHS, HEIGHTS, AND DETAILS COMMON TO THE SYSTEM SELECTED. THE CONTRACTOR SHALL VERIFY THAT THE SYSTEM SELECTED WILL CONFORM TO THE REQUIRED ALIGNMENTS AND DETAILS.

THE NOISE BARRIER IS TO BE DESIGNED USING THE PROPOSED GROUND LINE AT REFERENCE LINE AND THE ACOUSTICAL LINE SHOWN ON THE GENERAL PLAN SHEET.

THE ACOUSTICAL LINE IS THE TOP PAY LIMIT FOR THE BID ITEM "NOISE BARRIER DOUBLE-SIDED SOUND ABSORPTIVE N-55-2". NOISE BARRIER PLACED ABOVE THE ACOUSTICAL LINE WILL NOT BE MEASURED FOR PAYMENT.

THE PROPOSED GROUND LINE AT REFERENCE LINE IS THE BOTTOM PAY LIMIT FOR THE BID ITEM "NOISE BARRIER DOUBLE-SIDED SOUND ABSORPTIVE N-55-2". NOISE BARRIER PLACED BELOW THE FINISHED GRADE LINE WILL NOT BE MEASURED FOR PAYMENT.

EXISTING BORING LOGS AND LAB DATA IN THE VICINITY OF THE PROPOSED NOISE BARRIERS HAVE BEEN COMPILED AND INCLUDED IN THE DOCUMENT "GEOTECHNICAL EXPLORATION REPORT", DATED FEBRUARY 4, 2016, CONTACT THE DOT PROJECT MANAGER TO OBTAIN A COPY. THE CONTRACTOR IS RESPONSIBLE FOR THE REVIEW OF THE DATA IN THE REPORT, ASSESSING AND EVALUATING FIELD DRILLING CONDITIONS AND SUPPORTING THE DEVELOPMENT OF SOIL DESIGN PARAMETERS FOR THE NOISE BARRIER FOUNDATION DESIGN.

ALL NOISE BARRIERS SHALL BE DESIGNED IN ACCORDANCE WITH THE 1989 GUIDE SPECIFICATIONS FOR STRUCTURAL DESIGN OF SOUND BARRIERS, INCLUDING THE 1992 AND 2002 INTERIM'S BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS.

THE FOLLOWING DESIGN PRESSURES SHALL BE USED IN ACCORDANCE WITH THE SPECIAL PROVISIONS:
WIND LOAD ----- 28.5 P.S.F.

REINFORCING STEEL IN THE CONCRETE CORE OF THE NOISE BARRIER PANELS SHALL HAVE A MINIMUM CLEARANCE OF 1 INCH. THE CONCRETE CORE SHALL BE DESIGNED TO RESIST THE LOADS WITHOUT CONSIDERING ANY COMPOSITE ACTION FROM MATERIAL IN THE PANEL.

BOTTOM NOISE BARRIER PANELS SHALL BE DESIGNED TO SUPPORT THE DEAD LOAD (WEIGHT) OF THE PANELS DIRECTLY ABOVE IT AND ITS OWN DEAD LOAD. THE DEAD LOAD SHALL BE DISTRIBUTED UNIFORMLY ASSUMING SIMPLE BEAM ACTION WITH SUPPORTS AT THE POSTS. BOTTOM PANELS SHALL HAVE A MINIMUM AMOUNT OF PERIMETER REINFORCEMENT OF A #4 BAR WHICH SHALL BE CONTINUOUS AROUND THE CORNERS.

A 1/4" THICK COMPRESSIBLE BEARING PAD SHALL BE PROVIDED BETWEEN THE FOUNDATION AND THE BOTTOM PANELS. THE BEARING PADS SHALL BE PREFORMED EPDM RUBBER CONFORMING TO ASTM D-2000, GRADE 2, TYPE A, CLASS A WITH A MINIMUM DUROMETER HARDNESS OF 80. BEARING PADS SHALL BE INCIDENTAL TO THE BID ITEM "NOISE BARRIER DOUBLE-SIDED SOUND ABSORPTIVE N-55-2".

PRECAST CONCRETE PEDESTALS PLACED BETWEEN THE FOUNDATION AND BOTTOM PANELS SHALL BE REINFORCED IF OVER 1'-0" HIGH.

INCLUDE THE COST OF THE STONE PATTERN SURFACE TREATMENT, REVEALS, COATING OF STEEL POSTS AND CONNECTIONS, AND COLORING/STAINING THE PANELS, UNDER THE BID ITEM "NOISE BARRIER DOUBLE-SIDED SOUND ABSORPTIVE N-55-2".

ALL CONCRETE MASONRY FOR NOISE BARRIER FOUNDATIONS IS SUBJECT TO THE QMP REQUIREMENTS FOR CLASS II ANCILLARY CONCRETE. PERFORM QMP TESTING OF CONCRETE MASONRY FOR NOISE BARRIER FOUNDATIONS IN ACCORDANCE WITH SECTION 716 OF THE STANDARD SPECIFICATIONS FOR CLASS II ANCILLARY CONCRETE. QMP TESTING IS INCIDENTAL TO THE BID ITEM "NOISE BARRIER DOUBLE-SIDED SOUND ABSORPTIVE N-55-2".

ERECTION OF THE NOISE BARRIER IS LIMITED TO 2/3 THE HEIGHT OF THE NOISE BARRIER ACOUSTICAL LINE SHOWN IN THE GENERAL PLAN & ELEVATION SHEETS, PRIOR TO THE PLACEMENT OF EARTH FILL.

SEE THE ROADWAY PLAN FOR ALIGNMENT PARAMETERS AND CROSS SECTIONS. STATIONS GIVEN IN THIS PLAN ARE PROVIDED ALONG THE FRONT FACE OF THE NOISE BARRIER.

FF = FRONT FACE OR HIGHWAY SIDE OF THE NOISE BARRIER.
BF = BACK FACE OR RESIDENTIAL SIDE OF THE NOISE BARRIER.

STATE PROJECT NUMBER			
1020-06-75			
GENERAL NOTES			
DRAWINGS SHALL NOT BE SCALED.			
THE CONTRACTOR SHALL PROVIDE COMPLETE DESIGN, PLANS, DETAILS, SPECIFICATIONS AND SHOP DRAWINGS FOR THE NOISE BARRIER IN ACCORDANCE WITH THE SPECIAL PROVISIONS. THE NOISE BARRIER MANUFACTURER SHALL PROVIDE TECHNICAL ASSISTANCE TO THE CONTRACTOR DURING CONSTRUCTION. THE COST OF FURNISHING THESE ITEMS SHALL BE INCIDENTAL TO THE BID ITEM "NOISE BARRIER DOUBLE-SIDED SOUND ABSORPTIVE N-55-2".			
PLANS, ELEVATIONS AND DETAILS SHOWN ARE INTENDED TO INDICATE LOCATIONS, LENGTHS, HEIGHTS, AND DETAILS COMMON TO THE SYSTEM SELECTED. THE CONTRACTOR SHALL VERIFY THAT THE SYSTEM SELECTED WILL CONFORM TO THE REQUIRED ALIGNMENTS AND DETAILS.			
THE NOISE BARRIER IS TO BE DESIGNED USING THE PROPOSED GROUND LINE AT REFERENCE LINE AND THE ACOUSTICAL LINE SHOWN ON THE GENERAL PLAN SHEET.			
THE ACOUSTICAL LINE IS THE TOP PAY LIMIT FOR THE BID ITEM "NOISE BARRIER DOUBLE-SIDED SOUND ABSORPTIVE N-55-2". NOISE BARRIER PLACED ABOVE THE ACOUSTICAL LINE WILL NOT BE MEASURED FOR PAYMENT.			
THE PROPOSED GROUND LINE AT REFERENCE LINE IS THE BOTTOM PAY LIMIT FOR THE BID ITEM "NOISE BARRIER DOUBLE-SIDED SOUND ABSORPTIVE N-55-2". NOISE BARRIER PLACED BELOW THE FINISHED GRADE LINE WILL NOT BE MEASURED FOR PAYMENT.			
EXISTING BORING LOGS AND LAB DATA IN THE VICINITY OF THE PROPOSED NOISE BARRIERS HAVE BEEN COMPILED AND INCLUDED IN THE DOCUMENT "GEOTECHNICAL EXPLORATION REPORT", DATED FEBRUARY 4, 2016, CONTACT THE DOT PROJECT MANAGER TO OBTAIN A COPY. THE CONTRACTOR IS RESPONSIBLE FOR THE REVIEW OF THE DATA IN THE REPORT, ASSESSING AND EVALUATING FIELD DRILLING CONDITIONS AND SUPPORTING THE DEVELOPMENT OF SOIL DESIGN PARAMETERS FOR THE NOISE BARRIER FOUNDATION DESIGN.			
ALL NOISE BARRIERS SHALL BE DESIGNED IN ACCORDANCE WITH THE 1989 GUIDE SPECIFICATIONS FOR STRUCTURAL DESIGN OF SOUND BARRIERS, INCLUDING THE 1992 AND 2002 INTERIM'S BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS.			
THE FOLLOWING DESIGN PRESSURES SHALL BE USED IN ACCORDANCE WITH THE SPECIAL PROVISIONS: WIND LOAD ----- 28.5 P.S.F.			
REINFORCING STEEL IN THE CONCRETE CORE OF THE NOISE BARRIER PANELS SHALL HAVE A MINIMUM CLEARANCE OF 1 INCH. THE CONCRETE CORE SHALL BE DESIGNED TO RESIST THE LOADS WITHOUT CONSIDERING ANY COMPOSITE ACTION FROM MATERIAL IN THE PANEL.			
BOTTOM NOISE BARRIER PANELS SHALL BE DESIGNED TO SUPPORT THE DEAD LOAD (WEIGHT) OF THE PANELS DIRECTLY ABOVE IT AND ITS OWN DEAD LOAD. THE DEAD LOAD SHALL BE DISTRIBUTED UNIFORMLY ASSUMING SIMPLE BEAM ACTION WITH SUPPORTS AT THE POSTS. BOTTOM PANELS SHALL HAVE A MINIMUM AMOUNT OF PERIMETER REINFORCEMENT OF A #4 BAR WHICH SHALL BE CONTINUOUS AROUND THE CORNERS.			
A 1/4" THICK COMPRESSIBLE BEARING PAD SHALL BE PROVIDED BETWEEN THE FOUNDATION AND THE BOTTOM PANELS. THE BEARING PADS SHALL BE PREFORMED EPDM RUBBER CONFORMING TO ASTM D-2000, GRADE 2, TYPE A, CLASS A WITH A MINIMUM DUROMETER HARDNESS OF 80. BEARING PADS SHALL BE INCIDENTAL TO THE BID ITEM "NOISE BARRIER DOUBLE-SIDED SOUND ABSORPTIVE N-55-2".			
PRECAST CONCRETE PEDESTALS PLACED BETWEEN THE FOUNDATION AND BOTTOM PANELS SHALL BE REINFORCED IF OVER 1'-0" HIGH.			
INCLUDE THE COST OF THE STONE PATTERN SURFACE TREATMENT, REVEALS, COATING OF STEEL POSTS AND CONNECTIONS, AND COLORING/STAINING THE PANELS, UNDER THE BID ITEM "NOISE BARRIER DOUBLE-SIDED SOUND ABSORPTIVE N-55-2".			
ALL CONCRETE MASONRY FOR NOISE BARRIER FOUNDATIONS IS SUBJECT TO THE QMP REQUIREMENTS FOR CLASS II ANCILLARY CONCRETE. PERFORM QMP TESTING OF CONCRETE MASONRY FOR NOISE BARRIER FOUNDATIONS IN ACCORDANCE WITH SECTION 716 OF THE STANDARD SPECIFICATIONS FOR CLASS II ANCILLARY CONCRETE. QMP TESTING IS INCIDENTAL TO THE BID ITEM "NOISE BARRIER DOUBLE-SIDED SOUND ABSORPTIVE N-55-2".			
ERECTION OF THE NOISE BARRIER IS LIMITED TO 2/3 THE HEIGHT OF THE NOISE BARRIER ACOUSTICAL LINE SHOWN IN THE GENERAL PLAN & ELEVATION SHEETS, PRIOR TO THE PLACEMENT OF EARTH FILL.			
SEE THE ROADWAY PLAN FOR ALIGNMENT PARAMETERS AND CROSS SECTIONS. STATIONS GIVEN IN THIS PLAN ARE PROVIDED ALONG THE FRONT FACE OF THE NOISE BARRIER.			
FF = FRONT FACE OR HIGHWAY SIDE OF THE NOISE BARRIER. BF = BACK FACE OR RESIDENTIAL SIDE OF THE NOISE BARRIER.			
NO. DATE REVISION BY			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE N-55-2			
DRAWN BY GLE		PLANS CK'D. GLW	
GENERAL NOTES DETAILS		SHEET 2 OF 3	

	ASPHALT		TOPSOIL		PEAT
	CONCRETE		FILL		GRAVEL
	SAND		CLAY		SILT
	BOULDERS OR COBBLES		ORGANIC SILT		BEDROCK (UNKNOWN)
	SHALE		WELL GRADED SAND		IGNEOUS/ MFTA

BORING #/EL- STA./OFFSET

ST (1) 0.25 (2) 17

F-C COBBLE

WEATHERED

core run REC=8

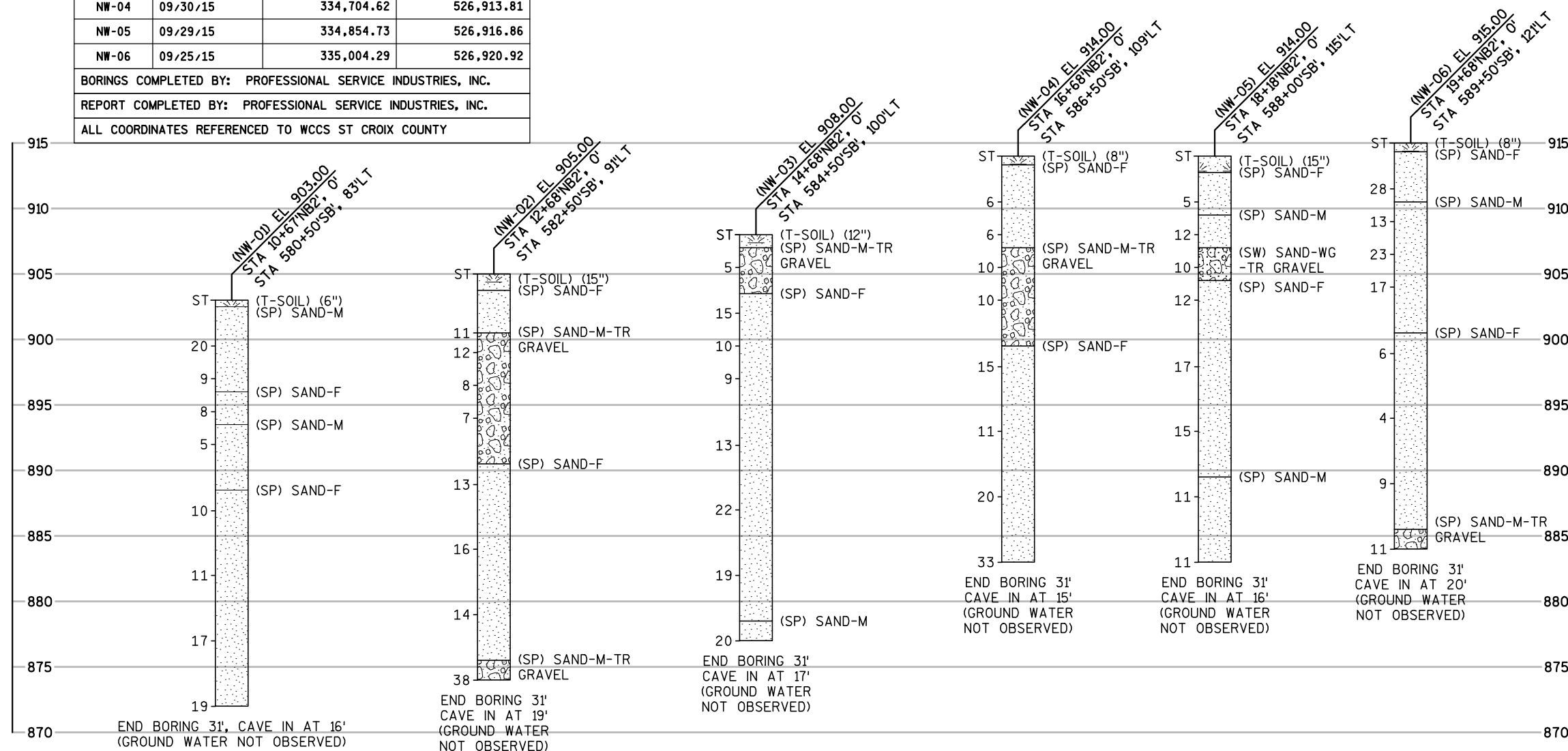
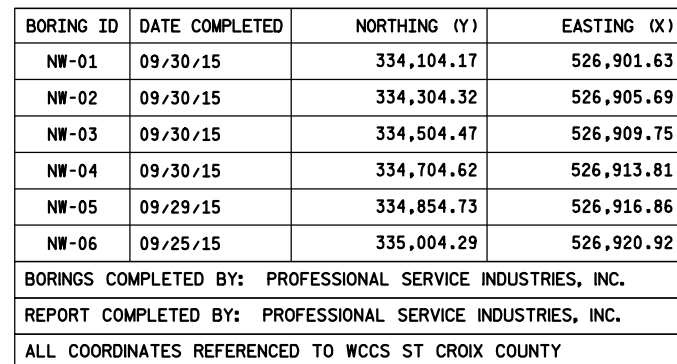
(2) UNLESS OTHERWISE, SPECIFIED THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

 AT TIME OF DRILLING
 END OF DRILLING
 AFTER DRILLING

SUBSURFACE EXPLORATION FOR FOUNDATION
DESIGN AND BIDDERS INFORMATION

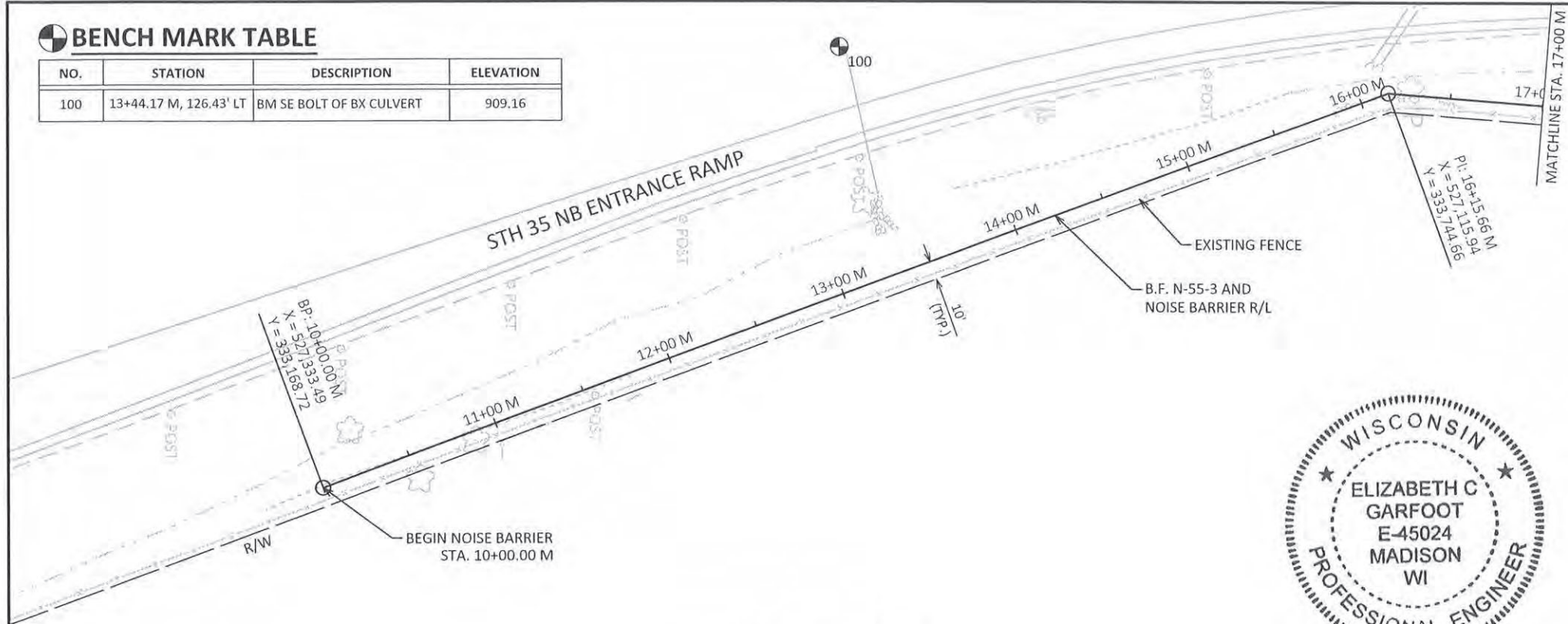
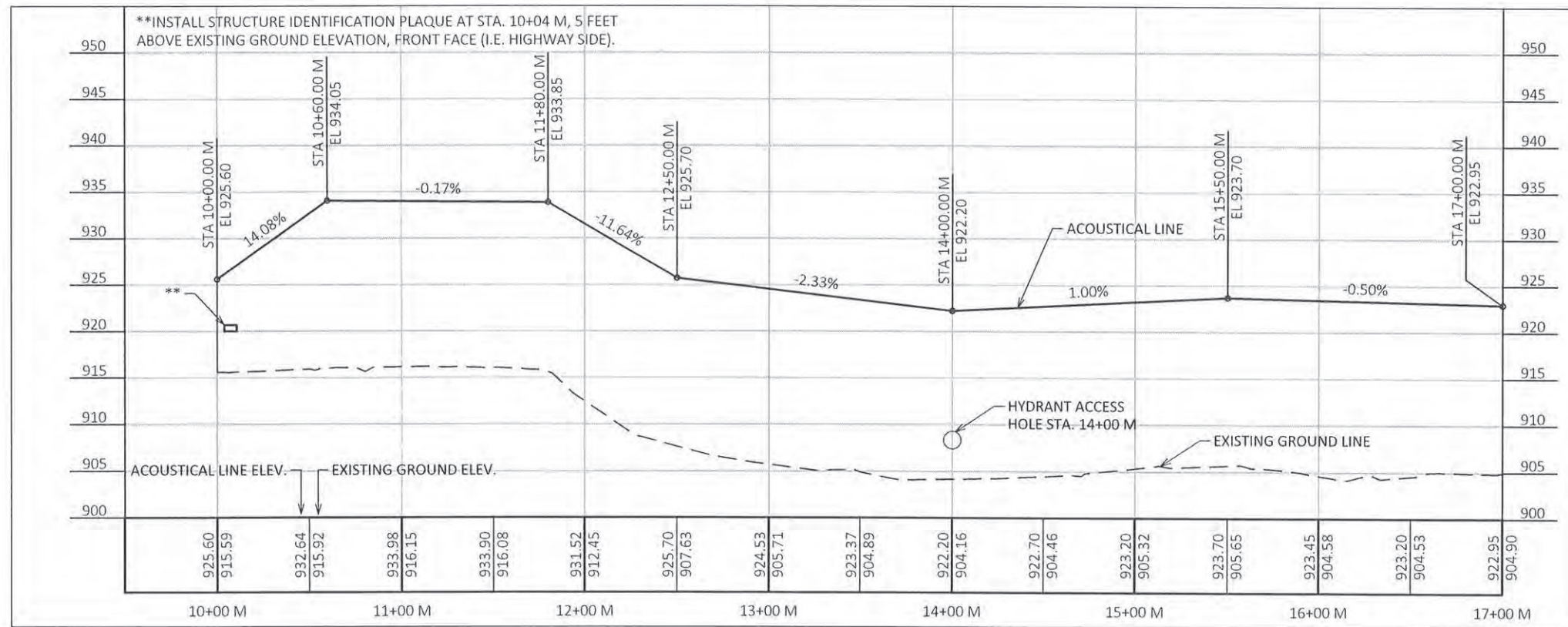
BORINGS WERE COMPLETED AT POINTS APPROXIMATELY
AS INDICATED ON THIS DRAWING TO OBTAIN INFORMATION
CONCERNING THE CHARACTER OF SUBSURFACE MATERIALS
FOUND AT THE SITE. BECAUSE THE INVESTIGATED
DEPTHS ARE LIMITED AND THE AREA OF THE BORINGS
IS VERY SMALL IN RELATION TO THE ENTIRE SITE,
THE WISCONSIN DEPARTMENT OF TRANSPORTATION DOES
NOT WARRANT SIMILAR SUBSURFACE CONDITIONS BELOW,
BETWEEN, OR BEYOND THESE BORINGS. VARIATIONS IN
SOIL CONDITIONS SHOULD BE EXPECTED AND
FLUCTUATIONS IN GROUNDWATER LEVELS MAY OCCUR.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE N-55-2			
		DRAWN BY GLE	PLANS CK'D. GLW
SUBSURFACE EXPLORATION		SHEET 3 OF 3	



BENCH MARK TABLE

NO.	STATION	DESCRIPTION	ELEVATION
100	13+44.17 M, 126.43' LT	BM SE BOLT OF BX CULVERT	909.16

PLAN
N-55-3ELEVATION
LOOKING AT B.F. OF NOISE BARRIER

TOTAL ESTIMATED QUANTITIES - N-55-3

ITEM CATEGORY	BID ITEM NUMBER	BID ITEMS	UNIT	TOTALS
0030	541.0300.S.02	NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-3	SF	22,875

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

STATE PROJECT NUMBER

1020-00-85

ALL STATIONS, ELEVATIONS, AND OFFSETS ARE IN FEET UNLESS OTHERWISE NOTED.

THE CONTRACTOR SHALL PROVIDE COMPLETE DESIGN, PLANS, DETAILS, SPECIFICATIONS, AND SHOP DRAWINGS FOR THE NOISE BARRIER IN ACCORDANCE WITH THE SPECIAL PROVISIONS. THE NOISE BARRIER MANUFACTURER SHALL PROVIDE TECHNICAL ASSISTANCE TO THE CONTRACTOR DURING CONSTRUCTION. THE COST OF FURNISHING THESE ITEMS SHALL BE INCLUDED IN THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-3".

PLANS, ELEVATIONS AND DETAILS SHOWN ON THESE DRAWINGS ARE INTENDED TO INDICATE BARRIER LOCATIONS, LENGTHS, HEIGHTS, AND DETAILS COMMON TO THE BARRIER SYSTEM SELECTED. THE CONTRACTOR SHALL VERIFY THAT THE BARRIER SYSTEM SELECTED WILL CONFORM TO THE REQUIRED ALIGNMENTS AND DETAILS.

ALL NOISE BARRIERS SHALL BE DESIGNED IN ACCORDANCE WITH THE LRFD BRIDGE DESIGN SPECIFICATIONS BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO).

THE FOLLOWING DESIGN PRESSURE SHALL BE USED IN ACCORDANCE WITH THE SPECIAL PROVISIONS:

35 PSF WIND LOAD FOR GROUND MOUNTED BARRIERS

SEE SPECIAL PROVISIONS FOR AESTHETIC TREATMENT TO BARRIER.

THE NOISE BARRIER IS TO BE DESIGNED USING THE GROUND LINE AND ACOUSTIC LINE SHOWN ON THIS SHEET.

INCLUDE THE COST OF SURFACE TREATMENT, REVEALS, COATING OF STEEL POSTS AND CONNECTIONS UNDER THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-3".

THE ACOUSTICAL LINE IS THE TOP PAY LIMIT FOR THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-3". NOISE BARRIER PLACED ABOVE THE ACOUSTICAL LINE WILL NOT BE MEASURED FOR PAYMENT.

THE EXISTING GROUND LINE IS THE BOTTOM PAY LIMIT FOR THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-3". NOISE BARRIER PLACED BELOW THE EXISTING GROUND LINE WILL NOT BE MEASURED FOR PAYMENT.

REINFORCING STEEL IN THE CONCRETE CORE OF THE NOISE BARRIER PANELS SHALL HAVE A MINIMUM CLEARANCE OF 1 INCH. THE CONCRETE CORE SHALL BE DESIGNED TO RESIST THE LOADS WITHOUT CONSIDERING ANY COMPOSITE ACTION FROM OTHER MATERIAL IN THE PANEL.

BOTTOM NOISE BARRIER PANELS SHALL BE DESIGNED TO SUPPORT THE DEAD LOAD (WEIGHT) OF THE PANELS DIRECTLY ABOVE IT AND ITS OWN DEAD LOAD. THE DEAD LOAD SHALL BE DISTRIBUTED UNIFORMLY ASSUMING SIMPLE BEAM ACTION WITH SUPPORTS AT THE POSTS. BOTTOM PANELS SHALL HAVE A MINIMUM AMOUNT OF PERIMETER REINFORCEMENT OF A #4 BAR WHICH SHALL BE CONTINUOUS AROUND THE CORNERS.

A COMPRESSIBLE BEARING PAD OF 3/4" THICK SHALL BE PROVIDED BETWEEN THE FOUNDATION AND THE BOTTOM PANELS. THE BEARING PADS SHALL BE PREFORMED EPDM RUBBER CONFORMING TO ASTM D-2000, GRADE 2, TYPE A, CLASS A WITH A MINIMUM DUROMETER HARDNESS OF 80. BEARING PADS SHALL BE INCIDENTAL TO THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-3".

A GEOTECHNICAL REPORT HAS BEEN PREPARED FOR THIS STRUCTURE AND IS AVAILABLE UPON REQUEST FROM WISDOT.

UTILITIES SHOWN MAY NOT BE ALL-INCLUSIVE. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS. CONTRACTOR SHALL COORDINATE PROPOSED WALL POST LOCATIONS WITH UTILITY LOCATIONS TO ENSURE THEY DO NOT INTERFERE WITH THE EXISTING UTILITY LOCATIONS.

LEGEND

R/L = REFERENCE LINE
R/W = RIGHT OF WAY

LIST OF DRAWINGS:

- GENERAL PLAN - 1
- GENERAL PLAN - 2
- BARRIER DETAILS
- SUBSURFACE EXPLORATION - 1
- SUBSURFACE EXPLORATION - 2
- ELEVATION AND AESTHETIC DETAILS

STRUCTURE DESIGN CONTACTS:
DESIGN CONSULTANT CONTACT:
ELIZABETH GARFOOT (608) 251-4843

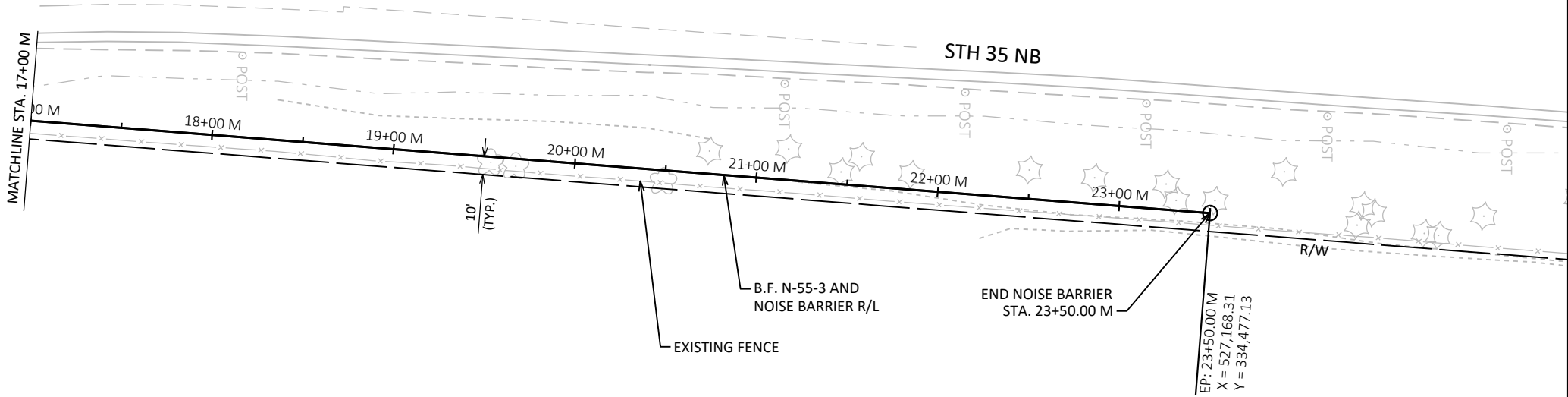
BUREAU OF STRUCTURES CONTACT:
AARON BONK (608) 261-0261

NO.	DATE	REVISION	BY
910 WEST WINGRA DRIVE MADISON, WISCONSIN 53715 (608)-251-4843 (608)-251-8655 FAX WWW.STRAND.COM			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
ACCEPTED			SDR 12/04/24 DATE
STRUCTURE N-55-3			
NOISE WALL ALONG STH 35 NB ONRAMP FROM HIGH RIDGE DR			
COUNTY	ST. CROIX	TOWN/CITY/VILLAGE	HUDSON
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATION			
DESIGNED BY	ECG	CK'D	BMO
DRAWN BY	ZHC	CK'D	BMO
GENERAL PLAN - 1			SHEET 1 OF 6

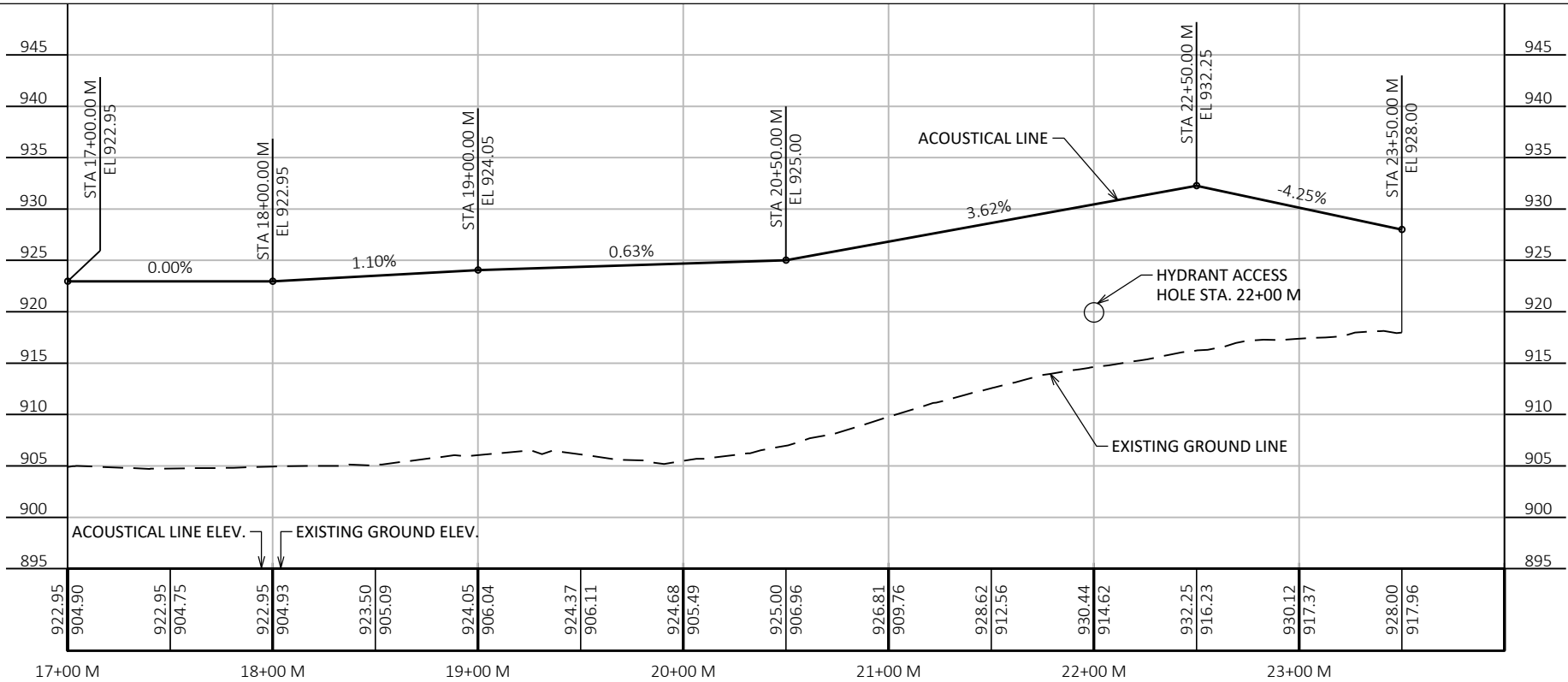
1 D

DATE:

SCALE = 1/4"=1'-0"



PLAN
N-55-3



ELEVATION
LOOKING AT B.F. OF NOISE BARRIER

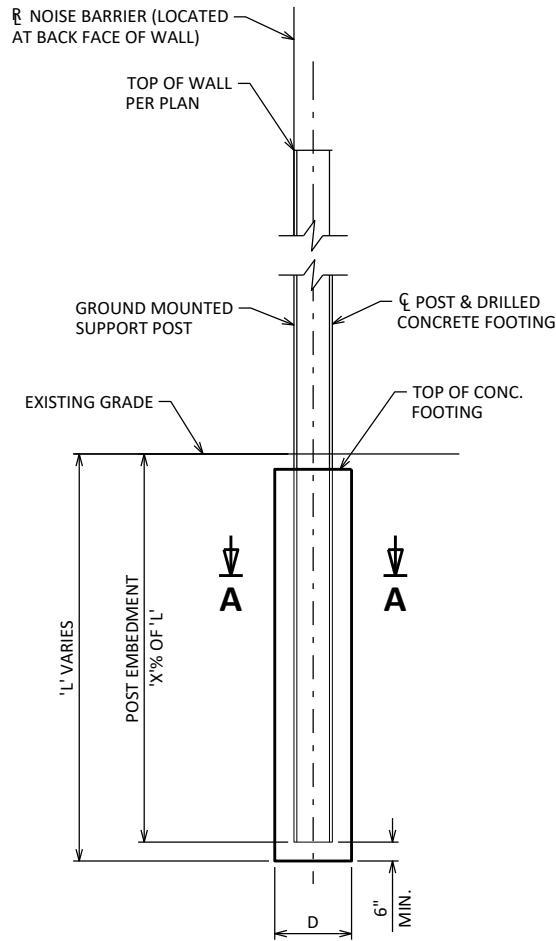
ELEVATION TABLE

NOISE BARRIER WALL STA.	EXISTING GROUND ELEV.	ACOUSTICAL LINE ELEV.
10+00.00 M	915.59	925.60
10+50.00 M	915.92	932.64
10+60.00 M	916.02	934.05
11+00.00 M	916.15	933.98
11+50.00 M	916.08	933.90
11+80.00 M	915.60	933.85
12+00.00 M	912.45	931.52
12+50.00 M	907.63	925.70
13+00.00 M	905.71	924.53
13+50.00 M	904.89	923.37
14+00.00 M	904.16	922.20
14+50.00 M	904.46	922.70
15+00.00 M	905.32	923.20
15+50.00 M	905.65	923.70
16+00.00 M	904.58	923.45
16+50.00 M	904.53	923.20
17+00.00 M	904.90	922.95
17+50.00 M	904.75	922.95
18+00.00 M	904.93	922.95
18+50.00 M	905.09	923.50
19+00.00 M	906.04	924.05
19+50.00 M	906.11	924.37
20+00.00 M	905.49	924.68
20+50.00 M	906.96	925.00
21+00.00 M	909.76	926.81
21+50.00 M	912.56	928.62
22+00.00 M	914.62	930.44
22+50.00 M	916.23	932.25
23+00.00 M	917.37	930.12
23+50.00 M	917.96	928.00

LEGEND

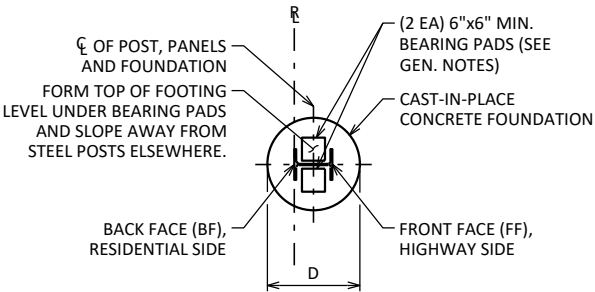
R/L = REFERENCE LINE
R/W = RIGHT OF WAY

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE N-55-3			
DRAWN BY ZHC		PLANS CK'D BMO	
GENERAL PLAN - 2		SHEET 2 OF 6 22	



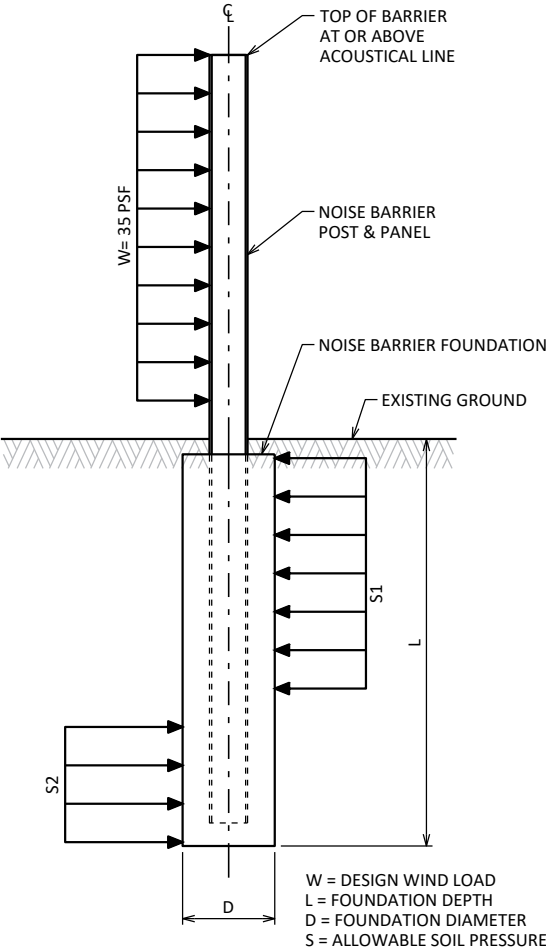
SECTION THRU GROUND MOUNTED POST & DRILLED CONC. FOOTING

TYPICAL AT EACH POST LOCATION
(NOT TO SCALE)
(‘D’, ‘L’ AND ‘X’ TO BE DETERMINED BY SUPPLIER)



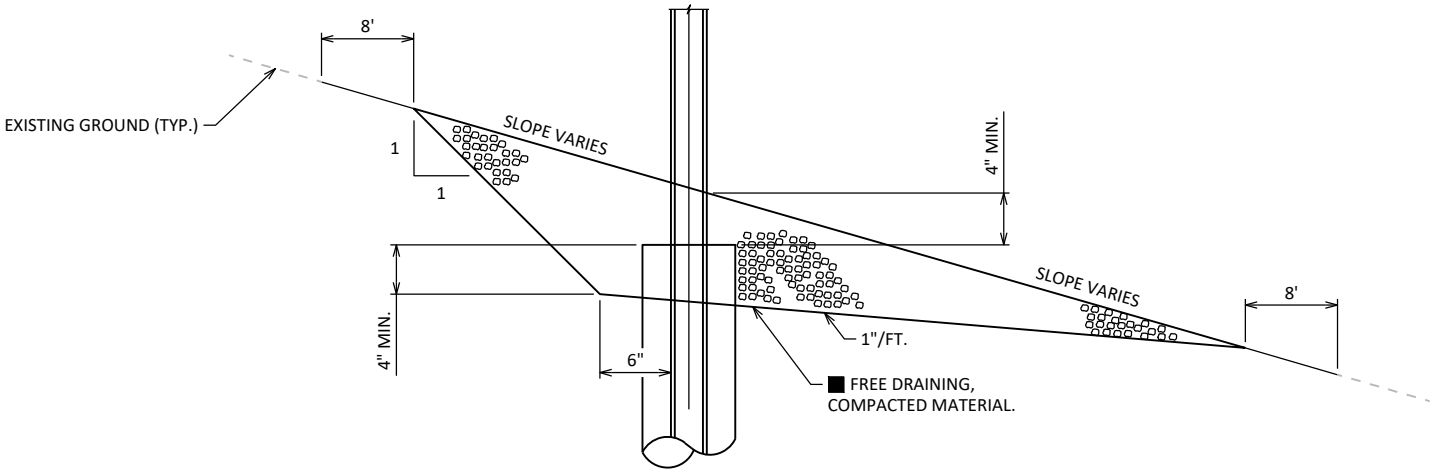
SECTION A-A

(AT TOP OF FOUNDATION, BARRIER PANELS OMITTED FOR DRAWING CLARITY)



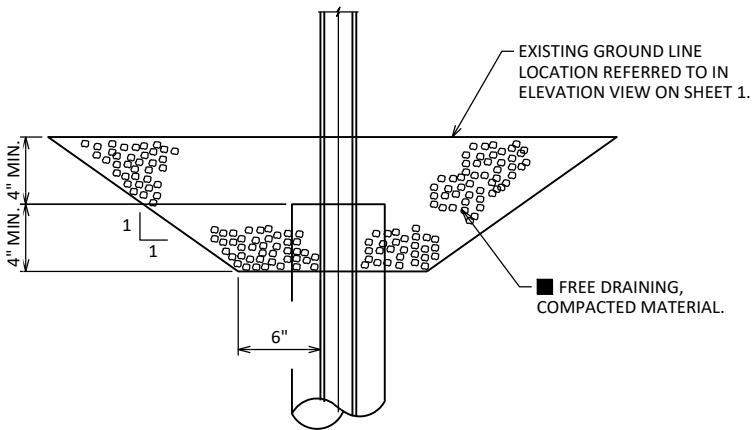
NOISE BARRIER LOADING DIAGRAM

(NOT TO SCALE)



* SLOPED GRADE BACKFILL & DRAINAGE DETAIL

(NOT TO SCALE)



* LEVEL GRADE BACKFILL & DRAINAGE DETAIL

(NOT TO SCALE)

GENERAL NOTES

INSTALL FREE DRAINING GRANULAR MATERIAL AT THE BOTTOM OF NOISE BARRIER AS SHOWN. FREE DRAINING MATERIAL IS INCLUDED WITH THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE STRUCTURE N-55-03."

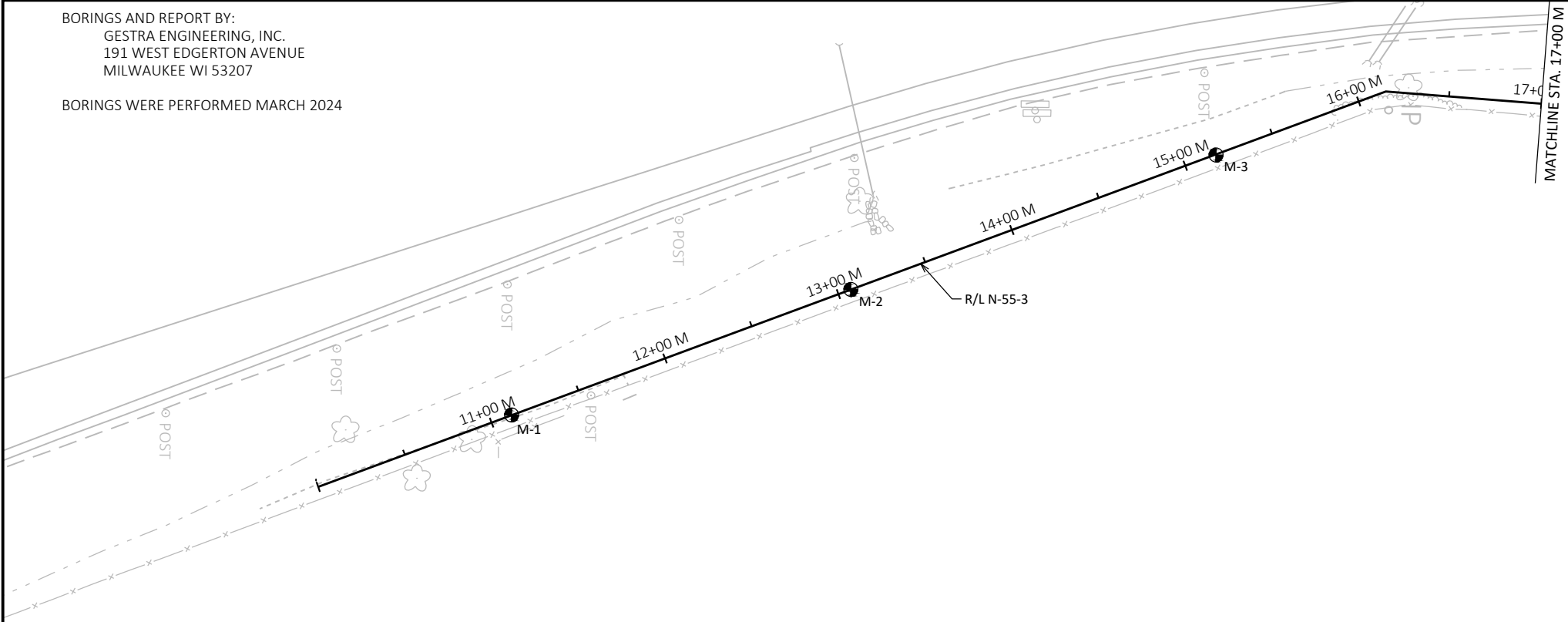
LEGEND

- * ALL ITEMS SHOWN ARE INCLUDED WITH THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE STRUCTURE N-55-3".
- AT A MINIMUM, MATERIAL AND COMPACTION SHALL MEET THE REQUIREMENTS OF SECTION 312 OF THE STANDARD SPECIFICATIONS.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE N-55-3			
DRAWN BY		ZHC	PLANS CK'D BMO
BARRIER DETAILS		SHEET 3 OF 6	
		23	

BORINGS AND REPORT BY:
GESTRA ENGINEERING, INC.
191 WEST EDGERTON AVENUE
MILWAUKEE WI 53207

BORINGS WERE PERFORMED MARCH 2024

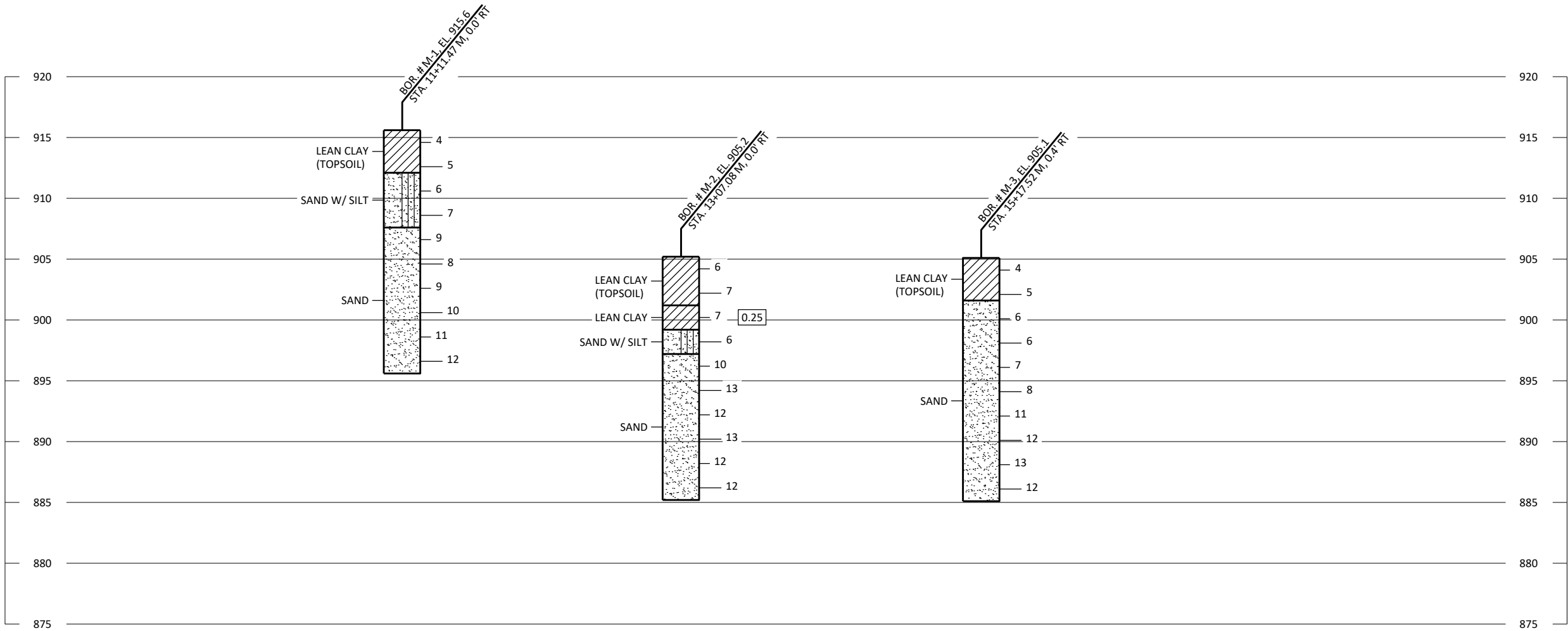


NOTE

THE SUBSURFACE INFORMATION PRESENTED HEREIN IS AN ABBREVIATED VERSION OF THE INFORMATION PRESENTED IN THE GEOTECHNICAL ENGINEERING REPORT. REVIEW THE APPROPRIATE GEOTECHNICAL REPORT AND SOIL BORING LOGS FOR ADDITIONAL SUBSURFACE INFORMATION.

PLAN

N-55-3



90% PSE - SEPTEMBER 2024

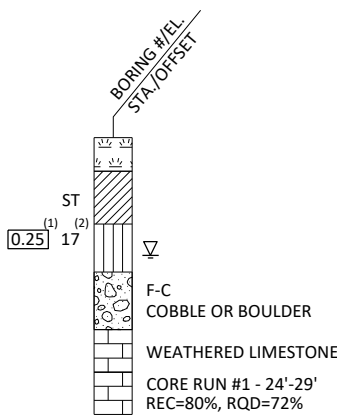
STATE PROJECT NUMBER

1020-00-85

MATERIAL SYMBOLS

ASPHALT	TOPSOIL	PEAT
CONCRETE	FILL	GRAVEL
SAND	CLAY	SILT
BOULDERS OR COBBLES	LIMESTONE	BEDROCK (UNKNOWN)
SHALE	SANDSTONE	IGNEOUS/META

LEGEND OF BORING



(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)

(2) UNLESS OTHERWISE SPECIFIED, THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

GROUND WATER ELEVATION

▽	AT TIME OF DRILLING
▼	END OF DRILLING
▼	AFTER DRILLING

ABBREVIATIONS

F-FINE M-MEDIUM C-COARSE ST-SHELBY TUBE

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

BORINGS WERE COMPLETED AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING TO OBTAIN INFORMATION CONCERNING THE CHARACTER OF SUBSURFACE MATERIALS FOUND AT THE SITE. BECAUSE THE INVESTIGATED DEPTHS ARE LIMITED AND THE AREA OF THE BORINGS IS VERY SMALL IN RELATION TO THE ENTIRE SITE, THE WISCONSIN DEPARTMENT OF TRANSPORTATION DOES NOT WARRANT SIMILAR SUBSURFACE CONDITIONS BELOW, BETWEEN, OR BEYOND THESE BORINGS. VARIATIONS IN SOIL CONDITIONS SHOULD BE EXPECTED AND FLUCTUATIONS IN GROUNDWATER LEVELS MAY OCCUR.

NO.	DATE	REVISION	BY
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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE N-55-3

DRAWN BY	ZHC	PLANS CK'D	BMO
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SUBSURFACE
EXPLORATION - 1

SHEET 4 OF 6
24

BORINGS AND REPORT BY:
GESTRA ENGINEERING, INC.
191 WEST EDGERTON AVENUE
MILWAUKEE WI 53207

BORINGS WERE PERFORMED MARCH 2024

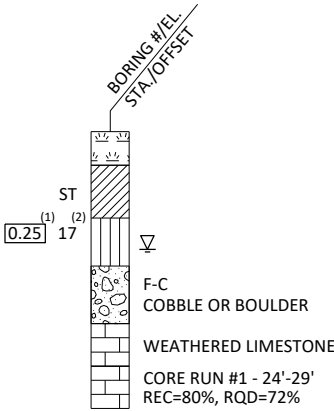
STATE PROJECT NUMBER

1020-00-85

MATERIAL SYMBOLS

	ASPHALT		TOPSOIL		PEAT
	CONCRETE		FILL		GRAVEL
	SAND		CLAY		SILT
	BOULDERS OR COBBLES		LIMESTONE		BEDROCK (UNKNOWN)
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NO.	DATE	REVISION	BY
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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE N-55-3

DRAWN BY	ZHC	PLANS CK'D	BMO
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SUBSURFACE
EXPLORATION - 2

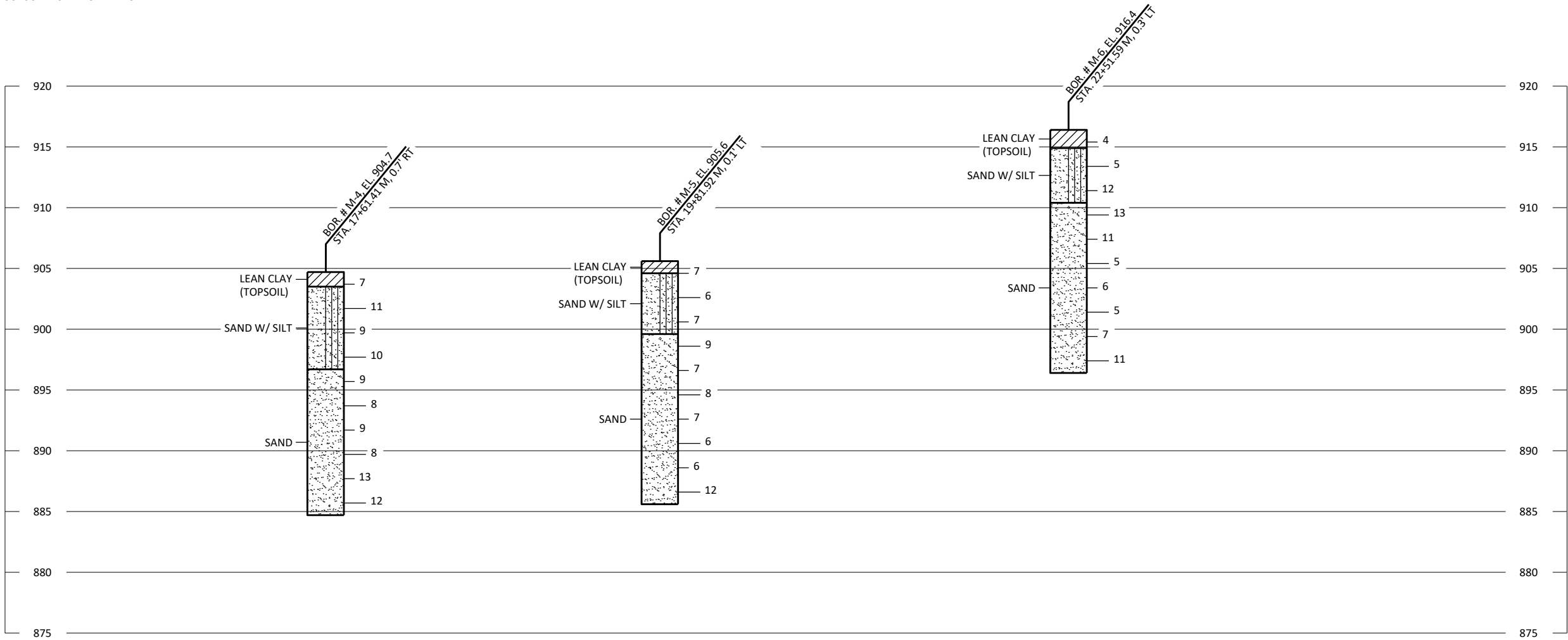
SHEET 5 OF 6
25

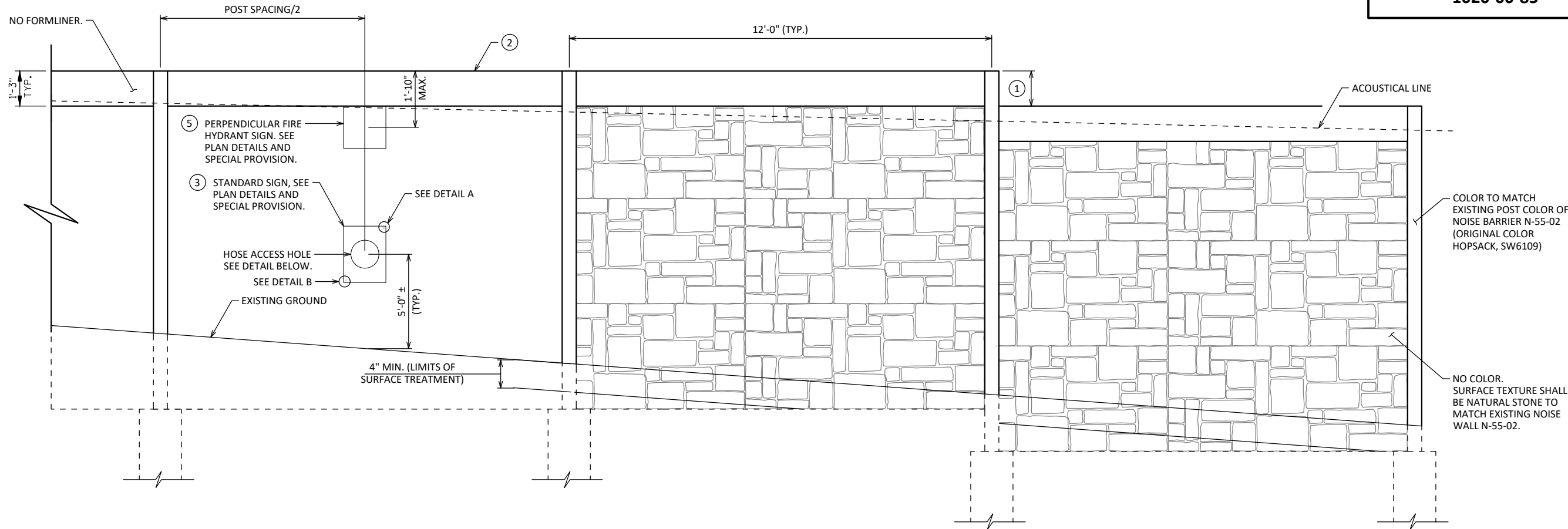
NOTE

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PLAN

N-55-3





TYPICAL NOISE BARRIER ELEVATION

(FORMLINER TO BE PLACED ON BOTH SIDES OF NOISE WALL)

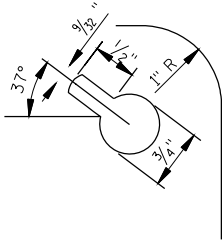
LEGEND

- STEP PANELS A MAXIMUM OF 3' IN HEIGHT. WHEN MORE THAN ONE PANEL MUST BE STEPPED, KEEP THE STEP INCREMENT THE SAME FOR EACH OF STEPPING PANELS.
- ADJUST VERTICAL PLACEMENT OF PANELS TO MAXIMIZE HORIZONTAL RUNS, KEEPING THE TOP OF PANELS AT THE SAME ELEVATION. THE TOP OF WALL SHALL BE AT OR ABOVE ACOUSTICAL LINE.
- TYPE II REFLECTIVE SIGN TO BE CENTERED ON HOSE ACCESS HOLE. TWO STANDARD SIGNS D9-54 WILL BE FURNISHED AND INSTALLED PER ACCESS HOLE LOCATION. ONE SIGN SHALL BE INSTALLED ON EACH SIDE OF THE BARRIER. SIGNS TO BE INCLUDED WITH THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-03".
- STAINLESS STEEL HARDWARE (INCLUDING THRU BOLTS, WASHERS, NUTS, ETC.) TYPE 316 STAINLESS OR APPROVED EQUIVALENT. HARDWARE INCLUDED WITH THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-03".
- STANDARD SIGNS D9-54A WILL BE FURNISHED AND INSTALLED PER HOSE ACCESS HOLE STATION. SIGN SHALL BE ATTACHED TO THE NOISE BARRIER PANEL ON EACH SIDE NEAR THE TOP OF THE BARRIER. SIGNS AND MOUNTING BRACKET TO BE INCLUDED WITH THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-03". SEE SPECIAL PROVISIONS.

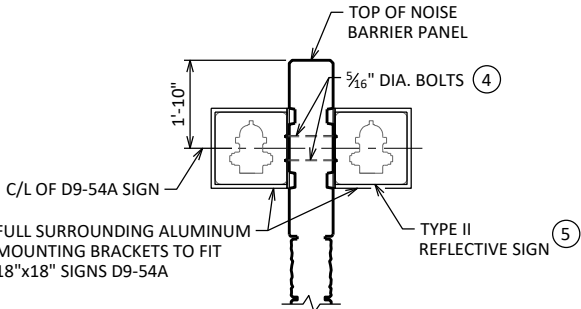
ACCESS HOLE LOCATIONS

* WALL STA.
14+00 M
22+00 M

* ADJUST WALL STATION AS REQUIRED TO PLACE ACCESS HOLES MIDWAY BETWEEN POSTS.

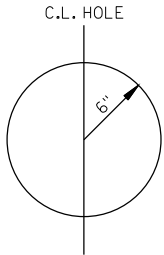


DETAIL A

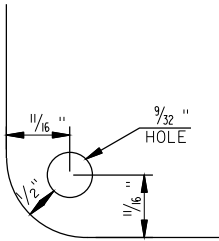


FIRE HYDRANT LOCATION SIGN MOUNTING

(SECTION THRU NOISE BARRIER PANEL)



HOSE ACCESS HOLE DETAIL



DETAIL B

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE N-55-3			
DRAWN BY		ZHC	PLANS CK'D BMO
ELEVATION AND AESTHETIC DETAILS		SHEET 6 OF 6 26	

ELEVATION TABLE

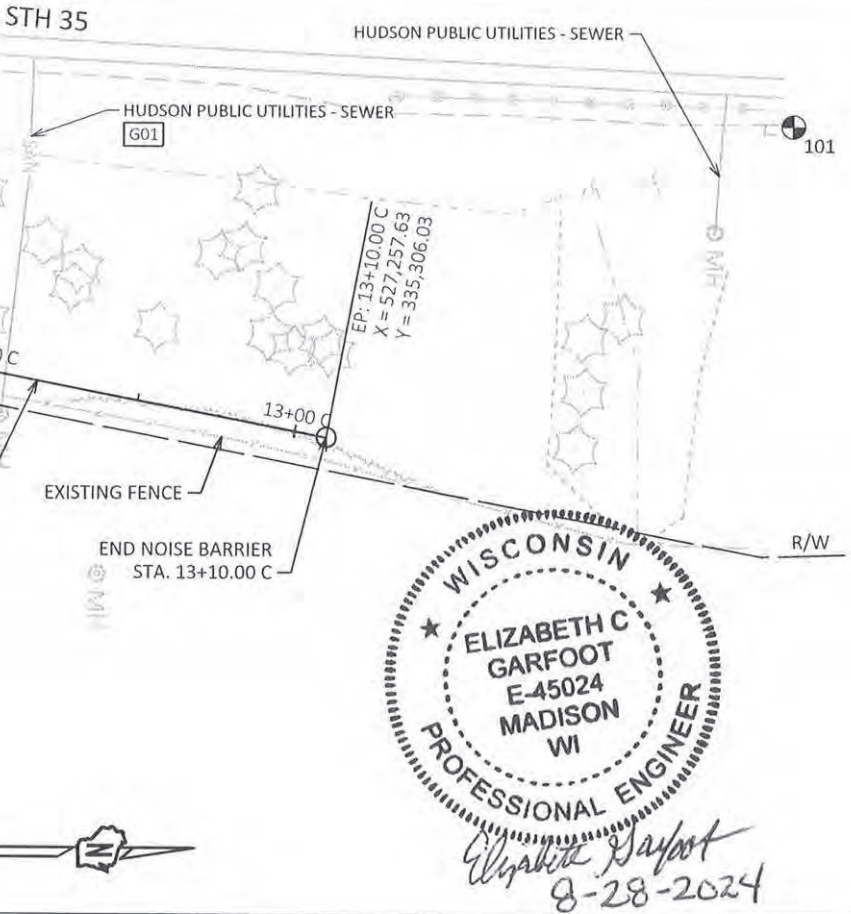
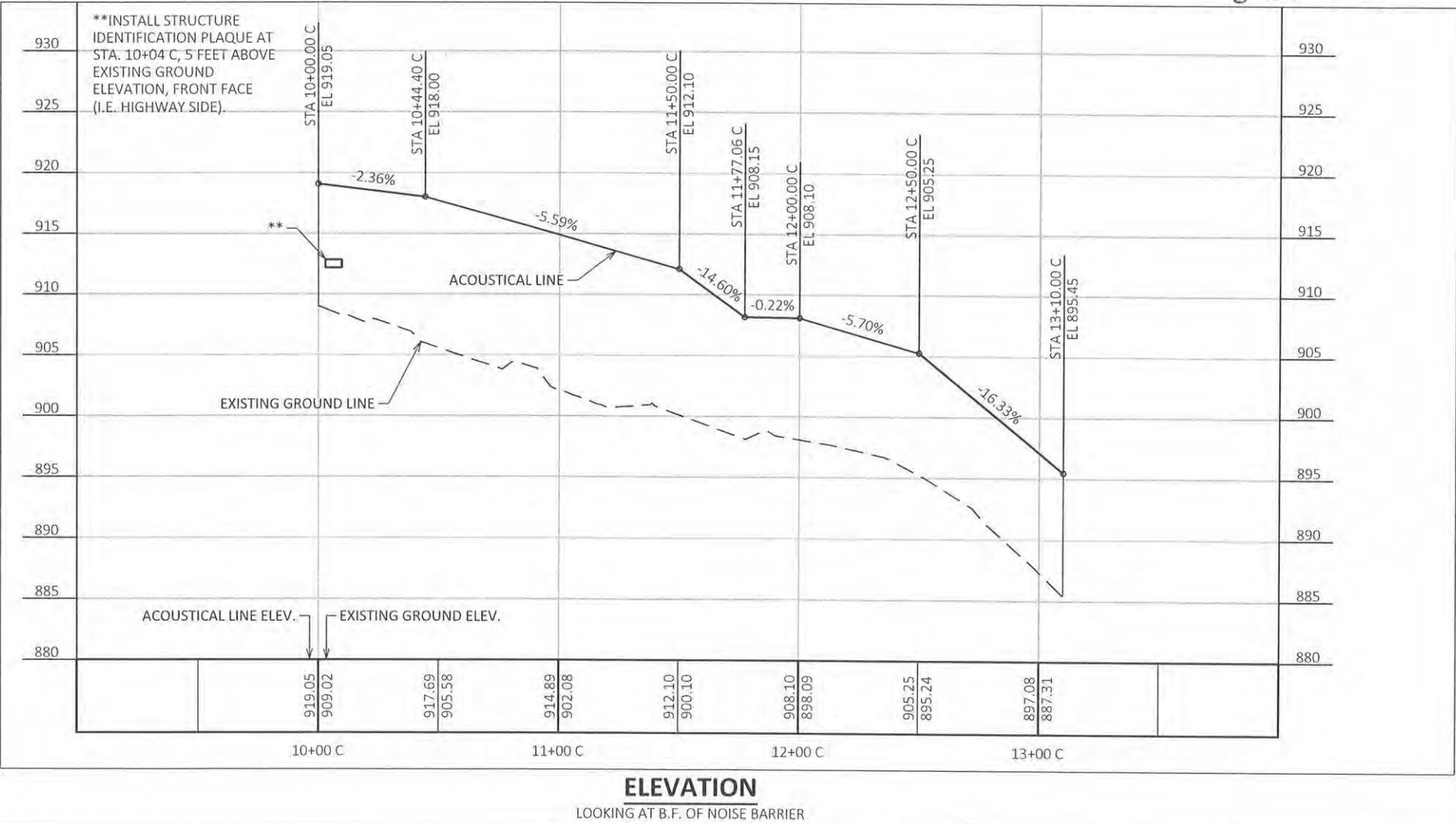
NOISE BARRIER WALL STA.	EXISTING GROUND ELEV.	ACOUSTICAL LINE ELEV.
10+00.00 C	909.02	919.05
10+44.40 C	905.97	918.00
10+50.00 C	905.58	917.69
11+00.00 C	902.08	914.89
11+50.00 C	900.10	912.10
11+77.06 C	898.15	908.15
12+00.00 C	898.09	908.10
12+50.00 C	895.24	905.25
13+00.00 C	887.31	897.08
13+10.00 C	885.42	895.45

BENCH MARK TABLE

NO.	STATION	DESCRIPTION	ELEVATION
101	X=527159.40 Y=335452.25	BM CHSLD SQR	888.30

TOTAL ESTIMATED QUANTITIES - N-55-4

ITEM CATEGORY	BID ITEM NUMBER	BID ITEMS	UNIT	TOTALS
0040	541.0300.S.03	NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-4	SF	3,425



GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

STATE PROJECT NUMBER

1020-00-85

ALL STATIONS, ELEVATIONS, AND OFFSETS ARE IN FEET UNLESS OTHERWISE NOTED.

THE CONTRACTOR SHALL PROVIDE COMPLETE DESIGN, PLANS, DETAILS, SPECIFICATIONS, AND SHOP DRAWINGS FOR THE NOISE BARRIER IN ACCORDANCE WITH THE SPECIAL PROVISIONS. THE NOISE BARRIER MANUFACTURER SHALL PROVIDE TECHNICAL ASSISTANCE TO THE CONTRACTOR DURING CONSTRUCTION. THE COST OF FURNISHING THESE ITEMS SHALL BE INCLUDED IN THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-4".

PLANS, ELEVATIONS AND DETAILS SHOWN ON THESE DRAWINGS ARE INTENDED TO INDICATE BARRIER LOCATIONS, LENGTHS, HEIGHTS, AND DETAILS COMMON TO THE BARRIER SYSTEM SELECTED. THE CONTRACTOR SHALL VERIFY THAT THE BARRIER SYSTEM SELECTED WILL CONFORM TO THE REQUIRED ALIGNMENTS AND DETAILS.

ALL NOISE BARRIERS SHALL BE DESIGNED IN ACCORDANCE WITH THE LRFD BRIDGE DESIGN SPECIFICATIONS BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO).

THE FOLLOWING DESIGN PRESSURE SHALL BE USED IN ACCORDANCE WITH THE SPECIAL PROVISIONS:
35 PSF WIND LOAD FOR GROUND MOUNTED BARRIERS

SEE SPECIAL PROVISIONS FOR AESTHETIC TREATMENT TO BARRIER.

THE NOISE BARRIER IS TO BE DESIGNED USING THE GROUND LINE AND ACOUSTIC LINE SHOWN ON THIS SHEET.

INCLUDE THE COST OF SURFACE TREATMENT, REVEALS, COATING OF STEEL POSTS AND CONNECTIONS UNDER THE BID ITEM " NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-4".

THE ACOUSTICAL LINE IS THE TOP PAY LIMIT FOR THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-4". NOISE BARRIER PLACED ABOVE THE ACOUSTICAL LINE WILL NOT BE MEASURED FOR PAYMENT.

THE EXISTING GROUND LINE IS THE BOTTOM PAY LIMIT FOR THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-4". NOISE BARRIER PLACED BELOW THE EXISTING GROUND LINE WILL NOT BE MEASURED FOR PAYMENT.

REINFORCING STEEL IN THE CONCRETE CORE OF THE NOISE BARRIER PANELS SHALL HAVE A MINIMUM CLEARANCE OF 1 INCH. THE CONCRETE CORE SHALL BE DESIGNED TO RESIST THE LOADS WITHOUT CONSIDERING ANY COMPOSITE ACTION FROM OTHER MATERIAL IN THE PANEL.

BOTTOM NOISE BARRIER PANELS SHALL BE DESIGNED TO SUPPORT THE DEAD LOAD (WEIGHT) OF THE PANELS DIRECTLY ABOVE IT AND ITS OWN DEAD LOAD. THE DEAD LOAD SHALL BE DISTRIBUTED UNIFORMLY ASSUMING SIMPLE BEAM ACTION WITH SUPPORTS AT THE POSTS. BOTTOM PANELS SHALL HAVE A MINIMUM AMOUNT OF PERIMETER REINFORCEMENT OF A #4 BAR WHICH SHALL BE CONTINUOUS AROUND THE CORNERS.

A COMPRESSIBLE BEARING PAD OF 1/2" THICK SHALL BE PROVIDED BETWEEN THE FOUNDATION AND THE BOTTOM PANELS. THE BEARING PADS SHALL BE PREFORMED EPDM RUBBER CONFORMING TO ASTM D-2000, GRADE 2, TYPE A, CLASS A WITH A MINIMUM DUROMETER HARDNESS OF 80. BEARING PADS SHALL BE INCIDENTAL TO THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-4".

A GEOTECHNICAL REPORT HAS BEEN PREPARED FOR THIS STRUCTURE AND IS AVAILABLE UPON REQUEST FROM WISDOT.

UTILITIES SHOWN MAY NOT BE ALL-INCLUSIVE. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS. CONTRACTOR SHALL COORDINATE PROPOSED WALL POST LOCATIONS WITH UTILITY LOCATIONS TO ENSURE THEY DO NOT INTERFERE WITH THE EXISTING UTILITY LOCATIONS.

LIST OF DRAWINGS:

- GENERAL PLAN
- BARRIER DETAILS
- SUBSURFACE EXPLORATION
- ELEVATION AND AESTHETIC DETAILS

LEGEND

R/L = REFERENCE LINE
R/W = RIGHT OF WAY

G01 EXISTING UTILITIES TO REMAIN. SPACE NOISE BARRIER POSTS TO AVOID ANY IMPACTS TO UTILITY LINES. CONTRACTOR SHALL POT HOLE UTILITIES TO CONFIRM LOCATIONS. COST INCLUDED WITH "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE N-55-4".

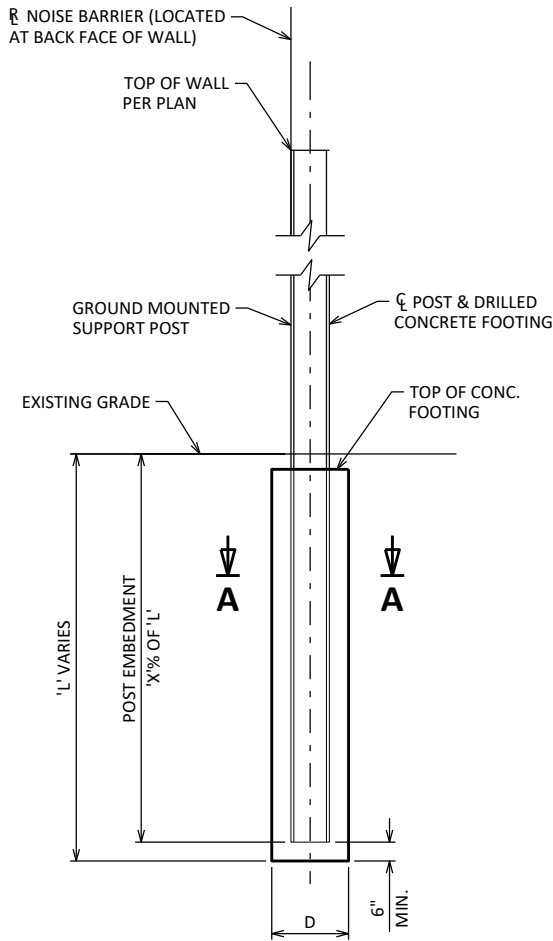
STRUCTURE DESIGN CONTACTS:

DESIGN CONSULTANT CONTACT:
ELIZABETH GARFOOT (608) 251-4843

BUREAU OF STRUCTURES CONTACT:
AARON BONK (608) 261-0261

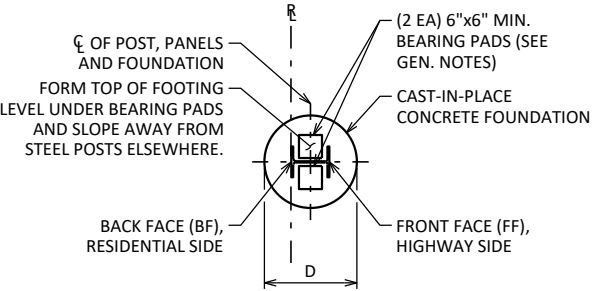
NO.	DATE	REVISION	BY
910 WEST WINGRA DRIVE MADISON, WISCONSIN 53715 (608)-251-4843 (608)-251-8655 FAX WWW.STRAND.COM			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
ACCEPTED			SDR 12/04/24 DATE
STRUCTURE N-55-4			
NOISE WALL ALONG STH 35 NB			
COUNTY	ST. CROIX	CITY/VILLAGE	HUDSON
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATION			
DESIGNED BY	ECG	DESIGNED CK'D	BMO
DRAWN BY	ZHC	PLANS CK'D	BMO
GENERAL PLAN			SHEET 1 OF 4

SCALE = 1IN:60FT



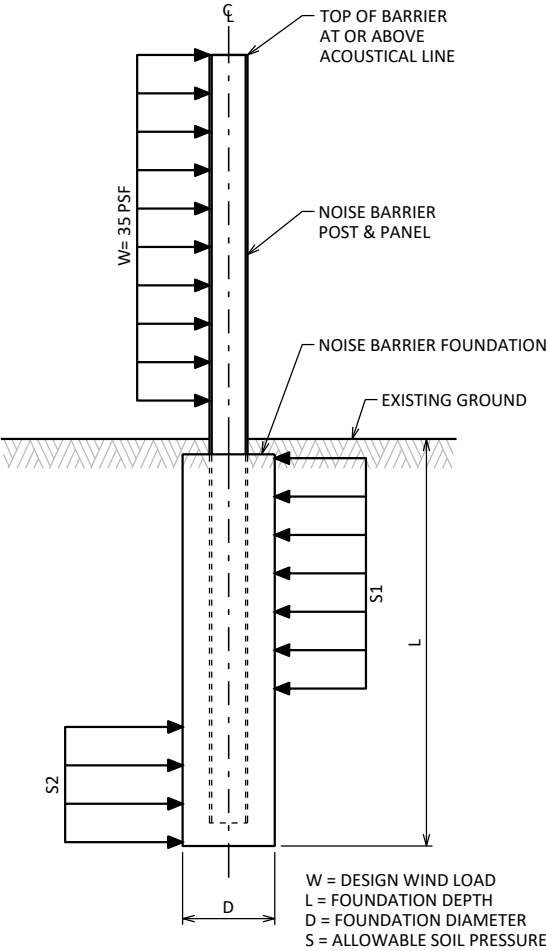
SECTION THRU GROUND MOUNTED POST & DRILLED CONC. FOOTING

TYPICAL AT EACH POST LOCATION
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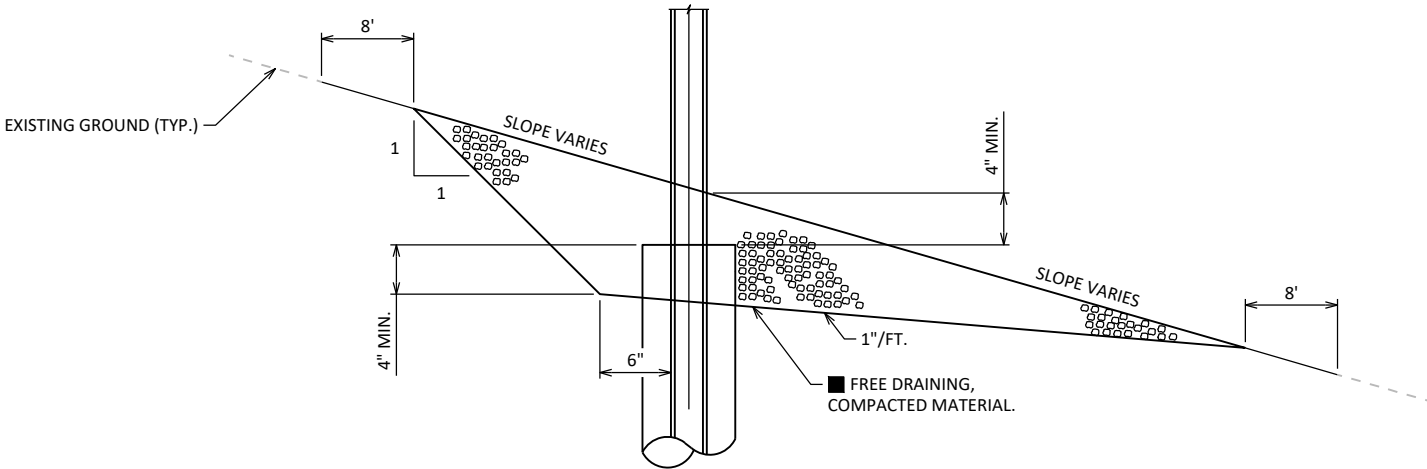
SECTION A-A

(AT TOP OF FOUNDATION, BARRIER PANELS OMITTED FOR DRAWING CLARITY)



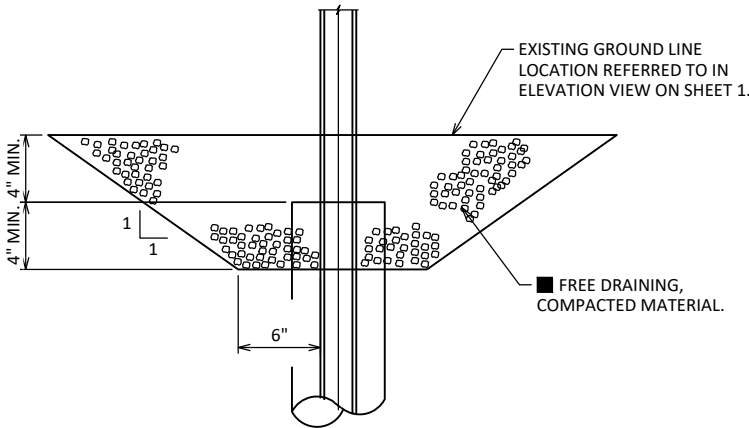
NOISE BARRIER LOADING DIAGRAM

(NOT TO SCALE)



*** SLOPED GRADE BACKFILL & DRAINAGE DETAIL**

(NOT TO SCALE)



*** LEVEL GRADE BACKFILL & DRAINAGE DETAIL**

(NOT TO SCALE)

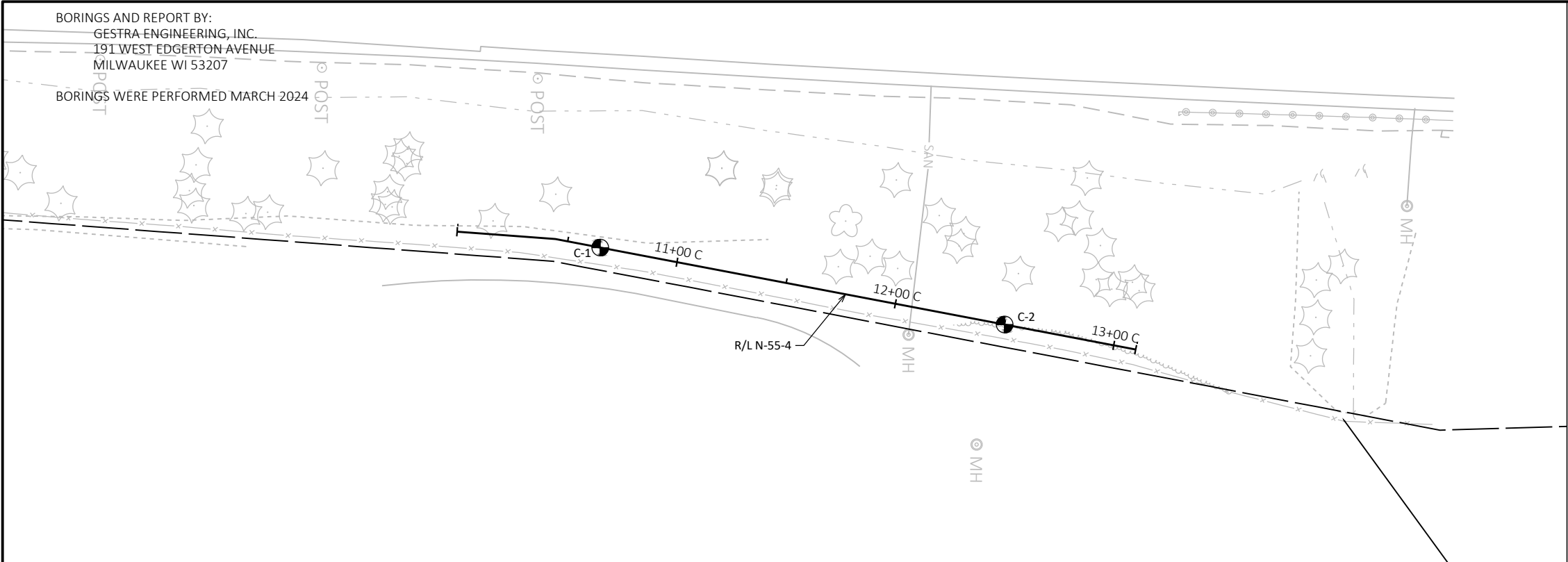
GENERAL NOTES

INSTALL FREE DRAINING GRANULAR MATERIAL AT THE BOTTOM OF NOISE BARRIER AS SHOWN. FREE DRAINING MATERIAL IS INCLUDED WITH THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE STRUCTURE N-55-04."

LEGEND

- * ALL ITEMS SHOWN ARE INCLUDED WITH THE BID ITEM "NOISE BARRIERS DOUBLE-SIDED SOUND ABSORPTIVE STRUCTURE N-55-4".
- AT A MINIMUM, MATERIAL AND COMPACTION SHALL MEET THE REQUIREMENTS OF SECTION 312 OF THE STANDARD SPECIFICATIONS.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE N-55-4			
DRAWN BY		ZHC	PLANS CK'D BMO
BARRIER DETAILS		SHEET 2 OF 4 28	

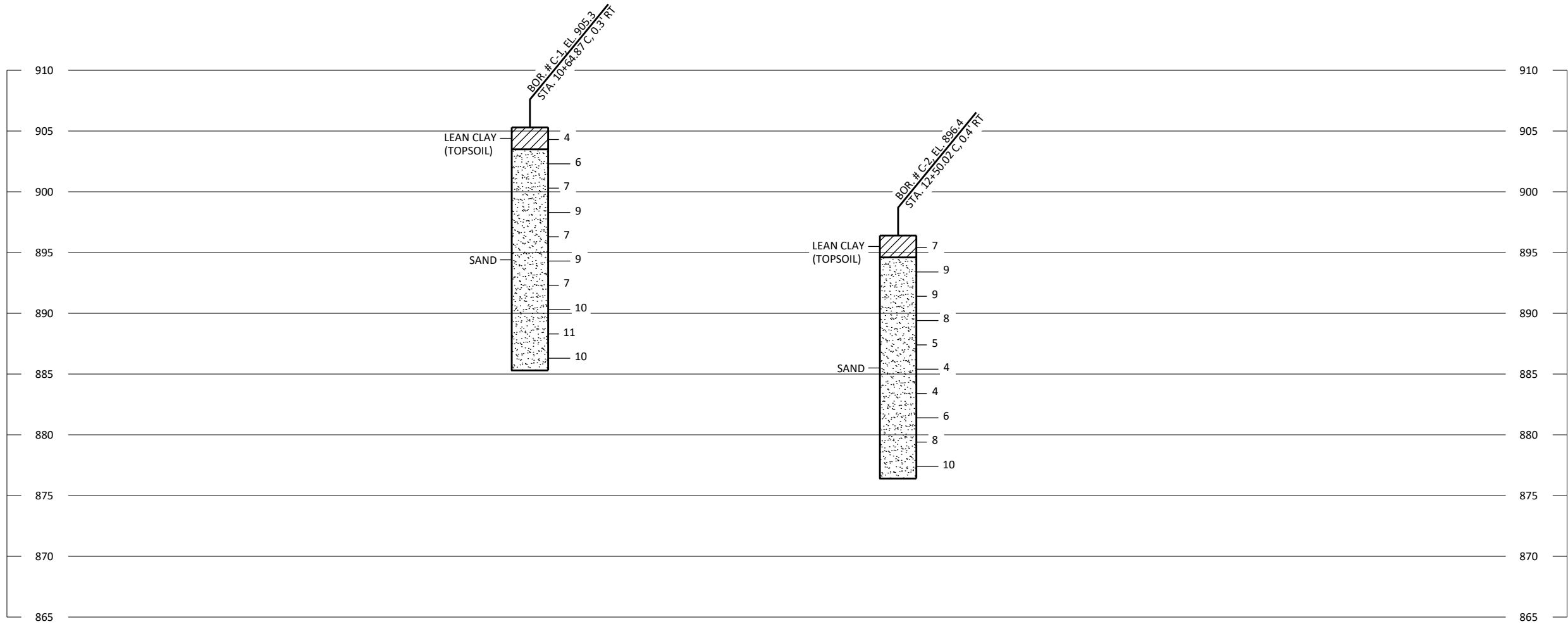


NOTE

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PLAN

N-55-4



90% PSE - SEPTEMBER 2024

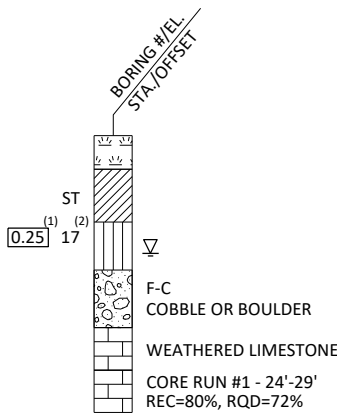
STATE PROJECT NUMBER

1020-00-85

MATERIAL SYMBOLS

ASPHALT	TOPSOIL	PEAT
CONCRETE	FILL	GRAVEL
SAND	CLAY	SILT
BOULDERS OR COBBLES	LIMESTONE	BEDROCK (UNKNOWN)
SHALE	SANDSTONE	IGNEOUS/META

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DESIGN AND BIDDERS INFORMATION

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NO.	DATE	REVISION	BY
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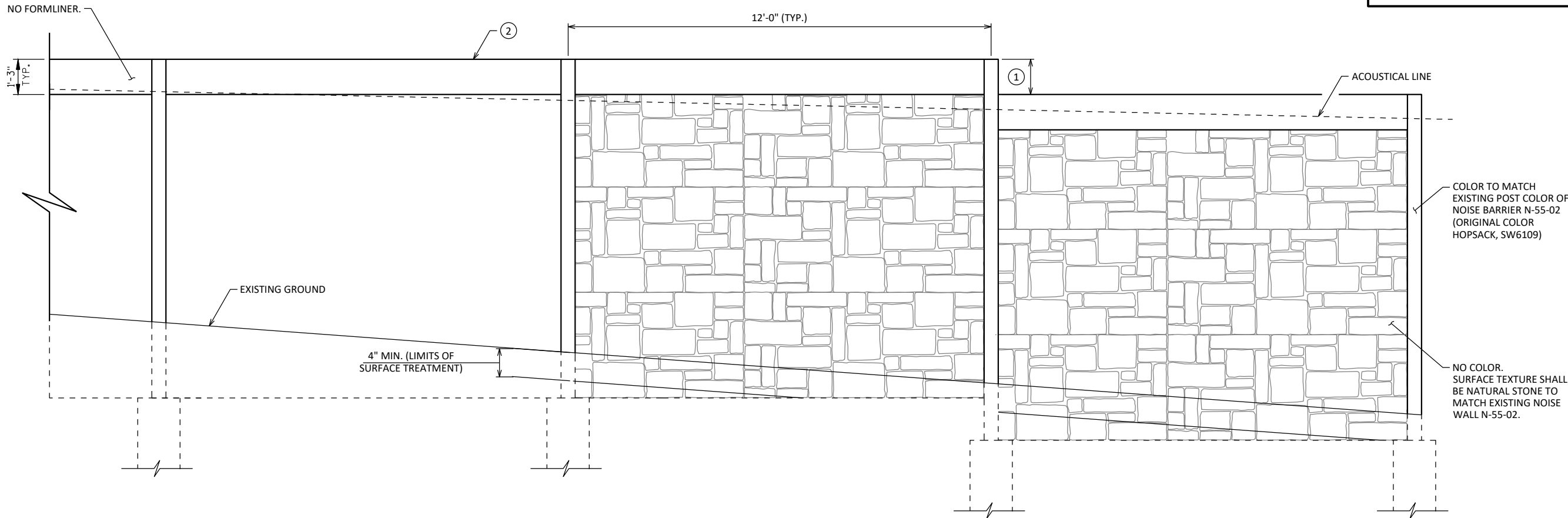
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE N-55-4

DRAWN BY	ZHC	PLANS CK'D	BMO
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SUBSURFACE
EXPLORATION

SHEET 3 OF 4
29



TYPICAL NOISE BARRIER ELEVATION

(FORMLINER TO BE PLACED ON BOTH SIDES OF NOISE WALL)

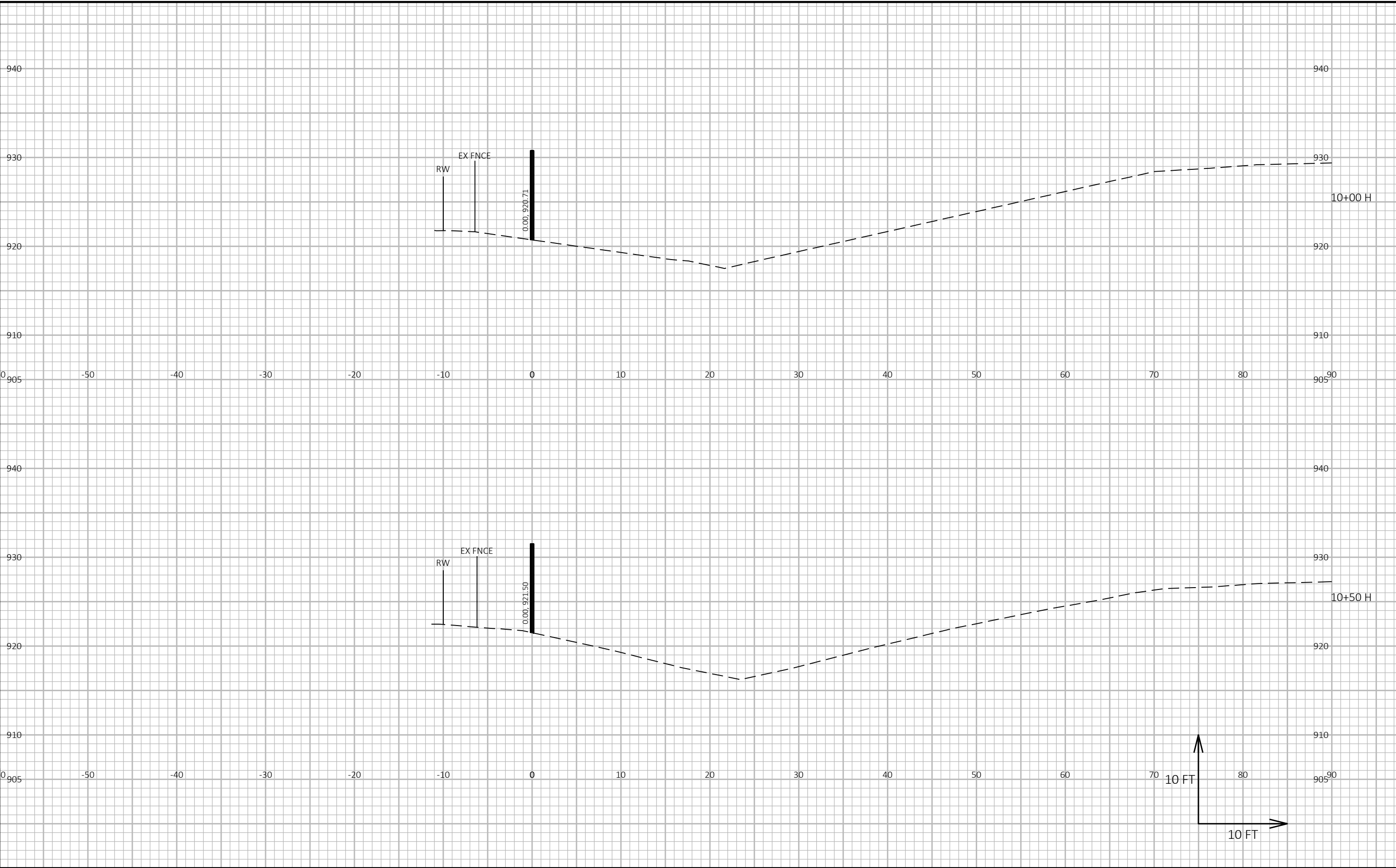
LEGEND

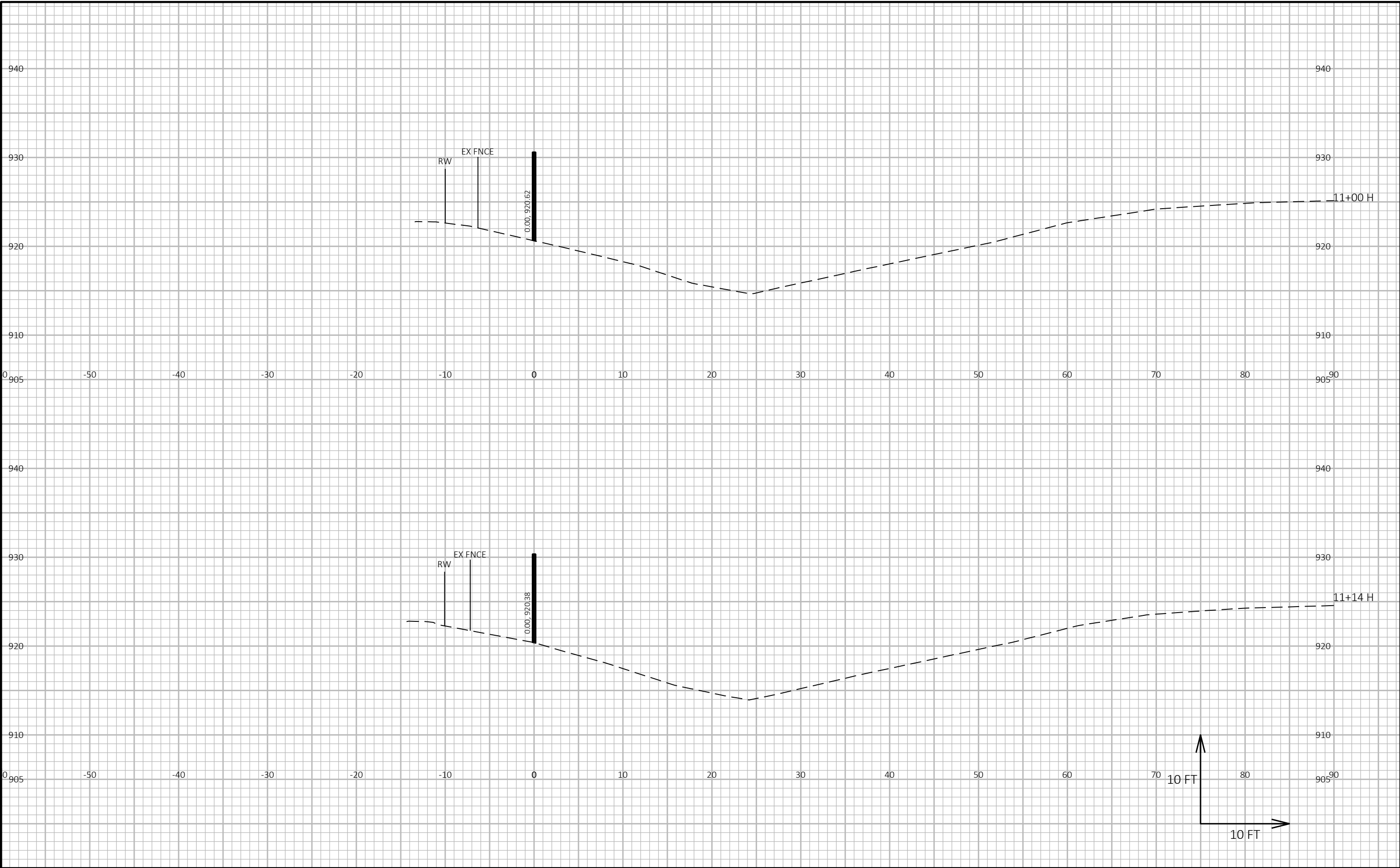
- ① STEP PANELS A MAXIMUM OF 3' IN HEIGHT. WHEN MORE THAN ONE PANEL MUST BE STEPPED, KEEP THE STEP INCREMENT THE SAME FOR EACH OF STEPPING PANELS.
- ② ADJUST VERTICAL PLACEMENT OF PANELS TO MAXIMIZE HORIZONTAL RUNS, KEEPING THE TOP OF PANELS AT THE SAME ELEVATION. THE TOP OF WALL SHALL BE AT OR ABOVE ACOUSTICAL LINE.

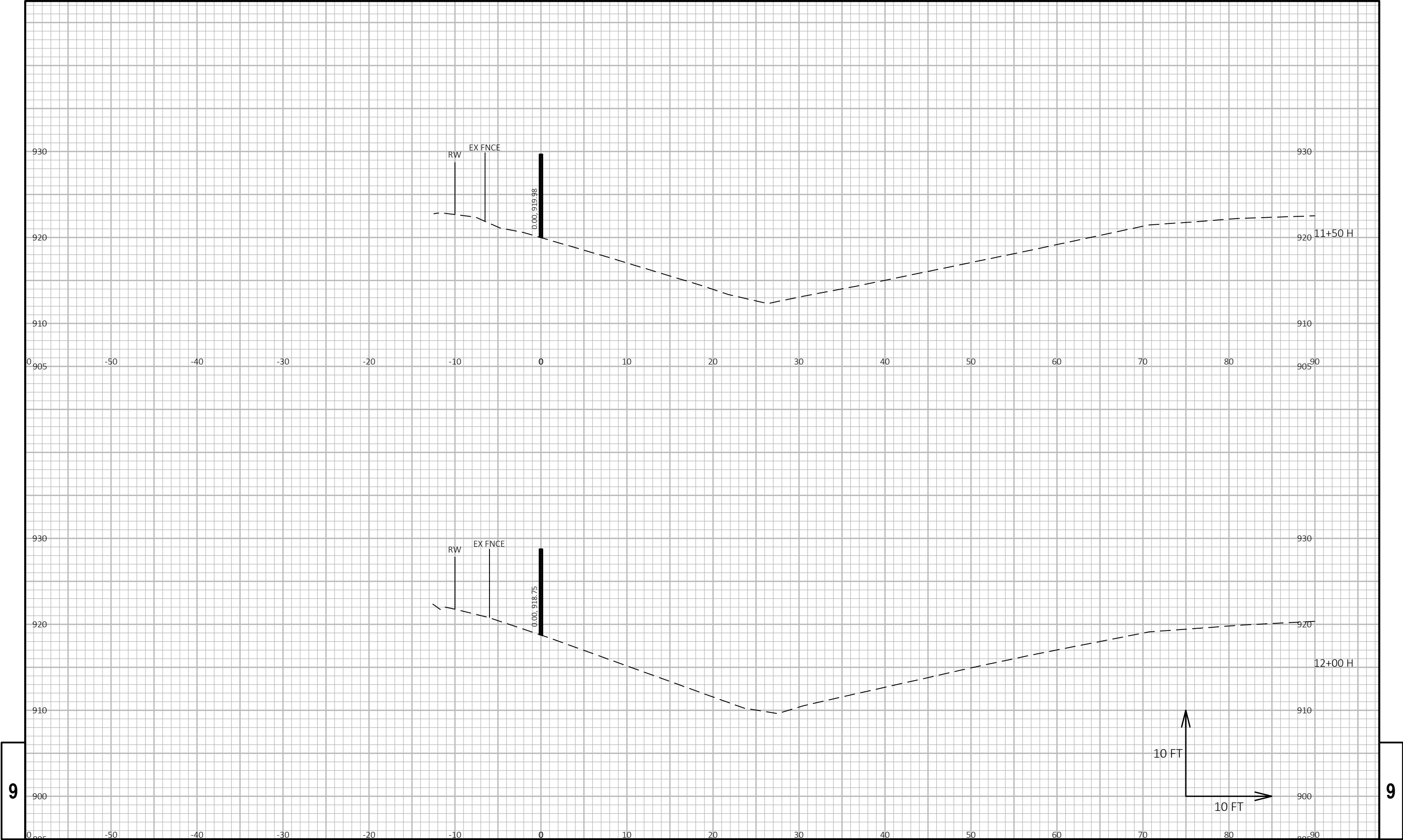
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE N-55-4			
DRAWN BY		ZHC	PLANS CK'D BMO
ELEVATION AND AESTHETIC DETAILS		SHEET 4 OF 4	
		30	

STH 35		AREA (SF)		INCREMENTAL VOL (CY) (UNADJUSTED)		CUMULATIVE VOL (CY)		MASS ORDINATE NOTE 3
NOISE WALL N-55-02 DITCH GRADING		EXCAVATION COMMON NOTE 1	FILL NOTE 2	EXCAVATION COMMON NOTE 1	FILL NOTE 2	EXCAVATION		
STATION	DISTANCE					COMMON 1.00 NOTE 1	EXPANDED FILL 1.25	
17+71 H	---	0.0	0.0	0.0	0.0	0.0	0.0	0
17+76 H	5	0.6	0.7	0.1	0.1	0.1	0.1	0
18+00 H	24	5.1	0.7	2.5	0.6	2.6	0.8	2
18+12 H	12	5.6	0.4	2.4	0.3	5.0	1.2	4
18+50 H	38	5.1	0.0	7.5	0.3	12.5	1.5	11
18+96 H	46	0.0	0.0	4.3	0.0	16.9	1.5	15
			COLUMN TOTALS	16.9	1.3			

- NOTES:
- 1) EXCAVATION COMMON: EXCAVATION COMMON INCLUDES CUT AND UNUSABLE PAVEMENT MATERIAL.
 - 2) FILL: FILL DOES NOT INCLUDE UNUSABLE PAVEMENT MATERIAL
 - 3) MASS ORDINATE: MASS ORDINATE = CUT + STRUCTURE EXCAVATION - (FILL* FILL FACTOR)



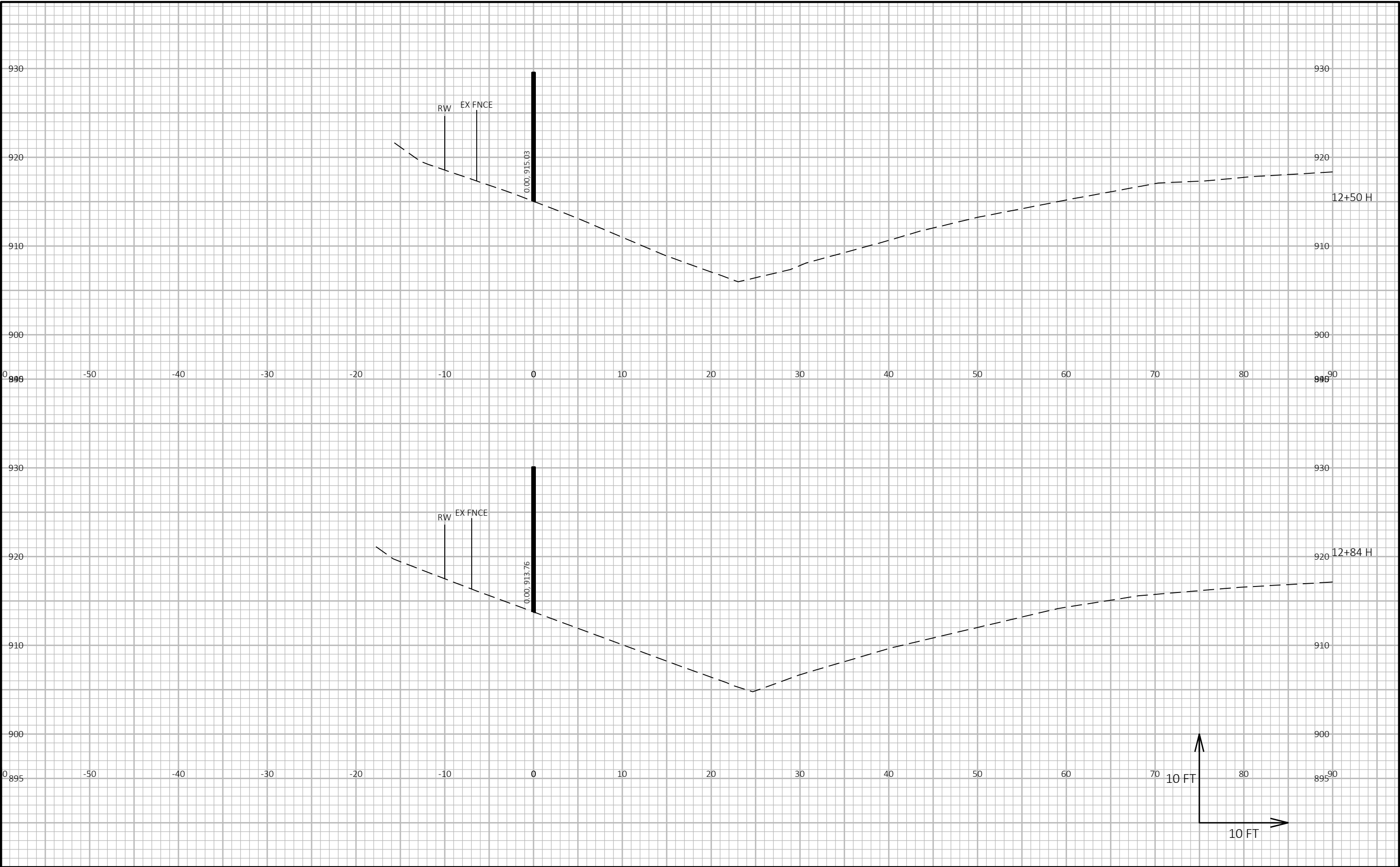


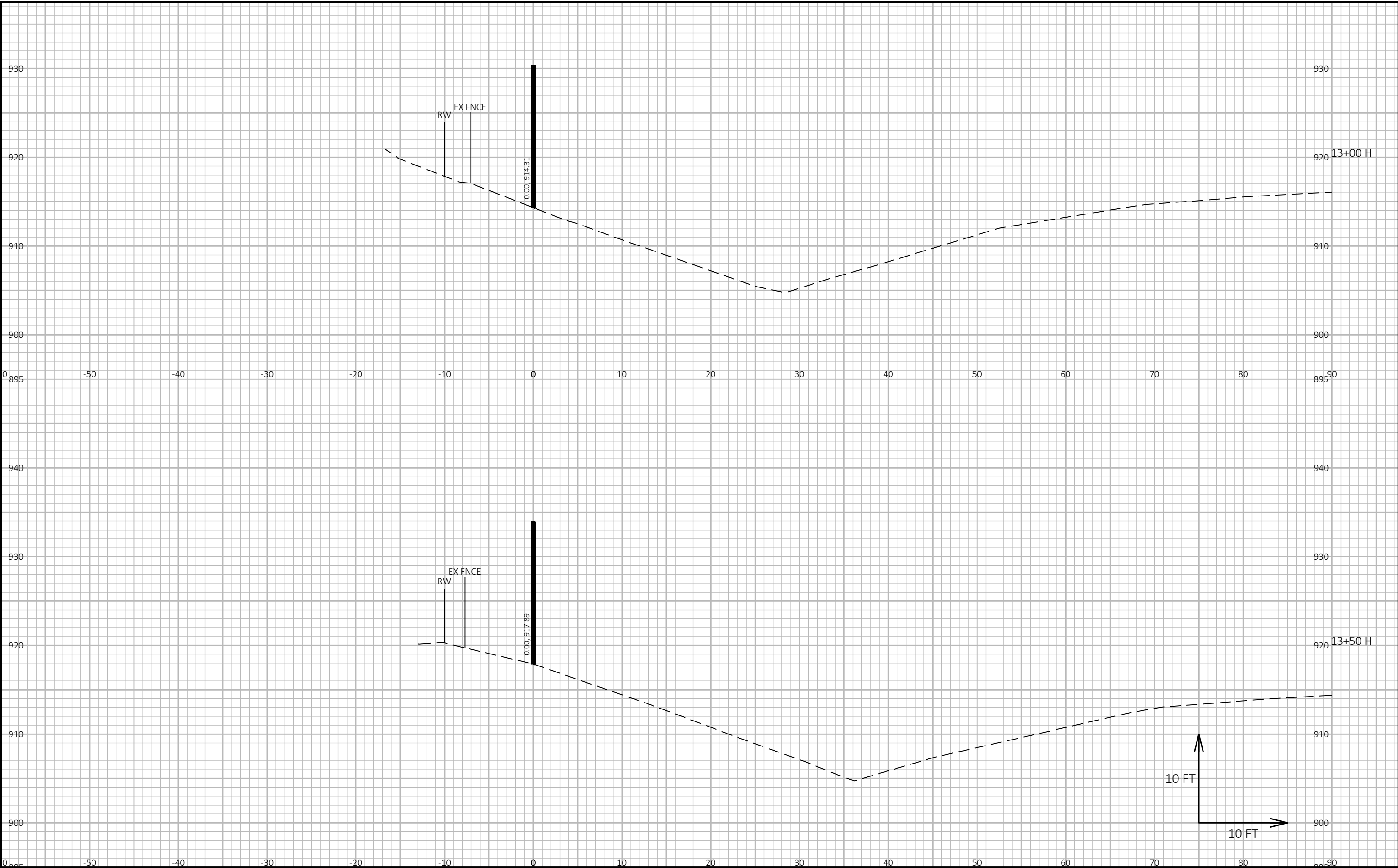


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PROJECT NO:	1020-00-85	HWY:	IH 94	COUNTY:	ST. CROIX	CROSS SECTIONS:	N-55-02	SHEET	18	E
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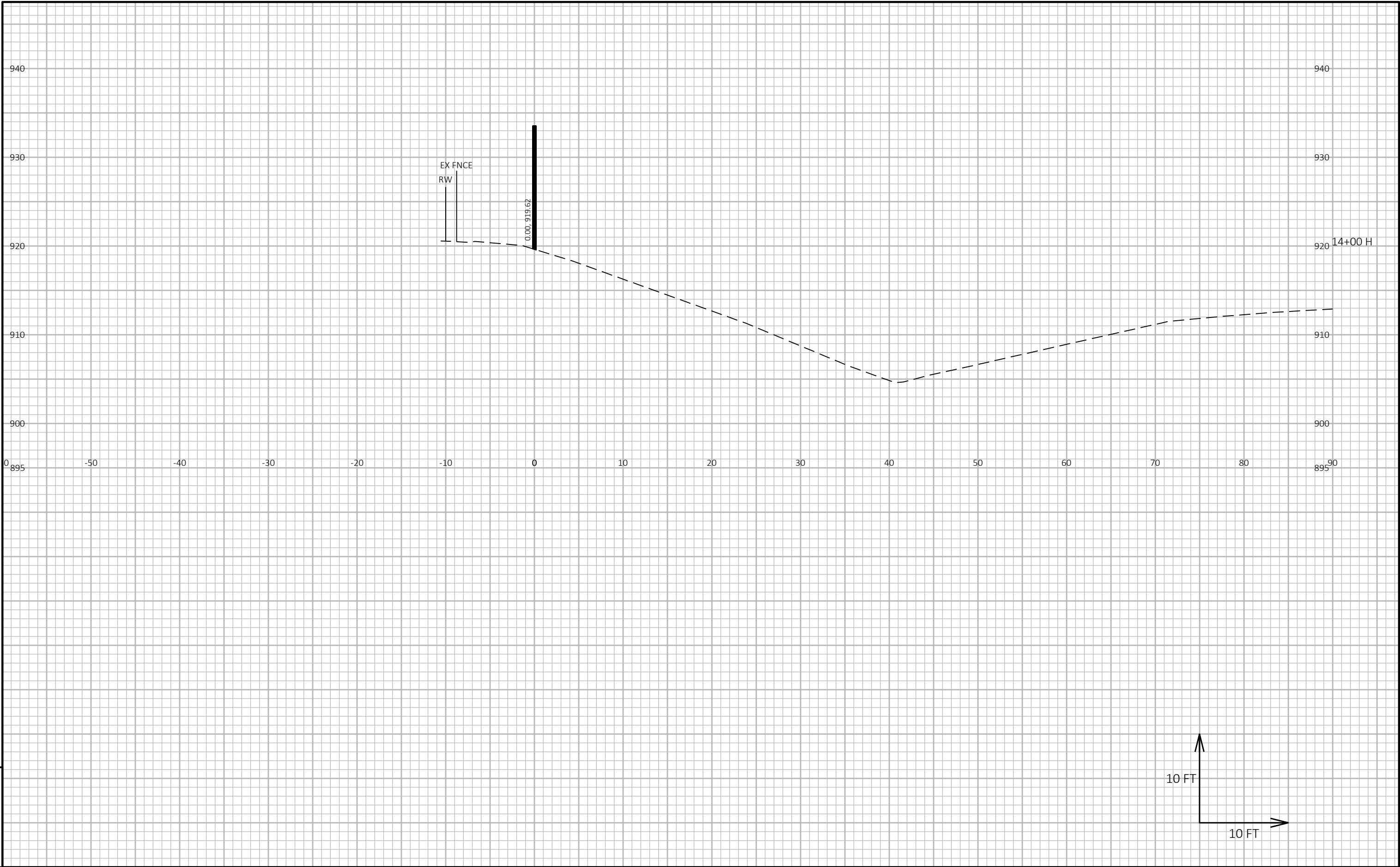




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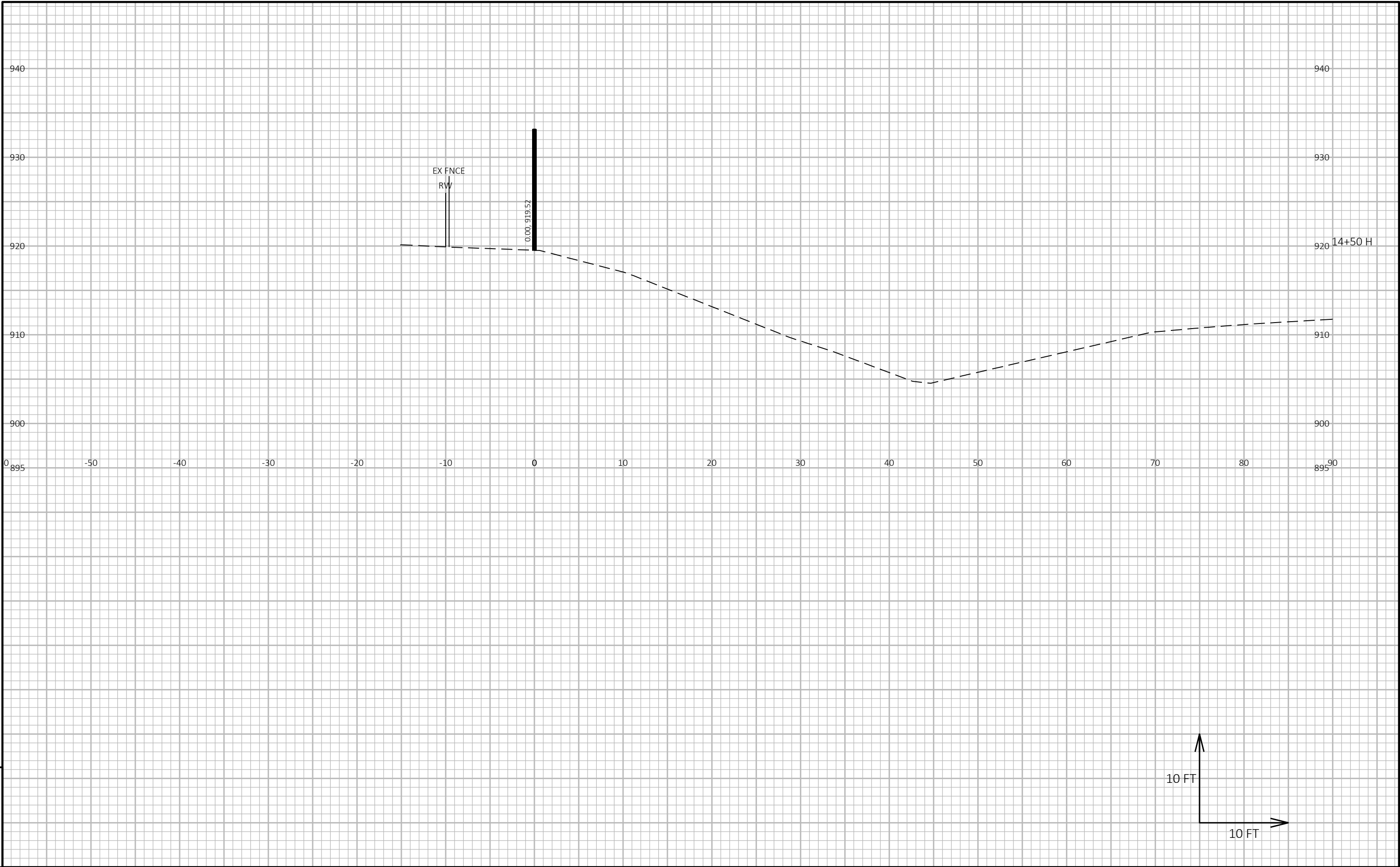
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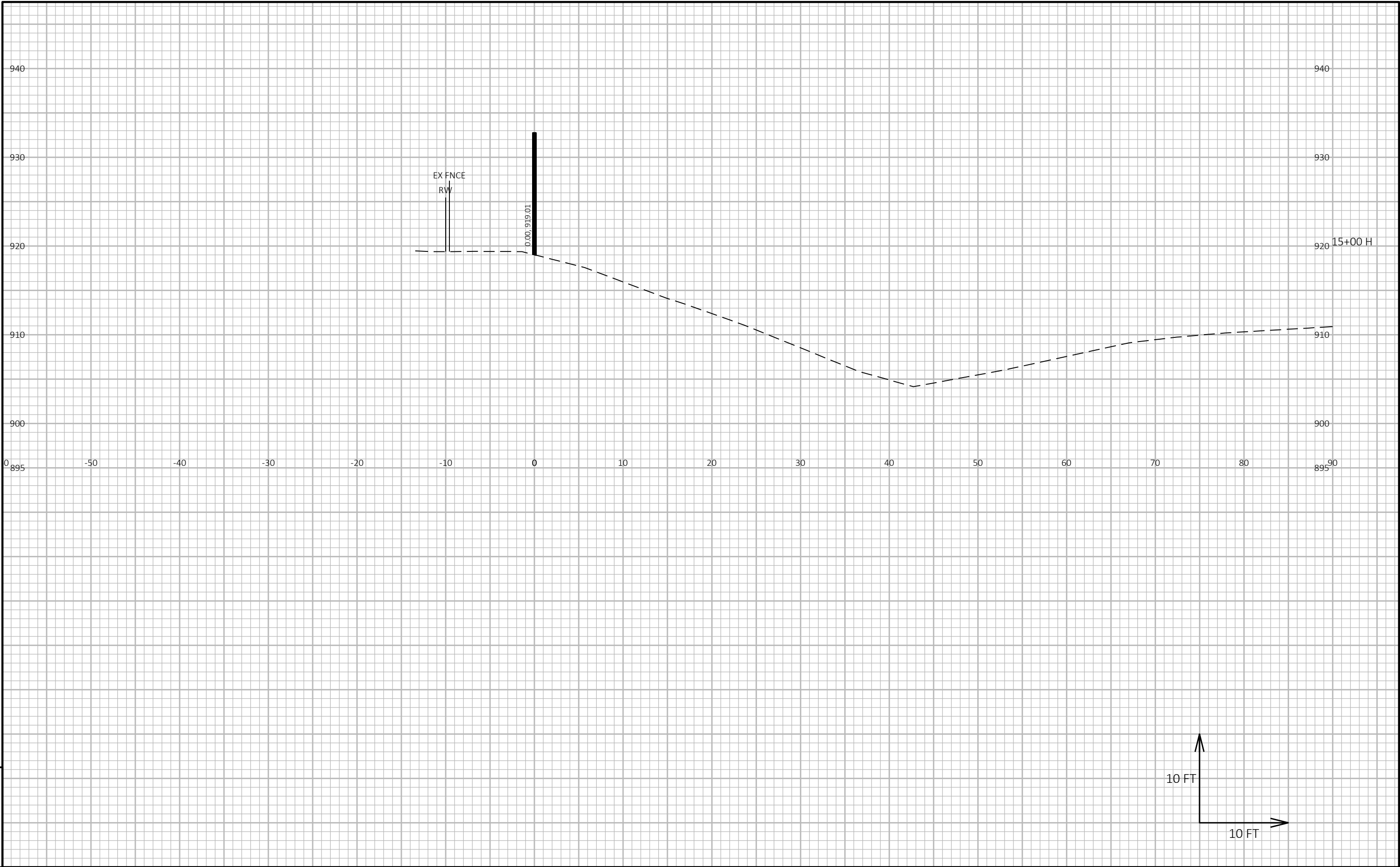
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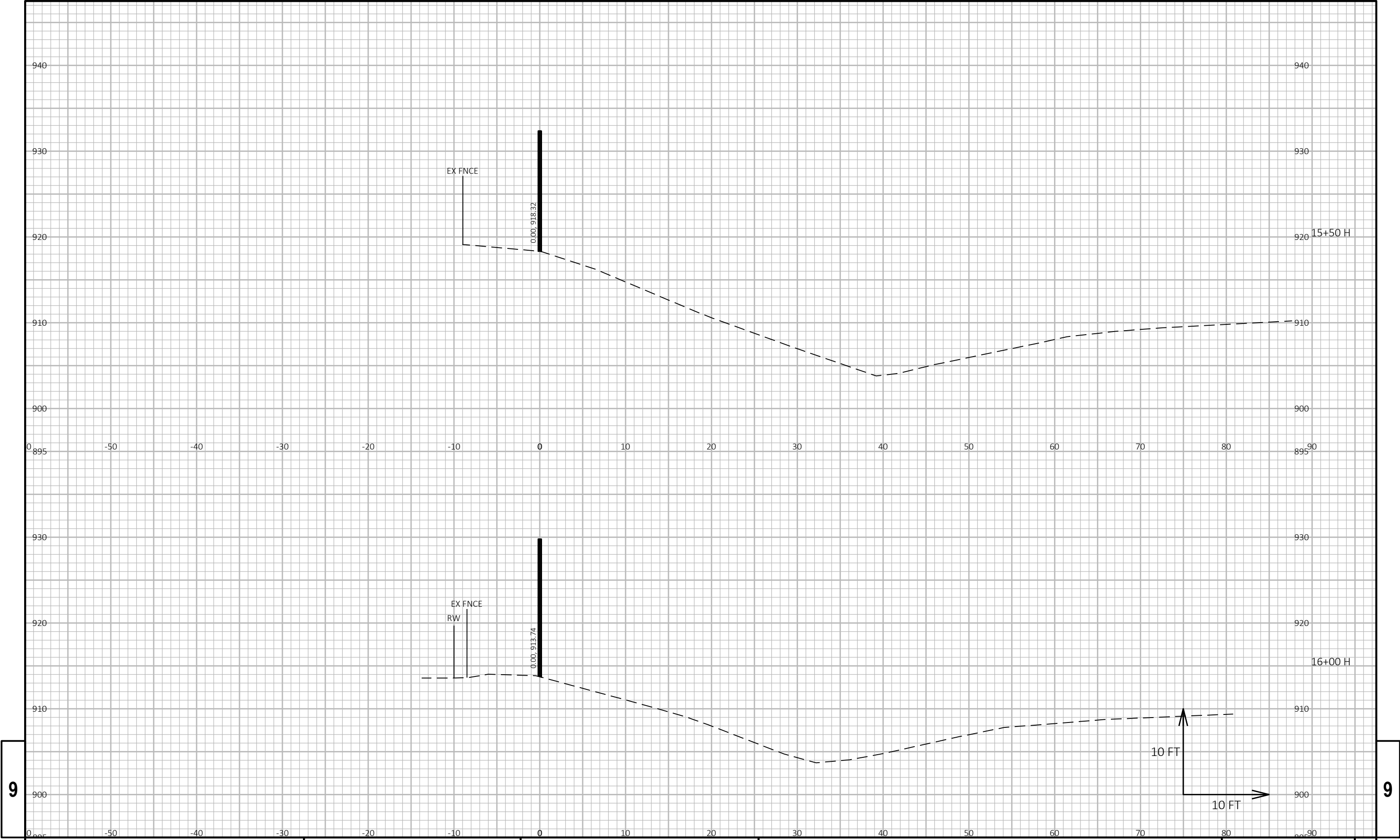
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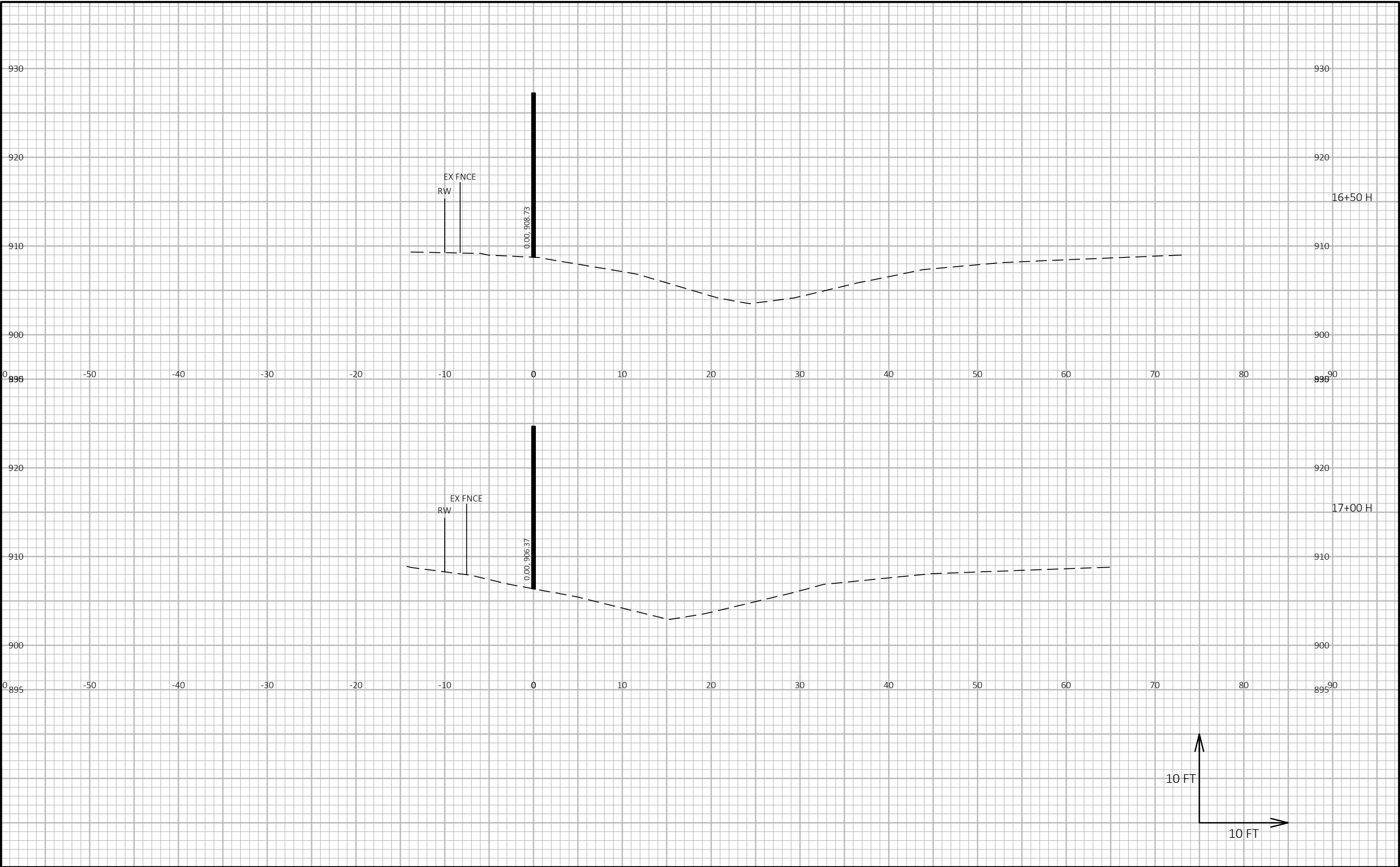
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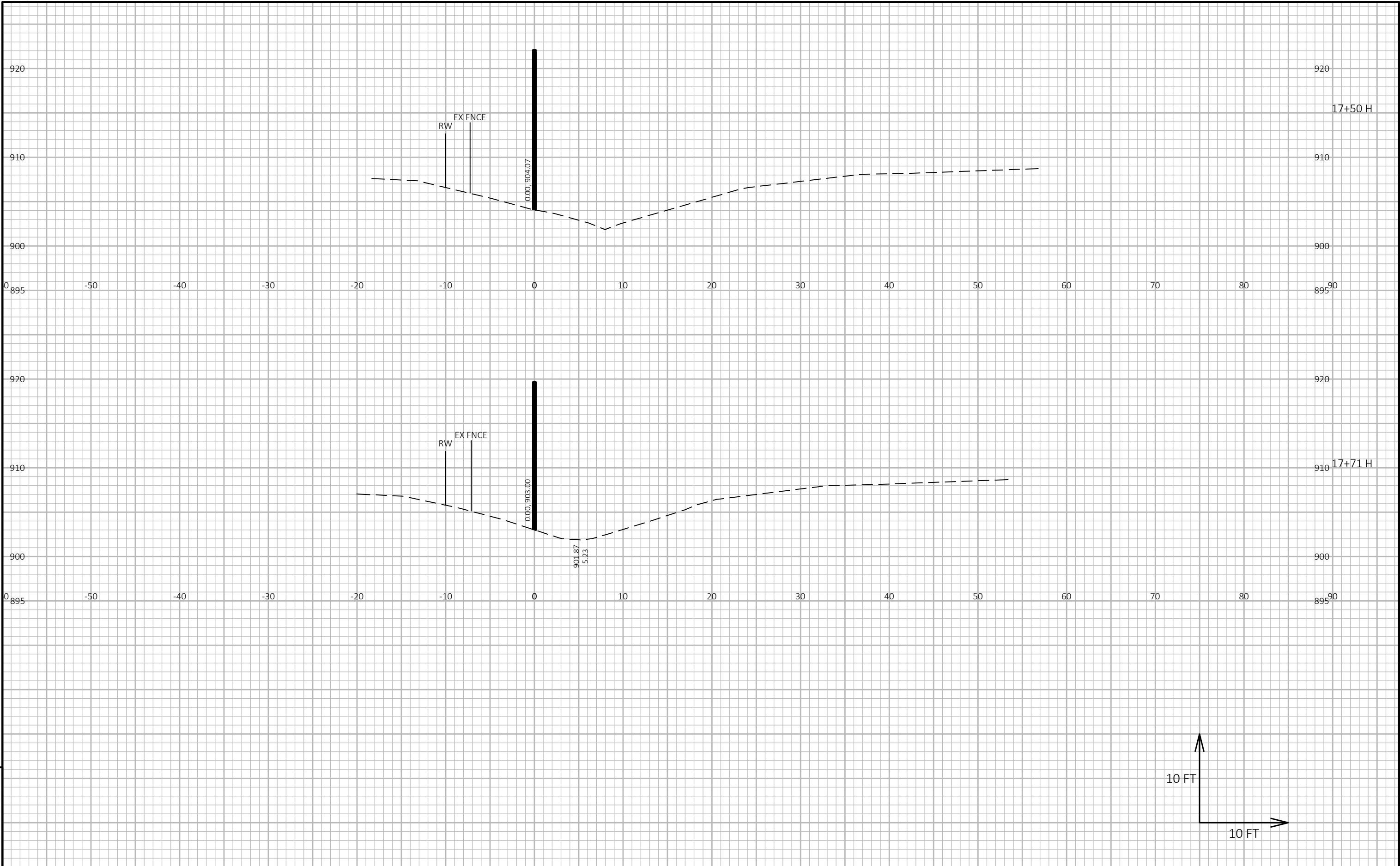
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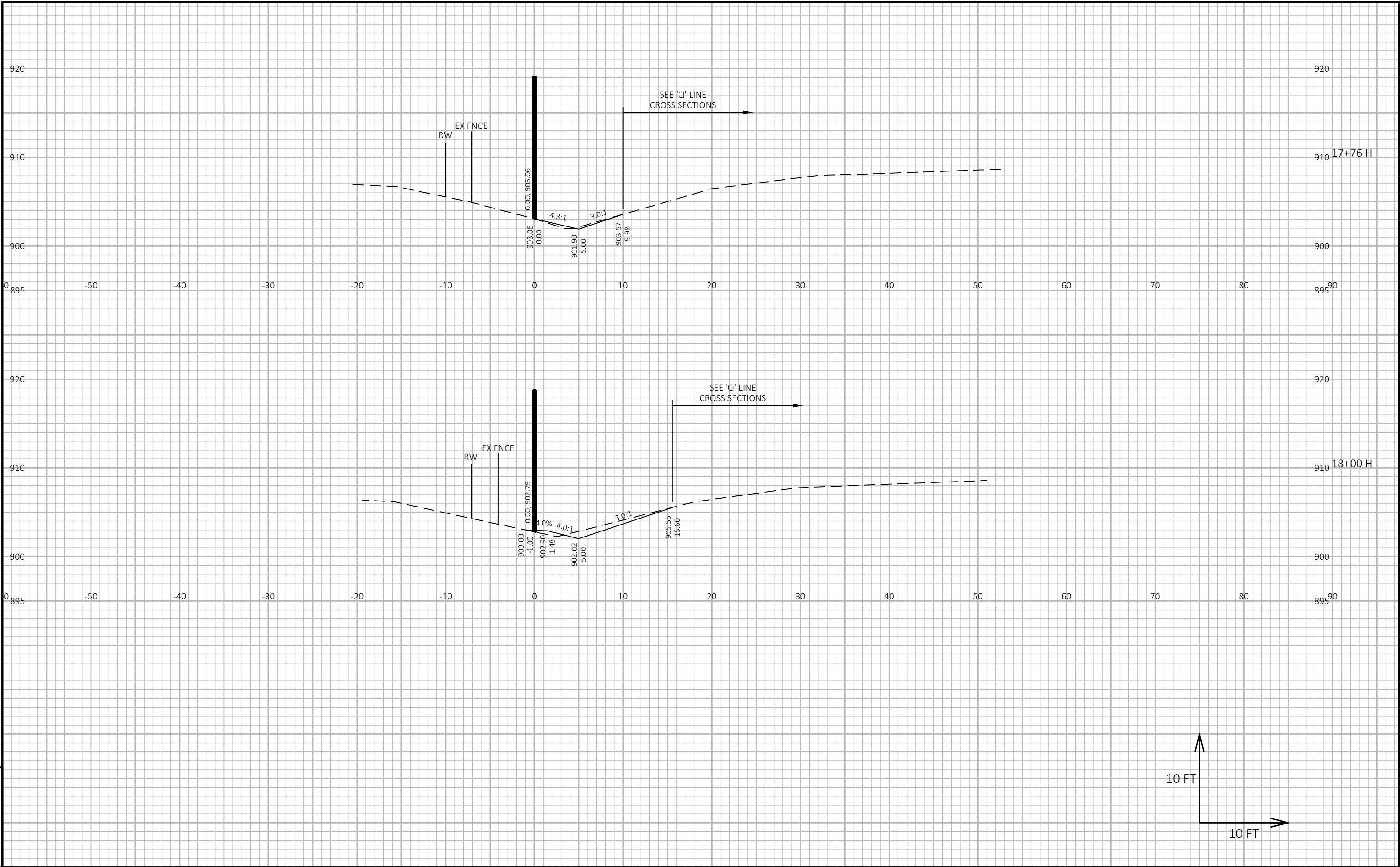
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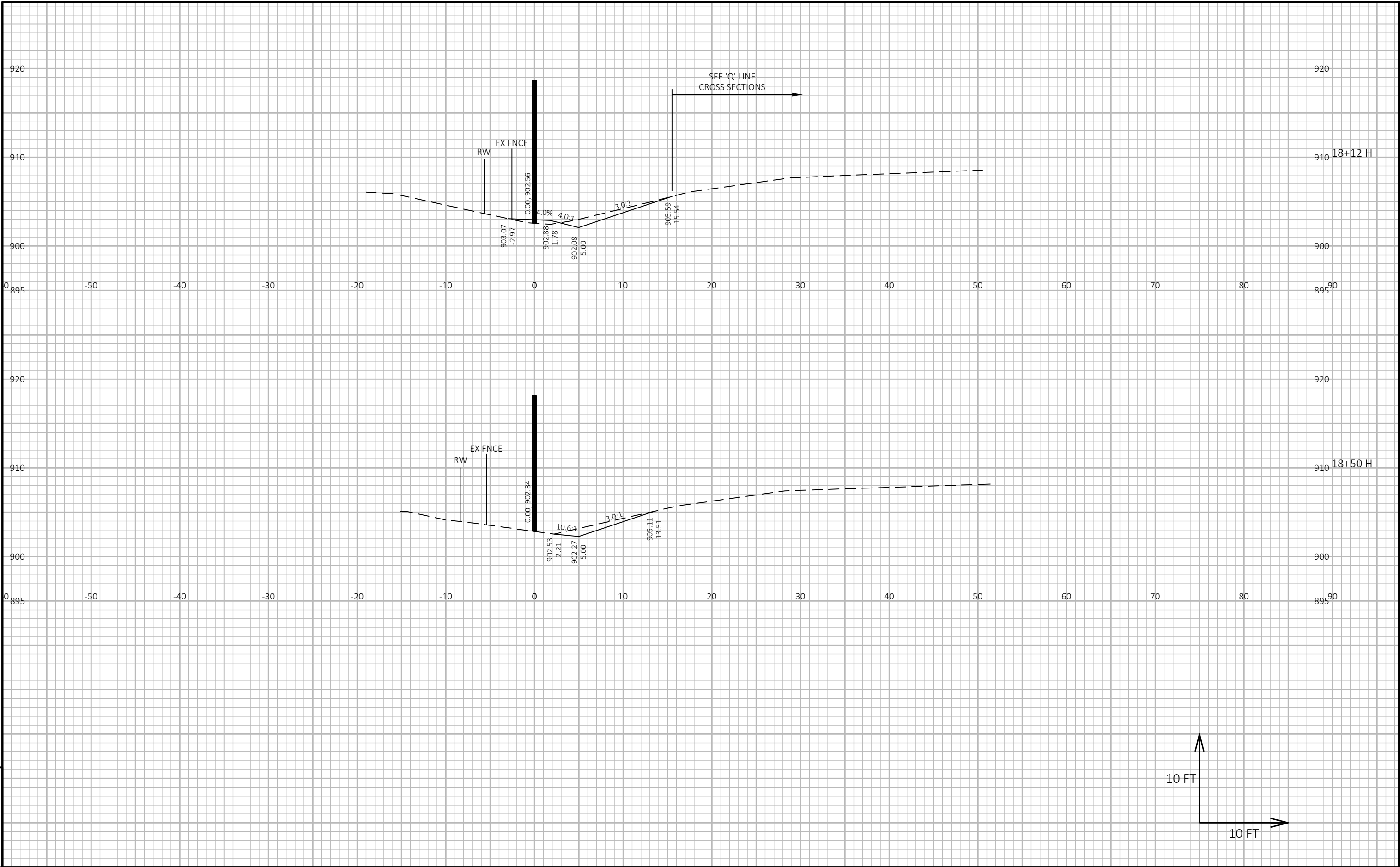
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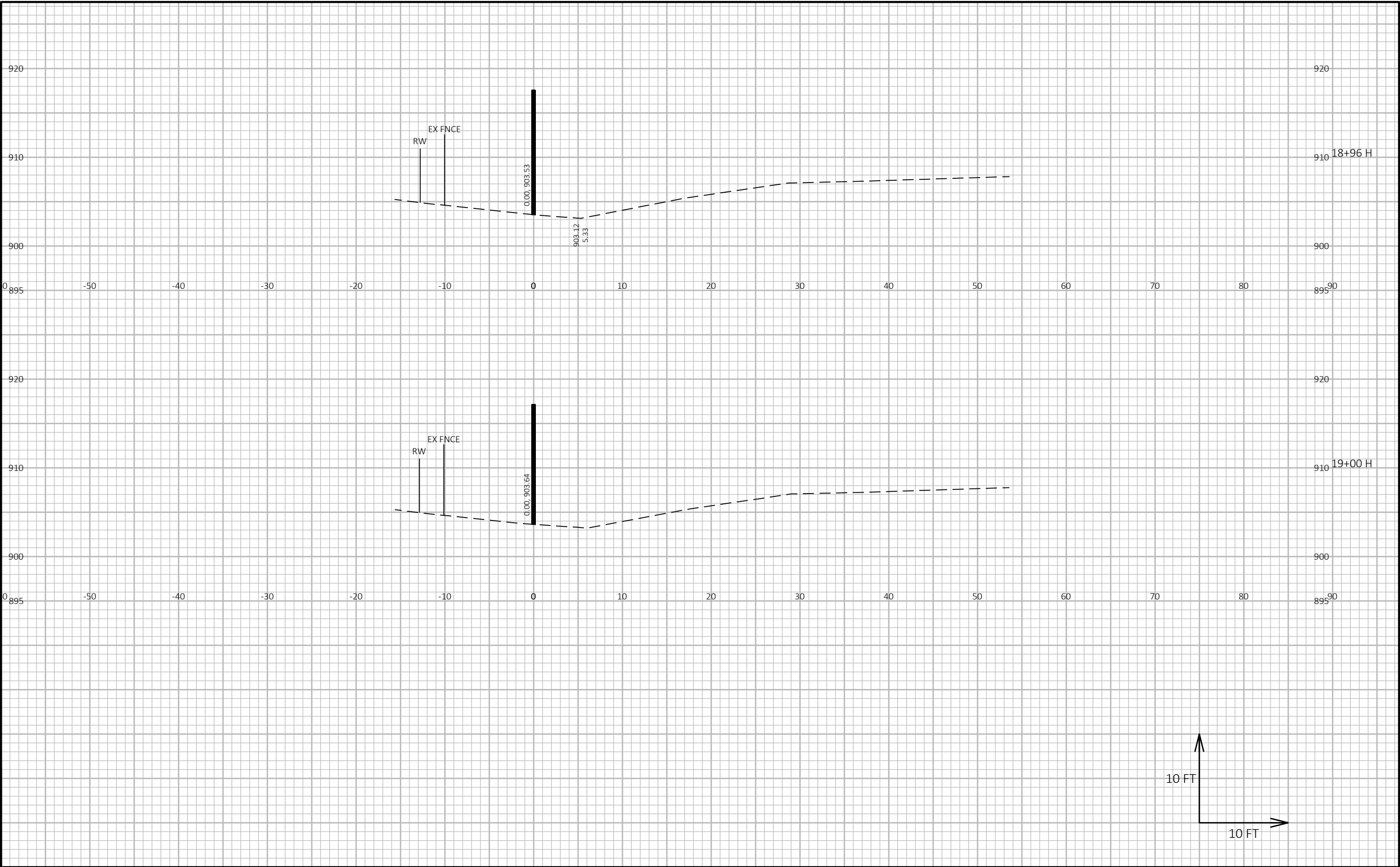
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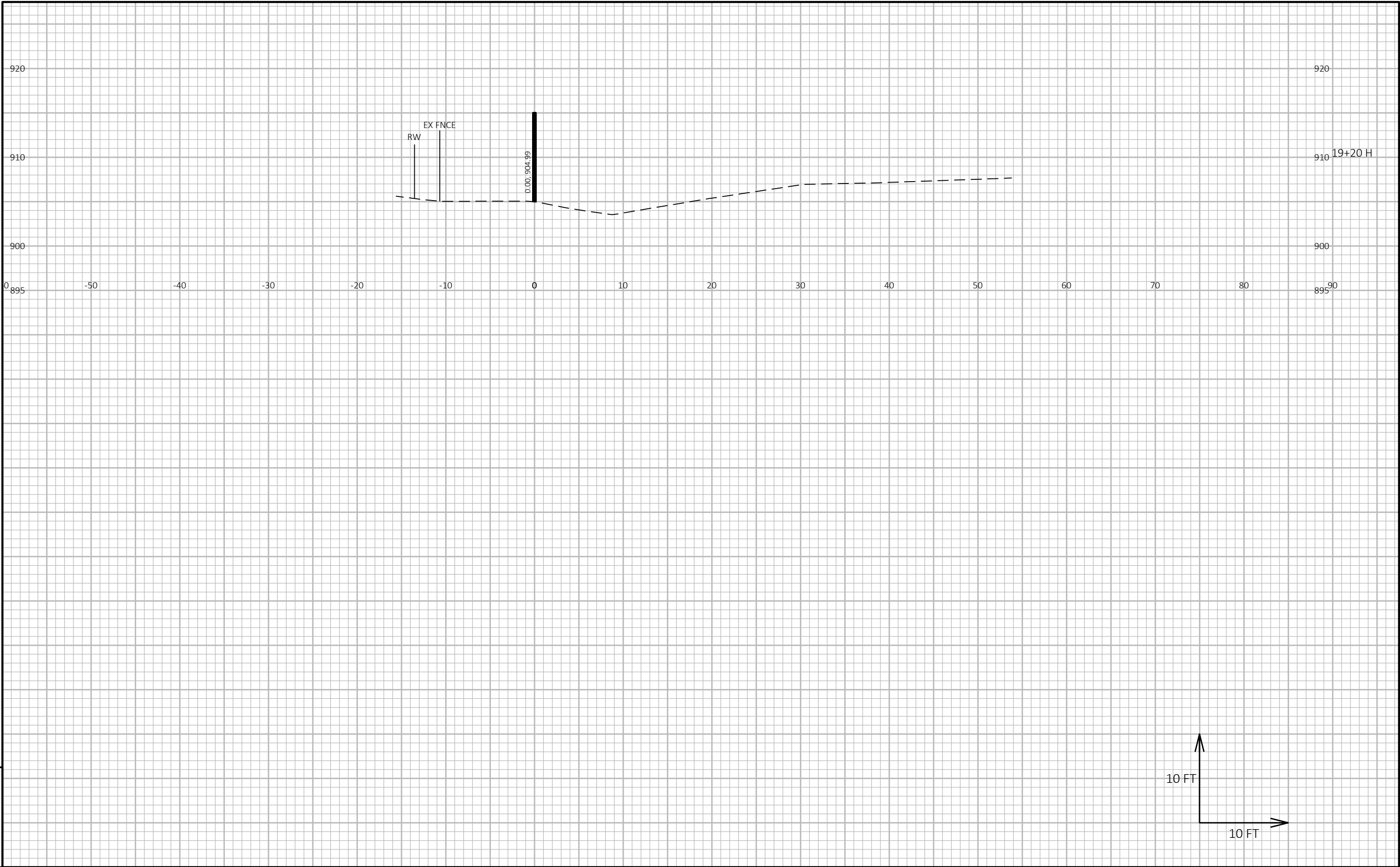
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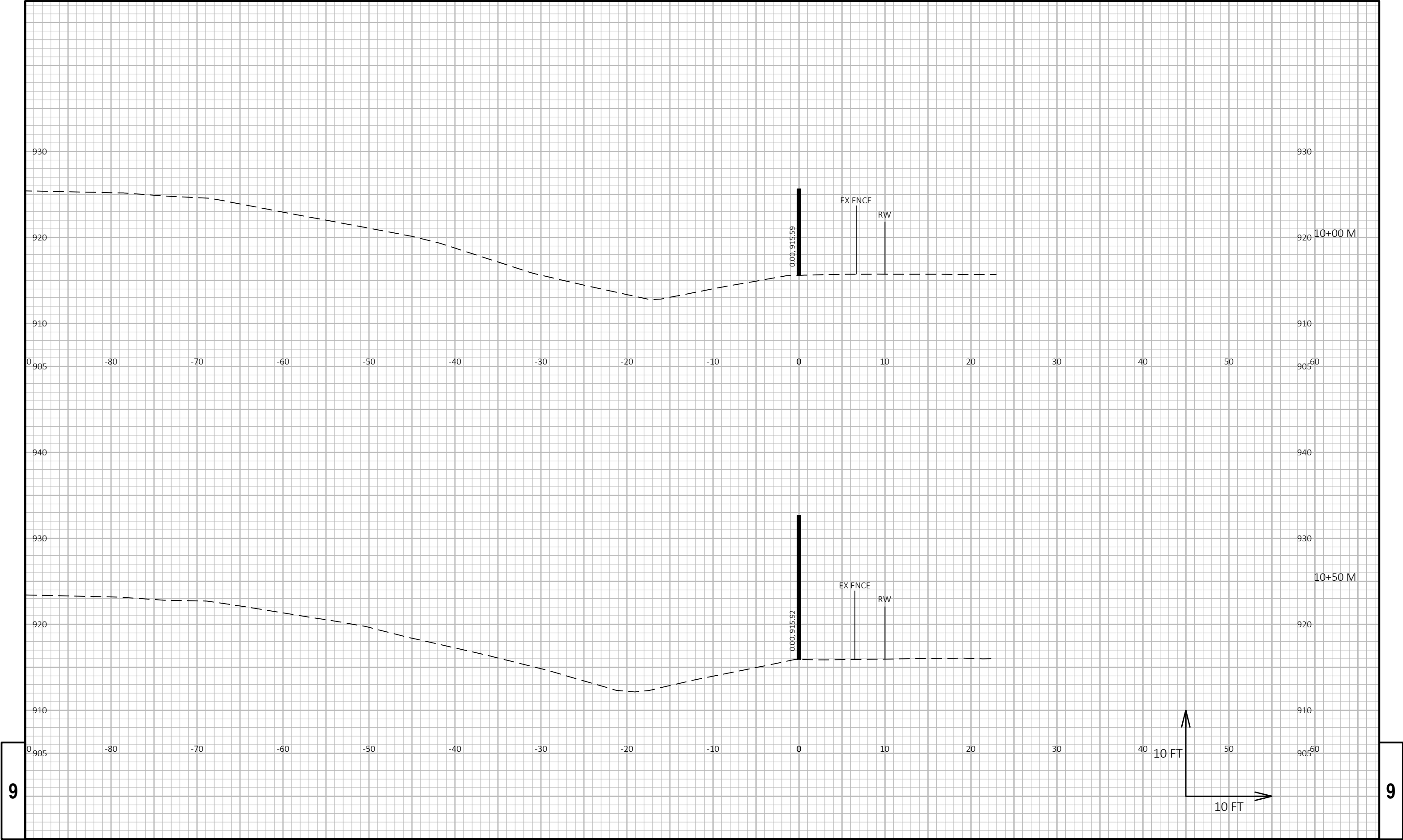
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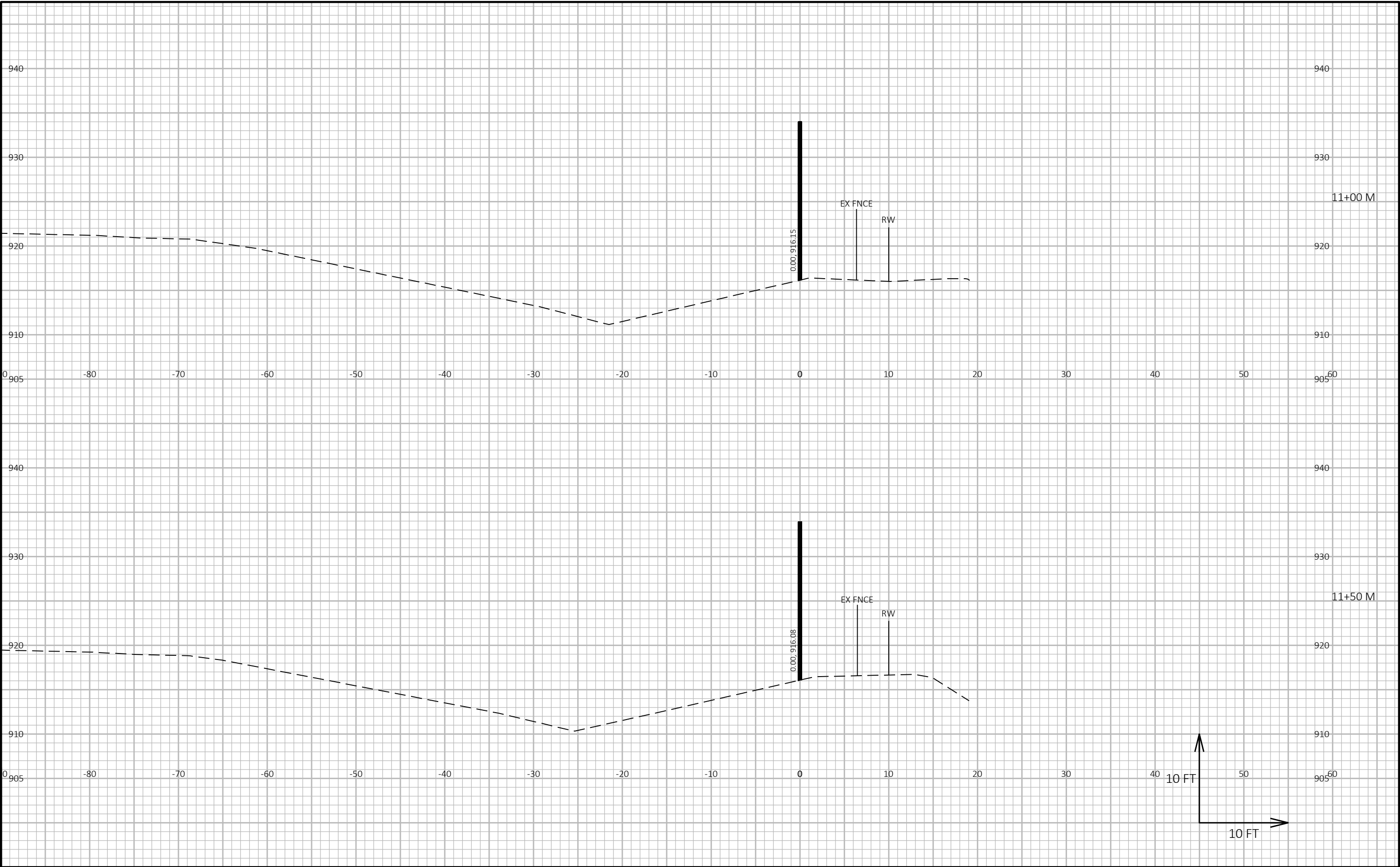


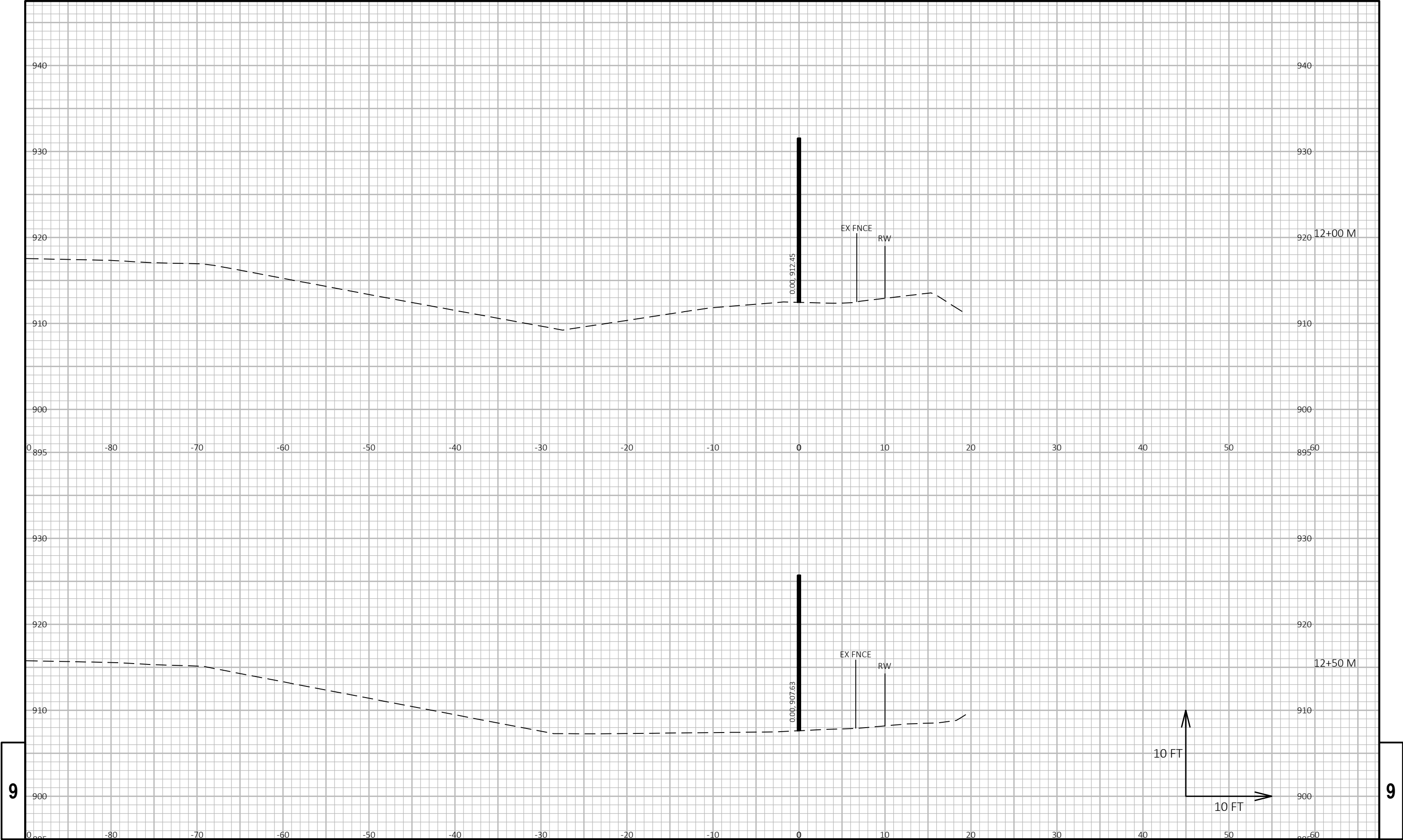
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PROJECT NO: 1020-00-85	HWY: IH 94	COUNTY: ST. CROIX	CROSS SECTIONS: N-55-02	SHEET 30	E
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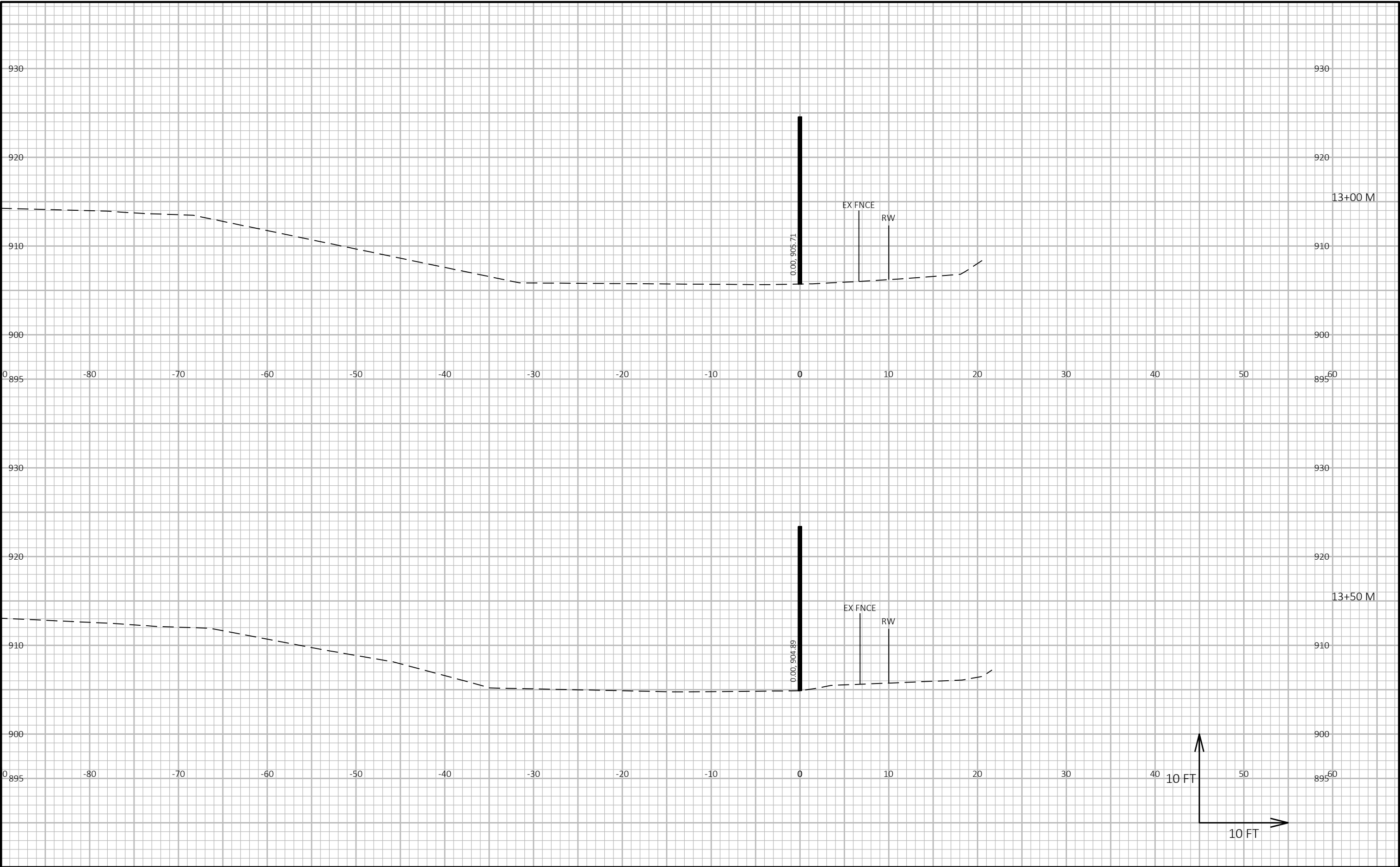




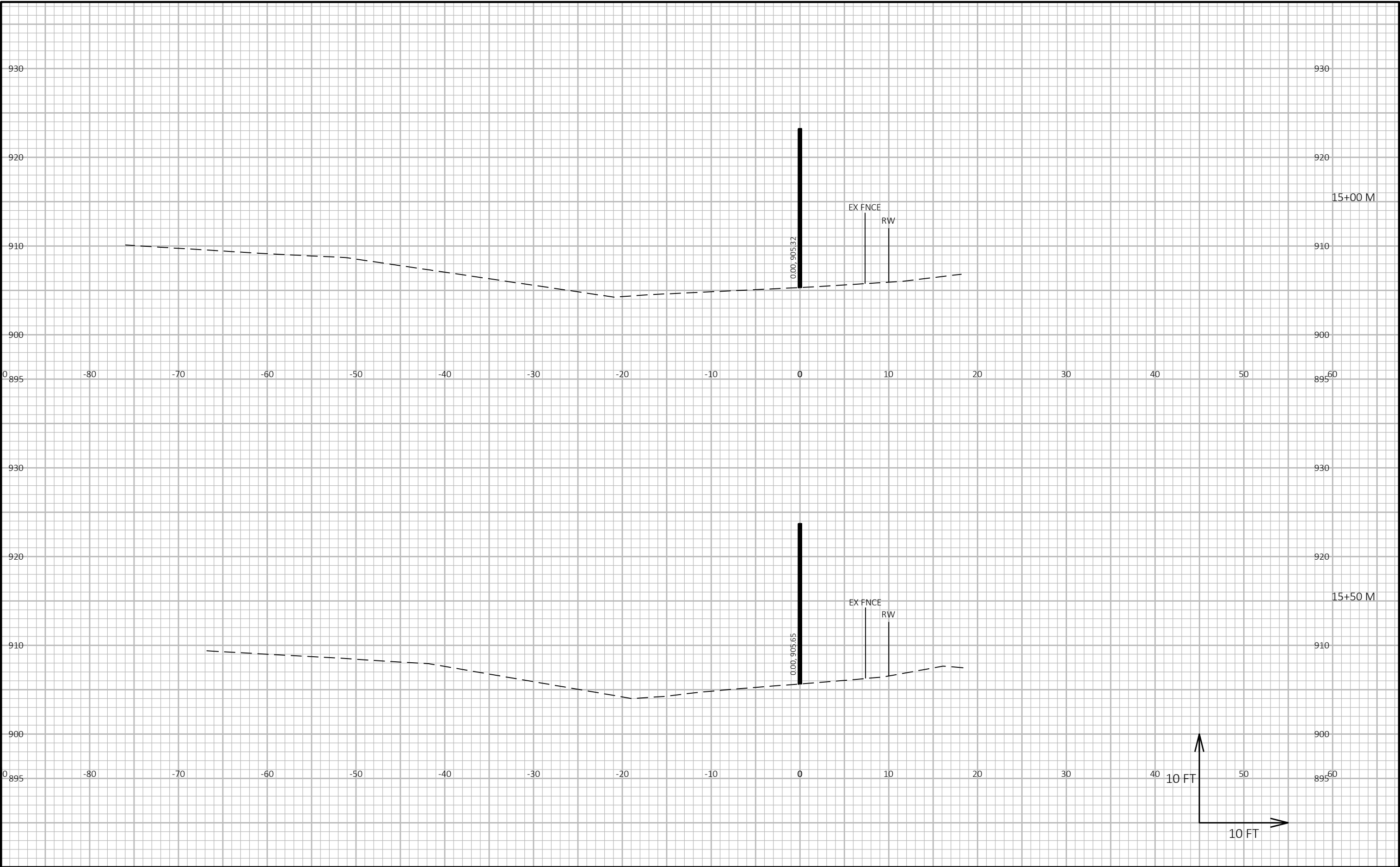
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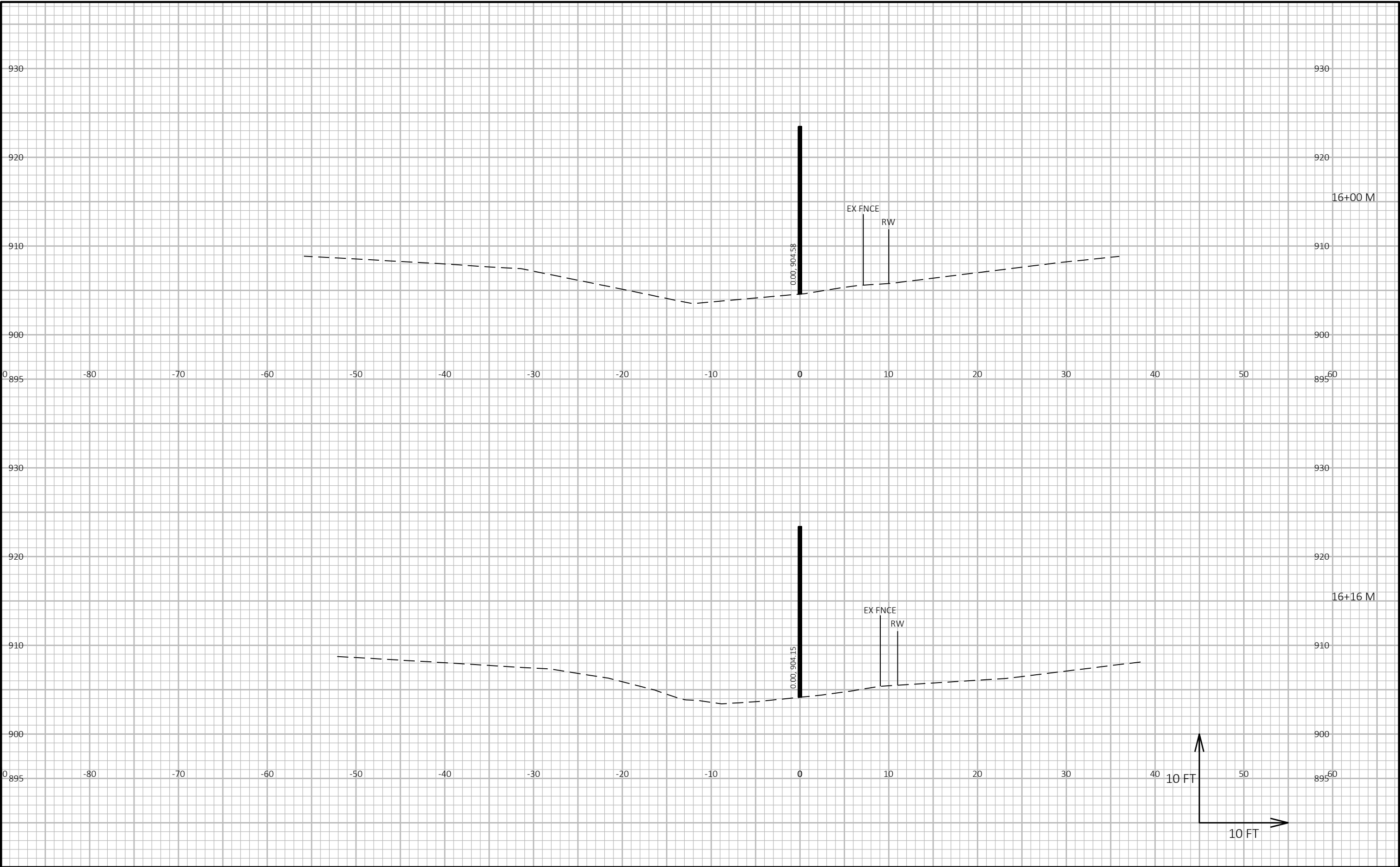




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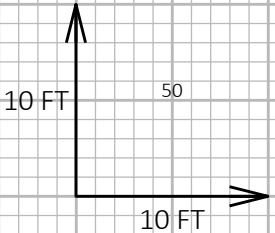
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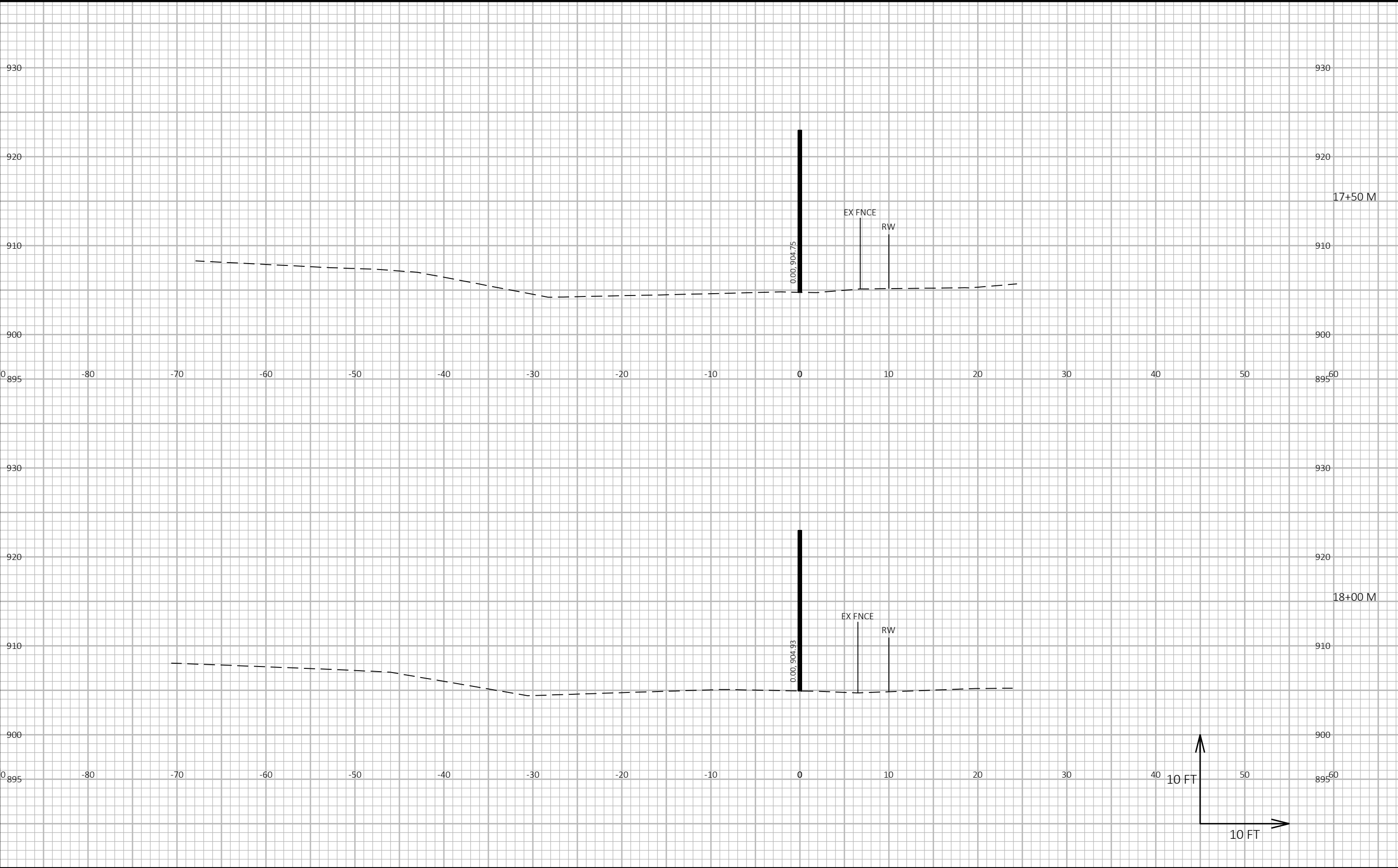


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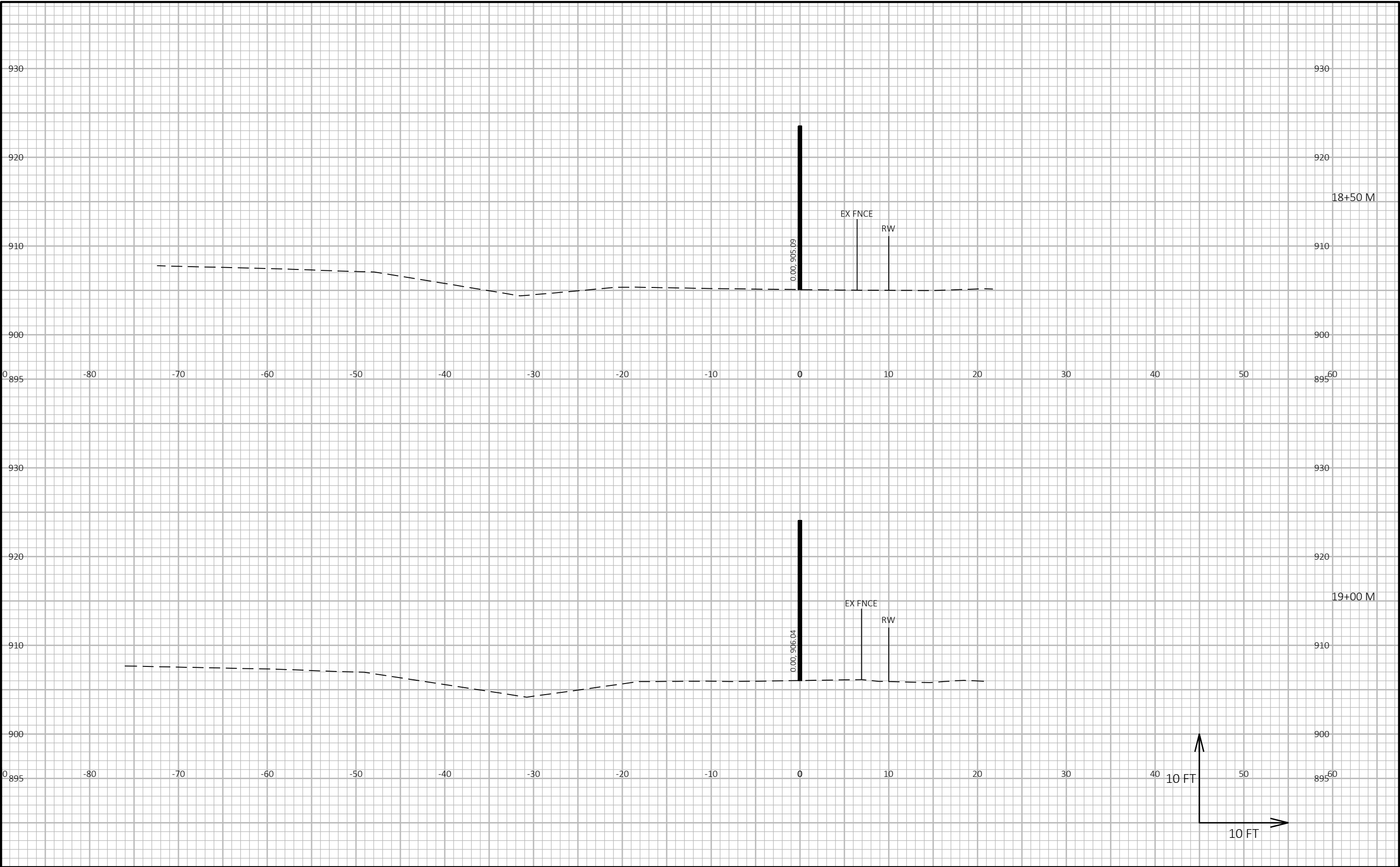


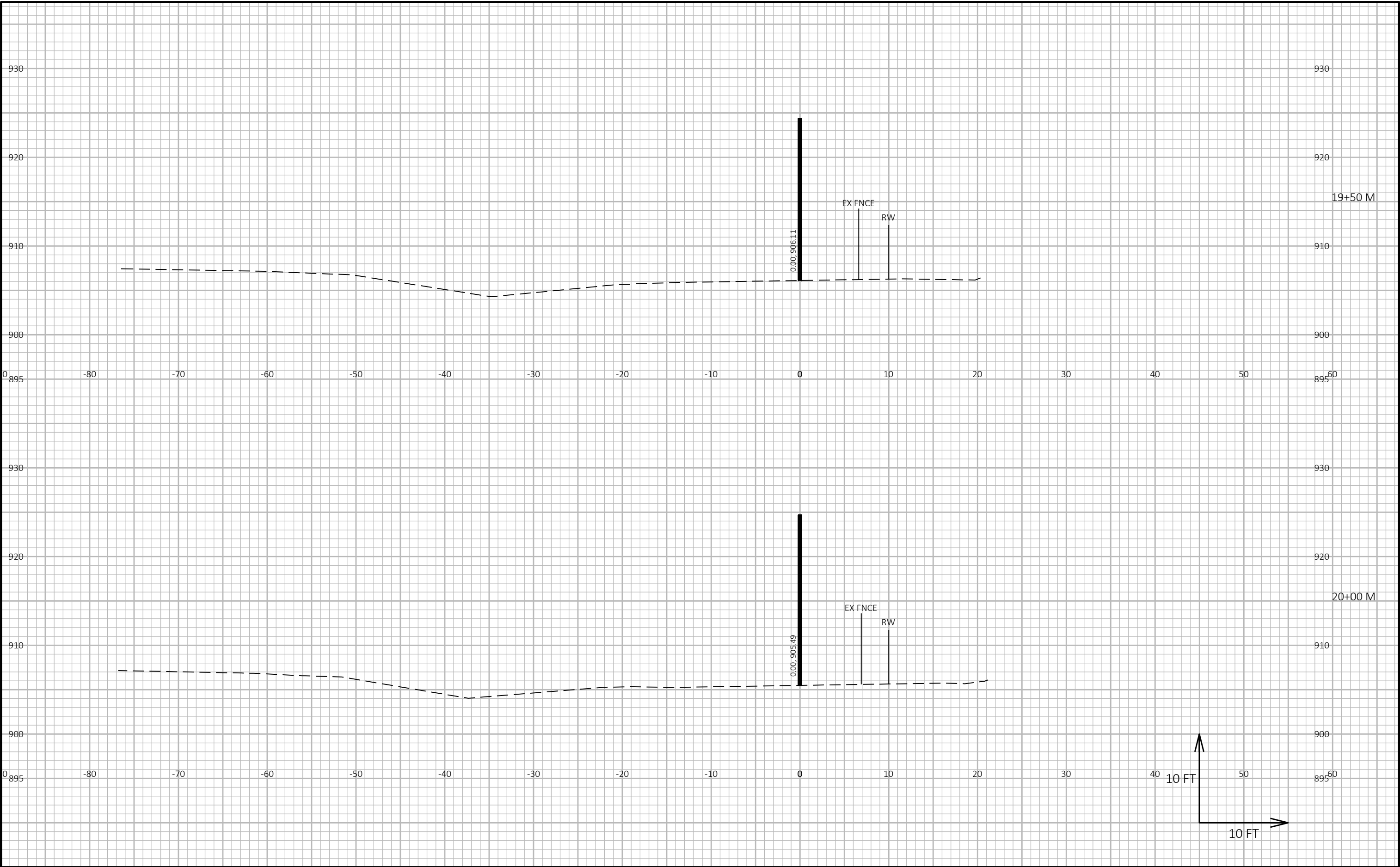


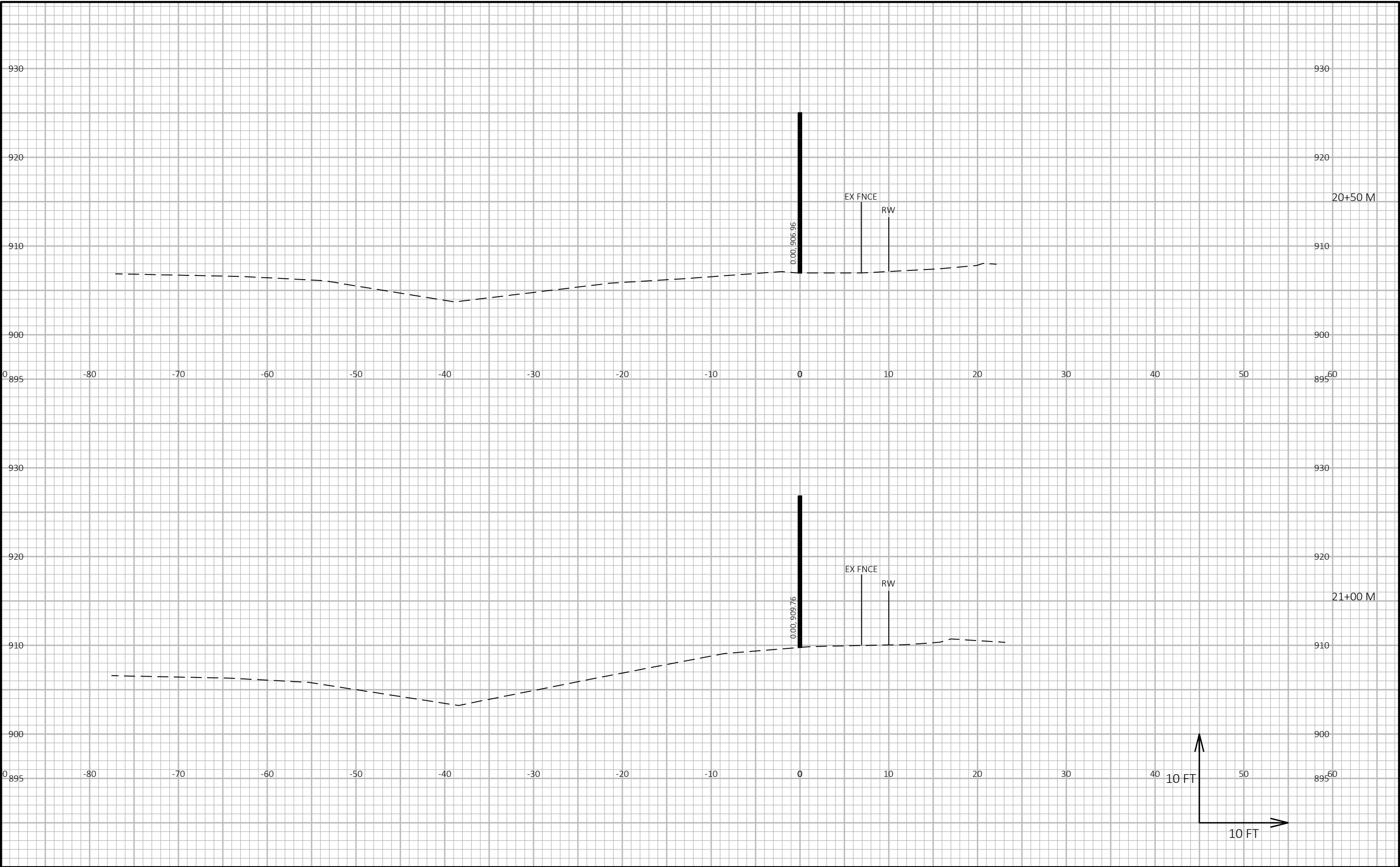
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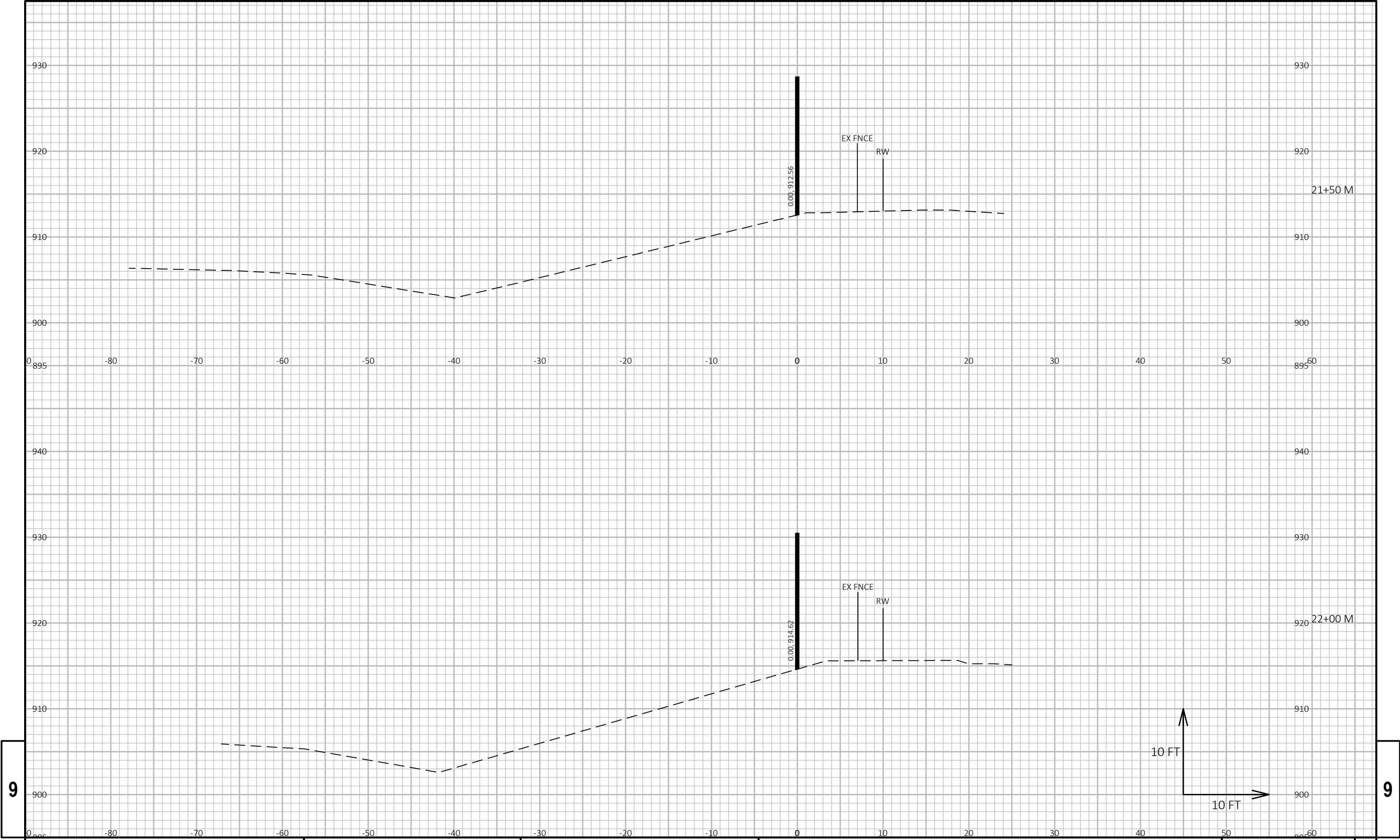
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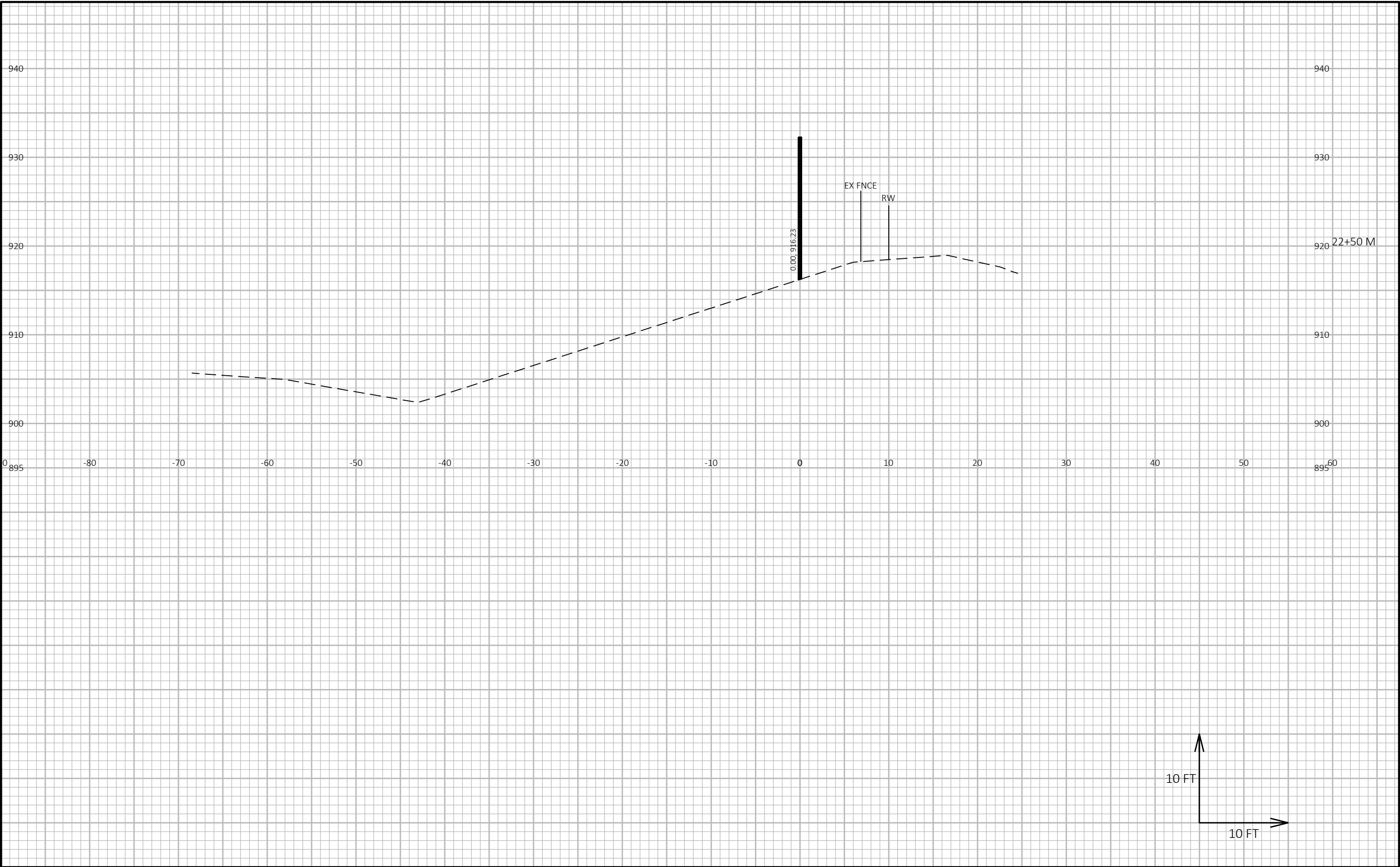
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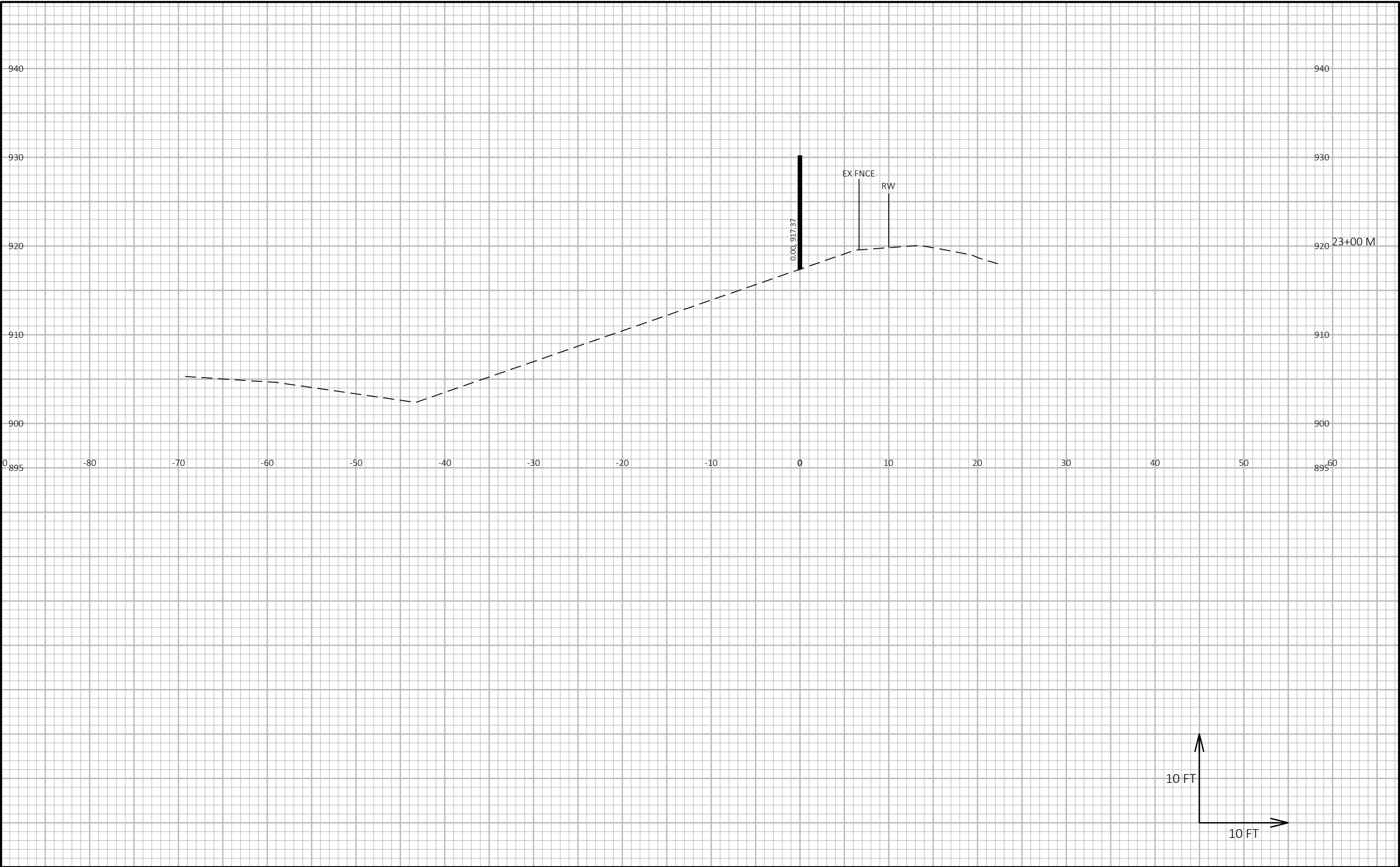
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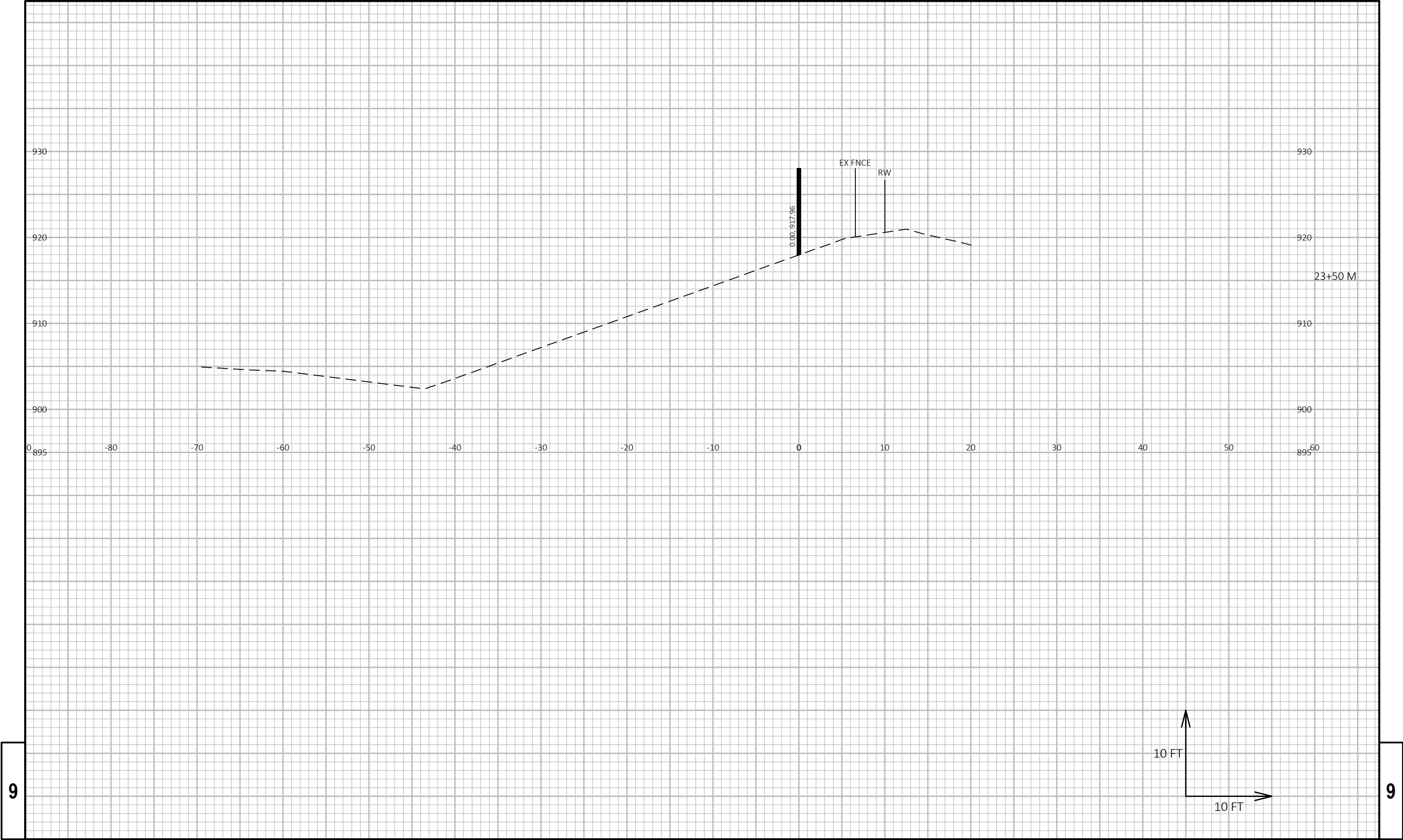
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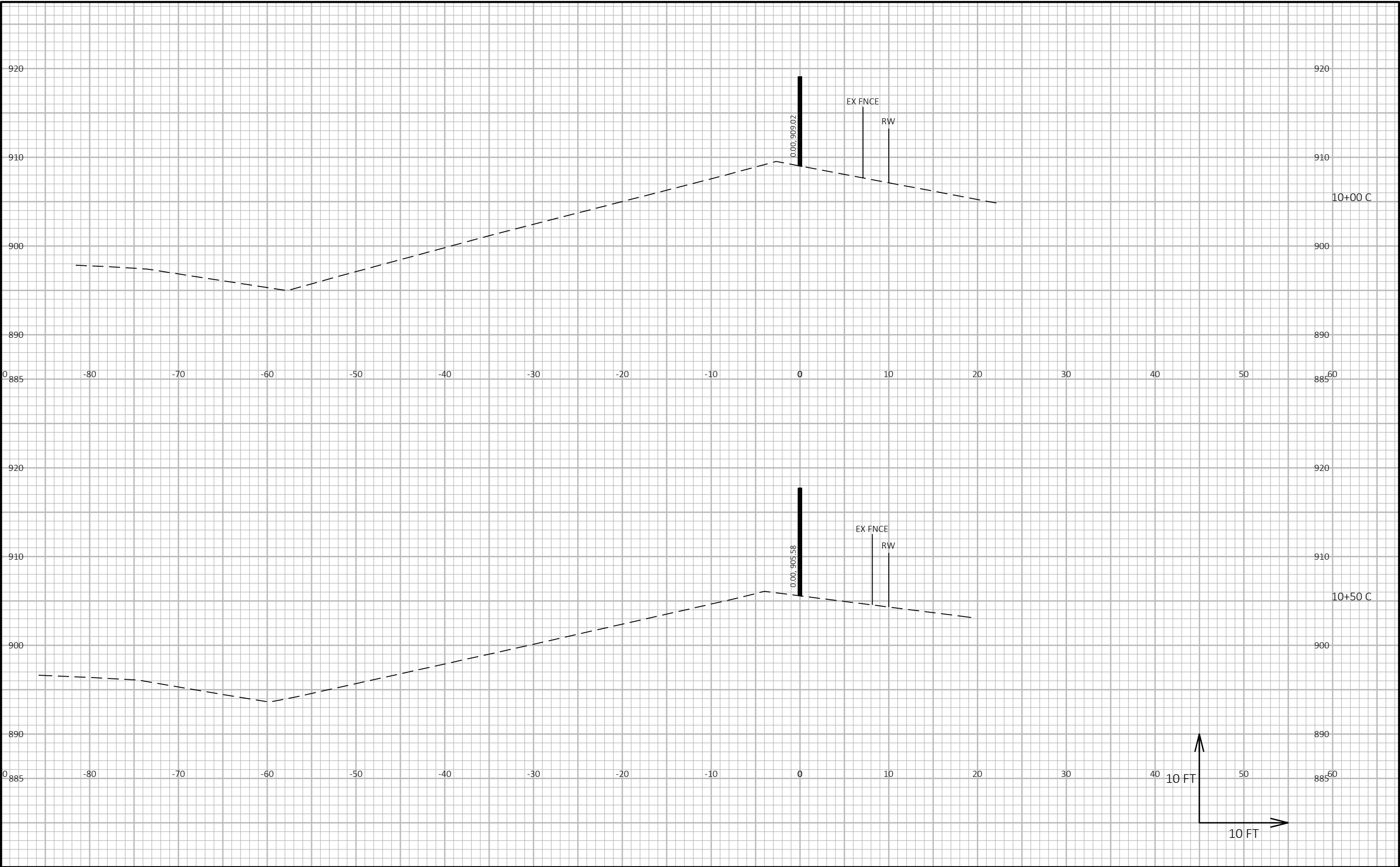
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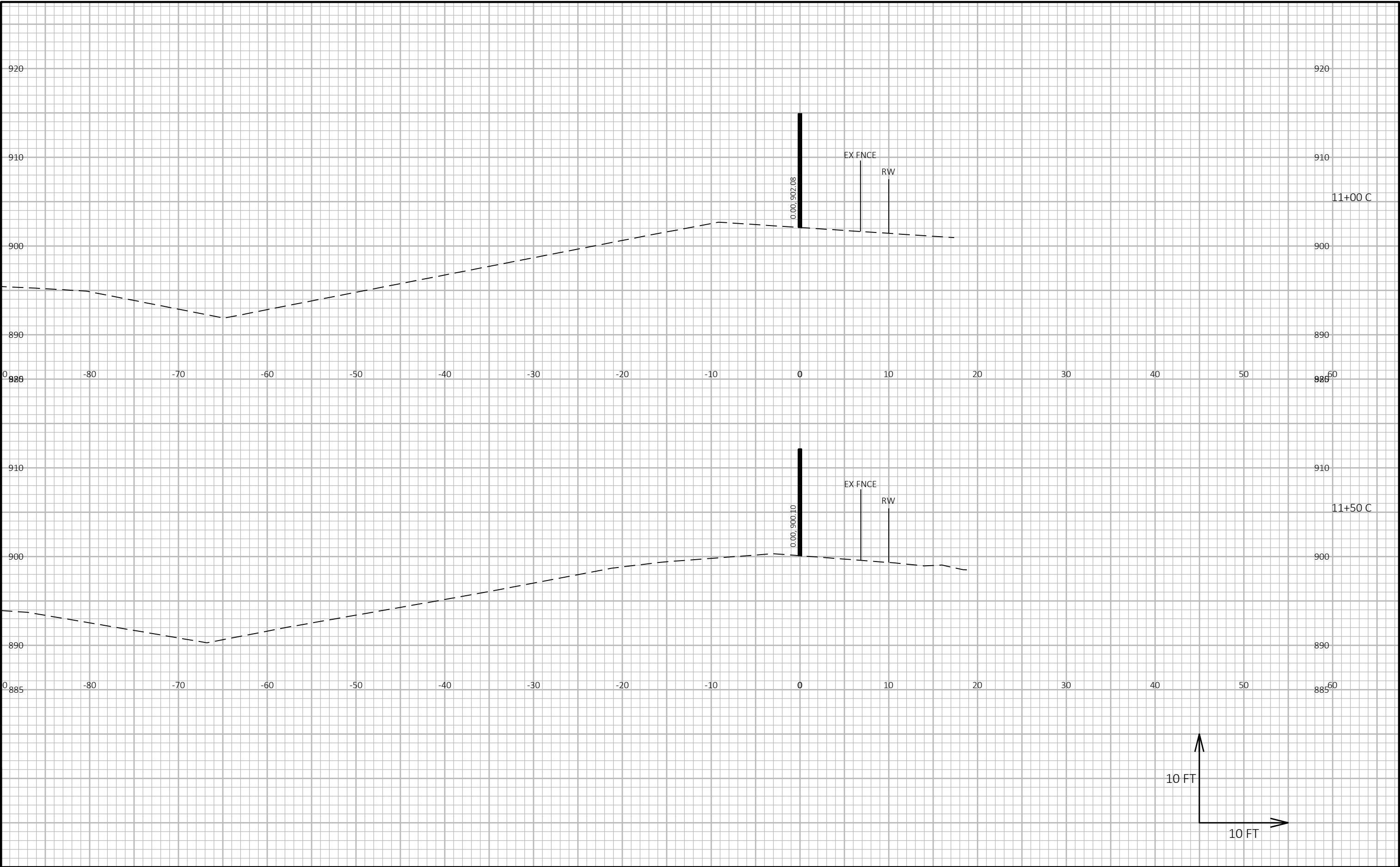
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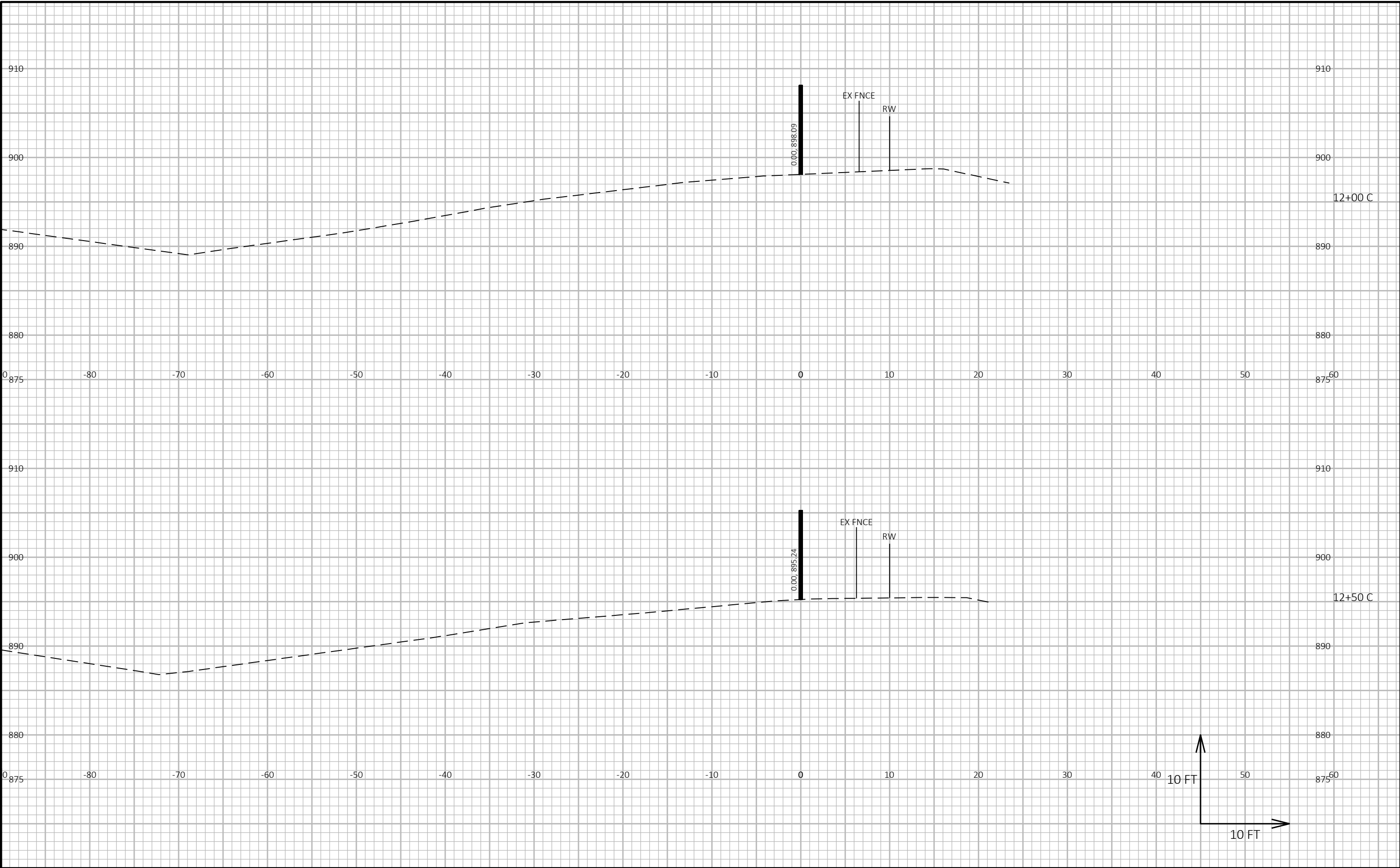
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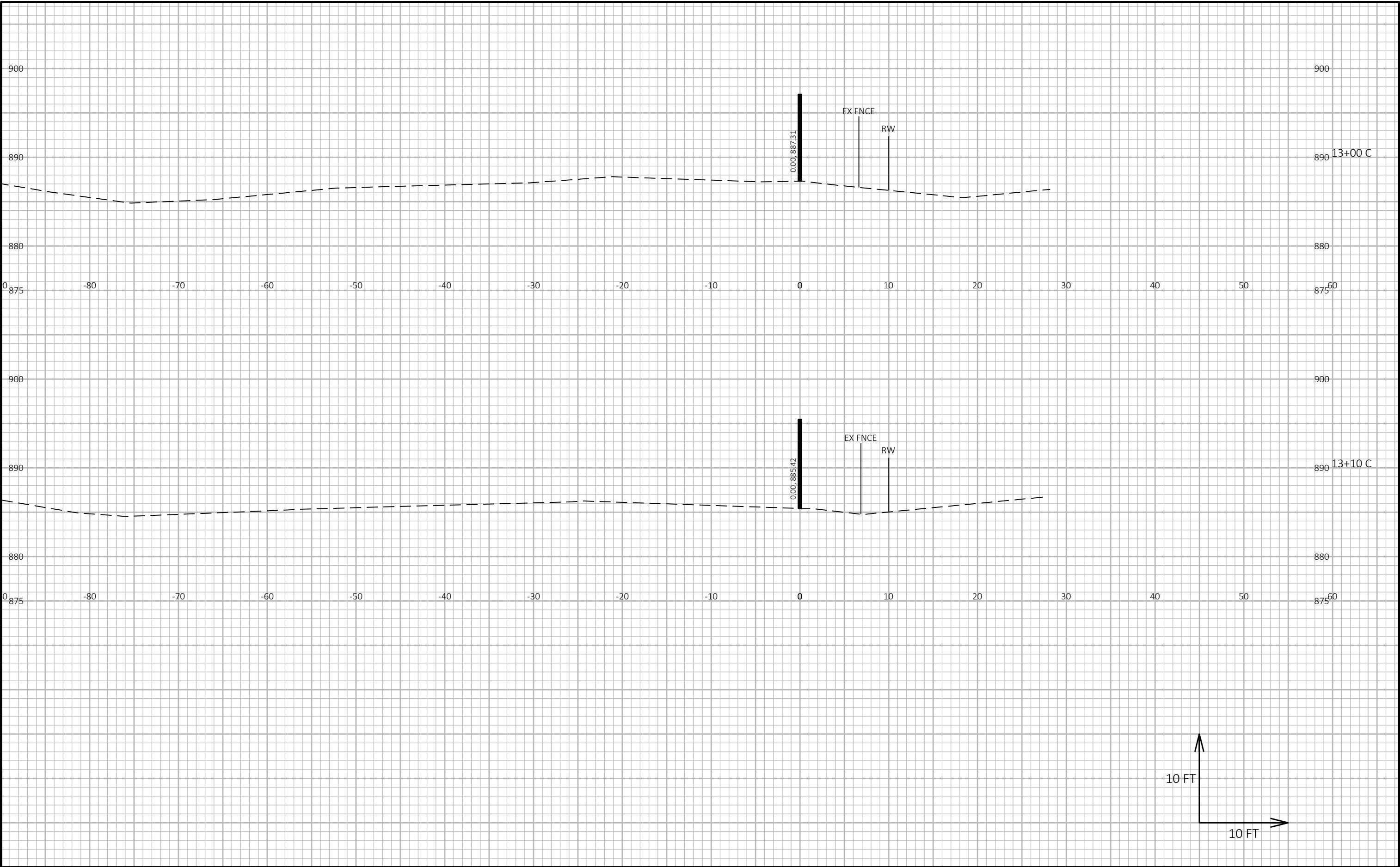


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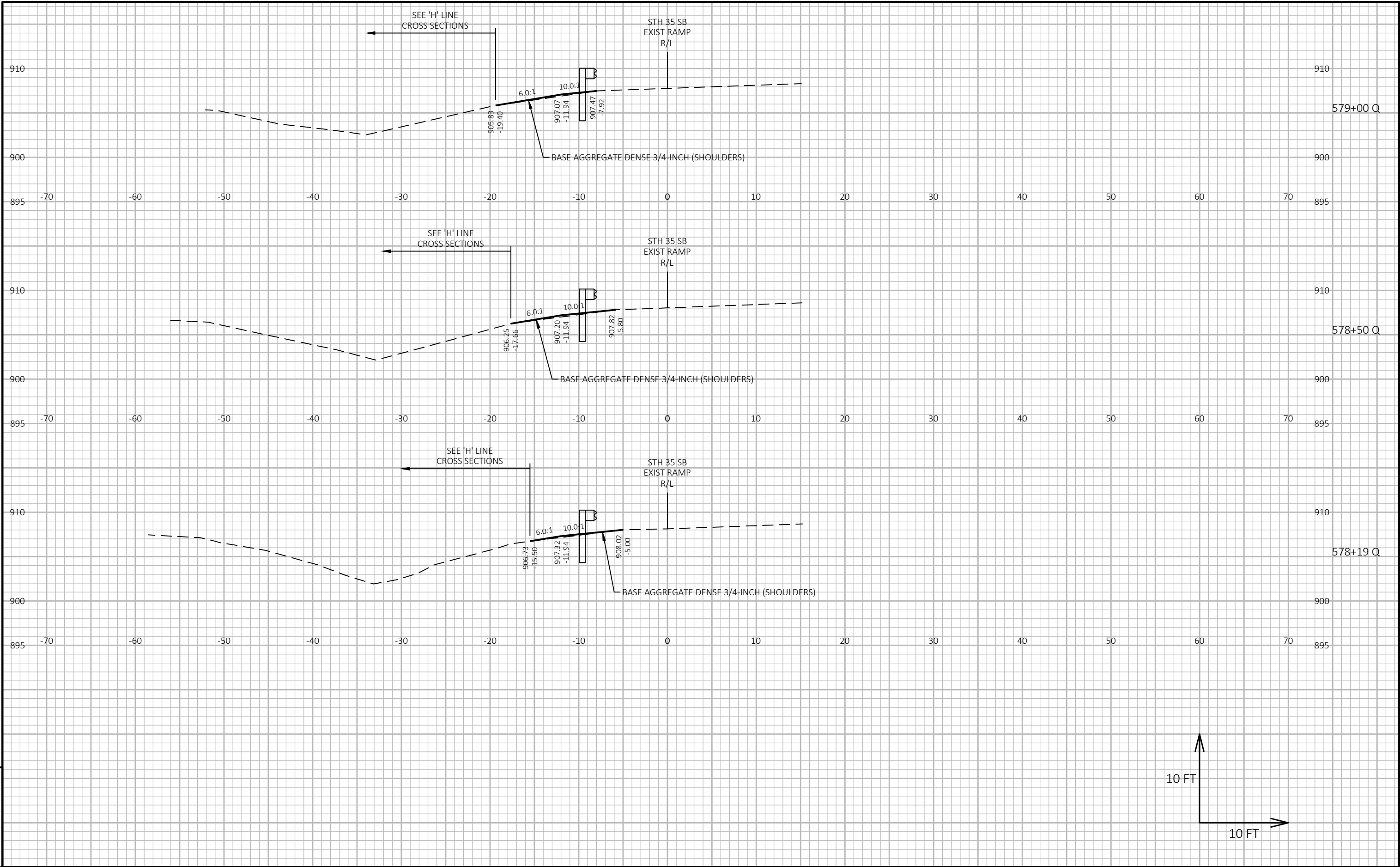
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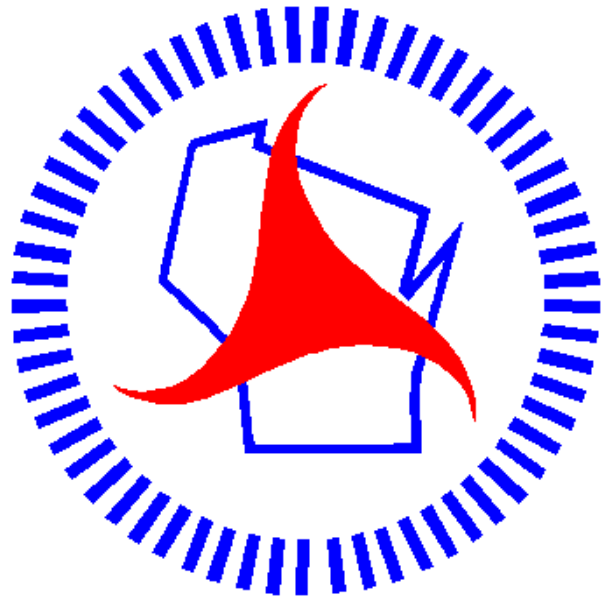


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PROJECT NO: 1020-00-85	HWY: IH 94	COUNTY: ST. CROIX	CROSS SECTIONS: GUARDRAIL	SHEET 51	E
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Notes



Wisconsin Department of Transportation

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