

RHI

PROJECT ID: 9080-14-61

WITH: 9080-14-73

COUNTY: VILAS

APRIL 2020

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 = 68

28





DESIGN DESIGNATION 9080-14-61

A.A.D.T.	2019	=	4,500
A.A.D.T.	2039	=	5,600
D.H.V.		=	672
D.D.		=	61 / 39
T.		=	11.0 %
DESIGN SPEED		=	55 MPH
ESALS		=	927,200

CONVENTIONAL SYMBOLS

PLAN

CORPORATE LIMITS

PROPERTY LINE

LOT LINE

LIMITED HIGHWAY EASEMENT

EXISTING RIGHT OF WAY

PROPOSED OR NEW R/W LINE

SLOPE INTERCEPT

REFERENCE LINE

EXISTING CULVERT

PROPOSED CULVERT (Box or Pipe)

COMBUSTIBLE FLUIDS

MARSH AREA

WOODED OR SHRUB AREA

PROFILE

GRADE LINE

ORIGINAL GROUND

MARSH OR ROCK PROFILE (To be noted as such)

SPECIAL DITCH

GRADE ELEVATION

CULVERT (Profile View)

UTILITIES

ELECTRIC

FIBER OPTIC

GAS

SANITARY SEWER

STORM SEWER

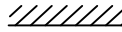
TELEPHONE

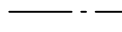
WATER

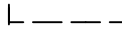
UTILITY PEDESTAL

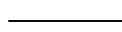
POWER POLE

TELEPHONE POLE

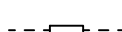


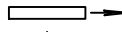




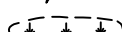


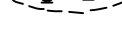


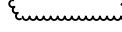


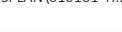






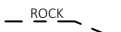


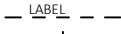


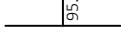


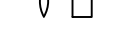




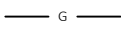


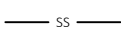


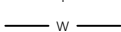


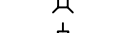


















STATE OF WISCONSIN

DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

WOODRUFF - EAGLE RIVER

CTH O TO CTH H CULVERTS

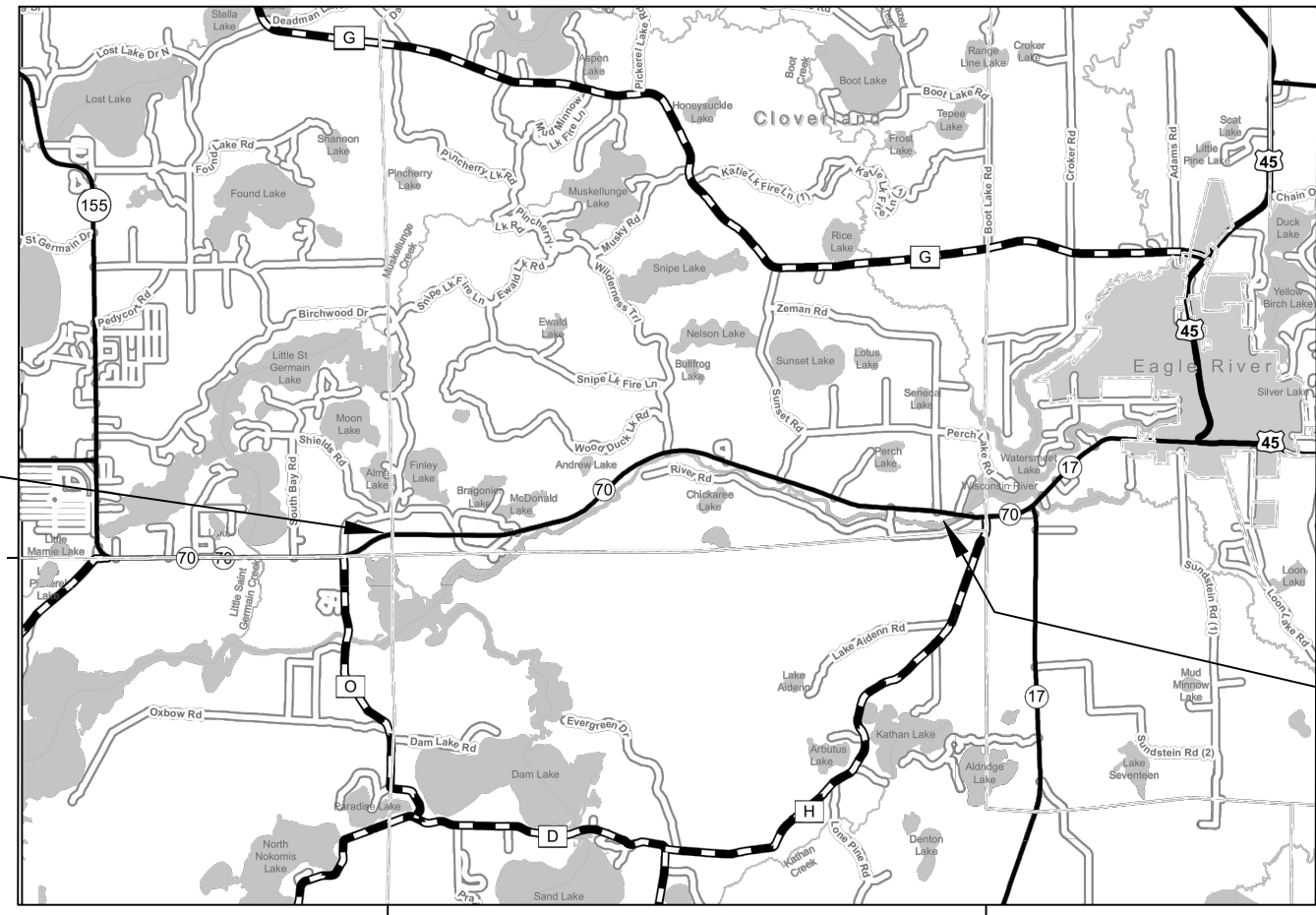
STH 70

VILAS

STATE PROJECT NUMBER

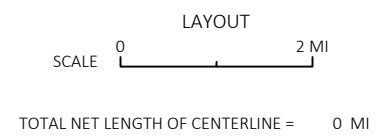
9080-14-61

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
9080-14-61	WISC 2020154	1



BEGIN PROJECT
STA 248+00

END PROJECT
STA 552+00



HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), VILAS 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.

ELEVATIONS SHOWN ON THE PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) (2012).

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	COLEMAN ENGINEERING
Designer	BARBARA HETH
Project Manager	DAN ERVA
Regional Examiner	CHERYL SIMON
Regional Supervisor	DAN ERVA

APPROVED FOR THE DEPARTMENT

DATE: 2/17/2020

(Signature)

E

GENERAL NOTES

STH 70 CENTERLINE ALIGNMENT IS A BEST FIT OF THE EXISTING CENTERLINE.

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

UTILITIES

FRONTIER NORTH INC
1851 N 14TH AVE
WAUSAU, WI 54401
CALVIN KLADE
Calvin.klade@ftr.com
715-847-1525 OFFICE
715-573-2110 CELL

WISCONSIN PUBLIC SERVICE
PO BOX 1166
WAUSAU, WI 54402
DON LUTZOW
Donald.lutzow@wisconsinpublicservice.com
715-848-7487 OFFICE
715-493-7802 CELL

WISCONSIN PUBLIC SERVICE
2027 NAVAJO STREET, PO BOX 160
RHINELANDER, WI 54501
CHRIS GILMAN
chris.gilman@wisconsinpublicservice.com
715-369-7133 OFFICE
715-490-4153 CELL

COMMUNICATION LINE

ELECTRICITY

GAS/PETROLEUM

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

NORTHERN REGION HEADQUARTERS
107 SUTLIFF
RHINELANDER, WI 54501
JON SIMONSEN
Jonathan.Simonsen@wi.gov
(715) 367-1936

RUNOFF COEFFICIENT TABLE

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

9080-14-61
TOTAL PROJECT AREA = 9.2 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 5.9ACRES

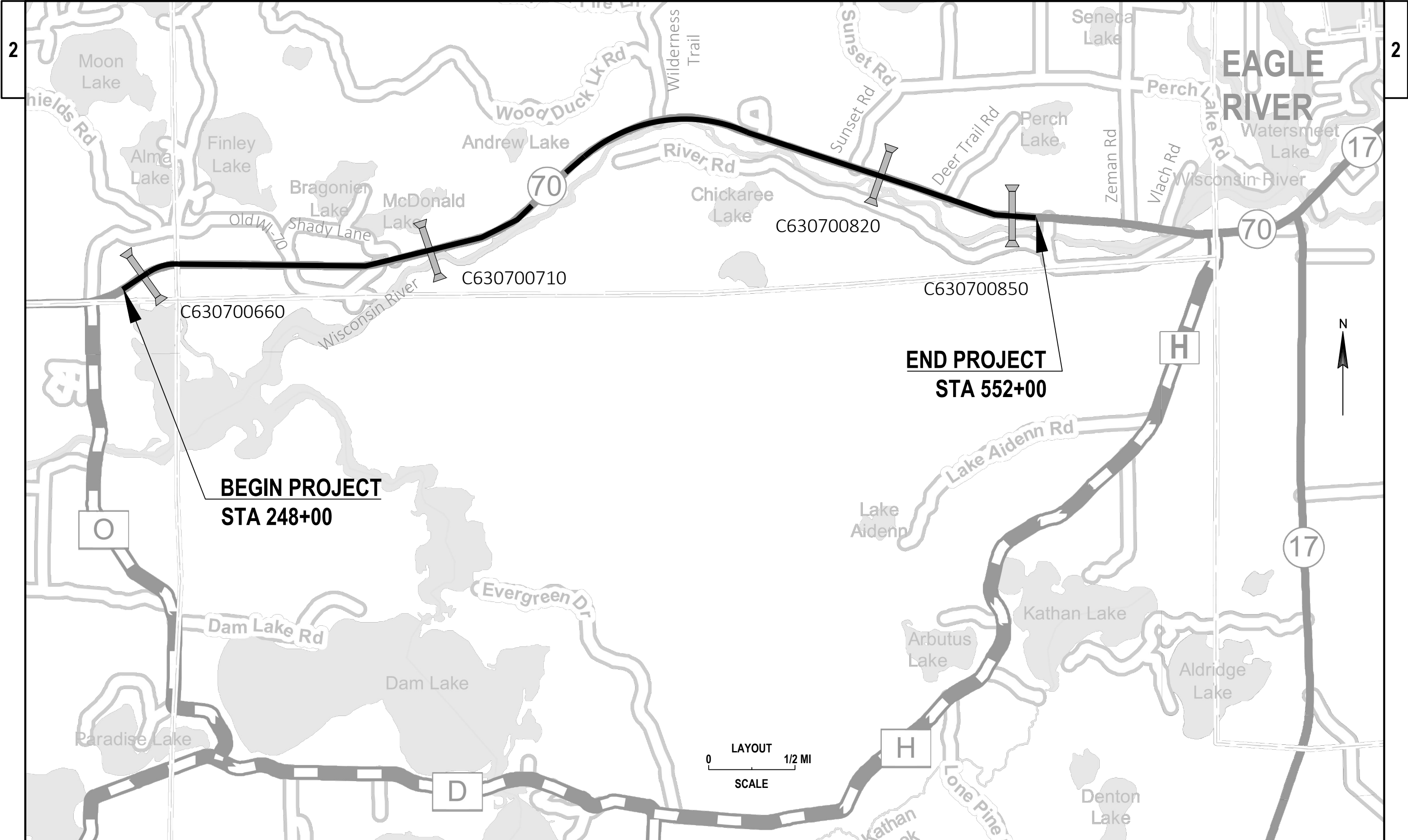


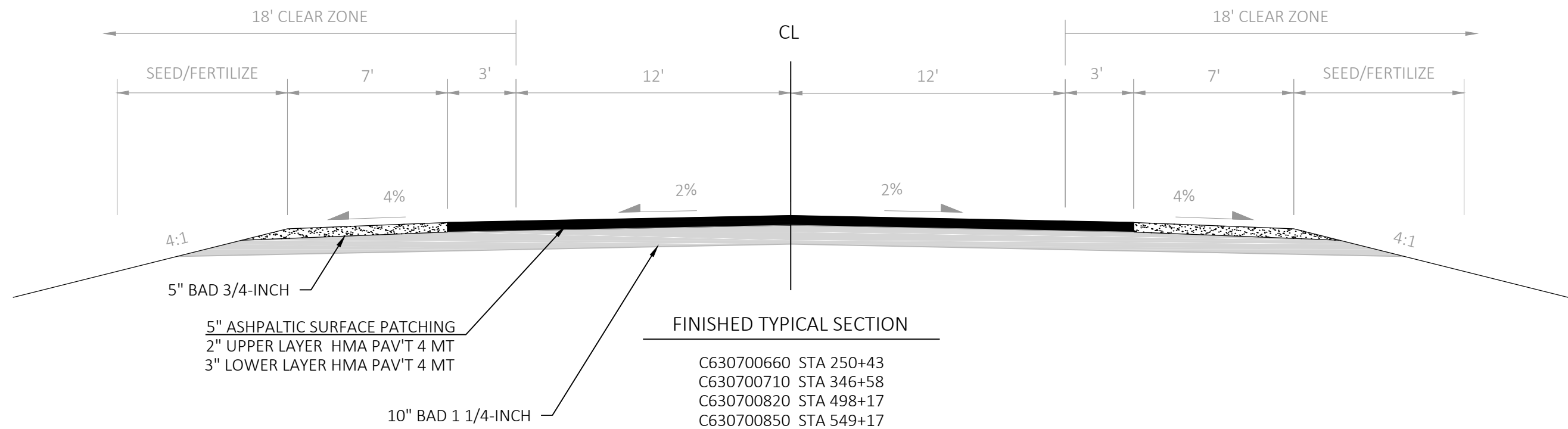
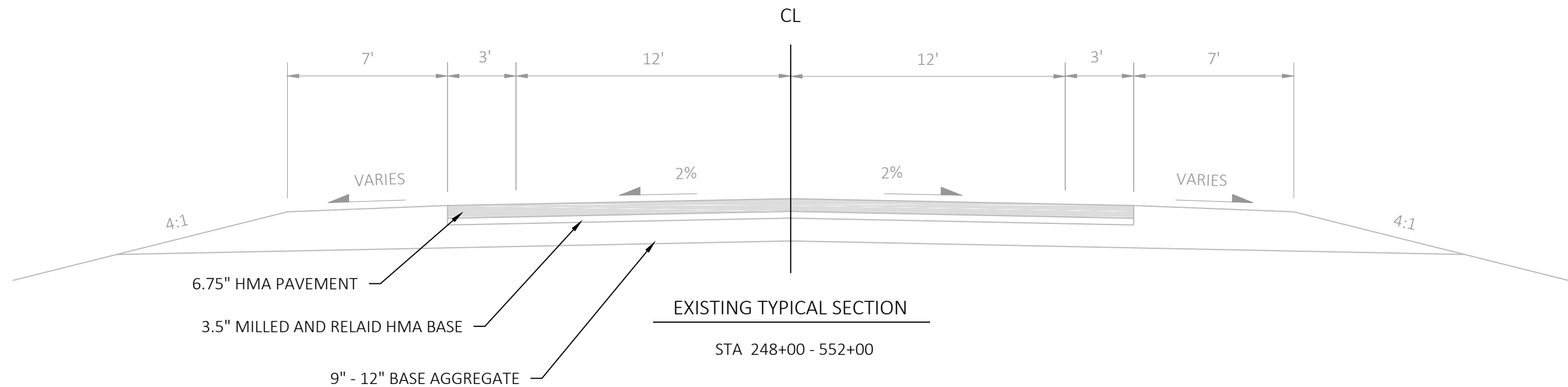
Dial **811** or (800)242-8511

www.DiggersHotline.com

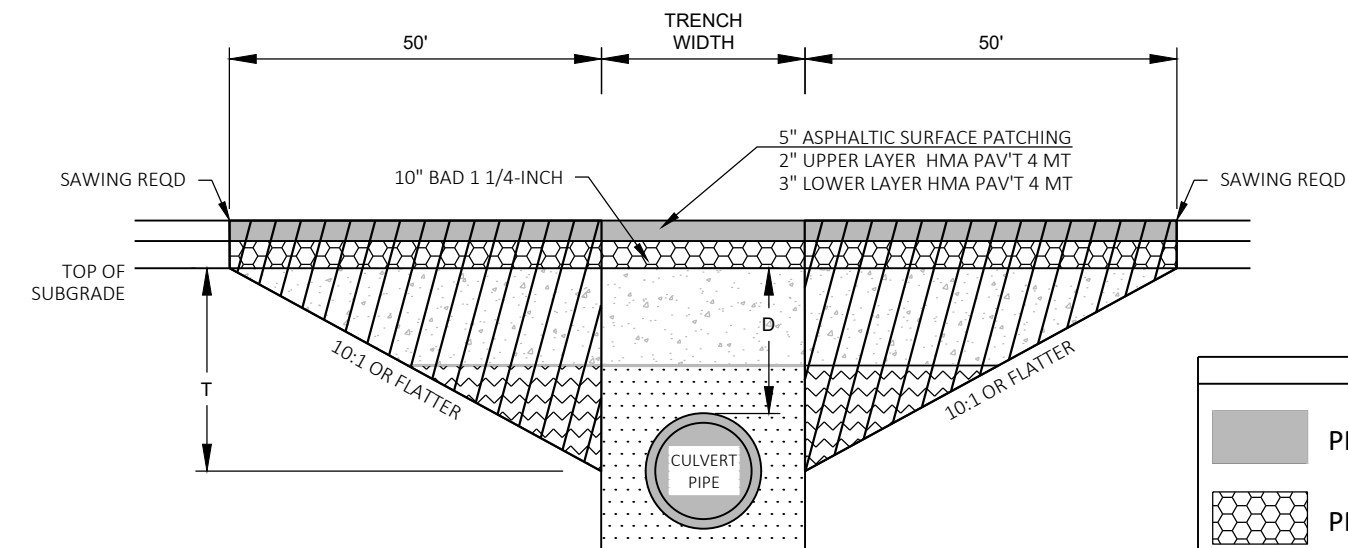
AS-BUILT PLANS

9080-15-60 2008
9080-05-71 1993
9080-08-70 1993 B-63-17
T024-1(1) 1948
F.A. PROJECT 146(2) 1941



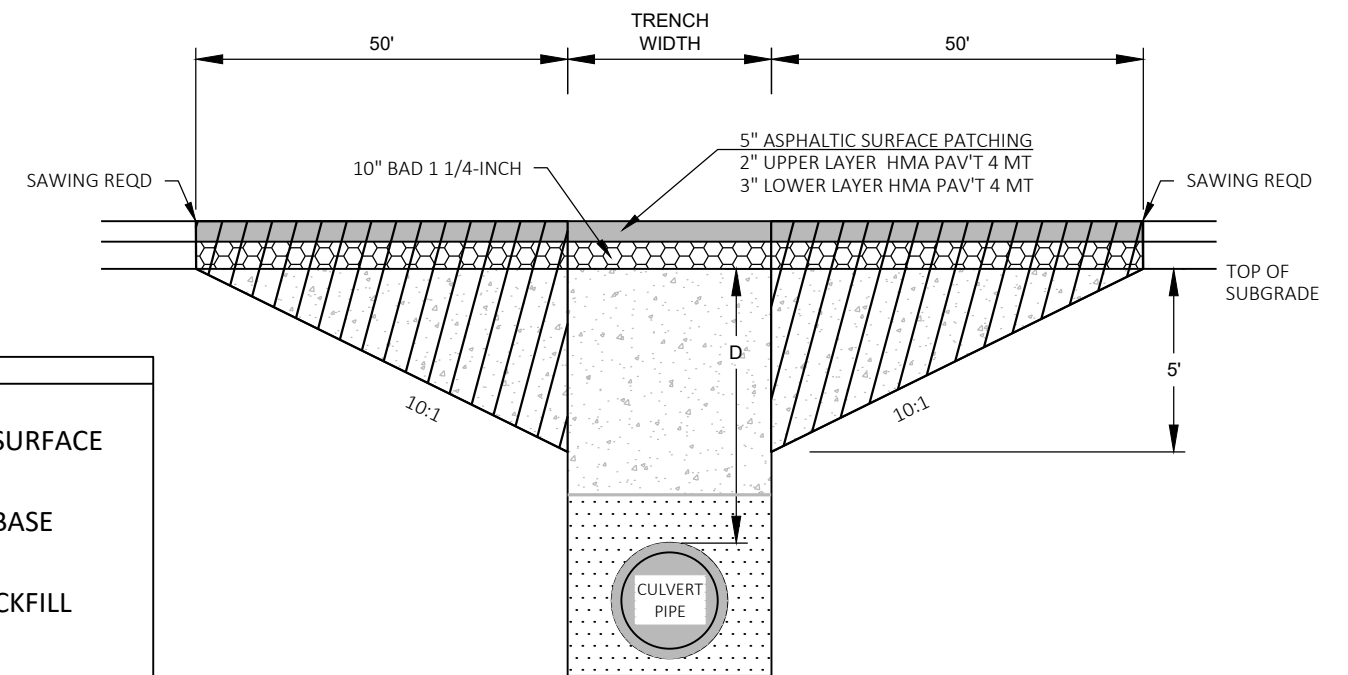


2



TRANSITION CUT DEPTH (T) = THE LESSER OF
DEPTH TO CENTER OF PIPE OR 5 FT.
DO NOT EXTEND TRANSITION CUT BELOW HORIZONTAL CENTER OF PIPE.

DEPTH $D < 6$ FT



DEPTH $D \geq 6$ FT

CULVERT PIPE TRANSITION

CULVERT ID	CL STA	D DEPTH (FT)	PIPE DIA (IN)	PIPE TYPE
C630700660	250+43	3.8	48	CPRC III
C630700710	346+58	6.6	24	CPRC III
C630700820	498+17	2.0*	24	CPRC IV
C630700850	549+17	2.6	30	CPRC III

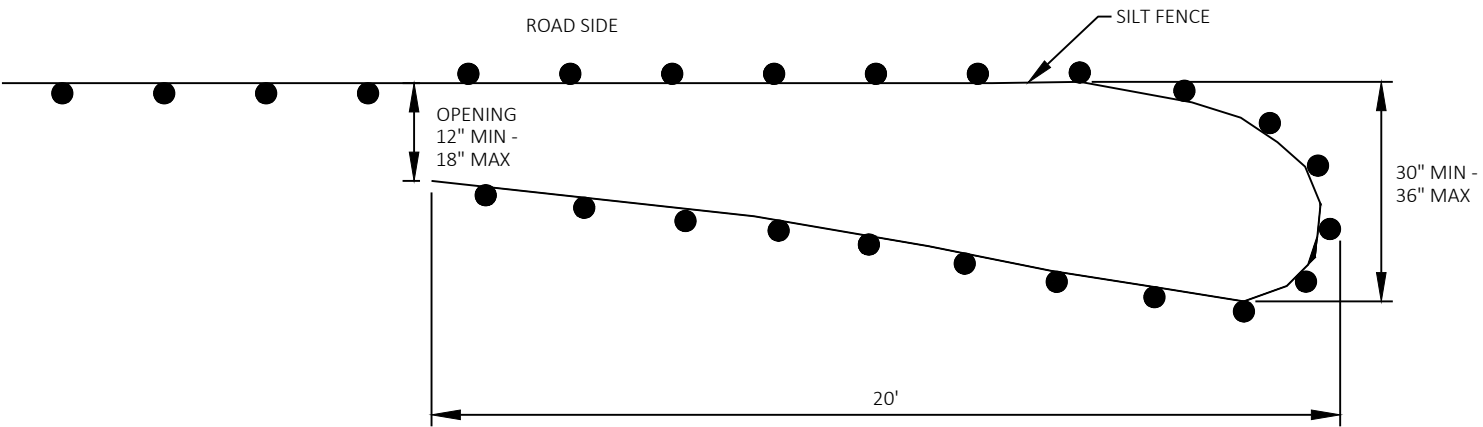
*REDUCED SUBGRADE COVER

NOTES

TRANSITION CUT IS PAID AS EXCAVATION COMMON.

TRANSITION CUT WIDTH IS FROM SUBGRADE SHOULDER POINT TO SUBGRADE SHOULDER POINT.

BACKFILL THE TRANSITION CUT AREAS WITH FOUNDATION AND TRENCH BACKFILL AS SPECIFIED IN STANDARD SPEC 520.

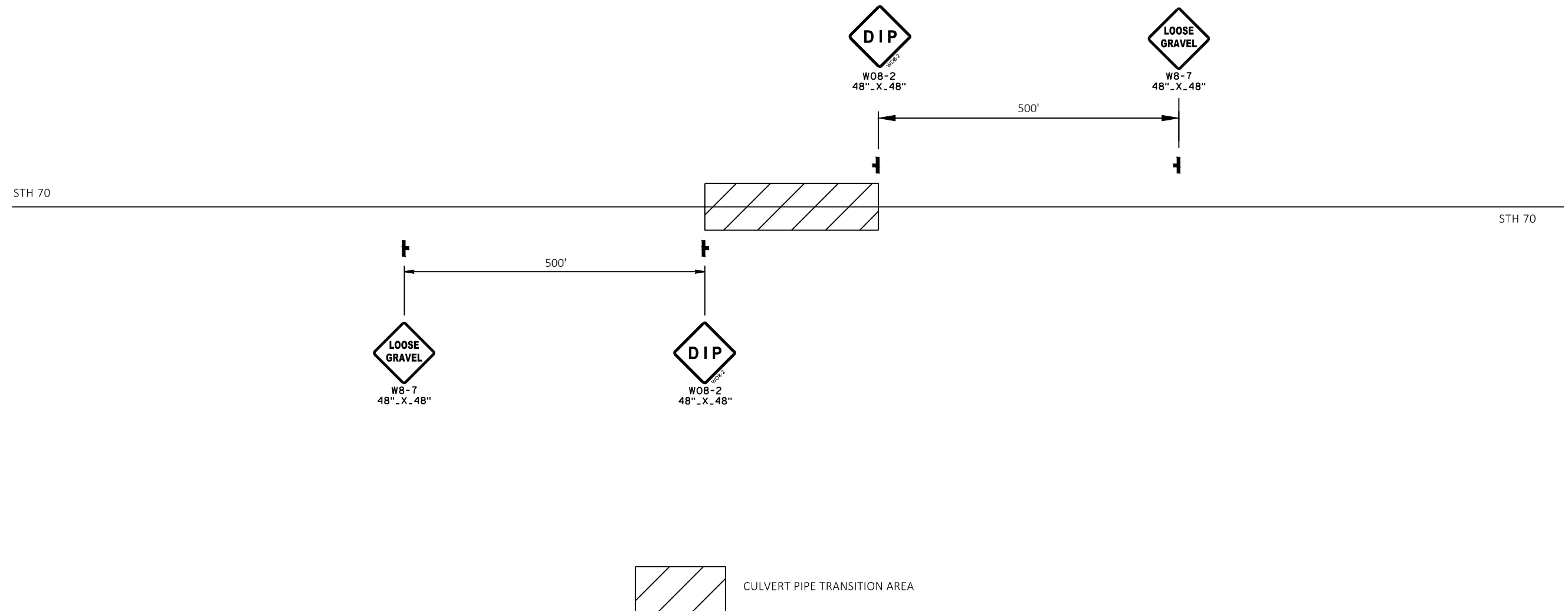


PLAN VIEW

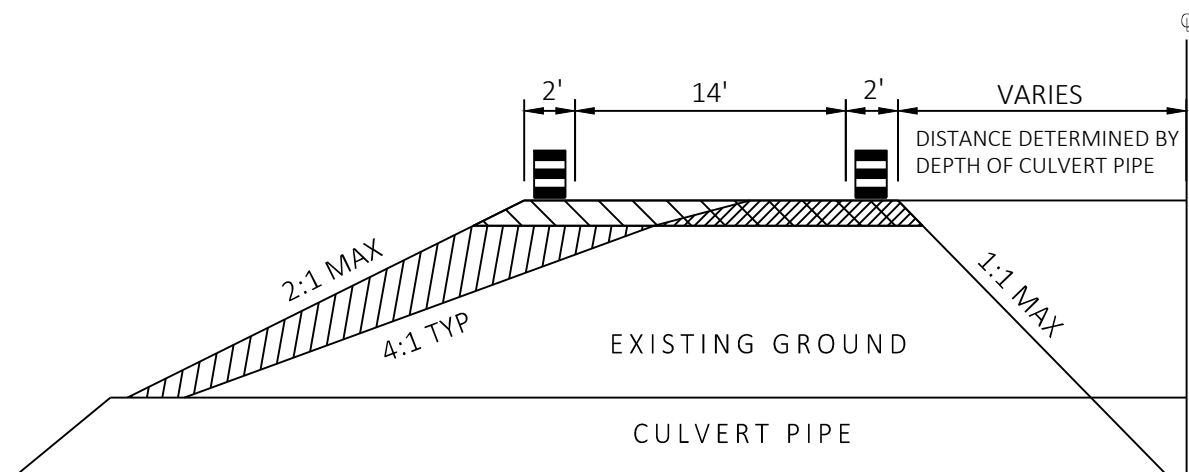
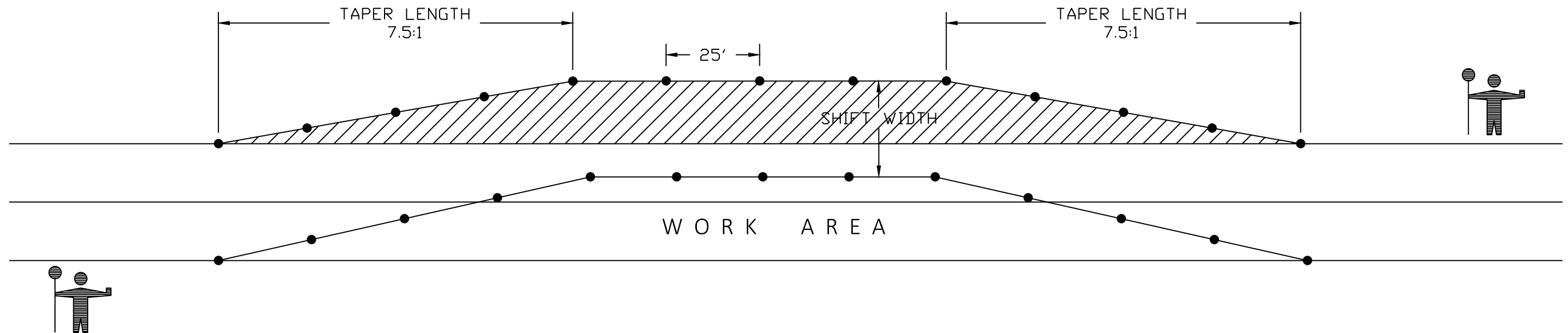
- GENERAL NOTES:
- FOR THE TURN-AROUND SILT FENCE AND POSTS
- PLACE POSTS ON THE OUTSIDE OF THE TURN-AROUND
 - TRENCH SILT FENCE ACCORDING TO SILT FENCE REQUIREMENTS

TEMPORARY SMALL ANIMAL TURN-AROUND

STA 250+43 C630700660



TEMPORARY SIGNING AT CULVERT PIPE REPLACEMENT



NOTES

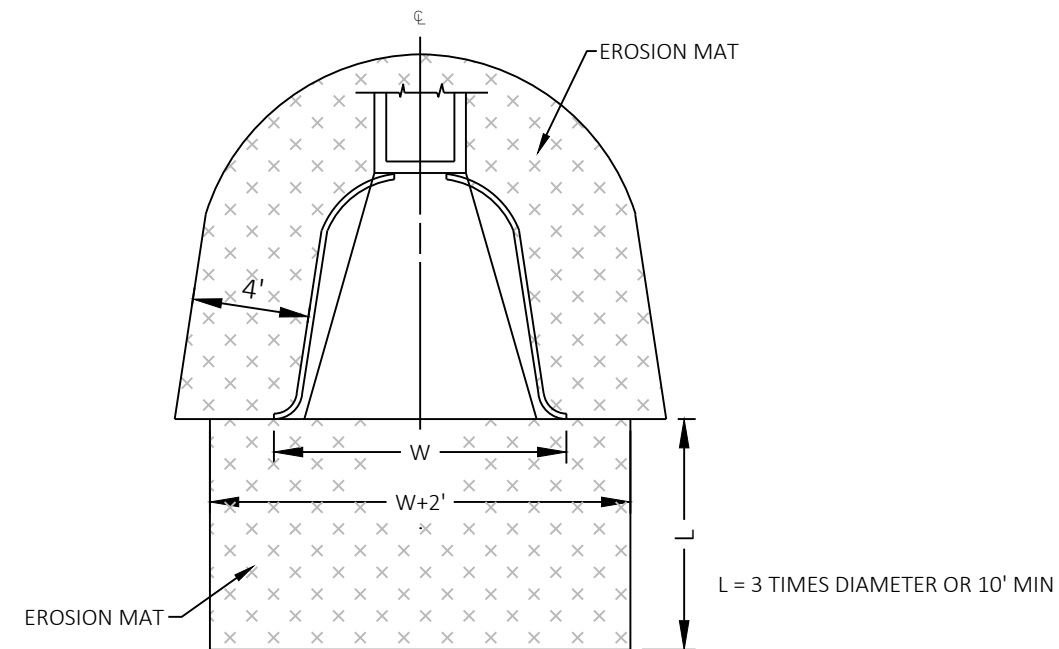
1. EXTEND TAPERS ACROSS THE SHOULDER
UNLESS DOING SO WOULD GREATLY CONFLICT WITH THE WORK OPERATION
2. WHEN WORK IS NOT IN PROGRESS:
 - REMOVE OR COVER ALL LANE CLOSURE SIGNS
 - MOVE ALL DEVICES A SAFE DISTANCE OUTSIDE THE SHOULDER
 - RESTORE LANES TO A SAFE OPERATING CONDITION
3. USE WITH SDD "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION"

KEY

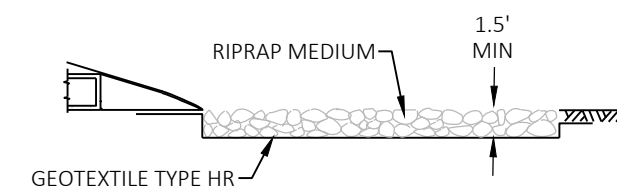
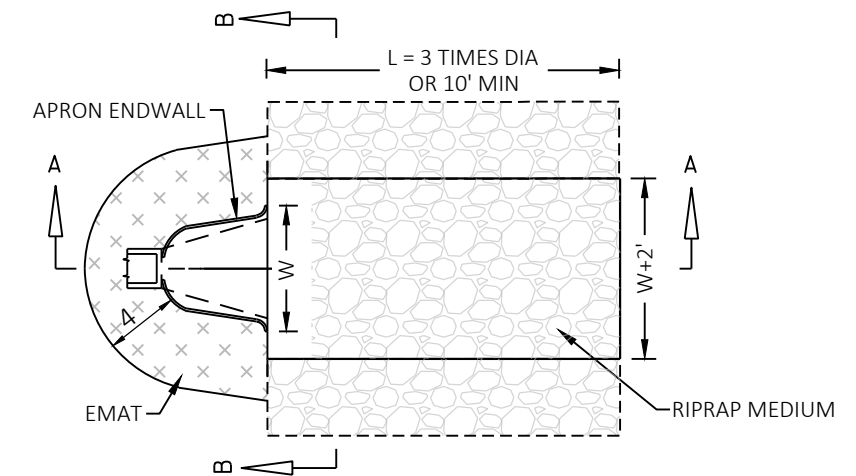
- TRAFFIC CONTROL DRUM
- ▨ EXISTING PAVE SURFACE
-OR-
6" BASE AGGREGATE DENSE 1 1/4 INCH
- INCIDENTAL TO LANE SHIFT SYSTEM
- ▧ 6" BASE AGGREGATE DENSE 1 1/4 INCH
- INCIDENTAL TO LANE SHIFT SYSTEM
- ▩ FILL
- INCIDENTAL TO LANE SHIFT SYSTEM

LANE SHIFT DETAIL

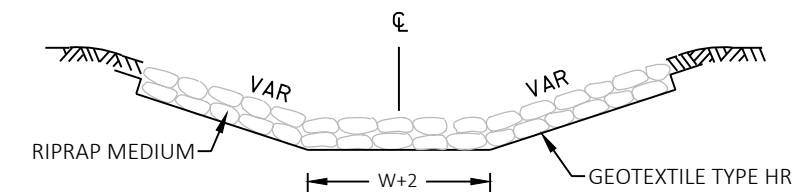
STA 257+43 C630700660
STA 346+58 C630700710
STA 498+17 C630700820
STA 549+17 C630700850



EROSION MAT AT PIPE END



SECTION A-A



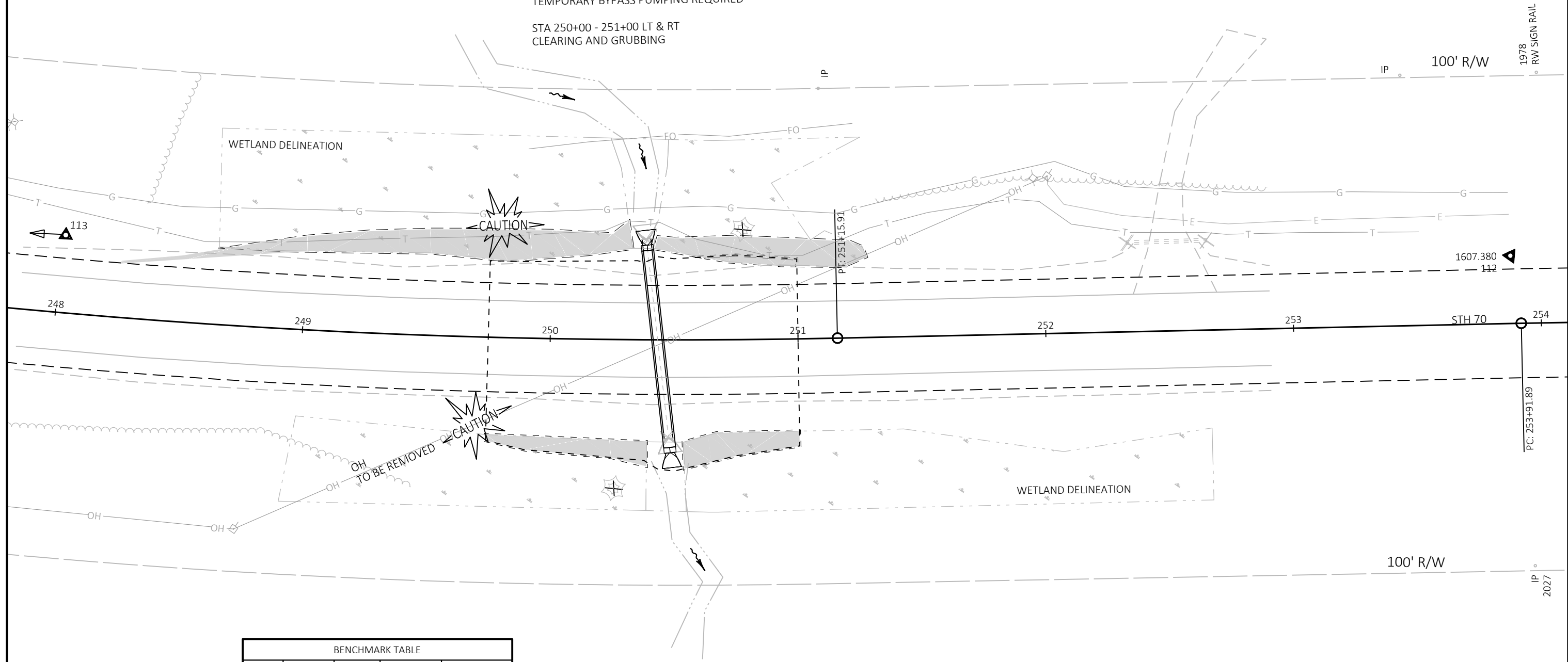
SECTION B-B

EMAT, RIPRAP MEDIUM, AND GEOTEXTILE AT APRON ENDWALL

C630700660
STA 250+43
1-42" x 81' CPCS AND 2 AEW'S REMOVE
1-48" CPRC REQUIRED
2-48" AEW REQUIRED
SKEW 7° RHF

LANE SHIFT LT REQUIRED
TEMPORARY BYPASS PUMPING REQUIRED

STA 250+00 - 251+00 LT & RT
CLEARING AND GRUBBING



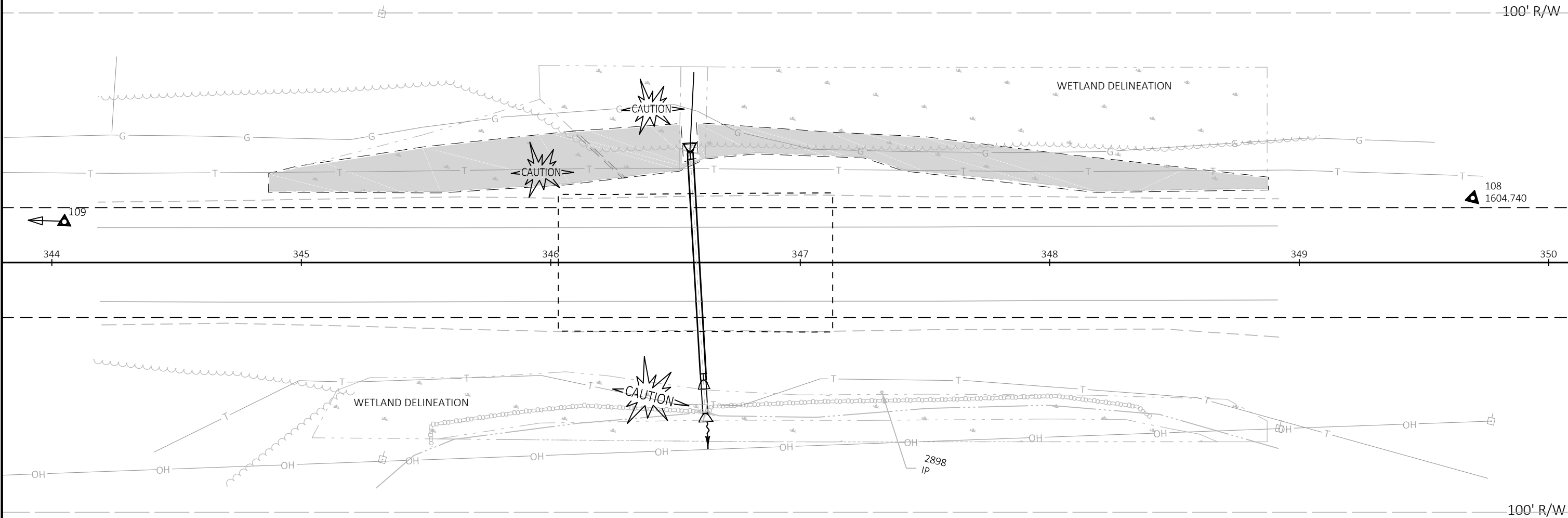
BENCHMARK TABLE				
POINT	STATION	OFFSET	ELEVATION	DESCRIPTION
112	253+88	27 LT	1607.380	CP
113	246+64	29 LT	1604.746	CP

LEGEND	
	DELINEATED WETLAND AREAS
	PERMITTED WETLAND IMPACTS (PERMANENT AND TEMPORARY)

C630700710
STA 346+58
1-24" x 105' CPCS REMOVE - NO EXISTING AEW's
1-24" CPRC REQUIRED
2-24" AEW REQUIRED
SKEW 3° RHF

LANE SHIFT LT REQUIRED
TEMPORARY BYPASS PUMPING REQUIRED

ST 346+00 - 349+00 LT
CLEARING & GRUBBING

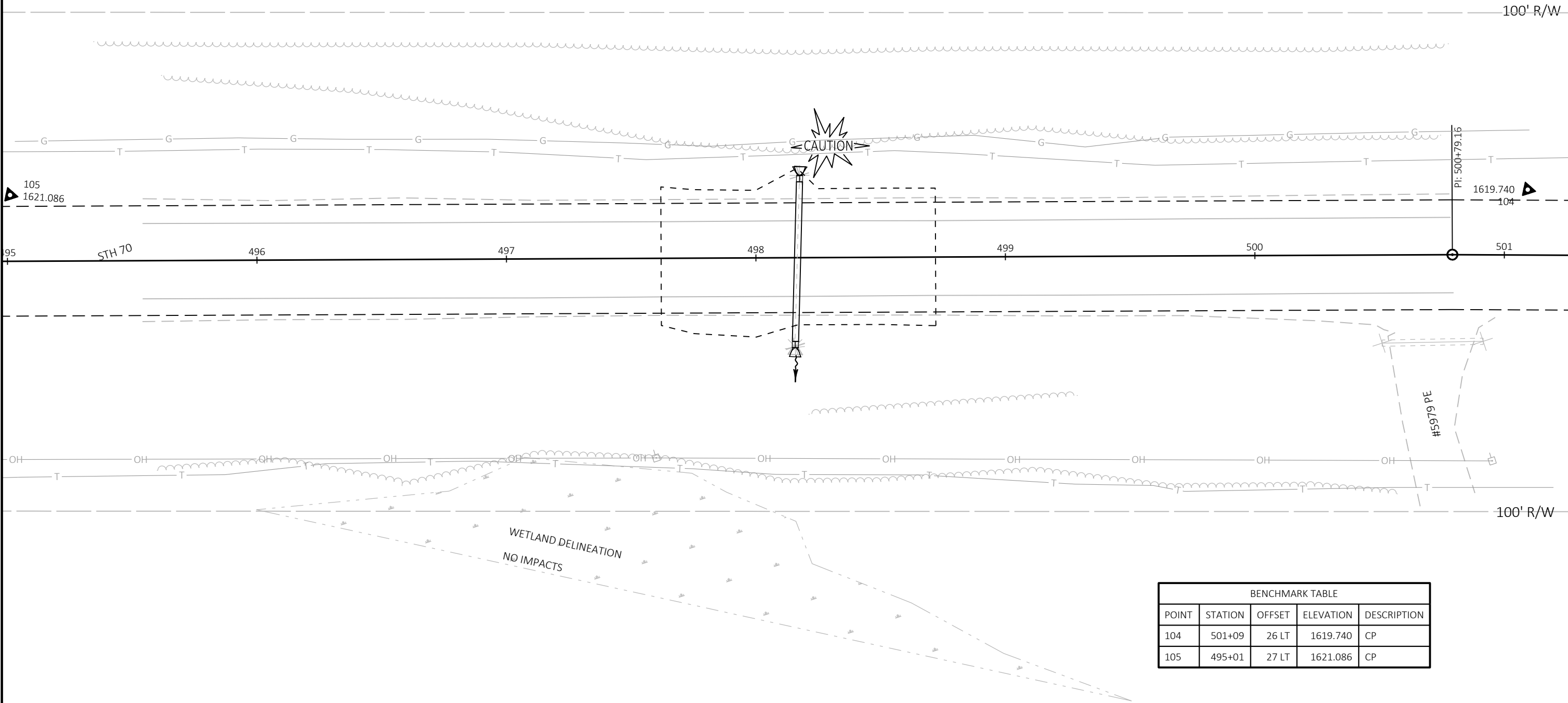


BENCHMARK TABLE				
POINT	STATION	OFFSET	ELEVATION	DESCRIPTION
108	349+70	26 LT	1604.740	CP
109	342+87	25 LT	1616.708	CP

LEGEND	
	DELINEATED WETLAND AREAS
	PERMITTED WETLAND IMPACTS (PERMANENT AND TEMPORARY)

C630700820
STA 498+17
1-24" x 68' CPCS AND 2 AEW REMOVE
1-24" CPRC REQUIRED
2-24" AEW RC REQUIRED
SKEW 2° LHF

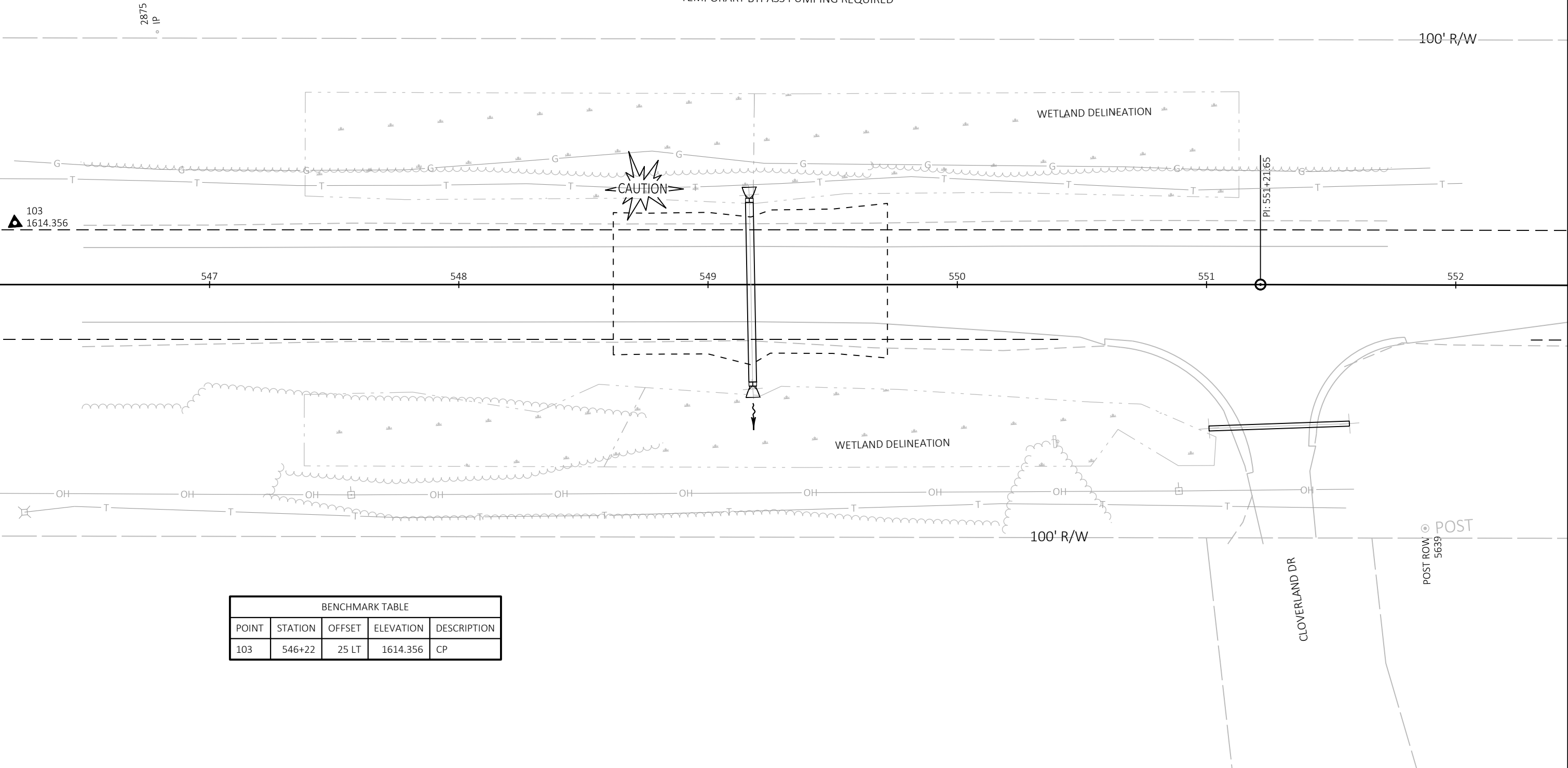
LANE SHIFT LT REQUIRED



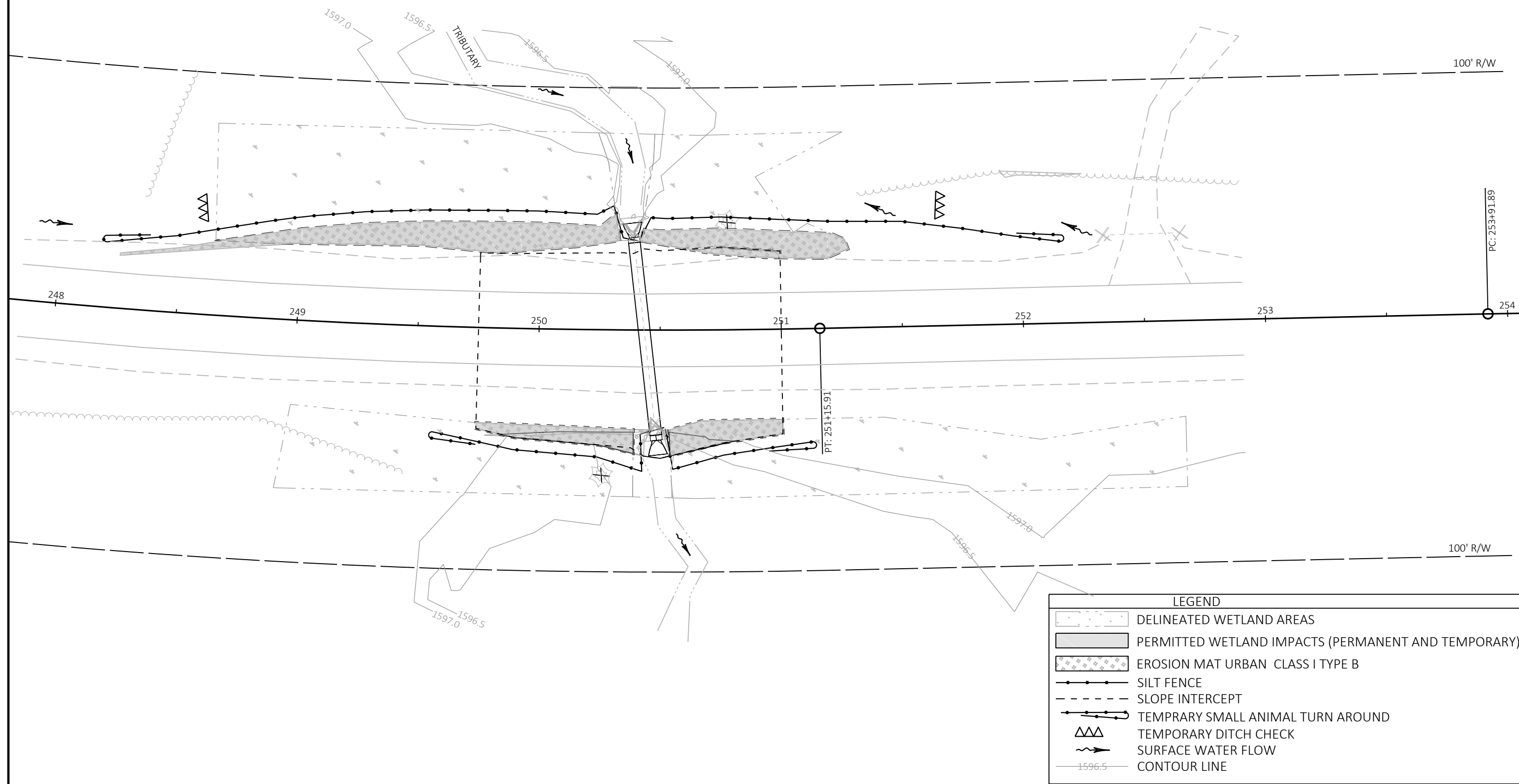
BENCHMARK TABLE				
POINT	STATION	OFFSET	ELEVATION	DESCRIPTION
104	501+09	26 LT	1619.740	CP
105	495+01	27 LT	1621.086	CP

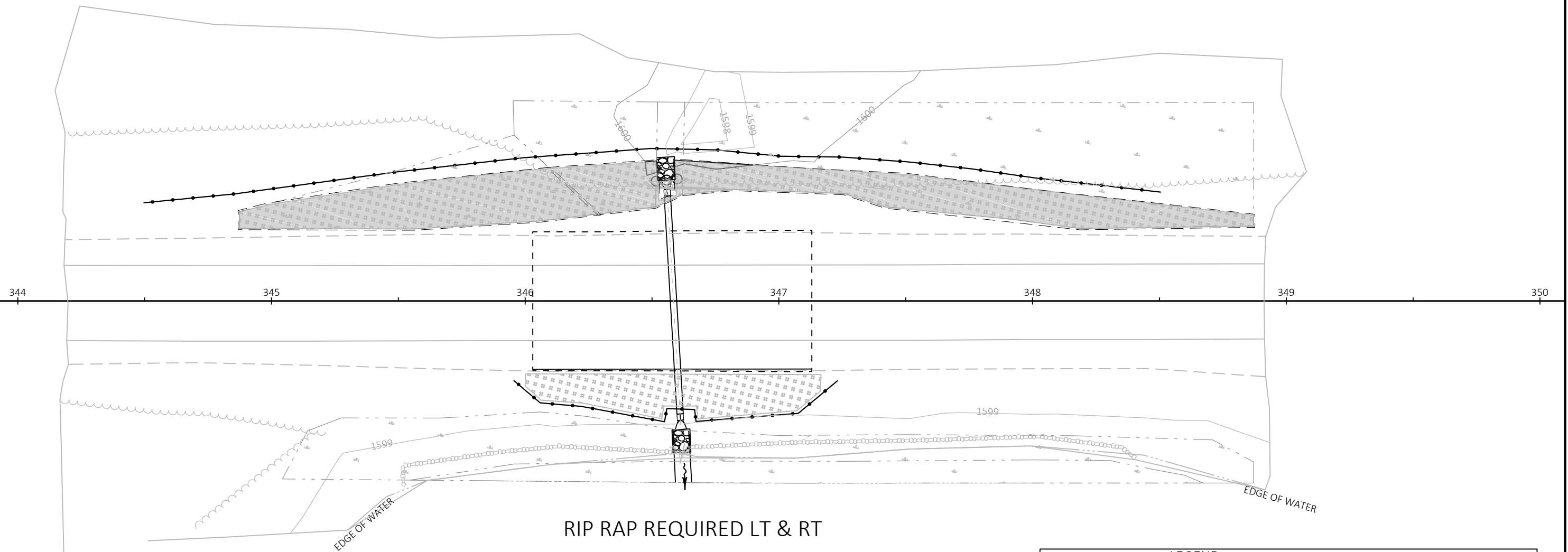
C630700850
STA 549+17
1-30" x 78' CPCS AND 1 AEW - RT REMOVE
1-30" CPRC REQUIRED
2-30" AEW REQUIRED
SKEW 1° RHF

LANE SHIFT LT REQUIRED
TEMPORARY BYPASS PUMPING REQUIRED



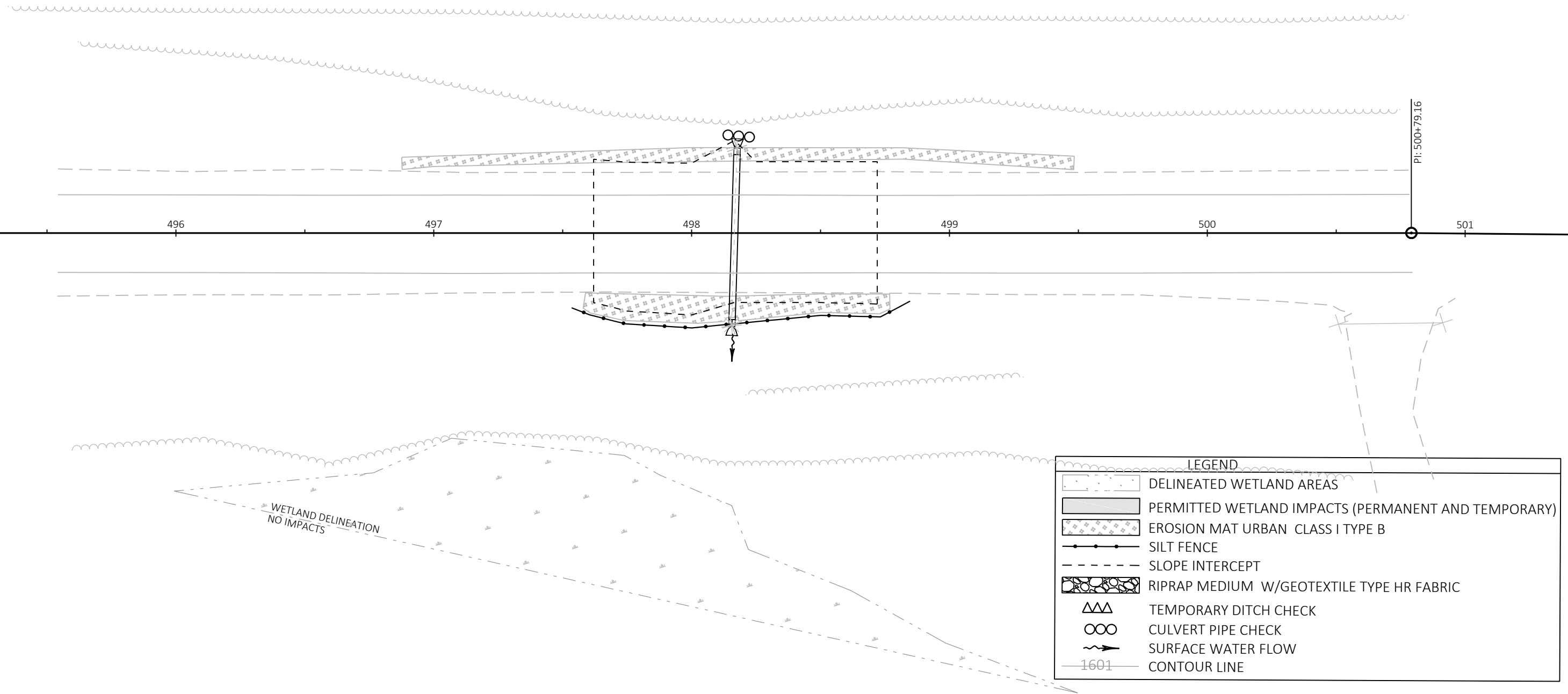
BENCHMARK TABLE				
POINT	STATION	OFFSET	ELEVATION	DESCRIPTION
103	546+22	25 LT	1614.356	CP



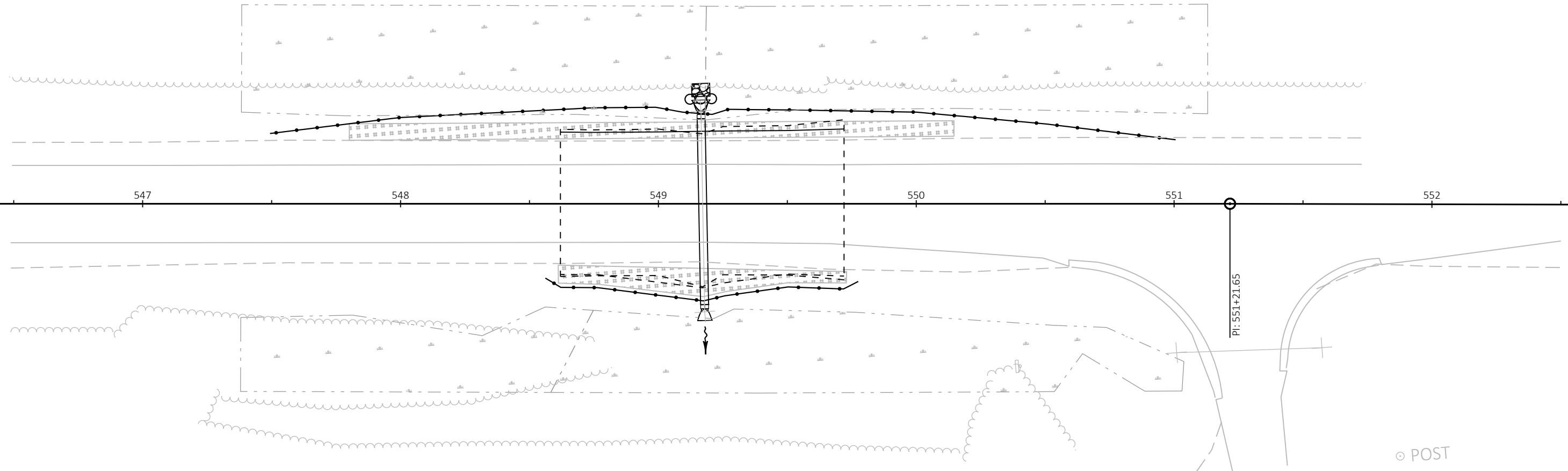


LEGEND	
	DELINEATED WETLAND AREAS
	PERMITTED WETLAND IMPACTS (PERMANENT AND TEMPORARY)
	EROSION MAT URBAN CLASS I TYPE B
	SILT FENCE
	SLOPE INTERCEPT
	RIPRAP MEDIUM W/GEOTEXTILE TYPE HR FABRIC
	TEMPORARY DITCH CHECK
	CULVERT PIPE CHECK
	SURFACE WATER FLOW
	CONTOUR LINE

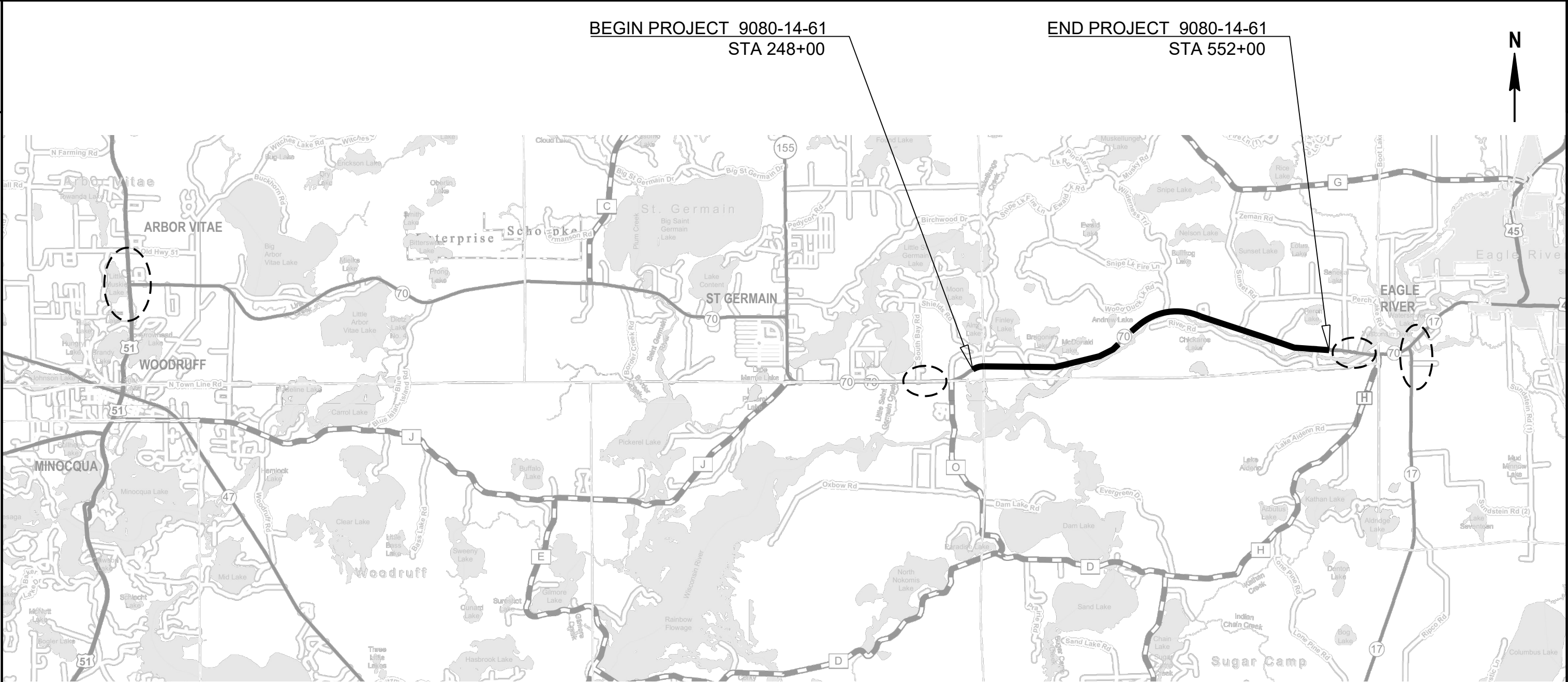
C630700820 NO WETLAND IMPACTS



C630700850 NO WETLAND IMPACTS



LEGEND	
	DELINEATED WETLAND AREAS
	PERMITTED WETLAND IMPACTS (PERMANENT AND TEMPORARY)
	EROSION MAT URBAN CLASS I TYPE B
	SILT FENCE
	SLOPE INTERCEPT
	RIPRAP MEDIUM W/GEOTEXTILE TYPE HR FABRIC
	TEMPORARY DITCH CHECK
	CULVERT PIPE CHECK
	SURFACE WATER FLOW
	CONTOUR LINE



BEGIN PROJECT 9080-14-61
STA 248+00

END PROJECT 9080-14-61
STA 552+00

ADVANCED WIDTH RESTRICTION SIGNING

SEE SDD "TRAFFIC CONTROL, ADVANCED WIDTH RESTRICTION SIGNING"

 SIGN LOCATIONS AND SPECIFICS


W12-52
48"x48"


M1-6
24"x24"

AT
USH 51


W57-52
36"x24"

AT
STH 17


W57-52
36"x24"

Estimate Of Quantities By Plan Sets

9080-14-61

Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	2.000	2.000
0004	201.0205	Grubbing	STA	2.000	2.000
0006	203.0100	Removing Small Pipe Culverts	EACH	4.000	4.000
0016	205.0100	Excavation Common	CY	2,645.000	2,645.000
0024	213.0100	Finishing Roadway (project) 01. 9080-14-61	EACH	1.000	1.000
0028	305.0110	Base Aggregate Dense 3/4-Inch	TON	200.000	200.000
0030	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,500.000	1,500.000
0032	455.0605	Tack Coat	GAL	50.000	50.000
0046	465.0110	Asphaltic Surface Patching	TON	430.000	430.000
0058	522.0124	Culvert Pipe Reinforced Concrete Class III 24-Inch	LF	112.000	112.000
0060	522.0130	Culvert Pipe Reinforced Concrete Class III 30-Inch	LF	84.000	84.000
0062	522.0148	Culvert Pipe Reinforced Concrete Class III 48-Inch	LF	80.000	80.000
0064	522.0424	Culvert Pipe Reinforced Concrete Class IV 24-Inch	LF	74.000	74.000
0066	522.1024	Apron Endwalls for Culvert Pipe Reinforced Concrete 24-Inch	EACH	4.000	4.000
0068	522.1030	Apron Endwalls for Culvert Pipe Reinforced Concrete 30-Inch	EACH	2.000	2.000
0070	522.1048	Apron Endwalls for Culvert Pipe Reinforced Concrete 48-Inch	EACH	2.000	2.000
0074	606.0200	Riprap Medium	CY	6.000	6.000
0090	618.0100	Maintenance And Repair of Haul Roads (project) 01. 9080-14-61	EACH	1.000	1.000
0094	619.1000	Mobilization	EACH	0.130	0.130
0096	624.0100	Water	MGAL	80.000	80.000
0098	625.0100	Topsoil	SY	2,300.000	2,300.000
0100	628.1504	Silt Fence	LF	2,300.000	2,300.000
0102	628.1520	Silt Fence Maintenance	LF	1,150.000	1,150.000
0104	628.1905	Mobilizations Erosion Control	EACH	2.000	2.000
0106	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0108	628.2008	Erosion Mat Urban Class I Type B	SY	2,300.000	2,300.000
0110	628.7504	Temporary Ditch Checks	LF	90.000	90.000
0112	628.7555	Culvert Pipe Checks	EACH	15.000	15.000
0114	629.0210	Fertilizer Type B	CWT	1.500	1.500
0116	630.0120	Seeding Mixture No. 20	LB	75.000	75.000
0118	630.0160	Seeding Mixture No. 60	LB	10.000	10.000
0120	630.0500	Seed Water	MGAL	75.000	75.000
0122	633.5200	Markers Culvert End	EACH	8.000	8.000
0130	643.0300	Traffic Control Drums	DAY	600.000	600.000
0132	643.0900	Traffic Control Signs	DAY	550.000	550.000
0136	643.5000	Traffic Control	EACH	0.200	0.200
0138	645.0120	Geotextile Type HR	SY	20.000	20.000

Estimate Of Quantities By Plan Sets

9080-14-61					
Line	Item	Item Description	Unit	Total	Qty
0148	649.0105	Temporary Marking Line Paint 4-Inch	LF	800.000	800.000
0150	650.4500	Construction Staking Subgrade	LF	400.000	400.000
0152	650.5000	Construction Staking Base	LF	400.000	400.000
0156	650.6000	Construction Staking Pipe Culverts	EACH	4.000	4.000
0160	650.9910	Construction Staking Supplemental Control (project) 01. 9080-14-61	LS	1.000	1.000
0164	650.9920	Construction Staking Slope Stakes	LF	400.000	400.000
0166	690.0150	Sawing Asphalt	LF	200.000	200.000
0174	SPV.0060	Special 01. Lane Shift	EACH	4.000	4.000
0176	SPV.0060	Special 02. Temporary Bypass Pumping C630700660	EACH	1.000	1.000
0178	SPV.0060	Special 03. Temporary Bypass Pumping C630700710	EACH	1.000	1.000
0180	SPV.0060	Special 04. Temporary Bypass Pumping C630700850	EACH	1.000	1.000

3

CLEARING & GRUBBING 201.0105 CLEARING 201.0205 GRUBBING LOCATION STA STA 250+00 - 251+00 C630700660 1 1 437+00 - 438+00 C630700780 1 1 TOTAL 2 2				CULVERT PIPE REINFORCED CONCRETE APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE MARKERS CULVERT END PIPE* 522.0124 CLASS III 24-INCH 522.0130 CLASS III 30-INCH 522.0148 CLASS III 48-INCH 522.0424 CLASS IV 24-INCH ENDWALLS* 522.1024 24-INCH EACH 522.1030 30-INCH EACH 522.1048 48-INCH EACH MARKERS 635.5200 LOCATION LF LF LF LF EACH EACH EACH EACH 250+43 C630700660 80 2 346+58 C630700710 112 2 2 498+17 C630700820 74 2 2 547+19 C630700850 -- 84 -- -- -- 2 2 TOTAL 112 84 80 74 4 2 2 8 *TIE ALL JOINTS.										RIPRAP MEDIUM GEOTEXTILE TYPE HR 606.0200 MEDIUM CY 645.0120 HR SY LOCATION 346+66 RT C630700710 24" 4 12 498+17 LT C630700850 30" 2 8 TOTAL 6 20																	
REMOVING SMALL PIPE CULVERTS 203.0100 EACH LOCATION TYPE SIZE 250+43 C630700660 CPCM 42" x 81' 1 346+58 C630700710 CPCM 24" x 105' 1 498+17 C630700820 CPCM 24" x 68' 1 547+17 C630700850 CPCM 30" x 78' 1 TOTAL 4				LANDSCAPING ITEMS 625.0100 TOPSOIL 628.2008 E-MAT URBAN CLASS I TYPE B 629.0210 FERT TYPE B CWT 630.0120 SEED NO. 20 LB 630.0160 SEED NO. 60 LB 630.0500 SEED WATER MGAL LOCATION SY SY CWT LB LB MGAL 250+43 LANE SHIFT LT 265 265 0.17 4 250+43 PIPE TRANSITION C0660 RT 110 110 0.07 2 346+58 LANE SHIFT LT 610 610 0.38 17 346+58 PIPE TRANSITION C0710 RT 185 185 0.12 5 498+17 LANE SHIFT LT 260 260 0.16 7 498+17 PIPE TRANSITION C0820 RT 105 105 0.07 3 549+17 LANE SHIFT LT 170 170 0.11 5 549+17 PIPE TRANSITION C0850 RT 100 100 0.06 3 SHOULDERS LT & RT AT 4 CULVERTS 0.12 5 UNDISTRIBUTED 495 495 0.25 30 4 75 TOTAL 2,300 2,300 1.50 75 10 75										SILT FENCE SILT FENCE MAINTENACE 628.1504 SILT FENCE LF 628.1520 SILT FENCE MAINT LF LOCATION 248+17 - 252+17 LT LANE SHIFT 460 230 249+55 - 251+14 RT PIPE TRANS C0660 240 120 344+50 - 348+50 LT LANE SHIFT 400 200 346+95 - 347+23 RT PIPE TRANS C0710 110 55 497+50 - 498+85 RT PIPE TRANS C0820 140 70 549+50 - 551+00 RT LANE SHIFT 360 180 548+56 - 549+78 RT PIPE TRANS C0850 130 65 UNDISTRIBUTED 460 230 TOTAL 2,300 1,150																	
BASE AGGREGATE DENSE 3/4-INCH BASE AGGREGATE DENSE 1 1/4-INCH 305.0110 BASE 3/4" TON 305.0120 BASE 1 1/4" TON LOCATION CULVERT PIPE TRANSITIONS (4) 200 1,500				ASPHALTIC SURFACE PATCHING TACK COAT 455.0605 TACK COAT GAL 465.0110 ASPHALTIC SURF PATCHING TON LOCATION CULV PIPE TRANS (4) 50 430										WATER 624.0100 MGAL LOCATION UNDISTRIBUTED 80				MOBILIZATIONS EROSION CONTROL MOBILIZATIONS EMERGENCY EROSION CONTROL EMERGENCY MOB 628.1905 EACH EMERGENCY MOB 628.1910 EACH LOCATION PROJECT 9080-14-61 2 2					TEMPORARY DITCH CHECKS 628.7504 LF LOCATION 436+50 LT 15 438+00 LT 15 439+00 LT 15 UNDISTRIBUTED 45 TOTAL 90					CULVERT PIPE CHECKS 628.7555 EACH LOCATION 250+43 C630700660 24" 3 346+58 C630700710 24" 3 498+17 C630700820 24" 3 547+17 C630700780 30" 6 TOTAL 15			
PROJECT NO: 9080-14-61			HWY: STH 70			COUNTY: VILAS			MISCELLANEOUS QUANTITIES			SHEET: 21		E																	

3

EARTHWORK SUMMARY 9080-14-61							
Division	From/To Station	Location	205.0100 Common Excavation	Unexpanded Fill	Expanded Fill (2)	Mass Ordinate +/- (3)	Waste
			Cut (1)		Factor 1.25		
Division 1							
C630700660		CULVERT TRANSITION	412	412	515	-103	
EWKDetail-C0660.xml	248+00/252+50	SLOPES	<u>348</u>	<u>103</u>	<u>128</u>	<u>219</u>	
Division 1 Subtotal			760	515	643	116	116
Division 2							
C630700710		CULVERT TRANSITION	407	407	509	-102	
EWKDetail-C0710.xml	345+00/348+50	SLOPES	<u>202</u>	<u>0</u>	<u>0</u>	<u>202</u>	
Division 2 Subtotal			609	407	509	100	100
Division 3							
C630700820		CULVERT TRANSITION	407	407	509	-102	
EWKDetail-C0820.xml	495+50/499+75	SLOPES	<u>250</u>	<u>6</u>	<u>7</u>	<u>243</u>	
Division 3 Subtotal			657	413	516	141	141
Division 4							
C630700850		CULVERT TRANSITION	314	314	393	-79	
EWKDetail-C0850.xml	548+00/551+00	SLOPES	<u>305</u>	<u>1</u>	<u>2</u>	<u>304</u>	
Division 4 Subtotal			619	315	394	225	225
GRAND TOTAL			2,645	1,650	2,062	583	583
	TOTAL COMMON EXCAVATION		2,645				
	Notes:						
	(1) Salvaged/Unsuable Pavement Material is included in Cut.						
	(2) Expanded Fill Factor = 1.25						
	Expanded Fill = (Unexpanded Fill) * Fill Factor						
	(3) 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.						

3

TRAFFIC CONTROL SUMMARY				
LOCATION	643.0300		643.0900	
	#drums x	DRUMS	#signs x	SIGN
	<u>#days</u>	<u>DAYS</u>	<u>#days</u>	<u>DAYS</u>
248+00 - 552+00				
CULVERTS - LOOSE GRAVEL, BUMP			4 x 11	44
RWA ADDITIONAL SIGNS AT 2, 4, 6 MILES			6 x 50	300
248+00 - 253+00	C630700660 CULV REPLACE	30 x 3 90	4 x 3	12
344+08 - 349+08	C630700710 CULV REPLACE	40 x 4 160	4 x 4	16
496+34- 500+00	C630700720 CULV REPLACE	30 x 2 60	4 x 2	8
547+11 - 551+23	C630700750 CULV REPLACE	33 x 2 70	4 x 2	8
UNDISTRIBUTED		<u>220</u>		<u>162</u>
TOTAL		600		550

MARKING SUMMARY	
	649.0105
	TEMP PAINT
	4-INCH
	YELLOW CL
<u>LOCATION</u>	<u>LF</u>
PIPE TRANSITIONS (4)	800

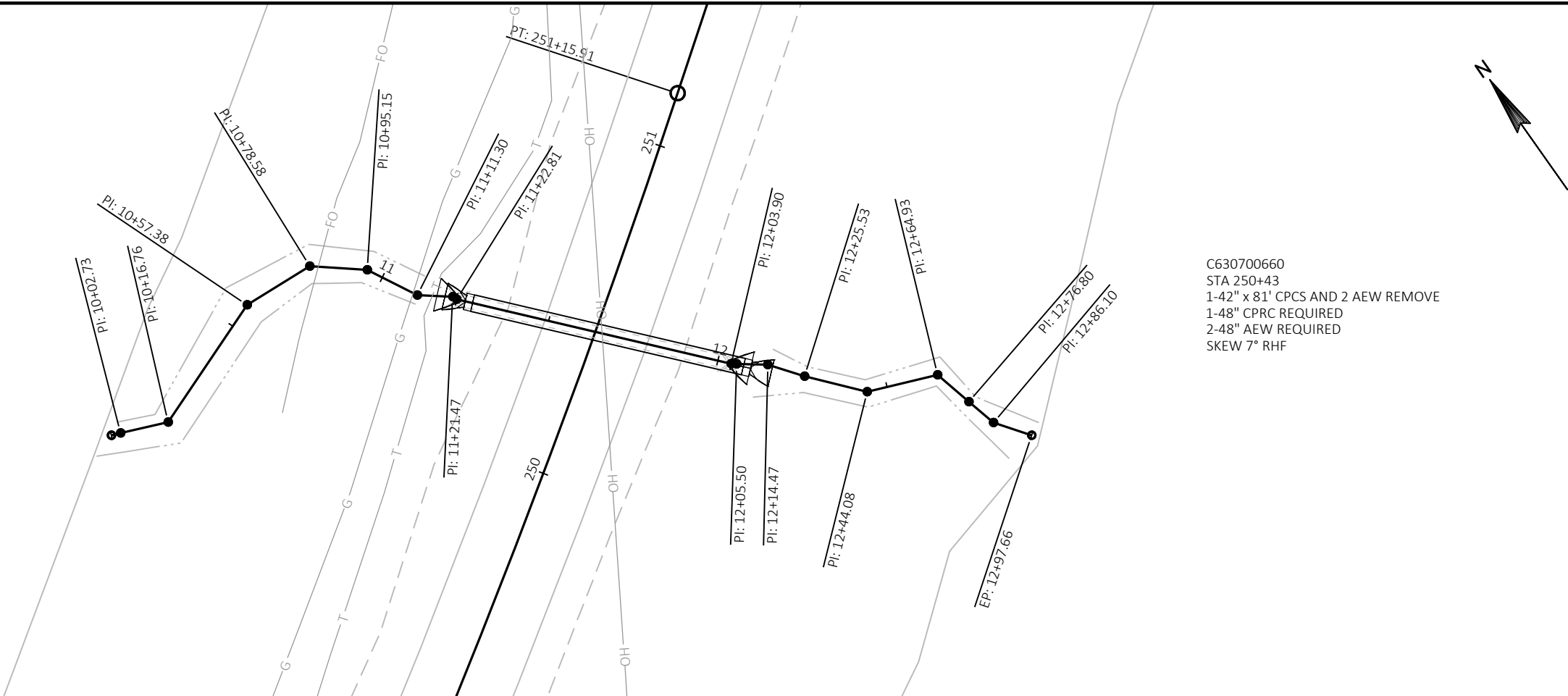
CONSTRUCTION STAKING ITEMS				
LOCATION	650.4500	650.5000	650.6000	650.9920
	SUBGRADE	BASE	PIPE CULVERTS	SLOPE STAKES
	<u>LF</u>	<u>LF</u>	<u>EACH</u>	<u>LF</u>
PIPE TRANSITIONS (4)	400	400	4	400

SAWING ASPHALT	
	690.0150
<u>LOCATION</u>	<u>LF</u>
250+43 CULV TRANSITION	50
346+58 CULV TRANSITION	50
498+17 CULV TRANSITION	50
549+17 CULV TRANSITION	<u>50</u>
TOTAL	200

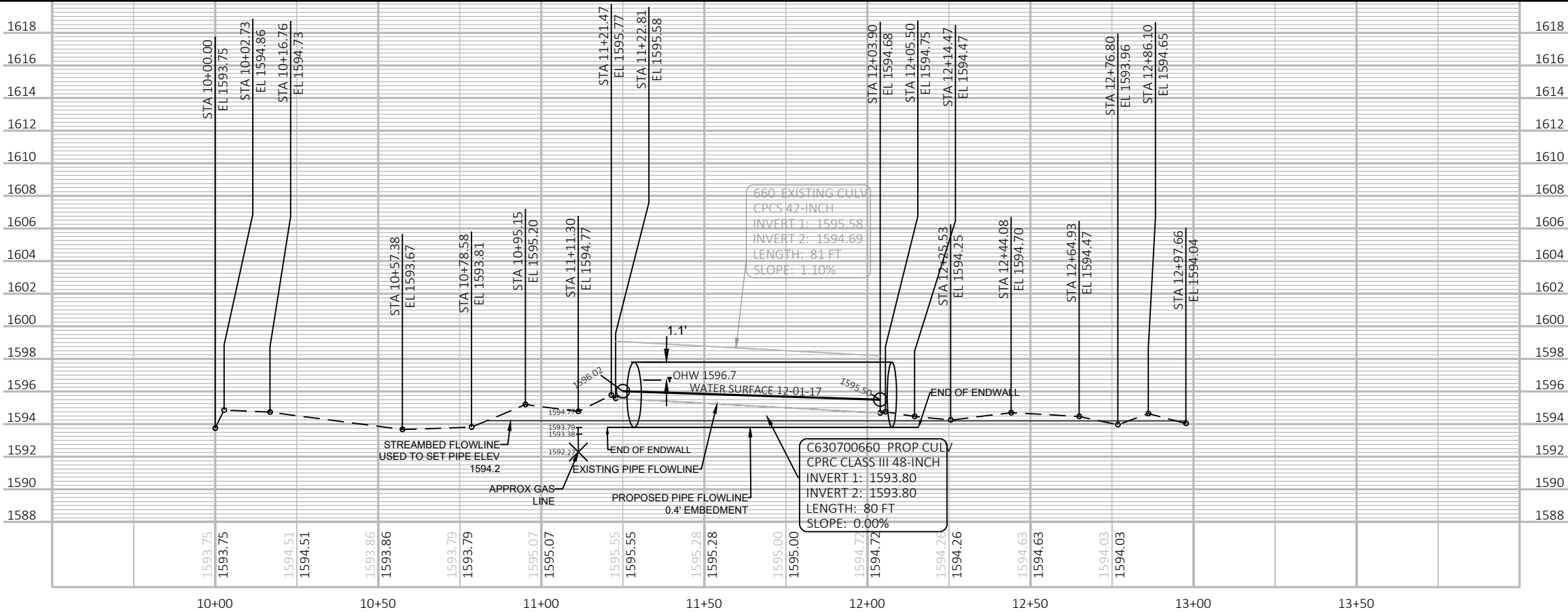
TEMPORARY BYPASS PUMPING			
LOCATION	SPV.0060.02	SPV.0060.03	SPV.0060.04
	<u>EACH</u>	<u>EACH</u>	<u>EACH</u>
250+43 48" PIPE C630700660	1		
346+58 24" PIPE C630700710		1	
549+17 30" PIPE C630700850			1

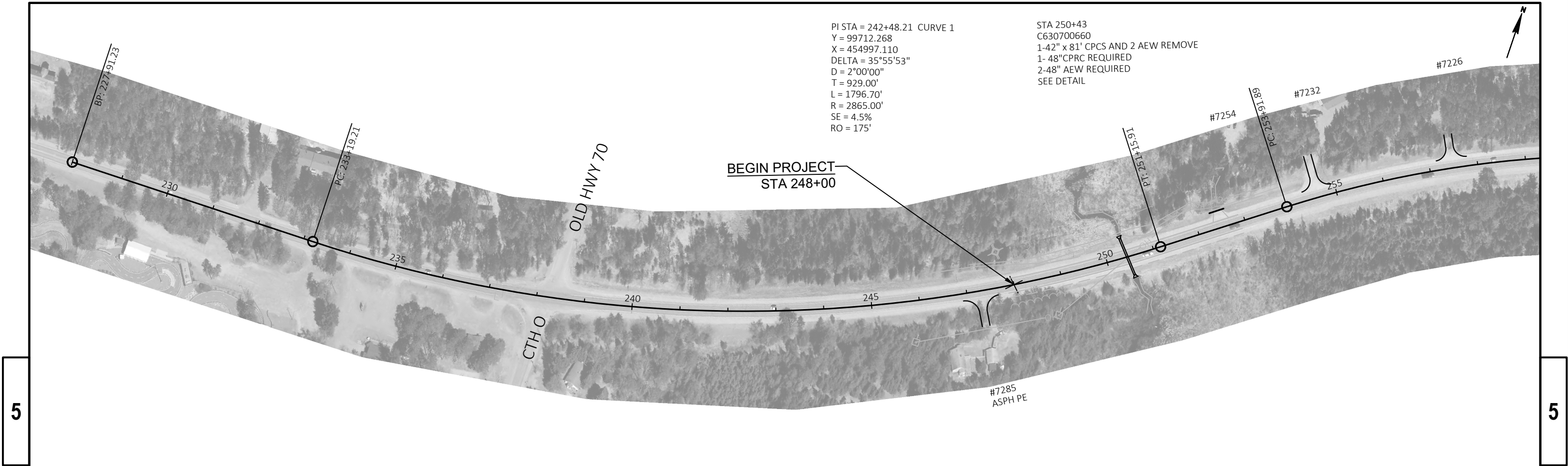
LANE SHIFT	
	SPV.0060.01
<u>LOCATION</u>	<u>EACH</u>
250+43 LT C630700660	1
346+58 LT C630700710	1
498+17 LT C630700820	1
549+17 LT C630700850	<u>1</u>
TOTAL	4

3



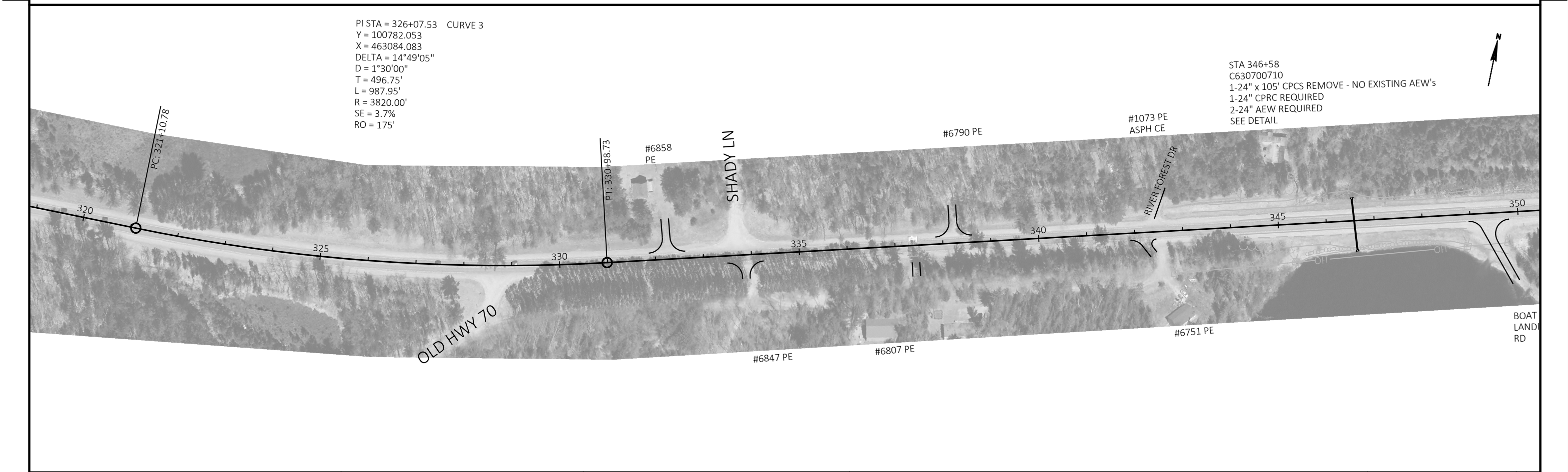
C630700660
STA 250+43
1-42" x 81' CPCS AND 2 AEW REMOVE
1-48" CPRC REQUIRED
2-48" AEW REQUIRED
SKEW 7° RHF



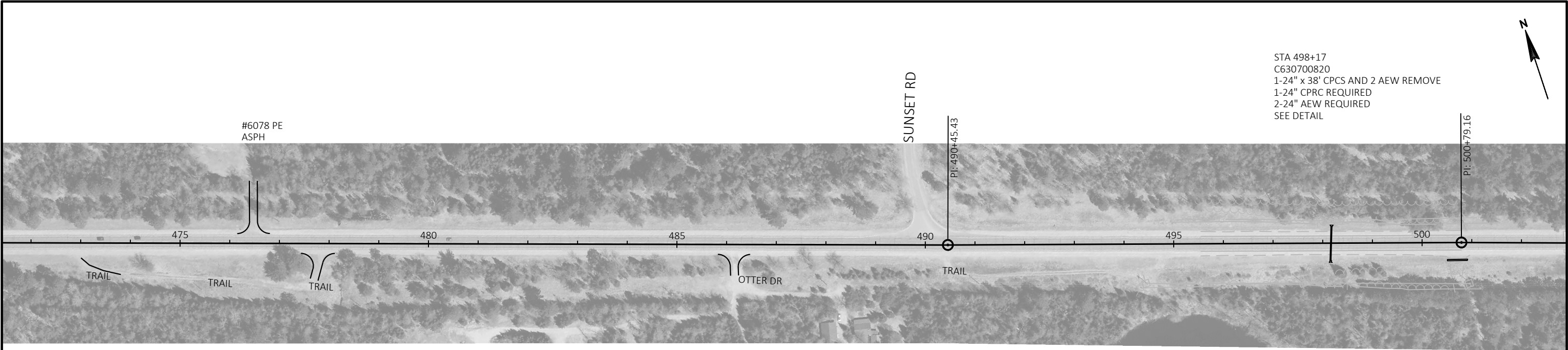


5

5



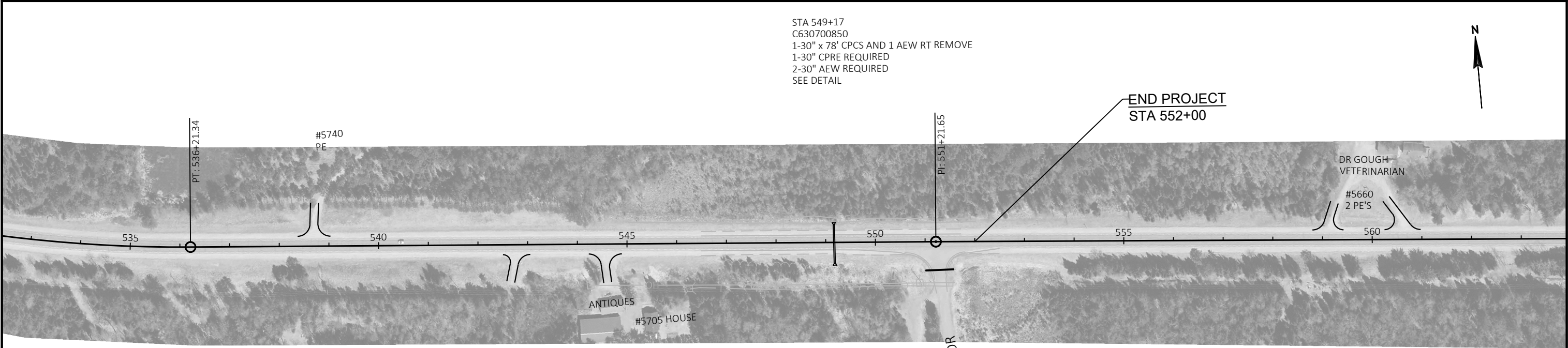
PROJECT NO: 9080-14-61	HWY: STH 70	COUNTY: VILAS	PLAN	SHEET 25	E
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5

#6078 PE ASPH
#6013
#6009
#5979 PE

5



#5813
HOUSE

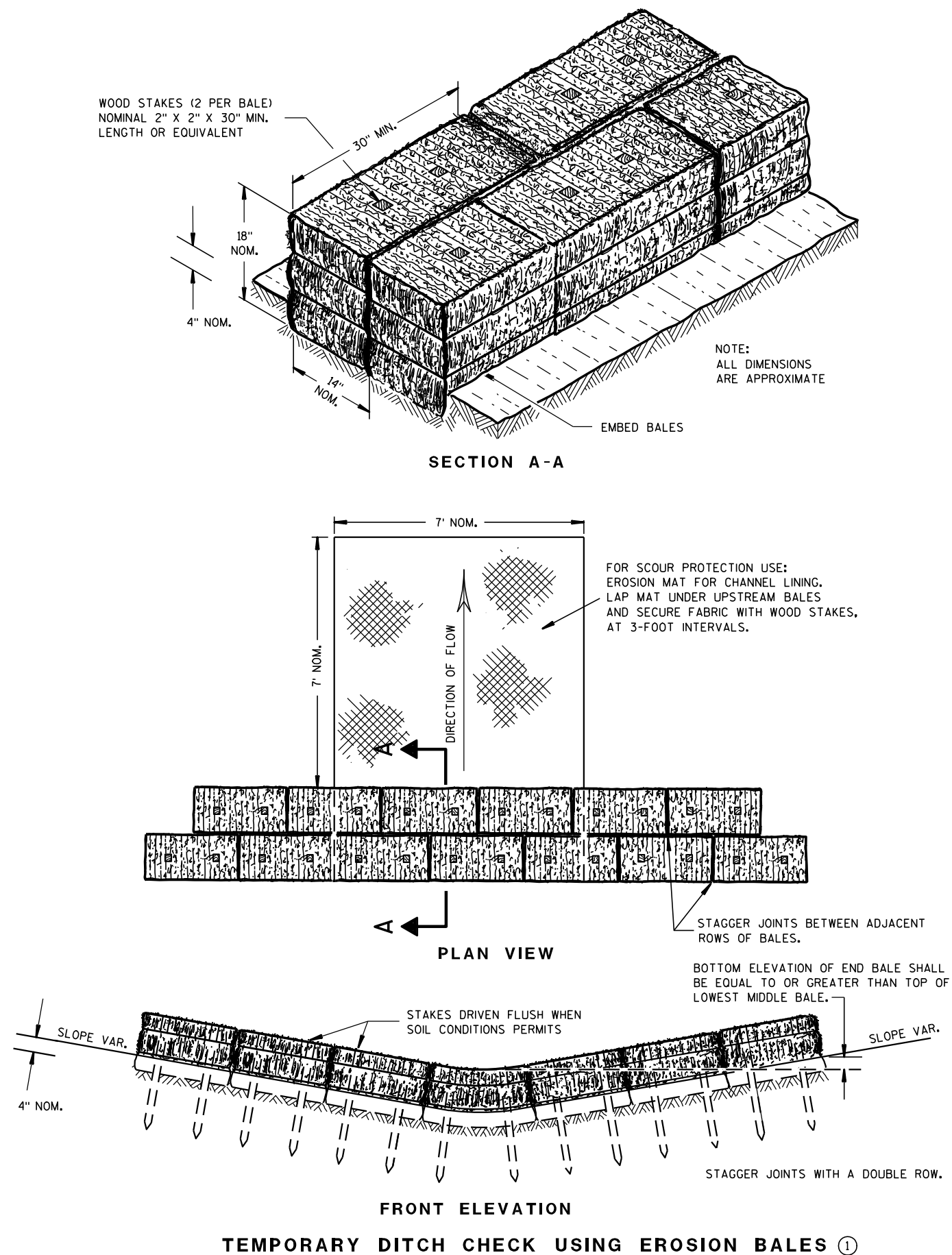
#5715 PE

#103

PROJECT NO: 9080-14-61	HWY: STH 70	COUNTY: VILAS	PLAN	SHEET 26	E
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Standard Detail Drawing List

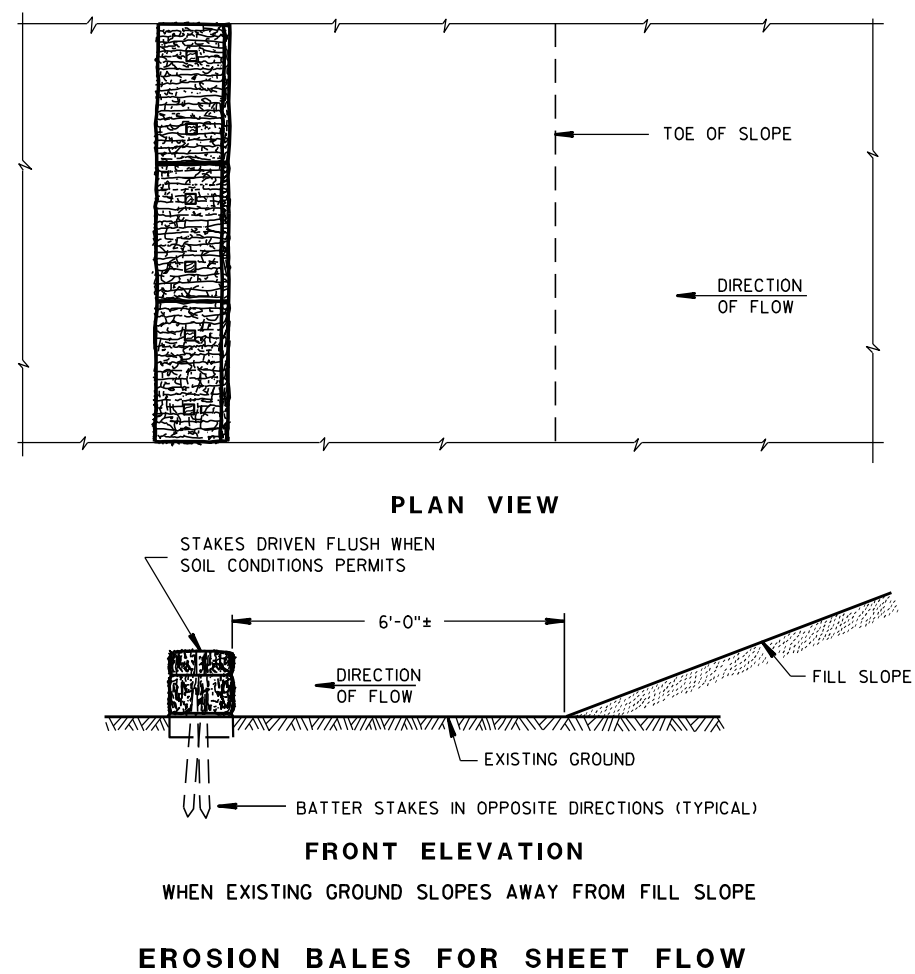
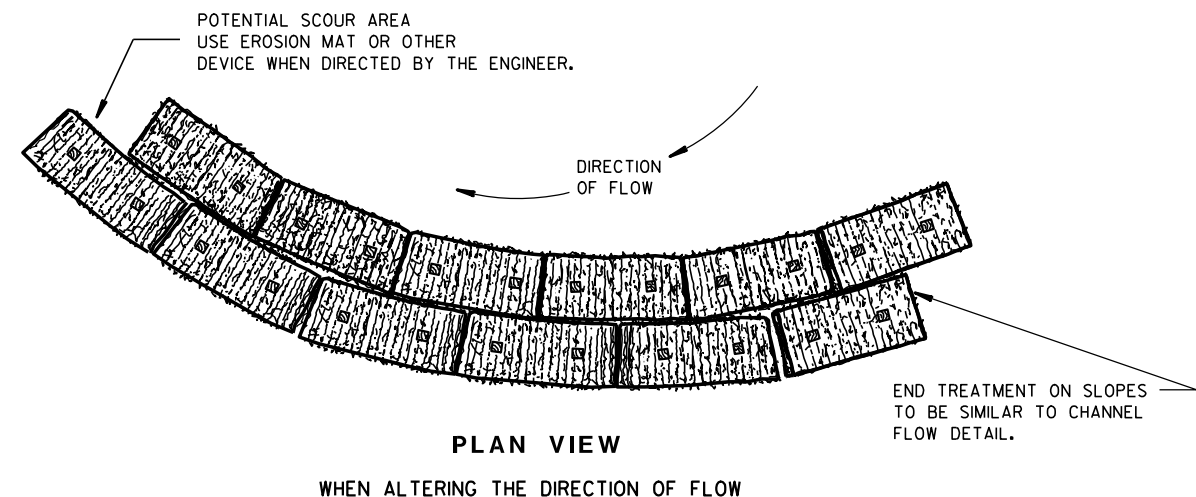
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E15-01	CULVERT PIPE CHECK
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C02-07F	ADVANCED WIDTH RESTRICTION SIGNING
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C08-19A	LONGITUDINAL MARKING (MAINLINE)
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-07	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION



GENERAL NOTES

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

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



TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02
DATE

/S/ Beth Conn-----
CHIEF ROADWAY DEVELOPER 28 ENGINEER

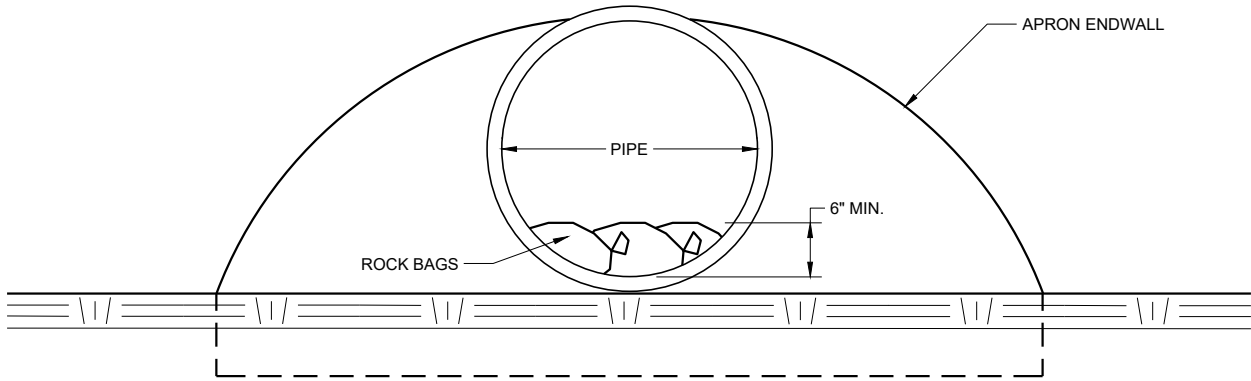
FHWA



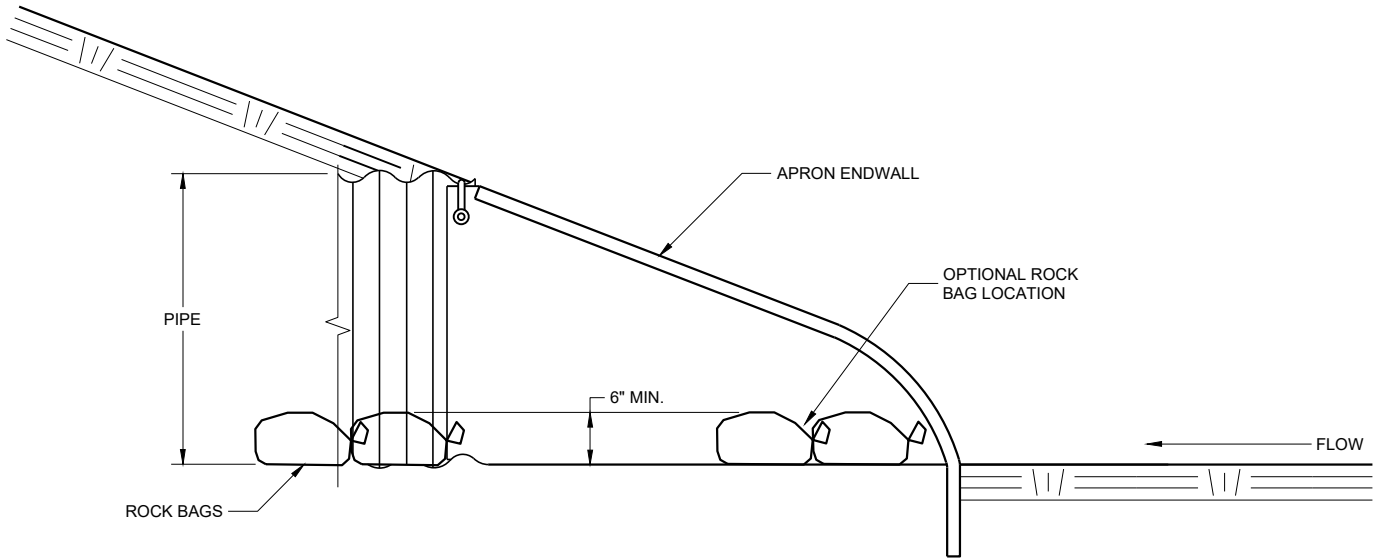
- ① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
- ② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- ③ WOOD POSTS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



SILT FENCE
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION
APPROVED <u>4-29-05</u> DATE <u>/s/ Beth Cannata</u> CHIEF ROADWAY DEVELOP <u>29</u> INCHER FHWA



END VIEW



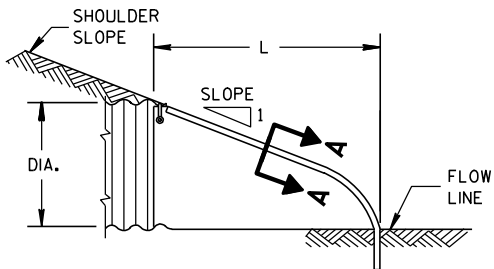
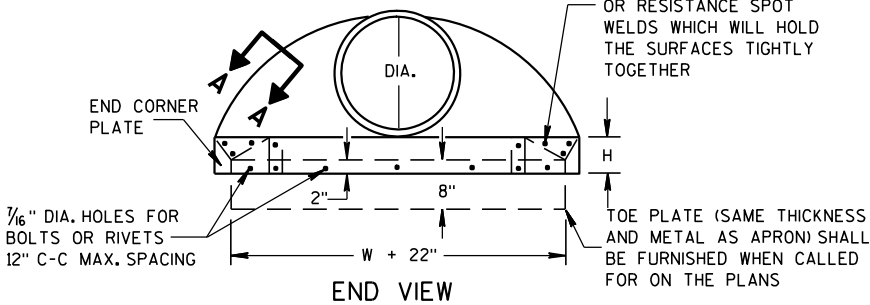
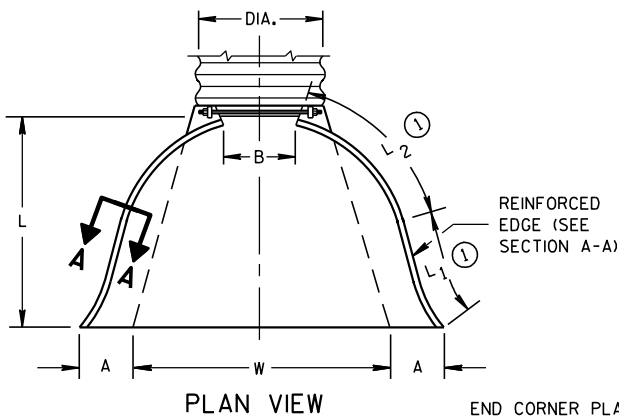
SIDE VIEW

CULVERT PIPE CHECK
(INSTALL ON INLET END ONLY)

CULVERT PIPE CHECK		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
APPROVED May 2019 DATE	/S/ Daniel Schave EROSION CONTROL ENGI	30
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")	L ₁ ①	L ₂ ①	W (±2")			
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.	
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.	
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to 1	1 Pc.	
21	.064	.060	9	12	6	36	18	29 5/8	42	2 1/2 to 1	1 Pc.	
24	.064	.075	10	13	6	41	18	37 1/4	48	2 1/2 to 1	1 Pc.	
30	.079	.075	12	16	8	51	18	52 1/4	60	2 1/2 to 1	1 Pc.	
36	.079	.105	14	19	9	60	24	59 3/4	72	2 1/2 to 1	2 Pc.	
42	.109	.105	16	22	11	69	24	75 5/8	84	2 1/2 to 1	2 Pc.	
48	.109	.105	18	27	12	78	24	81	90	2 1/4 to 1	3 Pc.	
54	.109	.105	18	30	12	84	30	85 1/2	102	2 1/4 to 1	3 Pc.	
60	.109x	.105x	18	33	12	87	—	—	114	2 to 1	3 Pc.	
66	.109x	.105x	18	36	12	87	—	—	120	2 to 1	3 Pc.	
72	.109x	.105x	18	39	12	87	—	—	126	2 to 1	3 Pc.	
78	.109x	.105x	18	42	12	87	—	—	132	1 1/2 to 1	3 Pc.	
84	.109x	.105x	18	45	12	87	—	—	138	1 1/2 to 1	3 Pc.	
90	.109x	.105x	18	37	12	87	—	—	144	1 1/2 to 1	3 Pc.	
96	.109x	.105x	18	35	12	87	—	—	150	1 1/2 to 1	3 Pc.	

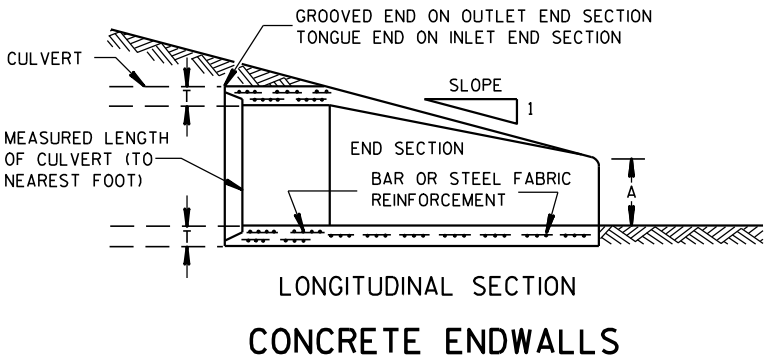
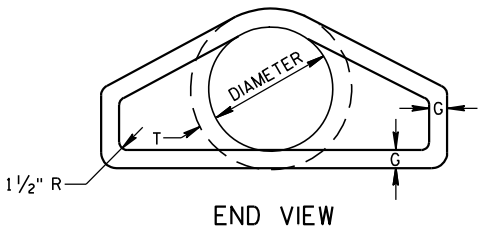
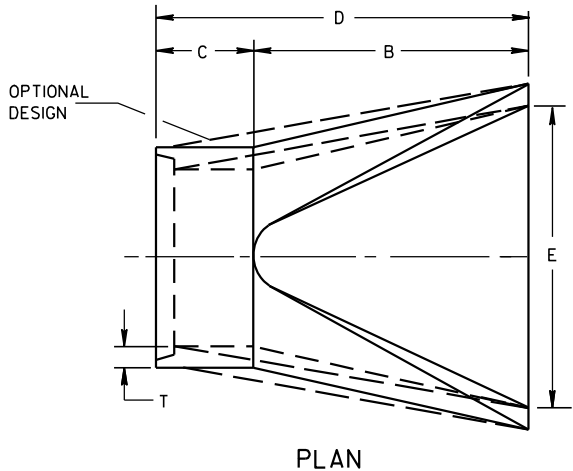
* EXCEPT CENTER PANEL
SEE GENERAL NOTES



METAL ENDWALLS

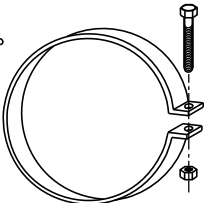
REINFORCED CONCRETE APRON ENDWALLS								
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE
	T	A	B	C	D	E	G	
12	2	4	24	48 ⁷ / ₈	72 ¹ / ₈	24	2	3 to 1
15	2 ¹ / ₄	6	27	46	73	30	2 ¹ / ₄	3 to 1
18	2 ¹ / ₂	9	27	46	73	36	2 ¹ / ₂	3 to 1
21	2 ³ / ₄	9	36	37 ¹ / ₂	73 ¹ / ₂	42	2 ³ / ₄	3 to 1
24	3	9 ¹ / ₂	43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

*MINIMUM
**MAXIMUM

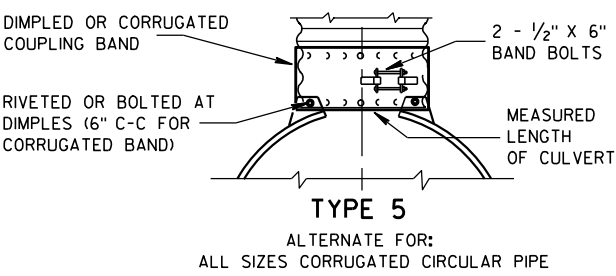
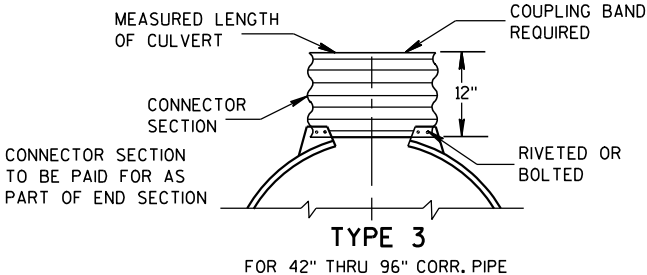
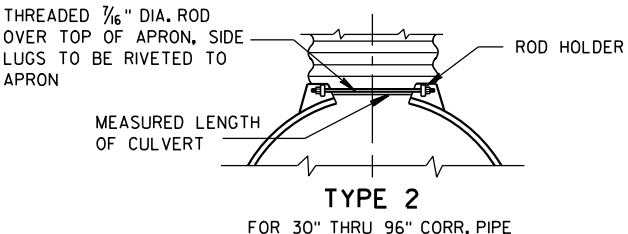
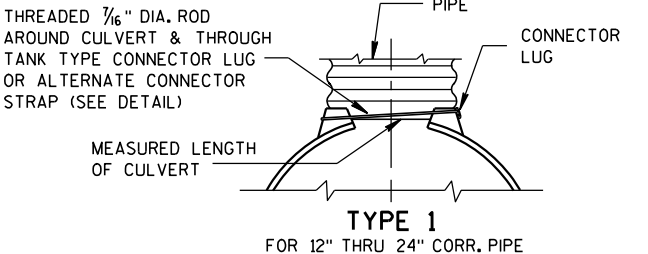


CONCRETE ENDWALLS

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



ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



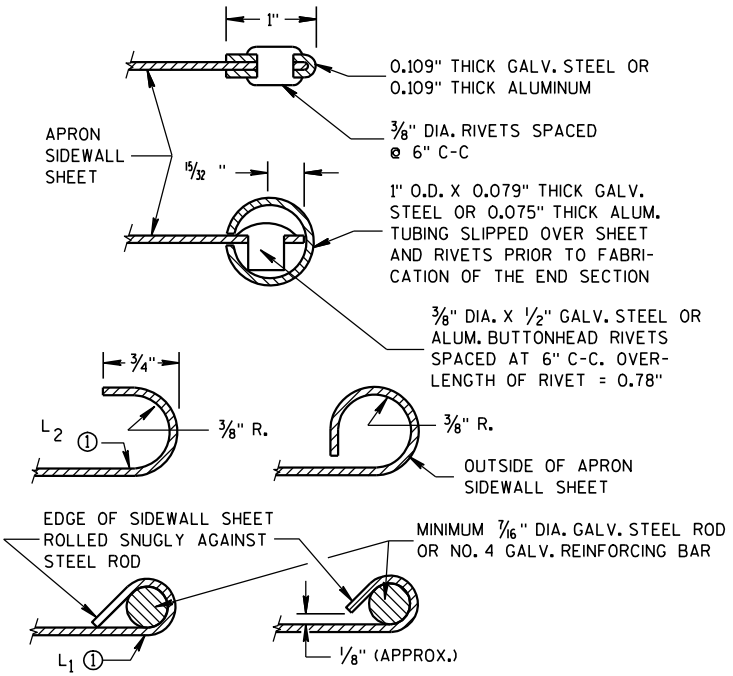
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



GENERAL NOTES

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

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

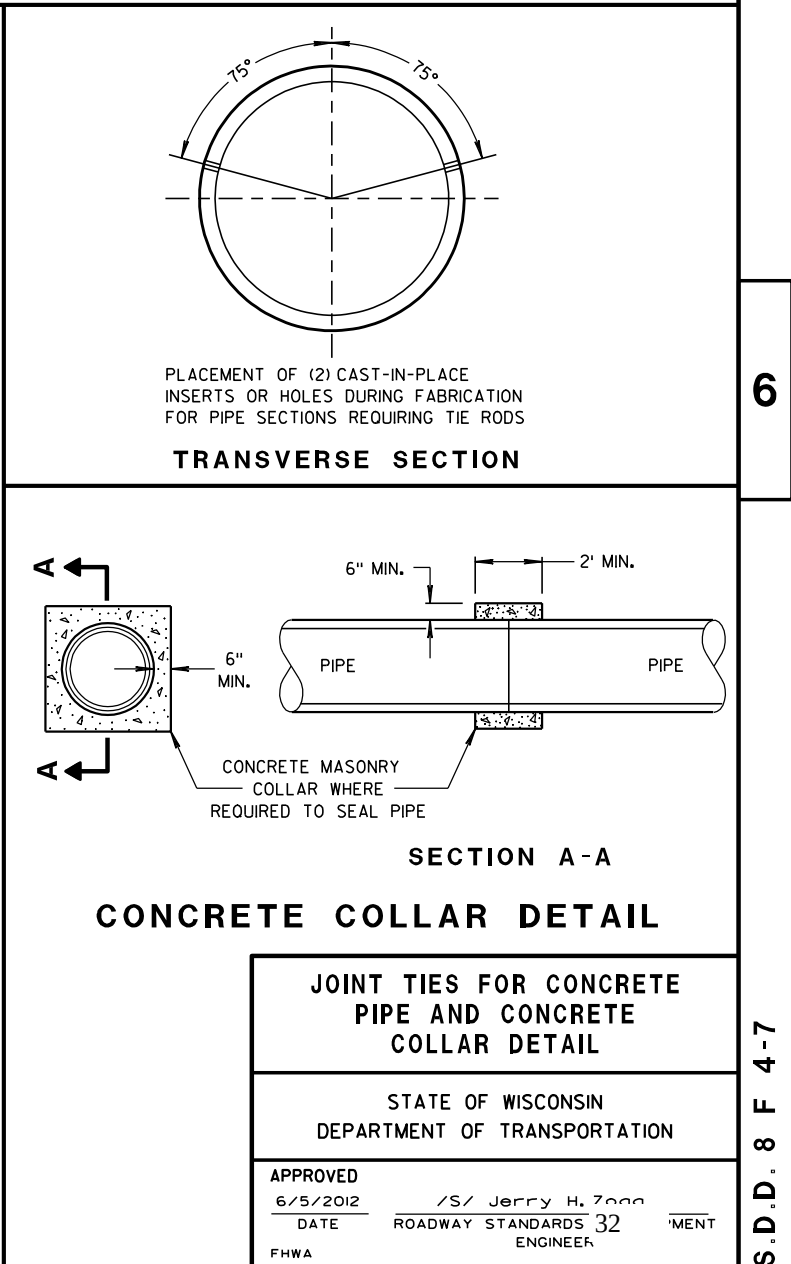
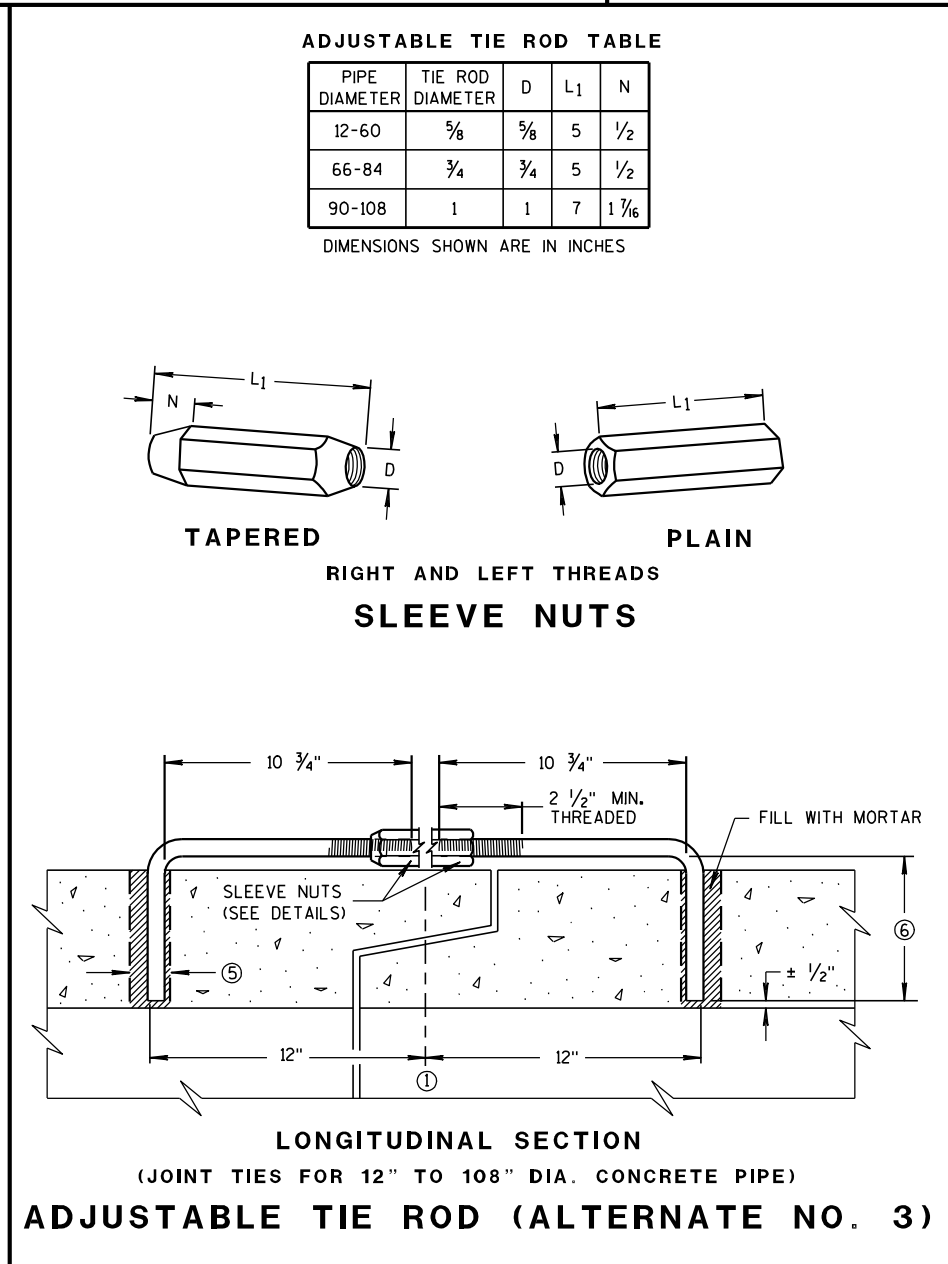
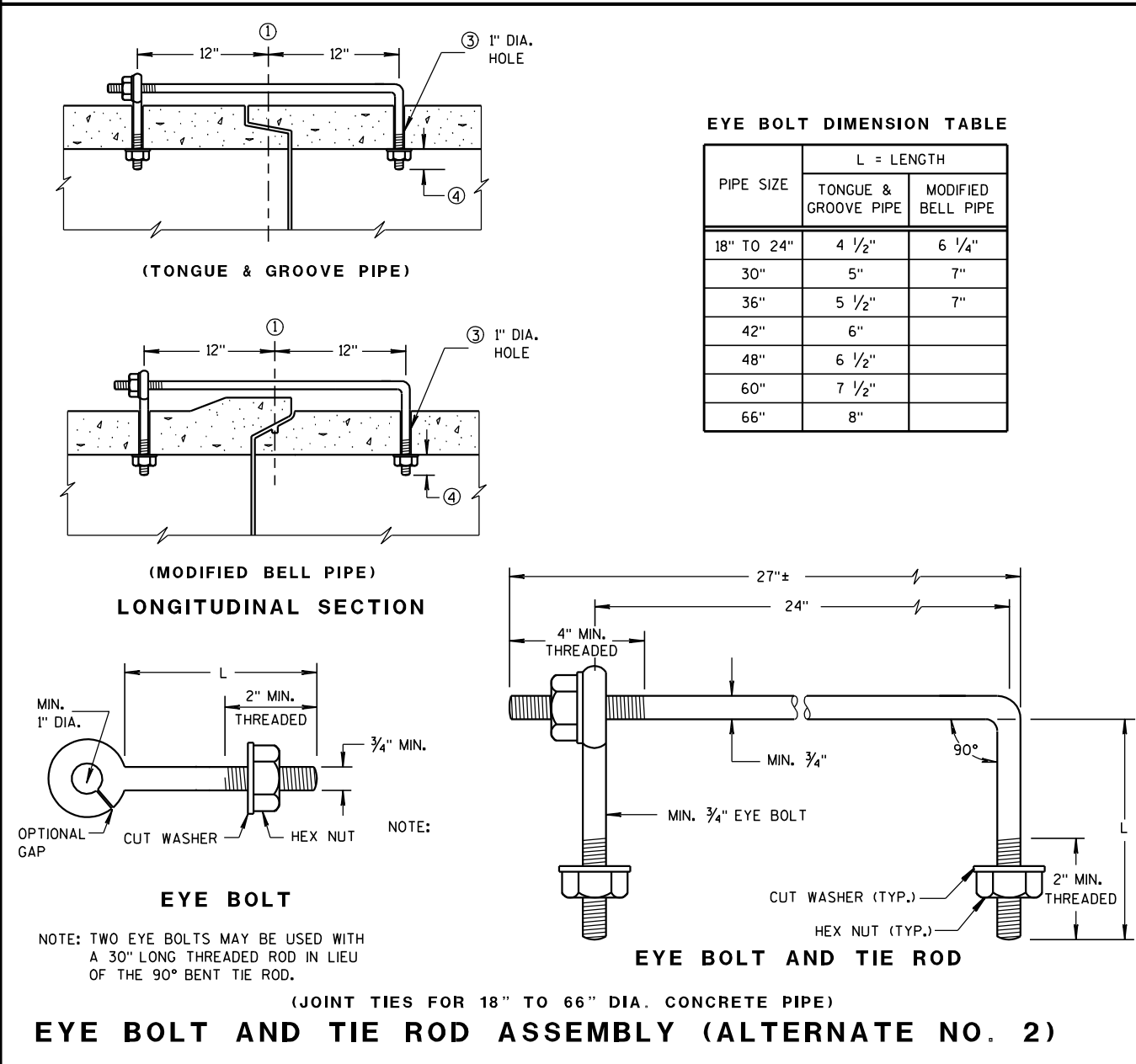
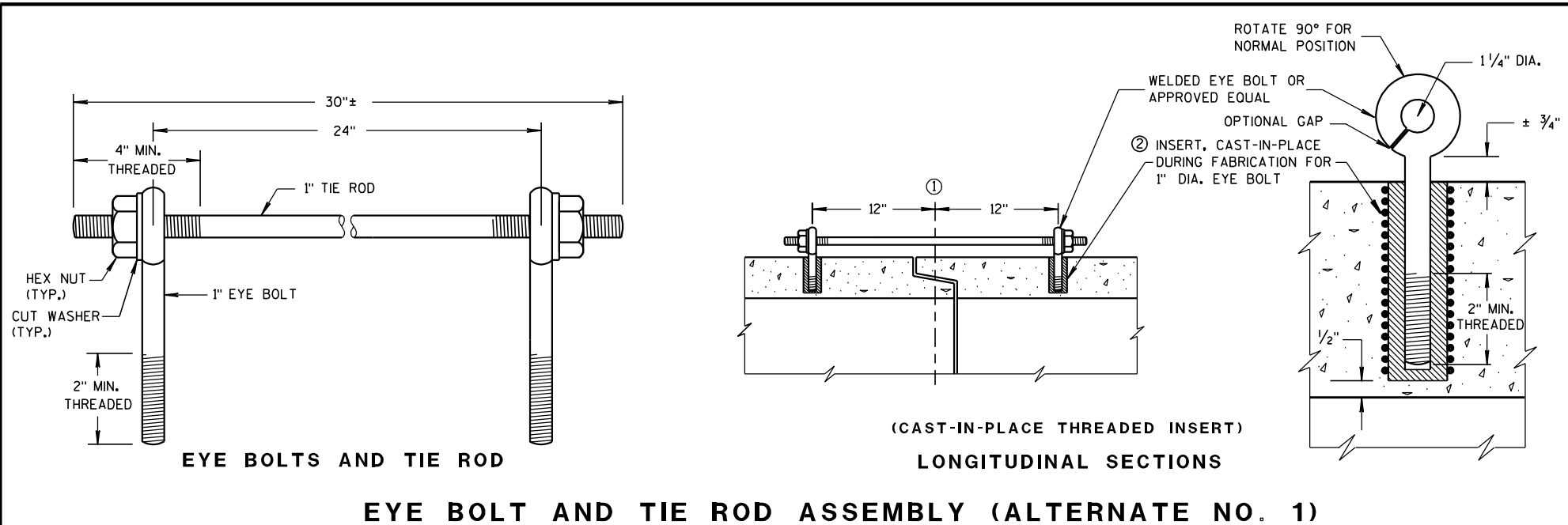
ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT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

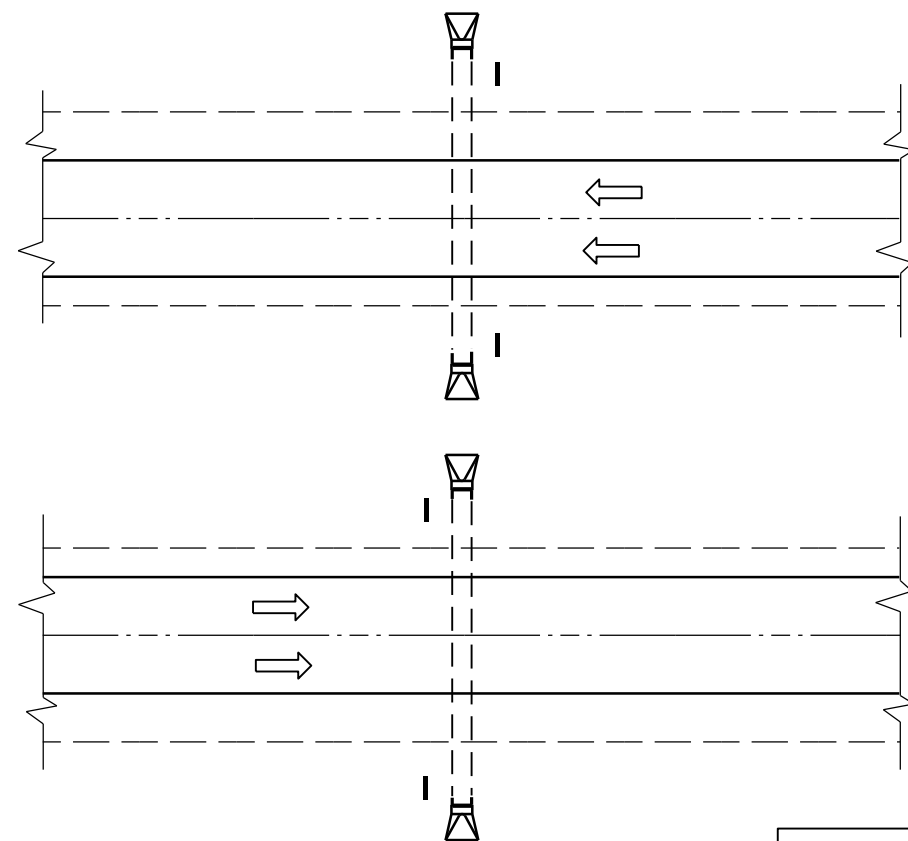
LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES.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

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

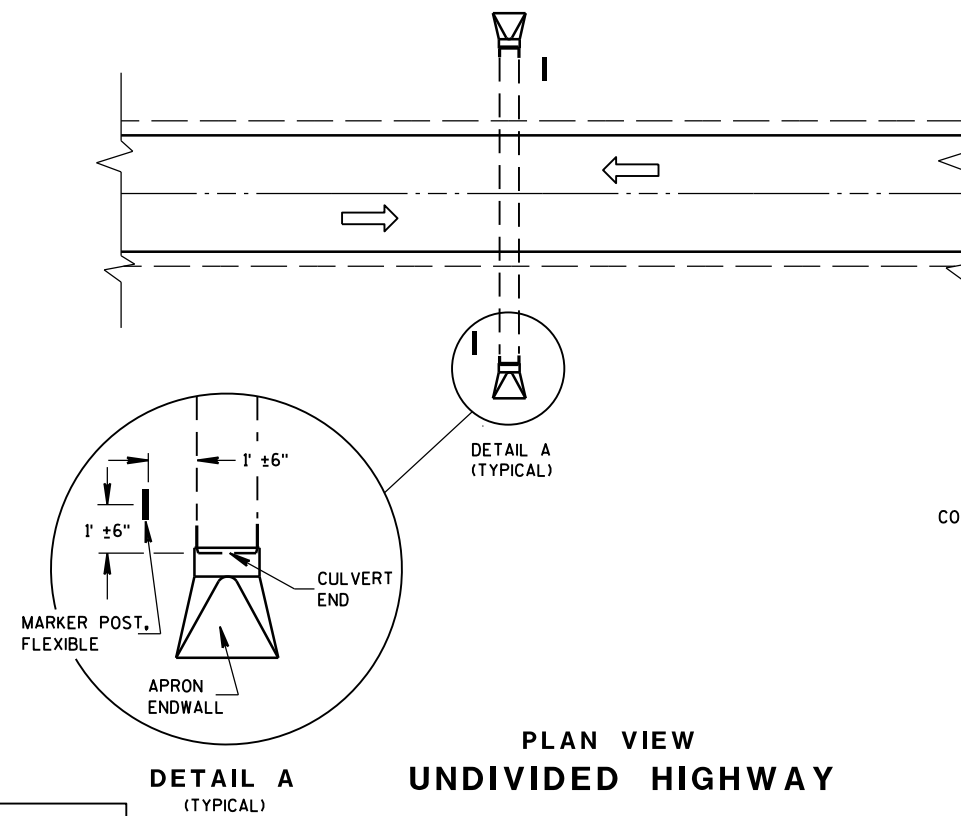
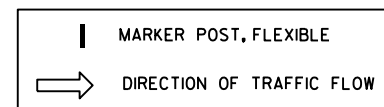
① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR CULVERT PIPE			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
APPROVED 11/30/94 DATE	/S/ Rory L. Rhinehart CHIEF ROADWAY DEVELOP	31	NEER
FHWA			





PLAN VIEW
DIVIDED HIGHWAY

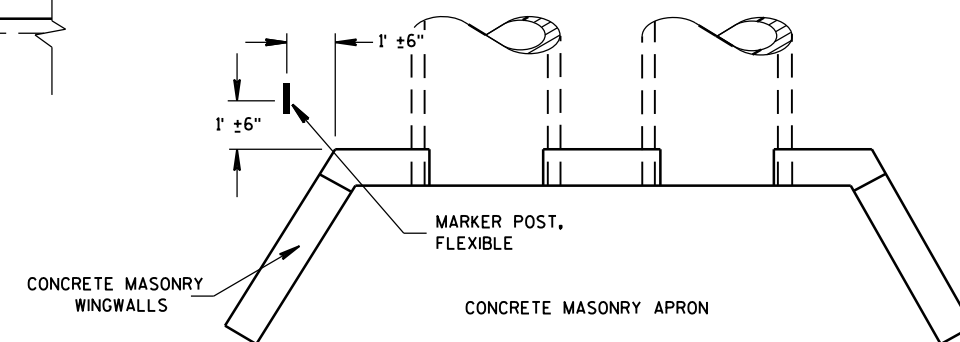


PLAN VIEW
UNDIVIDED HIGHWAY

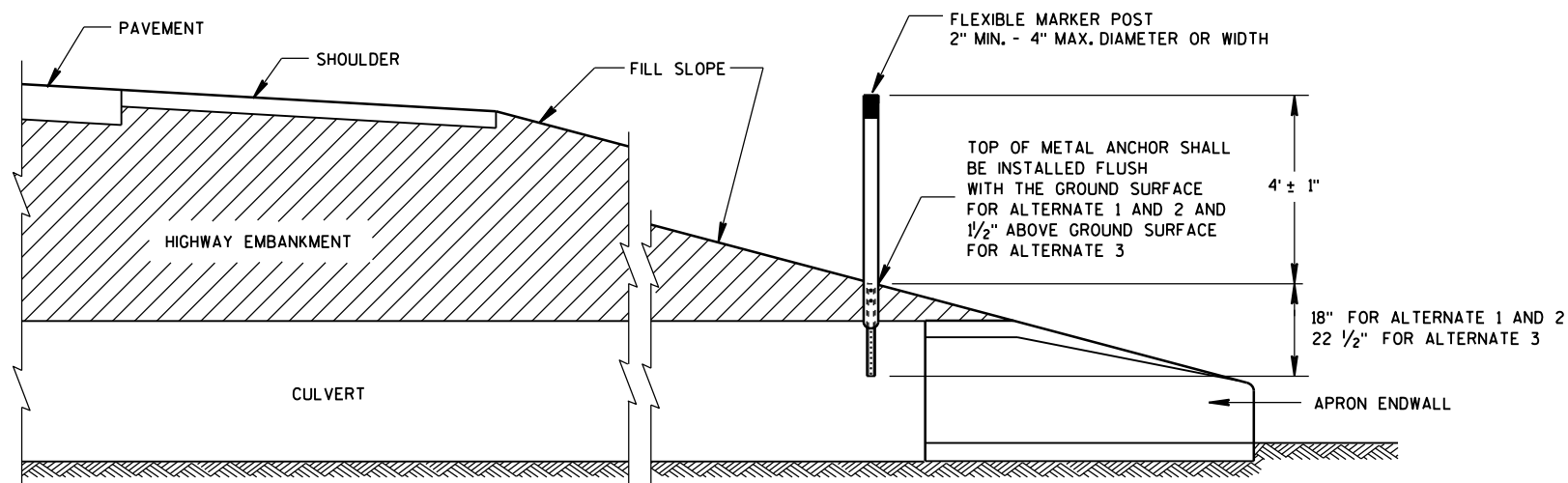
FLEXIBLE MARKER POST LOCATION

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.



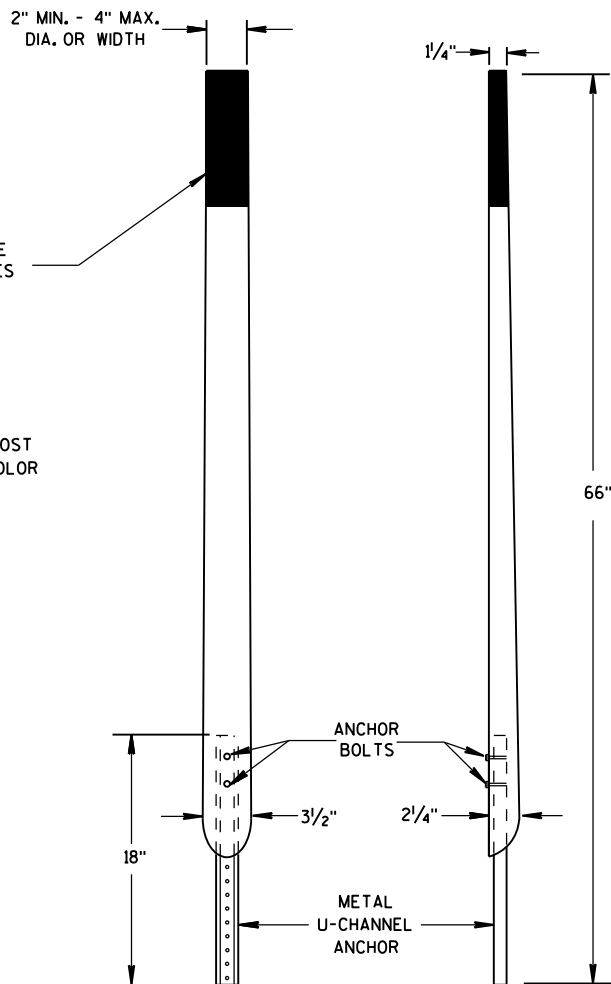
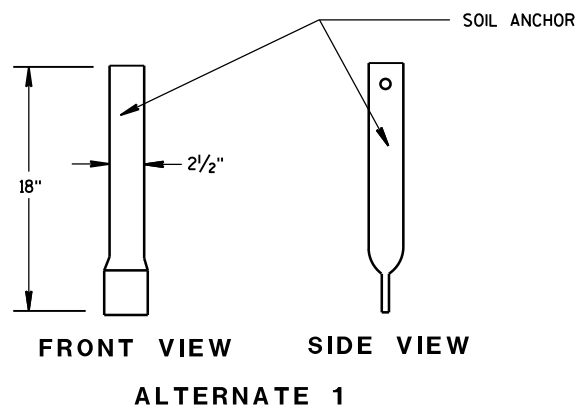
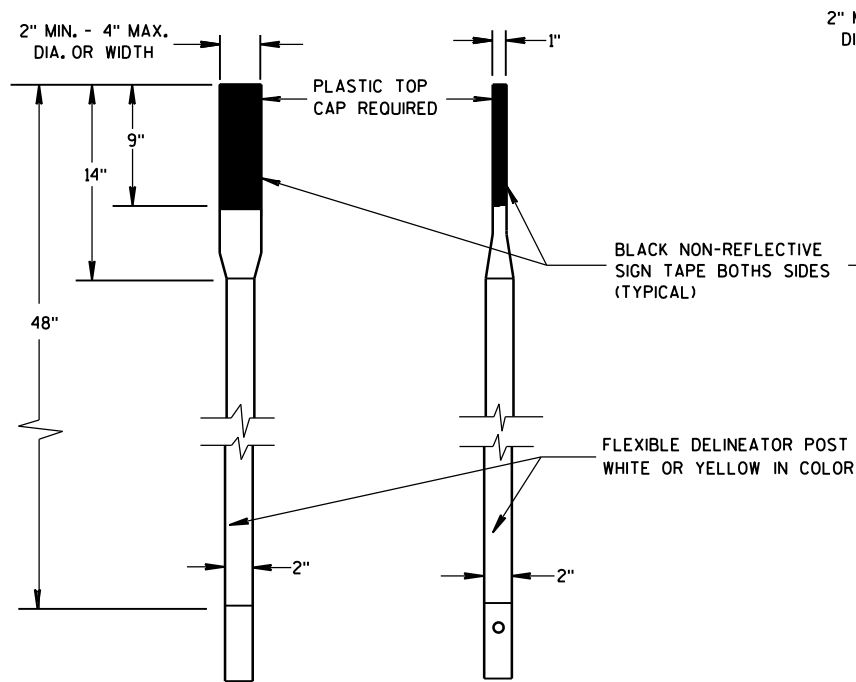
PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH



CROSS SECTION
FLEXIBLE MARKER POST

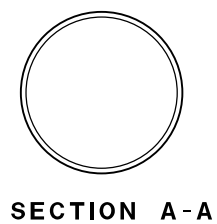
FLEXIBLE MARKER POST
FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

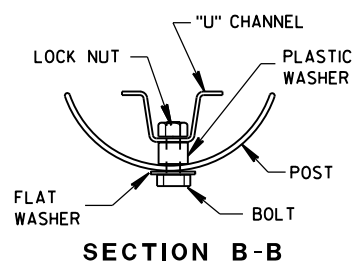
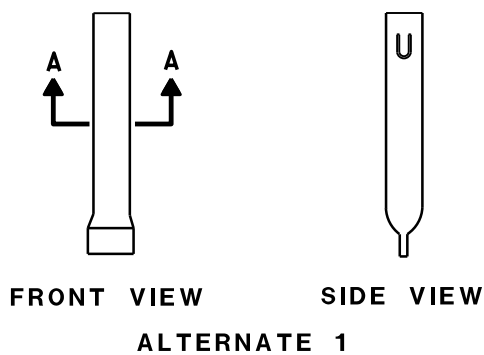


FRONT VIEW SIDE VIEW
ALTERNATE 2

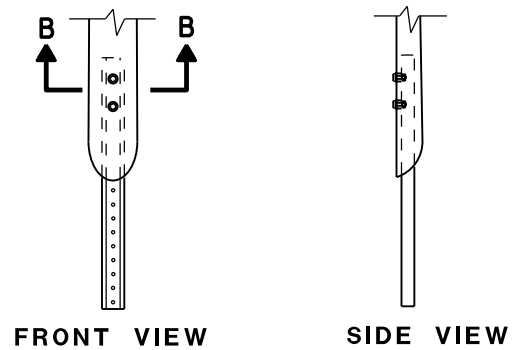
FLEXIBLE MARKER POSTS



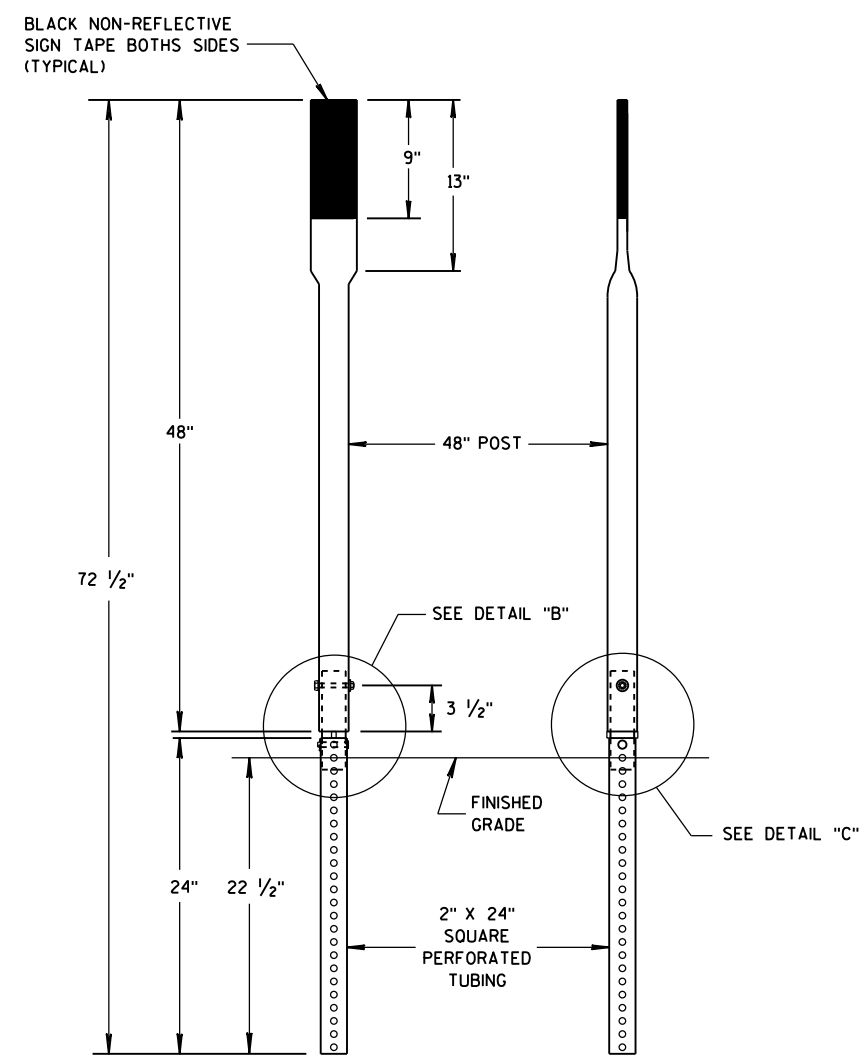
SECTION A-A



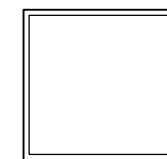
SECTION B-B



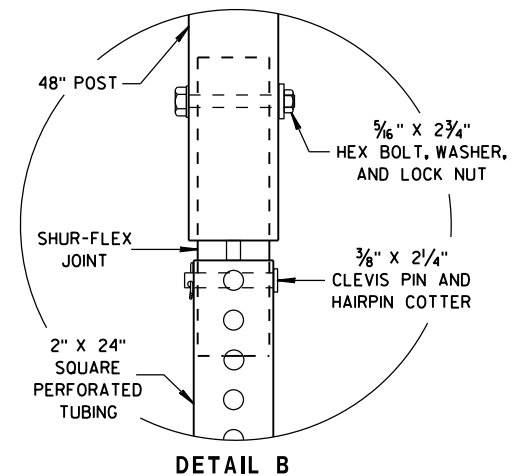
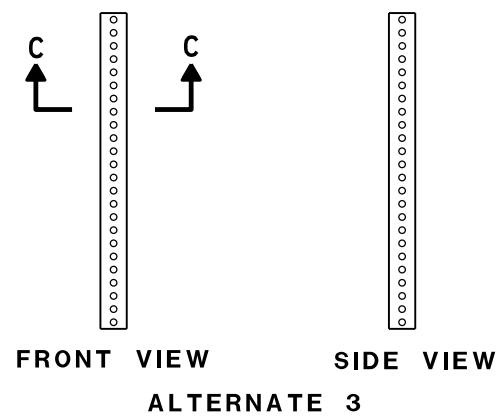
FRONT VIEW SIDE VIEW
ALTERNATE 2
FLEXIBLE MARKER POST ANCHORS



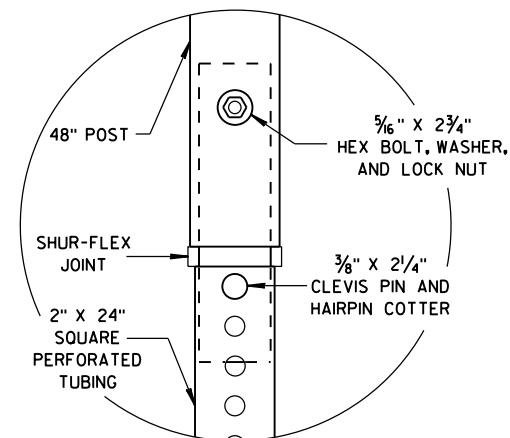
FRONT VIEW SIDE VIEW
ALTERNATE 3



SECTION C-C



DETAIL B



DETAIL C

FLEXIBLE MARKER POST FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

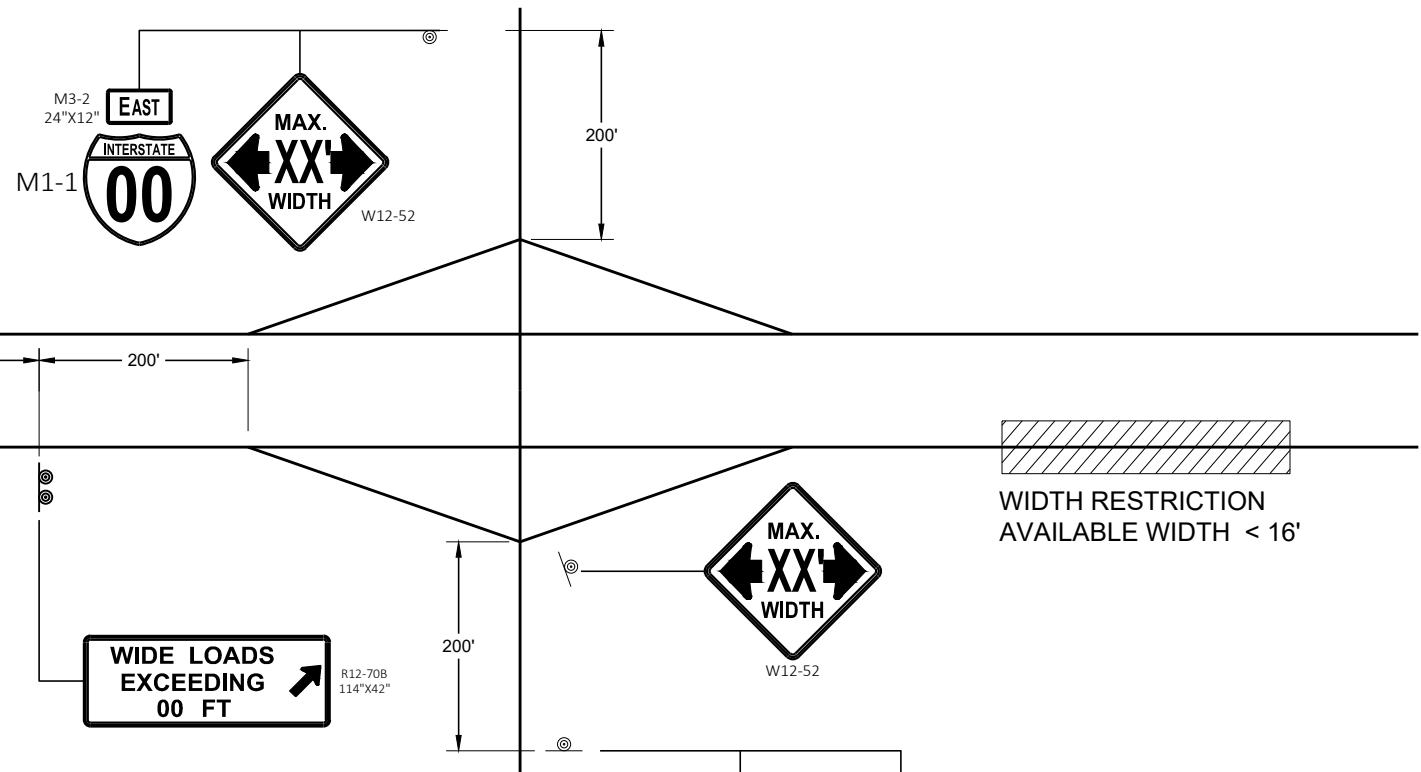
10/1/2012

DATE

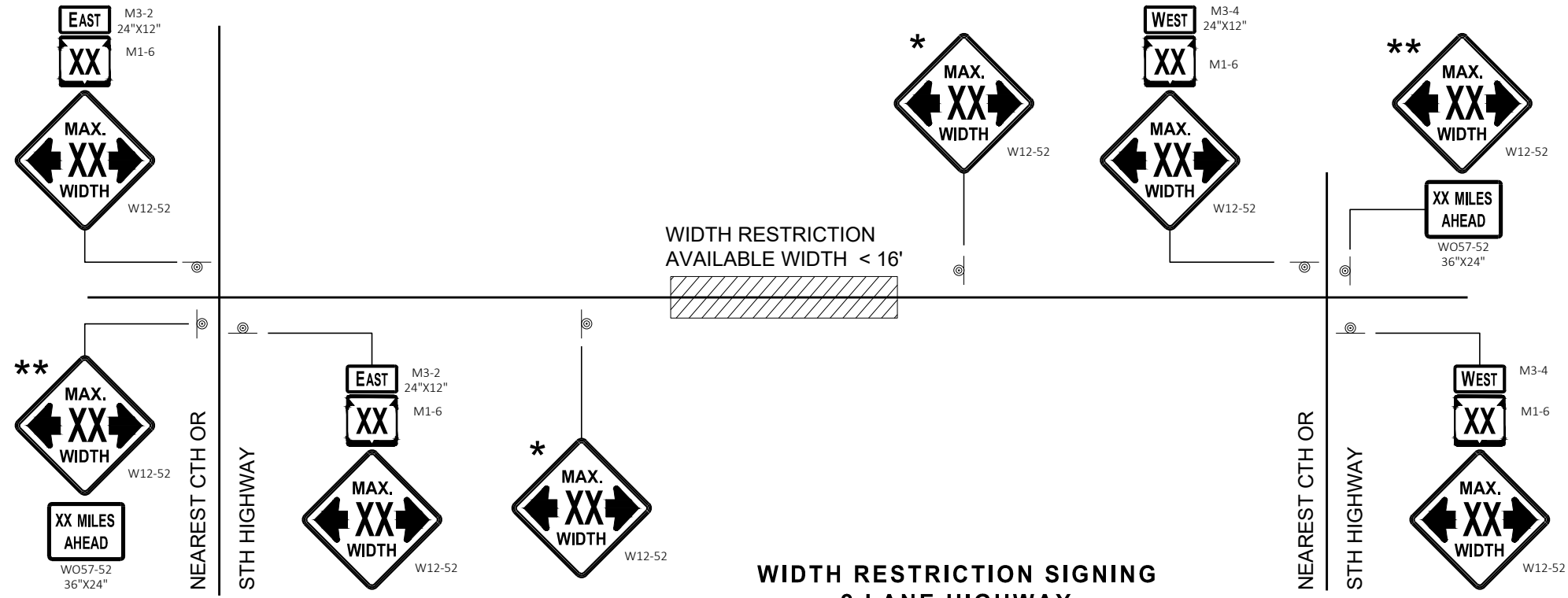
FHWA

/S/ Travis Feltes
STATE TRAFFIC ENGINEER 34

IGN



WIDTH RESTRICTION SIGNING



WIDTH RESTRICTION SIGNING
2 LANE HIGHWAY

LEGEND

 SIGN ON PERMANENT SUPPORT

GENERAL NOTES

- THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.
- THE SPACING BETWEEN SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.
- ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.
- ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.
- "WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.
- WIDTH ON SIGN TO BE APPROXIMATELY ONE FOOT LESS THAN AVAILABLE WIDTH.
- *** PLACE 500 FEET BEFORE THE W20 - 1A AND 500 FEET BEFORE ADDITIONAL SIGNS FOR ROADWAYS WITH A PRE - CONSTRUCTION SPEED LIMIT OF 45 MPH OR MORE. FOR 35-40 MPH, USE 350 FOOT TYPICAL SPACING. FOR 25-30 MPH, USE 200 FOOT TYPICAL SPACING.
- **** SIGN SHALL BE VISIBLE FROM ROADWAY.
- ***** ADDITIONAL SIGNS NEEDED IF THERE IS AN ON RAMP BETWEEN SIGNS.



ADVANCED WIDTH RESTRICTION SIGNING	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED November 2018 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER 35
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.

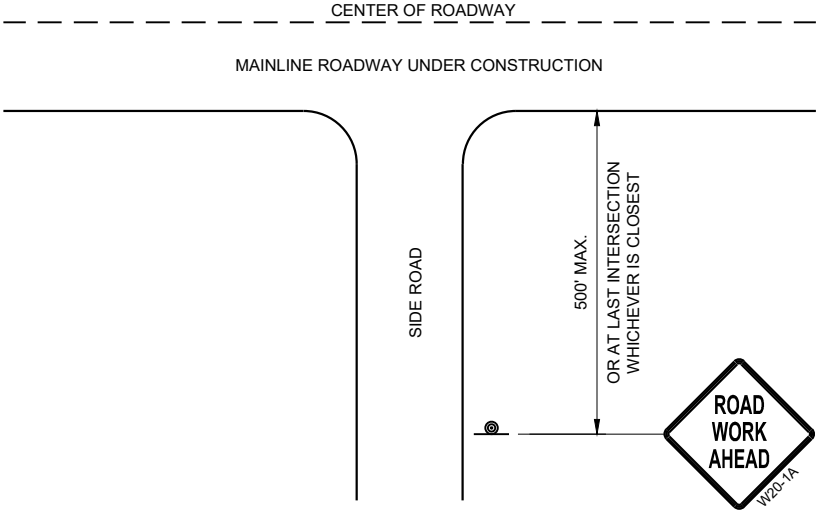
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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.

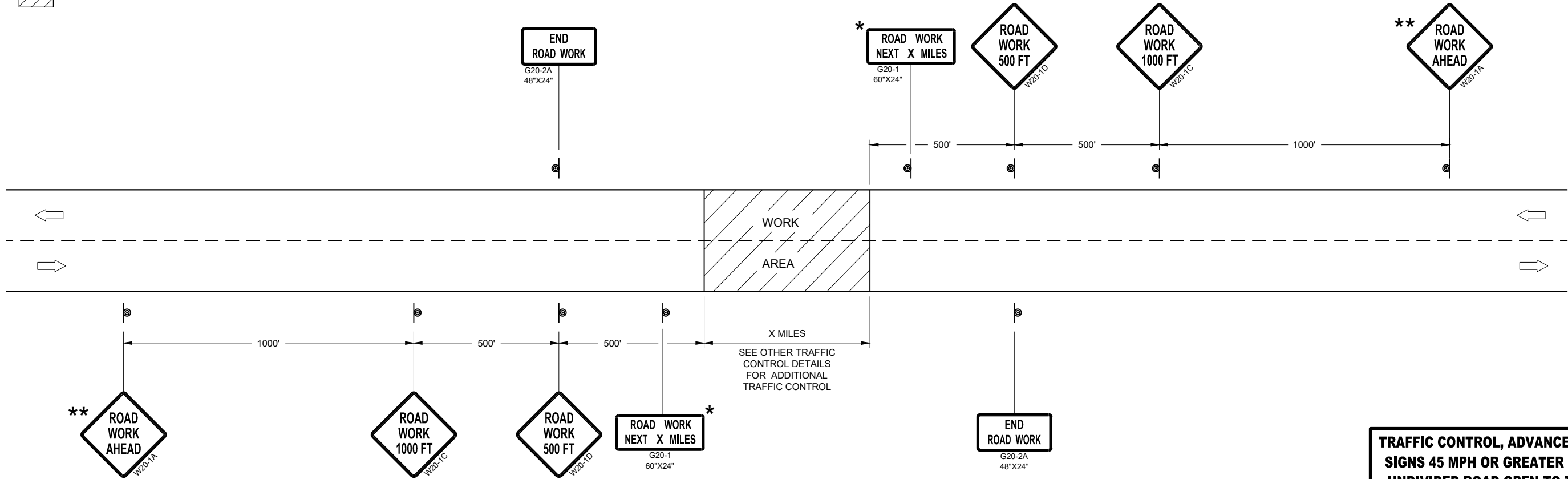
- * OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- ** PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.

LEGEND

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



TYPICAL SIDE ROAD APPROACH
WARNING SIGN DETAIL



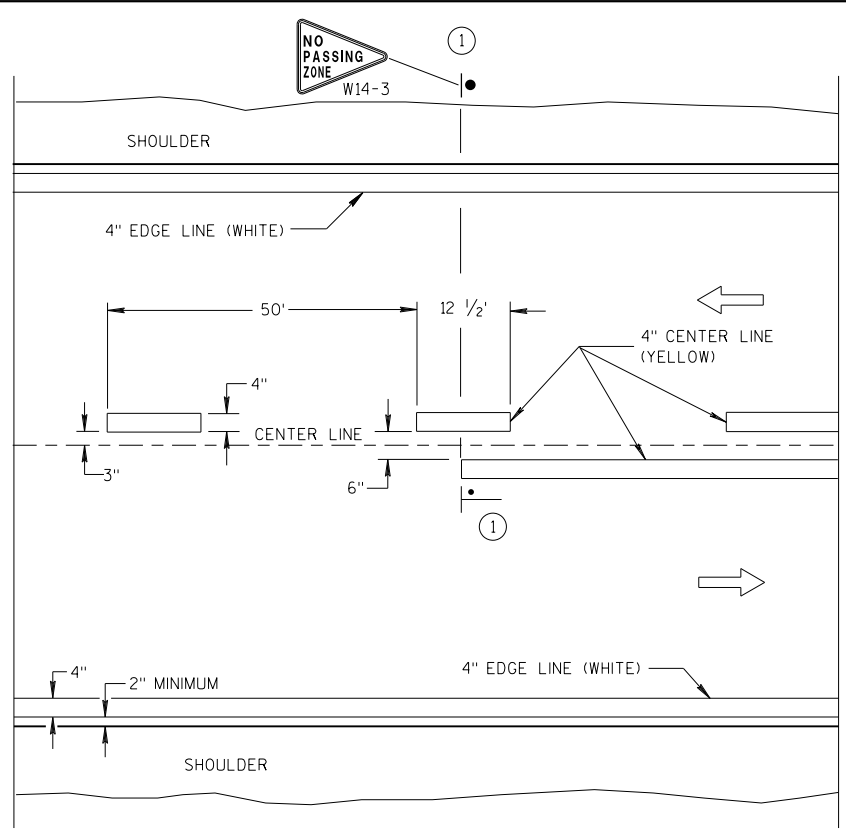
TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

TRAFFIC CONTROL, ADVANCE WARNING
SIGNS 45 MPH OR GREATER TWO-WAY
UNDIVIDED ROAD OPEN TO TRAFFICE

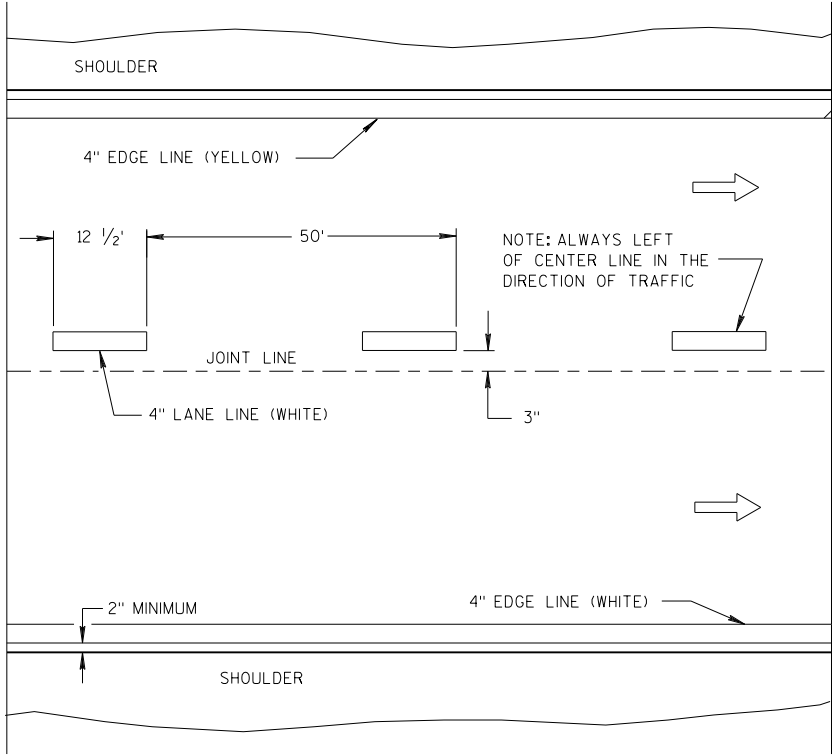
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
July 2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 36

FHWA

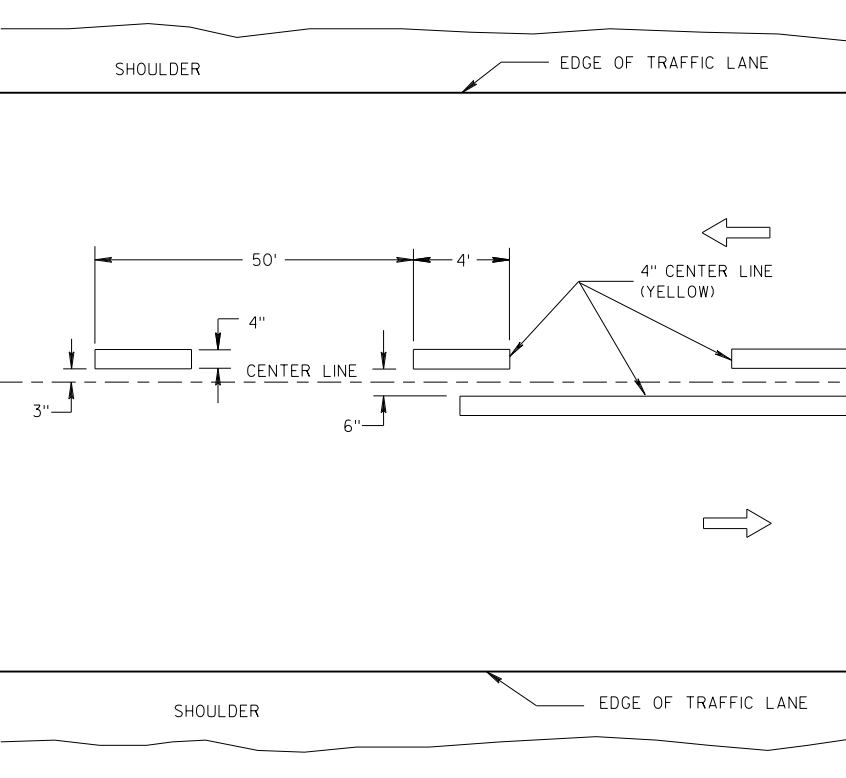


TWO WAY TRAFFIC

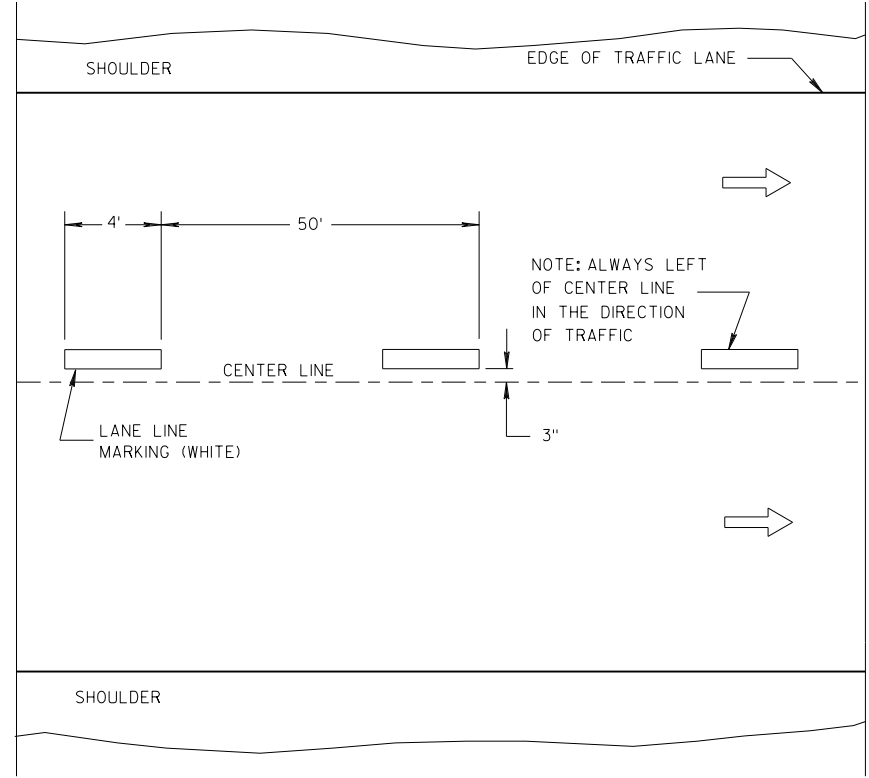


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

GENERAL NOTES

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

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

NOTE

ARROW SYMBOL (➡) SHOWS DIRECTION OF TRAVEL

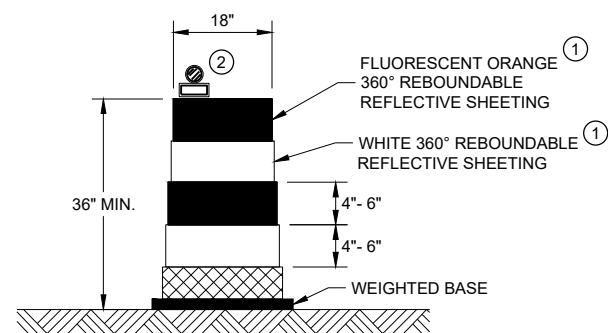
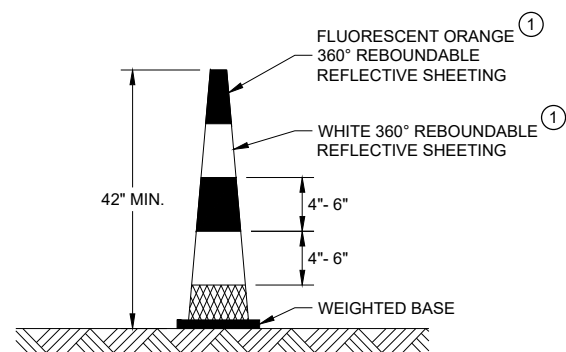
LEGEND

- "T" MARKING
- POST MOUNTED SIGN

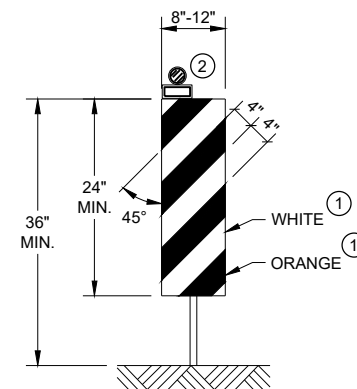
LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

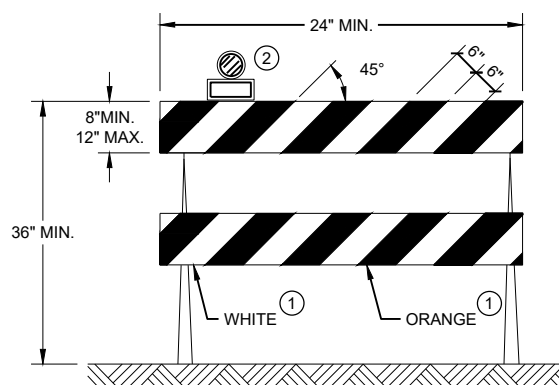
APPROVED
7/2018 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MAR 37 INEER
FHWA

**DRUM****42" CONE**

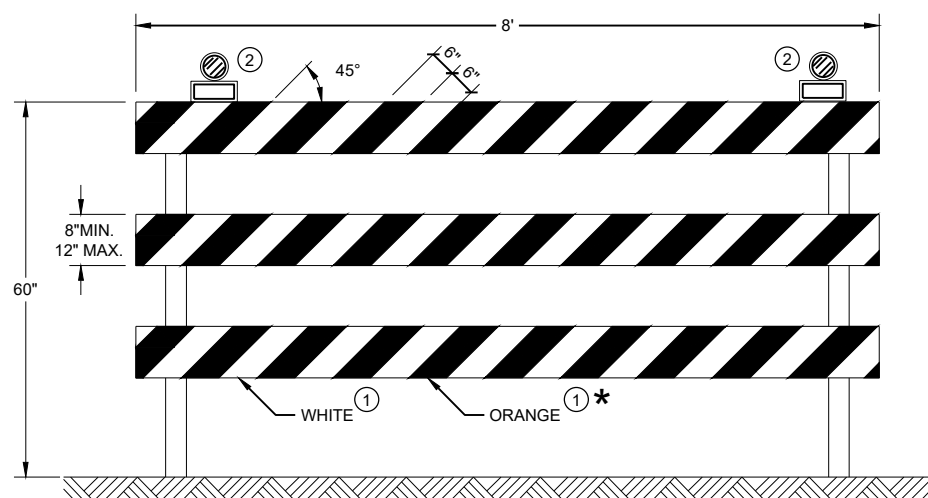
DO NOT USE IN TAPERS
 $\frac{1}{2}$ SPACING OF DRUMS

**VERTICAL PANEL**

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

**TYPE II BARRICADE**

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

**TYPE III BARRICADE**

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

GENERAL NOTES

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

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

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

APPROVED
 June 2017 /S/ Andrew Heidtke
 DATE WORK ZONE ENGINEER 38

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.

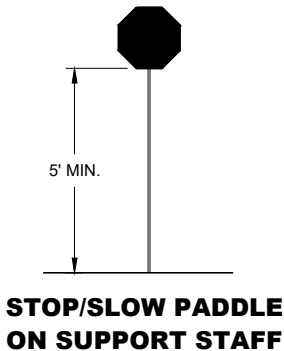
③ EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS SPACED ACCORDING TO MANUFACTURER'S RECOMMENDATION, PLACED TRANSVERSE ACROSS THE LANE AT LOCATIONS SHOWN.

ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FOR 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.

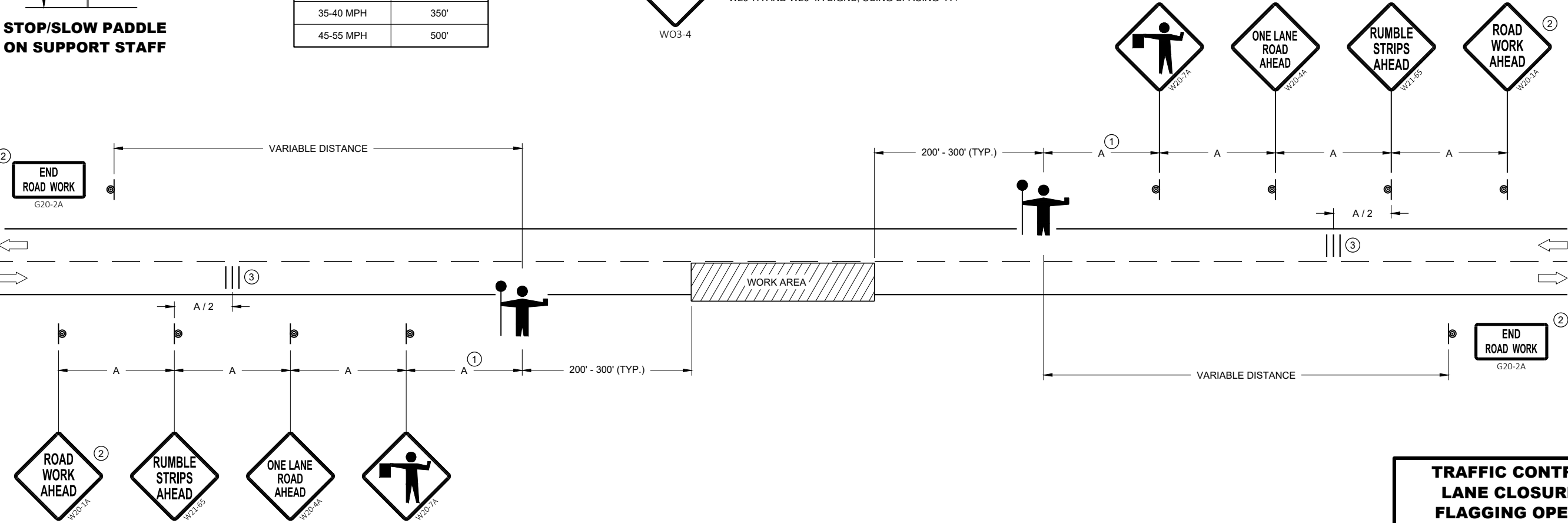


SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

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



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

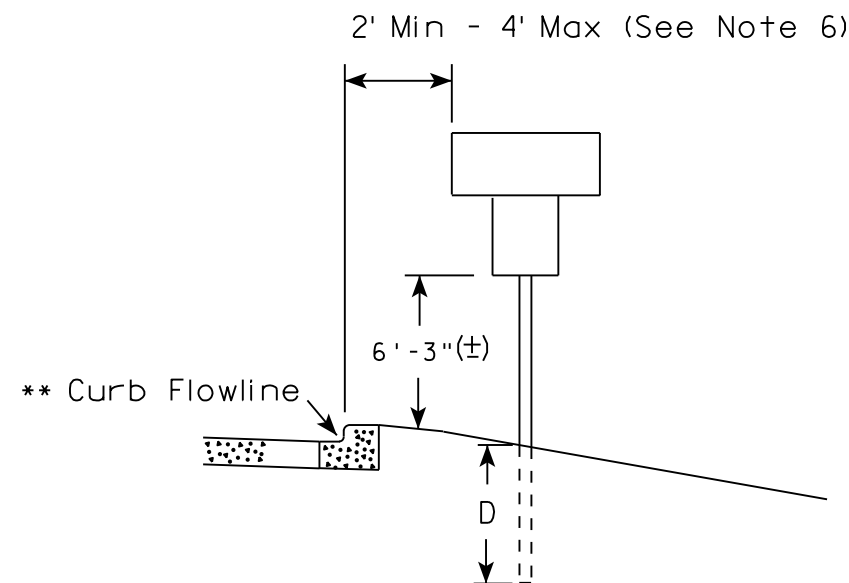
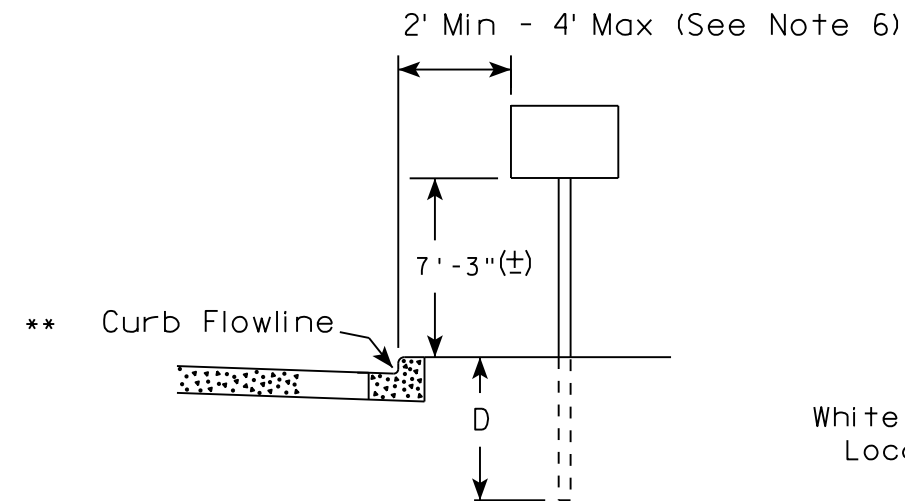
TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2019 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 39

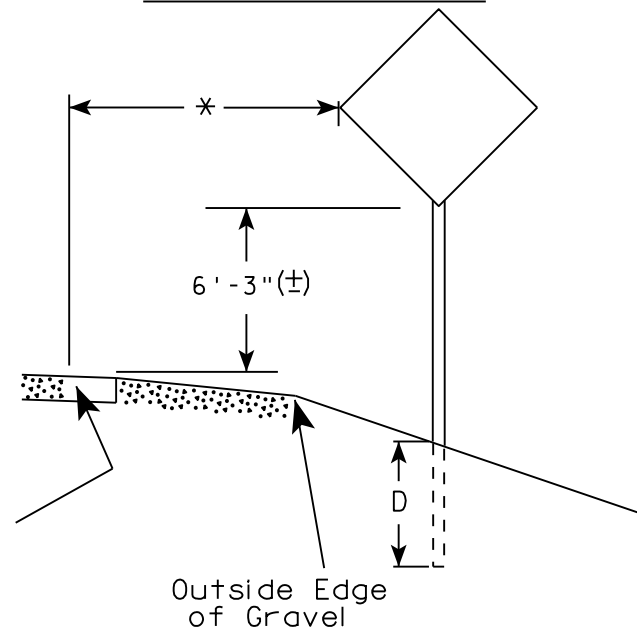
FHWA

URBAN AREA

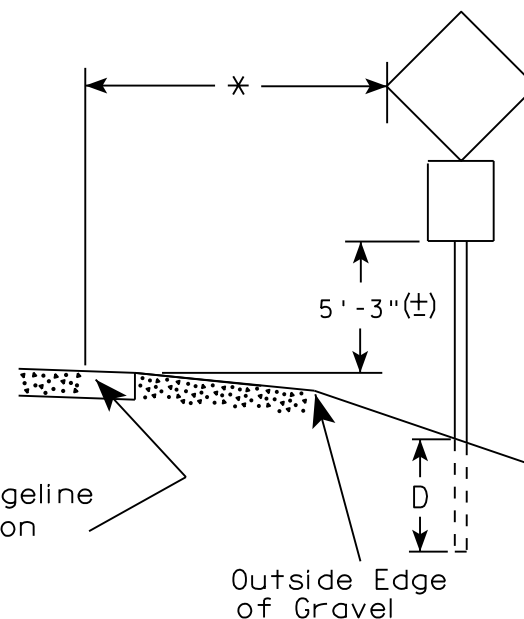


White Edgeline
Location

RURAL AREA (See Note 2)



White Edgeline
Location



Outside Edge
of Gravel

POST EMBEDMENT DEPTH

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

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

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

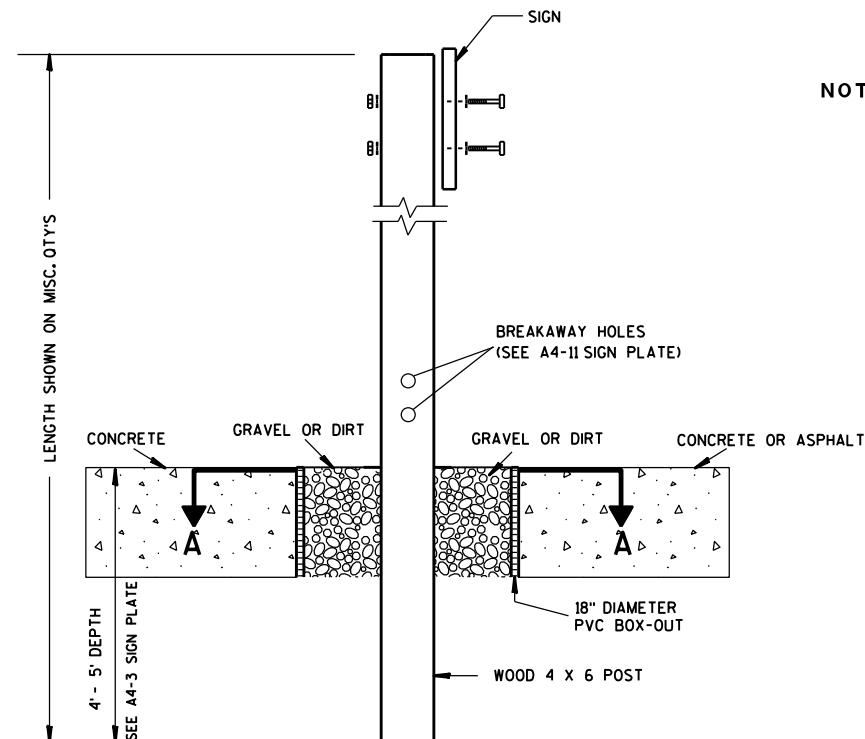
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

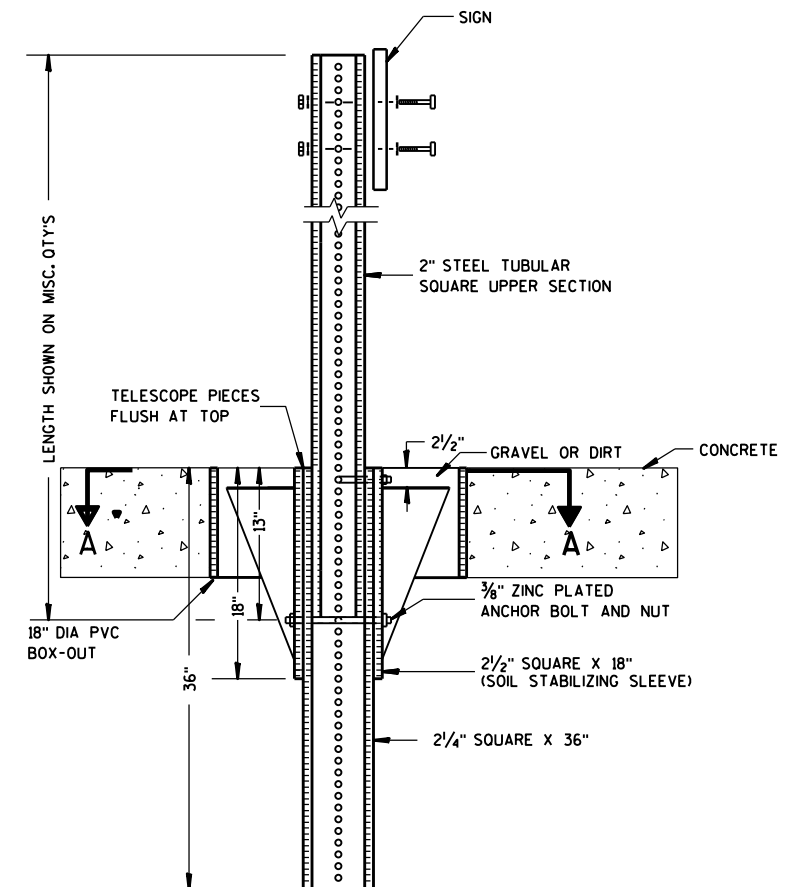
DATE 8/21/17 PLATE NO. A4-3.21



ELEVATION VIEW

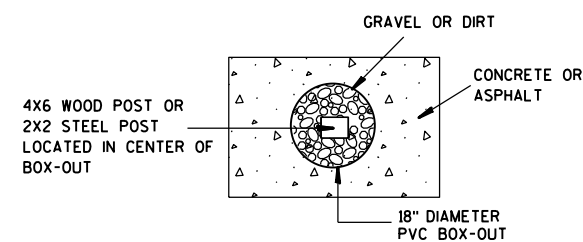
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST
BOX-OUTS
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/27/14 PLAT 41 A4-3B.1

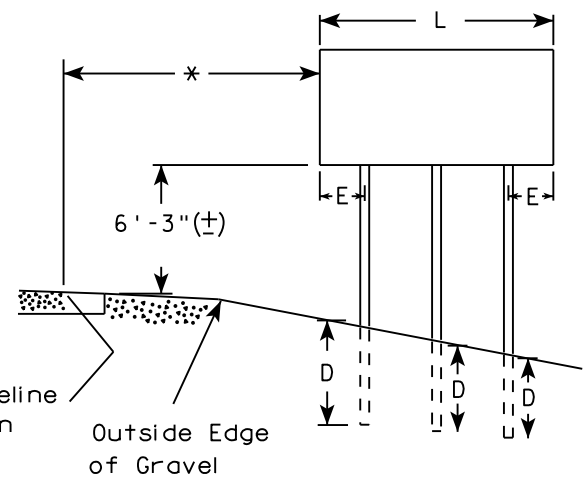
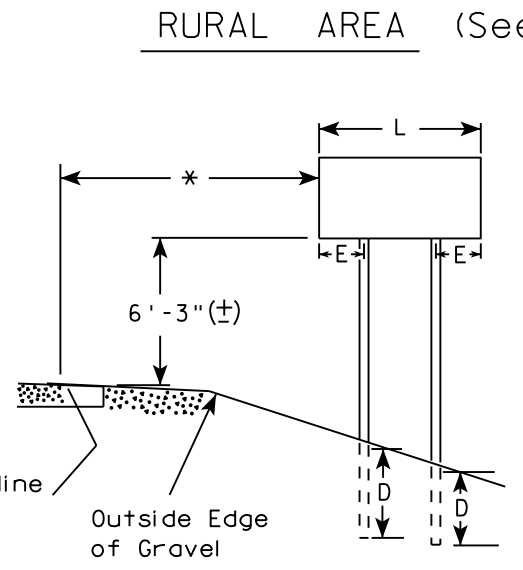
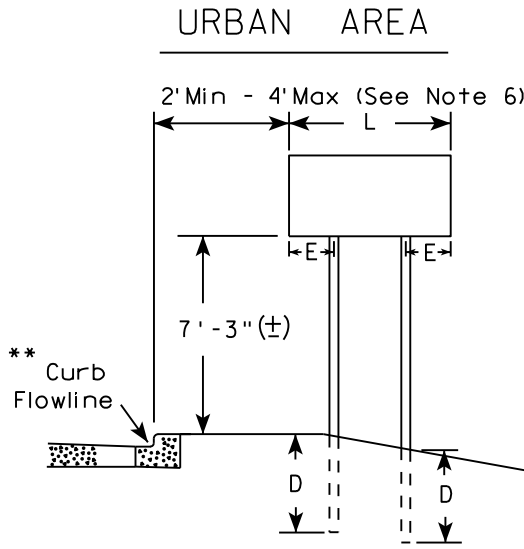
PROJECT NO:

HWY:

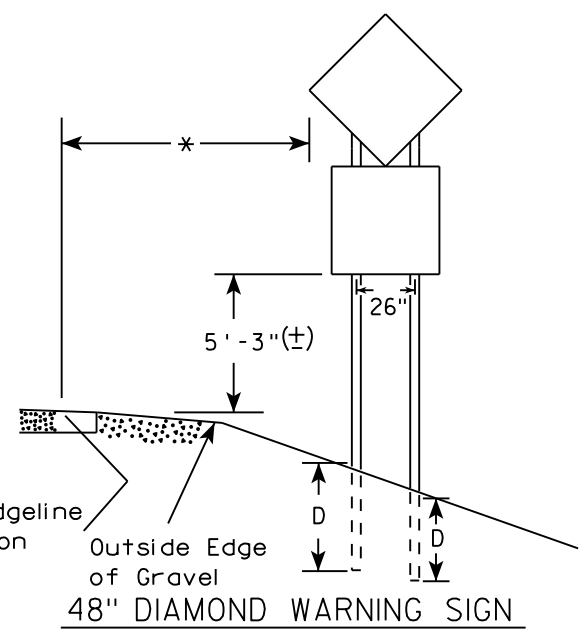
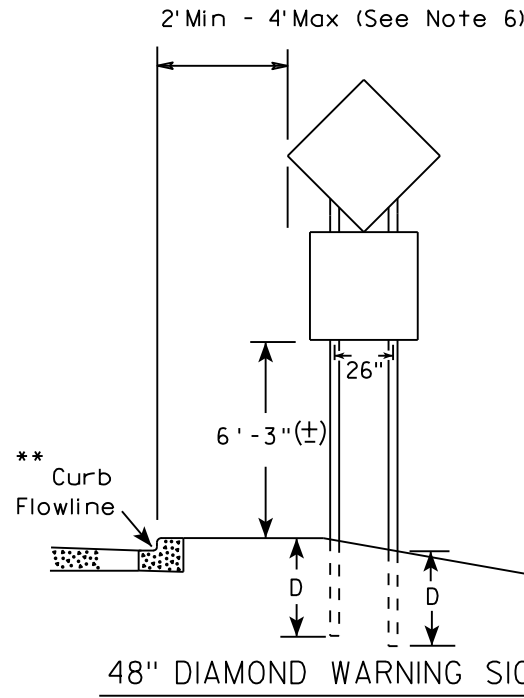
COUNTY:

SHEET NO:

E



- GENERAL NOTES
1. For 3 or 4 post installations, individual post spacing shall be greater than 3'-6".
 2. See tables below for required number of posts.
 3. For expressways and freeways, mounting height is 7'-3" (±) or 6'-3" (±) depending upon existence of sub-sign.
 4. The (±) tolerance for mounting height is 3 inches.
 5. J-Assemblies are considered to be one sign for mounting height.
 6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
 7. Folding signs shall be mounted at a height of 5'-3" (±) or as directed by the engineer.
 8. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Clearance Markers (W5-52), Mile Markers (D10 series), In Road Object Markers (W5-54) & End of Road Markers (W5-56) shall be mounted at a height of 4"-3" (±).



- * 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.
- ** The existence of curb and gutter does not in itself mandate the vertical clearance illustrated. That height is typically measured where there is sidewalk adjacent to the roadway or parking is permitted. In the absence of sidewalk vertical clearance is measured from the top of the curb. Offset of signs is measured from the flow line.
- *** See A4-3 sign plate for signs 4' or less in width and less than 20 S.F. in area.

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

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

POST EMBEDMENT DEPTH

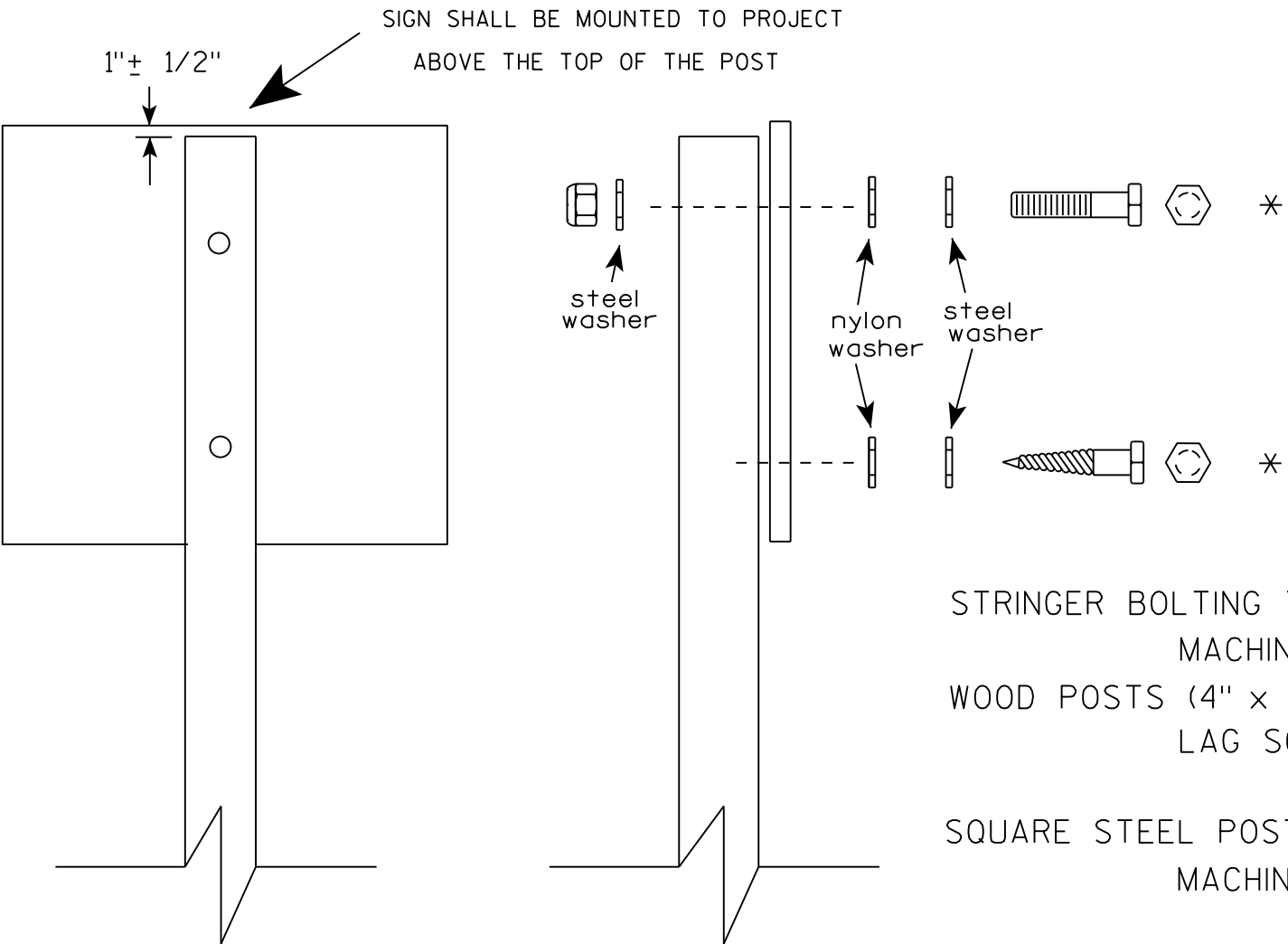
Area of Sign Installation (Sq. Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

TYPICAL INSTALLATION
OF TYPE II SIGNS
ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 8/21/17 PLATE NO. A4-4.15



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

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

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

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

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

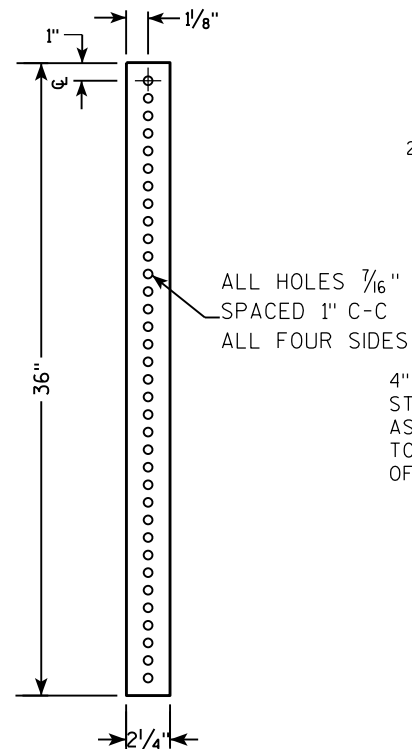
ATTACHMENT OF SIGNS
TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

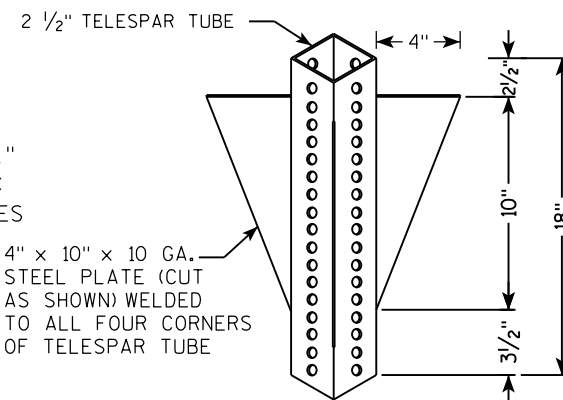
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 8/11/16 PLATE NO. A4-8.8
43

**2 1/4 " SQUARE
12 GAUGE
PERFORATED
GALVANIZED FINISH**



**2 1/2" SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH**



LENGTH SHOWN ON MISC. QTY'S
 18" DIA SCHEDULE 40 PVC BOX-OUT
 TELESCOPE PIECES FLUSH AT TOP
 36"
 18"
 13"
 2 1/2"
 2 1/4" SQUARE X 36"
 2 1/2" SQUARE X 18" (SOIL STABILIZING SLEEVE)
 3/8" ZINC PLATED ANCHOR BOLT AND NUT
 2 1/2" GRAVEL OR DIRT
 3/8" ZINC PLATED CORNER ANCHOR BOLT AND NUT
 ALL HOLES 7/16" SPACED 1" C-C ALL FOUR SIDES
 2" STEEL TUBULAR SQUARE UPPER SECTION
 SEE SIGN PLATE A4-8 FOR BOLT WASHER, & NUT MATERIAL
 SIGN

LENGTH SHOWN ON MISC. QTY'S

SEE SIGN PLATE A4-8 FOR BOLT WASHER, & NUT MATERIAL

2" STEEL TUBULAR SQUARE UPPER SECTION

ALL HOLES $\frac{7}{16}$ " SPACED 1" C-C ALL FOUR SIDES

$\frac{3}{8}$ " ZINC PLATED CORNER ANCHOR BOLT AND NUT

1"

TELESCOPE PIECES FLUSH AT TOP

18"

12"

36"

$\frac{3}{8}$ " ZINC PLATED ANCHOR BOLT AND NUT

2 1/2" SQUARE X 18" (SOIL STABILIZING SLEEVE)

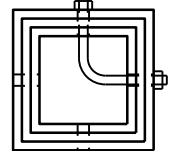
2 1/4" SQUARE X 36"

A

B

C

3/8" ZINC PLATED CORNER
ANCHOR BOLT AND NUT



DIRECTION
OF TRAFFIC

SECTION A-A

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

TUBULAR STEEL
SIGN POST
A4-9

WISCONSIN DEPT OF TRANSPORTATION

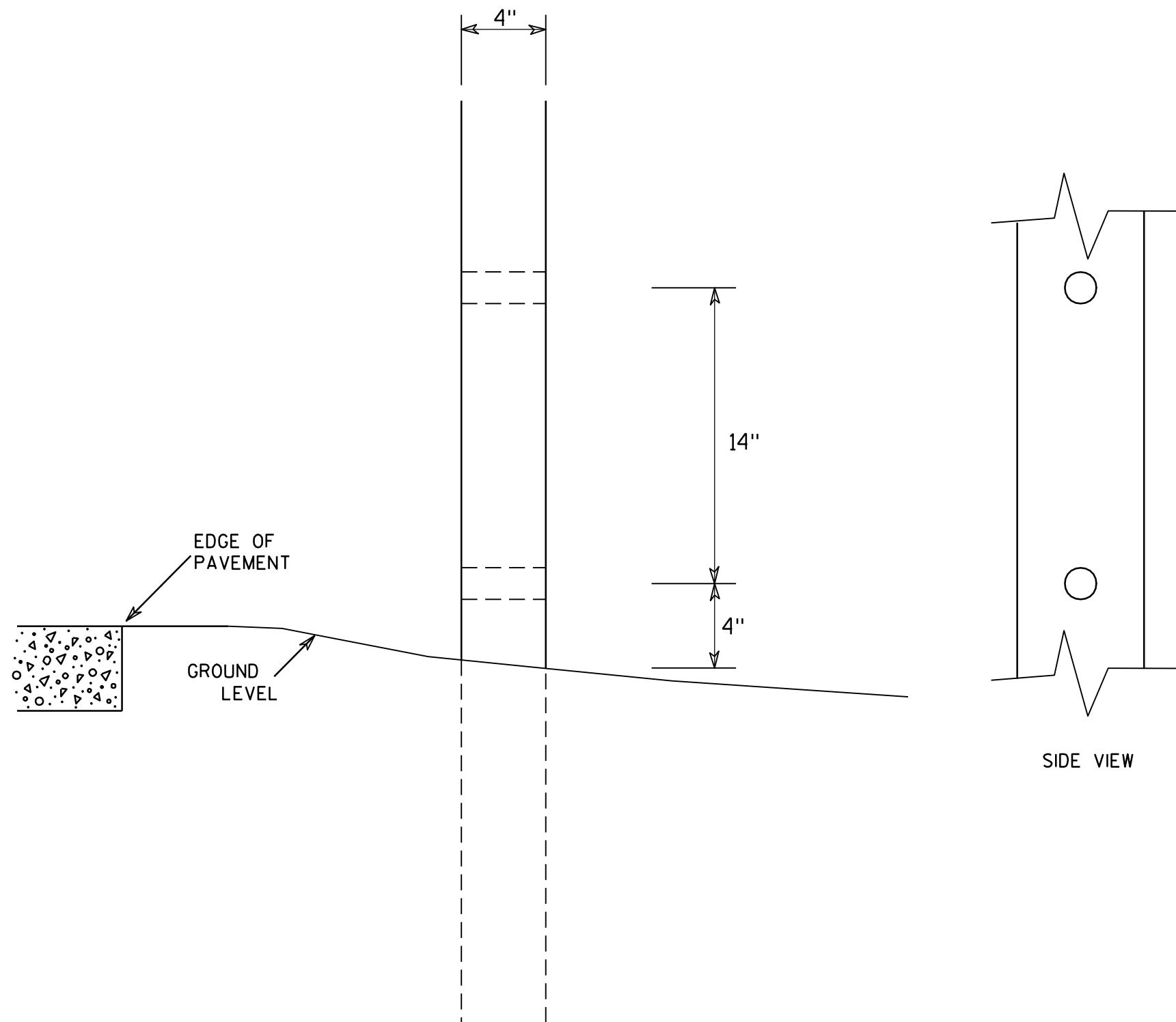
APPROVED Matthew R Rauch

for State Traffic Engineer

DATE 2/05/15 PLAT 11 14-9.9

PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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7

GENERAL NOTES

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

7

**4 X 6 WOOD POST
MODIFICATIONS**

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Chester J. Spang
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

HWY:

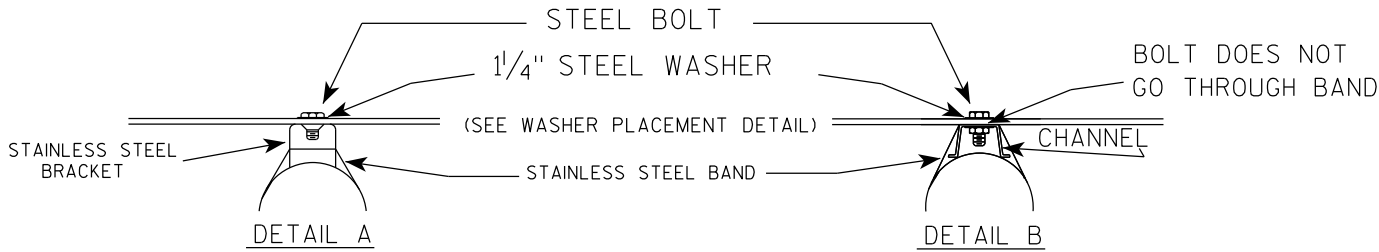
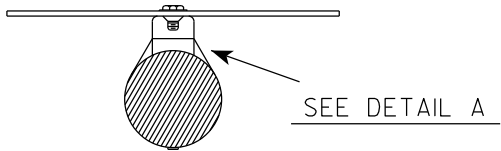
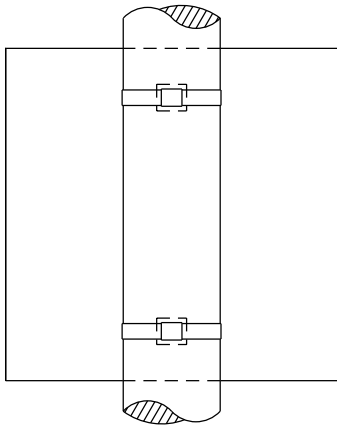
COUNTY:

SHEET NO: 45

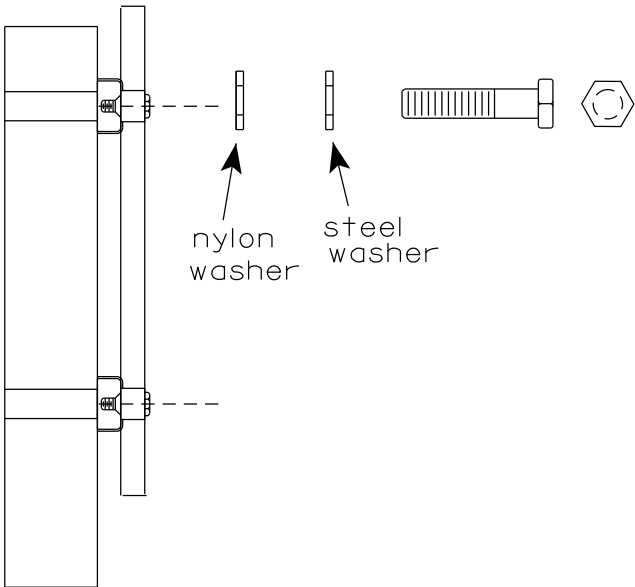
E

BANDING

SINGLE SIGN



WASHER PLACEMENT

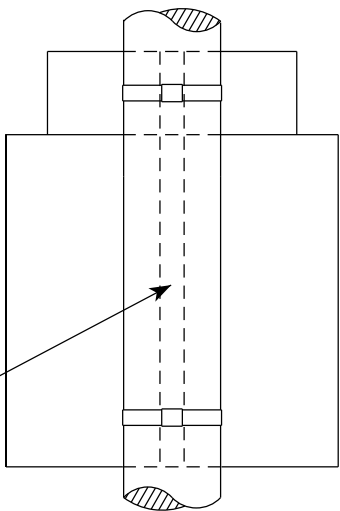


WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON
FOR ALL TYPE H SIGNS

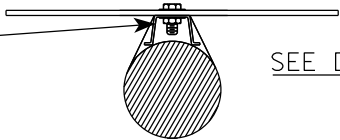
GENERAL NOTES

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

"J" ASSEMBLY



CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET

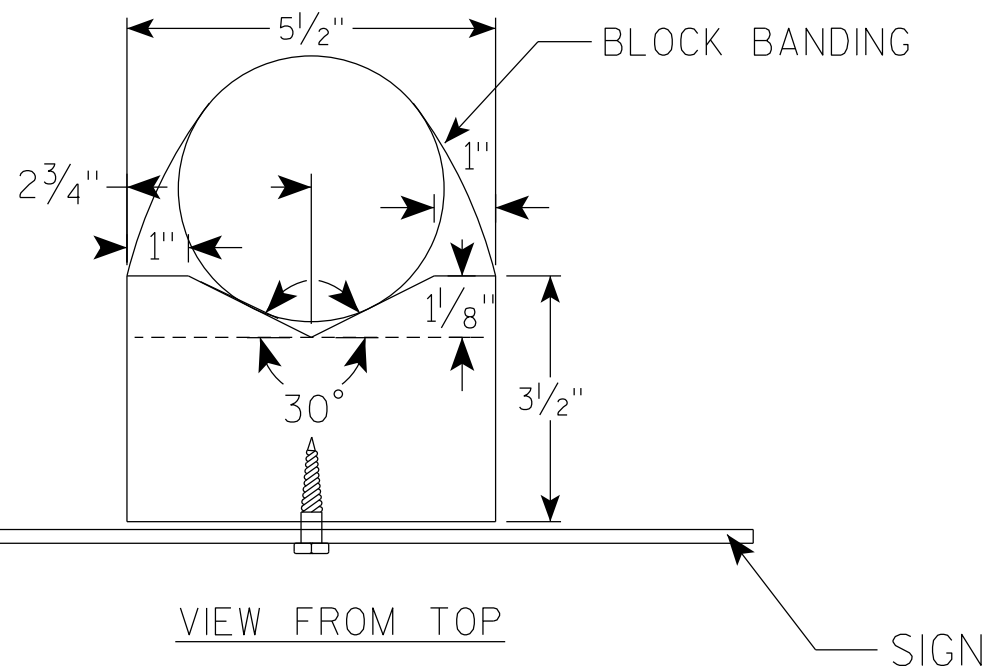
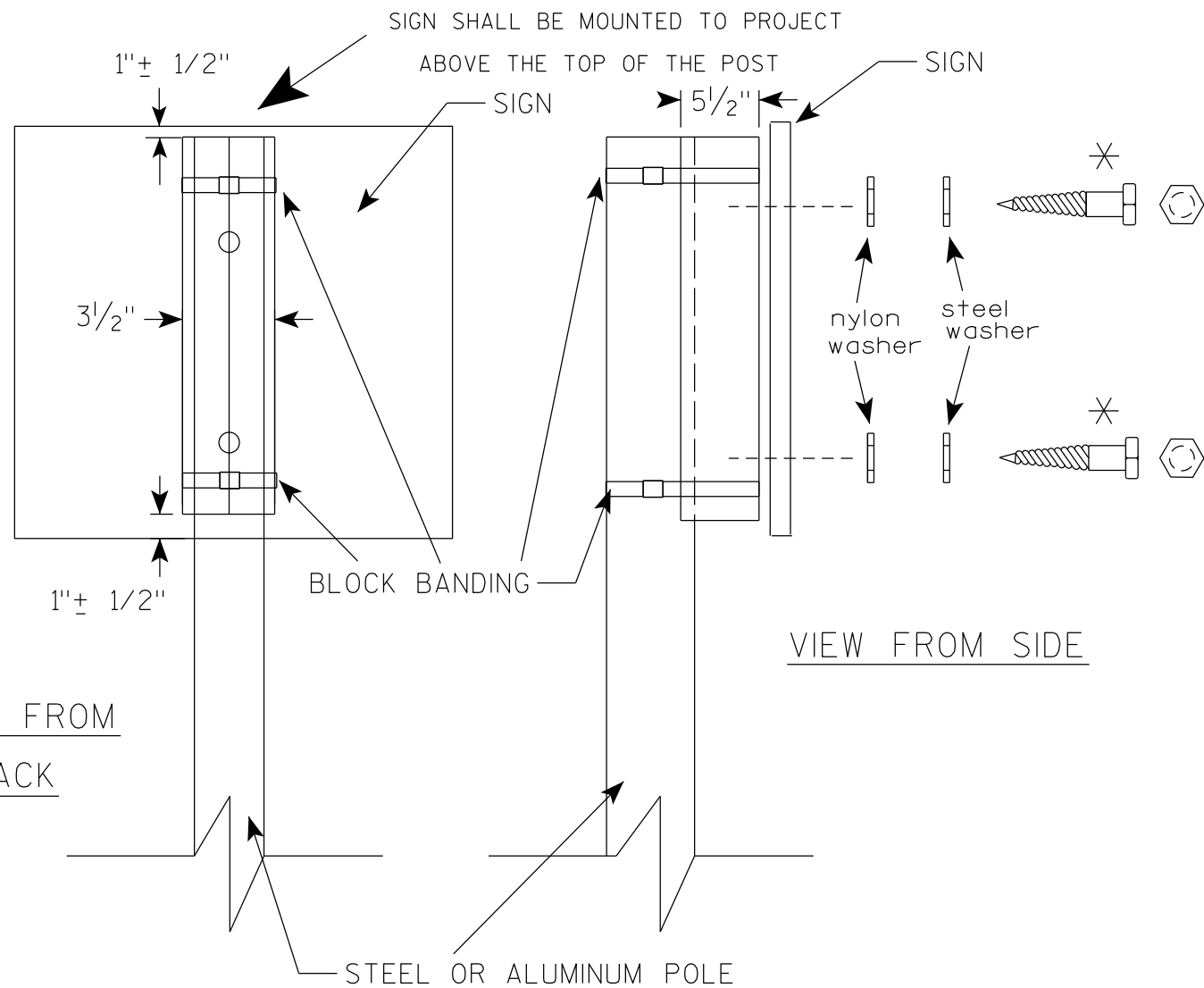


STANDARD SIGN
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer
DATE 6/10/19 PLATE NO. A5-9.4

VIEW FROM
BACK



GENERAL NOTES

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

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

BLOCK BANDING DETAIL
(V-BLOCK OPTION)

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

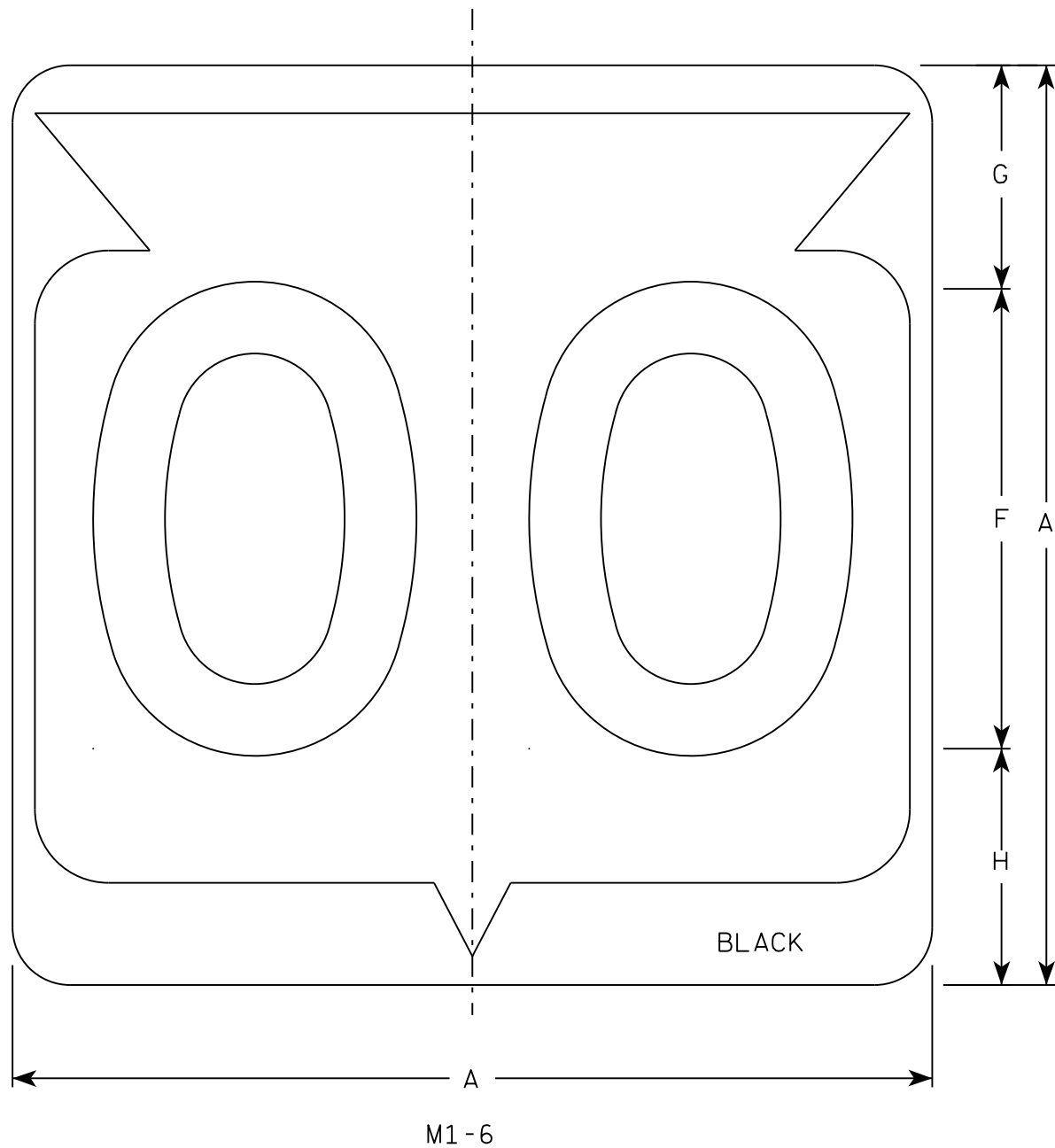
DATE 6/10/19 PLATE NO. A5-10.2

PROJECT NO:

SHEET NO: 47

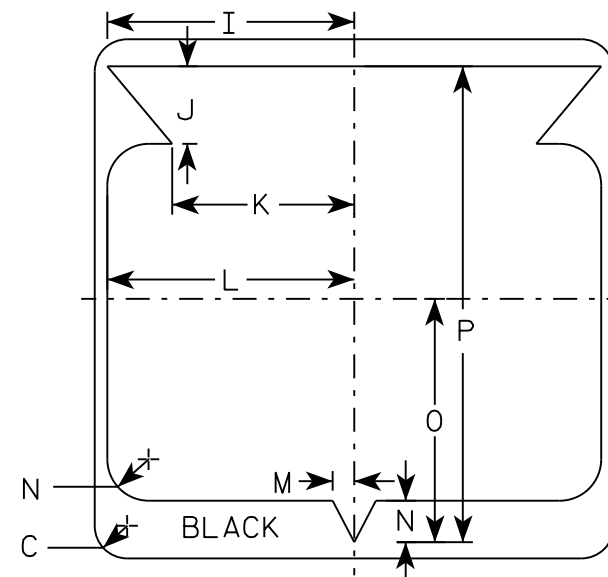
E

7



NOTES

1. Sign is Type II - Type H Reflective
2. Color:
Background - White
Message - Black
3. Message Series - D except 3 number signs Series C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.



7

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24		1 1/2			12	5 1/2	6 1/2	10 1/4	2 1/2	8 7/8	11 1/2	1	1 7/8	11 1/4	21 7/8											4.0
3	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0
4	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0
5	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0

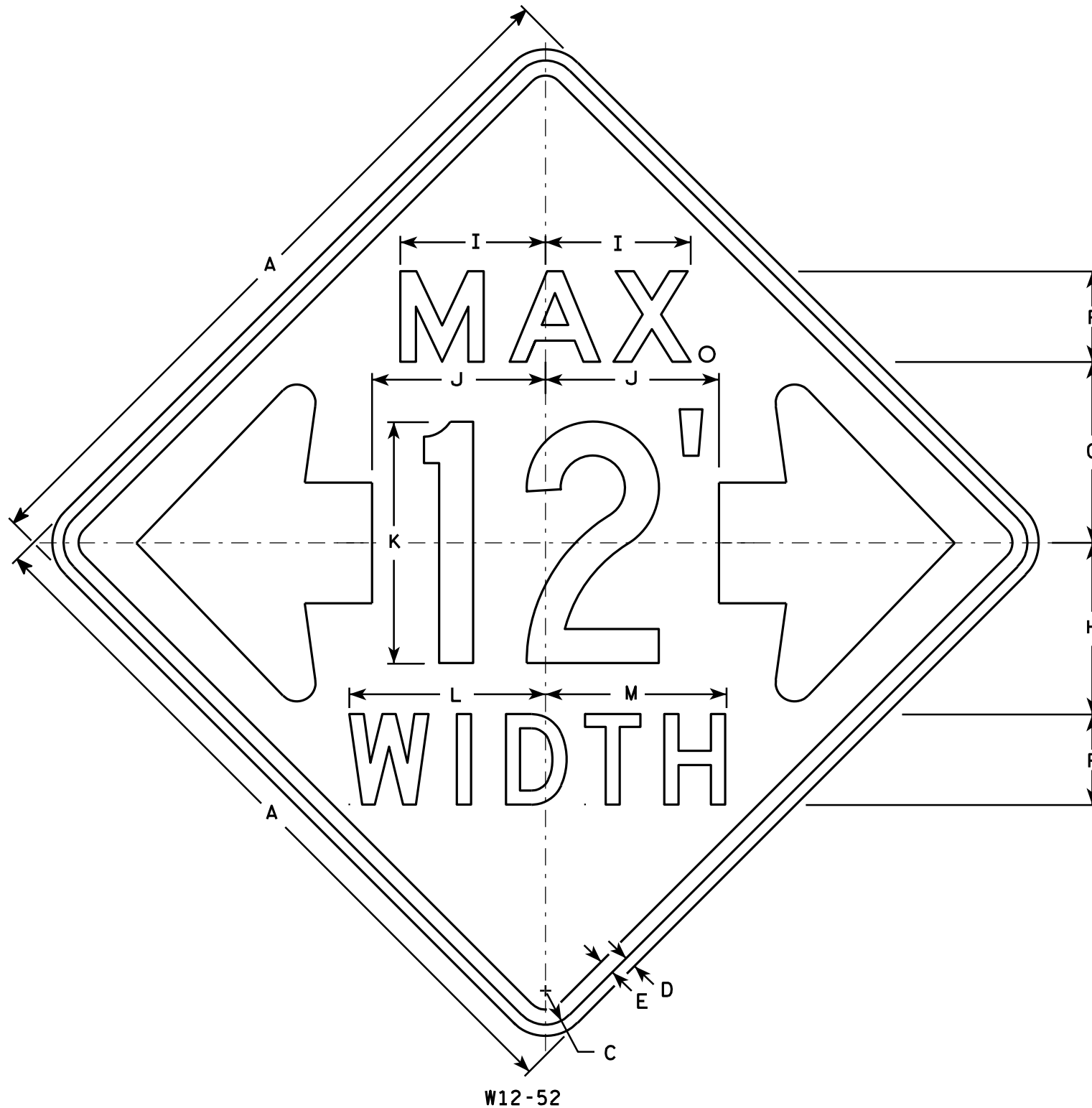
STATE ROUTE MARKER
M1-6 FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

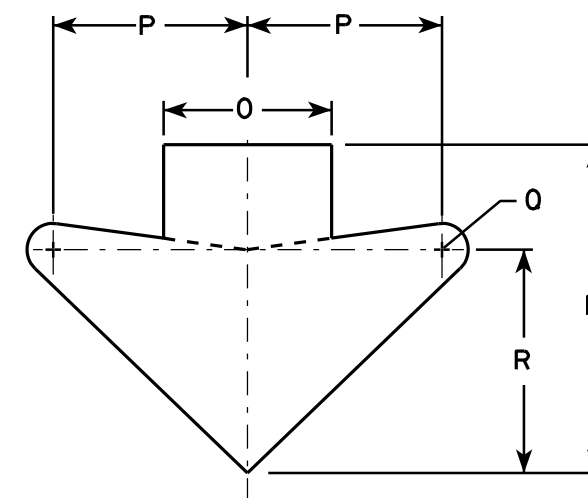
DATE 3/16/18 PLATE NO. M1-6.10

SHEET NO: 48



NOTES

- Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- Color:
Background - Orange
Message - Black
- Message Series - See note 5
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- The top line is series E, the numerals are series C, and the bottom line is series D.
- Substitute appropriate numerals and adjust spacing as required.



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48		2 1/4	3/4	1	6	12	11 3/8	9 5/8	11 1/2	16	13	12	15 5/8	8	9 1/4	1 1/4	10 5/8									16.0
2M	48		2 1/4	3/4	1	6	12	11 3/8	9 5/8	11 1/2	16	13	12	15 5/8	8	9 1/4	1 1/4	10 5/8									16.0
3																											
4																											
5																											

STANDARD SIGN W12-52

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
For State Traffic Engineer

DATE 3/16/11 PLATE NO. W12-52.7

PROJECT NO:

HWY:

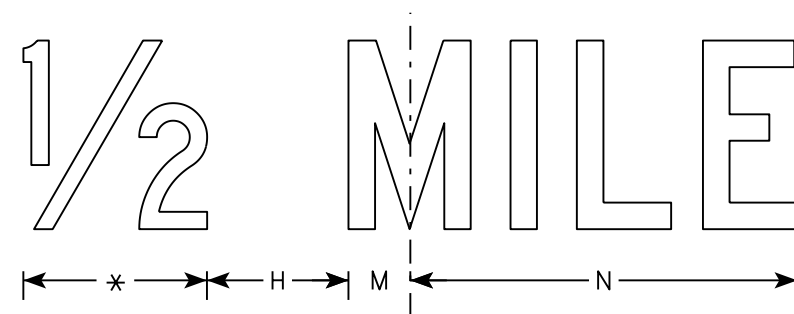
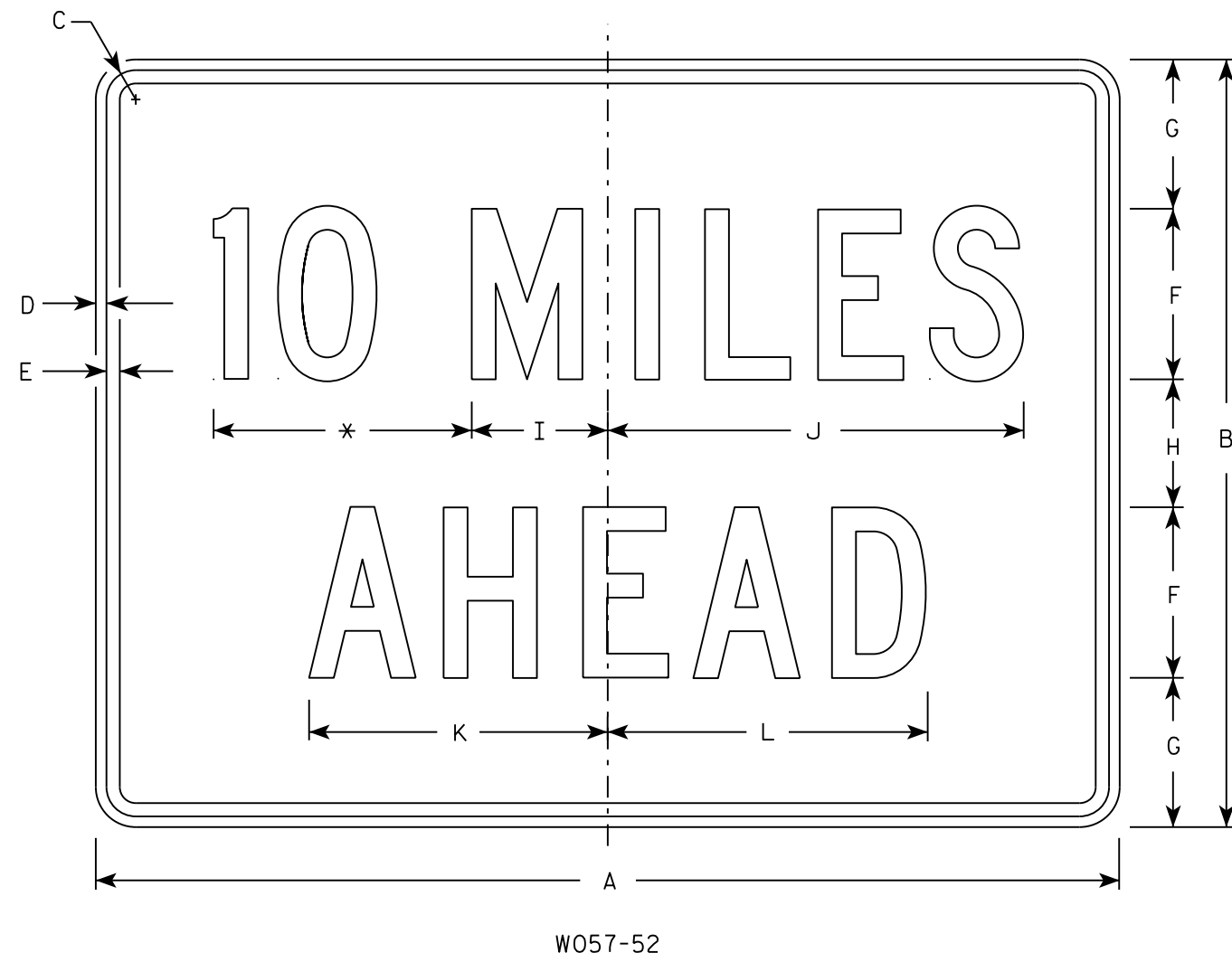
COUNTY:

SHEET NO: 49

E

NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
Background - Orange
Message - Black
- 3. Message Series - C
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 5. Substitute appropriate numerals to the nearest quarter mile and optically adjust spacing to achieve proper balance.



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	24	1 1/8	3/8	1/2	6	4 1/2	3	4 3/4	14 5/8	10 5/8	11 3/8	2	12													6.0
2S	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0
2M	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0
3	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0
4	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0
5	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0

STANDARD SIGN W057-52	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> for State Traffic Engineer
DATE 3/21/17	PLATE NO. W057-52.2

C630700660

STATION	Distance	AREA (SF)		Incremental Vol (CY) (Unadjusted)		Cumulative Vol (CY)		
		Cut	Fill	Cut	Fill	Cut	Expanded Fill	Mass Ordinate
						1.00	1.25	Note 8
248+00	0.00	0	0	0	0	0	0	0
248+50	50.00	0	0	0	0	0	0	0
249+00	50.00	0	0	0	0	0	0	0
249+50	50.00	0	0	0	0	0	0	0
249+75	25.00	57	6	27	3	27	3	23
250+00	25.00	57	13	53	9	79	14	65
250+35	35.00	57	23	74	24	154	44	110
250+38	3.00	57	24	6	3	160	47	113
250+43.35	5.35	58	30	11	5	171	53	118
250+50	6.65	58	36	14	8	186	64	122
251+00	50.00	59	10	108	43	294	117	177
251+50	50.00	0	0	54	9	348	128	219
252+00	50.00	0	0	0	0	348	128	219
252+49.96	49.96	0	0	0	0	348	128	219
				348	103			

NOTE

8. The Mass Ordinate + or - Quantity calculated for for the Division.
Plus (+) quantity is an excess of material w ithin the Division.
Minus (-) quantity is a shortage of material w ithin the Divison

C630700710

STATION	Distance	AREA (SF)		Incremental Vol (CY) (Unadjusted)		Cumulative Vol (CY)		
		Cut	Fill	Cut	Fill	Cut	Expanded Fill	Mass Ordinate
345+00	0.00	0	0	0	0	0	0	0
345+50	50.00	0	0	0	0	0	0	0
346+00	50.00	0	0	0	0	0	0	0
346+58.45	58.45	57	0	62	0	62	0	62
346+62	3.55	57	0	8	0	69	0	69
347+00	38.00	57	0	80	0	150	0	150
347+50	50.00	0	0	53	0	202	0	202
348+00	50.00	0	0	0	0	202	0	202
348+49.89	49.89	0	0	0	0	202	0	202
				202	0			

9

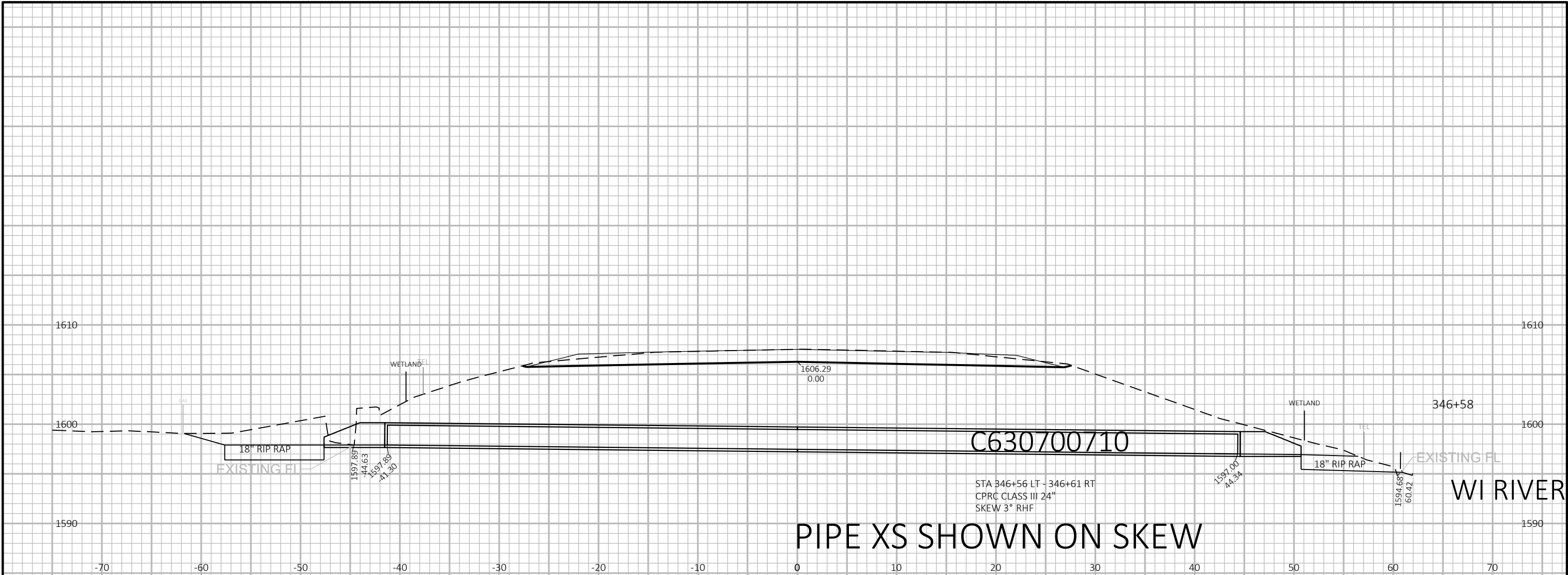
9

C0630700820										
STATION	Distance	AREA (SF)			Incremental Vol (CY) (Unadjusted)			Cumulative Vol (CY)		
		Cut	Fill	EBS	Cut	Fill	EBS	Cut	Expanded Fill	Mass Ordinate
					205.0100	Note 3	205.0100		Note 8	
497+00	150.00	0.00	0.00	0.00	0	0	0	0	0	0
497+50	50.00	0.00	0.00	0.00	0	0	0	0	0	0
497+75	25.00	59.83	0.21	0.00	28	0	0	28	0	28
498+00	25.00	59.52	0.36	0.00	55	0	0	83	0	83
498+16.7	16.70	59.22	5.86	0.00	37	2	0	120	2	117
498+50	33.30	60.87	0.00	0.00	74	4	0	194	6	188
499+00	50.00	0.00	0.00	0.00	56	0	0	250	6	244
499+50	50.00	0.00	0.00	0.00	0	0	0	250	6	244
		TOTAL			250	6	0			

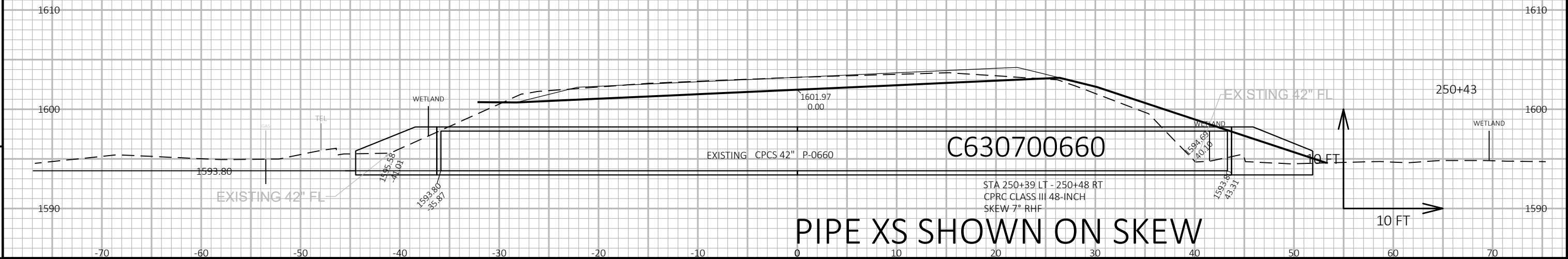
NOTE

8. The Mass Ordinate + or - Quantity calculated for for the Divison.
Plus (+) quantity is an excess of material w ithin the Division.
Minus (-) quantity is a shortage of material w ithin the Divison

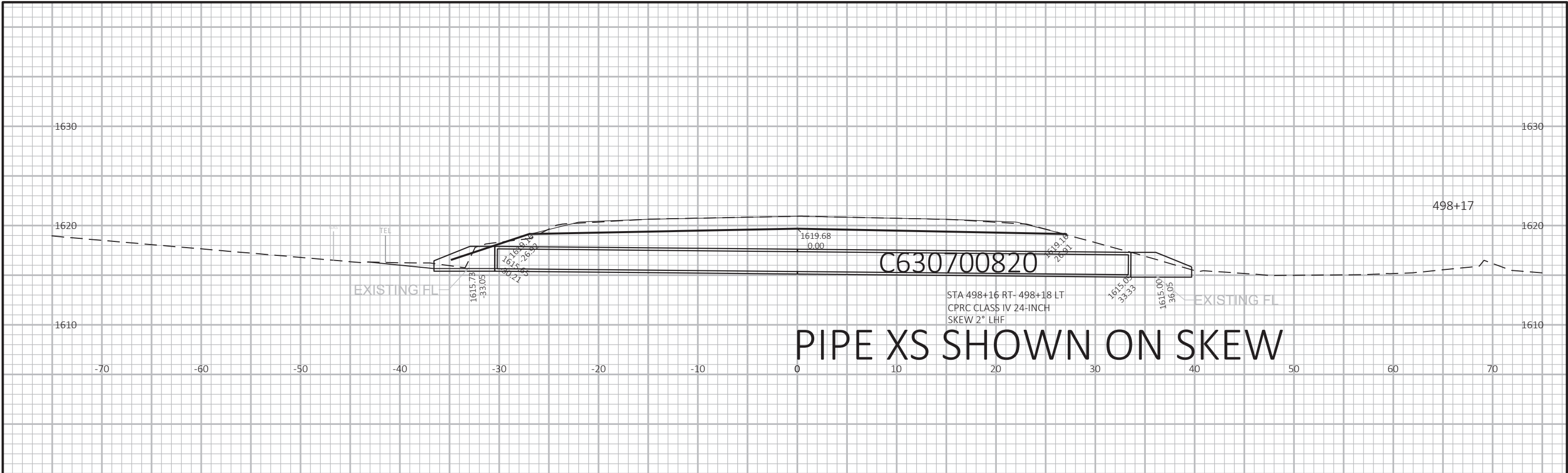
C0630700850										
STATION	Distance	AREA (SF)			Incremental Vol (CY) (Unadjusted)			Cumulative Vol (CY)		
		Cut	Fill	EBS	Cut	Fill	EBS	Cut	Expanded Fill	Mass Ordinate
					205.0100	Note 3		Note 1		Note 8
548+00	100.00	0.0	0	0	0	0	0	0	0	0
548+75	75.00	58.5	0	0	81	0	0	81	0	81
549+00	25.00	59.8	0	0	55	0	0	136	0	136
549+17.19	17.19	59.1	1	0	38	0	0	174	0	173
549+50	32.81	62.4	0	0	74	1	0	248	1	246
550+00	50.00	0.0	0	0	58	0	0	305	1	304
550+50	50.00	0.0	0	0	0	0	0	305	1	304
551+00	50.00	0.0	0	0	0	0	0	305	1	304
		TOTAL			305	1	0			



PIPE XS SHOWN ON SKEW



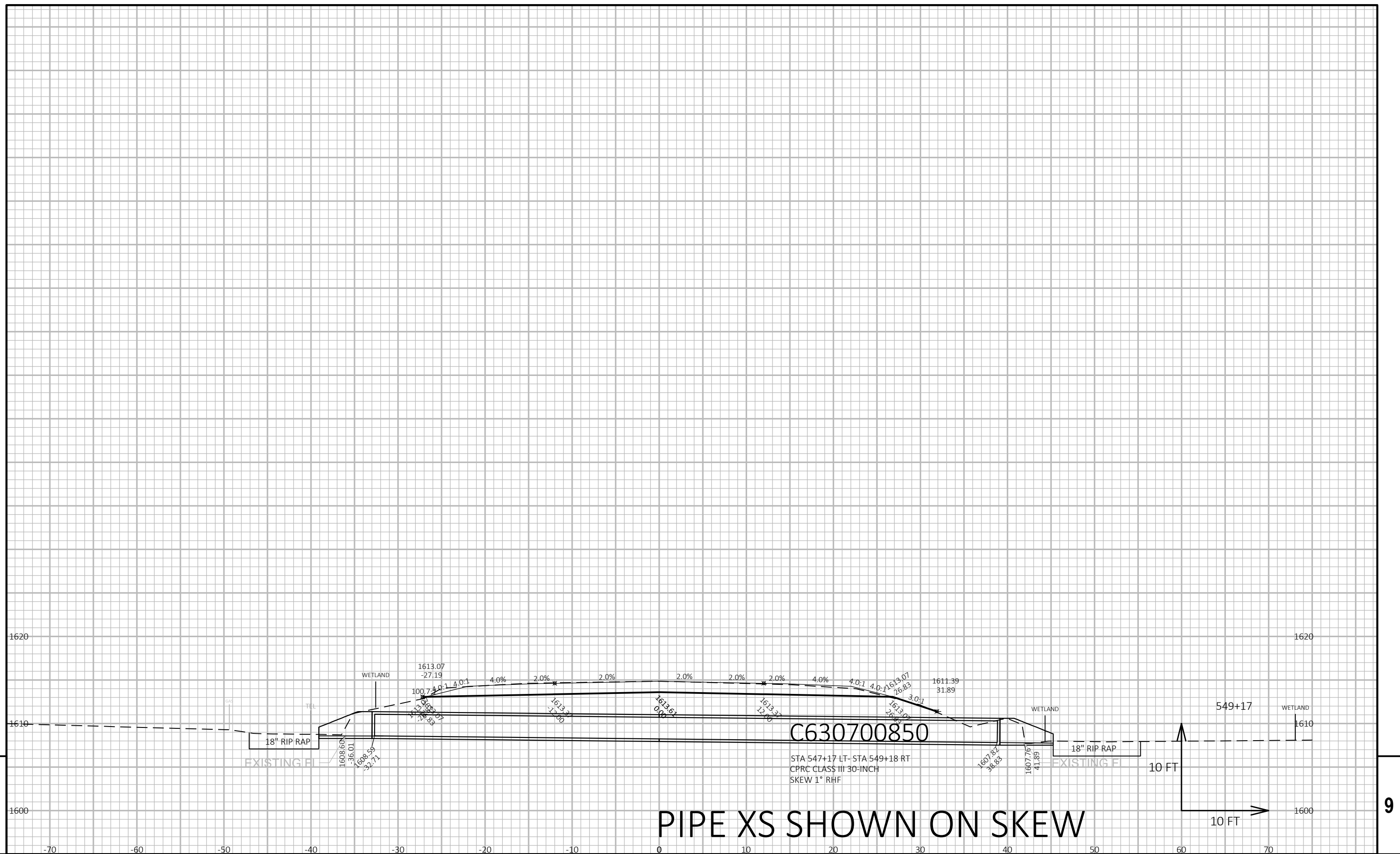
PIPE XS SHOWN ON SKEW



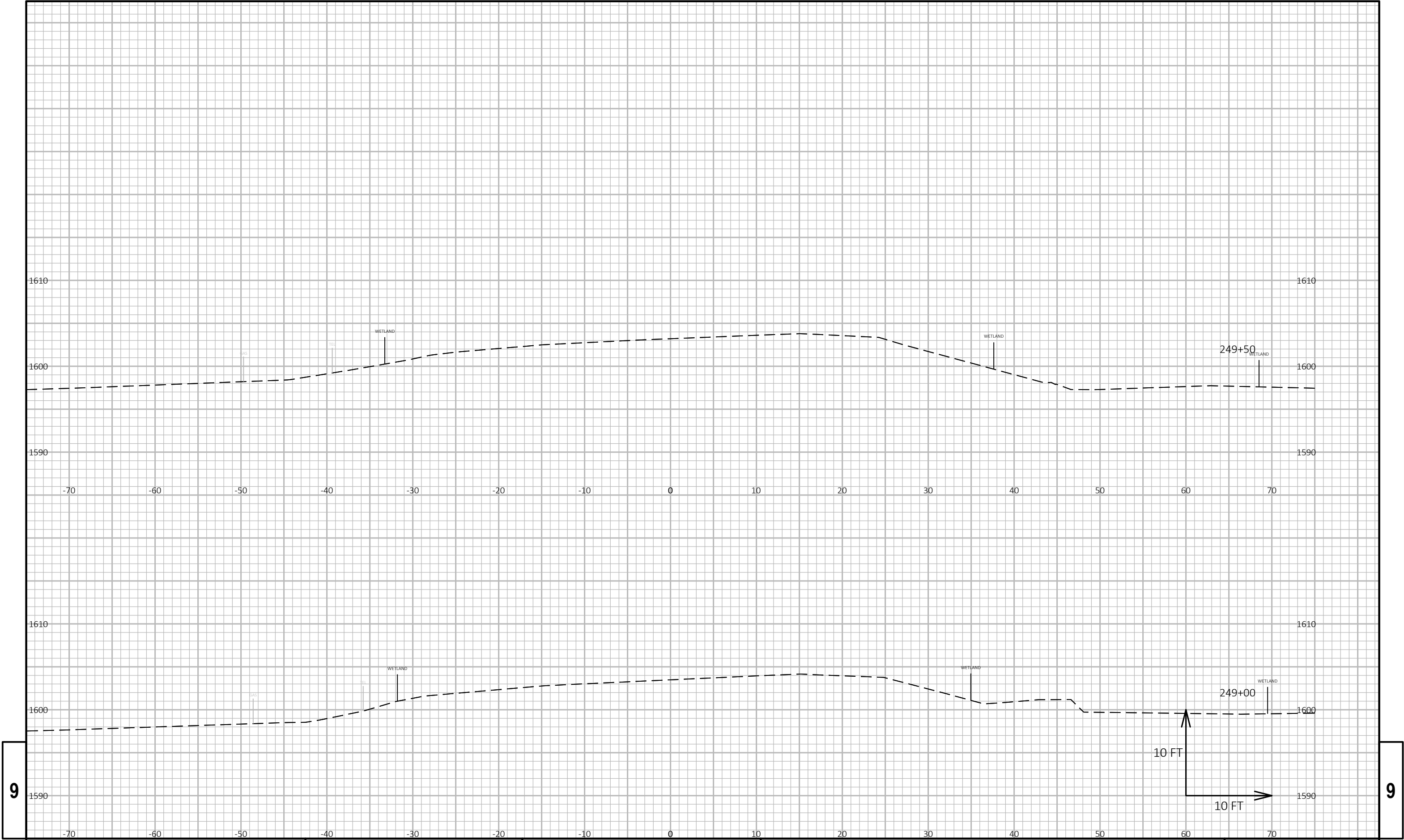
9

9

PROJECT NO: 9080-14-61	HWY: STH 70	COUNTY: VILAS	CROSS SECTIONS: CULVERT PIPE	SHEET 54	E
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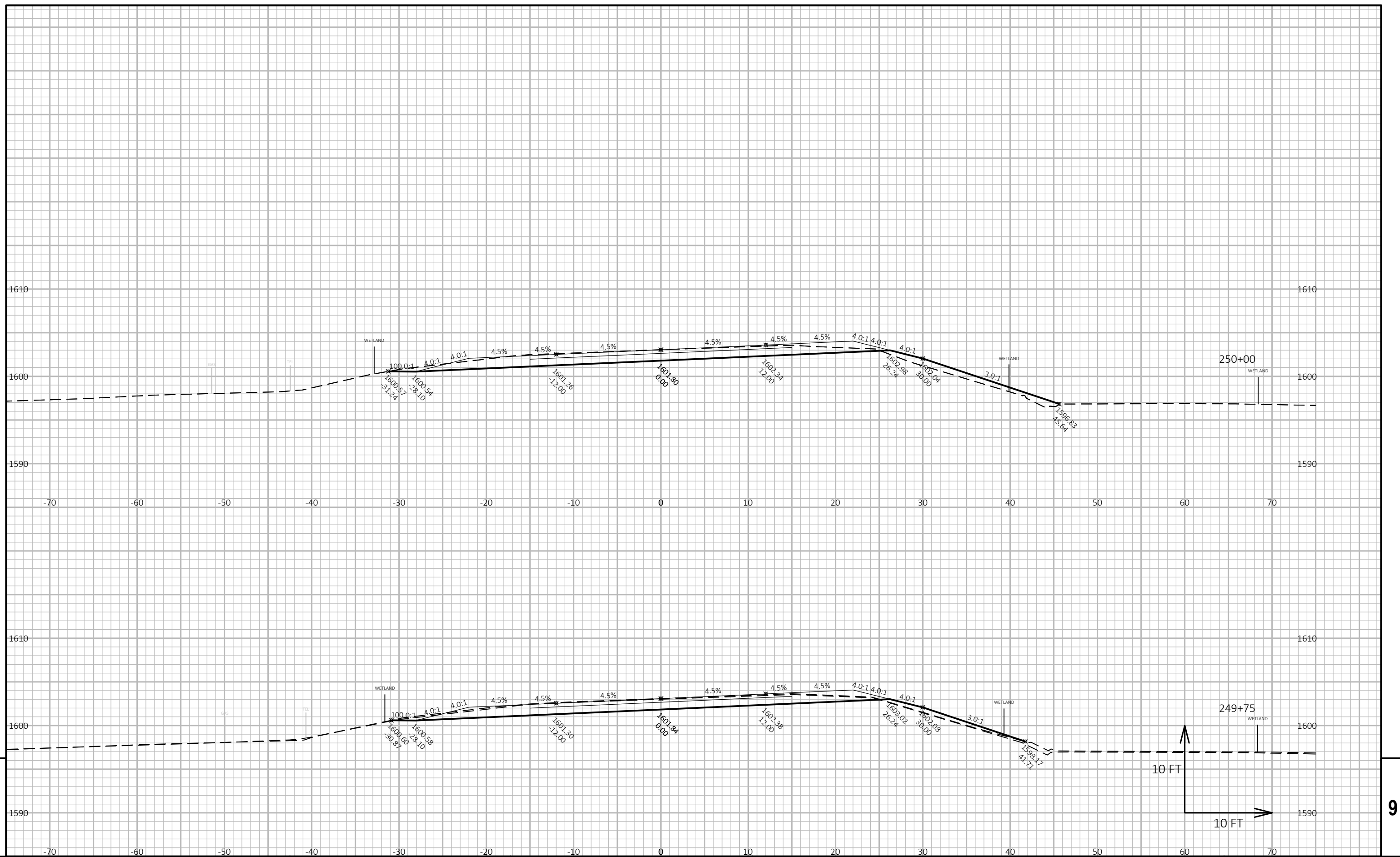
PROJECT NO: 9080-14-61		HWY: STH 70		COUNTY: VILAS		CROSS SECTIONS: CULVERT PIPE		SHEET 55		E	
FILE NAME : N:\PDS\C3D\90801403\DESIGN\XS\XS.DWG				PLOT DATE : 1/23/2019 9:53 AM		PLOT BY : HETH, BARBARA L		PLOT NAME :		PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.	
LAYOUT NAME - xs - 090203pipe				WISDOT/CADDs SHEET 49							

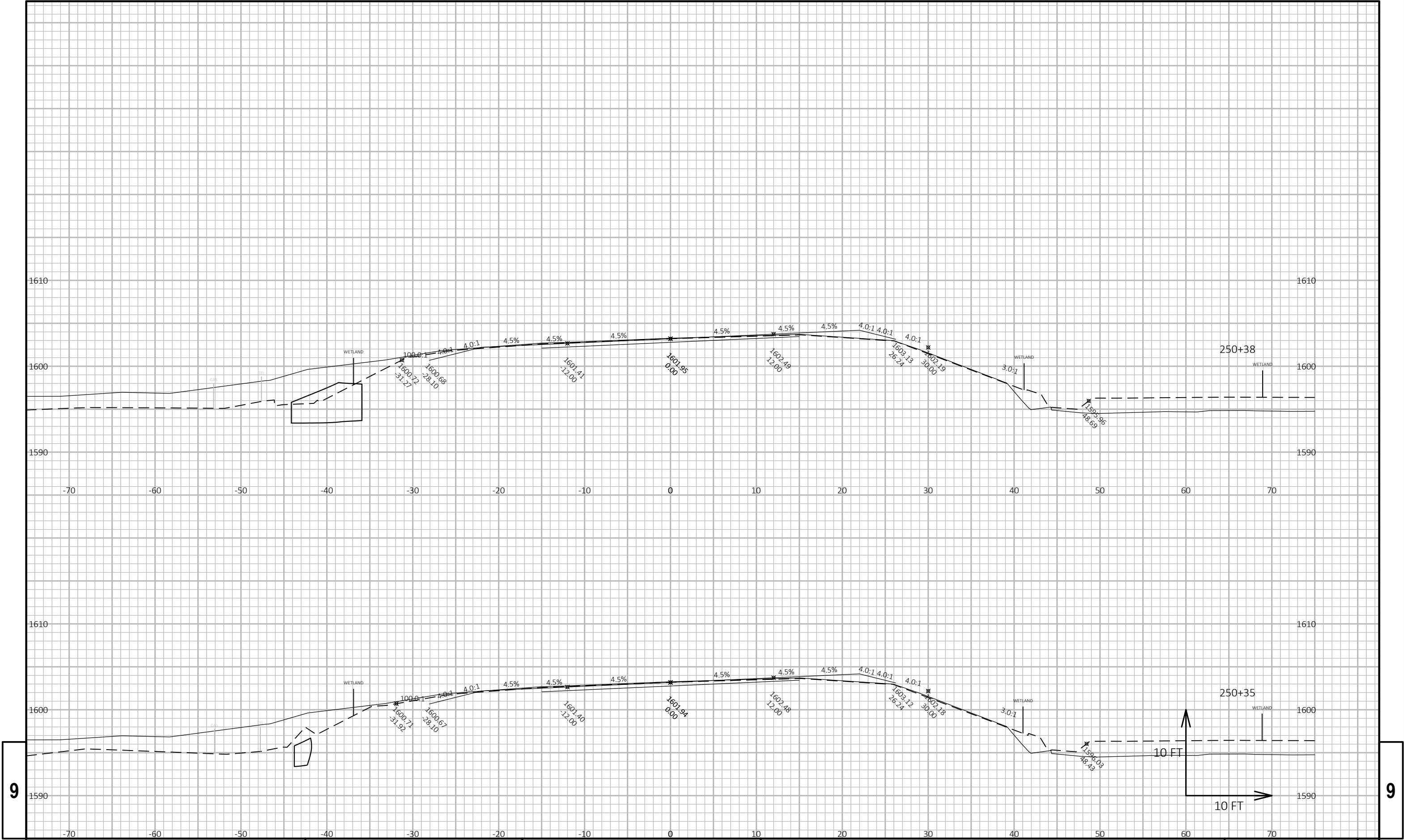


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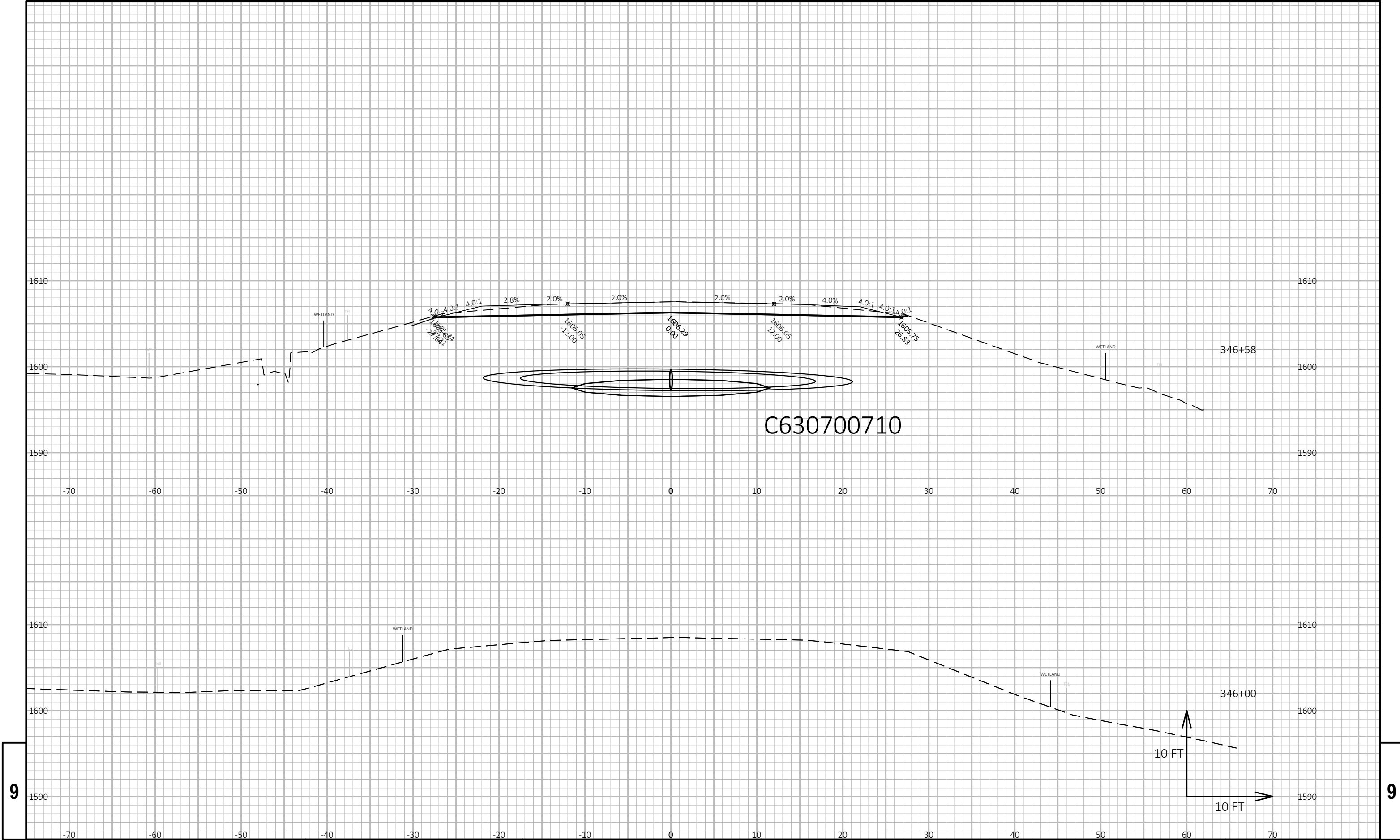
PROJECT NO: 9080-14-61	HWY: STH 70	COUNTY: VILAS	CROSS SECTIONS: CROSS SECTIONS 1 - C630700660	SHEET 56	E
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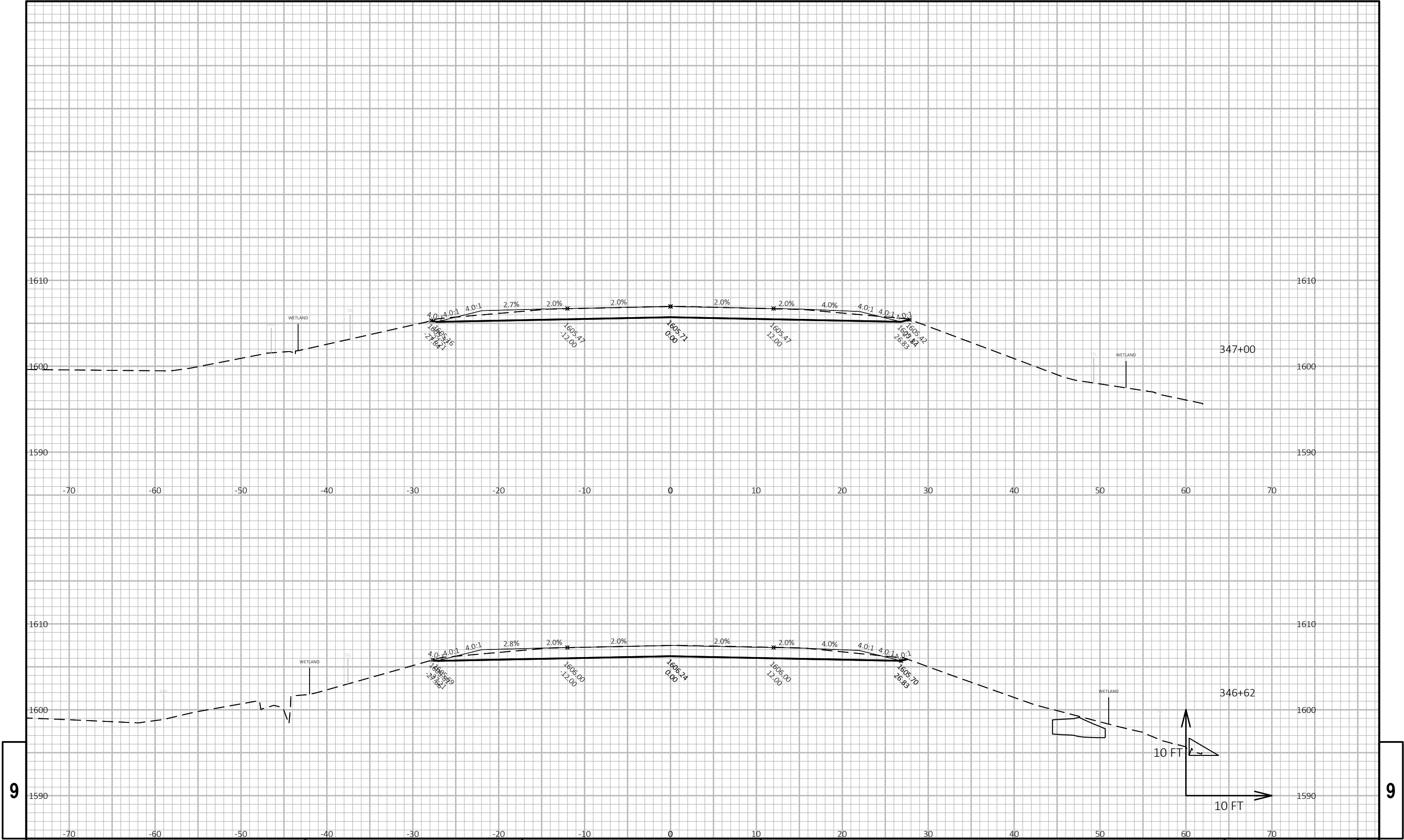
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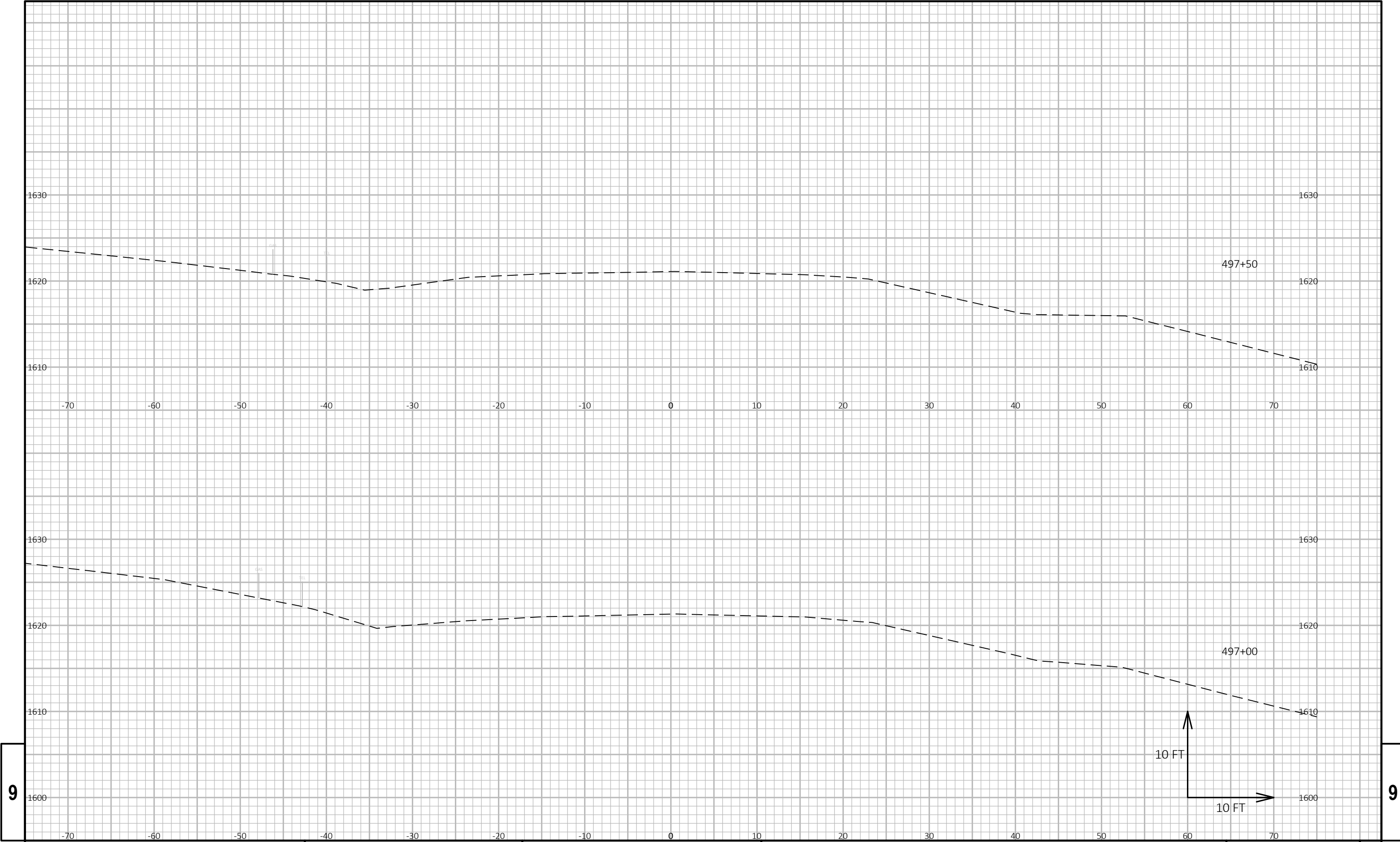
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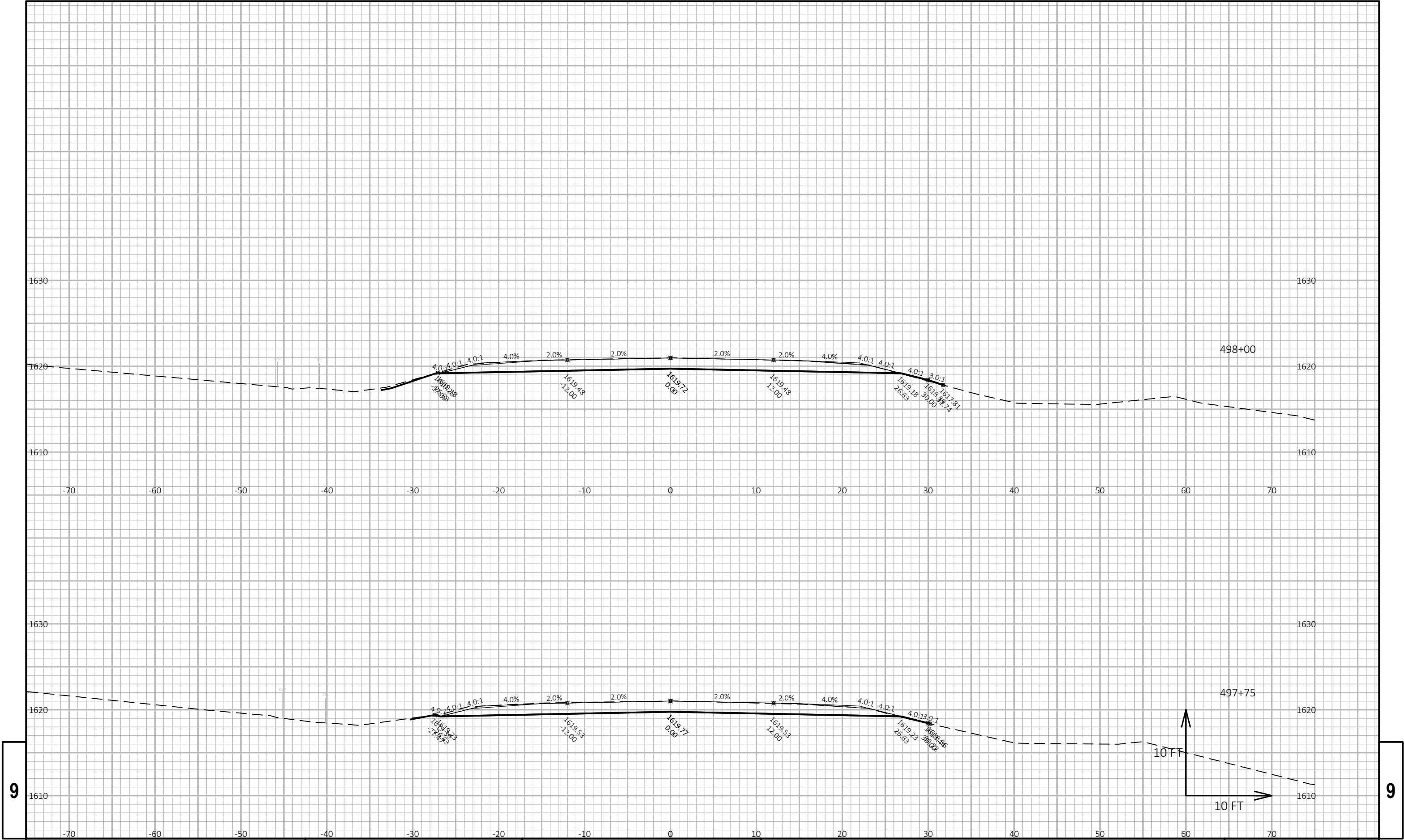
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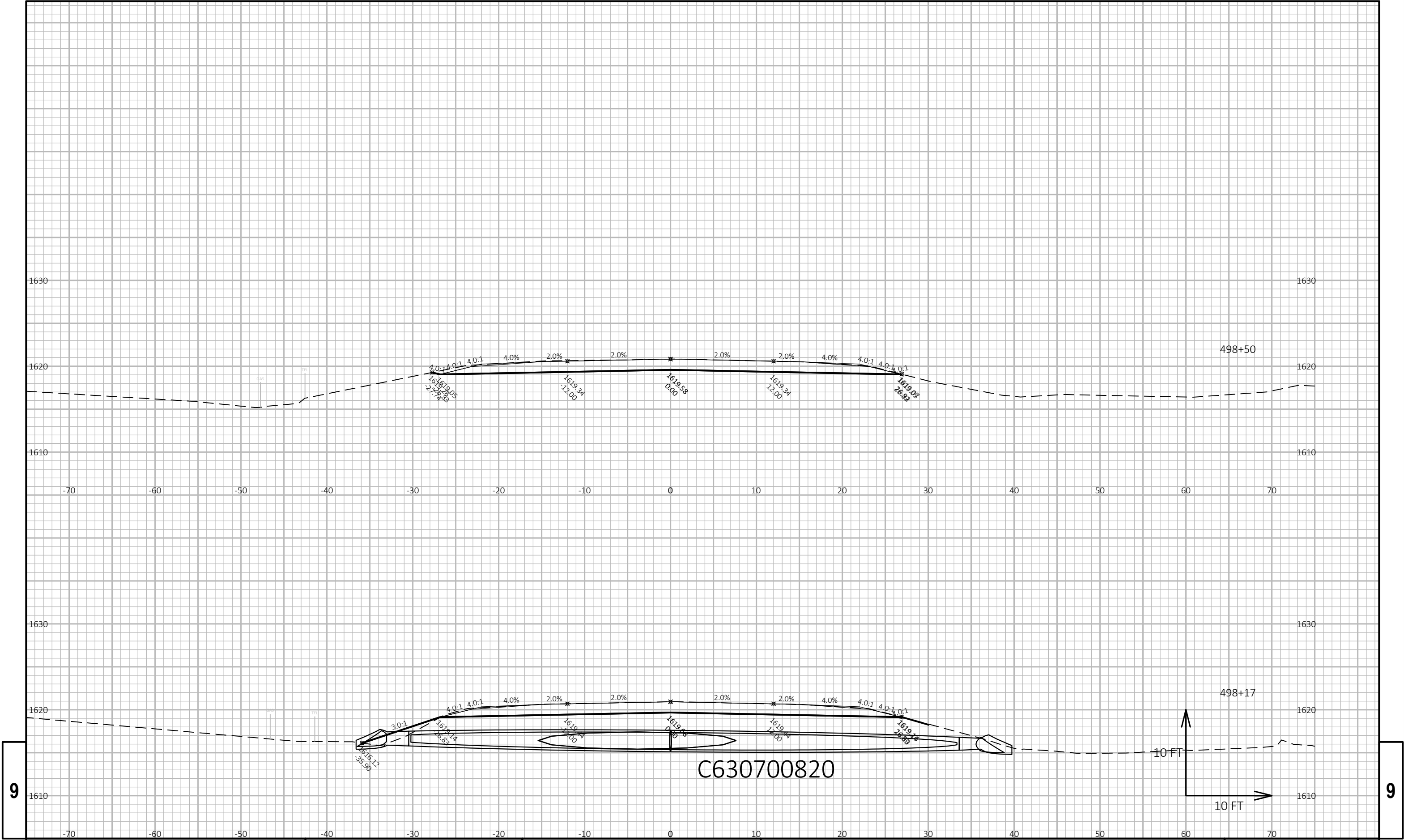
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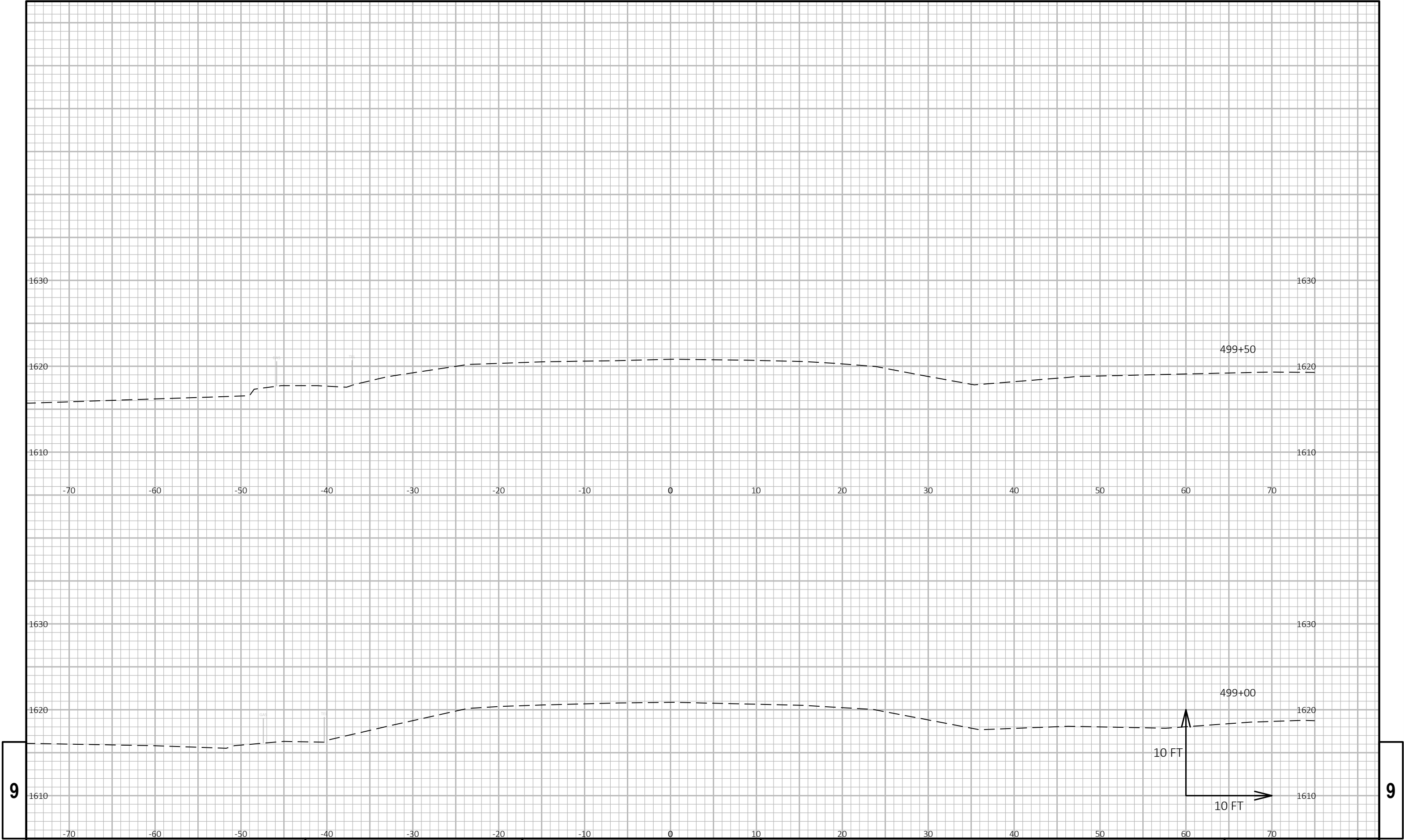
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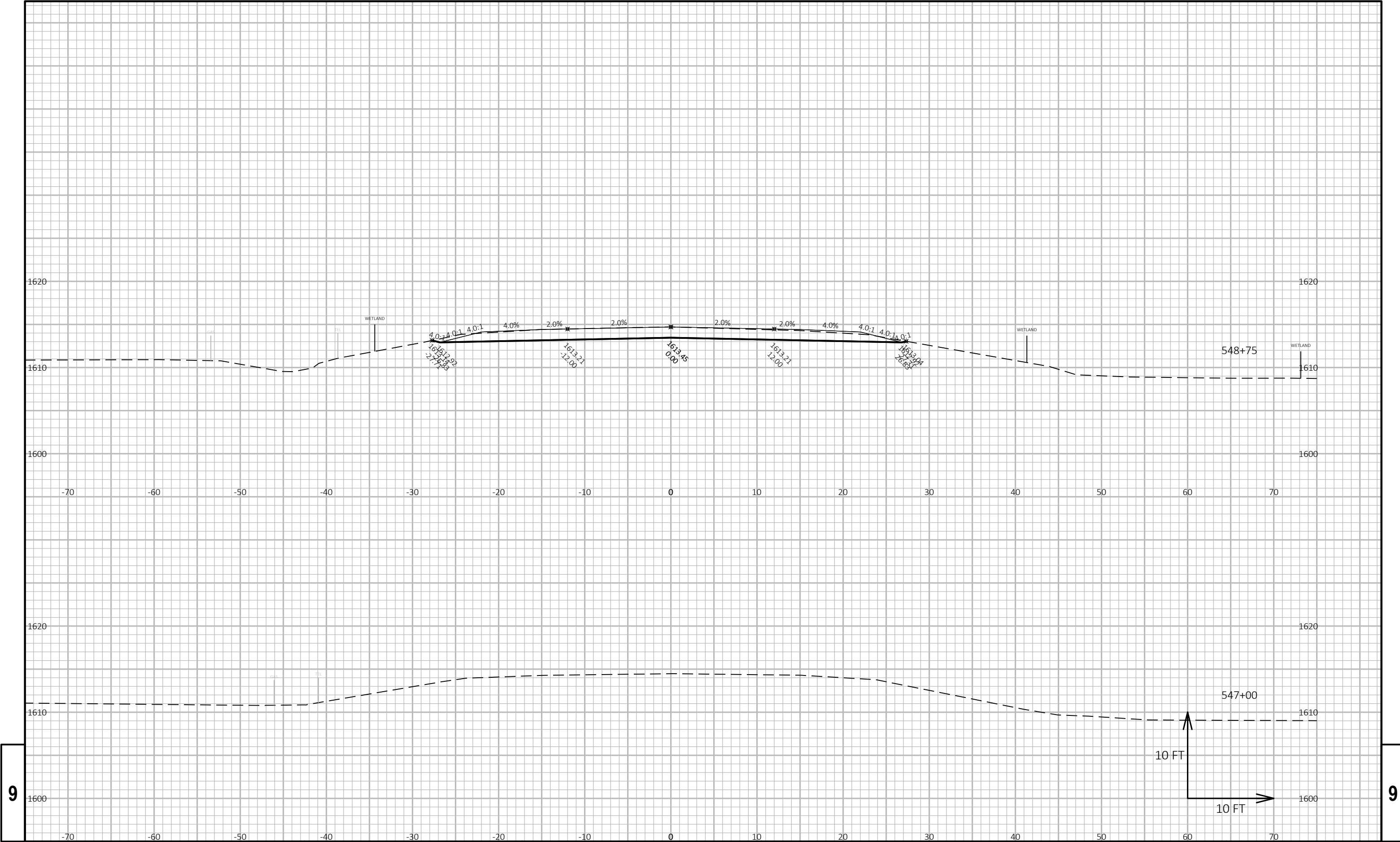
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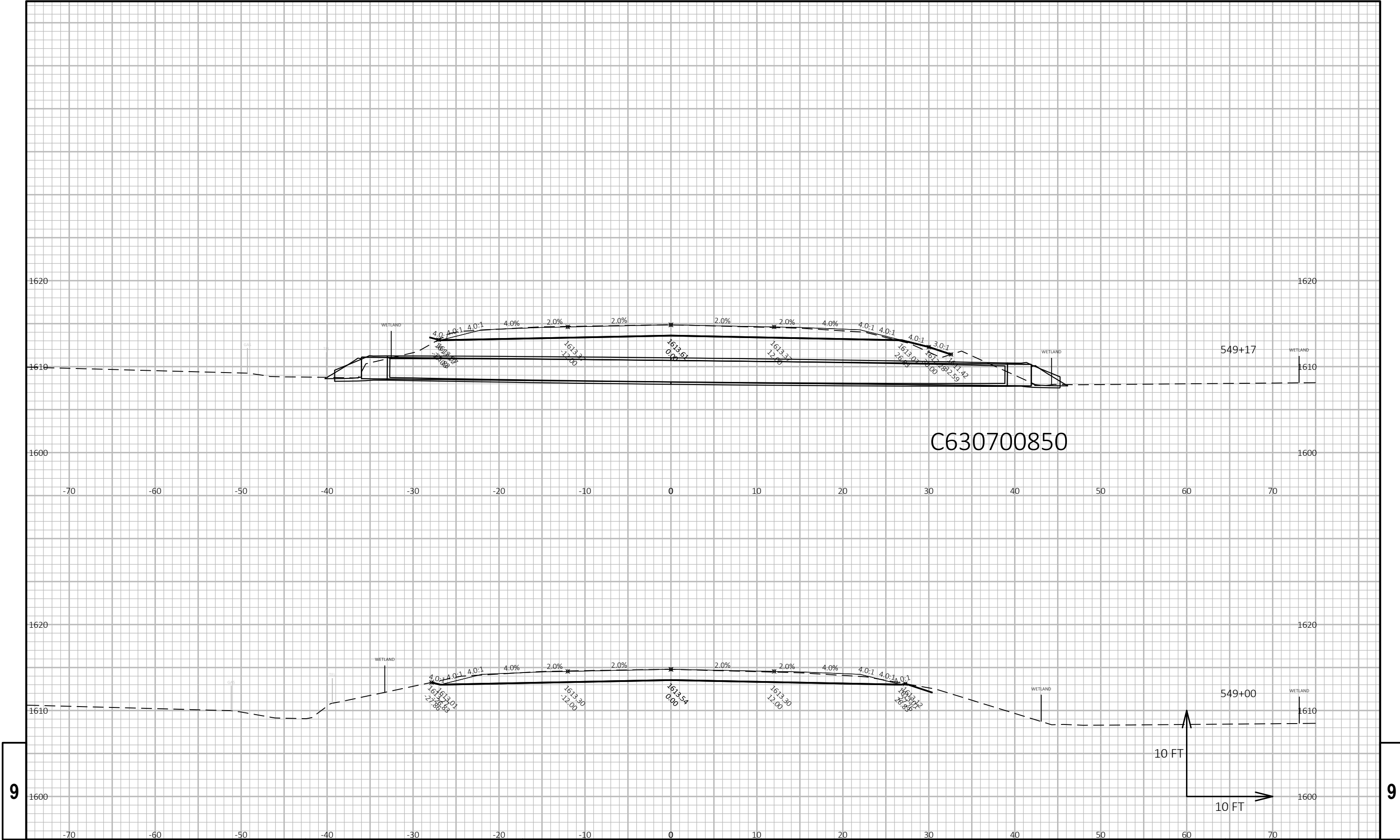
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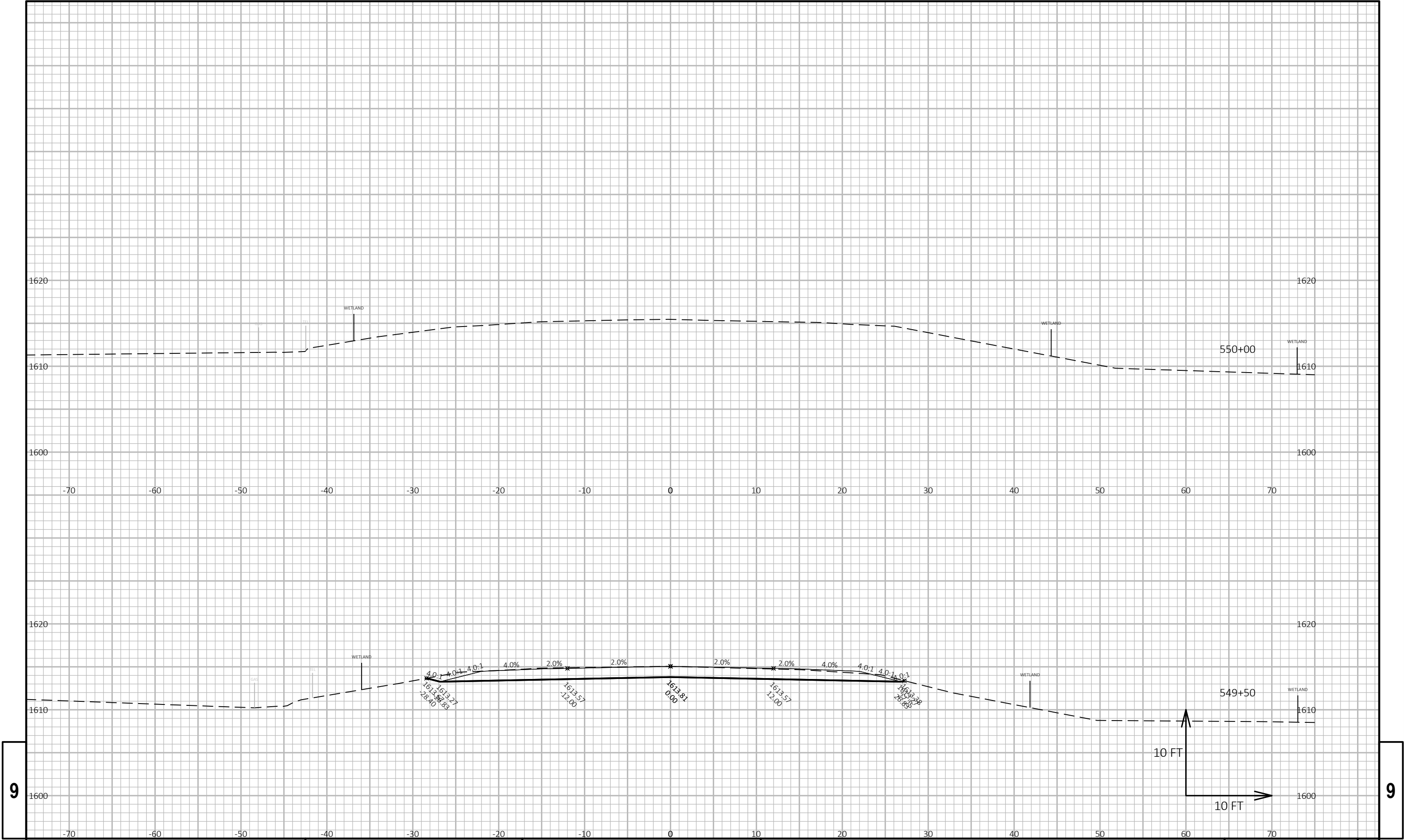
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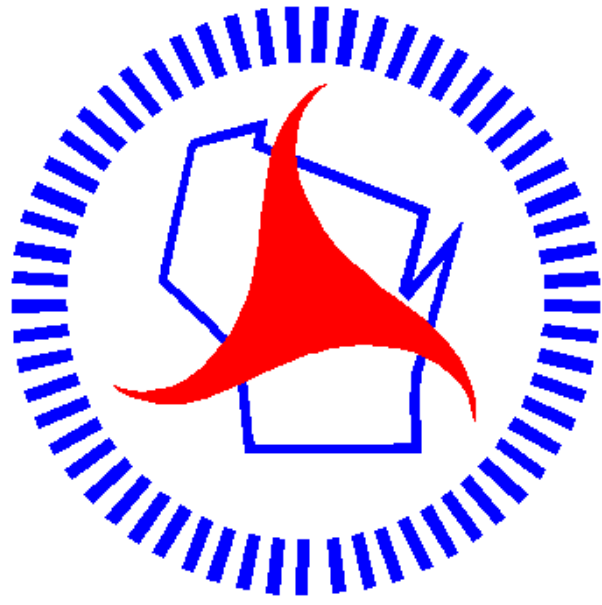
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9



9

9



Wisconsin Department of Transportation

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RHI

PROJECT ID: 9080-14-73

WITH: 9080-14-61

COUNTY: VILAS

APRIL 2020

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 = 168



28

N

DESIGN DESIGNATION 9080-14-73

A.A.D.T. 2019 = 4,500
A.A.D.T. 2039 = 5,600
D.H.V. = 672
D.D. = 61 / 39
T. = 11.0 %
DESIGN SPEED = 55 MPH
ESALS = 927,200

CONVENTIONAL SYMBOLS

PLAN

CORPORATE LIMITS

PROPERTY LINE

LOT LINE

LIMITED HIGHWAY EASEMENT

EXISTING RIGHT OF WAY

PROPOSED OR NEW R/W LINE

SLOPE INTERCEPT

REFERENCE LINE

EXISTING CULVERT

PROPOSED CULVERT (Box or Pipe)

COMBUSTIBLE FLUIDS

MARSH AREA

WOODED OR SHRUB AREA

PROFILE

GRADE LINE

ORIGINAL GROUND

MARSH OR ROCK PROFILE (To be noted as such)

SPECIAL DITCH

GRADE ELEVATION

CULVERT (Profile View)

UTILITIES

ELECTRIC

FIBER OPTIC

GAS

SANITARY SEWER

STORM SEWER

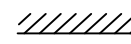
TELEPHONE

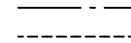
WATER

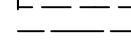
UTILITY PEDESTAL

POWER POLE

TELEPHONE POLE

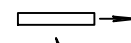






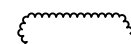


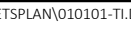






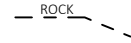


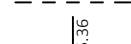






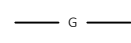


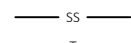


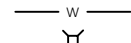


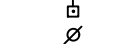
















STATE OF WISCONSIN

DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

WOODRUFF - EAGLE RIVER

CTH O TO CTH H

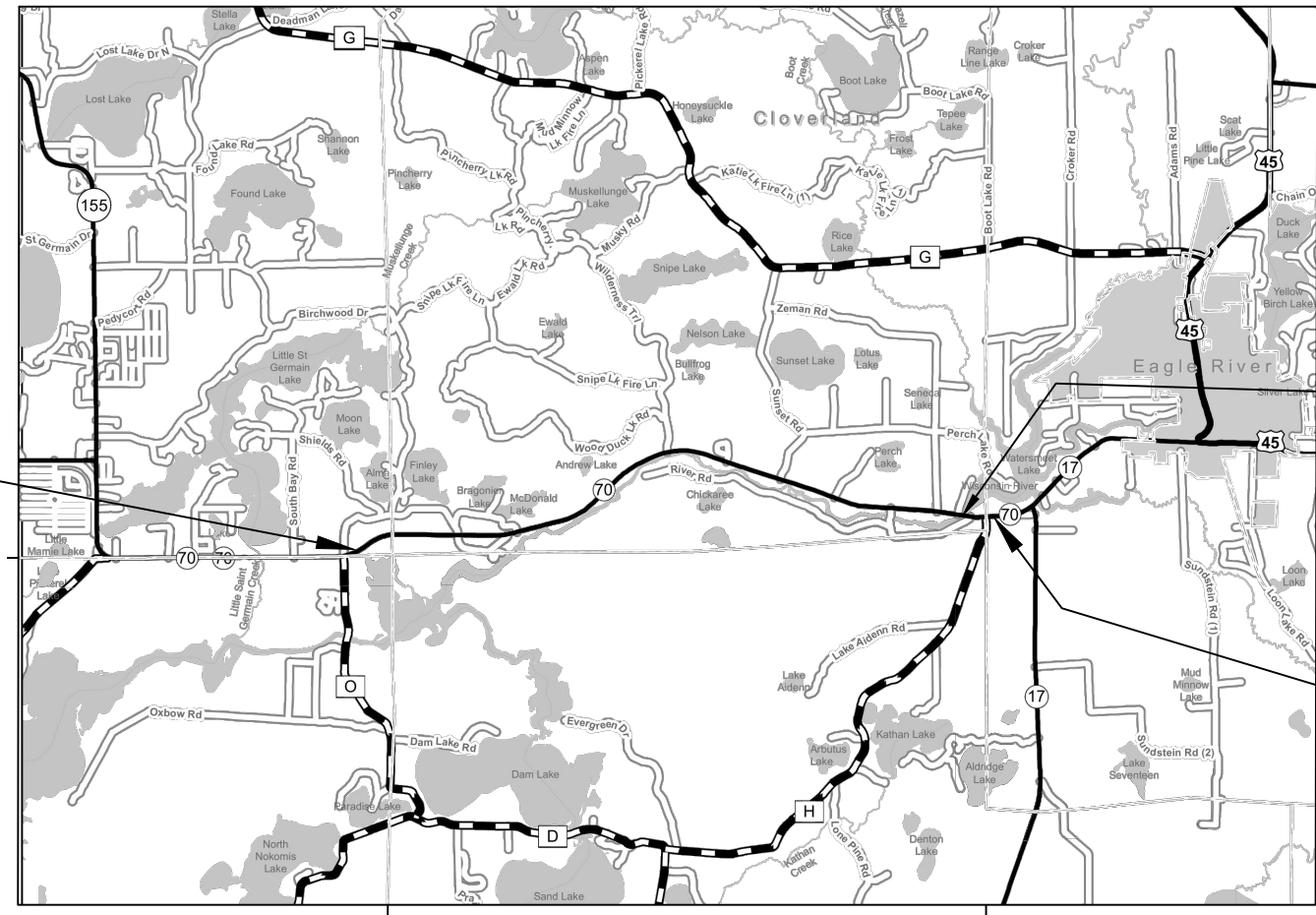
STH 70

VILAS

STATE PROJECT NUMBER

9080-14-73

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
9080-14-73	WISC 2020155	1



LAYOUT

SCALE 0 2 MI

TOTAL NET LENGTH OF CENTERLINE = 7.06 MI

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), VILAS 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.

ELEVATIONS SHOWN ON THE PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) (2012).

STA 589+64 TO STA 592+24

EXCEPTION TO NET CL LENGTH

B-63-17 260 FT

END PROJECT

STA 612+91

STATE OF WISCONSIN

DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor COLEMAN ENGINEERING

Designer BARBARA HETH

Project Manager DAN ERVA

Regional Examiner CHERYL SIMON

Regional Supervisor DAN ERVA

APPROVED FOR THE DEPARTMENT

DATE: 2/17/2020

(Signature)

E

GENERAL NOTES

STH 70 CENTERLINE ALIGNMENT IS A BEST FIT OF THE EXISTING CENTERLINE.

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

UTILITIES

FRONTIER NORTH INC COMMUNICATION LINE
1851 N 14TH AVE
WAUSAU, WI 54401
CALVIN KLADE
Calvin.klade@ftr.com
715-847-1525 OFFICE
715-573-2110 CELL

WISCONSIN PUBLIC SERVICE ELECTRICITY
PO BOX 1166
WAUSAU, WI 54402
DON LUTZOW
Donald.lutzow@wisconsinpublicservice.com
715-848-7487 OFFICE
715-493-7802 CELL

WISCONSIN PUBLIC SERVICE GAS/PETROLEUM
2027 NAVAJO STREET, PO BOX 160
RHINELANDER, WI 54501
CHRIS GILMAN
chris.gilman@wisconsinpublicservice.com
715-369-7133 OFFICE
715-490-4153 CELL

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

NORTHERN REGION HEADQUARTERS
107 SUTLIFF
RHINELANDER, WI 54501
JON SIMONSEN
Jonathan.Simonsen@wi.gov
(715) 367-1936

RUNOFF COEFFICIENT TABLE

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

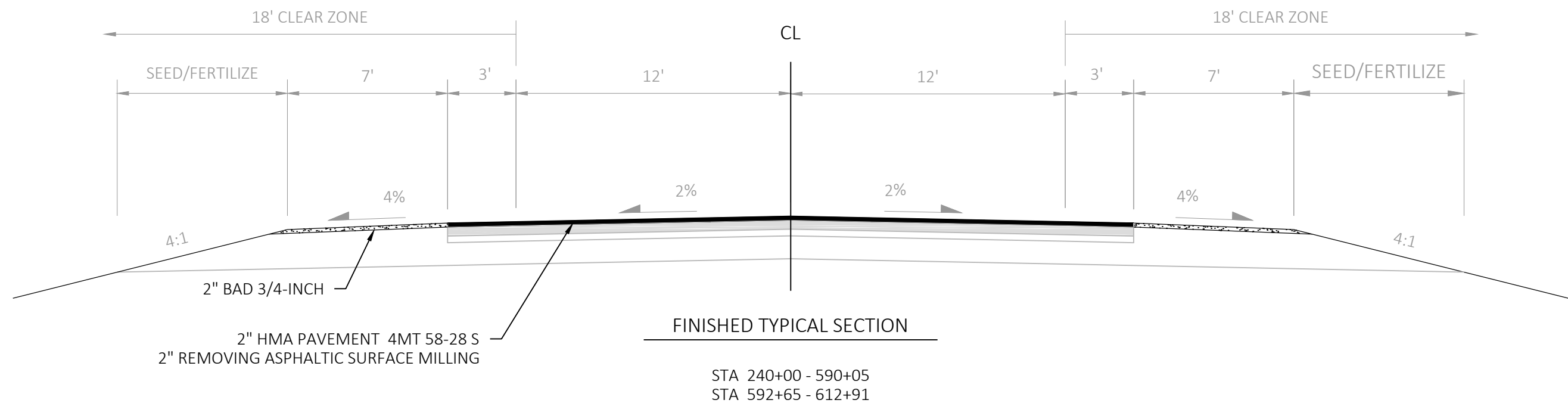
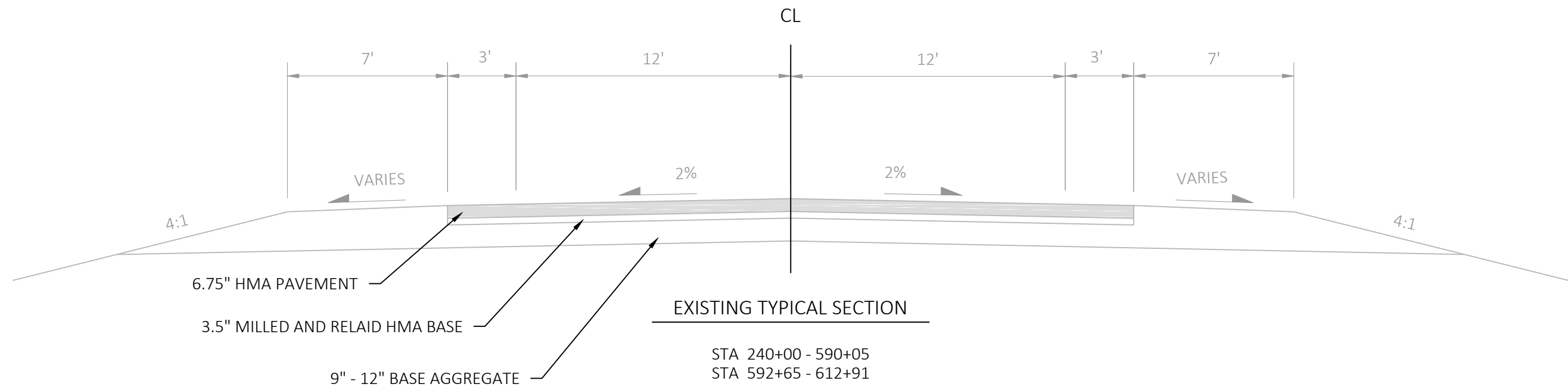
TOTAL PROJECT AREA = 170.1 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 7.5 ACRES

AS-BUILT PLANS

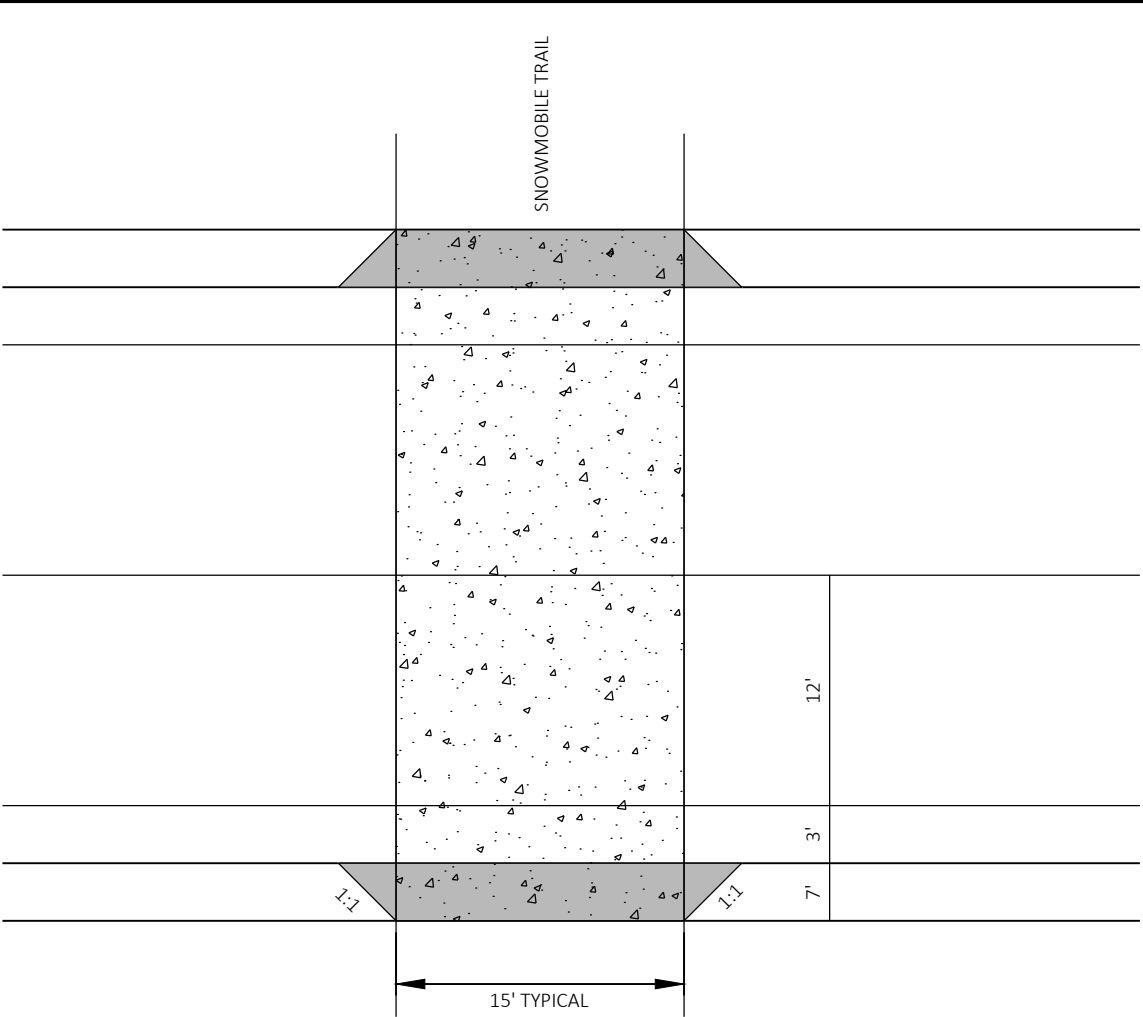
9080-15-60 2008
9080-05-71 1993
9080-08-70 1993 B-63-17
T024-1(1) 1948
F.A. PROJECT 146(2) 1941



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www.DiggersHotline.com



2



PROTECTIVE THERMOPLASTIC COATING AT SNOWMOBILE TRAIL CROSSING



NEW LOCATION
5" HMA PAVEMENT WIDENING
2" UPPER LAYER
3" LOWER LAYER

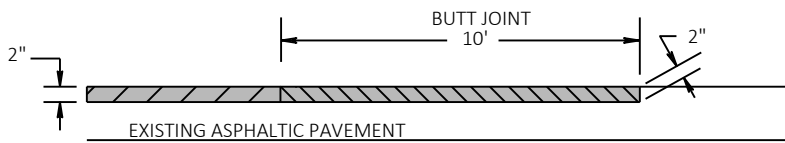
EXISTING LOCATION
2" HMA PAVEMENT
2" REMOVING ASPHALTIC SURFACE MILLING

NOTE: PREPARATION FOR PAVEMENT WIDENING
PAID UNDER PREPARE FOUNDATION
FOR ASPHALTIC SHOULDERS

SNOWMOBILE TRAIL CROSSING

STA 301+53
STA 337+38
STA 502+94
STA 563+33
STA 586+92
STA 611+05 NEW LOCATION

2



	HMA PAVEMENT
	REMOVING ASPHALTIC SURFACE MILLING
	REMOVING ASPHALTIC SURFACE BUTT JOINTS

MAINLINE BUTT JOINT DETAIL

STA 240+00
STA 612+90

PROJECT NO: 9080-14-73

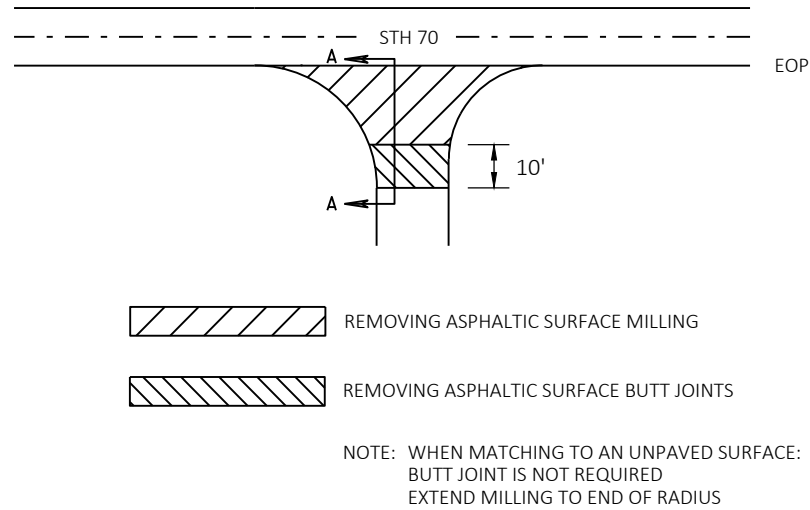
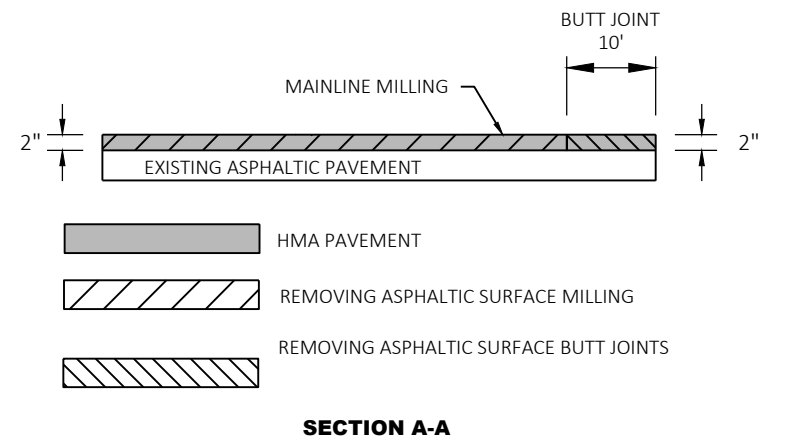
HWY:STH 70

COUNTY: VILAS

CONSTRUCTION DETAILS

SHEET

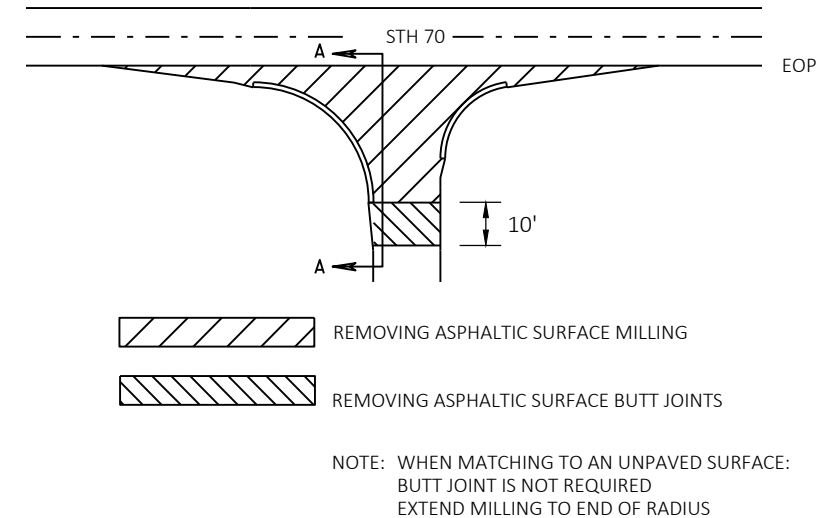
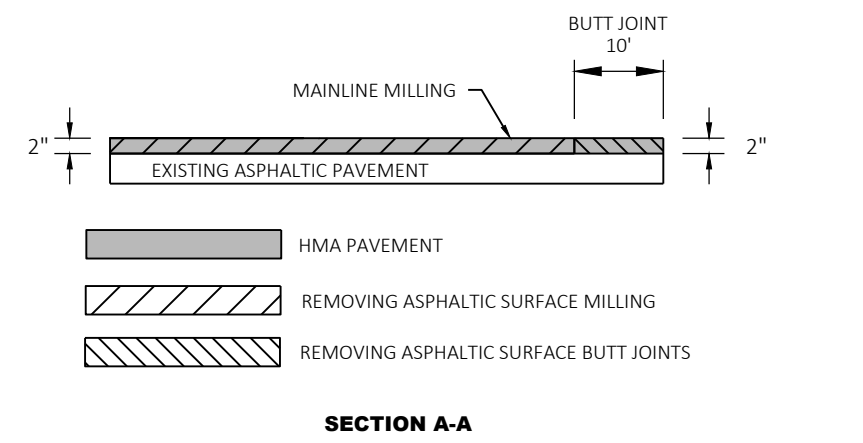
11



BUTT JOINT DETAIL

SIDE ROADS WITHOUT CURB AND GUTTER

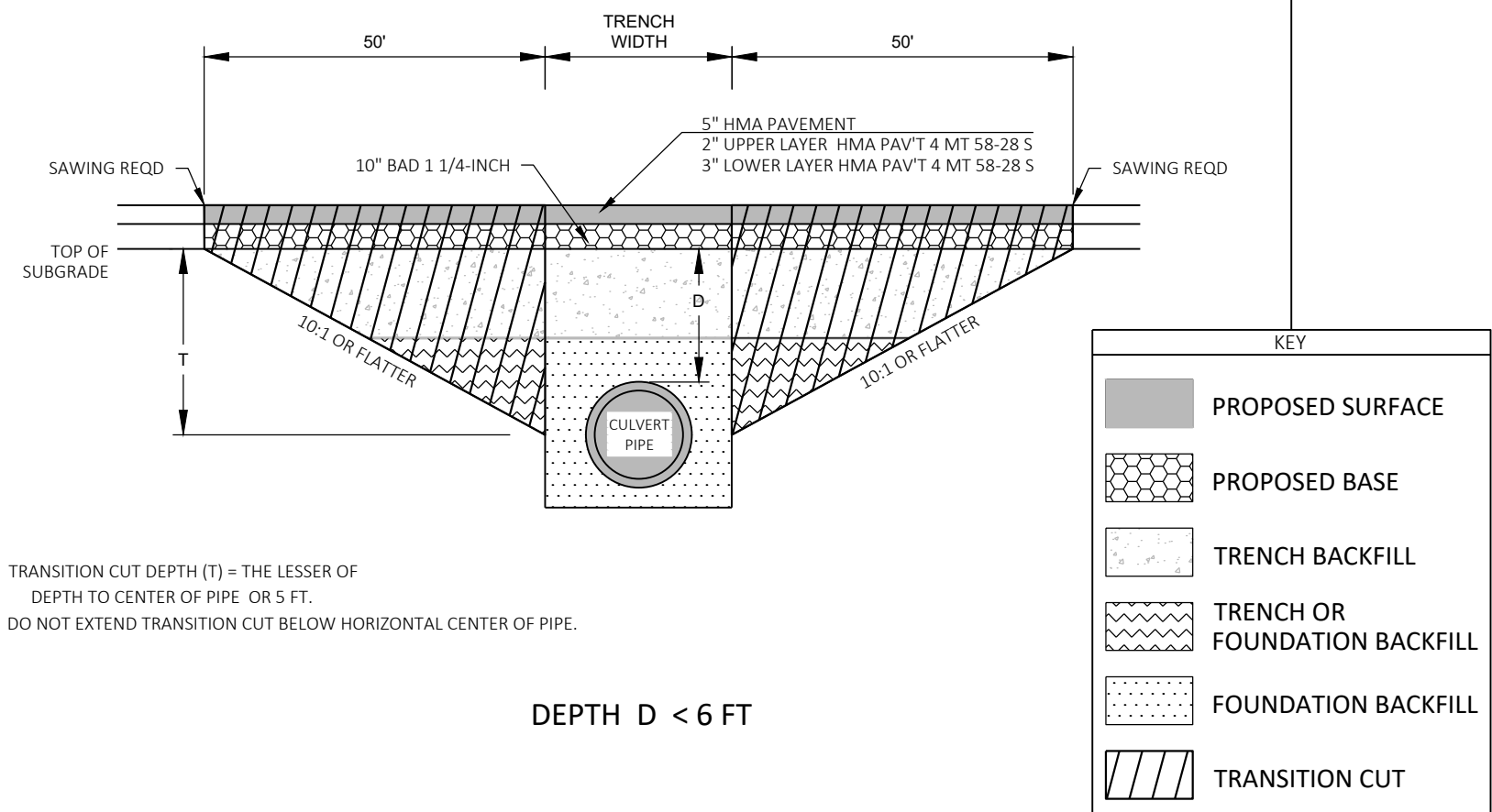
MOONLITE DR
COVE LN
ROBIN DR
DEER TRAIL
FOX LN
VLACH RD
CLOVERLAND DR (EAST)



BUTT JOINT DETAIL

SIDE ROADS WITH CURB AND GUTTER

OLD HWY 70 (WEST LT)
OLD HWY 70 (WEST RT)
OLD HWY 70 (EAST)
SHADY LN
WILDERNESS TR
SUNSET RD
CLOVERLAND DR (WEST)
ZEMAN RD
CTH H



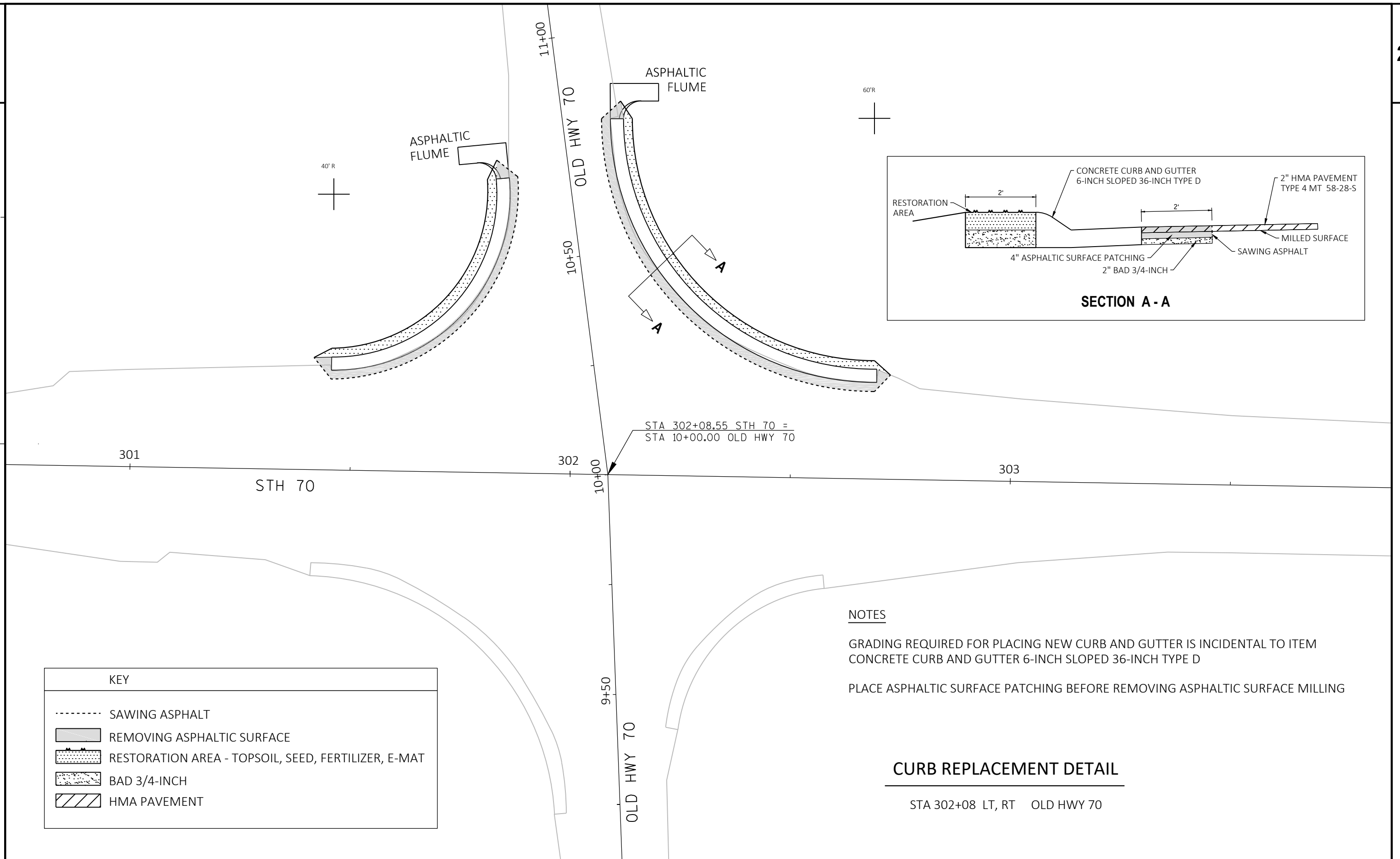
NOTES

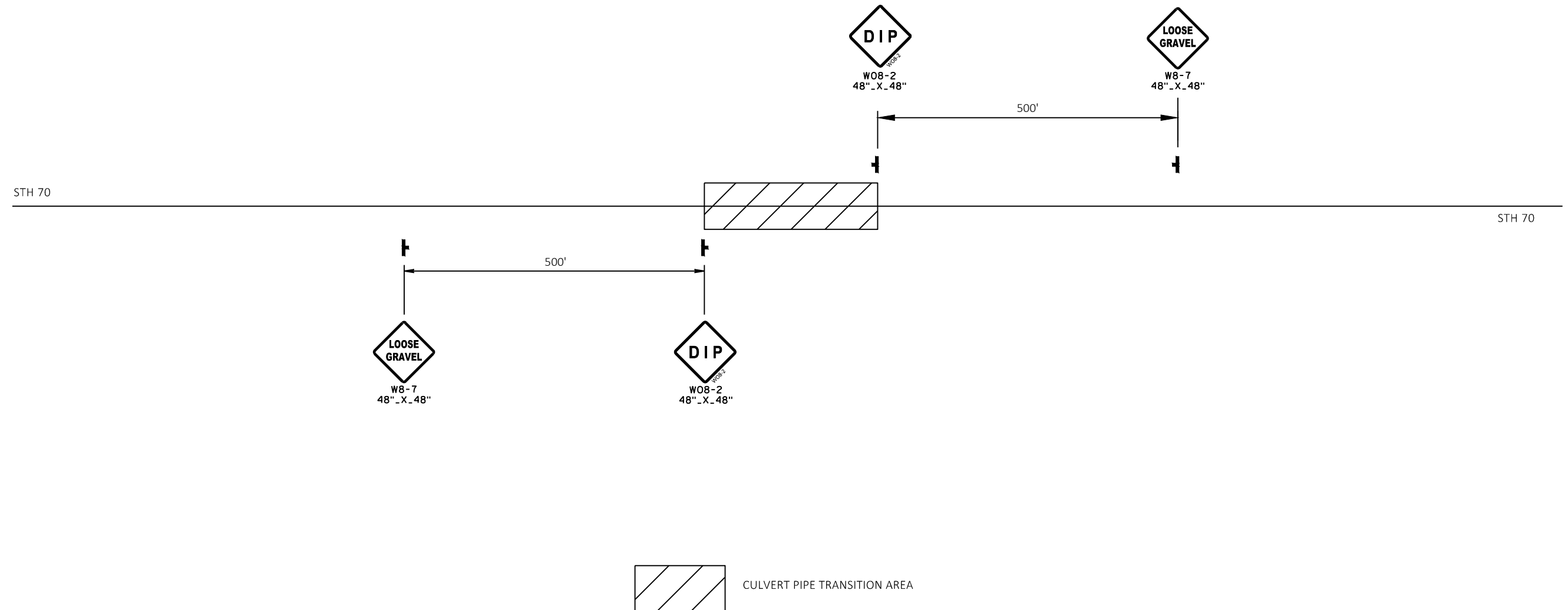
TRANSITION CUT IS PAID AS EXCAVATION COMMON.
TRANSITION CUT WIDTH IS FROM SUBGRADE SHOULDER POINT TO SUBGRADE SHOULDER POINT.
BACKFILL THE TRANSITION CUT AREAS WITH FOUNDATION AND TRENCH BACKFILL AS SPECIFIED IN STANDARD SPEC 520.
PERFORM CULVERT PIPE REPLACEMENT BEFORE REMOVING ASPHALTIC SURFACE MILLING.
PLACE HMA PAVEMENT AFTER CULVERT PIPE CONSTRUCTION AND BEFORE REMOVING ASPHALTIC SURFACE MILLING.

CULVERT PIPE TRANSITION

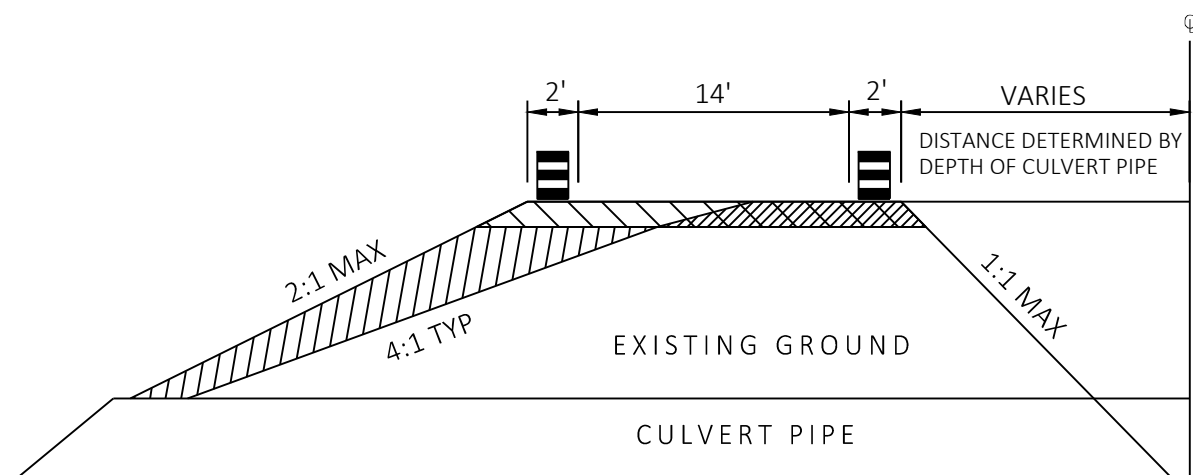
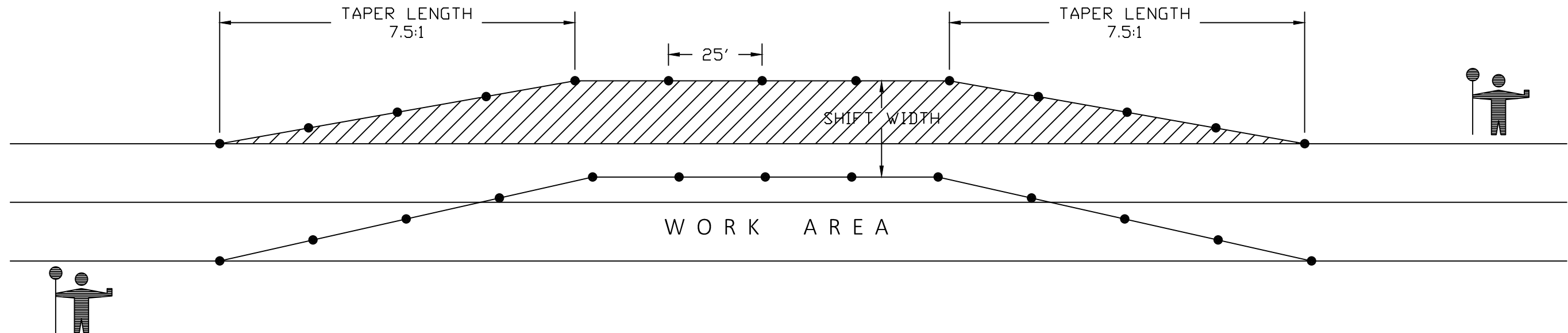
CULVERT ID	CL STA	D DEPTH (FT)	PIPE DIA (IN)	PIPE TYPE
C630700780	437+23	2.6*	24	CPRC IV

*REDUCED SUBGRADE COVER - LEFT SIDE OF PIPE





TEMPORARY SIGNING AT CULVERT PIPE REPLACEMENT



LANE SHIFT DETAIL

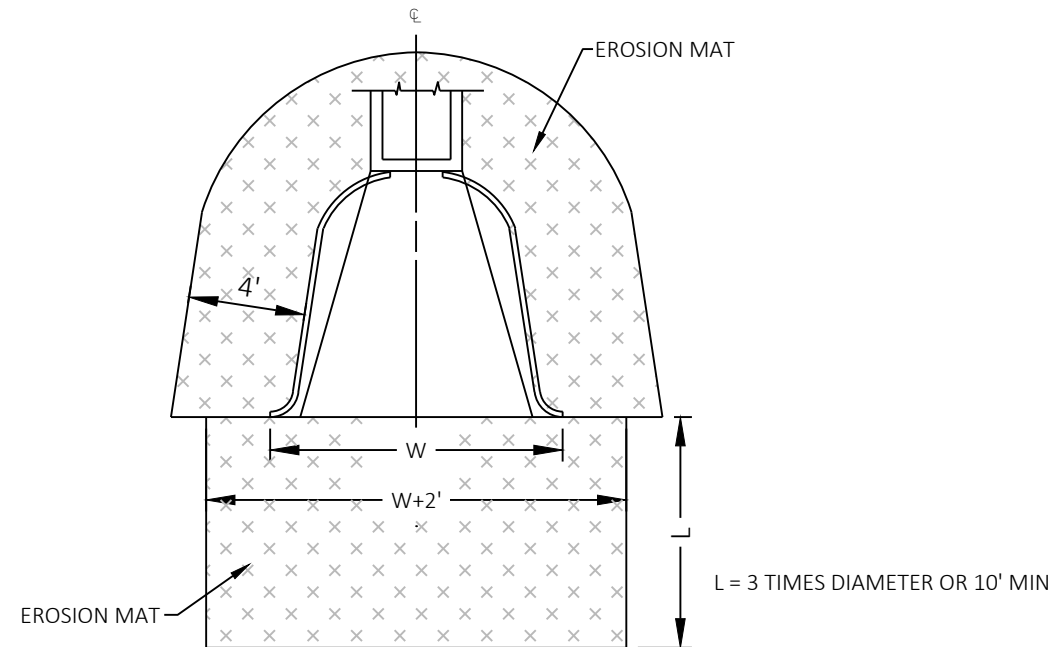
STA 437+23 C630700780

NOTES

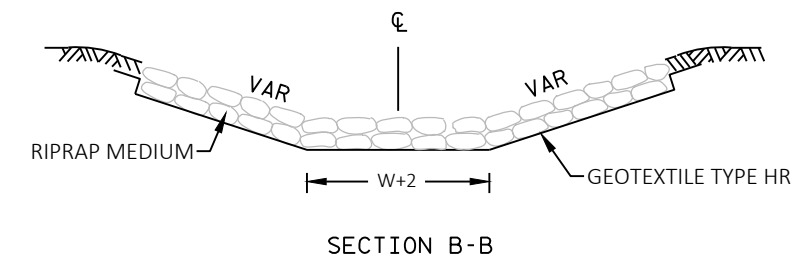
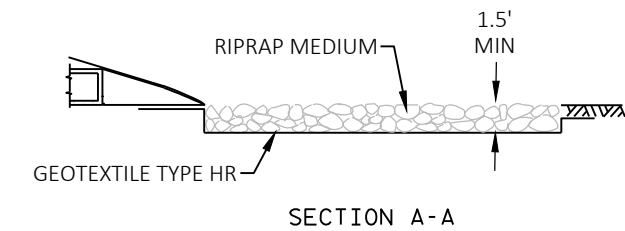
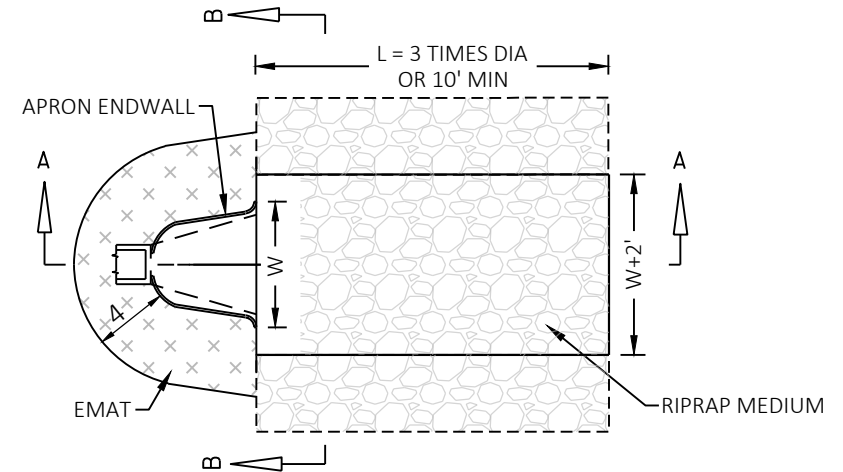
1. EXTEND TAPERS ACROSS THE SHOULDER
UNLESS DOING SO WOULD GREATLY CONFLICT WITH THE WORK OPERATION
2. WHEN WORK IS NOT IN PROGRESS:
 - REMOVE OR COVER ALL LANE CLOSURE SIGNS
 - MOVE ALL DEVICES A SAFE DISTANCE OUTSIDE THE SHOULDER
 - RESTORE LANES TO A SAFE OPERATING CONDITION
3. USE WITH SDD "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION"

KEY

- TRAFFIC CONTROL DRUM
- ▨ EXISTING PAVE SURFACE
-OR-
6" BASE AGGREGATE DENSE 1 1/4 INCH
- INCIDENTAL TO LANE SHIFT SYSTEM
- ▧ 6" BASE AGGREGATE DENSE 1 1/4 INCH
- INCIDENTAL TO LANE SHIFT SYSTEM
- ▩ FILL
- INCIDENTAL TO LANE SHIFT SYSTEM



EROSION MAT AT PIPE END

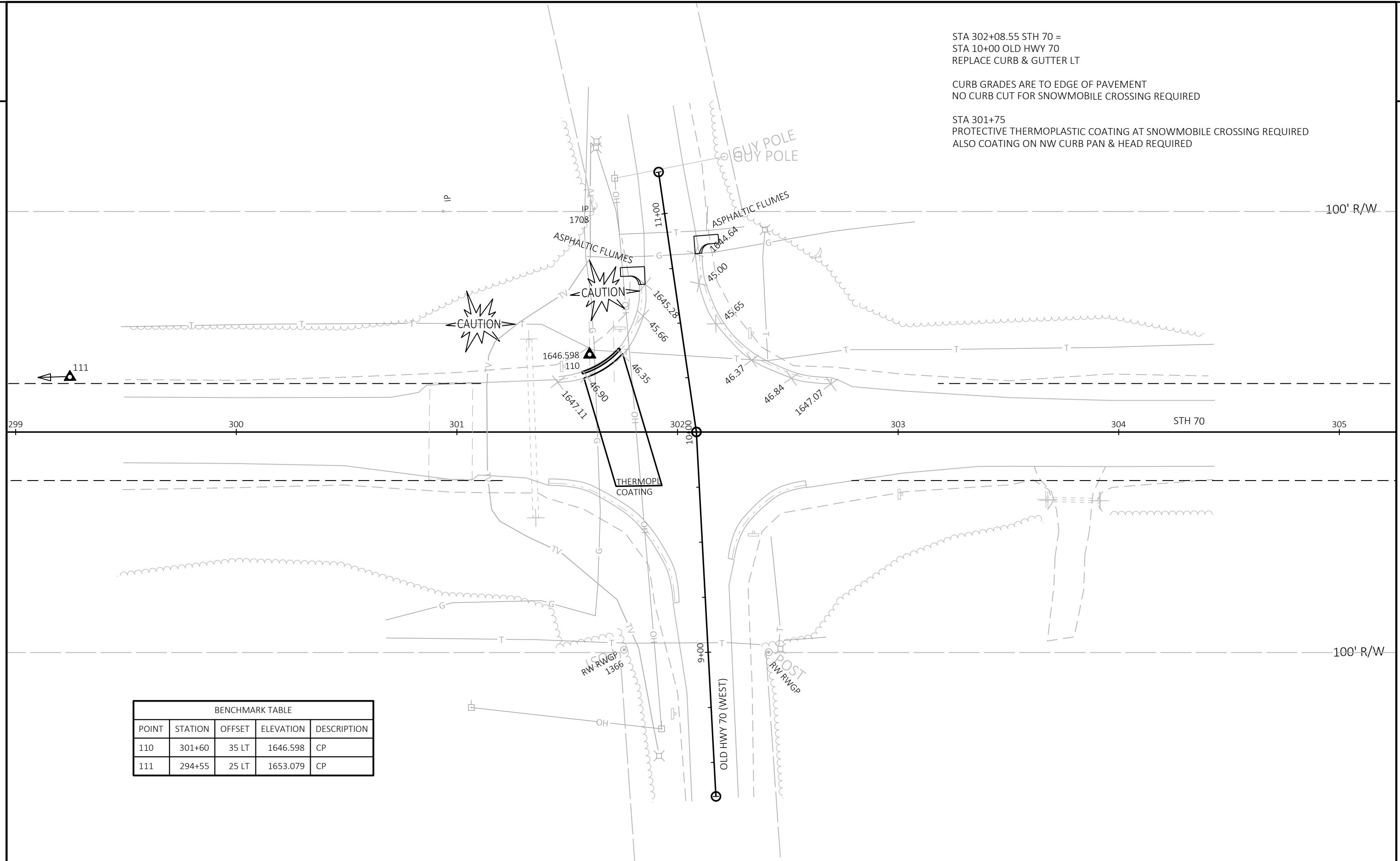


EMAT, RIPRAP MEDIUM, AND GEOTEXTILE AT APRON ENDWALL

STA 302+08.55 STH 70 =
STA 10+00 OLD HWY 70
REPLACE CURB & GUTTER LT

CURB GRADES ARE TO EDGE OF PAVEMENT
NO CURB CUT FOR SNOWMOBILE CROSSING REQUIRED

STA 301+75
PROTECTIVE THERMOPLASTIC COATING AT SNOWMOBILE CROSSING REQUIRED
ALSO COATING ON NW CURB PAN & HEAD REQUIRED

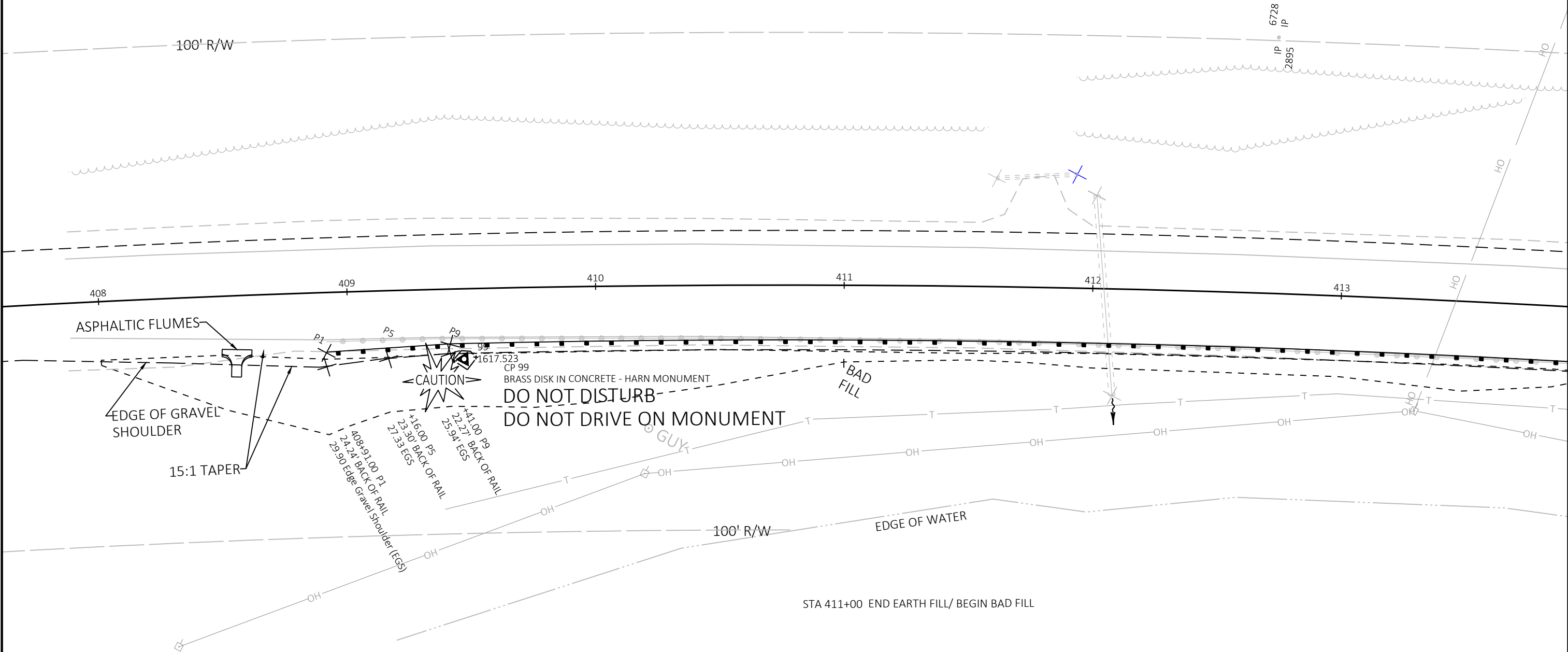


BENCHMARK TABLE				
POINT	STATION	OFFSET	ELEVATION	DESCRIPTION
110	301+60	35 LT	1646.598	CP
111	294+55	25 LT	1653.079	CP

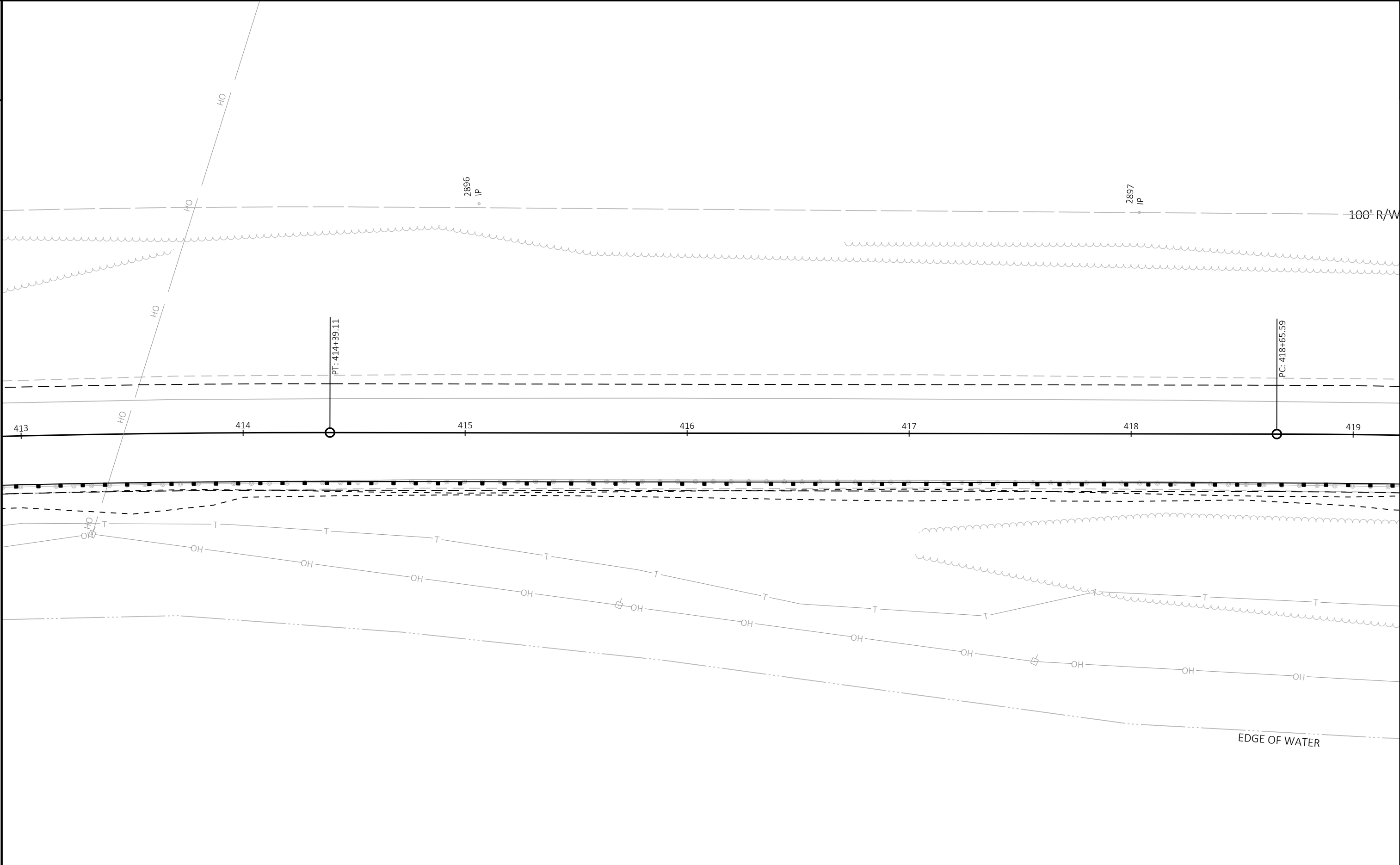
STA 408+91 - 442+59.75 RT
MGS GUARDRAIL 3 AND 3 K REQUIRED
MGS GUARDRAIL TERMINAL EAT REQUIRED
GUARDRAIL MOW STRIP ASPHALT REQUIRED

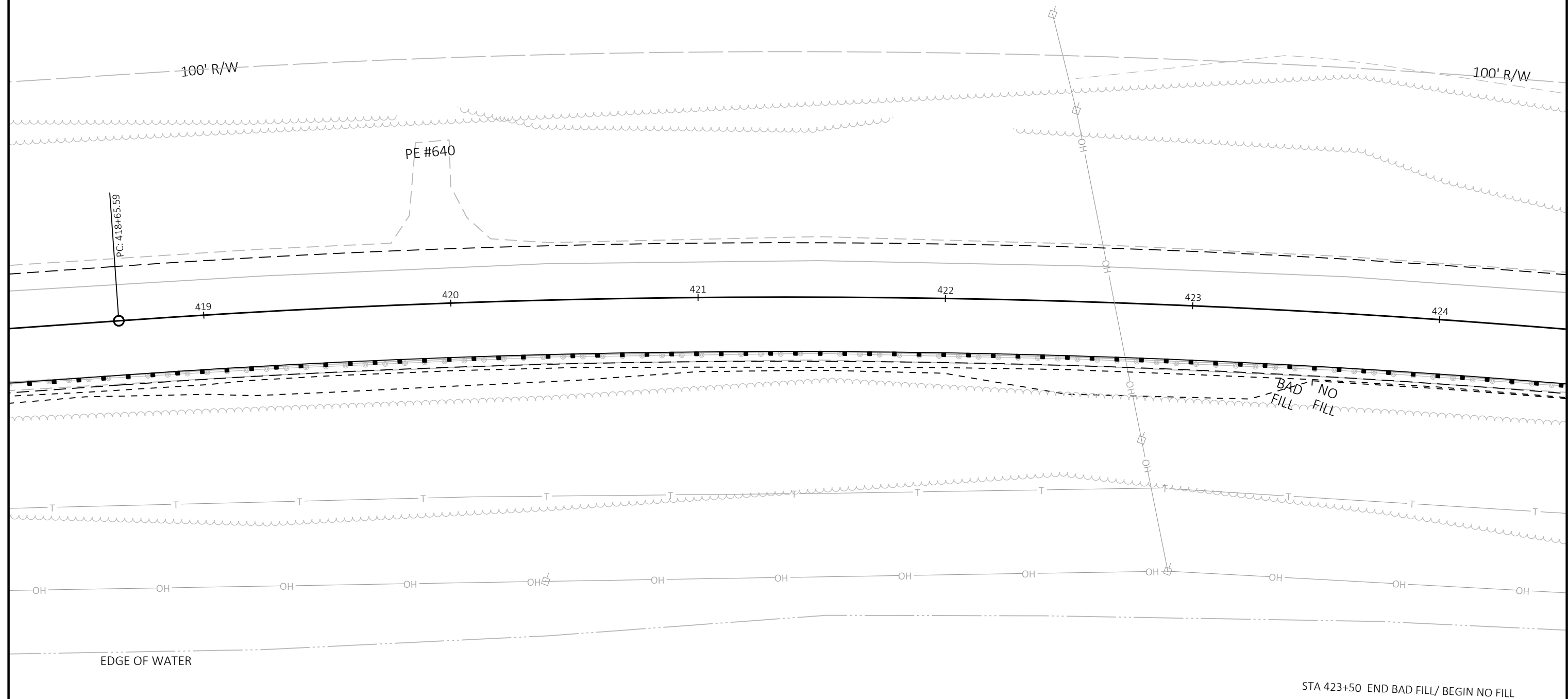
STA 409+46 RT
SAFETY FENCE AROUND HARN MONUMENT REQUIRED

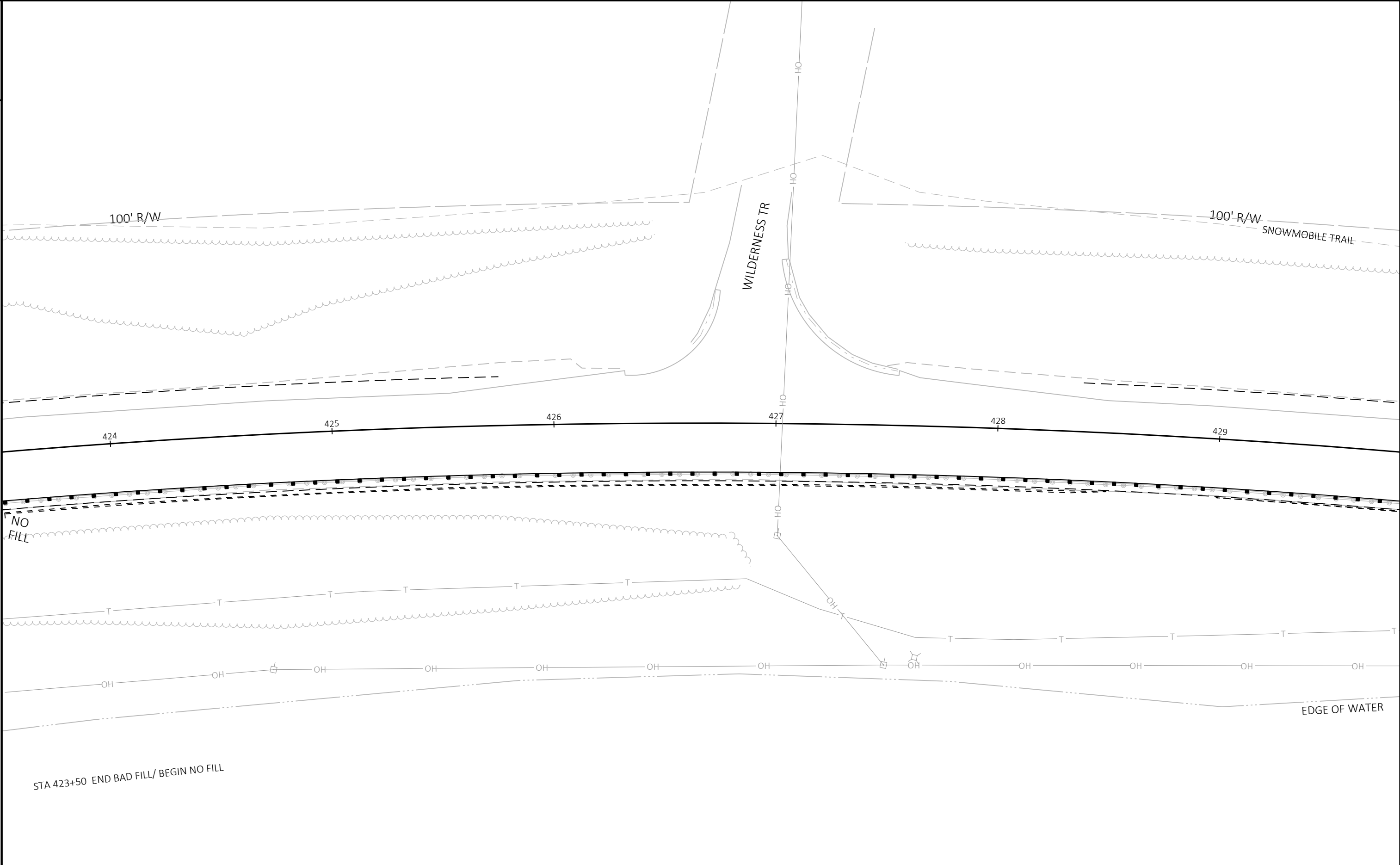
STA 412+04
C630700760 24"CPRC
NO WOK REQUIRED



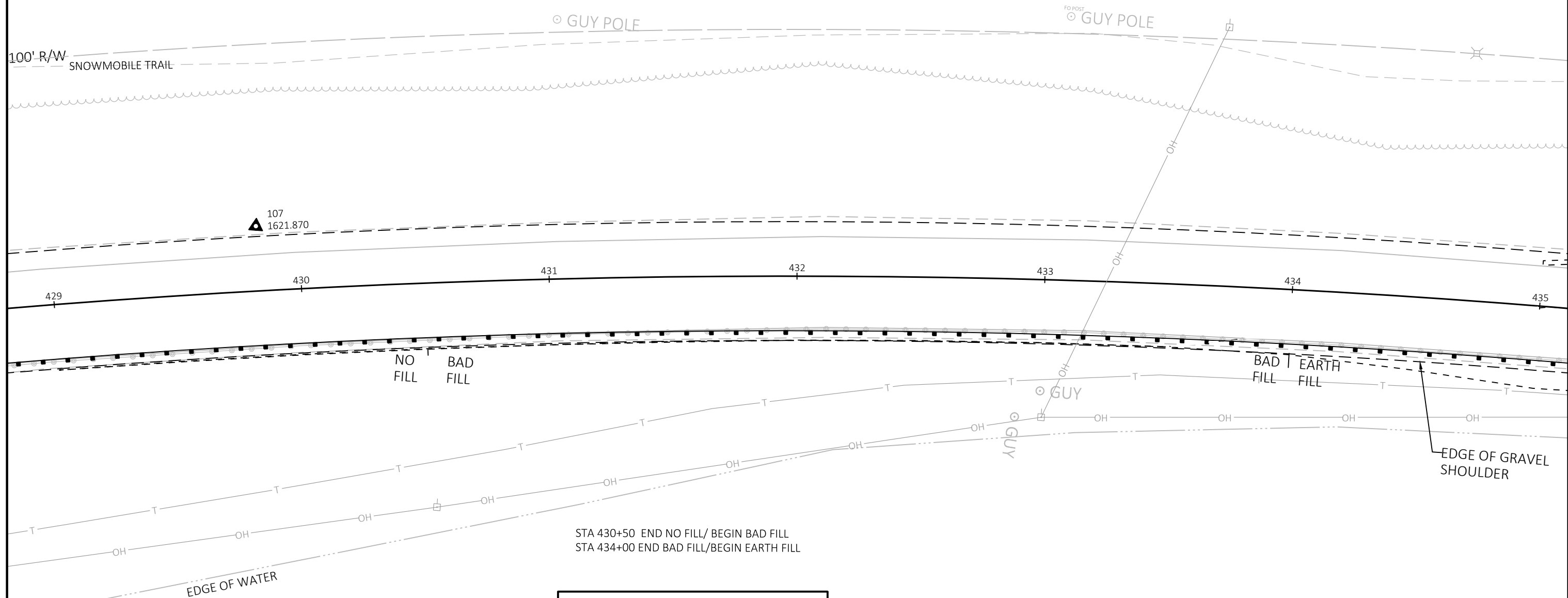
BENCHMARK TABLE				
POINT	STATION	OFFSET	ELEVATION	DESCRIPTION
99	409+46	28 RT	1617.523	HARN BRASS DISK - DO NOT DISTURB







PROJECT NO: 9080-14-73	HWY: STH 70	COUNTY: VILAS	PLAN DETAILS	SHEET 16	E
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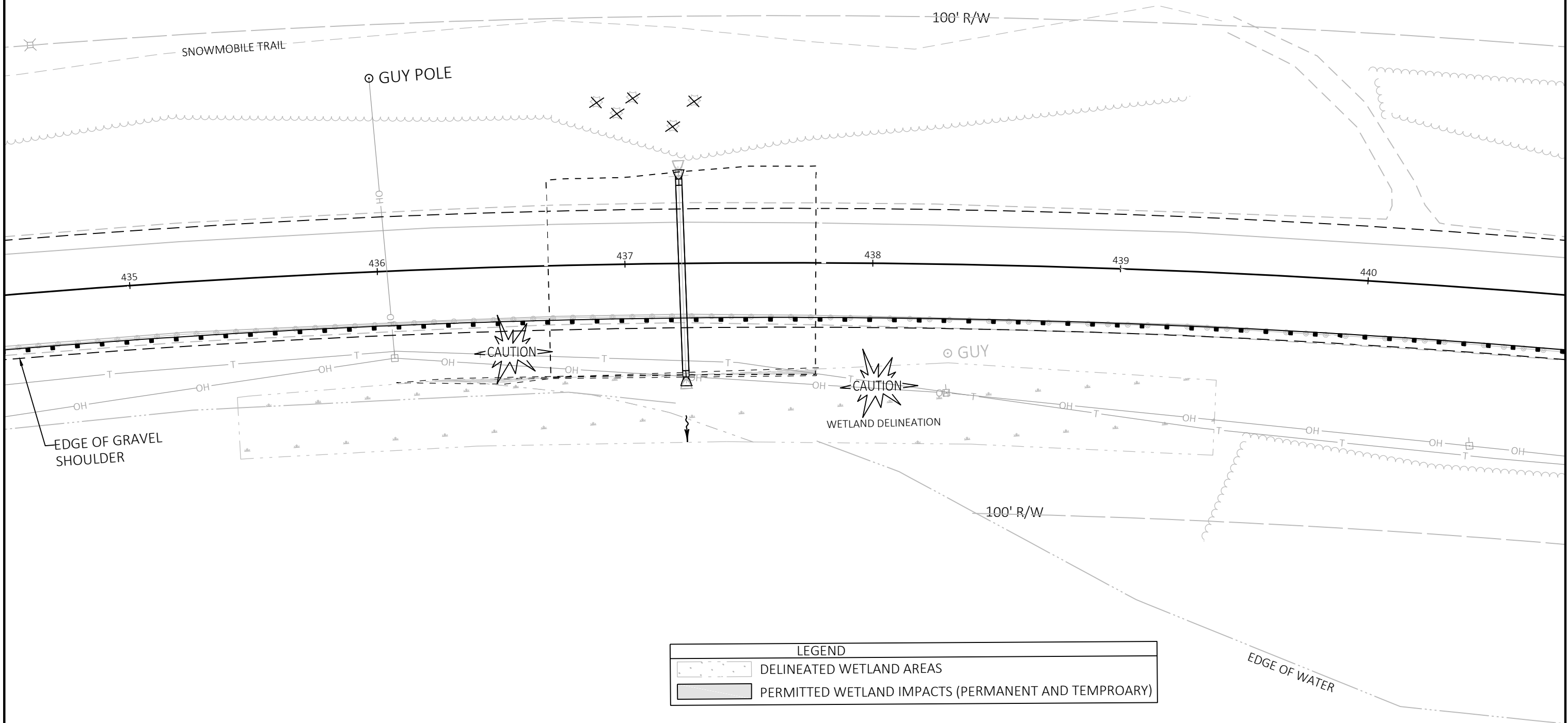
STA 430+50 END NO FILL/ BEGIN BAD FILL
STA 434+00 END BAD FILL/BEGIN EARTH FILL

BENCHMARK TABLE				
POINT	STATION	OFFSET	ELEVATION	DESCRIPTION
107	429+83	26 LT	1621.870	CP

C630700780
STA 437+23
1-24" x 80' CPRC AND 1 AEW - LT REMOVE
1-24" CPRC REQUIRED
2-24" AEW REQUIRED
SKEW 2° RHF

LANE SHIFT LT REQUIRED

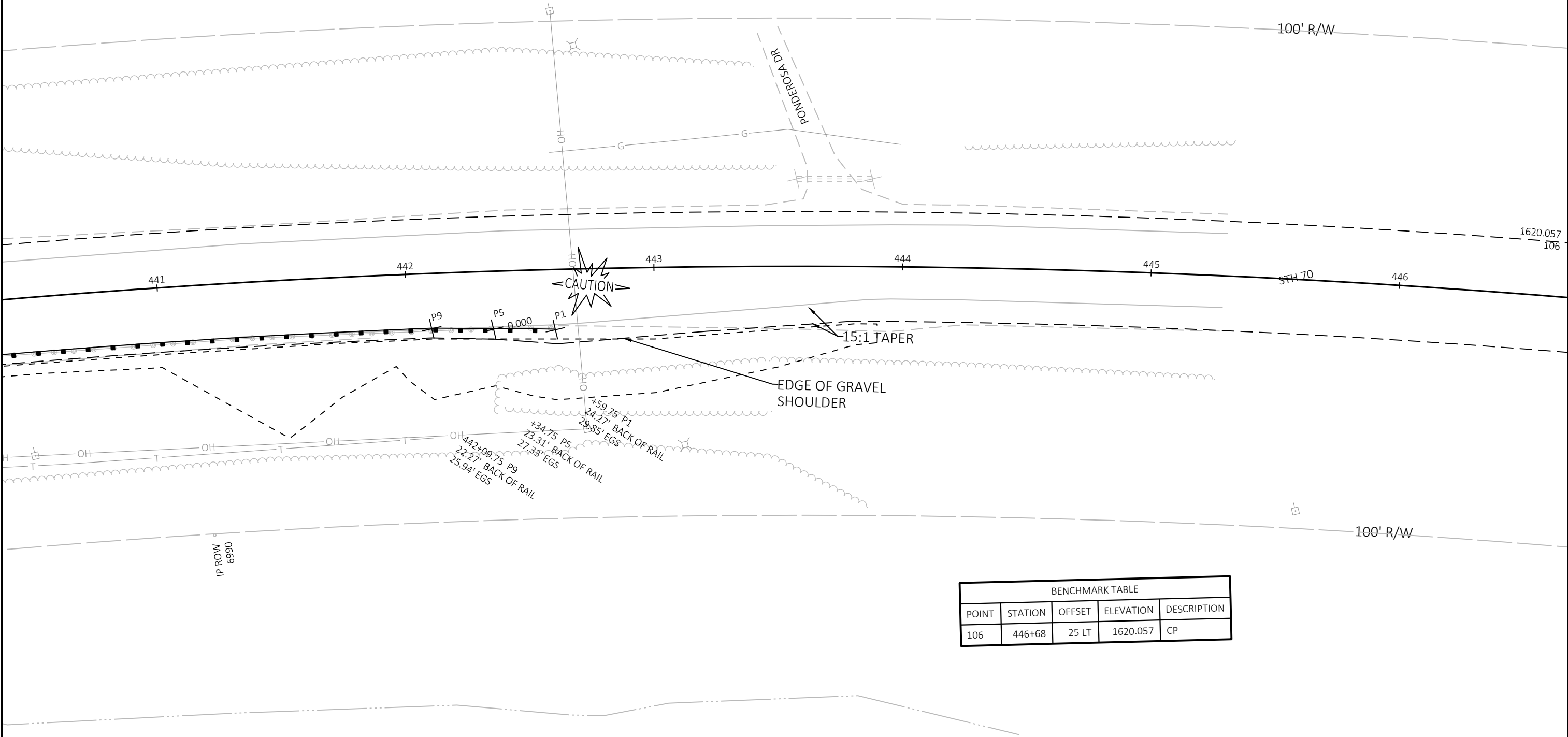
STA 437+00 - 438+00
CLEARING AND GRUBBING REQUIRED

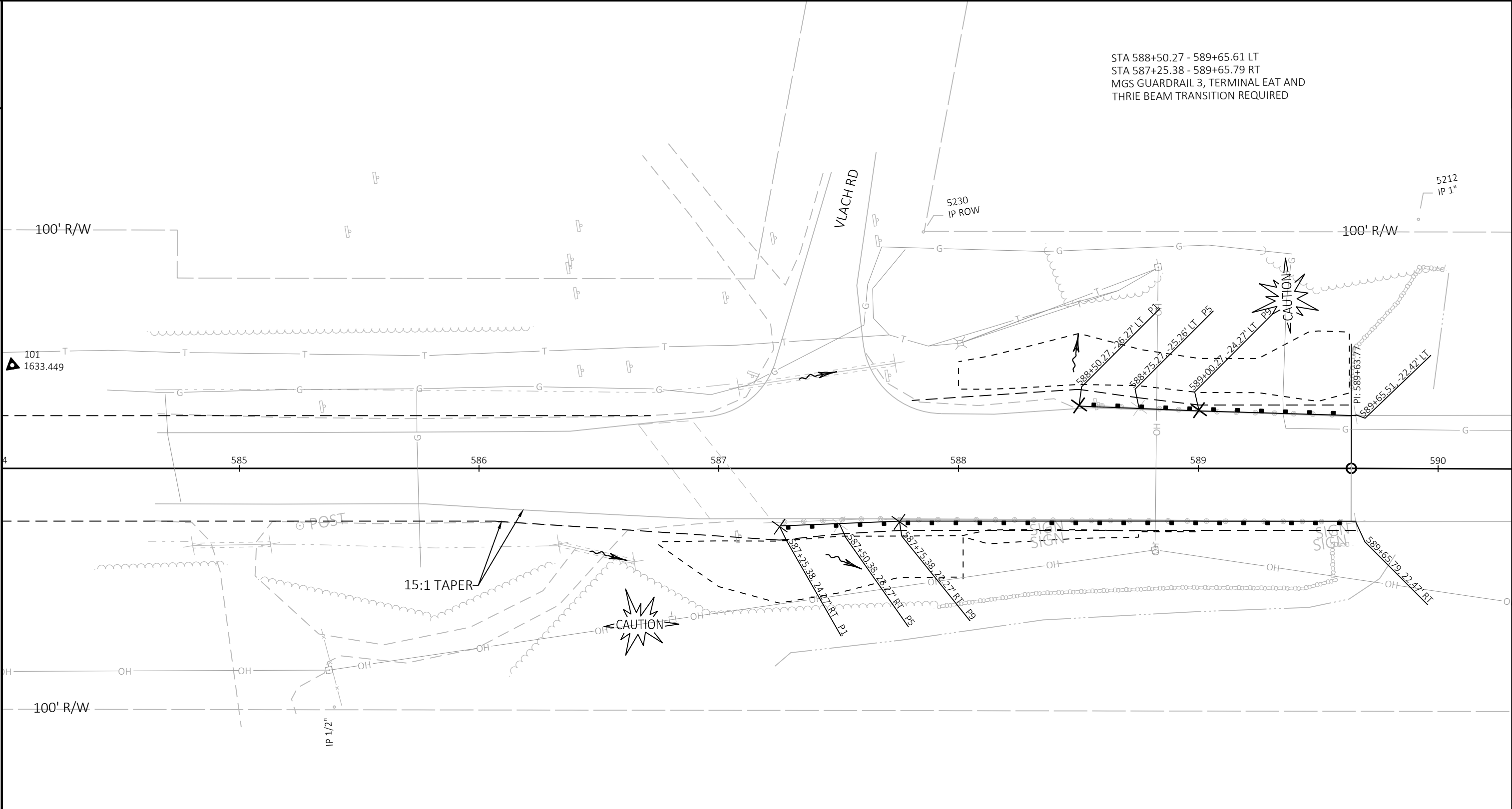


LEGEND	
	DELINEATED WETLAND AREAS
	PERMITTED WETLAND IMPACTS (PERMANENT AND TEMPORARY)

STA 408+91 - 442+60 RT
MGS GUARDRAIL 3 AND 3 K REQUIRED
MGS GUARDRAIL TERMINAL EAT REQUIRED
GUARDRAIL MOW STRIP ASPHALT REQUIRED

STA 442+00 - 444+00 RT
CLEARING AND GRUBBING REQUIRED



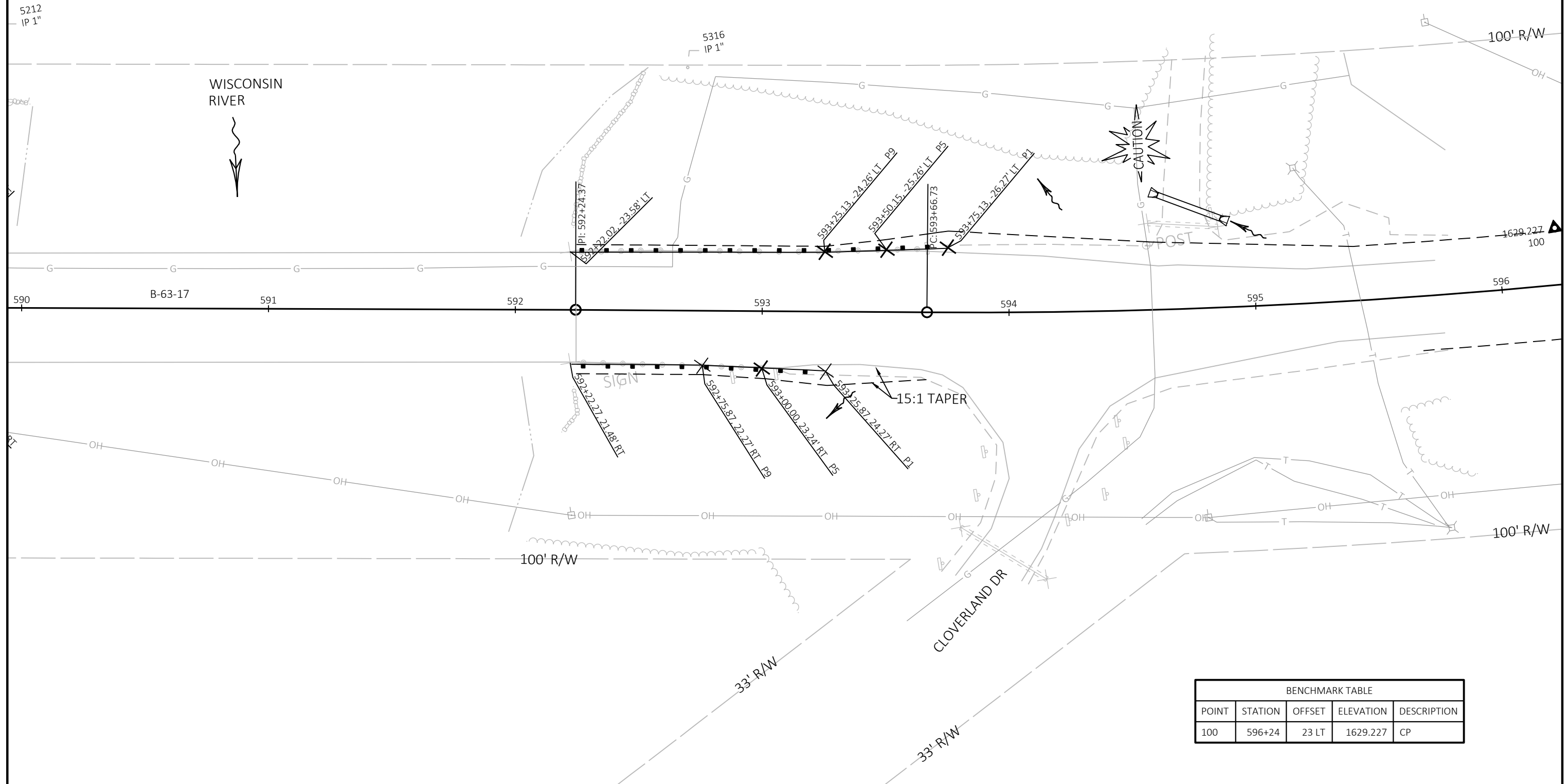


BENCHMARK TABLE				
POINT	STATION	OFFSET	ELEVATION	DESCRIPTION
101	584+05	43 LT	1633.449	CP

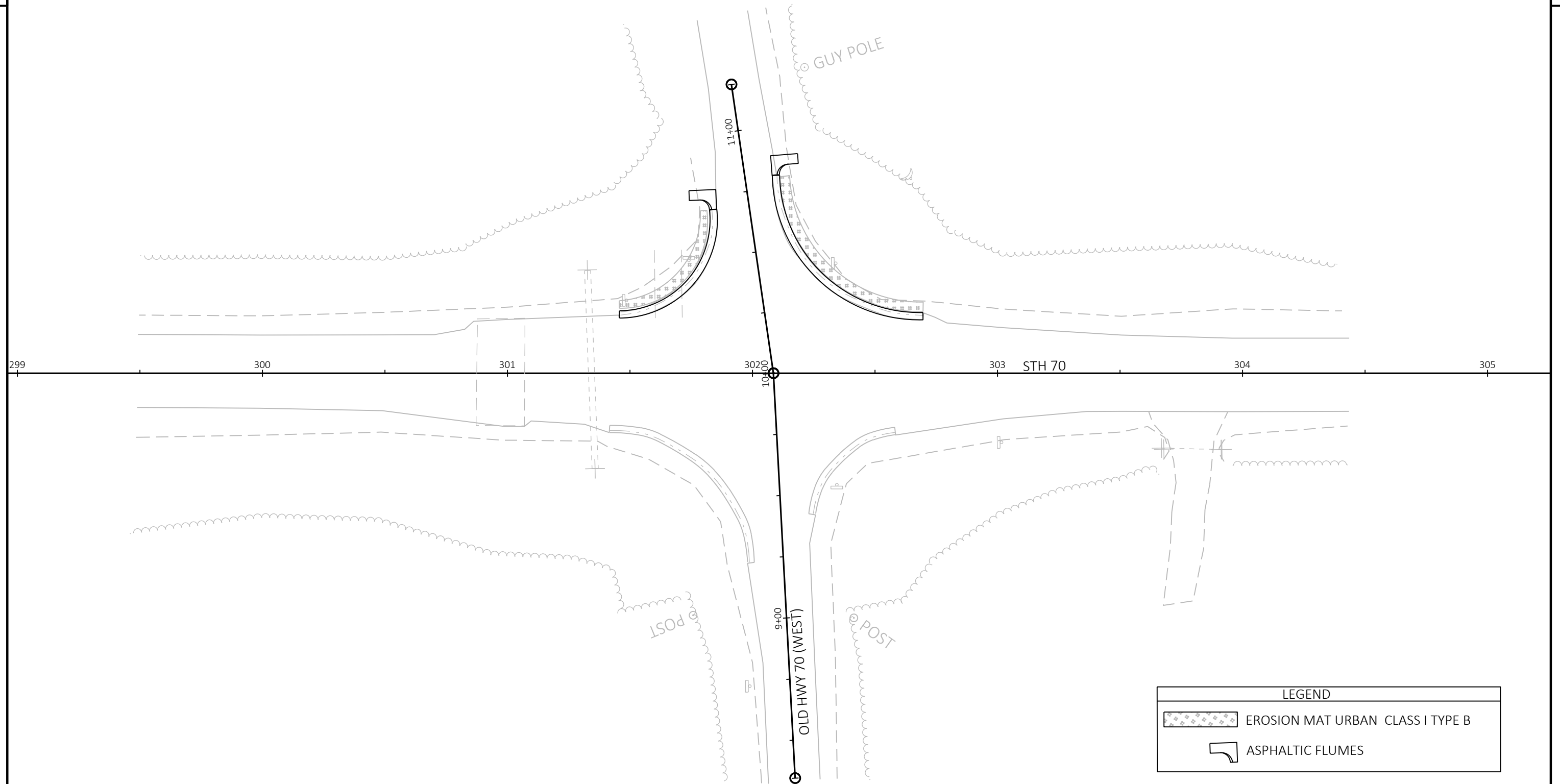
STA 588+50.27 - 589+65.61 LT
STA 587+25.38 - 589+65.79 RT
MGS GUARDRAIL 3, TERMINAL EAT AND
THRIE BEAM TRANSITION REQUIRED

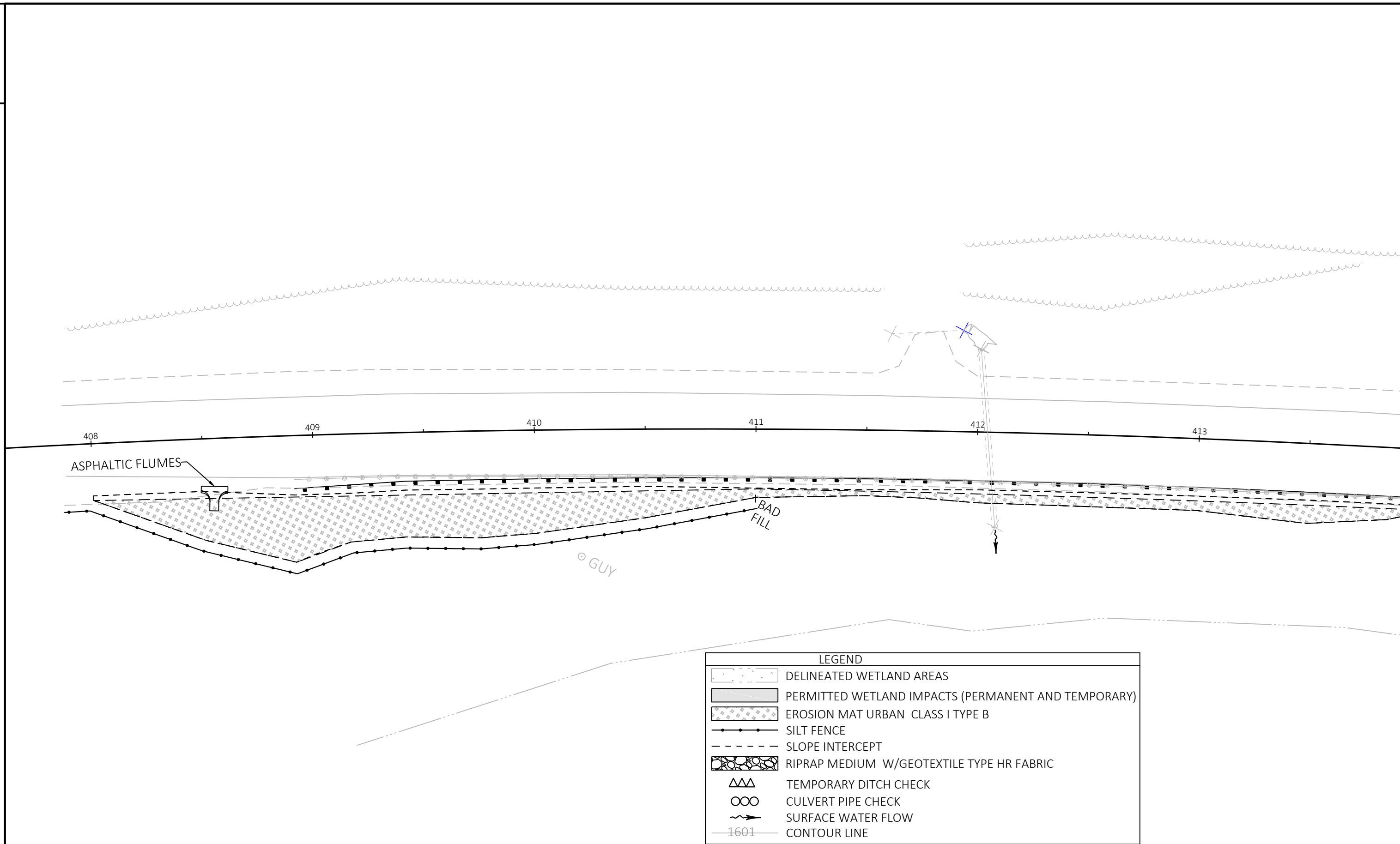
STA 592+22 - 593+75 LT
STA 592+22 - 593+26 RT
MGS GUARDRAIL 3, TERMINAL EAT AND
THRIE BEAM TRANSITION REQUIRED

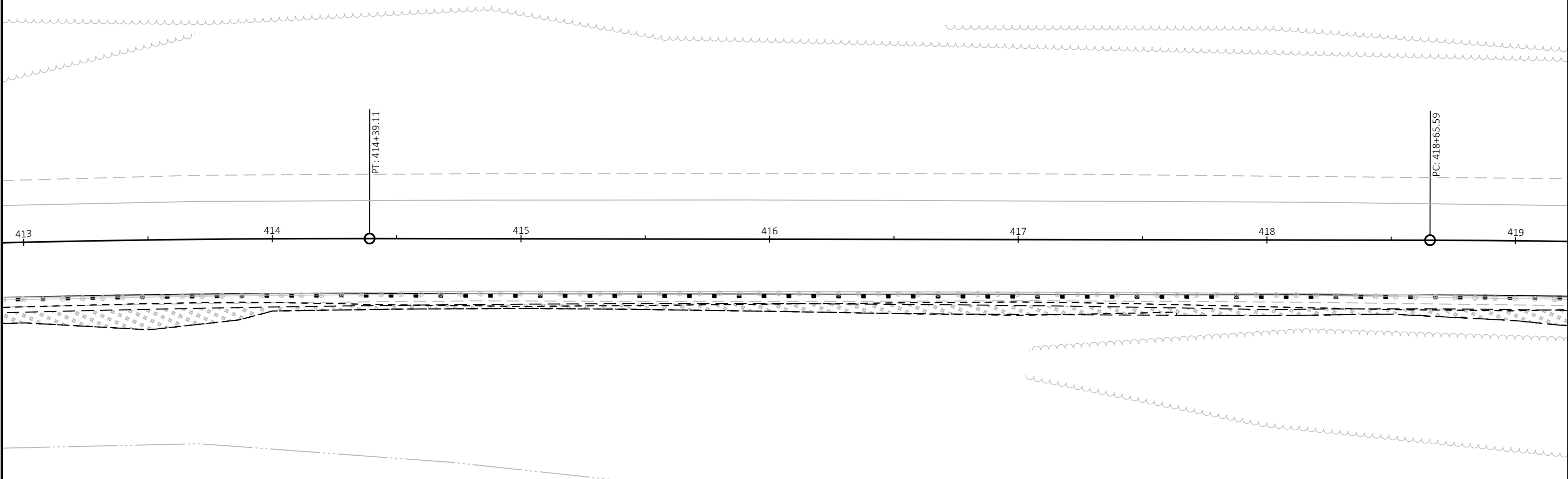
STA 594+75 LT PE
1-24" CPCM REMOVE
1-28"x 20" PACS REQUIRED
2-28"x 20" AEW REQUIRED



OLD HWY 70 (WEST) INTERSECTION

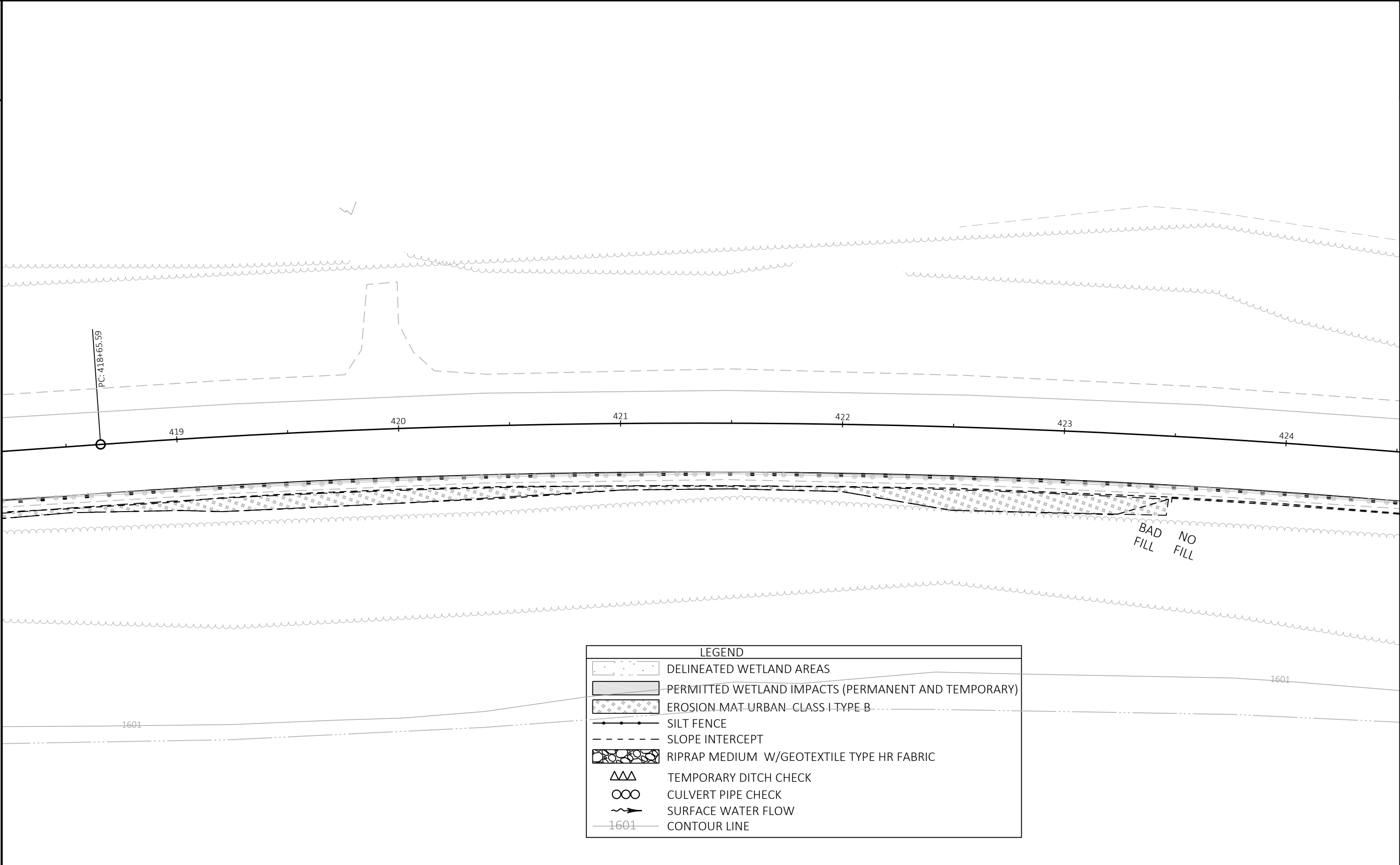




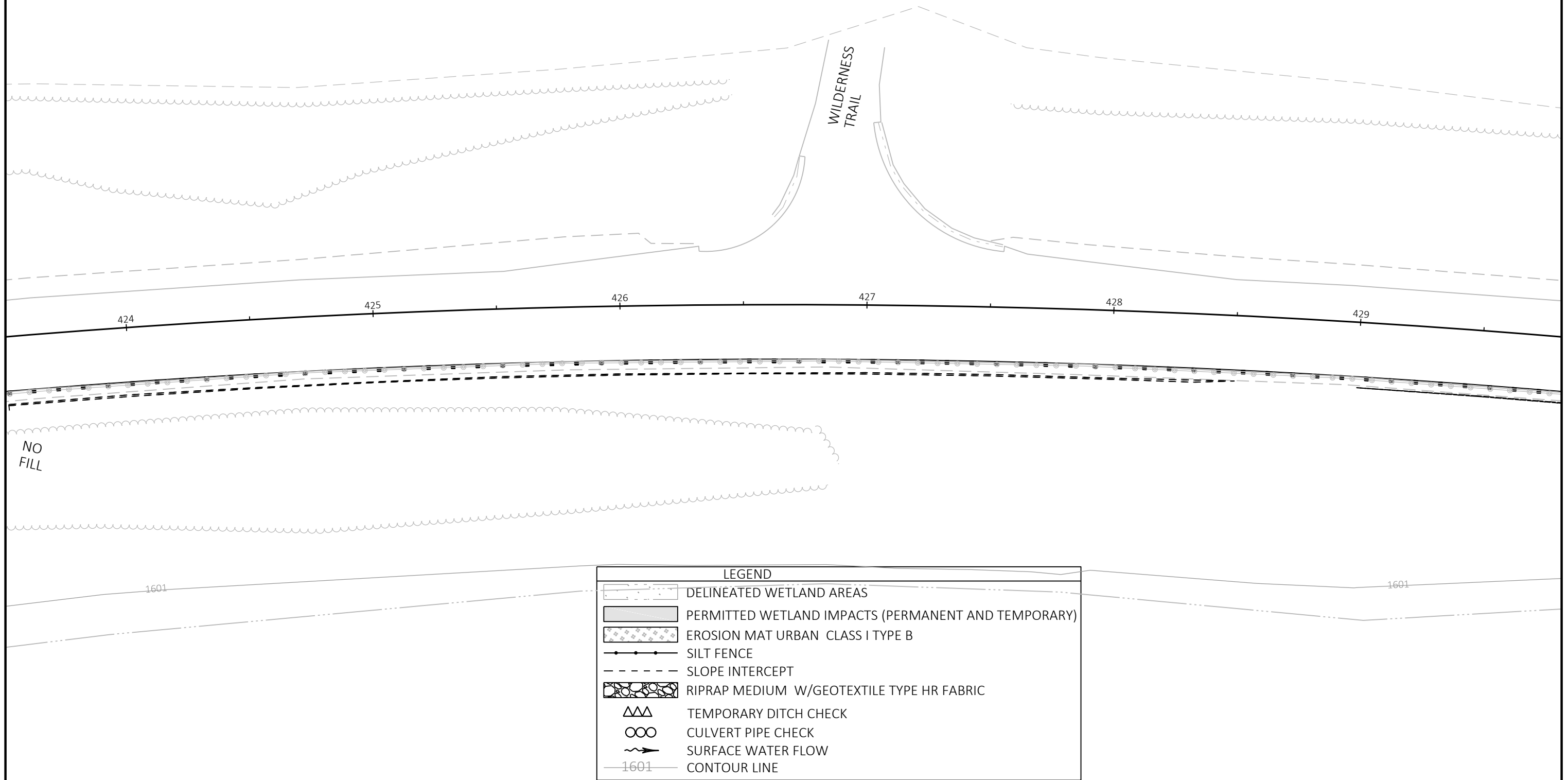


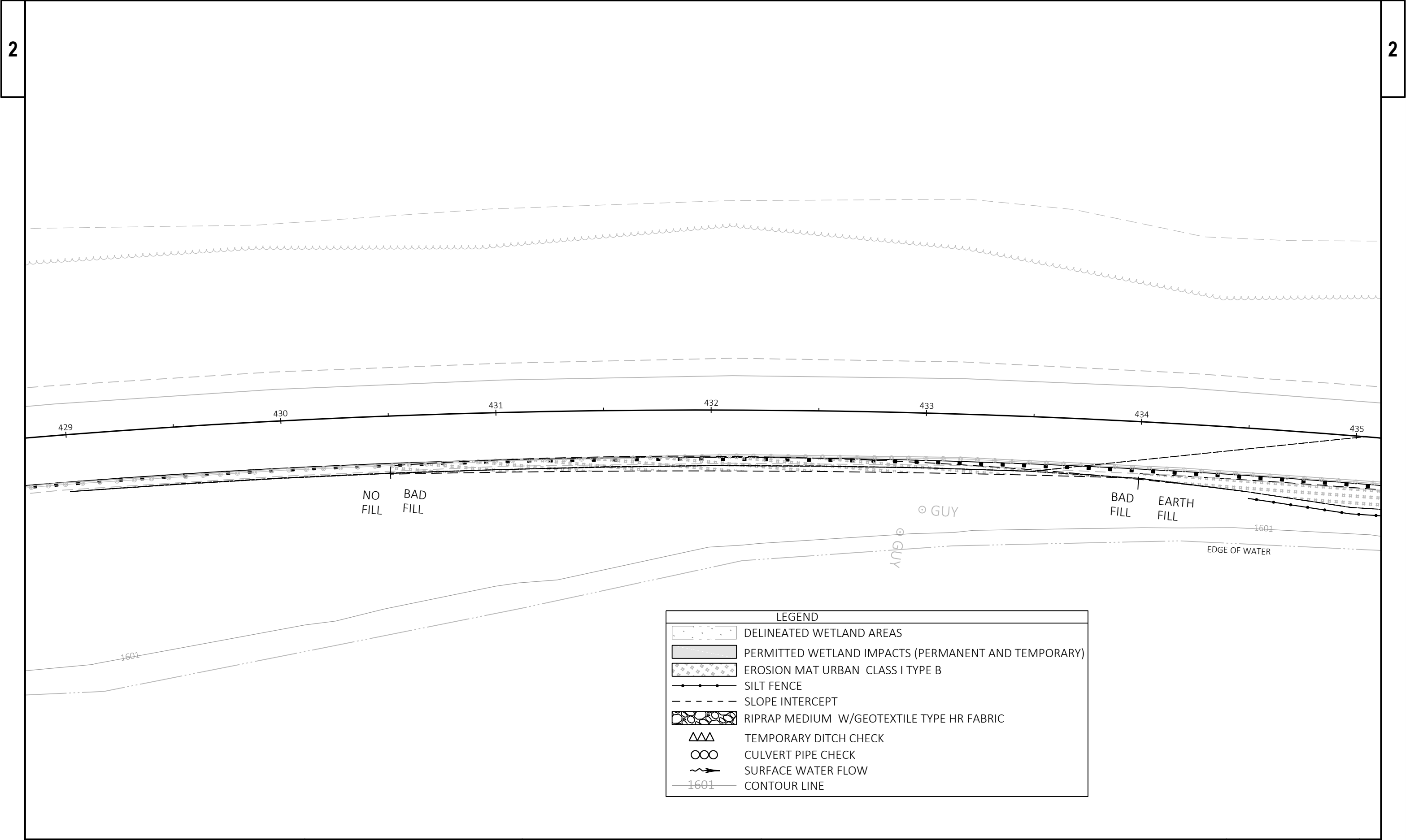
LEGEND

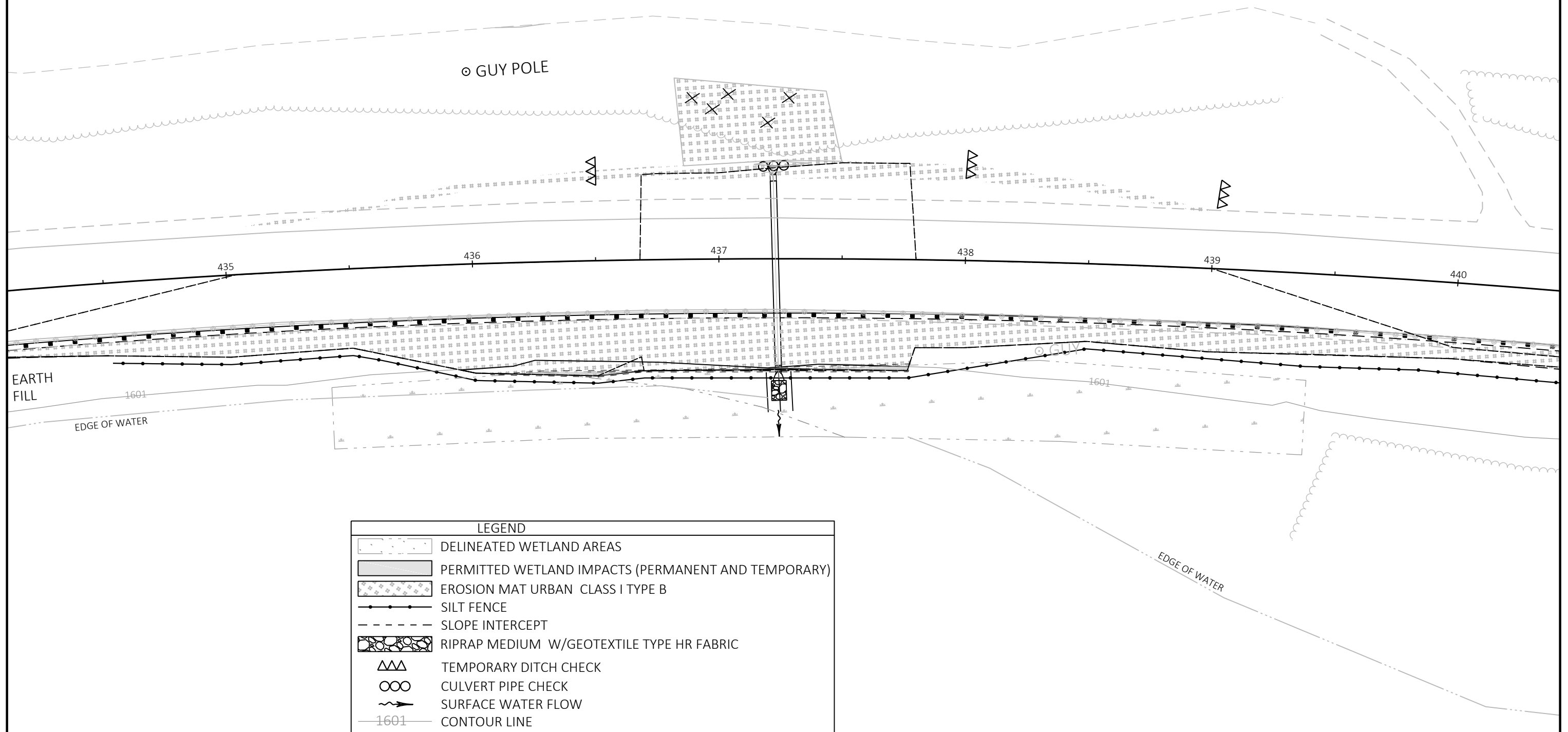
	DELINEATED WETLAND AREAS
	PERMITTED WETLAND IMPACTS (PERMANENT AND TEMPORARY)
	EROSION MAT URBAN CLASS I TYPE B
	SILT FENCE
	SLOPE INTERCEPT
	RIPRAP MEDIUM W/GEOTEXTILE TYPE HR FABRIC
	TEMPORARY DITCH CHECK
	CULVERT PIPE CHECK
	SURFACE WATER FLOW
	CONTOUR LINE

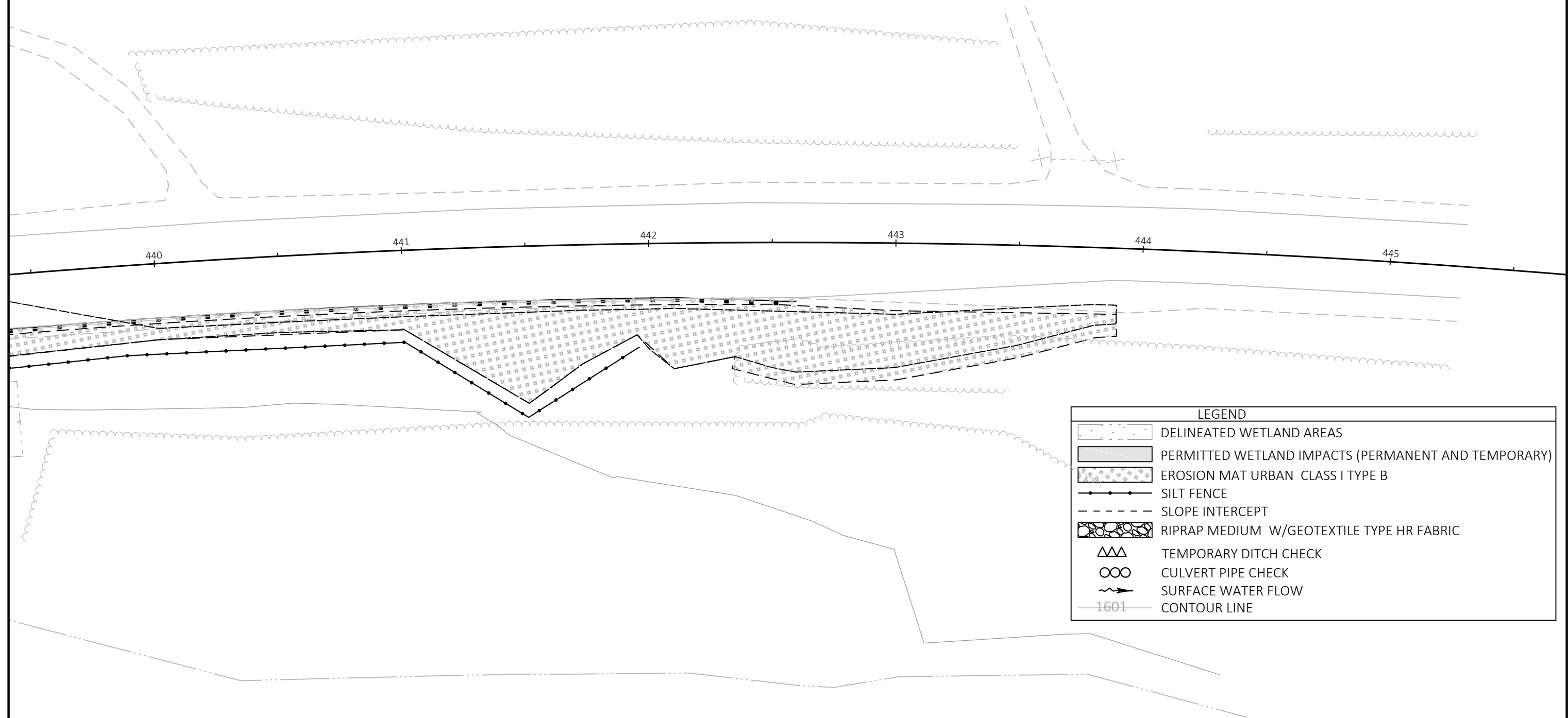


LEGEND	
	DELINEATED WETLAND AREAS
	PERMITTED WETLAND IMPACTS (PERMANENT AND TEMPORARY)
	EROSION MAT URBAN - CLASS I TYPE B
	SILT FENCE
	SLOPE INTERCEPT
	RIPRAP MEDIUM W/GEOTEXTILE TYPE HR FABRIC
	TEMPORARY DITCH CHECK
	CULVERT PIPE CHECK
	SURFACE WATER FLOW
	CONTOUR LINE





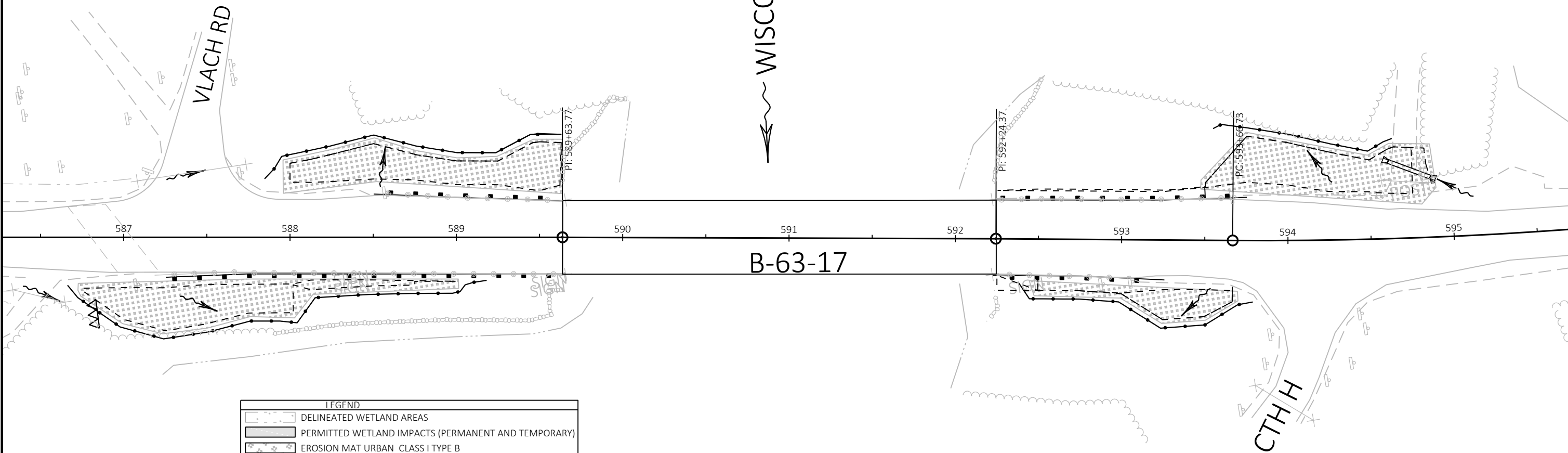




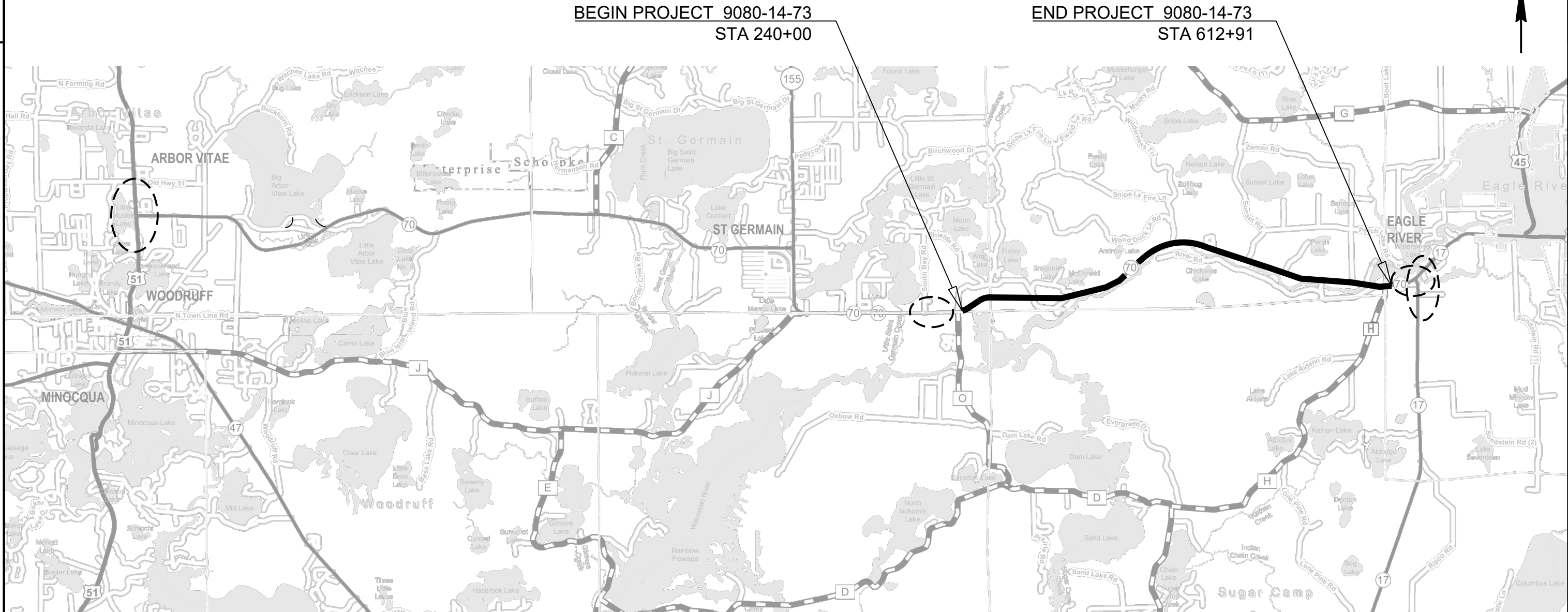
B-63-17 WEST SIDE
NO WETLAND IMPACTS

B-63-17 EAST SIDE
NO WETLAND IMPACTS

WISCONSIN RIVER



LEGEND	
	DELINEATED WETLAND AREAS
	PERMITTED WETLAND IMPACTS (PERMANENT AND TEMPORARY)
	EROSION MAT URBAN CLASS I TYPE B
	SILT FENCE
	SLOPE INTERCEPT
	RIPRAP MEDIUM W/GEOTEXTILE TYPE R FABRIC
	TEMPORARY DITCH CHECK
	CULVERT PIPE CHECK
	SURFACE WATER FLOW



ADVANCED WIDTH RESTRICTION SIGNING

SEE SDD "TRAFFIC CONTROL, ADVANCED WIDTH RESTRICTION SIGNING"

 SIGN LOCATIONS AND SPECIFICS



W12-52
48"X48"



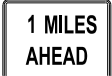
M1-6
24"X24"

AT
USH 51



W57-52
36"X24"

AT
STH 17



W57-52
36"X24"

Estimate Of Quantities By Plan Sets

9080-14-73					
Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	5.000	5.000
0004	201.0205	Grubbing	STA	5.000	5.000
0006	203.0100	Removing Small Pipe Culverts	EACH	2.000	2.000
0008	204.0115	Removing Asphaltic Surface Butt Joints	SY	500.000	500.000
0010	204.0120	Removing Asphaltic Surface Milling	SY	131,600.000	131,600.000
0012	204.0150	Removing Curb & Gutter	LF	160.000	160.000
0014	204.0165	Removing Guardrail	LF	3,940.000	3,940.000
0016	205.0100	Excavation Common	CY	800.000	800.000
0018	208.0100	Borrow	CY	400.000	400.000
0020	211.0100	Prepare Foundation for Asphaltic Paving (project) 01. 9080-14-73	LS	1.000	1.000
0022	211.0400	Prepare Foundation for Asphaltic Shoulders	STA	1.000	1.000
0026	213.0100	Finishing Roadway (project) 02. 9080-14-73	EACH	1.000	1.000
0028	305.0110	Base Aggregate Dense 3/4-Inch	TON	5,400.000	5,400.000
0030	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	800.000	800.000
0032	455.0605	Tack Coat	GAL	9,400.000	9,400.000
0034	460.0105.S	HMA Percent Within Limits (PWL) Test Strip Volumetrics	EACH	1.000	1.000
0036	460.0110.S	HMA Percent Within Limits (PWL) Test Strip Density	EACH	1.000	1.000
0038	460.2005	Incentive Density PWL HMA Pavement	DOL	11,060.000	11,060.000
0040	460.2007	Incentive Density HMA Pavement Longitudinal Joints	DOL	26,660.000	26,660.000
0042	460.2010	Incentive Air Voids HMA Pavement	DOL	14,950.000	14,950.000
0044	460.6224	HMA Pavement 4 MT 58-28 S	TON	14,950.000	14,950.000
0046	465.0110	Asphaltic Surface Patching	TON	500.000	500.000
0048	465.0120	Asphaltic Surface Driveways and Field Entrances	TON	40.000	40.000
0050	465.0315	Asphaltic Flumes	SY	30.000	30.000
0052	465.0475	Asphalt Centerline Rumble Strips 2-Lane Rural	LF	33,800.000	33,800.000
0054	521.1228	Apron Endwalls for Pipe Arch Steel 28x20-Inch	EACH	2.000	2.000
0056	521.3728	Pipe Arch Corrugated Steel 28x20-Inch	LF	28.000	28.000
0064	522.0424	Culvert Pipe Reinforced Concrete Class IV 24-Inch	LF	86.000	86.000
0066	522.1024	Apron Endwalls for Culvert Pipe Reinforced Concrete 24-Inch	EACH	2.000	2.000
0072	601.0557	Concrete Curb & Gutter 6-Inch Sloped 36-Inch Type D	LF	155.000	155.000
0074	606.0200	Riprap Medium	CY	7.000	7.000
0076	614.0360	Steel Plate Beam Guard Temporary	LF	100.000	100.000
0078	614.0396	Guardrail Mow Strip Asphalt	SY	1,700.000	1,700.000
0080	614.2300	MGS Guardrail 3	LF	2,588.000	2,588.000
0082	614.2330	MGS Guardrail 3 K	LF	925.000	925.000
0084	614.2500	MGS Thrie Beam Transition	LF	158.000	158.000
0086	614.2610	MGS Guardrail Terminal EAT	EACH	6.000	6.000
0088	616.0700.S	Fence Safety	LF	30.000	30.000

Estimate Of Quantities By Plan Sets

9080-14-73					
Line	Item	Item Description	Unit	Total	Qty
0092	618.0100	Maintenance And Repair of Haul Roads (project) 02. 9080-14-73	EACH	1.000	1.000
0094	619.1000	Mobilization	EACH	0.870	0.870
0096	624.0100	Water	MGAL	120.000	120.000
0098	625.0100	Topsoil	SY	7,100.000	7,100.000
0100	628.1504	Silt Fence	LF	1,600.000	1,600.000
0102	628.1520	Silt Fence Maintenance	LF	800.000	800.000
0104	628.1905	Mobilizations Erosion Control	EACH	4.000	4.000
0106	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0108	628.2008	Erosion Mat Urban Class I Type B	SY	7,100.000	7,100.000
0110	628.7504	Temporary Ditch Checks	LF	45.000	45.000
0112	628.7555	Culvert Pipe Checks	EACH	10.000	10.000
0114	629.0210	Fertilizer Type B	CWT	30.000	30.000
0116	630.0120	Seeding Mixture No. 20	LB	1,100.000	1,100.000
0118	630.0160	Seeding Mixture No. 60	LB	10.000	10.000
0120	630.0500	Seed Water	MGAL	175.000	175.000
0122	633.5200	Markers Culvert End	EACH	2.000	2.000
0124	634.0616	Posts Wood 4x6-Inch X 16-FT	EACH	5.000	5.000
0126	638.2102	Moving Signs Type II	EACH	10.000	10.000
0128	642.5001	Field Office Type B	EACH	1.000	1.000
0130	643.0300	Traffic Control Drums	DAY	1,830.000	1,830.000
0132	643.0900	Traffic Control Signs	DAY	1,525.000	1,525.000
0134	643.1050	Traffic Control Signs PCMS	DAY	10.000	10.000
0136	643.5000	Traffic Control	EACH	0.800	0.800
0138	645.0120	Geotextile Type HR	SY	20.000	20.000
0140	646.1020	Marking Line Epoxy 4-Inch	LF	46,600.000	46,600.000
0142	646.1040	Marking Line Grooved Wet Ref Epoxy 4-Inch	LF	77,000.000	77,000.000
0144	646.4520	Marking Line Same Day Epoxy 4-Inch	LF	46,900.000	46,900.000
0146	648.0100	Locating No-Passing Zones	MI	7.060	7.060
0148	649.0105	Temporary Marking Line Paint 4-Inch	LF	46,900.000	46,900.000
0150	650.4500	Construction Staking Subgrade	LF	4,012.000	4,012.000
0152	650.5000	Construction Staking Base	LF	4,012.000	4,012.000
0154	650.5500	Construction Staking Curb Gutter and Curb & Gutter	LF	155.000	155.000
0156	650.6000	Construction Staking Pipe Culverts	EACH	1.000	1.000
0158	650.8000	Construction Staking Resurfacing Reference	LF	37,040.000	37,040.000
0162	650.9910	Construction Staking Supplemental Control (project) 02. 9080-14-73	LS	1.000	1.000
0164	650.9920	Construction Staking Slope Stakes	LF	4,012.000	4,012.000
0166	690.0150	Sawing Asphalt	LF	135.000	135.000
0168	740.0440	Incentive IRI Ride	DOL	28,070.000	28,070.000

Estimate Of Quantities By Plan Sets

9080-14-73					
Line	Item	Item Description	Unit	Total	Qty
0170	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	2,000.000	2,000.000
0172	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	1,260.000	1,260.000
0174	SPV.0060	Special 01. Lane Shift	EACH	1.000	1.000
0182	SPV.0180	Special 01. Protective Thermoplastic Coating at Snowmobile Crossing	SY	460.000	460.000

3

CLEARING & GRUBBING 201.0105 CLEARING STA 201.0205 GRUBBING STA <table><tr><td>346+00 - 349+00 C360700710</td><td>3</td><td>3</td></tr><tr><td>442+00 - 444+00 GUARDRAIL</td><td><u>2</u></td><td><u>2</u></td></tr><tr><td>TOTAL</td><td>5</td><td>5</td></tr></table>			346+00 - 349+00 C360700710	3	3	442+00 - 444+00 GUARDRAIL	<u>2</u>	<u>2</u>	TOTAL	5	5	REMOVING GUARDRAIL 204.0165 LF <table><tr><td>408+91 - 442+61 RT</td><td>3,354</td></tr><tr><td>588+55 - 589+66 LT B-63-17 NW</td><td>109</td></tr><tr><td>587+18 - 589+66 RT B-63-17 SW</td><td>246</td></tr><tr><td>592+72 - 583+70 LT B-63-17 NE</td><td>147</td></tr><tr><td>592+72 - 593+07 RT B-63-17 SE</td><td><u>84</u></td></tr><tr><td>TOTAL</td><td>3,940</td></tr></table>		408+91 - 442+61 RT	3,354	588+55 - 589+66 LT B-63-17 NW	109	587+18 - 589+66 RT B-63-17 SW	246	592+72 - 583+70 LT B-63-17 NE	147	592+72 - 593+07 RT B-63-17 SE	<u>84</u>	TOTAL	3,940	BASE AGGREGATE DENSE 3/4-INCH BASE AGGREGATE DENSE 1 1/4-INCH 305.0110 BASE 3/4" TON 305.0120 BASE 1 1/4" TON <table><tr><td>240+00 - 613+00</td><td>4,000</td><td>0</td></tr><tr><td>SIDEROADS (15)</td><td>600</td><td>0</td></tr><tr><td>CULVERT PIPE TRANSITION (1)</td><td>0</td><td>350</td></tr><tr><td>GUARDRAIL- river (shld base & fill slopes)</td><td>0</td><td>250</td></tr><tr><td>GUARDRAIL- bridge (shld base & fill slopes)</td><td>0</td><td>100</td></tr><tr><td>PE'S & CE'S (98)</td><td>700</td><td>0</td></tr><tr><td>UNDISTRIBUTED</td><td><u>100</u></td><td><u>100</u></td></tr><tr><td>TOTAL</td><td>5,400</td><td>800</td></tr></table>			240+00 - 613+00	4,000	0	SIDEROADS (15)	600	0	CULVERT PIPE TRANSITION (1)	0	350	GUARDRAIL- river (shld base & fill slopes)	0	250	GUARDRAIL- bridge (shld base & fill slopes)	0	100	PE'S & CE'S (98)	700	0	UNDISTRIBUTED	<u>100</u>	<u>100</u>	TOTAL	5,400	800	ASPHALTIC SURFACE PATCHING 465.0110 TON COMMENTS <table><tr><td>301+46 302+69 LT</td><td>10</td><td>OLD 70 CURB NW, NE</td></tr><tr><td>UNDISTRIBUTED</td><td><u>490</u></td><td>POTHOLE'S & RAMPING</td></tr><tr><td>TOTAL</td><td>500</td><td></td></tr></table>			301+46 302+69 LT	10	OLD 70 CURB NW, NE	UNDISTRIBUTED	<u>490</u>	POTHOLE'S & RAMPING	TOTAL	500								
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REMOVING SMALL PIPE CULVERTS 203.0100 EACH <table><tr><td>437+23 C630700780</td><td>CPRC</td><td>24" x 80'</td><td>1</td></tr><tr><td>594+72 LT PE</td><td>CPCM</td><td>24' X 28'</td><td><u>1</u></td></tr><tr><td>TOTAL</td><td></td><td></td><td>2</td></tr></table>			437+23 C630700780	CPRC	24" x 80'	1	594+72 LT PE	CPCM	24' X 28'	<u>1</u>	TOTAL			2	PREPARE FOUNDATION FOR ASPHALTIC PAVING PROJ 211.0100 LS <table><tr><td>PROJECT 9080-14-73</td><td>1</td></tr></table>		PROJECT 9080-14-73	1	TACK COAT HMA PAVEMENT 4 MT 58-28 S 455.0605 TACK COAT GAL 460.6224 HMA 4 MT TON <table><tr><td>240+00 - 612+91</td><td>9,000</td><td>14,250</td></tr><tr><td>437+23 CULV PIPE</td><td>20</td><td>100</td></tr><tr><td>SIDEROADS (15)</td><td><u>380</u></td><td><u>600</u></td></tr><tr><td>TOTAL</td><td>9,400</td><td>14,950</td></tr></table>			240+00 - 612+91	9,000	14,250	437+23 CULV PIPE	20	100	SIDEROADS (15)	<u>380</u>	<u>600</u>	TOTAL	9,400	14,950	ASPHALTIC SURFACE DRIVEWAYS & FIELD ENTRANCES 465.0120 TONS <table><tr><td>UNDISTRIBUTED</td><td>40</td></tr></table>		UNDISTRIBUTED	40																																		
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REMOVING ASPHALTIC SURFACE BUTT JOINTS 204.0115 SY <table><tr><td>240+00 - 240+10</td><td>33</td></tr><tr><td>589+54 - 589+64 B-63-0017</td><td>49</td></tr><tr><td>592+24 - 592+34 B-63-0017</td><td>49</td></tr><tr><td>612+90 - 613+00</td><td>33</td></tr><tr><td>INTERSECTIONS W/ C&G (9)</td><td>240</td></tr><tr><td>UNDISTRIBUTED</td><td><u>96</u></td></tr><tr><td>TOTAL</td><td>500</td></tr></table>			240+00 - 240+10	33	589+54 - 589+64 B-63-0017	49	592+24 - 592+34 B-63-0017	49	612+90 - 613+00	33	INTERSECTIONS W/ C&G (9)	240	UNDISTRIBUTED	<u>96</u>	TOTAL	500	PREPARE FOUNDATION FOR ASPHALTIC SHOULDERS 211.0400 STA <table><tr><td>611+06 LT</td><td>0.5</td></tr><tr><td>611+06 RT</td><td><u>0.5</u></td></tr><tr><td>TOTAL</td><td>1.0</td></tr></table> * USE AT SNOWMOBILE CROSSING		611+06 LT	0.5	611+06 RT	<u>0.5</u>	TOTAL	1.0	HMA PAVEMENT PWL TEST STRIP VOLUMETRICS HMA PAVEMENT PWL TEST STRIP DENSITY 460.0105.S VOLUMETRICS EACH 460.0110.S DENSITY EACH <table><tr><td>PROJECT 9080-14-73</td><td>1</td><td>1</td></tr></table>			PROJECT 9080-14-73	1	1	ASPAHLTIC CENTER LINE RUMBEL STRIP 2-LANE RURAL 465.0475 CENTERLINE LF <table><tr><td>240+00 - 610+00</td><td>33,800</td></tr></table>		240+00 - 610+00	33,800																																					
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PROJECT 9080-14-73	1	1																																																																					
240+00 - 610+00	33,800																																																																						
REMOVING ASPHALTIC SURFACE MILLING 204.0120 SY <table><tr><td>240+00 - 590+05</td><td>119,200</td></tr><tr><td>592+65 - 613+00</td><td>7,400</td></tr><tr><td>INTERSECTIONS (15)</td><td><u>5,000</u></td></tr><tr><td>TOTAL</td><td>131,600</td></tr></table>			240+00 - 590+05	119,200	592+65 - 613+00	7,400	INTERSECTIONS (15)	<u>5,000</u>	TOTAL	131,600	PWL MIXTURE USE TABLE - ACCEPTANCE CRITERIA <table><tr><th>LOCATION</th><th>STA</th><th>MIXTURE USE</th><th>UNDERLYING SURFACE</th><th>BID ITEM</th><th>TONS</th><th>THICKNESS INCHES</th><th colspan="2">QUALITY MANAGEMENT PROGRAMS TO BE USED FOR:</th></tr><tr><th colspan="2"></th><th></th><th></th><th></th><th></th><th></th><th>MIXTURE ACCEPTANCE</th><th>DENSITY ACCEPTANCE</th></tr><tr><td>12 FOOT DRIVING LANE</td><td>240+00 - 612+94</td><td>UPPER LAYER</td><td>MILLED EXISTING HMA SURFACE</td><td>4 MT 58-28 S</td><td>11,060</td><td>2</td><td>PWL INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010</td><td>INCENTIVE DENSITY PWL HMA PAVMENT 460.2005</td></tr><tr><td>3 FOOT SHOULDER, SIDEROADS</td><td>240+00 - 612+94</td><td>UPPER LAYER</td><td>MILLED EXISTING HMA SURFACE</td><td>4 MT 58-28 S</td><td>3,190 600</td><td>2</td><td>PWL INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010</td><td>ACCEPTANCE TESTING BY WisDOT; INELIGIBLE FOR INCENTIVE</td></tr><tr><td>C630700780</td><td>436+69 - 437+77</td><td>CULVERT PATCH</td><td>BASE AGGREATE</td><td>4 MT 58-28 S</td><td><u>100</u></td><td>5</td><td>QMP AS PER SS 465</td><td>ACCEPTANCE BY ORDINARY COMPACTION</td></tr><tr><td colspan="5"></td><td>14,950</td><td colspan="3"></td></tr></table>							LOCATION	STA	MIXTURE USE	UNDERLYING SURFACE	BID ITEM	TONS	THICKNESS INCHES	QUALITY MANAGEMENT PROGRAMS TO BE USED FOR:									MIXTURE ACCEPTANCE	DENSITY ACCEPTANCE	12 FOOT DRIVING LANE	240+00 - 612+94	UPPER LAYER	MILLED EXISTING HMA SURFACE	4 MT 58-28 S	11,060	2	PWL INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010	INCENTIVE DENSITY PWL HMA PAVMENT 460.2005	3 FOOT SHOULDER, SIDEROADS	240+00 - 612+94	UPPER LAYER	MILLED EXISTING HMA SURFACE	4 MT 58-28 S	3,190 600	2	PWL INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010	ACCEPTANCE TESTING BY WisDOT; INELIGIBLE FOR INCENTIVE	C630700780	436+69 - 437+77	CULVERT PATCH	BASE AGGREATE	4 MT 58-28 S	<u>100</u>	5	QMP AS PER SS 465	ACCEPTANCE BY ORDINARY COMPACTION						14,950			
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					14,950																																																																		
REMOVING CURB & GUTTER 204.0150 LF <table><tr><td>301+79 LT OLD 70 NW</td><td>66</td></tr><tr><td>303+33 LT OLD 70 NE</td><td><u>94</u></td></tr><tr><td>TOTAL</td><td>160</td></tr></table>			301+79 LT OLD 70 NW	66	303+33 LT OLD 70 NE	<u>94</u>	TOTAL	160																																																															
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TOTAL	160																																																																						
PROJECT NO: 9080-14-73		HWY: STH 70		COUNTY: VILAS		MISCELLANEOUS QUANTITIES			SHEET: 35		E																																																												

EARTHWORK SUMMARY 9080-14-73									
Division	From/To Station	Location	205.0100 Common Excavation	Available Material (5)	Unexpanded Fill	Expanded Fill (13)	Mass Ordinate +/- (14)	Waste	208.0100 Borrow
			Cut (2)			Factor 1.25			
Division 1									
C630700780	437+23	CULVERT TRANSITION	313	313	313	391	-78	0	78
EWKDetail-C0780.xml	408+00/444+00	SLOPES	466	466	183	229	237	237	0
Division 1 Subtotal			779	779	496	620	159	237	78
Division 2									
BridgeWest.xml	586+75/589+63	SLOPES	7	7	84	105	-98	0	98
Division 2 Subtotal			7	7	84	105	-98	0	98
Division 3									
BridgeEast.xml	592+25/595+00	SLOPES	9	9	114	143	-134	0	134
Division 3 Subtotal			9	9	114	143	-134	0	134
Undistributed			5						90
Grand Total			800	482	381	868	-73	237	400
Total Common Exc			800						
Notes:									
(2) Salvaged/Unsuable Pavement Material is included in Cut.									
(5) Available Material = Cut - Salvaged/Unusuable Pavement Material									
(13) Expanded Fill Factor = 1.25									
Expanded Fill = (Unexpanded Fill) * Fill Factor									
(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.									

3

PIPE ARCH CORRUGATED STEEL APRON ENDWALLS FOR PIPE ARCH STEEL ENDWALLS 521.1228 STEEL 28x20-INCH EACH PIPE 521.3728 STEEL 28x20-INCH LF MINIMUM WALL THICKNESS INCHES				CULVERT PIPE REINFORCED CONCRETE APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONC MARKERS CULVERT END 522.0424 PIPE* CLASS IV 24-INCH LF 522.1024 ENDWALLS* 24-INCH EACH 635.5200 MARKERS EACH				GUARDRAIL ITEMS 614.0360 STEEL PLATE BEAM GUARD TEMPORARY LF 614.2300 MGS GUARDRAIL 3 LF 614.2330 MGS GUARDRAIL 3 K LF 614.2500 MGS THRIE BEAM TRANSITION LF 614.2610 MGS TERMINAL EAT EACH													
LOCATION 594+72 LT PE 2 28 0.064				LOCATION 437+23 C630700780 86 2 2				436+73 - 437+73 RT after pipe replacement 100 0 0 0 0													
CONCRETE CURB & GUTTER 6-INCH SLOPED 36-INCH TYPE D 601.0558 LOCATION LF 301+79 OLD 70 NW 64 303+33 OLD 70 NE 91 TOTAL 155				408+91 - 428+00 RT 0 1,856.00 0 0 1																	
RIPRAP MEDIUM GEOTEXTILE TYPE HR 606.0200 MEDIUM CY 645.0120 FABRIC SY				428+00 - 437+25 RT 0 0.00 925 0 0																	
GUARDRAIL MOW STRIP ASPHALT 614.0396 LOCATION SY 408+90 - 442+60 RT 1,700				437+25 - 442+59.75 RT 0 482.00 0 0 1																	
SAFETY FENCE 628.7504 LOCATION LF 409+46 RT CP99, 5' RAD 30				588+50.27 - 589+65.61 LT NW 0 25.00 0 39.4 1																	
WATER 624.0100 LOCATION MGAL UNDISTRIBUTED 120				587+25.38 - 589+65.79 RT SW 0 150.00 0 39.4 1																	
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				599+22.00 - 593+75.13 LT NE 0 62.50 0 39.4 1																	
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				592+22.27 - 593+25.87 RT SE 0 12.50 0 39.4 1																	
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				TOTAL 100 2,588.00 925 158 6																	
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				LANDSCAPING ITEMS 625.0100 TOPSOIL CLASS I SY 628.2008 E-MAT URBAN TYPE B SY 629.0210 FERT TYPE B CWT 630.0120 SEED NO. 20 LB 630.0160 SEED NO. 60 LB 630.0500 SEED WATER MGAL						SILT FENCE SILT FENCE MAINTENACE 628.1504 SILT FENCE LF 628.1520 SILT FENCE MAINT LF											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				SHOULDERS LT & RT (PROJECT) 260 260 0.16 900 4						LOCATION 407+98 - 411+00 RT BEAM GUARD 410 205											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				437+23 LANE SHIFT LT 105 105 0.07 2 2						434+50 - 442+00 RT PIPE TRANS C0780 140 70											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				437+23 PIPE TRANSITION C0780 RT 70 70 0.04 12 4						588+66 - 589+18 RT SW BRIDGE 275 138											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				301+45 - 302+70 LT CURB & GUTTER 450 450 0.28 12 4						587+85 - 589+26 LT NW BRIDGE 155 78											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				435+00 - 439+50 LT LANE SHIFT 1,150 1150 0.72 31 4						592+38 - 593+79 RT SE BRIDGE 155 78											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				407+86 - 423+50 RT 500 500 0.32 14 4						593+55 - 594+64 LT NE BRIDGE 200 100											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				430+50 - 434+00 RT 1,750 1750 1.10 47 4						UNDISTRIBUTED 265 131											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				434+00 - 444+00 RT 586+66 - 589+18 RT 470 470 0.30 13 4						TOTAL 1,600 800											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				587+84 - 589+26 LT 430 430 0.27 12 4						UNDISTRIBUTED 175											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				592+32 - 593+79 RT 200 200 0.13 5 4						UNDISTRIBUTED 175											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				593+55 - 594+65 LT 500 500 0.32 14 4						UNDISTRIBUTED 175											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				UNDISTRIBUTED 1,215 1,215 5.29 51 4 175						UNDISTRIBUTED 175											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				TOTAL 7,100 7,100 30.00 1,100 10 175						UNDISTRIBUTED 175											
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				MOBILIZATIONS EROSION CONTROL MOBILIZATIONS EMERGENCY EROSION CONTROL 628.1905 EMERGENCY MOB EACH 628.1910 EMERGENCY MOB EACH						TEMPORARY DITCH CHECKS 628.7504 LOCATION LF						CULVERT PIPE CHECKS 628.7555 LOCATION EACH					
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				LOCATION PROJECT 9080-14-73 4 3						586+75 RT 15 30						437+23 C630700780 48" 10					
PROJECT NO: 9080-14-73 HWY: STH 70 COUNTY: VILAS MISCELLANEOUS QUANTITIES SHEET: 37 E				PROJECT 9080-14-73 4 3						UNDISTRIBUTED 45						UNDISTRIBUTED 10					

3

PERMANENT SIGNING						634.0616	638.2102
						POSTS WOOD 4"x6"x16' EACH	MOVING SIGNS TYPE II EACH
		LOCATION/DIRECTION					
SIGN #	STA	LT	RT	SIGN MESSAGE			
1	301.49	E		NO PASSING ZONE	Old 70 NW quad	0	1
2	301.74	S		STOP	Old 70 NW quad	0	1
3	549.30		W	NO PASSING ZONE		0	1
4	593.07		E	JCT H		0	1
				UNDISTRIBUTED		<u>5</u>	<u>6</u>
TOTAL						5	10

CONSTRUCTION STAKING ITEMS						
		650.4500	650.5000	650.5500	650.6000	650.8000
		SUBGRADE	BASE	CURB & GUTTER	PIPE CULVERTS	RESURFACING REFERENCE
		LF	LF	LF	EACH	LF
LOCATION						
240+00 - 613+00						
OLD HWY 70						
437+23 PIPE TRANSITION		100	100	155	1	37,040
408+90 - 442+60 RT BEAM GUARD		3,370	3,370			100
590+00 BRIDGE BEAM GUARD LT&RT		<u>542</u>	<u>542</u>	--	--	<u>542</u>
TOTAL		4,012	4,012	155	1	37,040

3

TRAFFIC CONTROL SUMMARY					
		643.0300	643.0900	643.105	
				CHANGEABLE	
		#drums x	DRUMS	#signs x	*SIGN
		#days	DAYS	#days	MESSAGE
LOCATION					DAYS
240+00 - 612+91				1,400	10
435+38 - 439+08	C630700780 CULV REPLACE	30 x 3	90	4 x 4	16
302+08 LT	CURB & GUTTER OLD 70	29 x 10	290	2 x 7	14
404+00 - 447+50 RT	GUARDRAIL RT	65 x 8	520	2 x 8	16
580+15 - 600+75 LT & RT	GUARDRAIL LT&RT	43 x 10	430	4 x 7	28
UNDISTRIBUTED			<u>500</u>	<u>51</u>	---
TOTAL			1,830	1,525	10
* SIGNS USED BY CONTRACTOR FOR MOVING OPERATIONS SHALL BE INCIDENTAL TO THE OPERATION.					
*** USE 2 SIGNS STARTING 5 DAYS BEFORE CONSTRUCTION BEGINS					

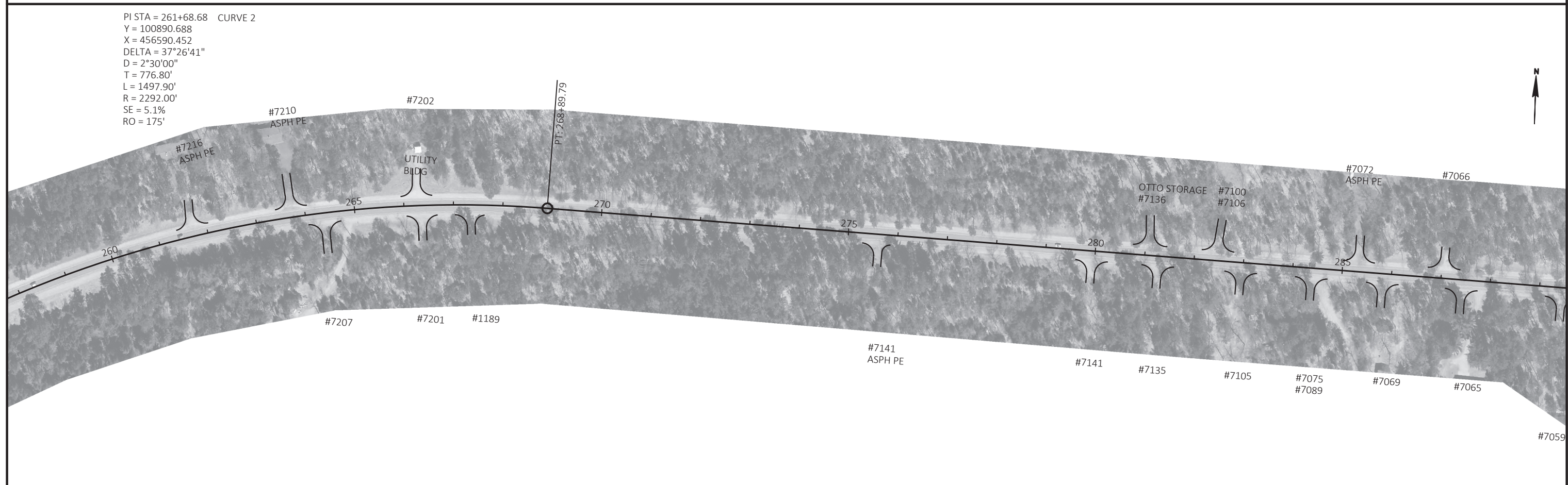
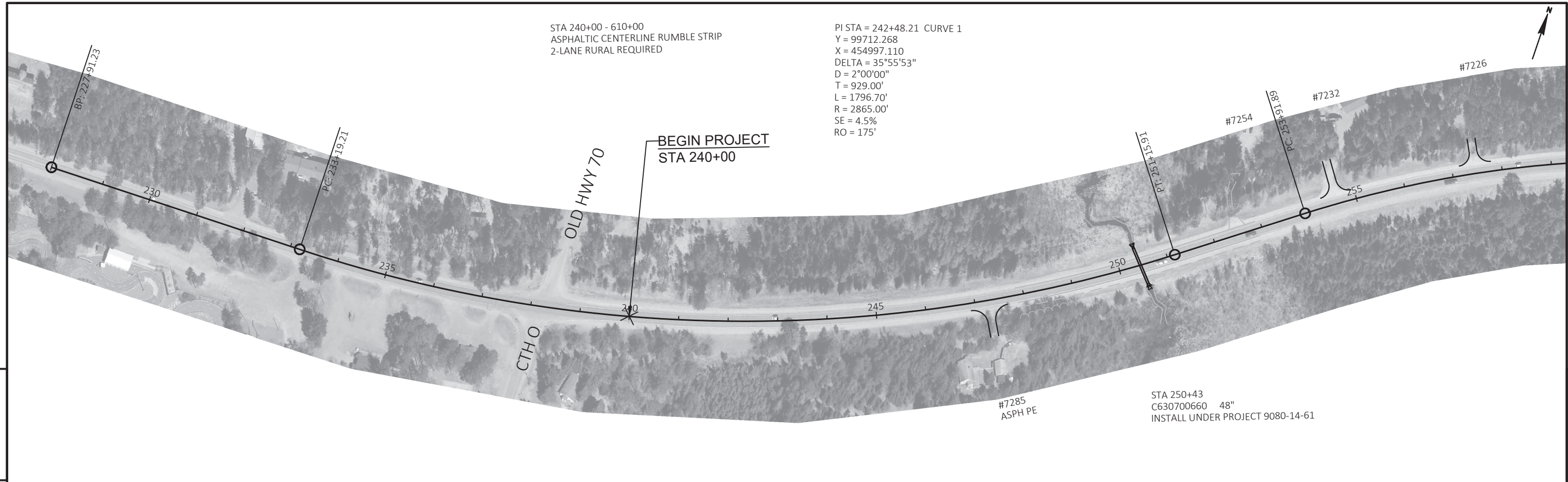
SAWING ASPHALT	
LOCATION	690.0150 LF
OLD 70 NW CURB RADIUS	35
OLD 70 NE CURB RADIUS	50
437+23 CULV TRANSITION	<u>50</u>
TOTAL	135

LANE SHIFT	
LOCATION	SPV.0060.01 EACH
437+23 LT C630700780	1

MARKING SUMMARY				
		rumble strips	646.1040	milled surf
		646.1020	GROOVED	646.4520
		EPOXY	WET REF	SAME DAY EPOXY
		4-INCH	4-INCH	4-INCH
		YELLOW CL	WHITE EDGELINE	YELLOW CL
LOCATION	LF	LF	LF	LF
240+00 - 613+00			77,000	46,900
240+00 - 610+00	46,600			

PROTECTIVE THERMOPLASTIC COATING AT SNOWMOBILE TRAIL CROSSING	
LOCATION	SPV.0180.01 SY
301+75 & NW CURB HEAD	127
337+38	67
502+94	67
565+33	67
586+92	67
611+06	<u>67</u>
TOTAL	460

LOCATING NO PASSING ZONES	
LOCATION	648.0100 MI
240+00 - 612+91	7.06



PROJECT NO: 9080-14-73	HWY: STH 70	COUNTY: VILAS	PLAN	SHEET 39	E
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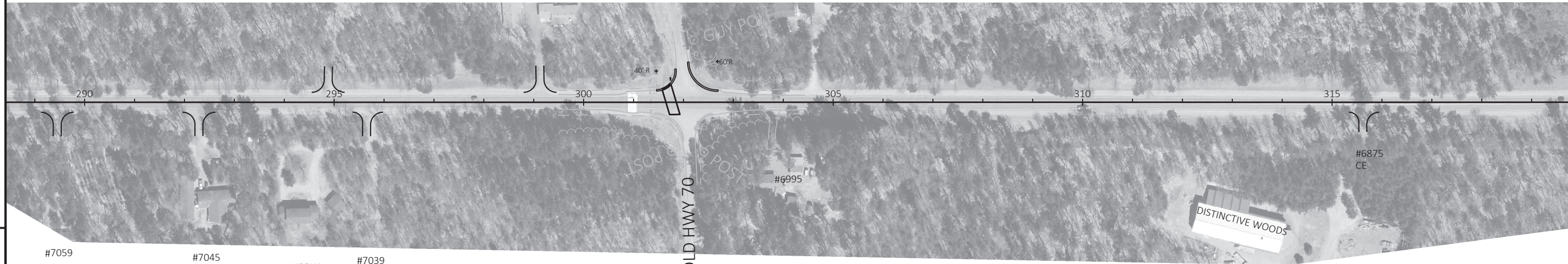
STA 301+75
PROTECTIVE THERMOPLASTIC COATING
AT SNOWMOBILE CROSSING AND ON NW CURB HEAD REQUIRED

STA 302+08.55 =
STA 10+00.00 OLD HWY 70
REPLACE CURB & GUTTER LT
SEE DETAIL



#7020
ASPH PE

#6990



5

5

PI STA = 326+07.53 CURVE 3
Y = 100782.053
X = 463084.083
DELTA = 14°49'05"
D = 1°30'00"
T = 496.75'
L = 987.95'
R = 3820.00'
SE = 3.7%
RO = 175'

STA 337+38
PROTECTIVE THERMOPLASTIC COATING
AT SNOWMOBILE CROSSING REQUIRED



STA 346+58
C630700710 24"
INSTALL UNDER PROJECT 9080-14-61

PROJECT NO: 9080-14-73

HWY: STH 70

COUNTY: VILAS

PLAN

SHEET

40

E

FILE NAME : N:\PDS\C3D\90801403\SHEETS\PLAN\050201-PN.DWG
LAYOUT NAME - 050203-pn

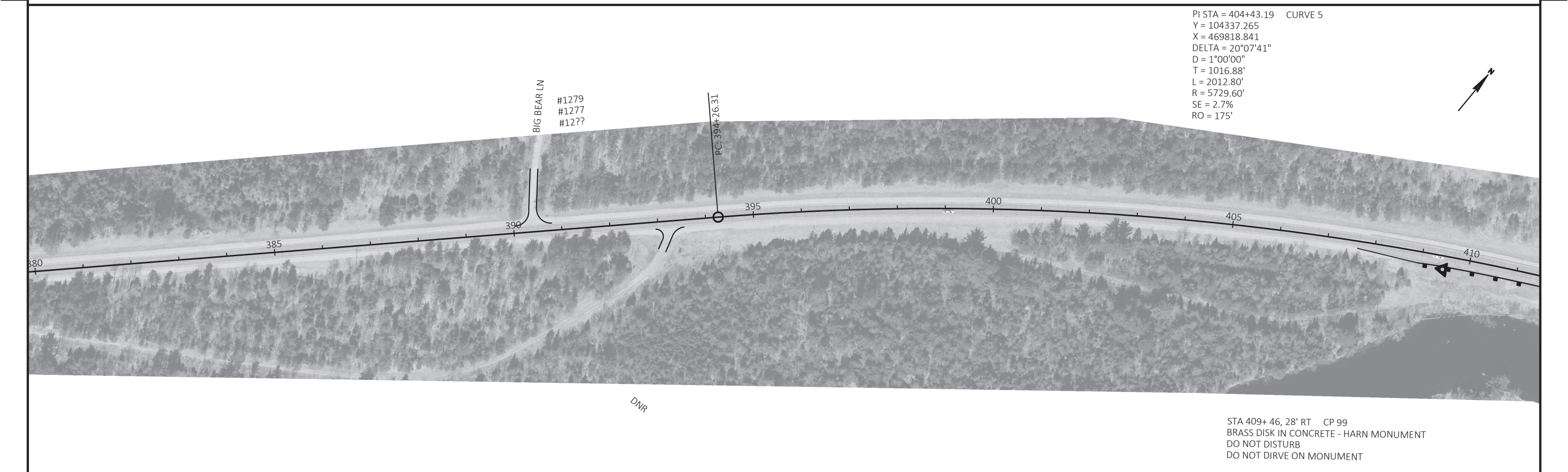
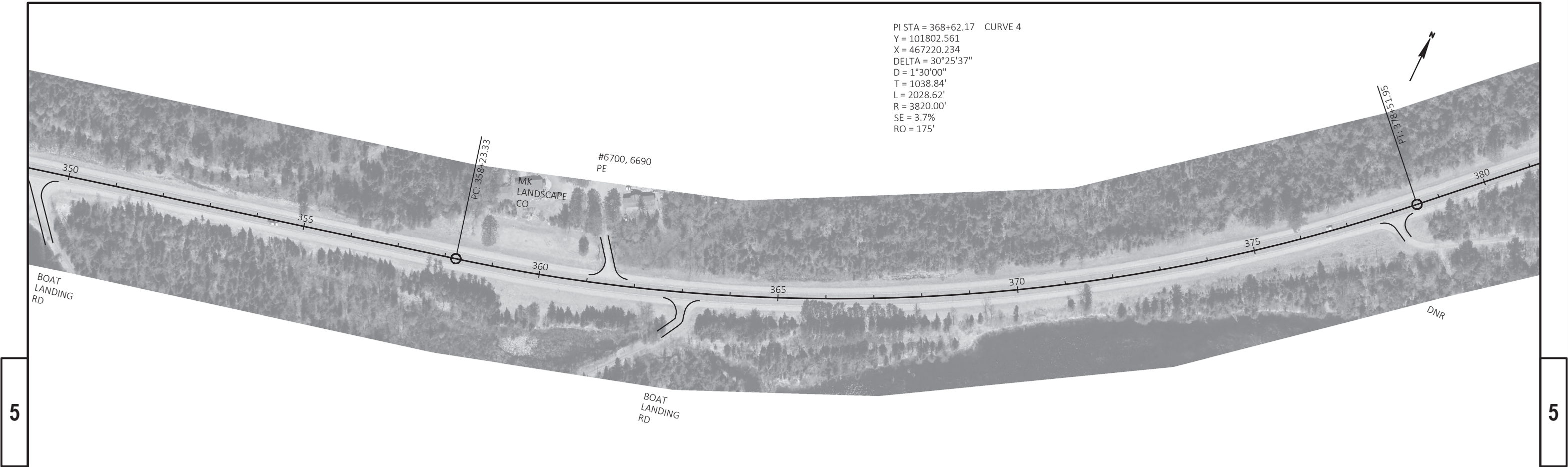
PLOT DATE : 12/17/2018 1:28 PM

PLOT BY : HETH, BARBARA L

PLOT NAME :

PLOT SCALE : #####

WISDOT/CADD5 SHEET 44



STA 409+ 46, 28' RT CP 99
BRASS DISK IN CONCRETE - HARN MONUMENT
DO NOT DISTURB
DO NOT DIRVE ON MONUMENT

STA 412+04
C630700760 EXISTING 24"
NO WORK REQUIRED

PI STA = 434+03.28 CURVE 6
Y = 105557.307
X = 472538.788
DELTA = 43°51'18"
D = 1°30'00"
T = 1537.68'
L = 2923.73'
R = 3819.80'
SE = 3.7%
RO = 175'

STA 437+23
C630700780 24"
1-24" x 80' CPRC REMOVE
1-24" CPRC REQUIRED
2-24" AEW REQUIRED



5

STA 408+91 - 442+59.75 RT
REMOVE GUARDRAIL 3,268 LF
MGS GUARDRAIL 3, 3 K AND TERMINAL END EAT REQUIRED
GUARDRAIL MOW STRIP ASPHALT REQUIRED
SEE DETAIL

5



#1275
#1298

#6230
#6234

#1245

PI: 470+01.63

PI: 465+99.25

MOONLITE DR

COVE LN

#6215
PE FE

#6165

#6149 PE
BAUER

#6141 CE #6141 CE

#6183

#6175

#6171

#6169

#6205

PROJECT NO: 9080-14-73

HWY: STH 70

COUNTY: VILAS

PLAN

SHEET

42

E

FILE NAME : N:\PDS\C3D\90801403\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 050207-pn

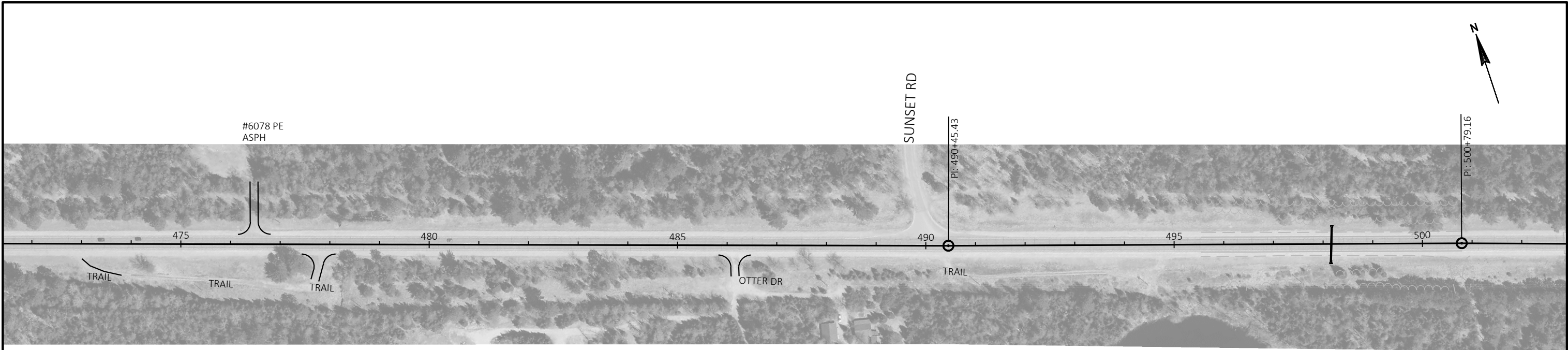
PLOT DATE : 12/17/2018 1:29 PM

PLOT BY : HETH, BARBARA L

PLOT NAME :

PLOT SCALE : #####

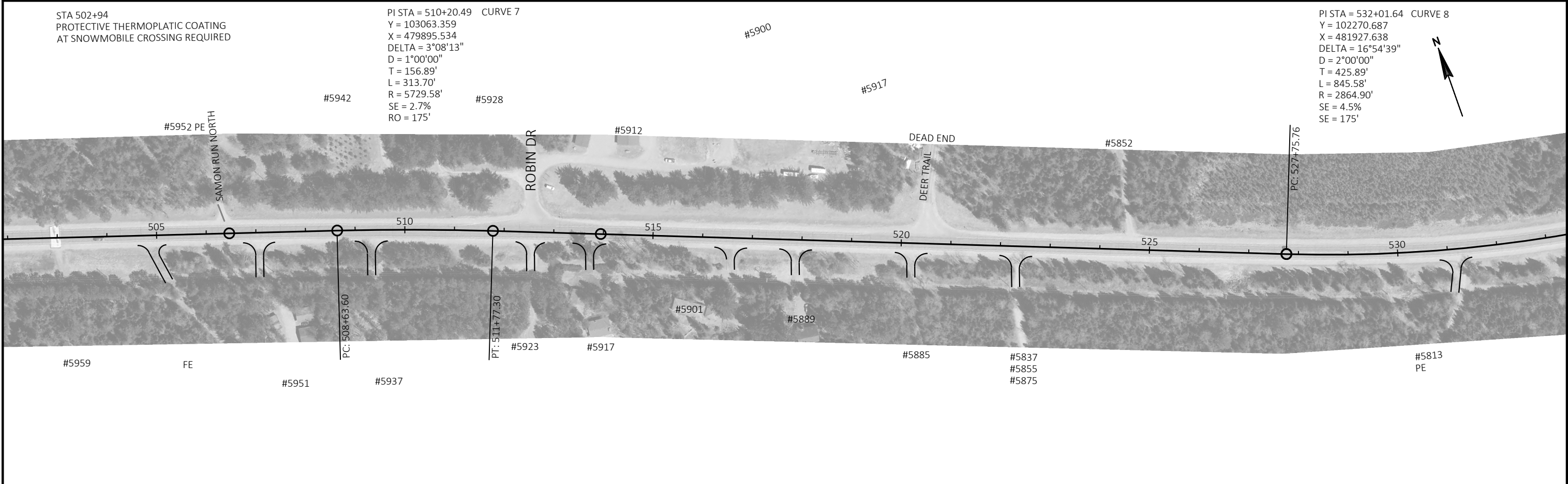
WISDOT/CADD5 SHEET 44



5

5

STA 498+17
C630700820 24"
INSTALL UNDER PROJECT 9080-14-61



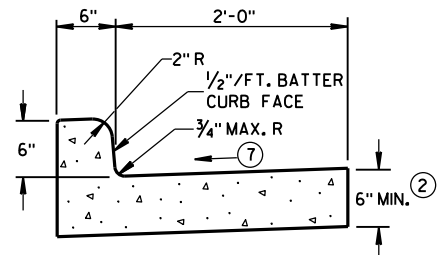
STA 502+94
PROTECTIVE THERMOPLATIC COATING
AT SNOWMOBILE CROSSING REQUIRED

PI STA = 510+20.49 CURVE 7
Y = 103063.359
X = 479895.534
DELTA = 3°08'13"
D = 1°00'00"
T = 156.89'
L = 313.70'
R = 5729.58'
SE = 2.7%
RO = 175'

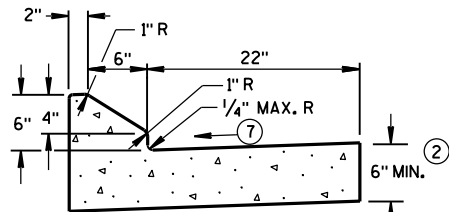
PI STA = 532+01.64 CURVE 8
Y = 102270.687
X = 481927.638
DELTA = 16°54'39"
D = 2°00'00"
T = 425.89'
L = 845.58'
R = 2864.90'
SE = 4.5%
SE = 175'

Standard Detail Drawing List

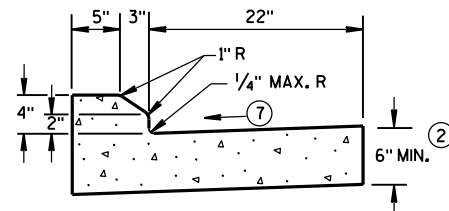
08D01-20A	CONCRETE CURB & GUTTER
08D01-20B	CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS
08D04-05	CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E15-01	CULVERT PIPE CHECK
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F02-01	APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
09A01-13A	AT-GRADE SIDE ROAD INTERSECTION, TYPES "B1", "B2", "C" AND D AND TEE INTERSECTION BYPASS LANE
13A11-03A	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13A11-03B	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13C19-01	HMA LONGITUDINAL JOINTS
14B28-03	GUARDRAIL MOW STRIP
14B29-01	SAFETY EDGE
14B42-06A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
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 THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05E	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05F	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05I	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05J	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05K	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05L	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C02-07F	ADVANCED WIDTH RESTRICTION SIGNING
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C08-19A	LONGITUDINAL MARKING (MAINLINE)
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-07	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C35-03A	PAVEMENT MARKING (INTERSECTIONS)
15D28-03	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS



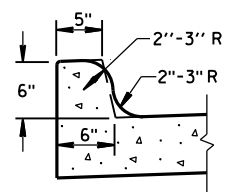
TYPES A⁽¹⁾ & D



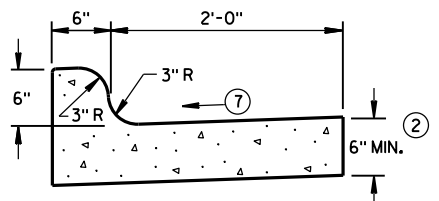
6" SLOPED CURB TYPES G⁽¹⁾ & J



4" SLOPED CURB TYPES G⁽¹⁾ & J

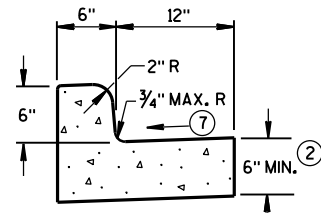


TYPES K⁽¹⁾ & L
(OPTIONAL CURB SHAPE)



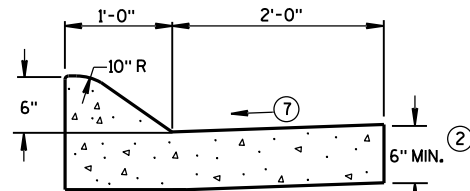
TYPES K⁽¹⁾ & L

CONCRETE CURB & GUTTER 30"

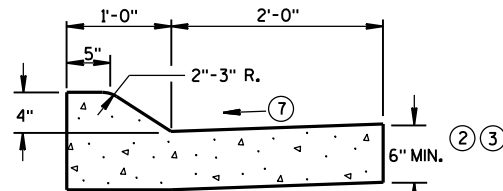


TYPES A⁽¹⁾ & D

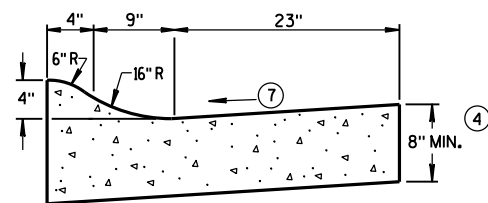
CONCRETE CURB & GUTTER 18"



6" SLOPED CURB TYPES A⁽¹⁾ & D

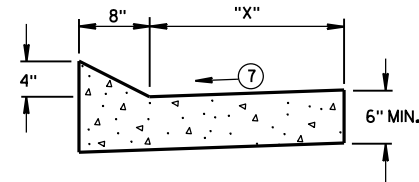


4" SLOPED CURB TYPES A⁽¹⁾ & D



4" SLOPED CURB TYPES R⁽¹⁾ & T⁽⁵⁾

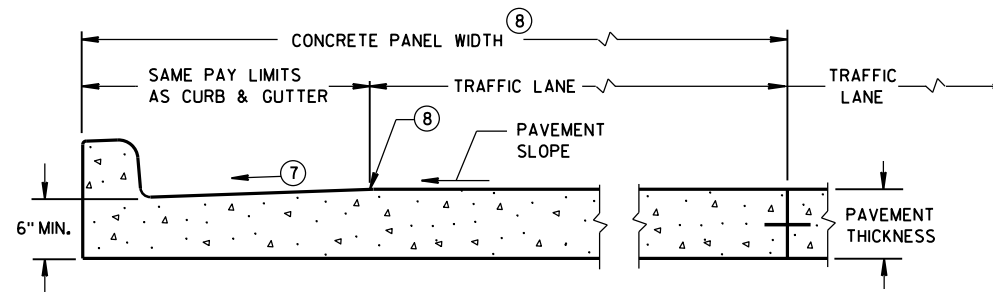
CONCRETE CURB & GUTTER 36"



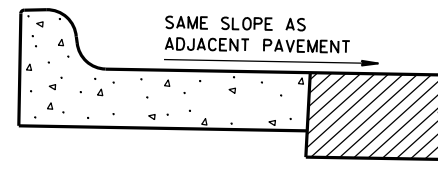
TYPES TBT & TBTT⁽¹⁾

CONCRETE CURB & GUTTER

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



PARTIAL SECTION OF PAVEMENT
WITH INTEGRAL CURB & GUTTER



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

GENERAL NOTES

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

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

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

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

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

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTER 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 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.

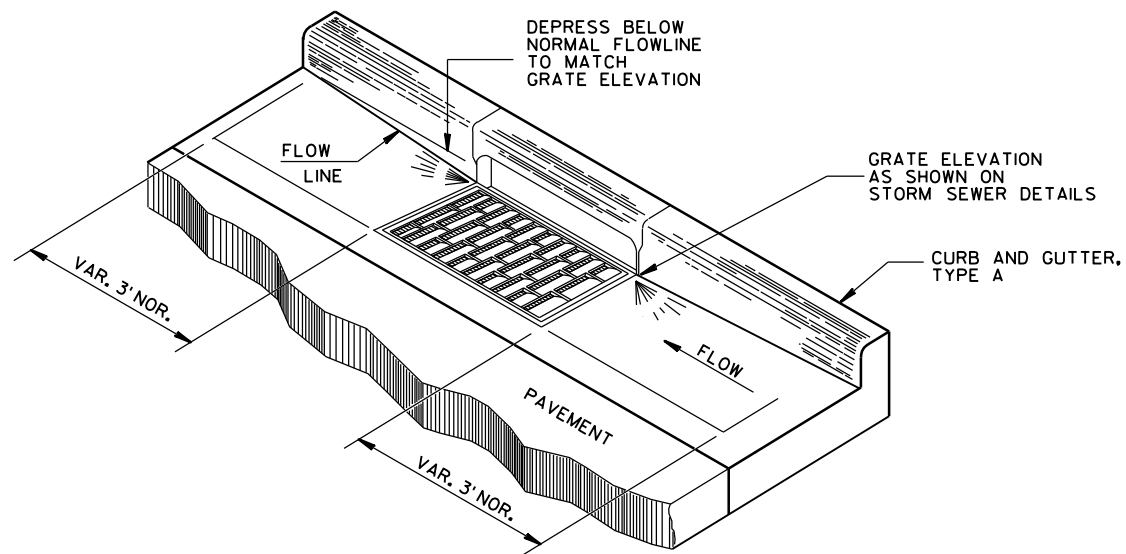
PAVEMENT THICKNESS AND MAXIMUM CONCRETE PANEL WIDTH TABLE

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

* BIKE LANE IS NOT SHOWN.

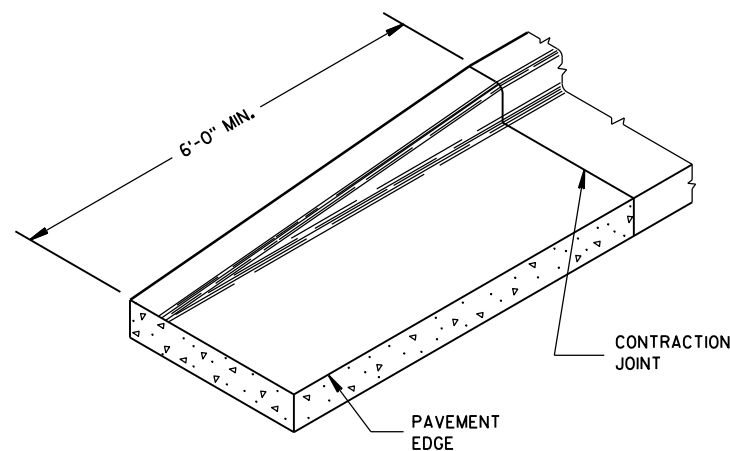
CONCRETE CURB & GUTTER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

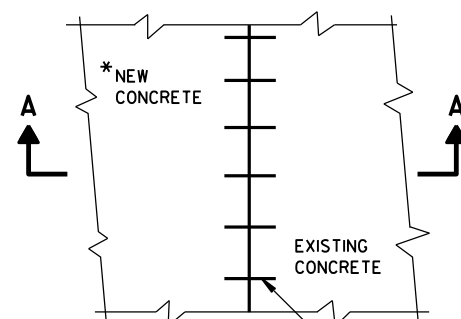


DETAIL OF CURB AND GUTTER AT INLETS

(TYPE H INLET COVER SHOWN)

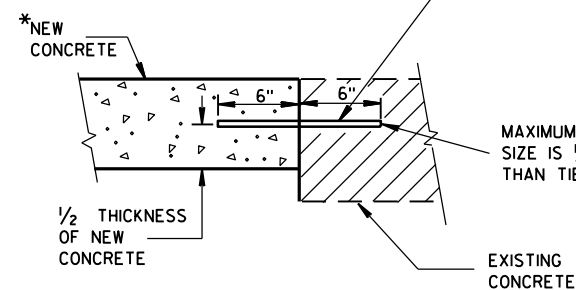


END SECTION CURB & GUTTER



PLAN VIEW

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



TIE BARS DRILLED INTO EXISTING PAVEMENT

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

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

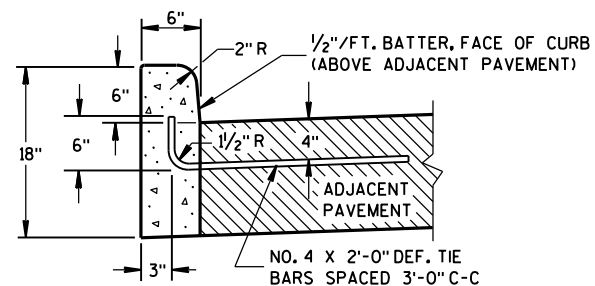
GENERAL NOTES

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

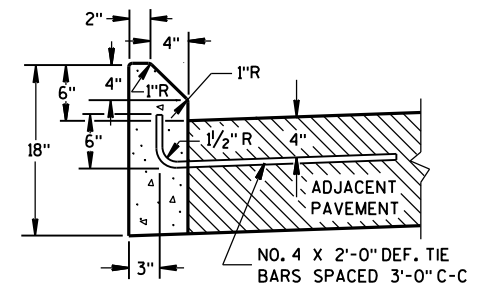
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

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 GUTTER 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.
- ⑨ REFER TO SDD 8D18 AND SDD 8D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.

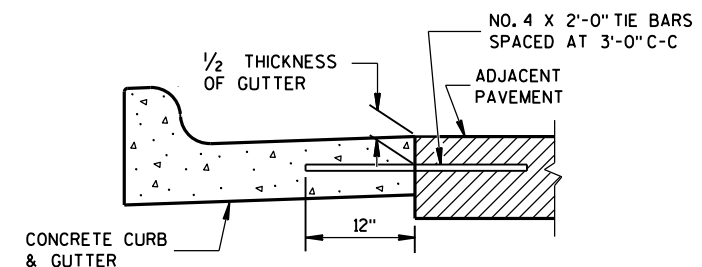


TYPES A^① & D

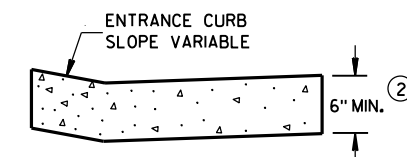


TYPES G^① & J

CONCRETE CURB



TYPICAL TIE BAR LOCATION^①



DRIVEWAY ENTRANCE CURB^⑨

(WHEN DIRECTED BY THE ENGINEER)

CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June, 2017

DATE

FHWA

/S/ Rodney Taylor

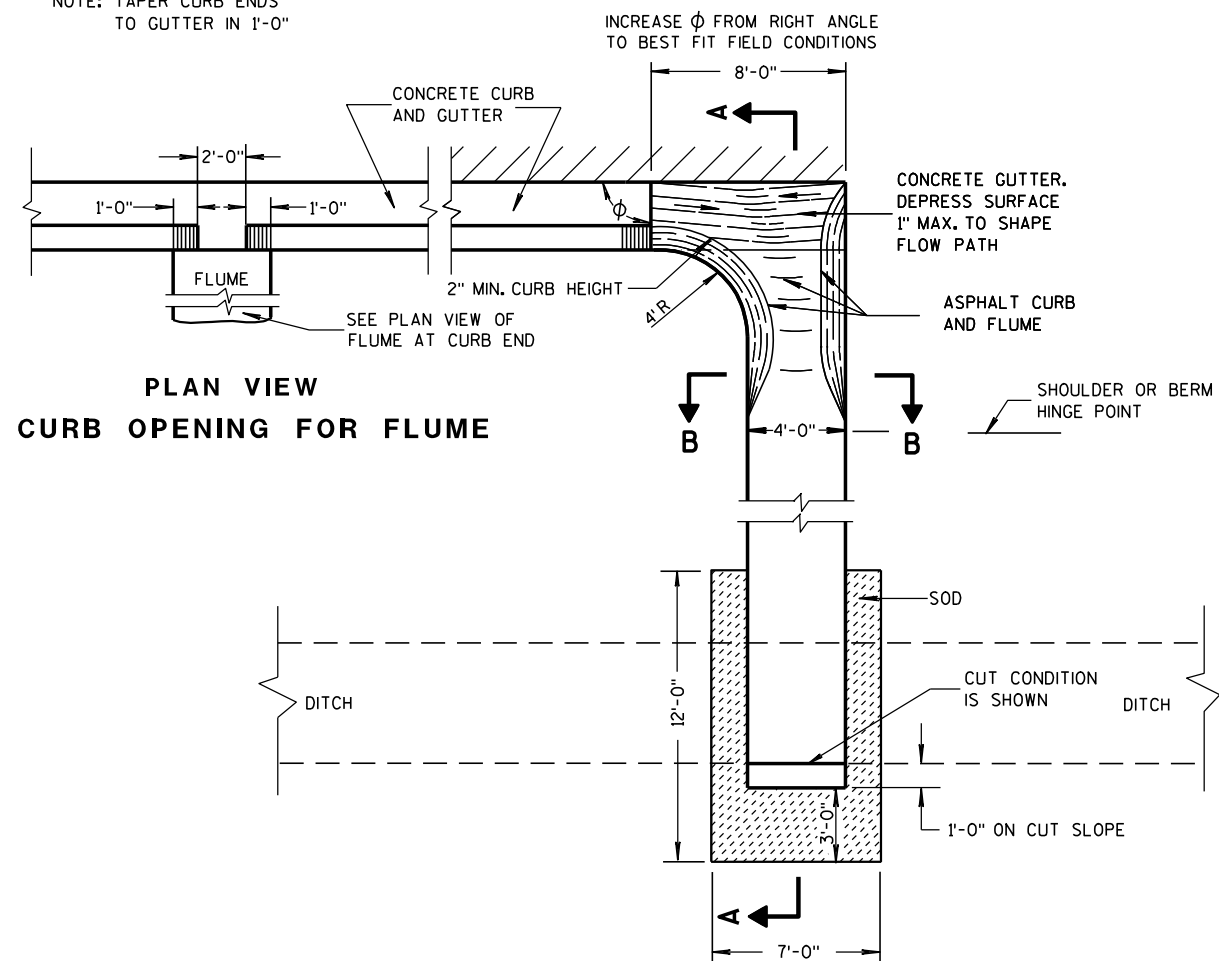
ROADWAY STANDARDS 48

UNIT SUPERVISOR

ENT

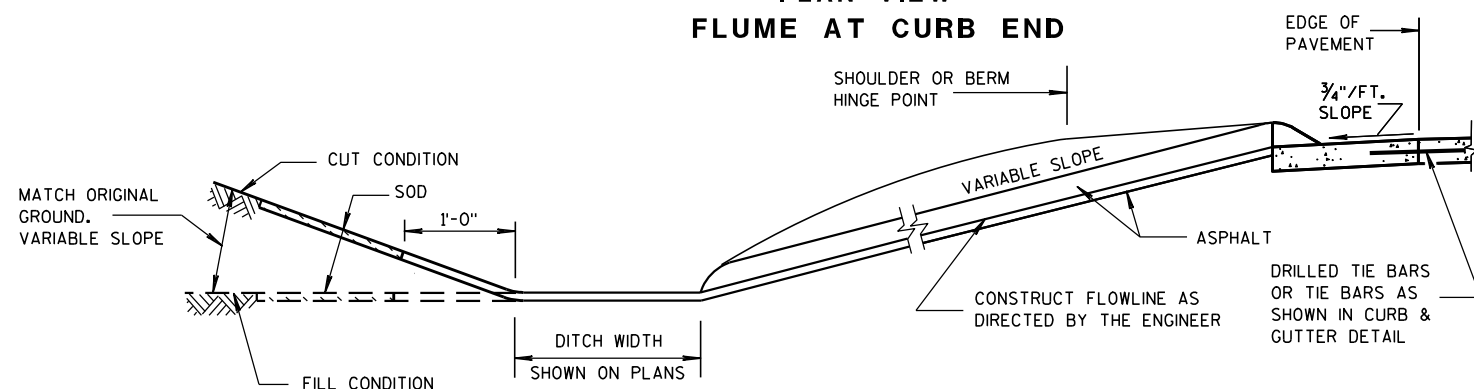
ASPHALTIC FLUME

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

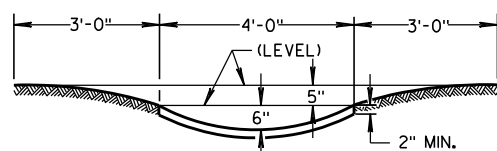


PLAN VIEW
CURB OPENING FOR FLUME

PLAN VIEW
FLUME AT CURB END



SECTION A-A



SECTION B-B

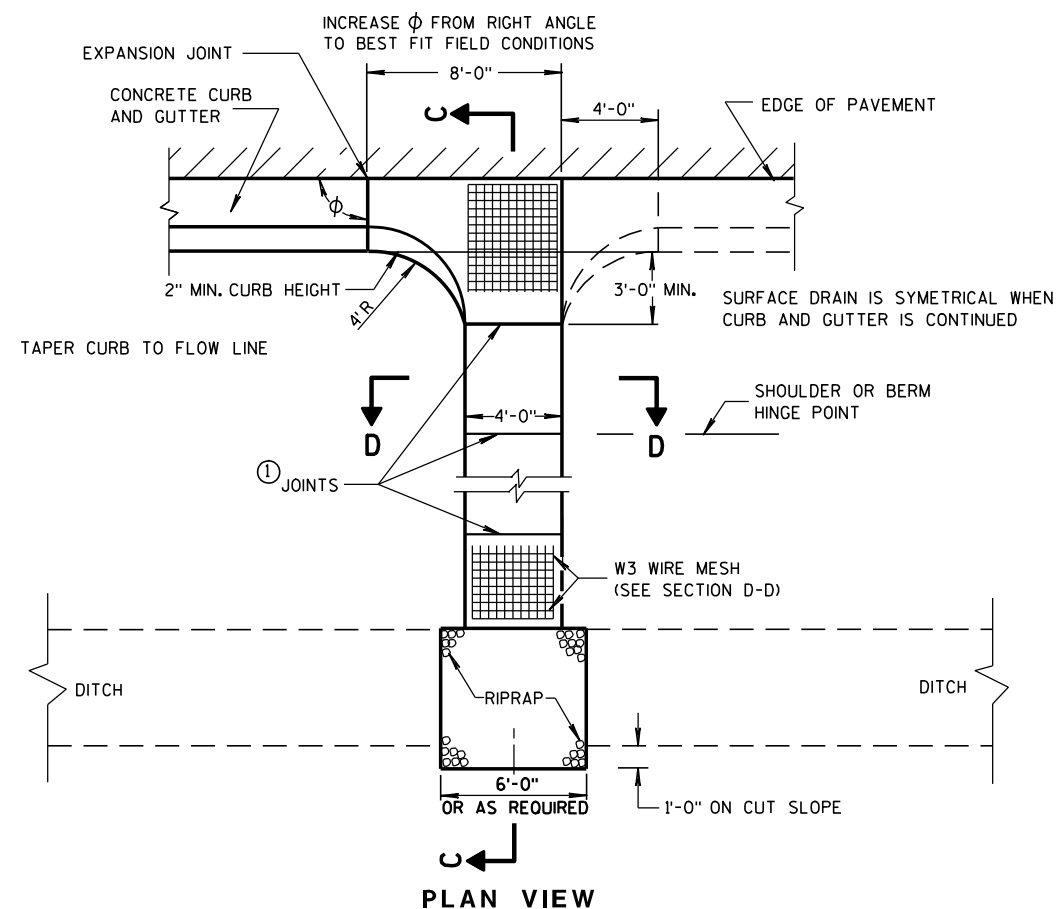
GENERAL NOTES

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

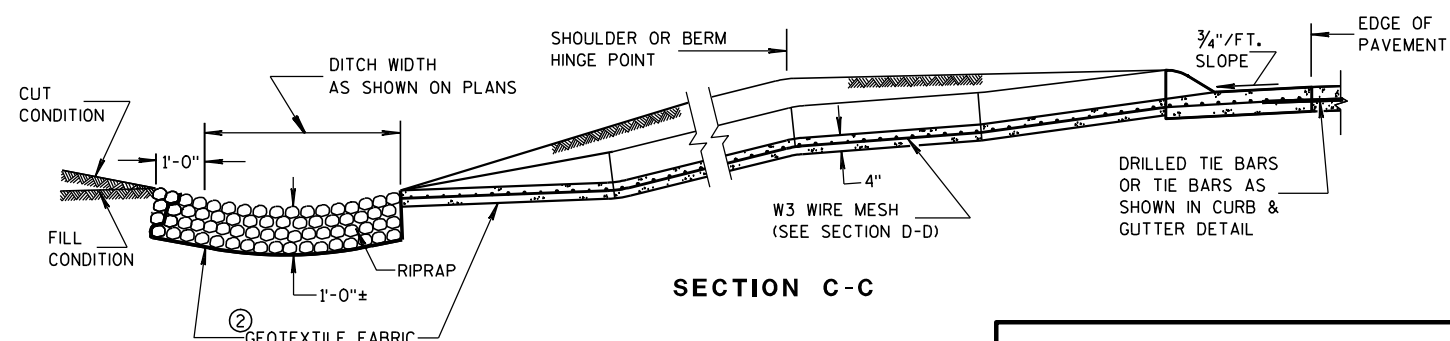
WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

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

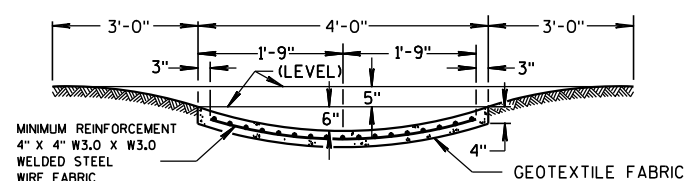
③ CONCRETE SURFACE DRAIN



PLAN VIEW



SECTION C-C



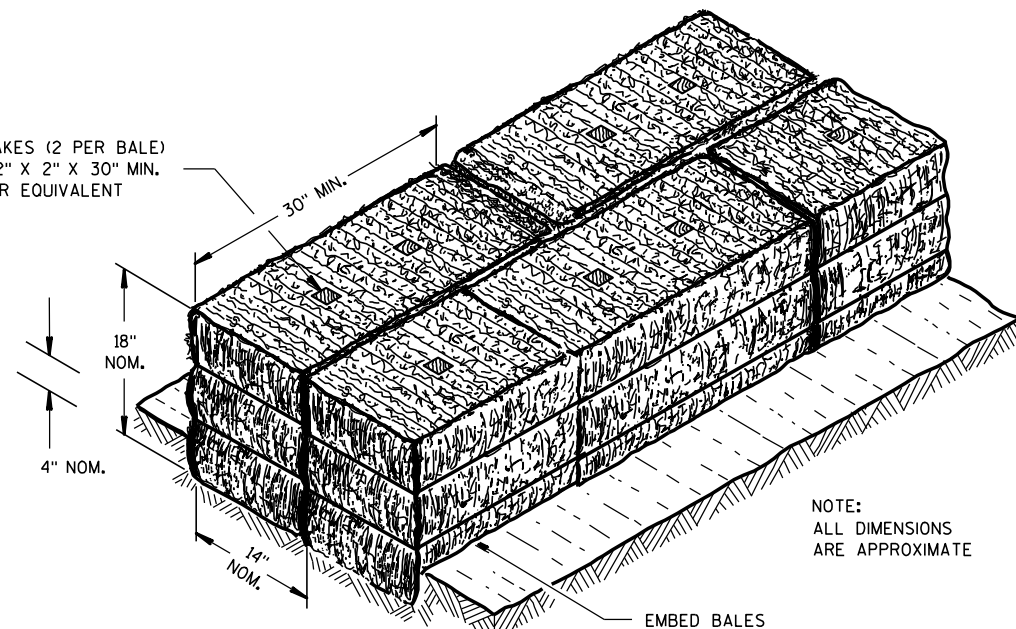
SECTION D-D

CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES

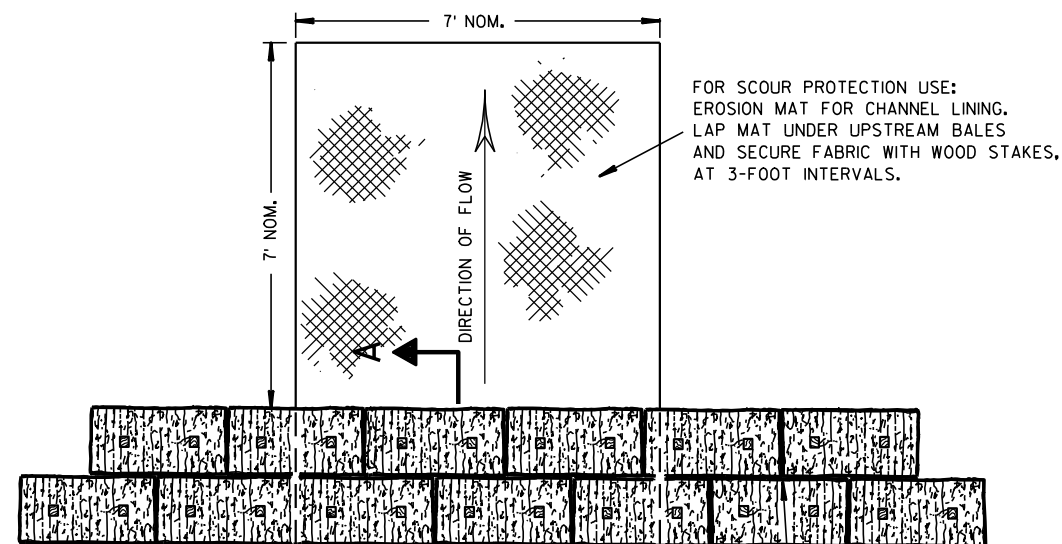
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9-4-08 /S/ Jerry H. Zapp
DATE ROADWAY STANDARDS 49
FWHA ENGINEER

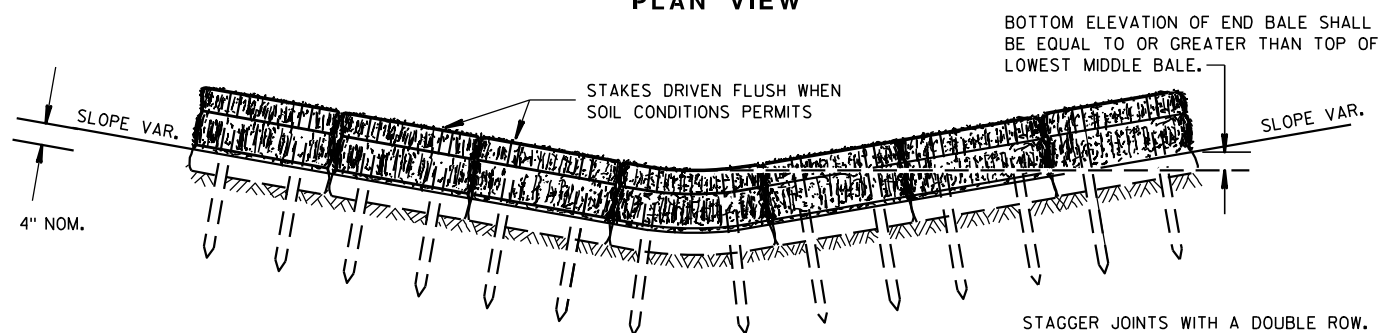
WOOD STAKES (2 PER BALE)
NOMINAL 2" X 2" X 30" MIN.
LENGTH OR EQUIVALENT



SECTION A-A



PLAN VIEW



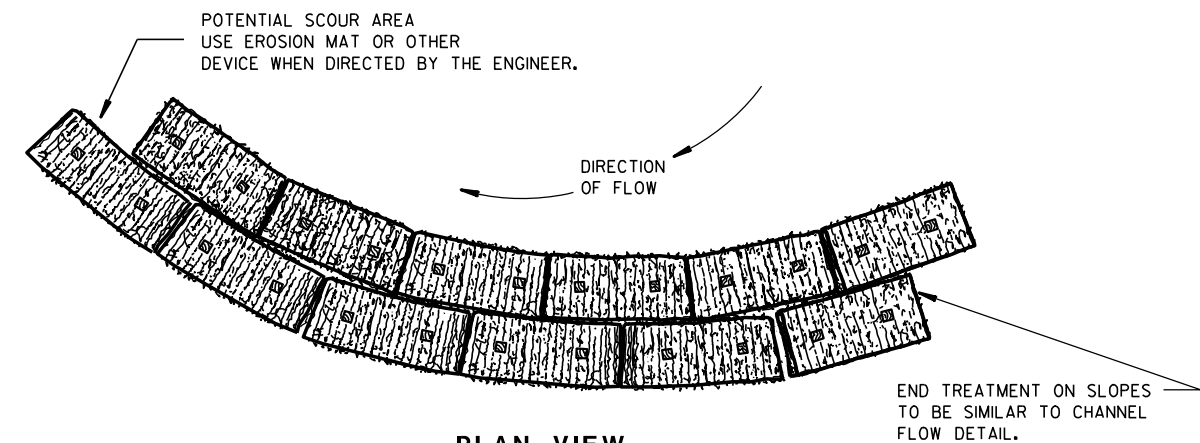
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

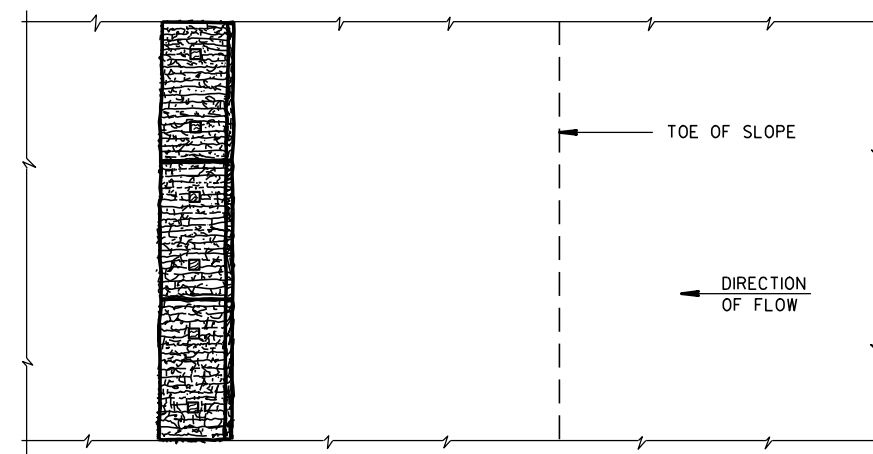
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

- 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.

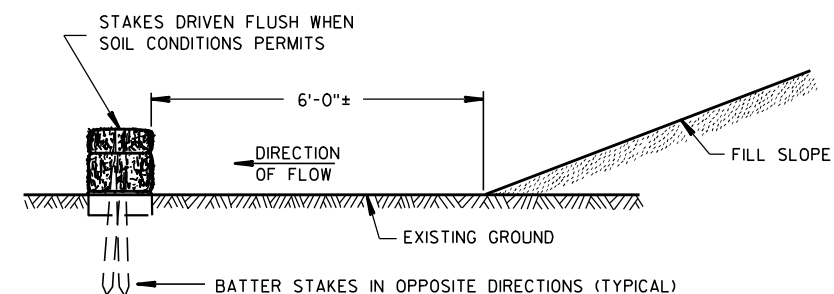


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

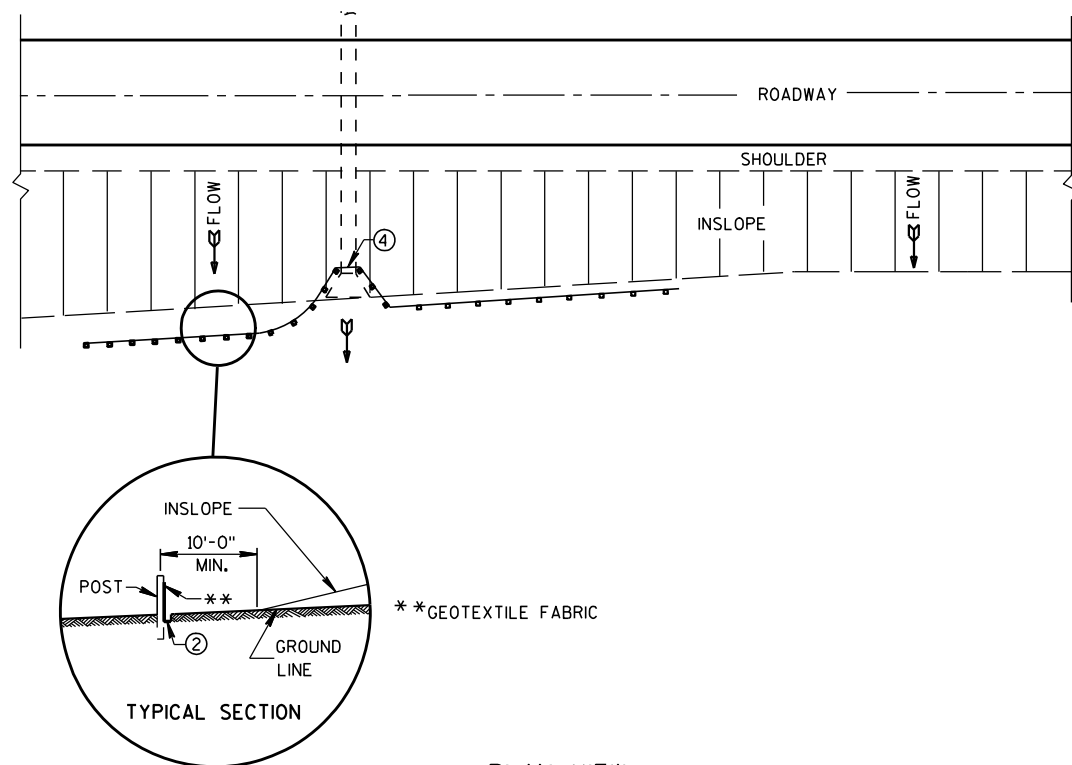
APPROVED

6/04/02
DATE

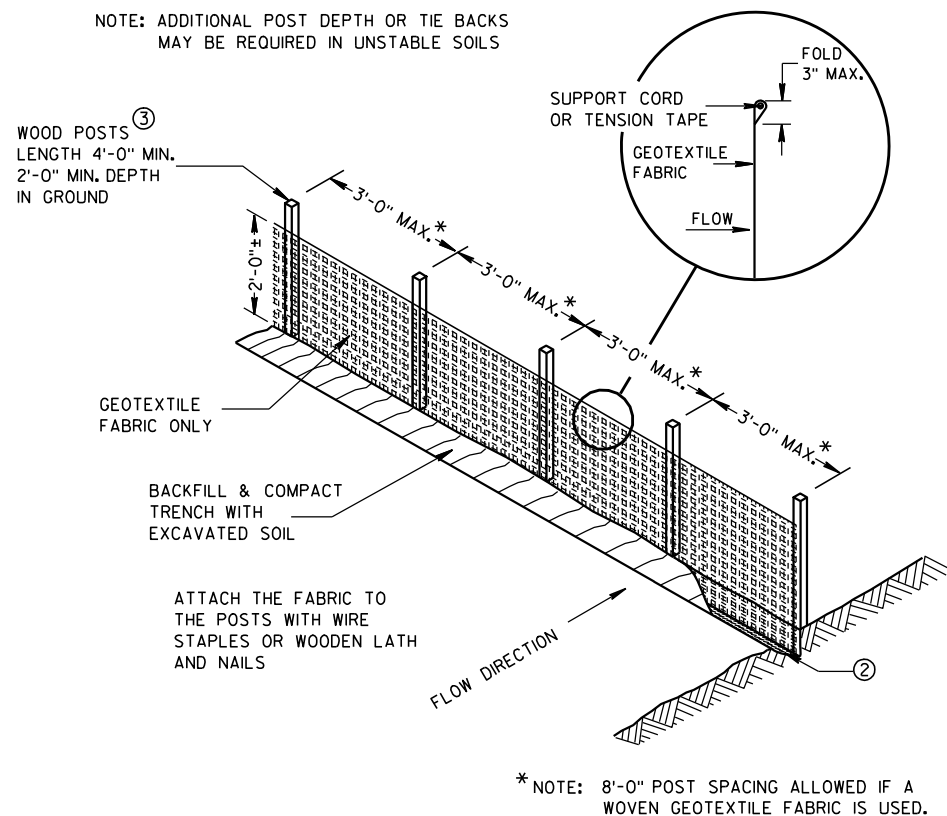
/S/ Beth Connors
CHIEF ROADWAY DEVELOPER

ENGINEER

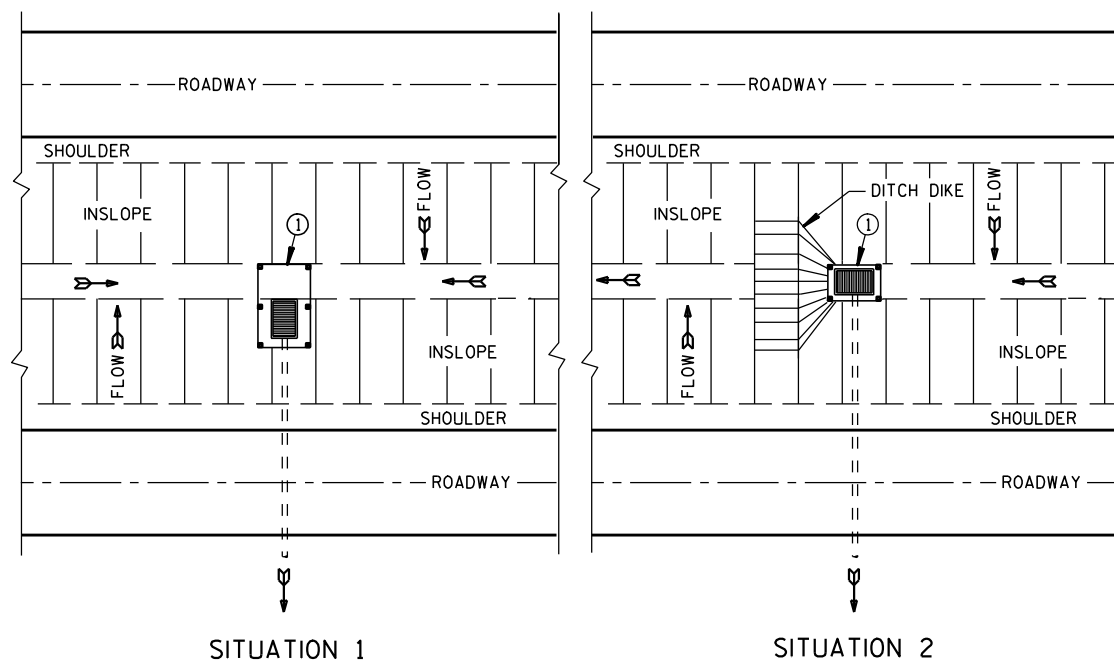
FHWA



TYPICAL APPLICATION OF SILT FENCE

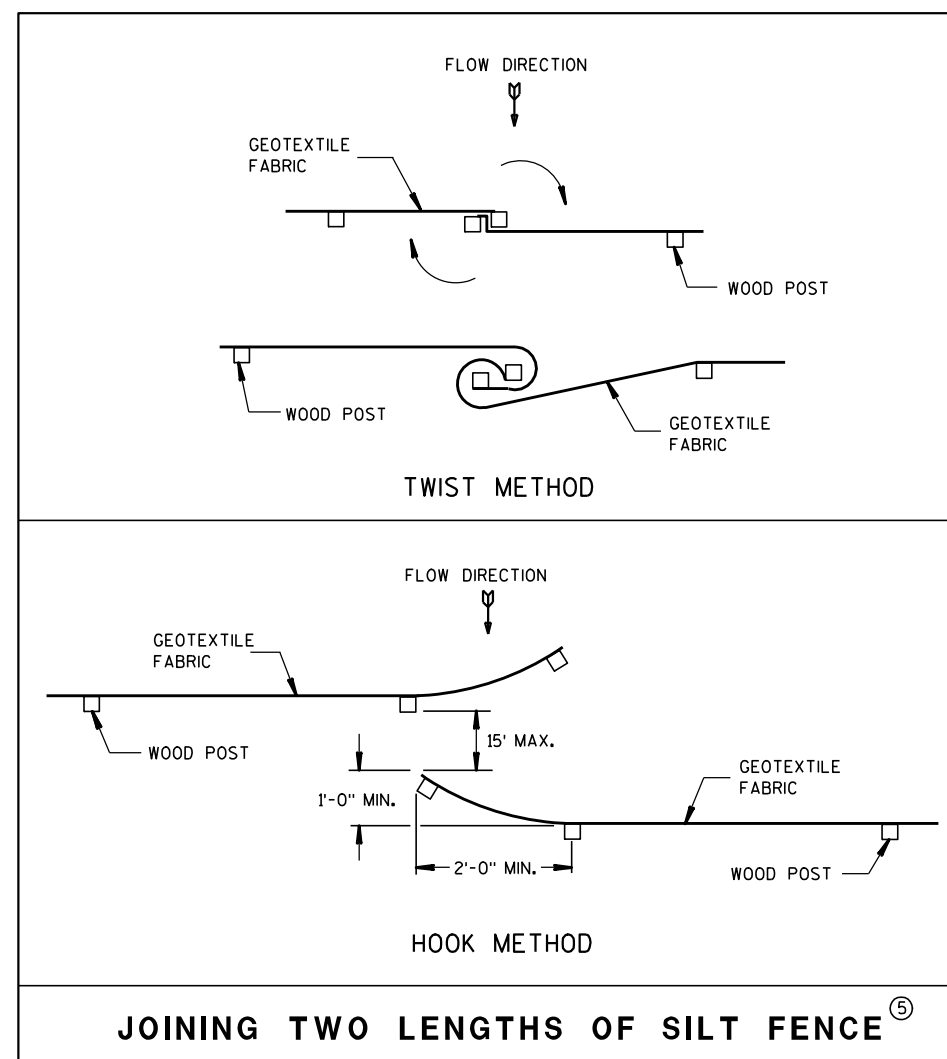


SILT FENCE



PLAN VIEW

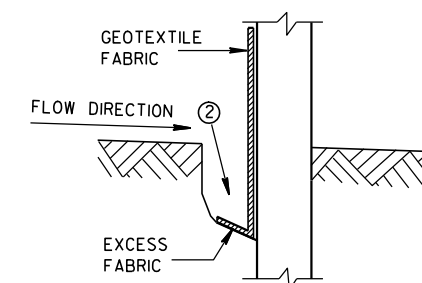
SILT FENCE AT MEDIAN SURFACE DRAINS



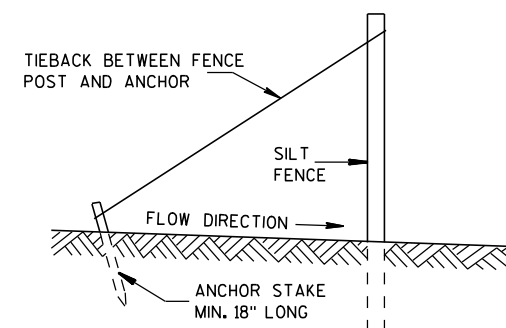
GENERAL NOTES

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



SILT FENCE TIE BACK (WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

4-29-05

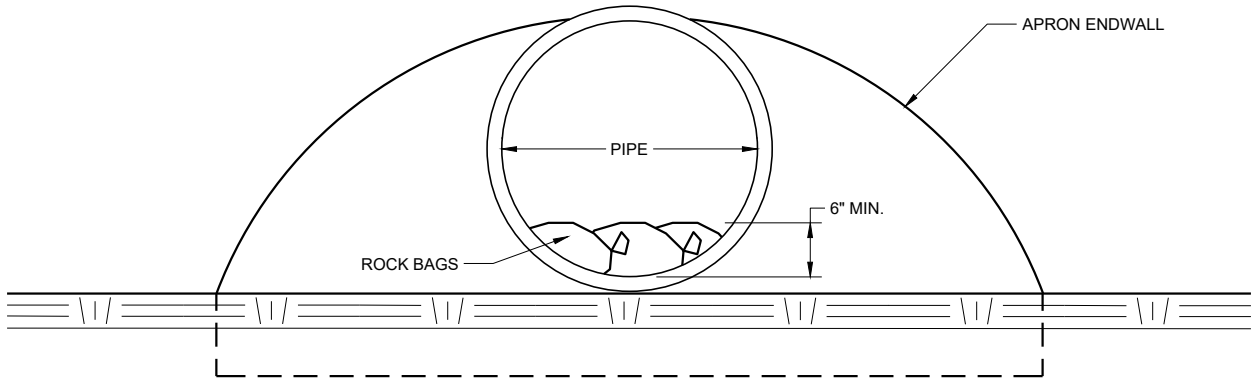
DATE

/S/ Beth Conn

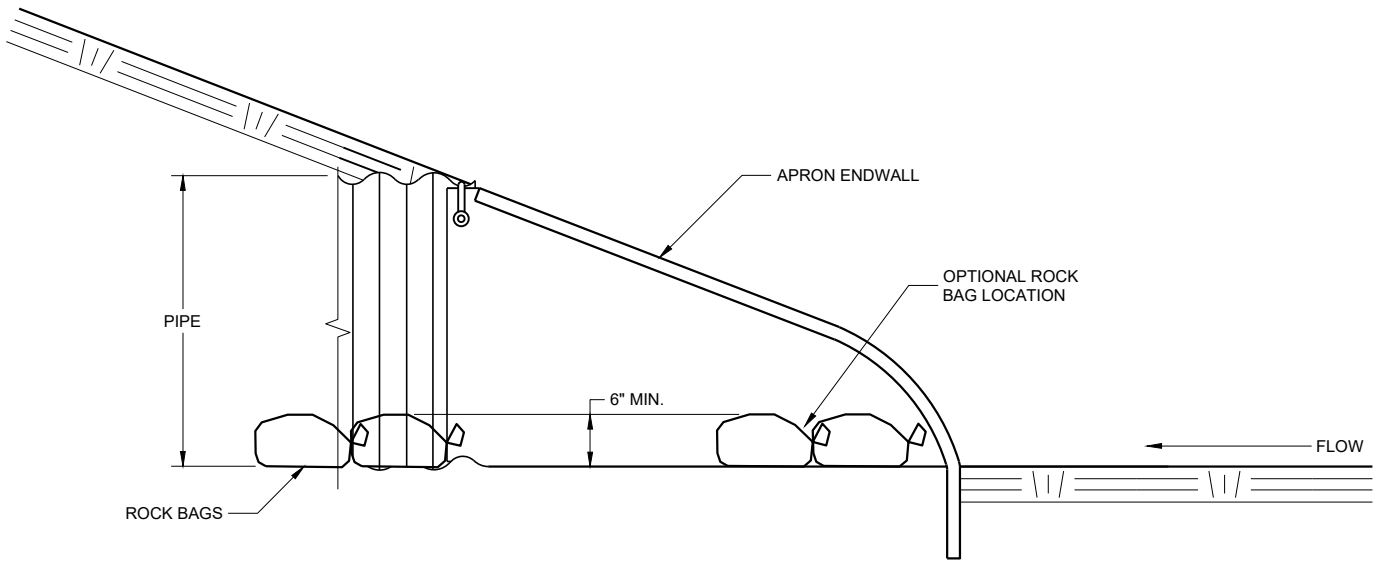
CHIEF ROADWAY DEVELOPER

FHWA

ENGINEER



END VIEW



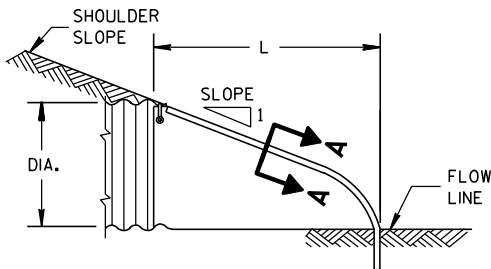
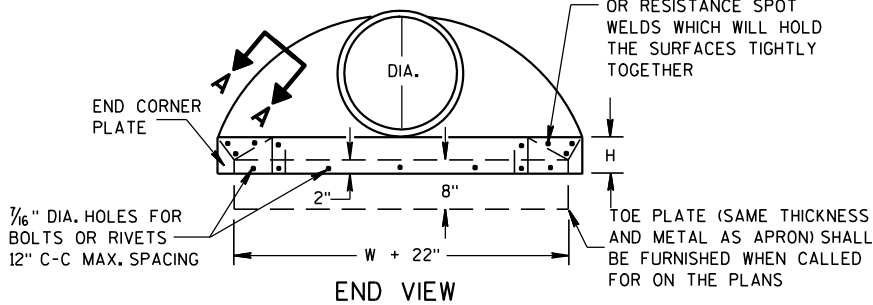
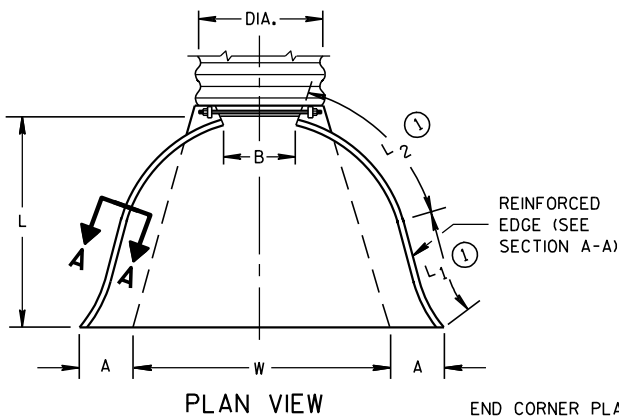
SIDE VIEW

CULVERT PIPE CHECK
(INSTALL ON INLET END ONLY)

CULVERT PIPE CHECK	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2019 DATE	/S/ Daniel Schave EROSION CONTROL ENGI 52
FHWA	

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

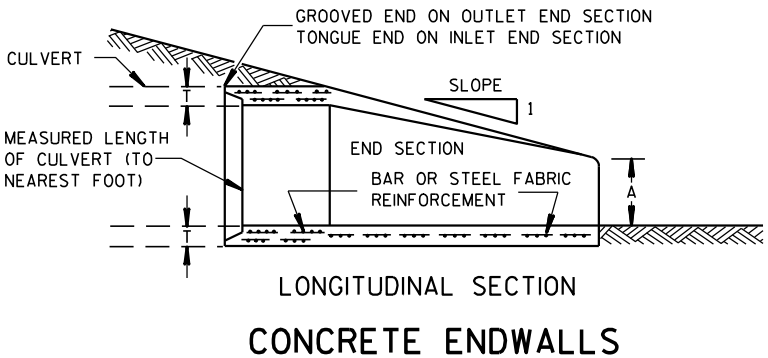
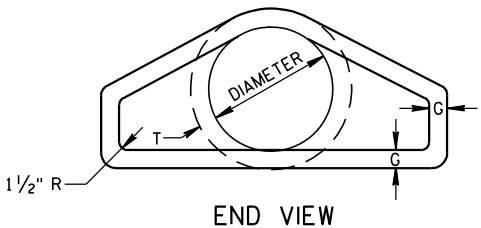
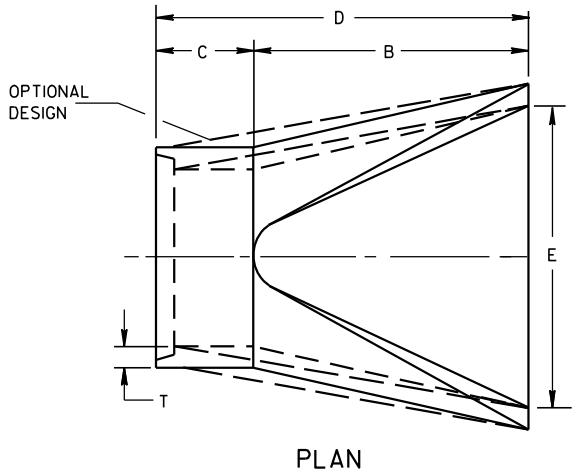
* EXCEPT CENTER PANEL
SEE GENERAL NOTES



SIDE ELEVATION
METAL ENDWALLS

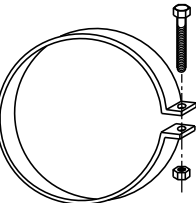
REINFORCED CONCRETE APRON ENDWALLS												
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE				
	T	A	B	C	D	E	G					
12	2	4	24	48 1/8	72 1/8	24	2	3 to 1				
15	2 1/4	6	27	46	73	30	2 1/4	3 to 1				
18	2 1/2	9	27	46	73	36	2 1/2	3 to 1				
21	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	3 to 1				
24	3	9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

* MINIMUM
** MAXIMUM

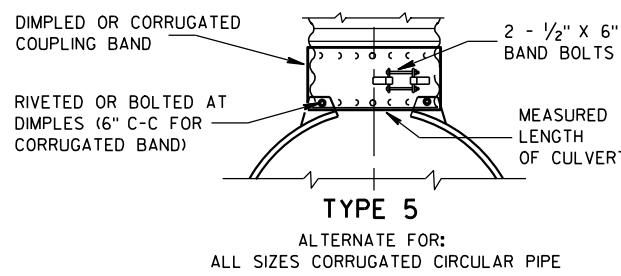
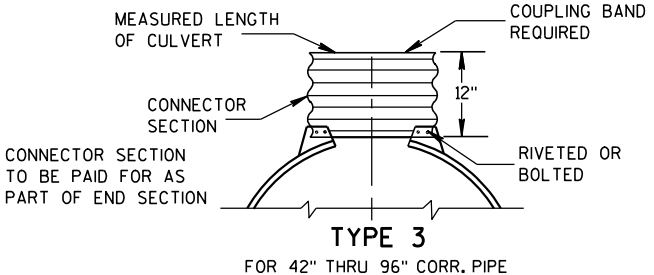
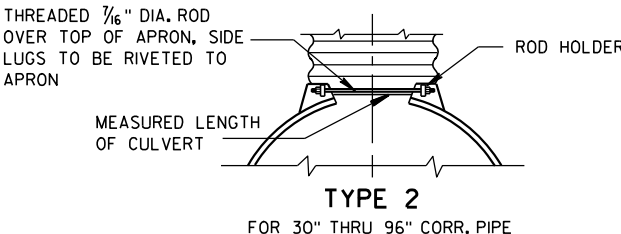
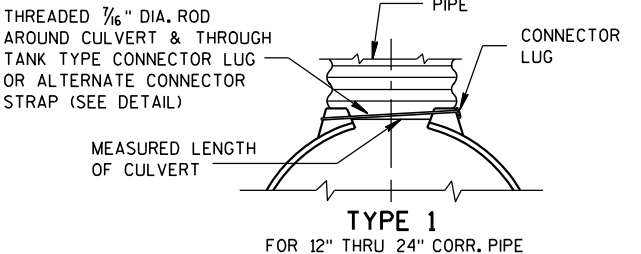


LONGITUDINAL SECTION
CONCRETE ENDWALLS

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



ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



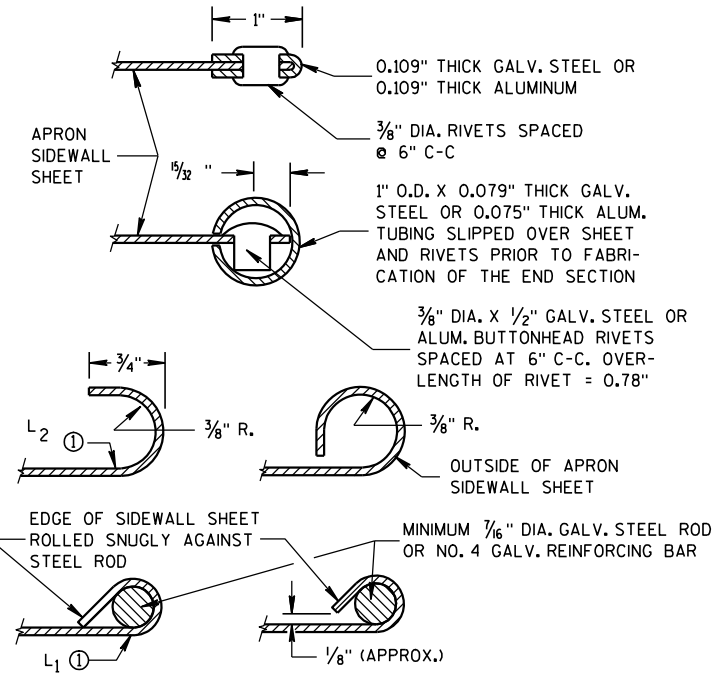
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

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

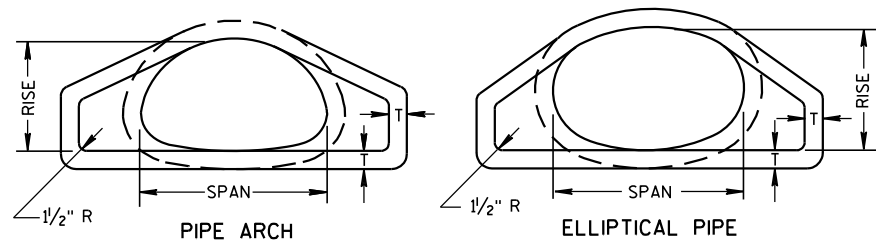
ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT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

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

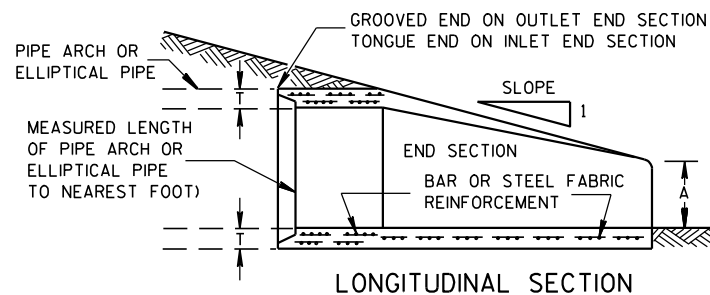
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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

APRON ENDWALLS FOR CULVERT PIPE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 11/30/94 DATE	/S/ Rory L. Rhin... CHIEF ROADWAY DEVELOP 53 NEER
FHWA	

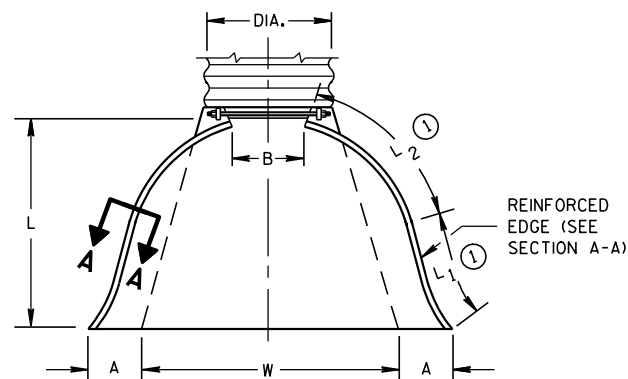


END VIEW



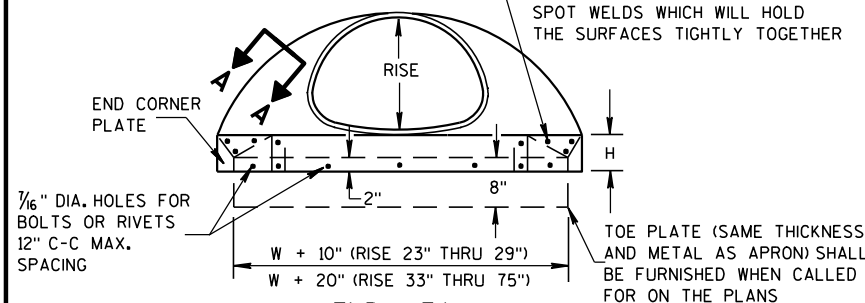
LONGITUDINAL SECTION

CONCRETE ENDWALLS

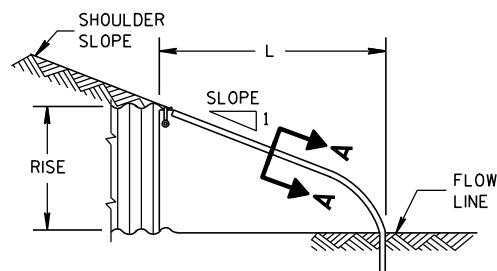
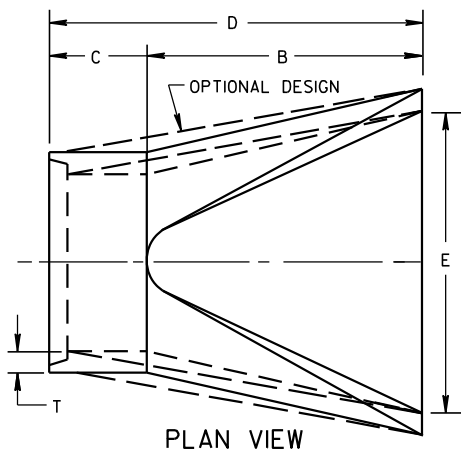


PLAN VIEW

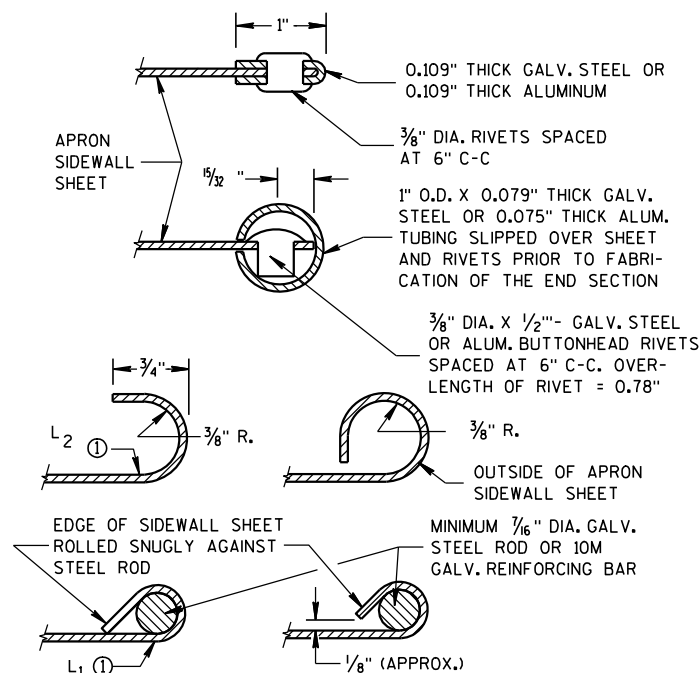
END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER



END VIEW

SIDE ELEVATION
METAL ENDWALLS

PLAN VIEW

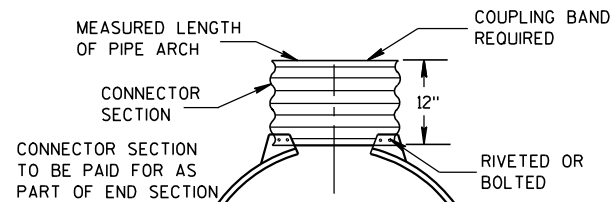


SECTION A-A



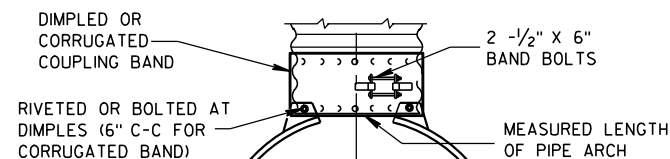
TYPE 2

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

CONNECTION DETAILS

2- 2/3" X 1/2" CORRUGATIONS

EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	SPAN	RISE	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")		
					(±1")	(MAX.)	(±1")	(±1 1/2")	①	①	(±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.

3" X 1" CORRUGATIONS

EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	SPAN	RISE	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")		
					(±1")	(MAX.)	(±1")	(±1 1/2")	①	①	(±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

REINFORCED CONCRETE PIPE ARCH

EQUIV. DIA. (Inches)	DIMENSIONS (Inches)								APPROX. SLOPE
	** SPAN	** RISE	T	A	B	C	D	E	
	(Inches)	(Inches)	(Inches)	(Inches)	(Inches)	(Inches)	(Inches)	(Inches)	
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

REINFORCED CONCRETE ELLIPTICAL PIPE

EQUIV. DIA. (Inches)	DIMENSIONS (Inches)								APPROX. SLOPE
	** SPAN	** RISE	T	A	B	C	D	E	
	(Inches)	(Inches)	(Inches)	(Inches)	(Inches)	(Inches)	(Inches)	(Inches)	
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 1/4	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

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 PIPESTATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

11/30/94

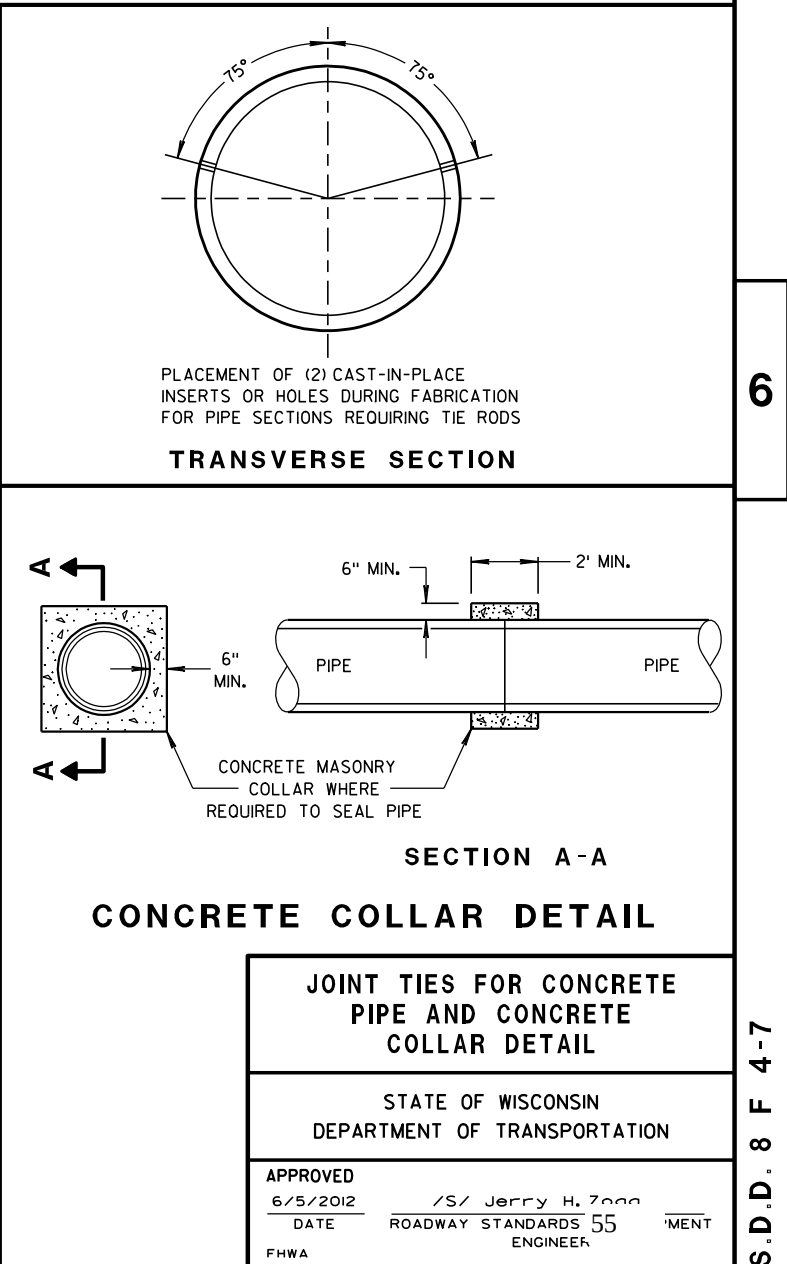
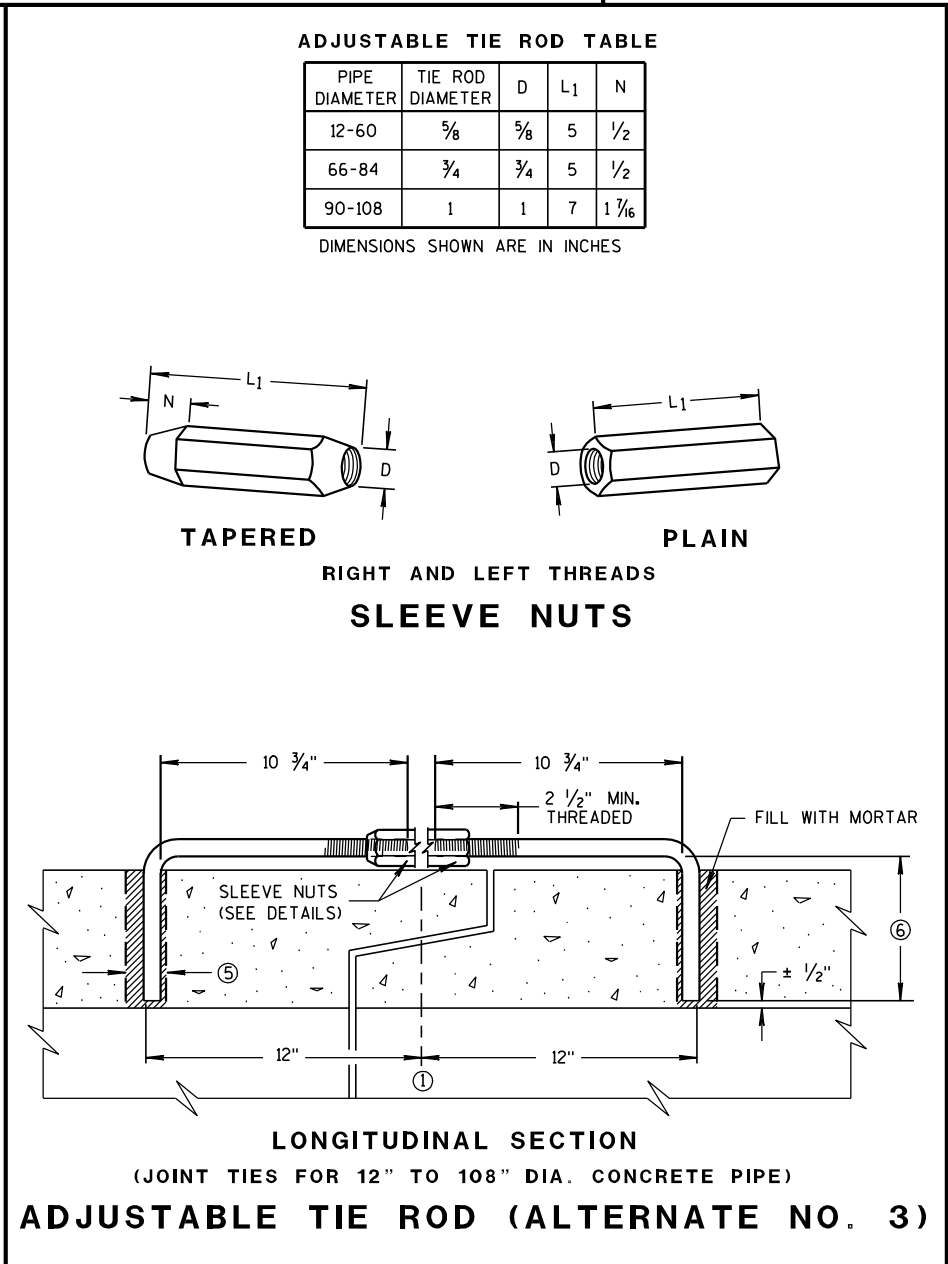
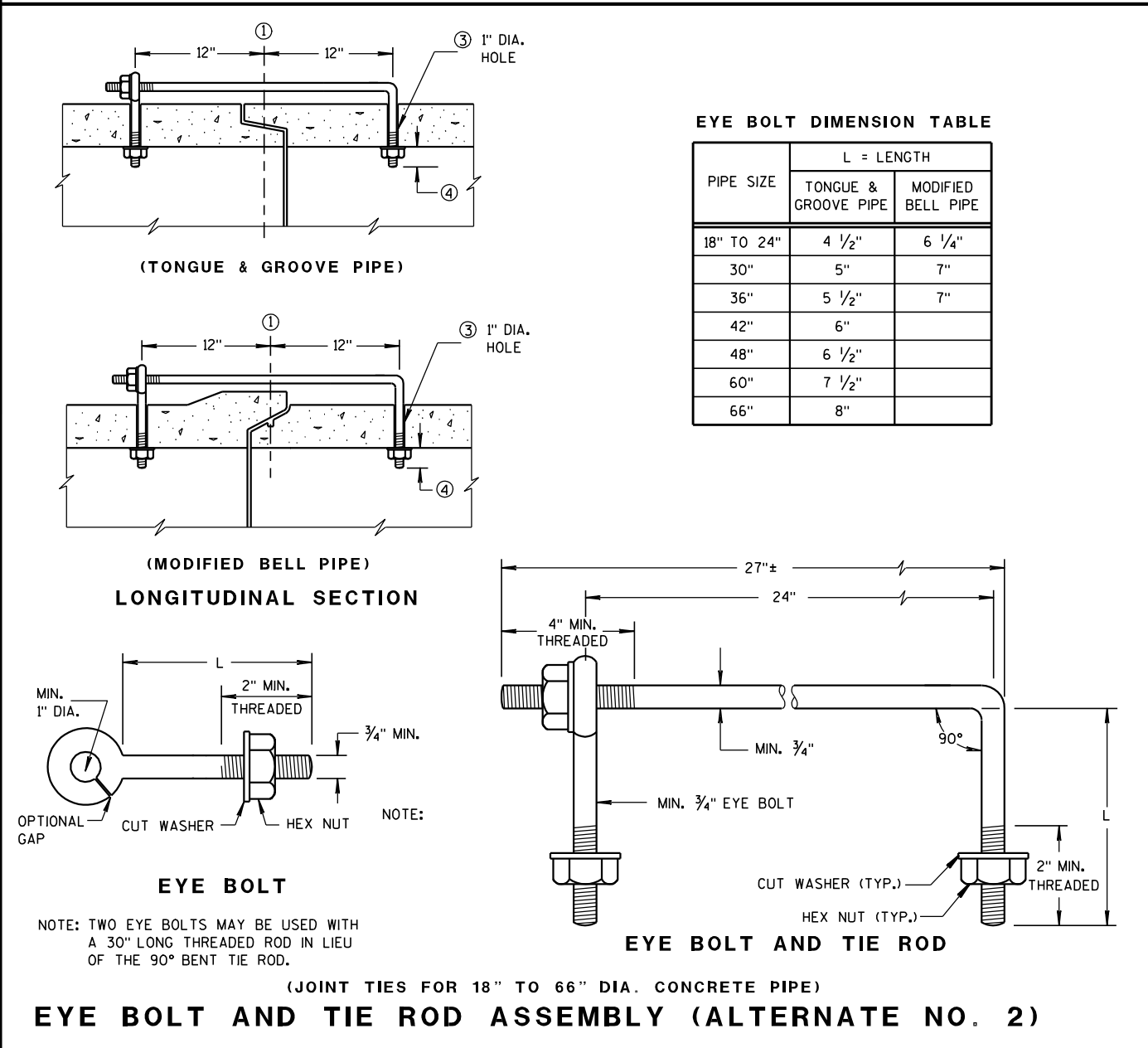
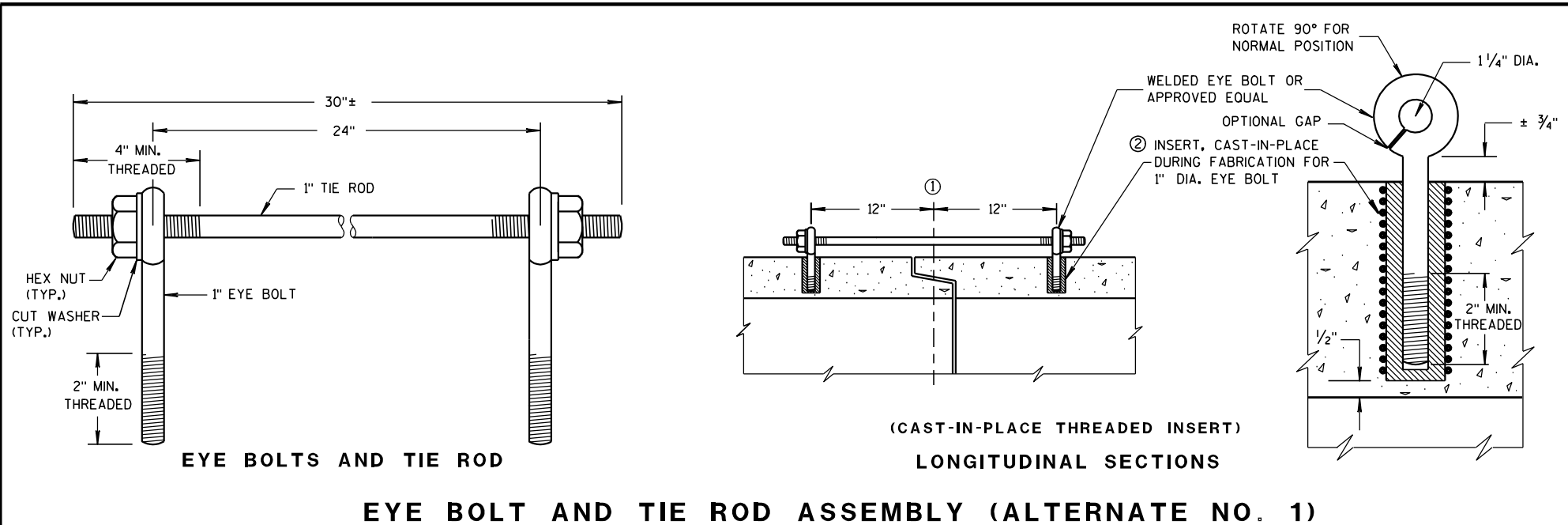
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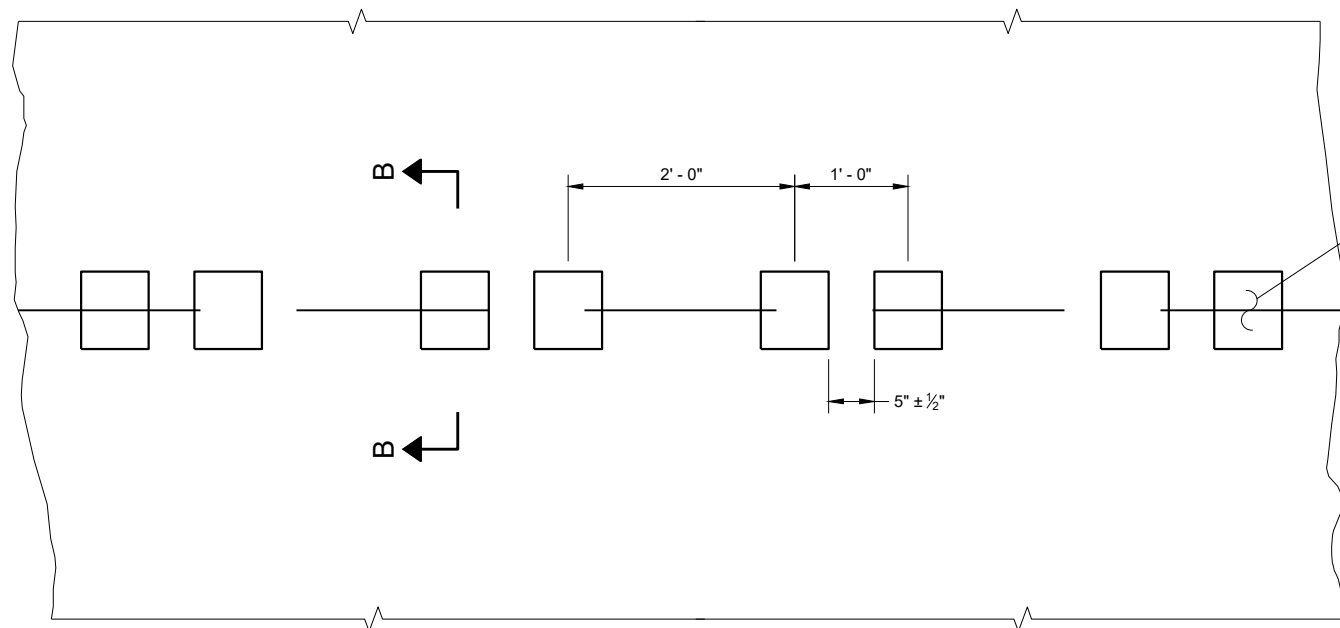
/S/ Rory L. Rhinehart

CHIEF ROADWAY DEVELOPER

FHWA

ENGINEER

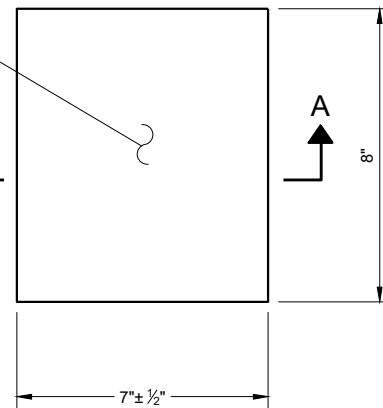




PLAN VIEW
SHOULDER WITH GROOVES

6

PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP



PLAN VIEW
(SINGLE GROOVE)

GENERAL NOTES

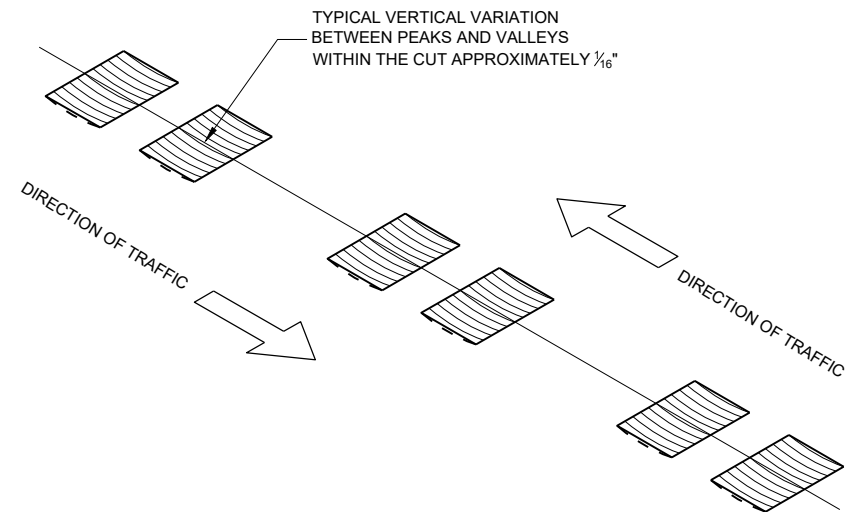
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

DO NOT MILL CENTERLINE GROOVES THROUGH ANY INTERSECTION, MARKED CROSSWALK, NON-MOTORIZED PATH CROSSING, OR SNOWMOBILE CROSSING.

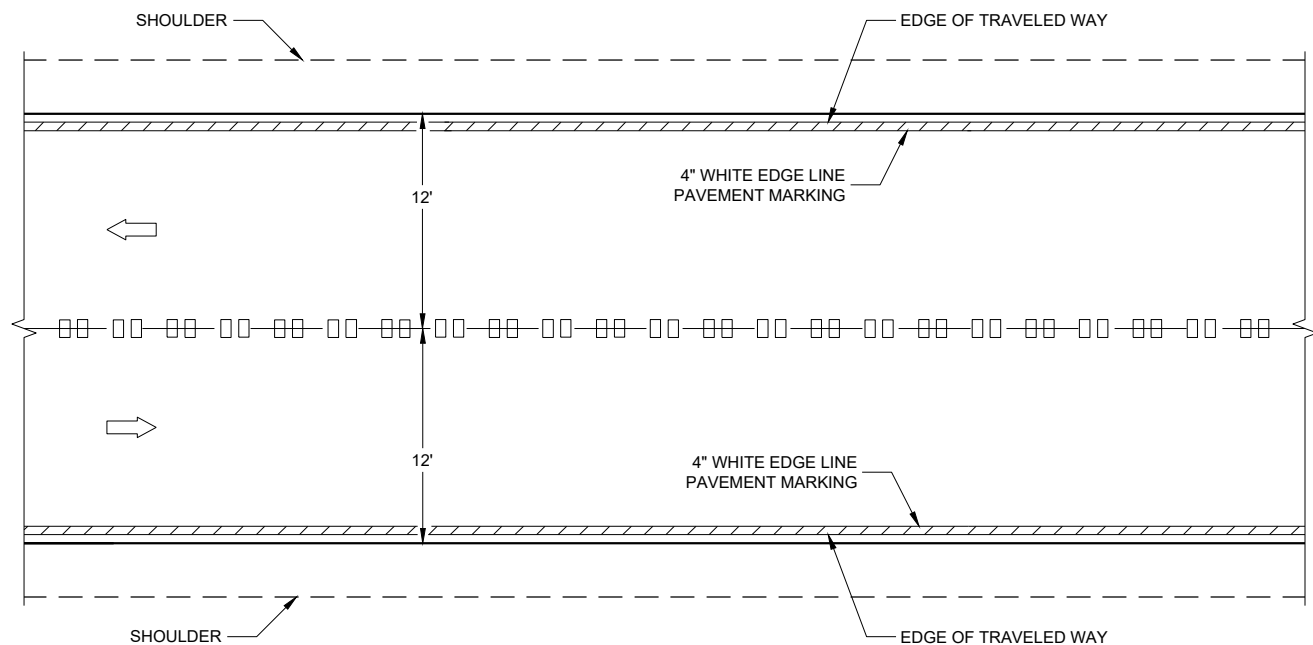
INSTALL PAVEMENT MARKING AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

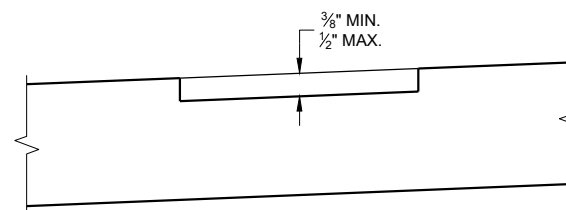
- ① CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



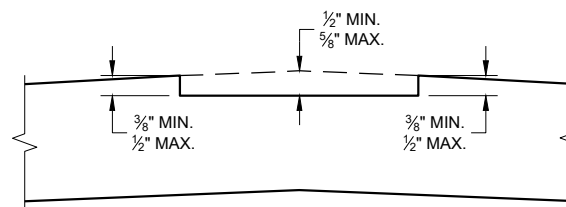
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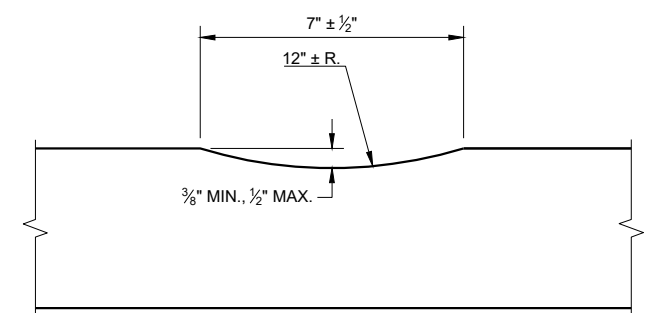
CENTERLINE GROOVES ON TWO-WAY ROADWAYS



SECTION B - B
SUPERELEVATED ROADWAY



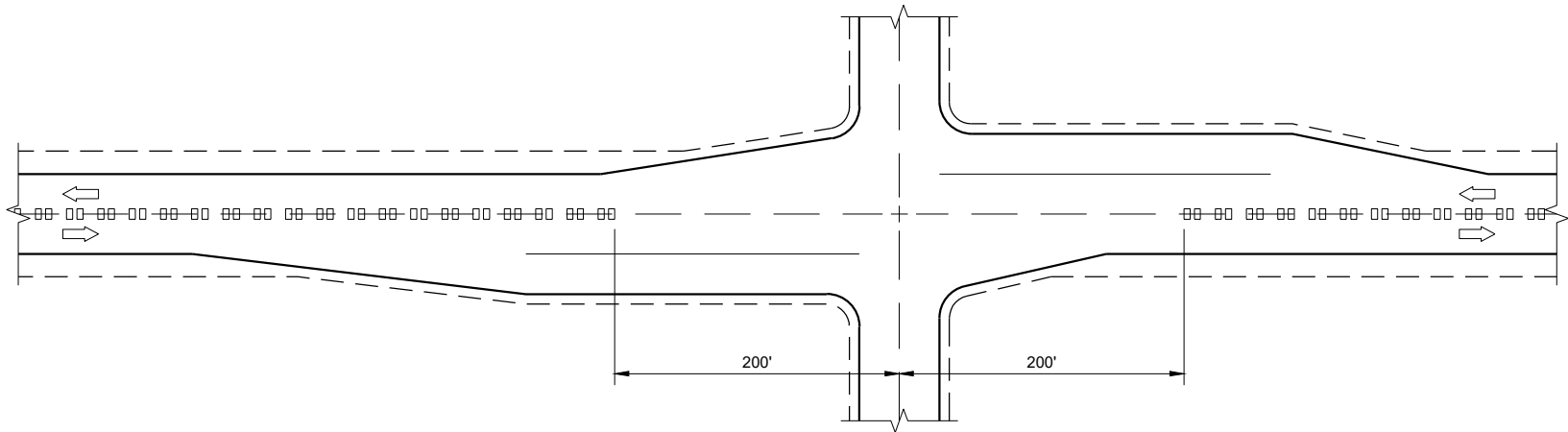
SECTION B - B
CROWNED ROADWAY



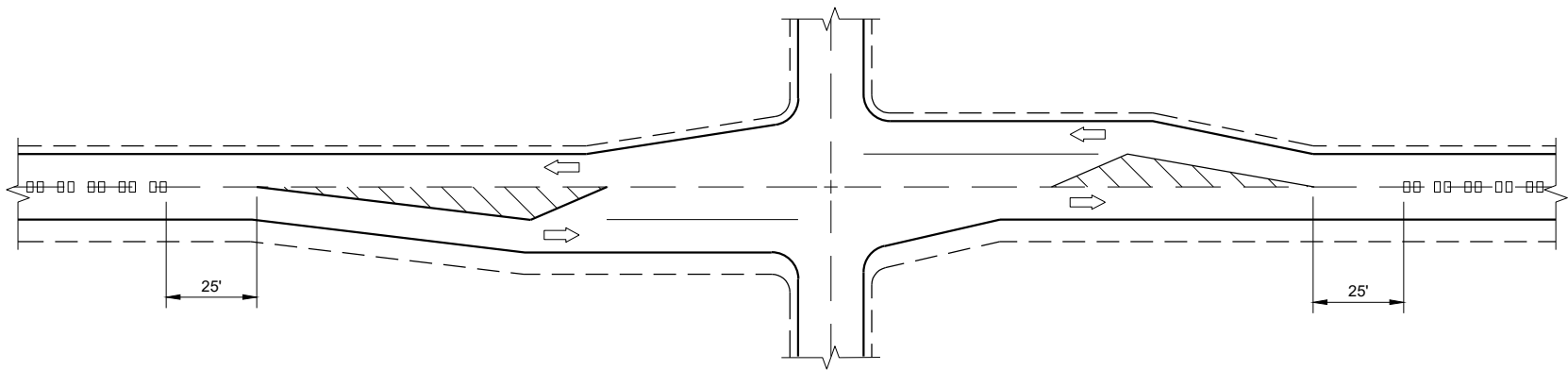
SECTION A - A

2-LANE RURAL
CENTER LINE RUMBLE STRIP,
MILLING

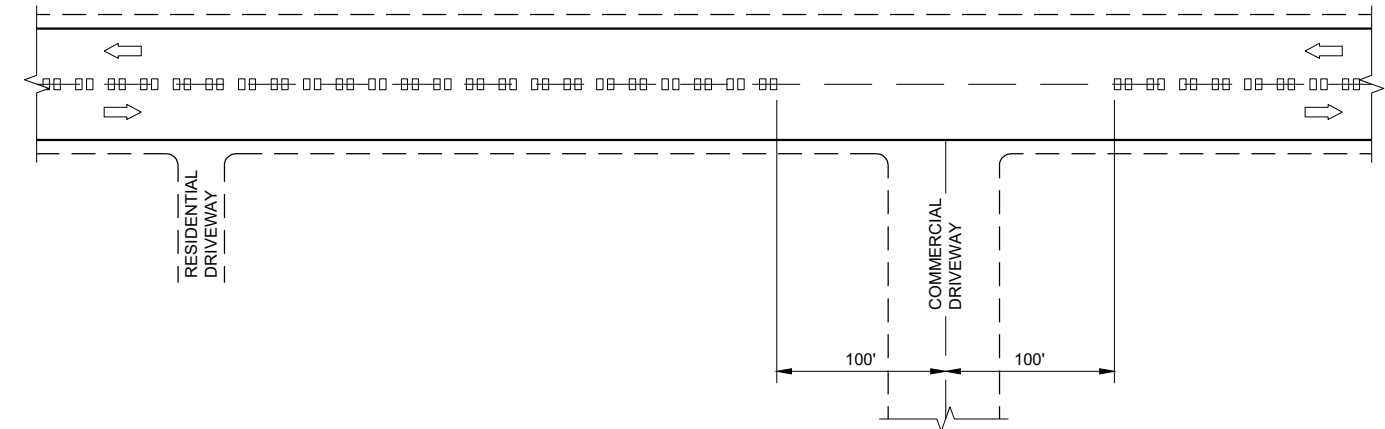
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



CENTERLINE GROOVES AT INTERSECTIONS



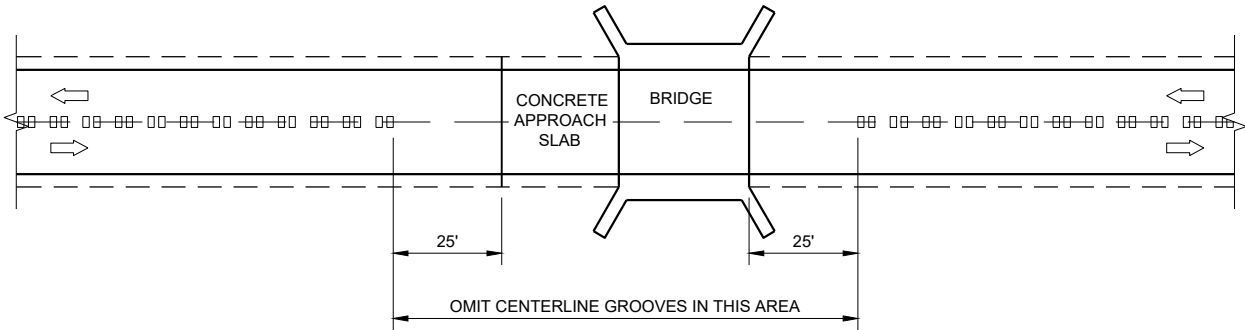
CENTERLINE GROOVES AT INTERSECTIONS
(WITH LEFT TURN LANES)



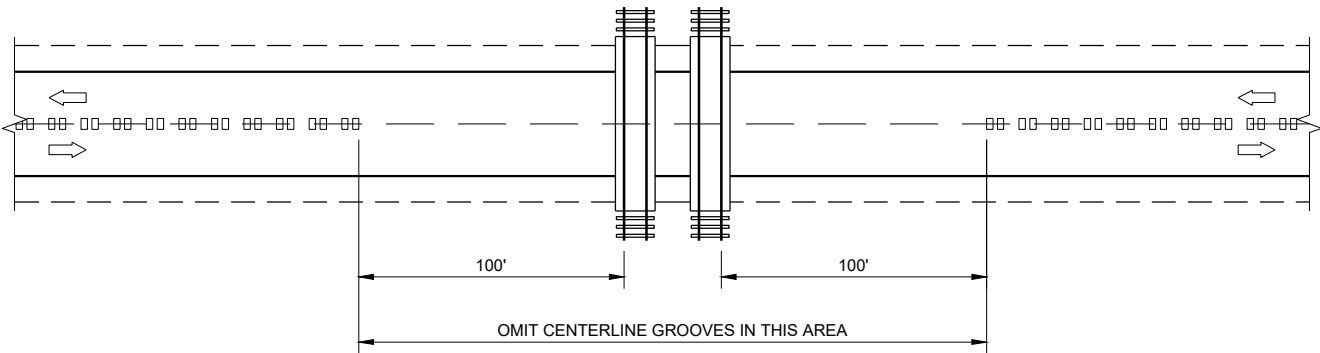
CENTERLINE GROOVES AT DRIVEWAYS^①

GENERAL NOTES

- ① CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



CENTERLINE GROOVES AT BRIDGES



CENTERLINE GROOVES AT RAILROADS

2-LANE RURAL
CENTERLINE RUMBLE STRIP,
MILLING

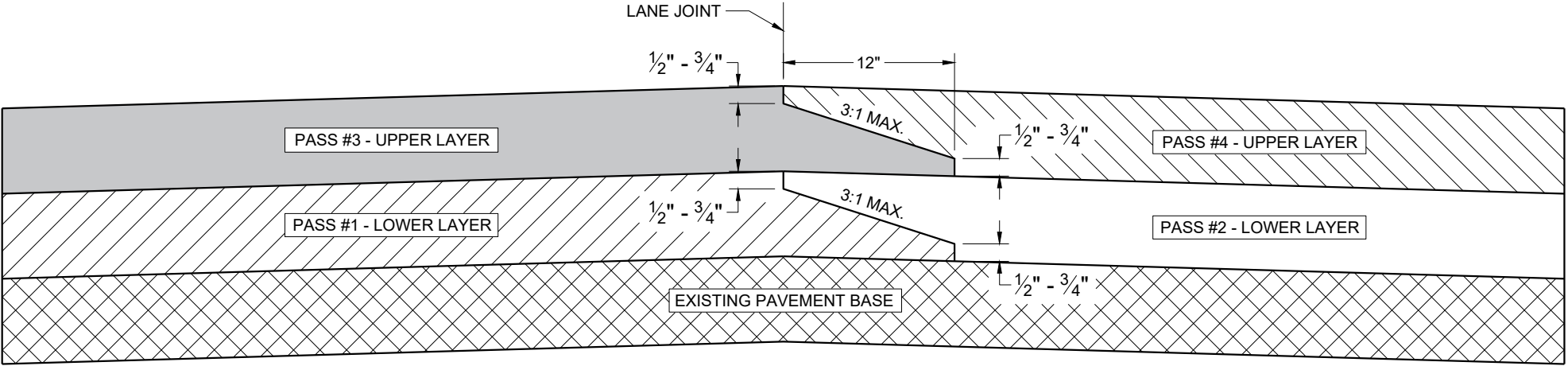
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

FHWA

GENERAL NOTES

CONFORM TO STANDARD SPECIFICATION 450.3.2.8



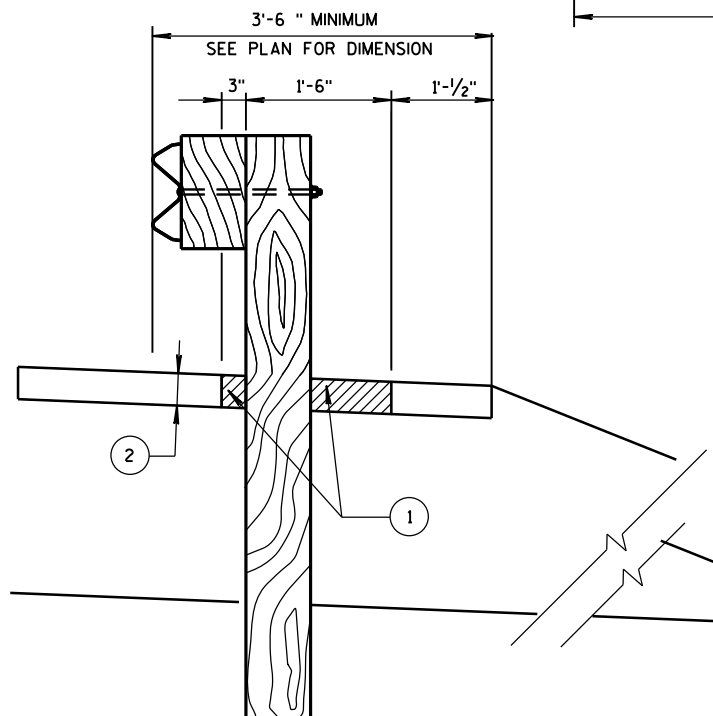
TYPICAL PAVEMENT CROSS SECTION
OF NOTCHED WEDGE LONGITUDINAL JOINTS

HMA LONGITUDINAL JOINTS

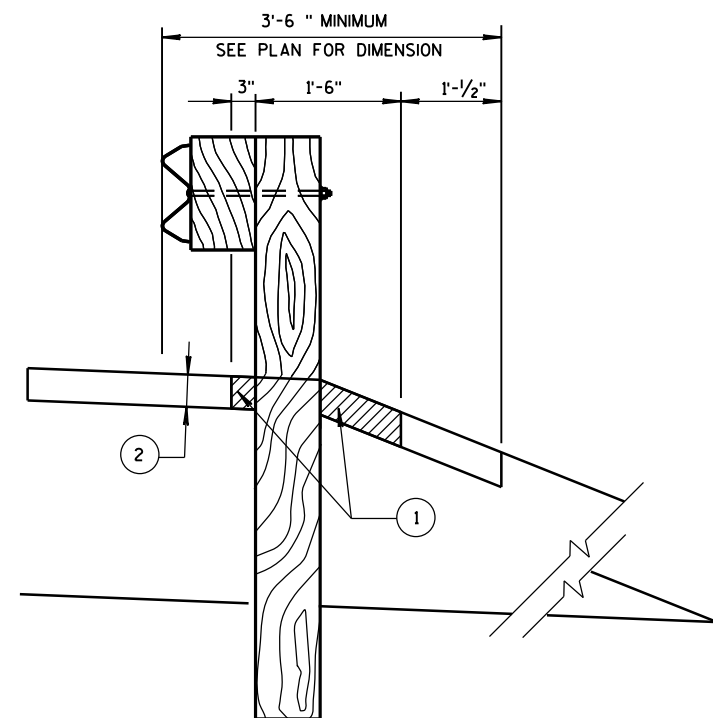
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2019 /S/ Steven Hefel
DATE HMA PAVEMENT ENGIN 59

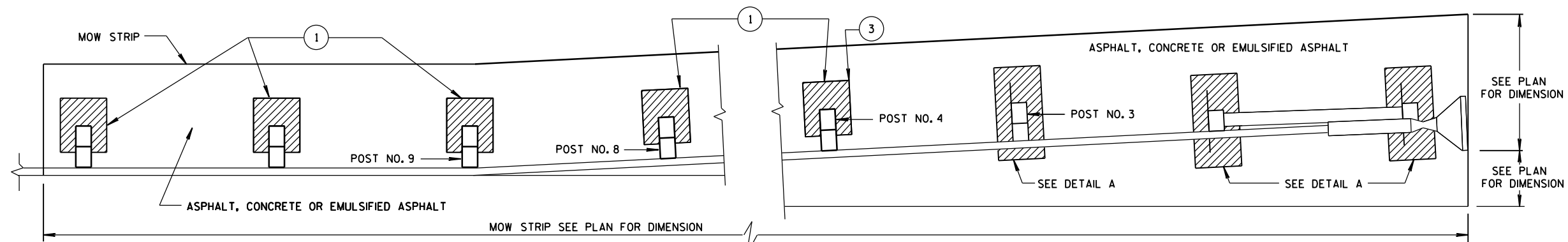
FHWA



SECTION A-A

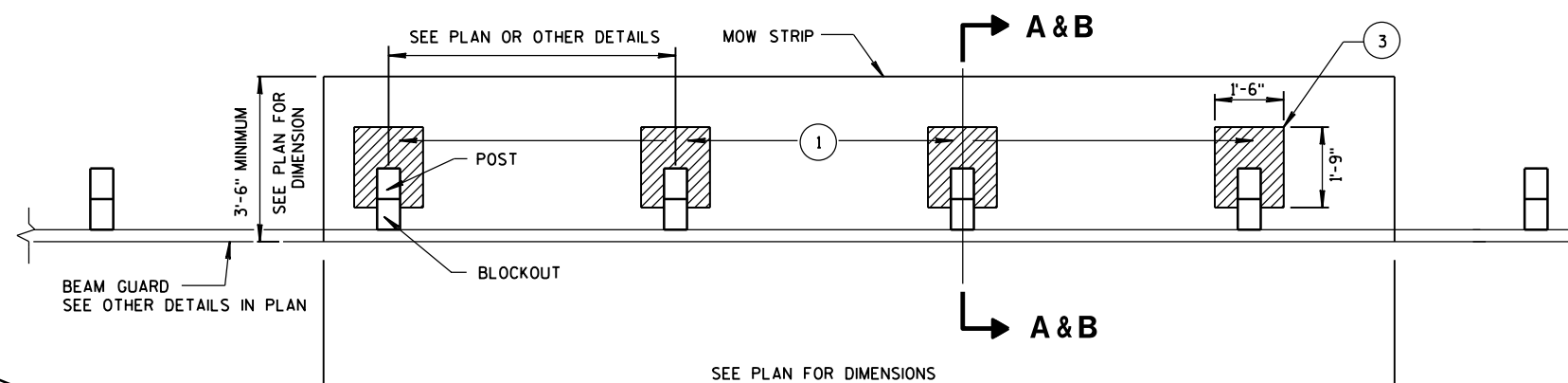


SECTION B-B



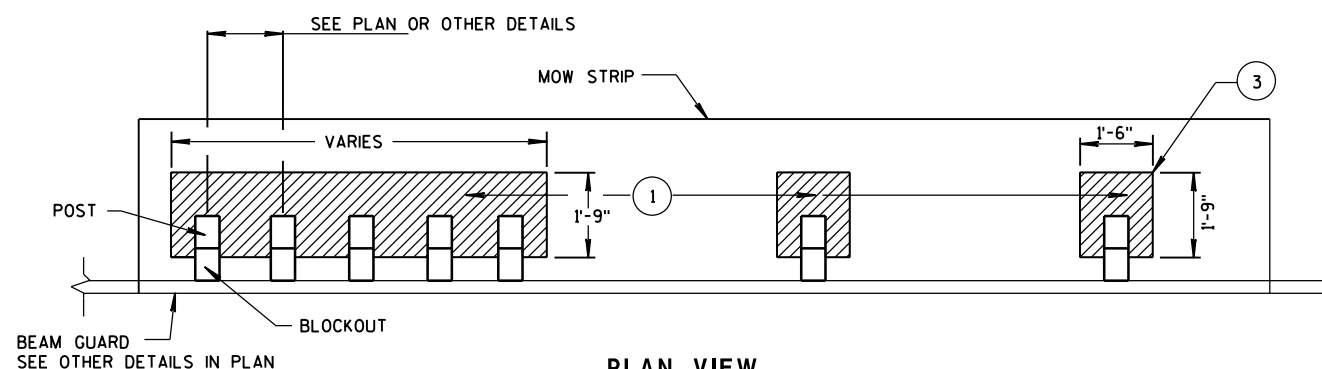
PLAN VIEW

MOW STRIP LAYOUT FOR ENERGY ABSORBING TERMINAL



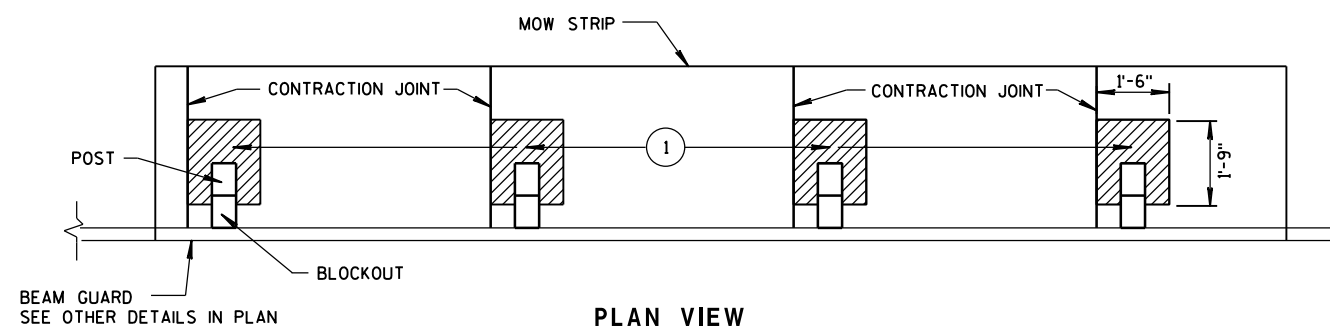
PLAN VIEW

MOW STRIP FOR TYPICAL BLOCKOUT LAYOUT



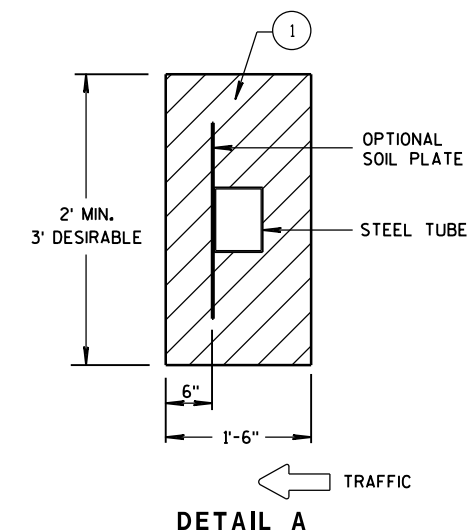
PLAN VIEW

MOW STRIP FOR TIGHT SPACING LAYOUT

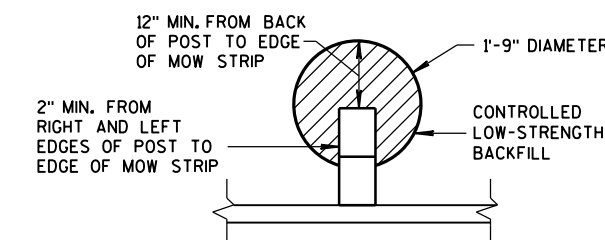


PLAN VIEW

JOINT PLACEMENT FOR CONCRETE MOW STRIP



DETAIL A

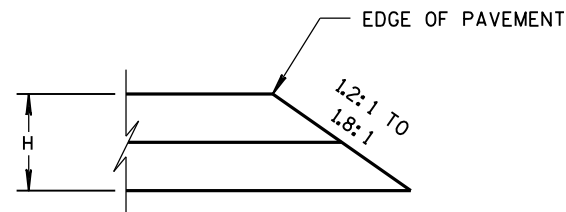
ALTERNATIVE HMA
MOW STRIP DESIGN

- ① CONTROLLED LOW-STRENGTH BACKFILL OR EMULSIFIED ASPHALT.
- ② DEPTH OF MOW STRIP:
ASPHALT - 4"
CONCRETE - 4"
EMULSIFIED ASPHALT - 1" OR LESS
- ③ FOR EMULSIFIED ASPHALT MOW STRIP LEAVE OUTS NOT REQUIRED. (TYPICAL FOR ALL POSTS.)

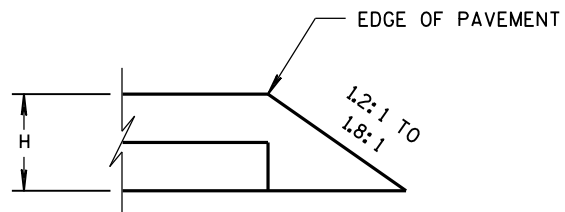
GUARDRAIL MOW STRIP

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

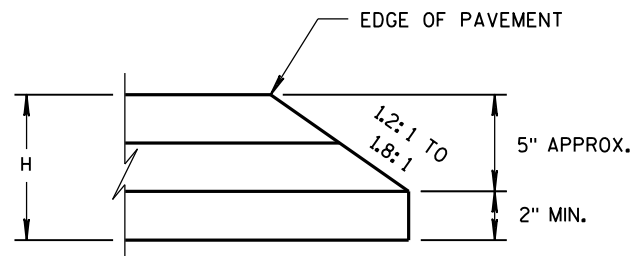
APPROVED
June 2014 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS 60 NT
FHWA ENGINEER



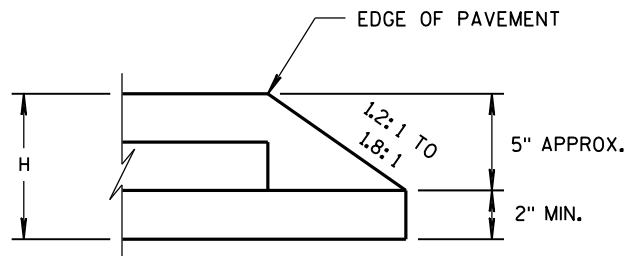
CONSTRUCTED WITH FINAL TWO LAYERS
FOR H 5" OR LESS



CONSTRUCTED WITH FINAL LAYER
FOR H 5" OR LESS

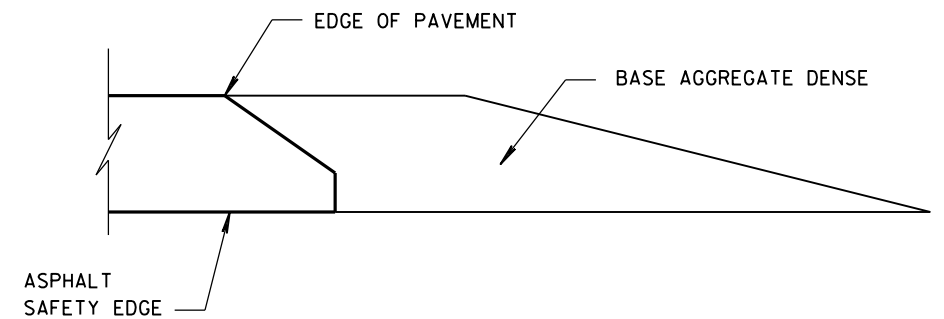


CONSTRUCTED WITH FINAL TWO LAYERS
FOR H GREATER THAN 5"



CONSTRUCTED WITH FINAL LAYER
FOR H GREATER THAN 5"

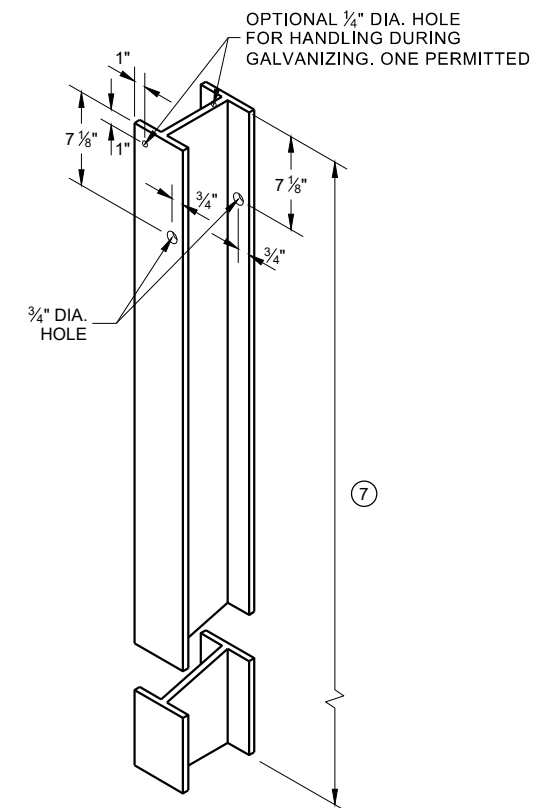
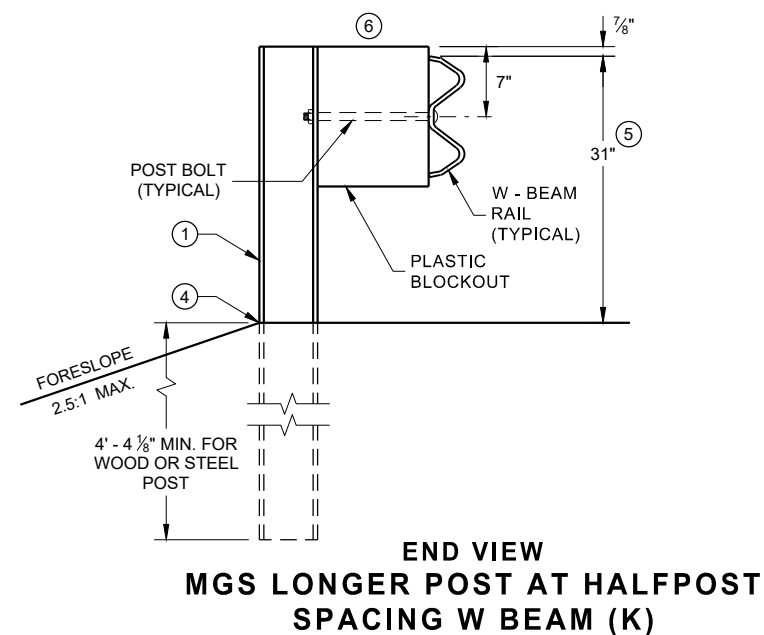
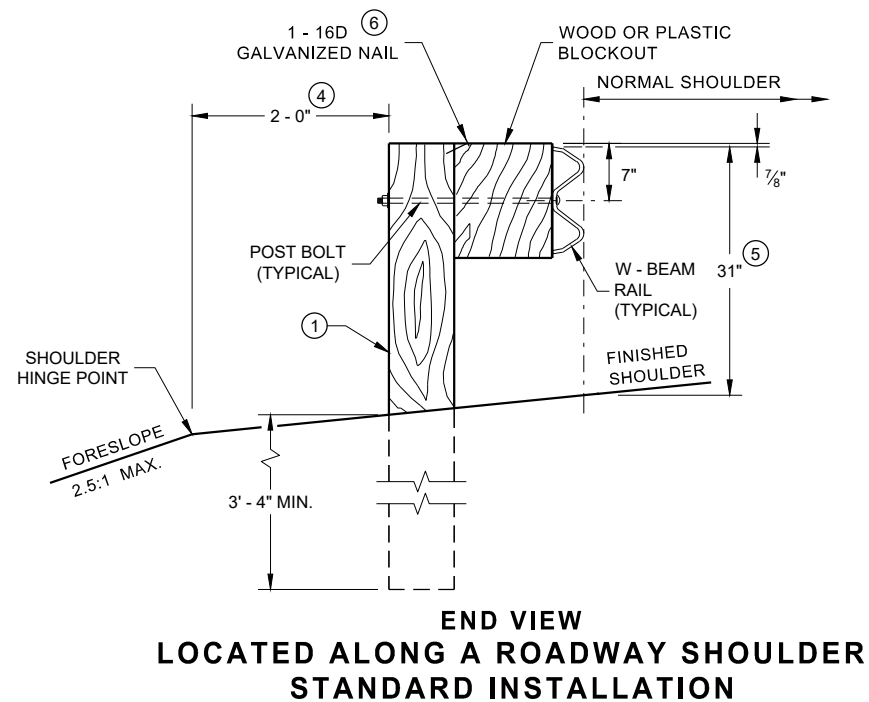
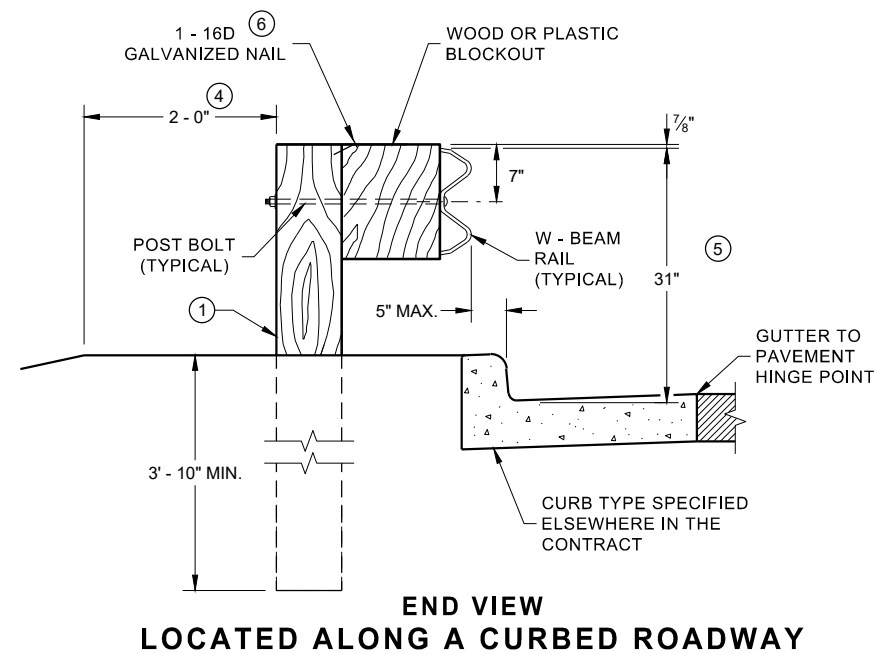
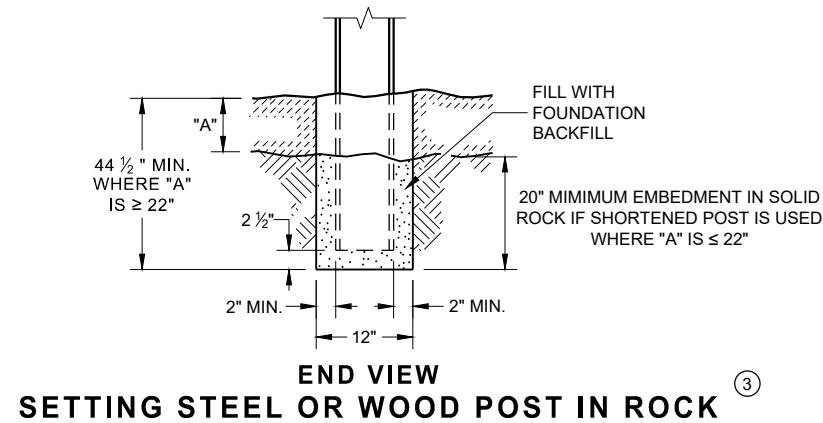
HMA PAVEMENT AND HMA OVERLAYS



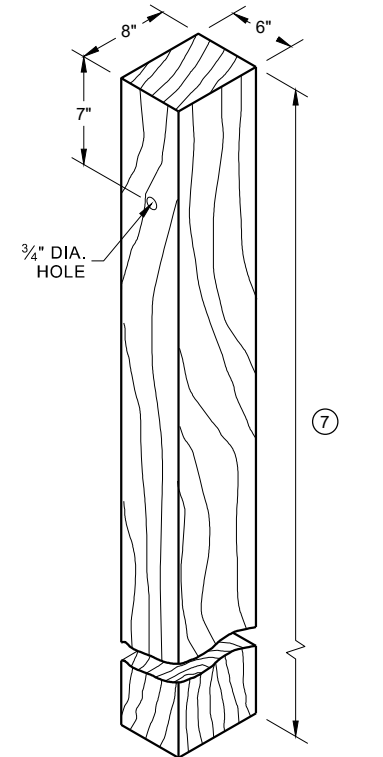
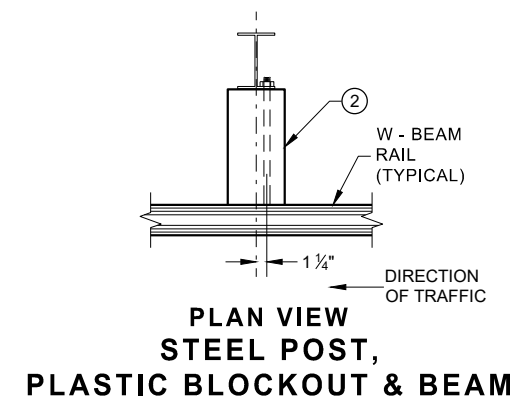
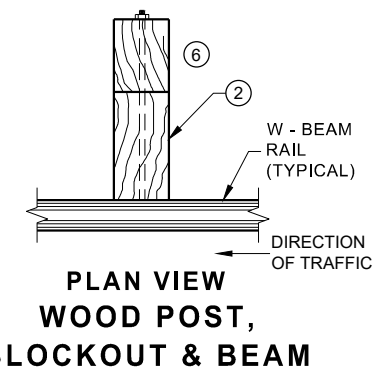
FINISHED SHOULDER AGGREGATE PLACEMENT

SAFETY EDGE _{SM}		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
APPROVED DATE 11/30/2012	/S/ Jerry H. Zoaga ROADWAY STANDARDS ENGINEER	61 ENT
FHWA		

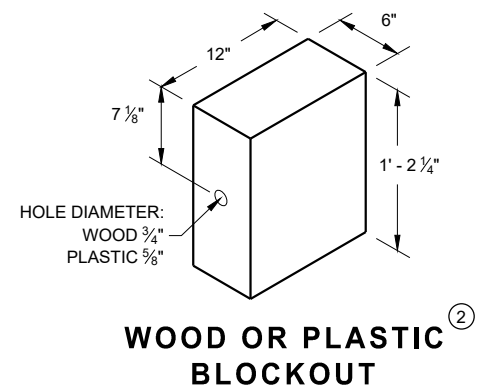
- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. 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 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 +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".



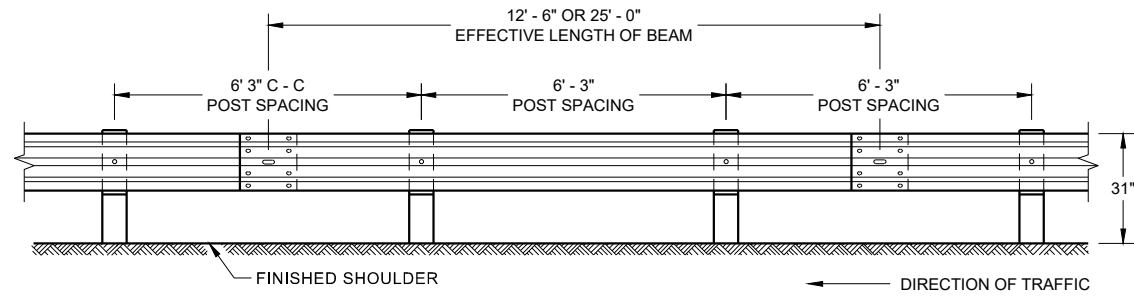
**STEEL POST & HOLE
PUNCHING DETAIL
(W 6 X 9) ①**



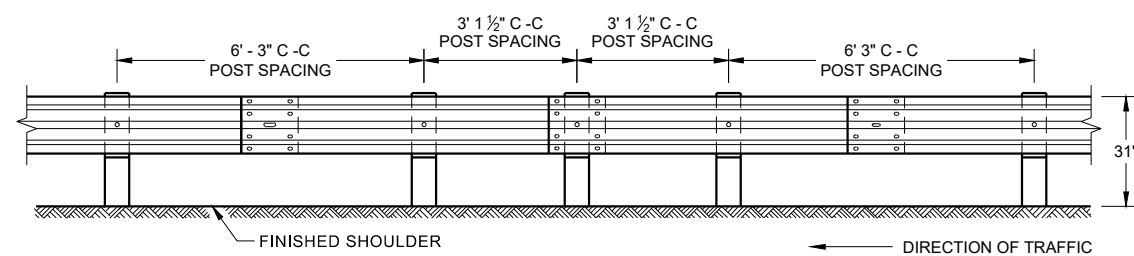
WOOD POST (6" X 8") NOMINAL ⁽¹⁾



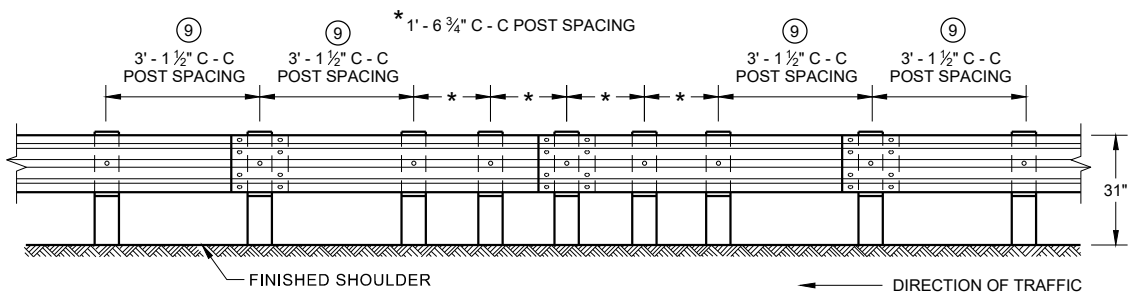
WOOD OR PLASTIC BLOCKOUT ⁽²⁾



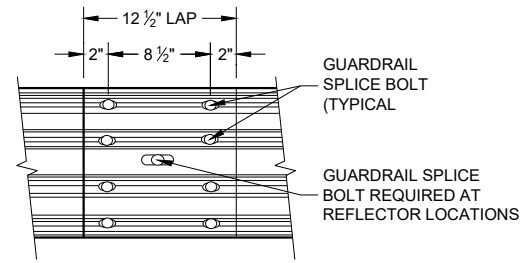
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



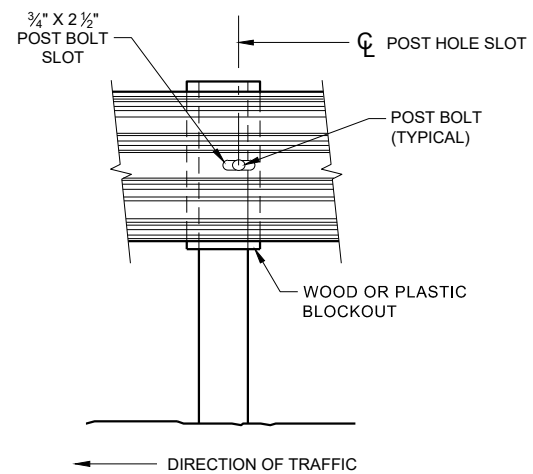
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



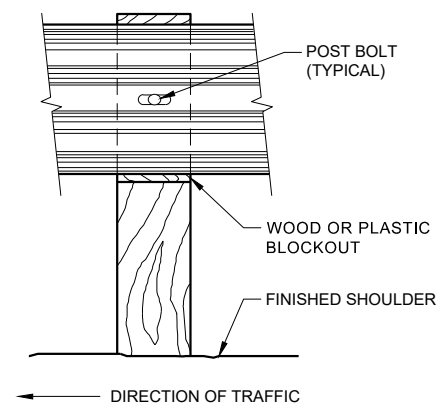
**FRONT VIEW
QUARTER POST SPACING (QS)**



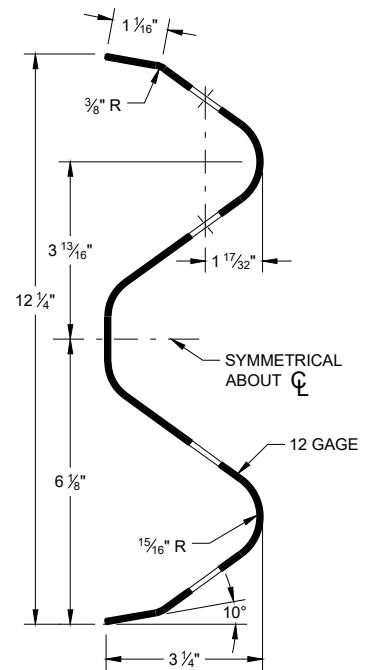
**FRONT VIEW
MID-SPAN BEAM SPLICE**



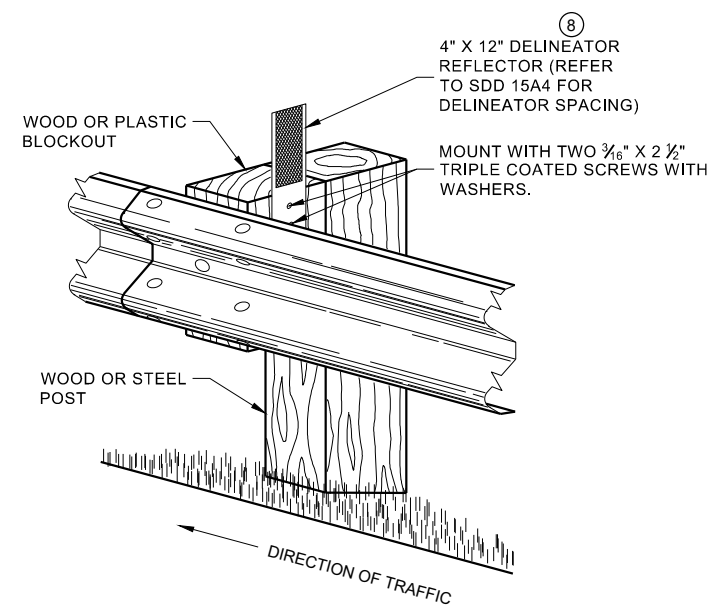
FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



SECTION THRU W-BEAM RAIL



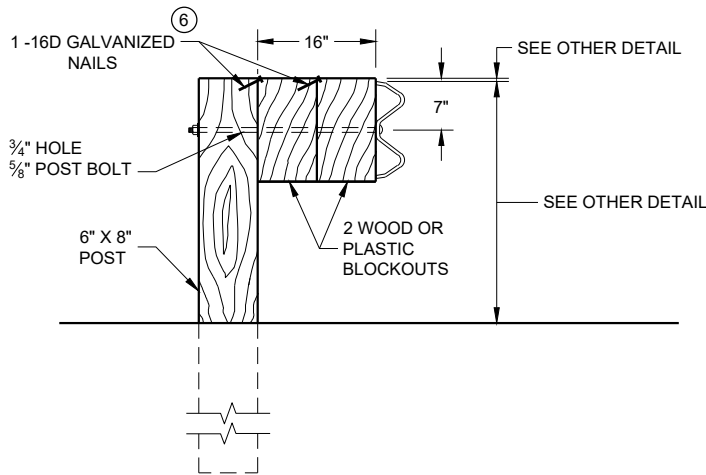
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

- 8 DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
 - 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 3/4" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.
- GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

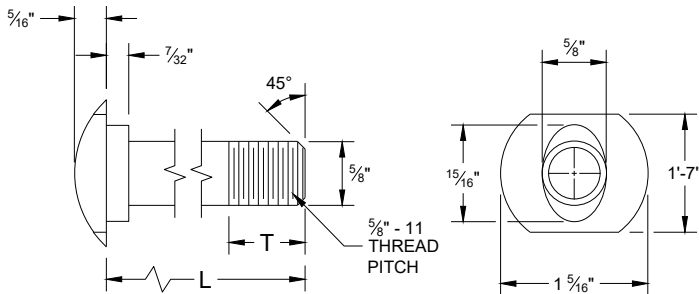
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

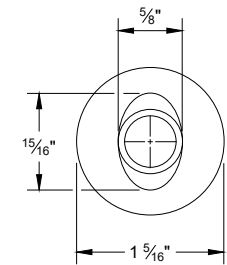
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.

- 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.

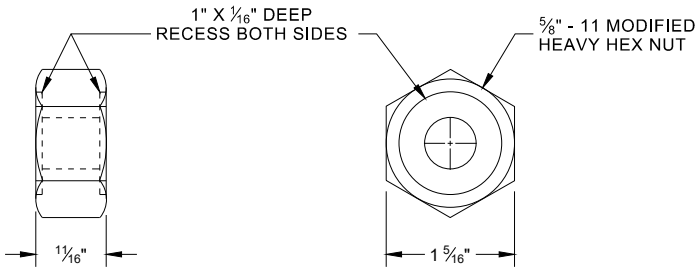


POST BOLT TABLE

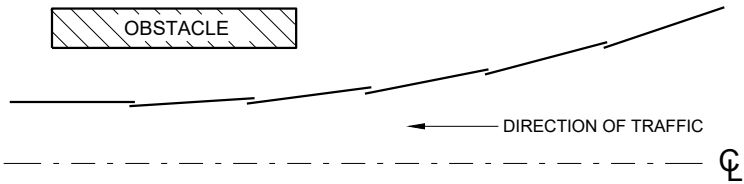
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



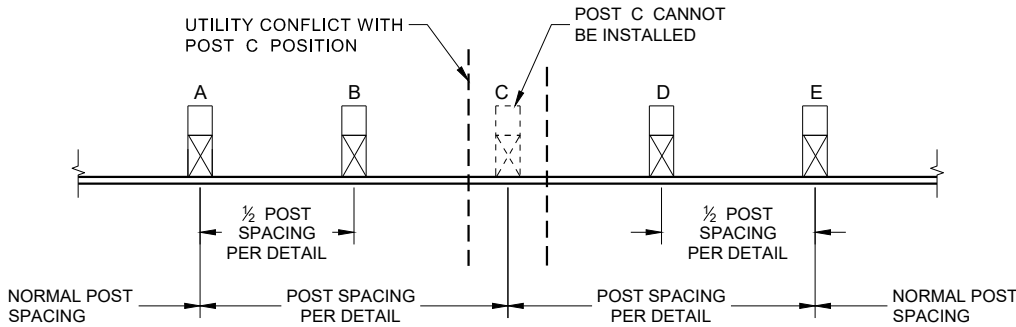
ALTERNATE BOLT HEAD



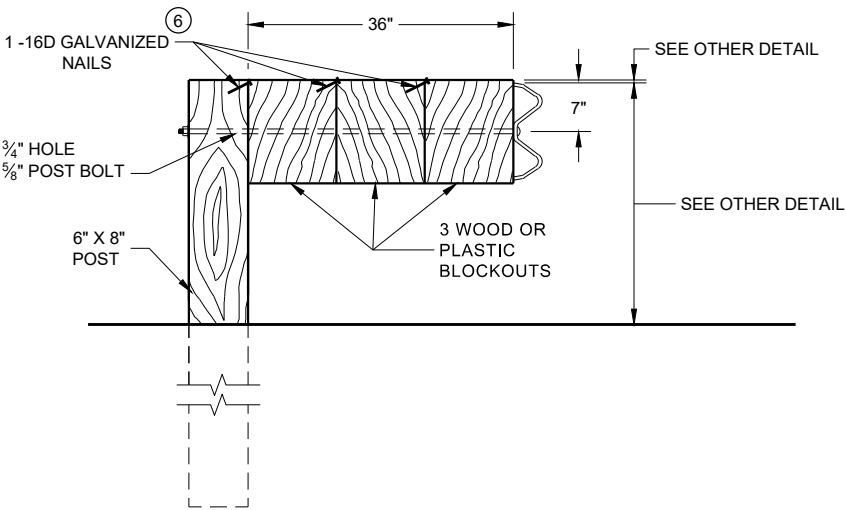
POST BOLT, SPLICE BOLT
AND RECESS NUT



PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION

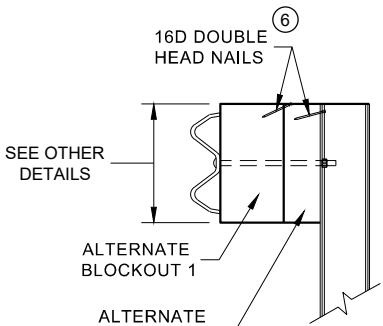


DETAIL FOR 36" BLOCKOUT DEPTH

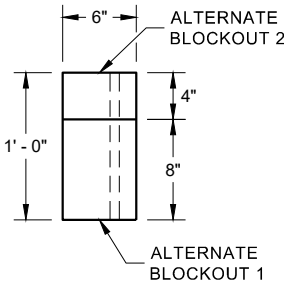
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.

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.

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



SIDE VIEW

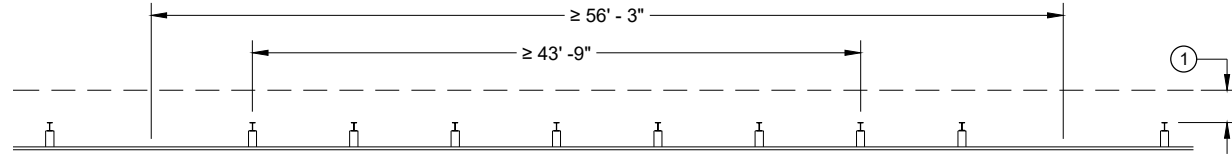


PLAN VIEW

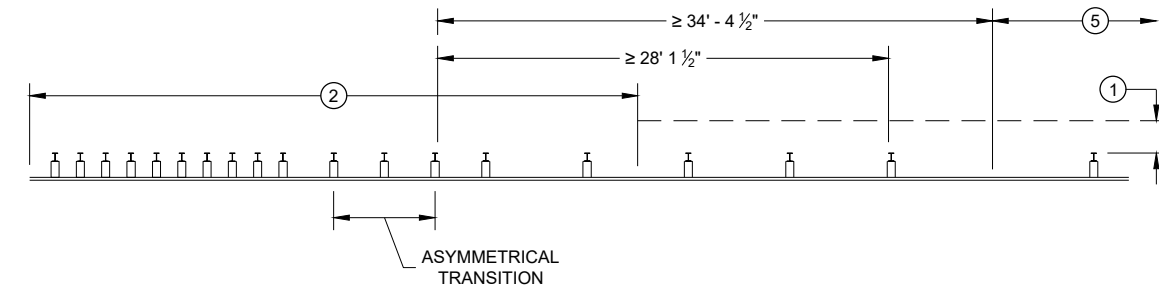
ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

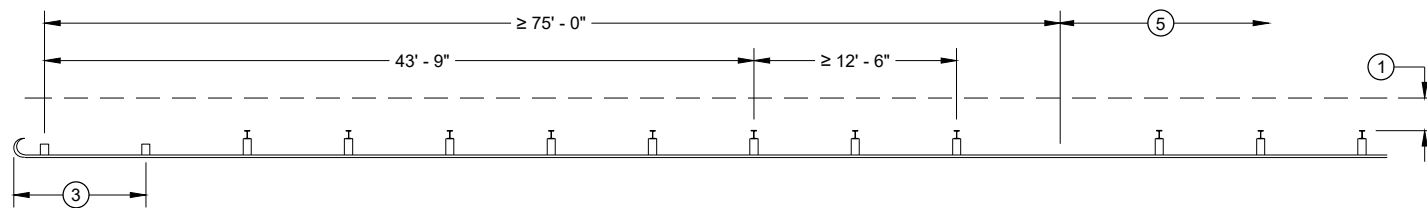
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



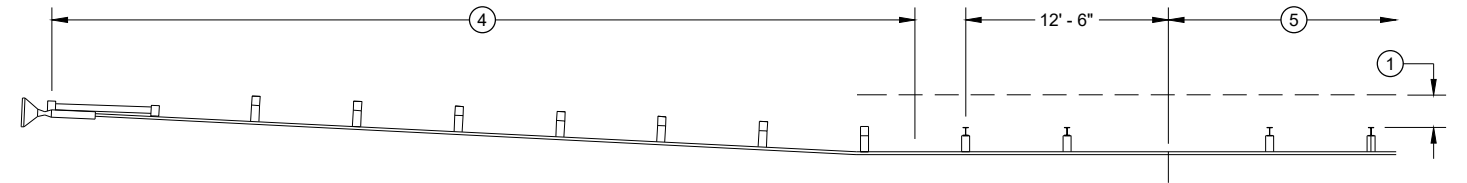
MISSING POST IN NORMAL BEAM GUARD RUN



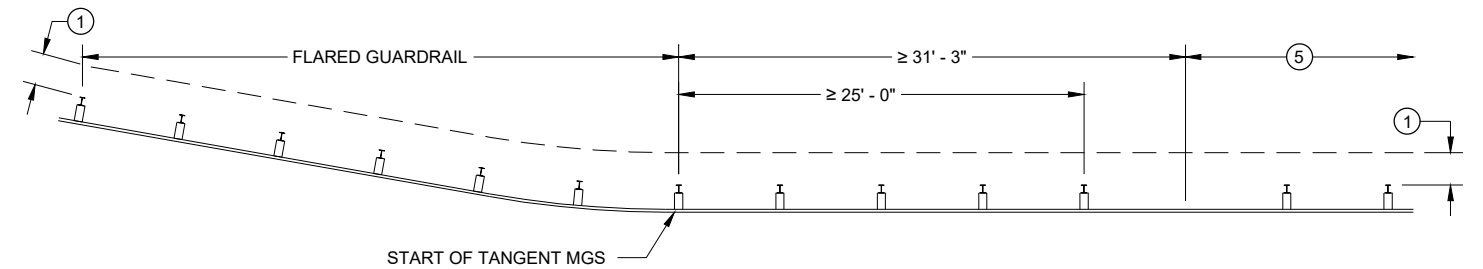
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



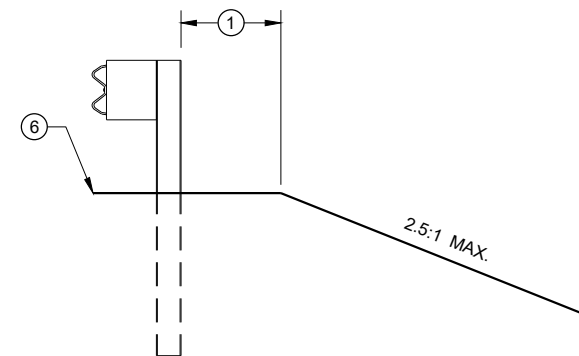
MISSING POST IN NORMAL BEAM GUARD RUN
NEAR TYPE 2 TERMINAL



MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR FLARED BEAM GUARD



CROSS SECTION VIEW

- ① MINIMUM OF 2 FEET OF GRADING BEHIND POST.
- ② SEE SDD 14B45 FOR MORE DETAILS.
- ③ SEE SDD 14B47 FOR MORE DETAILS.
- ④ SEE SDD 14B44 FOR MORE DETAILS.
- ⑤ SEE MISSING POST IN NORMAL BEAM GUARD RUN FOR DISTANCE TO NEXT MISSING POST AND AREA FOR WELL DRAINED, COMPACTED SOILS.
- ⑥ SEE PLAN FOR SHOULDER DESIGN.

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
65
FHWA

GENERAL NOTES

- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
 - (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
 - (C) DIFFERENT 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.

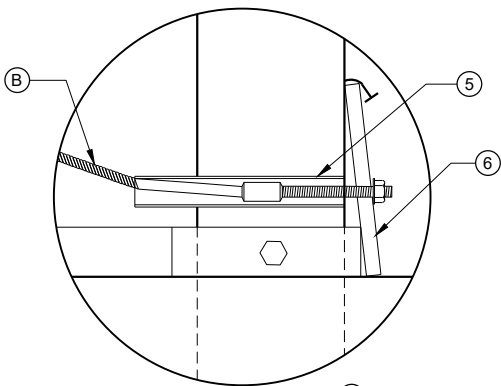
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

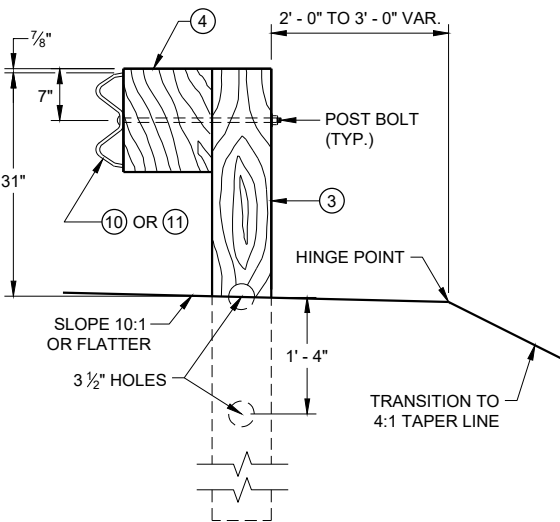
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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

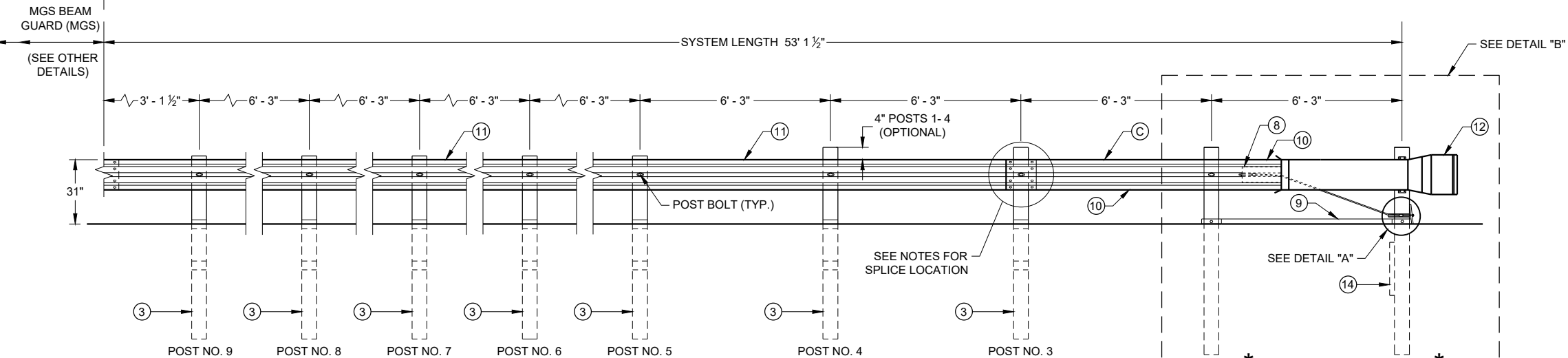
THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



DETAIL "A"

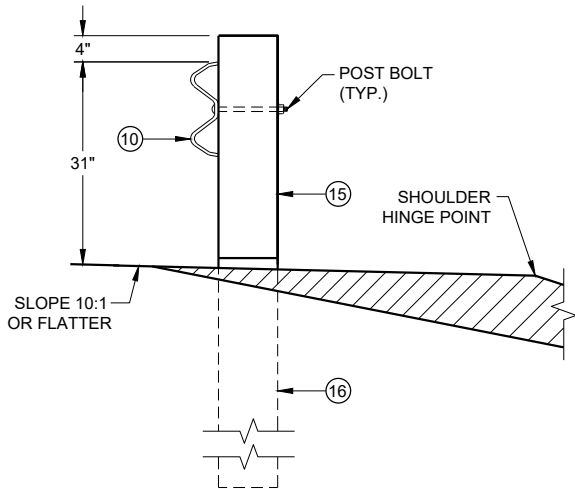


SECTION C - C
TYPICAL AT POST NOS. 3 - 9

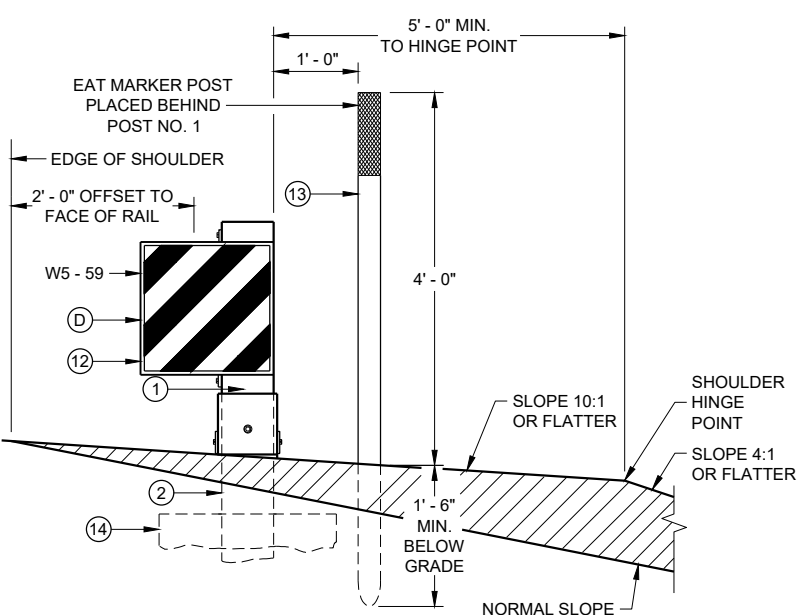


PLAN

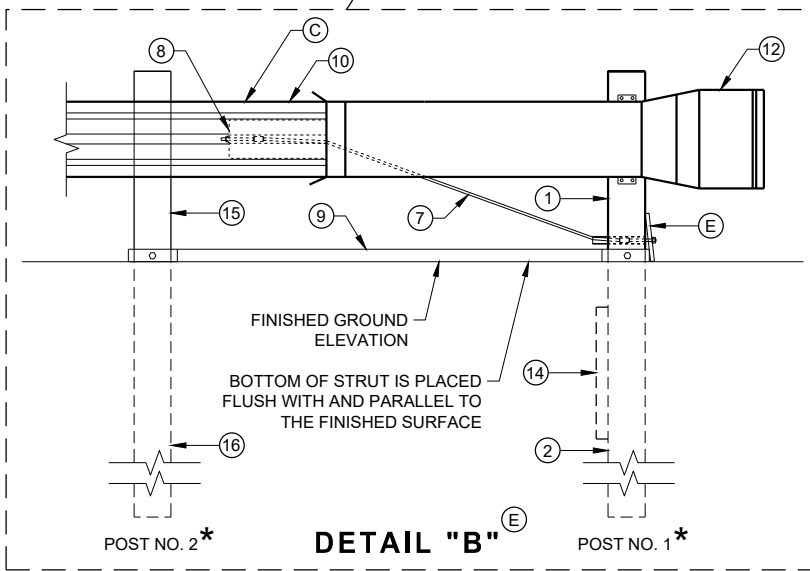
ELEVATION



SECTION B - B
TYPICAL AT POST NO. 2*



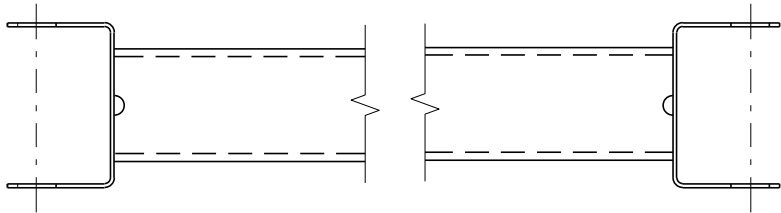
SECTION A - A
TYPICAL AT POST NO. 1*



DETAIL "B"

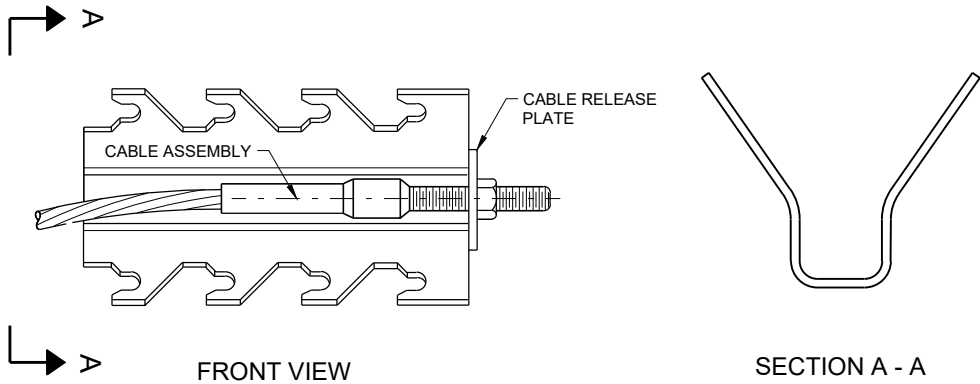
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

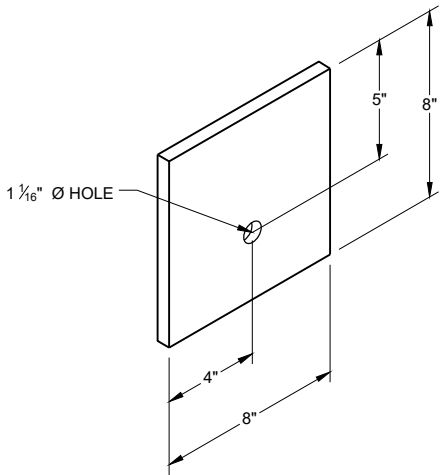


GENERIC GROUND STRUT⁹ ^E

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



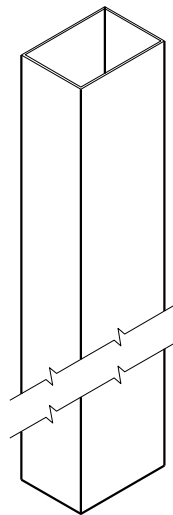
GENERIC ANCHOR CABLE BOX⁹ ^E



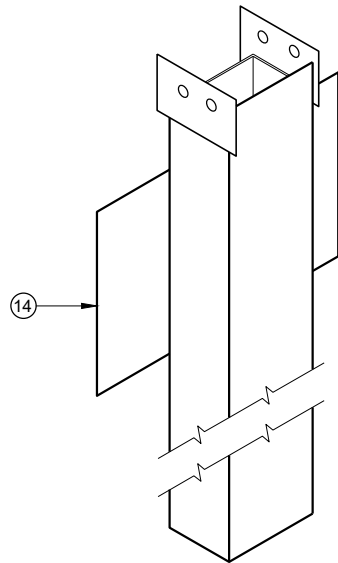
BEARING PLATE⁶ ^E

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

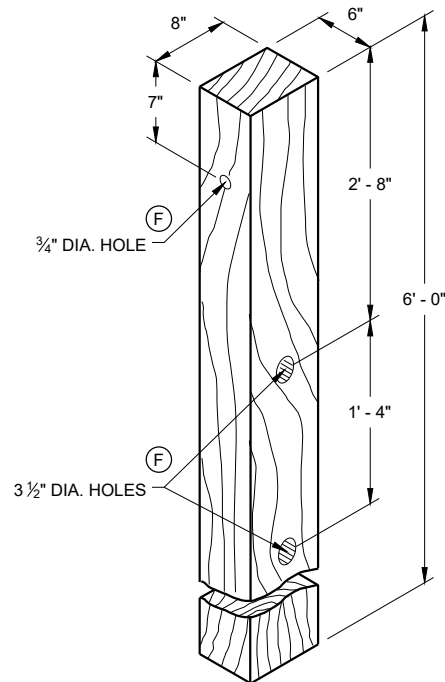
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



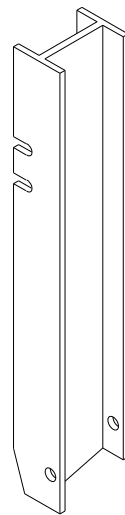
UPPER POST NO. 1 ⁽¹⁾ (E)



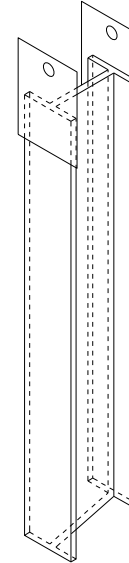
LOWER POST NO. 1 ⁽²⁾ (E)



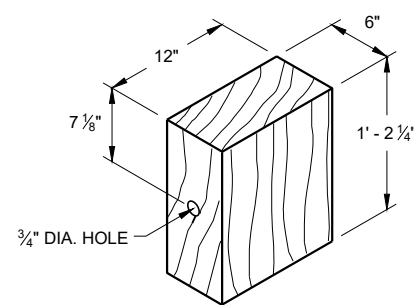
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



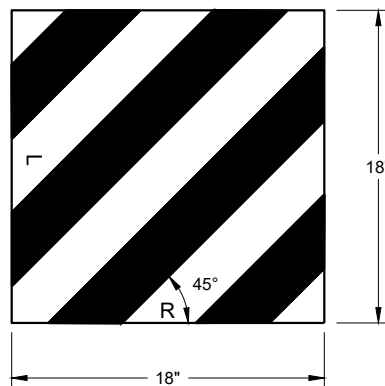
UPPER POST NO. 2 ⁽¹⁵⁾ (E)



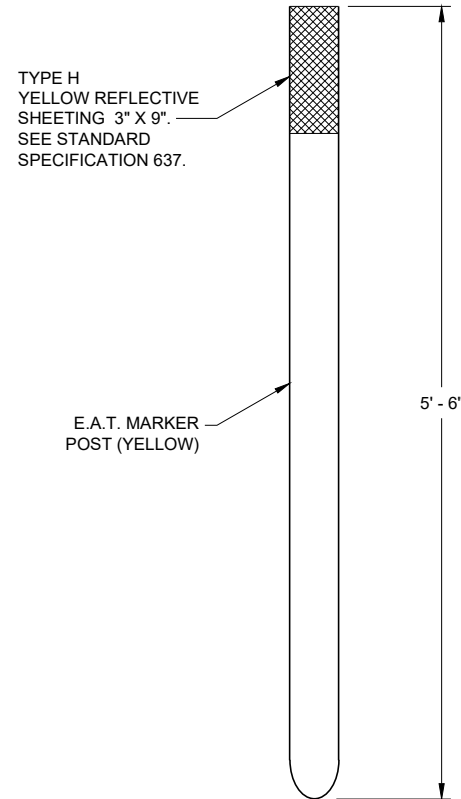
LOWER POST NO. 2 ⁽¹⁶⁾ (E)



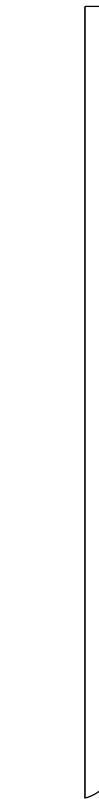
WOOD BLOCKOUT ⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



REFLECTIVE SHEETING DETAIL ^(E)

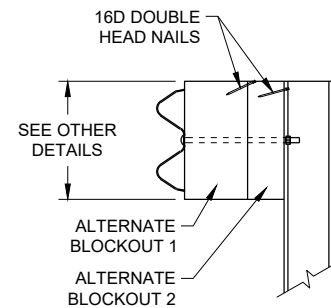


FRONT VIEW

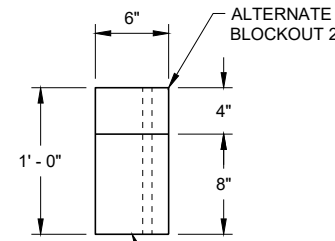


SIDE VIEW

E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW



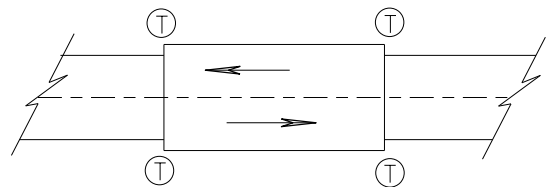
TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

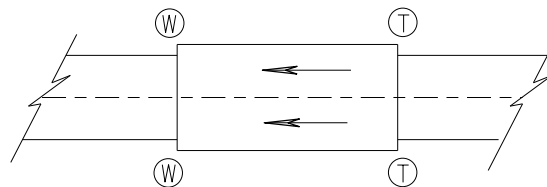
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
68
FHWA



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

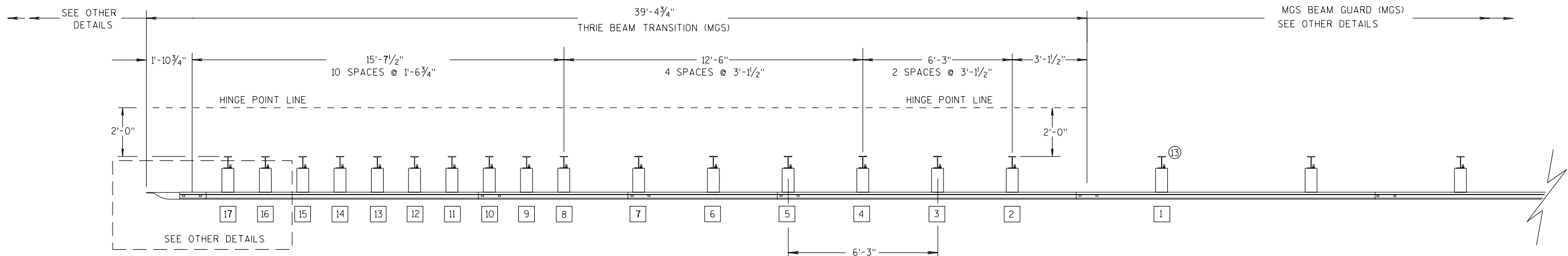
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

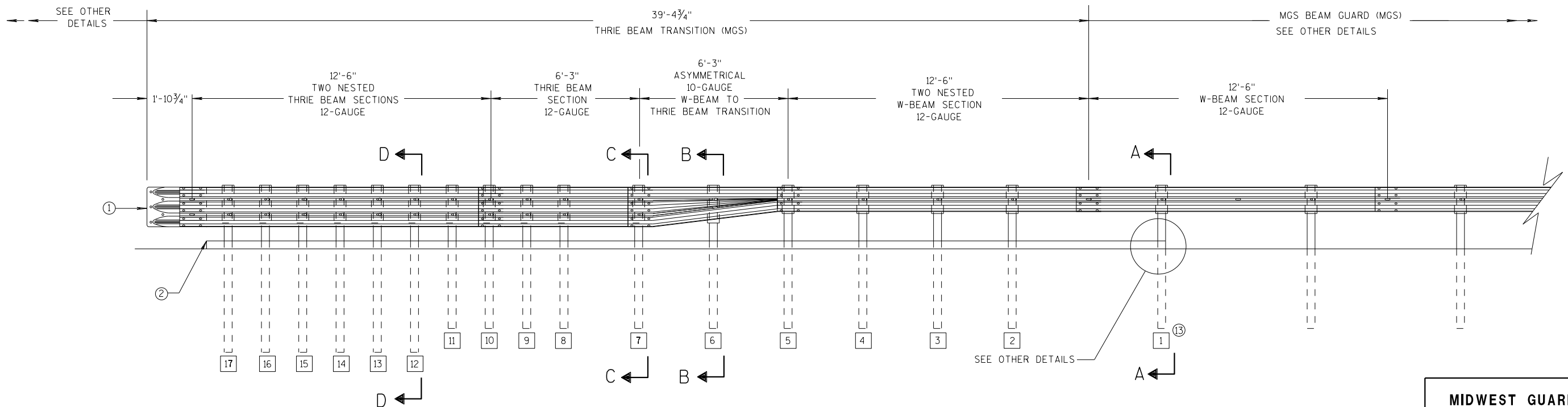
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

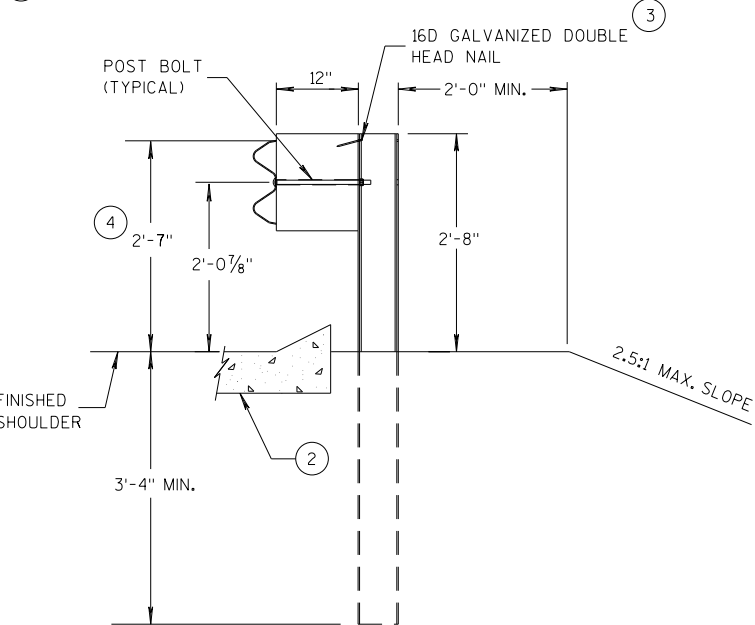
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

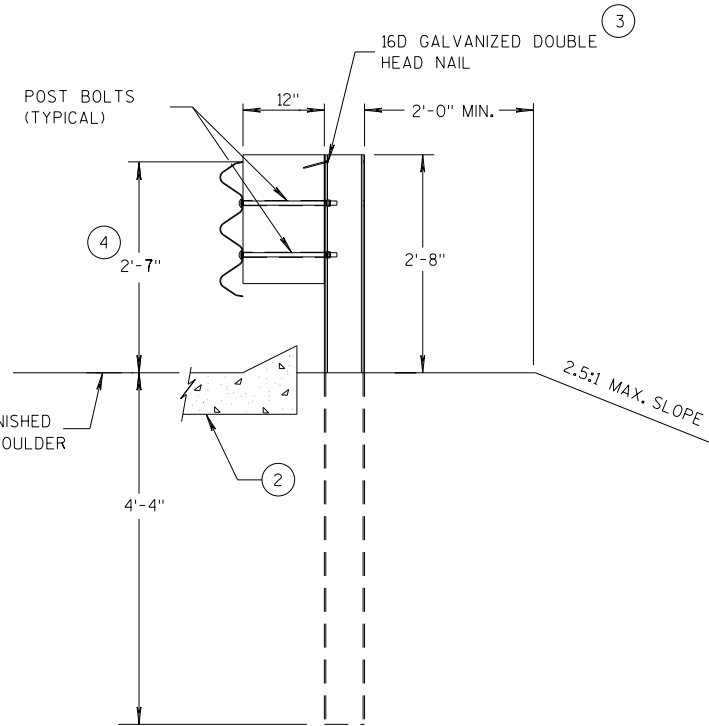
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

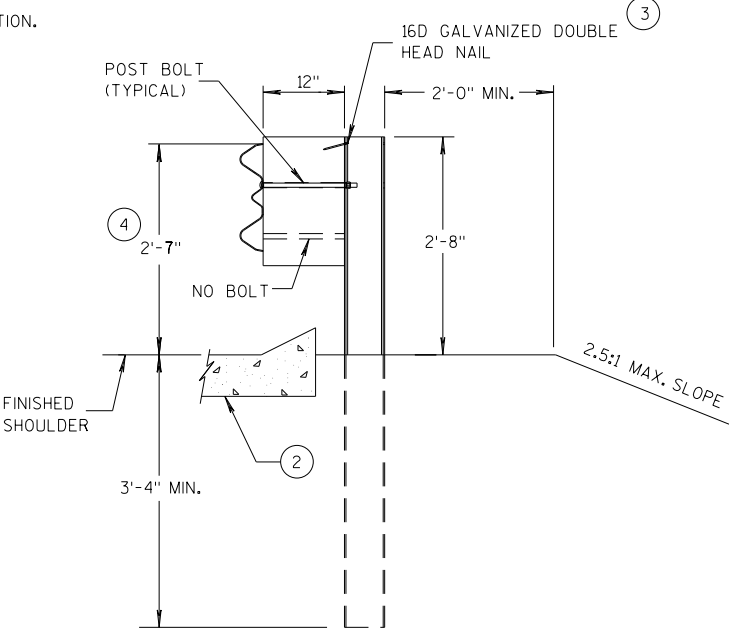
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".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



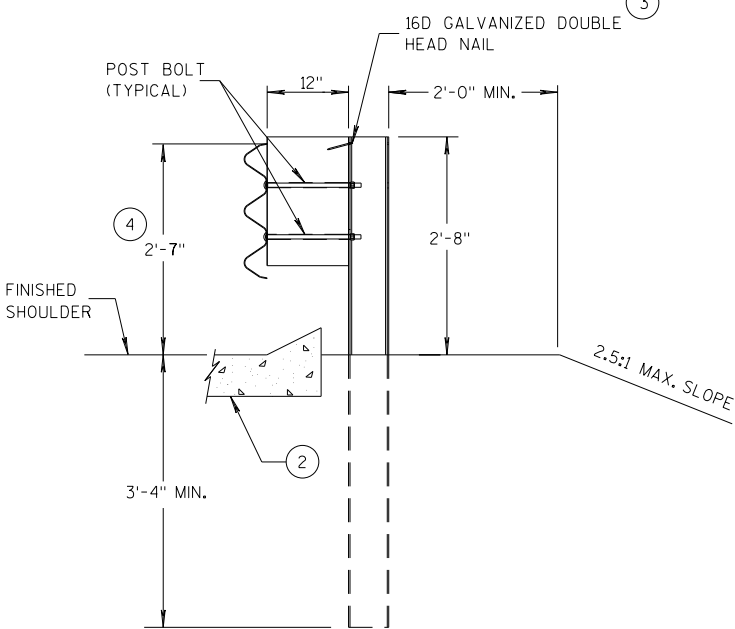
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

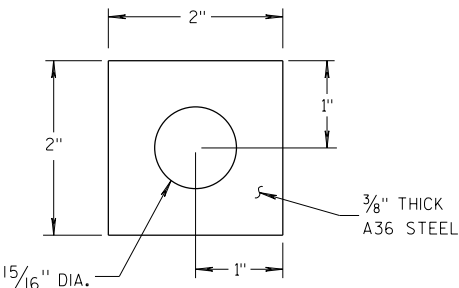
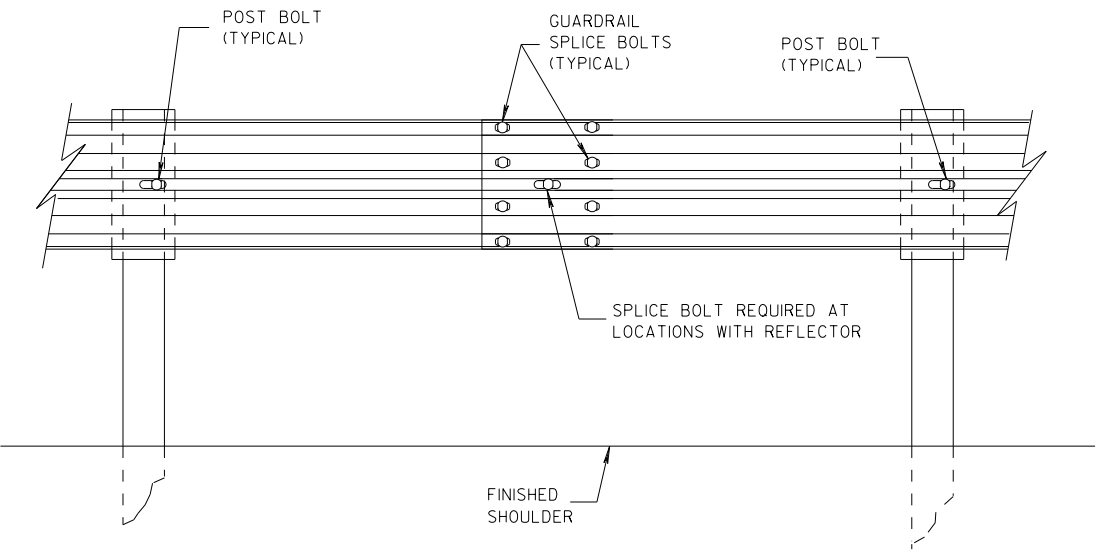
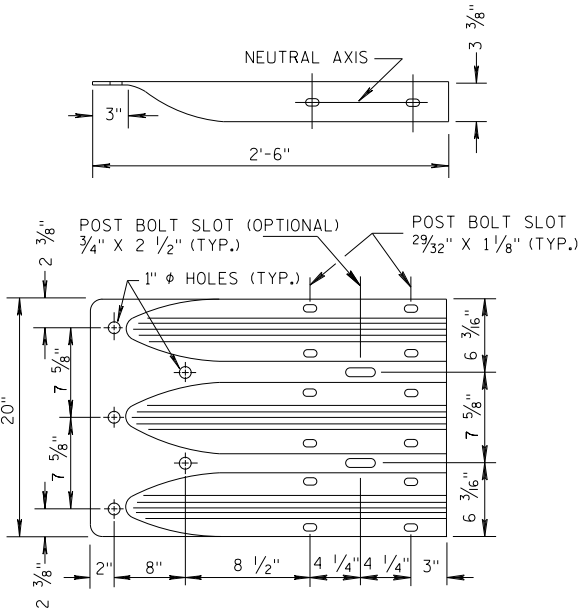


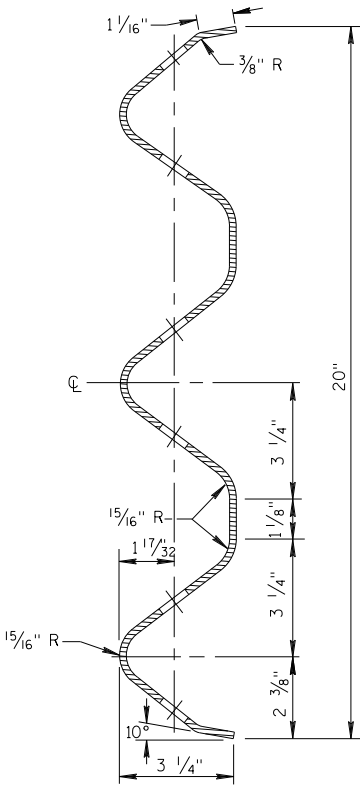
PLATE WASHER DETAIL



SPlice DETAIL



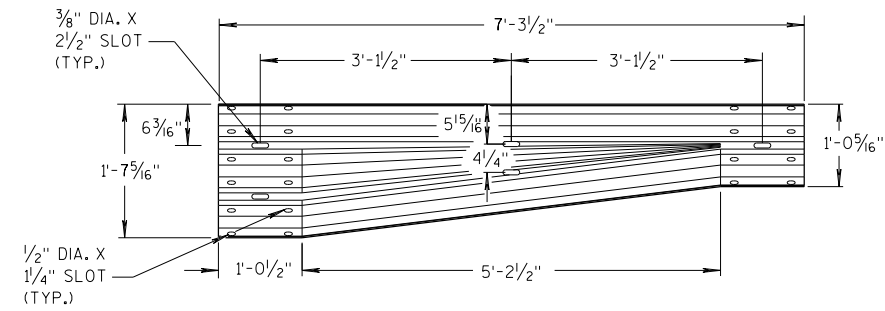
THRIE BEAM
TERMINAL CONNECTOR



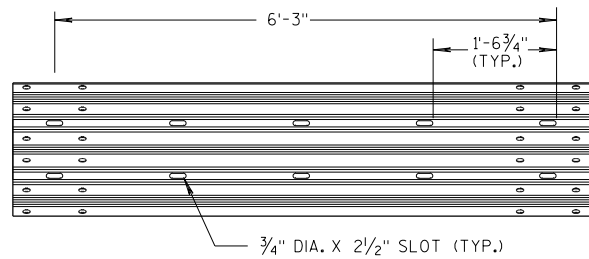
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

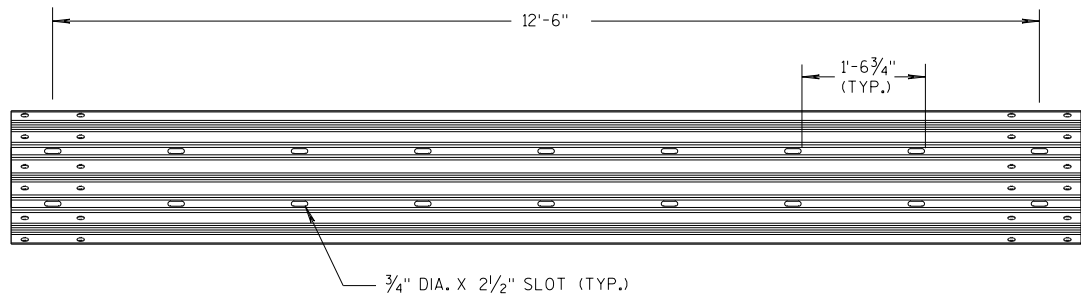
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



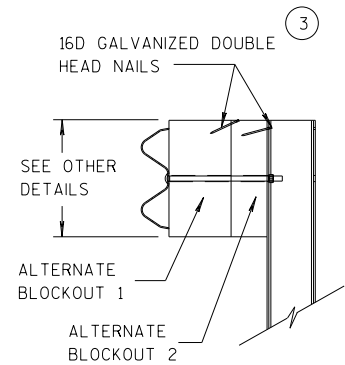
W-BEAM TO THRIE BEAM TRANSITION SECTION



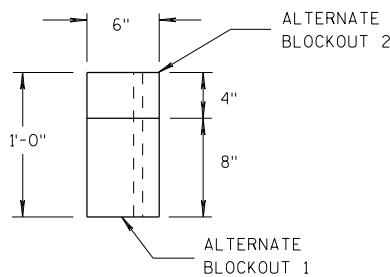
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

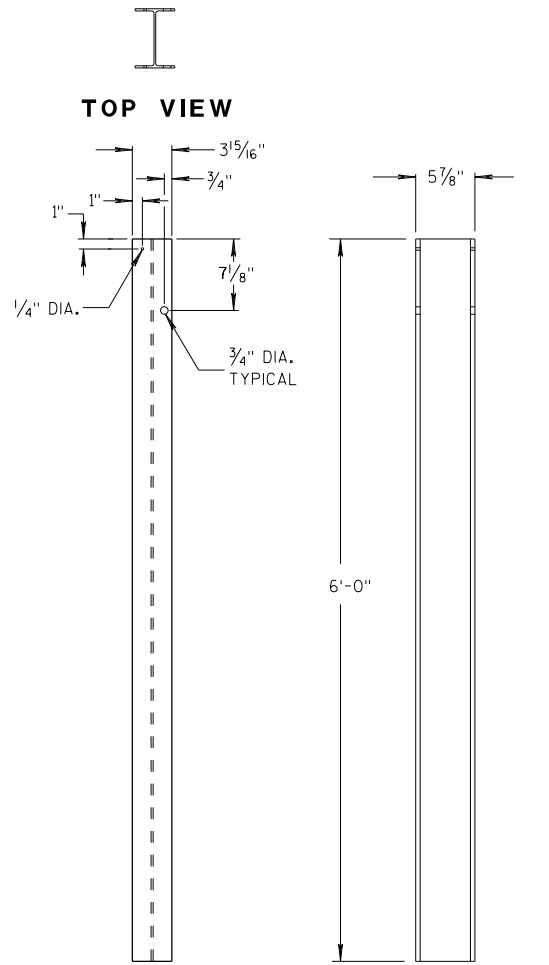


SIDE VIEW



TOP VIEW

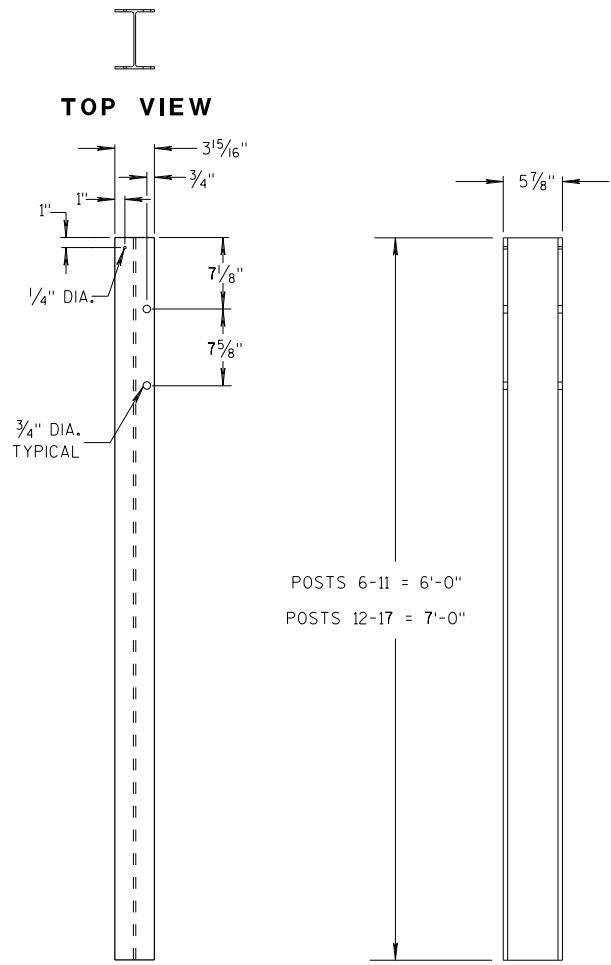
ALTERNATE WOOD BLOCKOUT DETAIL



FRONT VIEW

SIDE VIEW

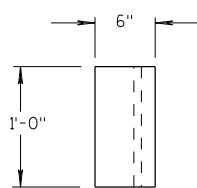
STEEL POSTS 1-5



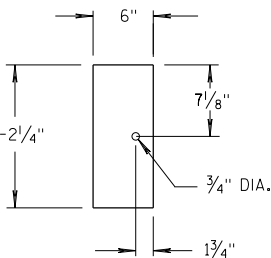
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17

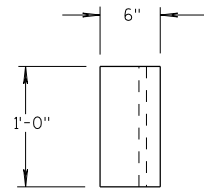


TOP VIEW

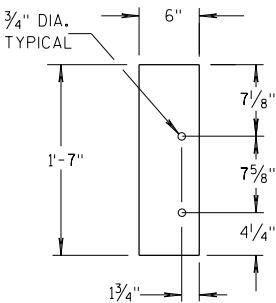


FRONT VIEW

BLOCKOUT POSTS 1-5



TOP VIEW



FRONT 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.

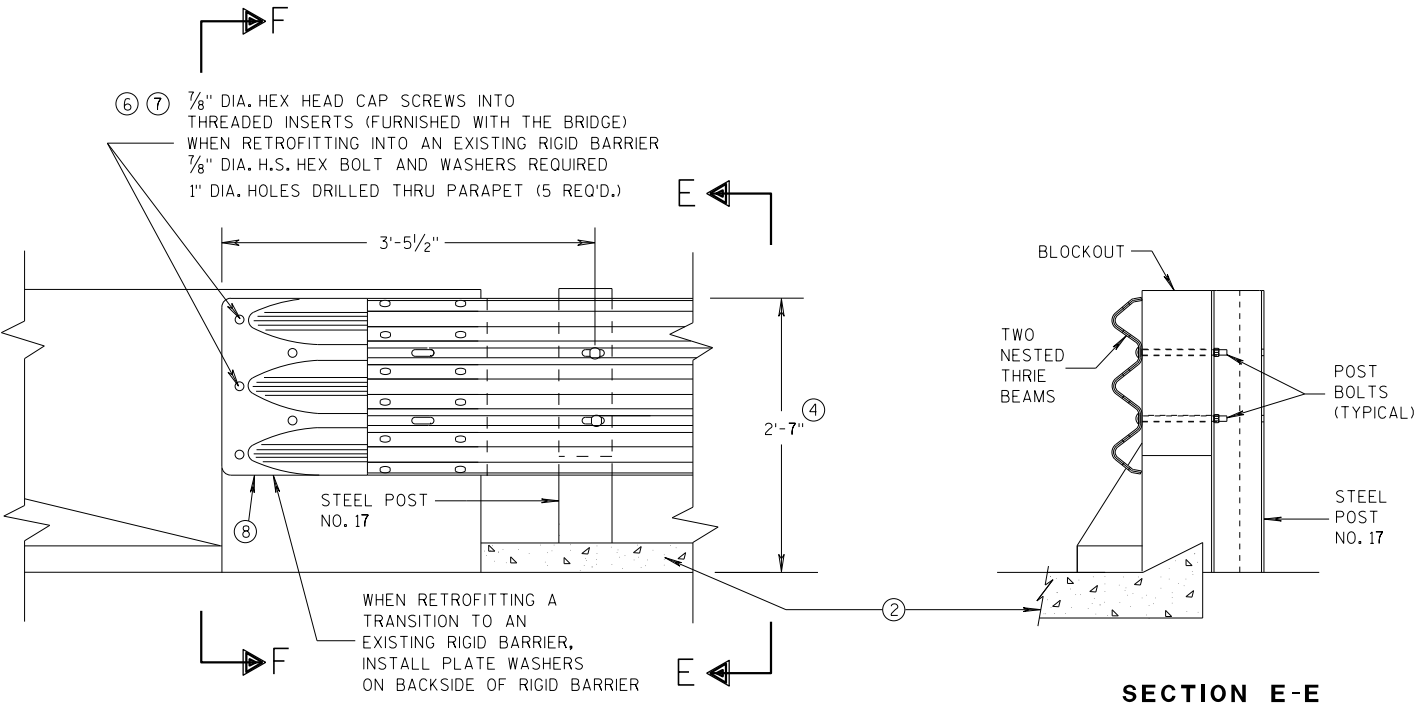
③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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.

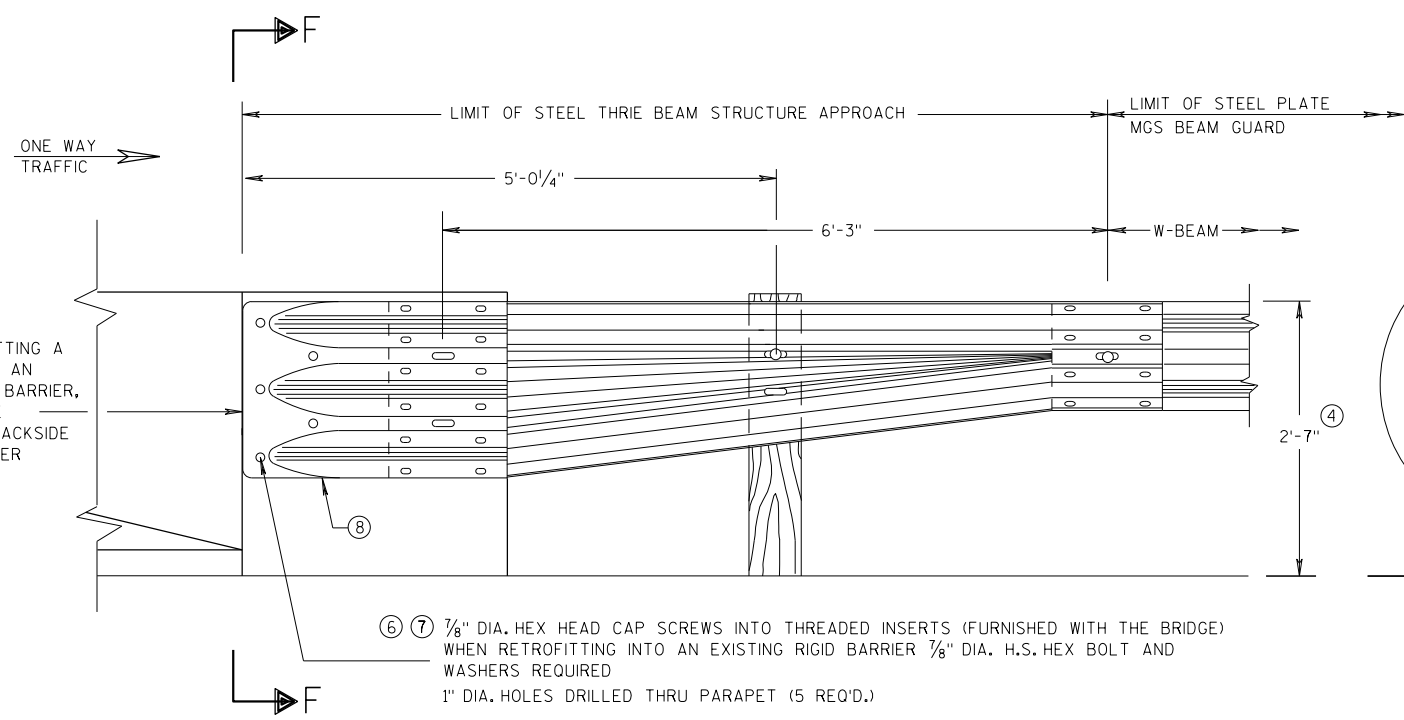
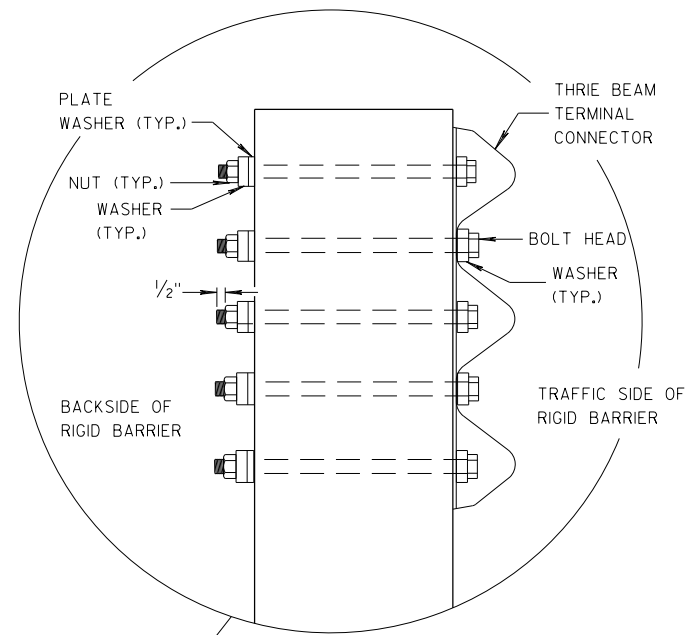
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

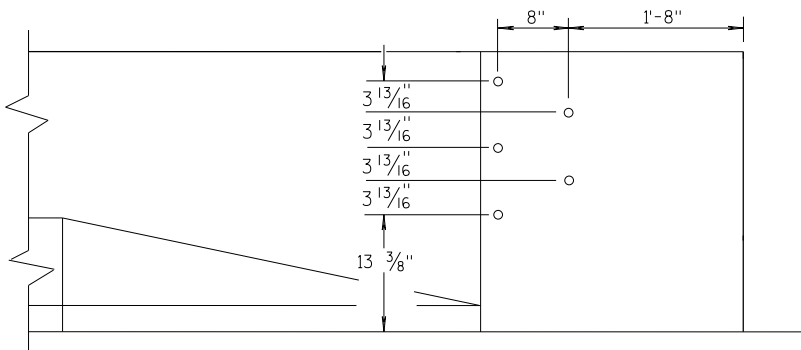


GENERAL NOTES

- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION 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 5/8" 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".



SECTION F-F



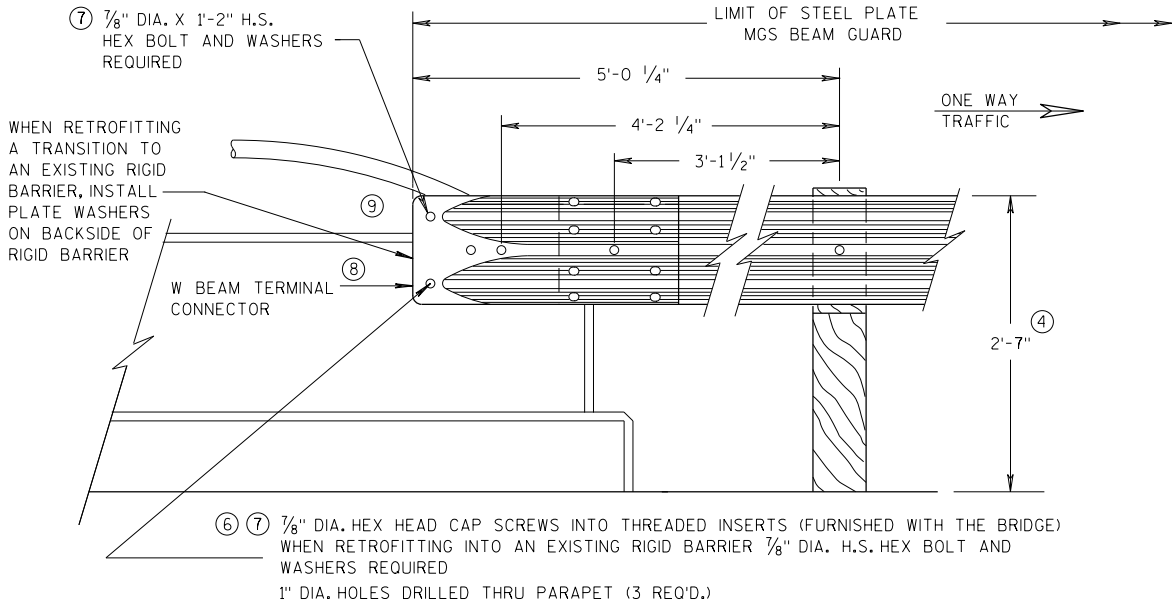
DRILL HOLE LOCATION

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
APPROVED 07/2018	/S/ Rodney Taylor		
DATE	ROADWAY STANDARDS	72	INT
FHWA	UNIT SUPERVISOR		

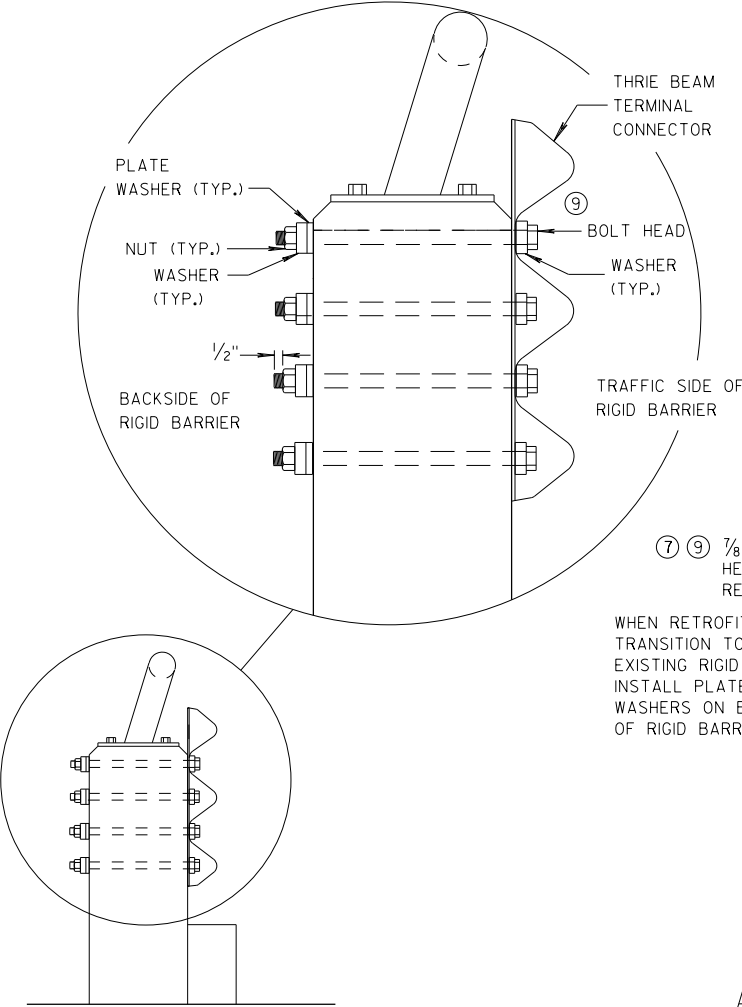
GENERAL NOTES

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

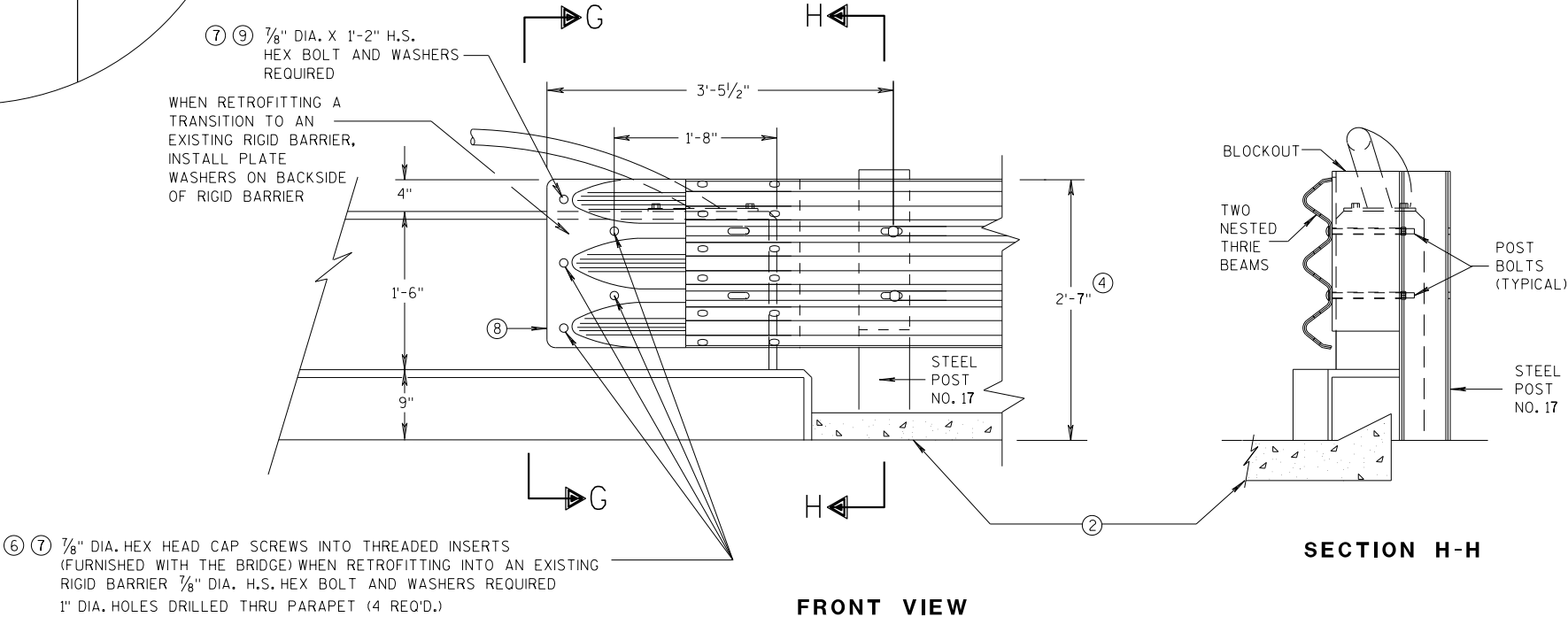
- ②
- OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④
- TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥
- DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦
- BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT 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 $\frac{5}{8}"$ 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 $\frac{1}{2}"$.
- 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)

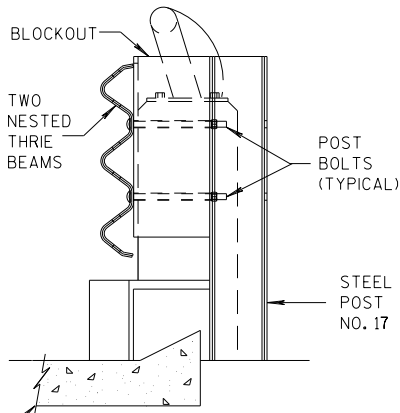


SECTION G-G



FRONT VIEW

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS

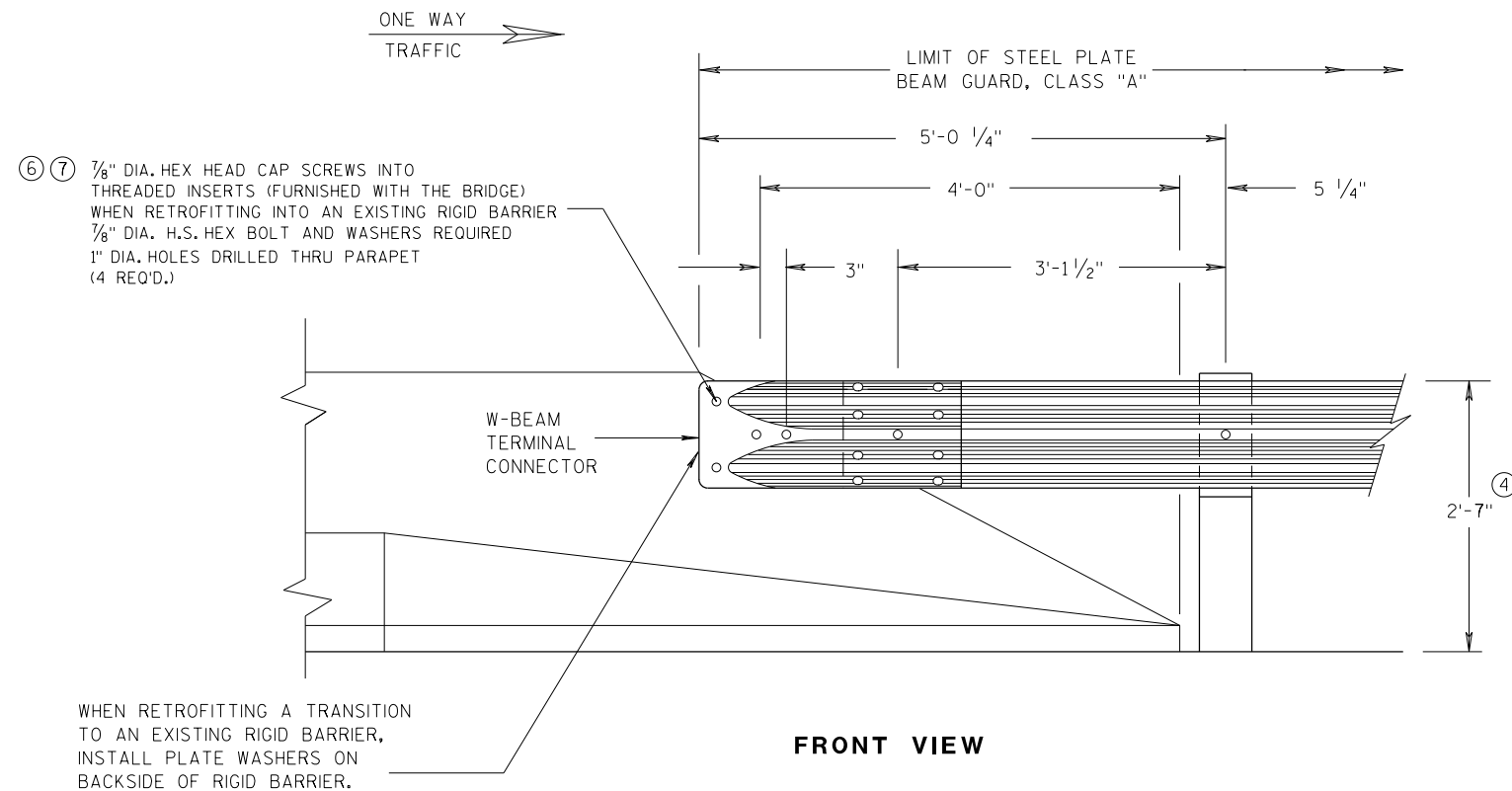


SECTION H-H

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

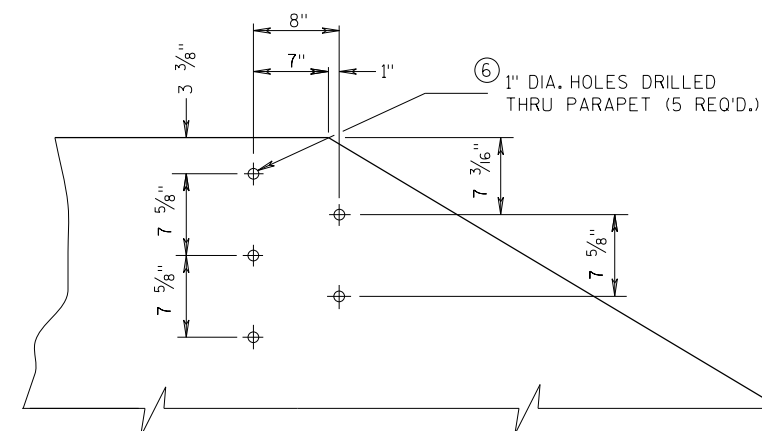
APPROVED
07/2018 /S/ Rodney Taylor
DATE ROADWAY STANDARDS UNIT SUPERVISOR
FHWA 73



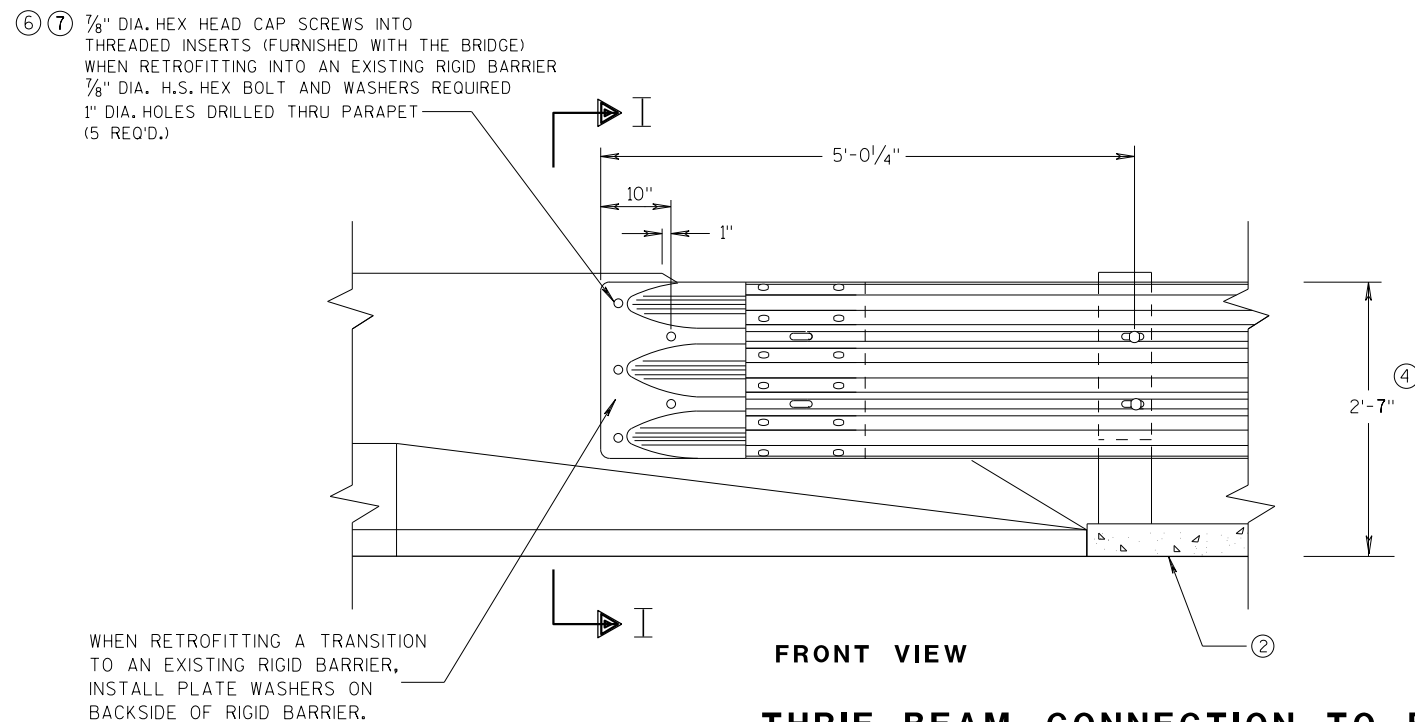
**W BEAM CONNECTION TO
PARAPETS WITH SLOPED ENDS**
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

GENERAL NOTES

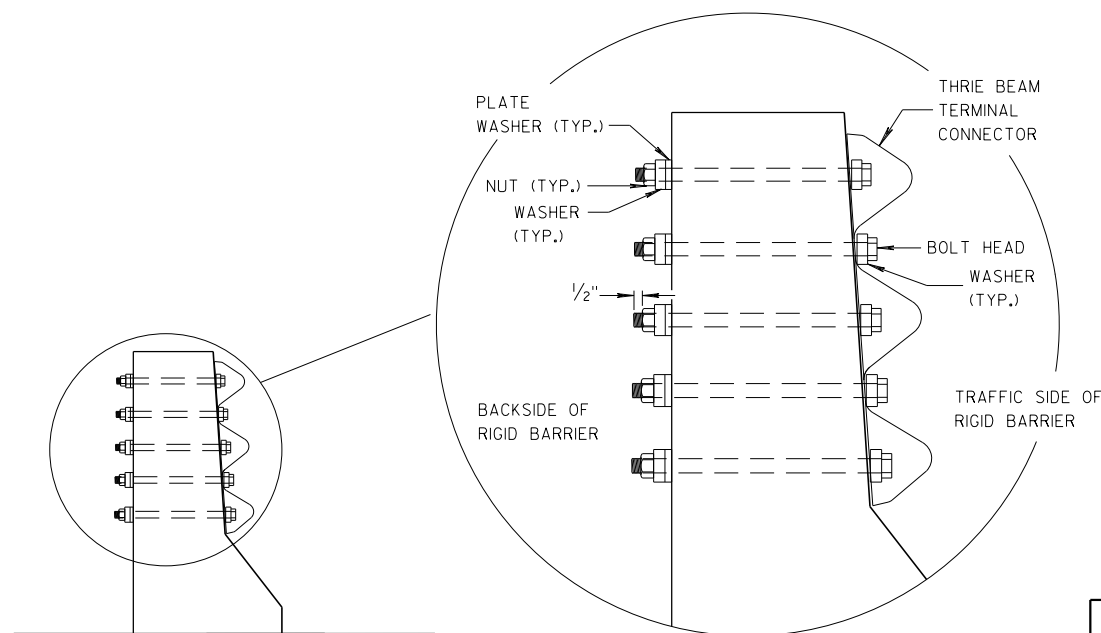
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH 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 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



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



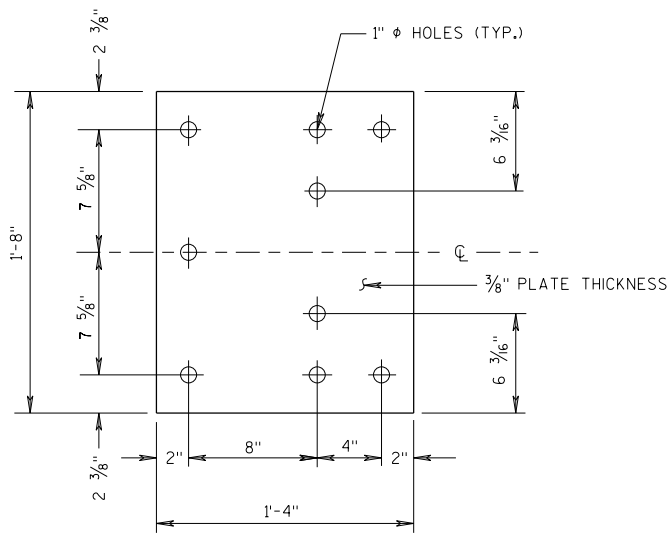
**THRIE BEAM CONNECTION TO BRIDGE
PARAPETS WITH SLOPED ENDS**



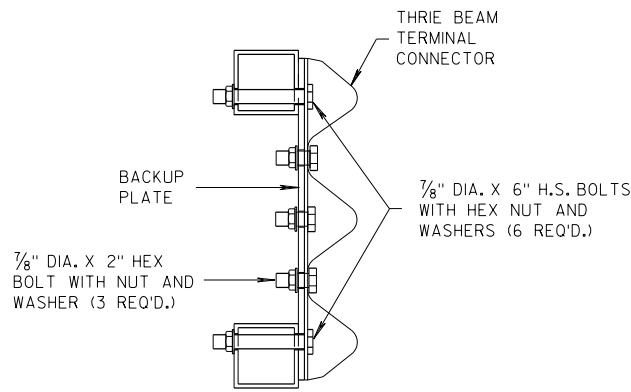
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

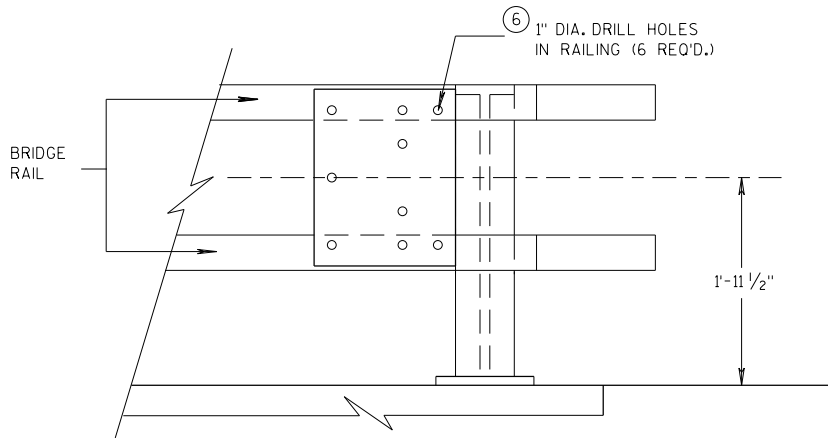
APPROVED
DATE 07/2018 /S/ Rodney Taylor
ROADWAY STANDARDS UNIT SUPERVISOR 74
FHWA



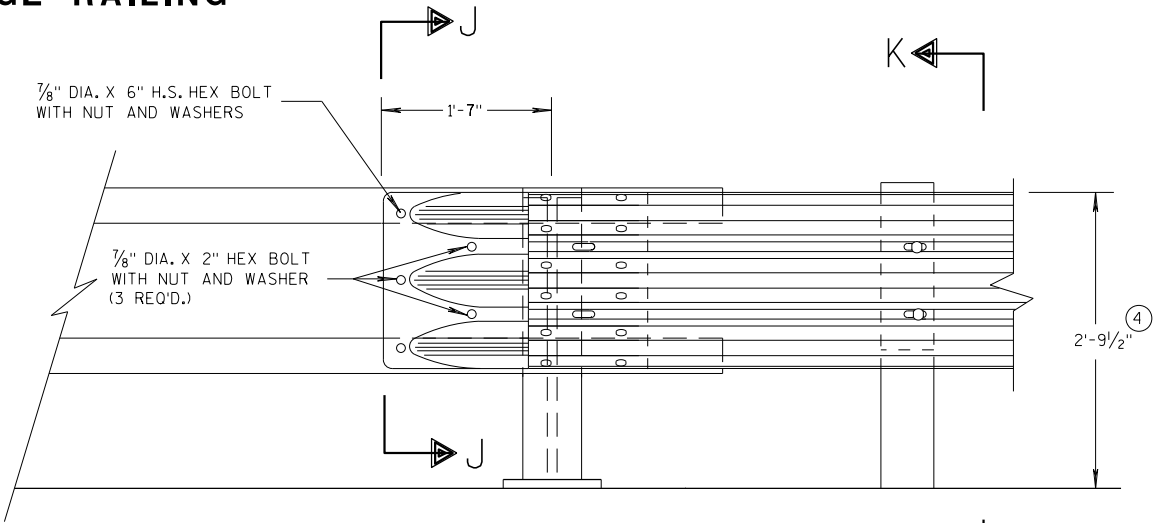
BACK-UP PLATE DETAIL



SECTION J-J

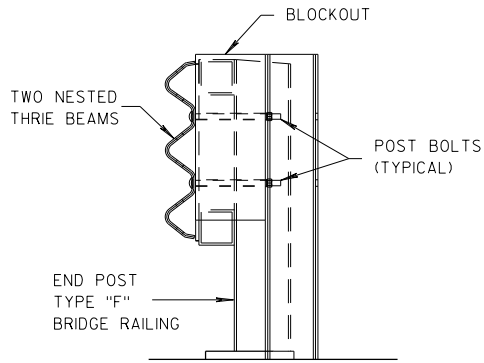


BACK-UP PLATE MOUNTING
ONTO BRIDGE RAILING



FRONT VIEW

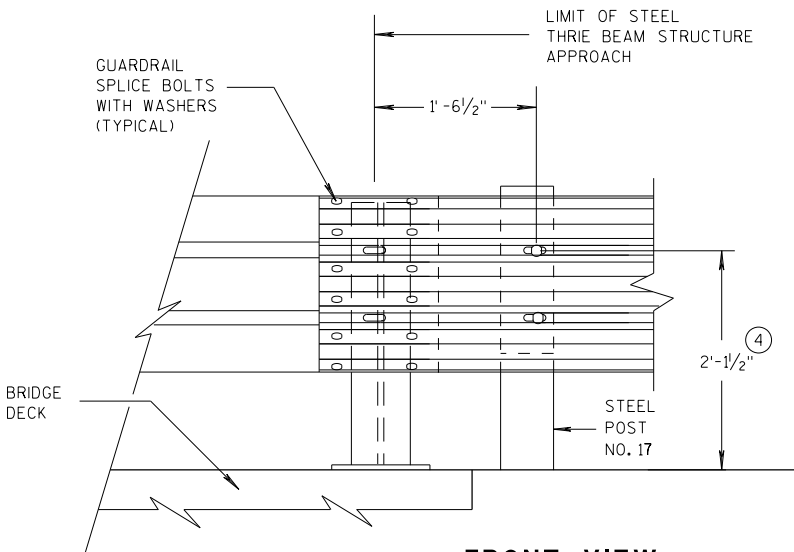
THRIE BEAM CONNECTION TO
TUBULAR RAILING TYPE "F"



SECTION K-K

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.



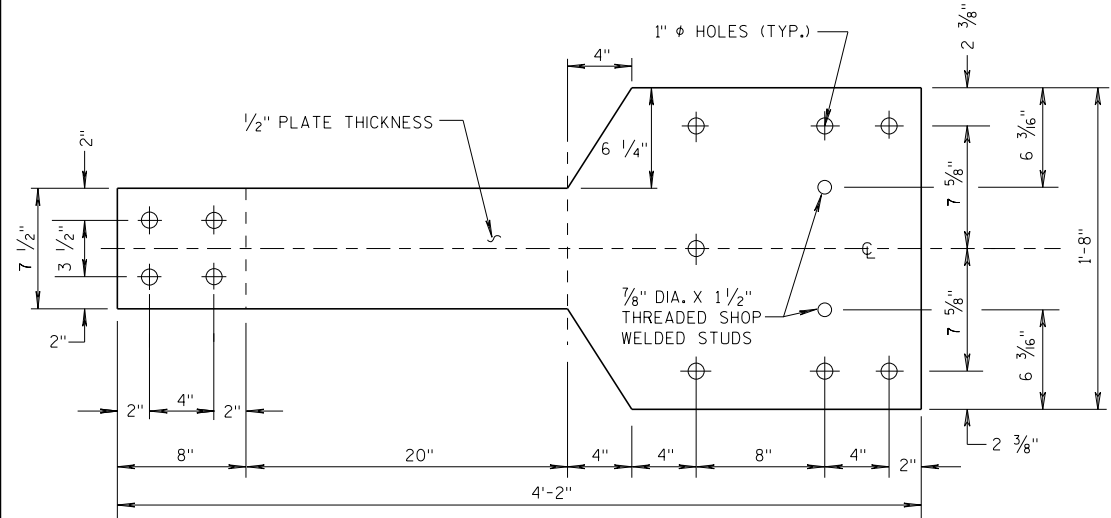
FRONT VIEW

THRIE BEAM CONNECTION TO
STEEL RAILING TYPE "W"

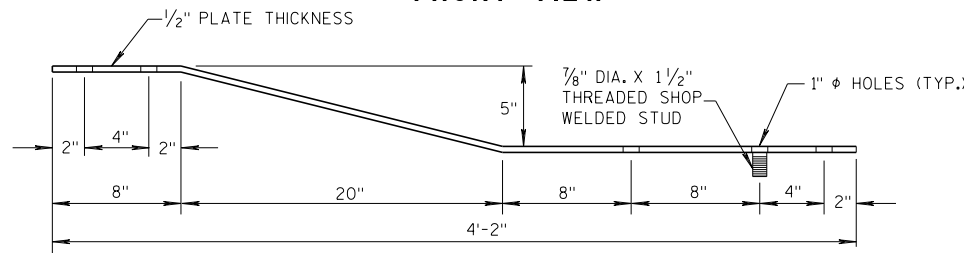
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
APPROVED 07/2018	/S/ Rodney Taylor	75
DATE	ROADWAY STANDARDS DEVELOPMENT	UNIT SUPERVISOR
FHWA		

GENERAL NOTES

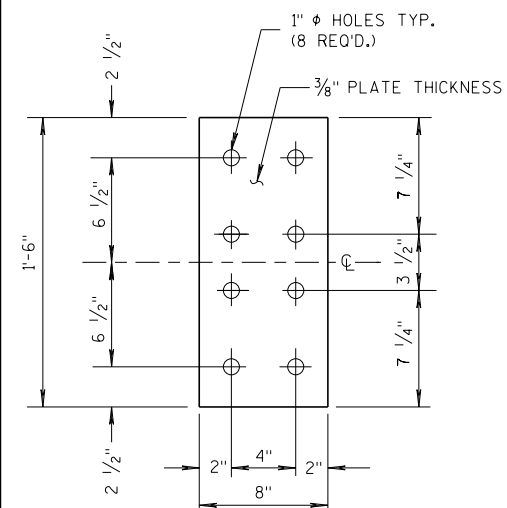
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.



FRONT VIEW

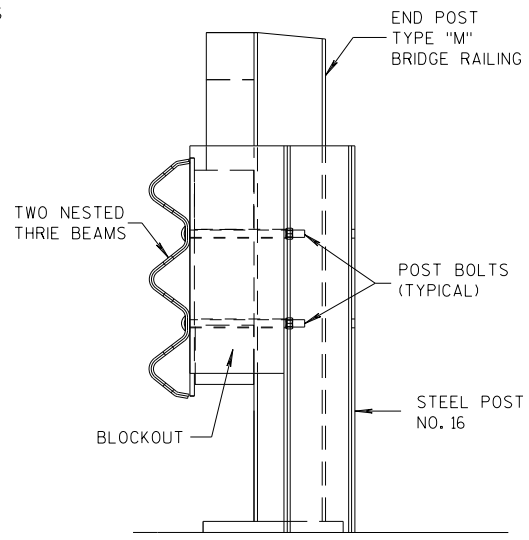


**PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"**

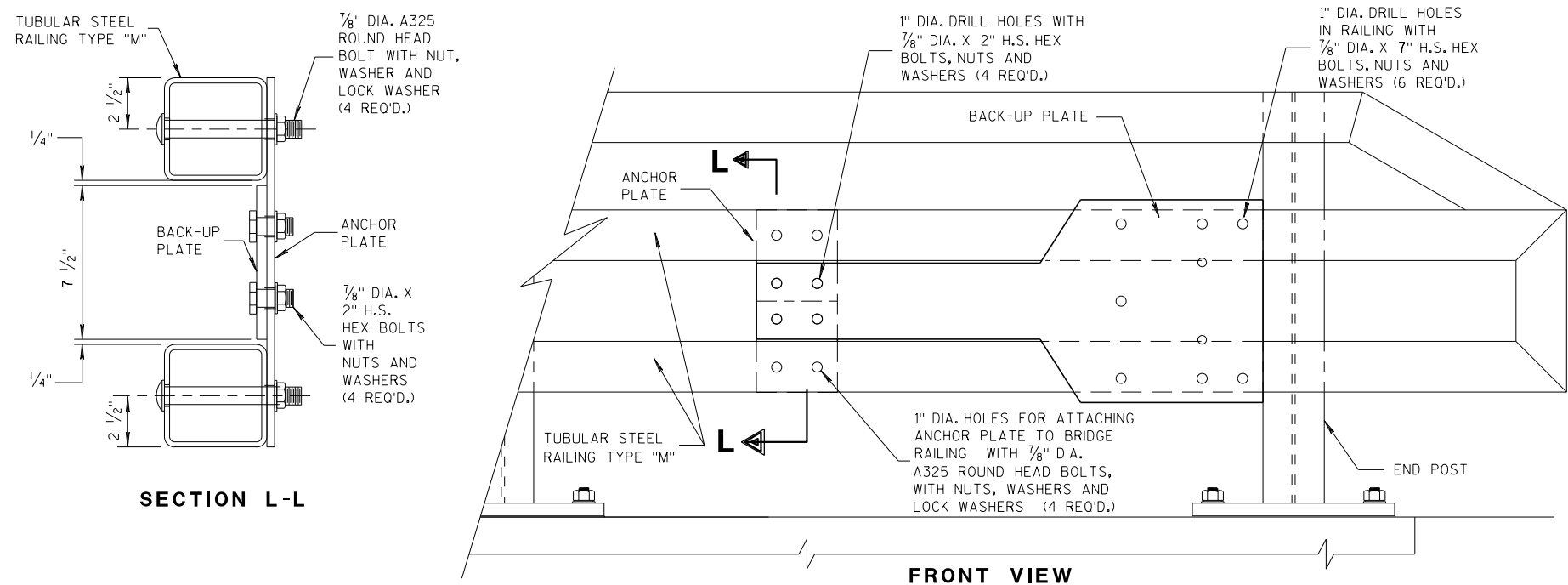


FRONT VIEW

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



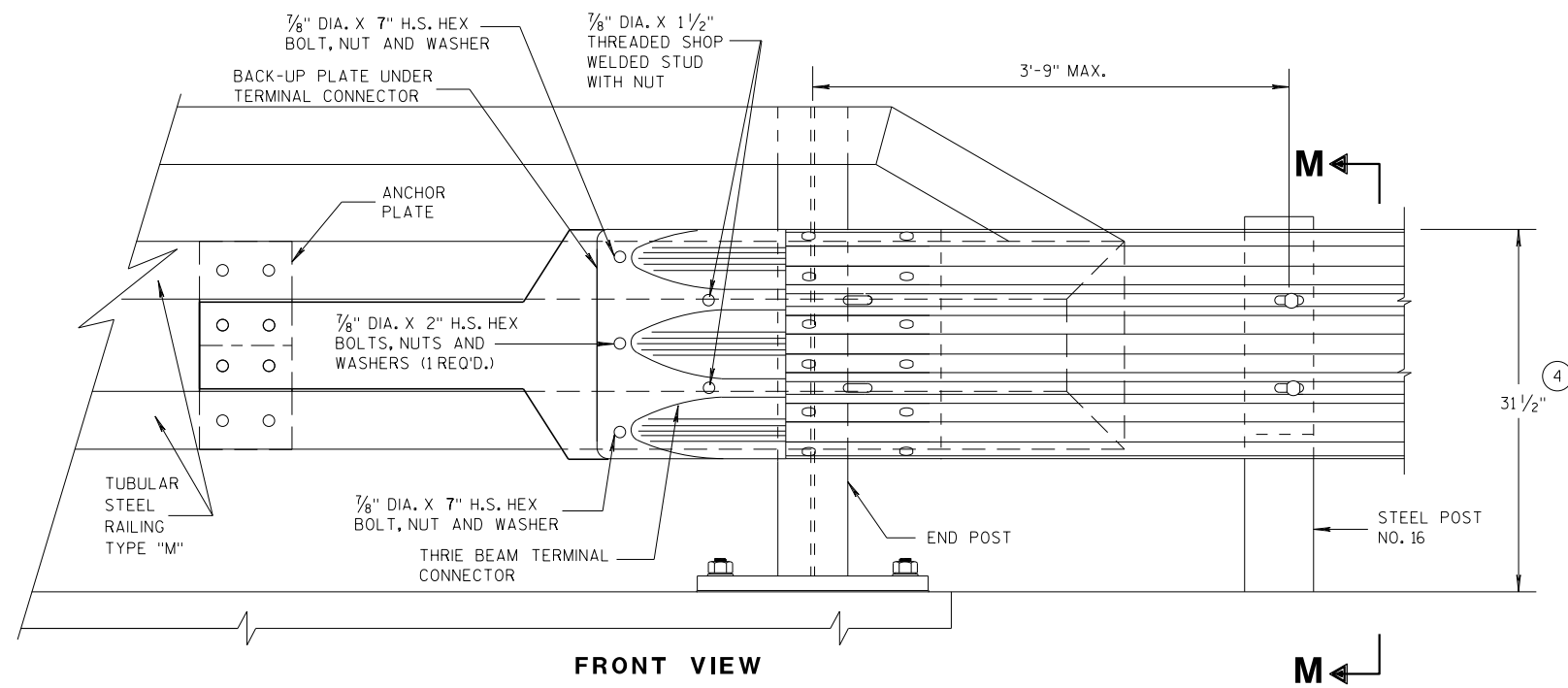
SECTION M-M



SECTION L-L

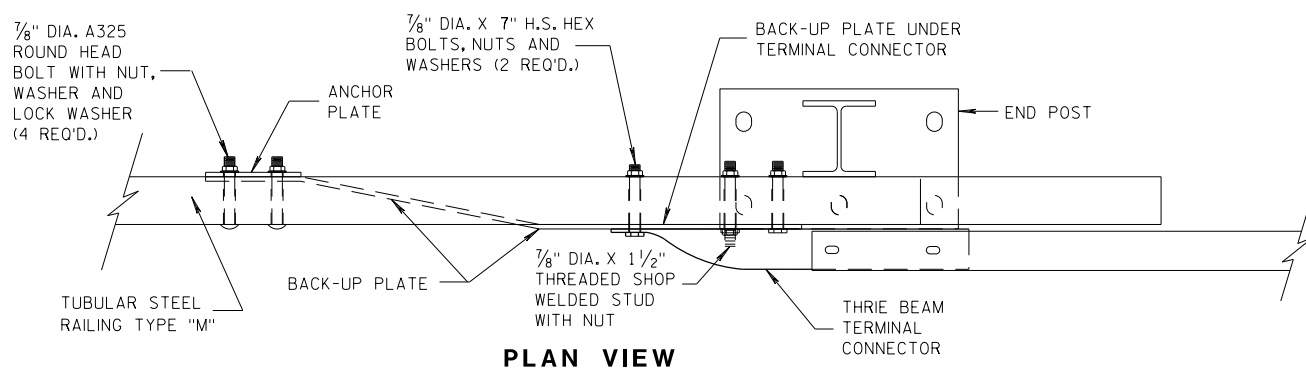
FRONT VIEW

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



FRONT VIEW

M



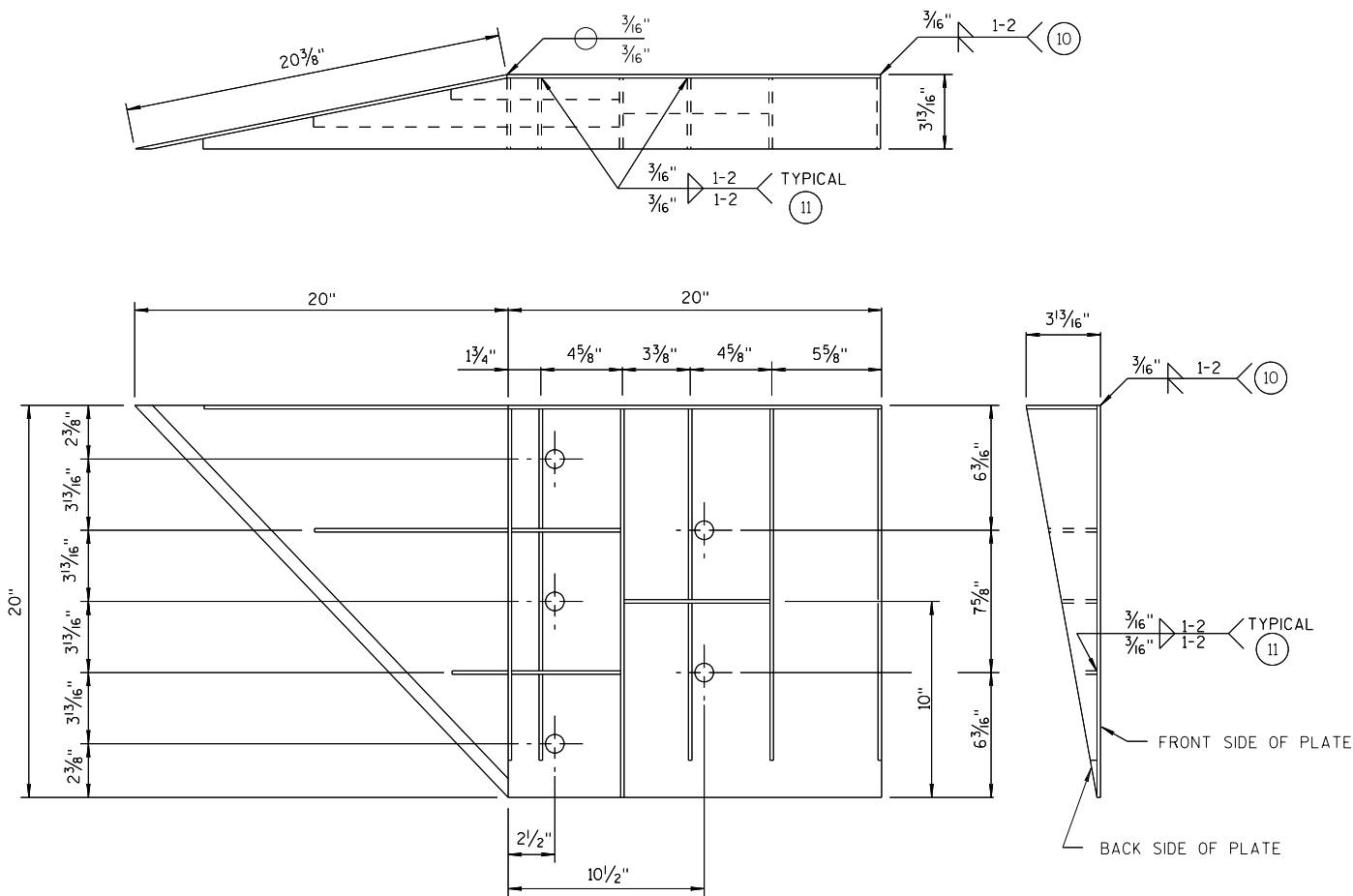
PLAN VIEW

THREE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
07/2018 /S/ Rodney Taylor
DATE ROADWAY STANDARDS UNIT SUPERVISOR
FHWA 76 ENT

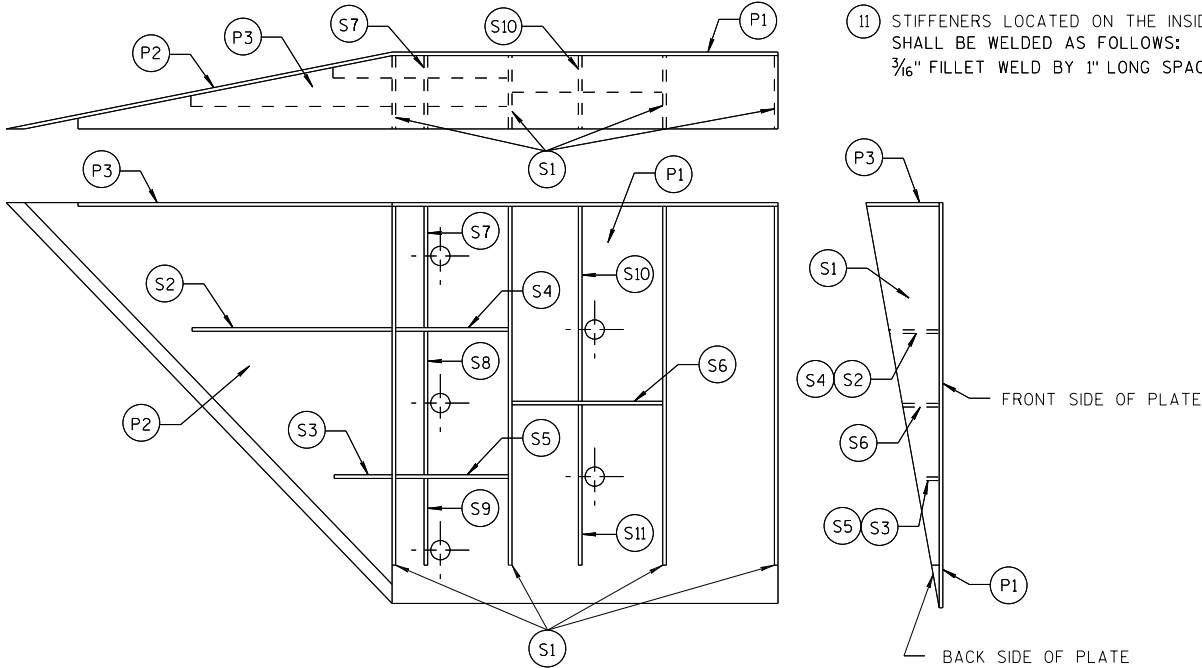


WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

SINGLE SLOPE CONNECTION 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 7/16"	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 7/8"	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 5/8" x 9 11/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 3/16"	1/4"

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



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.

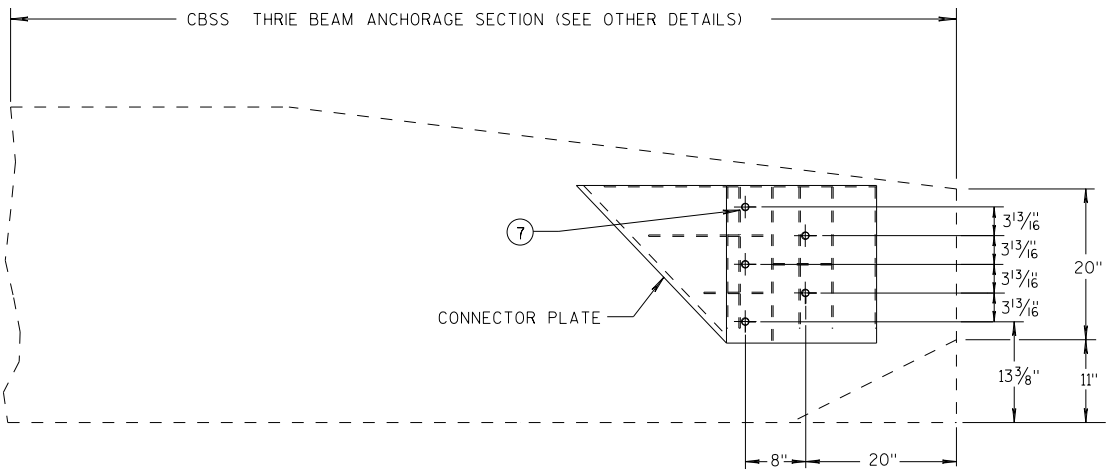
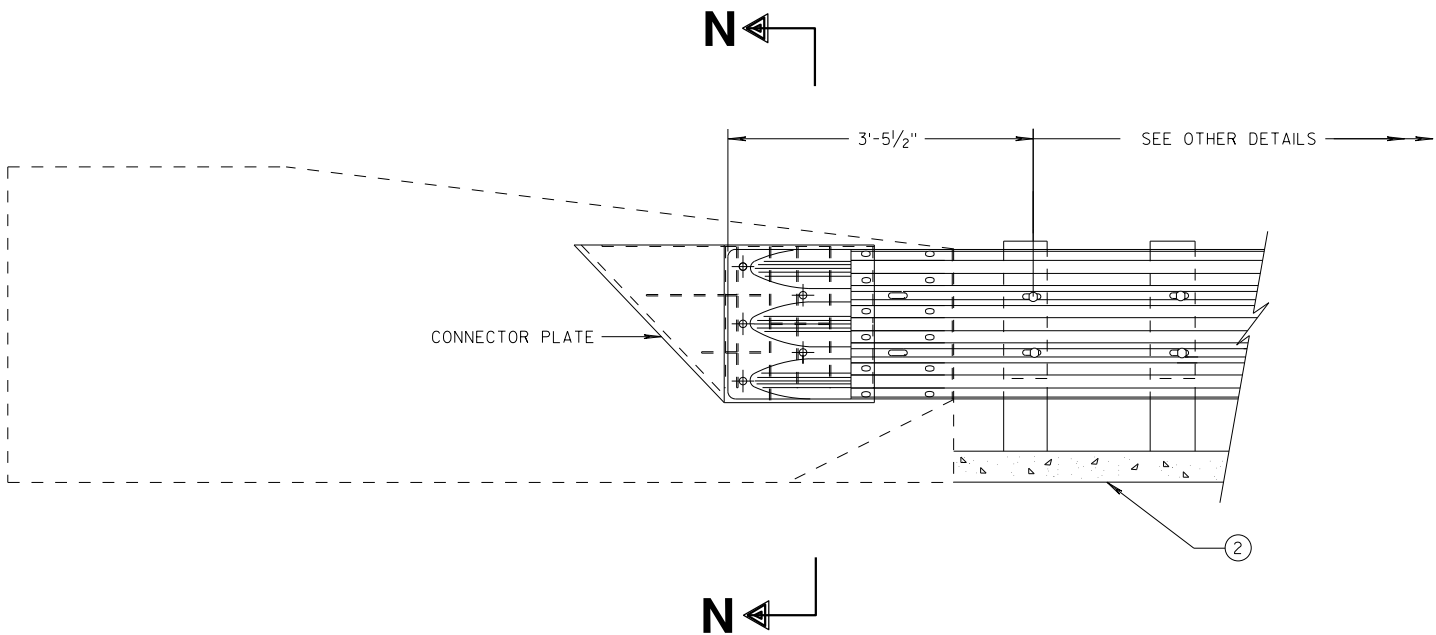
- STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS FOLLOWS:
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 3/16" FILLET WELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.
- STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
3/16" FILLET WELD BY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

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS UNIT SUPERVISOR
77
FHWA

THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER

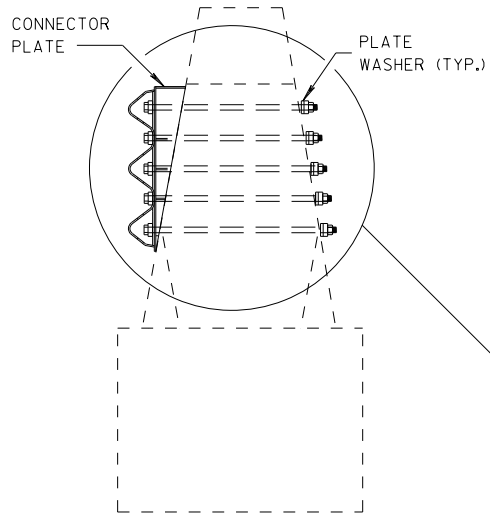


SINGLE SLOPE CONNECTION PLATE PLACEMENT

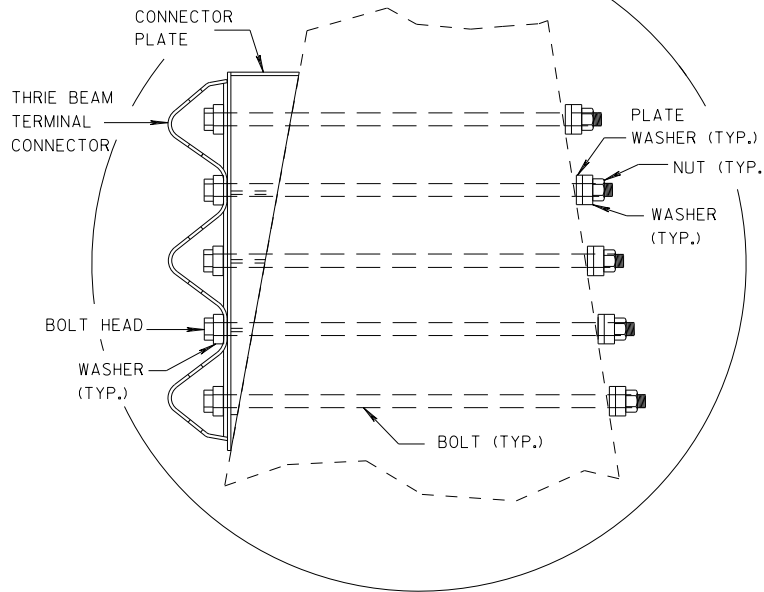
GENERAL NOTES

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 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



SECTION N-N



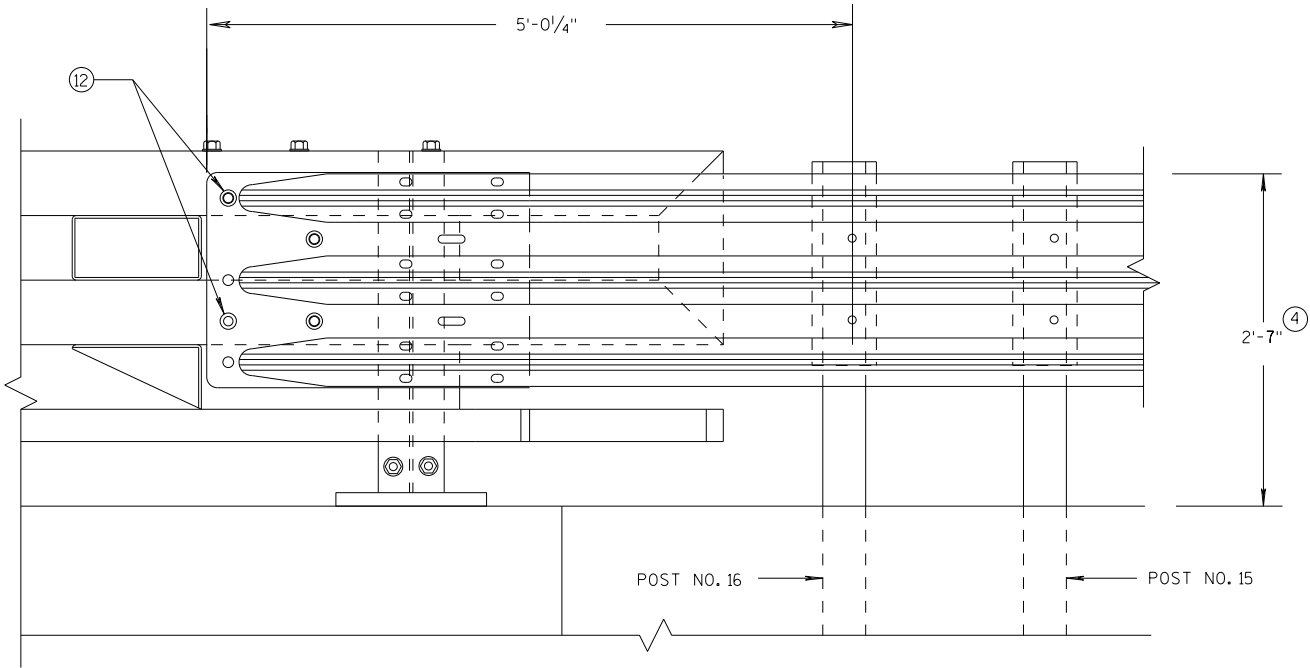
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

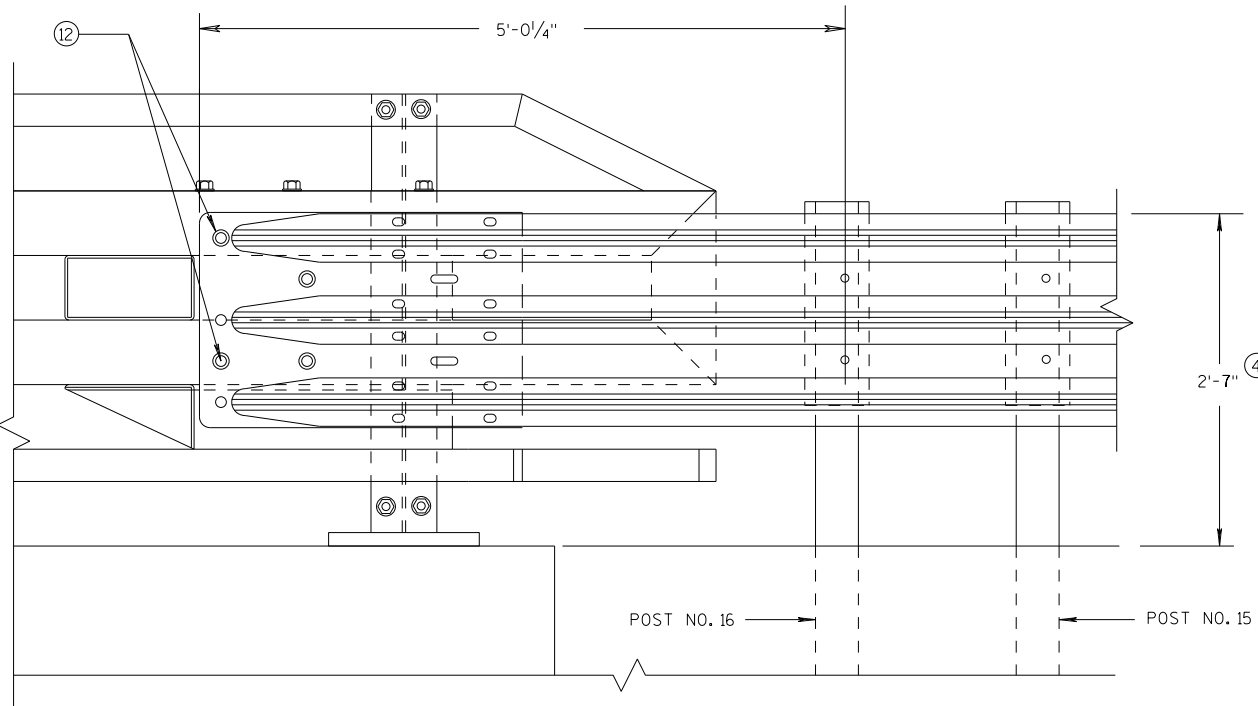
APPROVED
DATE 7/2018
ROADWAY STANDARDS DIVISION
UNIT SUPERVISOR /S/ Rodney Taylor
78
FHWA

GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- 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 $\frac{1}{2}$ -INCH BEYOND NUT.



ELEVATION OF DETAIL AT NY3 END POST
THRIE BEAM RAIL ATTACHMENT

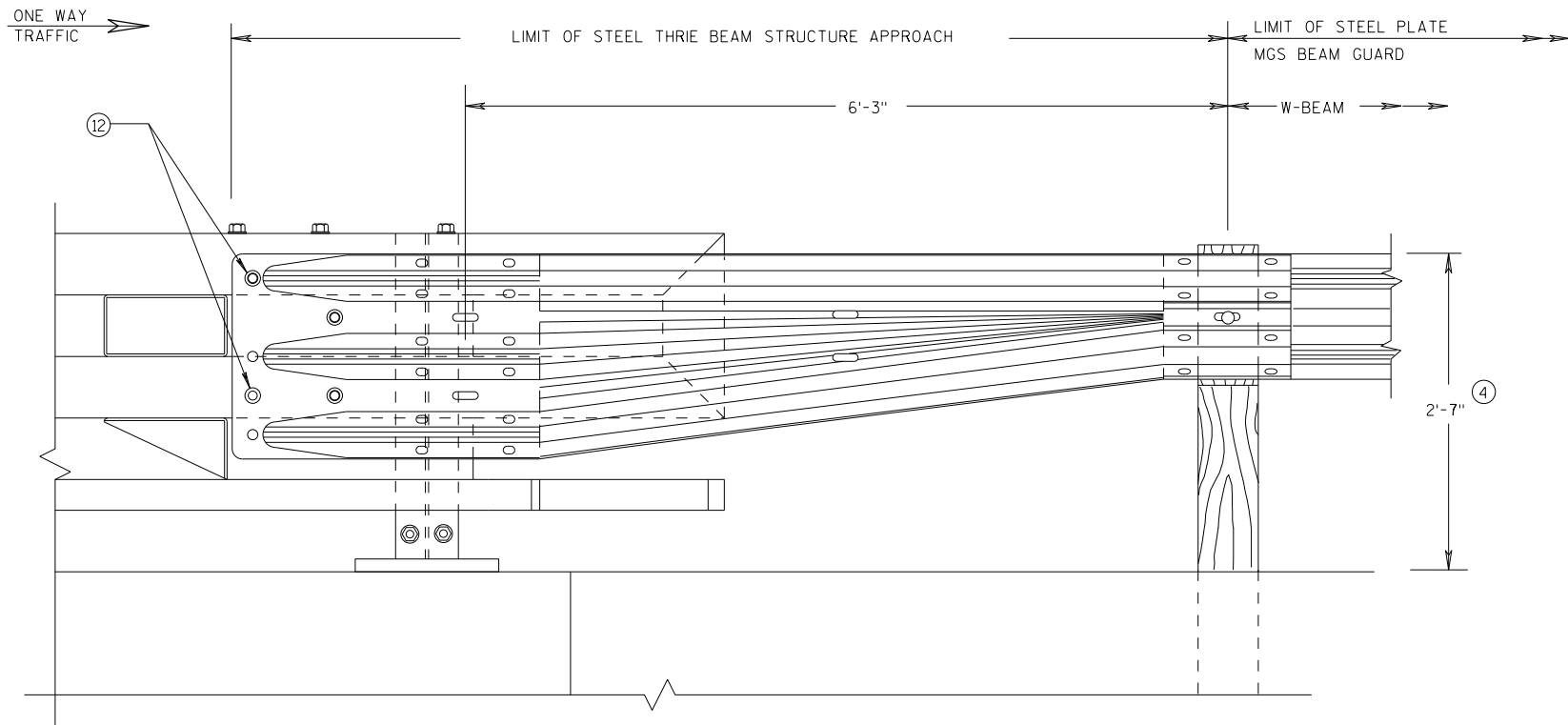


ELEVATION OF DETAIL AT NY4 END POST
THRIE BEAM RAIL ATTACHMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED	/S/ Rodney Taylor	NT
DATE	7/2018	79
FHWA	ROADWAY STANDARDS	UNIT SUPERVISOR

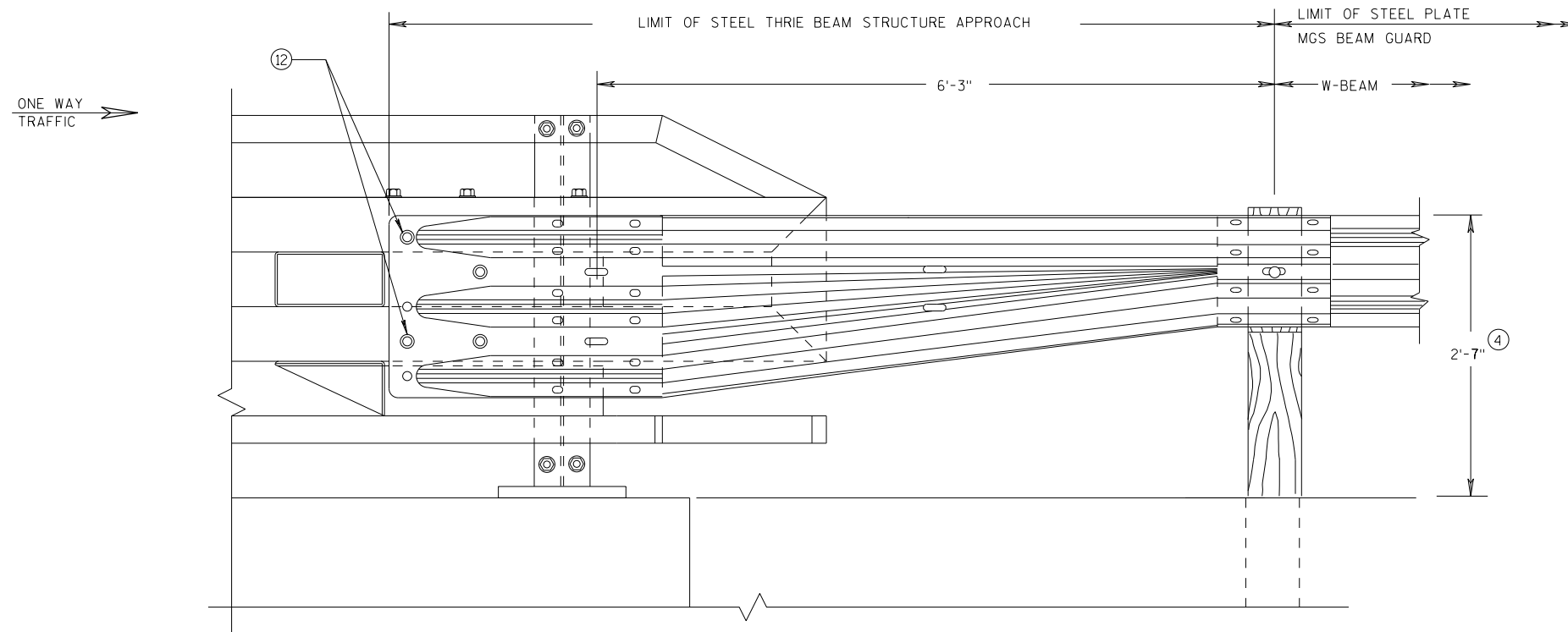


GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- 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 $\frac{1}{2}$ -INCH BEYOND NUT.

FRONT VIEW

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



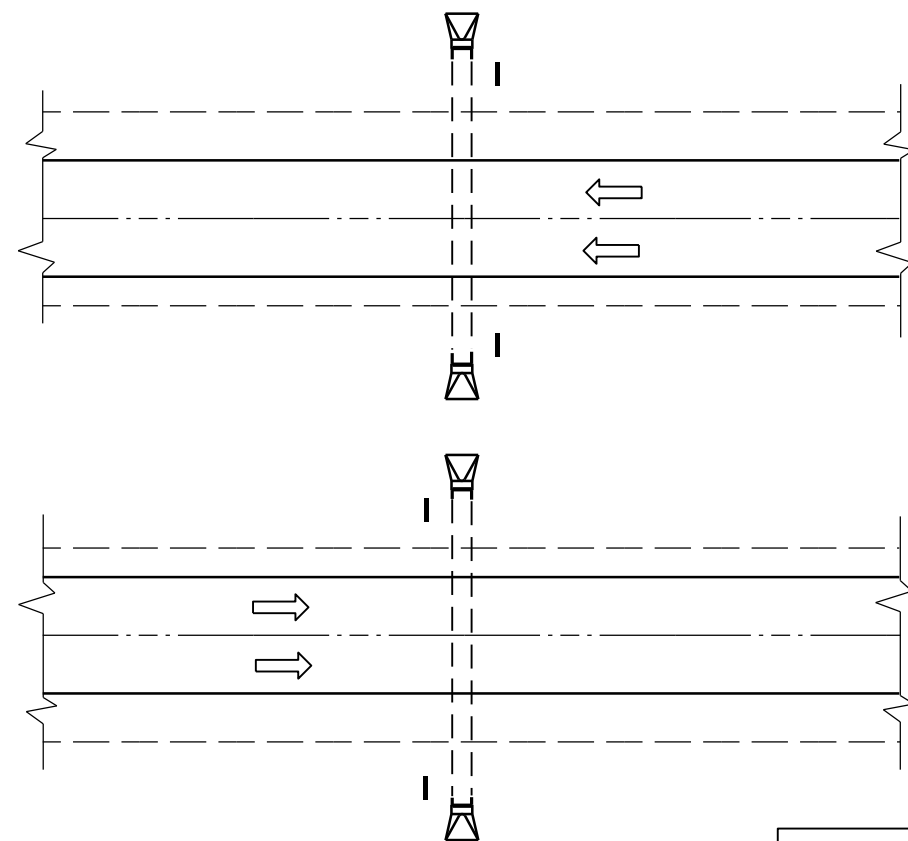
FRONT VIEW

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

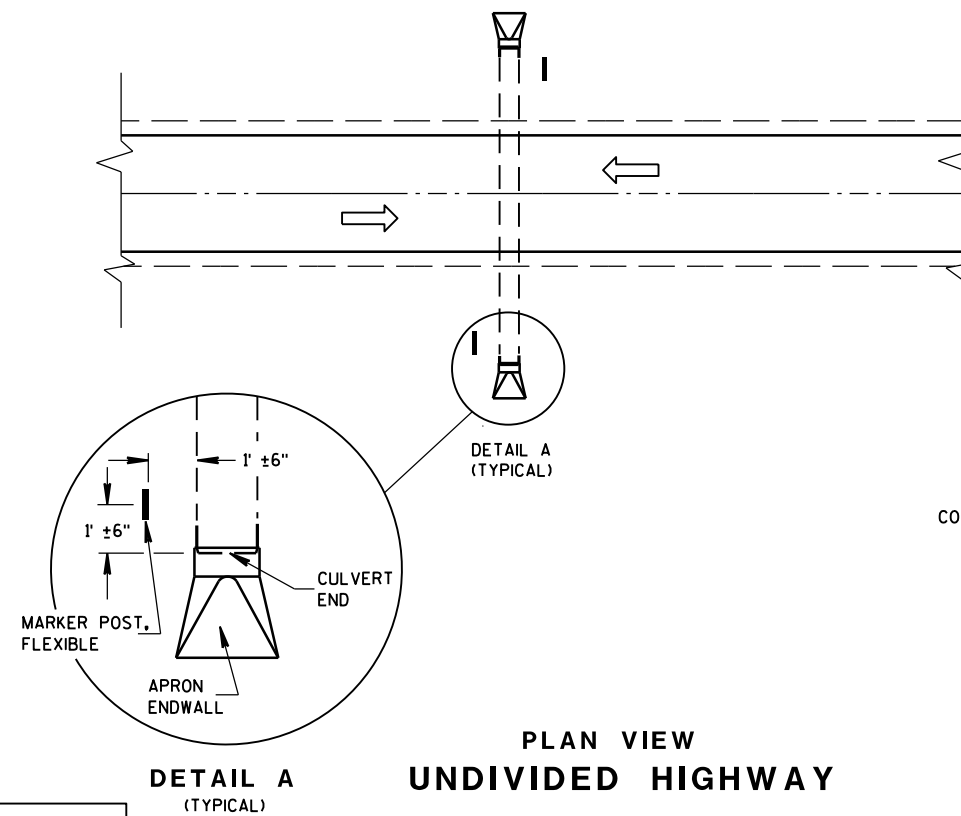
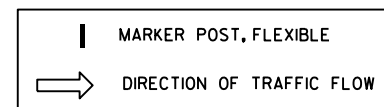
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED		
DATE	7/2018	/S/ Rodney Taylor
FHWA	ROADWAY STANDARDS C 80	UNIT SUPERVISOR NT



PLAN VIEW
DIVIDED HIGHWAY

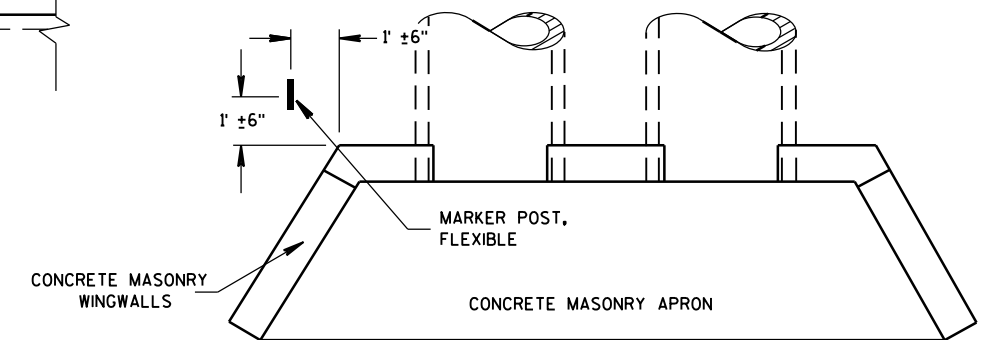


PLAN VIEW
UNDIVIDED HIGHWAY

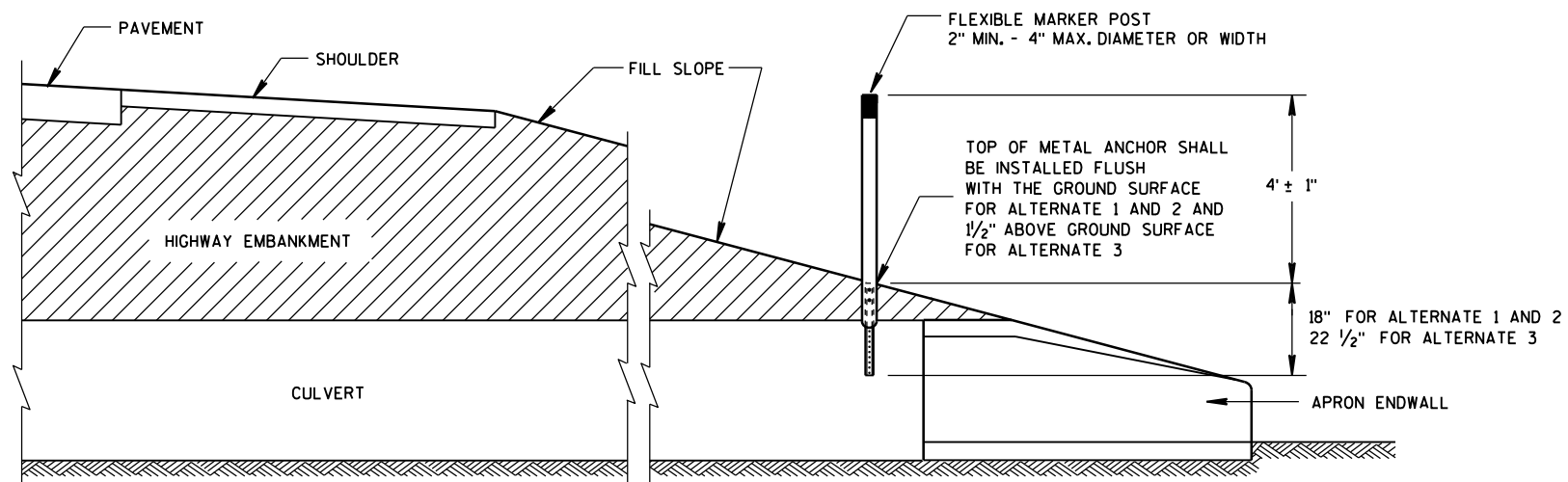
FLEXIBLE MARKER POST LOCATION

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.



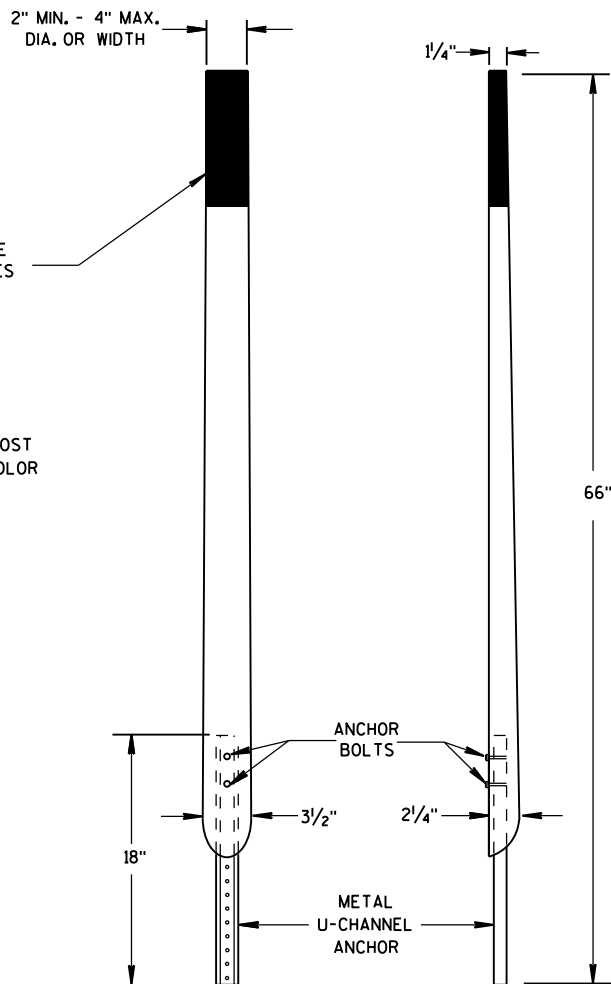
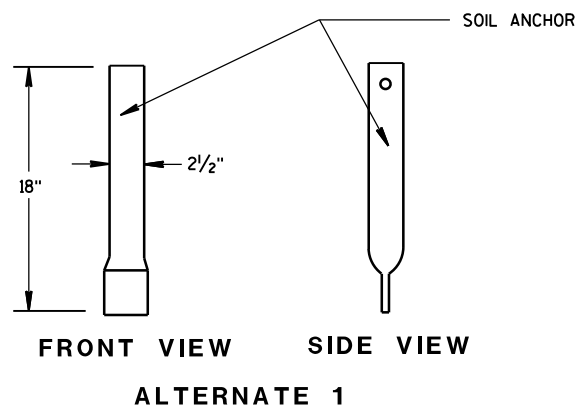
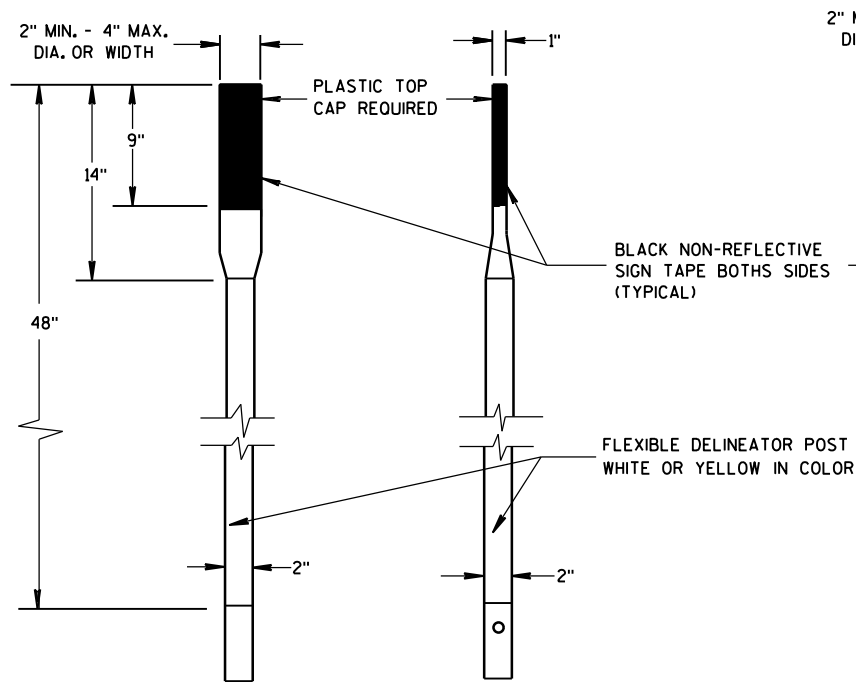
PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH



CROSS SECTION
FLEXIBLE MARKER POST

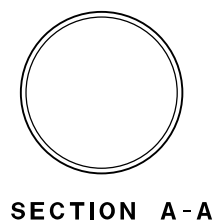
FLEXIBLE MARKER POST
FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

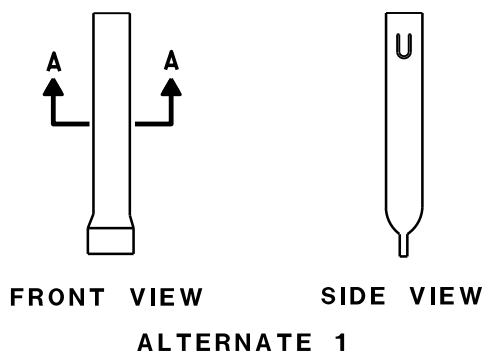


FRONT VIEW SIDE VIEW
ALTERNATE 2

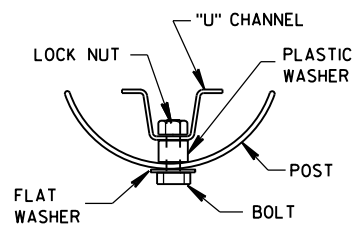
FLEXIBLE MARKER POSTS



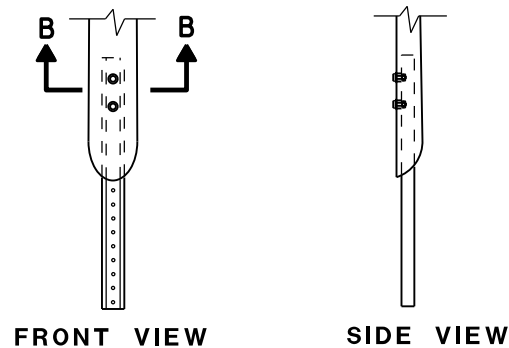
SECTION A-A



FRONT VIEW SIDE VIEW
ALTERNATE 1

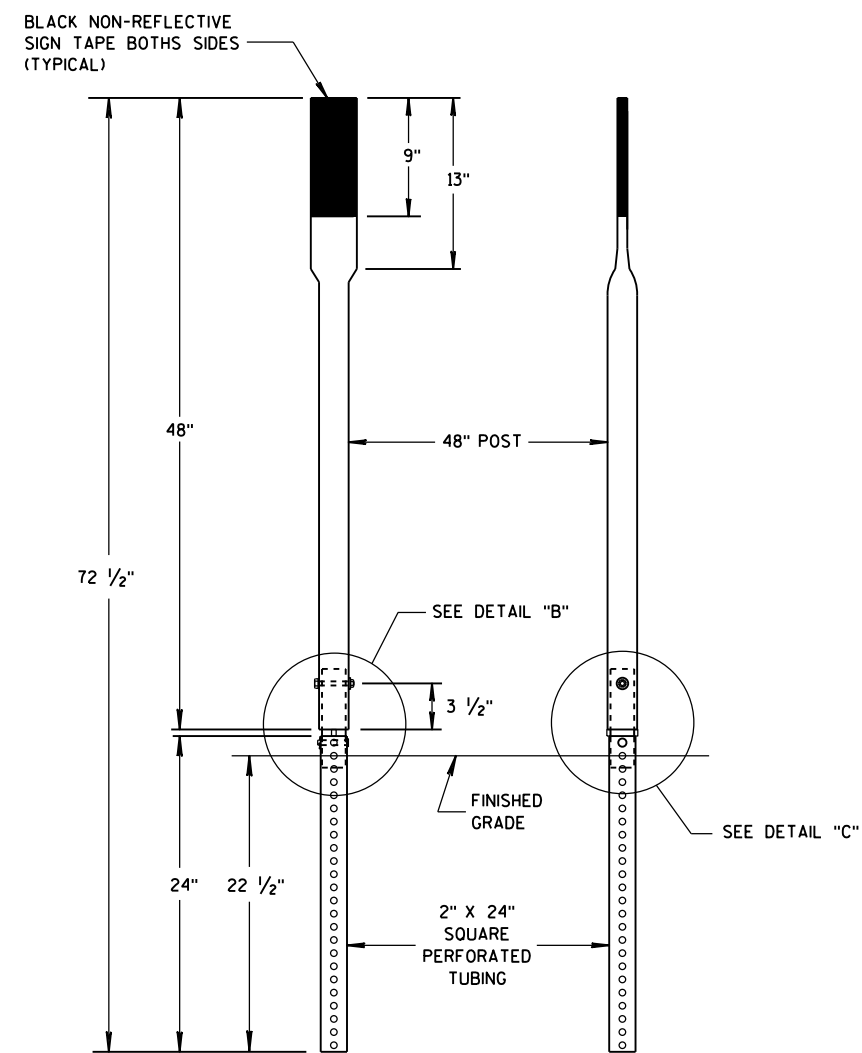


SECTION B-B

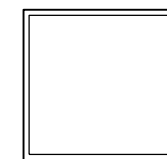


FRONT VIEW SIDE VIEW
ALTERNATE 2

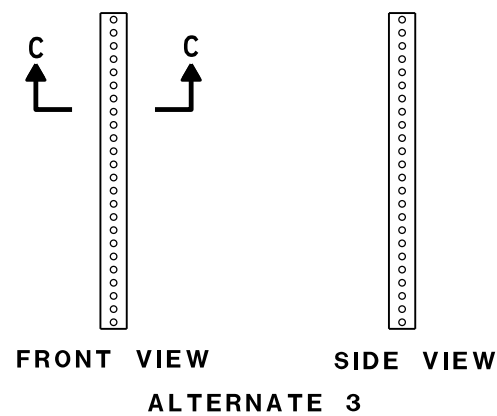
FLEXIBLE MARKER POST ANCHORS



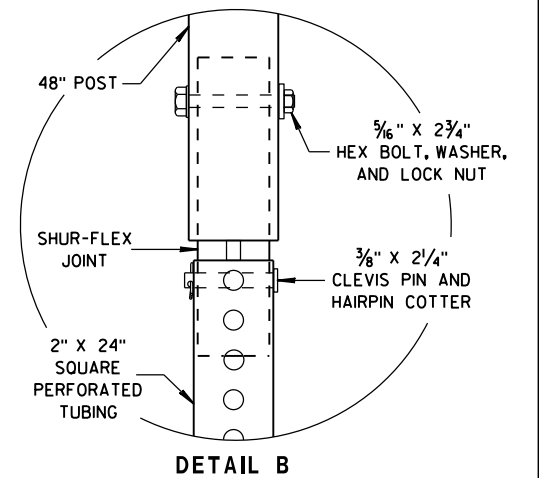
FRONT VIEW SIDE VIEW
ALTERNATE 3



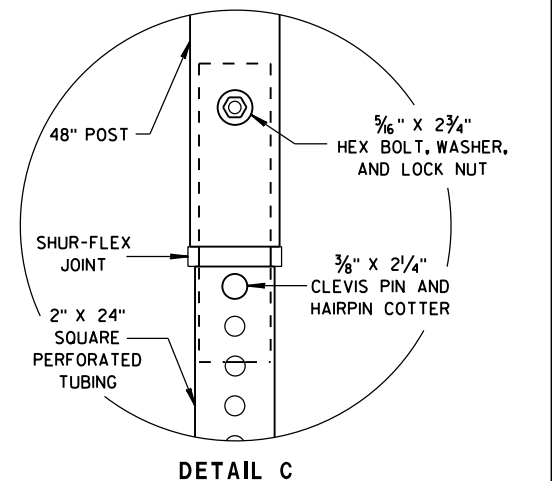
SECTION C-C



FRONT VIEW SIDE VIEW
ALTERNATE 3



DETAIL B



DETAIL C

FLEXIBLE MARKER POST FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

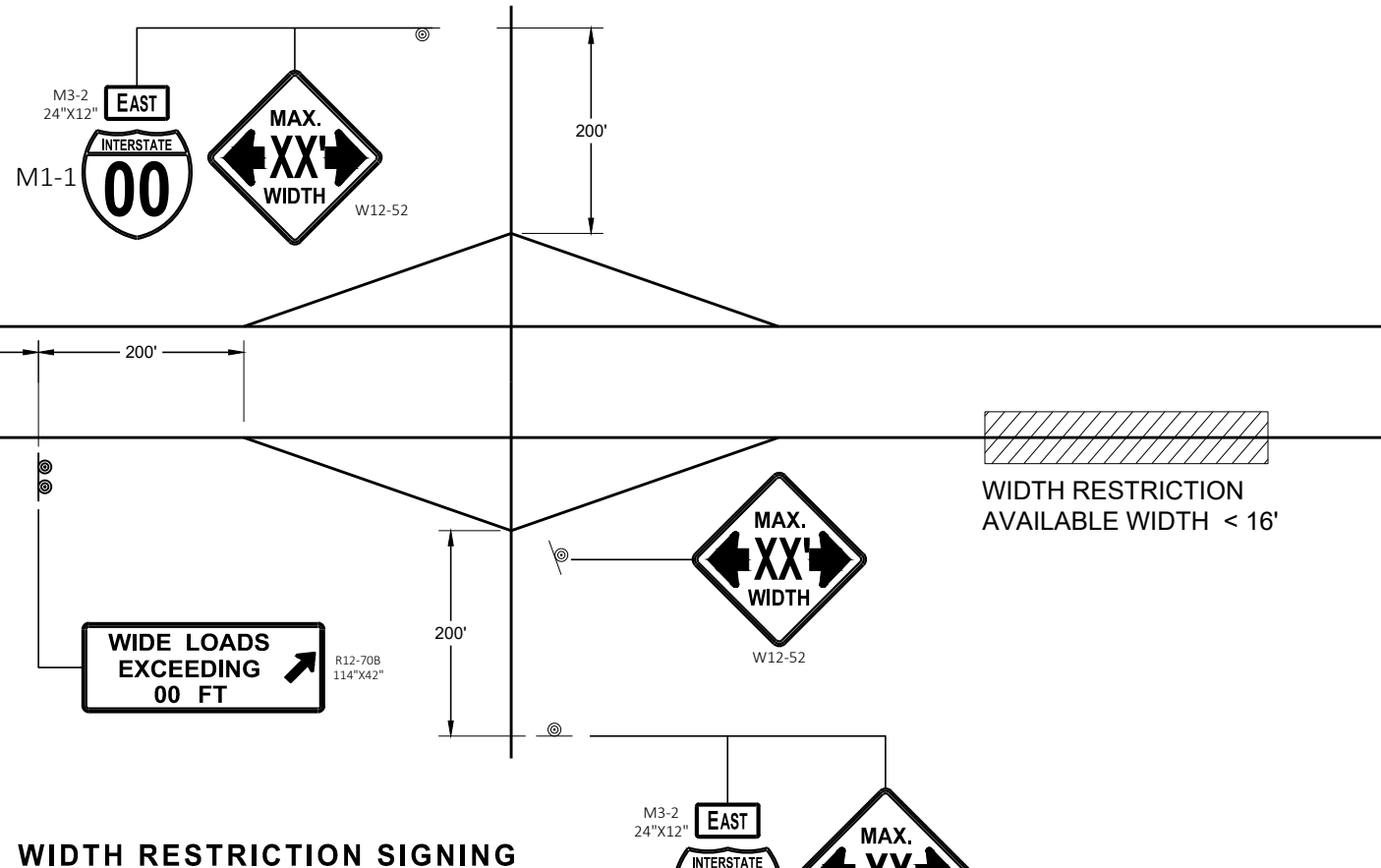
10/1/2012

DATE

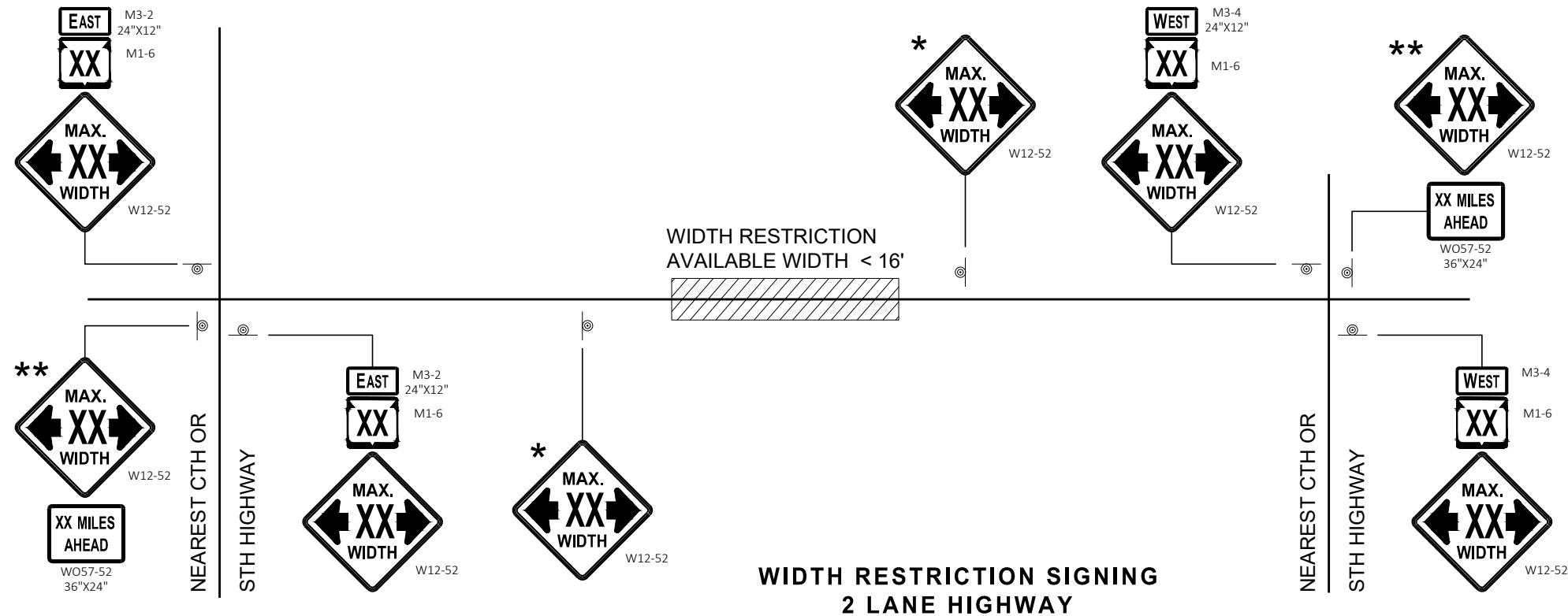
FHWA

/S/ Travis Feltes
STATE TRAFFIC ENGINEER 82

IGN



WIDTH RESTRICTION SIGNING



WIDTH RESTRICTION SIGNING
2 LANE HIGHWAY

LEGEND

⊙ SIGN ON PERMANENT SUPPORT

GENERAL NOTES

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

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

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

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

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

WIDTH ON SIGN TO BE APPROXIMATELY ONE FOOT LESS THAN AVAILABLE WIDTH.

* PLACE 500 FEET BEFORE THE W20 - 1A AND 500 FEET BEFORE ADDITIONAL SIGNS FOR ROADWAYS WITH A PRE - CONSTRUCTION SPEED LIMIT OF 45 MPH OR MORE. FOR 35-40 MPH, USE 350 FOOT TYPICAL SPACING. FOR 25-30 MPH, USE 200 FOOT TYPICAL SPACING.

** SIGN SHALL BE VISIBLE FROM ROADWAY.

*** ADDITIONAL SIGNS NEEDED IF THERE IS AN ON RAMP BETWEEN SIGNS.



WIDTH ON SIGN TO BE APPROX. 1 - FOOT LESS THAN AVAILABLE WIDTH

ADVANCED WIDTH
RESTRICTION SIGNING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 83
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.

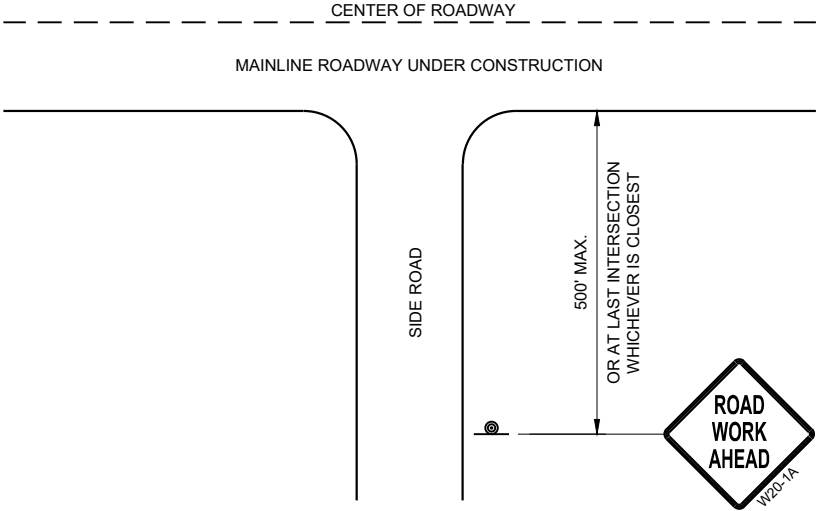
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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.

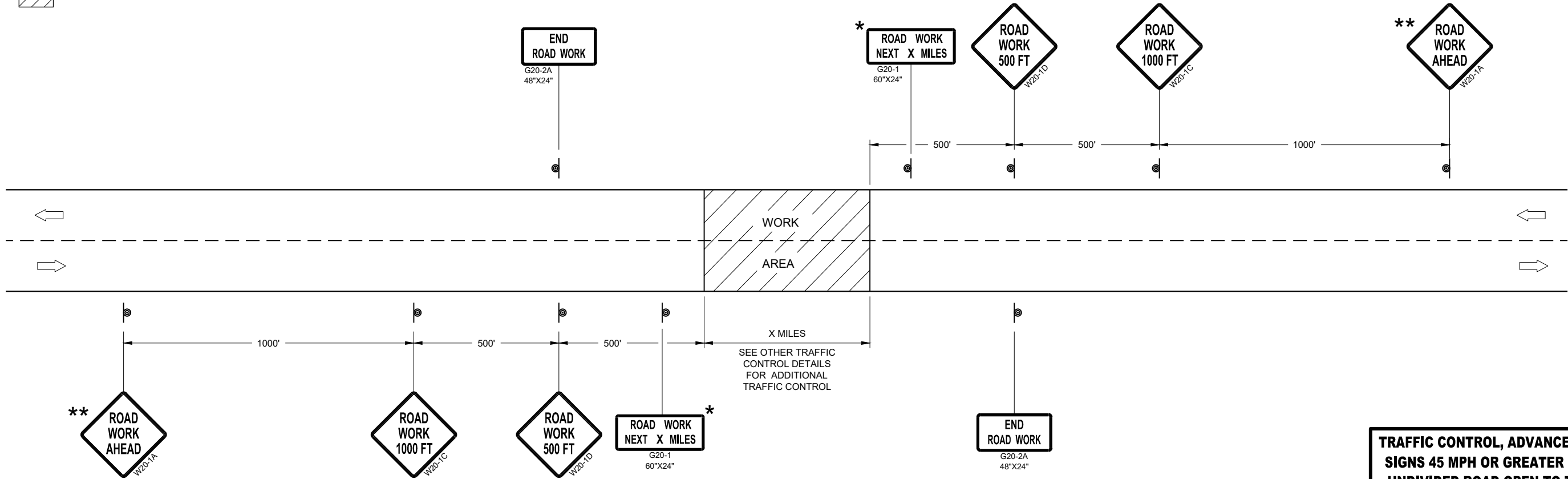
- * OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- ** PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.

LEGEND

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



TYPICAL SIDE ROAD APPROACH
WARNING SIGN DETAIL



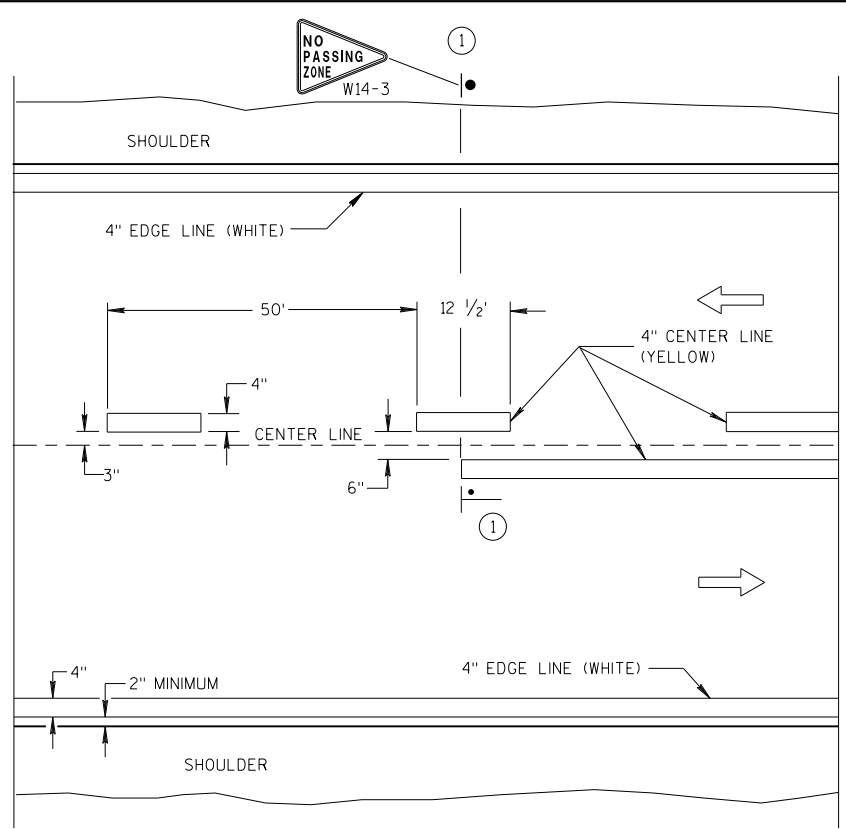
TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

TRAFFIC CONTROL, ADVANCE WARNING
SIGNS 45 MPH OR GREATER TWO-WAY
UNDIVIDED ROAD OPEN TO TRAFFICE

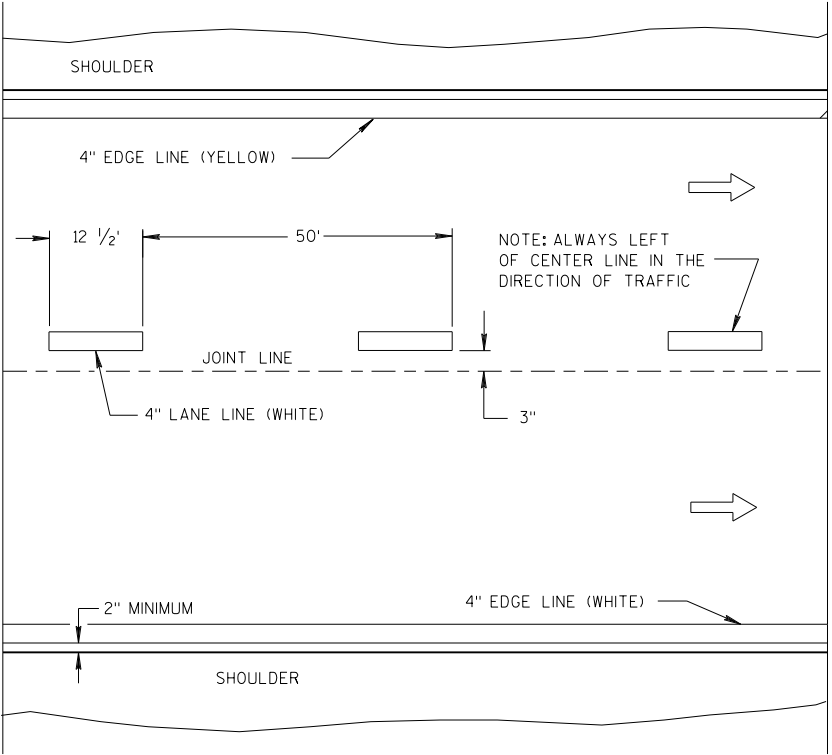
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
July 2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 84

FHWA

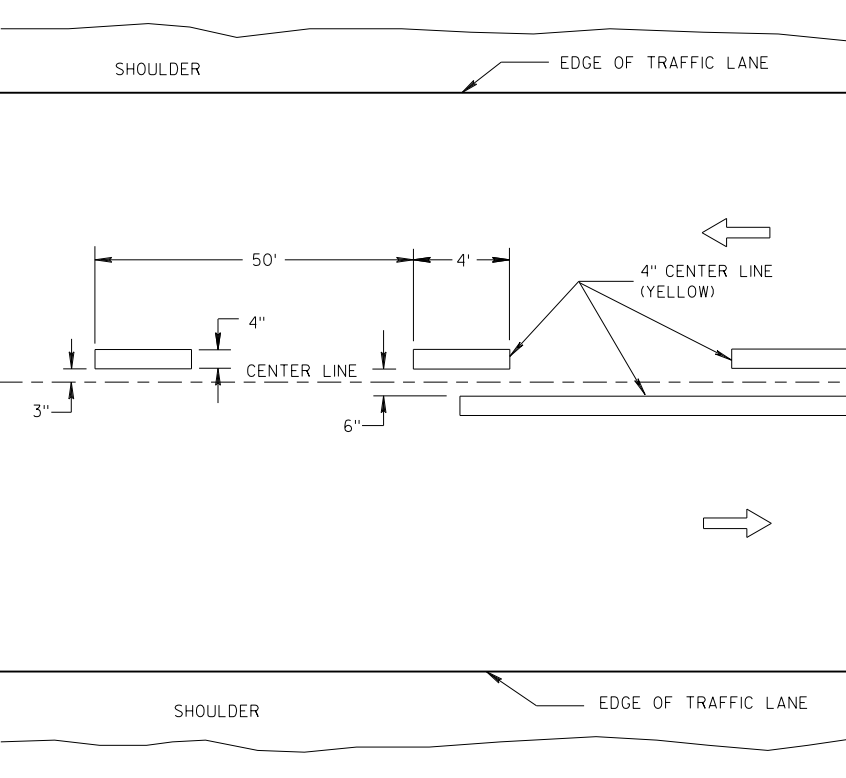


TWO WAY TRAFFIC

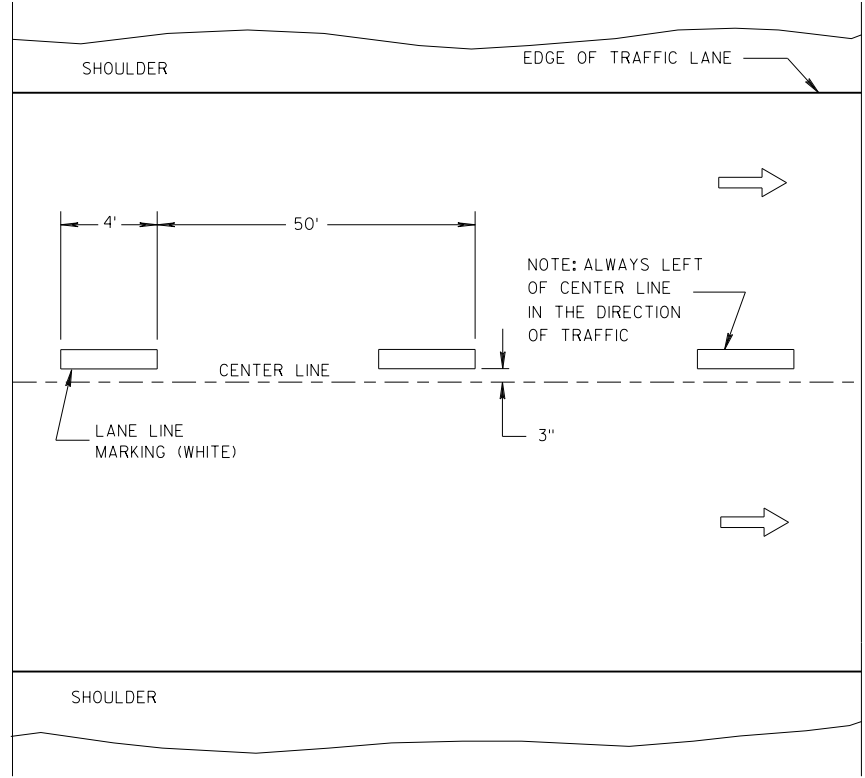


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

GENERAL NOTES

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

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

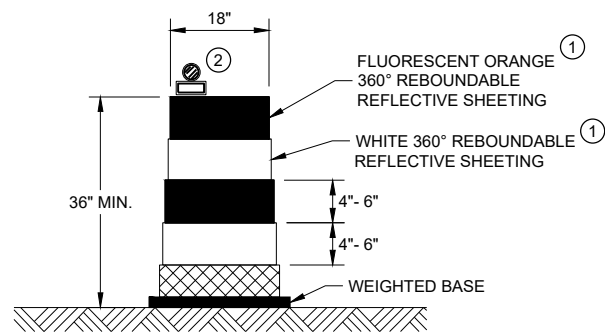
NOTE

ARROW SYMBOL (➡) SHOWS DIRECTION OF TRAVEL

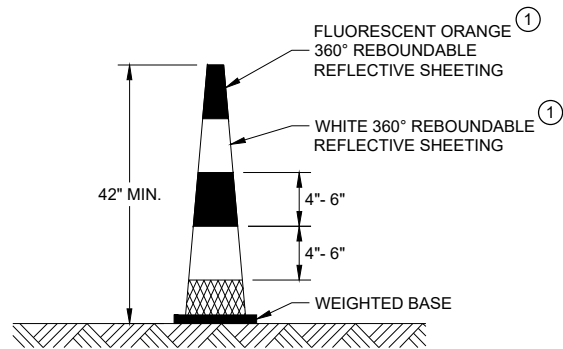
LEGEND

- "T" MARKING
- POST MOUNTED SIGN

LONGITUDINAL MARKING (MAINLINE)		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
APPROVED 7/2018 DATE	/S/ Matthew R. Rauch STATE SIGNING AND MAR 85 INEER	
FHWA		

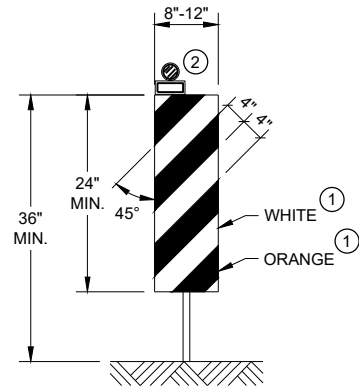


DRUM



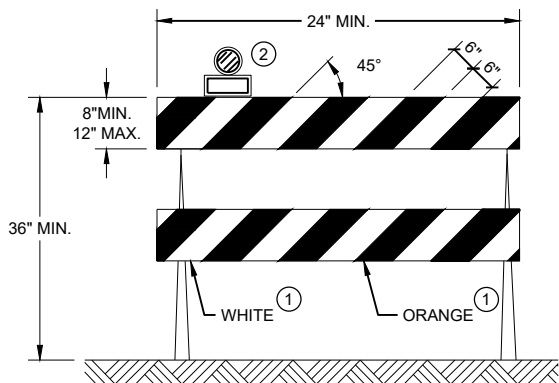
42" CONE

DO NOT USE IN TAPERS
½ SPACING OF DRUMS



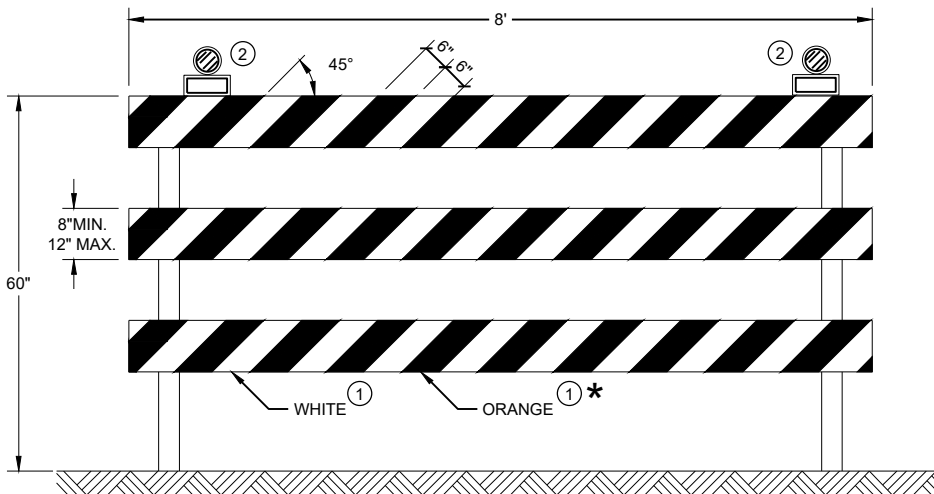
VERTICAL PANEL

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



TYPE II BARRICADE

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



TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

GENERAL NOTES

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

CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 86
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.

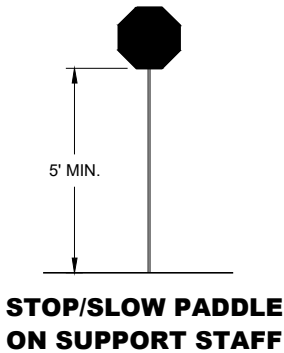
THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS, DEVICES, AND LOCATION OF ALL FLAGGERS SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

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.
- 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.
 - 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.
- EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS SPACED ACCORDING TO MANUFACTURER'S RECOMMENDATION, PLACED TRANSVERSE ACROSS THE LANE AT LOCATIONS SHOWN.
- ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FOR 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.

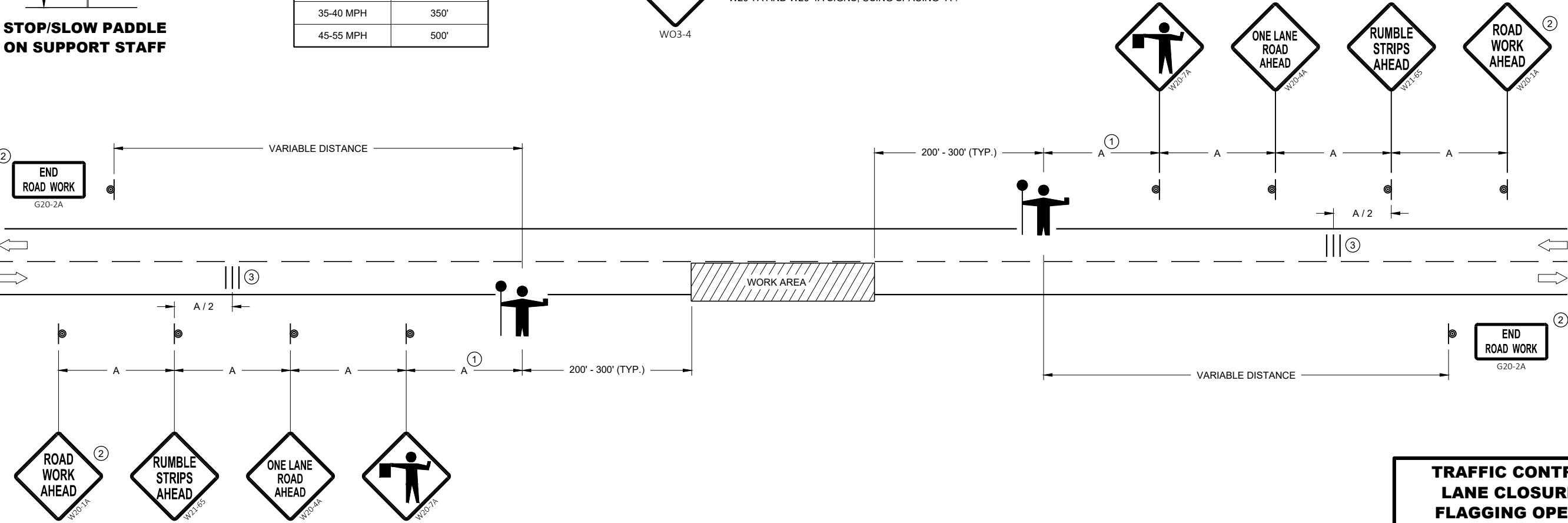


SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

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



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".



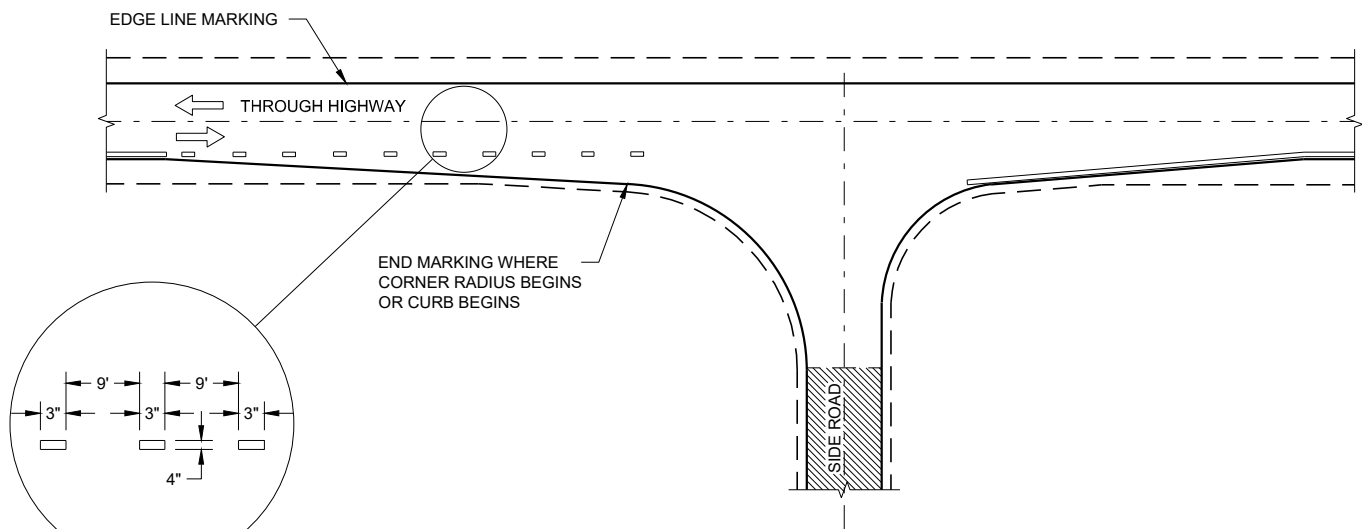
TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

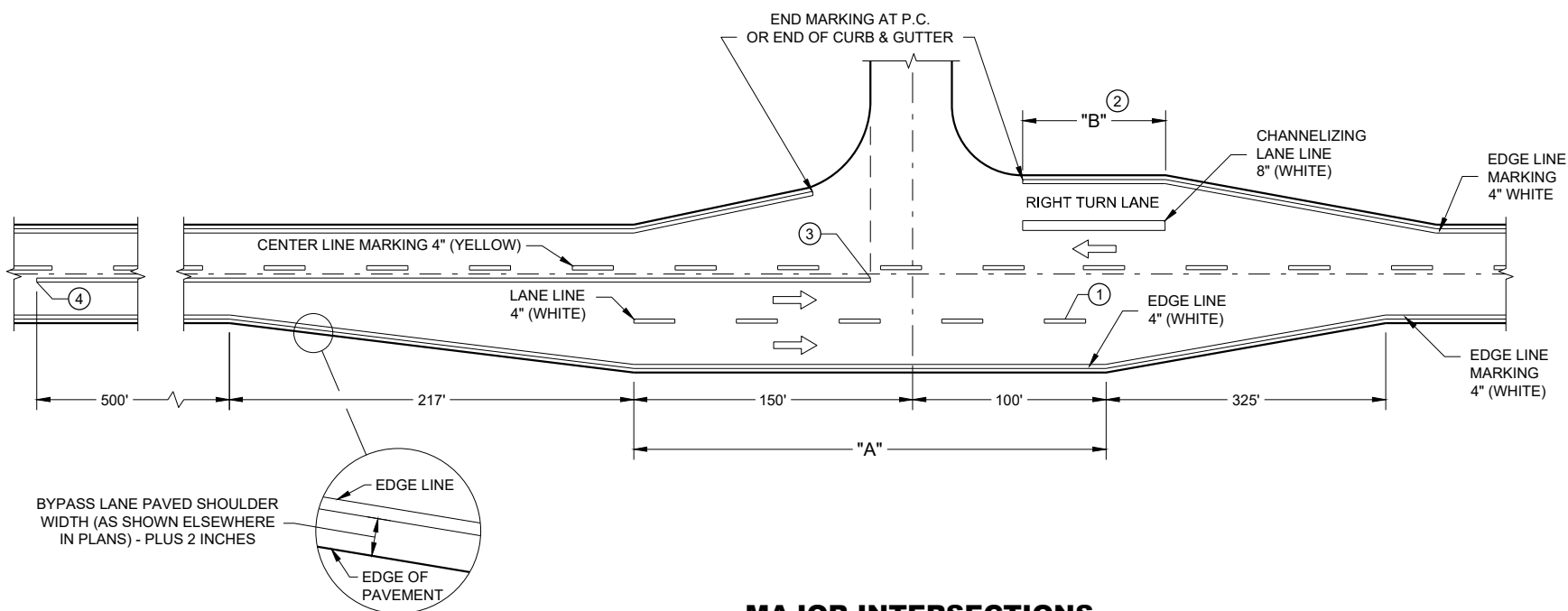
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2019 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 87

FHWA



MINOR INTERSECTION



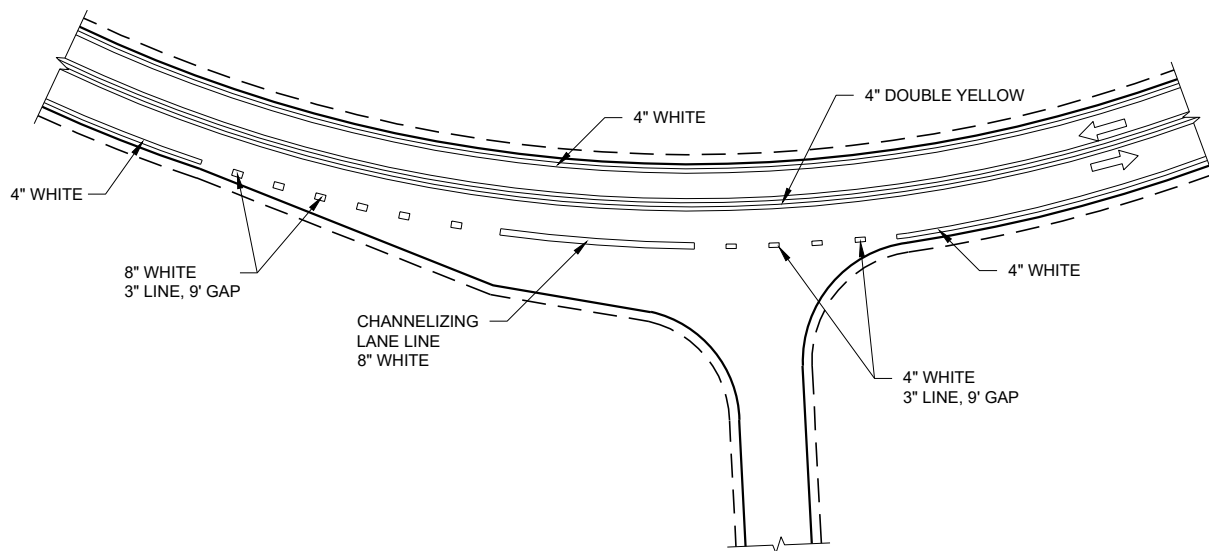
MAJOR INTERSECTIONS
(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANE)

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

ARROW SYMBOL (➞) SHOWS DIRECTION OF TRAVEL



INTERSECTION ON OUTSIDE OF CURVE

LEGEND

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

TABLE A

SHOULDER TAPER LENGTH (FEET)					BUFFER SPACE (FEET)
S \ W	4	6	8	10	
30	20	30	40	50	200
35	30	45	55	70	250
40	40	55	75	90	305
45	60	90	120	150	360
50	70	100	135	170	425
55	75	110	150	185	495

W = SHOULDER WIDTH (FEET)
S = NON-CONSTRUCTION SPEED LIMIT (MPH)

TAPER LENGTH

L = WS AT 45 MPH OR GREATER
L = WS² / 60 AT 40 MPH OR LESS

SHOULDER TAPER LENGTH = 1/3L

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" IS THE SAME AS "W" 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.

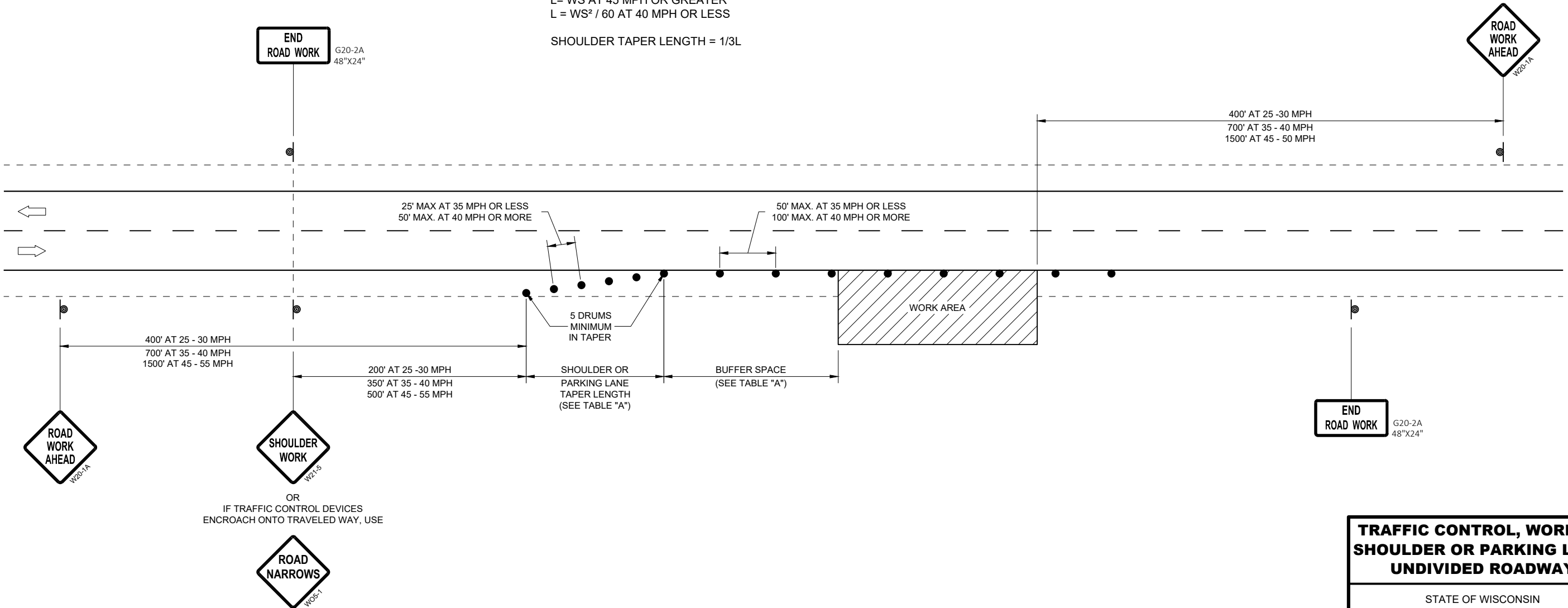
W20-1A AND G20-2A SIGNS ARE NOT REQUIRED IF THE WORK AREA IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY RESENT. G20-2A SIGNS MAY ALSO BE OMITTED IF DURATION OF WORK IS LESS THAN 7 CONTINUOUS DAYS AND NIGHTS.

6

6

SDD 15D28 - 03

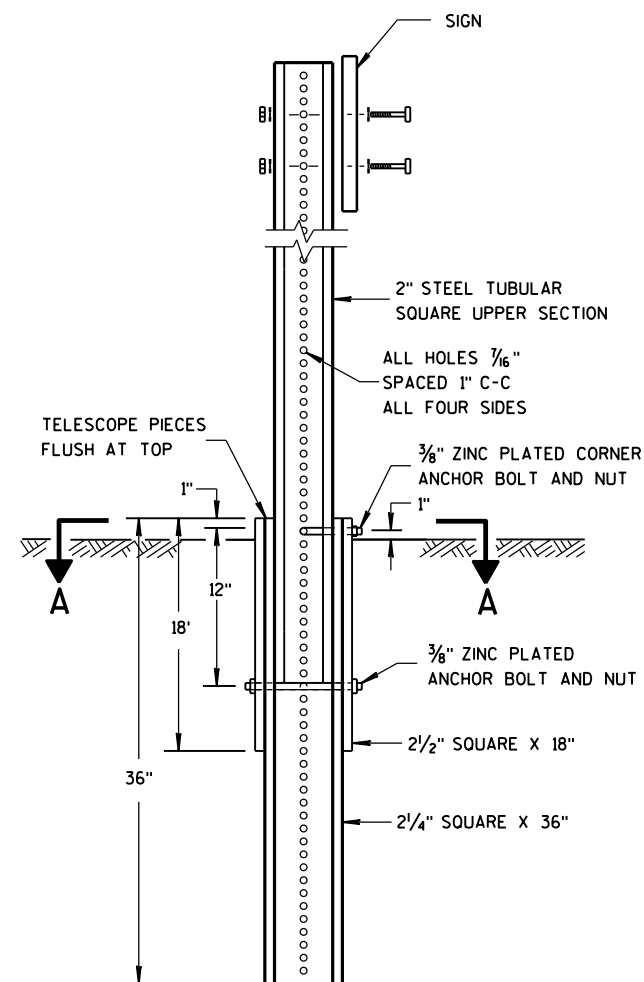
SDD 15D28 - 03



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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
August 2019
DATE
/S/ Andrew Heidtke
STATEWIDE WORK ZONE T
SAFETY ENGINEER 89
FHWA

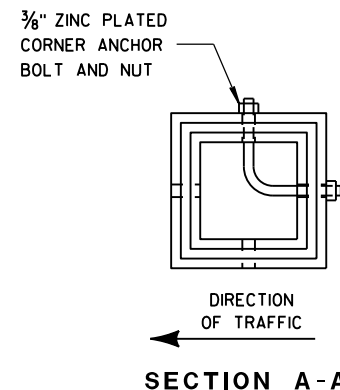


DETAIL OF TUBULAR
STEEL SIGN POST

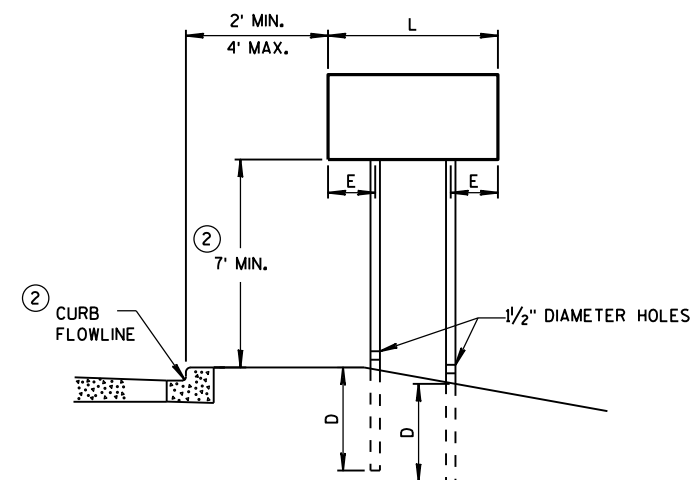
TUBULAR STEEL POSTS

AREA OF SIGN INSTALLATION (SQ. FT.)	NUMBER OF REQUIRED TUBULAR STEEL POSTS
9 OR LESS	1
GREATER THAN 9 LESS THAN OR EQUAL TO 18	2
GREATER THAN 18 LESS THAN OR EQUAL TO 27	3

SIGNS WIDER THAN 3 FEET OR LARGER THAN 9 SQ. FT. SHALL
BE MOUNTED ON MULTIPLE POSTS (SEE ABOVE TABLE).
SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED
ON TUBULAR STEEL POSTS.



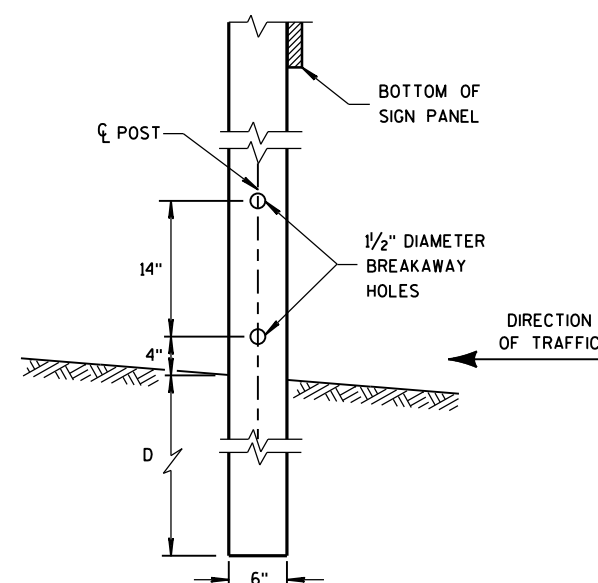
SECTION A-A



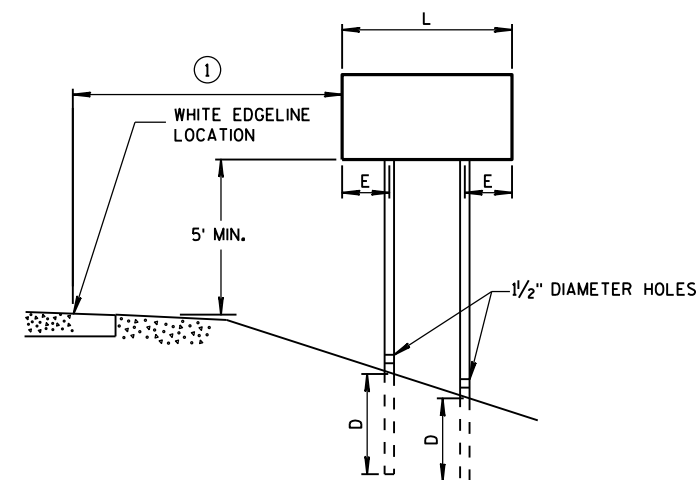
URBAN AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST EMBEDMENT DEPTH	
AREA OF SIGN INSTALLATION (SQ. FT.)	D (MIN)
20 OR LESS	4'
GREATER THAN 20	5'



4 "x6 " WOOD POST
MODIFICATION



RURAL AREA

POST SPACING REQUIREMENTS		NUMBER OF WOOD POSTS REQUIRED
L	E	
48" OR LESS AND LESS THAN 20 SQ. FT.	-	1
LESS THAN 60"	12"	2
60" TO 120"	L/5	2
GREATER THAN 120" LESS THAN 168"	12"	3
168" AND GREATER	12"	4

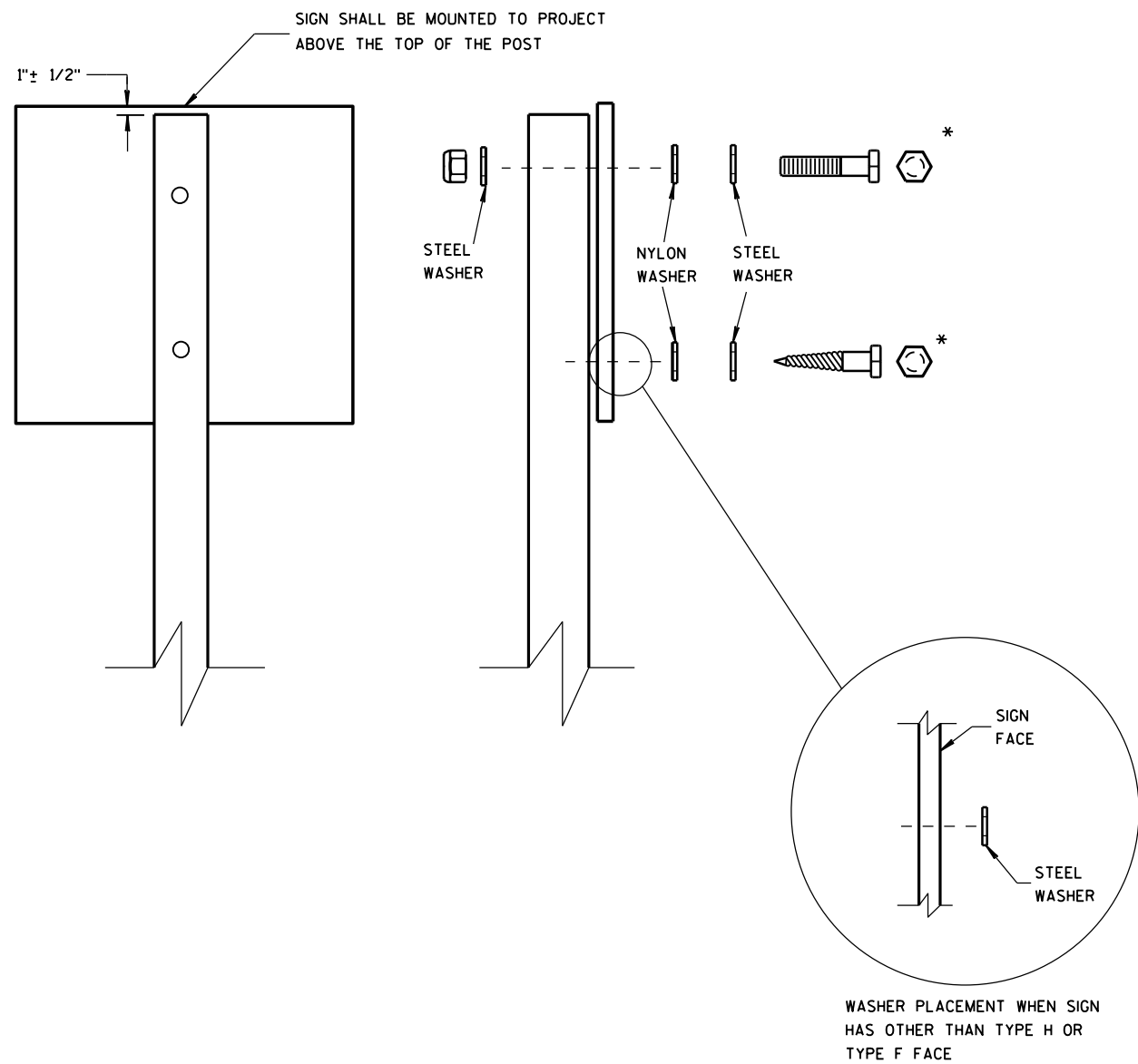
SEE NOTE ③

GENERAL NOTES

- ① 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.
- ② THE EXISTENCE OF CURB AND GUTTER DOES NOT IN ITSELF MANDATE THE VERTICAL CLEARANCE ILLUSTRATED. THAT HEIGHT IS TYPICALLY MEASURED WHERE THERE IS SIDEWALK ADJACENT TO THE ROADWAY OR PARKING IS PERMITTED. IN THE ABSENCE OF SIDEWALK, VERTICAL CLEARANCE IS MEASURED FROM THE TOP OF THE CURB. IF NO SIDEWALK AND NO PARKING, VERTICAL CLEARANCE MAY BE REDUCED TO 5 FOOT MINIMUM. OFFSET OF SIGNS IS MEASURED FROM THE CURB FLOWLINE.
- ③ FOR SIGNS REQUIRING 4 POSTS, SPACE INTERMEDIATE POSTS EVENLY.

TEMPORARY TRAFFIC CONTROL
SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



NUTS, BOLTS AND LAGS USED FOR MOUNTING SIGNS SHALL HAVE HEXAGONAL HEADS AND SHALL BE EITHER:

- A. HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: A 153, CLASS D, OR SC 3
- B. ELECTRO-GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: B 633, TYPE III, SC 3

THREADS ON BOLTS AND NUTS SHALL BE MANUFACTURED WITH SUFFICIENT ALLOWANCE FOR THE CADMIUM PLATE OR GALVANIZED COATING TO PERMIT THE NUTS TO RUN FREELY ON THE BOLTS.

- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - 3/8" x 3"
 - MACHINE BOLTS - 5/16" x 6-1/2" OR 7" LENGTH W/ NUTS

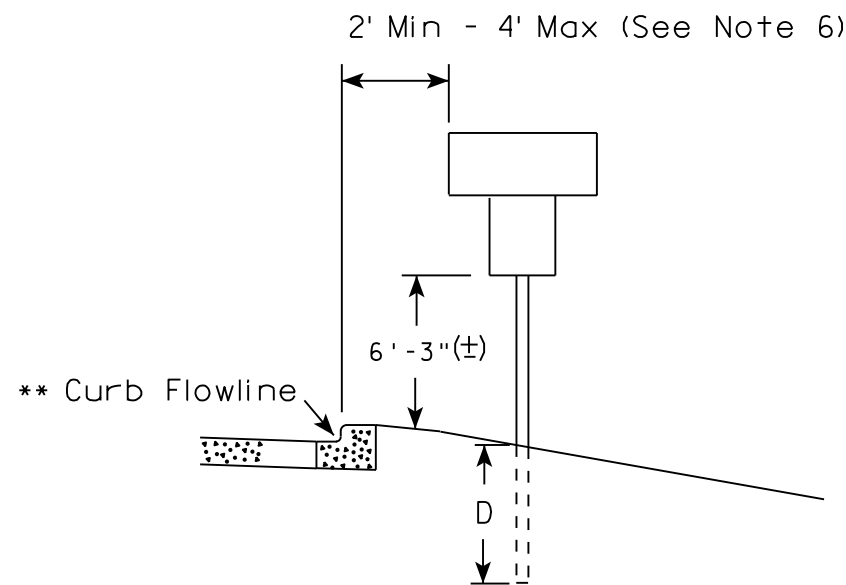
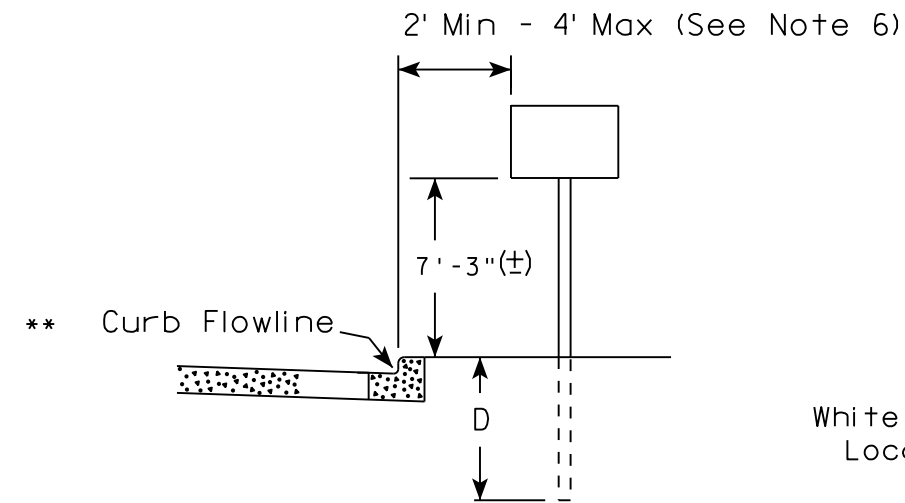
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - 3/8" x 3-1/4" LENGTH W/ NUTS
 - RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

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

* TWO DIFFERENT FASTENING SYSTEMS ARE SHOWN FOR ILLUSTRATION PURPOSES. ON ANY INDIVIDUAL SIGN, EITHER ONE OR THE OTHER SYSTEM SHALL BE USED. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

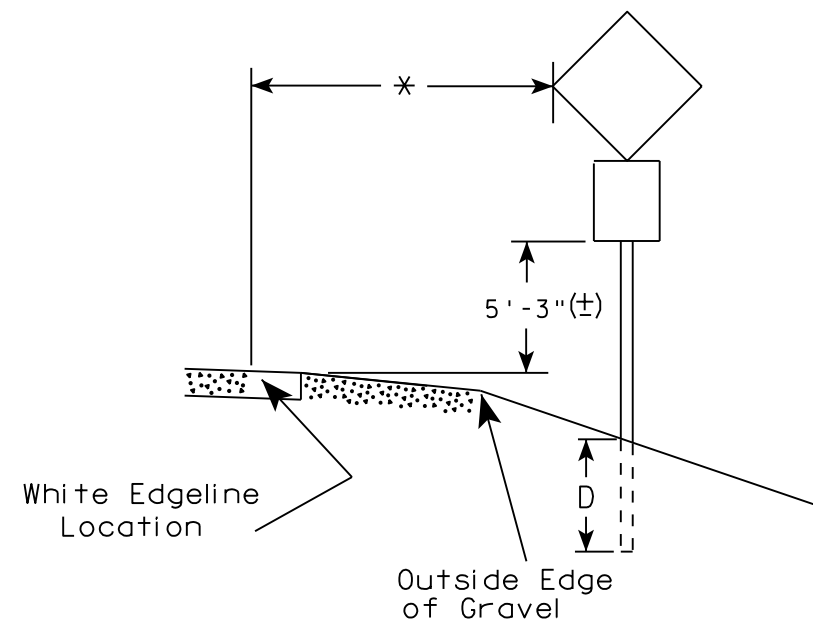
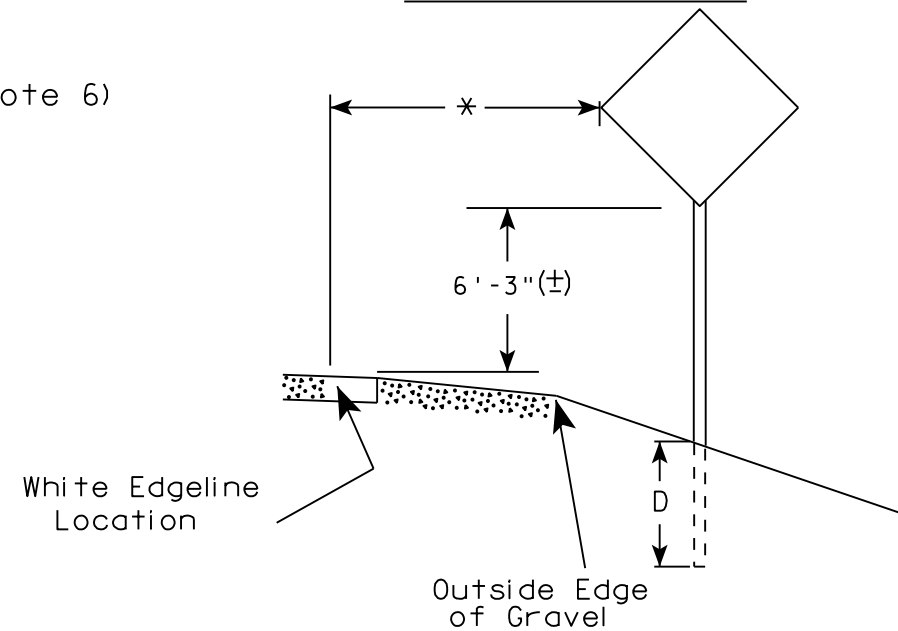
ATTACHMENT OF SIGNS TO POSTS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENC 91
FHWA	

URBAN AREA



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

RURAL AREA (See Note 2)



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

POST EMBEDMENT DEPTH

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

GENERAL NOTES

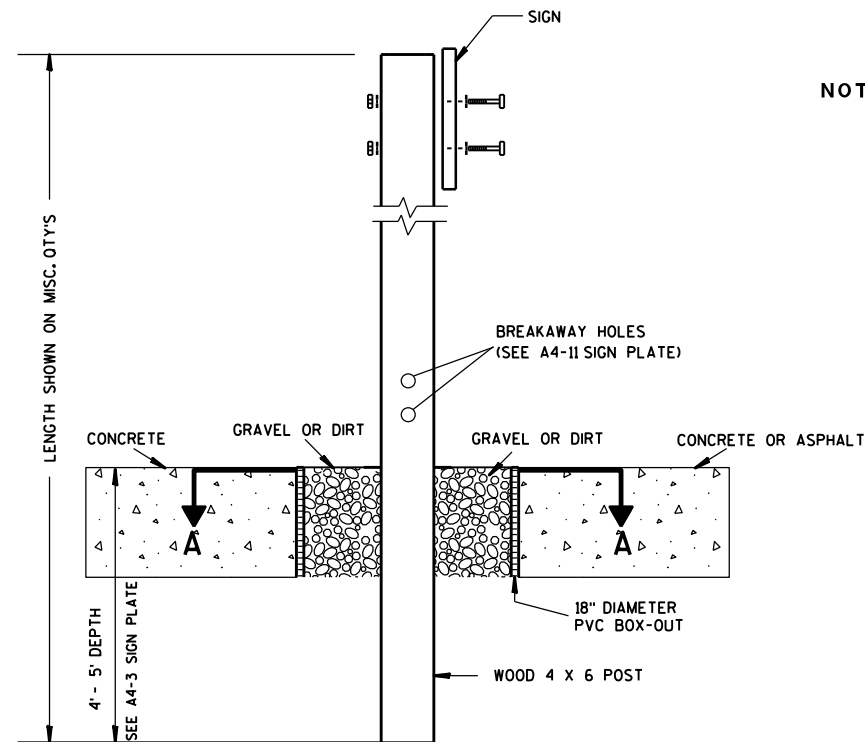
1. Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on barrier wall, see A4-10 sign plate.
3. For expressways and freeways, mounting height is 7'-3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
4. J-Assemblies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

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

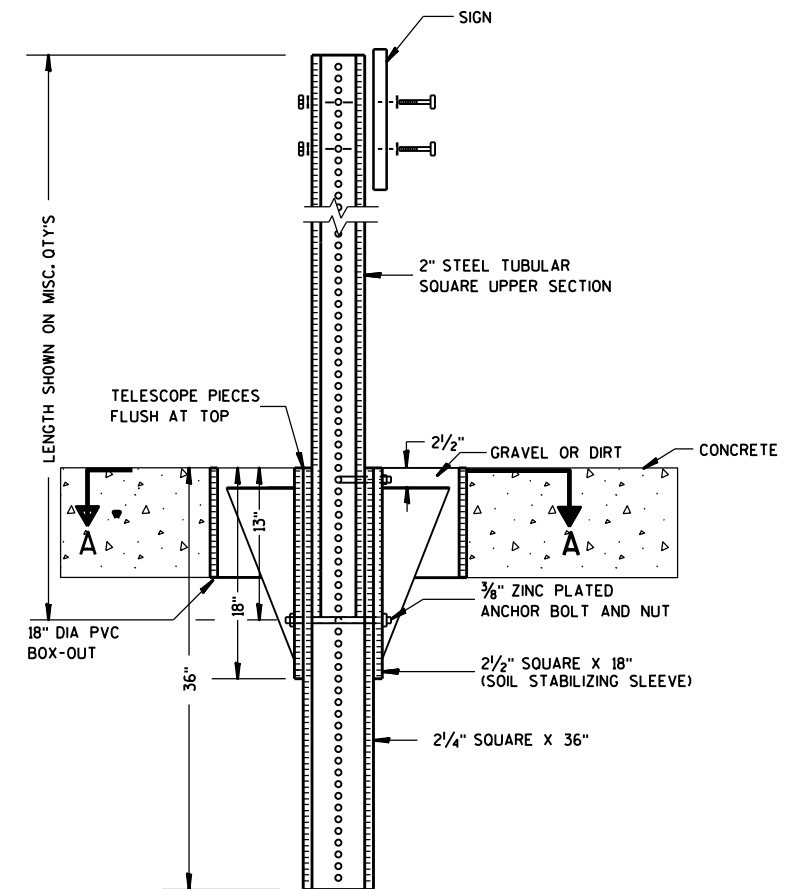
DATE 8/21/17 PLATE NO. A4-3.21



ELEVATION VIEW

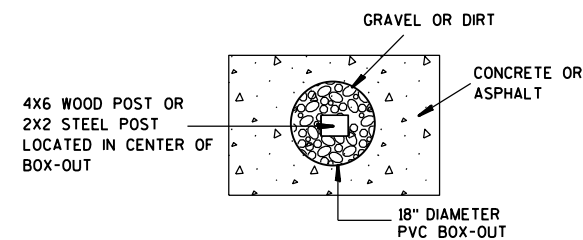
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST
BOX-OUTS
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/27/14 PLAT 93 A4-3B.1

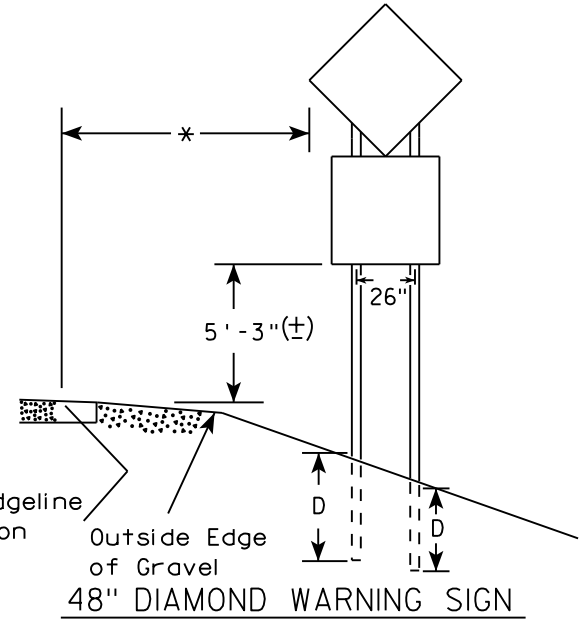
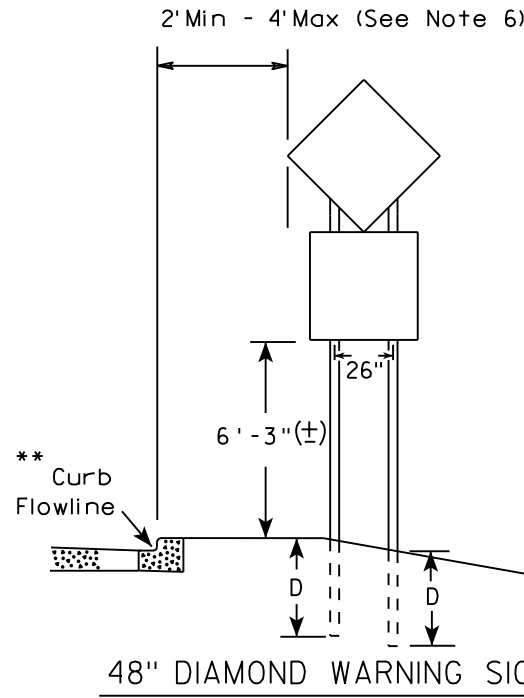
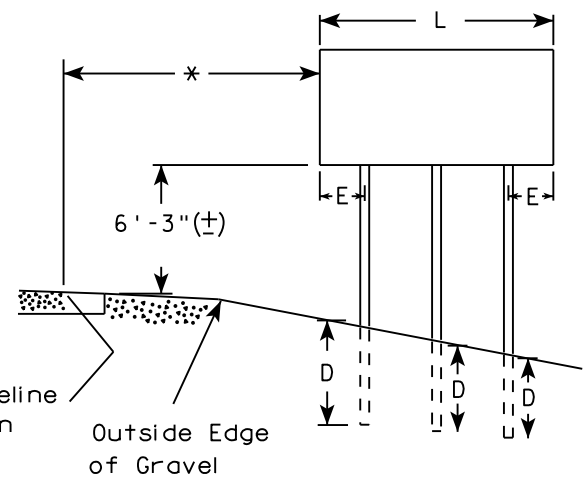
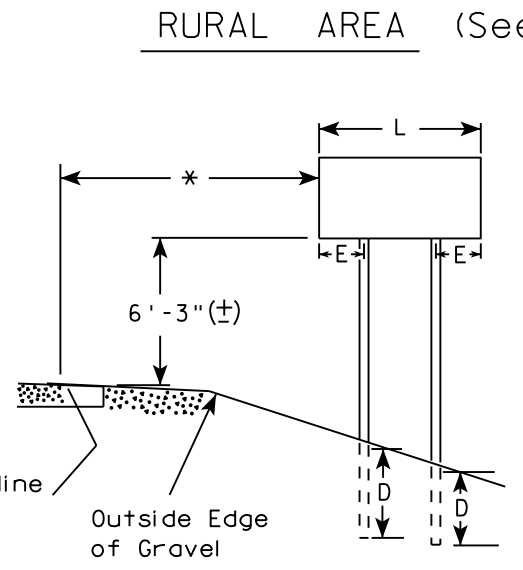
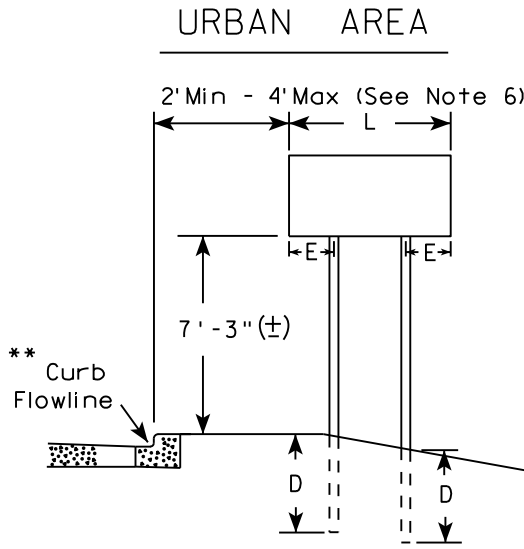
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



- GENERAL NOTES
1. For 3 or 4 post installations, individual post spacing shall be greater than 3'-6".
 2. See tables below for required number of posts.
 3. For expressways and freeways, mounting height is 7'-3" (±) or 6'-3" (±) depending upon existence of sub-sign.
 4. The (±) tolerance for mounting height is 3 inches.
 5. J-Assemblies are considered to be one sign for mounting height.
 6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
 7. Folding signs shall be mounted at a height of 5'-3" (±) or as directed by the engineer.
 8. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Clearance Markers (W5-52), Mile Markers (D10 series), In Road Object Markers (W5-54) & End of Road Markers (W5-56) shall be mounted at a height of 4"-3" (±).

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

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

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

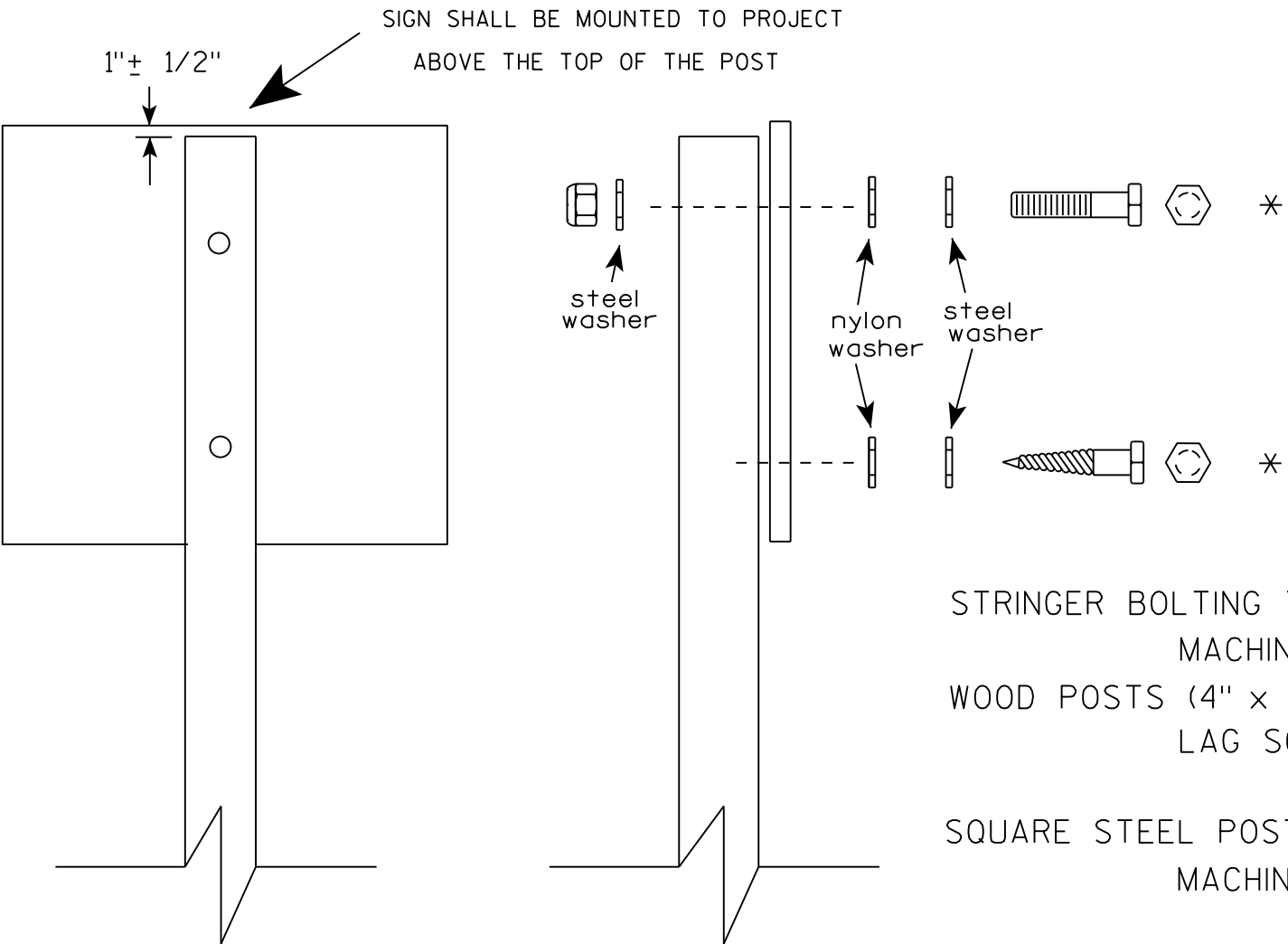
SIGN SHAPE OTHER THAN DIAMOND (TWO POSTS REQUIRED)	
L	E
Greater than 48" Less than 60"	12"
60" to 108"	L/5

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

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> for State Traffic Engineer
DATE 8/21/17	PLATE NO. A4-4.15



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

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

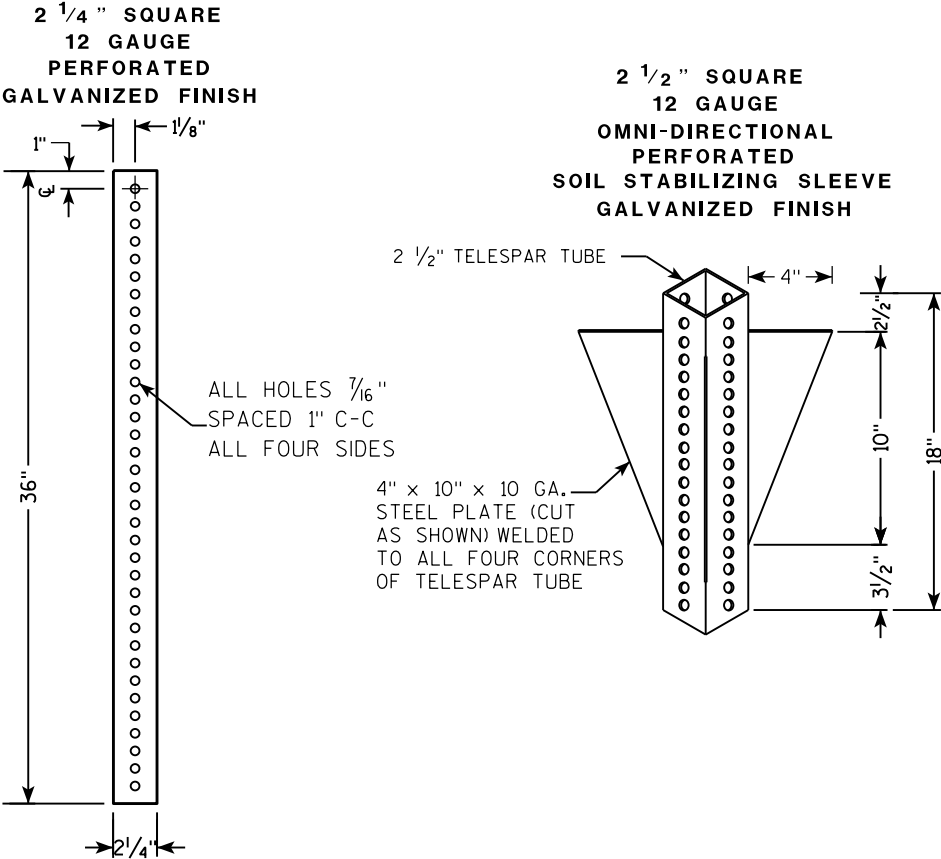
Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

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

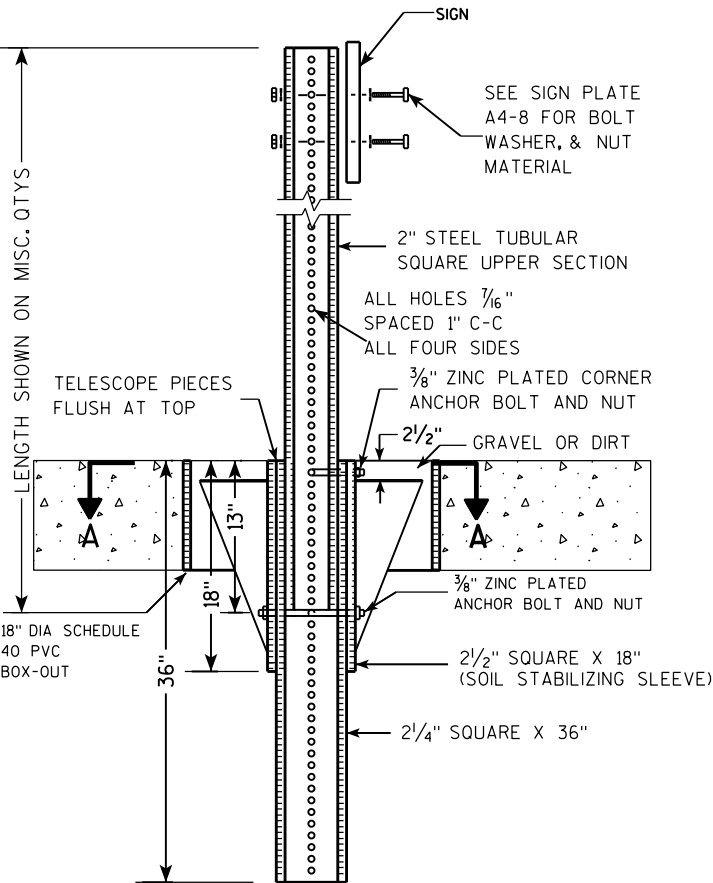
* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require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

ATTACHMENT OF SIGNS TO POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 8/11/16	PLATE NO. A4-8.8 95

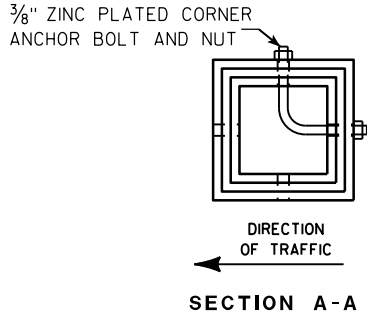
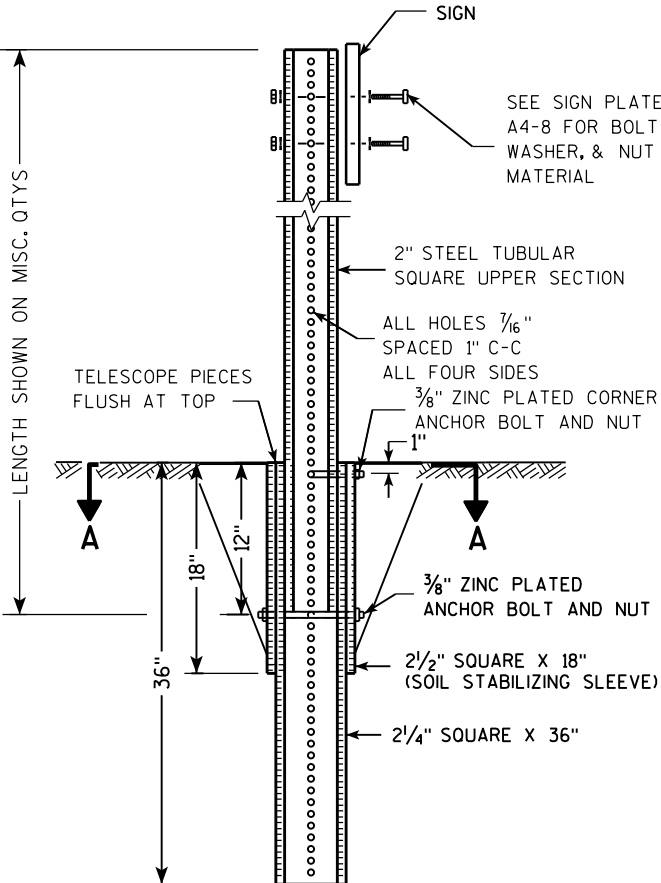
TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM



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



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



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

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

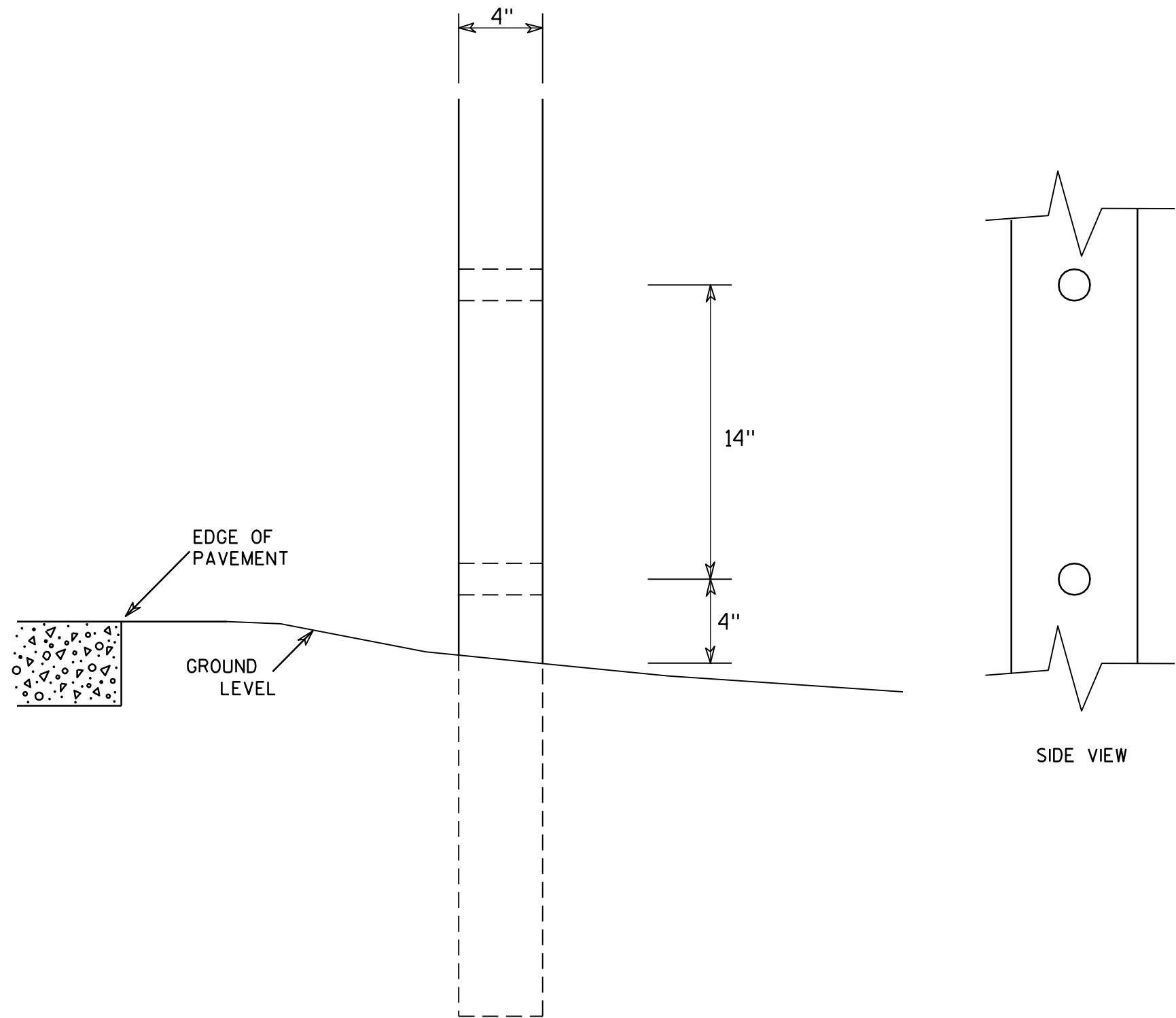
TUBULAR STEEL
SIGN POST
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 2/05/15 PLAT 96 14-9.9

7



GENERAL NOTES

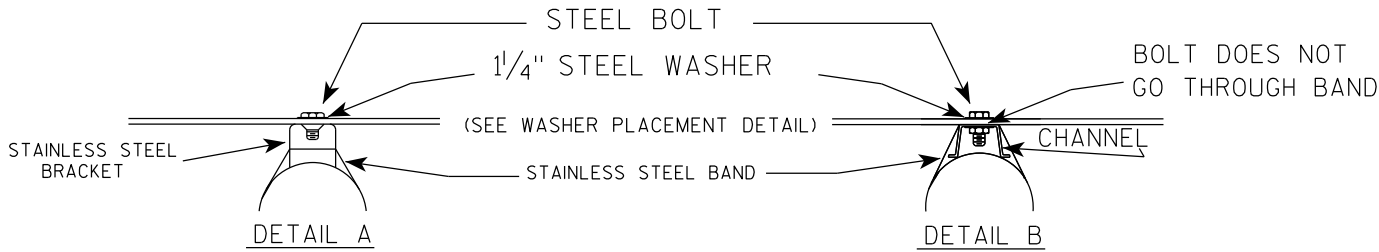
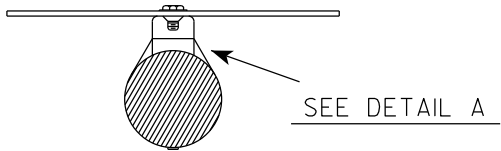
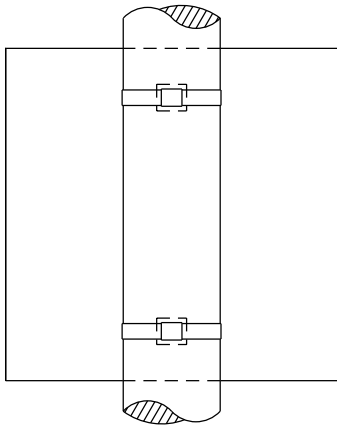
1. All 4 x 6 Wood Posts shall be modified by having two 1½" diameter holes drilled perpendicular to the roadway centerline.

7

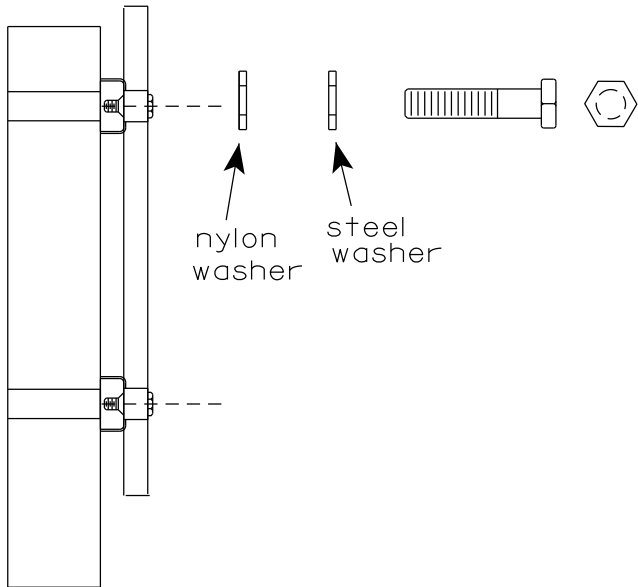
4 X 6 WOOD POST MODIFICATIONS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Chester J. Spang</i> for State Traffic Engineer
DATE 3/27/97	PLATE NO. A4-11.2

BANDING

SINGLE SIGN



WASHER PLACEMENT

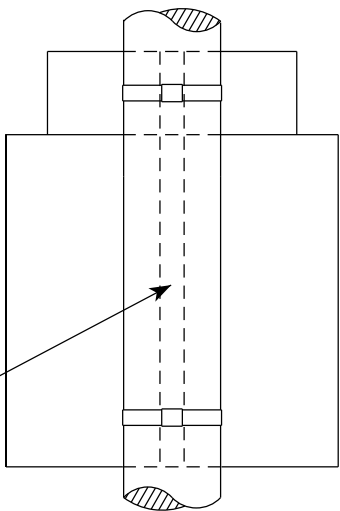


WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON
FOR ALL TYPE H SIGNS

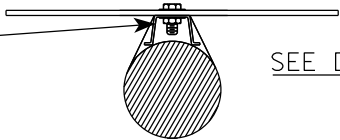
GENERAL NOTES

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

"J" ASSEMBLY



CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET

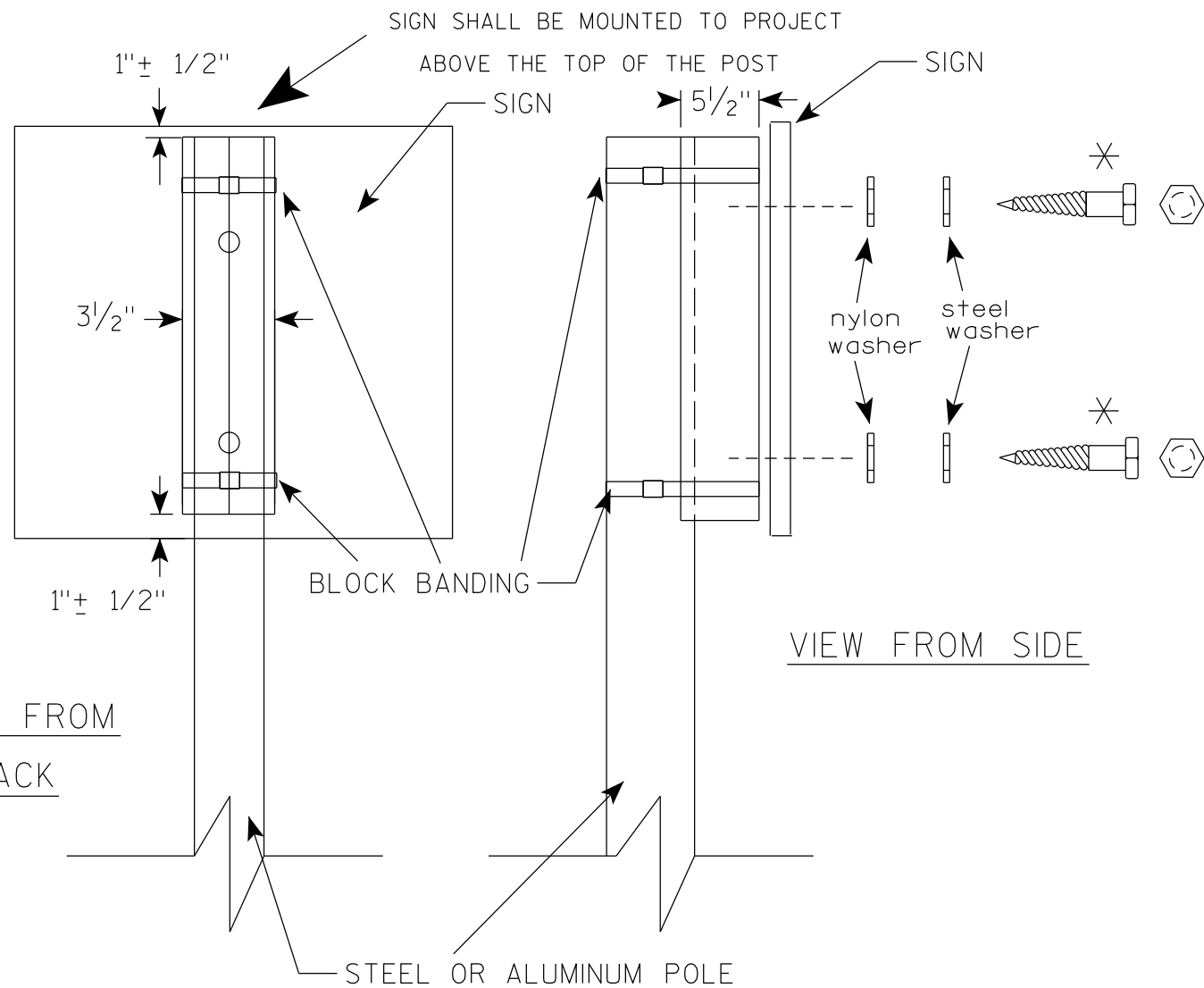


STANDARD SIGN
SIGN BANDING DETAILS

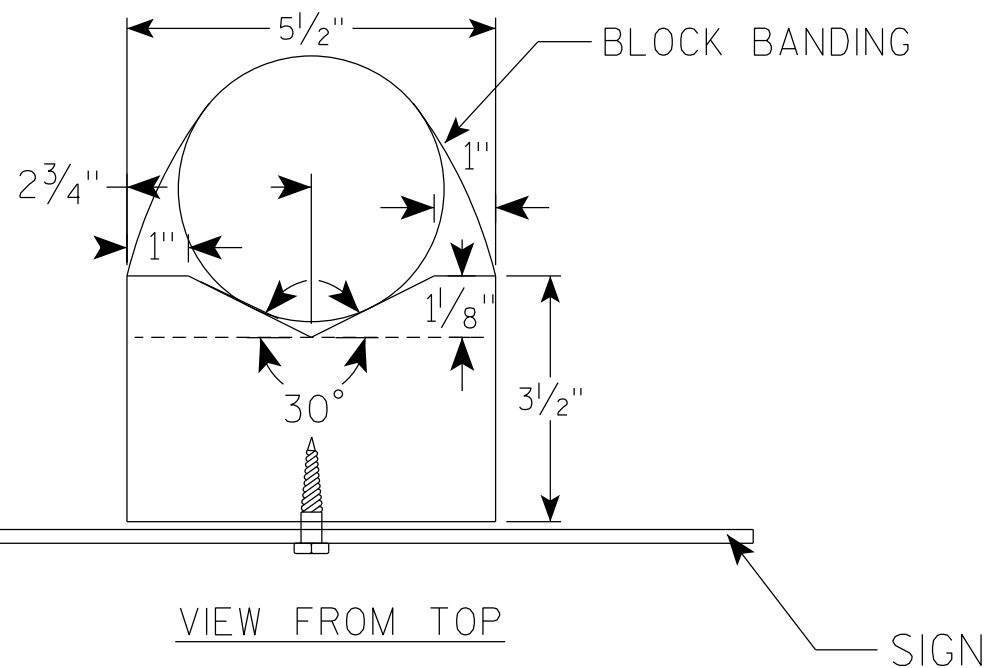
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer
DATE 6/10/19 PLATE NO. A5-9.4

VIEW FROM
BACK



VIEW FROM SIDE



GENERAL NOTES

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

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

BLOCK BANDING DETAIL
(V-BLOCK OPTION)

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

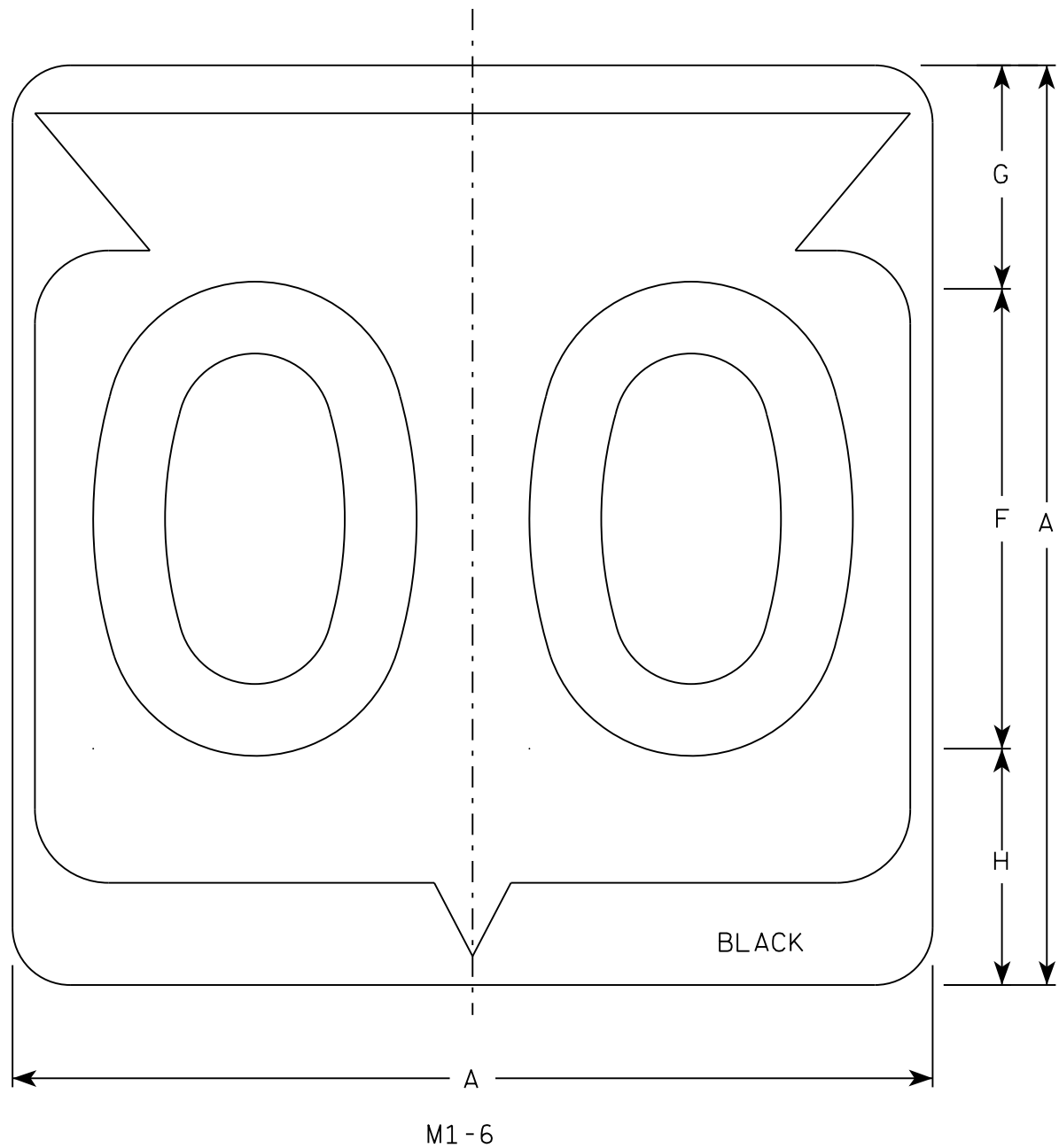
DATE 6/10/19 PLATE NO. A5-10.2

PROJECT NO:

SHEET NO: 99

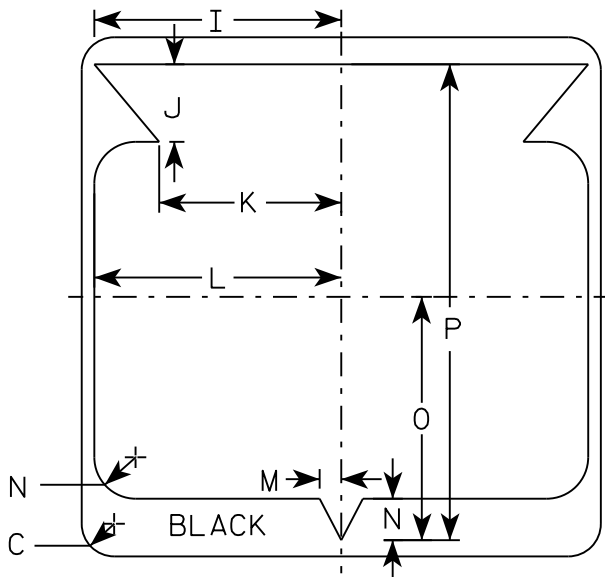
E

7



NOTES

- 1. Sign is Type II - Type H Reflective
- 2. Color:
Background - White
Message - Black
- 3. Message Series - D except 3 number signs Series C
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.



7

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24		1 1/2			12	5 1/2	6 1/2	10 1/4	2 1/2	8 7/8	11 1/2	1	1 7/8	11 1/4	21 7/8											4.0
3	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0
4	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0
5	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0

PROJECT NO:

HWY:

COUNTY:

SHEET NO: 100

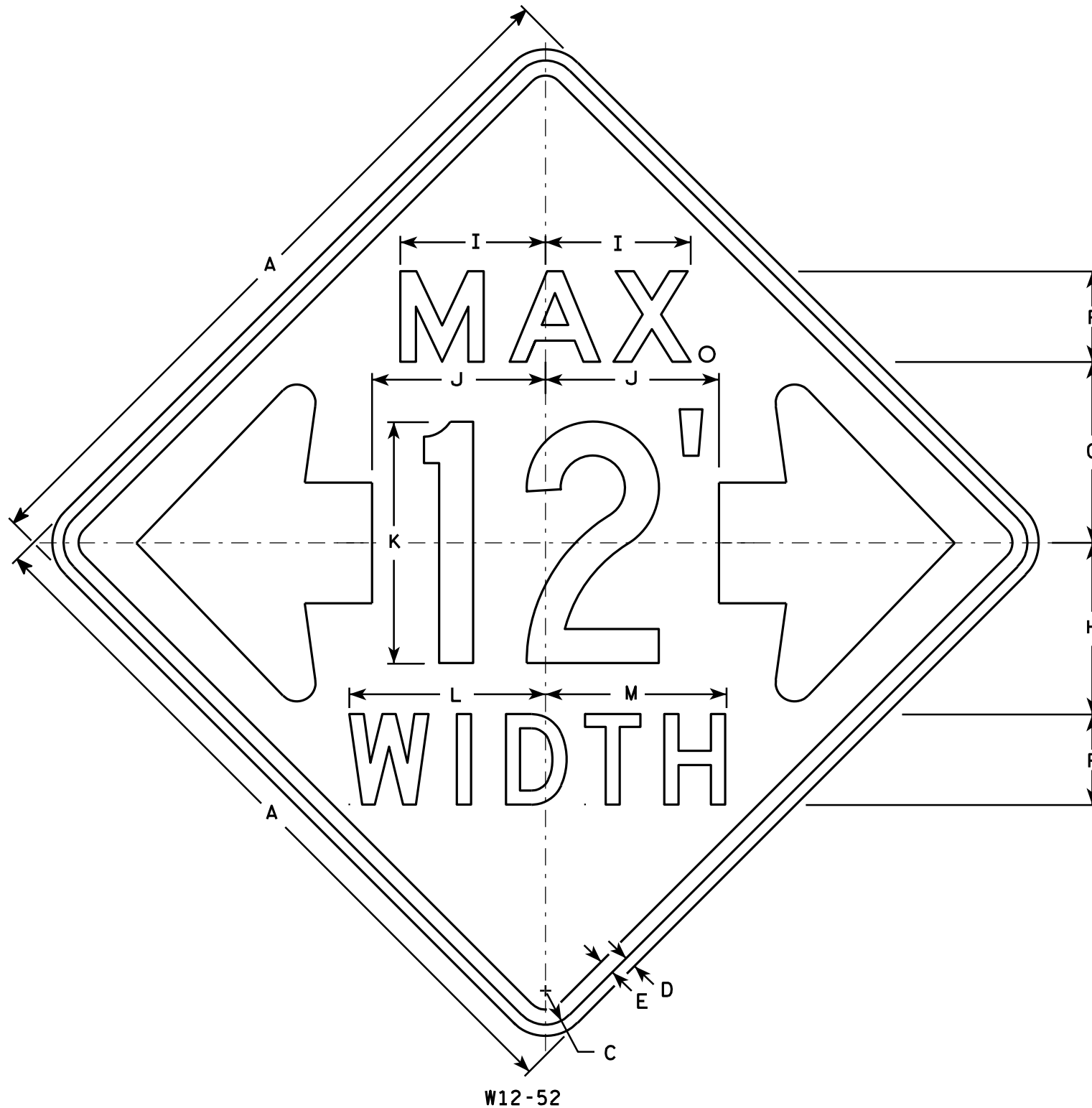
E

STATE ROUTE MARKER
M1-6 FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

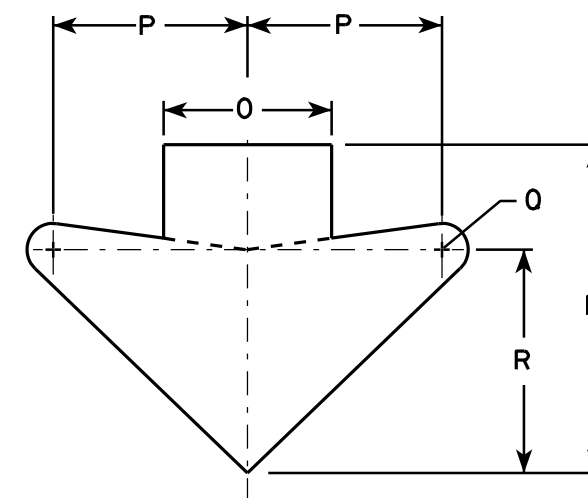
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 3/16/18 PLATE NO. M1-6.10



NOTES

1. Sign Is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Orange
Message - Black
3. Message Series - See note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. The top line is series E, the numerals are series C, and the bottom line is series D.
6. Substitute appropriate numerals and adjust spacing as required.



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48		2 1/4	3/4	1	6	12	11 3/8	9 5/8	11 1/2	16	13	12	15 5/8	8	9 1/4	1 1/4	10 5/8									16.0
2M	48		2 1/4	3/4	1	6	12	11 3/8	9 5/8	11 1/2	16	13	12	15 5/8	8	9 1/4	1 1/4	10 5/8									16.0
3																											
4																											
5																											

STANDARD SIGN W12-52

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 3/16/11 PLATE NO. W12-52.7

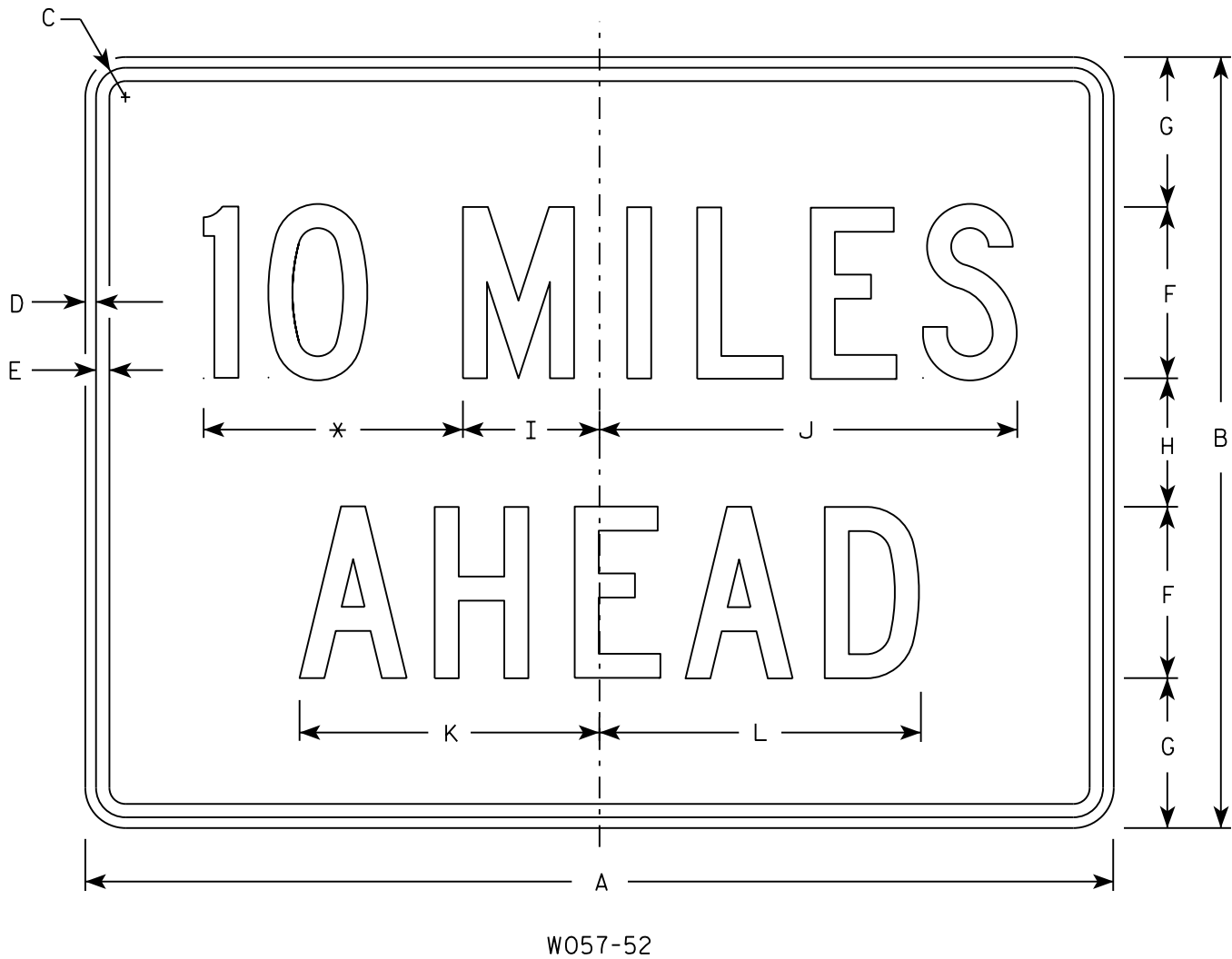
PROJECT NO:

HWY:

COUNTY:

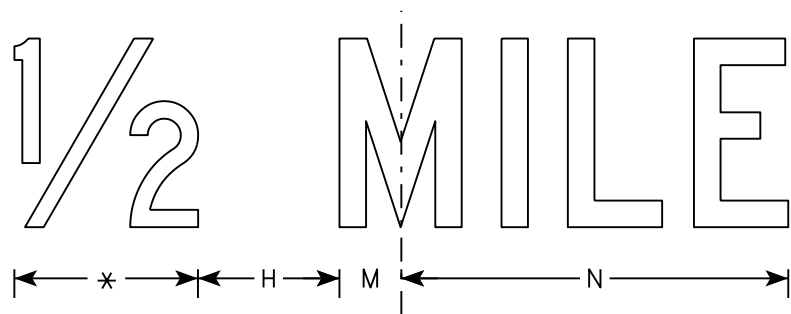
SHEET NO: 101

E



NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
Background - Orange
Message - Black
- 3. Message Series - C
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 5. Substitute appropriate numerals to the nearest quarter mile and optically adjust spacing to achieve proper balance.



* See note 5

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	24	1 1/8	3/8	1/2	6	4 1/2	3	4 3/4	14 5/8	10 5/8	11 3/8	2	12													6.0
2S	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0
2M	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0
3	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0
4	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0
5	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0

PROJECT NO:

HWY:

COUNTY:

DATE 3/21/17

PLATE NO. W057-52.2

SHEET NO: 102

E

STANDARD SIGN
W057-52

WISCONSIN DEPT OF TRANSPORTATION

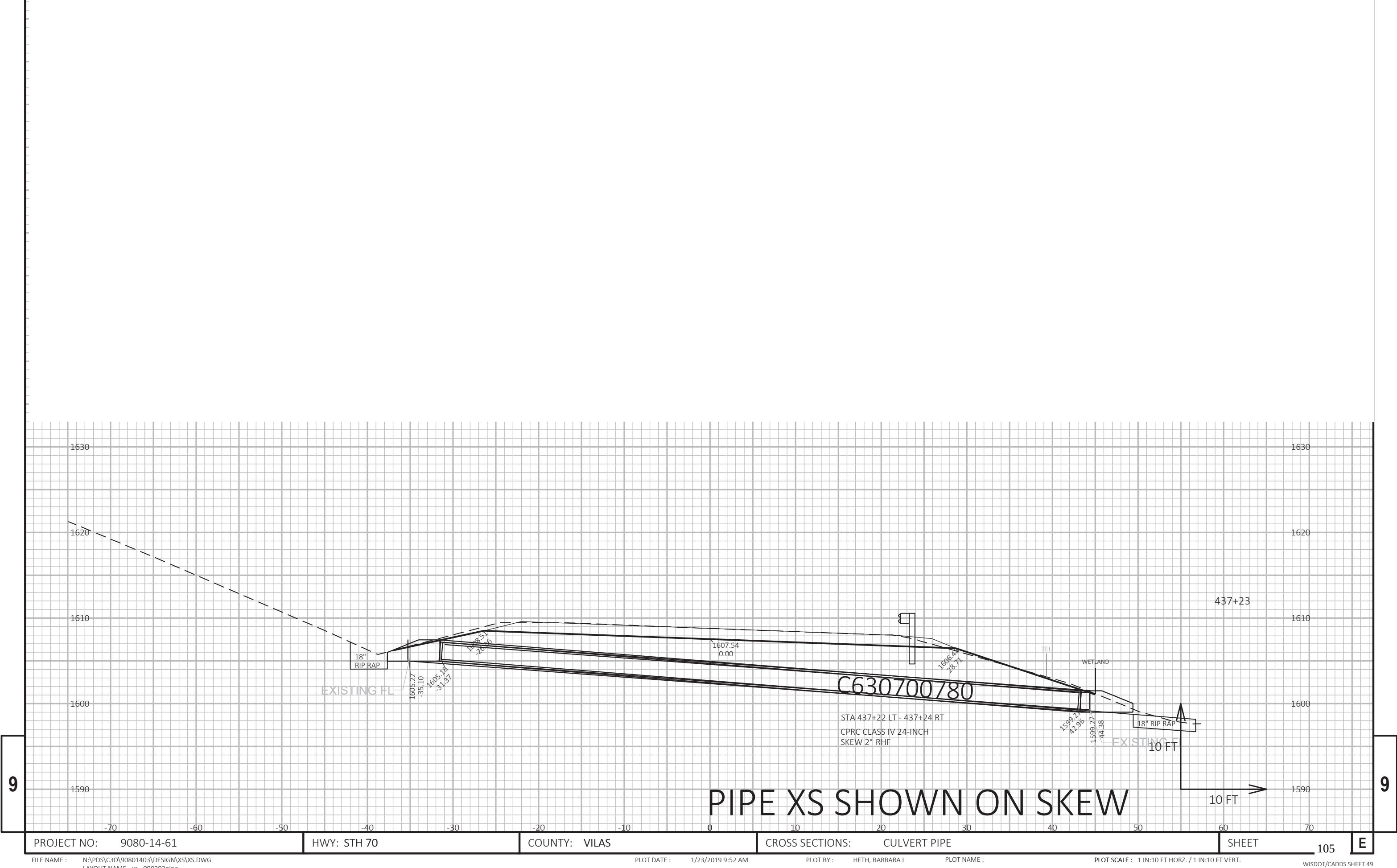
APPROVED
Matthew R. Rauch
for State Traffic Engineer

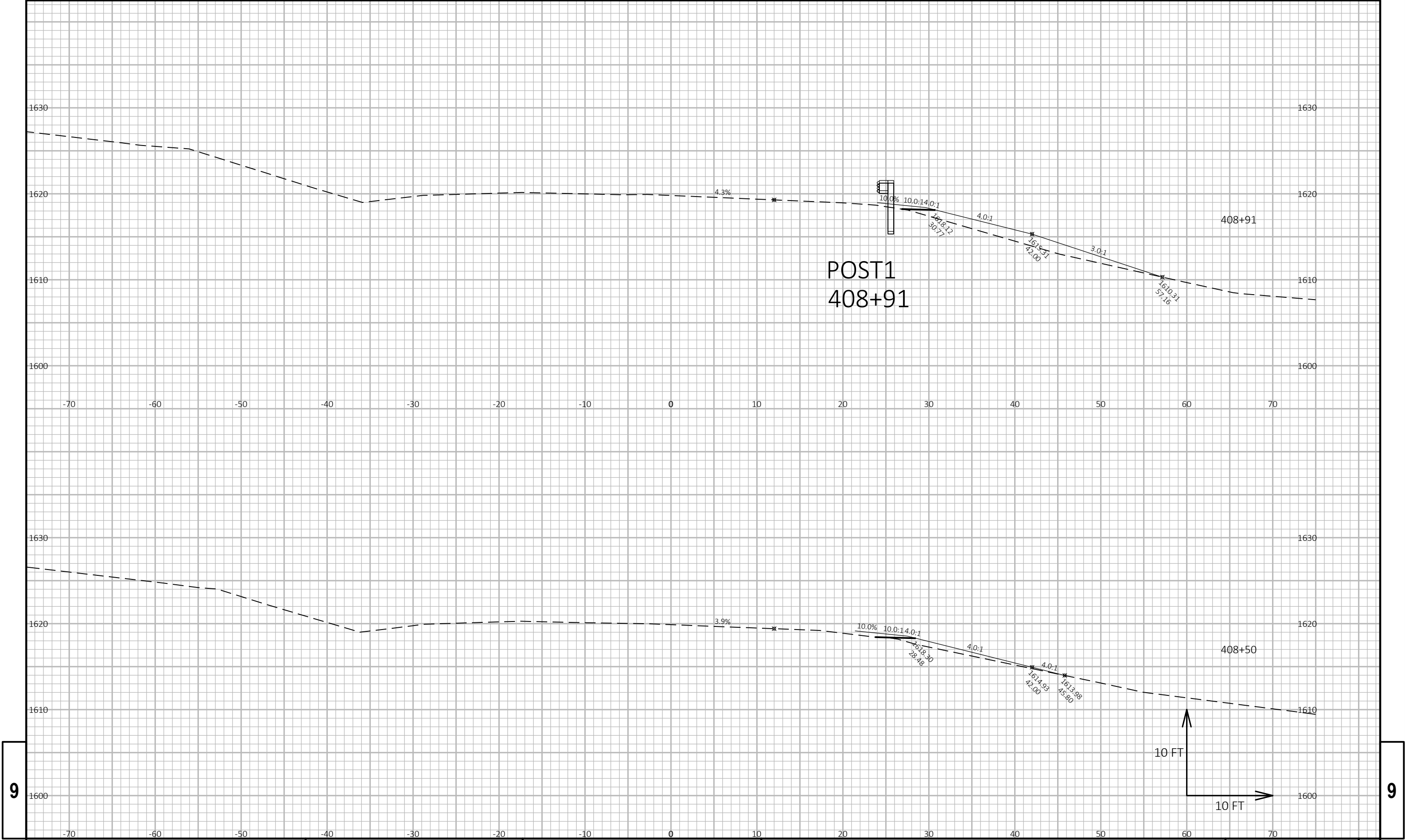
DATE 3/21/17

PLATE NO. W057-52.2

NOTE

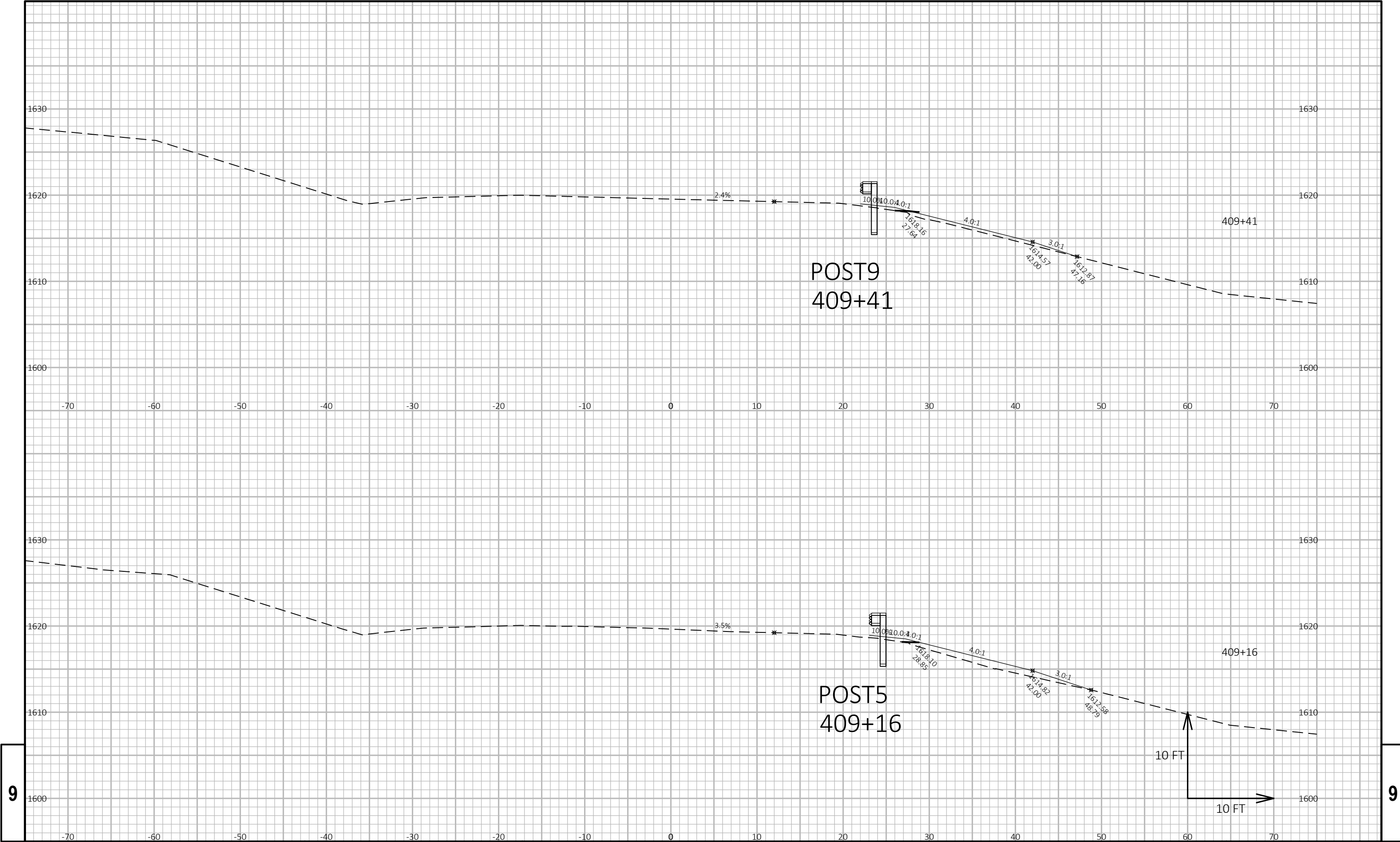
8. The Mass Ordinate + or - Quantity calculated for for the Division.
Plus (+) quantity is an excess of material within the Division.
Minus (-) quantity is a shortage of material within the Division





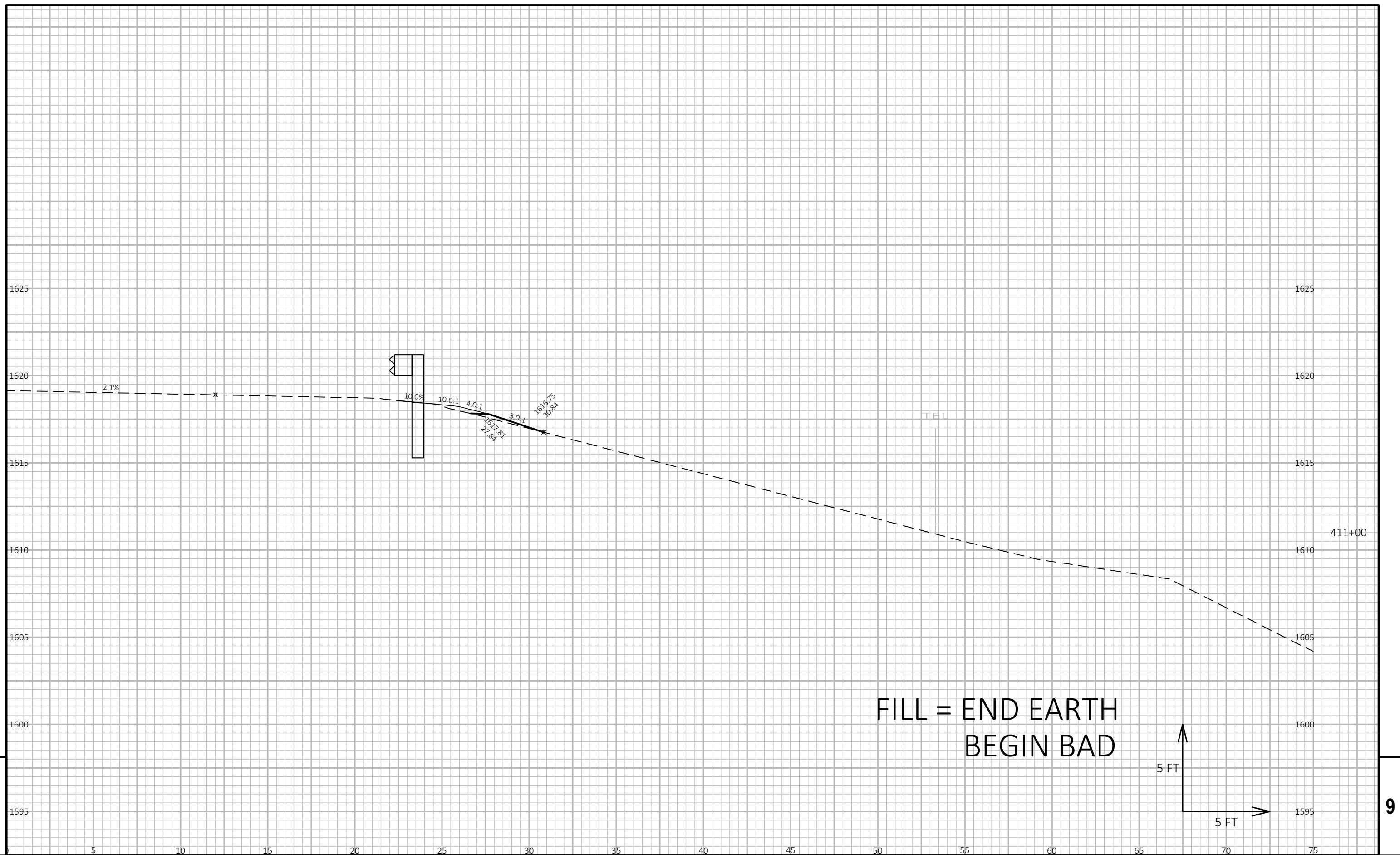
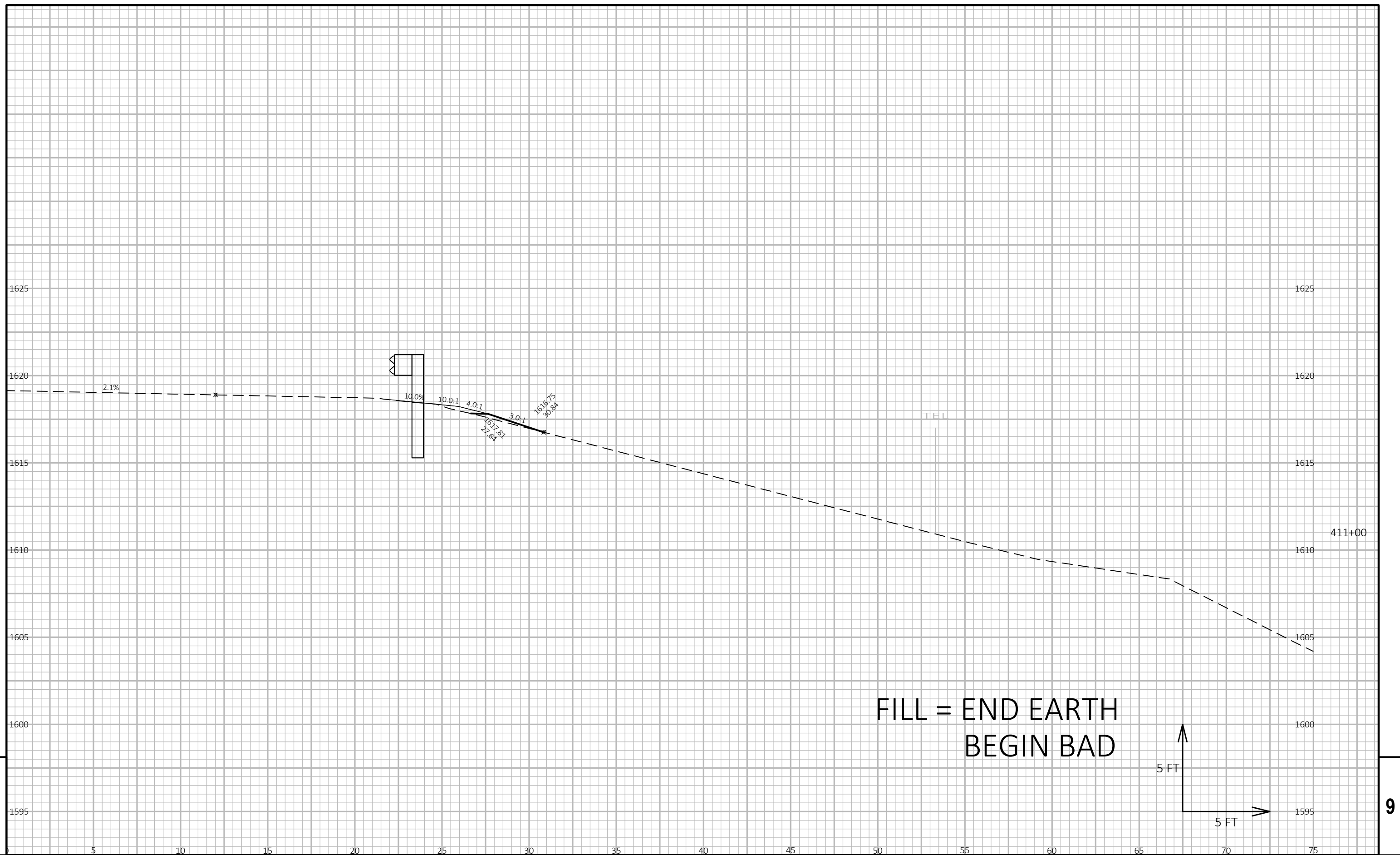
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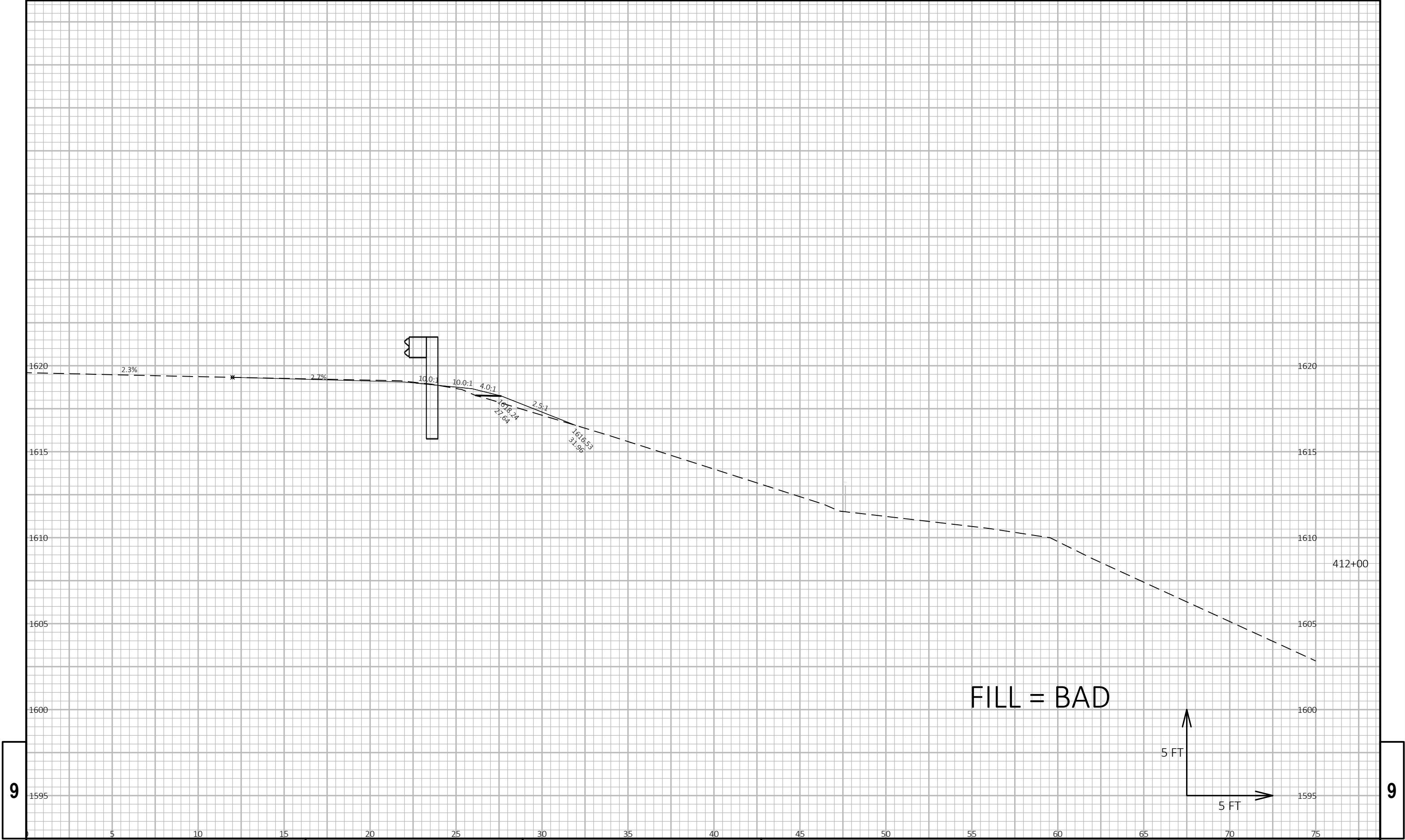
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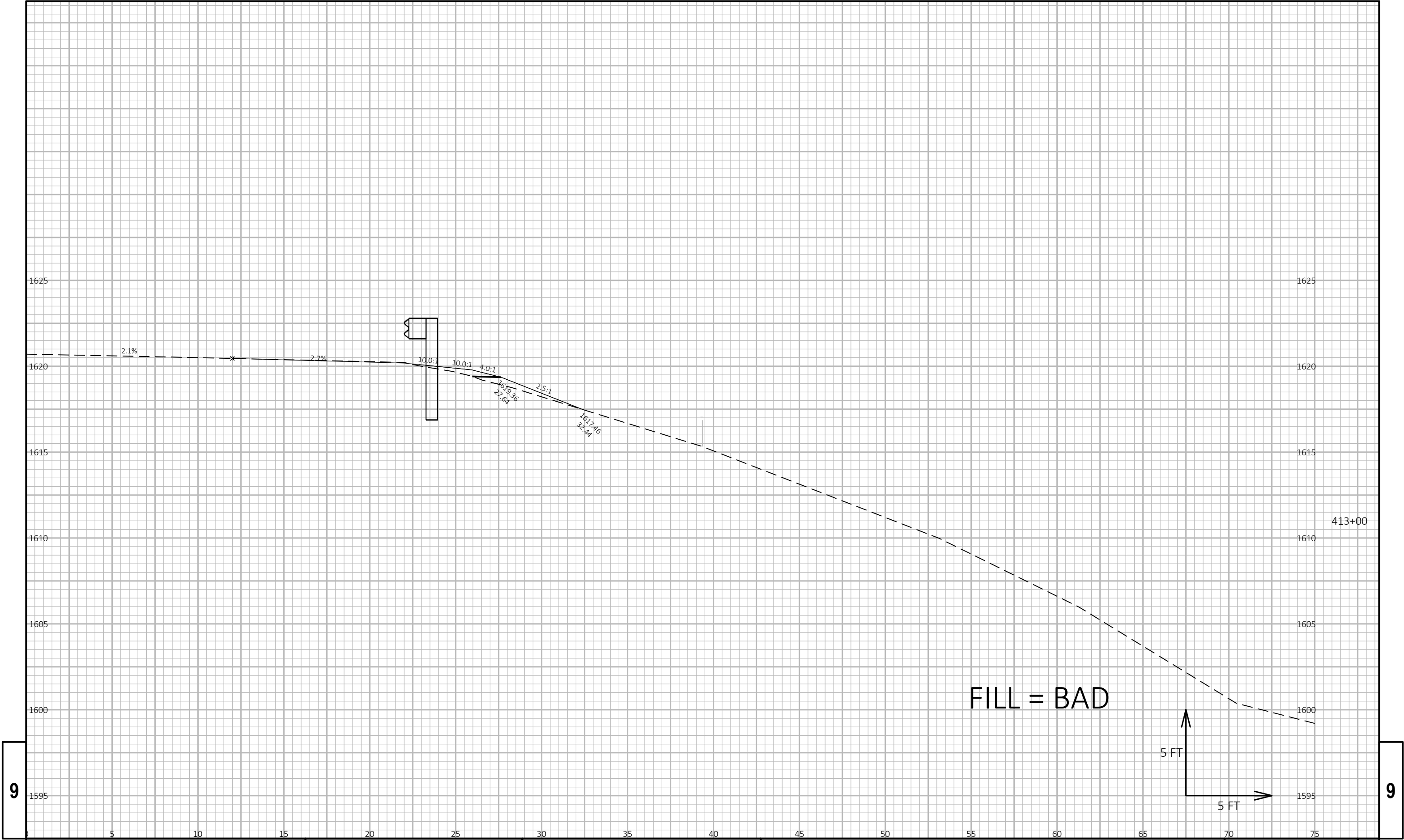
PROJECT NO: 9080-14-73	HWY: STH 70	COUNTY: VILAS	CROSS SECTIONS: CROSS SECTIONS 408 - 444 GUARDRAIL	SHEET 109	E
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FILE NAME :	N:\PDS\C3D\90801403\DESIGN\XS\XS-LONGBG.DWG	PLOT DATE :	1/7/2019 5:10 PM	PLOT BY :	HETH, BARBARA L	PLOT NAME :		PLOT SCALE :	1 IN=5 FT HORZ. / 1 IN=5 FT VERT.	WISDOT/CADD SHEET 49
LAYOUT NAME :	090208-xs-Lbg									



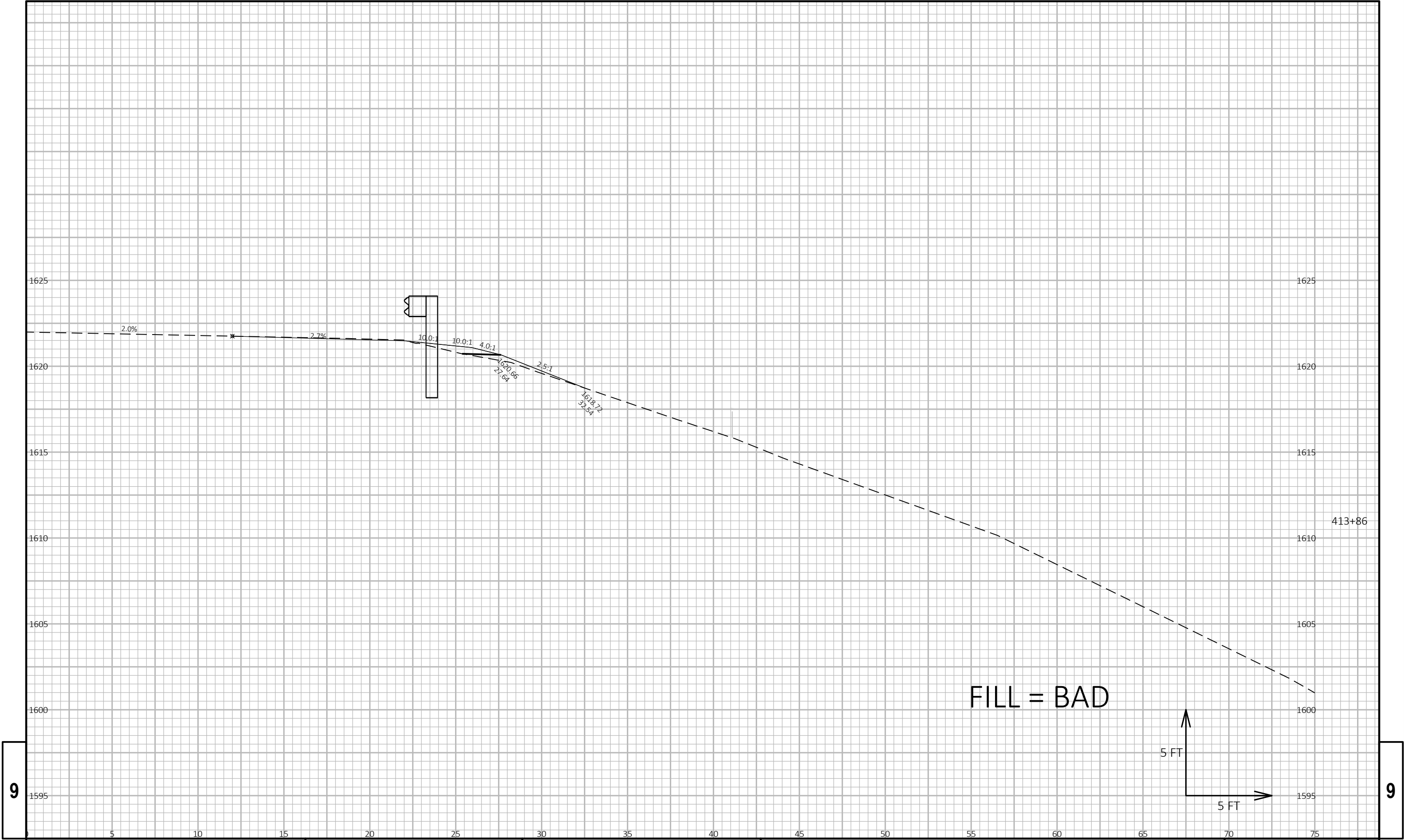
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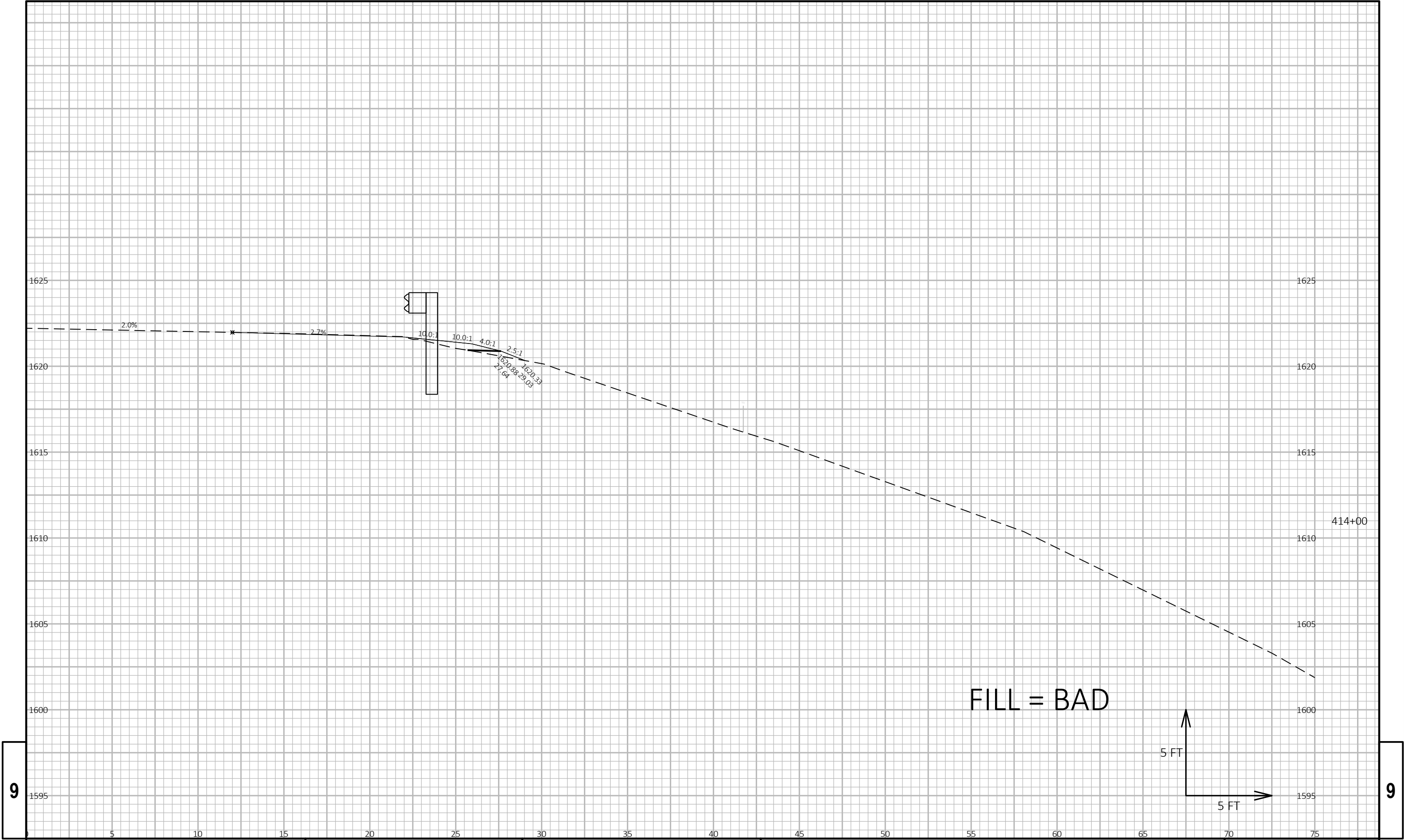
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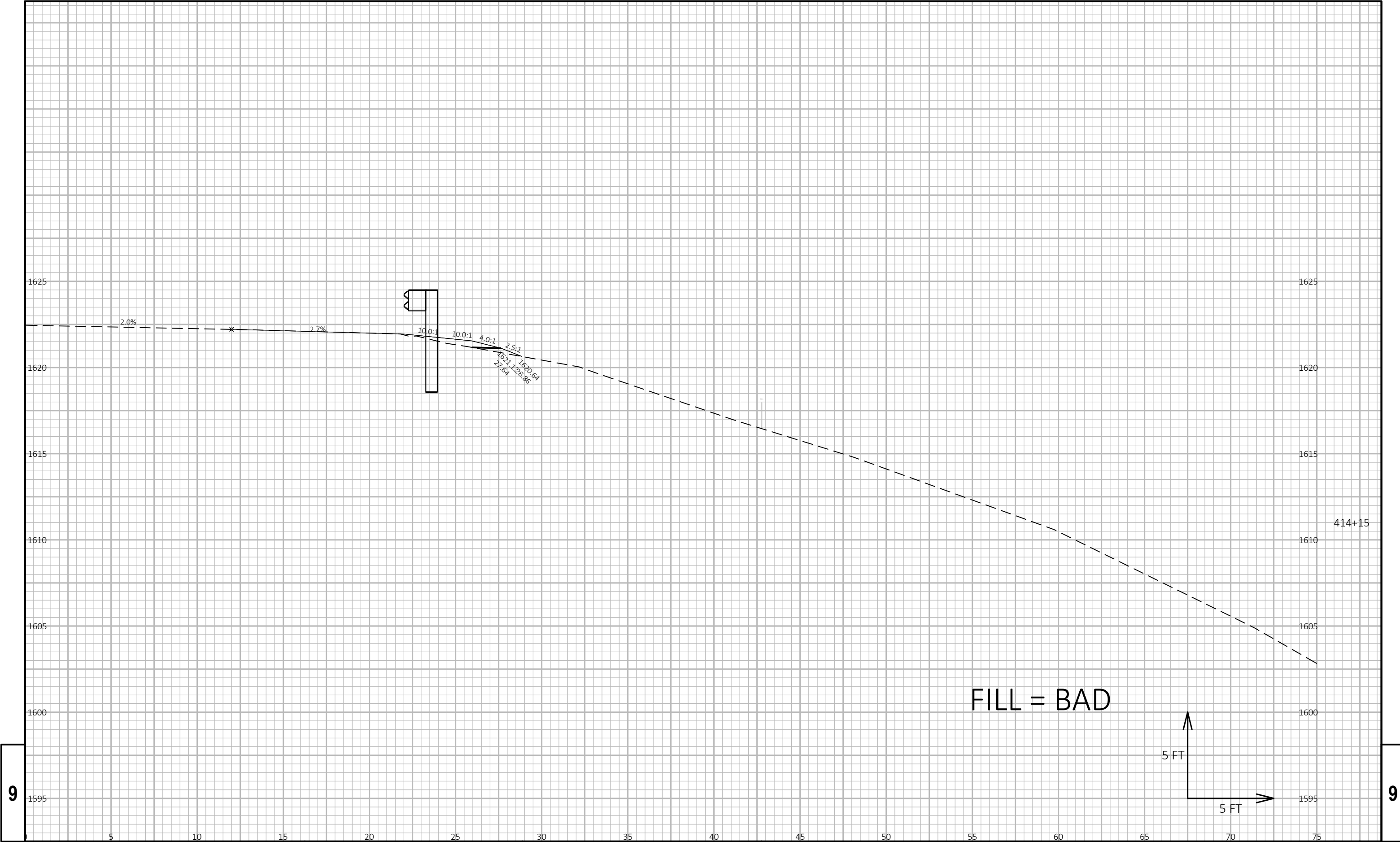
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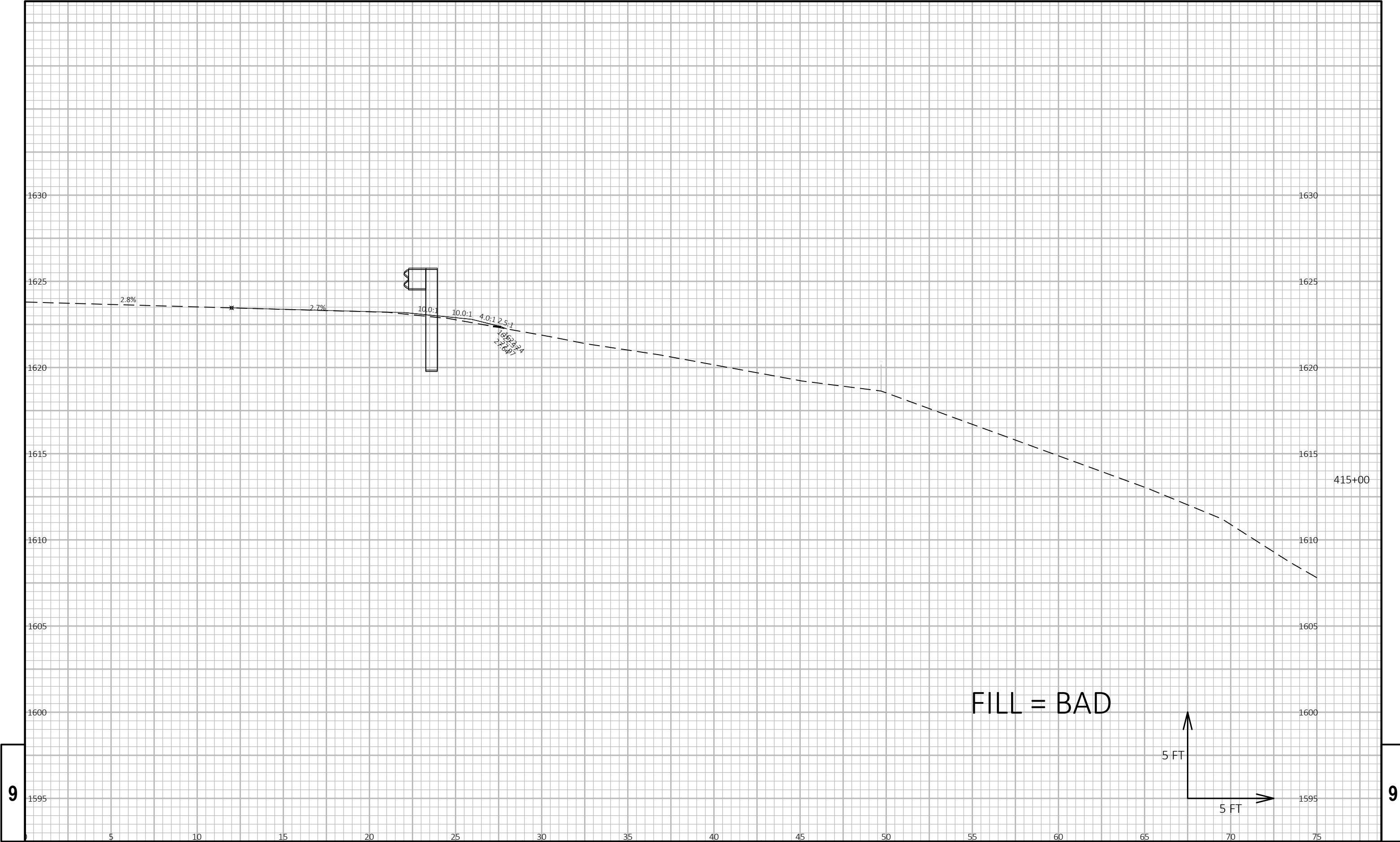
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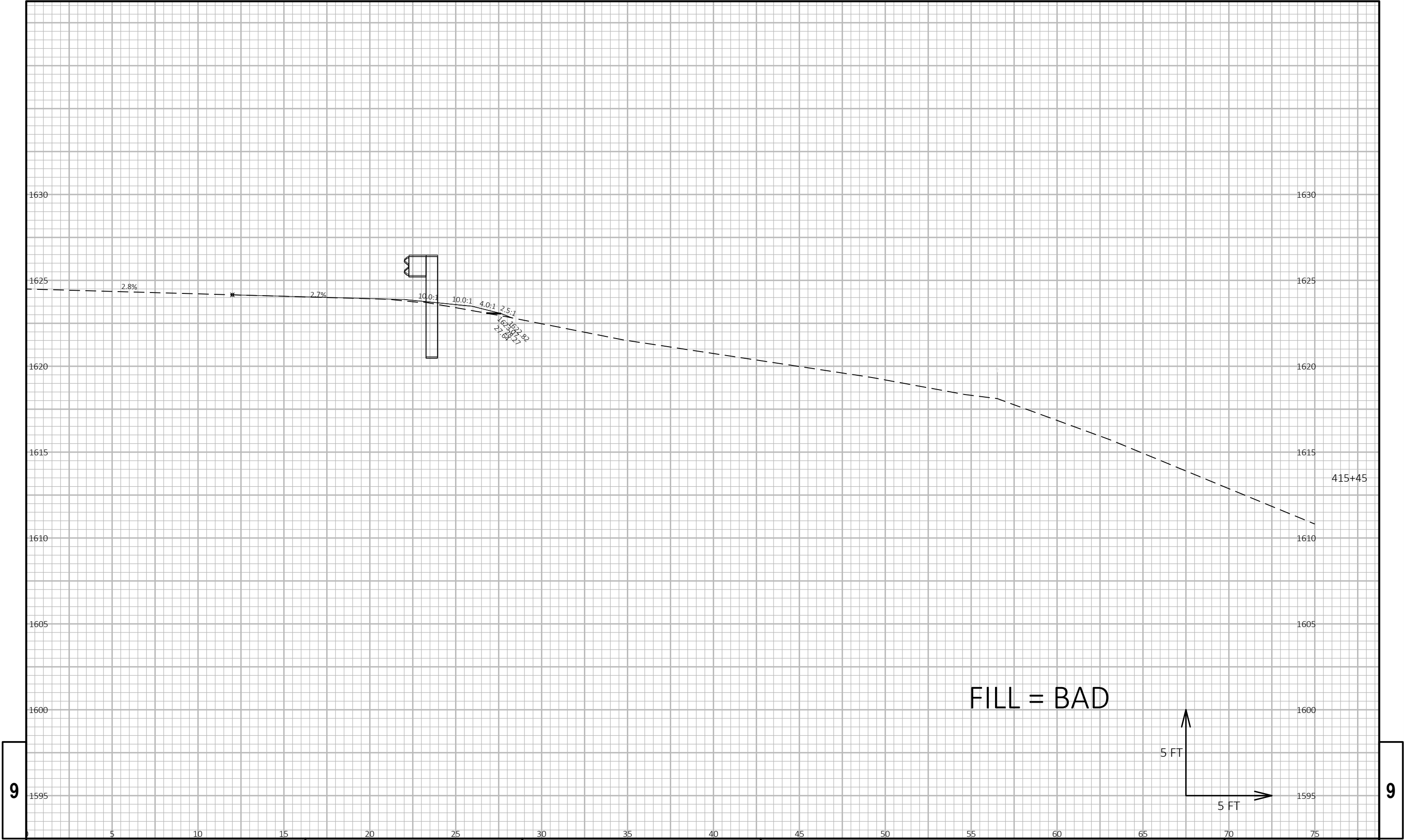
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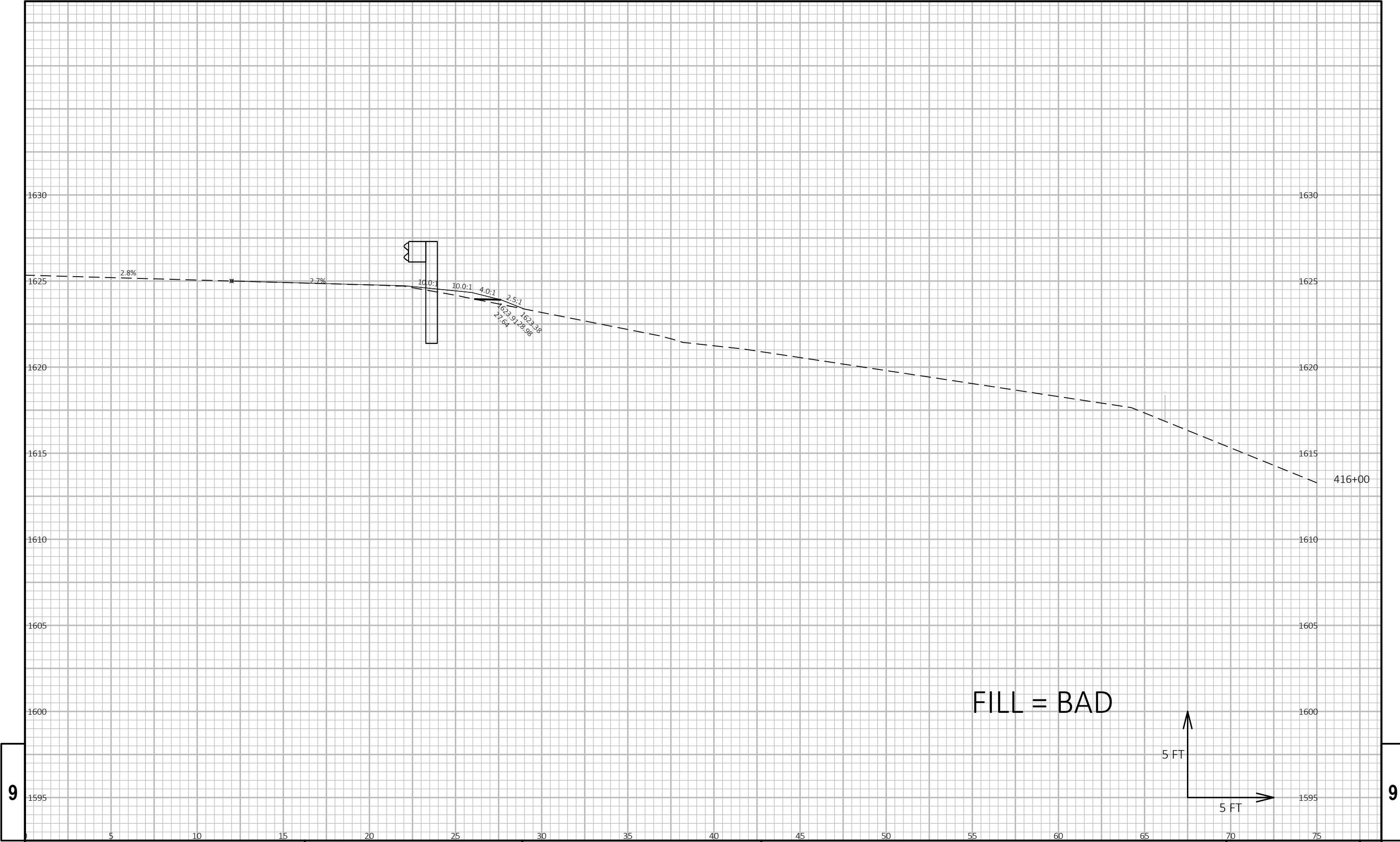
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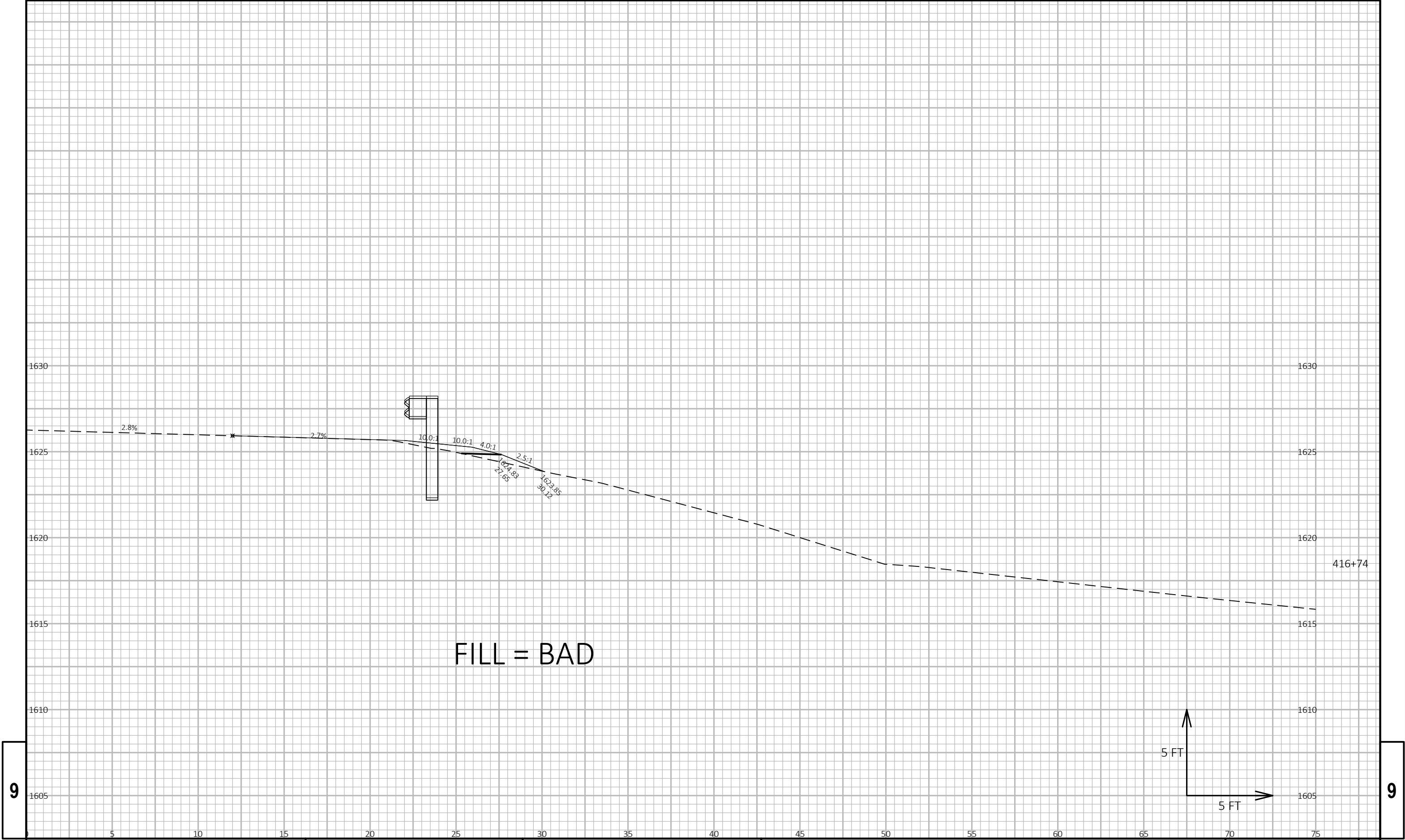
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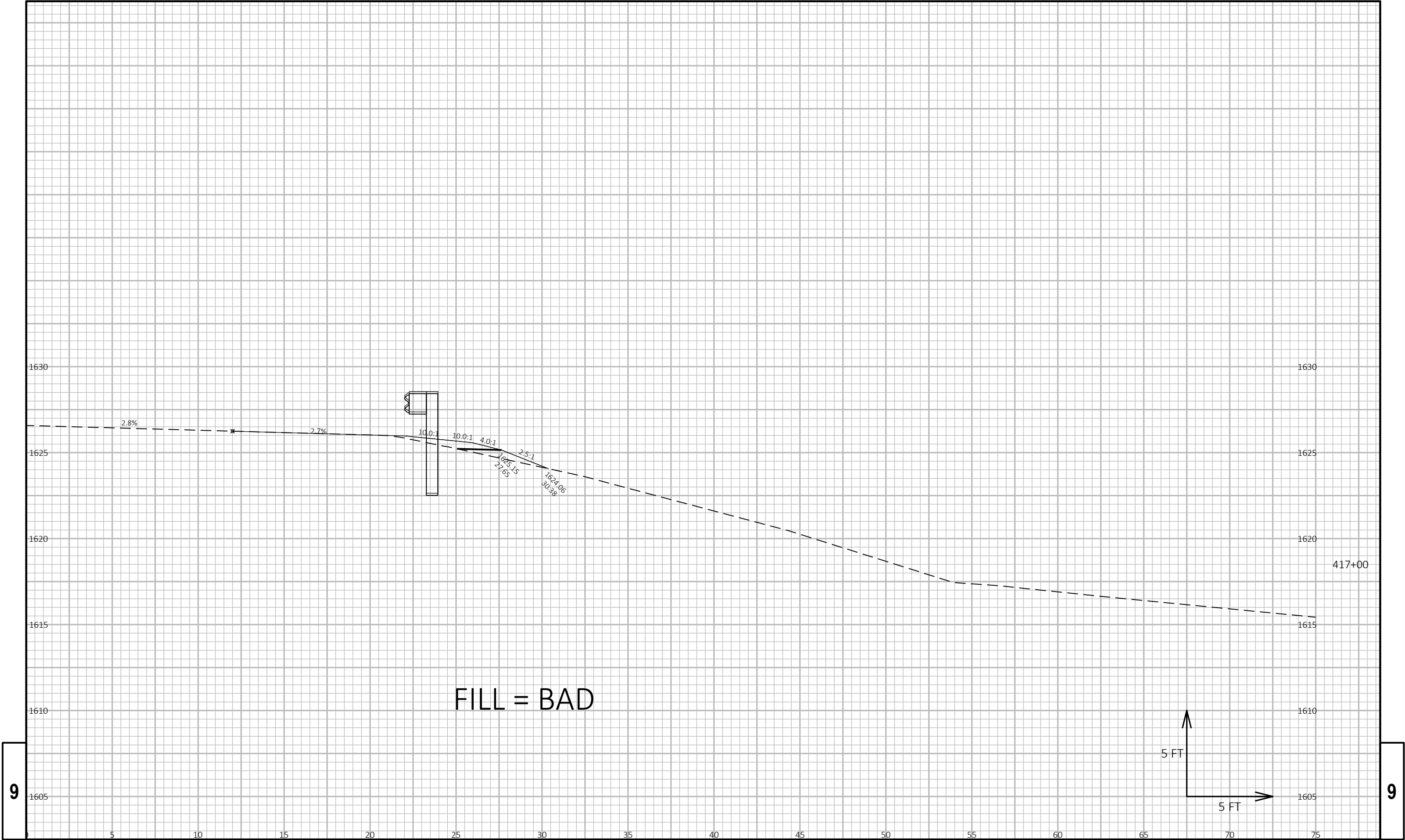
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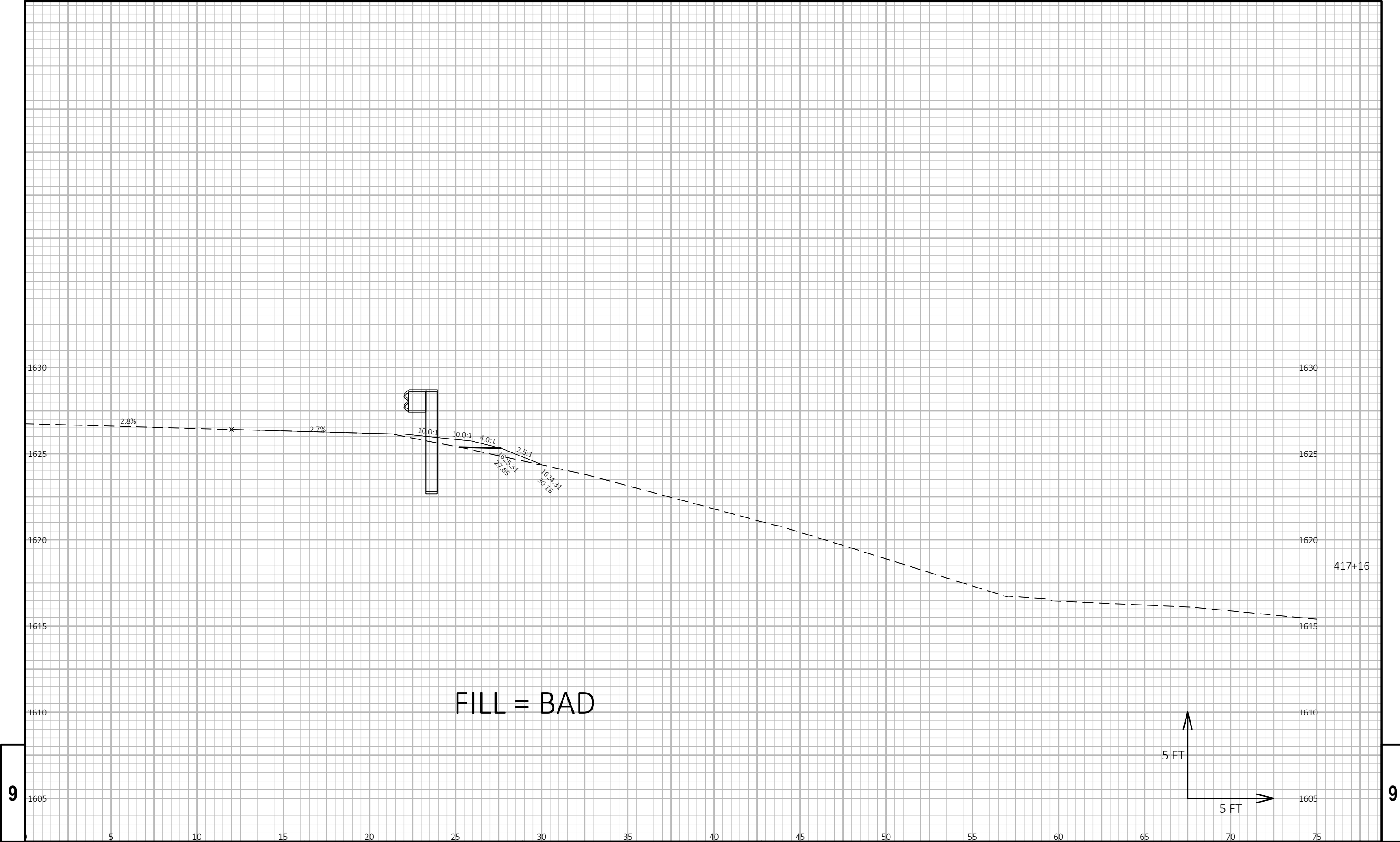
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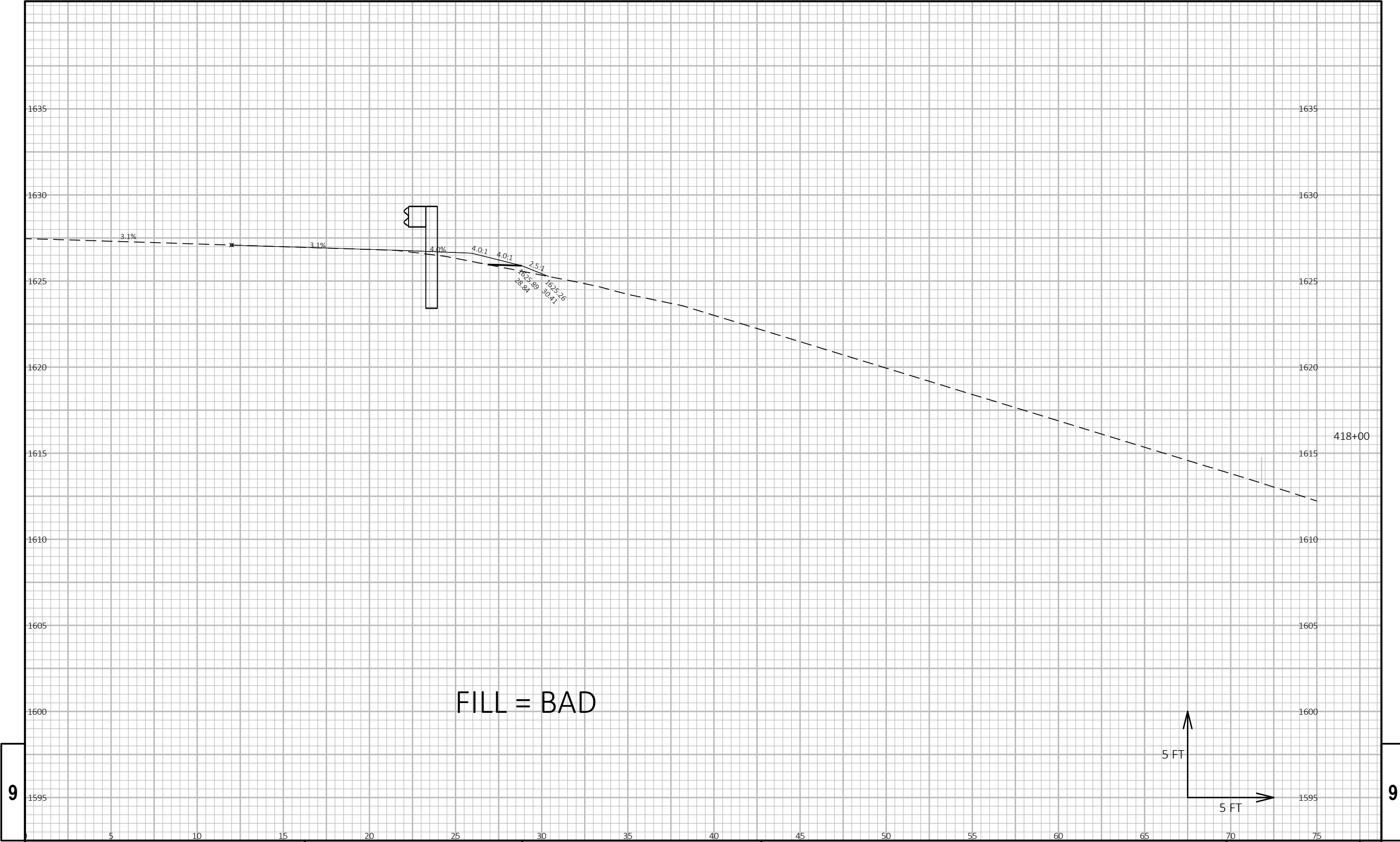
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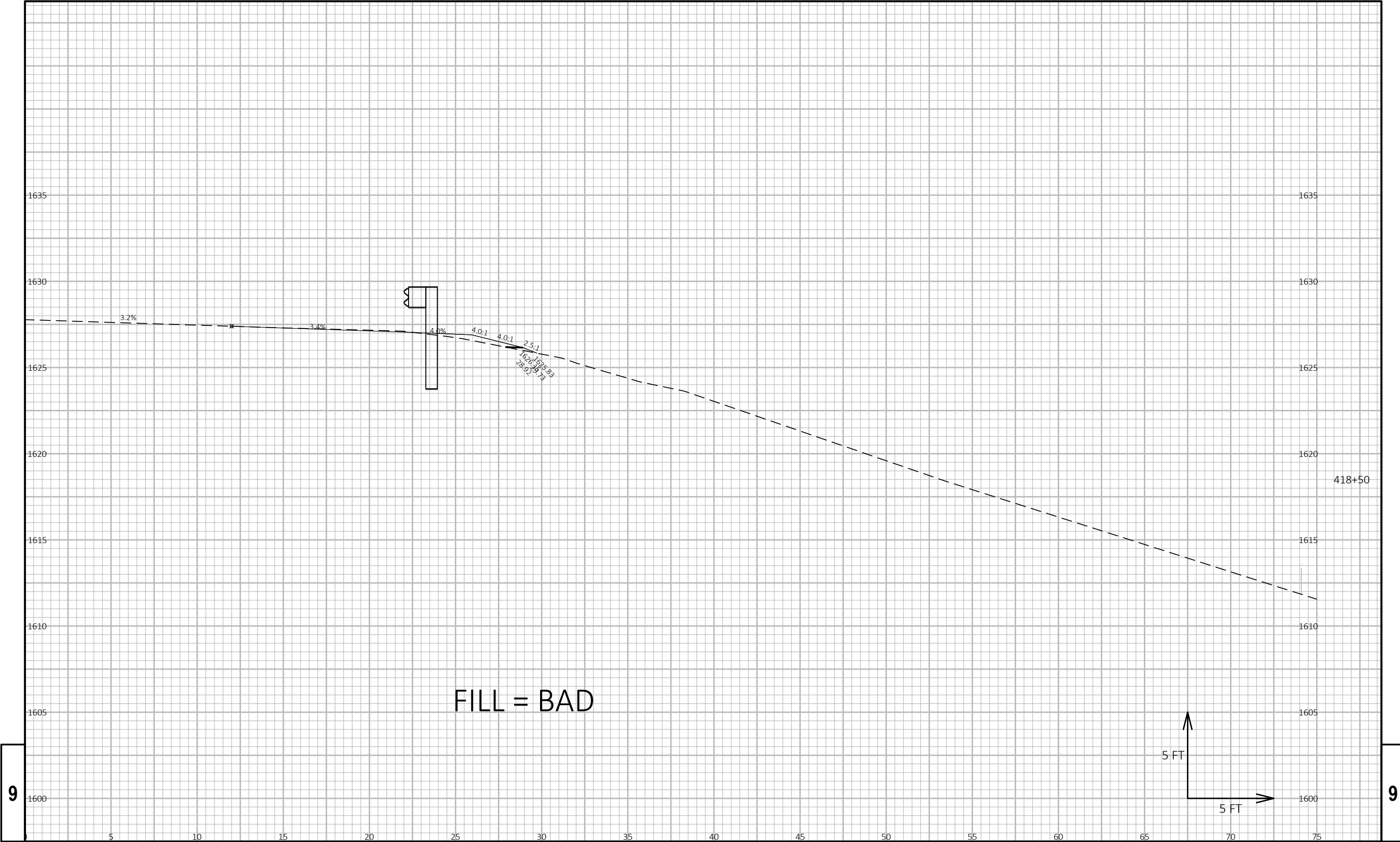
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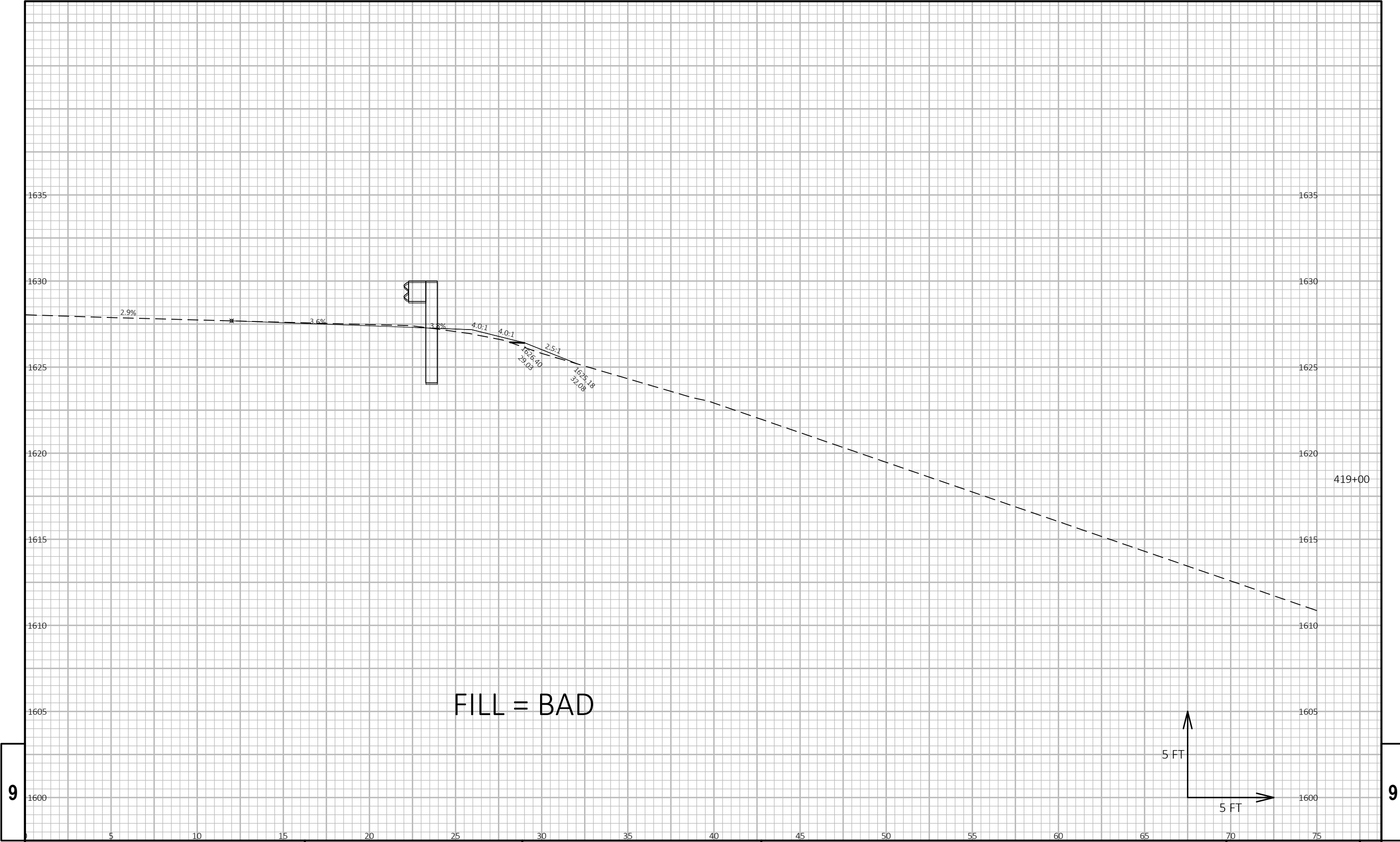
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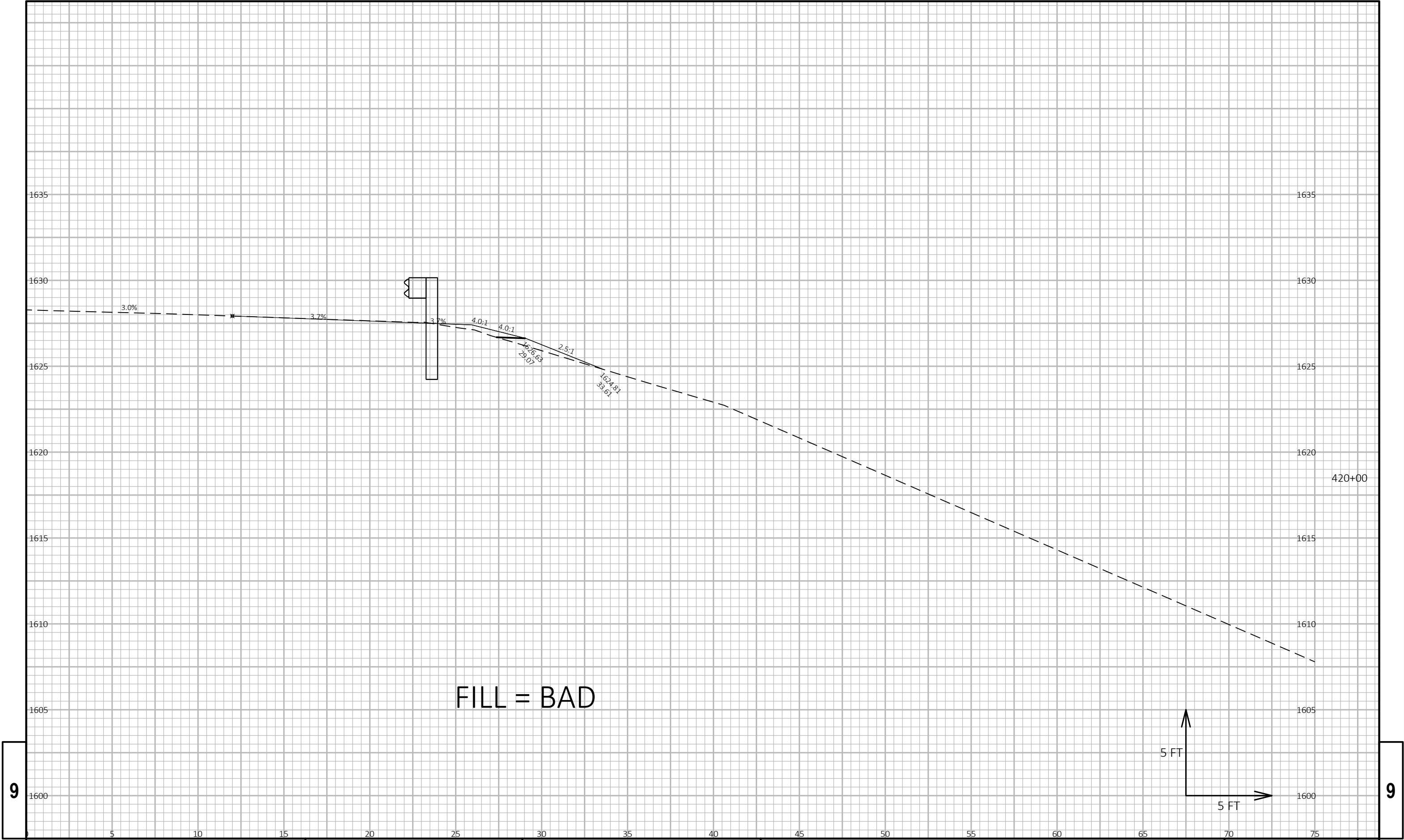
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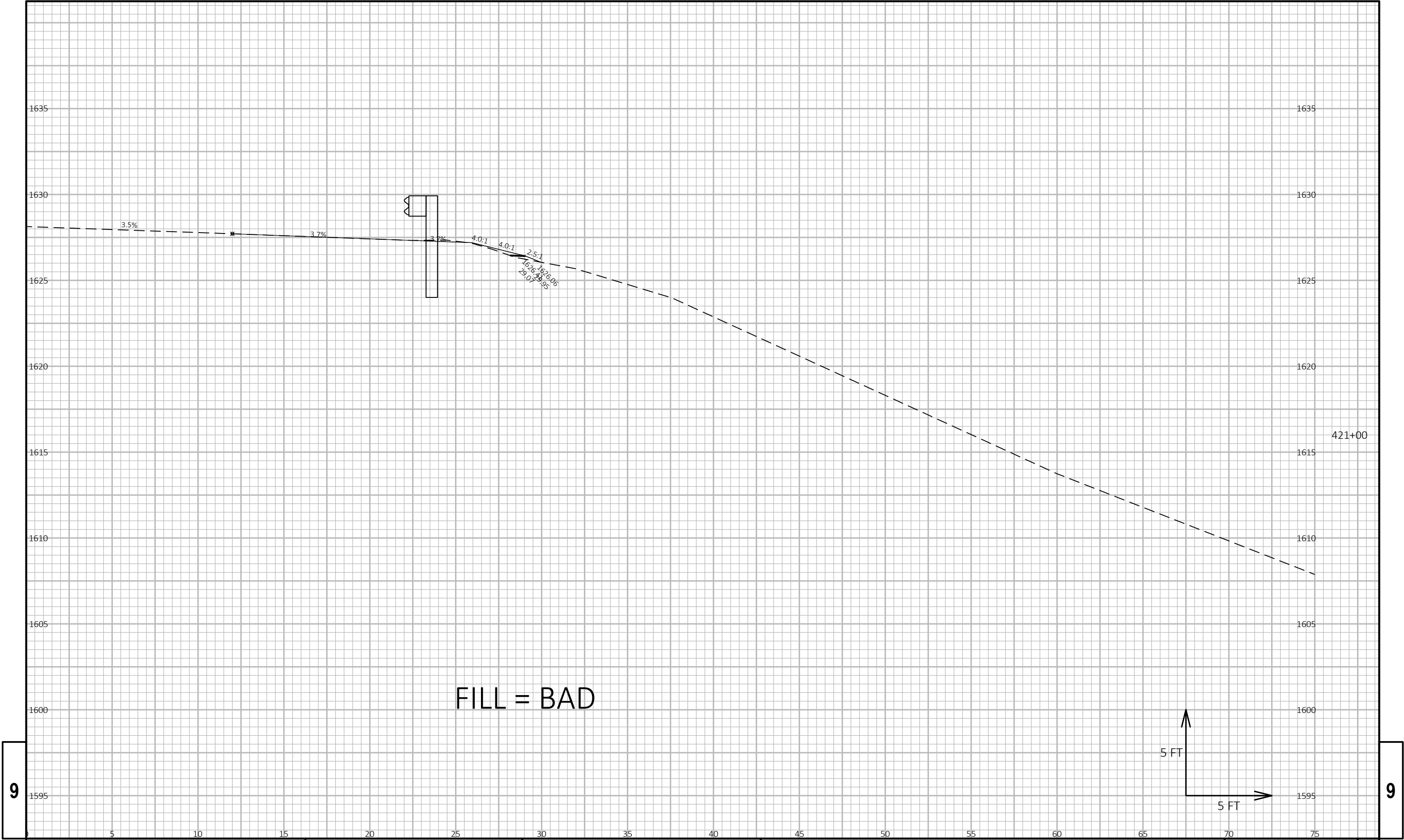
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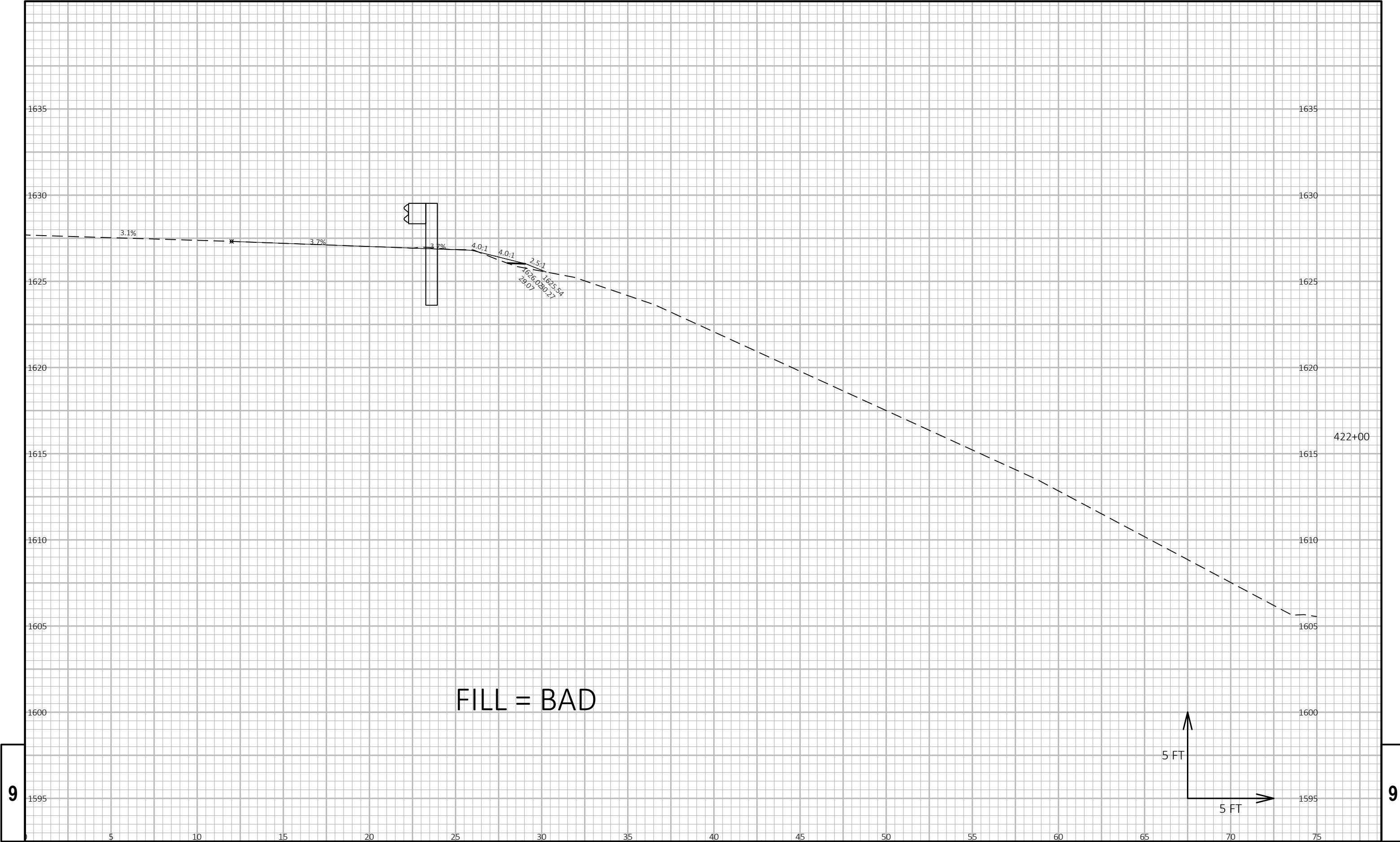
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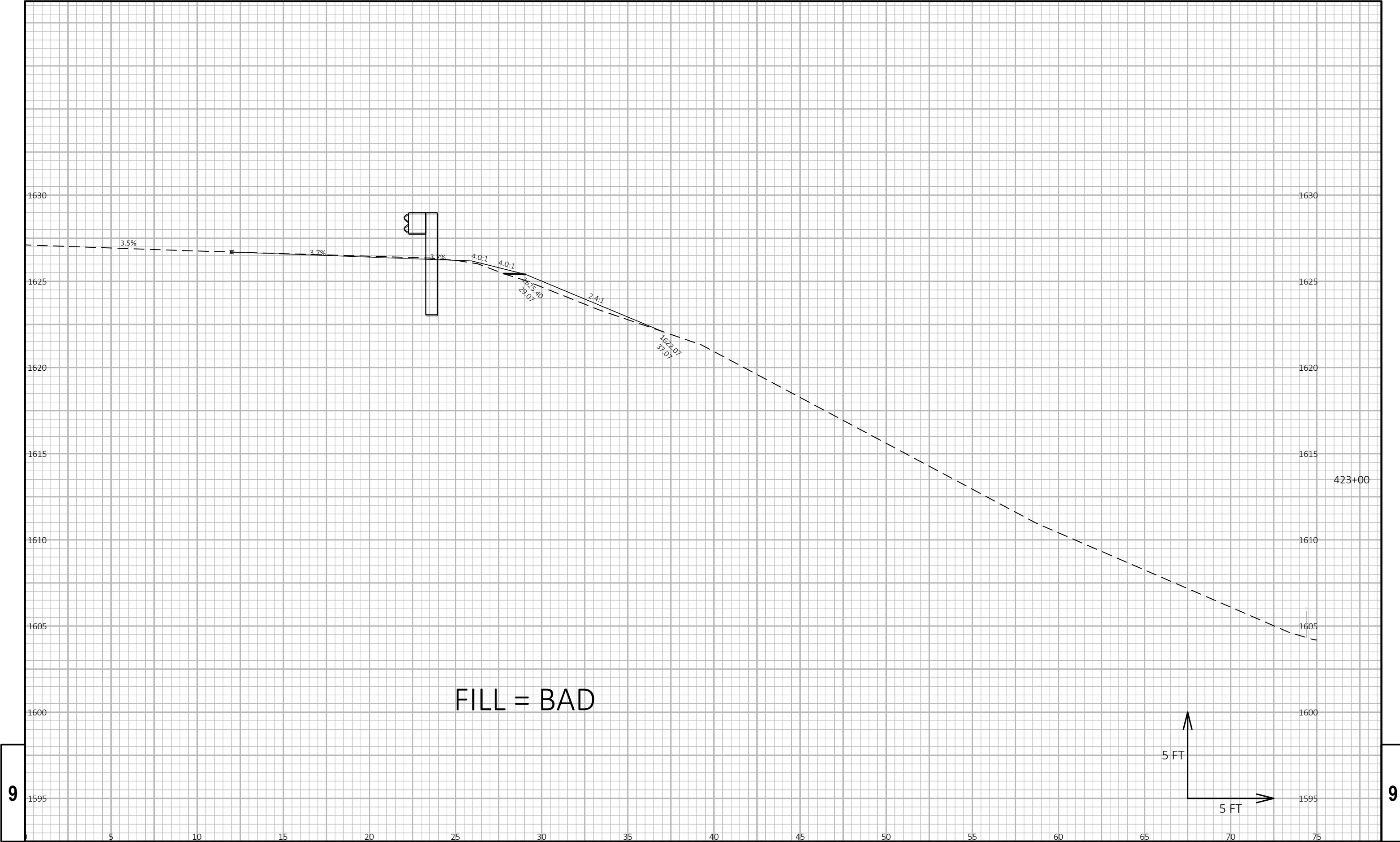
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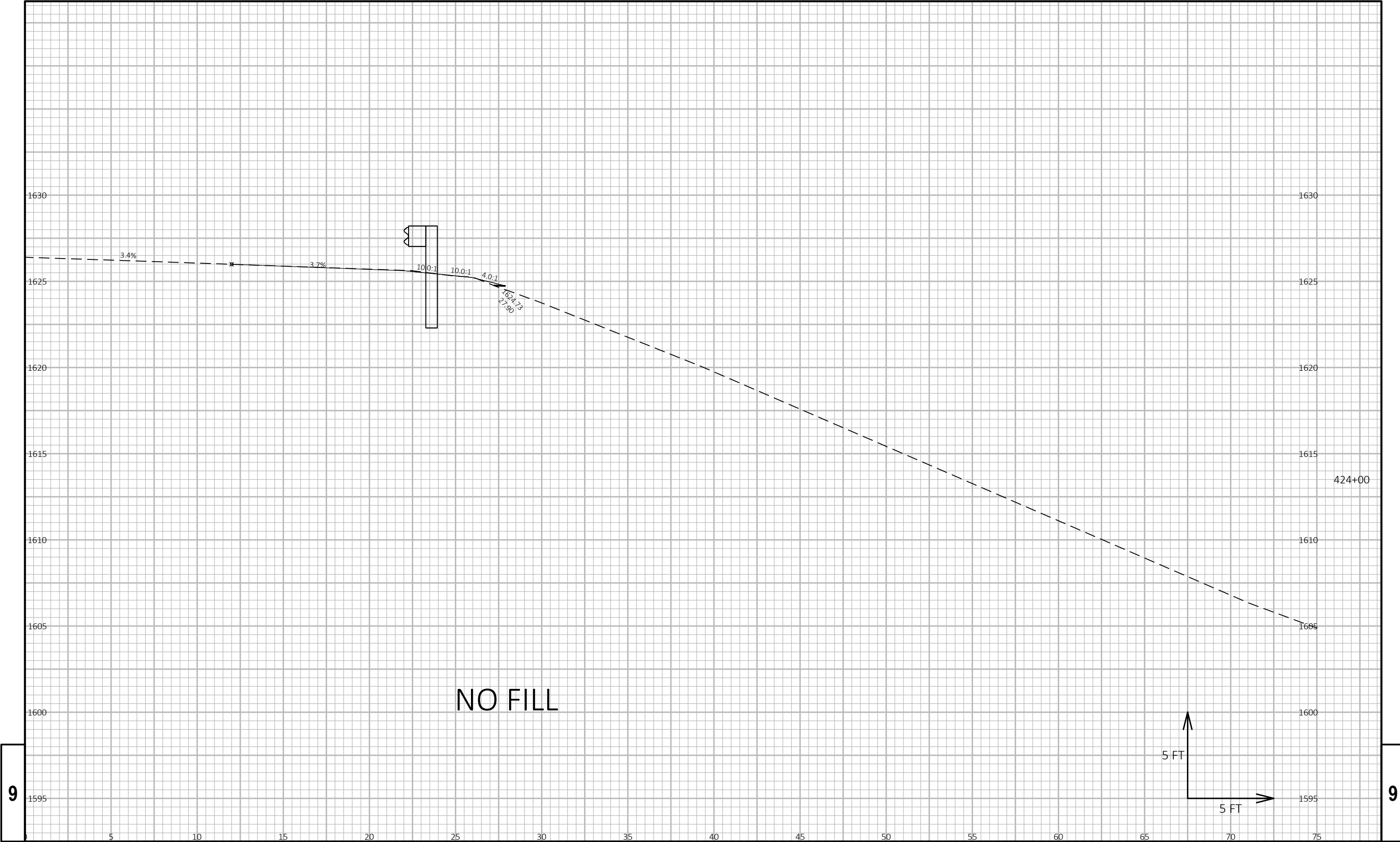
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PROJECT NO: 9080-14-73	HWY: STH 70	COUNTY: VILAS	CROSS SECTIONS: CROSS SECTIONS 408 - 444 GUARDRAIL	SHEET 126	E
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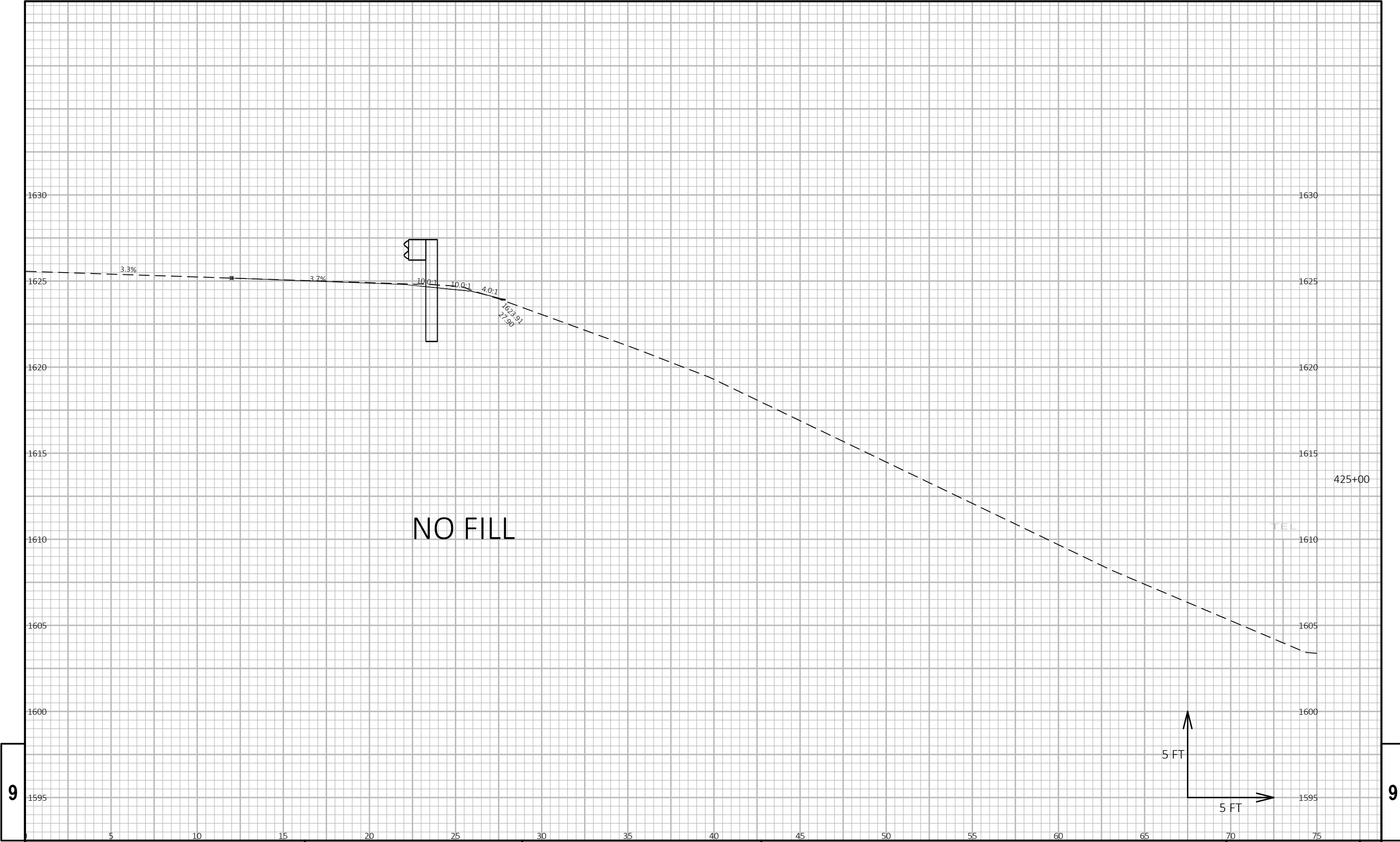
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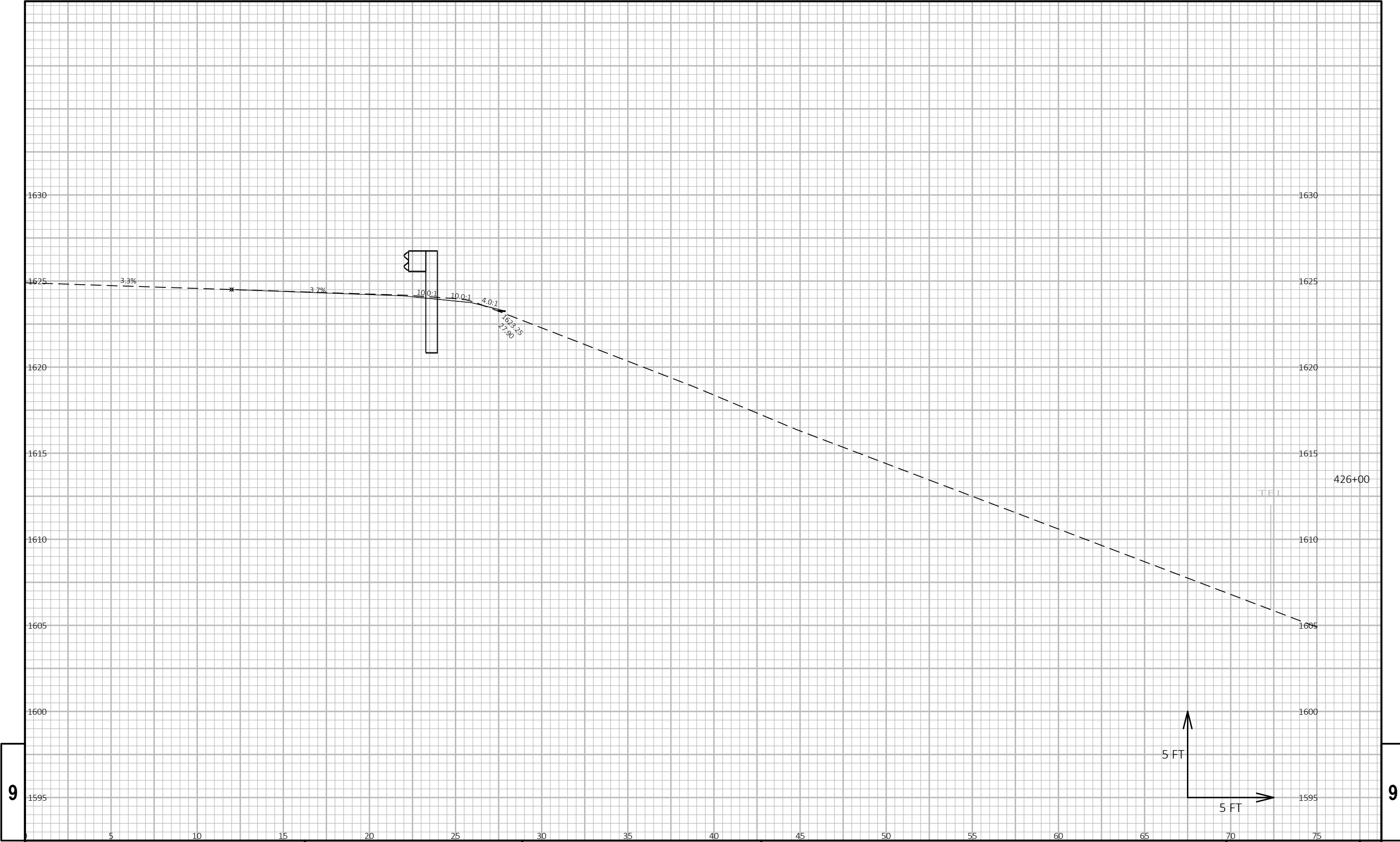
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PROJECT NO: 9080-14-73	HWY: STH 70	COUNTY: VILAS	CROSS SECTIONS: CROSS SECTIONS 408 - 444 GUARDRAIL	SHEET 128	E
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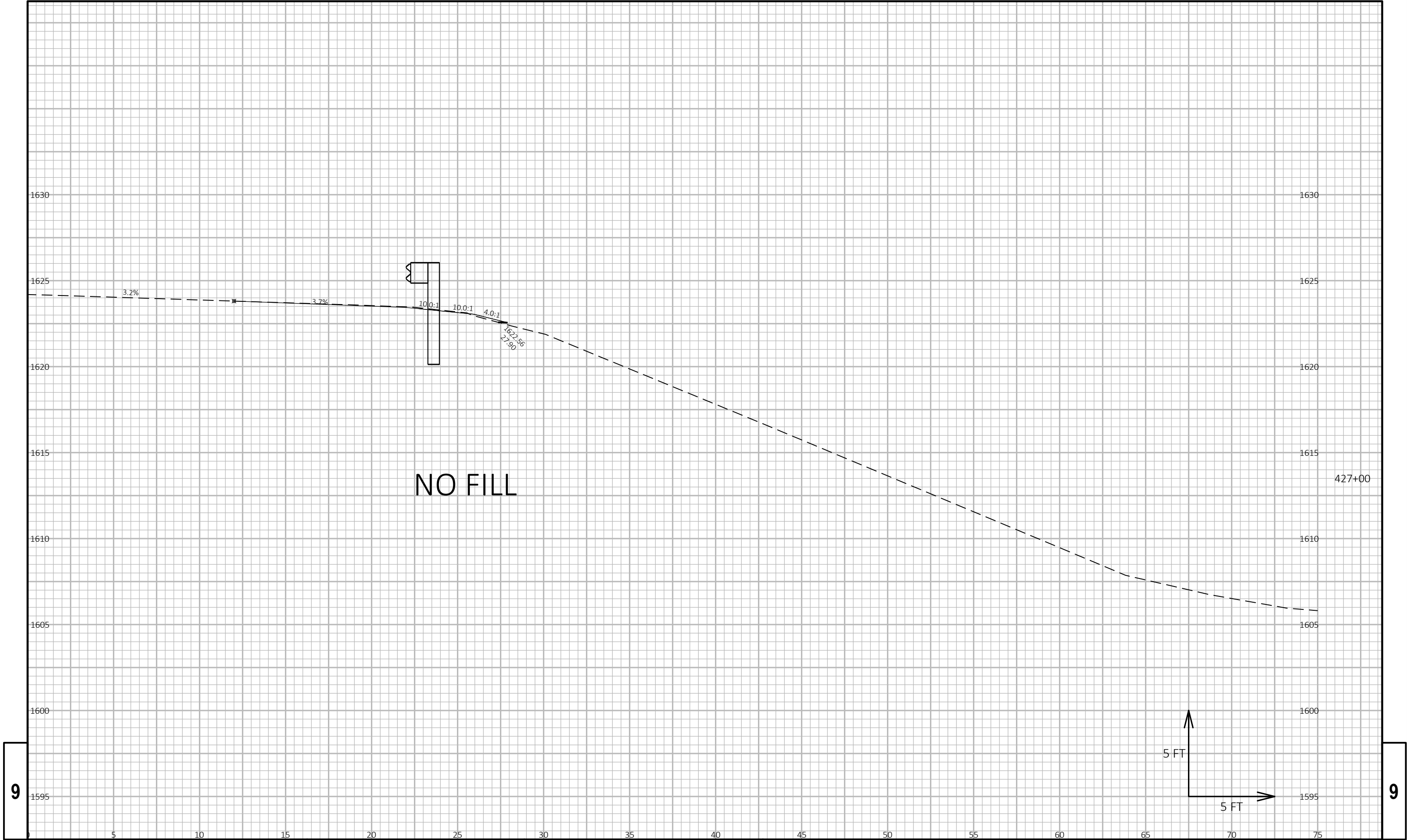
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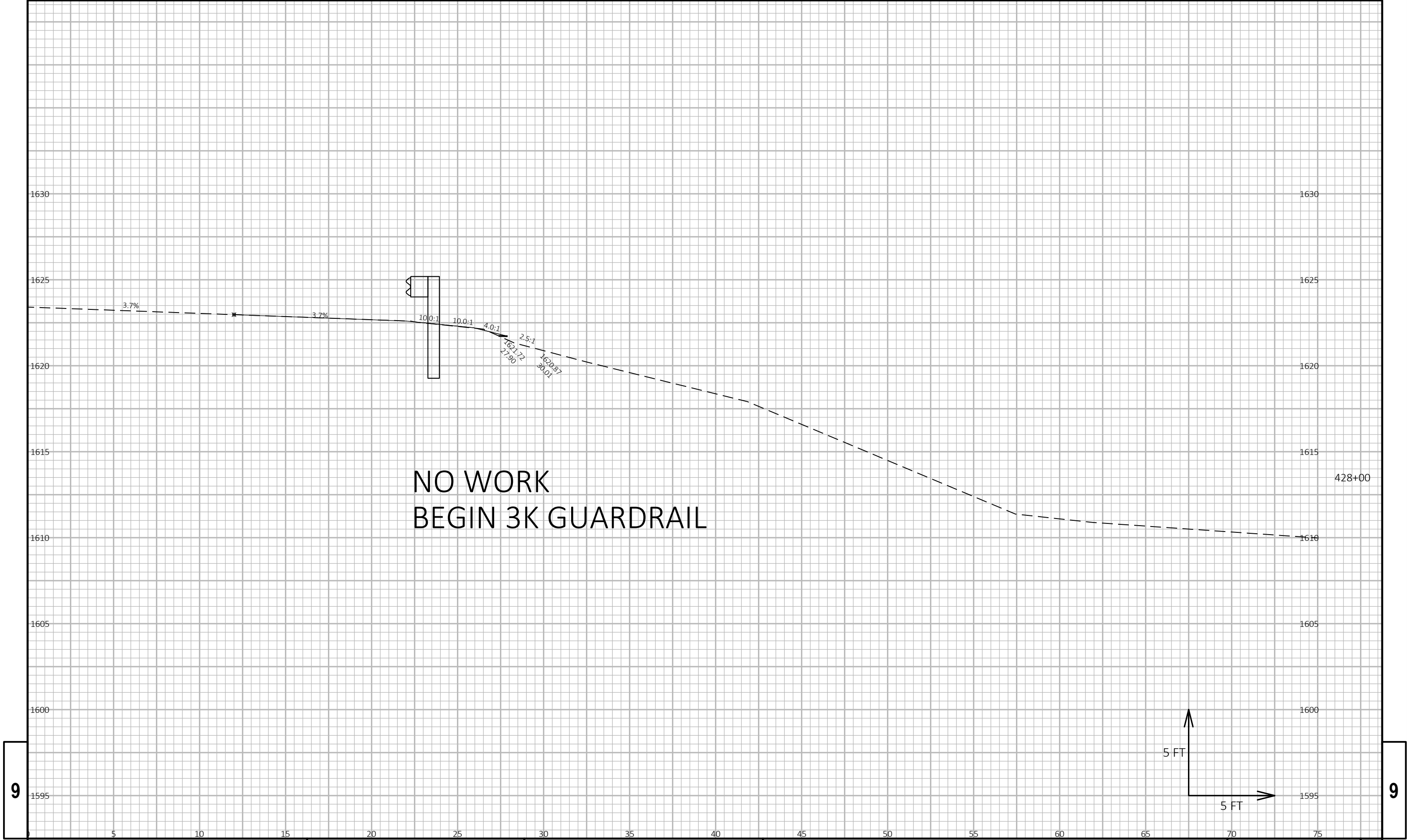
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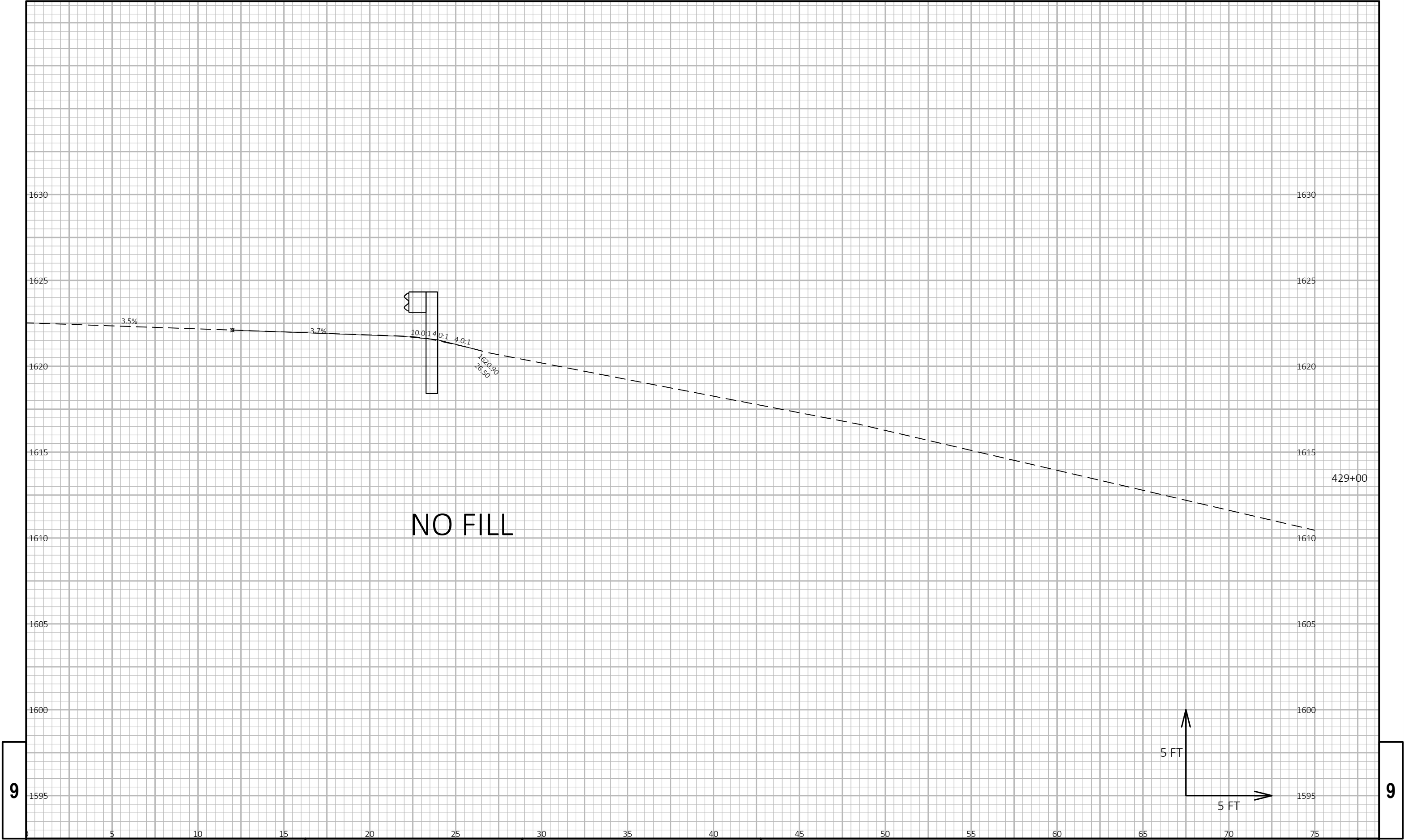
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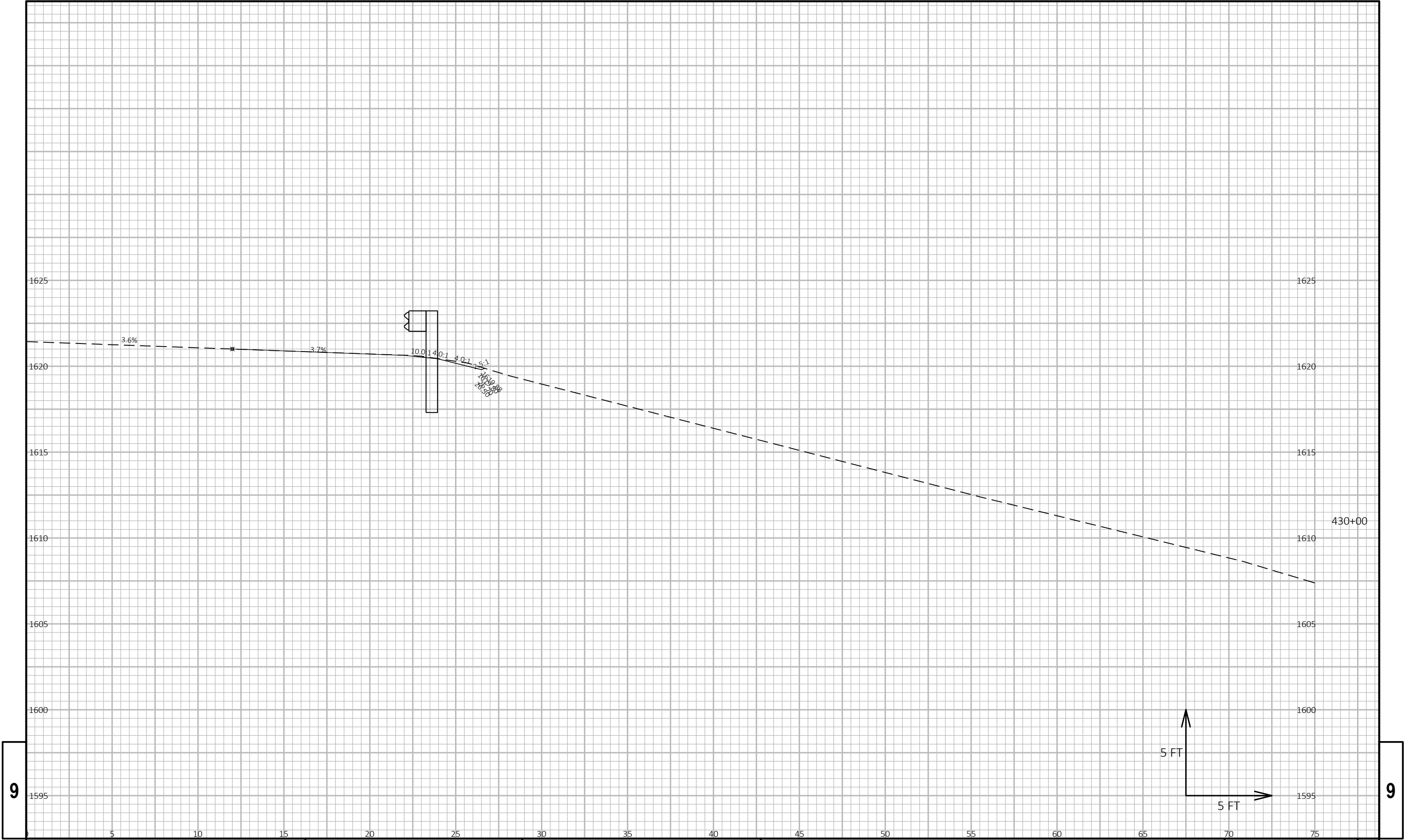
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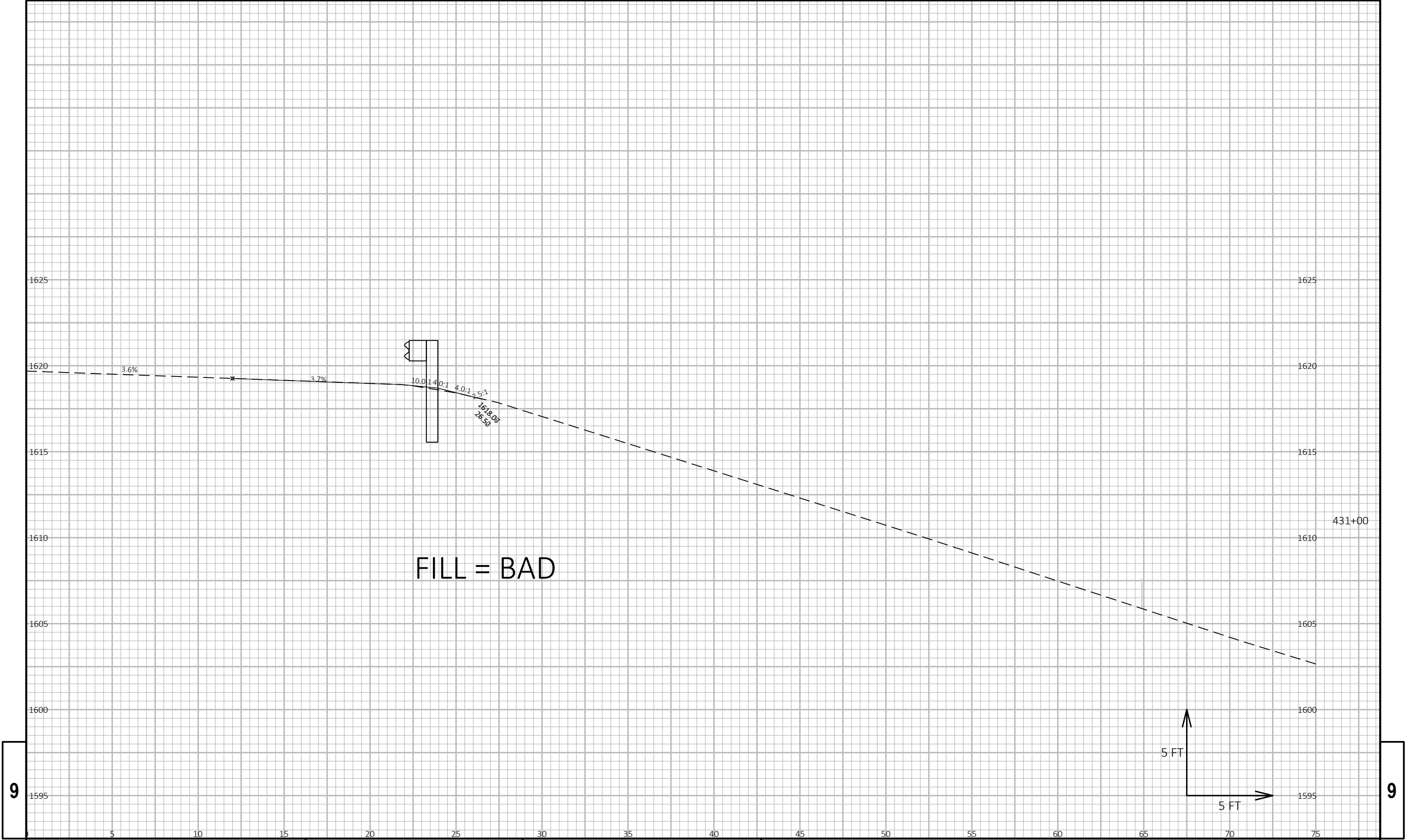
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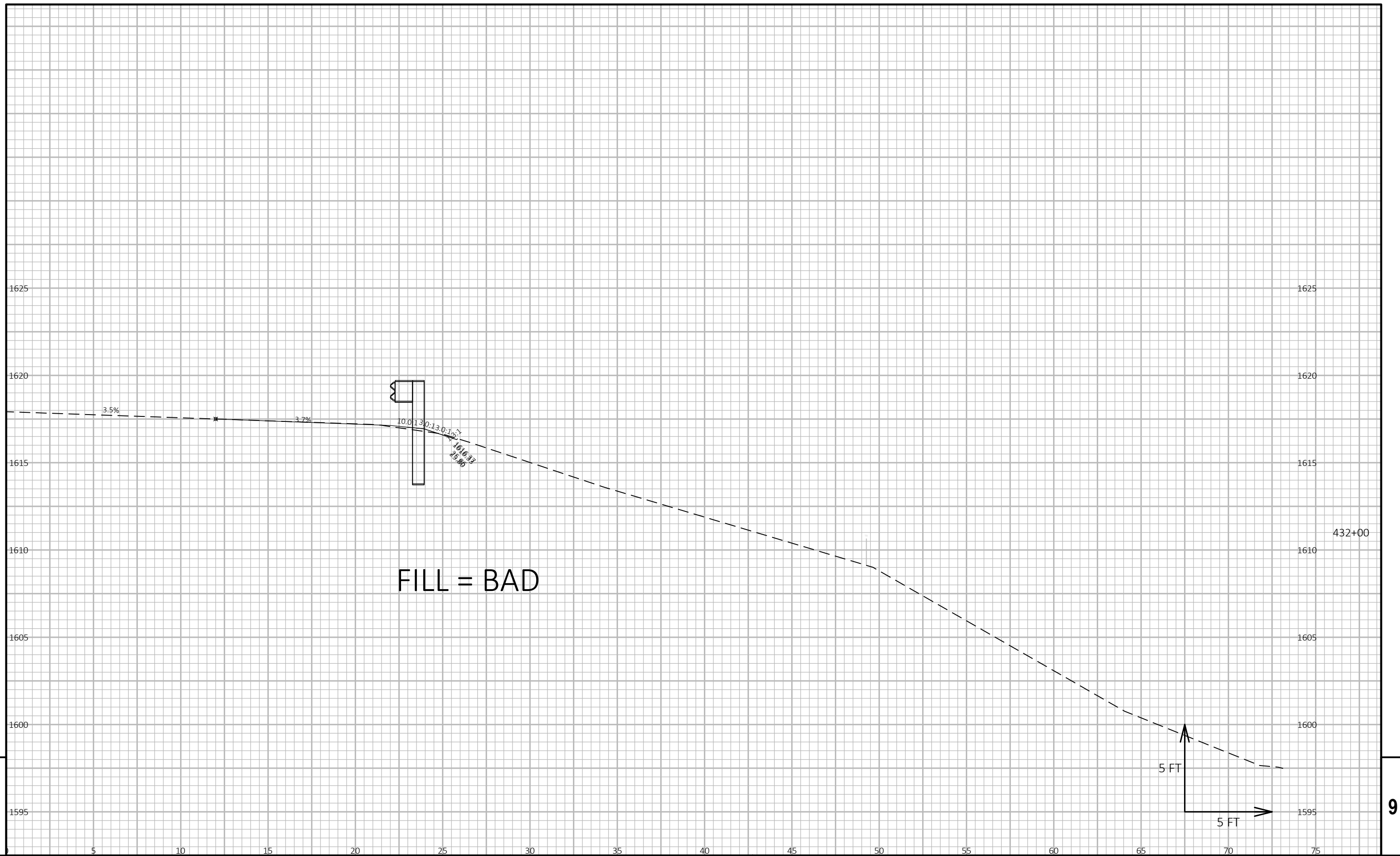
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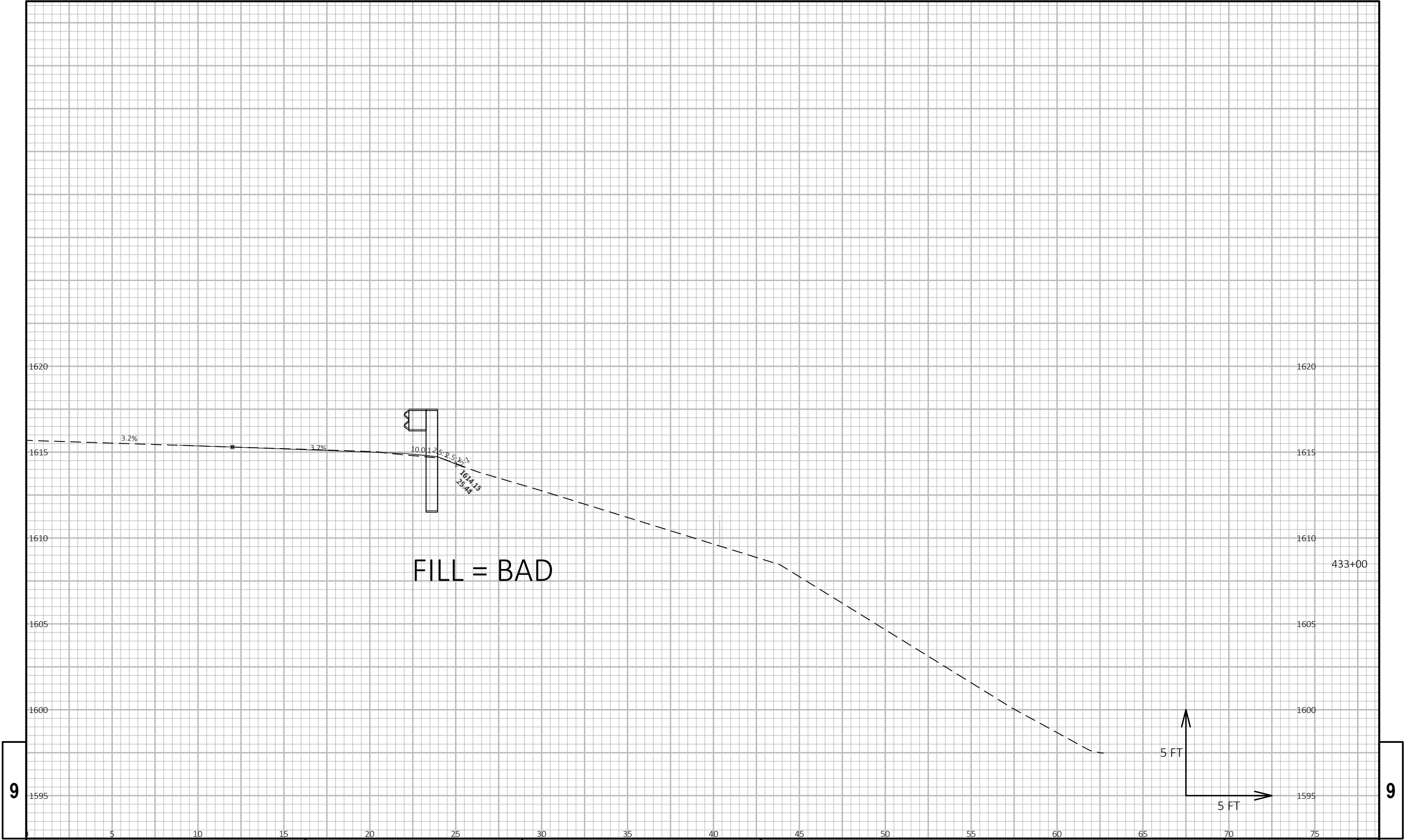




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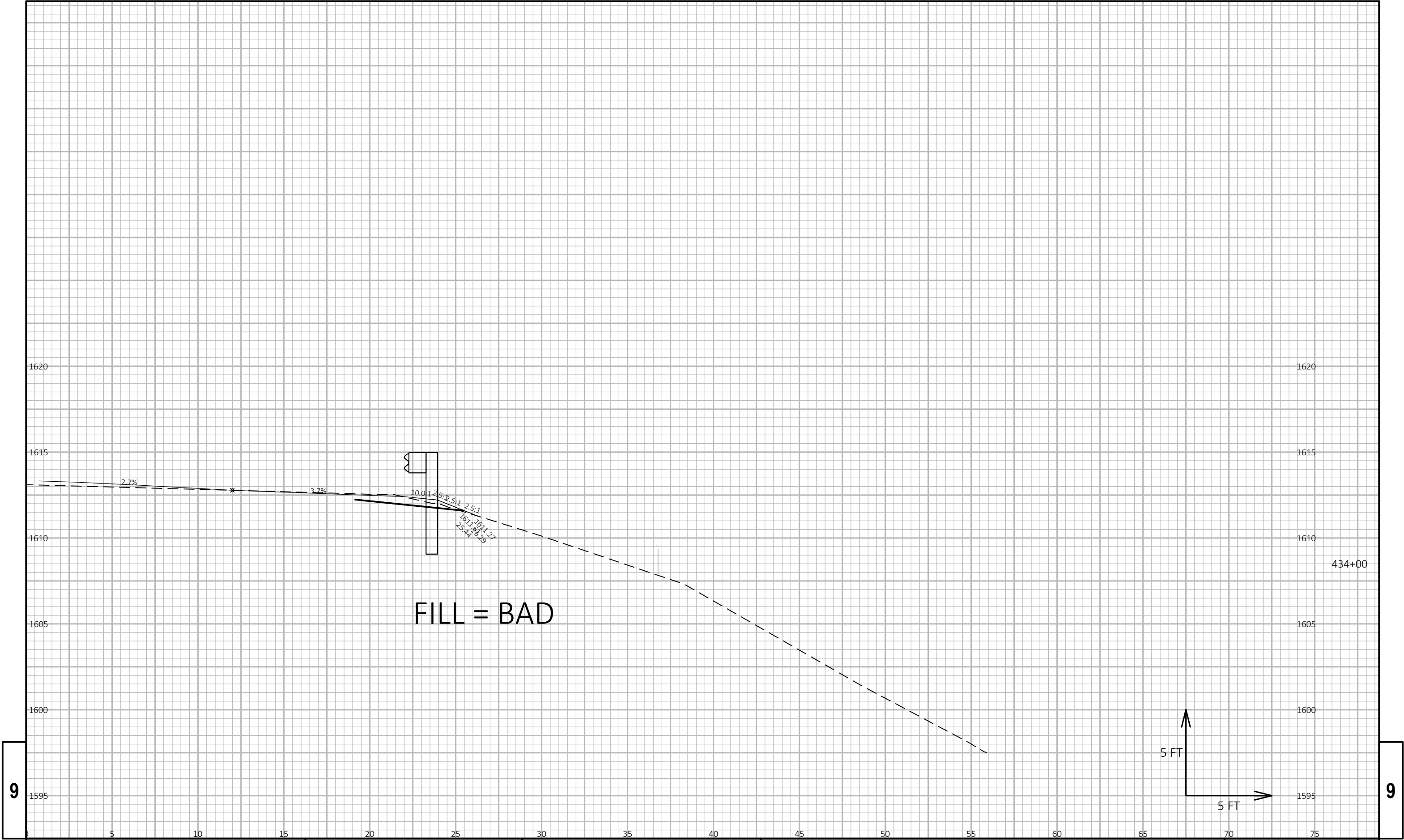
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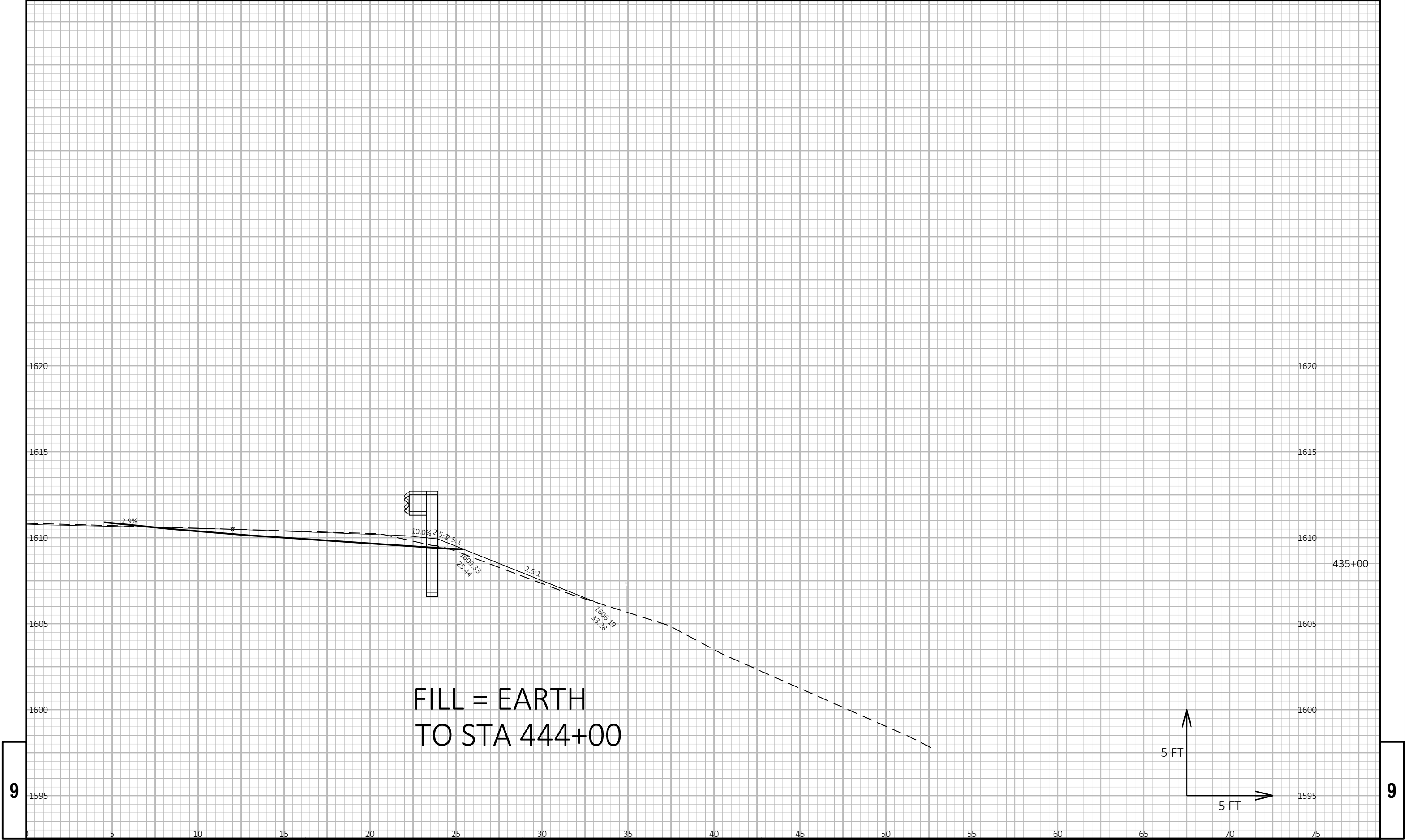
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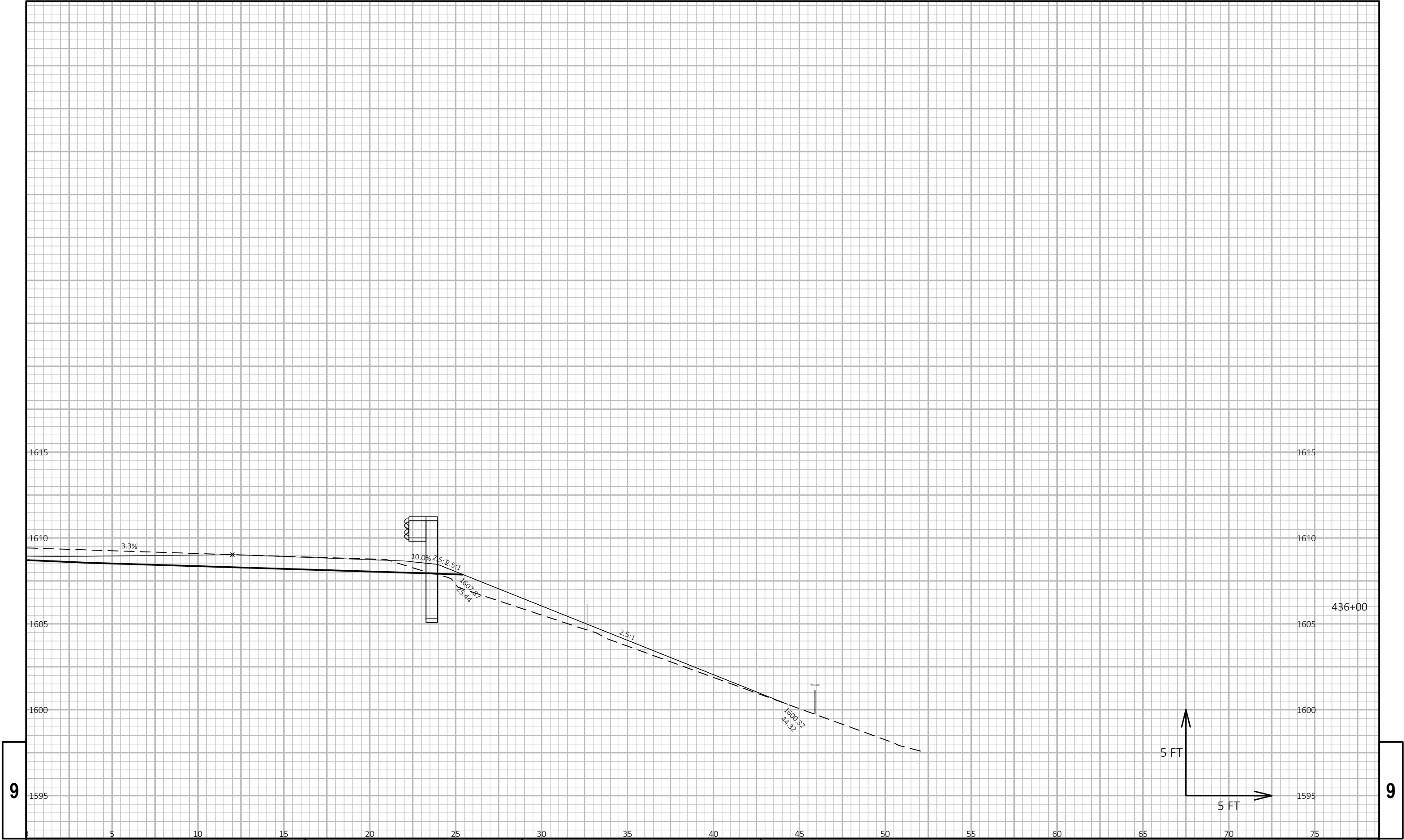
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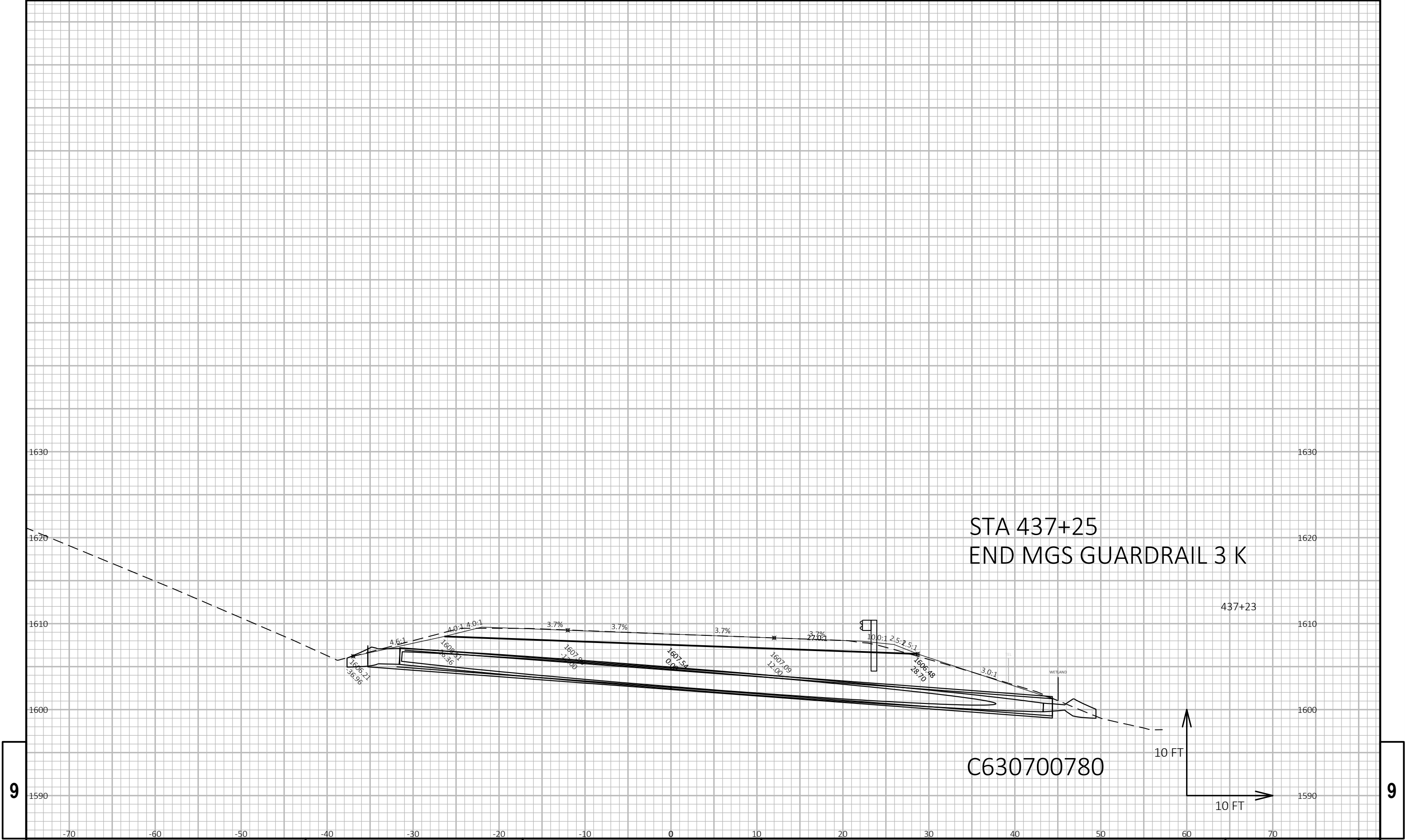


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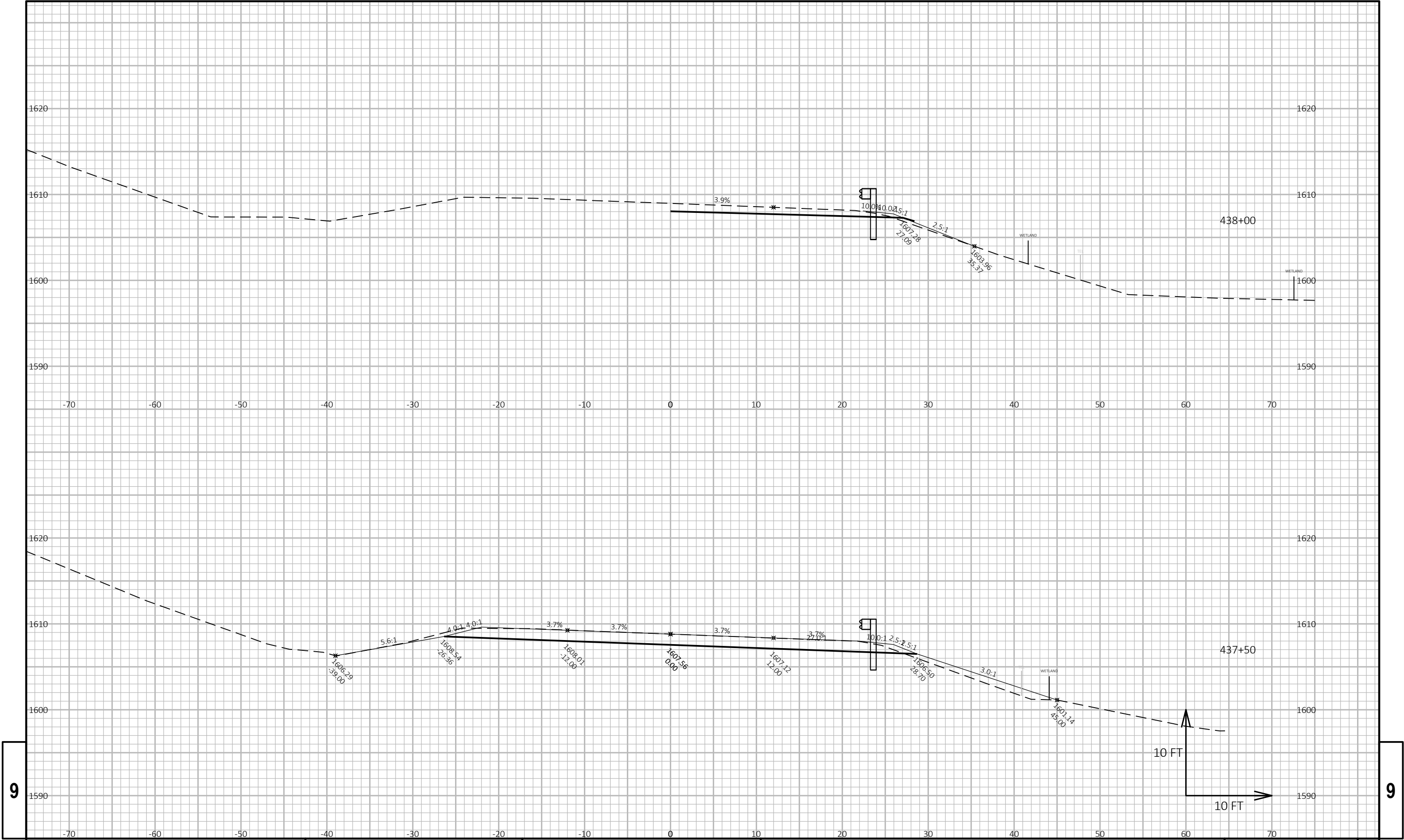






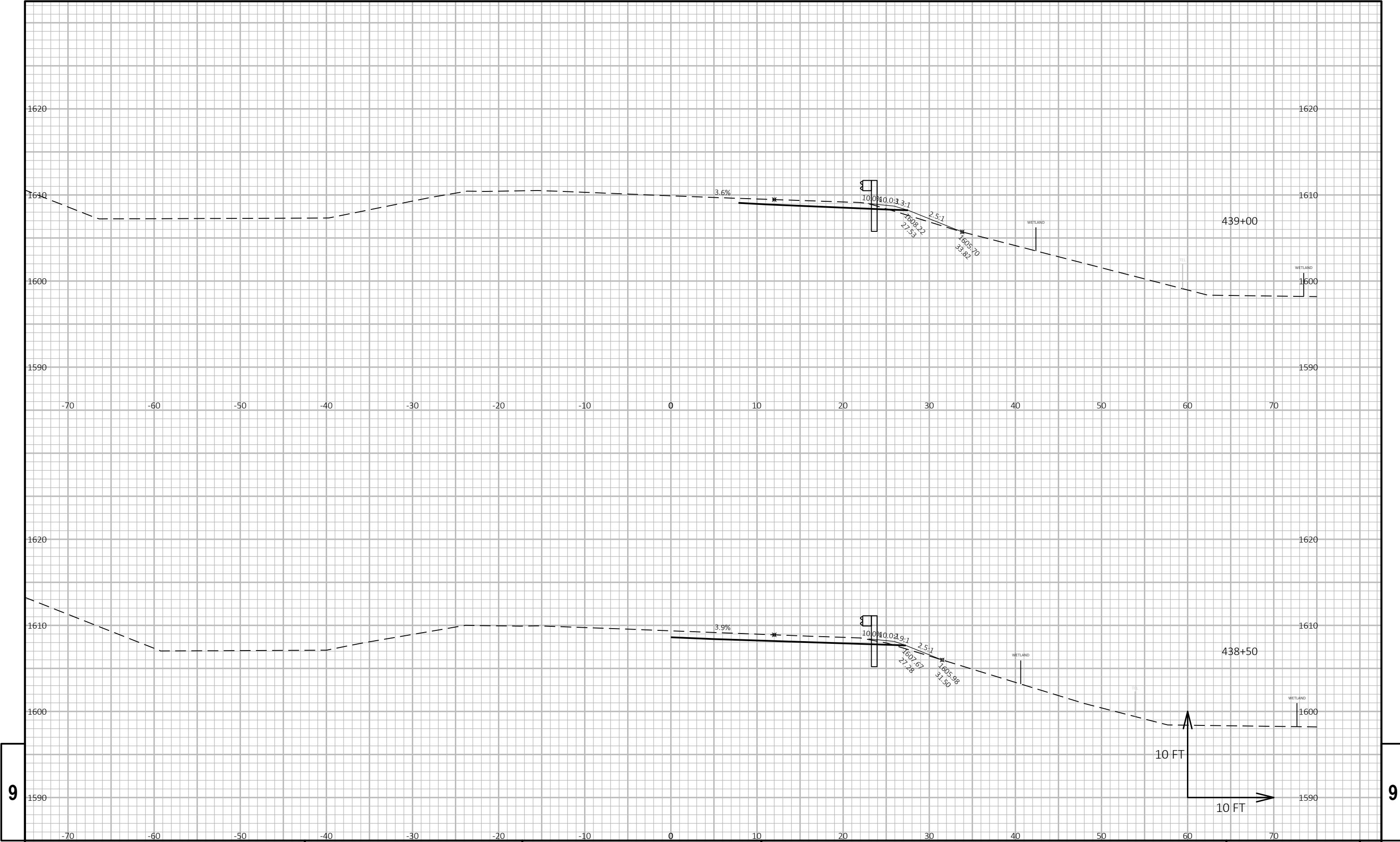
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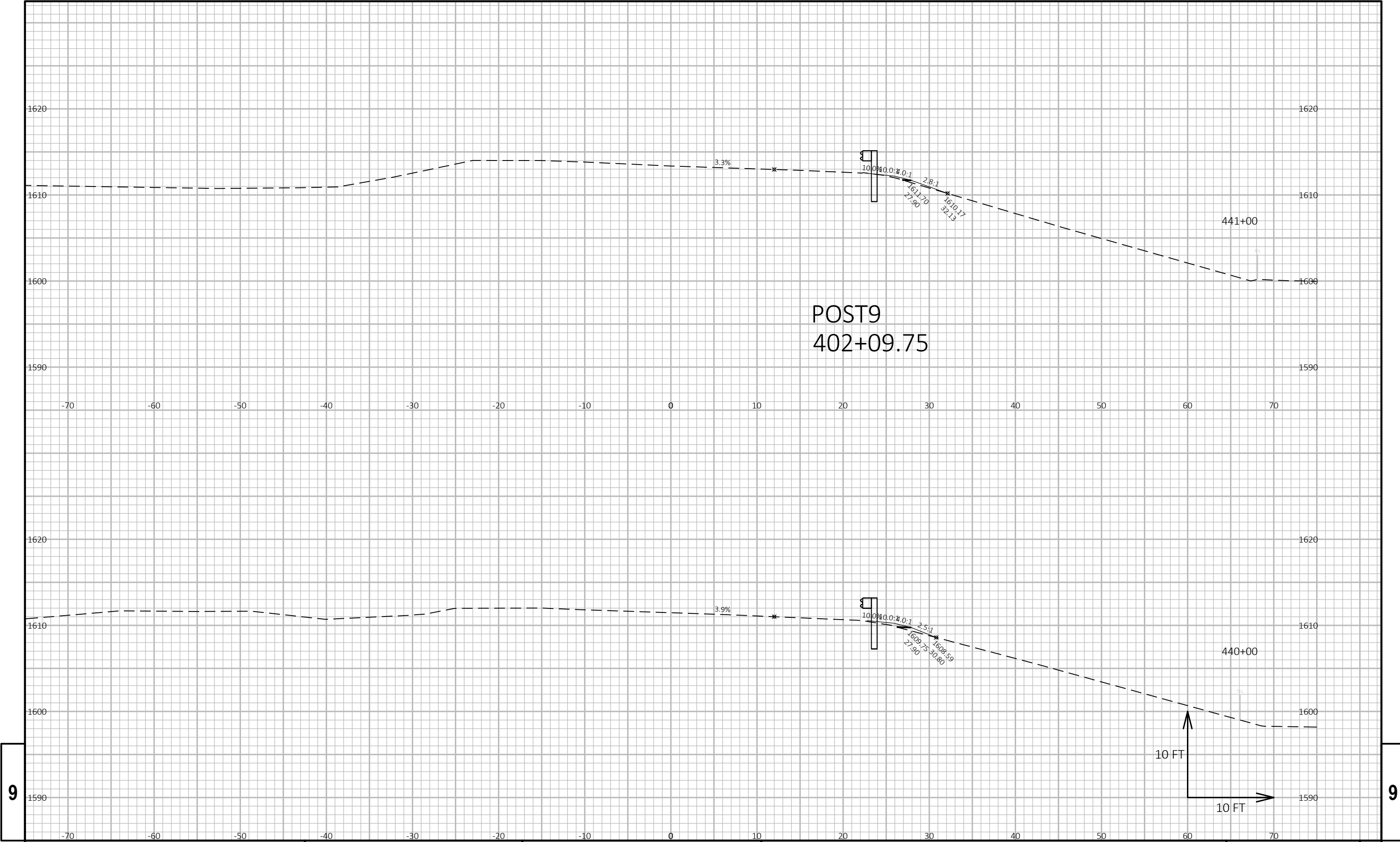
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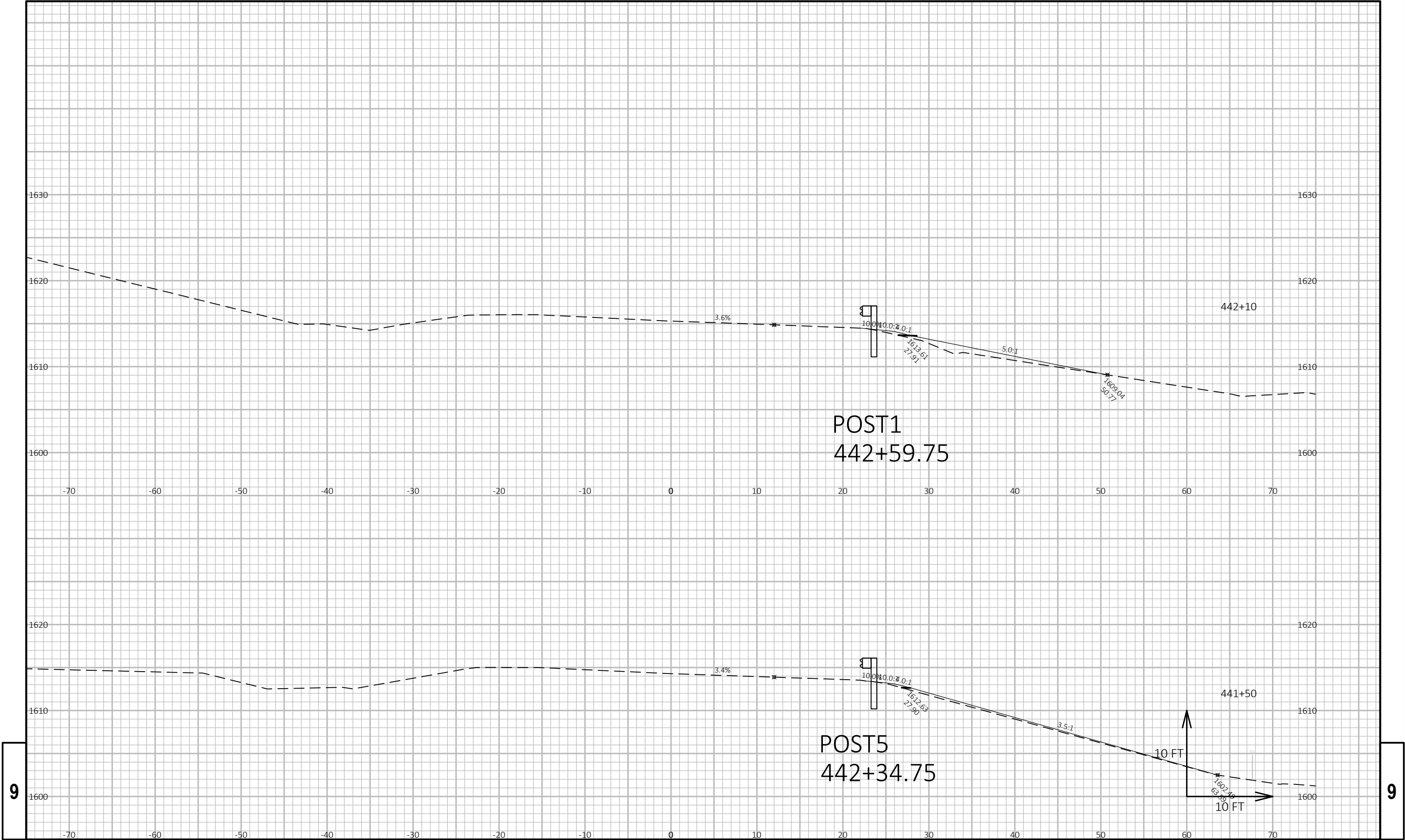
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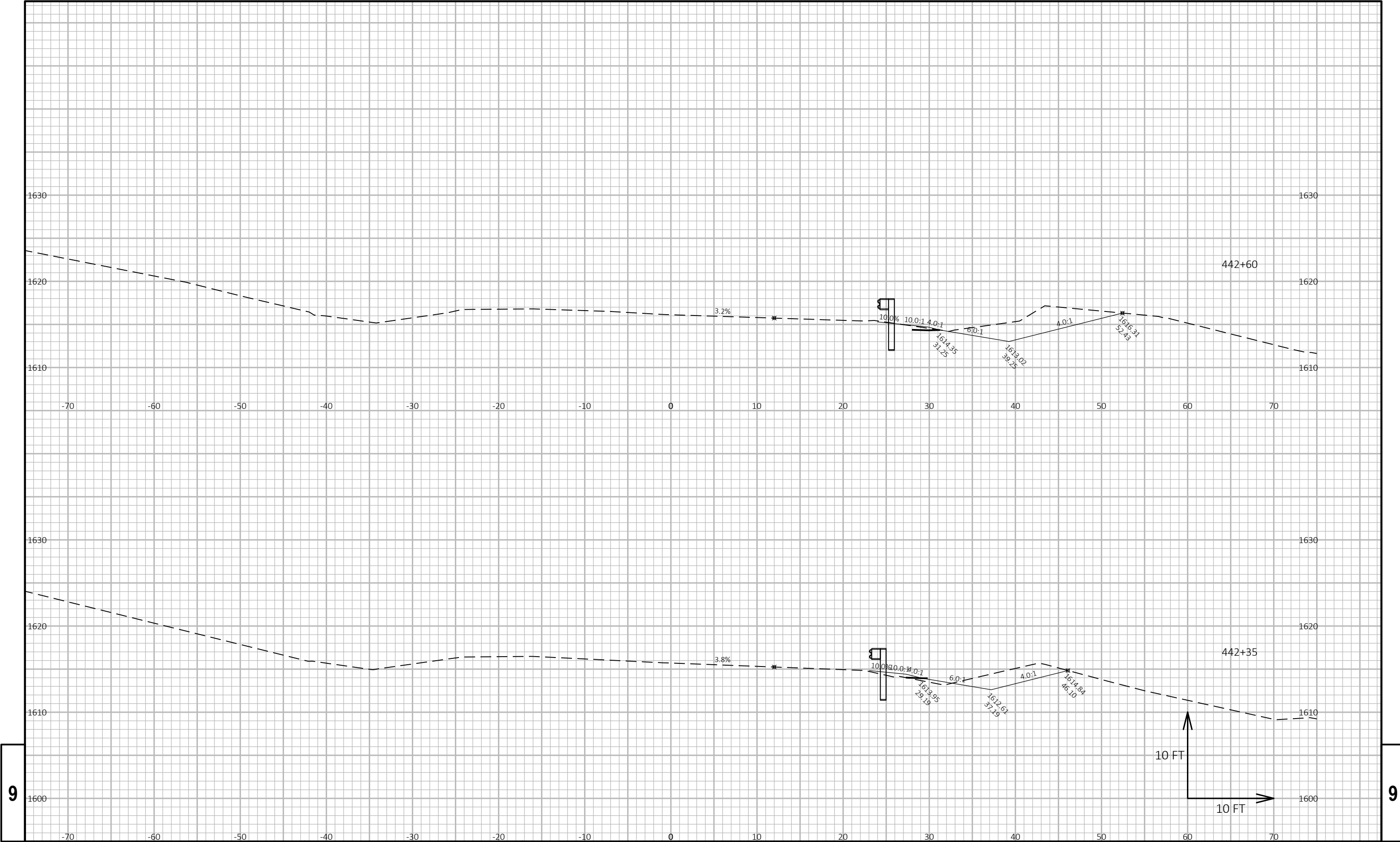
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PROJECT NO: 9080-14-73	HWY: STH 70	COUNTY: VILAS	CROSS SECTIONS: CROSS SECTIONS 3 - C630700780	SHEET 144
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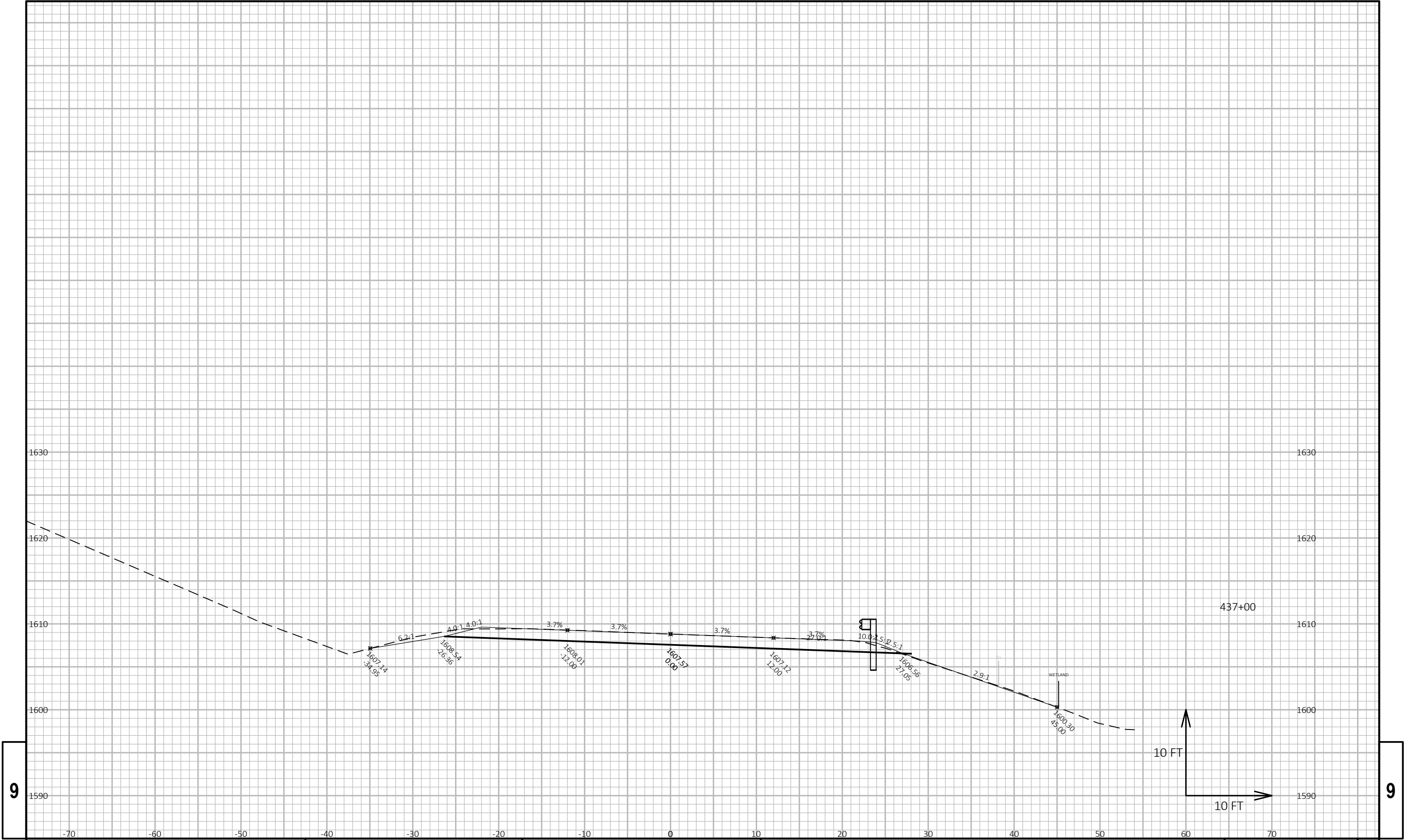
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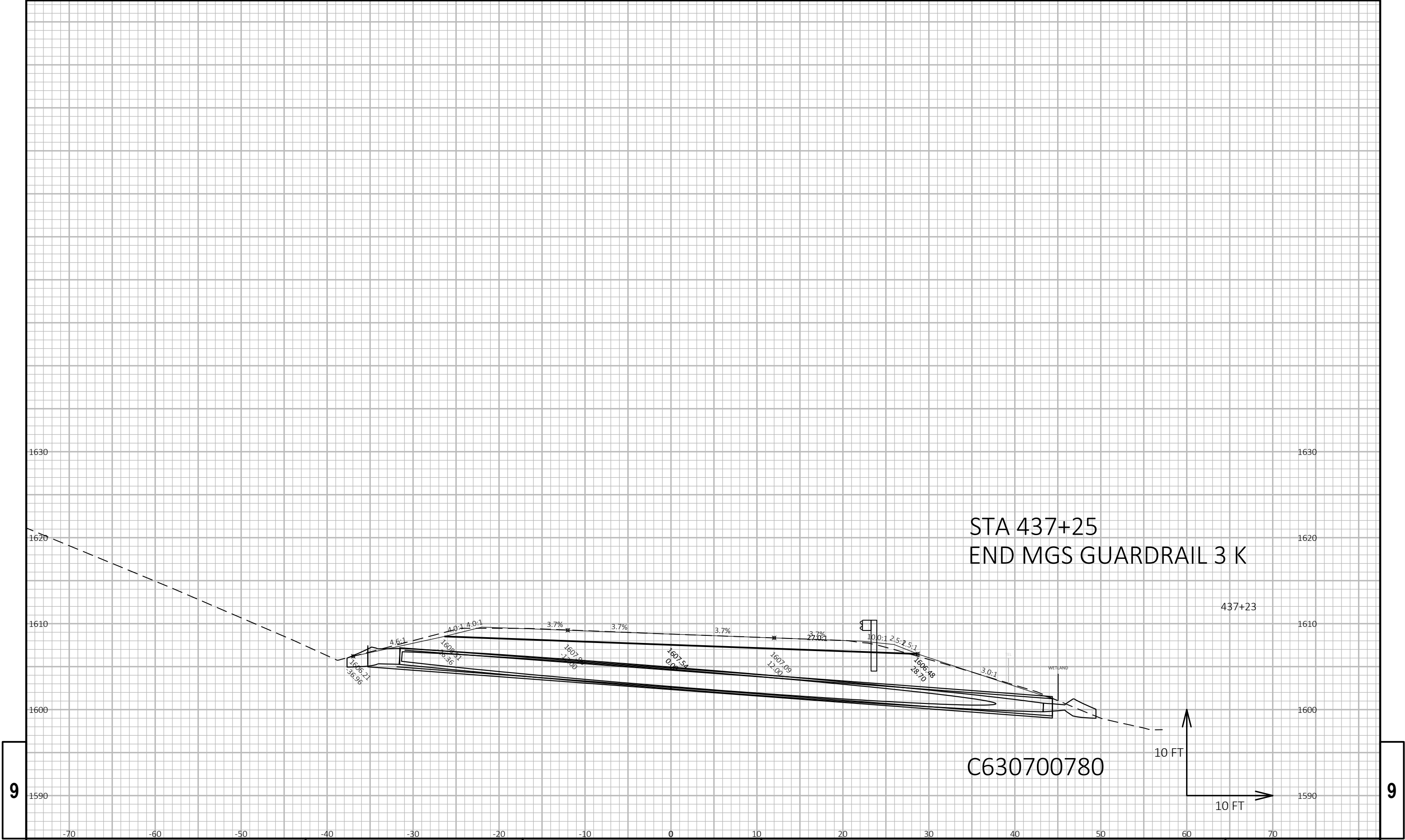
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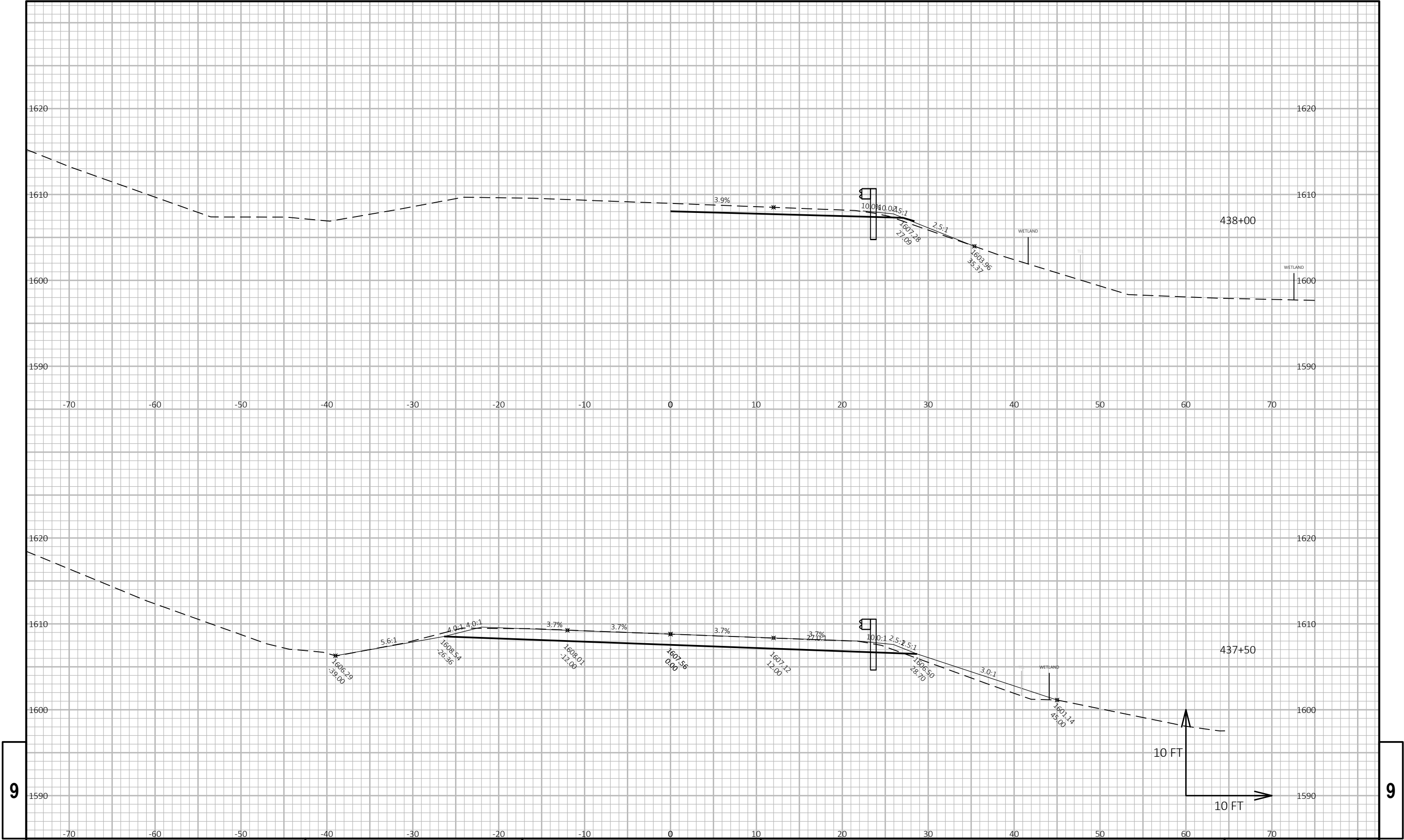
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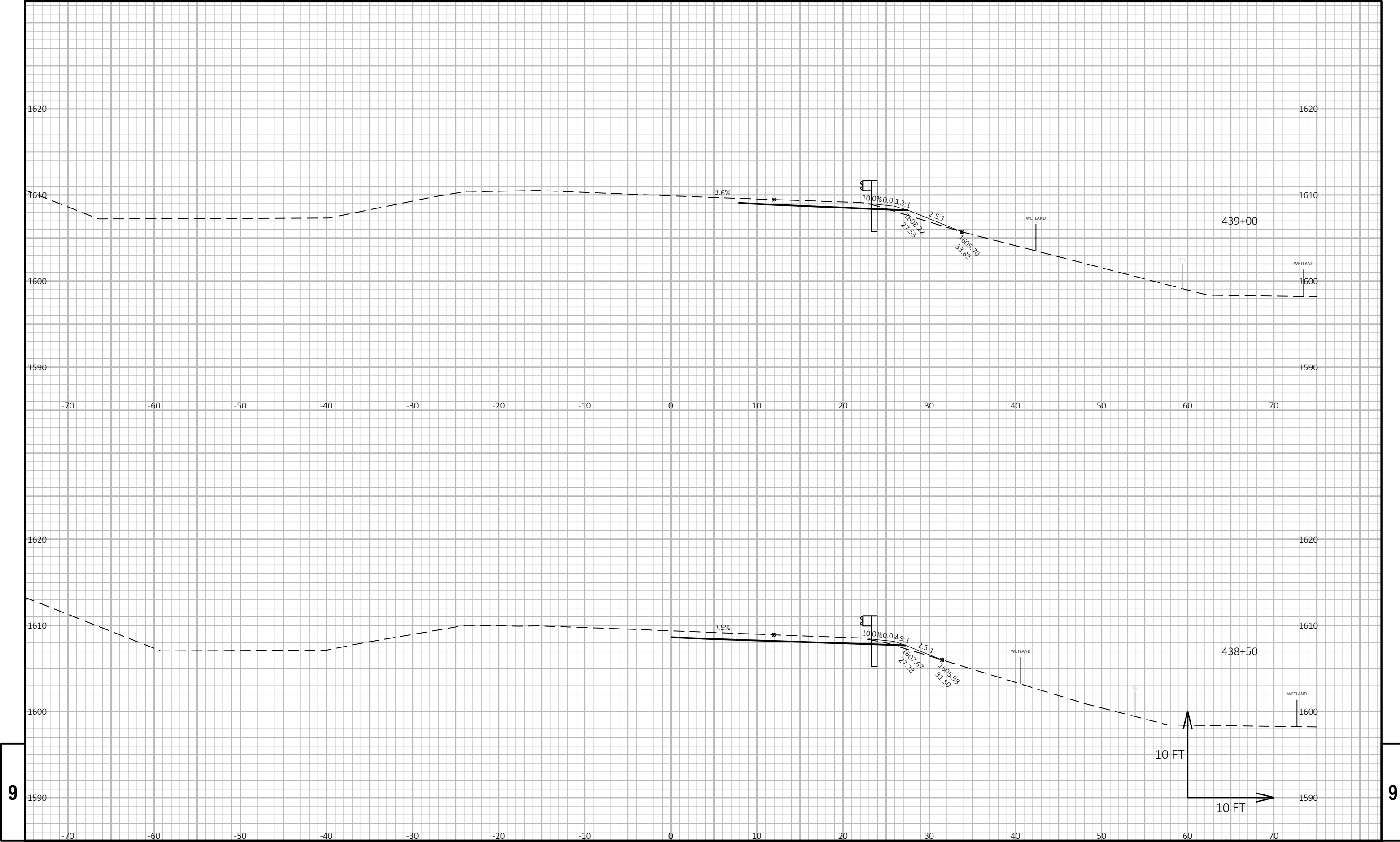
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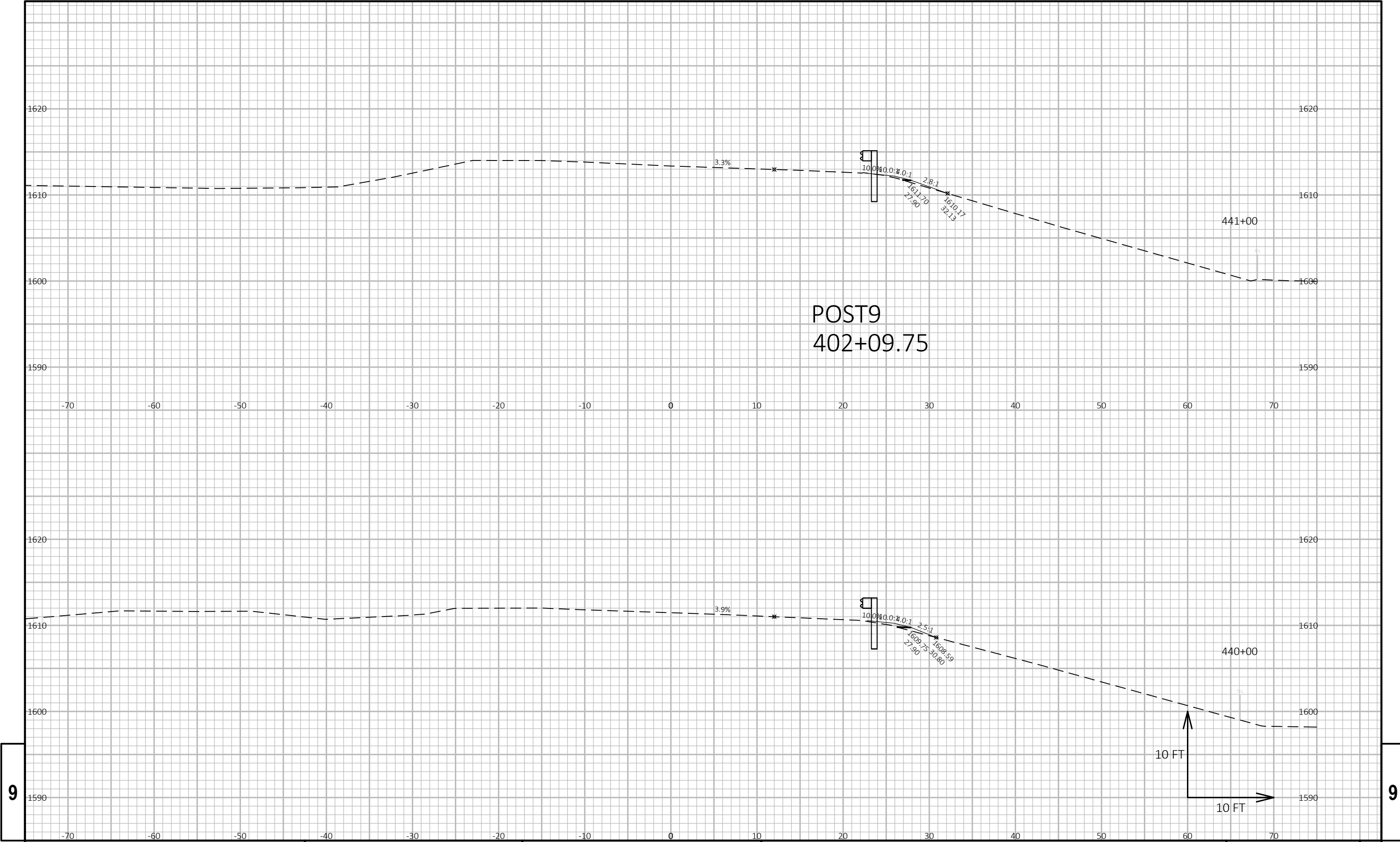
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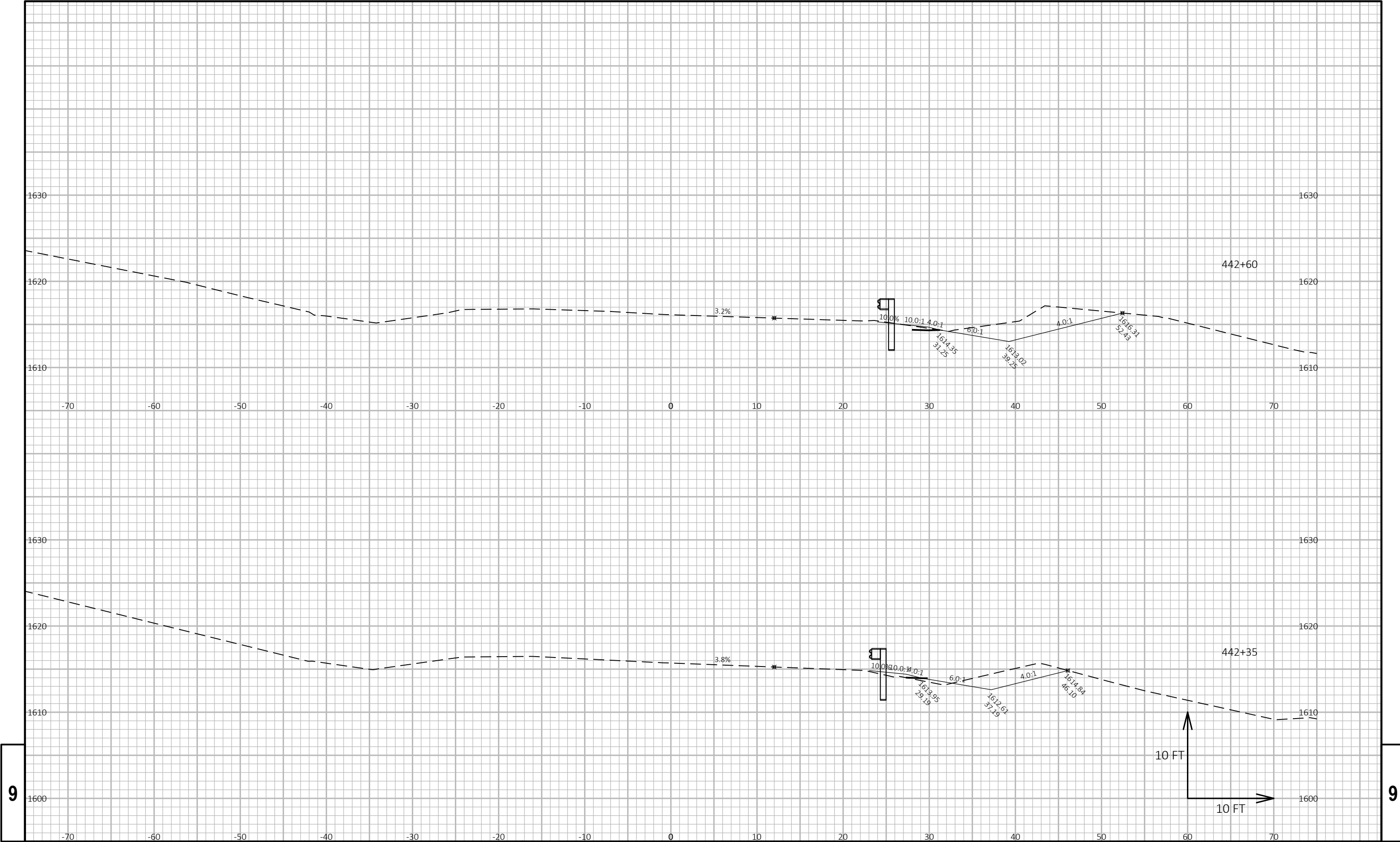
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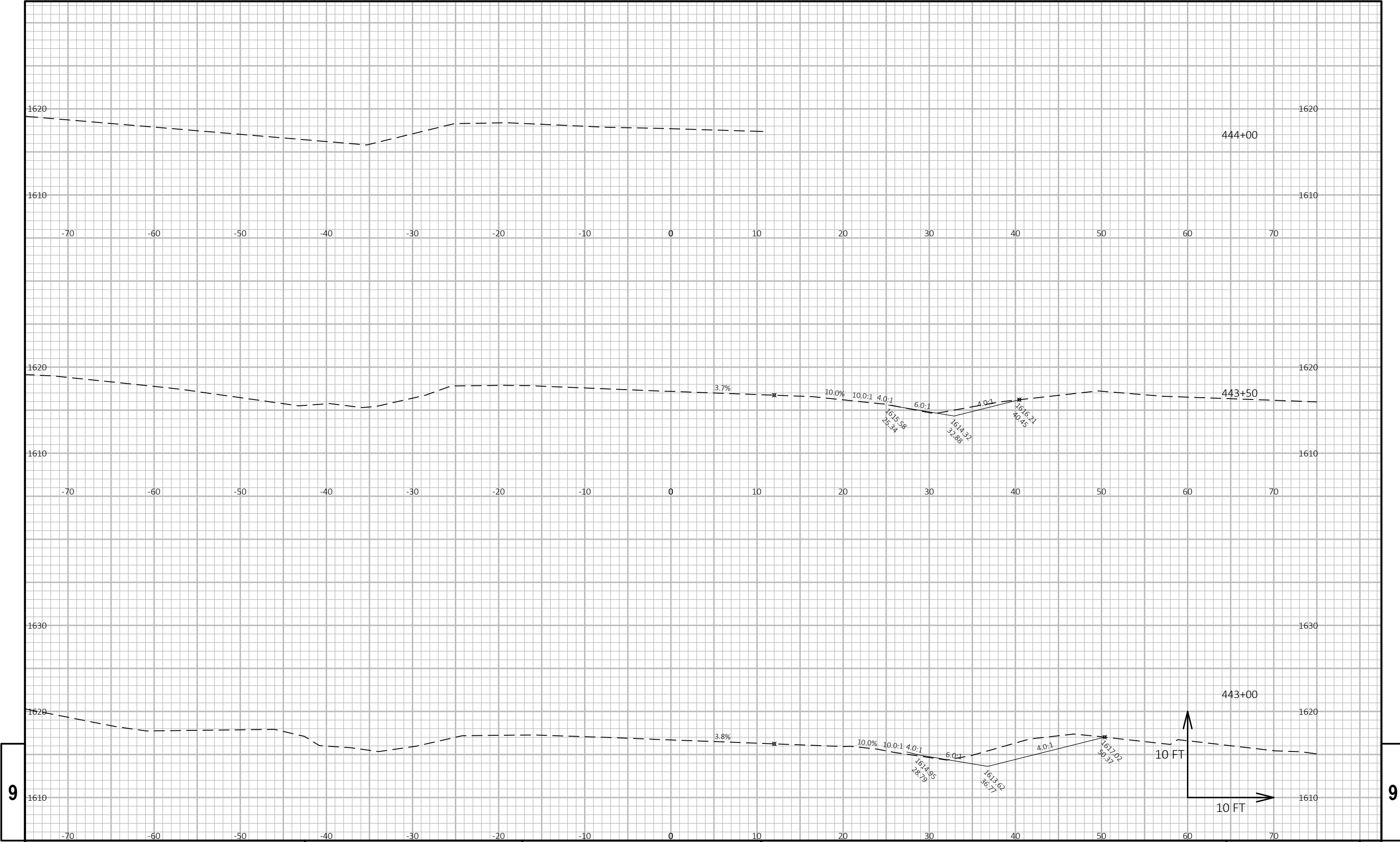
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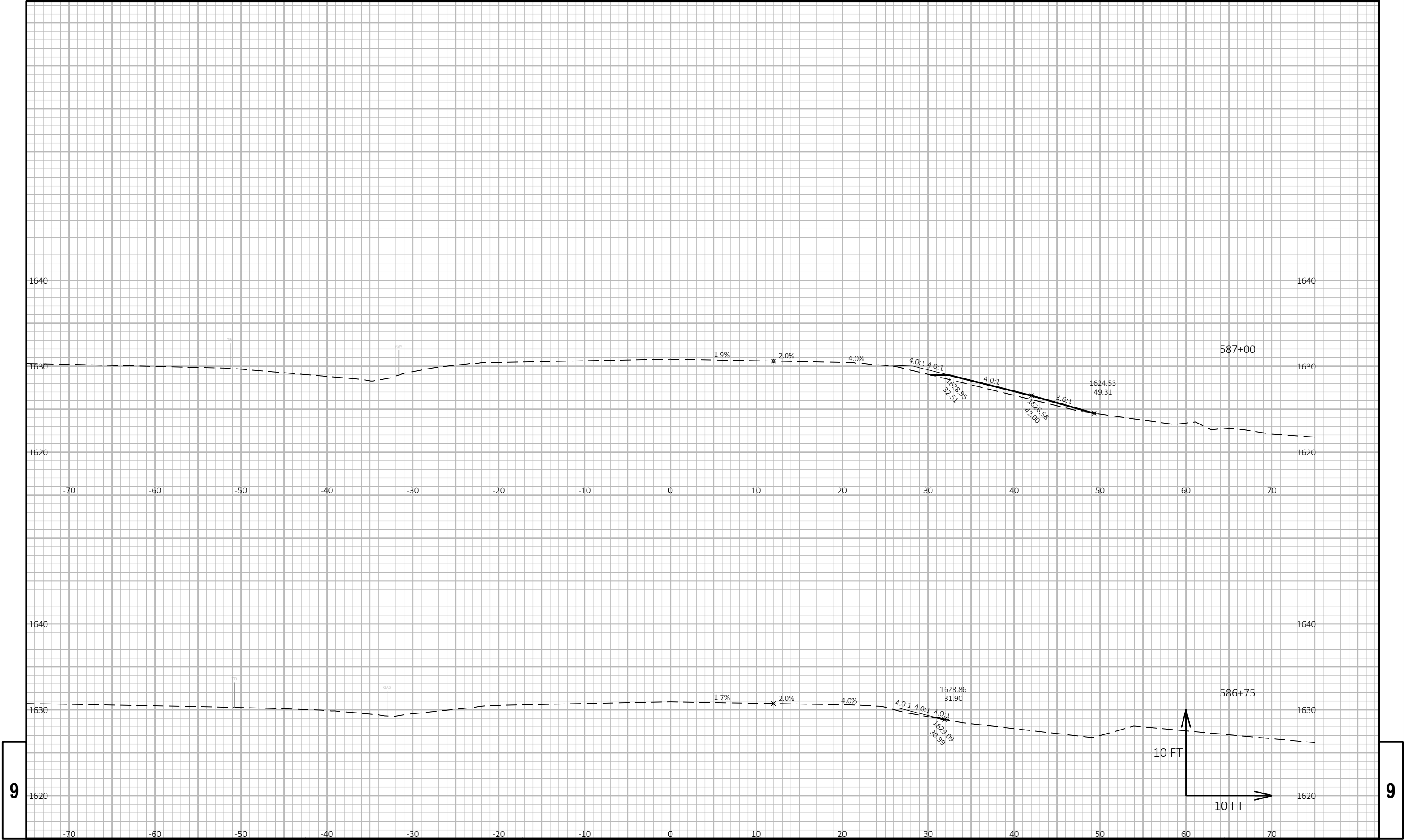
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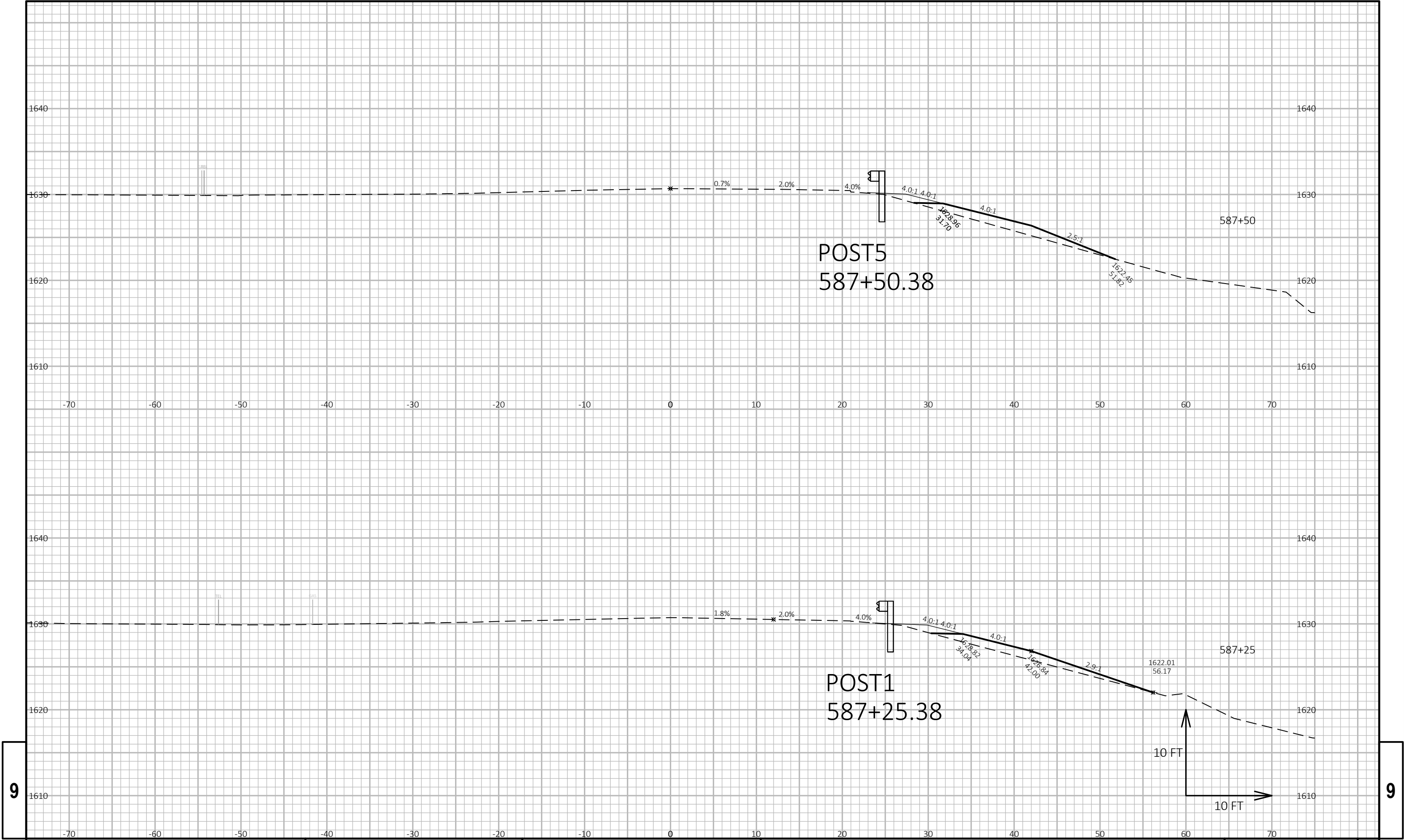
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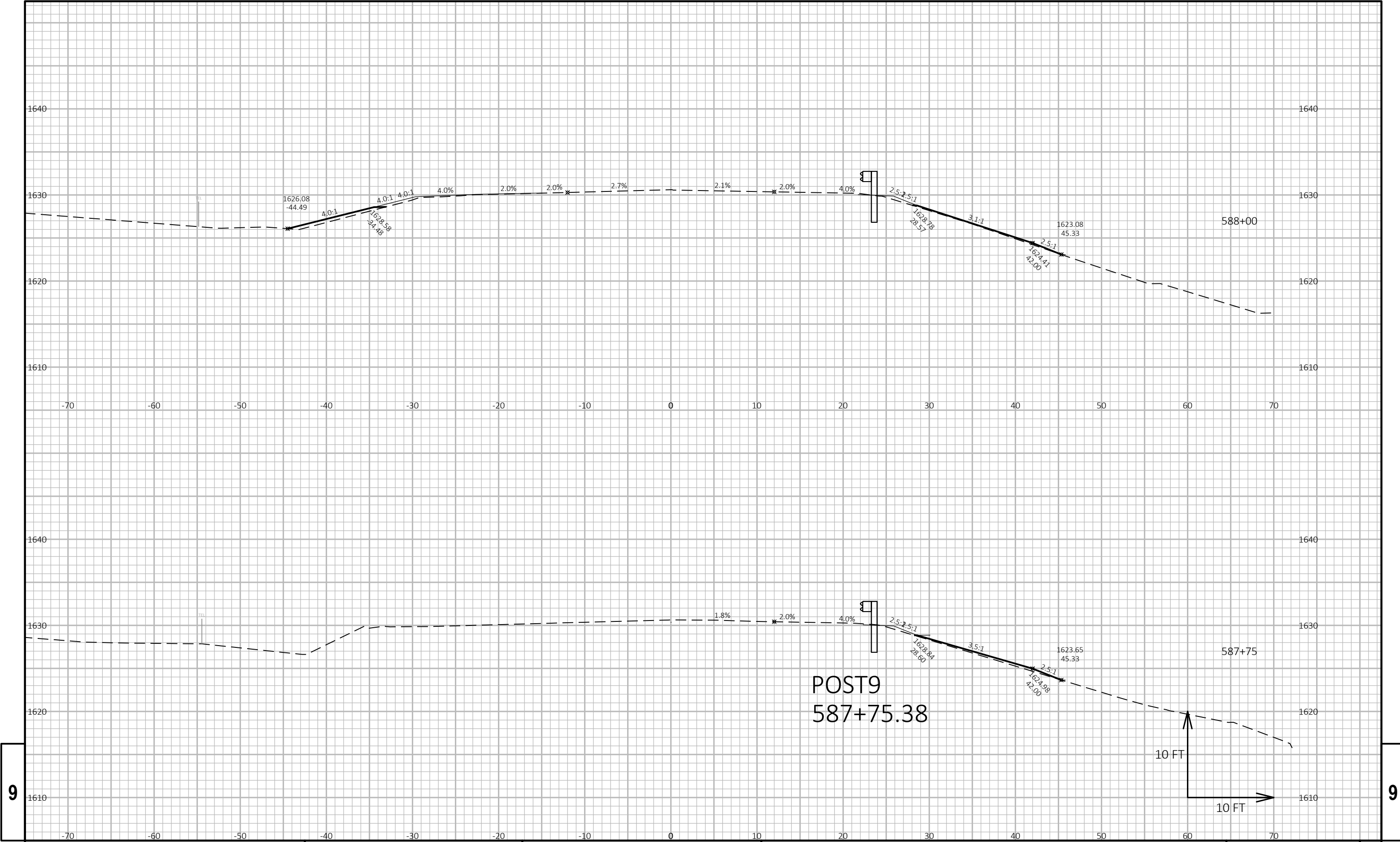
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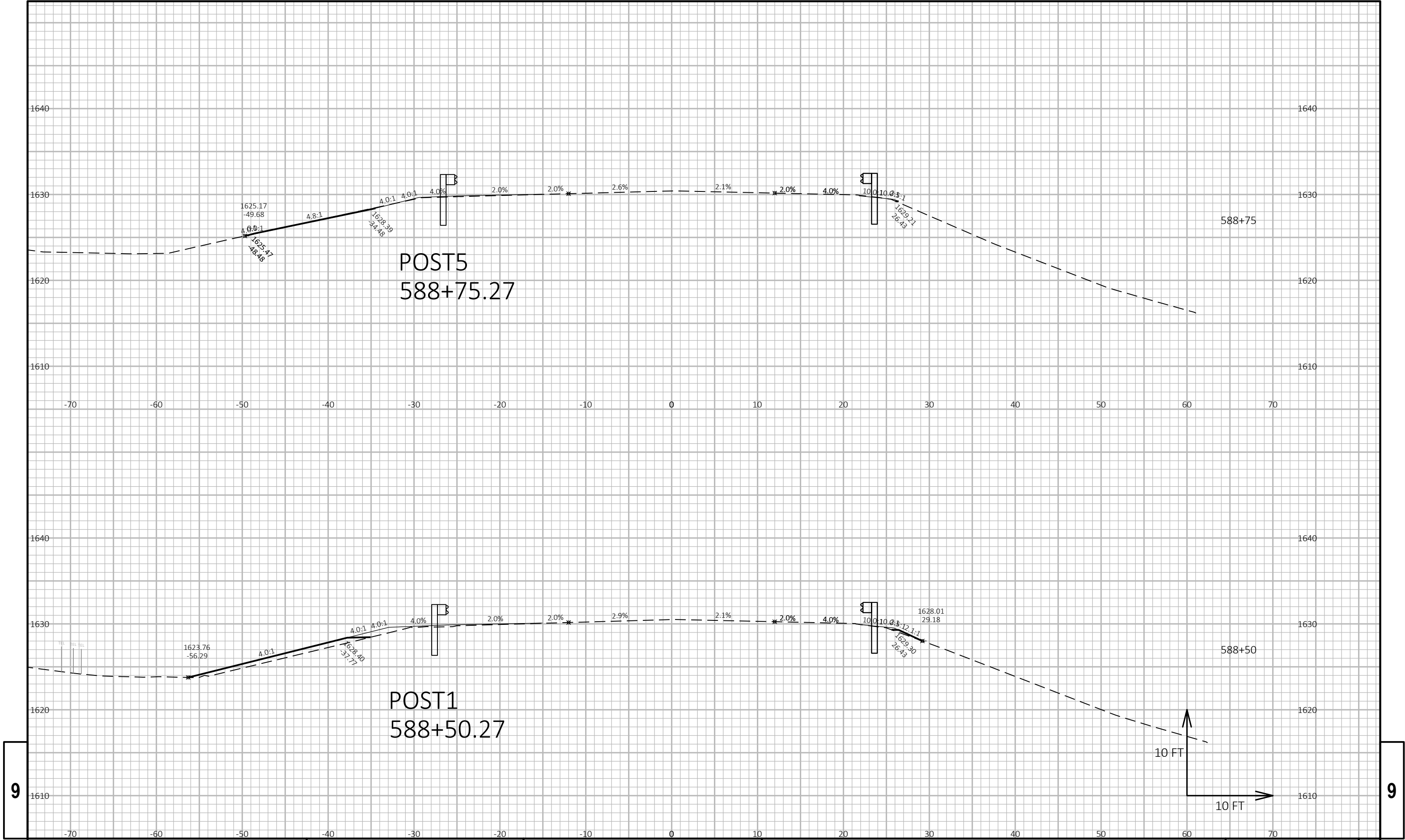
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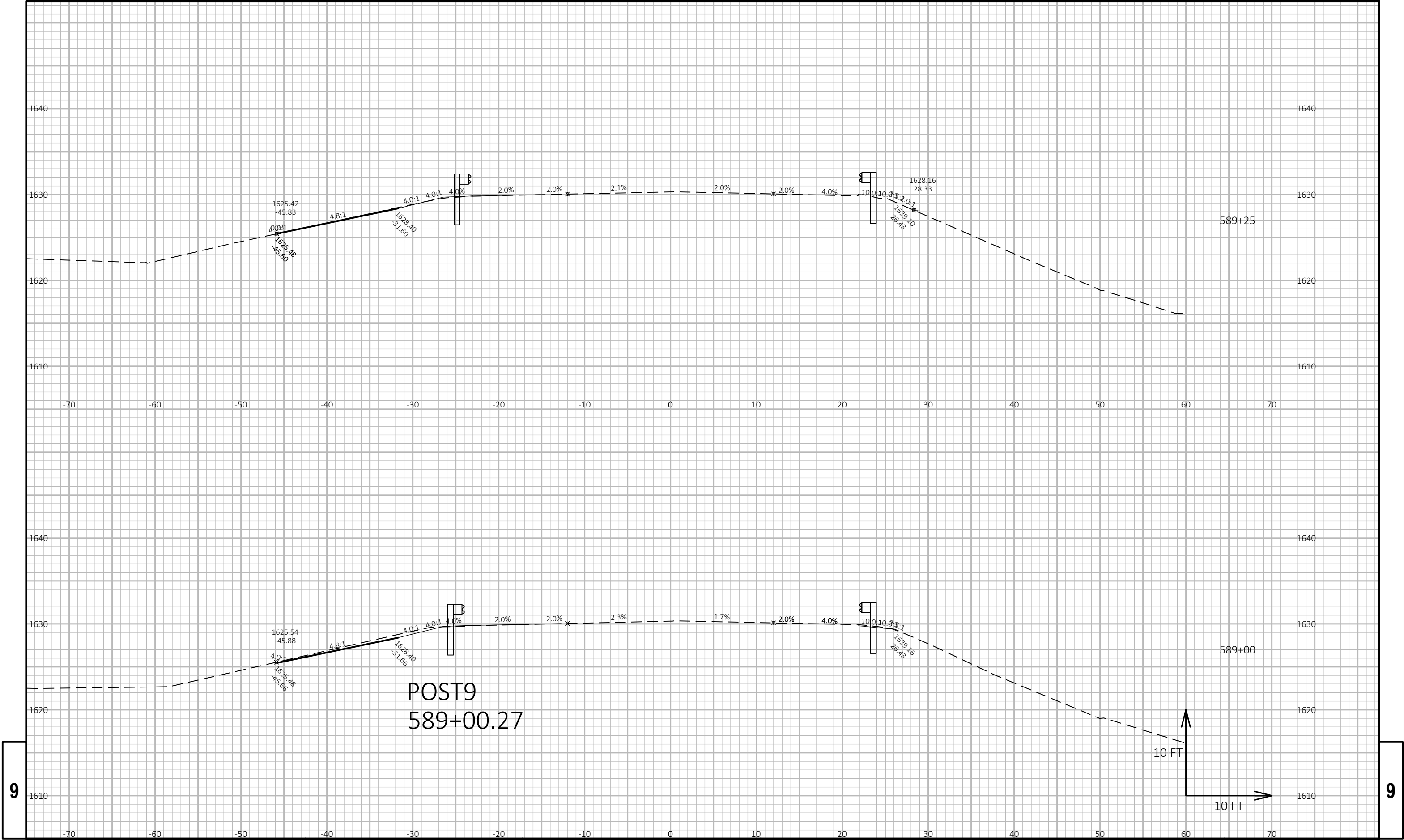
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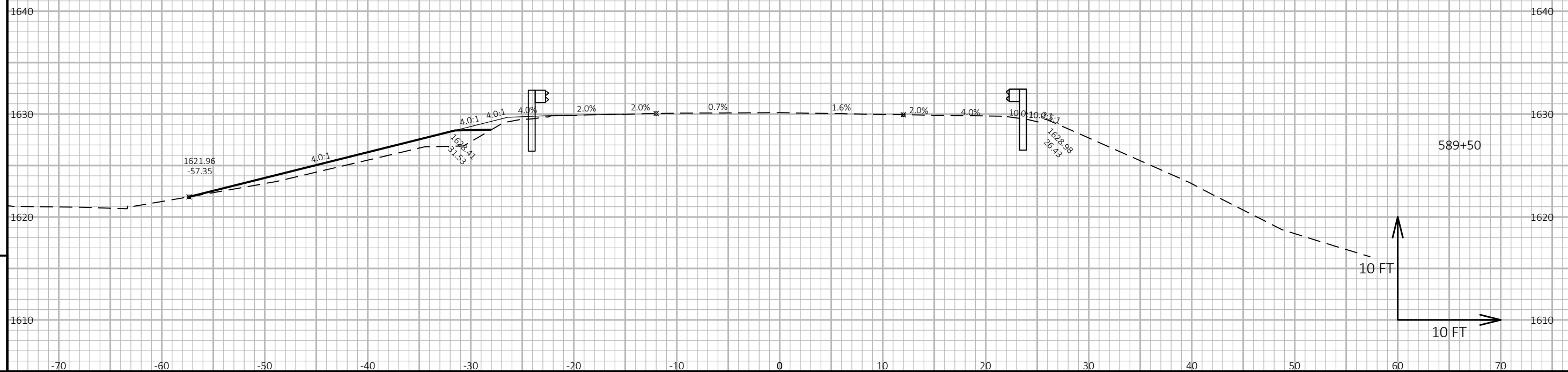
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B-63-17
STA 593+63



PROJECT NO:	9080-14-73
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HWY: STH 70

COUNTY: VILAS

CROSS SECTIONS:	CROSS SECTIONS 6 - B-63-17 WEST
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SHEET

61

FILE NAME : N:\PDS\C3D\90801403\DESIGN\XS\XS.DWG
LAYOUT NAME - 090228-xs6-west bridge

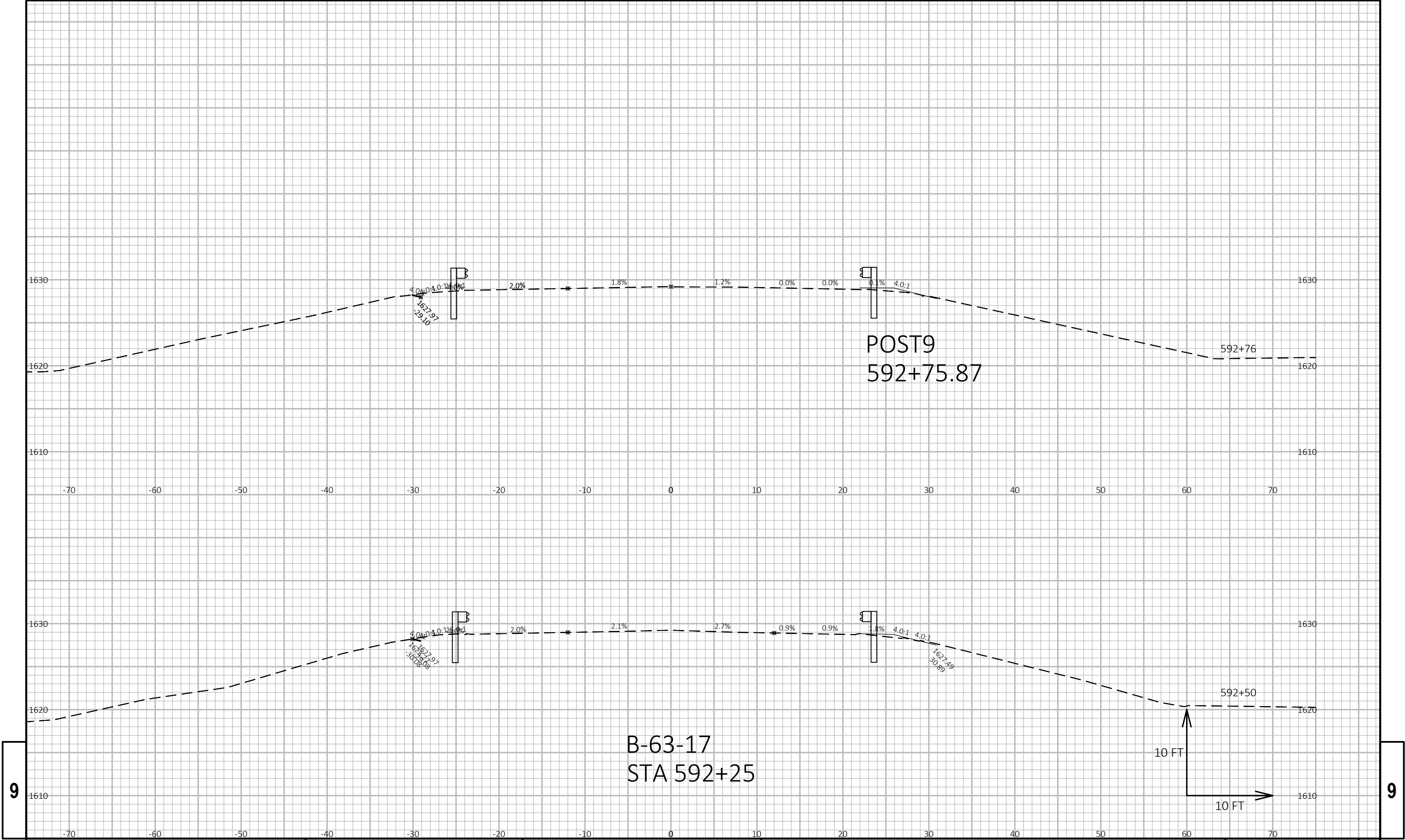
PLOT DATE : 11/16/2018 1:16 PM

PLOT BY : HETH, BARBARA L

PLOT NAME :

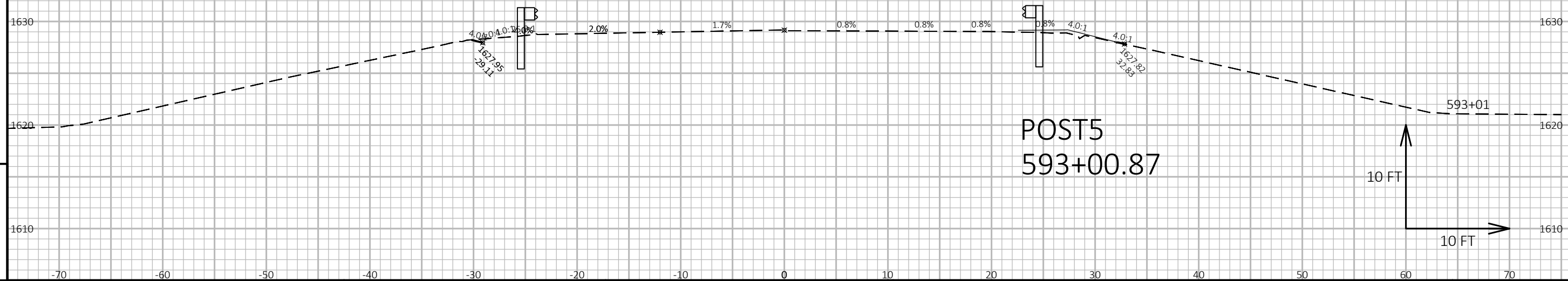
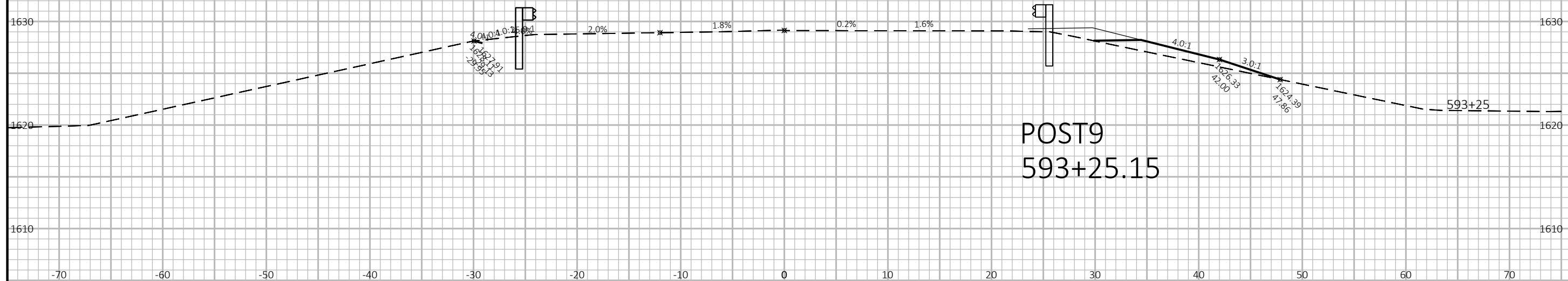
PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



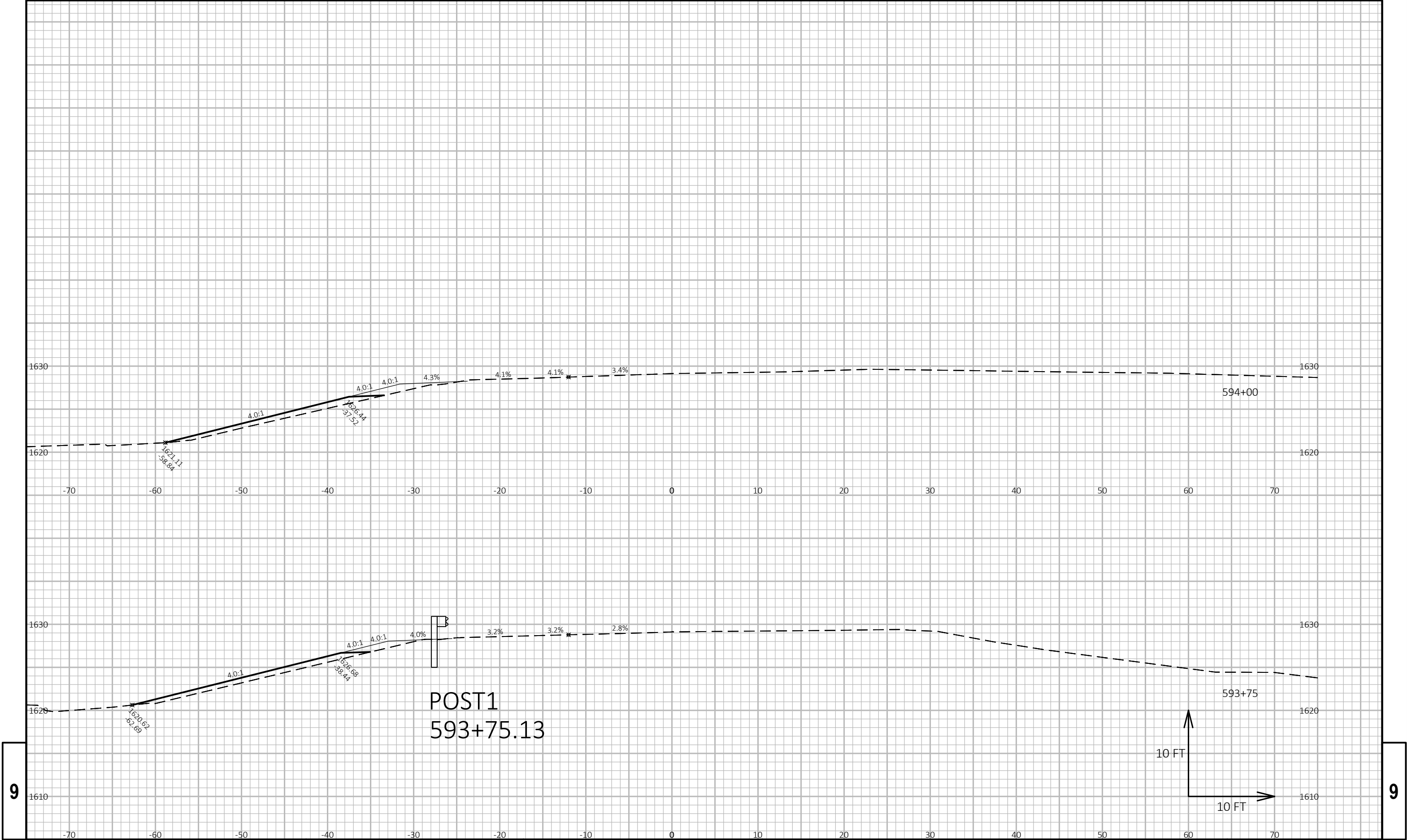
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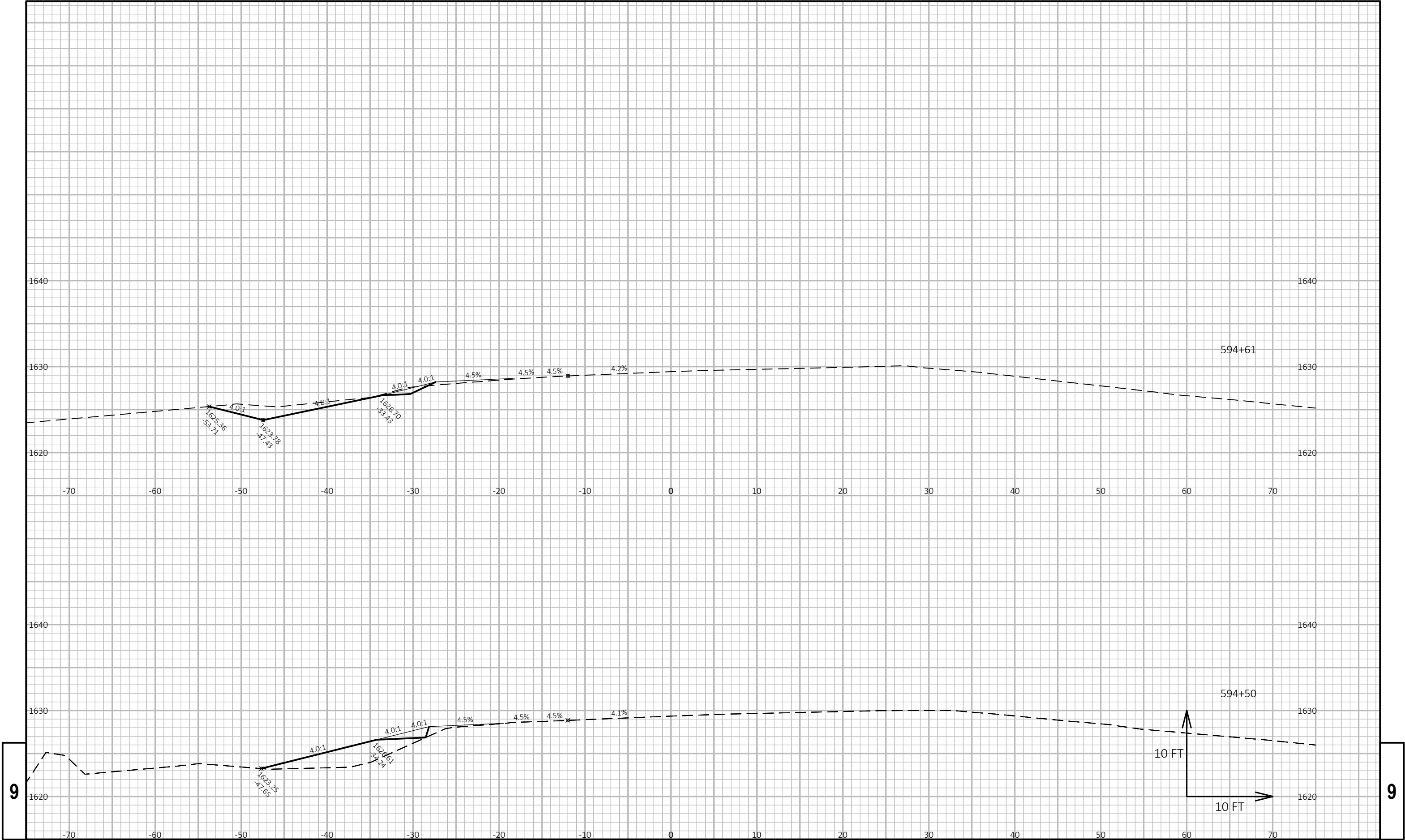
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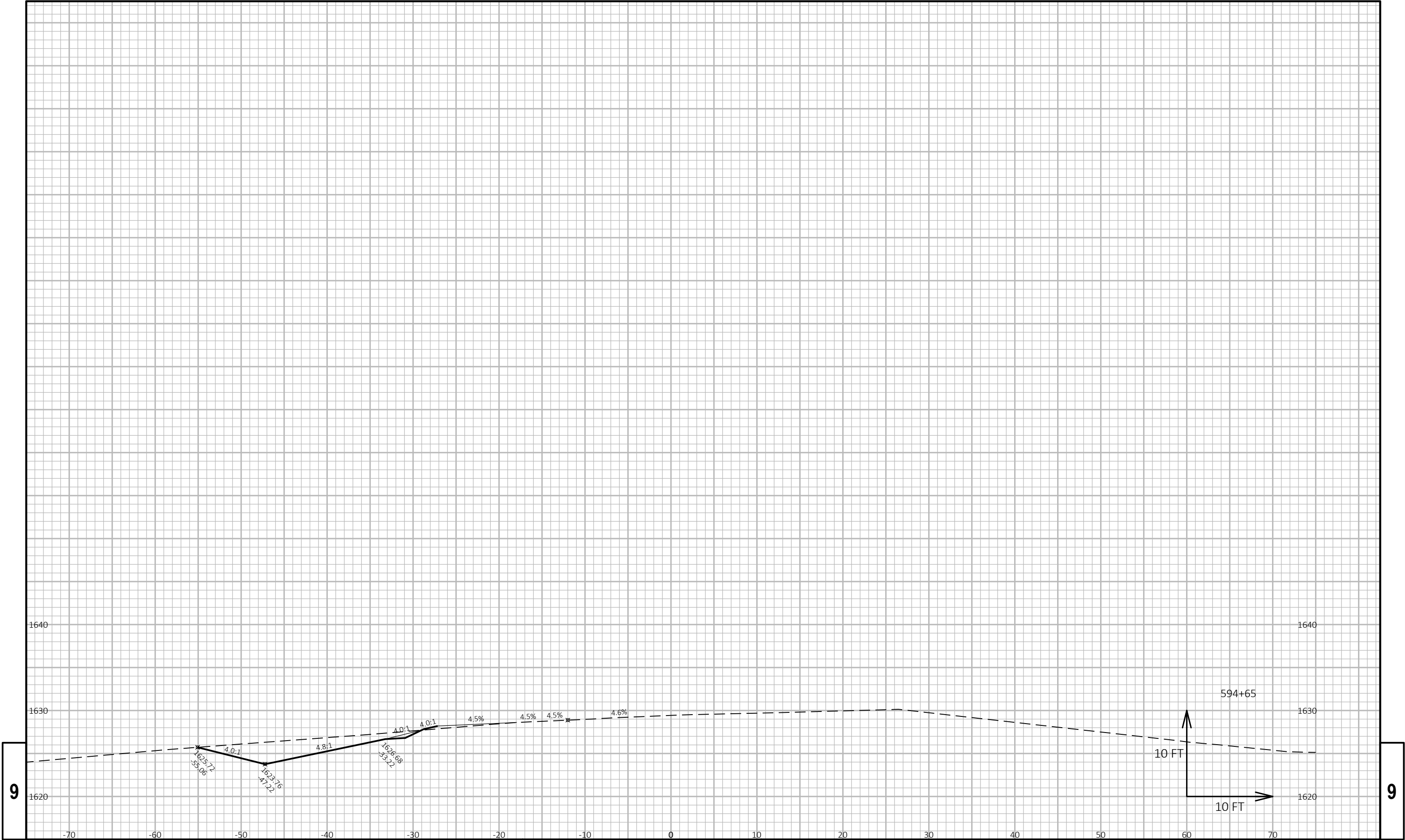
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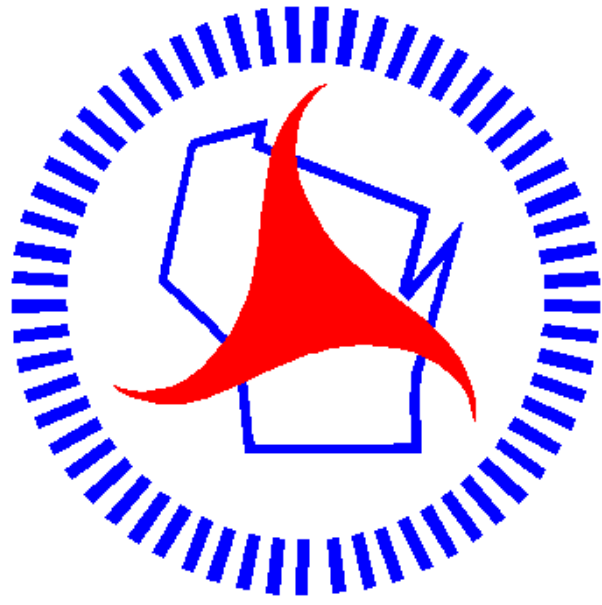
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Wisconsin Department of Transportation

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