

EAU

PROJECT ID:
WITH: N/A

7650-01-62

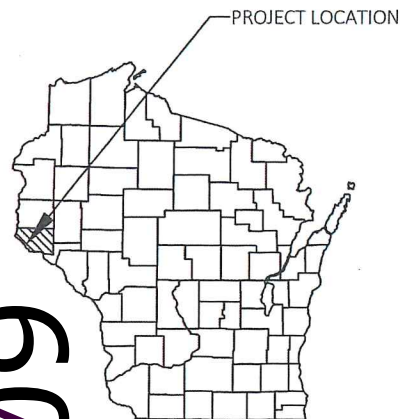
COUNTY:
PIERCE

MARCH 2019

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 Plan
Section No.	5	Plan and Profile
Section No.	6	Standard Detail Drawings
Section No.	7	Sign Plans
Section No.	8	Structure Plans
Section No.	8	Computer Earthwork Data
Section No.	9	Cross Sections

TOTAL SHEETS = 146



DESIGN DESIGNATION

A.A.D.T.	2019	=	3600
A.A.D.T.	2039	=	4900
D.H.V.		=	10.8 %
D.D.		=	52/48
T.		=	13.2 %
DESIGN SPEED		=	55 MPH
ESALS		=	960,000

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

HAGER CITY - PRESCOTT

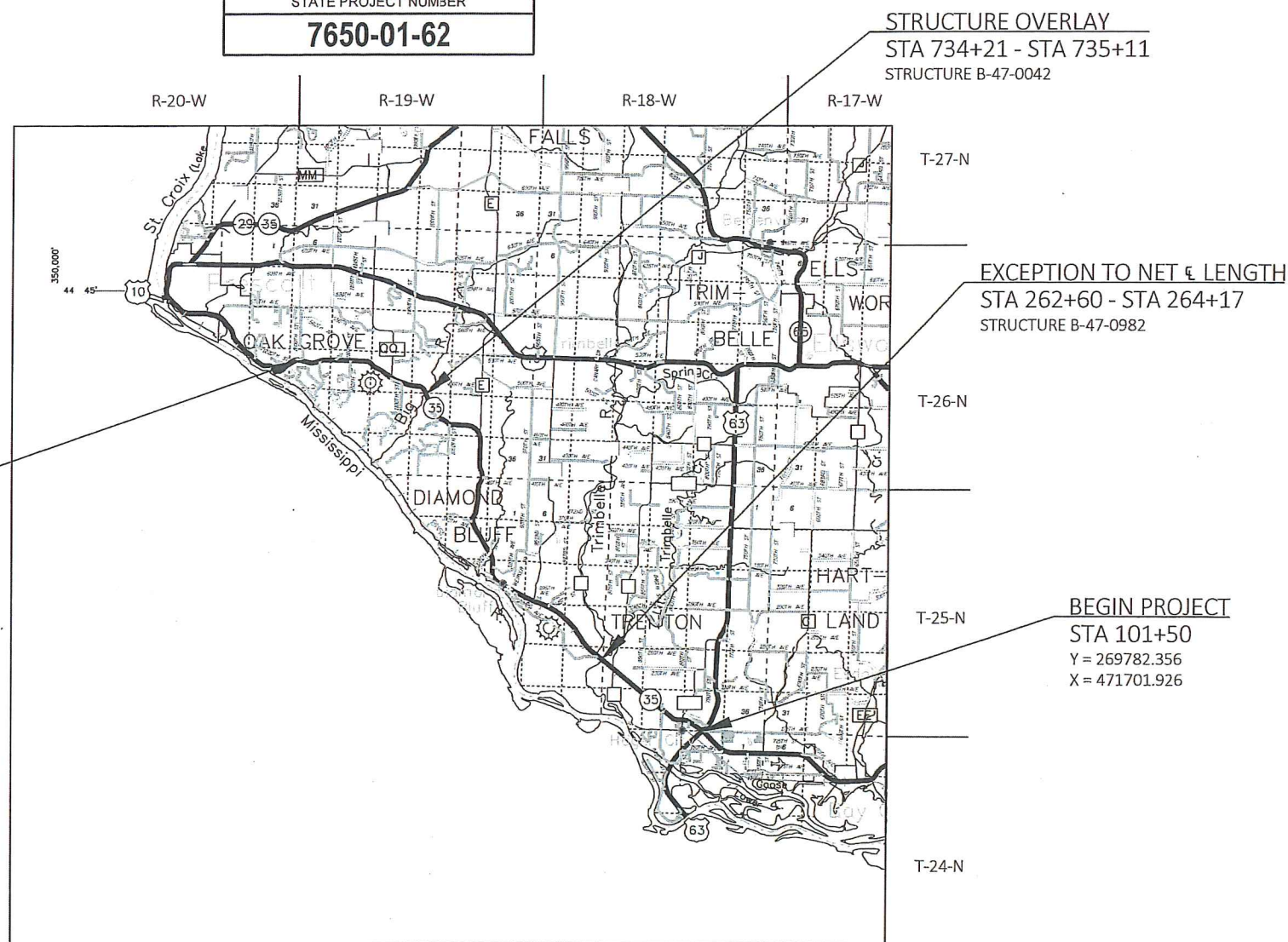
USH 63 TO COULEE CREEK

STH 35

PIERCE COUNTY

STATE PROJECT NUMBER

7650-01-62



LAYOUT
SCALE 0 4 Mi

TOTAL NET LENGTH OF CENTERLINE = 15.23 MI

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM, PIERCE COUNTY.

STATE PROJECT

7650-01-62

FEDERAL PROJECT

PROJECT

CONTRACT

STRUCTURE OVERLAY

STA 734+21 - STA 735+11

STRUCTURE B-47-0042

EXCEPTION TO NET LENGTH

STA 262+60 - STA 264+17

STRUCTURE B-47-0982

BEGIN PROJECT

STA 101+50

Y = 269782.356

X = 471701.926

ORIGINAL PLANS PREPARED BY

SEH



DATE: 10-31-18 Tara L. Krista (Professional Engineer Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	SEH / WISDOT
Designer	SEH
Project Manager	MATT PFEIFER
Regional Examiner	JENNIFER OLDENBURG
Regional Supervisor	JIM KOENIG

APPROVED FOR THE DEPARTMENT

DATE: 12/5/18 Matt Pfeifer (Signature)

GENERAL NOTES

ELEVATIONS SHOWN ON THE PLAN ARE REFERENCED TO THE APPROXIMATE USGS DATUM.

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

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

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

THE EXACT LOCATION OF THE EROSION CONTROL DEVICES SHALL BE DETERMINED IN THE FIELD.

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, ARE TO BE 4-INCH SALVAGED TOPSOILED, FERTILIZED, SEEDED AND MULCHED.

ALL PAVEMENT DIMENSIONS AND STATIONS ARE SHOWN TO THE EDGE OF PAVEMENT UNLESS NOTED OTHERWISE.

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

ALIGNMENT TO BE USED FOR STATION LOCATION ONLY. OFFSETS TO BEAM SHALL BE FIELD VERIFIED AND BASED ON ACTUAL FIELD CENTERLINE LOCATION.

CONTROL AND GPS POINT TABLE

STATION	OFFSET	NORTHING	EASTING	ELEVATION	DESCRIPTION
N/A	N/A	269631.171	471984.051	745.54	CP50 3/4" REBAR WITH CAP
132+37.93	36.42	271116.244	468980.790	714.45	CP51 3/4" REBAR WITH CAP
182+63.29	-42.43	273646.276	464786.755	718.73	GPS HMP MON-DL4232
190+69.68	-40.16	274142.819	464151.367	717.46	CP52 3/4" REBAR WITH CAP
247+86.33	-41.49	277646.005	459633.920	729.47	CP53 3/4" REBAR WITH CAP
306+80.64	-38.03	281632.990	455340.081	736.55	CP54 3/4" REBAR WITH CAP
350+02.08	-36.93	284635.849	452307.180	734.65	CP55 3/4" REBAR WITH CAP
397+24.70	-50.06	286478.931	447972.764	732.53	CP56 3/4" REBAR WITH CAP
434+25.18	34.82	288218.086	444709.266	723.44	CP57 3/4" REBAR WITH CAP
456+39.50	-34.91	290069.014	443813.072	782.32	CP100 3/4" REBAR WITH CAP
475+02.49	-47.70	291820.959	443478.510	707.66	CP58 3/4" REBAR WITH CAP
538+82.85	50.78	297457.346	441527.368	1044.81	CP59 3/4" REBAR WITH CAP
582+51.29	55.09	301735.108	442173.036	1022.35	CP60 3/4" REBAR WITH CAP
643+46.02	52.56	307708.737	441338.178	1053.52	CP61 3/4" REBAR WITH CAP
667+10.66	100.66	308522.637	439161.297	1090.50	GPS HMP MON-DL4235
681+01.76	-49.93	308427.601	437759.549	1023.88	CP62 3/4" REBAR WITH CAP
733+42.17	43.54	312180.142	434384.195	763.73	CP63 3/4" REBAR WITH CAP
785+63.78	-46.01	314199.275	429854.272	982.63	CP64 3/4" REBAR WITH CAP
845+34.15	101.00	316490.232	424573.226	995.35	CP65 3/4" REBAR WITH CAP
903+06.31	45.60	316116.237	418886.400	754.52	CP66 3/4" REBAR WITH CAP

UTILITY CONTACTS

COMMUNICATIONS

BEVCOMM
PO BOX 125
W8108 165TH AVENUE
HAGER CITY, WI 54014
TELEPHONE: 715.792.2103
ATTENTION: CHAD WHITCOMB
EMAIL: CWHITCOMB@BEVCOMM.COM

CENTURYLINK
1825 PIONEER AVE
RICE LAKE, WI 54868
TELEPHONE: 715.234.5534
ATTENTION: JEREMY SISKO
EMAIL: JEREMY.SISKO@CENTURYLINK.COM

ELECTRICITY
DAIRYLAND POWER COOPERATIVE
P.O. BOX 817
3200 EAST AVENUE SOUTH
LA CROSSE, WI 54602
TELEPHONE: 608.518.2633
ATTENTION: ROB MALY
EMAIL: ROB.MALY@DAIRYLANDPOWER.COM

XCEL ENERGY
2001 OLD HWY 35 S
HUDSON, WI 54016
TELEPHONE: 715.377.1810
ATTENTION: BRIAN MELLO
EMAIL: BRIAN.M.MELLO@XCELENERGY.COM

PIERCE PEPIN COOPERATIVE SERVICES
PO BOX 420
W7725 USH 10
ELLSWORTH, WI 54011
TELEPHONE: 715.273.2473
ATTENTION: BRAD RISTOW
EMAIL: BRISTOW@PIERCEPEPIN.COOP

GAS/PETROLEUM
FLINT HILLS RESOURCES
PO BOX 64596
SAINT PAUL, MN 55164
TELEPHONE: 651.480.2617
ATTENTION: ADAM CROCKER
EMAIL: ADAM.CROCKER@FHR.COM

WE ENERGIES
104 W SOUTH STREET
RICE LAKE, WI 54868
TELEPHONE: 715. 234.9605
ATTENTION: STEVEN CHAVERS
EMAIL: STEVEN.CHAVERS@WE-ENERGIES.COM



Dial  or (800)242-8511

www.DiggersHotline.com

DESIGN CONTACT

SEH
10 NORTH BRIDGE STREET
CHIPPEWA FALLS, WI 54729
TELEPHONE: 715.720.6266
ATTENTION: GREG WEYANDT
EMAIL: GWYANDT@SEHINC.COM

WDNR CONTACT

DNR WEST CENTRAL REGION HQ
1300 WEST CLAIREMONT AVENUE
EAU CLAIRE, WI 54701
TELEPHONE: 715.836.6571
ATTENTION: AMY LESIK
EMAIL: AMYL.LESIK@WISCONSIN.GOV

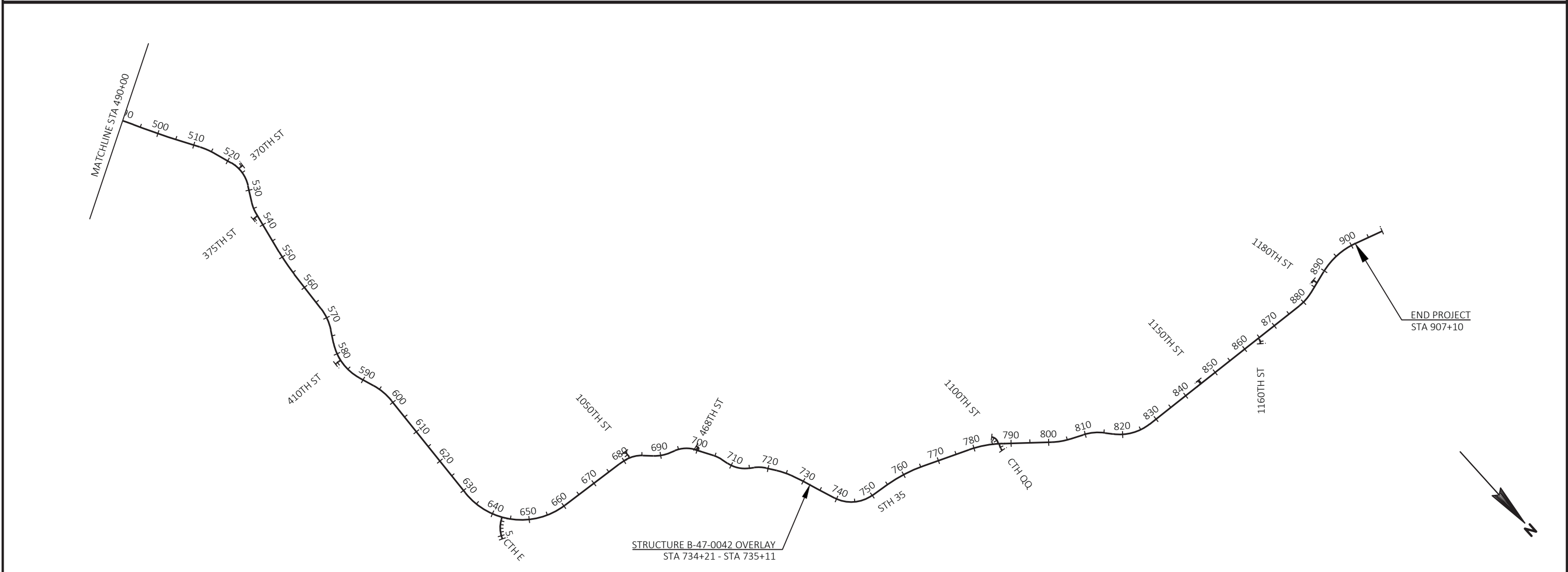
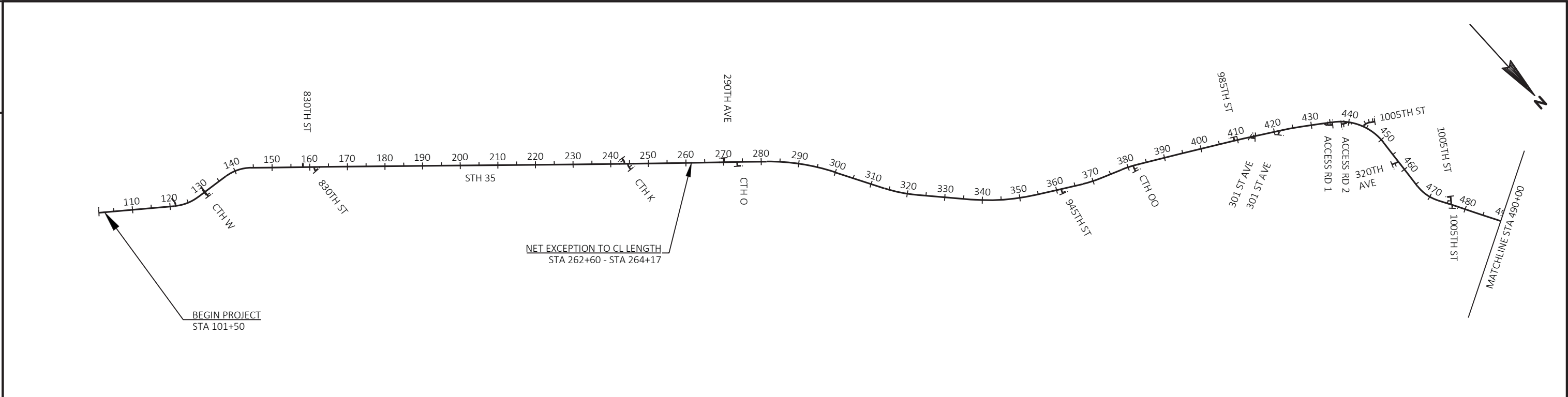
WISDOT NW REGION CONTACT
718 WEST CLAIREMONT AVENUE
EAU CLAIRE, WI 54701
TELEPHONE: 715.579.0789
ATTENTION: MATT PFEIFER
EMAIL: MATTHEW.PFEIFER@DOT.WI.GOV

RUNOFF COEFFICIENT TABLE

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

TOTAL PROJECT AREA = 222 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 6 ACRES

2



PROJECT NO:	7650-01-62
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HWY: STH 35

COUNTY: PIERCE

PROJECT OVERVIEW

SHEET

E

FILE NAME : P:\UZ\W\WITNW\142897\C3D-STH 35\SHEETSPLAN\020201_PO.DWG
LAYOUT NAME : 01

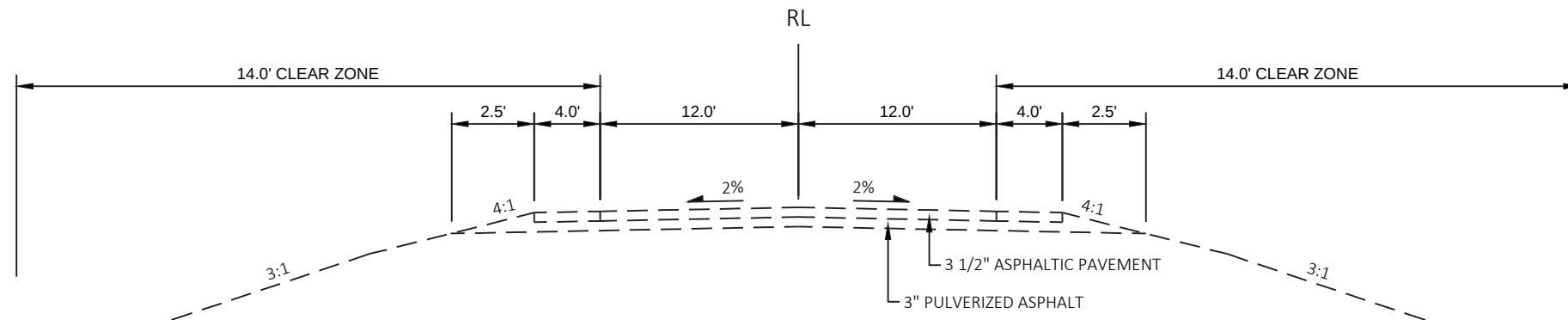
PLOT DATE : 10/31/2018 12:41 PM

PLOT BY : NICK ENGH

PLOT NAME :

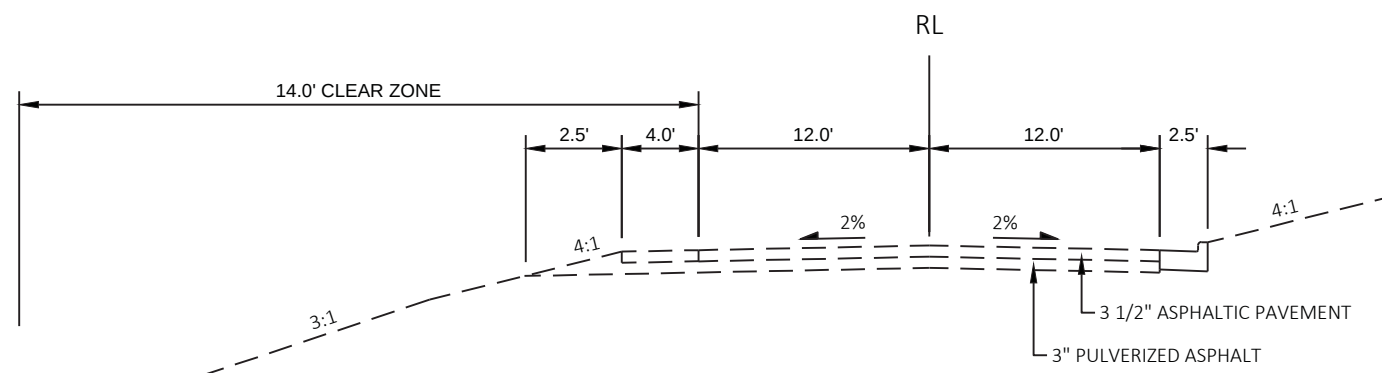
PLOT SCALE : 1 IN:0.5 MI

WISDOT/CADDS SHEET 42



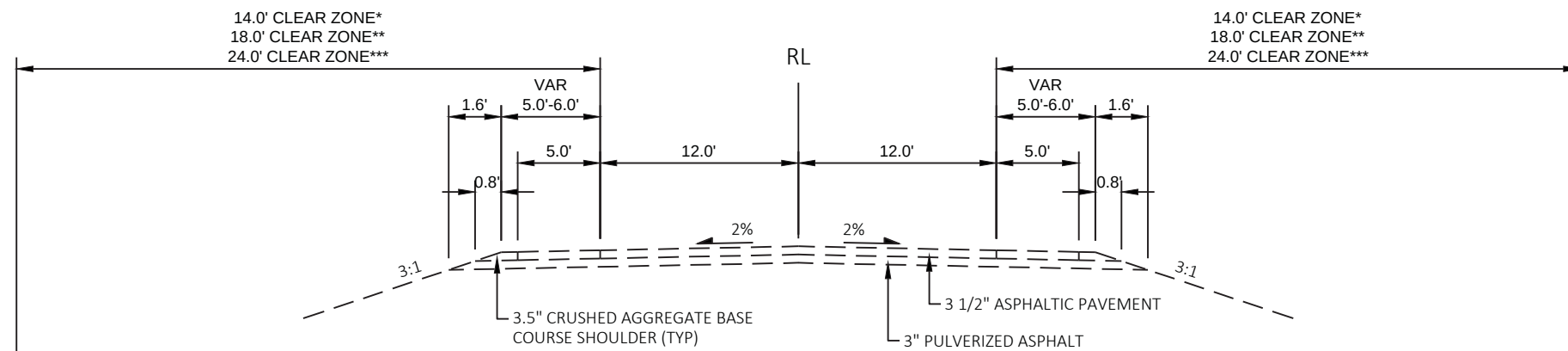
TYPICAL EXISTING SECTION

STH 35
STA 101+50 TO STA 401+00
STA 433+00 TO STA 450+00



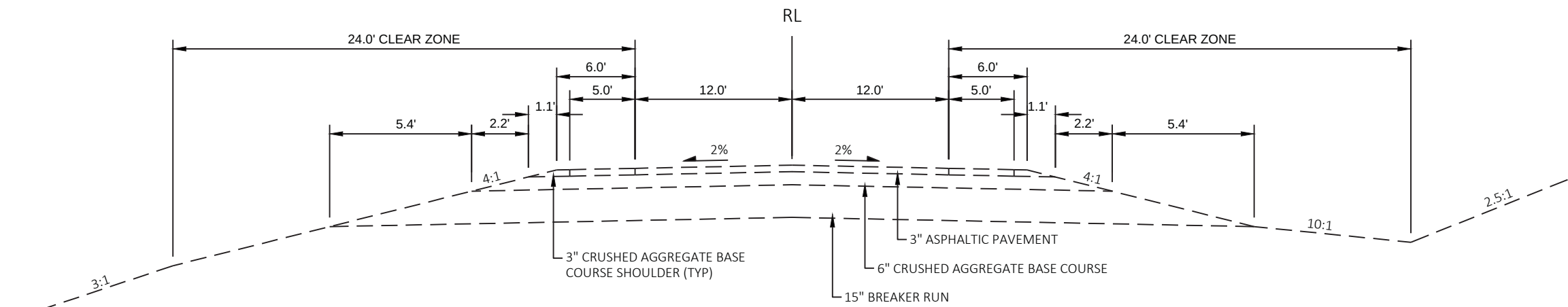
TYPICAL EXISTING SECTION

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STA 401+00 TO STA 433+00



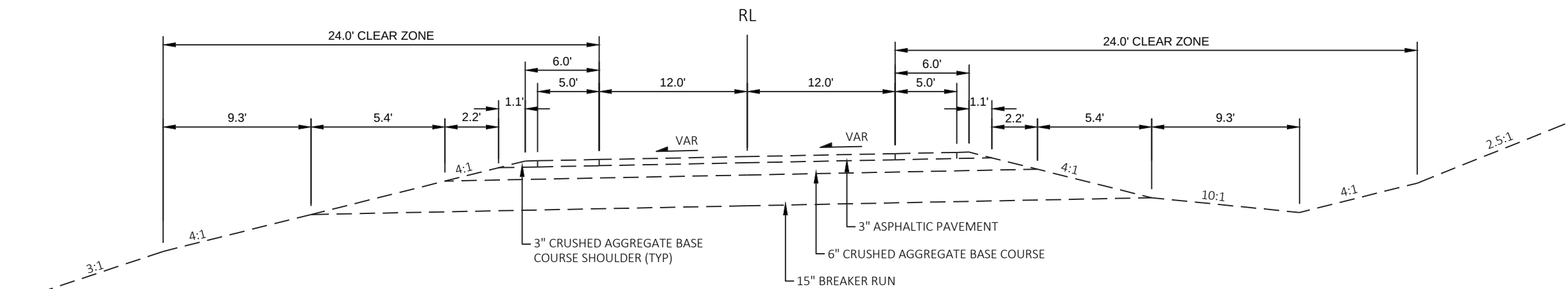
TYPICAL EXISTING SECTION

STH 35
STA 450+00 TO STA 517+00*
STA 517+00 TO STA 573+30**
STA 678+50 TO STA 734+21***



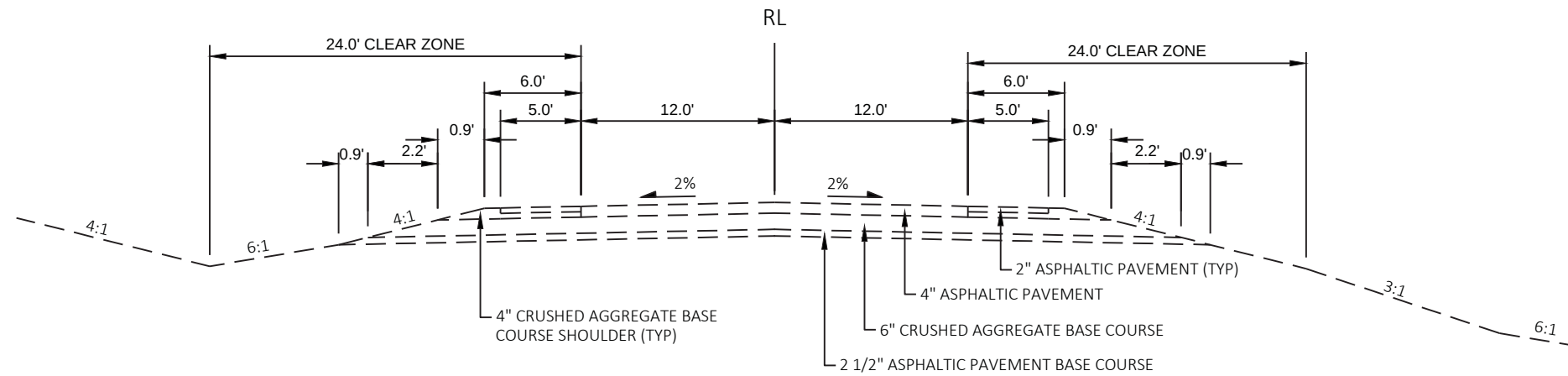
TYPICAL EXISTING SECTION - TANGENT

STH 35
STA 573+30 TO STA 678+50



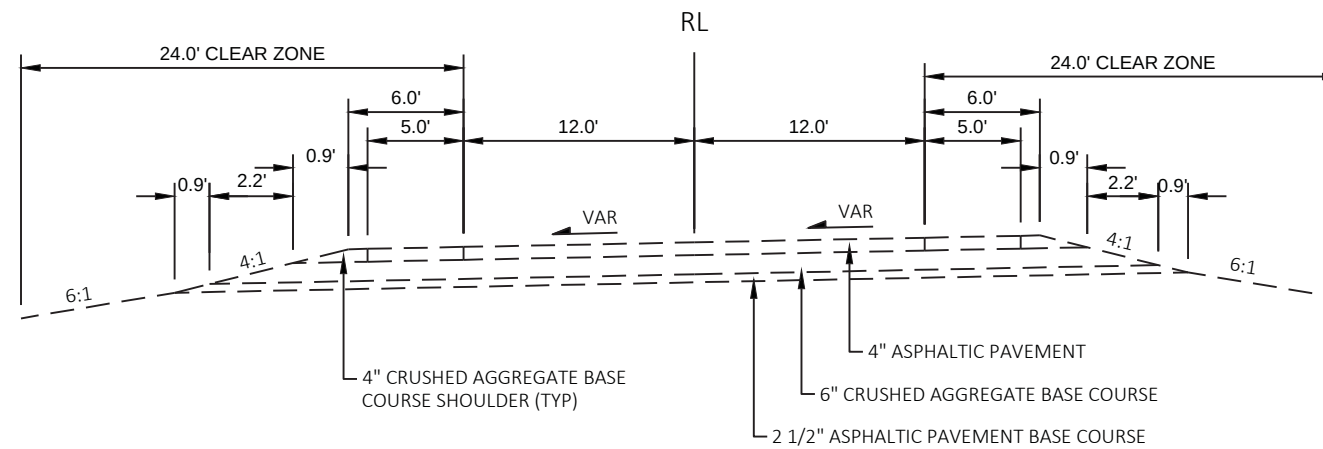
TYPICAL EXISTING SECTION - SUPER ELEVATION

STH 35
STA 573+30 TO STA 678+50



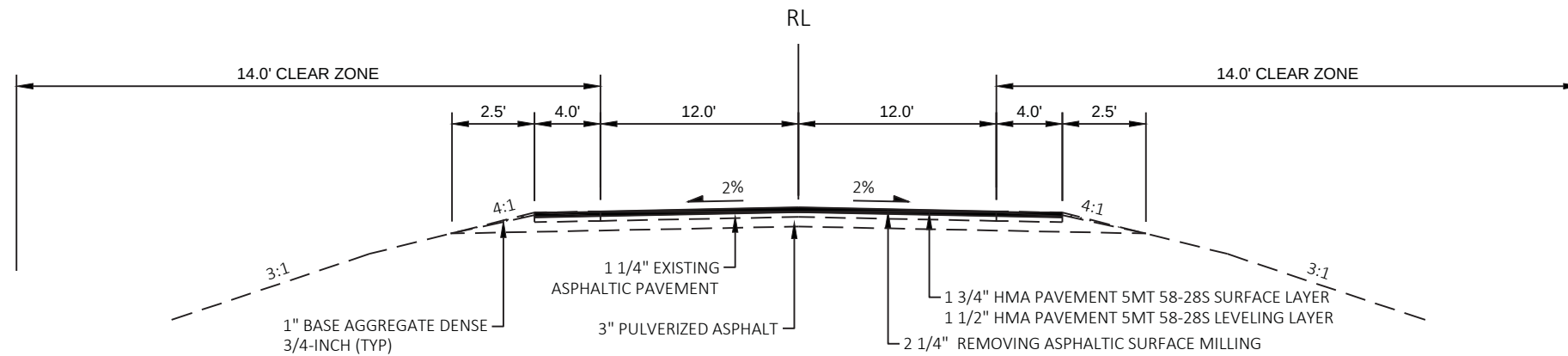
TYPICAL EXISTING SECTION - TANGENT

STH 35
STA 735+11 TO STA 907+10

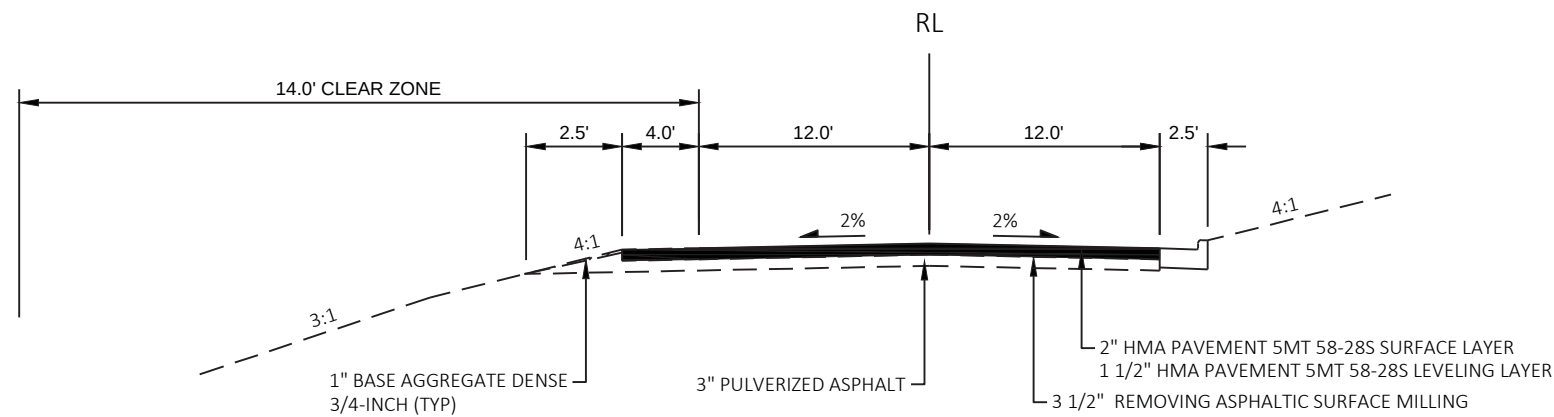


TYPICAL EXISTING SECTION - SUPER ELEVATION

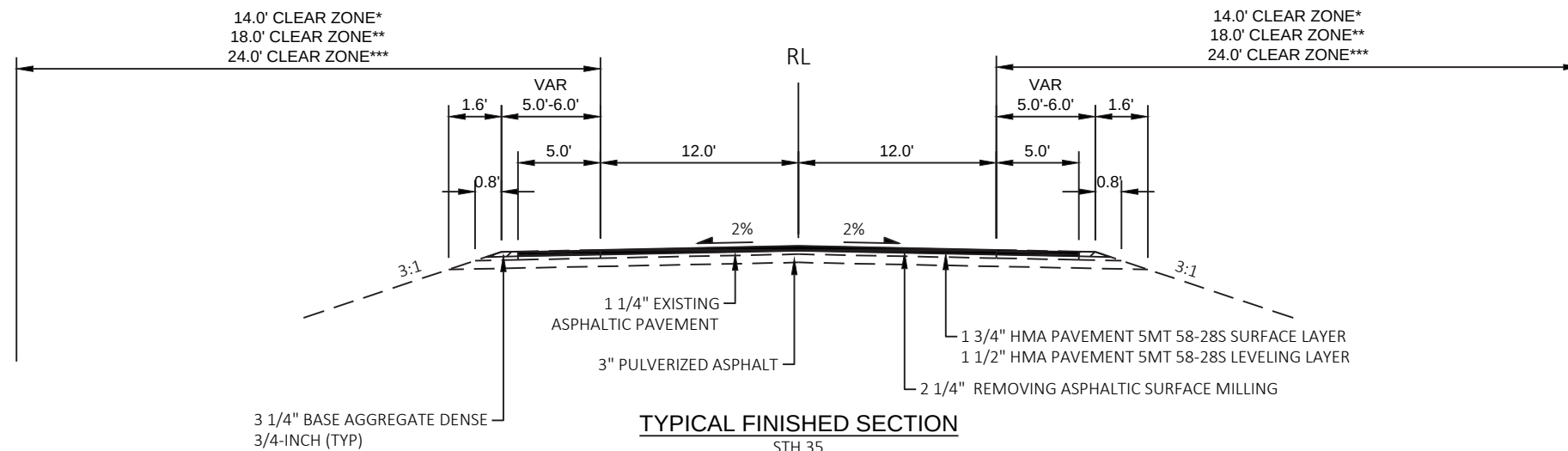
STH 35
STA 735+11 TO STA 907+10

**TYPICAL FINISHED SECTION**

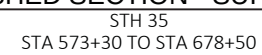
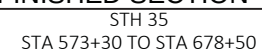
STH 35
STA 101+50 TO STA 401+00
STA 433+00 TO STA 450+00

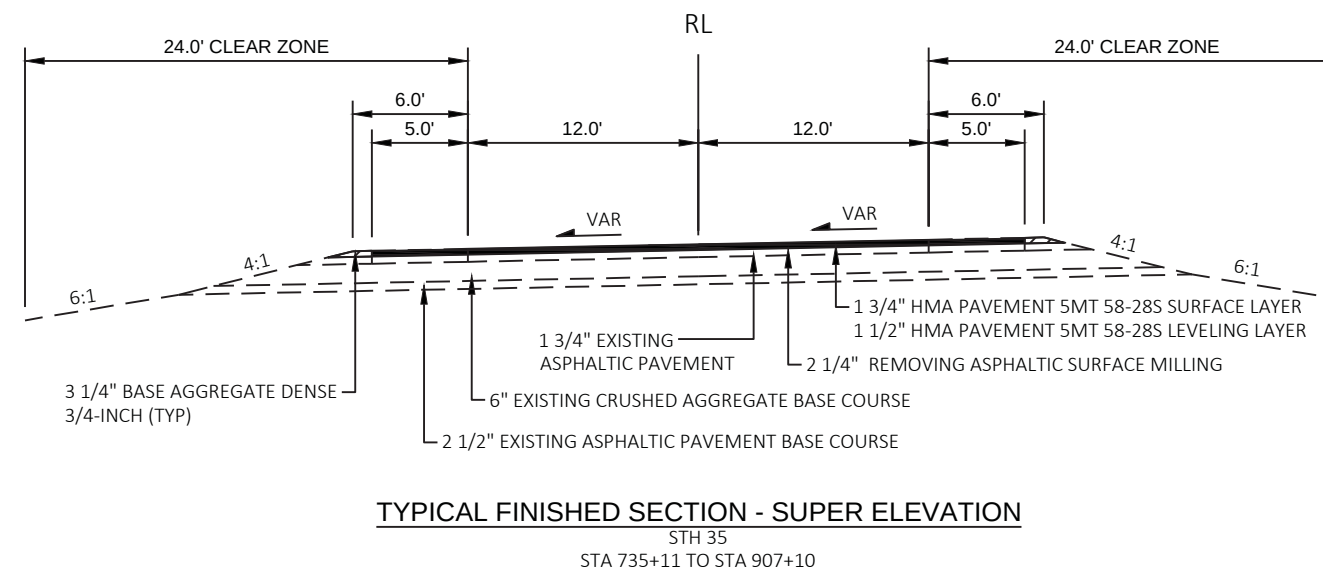
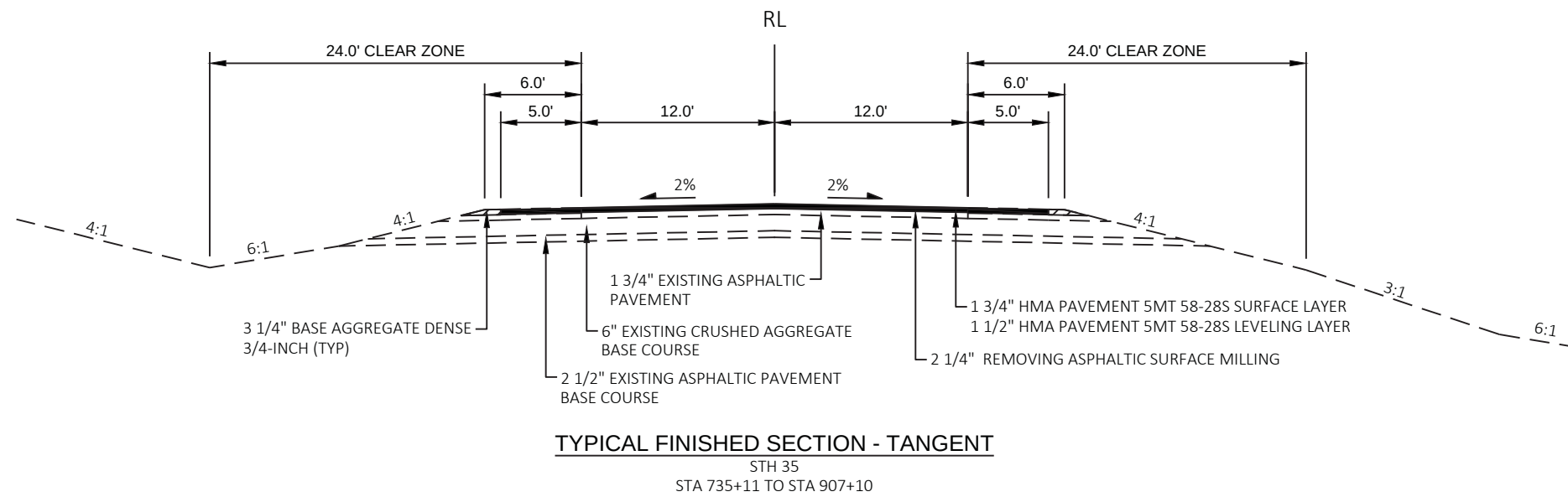
**TYPICAL FINISHED SECTION**

STH 35
STA 401+00 TO STA 433+00

**TYPICAL FINISHED SECTION**

STH 35
STA 450+00 TO STA 517+00*
STA 517+00 TO STA 573+30**
STA 678+50 TO STA 734+21***





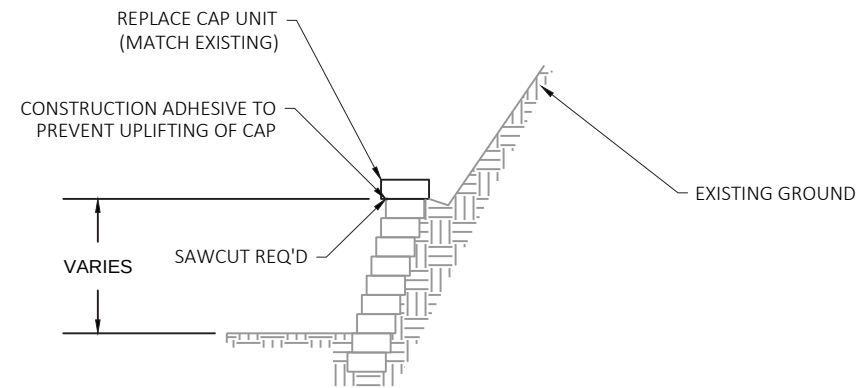
B-47-0042 ASPHALT OVERLAY DETAIL

DITCH CLEANING DETAIL

BUTT JOINT DETAIL

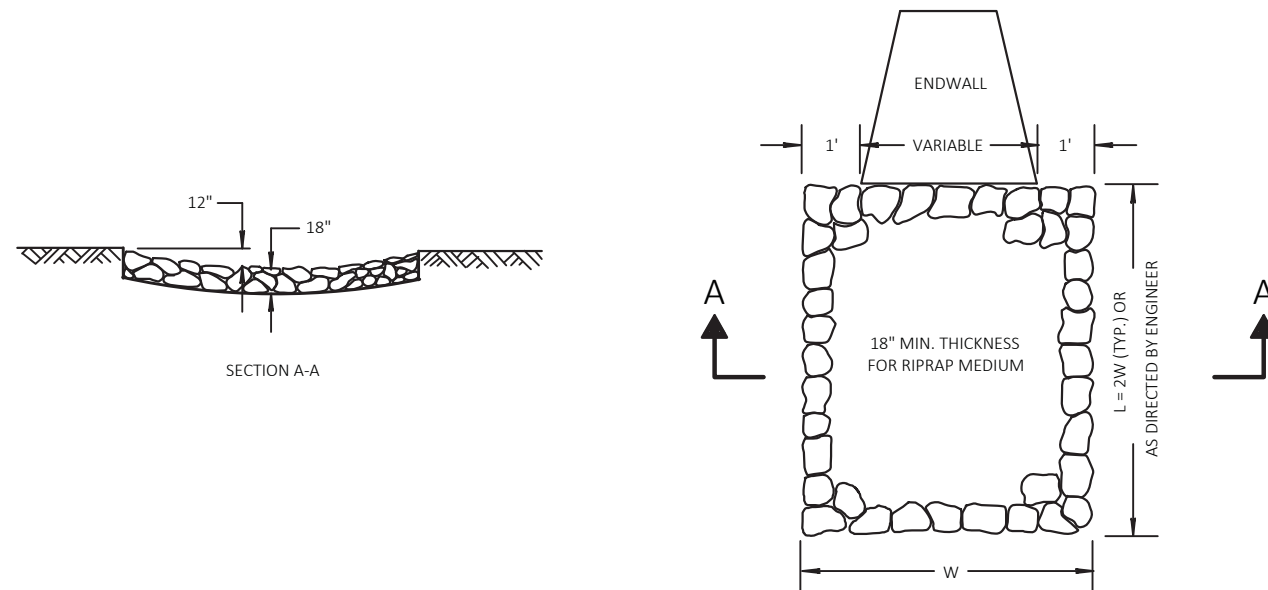
GUARDRAIL TERMINAL EAT EROSION CONTROL & RESTORATION DETAIL

NOTE: CONSTRUCTION STAKING, EXCAVATION COMMON, BORROW, 4" SALVAGED TOPSOIL, MULCHING, FERTILIZER TYPE B, AND SEEDING MIXTURE NO. 20 INCLUDED IN ITEM BARRIER SYSTEM GRADING SHAPING FINISHING.



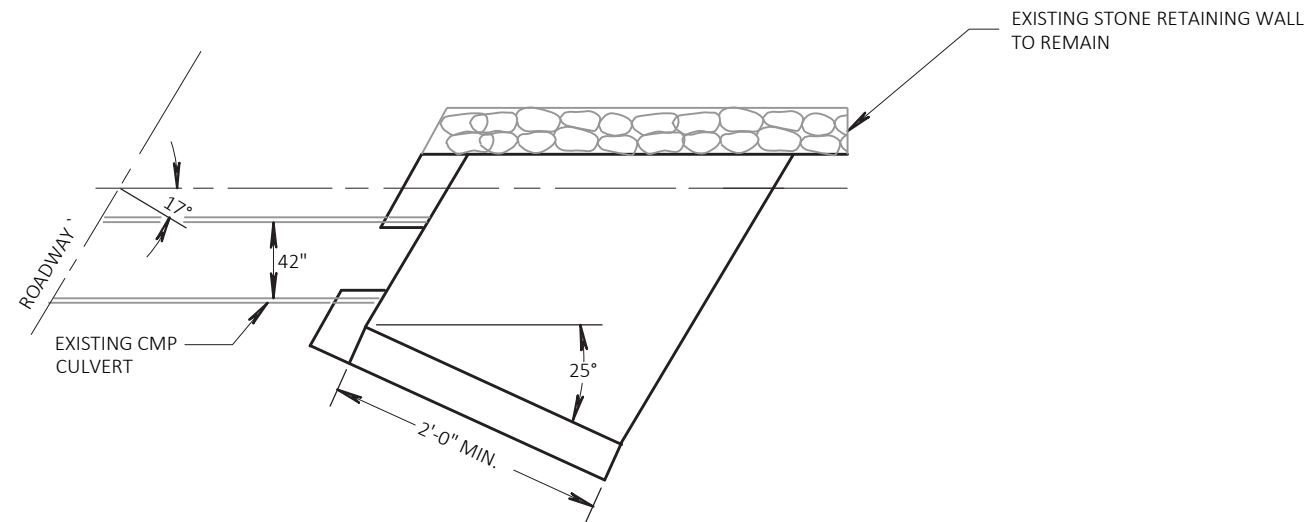
RECONSTRUCTING CONCRETE BLOCK RETAINING WALL CAP DETAIL

STA 406+65 TO STA 410+75

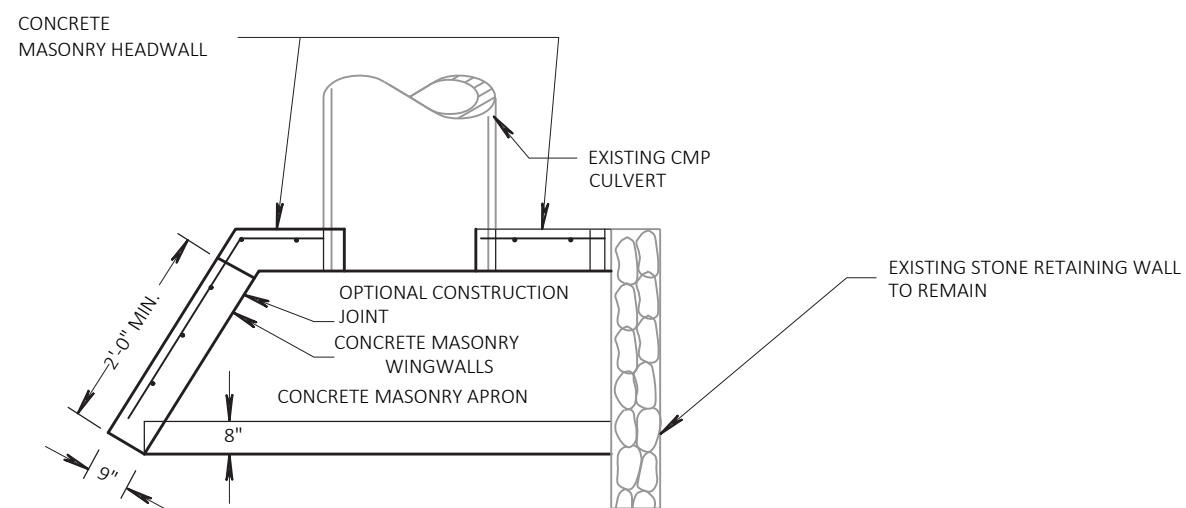


SUPPLEMENTAL RIPRAP MEDIUM TREATMENT AT CULVERTS

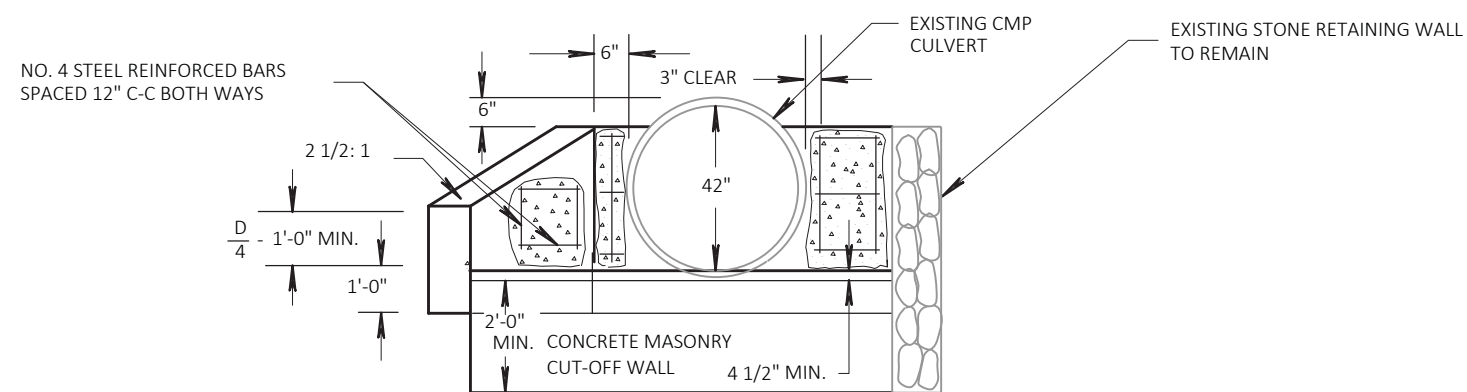
NOTE: GEOTEXTILE FABRIC NOT REQUIRED



WINGWALL ANGLE DETAIL



PLAN VIEW



END ELEVATION

RECONSTRUCTING STONE HEADWALL DETAILGENERAL 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.

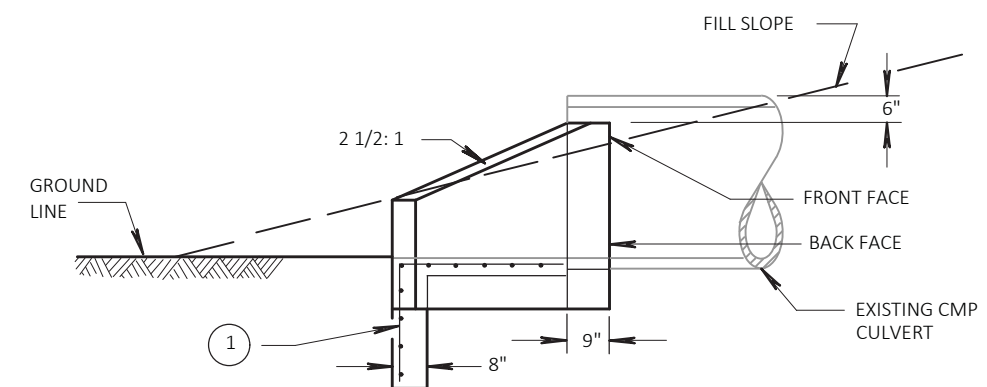
FILL SLOPES FLATTER THAN 2 1/2:1 SHALL BE WARPED TO MEET THE TOP OF THE WINGWALLS.

ALL STEEL REINFORCEMENT AND WELDED STEEL WIRE FABRIC SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE NOTED.

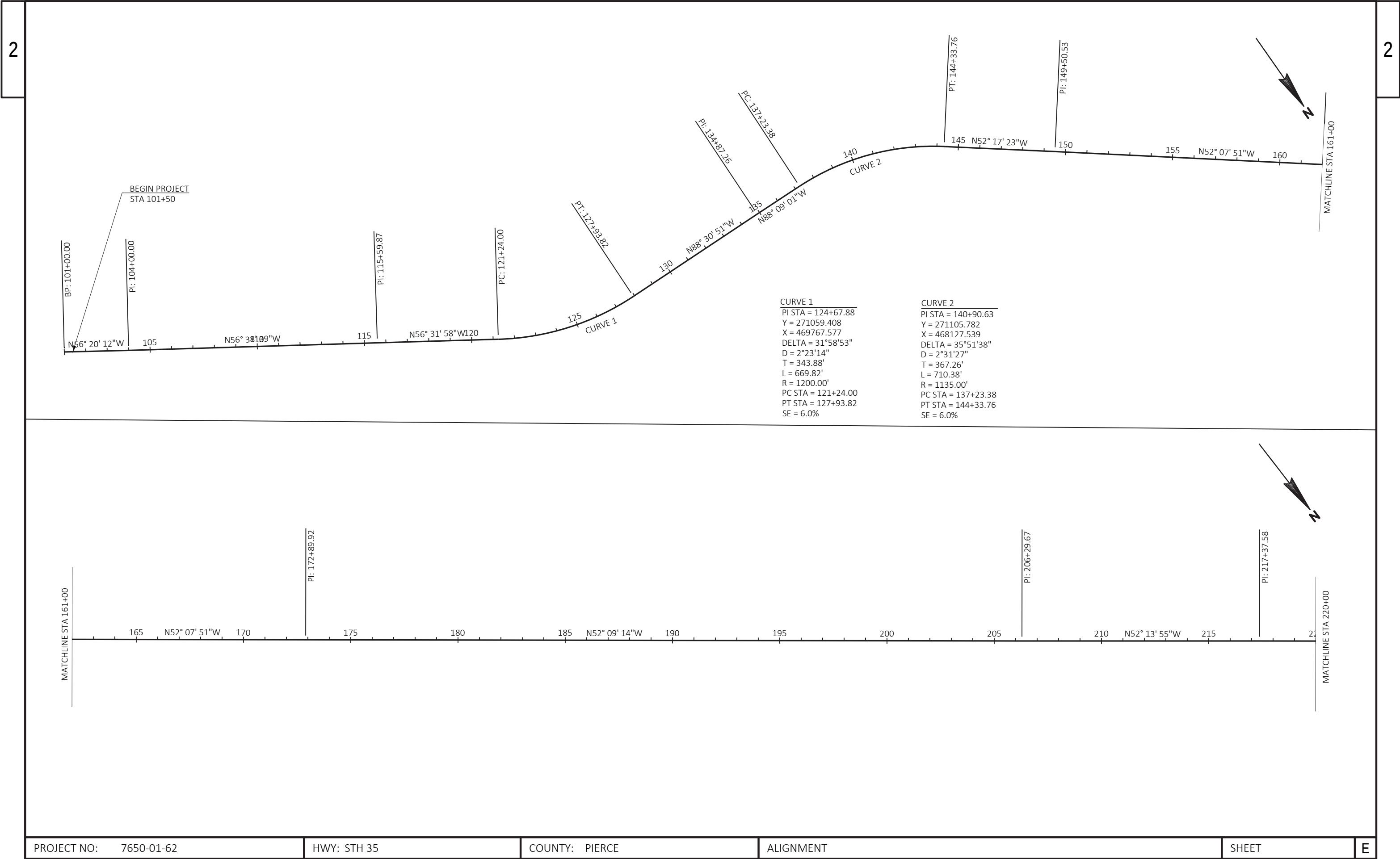
- ① MINIMUM REINFORCEMENT SHALL BE 6" X 6" - W4.0 X W4.0 OR NO. 3 BARS SPACED 12" C-C IN BOTH DIRECTIONS.

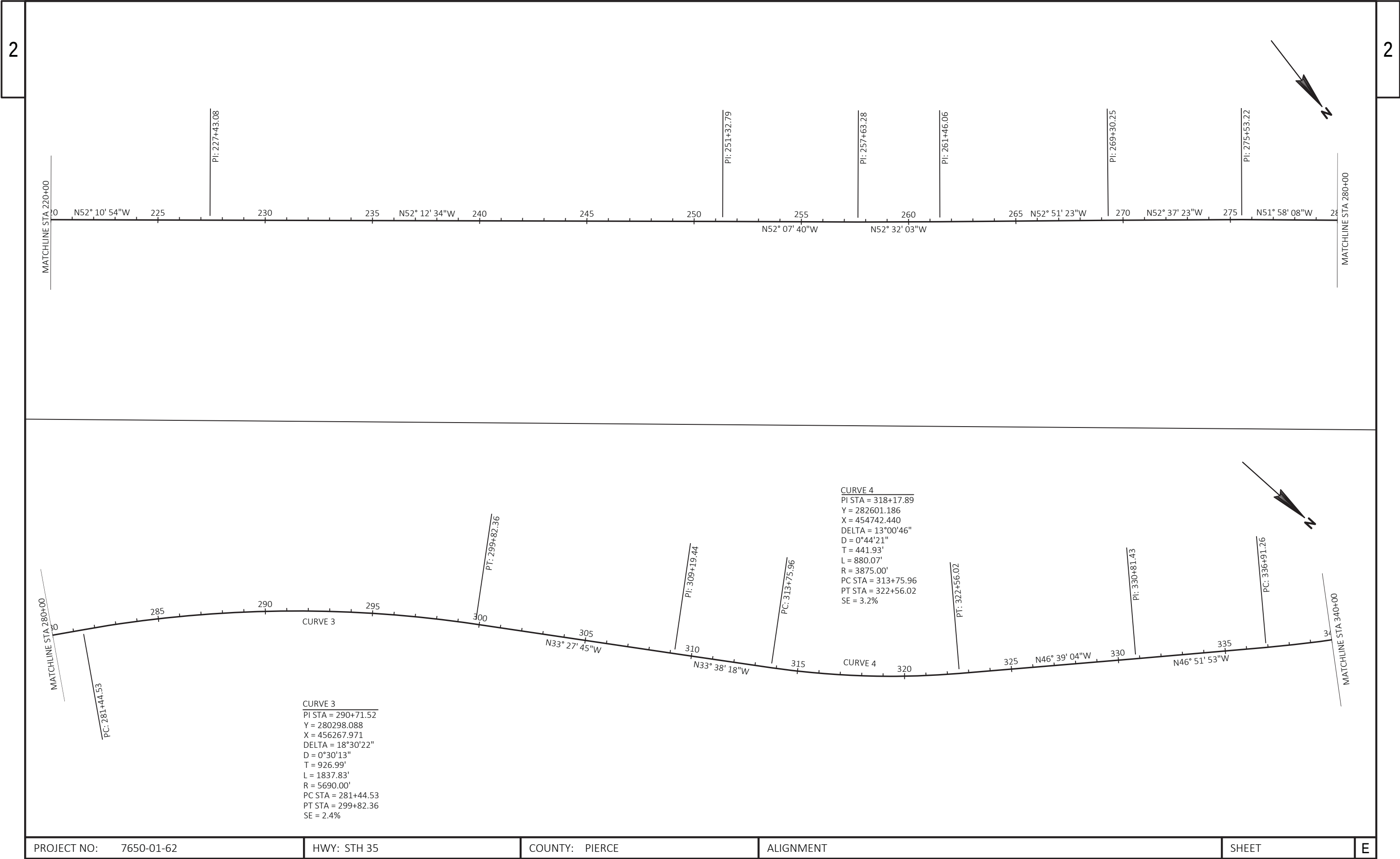


EXISTING PIPE AND STONE HEADWALL

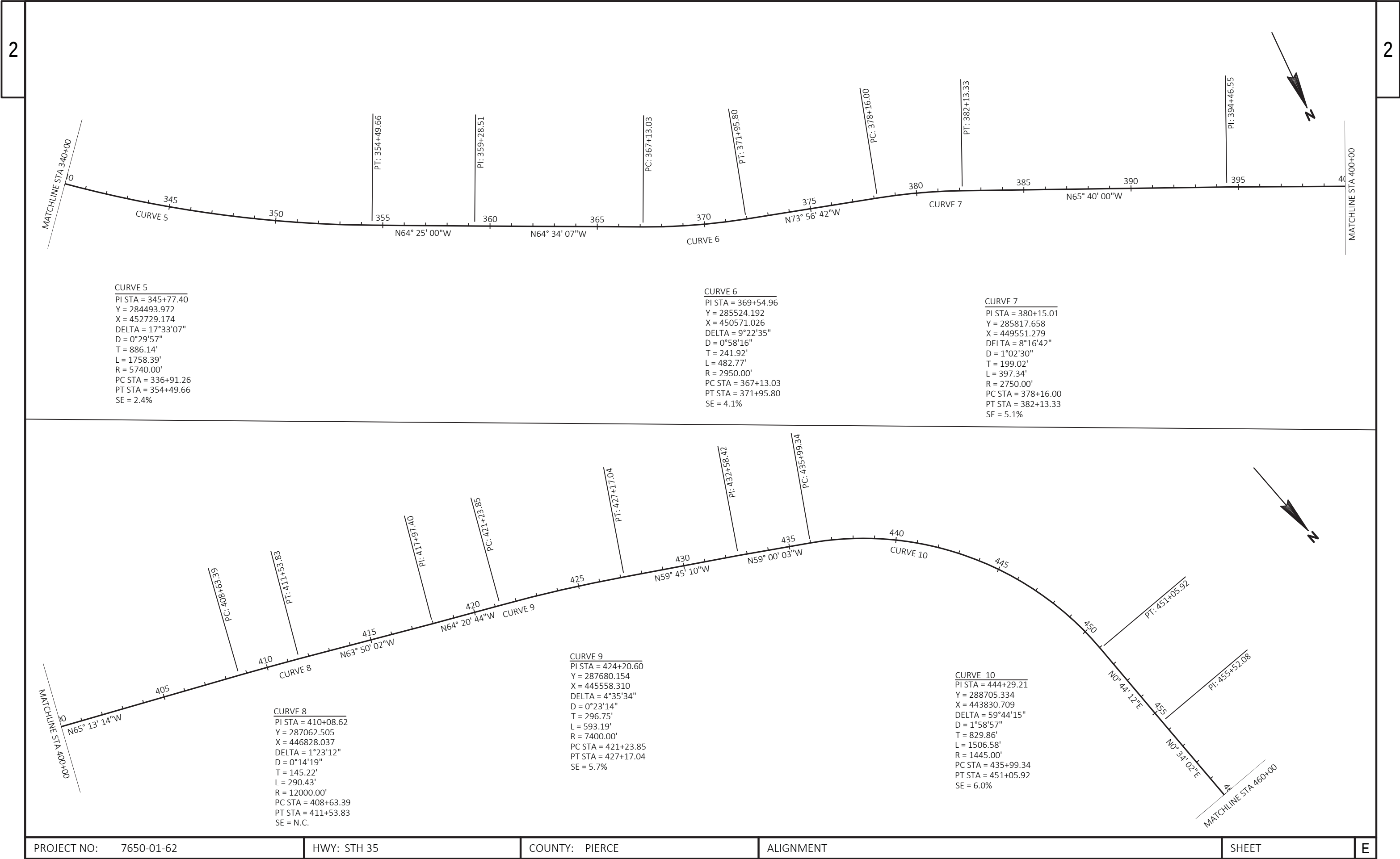


SIDE ELEVATION

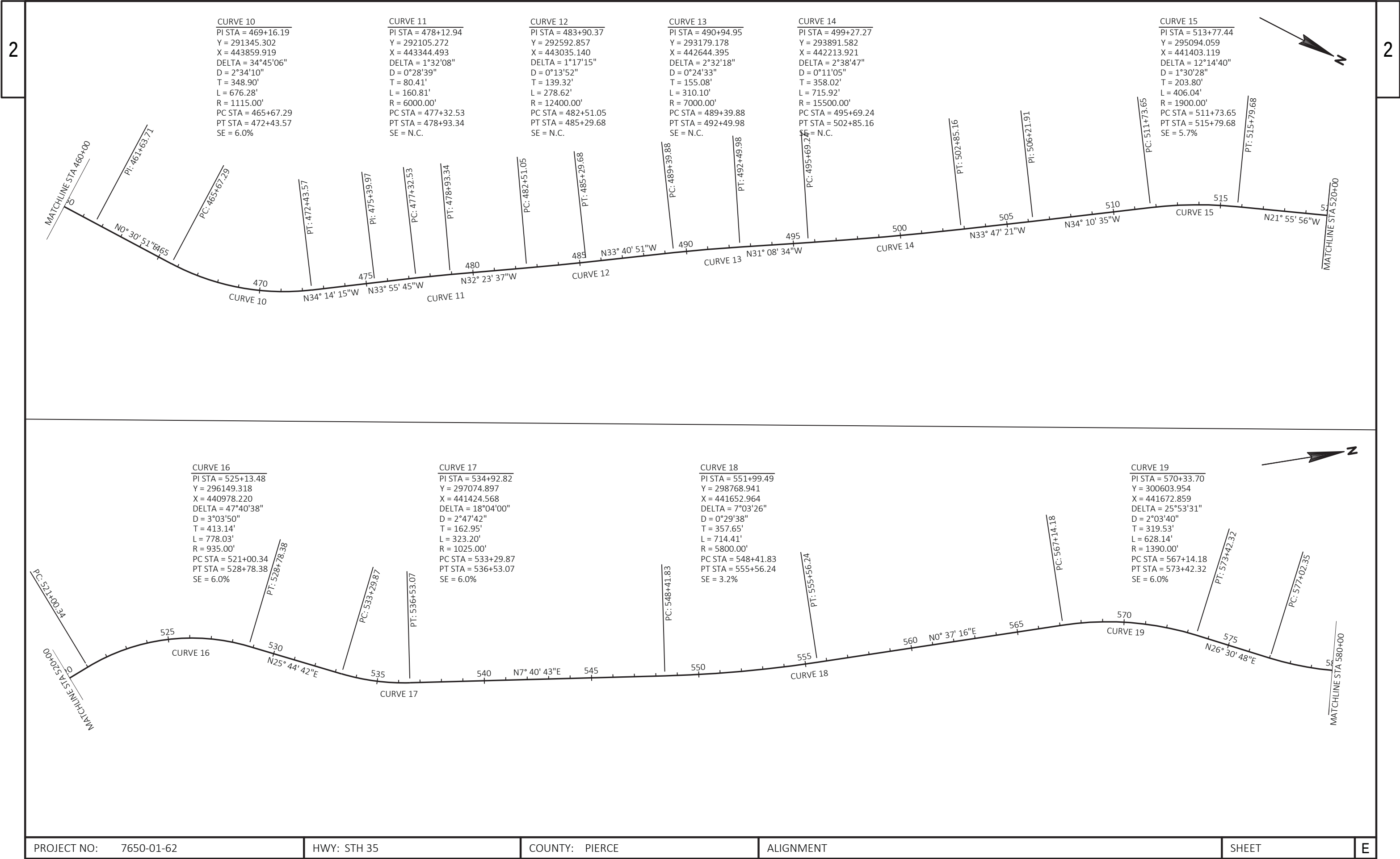


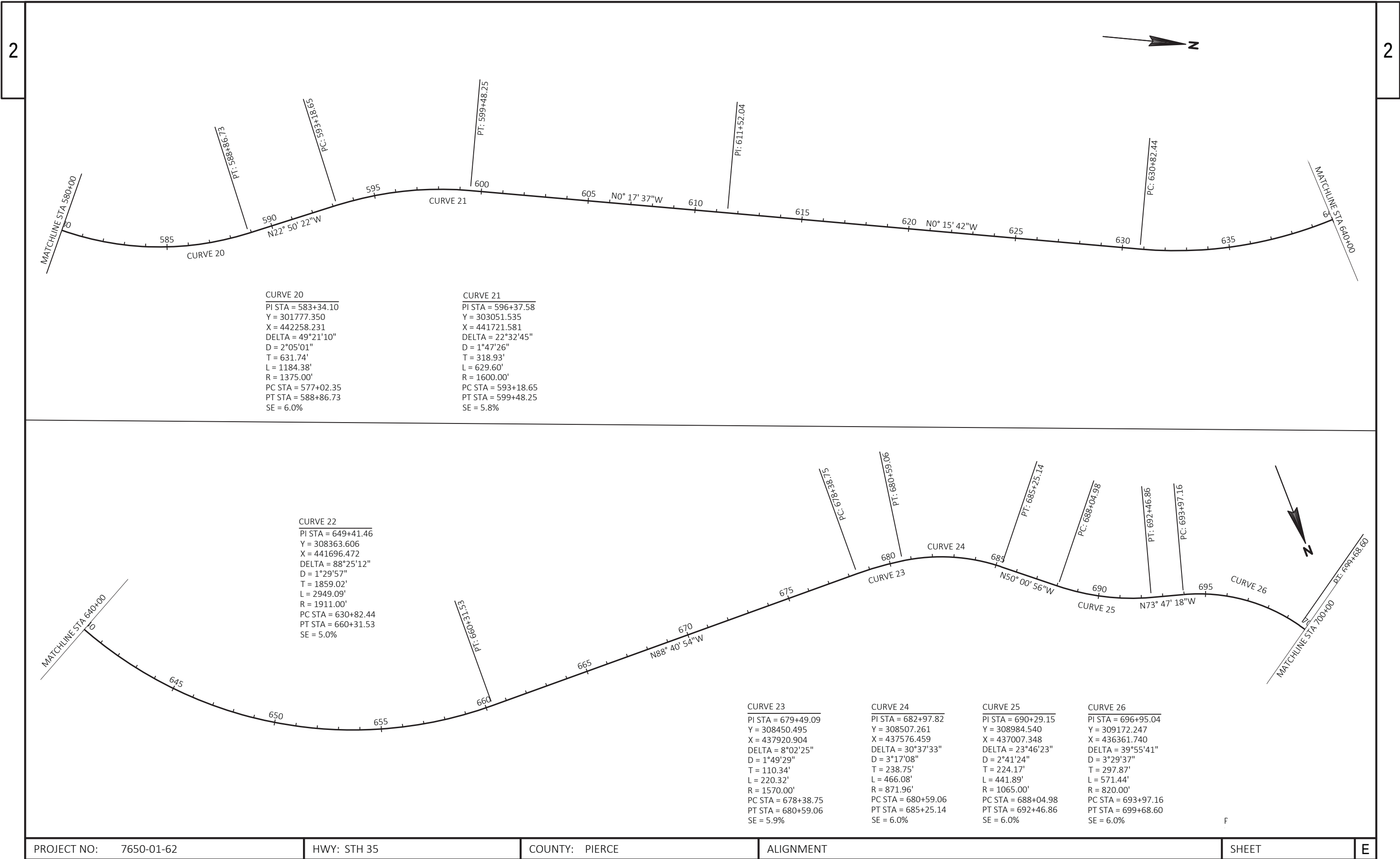


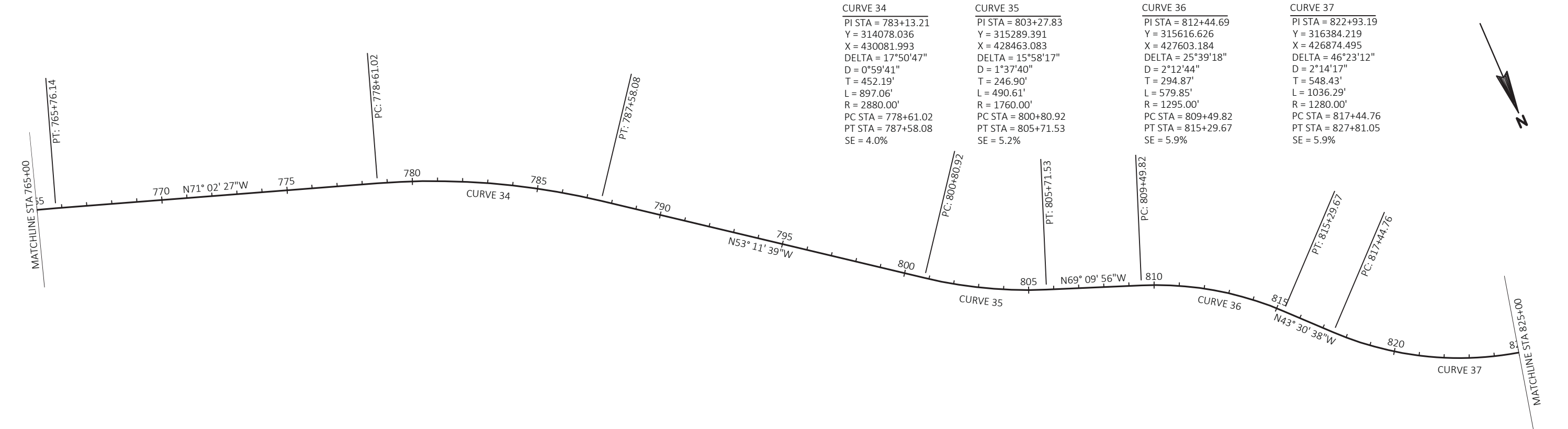
PROJECT NO:	7650-01-62	HWY: STH 35	COUNTY: PIERCE	ALIGNMENT	SHEET	E
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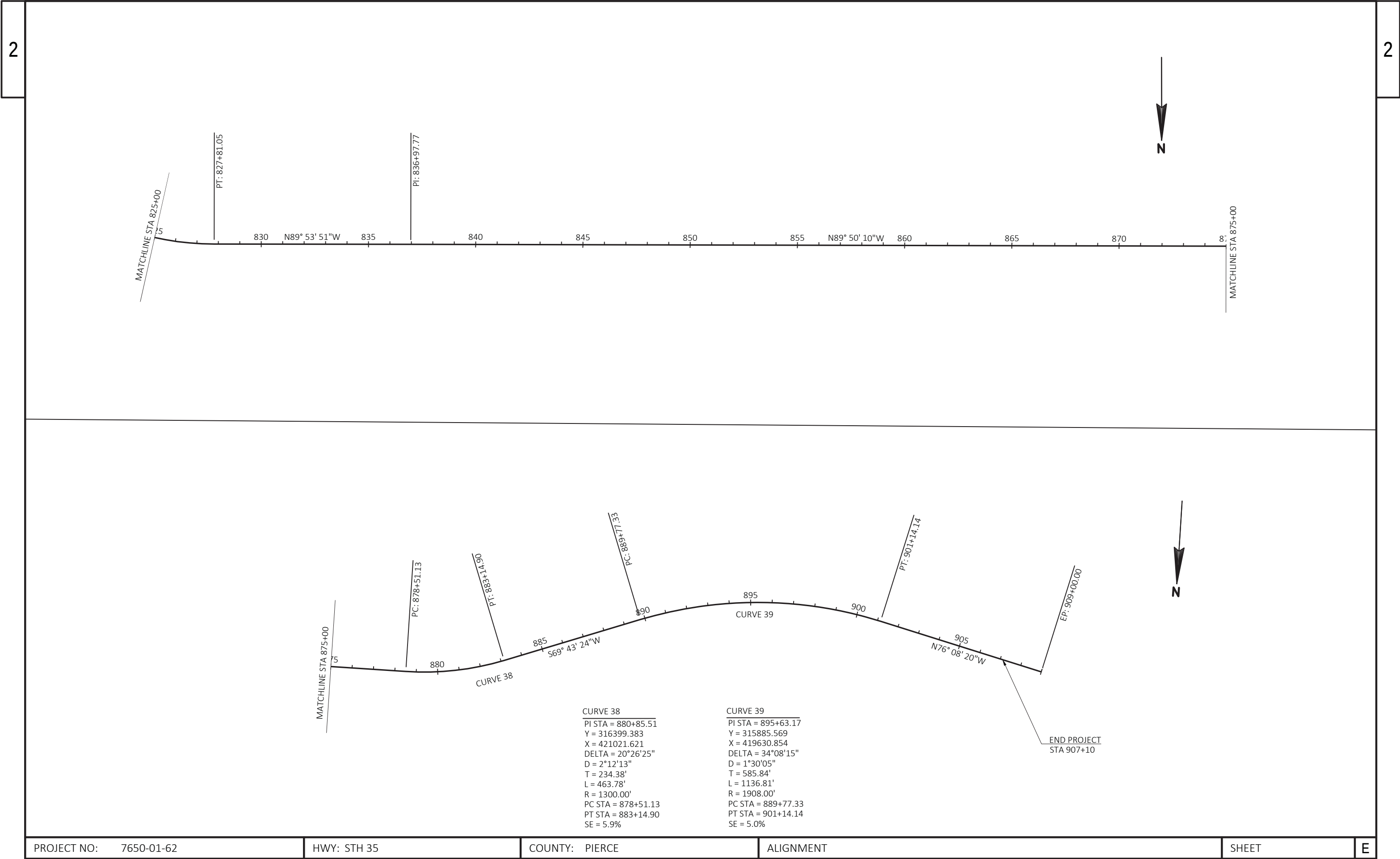


PROJECT NO:	7650-01-62	HWY: STH 35	COUNTY: PIERCE	ALIGNMENT	SHEET	E
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CURVE 38
PI STA = 880+85.51
Y = 316399.383
X = 421021.621
DELTA = 20°26'25"
D = 2°12'13"
T = 234.38'
L = 463.78'
R = 1300.00'
PC STA = 878+51.13
PT STA = 883+14.90
SE = 5.9%

CURVE 39
PI STA = 895+63.17
Y = 315885.569
X = 419630.854
DELTA = 34°08'15"
D = 1°30'05"
T = 585.84'
L = 1136.81'
R = 1908.00'
PC STA = 889+77.33
PT STA = 901+14.14
SE = 5.0%

SUPERELEVATION TABLE

Station	Description	Left Outside Shoulder	Left Outside Lane	Right Outside Lane	Right Outside Shoulder
101+00.00'	Begin Alignment	-4.00%	-2.00%	-2.00%	-4.00%
280+53.03'	End Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%
281+03.86'	Level Crown	-4.00%	0.00%	-2.00%	-4.00%
281+54.69'	Reverse Crown	-4.00%	2.00%	-2.00%	-4.00%
281+64.86'	Begin Full Super	-4.00%	2.40%	-2.40%	-4.00%
299+62.03'	End Full Super	-4.00%	2.40%	-2.40%	-4.00%
299+72.20'	Reverse Crown	-4.00%	2.00%	-2.00%	-4.00%
300+23.03'	Level Crown	-4.00%	0.00%	-2.00%	-4.00%
300+73.86'	Begin Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%
312+70.04'	End Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%
313+21.29'	Level Crown	-4.00%	-2.00%	0.00%	-4.00%
313+72.54'	Reverse Crown	-4.00%	-2.00%	2.00%	-4.00%
314+03.29'	Begin Full Super	-4.00%	-3.20%	3.20%	-4.00%
322+28.69'	End Full Super	-4.00%	-3.20%	3.20%	-4.00%
322+59.44'	Reverse Crown	-4.00%	-2.00%	2.00%	-4.00%
323+10.69'	Level Crown	-4.00%	-2.00%	0.00%	-4.00%
323+61.94'	Begin Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%
335+99.76'	End Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%
336+50.60'	Level Crown	-4.00%	-2.00%	0.00%	-4.00%
337+01.43'	Reverse Crown	-4.00%	-2.00%	2.00%	-4.00%
337+11.60'	Begin Full Super	-4.00%	-2.40%	2.40%	-4.00%
354+29.33'	End Full Super	-4.00%	-2.40%	2.40%	-4.00%
354+39.49'	Reverse Crown	-4.00%	-2.00%	2.00%	-4.00%
354+90.33'	Level Crown	-4.00%	-2.00%	0.00%	-4.00%
355+41.16'	Begin Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%
420+38.85'	End Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%
420+89.85'	Level Crown	-4.00%	0.00%	-2.00%	-4.00%
421+40.85'	Begin Full Super	-4.00%	2.00%	-2.00%	-4.00%
421+40.85'	Reverse Crown	-4.00%	2.00%	-2.00%	-4.00%
427+00.04'	End Full Super	-4.00%	2.00%	-2.00%	-4.00%
427+00.04'	Reverse Crown	-4.00%	2.00%	-2.00%	-4.00%
427+51.04'	Level Crown	-4.00%	0.00%	-2.00%	-4.00%
428+02.04'	Begin Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%

Station	Description	Left Outside Shoulder	Left Outside Lane	Right Outside Lane	Right Outside Shoulder
434+50.78'	End Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%
435+02.00'	Level Crown	-4.00%	0.00%	-2.00%	-4.00%
435+53.23'	Reverse Crown	-4.00%	2.00%	-2.00%	-4.00%
436+04.46'	Low Shoulder Match	-4.00%	4.00%	-4.00%	-4.00%
436+04.46'	Begin Shoulder Rollover	-4.00%	4.00%	-4.00%	-4.00%
436+48.00'	Begin Full Super	-2.30%	5.70%	-5.70%	-5.70%
450+57.26'	End Full Super	-2.30%	5.70%	-5.70%	-5.70%
451+00.80'	Low Shoulder Match	-4.00%	4.00%	-4.00%	-4.00%
451+00.80'	End Shoulder Rollover	-4.00%	4.00%	-4.00%	-4.00%
451+52.03'	Reverse Crown	-4.00%	2.00%	-2.00%	-4.00%
452+03.26'	Level Crown	-4.00%	0.00%	-2.00%	-4.00%
452+54.49'	Begin Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%
519+47.31'	End Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%
519+98.31'	Level Crown	-4.00%	0.00%	-2.00%	-4.00%
520+49.31'	Reverse Crown	-4.00%	2.00%	-2.00%	-4.00%
521+00.31'	Low Shoulder Match	-4.00%	4.00%	-4.00%	-4.00%
521+00.31'	Begin Shoulder Rollover	-4.00%	4.00%	-4.00%	-4.00%
521+51.31'	Begin Full Super	-2.00%	6.00%	-6.00%	-6.00%
528+27.36'	End Full Super	-2.00%	6.00%	-6.00%	-6.00%
528+78.36'	Low Shoulder Match	-4.00%	4.00%	-4.00%	-4.00%
528+78.36'	End Shoulder Rollover	-4.00%	4.00%	-4.00%	-4.00%
529+29.36'	Reverse Crown	-4.00%	2.00%	-2.00%	-4.00%
529+80.36'	Level Crown	-4.00%	0.00%	-2.00%	-4.00%
530+31.36'	Begin Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%
531+76.84'	End Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%
532+27.84'	Level Crown	-4.00%	-2.00%	0.00%	-4.00%
532+78.84'	Reverse Crown	-4.00%	-2.00%	2.00%	-4.00%
533+29.84'	Low Shoulder Match	-4.00%	-4.00%	4.00%	-4.00%
533+29.84'	Begin Shoulder Rollover	-4.00%	-4.00%	4.00%	-4.00%
533+80.84'	Begin Full Super	-6.00%	-6.00%	6.00%	-2.00%
536+02.05'	End Full Super	-6.00%	-6.00%	6.00%	-2.00%
536+53.05'	Low Shoulder Match	-4.00%	-4.00%	4.00%	-4.00%
536+53.05'	End Shoulder Rollover	-4.00%	-4.00%	4.00%	-4.00%
537+04.05'	Reverse Crown	-4.00%	-2.00%	2.00%	-4.00%
537+55.05'	Level Crown	-4.00%	-2.00%	0.00%	-4.00%
538+06.05'	Begin Normal Crown	-4.00%	-2.00%	-2.00%	-4.00%
688+55.95'	Begin Full Super	-6.00%	-6.00%	6.00%	-2.00%
691+95.85'	End Full Super	-6.00%	-6.00%	6.00%	-2.00%
909+00.00'	End Alignment	-4.00%	-2.00%	-2.00%	-4.00%

NOTE: SUPERELEVATION INFO ONLY SHOWN FOR CURVES WHERE SUPERELEVATION NEEDS TO BE ADJUSTED.
MATCH EXISTING SUPERELEVATION ELSEWHERE.

Estimate Of Quantities

7650-01-62

Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	53.000	53.000
0004	201.0205	Grubbing	STA	53.000	53.000
0006	203.0100	Removing Small Pipe Culverts	EACH	1.000	1.000
0008	204.0100	Removing Pavement	SY	84.000	84.000
0010	204.0115	Removing Asphaltic Surface Butt Joints	SY	4,170.000	4,170.000
0012	204.0120	Removing Asphaltic Surface Milling	SY	302,000.000	302,000.000
0014	204.0180	Removing Delineators and Markers	EACH	115.000	115.000
0016	204.9060.S	Removing (item description) 01. Apron Endwalls	EACH	4.000	4.000
0018	205.0100	Excavation Common	CY	100.000	100.000
0020	208.0100	Borrow	CY	400.000	400.000
0022	211.0100	Prepare Foundation for Asphaltic Paving (project) 01. 7650-01-62	LS	1.000	1.000
0024	213.0100	Finishing Roadway (project) 01. 7650-01-62	EACH	1.000	1.000
0026	305.0110	Base Aggregate Dense 3/4-Inch	TON	3,590.000	3,590.000
0028	305.0500	Shaping Shoulders	STA	1,610.000	1,610.000
0030	455.0605	Tack Coat	GAL	38,230.000	38,230.000
0032	460.0105.S	HMA Percent Within Limits (PWL) Test Strip Volumetrics	EACH	1.000	1.000
0034	460.0110.S	HMA Percent Within Limits (PWL) Test Strip Density	EACH	2.000	2.000
0036	460.2005	Incentive Density PWL HMA Pavement	DOL	39,140.000	39,140.000
0038	460.2010	Incentive Air Voids HMA Pavement	DOL	57,380.000	57,380.000
0040	460.4110.S	Reheating HMA Pavement Longitudinal Joints	LF	80,403.000	80,403.000
0042	460.6225	HMA Pavement 5 MT 58-28 S	TON	57,375.000	57,375.000
0044	465.0110	Asphaltic Surface Patching	TON	100.000	100.000
0046	465.0120	Asphaltic Surface Driveways and Field Entrances	TON	170.000	170.000
0048	465.0425	Asphaltic Shoulder Rumble Strips 2-Lane Rural	LF	148,816.000	148,816.000
0050	465.0450	Asphaltic Intersection Rumble Strips	SY	84.000	84.000
0052	465.0475	Asphalt Centerline Rumble Strips 2-Lane Rural	LF	69,363.000	69,363.000
0054	520.1024	Apron Endwalls for Culvert Pipe 24-Inch	EACH	2.000	2.000
0056	520.1036	Apron Endwalls for Culvert Pipe 36-Inch	EACH	1.000	1.000
0058	520.1048	Apron Endwalls for Culvert Pipe 48-Inch	EACH	1.000	1.000
0060	520.8700	Cleaning Culvert Pipes	EACH	17.000	17.000
0062	521.3124	Culvert Pipe Corrugated Steel 24-Inch	LF	6.000	6.000
0064	524.0636	Apron Endwalls for Culvert Pipe Salvaged 36-Inch	EACH	1.000	1.000
0066	606.0200	Riprap Medium	CY	56.000	56.000
0068	606.0600	Grouted Riprap Medium	CY	10.000	10.000
0070	611.8115	Adjusting Inlet Covers	EACH	4.000	4.000
0072	611.9800.S	Pipe Grates	EACH	2.000	2.000
0074	614.0010	Barrier System Grading Shaping Finishing	EACH	42.000	42.000
0076	614.0370	Steel Plate Beam Guard Energy Absorbing Terminal	EACH	4.000	4.000
0078	614.0396	Guardrail Mow Strip Asphalt	SY	4,830.000	4,830.000

Estimate Of Quantities

7650-01-62

Line	Item	Item Description	Unit	Total	Qty
0080	614.0920	Salvaged Rail	LF	13,871.000	13,871.000
0082	614.2300	MGS Guardrail 3	LF	1,909.400	1,909.400
0084	614.2330	MGS Guardrail 3 K	LF	9,862.500	9,862.500
0086	614.2340	MGS Guardrail 3 L	LF	225.000	225.000
0088	614.2350	MGS Guardrail Short Radius	LF	150.000	150.000
0090	614.2500	MGS Thrie Beam Transition	LF	157.600	157.600
0092	614.2610	MGS Guardrail Terminal EAT	EACH	35.000	35.000
0094	614.2630	MGS Guardrail Short Radius Terminal	EACH	3.000	3.000
0096	618.0100	Maintenance And Repair of Haul Roads (project) 01. 7650-01-62	EACH	1.000	1.000
0098	619.1000	Mobilization	EACH	1.000	1.000
0100	624.0100	Water	MGAL	35.000	35.000
0102	625.0500	Salvaged Topsoil	SY	3,500.000	3,500.000
0104	627.0200	Mulching	SY	2,000.000	2,000.000
0106	628.1504	Silt Fence	LF	10,000.000	10,000.000
0108	628.1520	Silt Fence Maintenance	LF	10,000.000	10,000.000
0110	628.1905	Mobilizations Erosion Control	EACH	4.000	4.000
0112	628.1910	Mobilizations Emergency Erosion Control	EACH	4.000	4.000
0114	628.2008	Erosion Mat Urban Class I Type B	SY	3,900.000	3,900.000
0116	628.7005	Inlet Protection Type A	EACH	4.000	4.000
0118	628.7015	Inlet Protection Type C	EACH	4.000	4.000
0120	628.7504	Temporary Ditch Checks	LF	500.000	500.000
0122	628.7570	Rock Bags	EACH	60.000	60.000
0124	629.0210	Fertilizer Type B	CWT	60.000	60.000
0126	630.0120	Seeding Mixture No. 20	LB	2,510.000	2,510.000
0128	630.0200	Seeding Temporary	LB	2,510.000	2,510.000
0130	633.5200	Markers Culvert End	EACH	116.000	116.000
0132	642.5001	Field Office Type B	EACH	1.000	1.000
0134	643.0300	Traffic Control Drums	DAY	2,500.000	2,500.000
0136	643.0310.S	Temporary Portable Rumble Strips	LS	1.000	1.000
0138	643.0900	Traffic Control Signs	DAY	9,660.000	9,660.000
0140	643.5000	Traffic Control	EACH	1.000	1.000
0142	646.1020	Marking Line Epoxy 4-Inch	LF	264,693.000	264,693.000
0144	646.3020	Marking Line Epoxy 8-Inch	LF	2,285.000	2,285.000
0146	646.4520	Marking Line Same Day Epoxy 4-Inch	LF	107,250.000	107,250.000
0148	646.5020	Marking Arrow Epoxy	EACH	1.000	1.000
0150	646.5120	Marking Word Epoxy	EACH	1.000	1.000
0152	646.7120	Marking Diagonal Epoxy 12-Inch	LF	880.000	880.000
0154	646.8220	Marking Island Nose Epoxy	EACH	1.000	1.000
0156	648.0100	Locating No-Passing Zones	MI	15.260	15.260

Estimate Of Quantities

7650-01-62					
Line	Item	Item Description	Unit	Total	Qty
0158	649.0105	Temporary Marking Line Paint 4-Inch	LF	40,080.000	40,080.000
0160	650.6000	Construction Staking Pipe Culverts	EACH	5.000	5.000
0162	650.8000	Construction Staking Resurfacing Reference	LF	80,560.000	80,560.000
0164	650.9910	Construction Staking Supplemental Control (project) 01. 7650-01-62	LS	1.000	1.000
0166	690.0150	Sawing Asphalt	LF	2,250.000	2,250.000
0168	740.0440	Incentive IRI Ride	DOL	60,911.000	60,911.000
0170	SPV.0090	Special 01. Cleaning Ditch	LF	450.000	450.000
0172	SPV.0105	Special 01. Reconstructing Stone Headwall	LS	1.000	1.000
0174	SPV.0105	Special 02. Material Transfer Vehicle	LS	1.000	1.000
0176	SPV.0105	Special 03. Milling and Removing Temporary Joint	LS	1.000	1.000
0178	SPV.0105	Special 04. Reconstructing Concrete Block Retaining Wall Cap	LS	1.000	1.000

CLEARING & GRUBBING				
201.0105 201.0205 CLEARING GRUBBING				
STATION	LOCATION	STA	STA	REMARKS
STH 35				
343+00 - 347+00	LT	4	4	TREE LINE INSIDE 14' CLEAR ZONE
371+00 - 372+00	LT	1	1	TREE LINE INSIDE 14' CLEAR ZONE
439+00 - 442+00	RT	3	3	TREE LINE OBSURING ISD
469+00 - 472+00	LT	3	3	TREE LINE OBSURING ISD
527+00 - 528+00	RT	1	1	TREE LINE OBSURING ISD
586+00 - 587+00	LT	1	1	TREE LINE OBSURING ISD
648+00 - 649+00	LT	1	1	TREE LINE OBSURING ISD
685+00 - 720+00	LT & RT	35	35	TREE LINE INSIDE 30' CLEAR ZONE
761+00 - 764+00	LT	3	3	TREE LINE INSIDE 30' CLEAR ZONE
781+00 - 782+00	RT	1	1	TREE LINE OBSURING ISD
ITEM TOTALS		53	53	

PREPARE FOUNDATION FOR
ASPHALTIC PAVING (7650-01-62)

STATION	211.0100 LS
STH 35	
101+50 - 907+10	1
ITEM TOTAL	1

REMOVING PAVEMENT				
204.0115 REMOVING ASPHALTIC SURFACE 204.0100 REMOVING BUTT PAVEMENT JOINTS				
STATION	LOCATION	SY	SY	REMARKS
STH 35				
101+50 - 102+00	LT & RT	-	250	BEGIN PROJECT
104+34 - 104+62	LT	28	-	CONCRETE RUMBLE STRIP
107+17 - 107+42	LT	28	-	CONCRETE RUMBLE STRIP
109+92 - 110+17	LT	28	-	CONCRETE RUMBLE STRIP
262+10 - 262+60	LT & RT	-	180	B-47-0982
264+17 - 264+67	LT & RT	-	180	B-47-0982
906+60 - 907+10	LT & RT	-	190	END PROJECT
UNDISTRIBUTED	LT & RT	-	3370	DRIVEWAYS & SIDEROADS
ITEM TOTALS		84	4170	

FINISHING ROADWAY

STATION	213.0100 EACH
STH 35	
101+50 - 907+10	1
ITEM TOTAL	1

REMOVING ASPHALTIC SURFACE MILLING

STATION	LOCATION	204.0120 SY
STH 35		
101+50 - 262+10	LT & RT	60400
264+67 - 734+21	LT & RT	176650
735+11 - 907+10	LT & RT	64950
ITEM TOTALS		302000

BASE AGGREGATE DENSE

305.0110 624.0100 3/4-INCH WATER				
STATION	LOCATION	TON	MGAL	REMARKS
STH 35				
101+50 - 401+00	LT & RT	980	9.8	
401+00 - 433+00	LT	60	0.6	
433+00 - 450+00	LT & RT	60	0.6	
450+00 - 573+30	LT & RT	620	6.2	
573+30 - 678+50	LT & RT	530	5.3	
678+50 - 734+21	LT & RT	280	2.8	
735+11 - 907+10	LT & RT	860	8.6	
UNDISTRIBUTED	LT & RT	200	2.1	DRIVEWAYS
ITEM TOTALS		3590	36	

EXCAVATION

205.0100 208.0100 COMMON BORROW				
STATION	LOCATION	CY	CY	REMARKS
STH 35				
UNDISTRIBUTED	LT & RT	100	400	FOR FORESLOPE CORRECTIONS AS NEEDED
ITEM TOTAL		100	400	

SHAPING SHOULDERS

STATION	LOCATION	305.0500 STA
STH 35		
101+50 - 262+60	LT & RT	324
264+17 - 734+21	LT & RT	942
735+11 - 907+10	LT & RT	344
ITEM TOTALS		1610

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR
ENGINEER ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED

ASPHALTIC PAVEMENT									
STATION	LOCATION	460.0105.S		460.0110.S		460.4110.S		465.0120	
		TACK	TEST STRIP	TEST STRIP	LONGITUDINAL	PAVEMENT	PAVEMENT	ASPHALTIC	ASPHALTIC
		COAT	VOLUMETRICS	DENSITY	JOINTS	5 MT 58-28 S	5 MT 58-28 S	PATCHING	DRIVEWAYS
		GAL	EACH	EACH	LF	TON	TON	TON	AND FIELD
STH 35			1	2					
101+50 - 262+60	LT & RT	7300	-	-	16110	11080	-	-	
264+17 - 401+00	LT & RT	5930	-	-	13683	8980	-	-	
401+00 - 433+00	LT & RT	730	-	-	3200	2380	-	-	
433+00 - 734+21	LT & RT	13850	-	-	30121	21000	-	-	
734+21 - 735+11	LT & RT	30	-	-	90	35	-	-	B-47-0042 1.75" OVERLAY
735+11 - 907+10	LT & RT	7820	-	-	17199	11860	-	-	
UNDISTRIBUTED	LT & RT	2270	-	-	-	1590	-	-	FOR S.E. CORRECTION
UNDISTRIBUTED	LT & RT	300	-	-	-	450	-	-	FOR SIDEROADS
UNDISTRIBUTED	LT & RT	-	-	-	-	-	100	-	FOR PATCHING
UNDISTRIBUTED	LT & RT	-	-	-	-	-	-	170	FOR DRIVEWAYS
ITEM TOTALS		38230	1	2	80403	57375	100	170	

NOTE: TACK COAT REQUIRED PROIR TO PAVING OVER MILLED SURFACE. CALCULATIONS BASED ON APPLICATION RATE OF 0.06 GAL/SY. HMA PAVEMENT WEIGHT CALCULATIONS BASED ON UNIT WEIGHT OF 112 LB/SY/INCH.

PWL MIXTURE USE TABLE								
LOCATION	STATION	MIXTURE USE	UNDERLYING SURFACE	BID ITEM	TONS	THICKNESS	QUALITY MANAGEMENT PROGRAM TO BE USED FOR:	
							MIXTURE ACCEPTANCE	DENSITY ACCEPTANCE
VARIOUS		PATCHING	BASE AGGREGATE	ASPHALTIC SURFACE	100	2.25"	QMP AS PER 465	ACCEPTANCE BY ORDINARY COMPACTION
12' DRIVING LANES	101+50 - 907+10	LOWER LAYER*	MILLED EXISTING HMA SURFACE	5 MT 58-34 S	18,790	1.5"	PWL INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010	INCENTIVE DENSITY PWL HMA PAVEMENT 460.2005
4-6' SHOULDERS	101+50 - 907+10	LOWER LAYER*	MILLED EXISTING HMA SURFACE	5 MT 58-34 S	8,340	1.5"	PWL INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010	ACCEPTANCE TESTING BY THE DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE
SIDEROADS	101+50 - 907+10	LOWER LAYER	MILLED EXISTING HMA SURFACE	5 MT 58-34 S	210	1.5"	PWL INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010	ACCEPTANCE TESTING BY THE DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE
12' DRIVING LANES	101+50 - 907+10	UPPER LAYER	5 MT 58-25 S HMA PAVEMENT	5 MT 58-34 S	21,140	1.75"	PWL INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010	INCENTIVE DENSITY PWL HMA PAVEMENT 460.2005
4-6' SHOULDERS	101+50 - 907+10	UPPER LAYER	5 MT 58-25 S HMA PAVEMENT	5 MT 58-34 S	8,655	1.75"	PWL INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010	ACCEPTANCE TESTING BY THE DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE
SIDEROADS	101+50 - 907+10	UPPER LAYER	5 MT 58-25 S HMA PAVEMENT	5 MT 58-34 S	240	1.75"	PWL INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010	ACCEPTANCE TESTING BY THE DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE

*INCLUDES SE CORRECTION PLACED WITH LOWER LAYER

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED

CULVERT PIPES															REMARKS
STATION	203.0100 REMOVING SMALL PIPE CULVERTS EACH	204.0180 REMOVING DELINEATORS AND MARKERS EACH	204.9060.S REMOVING APRON ENDWALLS EACH	520.1024 APRON ENDWALLS FOR CULVERT PIPE 24-INCH EACH	520.1036 APRON ENDWALLS FOR CULVERT PIPE 36-INCH EACH	520.1048 APRON ENDWALLS FOR CULVERT PIPE 48-INCH EACH	520.8700 CLEANING CULVERT PIPES EACH	521.3124 CULVERT PIPE CORRUGATED STEEL 24-INCH LF	524.0636 APRON ENDWALLS FOR CULVERT PIPE SALVAGED 36-INCH EACH	611.9800.S PIPE GRATES EACH	633.5200 MARKERS CULVERT END EACH	650.6000 CONSTRUCTION STAKING PIPE CULVERTS EACH	SPV.0090.01 CLEANING DITCH LF	SPV.0105.01 RECONSTRUCTING STONE HEADWALL LS	
STH 35															
101+36	-	2	-	-	-	-	-	-	-	-	2	-	-	1	
110+31	-	2	-	-	-	-	1	-	-	1	2	-	-	-	PIPE GRATE LT
126+13	-	2	-	-	-	-	1	-	-	-	2	-	-	-	
126+25	-	2	-	-	-	-	1	-	-	-	2	-	-	-	
142+16	-	2	1	-	-	1	-	-	-	1	2	1	25	-	NEW AEW RT, PIPE GRATE RT, CLEANING DITCH RT
199+73	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
219+67	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
225+47	1	2	-	-	-	-	-	6	-	-	2	1	50	-	REPLACE 6' END SECTION ONLY RT, CLEANING DITCH LT & RT
266+63	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
274+26	-	2	-	-	-	-	1	-	-	-	2	-	-	-	
292+57	-	2	-	-	-	-	-	-	-	-	2	-	25	-	CLEANING DITCH RT
323+75	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
335+35	-	1	1	-	1	-	-	-	-	-	2	1	-	-	NEW AEW RT
347+41	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
358+72	-	2	-	-	-	-	-	-	-	-	2	-	25	-	CLEANING DITCH RT
365+00	-	-	-	-	-	-	1	-	-	-	-	-	-	-	DRIVEWAY CULVERT RT
397+41	-	1	-	-	-	-	1	-	-	-	1	-	-	-	
397+80	-	-	-	-	-	-	1	-	-	-	-	-	-	-	
398+00 - 399+00	-	-	-	-	-	-	-	-	-	-	-	-	25	-	CLEANING DITCH RT
409+36	-	1	-	-	-	-	1	-	-	-	1	-	-	-	
419+33	-	2	-	-	-	-	-	-	-	-	2	-	25	-	CLEANING DITCH LT
423+32	-	1	-	-	-	-	-	-	-	-	1	-	25	-	CLEANING DITCH LT
429+15	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
433+07	-	2	-	-	-	-	-	-	-	-	2	-	25	-	CLEANING DITCH LT
435+41	-	2	1	1	-	-	-	-	-	-	2	1	-	-	NEW AEW RT
439+62	-	1	-	-	-	-	-	-	-	-	1	-	-	-	
453+34	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
466+92	-	2	-	-	-	-	-	-	-	-	2	-	25	-	CLEANING DITCH RT
484+83	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
486+79	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
494+79	-	2	-	-	-	-	1	-	-	-	2	-	25	-	CLEANING DITCH RT
498+61	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
504+95	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
508+97	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
509+11	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
513+57	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
518+66	-	2	-	-	-	-	-	-	-	-	2	-	25	-	CLEANING DITCH RT
548+64	-	2	-	-	-	-	1	-	-	-	2	-	-	-	
558+96	-	2	1	1	-	-	-	-	-	-	2	1	-	-	NEW AEW RT
564+01	-	2	-	-	-	-	1	-	-	-	2	-	25	-	CLEANING DITCH LT
578+17	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
586+51	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
590+86	-	2	-	-	-	-	1	-	-	-	2	-	-	-	
599+12	-	2	-	-	-	-	-	-	-	-	2	-	25	-	CLEANING DITCH RT
626+14	-	2	-	-	-	-	1	-	-	-	2	-	50	-	CLEANING DITCH LT & RT
645+11	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
659+72	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
670+70	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
681-99	-	2	-	-	-	-	1	-	-	-	2	-	25	-	CLEANING DITCH LT
687+38	-	2	-	-	-	-	1	-	-	-	2	-	25	-	CLEANING DITCH RT
693+30	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
700+76	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
721+14	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
750+14	-	2	-	-	-	-	-	-	1	-	2	-	-	-	SALVAGE & REINSTALL AEW LT
753+90	-	2	-	-	-	-	1	-	-	-	2	-	-	-	
785+28	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
792+88	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
811+54	-	2	-	-	-	-	1	-	-	-	2	-	-	-	
816+98	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
840+92	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
855+89	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
865+96	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
891+86	-	2	-	-	-	-	-	-	-	-	2	-	-	-	
ITEM TOTALS	1	115	4	2	1	1	17	6	1	2	116	5	450	1	

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR
ENGINEER ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED

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<u>RUMBLE STRIPS</u>				
		465.0425 ASPHALTIC SHOULDER RUMBLE STRIPS 2-LANE RURAL	465.0450 ASPHALTIC INTERSECTION RUMBLE STRIPS	465.0475 ASPHALTIC CENTERLINE RUMBLE STRIPS 2-LANE RURAL
STATION	LOCATION	LF	SY	LF
STH 35				
101+50 - 262+60	LT & RT	27850	-	14035
104+34 - 104+62	LT	-	28	-
107+17 - 107+42	LT	-	28	-
109+92 - 110+17	LT	-	28	-
264+17 - 734+21	LT & RT	87623	-	39754
735+11 - 907+10	LT & RT	33343	-	15574
ITEM TOTALS		148816	84	69363
NOTE: TYPE 1 SHOULDER RUMBLE STRIPS REQ'D AT ≥5' SHOULDER (STA 450+00 - 907+10)				
NOTE: TYPE 2 SHOULDER RUMBLE STRIPS REQ'D AT 4' SHOULDER (STA 101+50 - 450+00)				

<u>ADJUSTING INLET COVERS</u>			611.8115
STATION	LOCATION	EACH	
STH 35			
409+13	RT	1	
409+36	RT	1	
419+33	RT	1	
423+32	RT	1	
ITEM TOTALS		4	

<u>MAINTENANCE AND REPAIR OF HAUL ROADS (7650-01-62)</u>			618.0100
STATION		EACH	
STH 35			
101+50 - 907+10		1	
ITEM TOTAL		1	

<u>MOBILIZATION</u>			619.1000
STATION		EACH	
STH 35			
101+50 - 907+10		1	
ITEM TOTAL		1	

GUARDRAIL ITEMS											
		614.0370 STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL EACH	614.0396 GUARDRAIL MOW STRIP ASPHALT SY	614.0920 SALVAGED RAIL LF	614.2300 MGS GUARDRAIL 3 LF	614.2330 MGS GUARDRAIL 3 K LF	614.2340 MGS GUARDRAIL 3 L LF	614.2350 MGS GUARDRAIL SHORT RADIUS LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL EAT TERMINAL EACH	614.2630 MGS GUARDRAIL SHORT RADIUS TERMINAL EACH
STATION	LOCATION										REMARKS
STH 35											
260+92 - 261+42	RT	1	-	13871	-	-	-	-	-	-	ATTACHED TO B-47-982 EXISTING CLASS A BEAM GUARD ATTACHED TO B-47-982 EXISTING CLASS A BEAM GUARD ATTACHED TO B-47-982 EXISTING CLASS A BEAM GUARD ATTACHED TO B-47-982 EXISTING CLASS A BEAM GUARD
261+29 - 261+79	LT	1	-	-	-	-	-	-	-	-	
265+59 - 266+09	LT	1	-	-	-	-	-	-	-	-	
266+46 - 266+96	RT	1	-	-	-	-	-	-	-	-	
276+17 - 303+05	LT	-	1150	-	-	2587.5	-	-	-	2	-
372+30 - 375+48	RT	-	-	-	100	-	112.5	-	-	2	-
372+36 - 375+92	LT	-	-	-	137.5	-	112.5	-	-	2	-
435+14 - 443+25	LT	-	-	-	712.5	-	-	-	-	2	-
449+98 - 454+90	LT	-	180	-	-	387.5	-	-	-	2	-
452+27 - 454+96	RT	-	-	-	162.5	-	-	-	-	2	-
461+72 - 463+91	LT	-	-	-	112.5	-	-	-	-	2	-
465+86 - 473+53	LT	-	290	-	-	650	-	-	-	2	-
467+24 - 473+22	RT	-	230	-	-	500	-	-	-	2	-
483+86 - 488+91	RT	-	180	-	-	400	-	-	-	2	-
495+96 - 508+64	RT	-	520	-	-	1162.5	-	-	-	2	-
508+56 - 511+50	LT	-	90	-	-	187.5	-	-	-	2	-
692+04 - 700+09	LT	-	380	-	28.1	737.5	-	75	-	1	1
701+08 - 721+97	RT	-	930	-	578.1	1462.5	-	37.5	-	1	1
720+48 - 721+75	LT	-	60	-	78.1	-	-	37.5	-	1	1
730+51 - 734+06	LT	-	120	-	-	262.5	-	-	39.4	1	-
733+25 - 734+18	RT	-	-	-	-	-	-	-	39.4	1	-
735+11 - 736+28	LT	-	20	-	-	25	-	-	39.4	1	-
735+23 - 738+78	RT	-	120	-	-	262.5	-	-	39.4	1	-
748+96 - 760+51	LT	-	470	-	-	1050	-	-	-	2	-
892+37 - 897+14	LT	-	90	-	-	187.5	-	-	-	2	-
ITEMTOTALS		4	4830	13871	1909.4	9862.5	225.0	150.0	157.6	35	3
NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED											

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PROJECT NO:	7650-01-62	HWY: STH 35	COUNTY: PIERCE	MISCELLANEOUS QUANTITIES	SHEET	E
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BARRIER SYSTEM GRADING SHAPING FINISHING

614.0010				***	***	***	***	***	***	***	***	REMARKS
STATION	LOCATION	EACH	REMARKS	EXCAVATION COMMON CY	BORROW CY	SALVAGED TOPSOIL SY	MULCHING SY	EMAT URBAN CLASS I TYPE B SY	FERTILIZER TYPE B CWT	SEEDING MIXTURE NO. 20 LB	630.0200 TEMPORARY SEEDING LB	
STH 35												
260+92	LT	1	E.A.T.	0.9	1.5	30.0	33.0	0.0	0.09	3.8	3.8	STANDARD GRADING
261+29	RT	1	E.A.T.	0.0	20.1	98.0	108.0	0.0	0.14	5.9	5.9	STANDARD GRADING
266+09	LT	1	E.A.T.	0.6	2.5	15.0	13.0	5.0	0.06	2.3	2.3	MODIFIED GRADING
266+96	RT	1	E.A.T.	0.0	21.3	87.0	48.0	48.0	0.07	2.9	2.9	MODIFIED GRADING
276+17	LT	1	E.A.T.	0.0	1.4	25.0	21.0	7.0	0.04	1.4	1.4	MODIFIED GRADING
303+05	LT	1	E.A.T.	0.0	4.8	50.0	42.0	14.0	0.06	2.4	2.4	MODIFIED GRADING
372+30	RT	1	E.A.T.	0.0	11.2	76.0	84.0	0.0	0.14	5.7	5.7	STANDARD GRADING
372+36	LT	1	E.A.T.	0.6	0.0	42.0	47.0	0.0	0.07	2.8	2.8	STANDARD GRADING
375+48	RT	1	E.A.T.	0.0	40.9	321.0	354.0	0.0	0.41	17.4	17.4	STANDARD GRADING
375+92	LT	1	E.A.T.	0.0	9.7	121.0	100.0	34.0	0.15	6.1	6.1	STANDARD GRADING
435+14	LT	1	E.A.T.	2.0	0.0	28.0	31.0	0.0	0.06	2.6	2.6	MODIFIED GRADING
443+24	LT	1	E.A.T.	14.0	0.0	73.0	81.0	0.0	0.16	6.5	6.5	STANDARD GRADING
449+98	LT	1	E.A.T.	0.0	48.4	238.0	131.0	131.0	0.15	6.4	6.4	MODIFIED GRADING
452+27	RT	1	E.A.T.	3.2	0.0	49.0	54.0	0.0	0.09	3.6	3.6	STANDARD GRADING
454+90	LT	1	E.A.T.	0.0	54.5	394.0	217.0	217.0	0.40	16.9	16.9	STANDARD GRADING
454+96	RT	1	E.A.T.	0.0	23.1	328.0	181.0	181.0	0.19	7.8	7.8	MODIFIED GRADING
461+72	LT	1	E.A.T.	0.0	33.9	166.0	92.0	92.0	0.16	6.7	6.7	STANDARD GRADING
463+91	LT	1	E.A.T.	0.0	28.7	142.0	118.0	40.0	0.16	6.8	6.8	STANDARD GRADING
465+86	LT	1	E.A.T.	0.0	33.7	218.0	120.0	120.0	0.23	9.6	9.6	STANDARD GRADING
467+24	RT	1	E.A.T.	2.0	0.7	55.0	31.0	31.0	0.09	3.7	3.7	STANDARD GRADING
473+22	RT	1	E.A.T.	0.0	10.4	86.0	48.0	48.0	0.10	4.1	4.1	STANDARD GRADING
473+53	LT	1	E.A.T.	0.0	16.2	208.0	206.0	23.0	0.29	12.1	12.1	MODIFIED GRADING
483+86	RT	1	E.A.T.	0.0	8.3	96.0	53.0	53.0	0.13	5.3	5.3	MODIFIED GRADING
488+91	RT	1	E.A.T.	0.0	39.0	159.0	88.0	88.0	0.10	4.2	4.2	MODIFIED GRADING
495+96	RT	1	E.A.T.	0.0	34.1	173.0	48.0	143.0	0.10	4.2	4.2	MODIFIED GRADING
508+56	LT	1	E.A.T.	0.0	25.9	108.0	90.0	30.0	0.12	5.0	5.0	MODIFIED GRADING
508+64	RT	1	E.A.T.	0.0	4.6	90.0	75.0	25.0	0.12	4.8	4.8	STANDARD GRADING
511+50	LT	1	E.A.T.	0.1	10.9	49.0	41.0	14.0	0.06	2.2	2.2	MODIFIED GRADING
692+04	LT	1	E.A.T.	0.9	4.6	66.0	55.0	19.0	0.08	3.3	3.3	MODIFIED GRADING
700+09	LT	1	S.R.T.	0.0	5.0	30.0	25.0	9.0	0.10	3.0	3.0	
701+08	RT	1	S.R.T.	0.0	5.0	37.0	21.0	21.0	0.10	4.2	4.2	
720+48	LT	1	E.A.T.	0.0	62.0	236.0	234.0	26.0	0.23	9.6	9.6	MODIFIED GRADING
721+75	LT	1	S.R.T.	0.0	5.0	37.0	21.0	21.0	0.10	3.0	3.0	
721+97	RT	1	E.A.T.	0.0	8.2	97.0	81.0	27.0	0.05	2.1	2.1	MODIFIED GRADING
730+51	LT	1	E.A.T.	0.0	85.5	646.0	356.0	356.0	0.46	19.6	19.6	MODIFIED GRADING
733+25	RT	1	E.A.T.	0.1	5.4	97.0	81.0	27.0	0.09	3.6	3.6	STANDARD GRADING
736+28	LT	1	E.A.T.	1.2	24.9	103.0	57.0	57.0	0.08	3.3	3.3	MODIFIED GRADING
738+78	RT	1	E.A.T.	4.7	0.3	46.0	51.0	0.0	0.07	2.6	2.6	MODIFIED GRADING
748+96	LT	1	E.A.T.	0.0	45.6	181.0	180.0	20.0	0.18	7.7	7.7	MODIFIED GRADING
760+51	LT	1	E.A.T.	4.4	0.2	39.0	43.0	0.0	0.08	3.1	3.1	MODIFIED GRADING
892+37	LT	1	E.A.T.	1.4	23.7	328.0	271.0	91.0	0.54	23.1	23.1	MODIFIED GRADING
897+14	LT	1	E.A.T.	0.2	0.7	51.0	57.0	0.0	0.09	3.8	3.8	STANDARD GRADING
ITEM TOTALS		42		36.3	761.9	5519.0	4088.0	2018.0	6.2	255.2	255.2	

***ITEMS & QUANTITIES LISTED FOR BID INFORMATION ONLY
***SEEDING AREA INCLUDES GRAVEL SHOULDERS

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR
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TOPSOIL, MULCHING AND SEEDING

STATION	LOCATION	625.0500	627.0200	629.0210	630.0120	630.0200	REMARKS
		SALVAGED TOPSOIL SY	MULCHING SY	FERTILIZER TYPE B CWT	SEEDING MIXTURE NO. 20 LB	TEMPORARY SEEDING LB	
STH 35							
101+50 - 907+10	LT & RT	-	-	59	2460	2460	FOR GRAVEL SHOULDER FOR FORESLOPE CORRECTIONS
UNDISTRIBUTED	LT & RT	3500	2000	1	50	50	
ITEM TOTALS		3500	2000	60	2510	2510	
NOTE: SEEDING AREA INCLUDES GRAVEL SHOULDERS							

FIELD OFFICE TYPE B

STATION	642.5001 EACH
STH 35	
101+50 - 907+10	1
ITEM TOTALS	1

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MOBILIZATIONS EROSION CONTROL

STATION	628.1905	628.1910
	MOBILIZATIONS EROSION CONTROL EACH	MOBILIZATIONS EMERGENCY EROSION CONTROL EACH
STH 35		
101+50 - 907+10	4	4
ITEM TOTALS	4	4

TRAFFIC CONTROL

STATION	LOCATION	643.0300	643.0310.S	643.0900	643.5000
		DRUMS DAY	TEMPORARY PORTABLE RUMBLE STRIPS LS	SIGNS DAY	TRAFFIC CONTROL EACH
STH 35					
101+50 - 907+10	LT & RT	2500	1	9660	1
ITEM TOTALS		2500	1	9660	1

EROSION CONTROL ITEMS

STATION	LOCATION	606.0200	606.0600	628.1504	628.1520	628.2008	628.7005	628.7015	628.7504	628.7570	REMARKS
		RIPRAP MEDIUM CY	GROUTED RIPRAP MEDIUM CY	SILT FENCE LF	SILT FENCE MAINTENANCE LF	EROSION MAT CLASS I TYPE B SY	INLET PROTECTION TYPE A EACH	INLET PROTECTION TYPE C EACH	TEMPORARY DITCH CHECKS LF	ROCK BAGS EACH	
STH 35											
101+50 - 907+10	UNDISTRIBUTED	-	-	4200	4200	-	-	-	-	-	GUARDRAIL TERMINAL AREAS PIPE & DITCH WORK AREAS FOR S.E. CORRECTION SLOPES FOR MISCELLANEOUS SLOPE CORRECTION
101+50 - 907+10	UNDISTRIBUTED	-	-	500	500	-	-	-	500	60	
101+50 - 907+10	UNDISTRIBUTED	-	-	3000	3000	2200	-	-	-	-	
101+50 - 907+10	UNDISTRIBUTED	-	-	2300	2300	1700	-	-	-	-	
398+00 - 398+75	RT	50	-	-	-	-	-	-	-	-	
409+13	RT	-	-	-	-	-	1	1	-	-	
409+36	RT	-	-	-	-	-	1	1	-	-	
419+33	RT	-	-	-	-	-	1	1	-	-	
423+32	RT	-	-	-	-	-	1	1	-	-	
509+00 - 510+35	LT	-	10	-	-	-	-	-	-	-	
518+37	LT	1	-	-	-	-	-	-	-	-	
700+00	LT	4	-	-	-	-	-	-	-	-	
855+89	LT	1	-	-	-	-	-	-	-	-	
ITEM TOTALS		56	10	10000	10000	3900	4	4	500	60	

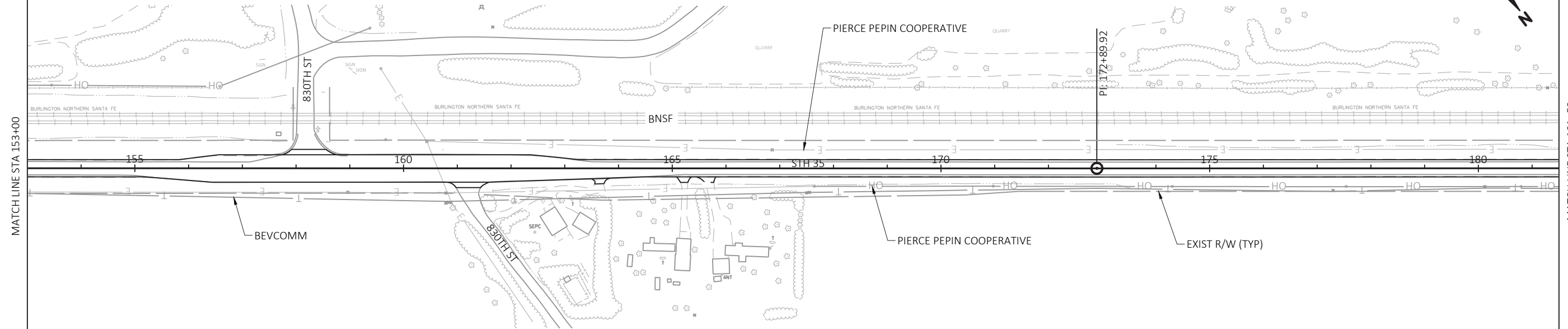
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ENGINEER ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED

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PAVEMENT MARKING									

UTILITY LOCATIONS ARE APPROXIMATE,
ACTUAL LOCATION MUST BE FIELD VERIFIED



STA 163+65 RT
CONSTRUCT ASPH PE
SAWCUT REQ'D

STA 165+24 RT
CONSTRUCT AGG PE

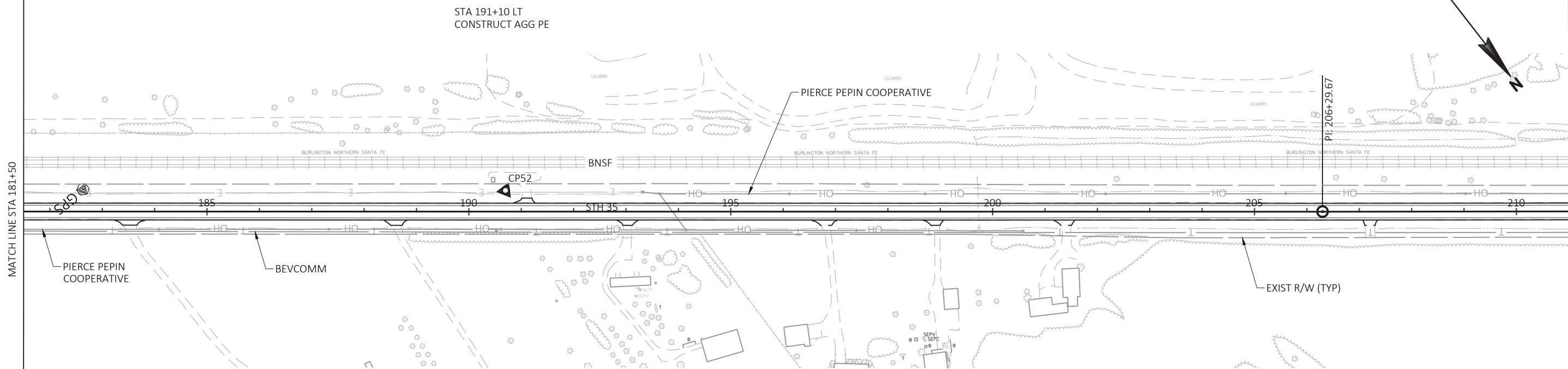
STA 165+71 RT
CONSTRUCT AGG PE

SCALE, FEET

0 100 200

5

5



STA 183+55 RT
CONSTRUCT AGG PE

STA 188+64 RT
CONSTRUCT AGG PE

STA 193+03 RT
CONSTRUCT AGG PE

STA 196+85 RT
CONSTRUCT AGG PE

STA 199+73
MARKERS CULVERT END REQ'D

STA 198+94 RT
CONSTRUCT AGG PE

STA 201+41 RT
CONSTRUCT AGG PE

STA 207+20 RT
CONSTRUCT AGG CE

SCALE, FEET

0 100 200

PROJECT NO: 7650-01-62

HWY: STH 35

COUNTY: PIERCE

PLAN

SHEET

E

FILE NAME : P:\UZ\W\WITNW\142897\C3D-STH 35\SHEETS\PLAN\050201_PN.DWG
LAYOUT NAME - 02

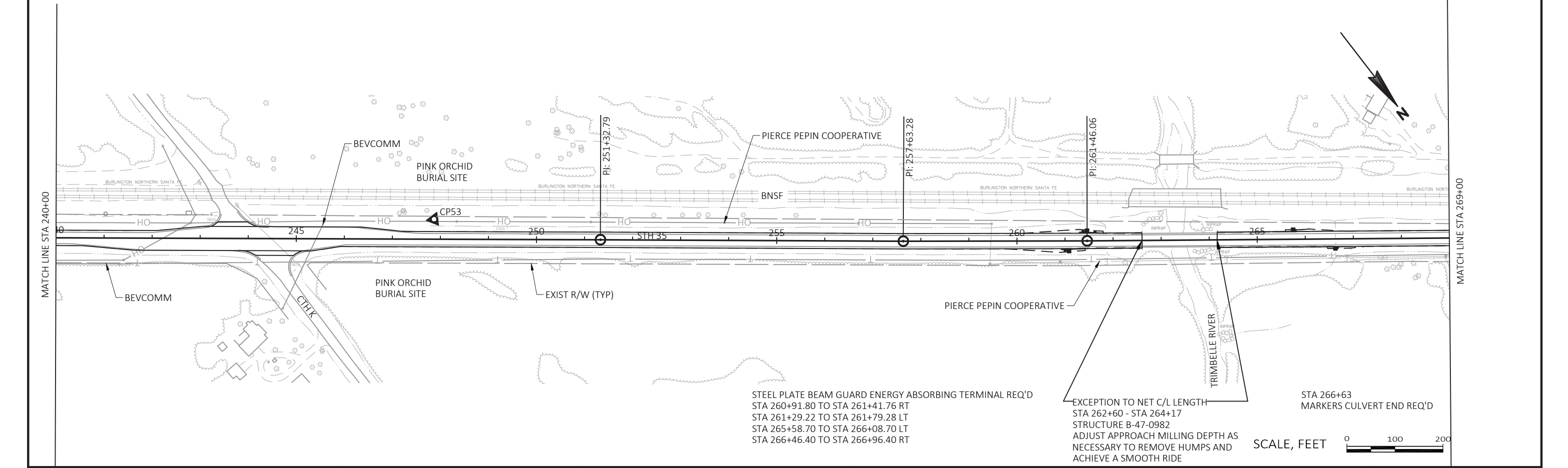
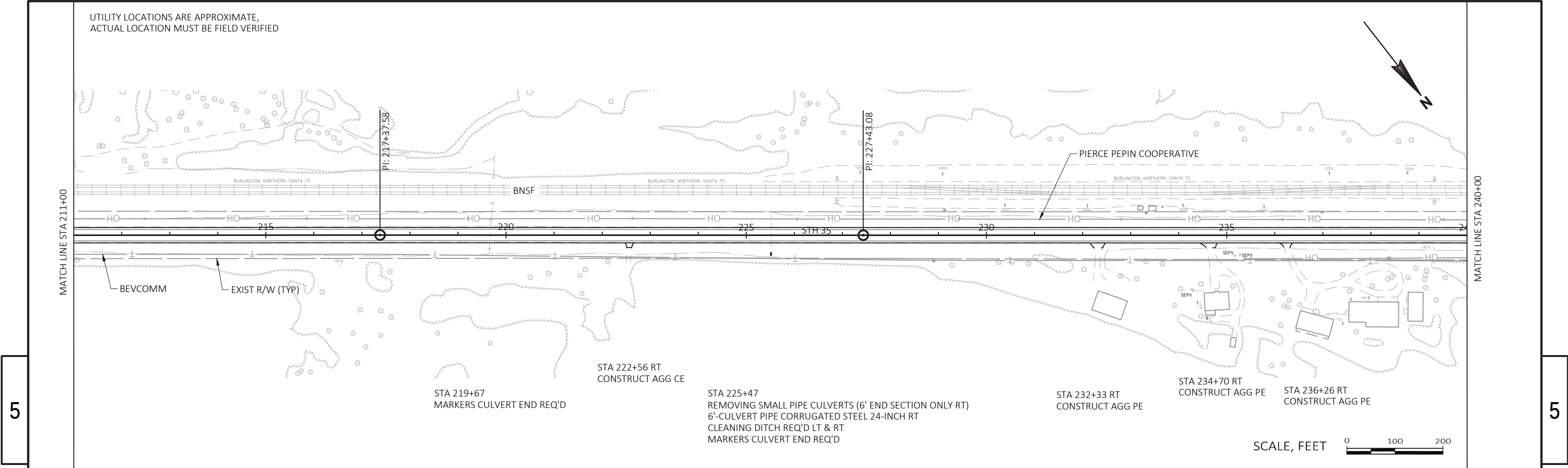
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PLOT BY : NICK ENGH

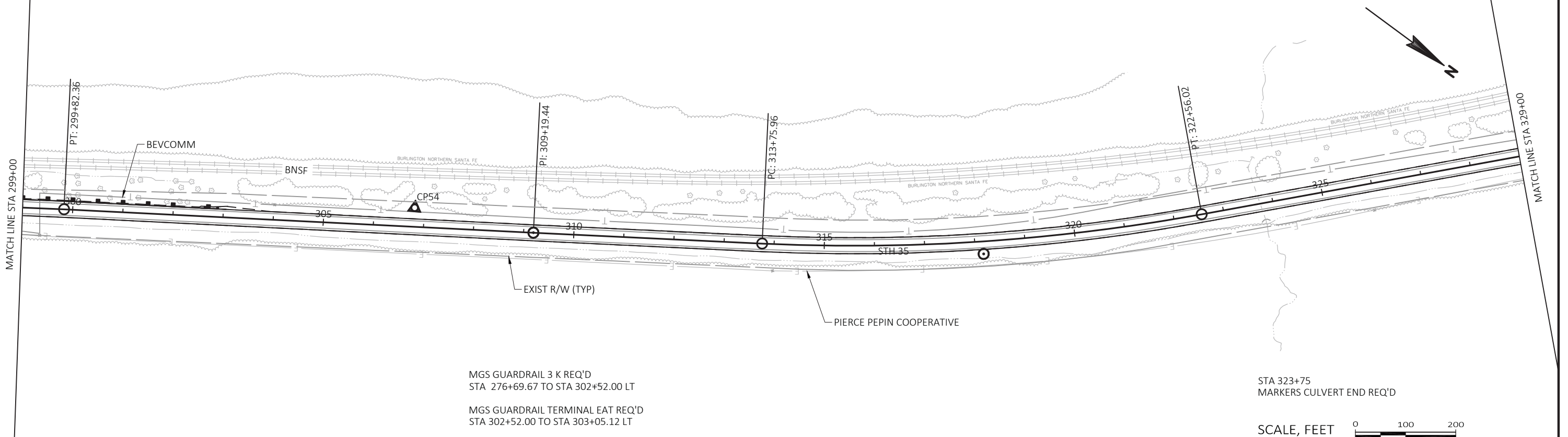
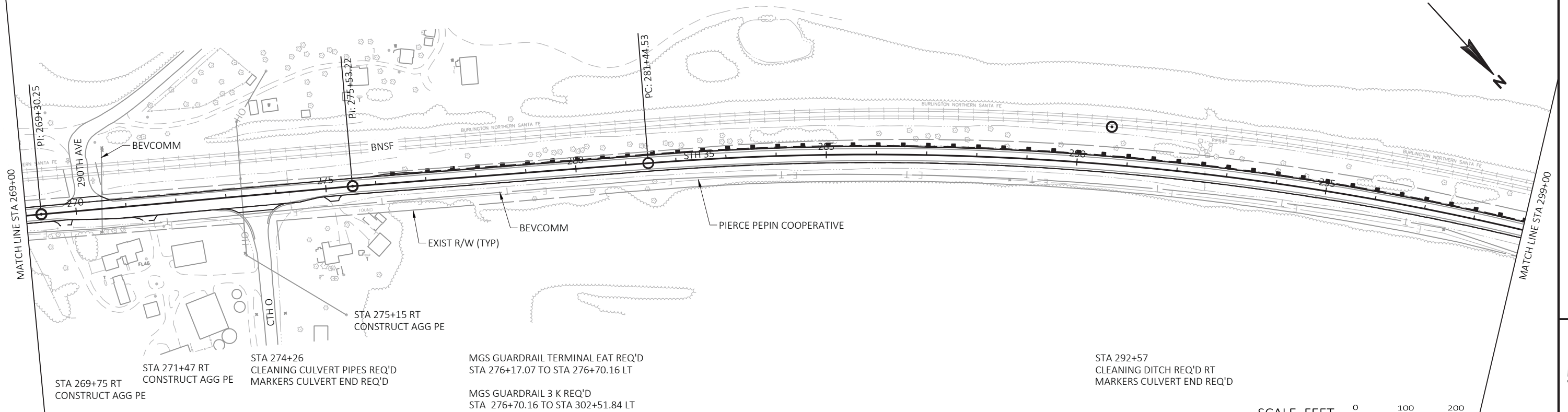
PLOT NAME :

PLOT SCALE : 1 IN=200 FT

WISDOT/CADDs SHEET 44



UTILITY LOCATIONS ARE APPROXIMATE,
ACTUAL LOCATION MUST BE FIELD VERIFIED



PROJECT NO: 7650-01-62

HWY: STH 35

COUNTY: PIERCE

PLAN

SHEET

E

FILE NAME : P:\UZ\W\WITNW\142897\C3D-STH 35\SHEETSPLAN\050201_PN.DWG
LAYOUT NAME - 04

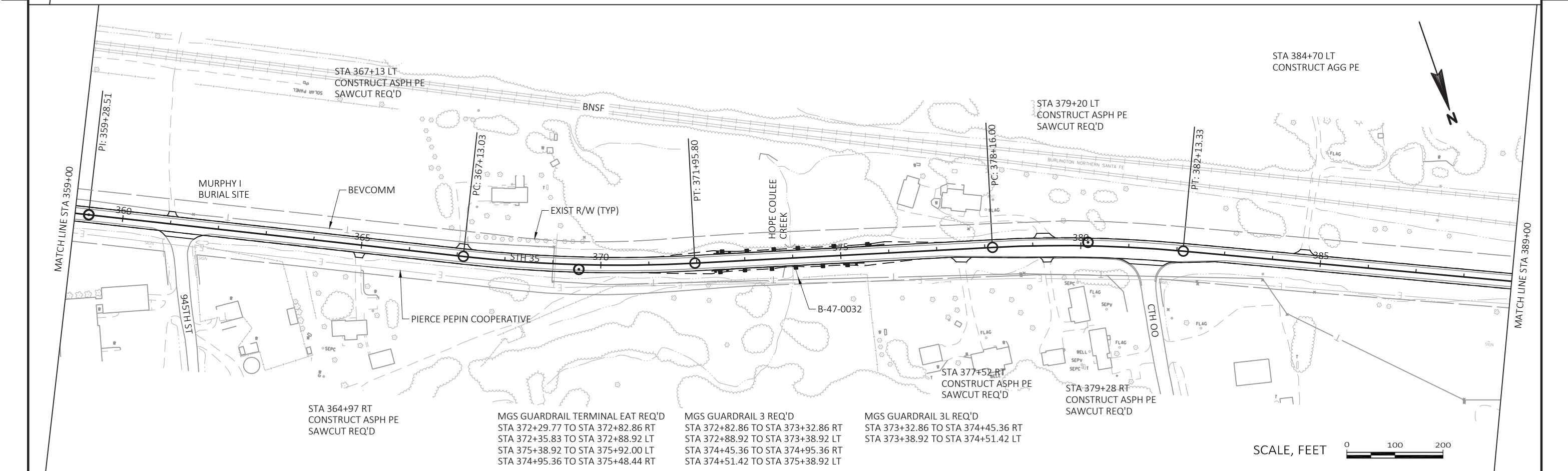
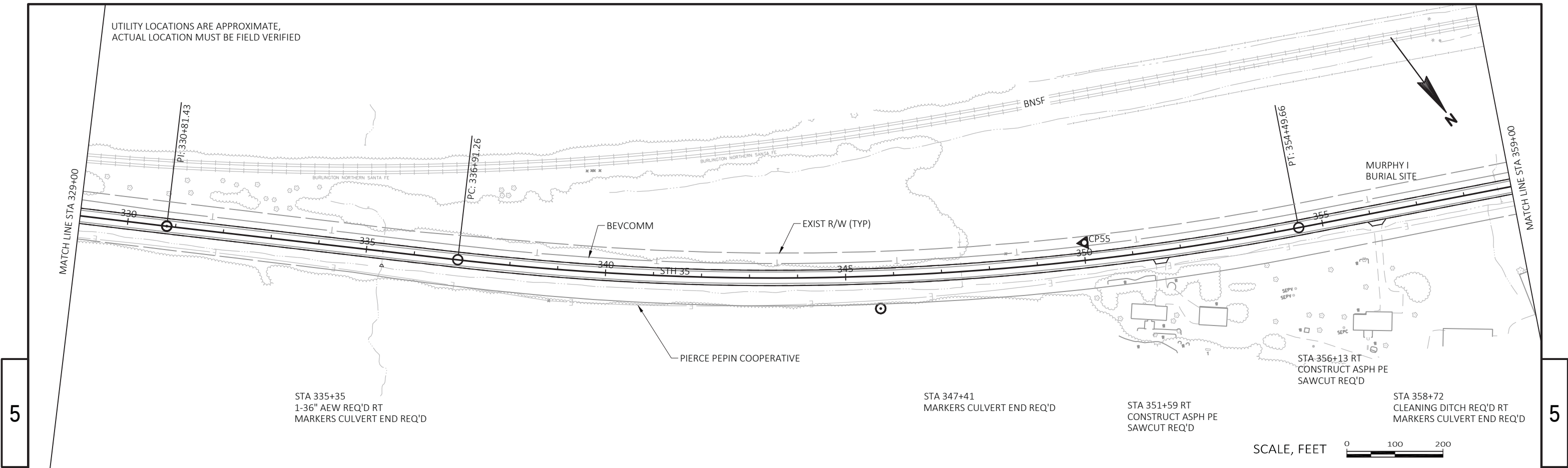
PLOT DATE : 10/31/2018 1:13 PM

PLOT BY : NICK ENGH

PLOT NAME :

PLOT SCALE : 1 IN=200 FT

WISDOT/CADDs SHEET 44



PROJECT NO: 7650-01-62

HWY: STH 35

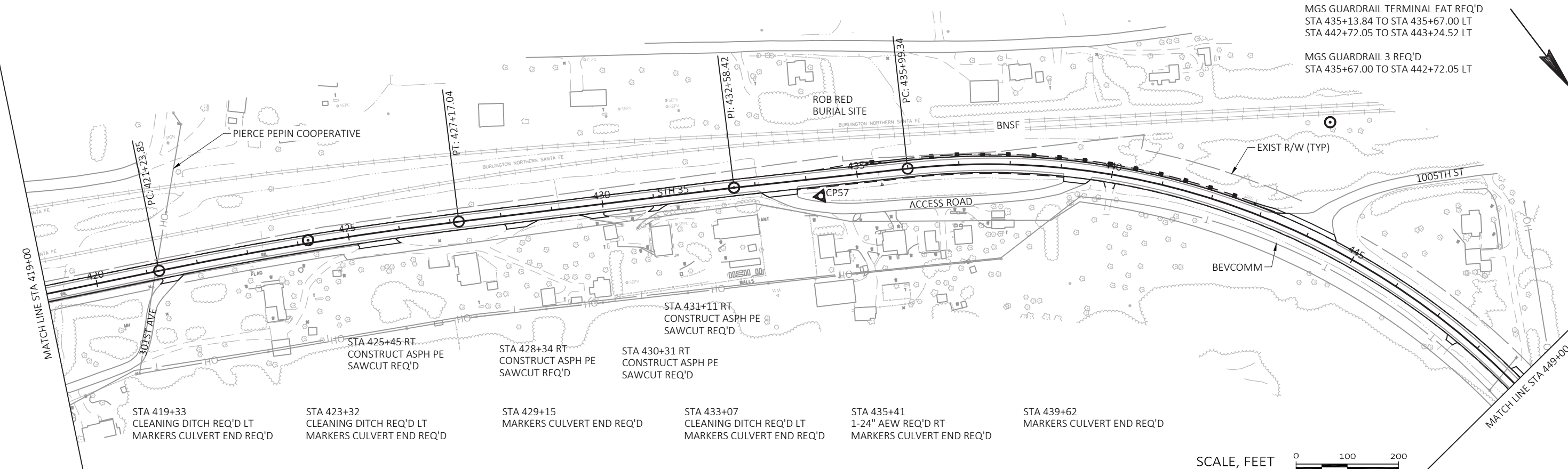
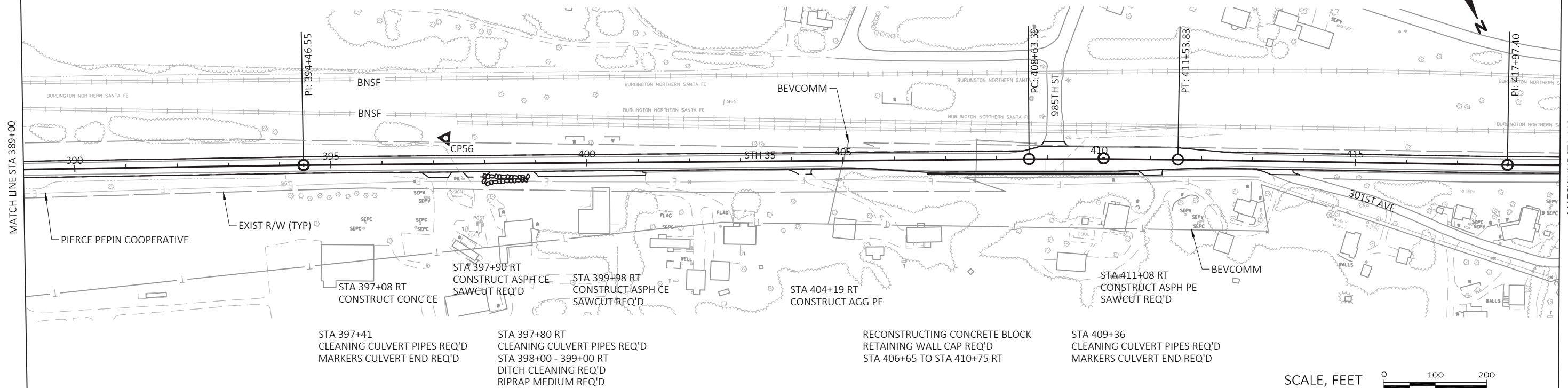
COUNTY: PIERCE

PLAN

SHEET

E

UTILITY LOCATIONS ARE APPROXIMATE,
ACTUAL LOCATION MUST BE FIELD VERIFIED



PROJECT NO: 7650-01-62

HWY: STH 35

COUNTY: PIERCE

PLAN

SHEET

E

FILE NAME : P:\UZ\W\WITNW\142897\C3D-STH 35\SHEETSP\050201_PN.DWG
LAYOUT NAME - 06

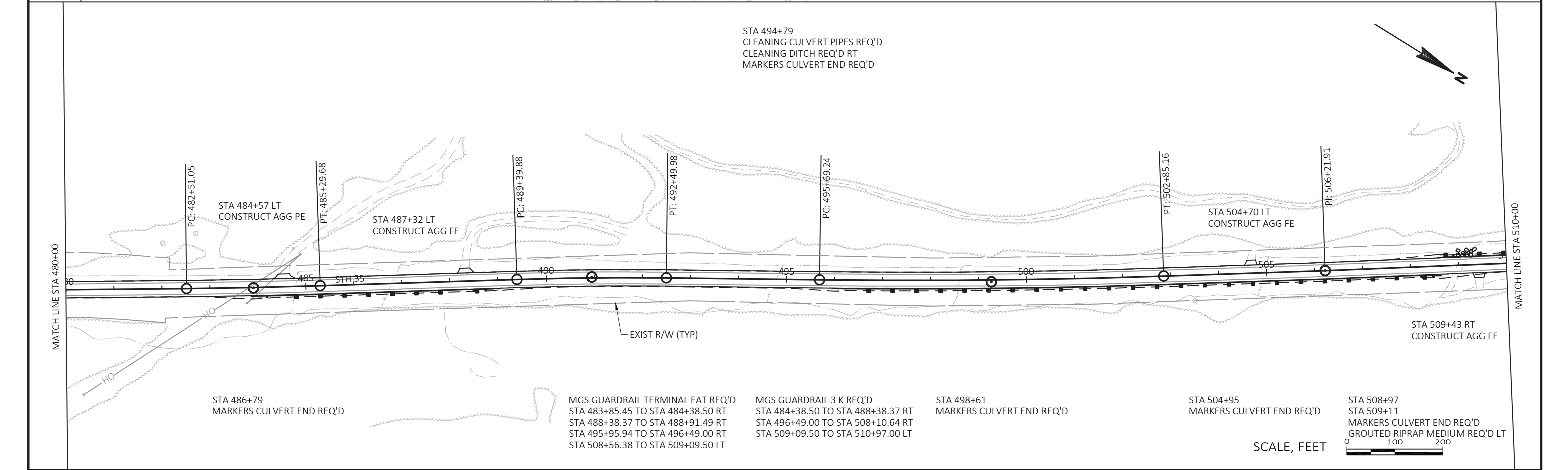
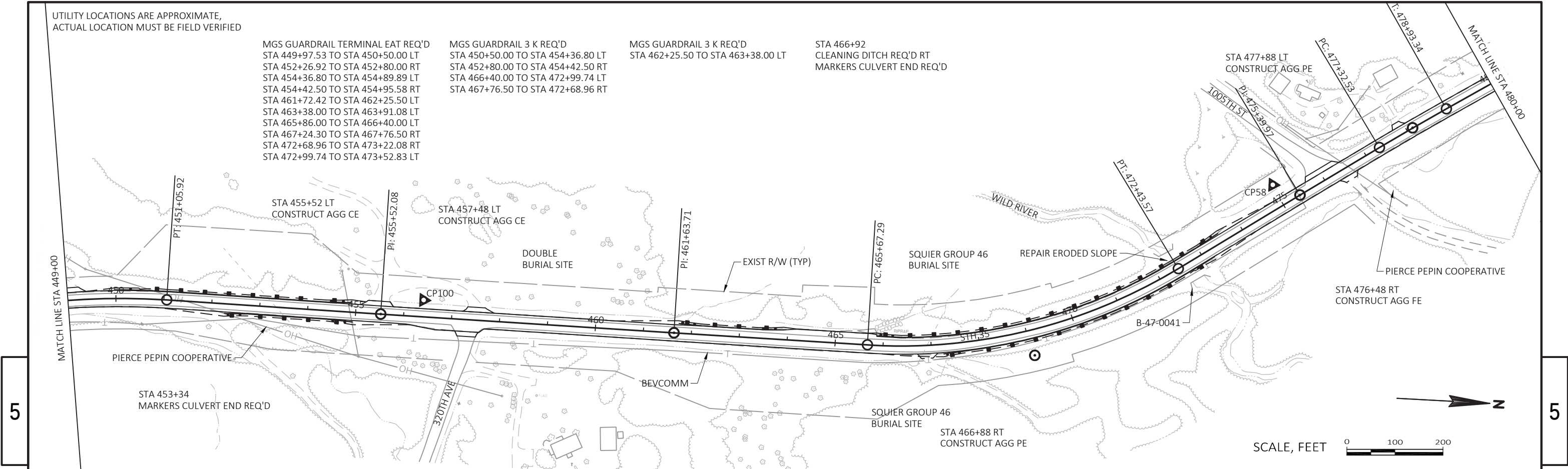
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PLOT BY : NICK ENGH

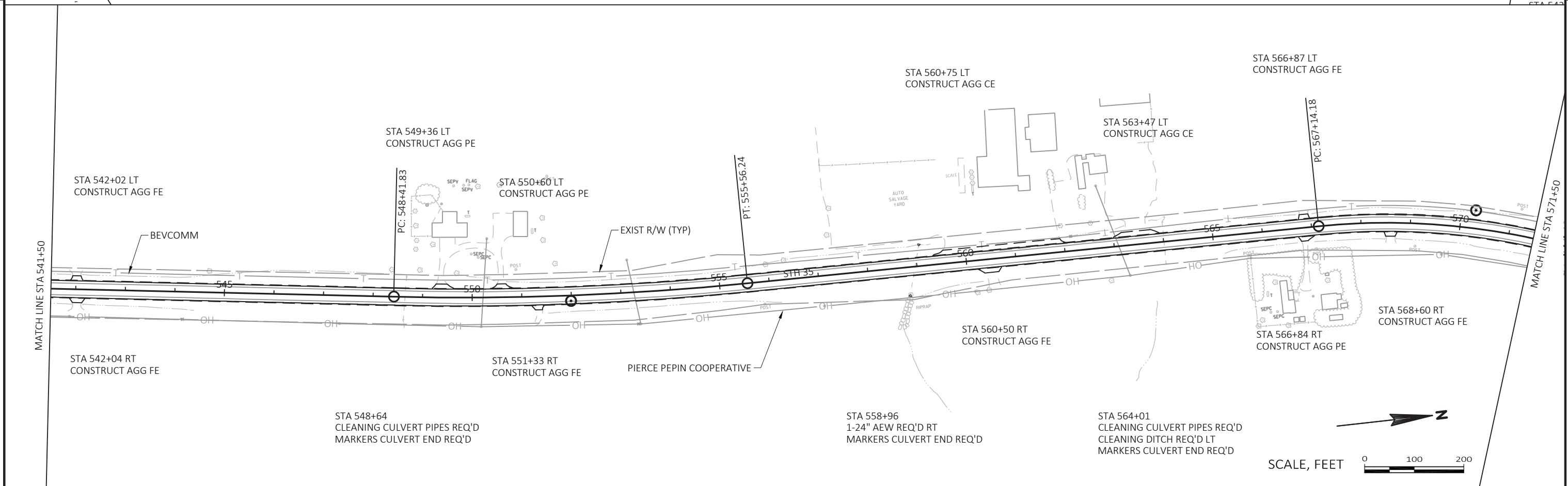
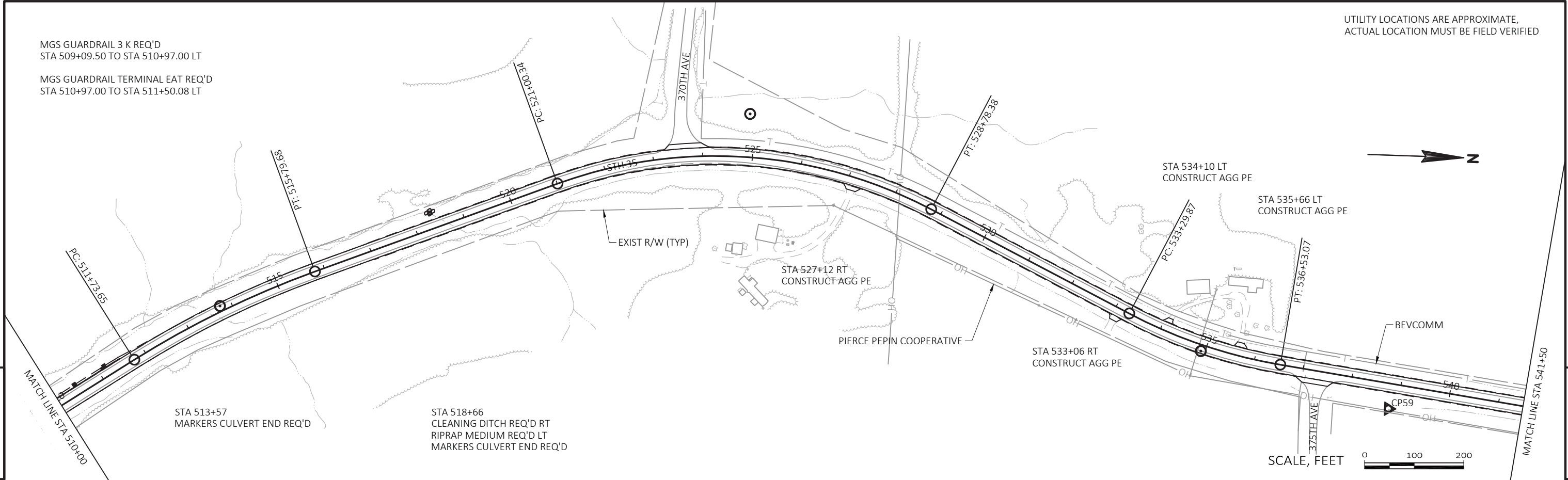
PLOT NAME :

PLOT SCALE : 1 IN:200 FT

WISDOT/CADDs SHEET 44



PROJECT NO:	7650-01-62	HWY:	STH 35	COUNTY:	PIERCE	PLAN	SHEET	E
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PROJECT NO: 7650-01-62	HWY: STH 35	COUNTY: PIERCE	PLAN	SHEET	E
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UTILITY LOCATIONS ARE APPROXIMATE,
ACTUAL LOCATION MUST BE FIELD VERIFIED

MATCH LINE STA 571+50

PT: 573+42.32

PC: 577+02.35

STA 580+00 LT
CONSTRUCT AGG FE

STA 585+57 LT
CONSTRUCT AGG FE

PT: 588+86.73

PC: 593+18.65

PT: 599+48.25

MATCH LINE STA 602+50

BEVCOMM

EXIST R/W (TYP)

STA 587+83 RT
CONSTRUCT AGG FE

PIERCE PEPIN COOPERATIVE

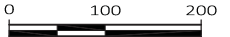
STA 578+17
MARKERS CULVERT END REQ'D

STA 586+51
MARKERS CULVERT END REQ'D

STA 590+86
CLEANING CULVERT PIPES REQ'D
MARKERS CULVERT END REQ'D

STA 599+12
CLEANING DITCH REQ'D RT
MARKERS CULVERT END REQ'D

SCALE, FEET



5

5

STA 603+37 LT
CONSTRUCT AGG PE

STA 606+18 LT
CONSTRUCT AGG PE

PT: 611+52.04

STA 620+26 LT
CONSTRUCT AGG PE

BEVCOMM

PC: 630+82.44

MATCH LINE STA 632+00

MATCH LINE STA 602+50

STA 603+52 RT
CONSTRUCT AGG FE

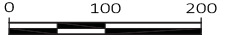
STA 612+00 RT
CONSTRUCT AGG FE

STA 620+56 RT
CONSTRUCT ASPH CE
SAWCUT REQ'D

STA 623+30 RT
CONSTRUCT AGG FE

STA 626+14
CLEANING CULVERT PIPES REQ'D
CLEANING DITCH REQ'D LT & RT
MARKERS CULVERT END REQ'D

SCALE, FEET



PROJECT NO: 7650-01-62

HWY: STH 35

COUNTY: PIERCE

PLAN

SHEET

E

FILE NAME : P:\UZ\W\WITNW\142897\C3D-STH 35\SHEETPLAN\050201_PN.DWG
LAYOUT NAME - 09

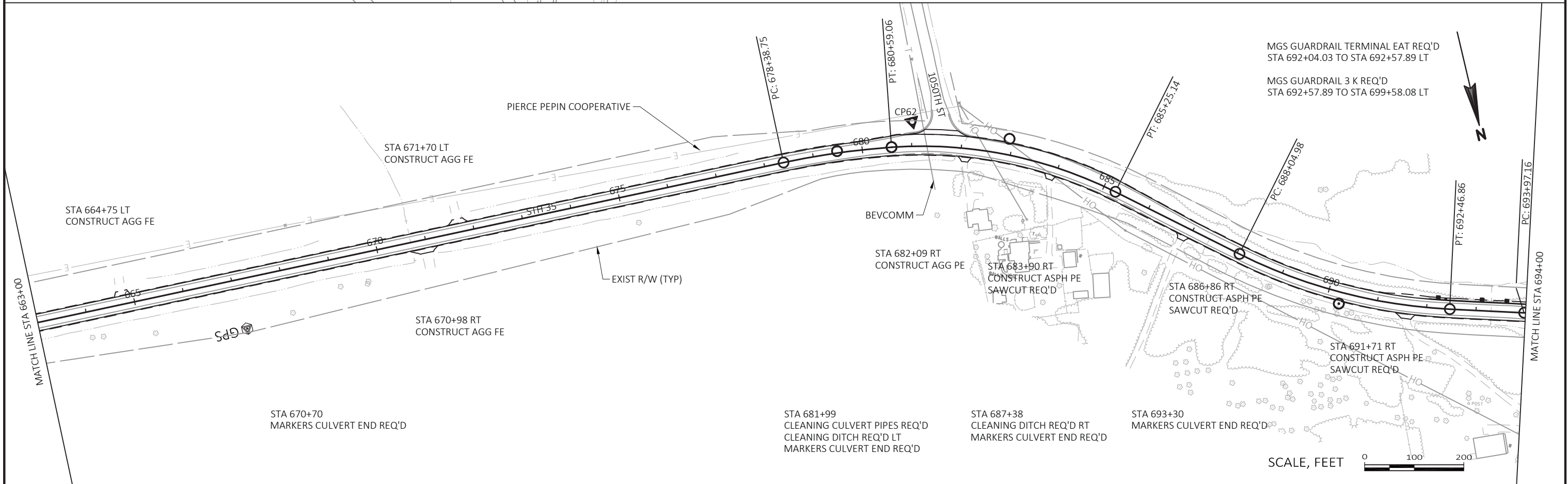
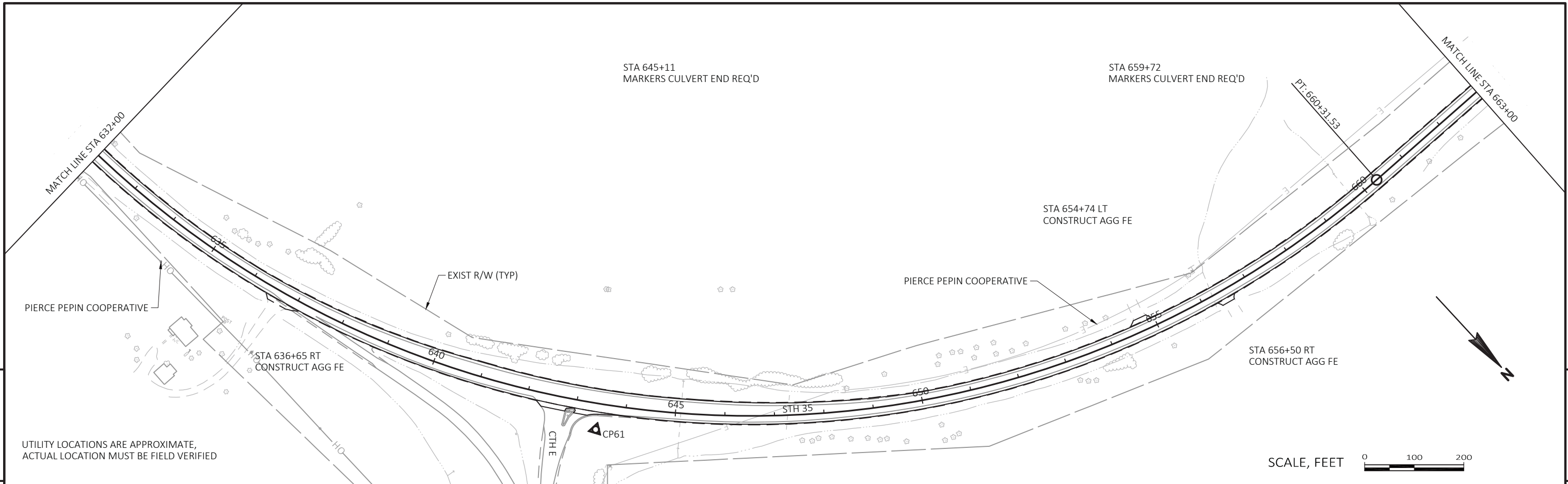
PLOT DATE : 10/31/2018 1:16 PM

PLOT BY : NICK ENGH

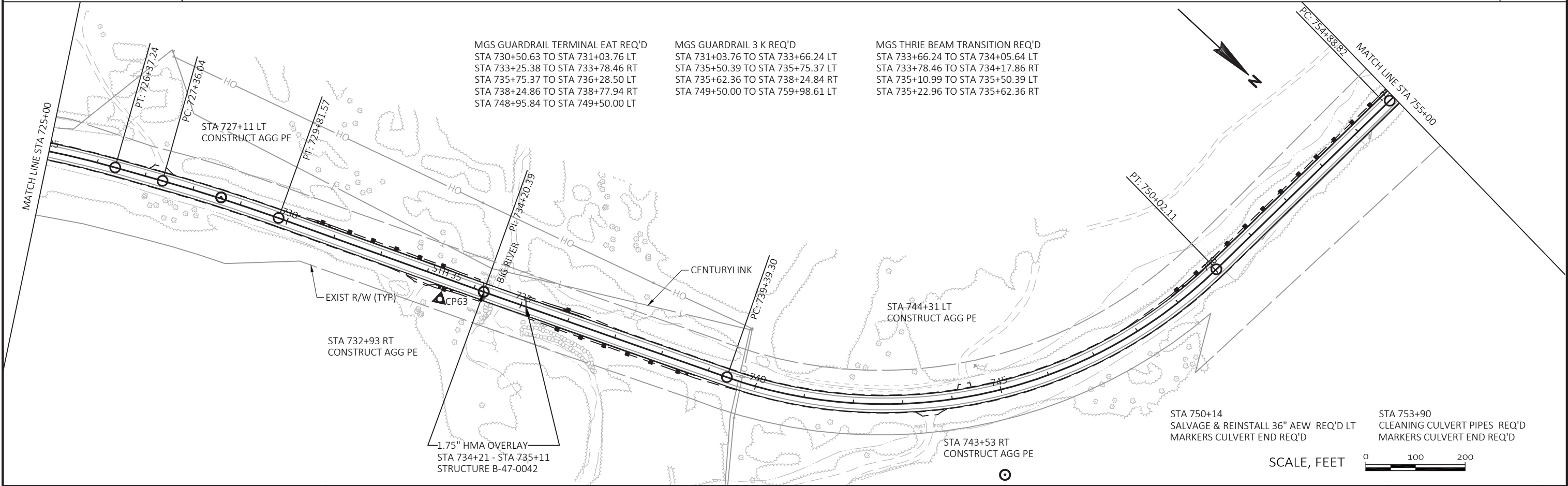
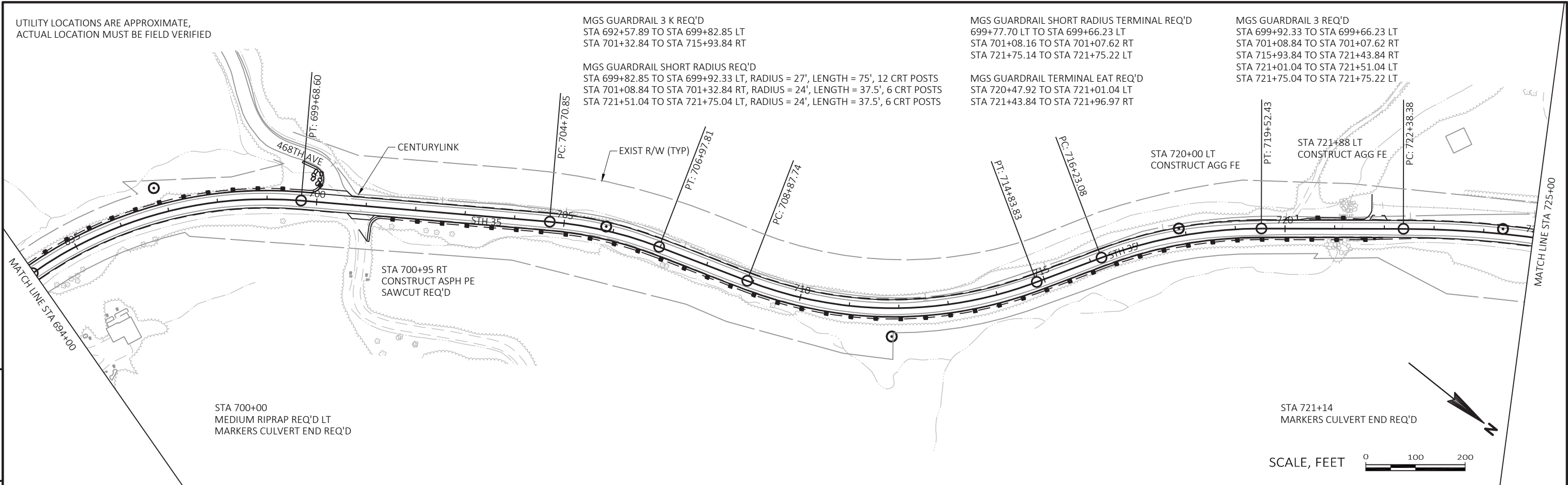
PLOT NAME :

PLOT SCALE : 1 IN:200 FT

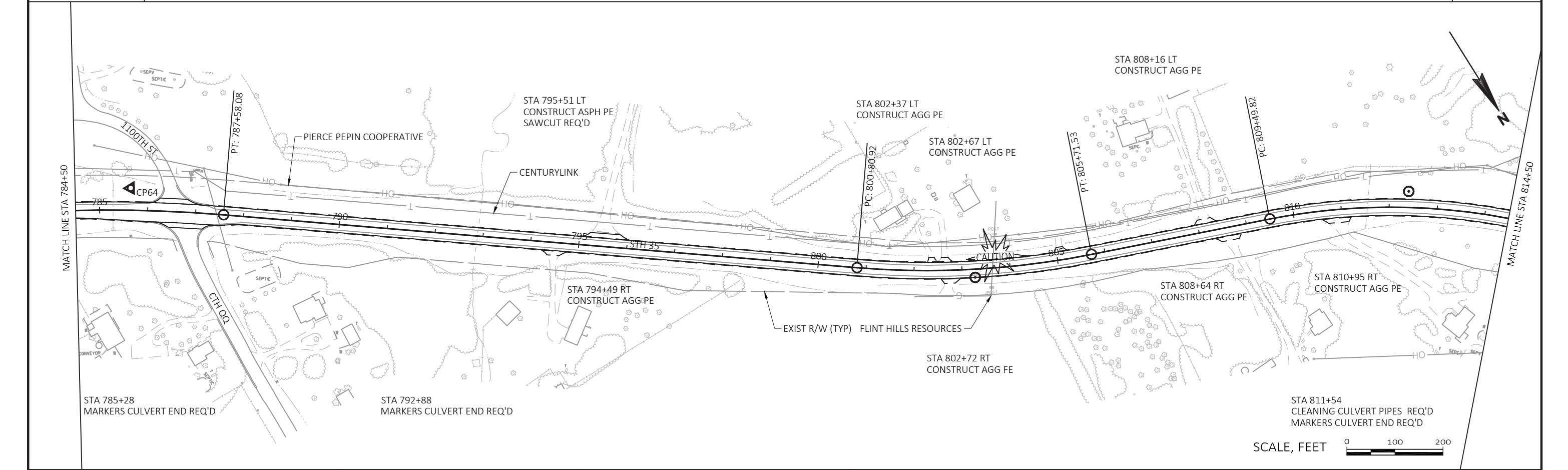
WISDOT/CADDs SHEET 44



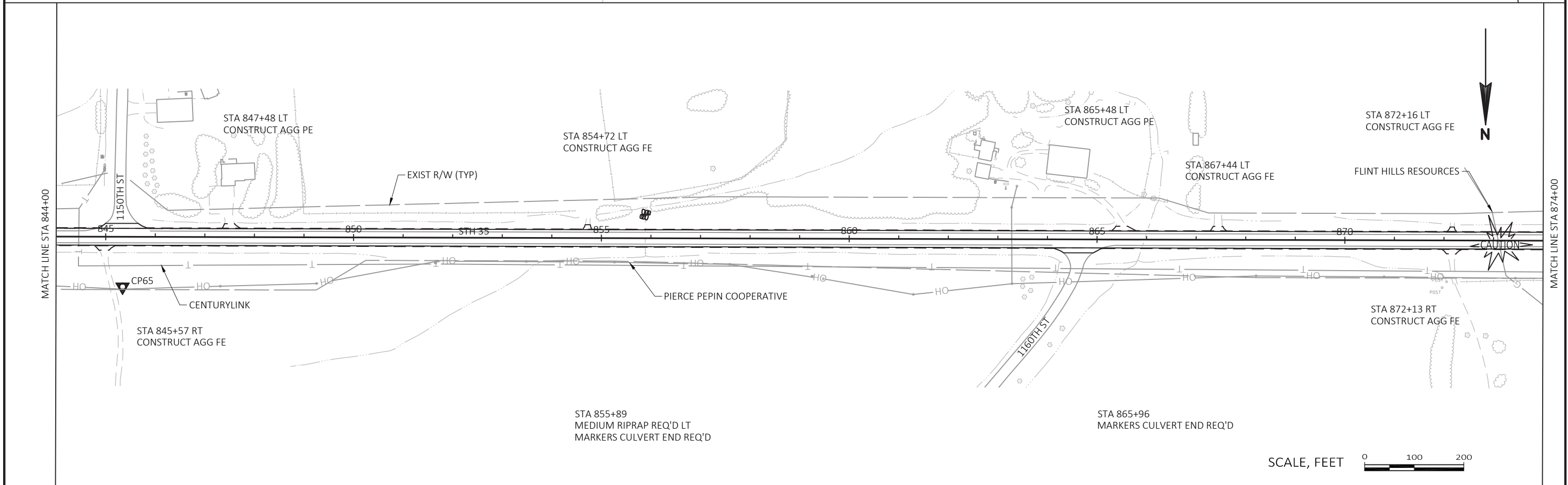
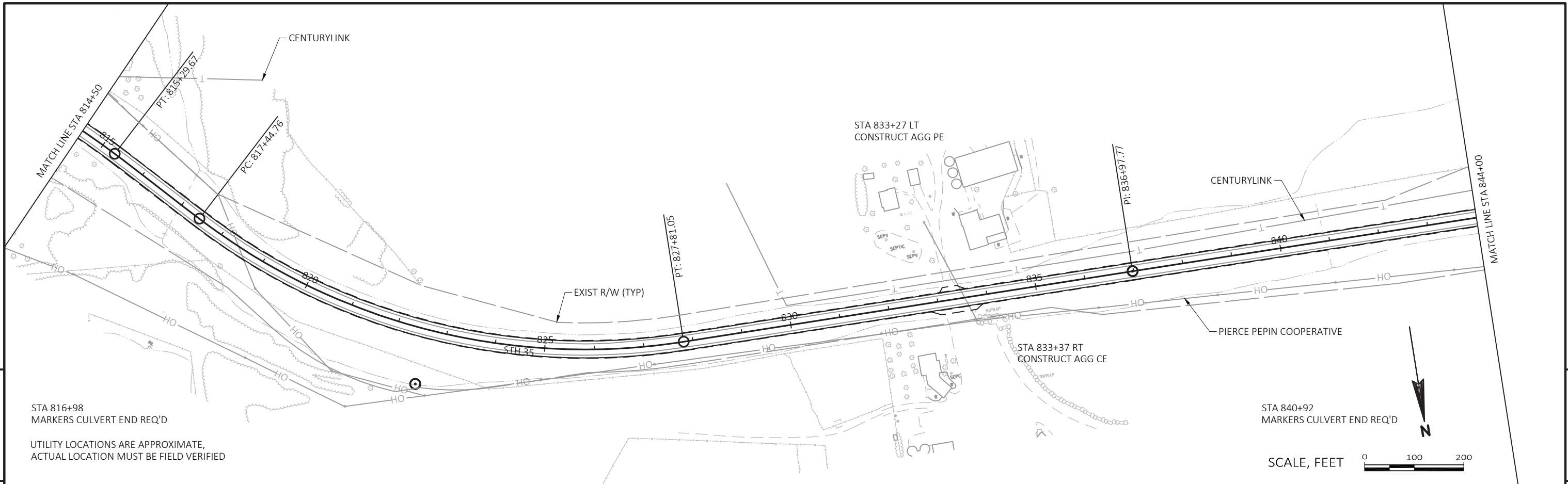
PROJECT NO: 7650-01-62	HWY: STH 35	COUNTY: PIERCE	PLAN	SHEET	E
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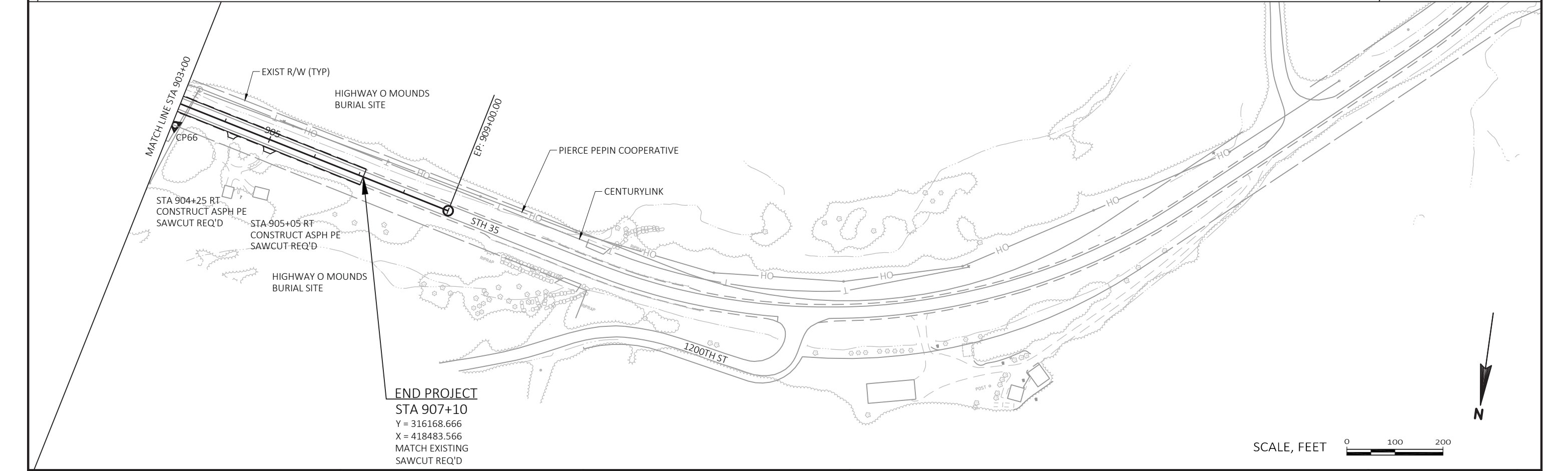
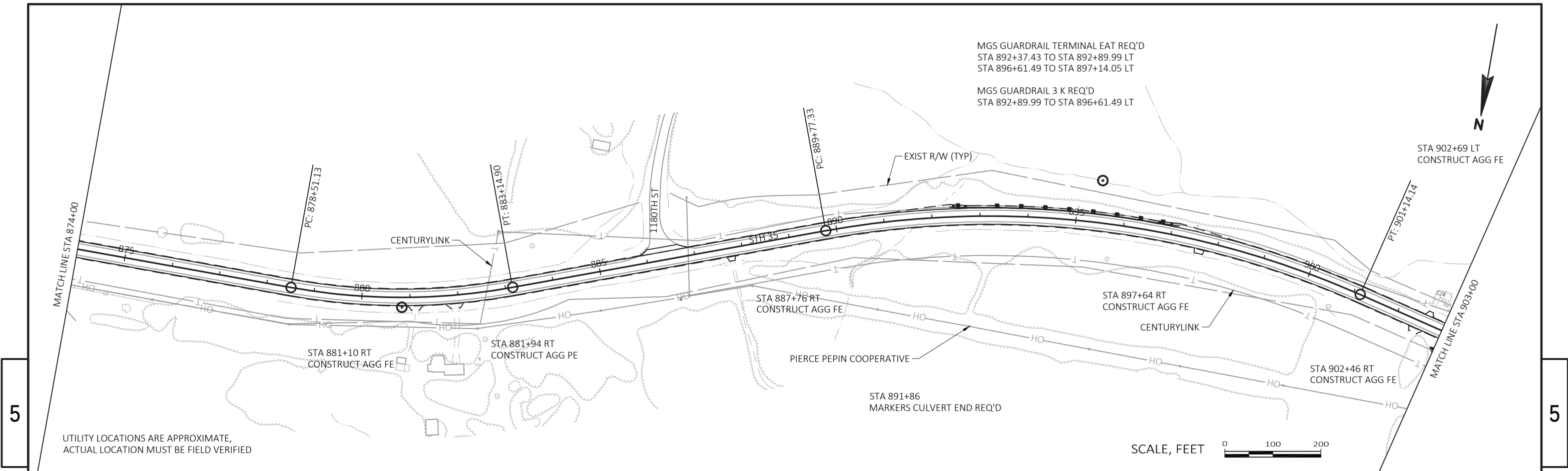
PROJECT NO: 7650-01-62	HWY: STH 35	COUNTY: PIERCE	PLAN	SHEET	E
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PROJECT NO:	7650-01-62	HWY:	STH 35	COUNTY:	PIERCE	PLAN		SHEET	E
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PROJECT NO: 7650-01-62	HWY: STH 35	COUNTY: PIERCE	PLAN	SHEET	E
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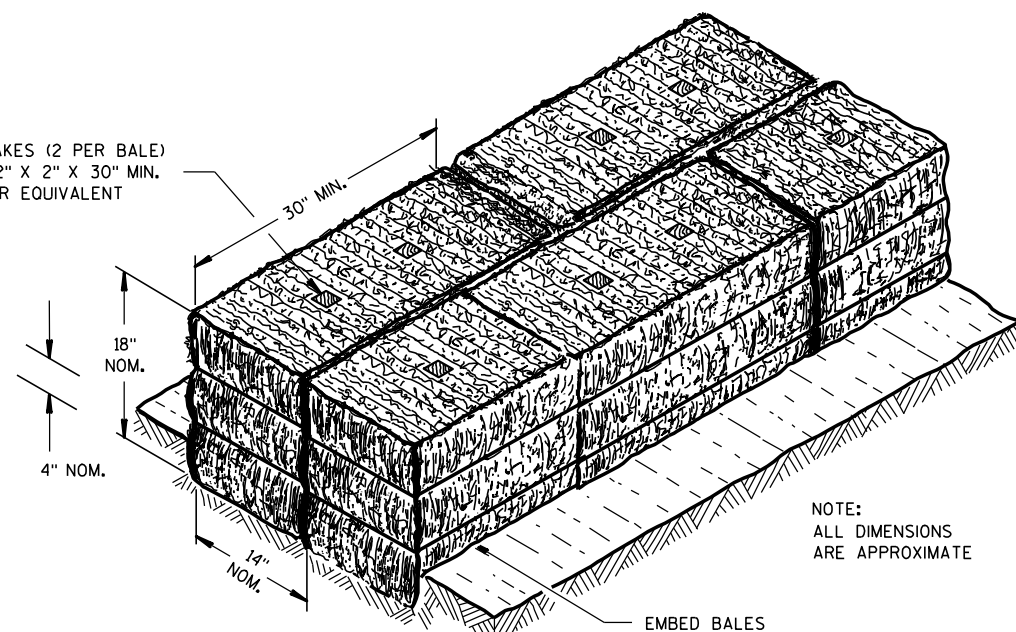


PROJECT NO: 7650-01-62	HWY: STH 35	COUNTY: PIERCE	PLAN	SHEET	E
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Standard Detail Drawing List

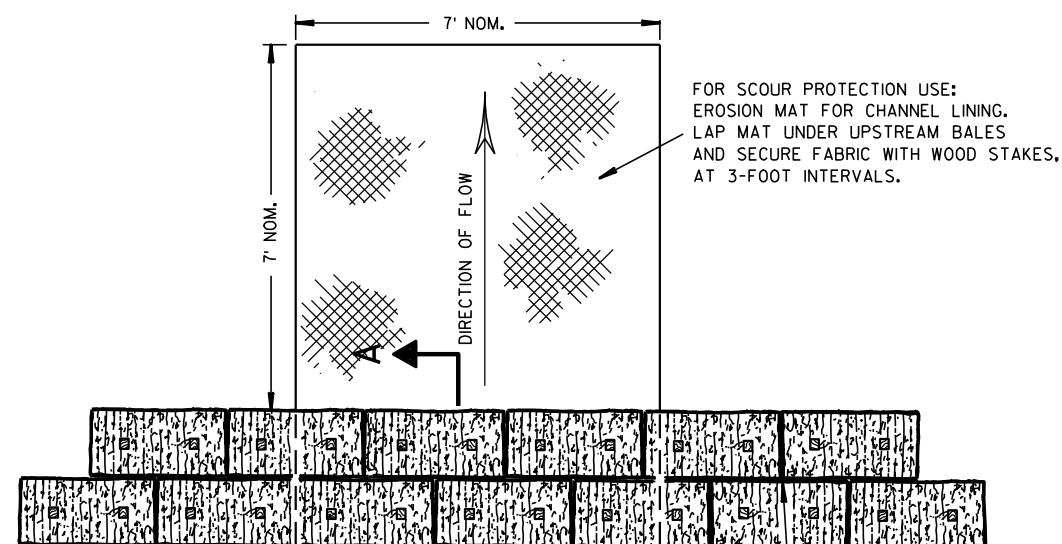
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
13A10-02A	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-02B	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-02C	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-02D	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A11-03A	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13A11-03B	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
14B24-09A	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-09B	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-09C	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B28-03	GUARDRAIL MOW STRIP
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
14B43-04A	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
14B43-04B	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
14B43-04C	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM 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)
14B53-01A	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01B	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01C	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01D	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01E	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01F	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01G	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01H	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01I	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C06-09	SIGNING & MARKING FOR TWO LANE BRIDGES
15C07-14B	PAVEMENT MARKING WORDS
15C07-14C	PAVEMENT MARKING ARROWS
15C08-19A	LONGITUDINAL MARKING (MAINLINE)
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-06	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C18-04	MEDIAN ISLAND MARKING
15C31-03A	PAVEMENT MARKING (RAMPS AND GORES)
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
15D39-02	TRAFFIC CONTROL, DROP-OFF SIGNING

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



SECTION A-A

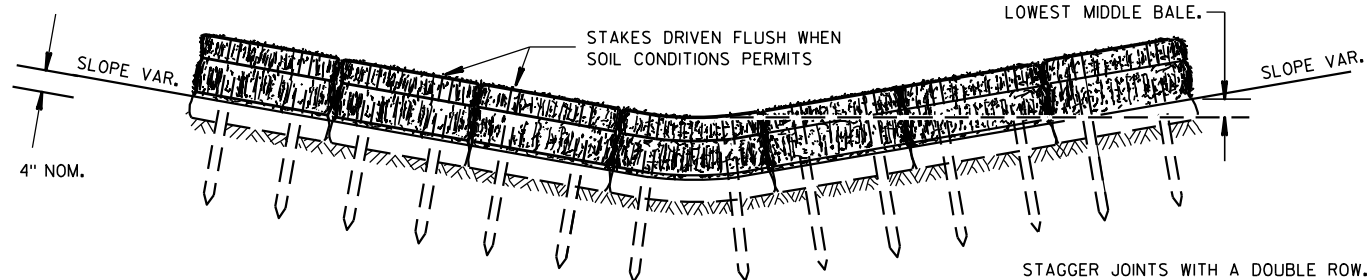
NOTE:
ALL DIMENSIONS
ARE APPROXIMATE



PLAN VIEW

STAGGER JOINTS BETWEEN ADJACENT
ROWS OF BALES.

BOTTOM ELEVATION OF END BALE SHALL
BE EQUAL TO OR GREATER THAN TOP OF
LOWEST MIDDLE BALE.



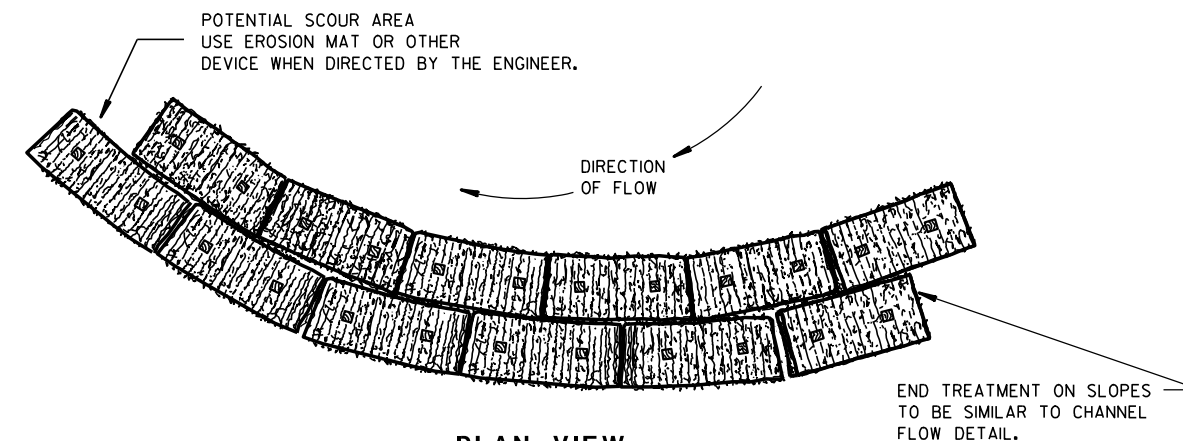
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

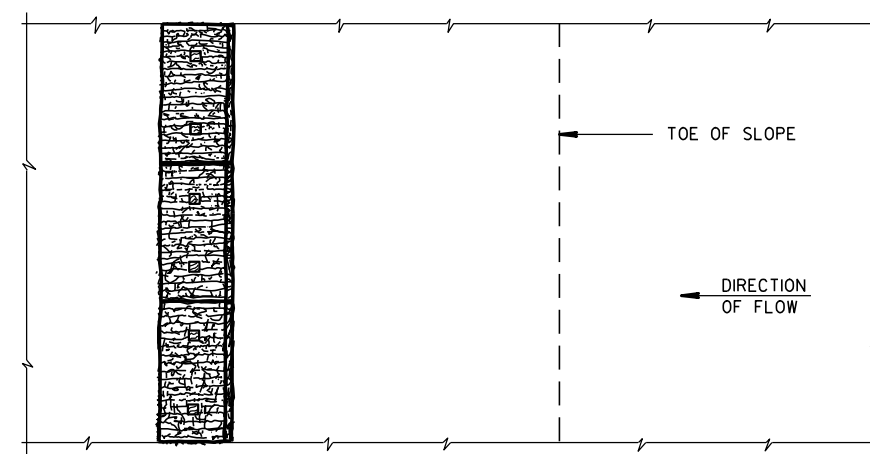
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

- 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.

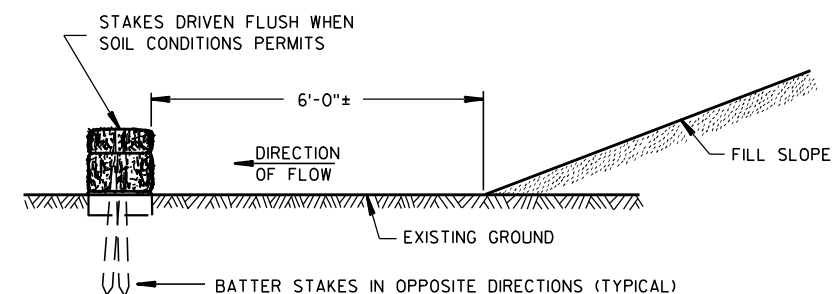


PLAN VIEW

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

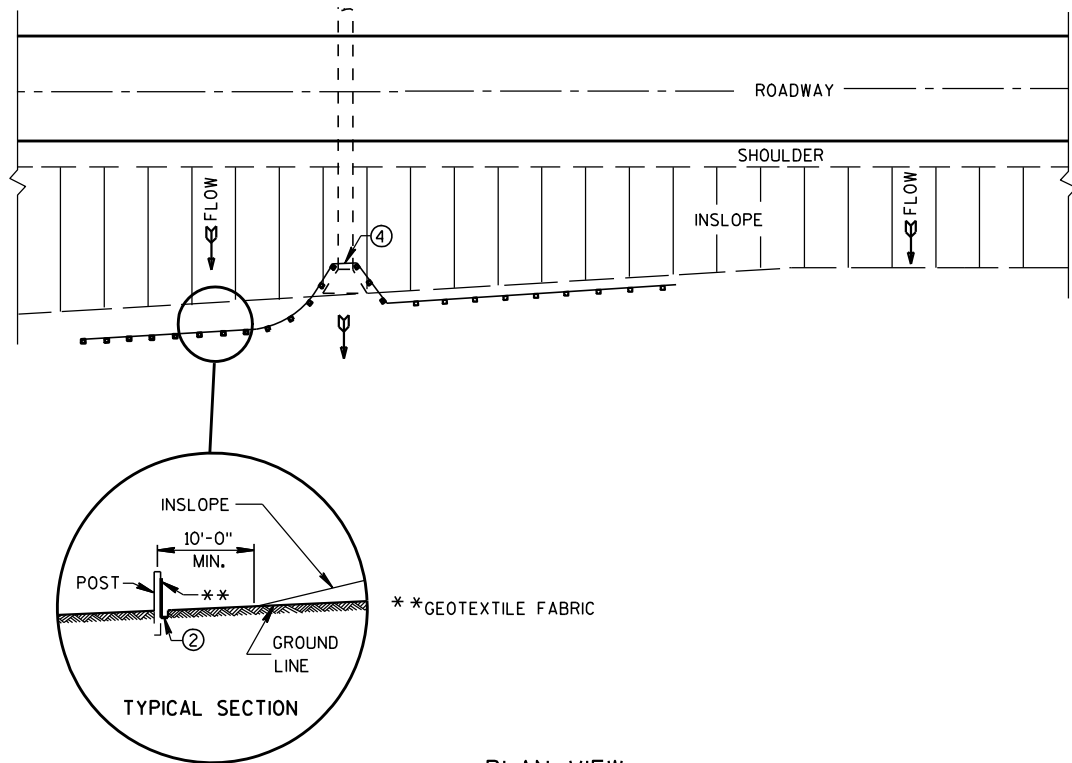
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

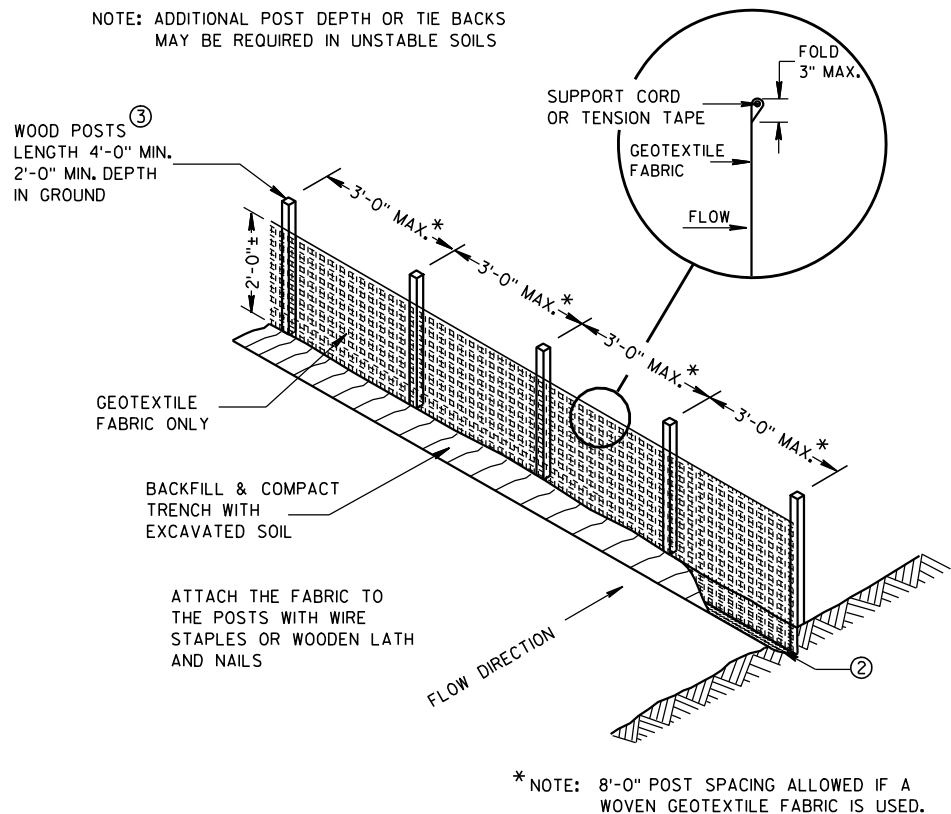
6/04/02
DATE

FHWA

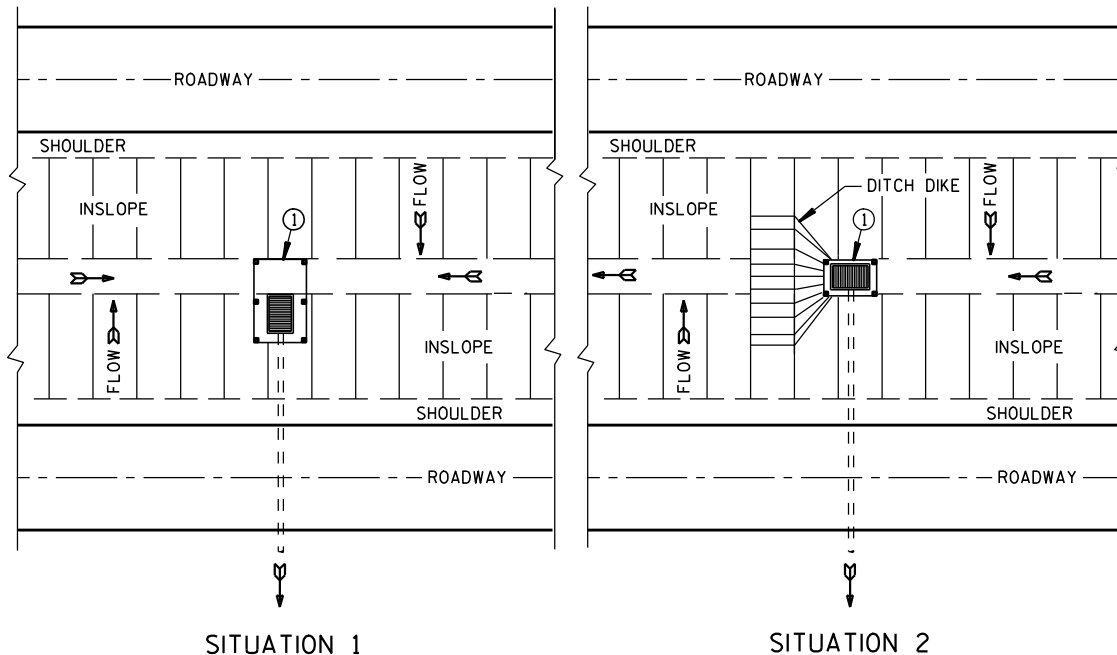
/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER



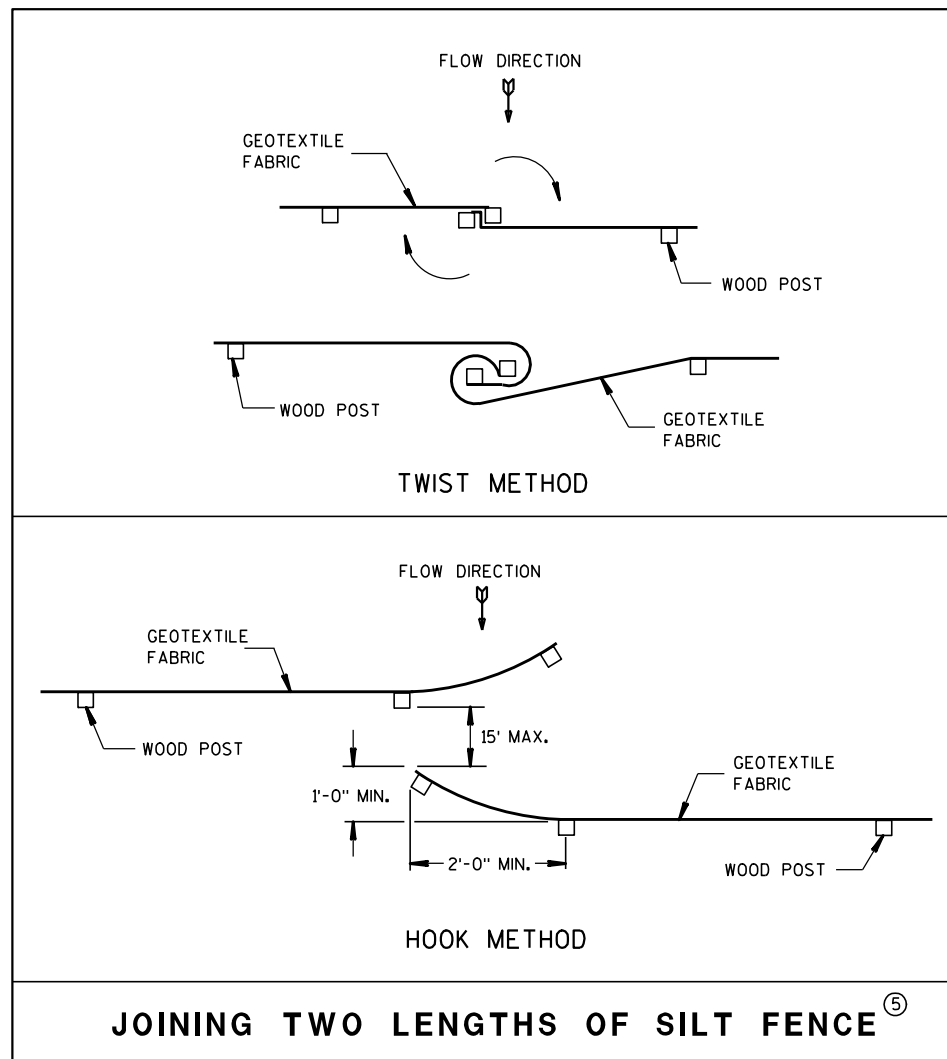
PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE



SILT FENCE



PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS

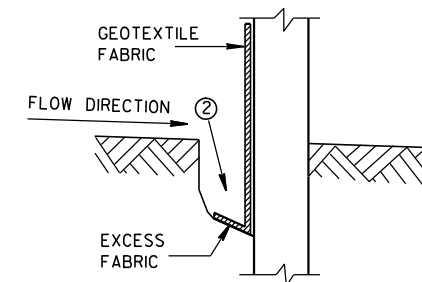


JOINING TWO LENGTHS OF SILT FENCE^⑤

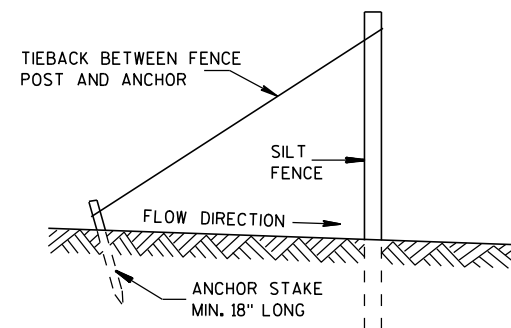
GENERAL NOTES

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

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

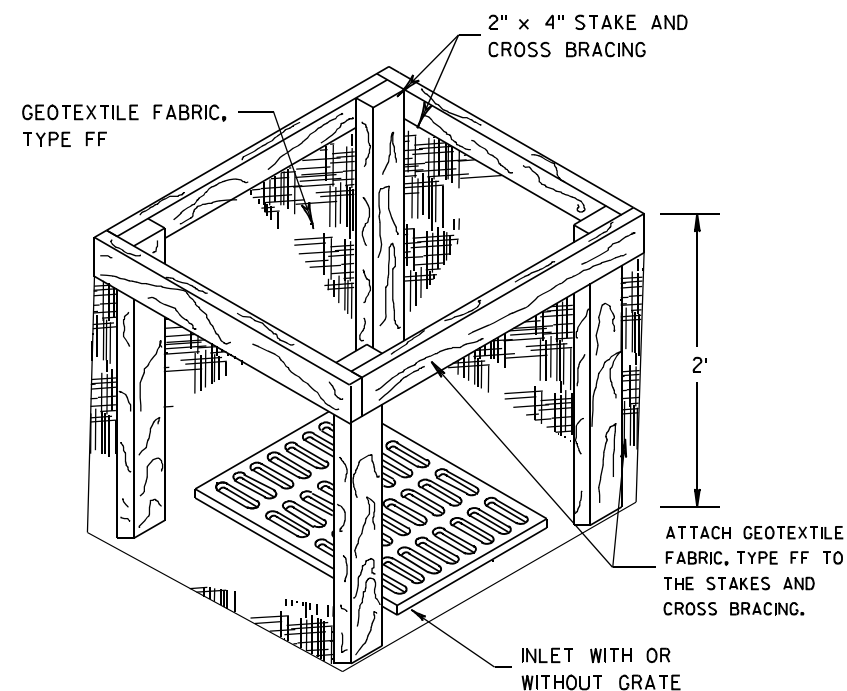
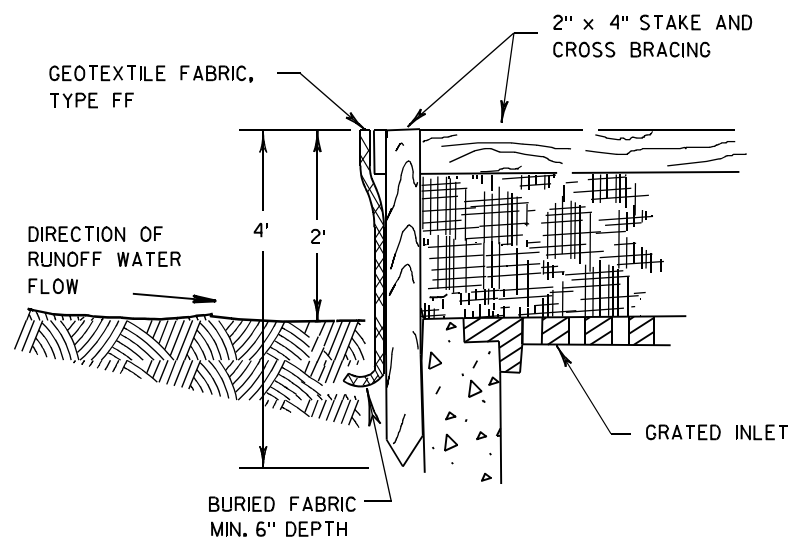


TRENCH DETAIL



SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

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



INLET PROTECTION, TYPE A

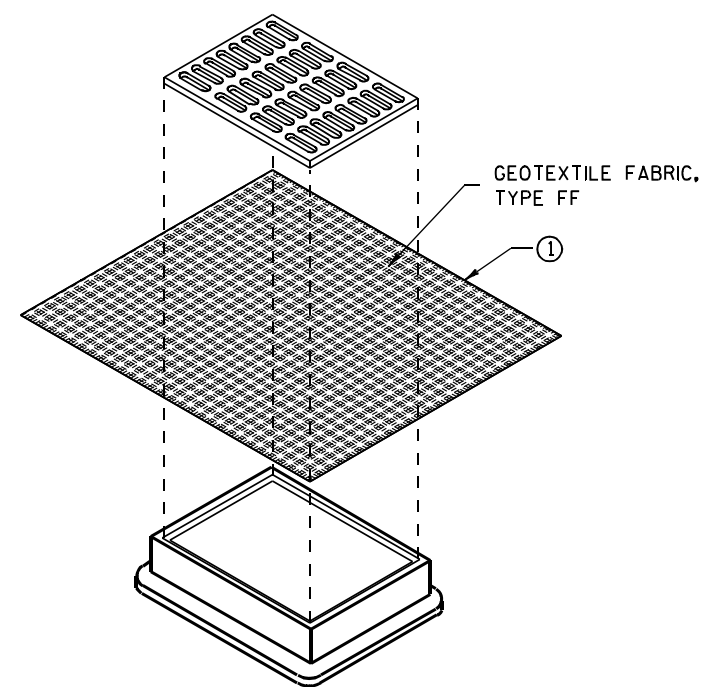
GENERAL NOTES

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

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

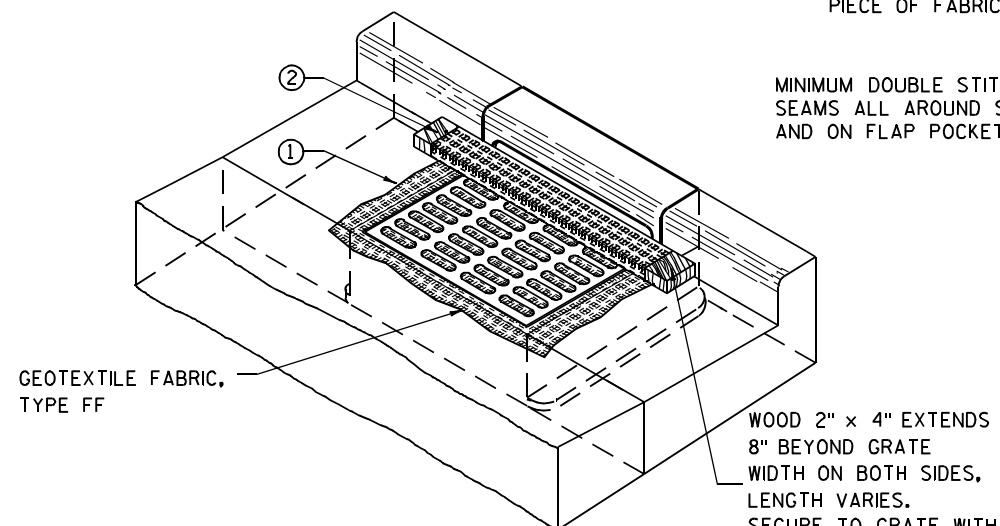
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

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



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

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



INLET PROTECTION, TYPE C (WITH CURB BOX)

INSTALLATION NOTES

TYPE B & C

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

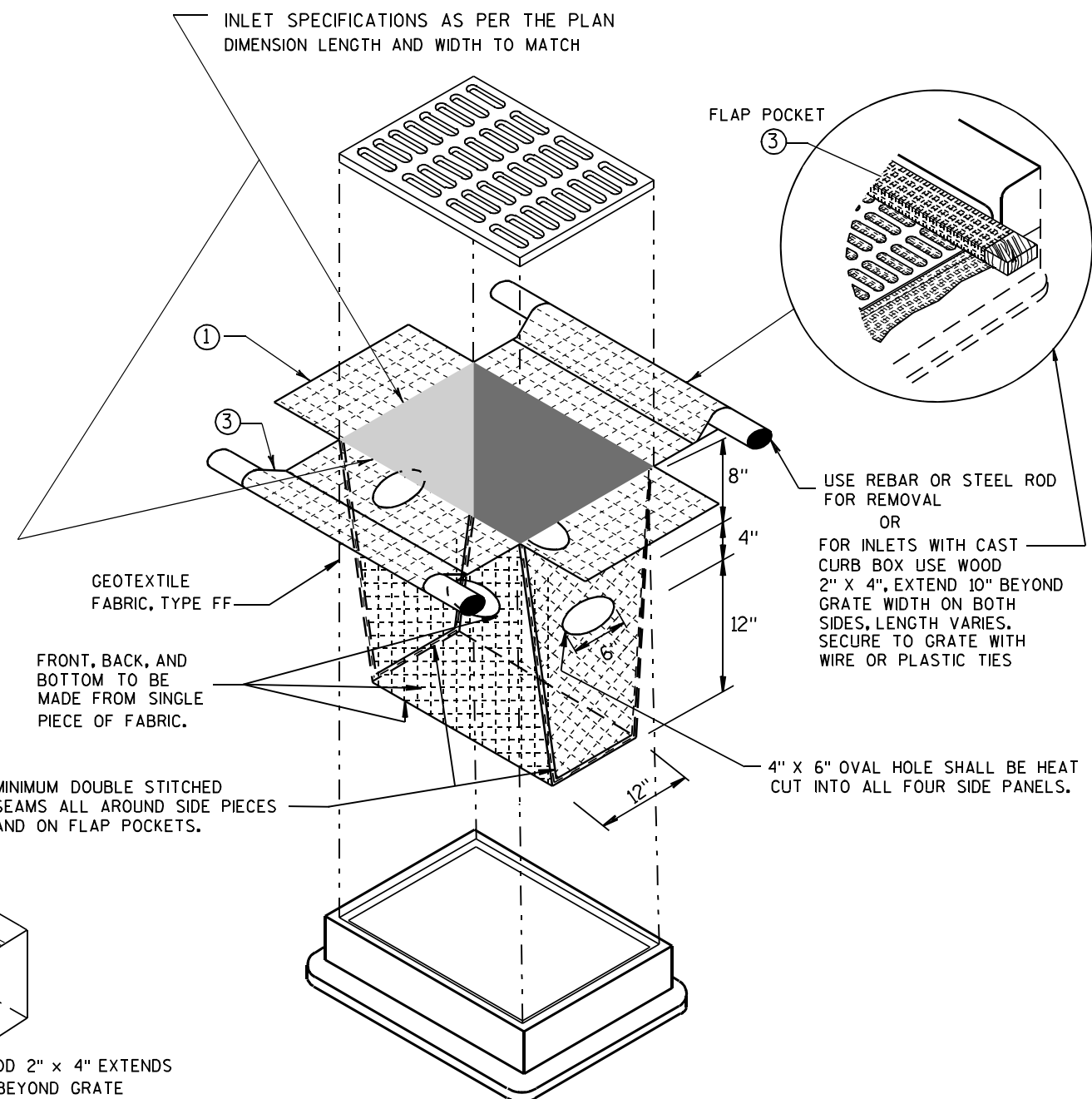
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

TYPE D

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

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

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



INLET PROTECTION, TYPE D

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

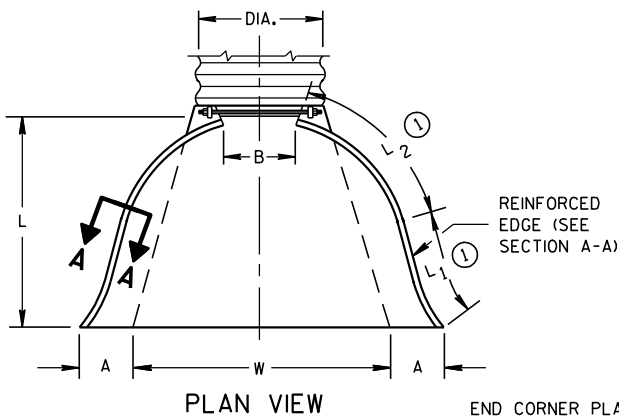
**INLET PROTECTION
TYPE A, B, C, AND D**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/16/02 /S/ Beth Cannestra
DATE
FHWA CHIEF ROADWAY DEVELOPMENT ENGINEER

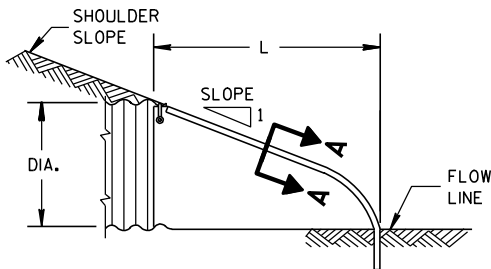
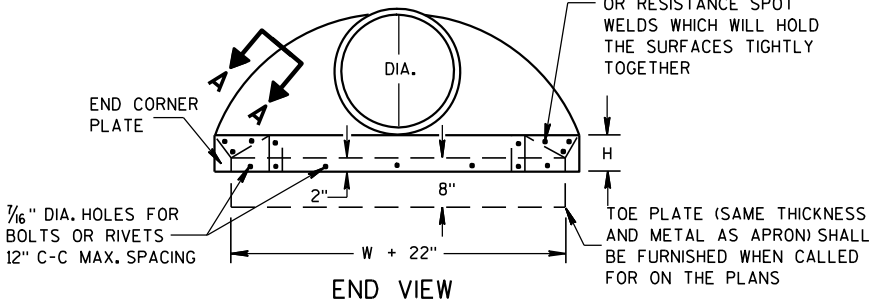
METAL APRON ENDWALLS												
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE		BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")			
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1	1 Pc.
18	.064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

* EXCEPT CENTER PANEL
SEE GENERAL NOTES



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

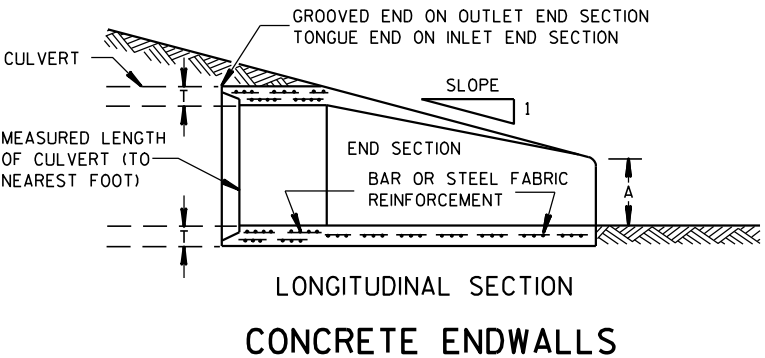
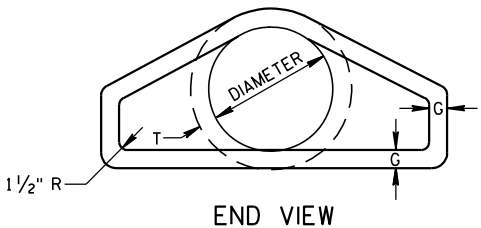
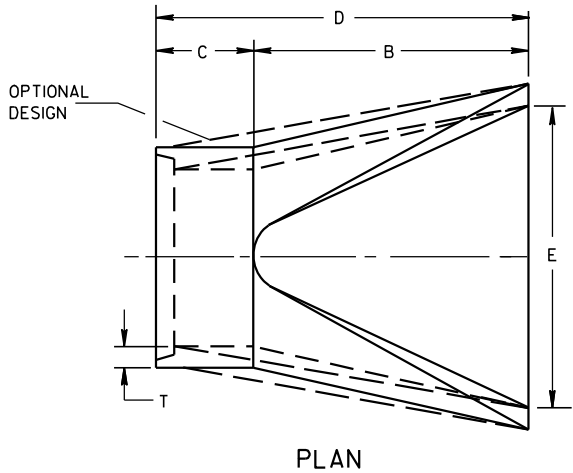
TOE PLATE (SAME THICKNESS AND METAL AS APRON) SHALL BE FURNISHED WHEN CALLED FOR ON THE PLANS



SIDE ELEVATION
METAL ENDWALLS

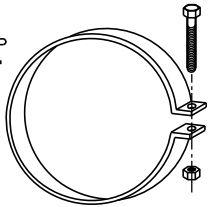
REINFORCED CONCRETE APRON ENDWALLS												
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE				
	T	A	B	C	D	E	G					
12	2	4	24	48 7/8	72 7/8	24	2	3 to 1				
15	2 1/4	6	27	46	73	30	2 1/4	3 to 1				
18	2 1/2	9	27	46	73	36	2 1/2	3 to 1				
21	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	3 to 1				
24	3	9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

* MINIMUM
** MAXIMUM

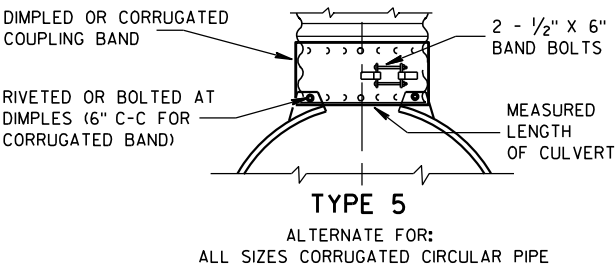
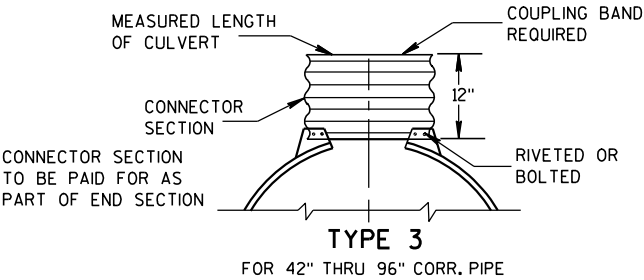
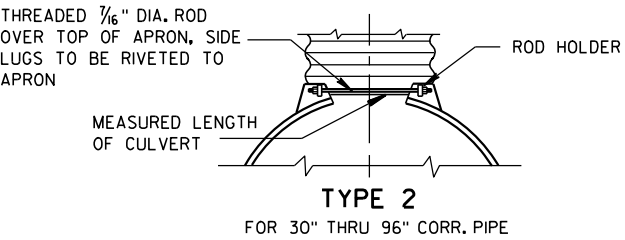
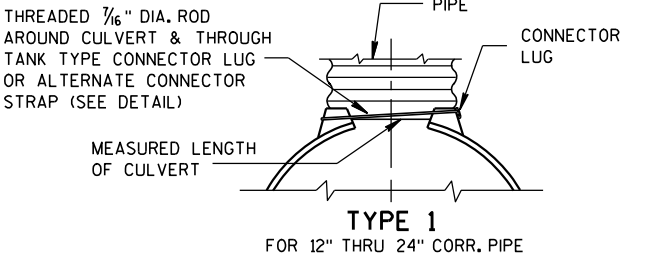


LONGITUDINAL SECTION
CONCRETE ENDWALLS

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



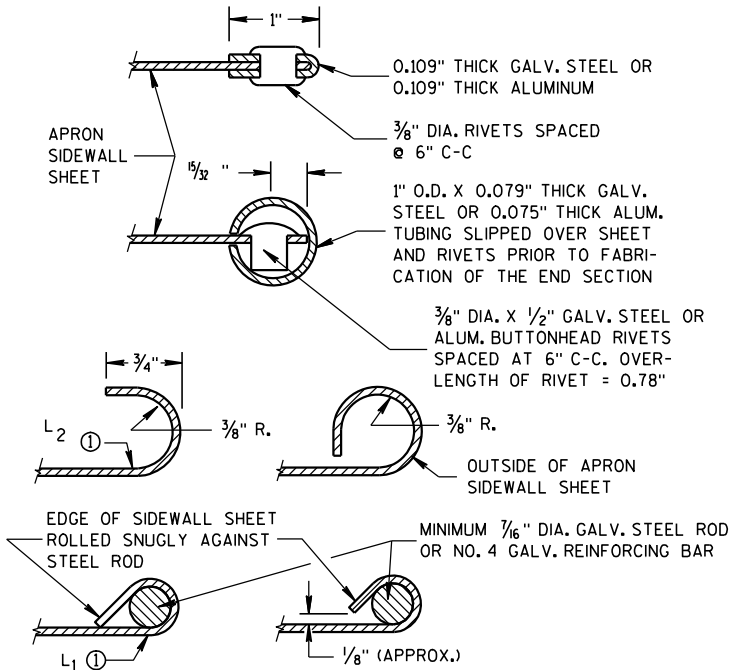
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

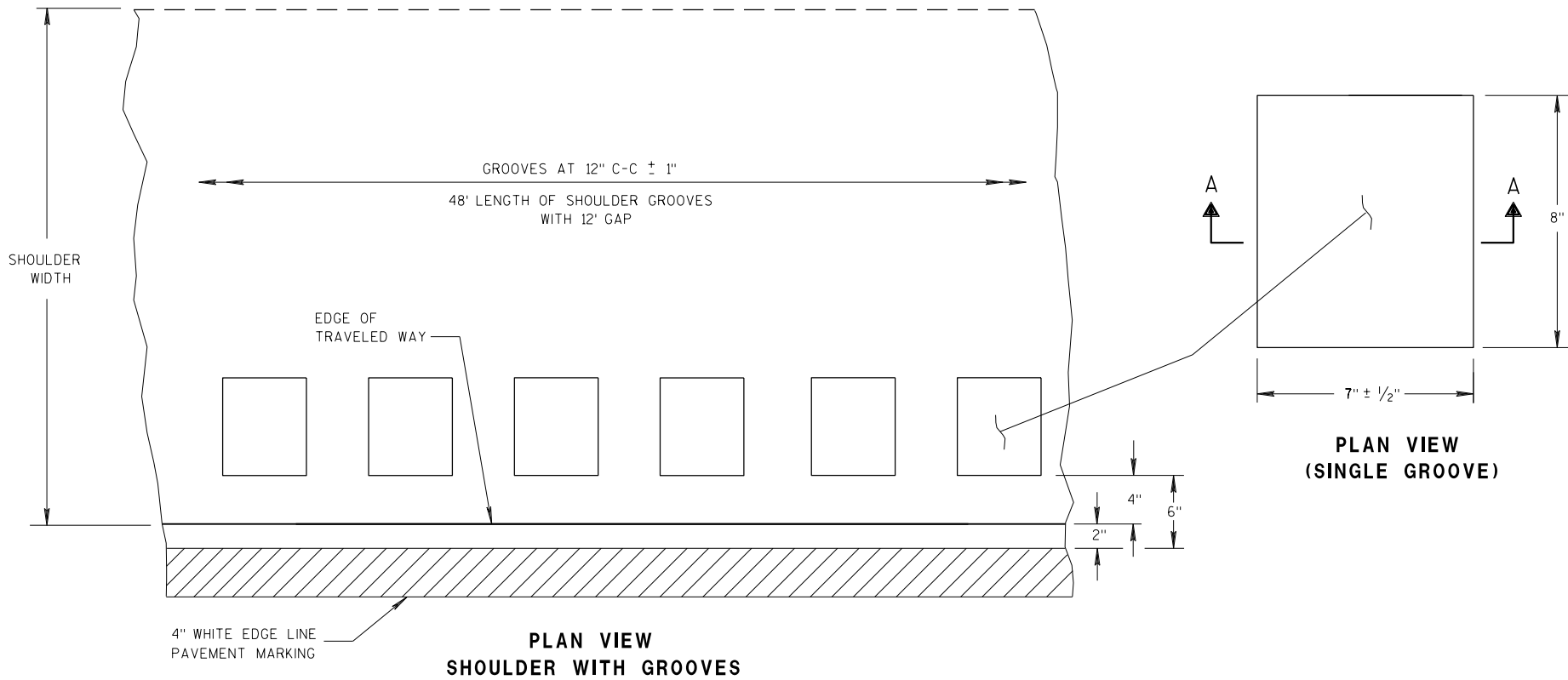


SECTION A-A

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.

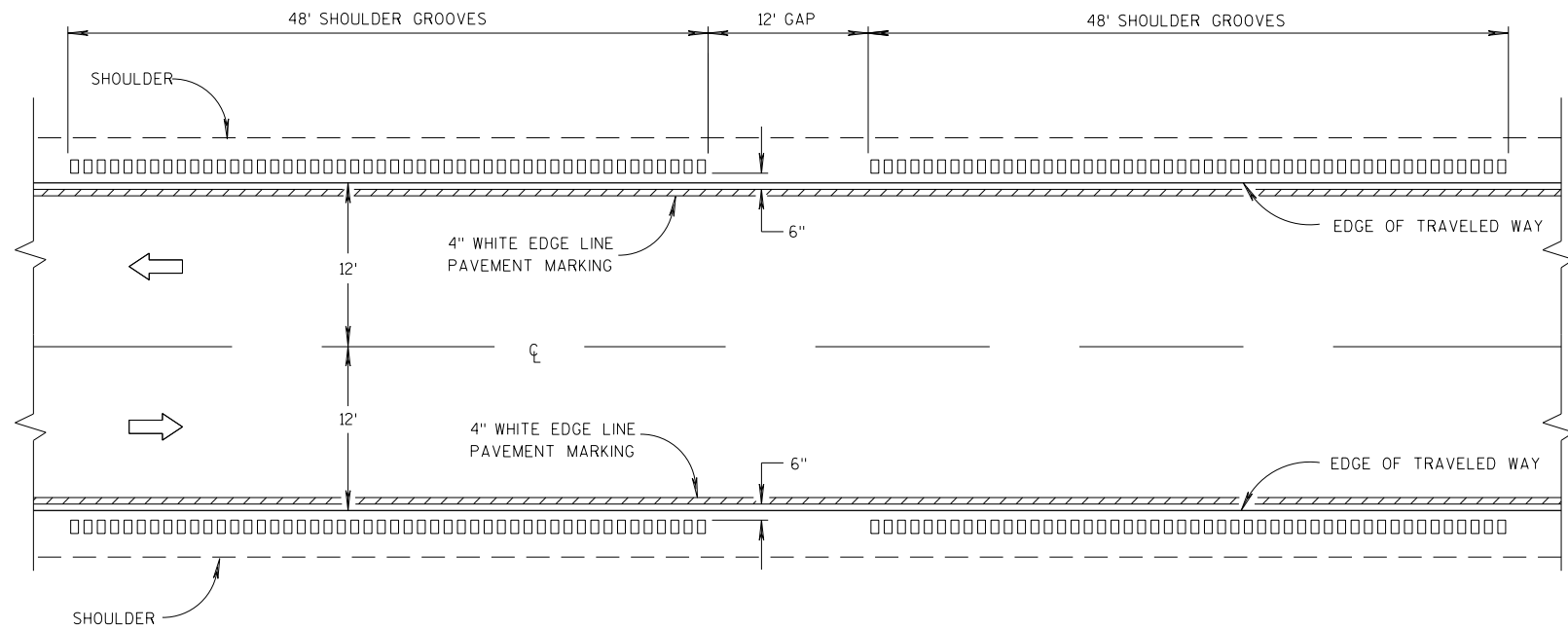
APRON ENDWALLS FOR CULVERT PIPE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 11/30/94 DATE	/S/ Rory L. Rhinesmith CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	



PLAN VIEW
SHOULDER WITH GROOVES

PLAN VIEW
(SINGLE GROOVE)

PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP



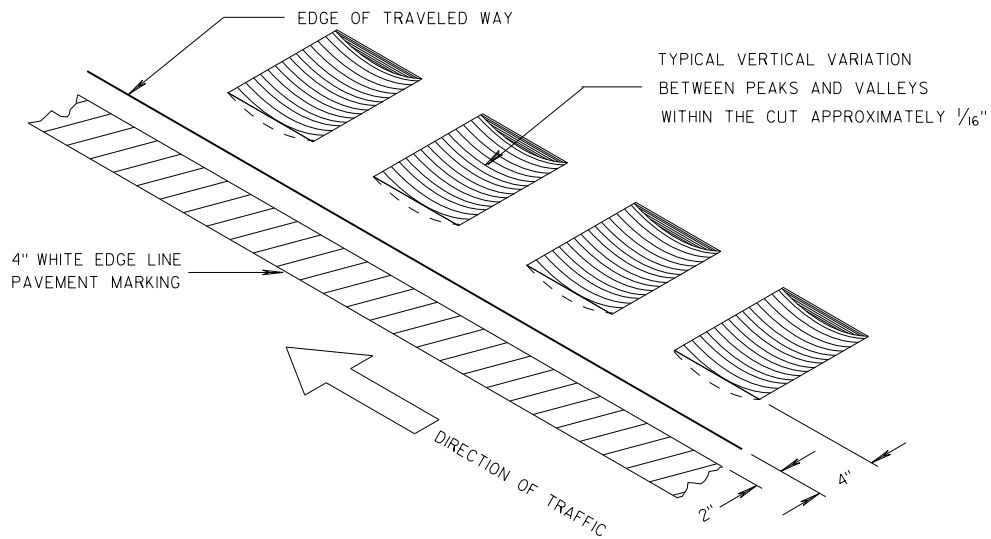
TYPE 1
2-LANE SHOULDER RUMBLE STRIP

GENERAL NOTES

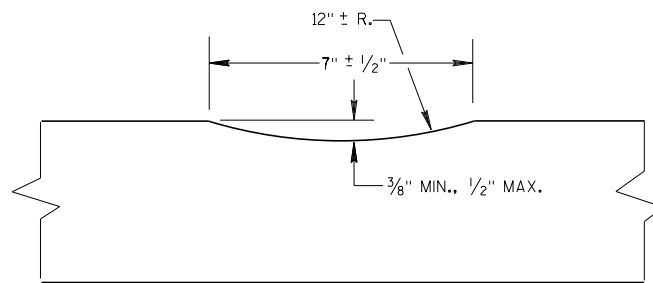
DETAILS OF CONSTRUCTION SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

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



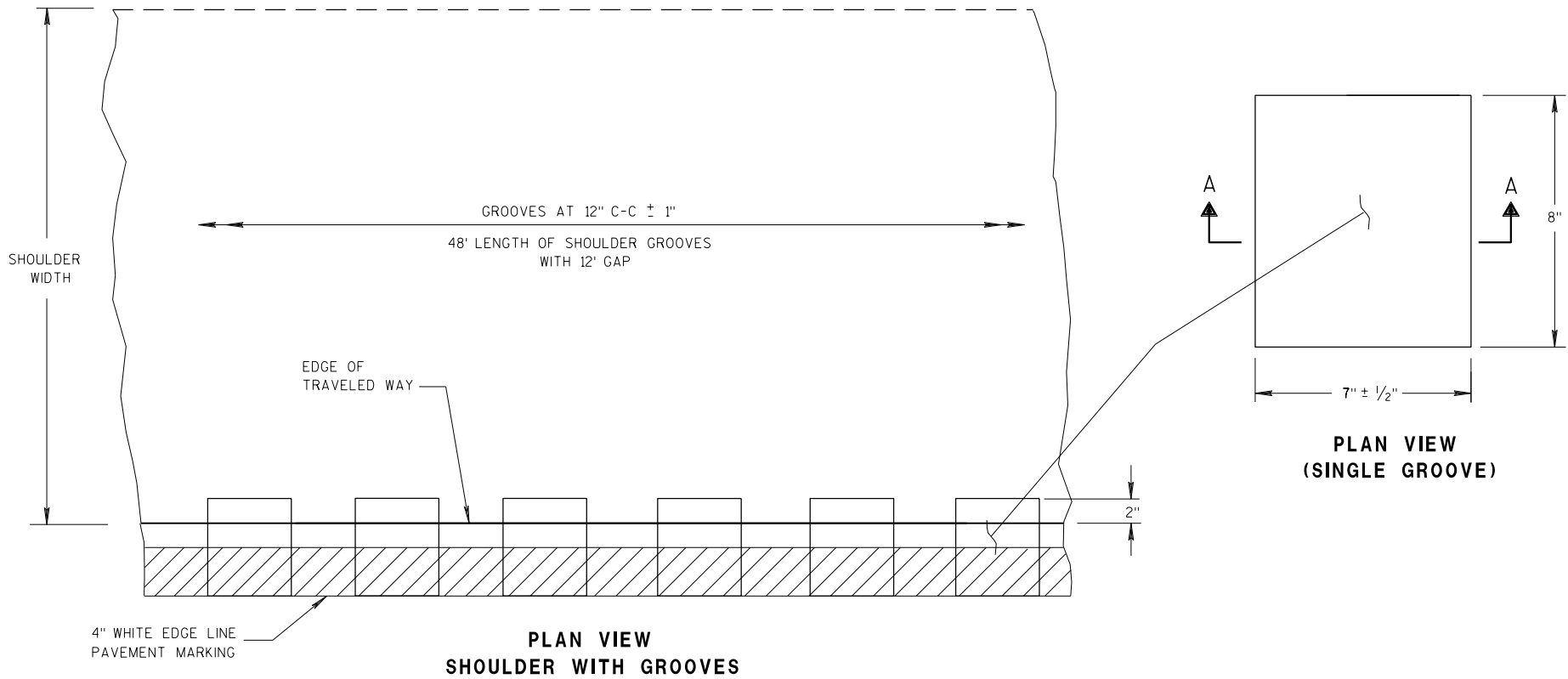
ISOMETRIC



SECTION A-A

2-LANE RURAL
SHOULDER RUMBLE STRIP, MILLING

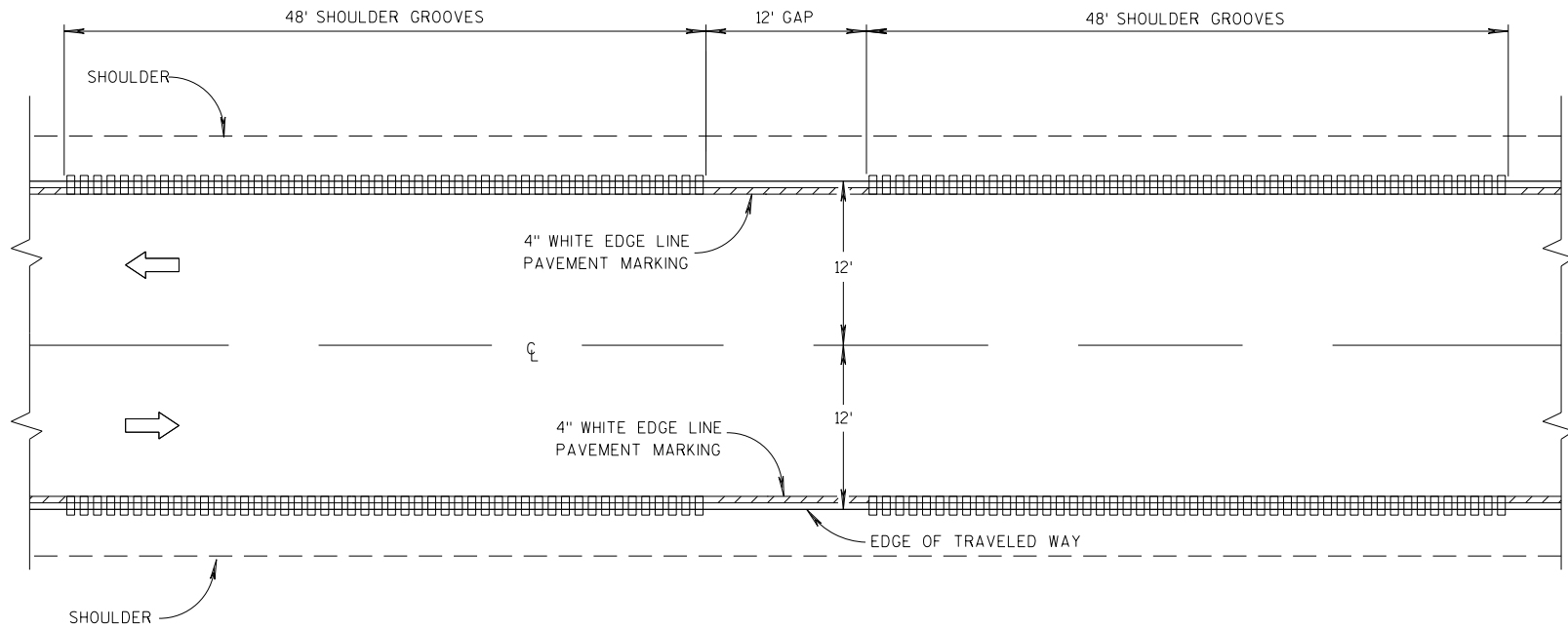
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



PLAN VIEW
SHOULDER WITH GROOVES

PLAN VIEW
(SINGLE GROOVE)

6
PLACEMENT DETAIL FOR TYPE 2 MILLED RUMBLE STRIP



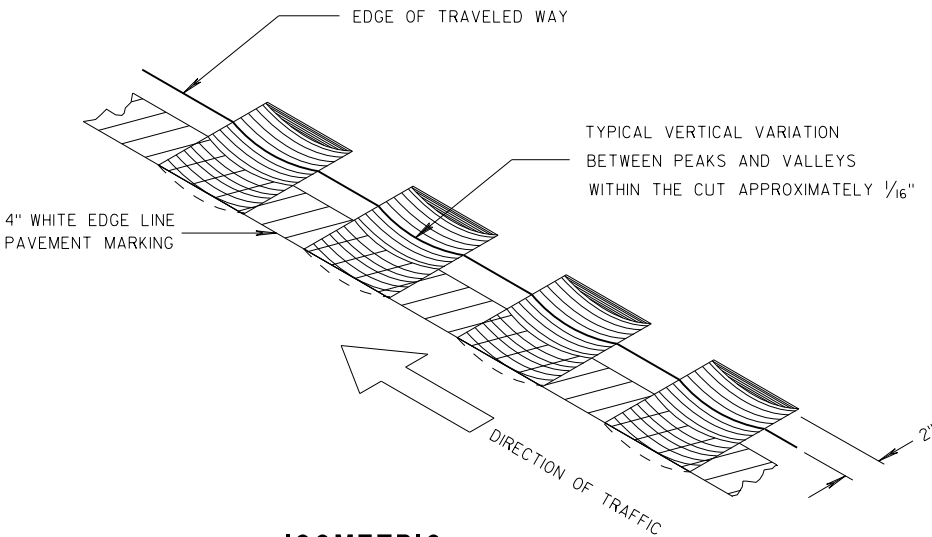
TYPE 2
2-LANE SHOULDER RUMBLE STRIP

GENERAL NOTES

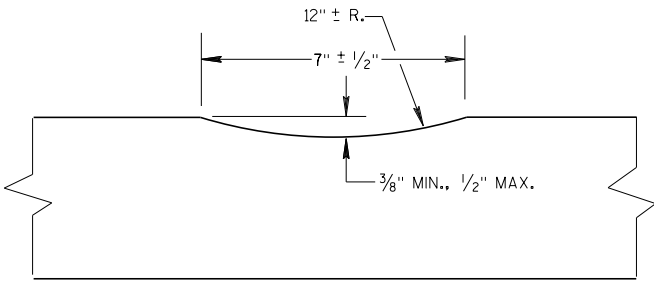
DETAILS OF CONSTRUCTION SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

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



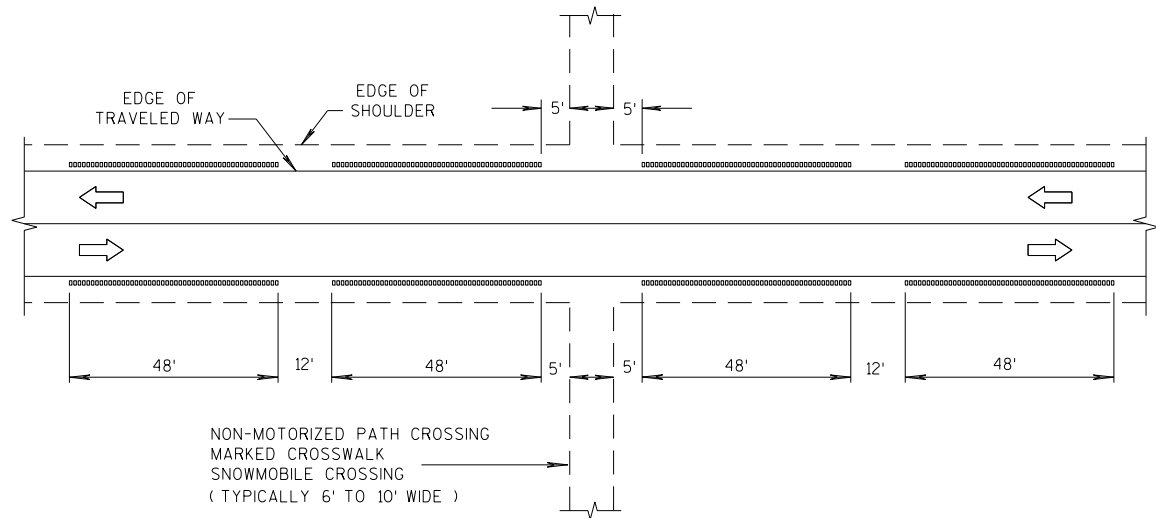
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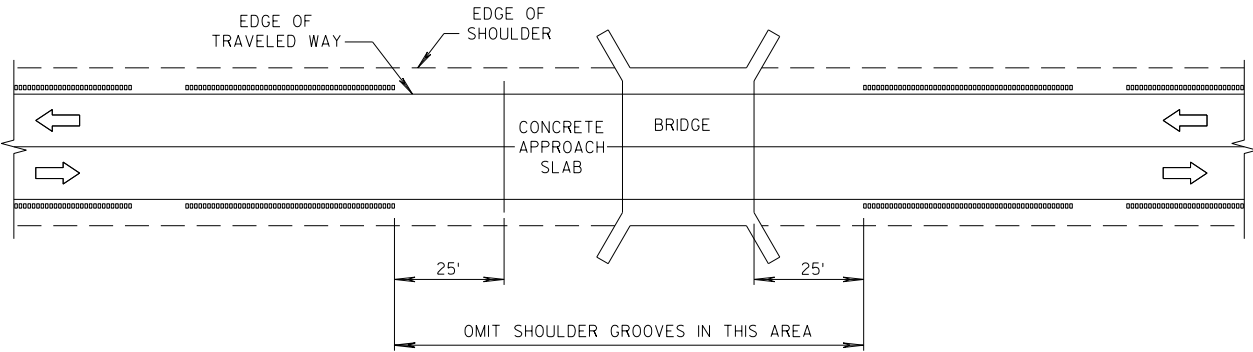
SECTION A-A

2-LANE RURAL
SHOULDER RUMBLE STRIP, MILLING

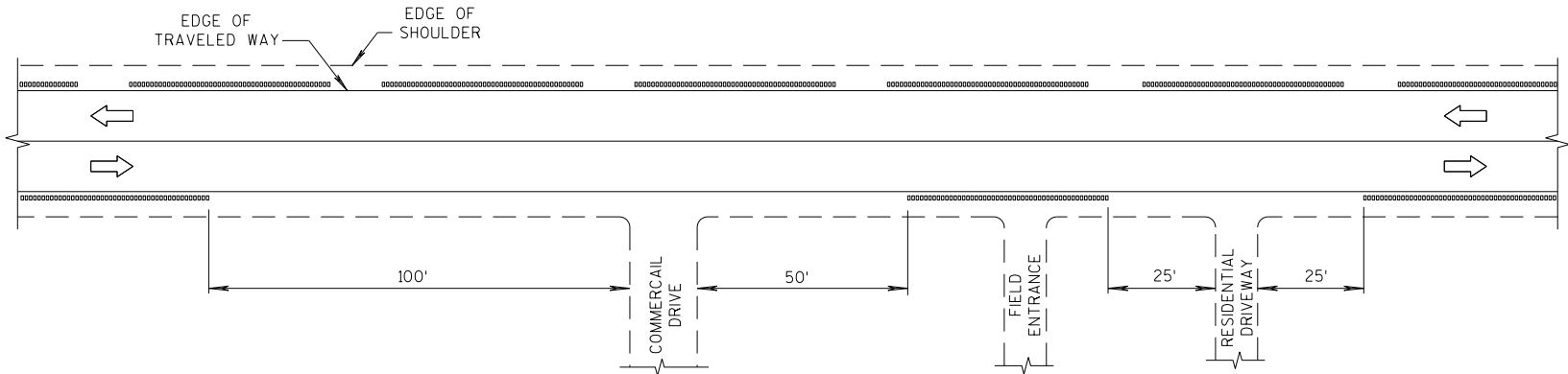
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



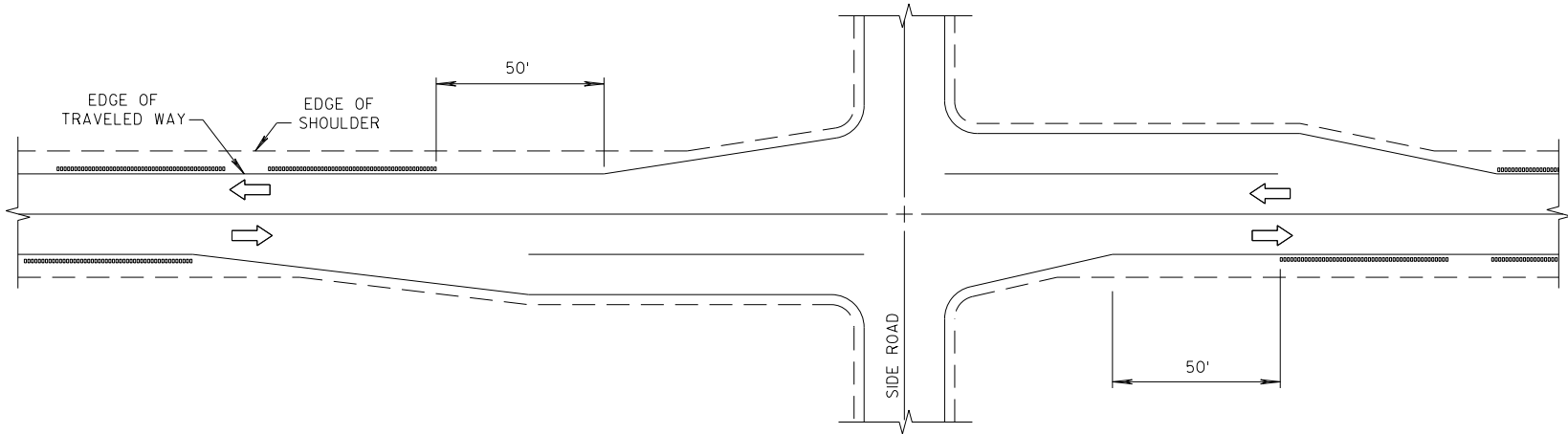
SHOULDER GROOVES AT MISCELLANEOUS CROSSINGS



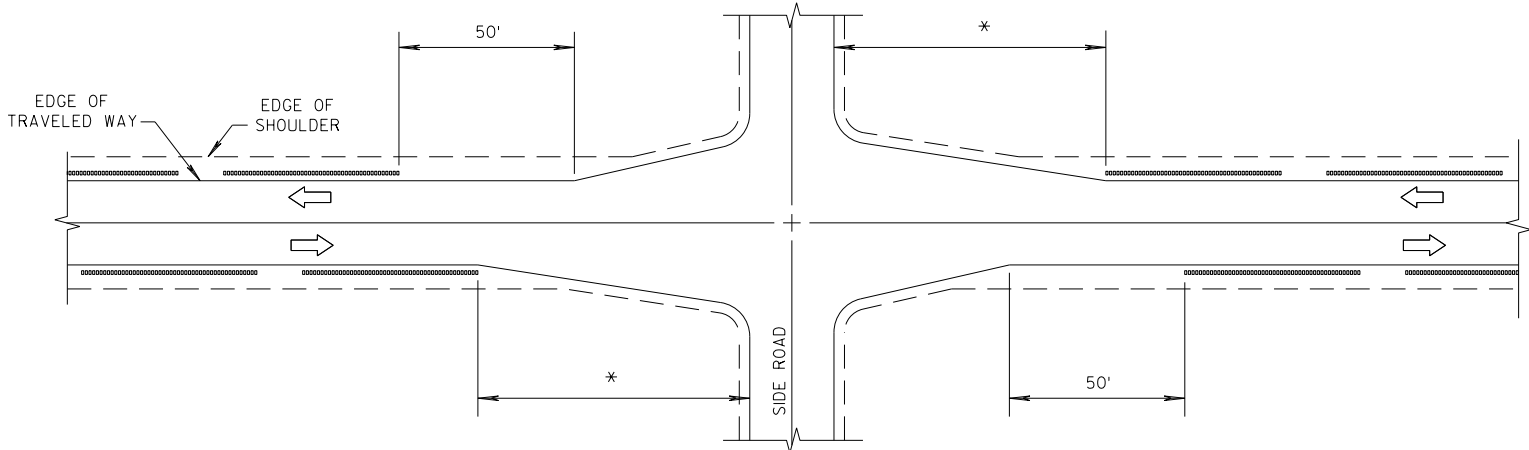
SHOULDER GROOVES AT BRIDGES



SHOULDER GROOVES AT DRIVEWAYS^①

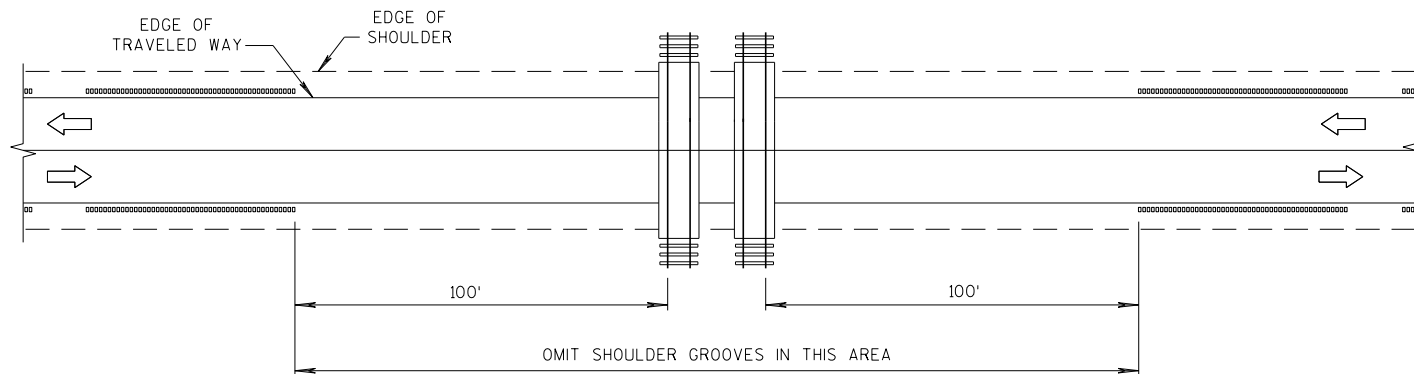


SHOULDER GROOVES AT WITH RIGHT TURN LANE

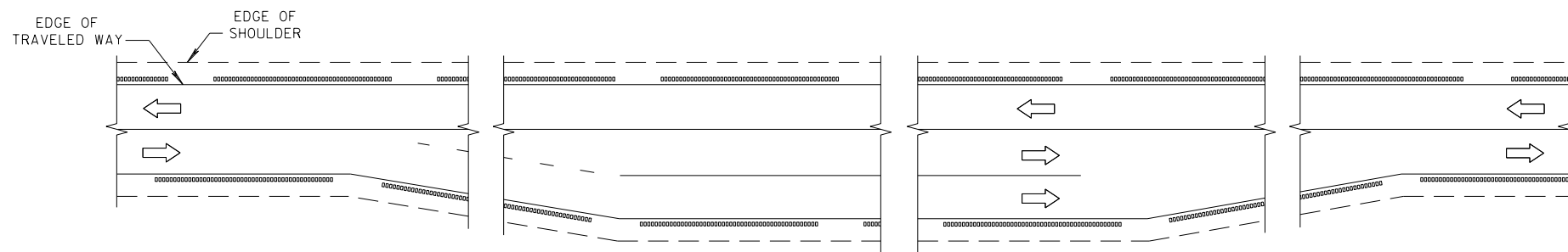


* GREATER OF 100' OR APPROACH TAPER LENGTH

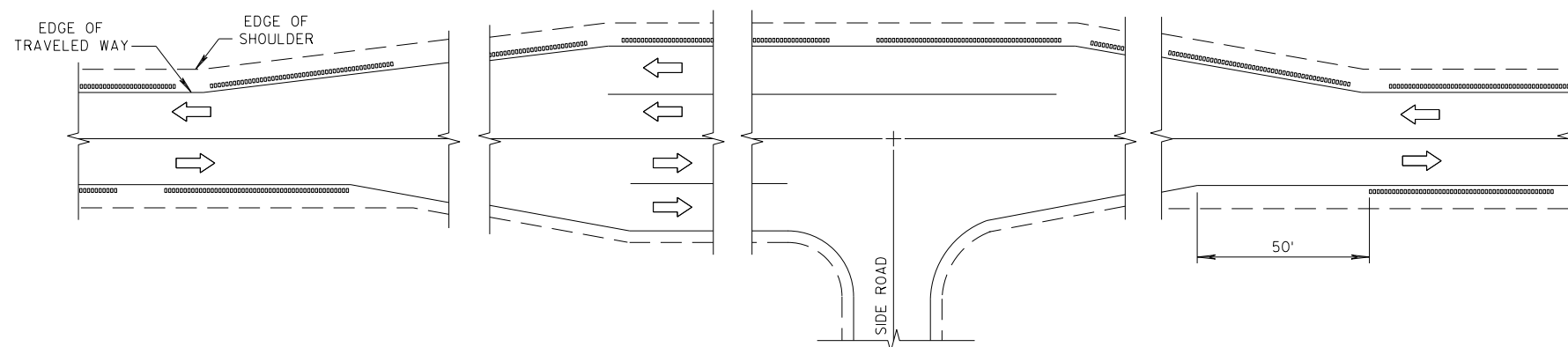
SHOULDER GROOVES AT INTERSECTIONS WITH APPROACH TAPER



SHOULDER GROOVES AT RAILROADS



SHOULDER GROOVES AT PASSING AND CLIMBING LANES

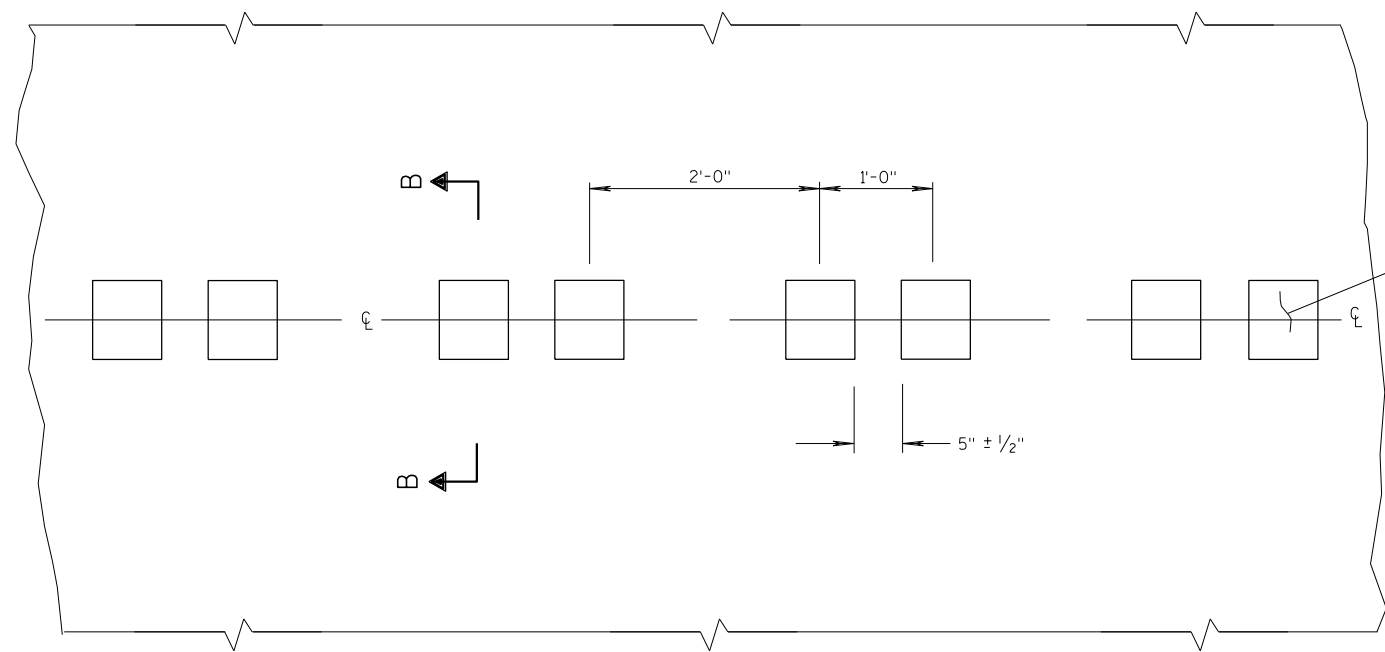


SHOULDER GROOVES AT BYPASS LANES

2-LANE RURAL
SHOULDER RUMBLE STRIP, MILLING

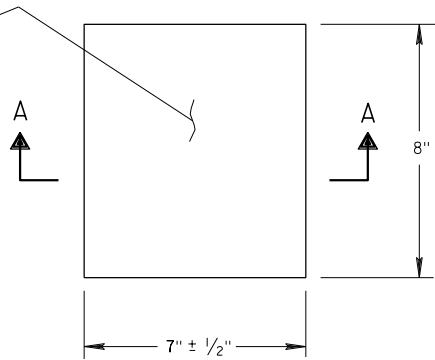
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



PLAN VIEW
CENTER LINE WITH GROOVES

PLACEMENT DETAIL FOR MILLED RUMBLE STRIP



PLAN VIEW
(SINGLE GROOVE)

GENERAL NOTES

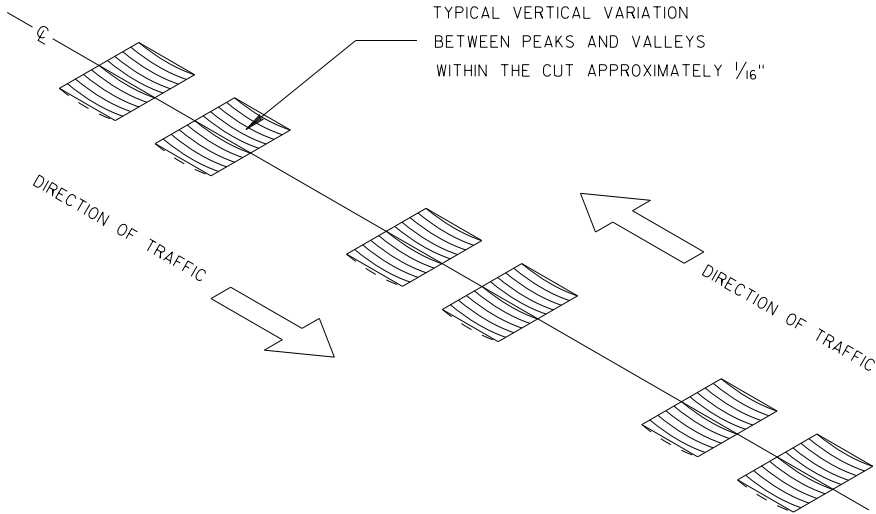
DETAILS OF CONSTRUCTION SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

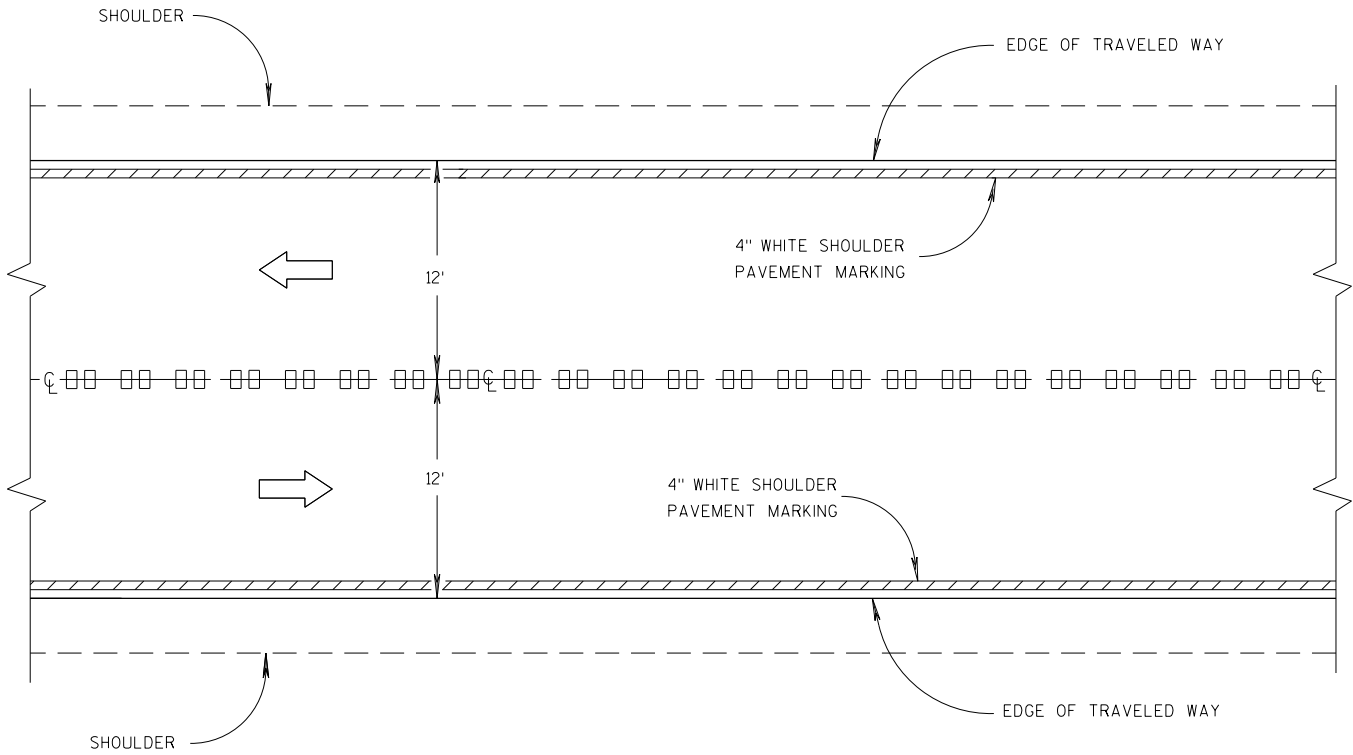
INSTALL PERMANENT MARKING EPOXY 4-INCH AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

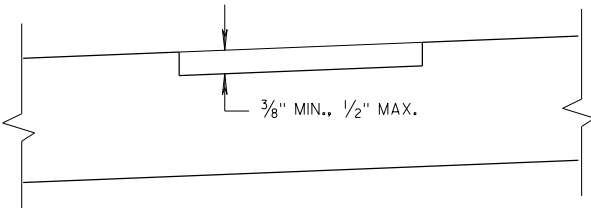
- ① CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS, WHEN DIRECTED BY THE ENGINEER.



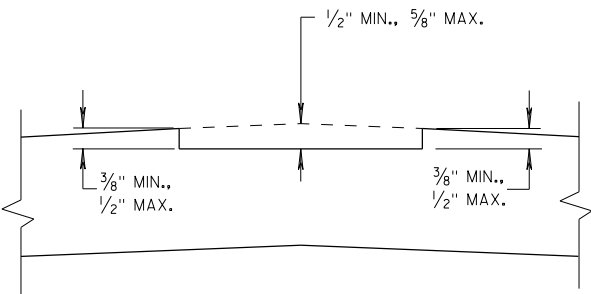
ISOMETRIC



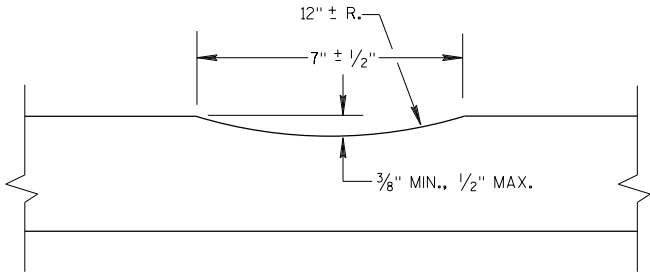
CENTER LINE GROOVES ON TWO-WAY ROADWAYS



SECTION B-B
SUPERELEVATED ROADWAY



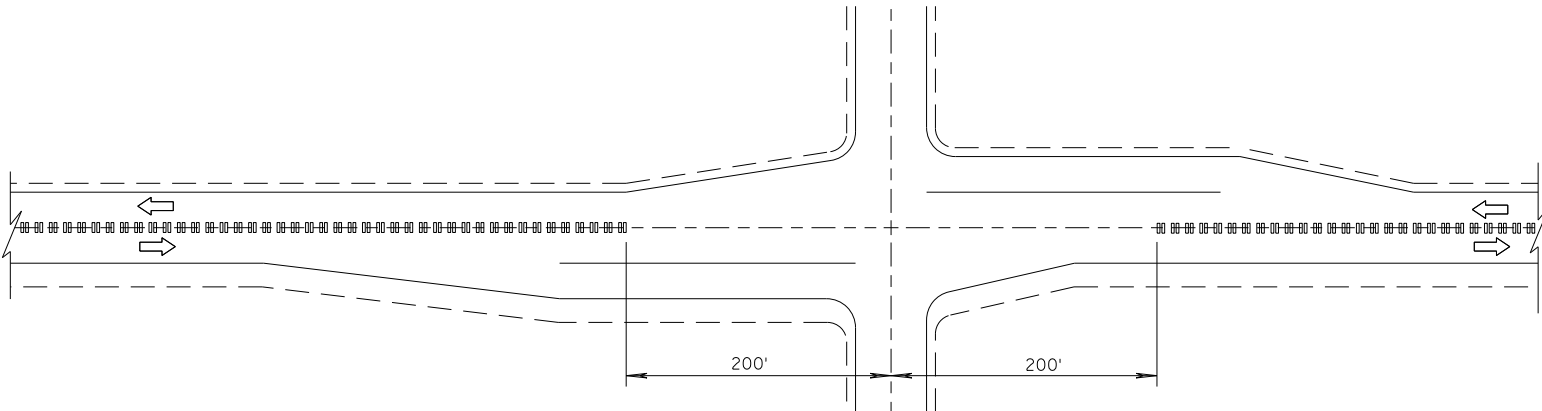
SECTION B-B
CROWNED ROADWAY



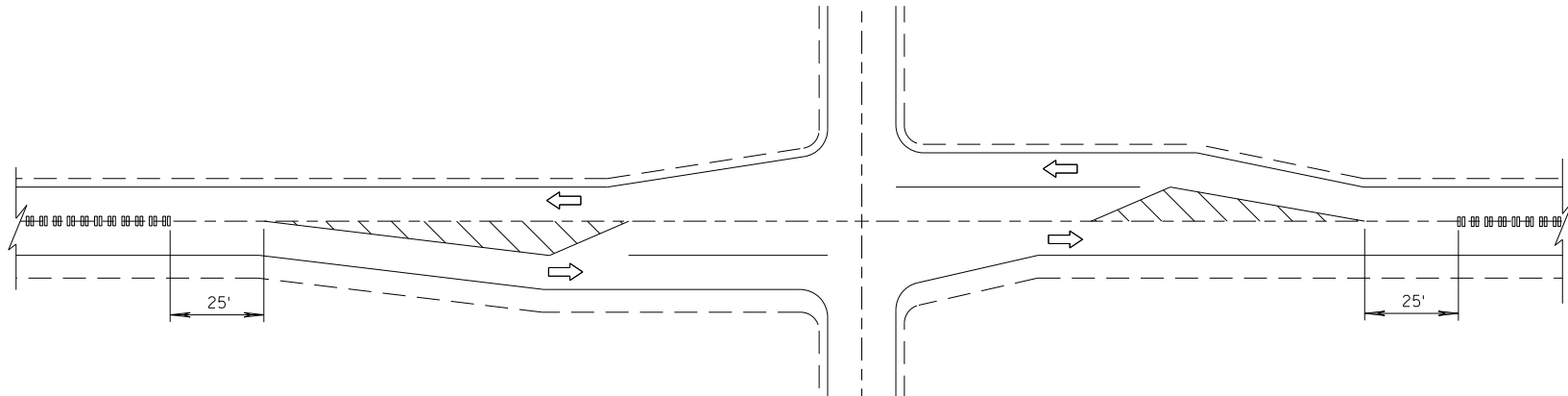
SECTION A-A

2-LANE RURAL
CENTER LINE RUMBLE STRIP,
MILLING

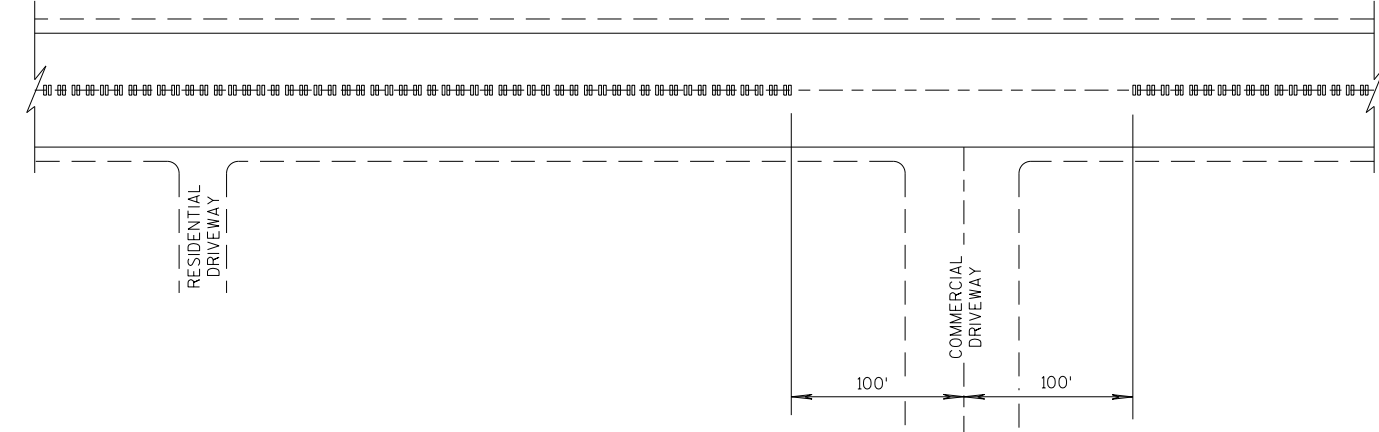
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



CENTER LINE GROOVES AT INTERSECTIONS



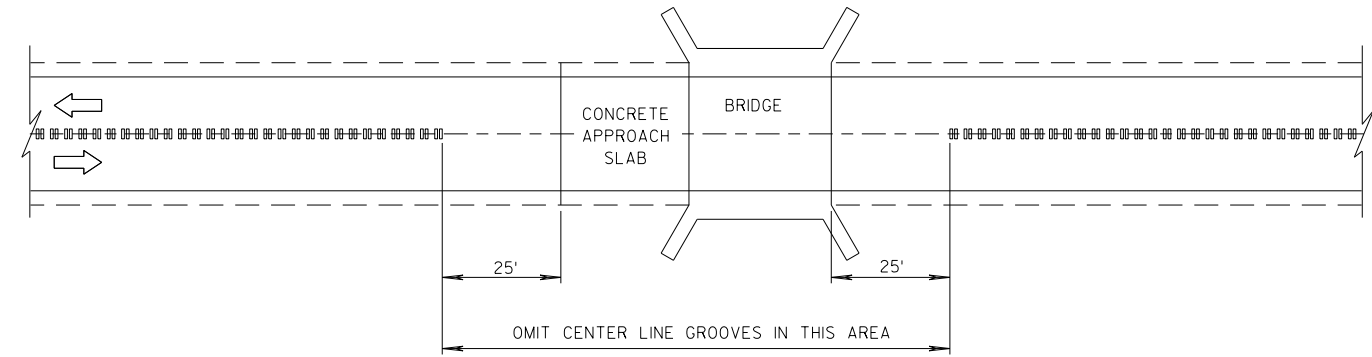
CENTER LINE GROOVES AT INTERSECTIONS
(WITH LEFT TURN LANES)



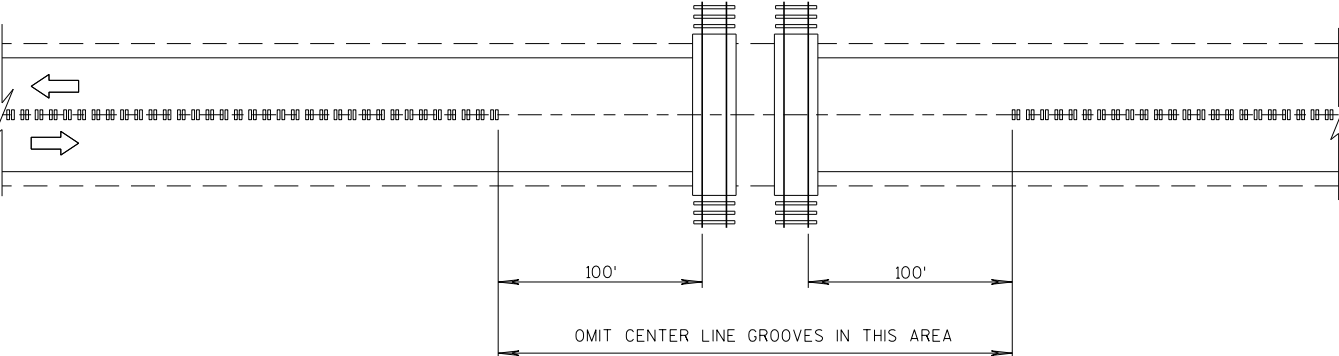
CENTER LINE GROOVES AT DRIVEWAYS

1

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



CENTER LINE GROOVES AT BRIDGES



CENTER LINE GROOVES AT RAILROADS

2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 7/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

BILL OF MATERIALS

NOTE NO.	DESCRIPTION
①	WOOD BREAKAWAY TERMINAL POST: 5 1/2" X 7 1/2" X 3'-9"
②	STEEL TUBE TS 8" X 6" X 0.188", 6'-0"
④	WOOD BREAKAWAY CRT POST: 6" X 8" X 6'-0"
⑤	WOOD OFFSET BLOCKS: 6' X 8" X 1'-2"
⑥	PIPE SLEEVE: 2" X 5 1/2" STANDARD PIPE
⑦	BEARING PLATE
⑧	BCT CABLE ASSEMBLY
⑨	CABLE ANCHOR BOX
⑩	STRUT & YOKE
⑪	STEEL PLATE BEAM, END PANEL 12 GA.
⑫	STEEL PLATE BEAM: 12 GA. 13'-6 1/2"
⑬	IMPACT HEAD
⑭	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE F PER SECTION 637 OF THE STANDARD SPECIFICATIONS

GENERAL NOTES

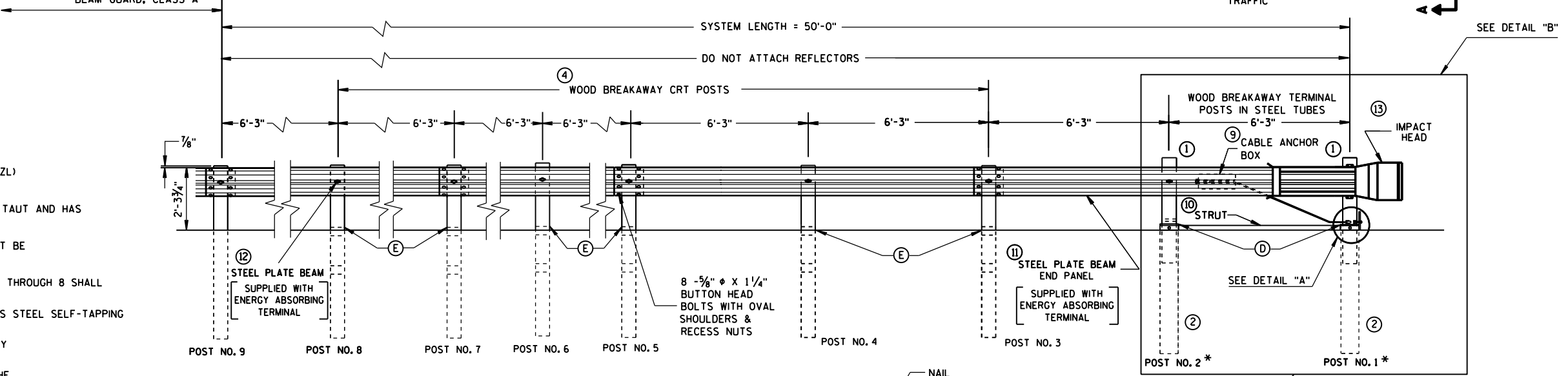
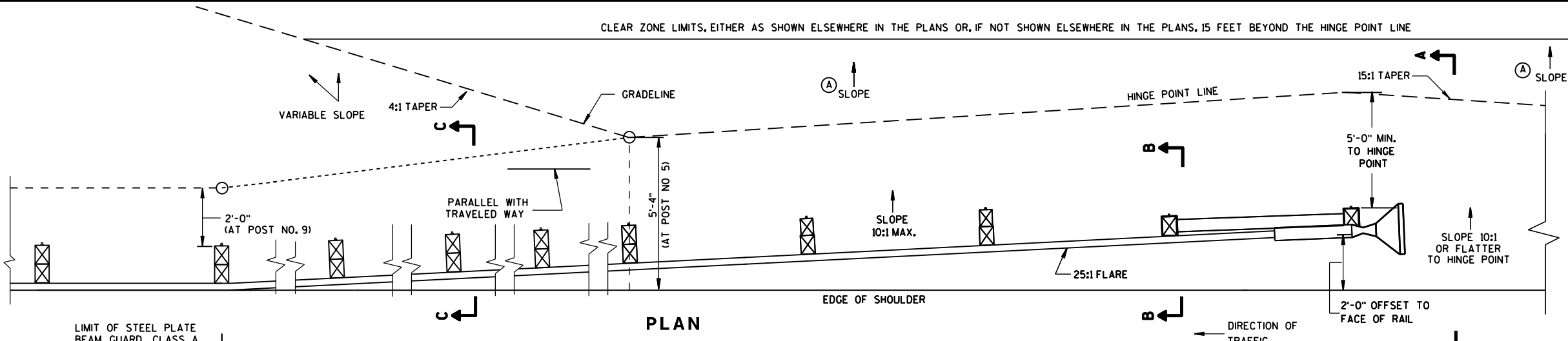
FOLLOW MANUFACTURE'S BOLTING RECOMMENDATIONS.

- (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.
- (D) THE TOP OF THE STEEL TUBE ON POSTS 1 AND 2 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.
- (E) THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST 3 THROUGH 8 SHALL BE 3/4" ABOVE THE FINISHED GROUND LINE.
- (F) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS, ONE SCREW PER CORNER.

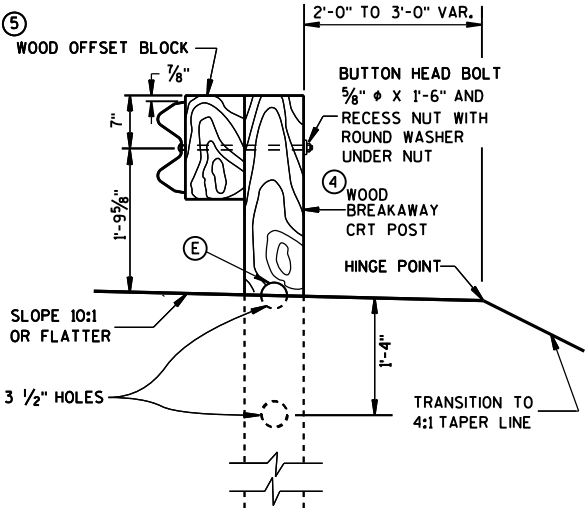
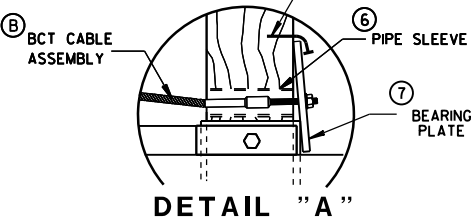
STEEL POSTS SHALL NOT BE ALLOWED FOR USE WITH ENERGY ABSORBING TERMINALS.

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

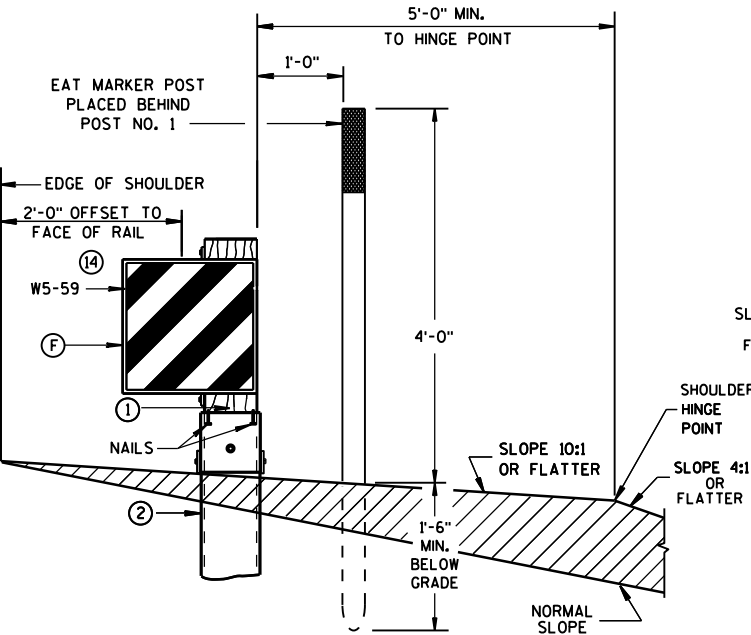
*DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.



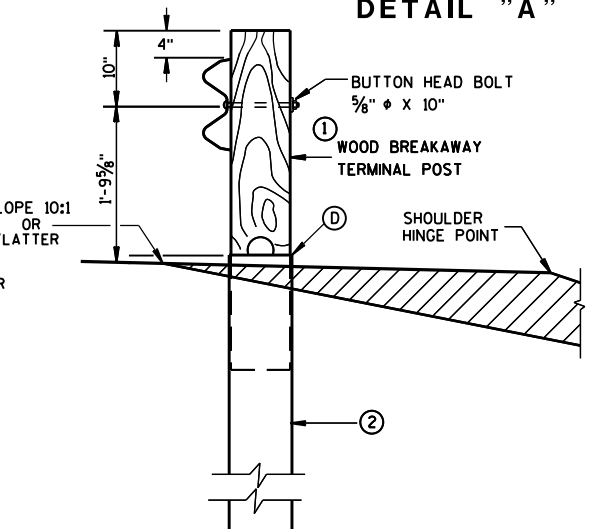
ELEVATION



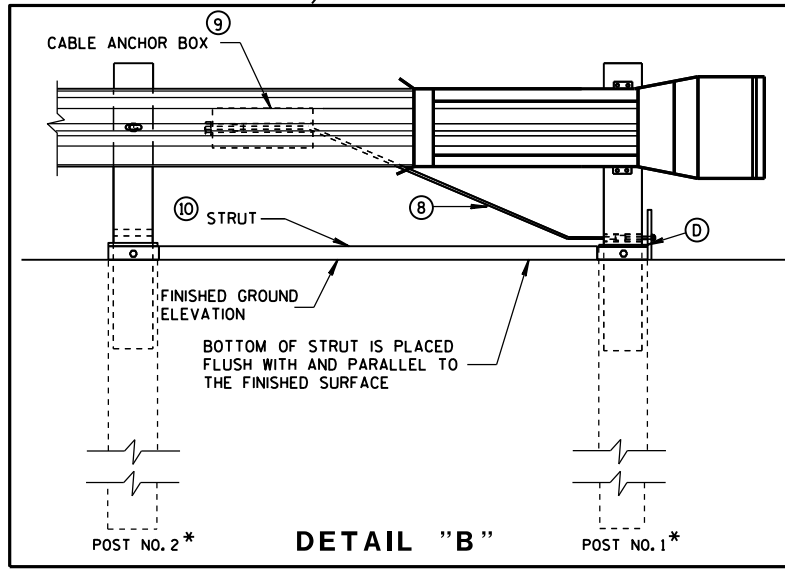
SECTION C-C
TYPICAL AT POST NOS. 6, 8



SECTION A-A
TYPICAL AT POST NO. 1*



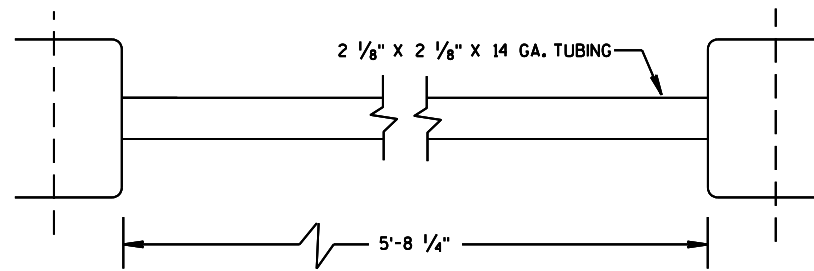
SECTION B-B
TYPICAL AT POST NO. 2*



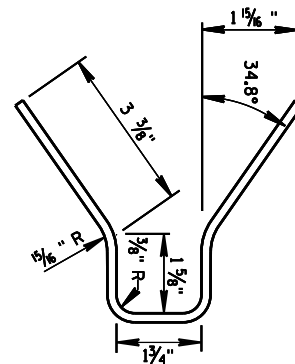
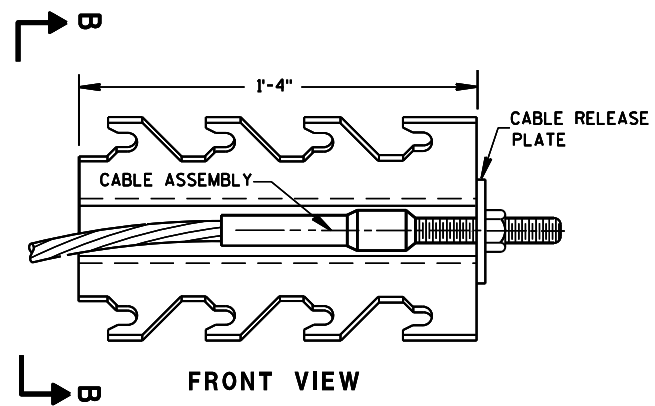
DETAIL "B"

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

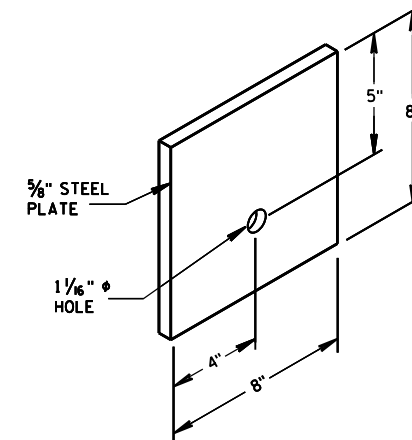
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



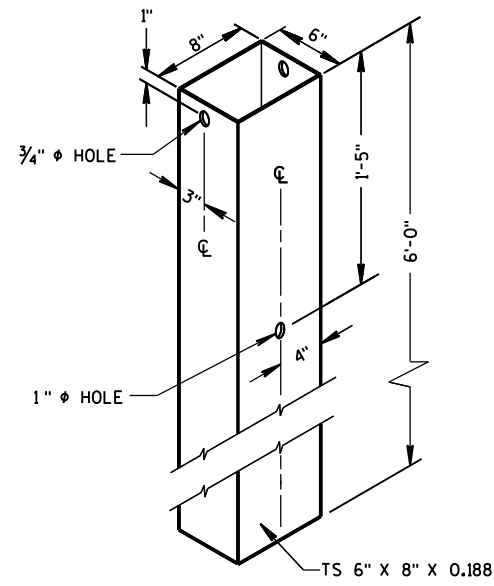
⑩ STRUT DETAIL



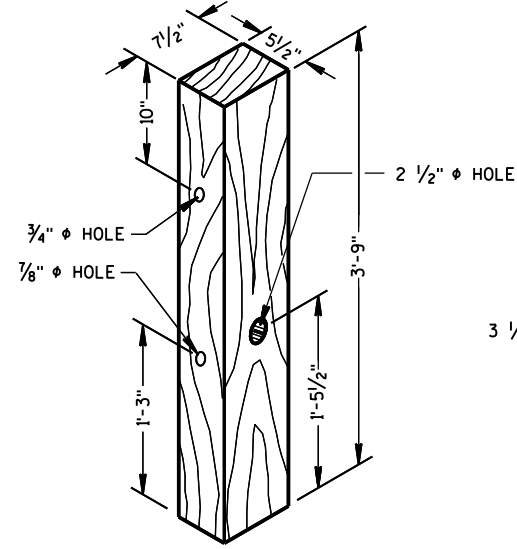
⑨ CABLE ANCHOR BOX



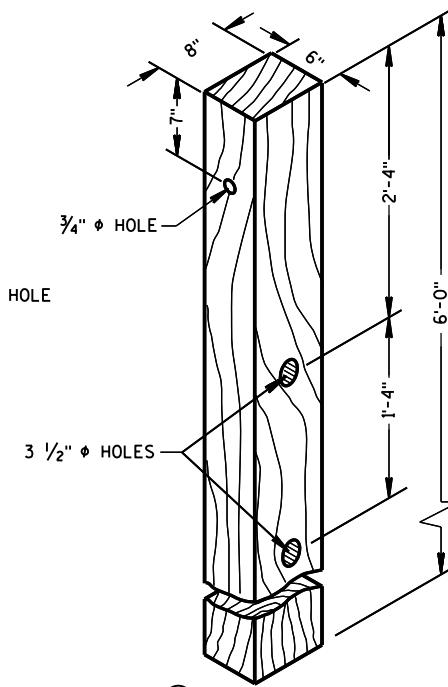
⑦ STEEL BEARING PLATE



② **72" STEEL TUBE**
(POSTS NO. 1-4)



① **TERMINAL POST**

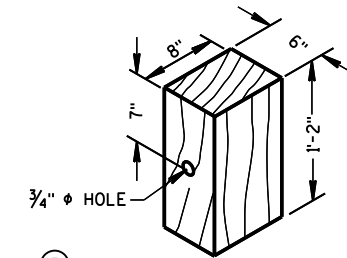


④ **CRT POST**
(POSTS NO'S 5-8)

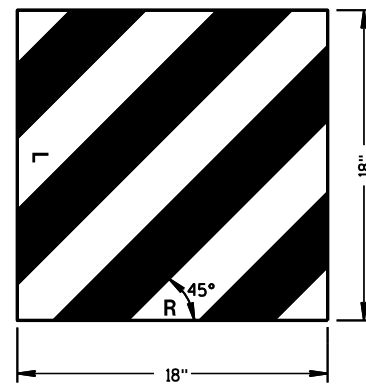
WOOD BREAKAWAY POSTS

GENERAL NOTES

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

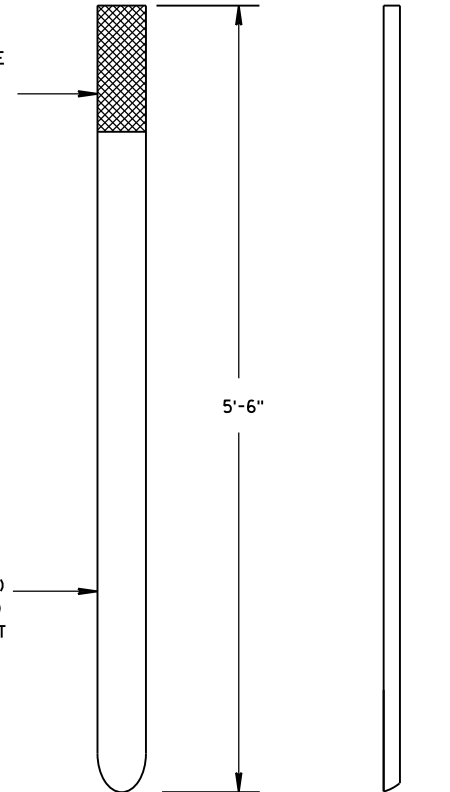


⑤ **WOOD OFFSET BLOCK**
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



⑭ **REFLECTIVE SHEETING DETAILS**

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



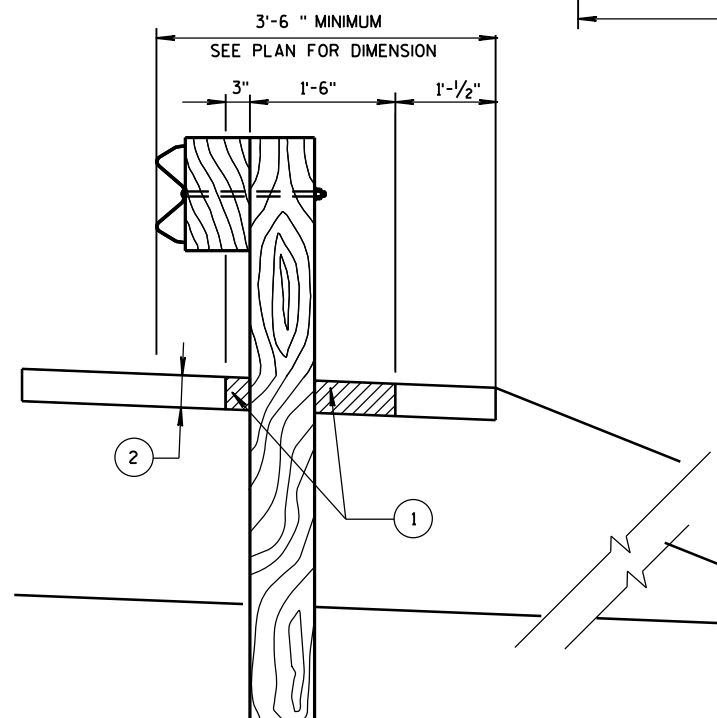
FRONT VIEW SIDE VIEW

E.A.T. MARKER POST

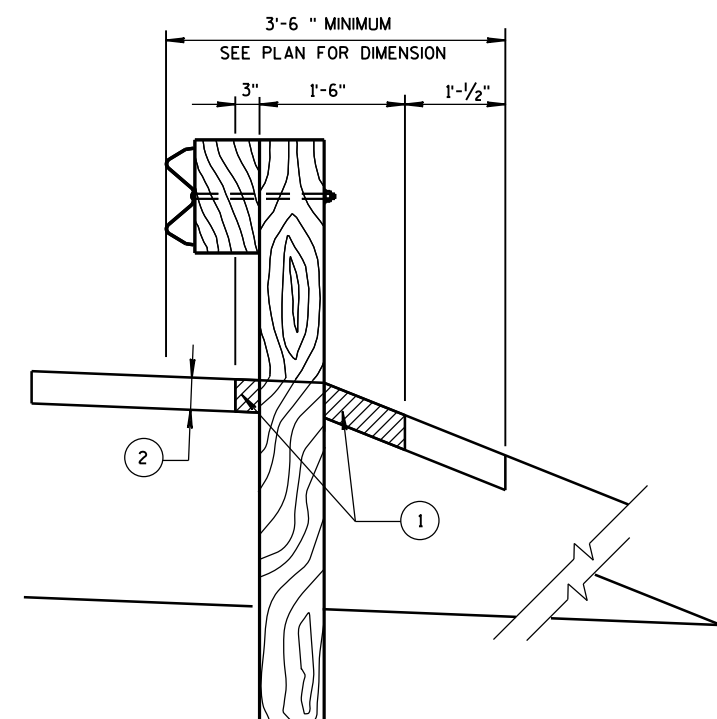
**STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

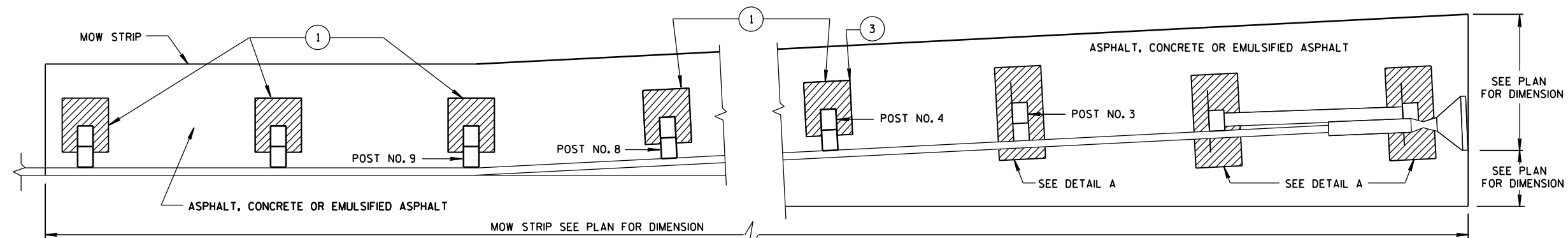
APPROVED
June 2017 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA UNIT SUPERVISOR



SECTION A-A

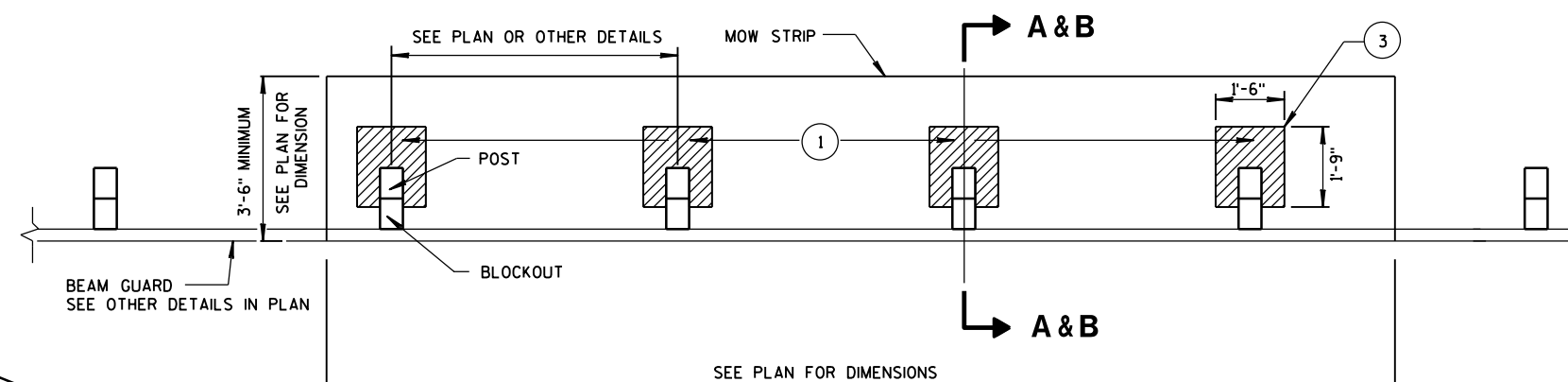


SECTION B-B



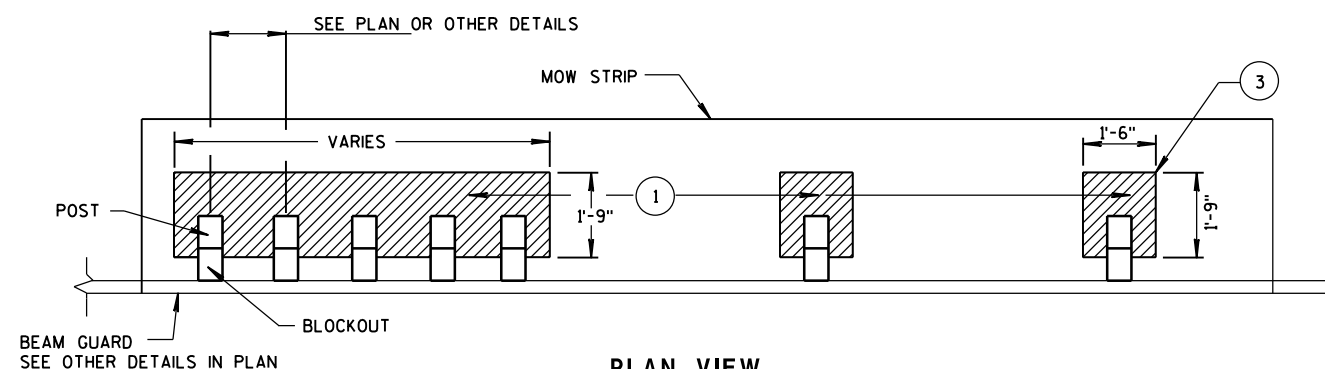
PLAN VIEW

MOW STRIP LAYOUT FOR ENERGY ABORING TERMINAL



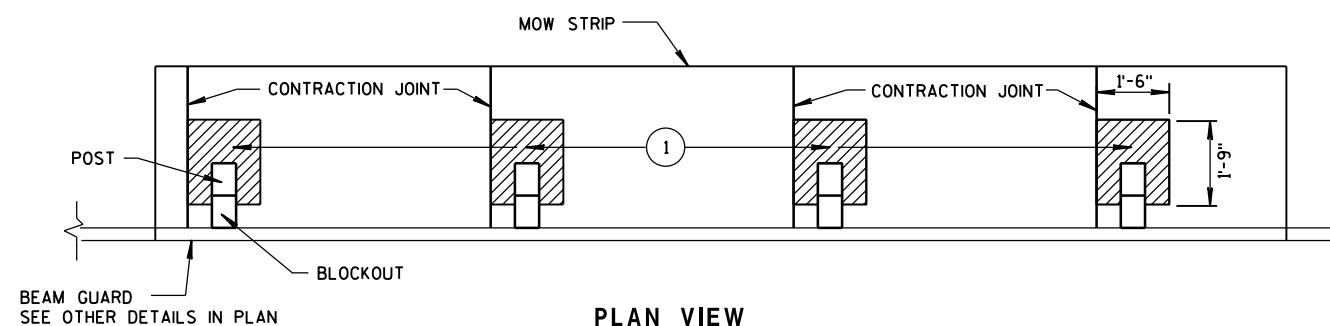
PLAN VIEW

MOW STRIP FOR TYPICAL BLOCKOUT LAYOUT



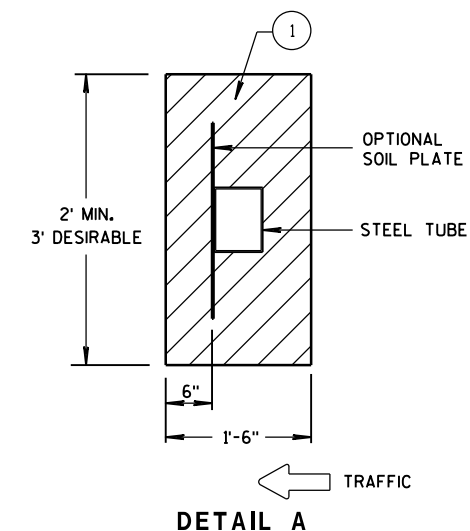
PLAN VIEW

MOW STRIP FOR TIGHT SPACING LAYOUT

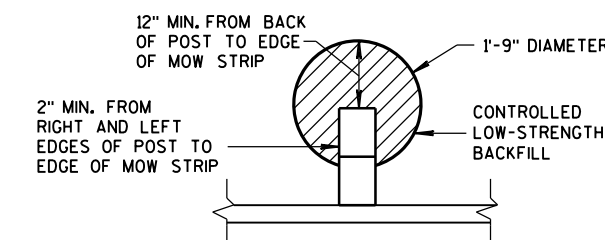


PLAN VIEW

JOINT PLACEMENT FOR CONCRETE MOW STRIP



DETAIL A

ALTERNATIVE HMA
MOW STRIP DESIGN

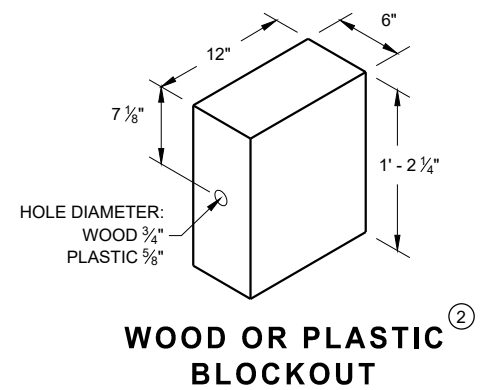
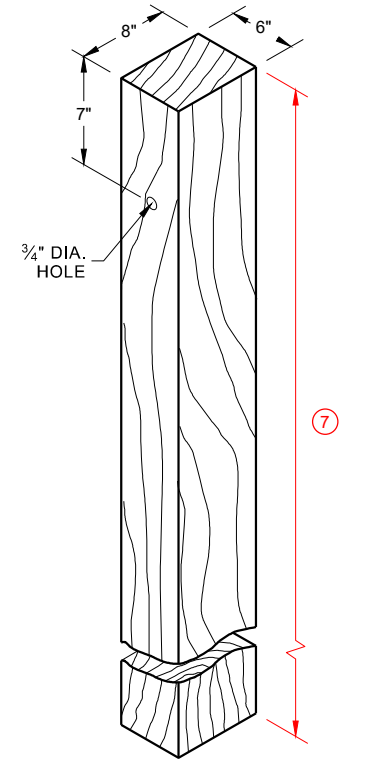
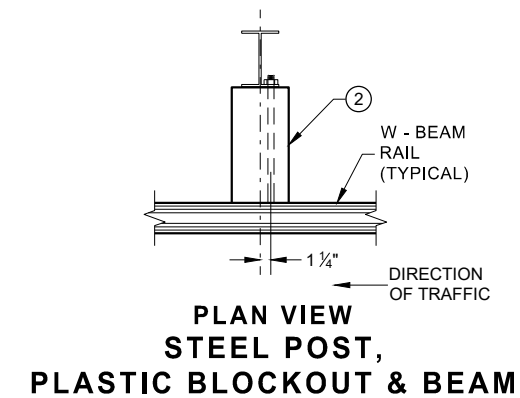
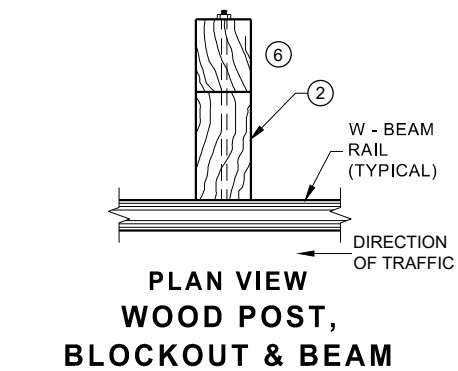
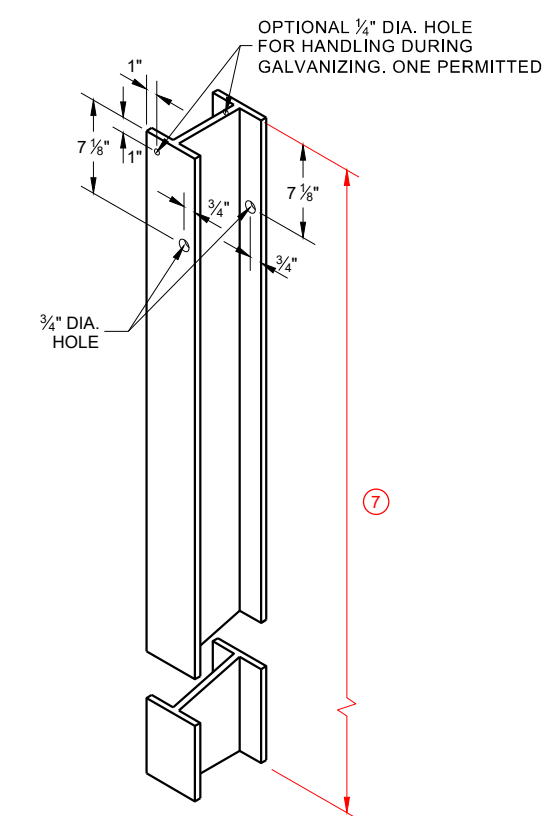
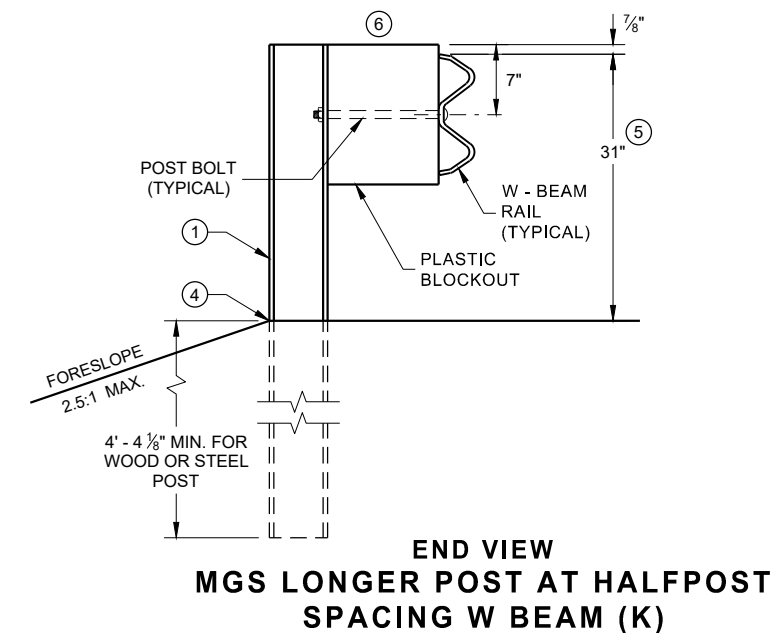
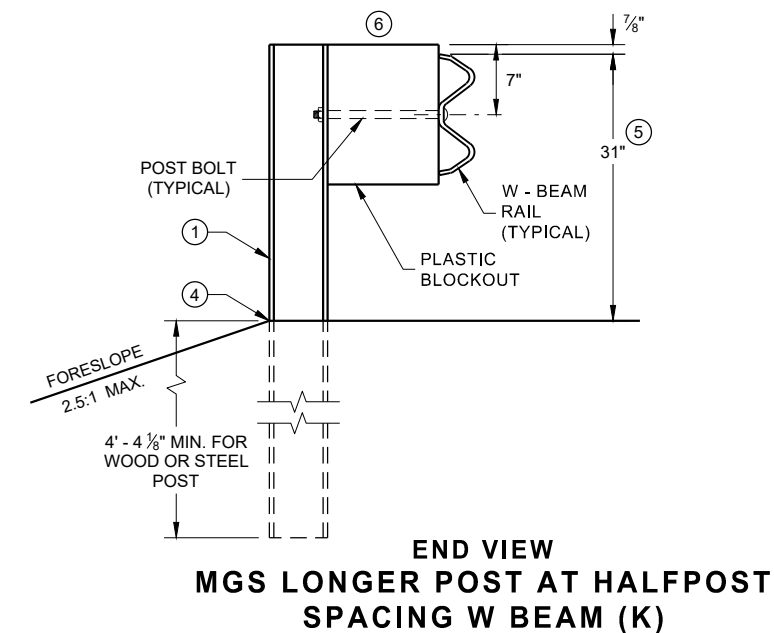
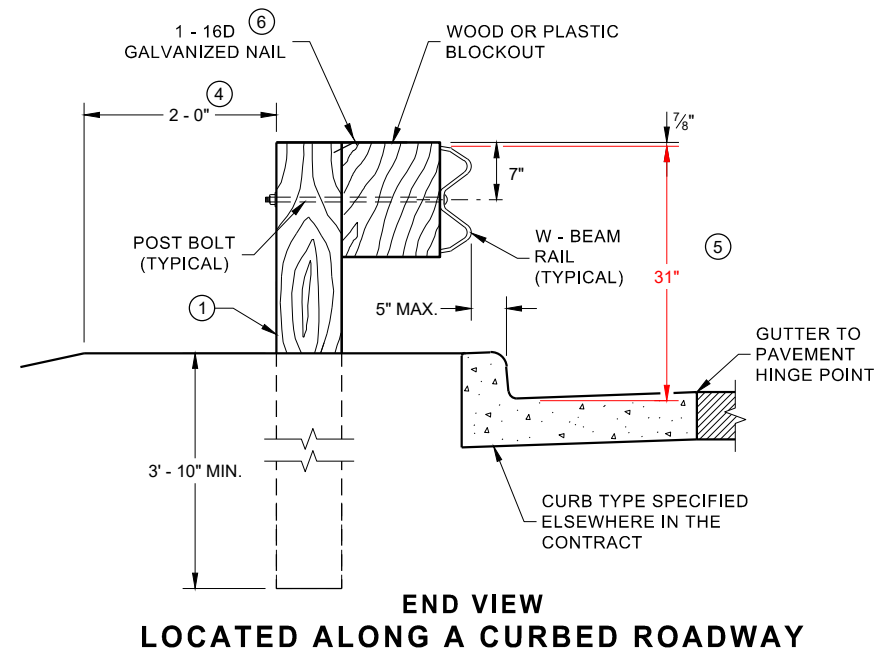
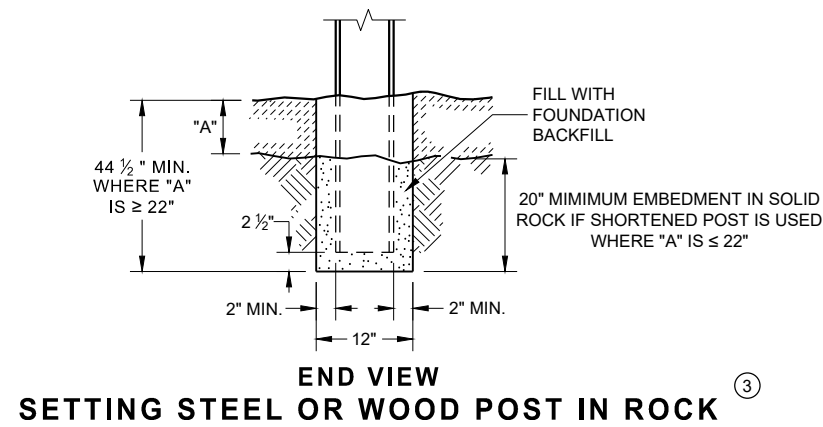
- ① CONTROLLED LOW-STRENGTH BACKFILL OR EMULSIFIED ASPHALT.
- ② DEPTH OF MOW STRIP:
ASPHALT - 4"
CONCRETE - 4"
EMULSIFIED ASPHALT - 1" OR LESS
- ③ FOR EMULSIFIED ASPHALT MOW STRIP LEAVE OUTS NOT REQUIRED. (TYPICAL FOR ALL POSTS.)

GUARDRAIL MOW STRIP

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

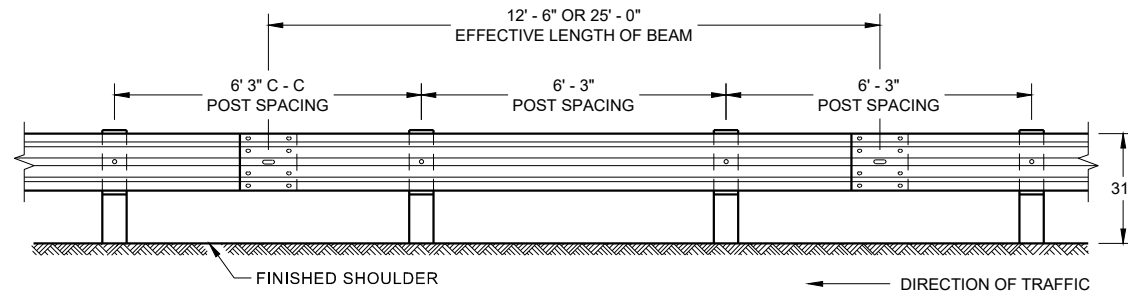
APPROVED
June 2014 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA ENGINEER

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

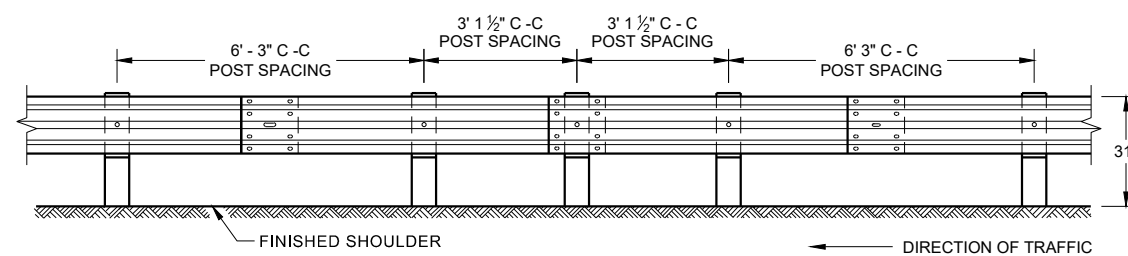


MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

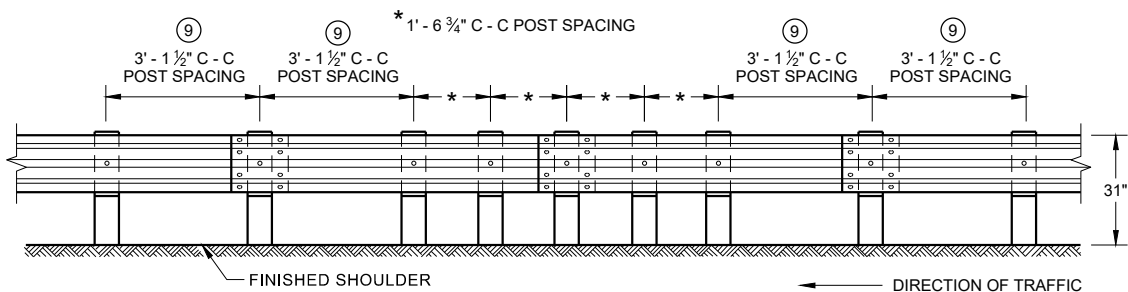
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



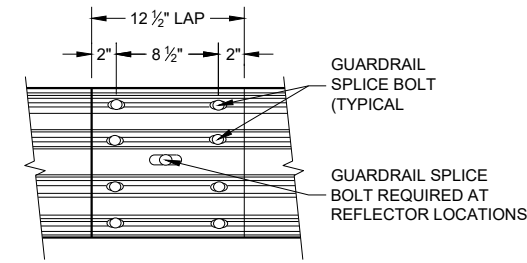
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



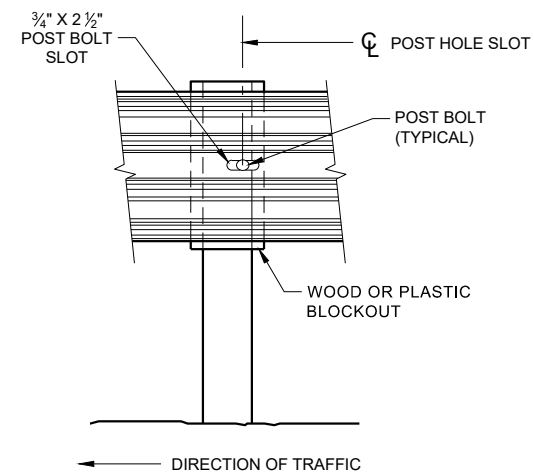
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



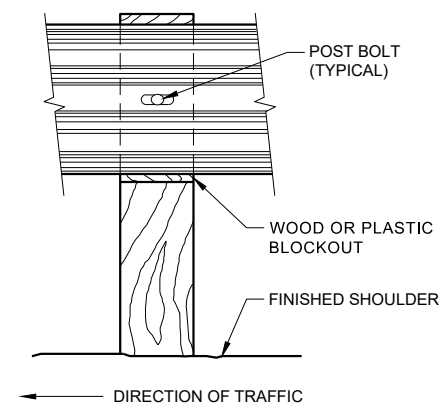
**FRONT VIEW
QUARTER POST SPACING (QS)**



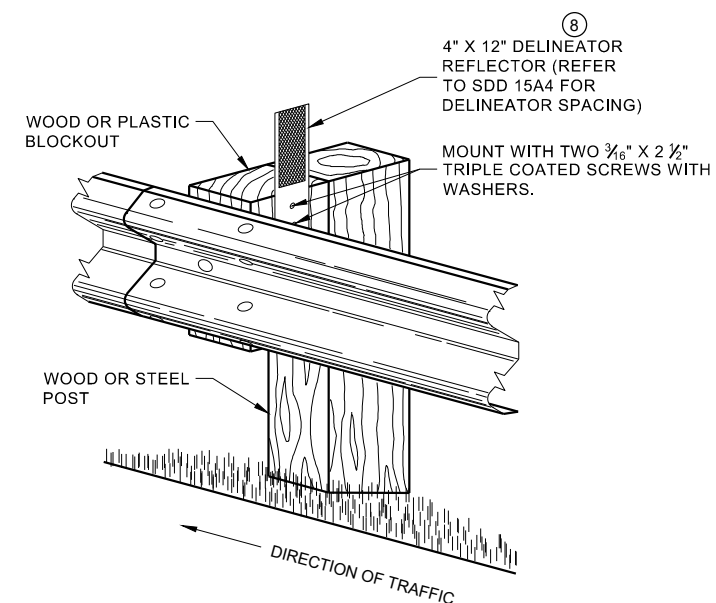
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



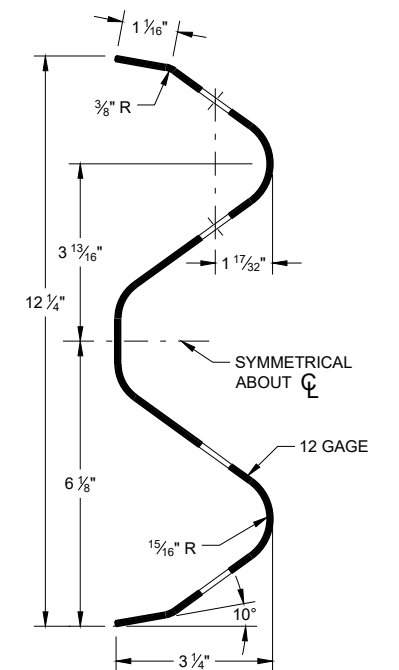
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. 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.



SECTION THRU W-BEAM RAIL

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



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.

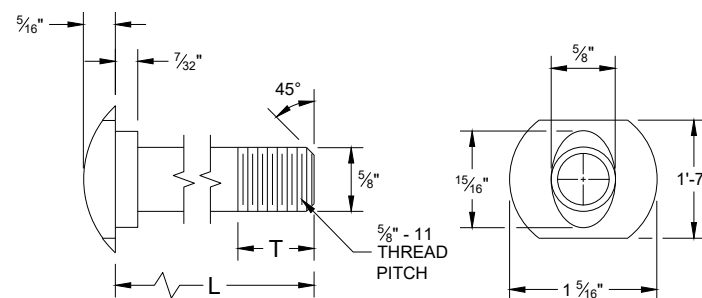


NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.

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

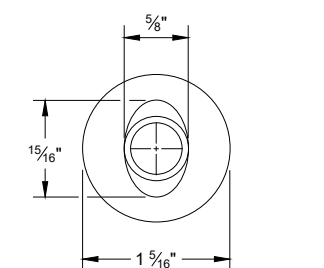
NOTE:

1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF $\frac{3}{16}$ ".
2. IF THE BOLT EXTENDS MORE THAN $\frac{1}{4}$ " FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

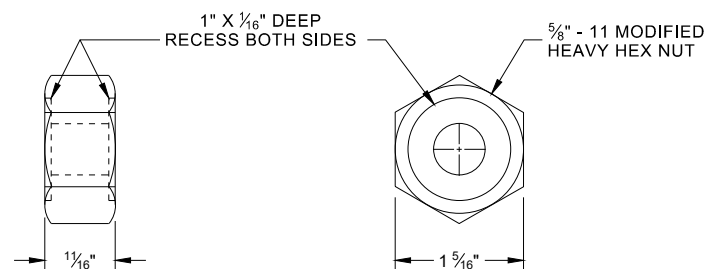


POST BOLT TABLE

L	T (MIN.)
1 ¼"	1 ⅛"
2"	1 ¾"
10"	4"
14"	4 ⅙"
18"	4"
21"	4 ⅙"
25"	4"

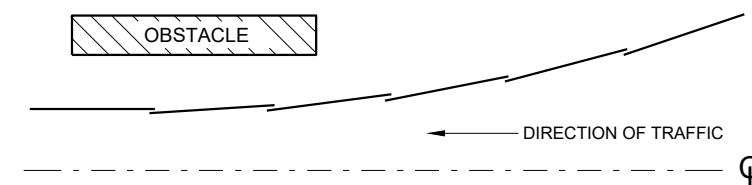


ALTERNATE BOLT HEAD

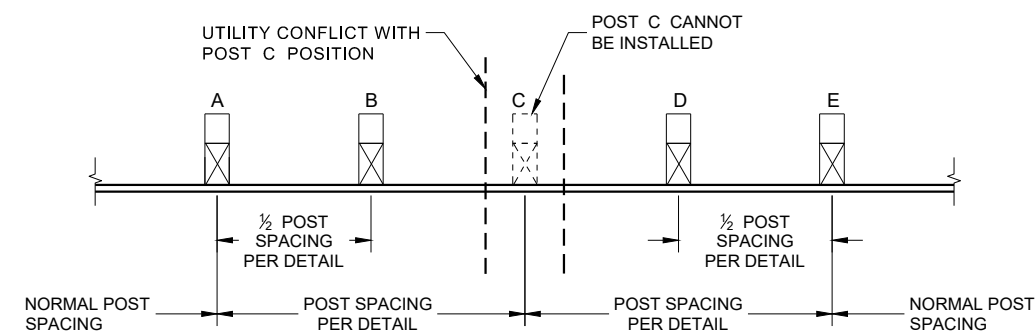


POST BOLT, SPLICE BOLT AND RECESS NUT

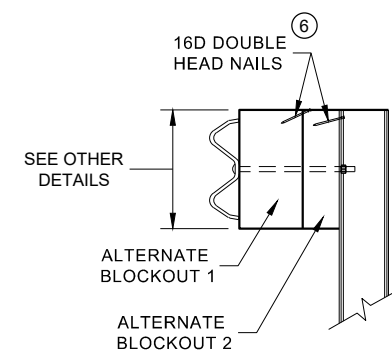
⑥ WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



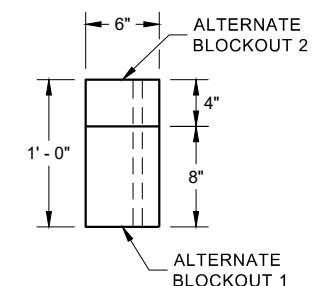
**PLAN VIEW
BEAM LAPPING DETAIL**



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW

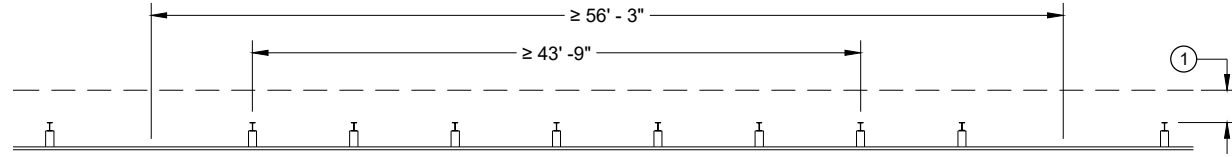


PLAN VIEW

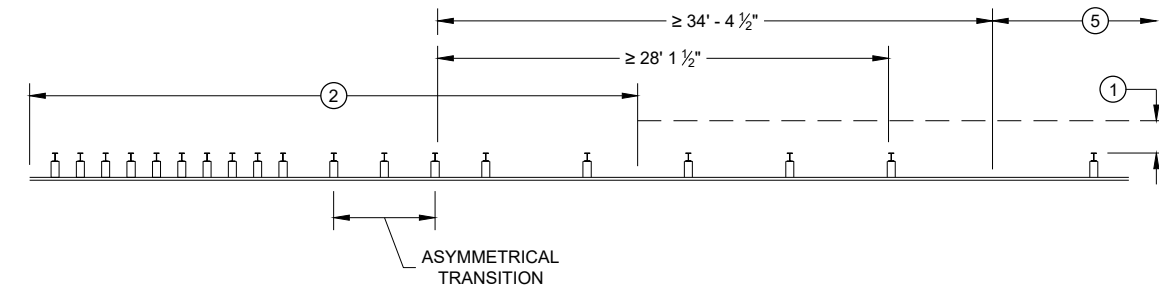
ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

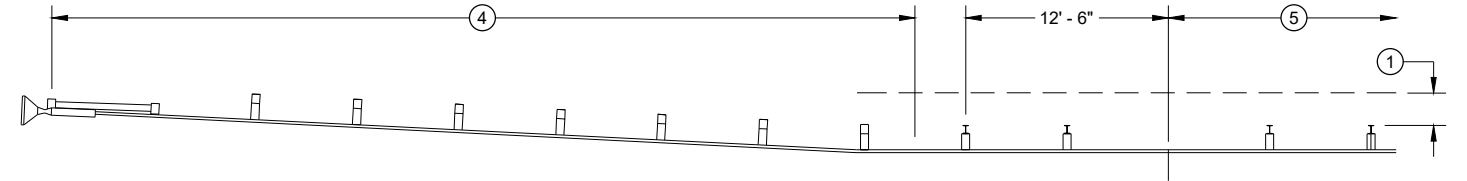
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



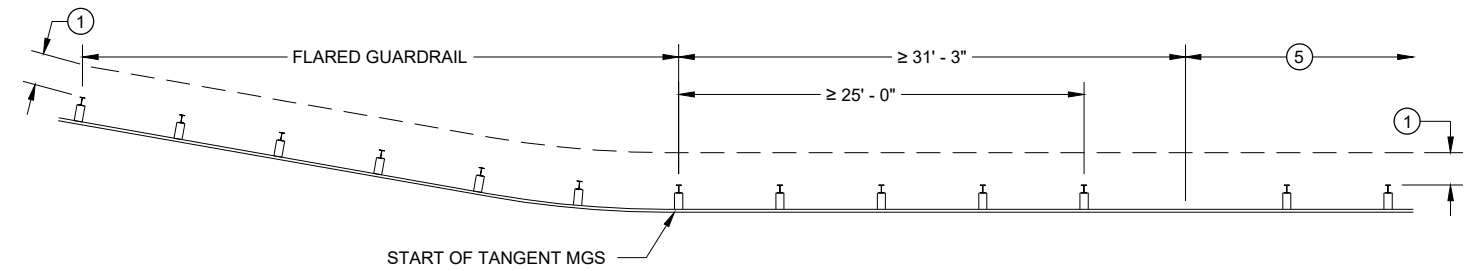
MISSING POST IN NORMAL BEAM GUARD RUN



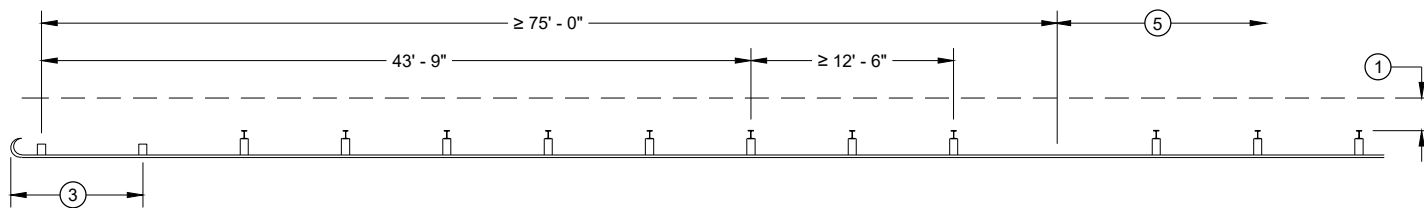
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



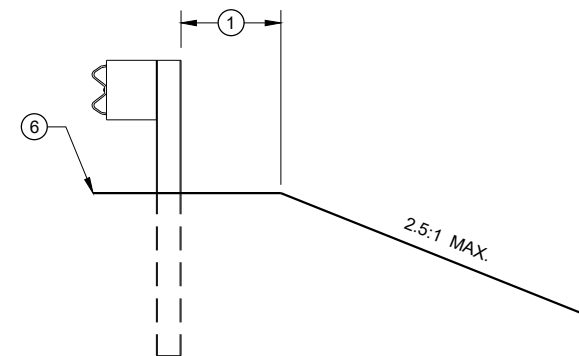
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR FLARED BEAM GUARD



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR TYPE 2 TERMINAL



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
FHWA

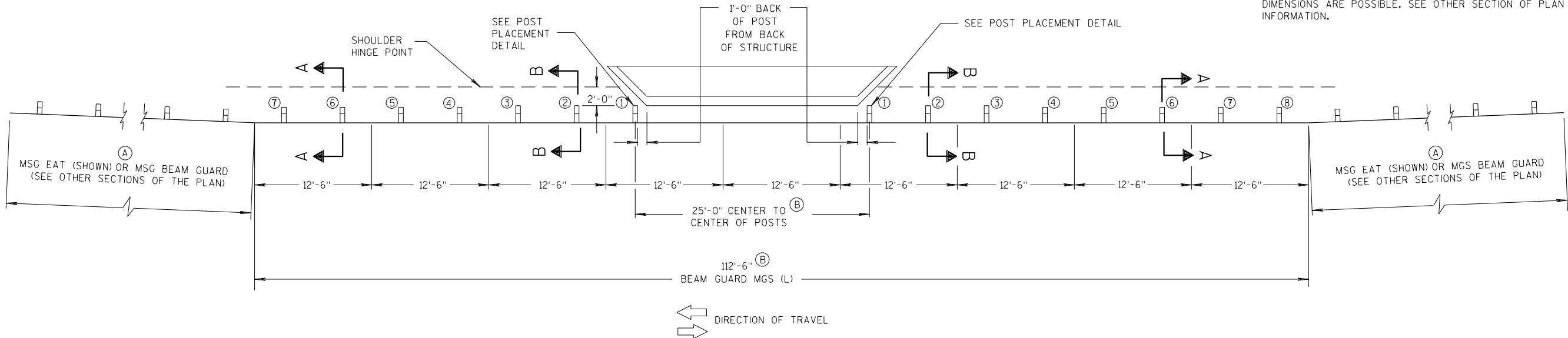
GENERAL NOTES

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

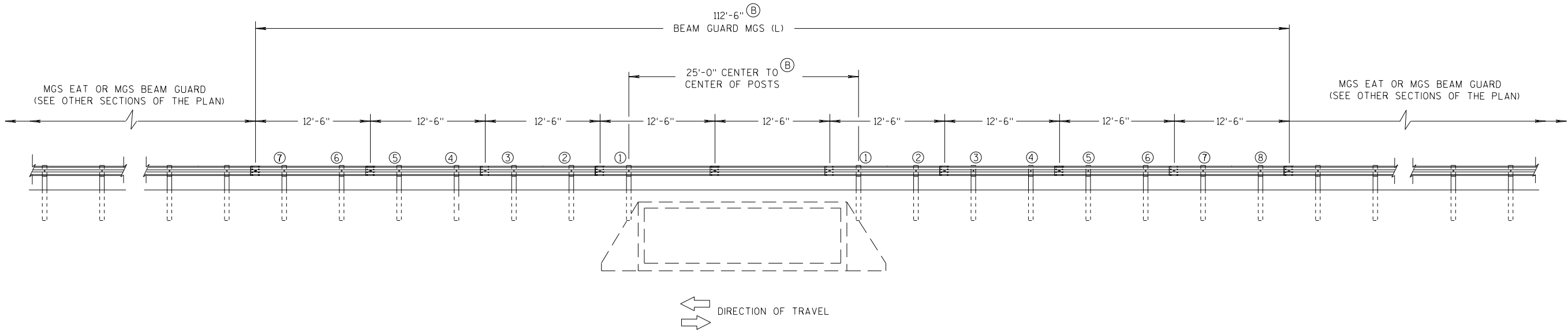
SEE SDD 14 B 42 FOR MORE DETAILS.

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

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



PLAN VIEW



ELEVATION VIEW

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

MIDWEST GUARDRAIL SYSTEM
LONG SPAN MGS (L)

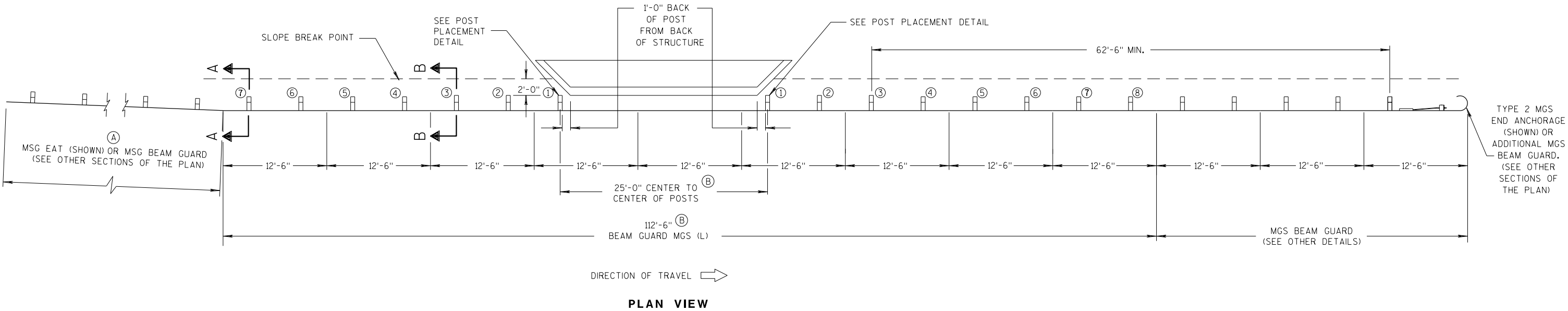
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

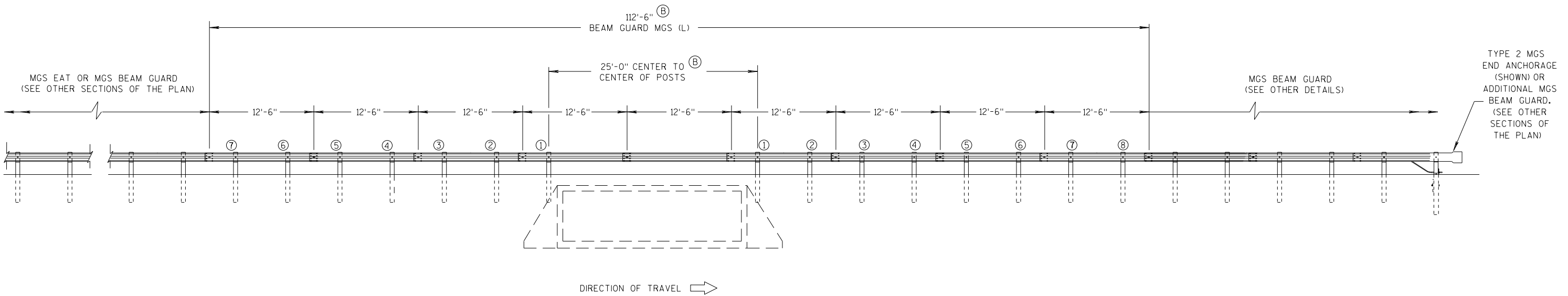
POSTS 1 THROUGH 3 ARE CRT POSTS.
ALL OTHER POSTS SHALL BE WOOD OR STEEL.

SEE SDD 14 B 42 FOR MORE DETAILS.

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



PLAN VIEW

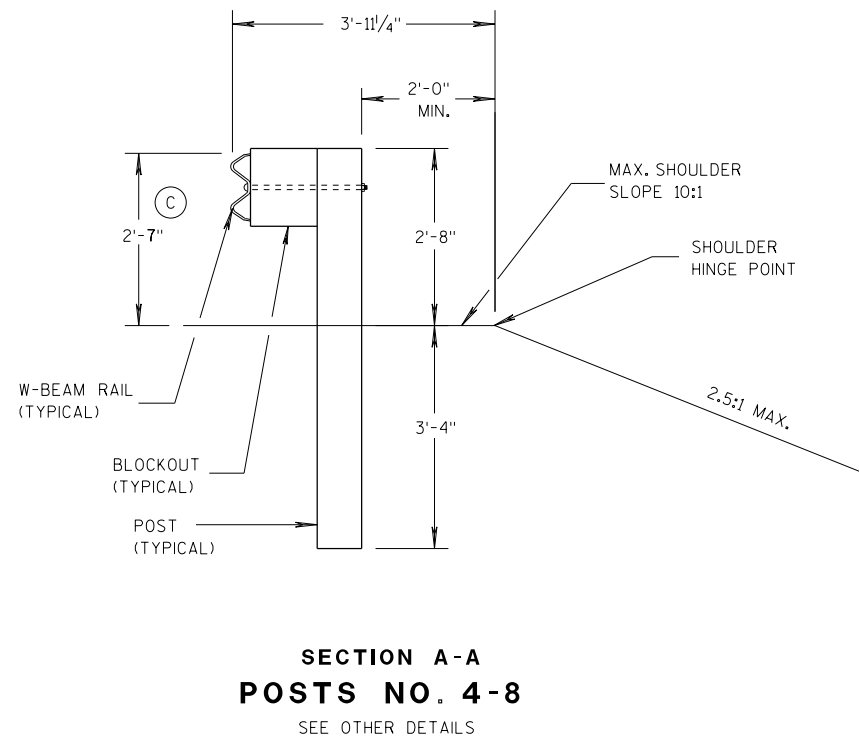
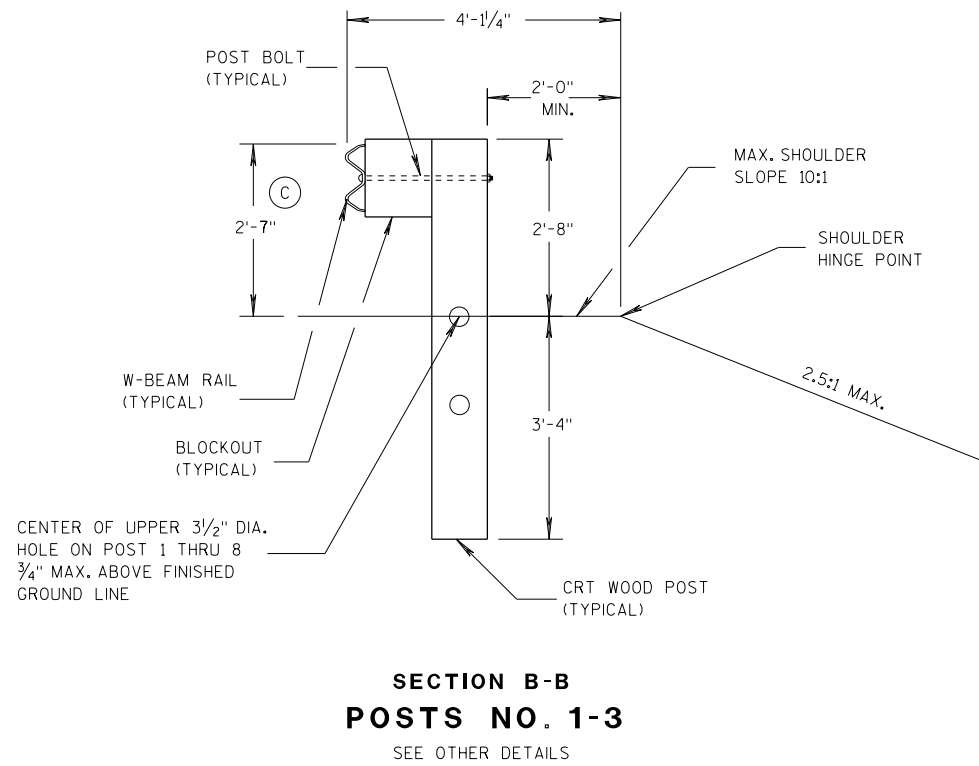
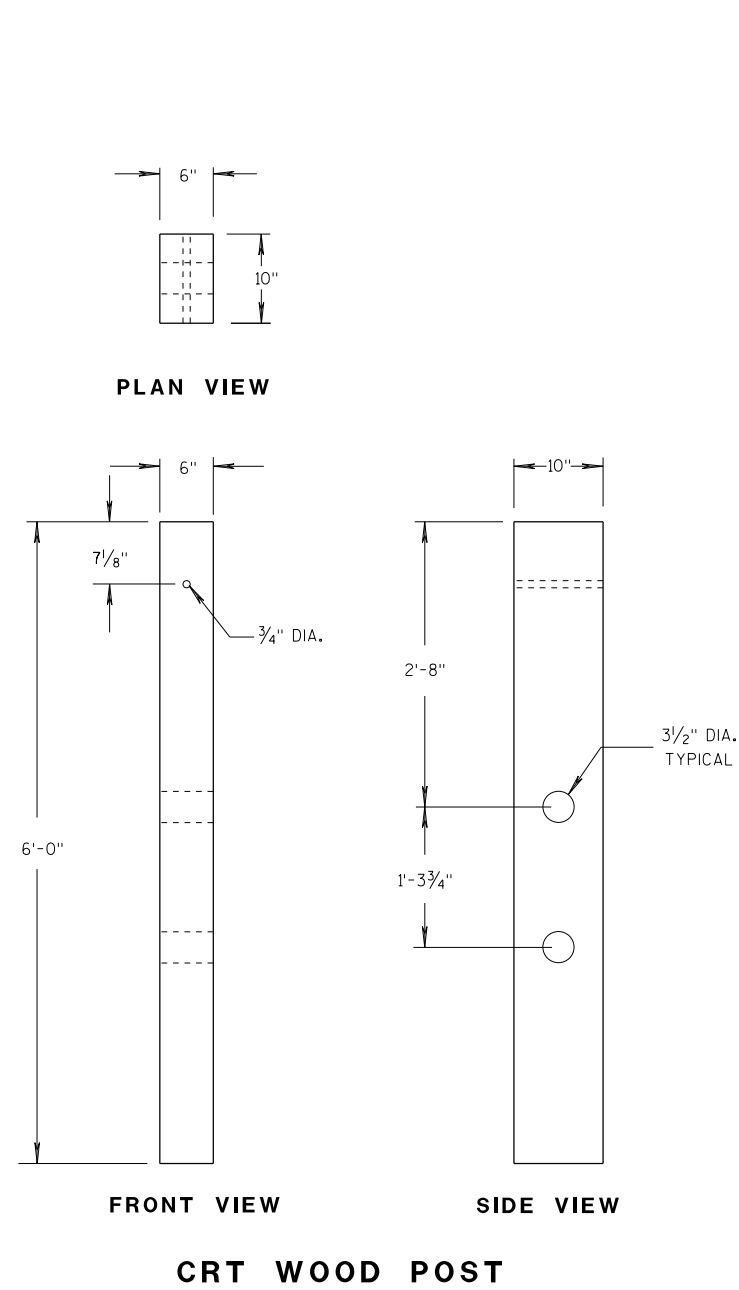


ELEVATION VIEW

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

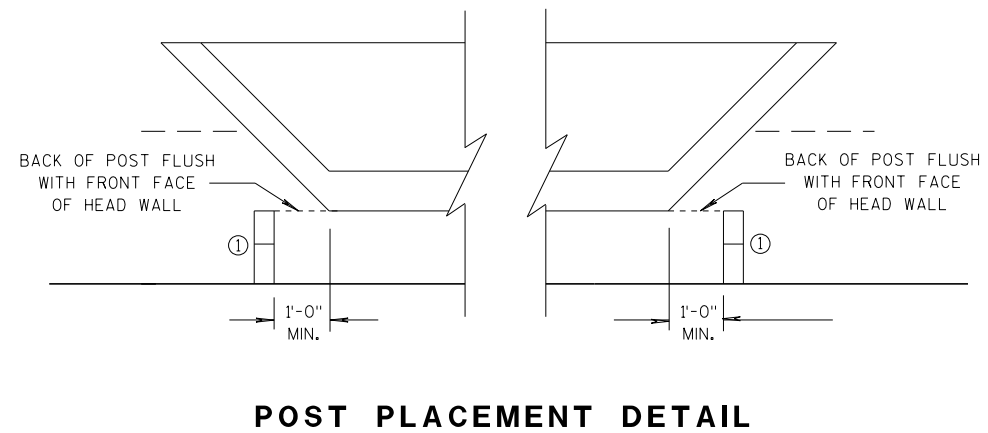
MIDWEST GUARDRAIL SYSTEM
LONG SPAN MGS (L)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



GENERAL NOTES

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



MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	

GENERAL NOTES

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

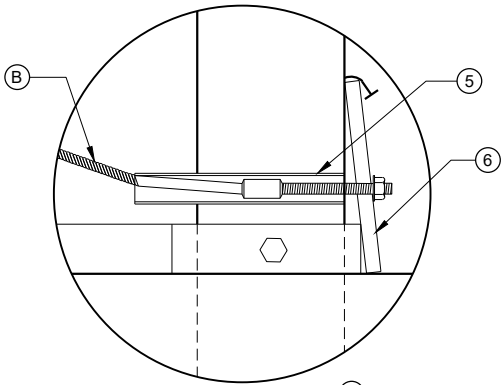
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

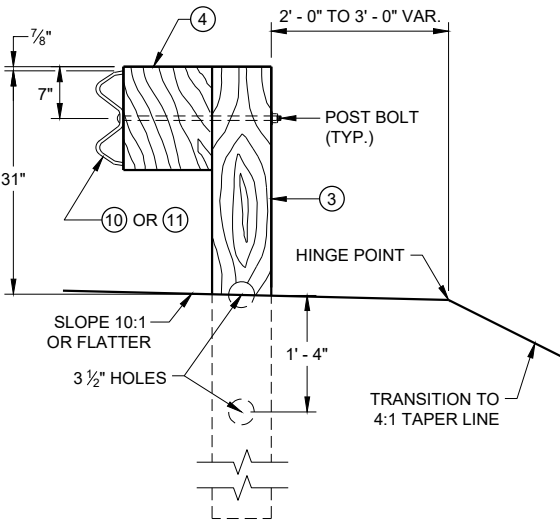
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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

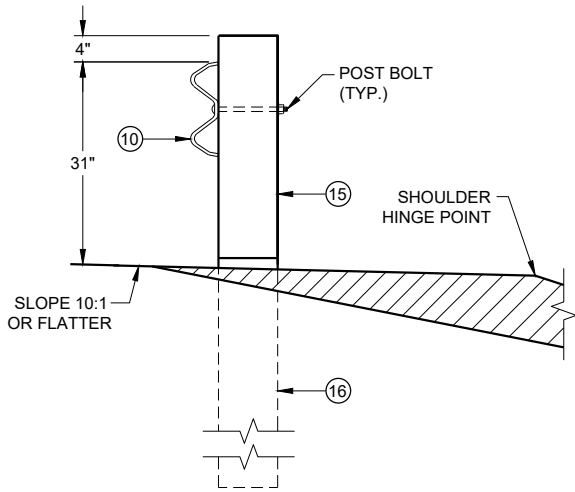
THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



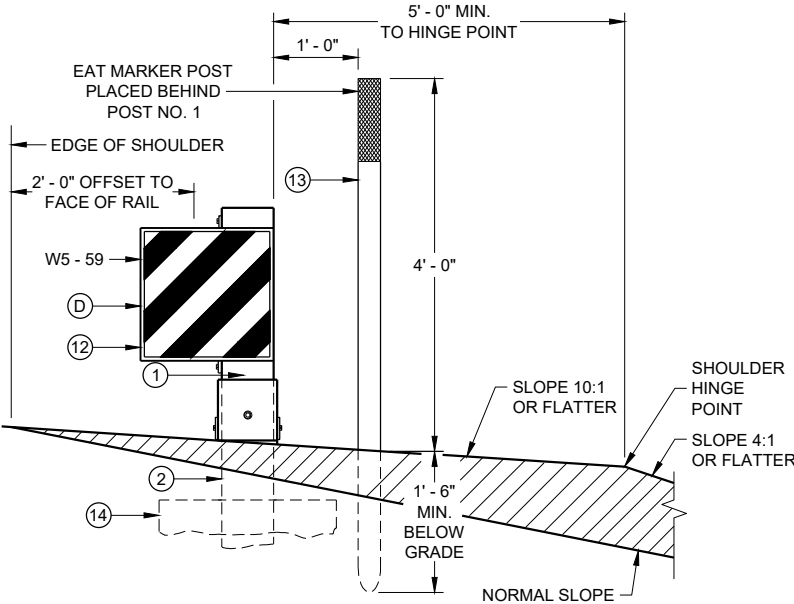
DETAIL "A"



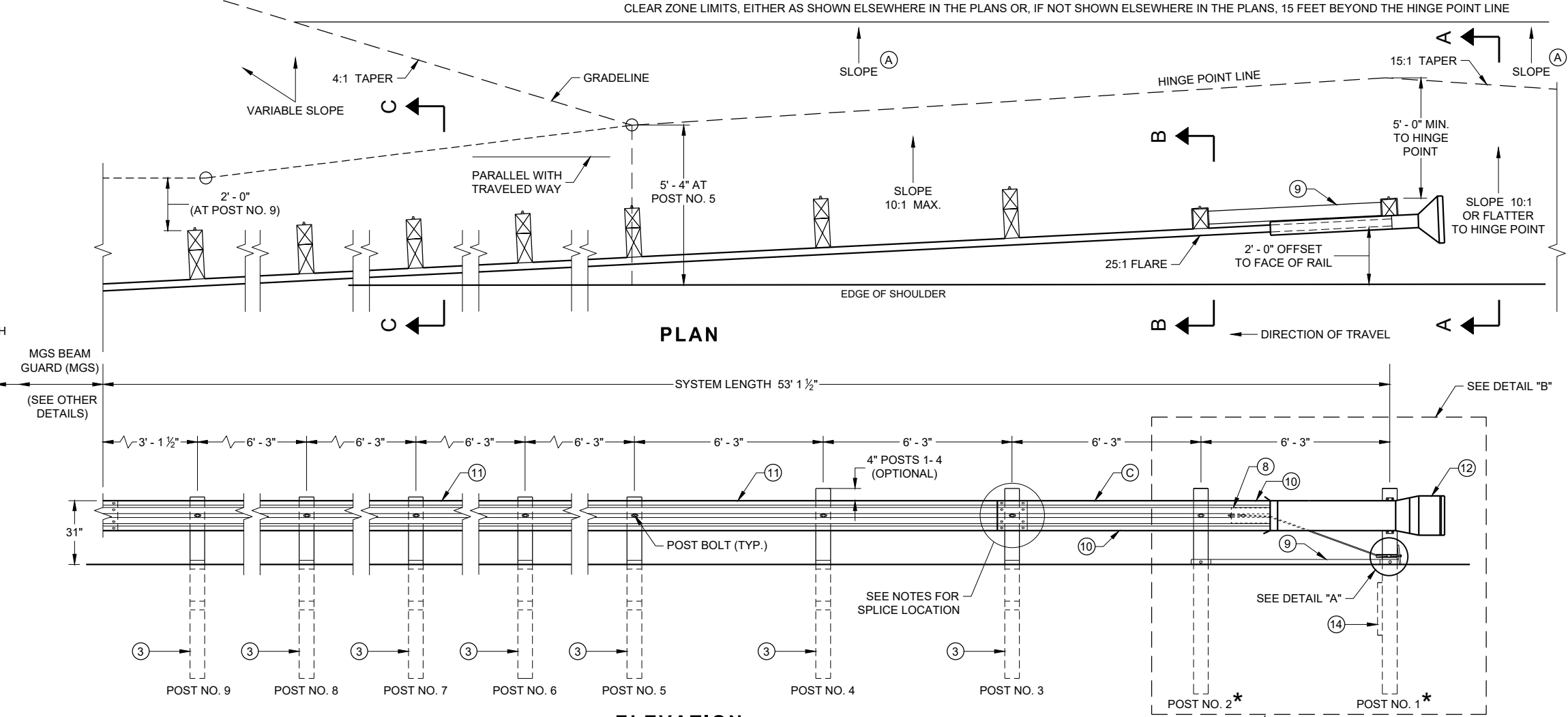
SECTION C - C
TYPICAL AT POST NOS. 3 - 9



SECTION B - B
TYPICAL AT POST NO. 2*

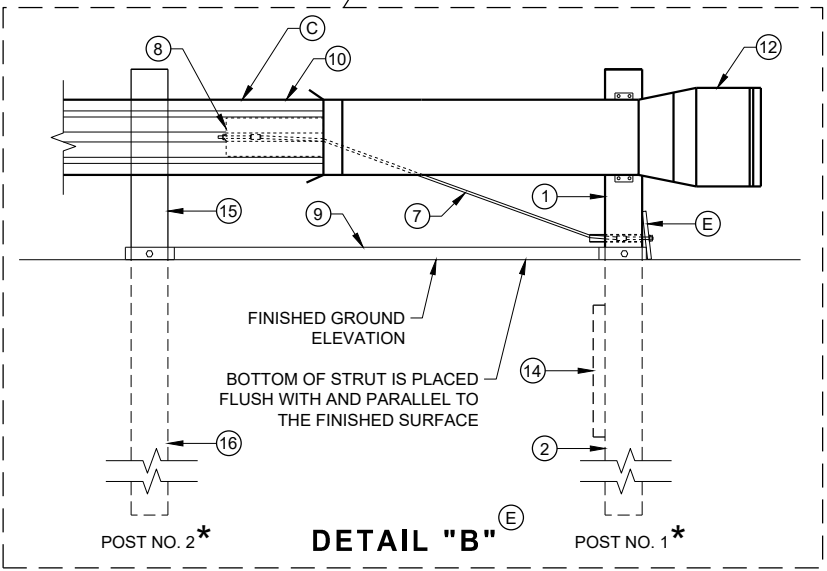


SECTION A - A
TYPICAL AT POST NO. 1*



PLAN

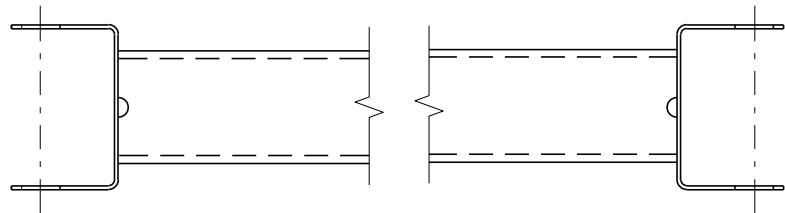
ELEVATION



DETAIL "B"

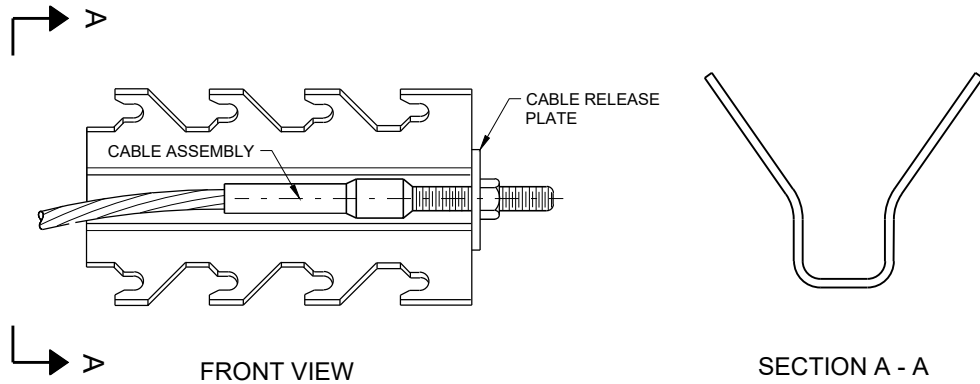
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

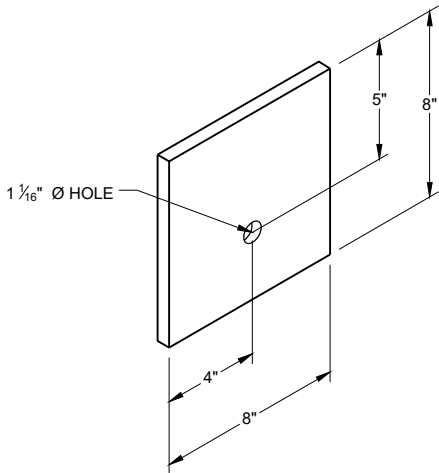


GENERIC GROUND STRUT^⑨ [Ⓔ]

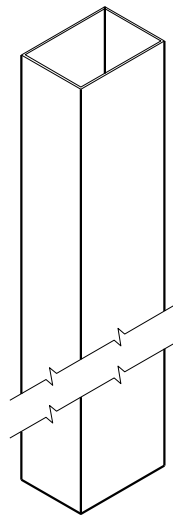
BILL OF MATERIALS	
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED 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



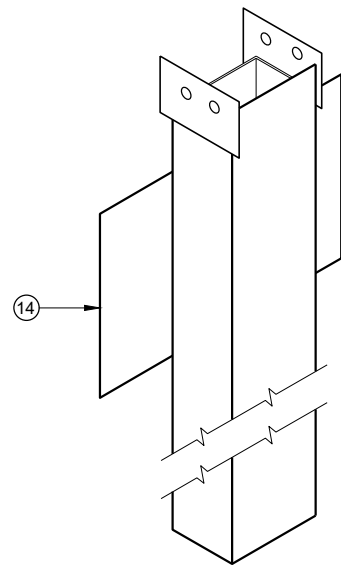
GENERIC ANCHOR CABLE BOX^⑨ [Ⓔ]



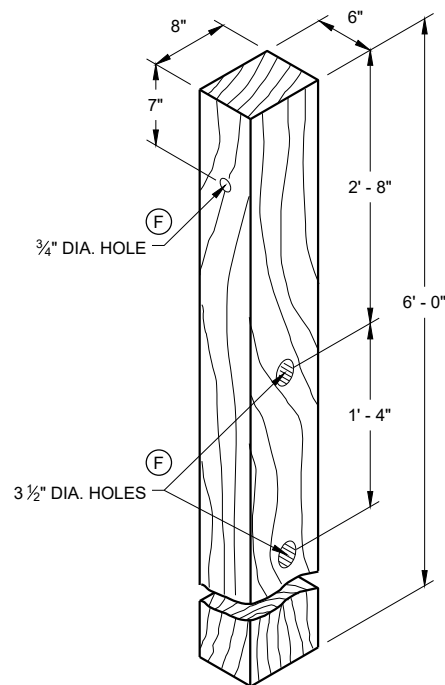
BEARING PLATE^⑥ [Ⓔ]



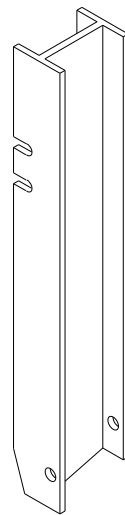
UPPER POST NO. 1^{(1) (E)}



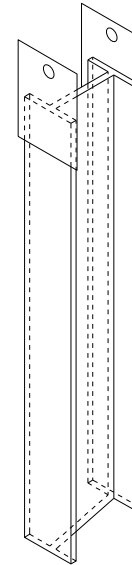
LOWER POST NO. 1^{(2) (E)}



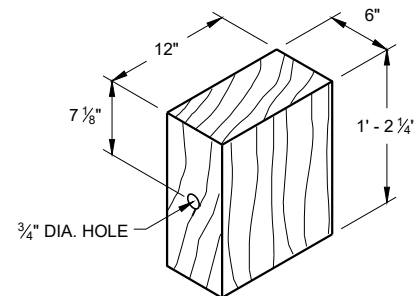
WOOD CRT POST^{(3) (E)}
POSTS NUMBER 3-9



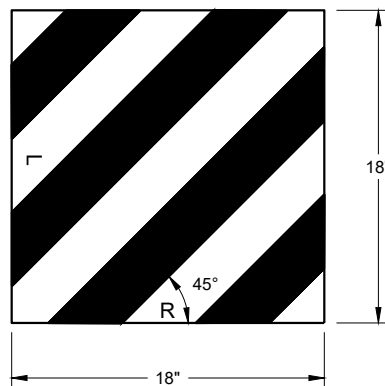
UPPER POST NO. 2^{(15) (E)}



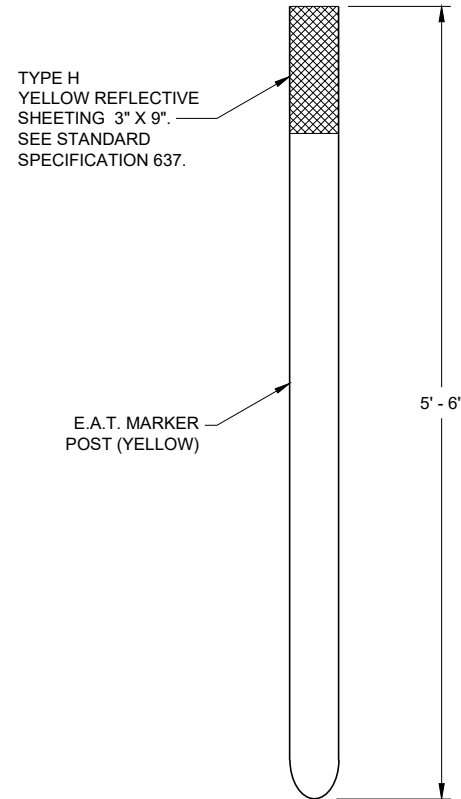
LOWER POST NO. 2^{(16) (E)}



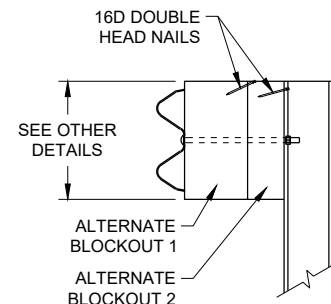
WOOD BLOCKOUT⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



REFLECTIVE SHEETING DETAIL^(E)

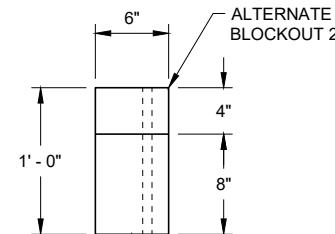


E.A.T. MARKER POST⁽¹³⁾



SIDE VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

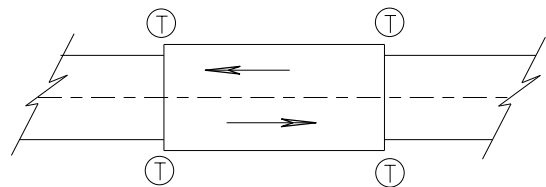


TOP VIEW

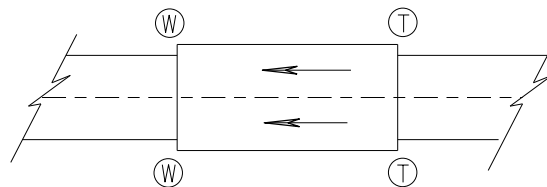
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

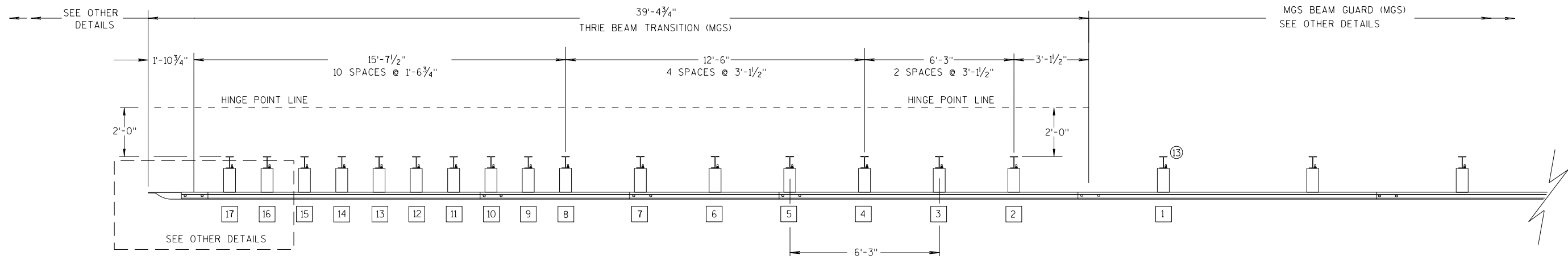
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

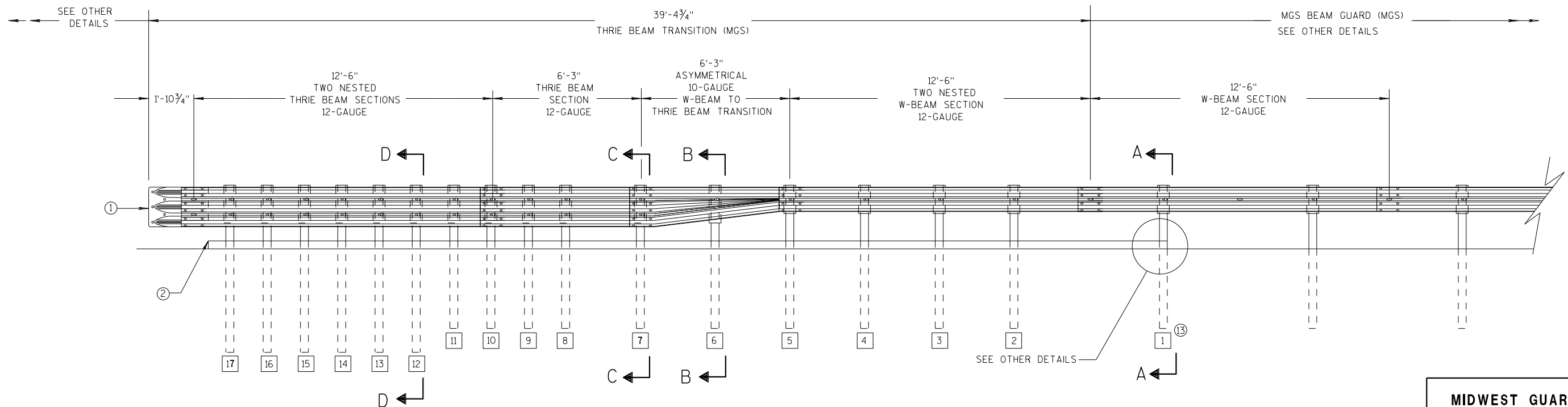
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

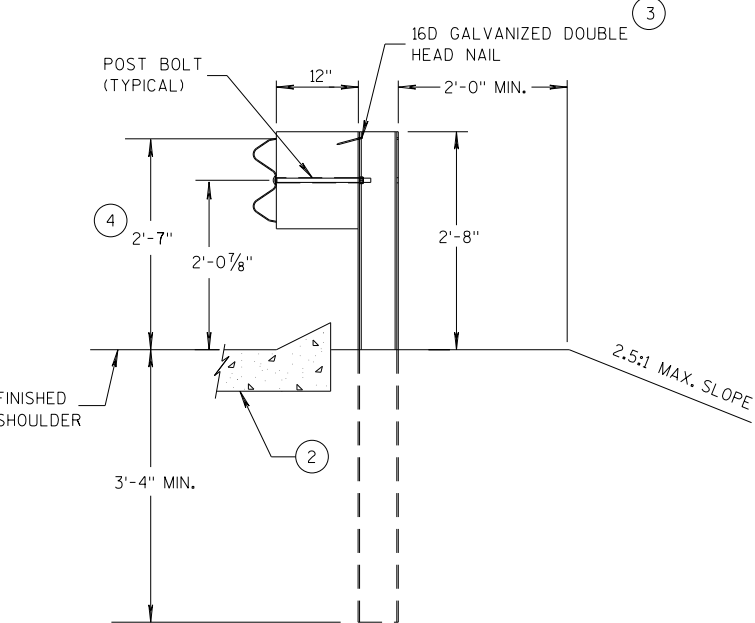
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

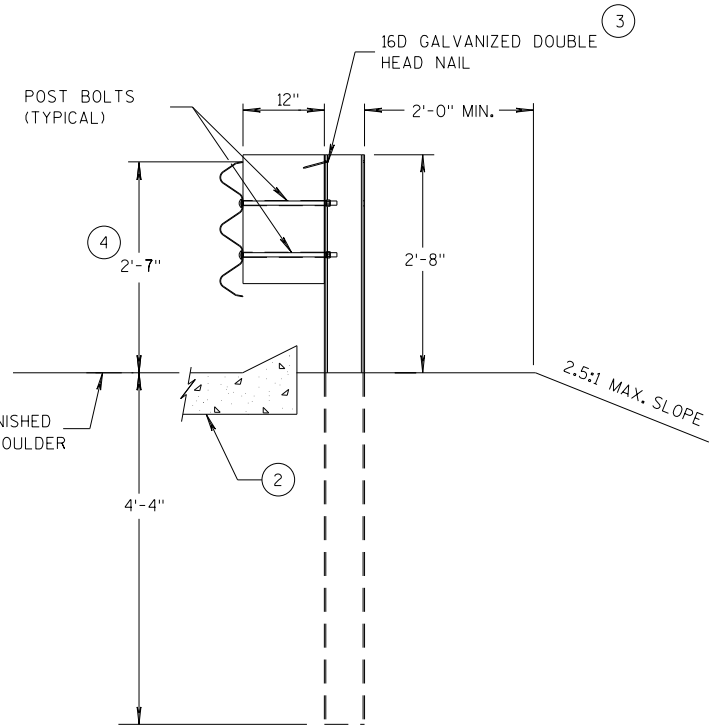
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

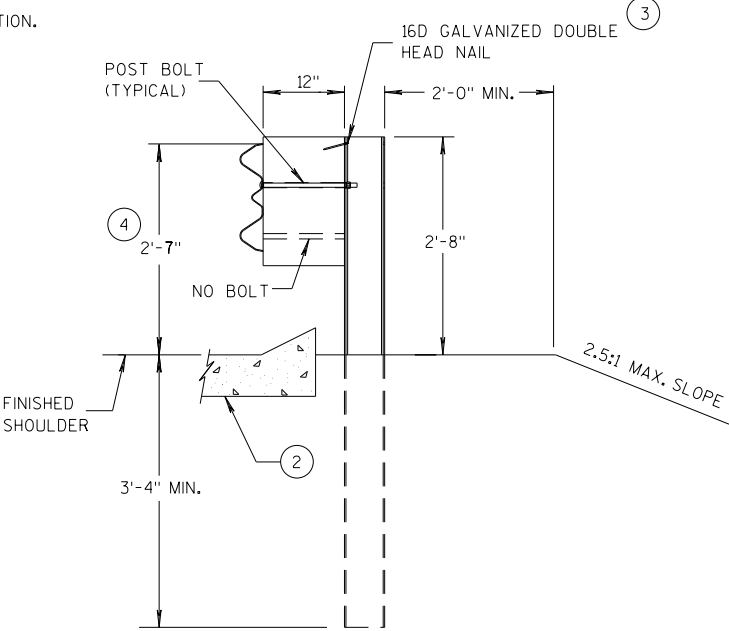
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm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



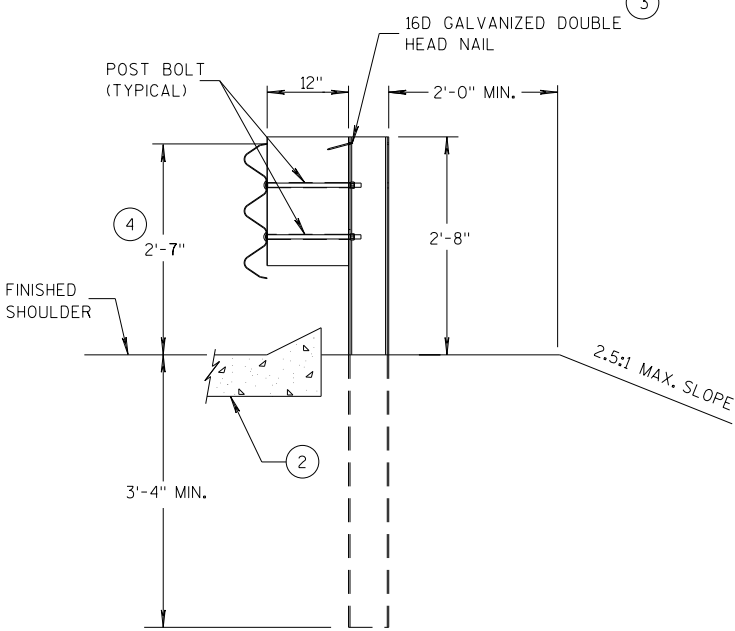
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

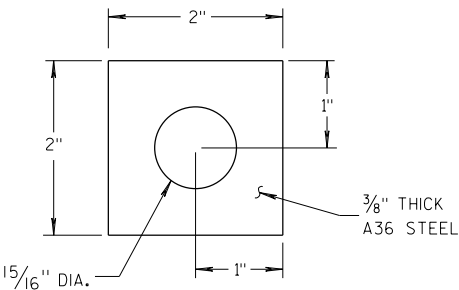
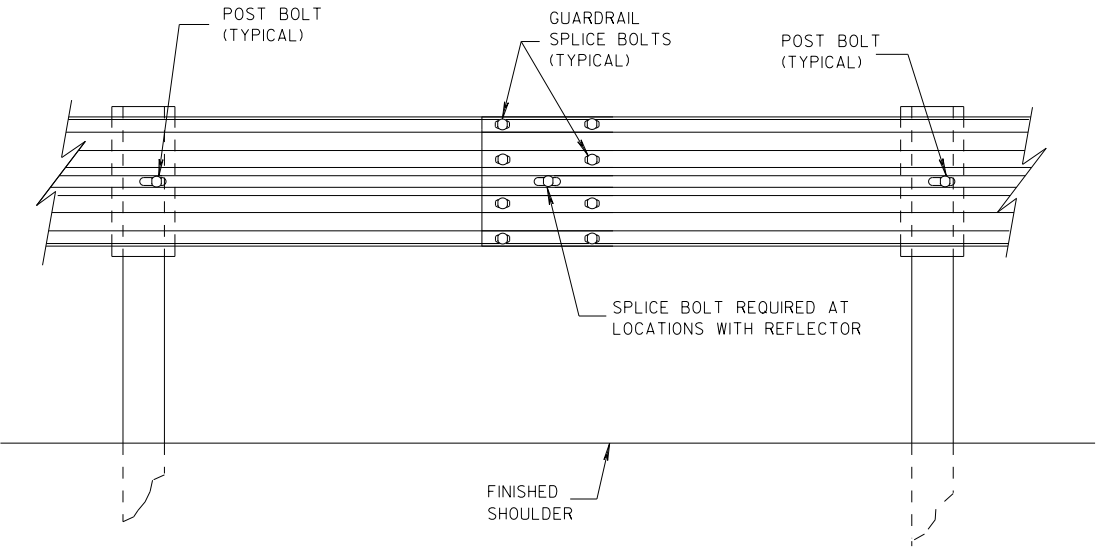
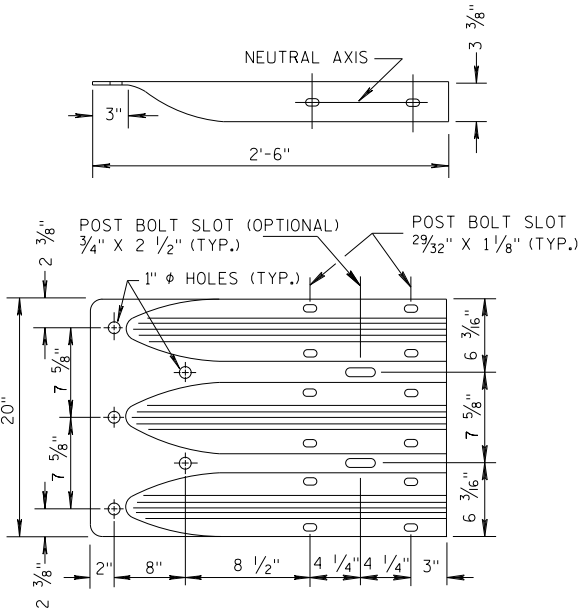


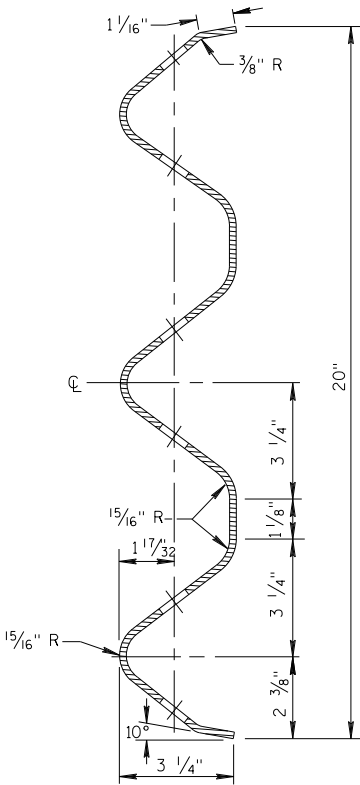
PLATE WASHER DETAIL



SPlice DETAIL



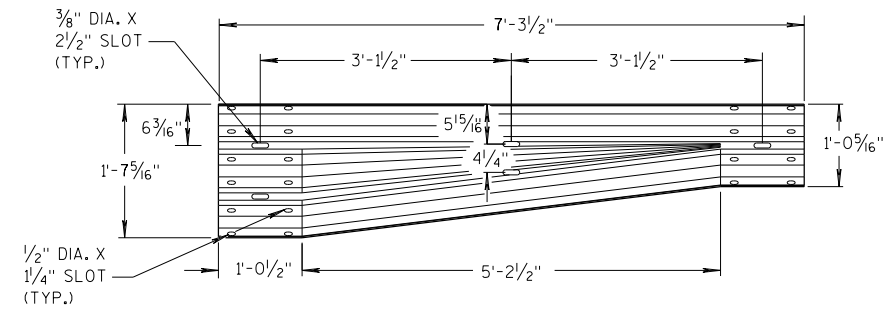
THRIE BEAM
TERMINAL CONNECTOR



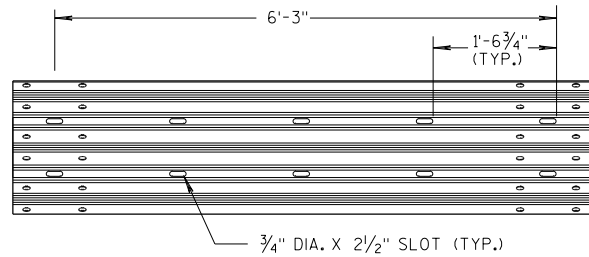
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

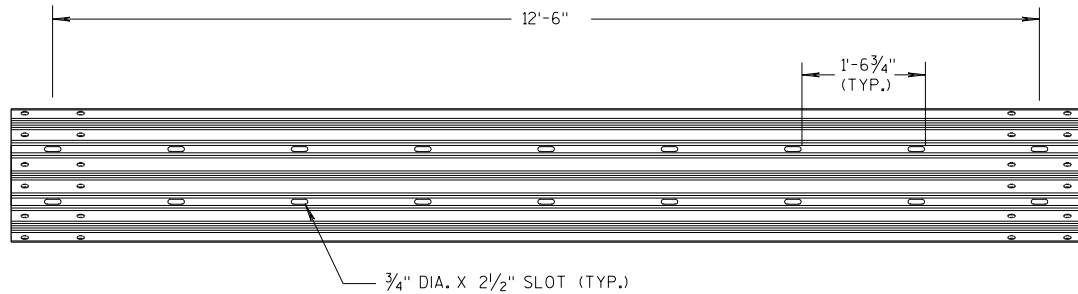
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



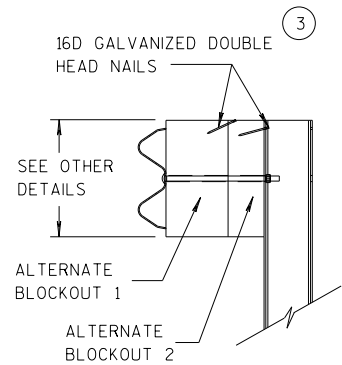
W-BEAM TO THRIE BEAM TRANSITION SECTION



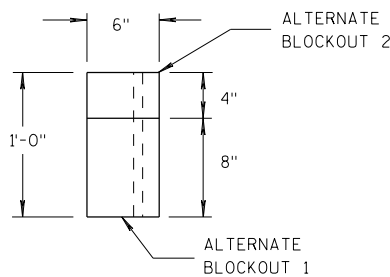
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

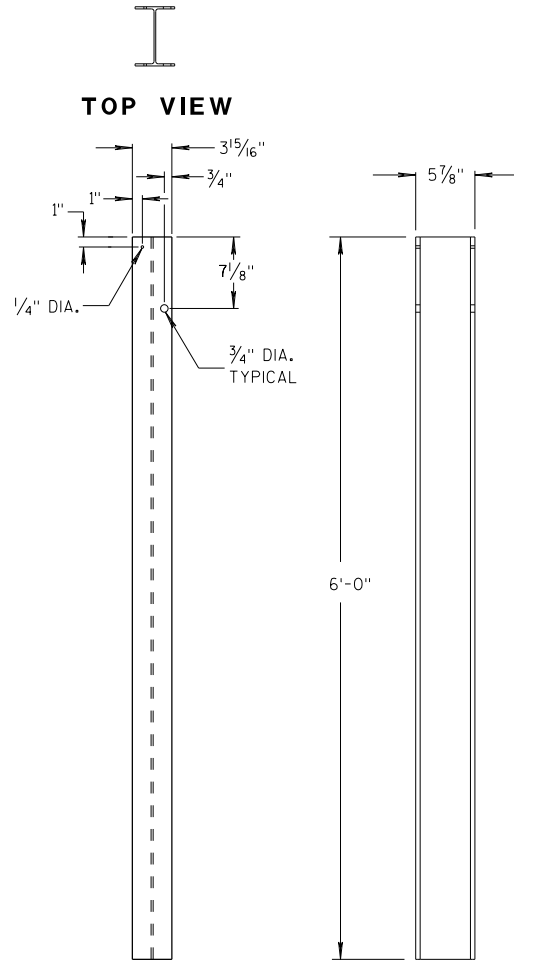


SIDE VIEW



TOP VIEW

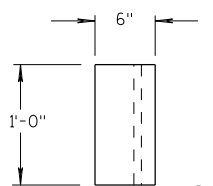
ALTERNATE WOOD BLOCKOUT DETAIL



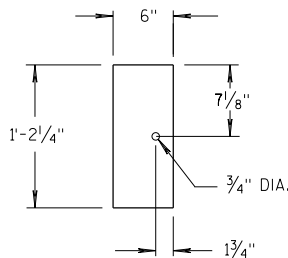
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

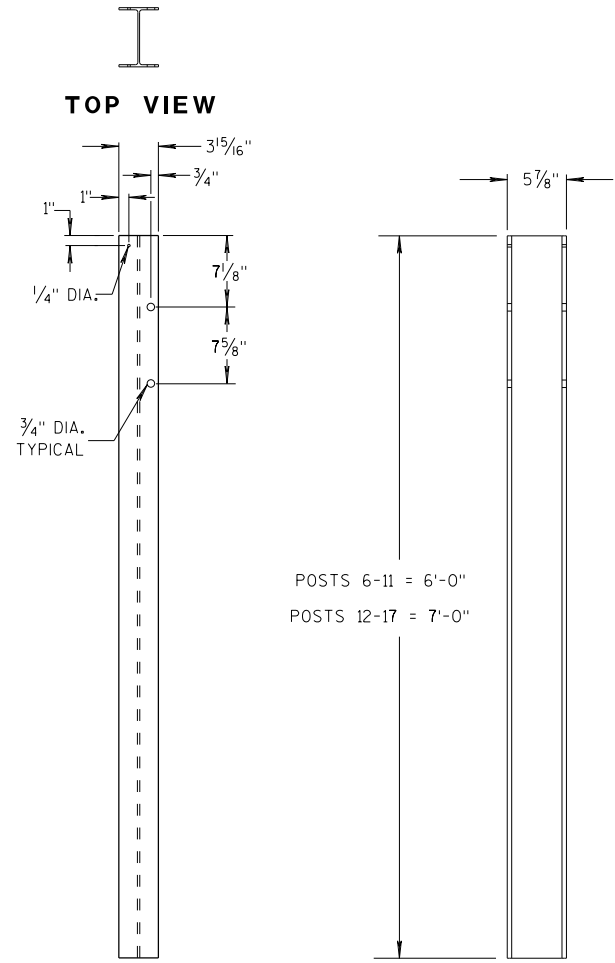


TOP VIEW



FRONT VIEW

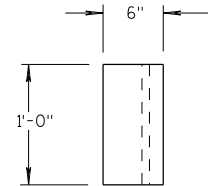
BLOCKOUT POSTS 1-5



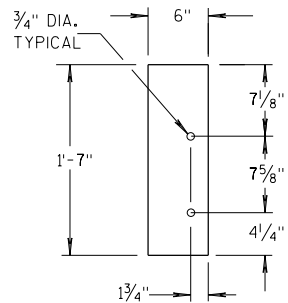
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



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.

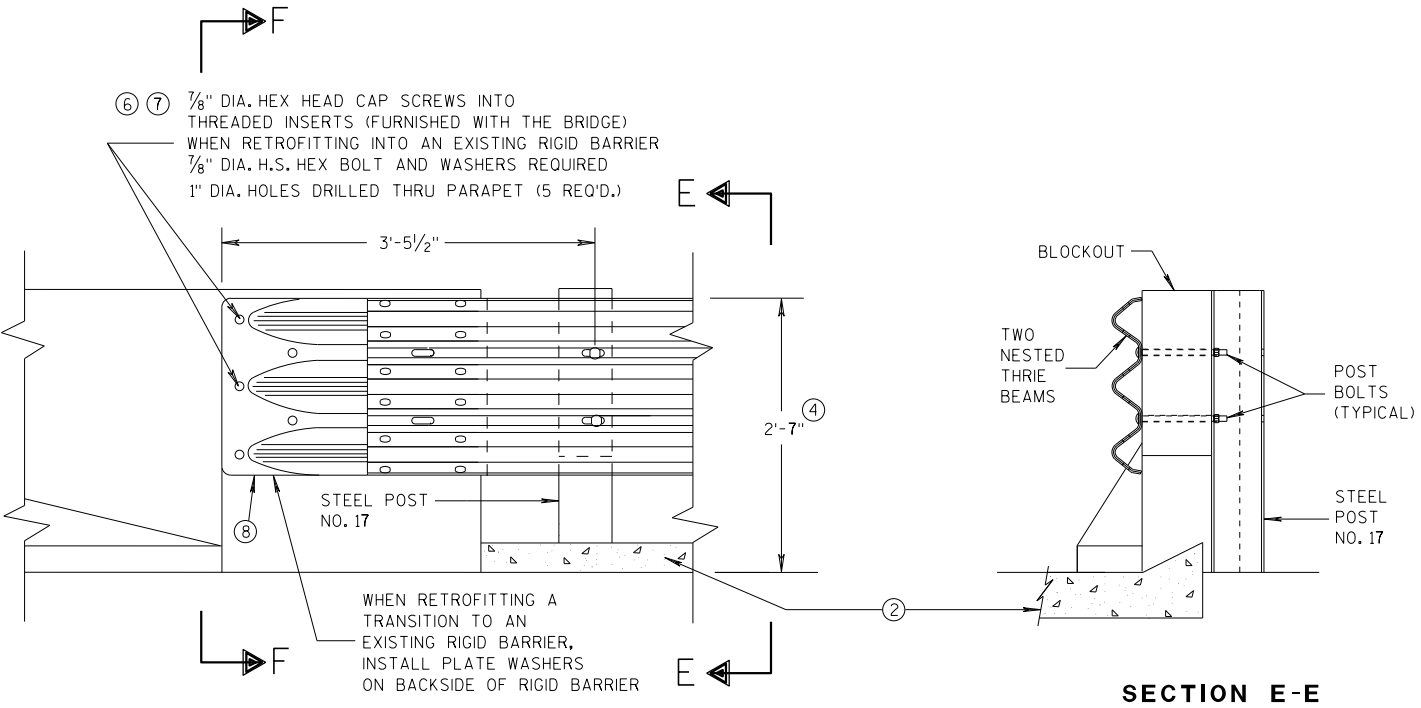
③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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.

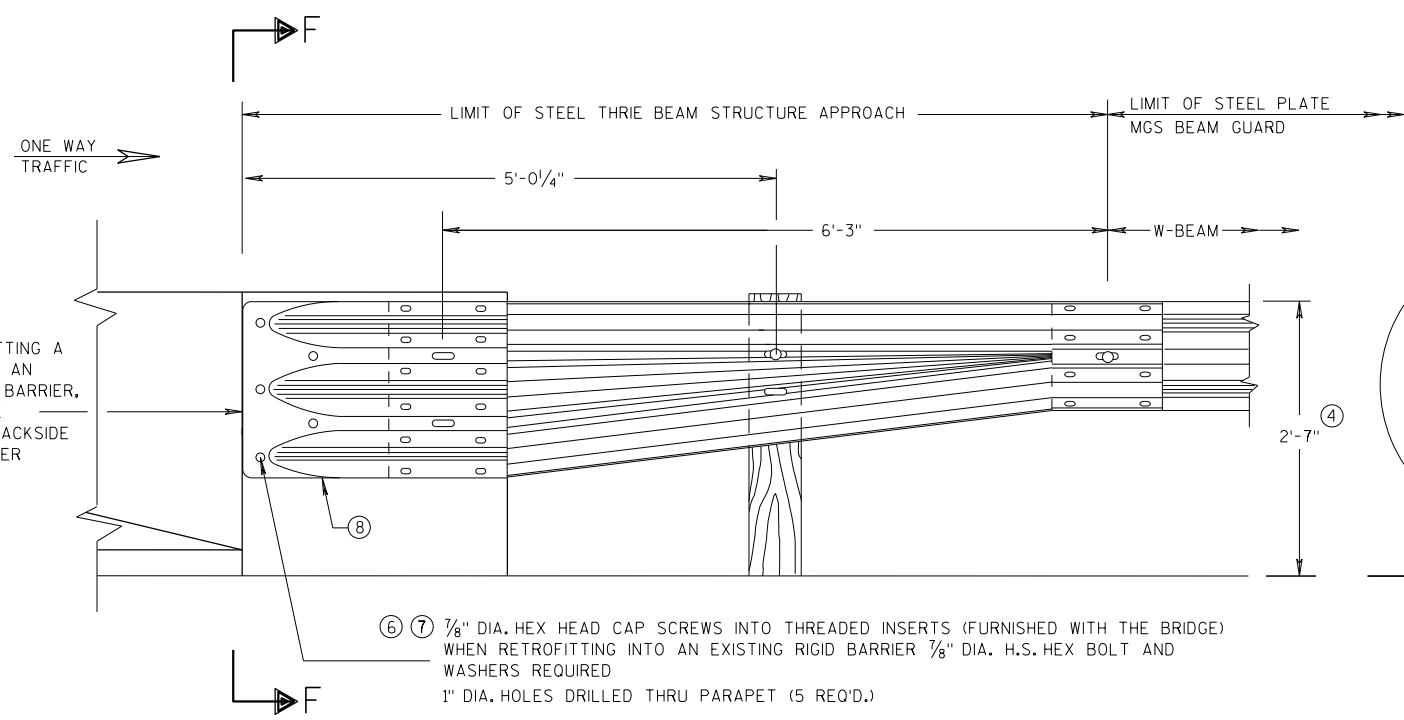
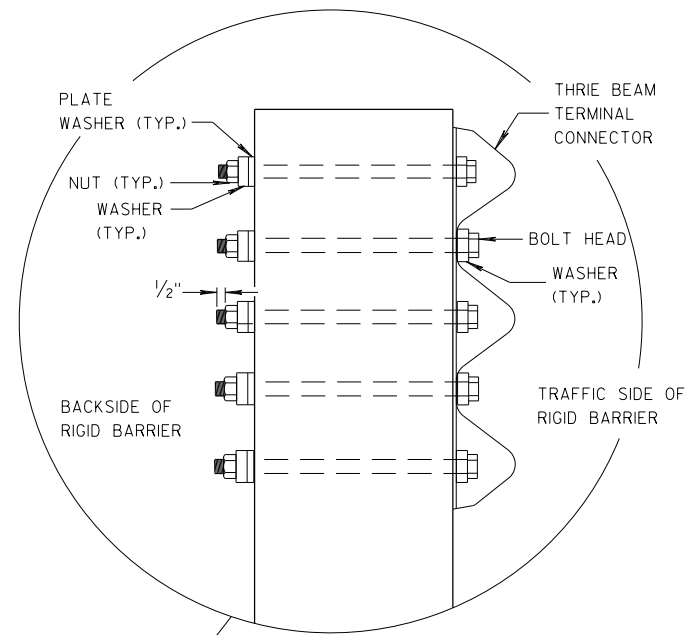
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

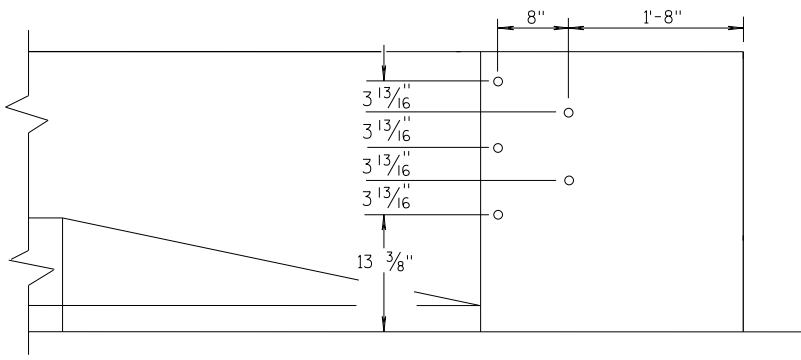


GENERAL NOTES

- 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

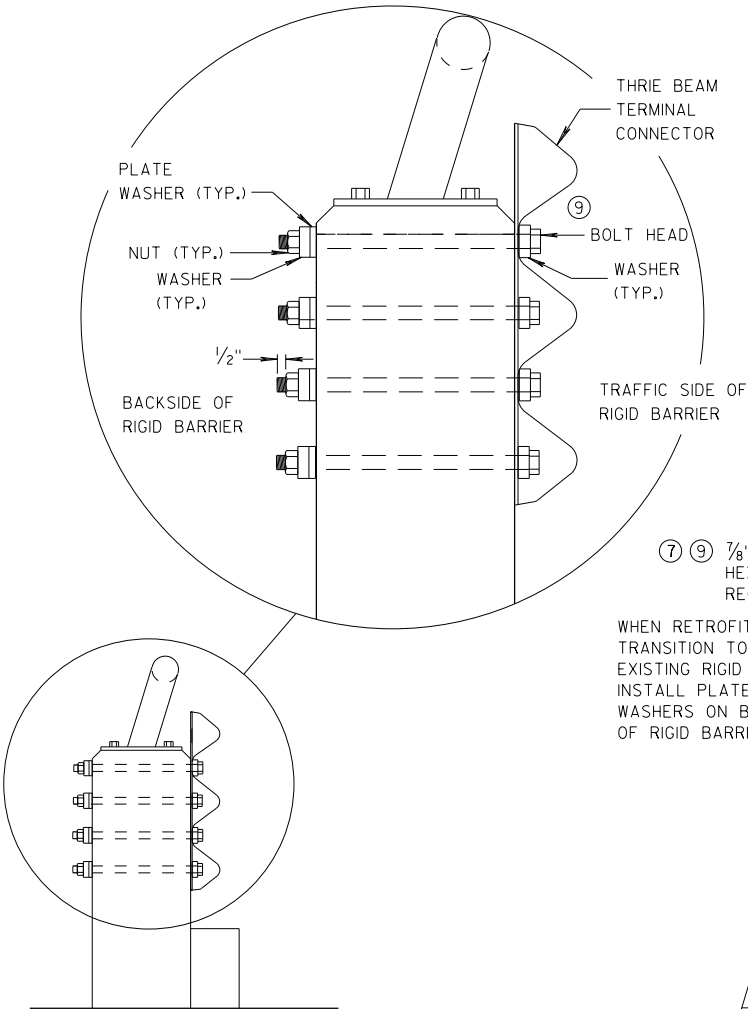


MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

GENERAL NOTES

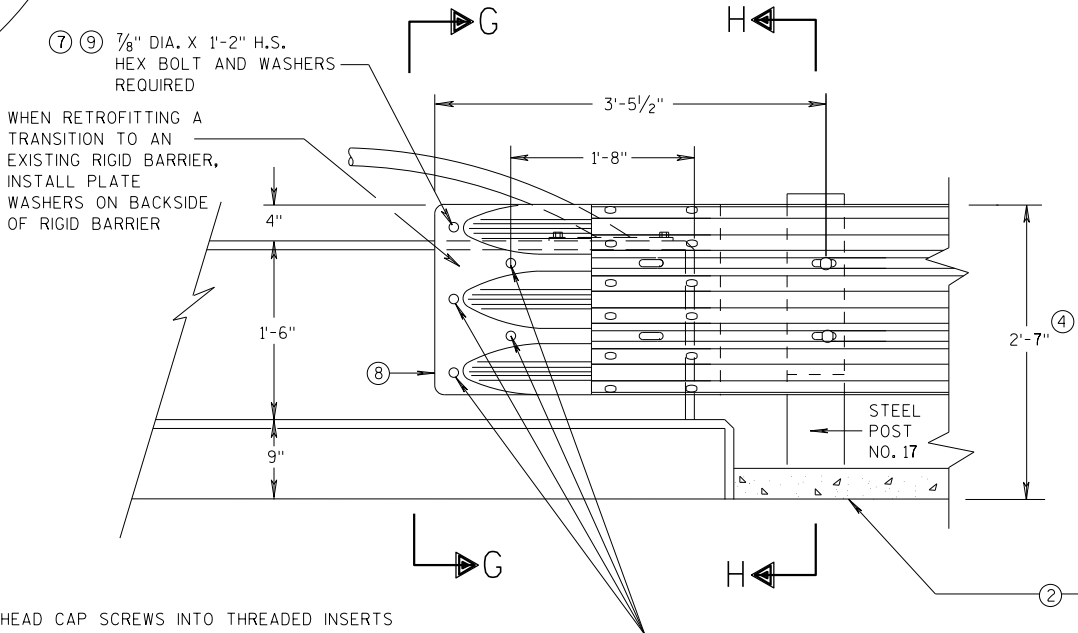
THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

- 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.



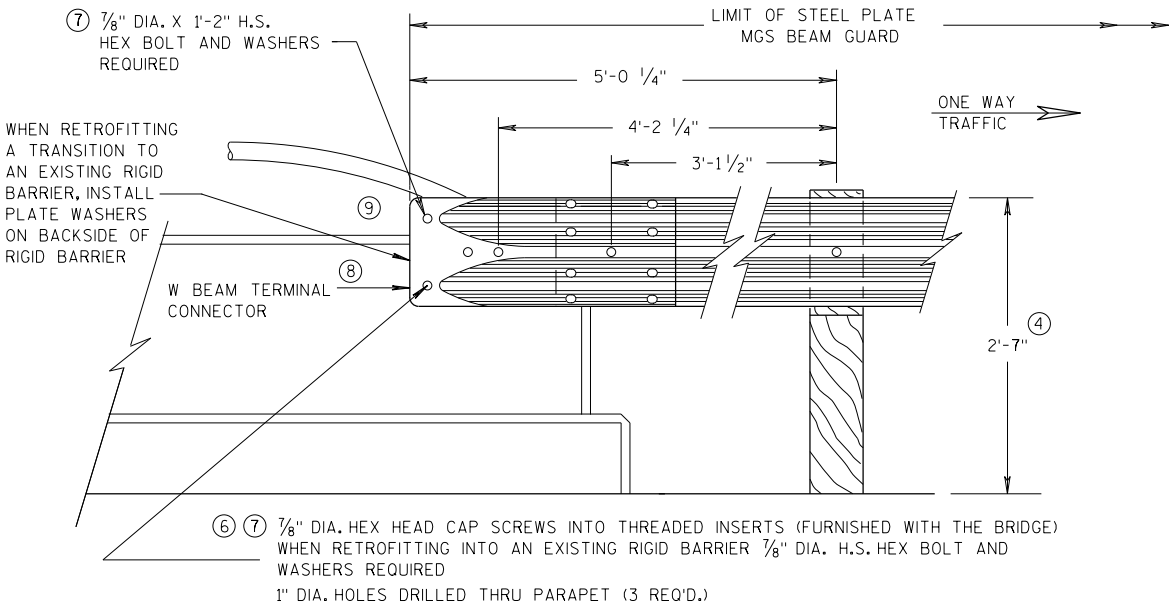
SECTION G-G

- ⑥ ⑦
- $\frac{7}{8}"$ DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER $\frac{7}{8}"$ DIA. H.S. HEX BOLT AND WASHERS REQUIRED 1" DIA. HOLES DRILLED THRU PARAPET (4 REQ'D.)



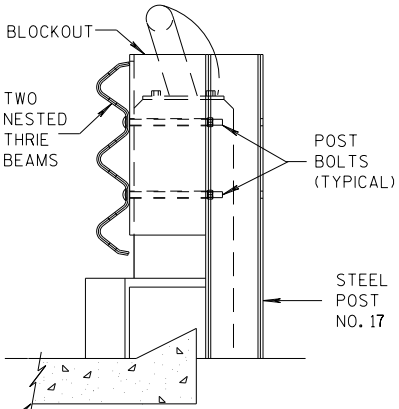
FRONT VIEW

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS



FRONT VIEW

W BEAM CONNECTION TO VERTICAL FACE PARAPET
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)



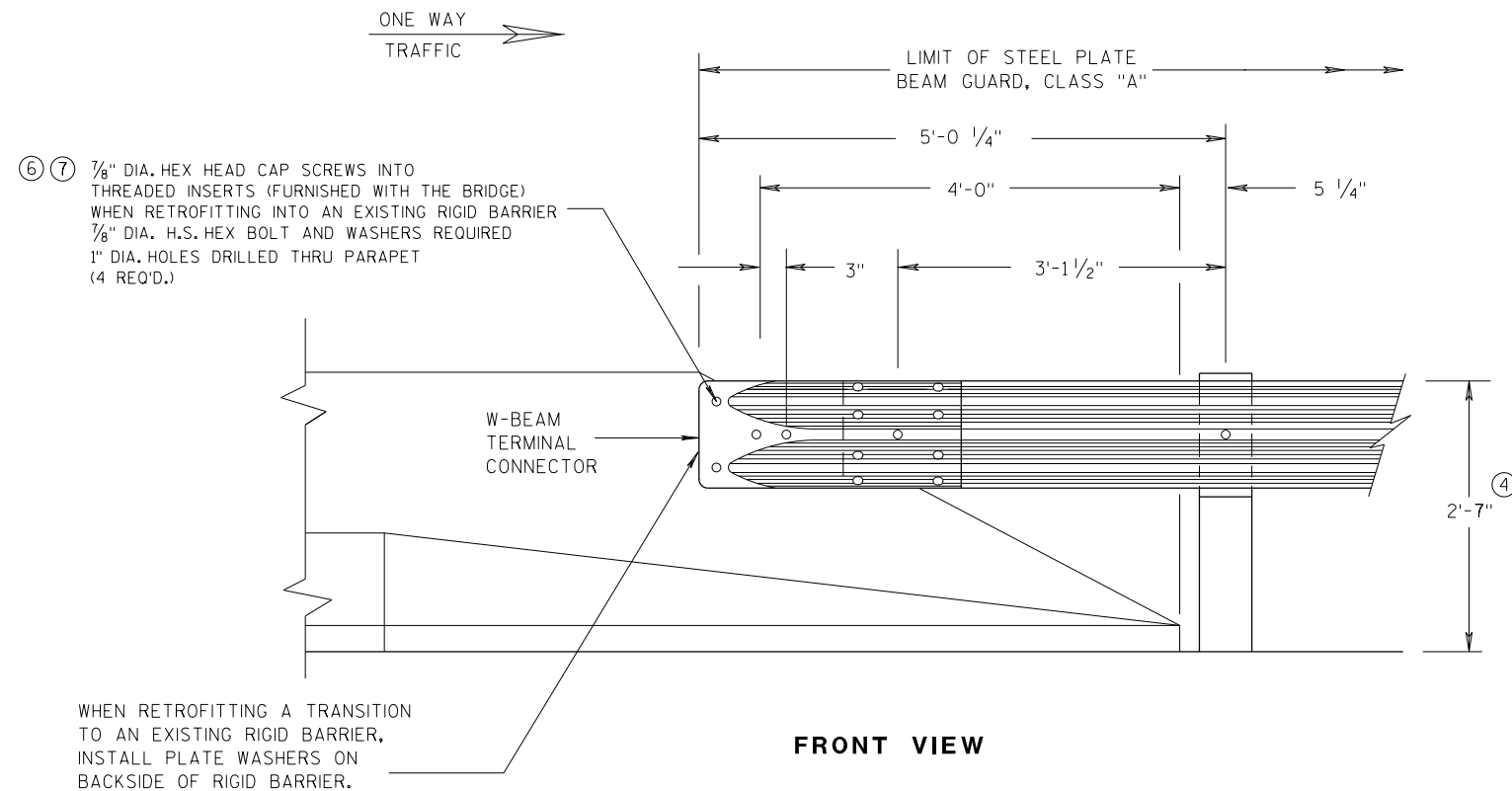
SECTION H-H

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
07/2018
DATE
FHWA

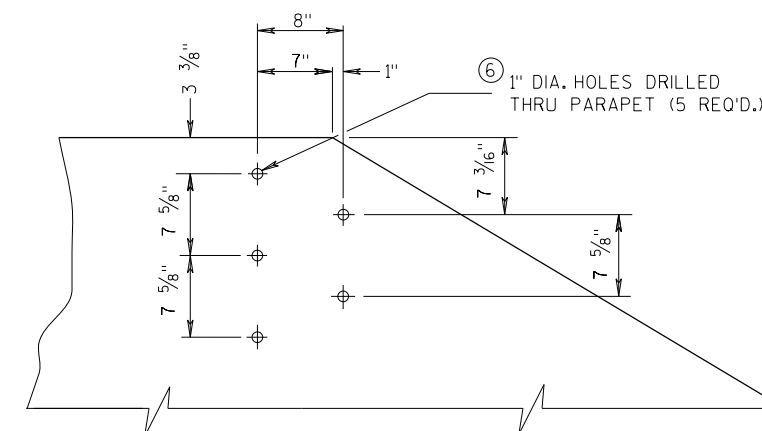
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR



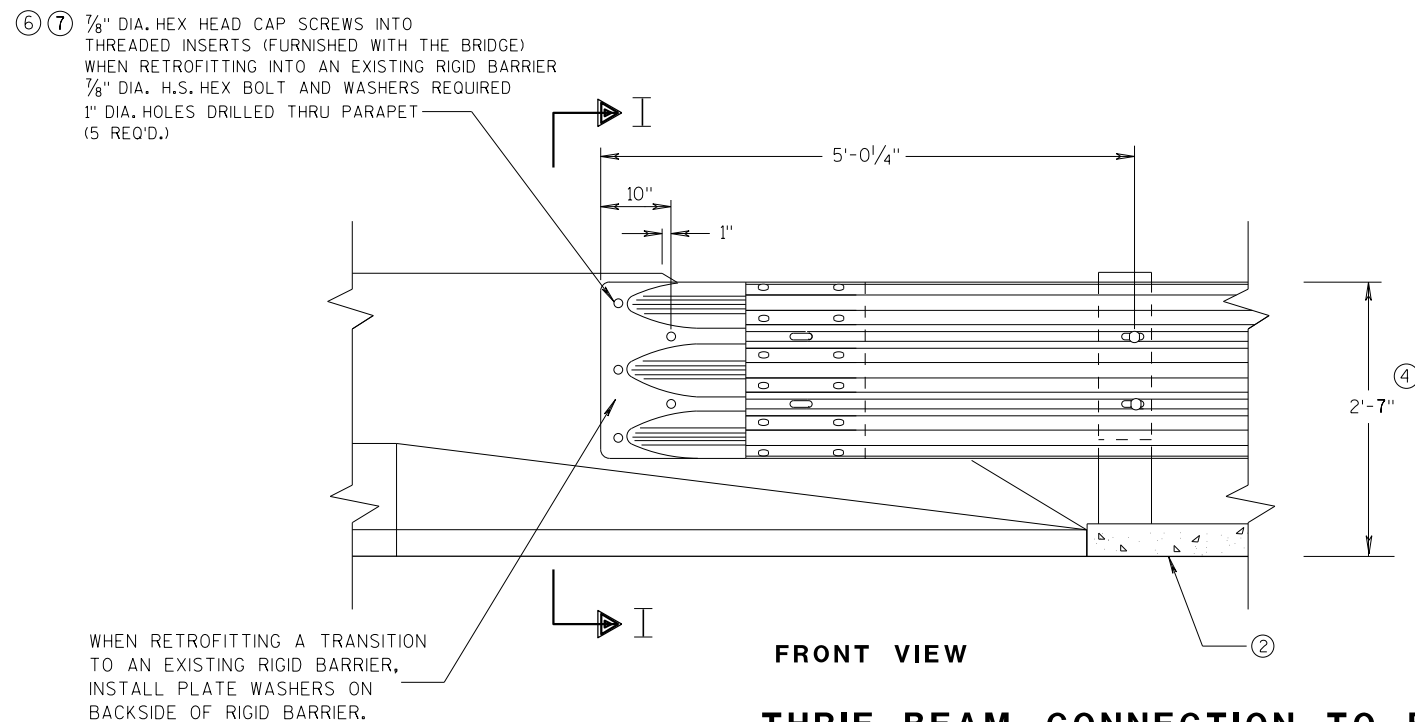
**W BEAM CONNECTION TO
PARAPETS WITH SLOPED ENDS**
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

GENERAL NOTES

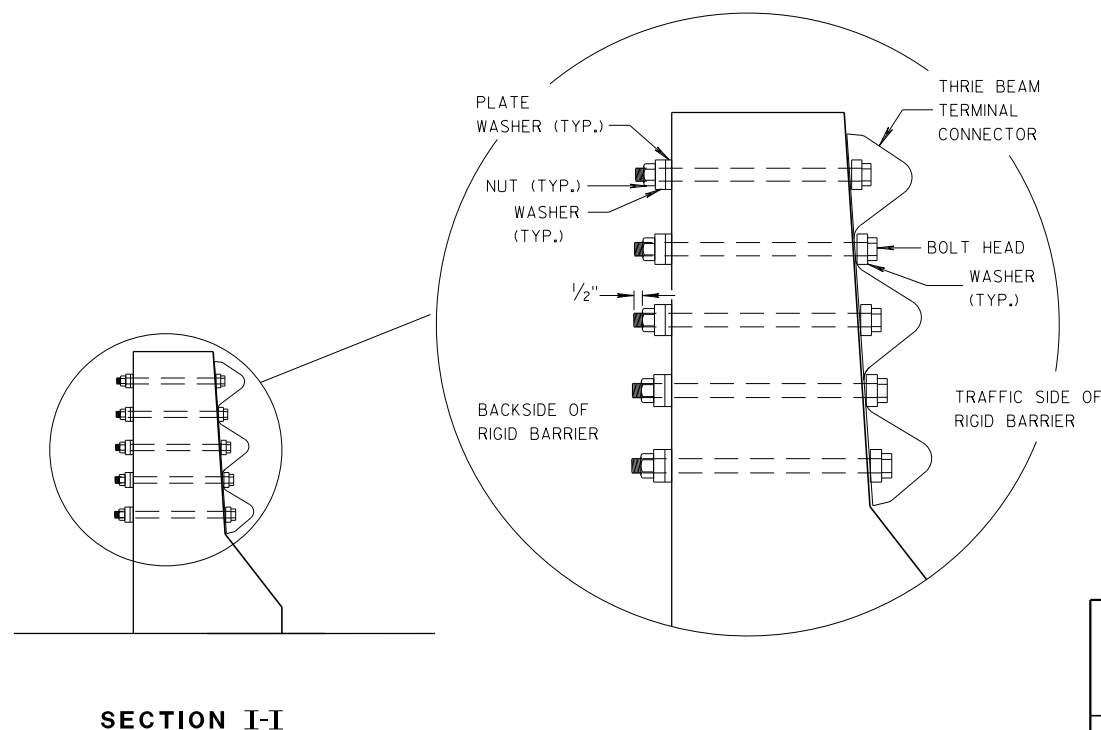
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH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



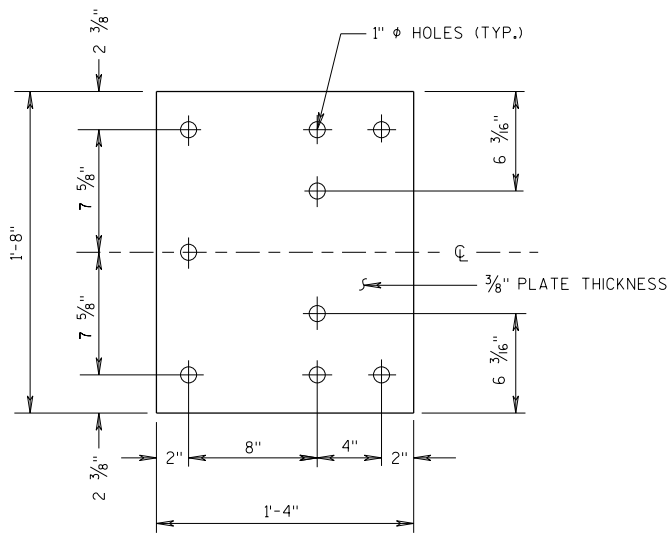
**THRIE BEAM CONNECTION TO BRIDGE
PARAPETS WITH SLOPED ENDS**



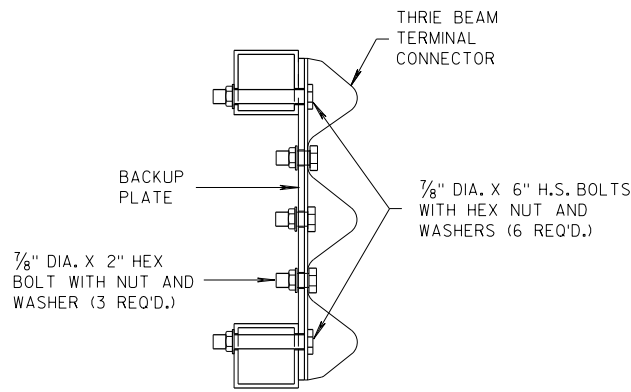
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

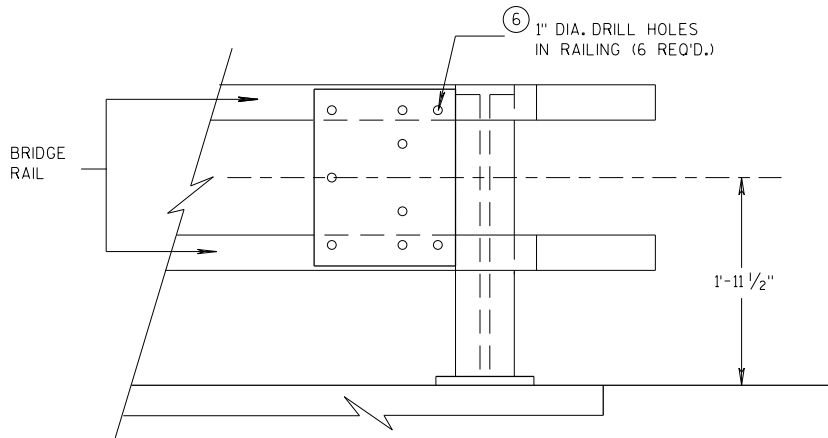
APPROVED
07/2018
DATE
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ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



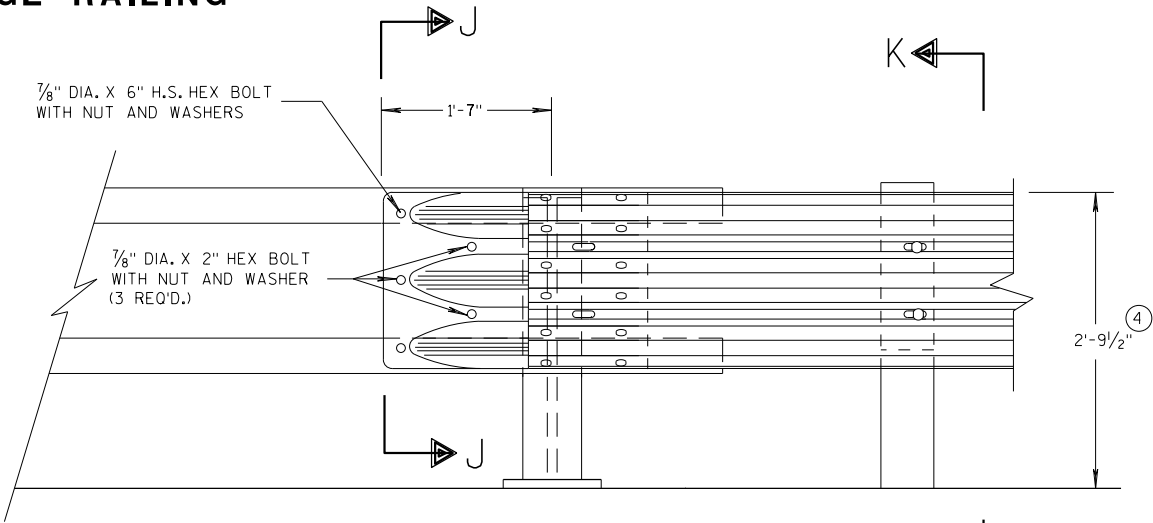
BACK-UP PLATE DETAIL



SECTION J-J

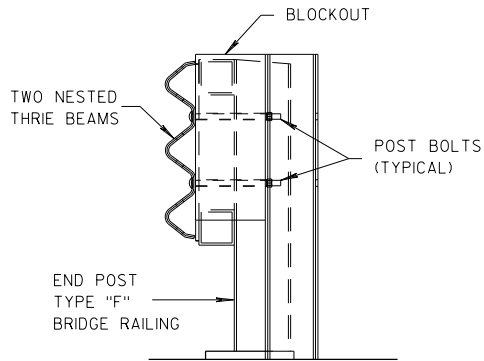


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

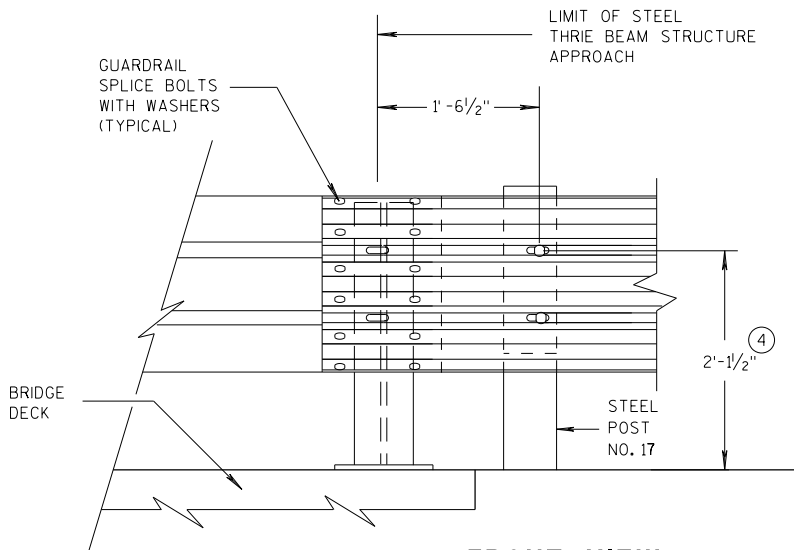
THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



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.



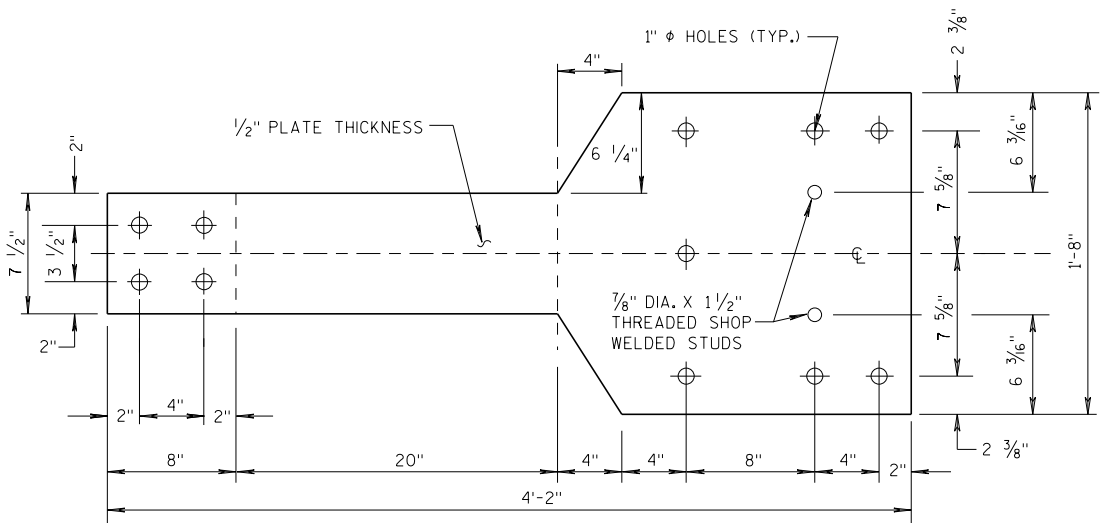
FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

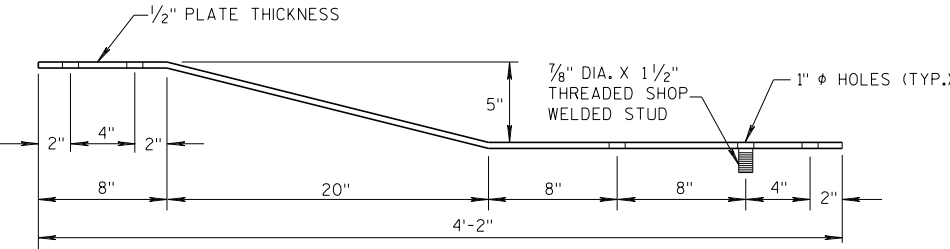
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018	/S/ Rodney Taylor
DATE	ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

GENERAL NOTES

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

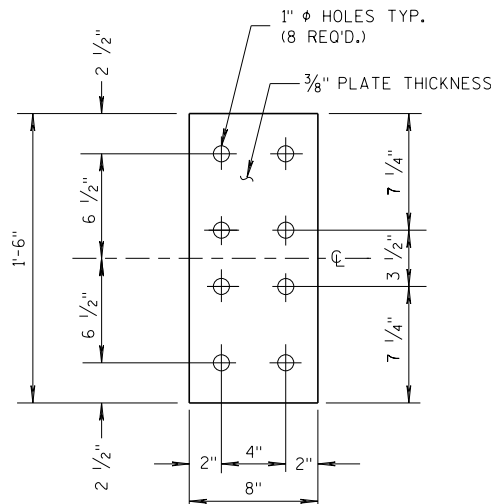


FRONT VIEW



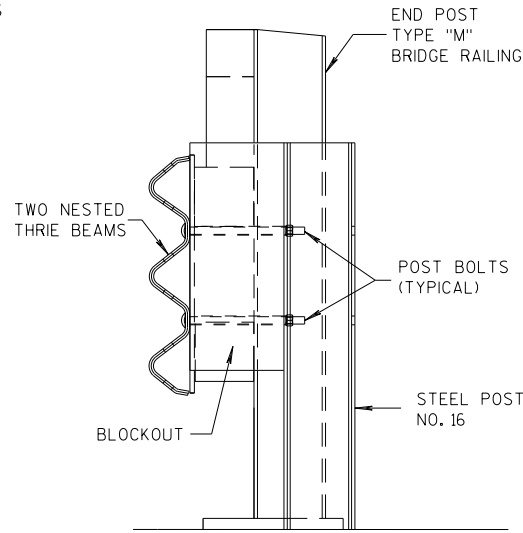
PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

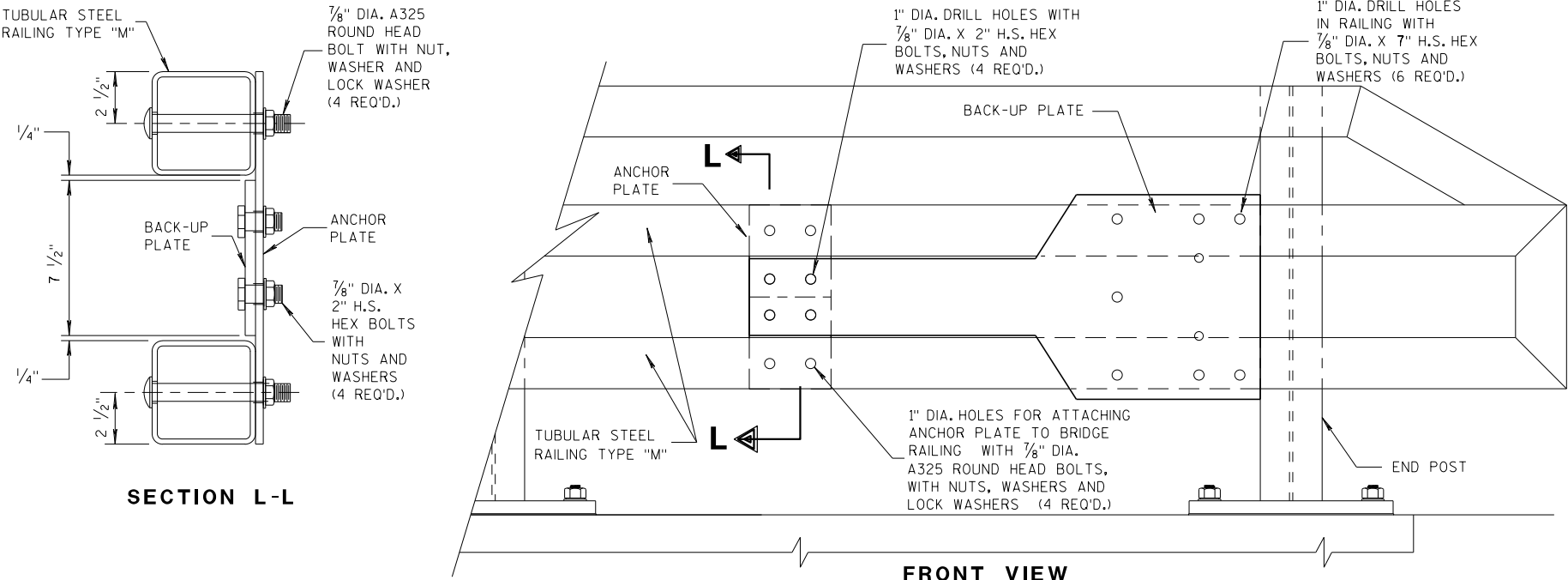


FRONT VIEW

ANCHOR
PLATE DETAIL,
TYPE "M"



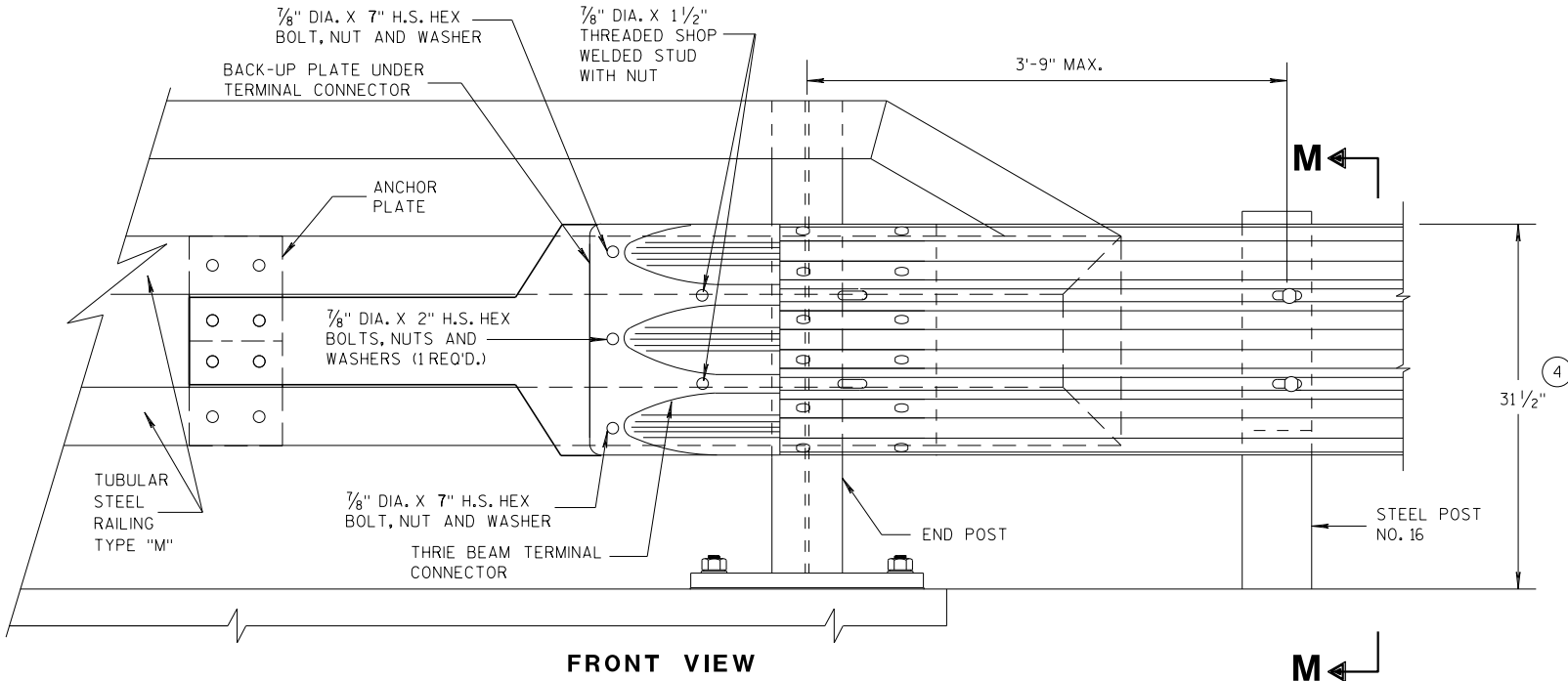
SECTION M-M



SECTION L-L

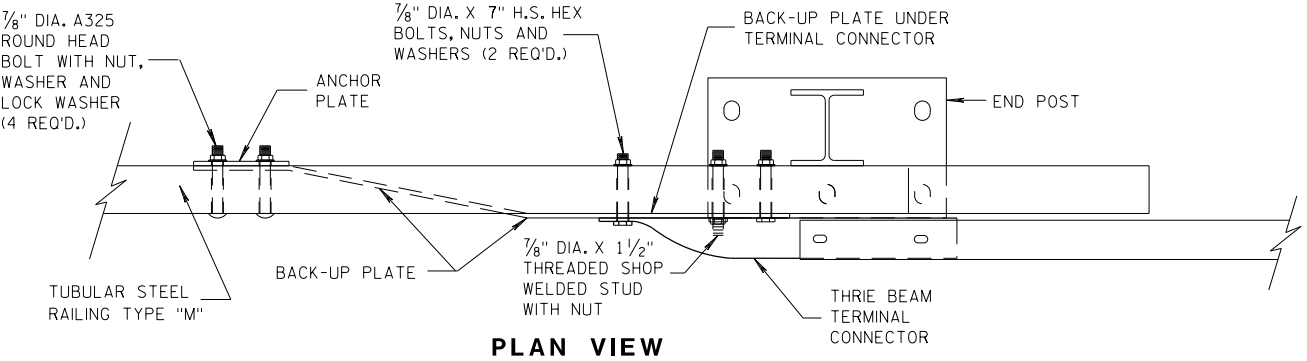
FRONT VIEW

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



FRONT VIEW

M



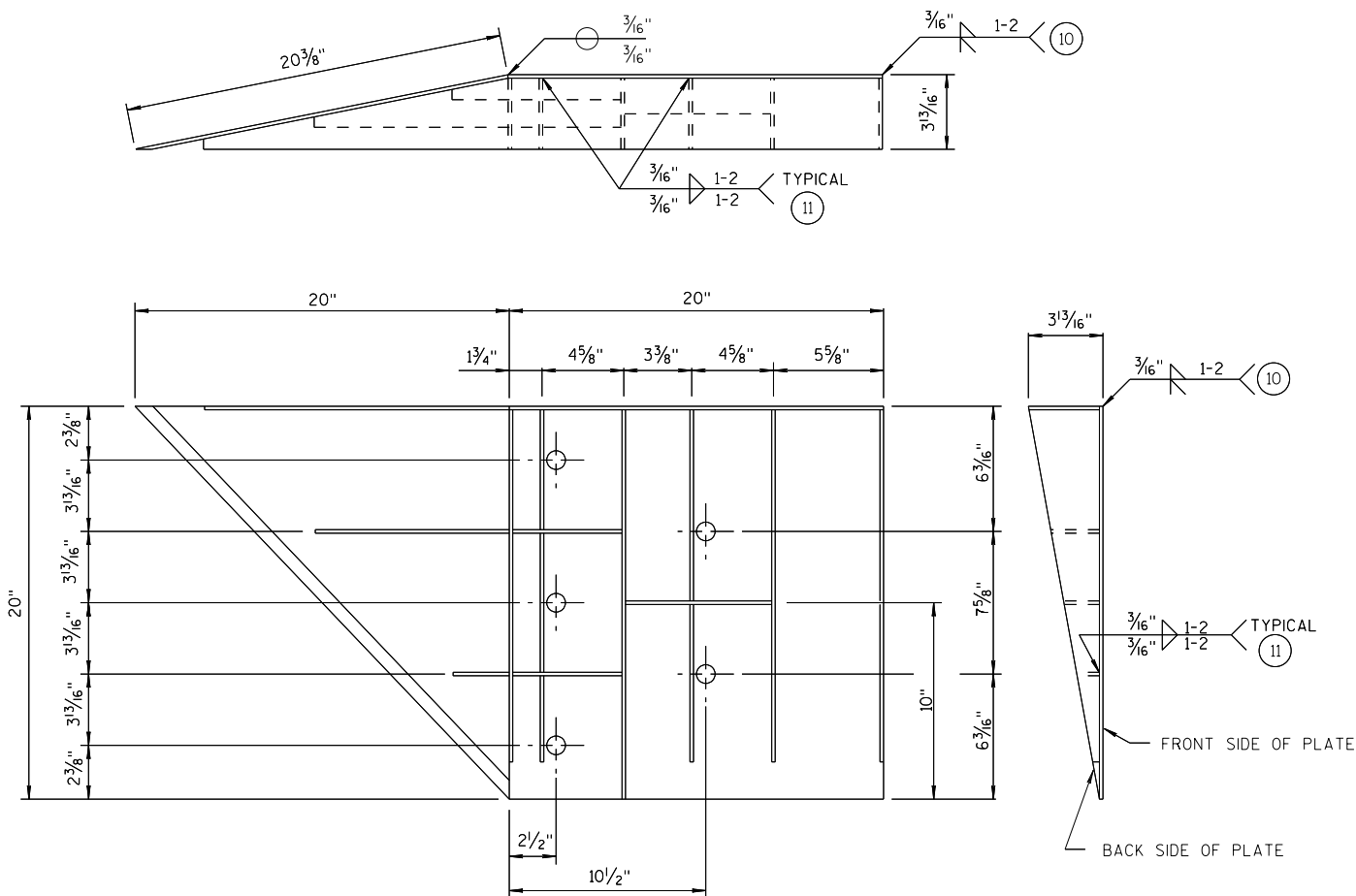
PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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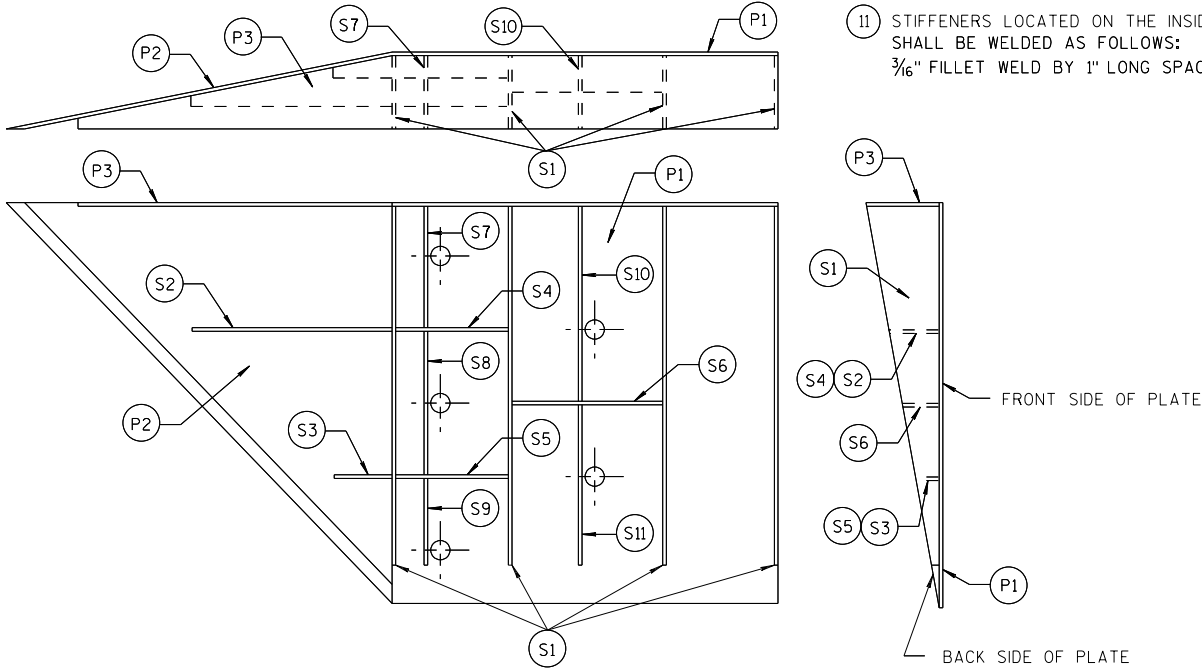


WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

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

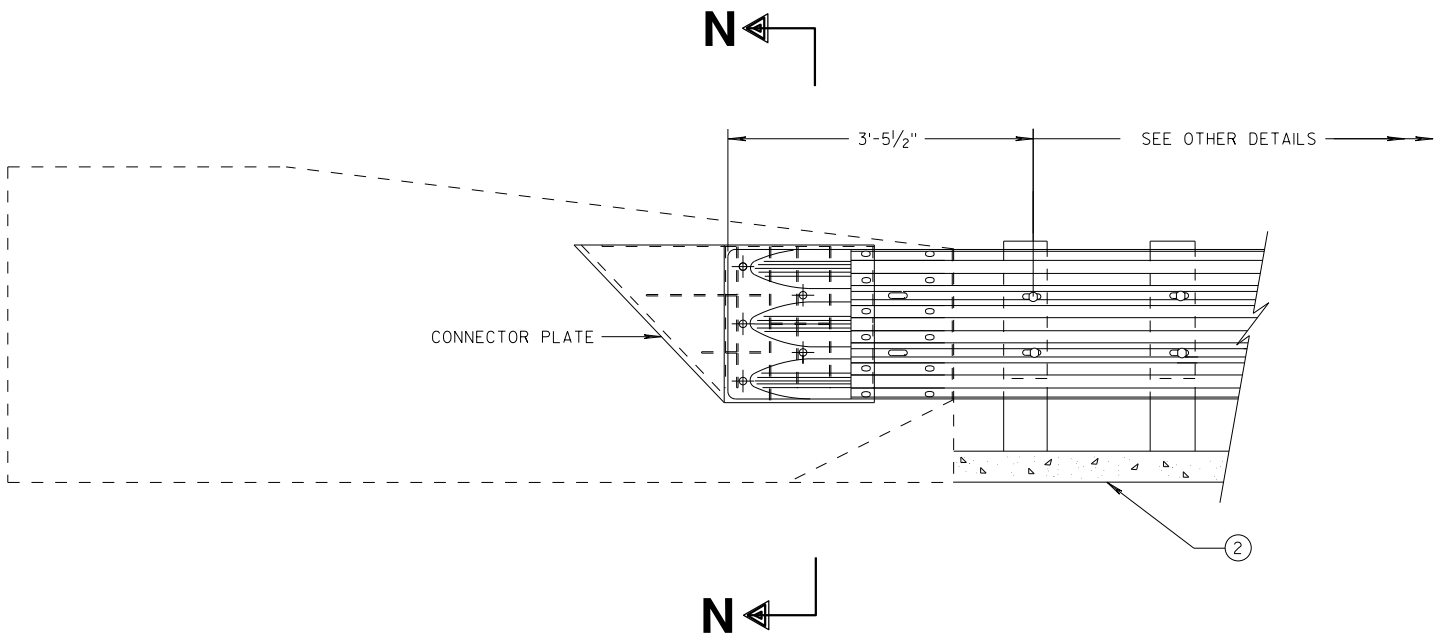
- COVER PLATE PANELS ARE 3/16" THICK.
- ALL STIFFENERS ARE 1/4" THICK.
- CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.
- FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.
- ALL HOLE DIAMETERS SHALL BE 1".
- FOR OPPOSITE SIDE INSTALLATION MIRROR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

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

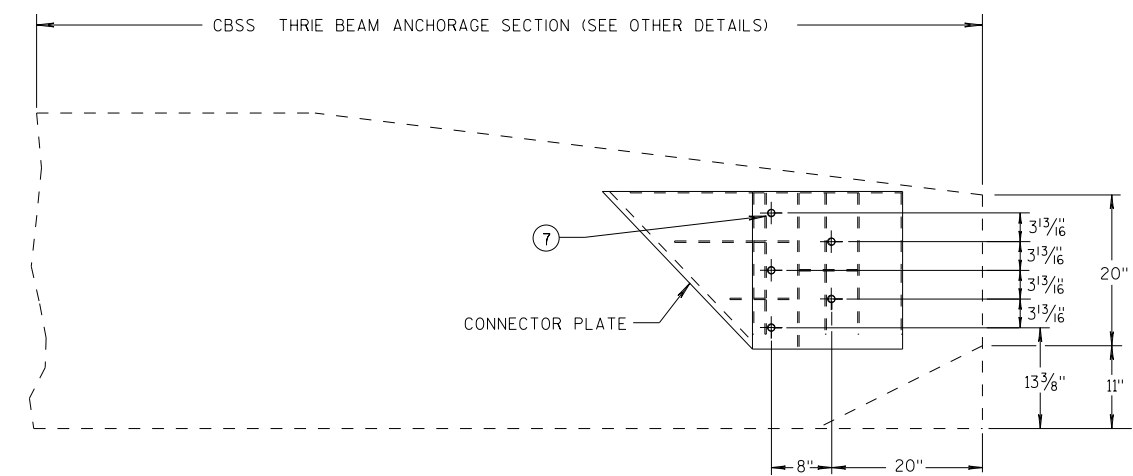
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



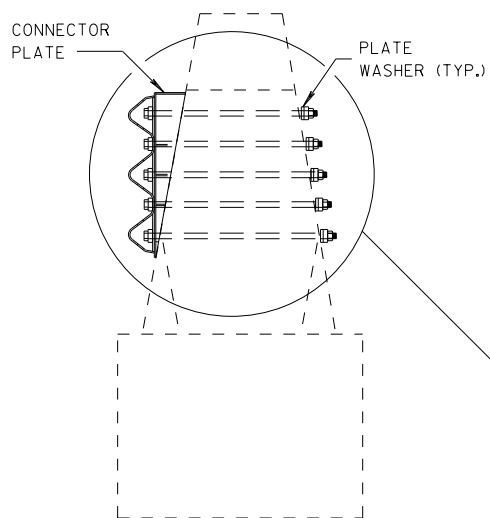
THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



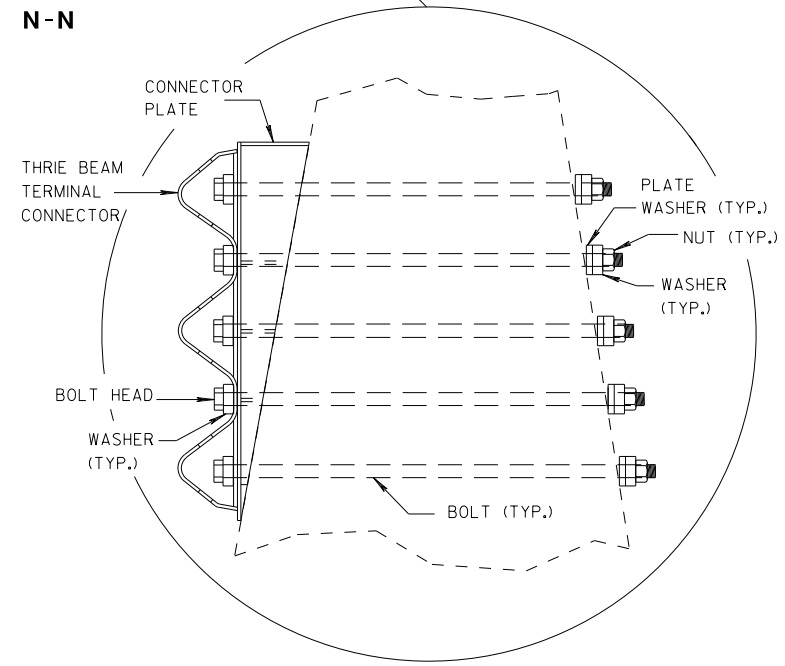
SINGLE SLOPE CONNECTION PLATE PLACEMENT

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 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.



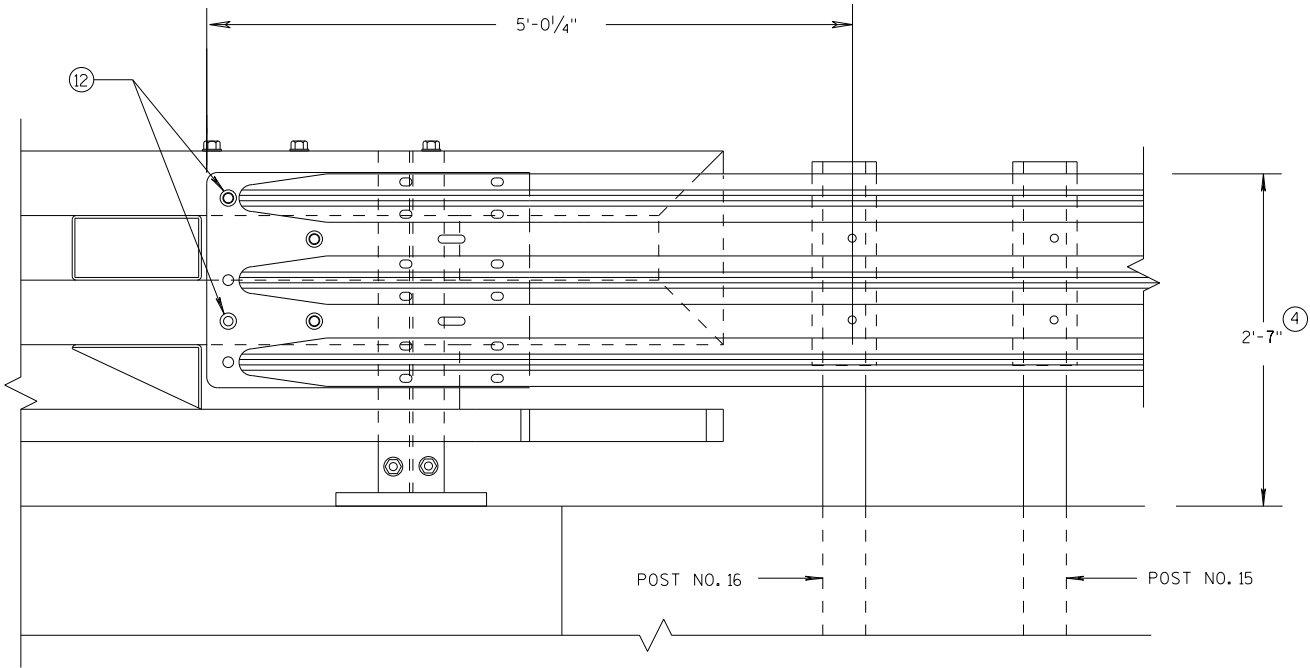
SECTION N-N



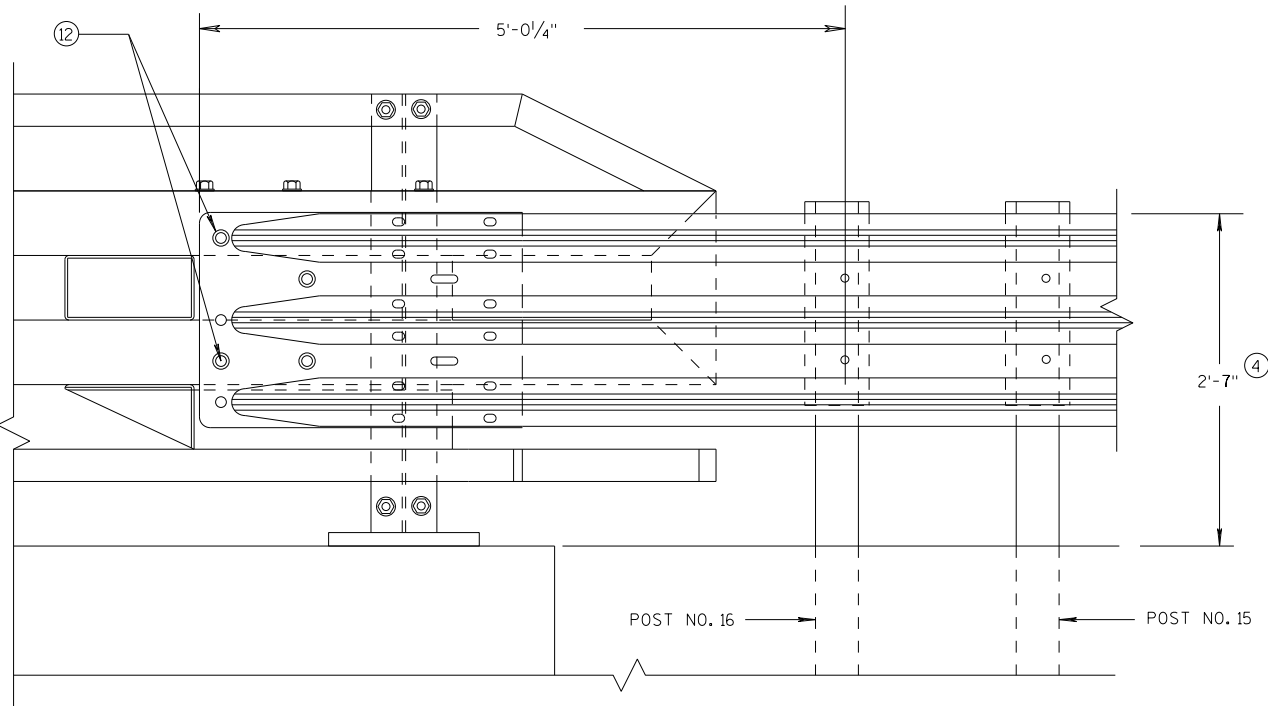
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 7/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

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

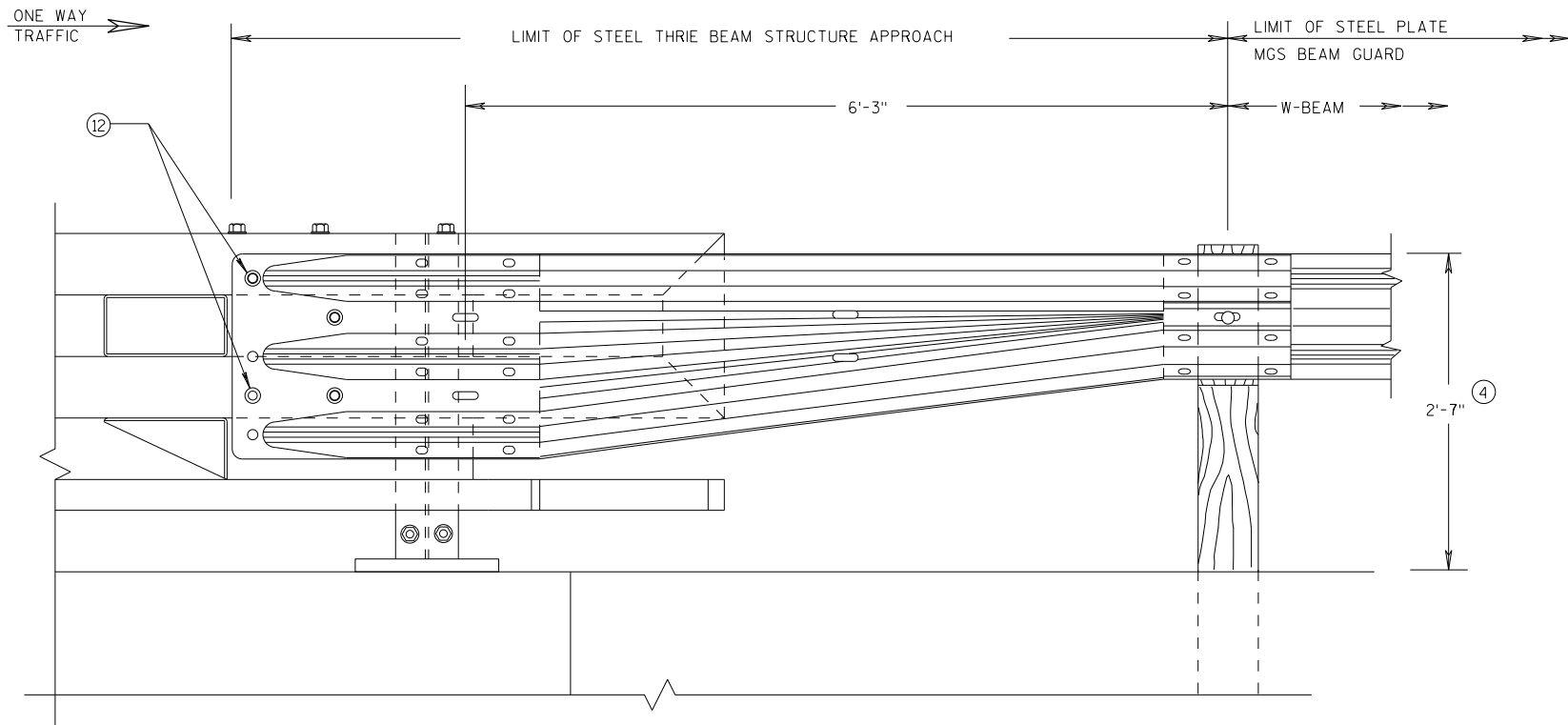


ELEVATION OF DETAIL AT NY4 END POST
THRIE BEAM RAIL ATTACHMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



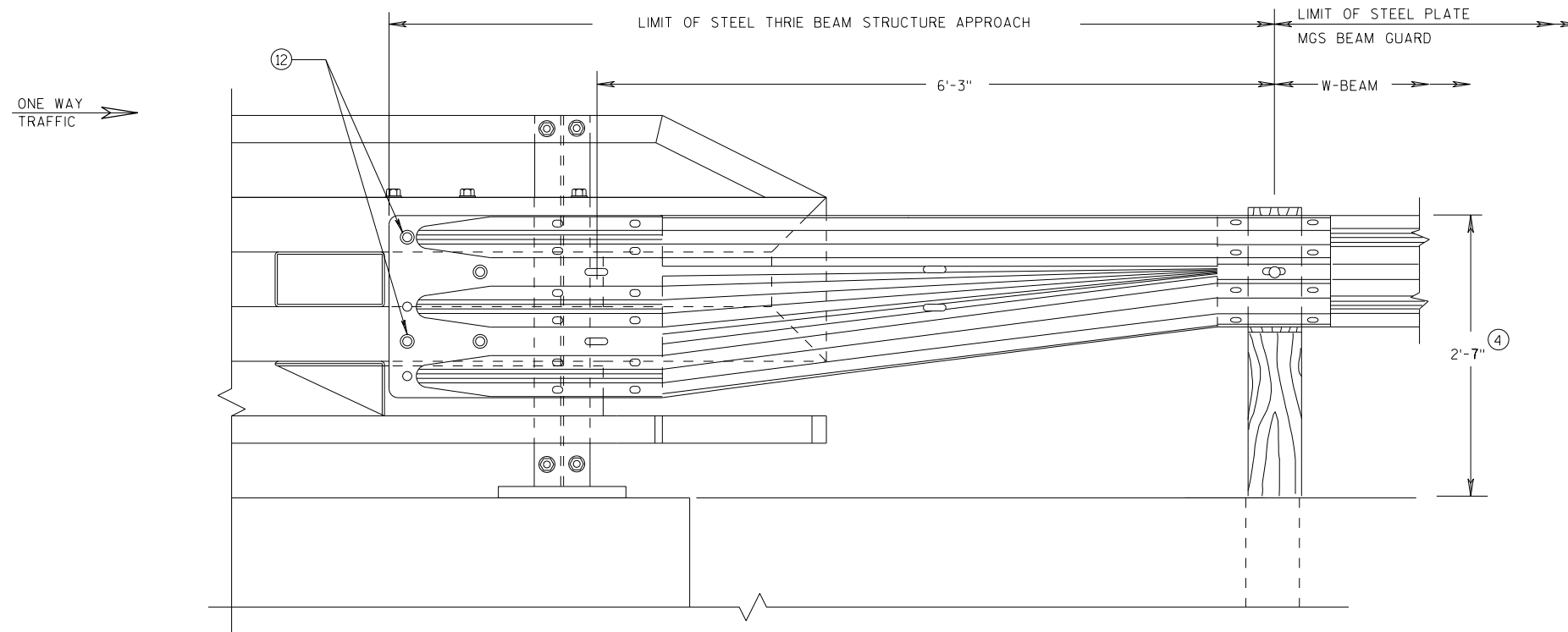
GENERAL NOTES

(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.

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

7/2018

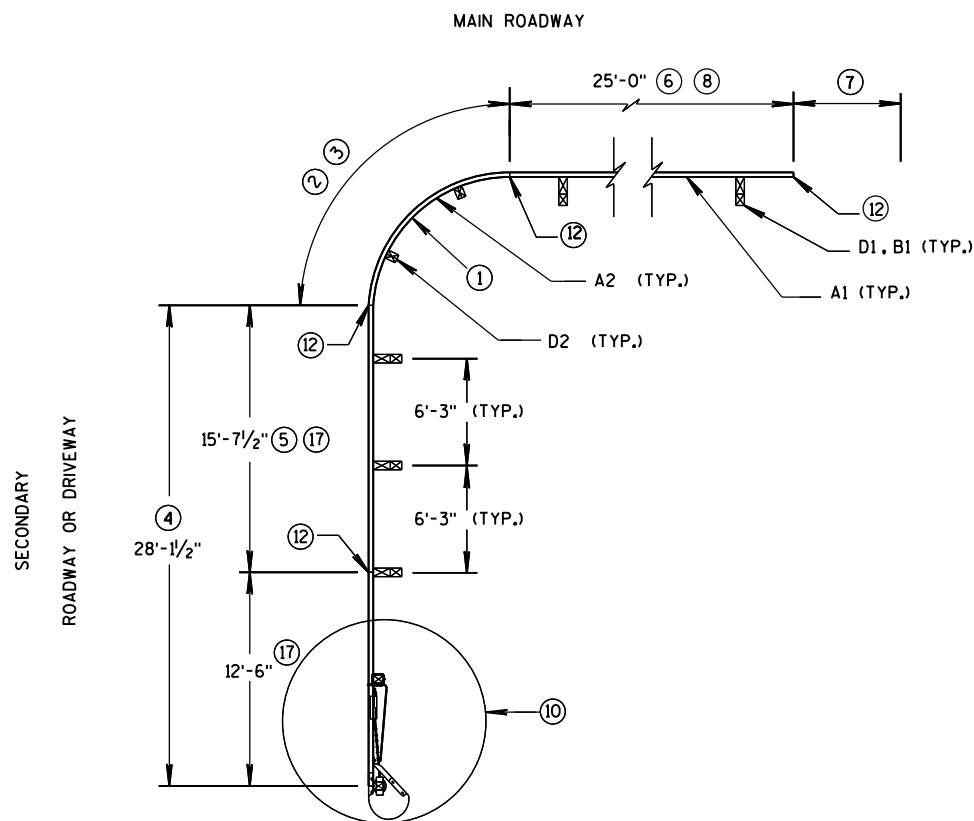
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FHWA

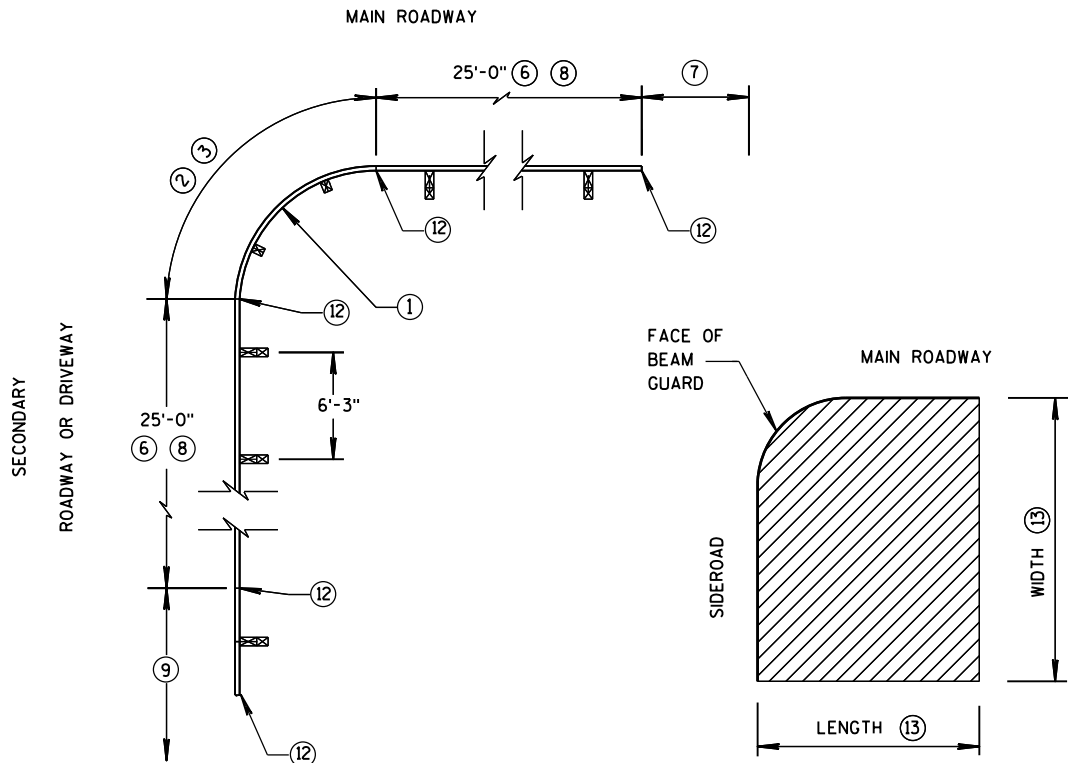
/S/ Rodney Taylor

ROADWAY STANDARDS DEVELOPMENT

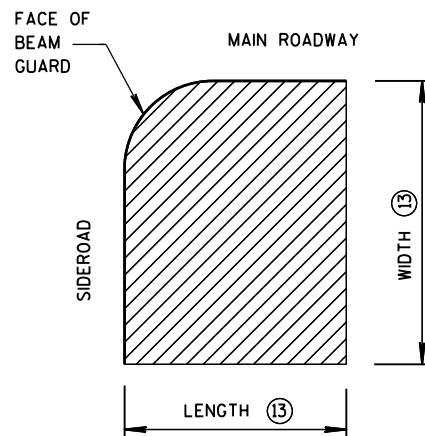
UNIT SUPERVISOR



SHORT RADIUS BEAM GUARD WITH
SHORT RADIUS TERMINAL ON
SECONDARY ROAD OR DRIVEWAY
PLAN VIEW



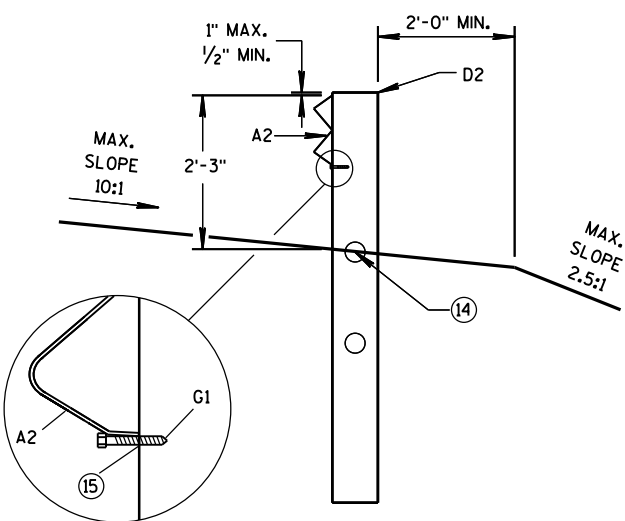
SHORT RADIUS BEAM GUARD WITH
EAT, ADDITIONAL BEAM GUARD
OR
TRANSITION TO RIGID BARRIER
ON SECONDARY ROAD OR
DRIVEWAY
PLAN VIEW



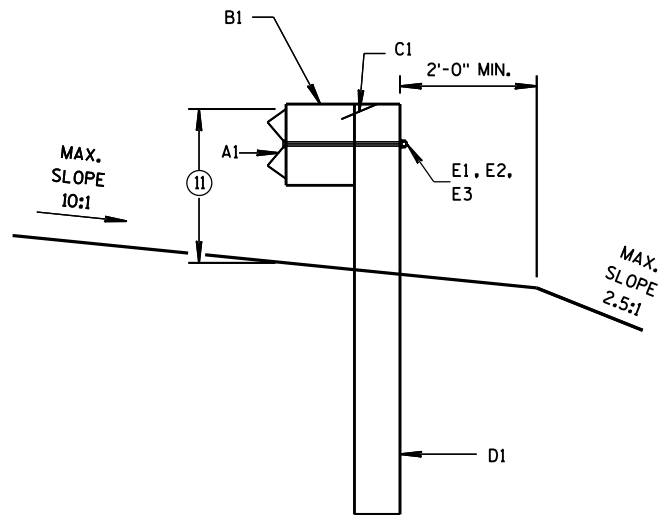
AREA FREE OF
FIXED OBJECTS FOR
RADIUS 32' AND LESS (16)

TABLE FOR RADIUS OF 32' AND LESS

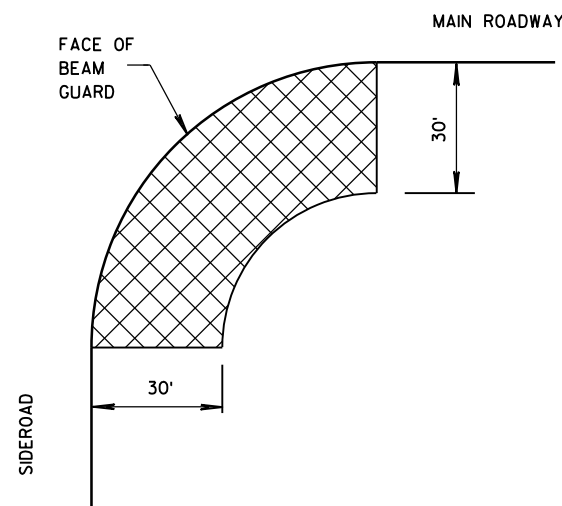
RADIUS FT	LENGTH FT	WIDTH FT
8	25	15
16	30	15
24	40	20
32	50	30



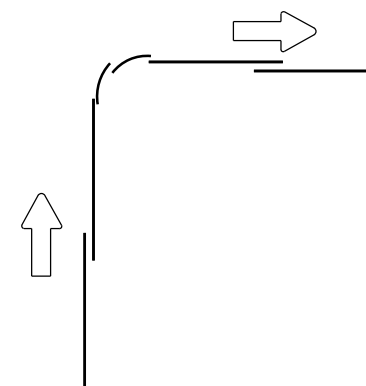
CONTROLLED RELEASE
TERMINAL POST (CRT) IN RADIUS



BEAM GUARD POSTS
IN HEIGHT TRANSITION



AREA FREE OF FIXED OBJECTS (16)
RADIUS GREATER THAN 32'



LAP SPLICE DETAIL

GENERAL NOTES

SEE PLANS FOR OTHER BARRIER SYSTEM AND LOCATION SPECIFICS.

SEE 14B42 FOR MORE INFORMATION ON BEAM GUARD INSTALLATION, PARTS, MATERIALS, AND INSTALLATION INFORMATION.

GALVANIZE PARTS AFTER FABRICATION.

WELDING IS TO FOLLOW CURRENT REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE ANSI/AWS D1.1

UNLESS NOTED OTHERWISE, ALL PLATES ARE FLAT AND FREE OF WARP.

UNLESS NOTED OTHERWISE, ALL EDGES ARE SMOOTH, STRAIGHT AND VERITCAL.

ALL CUTS AND HOLES, EXCEPT IN BEAM GUARD RAIL ARE TO BE MACHINED OR MACHINE FLAME CUTS.

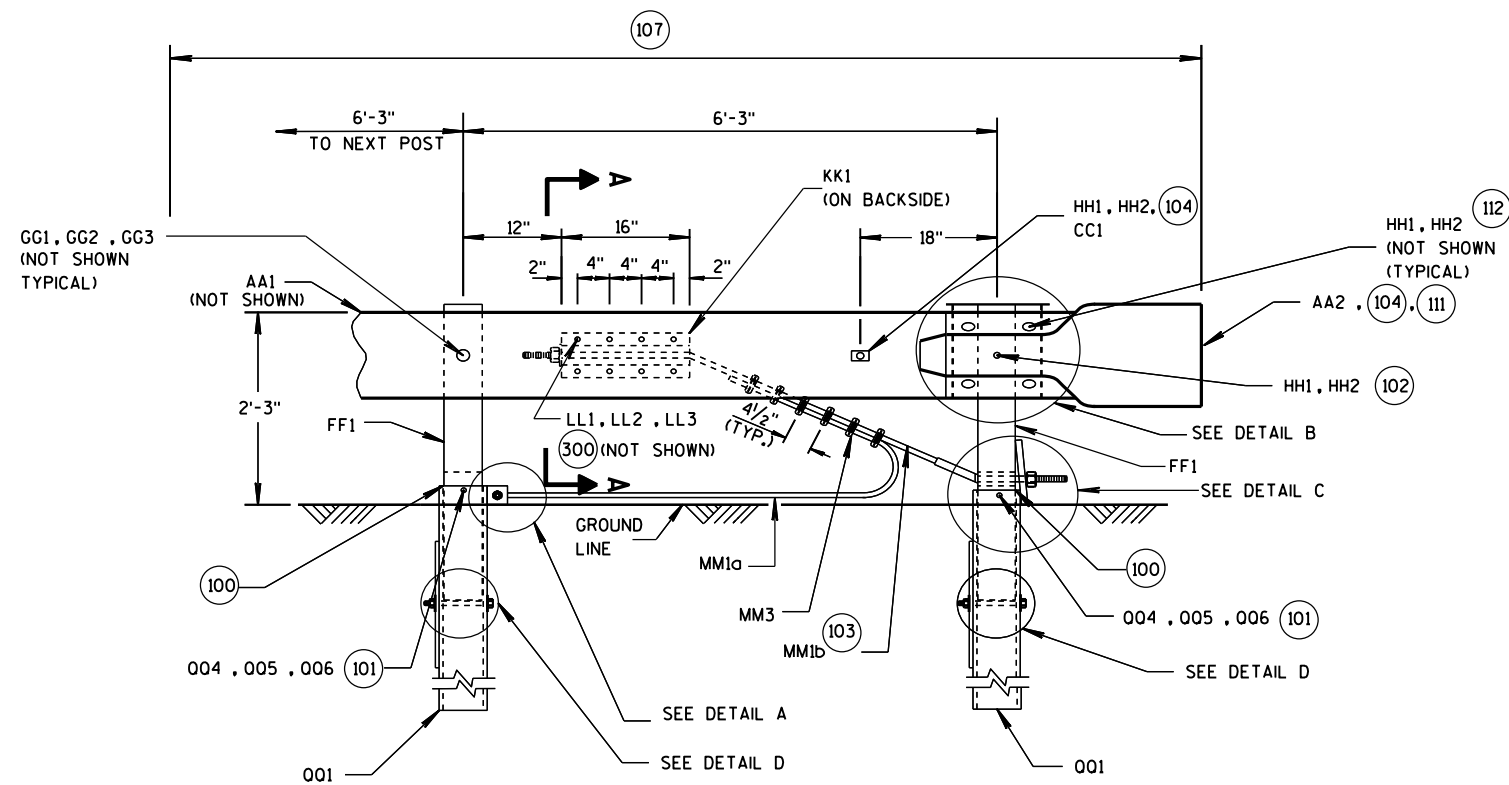
UNLESS NOTED OTHERWISE CUT OR PROVIDE BOLTS THAT ARE 1/4" TO 1/2" BEYOND THE NUT

DRAWINGS ARE NOT TO SCALE.

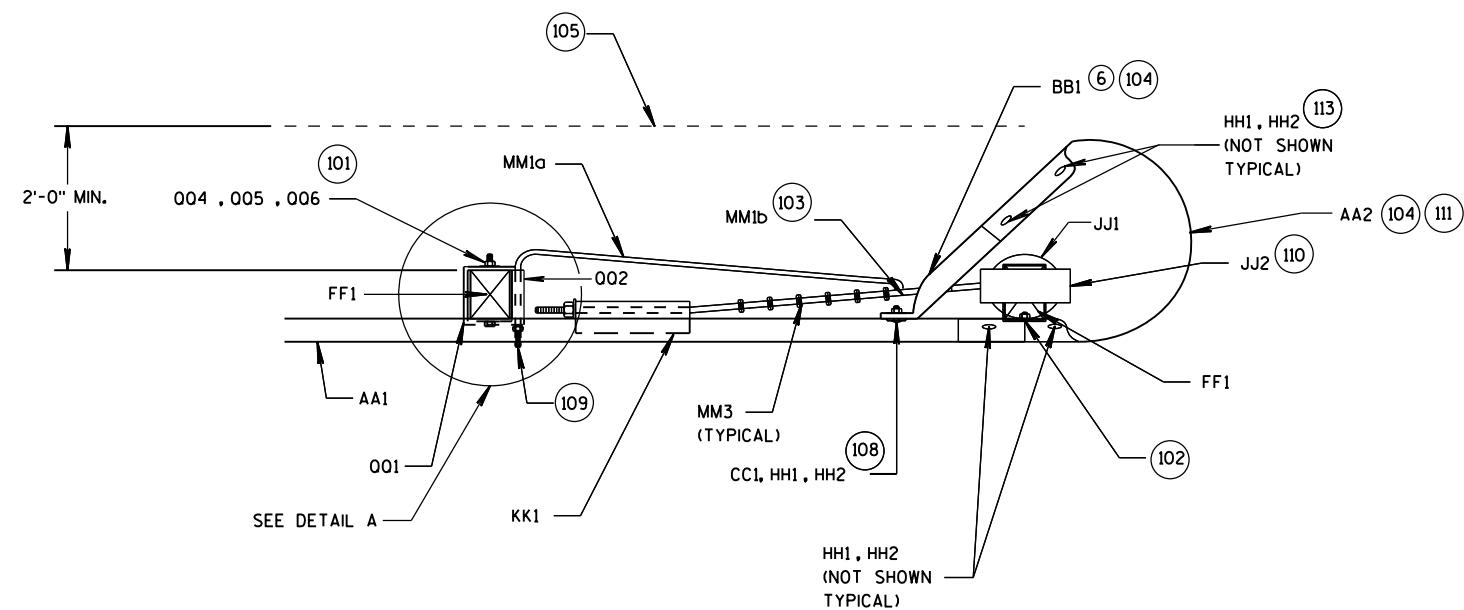
- (1) RADIUS MEASURE FROM INSIDE OF RAIL. LENGTH OF BEAM GUARD SHORT RADIUS GUARD MEASURED ALONG TRAFFIC SIDE OF RAIL. RADIUS BETWEEN 8 FEET TO 150 FEET. SEE PLAN FOR REQUIRED RADIUS. BEAM GUARD RAIL IN RADIUS IS SHOP BENT. ODD RAIL LENGTH OR FIELD CUTS MAY BE REQUIRED.
- (2) CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE USED IN THE RADIUS. CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE SPACED 6'-3". SEE PLAN FOR NUMBER OF CONTROLLED RELEASE TERMINAL (CRT) POSTS.
- (3) WITHIN RADIUS BEAM GUARD RAILS ARE NOT BOLTED TO POSTS. BEAM GUARD RAILS RESTED ON TOP OF LAG SCREW.
- (4) MINIMUM LENGTH OF BEAM GUARD ALONG SIDE ROAD OR DRIVEWAY TO INSTALL SHORT RADIUS TERMINAL. BEAM GUARD IS PAID FOR WITH BEAM GUARD ITEM.
- (5) ODD LENGTH OF BEAM GUARD REQUIRED TO INSTALL SHORT RADIUS TERMINAL.
- (6) MINIMUM AMOUNT OF BEAM GUARD TO BE INSTALLED PRIOR TRANSITION TO RIGID BARRIER, ADDITIONAL BEAM GUARD, OR EAT. BEAM GUARD PAID FOR WITH BEAM GUARD ITEM. SEE PLANS FOR MORE DETAIL.
- (7) BEAM GUARD, EAT OR TRANSITION TO RIGID BARRIER. SEE PLAN.
- (8) TOP OF BEAM GUARD BY THE RADIUS IS 27". HEIGHT OF BEAM GUARD IS 31" BY TRANSITION TO RIGID BARRIER, ADDITIONAL BEAM GUARD OR EAT.
- (9) ADDITIONAL BEAM GUARD, EAT OR TRANSITION TO RIGID BARRIER. BEAM GUARD SHOWN. SEE PLAN FOR DETAILS.
- (10) SHORT RADIUS TERMINAL (SEE OTHER DETAILS)
- (11) HEIGHT VARIES. SEE NOTE (8) AND (17).
- (12) BEAM GUARD RAIL SPLICE LOCATION. SPLICE LOCATION REQUIRE PART F1 AND F2. SEE SDD 14B42 FOR DETAILS.
- (13) SEE TABLE FOR VALUES.
- (14) MAXIMUM HEIGHT FOR CENTER OF HOLE IS 3/4" ABOVE FINISHED GROUND ±1".
- (15) DRILL 15/64" DIA. PILOT HOLE. DO NOT HAMMER LAG SCREW INTO POST.
- (16) SMALL SIGNS ON BREAKAWAY HARDWARE ARE ACCEPTABLE.
- (17) TOP OF RAIL HEIGHT IS 27" WHEN USING A SHORT RADIUS TERMINAL.

SHORT RADIUS BEAM GUARD
(MGS) SHORT RADIUS
TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

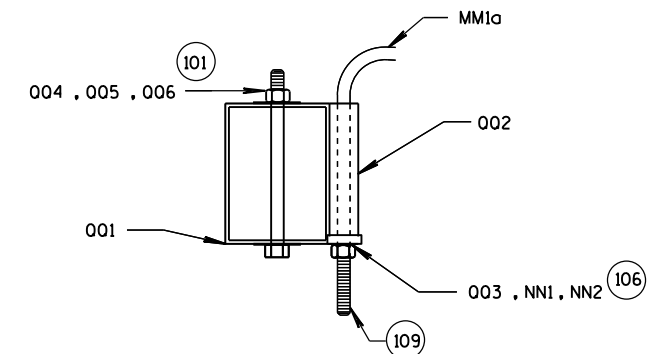


**SHORT RADIUS TERMINAL
PROFILE VIEW**

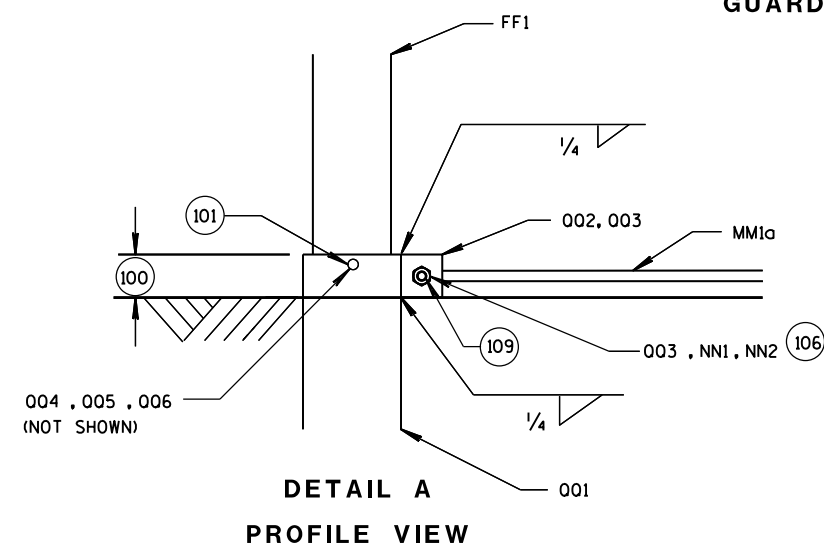


**SHORT RADIUS TERMINAL
TOP VIEW**

- (100) TOP OF FOUNDATION TUBE 2 INCHES MAXIMUM ABOVE FINISHED GROUND.
- (101) WASHERS REQUIRED BETWEEN BOLT HEAD AND FOUNDATION TUBE AND BETWEEN NUT AND FOUNDATION TUBE.
- (102) SPLICE BOLT AND NUT CONNECTS BEAM GUARD RAIL, W-BEAM END SECTION BUFFER, AND STEEL PIPE ASSEMBLY. NO WASHER REQUIRED. SEE DETAIL B.
- (103) CABLE IS TAUT.
- (104) ADJUST AA2 AND BB1 TO FIT.
- (105) BREAK POINT OF SHOULDER.
- (106) TACK WELD CABLE CONNECTOR TUBE PLATE TO CABLE CONNECTION TUBE. SEE DETAIL A PROFILE VIEW.
- (107) PAY LIMIT FOR BEAM GUARD.
- (108) SQUARE WASHER BETWEEN HEAD OF BOLT AND TRAFFIC FACE OF BEAM GUARD. ROUND WASHER REQUIRED BETWEEN NUT AND BB1.
- (109) CUT OR PROVIDE THREADED STUD THAT IS FLUSH WITH FACE OF BEAM GUARD RAIL KK1 (PLUS OR MINUS 1/2" TOLERANCE). DEBURR AFTER CUTTING.
- (110) SEE STEEL PIPE ASSEMBLY DETAILS.
- (111) ATTACH UU2 WITH UU3. SHOP APPLY UU1 TO UU2.
- (112) FOUR HH1 AND HH2 REQUIRED TO ATTACH AA1 TO AA2.
- (113) FOUR HH1 AND HH2 REQUIRED TO ATTACH AA2 TO BB1.



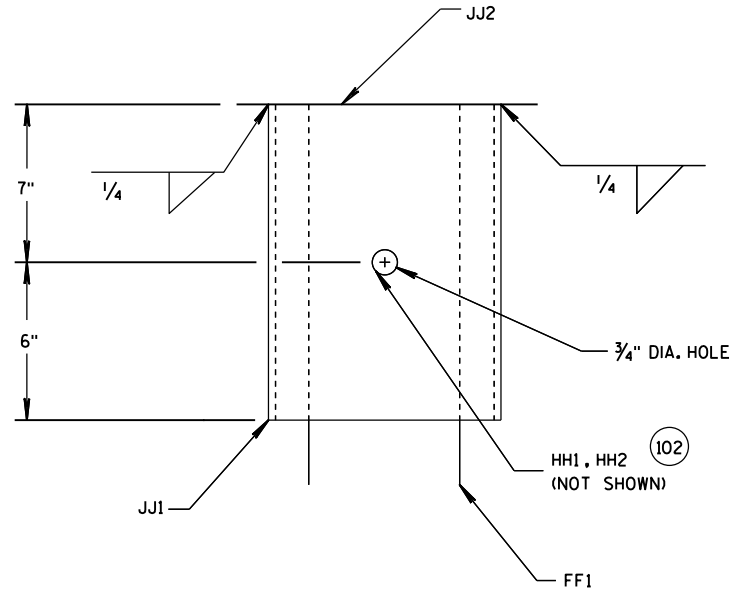
**DETAIL A
TOP VIEW
(WOOD BREAKAWAY AND BEAM
GUARD RAIL POSTS NOT SHOWN)**



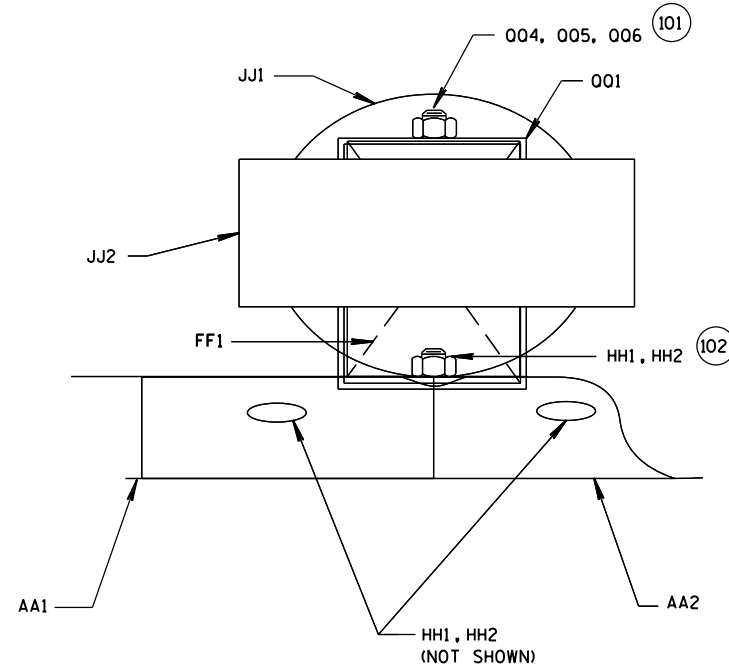
**DETAIL A
PROFILE VIEW**

**STEEL PLATE BEAM GUARD
SHORT RADIUS TERMINAL
MGS**

**STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION**

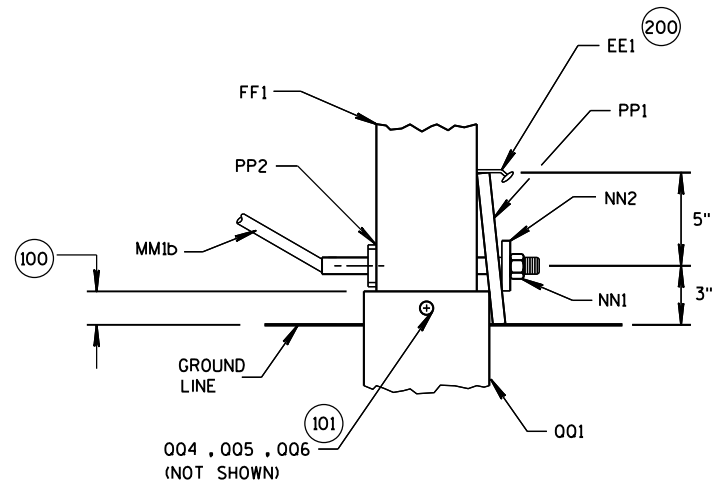


DETAIL B
PROFILE VIEW OF STEEL PIPE ASSEMBLY
 (BEAM GUARD AND W-BEAM
 END SECTION NOT SHOWN)

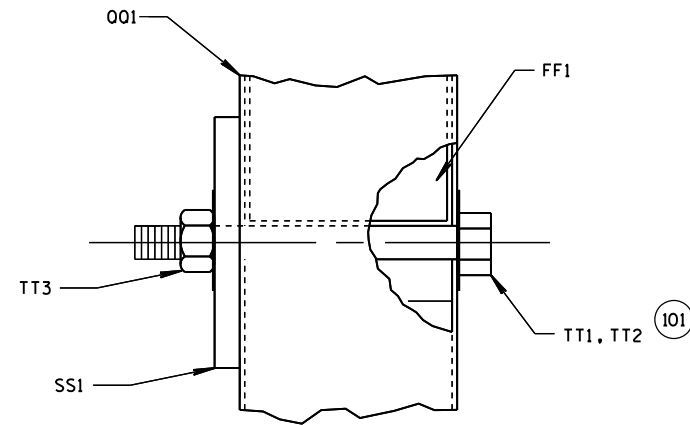


DETAIL B
PLAN VIEW OF STEEL PIPE ASSEMBLY

(200) 2 NAILS SPACED 4 INCHES CENTER TO CENTER.



DETAIL C
PROFILE VIEW



DETAIL D
PROFILE VIEW

**SHORT RADIUS BEAM GUARD
 (MGS) SHORT RADIUS
 TERMINAL (MGS)**

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION



LL1, LL2, LL3
(TYPICAL)

(300)

AA1

1 5/8"

1 3/4"

KK2

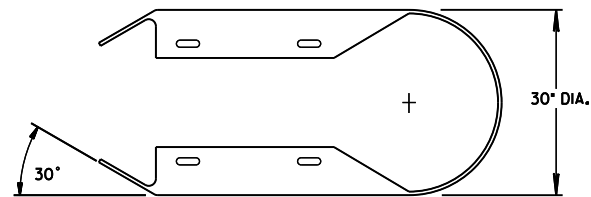
NN2, NN1, MM1b

KK1

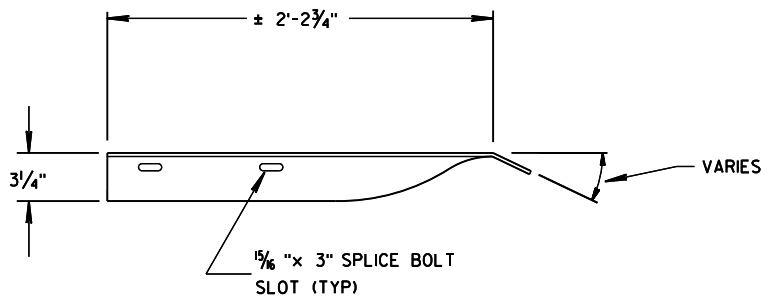
MM1b

SECTION A-A

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

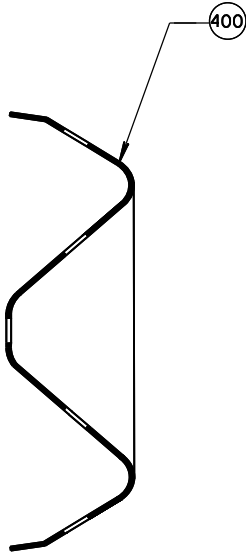


TOP VIEW

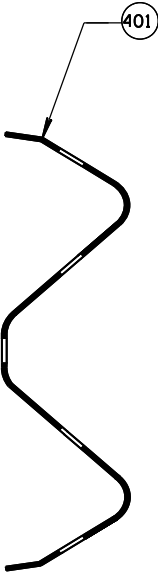


TOP VIEW

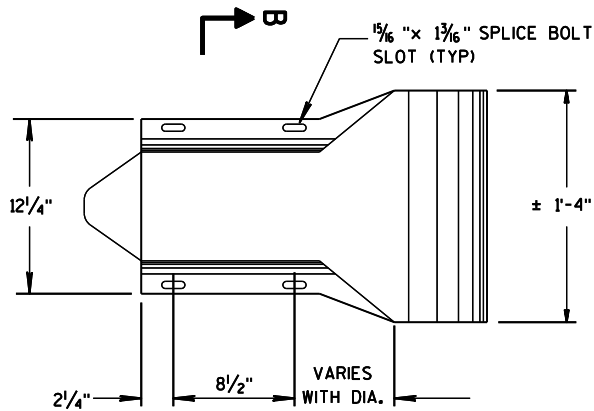
400 CROSS SECTION OF PART IS TO FIT OVER AA1.
401 CROSS SECTION OF PART IS TO FIT OVER OR UNDER AA1.



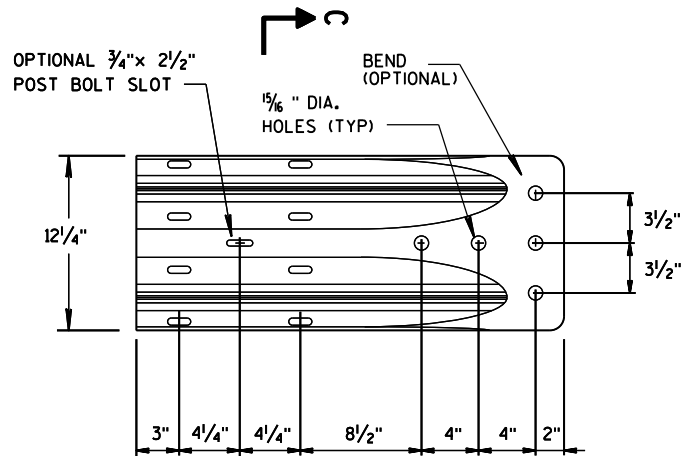
SECTION B-B



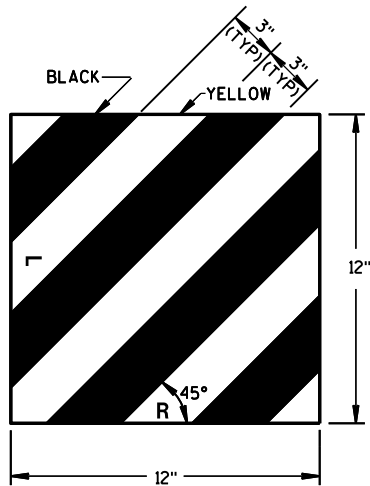
SECTION C-C



W-BEAM
END SECTION BUFFER (AA2)
PROFILE VIEW



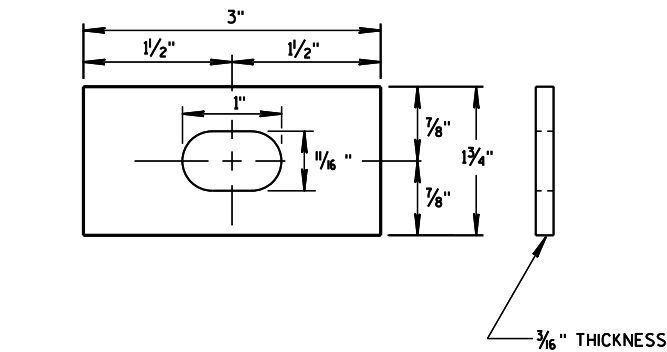
W-BEAM
TERMINAL CONNECTOR (BB1)
PROFILE VIEW



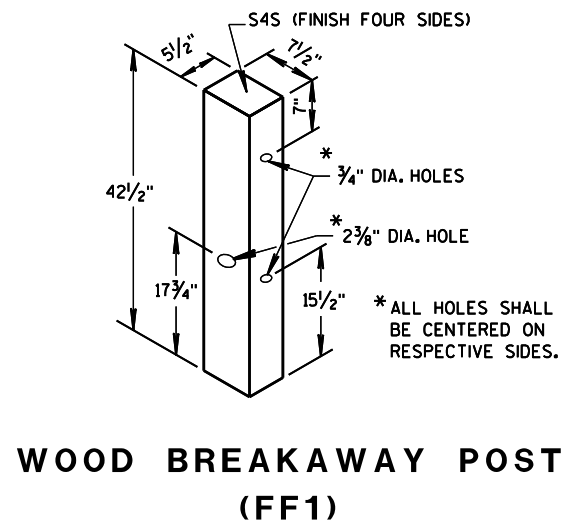
REFLECTIVE SHEETING
(UU1, UU2)

SHORT RADIUS BEAM GUARD
(MGS) SHORT RADIUS
TERMINAL (MGS)

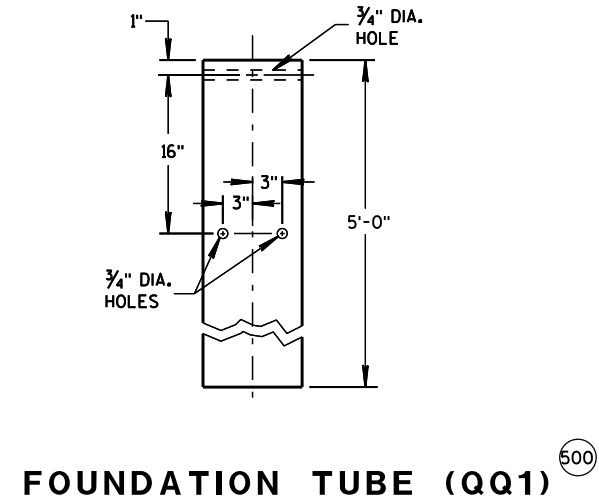
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



**RECTANGULAR
PLATE WASHER (CC1)**

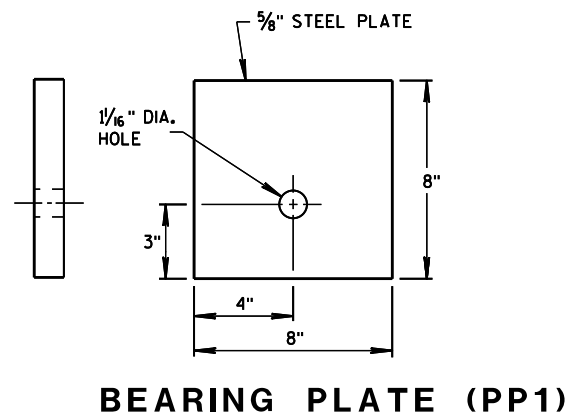


**WOOD BREAKAWAY POST
(FF1)**

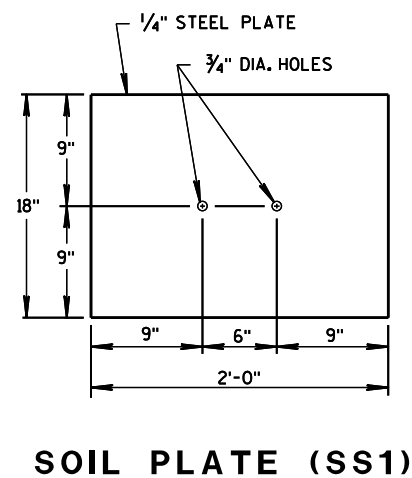


FOUNDATION TUBE (QQ1)

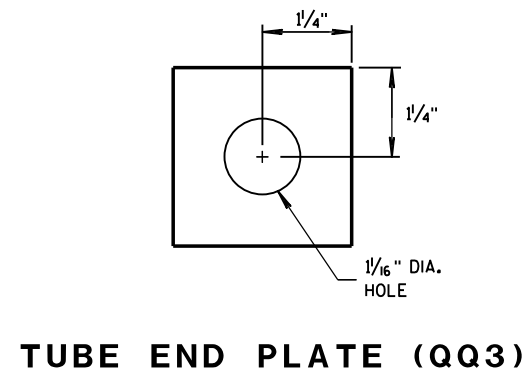
- (500) SEE DETAIL "D" FOR LOCATION AND ATTACHING SSL.
- (501) FOR MM1a THREADED STUD ONLY REQUIRED ON ONE END. SWAGED FITTING REQUIRED.
- (502) LOCATE HOLES ON THE CENTERLINE OF THE SIDE OF THE POST.
- (503) MM1a MAY HAVE ONE THREADED STUD 4 INCHES LONG. SEE NOTE (109).



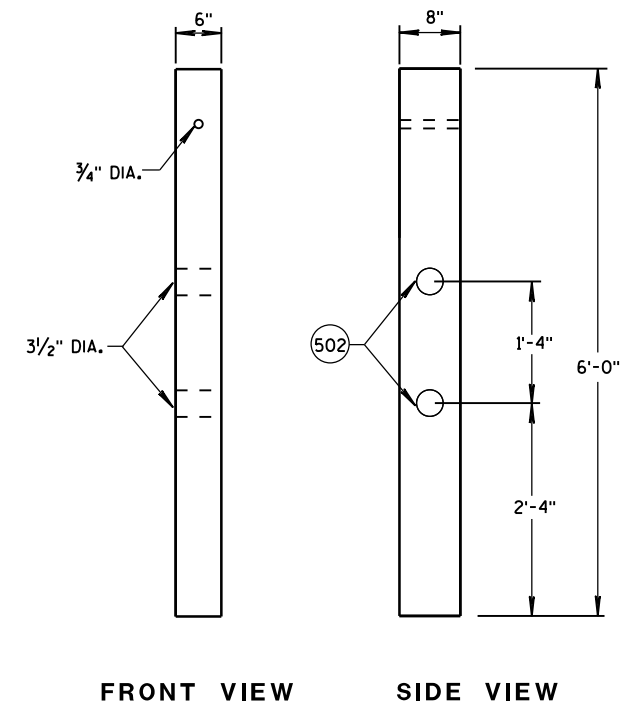
BEARING PLATE (PP1)



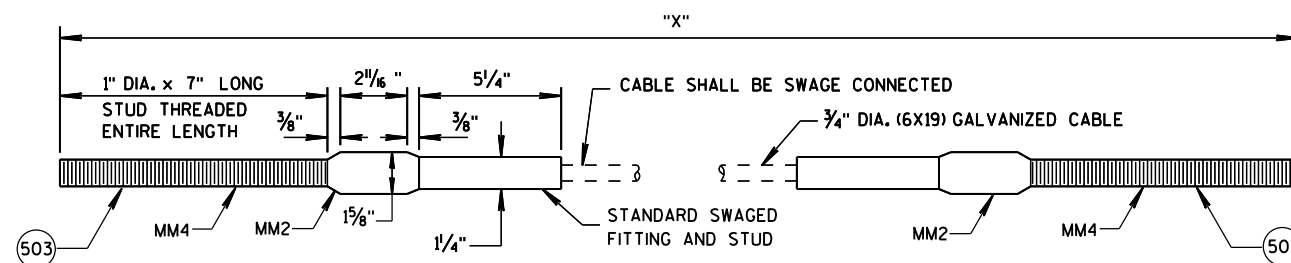
SOIL PLATE (SS1)



TUBE END PLATE (QQ3)



**CONTROLLED RELEASE
TERMINAL POST (CRT) (D2)**



CABLE ASSEMBLY (MM1a , MM1b)

"X" LENGTH	
MM1a	9'-0"
MM1b	6'-8"

**SHORT RADIUS BEAM GUARD
(MGS) SHORT RADIUS
TERMINAL (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
A1	BEAM GUARD RAIL	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
A2	BEAM GUARD RAIL - SHOP BENT	INDICATE ON BACK OF RAIL RADIUS THAT RAIL WAS BENT TO. SHOP BEND RADIUS IS TO THE NEAREST FOOT. FOLLOW AASHTO M180 ON HOW TO MARK RADIUS INFORMATION.	
		AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
B1	BLOCK - WOOD	WISDOT SPEC. 614	SEE SDD 14B42
C1	NAIL	ASTM A153 HOT DIP CLASS D	
		ASTM F1667 TYPE 1 STYLE 12 (16 DOUBLE HEAD)	
D1	POST-STRONG POST-WOOD	WISDOT SPEC. 614	SEE SDD 14B42
D2	POST-CRT-WOOD	WISDOT SPEC. 614	
E1	POST BOLT	ASTM A307 GRADE A OR SAE J429 GRADE 2	5/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		AASHTO M180	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
E2	POST BOLT-WASHER	ASTM F436 TYPE 1 (HARDEN TYPICALLY USED WITH STEEL) OR ASTM F844 (UNHARDENED TYPICALLY WITH WOOD)	5/8" DIA.
		GALV. AASHTO M111/ASTM A 123 OR GALV. HOT DIP, TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329	
E3	POST BOLT - NUT		5/8" DIA. SEE SDD 14B42 FOR GEOMETRY
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		ASTM A563 GRADE A HEAVY HEX HEAD	
F1	SPLICE BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	5/8" DIA. SEE SDD 14B42 FOR GEOMETRY AND OTHER INFORMATION
		ASTM A307 GRADE A OR SAE J429 GRADE 2	
		UNC	
		AASHTO M180	

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
F2	SPLICE BOLT - NUT	ASTM A563 GRADE A	5/8" DIA. SEE SDD 14B42 FOR GEOMETRY
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
G1	LAG SCREW	UNC	
		ASTM A308 GRADE A ASTM A153 CLASS D	
H1	DELINEATOR - BEAM GUARD		3/8" DIA. 3" LONG
H2	DELINEATION - SHEETING		SEE SDD 14B42 FOR MORE INFORMATION
J1	FOUNDATION BACKFILL	YELLOW OR WHITE	
		WISDOT SPEC 637 TYPE SH	
AA1	BEAM GUARD RAIL - PUNCHED	APPROVED PRODUCT LIST	
		STANDARD SPEC. 614	
AA2	BEAM GUARD RAIL - END SECTION BUFFER	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
BB1	BEAM GUARD RAIL - TERMINAL CONNECTOR MODIFIED	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
CC1	SHORT RADIUS - SQUARE WASHER	AASHTO M180	
		GALV. AASHTO M111 / ASTM A123	
EE1	NAIL	ASTM A153 HOT DIP CLASS D	
		ASTM F1667 TYPE 1 STYLE 12 (16 DOUBLE HEADED)	
FF1	POST - BCT - WOOD	S4S FINISH ON 4 SIDES	
		WISDOT SPEC. 614	
GG1	POST BOLT	ASTM A307 GRADE A OR SAE J429 GRADE 2	3/8" DIA. SEE SDD 14B42 FOR GEOMETRY
		AASHTO M180	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
GG2	POST BOLT - WASHER	UNC	
		ASTM F436 TYPE 1 (HARDEN TYPICALLY USED WITH STEEL) OR ASTM F844 (UNHARDENED TYPICALLY WITH WOOD)	
		GALV. AASHTO M111 / ASTM A123 OR 5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	3/8" DIA.

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
GG3	POST BOLT - NUT	ASTM A563 GRADE A	3/8" DIA.
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	SEE 14B42 FOR GEOMETRY
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		ASTM A563 GRADE A HEAVY HEX HEAD	
HH1	SPLICE BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	3/8" DIA. SEE 14B42 FOR GEOMETRY
		ASTM A307 GRADE A OR SAE J429 GRADE 2	
		UNC	
		AASHTO M180 HEAD GEOMETRY	
HH2	SPLICE BOLT - NUT	ASTM A563 GRADE A	3/8" DIA.
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	SEE 14B42 FOR GEOMETRY
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		UNC	
JJ1	PIPE - STEEL	ASTM A53 GALVANIZED GRADE B SCHEDULE 40	10" O.D.
JJ2	TOP PLATE	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	DIMENSIONS 3/8" X 4" X 1'-0"
		GALV. AASHTO M111 / ASTM A123	
KK1	ANCHOR BRACKET	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
KK2	ANCHOR BRACKET - BEARING PLATE	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
LL1	ANCHOR BRACKET - BOLT	ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	5/8" DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
		ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	
LL2	ANCHOR BRACKET - WASHER	GALV. AASHTO M111 / ASTM A123 OR 5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	5/8" DIA.
LL3	ANCHOR BRACKET - NUT	ASTM A563 GRADE A	5/8" DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A563	
		UNC	

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
MM1a	ANCHOR CABLE	AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIC CLASS C ZINC COATED	
MM1b	ANCHOR CABLE	AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIC CLASS C ZINC COATED	
MM2	ANCHOR CABLE - SWAGE FITTING	ASTM A576 GRADE 1035	
		SWAGE FITTINGS ARE TO BE FACTORY SWEDGED. WITH A BREAKING STRENGTH 40,000 LBS.	
		GALV. AASHTO M111 / ASTM A123	
		ASME B30.26 FORGED, CAST, OR DIE STAMPED WITH THE FOLLOWING INTO CONNECTION: NAME OF MANUFACTURER OR TRADEMARK OF CONNECTION'S MANUFACTURER, SIZE OR RATED LOAD, GRADE.	
MM3	WIRE ROPE CABLE CLAMPS	FF-C-450D TYPE 1 CLASS 1	3/4"
		ASTM A153 HOT DIP CLASS D	
MM4	ANCHOR CABLE - SWAGE FITTING - STUD	ASTM F3125 GRADE A325 TYPE 1 OR SAE GRADE 5 OR ASTM A449 TYPE 1 HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
NN1	ANCHOR CABLE - NUT	ASTM A563 GRADE A	1" DIA.
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A563	
NN2	ANCHOR CABLE - NUT - WASHER	UNC	1" DIA.
		ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	
		GALV. AASHTO M111 / ASTM A123 OR 5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
PP1	BEARING PLATE AT POST	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
PP2	PIPE - STEEL	ASTM A53 GALVANIZED GRADE B SCHEDULE 40	2" DIA. x 6" LONG
QQ1	FOUNDATION TUBE	ASTM A500 GRADE B	8" X 6" X 3/16"
		GALV. AASHTO M111 / ASTM A123	
QQ2	SHORT RADIUS - FOUNDATION TUBE - ANCHOR CABLE - TUBE	ASTM A500 GRADE B	DIMENSIONS 2 1/2" X 2 1/4" X 1/4" X 8"
		GALV. AASHTO M111 / ASTM A123	

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
003	SHORT RADIUS - SOIL TUBE - ANCHOR CABLE - TUBE - END PLATE	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	DIMENSIONS 2 1/2" X 2 1/2" X 1/4"
		GALV. AASHTO M111 / ASTM A123	
004	GROUND STRUT AND YOKE - BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	5/8" DIA.
		ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	
		UNC	
005	GROUND PLATE AND YOKE - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	5/8" DIA.
		GALV. AASHTO M111 / ASTM A123 OR 5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
006	GROUND STRUT AND YOKE - NUT	HEAVY HEX	5/8" DIA.
		UNC	
		ASTM A563 GRADE A	
		OVER TAPPED NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
SS1	SOIL PLATE	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
TT1	SOIL PLATE - BOLT	ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	5/8" DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	
TT2	SOIL PLATE - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	5/8" DIA.
		GALV. AASHTO M111 / ASTM A123 OR 5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
TT3	SOIL PLATE - NUT	GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	5/8" DIA.
UU1	OBJECT MARKER - SHEETING	MUTCD / WISDOT OBJECT MARKER TYPE 3	PATTERN AND COLOR FOR SHEETING SHEETING TYPE FOR MARKER
		WISDOT SPEC 637 TYPE F	
		APPROVED PRODUCT LIST	
UU2	OBJECT MARKER - ALUMINUM PLATE	WISDOT SPEC 637 ALUMINUM PLATE	MATERIAL AND THICKNESS OF MATERIALS
UU3	OBJECT MARKER - SCREWS	STAINLESS SELF-TAPPING SCREWS	
VV1	FOUNDATION BACKFILL	WISDOT SPEC 614	

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

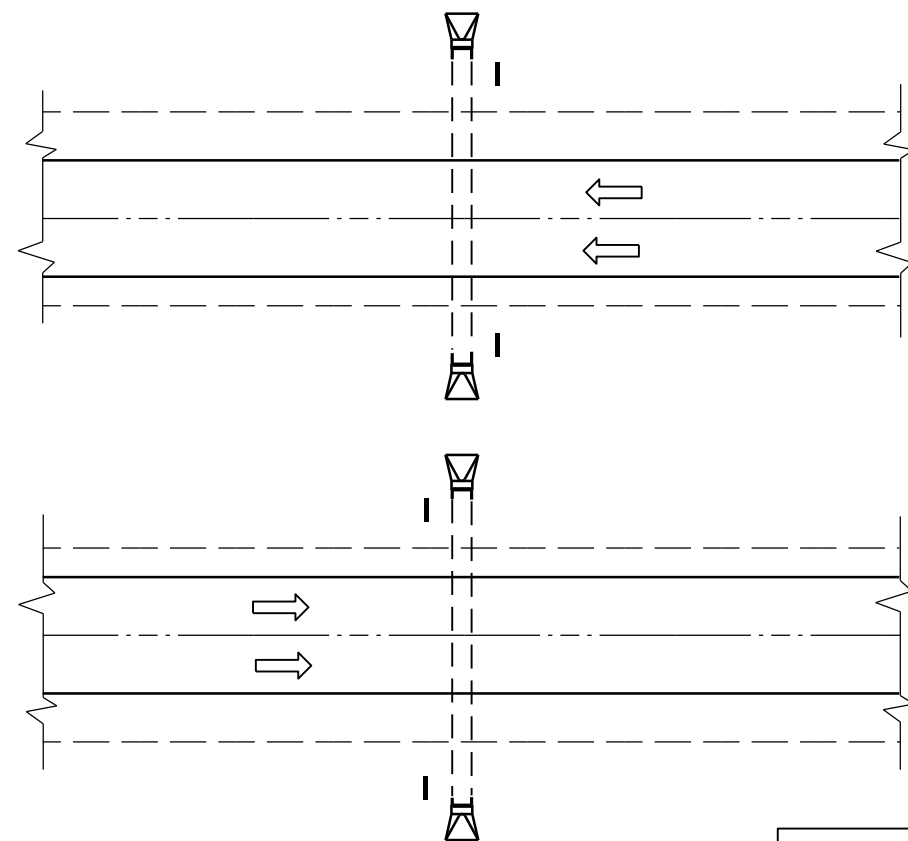
June 2017

DATE

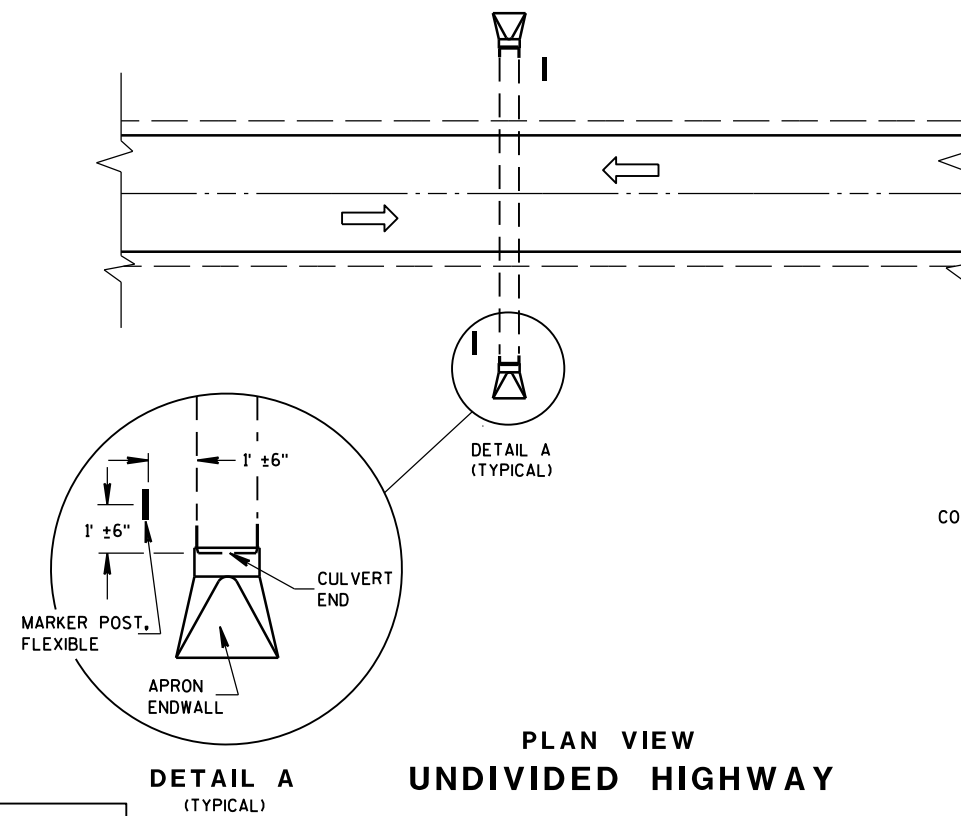
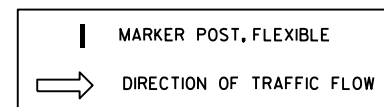
FHWA

/S/ Rodney Taylor

ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR



PLAN VIEW
DIVIDED HIGHWAY

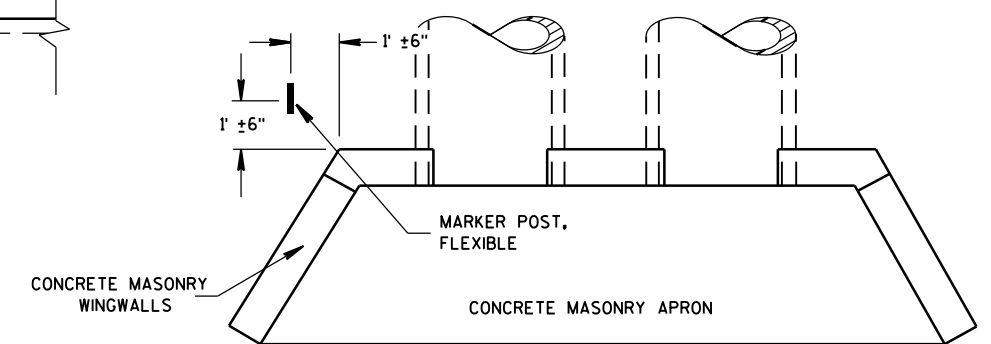


PLAN VIEW
UNDIVIDED HIGHWAY

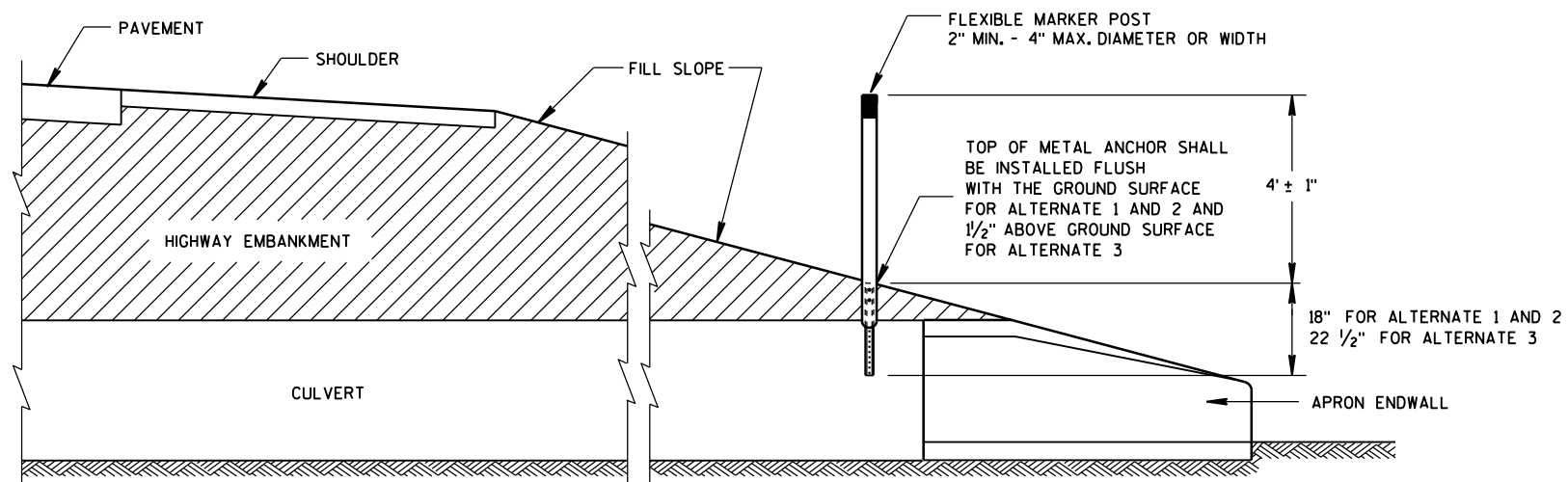
FLEXIBLE MARKER POST LOCATION

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.



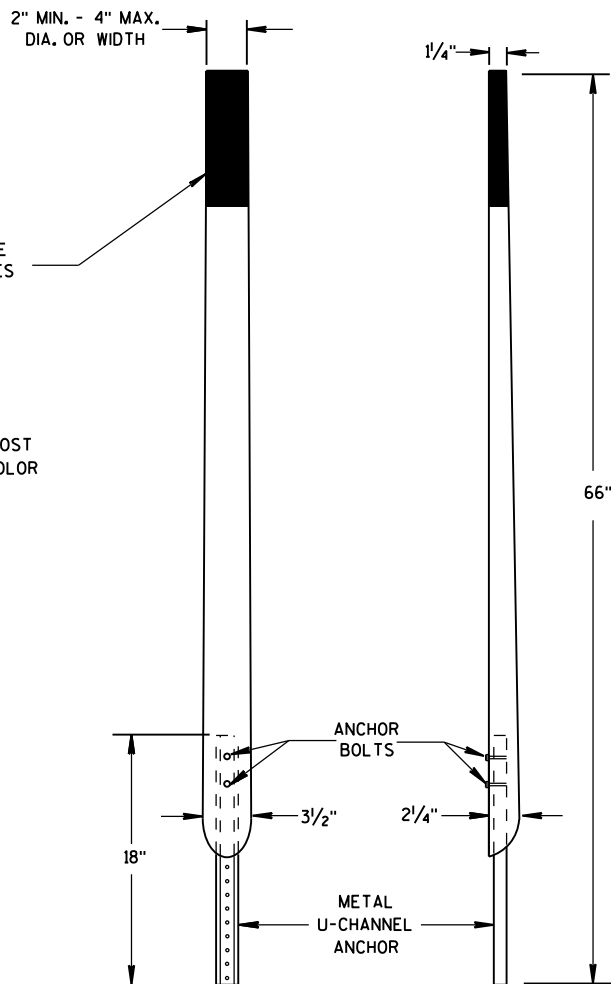
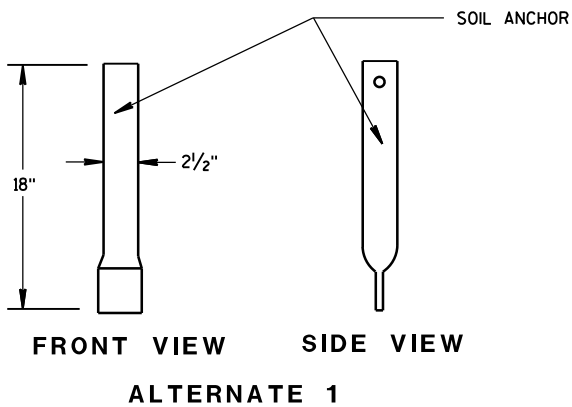
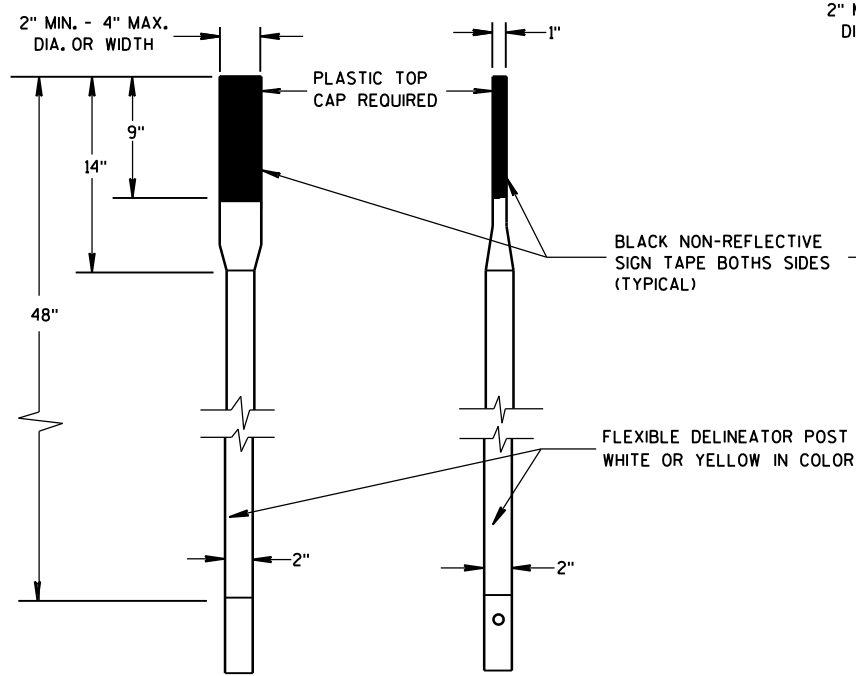
PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH



CROSS SECTION
FLEXIBLE MARKER POST

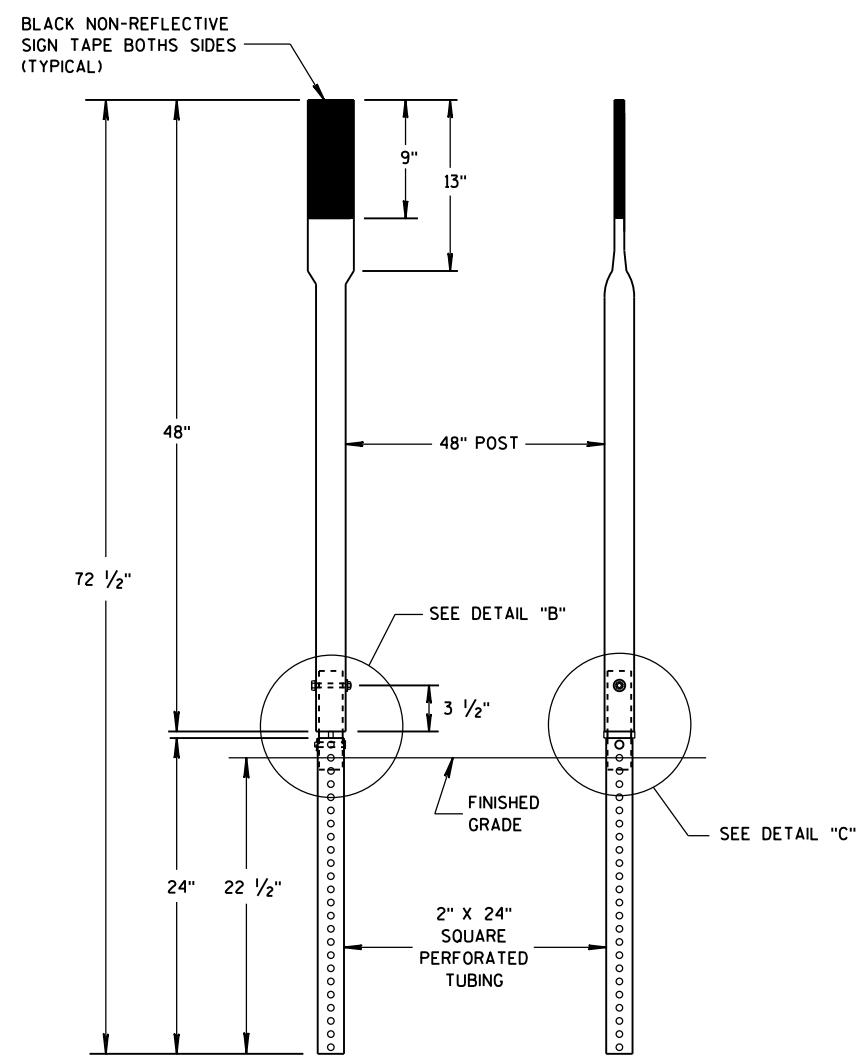
FLEXIBLE MARKER POST
FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

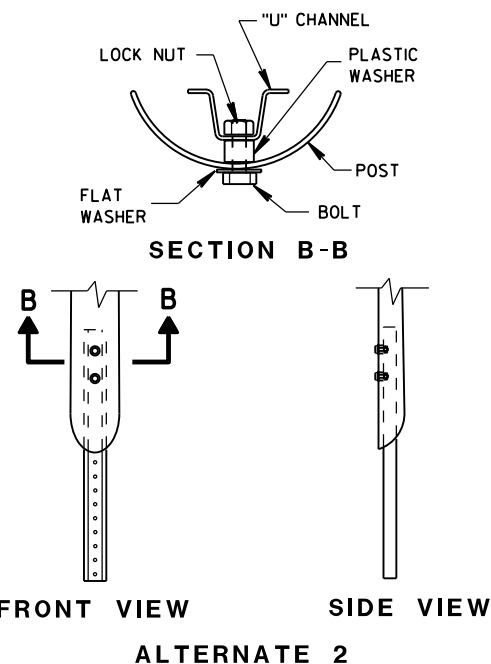
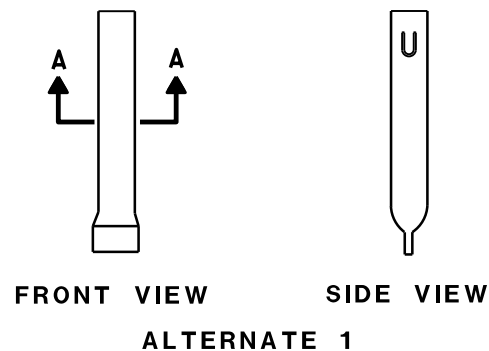
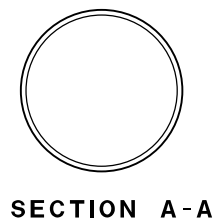
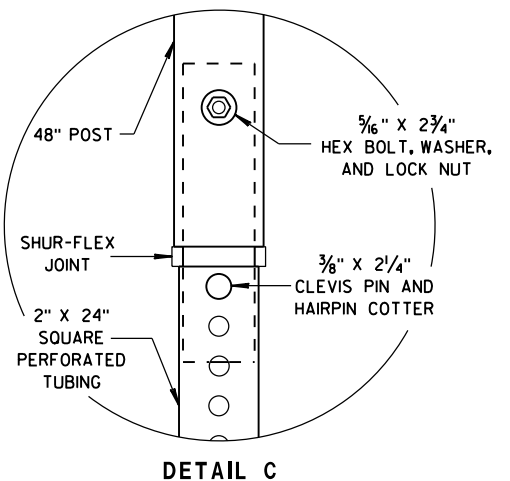
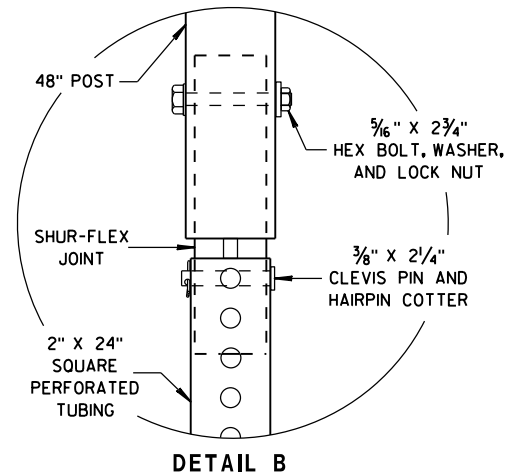
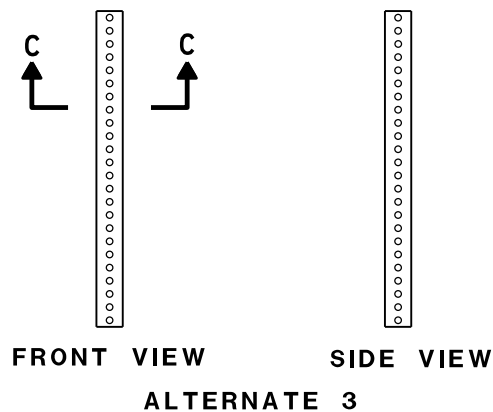
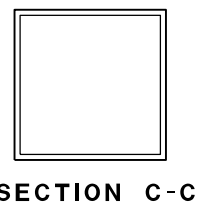


FRONT VIEW SIDE VIEW
ALTERNATE 2

FLEXIBLE MARKER POSTS



FRONT VIEW SIDE VIEW
ALTERNATE 3

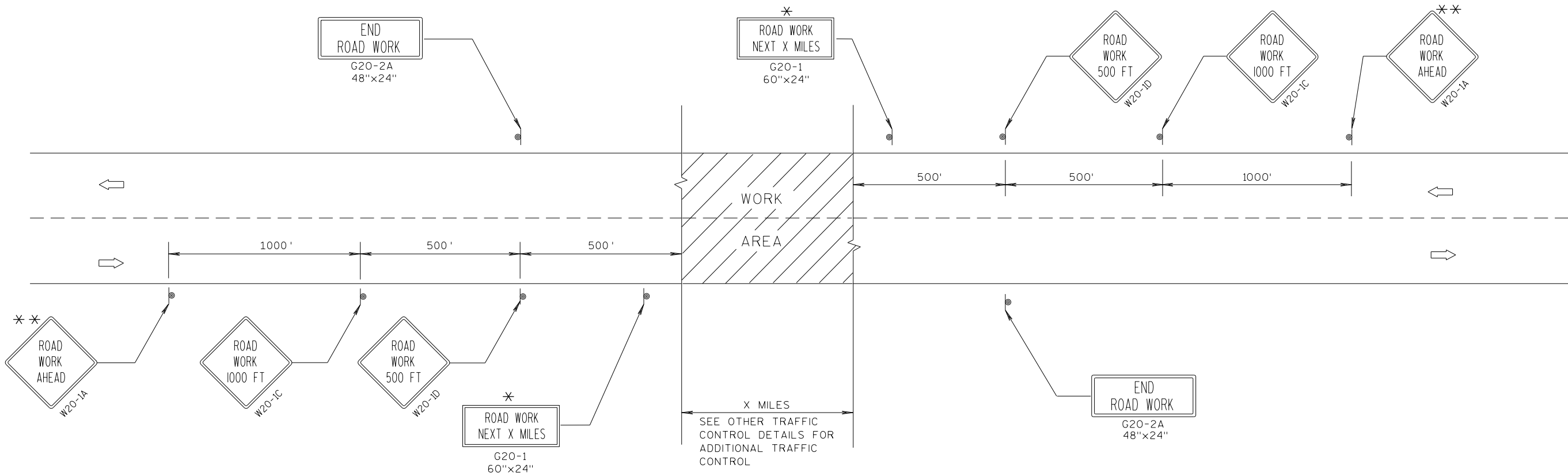


FLEXIBLE MARKER POST ANCHORS

FLEXIBLE MARKER POST
FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/1/2012 /S/ Travis Feltes
DATE STATE TRAFFIC ENGINEER OF DESIGN
FHWA



TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL

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.

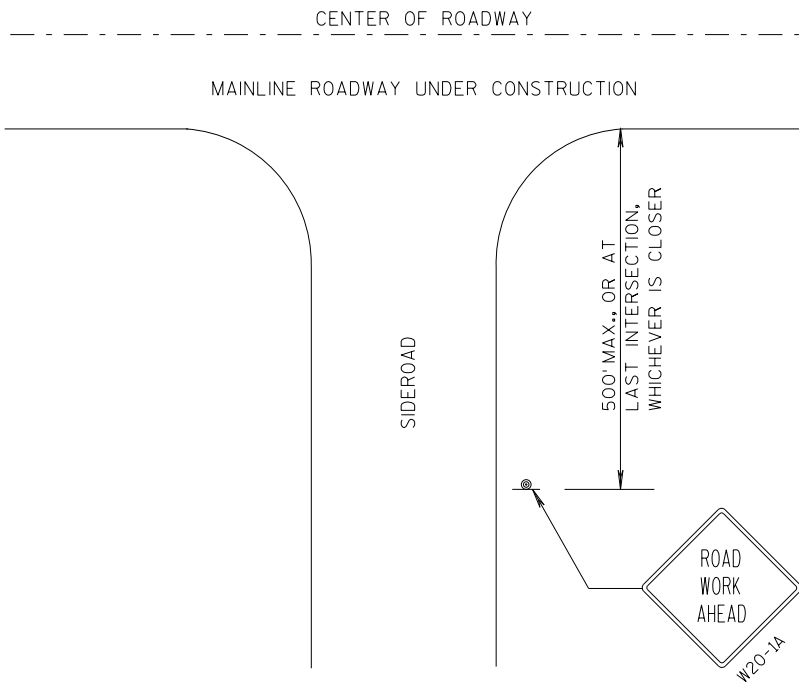
ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 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 RE-ESTABLISHED.

* OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS.

* * PLACE ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.



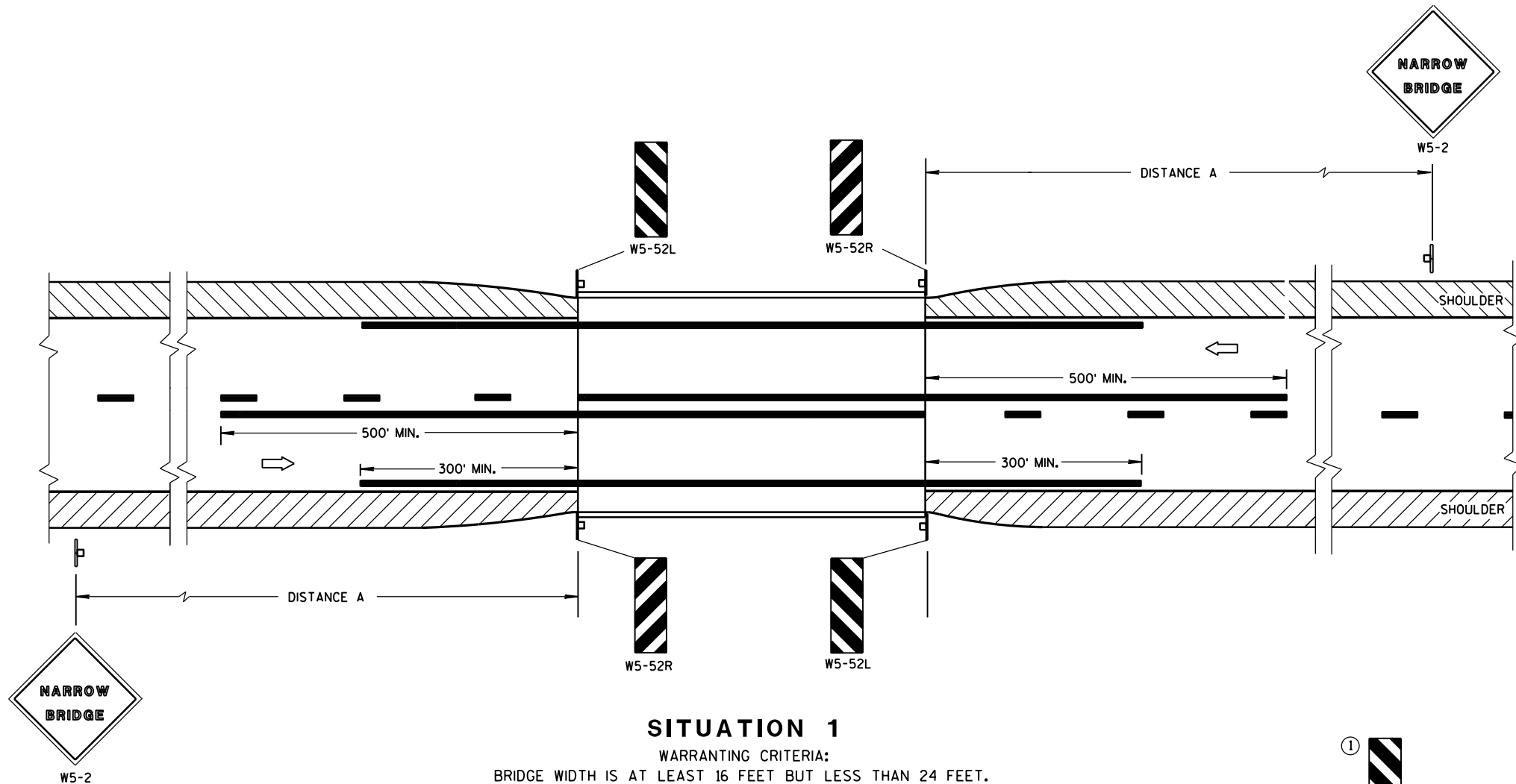
LEGEND

- ⊙ SIGN ON PERMANENT SUPPORT
- ➡ DIRECTION OF TRAFFIC
- ▨ WORK AREA

TRAFFIC CONTROL, ADVANCE
WARNING SIGNS 45 M.P.H.
OR GREATER TWO-WAY
UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

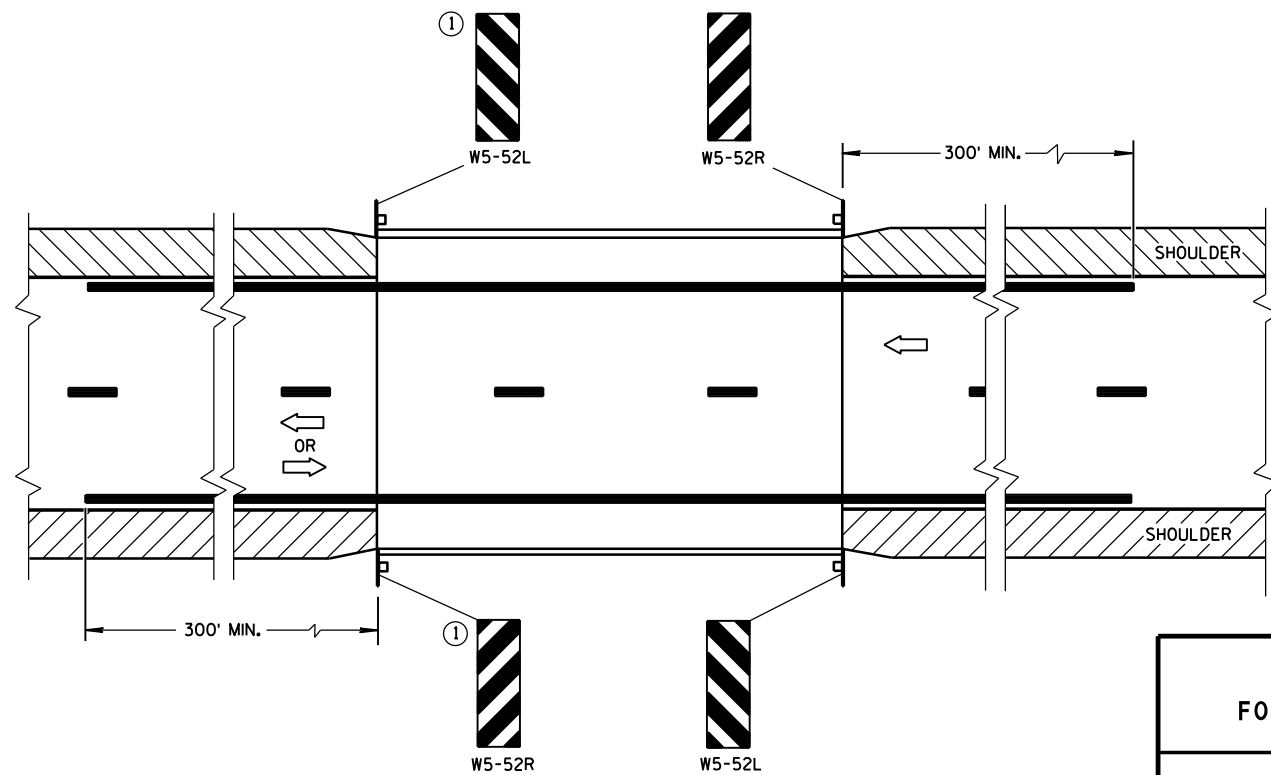
APPROVED
7/2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER
FHWA



SITUATION 1
WARRANTING CRITERIA:
BRIDGE WIDTH IS AT LEAST 16 FEET BUT LESS THAN 24 FEET.

DISTANCE TABLE

POSTED OR 85th PERCENTILE SPEED	DISTANCE "A "
25	150'
30	200'
35	250'
40	300'
45	400'
50	550'
55	750'



SITUATION 2
WARRANTING CRITERIA:
1. BRIDGE WIDTH IS AT LEAST 24 FEET AND
2. BRIDGE SHOULDER WIDTH IS LESS THAN 6 FEET.

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.

LOCATE W5-52 SIGN POST(S) BEHIND GUARDRAIL WHEN PRESENT.

PLACE THE EDGE OF THE W5-52 SIGN IN LINE WITH FACE OF CURB OR PARAPET.

① OMIT ON ONE-WAY TRAVELLED WAYS.

➡ DIRECTION OF TRAFFIC

**SIGNING & MARKING
FOR TWO LANE BRIDGES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

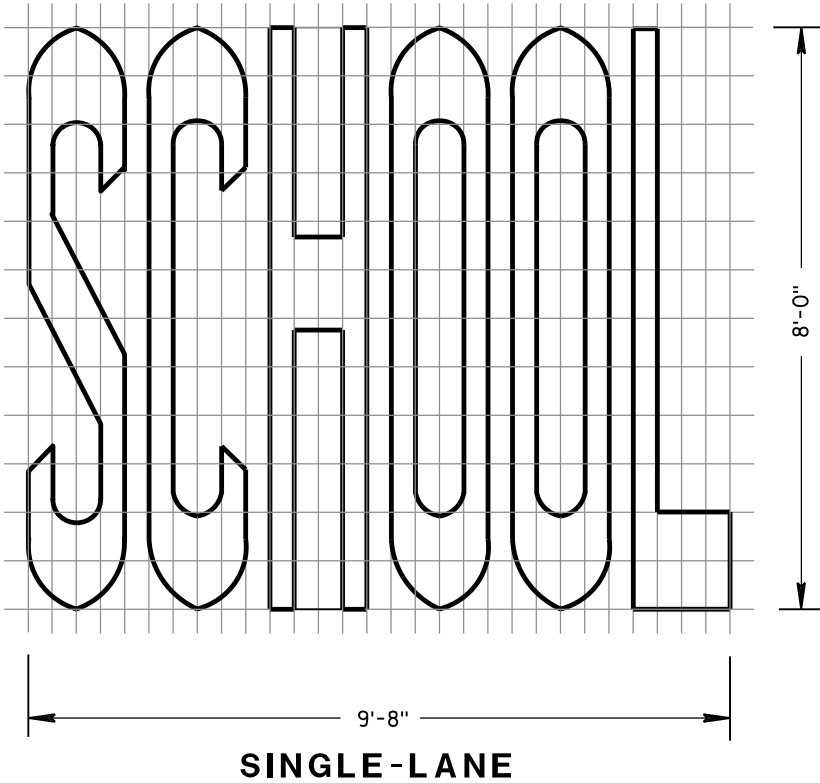
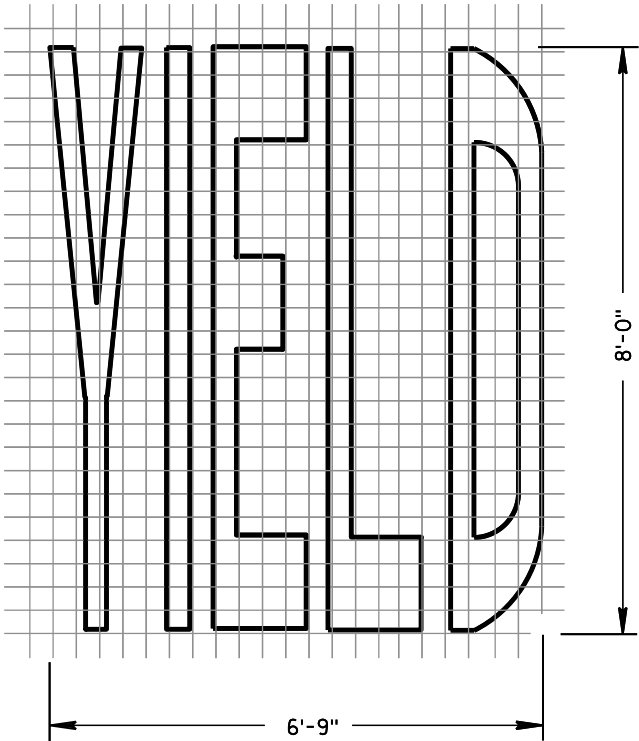
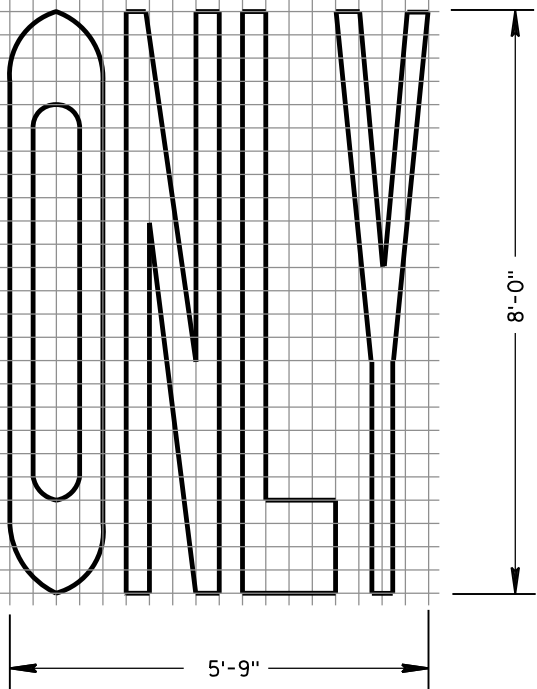
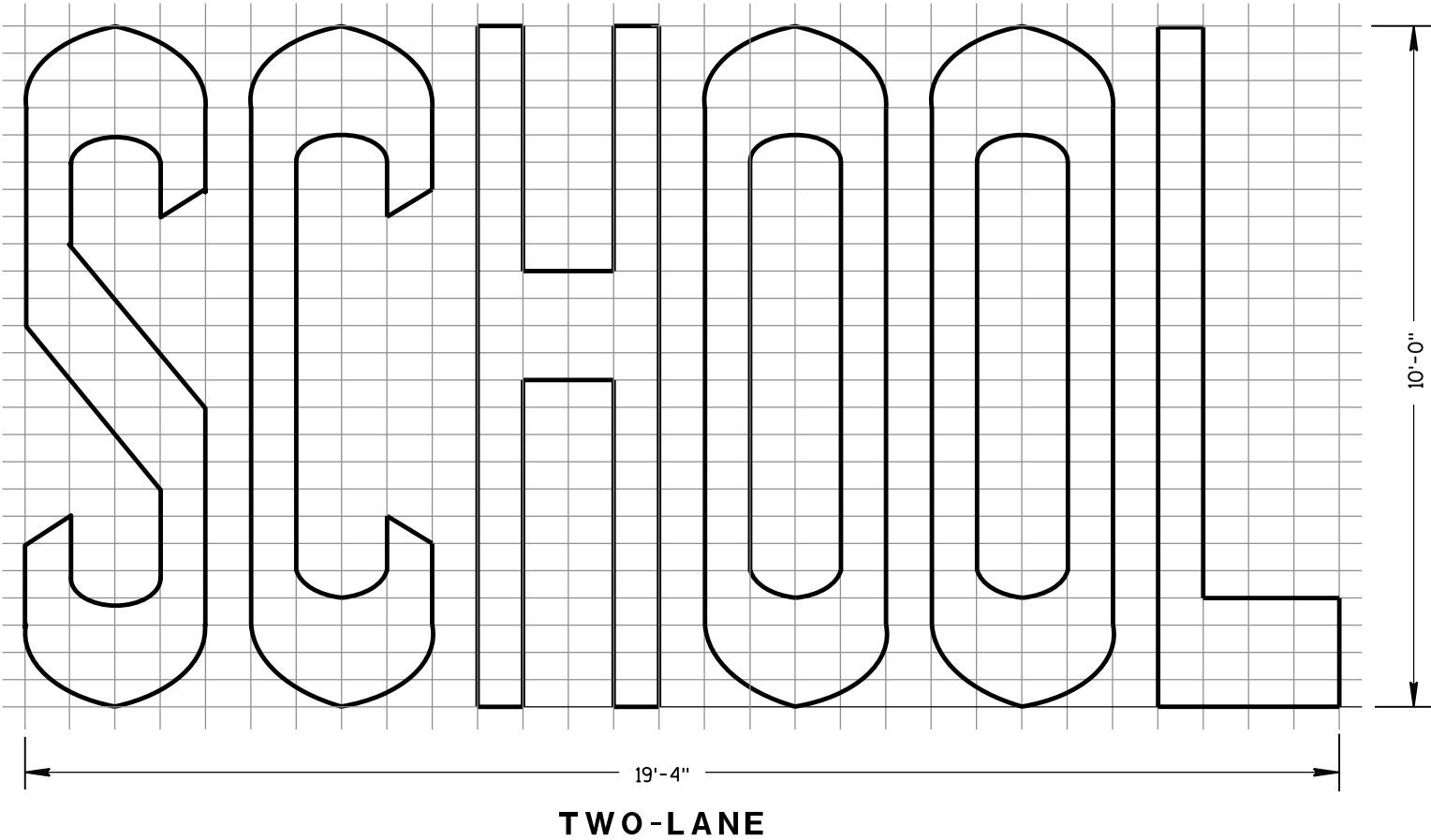
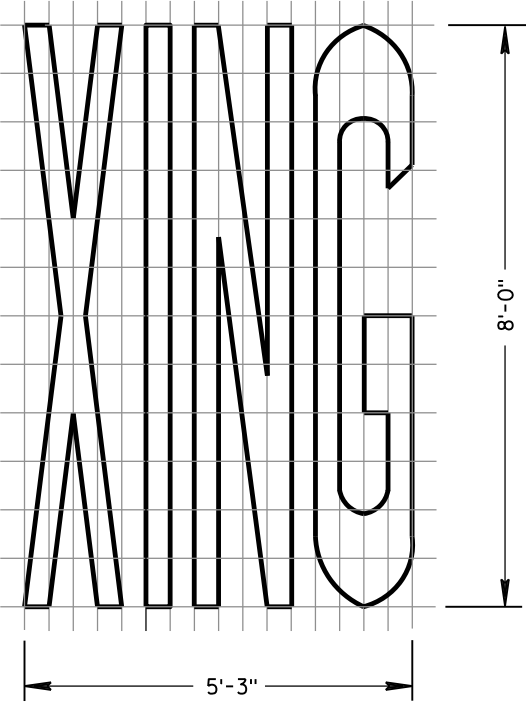
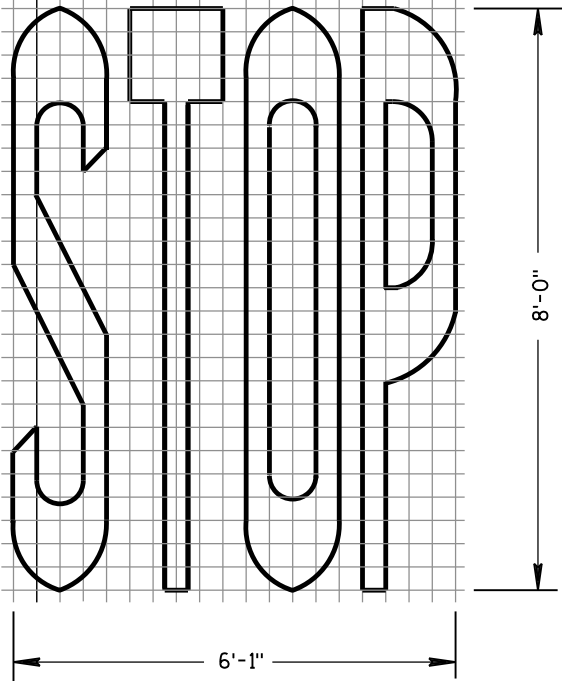
June 2017
DATE

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

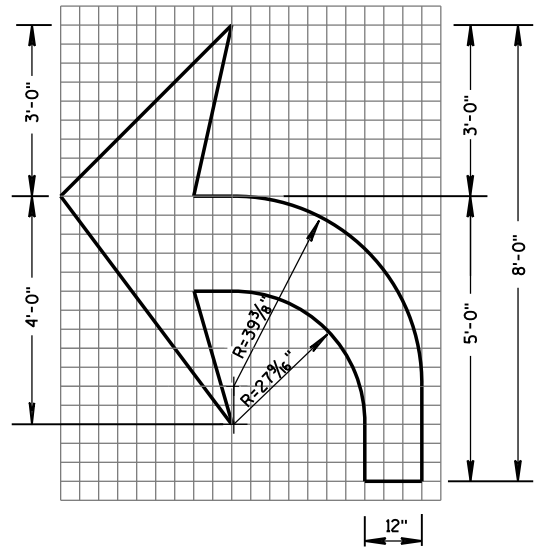
FHWA

GENERAL NOTES

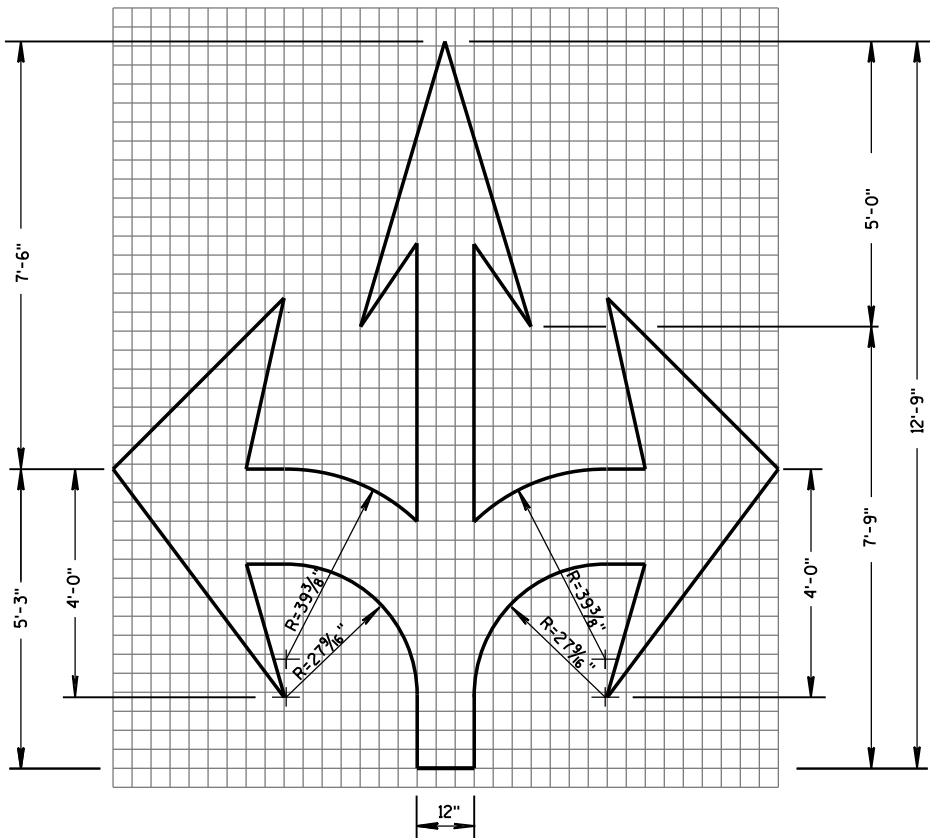
DETAILS OF INSTALLATION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.



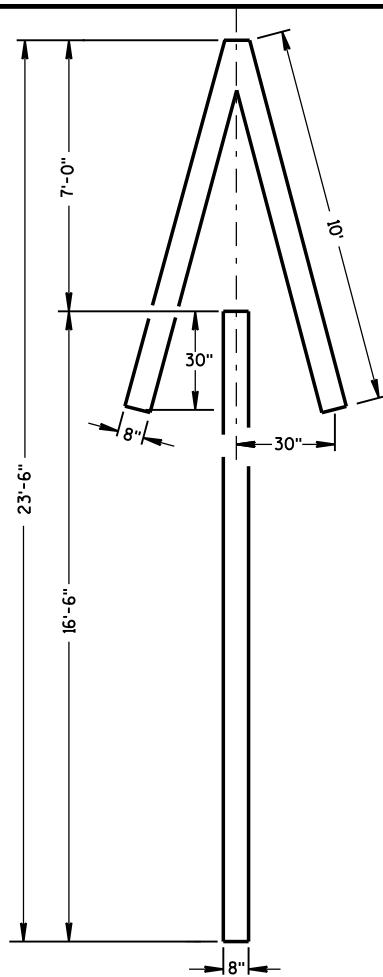
PAVEMENT MARKING WORDS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Matthew R. Rauch STATE SIGNING AND MARKING ENGINEER
FHWA	



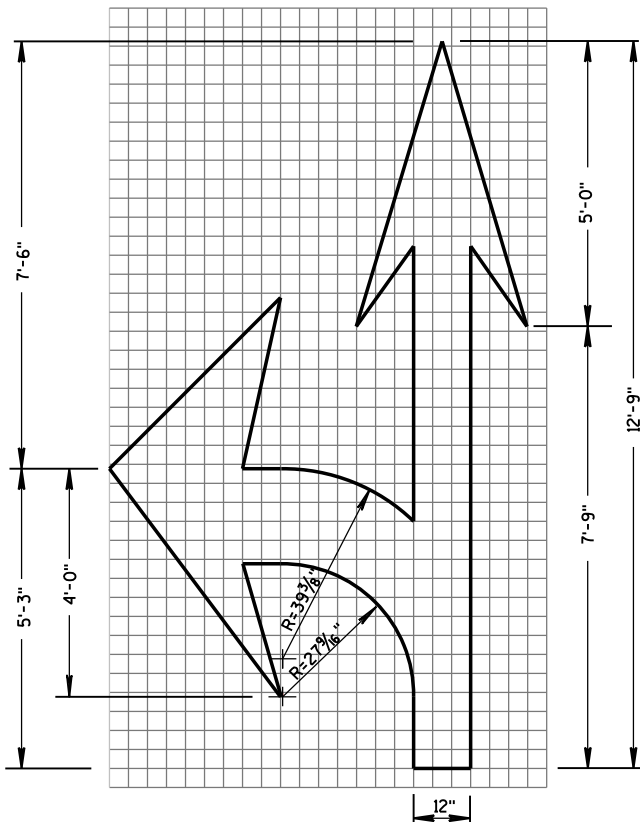
TYPE 2



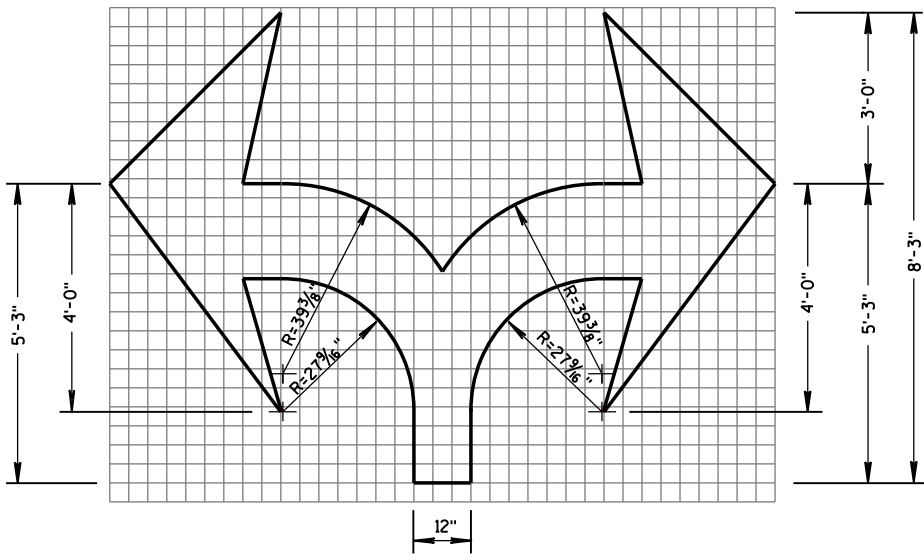
TYPE 6



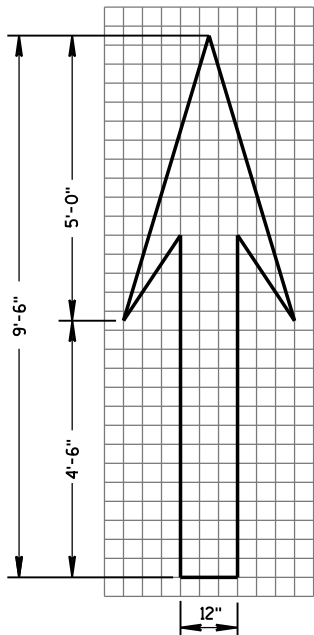
TYPE 4



TYPE 3



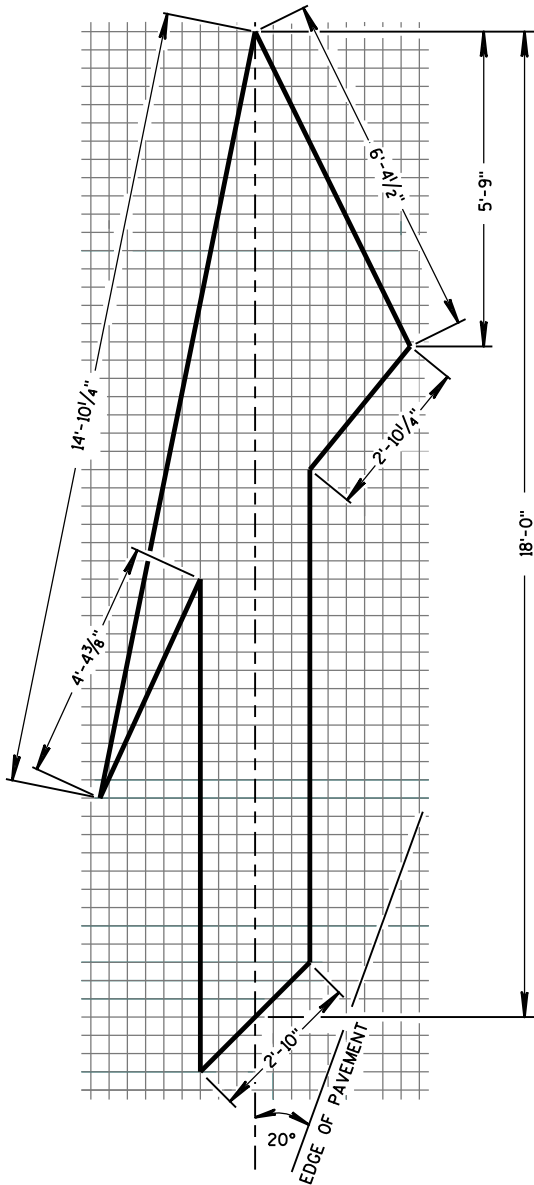
TYPE 7



TYPE 1

GENERAL NOTES

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

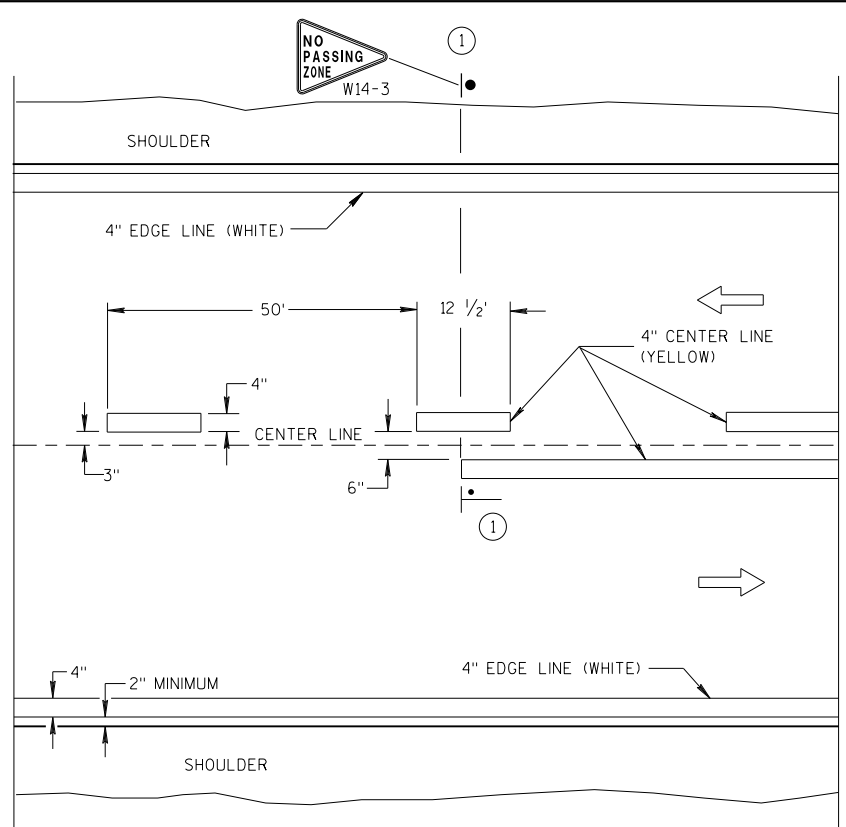


TYPE 5 LANE DROP ARROW

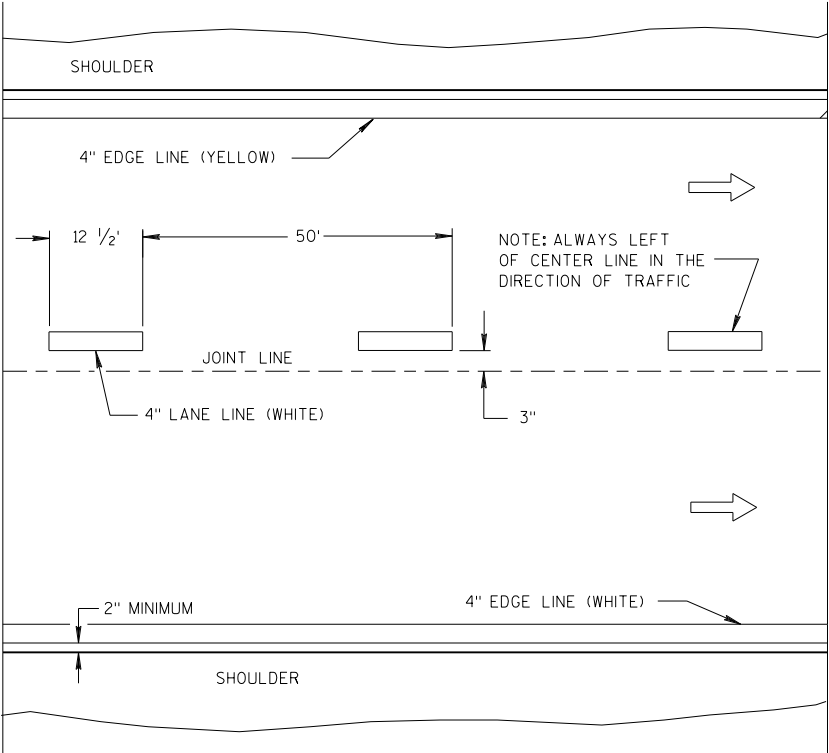
PAVEMENT MARKING ARROWS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MARKING ENGINEER
FHWA

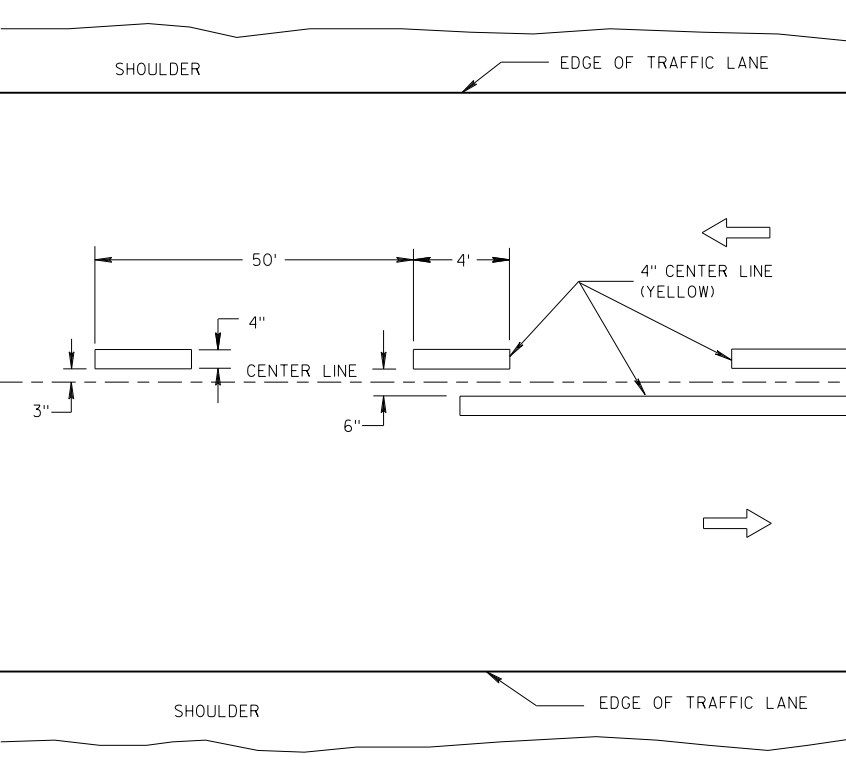


TWO WAY TRAFFIC

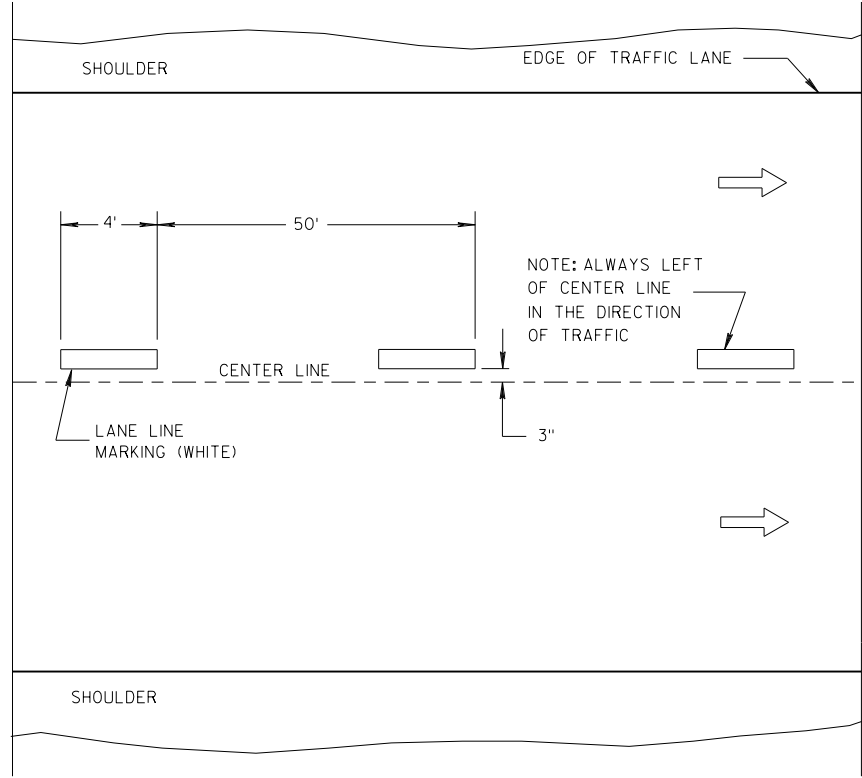


ONE WAY TRAFFIC

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

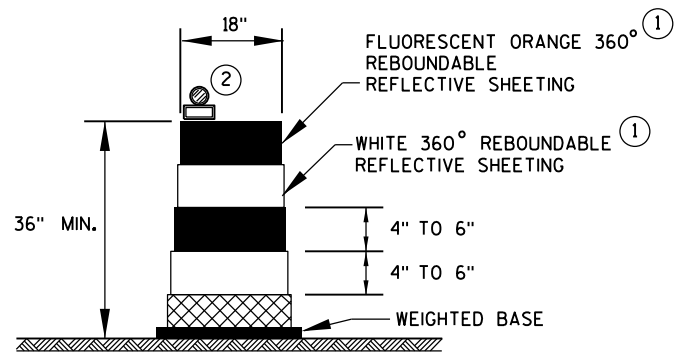
LEGEND

- "T" MARKING
- POST MOUNTED SIGN

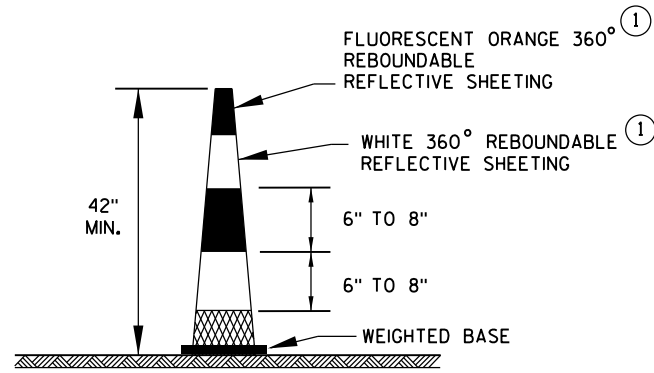
LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MARKING ENGINEER
FHWA



DRUM

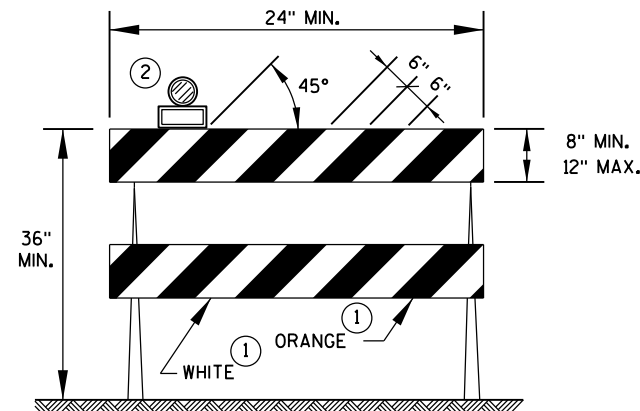


42" CONE

DO NOT USE IN TAPERS
1/2 SPACING OF DRUMS

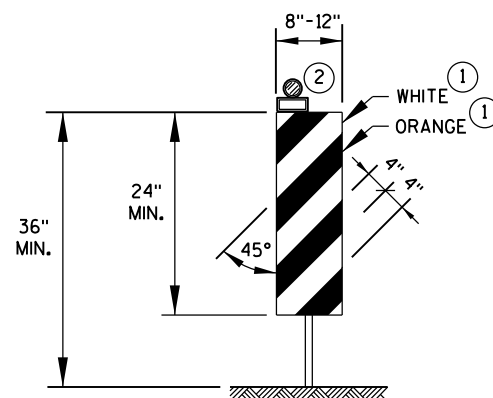
GENERAL NOTES

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



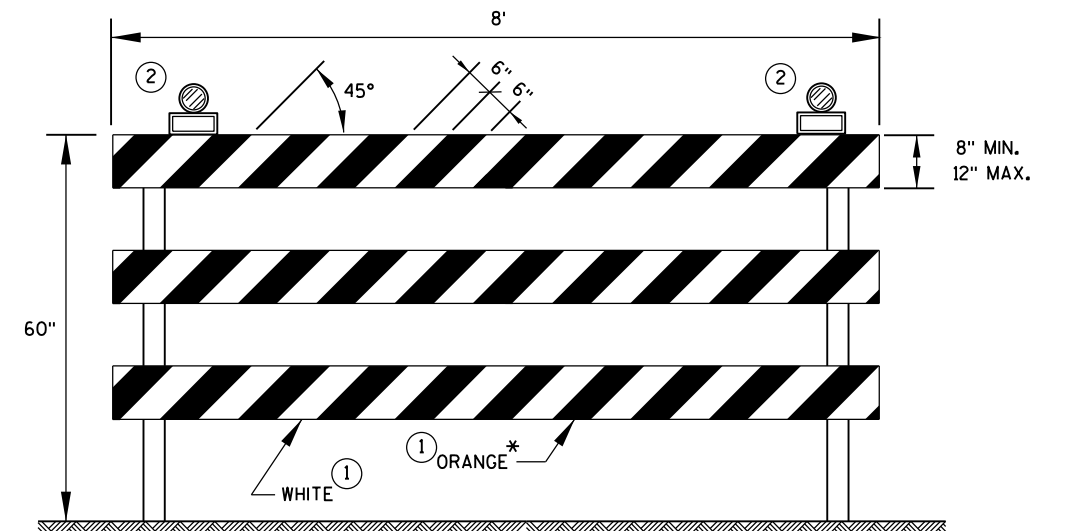
TYPE 2 BARRICADE

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



VERTICAL PANEL

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



TYPE 3 BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION, USE RED SHEETING.

CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June 2017
DATE

FHWA

/S/ Andrew Heidtke
WORK ZONE ENGINEER

LEGEND

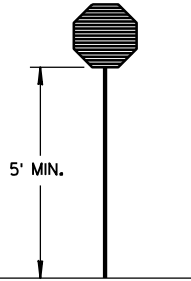
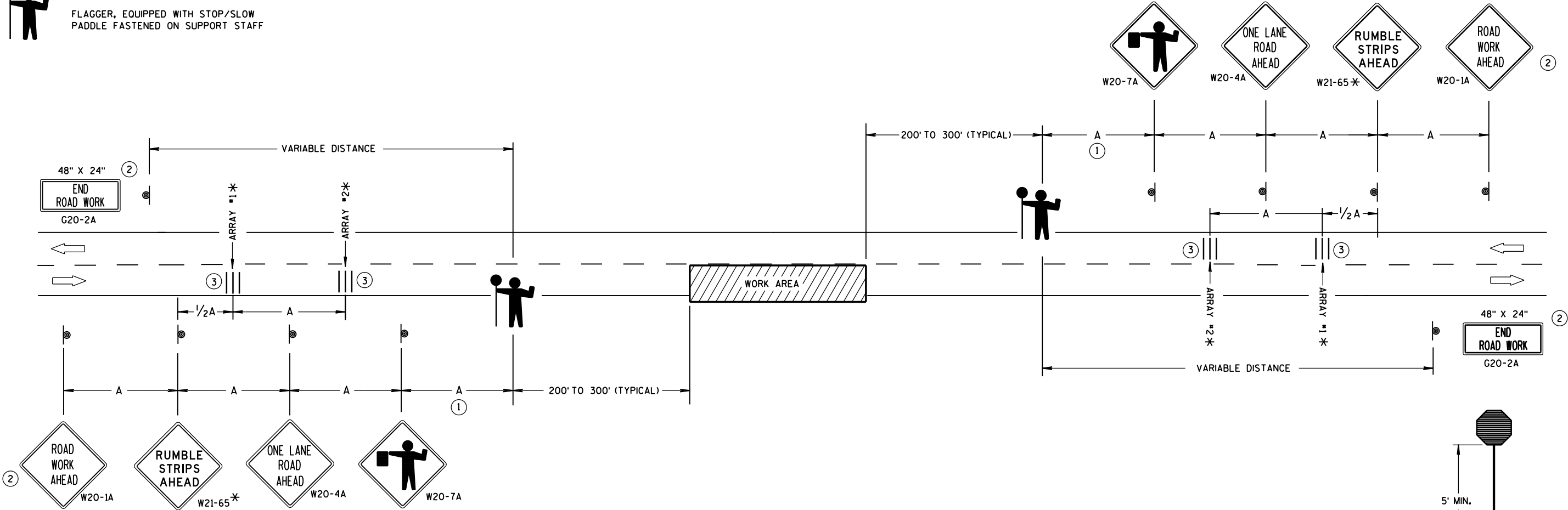
- SIGN ON PORTABLE OR PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA
- FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

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



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



STOP/SLOW PADDLE ON SUPPORT STAFF

TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

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.

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS AND DEVICES (AND THE 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.

"W0" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

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.

INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS. PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

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

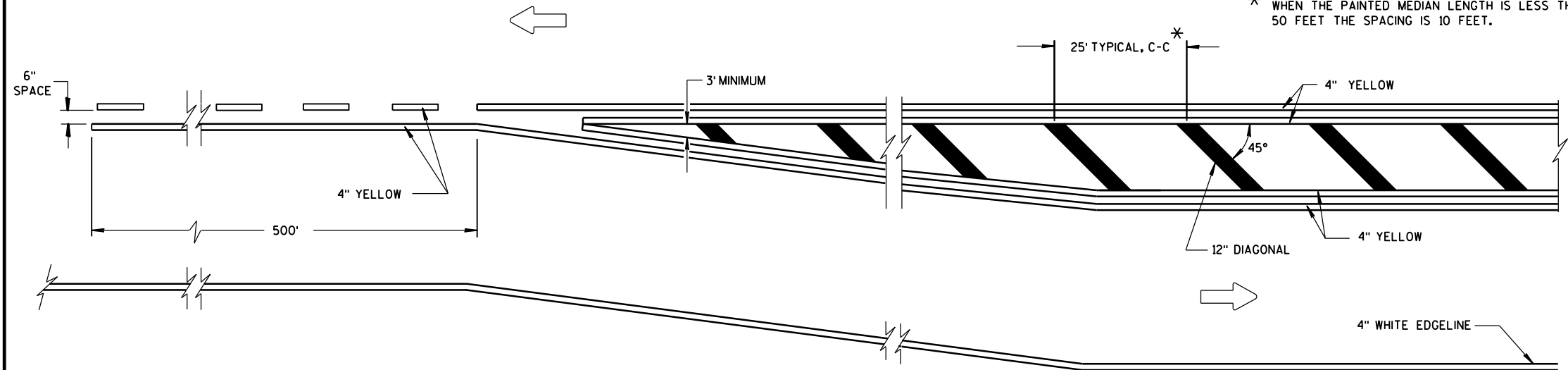
FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT, REMOVE TEMPORARY RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

- * UTILIZE TEMPORARY RUMBLE STRIPS WHEN FLAGGING OPERATION IS ANTICIPATED TO BE STATIONARY IN EXCESS OF TWO HOURS.
- ① FOR A MOVING WORK OPERATION, SIGNING AND TEMPORARY RUMBLE STRIPS (IF USED) SHALL BE REESTABLISHED (AS SIMULTANEOUSLY AS PRACTICAL) AT APPROXIMATELY 3,500 FOOT 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.
- ③ EACH TEMPORARY RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS SPACED ACCORDING TO MANUFACTURER'S RECOMMENDATION, PLACED TRANSVERSE ACROSS THE LANE AT LOCATIONS SHOWN.

TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Andrew Heldtke
DATE WORK ZONE ENGINEER
FHWA

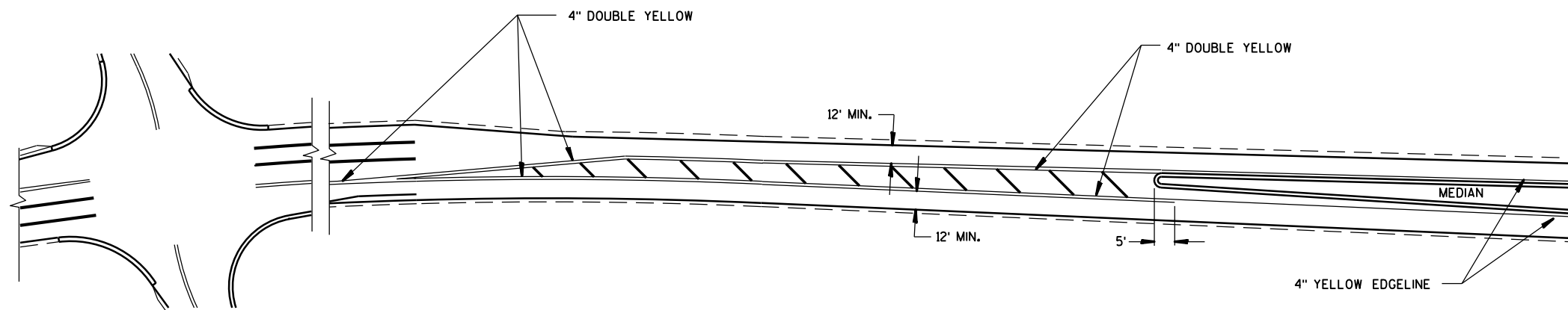


MEDIAN ISLAND DETAIL

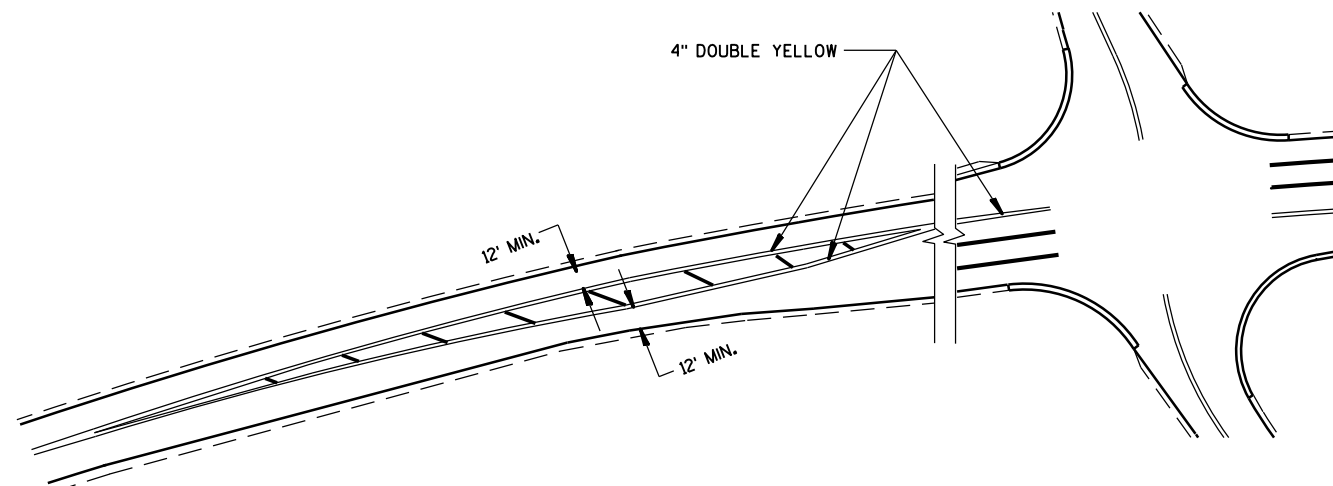
GENERAL NOTE

DIAGONALS ARE OPTIONAL WHEN PAINTED ISLAND IS LESS THAN 6 FEET AT WIDEST POINT.

➡ DIRECTION OF TRAVEL



APPROACH MARKINGS FOR OTHER MEDIAN TYPES

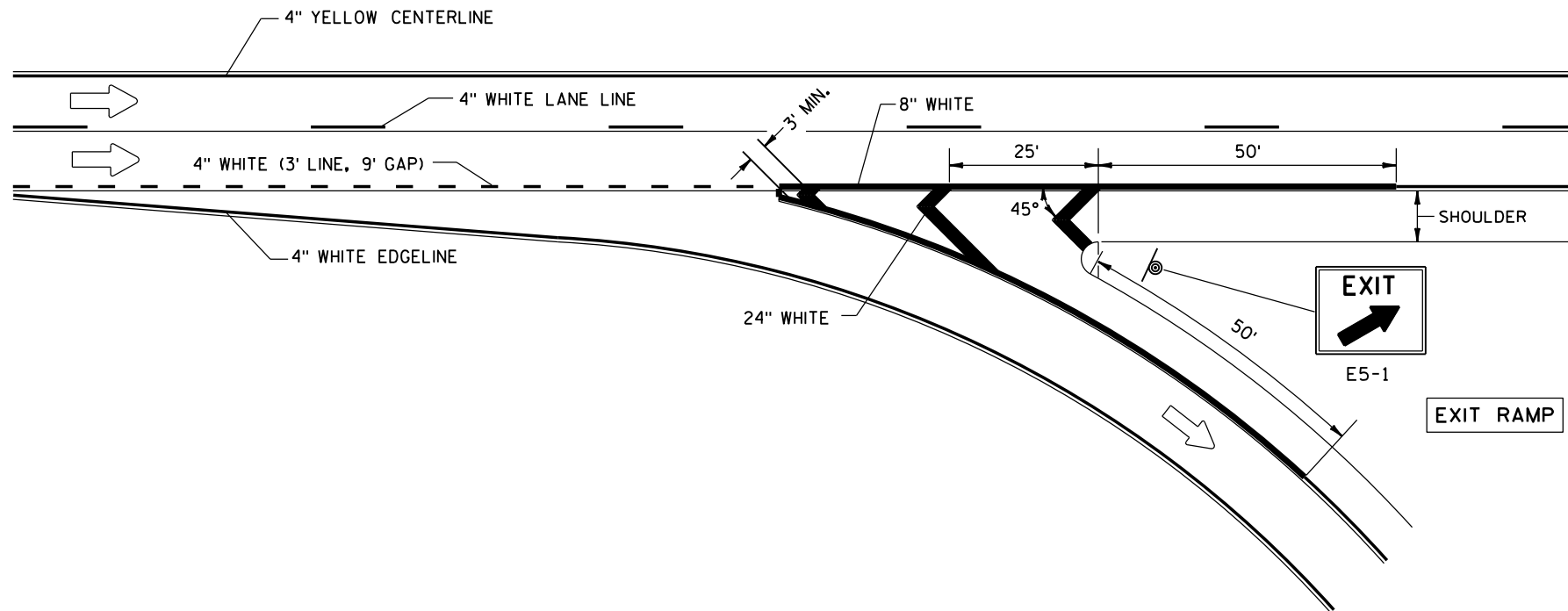


NON APPROACH MARKINGS

MEDIAN ISLAND MARKING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Matthew Rauch
DATE STATE SIGNING AND MARKING ENGINEER
FHWA



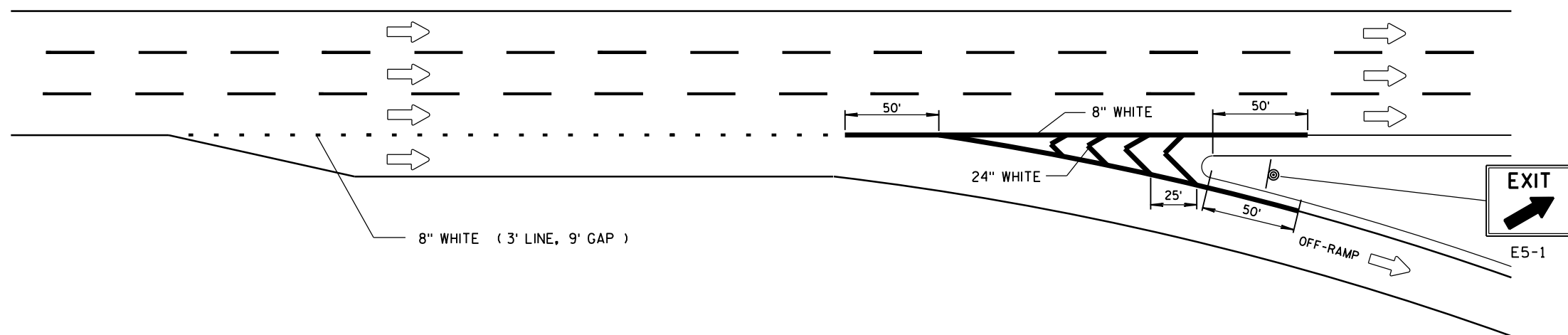
PAVEMENT MARKING FOR EXIT RAMP

GENERAL NOTES

PLACE GROOVE 3 INCHES LEFT OF JOINT.

LEGEND

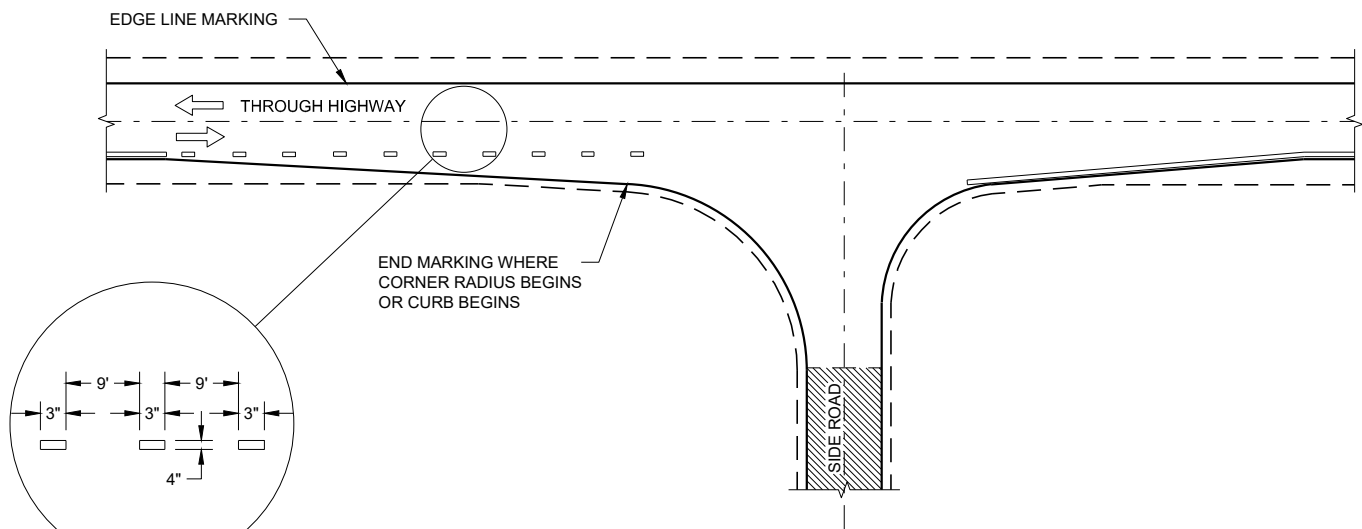
- DIRECTION OF TRAVEL
- SIGN ON PERMANENT SUPPORT



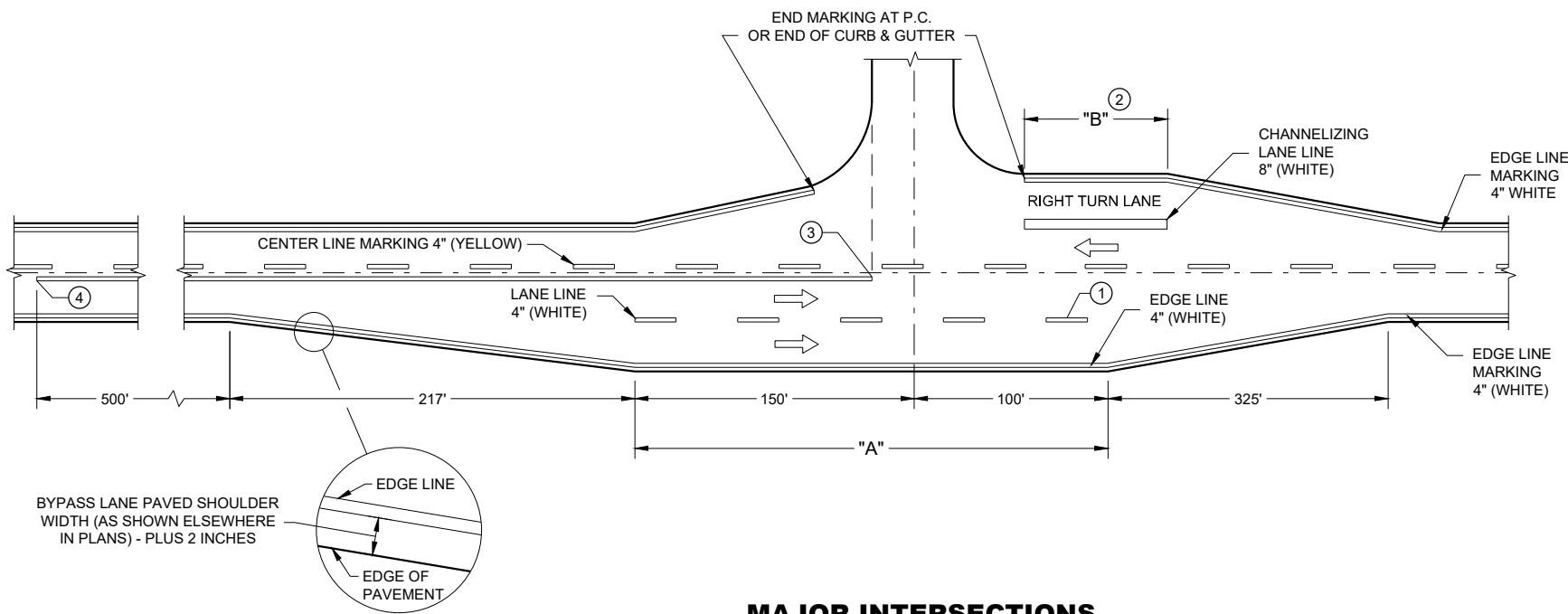
SERVICE INTERCHANGE PAVEMENT MARKING FOR PARALLEL EXIT-RAMP

PAVEMENT MARKING
(RAMPS AND GOES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



MINOR INTERSECTION



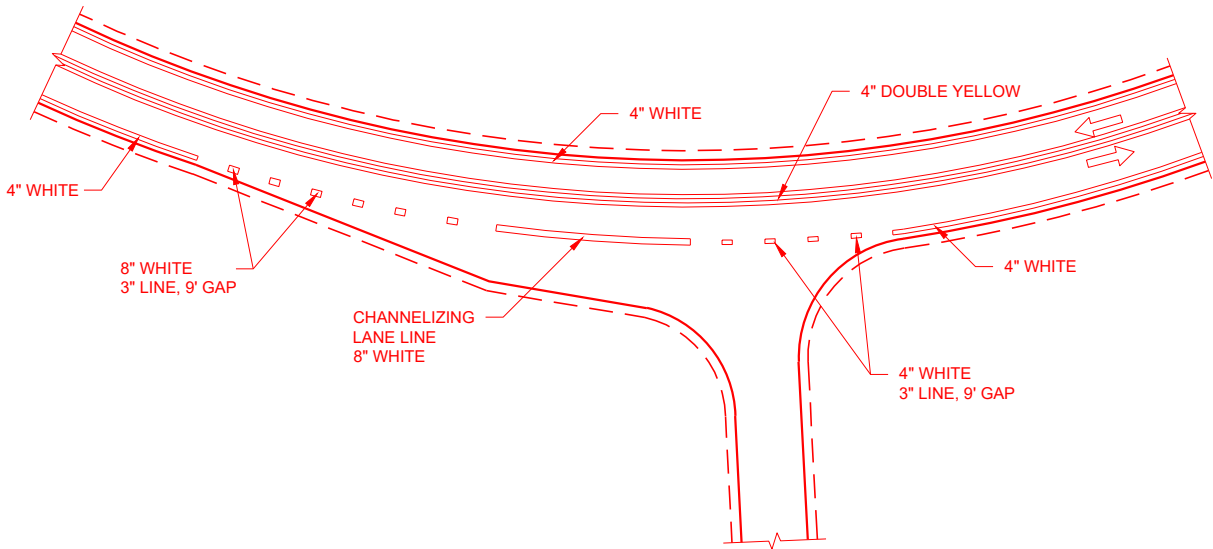
MAJOR INTERSECTIONS
(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANE)

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

PAVEMENT MARKING
(INTERSECTIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

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

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

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

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

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

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

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

TABLE A

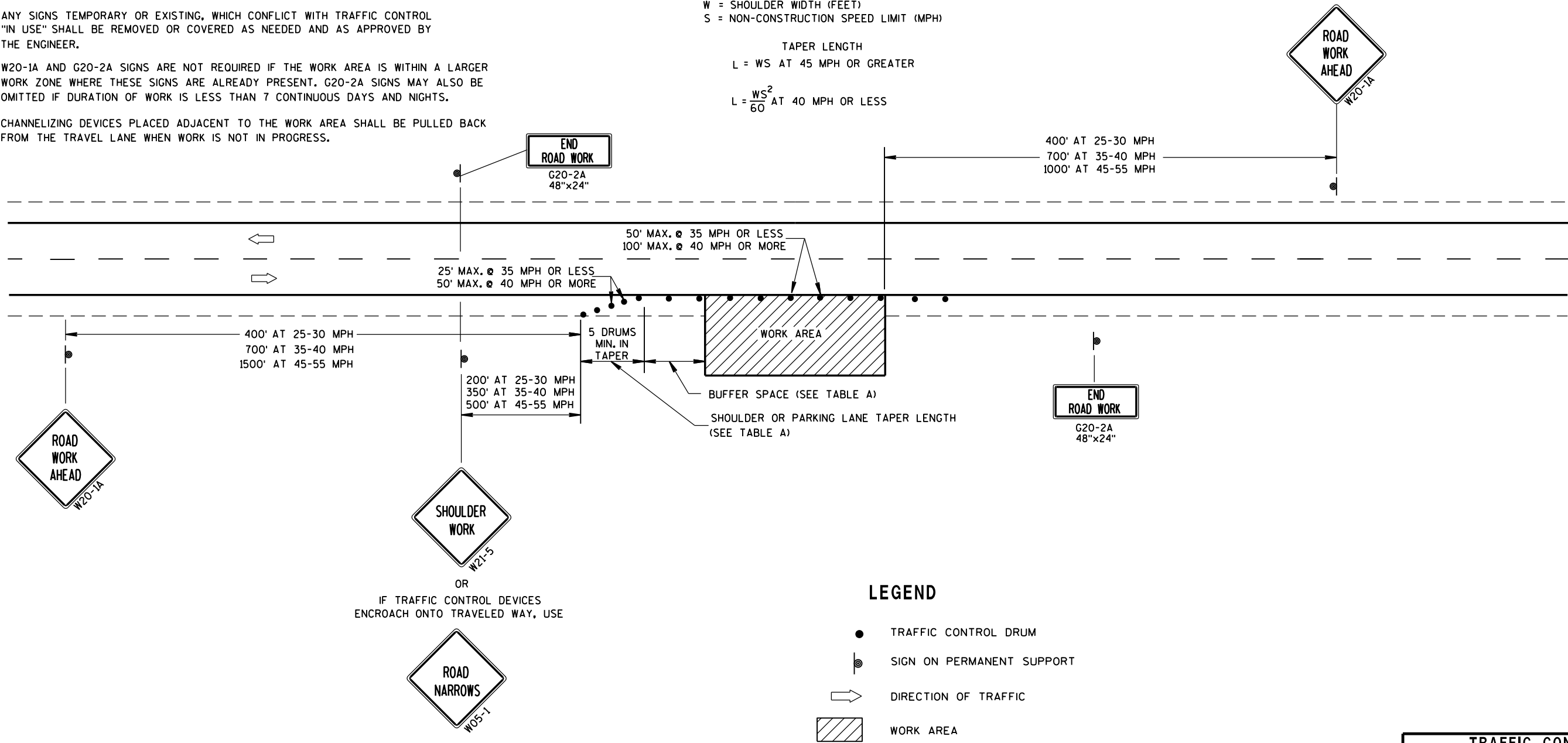
SHOULDER TAPER LENGTH (FEET)					BUFFER SPACE (FEET)
S	W	4	6	8	
30	20	30	40	50	200
35	30	45	55	70	250
40	40	55	75	90	305
45	60	90	120	150	360
50	70	100	135	170	425
55	75	110	150	185	495

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

TAPER LENGTH
L = WS AT 45 MPH OR GREATER

$L = \frac{WS^2}{60}$ AT 40 MPH OR LESS

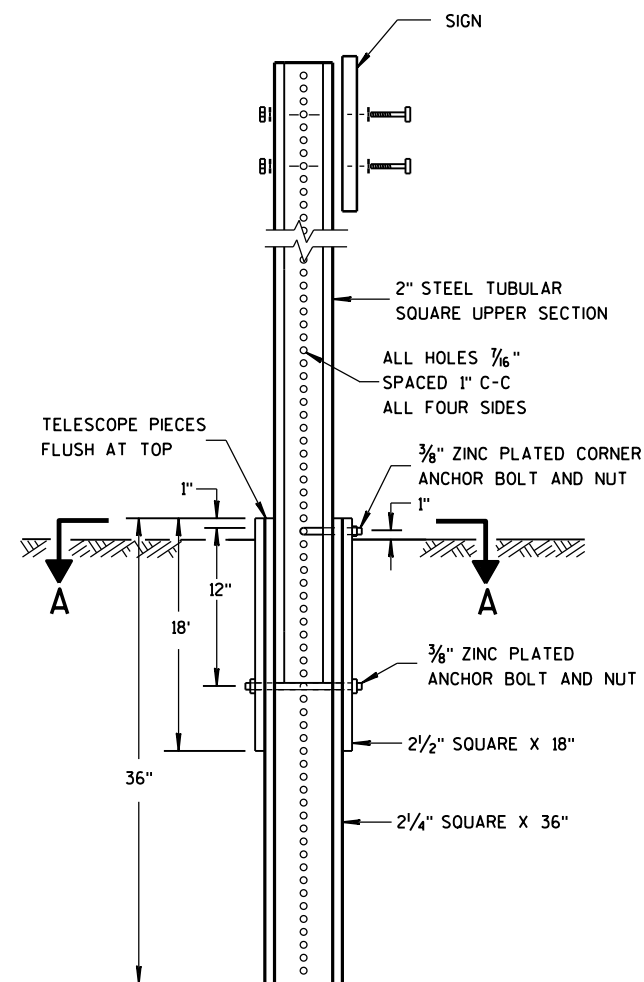
SHOULDER TAPER LENGTH = $\frac{1}{3}L$



LEGEND

- TRAFFIC CONTROL DRUM
- ⦿ SIGN ON PERMANENT SUPPORT
- ➡ DIRECTION OF TRAFFIC
- ▨ WORK AREA

TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED July 14, 2015 DATE	/S/ Peter Amakobe Atepe STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA	



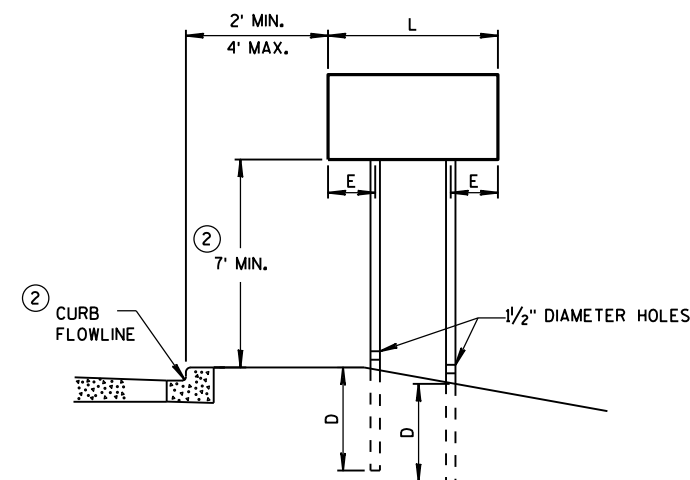
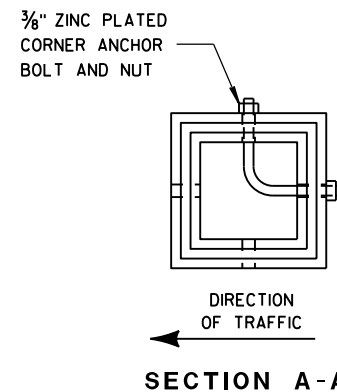
DETAIL OF TUBULAR
STEEL SIGN POST

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).

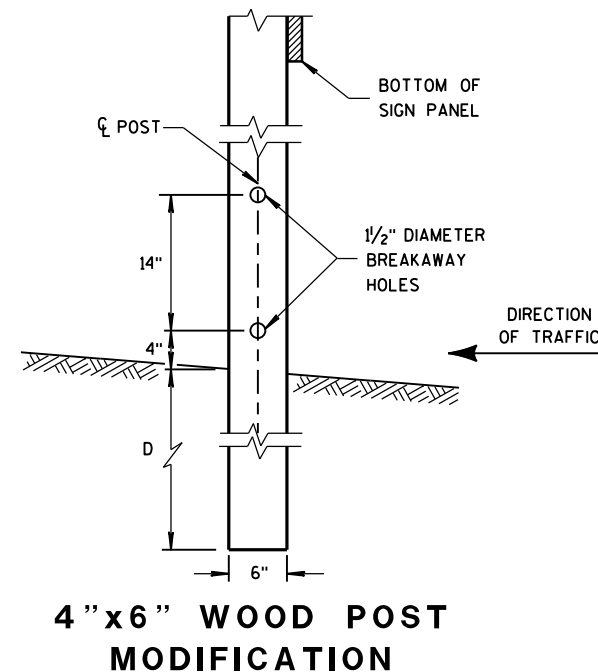
SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED
ON TUBULAR STEEL POSTS.



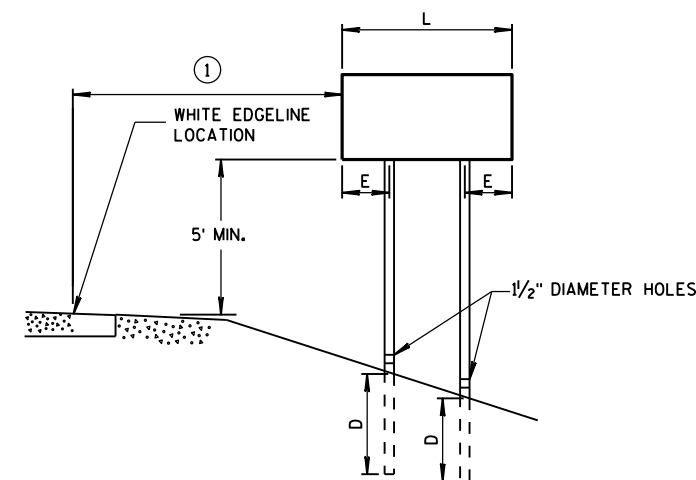
URBAN AREA

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

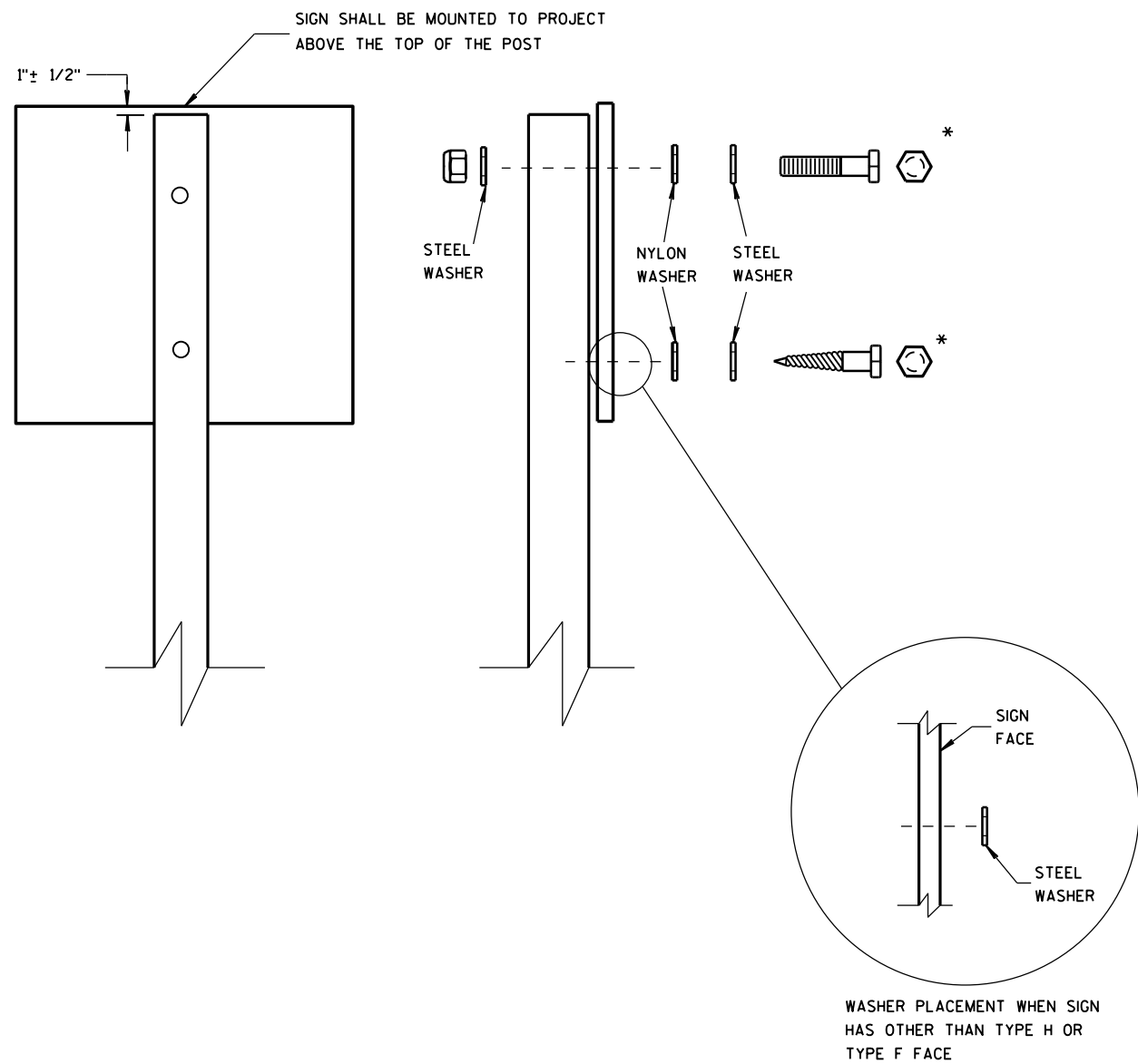
SEE NOTE ③

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.

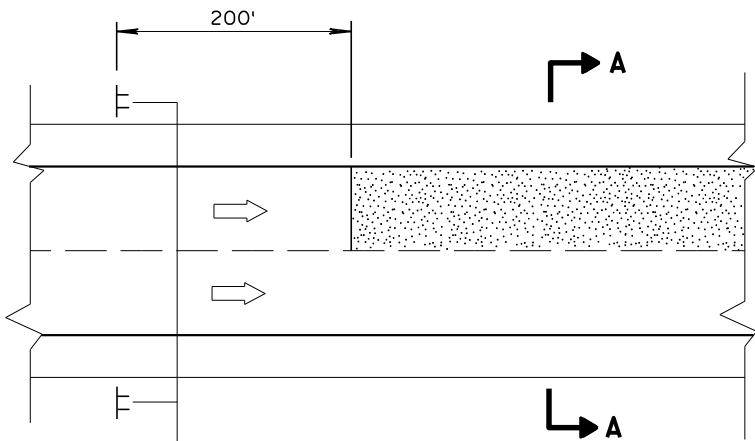
- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - 3/8" x 3"
 - MACHINE BOLTS - 5/16" x 6-1/2" OR 7" LENGTH W/ NUTS

- 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 ENGINEER
FHWA	

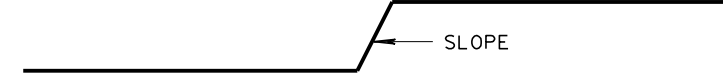


MULTI-LANE

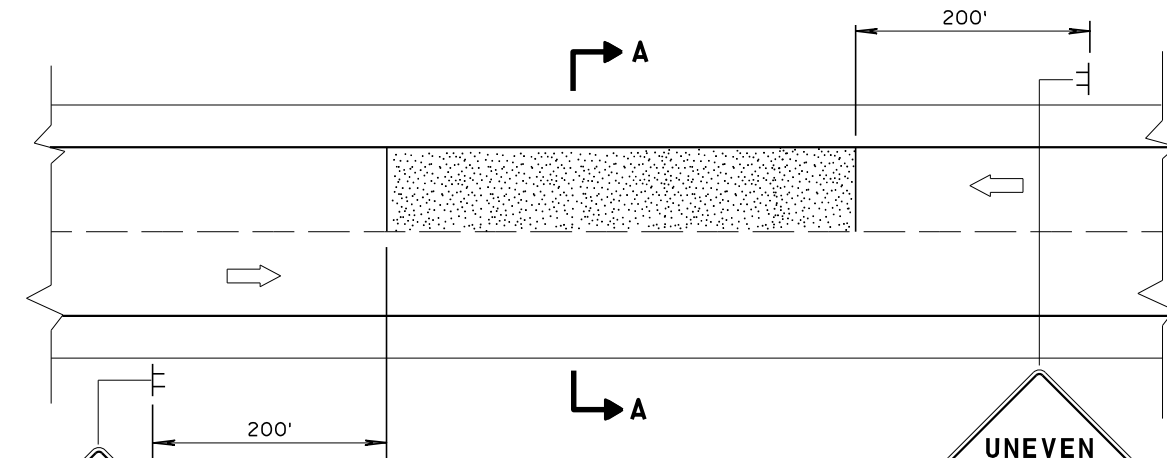


SECTION A-A

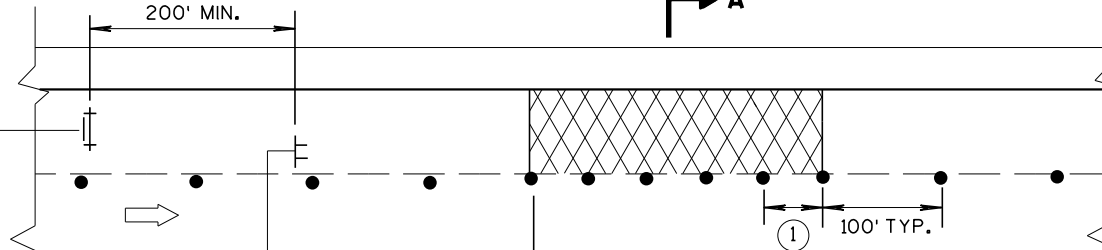
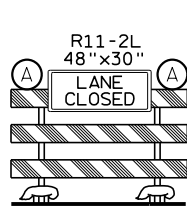
OR



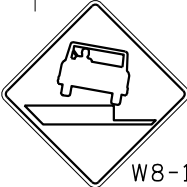
SECTION A-A



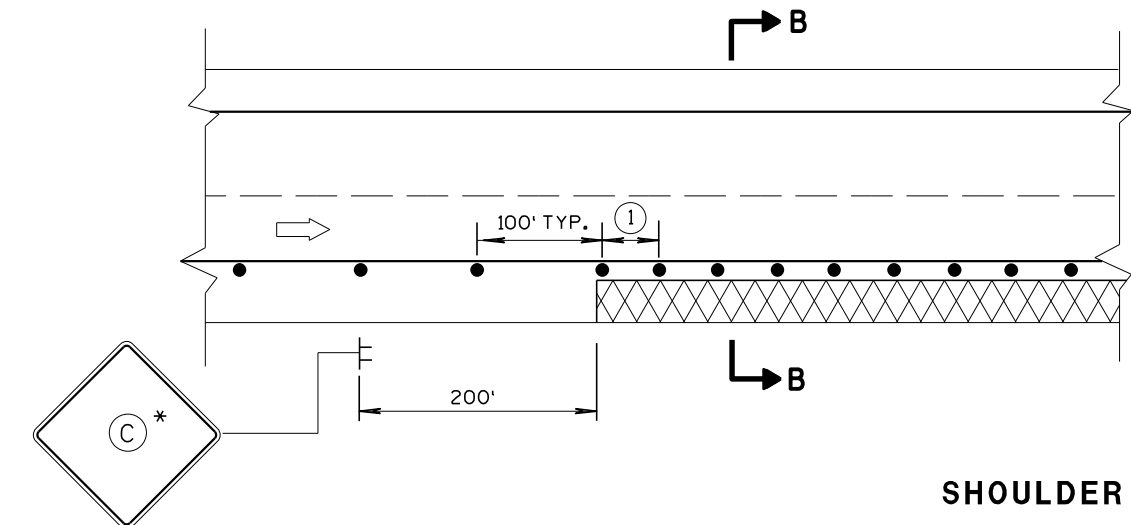
TWO-WAY TWO LANE



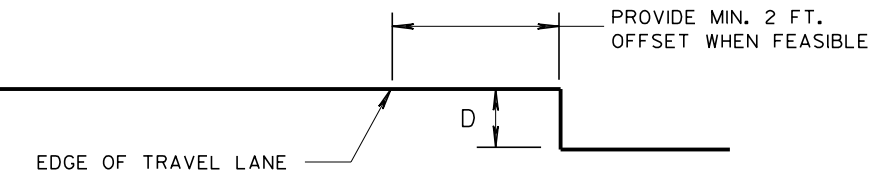
MULTI-LANE BASE PATCHING



ADJACENT LANE DROP-OFFS



SHOULDER DROP-OFFS



SECTION B-B

GENERAL NOTES

FOR SPOT LOCATIONS USE ENGINEERING JUDGEMENT WHEN PLACING ADDITIONAL SIGNS.

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

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

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

* IF THE DROP-OFF IS CONTINUOUS ALONG THE PROJECT, PLACE ADDITIONAL SIGNS EVERY 1 MILE AND AFTER EACH ENTRANCE RAMP.

① USE CLOSER SPACING WHEN DELINEATING DROP-OFF.

LEGEND

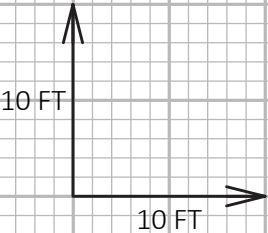
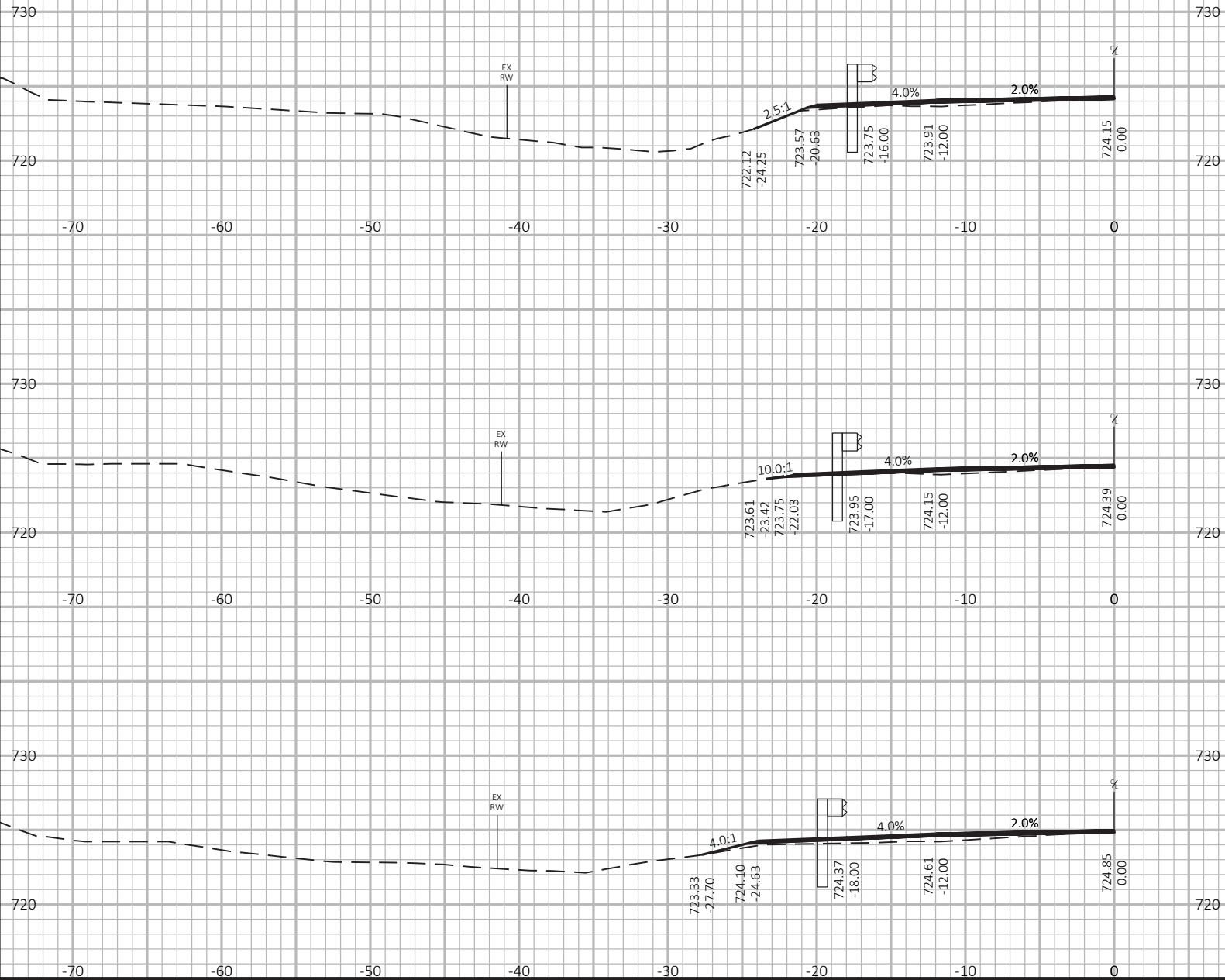
- TYPE III BARRICADE WITH ATTACHED SIGN
- SIGN ON TEMPORARY SUPPORT
- TRAFFIC CONTROL DRUM
- TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC
- WORK AREA WITH DROP-OFF
- MILLED SURFACE

D	SIGN (C)
< 2" WITH A SLOPE STEEPER THAN 3:1	 W08-9
2" < 6" WITH A SLOPE STEEPER THAN 3:1	 W8-9A PROVIDE A 3:1 OR FLATTER SLOPE OF MATERIAL ADJACENT TO THE PAVEMENT

TRAFFIC CONTROL, DROP-OFF SIGNING	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED March 2018 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

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OFFSETS TO BEAM SHALL BE FIELD VERIFIED AND BASED ON
ACTUAL FIELD CENTERLINE LOCATION.



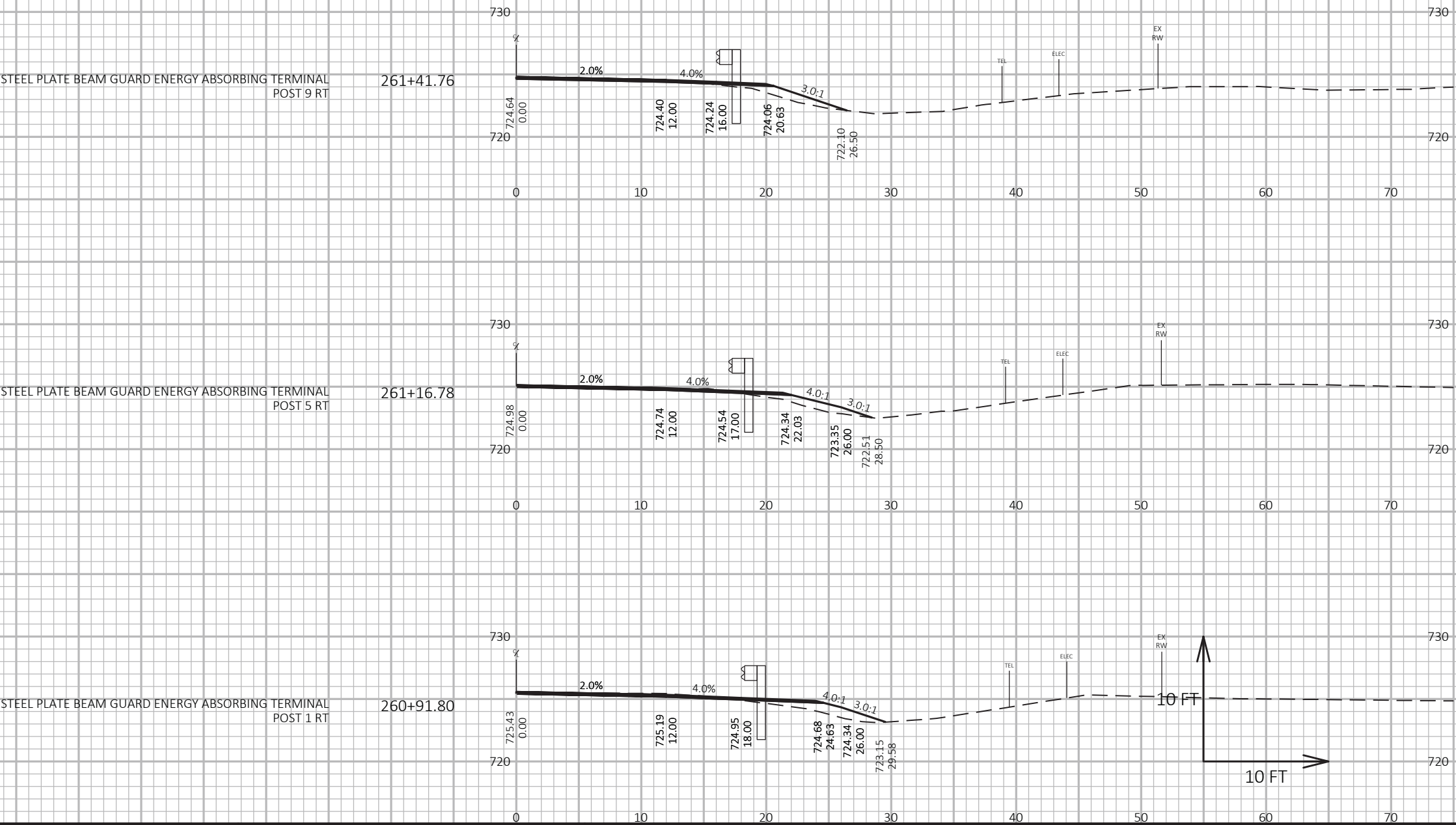
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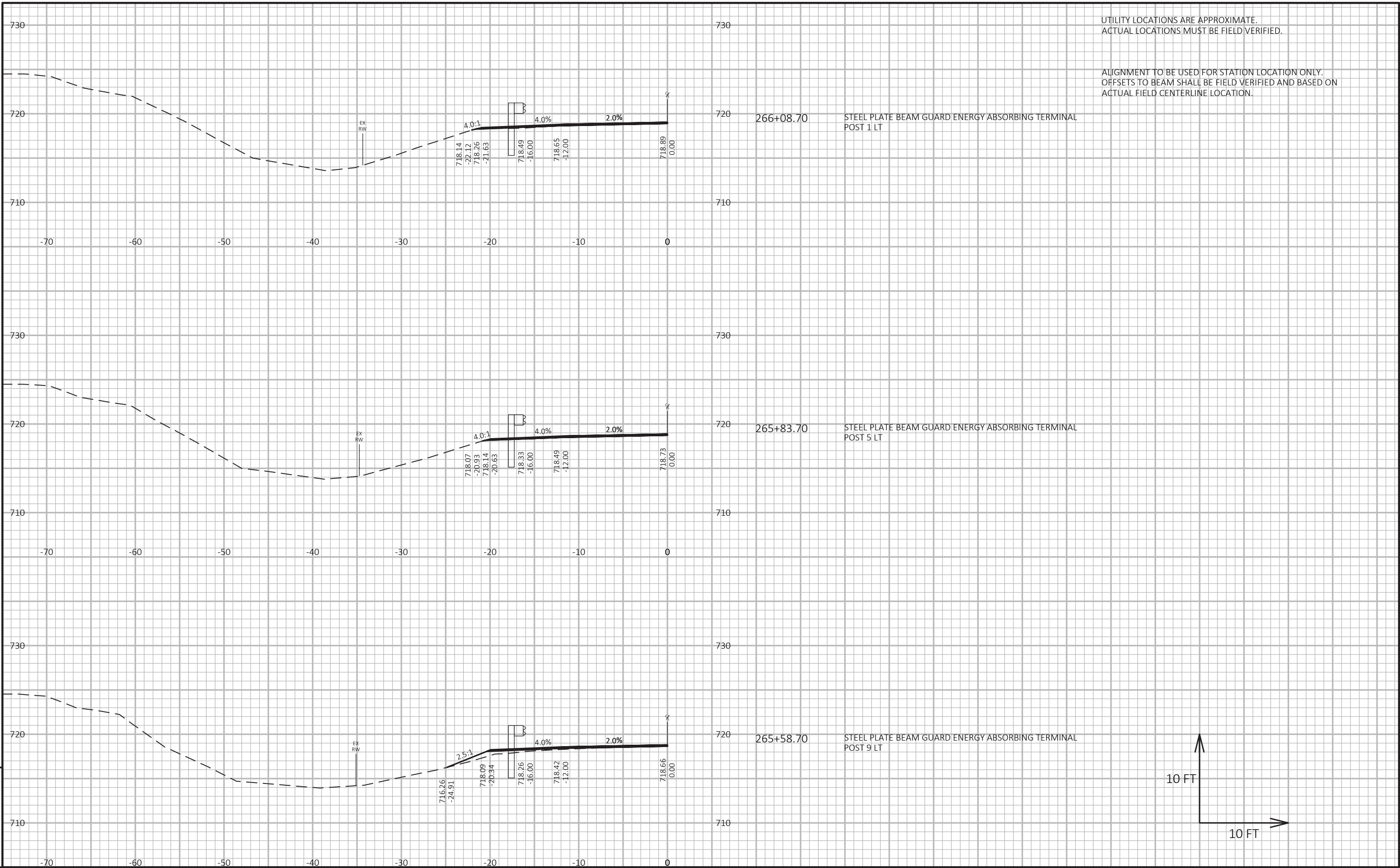
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PROJECT NO: 7650-01-62	HWY: STH 35	COUNTY: PIERCE	CROSS SECTIONS: STH 35	SHEET E
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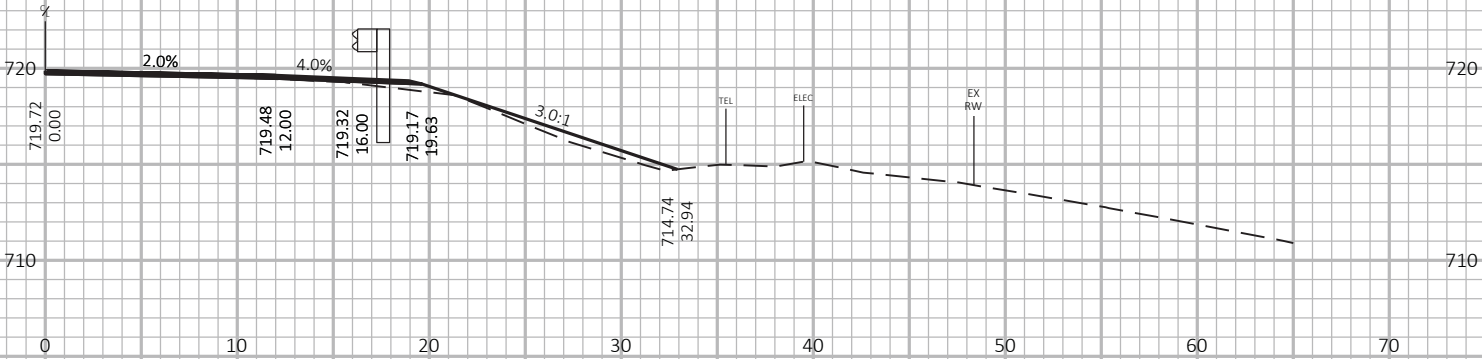


PROJECT NO:	7650-01-62	HWY:	STH 35	COUNTY:	PIERCE	CROSS SECTIONS:	STH 35	SHEET	E
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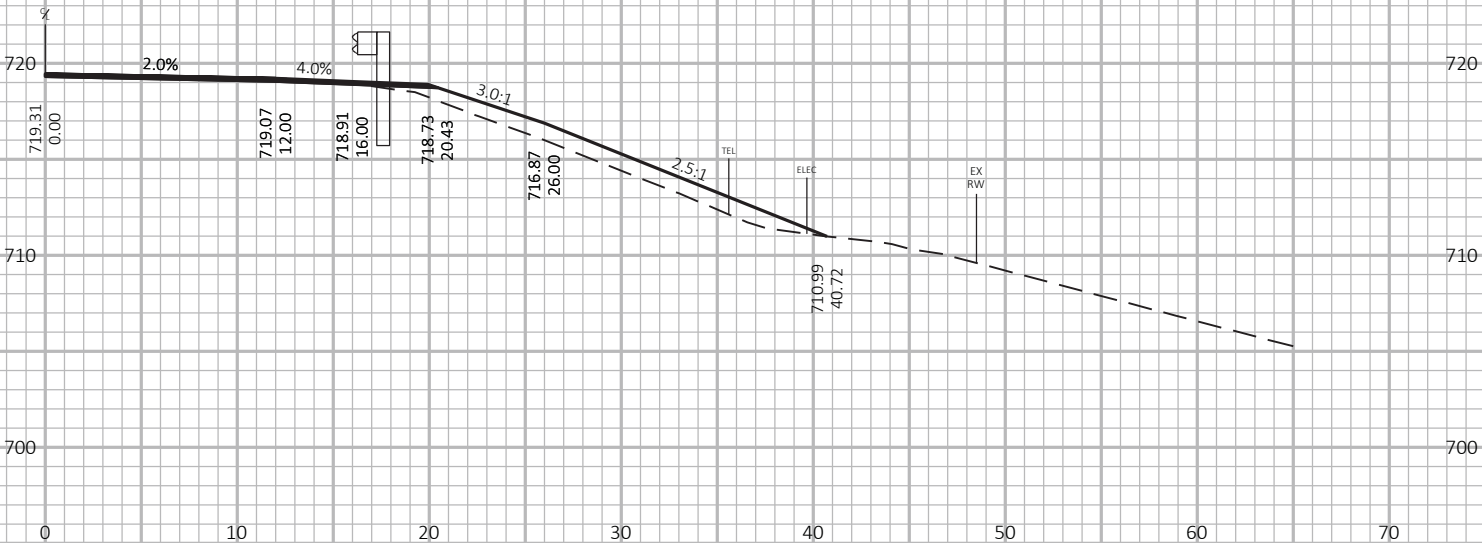
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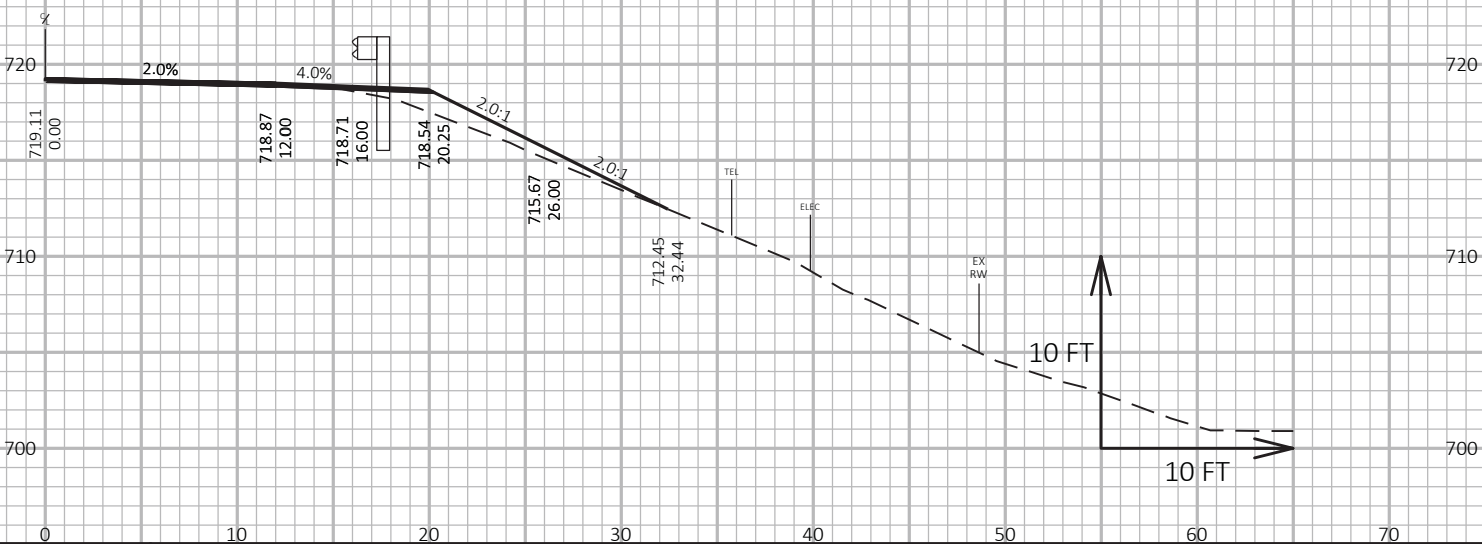
STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
POST 1 RT 266+96.40



STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
POST 5 RT 266+71.40

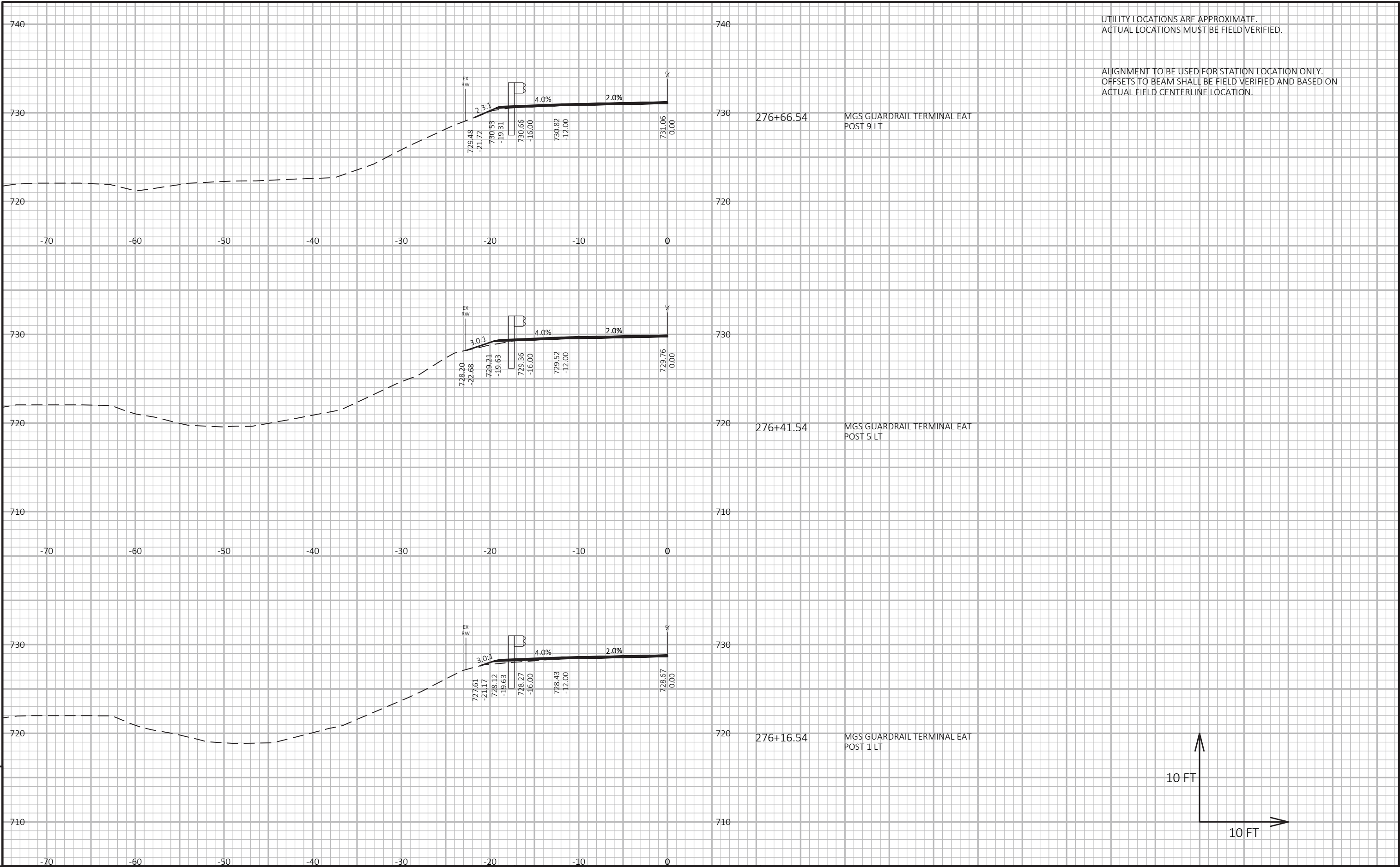


STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
POST 9 RT 266+46.40



9

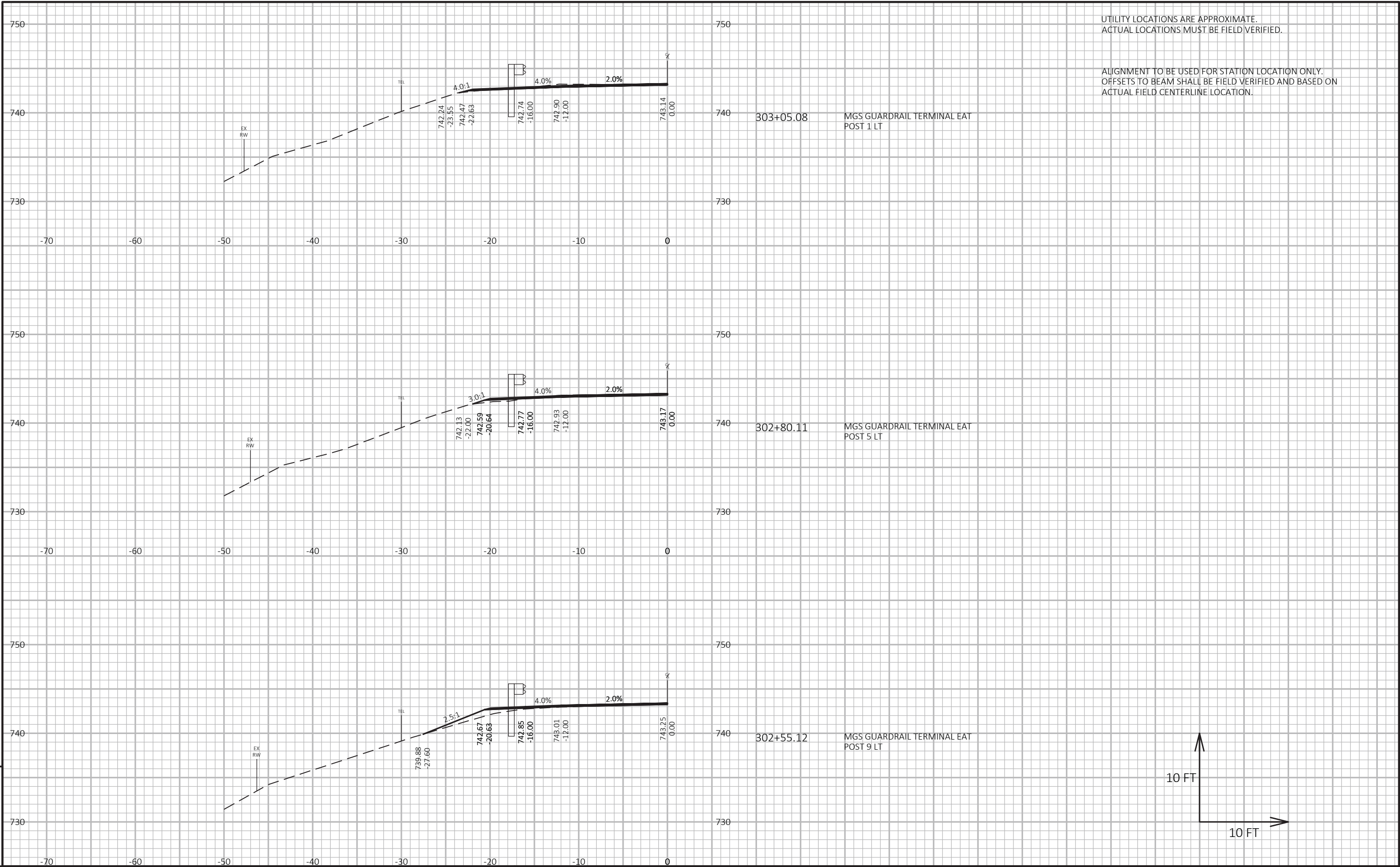
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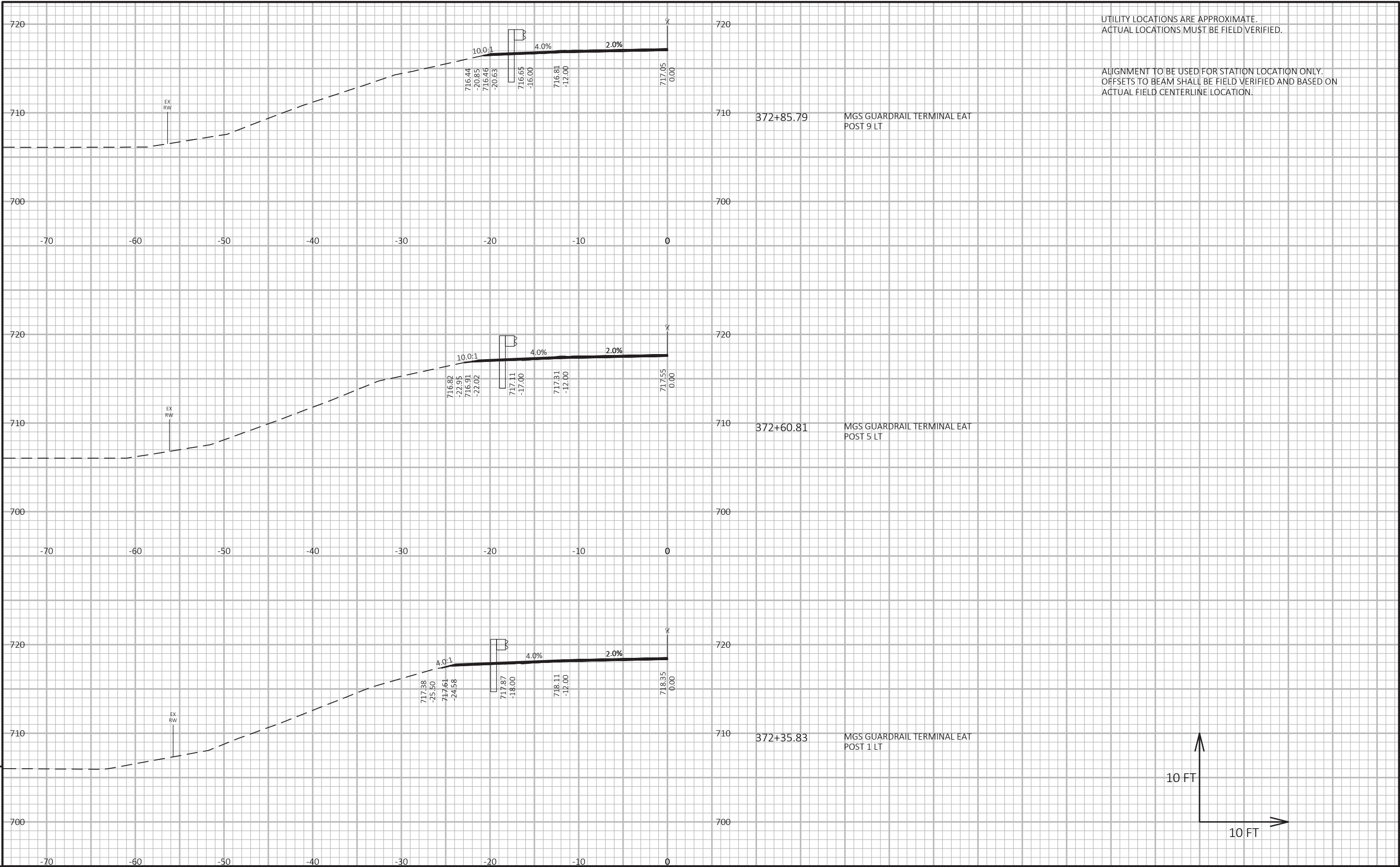
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PROJECT NO: 7650-01-62	HWY: STH 35	COUNTY: PIERCE	CROSS SECTIONS: STH 35	SHEET E
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PROJECT NO:	7650-01-62	HWY:	STH 35	COUNTY:	PIERCE	CROSS SECTIONS:	STH 35	SHEET	E
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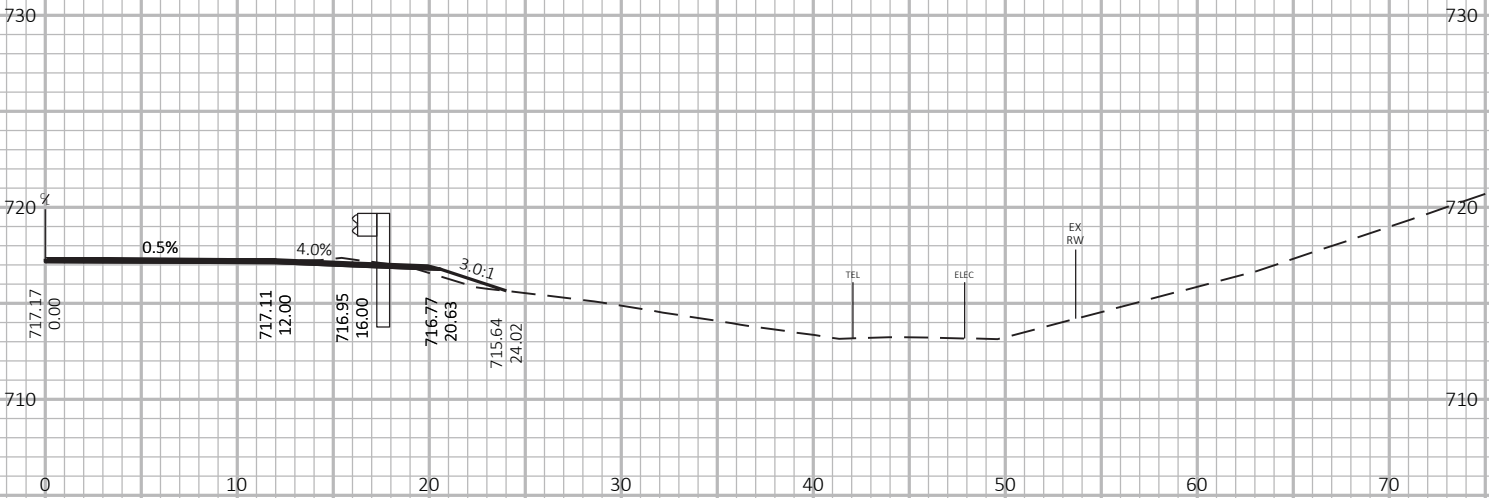


PROJECT NO:	7650-01-62	HWY:	STH 35	COUNTY:	PIERCE	CROSS SECTIONS:	STH 35	SHEET	E
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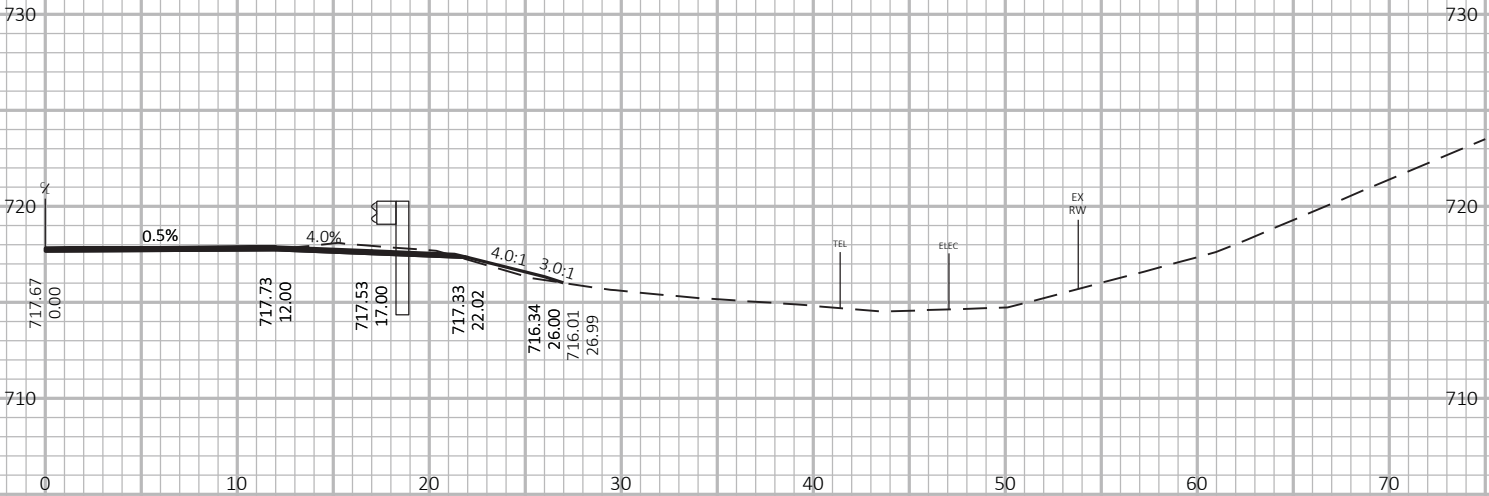
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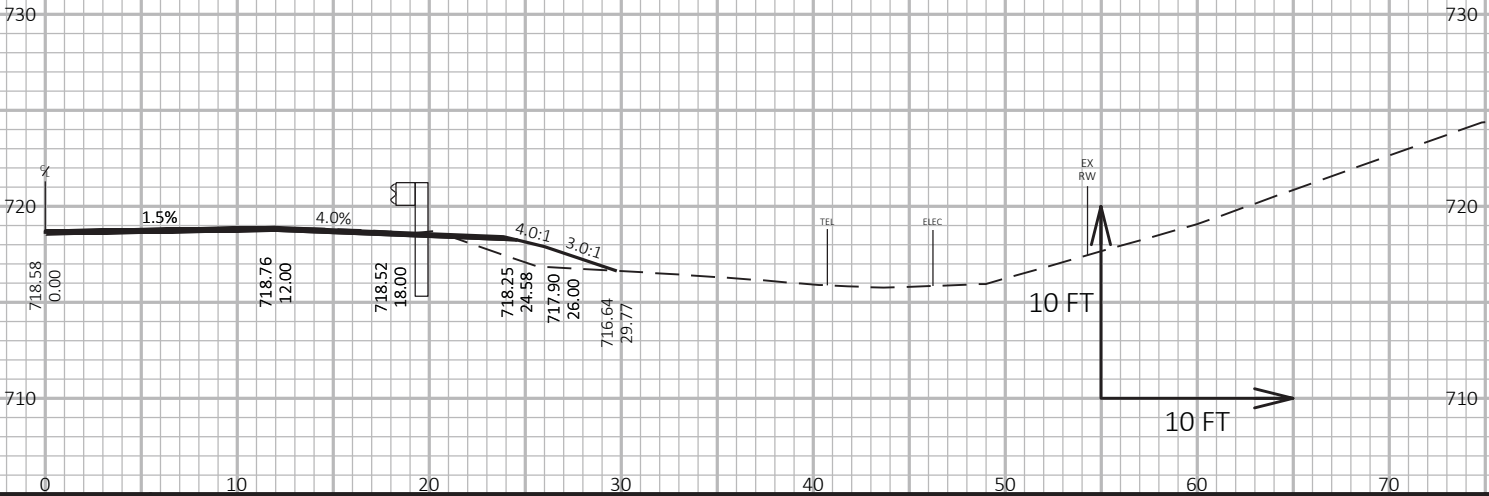
MGS GUARDRAIL TERMINAL EAT
POST 9 RT 372+79.73



MGS GUARDRAIL TERMINAL EAT
POST 5 RT 372+54.75



MGS GUARDRAIL TERMINAL EAT
POST 1 RT 372+29.77

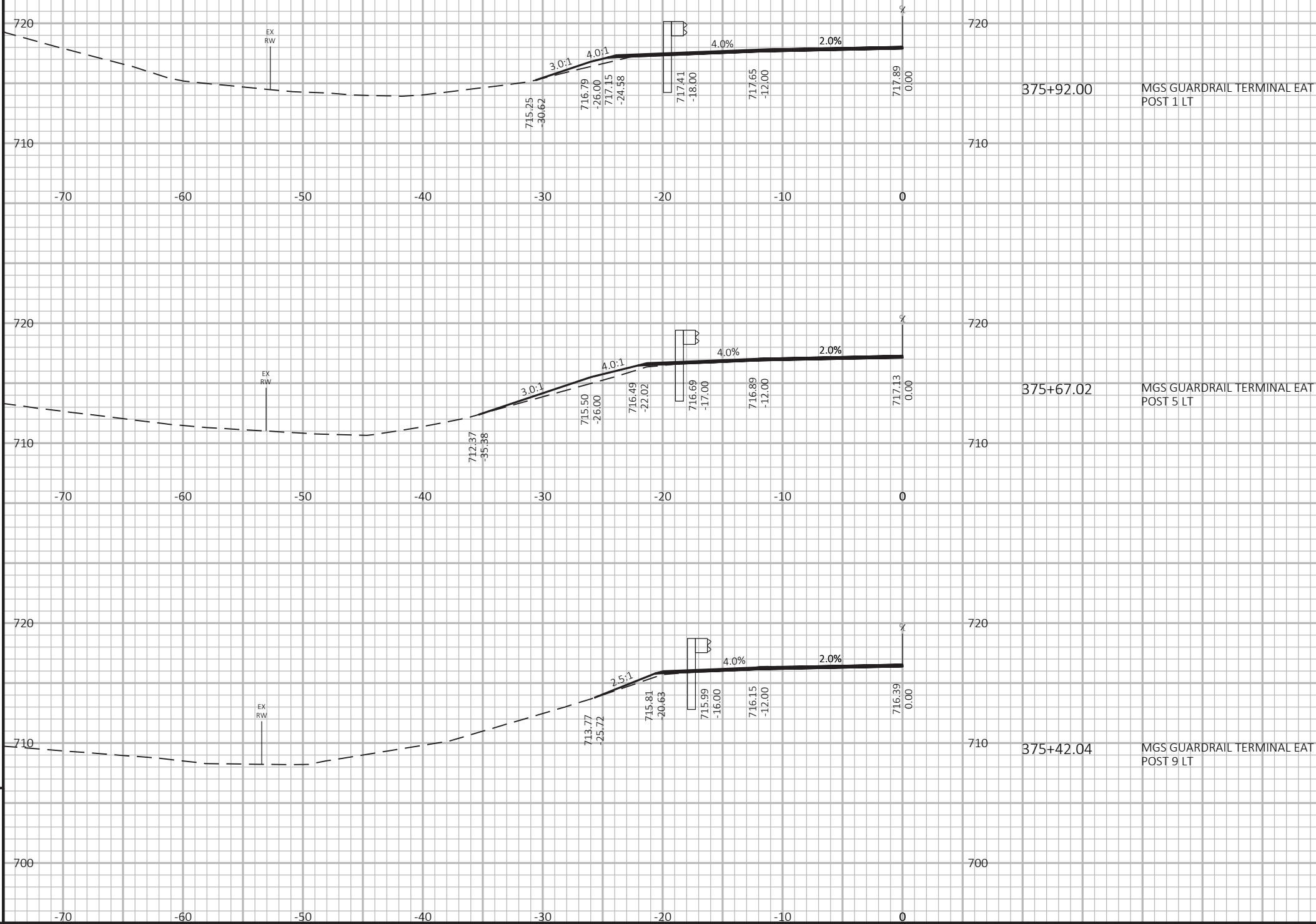


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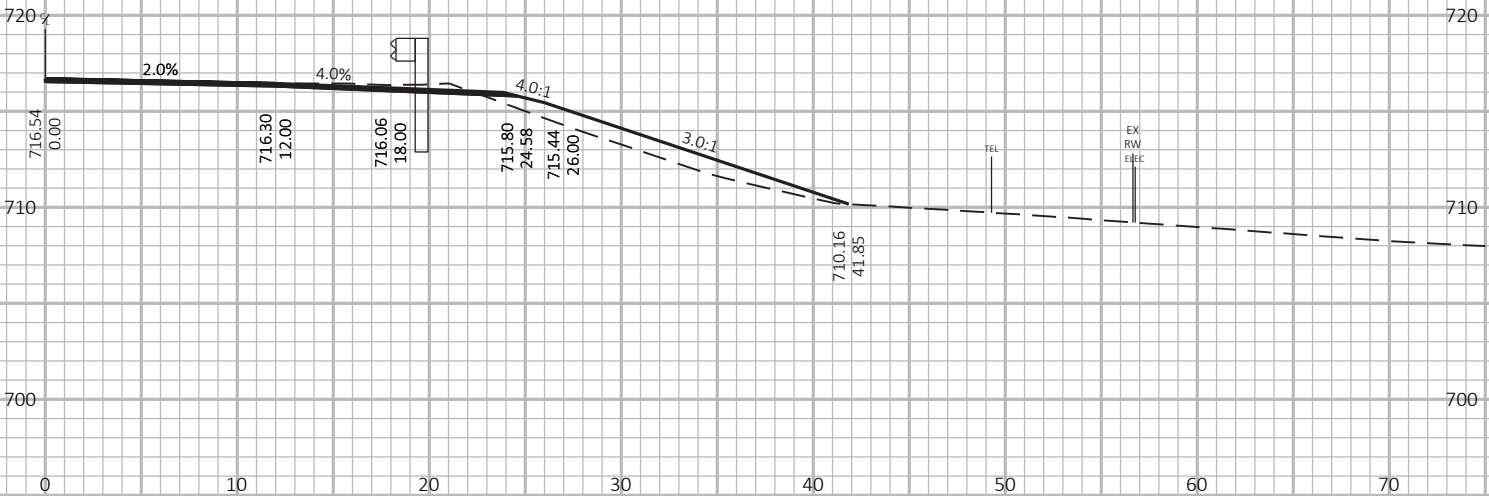
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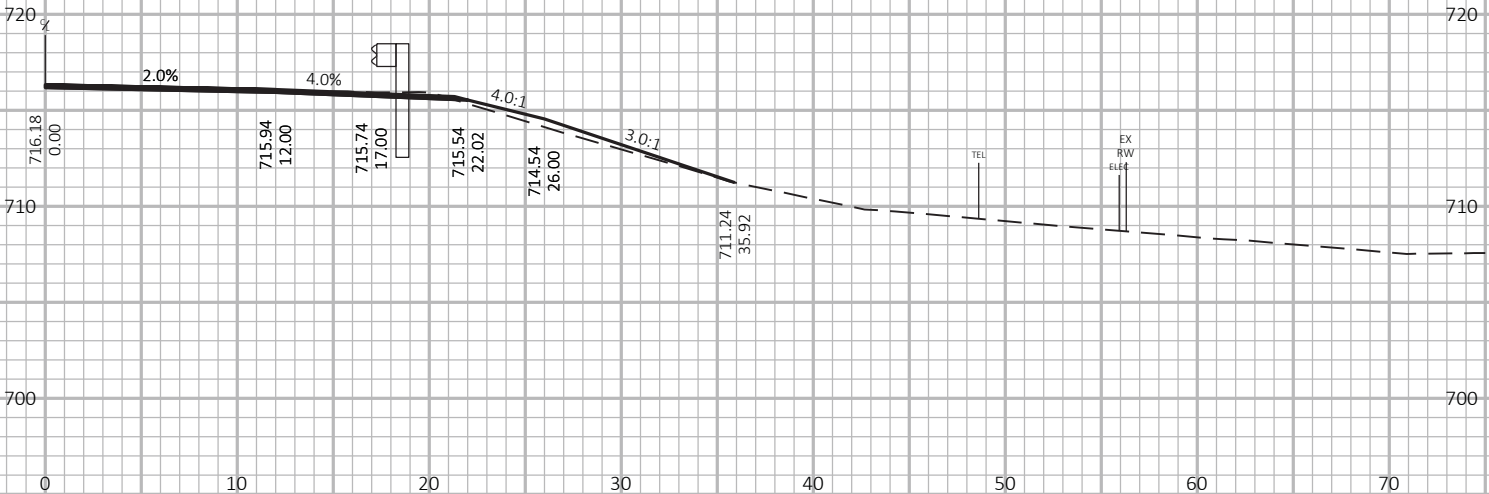
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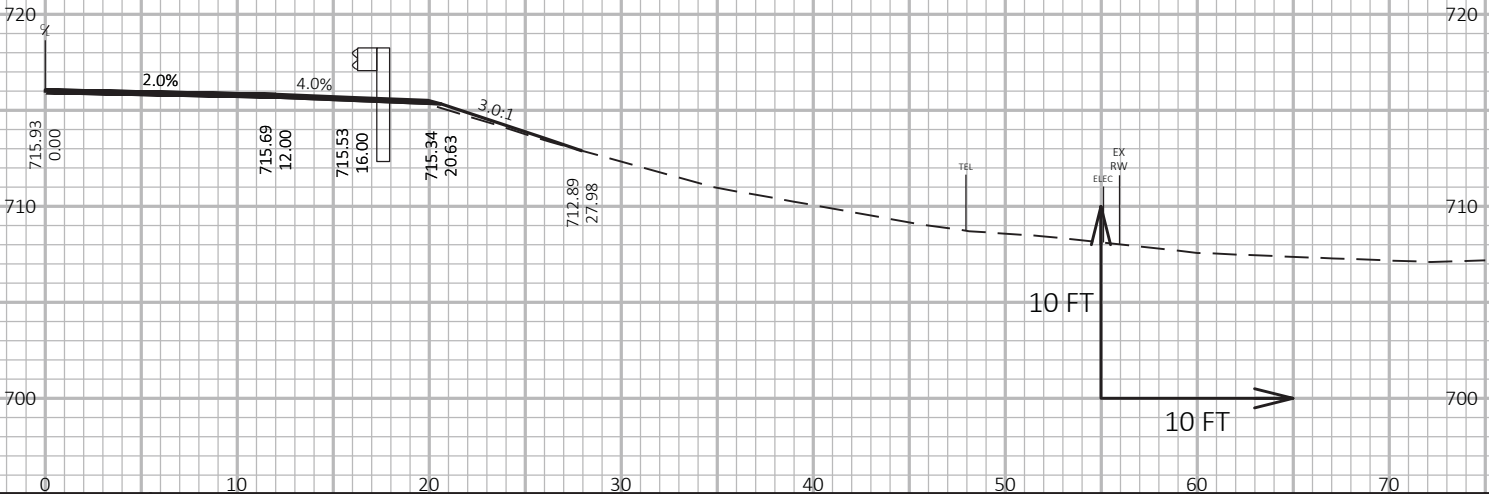
MGS GUARDRAIL TERMINAL EAT
POST 1 RT 375+48.44



MGS GUARDRAIL TERMINAL EAT
POST 5 RT 375+23.46

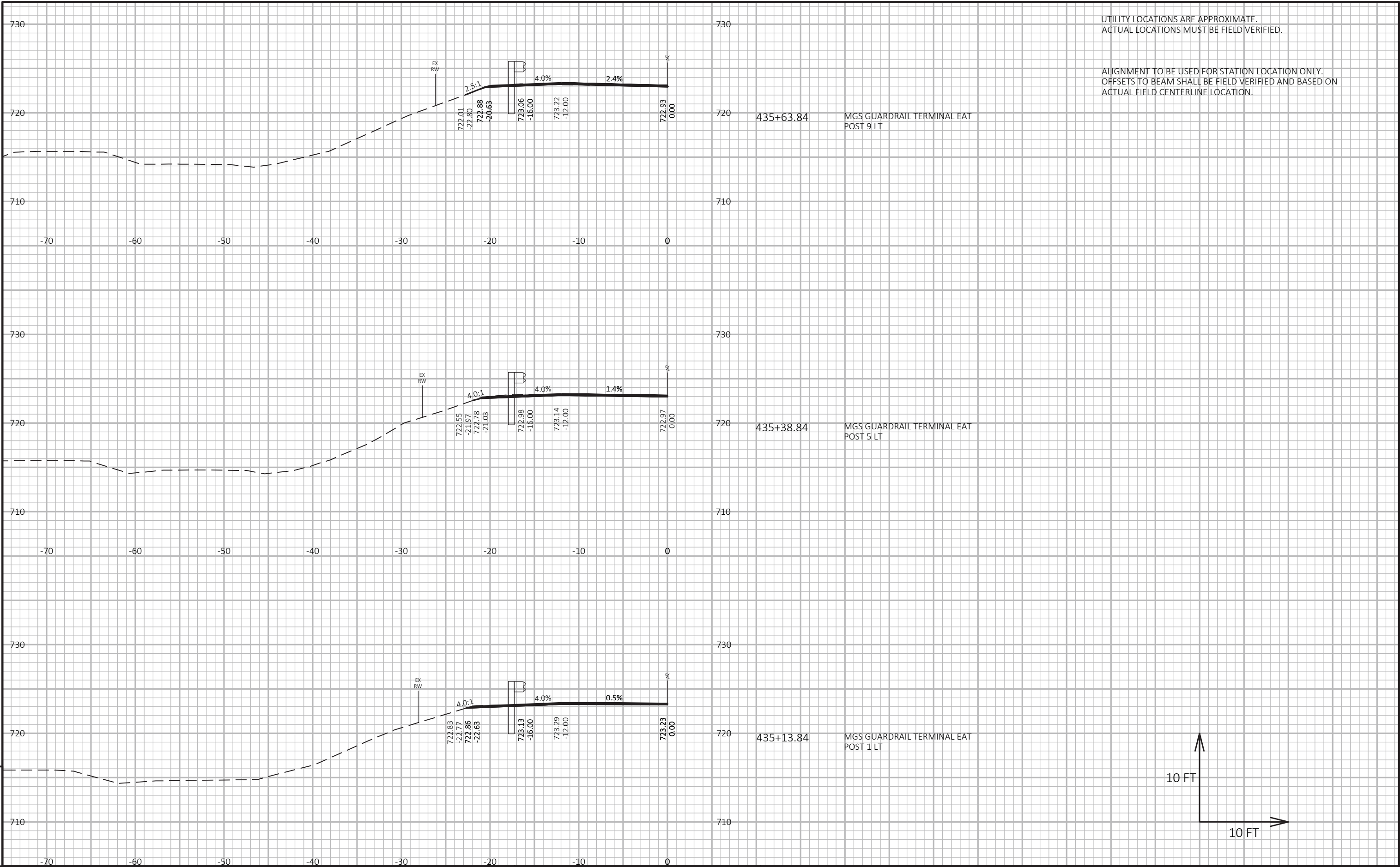


MGS GUARDRAIL TERMINAL EAT
POST 9 RT 374+98.48

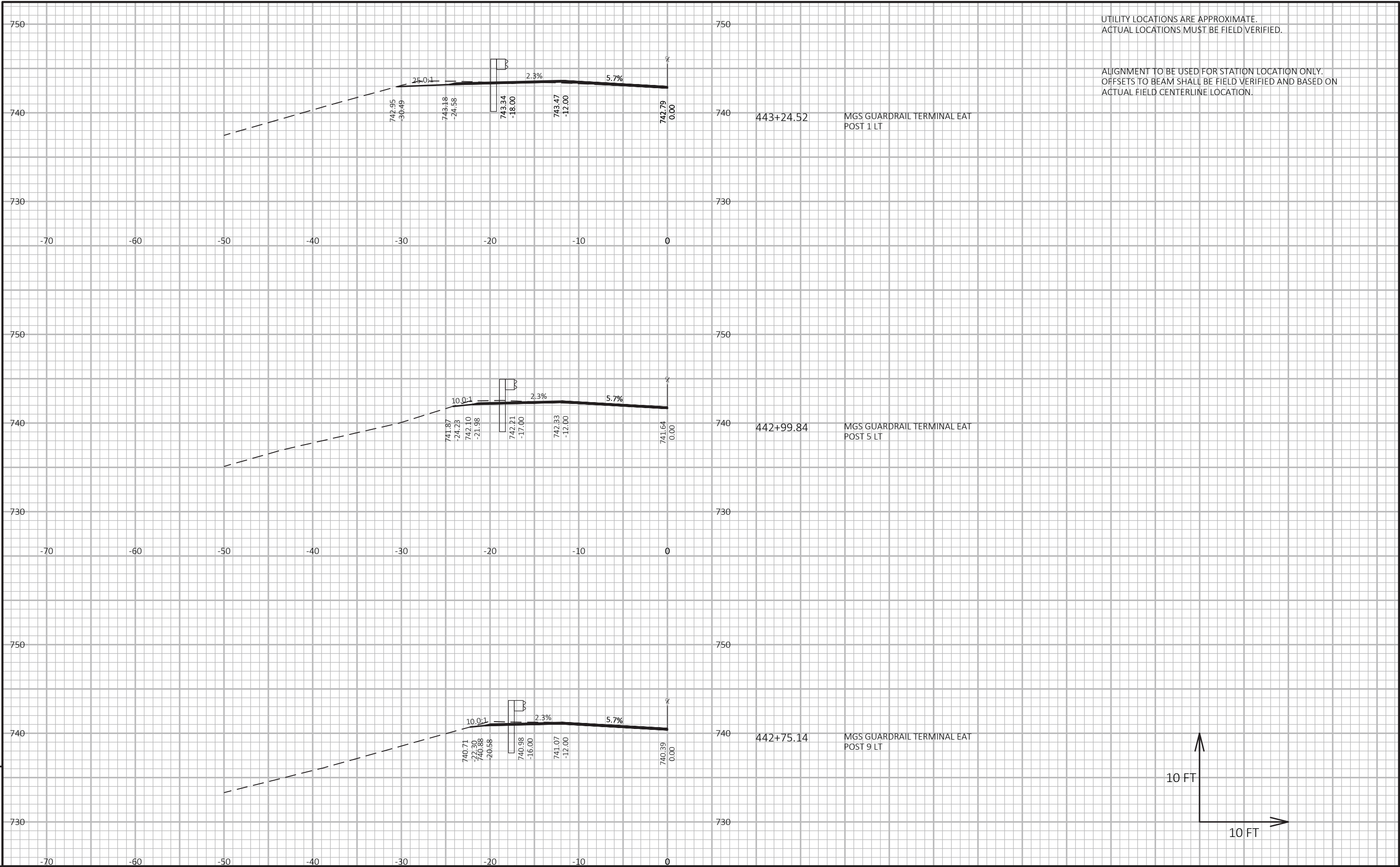


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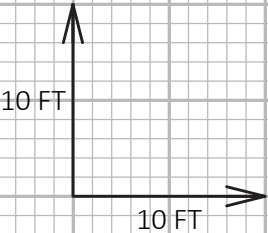


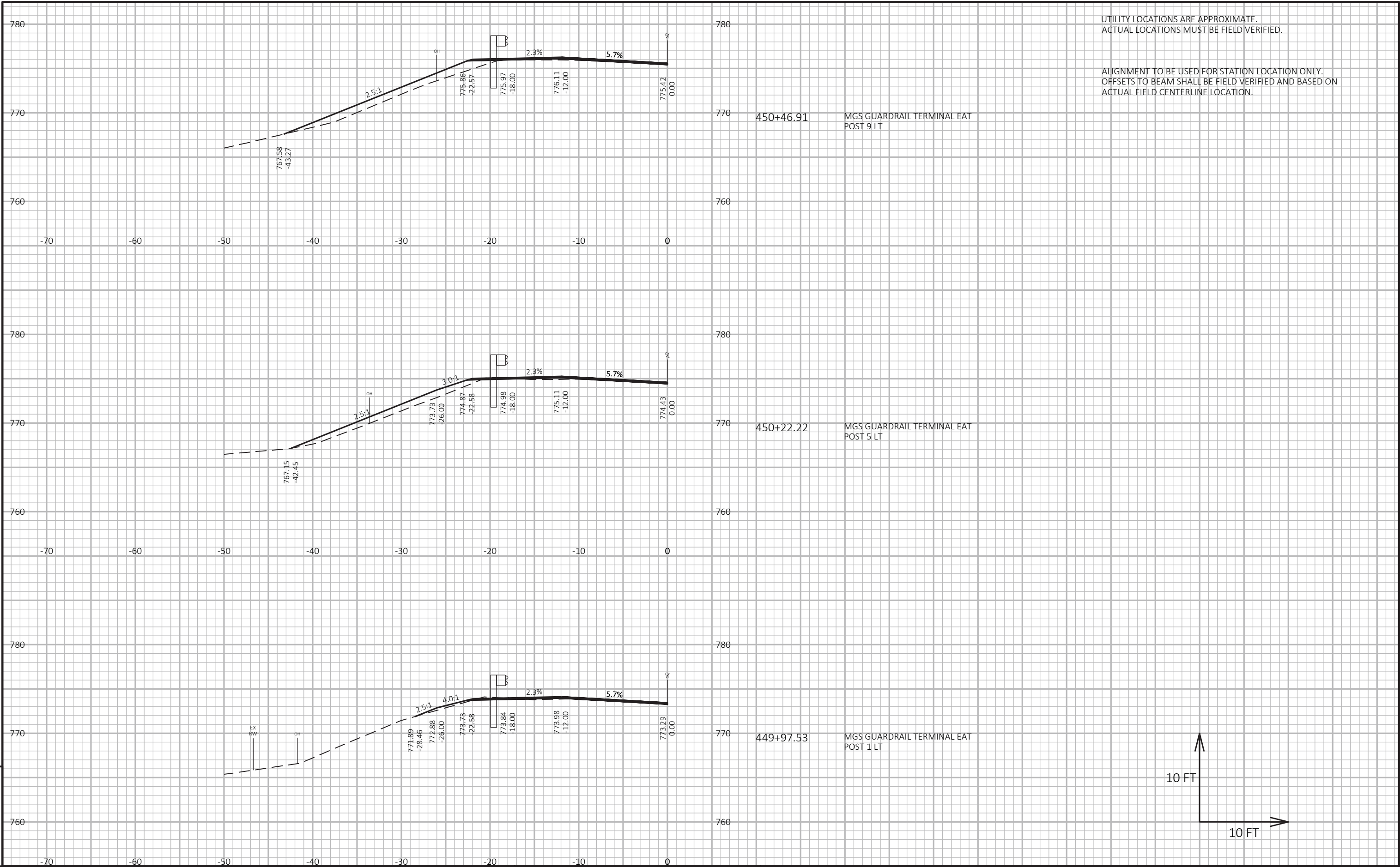
PROJECT NO:	7650-01-62	HWY:	STH 35	COUNTY:	PIERCE	CROSS SECTIONS:	STH 35	SHEET	E
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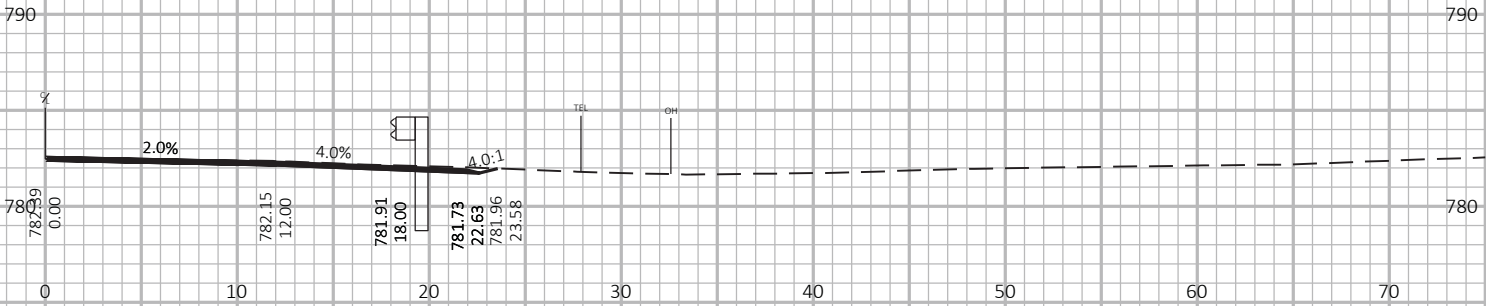
PROJECT NO:	7650-01-62	HWY:	STH 35	COUNTY:	PIERCE	CROSS SECTIONS:	STH 35	SHEET	E
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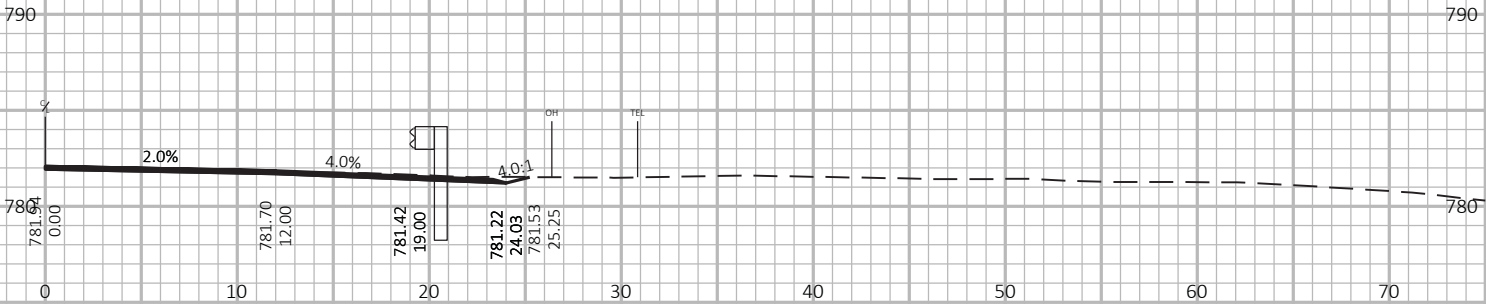
MGS GUARDRAIL TERMINAL EAT
POST 9 RT

452+76.88



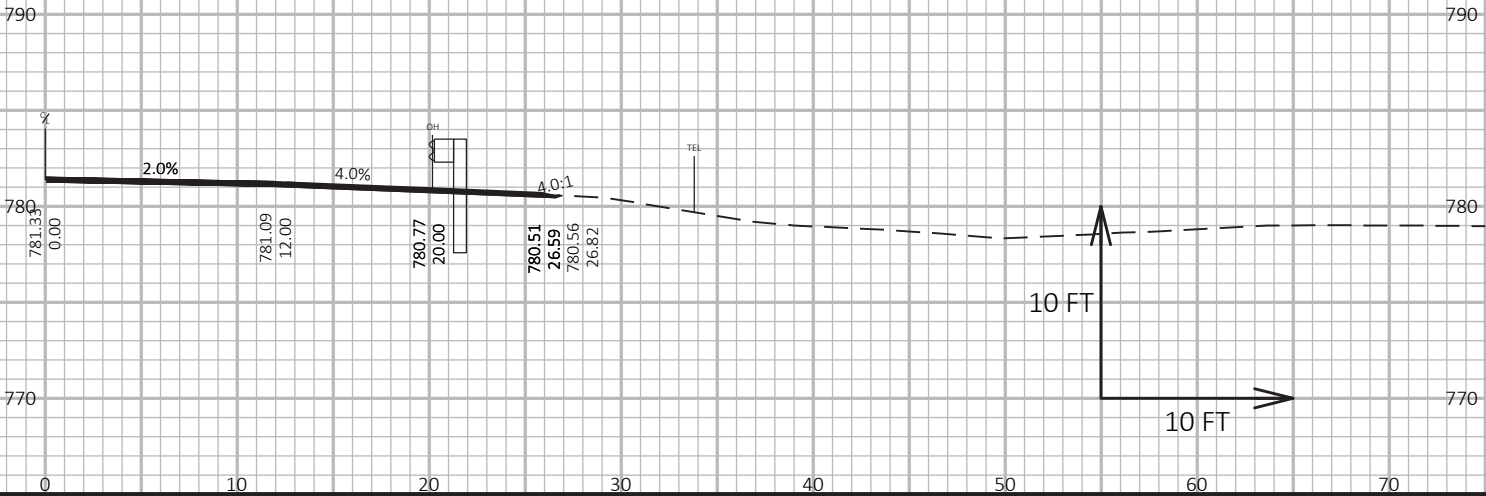
MGS GUARDRAIL TERMINAL EAT
POST 5 RT

452+51.90



MGS GUARDRAIL TERMINAL EAT
POST 1 RT

452+26.92



10 FT

10 FT

PROJECT NO: 7650-01-62

HWY: STH 35

COUNTY: PIERCE

CROSS SECTIONS: STH 35

SHEET

E

FILE NAME : P:\U2\W\WITNW\142897\C3D-STH 35\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - EAT STA 452 RT

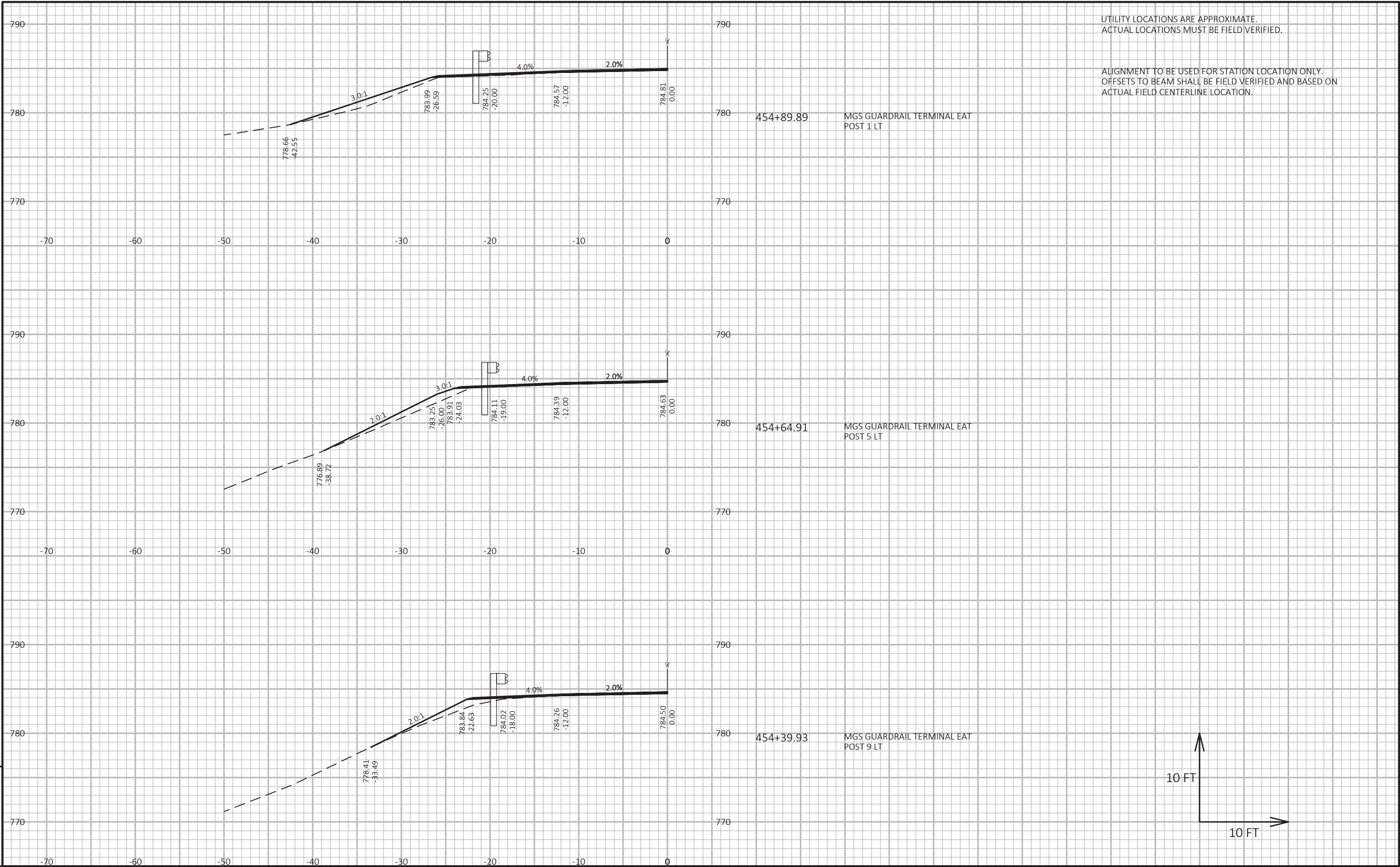
PLOT DATE : 10/31/2018 1:23 PM

PLOT BY : NICK ENGH

PLOT NAME :

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

WISDOT/CADDs SHEET 49



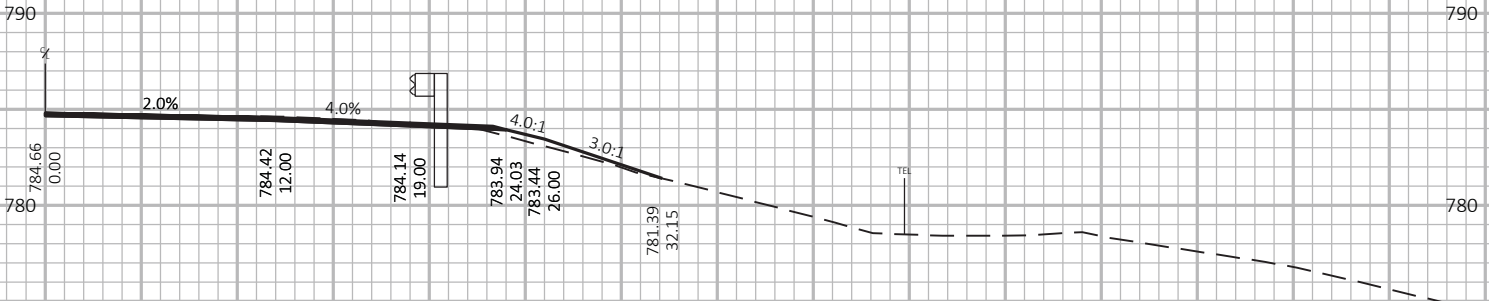
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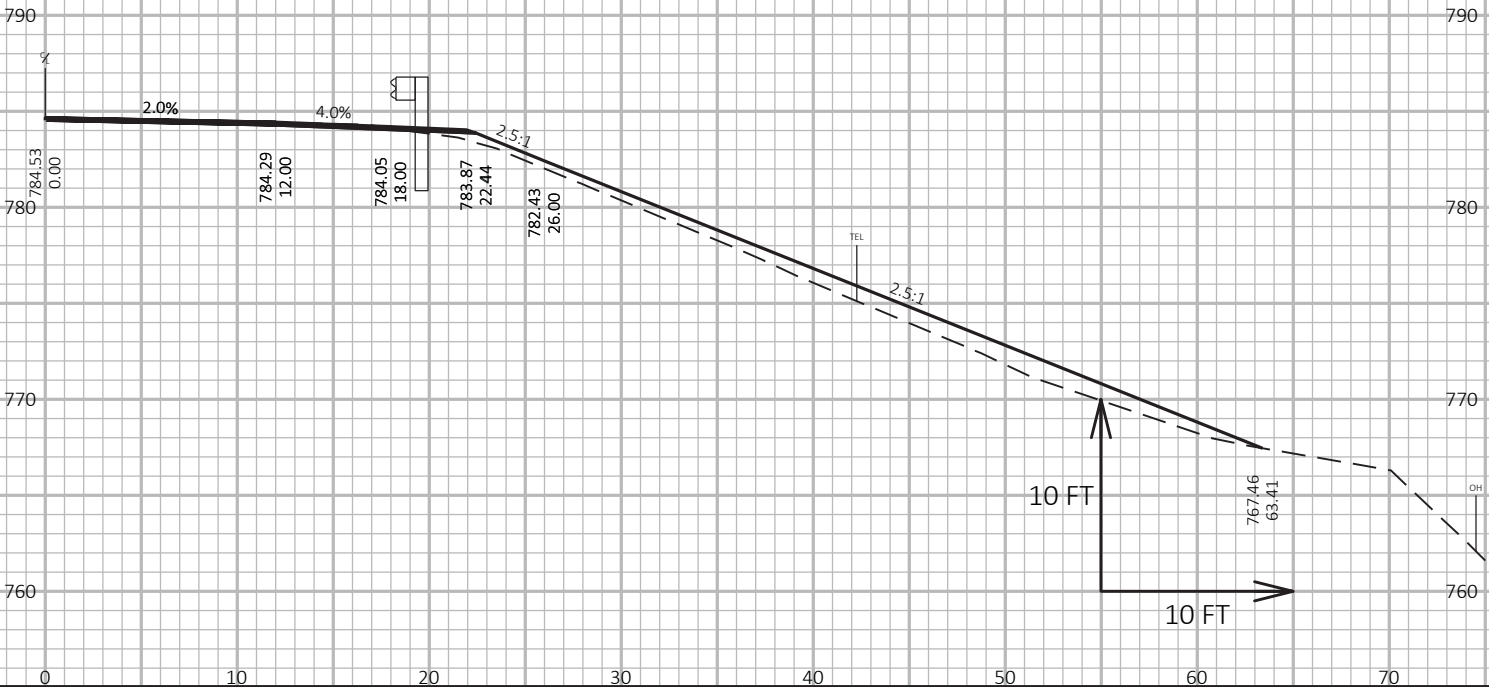
MGS GUARDRAIL TERMINAL EAT
POST 1 RT 454+95.58



MGS GUARDRAIL TERMINAL EAT
POST 5 RT 454+70.60



MGS GUARDRAIL TERMINAL EAT
POST 9 RT 454+45.62



PROJECT NO: 7650-01-62

HWY: STH 35

COUNTY: PIERCE

CROSS SECTIONS: STH 35

SHEET

E

FILE NAME : P:\UZ\W\WITNW\142897\C3D-STH 35\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - EAT STA 454 RT

PLOT DATE : 10/31/2018 1:23 PM

PLOT BY : NICK ENGH

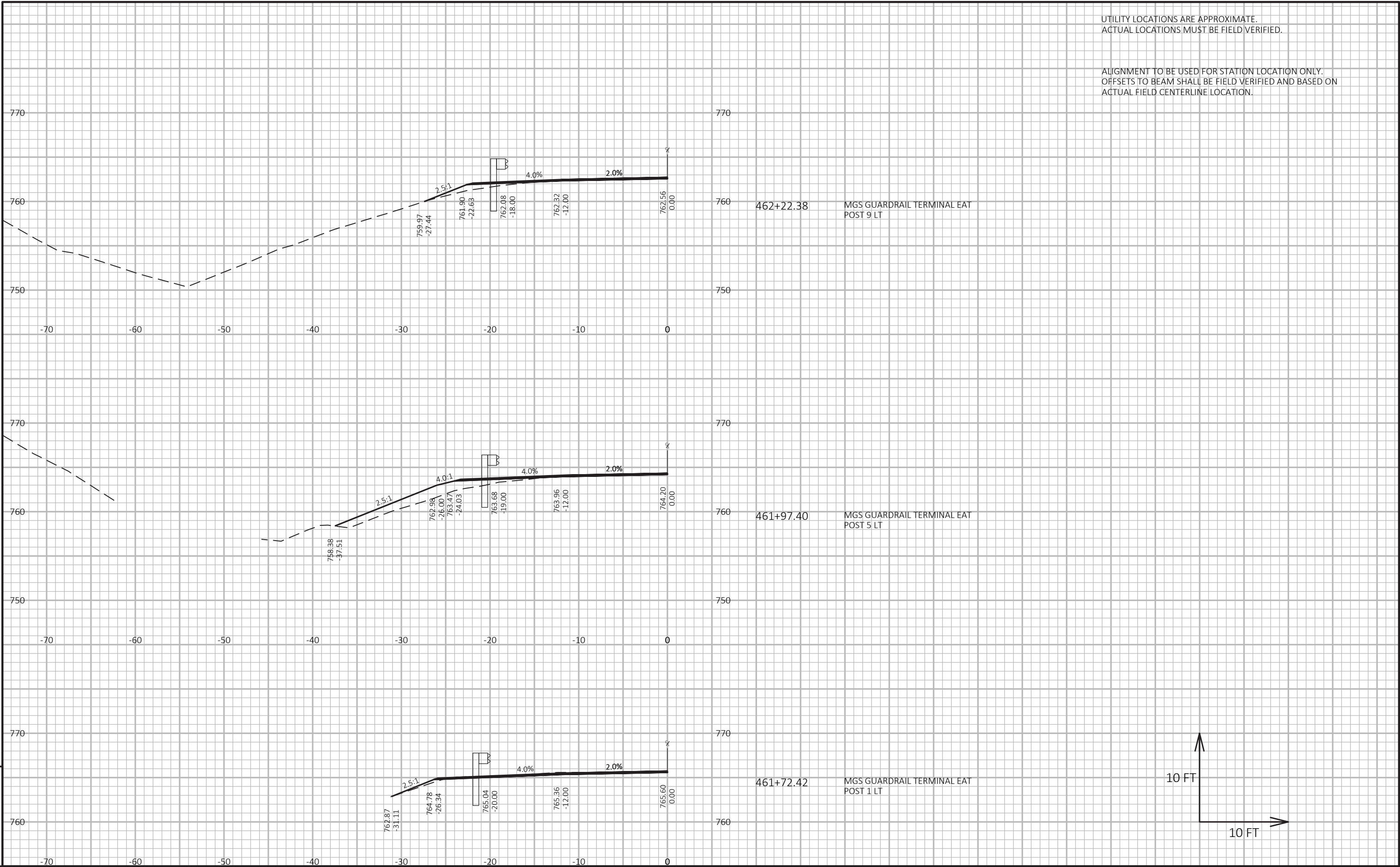
PLOT NAME :

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

WISDOT/CADDs SHEET 49

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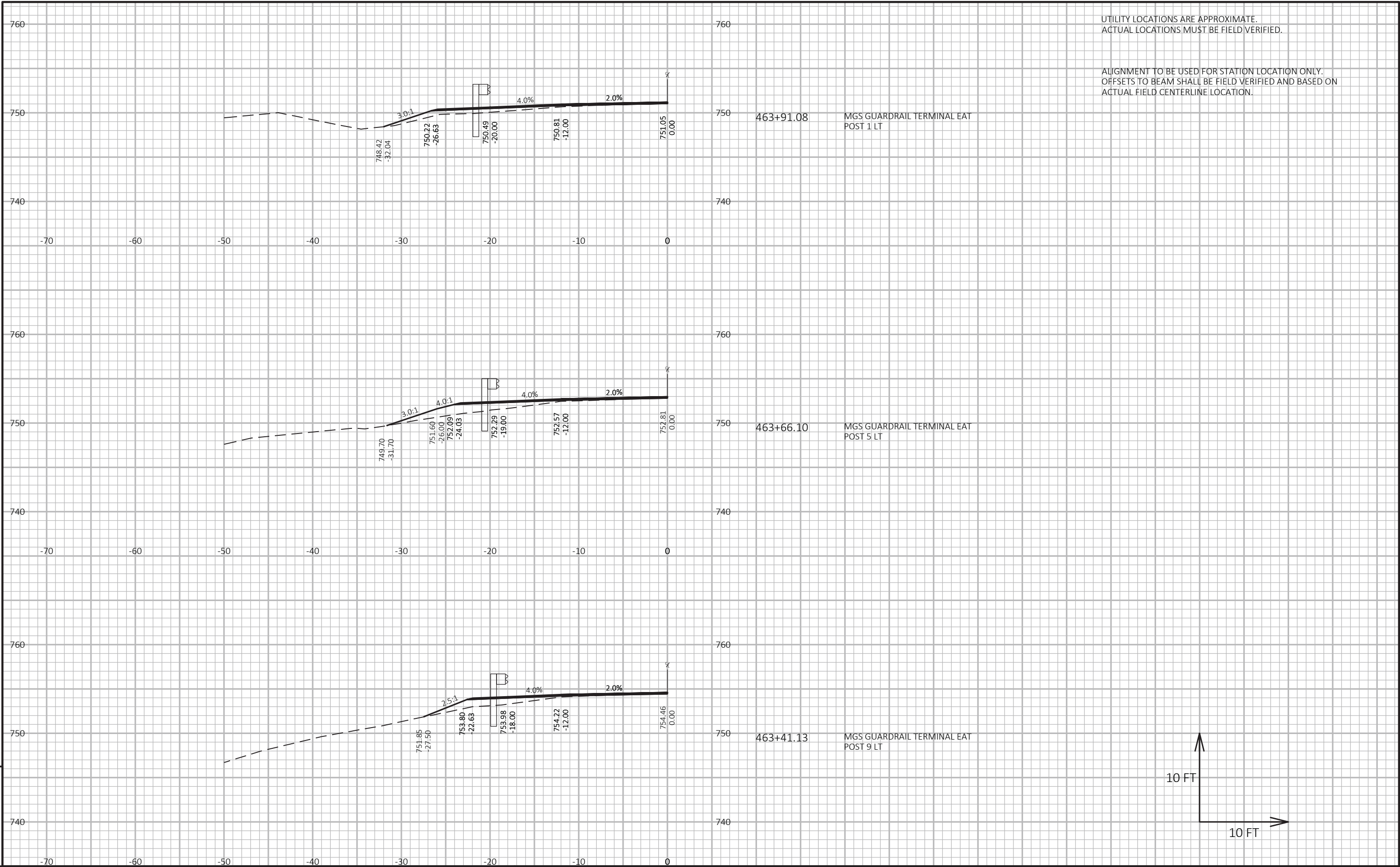
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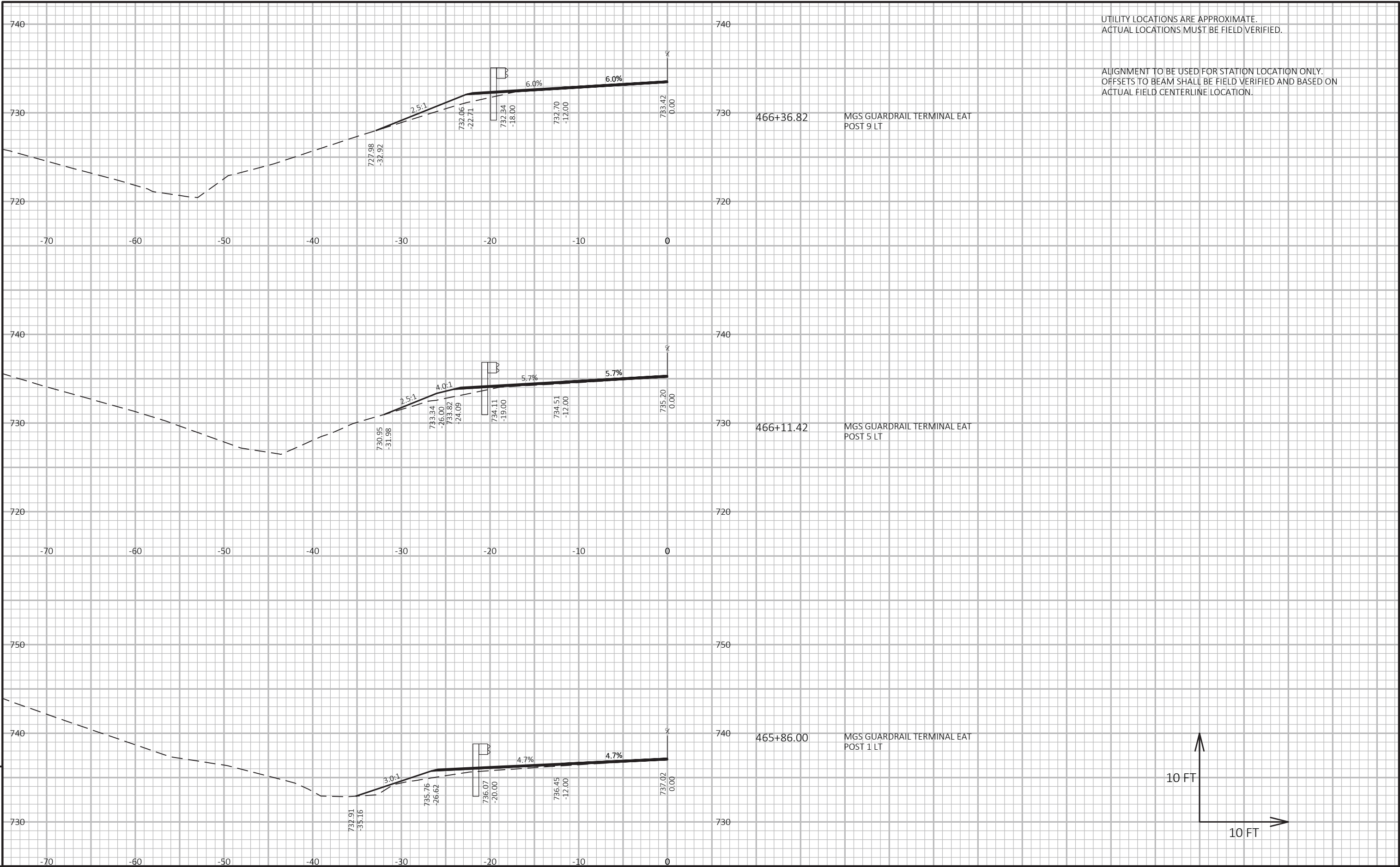
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9

PROJECT NO:	7650-01-62	HWY:	STH 35	COUNTY:	PIERCE	CROSS SECTIONS:	STH 35	SHEET	E
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PROJECT NO:	7650-01-62	HWY:	STH 35	COUNTY:	PIERCE	CROSS SECTIONS:	STH 35	SHEET	E
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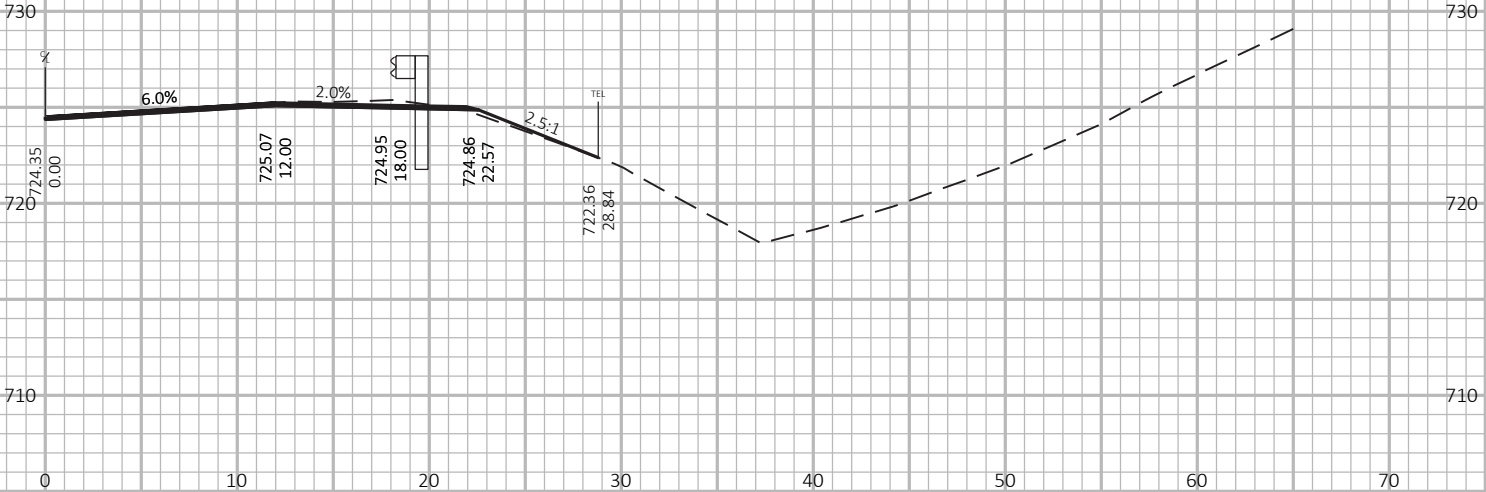
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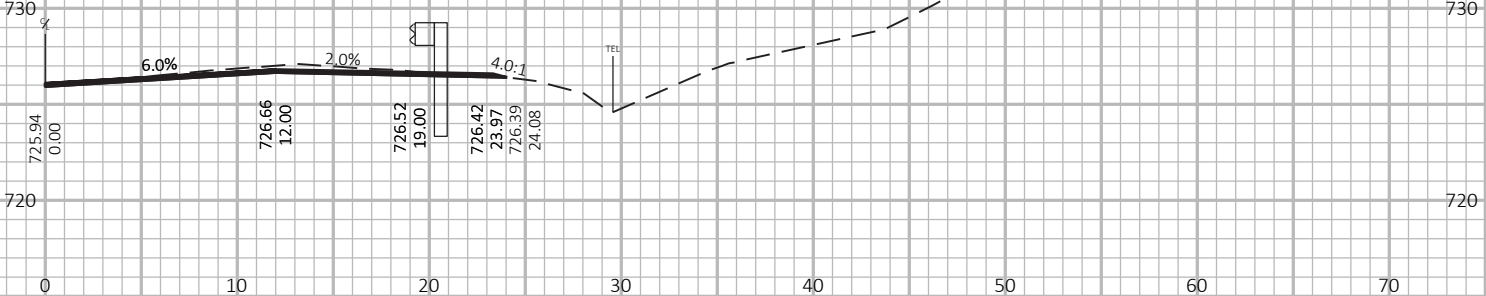
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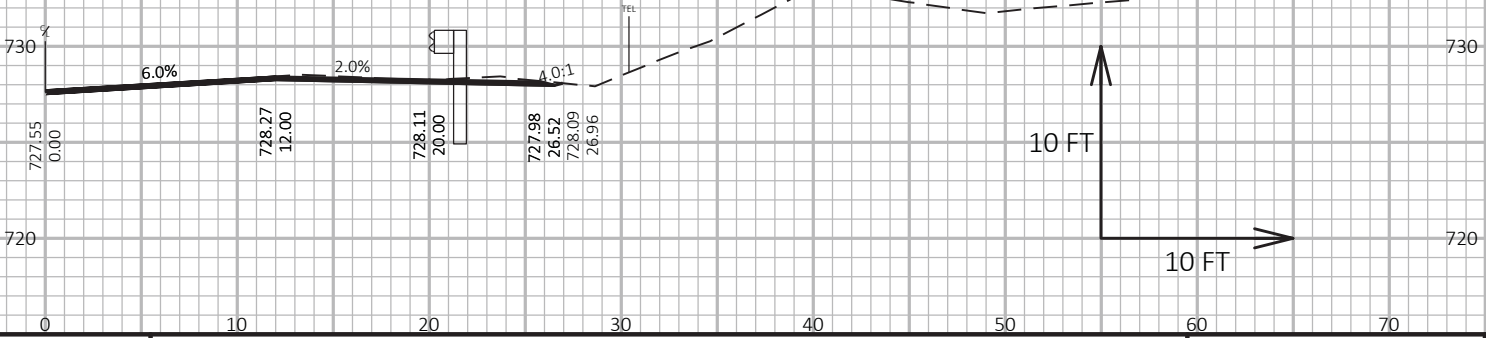
MGS GUARDRAIL TERMINAL EAT
POST 9 RT 467+73.42

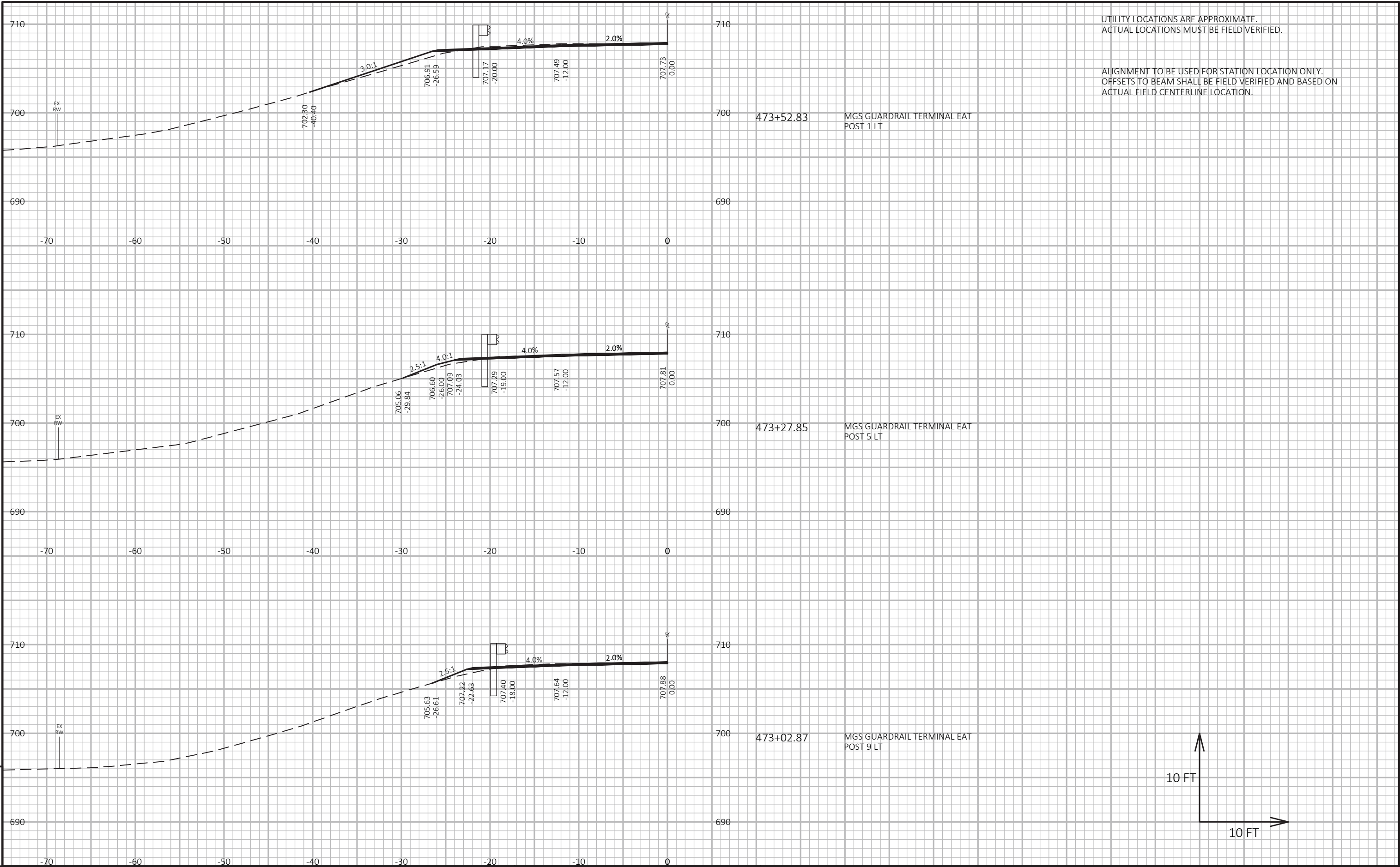


MGS GUARDRAIL TERMINAL EAT
POST 5 RT 467+48.85



MGS GUARDRAIL TERMINAL EAT
POST 1 RT 467+24.30



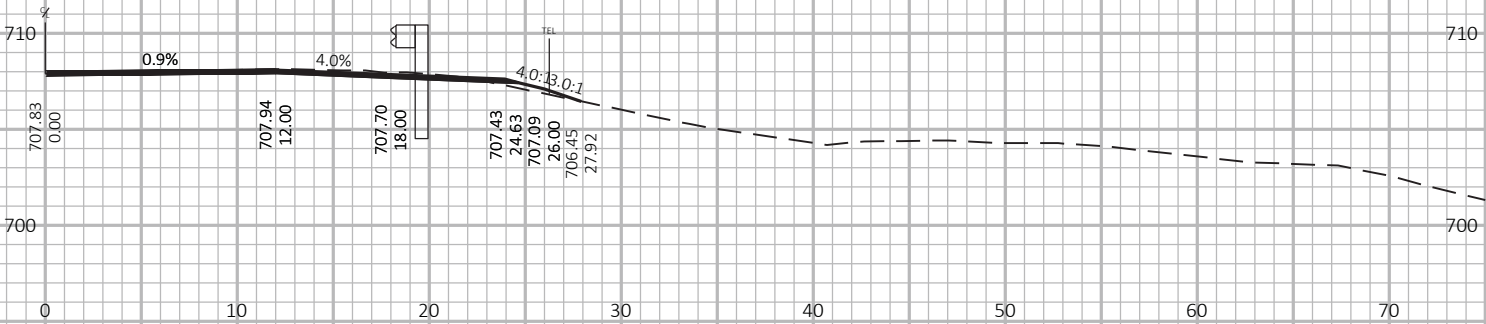


PROJECT NO:	7650-01-62	HWY:	STH 35	COUNTY:	PIERCE	CROSS SECTIONS:	STH 35	SHEET	E
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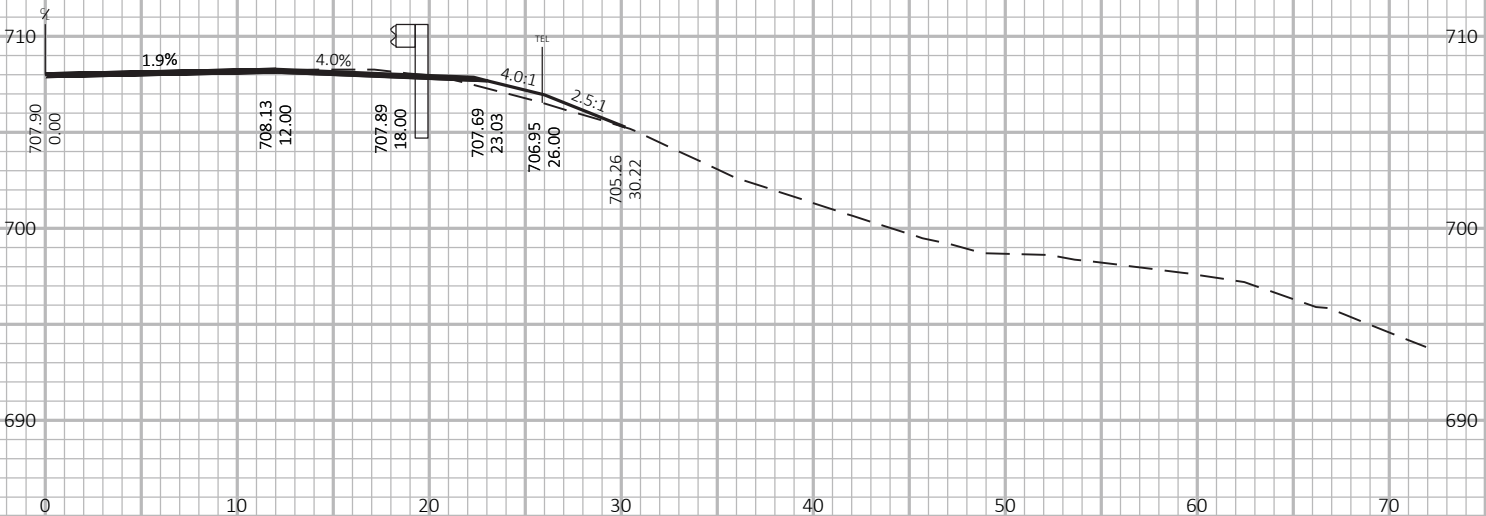
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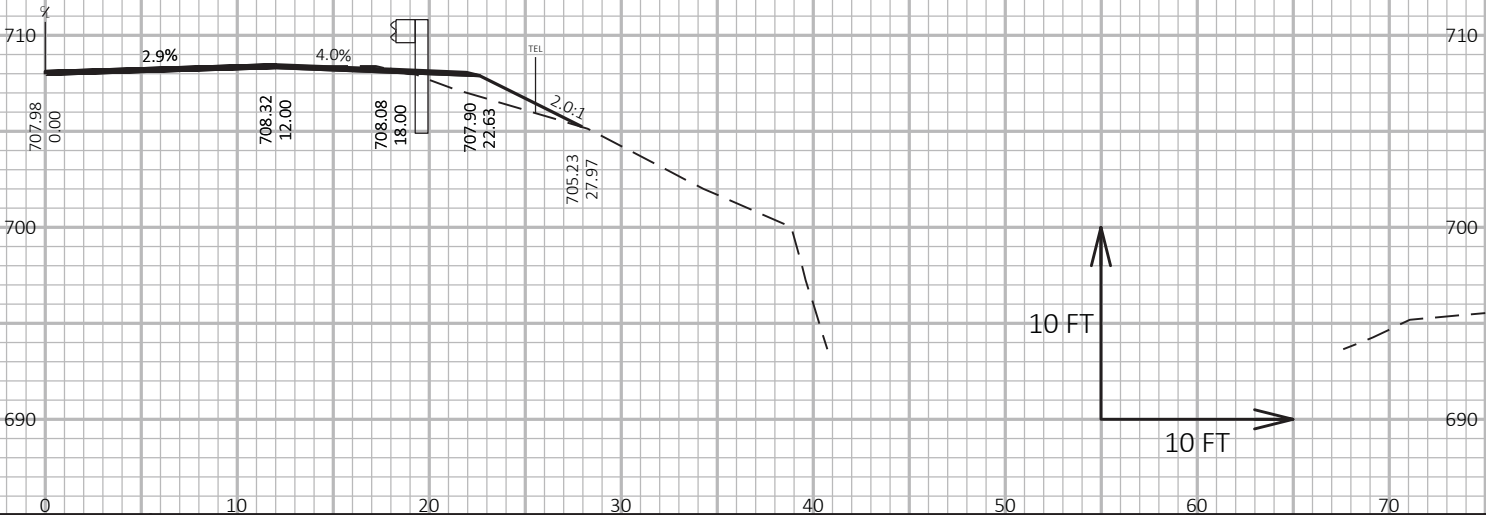
MGS GUARDRAIL TERMINAL EAT
POST 1 RT 473+22.08



MGS GUARDRAIL TERMINAL EAT
POST 5 RT 472+97.08



MGS GUARDRAIL TERMINAL EAT
POST 9 RT 472+72.08



10 FT

10 FT

PROJECT NO: 7650-01-62

HWY: STH 35

COUNTY: PIERCE

CROSS SECTIONS: STH 35

SHEET

E

FILE NAME : P:\UZ\W\WITNW\142897\C3D-STH 35\SHEETSP\N\090201_XS.DWG
LAYOUT NAME - EAT STA 473 RT

PLOT DATE : 10/31/2018 1:25 PM

PLOT BY : NICK ENGH

PLOT NAME :

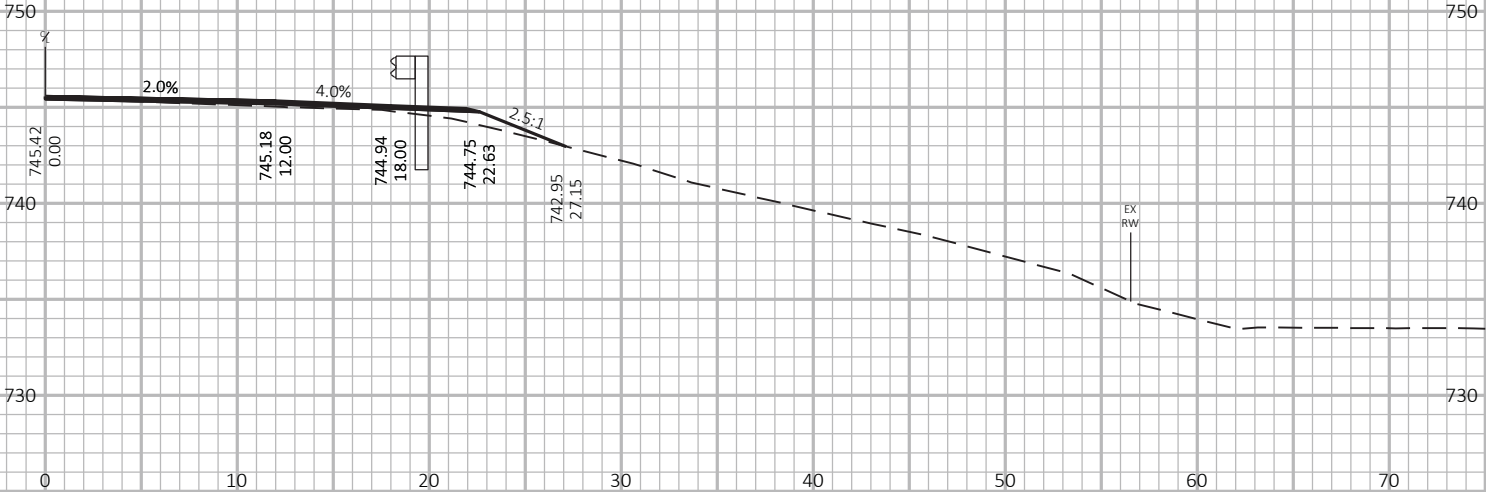
PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDs SHEET 49

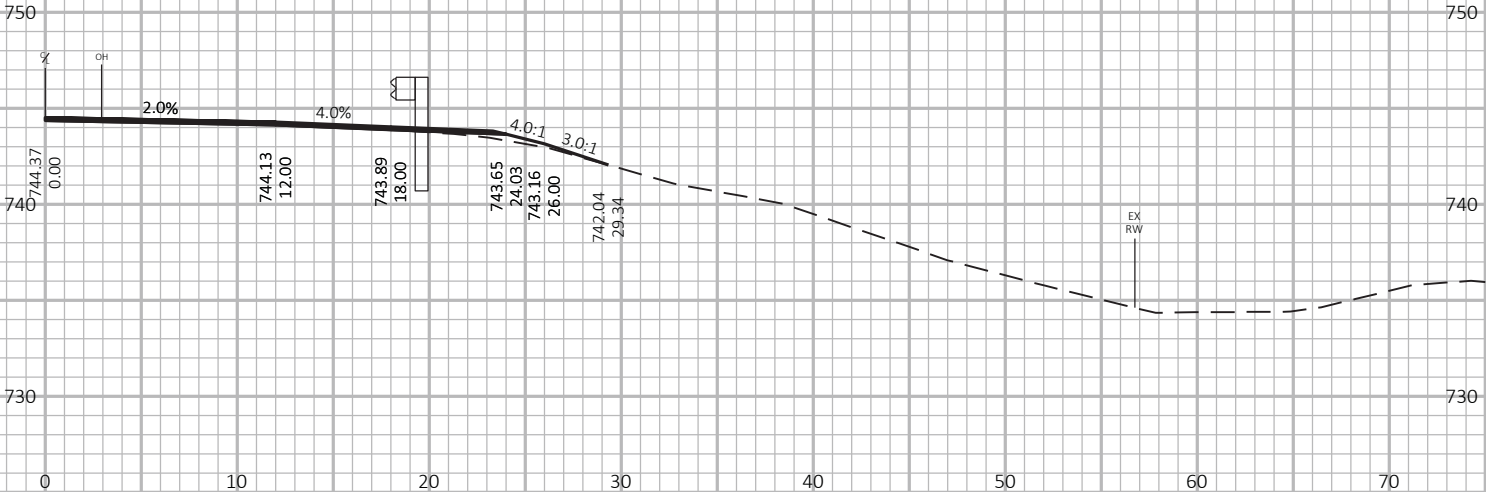
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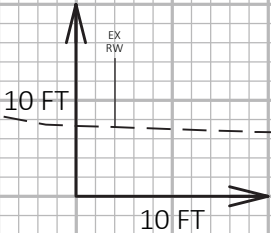
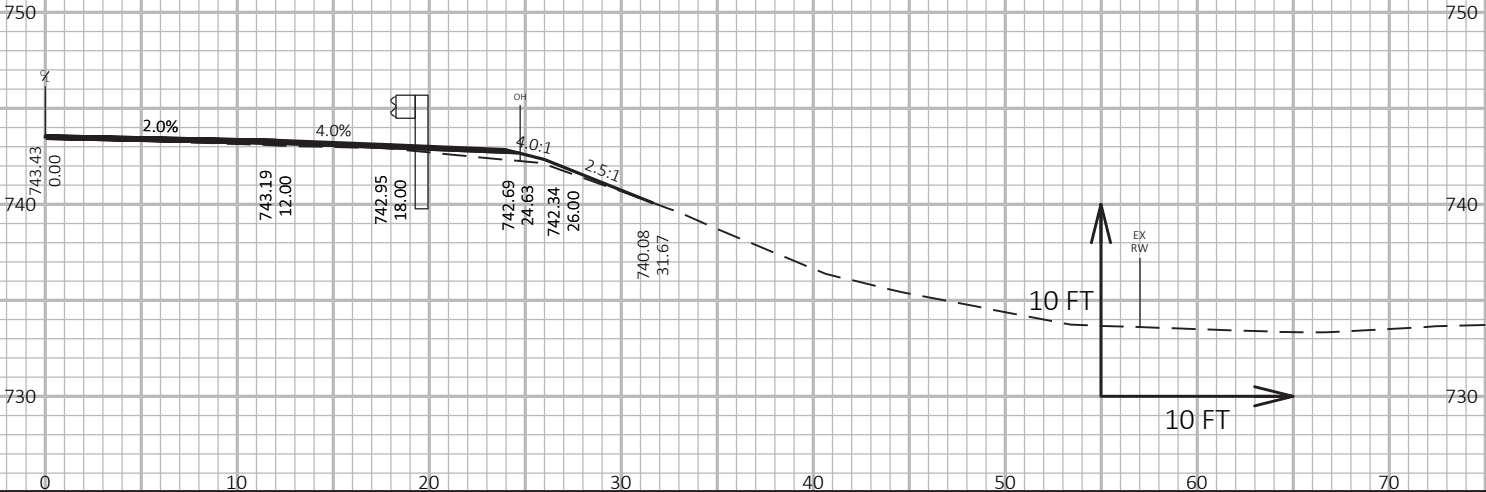
MGS GUARDRAIL TERMINAL EAT
POST 9 RT 484+35.37



MGS GUARDRAIL TERMINAL EAT
POST 5 RT 484+10.41



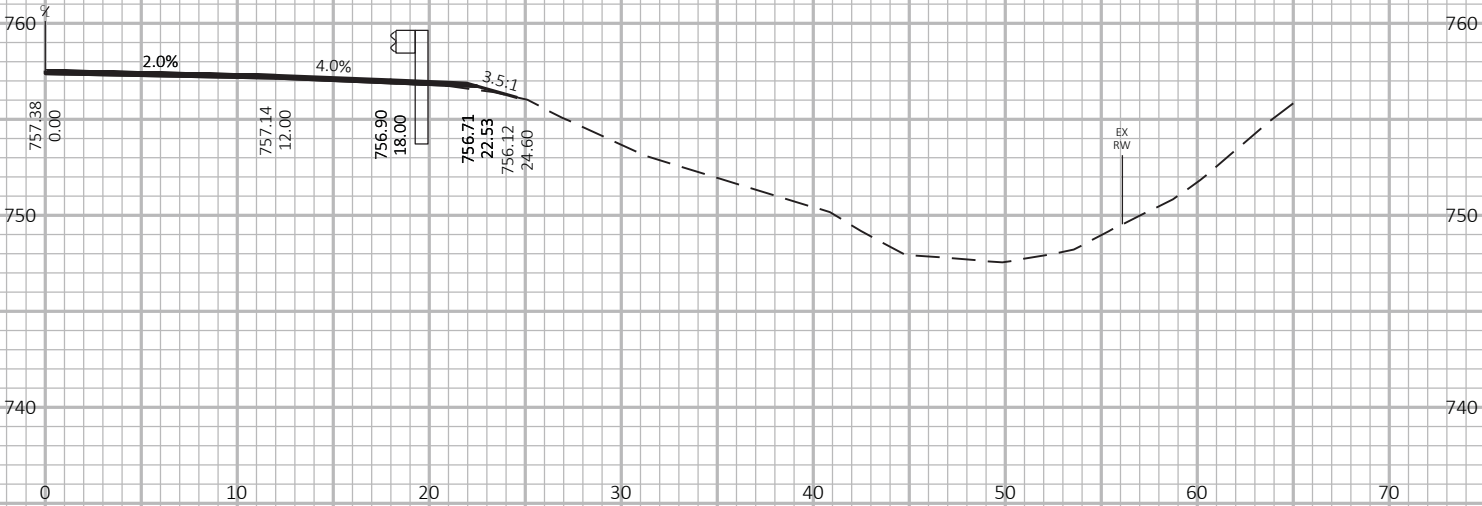
MGS GUARDRAIL TERMINAL EAT
POST 1 RT 483+85.45



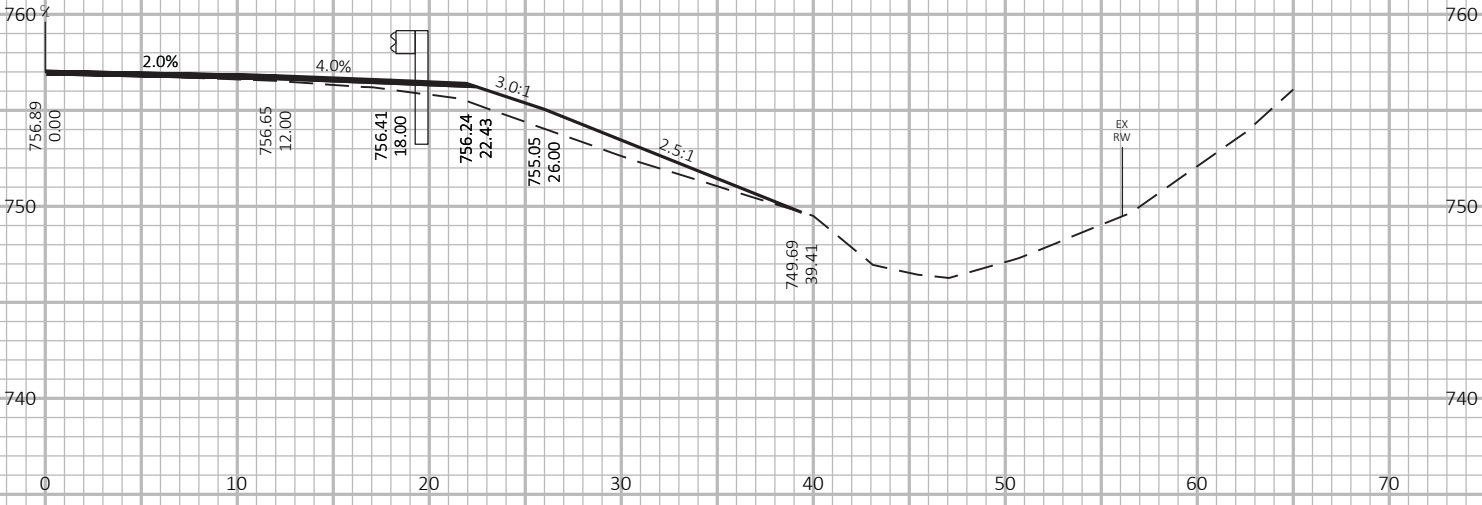
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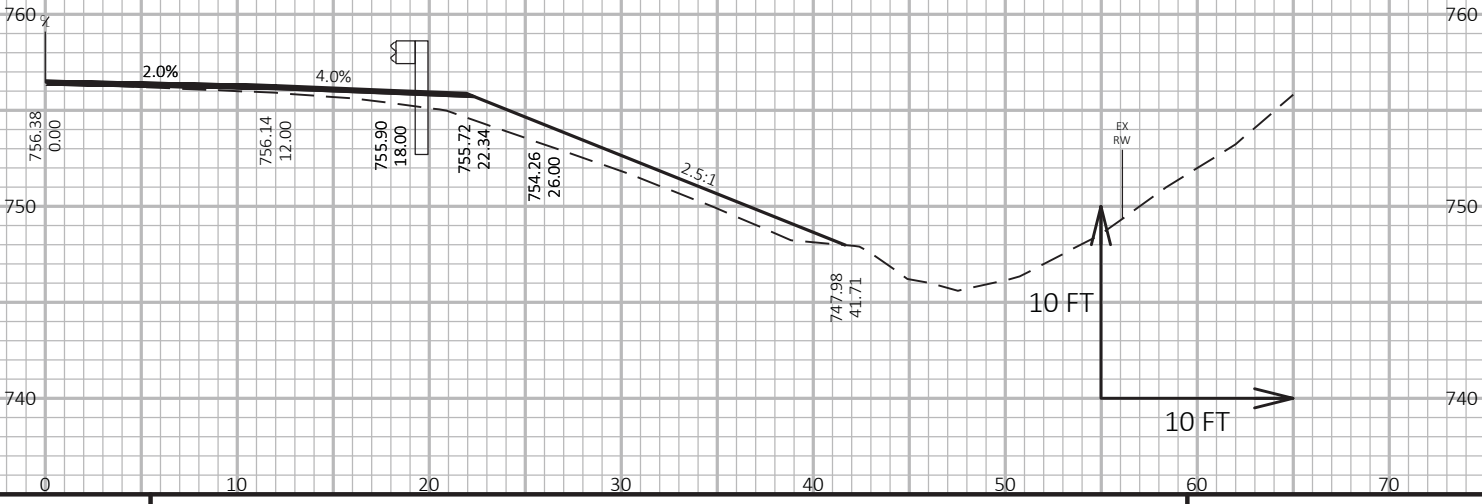
MGS GUARDRAIL TERMINAL EAT
POST 1 RT 488+91.50



MGS GUARDRAIL TERMINAL EAT
POST 5 RT 488+66.49



MGS GUARDRAIL TERMINAL EAT
POST 9 RT 488+41.49



9

PROJECT NO: 7650-01-62

HWY: STH 35

COUNTY: PIERCE

CROSS SECTIONS: STH 35

SHEET

E

FILE NAME : P:\UZ\W\WITNW\142897\C3D-STH 35\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - EAT STA 488 RT

PLOT DATE : 10/31/2018 1:25 PM

PLOT BY : NICK ENGH

PLOT NAME :

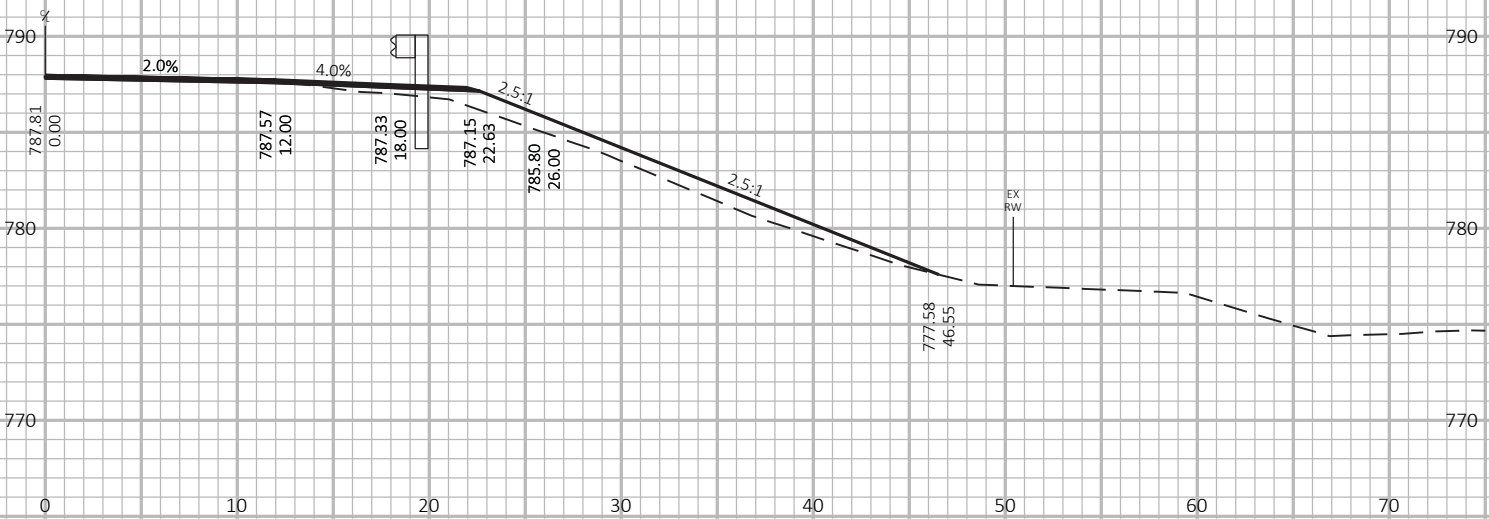
PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDs SHEET 49

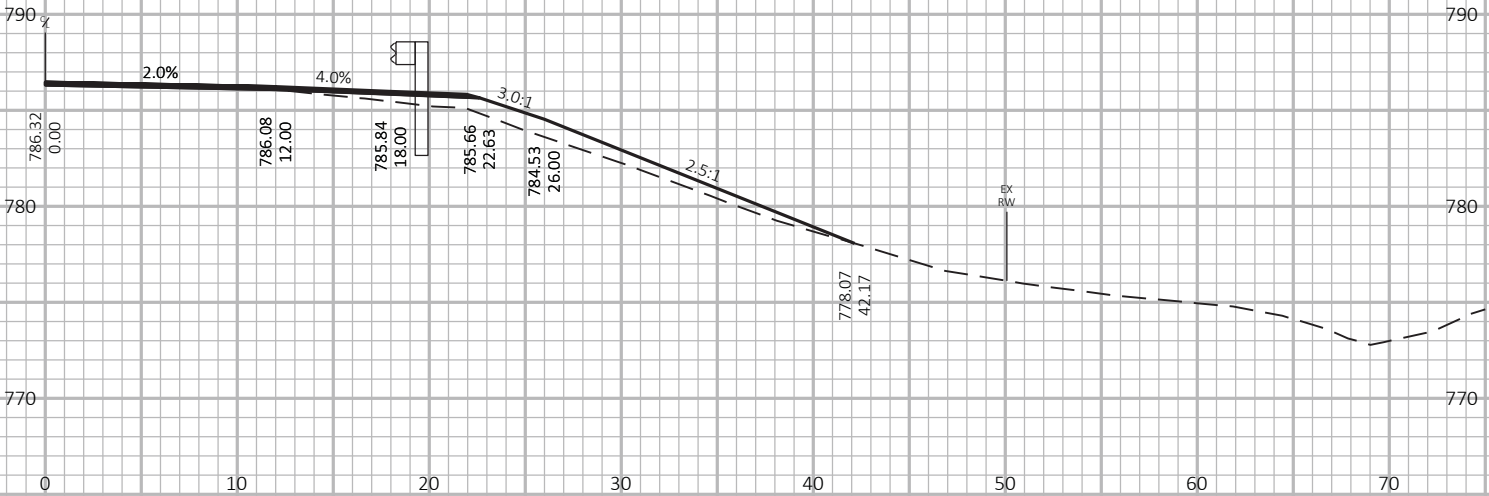
UTILITY LOCATIONS ARE APPROXIMATE.
ACTUAL LOCATIONS MUST BE FIELD VERIFIED.

ALIGNMENT TO BE USED FOR STATION LOCATION ONLY.
OFFSETS TO BEAM SHALL BE FIELD VERIFIED AND BASED ON
ACTUAL FIELD CENTERLINE LOCATION.

MGS GUARDRAIL TERMINAL EAT
POST 9 RT 496+45.86



MGS GUARDRAIL TERMINAL EAT
POST 5 RT 496+20.88



MGS GUARDRAIL TERMINAL EAT
POST 1 RT 495+95.91



9

9

PROJECT NO: 7650-01-62

HWY: STH 35

COUNTY: PIERCE

CROSS SECTIONS: STH 35

SHEET

E

FILE NAME : P:\UZ\W\WITNW\142897\C3D-STH 35\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - EAT STA 496 RT

PLOT DATE : 10/31/2018 1:26 PM

PLOT BY : NICK ENGH

PLOT NAME :

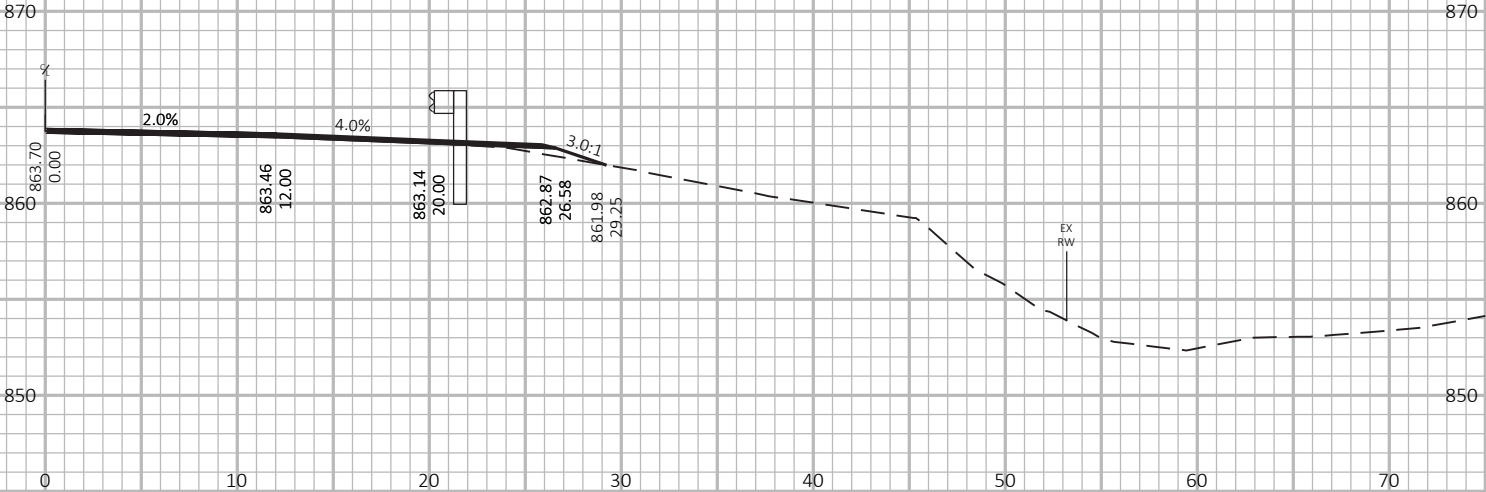
PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDs SHEET 49

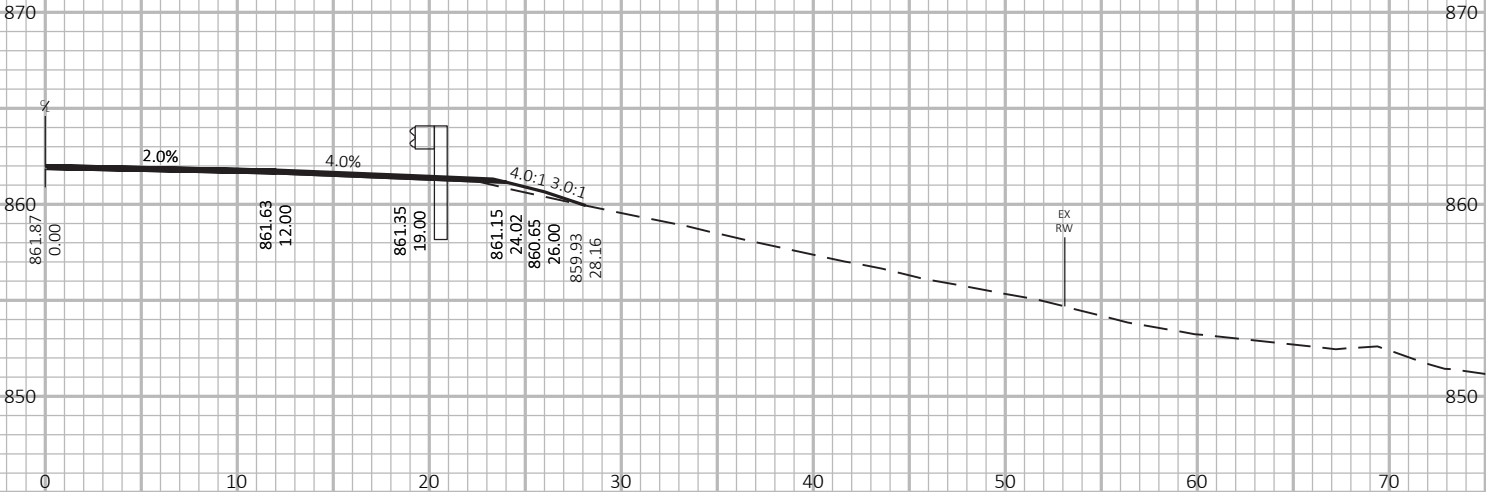
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ACTUAL FIELD CENTERLINE LOCATION.

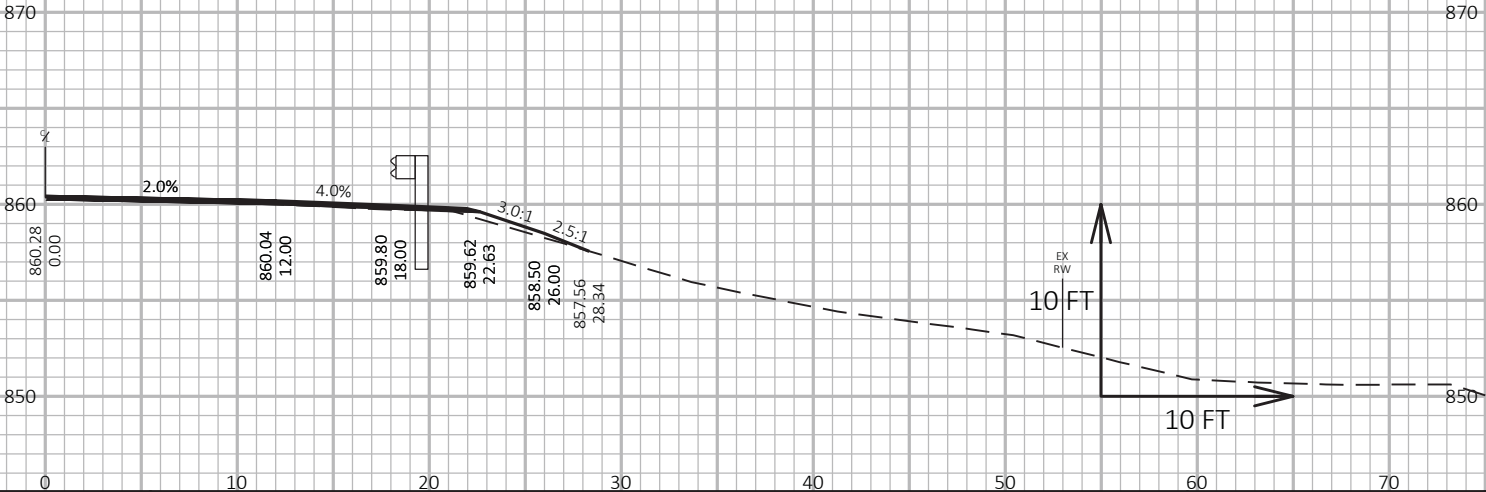
MGS GUARDRAIL TERMINAL EAT
POST 1 RT 508+63.70



MGS GUARDRAIL TERMINAL EAT
POST 5 RT 508+38.72



MGS GUARDRAIL TERMINAL EAT
POST 9 RT 508+13.74



PROJECT NO: 7650-01-62

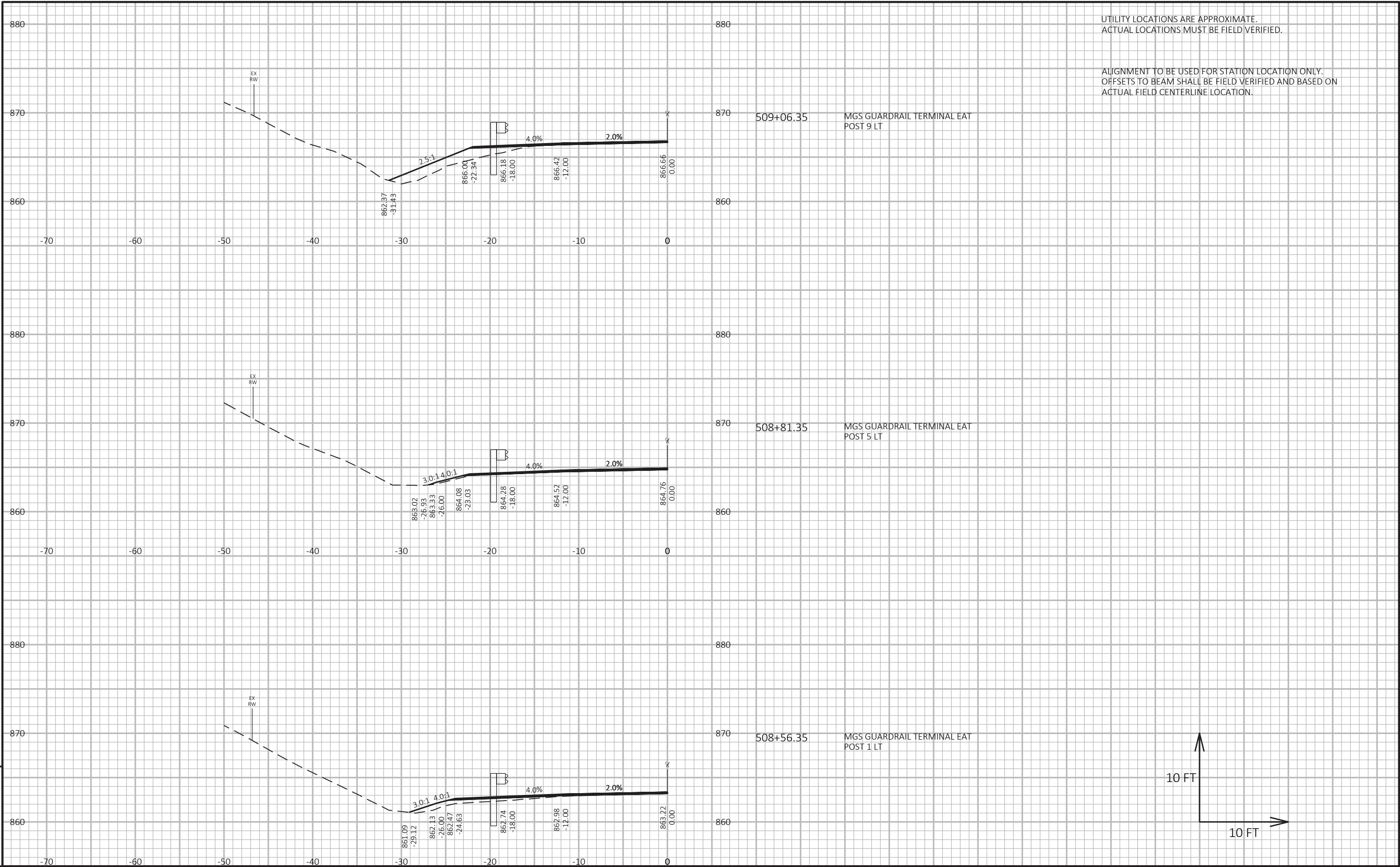
HWY: STH 35

COUNTY: PIERCE

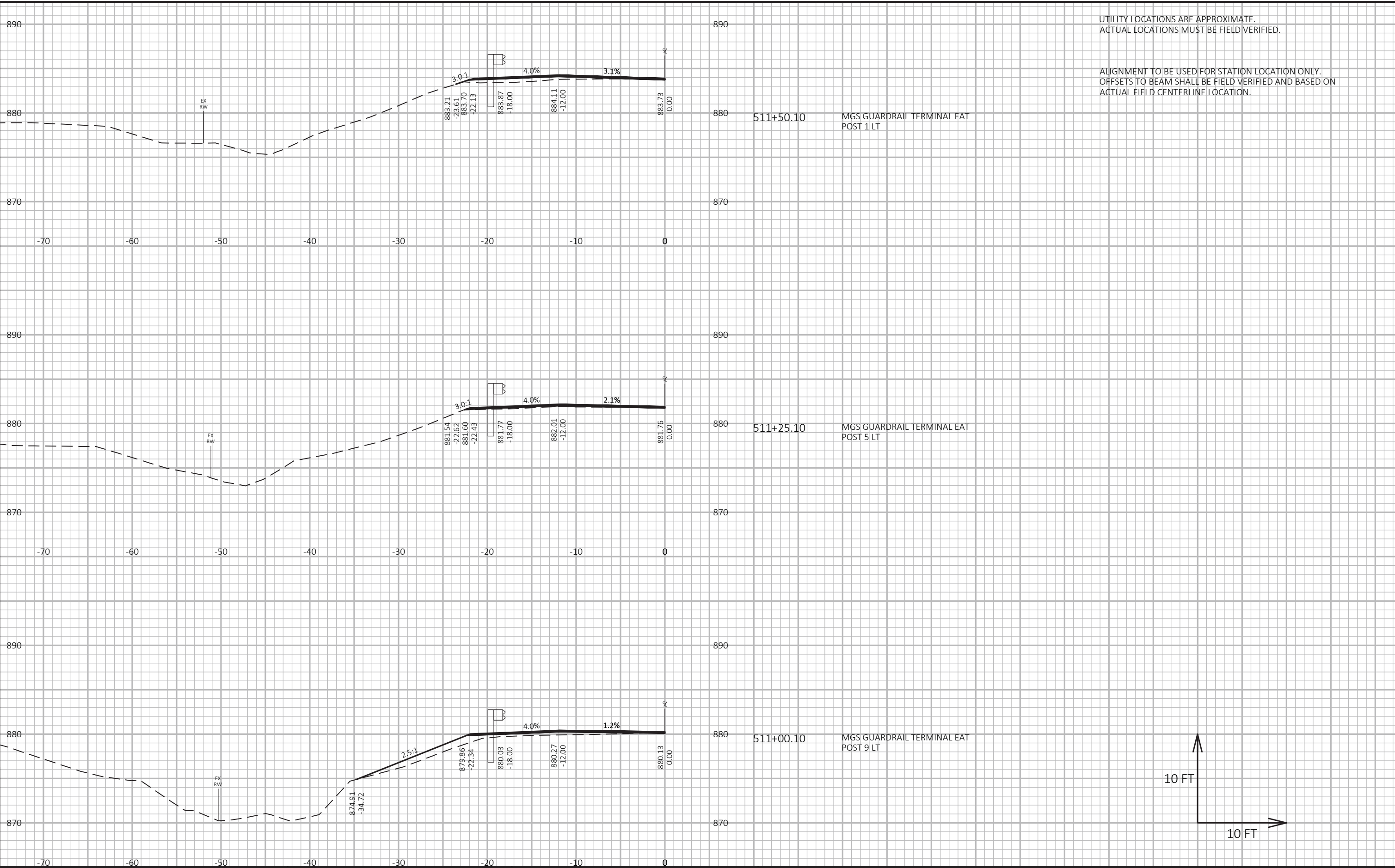
CROSS SECTIONS: STH 35

SHEET

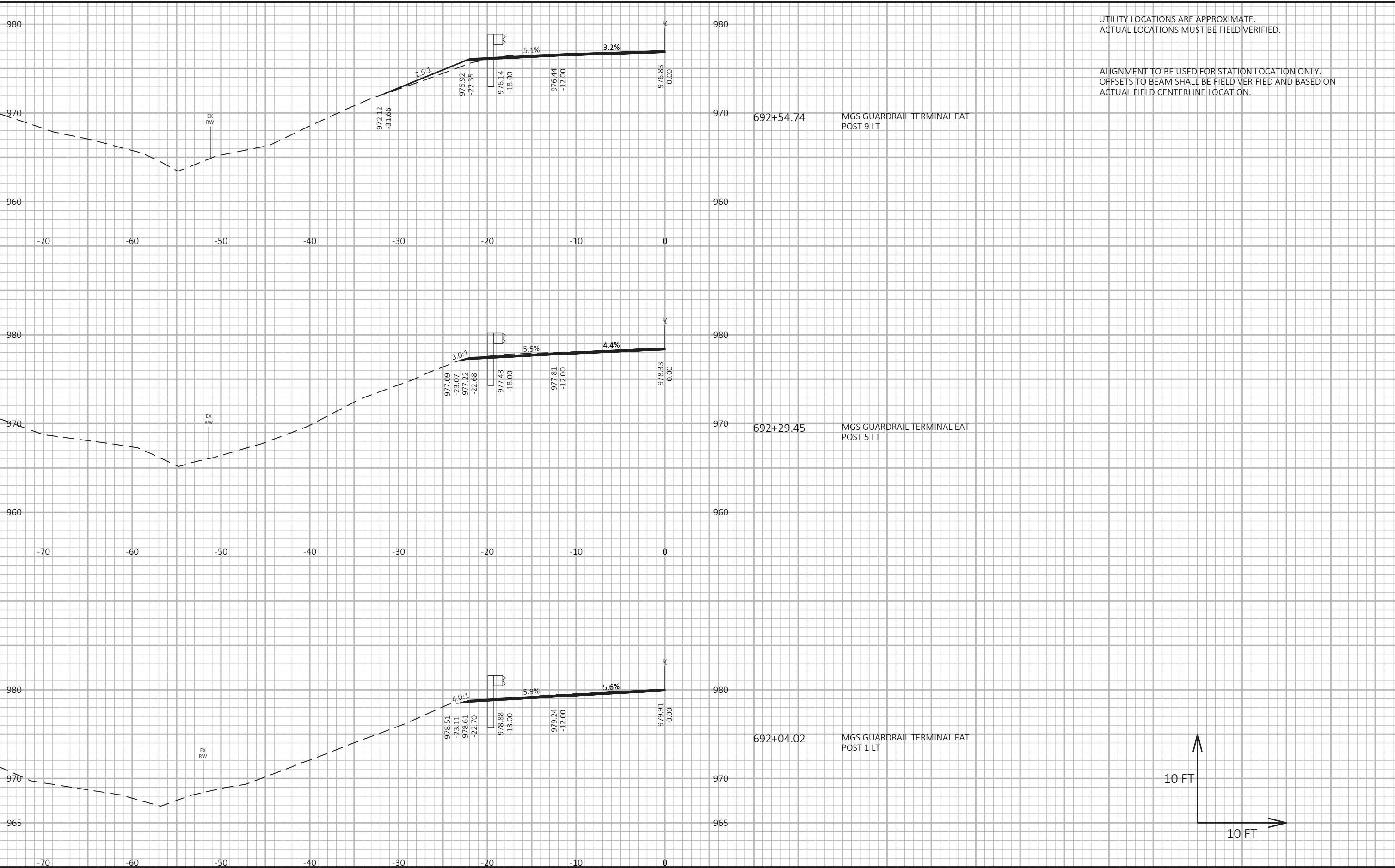
E



PROJECT NO:	7650-01-62	HWY:	STH 35	COUNTY:	PIERCE	CROSS SECTIONS:	STH 35	SHEET	E
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PROJECT NO: 7650-01-62	HWY: STH 35	COUNTY: PIERCE	CROSS SECTIONS: STH 35	SHEET E
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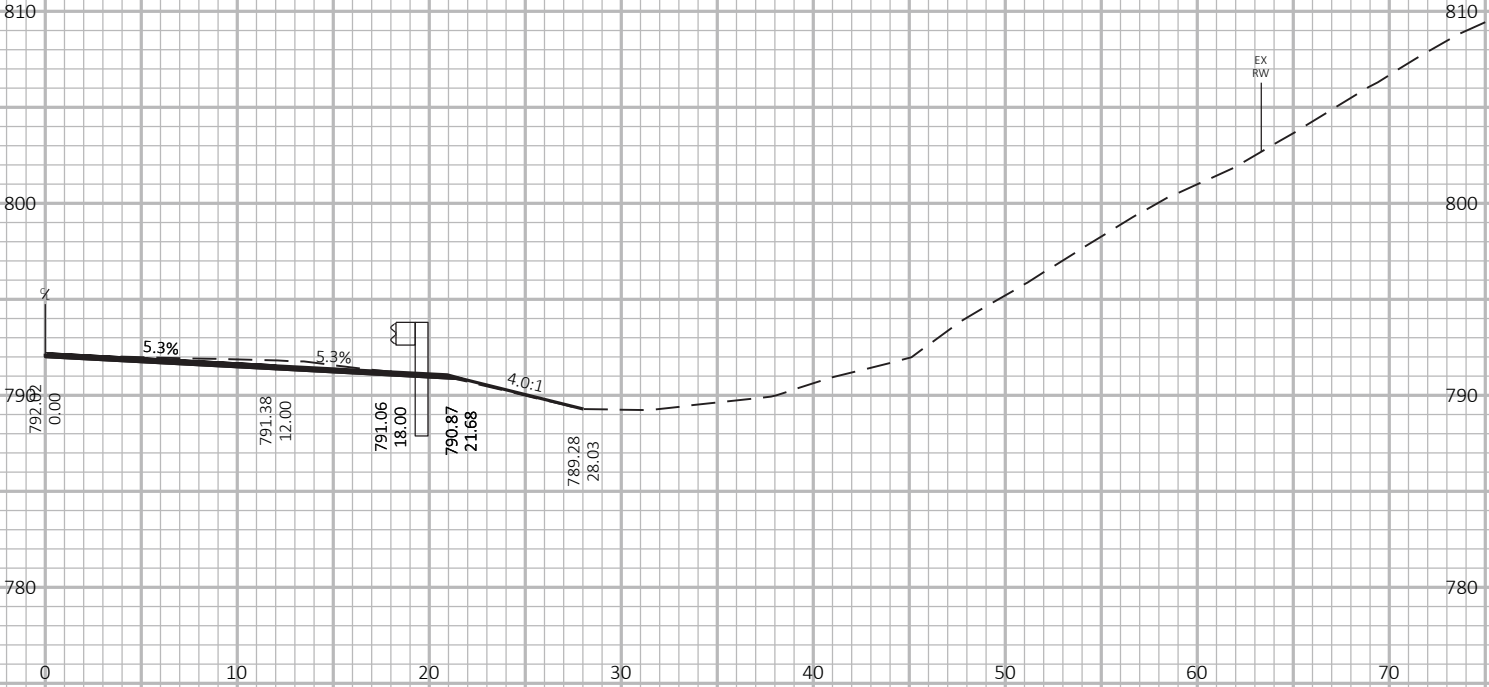
PROJECT NO: 7650-01-62	HWY: STH 35	COUNTY: PIERCE	CROSS SECTIONS: STH 35	SHEET	E
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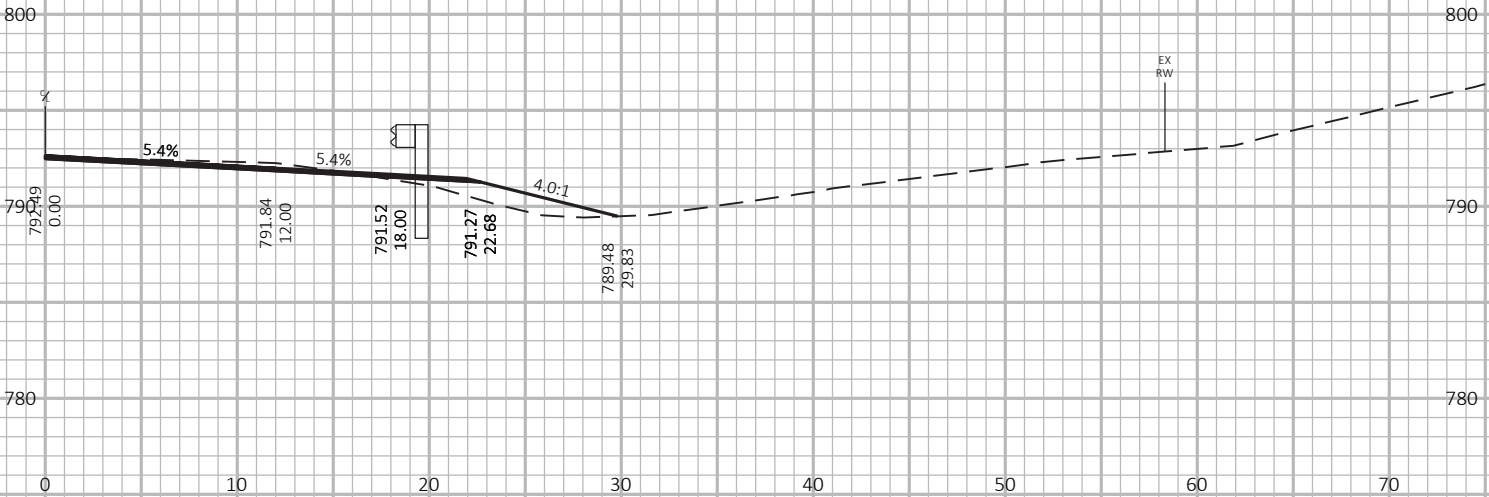
MGS GUARDRAIL TERMINAL EAT
POST 1 RT

721+96.95



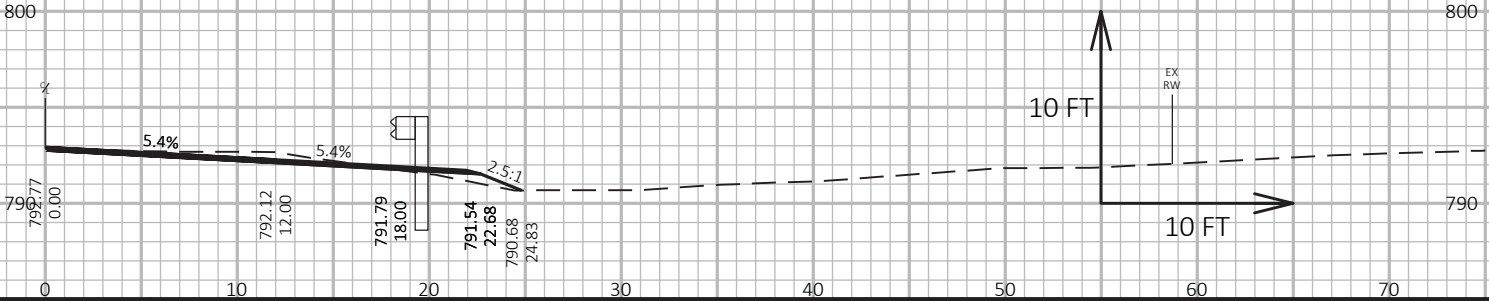
MGS GUARDRAIL TERMINAL EAT
POST 5 RT

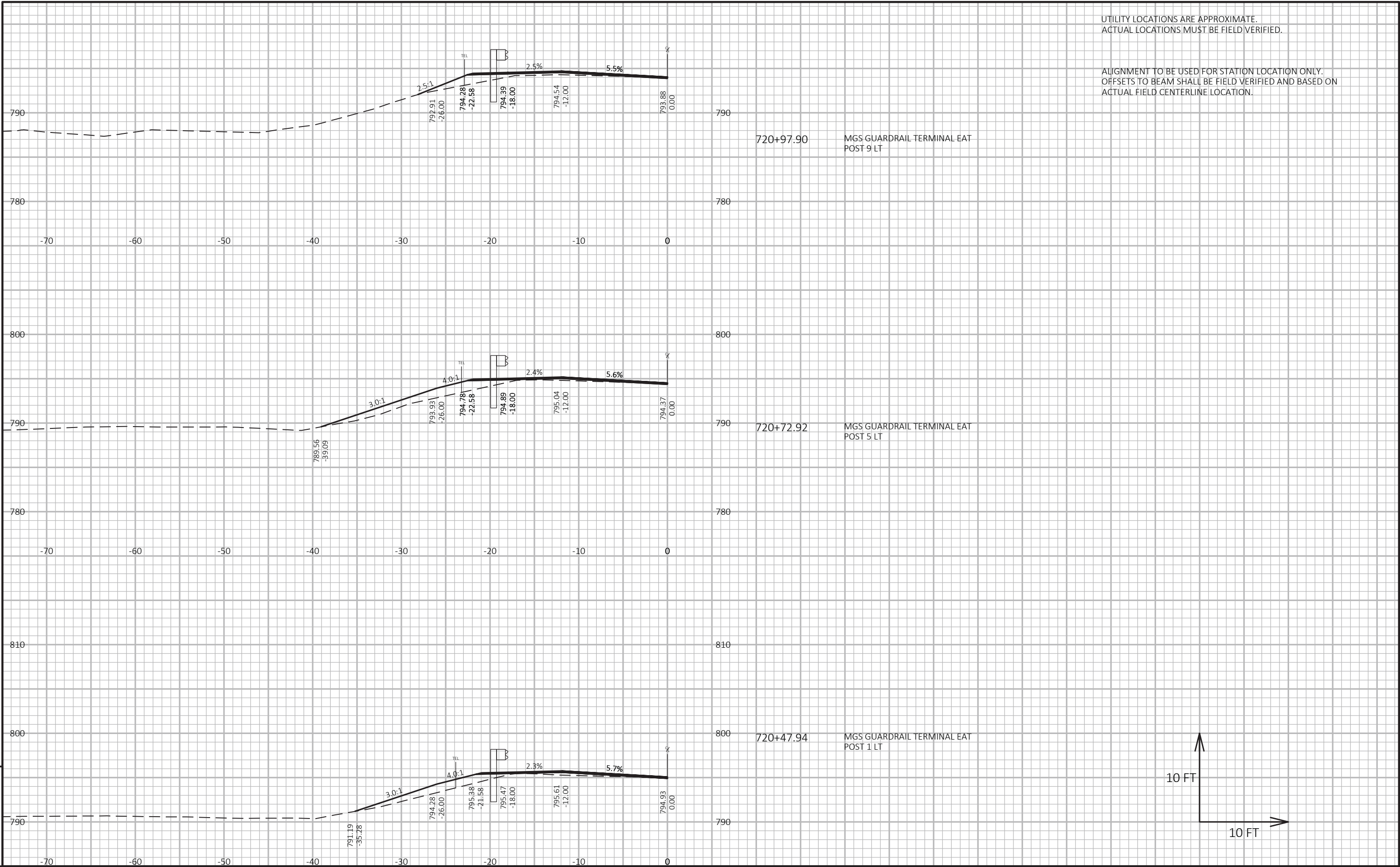
721+71.95

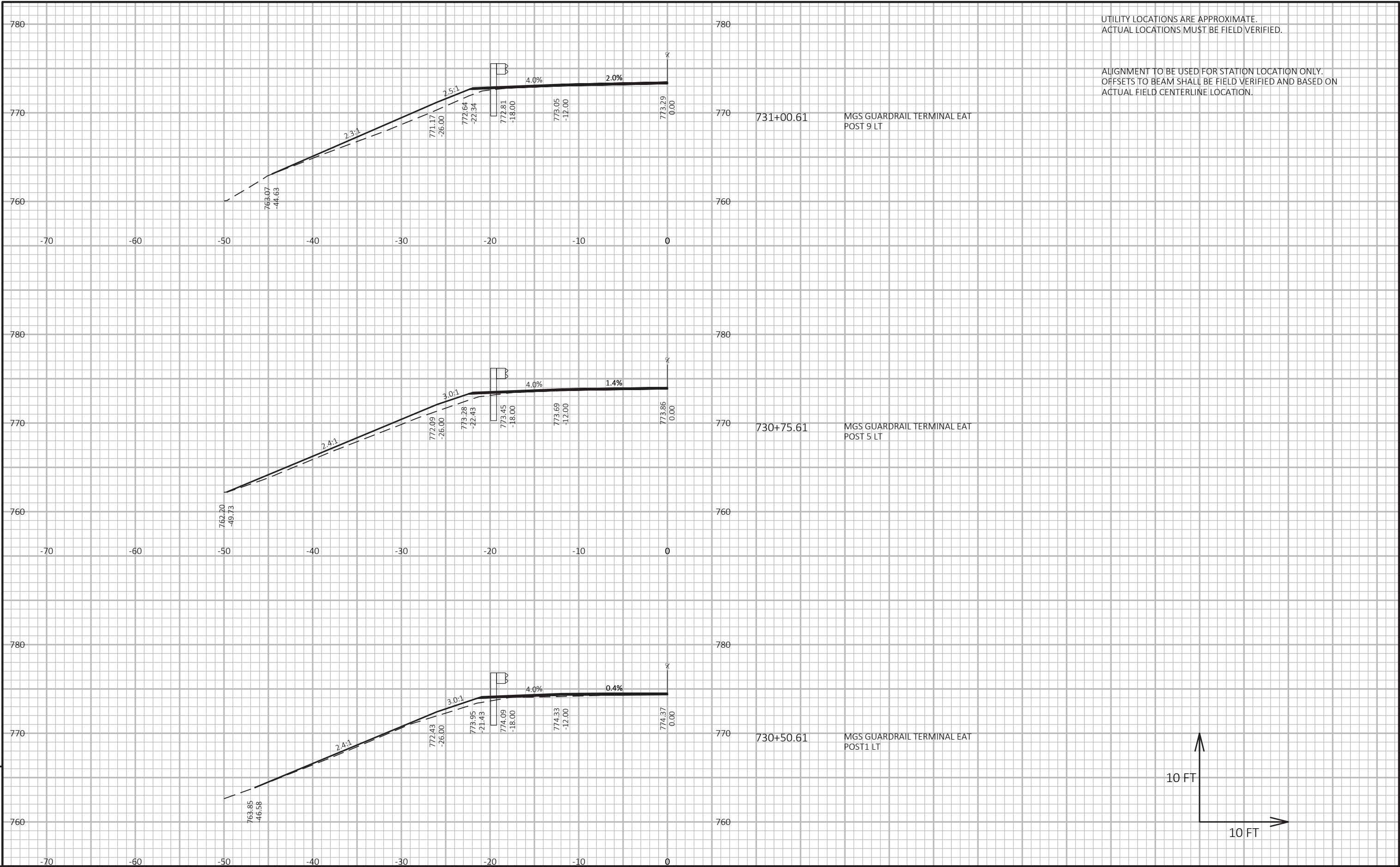


MGS GUARDRAIL TERMINAL EAT
POST 9 RT

721+46.95





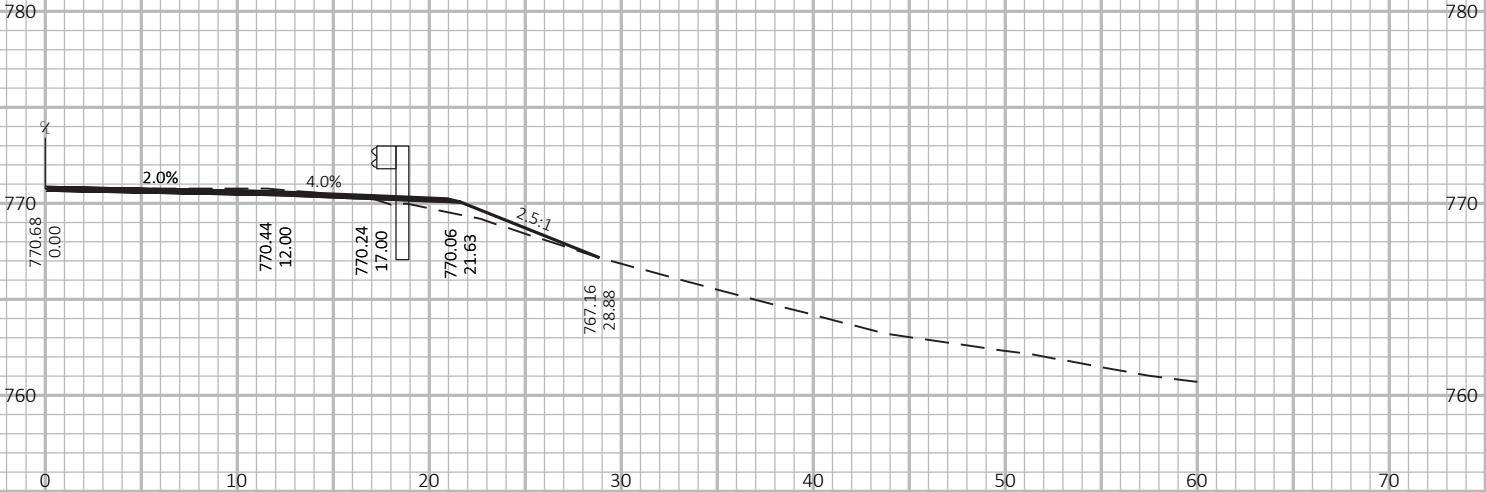


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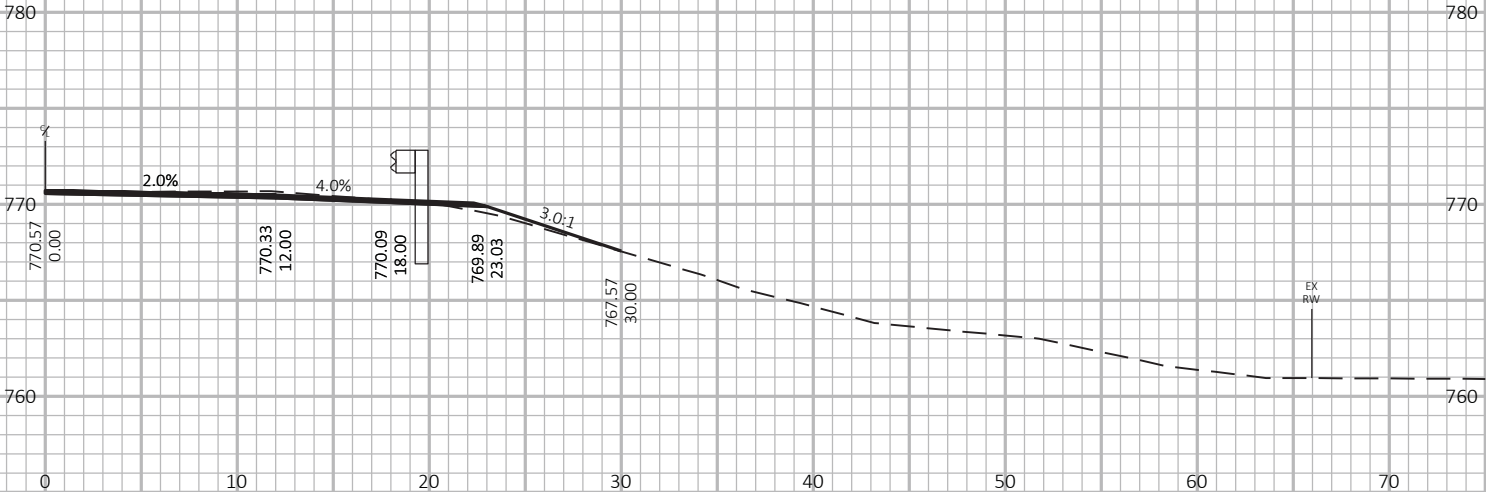
MGS GUARDRAIL TERMINAL EAT
POST 9 RT

733+75.31



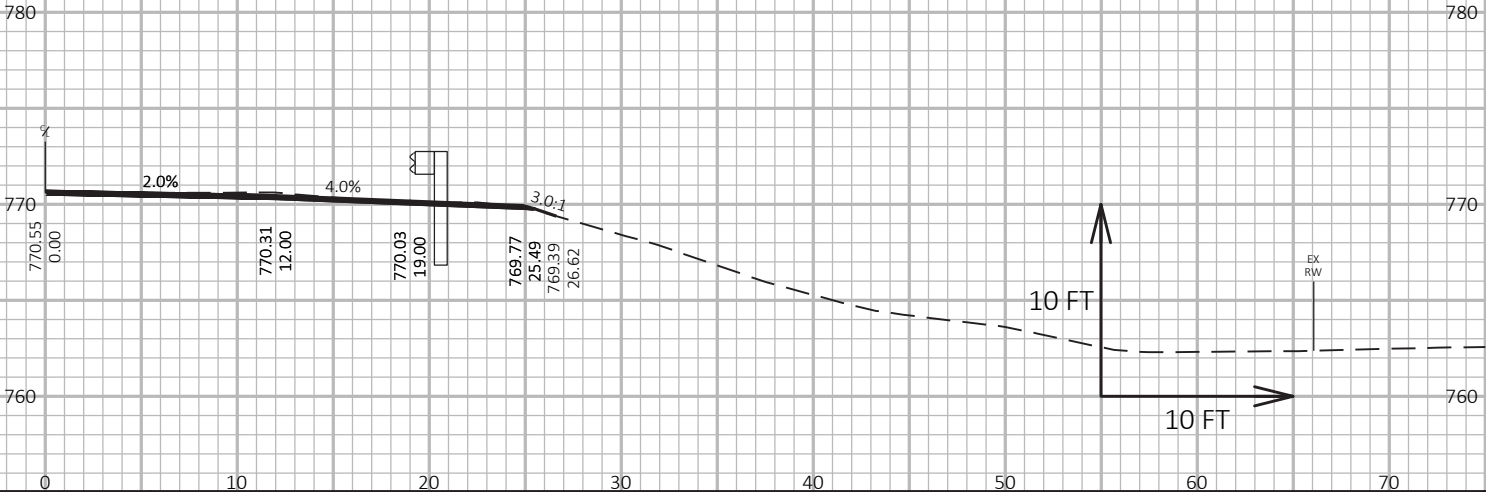
MGS GUARDRAIL TERMINAL EAT
POST 5 RT

733+50.33



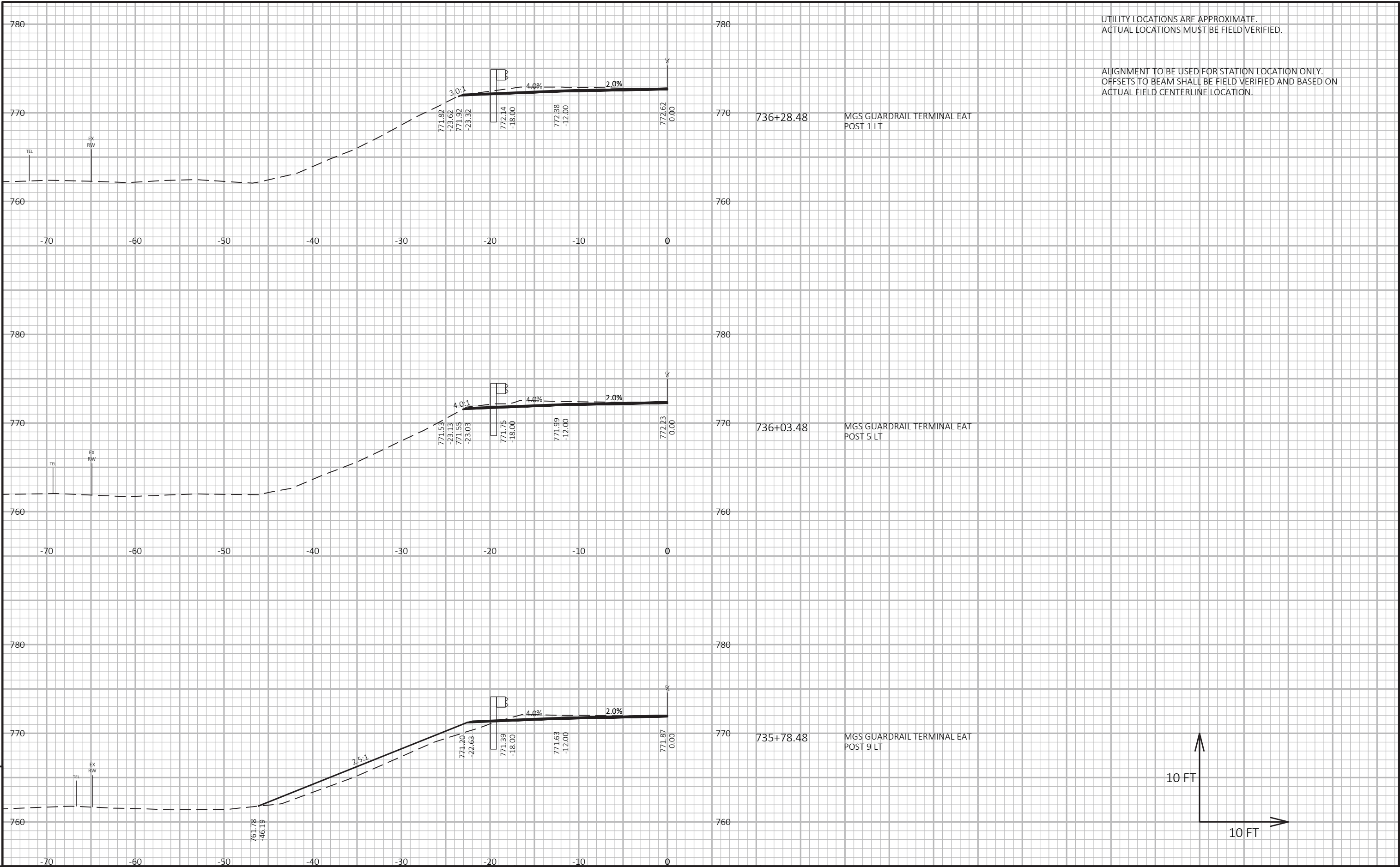
MGS GUARDRAIL TERMINAL EAT
POST 1 RT

733+25.35



9

9



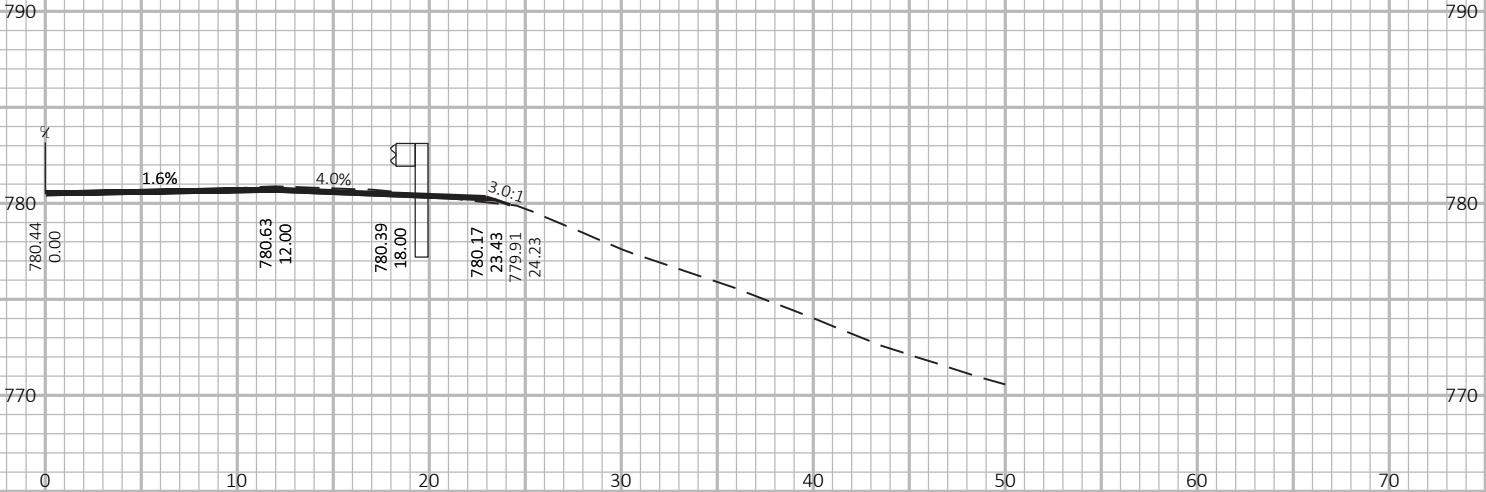
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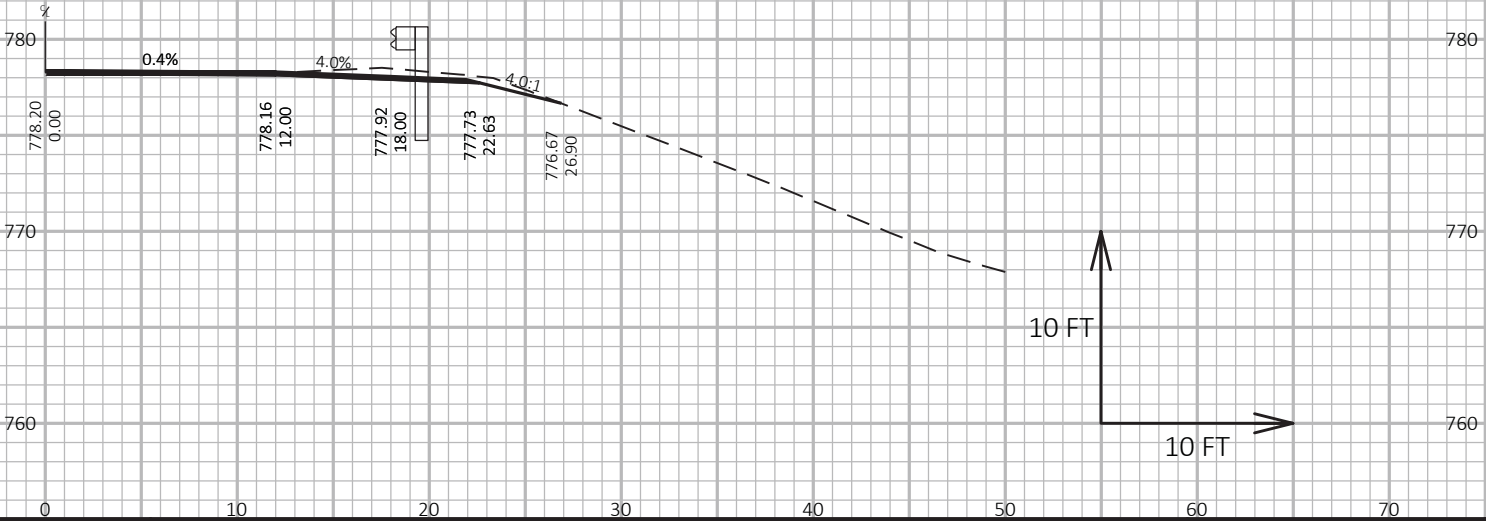
MGS GUARDRAIL TERMINAL EAT
POST 1 RT 738+77.94



MGS GUARDRAIL TERMINAL EAT
POST 5 RT 738+52.94



MGS GUARDRAIL TERMINAL EAT
POST 9 RT 738+27.94



10 FT

10 FT

PROJECT NO: 7650-01-62

HWY: STH 35

COUNTY: PIERCE

CROSS SECTIONS: STH 35

SHEET

E

FILE NAME : P:\UZ\W\WITNW\142897\C3D-STH 35\SHEETPLAN\090201_XS.DWG
LAYOUT NAME - EAT STA 738 RT

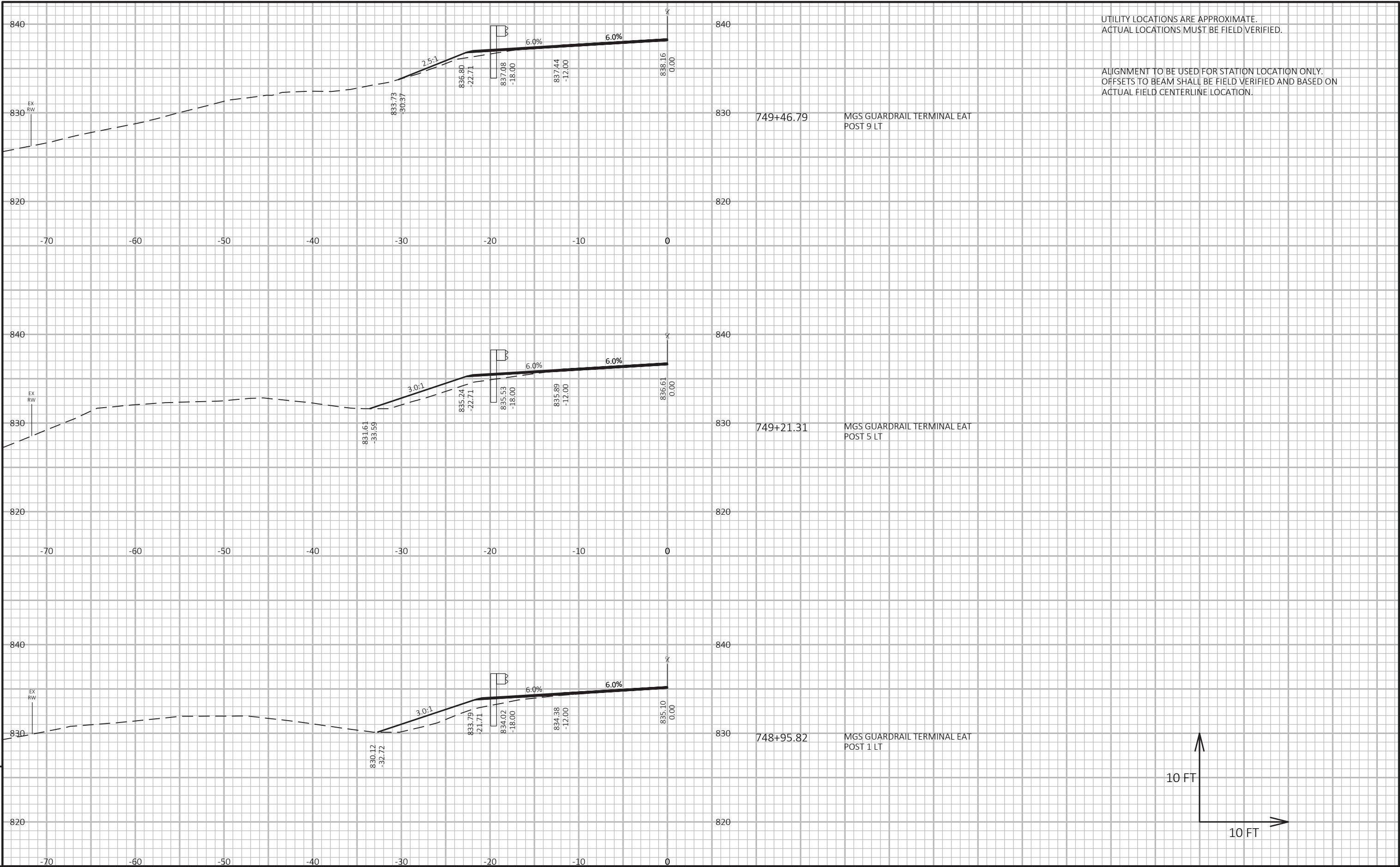
PLOT DATE : 10/31/2018 1:28 PM

PLOT BY : NICK ENGH

PLOT NAME :

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

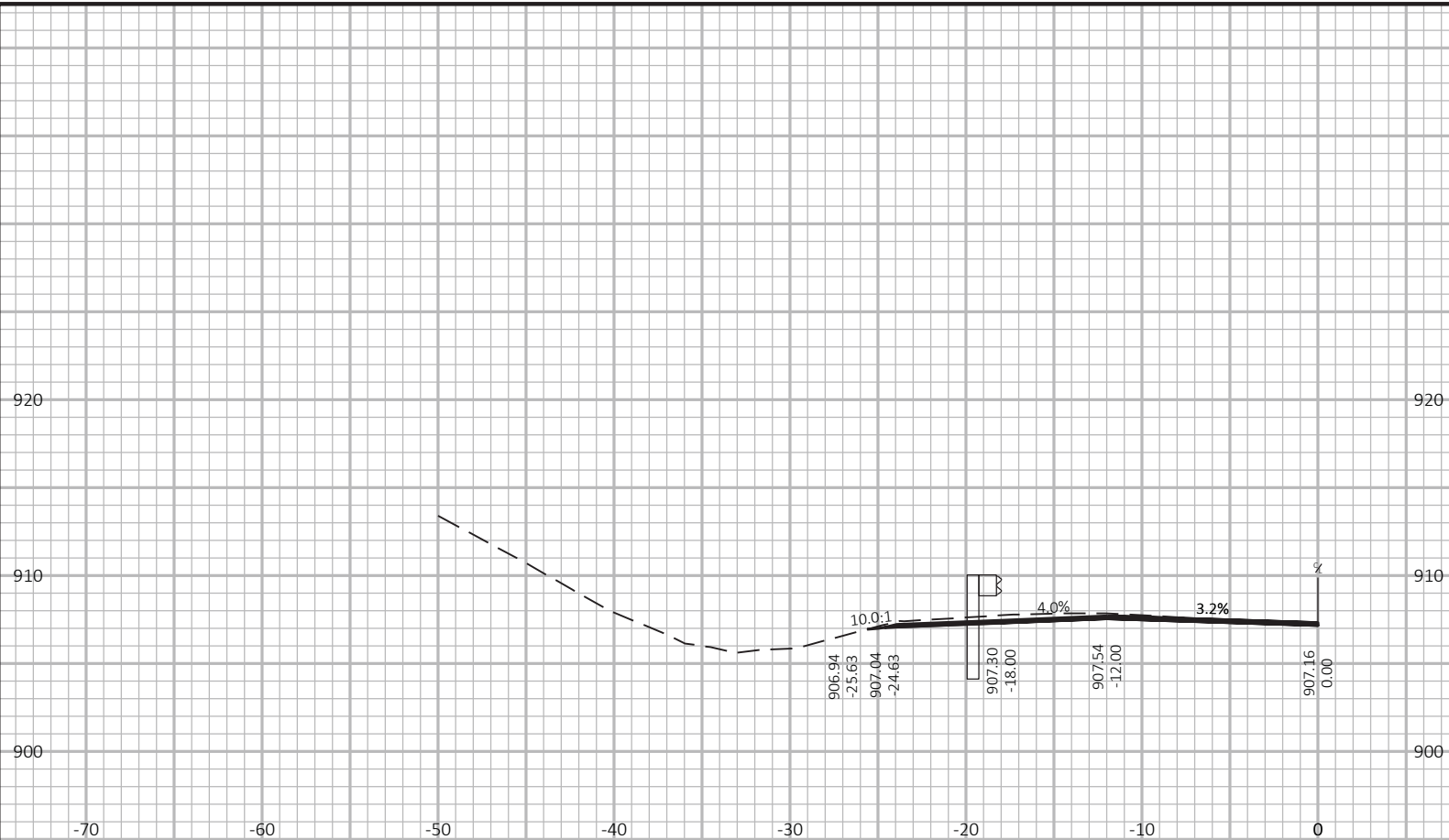
WISDOT/CADDs SHEET 49



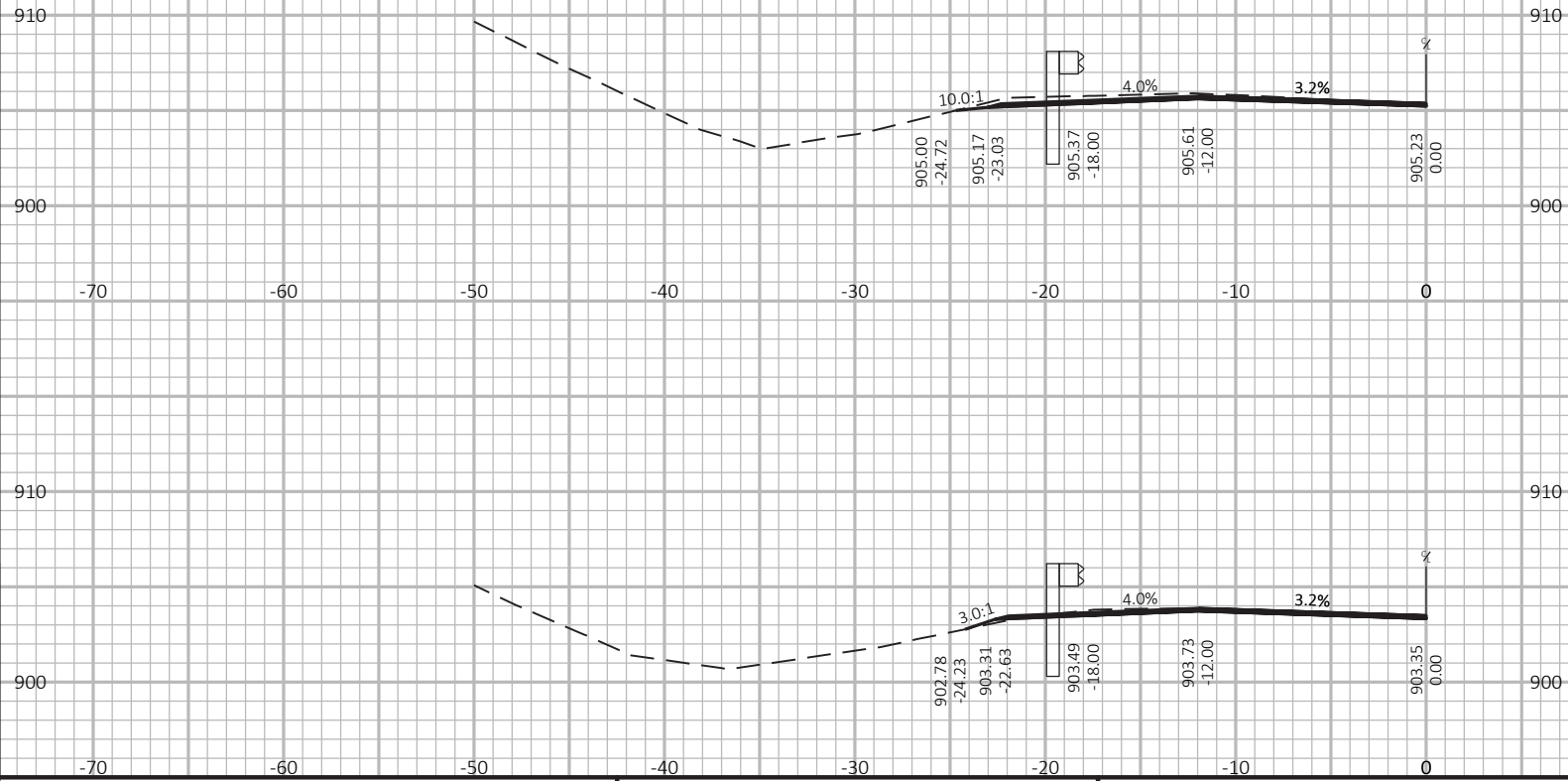
PROJECT NO:	7650-01-62	HWY:	STH 35	COUNTY:	PIERCE	CROSS SECTIONS:	STH 35	SHEET	E
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UTILITY LOCATIONS ARE APPROXIMATE.
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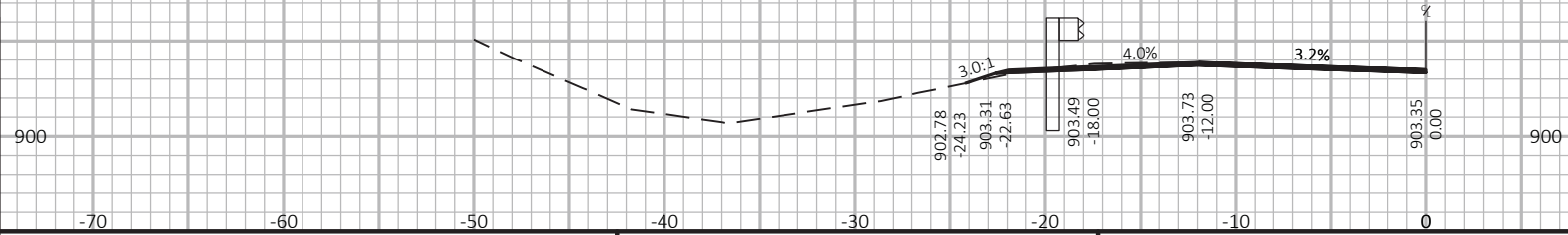
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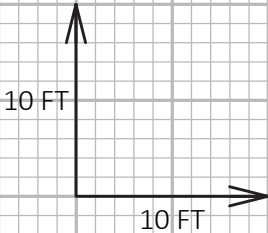
760+51.47 MGS GUARDRAIL TERMINAL EAT
POST 1 LT



760+26.56 MGS GUARDRAIL TERMINAL EAT
POST 5 LT



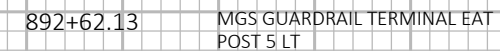
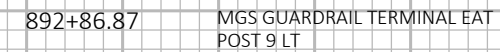
760+01.70 MGS GUARDRAIL TERMINAL EAT
POST 9 LT



9

9

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ACTUAL FIELD CENTERLINE LOCATION.



MGS GUARDRAIL TERMINAL EAT SHOWN WITHOUT FLARE. INSTALL WITH 2' FLARE IF UTILITY LOCATES SHOW CONFLICTS WILL BE AVOIDED WITH APPROVAL OF THE ENGINEER

TEL

10.0:1

3.0%

5.0%

892+37.40

MGS GUARDRAIL TERMINAL EAT POST 1 LT

810

820

830

-70

-60

-50

-40

-30

-20

-10

0

820.82

820.16

820.98

821.18

821.36

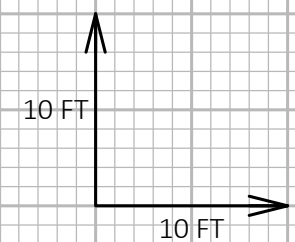
820.76

-24.56

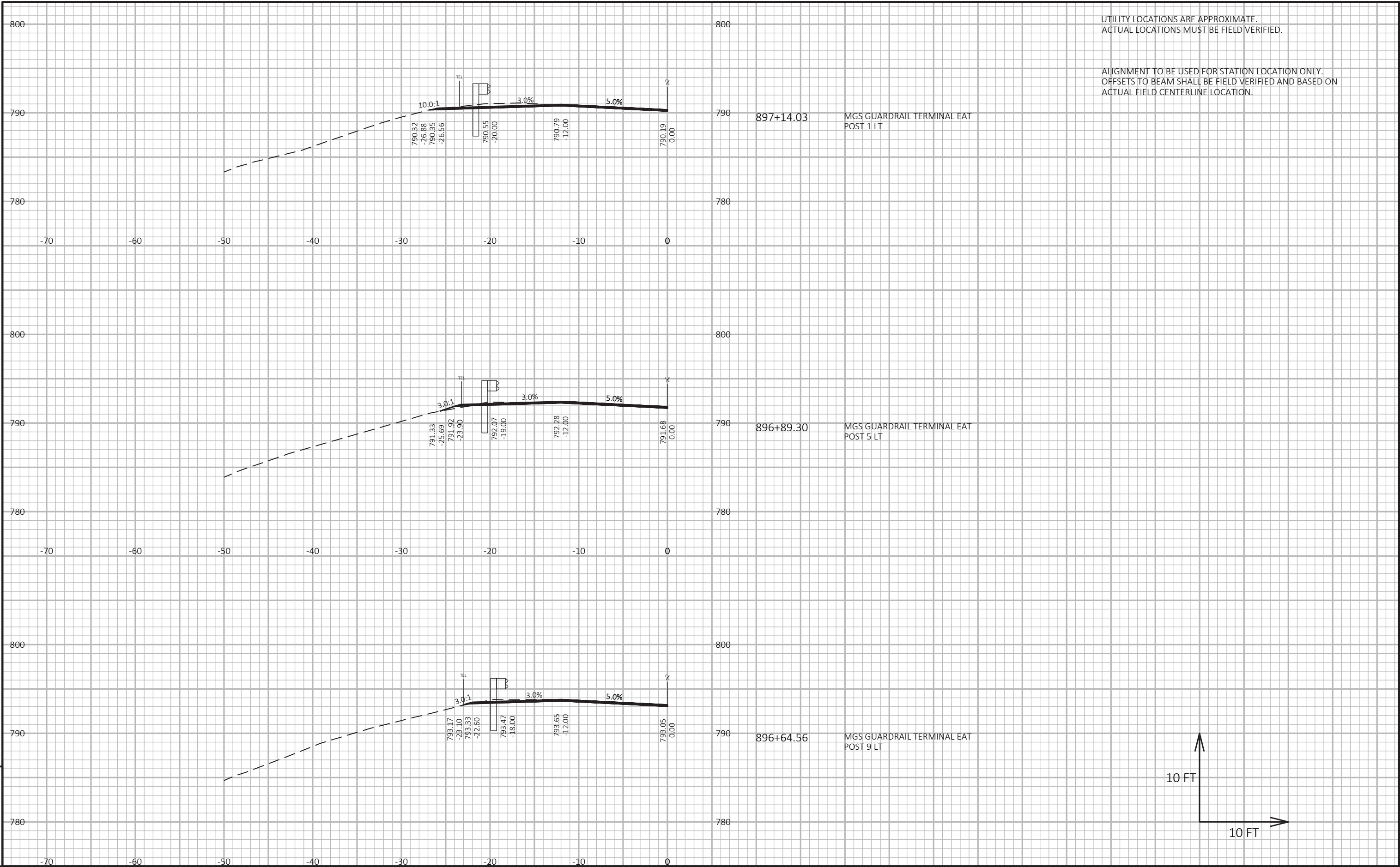
-18.00

-12.00

0.00

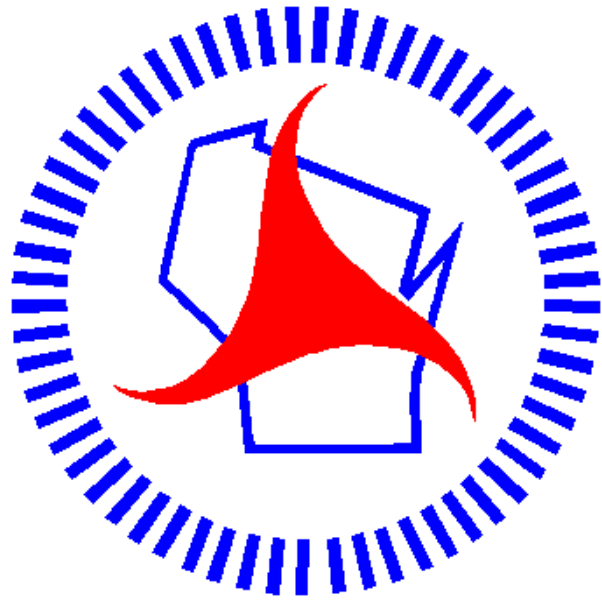


9



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Wisconsin Department of Transportation

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