

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

FOND DU LAC - OSHKOSH

SCOTT STREET - NCL

USH 45

FOND DU LAC COUNTY

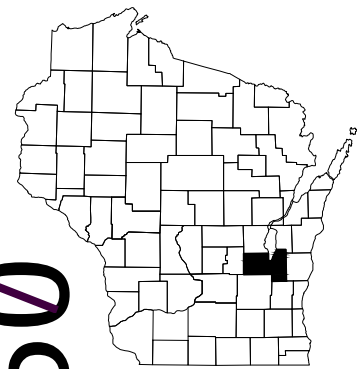
STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
4110-28-71	WISC 2024316	1

STATE PROJECT NUMBER
4110-28-71

ORDER OF SHEETS

Section No. 1	Title
Section No. 2	Typical Sections and Details
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 = 164



09

DESIGN DESIGNATION 4110-28-00

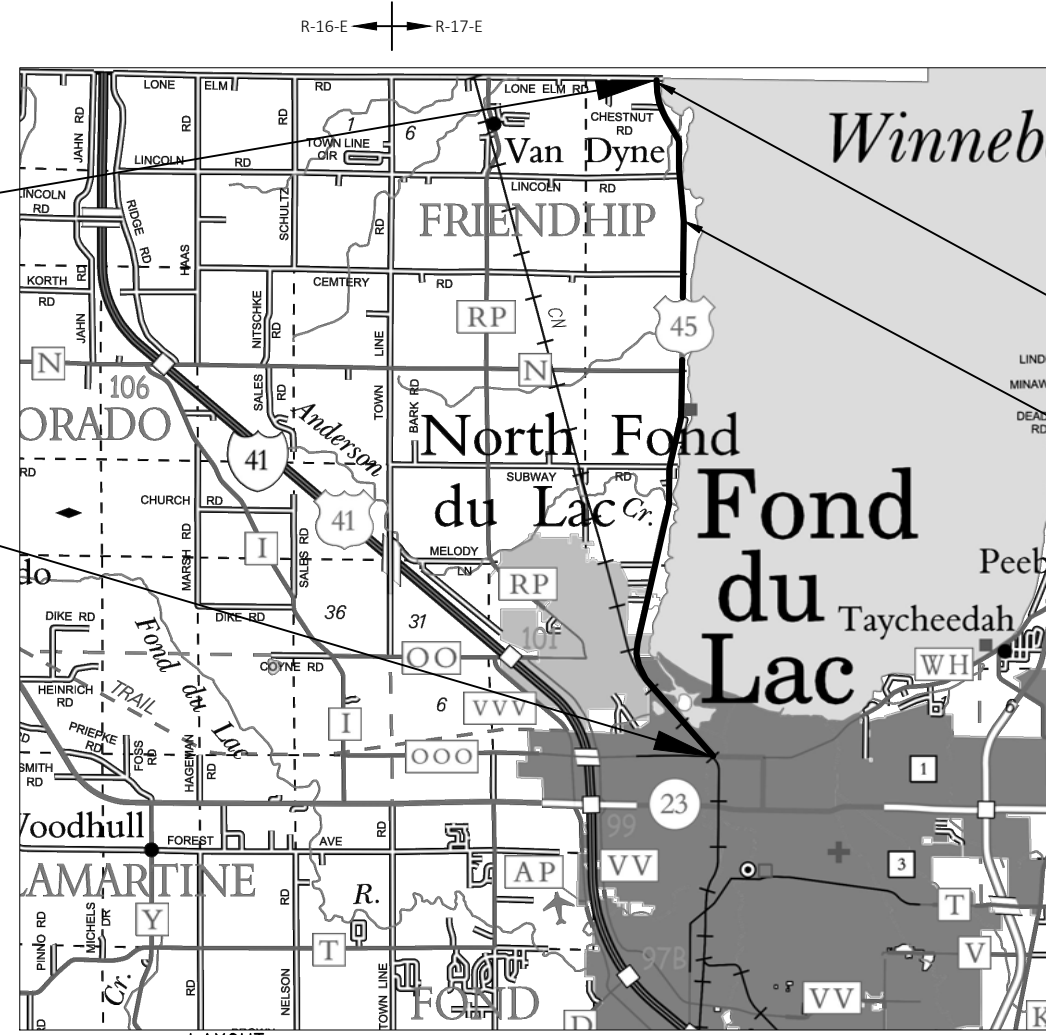
A.A.D.T. 2023	=	3,500
A.A.D.T. 2043	=	4,100
D.H.V.	=	463
D.D.	=	60/40
T.	=	15.6
DESIGN SPEED	=	50
ESALS	=	1,100,000

CONVENTIONAL SYMBOLS

<p>PLAN</p> <p>CORPORATE LIMITS </p> <p>PROPERTY LINE </p> <p>LOT LINE </p> <p>LIMITED HIGHWAY EASEMENT </p> <p>EXISTING RIGHT OF WAY </p> <p>PROPOSED OR NEW R/W LINE </p> <p>SLOPE INTERCEPT </p> <p>REFERENCE LINE </p> <p>EXISTING CULVERT </p> <p>PROPOSED CULVERT (Box or Pipe) </p> <p>COMBUSTIBLE FLUIDS </p> <p>MARSH AREA </p> <p>WOODED OR SHRUB AREA </p>	<p>PROFILE</p> <p>GRADE LINE </p> <p>ORIGINAL GROUND </p> <p>MARSH OR ROCK PROFILE (To be noted as such) </p> <p>SPECIAL DITCH </p> <p>GRADE ELEVATION </p> <p>CULVERT (Profile View) </p> <p>UTILITIES</p> <p>ELECTRIC </p> <p>OVERHEAD UTILITY </p> <p>FIBER OPTIC </p> <p>GAS </p> <p>SANITARY SEWER </p> <p>STORM SEWER </p> <p>TELEPHONE </p> <p>WATER </p> <p>UTILITY PEDESTAL </p> <p>POWER POLE </p> <p>TELEPHONE POLE </p>
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BEGIN PROJECT
STA 500+00.00
Y = 428,040.382
X = 811,189.182

END PROJECT
STA 394+31.31
Y = 390,949.115
X = 814,303.699



EQUATION
STA BACK 500+98.51=
STA AHEAD 0+00.00

EQUATION
STA BACK 83+73.56=
STA AHEAD 87+35.48

SCALE 0 2 MILES

TOTAL NET LENGTH OF CENTERLINE = 7.428 MILES

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, FOND DU LAC COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
PREPARED BY	NE REGION
Surveyor	D. HOLLAND
Designer	R. ERDMANN
Project Manager	R. WAGNER
Regional Examiner	
Regional Supervisor	
APPROVED FOR THE DEPARTMENT	
DATE: 1/31/24	
	(Signature)

GENERAL NOTES

THE LOCATIONS OF EXISTING UTILITY FACILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY FACILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

THE EXACT CONSTRUCTION LIMITS AND LOCATIONS OF ALL ENTRANCES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

EXISTING PERMANENT SIGNS ARE TO REMAIN IN PLACE UNLESS SPECIALLY CALLED FOR REMOVAL ON MISCELLANEOUS QUANTITY TABLE.

EROSION CONTROL DEVICES SHALL BE PLACED IN SEQUENCE WITH CONSTRUCTION OPERATIONS OR AS OTHERWISE DIRECTED BY THE ENGINEER. THE EXACT LOCATIONS OF ALL EROSION CONTROL ITEMS SHALL BE DETERMINED BY THE ENGINEER.

THE CONTRACTOR IS TO WORK WITH UTMOST CARE AND PROTECT ALL SURVEY MARKERS. REMOVAL OF ANY SURVEY MARKER IS TO BE WITH APPROVAL OF THE ENGINEER. DETAILS OF CONSTRUCTION NOT SHOWN ON THE PLAN SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.

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

ALL DISTURBED AREAS, NOT OTHERWISE SURFACED, ARE TO BE SALVAGED TOPSOILED, FERTILIZED, SEEDED AND COVERED WITH EROSION MAT, AS SHOWN ON THE PLANS.

THE CONTRACTOR SHALL NOTIFY DIGGERS HOTLINE AND ALL UTILITIES IN THE VICINITY OF THE PROJECT TO LOCATE THEIR FACILITIES AT LEAST THREE WORKING DAYS PRIOR TO BEGINNING WORK.

ORDER OF SECTION 2 DETAIL SHEETS

- GENERAL NOTES
- TYPICAL SECTIONS
- CONSTRUCTION DETAILS
- PLAN DETAILS
- EROSION CONTROL

CONTACTS

WISCONSIN DNR LIAISON

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GREEN BAY, WI 54313
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jeremiah.schiefelbein@wisconsin.gov

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NE REGION SURVEY COORDINATOR

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NE REGION DESIGN PROJECT MANAGER

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UTILITIES CONTACTS

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NOLANTIEDT@alliantenergy.com

CHARTER COMMUNICATIONS - COMMUNICATION LINE
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NOLANTIEDT@ALLIANTENERGY.COM

CITY OF FOND DU LAC DEPARTMENT OF PUBLIC WORKS - SEWER
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(920) 433-1175
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WINDSTREAM KDL, LLC - COMMUNICATION LINE
LORI KETTER
969 WAUBE LANE
GREEN BAY, WI 54304
(920) 410-6902
Lori.ketter@windstream.com

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
MEDIAN STRIPTURF:	.22	.30	.38	.26	.34	.44	.30	.37	.50	.34	.41	.56
SIDE SLOPETURF:	.19	.20	.24	.19	.22	.26	.20	.23	.30	.20	.25	.30
PAVEMENT:	.24	.26	.30	.25	.28	.33	.26	.30	.37	.27	.32	.40
ASPHALT:			.32			.34			.36			.38
CONCRETE:												
BRICK:												
DRIVES, WALKS:												
ROOFS:												
GRAVEL ROADS, SHOULDERS:												

TOTAL PROJECT AREA = 60 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 1.66 ACRES

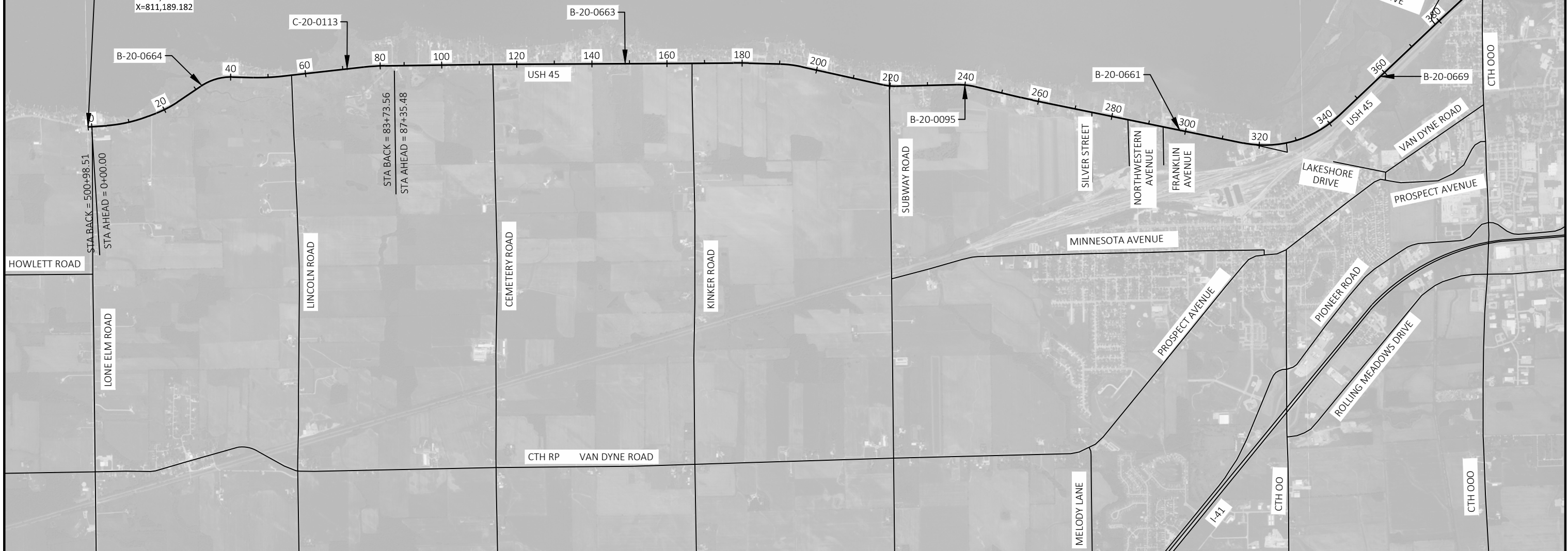




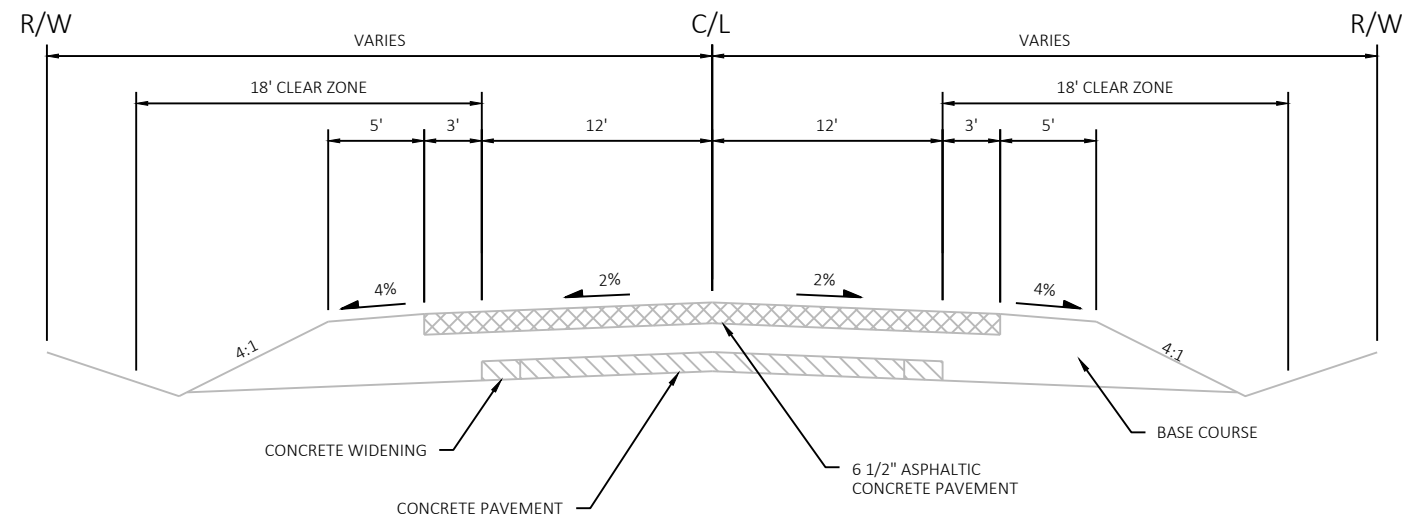
LAKE WINNEBAGO

END PROJECT
STA 394+85.00
Y=390,909.128
X=814,339.529

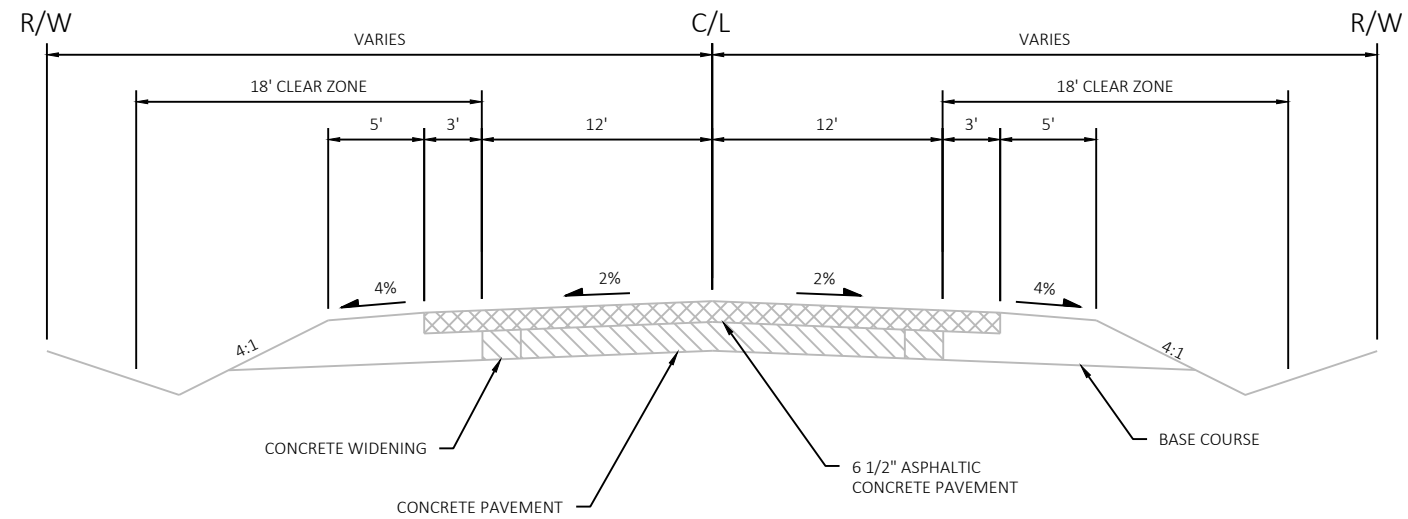
BEGIN PROJECT
STA 500+00.00
Y=428,040.382
X=811,189.182



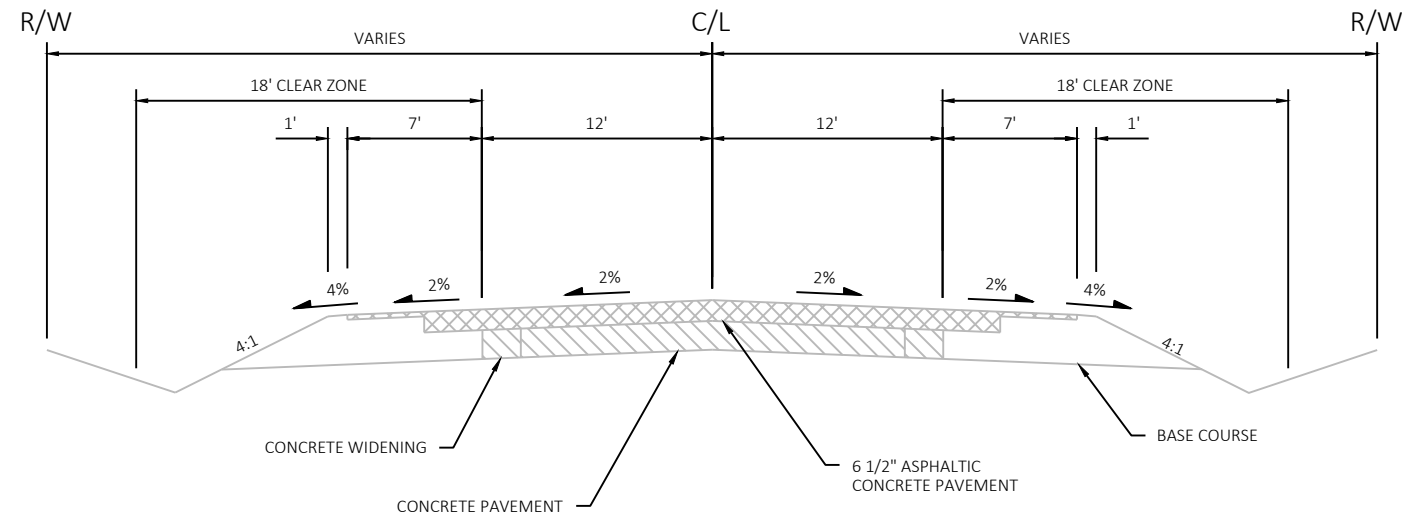
PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	PROJECT OVERVIEW	SHEET	E
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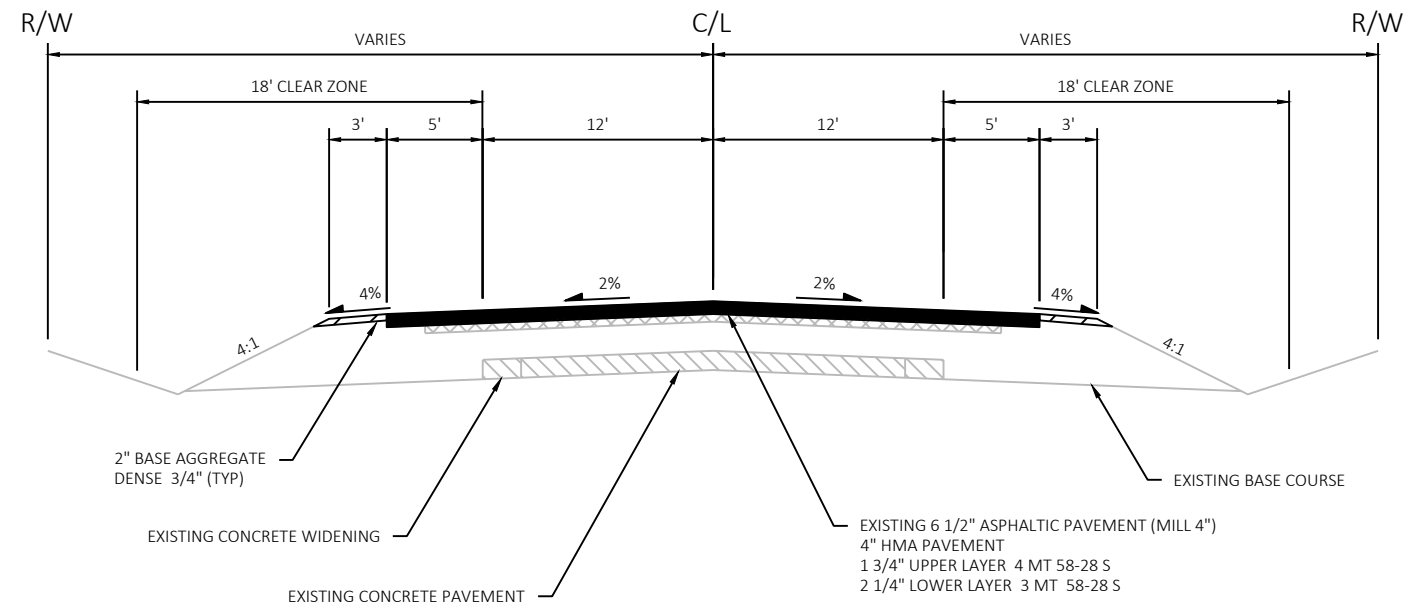
EXISTING TYPICAL SECTION USH 45
 STA 15+00 TO STA 40+00
 STA 60-00 TO STA 80+00



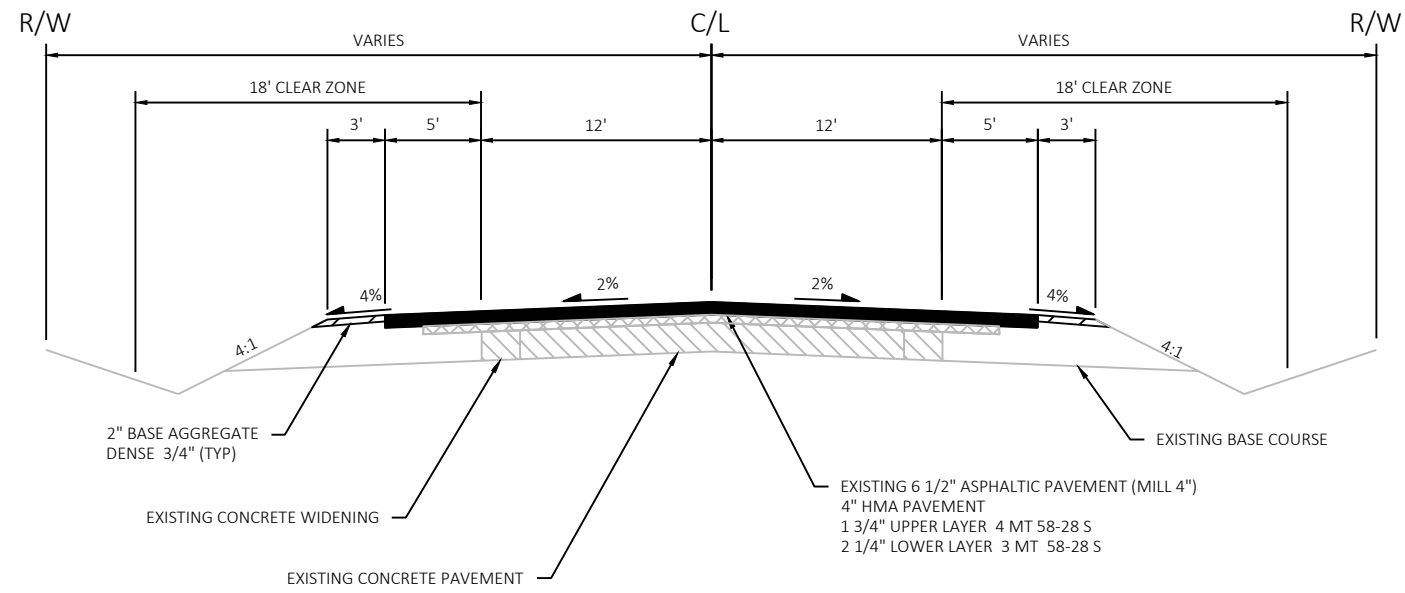
EXISTING TYPICAL SECTION USH 45
 STA 1+36.25 TO STA 15+00
 STA 40+00 TO STA 60+00
 STA 80+00 TO STA 378+05



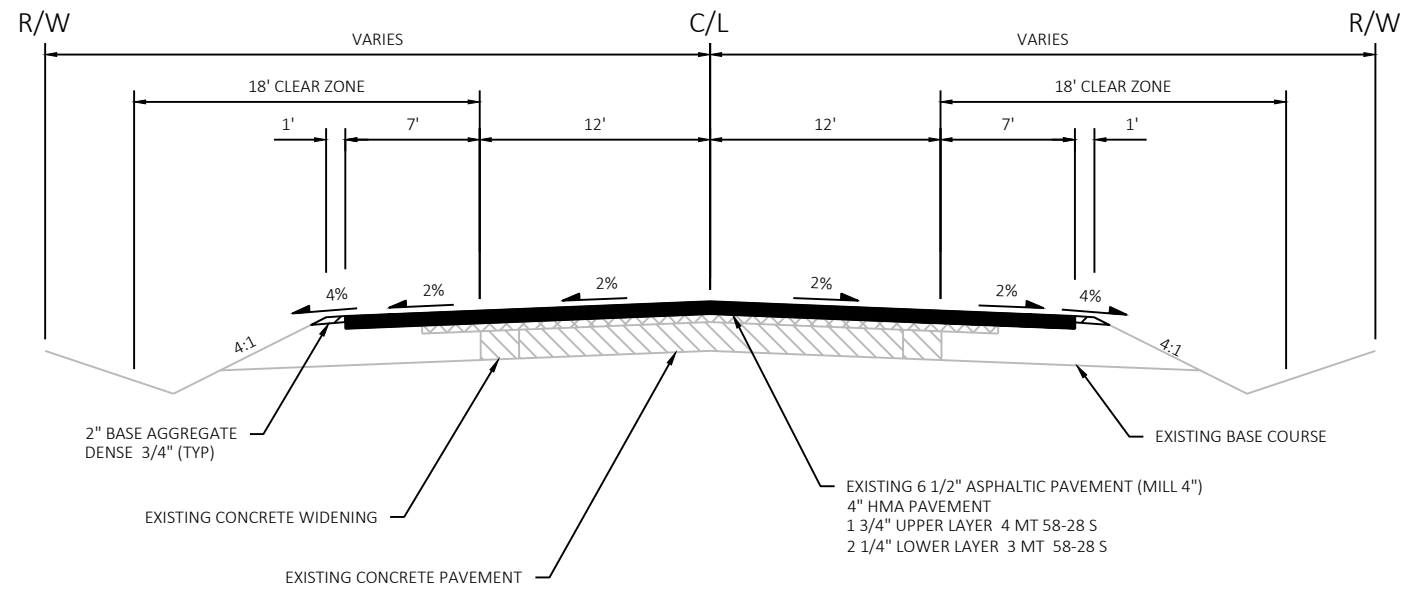
EXISTING TYPICAL SECTION USH 45
STA 378+05 TO STA 394+83



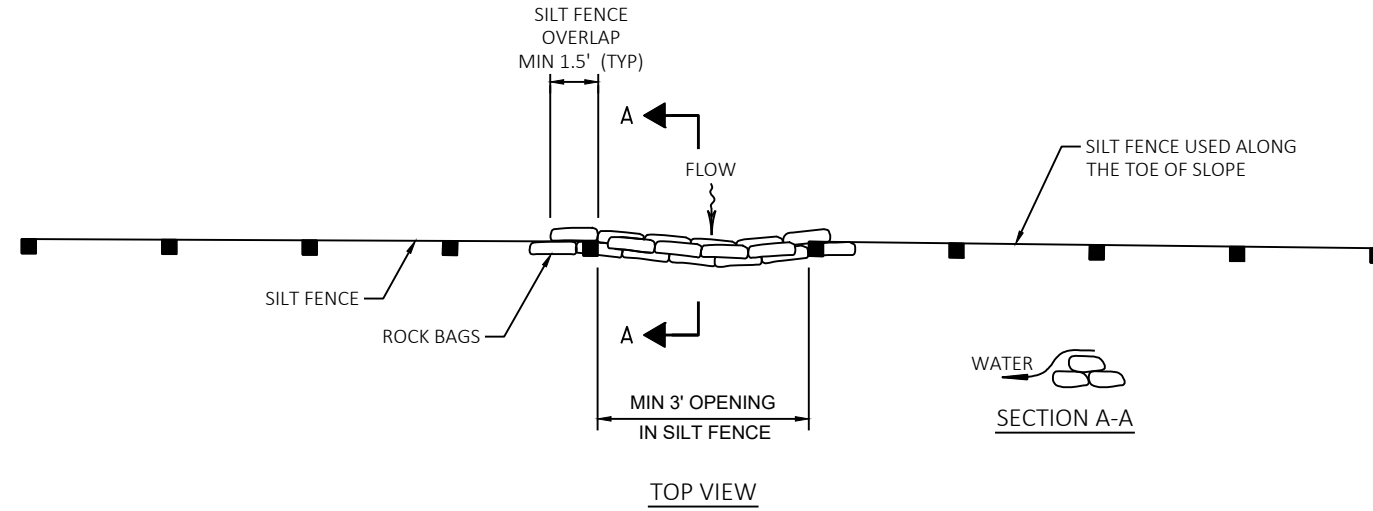
FINISHED TYPICAL SECTION USH 45
STA 15+00 TO STA 40+00
STA 60-00 TO STA 80+00



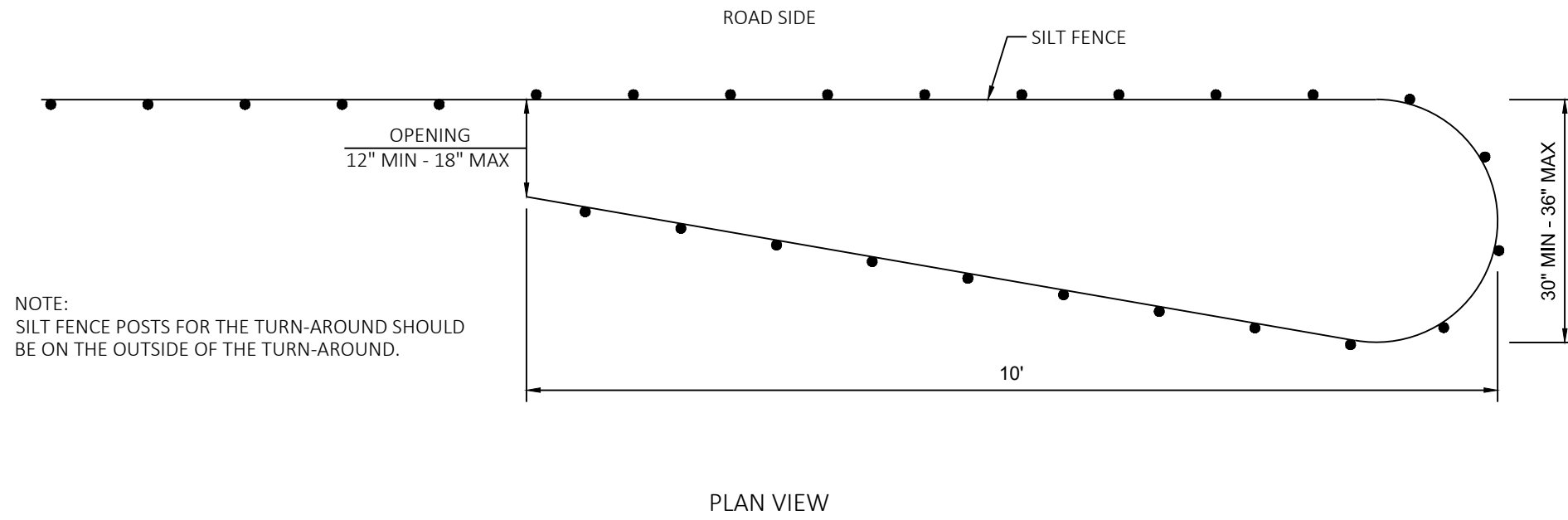
FINISHED TYPICAL SECTION USH 45
 STA 0+00 TO STA 15+00
 STA 500+00 TO STA 0+00
 STA 40+00 TO STA 60+00
 STA 80+00 TO STA 378+05



FINISHED TYPICAL SECTION USH 45
 STA 378+05 TO STA 394+83

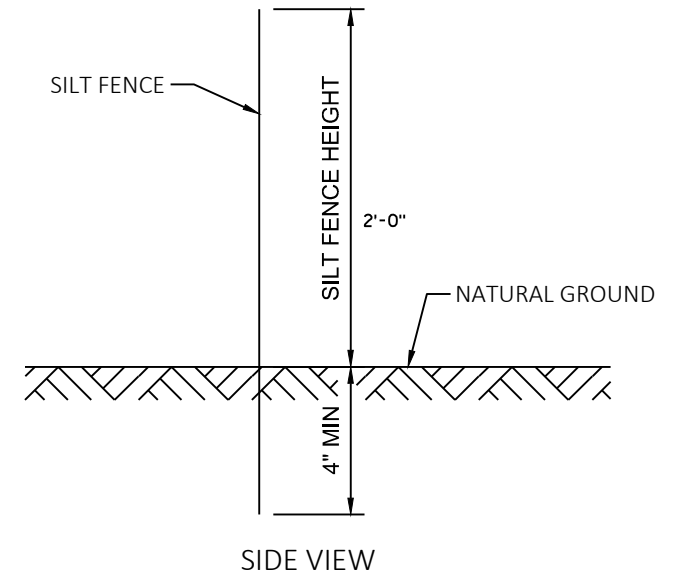


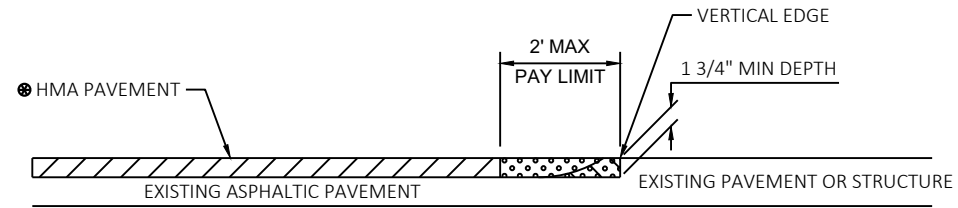
ROCK BAGS USED FOR SILT FENCE RELIEF DETAIL






NOTE:
SILT FENCE POSTS FOR THE TURN-AROUND SHOULD
BE ON THE OUTSIDE OF THE TURN-AROUND.

SILT FENCE TURN-AROUND DETAIL

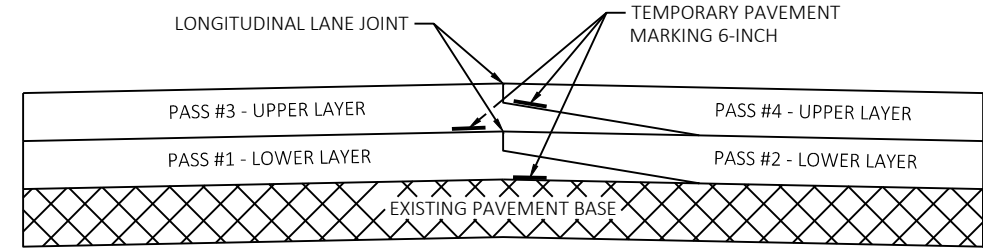




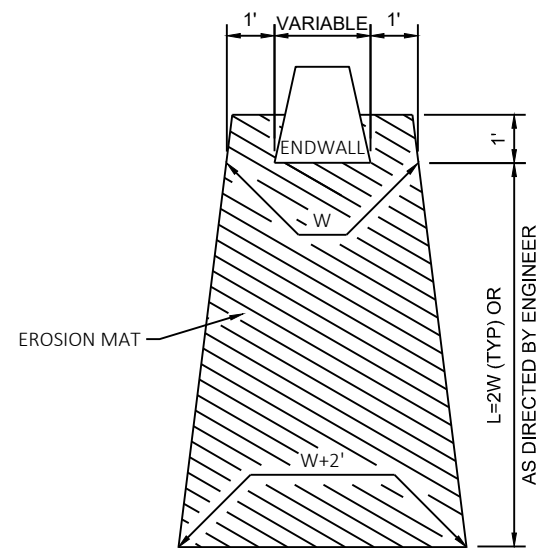
-  REMOVING ASPHALTIC SURFACE, MILLING
-  REMOVING ASPHALTIC SURFACE, BUTT JOINTS
-  REMOVE ASPHALTIC SURFACE WEDGE AT BUTT JOINT TO CREATE VERTICAL EDGE

SEE TYPICAL CROSS SECTION FOR PAVEMENT TYPE AND THICKNESS OF INDIVIDUAL LAYERS

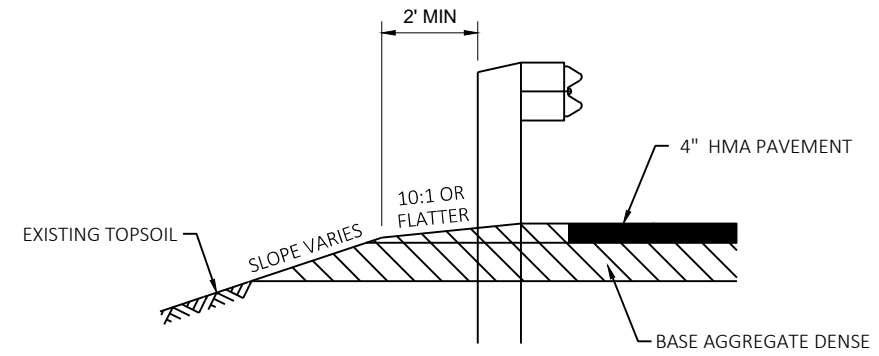
BUTT JOINT DETAIL FOR ASPHALTIC PAVEMENTS (NO PROFILE CHANGE)



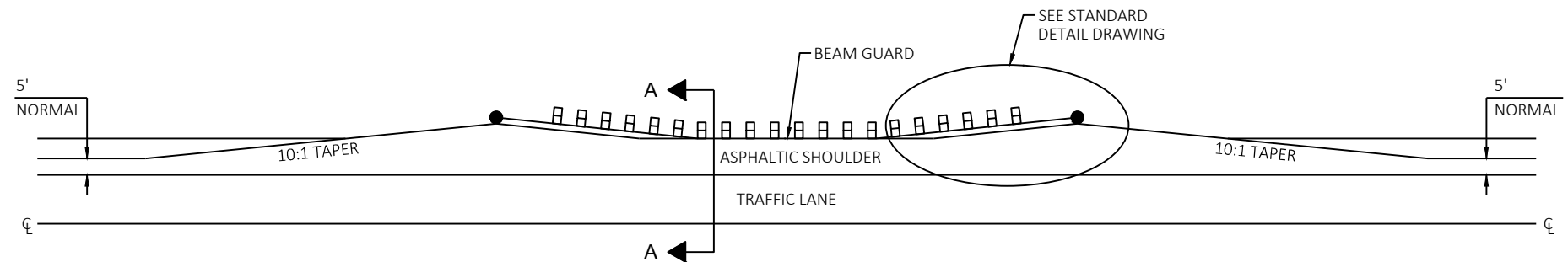
PAVEMENT MARKING DETAIL FOR TAPERED OVERLAPPING JOINTS IN HMA PAVEMENTS



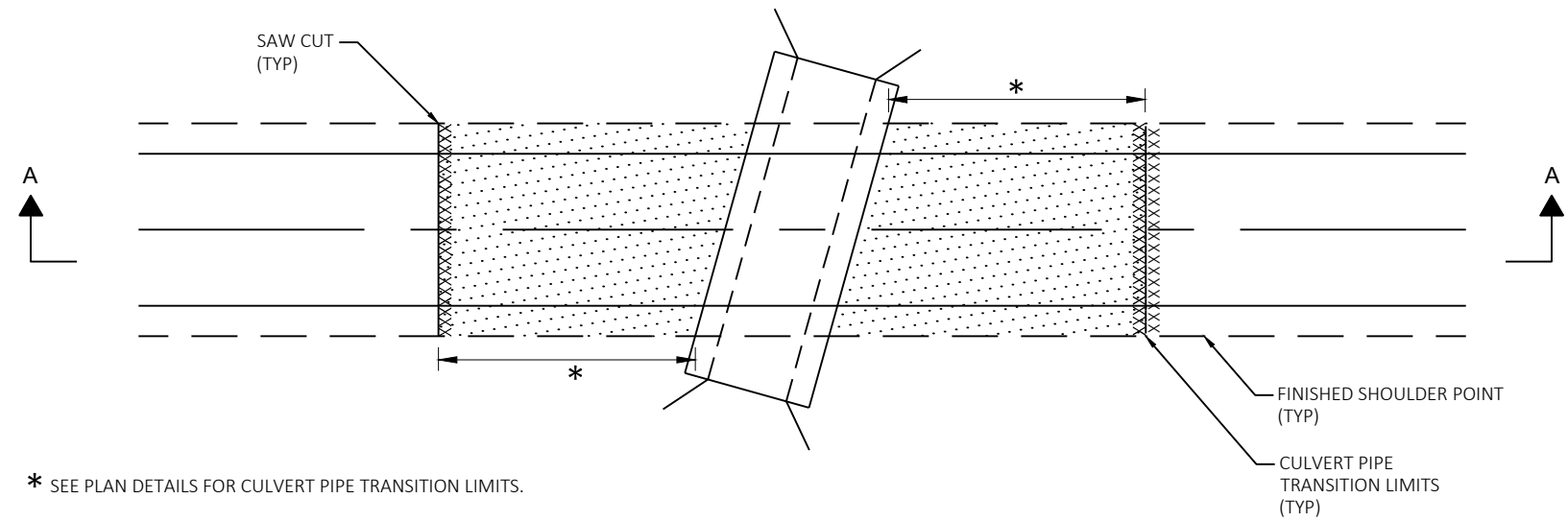
EROSION MAT TREATMENT AT CULVERTS



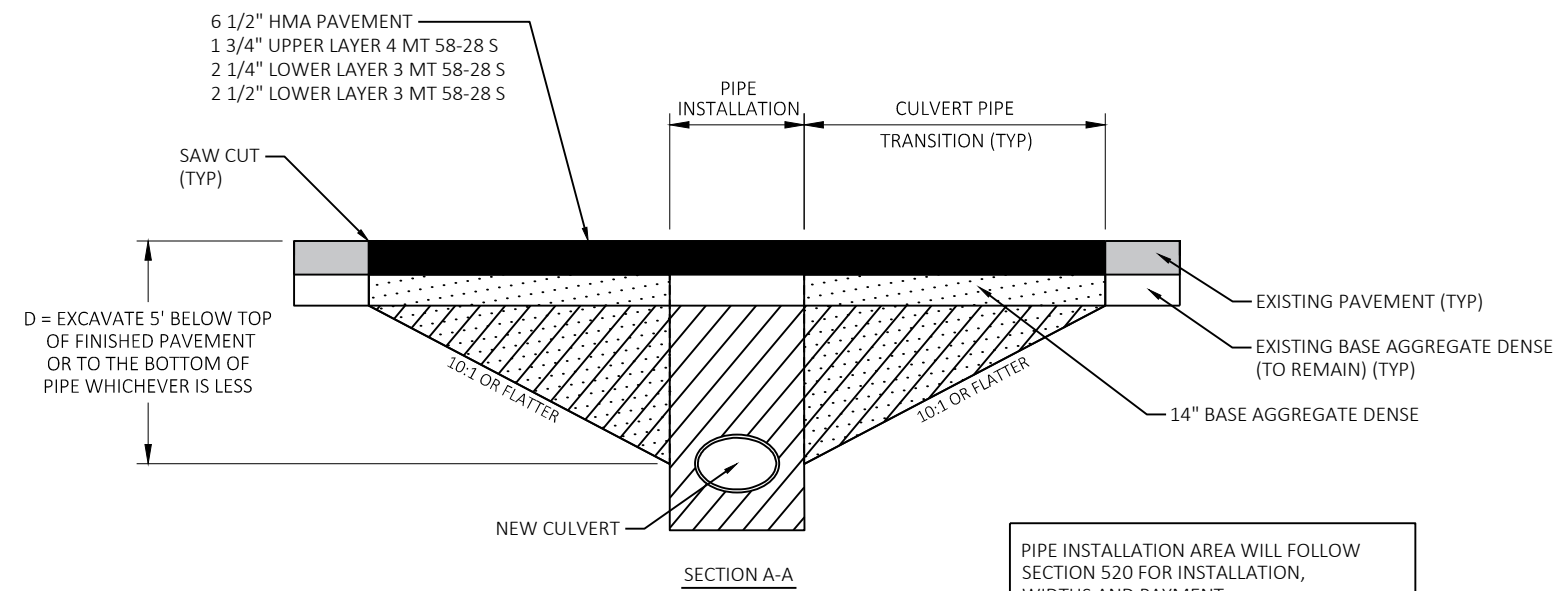
SECTION A-A



DETAIL FOR ASPHALTIC SHOULDER AT BEAM GUARD



* SEE PLAN DETAILS FOR CULVERT PIPE TRANSITION LIMITS.



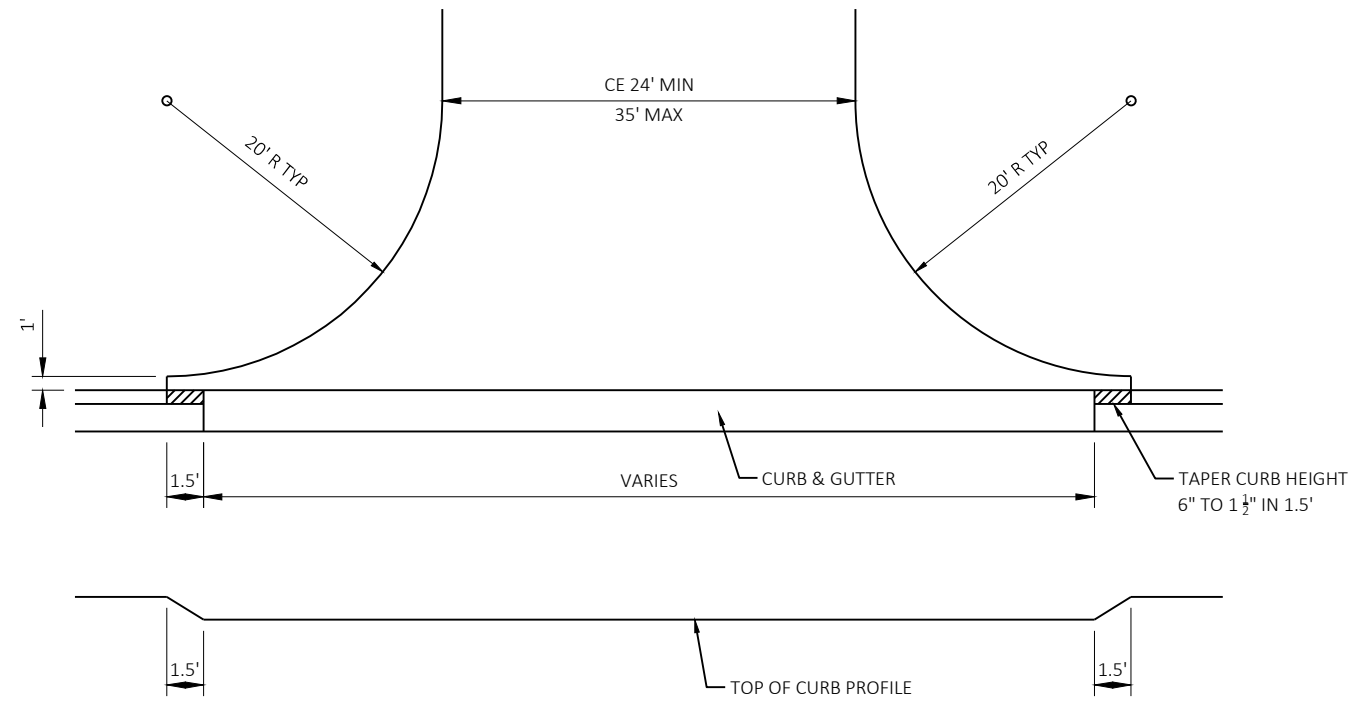
PIPE INSTALLATION AREA WILL FOLLOW SECTION 520 FOR INSTALLATION, WIDTHS AND PAYMENT.

CONSTRUCT TRANSITION PERPENDICULAR TO CULVERT PIPE.

CULVERT PIPE TRANSITION AREAS WILL BE PAID BY COMMON EXCAVATION & SPV FOUNDATION BACKFILL.

PAVEMENT SAW CUT TO BE PERPENDICULAR TO ROADWAY ALIGNMENT.

NEW CULVERT PIPES WITH TRANSITION



COMMERCIAL ENTRANCES

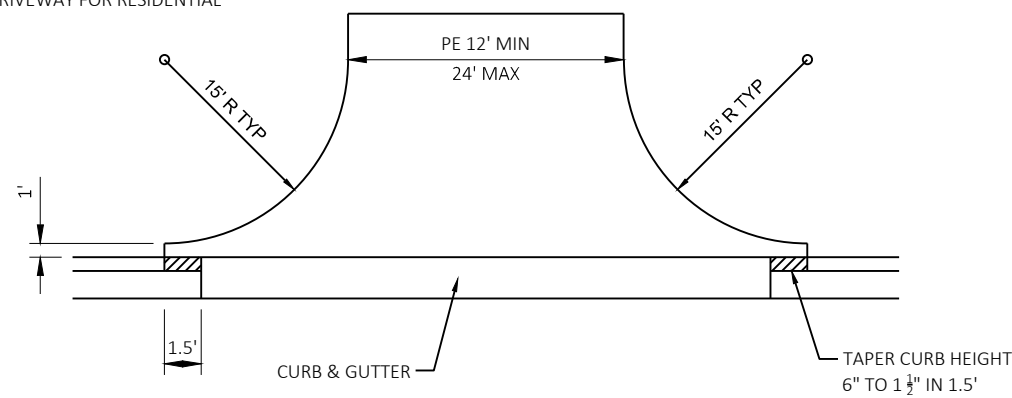
NOTES:
NON-PAVED DRIVEWAYS SHALL CONSIST OF
6" OF BASE AGGREGATE DENSE.

RESIDENTIAL ENTRANCE ASPHALTIC DRIVEWAYS
SHALL CONSIST OF 6" BASE AGGREGATE DENSE
AND 3" OF ASPHALTIC PAVEMENT.

COMMERCIAL ENTRANCE ASPHALTIC DRIVEWAYS
SHALL CONSIST OF 12" BASE AGGREGATE DENSE
AND 4" OF ASPHALTIC PAVEMENT

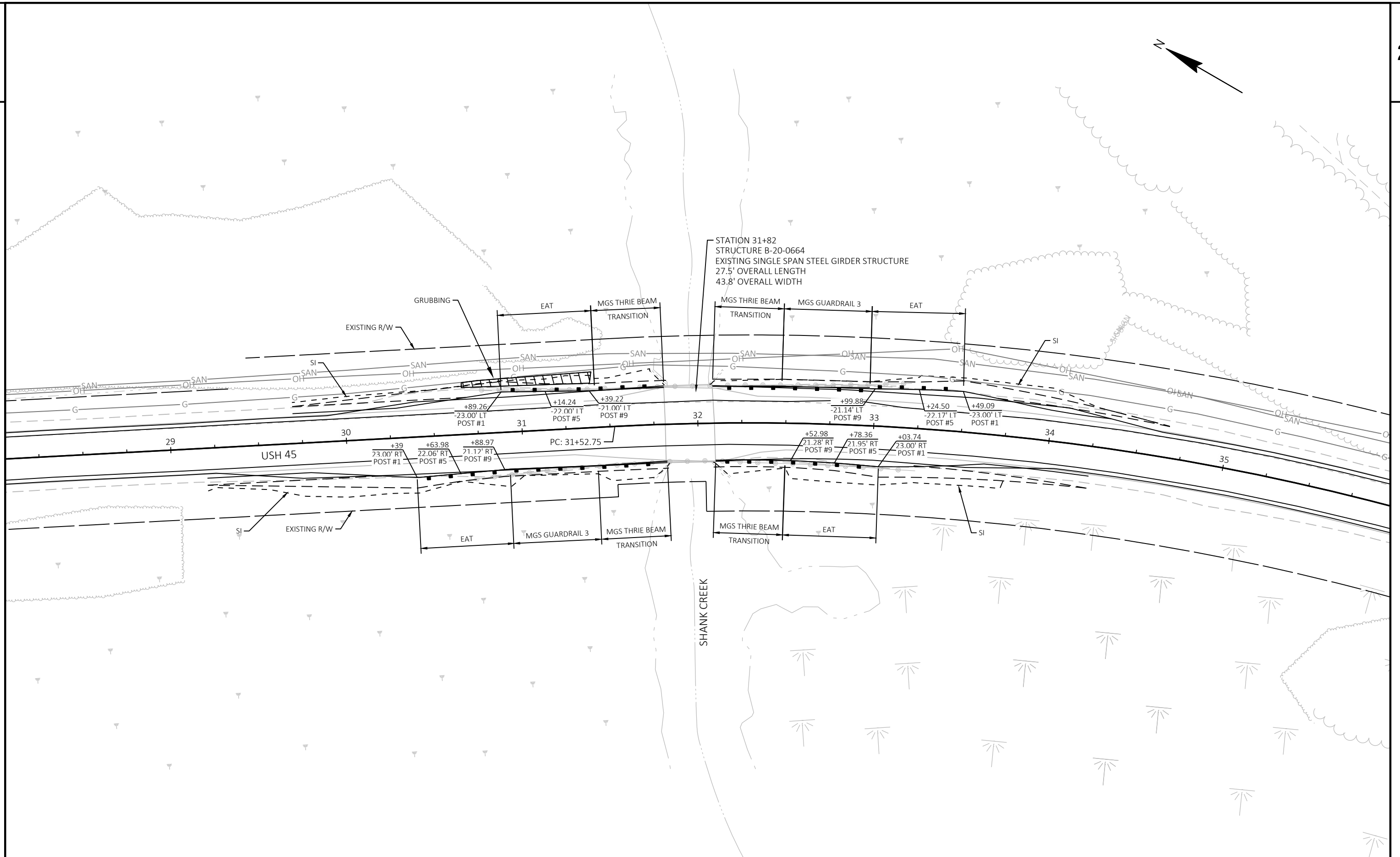
6" CONCRETE DRIVEWAY FOR RESIDENTIAL
ENTRANCES.

① A LARGER PAVING RADIUS FOR PAVING
IN HIGHER SPEED ZONE (> 40 MPH)
CAN BE USED IF WARRANTED.

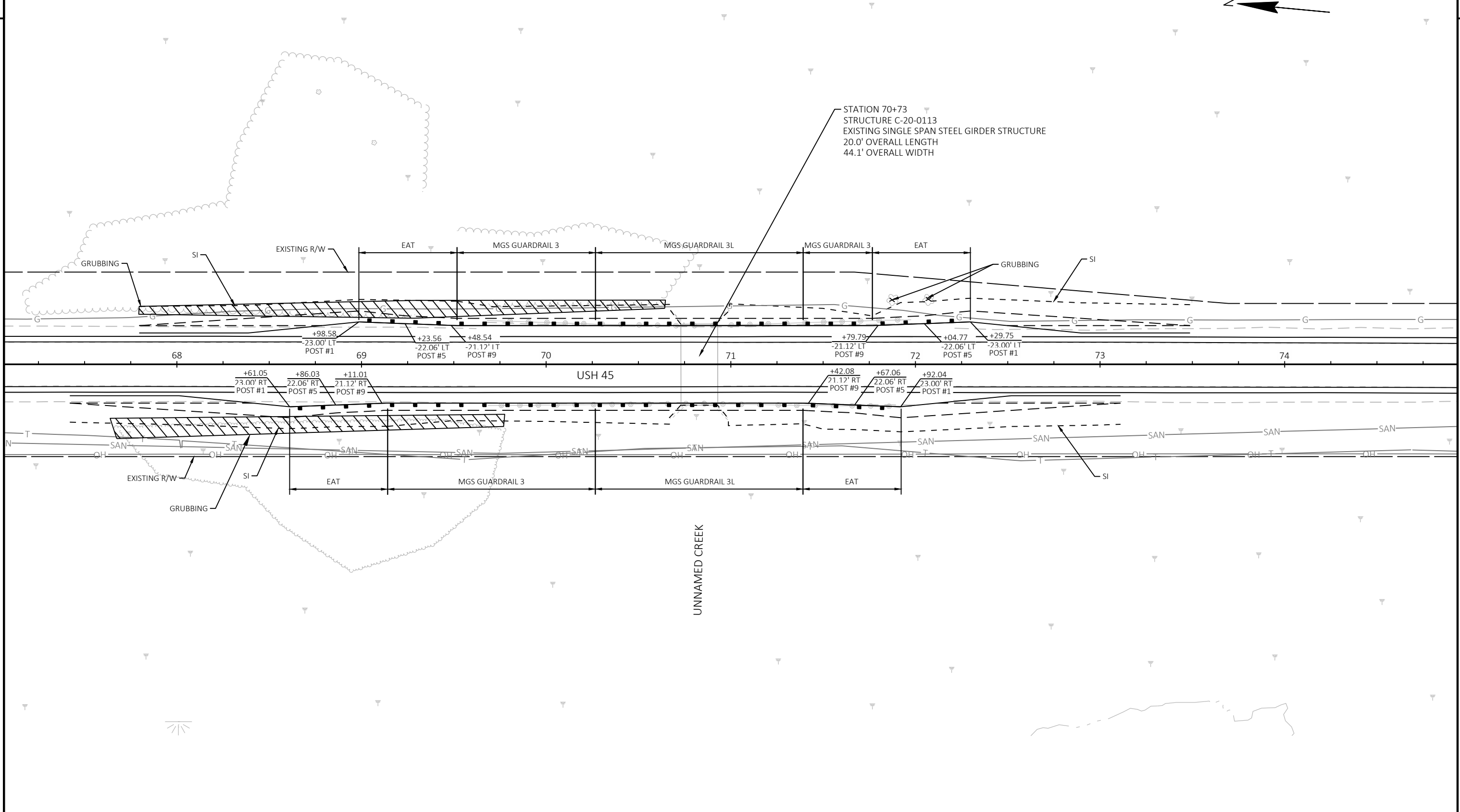


PRIVATE ENTRANCES

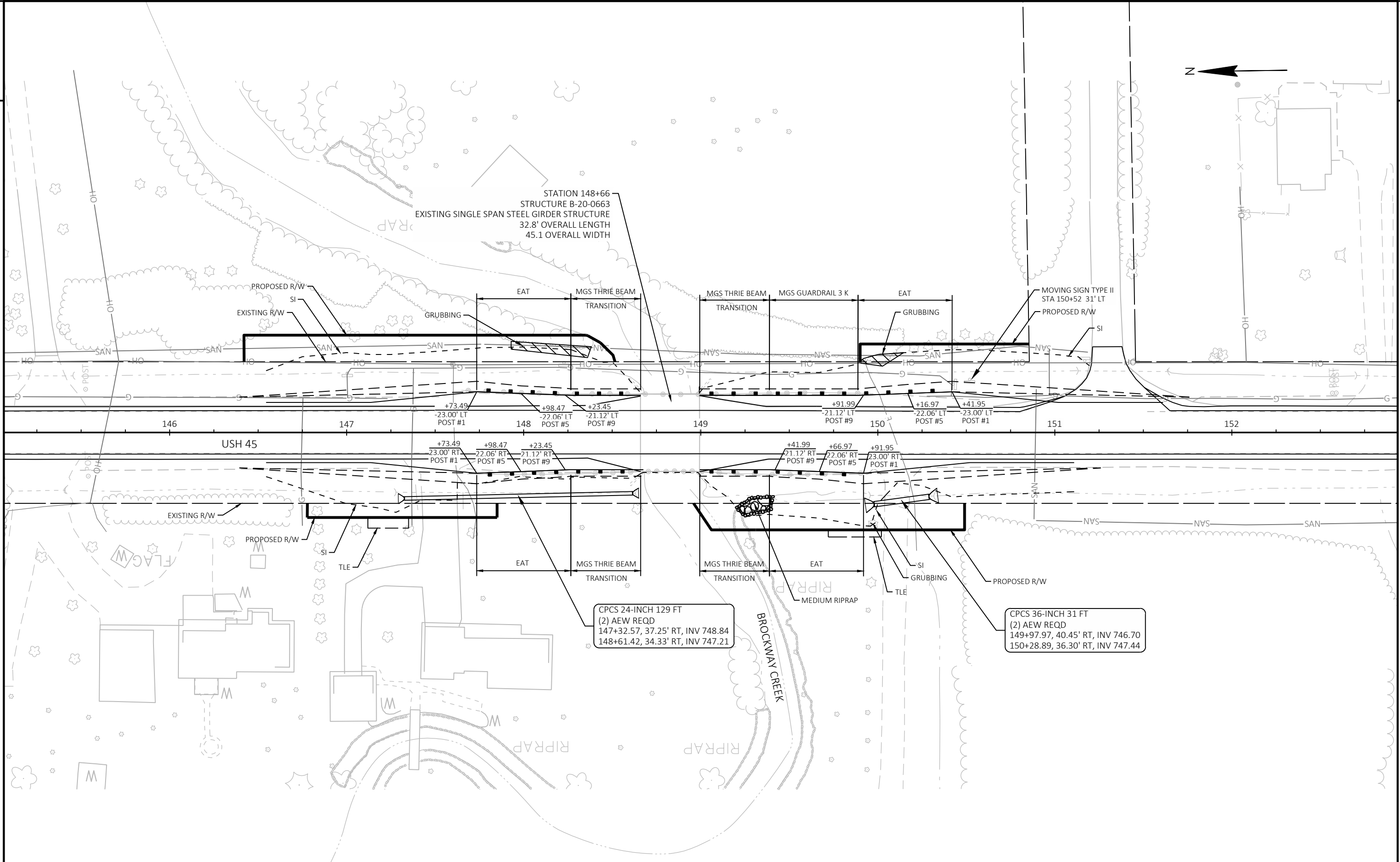
RURAL DRIVEWAYS WITH CURB & GUTTER



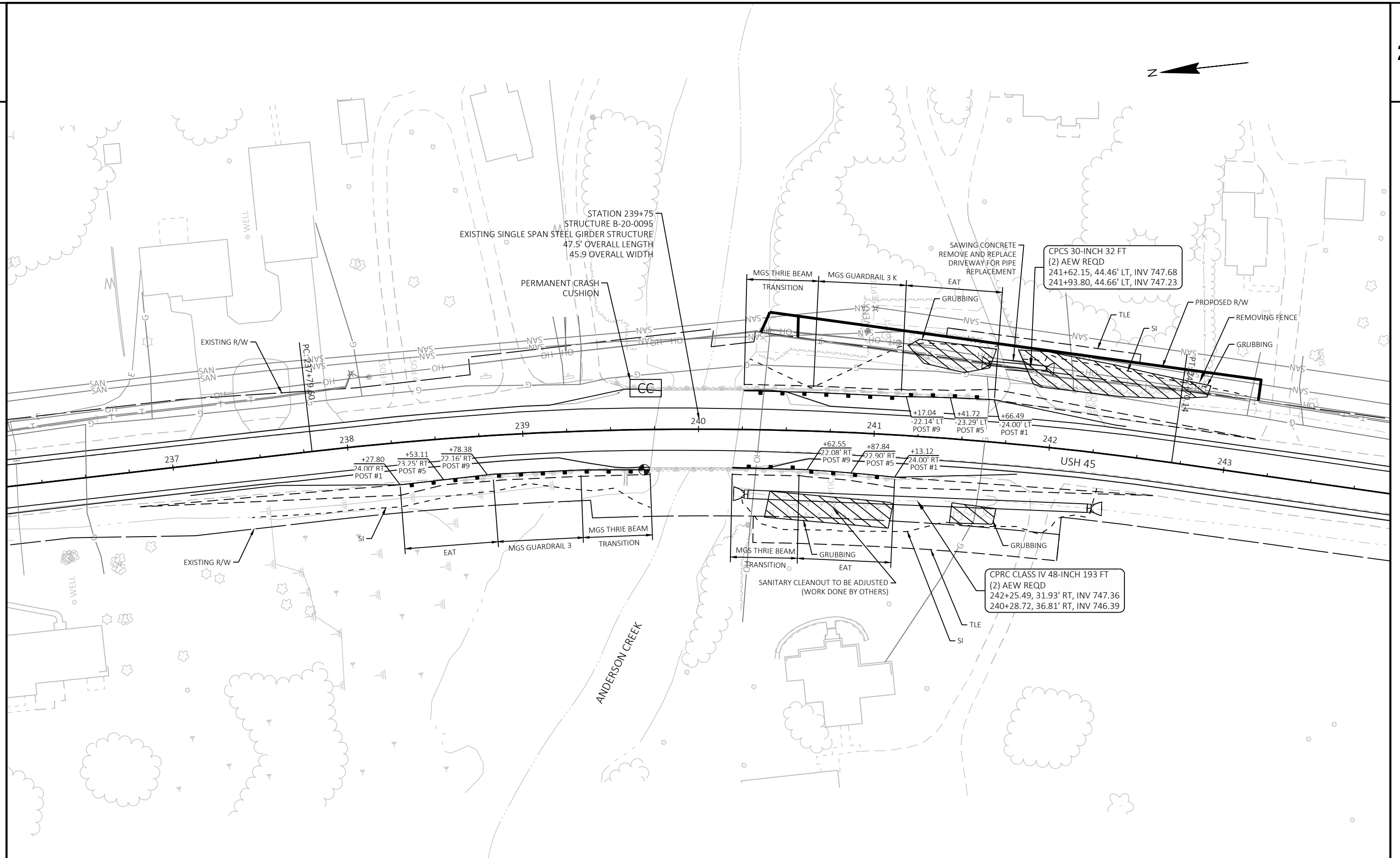
PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN DETAILS	SHEET	E
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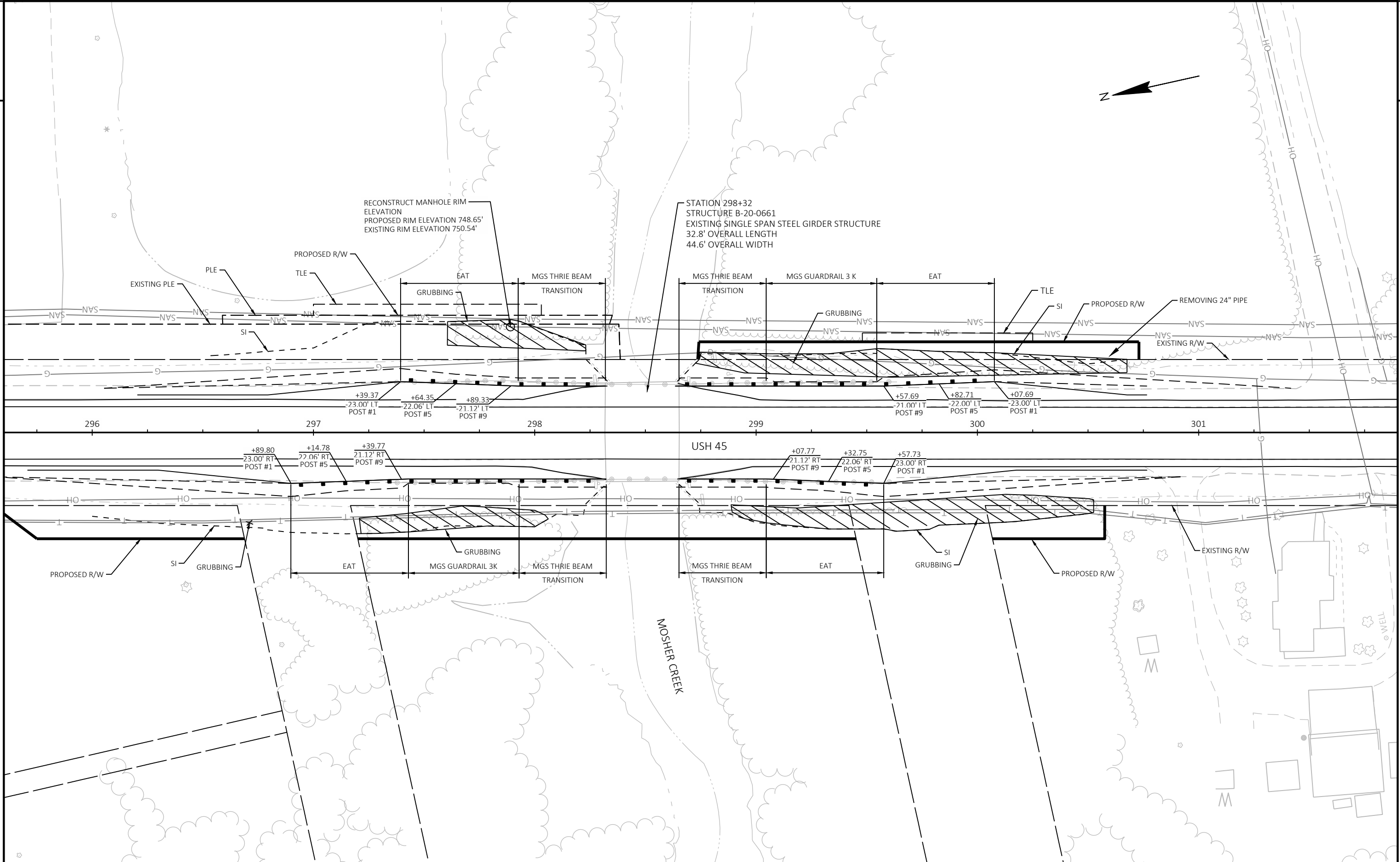


PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN DETAILS	SHEET	E
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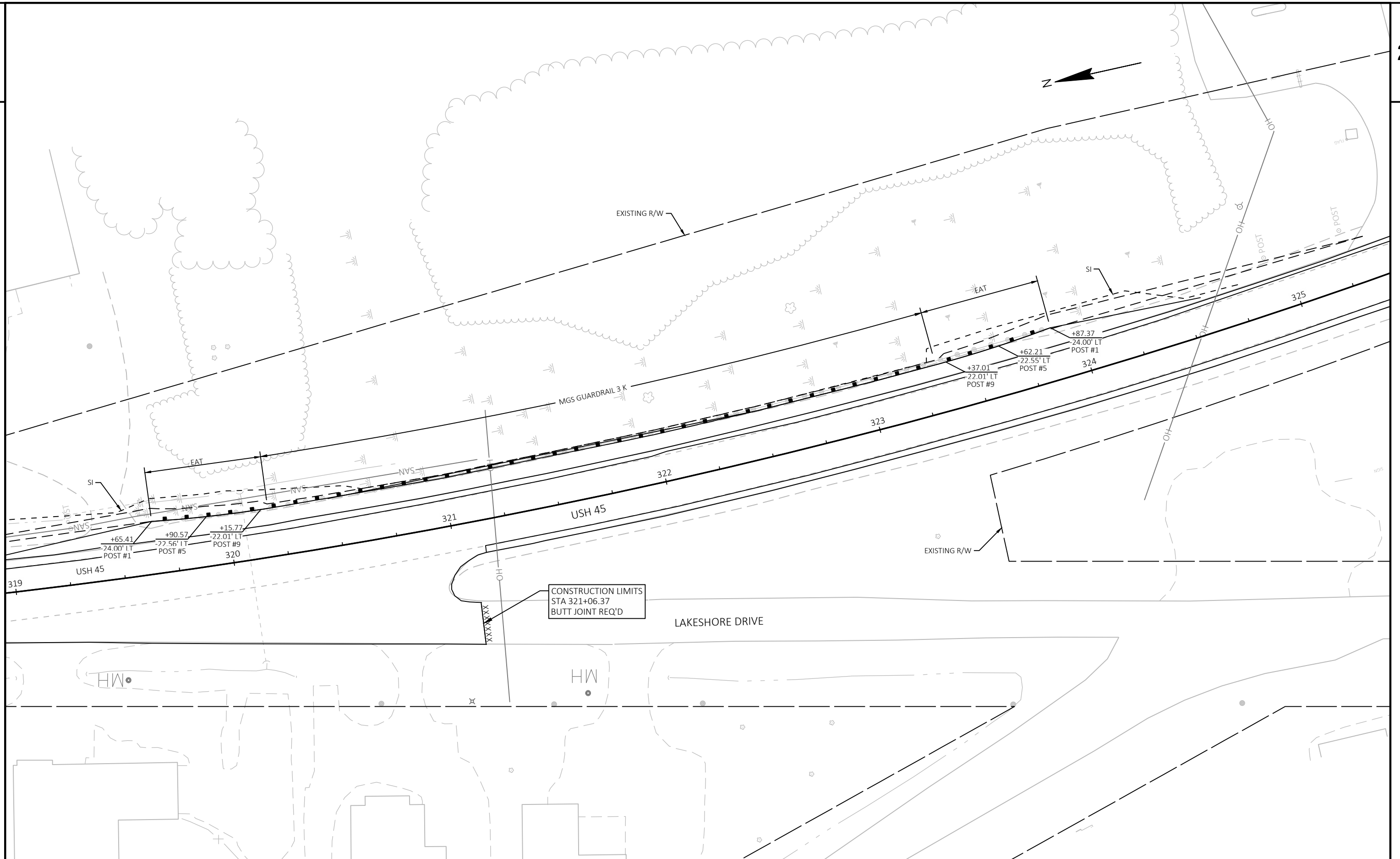


PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN DETAILS	SHEET	E
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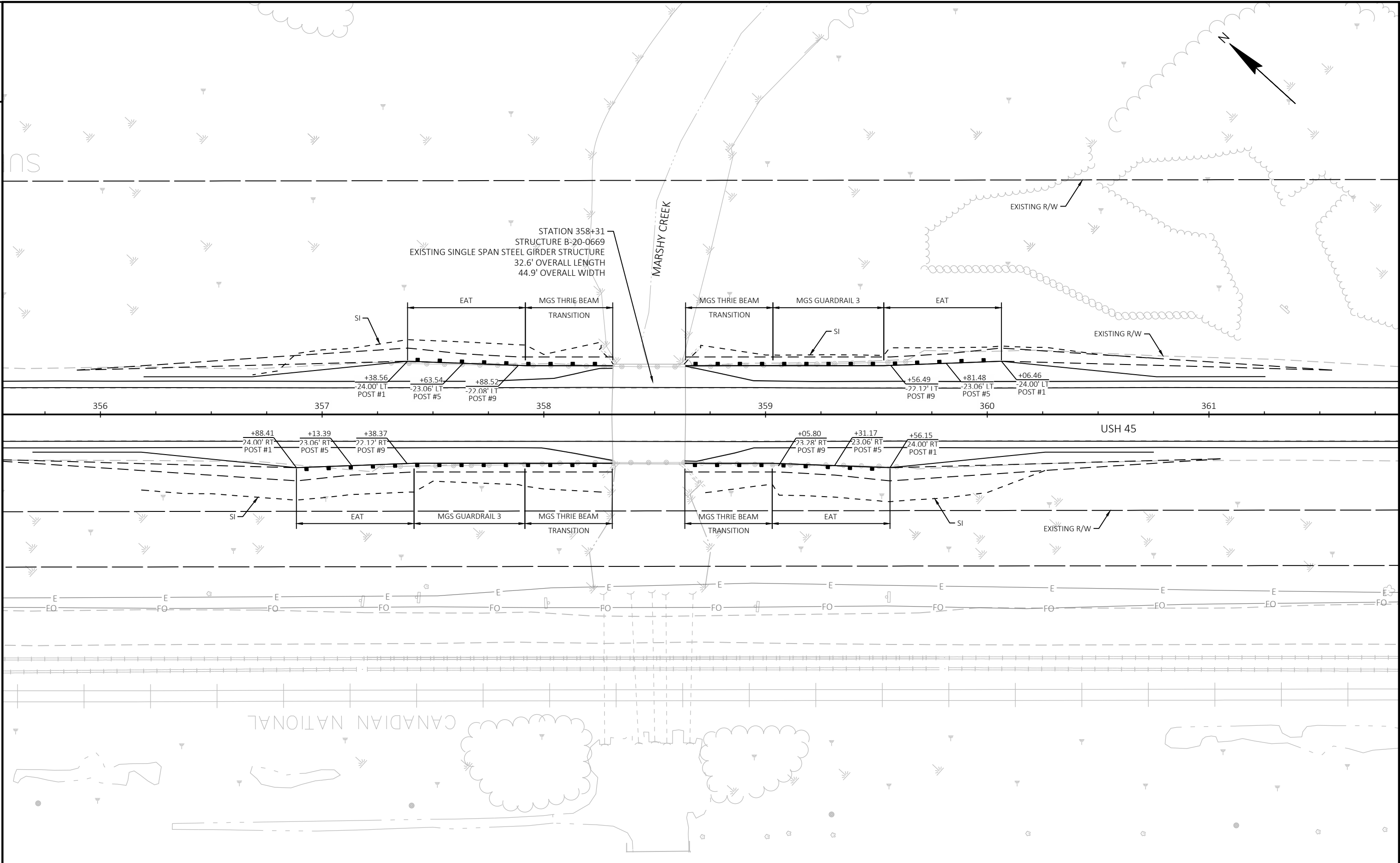


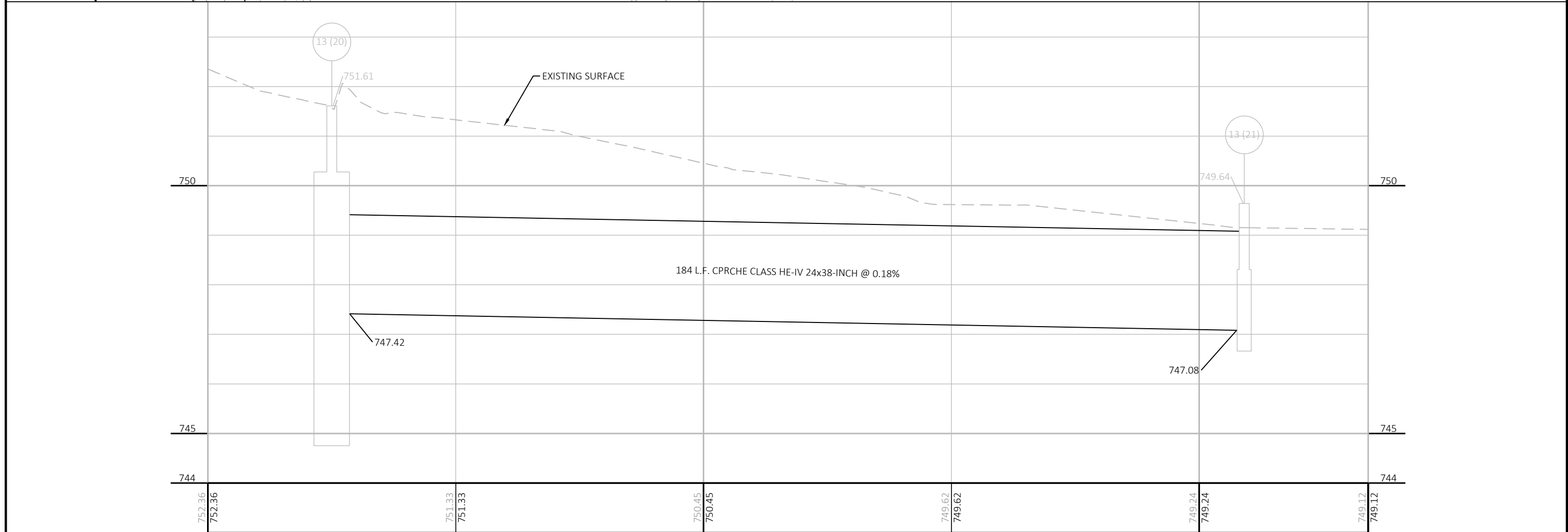
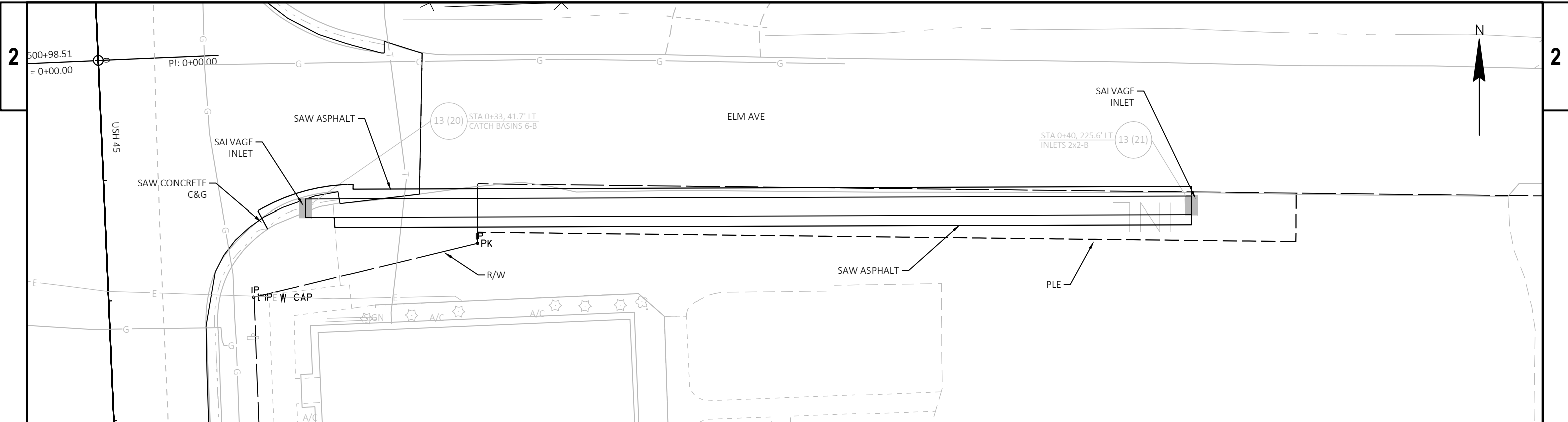


PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN DETAILS	SHEET	E
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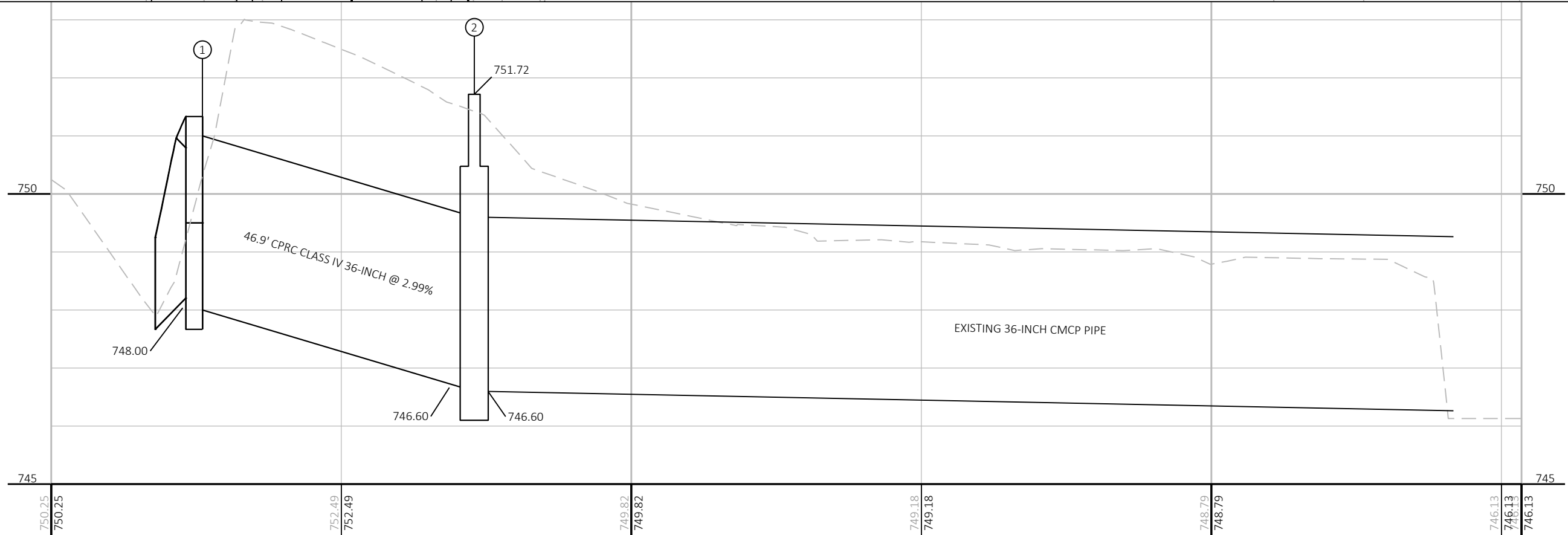
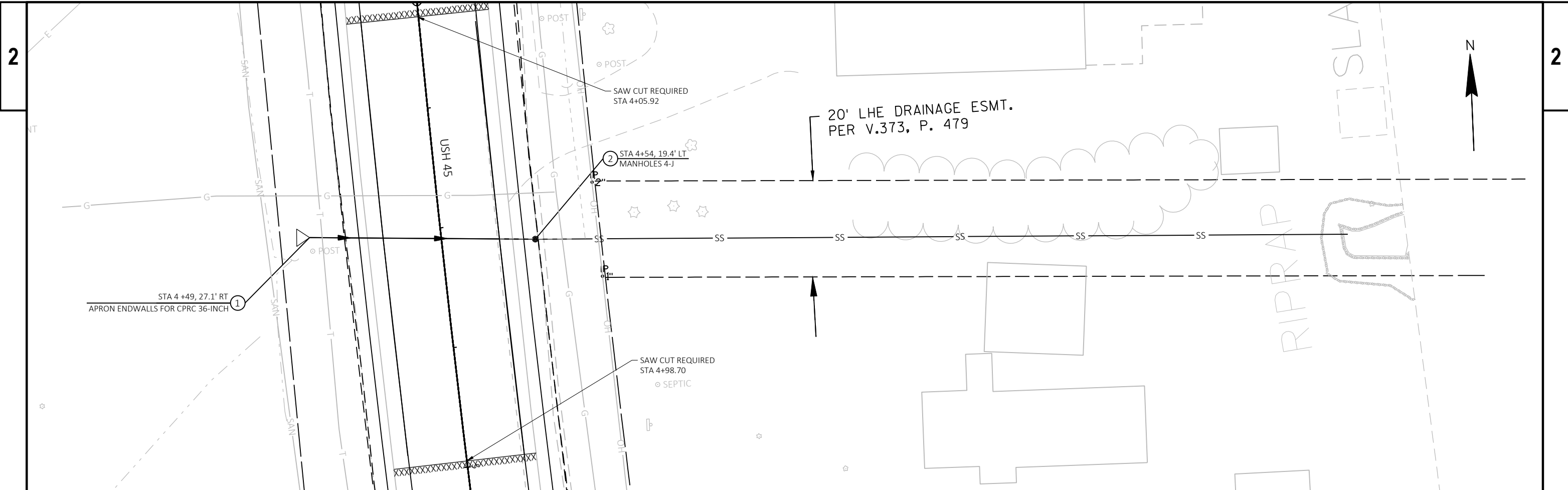


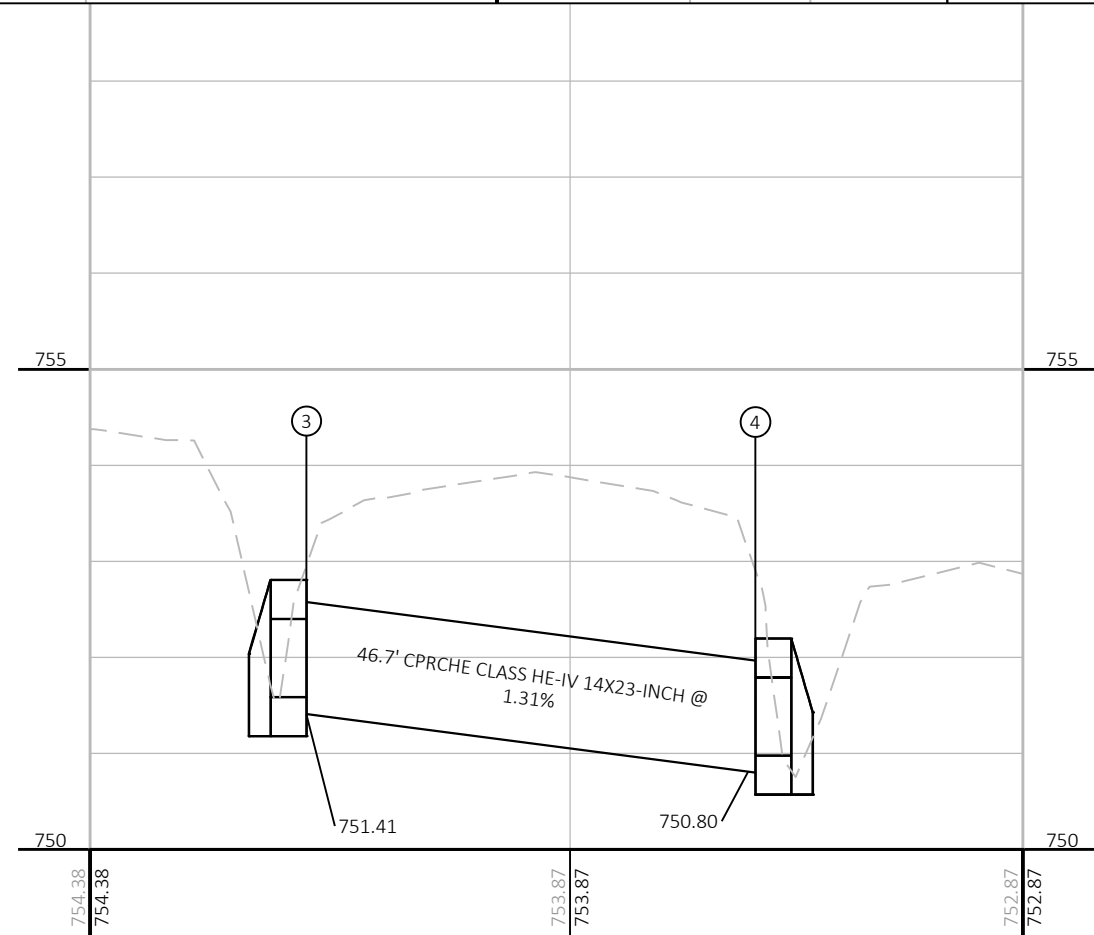
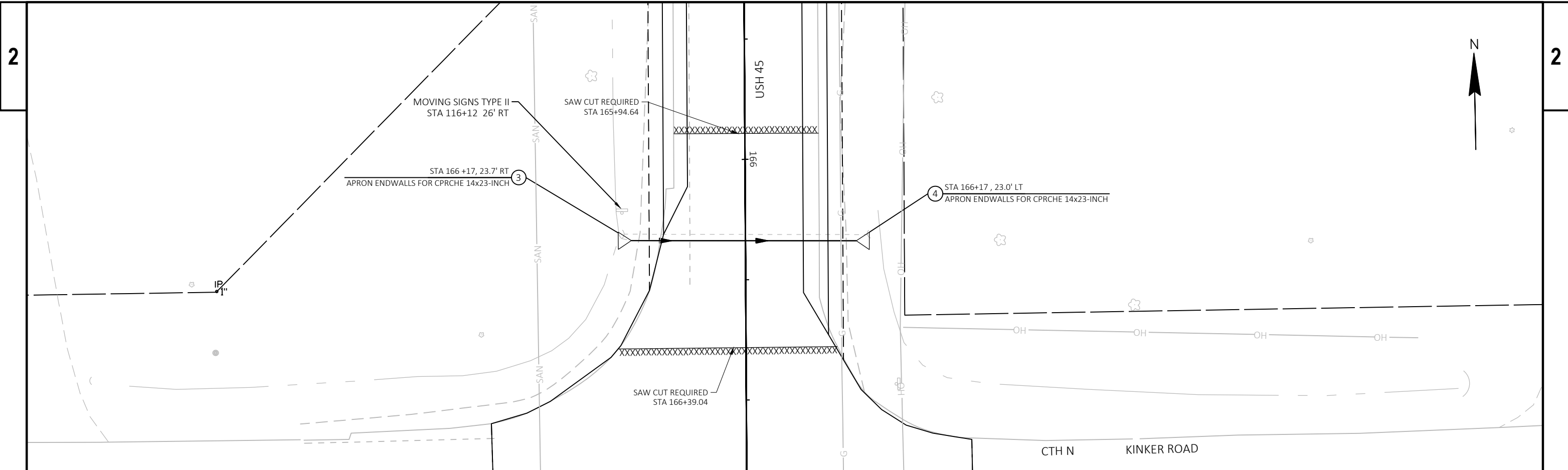
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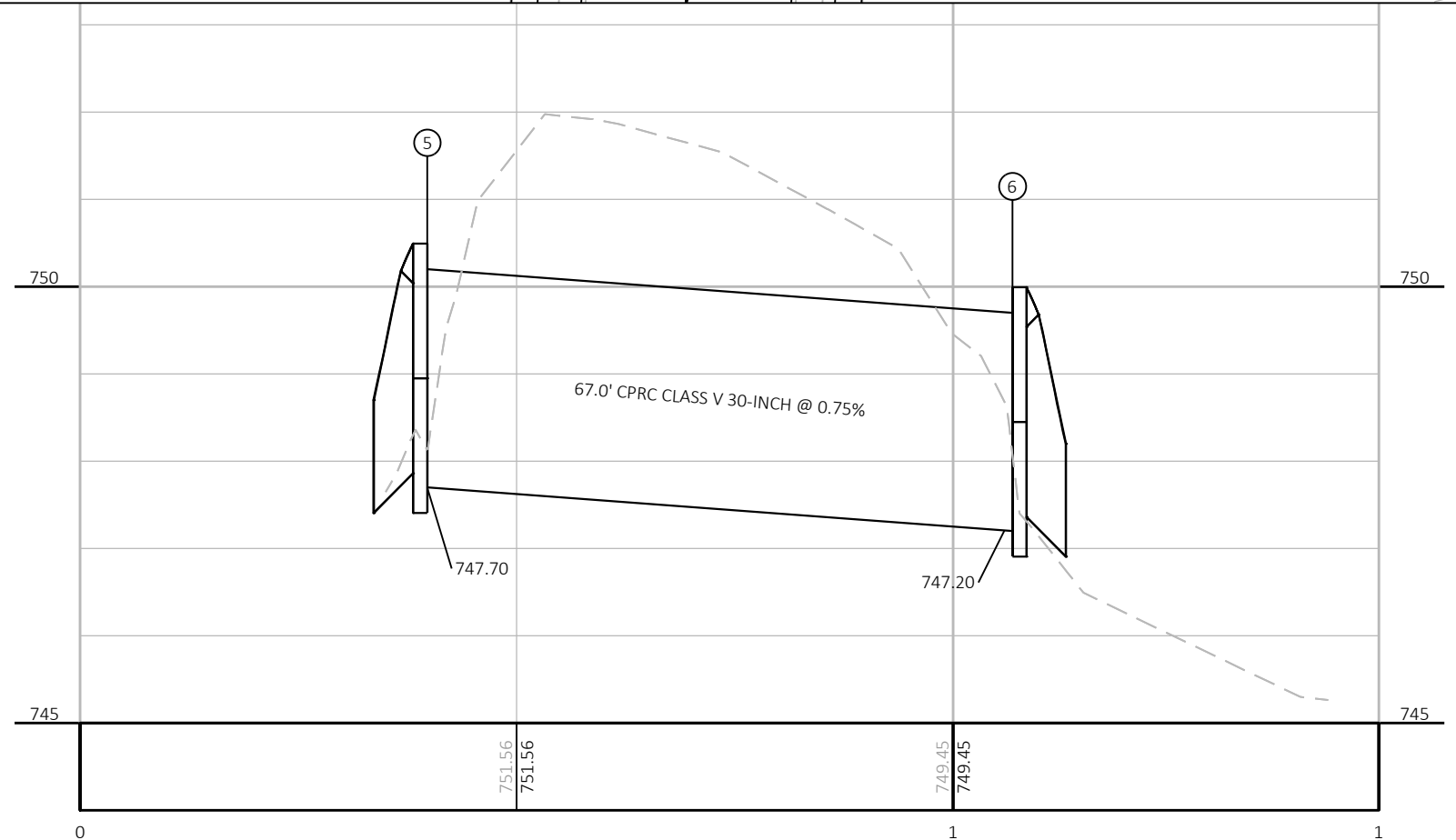
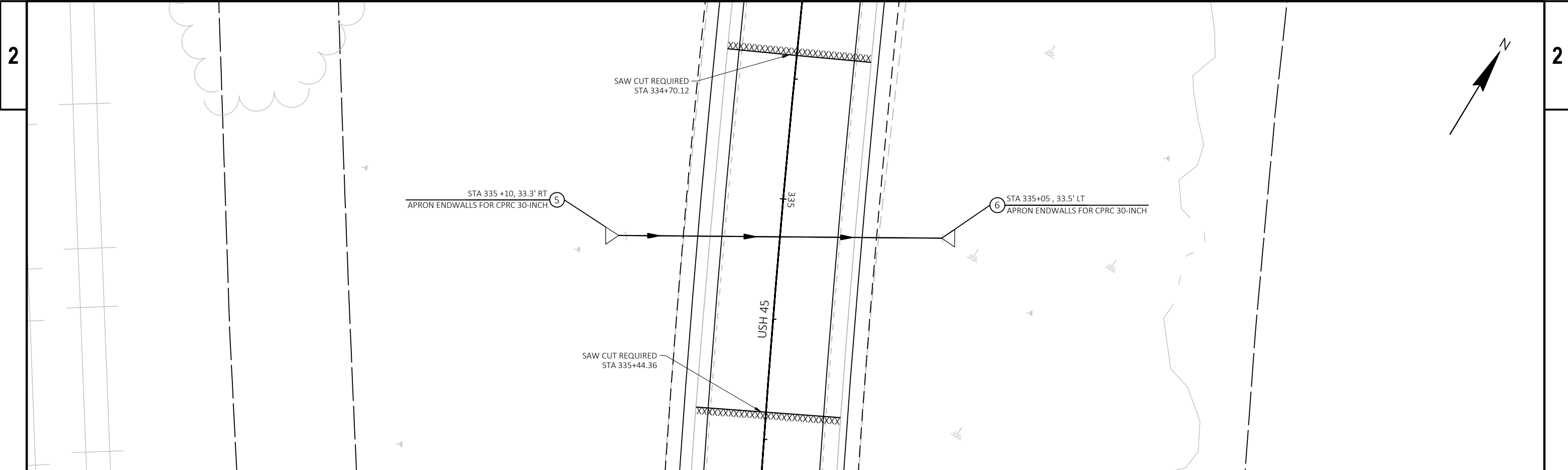


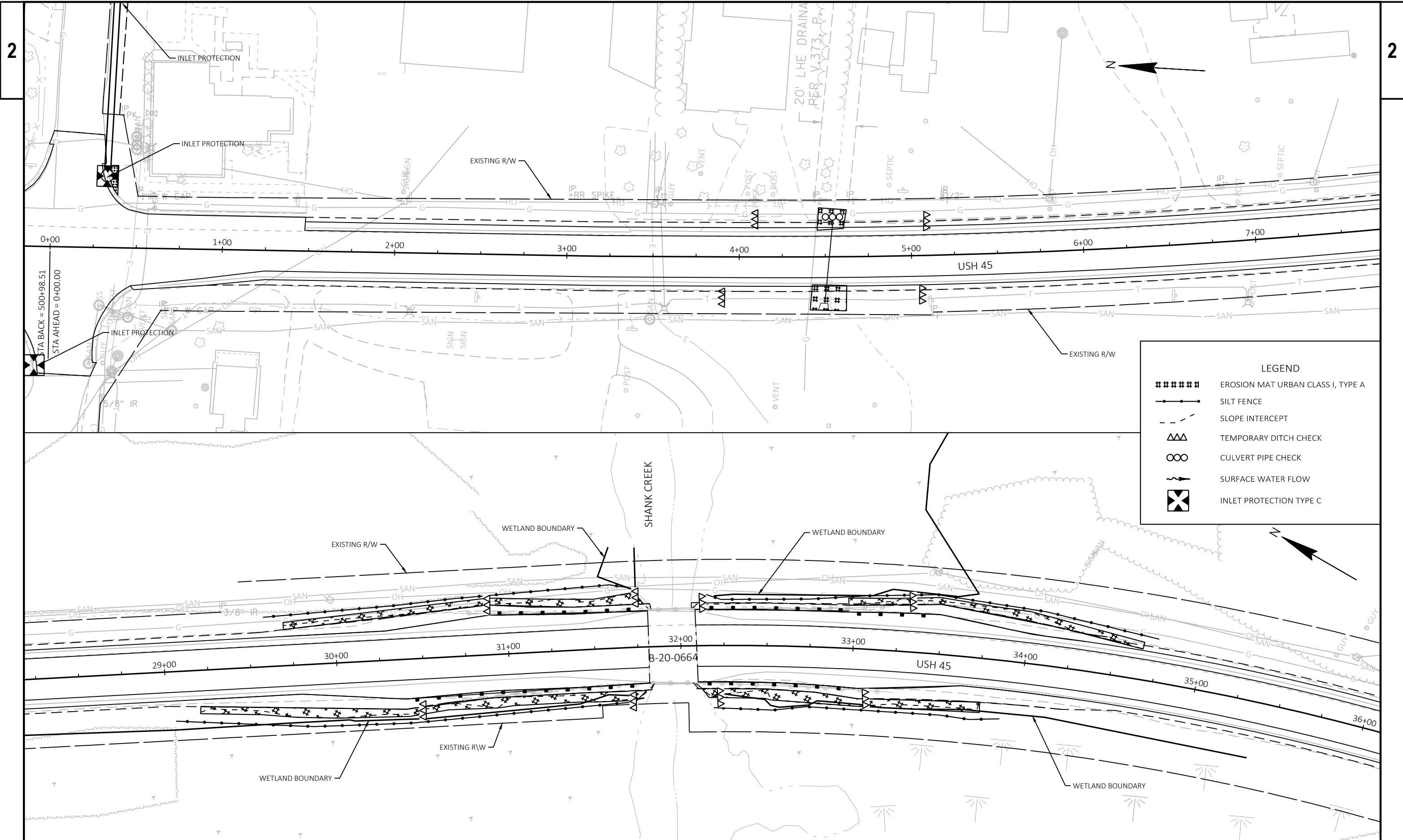


PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN DETAILS - STORM SEWER PLAN	SHEET	E
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PROJECT NO: 4110-28-71

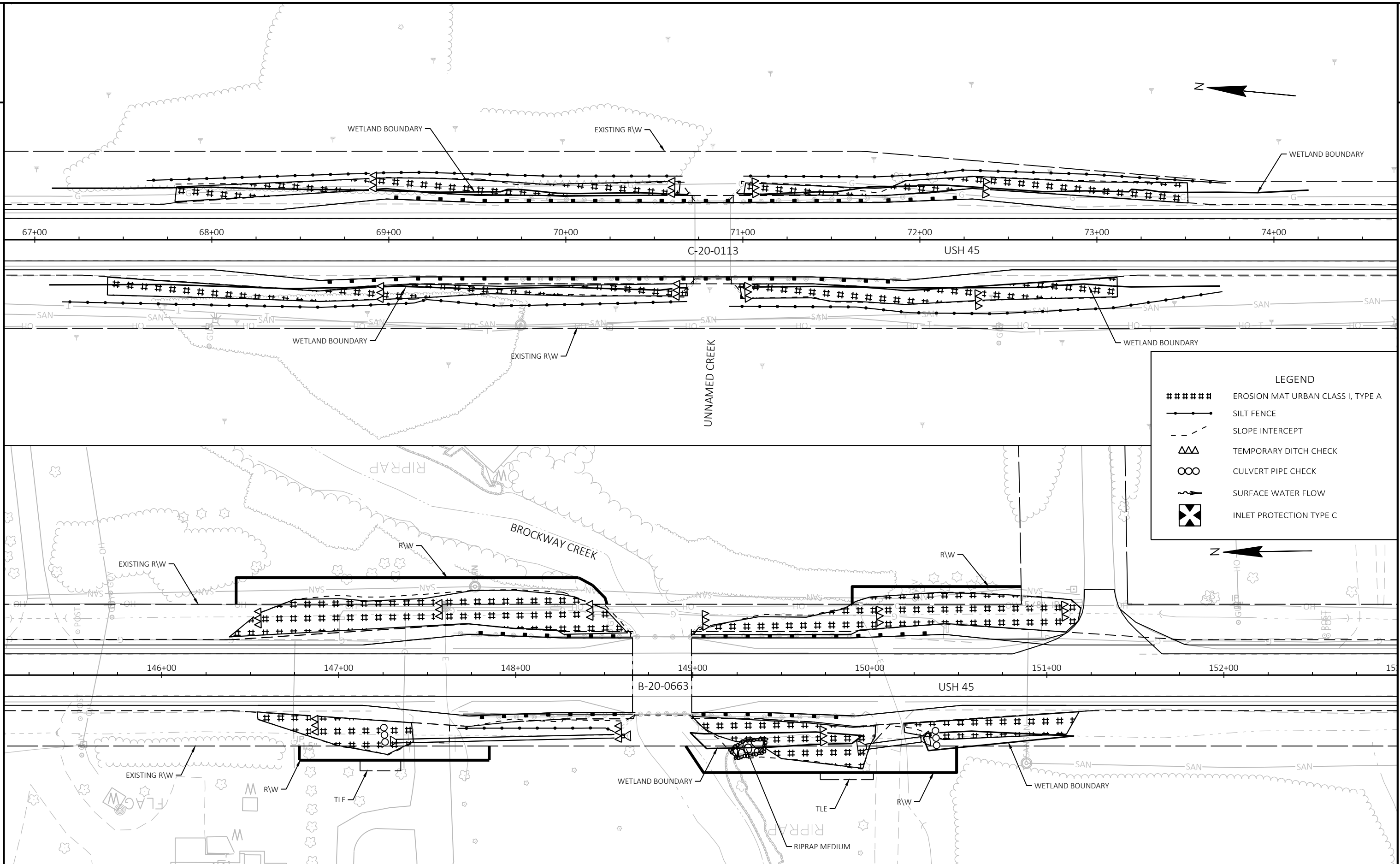
HWY: USH 45

COUNTY: FOND DU LAC

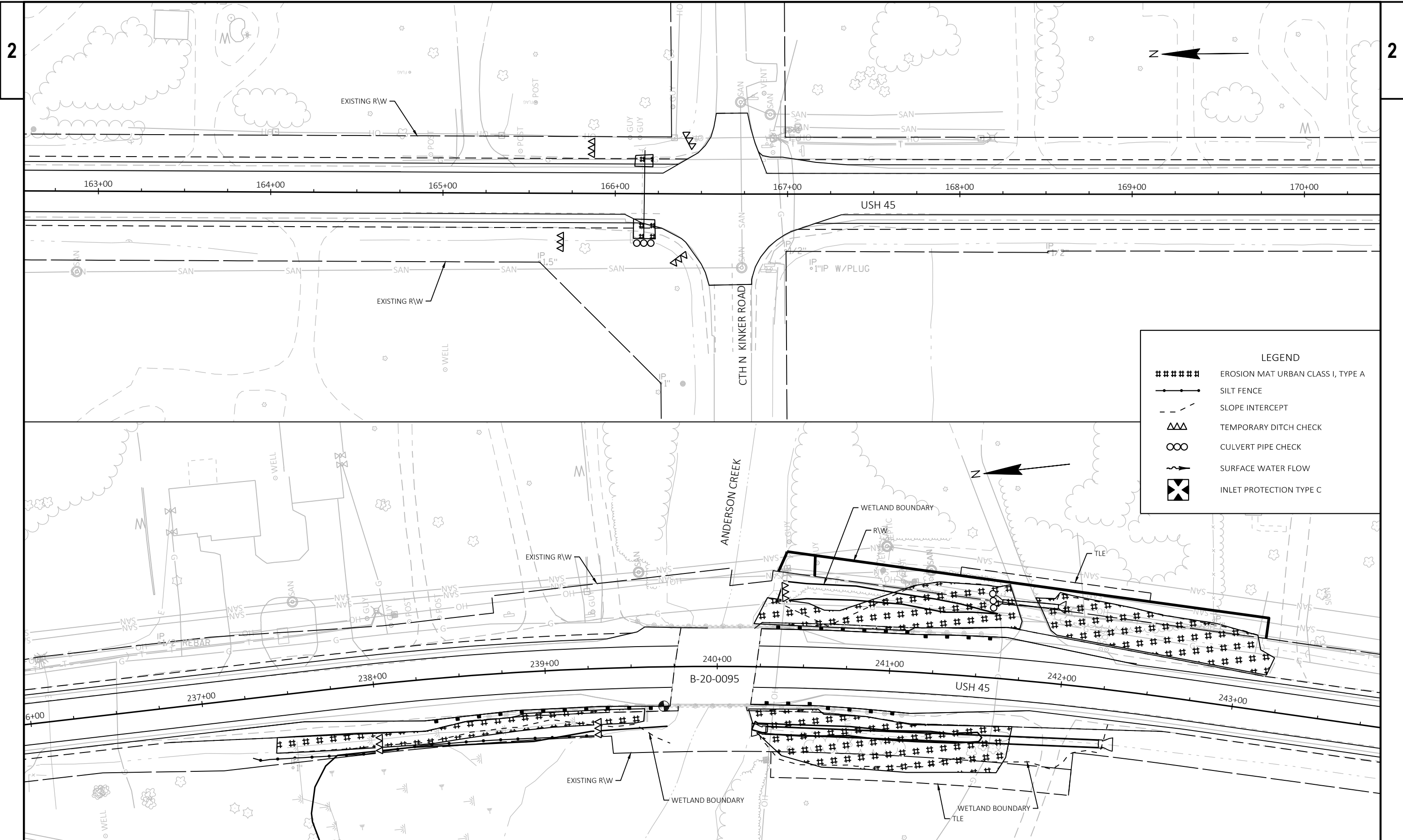
EROSION CONTROL PLAN

SHEET

E



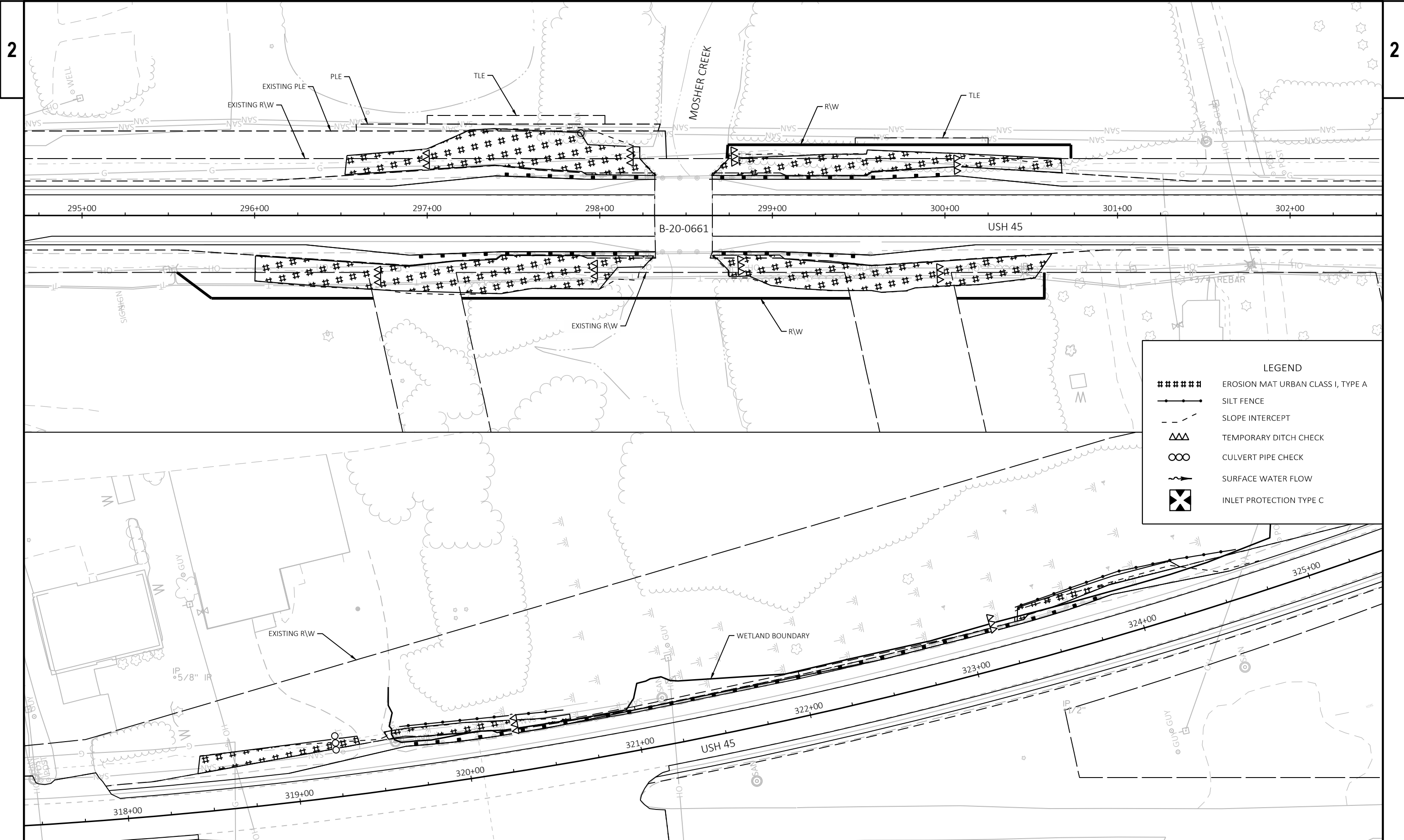
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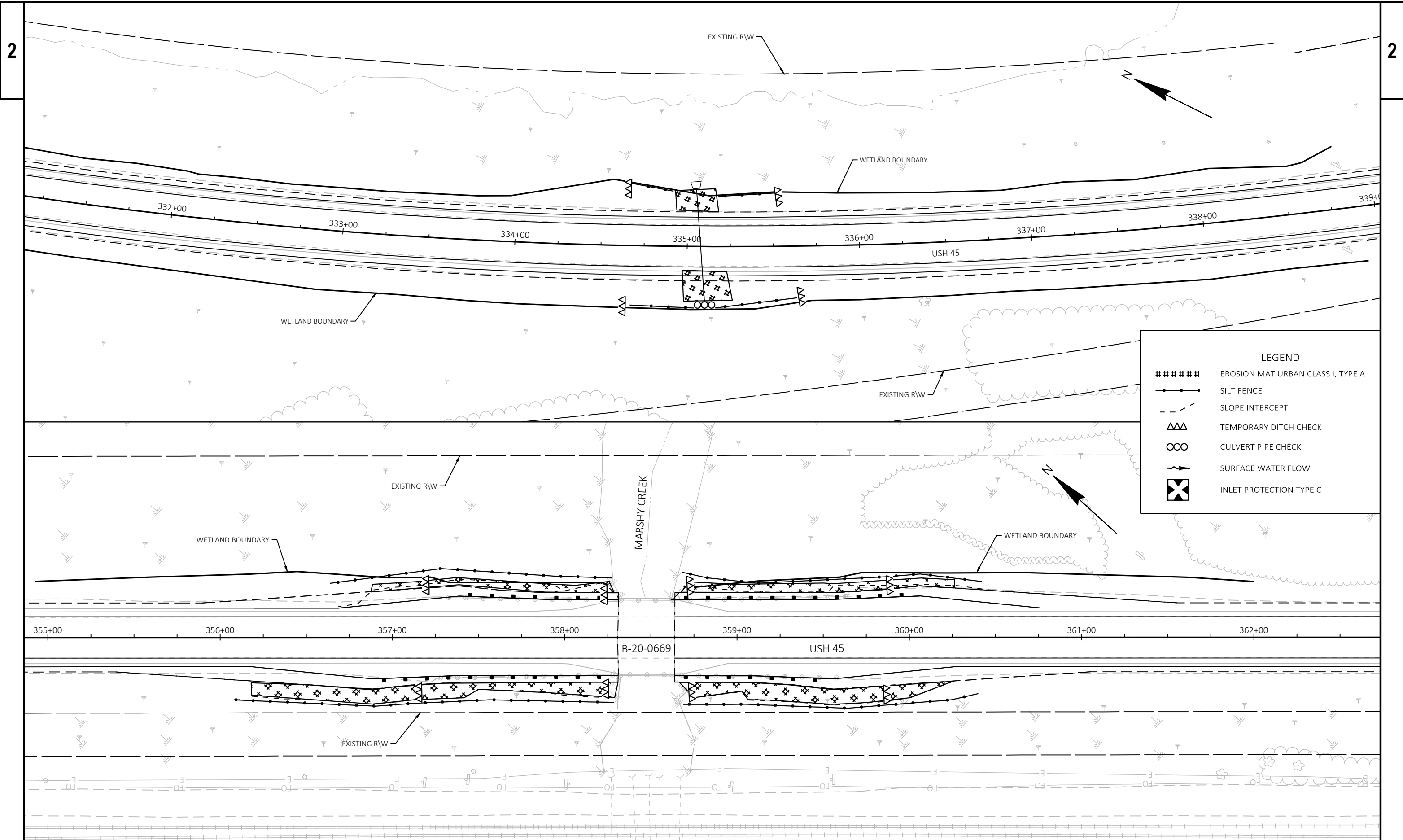


LEGEND

#####	EROSION MAT URBAN CLASS I, TYPE A
—●—	SILT FENCE
- - -	SLOPE INTERCEPT
▲▲▲	TEMPORARY DITCH CHECK
○○	CULVERT PIPE CHECK
~>	SURFACE WATER FLOW
⊠	INLET PROTECTION TYPE C

PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	EROSION CONTROL PLAN	SHEET	E
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LEGEND	
#####	EROSION MAT URBAN CLASS I, TYPE A
—●—	SILT FENCE
- - -	SLOPE INTERCEPT
△△	TEMPORARY DITCH CHECK
○○	CULVERT PIPE CHECK
~>	SURFACE WATER FLOW
⊗	INLET PROTECTION TYPE C

Estimate Of Quantities

4110-28-71

Line	Item	Item Description	Unit	Total	Qty
0002	201.0205	Grubbing	STA	17.000	17.000
0004	203.0100	Removing Small Pipe Culverts	EACH	9.000	9.000
0006	204.0100	Removing Concrete Pavement	SY	714.000	714.000
0008	204.0110	Removing Asphaltic Surface	SY	185.000	185.000
0010	204.0115	Removing Asphaltic Surface Butt Joints	SY	137.000	137.000
0012	204.0120	Removing Asphaltic Surface Milling	SY	138,658.000	138,658.000
0014	204.0150	Removing Curb & Gutter	LF	14.000	14.000
0016	204.0165	Removing Guardrail	LF	3,267.000	3,267.000
0018	204.0170	Removing Fence	LF	25.000	25.000
0020	205.0100	Excavation Common	CY	878.000	878.000
0022	208.0100	Borrow	CY	2,208.000	2,208.000
0024	208.1500.S	Temporary Lane Shift During Culvert Work	EACH	1.000	1.000
0026	211.0101	Prepare Foundation for Asphaltic Paving (project) 01. 4110-28-71	EACH	1.000	1.000
0028	211.0400	Prepare Foundation for Asphaltic Shoulders	STA	377.000	377.000
0030	213.0100	Finishing Roadway (project) 01. 4110-28-71	EACH	1.000	1.000
0032	305.0110	Base Aggregate Dense 3/4-Inch	TON	390.000	390.000
0034	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	2,027.000	2,027.000
0036	305.0500	Shaping Shoulders	STA	377.000	377.000
0038	416.0610	Drilled Tie Bars	EACH	6.000	6.000
0040	450.4000	HMA Cold Weather Paving	TON	9,086.000	9,086.000
0042	455.0605	Tack Coat	GAL	18,640.000	18,640.000
0044	460.0105.S	HMA Percent Within Limits (PWL) Test Strip Volumetrics	EACH	2.000	2.000
0046	460.6223	HMA Pavement 3 MT 58-28 S	TON	15,223.000	15,223.000
0048	460.6224	HMA Pavement 4 MT 58-28 S	TON	21,120.000	21,120.000
0050	465.0105	Asphaltic Surface	TON	297.000	297.000
0052	520.8700	Cleaning Culvert Pipes	EACH	3.000	3.000
0054	521.1024	Apron Endwalls for Culvert Pipe Steel 24-Inch	EACH	2.000	2.000
0056	521.1030	Apron Endwalls for Culvert Pipe Steel 30-Inch	EACH	2.000	2.000
0058	521.1036	Apron Endwalls for Culvert Pipe Steel 36-Inch	EACH	2.000	2.000
0060	521.3124	Culvert Pipe Corrugated Steel 24-Inch	LF	129.000	129.000
0062	521.3130	Culvert Pipe Corrugated Steel 30-Inch	LF	32.000	32.000
0064	521.3136	Culvert Pipe Corrugated Steel 36-Inch	LF	31.000	31.000
0066	522.0448	Culvert Pipe Reinforced Concrete Class IV 48-Inch	LF	193.000	193.000
0068	522.0530	Culvert Pipe Reinforced Concrete Class V 30-Inch	LF	67.000	67.000
0070	522.1030	Apron Endwalls for Culvert Pipe Reinforced Concrete 30-Inch	EACH	2.000	2.000
0072	522.1036	Apron Endwalls for Culvert Pipe Reinforced Concrete 36-Inch	EACH	1.000	1.000
0074	522.1048	Apron Endwalls for Culvert Pipe Reinforced Concrete 48-Inch	EACH	2.000	2.000
0076	522.2414	Culvert Pipe Reinforced Concrete Horizontal Elliptical Class HE-IV 14x23-Inch	LF	47.000	47.000
0078	522.2614	Apron Endwalls for Culvert Pipe Reinforced Concrete Horizontal Elliptical 14x23-Inch	EACH	2.000	2.000
0080	601.0411	Concrete Curb & Gutter 30-Inch Type D	LF	14.000	14.000
0082	602.0810	Concrete Driveway 6-Inch	SY	8.000	8.000
0084	606.0200	Riprap Medium	CY	32.000	32.000
0086	608.0436	Storm Sewer Pipe Reinforced Concrete Class IV 36-Inch	LF	47.000	47.000
0088	608.2424	Storm Sewer Pipe Reinforced Concrete Horizontal Elliptical Class HE-IV 24x38-Inch	LF	184.000	184.000
0090	611.0530	Manhole Covers Type J	EACH	1.000	1.000
0092	611.2004	Manholes 4-FT Diameter	EACH	1.000	1.000
0094	611.9710	Salvaged Inlet Covers	EACH	2.000	2.000
0096	611.9850.S	Pipe Grates (size) 01. 14x23-Inch	EACH	2.000	2.000
0098	611.9850.S	Pipe Grates (size) 02. 36-Inch	EACH	1.000	1.000
0100	614.0800	Crash Cushions Permanent	EACH	1.000	1.000

Estimate Of Quantities

4110-28-71

Line	Item	Item Description	Unit	Total	Qty
0102	614.2300	MGS Guardrail 3	LF	475.000	475.000
0104	614.2330	MGS Guardrail 3 K	LF	513.000	513.000
0106	614.2340	MGS Guardrail 3 L	LF	225.000	225.000
0108	614.2500	MGS Thrie Beam Transition	LF	749.000	749.000
0110	614.2610	MGS Guardrail Terminal EAT	EACH	25.000	25.000
0112	618.0100	Maintenance and Repair of Haul Roads (project) 01. 4110-28-71	EACH	1.000	1.000
0114	619.1000	Mobilization	EACH	1.000	1.000
0116	624.0100	Water	MGAL	6.000	6.000
0118	625.0500	Salvaged Topsoil	SY	5,887.000	5,887.000
0120	628.1504	Silt Fence	LF	3,390.000	3,390.000
0122	628.1520	Silt Fence Maintenance	LF	3,390.000	3,390.000
0124	628.1905	Mobilizations Erosion Control	EACH	5.000	5.000
0126	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0128	628.2006	Erosion Mat Urban Class I Type A	SY	5,887.000	5,887.000
0130	628.7015	Inlet Protection Type C	EACH	4.000	4.000
0132	628.7504	Temporary Ditch Checks	LF	738.000	738.000
0134	628.7555	Culvert Pipe Checks	EACH	8.000	8.000
0136	628.7570	Rock Bags	EACH	40.000	40.000
0138	629.0210	Fertilizer Type B	CWT	4.000	4.000
0140	630.0130	Seeding Mixture No. 30	LB	106.000	106.000
0142	630.0500	Seed Water	MGAL	66.000	66.000
0144	633.5200	Markers Culvert End	EACH	5.000	5.000
0146	634.0616	Posts Wood 4x6-Inch X 16-FT	EACH	1.000	1.000
0148	638.2102	Moving Signs Type II	EACH	2.000	2.000
0150	638.3000	Removing Small Sign Supports	EACH	1.000	1.000
0152	642.5001	Field Office Type B	EACH	1.000	1.000
0154	643.0300	Traffic Control Drums	DAY	1,835.000	1,835.000
0156	643.0900	Traffic Control Signs	DAY	2,952.000	2,952.000
0158	643.1050	Traffic Control Signs PCMS	DAY	28.000	28.000
0160	643.3165	Temporary Marking Line Paint 6-Inch	LF	44,478.000	44,478.000
0162	643.5000	Traffic Control	EACH	1.000	1.000
0164	645.0120	Geotextile Type HR	SY	16.000	16.000
0166	646.2020	Marking Line Epoxy 6-Inch	LF	27,792.000	27,792.000
0168	646.2040	Marking Line Grooved Wet Ref Epoxy 6-Inch	LF	77,763.000	77,763.000
0170	646.4040	Marking Line Grooved Wet Ref Epoxy 10-Inch	LF	359.000	359.000
0172	646.5020	Marking Arrow Epoxy	EACH	2.000	2.000
0174	646.6466	Cold Weather Marking Epoxy 6-Inch	LF	26,389.000	26,389.000
0176	646.6470	Cold Weather Marking Epoxy 10-Inch	LF	90.000	90.000
0178	650.4000	Construction Staking Storm Sewer	EACH	2.000	2.000
0180	650.6000	Construction Staking Pipe Culverts	EACH	6.000	6.000
0182	650.8000	Construction Staking Resurfacing Reference	LF	39,583.000	39,583.000
0184	650.9911	Construction Staking Supplemental Control (project) 01. 4110-28-71	EACH	1.000	1.000
0186	650.9920	Construction Staking Slope Stakes	LF	6,114.000	6,114.000
0188	690.0150	Sawing Asphalt	LF	426.000	426.000
0190	690.0250	Sawing Concrete	LF	192.000	192.000
0192	740.0440	Incentive IRI Ride	DOL	59,360.000	59,360.000
0194	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	2,000.000	2,000.000
0196	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	1,320.000	1,320.000
0198	SPV.0035	Special 01. Foundation Backfill	CY	1,349.000	1,349.000
0200	SPV.0055	Special 01. Incentive Density PWL HMA Pavement	DOL	24,680.000	24,680.000

Estimate Of Quantities

4110-28-71

Line	Item	Item Description	Unit	Total	Qty
0202	SPV.0055	Special 02. Incentive Air Voids HMA Pavement	DOL	36,237.000	36,237.000
0204	SPV.0055	Special 03. Incentive Density HMA Pavement Longitudinal Joints	DOL	15,833.000	15,833.000
0206	SPV.0060	Special 01. Reconstruct Sanitary Manhole	EACH	1.000	1.000

DIVISION	FROM/TO STATION	LOCATION	205.0100* COMMON EXCAVATION (1)		SALVAGED/UNUSABLE PAVEMENT MATERIAL (4)	AVAILABLE MATERIAL (5)	UNEXPANDED FILL	EXPANDED FILL (13)	MASS ORDINATE +/- (14)	WASTE	208.0100 BORROW	COMMENT
			CUT (2)	EBS EXCAVATION (3)				FACTOR 1.54				
DIVISION 1												
45-NORTH	29+20.00/73+60.00		14	0	0	14	571	879	-865	0	865	
45-SOUTH	146+50.00/360+80.00		301	0	0	301	1,067	1,643	-1,342	0	1,342	
DIVISION 1 SUBTOTAL			315	0	0	315	1,638	2,523	-2,208	0	2,208	
GRAND TOTAL			315	0	0	315	1,638	2,523	-2,208	0	2,208	
TOTAL COMMON EXC			315									

NOTES:

- (1) COMMON EXCAVATION IS THE SUM OF THE CUT AND EBS EXCAVATION COLUMNS. ITEM NUMBER 205.0100. THIS QUANTITY REFLECTS GRADING. * - ADDITIONAL QUANTITY FOR SHALLOW PIPE TRANSITIONS SHOWN ELSEWHERE.
- (2) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
- (3) EBS EXCAVATION TO BE BACKFILLED WITH SELECT BORROW MATERIAL. NOTE: THIS IS DESIGNERS CHOICE, CAN BE BACKFILLED WITH BORROW, OR CUT AS WELL.
- (4) SALVAGED/UNUSABLE PAVEMENT MATERIAL
- (5) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSABLE PAVEMENT MATERIAL
- (13) EXPANDED FILL FACTOR = 1.54
- (14) THE MASS ORDINATE + OR - QTY CALCULATED FOR THE DIVISION. PLUS QUANTITY INDICATES AN EXCESS OF MATERIAL WITHIN THE DIVISION. MINUS INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.
- (15) FACTORS USED TO COMPUTE ANTICIPATED WASTE AND THE COMPUTED WASTE VOLUME IDENTIFIED ARE FOR GENERAL INFORMATION ONLY.

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EXCAVATION									
CATEGORY	STATION	TO	STATION	LOCATION	204.0100	204.0110	204.0150	205.0100*	REMARKS
					REMOVING CONCRETE PAVEMENT SY	REMOVING ASPHALTIC SURFACE SY	REMOVING CURB & GUTTER LF	EXCAVATION COMMON CY	
0010	0+31	-	0+33	RT	-	157	14	-	LONE ELM
0010	4+24	-	4+79	LT/RT	311	-	-	276	CROSS CULVERT
0010	147+42	-	147+62	RT	-	9	-	-	DRIVEWAY CULVERT
0010	150+03	-	150+18	RT	-	8	-	-	DRIVEWAY CULVERT
0010	166+04	-	166+30	LT/RT	149	-	-	103	CROSS CULVERT
0010	241+91	-	242+03	RT	-	11	-	-	DRIVEWAY CULVERT
0010	241+71	-	241+83	LT	8	-	-	-	DRIVEWAY CULVERT
0010	334+85	-	335+30	LT/RT	246	-	-	184	CROSS CULVERT
0010	THROUGHOUT PROJECT	-		USH 45	-	-	-	315	FROM EARTHWORK TABLE
TOTAL 0010					714	185	14	878	

BUTT JOINTS				
CATEGORY	STATION	LOCATION		SY
0010	500+00	Begin Project	LT/RT	9
0010	0+24	E Lone Elm Ave	RT	7
0010	0+24	E Lone Elm Ave	LT	7
0010	56+29	Lincoln Rd	RT	5
0010	82+61	W Lake Ct	RT	3
0010	113+51	Cemetery Rd	RT	5
0010	113+51	Cemetery Rd	LT	4
0010	151+21	Shady Dr	LT	4
0010	166+57	Kinker Rd	RT	5
0010	166+57	Kinker Rd	LT	4
0010	193+10	Cottage Dr	LT	5
0010	204+62	Cottage Dr	LT	5
0010	219+60	Subway Rd	RT	5
0010	219+60	Subway Rd	LT	6
0010	228+50	Westlake Ct	RT	5
0010	274+77	Silver St	RT	5
0010	284+46	NorthWestern Ave	RT	6
0010	293+94	Franklin Ave	RT	7
0010	317+53	Rosie Ln	LT	13
0010	321+05	Lakeshore Dr	LT	4
0010	327+09	Lakeshore Dr	RT	6
0010	378+24	Howard Litscher Dr	LT	8
0010	394+85	End Of Project	LT/RT	9
0010	148+66	Bridge	USH 45	9
0010	148+98	Bridge	USH 45	9
0010	239+75	Bridge	USH 45	9
0010	240+41	Bridge	USH 45	9
0010	298+30	Bridge	USH 45	9
0010	298+64	Bridge	USH 45	9
0010	358+31	Bridge	USH 45	9
0010	358+63	Bridge	USH 45	9
TOTAL 0010				137

204.0115
REMOVING
ASPHALTIC
SURFACE BUTT
JOINTS

MILLING

204.0120 REMOVING ASPHALTIC SURFACE MILLING						
CATEGORY	STATION	TO	STATION	LOCATION	SY	REMARKS
0010	500+00	-	500+98	LT/RT	625	4" MILL
0010	0+00	-	15+00	LT/RT	5,384	4" MILL
0010	15+00	-	40+00	LT/RT	8,597	4" MILL
0010	40+00	-	60+00	LT/RT	6,901	4" MILL
0010	60+00	-	80+00	LT/RT	6,711	4" MILL
0010	80+00	-	378+05	LT/RT	102,545	4" MILL
0010	378+05	-	394+85	LT/RT	7,896	4" MILL
TOTAL 0010					138,658	

REMOVAL

204.0170 REMOVING FENCE						
CATEGORY	STATION	TO	STATION	LOCATION	LF	REMARKS
0010	242+57	-	242+82	47'LT	25	FENCE WITHIN R/W
TOTAL 0010					25	

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																				CULVERT PIPE																		
																				203.0100	208.1500.S	520.8700	521.3124	521.3130	521.3136	522.0448	522.0530	522.2414	608.0436	608.2424	611.9850.S.01	611.9850.S.02	633.5200	650.4000	650.6000			
																				REMOVING SMALL	TEMPORARY LANE	CLEANING	CULVERT PIPE	CULVERT PIPE	CULVERT PIPE	CULVERT PIPE	CULVERT PIPE	CULVERT PIPE	STORM SEWER	STORM SEWER	PIPE GRATES (SIZE)	PIPE GRATES (SIZE)	MARKERS	CONSTRUCTION	CONSTRUCTION			
																				PIPE CULVERTS	SHIFT DURING	CULVERT PIPES	CORRUGATED	CORRUGATED	CORRUGATED	REINFORCED	REINFORCED	REINFORCED	PIPE REINFORCED	PIPE REINFORCED	(14X23-INCH)	(36-INCH)	CULVERT END	STAKING STORM	STAKING PIPE			
																				EACH	EACH	EACH	STEEL 24-INCH	STEEL 30-INCH	STEEL 36-INCH	CONCRETE CLASS	CONCRETE CLASS	ELLIPTICAL CLASS	CONCRETE CLASS	ELLIPTICAL CLASS	EACH	EACH	EACH	SEWER	CULVERTS			REMARKS
CATEGORY	STATION	TO	STATION	LOCATION																																		
0010	0+31	-	0+33	LT	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LONE ELM																		
0010	4+49	-	4+54	LT	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	MAINLINE																		
0010	55+70	-	55+70	LT/RT	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	CLEANING																		
0010	147+33	-	148+62	RT	1	-	-	129	-	-	-	-	-	-	-	-	-	-	-	DRIVEWAY																		
0010	149+98	-	150+29	RT	1	-	-	-	-	31	-	-	-	-	-	-	-	-	-	DRIVEWAY																		
0010	166+17	-	166+17	LT/RT	1	-	-	-	-	-	-	47	-	-	-	-	-	-	-	MAINLINE																		
0010	240+29	-	242+25	32' RT	1	-	-	-	-	-	193	-	-	-	-	-	-	-	-	DRIVEWAY																		
0010	241+62	-	241+93	44' LT	1	-	-	-	32	-	-	-	-	-	-	-	-	-	-	DRIVEWAY																		
0010	269+31	-	270+88	30 LT	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	CLEANING																		
0010	300+43	-	300+69	30 LT	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CULVERT REMOVAL																		
0010	335+05	-	335+10	LT/RT	1	-	-	-	-	-	67	-	-	-	-	-	-	-	-	MAINLINE																		
TOTAL 0010					9	1	3	129	32	31	193	67	47	47	184	2	1	5	2	6																		

																				CULVERT STRUCTURE																	
																				521.1024	521.1030	521.1036	522.1030	522.1036	522.1048	522.2614	611.0530	611.2004	611.9710	SPV.0060.01							
																				APRON ENDWALLS	APRON ENDWALLS	APRON ENDWALLS	APRON ENDWALLS	APRON ENDWALLS	APRON ENDWALLS	REINFORCED	REINFORCED	REINFORCED	REINFORCED	REINFORCED	MANHOLE COVERS	MANHOLES 4-FT	SALVAGED INLET	RECONSTRUCT			
																				FOR CULVERT PIPE	FOR CULVERT PIPE	FOR CULVERT PIPE	FOR CULVERT PIPE	FOR CULVERT PIPE	FOR CULVERT PIPE	CONCRETE 30-	CONCRETE 36-	CONCRETE 48-	ELLIPTICAL 14X23-	CONCRETE	TYPE J	DIAMETER	COVERS	SANITARY			
																				STEEL 24-INCH	STEEL 30-INCH	STEEL 36-INCH	INCH	INCH	INCH	INCH	INCH	INCH	INCH	HORIZONTAL	EACH	EACH	EACH	MANHOLE			
CATEGORY	STATION	TO	STATION	LOCATION																																	
0010	0+31	-	0+33	LT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LONE ELM																	
0010	4+49	-	4+54	LT/RT	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	MAINLINE																	
0010	147+33	-	148+62	RT	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DRIVEWAY																	
0010	149+98	-	150+29	RT	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	DRIVEWAY																	
0010	166+17	-	166+17	LT/RT	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	MAINLINE																	
0010	240+28	-	242+25	RT	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	DRIVEWAY																	
0010	241+62	-	241+93	LT	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	DRIVEWAY																	
0020	297+80	-	297+90	LT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	MAINLINE																	
0010	335+05	-	335+10	LT/RT	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	MAINLINE																	
TOTAL 0010					2	2	2	2	1	2	2	1	1	2	-	-	-	-	-	-																	
TOTAL 0020					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1																

BASE AGG

CATEGORY	STATION	TO	STATION	LOCATION	305.0110	305.0120	REMARKS
					BASE AGGREGATE DENSE 3/4-INCH	BASE AGGREGATE DENSE 1 1/4-INCH	
					TON	TON	
0010	0+31	-	0+33	RT	-	165	STORM SEWER REPLACEMENT
0010	4+49	-	4+54	LT/RT	-	762	STORM SEWER REPLACEMENT
0010	147+42	-	147+62	RT	-	9	CULVERT REPLACEMENT
0010	150+03	-	150+18	RT	-	8	CULVERT REPLACEMENT
0010	166+04	-	166+30	LT/RT	-	461	CULVERT REPLACEMENT
0010	241+91	-	242+03	32' RT	-	11	CULVERT REPLACEMENT
0010	241+71	-	241+83	44' LT	-	8	CULVERT REPLACEMENT
0010	335+05	-	335+30	LT/RT	-	603	CULVERT REPLACEMENT
0010	Project Limits	-	394+85	USH 45	390	-	SHOULDERS
TOTAL 0010					390	2,027	

CONCRETE

CATEGORY	STATION	TO	STATION	LOCATION	416.0610	602.0810	REMARKS
					DRILLED TIE BARS EACH	CONCRETE DRIVEWAY 6-INCH SY	
0010	0+31	-	0+33	RT	3	-	CURB AND GUTTER
0010	241+71	-	241+83	LT	3	8	CULVERT REPLACEMENT
TOTAL 0010					6	8	

GRUBBING

CATEGORY	STATION	TO	STATION	LOCATION	201.0205
					GRUBBING STA
0010	30+00	-	32+00	USH 45 LT'	2
0010	67+00	-	71+00	USH 45 LT' RT'	4
0010	147+00	-	149+00	USH 45 LT'	2
0010	149+00	-	151+00	USH 45 LT'	2
0010	240+00	-	243+00	USH 45 LT' RT'	3
0010	296+00	-	301+00	USH 45 LT' RT'	4
TOTAL 0010					17

GUARDRAIL

CATEGORY	STATION	TO	STATION	LOCATION	204.0165	614.0800	614.2300	614.2330	614.2340	614.2500	614.2610
					REMOVING GUARDRAIL LF	CRASH CUSHIONS PERMANENT EACH	MGS GUARDRAIL 3 LF	MGS GUARDRAIL 3 K LF	MGS GUARDRAIL 3 L LF	MGS THRIE BEAM TRANSITION LF	MGS GUARDRAIL TERMINAL EAT EACH
0010	30+39		33+04	RT	254	-	50	-	-	79	2
0010	30+89		33+49	LT	254	-	50	-	-	79	2
0010	68+61		71+92	RT	230	-	113	-	113	-	2
0010	68+98		72+30	LT	230	-	113	-	113	-	2
0010	147+74		149+89	RT	229	-	-	-	-	79	2
0010	147+74		150+42	LT	233	-	-	50	-	79	2
0010	238+28		241+13	RT	251	-	50	-	-	79	2
0010	239+00		241+67	LT	215	1	-	50	-	39	1
0010	296+90		299+58	RT	234	-	-	50	-	79	2
0010	297+39		300+08	LT	234	-	-	50	-	79	2
0010	319+65		323+87	LT	417	-	-	313	-	-	2
0010	356+88		359+56	RT	243	-	50	-	-	79	2
0010	357+38		360+06	LT	243	-	50	-	-	79	2
TOTAL 0010					3,267	1	475	513	225	749	25

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CATEGORY	STATION	TO	STATION	LOCATION	HMA					REMARKS
					450.4000 HMA COLD WEATHER PAVING TON	455.0605 TACK COAT GAL	460.6223 HMA PAVEMENT 3 MT 58-28 S TON	460.6224 HMA PAVEMENT 4 MT 58-28 S TON	465.0105 ASPHALTIC SURFACE TON	
0010	Start Limit	-	148+66	USH 45	-	4673	3816	5296	-	DRIVING LANES
0010	148+98	-	239+78	USH 45	-	2904	2,372	3,292	-	DRIVING LANES
0010	240+41	-	298+32	USH 46	-	1859	1518	2107	-	DRIVING LANES
0010	298+65	-	358+31	USH 45	-	1909	1559	2164	-	DRIVING LANES
0010	358+63	-	394+83	USH 45	-	1158	946	1,313	-	DRIVING LANES
0010	0+47	-	31+81	RT	-	220	180	250	-	5 FT SHOULDER
0010	1+48	-	31+81	LT	-	210	171	238	-	5 FT SHOULDER
0010	32+08	-	113+39	LT	-	555	453	629	-	5 FT SHOULDER
0010	32+09	-	55+35	RT	-	162	132	183	-	5 FT SHOULDER
0010	56+98	-	82+42	RT	-	192	156	217	-	5 FT SHOULDER
0010	83+48	-	113+18	RT	-	169	138	192	-	5 FT SHOULDER
0010	113+94	-	148+66	LT	-	224	183	254	-	5 FT SHOULDER
0010	114+12	-	148+66	RT	-	238	194	269	-	5 FT SHOULDER
0010	148+99	-	151+10	LT	-	24	20	27	-	5 FT SHOULDER
0010	148+99	-	166+15	RT	-	122	100	138	-	5 FT SHOULDER
0010	151+41	-	166+37	LT	-	102	83	115	-	5 FT SHOULDER
0010	166+83	-	195+76	LT	-	173	141	196	-	5 FT SHOULDER
0010	167+16	-	219+46	RT	-	348	284	394	-	5 FT SHOULDER
0010	193+24	-	204+49	LT	-	74	61	84	-	5 FT SHOULDER
0010	204+95	-	219+42	LT	-	96	78	108	-	5 FT SHOULDER
0010	220+16	-	225+15	LT	-	29	24	33	-	5 FT SHOULDER
0010	220+45	-	227+68	RT	-	47	38	53	-	5 FT SHOULDER
0010	229+31	-	239+74	RT	-	80	65	91	-	5 FT SHOULDER
0010	231+11	-	239+79	LT	-	57	47	65	-	5 FT SHOULDER
0010	240+20	-	273+99	RT	-	235	192	266	-	5 FT SHOULDER
0010	240+24	-	298+32	LT	-	408	333	462	-	5 FT SHOULDER
0010	275+04	-	283+86	RT	-	57	47	65	-	5 FT SHOULDER
0010	285+06	-	293+81	RT	-	57	47	65	-	5 FT SHOULDER
0010	294+55	-	298+32	RT	-	35	29	40	-	5 FT SHOULDER
0010	298+65	-	317+13	LT	-	134	109	151	-	5 FT SHOULDER
0010	298+65	-	318+39	RT	-	139	113	157	-	5 FT SHOULDER
0010	317+90	-	358+31	LT	-	318	259	360	-	5 FT SHOULDER
0010	321+05	-	326+61	RT	-	36	30	41	-	5 FT SHOULDER
0010	328+21	-	358+31	RT	-	213	174	242	-	5 FT SHOULDER
0010	358+64	-	378+04	LT	-	141	115	160	-	5 FT SHOULDER
0010	358+64	-	378+05	RT	-	140	114	158	-	5 FT SHOULDER
0010	378+05	-	394+83	RT	-	157	128	177	-	7 FT SHOULDER
0010	384+24	-	394+83	LT	-	99	81	112	-	7 FT SHOULDER
0010	223+86	-	231+57	USH 45	-	80	66	91	-	BYPASS LANE
0010	379+53	-	383+85	USH 45	-	50	41	56	-	TURN LANE
0010	55+05	-	57+51	RT	-	48	39	54	-	INTERSECTION
0010	82+33	-	83+63	RT	-	33	27	37	-	INTERSECTION
0010	113+03	-	114+28	RT	-	24	20	28	-	INTERSECTION
0010	150+81	-	151+65	LT	-	18	14	20	-	INTERSECTION
0010	166+28	-	166+88	LT	-	15	12	17	-	INTERSECTION
0010	192+39	-	193+27	LT	-	14	11	15	-	INTERSECTION
0010	204+36	-	204+96	LT	-	9	7	10	-	INTERSECTION
0010	218+73	-	220+63	RT	-	46	38	53	-	INTERSECTION
0010	219+21	-	220+26	LT	-	15	12	17	-	INTERSECTION
0010	227+55	-	229+53	RT	-	43	35	48	-	INTERSECTION
0010	273+79	-	275+22	RT	-	37	30	41	-	INTERSECTION
0010	283+40	-	285+32	RT	-	33	27	37	-	INTERSECTION
0010	293+80	-	294+82	RT	-	27	22	30	-	INTERSECTION
0010	317+56	-	321+14	RT	-	78	64	88	-	INTERSECTION
0010	326+48	-	328+58	RT	-	67	55	76	-	INTERSECTION
0010	500+00	-	1+48	LT	-	57	46	64	-	INTERSECTION
0010	500+00	-	1+25	RT	-	56	45	63	-	INTERSECTION
0010	377+50	-	379+53	LT	-	56	45	63	-	INTERSECTION
0010	113+26	-	114+02	LT	-	14	11	15	-	INTERSECTION
0010	166+05	-	167+31	RT	-	29	24	26	-	INTERSECTION
0010	0+31	-	0+33	RT	-	-	-	-	28	CULVERT PIPE
0010	4+24	-	4+79	USH 45	-	-	-	-	116	CULVERT PIPE
0010	147+42	-	147+62	RT	-	-	-	-	2	DRIVEWAY
0010	150+03	-	150+18	RT	-	-	-	-	1	DRIVEWAY
0010	116+04	-	166+30	USH 45	-	-	-	-	56	CULVERT PIPE
0010	241+91	-	242+03	RT	-	-	-	-	2	DRIVEWAY
0010	334+85	-	335+30	USH 45	-	-	-	-	92	CULVERT PIPE
-	-	-	-	USH 45	9086	-	-	-	-	UNDISTRIBUTED
TOTAL 0010					9086	18640	15223	21120	297	

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PROJECT NO: 4110-28-00

HWY: USH 45

COUNTY: FOND DU LAC

MISCELLANEOUS QUANTITIES

SHEET:

E

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EROSION CONTROL

628.1504 628.1520 628.1905 628.1910 628.7015 628.7504 628.7555 628.7570

MOBILIZATIONS
EMERGENCY

MOBILIZATIONS
EROSION
CONTROL

INLET PROTECTION
TYPE C

TEMPORARY
DITCH CHECKS

CULVERT PIPE
CHECKS

ROCK BAGS

CATEGORY	STATION	TO	STATION	LOCATION	SILT FENCE LF	SILT FENCE MAINTENANCE LF	MOBILIZATIONS EROSION CONTROL EACH	MOBILIZATIONS EROSION CONTROL EACH	INLET PROTECTION TYPE C EACH	TEMPORARY DITCH CHECKS LF	CULVERT PIPE CHECKS EACH	ROCK BAGS EACH	REMARKS
0010	0+30	-	-	LT	-	-	-	-	3	-	-	-	
0010	3+94	-	5+10	LT/RT	-	-	-	-	-	40	1	-	CULVERT REPLACEMENT
0010	29+05	-	31+73	RT	268	268	-	-	-	20	-	-	GUARDRAIL
0010	29+59	-	31+75	LT	217	217	-	-	-	20	-	-	GUARDRAIL
0010	32+15	-	34+75	LT	266	266	-	-	-	20	-	-	GUARDRAIL
0010	32+19	-	33+89	RT	166	166	-	-	-	20	-	-	GUARDRAIL
0010	67+16	-	70+69	RT	354	354	-	-	-	20	-	-	GUARDRAIL
0010	67+63	-	70+66	LT	303	303	-	-	-	20	-	-	GUARDRAIL
0010	70+92	-	73+71	RT	280	280	-	-	-	20	-	-	GUARDRAIL
0010	71+00	-	73+73	LT	273	273	-	-	-	20	-	-	GUARDRAIL
0010	146+38	-	151+17	LT/RT	95	95	-	-	-	90	2	-	GUARDRAIL
0010	165+60	-	166+45	LT/RT	-	-	-	-	-	40	1	-	CULVERT REPLACEMENT
0010	237+26	-	243+21	LT/RT	204	204	-	-	-	40	-	-	GUARDRAIL
0010	296+02	-	300+68	LT/RT	-	-	-	-	-	80	-	-	GUARDRAIL
0010	319+23	-	320+59	LT	96	96	-	-	-	10	1	-	GUARDRAIL
0010	323+07	-	324+64	LT	133	133	-	-	-	10	-	-	GUARDRAIL
0010	334+57	-	335+62	LT/RT	-	-	-	-	-	40	1	-	CULVERT REPLACEMENT
0010	356+08	-	358+29	RT	224	224	-	-	-	20	-	-	GUARDRAIL
0010	356+64	-	358+27	LT	164	164	-	-	-	20	-	-	GUARDRAIL
0010	358+68	-	360+42	LT	175	175	-	-	-	20	-	-	GUARDRAIL
0010	358+69	-	360+40	RT	172	172	-	-	-	20	-	-	GUARDRAIL
0010	500+90	-	-	RT	-	-	-	-	1	-	-	-	
0010	-	-	-	-	-	-	5	3	-	148	2	40	UNDISTRIBUTED
TOTAL 0010					3,390	3,390	5	3	4	738	8	40	

MARKING ARROWS

646.5020

CURB AND GUTTER

601.0411
CONCRETE CURB
& GUTTER 30-
INCH TYPE D

MARKING ARROW EPOXY
TYPE 2 TYPE 7

CATEGORY	STATION	TO	STATION	LOCATION	LF	REMARKS
0010	0+31	-	0+33	RT	14	LONE ELM REPLACEMENT
TOTAL 0010					14	

CATEGORY	STATION	TO	STATION	LOCATION	EACH	EACH
0010	394+00	-	394+05	USH 45	1	1
TOTAL 0010					1	1

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RESTORATION

CATEGORY	STATION	TO	STATION	LOCATION	625.0500	628.2006	629.0210	630.0130	630.0500	REMARKS
					SALVAGED TOPSOIL SY	EROSION MAT URBAN CLASS I TYPE A SY	FERTILIZER TYPE B CWT	SEEDING MIXTURE NO. 30 LB	SEED WATER MGAL	
0010	4+41	-	4+62	RT	33	33	0.020	1	0	CULVERT REPLACEMENT
0010	4+45	-	4+63	LT	21	21	0.010	0	0	CULVERT REPLACEMENT
0010	29+20	-	31+79	RT	141	141	0.090	3	2	GUARDRAIL
0010	29+70	-	31+79	LT	99	99	0.060	2	1	GUARDRAIL
0010	32+12	-	33+77	RT	96	96	0.060	2	1	GUARDRAIL
0010	32+96	-	34+67	LT	85	85	0.050	2	1	GUARDRAIL
0010	67+41	-	70+69	RT	247	247	0.160	4	3	GUARDRAIL
0010	67+79	-	70+65	LT	232	232	0.150	4	3	GUARDRAIL
0010	70+98	-	73+12	RT	202	202	0.130	4	2	GUARDRAIL
0010	71+01	-	73+52	LT	199	199	0.130	4	2	GUARDRAIL
0010	146+38	-	148+63	LT	412	412	0.260	7	5	GUARDRAIL
0010	146+54	-	147+42	RT	127	127	0.080	2	1	GUARDRAIL
0010	148+99	-	150+03	RT	186	186	0.120	3	2	GUARDRAIL
0010	149+00	-	151+19	LT	349	349	0.220	6	4	GUARDRAIL
0010	150+19	-	151+18	RT	111	111	0.070	2	1	GUARDRAIL
0010	166+12	-	166+22	LT	8	8	0.010	0	0	CULVERT REPLACEMENT
0010	166+12	-	166+25	RT	16	16	0.010	0	0	CULVERT REPLACEMENT
0010	237+40	-	239+57	RT	208	208	0.130	4	2	GUARDRAIL
0010	240+18	-	241+74	RT	451	451	0.280	8	5	GUARDRAIL
0010	240+21	-	241+74	LT	319	319	0.200	6	4	GUARDRAIL
0010	241+81	-	243+20	LT	338	338	0.210	6	4	GUARDRAIL
0010	296+00	-	298+31	RT	405	405	0.260	7	5	GUARDRAIL
0010	296+52	-	298+32	LT	332	332	0.210	6	4	GUARDRAIL
0010	298+65	-	300+68	LT	219	219	0.140	4	3	GUARDRAIL
0010	298+65	-	300+62	RT	307	307	0.190	6	3	GUARDRAIL
0010	318+42	-	319+38	LT	77	77	0.050	1	1	GUARDRAIL
0010	319+53	-	320+63	LT	60	60	0.040	1	1	GUARDRAIL
0010	323+30	-	324+30	LT	55	55	0.030	1	1	GUARDRAIL
0010	334+93	-	335+18	LT	32	32	0.020	1	0	CULVERT REPLACEMENT
0010	334+97	-	335+26	RT	57	57	0.040	1	1	CULVERT REPLACEMENT
0010	356+18	-	358+31	RT	173	173	0.110	3	2	GUARDRAIL
0010	356+87	-	358+29	LT	69	69	0.040	1	1	GUARDRAIL
0010	358+66	-	360+25	RT	133	133	0.080	2	2	GUARDRAIL
0010	358+67	-	360+26	LT	88	88	0.060	2	1	GUARDRAIL
TOTAL 0010					5,887	5,887	4	106	66	

WATER

CATEGORY	LOCATION	624.0100	REMARKS
		WATER MGAL	
0010	PROJECT LIMITS	2	DUST CONTROL
0010		4	COMPACTION
TOTAL 0010		6	

RIPRAP

CATEGORY	STATION	TO	STATION	LOCATION	606.0200	645.0120	REMARKS
					RIPRAP MEDIUM CY	GEOTEXTILE TYPE HR SY	
0010	149+21	-	149+41	RT	32	16	RIPRAP REPLACEMENT
TOTAL 0010					32	16	

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PAVEMENT MARKING

CATEGORY	STATION	TO	STATION	LOCATION	643.3165		646.2020		646.2040		646.4040	646.6466	646.6470	REMARKS
					TEMPORARY MARKING LINE PAINT 6-INCH		MARKING LINE EPOXY 6-INCH		MARKING LINE GROOVED WET REF EPOXY 6-INCH		MARKING LINE GROOVED WET REF EPOXY 10-INCH	COLD WEATHER MARKING EPOXY 6-INCH	COLD WEATHER MARKING EPOXY 10-INCH	
					SOLID YELLOW LF	DASHED YELLOW	SOLID YELLOW LF	DASHED YELLOW	SOLID WHITE LF	DASHED WHITE	LF	LF	LF	
0010	500+00	-	500+98	USH 45	392	-	196	-	30	-	48	-	-	
0010	0+00	-	37+50	USH 45	15,003	-	7502	-	7,408	-	-	-	-	
0010	37+50	-	47+40	USH 45	1,980	158	990	248	1,980	-	-	-	-	
0010	47+40	-	211+85	USH 45	-	2631	-	4111	32,380	-	-	-	-	
0010	211+85	-	231+37	USH 45	3,904	312	1952	488	3,739	75	-	-	-	
0010	231+37	-	240+35	USH 45	3,592	-	1796	-	1,796	-	-	-	-	
0010	240+35	-	246+67	USH 45	1,264	101	632	158	1,264	-	-	-	-	
0010	246+67	-	310+94	USH 45	-	1028	-	1607	12,684	-	-	-	-	
0010	310+94	-	318+88	USH 45	1,588	127	794	199	1,588	-	-	-	-	
0010	318+88	-	340+55	USH 45	8,668	-	4334	-	4,259	-	-	-	-	
0010	340+55	-	349+59	USH 45	1,808	145	904	226	1,808	-	-	-	-	
0010	349+59	-	379+23	USH 45	-	474	-	741	5,928	-	-	-	-	
0010	379+23	-	389+56	USH 45	-	165	-	258	2,066	-	225	-	-	
0010	389+56	-	394+85	USH 45	1,052	84	526	132	758	-	86	-	-	
0010	PROJECT START	-	PROJECT END	USH 45	-	-	-	-	-	-	-	26,389	90	UNDISTRIBUTED
SUB TOTALS					39,251	5,227	19,626	8,167	77,688	75	-	-	-	
TOTAL 0010					44,478		27,792		77,763		359	26,389	90	

SIGN

CATEGORY	STATION	LOCATION	634.0616	638.2102	638.3000	REMARKS
			POSTS WOOD 4X6-INCH X 16-FT EACH	MOVING SIGNS TYPE II EACH	REMOVING SMALL SIGN SUPPORTS EACH	
0010	150+52	31' LT	1	1	1	ADOPT A HIGHWAY - REPLACE SUPPORT IF POOR CONDITION
0010	116+12	26' RT	-	1	-	CTH N, RIGHT TURN ARROW
TOTAL 0010			1	2	1	

STAKING

CATEGORY	STATION	TO	STATION	LOCATION	650.8000	650.9911.01	650.9920
					CONSTRUCTION STAKING RESURFACING REFERENCE LF	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (Projecct) 01. 4110-28-71 EACH	CONSTRUCTION STAKING SLOPE STAKES LF
0010	500+00	-	500+98	USH 45	98	-	-
0010	0+00	-	394+85	USH 45	39,485	-	-
0010	28+55	-	35+26.99	USH 45	-	1	1190
0010	67+47	-	74+15	USH 45	-	-	1150
0010	146+31	-	150+78	USH 45	-	-	594
0010	236+85	-	241+65	USH 45	-	-	600
0010	294+79	-	301+32	USH 45	-	-	1124
0010	319+65	-	324+60	USH 45	-	-	496
0010	356+04	-	361+59	USH 45	-	-	960
TOTAL 0010					39,583	1	6,114

TRAFFIC CONTROL
643.0300 643.0900 643.1050

CATEGORY	LOCATION	APPROXIMATE	TRAFFIC CONTROL DRUMS		TRAFFIC CONTROL SIGNS		TRAFFIC CONTROL SIGNS PCMS		REMARKS
		SERVICE PERIOD DAY	NO. IN SERVICE	DAY	NO. IN SERVICE	DAY	NO. IN SERVICE	DAY	
0010	PROJECT	63	-	-	10	630	-	-	SEE SDD 15C04
0010	USH 45 (BEGIN PROJECT)	63	-	-	3	78	1	14	SEE SDD 15C04, 15D44, 15D45
0010	E Lone Elm Ave	63	-	-	6	156	-	-	SEE SDD 15C04, 15D44, 15D45
0010	Lincoln Rd	63	-	-	2	73	-	-	SEE SDD 15C04, 15D44
0010	W Lake Ct	63	-	-	2	73	-	-	SEE SDD 15C04, 15D44
0010	Cemetery Rd	63	-	-	4	146	-	-	SEE SDD 15C04, 15D44
0010	Shady Dr	63	-	-	2	73	-	-	SEE SDD 15C04, 15D44
0010	Kinker Rd	63	-	-	6	156	-	-	SEE SDD 15C04, 15D44, 15D45
0010	Cottage Dr	63	-	-	4	146	-	-	SEE SDD 15C04, 15D44
0010	Subway Rd	63	-	-	4	146	-	-	SEE SDD 15C04, 15D44
0010	Westlake Ct	63	-	-	2	73	-	-	SEE SDD 15C04, 15D44
0010	Silver St	63	-	-	2	73	-	-	SEE SDD 15C04, 15D44
0010	NorthWestern Ave	63	-	-	2	73	-	-	SEE SDD 15C04, 15D44
0010	Franklin Ave	63	-	-	2	73	-	-	SEE SDD 15C04, 15D44
0010	Rosie Ln	63	-	-	2	73	-	-	SEE SDD 15C04, 15D44
0010	Lakeshore Dr	63	-	-	2	73	-	-	SEE SDD 15C04, 15D44
0010	STA 327+09	63	-	-	3	78	-	-	SEE SDD 15C04, 15D44, 15D45
0010	Howard Litscher Dr	63	-	-	2	73	-	-	SEE SDD 15C04, 15D44
0010	USH 45 (END PROJECT)	63	-	-	2	73	1	14	SEE SDD 15C04, 15D44
0010	ASPHALT PAVING	26	-	-	10	260	-	-	SEE SDD 15C12
0010	MILLING	10	-	-	16	160	-	-	SEE SDD 15C12, 15D44
0010	BASE COURSE (SHOULDERS)	3	-	-	10	20	-	-	SEE SDD 15C12
0010	CULVERT REPLACEMENTS	6	70	420	16	80	-	-	SEE SDD 15C12, 15D45, 15D48
0010	PAVEMENT MARKING	3	-	-	6	18	-	-	SEE SDD 15C19
0010	BEAMGUARD REMOVE AND REPLACE	5	283	1415	15	75	-	-	SEE SDD 15C12, 15D28
TOTAL 0010				1,835		2,952		28	

FOUNDATION BACKFILL

CATEGORY	STATION	TO	STATION	LOCATION	SPV.0035.01	REMARKS
					FOUNDATION BACKFILL CY	
0010	4+24	-	4+79	LT/RT	256	MAINLINE CULVERT
0010	147+33	-	148+62	RT	516	DRIVEWAY CULVERT REPLACEMENT TRENCH FILL
0010	149+98	-	150+29	RT	156	DRIVEWAY CULVERT REPLACEMENT TRENCH FILL
0010	166+04	-	166+30	LT/RT	80	MAINLINE CULVERT
0010	241+62	-	241+93	LT	179	DRIVEWAY CULVERT REPLACEMENT TRENCH FILL
0010	334+85	-	335+30	LT/RT	162	MAINLINE CULVERT
TOTAL 0010					1,349	

SAWING

CATEGORY	STATION	TO	STATION	LOCATION	690.0150	690.0250	REMARKS
					SAWING ASPHALT LF	SAWING CONCRETE LF	
0010	4+24	-	0+33	LT	390	6	CULVERT REPLACEMENT
0010	31+00	-	4+79	LT/RT	12	48	CULVERT REPLACEMENT
0010	166+04	-	166+30	LT/RT	12	63.5	CULVERT REPLACEMENT
0010	241+71	-	241+83	LT	-	26	DRIVEWAY REPLACEMENT
0010	334+85	-	335+30	LT/RT	12	48	CULVERT REPLACEMENT
TOTAL 0010					426	192	

MISC

CATEGORY	STATION	TO	STATION	LOCATION	642.5001	643.5000	ASP.1TOA	ASP.1TOG	211.0101.01	211.0400	213.0100.01	305.0500	460.0105.S	618.0100.01	619.1000
					FIELD OFFICE TYPE B EACH	TRAFFIC CONTROL EACH	APPRENTICE AT \$5.00/HR HRS	ON-THE-JOB TRAINING GRADUATE AT \$5.00/HR HRS	FOUNDATION FOR ASPHALTIC PAVING (PROJECT) 01. EACH	PREPARE ASPHALTIC SHOULDERS STA	FINISHING ROADWAY (PROJECT) 01. EACH	SHAPING SHOULDERS STA	HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP VOLUMETRICS EACH	MAINTENANCE AND REPAIR OF HAUL ROADS (PROJECT) 01. EACH	MOBILIZATION EACH
0010	-	-	-	USH 45	1	1	2000	1320	1	376.69	1	376.69	2	1	1
TOTAL 0010					1	1	2,000	1,320	1	377	1	377	2	1	1

CONVENTIONAL SYMBOLS

SECTION LINE		SECTION CORNER SYMBOL		R/W MONUMENT (TO BE SET)	
QUARTER LINE		SECTION CORNER MONUMENT		NON-MONUMENTED R/W POINT	
SIXTEENTH LINE		GEODETIC SURVEY MONUMENT		FOUND IRON PIN (1-INCH UNLESS NOTED)	
NEW REFERENCE LINE		SIXTEENTH CORNER MONUMENT		SIGN	
NEW R/W LINE		OFF-PREMISE SIGN		COMPENSABLE	
EXISTING R/W OR HE LINE		NON-COMPENSABLE		NON-COMPENSABLE	
PROPERTY LINE		ELECTRIC POLE		TELEPHONE POLE	
LOT, TIE & OTHER MINOR LINES		PEDESTAL (LABEL TYPE) (TV, TEL, ELEC, ETC.)		PEDESTAL (LABEL TYPE) (TV, TEL, ELEC, ETC.)	
SLOPE INTERCEPT		ACCESS RESTRICTED BY ACQUISITION		NO ACCESS (BY STATUTORY AUTHORITY)	
CORPORATE LIMITS		NO ACCESS (BY PREVIOUS PROJECT OR CONTROL)		ACCESS RESTRICTED (BY PREVIOUS PROJECT OR CONTROL)	
UNDERGROUND FACILITY (COMMUNICATIONS, ELECTRIC, ETC.)		NO ACCESS (NEW HIGHWAY)		PARCEL NUMBER (25)	UTILITY NUMBER (40)
NEW R/W (FEE OR HE) (HATCHING VARIES BY OWNER)		PARALLEL OFFSETS		PARALLEL OFFSETS	
TEMPORARY LIMITED EASEMENT AREA		BRIDGE		TO BE REMOVED	
EASEMENT AREA (PERMANENT LIMITED OR RESTRICTED DEVELOPMENT)		CULVERT		BRIDGE	
TRANSMISSION STRUCTURES					
BUILDING					
BRIDGE					

CONVENTIONAL UTILITY SYMBOLS

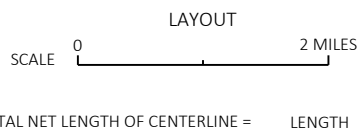
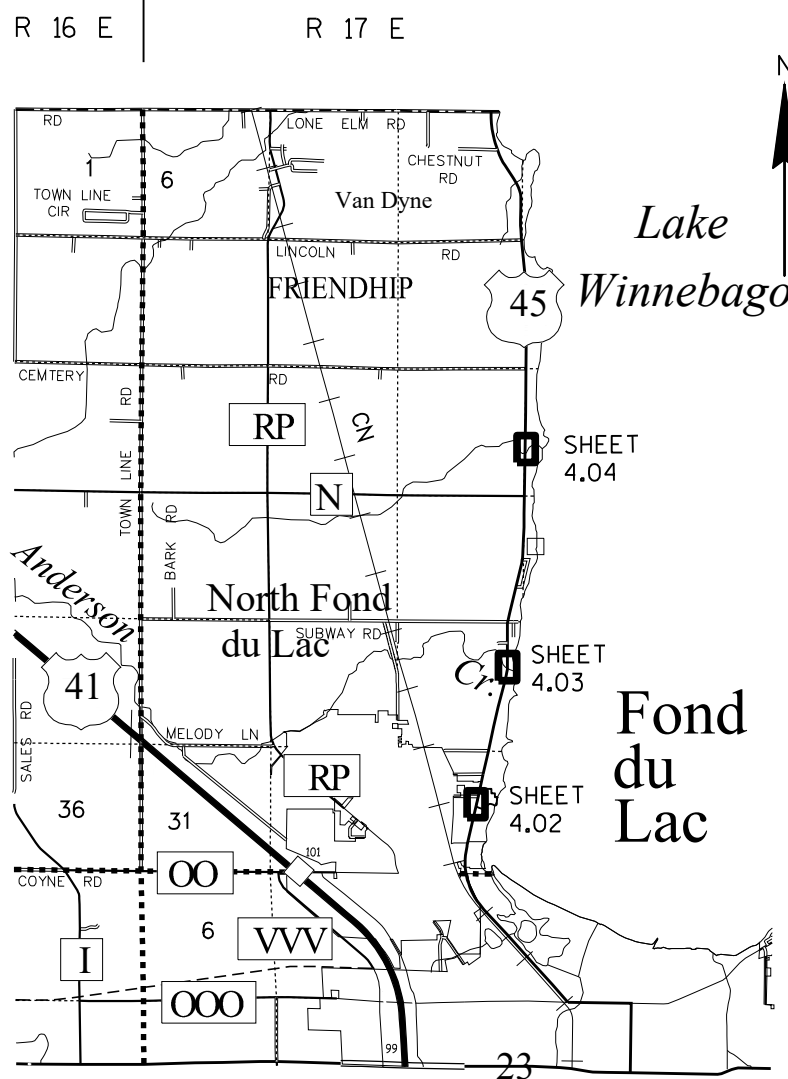
WATER	
GAS	
TELEPHONE	
OVERHEAD TRANSMISSION LINES	
ELECTRIC	
CABLE TELEVISION	
FIBER OPTIC	
SANITARY SEWER	
STORM SEWER	
ELECTRIC TOWER	

CONVENTIONAL ABBREVIATIONS

ACCESS RIGHTS	AR	POINT OF COMPOUND CURVE	PCC
ACRES	AC	POINT OF INTERSECTION	PI
AHEAD	AH	PROPERTY LINE	PL
ALUMINUM	ALUM	RECORDED AS (100')	(100')
AND OTHERS	ET AL	REEL / IMAGE	R/I
BACK	BK	REFERENCE LINE	R/L
BLOCK	BLK	REMAINING	REM
CENTERLINE	C/L	RESTRICTIVE DEVELOPMENT EASEMENT	RDE
CERTIFIED SURVEY MAP	CSM	RIGHT	RT
CONCRETE	CONC	RIGHT OF WAY	R/W
COUNTY	CO	SECTION	SEC
COUNTY TRUNK HIGHWAY	CTH	SEPTIC VENT	SEPV
DISTANCE	DIST	SQUARE FEET	SF
CORNER	COR	STATE TRUNK HIGHWAY	STH
DOCUMENT NUMBER	DOC	STATION	STA
EASEMENT	EASE	TELEPHONE PEDESTAL	TP
EXISTING	EX	TEMPORARY LIMITED EASEMENT	TLE
GAS VALVE	GV	TRANSPORTATION PROJECT PLAT	TPP
GRID NORTH	GN	UNITED STATES HIGHWAY	USH
HIGHWAY EASEMENT	HE	VOLUME	V
IDENTIFICATION	ID		
LAND CONTRACT	LC		
LEFT	LT		
MONUMENT	MON		
NATIONAL GEODETIC SURVEY	NGS		
NUMBER	NO		
OUTLOT	OL		
PAGE	P		
POINT OF TANGENCY	PT		
PERMANENT LIMITED EASEMENT	PLE		
POINT OF BEGINNING	POB		
POINT OF CURVATURE	PC		

CURVE DATA ABBREVIATIONS

LONG CHORD	LCH
LONG CHORD BEARING	LCB
RADIUS	R
DEGREE OF CURVE	D
CENTRAL ANGLE	Δ/DELTA
LENGTH OF CURVE	L
TANGENT	T
DIRECTION AHEAD	DA
DIRECTION BACK	DB



NOTES:

POSITIONS SHOWN ON THIS PLAT ARE WISCONSIN COORDINATE REFERENCE SYSTEM COORDINATES (WISCRS), FOND DU LAC COUNTY, NAD83 (2011) IN US SURVEY FEET. VALUES SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

ALL NEW RIGHT-OF-WAY MONUMENTS WILL BE TYPE 2 (TYPICALLY 3/4" X 24" IRON REBARS), UNLESS OTHERWISE NOTED, AND WILL BE PLACED PRIOR TO THE COMPLETION OF THE PROJECT.

ALL RIGHT-OF-WAY LINES DEPICTED IN THE NON-ACQUISITION AREAS ARE INTENDED TO RE-ESTABLISH EXISTING RIGHT-OF-WAY LINES AS DETERMINED FROM PREVIOUS PROJECTS, OTHER RECORDED DOCUMENTS, CENTERLINE OF EXISTING PAVEMENTS AND/OR EXISTING OCCUPATIONAL LINES.

PARCEL AND UTILITY IDENTIFICATION NUMBERS MAY NOT POINT TO ALL AREAS OF ACQUISITION, AS NOTED ON THE TPP DETAIL PAGES.

DIMENSIONING FOR THE NEW RIGHT-OF-WAY IS MEASURED ALONG AND PERPENDICULAR TO THE NEW REFERENCE LINES.

RIGHT-OF-WAY BOUNDARIES ARE DEFINED WITH COURSES OF THE PERIMETER OF THE HIGHWAY LANDS REFERENCED TO THE U.S. PUBLIC LAND SURVEY SYSTEM OR OTHER "SURVEYS" OF PUBLIC RECORD.

FOR THE CURRENT ACCESS/DRIVEWAY INFORMATION, CONTACT THE PLANNING UNIT OF THE WISCONSIN DEPARTMENT OF TRANSPORTATION OFFICE IN GREEN BAY

INFORMATION FOR THE BASIS OF EXISTING HIGHWAY RIGHT-OF-WAY POINTS OF REFERENCE AND ACCESS CONTROL ARE LISTED ON THE DETAIL PAGES.

A TEMPORARY LIMITED EASEMENT (TLE) IS A RIGHT FOR CONSTRUCTION PURPOSES, AS DEFINED HEREIN, INCLUDING THE RIGHT TO OPERATE NECESSARY EQUIPMENT THEREON, THE RIGHT OF INGRESS AND EGRESS, AS LONG AS REQUIRED FOR SUCH PUBLIC PURPOSE, INCLUDING THE RIGHT TO PRESERVE, PROTECT, REMOVE, OR PLANT THEREON ANY VEGETATION THAT THE HIGHWAY AUTHORITIES MAY DEEM DESIRABLE. ALL (TLEs) ON THIS PLAT EXPIRE AT THE COMPLETION OF THE CONSTRUCTION PROJECT FOR WHICH THIS INSTRUMENT IS GIVEN.

PROPERTY LINES SHOWN ON THIS PLAT FOR PROPERTIES BEING IMPACTED ARE DRAWN FROM DATA DERIVED FROM FILED/RECORDED MAPS AND DOCUMENTS OF PUBLIC RECORD. THIS PLAT MAY NOT BE A TRUE REPRESENTATION OF EXISTING PROPERTY LINES, EXCLUDING RIGHT-OF-WAY, AND SHOULD NOT BE USED AS A SUBSTITUTE FOR AN ACCURATE FIELD SURVEY.

A PERMANENT LIMITED EASEMENT (PLE) IS A RIGHT FOR CONSTRUCTION AND MAINTENANCE PURPOSES, AS DEFINED HEREIN, INCLUDING THE RIGHT TO OPERATE NECESSARY EQUIPMENT THEREON AND THE RIGHT OF INGRESS AND EGRESS, AS LONG AS REQUIRED FOR SUCH PUBLIC PURPOSE, INCLUDING THE RIGHT TO PRESERVE, PROTECT, REMOVE OR PLANT THEREON ANY VEGETATION THAT THE HIGHWAY AUTHORITIES MAY DEEM DESIRABLE, BUT WITHOUT PREJUDICE TO THE OWNER'S RIGHT TO MAKE OR CONSTRUCT IMPROVEMENTS ON SAID LANDS OR TO FLATTEN THE SLOPES, PROVIDING SAID ACTIVITIES WILL NOT IMPAIR OR OTHERWISE ADVERSELY AFFECT THE HIGHWAY FACILITIES

R/W PROJECT NUMBER 4110-28-20	SHEET NUMBER 4.01	TOTAL SHEETS 4
FEDERAL PROJECT NUMBER		
PLAT OF RIGHT OF WAY REQUIRED FOR FOND DU LAC - OSHKOSH SCOTT STREET - NCL		
USH 45	FOND DU LAC COUNTY	
CONSTRUCTION PROJECT NUMBER		

ORIGINAL PLAT PREPARED BY

raSmith 16745 W. Bluemound Road
Brookfield, WI 53005-5938
(262) 781-1000
creativity beyond engineering rasmith.com



DATE: 1-13-2023 *David A. Yurk*
LAND SURVEYOR

REVISION DATE
3-9-2023
6-22-2023
8-3-2023

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED FOR THE DEPARTMENT
DATE: 8/16/2023 *Mark Kromer*
(Signature)

CAUTION:

THIS PLAT IS A GRAPHIC REPRESENTATION AND IS FOR REFERENCE PURPOSES ONLY. DEEDS MUST BE CHECKED TO DETERMINE PROPERTY BOUNDARIES AND ACCESS RIGHTS.

RW COURSE TABLE		
PARCEL 1		
301-302	N77°24'26"W	15.00'
302-303	N12°35'34"E	50.73'
303-300	S89°45'12"E	15.36'
300-301	S12°35'34"W	54.02'
PARCEL 2 & 3		
304-305	N89°45'12"W	15.36'
305-308	N12°35'34"E	225.21'
308-309	S89°45'12"E	15.36'
309-304	S12°35'34"W	225.21'
PARCEL 4		
317-314	S12°35'34"W	110.54'
314-315	N89°45'12"W	15.36'
315-316	N12°35'34"E	93.83'
316-317	N49°27'46"E	25.00'
PARCEL 5		
318-319	N12°35'34"E	178.00'
319-320	S77°24'26"E	8.00'
320-321	S12°35'34"W	178.00'
321-318	N77°24'26"W	8.00'

TLE STATION OFFSET		
POINT	STATION	OFFSET
T700	300+25.00	-41.00'
T701	300+25.00	-45.00'
T702	299+48.00	-45.00'
T703	299+48.00	-41.00'
T704	298+03.00	-53.00'
T705	298+03.00	-58.00'
T706	297+00.00	-58.00'
T707	297+00.00	-53.00'

STONE MONUMENT
Y=398,852.58
X=809,964.42

ALUMINUM MONUMENT
Y=401,448.80
X=809,945.75

PLE COURSE TABLE		
PARCEL 6		
323-324	S77°24'26"E	4.00'
324-325	S12°35'34"W	156.00'
325-322	N77°24'26"W	4.00'
322-323	N12°35'34"E	156.00'

PLE STATION OFFSET		
322	298+15.00	-49.00'
323	296+59.00	-49.00'
324	296+59.00	-53.00'
325	298+15.00	-53.00'

RW STATION OFFSET		
POINT	STATION	OFFSET
300	300+03.57	33.00'
301	300+57.58	33.00'
302	300+57.58	48.00'
303	300+06.85	48.00'
304	299+41.94	33.00'
305	299+45.22	48.00'
308	297+20.01	48.00'
309	297+16.73	33.00'
314	296+65.54	33.00'
315	296+68.83	48.00'
316	295+75.00	48.00'
317	295+55.00	33.00'
318	300+73.00	-33.00'
319	298+95.00	-33.00'
320	298+95.00	-41.00'
321	300+73.00	-41.00'

100 AT&T WISCONSIN
20' EASEMENT
DOC. 357651
PARCELS 1,2&3
15' EASEMENT
DOC. 357203
PARCEL 4

STA:300+73.00
0.00' O/S
Y:398,750.756
X:810,512.8451

101 ALLIANT ENERGY
GAS
NO RECORD OF
EASEMENT
PARCELS 5

102 CONSOLIDATED
SANITARY DISTRICT NO. 1
20' EASEMENT
DOC. 434955
PARCEL 5
20' EASEMENT
DOC. 434583
PARCEL 6

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S77°24'26"E	33.00'
L2	N77°24'26"W	33.00'
L3	N89°59'52"W	33.81'
L4	S77°24'26"E	49.00'
L5	S77°24'26"E	33.00'

TLE COURSE TABLE		
PARCEL 5		
321-T700	N12°35'34"E	48.00'
T700-T703	N12°35'34"E	77.00'
T703-T702	S77°24'26"E	4.00'
T702-T701	S12°35'34"W	77.00'
T701-T700	N77°24'26"W	4.00'
PARCEL 6		
324-T707	S12°35'34"W	41.00'
T707-T706	S77°24'26"E	5.00'
T706-T705	S12°35'34"W	103.00'
T705-T704	N77°24'26"W	5.00'
T704-T707	N12°35'34"E	103.00'

UTILITY INTERESTS REQUIRED		
UTILITY NUMBER	UTILITY OWNER	INTEREST REQUIRED
100	AT&T WISCONSIN	RELEASE OF RIGHTS
101	ALLIANT ENERGY - GAS	RELEASE OF RIGHTS
102	CONSOLIDATED SANITARY DISTRICT NO. 1	RELEASE OF RIGHTS

SCHEDULE OF LANDS & INTERESTS REQUIRED							
PARCEL NUMBER	OWNER(S)	INTEREST(S) REQUIRED	FEE R/W ACRES REQUIRED			TLE ACRES	PLE ACRES
			NEW	EXISTING	TOTAL		
1	EDWARD WIELGOSH	FEE	0.010	-	0.010	-	-
2	RONALD LEE FREIBERG	FEE	0.021	-	0.021	-	-
3	RONALD LEE FREIBERG AND LAURETTA N. FREIBERG	FEE	0.056	-	0.056	-	-
4	GIESE BROS. INC.	FEE	0.035	-	0.035	-	-
5	RICHARD W. HARMAN AND LISA M. ROUSKE	FEE, TLE	0.037	-	0.037	0.007	-
6	WEST SHORE HOLDINGS, LLC.	PLE, TLE	-	-	-	0.012	0.016

OWNERS' NAMES ARE SHOWN FOR REFERENCE PURPOSES ONLY AND ARE SUBJECT TO CHANGE PRIOR TO THE TRANSFER OF LAND INTERESTS TO THE DEPARTMENT.

NOTES:

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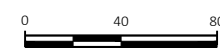
FOR THE LATEST ACCESS/DRIVEWAY INFORMATION CONTACT THE PLANNING UNIT OF THE WISCONSIN DEPARTMENT OF TRANSPORTATION OFFICE IN GREEN BAY.

RIGHT-OF-WAY MONUMENTS ARE TYPE 2 AND ARE PLACED PRIOR TO OR AT THE TIME OF LAND TITLE TRANSFER.

REVISION DATE 3-9-2023 6-22-2023 8-3-2023 NC

DATE 1-13-2023

SCALE, FEET



HWY: USH 45

STATE R/W PROJECT NUMBER 4110-28-20

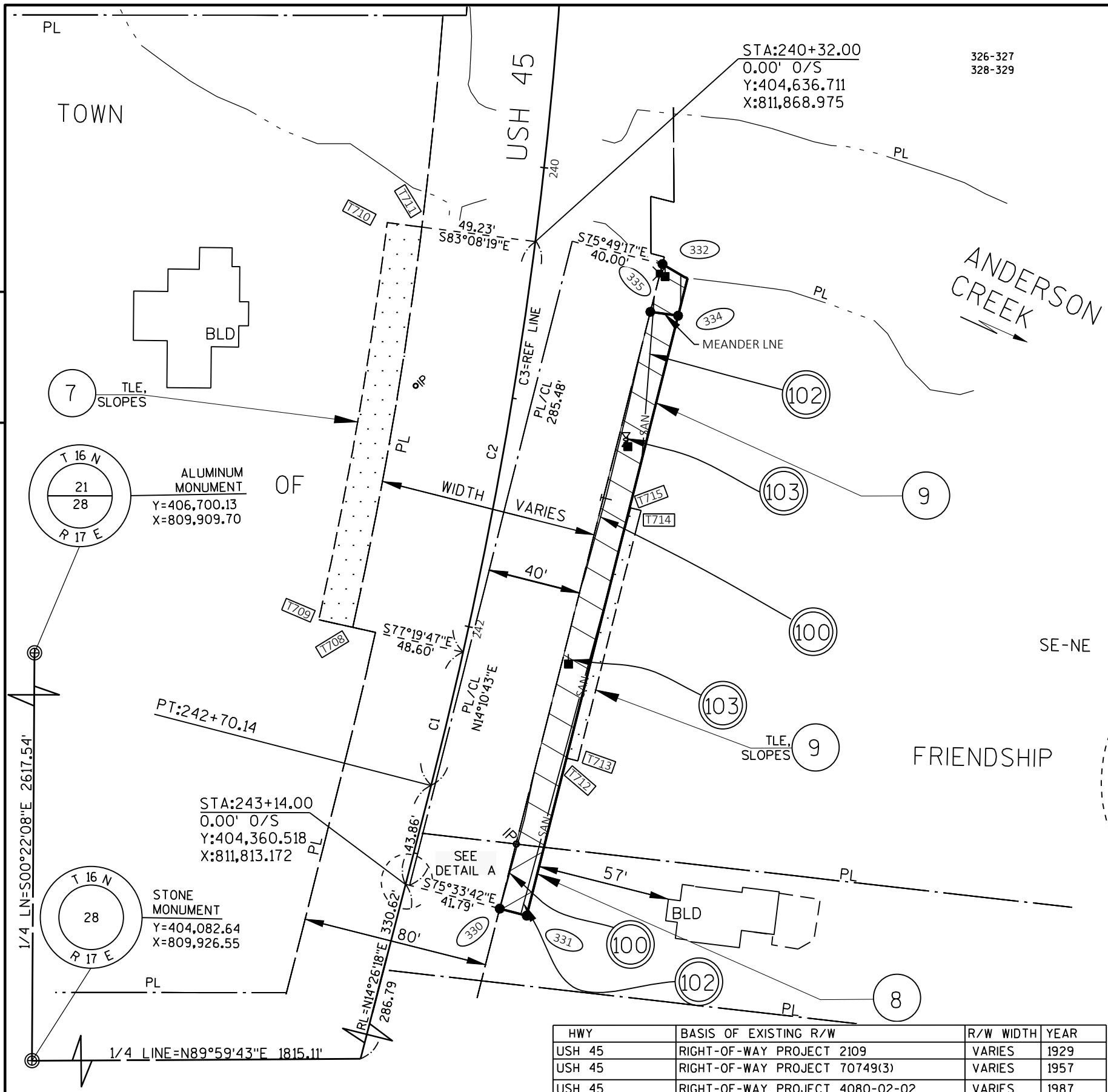
PLAT SHEET 4.02

COUNTY: FOND DU LAC

CONSTRUCTION PROJECT NUMBER

PS&E SHEET

E



TLE COURSE TABLE		
PARCEL 7		
T708-T709	N77°31'07"W	15.00'
T710-T711	S82°42'17"E	15.00'
PARCEL 9		
331-T712	N14°10'43"E	69.82'
T712-T715	N14°10'43"E	111.00'
T715-T714	S75°49'17"E	5.00'
T714-T713	S14°10'43"W	111.00'
T713-T712	N75°49'17"W	5.00'

CURVE TABLE				
CURVE	RADIUS	LENGTH	LCB	LCH
T709-T710	1845.08'	173.25'	N09°47'29"E	173.18'
T711-T708	1860.08	174.61'	S09°47'32"W	174.54'
C1	1910.10	59.11'	N13°33'07"E	59.10'
C2	1910.10	179.03'	N09°58'49"E	178.97'
C3	1910.10	238.14'	N10°52'01"E	237.98'

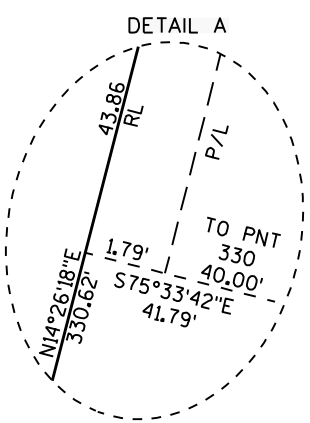
RW STATION OFFSET		
POINT	STATION	OFFSET
330	243+14.00	-41.79'
331	243+14.00	-53.79'
332	240+34.57	-55.42'
334	240+55.00	-65.04'
335	240+55.00	-53.03'

TLE STATION OFFSET		
POINT	STATION	OFFSET
T708	242+11.19	48.60'
T709	242+11.24	63.60'
T710	240+32.00	64.18'
T711	240+32.00	49.18'
T712	242+44.89	-53.64'
T713	242+44.94	-58.64'
T714	241+37.41	-62.73'
T715	241+37.11	-57.74'

RW COURSE TABLE		
PARCELS 8 & 9		
332-335	S14°10'43"W	21.15'
335-334	S82°00'54"E	12.07'
334-331	S14°10'43"W	265.86'
331-330	N75°33'42"W	12.00'

R/L USH 45
CURVE A
 PI STA: 240+26.22
 X: 811,885.602
 Y: 404,641.834
 PC STA: 237+79.60
 X: 811,884.415
 Y: 404,888.459
 PT STA: 242+70.14
 X: 811,824.108
 Y: 404,402.996
 DELTA: 14°42'52"RT
 BACK: S00°16'33"E
 AHEAD: S14°26'18"W
 D: 2°59'59"
 T: 246.63'
 L: 490.54'
 R: 1910.10'
 LCB: S07°04'52"W
 LCH: 489.19'

- (100) AT&T WISCONSIN
NO RECORD OF EASEMENT PARCELS 8 & 9
- (102) CONSOLIDATED SANITARY DISTRICT NO. 1
20' SANITARY SEWER EASEMENT DOC. 434972 PARCEL 8
EASEMENT DOC. 434970 PARCEL 9
- (103) ALLIANT ENERGY ELECTRIC
NO RECORD OF EASEMENT PARCEL 9



NOTES:
 POSITIONS SHOWN ON THIS PLAT ARE WISCONSIN COORDINATE REFERENCE SYSTEM COORDINATES (WISCRS), FOND DU LAC COUNTY, NAD 83 (2011) IN US SURVEY FEET. VALUES SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.
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 RIGHT-OF-WAY MONUMENTS ARE TYPE 2 AND ARE PLACED PRIOR TO OR AT THE TIME OF LAND TITLE TRANSFER.

UTILITY INTERESTS REQUIRED		
UTILITY NUMBER	UTILITY OWNER	INTEREST REQUIRED
100	AT&T WISCONSIN	RELEASE OF RIGHTS
102	CONSOLIDATED SANITARY DISTRICT NO. 1	RELEASE OF RIGHTS
103	ALLIANT ENERGY - ELECTRIC	RELEASE OF RIGHTS

SCHEDULE OF LANDS & INTERESTS REQUIRED							
PARCEL NUMBER	OWNER(S)	INTEREST(S) REQUIRED	FEE R/W ACRES REQUIRED			TLE ACRES	PLE ACRES
			NEW	EXISTING	TOTAL		
7	JOEL G. UTECHT & JENNIFER L. UTECHT	TLE	-	-	-	0.065	-
8	CRAIG S. SEMENAS & JULIE A. SEMENAS	FEE	0.008	0.024	0.032	-	-
9	NATHAN L. KASTEIN & KIM M. KASTEIN	FEE,TLE	0.070	0.239	0.309	0.013	-

HWY	BASIS OF EXISTING R/W	R/W WIDTH	YEAR
USH 45	RIGHT-OF-WAY PROJECT 2109	VARIES	1929
USH 45	RIGHT-OF-WAY PROJECT 70749(3)	VARIES	1957
USH 45	RIGHT-OF-WAY PROJECT 4080-02-02	VARIES	1987

REVISION DATE	3-9-2023 NC	6-22-2023	8-3-2023 NC	DATE	1-13-2023	SCALE, FEET	0 25 50	HWY:	USH 45	STATE R/W PROJECT NUMBER	4110-28-20	PLAT SHEET	4.03
				GRID FACTOR				COUNTY:	FOND DU LAC	CONSTRUCTION PROJECT NUMBER		PS&E SHEET	

RW COURSE TABLE		
PARCEL 10		
336-337	N89°11'24"W	15.00'
337-338	N00°48'36"E	118.00'
338-339	S89°11'24"E	15.00'
339-336	S00°48'36"W	118.00'
PARCEL 11		
345-340	S00°48'36"W	107.42'
340-341	N89°11'24"W	8.00'
341-344	N00°48'36"E	107.32'
344-345	S89°52'36"E	8.00'
PARCEL 13		
346-349	N00°48'36"E	95.65'
349-348	S89°11'24"E	10.00'
348-347	S00°48'36"W	95.47'
347-346	S89°46'52"W	10.00'
PARCEL 14		
353-352	S89°11'36"E	15.00'
352-351	S00°48'36"W	173.00'
351-350	N89°11'24"W	15.00'
350-353	N00°48'36"E	173.00'

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S89°11'24"E	40.00'
L2	N89°11'24"W	40.00'
L3	N89°11'24"W	40.00'
L4	S89°11'24"E	40.00'

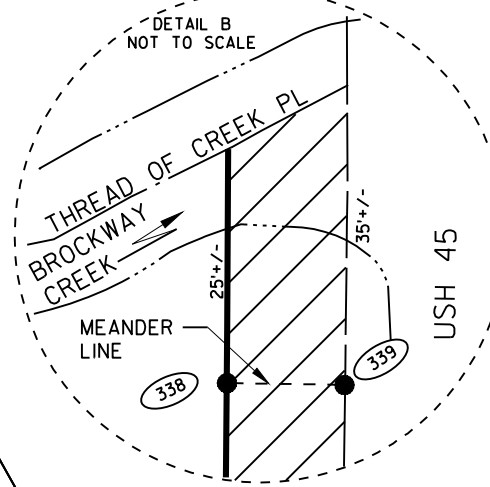
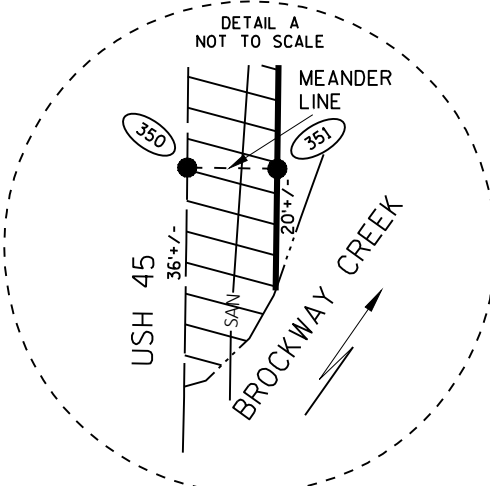
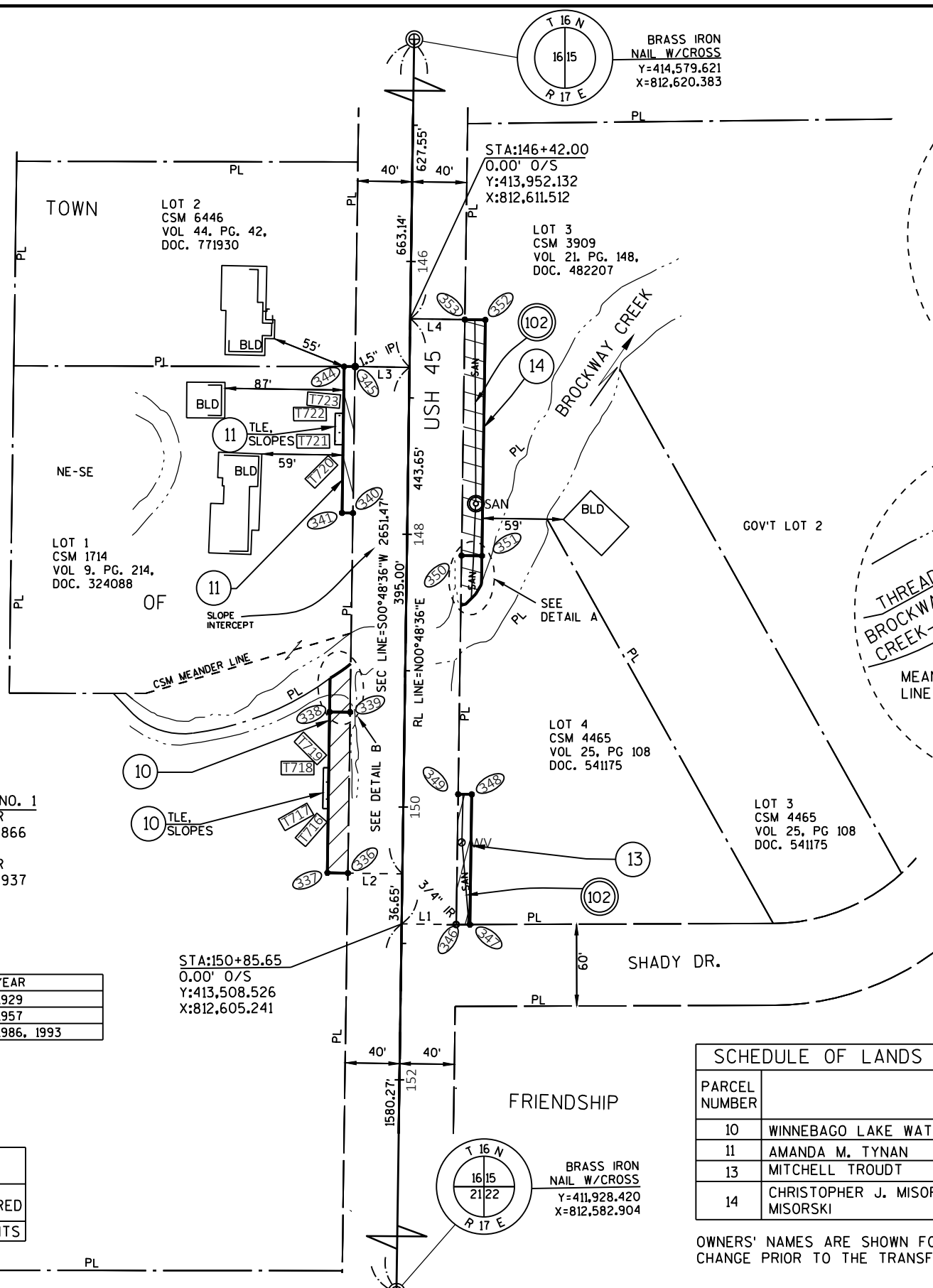
RW STATION OFFSET		
POINT	STATION	OFFSET
336	150+49.00	40.00'
337	150+49.00	55.00'
338	149+31.00	55.00'
339	149+31.00	40.00'
340	147+85.00	40.00'
341	147+85.00	48.00'
344	146+77.68	48.00'
345	146+77.59	40.00'
346	150+85.65	-40.00'
347	150+85.47	-50.00'
348	149+90.00	-50.00'
349	149+90.00	-40.00'
350	148+15.00	-40.00'
351	148+15.00	-55.00'
352	146+42.00	-55.00'
353	146+42.00	-40.00'

TLE STATION OFFSET		
POINT	STATION	OFFSET
T716	150+02.00	55.00'
T717	150+02.00	59.00'
T718	149+72.00	59.00'
T719	149+72.00	55.00'
T720	147+35.00	48.00'
T721	147+35.00	54.00'
T722	147+12.00	54.00'
T723	147+12.00	48.00'

HWY	BASIS OF EXISTING R/W	R/W WIDTH	YEAR
USH 45	RIGHT-OF-WAY PROJECT 2109	80'	1929
USH 45	RIGHT-OF-WAY PROJECT T0749(3)	73'	1957
USH 45	CSM 1714, 3909, 4465	80'	1986, 1993

UTILITY INTERESTS REQUIRED		
UTILITY NUMBER	UTILITY OWNER	INTEREST REQUIRED
102	CONSOLIDATED SANITARY DISTRICT NO. 1	RELEASE OF RIGHTS

102 CONSOLIDATED SANITARY DISTRICT NO. 1
20' SANITARY SEWER EASEMENT DOC. 434866 PARCELS 13
20' SANITARY SEWER EASEMENT DOC. 434937 PARCELS 14



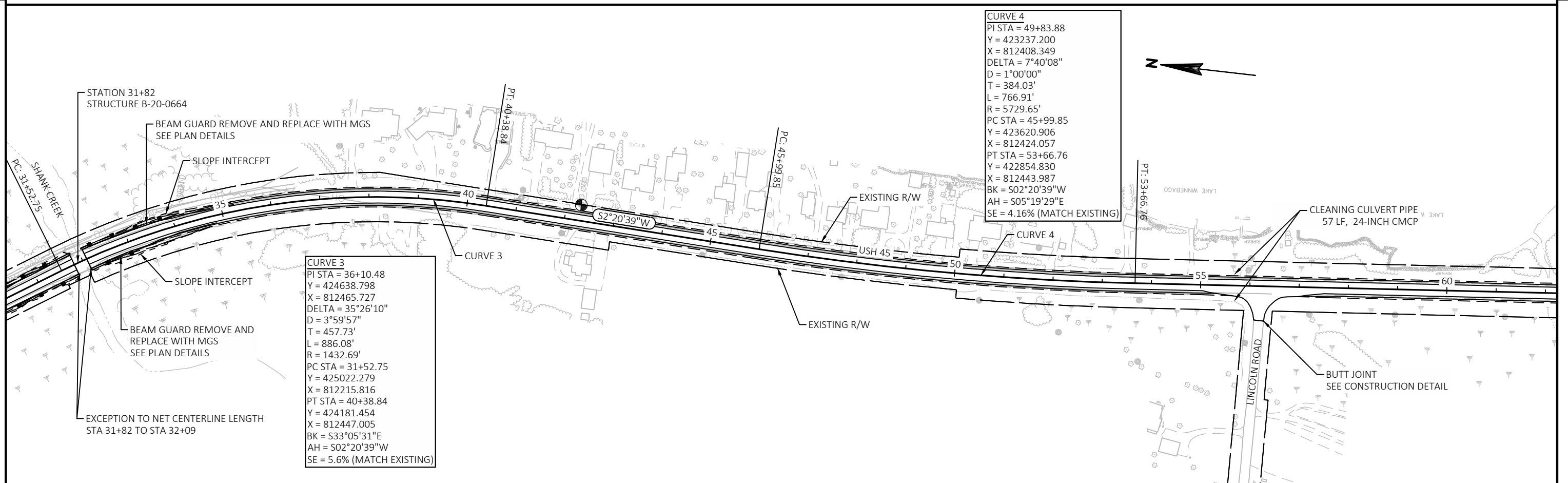
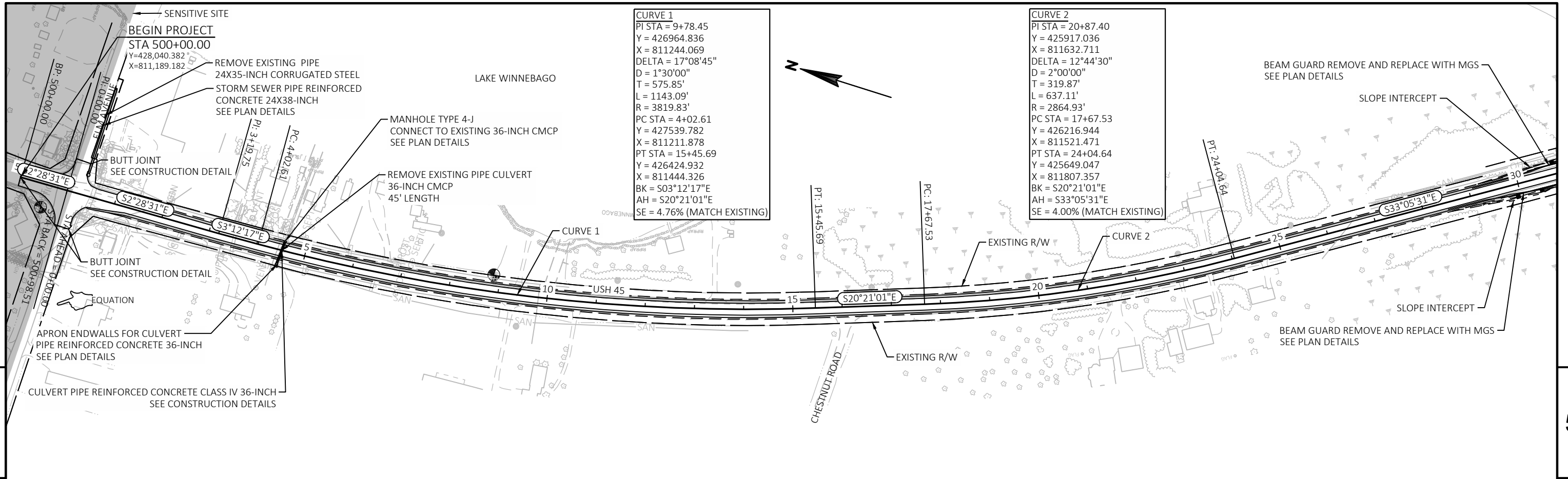
TLE COURSE TABLE		
PARCEL 10		
337-T716	N00°48'36"E	47.00'
T716-T717	N89°11'24"W	4.00'
T717-T718	N00°48'36"E	30.00'
T718-T719	S89°11'24"E	4.00'
T719-T716	S00°48'36"W	30.00'
PARCEL 11		
344-T723	S00°48'36"W	34.32'
T723-T720	S00°48'36"W	23.00'
T720-T721	N89°11'24"W	6.00'
T721-T722	N00°48'36"E	23.00'
T722-T723	S89°11'24"E	6.00'

NOTES:
POSITIONS SHOWN ON THIS PLAT ARE WISCONSIN COORDINATE REFERENCE SYSTEM COORDINATES (WISCRS), FOND DU LAC COUNTY, NAD 83 (2011) IN US SURVEY FEET. VALUES SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.
RIGHT OF WAY BOUNDARIES ARE DEFINED WITH COURSES OF PERIMETER OF THE HIGHWAY LANDS REFERENCED TO THE U.S. PUBLIC LAND SURVEY SYSTEM OR OTHER SURVEYS OF PUBLIC RECORD.
FOR THE LATEST ACCESS/DRIVEWAY INFORMATION CONTACT THE PLANNING UNIT OF THE WISCONSIN DEPARTMENT OF TRANSPORTATION OFFICE IN GREEN BAY.
RIGHT-OF-WAY MONUMENTS ARE TYPE 2 AND ARE PLACED PRIOR TO OR AT THE TIME OF LAND TITLE TRANSFER.

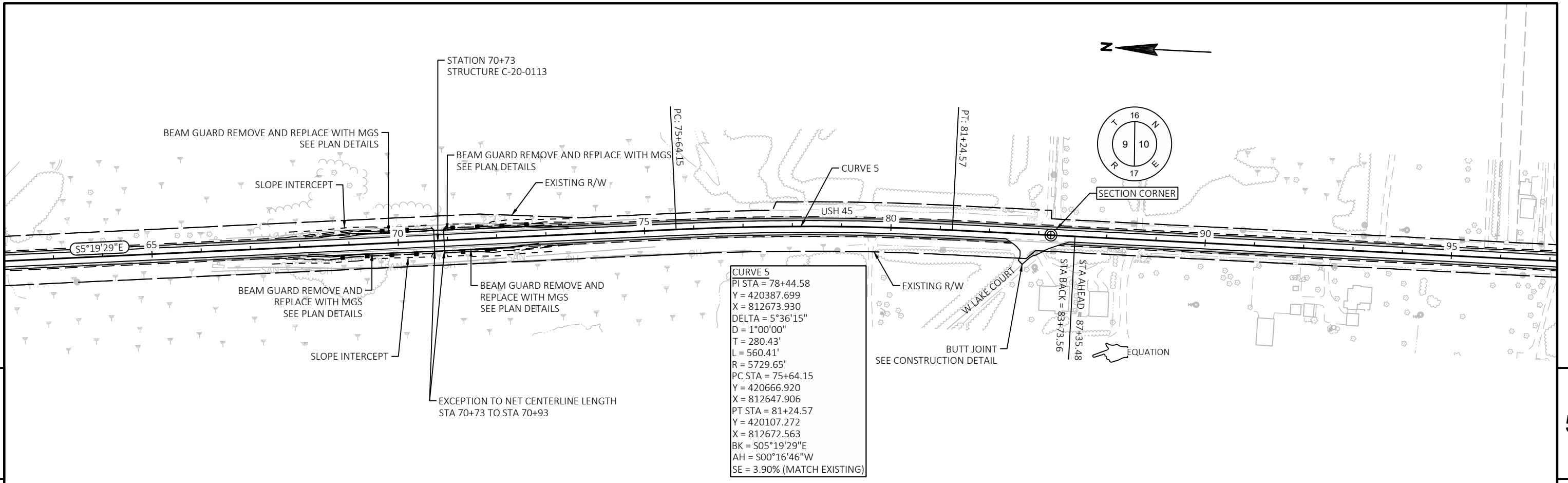
SCHEDULE OF LANDS & INTERESTS REQUIRED							
PARCEL NUMBER	OWNER(S)	INTEREST(S) REQUIRED	FEE R/W ACRES REQUIRED			TLE ACRES	PLE ACRES
			NEW	EXISTING	TOTAL		
10	WINNEBAGO LAKE WATCHERS LLC	FEE,TLE	0.051	-	0.051	0.003	-
11	AMANDA M. TYNAN	FEE,TLE	0.020	-	0.020	0.003	-
13	MITCHELL TROUDT	FEE	0.022	-	0.022	-	-
14	CHRISTOPHER J. MISORSKI AND JULIE A. MISORSKI	FEE	0.060	-	0.060	-	-

OWNERS' NAMES ARE SHOWN FOR REFERENCE PURPOSES ONLY AND ARE SUBJECT TO CHANGE PRIOR TO THE TRANSFER OF LAND INTERESTS TO THE DEPARTMENT.

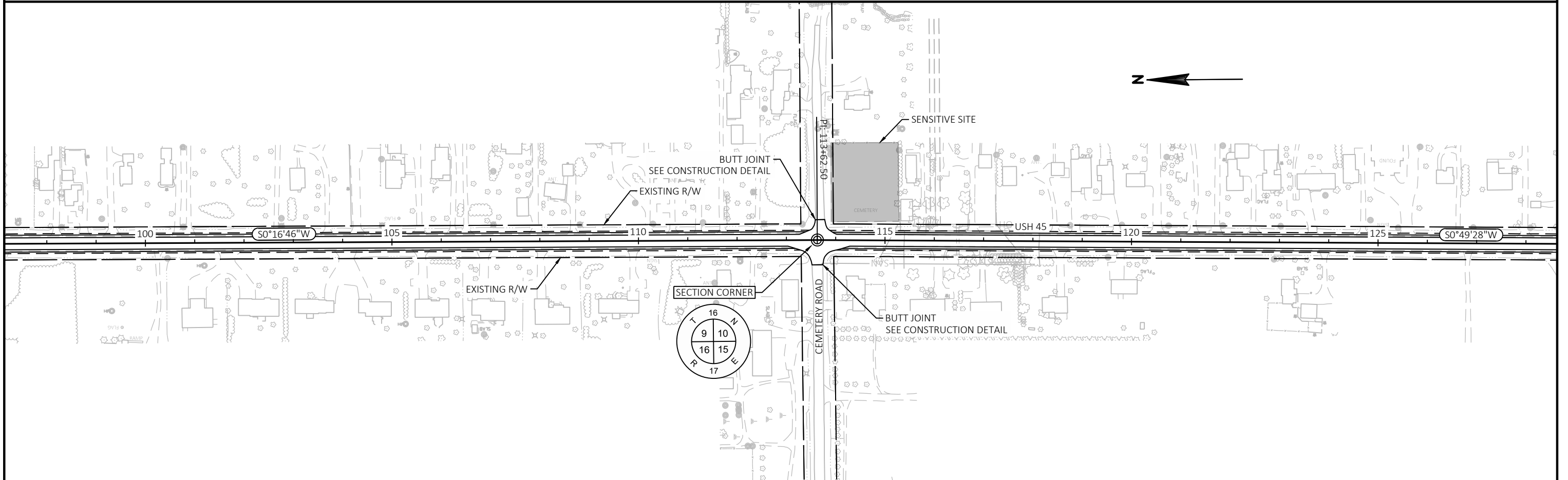
REVISION DATE	3-9-2023 NC	6-22-2023	8-3-2023	DATE	1-13-2023	SCALE, FEET	0 50 100	HWY:	USH 45	STATE R/W PROJECT NUMBER	4110-28-20	PLAT SHEET	4.04
GRID FACTOR								COUNTY:	FOND DU LAC	CONSTRUCTION PROJECT NUMBER		PS&E SHEET	

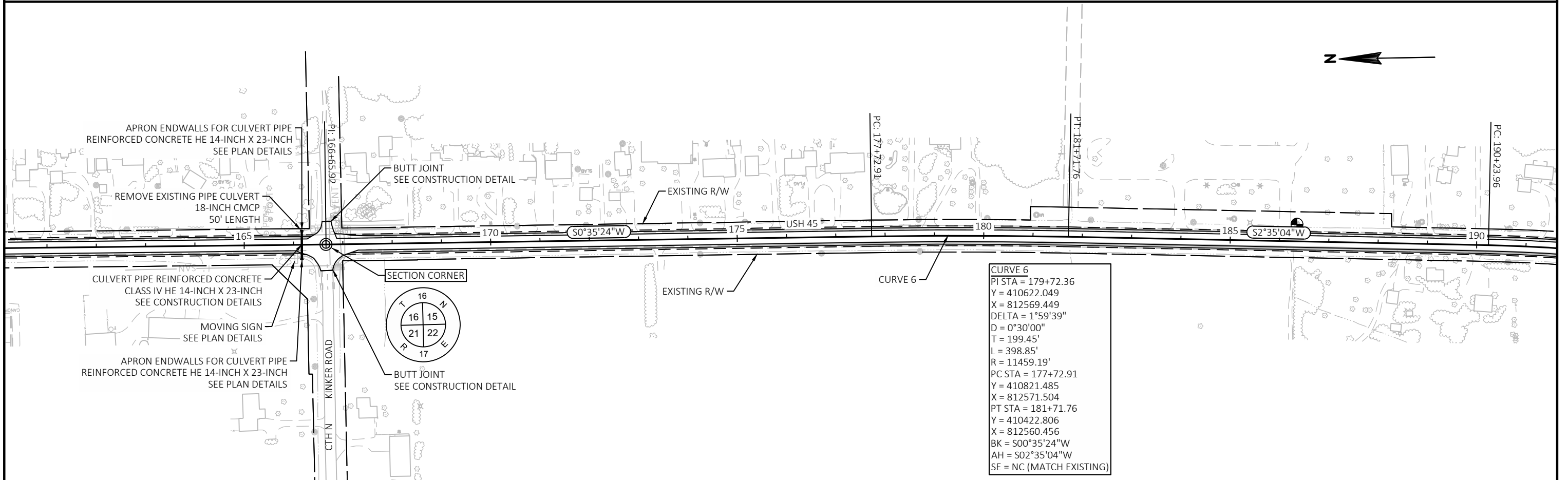
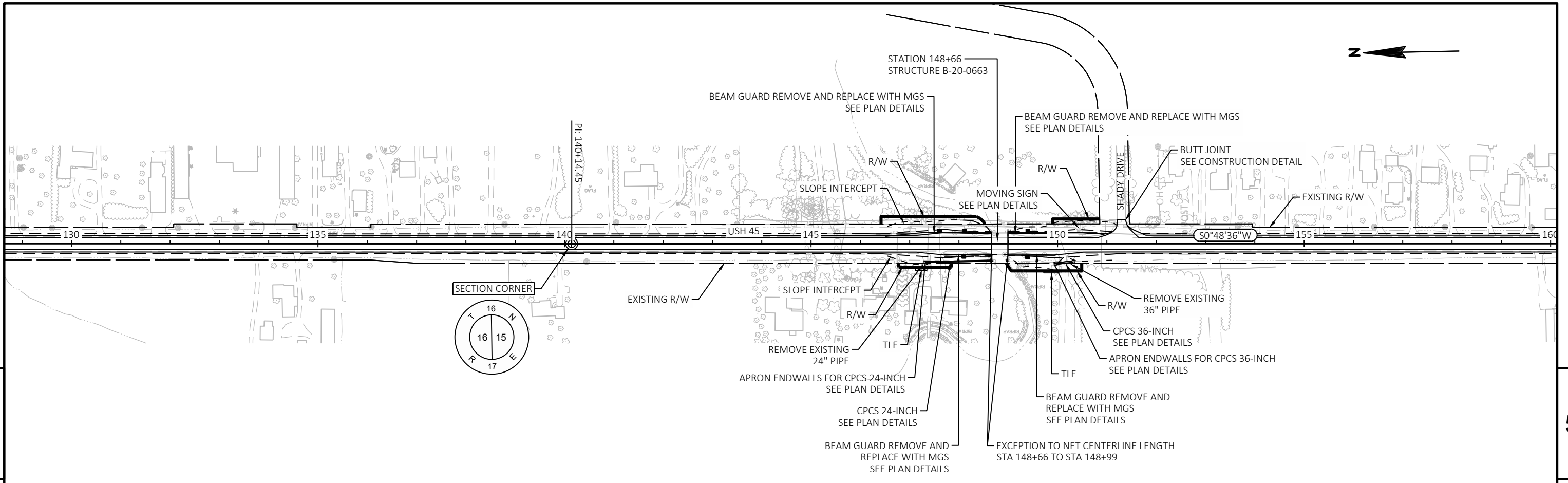


PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN SHEETS	SHEET	E
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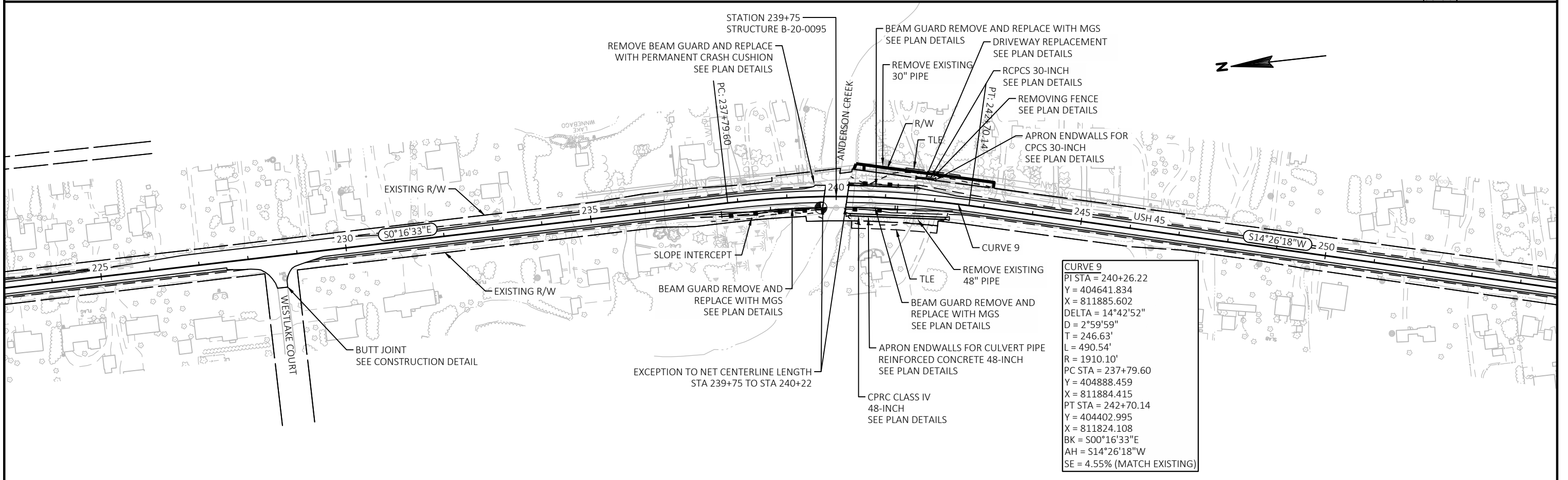
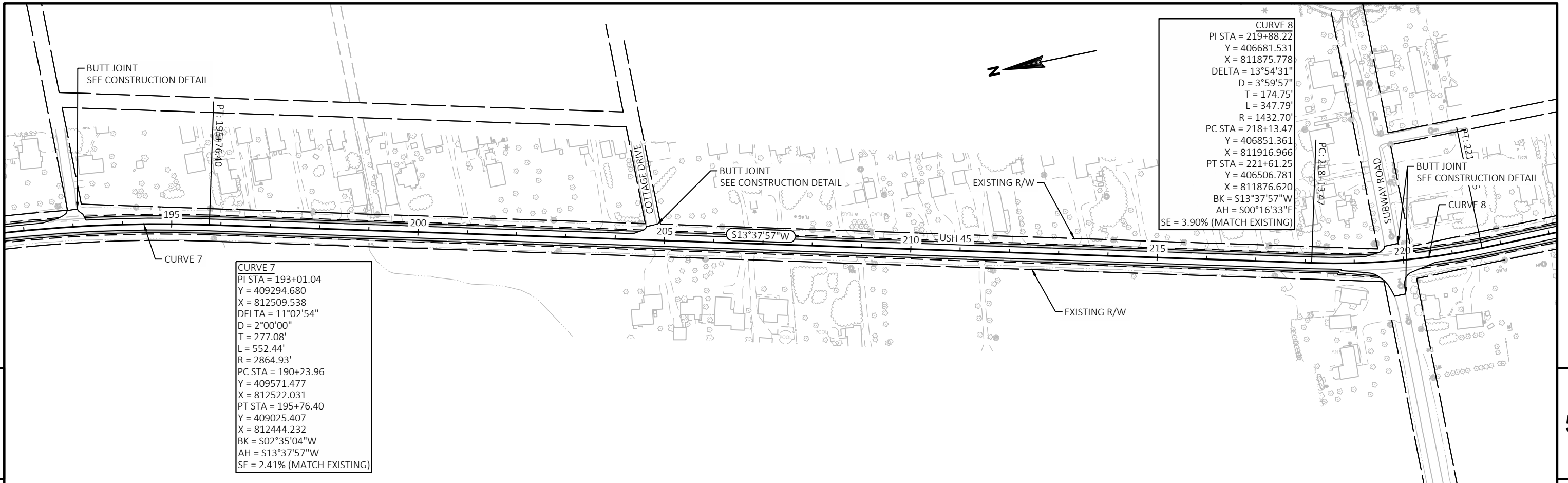


CURVE 5
 PI STA = 78+44.58
 Y = 420387.699
 X = 812673.930
 DELTA = 5°36'15"
 D = 1°00'00"
 T = 280.43'
 L = 560.41'
 R = 5729.65'
 PC STA = 75+64.15
 Y = 420666.920
 X = 812647.906
 PT STA = 81+24.57
 Y = 420107.272
 X = 812672.563
 BK = S05°19'29"E
 AH = S00°16'46"W
 SE = 3.90% (MATCH EXISTING)

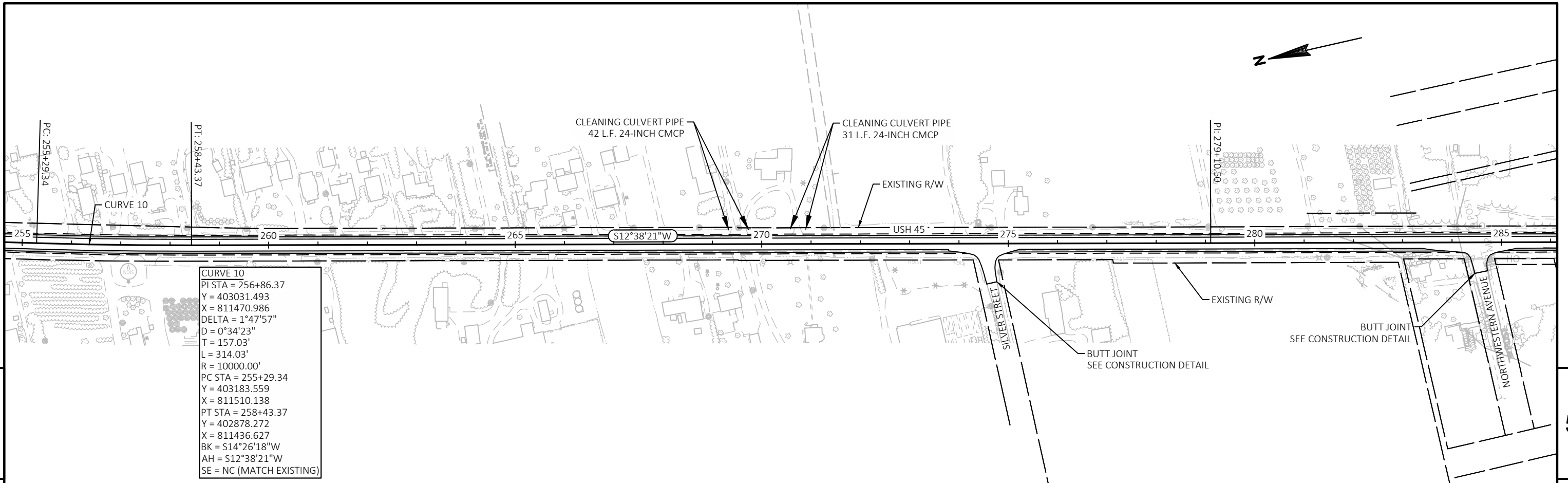




PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN SHEETS	SHEET	E
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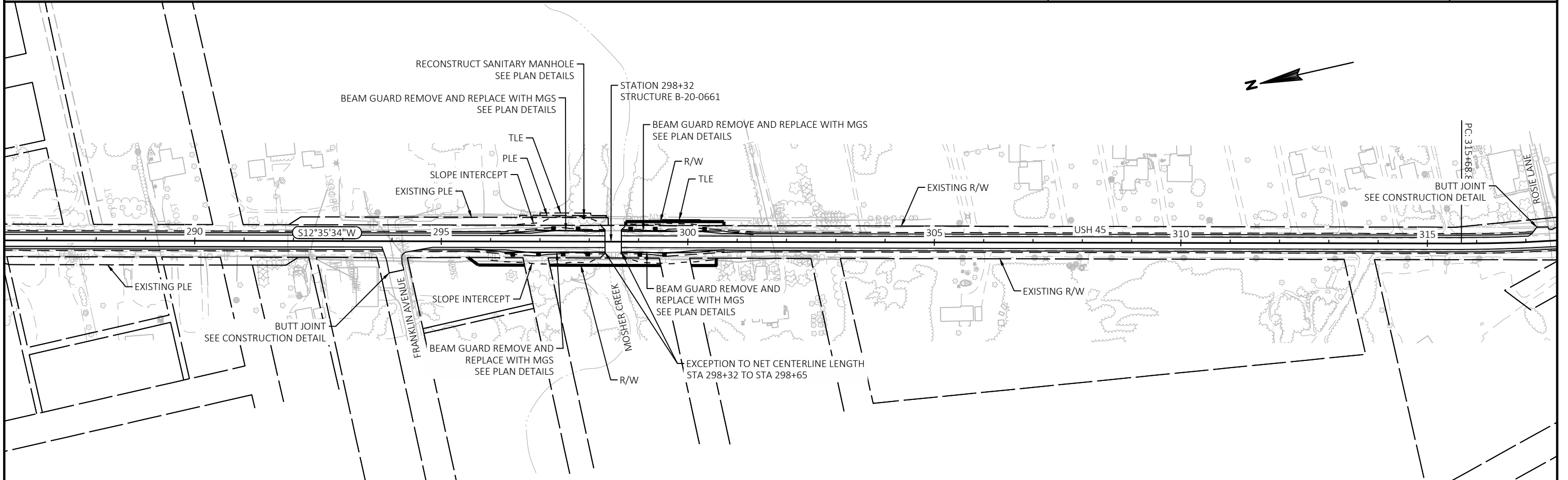
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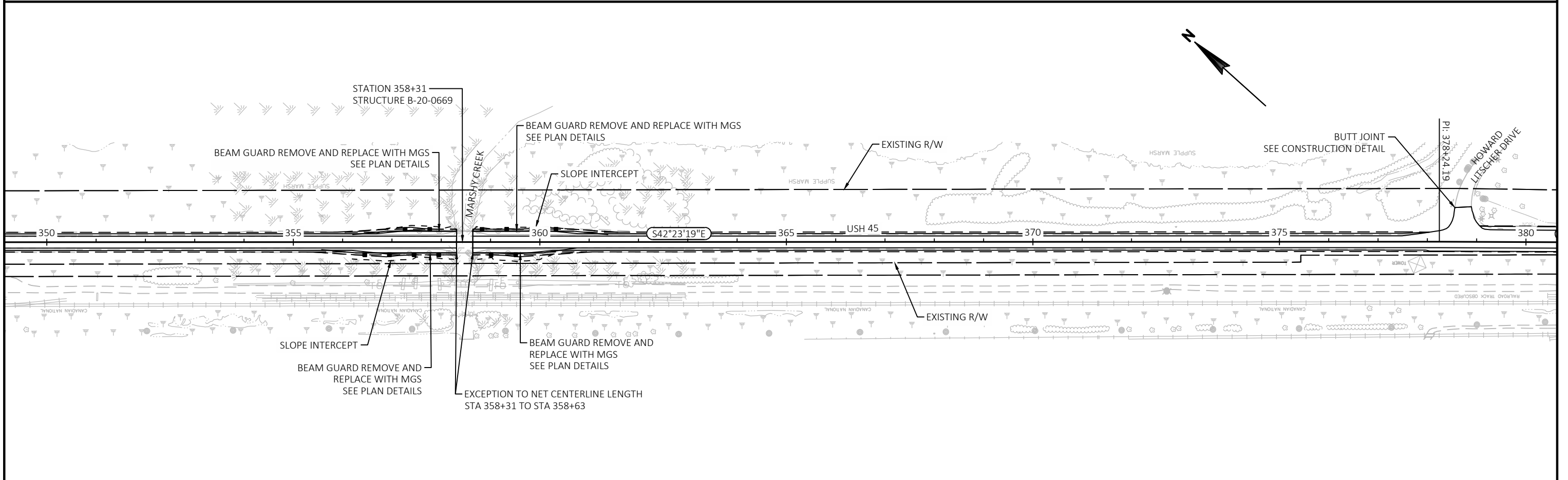
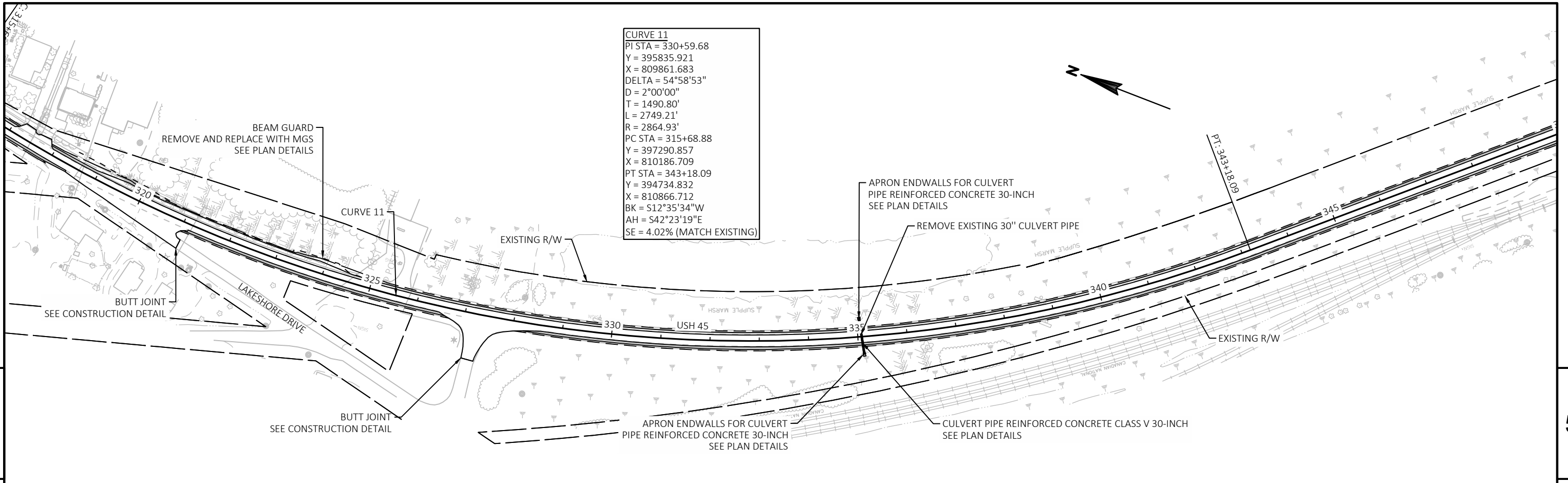
CURVE 10
 PI STA = 256+86.37
 Y = 403031.493
 X = 811470.986
 DELTA = 1°47'57"
 D = 0°34'23"
 T = 157.03'
 L = 314.03'
 R = 10000.00'
 PC STA = 255+29.34
 Y = 403183.559
 X = 811510.138
 PT STA = 258+43.37
 Y = 402878.272
 X = 811436.627
 BK = S14°26'18"W
 AH = S12°38'21"W
 SE = NC (MATCH EXISTING)

5

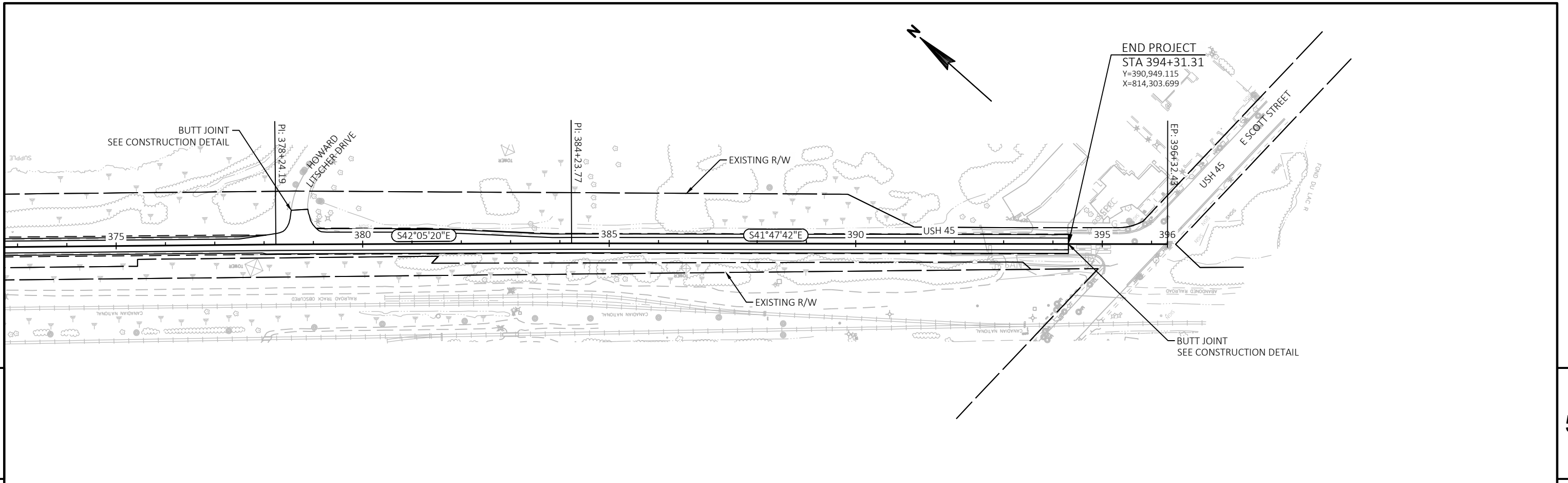
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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN SHEETS	SHEET	E
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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN SHEETS	SHEET	E
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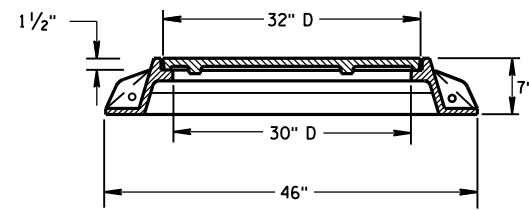
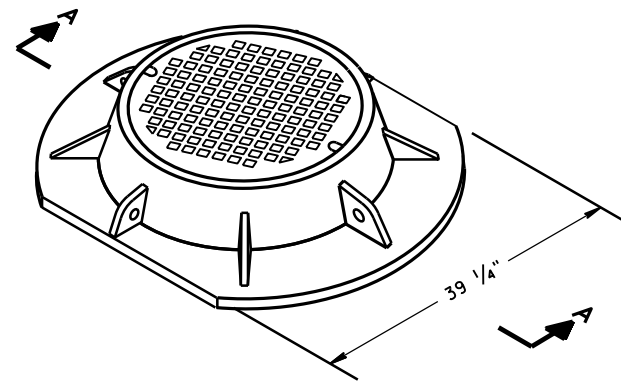
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5

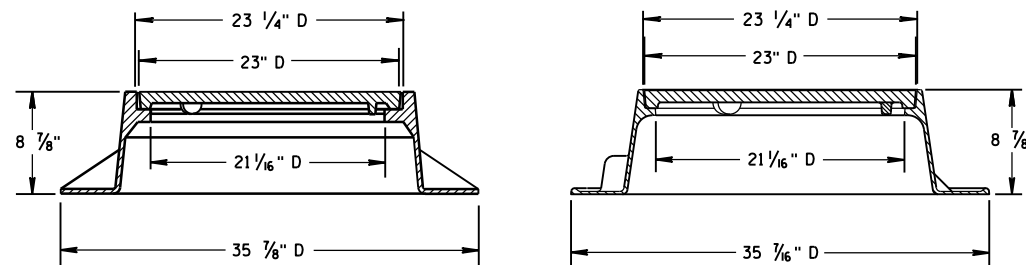
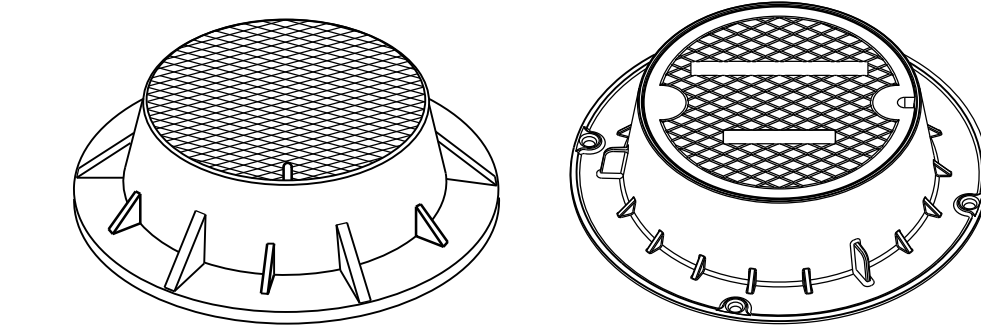
PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN SHEETS	SHEET	E
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Standard Detail Drawing List

08A05-19D	INLET COVER TYPE BW, MANHOLE COVERS, TYPE K, J, J-S, L & M
08B09-03	MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT, 8-FT, 9-FT, 10-FT DIAMETER
08D01-23A	CONCRETE CURB & GUTTER
08D21-01	DRIVEWAYS WITHOUT CURB & GUTTER
08D22-01	DRIVEWAYS WITHOUT CURB & GUTTER RESURFACING PROJECTS RURAL
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
08E15-01	CULVERT PIPE CHECK
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F02-01	APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE
08F04-08	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
13C19-03	HMA LONGITUDINAL JOINTS
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
14B43-04A	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
14B43-04B	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
14B43-04C	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05D	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05E	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05F	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05G	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05I	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05J	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05K	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05L	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M. P. H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C07-15C	PAVEMENT MARKING ARROWS
15C08-23A	PERMANENT LONGITUDINAL PAVEMENT MARKINGS
15C08-23B	TEMPORARY LONGITUDINAL PAVEMENT MARKING
15C11-10B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-09A	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C12-09B	TRAFFIC CONTROL, LANE CLOSURE WITH AUTOMATED FLAGGER ASSISTANCE DEVICE
15C19-08A	MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY
15C35-06A	PAVEMENT MARKING (INTERSECTIONS)
15D28-04	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY
15D44-02	TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES
15D45-03	TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH LOOSE GRAVEL
15D48-01	TRAFFIC CONTROL, LANE SHIFT IN FLAGGING OPERATION
15D51-01	TRAFFIC CONTROL, MOBILE OPERATIONS ON AN UNDIVIDED ROADWAY



SECTION A-A
TYPE "K"



TYPE "J"

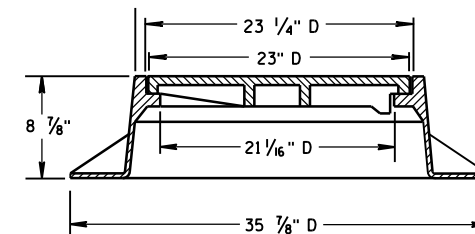
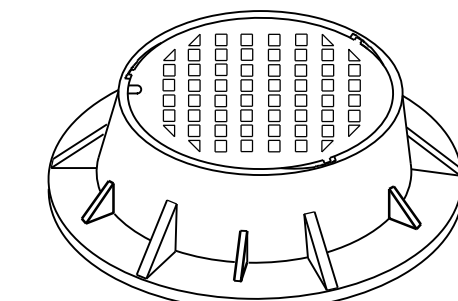
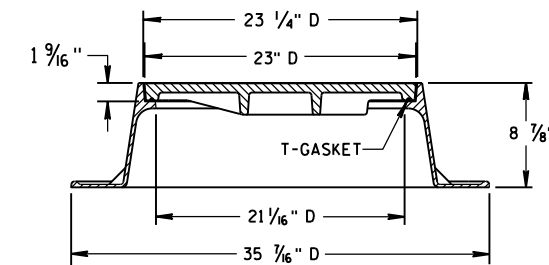
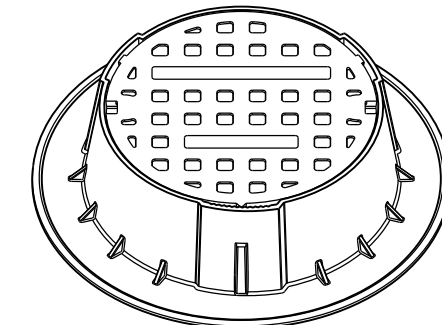
NOTE: EITHER CASTING IS ACCEPTABLE

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.

DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR MANHOLE COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

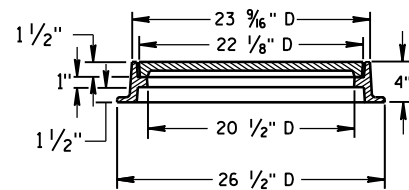
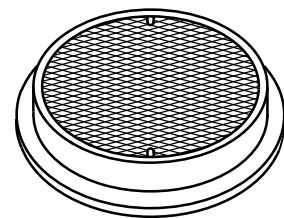


TYPE "J" SPECIAL

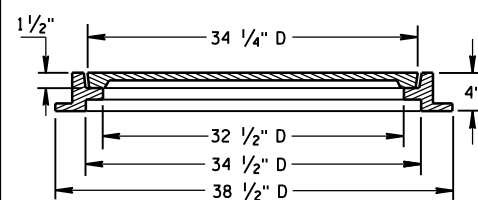
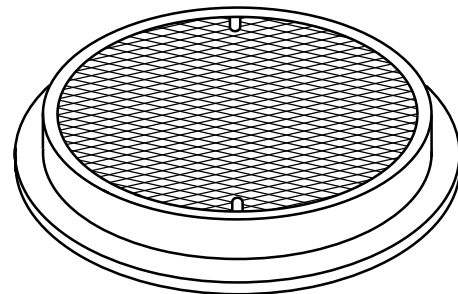
TYPE "B" NON-ROCKING SELF-SEAL LID
(NOTED AS TYPE J-S ON THE DRAINAGE TABLE)

NOTE: EITHER CASTING IS ACCEPTABLE

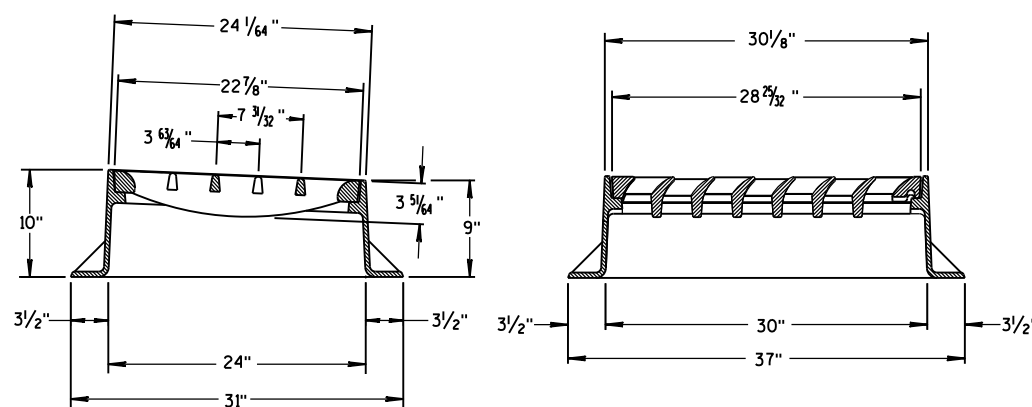
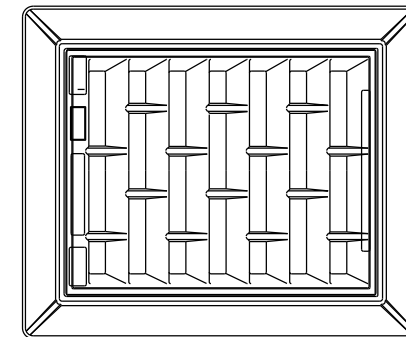
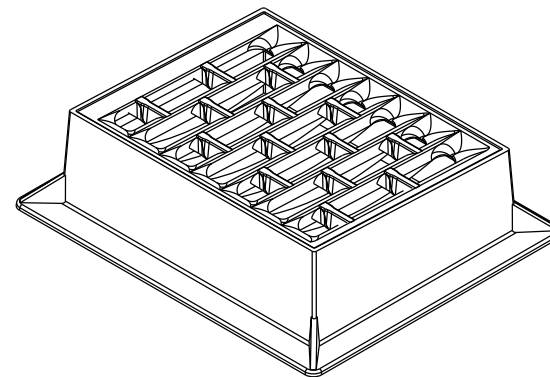
6



TYPE "L"



TYPE "M"



INLET COVER TYPE "BW"

6

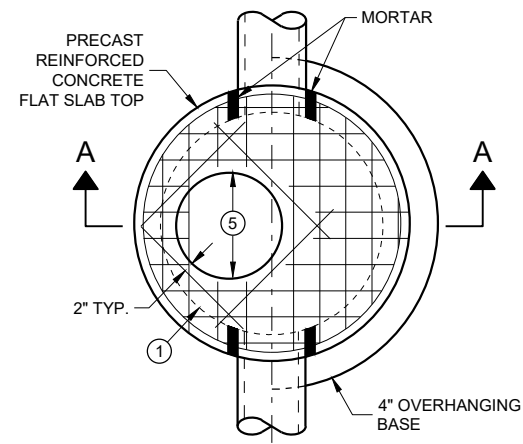
S.D.D. 8 A 5-19d

S.D.D. 8 A 5-19d

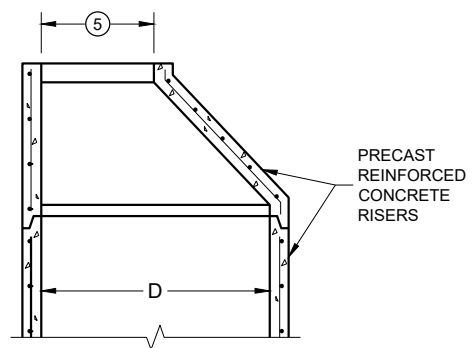
INLET COVER TYPE BW
MANHOLE COVERS, TYPE K,
J, J-S, L & M

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/27/2013 DATE /S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA



**PLAN VIEW
CIRCULAR OPENING**



**OPTIONAL PRECAST
REINFORCED CONCRETE
ECCENTRIC TOP**

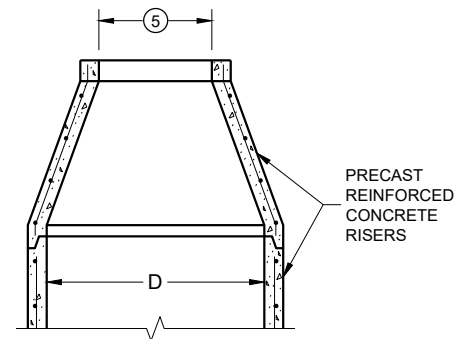
MANHOLE COVER OPENING MATRIX

MANHOLE COVER TYPE OPENING SIZE (FT.)	C	ALL J'S	K	L	M
2 DIA.	X	X		X	
3 DIA.			X		X

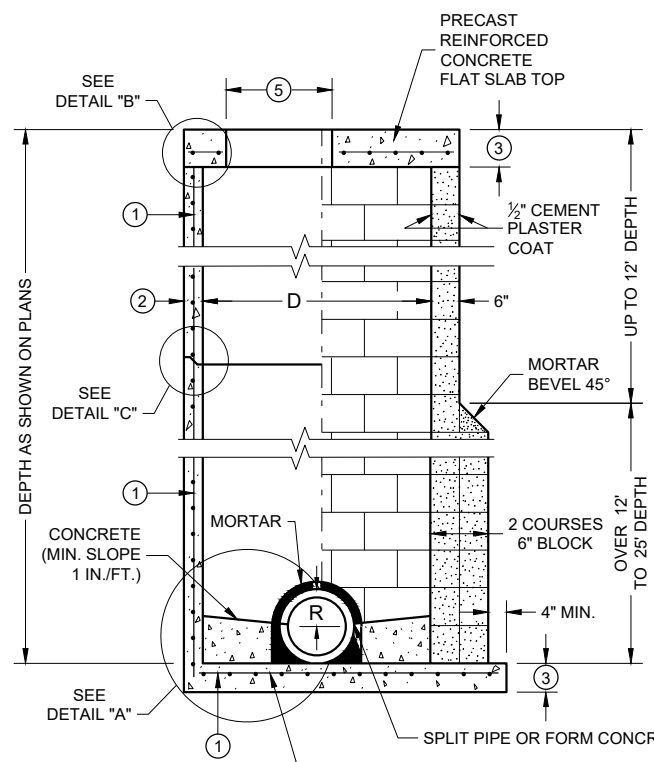
PIPE MATRIX

MANHOLE SIZE (DIA.)	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES		MINIMUM WALL THICKNESS (IN)	MINIMUM PRECAST FLAT SLAB TOP AND BASE THICKNESS
	180° SEPARATION (IN)	90° SEPARATION (IN)		
3-FT	15	12	4	6
4-FT	24	18	4	6
5-FT	36	24	5	8
6-FT	42	36	6	8
7-FT	48	36/42*	7	8
8-FT	60	42	8	8
9-FT	66	54	9	10
10-FT	72	60	10	10

*A 36" PIPE AND A 42" PIPE CAN BE PLACED WITHIN 90 DEGREES. SEE MINIMUM HORIZONTAL PIPE SEPARATION DETAIL.



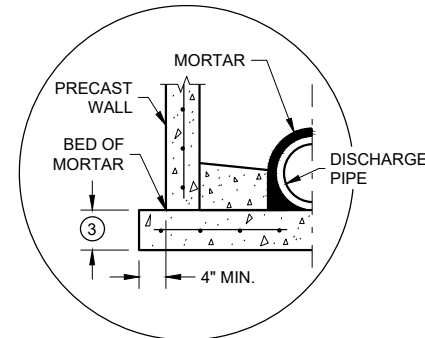
**OPTIONAL PRECAST
REINFORCED CONCRETE
CONCENTRIC TOP**



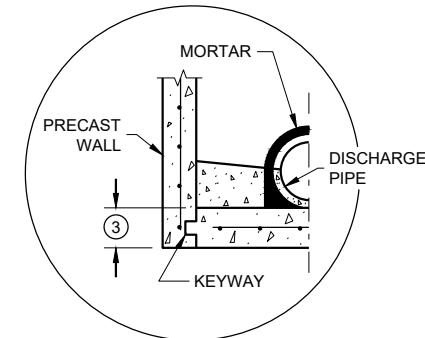
SECTION A - A

PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE

CONCRETE BLOCK WITH CAST IN PLACE OR PRECAST REINFORCED CONCRETE BASE ①

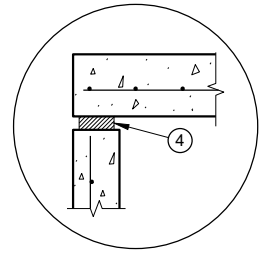


SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

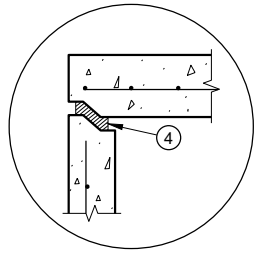


PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION

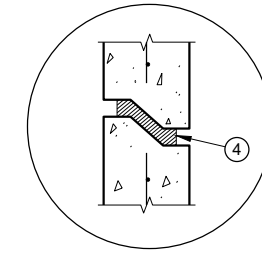
DETAIL "A"



TOP WITH PLAIN END JOINT



TOP WITH TONGUE AND GROOVE JOINT



RISER WITH TONGUE AND GROOVE JOINT

DETAIL "B"

DETAIL "C"

MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT, 8-FT, 9-FT AND 10-FT DIAMETER

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.

UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST MANHOLE UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATE THE SIZE OF THE STRUCTURE, AND THE FOLLOWING LETTER DESIGNATES THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF FOUNDATION BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

PRECAST REINFORCED CONCRETE CONE TOPS (ECCENTRIC OR CONCENTRIC) OR PRECAST REINFORCED CONCRETE FLAT SLAB TOPS MAY BE USED ON CONCRETE BLOCK STRUCTURES.

ECCENTRIC CONE TOPS MAY BE USED ON ALL STRUCTURES. CONCENTRIC CONE TOPS SHALL BE USED ONLY ON STRUCTURES 5 FEET OR LESS IN DEPTH UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

STEPS MEETING AASHTO M199 AND THE FOLLOWING REQUIREMENTS SHALL BE INSTALLED IN ALL STRUCTURES OVER 5 FEET IN DEPTH: 16 INCH C-C MAXIMUM SPACING; PROJECT A MINIMUM CLEAR DISTANCE OF 4 INCHES FROM THE WALL AT THE POINT OF EMBEDMENT; MINIMUM LENGTH OF 10 INCHES; MINIMUM WALL EMBEDMENT OF 3 INCHES. FERROUS METAL STEPS NOT PAINTED OR TREATED TO RESIST CORROSION SHALL HAVE A MINIMUM CROSS SECTIONAL DIMENSION OF 1 INCH.

STEPS OF APPROVED POLYPROPYLENE PLASTIC COATED REINFORCEMENT BAR ARE ACCEPTABLE. REINFORCING BAR MUST BE A MINIMUM OF 1/2 INCH AND MEET THE REQUIREMENTS OF ASTM A615.

CERTIFICATION SHALL BE PROVIDED THAT INSTALLED STEPS WHEN TESTED IN ACCORDANCE WITH SECTION 10 OF AASHTO T280 CAN WITHSTAND A VERTICAL LOAD OF 800 LBS. AND A HORIZONTAL LOAD OF 400 LBS.

ALL BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

ALL PRECAST MANHOLE UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M199.

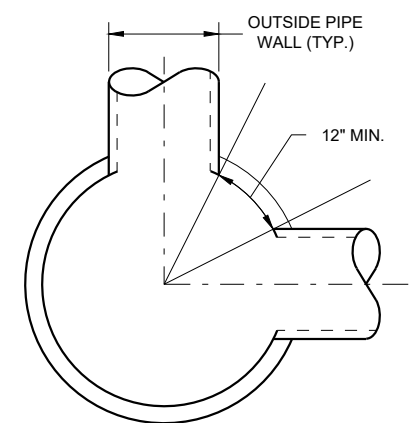
PRECAST REINFORCED RISERS SHALL HAVE A TONGUE AND GROOVE JOINT WITH TONGUE UP OR DOWN.

CONCRETE BLOCK WILL NOT BE PERMITTED FOR STRUCTURES GREATER THAN 4 FEET IN DIAMETER.

4" OVERHANGING BASES ARE REQUIRED FOR ALL CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

FOR ADDITIONAL CONFIGURATIONS, MAINTAIN A MINIMUM OF 12 INCHES AS MEASURED FROM THE INSIDE OF THE STRUCTURE WALL BETWEEN THE OUTSIDE PIPE WALLS OF ADJACENT PIPES. SEE DETAIL "D".

- ① FOR PRECAST MANHOLES PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.
- ② SEE PIPE MATRIX TABLE FOR MINIMUM WALL THICKNESS FOR PRECAST MANHOLES
- ③ SEE PIPE MATRIX TABLE FOR MINIMUM THICKNESS OF PRECAST FLAT SLAB TOPS AND BASES.
- ④ JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C 990 (TYP.).
- ⑤ SEE MANHOLE COVER OPENING MATRIX.

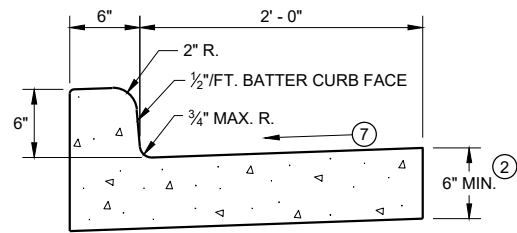


MINIMUM HORIZONTAL PIPE SEPARATION

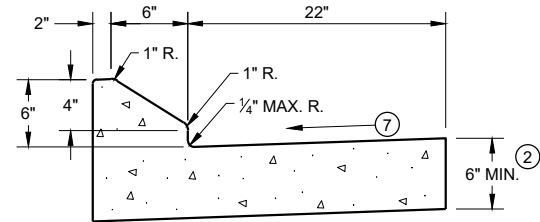
**MANHOLES, 3-FT, 4-FT
5-FT, 6-FT, 7-FT, 8-FT, 9-FT
AND 10-FT DIAMETER**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

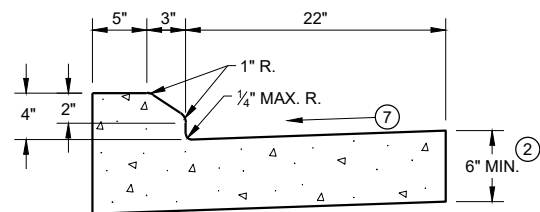
APPROVED
November 2021 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA



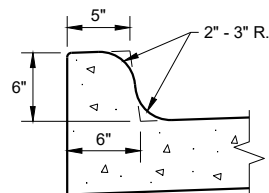
TYPES A^① & D



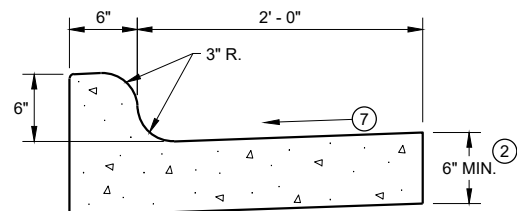
6" SLOPED CURB TYPES G^① & J



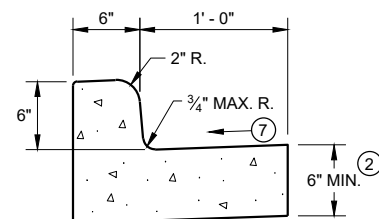
4" SLOPED CURB TYPES G^① & J



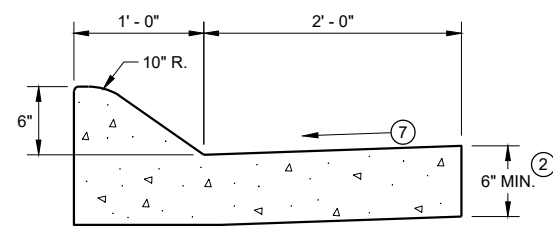
TYPES K^① & L
(OPTIONAL CURB SHAPE)



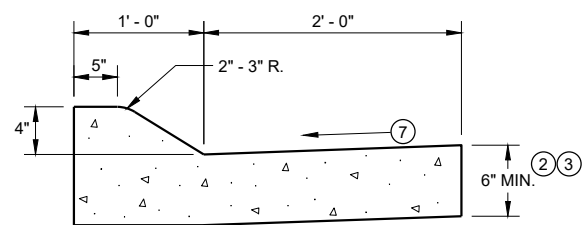
TYPES K^① & L
CONCRETE CURB AND GUTTER 30"



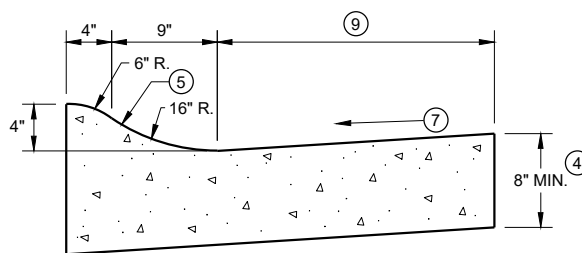
TYPES A^① & D
CONCRETE CURB AND GUTTER 18"



6" SLOPED CURB TYPES A^① & D

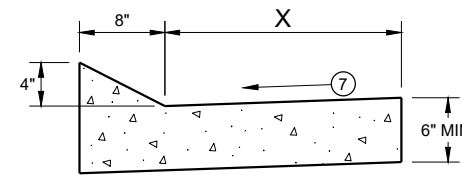


4" SLOPED CURB TYPES A^① & D
CONCRETE CURB AND GUTTER 36"



4" SLOPED CURB TYPES R^① & T

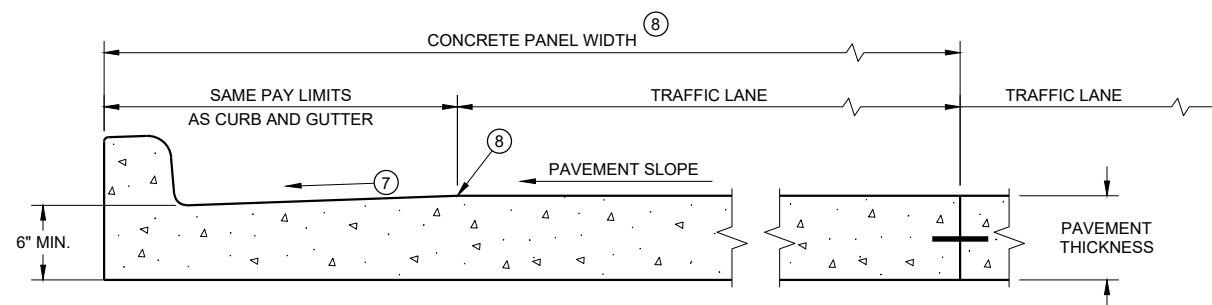
TBT & TBTT	X
30"	22"
36"	28"



TYPES TBT & TBTT^①
CONCRETE CURB AND GUTTER

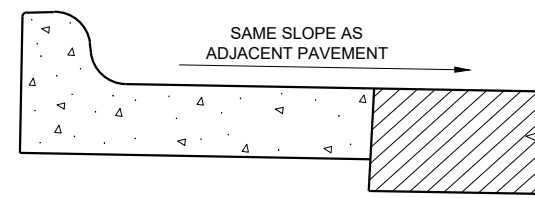
PAVEMENT THICKNESS AND MAXIMUM CONCRETE PANEL WIDTH TABLE

PAVEMENT THICKNESS	MAXIMUM PANEL WIDTH
LESS THAN 10"	12'
10" & ABOVE	15'



PARTIAL SECTION OF PAVEMENT* WITH INTEGRAL CURB AND GUTTER

* BIKE LANE IS NOT SHOWN



REVERSE SLOPE GUTTER^⑥
(TYPICAL FOR ALL CURB & GUTTER TYPES)

GENERAL NOTES

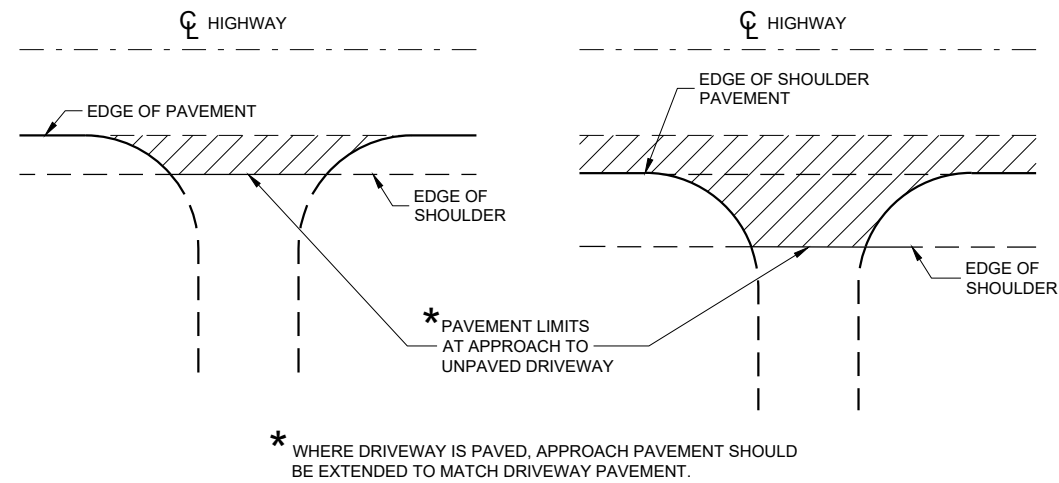
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

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

INTEGRAL CURB AND GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB AND GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

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

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.
- ④ THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑤ UNLESS OTHERWISE NOTED, FOR STAKING PURPOSES THE FACE OF CURB IS 6" FROM THE BACK OF CURB.
- ⑥ WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.
- ⑦ USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.
- ⑧ INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.
- ⑨ CONCRETE CURB AND GUTTER 4-INCH SLOPED 30-INCH TYPE "R" AND "T" = 17 INCHES
CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE "R" AND "T" = 23 INCHES



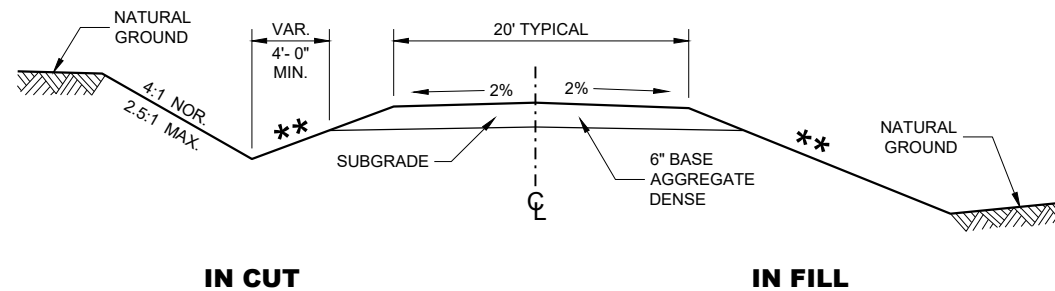
PLAN VIEW

(UNPAVED SHOULDER ON HIGHWAY)

PLAN VIEW

(PAVED SHOULDER ON HIGHWAY)

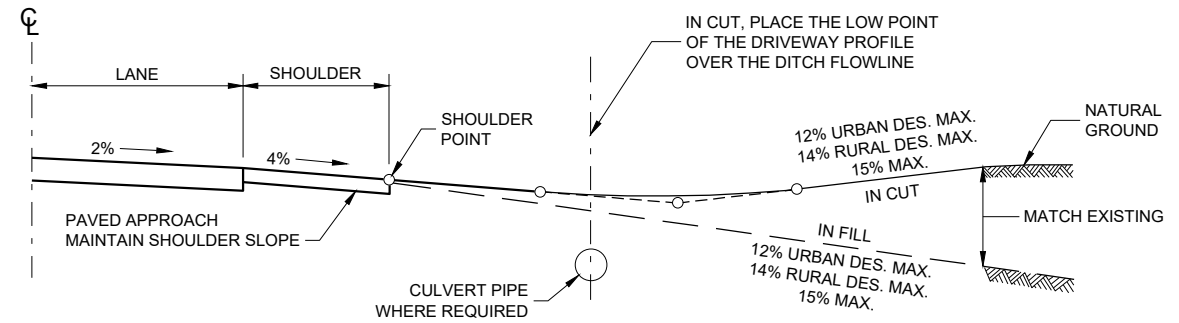
**RURAL DRIVEWAY INTERSECTION DETAIL
(NO CURB AND GUTTER OR SIDEWALK)**



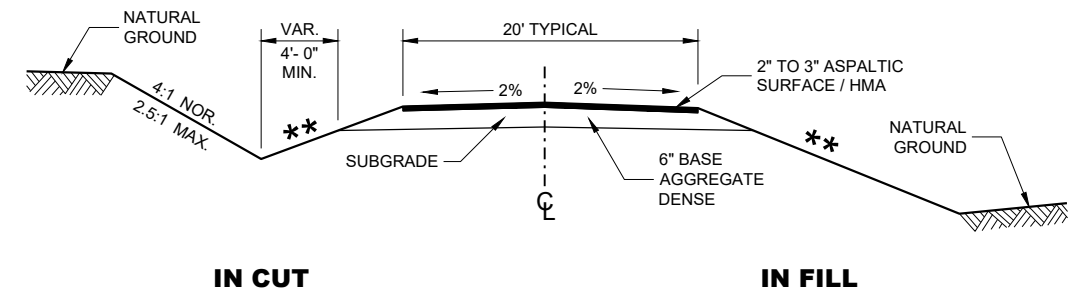
**TYPICAL CROSS SECTION FOR
PRIVATE DRIVE OR FIELD ENTRANCE
AGGREGATE SURFACE**

** SLOPE CAN VARY WITH SPEED. SEE 11-45-30.6.2

POSTED SPEED MPH	MAX. SLOPE
<35	4:1
≥ 35 TO < 60	6:1
≥60	10:1



TYPICAL DRIVEWAY PROFILES



**TYPICAL CROSS SECTION FOR
PRIVATE DRIVE OR FIELD ENTRANCE
ASPHALTIC SURFACE**

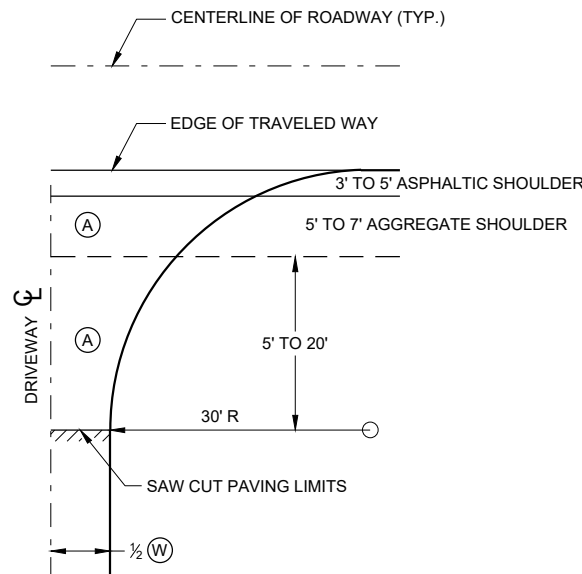
DRIVEWAYS WITHOUT CURB AND GUTTER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
December 2017 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA

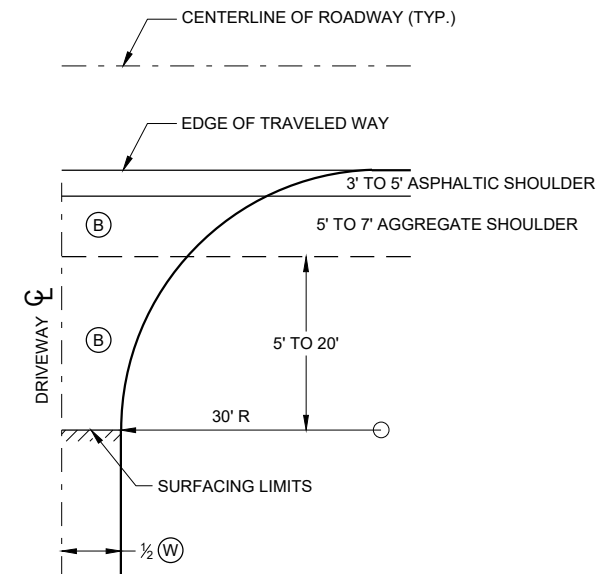
GENERAL NOTES

- ① DESIGN WILL DETERMINE FINAL DRIVEWAY ASPHALTIC THICKNESS BASED ON TYPE OF USAGE AND LOADINGS.

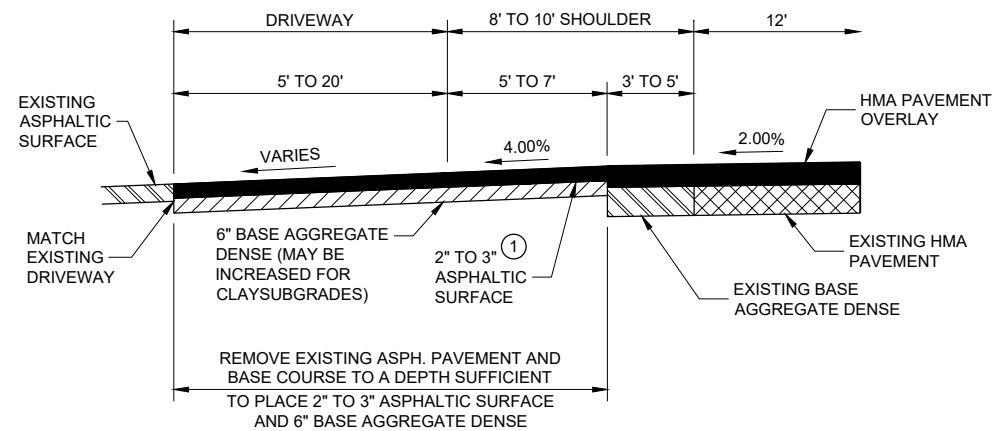


- Ⓐ : PAID FOR AS ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES. (TON)
- Ⓑ : PAID FOR AS BASE AGGREGATE DENSE 1 1/4" (TON)
- ⒲ : DRIVEWAY WIDTH 16' MIN. - 24' MAX.

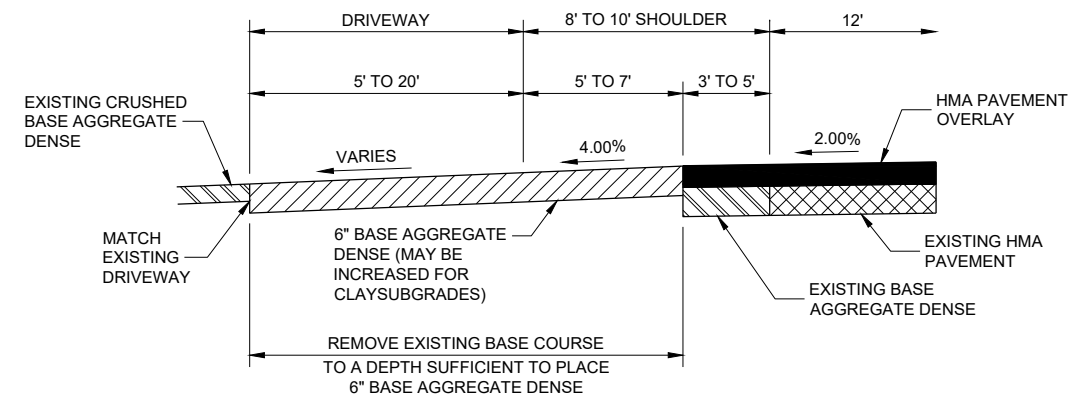
**PLAN VIEW
HALF SECTION**



**PLAN VIEW
HALF SECTION**



**PROFILE VIEW
RURAL ENTRANCE
WITH ASPHALTIC SURFACE
RESURFACING PROJECTS**



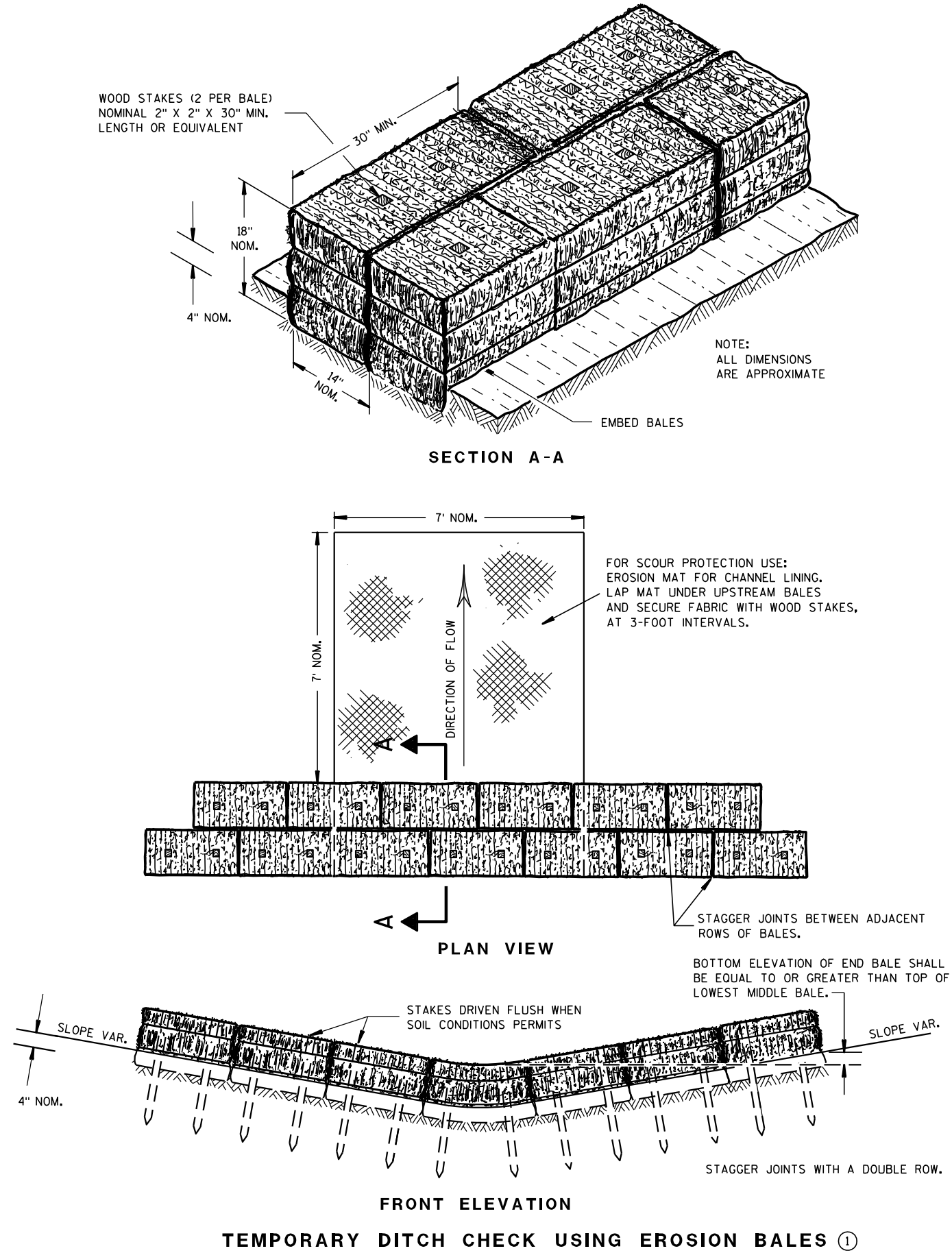
**PROFILE VIEW
RURAL ENTRANCE
WITH AGGREGATE SURFACE
6" BASE AGGREGATE DENSE
RESURFACING PROJECTS**

**DRIVEWAYS WITHOUT CURB
AND GUTTER RESURFACING
PROJECTS RURAL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
December 2016 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER

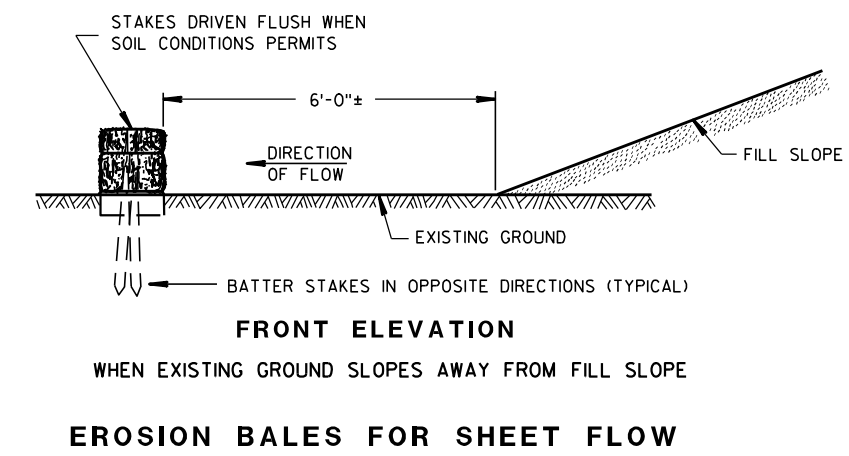
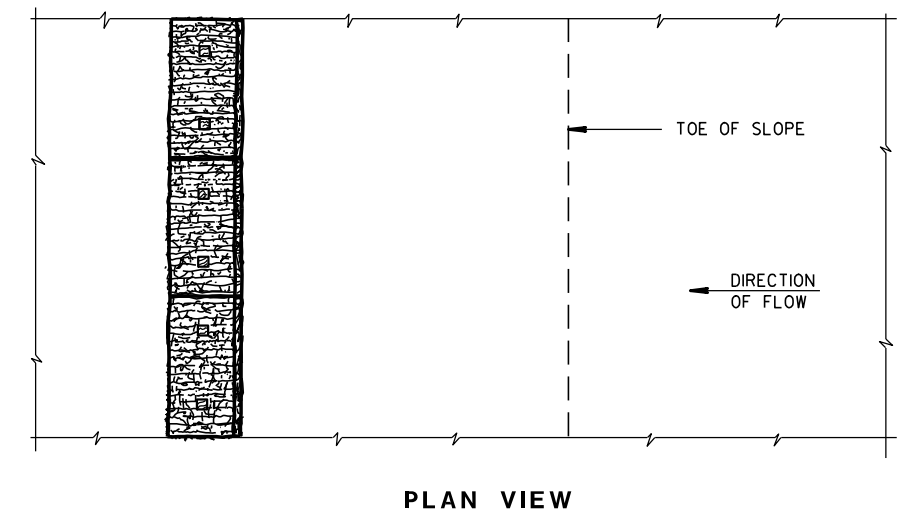
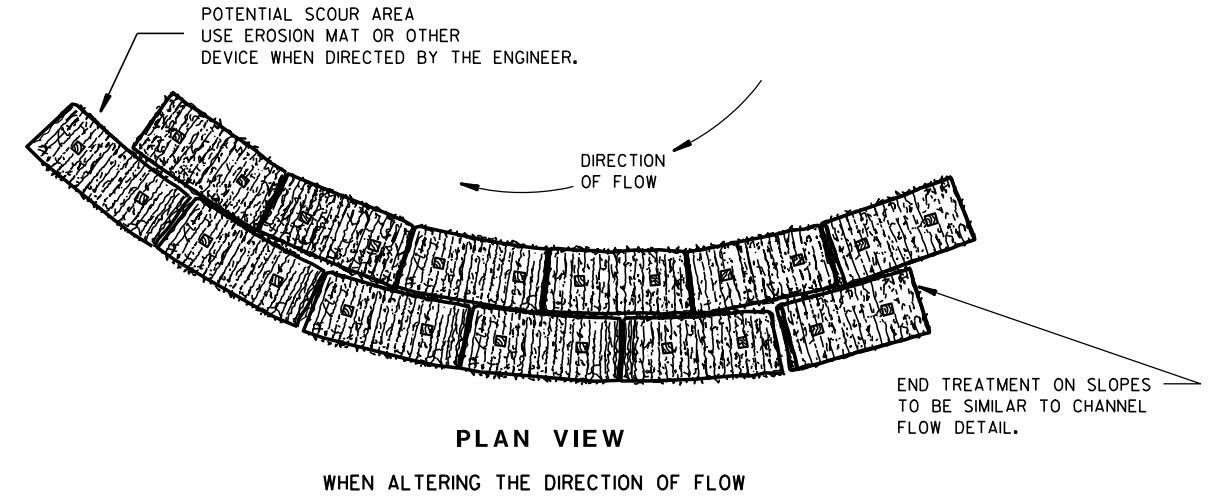
FHWA



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.

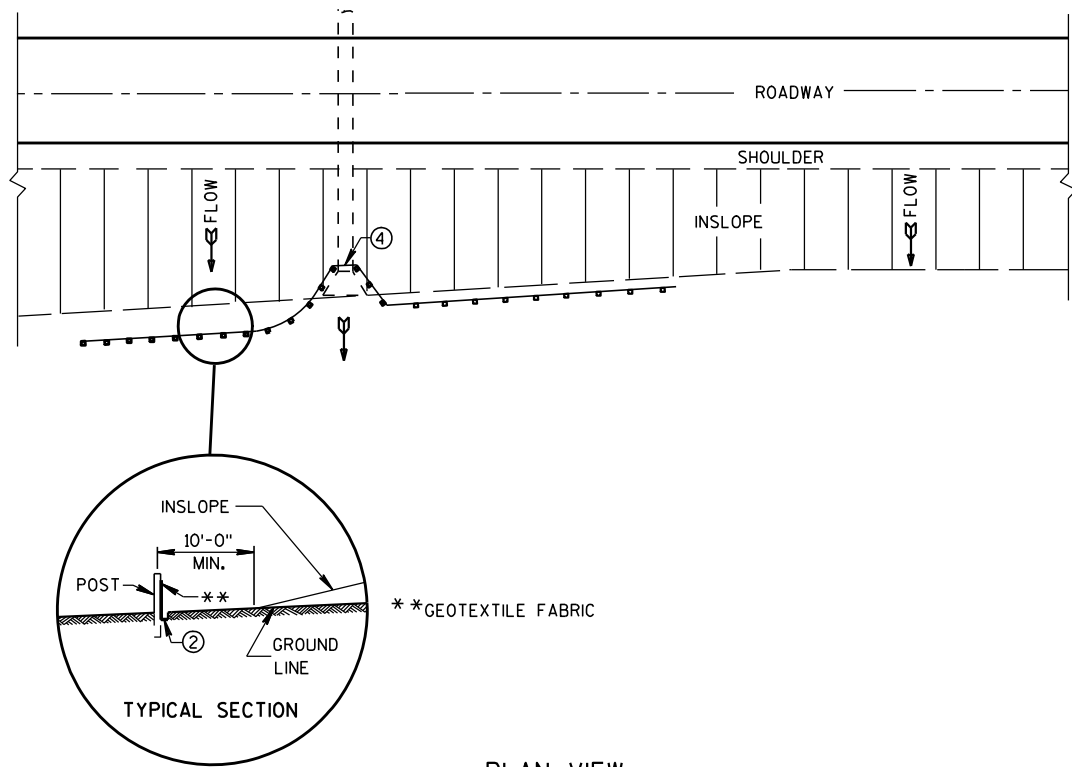
- ① TEMPORARY DITCH CHECKS EITHER EROSION BALES OR MANUFACTURED SHALL BE PAID FOR UNDER THE BID ITEM OF TEMPORARY DITCH CHECK. THE DEPARTMENT WILL NOT PAY FOR TEMPORARY DITCH CHECKS CONSTRUCTED OF A SINGLE ROW OF EROSION BALES.



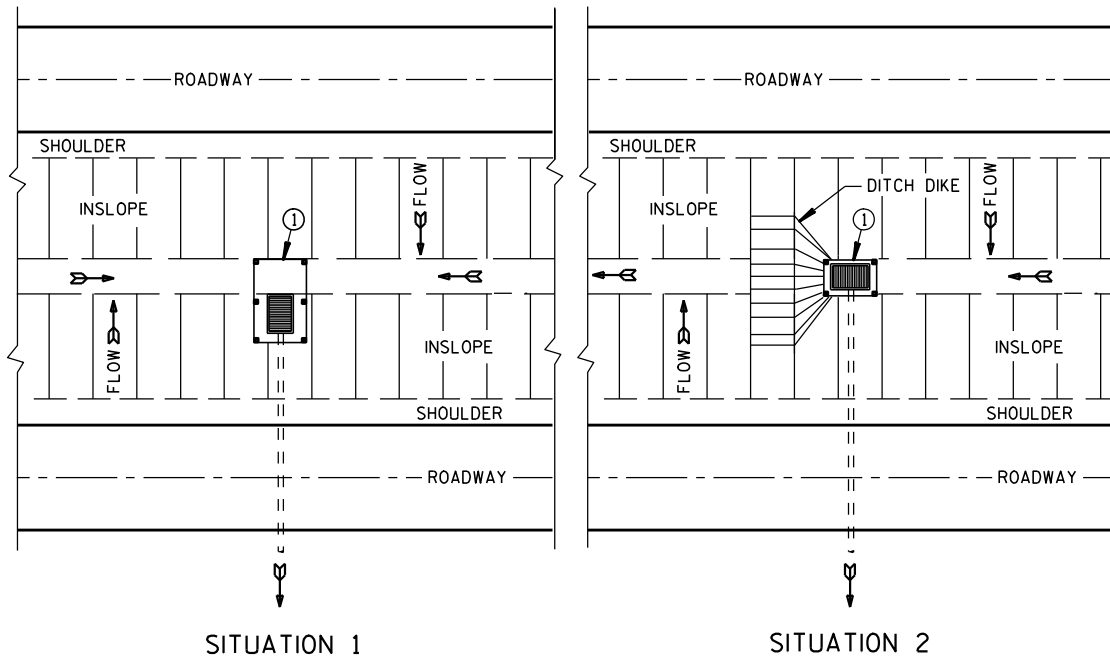
TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/04/02 /S/ Beth Canestra
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER
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PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE

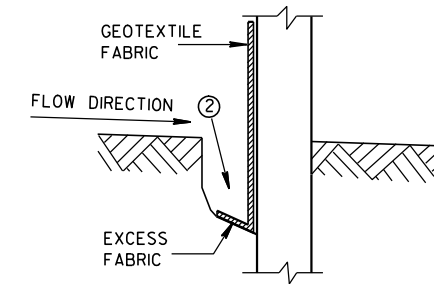


SITUATION 1 SITUATION 2
PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS

GENERAL NOTES

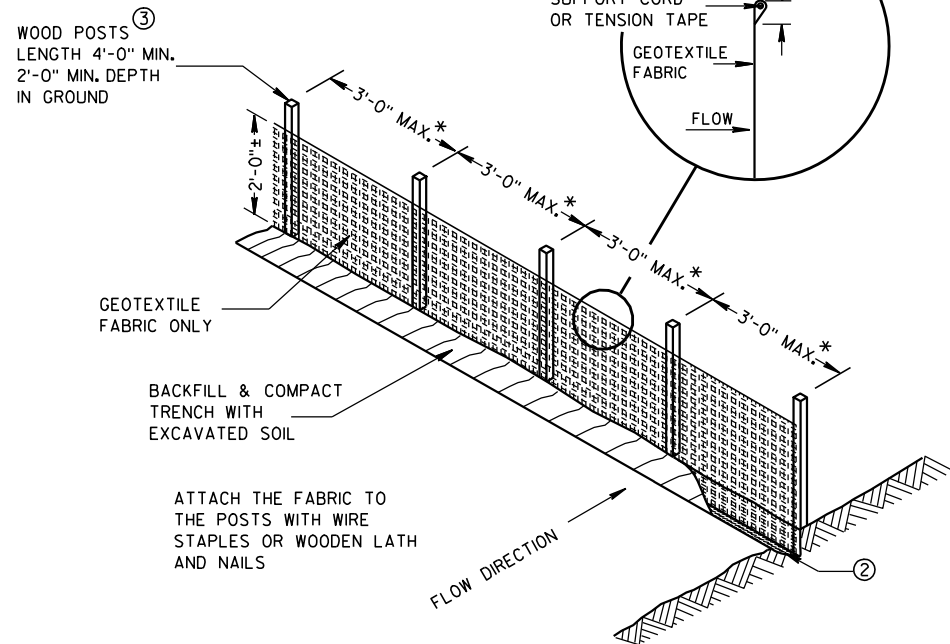
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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



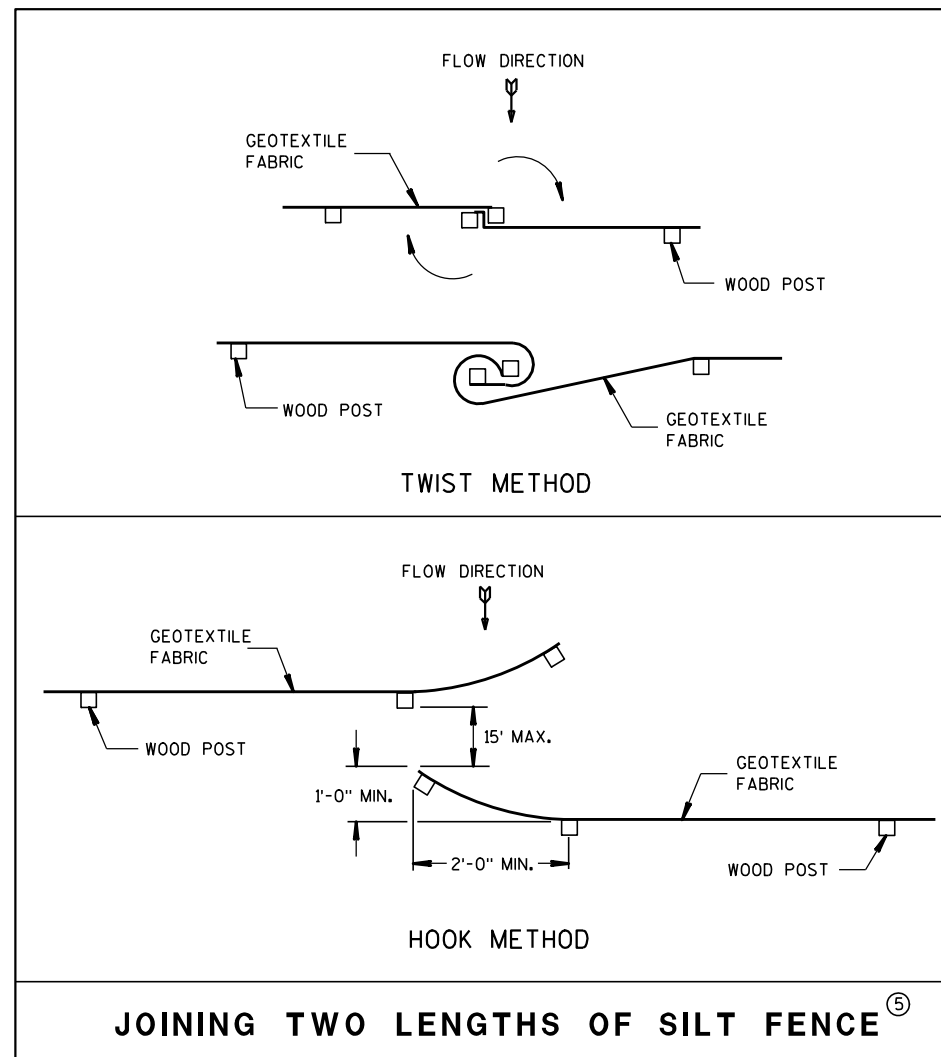
TRENCH DETAIL

NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS

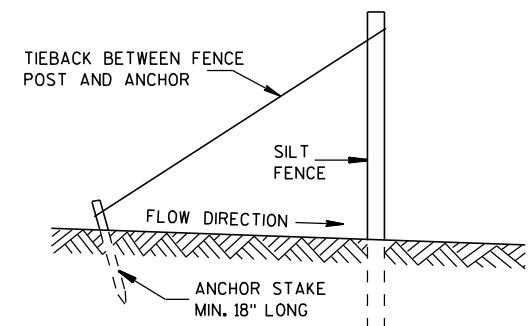


SILT FENCE

* NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.



JOINING TWO LENGTHS OF SILT FENCE ⑤

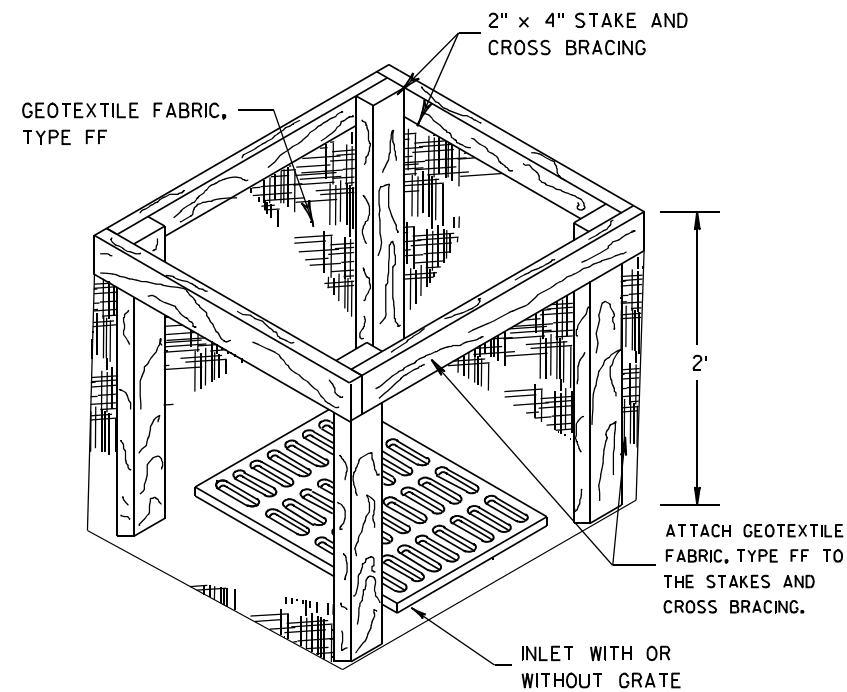
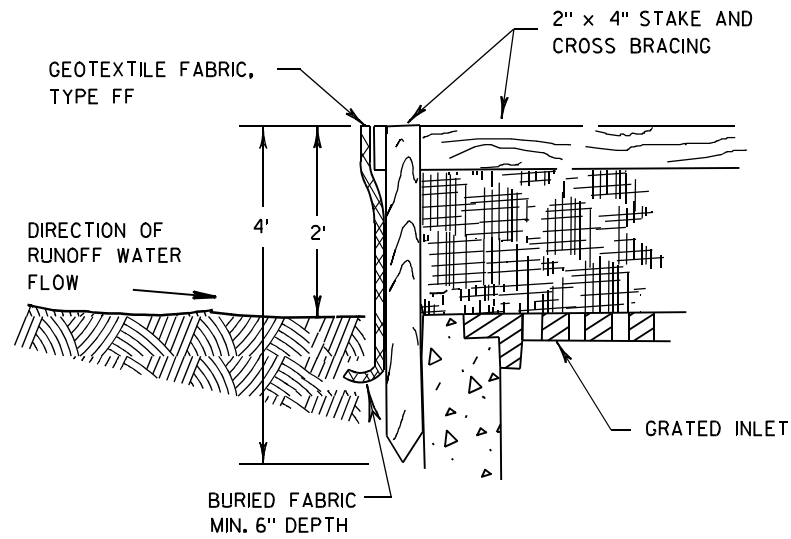


SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-29-05 /S/ Beth Canestra
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA



INLET PROTECTION, TYPE A

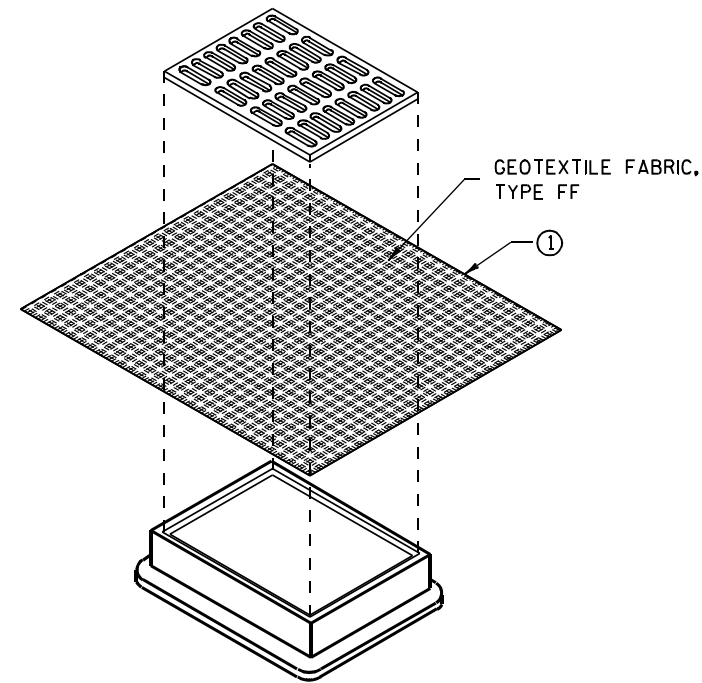
GENERAL NOTES

INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.

MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENT'S EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.

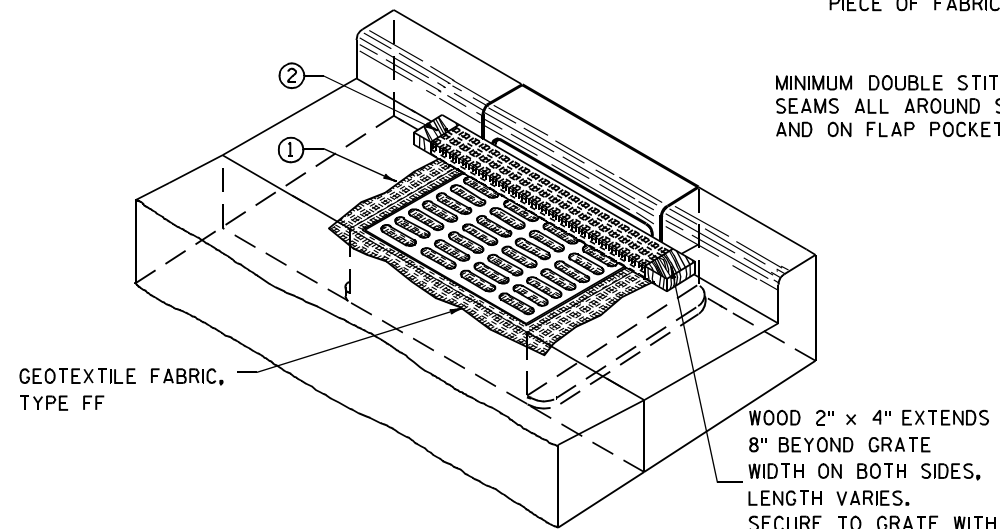
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

- ① FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
- ② FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.
- ③ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.



**INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)**

(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)



INLET PROTECTION, TYPE C (WITH CURB BOX)

INSTALLATION NOTES

TYPE B & C

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

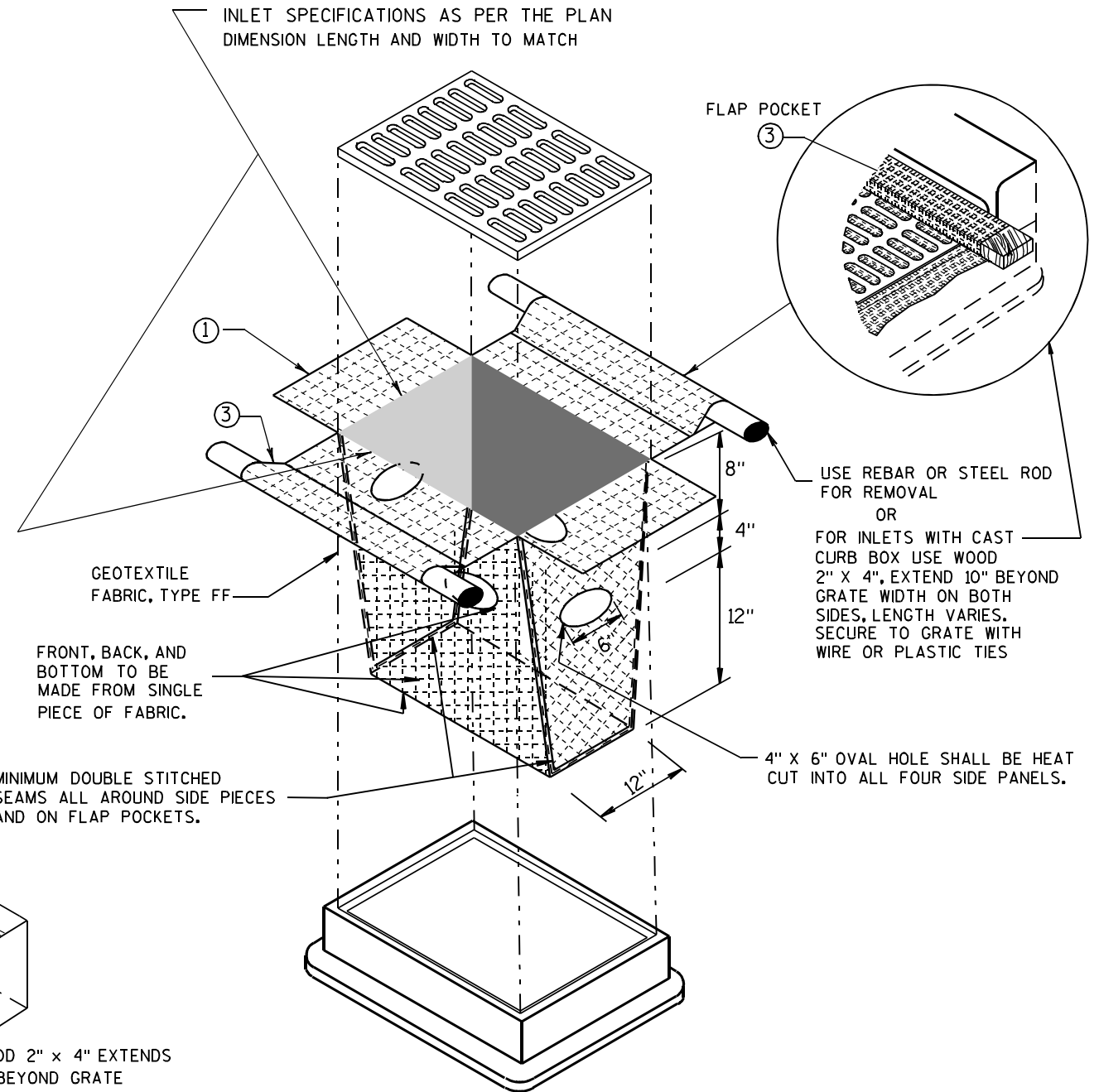
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

TYPE D

DO NOT INSTALL INLET PROTECTION TYPE D IN INLETS SHALLOWER THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

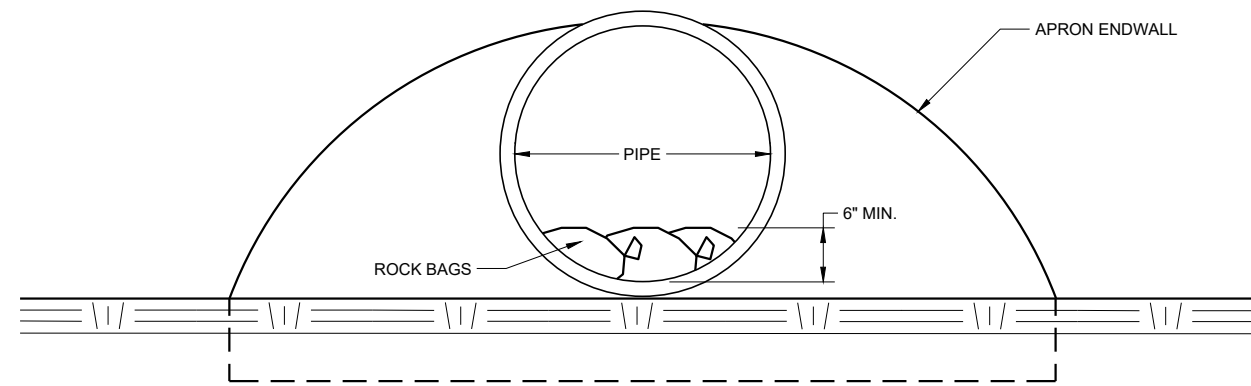
THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.



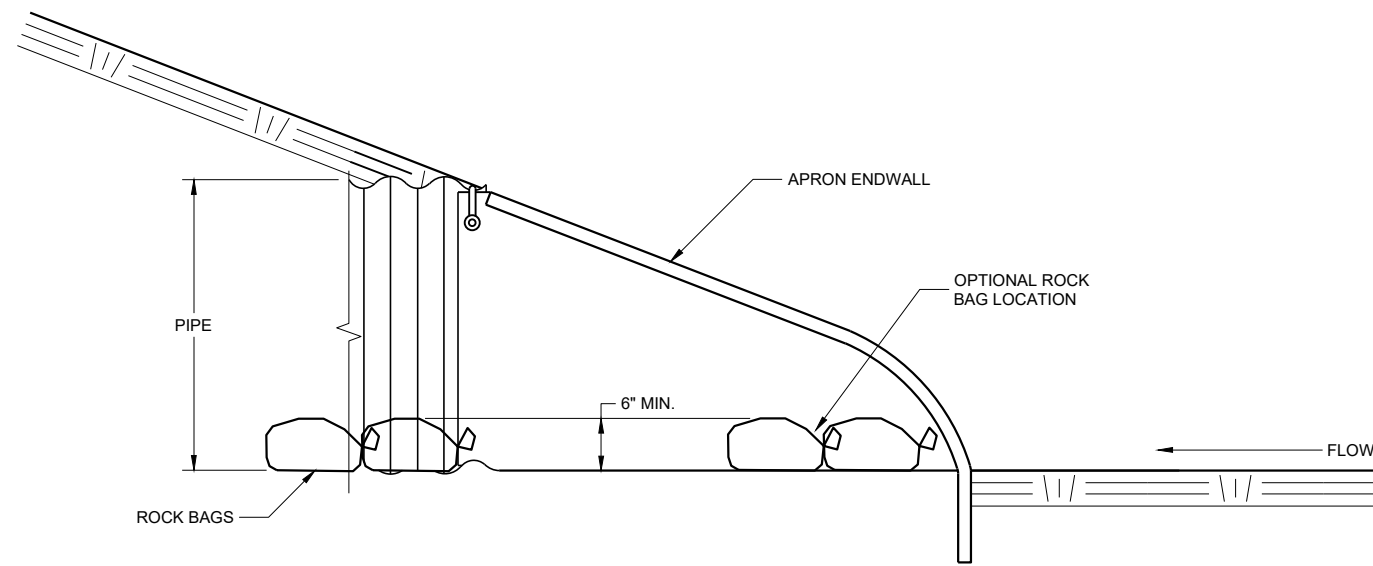
INLET PROTECTION, TYPE D

(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX AS PER NOTE ②)

INLET PROTECTION TYPE A, B, C, AND D	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 10/16/02 DATE	/s/ Beth Conestra CHIEF ROADWAY 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 /S/ Daniel Schave
DATE EROSION CONTROL ENGINEER

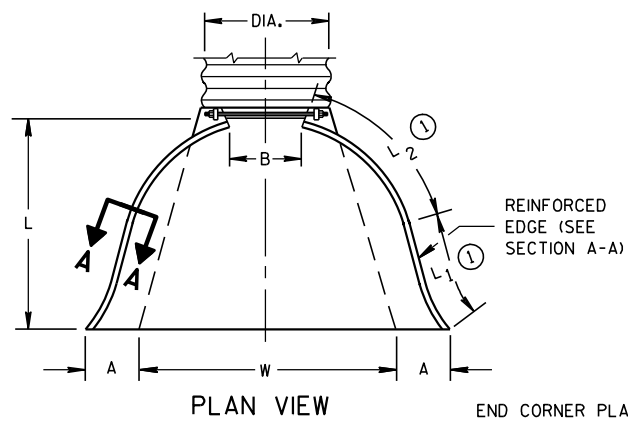
FHWA

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

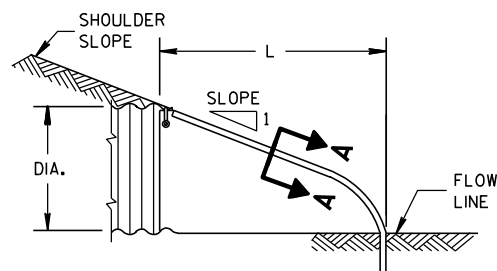
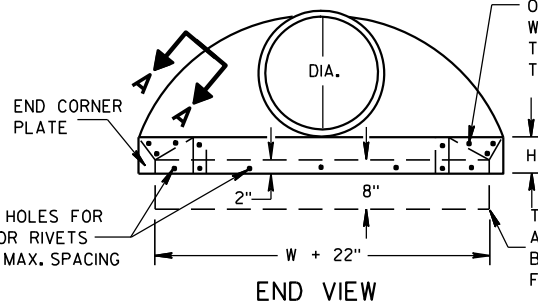
* EXCEPT CENTER PANEL SEE GENERAL NOTES

REINFORCED CONCRETE APRON ENDWALLS									
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE	
	T	A	B	C	D	E	G		
12	2	4	24	48 1/8	72 1/8	24	2	3 to 1	
15	2 1/4	6	27	46	73	30	2 1/4	3 to 1	
18	2 1/2	9	27	46	73	36	2 1/2	3 to 1	
21	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	3 to 1	
24	3	9 1/2	43 1/2	30	73 1/2	48	3	3 to 1	
27	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	3 to 1	
30	3 1/2	12	54	19 3/4	73 1/2	60	3 1/2	3 to 1	
36	4	15	63	34 3/4	97 3/4	72	4	3 to 1	
42	4 1/2	21	63	35	98	78	4 1/2	3 to 1	
48	5	24	72	26	98	84	5	3 to 1	
54	5 1/2	27	65	33 1/4-35	98 1/4-100	90	5 1/2	2 1/2 to 1	
60	6	* ** 30-35	60	39	99	96	5	2 to 1	
66	6 1/2	* ** 24-30	* ** 72-78	* ** 21-27	99	102	5 1/2	2 to 1	
72	7	* ** 24-36	78	21	99	108	6	2 to 1	
78	7 1/2	* ** 24-36	78	21	99	114	6 1/2	2 to 1	
84	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2 to 1	
90	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	1 1/2 to 1	

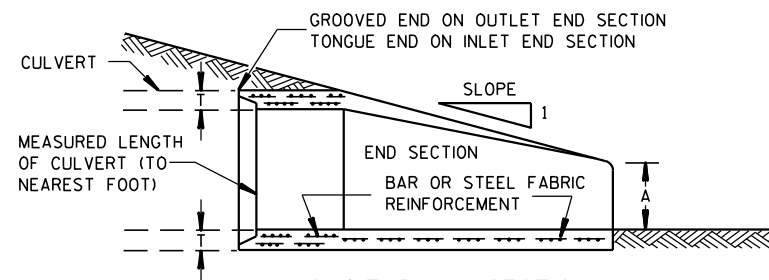
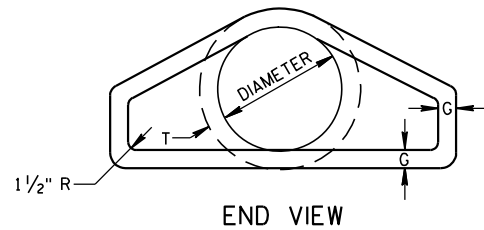
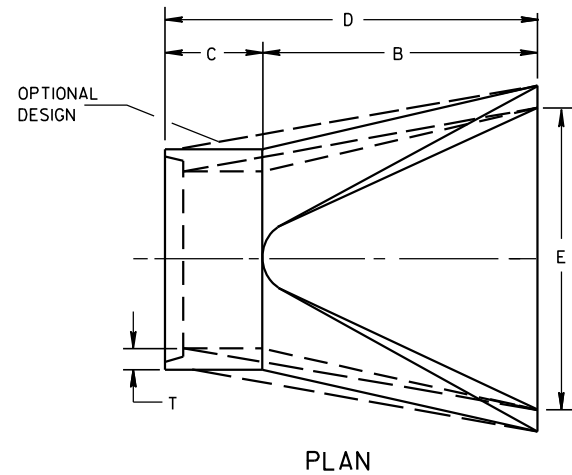
* MINIMUM
** MAXIMUM



REINFORCED EDGE (SEE SECTION A-A)
END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER
TOE PLATE (SAME THICKNESS AND METAL AS APRON) SHALL BE FURNISHED WHEN CALLED FOR ON THE PLANS

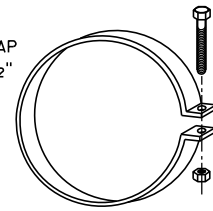


METAL ENDWALLS



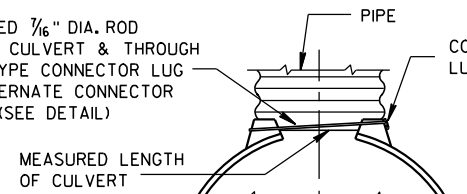
CONCRETE ENDWALLS

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



ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP

THREADED 1/16" DIA. ROD AROUND CULVERT & THROUGH TANK TYPE CONNECTOR LUG OR ALTERNATE CONNECTOR STRAP (SEE DETAIL)



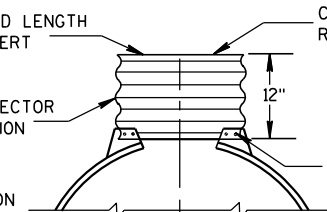
TYPE 1
FOR 12" THRU 24" CORR. PIPE

THREADED 1/16" DIA. ROD OVER TOP OF APRON, SIDE LUGS TO BE RIVETED TO APRON



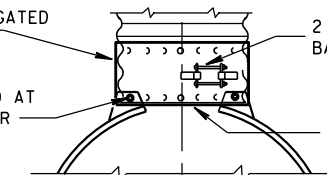
TYPE 2
FOR 30" THRU 96" CORR. PIPE

MEASURED LENGTH OF CULVERT
CONNECTOR SECTION TO BE PAID FOR AS PART OF END SECTION



TYPE 3
FOR 42" THRU 96" CORR. PIPE

DIMPLED OR CORRUGATED COUPLING BAND
RIVETED OR BOLTED AT DIMPLES (6" C-C FOR CORRUGATED BAND)



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

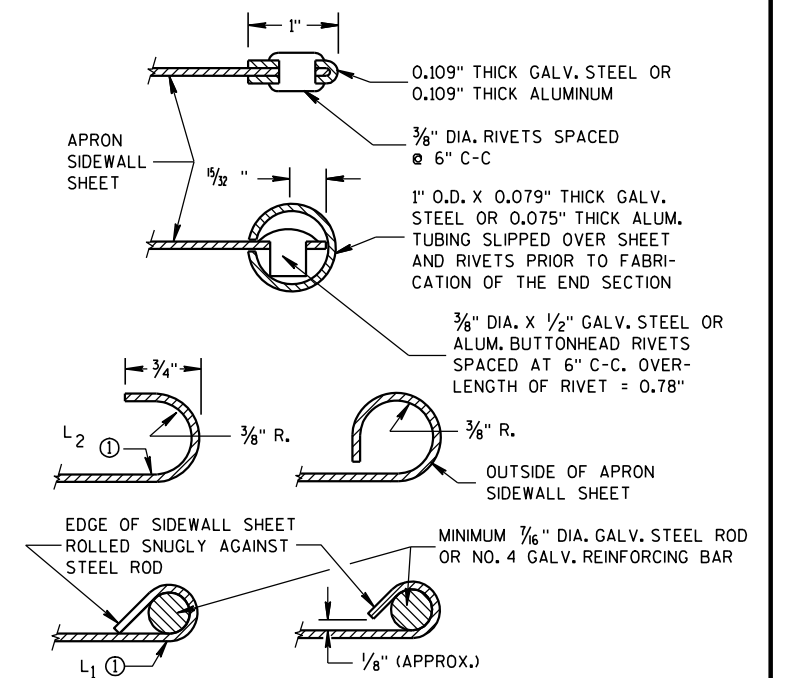
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

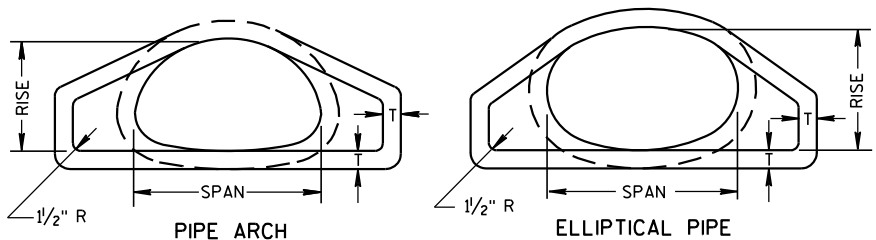
GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.
CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR VICE VERSA. GALVANIZED STEEL OR ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE OF THE SAME METAL.
ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE PERIMETER.
LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.
① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

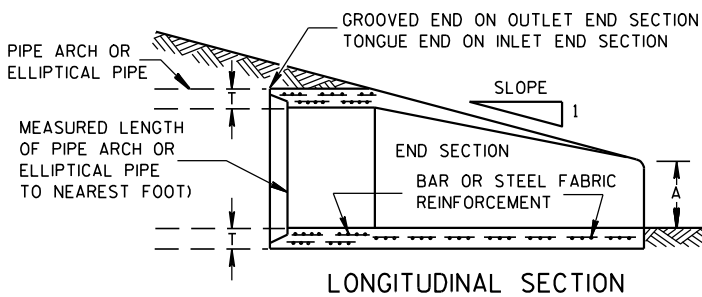
APRON ENDWALLS FOR CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/30/94 /S/ Rory L. Rhinesmith
DATE /S/ RORY L. RHINESMITH
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

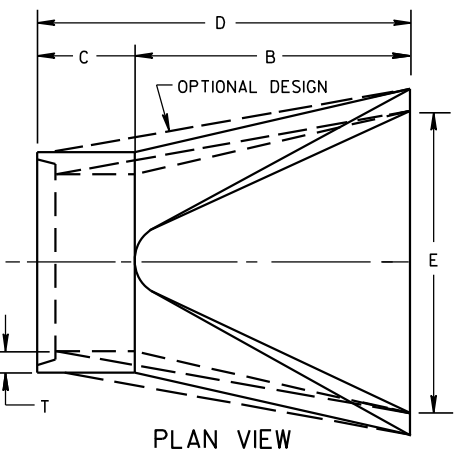


END VIEW



LONGITUDINAL SECTION

CONCRETE ENDWALLS



PLAN VIEW

EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	SPAN	RISE	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1/2")	L1 (±1")	L2 (±1")	W (±2")		
15	17	13	.064	.060	7	9	6	19	14	16	30	2 1/2 to 1	1 Pc.
18	21	15	.064	.060	7	10	6	23	14	19 3/8	36	2 1/2 to 1	1 Pc.
21	24	18	.064	.060	8	12	6	28	18	21 3/4	42	2 1/2 to 1	1 Pc.
24	28	20	.064	.060	9	14	6	32	18	27 1/2	48	2 1/2 to 1	1 Pc.
30	35	24	.079	.075	10	16	6	39	18	37 5/8	60	2 1/2 to 1	1 Pc.
36	42	29	.079	.075	12	18	8	46	24	45 3/8	75	2 1/2 to 1	1 Pc.
42	49	33	.109	.105	13	21	9	53	24	54 3/4	85	2 1/2 to 1	2 Pc.
48	57	38	.109	.105	18	26	12	63	24	68	90	2 1/2 to 1	3 Pc.
54	64	43	.109	.105	18	30	12	70	24	72 3/4	102	2 1/4 to 1	3 Pc.
60	71	47	.109*	.105*	18	33	12	77	30	82 1/4	114	2 1/4 to 1	3 Pc.
66	77	52	.109*	.105*	18	36	12	77	—	—	126	2 to 1	3 Pc.
72	83	57	.109*	.105*	18	39	12	77	—	—	138	2 to 1	3 Pc.

EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	SPAN	RISE	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1/2")	L1 (±1")	L2 (±1")	W (±2")		
48	53	41	.109	.105	18	26	12	63	24	72 3/4	90	2 1/2 to 1	2 Pc.
54	60	46	.109	.105	18	30	12	70	30	82 1/4	102	2 to 1	2 Pc.
60	66	51	.109*	.105*	18	33	12	77	—	—	114	1 1/2 to 1	3 Pc.
66	73	55	.109*	.105*	18	36	12	77	—	—	126	1 1/2 to 1	3 Pc.
72	81	59	.109*	.105*	18	39	12	77	—	—	138	2 to 1	3 Pc.
78	87	63	.109*	.105*	22	38	12	77	—	—	148	1 1/2 to 1	3 Pc.
84	95	67	.109*	.105*	22	34	12	77	—	—	162	1 1/2 to 1	3 Pc.
90	103	71	.109*	.105*	22	38	12	77	—	—	174	1 1/2 to 1	3 Pc.
96	112	75	.109*	.105*	24	40	12	77	—	—	174	1 1/2 to 1	3 Pc.

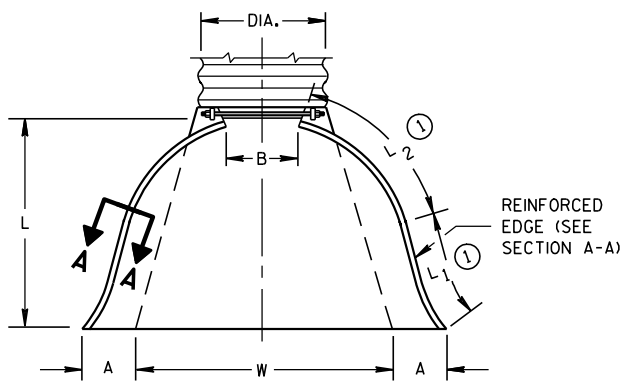
NOTE: ALL SPLICES TO BE LAP RIVETED OR BOLTED.

* EXCEPT CENTER PANEL SEE GENERAL NOTES

EQUIV. DIA. (Inches)	DIMENSIONS (Inches)									APPROX. SLOPE
	** SPAN	** RISE	T	A	B	C	D	E		
24	29	18	3	8 1/2	39	33	72	48	3 to 1	
30	36	22	3 1/2	9 1/2	50	46	96	60	3 to 1	
36	44	27	4	11 1/8	60	36	96	72	3 to 1	
42	51	31	4 1/2	15 1/8	60	36	96	78	3 to 1	
48	58	36	5	21	60	36	96	84	3 to 1	
54	65	40	5 1/2	25 1/2	60	36	96	90	3 to 1	
60	73	45	6	31	60	36	96	96	3 to 1	
72	88	54	7	31	60	39	99	120	2 to 1	
84	102	62	8	28 1/2	83	19	102	144	2 to 1	

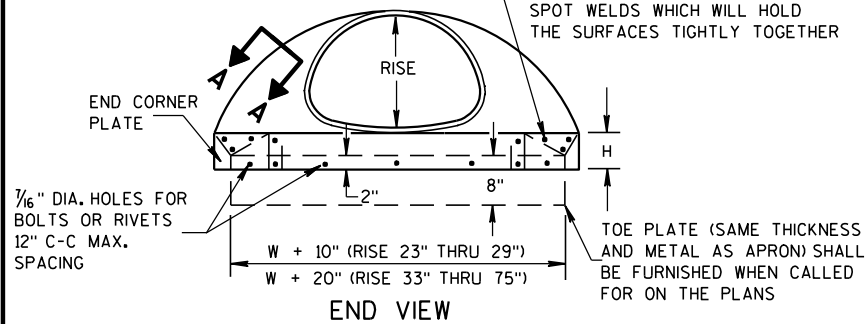
EQUIV. DIA. (Inches)	DIMENSIONS (Inches)									APPROX. SLOPE
	** SPAN	** RISE	T	A	B	C	D	E		
24	30	19	3 1/4	8 1/2	39	33	72	48	3 to 1	
30	38	24	3 3/4	9 1/2	54	18	72	60	3 to 1	
36	45	29	4 1/2	11 1/8	60	24	84	72	2 1/2 to 1	
42	53	34	5	15 3/4	60	36	96	78	2 1/2 to 1	
48	60	38	5 1/2	21	60	36	96	84	2 1/2 to 1	
54	68	43	6	25 1/2	60	36	96	90	2 1/2 to 1	
60	76	48	6 1/2	30	60	36	96	96	2 1/2 to 1	

** NOMINAL SIZE

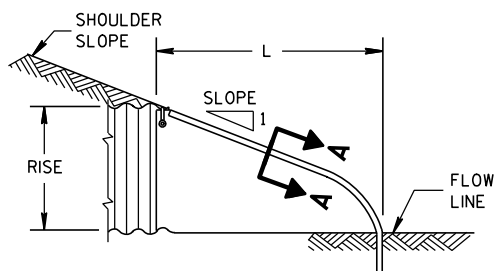


PLAN VIEW

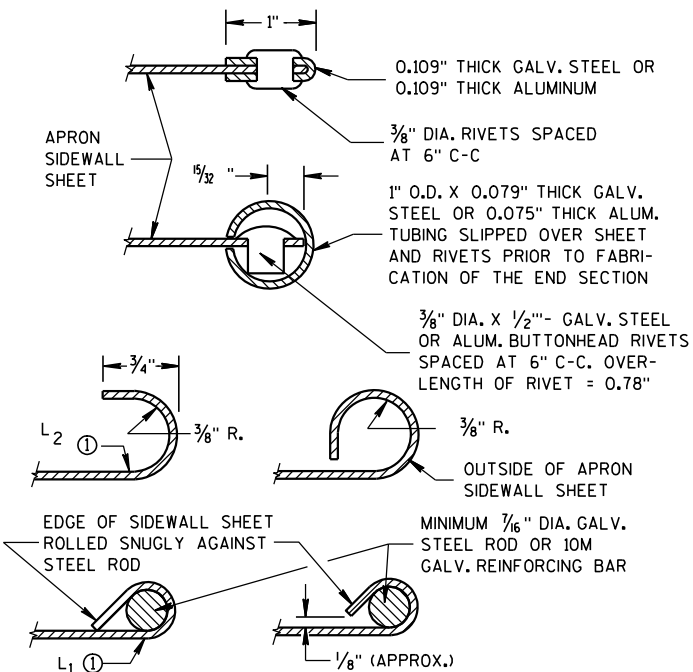
END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER.



END VIEW



SIDE ELEVATION METAL ENDWALLS

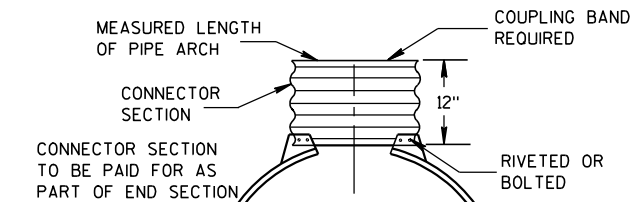


SECTION A-A



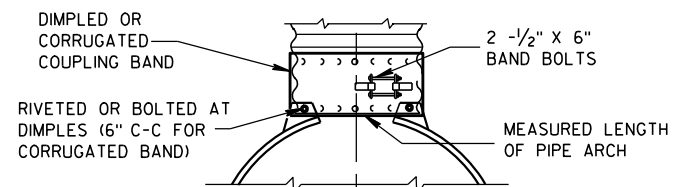
TYPE 2

FOR 17" X 13" THRU 112" X 75" PIPE ARCH



TYPE 3

FOR 64" X 43" THRU 112" X 75" PIPE ARCH



TYPE 5

ALTERNATE FOR:

ALL SIZES CORRUGATED PIPE ARCHES

NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL.

CONNECTION DETAILS

GENERAL NOTES

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

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

ALL THREE PIECE STEEL APRON ENDWALLS FOR 66" X 51" PIPE ARCH AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 66" X 51" PIPE ARCH AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE ARCH PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 77" X 52" THROUGH 112" X 75" APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.

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

① FOR PIPE ARCH SIZES UP TO 73" X 55" A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

APPROVED

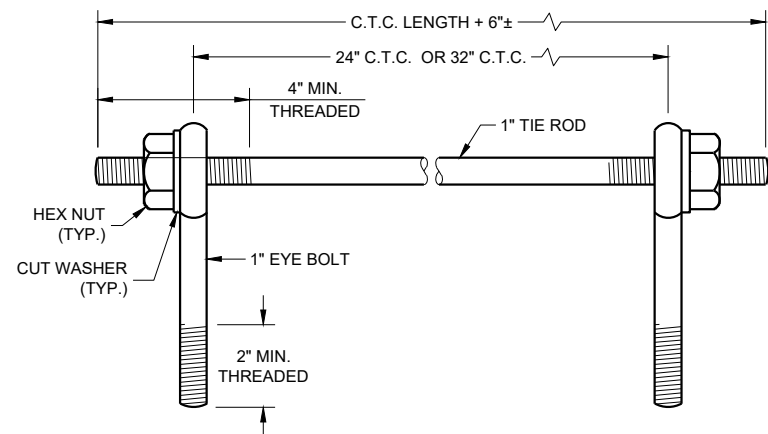
11/30/94

DATE

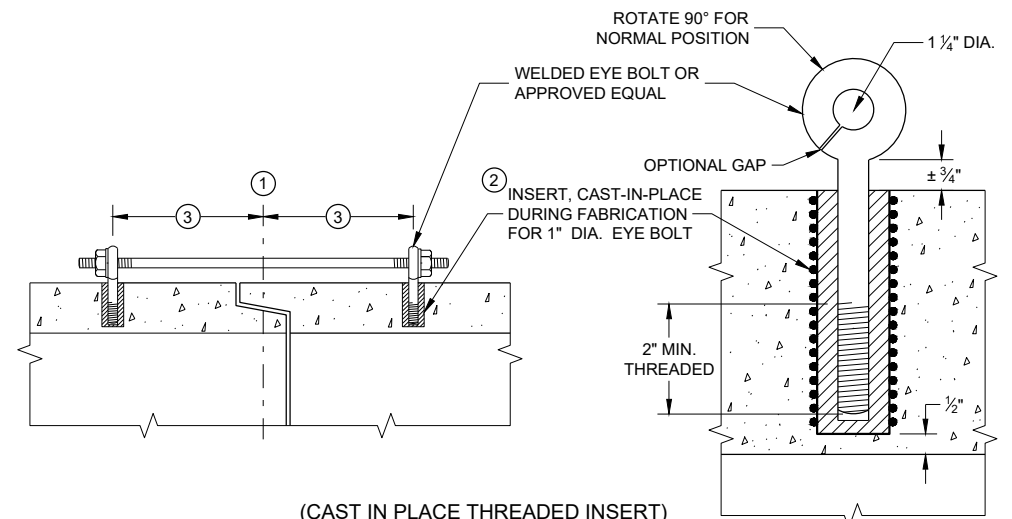
/S/ Rory L. Rhinesmith

CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA



EYE BOLTS AND TIE ROD
EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 1)



(CAST IN PLACE THREADED INSERT)
LONGITUDINAL SECTIONS

GENERAL NOTES

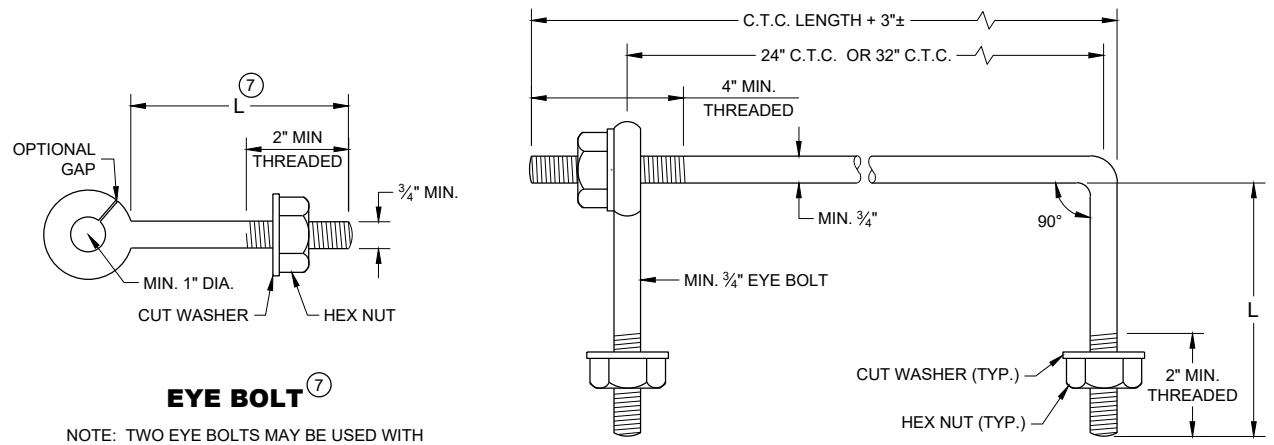
DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

CONCRETE CULVERT AND STORM SEWER PIPE SHALL BE TIED TOGETHER IN THE MANNER ILLUSTRATED BY THIS DETAIL AT LOCATIONS DESIGNATED IN THE STANDARD SPECIFICATIONS AND THE PLAN. THE CONTRACTOR MAY USE EITHER ALTERNATE 1, 2 OR 3 FOR DRAINAGE STRUCTURES. ONLY ALTERNATE 1 AND 3 MAY BE USED FOR CATTLE PASSES, UNLESS OTHERWISE STATED IN THE CONTRACT. THE MATERIALS, FABRICATION AND WORK NECESSARY TO TIE THE PIPE BY THIS DETAIL WILL BE CONSIDERED INCIDENTAL TO THE PIPE AND APRON ENDWALLS IF REQUIRED.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR JOINT TIES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

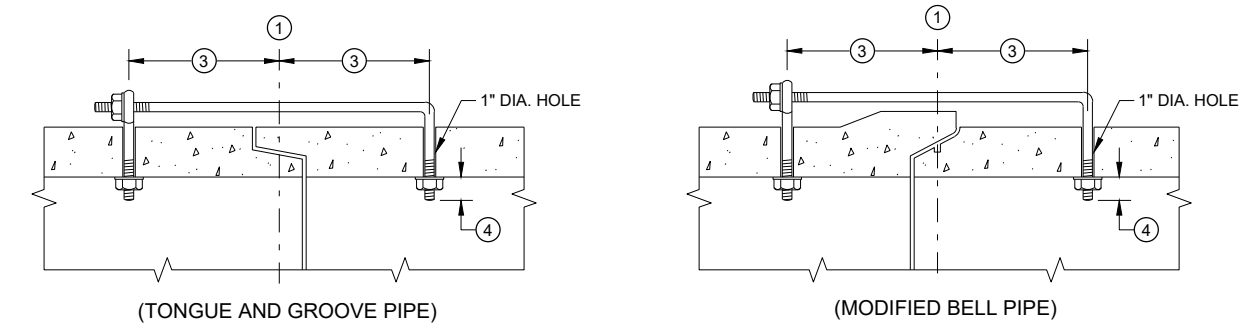
JOINT TIES TO BE HOT-DIP GALVANIZED PER ASTM A 153.

- ① CENTER LINE OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.
- ② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.
- ③ HOLES SHALL BE CAST-IN-PLACE OR DRILLED PER THE APPLICABLE DETAIL, AND EQUAL DISTANCE FROM THE CENTERLINE OF THE JOINT.
- ④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.
- ⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.
- ⑥ LENGTH ADEQUATE TO EXTEND TO WITHIN 1/2 INCH OF THE INNER SURFACE OF THE PIPE.
- ⑦ EYE BOLT LENGTH DETERMINED BY WALL THICKNESS, BELL THICKNESS AND BOLT PROJECTION INSIDE PIPE.



EYE BOLT AND TIE ROD

EYE BOLT
 NOTE: TWO EYE BOLTS MAY BE USED WITH A 30" OR 38" LONG THREADED ROD IN LIEU OF THE 90° BENT TIE ROD.



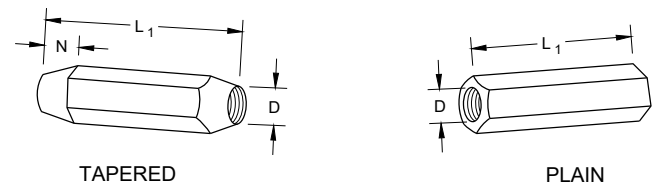
LONGITUDINAL SECTION
 (JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)

EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 2)

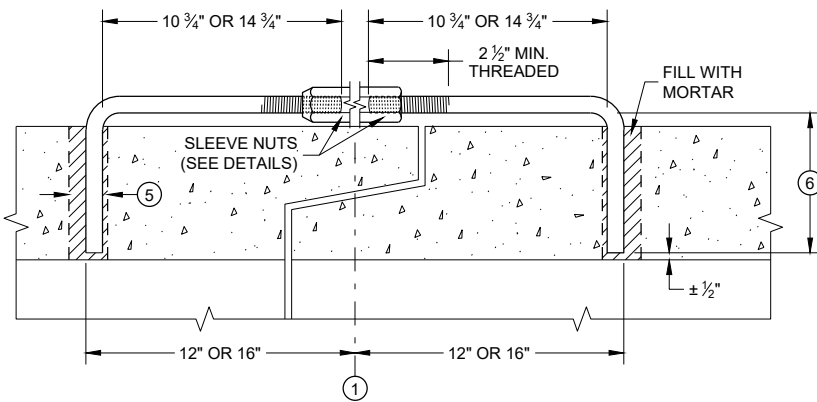
ADJUSTABLE TIE ROD TABLE

PIPE DIAMETER	TIE ROD DIAMETER	D	L ₁	N
12 - 60	5/8	5/8	5	1/2
66 - 84	3/4	3/4	5	1/2
90 - 144	1	1	7	1 1/16

DIMENSIONS SHOWN ARE IN INCHES

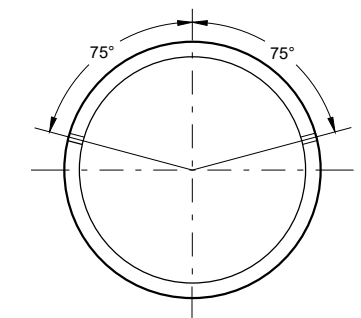


RIGHT AND LEFT THREADS SLEEVE NUTS



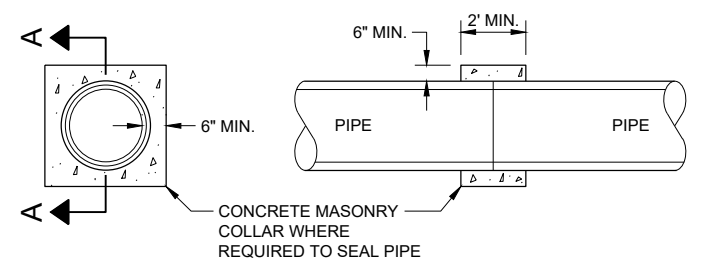
LONGITUDINAL SECTION

ADJUSTABLE TIE ROD (ALTERNATE NO. 3)



PLACEMENT OF (2) CAST-IN-PLACE INSERTS OR HOLES DURING FABRICATION FOR PIPE SECTIONS REQUIRING TIE RODS

TRANSVERSE SECTION

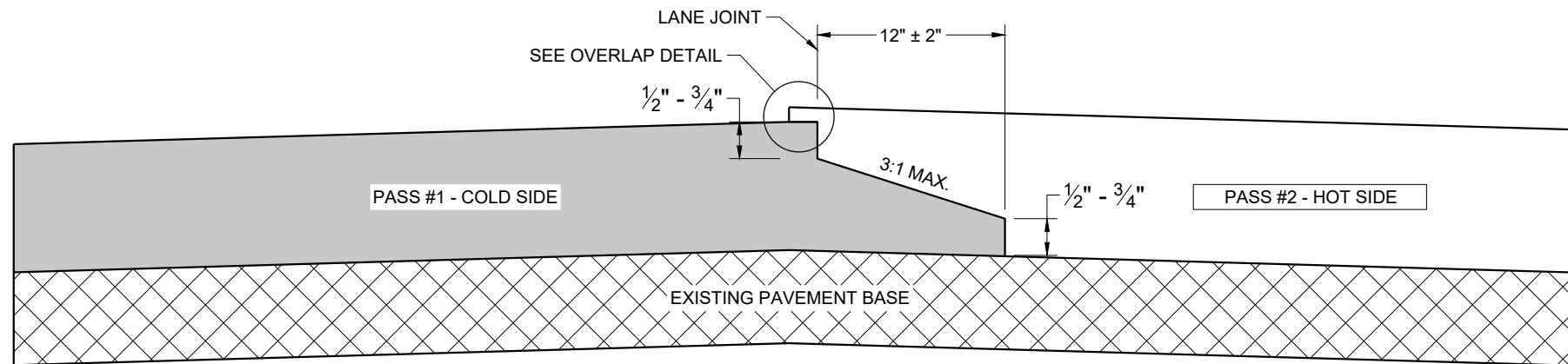


SECTION A - A
CONCRETE COLLAR DETAIL

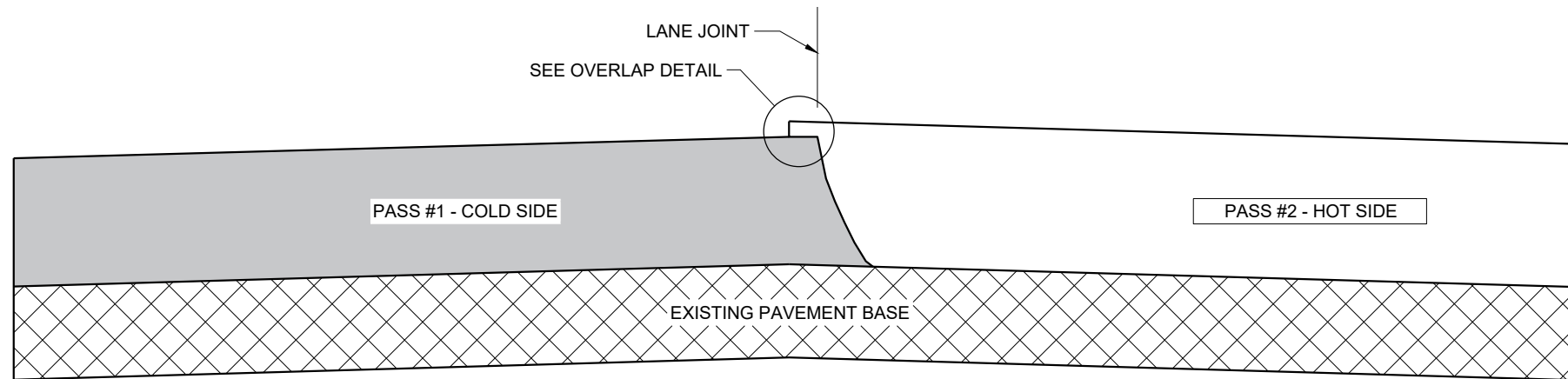
JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

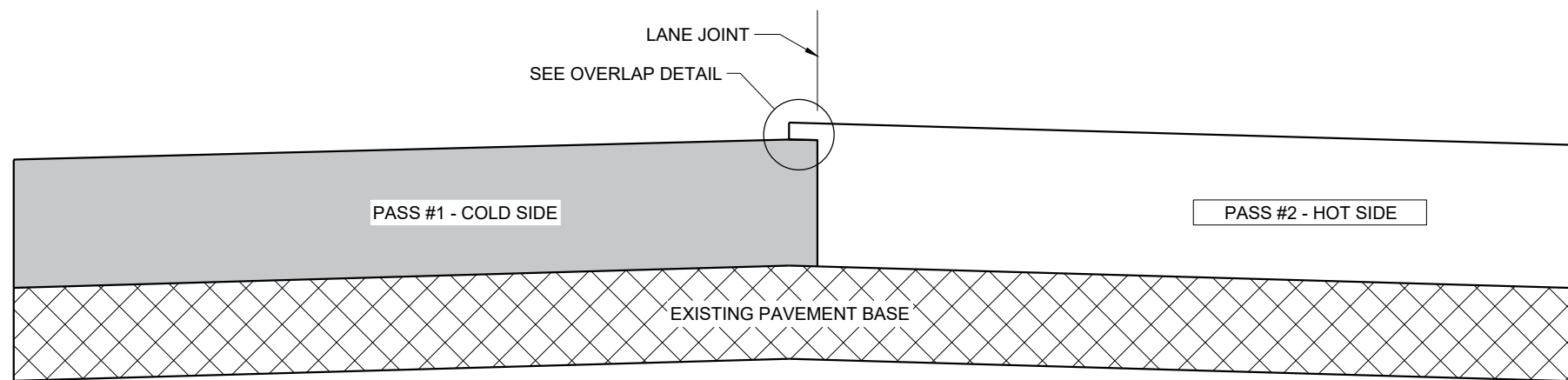
APPROVED
 November 2021 /S/ Rodney Taylor
 DATE ROADWAY STANDARDS DEVELOPMENT ENGINEER
 FHWA



**TYPICAL PAVEMENT CROSS SECTION
NOTCHED WEDGE JOINT**



**TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT**



**TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT (MILLED)**

GENERAL NOTES

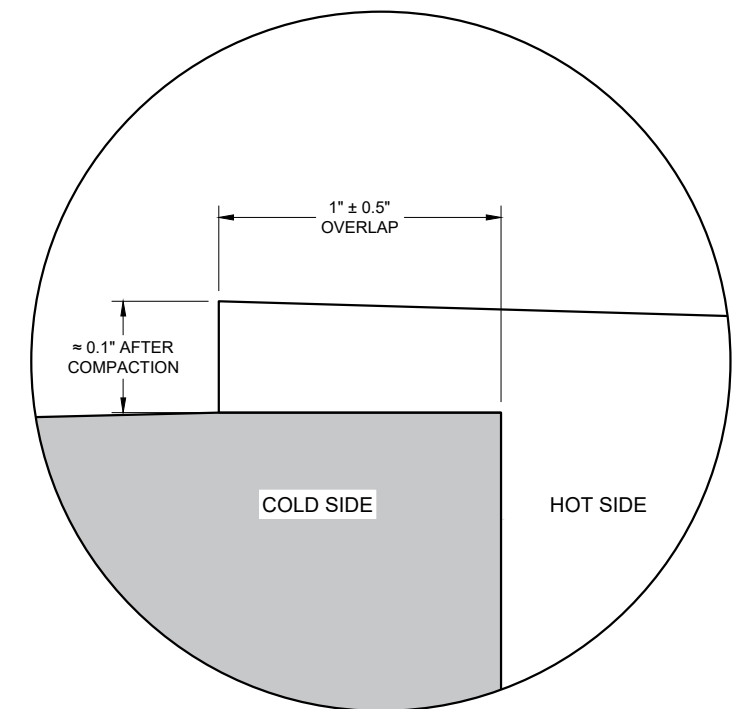
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

FOR ALL LONGITUDINAL JOINTS, ENSURE THE PAVER SCREED OVERLAPS THE PREVIOUSLY PLACED PAVEMENT BY $1" \pm 0.5"$ AND THE HOT SIDE OF THE JOINT REMAINS HIGHER THAN THE COLD SIDE BY APPROXIMATELY $0.1"$ AFTER FINAL COMPACTION. (IT WILL BE FLUSH WHEN PAVING IN ECHELON.)

ONLY REMOVE THE LONGITUDINAL NOTCHED WEDGE JOINT FOR SMA PAVEMENT OR AS DIRECTED BY THE ENGINEER TO ADDRESS SPECIFIC LENGTHS OF JOINT DAMAGED BY TRAFFIC.

WHEN MILLING BACK OR REMOVING ANY LONGITUDINAL JOINT, LIMIT THE MATERIAL REMOVED TO $2"$ FROM THE TOP NOTCH OR FROM THE VERTICAL JOINT EDGE ON THE COLD SIDE OF THE JOINT.

USE LONGITUDINAL MILLED JOINT AS PLANS SHOW OR THE AS THE ENGINEER DIRECTS.



OVERLAP DETAIL (TYPICAL)

6

6

SDD 13C19 - 03

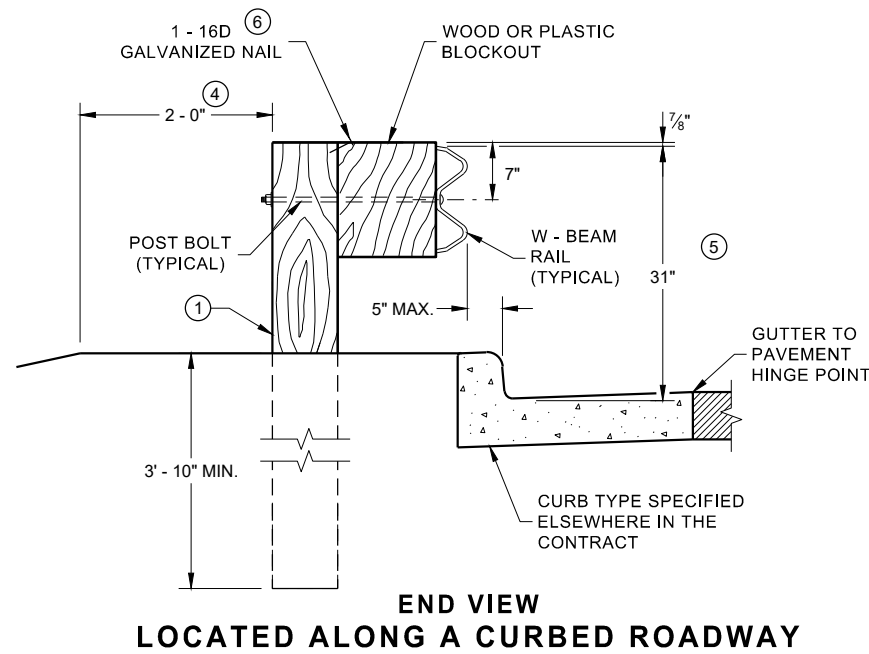
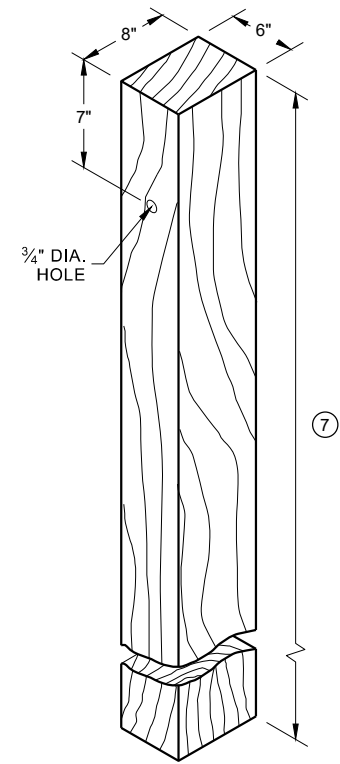
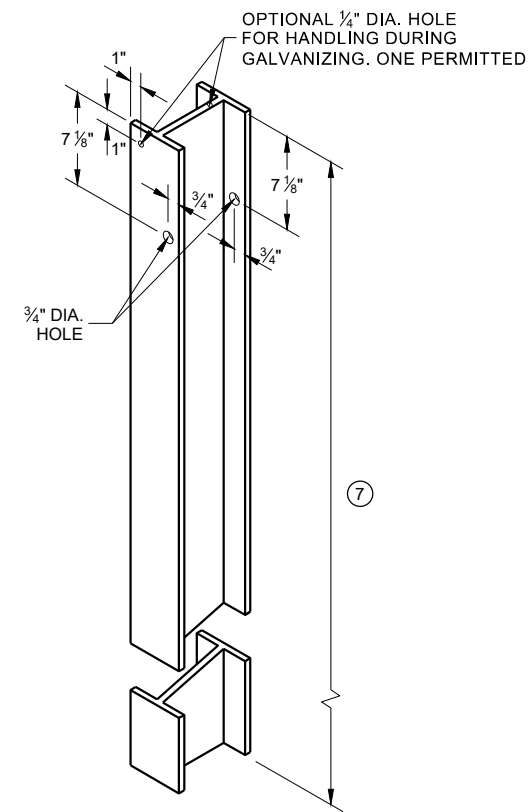
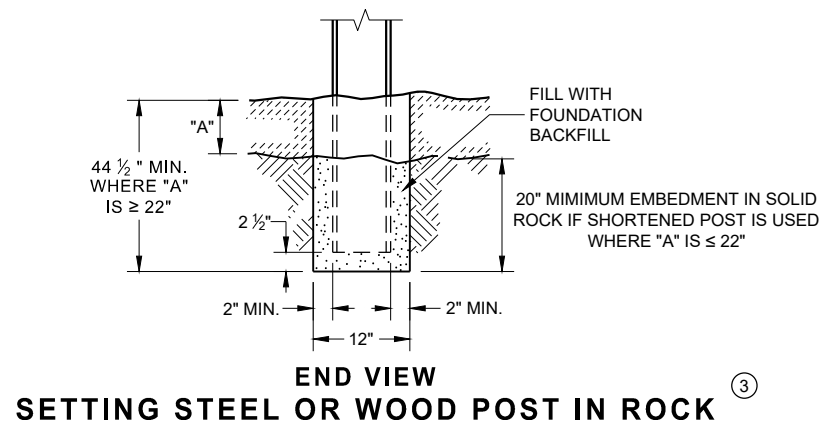
SDD 13C19 - 03

HMA LONGITUDINAL JOINTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

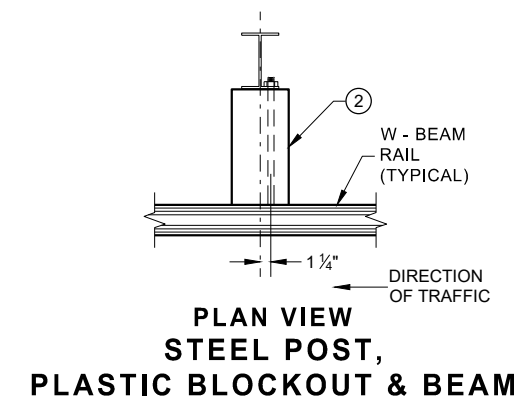
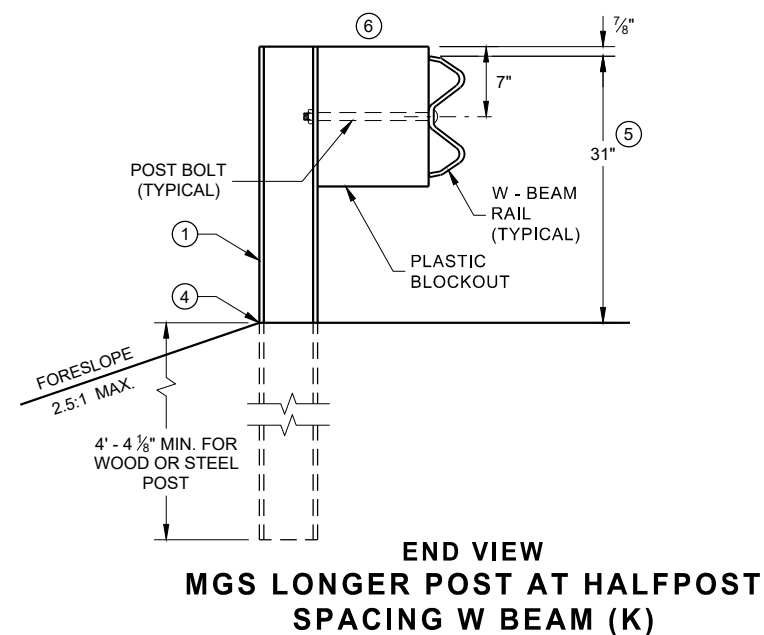
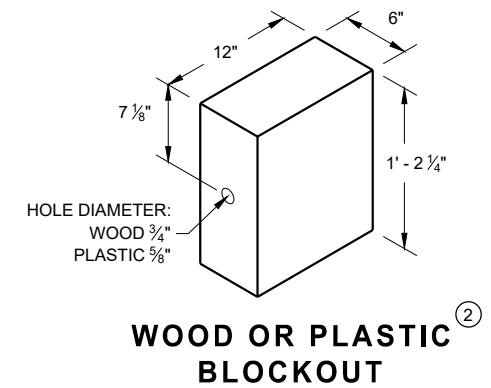
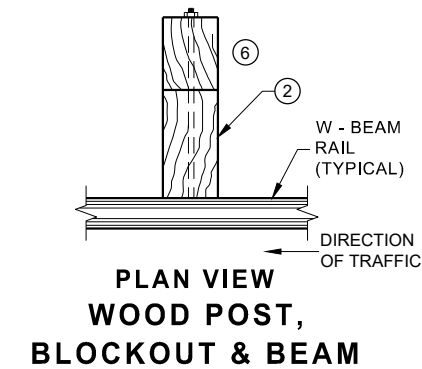
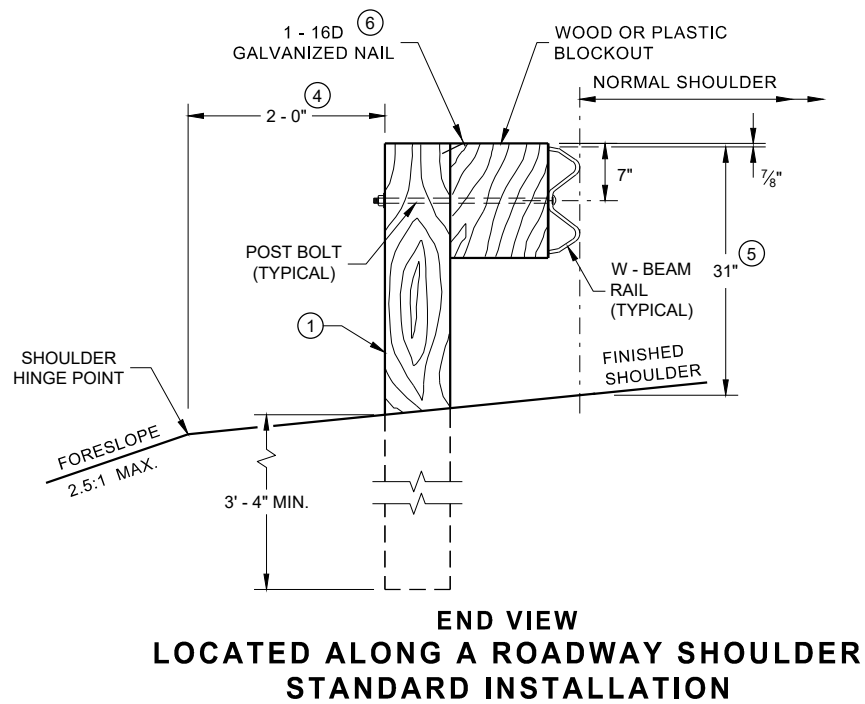
APPROVED
November 2020 DATE /S/ Steven Hefel
HMA PAVEMENT ENGINEER
FHWA

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



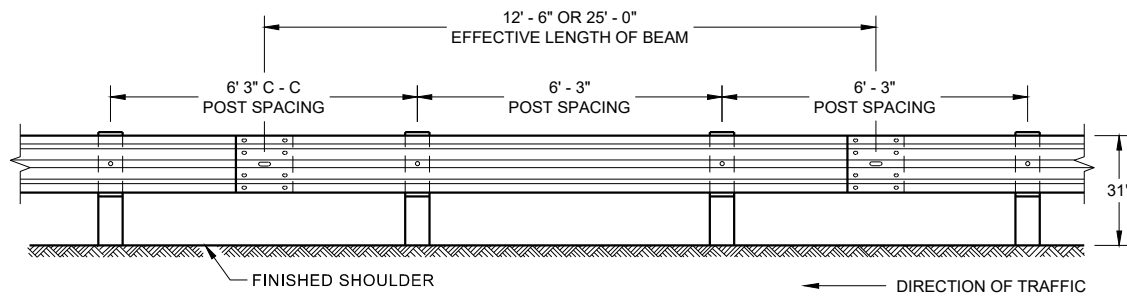
**STEEL POST & HOLE
PUNCHING DETAIL**
(W 6 X 9) ①

**WOOD POST
(6" X 8") NOMINAL** ①

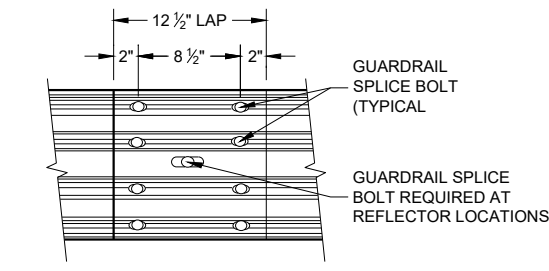


**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



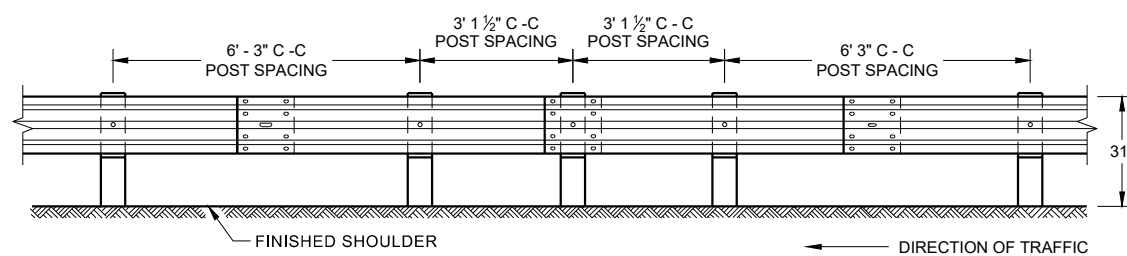
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



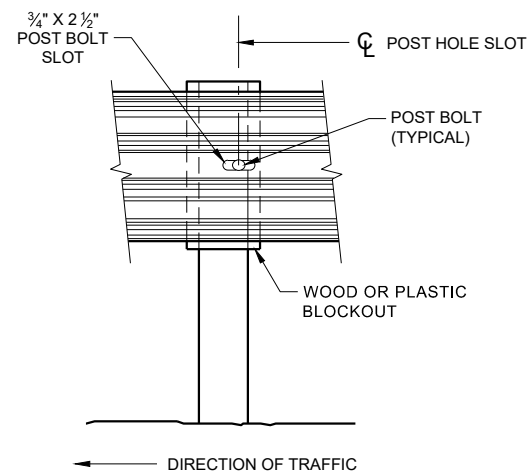
**FRONT VIEW
MID-SPAN BEAM SPLICE**

GENERAL NOTES

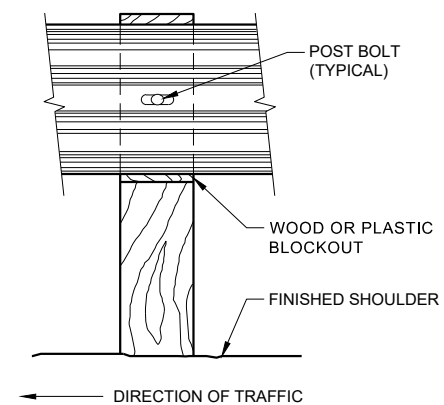
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
 - ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER 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 3/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



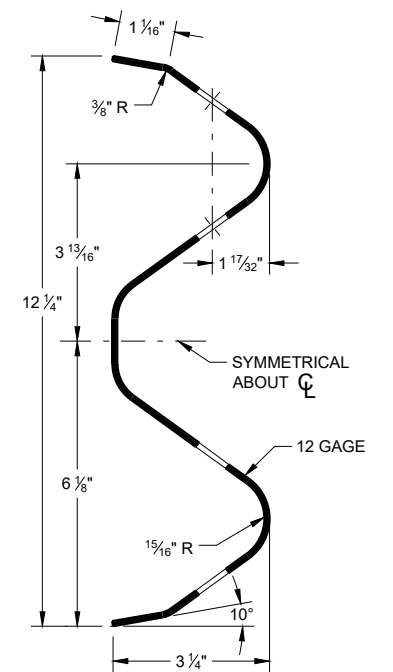
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



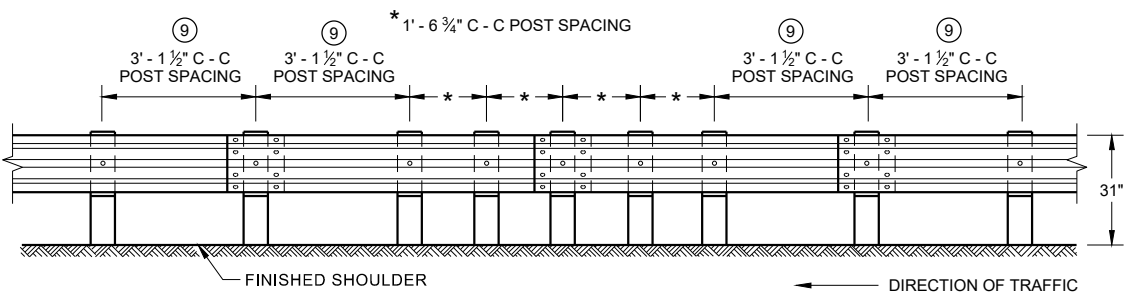
FRONT VIEW AT STEEL POST



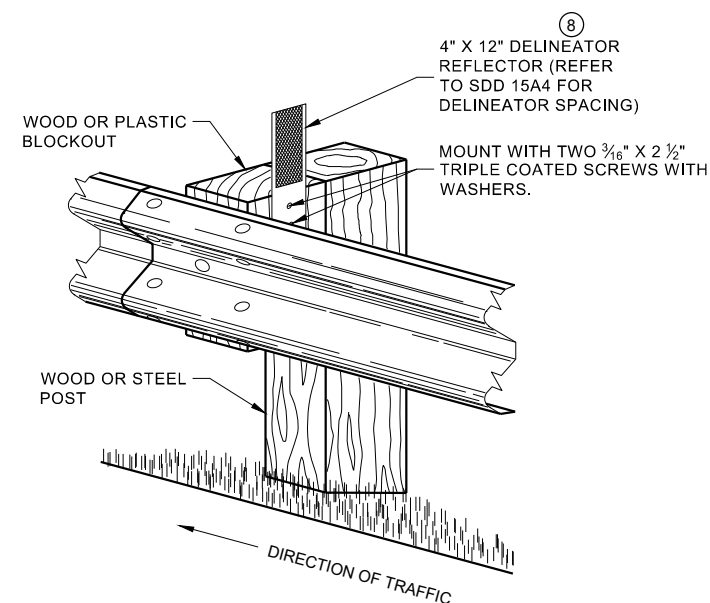
FRONT VIEW AT WOOD POST



SECTION THRU W-BEAM RAIL



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



**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

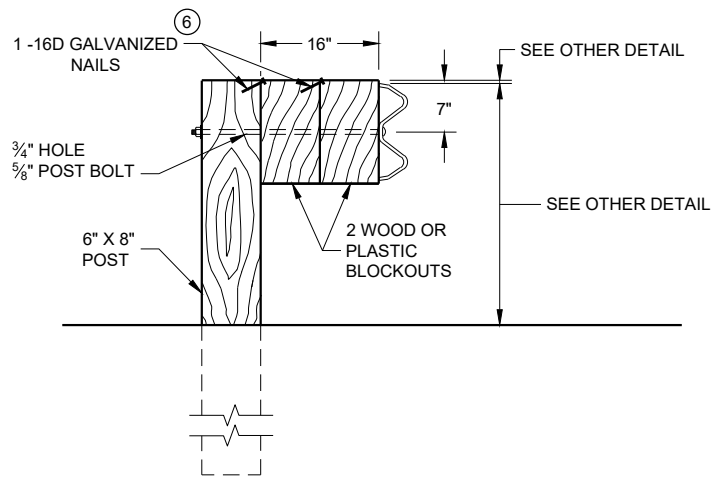
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

6

SDD 14B42 - 07b

SDD 14B42 - 07b

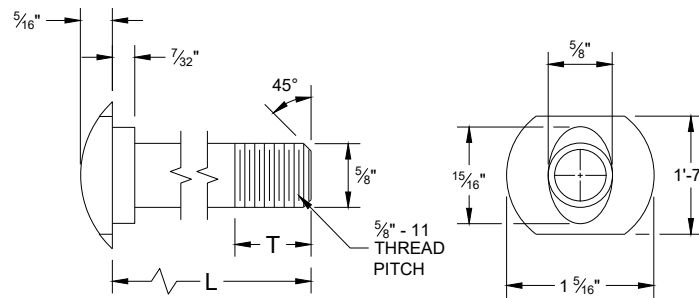


DETAIL FOR 16" BLOCKOUT DEPTH

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.

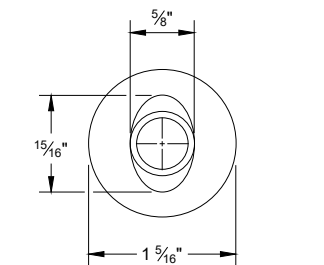
NOTE:

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.

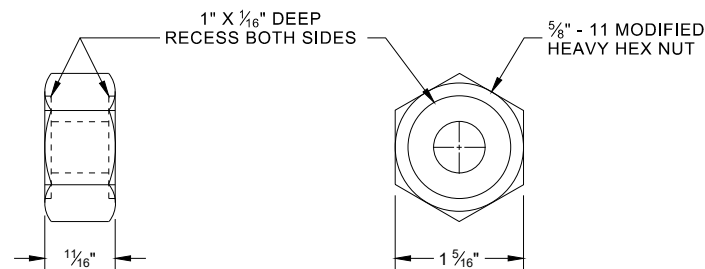


POST BOLT TABLE

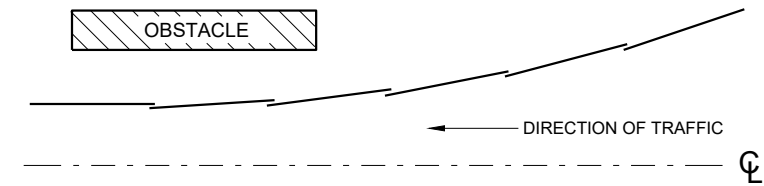
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



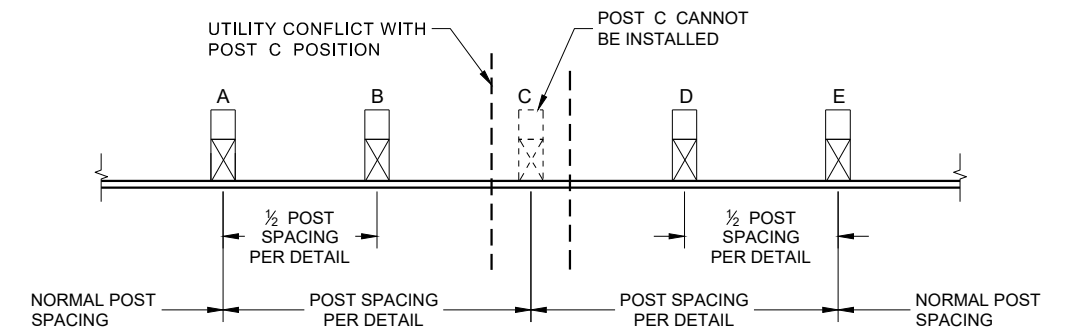
ALTERNATE BOLT HEAD



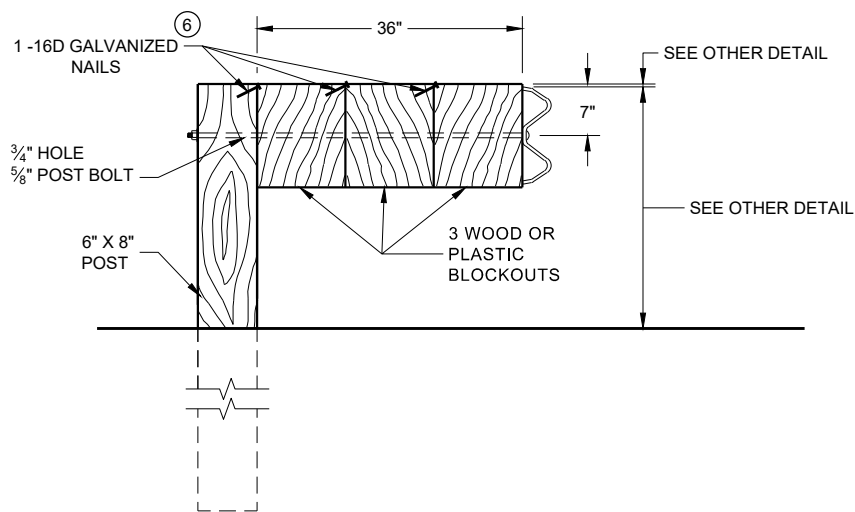
POST BOLT, SPLICE BOLT AND RECESS NUT



PLAN VIEW BEAM LAPPING DETAIL

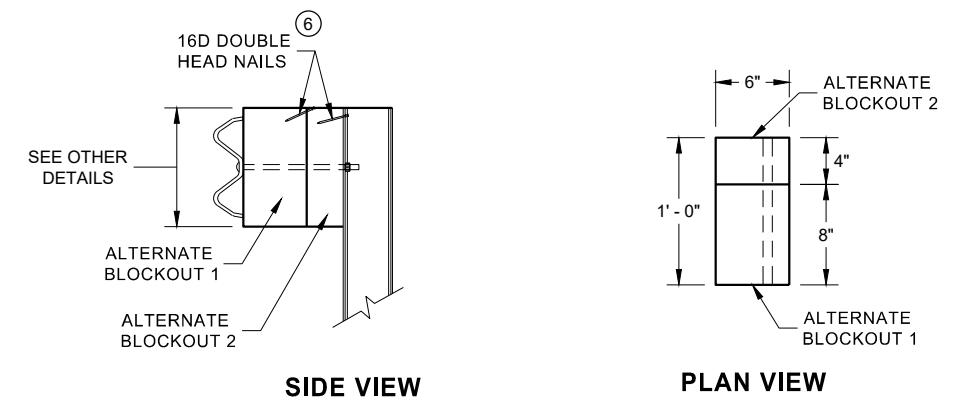


POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



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.

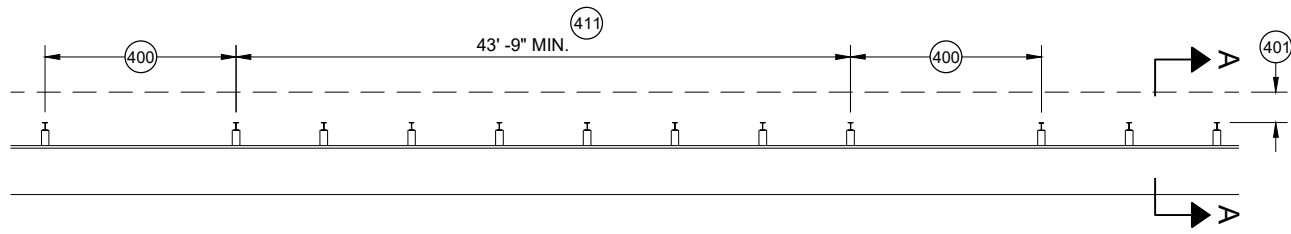


ALTERNATE WOOD BLOCKOUT DETAIL

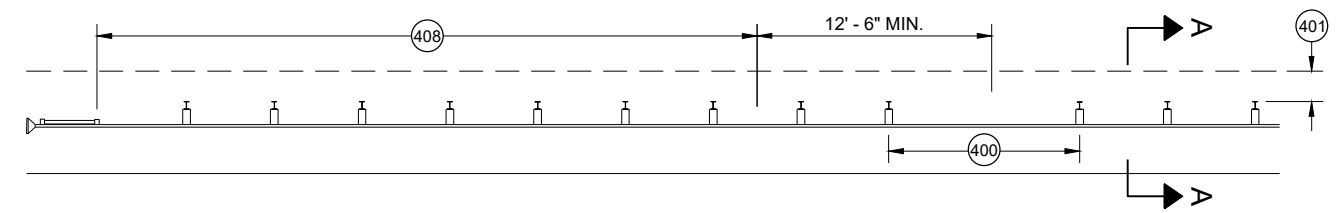
6 WHEN USING STEEL POST AND WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

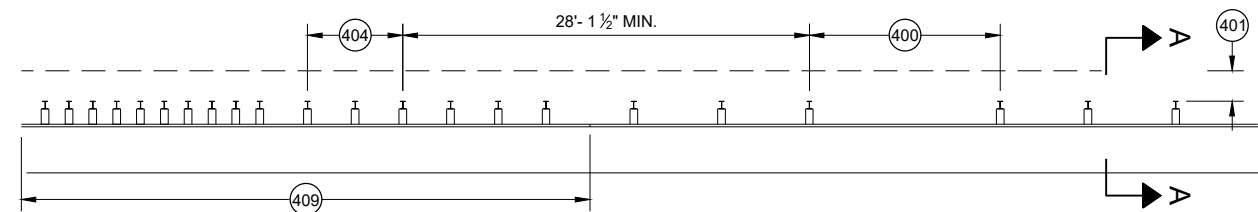
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



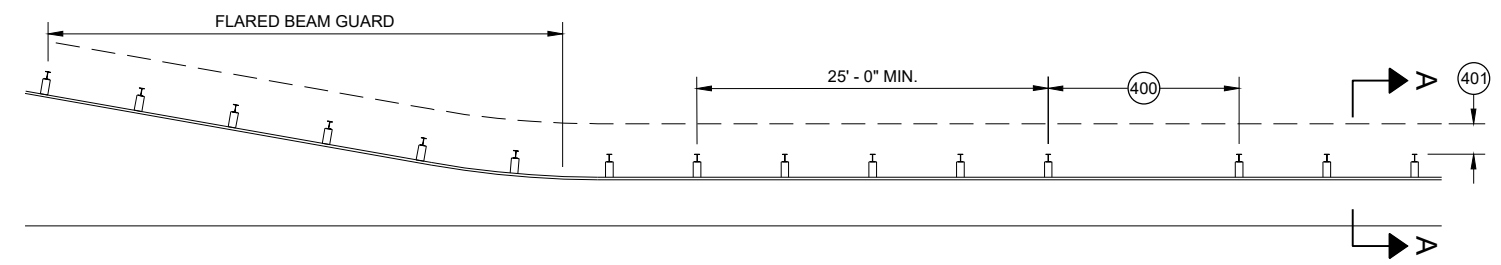
MISSING POST IN MGS GUARDRAIL



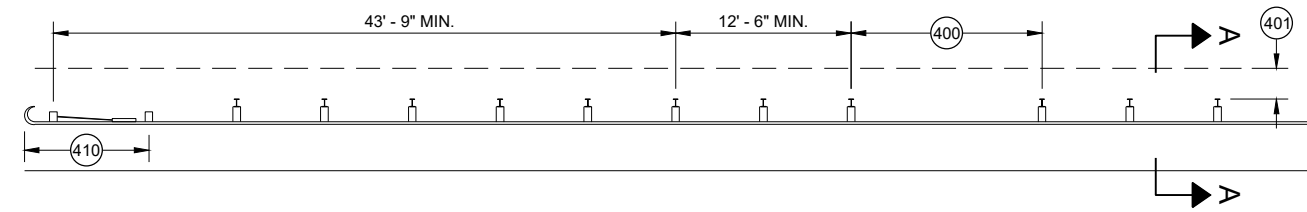
MISSING POST IN MGS GUARDRAIL NEAR EAT



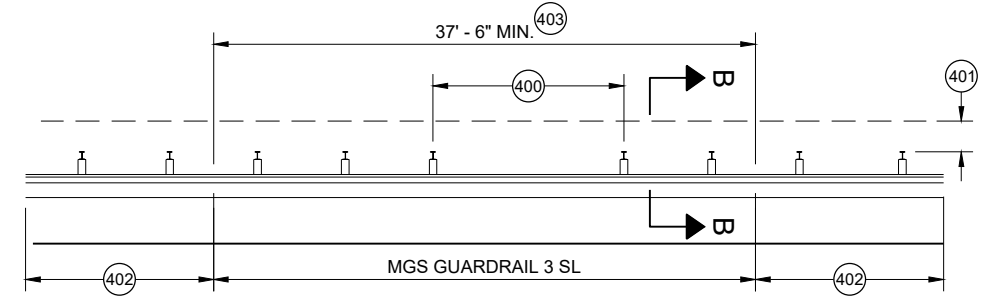
MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD

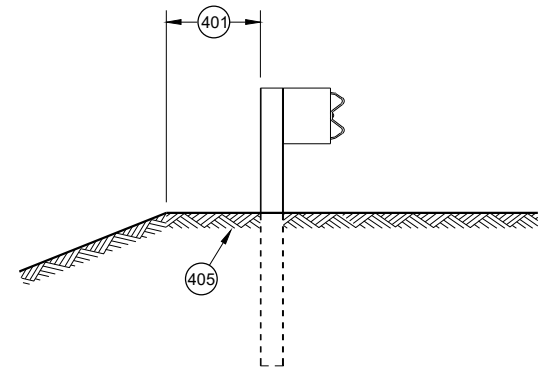


MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL

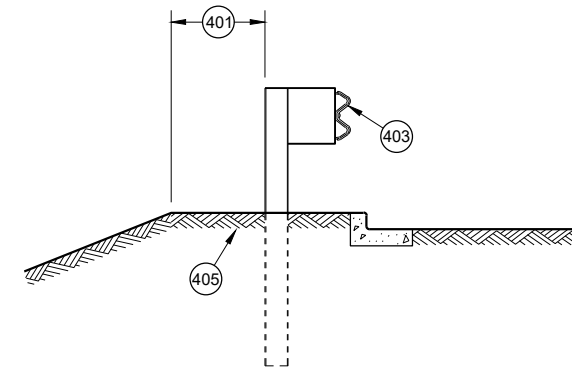


MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)

- 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
<small>FHWA</small>	

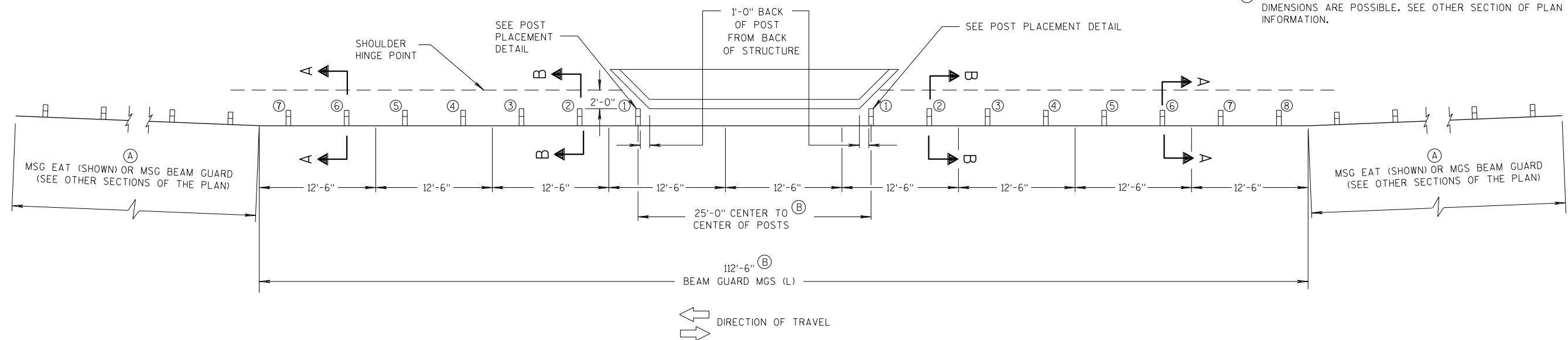
GENERAL NOTES

POSTS 1 THROUGH 3 ARE CRT POSTS.
ALL OTHER POSTS SHALL BE WOOD OR STEEL.

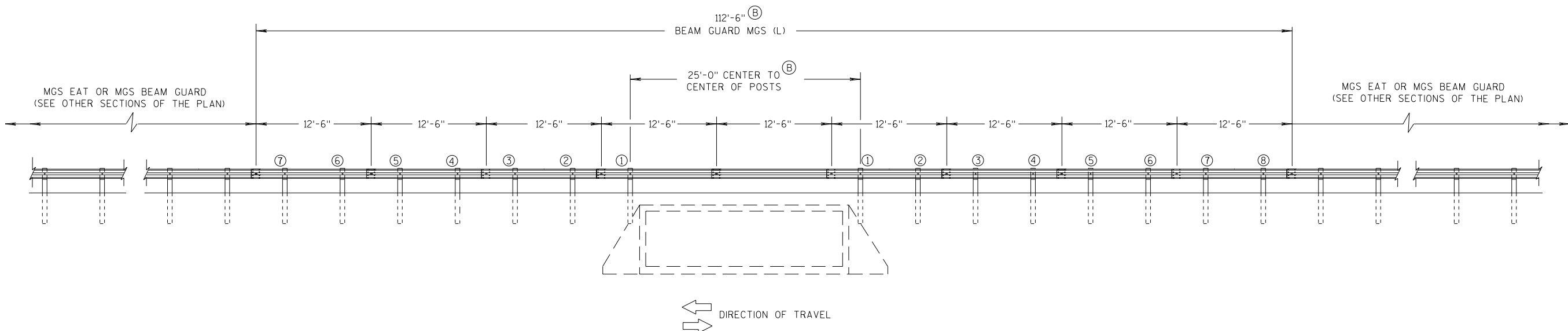
SEE SDD 14 B 42 FOR MORE DETAILS.

(A) FLARE FOR MGS EAT SHOWN, IF INSTALLING MGS NO FLARE NEEDED.

(B) VALUES SHOWN ON DRAWING REPRESENT THE MAXIMUM LENGTH. SHORTER DIMENSIONS ARE POSSIBLE. SEE OTHER SECTION OF PLAN FOR MORE INFORMATION.



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L) TWO-WAY TRAFFIC

**MIDWEST GUARDRAIL SYSTEM
LONG SPAN MGS (L)**

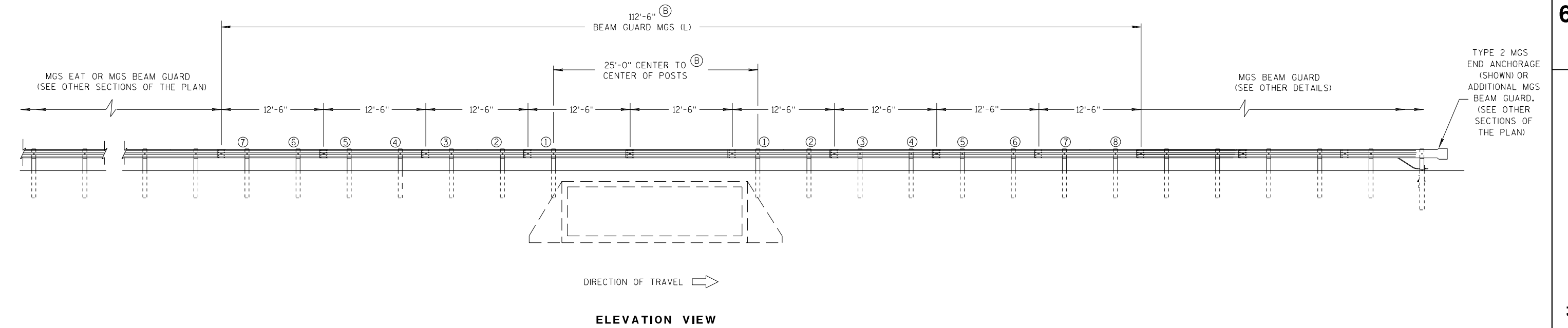
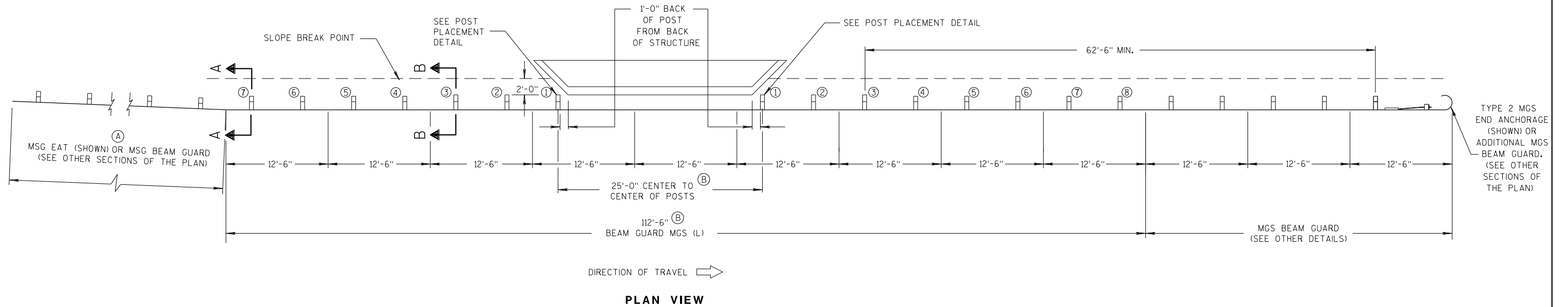
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

POSTS 1 THROUGH 3 ARE CRT POSTS.
ALL OTHER POSTS SHALL BE WOOD OR STEEL.

SEE SDD 14 B 42 FOR MORE DETAILS.

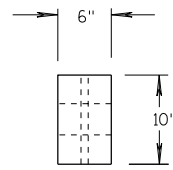
- (A) FLARE FOR MGS EAT SHOWN. IF INSTALLING MGS NO FLARE NEEDED.
- (B) VALUES SHOWN ON DRAWING REPRESENT THE MAXIMUM LENGTH. SHORTER DIMENSIONS ARE POSSIBLE. SEE OTHER SECTION OF PLAN FOR MORE INFORMATION.



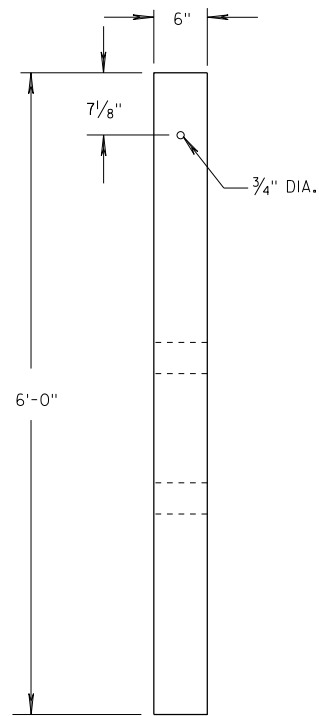
MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L) ONE-WAY TRAFFIC

**MIDWEST GUARDRAIL SYSTEM
LONG SPAN MGS (L)**

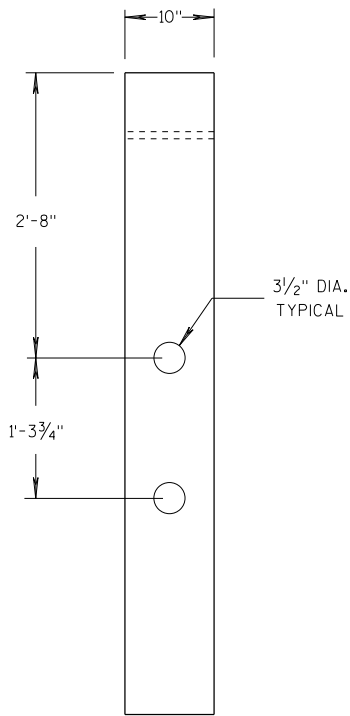
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



PLAN VIEW

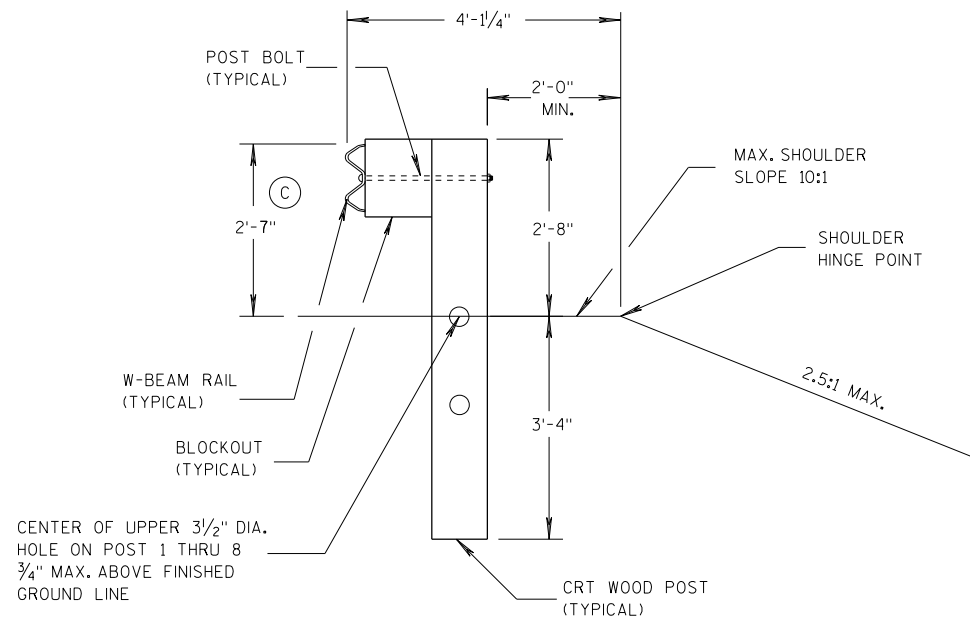


FRONT VIEW

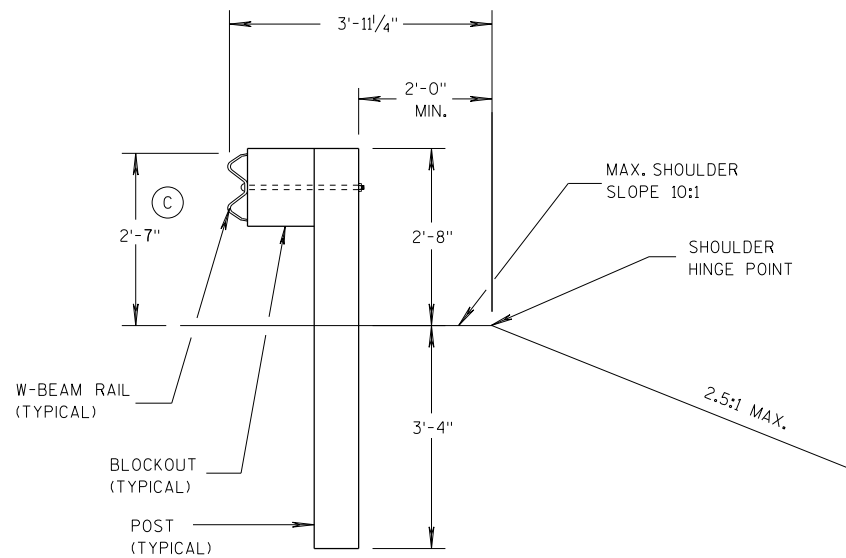


SIDE VIEW

CRT WOOD POST



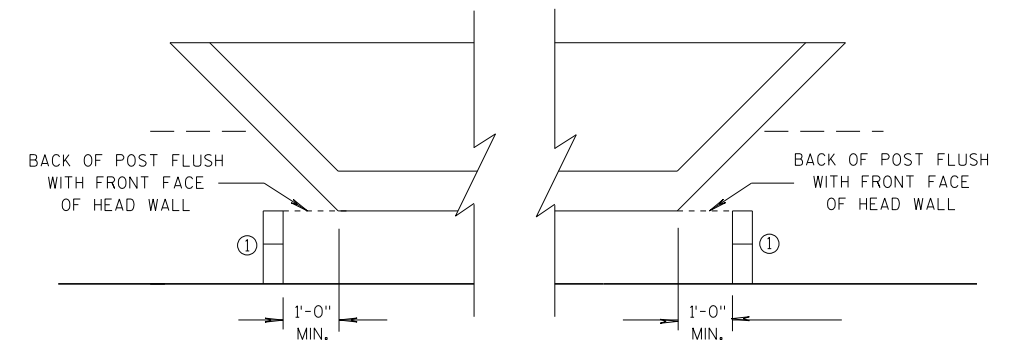
SECTION B-B
POSTS NO. 1-3
SEE OTHER DETAILS



SECTION A-A
POSTS NO. 4-8
SEE OTHER DETAILS

GENERAL NOTES

(C) TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



POST PLACEMENT DETAIL

MIDWEST GUARDRAIL SYSTEM
LONG SPAN MGS (L)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED	/S/ Rodney Taylor
DATE	07/2018
FHWA	ROADWAY STANDARDS DEVELOPMENT ENGINEER

GENERAL NOTES

- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
 - (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
 - (C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS. SEE MANUFACTURER'S INFORMATION.
 - (D) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF - TAPPING SCREWS. ONE SCREW PER CORNER.
 - (E) HARDWARE MAY VARY BETWEEN MANUFACTURER. SEE MANUFACTURER'S DRAWING FOR INFORMATION.
- DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

SEE SDD 14B42 FOR MORE INFORMATION.

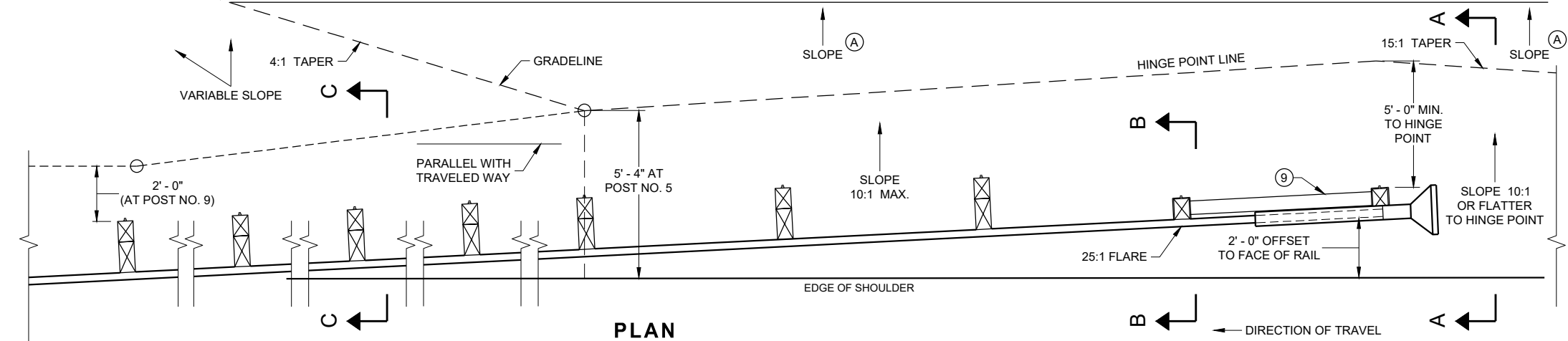
* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

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

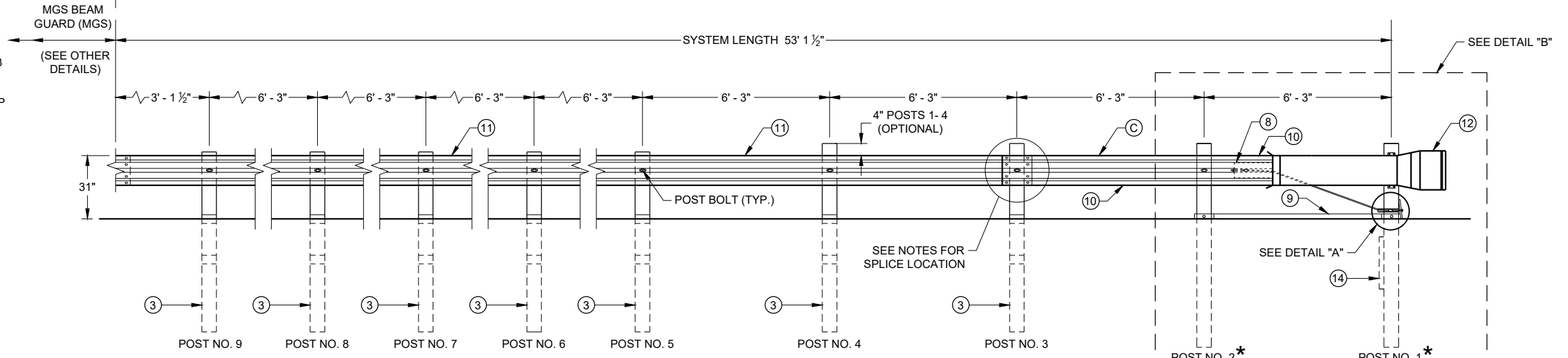
SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.

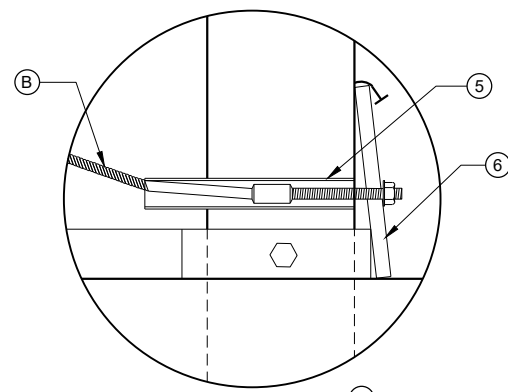
CLEAR ZONE LIMITS, EITHER AS SHOWN ELSEWHERE IN THE PLANS OR, IF NOT SHOWN ELSEWHERE IN THE PLANS, 15 FEET BEYOND THE HINGE POINT LINE



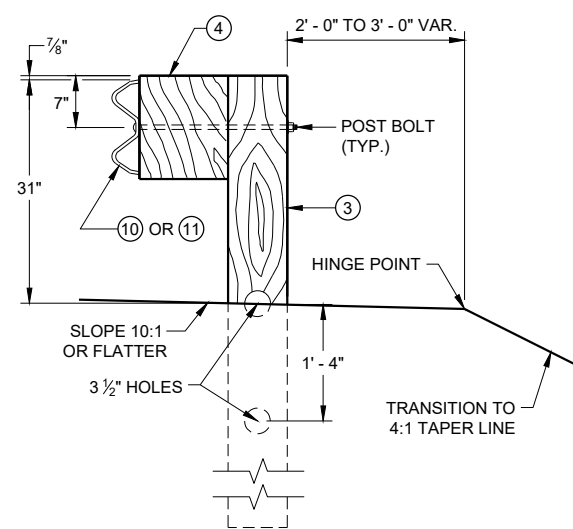
PLAN



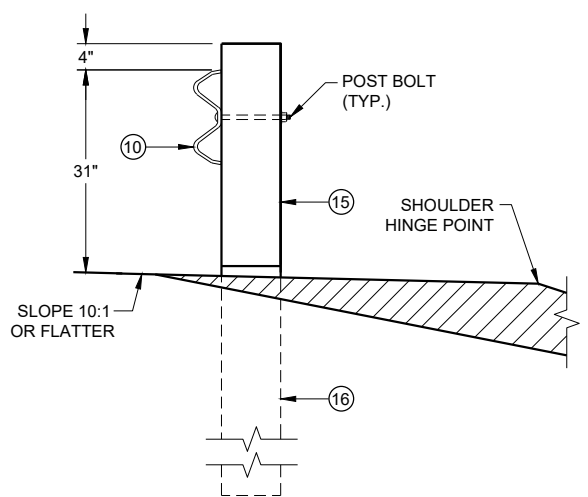
ELEVATION



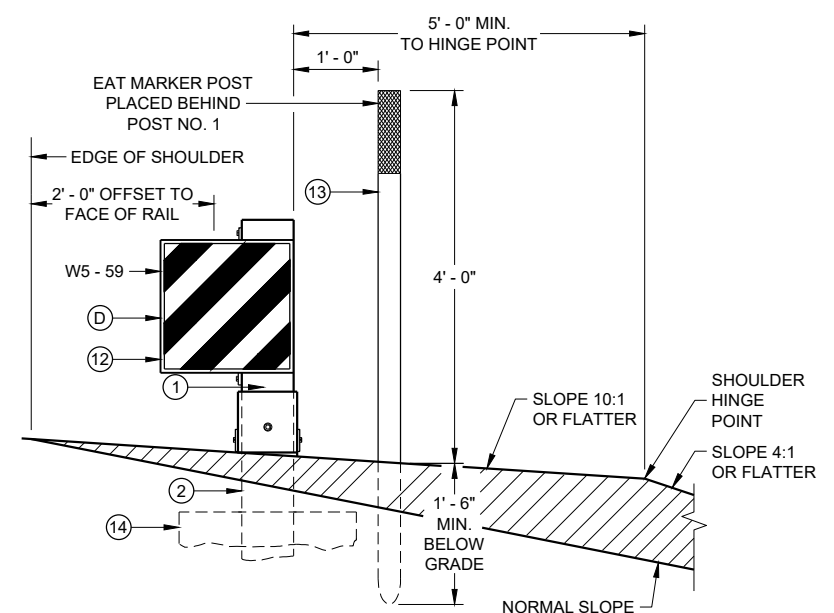
DETAIL "A"



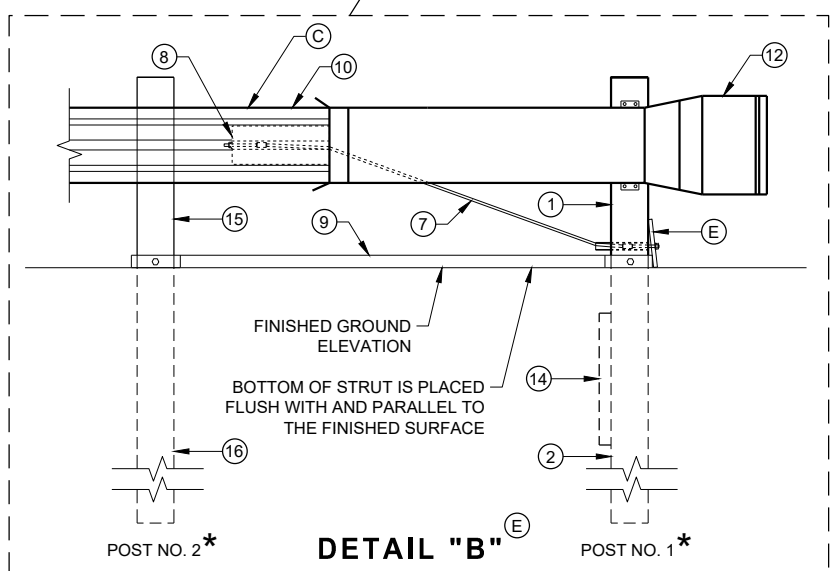
**SECTION C - C
TYPICAL AT POST NOS. 3 - 9**



**SECTION B - B
TYPICAL AT POST NO. 2***



**SECTION A - A
TYPICAL AT POST NO. 1***



DETAIL "B"

**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

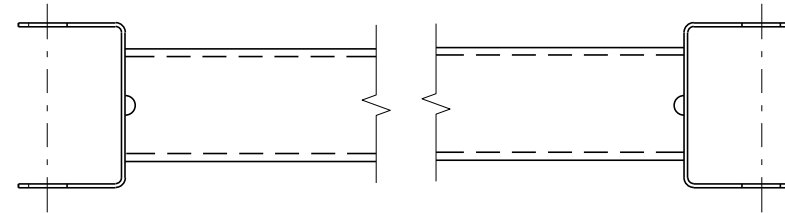
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SDD 14B44 - 04a

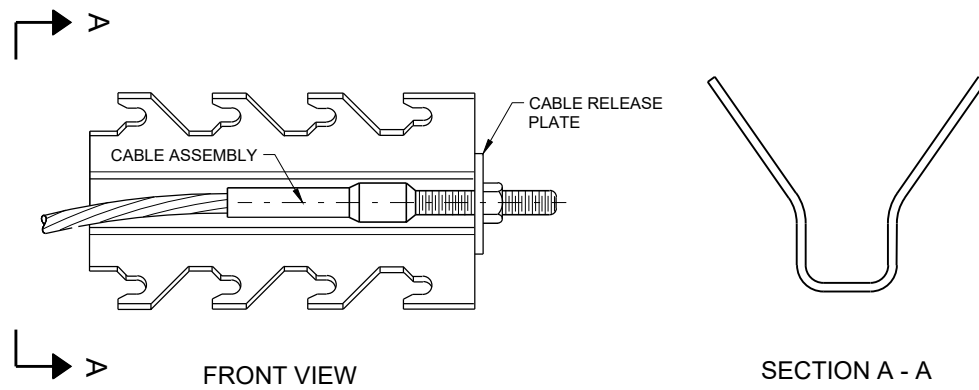
SDD 14B44 - 04a

BILL OF MATERIALS

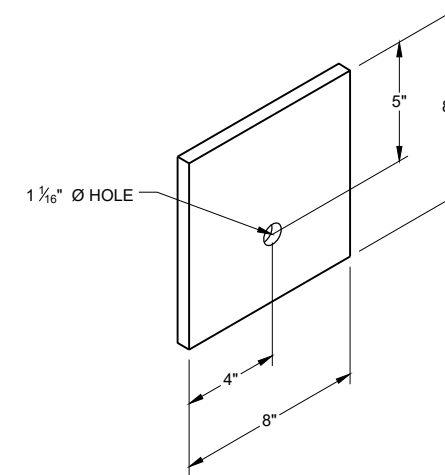
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED W-BEAM RAIL END PANEL, 12'-6" LONG.
⑪	STANDARD W-BEAM RAIL. MULTIPLE SECTIONS REQUIRED. SECTIONS VARY IN LENGTH.
⑫	IMPACT HEAD
⑬	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)
⑭	SOIL PLATE
⑮	UPPER POST NO. 2
⑯	LOWER POST NO. 2



GENERIC GROUND STRUT ⑨ ⑤



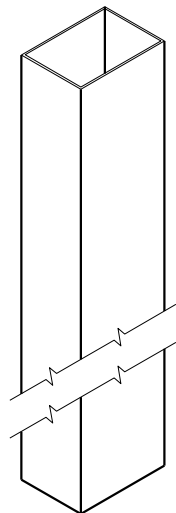
GENERIC ANCHOR CABLE BOX ⑨ ⑤



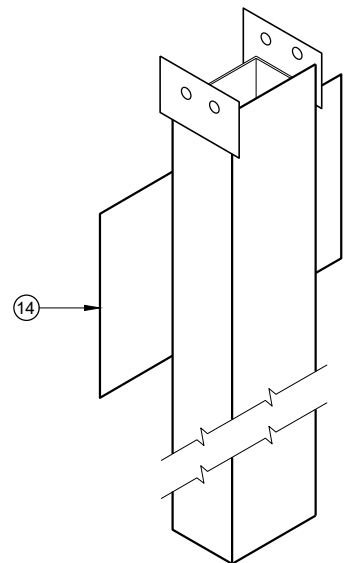
BEARING PLATE ⑥ ⑤

**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

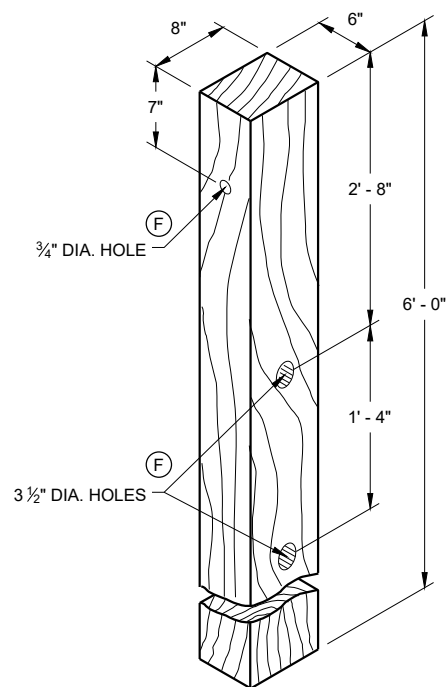
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



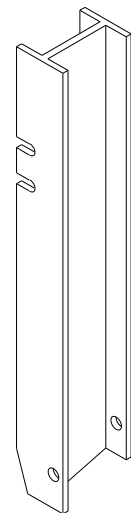
UPPER POST NO. 1 ⁽¹⁾ (E)



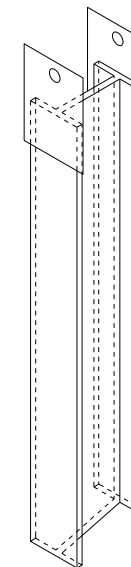
LOWER POST NO. 1 ⁽²⁾ (E)



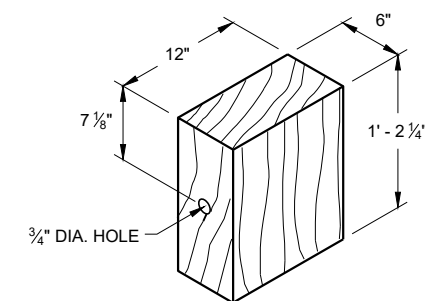
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



UPPER POST NO. 2 ⁽¹⁵⁾ (E)

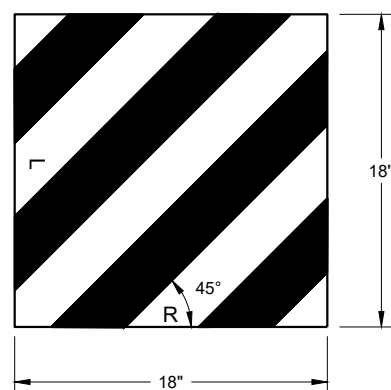


LOWER POST NO. 2 ⁽¹⁶⁾ (E)



WOOD BLOCKOUT ⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2

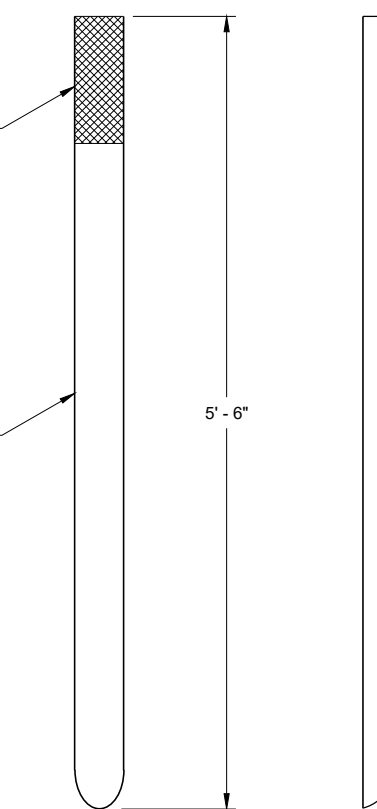
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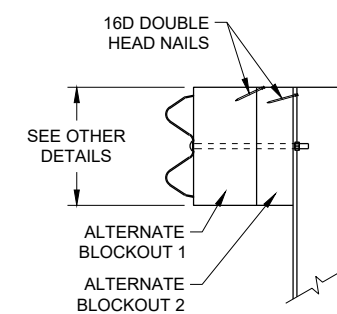
REFLECTIVE SHEETING DETAIL ^(E)

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

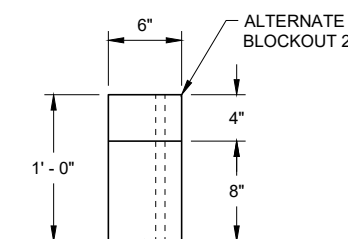
E.A.T. MARKER
POST (YELLOW)



FRONT VIEW SIDE VIEW
E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW



TOP VIEW

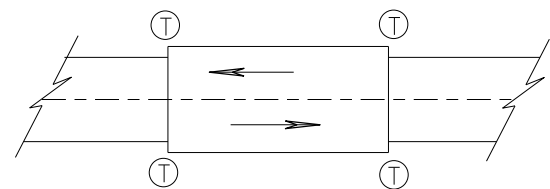
ALTERNATE WOOD
BLOCKOUT DETAIL

6

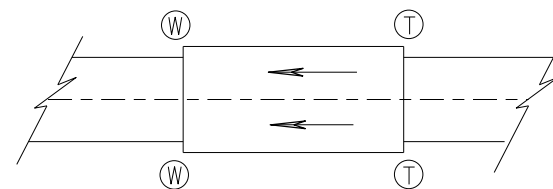
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

GENERAL NOTES

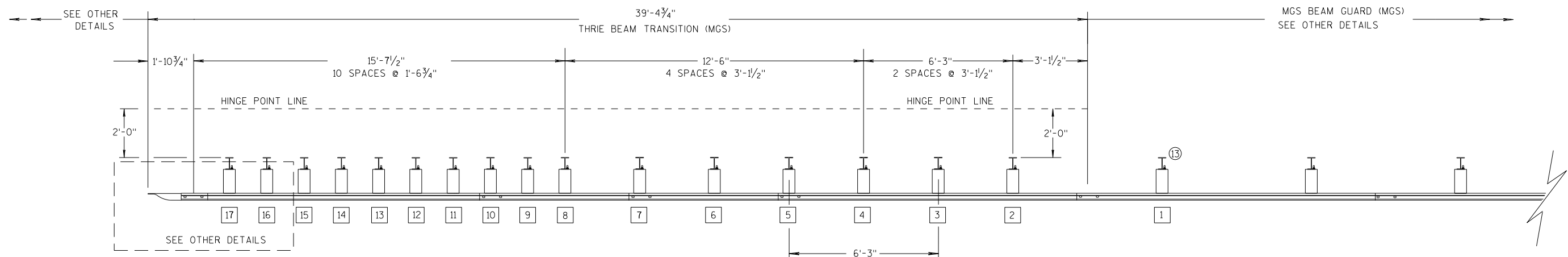
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

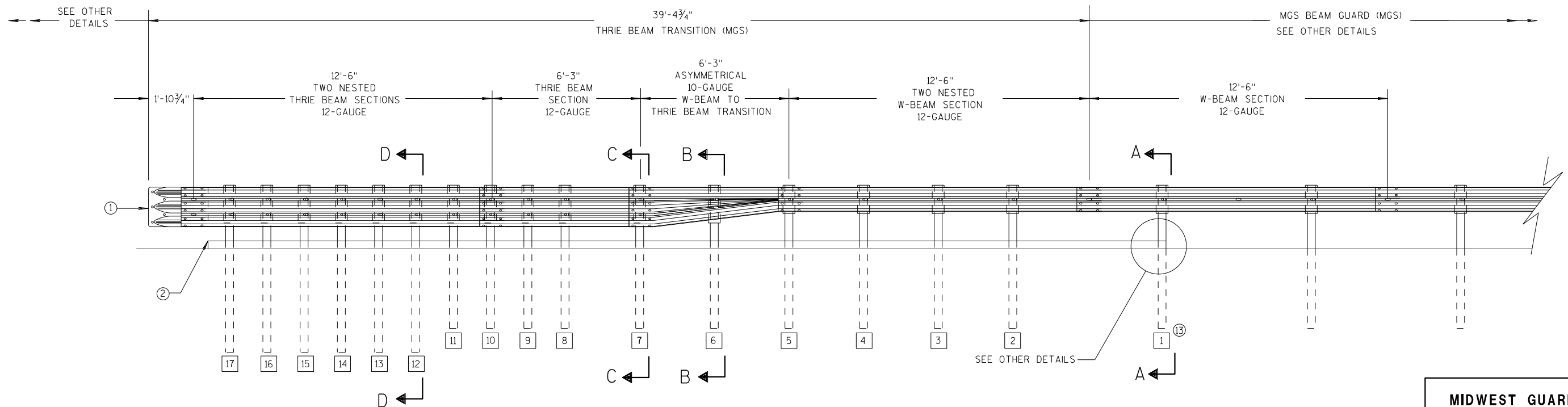
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

- ① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

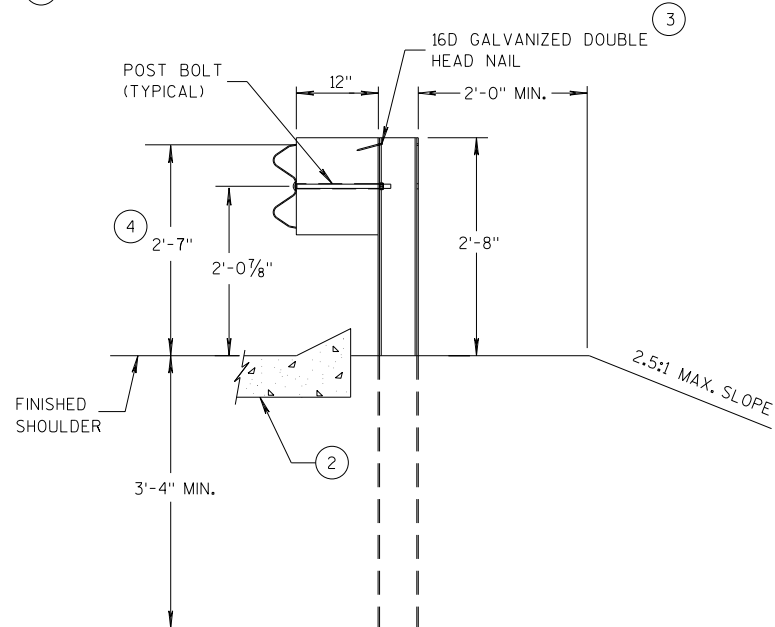
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S.D.D. 14 B 45-5a

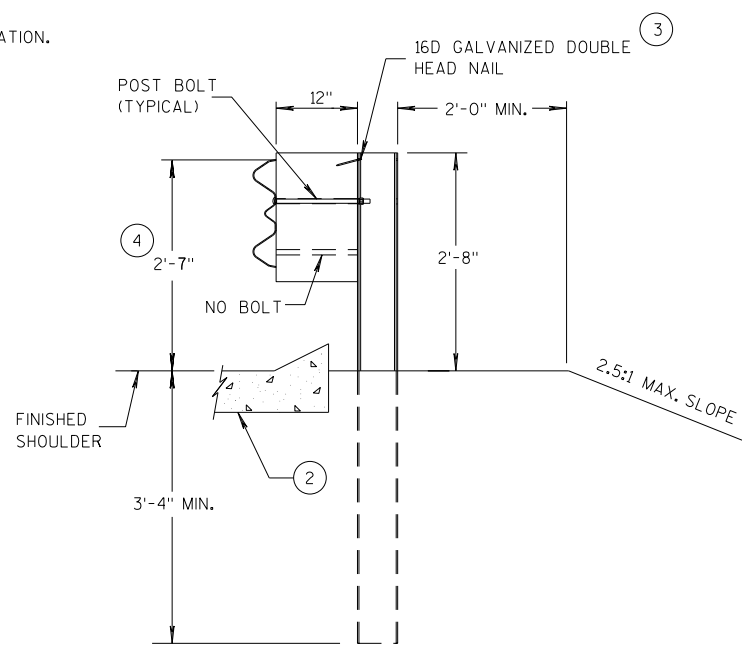
S.D.D. 14 B 45-5a

GENERAL NOTES

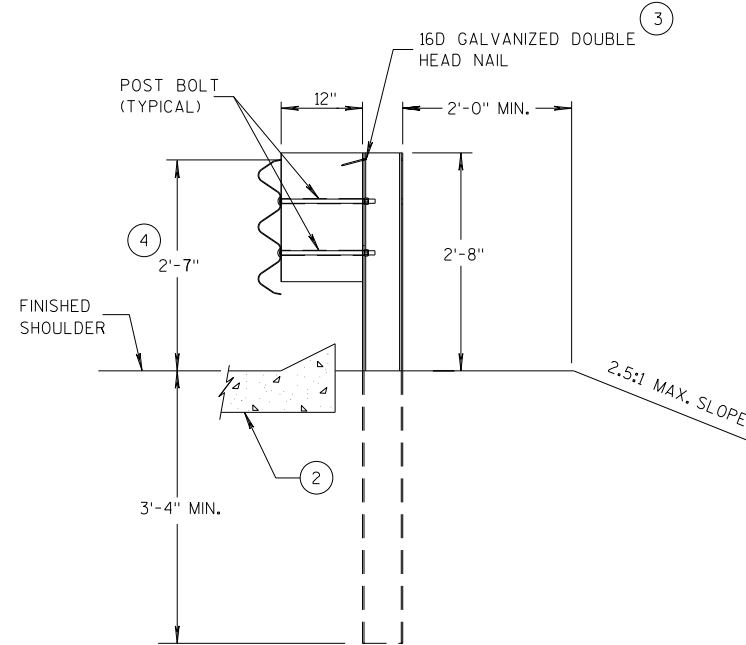
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".
- ⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42



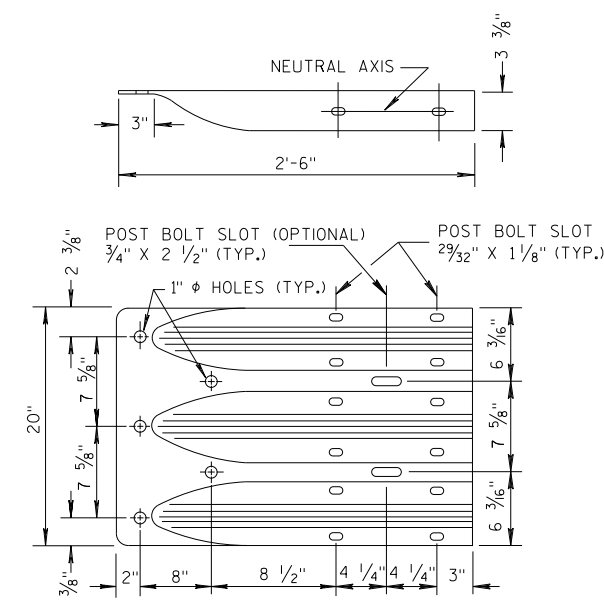
**SECTION A-A
POSTS 1-5**



**SECTION B-B
POST 6**



**SECTION C-C
POSTS 7-11**



**THRIE BEAM
TERMINAL CONNECTOR**

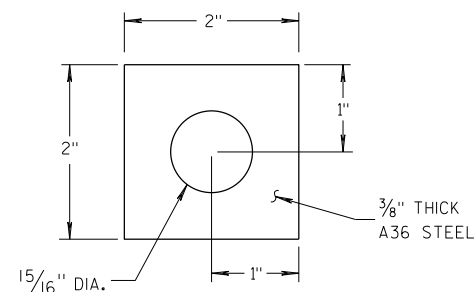
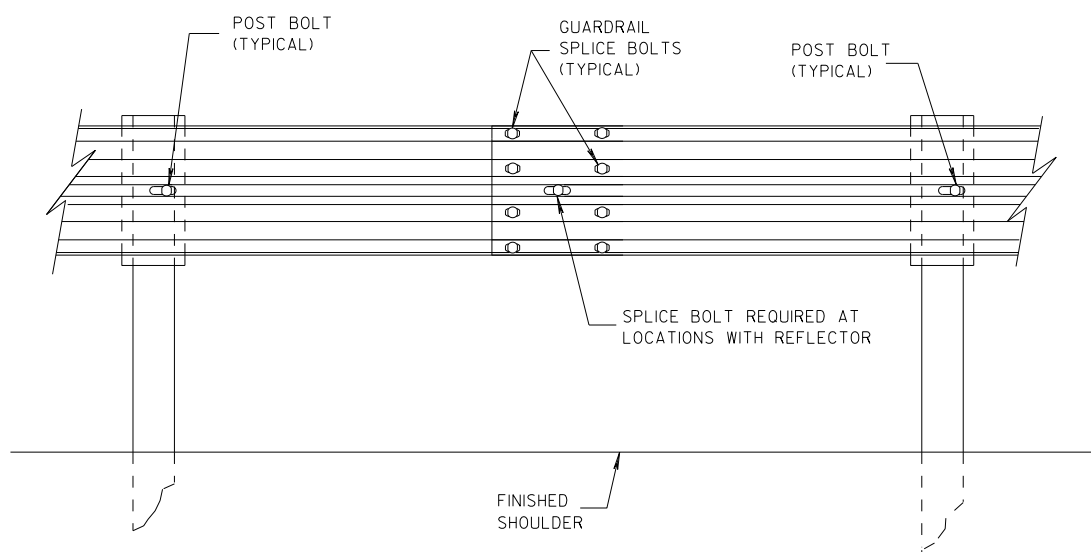
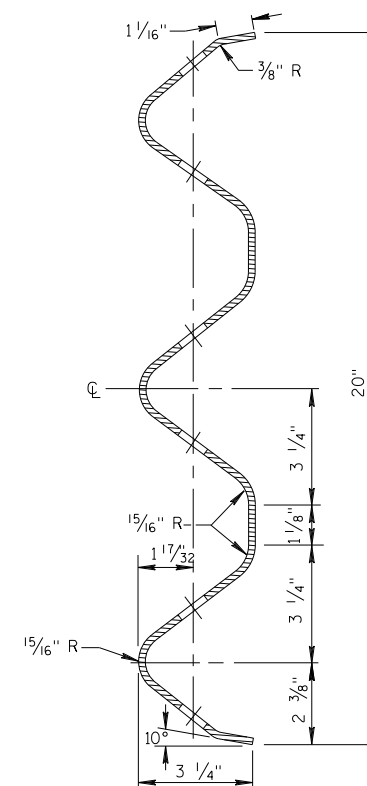


PLATE WASHER DETAIL



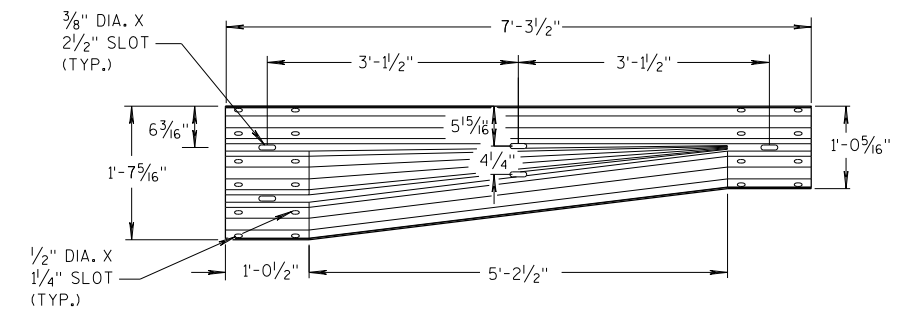
SPLICE DETAIL



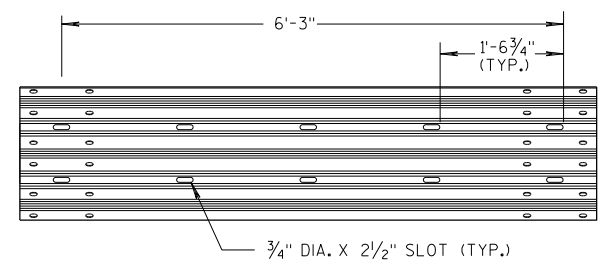
**SECTION THRU THRIE
BEAM RAIL ELEMENT**

**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

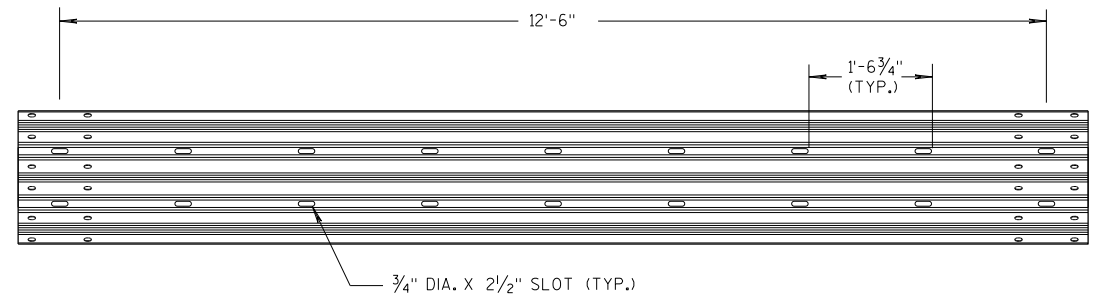
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



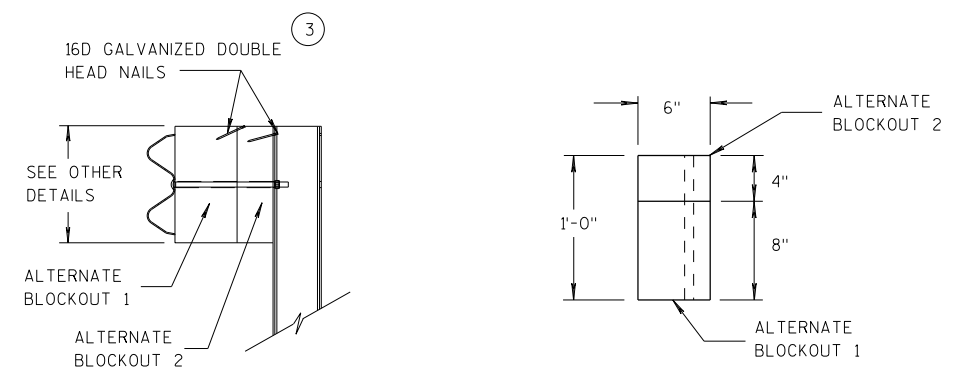
W-BEAM TO THRIE BEAM TRANSITION SECTION



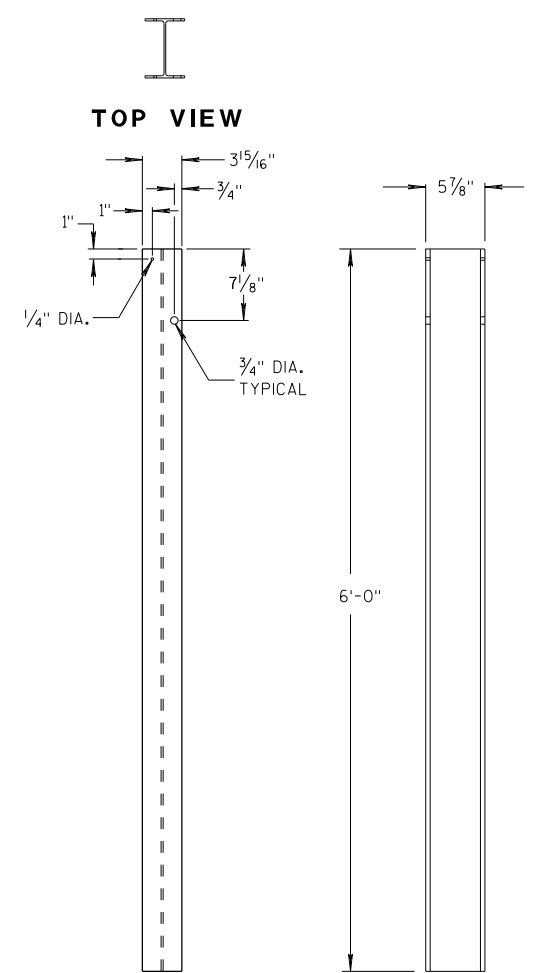
6'-3\"/>



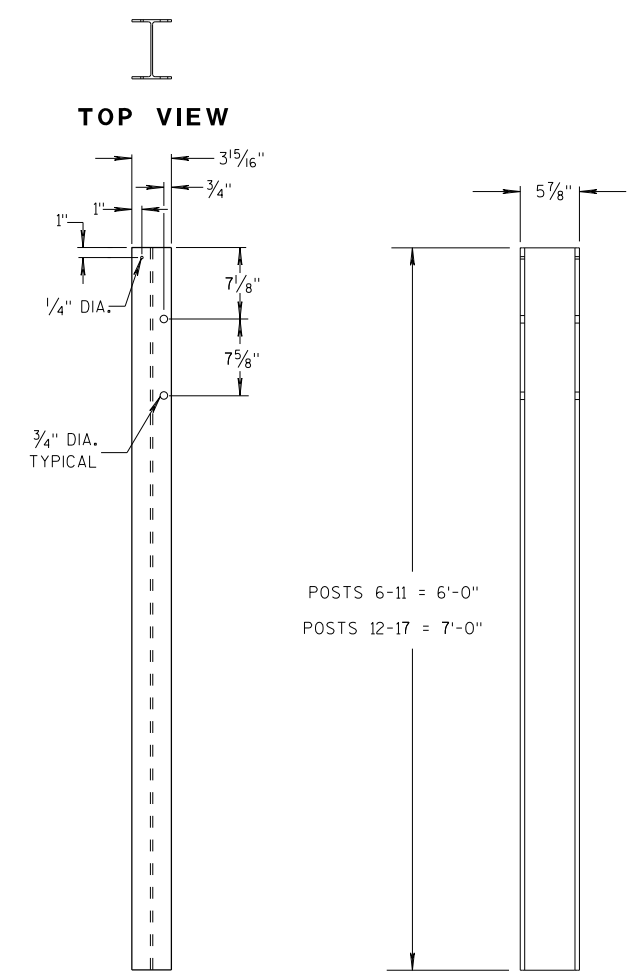
12'-6\"/>



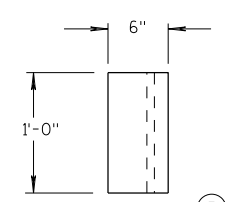
ALTERNATE WOOD BLOCKOUT DETAIL



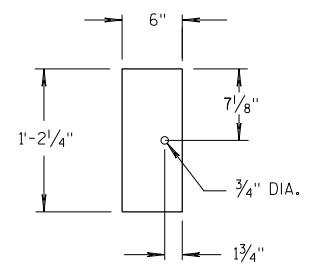
STEEL POSTS 1-5



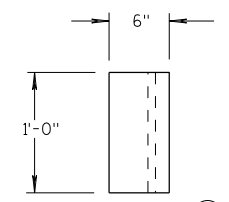
STEEL POSTS 6-17



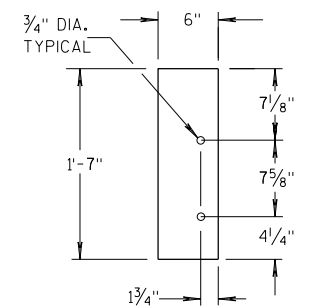
TOP VIEW



BLOCKOUT POSTS 1-5



TOP VIEW



BLOCKOUT POSTS 6-17

GENERAL NOTES

- STEEL POSTS ARE W6X9 OR W6X8.5.
- BOLT HOLES FOR POST ARE ON FRONT AND OF SIDE OF POST.
- (3) WHEN USING STEEL POSTS 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.
- (5) WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.
- (13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

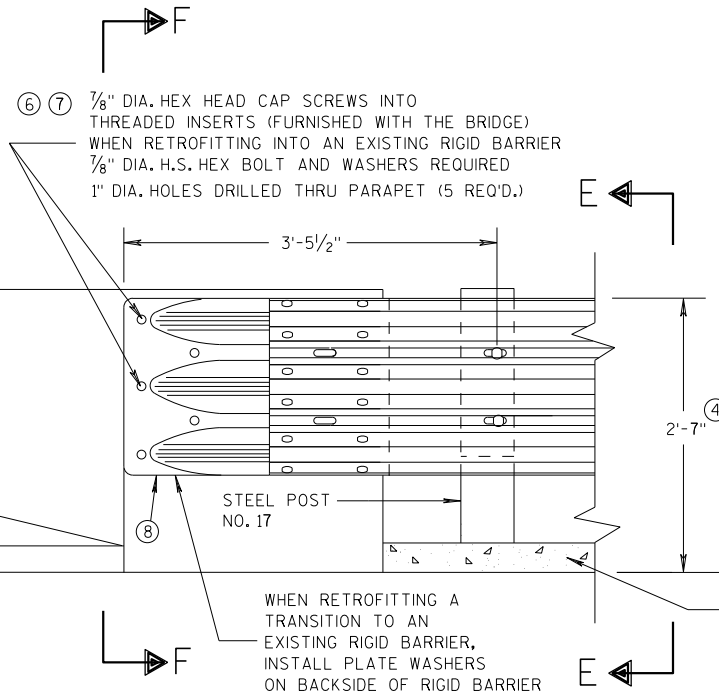
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

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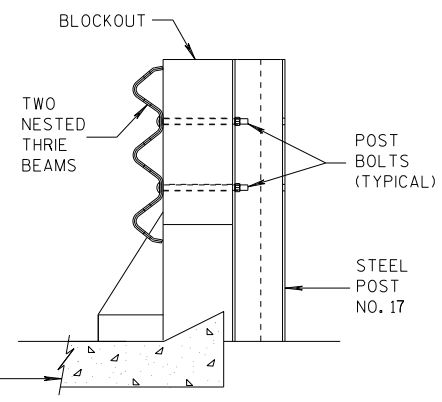
S.D.D. 14 B 45-5c

S.D.D. 14 B 45-5c



FRONT VIEW

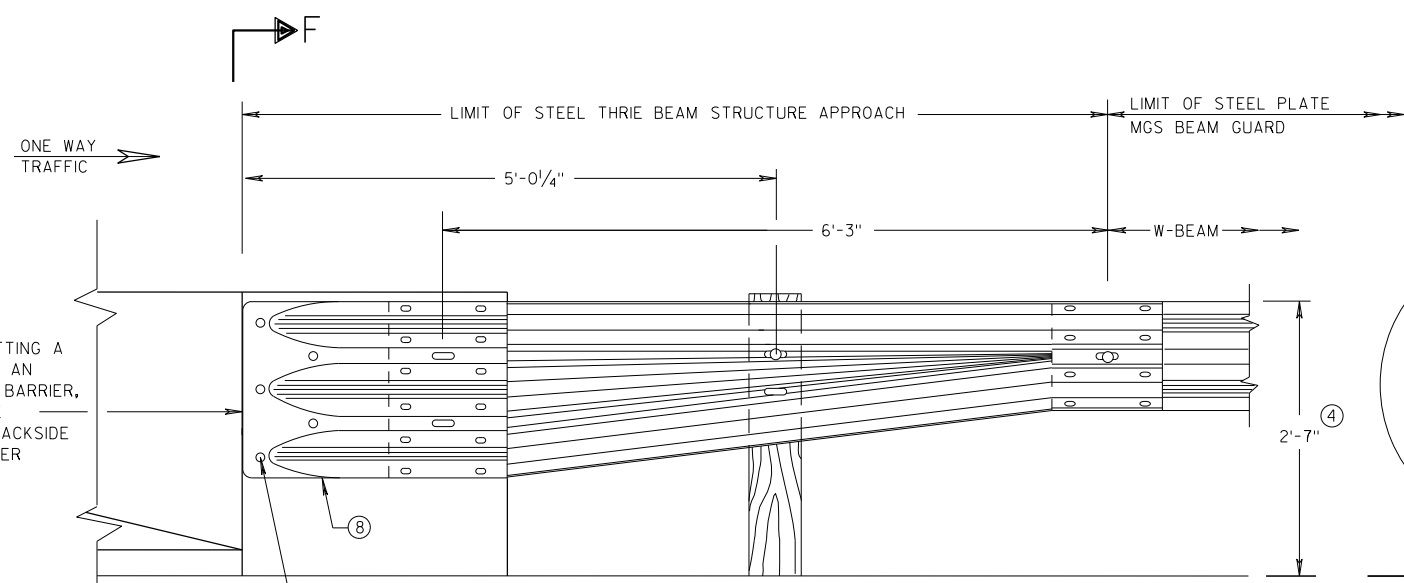
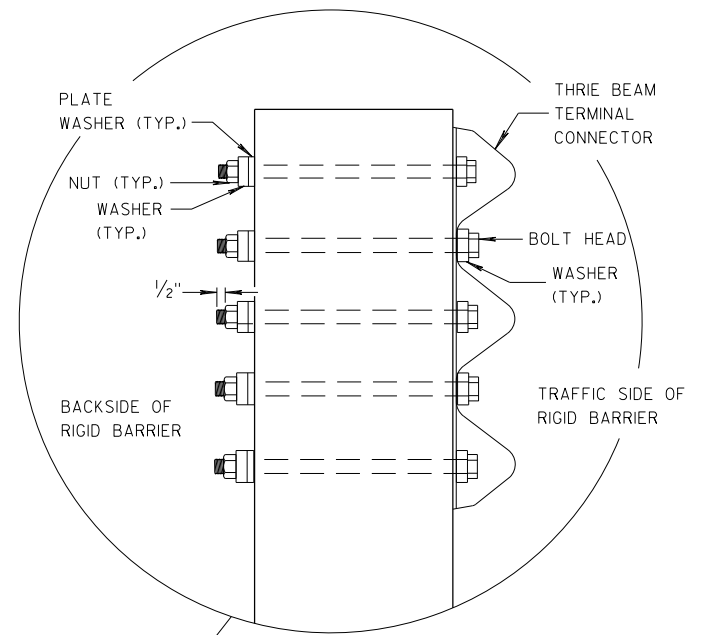
THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS



SECTION E-E

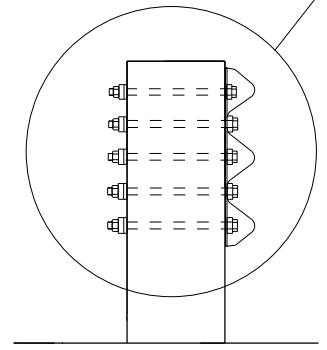
GENERAL NOTES

- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.
- (2) OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- (4) TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- (6) DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- (7) BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- (8) THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".

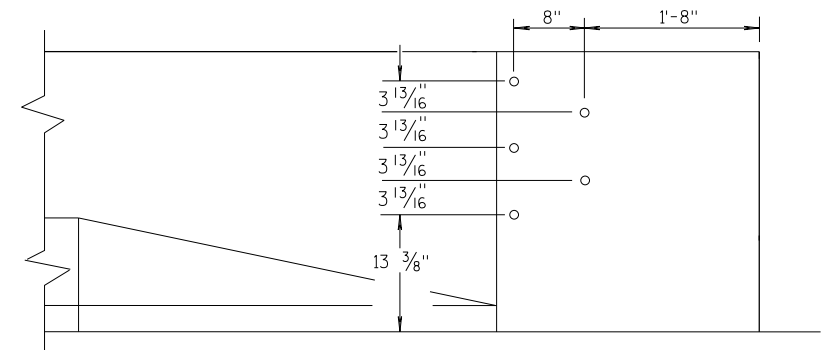


FRONT VIEW

**W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)**



SECTION F-F



DRILL HOLE LOCATION

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

6

6

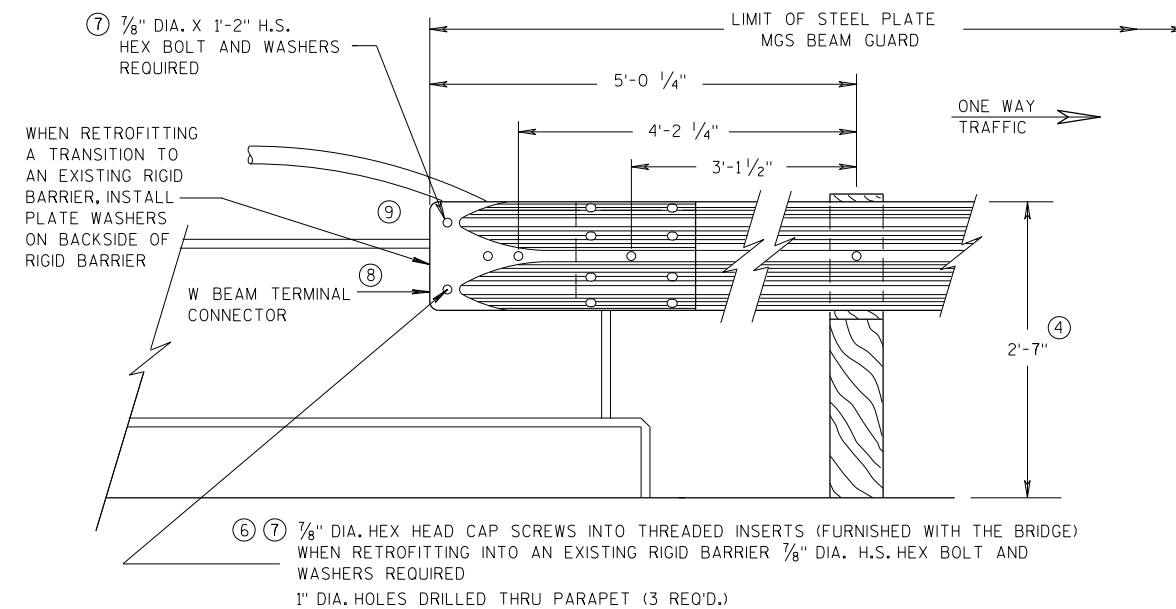
S.D.D. 14 B 45-5d

S.D.D. 14 B 45-5d

GENERAL NOTES

THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

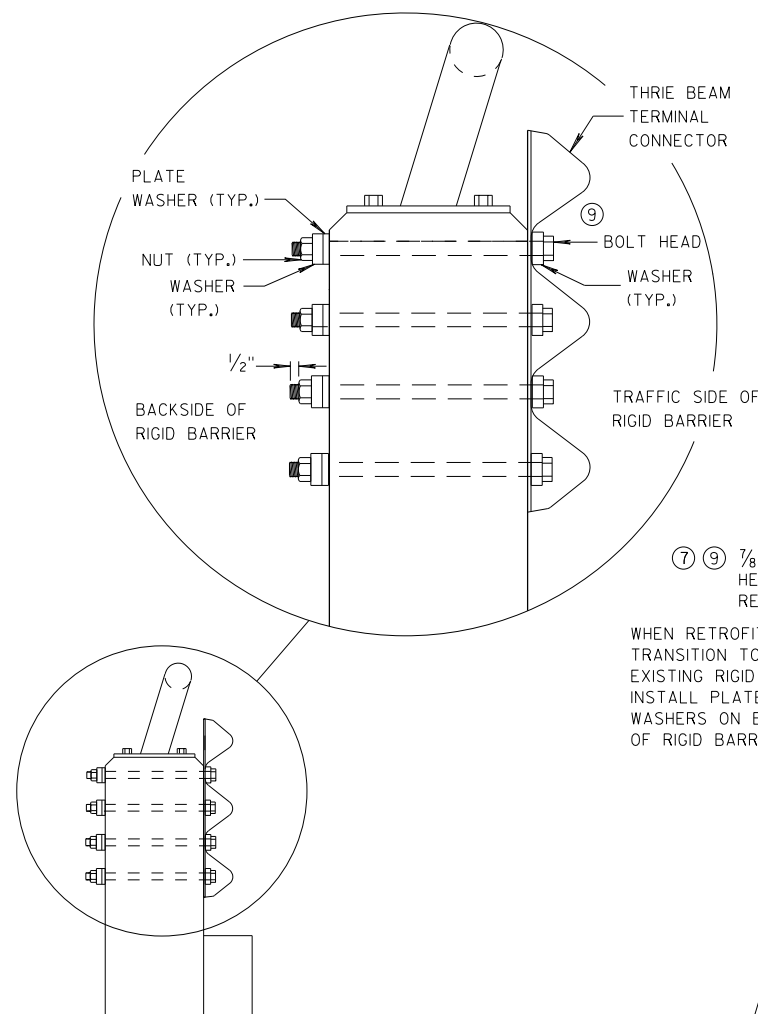
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".
- ⑨ BOLT, NUT AND WASHERS NOT REQUIRED FOR THIS LOCATION WHEN RETROFITTING AN EXISTING PAPAPET AND THE HOLE IS EITHER ABOVE PARAPET OR WITHIN 4 INCHES OF THE EDGE OF PARAPET.



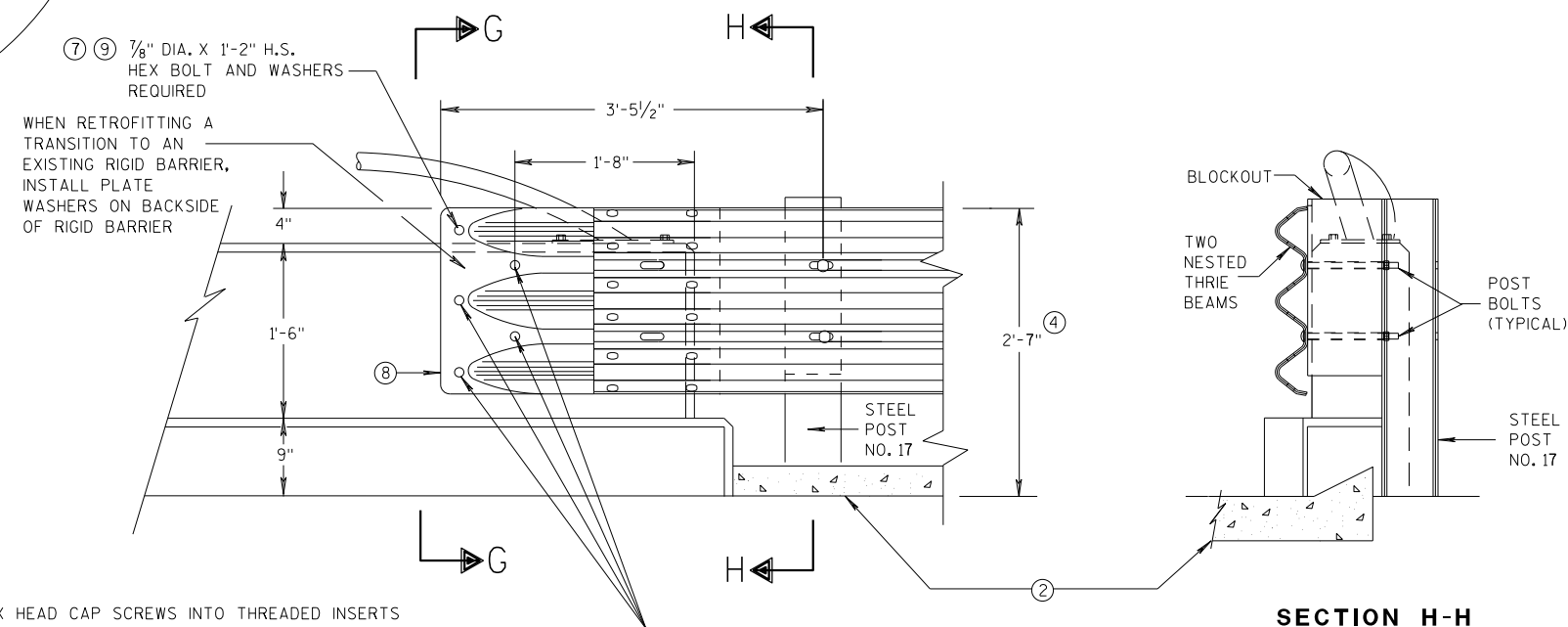
FRONT VIEW

W BEAM CONNECTION TO VERTICAL FACE PARAPET

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)



SECTION G-G



FRONT VIEW

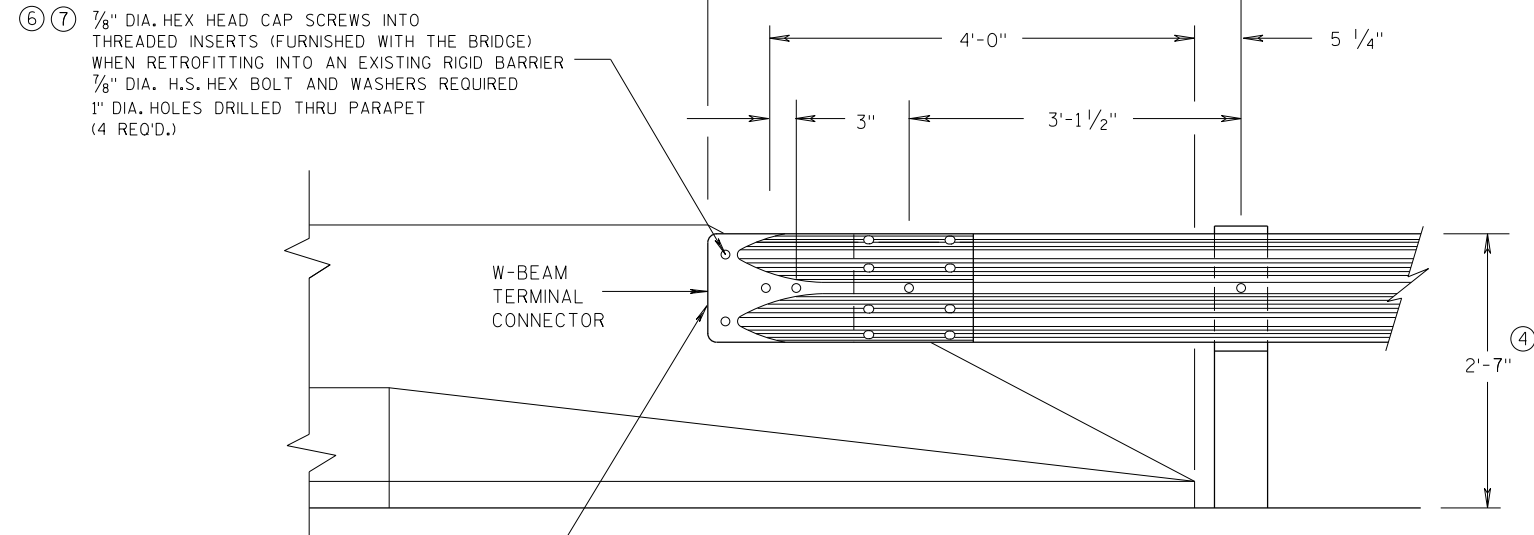
THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
07/2018 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA UNIT SUPERVISOR

ONE WAY
TRAFFIC



FRONT VIEW

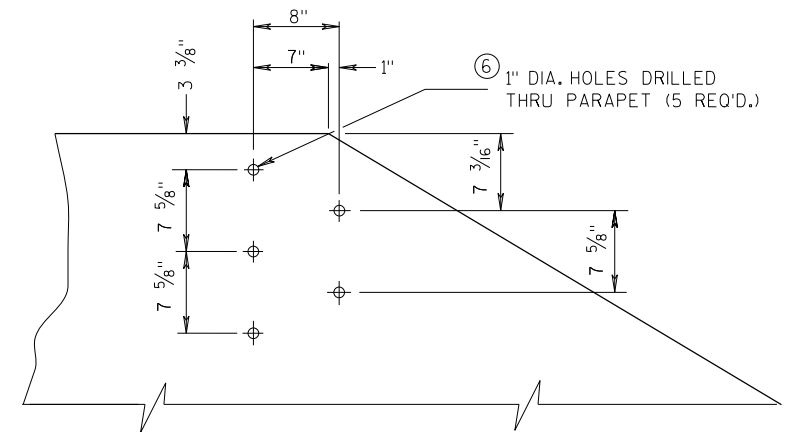
**W BEAM CONNECTION TO
PARAPETS WITH SLOPED ENDS**

(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

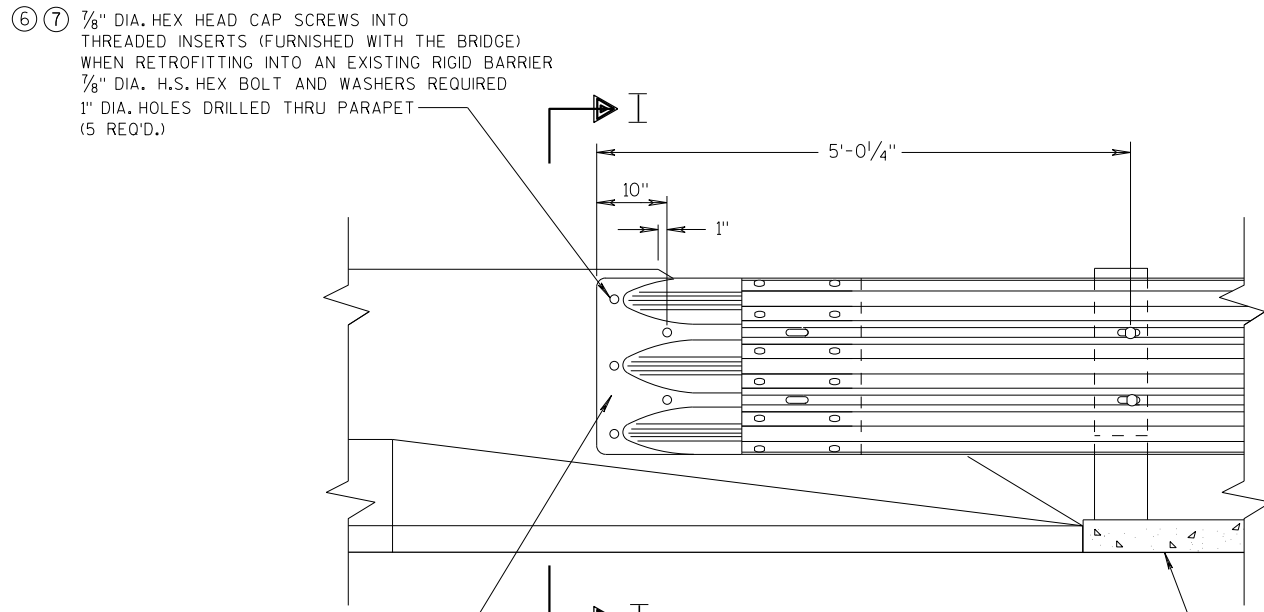
WHEN RETROFITTING A TRANSITION
TO AN EXISTING RIGID BARRIER,
INSTALL PLATE WASHERS ON
BACKSIDE OF RIGID BARRIER.

GENERAL NOTES

- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



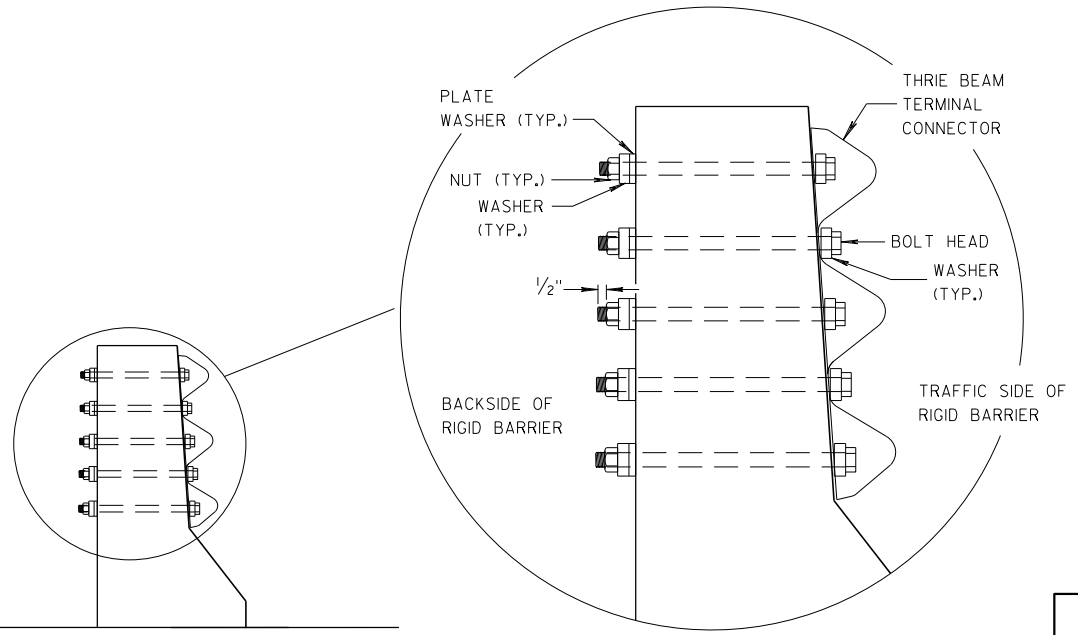
**DRILL HOLE LOCATION AND PATTERN
FOR THRIE BEAM CONNECTION**



FRONT VIEW

**THRIE BEAM CONNECTION TO BRIDGE
PARAPETS WITH SLOPED ENDS**

WHEN RETROFITTING A TRANSITION
TO AN EXISTING RIGID BARRIER,
INSTALL PLATE WASHERS ON
BACKSIDE OF RIGID BARRIER.

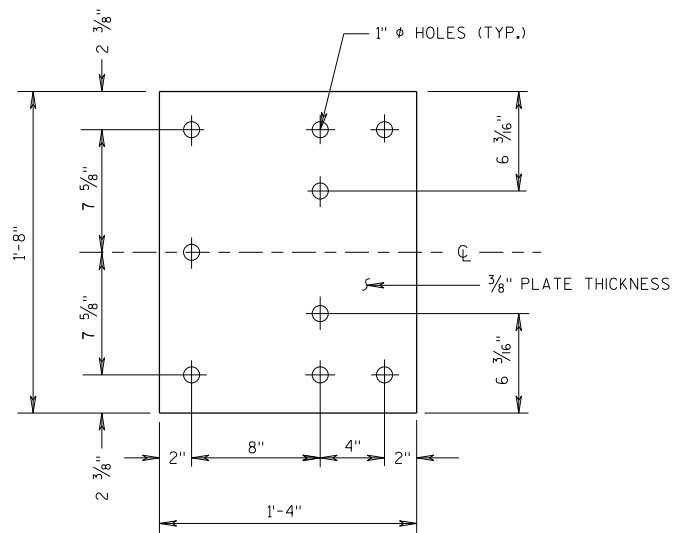


SECTION I-I

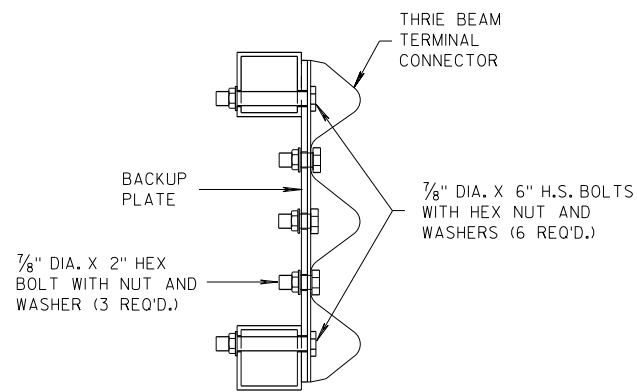
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

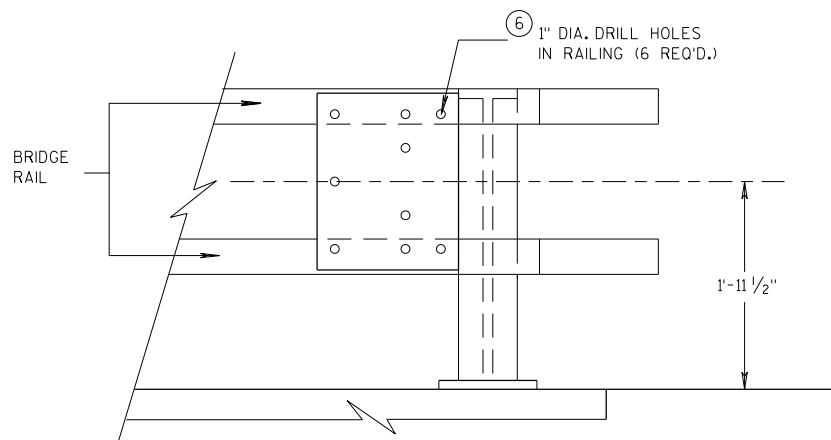
APPROVED
DATE 07/2018 /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



BACK-UP PLATE DETAIL



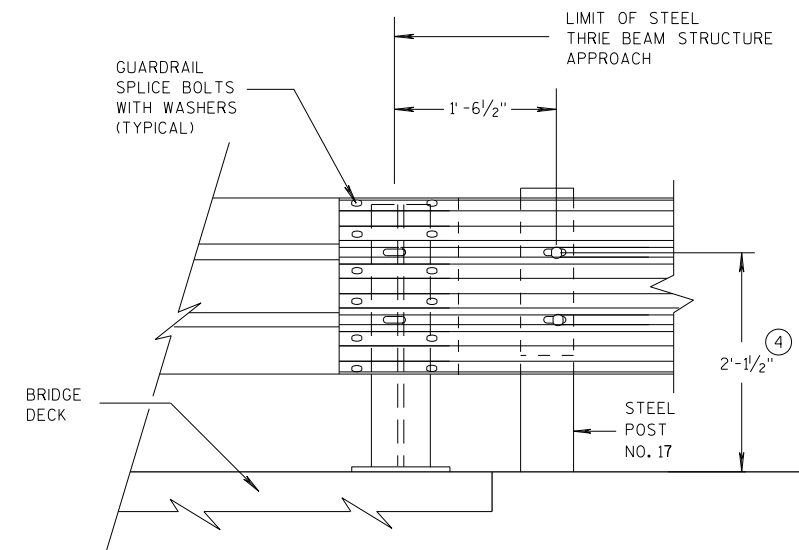
SECTION J-J



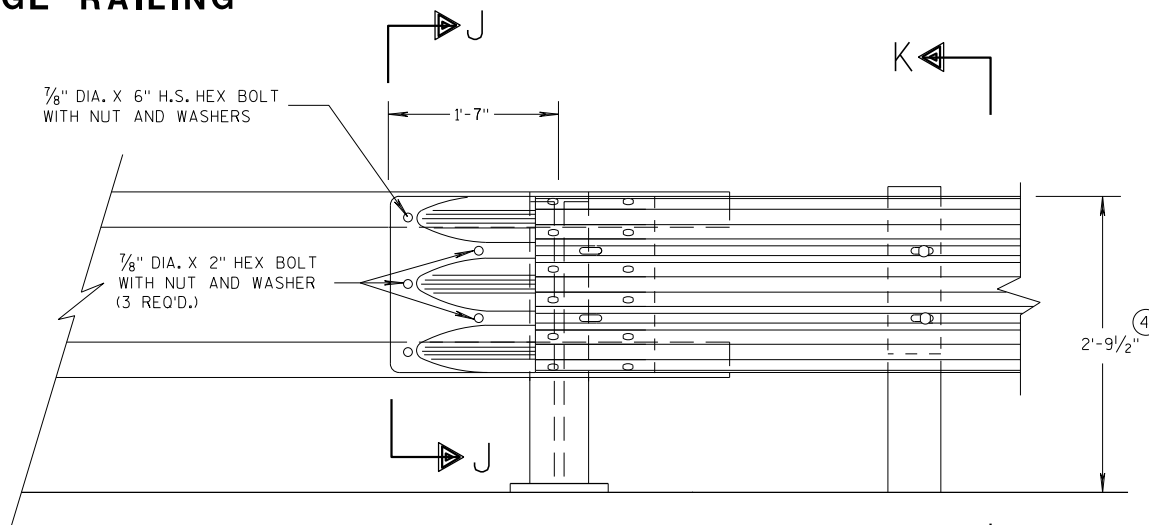
BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1'$.
- ⑥ DRILLING HOLES THROUGH THE PAPER, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

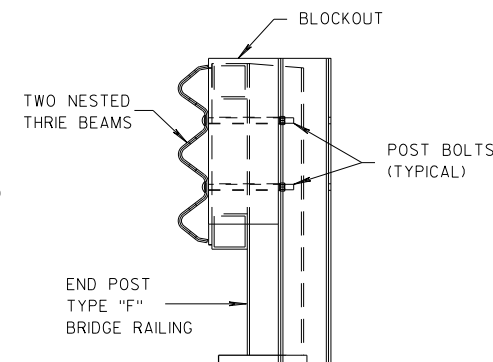


**FRONT VIEW
THRIE BEAM CONNECTION TO
STEEL RAILING TYPE "W"**



FRONT VIEW

**THRIE BEAM CONNECTION TO
TUBULAR RAILING TYPE "F"**



SECTION K-K

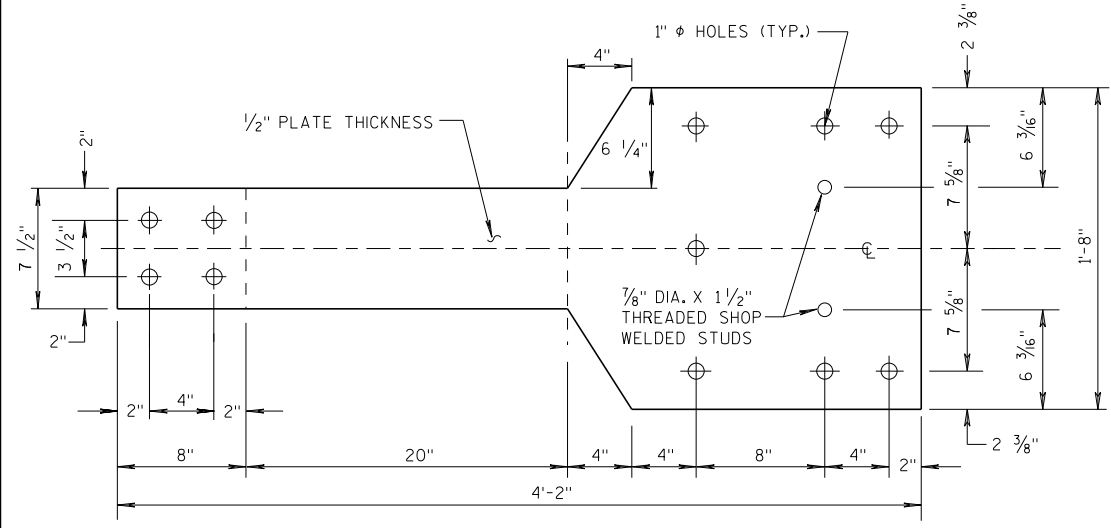
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

6

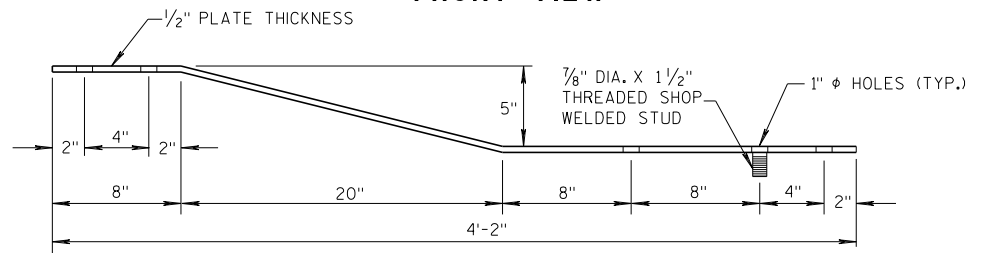
6

GENERAL NOTES

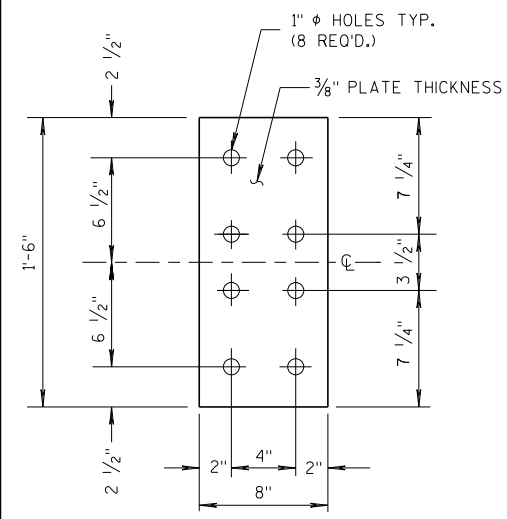
(4) TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



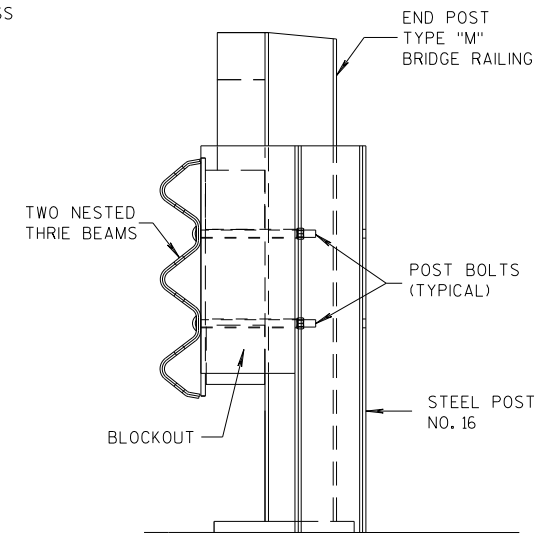
FRONT VIEW



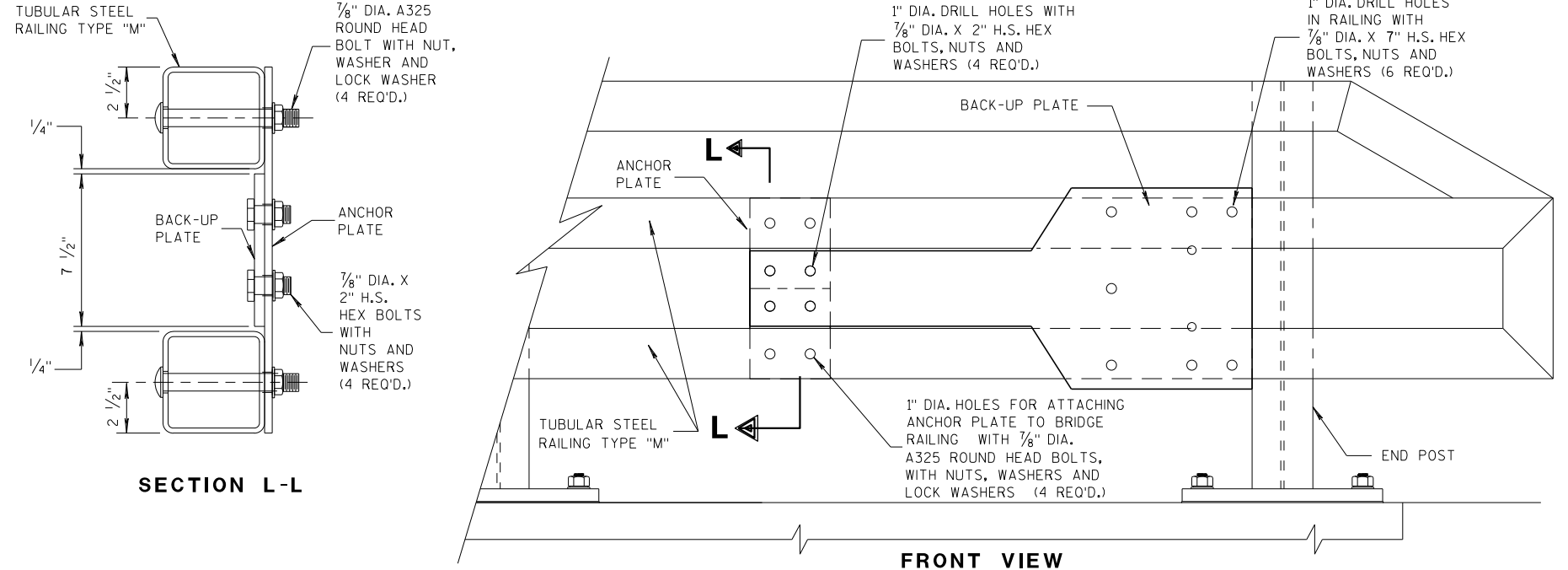
**PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"**



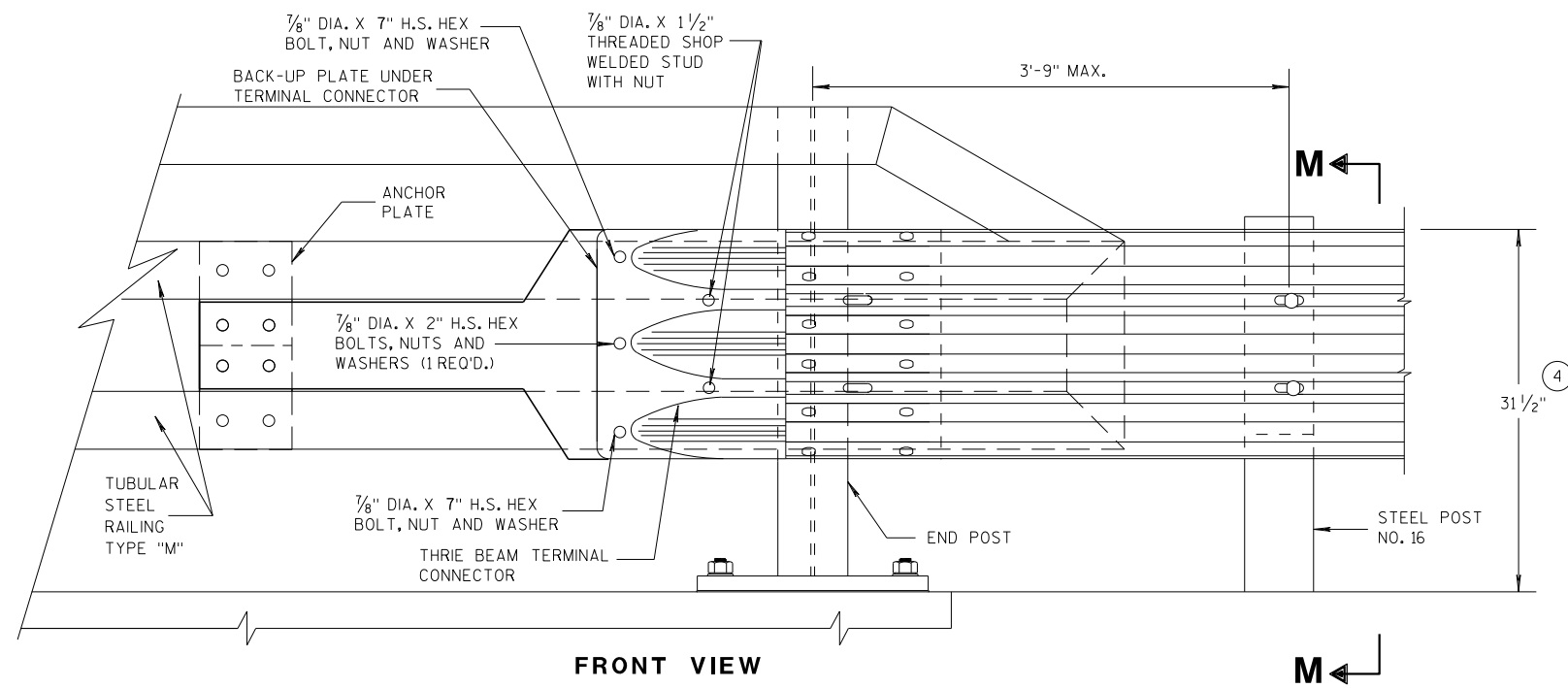
**FRONT VIEW
ANCHOR PLATE DETAIL, TYPE "M"**



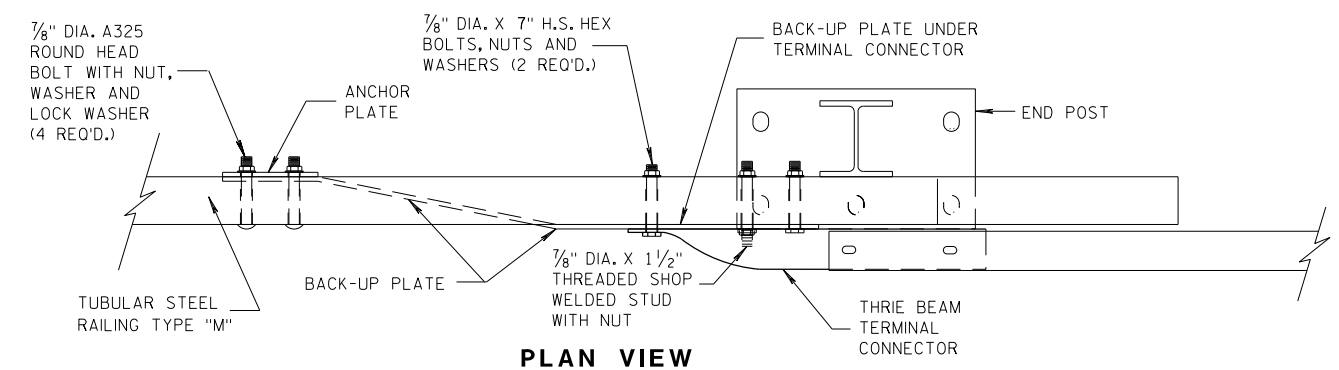
SECTION M-M



ANCHOR AND BACK-UP PLATE MOUNTING TO BRIDGE RAILING, TYPE "M"



FRONT VIEW



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

6

6

S.D.D. 14 B 45-5h

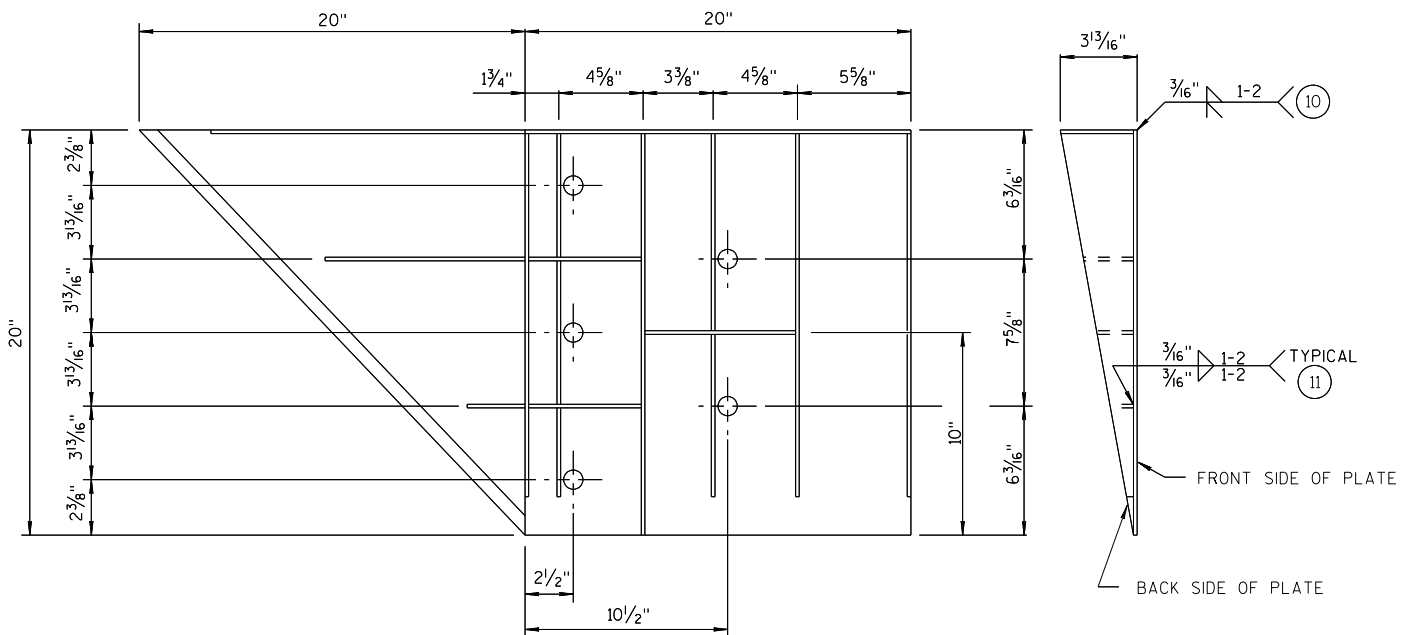
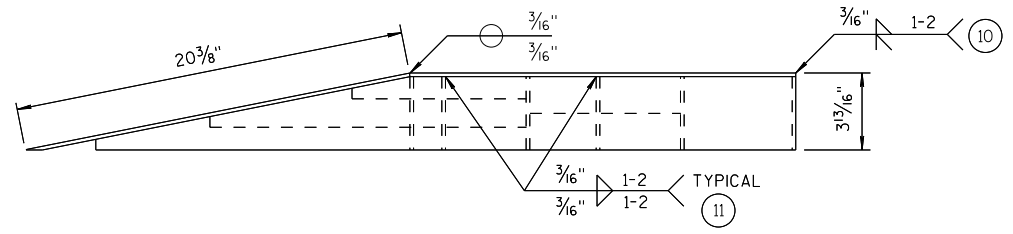
S.D.D. 14 B 45-5h

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED DATE FHWA	/s/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR

GENERAL NOTES

- COVER PLATE PANELS ARE 3/16" THICK.
- ALL STIFFENERS ARE 1/4" THICK.
- CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.
- FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.
- ALL HOLE DIAMETERS SHALL BE 1".
- FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.

- (10) STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS FOLLOWS:
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 3/16" FILLET WELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.
- (11) STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
3/16" FILLET WELD BY 1" LONG SPACED AT 2".



WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

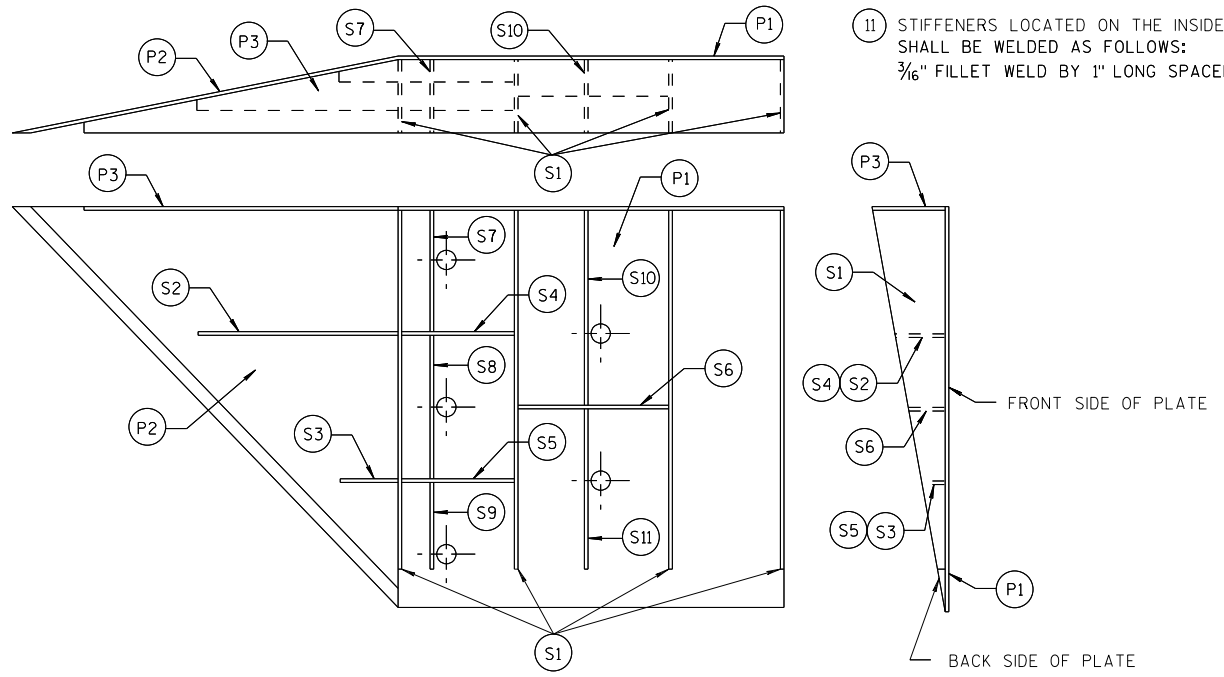


PLATE AND STIFFENER IDENTIFICATION
(VIEWED FROM BACK SIDE OF PLATE)

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)				
PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 3/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 5/16"	3/16"
S1	4		18 7/16" x 3 5/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 1/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 3/8" x 1/2"	1/4"
S4	1		6 1/8" x 2 1/16"	1/4"
S5	1		6 1/8" x 1 1/16"	1/4"
S6	1		7 3/4" x 1 3/4"	1/4"
S7	1		2 3/16" x 6" x 3 5/8" x 5 1/8"	1/4"
S8	1		1 5/32" x 7 1/2" x 2 1/2" x 7 3/8"	1/4"
S9	1		6 1/16" x 6 3/16" x 1 3/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 3/8" x 9 1 1/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 3/16"	1/4"

SINGLE SLOPE CONNECTION PLATE

**MIDWEST GUARDRAIL SYSTEM
THREE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018
DATE

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

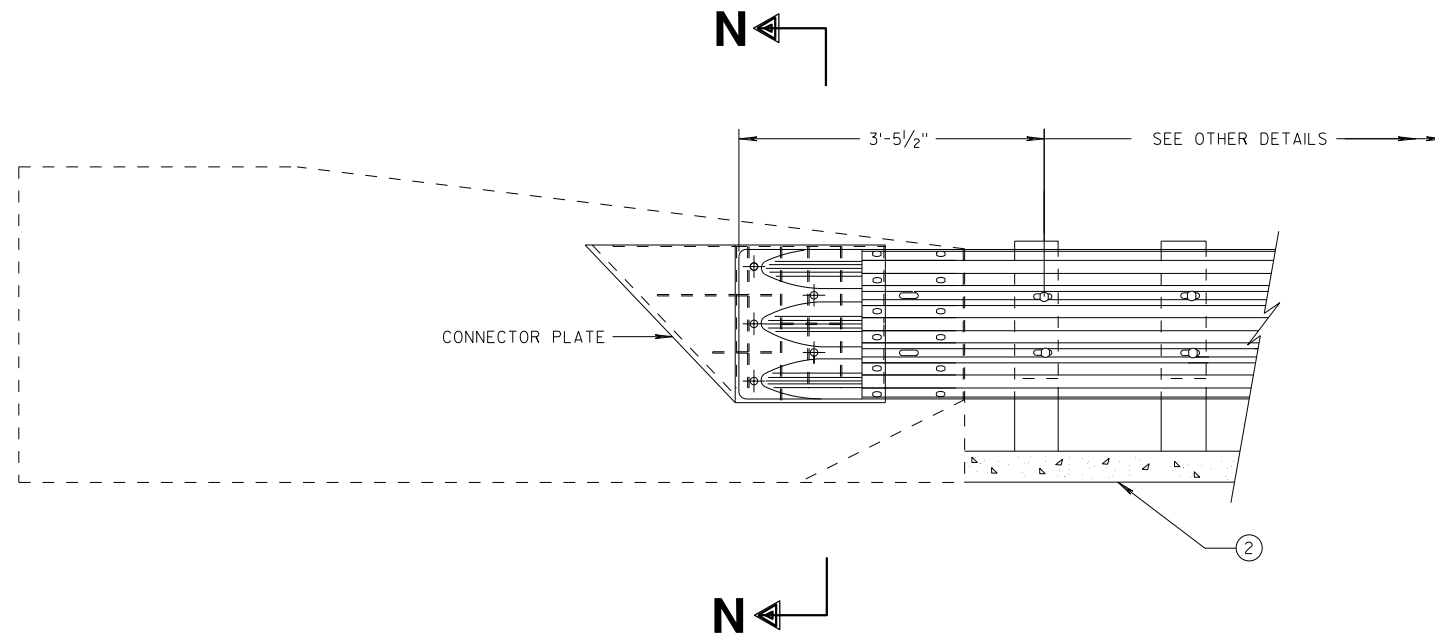
FHWA

GENERAL NOTES

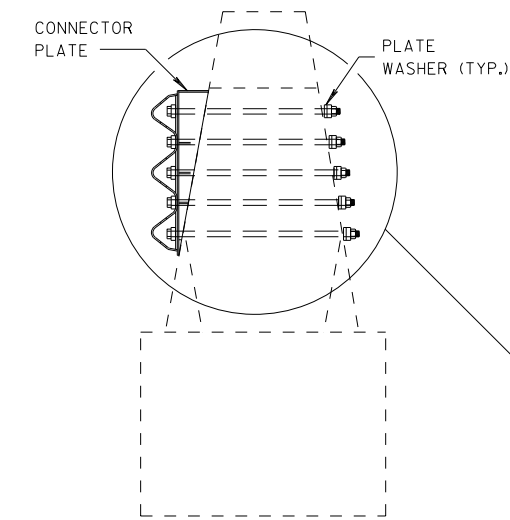
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

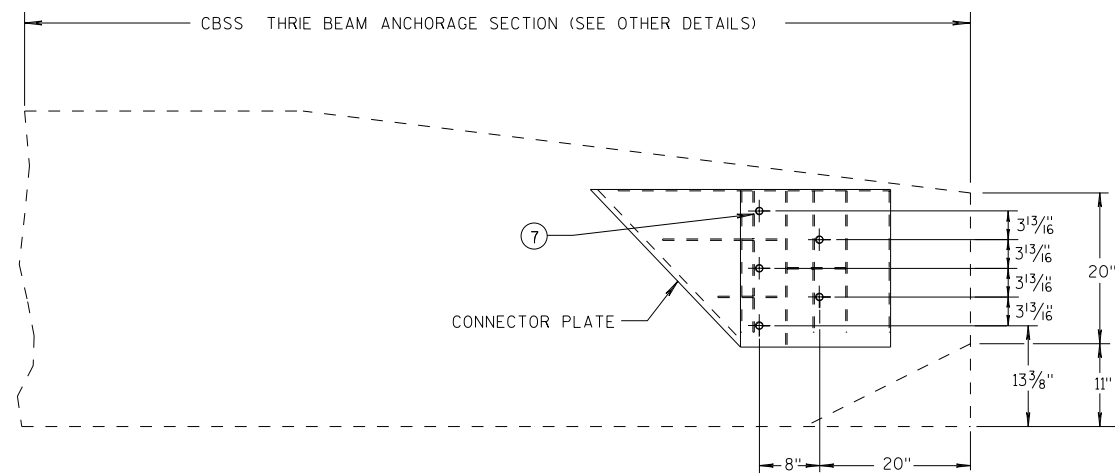
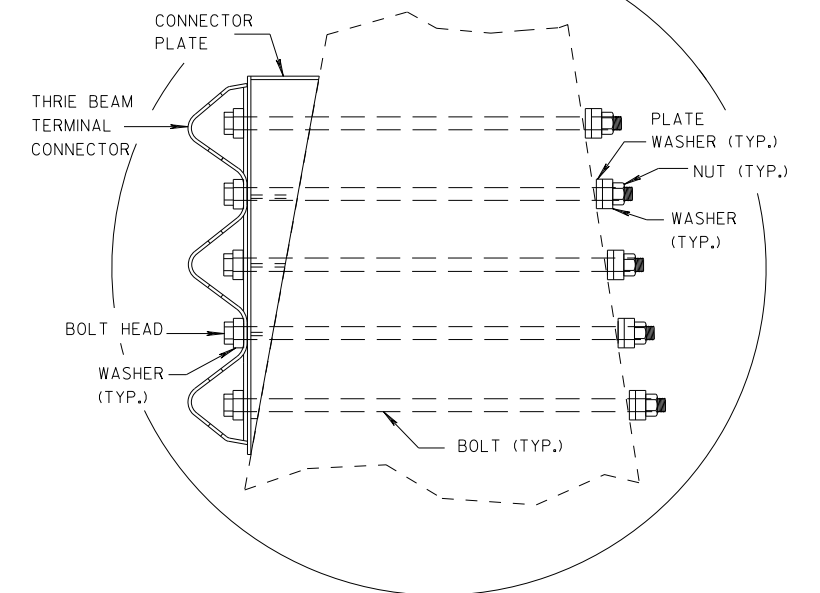
⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTION PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



SECTION N-N

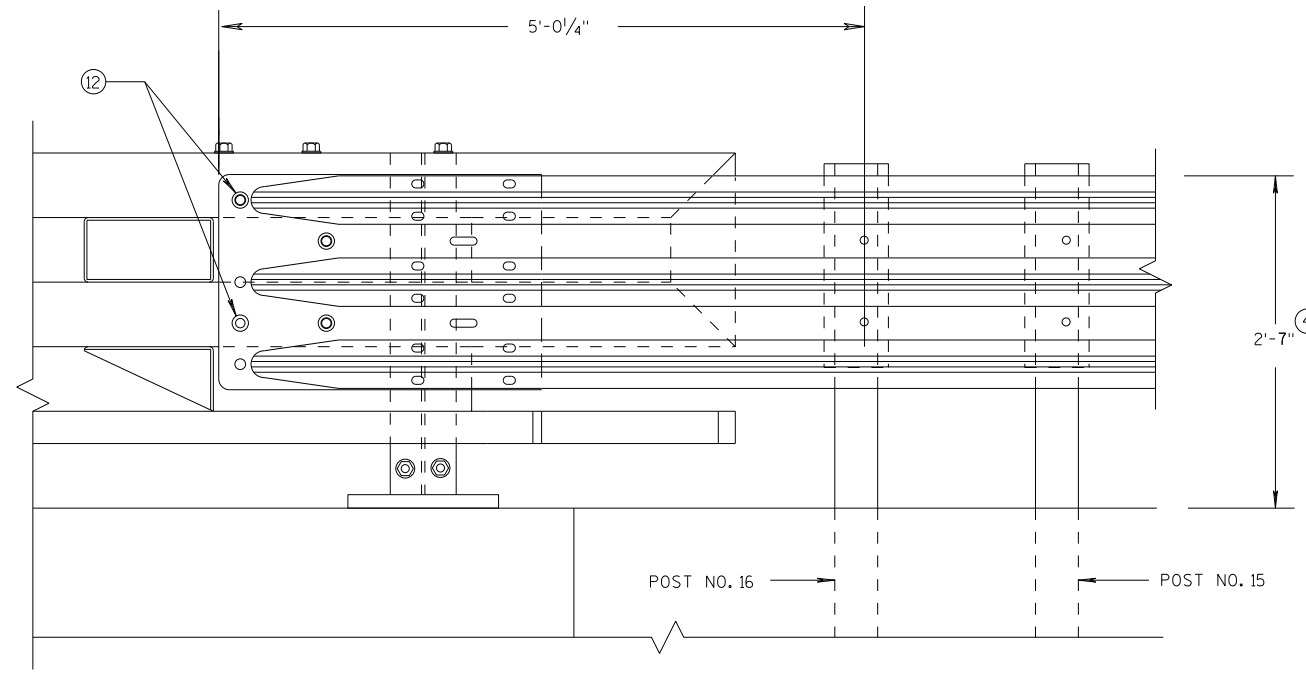


SINGLE SLOPE CONNECTION PLATE PLACEMENT

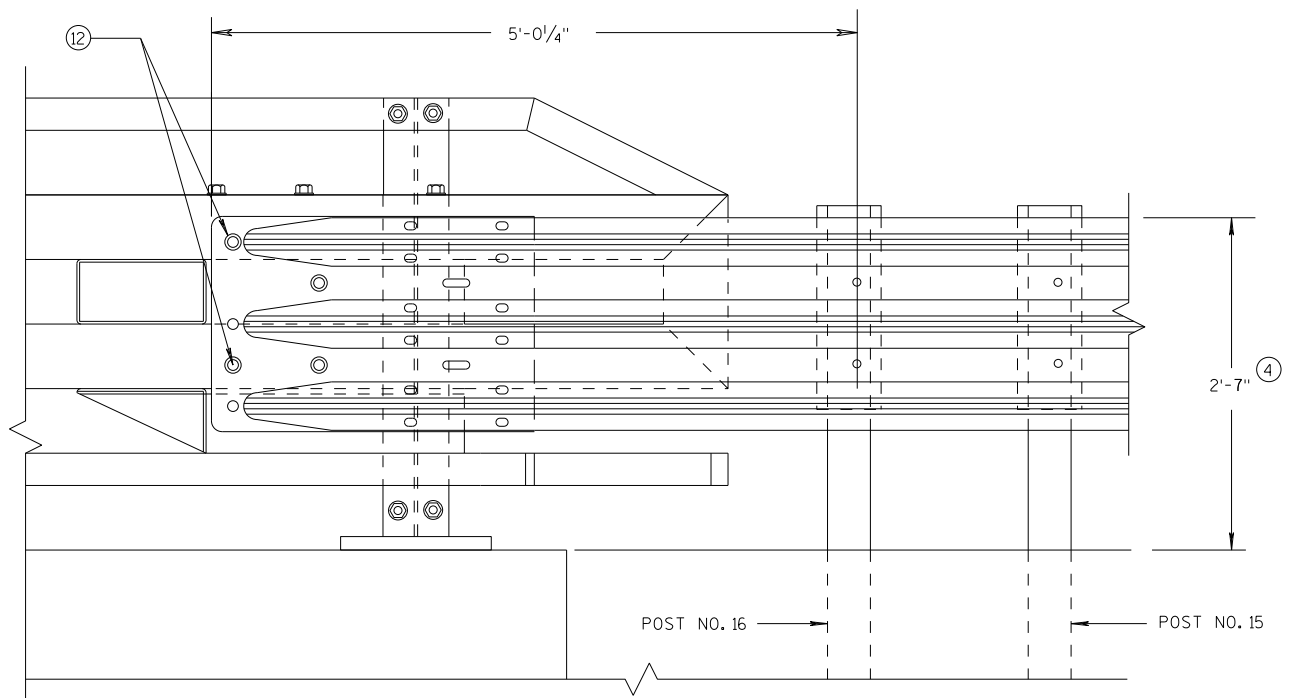
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE 7/2018 /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



**ELEVATION OF DETAIL AT NY3 END POST
THRIE BEAM RAIL ATTACHMENT**



**ELEVATION OF DETAIL AT NY4 END POST
THRIE BEAM RAIL ATTACHMENT**

GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS ± 1".
- ⑫ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND 1/2-INCH BEYOND NUT.

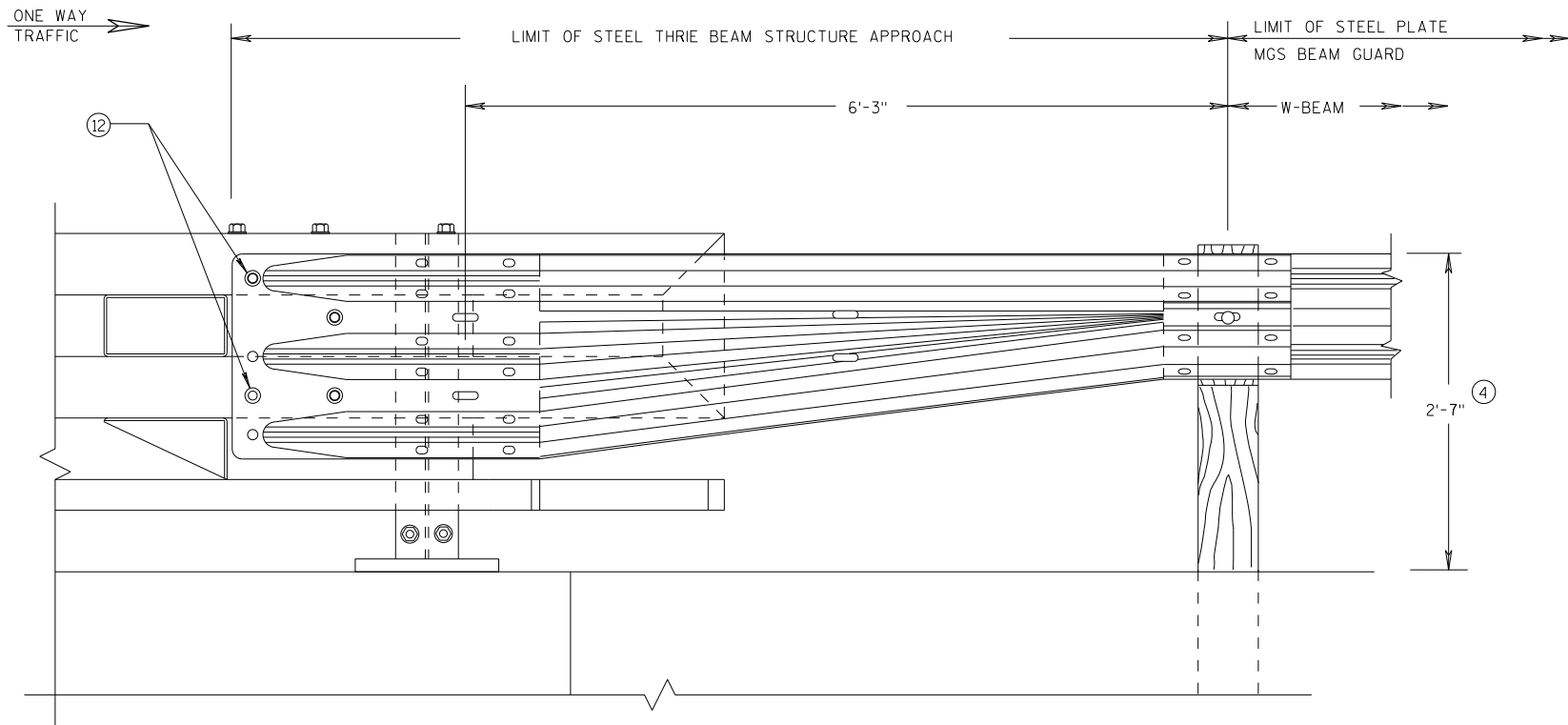
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6

S.D.D. 14 B 45-5k

S.D.D. 14 B 45-5k

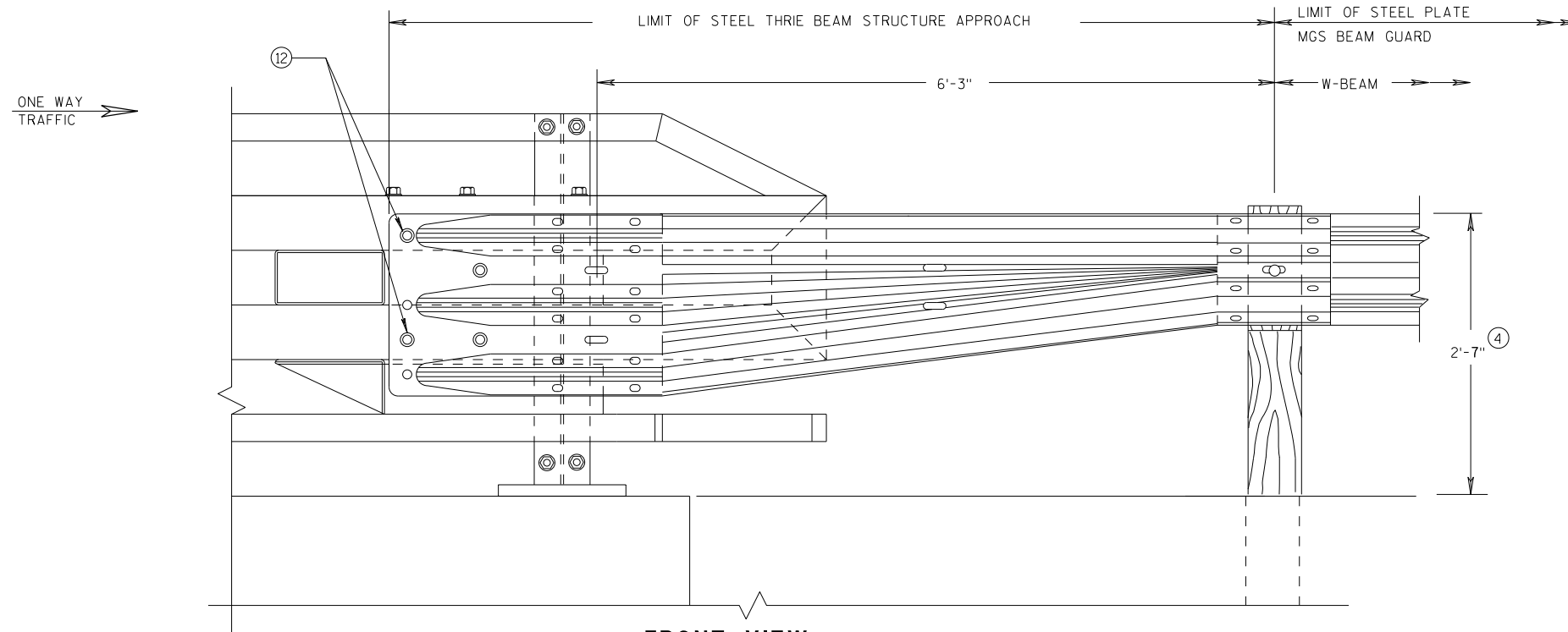
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 7/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	



FRONT VIEW
W BEAM TRANSITION AND
CONNECTION TO BRIDGE RAILING TYPE "NY3"
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS ± 1".
- ⑫ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND 1/2-INCH BEYOND NUT.

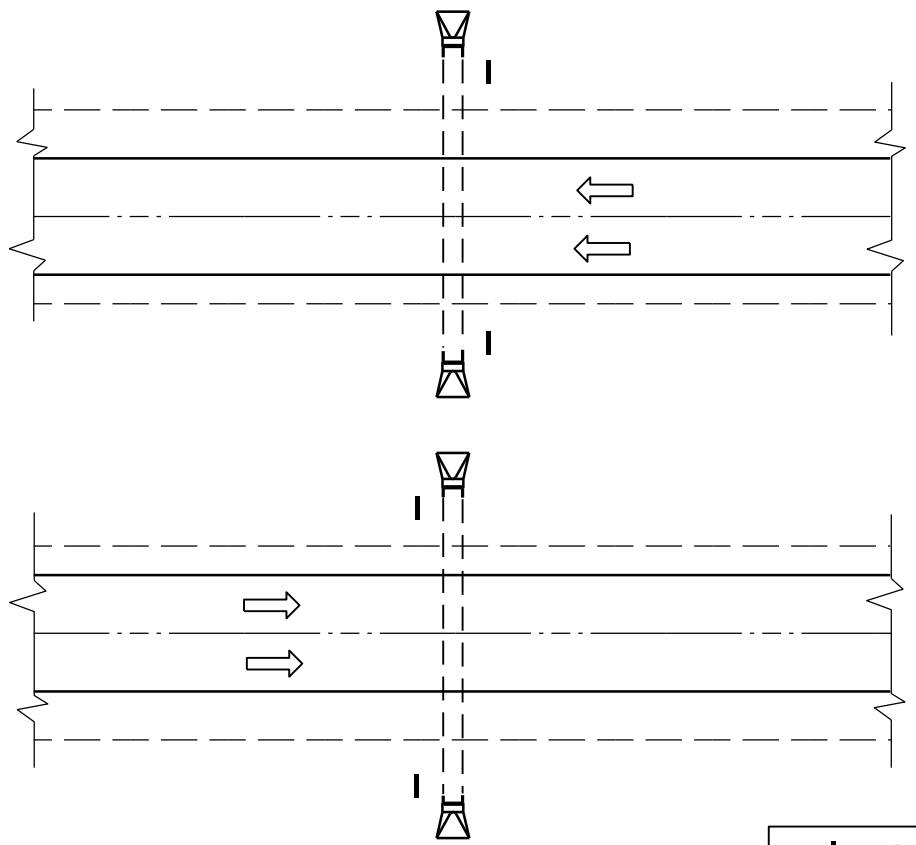


FRONT VIEW
W BEAM TRANSITION AND
CONNECTION TO BRIDGE RAILING TYPE "NY4"
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

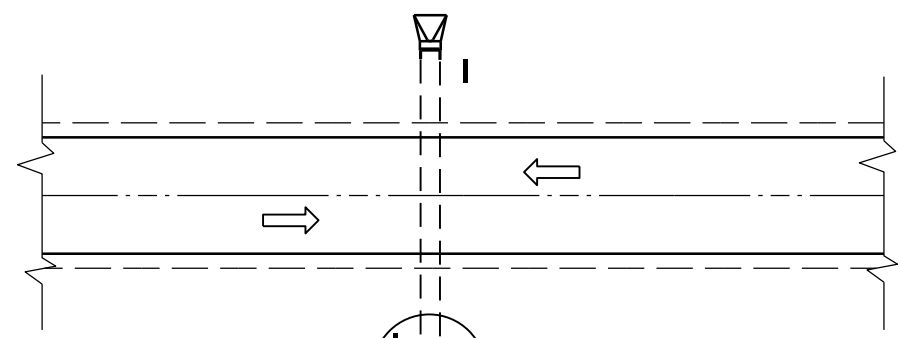
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

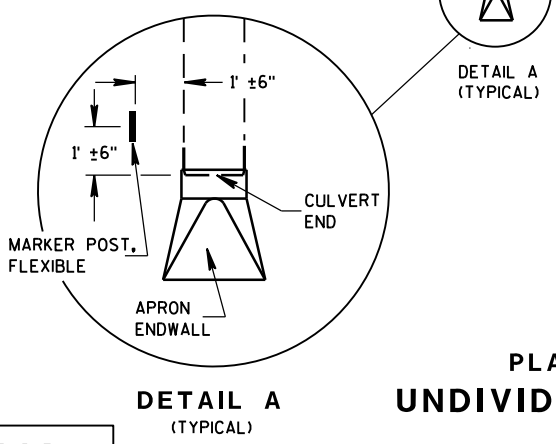
APPROVED
 DATE 7/2018 /S/ Rodney Taylor
 ROADWAY STANDARDS DEVELOPMENT
 UNIT SUPERVISOR
 FHWA



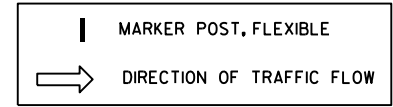
PLAN VIEW
DIVIDED HIGHWAY



PLAN VIEW
UNDIVIDED HIGHWAY

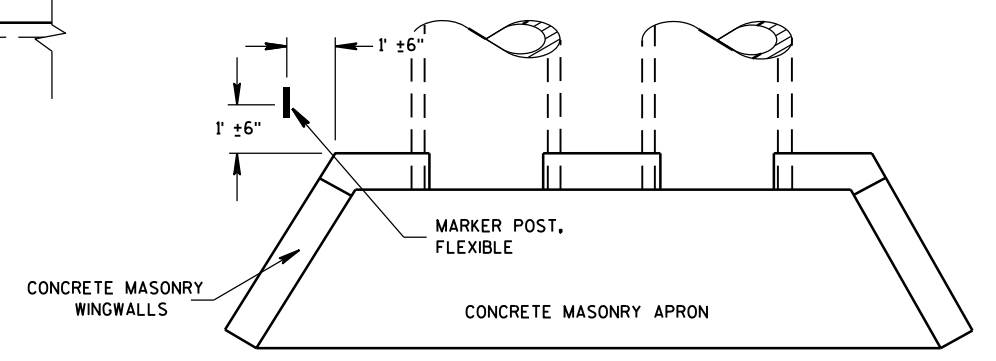


DETAIL A
(TYPICAL)



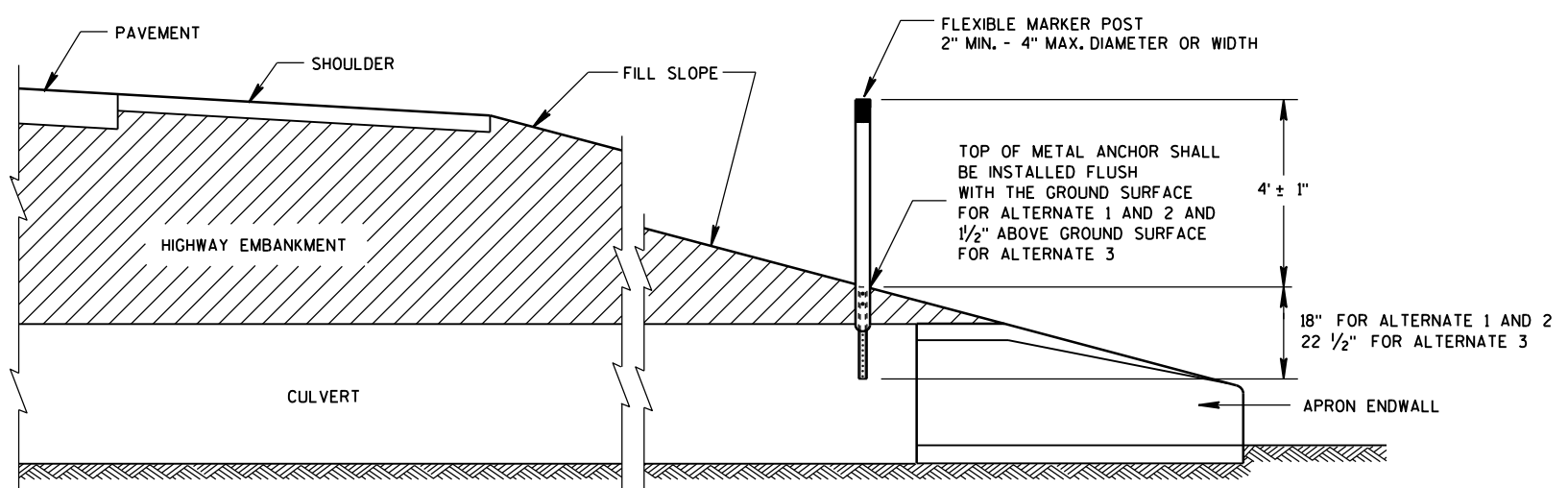
GENERAL NOTES

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.



PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH

FLEXIBLE MARKER POST LOCATION



CROSS SECTION
FLEXIBLE MARKER POST

**FLEXIBLE MARKER POST
FOR CULVERT END**

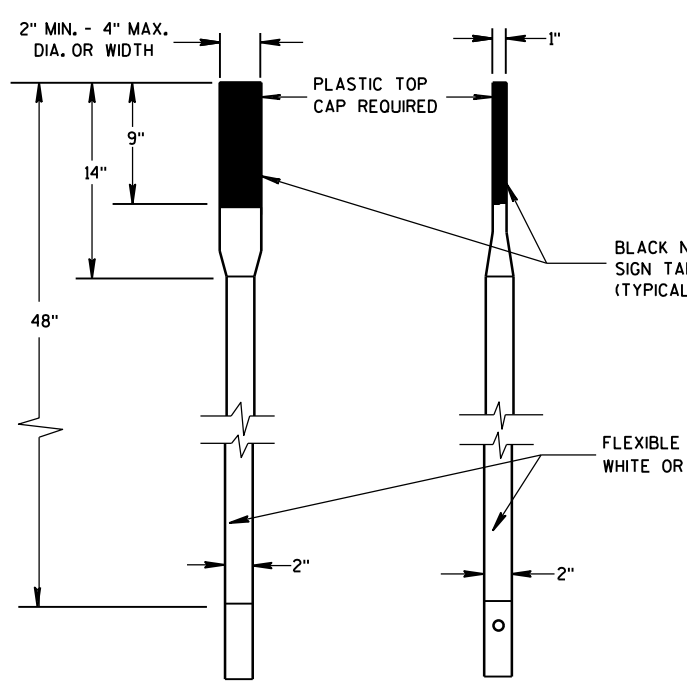
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

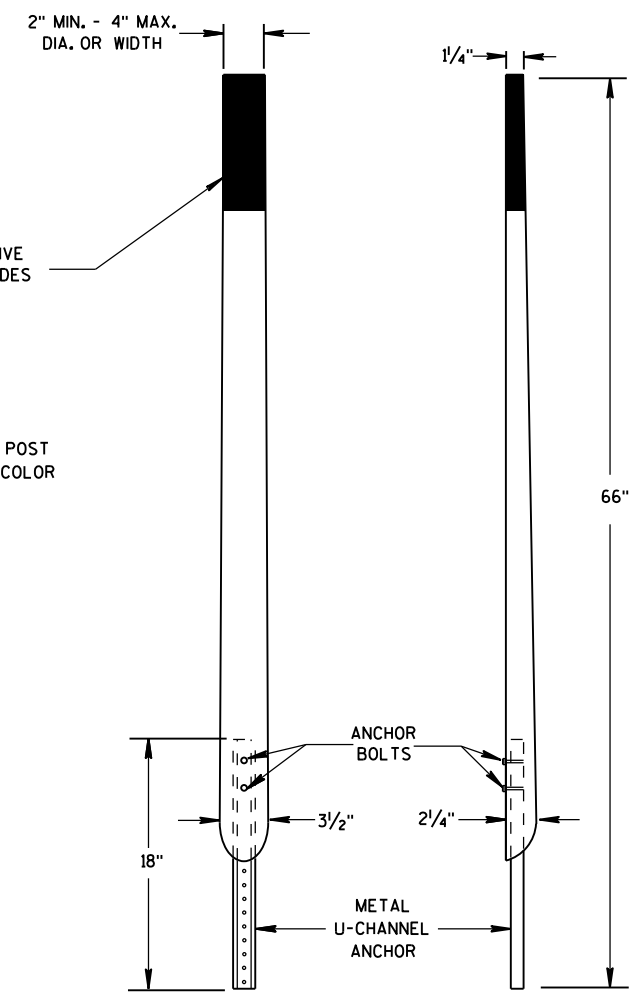
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S.D.D. 15 A 3-2a

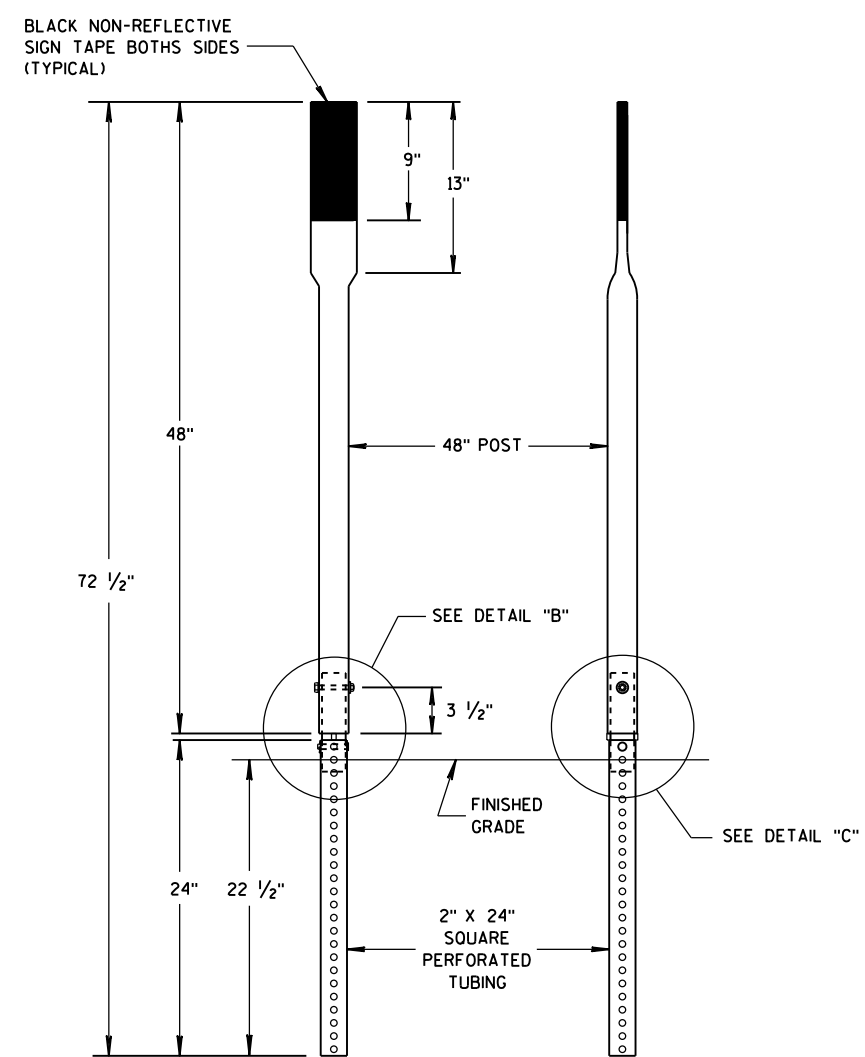
S.D.D. 15 A 3-2a



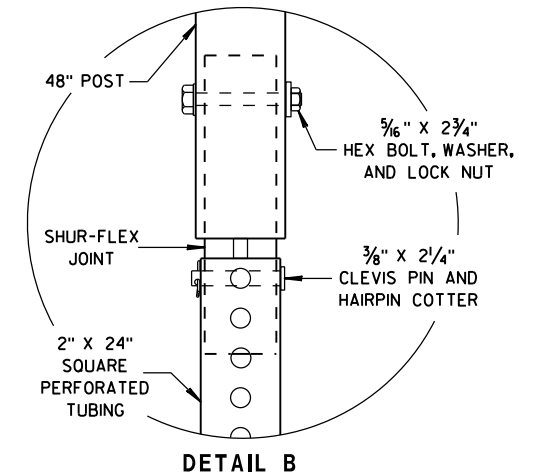
FRONT VIEW SIDE VIEW
ALTERNATE 1



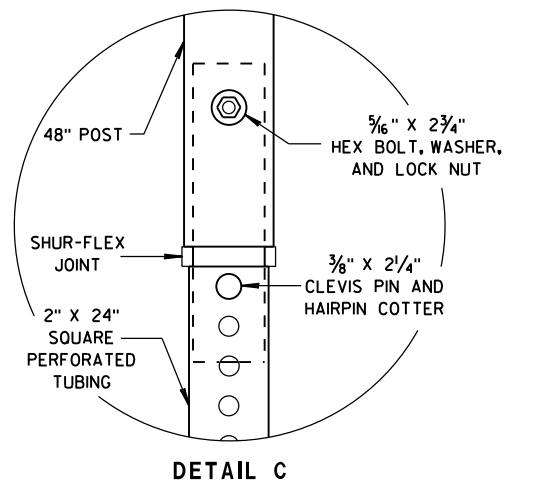
FRONT VIEW SIDE VIEW
ALTERNATE 2



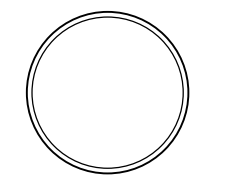
FRONT VIEW SIDE VIEW
ALTERNATE 3



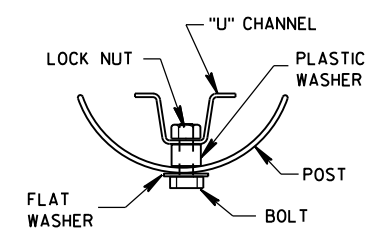
DETAIL B



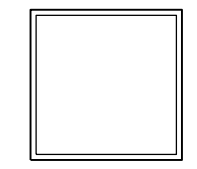
DETAIL C



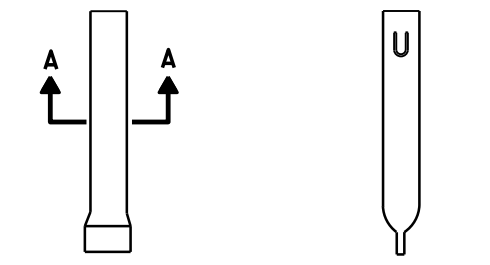
SECTION A-A



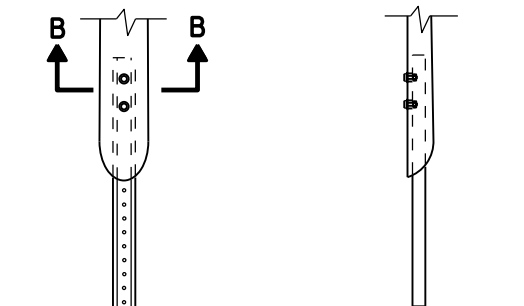
SECTION B-B



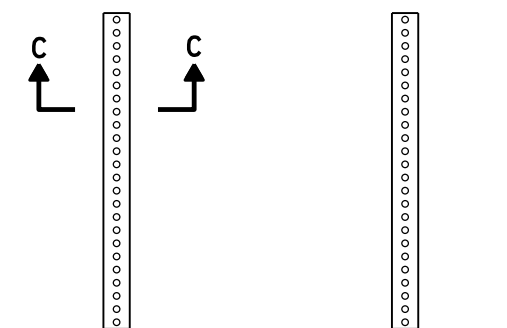
SECTION C-C



FRONT VIEW SIDE VIEW
ALTERNATE 1



FRONT VIEW SIDE VIEW
ALTERNATE 2



FRONT VIEW SIDE VIEW
ALTERNATE 3

FLEXIBLE MARKER POST ANCHORS

FLEXIBLE MARKER POST FOR CULVERT END	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 10/1/2012 DATE	/S/ Travis Feltes STATE TRAFFIC ENGINEER OF DESIGN
FHWA	

GENERAL NOTES

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

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.




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

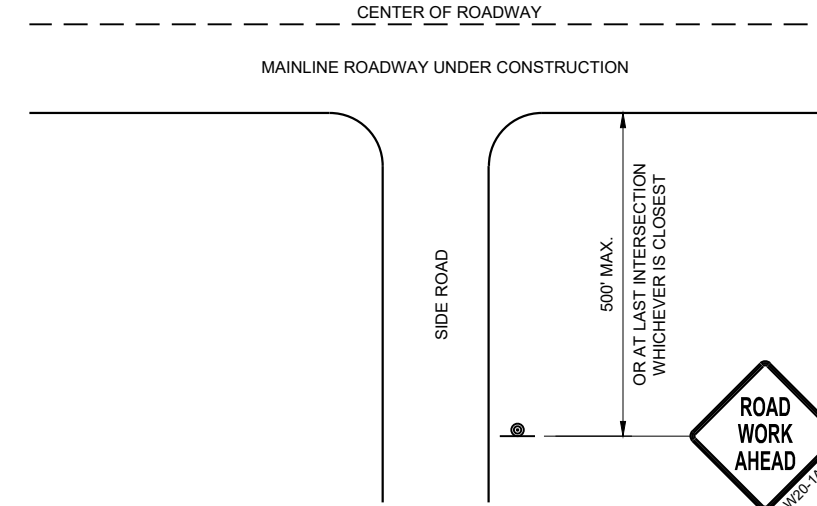
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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

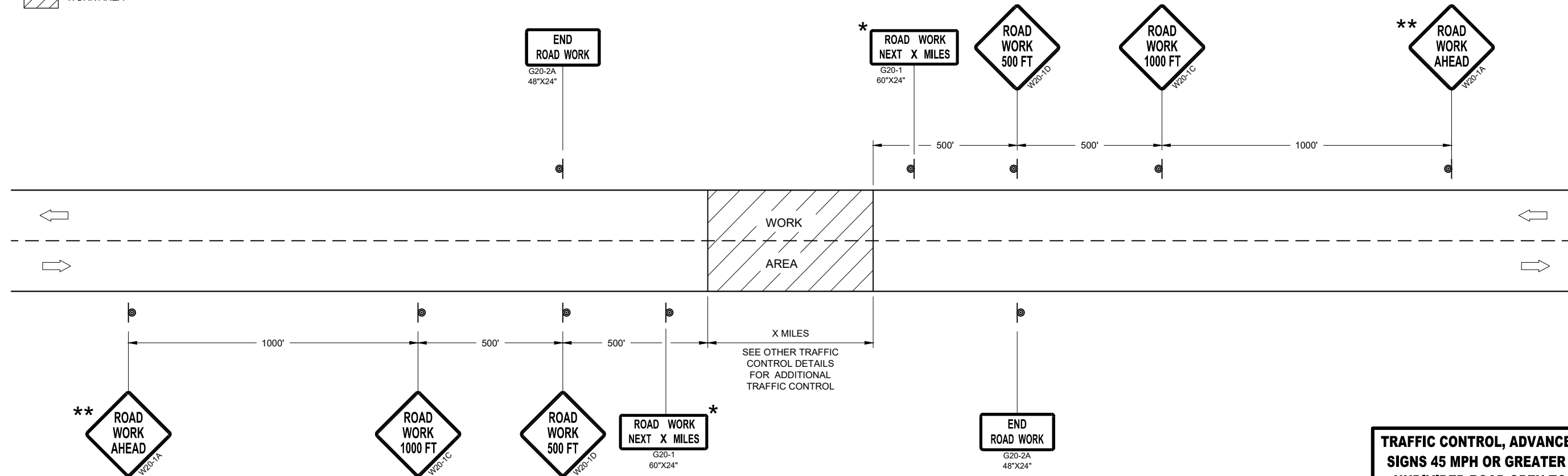
- * OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- ** PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.

LEGEND

-  SIGN ON PERMANENT SUPPORT
-  DIRECTION OF TRAFFIC
-  WORK AREA

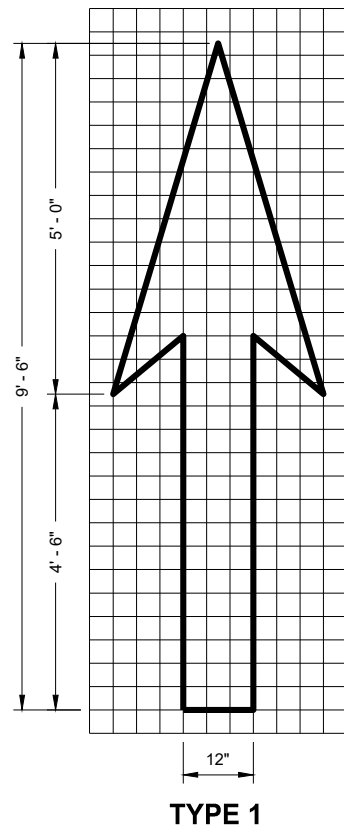


**TYPICAL SIDE ROAD APPROACH
WARNING SIGN DETAIL**

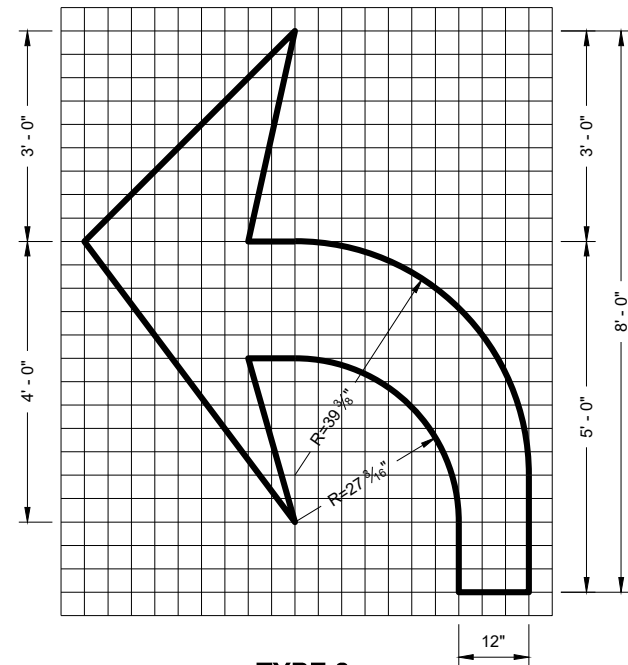


TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

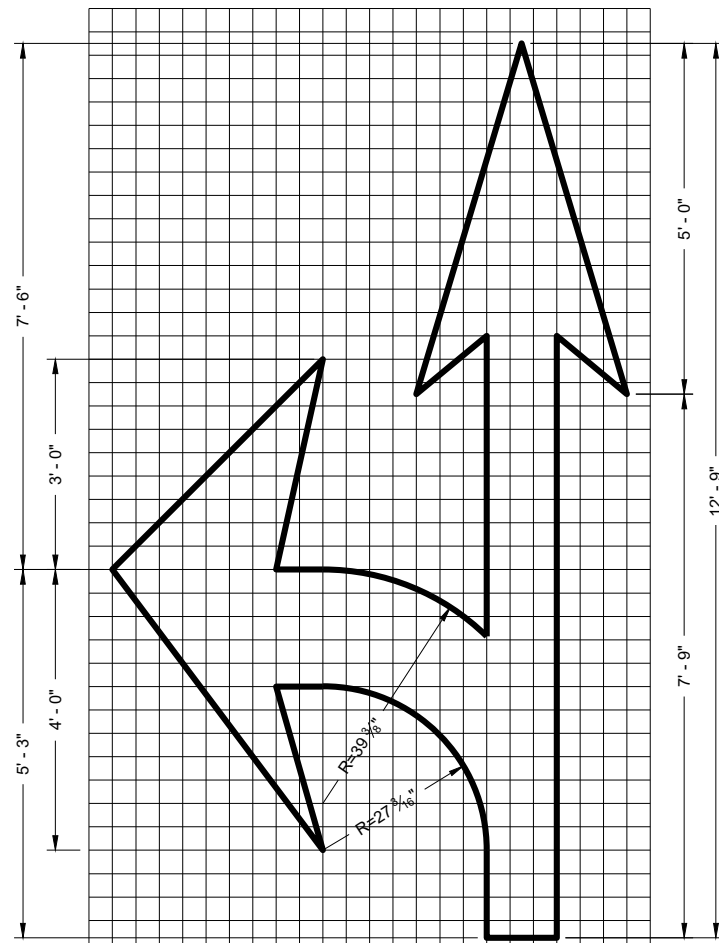
TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 MPH OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	



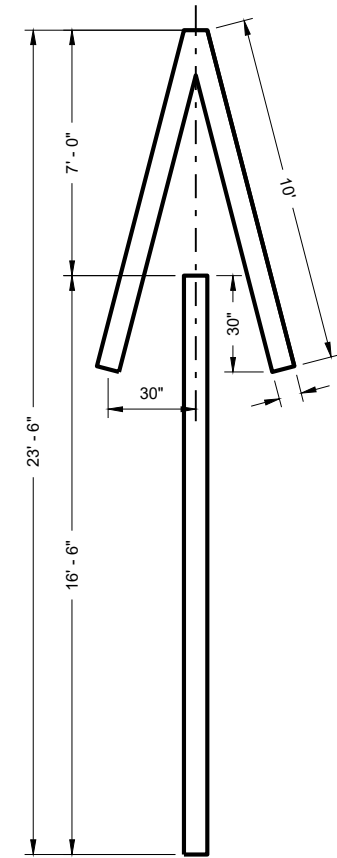
TYPE 1



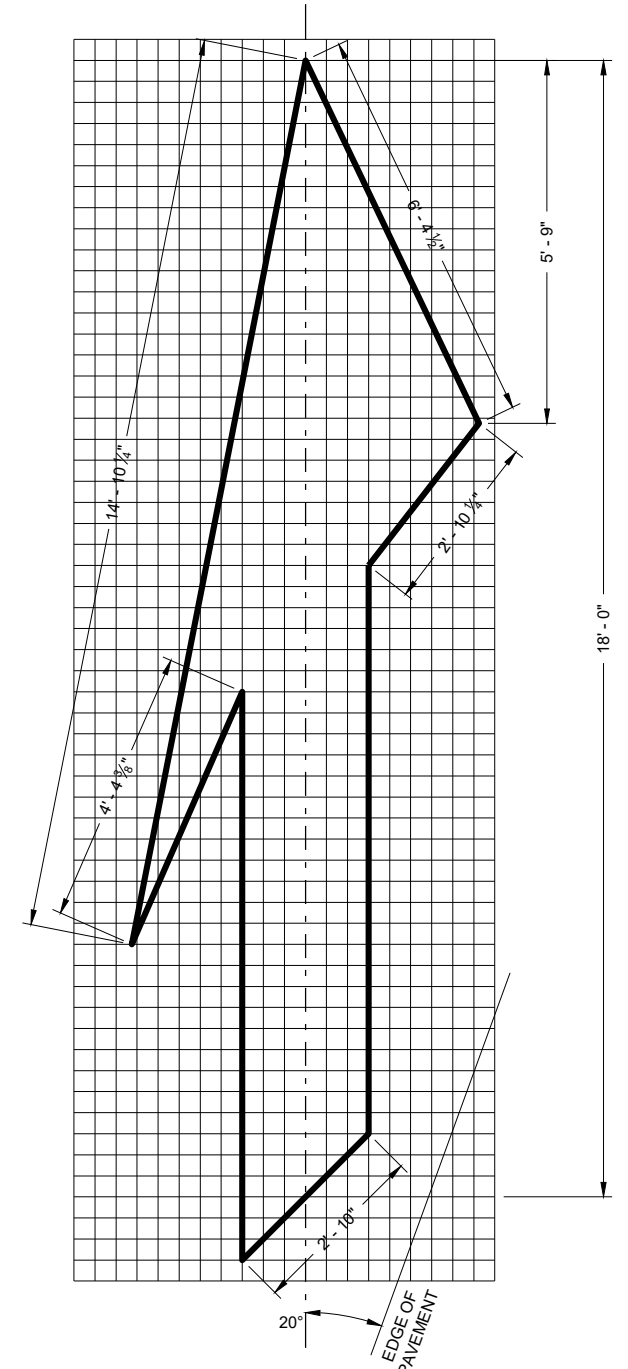
TYPE 2



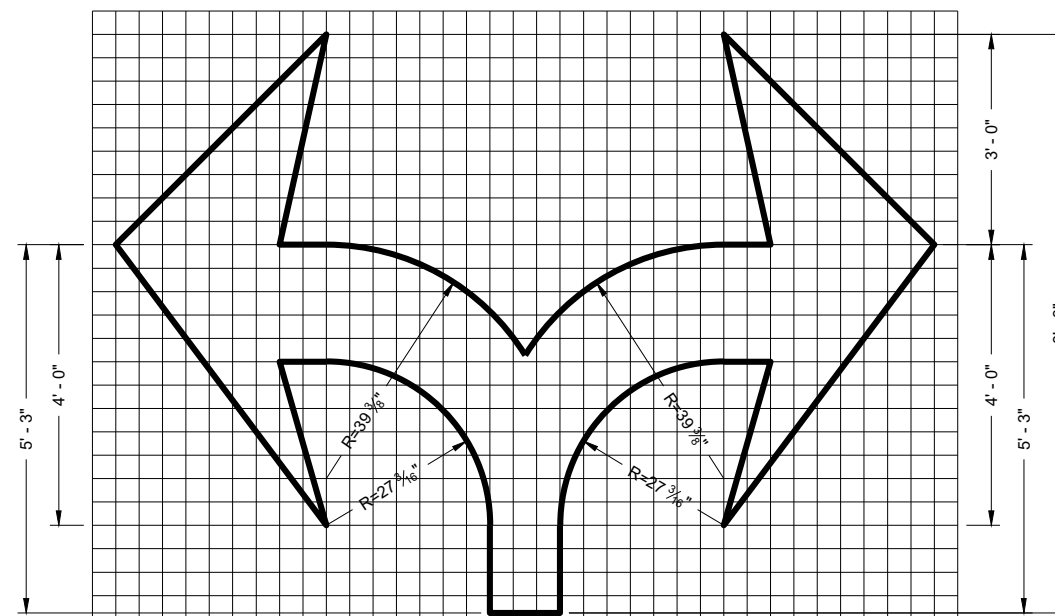
TYPE 3



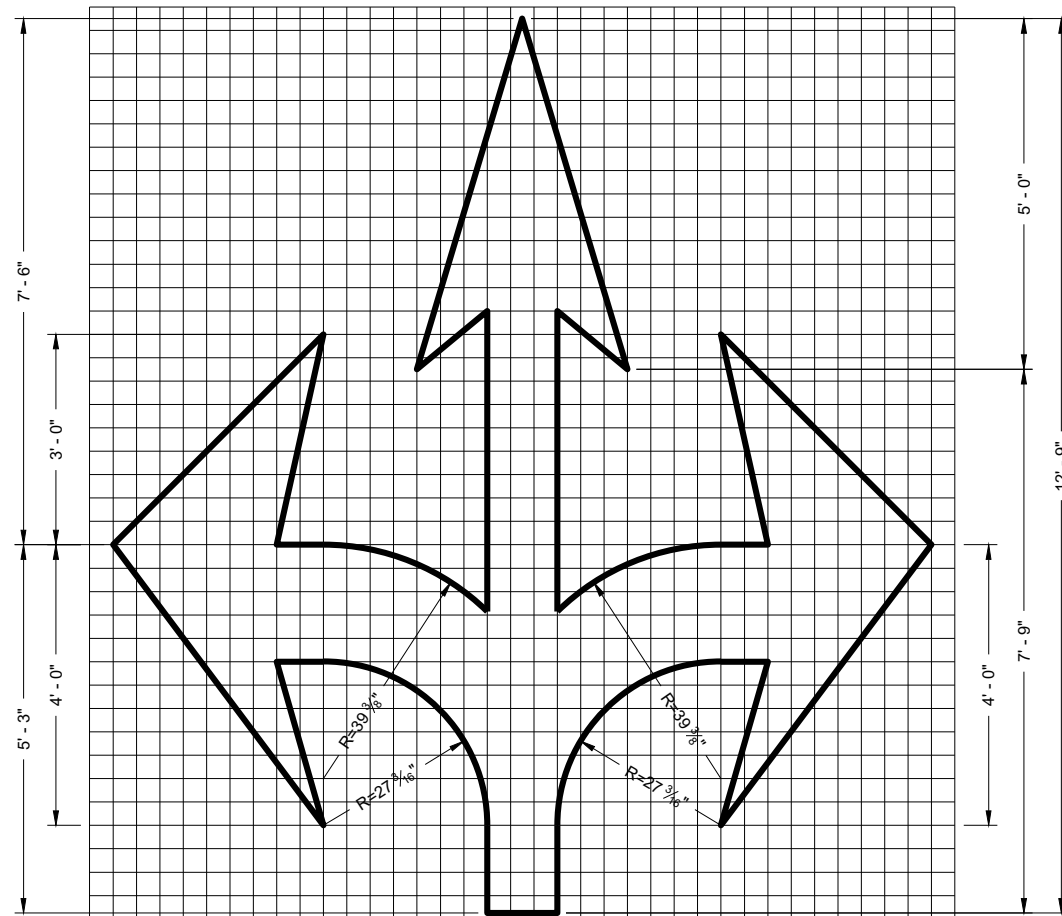
TYPE 4



TYPE 5 LANE DROP ARROW



TYPE 7



TYPE 6

GENERAL NOTES

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

PAVEMENT MARKING ARROWS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

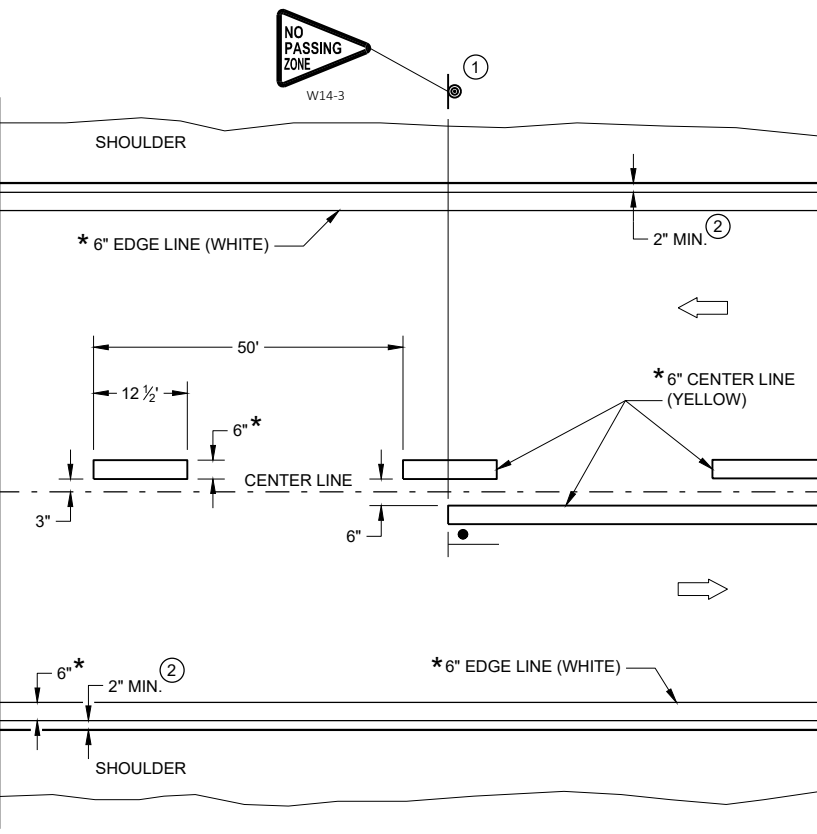
APPROVED

November 2019

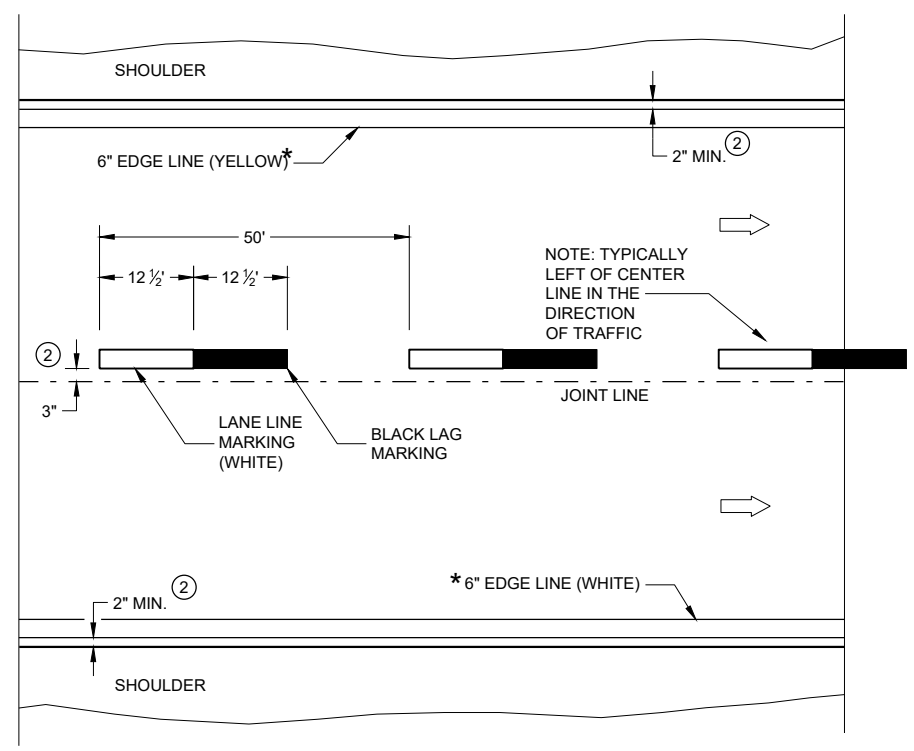
DATE

FHWA

/s/ Matthew Rauch
STATE SIGNING AND MARKING
ENGINEER



TWO WAY TRAFFIC



ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING

* CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES

GENERAL NOTES

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

- ① LOCATE THE NO PASSING ZONE W14-3 SIGN WITHIN 50 FEET OF THE "T" MARKING
- ② MEASURE FROM EDGE OF MARKING TO JOINT LINE. THIS DOES NOT INCLUDE SPACE NEEDED FOR GROOVING OPERATIONS.

LEGEND

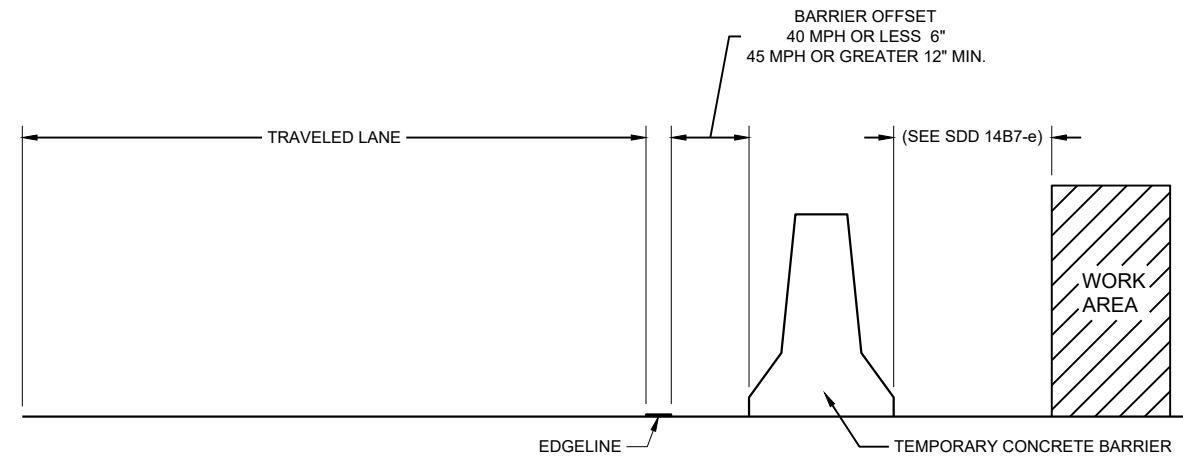
- "T" MARKING
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC

PERMANENT LONGITUDINAL PAVEMENT MARKINGS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2023 /S/ Jeannie Silver
DATE STATEWIDE SIGNING AND MARKING ENGINEER

FHWA



TEMPORARY BARRIER OFFSET FROM EDGE LINE

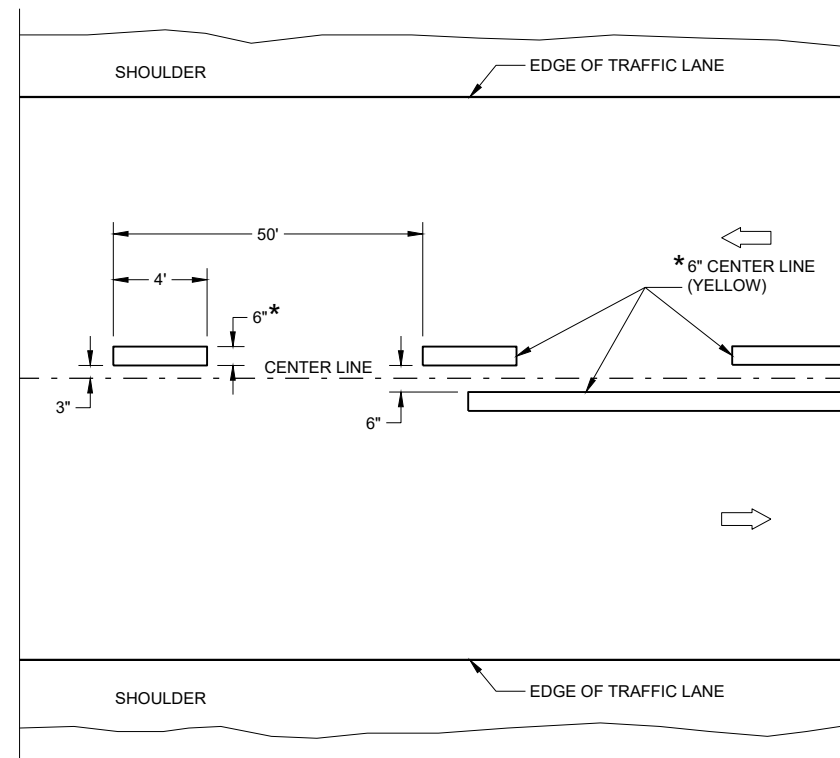
GENERAL NOTES

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

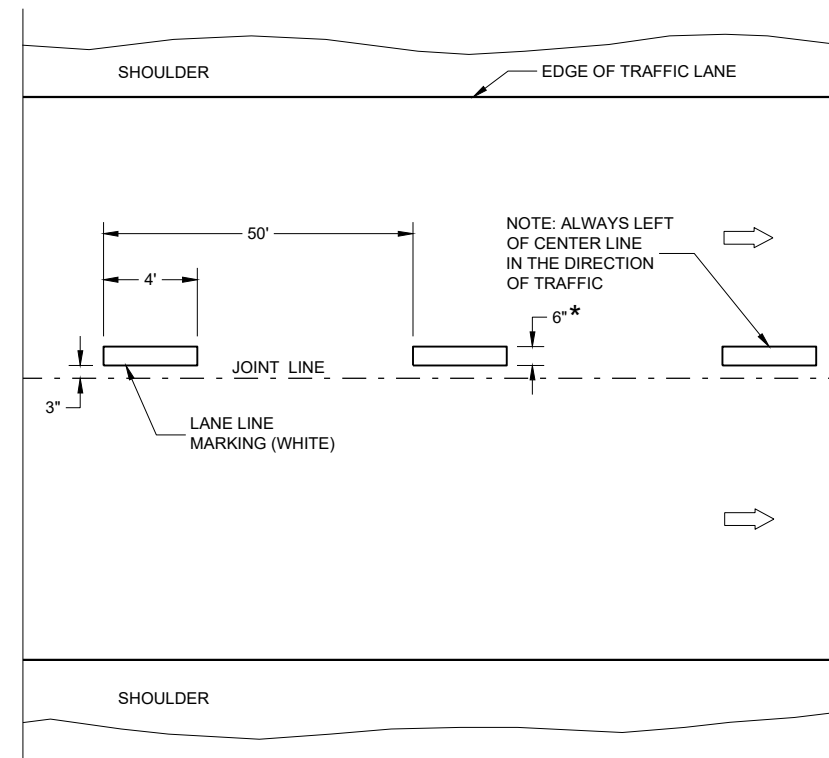
LEGEND

➡ DIRECTION OF TRAFFIC

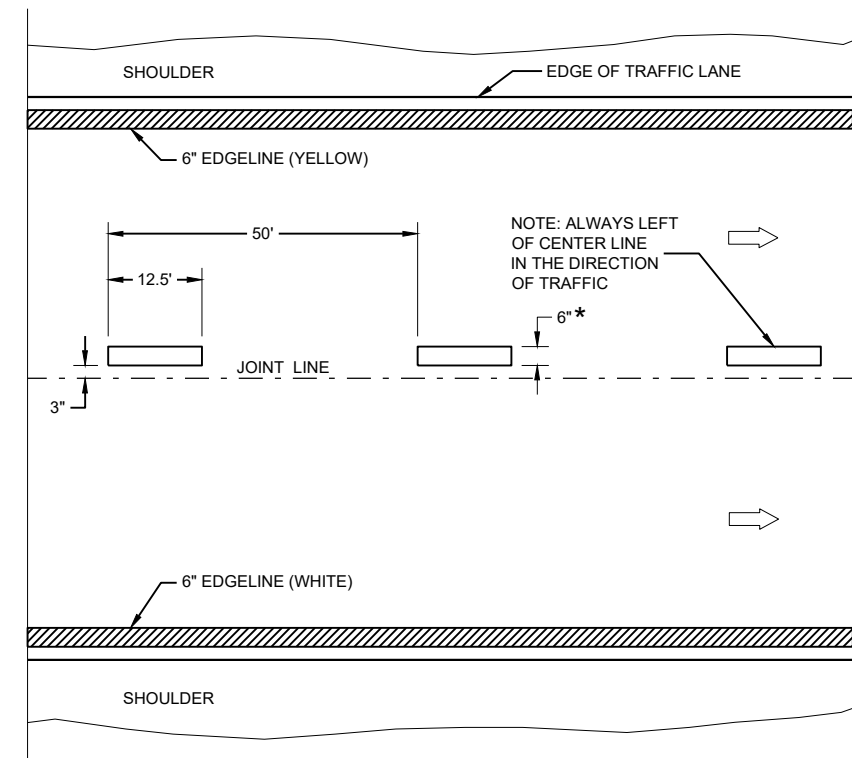
* CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES



TWO WAY TRAFFIC



ONE WAY TRAFFIC



FREEWAYS AND EXPRESSWAYS

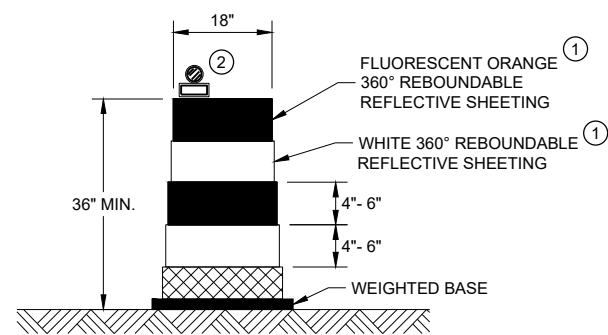
TEMPORARY PAVEMENT MARKING

TEMPORARY LONGITUDINAL PAVEMENT MARKING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

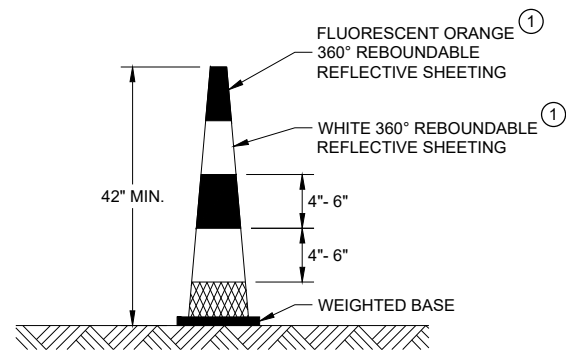
APPROVED
May 2023 /S/ Jeannie Silver
DATE STATEWIDE SIGNING AND MARKING
ENGINEER

FHWA



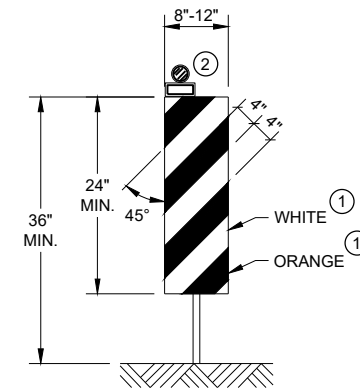
DRUM

BALLAST WIDTHS
RANGE FROM 24"-36"



42" CONE

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

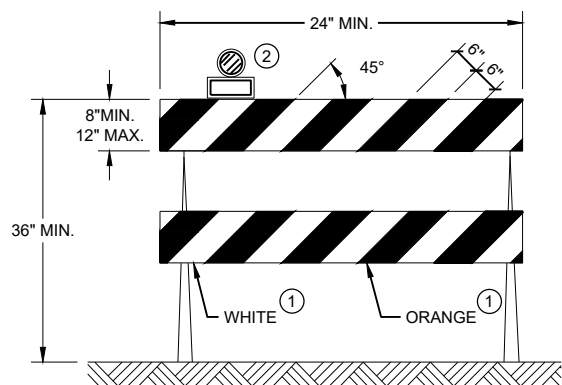


VERTICAL PANEL

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

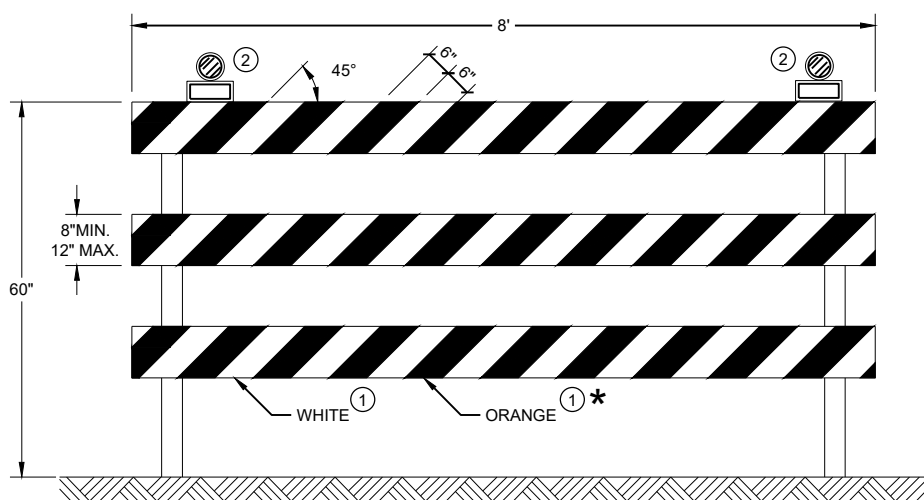
GENERAL NOTES

- 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.



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.






**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

-  SIGN ON PORTABLE OR PERMANENT SUPPORT
-  TEMPORARY PORTABLE RUMBLE STRIP ARRAY
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

GENERAL NOTES

DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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

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

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

THE FIRST ADVANCE WARNING SIGN SHOULD TYPICALLY BE LOCATED IN ADVANCE OF THE ANTICIPATED TRAFFIC BACKUP OR QUEUE.

WHEN A SIDE ROAD OR 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.

FLAGGING

FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT REMOVE TEMPORARY PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

- ① FOR MOVING WORK OPERATIONS, POST ADDITIONAL W20-7A FLAGGER SIGNS AT APPROXIMATELY 3,500' INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.
- ② SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.

WHEN THE DISTANCE BETWEEN FLAGGERS EXCEEDS 2 MILES, A PILOT CAR IS REQUIRED. WHEN CURVES REDUCE SIGHT DISTANCE BELOW 400', A PILOT CAR IS REQUIRED.

TEMPORARY PORTABLE RUMBLE STRIPS

UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.

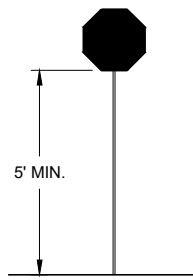
- ③ EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS PLACED TRANSVERSE ACROSS THE LANE AT THE LOCATIONS SHOWN. WITHIN EACH ARRAY, SPACING BETWEEN RUMBLE STRIPS SHALL BE 15 FEET ON CENTER

ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FROM THE APPROVED PRODUCTS LIST.

INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS.

PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

DO NOT INSTALL TEMPORARY PORTABLE RUMBLE STRIPS ON GRAVEL, MILLED SURFACES, OR ASPHALT THAT HAS BEEN PAVED LESS THAN 12 HOURS.



STOP/SLOW PADDLE ON SUPPORT STAFF

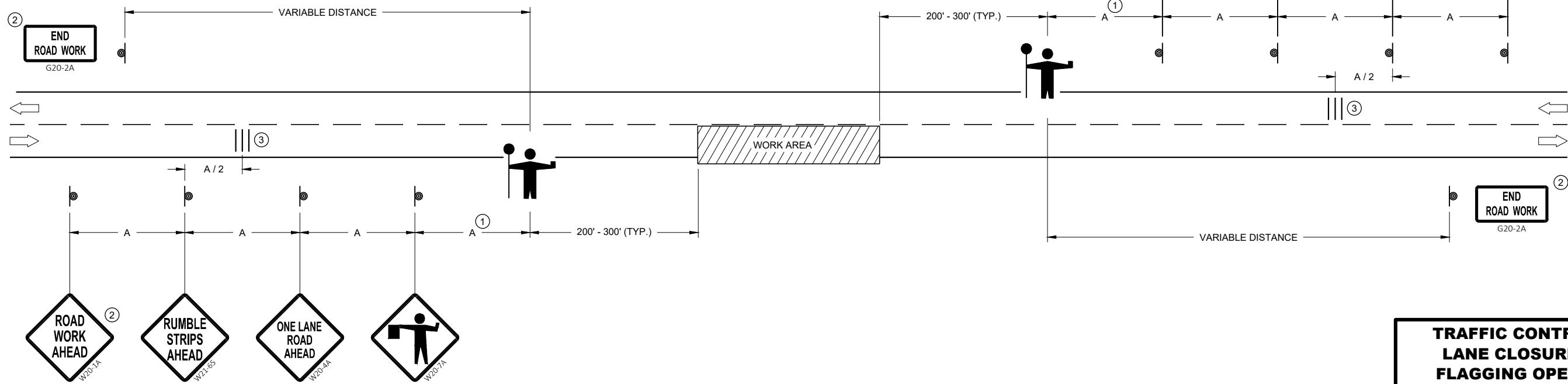
SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

SPEED LIMIT	SPACING "A"
25-30 MPH	200'
35-40 MPH	350'
45-55 MPH	500'



W03-4

USE OF W03-4 SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7A AND W20-4A SIGNS, USING SPACING "A".










TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE: May 2022 /S/ Andrew Heidtke
WORK ZONE ENGINEER

FHWA

GENERAL NOTES

-  SIGN ON PERMANENT SUPPORT
-  TRAFFIC CONTROL CONE 42-INCH
-  TRAFFIC CONTROL DRUM
-  TEMPORARY PORTABLE RUMBLE STRIP ARRAY
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  **AFAD** AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD)

GENERAL NOTES

DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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

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

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

THE FIRST ADVANCE WARNING SIGN SHOULD TYPICALLY BE LOCATED IN ADVANCE OF THE ANTICIPATED TRAFFIC BACKUP OR QUEUE.

WHEN A SIDE ROAD OR 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.

FLAGGING

IF THE AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD) STOPS WORKING, FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT REMOVE TEMPORARY PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

WHEN THE DISTANCE BETWEEN FLAGGERS EXCEEDS 2 MILES, A PILOT CAR IS REQUIRED. WHEN CURVES REDUCE SIGHT DISTANCE BELOW 400', A PILOT CAR IS REQUIRED.

- ① SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.
- ② IF FLAGGERS ARE PHYSICALLY NEEDED TO FLAG, REPLACE WO3-4 SIGNS WITH W20-7A SIGNS.

TEMPORARY PORTABLE RUMBLE STRIPS

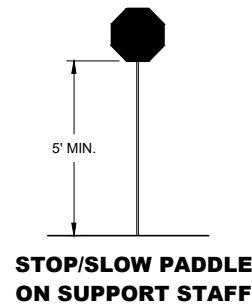
UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.

ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FROM THE APPROVED PRODUCTS LIST.

PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

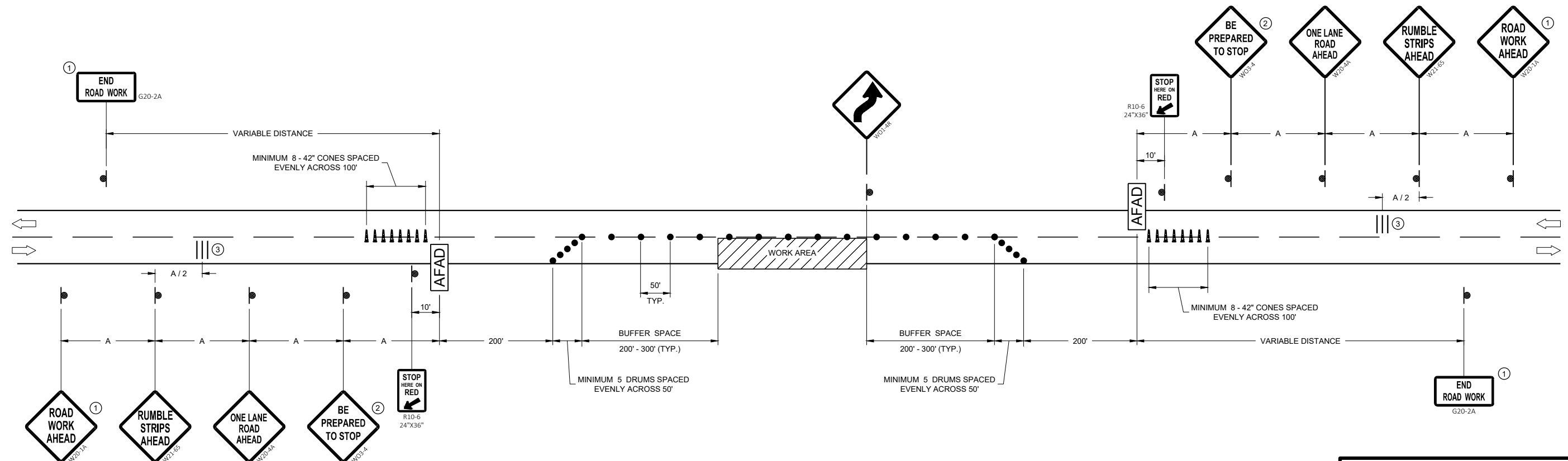
DO NOT INSTALL TEMPORARY PORTABLE RUMBLE STRIPS ON GRAVEL, MILLED SURFACES, OR ASPHALT THAT HAS BEEN PAVED LESS THAN 12 HOURS.

③ EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS PLACED TRANSVERSELY AT THE LOCATIONS SHOWN. WITHIN EACH ARRAY, SPACING BETWEEN RUMBLE STRIPS SHALL BE 15 FEET ON CENTER.



SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

SPEED LIMIT	SPACING "A"
25-30 MPH	200'
35-40 MPH	350'
45-55 MPH	500'







TRAFFIC CONTROL, LANE CLOSURE WITH AUTOMATED FLAGGER ASSISTANCE DEVICE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

LEGEND

- V1 LEAD VEHICLE
- V2 MARKING VEHICLE
- V3 SHADOW VEHICLE
-  TRUCK MOUNTED ATTENUATOR (TMA)
-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC
-  FLASHING ARROW PANEL (CAUTION)

GENERAL NOTES

ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.

ALL VEHICLES SHALL BE EQUIPPED WITH REAR FACING TYPE B OR C FLASHING ARROW PANEL OPERATING IN CAUTION MODE. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.

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

DISTANCE BETWEEN VEHICLES MAY VARY ACCORDING TO TERRAIN, SIGHT DISTANCE, PAINT DRYING TIME, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL AND HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.

THE WORK AND SHADOW VEHICLES SHOULD PULL OVER PERIODICALLY TO ALLOW TRAFFIC TO PASS.

WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR LAY STATIONARY SIGNS AND SUPPORTS FLAT ON THE GRADE WITH UPRIGHTS ORIENTED PARALLEL TO AND DOWNSTREAM FROM TRAFFIC.

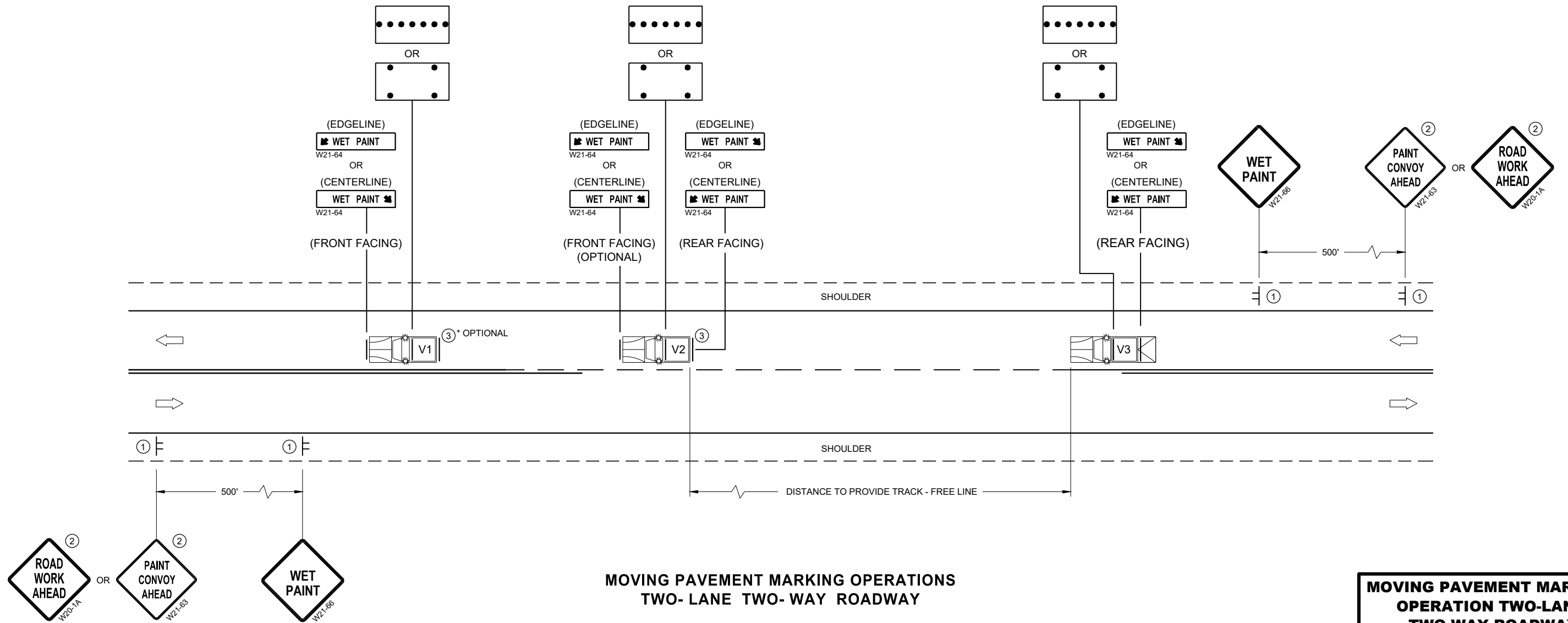
CONES SHOULD BE USED BETWEEN THE MARKING AND SHADOW VEHICLE AT 100 FOOT SPACING. CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.

CONES SHALL BE A MINIMUM OF 28" FOR WET PAVEMENT MARKING.

- ① SIGNS SHALL BE REPEATED APPROXIMATELY EVERY THREE MILES.
- ② IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1A OR W21-63 ARE NOT REQUIRED.
- ③ V1 AND V2 CAN BE SWITCHED SO THAT THE MARKER IS THE LEAD VEHICLE.

6

6

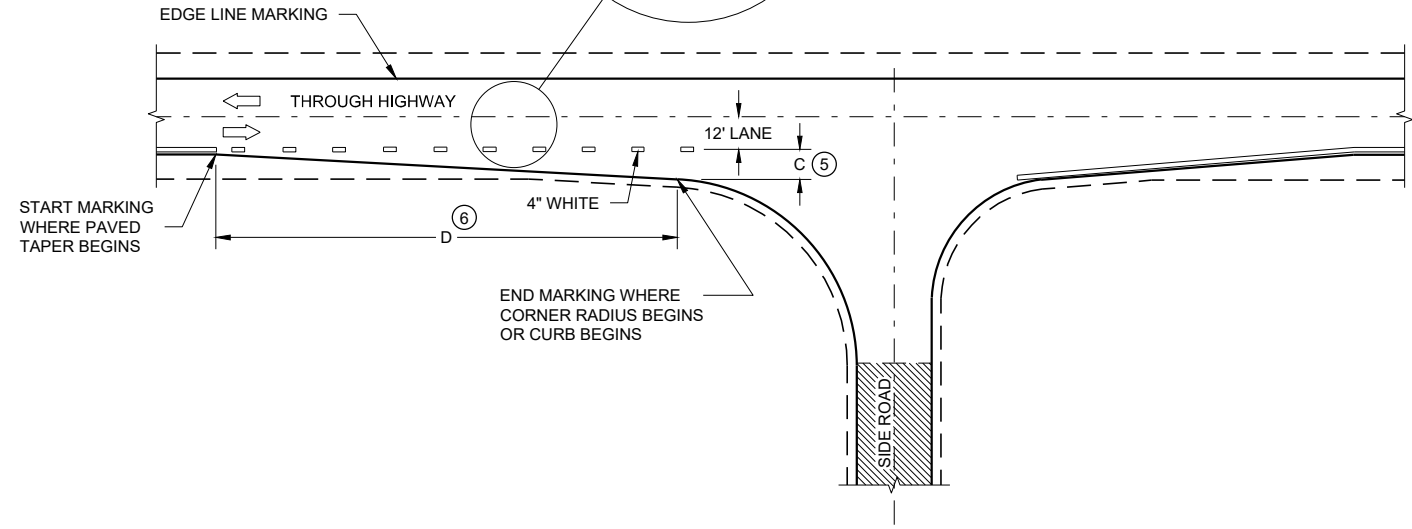
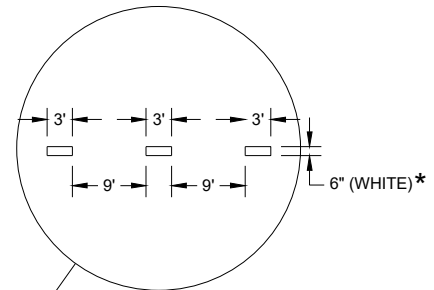


SDD 15C19-08a

SDD 15C19-08a

**MOVING PAVEMENT MARKING OPERATIONS
TWO-LANE TWO-WAY ROADWAY**

MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED February 2023 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	



MINOR INTERSECTION

* CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES

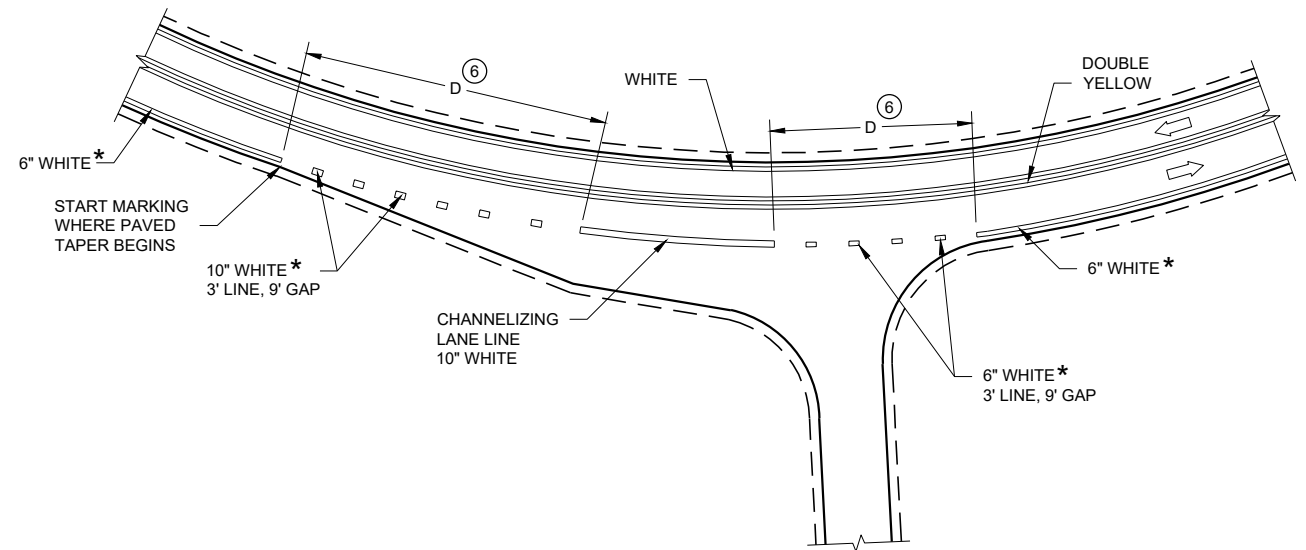
GENERAL NOTES

OMIT EDGE LINES THROUGH INTERSECTIONS. CONTINUE EDGE LINES THROUGH DRIVEWAYS.

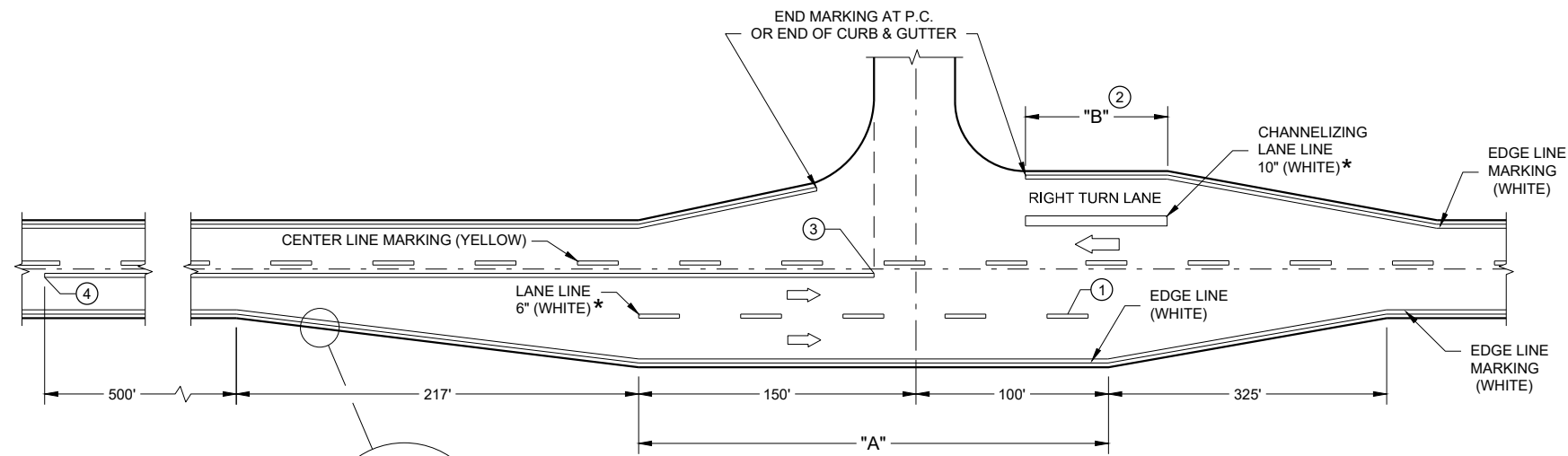
- ① WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT LANE LINE.
- ② WHEN DISTANCE "B" IS LESS THAN 100 FEET, OMIT CHANNELIZING LANE LINE.
- ③ BARRIER LINE ENDS AT SIDE ROAD PAVEMENT / SURFACE EDGE EXTENSION.
- ④ BARRIER LINE STARTS 500 FEET PRIOR TO THE BYPASS TAPER.
- ⑤ WHEN DISTANCE "C" IS LESS THAN 4 FEET, OMIT DOTTED EXTENSION.
- ⑥ WHEN DISTANCE "D" IS LESS THAN 50 FEET, OMIT DOTTED EXTENSION.

LEGEND

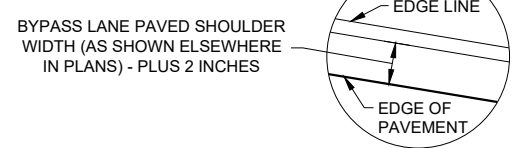
➔ DIRECTION OF TRAVEL



INTERSECTION ON OUTSIDE OF CURVE







**MAJOR INTERSECTIONS
(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANE)**



**PAVEMENT MARKING
(INTERSECTIONS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

LEGEND

-  SIGN ON PERMANENT SUPPORT
-  TRAFFIC CONTROL DRUM
-  DIRECTION OF TRAFFIC
-  WORK ZONE

GENERAL NOTES

ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY THE REGIONAL TRAFFIC UNIT.

"WO" SIGN IS THE SAME AS "W" SIGN EXCEPT THE BACKGROUND IS ORANGE.

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

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

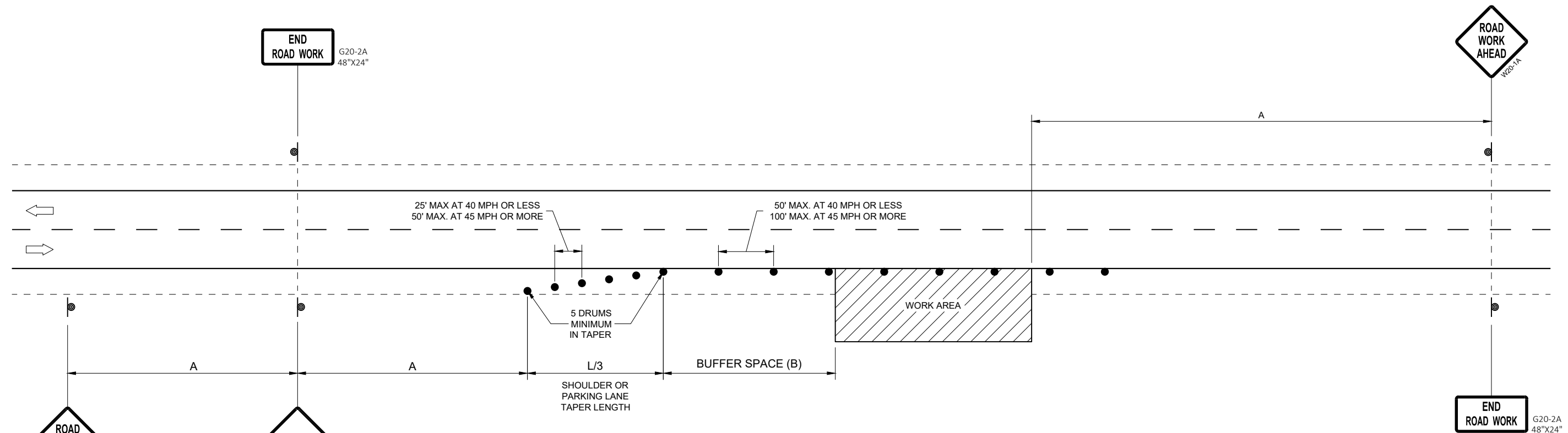
CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

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

W20-1A AND G20-2A SIGNS ARE NOT REQUIRED IF THE WORK AREA IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT. G20-2A SIGNS MAY ALSO BE OMITTED IF DURATION OF WORK IS LESS THAN 7 CONTINUOUS DAYS AND NIGHTS.

6

6



POSTED SPEED LIMIT PRIOR TO WORK STARTING (MPH)	ADVANCE WARNING SIGN SPACING (A) FEET	SHOULDER TAPER L / 3 W, LATERAL OFFSET (FT)						BUFFER SPACE (B) FEET
		3	4	5	6	7	8	
25	200'	10	14	17	21	24	28	55
30	200'	15	20	25	30	35	40	85
35	350'	20	27	34	40	47	54	120
40	350'	26	35	44	53	62	70	170
45	500'	45	59	74	89	104	119	220
50	500'	50	66	83	99	116	132	280
55	500'	54	73	91	109	127	145	335'

OR
IF TRAFFIC CONTROL DEVICES
ENCROACH ONTO TRAVELED WAY, USE



TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2020 /S/ Andrew Heidtke
DATE STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER

FHWA

SDD 15D28 - 04

SDD 15D28 - 04

GENERAL NOTES

DRAWING NOT TO SCALE. ALL SIGNS AND POSTS ON THIS SHEET SHALL BE PAID FOR WITH 'TRAFFIC CONTROL SIGNS' BID ITEM. ALL SIDE ROADS WHICH ARE UNDER CONSTRUCTION OF CURB AND GUTTER AND/OR GRADING SHALL BE ADEQUATELY SIGNED.

ALL SIGNS AND DEVICES SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD). SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE WISDOT STANDARD SIGN PLATES.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THAT THE BACKGROUND IS ORANGE.

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

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

ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

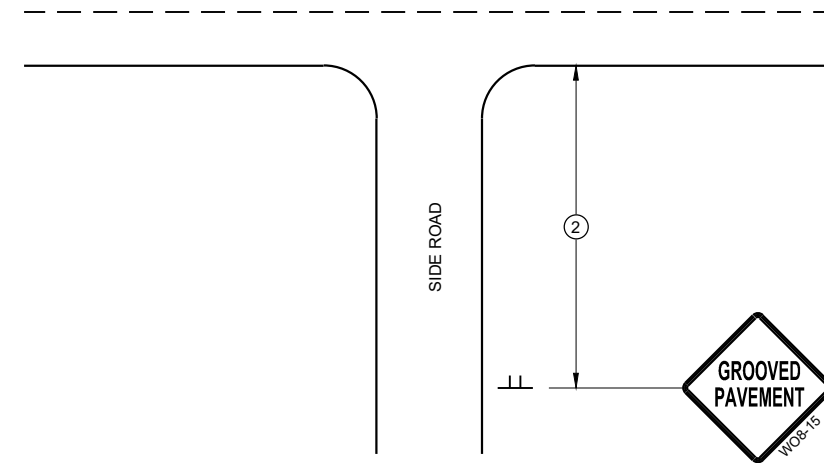
SEE 15C34 FOR ADDITIONAL TRAFFIC CONTROL SIGNING WHEN CENTERLINE PAVEMENT MAKINGS ARE MISSING. 'DO NOT PASS' SIGNS MUST BE INSTALLED ON THE SAME DAY AS MILLING OPERATIONS.

- ① PLACE SIGNS 350' IN ADVANCE OF MILLED SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- ② PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.

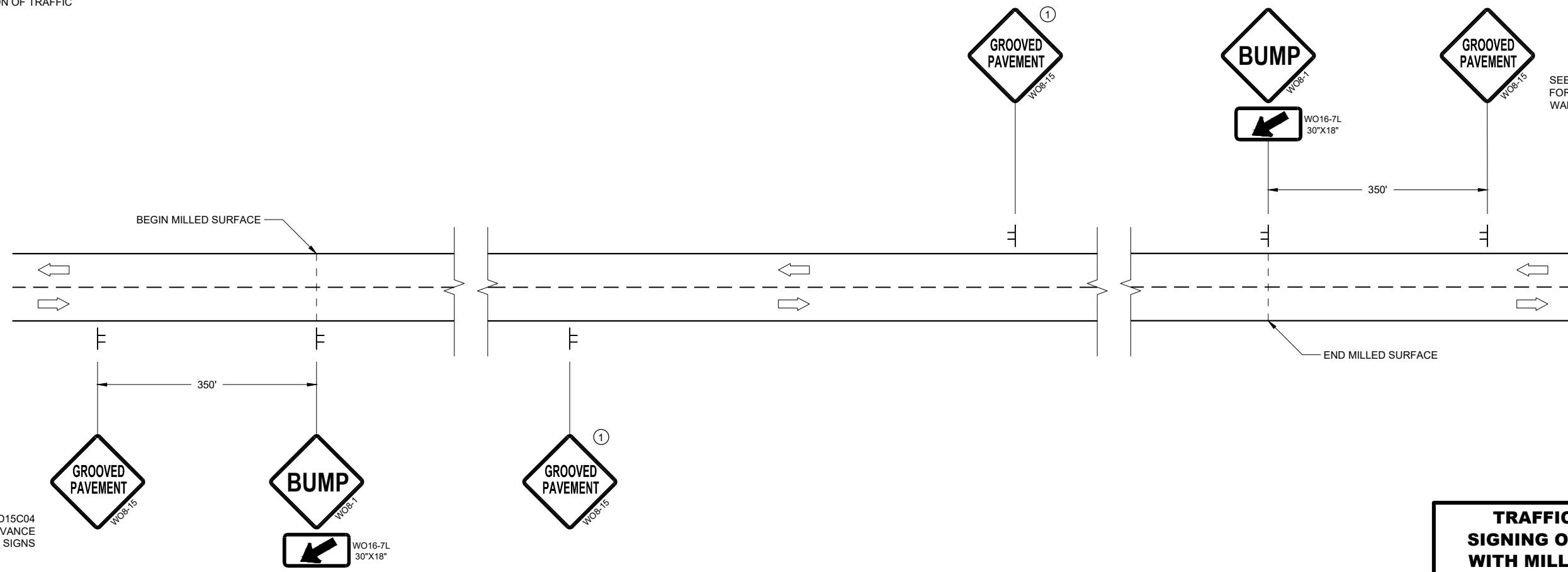
LEGEND

⊥ SIGN ON TEMPORARY SUPPORT

⇨ DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH SIGN DETAIL



SEE SDD15C04 FOR ADVANCE WARNING SIGNS

SEE SDD15C04 FOR ADVANCE WARNING SIGNS

DETAIL FOR SIGNING ON MILLED SURFACES

TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA

GENERAL NOTES

DRAWING NOT TO SCALE. ALL SIGNS AND POSTS ON THIS SHEET SHALL BE PAID FOR WITH 'TRAFFIC CONTROL SIGNS' BID ITEM. ALL SIDE ROADS WHICH ARE UNDER CONSTRUCTION OF CURB AND GUTTER AND/OR GRADING SHALL BE ADEQUATELY SIGNED.

ALL SIGNS AND DEVICES SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD). SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE WISDOT STANDARD SIGN PLATES.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THAT THE BACKGROUND IS ORANGE.

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

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

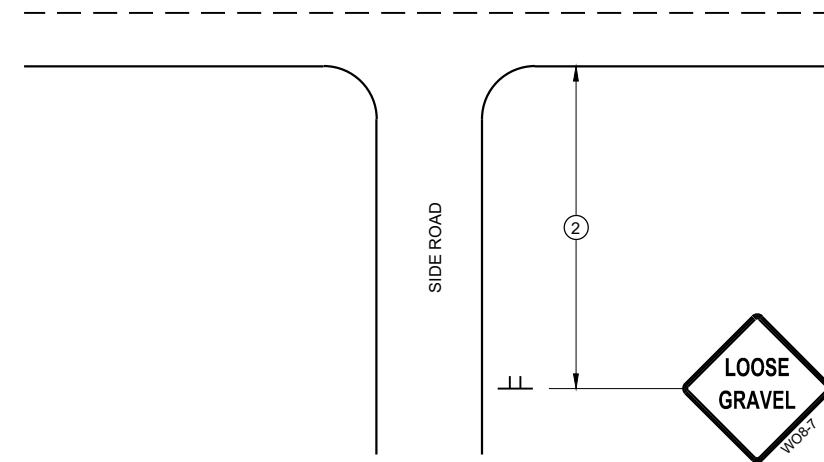
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

SEE 15C34 FOR ADDITIONAL TRAFFIC CONTROL SIGNING WHEN CENTERLINE PAVEMENT MAKINGS ARE MISSING. 'DO NOT PASS' SIGNS MUST BE INSTALLED ON THE SAME DAY AS MILLING OPERATIONS.

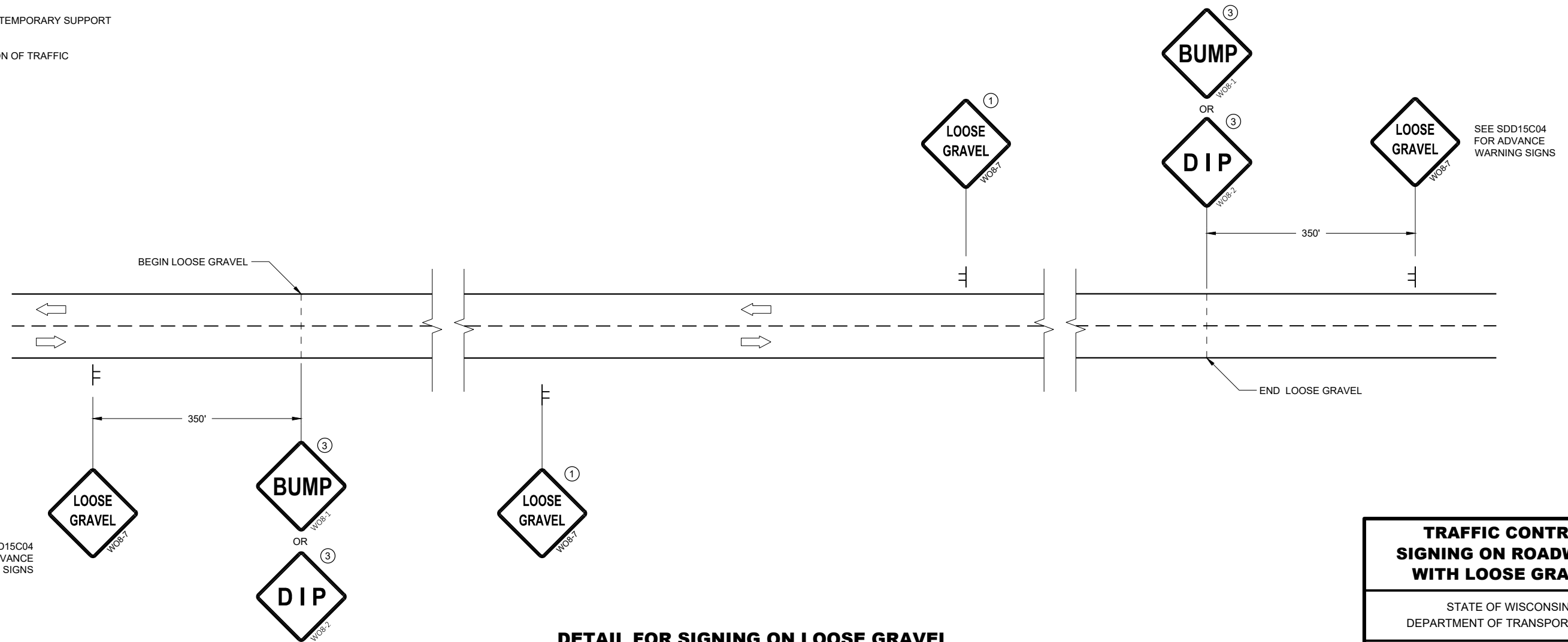
- ① PLACE SIGNS 350' IN ADVANCE OF CHIP SEALED OR LOOSE GRAVEL SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- ② PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.
- ③ ADD WO8-1 OR WO8-2 SIGN WHEN THE CONDITION IS PRESENT.

LEGEND

- ⊥ SIGN ON TEMPORARY SUPPORT
- ➡ DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH SIGN DETAIL



DETAIL FOR SIGNING ON LOOSE GRAVEL OR CHIP SEALED SURFACES

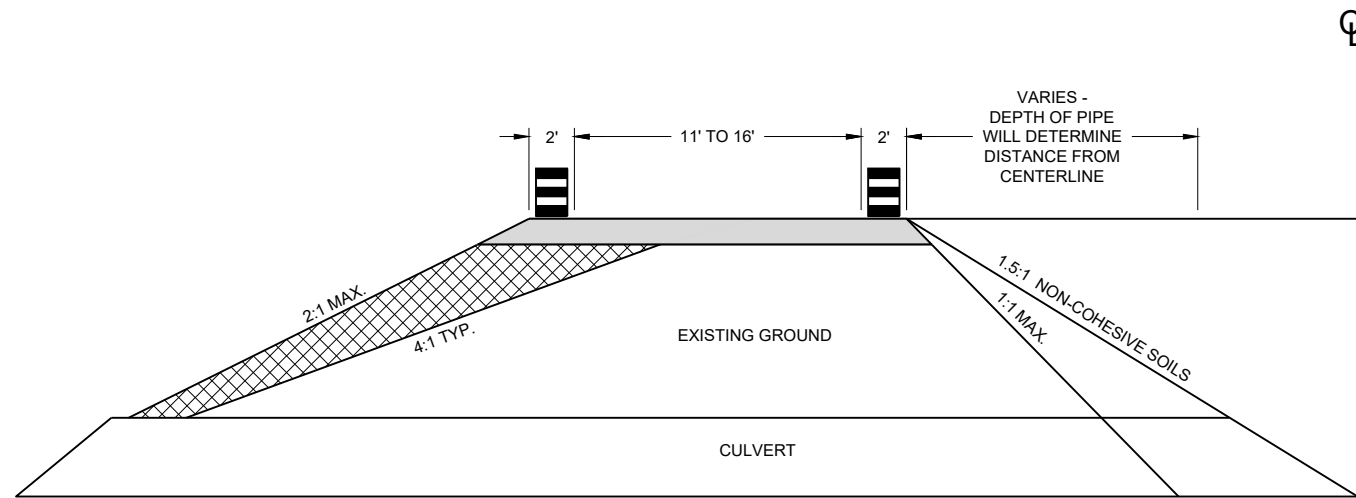
SEE SDD15C04 FOR ADVANCE WARNING SIGNS

TRAFFIC CONTROL SIGNING ON ROADWAYS WITH LOOSE GRAVEL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2021 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA



CROSS SECTION

GENERAL NOTES

USE 1:1 FOR COHESIVE CLAYS AND SILTS, LOAMS, SANDY CLAYS AND ANGULAR GRAVEL SOILS.
 USE 1.5:1 FOR NON-COHESIVE SOILS.

THE TAPER SHOULD EXTEND ACROSS THE SHOULDER UNLESS DOING SO WOULD GREATLY CONFLICT WITH THE WORK OPERATION.






ALL LANE CLOSURE SIGNS SHALL BE REMOVED OR COVERED AND ALL DEVICES REMOVED BEYOND THE SHOULDER WHEN WORK IS NOT IN PROGRESS AND THE LANE IS RESTORED TO A SAFE OPERATING CONDITION.

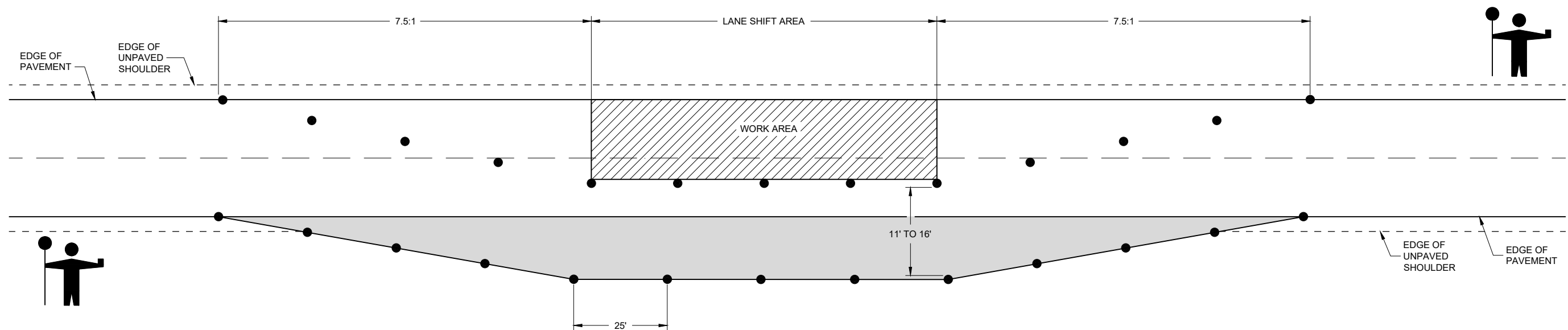
CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

USE WITH SDD 15C12 "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATIONS"

USE WITH SDD 15D45 "SIGNING ON ROADWAYS WITH LOOSE GRAVEL"

LEGEND

-  DRUM WITHOUT WARNING LIGHT
-  6" BASE AGGREGATE DENSE 1 1/2" - INCIDENTAL TO LANE SHIFT ITEM
-  FILL - INCIDENTAL TO LANE SHIFT ITEM
-  WORK AREA
-  FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF



LANE SHIFT IN FLAGGING OPERATION

**TRAFFIC CONTROL,
 TEMPORARY LANE SHIFT
 DURING CULVERT WORK**

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

APPROVED
 February 2021 /S/ Andrew Heidtke
 DATE WORK ZONE ENGINEER

FHWA





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SDD 15D48 - 01

SDD 15D48 - 01

LEGEND

- V1 WORK VEHICLE
- V2 SHADOW VEHICLE
-  TRUCK MOUNTED ATTENUATOR (TMA)
-  FLASHING ARROW PANEL (CAUTION)
-  WORK AREA
-  DIRECTION OF TRAFFIC

POSTED SPEED PRIOR TO WORK STARTING (MPH)	DECISION SIGHT DISTANCE (D)
0 - 25	550'
30	550'
35	700'
40	700'
45	900'
50	900'
55	1200'

GENERAL NOTES

ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED.

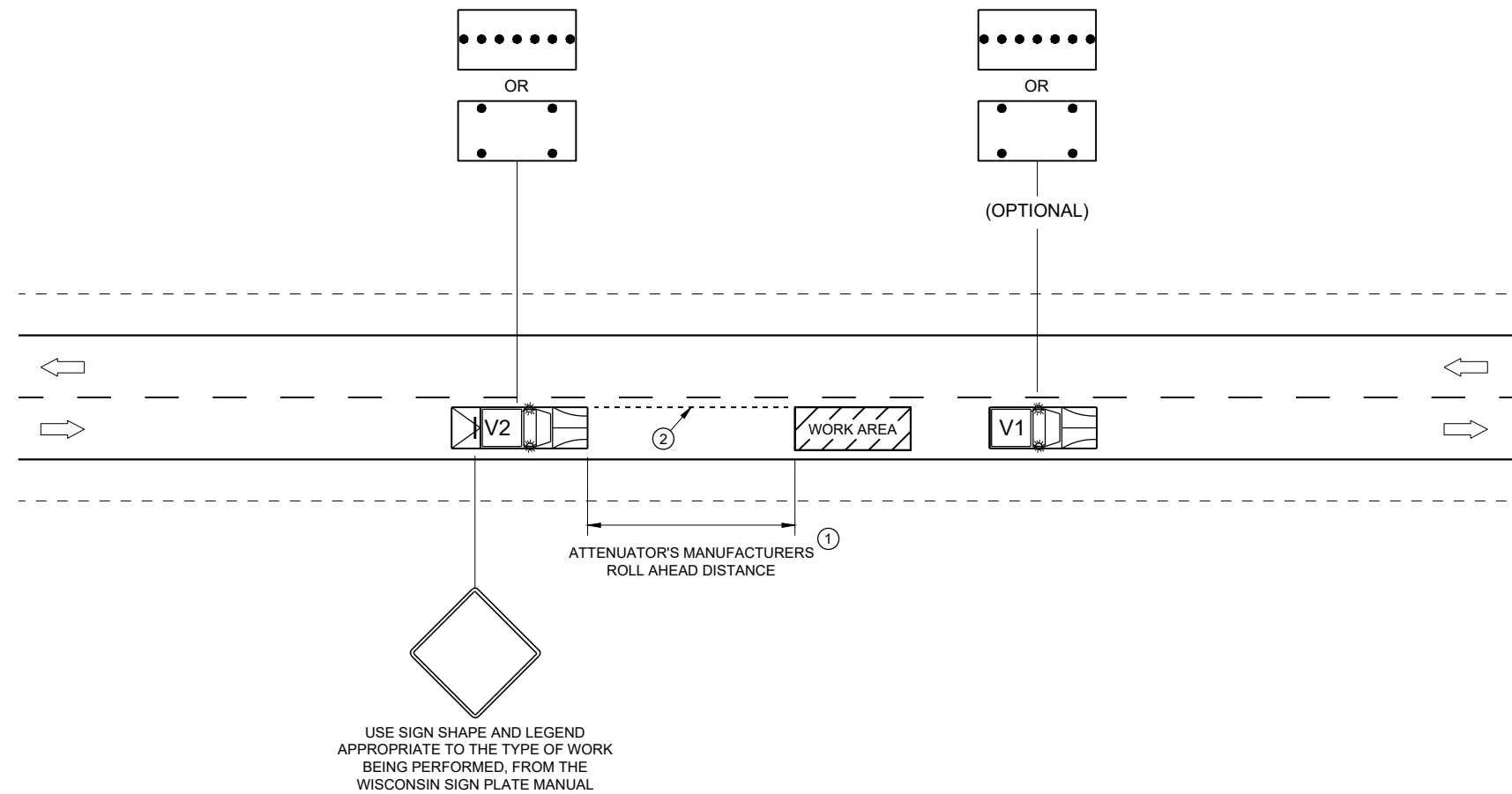
MOBILE IS WORK THAT MOVES CONTINUOUSLY OR MOVES AT LEAST THE DECISION SIGHT DISTANCE EVERY 15 MINUTES.

ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.

ALL ARROW PANELS SHALL BE REAR FACING, TYPE "B" OR "C", AND DISPLAYING THE FLASHING CAUTION MODE. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.

USE AN ATTENUATOR ON THE REARMOST VEHICLE THAT BLOCKS ALL OR PART OF THE TRAFFIC LANE.

- ① DISTANCE BETWEEN VEHICLES MAY INCREASE FROM THE ATTENUATOR'S ROLL AHEAD BASED ON TERRAIN, SIGHT DISTANCE, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.
- ② ALIGN LEFT SIDE OF SHADOW VEHICLE WITH EDGE OF WORK AREA.



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SDD 15D51 - 01

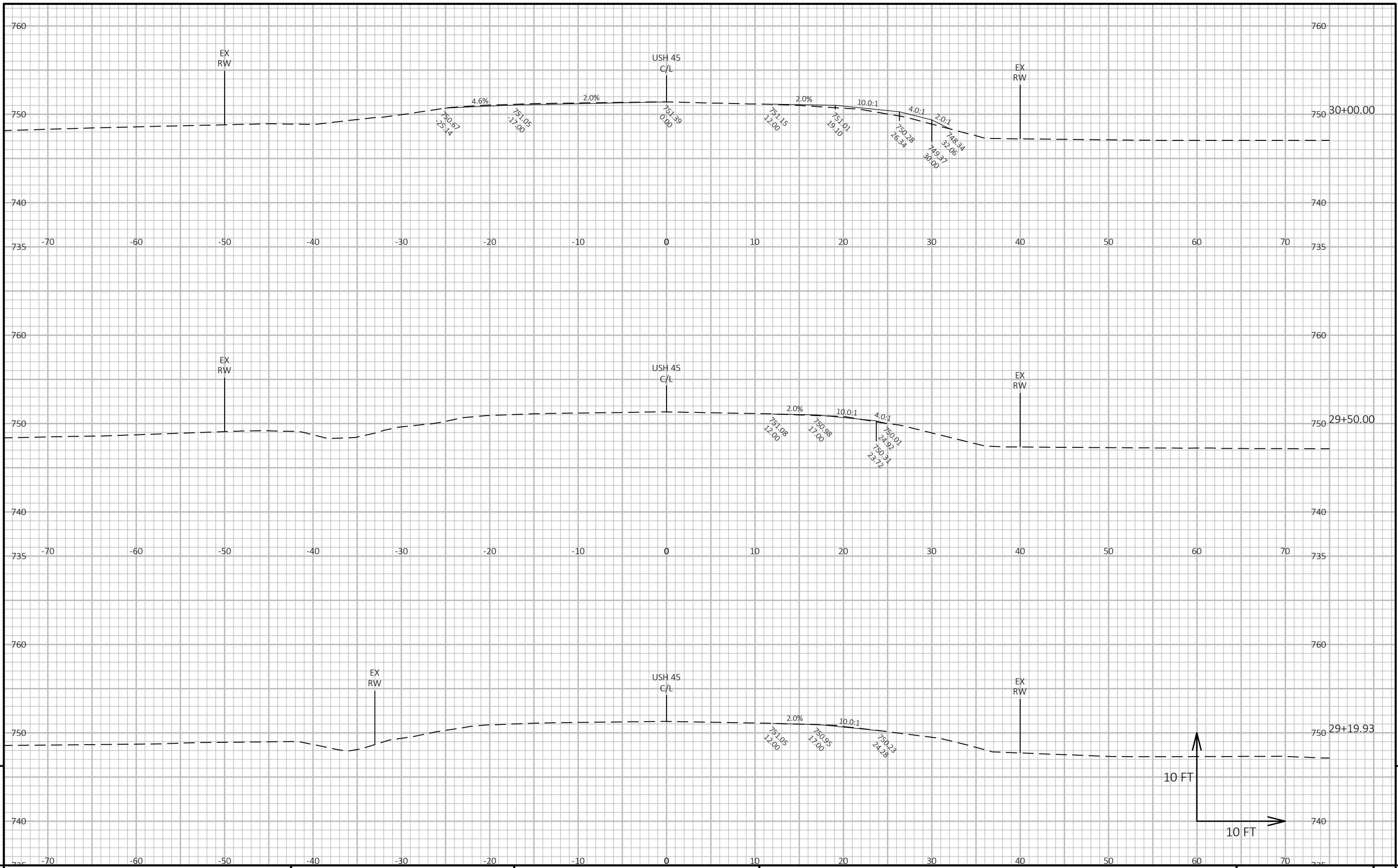
SDD 15D51 - 01

**TRAFFIC CONTROL,
MOBILE OPERATIONS ON
AN UNDIVIDED ROADWAY**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2021 /S/ Andrew Heidtke
DATE STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER

FHWA

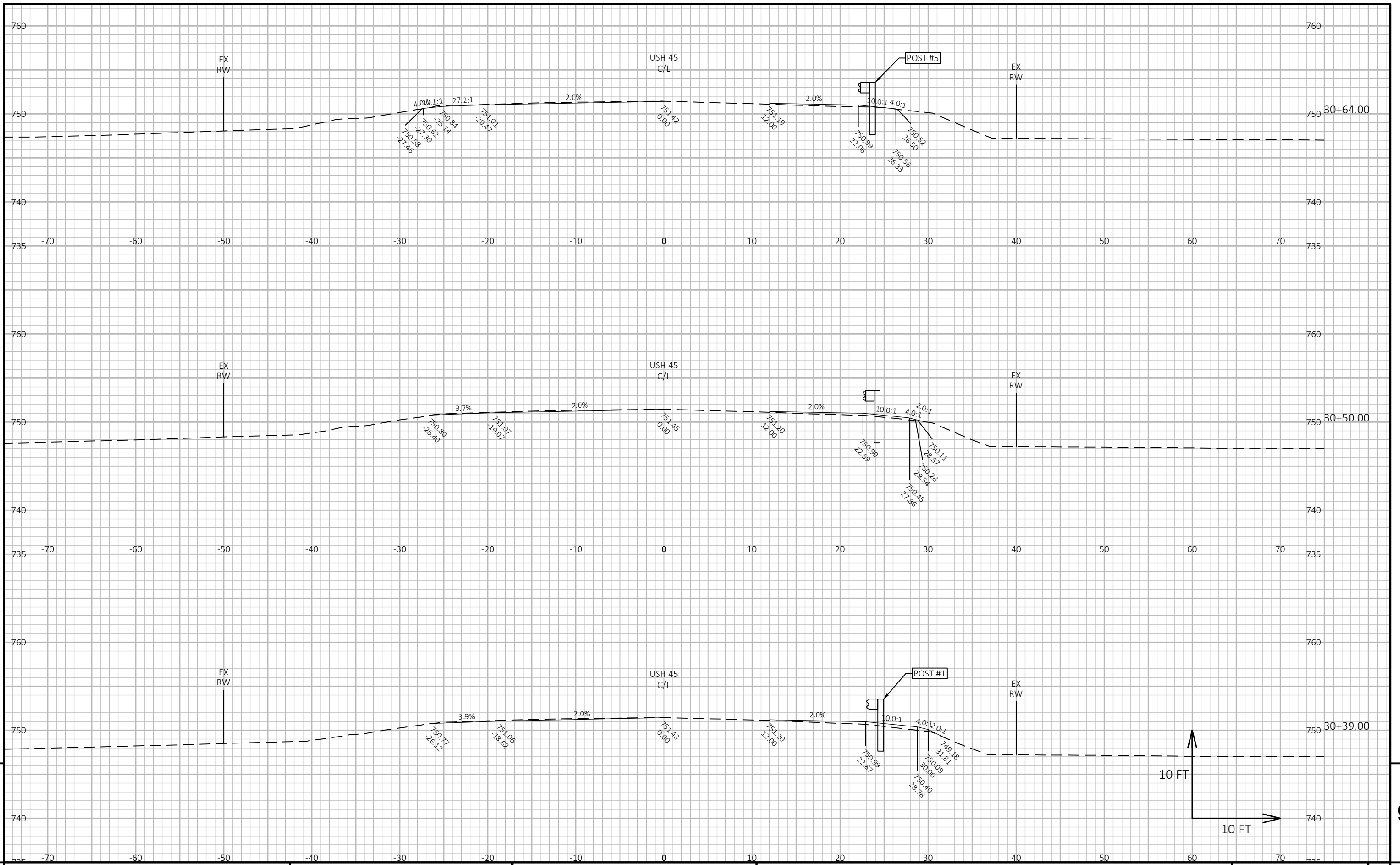


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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0664 SHEET E

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PROJECT NO: 4110-28-71

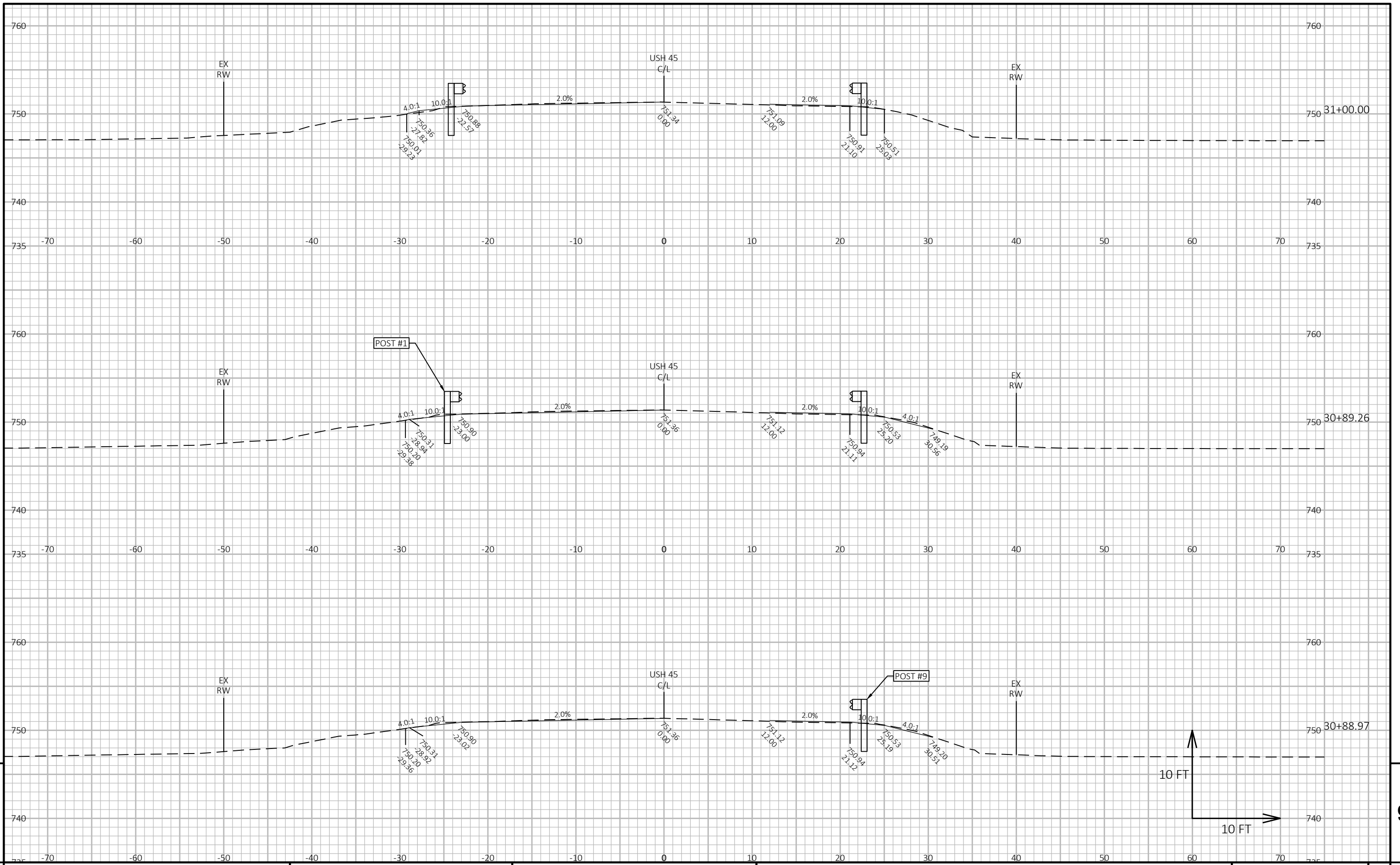
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COUNTY: FOND DU LAC

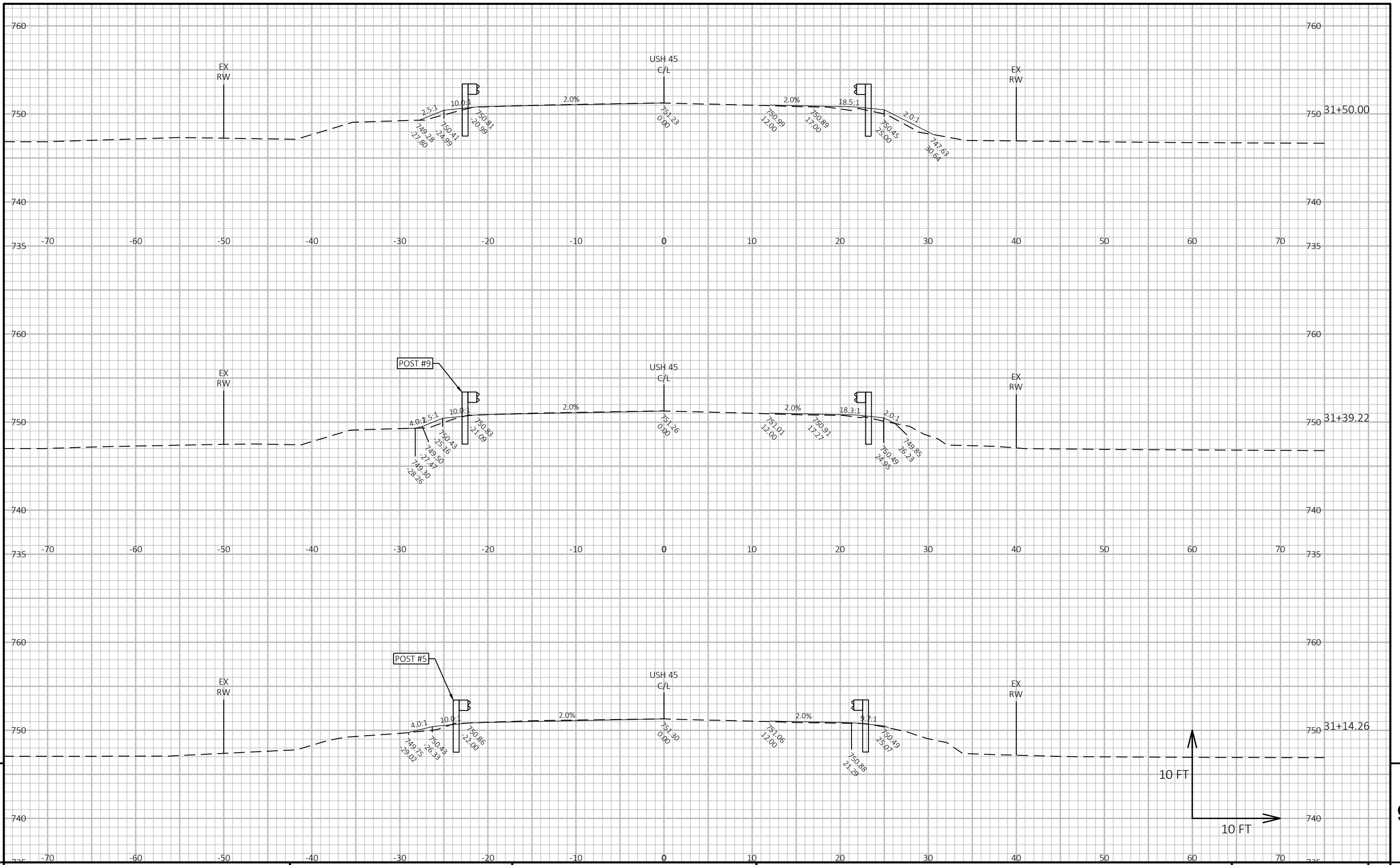
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SHEET

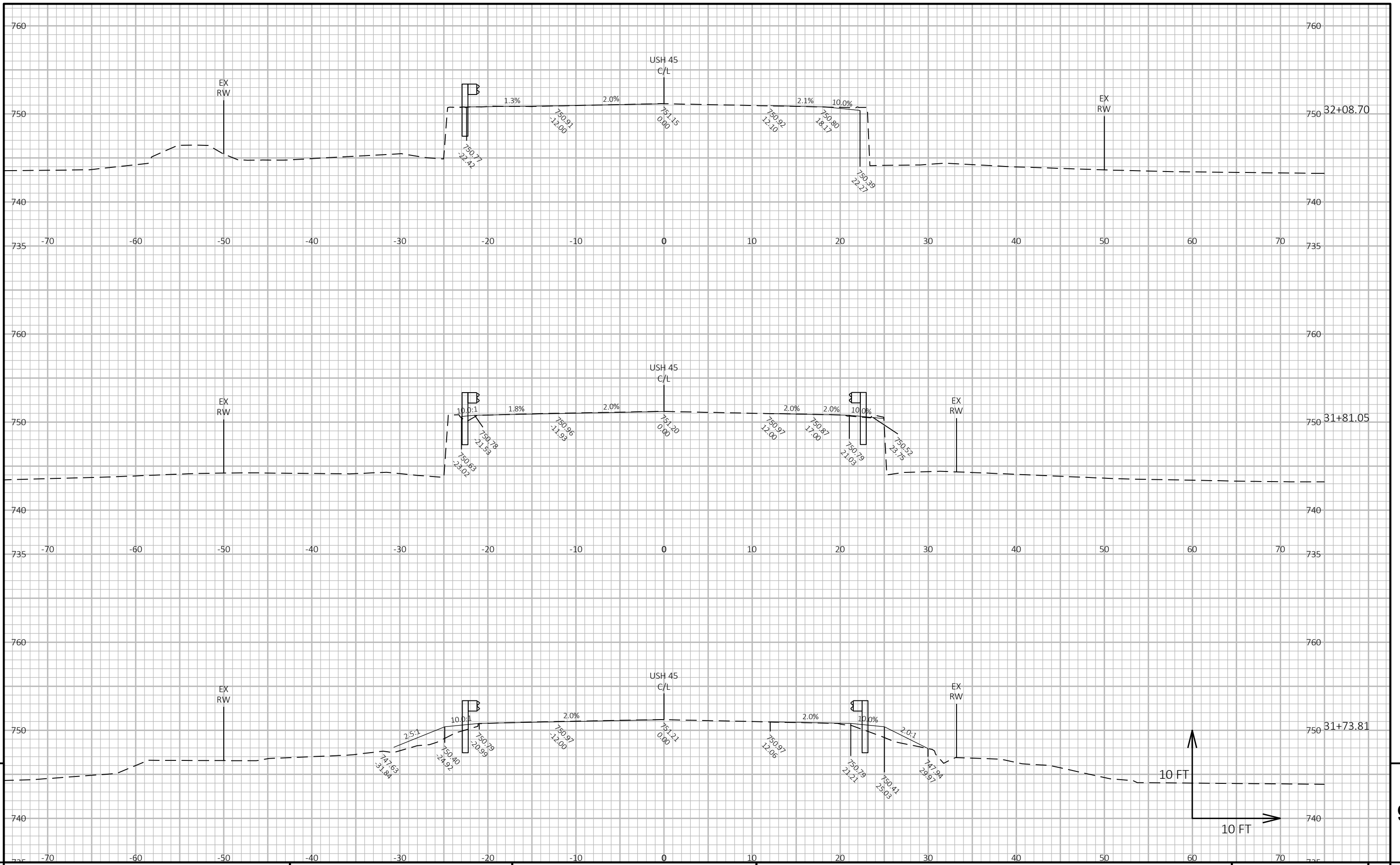
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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: B-20-0664	SHEET 9
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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0664 SHEET 9

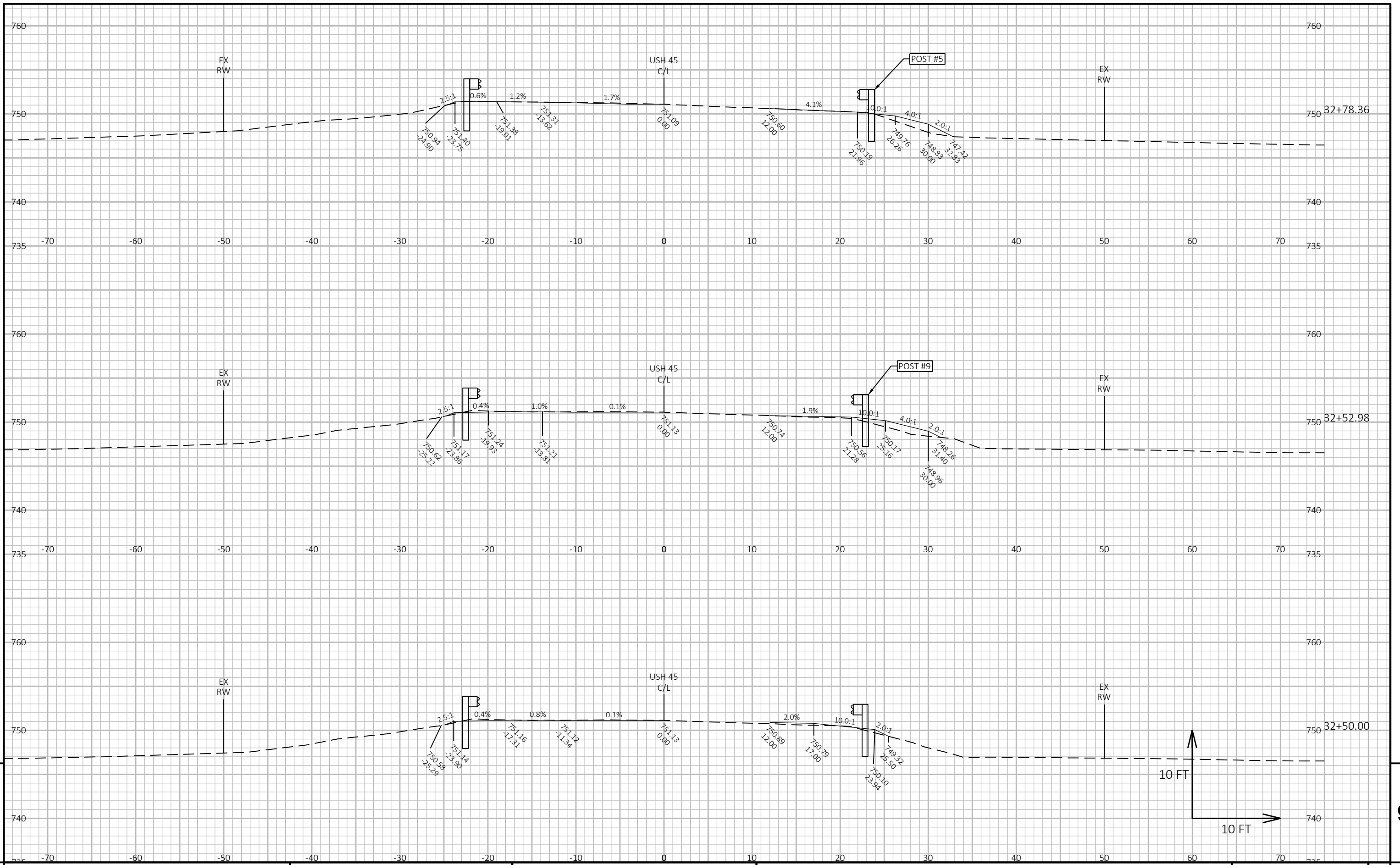


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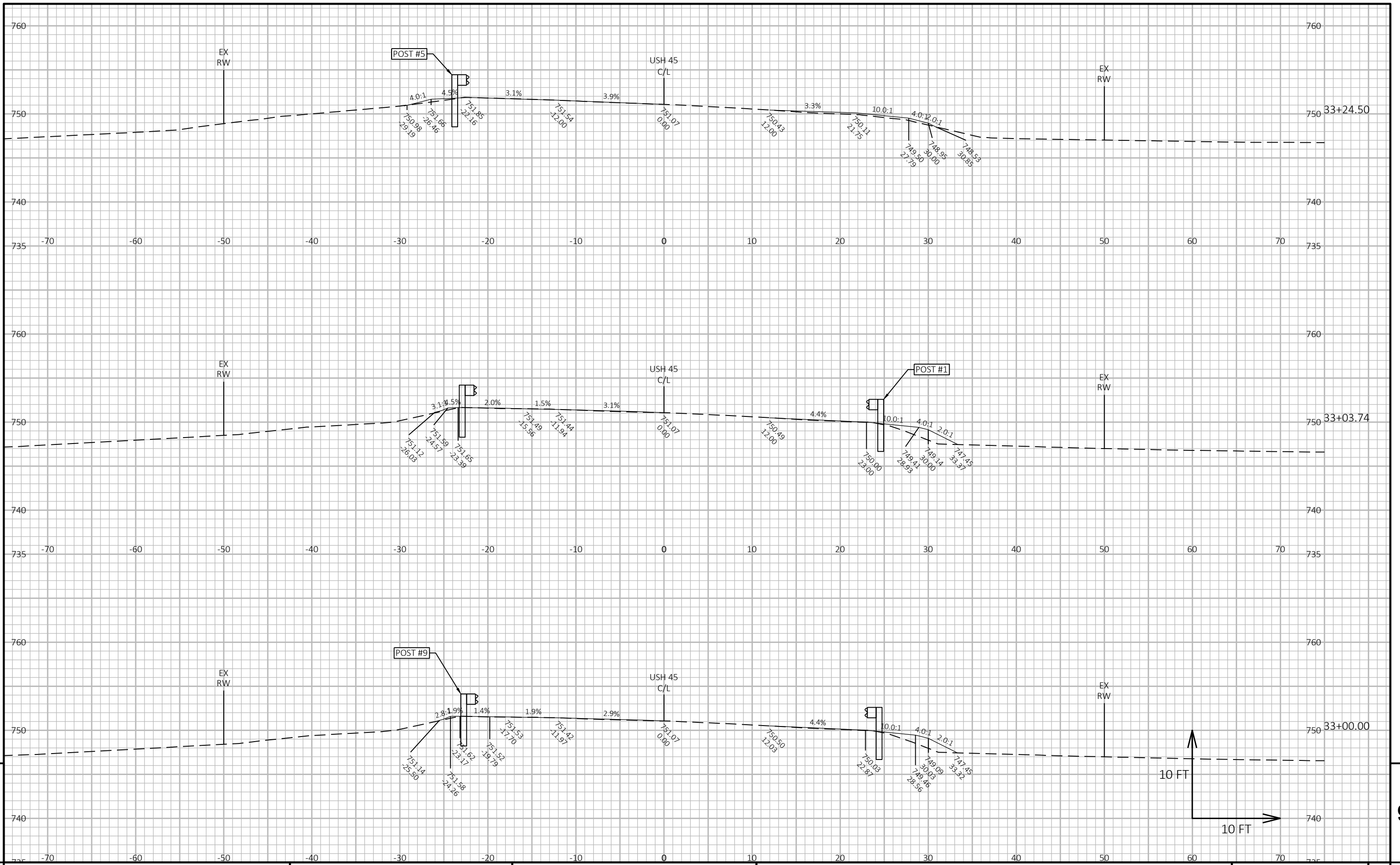
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PROJECT NO: 4110-28-71

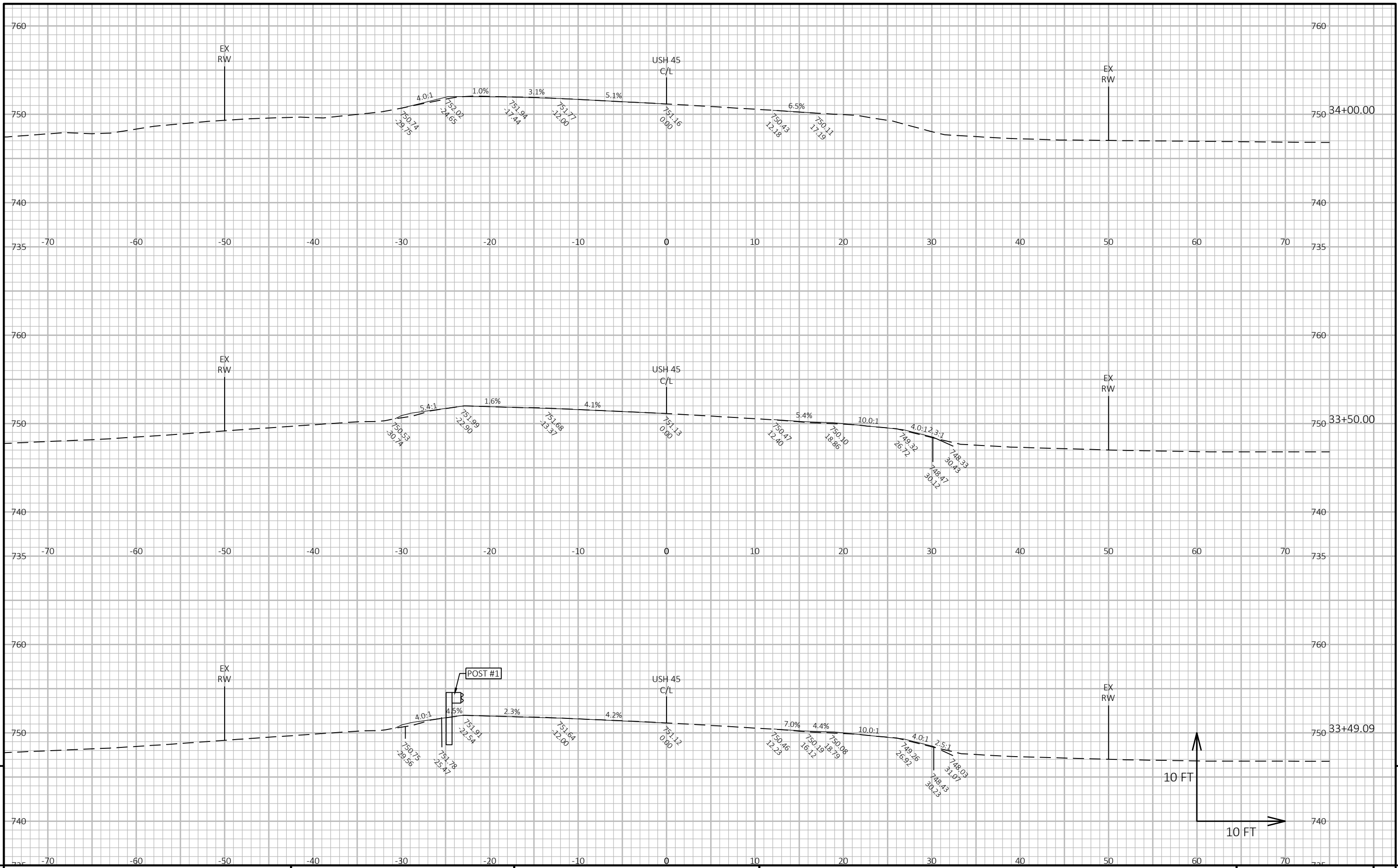
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COUNTY: FOND DU LAC

CROSS SECTIONS: B-20-0664

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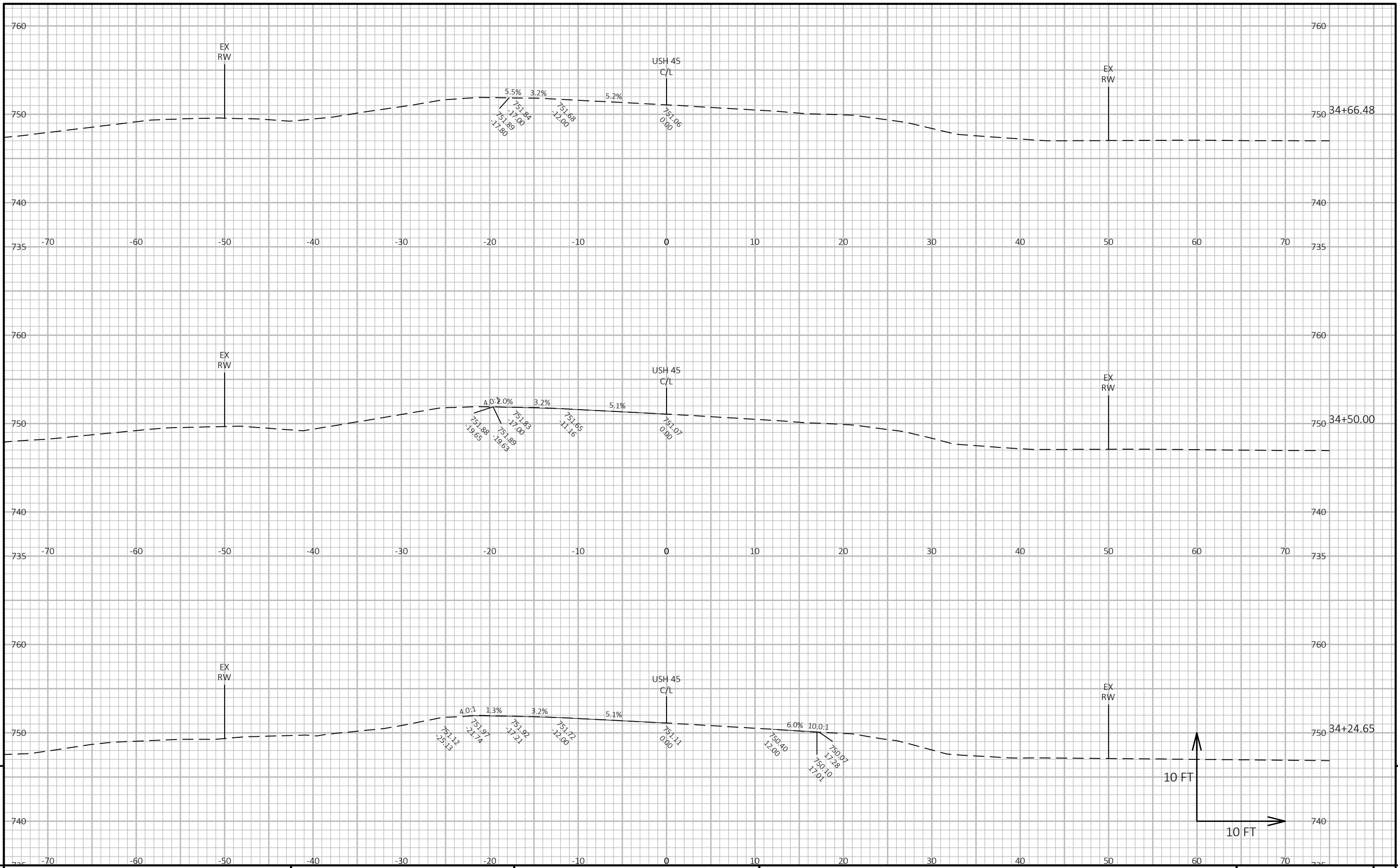


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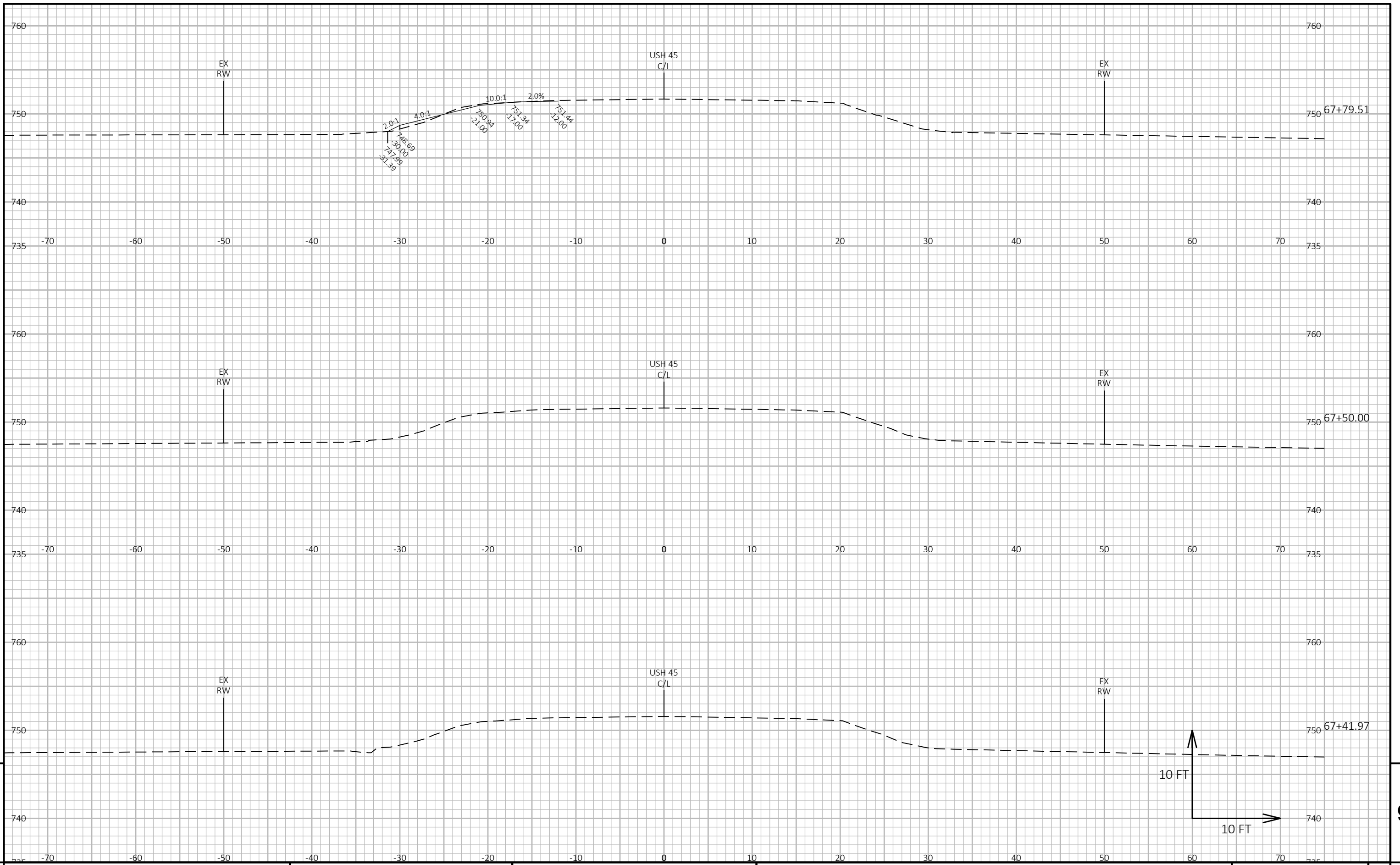


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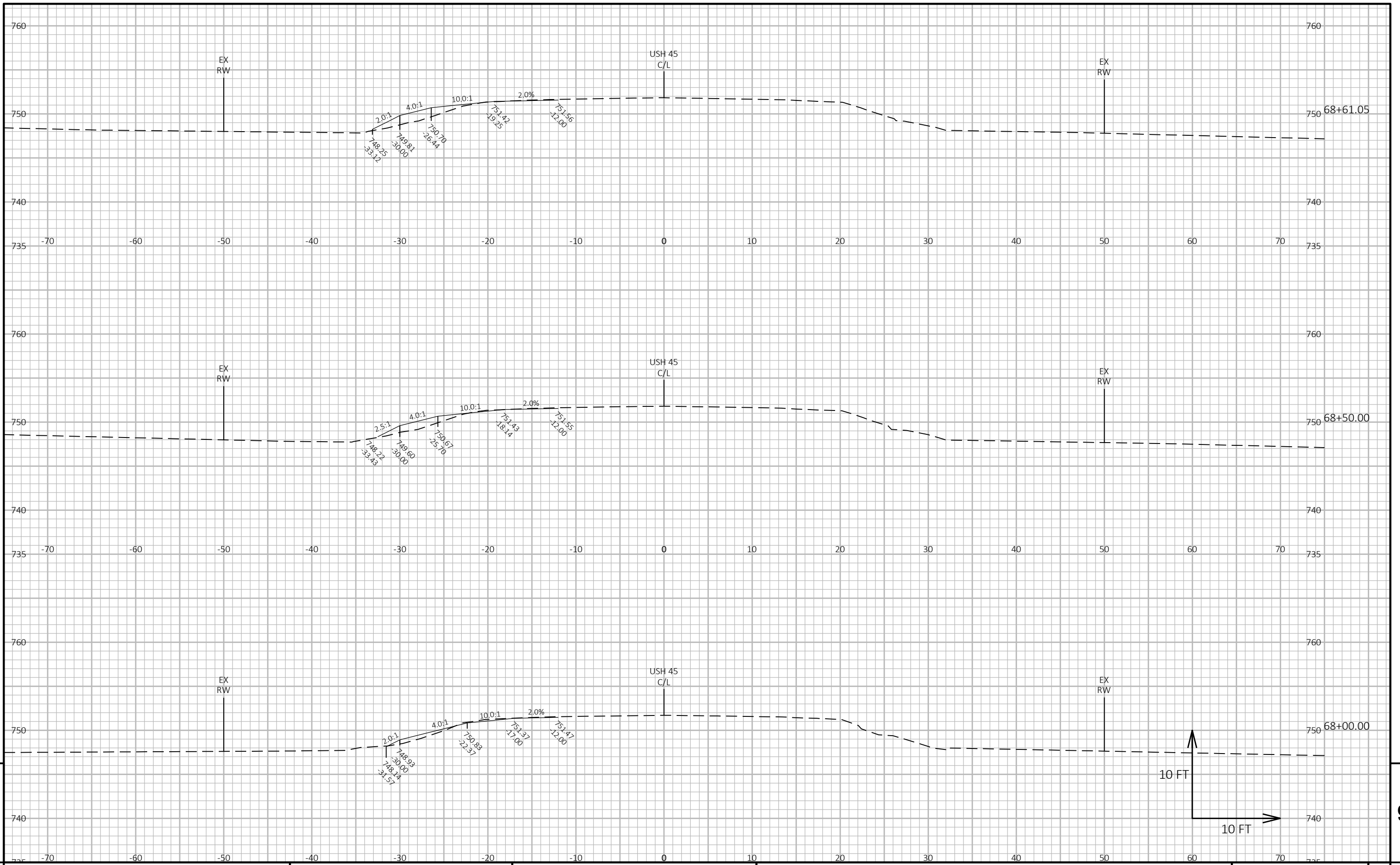
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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: C-20-0113	SHEET E
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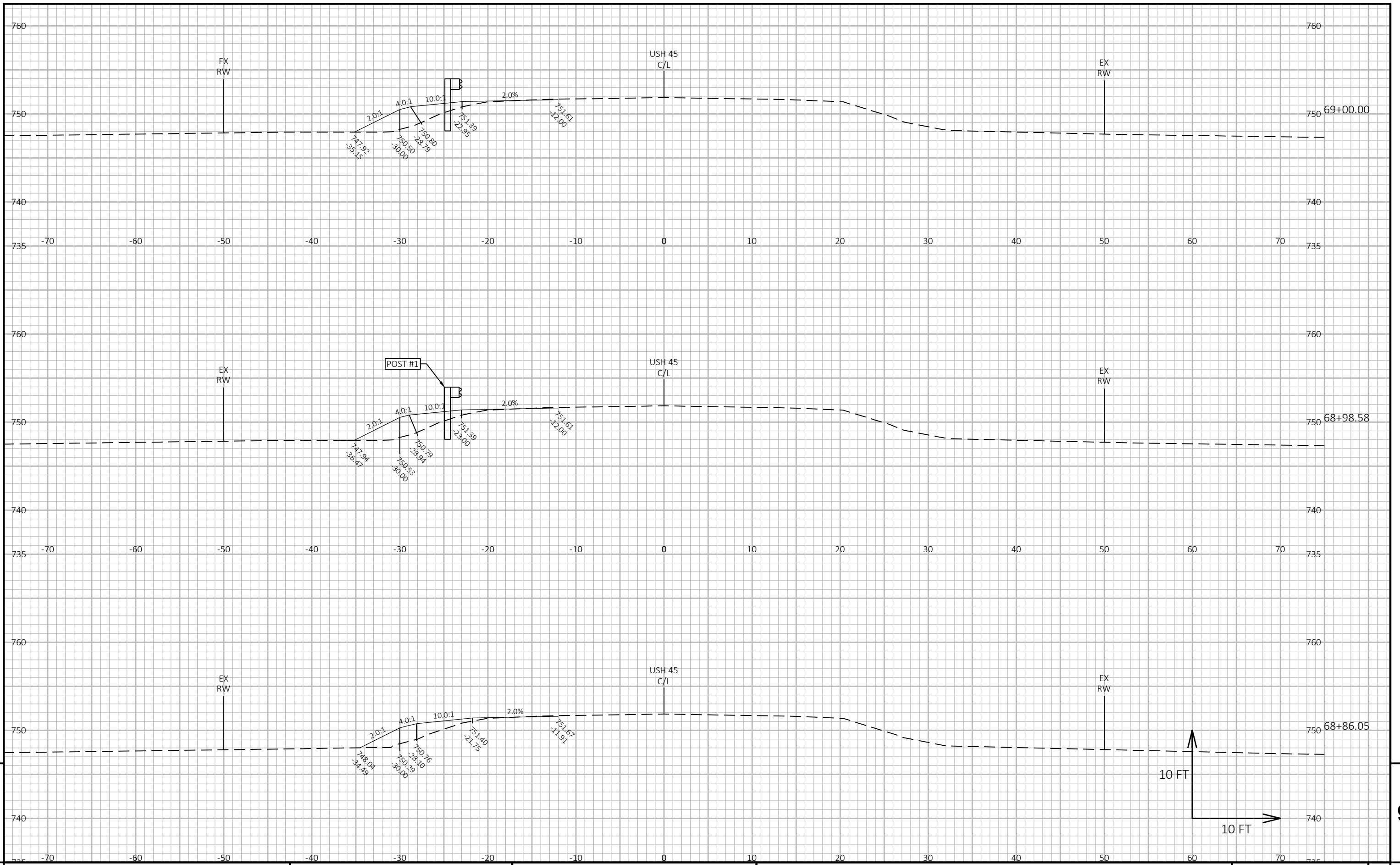
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COUNTY: FOND DU LAC

CROSS SECTIONS: C-20-0113

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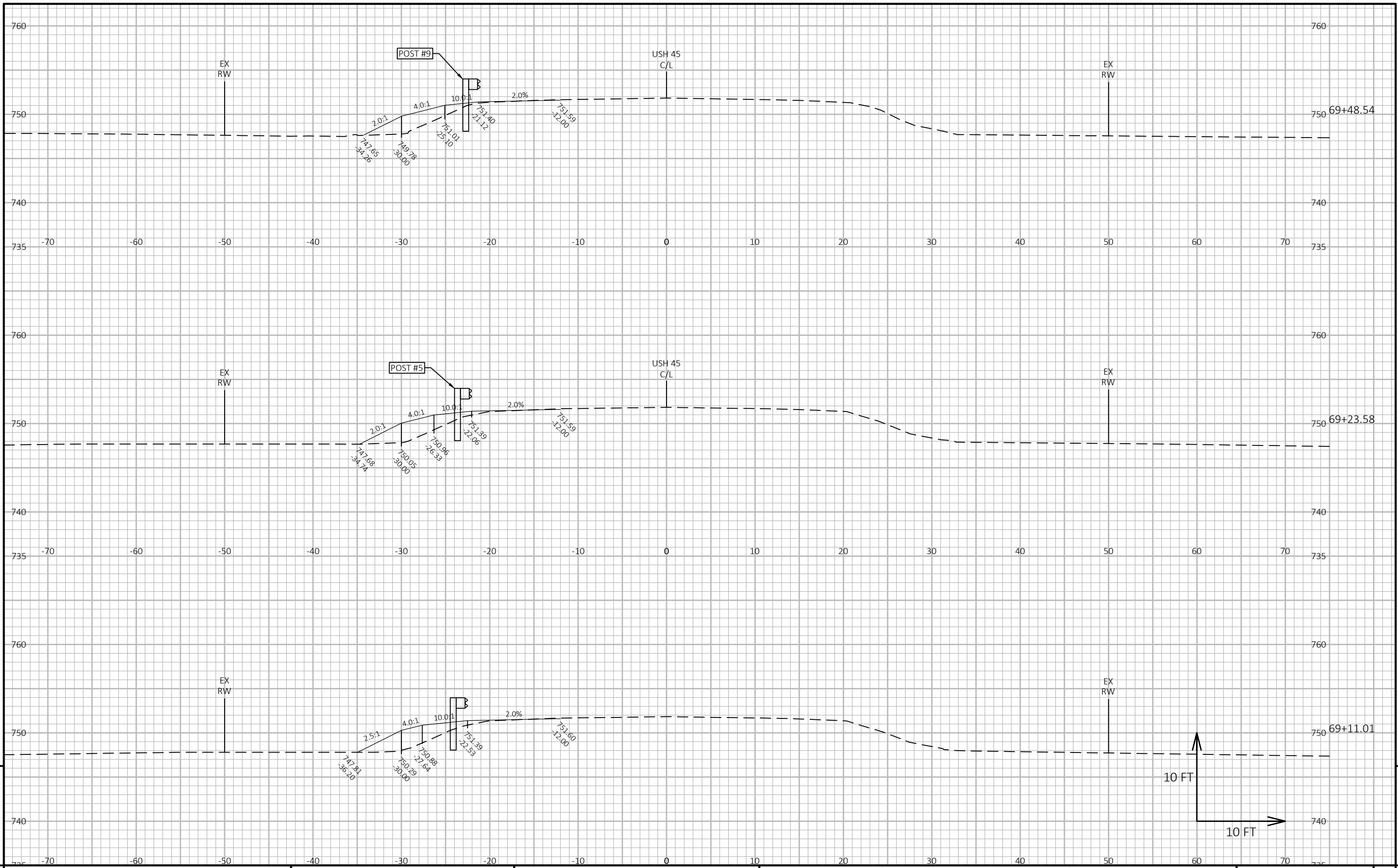


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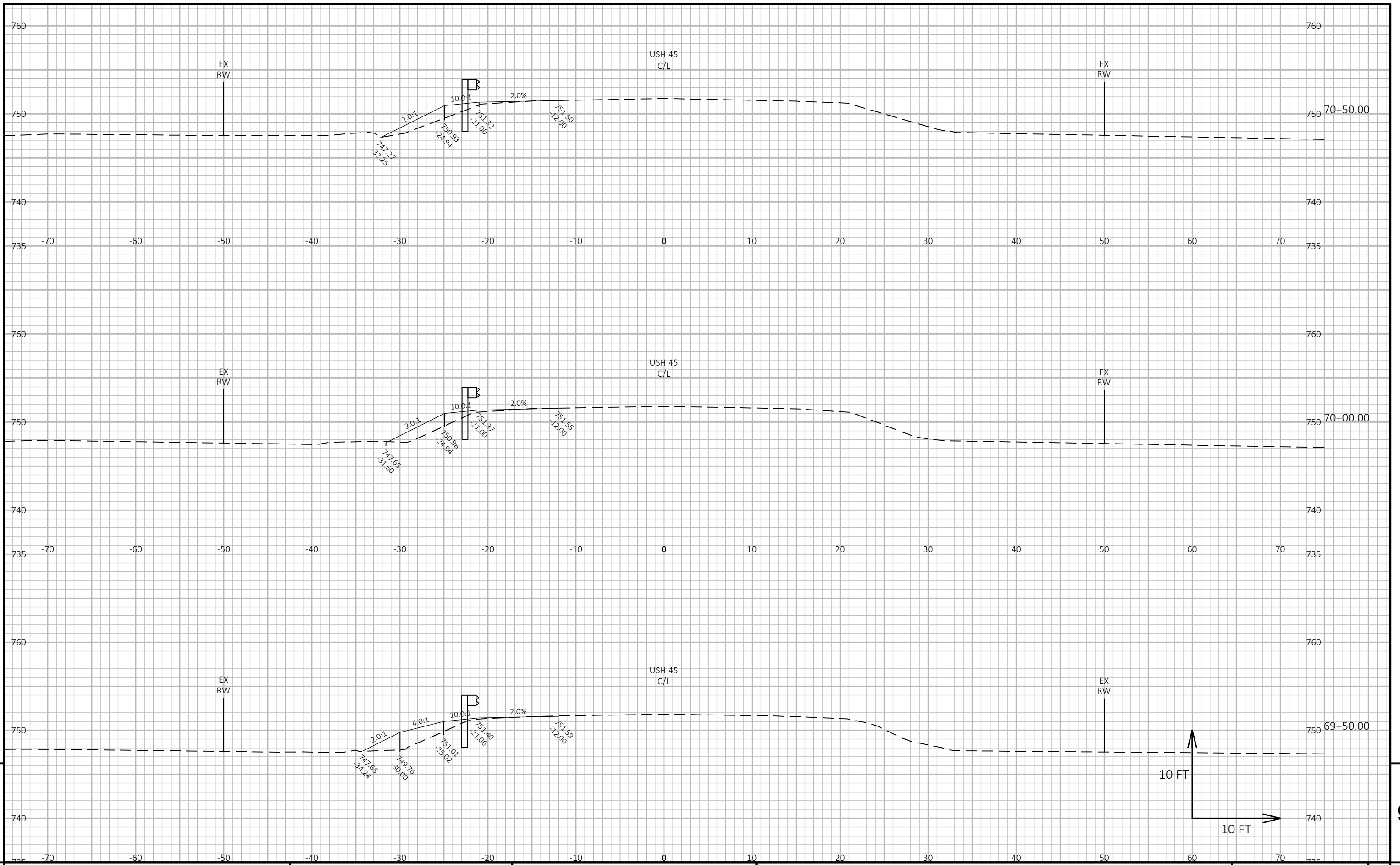


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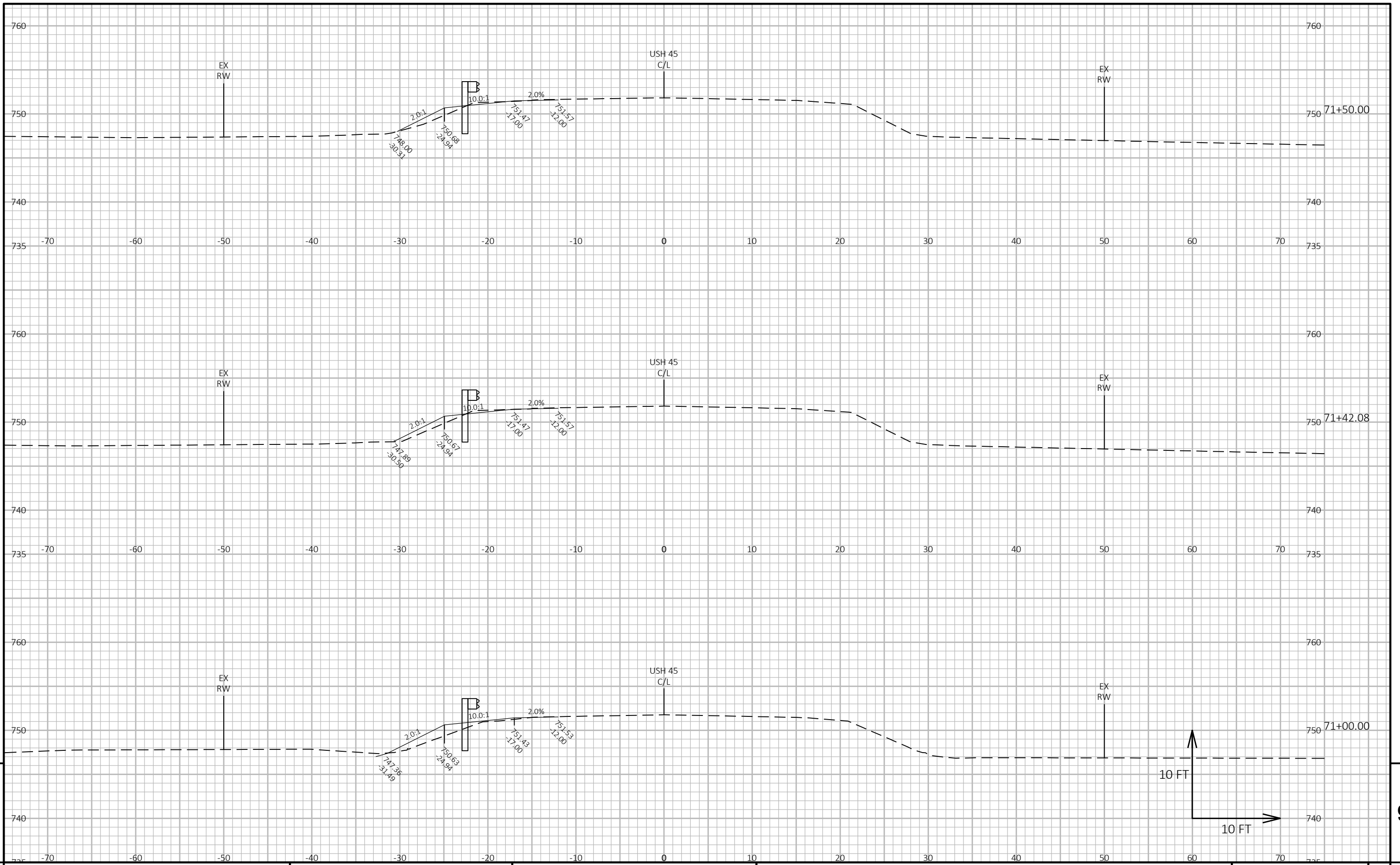


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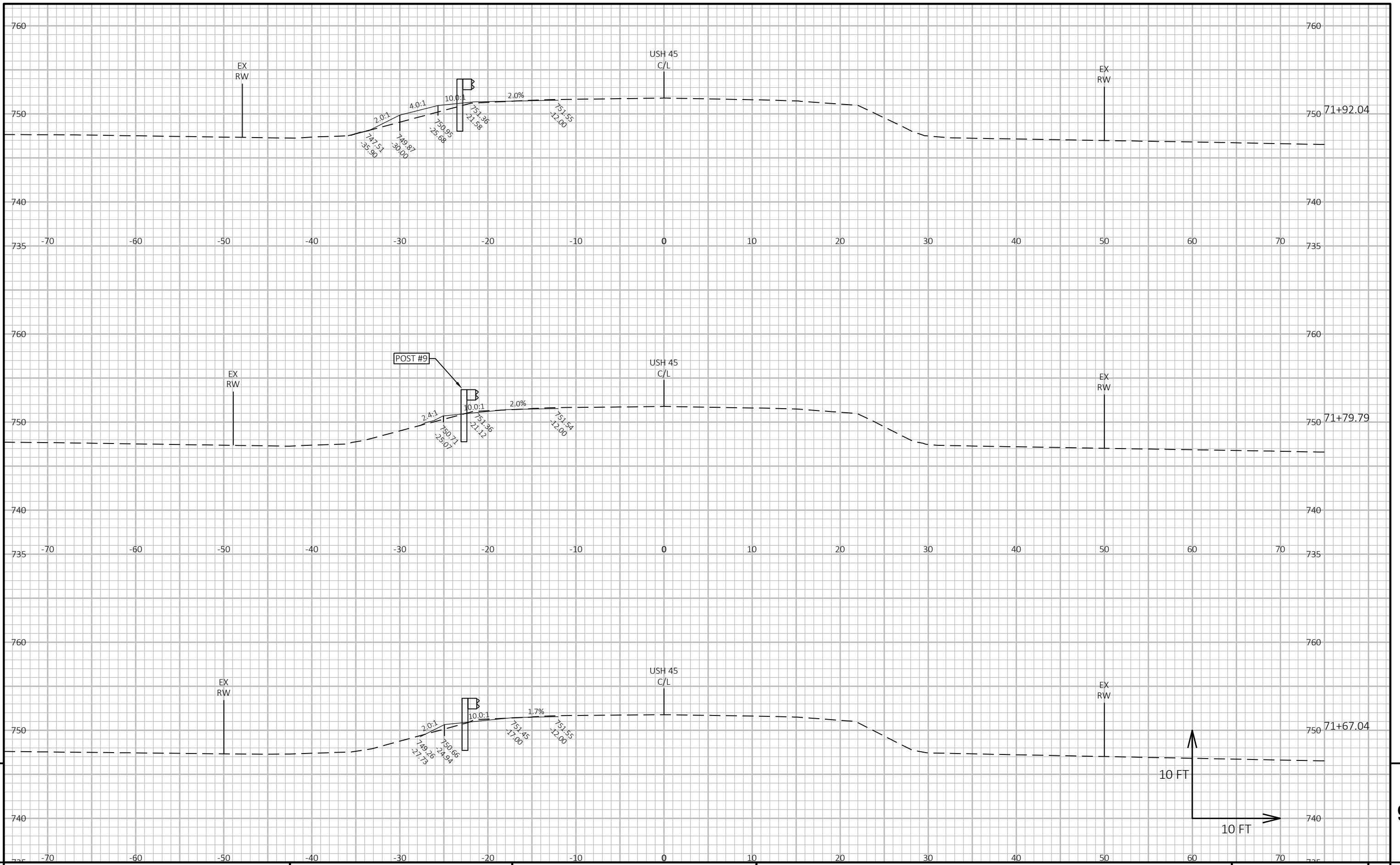
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COUNTY: FOND DU LAC

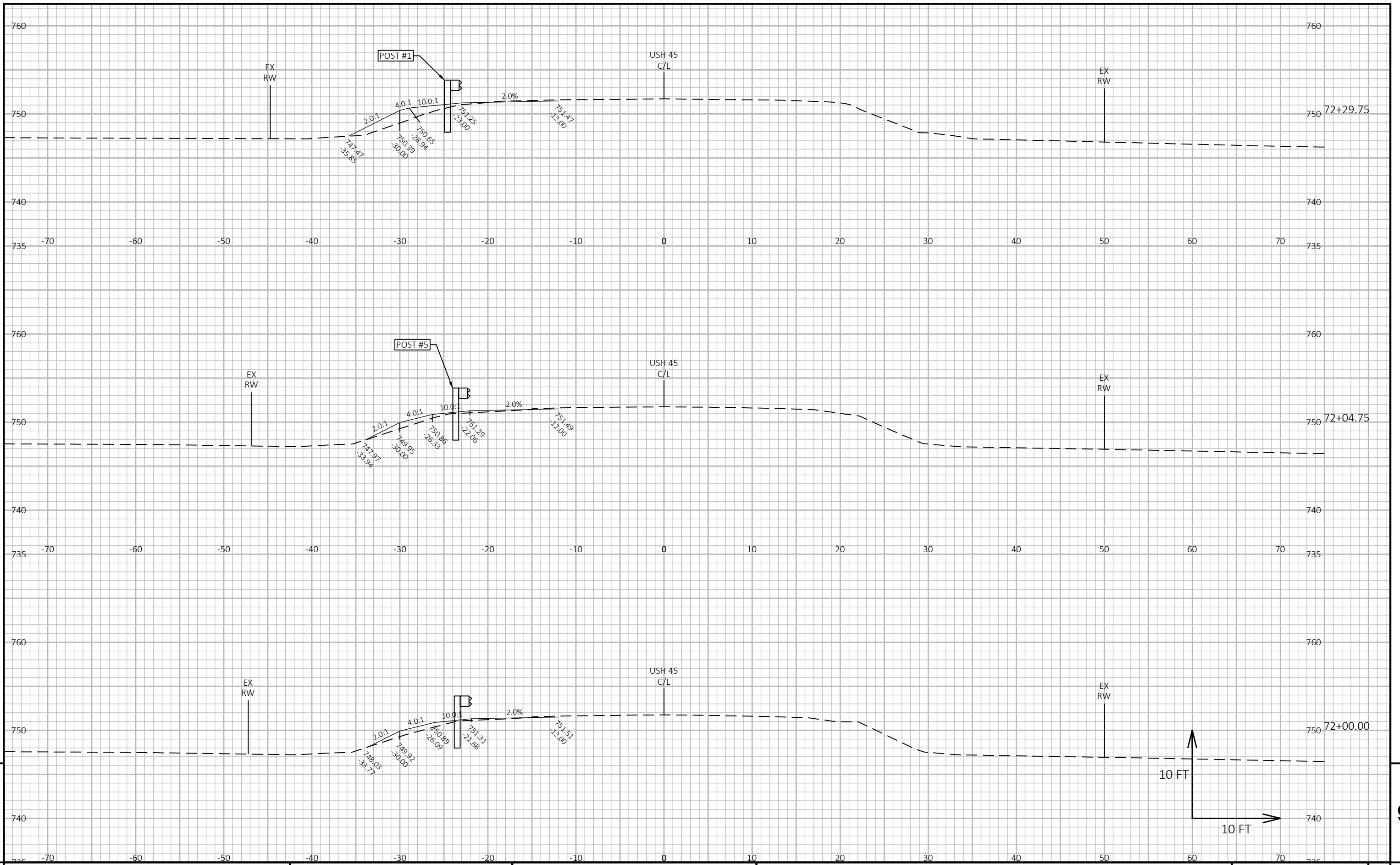
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SHEET

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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: C-20-0113	SHEET 9
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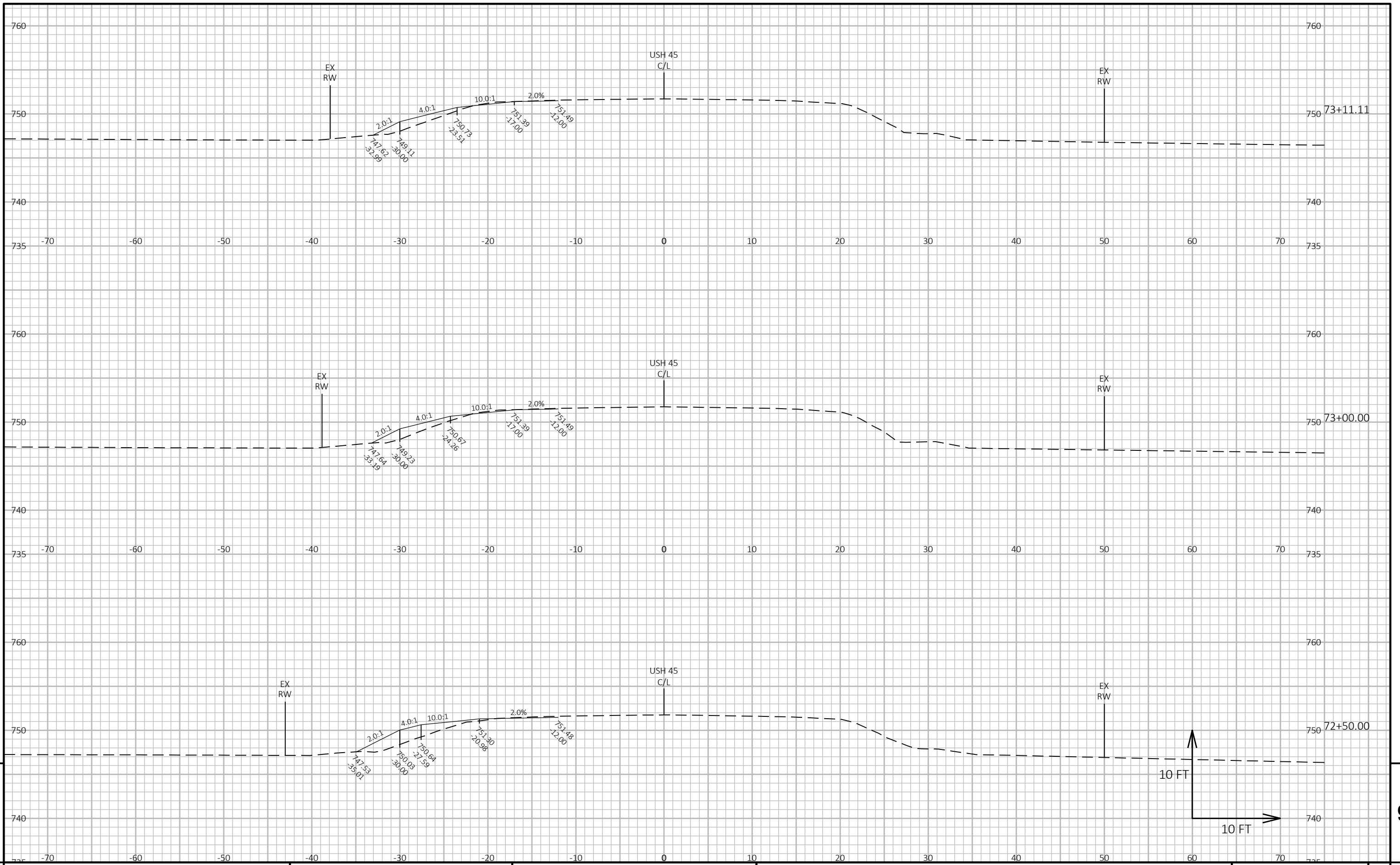


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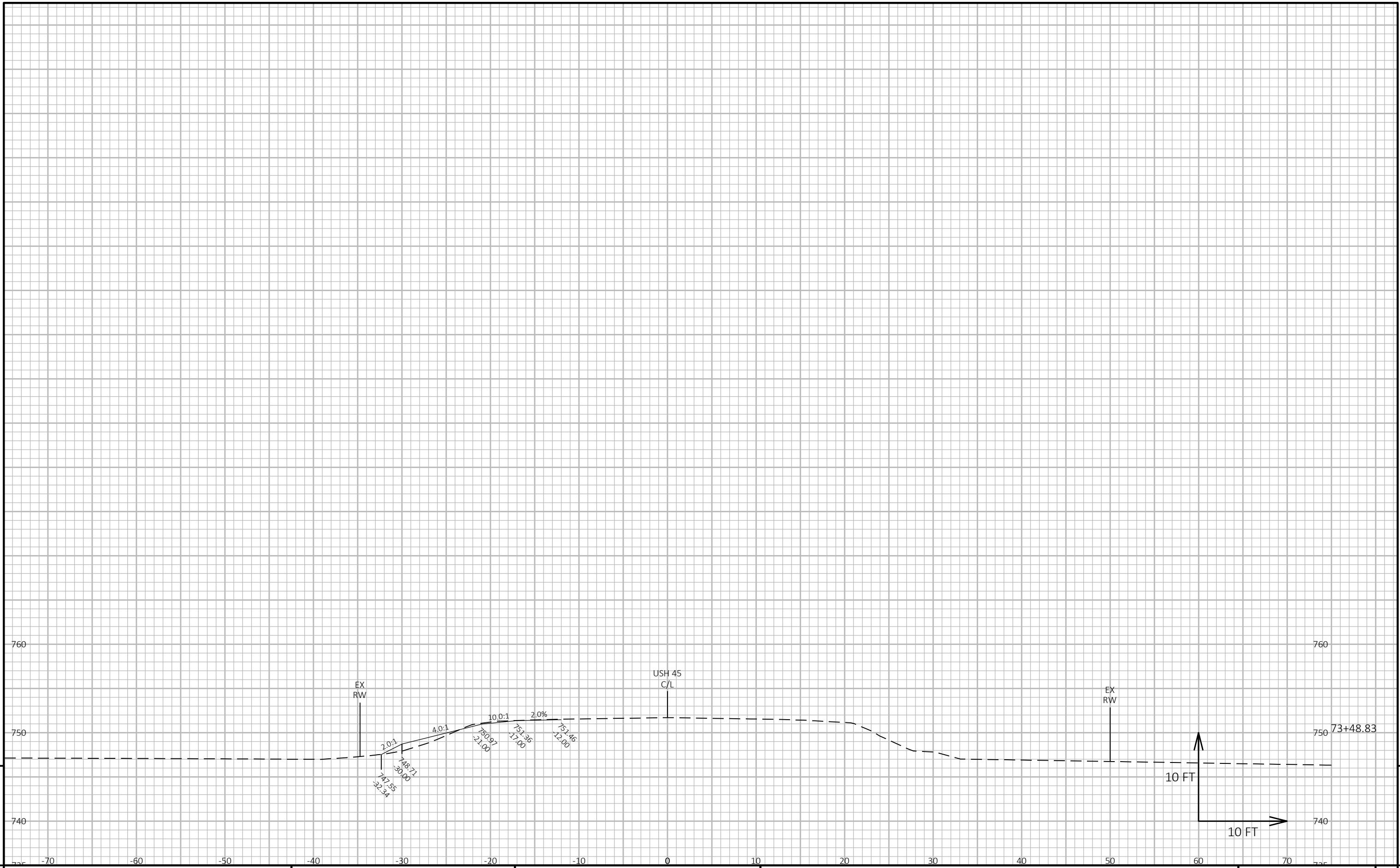
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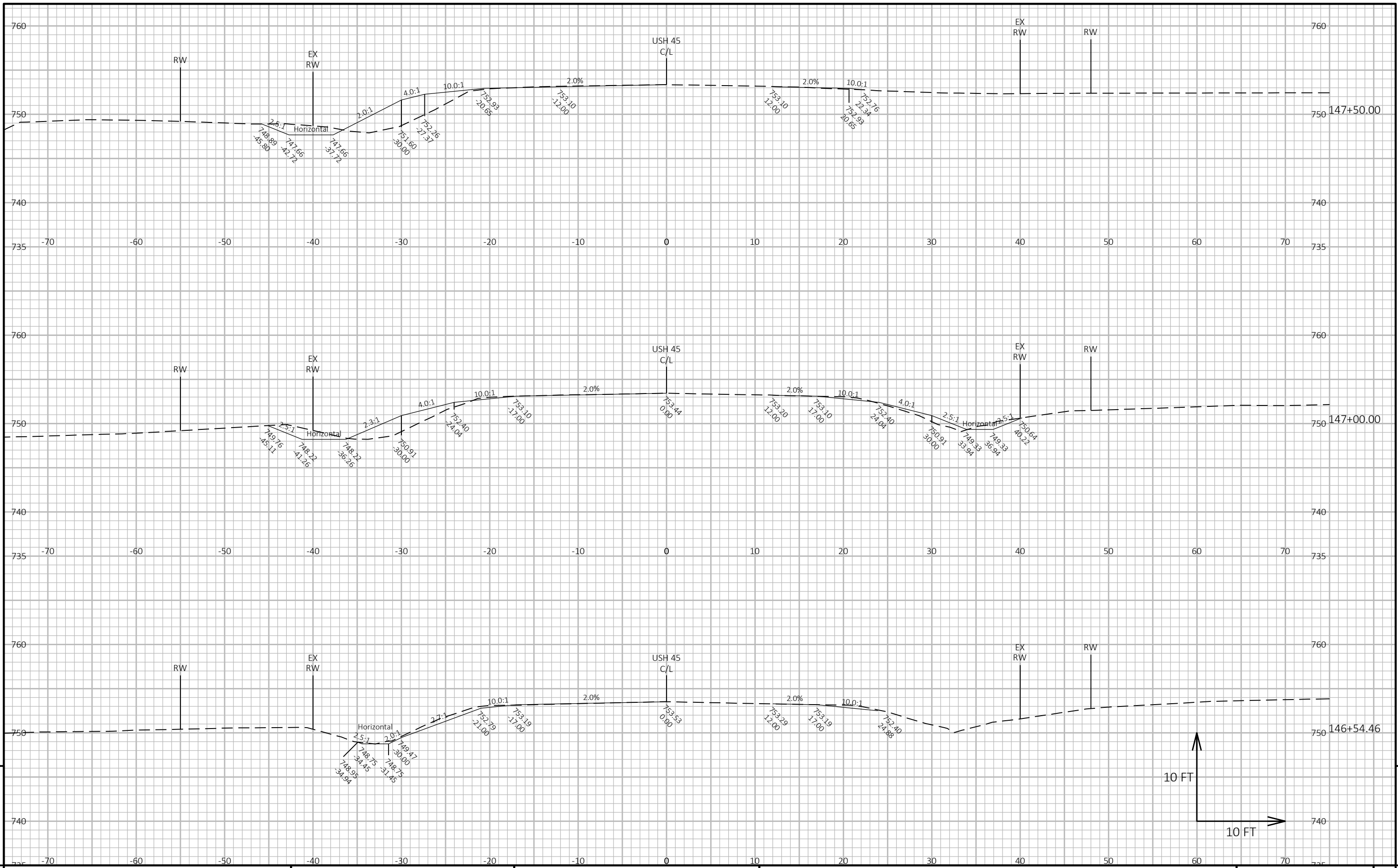


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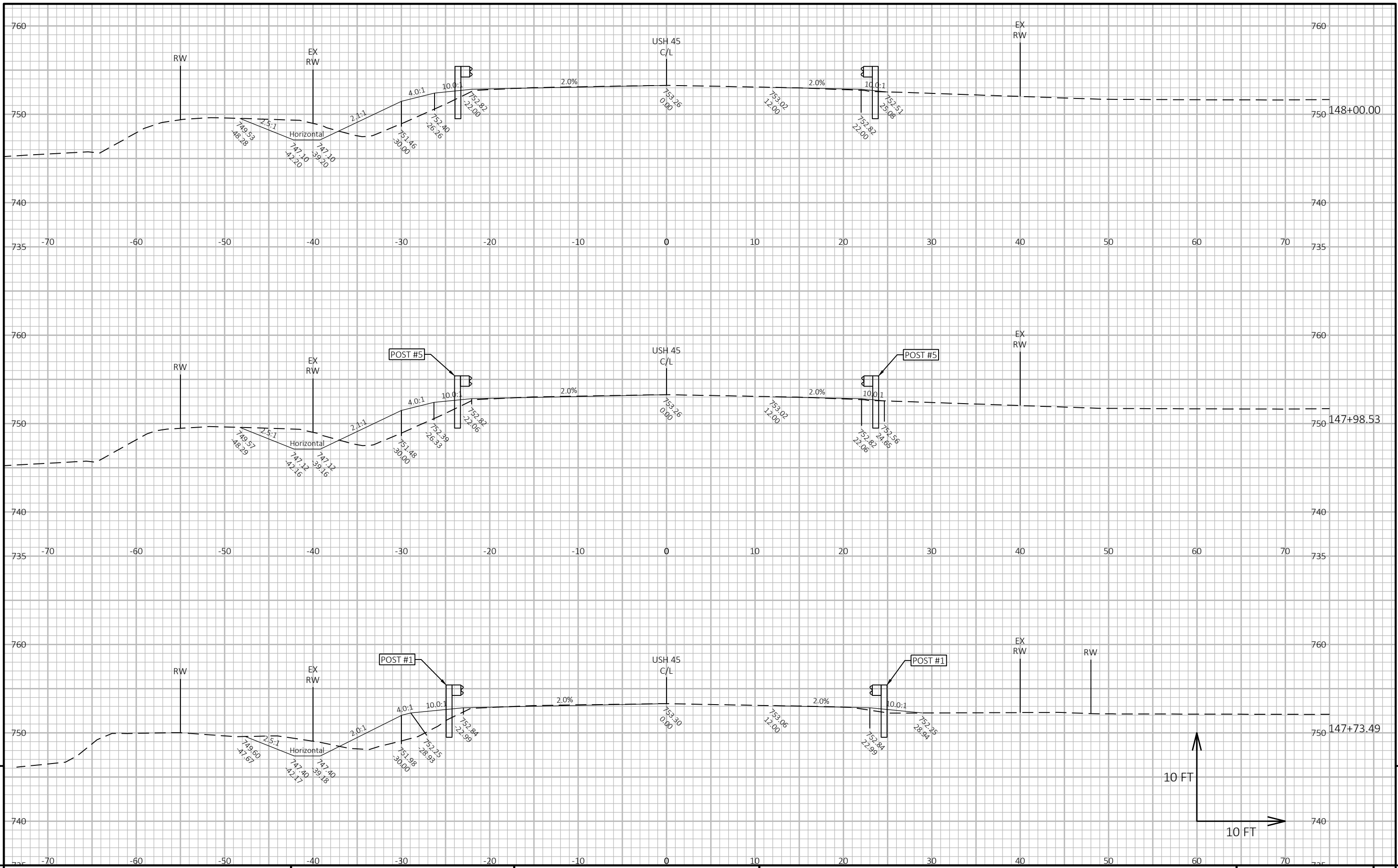
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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: C-20-0113	SHEET E
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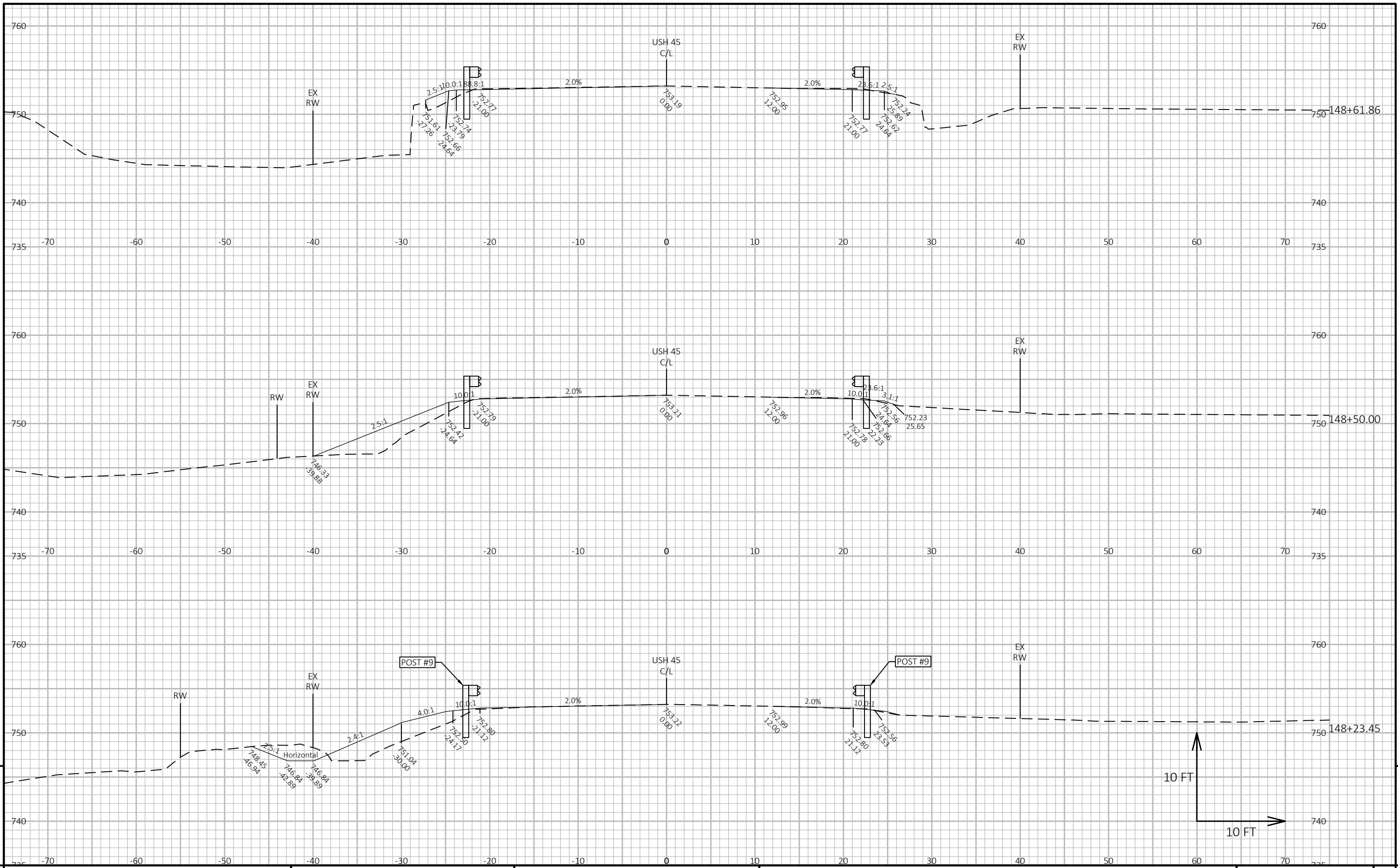
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 PLOT NAME :
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 WISDOT/CADD SHEET 49



PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: B-20-0663	SHEET E
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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: B-20-0663	SHEET	E
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PROJECT NO: 4110-28-71

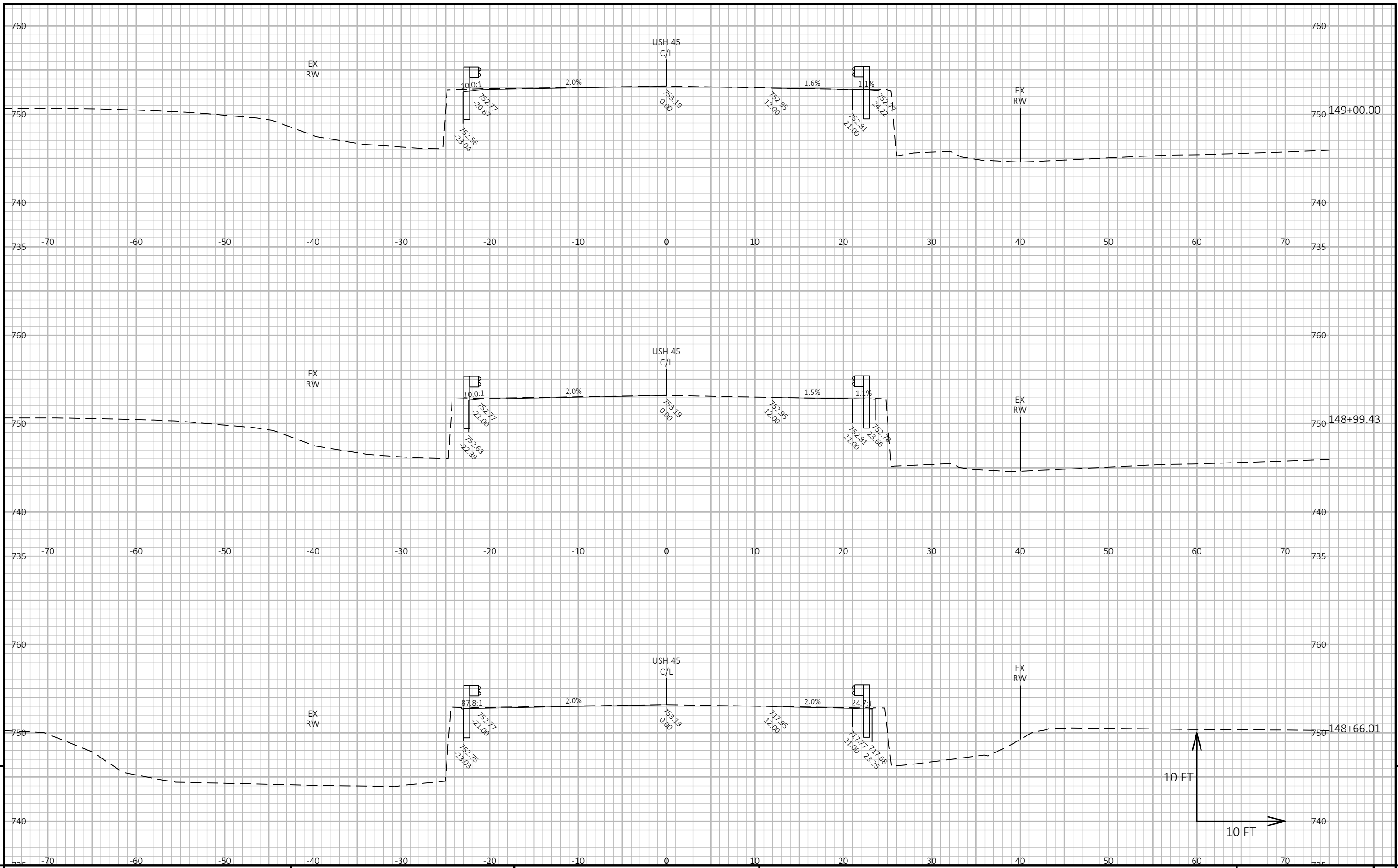
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COUNTY: FOND DU LAC

CROSS SECTIONS: B-20-0663

SHEET

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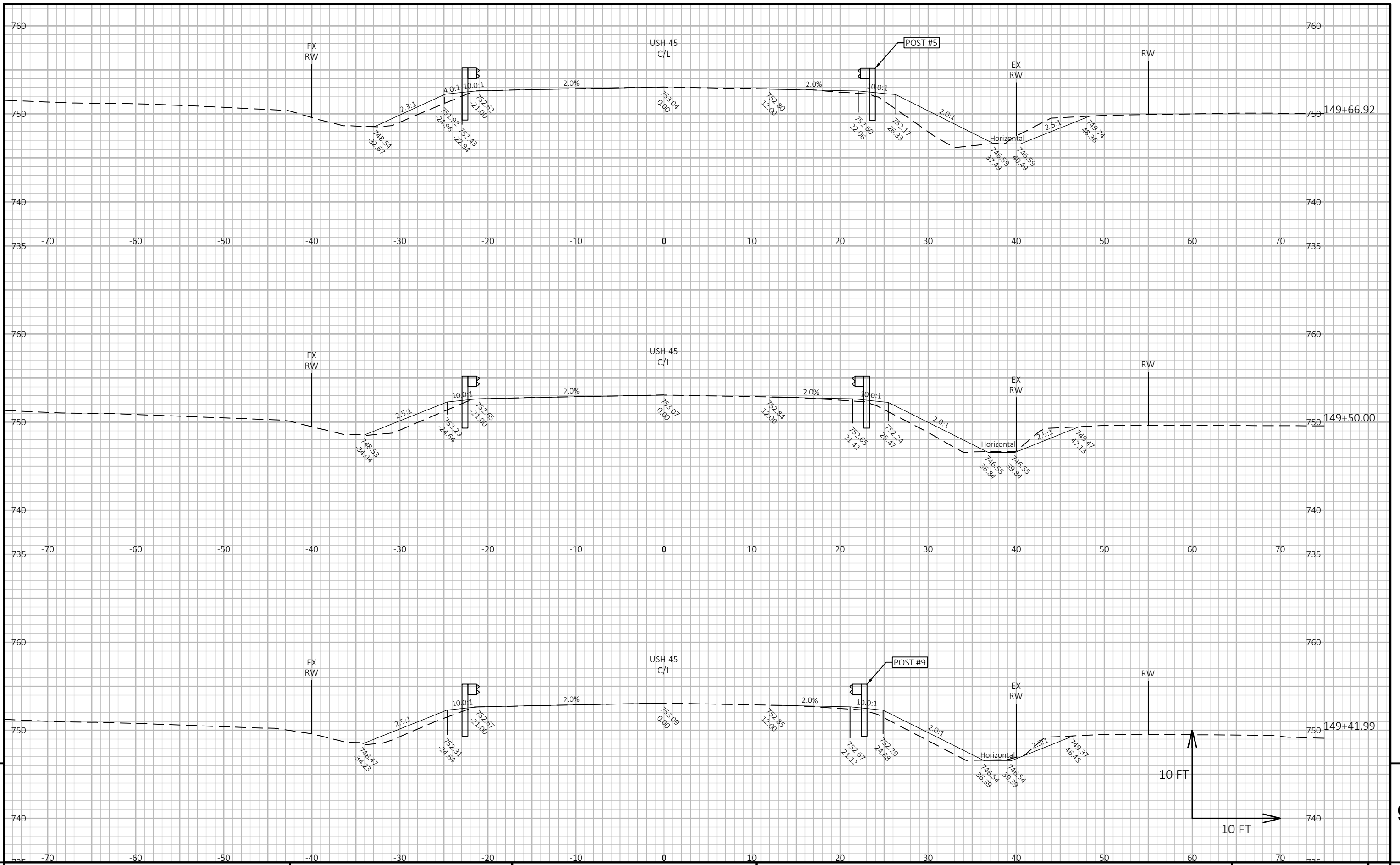


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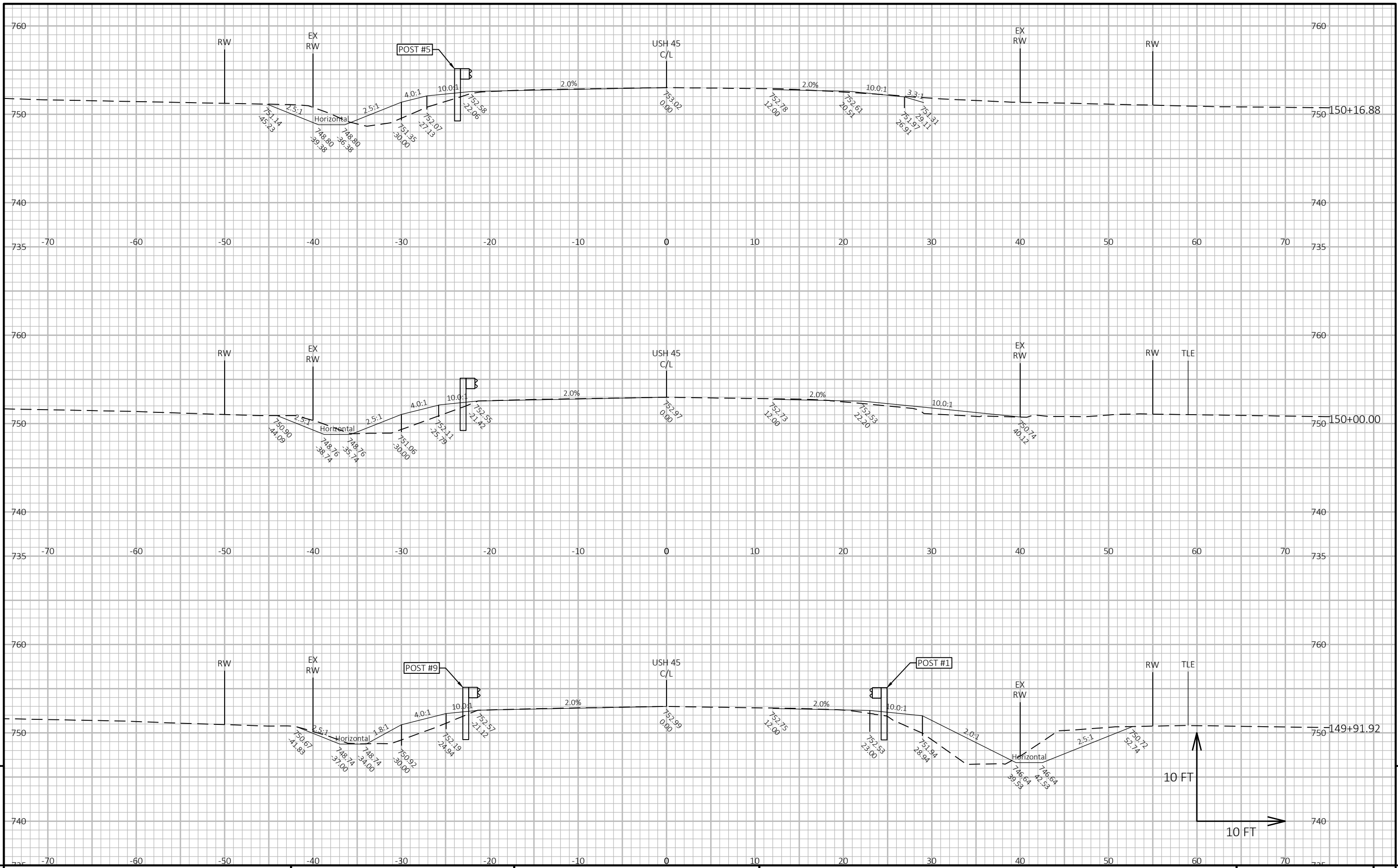
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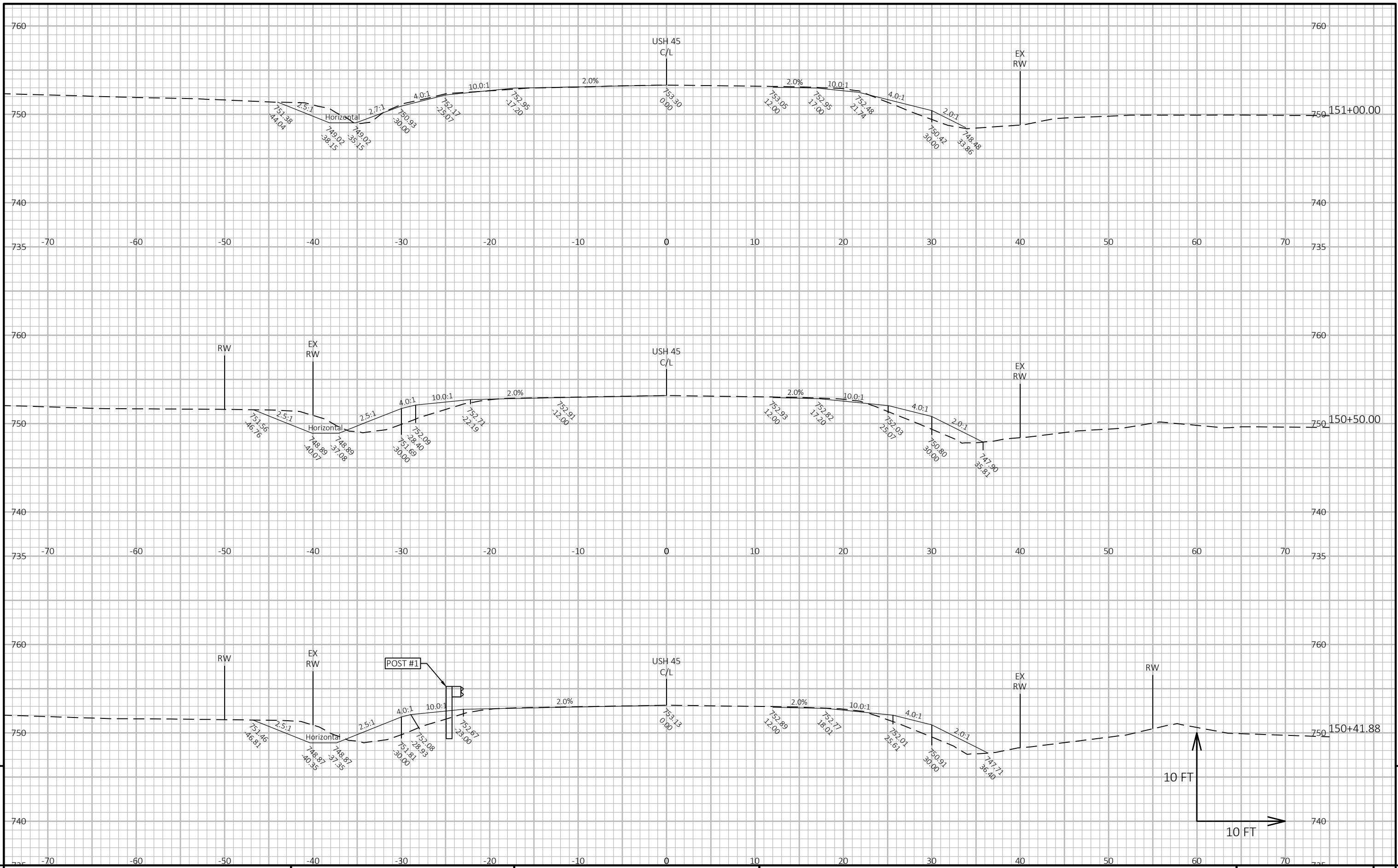
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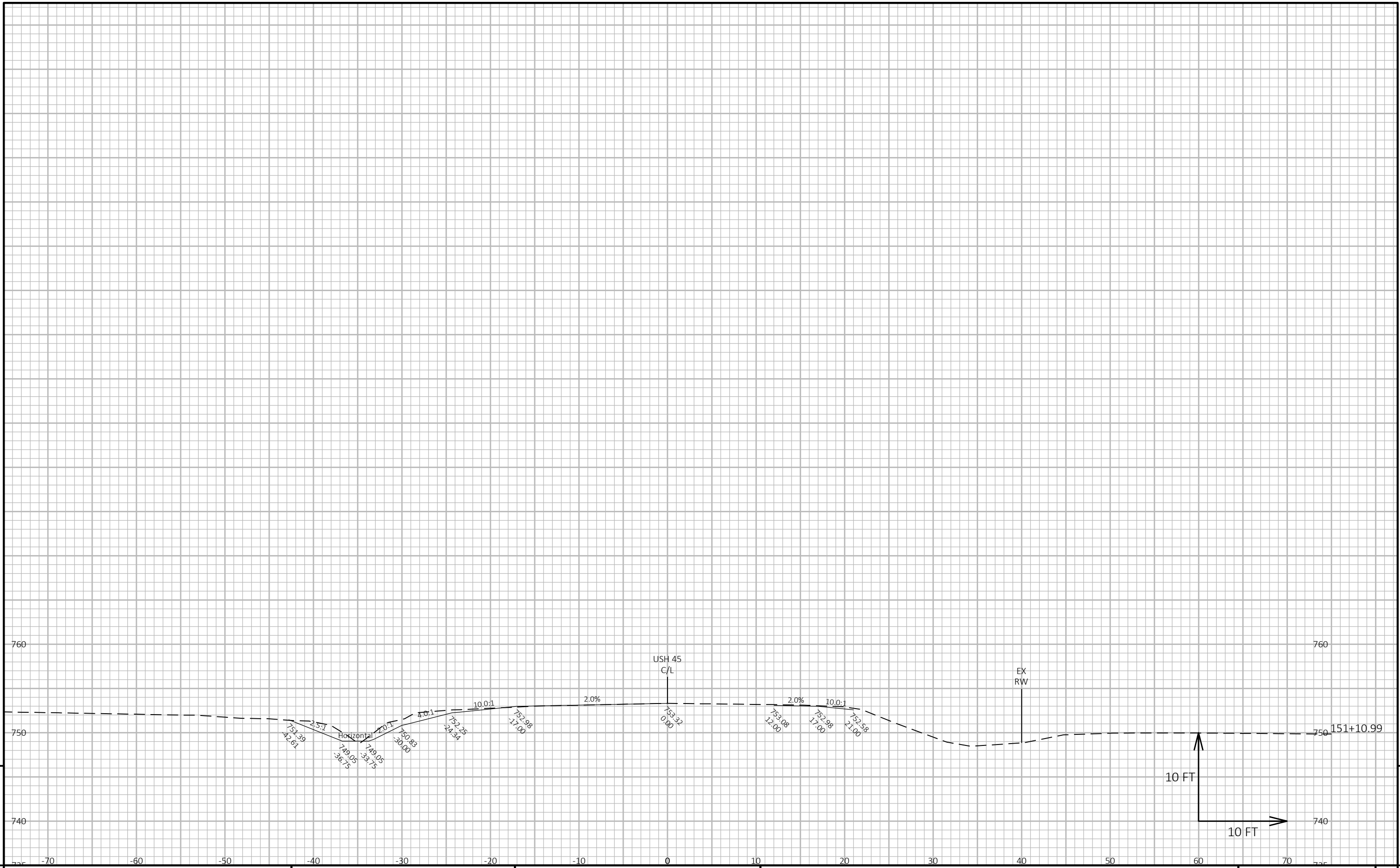
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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0663 SHEET 9



PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0663 SHEET 9

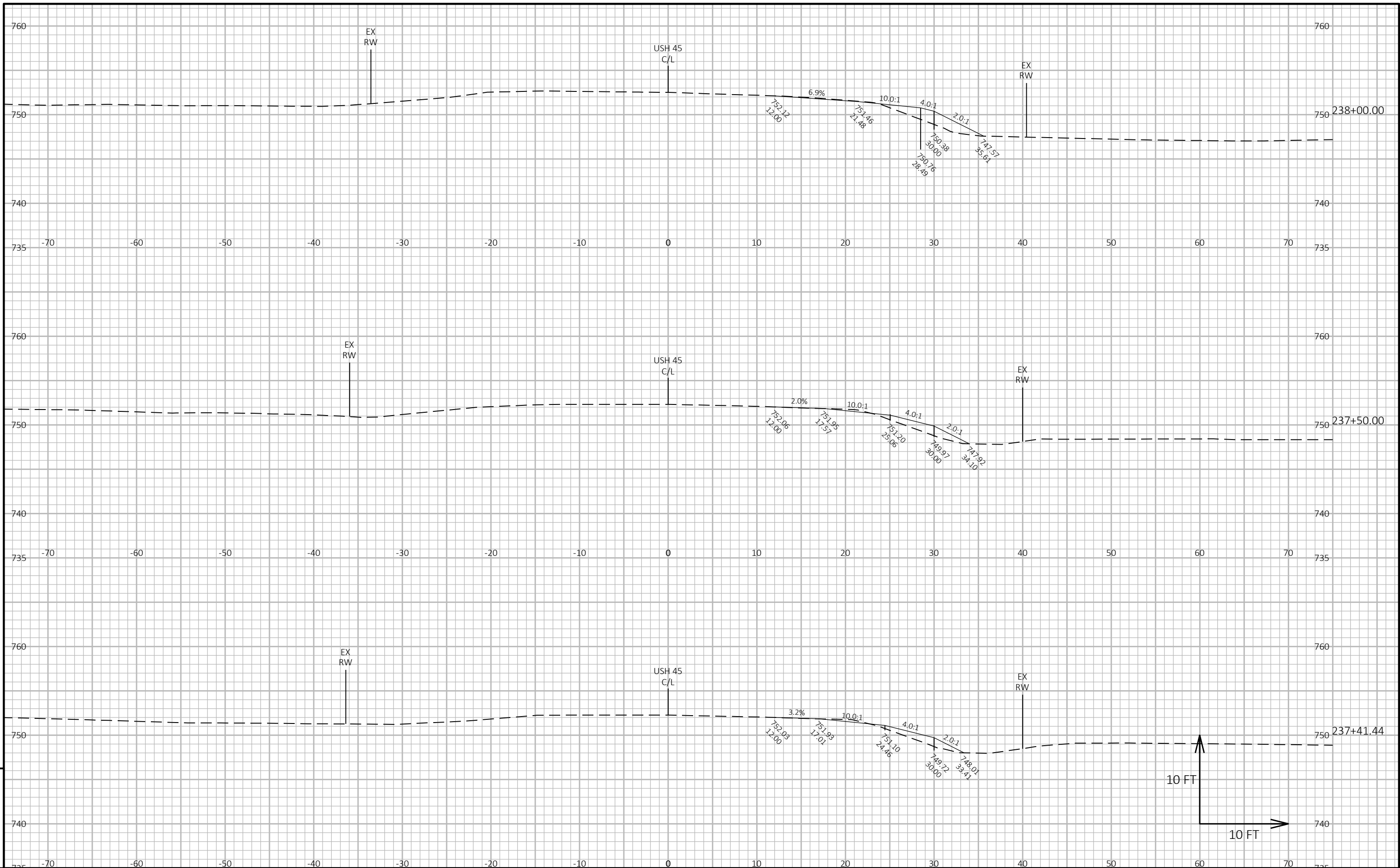


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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: B-20-0663	SHEET	E
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 WISDOT/CADD SHEET 49



PROJECT NO: 4110-28-71

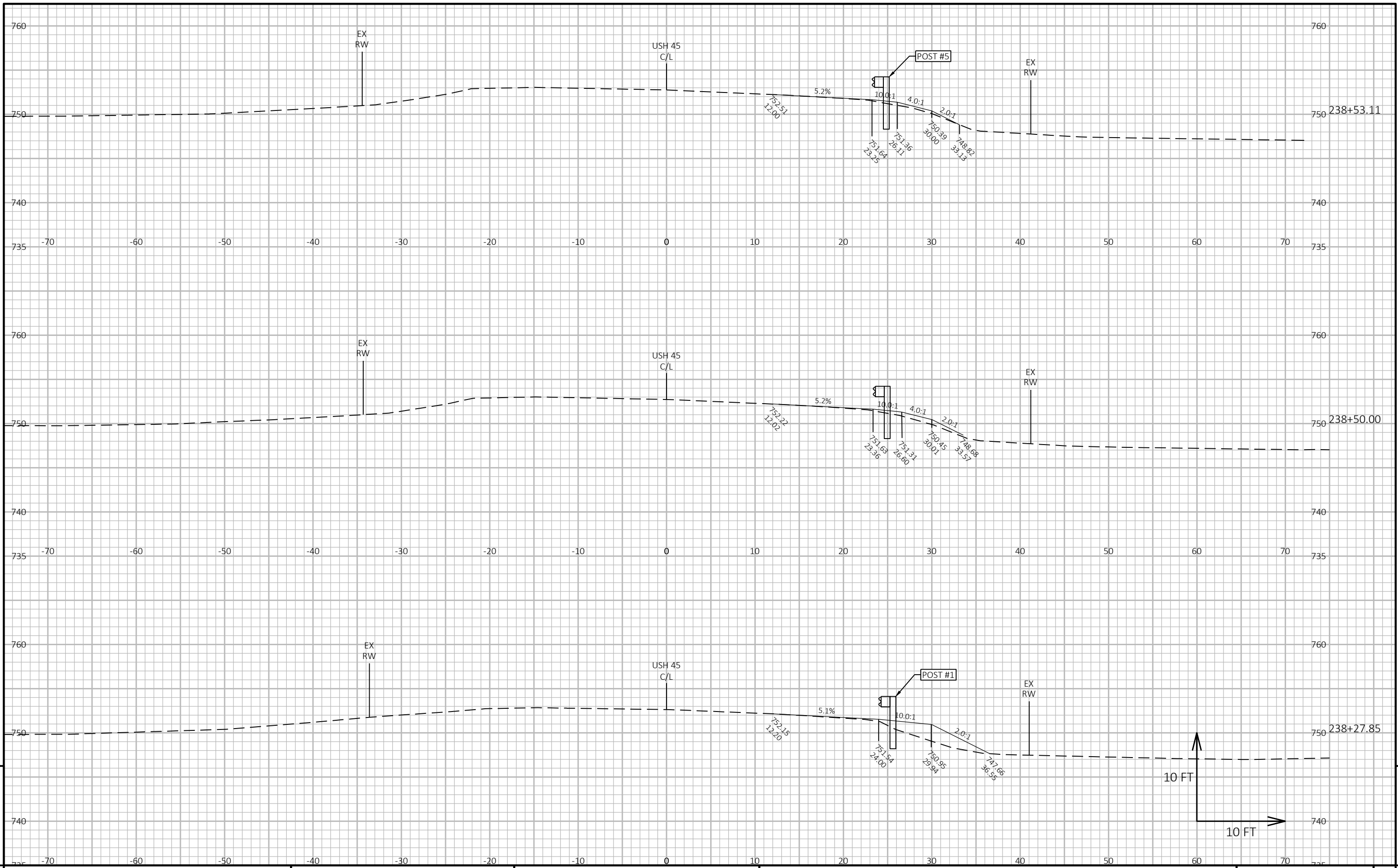
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COUNTY: FOND DU LAC

CROSS SECTIONS: B-20-0095

SHEET

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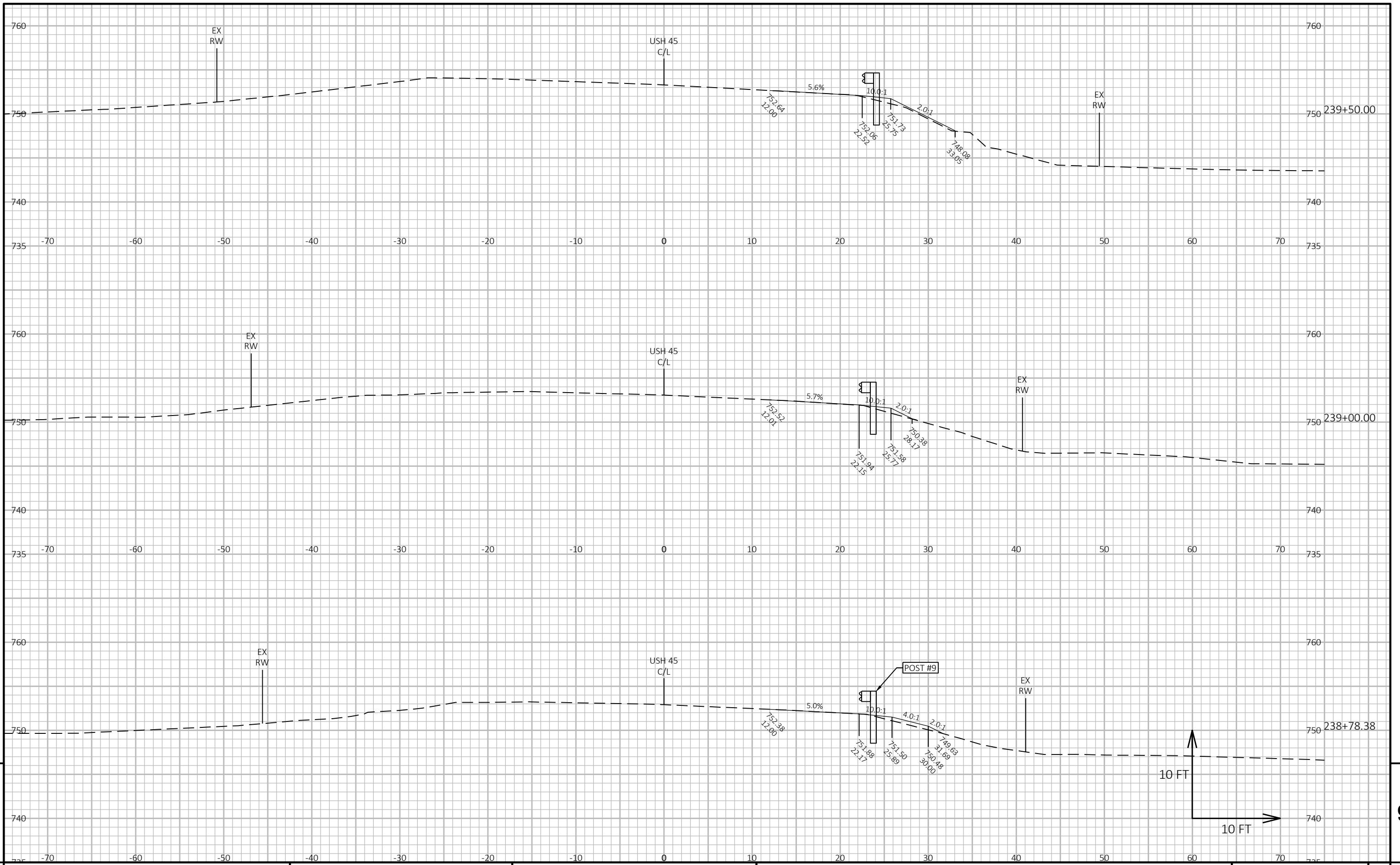


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PROJECT NO: 4110-28-71

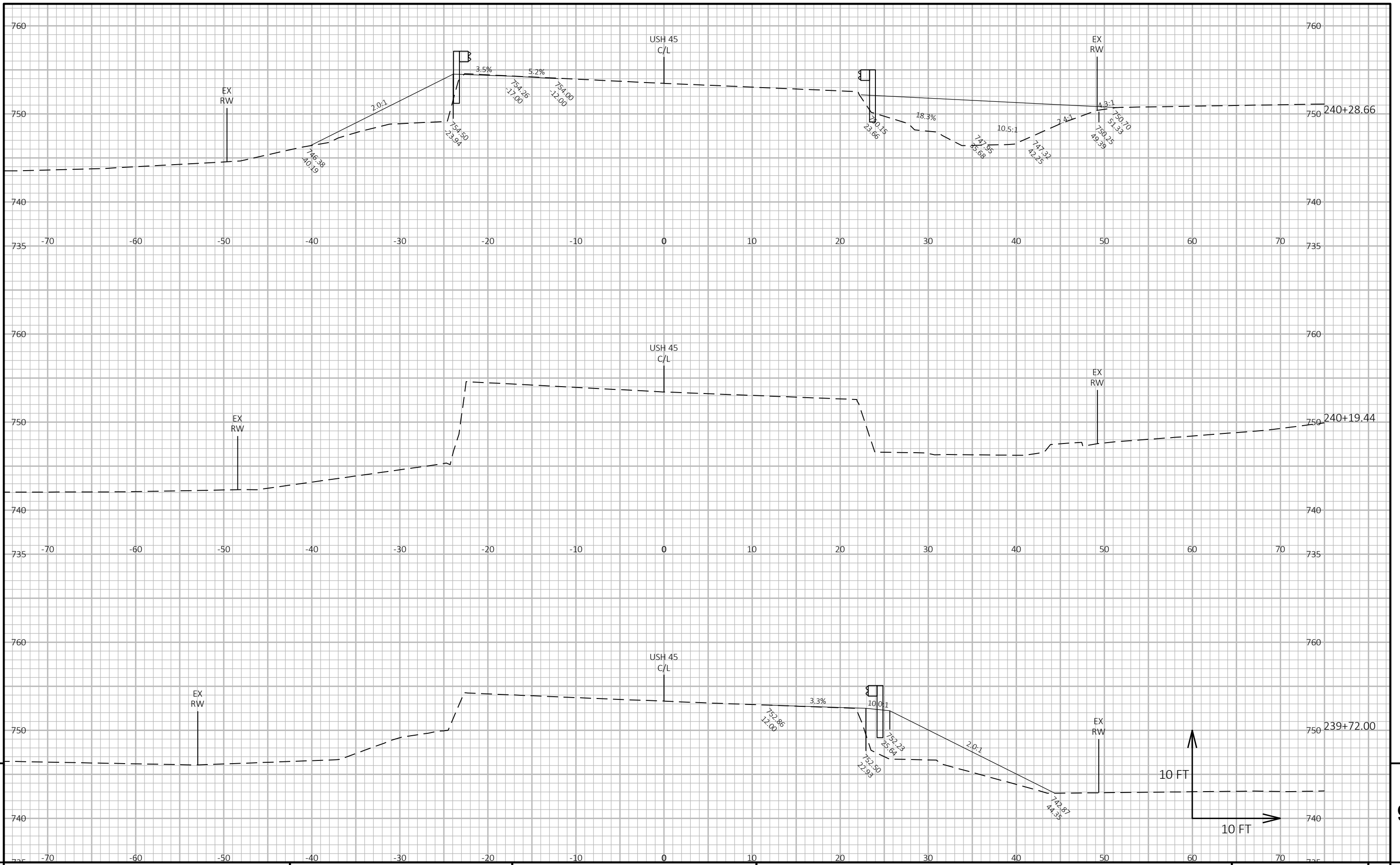
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CROSS SECTIONS: B-20-0095

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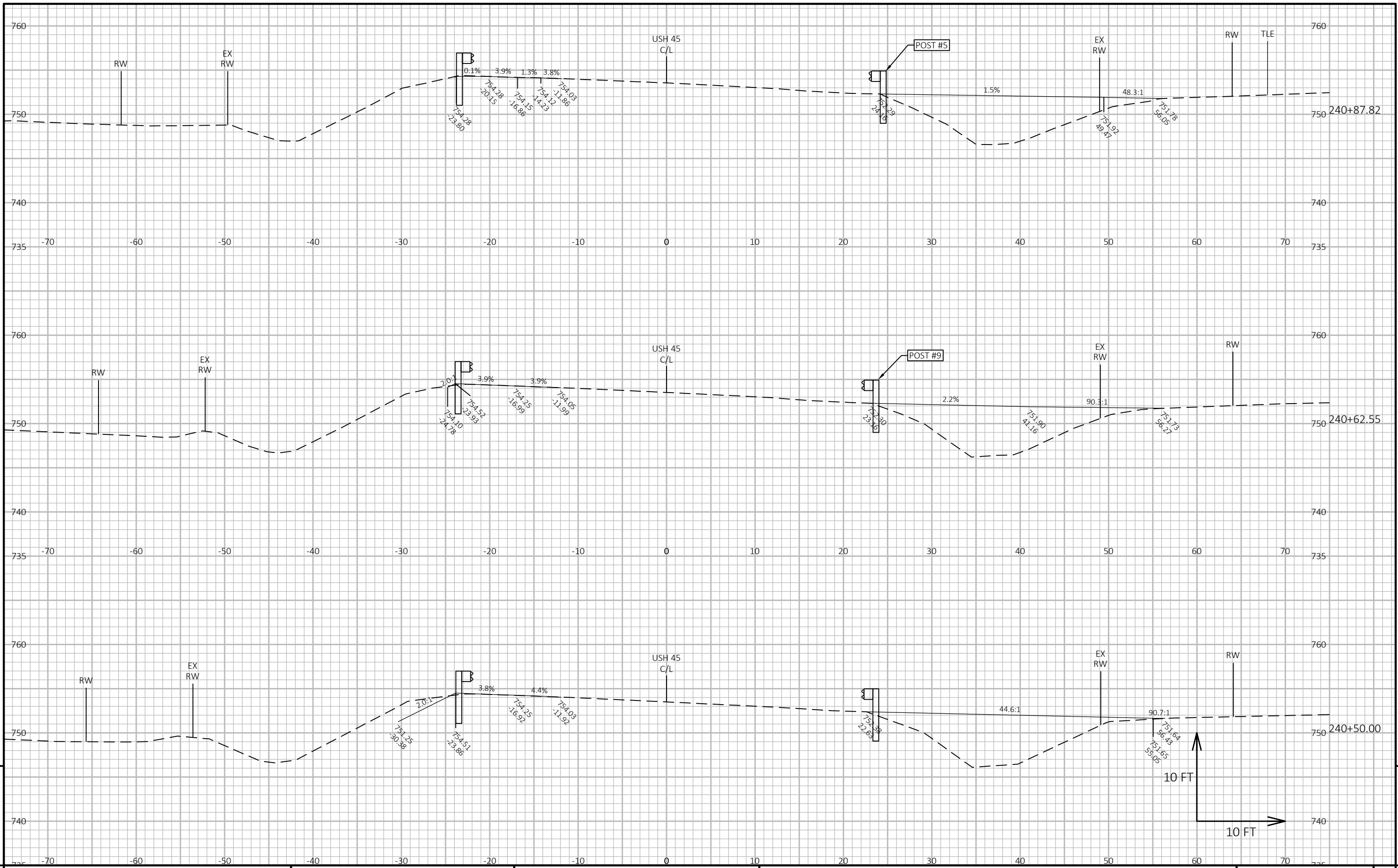
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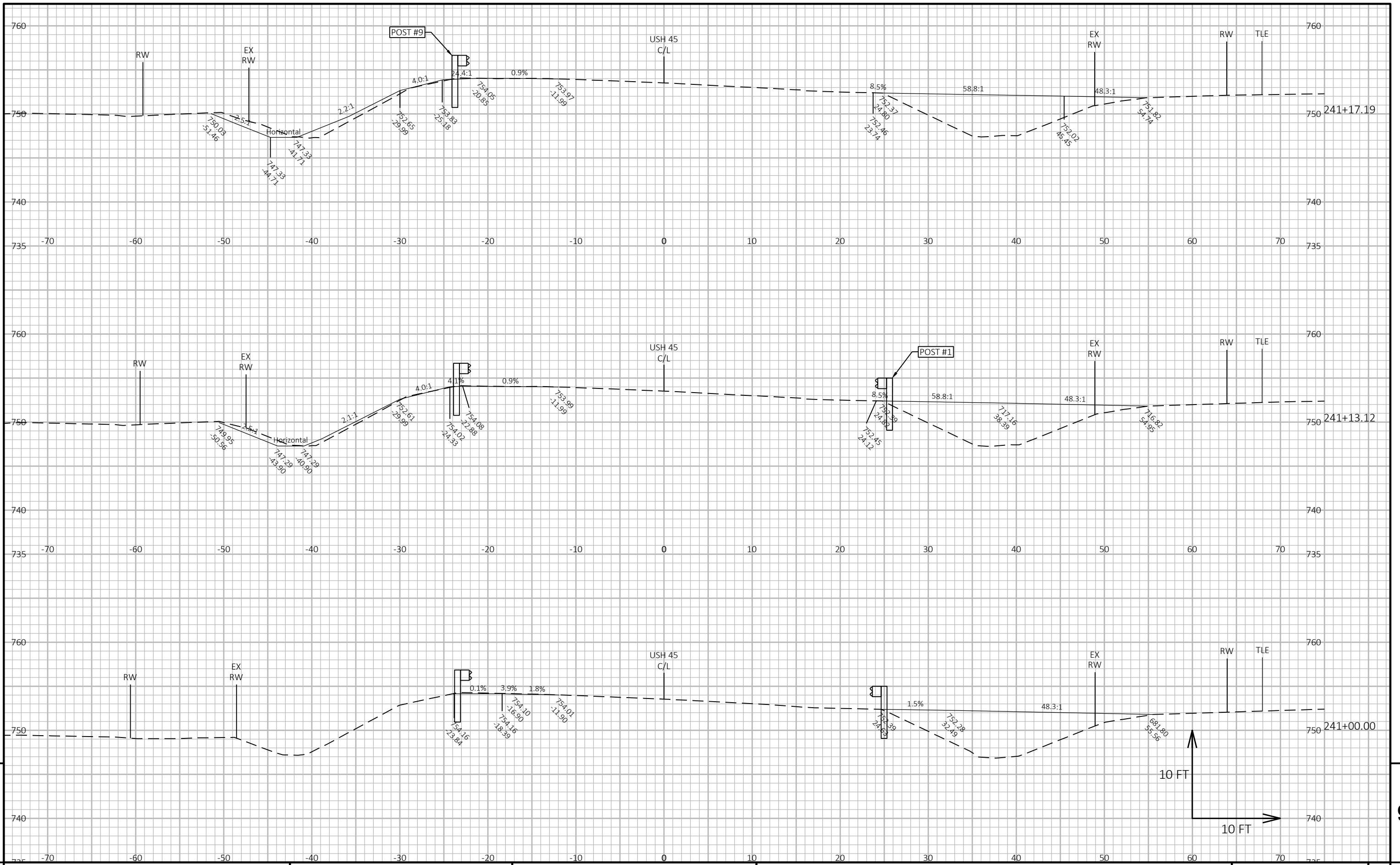


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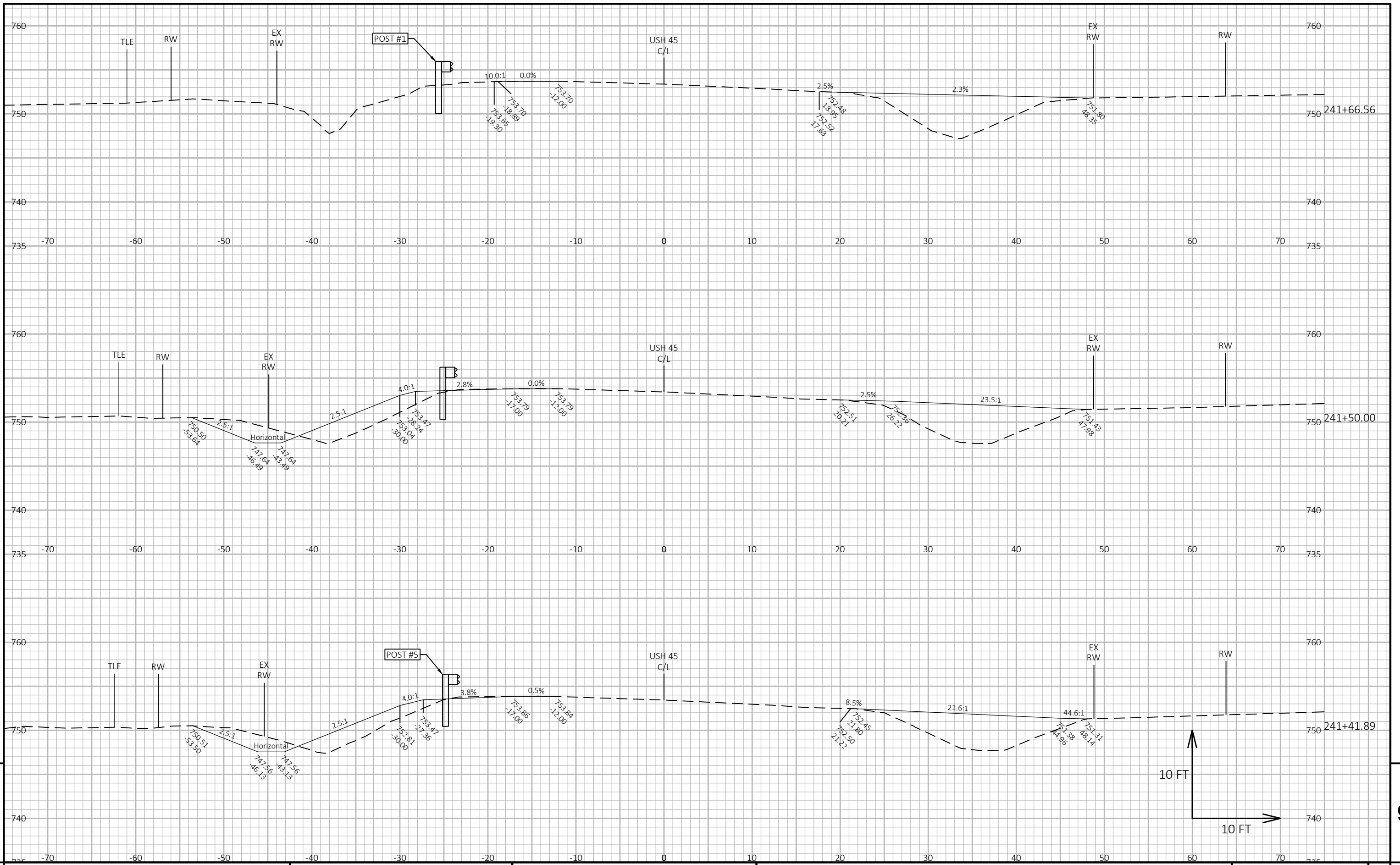
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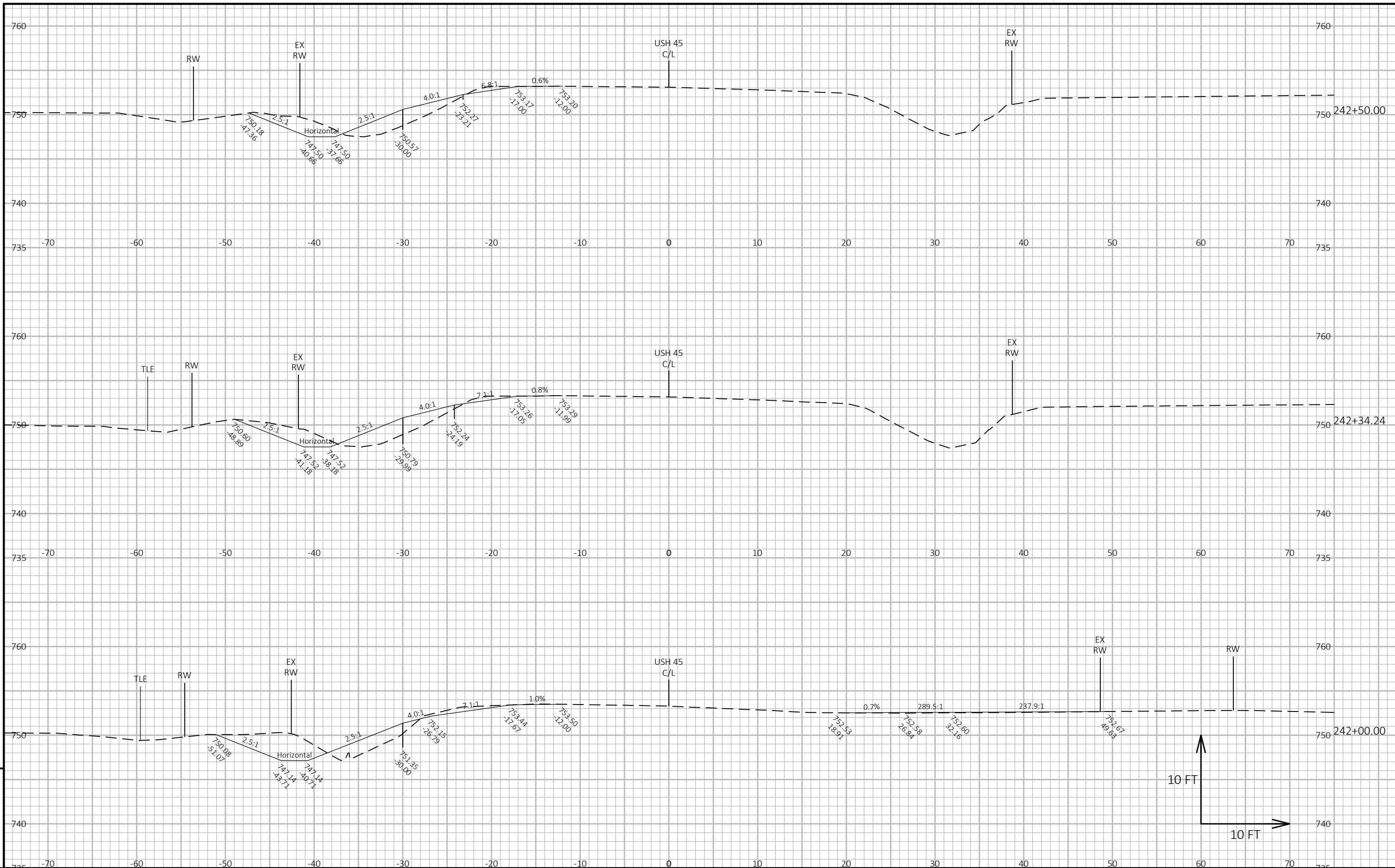


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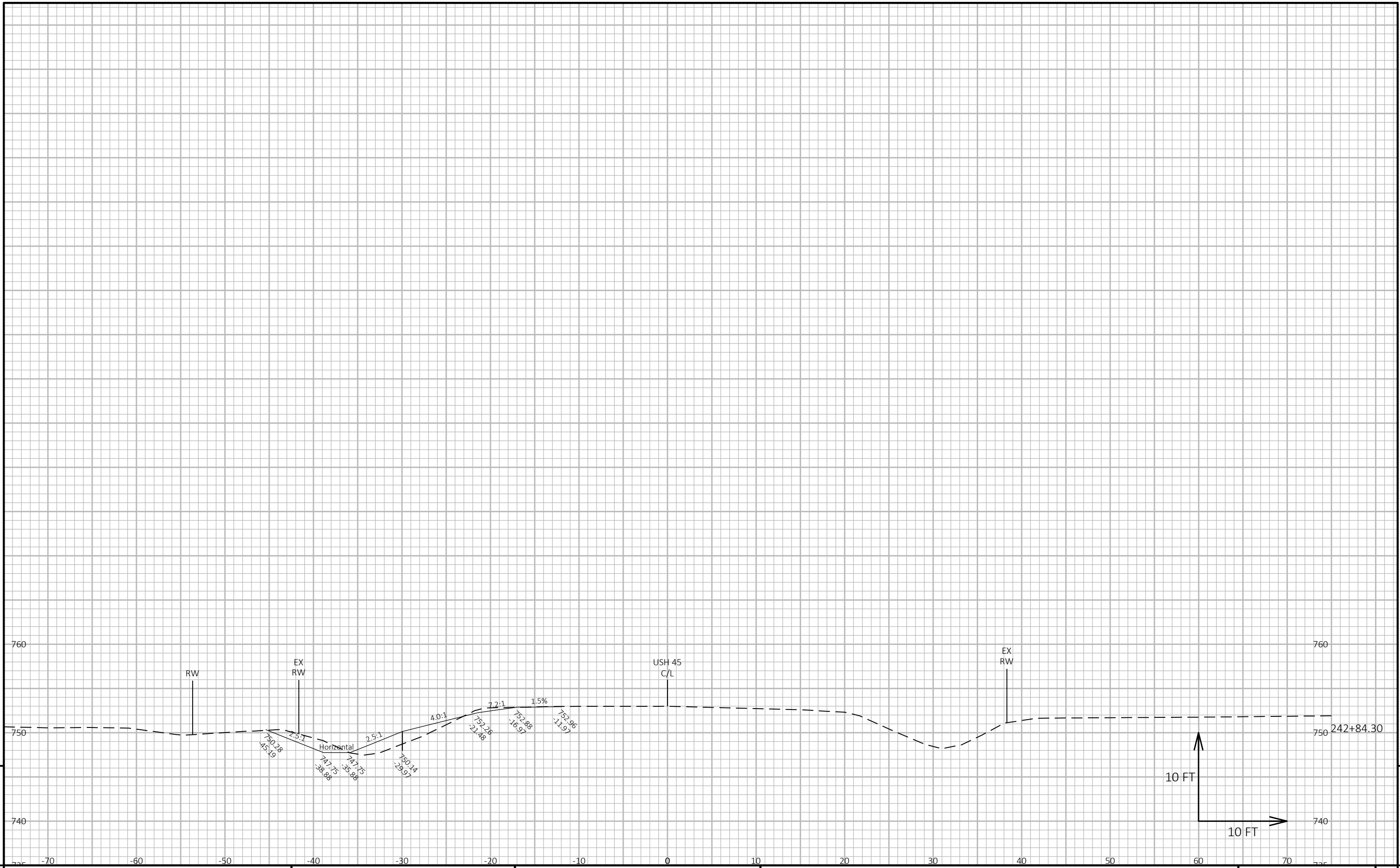
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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: B-20-0095	SHEET	E
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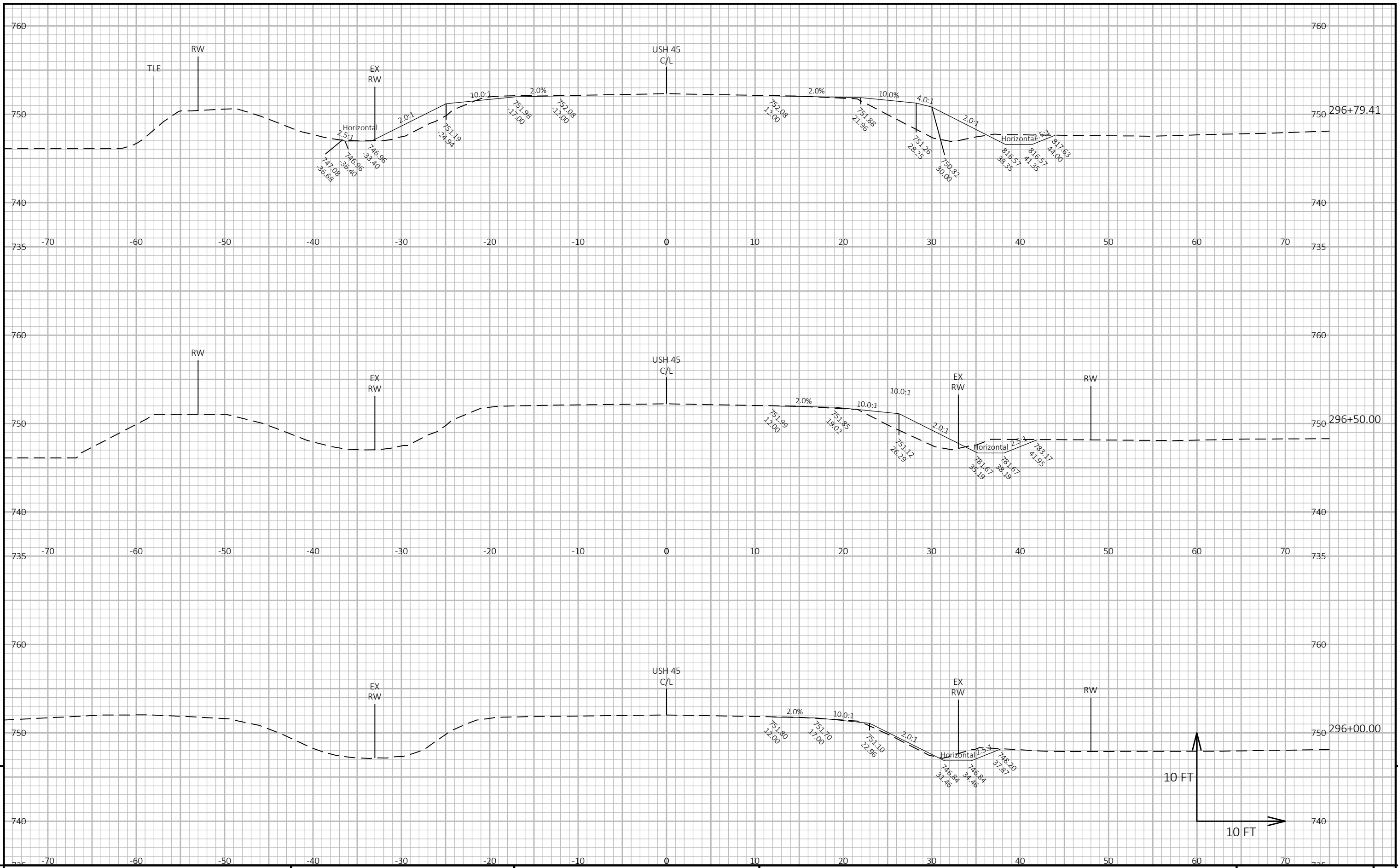


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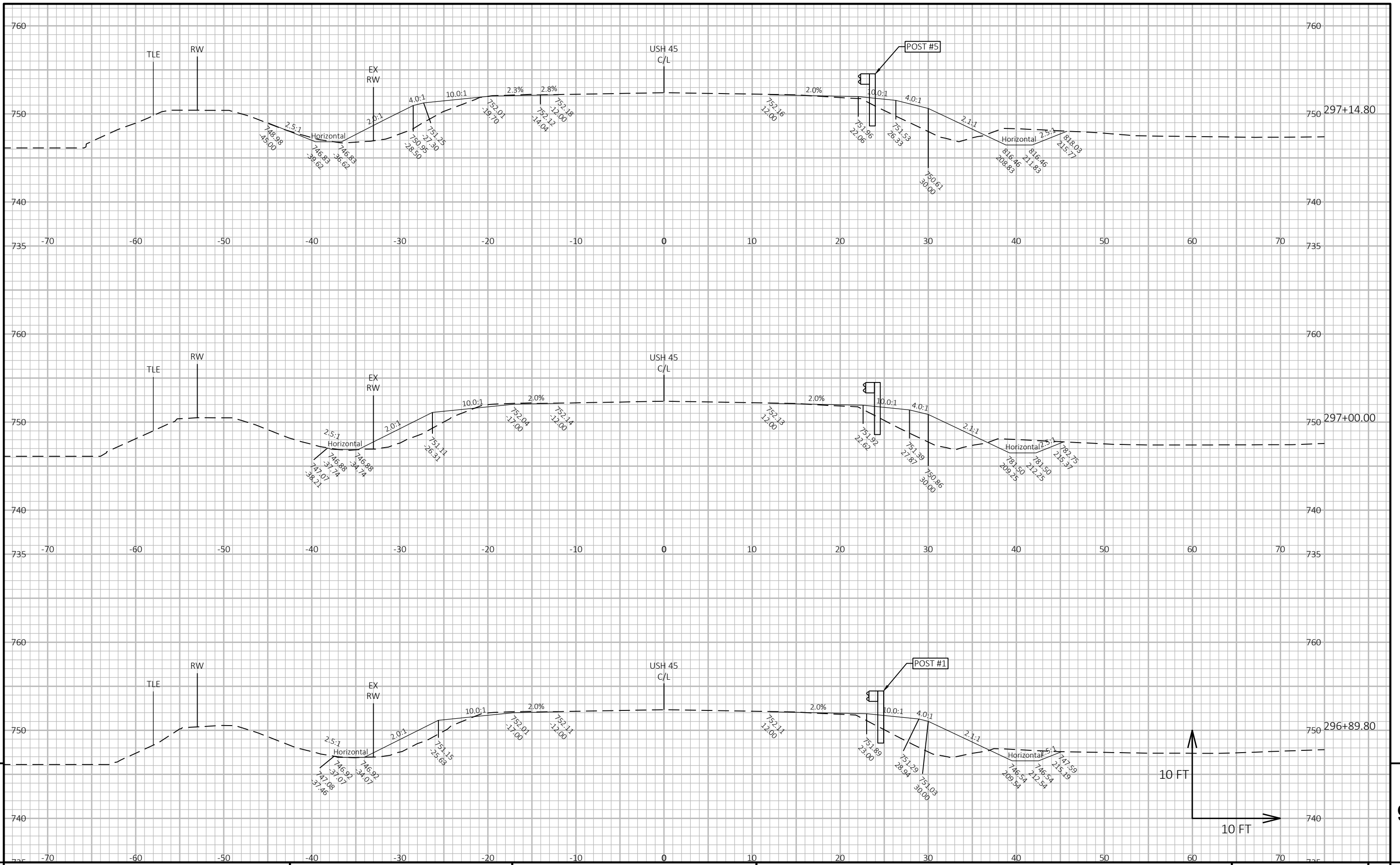
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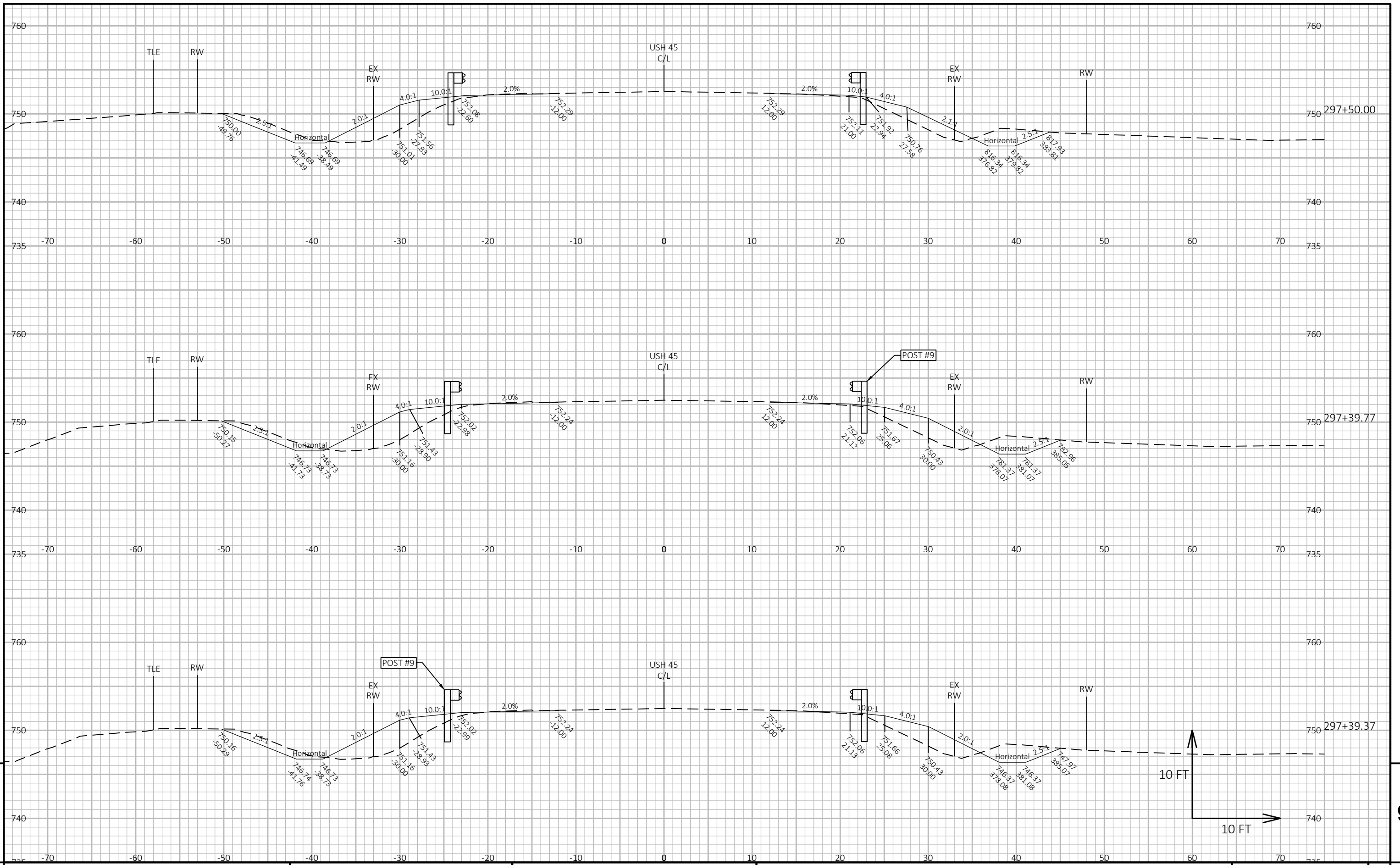
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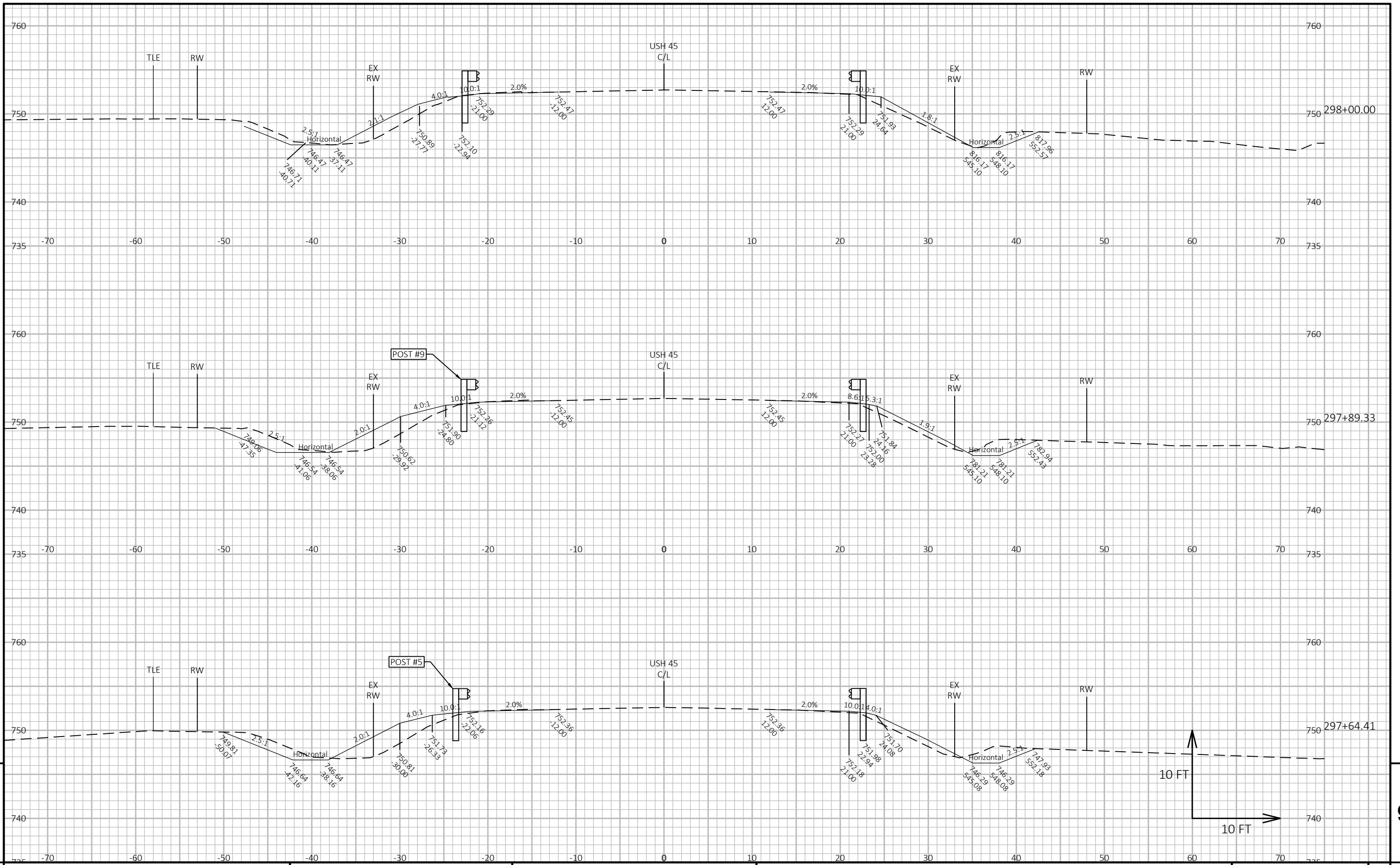


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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: B-20-0061	SHEET E
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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0061 SHEET 9



PROJECT NO: 4110-28-71

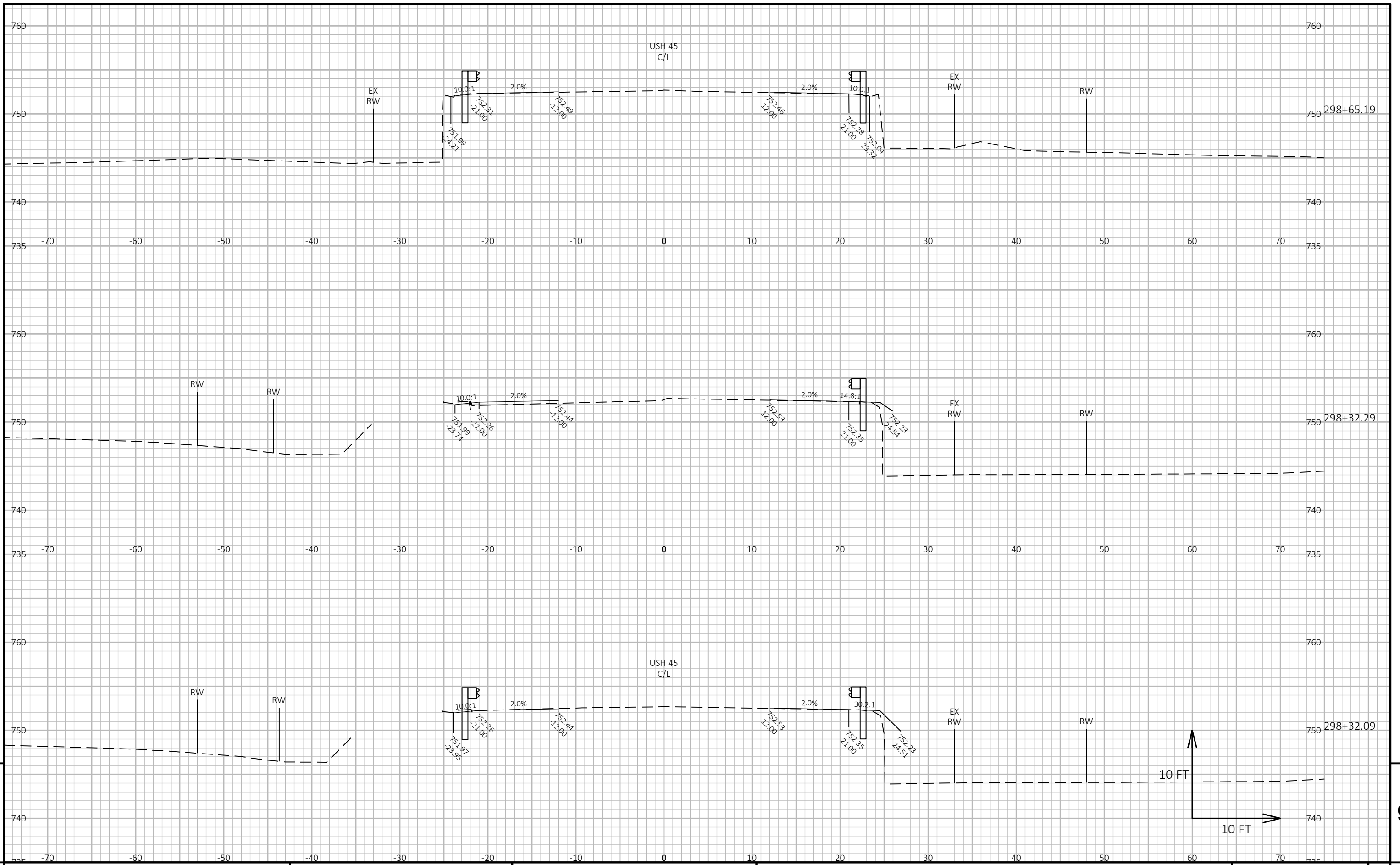
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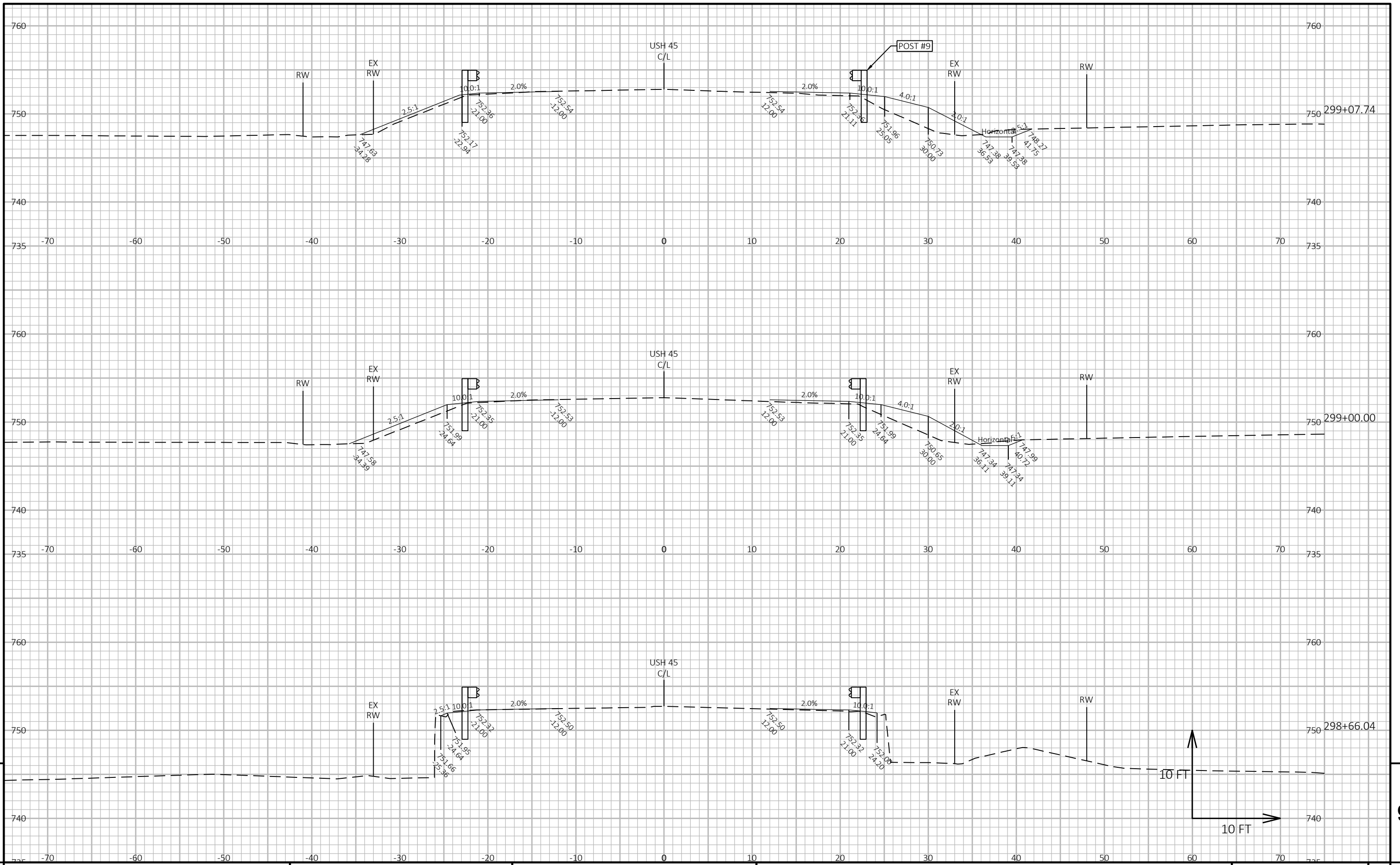
CROSS SECTIONS: B-20-0061

SHEET

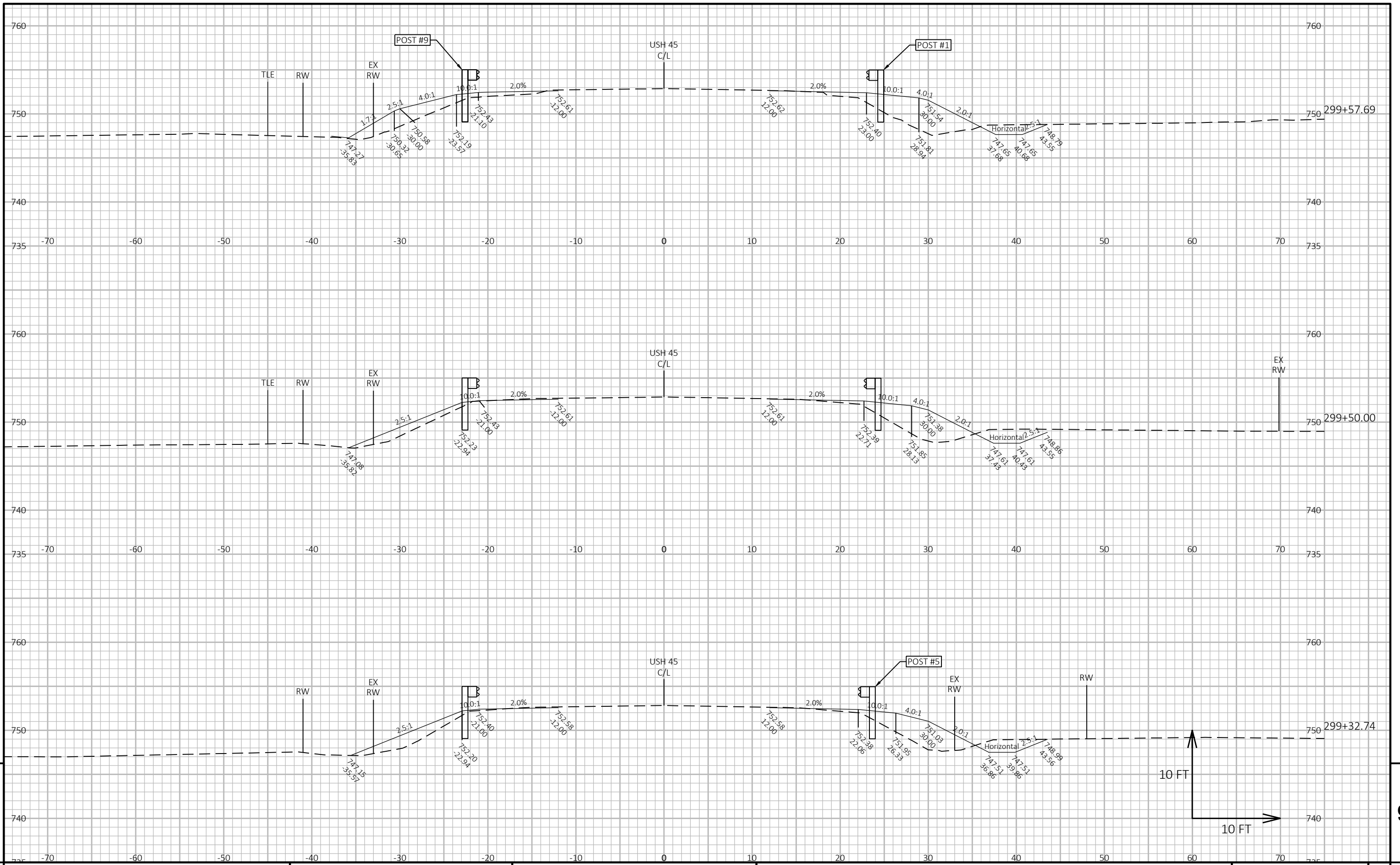
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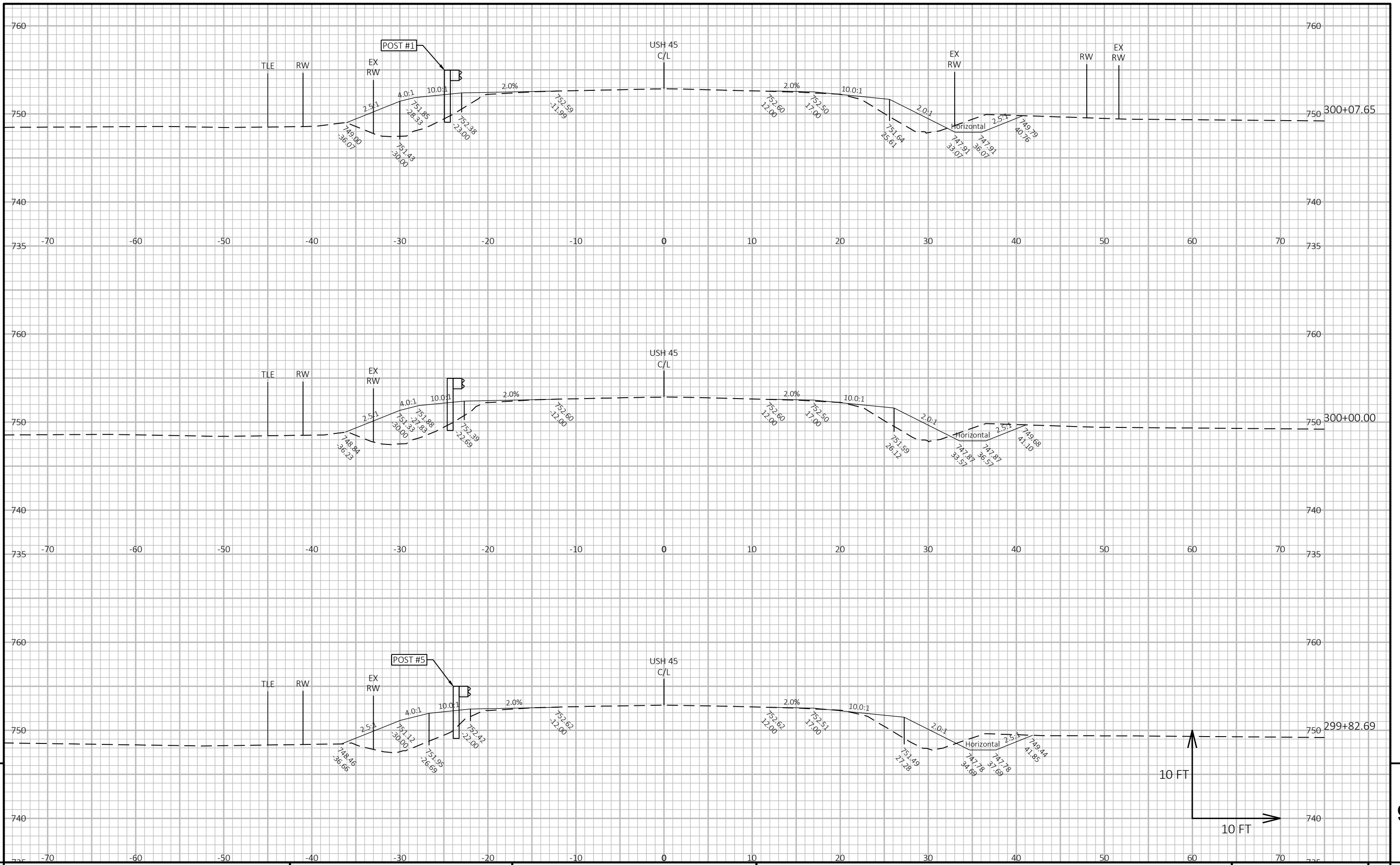
PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: B-20-0061	SHEET 9
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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: B-20-0061	SHEET 9
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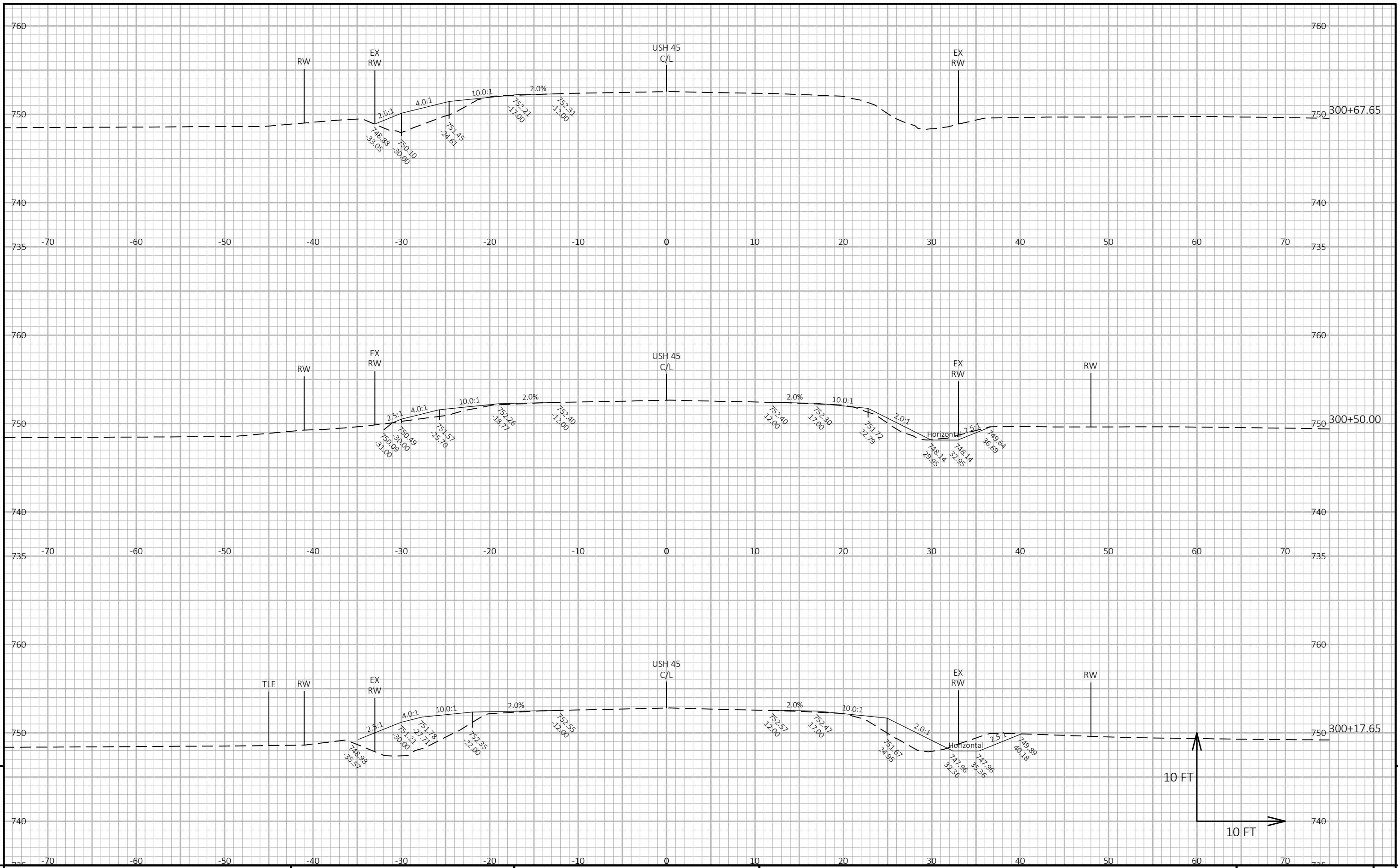


PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0061 SHEET 9

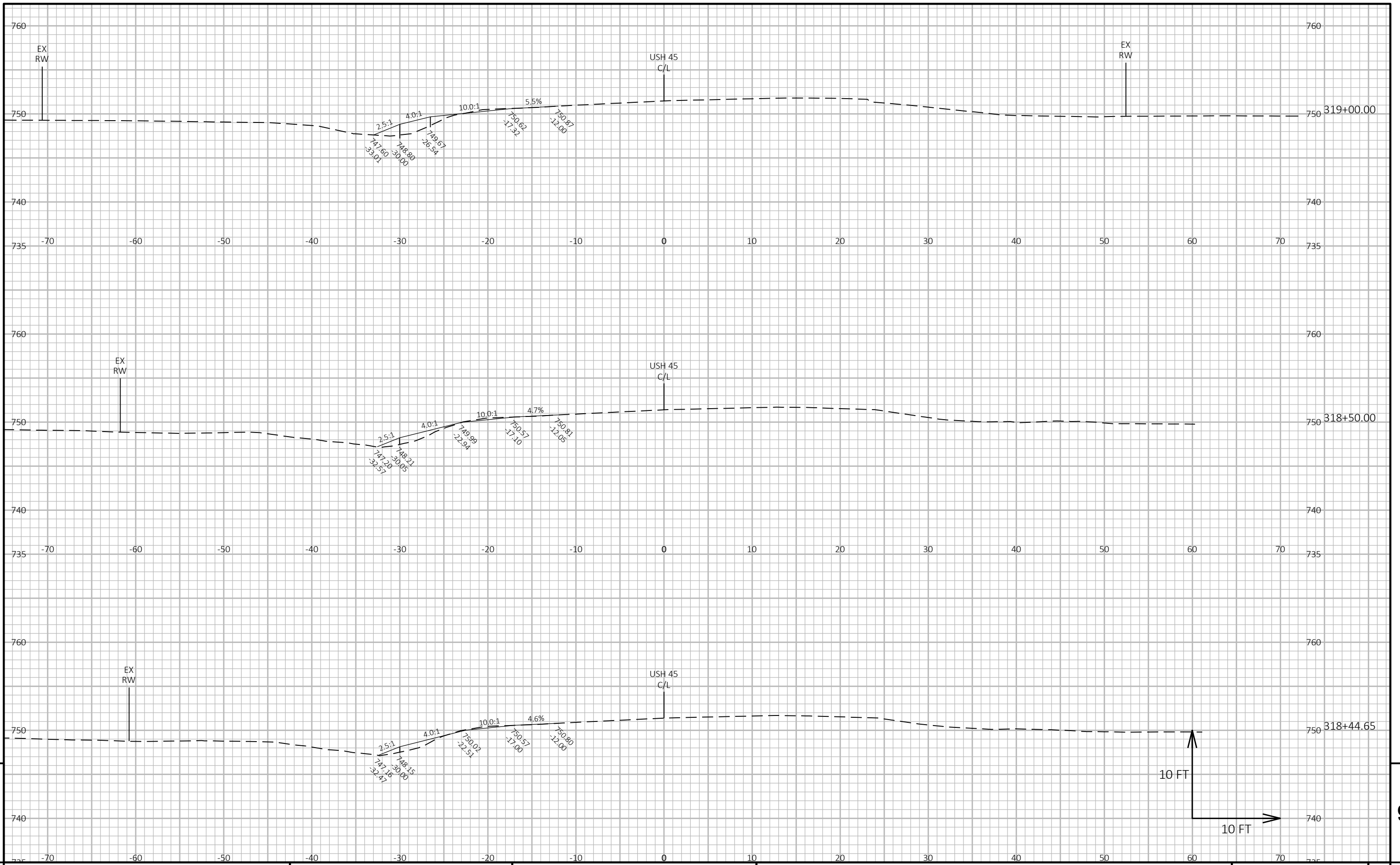


PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0061 SHEET 9

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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0061 SHEET 9

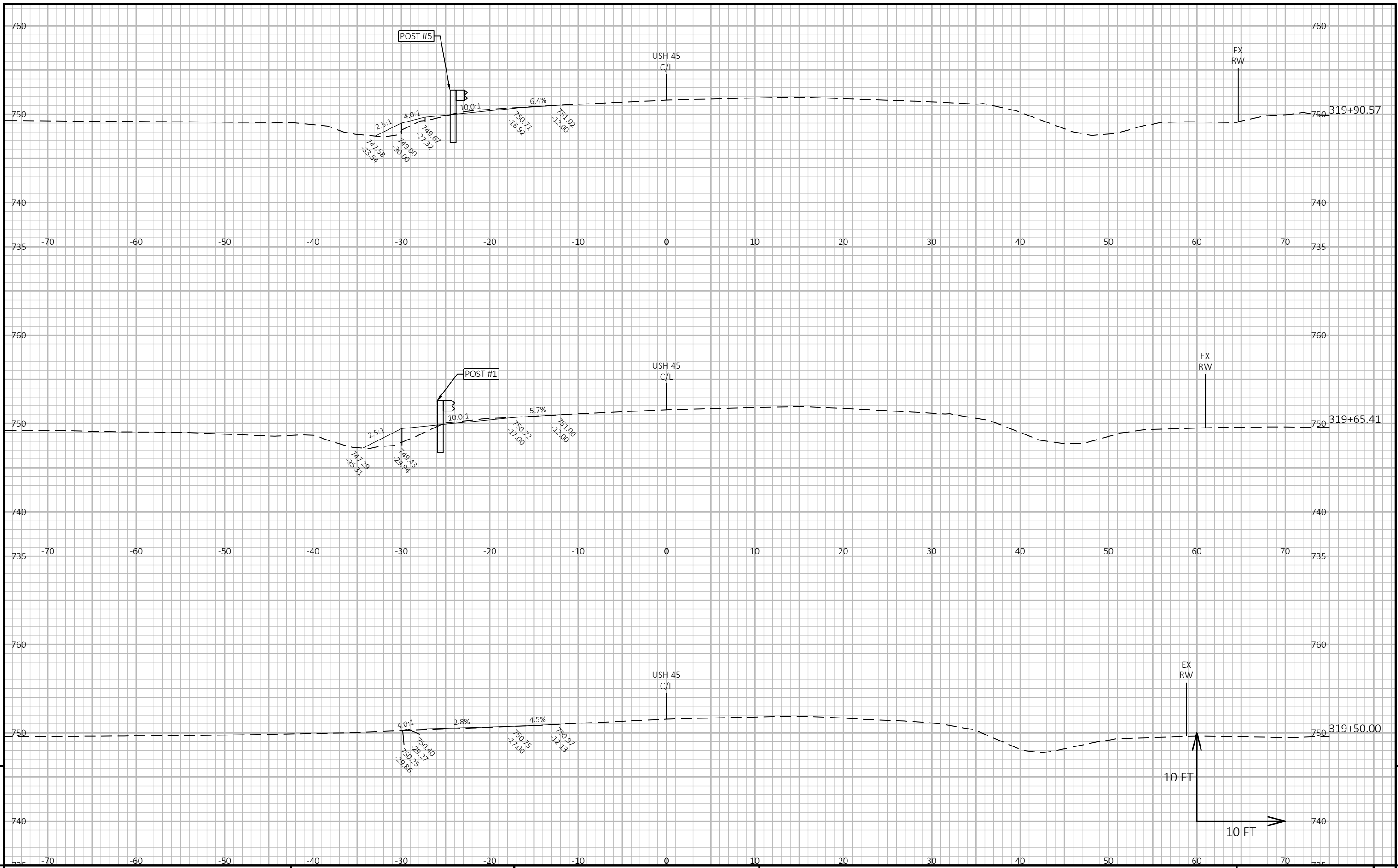


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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: CURVE 28 (319+65 - 323+87 BG LT) SHEET E

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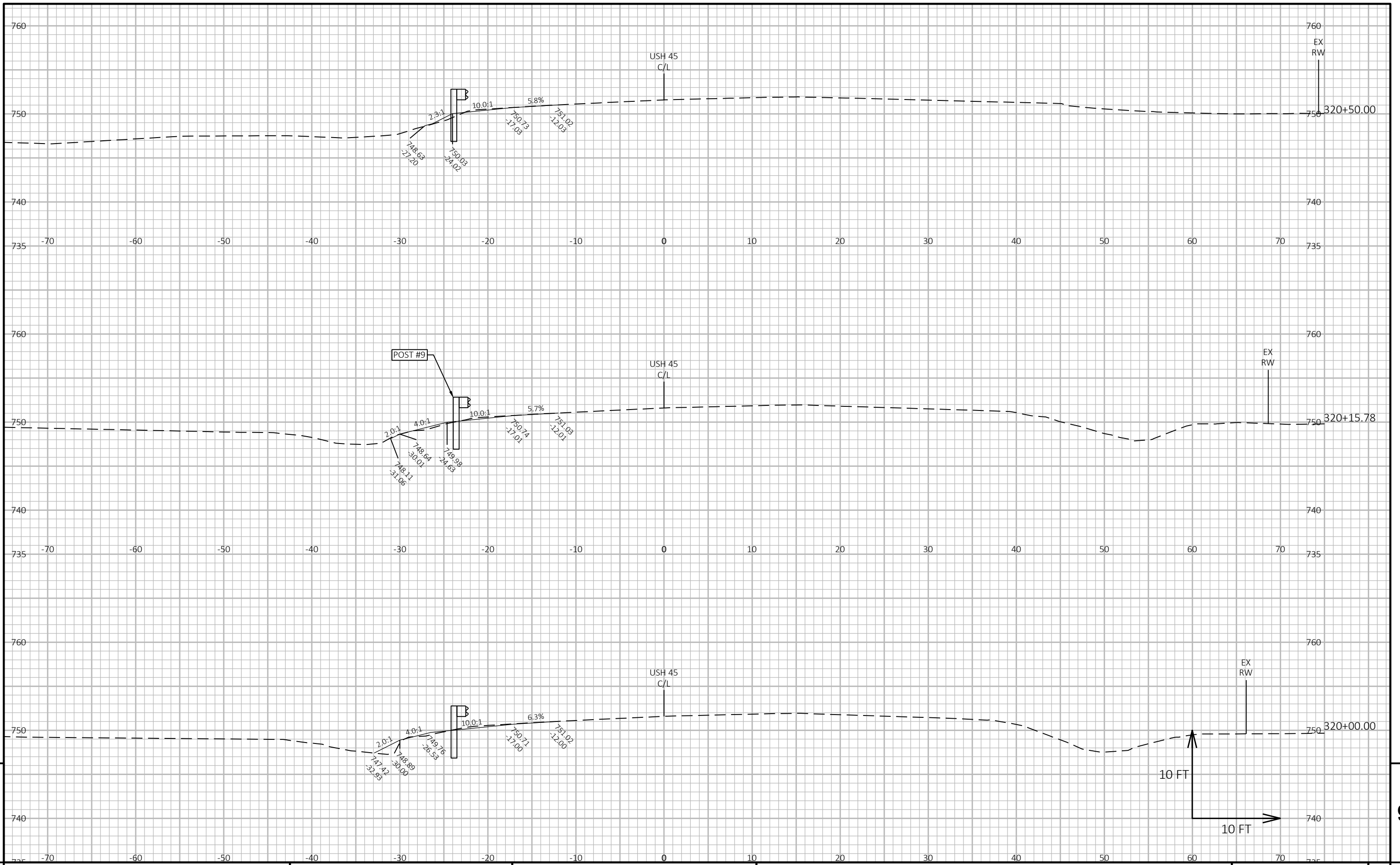


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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: CURVE 28 (319+65 - 323+87 BG LT)	SHEET	E
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 PLOT NAME :
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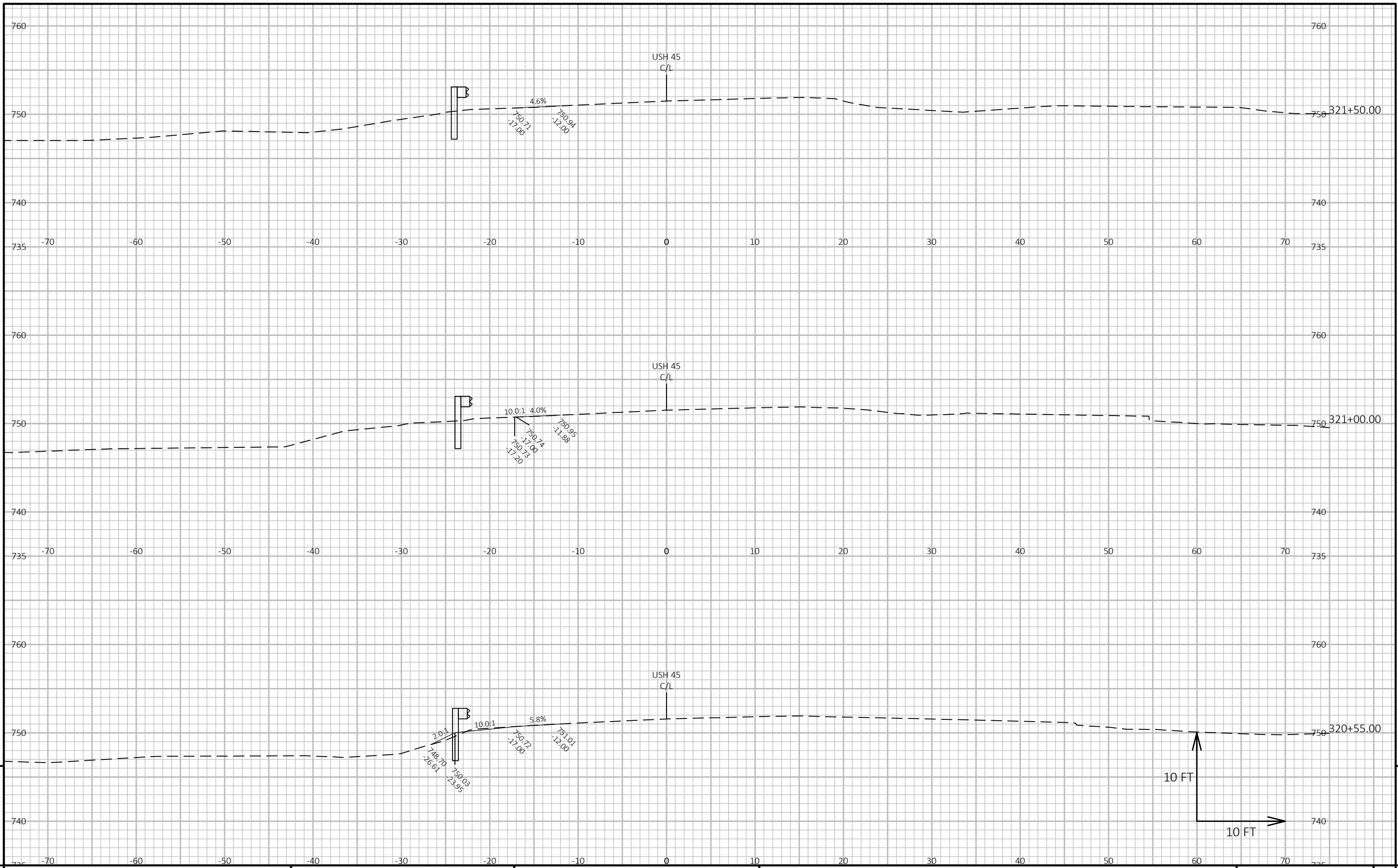


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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: CURVE 28 (319+65 - 323+87 BG LT)	SHEET	E
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FILE NAME : N:\PDS\C3D\41102800\Z_ALEX'S C3D FOLDER\41102800\SHEETSPLAN\090201-XS.DWG PLOT DATE : 10/25/2023 2:27 PM PLOT BY : HOLLAND, DREW M PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

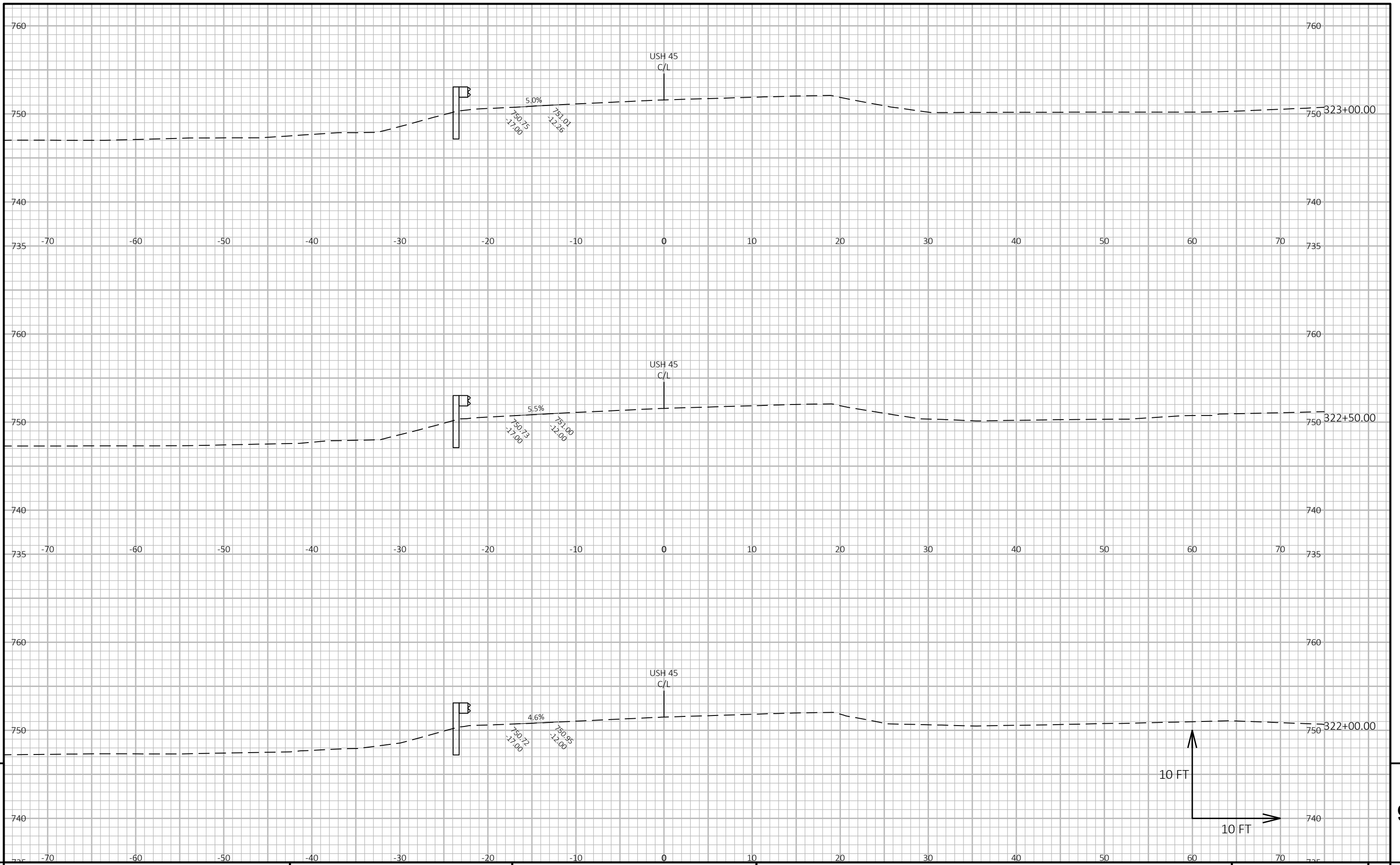


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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: CURVE 28 (319+65 - 323+87 BG LT) SHEET E

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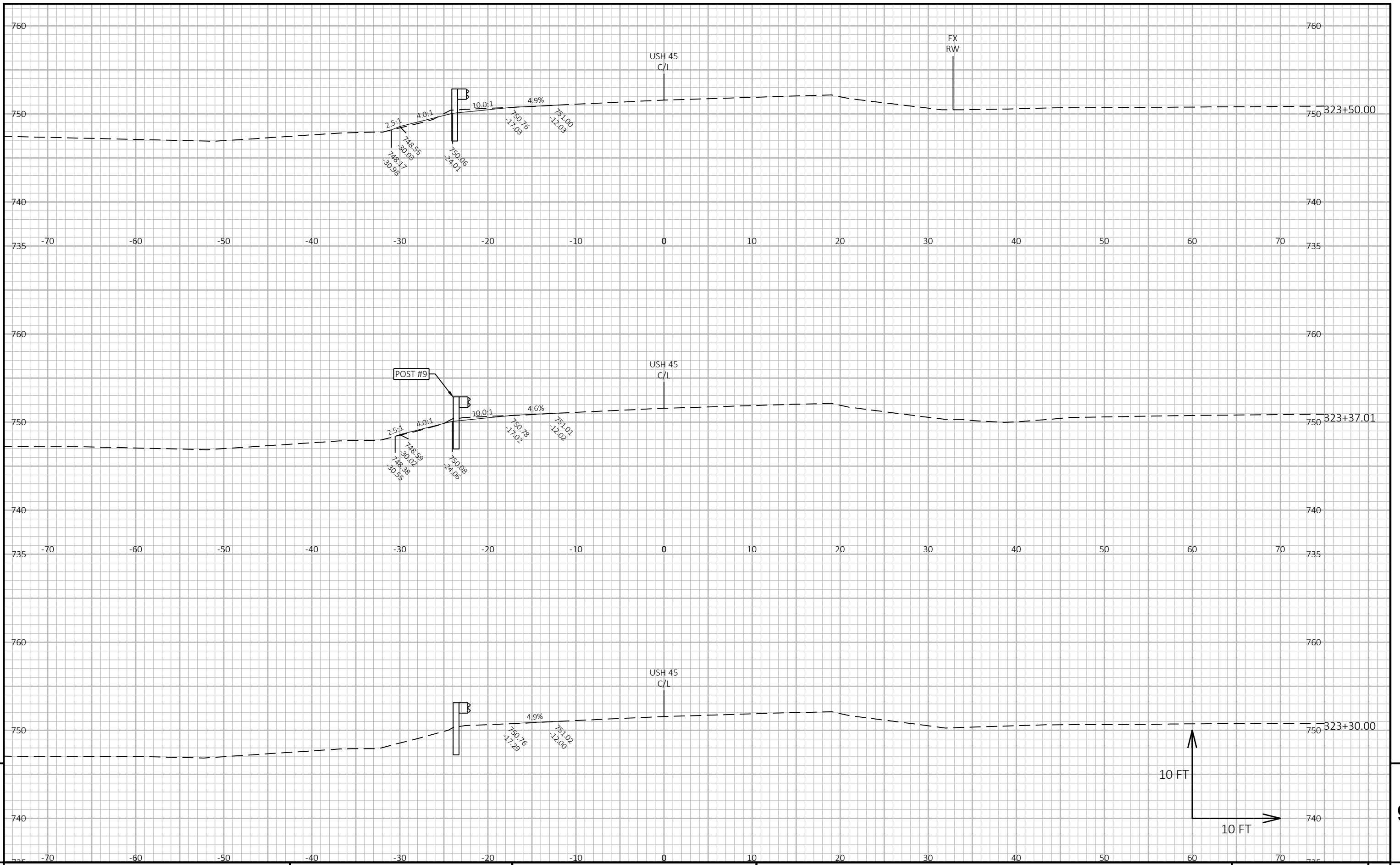
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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: CURVE 28 (319+65 - 323+87 BG LT) SHEET E

FILE NAME : N:\PDS\C3D\41102800\Z_ALEX'S C3D FOLDER\41102800\SHEETSPLAN\090201-XS.DWG PLOT DATE : 10/25/2023 2:27 PM PLOT BY : HOLLAND, DREW M PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

LAYOUT NAME - 090253-xs

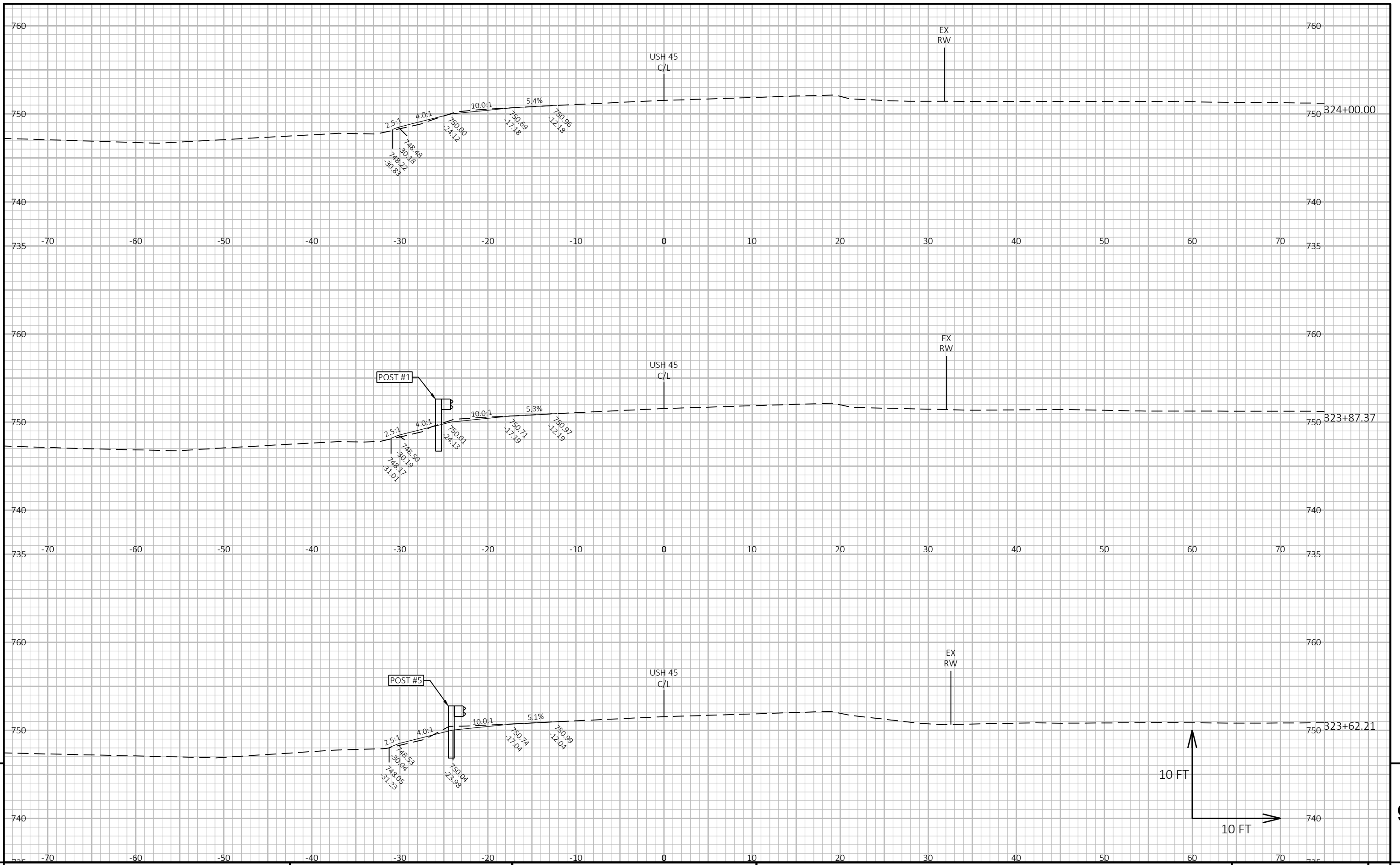


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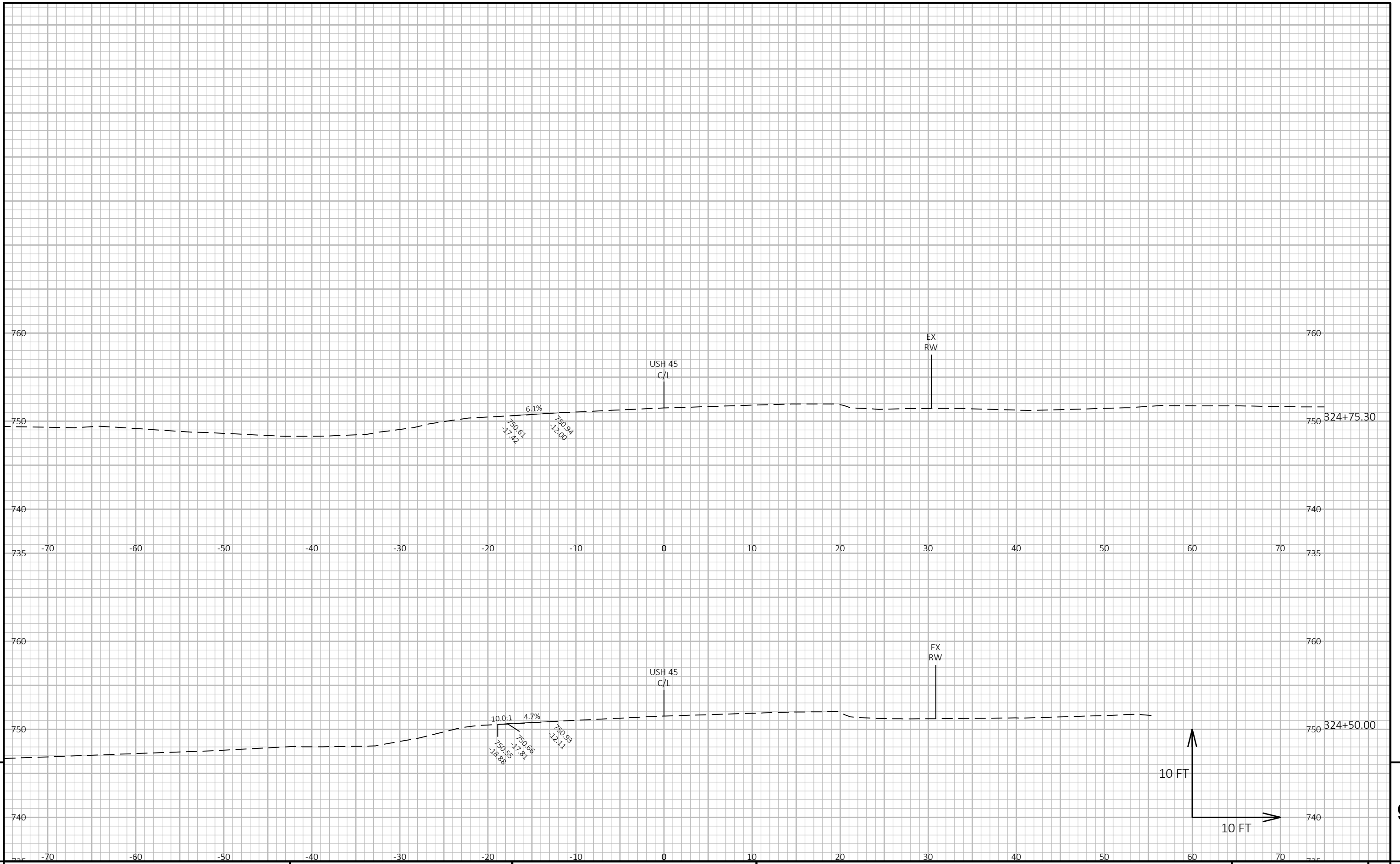
PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: CURVE 28 (319+65 - 323+87 BG LT)	SHEET	E
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FILE NAME : N:\PDS\C3D\41102800\Z_ALEX'S C3D FOLDER\41102800\SHEETSPLAN\090201-XS.DWG
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 PLOT NAME :
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 WISDOT/CADD SHEET 49



PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: CURVE 28 (319+65 - 323+87 BG LT) SHEET 9

FILE NAME : N:\PDS\C3D\41102800\Z_ALEX'S C3D FOLDER\41102800\SHEETSPLAN\090201-XS.DWG PLOT DATE : 10/25/2023 2:28 PM PLOT BY : HOLLAND, DREW M PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

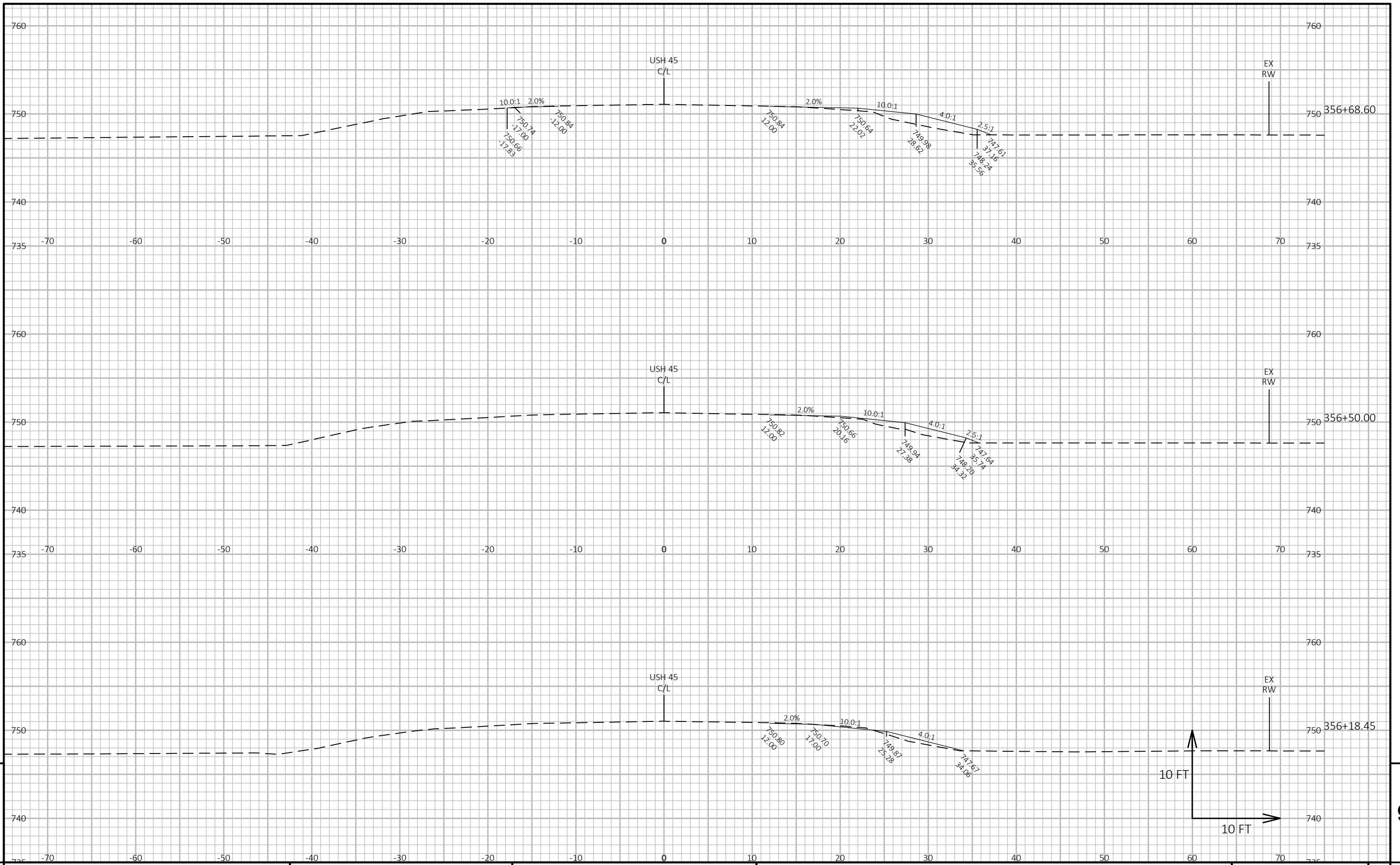


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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: CURVE 28 (319+65 - 323+87 BG LT)	SHEET	E
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 PLOT NAME :
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 WISDOT/CADD SHEET 49

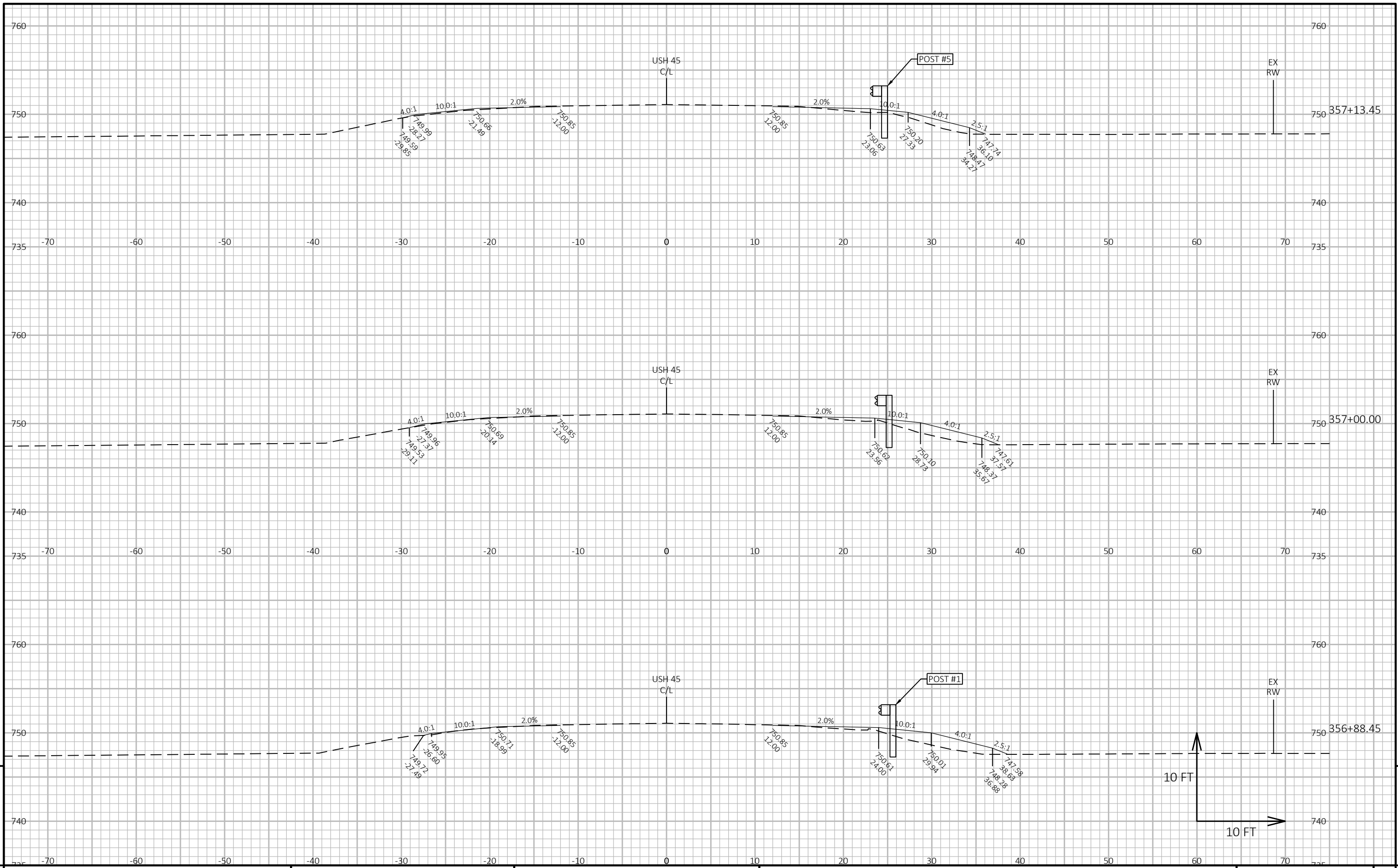


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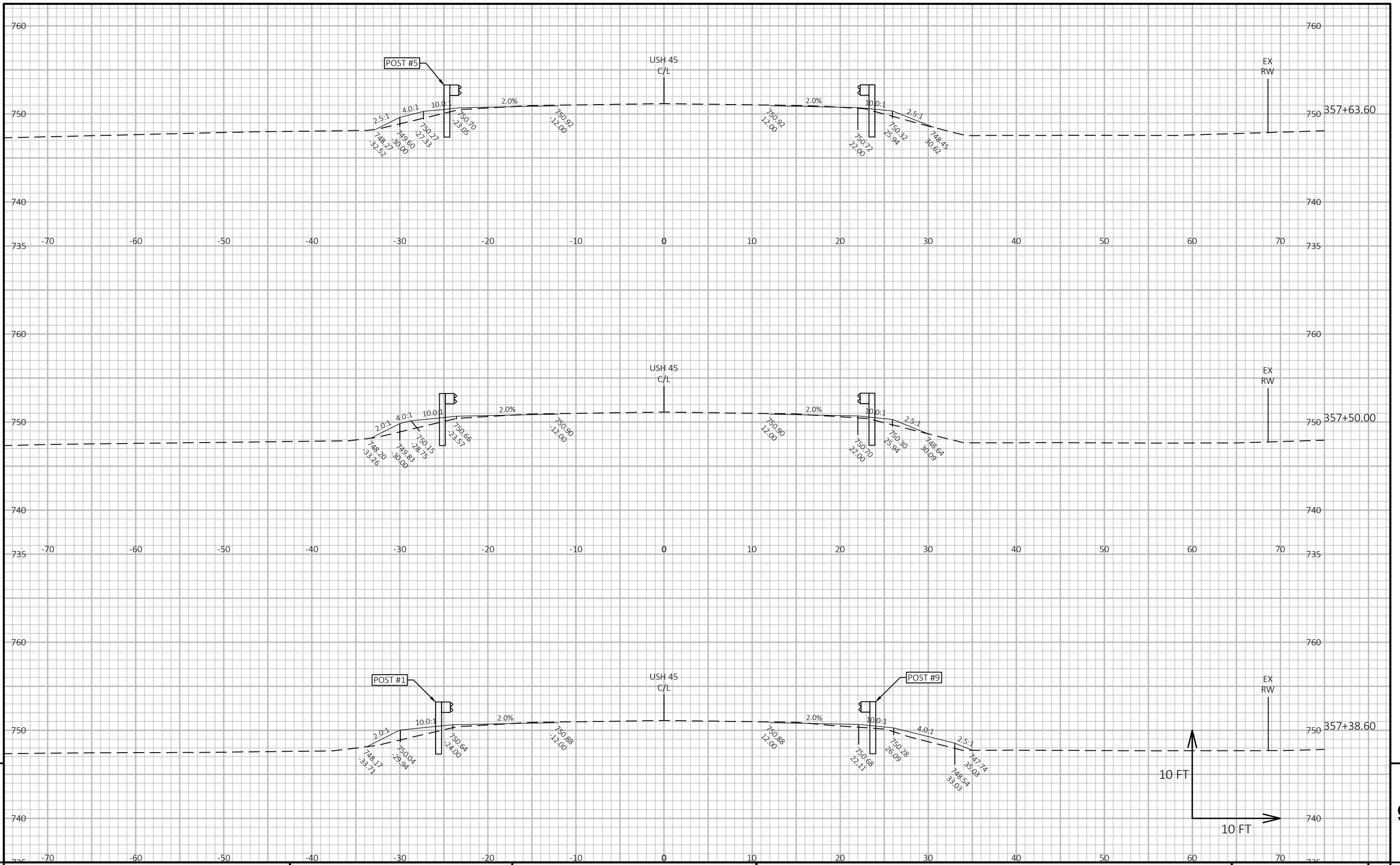
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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0669 SHEET E

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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0669 SHEET 9

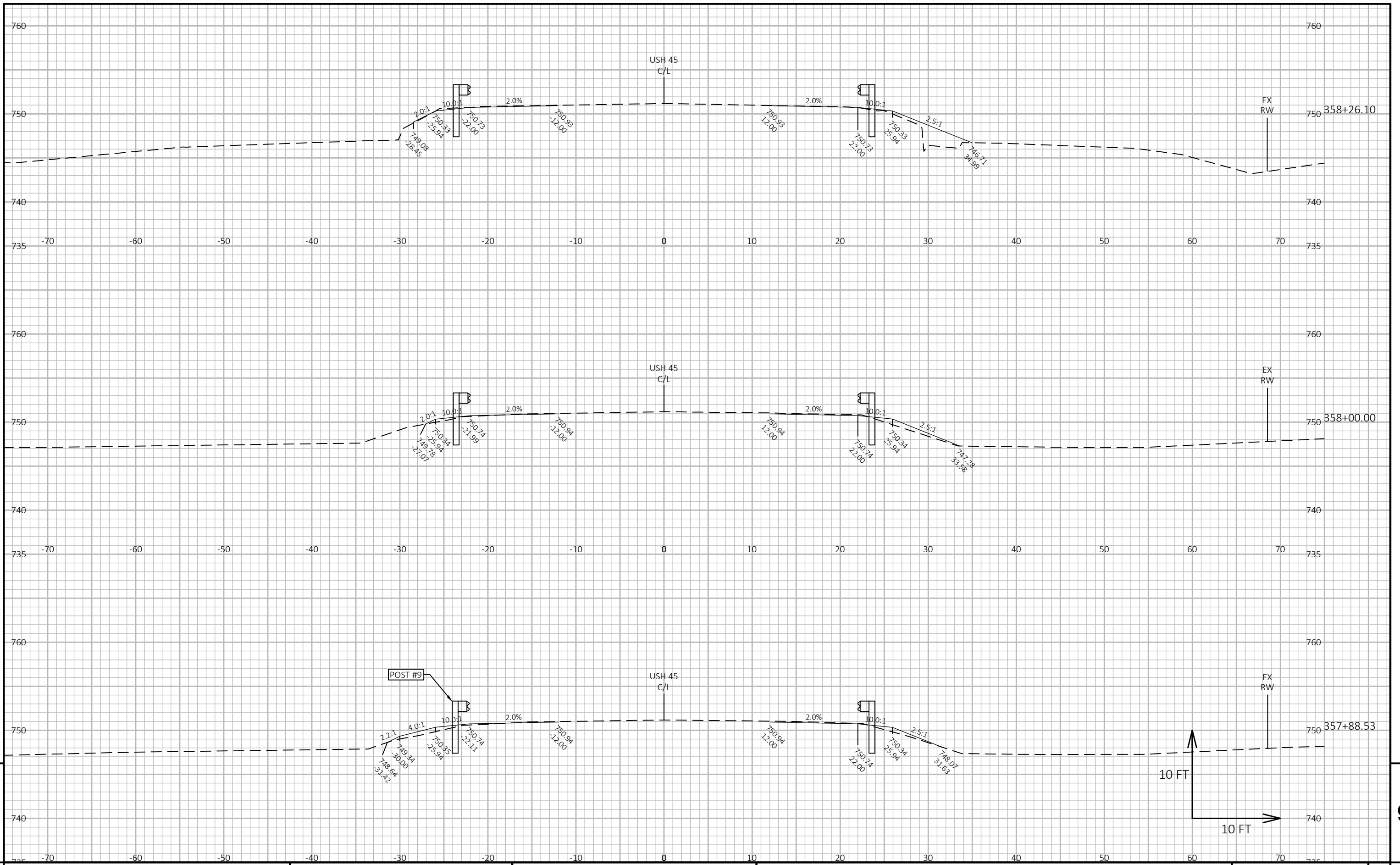


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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0669 SHEET E

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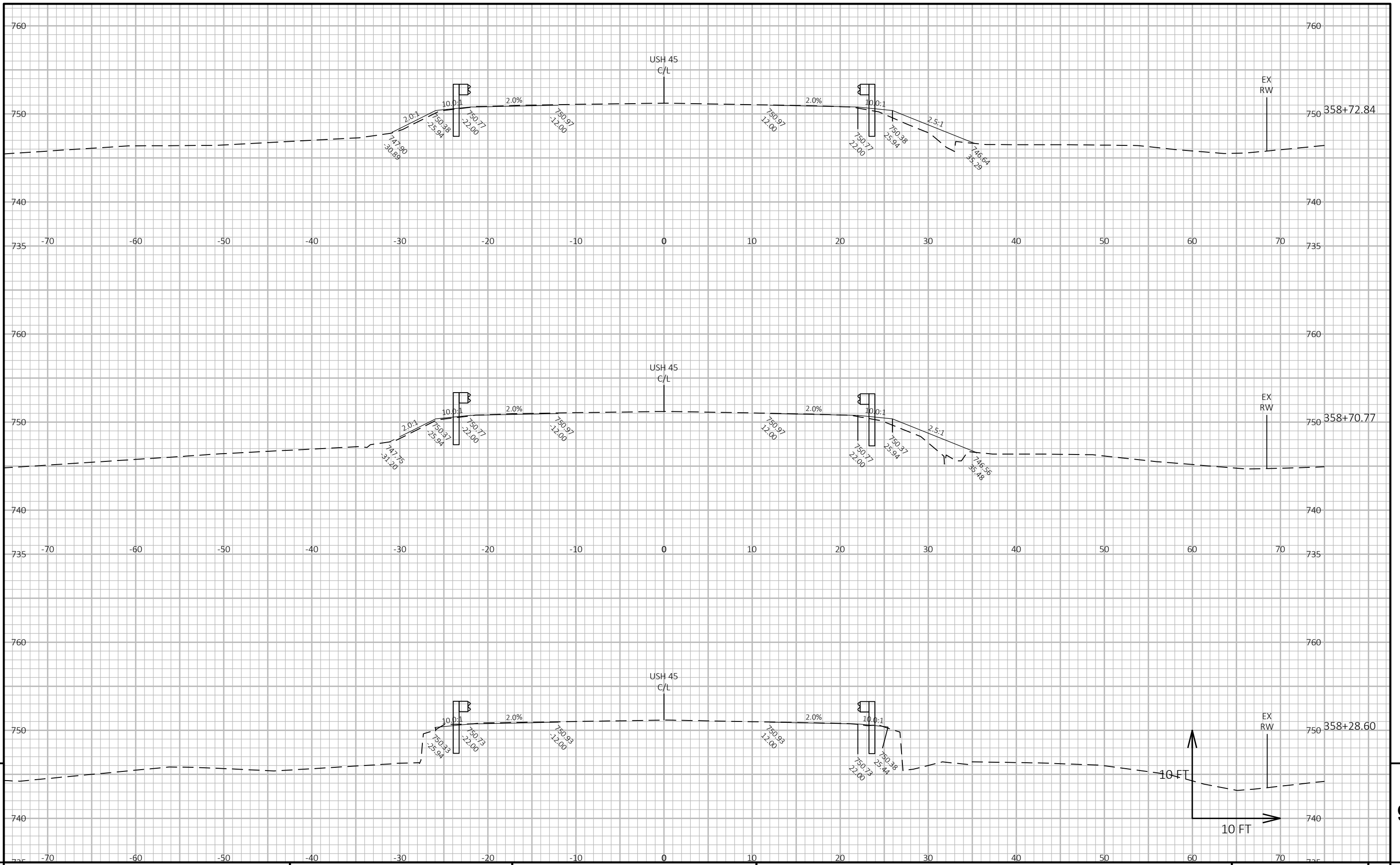
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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0669 SHEET E

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LAYOUT NAME - 090260-xs

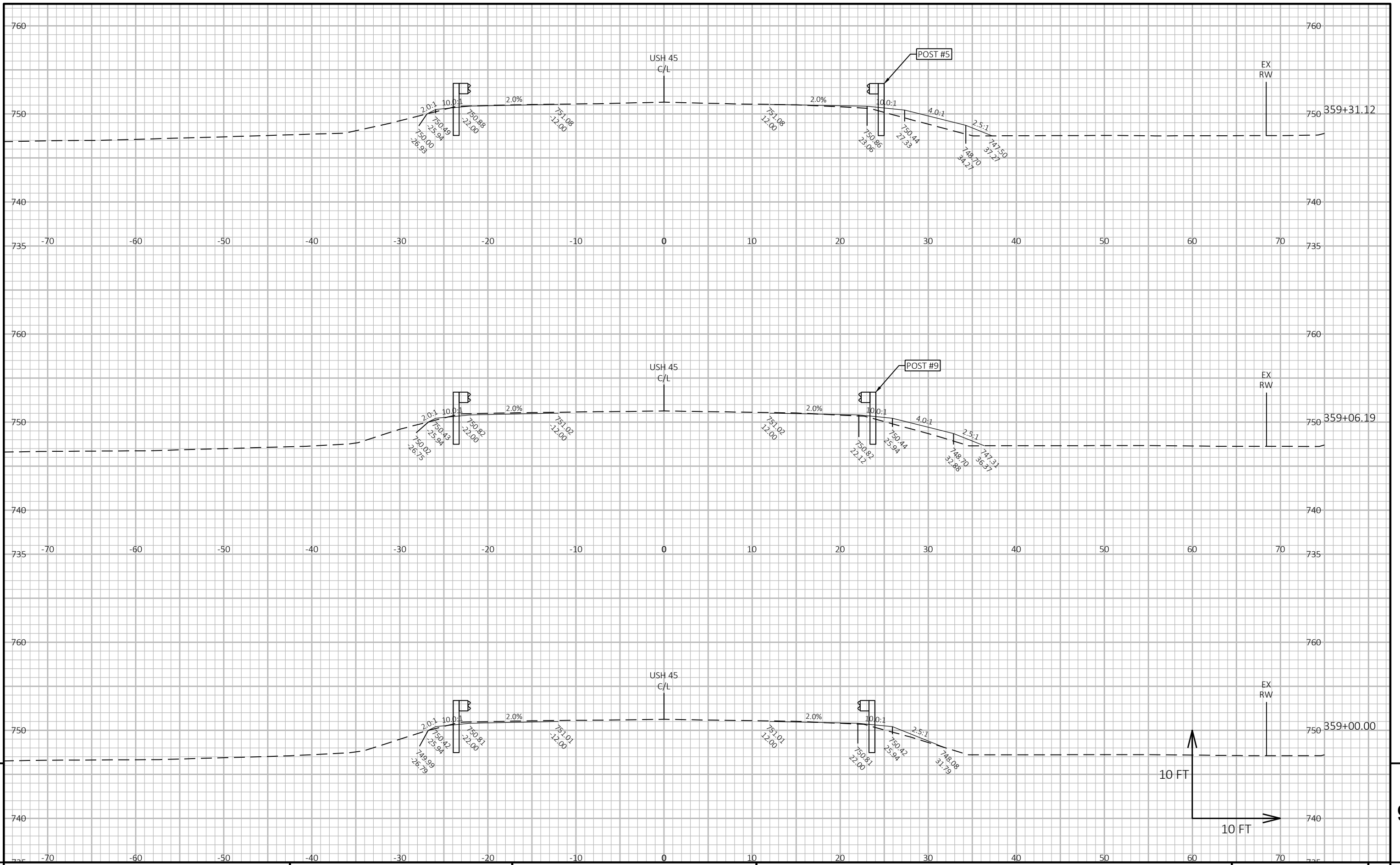


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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0669 SHEET E

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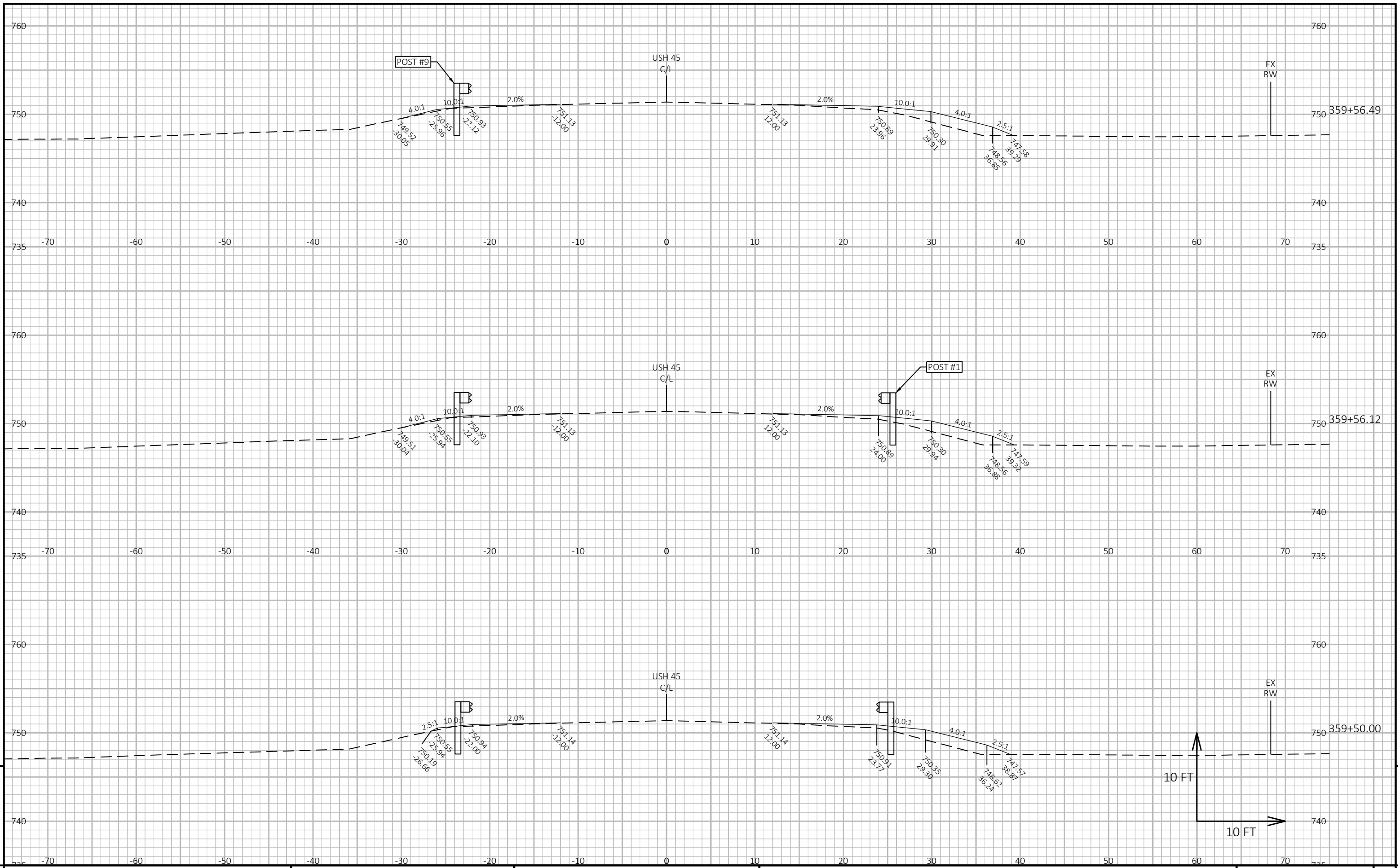


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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0669 SHEET E

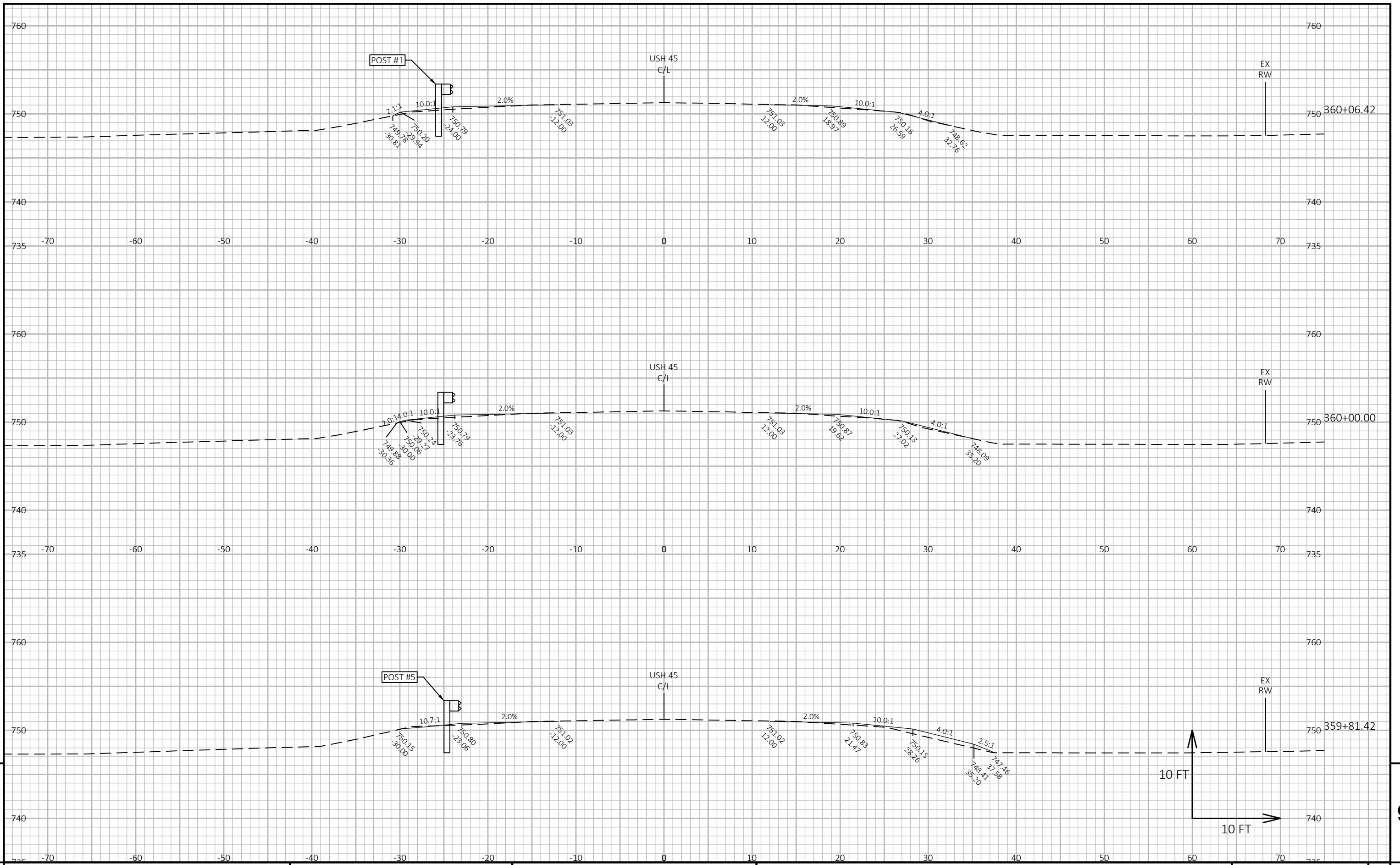
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PROJECT NO: 4110-28-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: B-20-0669	SHEET	E
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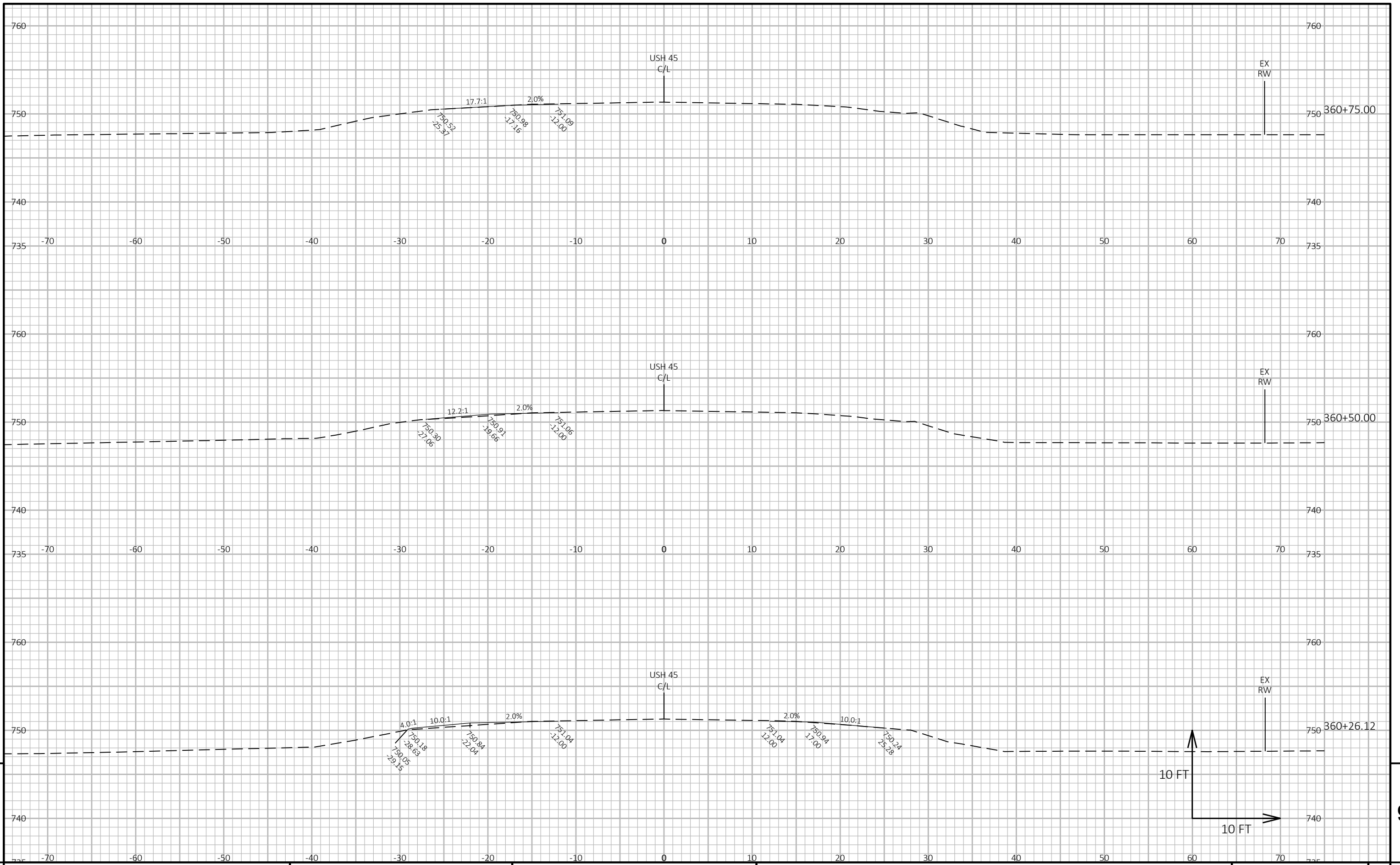


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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0669 SHEET E

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PROJECT NO: 4110-28-71 HWY: USH 45 COUNTY: FOND DU LAC CROSS SECTIONS: B-20-0669 SHEET E

FILE NAME : N:\PDS\C3D\41102800\Z_ALEX'S C3D FOLDER\41102800\SHEETSPLAN\090201-XS.DWG PLOT DATE : 10/25/2023 2:29 PM PLOT BY : HOLLAND, DREW M PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49



Wisconsin Department of Transportation

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