EAU

PROJECT ID: 7175-00-71

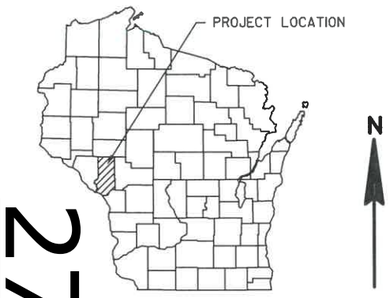
WITH: N/A

COUNTY: TREMPEALEAU

JANUARY 2018

ORDER OF SHEETS

TOTAL SHEETS = 98



27

DESIGN DESIGNATION

A.A.D.T.	2018	=	440
A.A.D.T.	2038	=	590
D.H.V.		=	59
D.D.		=	50/50
T.		=	10%
DESIGN SPEED		=	50 MPH
ESALS		=	180,000

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 (300'EB')
- EXISTING CULVERT
- PROPOSED CULVERT (Box or Pipe)
- COMBUSTIBLE FLUIDS (CAUTION)
- MARSH AREA
- WOODED OR SHRUB AREA

PROFILE

- GRADE LINE
- ORIGINAL GROUND
- MARSH OR ROCK PROFILE (To be noted as such) (ROCK)
- SPECIAL DITCH (LABEL)
- GRADE ELEVATION (95.36)
- CULVERT (Profile View)

UTILITIES

- ELECTRIC (E)
- FIBER OPTIC (FO)
- GAS (G)
- SANITARY SEWER (SAN)
- STORM SEWER (SS)
- TELEPHONE (T)
- WATER (W)
- UTILITY PEDESTAL
- POWER POLE
- TELEPHONE POLE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
7175-00-71	WISC 2018065	1

CTH OO - CTH H

N BR ELK CREEK BRIDGE B-61-0223

CTH O

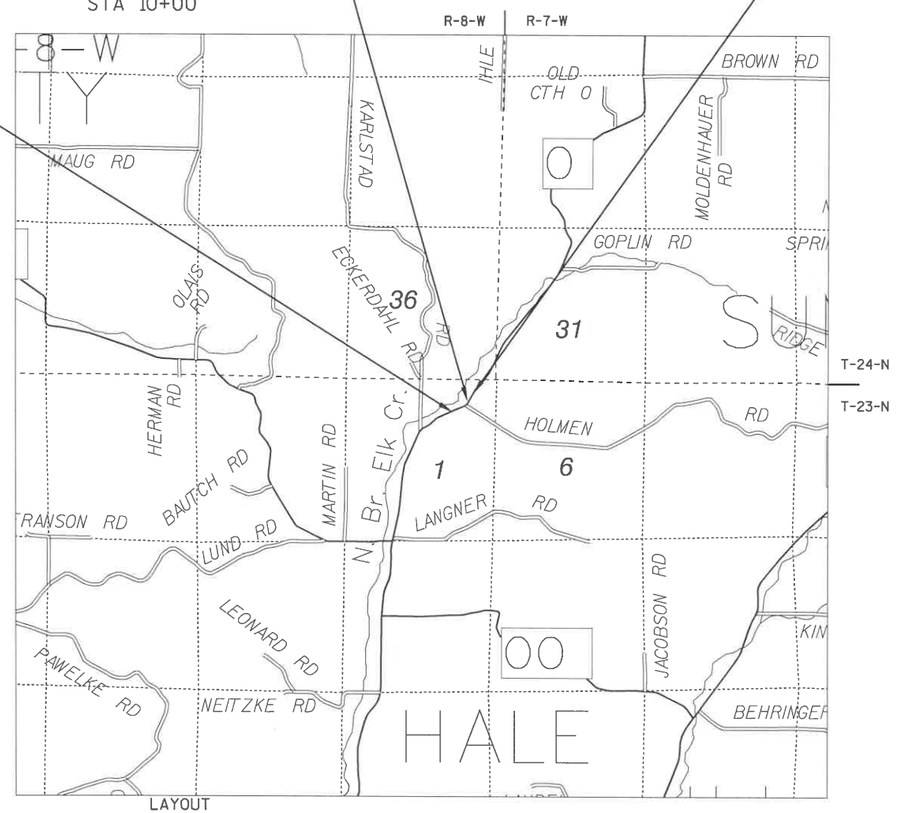
TREMPEALEAU COUNTY

STATE PROJECT NUMBER
7175-00-71

BEGIN PROJECT
STA 4+00
Y = 490543.957
X = 862279.283

STRUCTURE B-61-0223
STA 10+00

END PROJECT
STA 19+00
Y = 491591.172
X = 863326.684



LAYOUT

SCALE 0 1 MILE

TOTAL NET LENGTH OF CENTERLINE = 0.284 MI

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

ACCEPTED FOR
COUNTY of TREMPEALEAU
6/13/17 (Date) David Lyga Highway Commissioner

ORIGINAL PLANS PREPARED BY

SEH

WISCONSIN
TARA L. KRISTA
37975
CHIPPEWA FALLS, WI
PROFESSIONAL ENGINEER
6-12-17 (Date) (Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	SEH
Designer	SEH
Management Consultant	KNIGHT E/A INC.
C.O. Examiner	

APPROVED FOR THE DEPARTMENT
DATE: 7/25/17 (Management Consultant Signature)

E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\010101-TI.DWG
LAYOUT NAME - 010101-TI - 010101-TI

PLOT DATE : 6/8/2017 4:20 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME :

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 = 4.23 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 3.78 ACRES

GENERAL NOTES:

ELEVATIONS SHOWN ON THE PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

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.

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

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, ARE TO BE 4-INCH 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 PAVEMENTS AT REMOVAL LIMITS.

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

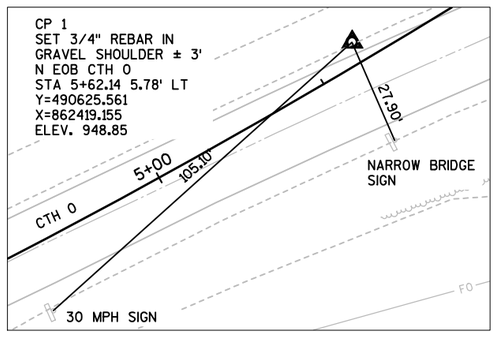
WISDOT MONUMENTS WILL BE SUPPLIED BY THE STATE AND INSTALLED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.

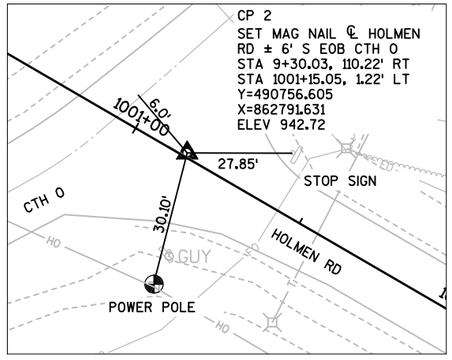
TACK COAT QUANTITY ESTIMATED USING AN APPLICATION RATE OF 0.06 GAL/SY.

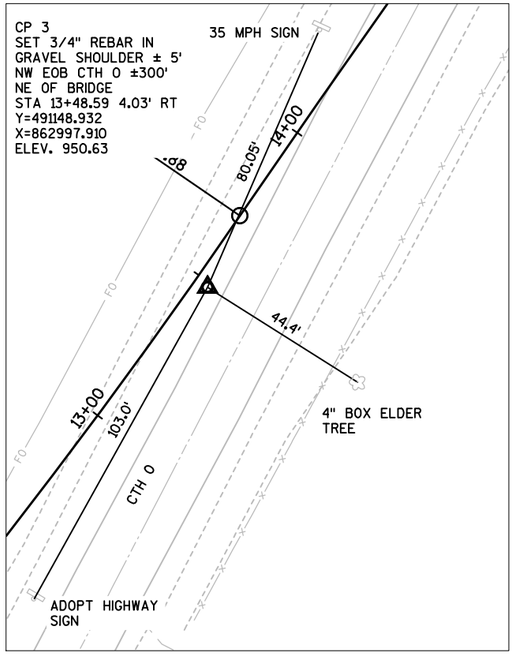
UTILITY CONTACTS

RIVERLAND ENERGY COOPERATIVE
PO BOX 277
ARCADIA, WI 54612
TELEPHONE: 715.829.3402
ATTENTION: JOSH ABRAMCZAK
EMAIL:JABRAMCZAK@RIVERLANDENERGY.COM

TRI-COUNTY COMMUNICATIONS COOPERATIVE
PO BOX 727
INDEPENDENCE, WI 54747
TELEPHONE: 715.695.2691
ATTENTION: BRIAN MELSNESS
EMAIL: BMELSNESS@TCC.COOP







ALIGNMENT TIES

N

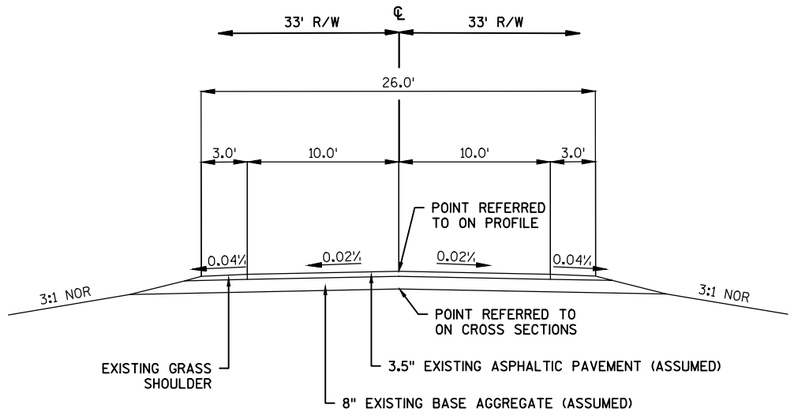
DIGGERS HOTLINE
Dial 811 or (800)242-8511
www.DiggersHotline.com

DESIGN CONTACT
SEH
10 NORTH BRIDGE STREET
CHIPPEWA FALLS, WI 54729
TELEPHONE 715.720.6291
ATTENTION TARA KRISTA
EMAIL: TKRISTA@SEHINC.COM

MUNICIPAL CONTACT
TREMPEALEAU COUNTY HIGHWAY DEPARTMENT
N36258 CTH QQ
P.O. BOX 97
WHITEHALL WI, 54773
TELEPHONE 715.538.4799
ATTENTION DAVE LYGA
EMAIL: LYGAD@TRIWEST.NET

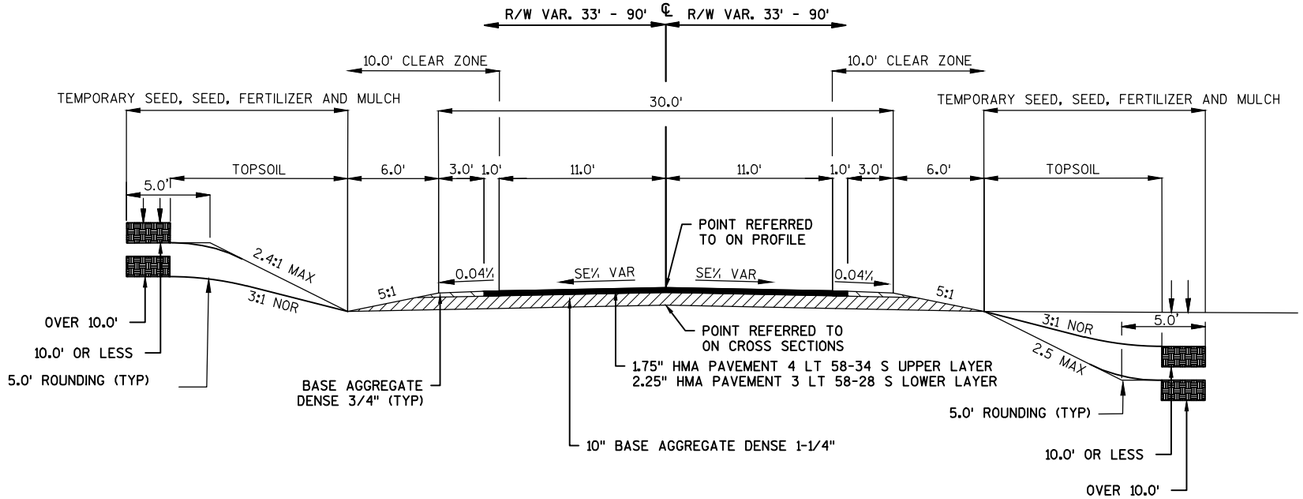
WDNR CONTACT
DNR SERVICE CENTER
3550 MORMON COULEE ROAD
LA CROSSE WI, 54601
TELEPHONE: 608.785.9115
ATTENTION: KAREN KALVELAGE
EMAIL: KAREN.KALVELAGE@WISCONSIN.GOV

2



TYPICAL EXISTING SECTION

STA 4+00 TO STA 9+88.50
STA 10+11.50 TO STA 19+00

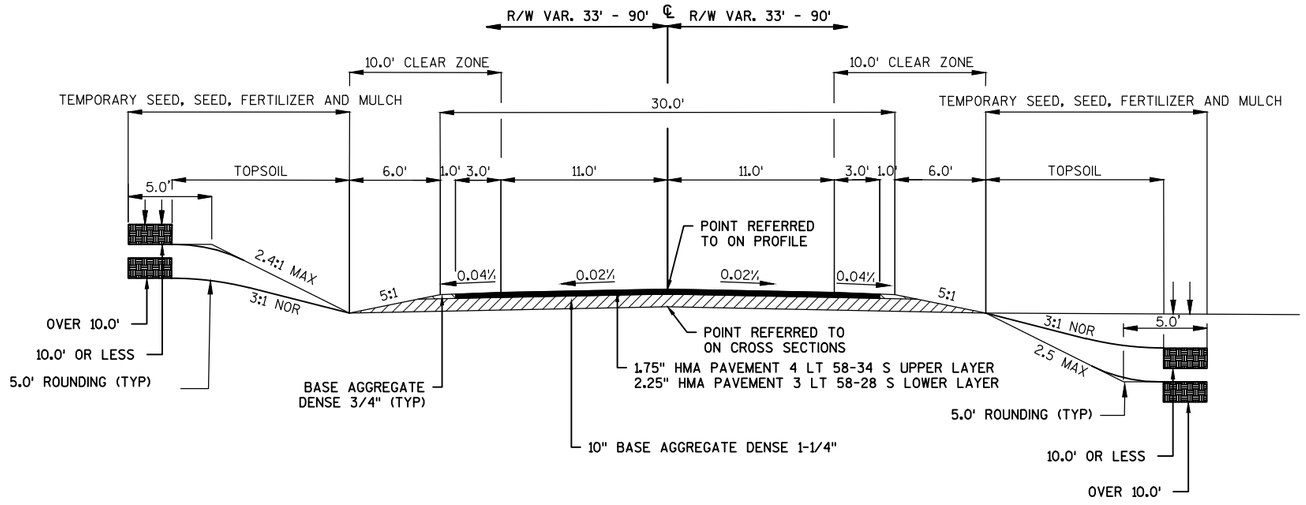


CUT TYPICAL FINISHED SECTION - LOCALLY FUNDED FILL

STA 4+00 TO STA 6+82
STA 13+19 TO STA 19+00

PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	TYPICAL SECTIONS	SHEET 3	E

2



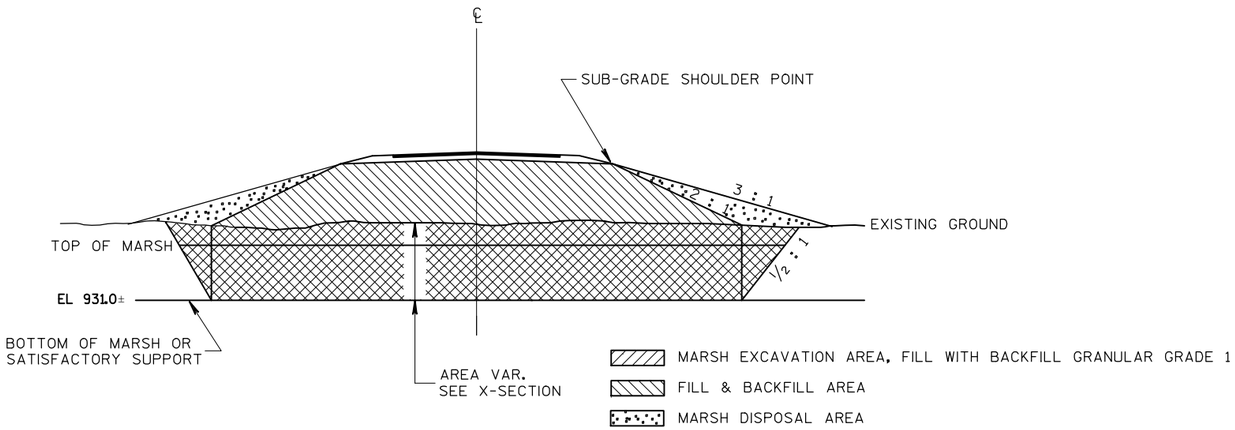
CUT TYPICAL FINISHED SECTION - FEDERALLY FUNDED FILL

STA 6+82 TO STA 9+81.13
STA 10+18.87 TO STA 13+19

PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	TYPICAL SECTIONS	SHEET 4	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\020301-TS.DWG
LAYOUT NAME - 020301-TS - PLAN 1 IN 10 FT (2)
PLOT DATE : 7/9/2017 2:01 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT
WISDOT/CADDS SHEET 42

2



TYPICAL MARSH EXCAVATION

NOTE: MARSH EXCAVATION EXPECTED FROM STATION 7+00 TO 12+00 AND 1000+00 TO 1000+75.
SEE GEOTECHNICAL REPORT FOR DETAILS.

SUPERELEVATION DATA CTH O

STATION	DESCRIPTION	LEFT OUTSIDE SHOULDER	LEFT OUTSIDE LANE	RIGHT OUTSIDE LANE	RIGHT OUTSIDE SHOULDER
4+00.00'	BEGIN ALIGNMENT	-4.00%	-2.00%	-1.00%	-4.00%
4+12.00'	LEVEL CROWN	-4.00%	-2.00%	0.00%	0.00%
4+36.00'	REVERSE CROWN	-4.00%	-2.00%	2.00%	2.00%
4+66.00'	BEGIN FULL SUPER	-4.50%	-4.50%	4.50%	4.50%
13+08.42'	END FULL SUPER	-4.50%	-4.50%	4.50%	4.50%
14+14.02'	BEGIN FULL SUPER	2.10%	2.10%	-2.10%	-2.10%
18+30.40'	END FULL SUPER	2.10%	2.10%	-2.10%	-2.10%
18+31.60'	REVERSE CROWN	2.00%	2.00%	-2.00%	-4.00%
18+55.60'	LEVEL CROWN	0.00%	0.00%	-2.00%	-4.00%
18+79.60'	BEGIN NORMAL CROWN	-4.00%	-2.00%	-2.00%	-4.00%
18+79.60'	BEGIN NORMAL SHOULDER	-4.00%	-2.00%	-2.00%	-4.00%
19+00.00'	END ALIGNMENT	-4.00%	-3.70%	-1.40%	-4.00%

ALIGNMENT DATA CTH O

Curve Point Data

Description	Station	Northing	Easting
PC:	4+00.000	490543.957	862279.283
PI:	8+96.77	490759.543	862726.836
PT:	13+70.880	491169.567	863007.301

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	29° 54' 25.7587"	Type:	LEFT
Radius:	1860.00		
Length:	970.88	Tangent:	496.77
Mid-Ord:	62.99	External:	65.20
Chord:	959.90	Course:	N 49° 19' 35.2458" E

Curve Point Data

Description	Station	Northing	Easting
PC:	13+70.880	491169.567	863007.301
PI:	16+13.75	491370.030	863144.422
PT:	18+56.302	491557.450	863298.891

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	05° 07' 19.3137"	Type:	RIGHT
Radius:	5430.00		
Length:	485.42	Tangent:	242.87
Mid-Ord:	5.42	External:	5.43
Chord:	485.26	Course:	N 36° 56' 02.0233" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	18+56.302	491557.450	863298.891
End:	19+00.000	491591.171	863326.684

Tangent Data

Parameter	Value	Parameter	Value
Length:	43.70	Course:	N 39° 29' 41.6801" E

CURVE 1
PI STA = 8+96.77
Y = 490759.542
X = 862726.836
DELTA = 29°54'26"
D = 3°04'50"
T = 496.77'
L = 970.88'
R = 1860.00'
PC STA = 4+00.00
PT STA = 13+70.88

CURVE 2
PI STA = 16+13.75
Y = 491370.030
X = 863144.422
DELTA = 5°07'19"
D = 1°03'19"
T = 242.87'
L = 485.42'
R = 5430.00'
PC STA = 13+70.88
PT STA = 18+56.30

CURVE 3
PI STA = 1000+19.75
Y = 490803.643
X = 862708.340
DELTA = 18°41'38"
D = 47°44'47"
T = 19.75'
L = 39.15'
R = 120.00'
PC STA = 1000+00.00
PT STA = 1000+39.15

ALIGNMENT DATA HOLMEN ROAD

Curve Point Data

Description	Station	Northing	Easting
PC:	1000+00.000	490818.522	862695.350
PI:	1000+19.75	490803.643	862708.341
PT:	1000+39.152	490793.712	862725.414

Circular Curve Data

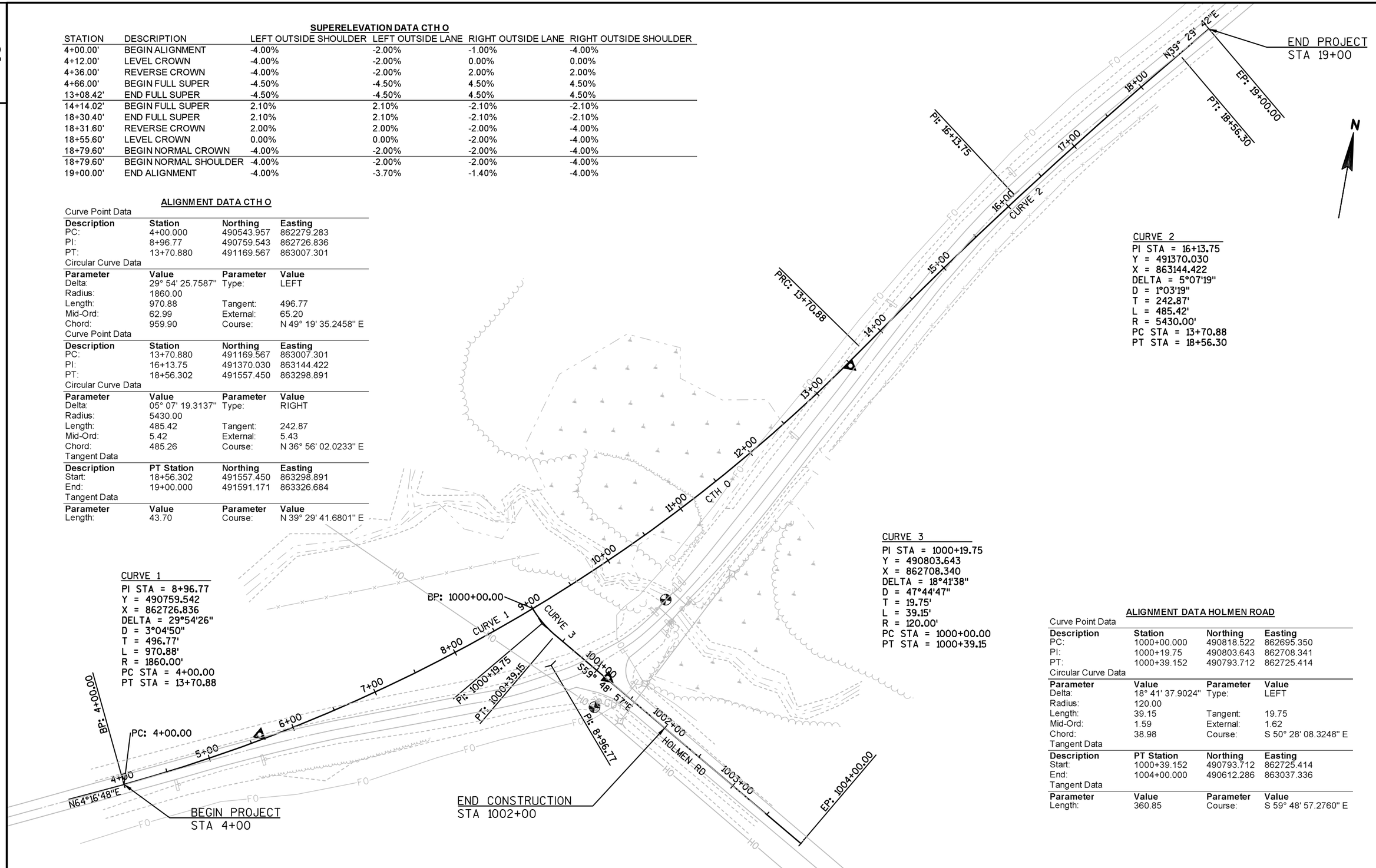
Parameter	Value	Parameter	Value
Delta:	18° 41' 37.9024"	Type:	LEFT
Radius:	120.00		
Length:	39.15	Tangent:	19.75
Mid-Ord:	1.59	External:	1.62
Chord:	38.98	Course:	S 50° 28' 08.3248" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	1000+39.152	490793.712	862725.414
End:	1004+00.000	490612.286	863037.336

Tangent Data

Parameter	Value	Parameter	Value
Length:	360.85	Course:	S 59° 48' 57.2760" E



PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	ALIGNMENT	SHEET 6	E

Estimate Of Quantities

7175-00-71

Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	4.000	4.000
0004	201.0205	Grubbing	STA	4.000	4.000
0006	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. 10+30	LS	1.000	1.000
0008	205.0100	Excavation Common	CY	9,033.000	9,033.000
0010	205.0400	Excavation Marsh	CY	10,879.000	10,879.000
0012	206.1000	Excavation for Structures Bridges (structure) 01. B-61-0223	LS	1.000	1.000
0014	208.0100	Borrow	CY	10,910.000	10,910.000
0016	209.1100	Backfill Granular Grade 1	CY	16,318.000	16,318.000
0018	210.1500	Backfill Structure Type A	TON	380.000	380.000
0020	213.0100	Finishing Roadway (project) 01. 7175-00-71	EACH	1.000	1.000
0022	214.0100	Obliterating Old Road	STA	6.800	6.800
0024	305.0110	Base Aggregate Dense 3/4-Inch	TON	345.000	345.000
0026	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	4,050.000	4,050.000
0028	440.4410	Incentive IRI Ride	DOL	653.000	653.000
0030	440.4410	Incentive IRI Ride	DOL	483.000	483.000
0032	455.0605	Tack Coat	GAL	300.000	300.000
0034	460.2000	Incentive Density HMA Pavement	DOL	2,510.000	2,510.000
0036	460.5223	HMA Pavement 3 LT 58-28 S	TON	630.000	630.000
0038	460.5244	HMA Pavement 4 LT 58-34 S	TON	480.000	480.000
0040	502.0100	Concrete Masonry Bridges	CY	147.000	147.000
0042	502.3200	Protective Surface Treatment	SY	160.000	160.000
0044	505.0400	Bar Steel Reinforcement HS Structures	LB	5,110.000	5,110.000
0046	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	19,965.000	19,965.000
0048	513.4061	Railing Tubular Type M (structure) 01. B-61-0223	LF	80.000	80.000
0050	516.0500	Rubberized Membrane Waterproofing	SY	25.000	25.000
0052	521.0124	Culvert Pipe Corrugated Steel 24-Inch	LF	83.000	83.000
0054	521.1024	Apron Endwalls for Culvert Pipe Steel 24-Inch	EACH	2.000	2.000
0056	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	650.000	650.000
0058	606.0300	Riprap Heavy	CY	230.000	230.000
0060	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	160.000	160.000
0062	614.0200	Steel Thrie Beam Structure Approach	LF	20.700	20.700
0064	614.0305	Steel Plate Beam Guard Class A	LF	12.500	12.500
0066	614.0345	Steel Plate Beam Guard Short Radius	LF	75.000	75.000
0068	614.0370	Steel Plate Beam Guard Energy Absorbing Terminal	EACH	1.000	1.000
0070	614.2300	MGS Guardrail 3	LF	25.000	25.000
0072	614.2500	MGS Thrie Beam Transition	LF	118.200	118.200
0074	614.2610	MGS Guardrail Terminal EAT	EACH	3.000	3.000
0076	618.0100	Maintenance And Repair of Haul Roads (project) 01.	EACH	1.000	1.000

7175-00-71

Line	Item	Item Description	Unit	Total	Qty
		7175-00-71			
0078	619.1000	Mobilization	EACH	1.000	1.000
0080	624.0100	Water	MGAL	44.000	44.000
0082	625.0100	Topsoil	SY	10,075.000	10,075.000
0084	627.0200	Mulching	SY	11,005.000	11,005.000
0086	628.1504	Silt Fence	LF	2,300.000	2,300.000
0088	628.1520	Silt Fence Maintenance	LF	2,300.000	2,300.000
0090	628.1905	Mobilizations Erosion Control	EACH	3.000	3.000
0092	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0094	628.2008	Erosion Mat Urban Class I Type B	SY	6,450.000	6,450.000
0096	628.7504	Temporary Ditch Checks	LF	135.000	135.000
0098	629.0210	Fertilizer Type B	CWT	7.000	7.000
0100	630.0160	Seeding Mixture No. 60	LB	300.000	300.000
0102	630.0200	Seeding Temporary	LB	300.000	300.000
0104	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0106	634.0616	Posts Wood 4x6-Inch X 16-FT	EACH	1.000	1.000
0108	637.2210	Signs Type II Reflective H	SF	5.180	5.180
0110	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0112	638.2102	Moving Signs Type II	EACH	2.000	2.000
0114	638.2602	Removing Signs Type II	EACH	11.000	11.000
0116	638.3000	Removing Small Sign Supports	EACH	11.000	11.000
0118	642.5001	Field Office Type B	EACH	1.000	1.000
0120	643.0300	Traffic Control Drums	DAY	1,180.000	1,180.000
0122	643.0420	Traffic Control Barricades Type III	DAY	806.000	806.000
0124	643.0705	Traffic Control Warning Lights Type A	DAY	1,612.000	1,612.000
0126	643.0900	Traffic Control Signs	DAY	1,125.000	1,125.000
0128	643.5000	Traffic Control	EACH	1.000	1.000
0130	645.0111	Geotextile Type DF Schedule A	SY	100.000	100.000
0132	645.0120	Geotextile Type HR	SY	460.000	460.000
0134	646.1020	Marking Line Epoxy 4-Inch	LF	5,900.000	5,900.000
0136	650.4500	Construction Staking Subgrade	LF	1,647.000	1,647.000
0138	650.5000	Construction Staking Base	LF	1,647.000	1,647.000
0140	650.6000	Construction Staking Pipe Culverts	EACH	1.000	1.000
0142	650.6500	Construction Staking Structure Layout (structure) 01. B-61-0223	LS	1.000	1.000
0144	650.9910	Construction Staking Supplemental Control (project) 01. 7175-00-71	LS	1.000	1.000
0146	650.9920	Construction Staking Slope Stakes	LF	1,647.000	1,647.000
0148	690.0150	Sawing Asphalt	LF	60.000	60.000
0150	715.0502	Incentive Strength Concrete Structures	DOL	882.000	882.000

7175-00-71

Line	Item	Item Description	Unit	Total	Qty
0152	ASP.1T0A	On-the-Job Training Apprentice at $5.00/HR	HRS	1,200.000	1,200.000
0154	ASP.1T0G	On-the-Job Training Graduate at $5.00/HR	HRS	300.000	300.000

3

CLEARING & GRUBBING

STATION - STATION	LOCATION	201.0105 CLEARING STA	201.0205 GRUBBING STA
CATEGORY 0010			
CTH O			
9+00 - 12+00	LT & RT	3	3
SUBTOTAL CATEGORY 0010		3	3
CATEGORY 0030			
CTH O			
5+00 - 6+00	RT	1	1
SUBTOTAL CATEGORY 0030		1	1
ITEM TOTALS		4	4

EXCAVATION

STATION - STATION	LOCATION	205.0100 COMMON CY	205.0400 MARSH CY	EXPANDED MARSH FILL CY	REDUCED MARSH IN FILL CY	AIR FILL CY	EXPANDED FILL CY	208.0100 BORROW CY	WASTE** CY	209.1100 BACKFILL GRANULAR GRADE 1 CY
CATEGORY 0010										
CTH O										
6+82 - 9+81.13	LT & RT	37	4982	7473	337	3966	5156	5156	37	7473
10+18.87 - 13+19	LT & RT	0	4538	6807	212	3468	4509	4509	-	6807
HOLMEN ROAD										
1000+15 - 1002+00	LT & RT	69	1359	2038	30	969	1260	1146	-45	2038
SUBTOTAL CATEGORY 0010		106	10879	16318	579	8403	10925	10811	-8	16318
CATEGORY 0030										
CTH O										
4+00 - 6+82	LT & RT	1457	-	-	106	420	547	16	926	-
13+19 - 19+00	LT & RT	7470	-	-	-	110	143	83	7410	-
SUBTOTAL CATEGORY 0030		8927	0	0.0	106	530	690	99	8336	0
ITEM TOTALS		9033	10879	16318	685	8933	11615	10910	8328	16318

**DUE TO CTH O REMAINING OPEN UNTIL FINAL CONNECTION, THE MAJORITY OF COMMON EXCAVATION CANNOT BE USED AS BORROW

NOTES:
1) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN COMMON EXCAVATION.
2) FILL DOES NOT INCLUDE UNUSABLE PAVEMENT EXCAVATION VOLUME.
3) FILL WILL BE BACKFILLED WITH CUT OR BORROW.
4) POSITIVE BORROW INDICATES A SHORTAGE OF MATERIAL.
5) NORMAL EXPANSION FACTOR = 1.3
6) MARSH EXPANSION FACTOR = 1.5. MARSH EXCAVATION LOCATED FROM STA 7+00 - 12+00 & 1000+15 - 1000+75.

FINISHING ROADWAY (7175-00-71)

STATION - STATION	213.0100 EACH
CATEGORY 0010	
CTH O	
4+00 - 19+00	1
ITEM TOTAL	1

OBLITERATING OLD ROAD

STATION - STATION	214.0100 STA
CATEGORY 0010	
CTH O	
7+00 - 9+90	2.9
10+10 - 13+19	3.1
SUBTOTAL CATEGORY 0010	6.0
CATEGORY 0030	
CTH O	
13+19 - 14+00	0.8
SUBTOTAL CATEGORY 0030	0.8

BASE AGGREGATE DENSE

STATION - STATION	LOCATION	305.0110 3/4-INCH TON	305.0120 1 1/4-INCH TON	624.0100 WATER MGAL
CATEGORY 0010				
CTH O				
6+82 - 9+81.13	LT & RT	40	730	8
10+18.87 - 13+19	LT & RT	60	780	8
HOLMEN ROAD				
1000+15 - 1002+00	LT & RT	60	560	6
SUBTOTAL CATEGORY 0010		160	2070	22
CATEGORY 0030				
CTH O				
4+00 - 6+82	LT & RT	60	645	7
13+19 - 19+00	LT & RT	125	1335	15
SUBTOTAL CATEGORY 0030		185	1980	22
ITEM TOTALS		345	4050	44

ASPHALTIC PAVEMENT ITEMS

STATION - STATION	LT & RT	455.0605 TACK COAT GAL	460.5223 HMA PAVEMENT 3 LT 58-28 S TON	460.5244 HMA PAVEMENT 4 LT 58-34 S TON
CATEGORY 0010				
CTH O				
6+82 - 9+81.13	LT & RT	60	125	95
10+18.87 - 13+19	LT & RT	60	130	95
HOLMEN ROAD				
1000+15 - 1002+00	LT & RT	40	85	65
SUBTOTAL CATEGORY 0010		160	340	255
CATEGORY 0030				
CTH O				
4+00 - 6+82	LT & RT	45	95	75
13+19 - 19+00	LT & RT	95	195	150
SUBTOTAL CATEGORY 0030		140	290	225
ITEM TOTALS		300	630	480

PIPE CULVERTS

STATION	LOCATION	521.1024 APRON ENDWALLS FOR CULVERT PIPE STEEL 24-INCH EACH	521.3124 CULVERT PIPE CORRUGATED STEEL 24-INCH LF
CATEGORY 0010			
HOLMEN ROAD			
1000+15 - 1002+00	LT & RT	2	83
ITEM TOTALS		2	83

GUARDRAIL ITEMS

STATION	LOCATION	614.0200 STEEL THRIE BEAM STRUCTURE APPROACH LF	614.0305 STEEL PLATE BEAM GUARD CLASS A LF	614.0345 STEEL PLATE BEAM GUARD SHORT RADIUS LF	614.0370 STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL EACH	614.2300 MGS GUARDRAIL 3 LF	614.2500 MGS GUARDRAIL THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH
CATEGORY 0010								
CTH O								
8+84.52 - 9+38.06	LT	-	-	-	-	-	-	1
9+38.06 - 9+77.78	LT	-	-	-	-	-	39.4	-
9+56.96 - 9+69.22	RT	-	12.5	-	-	-	-	-
9+69.22 - 9+89.70	RT	20.7	-	-	-	-	-	-
10+10.47 - 10+50.19	LT	-	-	-	-	-	39.4	-
10+21.86 - 10+60.94	RT	-	-	-	-	-	39.4	-
10+50.19 - 10+75.39	LT	-	-	-	-	25	-	-
10+60.94 - 11+13.58	RT	-	-	-	-	-	-	1
10+75.39 - 11+28.94	LT	-	-	-	-	-	-	1
HOLMEN ROAD								
1000+29.35 - 1000+86.57	LT	-	-	75	-	-	-	-
1000+86.57 - 1001+36.57	LT	-	-	-	1	-	-	-
ITEM TOTALS		20.7	12.5	75	1	25	118.2	3

MAINTENANCE AND REPAIR OF HAUL ROADS (7175-00-71)

STATION - STATION	618.0100 EACH
CTH O	
CATEGORY 0030	1
ITEM TOTAL	1

MOBILIZATION

STATION - STATION	619.1000 EACH
CTH O	
CATEGORY 0010	0.6
CATEGORY 0020	0.2
CATEGORY 0030	0.2
ITEM TOTAL	1

3

TOPSOIL, MULCHING AND SEEDING

STATION - STATION	LOCATION	625.0100 TOPSOIL SY	627.0200 MULCHING SY	629.0210 FERTILIZER TYPE B CWT	630.0160 SEEDING MIXTURE NO. 60 LB	630.0200 SEEDING TEMPORARY LB
CATEGORY 0010						
CTH O						
6+82 - 9+81.13	LT & RT	2565	2740	1.7	75	75
10+18.87 - 13+19	LT & RT	2110	2295	1.5	60	60
HOLMEN ROAD						
1000+15 - 1002+00	LT & RT	375	415	0.3	15	15
SUBTOTAL CATEGORY 0010		5050	5450	3.5	150	150
CATEGORY 0030						
CTH O						
4+00 - 6+82	LT & RT	1725	1905	1.2	50	50
13+19 - 19+00	LT & RT	3300	3650	2.3	100	100
SUBTOTAL CATEGORY 0030		5025	5555	3.5	150	150
ITEM TOTALS		10075	11005	7.0	300	300

EROSION CONTROL ITEMS

STATION - STATION	LOCATION	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.2008 EROSION MAT URBAN CLASS I TYPE B SY	628.7504 TEMPORARY DITCH CHECKS LF
CATEGORY 0010					
CTH O					
6+82 - 9+81.13	LT & RT	365	365	1010	15
10+18.87 - 13+19	LT & RT	865	865	815	45
HOLMEN ROAD					
1000+15 - 1002+00	LT & RT	200	200	205	-
SUBTOTAL CATEGORY 0010		1430	1430	2030	60
CATEGORY 0030					
CTH O					
4+00 - 6+82	LT & RT	285	285	1555	30
13+19 - 19+00	LT & RT	585	585	2865	45
SUBTOTAL CATEGORY 0030		870	870	4420	75
ITEM TOTALS		2300	2300	6450	135

MOBILIZATIONS EROSION CONTROL

STATION - STATION	628.1905 EROSION CONTROL EACH	628.1910 EMERGENCY EROSION CONTROL EACH
CATEGORY 0010		
CTH O		
4+00 - 19+00	3	3
ITEM TOTALS	3	3

FIELD OFFICE TYPE B

STATION - STATION	642.5001 EACH
CATEGORY 0010	
CTH O	1
ITEM TOTAL	1

TRAFFIC CONTROL

STATION - STATION	643.0300 DRUMS DAY	643.0420 BARRICADES TYPE III DAY	643.0705 WARNING LIGHTS TYPE A DAY	643.0900 SIGNS DAY	643.5000 TRAFFIC CONTROL EACH
CATEGORY 0010					
CTH O	1180	806	1612	1125	1
ITEM TOTAL	1180	806	1612	1125	1

PERMANENT SIGNING

SIGN GROUP CODE	SIGN CODE		TYPE II SIZE	637.2210 SIGNS TYPE II REFLECTIVE H SF	637.2230 SIGNS TYPE II REFLECTIVE F SF	634.0612 POSTS WOOD 4X6-INCH 12-FT EACH	634.0616 POSTS WOOD 4X6-INCH 16-FT EACH	638.2102 MOVING SIGNS TYPE II EACH	638.2602 REMOVING SIGNS TYPE II EACH	638.3000 REMOVING SMALL SIGN SUPPORTS EACH	REMARKS
CATEGORY 0010											
1-3	W5-52L	CLEARANCE STRIPER	12" X 36"	-	3	1	-	-	-	-	INSTALL
1-4	W5-52R	CLEARANCE STRIPER	12" X 36"	-	3	1	-	-	-	-	INSTALL
1-5	W5-52R	CLEARANCE STRIPER	12" X 36"	-	3	1	-	-	-	-	INSTALL
1-6	W5-52L	CLEARANCE STRIPER	12" X 36"	-	3	1	-	-	-	-	INSTALL
1-7		ADOPT A HIGHWAY	-	-	-	-	-	1	-	-	SALVAGE & REINSTALL
2-1	R1-1	STOP	30" X 30"	5.18	-	-	1	-	-	-	INSTALL
2-2		HOLMEN ROAD	-	-	-	-	-	1	-	-	SALVAGE & REINSTALL
2-3		STOP	-	-	-	-	-	-	1	1	REMOVE
2-4		WEIGHT LIMIT 15 TONS		-	-	-	-		1	1	REMOVE
2-5		CLEARANCE STRIPER		-	-	-	-		4	4	REMOVE
2-6		WEIGHT LIMIT 15 TONS		-	-	-	-		1	1	REMOVE
SUBTOTAL CATEGORY 0010				5.18	12	4	1	2	7	7	
CATEGORY 0030											
1-1		CURVE LEFT, 30 MPH	-	-	-	-	-	-	1	1	REMOVE
1-2		NARROW BRIDGE	-	-	-	-	-	-	1	1	REMOVE
1-8		CURVE RIGHT, 30 MPH	-	-	-	-	-	-	1	1	REMOVE
1-9		NARROW BRIDGE	-	-	-	-	-	-	1	1	REMOVE
SUBTOTAL CATEGORY 0030				0	0	0	0	0	4	4	
ITEM TOTALS				5.18	12	4	1	2	11	11	

PAVEMENT MARKING

STATION	LOCATION	646.1020 MARKING LINE EPOXY 4-INCH LF	REMARKS
CATEGORY 0010			
CTH O			
6+82 - 13+19	~	1274	DOUBLE YELLOW
6+82 - 13+19	LT & RT	1174	WHITE EDGE
SUBTOTAL CATEGORY 0010		2448	
CATEGORY 0030			
CTH O			
4+00 - 6+82	~	564	DOUBLE YELLOW
4+00 - 6+82	LT & RT	564	WHITE EDGE
13+19 - 19+00	~	1162	DOUBLE YELLOW
13+19 - 19+00	LT & RT	1162	WHITE EDGE
SUBTOTAL CATEGORY 0030		3452	
ITEM TOTALS		5900	

CONSTRUCTION STAKING

STATION - STATION	LOCATION	650.4500 SUBGRADE LF	650.5000 BASE LF	650.6000 PIPE CULVERTS EACH	650.6500 STRUCTURE LAYOUT (B-61-0223) LS	650.9910 SUPPLEMENTAL CONTROL (7175-00-71) LS	650.9920 SLOPE STAKES LF
CATEGORY 0010							
CTH O						1	
6+82 - 9+81.13	LT & RT	299	299	-	-	-	299
10+18.87 - 13+19	LT & RT	300	300	-	-	-	300
HOLMEN ROAD							
1000+15 - 1002+00	LT & RT	185	185	1	-	-	185
SUBTOTAL CATEGORY 0010		784	784	1	0	1	784
CATEGORY 0020							
CTH O							
10+00	LT & RT	-	-	-	1	-	-
SUBTOTAL CATEGORY 0020		0	0	0	1	0	0
CATEGORY 0030							
CTH O							
4+00 - 6+82	LT & RT	282	282	-	-	-	282
13+19 - 19+00	LT & RT	581	581	-	-	-	581
SUBTOTAL CATEGORY 0030		863	863	0	0	0	863
ITEM TOTALS		1647	1647	1	1	1	1647

SAWING ASPHALT

STATION - STATION	LOCATION	690.0150 LF
CATEGORY 0010		
CTH O		
4+00	LT & RT	20
19+00	LT & RT	20
HOLMEN ROAD		
1002+00	LT & RT	20
ITEM TOTAL		60

CONVENTIONAL SIGNS AND ABBREVIATIONS

A.P.	ACCESS POINT
AC	ACRES
AG	AGRICULTURAL
ALUM.	ALUMINUM
ANT	ANTENNA
B.	BARN
℄	CENTERLINE
CONC	CONCRETE
COR.	CORNER
C.S.M.	CERTIFIED SURVEY MAP
C.T.H.	COUNTY TRUNK HIGHWAY
DOC.	DOCUMENT
EASE.	EASEMENT
ET.AL.	AND OTHERS
FDN	FOUNDATION
FE	FIELD ENTRANCE
FRL.	FRACTIONAL
G	GARAGE
GP	GAS PUMPS
GRAV	GRAVEL
GV	GAS
HSE	HOUSE
IP	IRON PIPE OR PIN
L	LENGTH OF CURVE
LC	LONG CHORD OR LAND CONTRACT
LCB	LONG CHORD BEARING
LT	LEFT
MH	MANHOLE
MON.	MONUMENT
O.L.	OUTLOT
P.	PAGE
PC	POINT OF CURVATURE
PE	PRIVATE ENTRANCE
PI	POINT OF INTERSECTION
PK	PARKER-KALON FASTENER
P.L.	PROPERTY LINE
P.L.E.	PERMANENT LIMITED EASEMENT
PT	POINT OF TANGENCY
R	RADIUS OR RANGE
R.D.E.	RESTRICTED DEVELOPMENT EASEMENT
REM.	REMAINING
℞	REFERENCE LINE
RT	RIGHT
R/W	RIGHT OF WAY
S	SHED
SEC.	SECTION
SEPV	SEPTIC VENT
S.T.H.	STATE TRUNK HIGHWAY
STA.	STATION
T	TANGENT LENGTH OF CURVE OR TOWN
TAV	TAVERN
T.I.	TEMPORARY INTEREST
U.S.H.	UNITED STATES HIGHWAY
V.	VOLUME
W	WALL
X	EAST COORDINATE (GRID)
Y	NORTH COORDINATE (GRID)
N	NORTH COORDINATE (GROUND) OR NORTH
E	EAST COORDINATE (GROUND), EAST OR EXTERNAL
△	CENTRAL ANGLE OR DELTA

- STATE LINE
- COUNTY LINE
- TOWN OR RANGE LINE
- SECTION LINE
- QUARTER LINE
- SIXTEENTH LINE
- PROPOSED OR NEW R/W LINE
- EXISTING R/W LINE
- LOT LINE
- P.L. ± 58.1 PROPERTY LINE
- NO ACCESS (By Previous Acquisition)
- NO ACCESS (By Acquisition)
- NO ACCESS (By Statutory Authority)
- LIMITED EASEMENT (Temporary or Permanent)
- CORPORATE LIMITS

- SECTION CORNER
- RIGHT OF WAY POINT (NOT MONUMENTED)
- RIGHT OF WAY POINT (MONUMENTED)
- (Type) RECOVERED IRON PIN/PIPE
- TRIANGULATION POINT OR HORIZONTAL CONTROL STATION
- INLET
- HYDRANT

COMPENSABLE	NON COMPENSABLE
●	⊖ TELEPHONE POLE
■	□ POWER POLE

- 245 RIGHT OF WAY POINT NUMBER

- (Size)W WATER
- (Size)G GAS
- T TELEPHONE OR TELEGRAPH
- E ELECTRIC
- TV CABLE TELEVISION
- FO FIBER OPTIC
- (Size)SAN SANITARY SEWER
- (Size) SS STORM SEWER
- CAUTION NOTATION FOR COMBUSTIBLE FLUIDS
- SERVICE PEDESTAL
- (Label) SILO, MANHOLE OR WELL, ETC.

- RAILROAD
- BRIDGE
- (Label) BUILDING
- (Label) FOUNDATION OR RUINS
- FENCE
- MARSH AREA
- LAKE OR POND
- WOODED OR SHRUB AREA
- TREE

R/W PROJECT NUMBER	SHEET NUMBER	TOTAL SHEETS
7175-00-01	4.1	2
FEDERAL PROJECT NUMBER		

PLAT OF RIGHT-OF-WAY REQUIRED FOR

CTH 00 - CTH H

N BR ELK CREEK BRIDGE B-61-0223

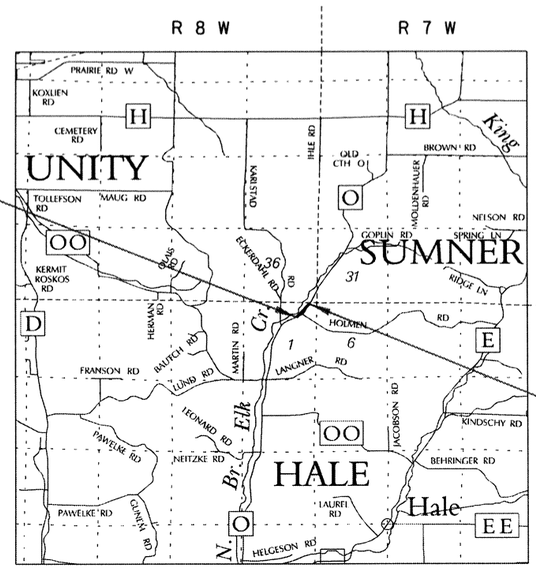
CTH 0 TREMPEALEAU COUNTY

CONSTRUCTION PROJECT NUMBER

BEGIN RELOCATION ORDER
STA. 4+00.00

Y= 490,543.957
X= 862,279.283

1090.816' SOUTH OF AND 1080.826' EAST OF THE NORTH 1/4 CORNER OF SEC. 1, T23N, R8W.



N

END RELOCATION ORDER
STA. 19+00.00

Y= 491591.171
X= 863,326.684

81.027' SOUTH OF AND 481.290' EAST OF THE NE CORNER OF SEC. 1, T23N, R8W.

LAYOUT
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.284 MI.

NOTES:

POSITIONS SHOWN ON THIS PLAT ARE WISCONSIN COUNTY COORDINATES, TREMPEALEAU COUNTY, NAD 83 (2011) IN US SURVEY FEET. VALUES SHOWN ARE GRID COORDINATES. GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

RIGHT OF WAY MONUMENTS ARE TYPE-2 (3/4" X 24" REBAR) AND WILL BE PLACED PRIOR TO THE COMPLETION OF THE PROJECT.

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

ORIGINAL PLAT PREPARED BY

SEH
WISCONSIN
JASON L. CANCE
S-2688
CHIPPEWA FALLS WI
LAND SURVEYOR

1-23-2017 (Date)

(Signature)

REVISION DATE

ACCEPTED FOR

COUNTY of TREMPEALEAU

1/24/17 (Date)

Dave Lyga Hwy. Comm'r (Signature & Title of Official)

E

SCHEDULE OF LANDS & INTERESTS REQUIRED

AREAS SHOWN IN THE TOTAL ACRES COLUMN MAY BE APPROXIMATE AND ARE DERIVED FROM TAX ROLLS OR OTHER AVAILABLE SOURCES AND MAY NOT INCLUDE LANDS OF THE OWNER WHICH ARE NOT CONTIGUOUS TO THE AREA TO BE ACQUIRED.

PARCEL NUMBER	OWNER (S)	INTEREST REQUIRED	TOTAL ACRES	R/W ACRES REQUIRED NEW	EXISTING	TOTAL	TOTAL ACRES REM.	TLE ACRES
1	MICHAEL E. & LYNN R. NELSON	FEE	157.20	1.40	1.03	2.43	154.77	-
2	KELLEN M. & LINDSEY A. NELSON	FEE	40.23	0.61	1.03	1.64	38.59	-
10	TRI-COUNTY COMMUNICATIONS COOPERATIVE INC.	RELEASE OF RIGHTS						
11	TREMPEALEAU ELECTRIC COOPERATIVE	RELEASE OF RIGHTS						
12	DAIRYLAND POWER COOPERATIVE	RELEASE OF RIGHTS						

OWNER NAMES ARE SHOWN FOR REFERENCE PURPOSES ONLY AND ARE SUBJECT TO CHANGE PRIOR TO THE TRANSFER OF LAND INTERESTS TO THE COUNTY.

POINT	NORTH	EAST
301	490573.72	862264.95
302	490606.26	862303.42
303	490636.29	862359.28
304	490691.50	862451.32
305	490764.72	862548.76
306	490888.68	862698.69
307	491009.80	862818.31
308	491171.34	862968.39
309	491216.32	862990.91
310	491382.84	863104.57
311	491581.16	863260.13
312	491612.38	863300.96
314	491570.40	863351.89
315	491386.34	863264.40
316	491231.46	863142.34
317	490821.86	862788.34
318	490751.74	862887.08
320	490684.32	862847.86
321	490730.23	862730.68
322	490583.89	862477.37
323	490536.76	862457.11
324	490517.14	862402.13
325	490514.26	862293.59

COURSE	BEARING	DISTANCE
1001-1002	N89°10'42"E	2609.79'
1002-326	S89°10'42"W	707.48'
326-310	S00°49'18"E	279.24'
310-311	N38°06'34"E	252.05'
311-312	N52°36'19"E	51.39'
312-313	S50°30'15"E	33.34'
313-314	S50°30'15"E	32.66'
314-315	S25°25'19"W	203.79'
315-316	S38°14'35"W	197.20'
316-317	S40°50'08"W	541.38'
317-318	S54°37'16"E	121.11'
318-327	S30°10'59"W	12.00'
327-319	S30°10'59"W	33.00'
319-320	S30°10'59"W	33.00'
320-321	N68°36'10"W	125.86'
321-322	S59°59'02"W	292.55'
322-323	S23°15'19"W	51.30'
323-324	S70°22'10"W	58.37'
324-325	S88°28'32"W	108.58'
325-300	N25°43'12"W	32.97'
300-301	N25°43'12"W	33.03'
301-302	N49°46'20"E	50.39'
302-303	N61°44'19"E	63.42'
303-304	N59°02'36"E	107.32'
304-305	N53°04'27"E	121.89'
305-306	N50°25'05"E	194.53'
306-307	N44°38'33"E	170.23'
307-308	N42°53'43"E	220.50'
308-309	N26°35'47"E	50.31'
309-310	N34°18'52"E	201.62'

POINT	STATION	OFFSET
300	4+00.00	0.00' L
301	4+00.00	33.03' L
302	4+50.00	45.00' L
303	5+15.00	45.00' L
304	6+25.00	45.00' L
305	7+50.00	50.00' L
306	9+50.00	50.00' L
307	11+25.00	50.00' L
308	13+50.00	33.00' L
309	14+00.00	40.00' L
310	16+00.00	45.00' L
311	18+50.00	45.00' L
312	19+00.00	33.34' L
313	19+00.00	0.00' R
314	19+00.00	32.66' R
315	17+00.00	80.00' R
316	15+00.00	75.00' R
317	9+70.00	60.00' R
318	1002+00.00	45.00' L
319	1002+00.00	0.00' R
320	1002+00.00	33.00' R
321	8+70.00	90.00' R
322	5+90.00	60.00' R
323	5+50.00	90.00' R
324	4+95.00	80.00' R
325	4+00.00	32.97' R
327	1002+00.00	33.00' L

BEGIN RELOCATION ORDER
STA. 4+00.00
Y= 490,543.957
X= 862,279.283

7/8" REBAR W/ ALUM. CAP
Y=491,634.773
X=861,198.457

7/8" REBAR
W/ ALUM. CAP
Y=491,672.198
X=863,807.974

BEGIN RELOCATION ORDER
STA. 19+00.00
Y= 491,591.171
X= 863,326.684

TOWN OF HALE

SE - SE
36-24-8

NW - NE
1-23-8

NE - NE
1-23-8

SIXTEENTH LINE

HOLMEN ROAD

C.T.H. O

PISTA 16+13.75
PIY =491370.030
PIX =863144.421
DELTA =5°07'19" (RT)
R =5430.00'
D =1°03'19"
T =242.87'
L =485.42'

PISTA 1000+19.75
PIY =490803.641
PIX =862708.340
DELTA =47°44'46" (LT)
R =120.00'
D =47°44'46"
T =19.75'
L =39.15'

PISTA 8+96.77
PIY =490759.542
PIX =862726.836
DELTA =29°54'26" (LT)
R =1860.00'
D =3°04'50"
T =496.77'
L =970.88'

PI 1002+50.00
Y= 490,687.703
X= 862,907.675

STA 9+00.00 =
STA PC 1000+00.00
Y=490,818.520
X=862,695.350

BASIS OF EXISTING RW	
ROAD	DOCUMENT
CTH O	WIS. STAT. 82.31(2)
HOLMEN RD	WIS. STAT. 82.31(2)

(10) TRI-COUNTY COMMUNICATIONS COOPERATIVE, INC.
AMBIGUOUS EASEMENT
DOC. # 322985

(2) KELLEN M. & LINDSEY A. NELSON

(11) TREMPEALEAU ELECTRIC COOPERATIVE
AMBIGUOUS EASEMENT
DOC. # 141619

(12) DAIRYLAND POWER COOPERATIVE
BLANKET EASEMENT
DOC. # 148115

(1) MICHAEL E. & LYNN R. NELSON

(10) TRI-COUNTY COMMUNICATIONS COOPERATIVE, INC.
16.5' EASEMENT
DOC. # 420479

(10) TRI-COUNTY COMMUNICATIONS COOPERATIVE, INC.
16.5' EASEMENT
DOC. # 402151

(10) TRI-COUNTY COMMUNICATIONS COOPERATIVE, INC.
AMBIGUOUS EASEMENT
DOC. # 402151

SUBJECT TO FARMLAND PRESERVATION AGREEMENT DOC. # 352275

SLOPE INTERCEPTS

EXCESS RIGHT OF WAY TO BE TRANSFERED TO OWNER OF PARCEL 2 BY QUIT CLAIM DEED FROM TREMPEALEAU COUNTY

REVISION DATE	DATE	SCALE, FEET	HWY: CTH O	STATE R/W PROJECT NUMBER 7175-00-01	PLAT SHEET NO: 4.2	
	GRID FACTOR N/A	0 50' 100'	COUNTY: TREMPEALEAU	CONSTRUCTION PROJECT NUMBER	PS&E SHEET 13	E

FILE NAME : P:\PT\T\Tremh\132859\Civil 3D\RW\RDCTH001.dgn PLOT TIME : 11:13:30 AM PLOT DATE : 1/10/2017 PLOT BY : SEH PLOT NAME : PLOT SCALE : N/A

WISDOT/CADDS SHEET 75

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

STA 9+00 CTH O =
STA 1000+00 HOLMEN ROAD
CONSTRUCT TYPE C INTERSECTION

B-61-223
PROPOSED
STRUCTURE
20° SKEW RHF

scale 50 100 0 100 200 feet

RIVERLAND ENERGY COOPERATIVE

SLOPE INTERCEPT (TYP)

INSTALL 1-3 W5-52L 12"X36"

INSTALL 1-5 W5-52R 12"X36"

N BRANCH ELK CREEK

0.35 ACRES TYPE M WETLAND IMPACT

WETLAND BOUNDARY (TYP)

STA 21+50 RT CONST AGG FE

REMOVE 1-8 30 M.P.H.

REMOVE 1-9 NARROW BRIDGE

R/W (TYP)

EXISTING FENCE (REMOVAL BY OTHERS PRIOR TO CONSTRUCTION)

REMOVE 1-1 30 M.P.H.

REMOVE 1-2 NARROW BRIDGE

+62 12.0' LT +82 14.0' LT

+62 12.0' RT +82 14.0' RT

+19 14.0' LT +39 12.0' LT

+19 14.0' RT +39 12.0' RT

CP1 CP2 CP3

CC1 CC2

BM1 BM2

TRI-COUNTY COMMUNICATIONS COOPERATIVE

OBLITERATING OLD ROAD

TRI-COUNTY COMMUNICATIONS COOPERATIVE

REMOVE EXISTING STRUCTURE P-61-958

INSTALL 1-6 W5-52L 12"X36"

INSTALL 1-4 W5-52R 12"X36"

MOVE 1-7

STA 11+41.72 12.0' RT

1001+00

1002+00

1003+00

HOLMEN RD

BEGIN PROJECT
STA 4+00
Y=490543.957
X=862279.283
MATCH EXISTING
SAWCUT REQ'D

BEGIN FEDERALLY FUNDED PROJECT
STA 6+82

END FEDERALLY FUNDED PROJECT
STA 13+19

END PROJECT
STA 19+00
Y=491591.172
X=863326.684
MATCH EXISTING
SAWCUT REQ'D

STEEL PLATE BEAM GUARD CLASS A
STA 9+56.96 TO STA 9+69.22 RT

STEEL THRIE BEAM STRUCTURE APPROACH
STA 9+69.22 TO STA 9+89.70 RT

STEEL PLATE BEAM GUARD SHORT RADIUS (36')
STA 1000+29.35 TO STA 1000+86.57 LT

STEEL PLATE BEAM GUARD EAT
STA 1000+86.57 TO STA 1001+36.57 LT

MGS GUARDRAIL TERMINAL EAT
STA 8+84.52 TO STA 9+38.06 LT
STA 10+60.94 TO STA 11+13.58 RT
STA 10+75.39 TO STA 11+28.94 LT

MGS THRIE BEAM TRANSITION
STA 9+38.06 TO STA 9+77.78 LT
STA 10+10.47 TO STA 10+50.19 RT
STA 10+21.86 TO STA 10+60.94 RT

MGS GUARDRAIL 3
STA 10+50.19 TO STA 10+75.39 LT

LEGEND
SILT FENCE
EMAT URBAN CLASS 1 TYPE B
TEMP DITCH CHECK

BENCHMARK TABLE

NO.	STATION	DESCRIPTION	ELEV
BM1	9+02.26 130.4' RT	POWER POLE, SW CORN HOLMEN RD AND CTH O	944.48
BM2	10+27.90 72.8' RT	PINK PAINT MARK, NORTH RAILING OF PROJECT BRIDGE CENTER, CENTER TOP RAILING	945.70

VCL = 200.00
K = 110.54

VPC STA 4+50.00
VPC EL 949.51

VPI STA 5+50.00
VPI EL 950.11

VPT STA 6+50.00
VPT EL 948.90

0.60%

-1.21%

FINISHED ℄ PROFILE

EXISTING ℄ PROFILE

VCL = 500.00
K = 99.99

VPC STA 13+75.00
VPC EL 952.63

3.78%

VPC STA 13+75.00
VPT EL 952.62

VPI STA 16+25.00
VPI EL 962.10

-0.80%

VPT STA 18+75.00
VPT EL 960.10

VPC STA 8+75.00
VPC EL 946.18

HIGH WATER 100 YR
EL 939.33

HIGH WATER 2 YR
EL 936.40

OBSERVED WATER LEVEL
EL 934.38 6/24/15

VPI STA 11+25.00
VPI EL 943.15

EXISTING ℄ ELEVATION

FINISHED ℄ ELEVATION

EARTHWORK SUMMARY
STA 4+00 TO STA 9+81.13

CUT	1494 CY
MARSH EX	4982 CY
MARSH EX USED AS FILL	443 CY
FILL	4386 CY
FILL AT 1.3% EXP	5703 CY
BORROW	5172 CY
WASTE	963 CY

EARTHWORK SUMMARY
STA 10+18.87 TO STA 19+00

CUT	7470 CY
MARSH EX	4538 CY
MARSH EX USED AS FILL	212 CY
FILL	3578 CY
FILL AT 1.3% EXP	4652 CY
BORROW	4592 CY
WASTE	7410 CY

STATION 10+00
STRUCTURE B-61-223
SINGLE SPAN CONCRETE FLAT SLAB BRIDGE
SKEWED 20° RHF
37.67 OVERALL LENGTH
30.0 CLEAR ROADWAY WIDTH

STATION 10+32
REMOVE STRUCTURE P-61-958
SINGLE SPAN STEEL DECK GIRDER BRIDGE
23.0 OVERALL LENGTH
20.0 CLEAR ROADWAY WIDTH

4+00	5+00	6+00	7+00	8+00	9+00	10+00	11+00	12+00	13+00	14+00	15+00	16+00	17+00	18+00	19+00
949.21	949.51	949.70	949.66	949.39	948.90	948.29	947.69	947.08	946.48	945.90	945.55	945.44	945.59	945.98	946.63
947.52	948.67	950.06	951.71	953.54	955.21	956.65	957.85	958.83	959.58	960.09	960.38	960.44	960.27	959.90	

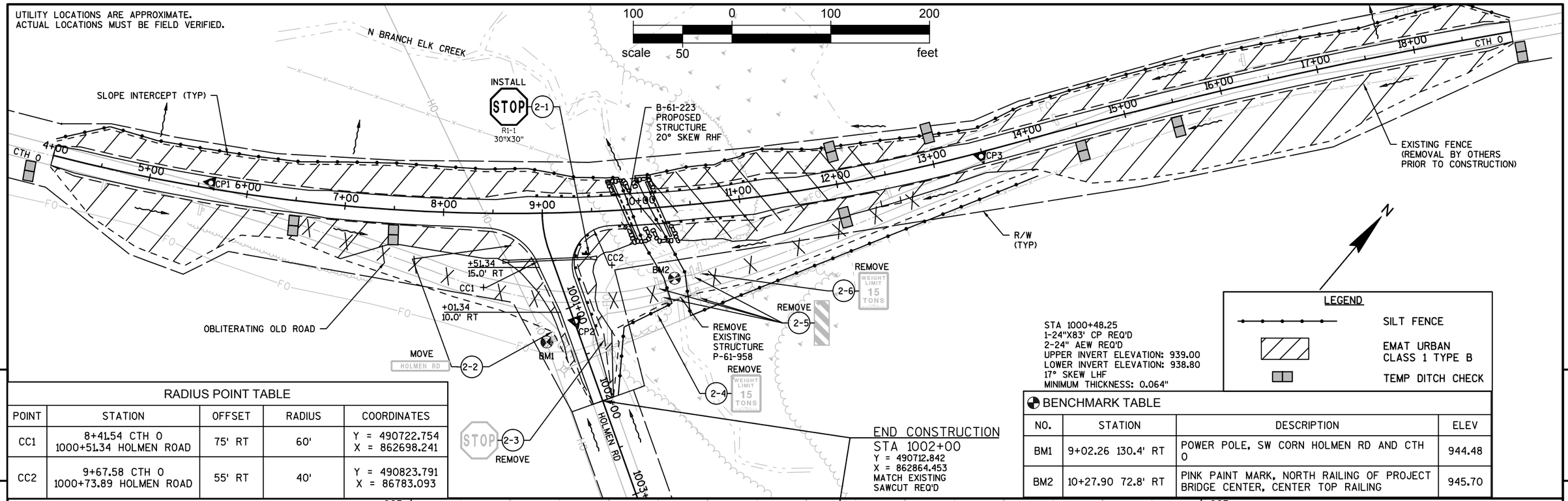
PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	PLAN AND PROFILE: CTH O	SHEET 14	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\050101-PP.DWG
LAYOUT NAME - 050101-PP - PP 01 CTH O

PLOT DATE : 7/9/2017 2:09 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44

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

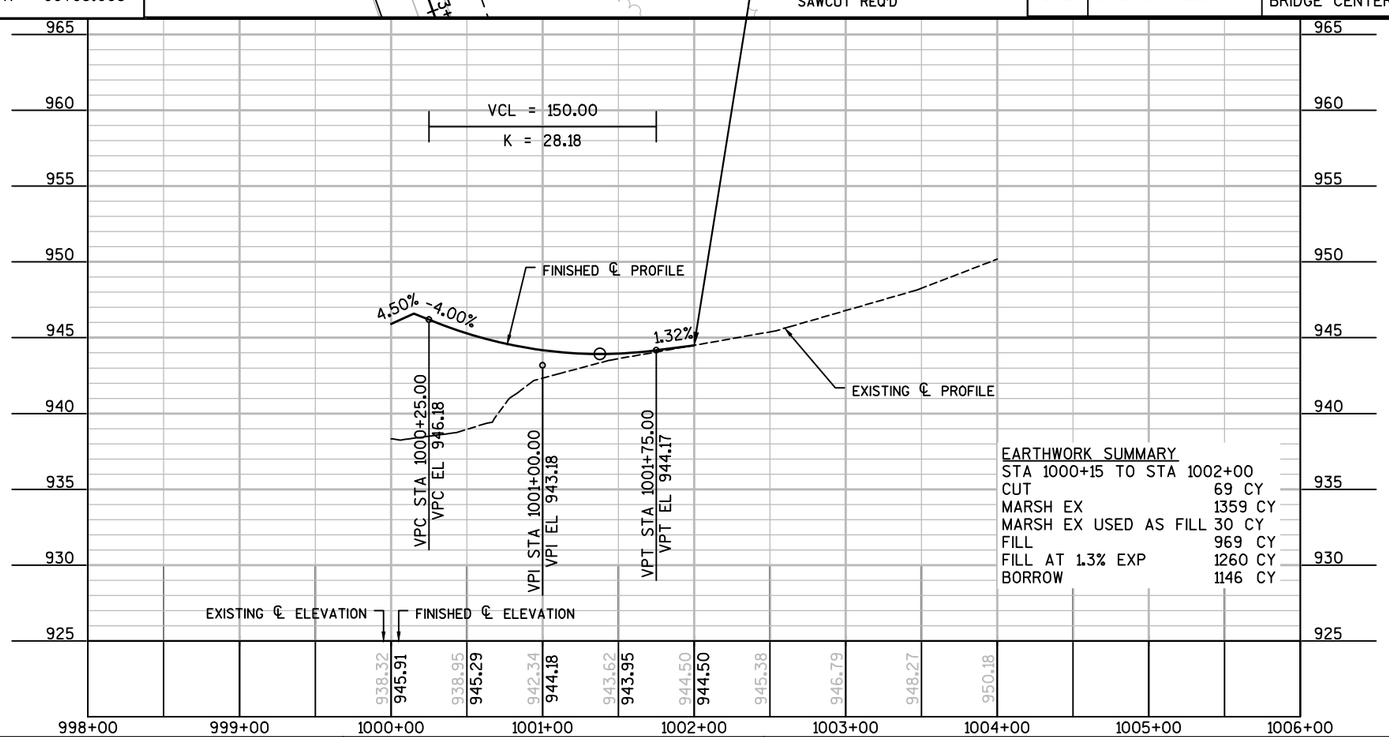


5

RADIUS POINT TABLE				
POINT	STATION	OFFSET	RADIUS	COORDINATES
CC1	8+41.54 CTH O 1000+51.34 HOLMEN ROAD	75' RT	60'	Y = 490722.754 X = 862698.241
CC2	9+67.58 CTH O 1000+73.89 HOLMEN ROAD	55' RT	40'	Y = 490823.791 X = 86783.093

BENCHMARK TABLE			
NO.	STATION	DESCRIPTION	ELEV
BM1	9+02.26 130.4' RT	POWER POLE, SW CORN HOLMEN RD AND CTH O	944.48
BM2	10+27.90 72.8' RT	PINK PAINT MARK, NORTH RAILING OF PROJECT BRIDGE CENTER, CENTER TOP RAILING	945.70

5



EARTHWORK SUMMARY
STA 1000+15 TO STA 1002+00

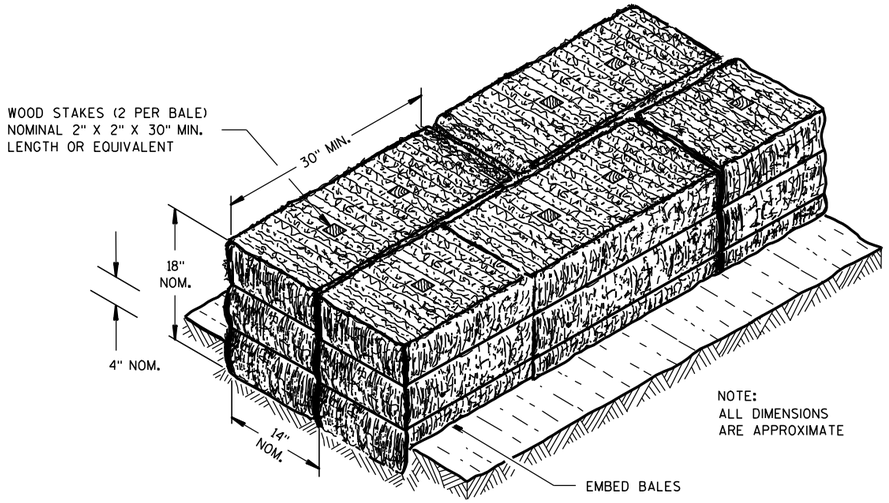
CUT	69 CY
MARSH EX	1359 CY
MARSH EX USED AS FILL	30 CY
FILL	969 CY
FILL AT 1.3% EXP	1260 CY
BORROW	1146 CY

PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	PLAN AND PROFILE: HOLMEN ROAD	SHEET	E

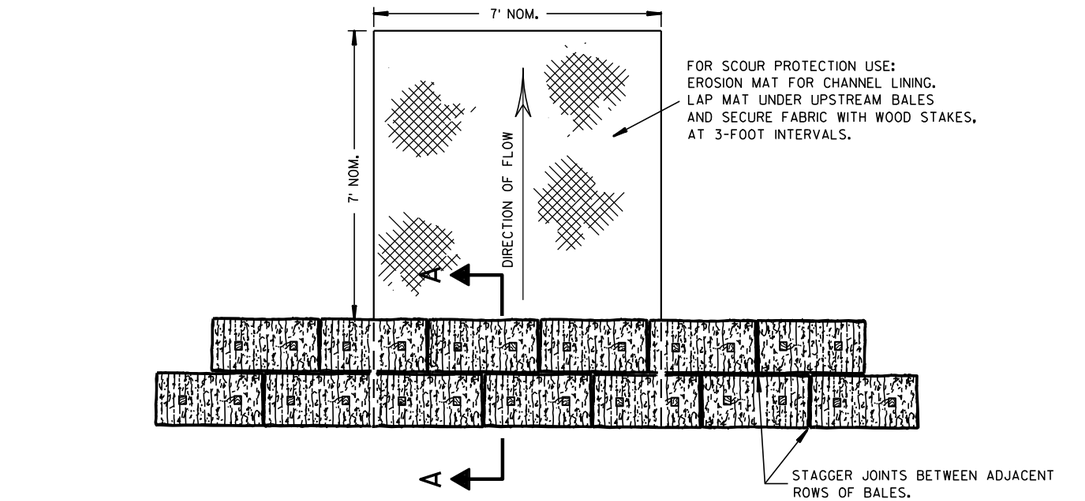
FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\050101-PP.DWG
LAYOUT NAME - 050101-PP - PP 02 HOLMEN RD
PLOT DATE : 10/23/2017 11:03 AM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:100 FT
WISDOT/CADDS SHEET 44

Standard Detail Drawing List

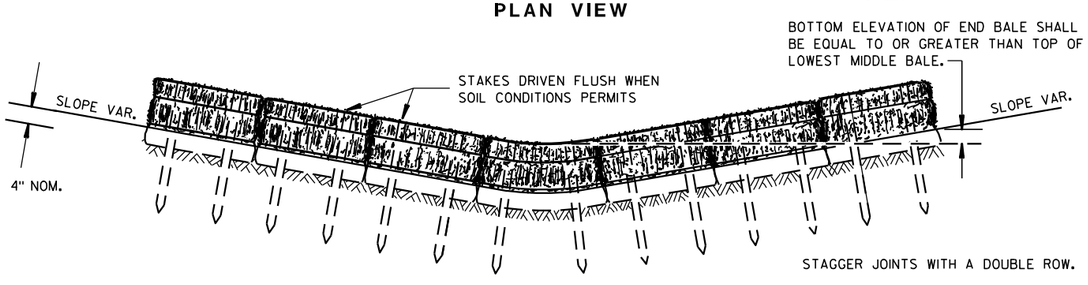
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
09A01-13A	AT-GRADE SIDE ROAD INTERSECTION, TYPES "B1", "B2", "C" AND D AND TEE INTERSECTION BYPASS LANE
12A03-10	NAME PLATE (STRUCTURES)
14B15-10A	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-10B	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-10C	STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS
14B18-06A	STEEL PLATE BEAM GUARD, CLASS "A" (AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS)
14B20-11A	STEEL THRIE BEAM STRUCTURE APPROACH
14B20-11F	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPE "M"
14B20-11G	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTOR PLATE DETAIL
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
14B27-01A	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B27-01B	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B27-01C	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B42-05A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-03A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-03B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-03C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-04A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04E	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04F	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04I	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04J	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04K	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04L	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-06A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C06-09	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-18A	LONGITUDINAL MARKING (MAINLINE)
15C35-01A	PAVEMENT MARKING (INTERSECTIONS)



SECTION A-A



PLAN VIEW



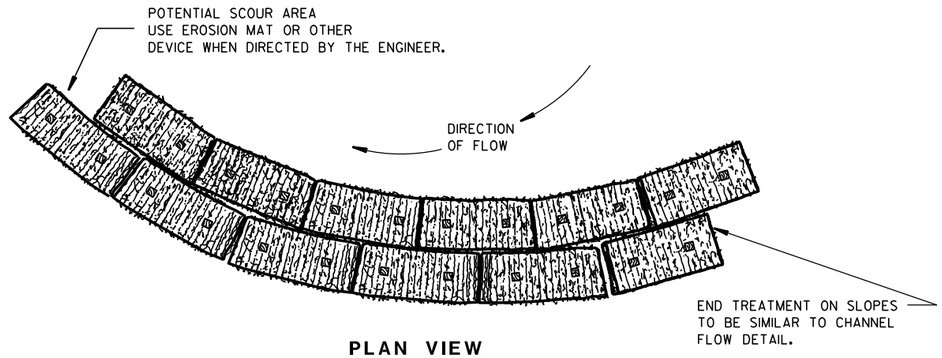
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

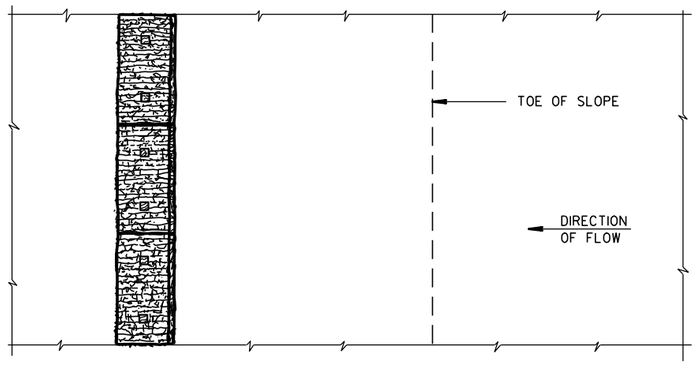
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

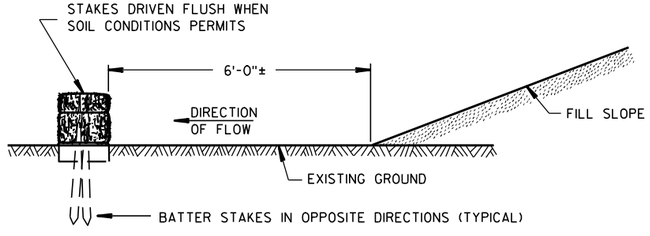


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02 DATE — /S/ Beth Cannestra — CHIEF ROADWAY DEVELOPMENT ENGINEER

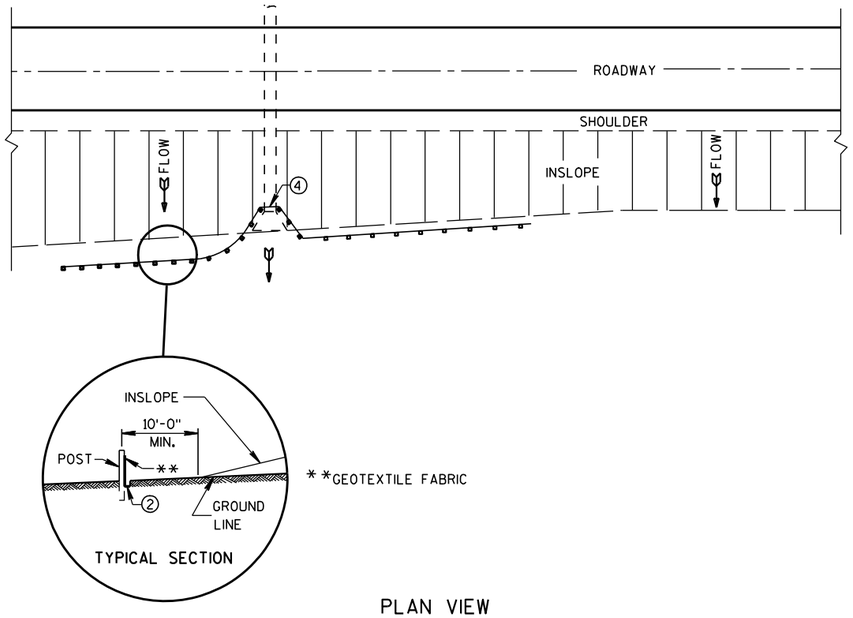
FHWA

6

S.D.D. 8 E 8-3

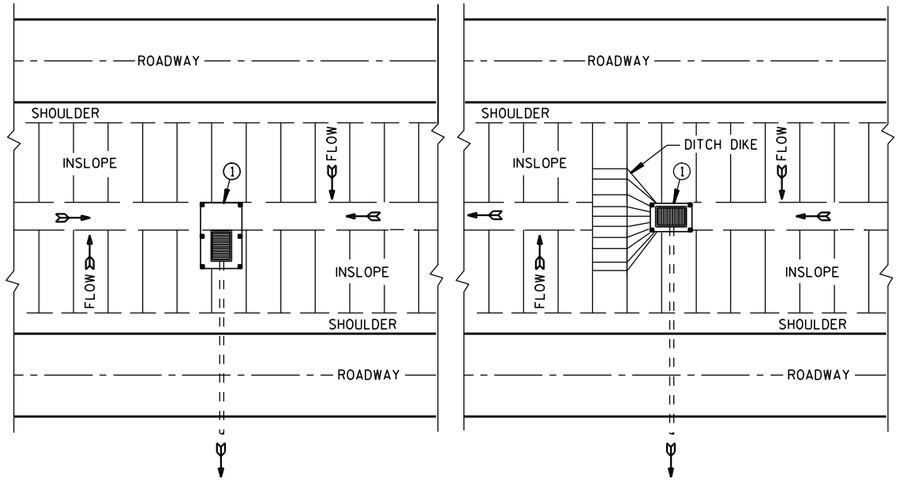
6

S.D.D. 8 E 8-3



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



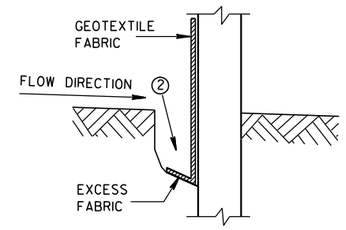
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

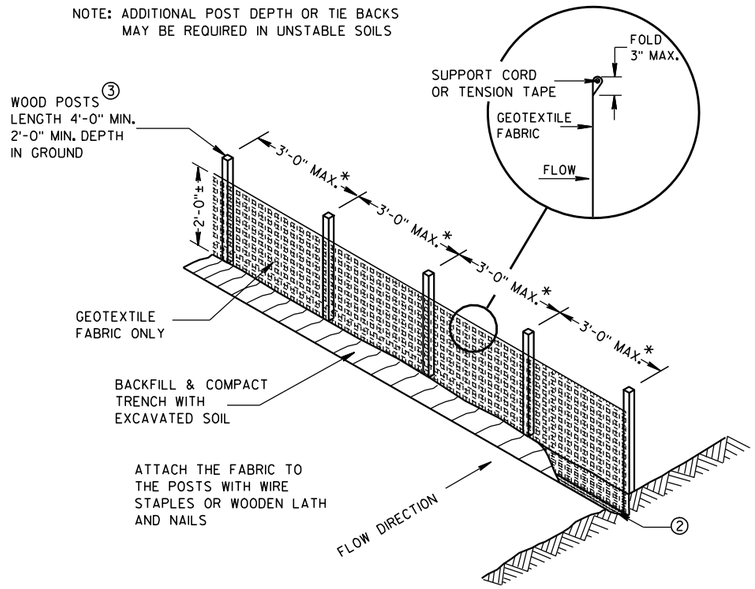
GENERAL NOTES

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

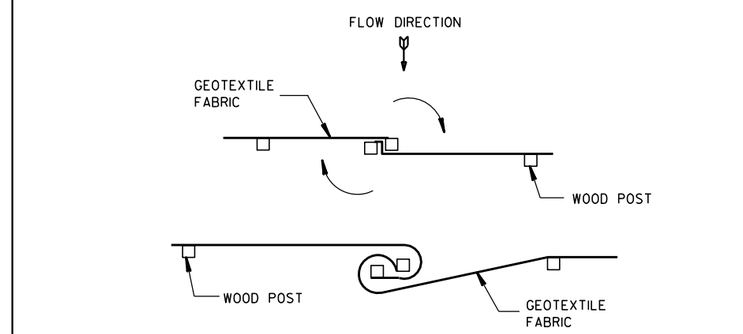
1. HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
2. FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL BE A MINIMUM SIZE OF 1⅛" X 1⅛" 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.



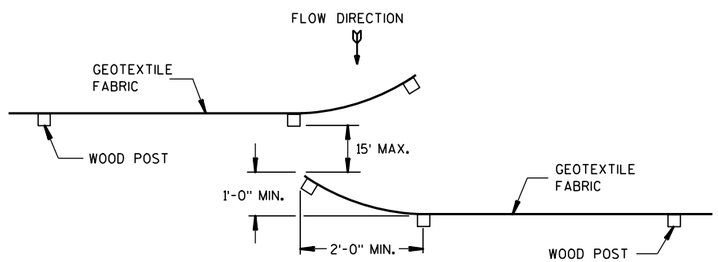
TRENCH DETAIL



SILT FENCE

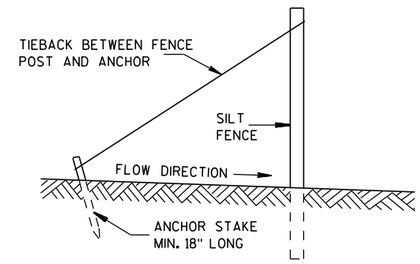


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE 5



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

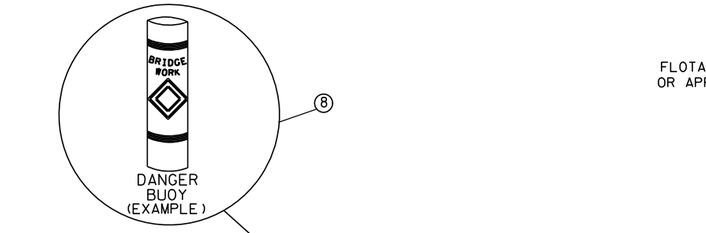
APPROVED
4-29-05 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

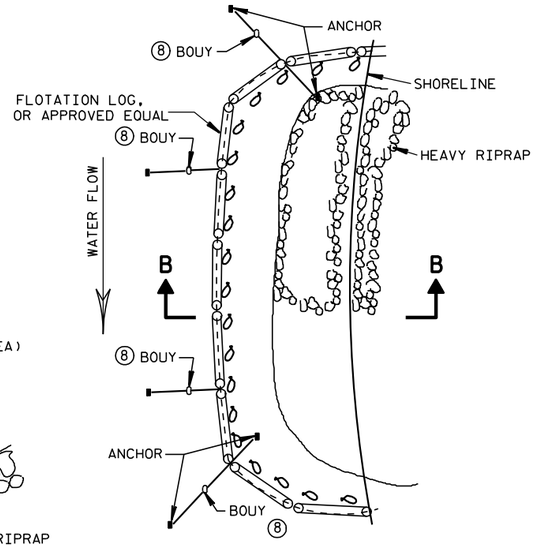
S.D.D. 8 E 9-6

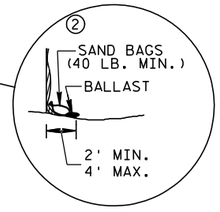
6

S.D.D. 8 E 9-6

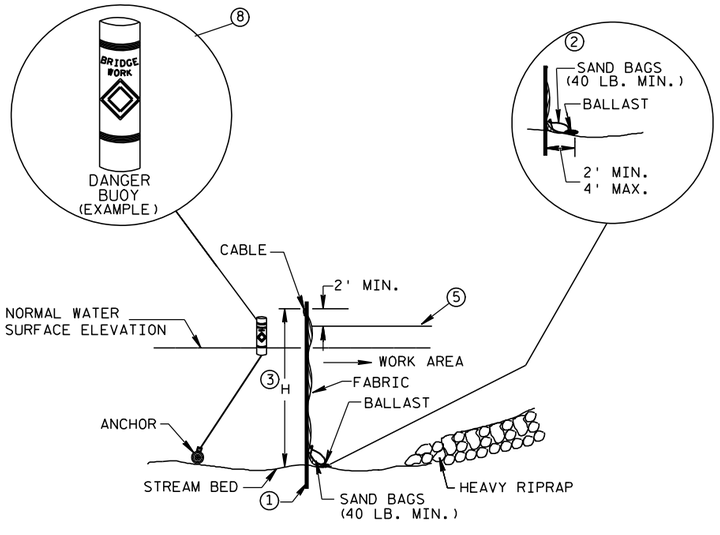


SECTION B-B

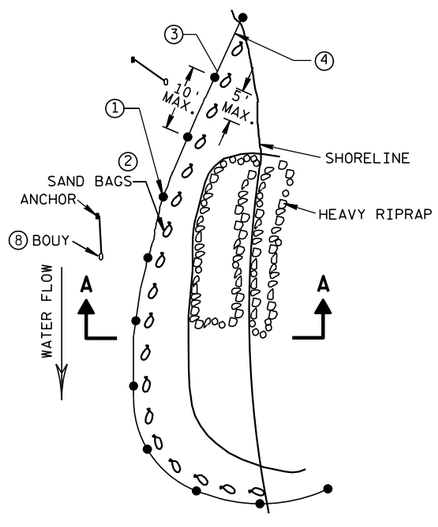




TURBIDITY BARRIER FLOAT ALTERNATIVE
CAUTION - SEE NOTE 6



SECTION A-A



PLAN VIEW

TURBIDITY BARRIER STANDARD POST INSTALLATION

TURBIDITY BARRIER PLACEMENT DETAILS

GENERAL NOTES

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

TURBIDITY BARRIER MAY BE REMOVED AT THE ENGINEERS DISCRETION, WHEN PERMANENT EROSION CONTROL MEASURES HAVE BEEN ESTABLISHED.

① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.

② SANDBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.

③ WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.

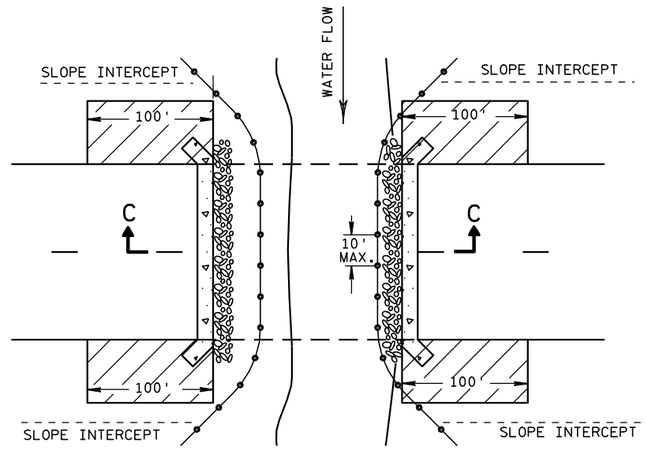
④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.

⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MIMIMUM BARRIER HEIGHT SHALL BE 2'GREATER THAN EITHER THE O2 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WICHEVER IS GREATER.

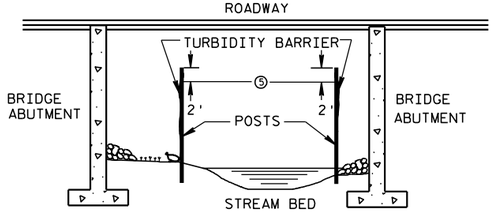
⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.

⑦ ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.

⑧ USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



PLAN VIEW



SECTION C-C

TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/04/02 — DATE
/S/ Beth Cannestra — CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 8 E 11-2

6

S.D.D. 8 E 11-2

METAL APRON ENDWALLS

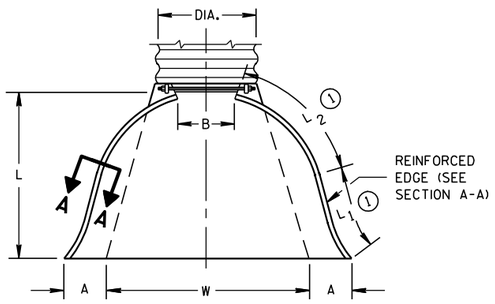
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")		
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to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

× EXCEPT CENTER PANEL SEE GENERAL NOTES

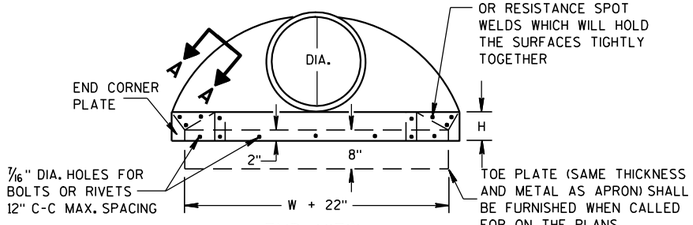
REINFORCED CONCRETE APRON ENDWALLS

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

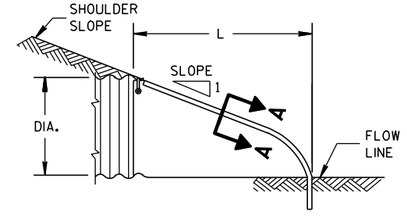
* MINIMUM
** MAXIMUM



PLAN VIEW

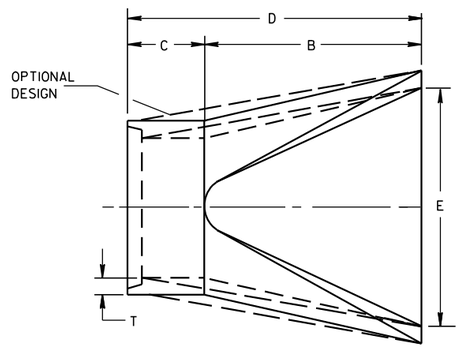


END VIEW

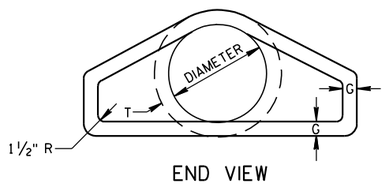


SIDE ELEVATION

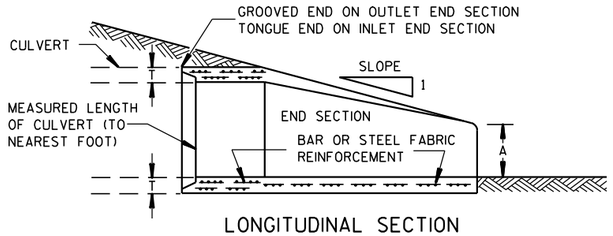
METAL ENDWALLS



PLAN

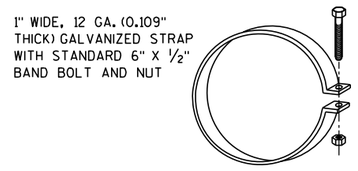


END VIEW



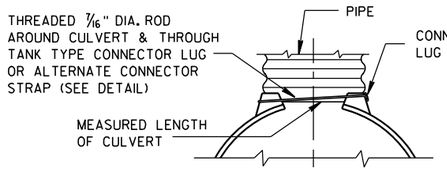
LONGITUDINAL SECTION

CONCRETE ENDWALLS

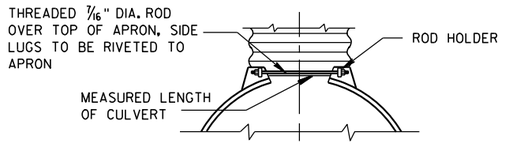


ALTERNATE FOR TYPE 1 CONNECTION

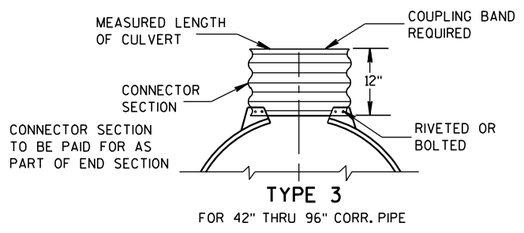
END SECTION CONNECTOR STRAP



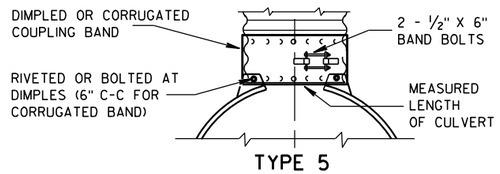
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

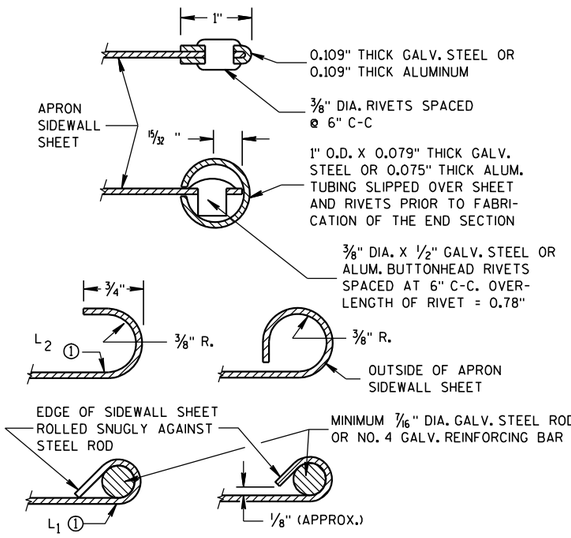
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR 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.

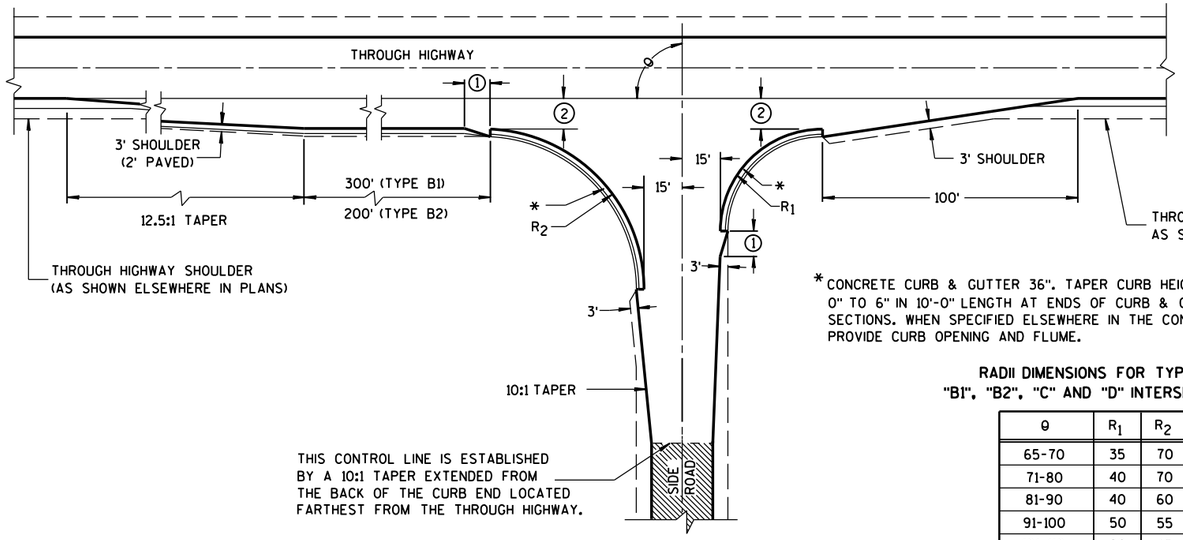
① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

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

6
S.D.D. 8 F 1-11

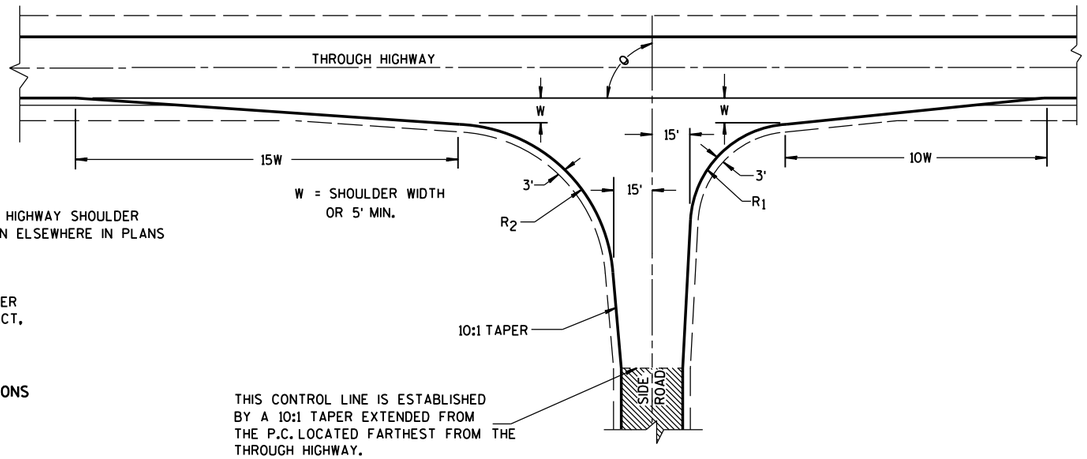


TYPE "B1" AND "B2"

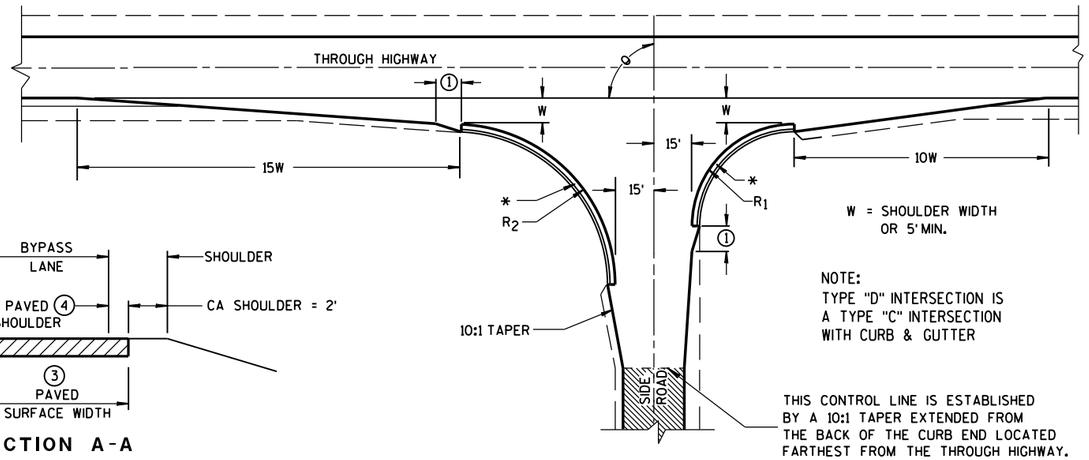
*CONCRETE CURB & GUTTER 36". TAPER CURB HEIGHT 0" TO 6" IN 10'-0" LENGTH AT ENDS OF CURB & GUTTER SECTIONS. WHEN SPECIFIED ELSEWHERE IN THE CONTRACT, PROVIDE CURB OPENING AND FLUME.

RADII DIMENSIONS FOR TYPES "B1", "B2", "C" AND "D" INTERSECTIONS

θ	R_1	R_2
65-70	35	70
71-80	40	70
81-90	40	60
91-100	50	55
101-110	60	45



TYPE "C"



TYPE "D"

GENERAL NOTES

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

SIDE ROAD SURFACING NOTE

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

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

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

EXISTING PAVED SURFACE

BYPASS LANE

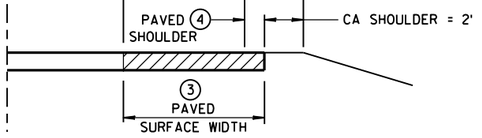
(1) 10-FT TYPICAL.

(2) 12-FT** PLUS ADDITIONAL WIDTH FOR BIKE LANE IF SHOWN ELSEWHERE IN THE PLAN.

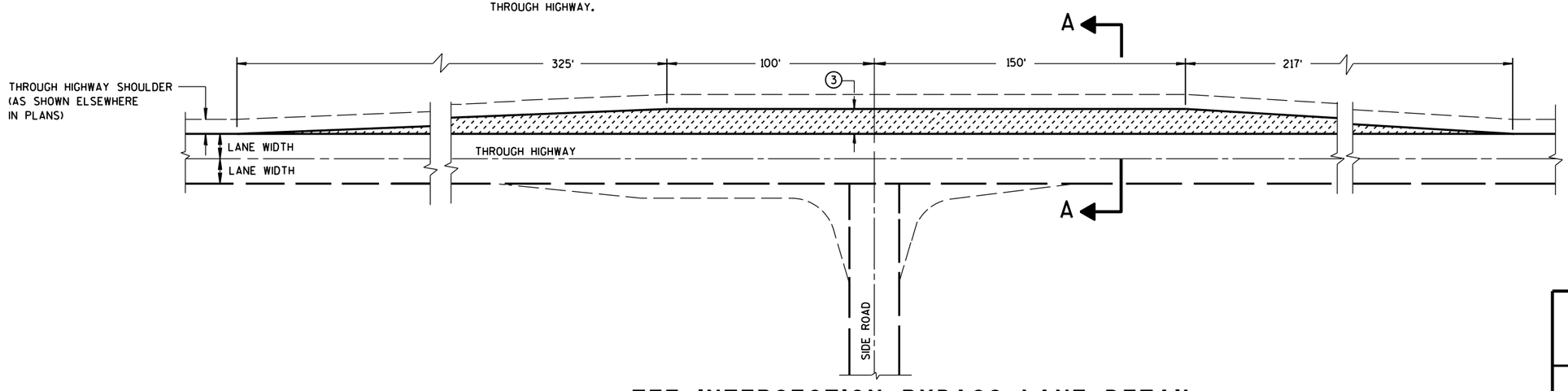
**10-FT MAY BE USED ON TYPE B2 ON RESURFACING PROJECTS IF SPECIFIED IN THE CONTRACT.

(3) BYPASS LANE PAVED SURFACE WIDTH OUTSIDE OF TRAVEL LANE
-ASPHALT = 12-FT PLUS PAVED SHOULDER WIDTH.
-PC CPNCRETE = 13-FT PLUS PAVED SHOULDER WIDTH.

(4) BYPASS LANE PAVED SHOULDER WIDTH = THE GREATER OF 1-FT OR THE PAVED SHOULDER WIDTH OF THE THROUGH HIGHWAY.



SECTION A-A
(SHOWING BYPASS LANE AND SHOULDER)



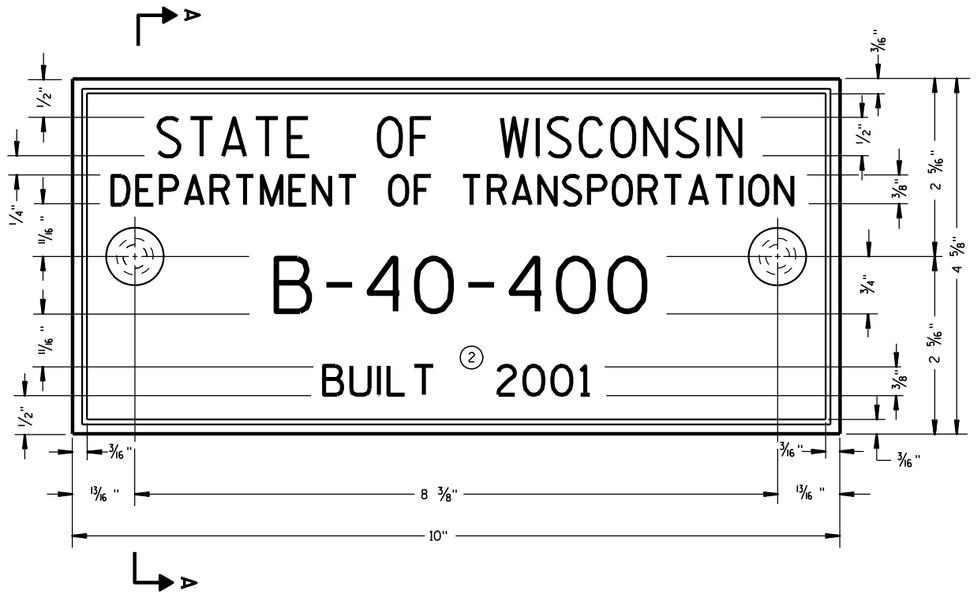
TEE INTERSECTION BYPASS LANE DETAIL

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

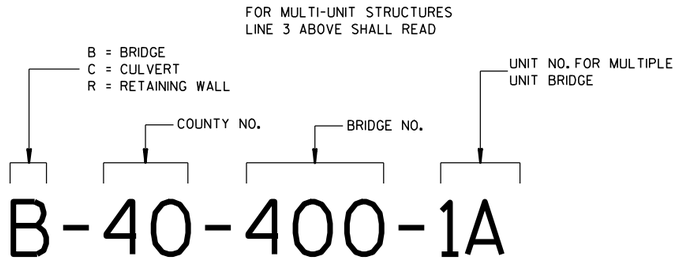
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

S.D.D. 9 A 1-13a



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



NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

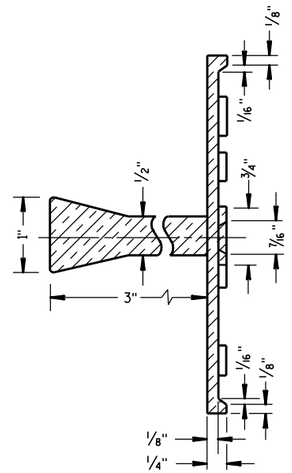
GENERAL NOTES

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

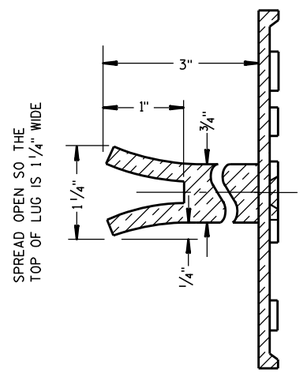
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

(1) EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

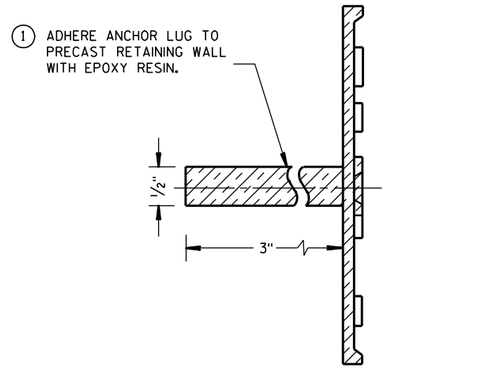
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A



ALTERNATE LUG



ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE (STRUCTURES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

3/26/10 DATE — /S/ Scot Beck — CHIEF STRUCTURAL DEVELOPMENT ENGINEER

FHWA

6

S.D.D. 12 A 3-10

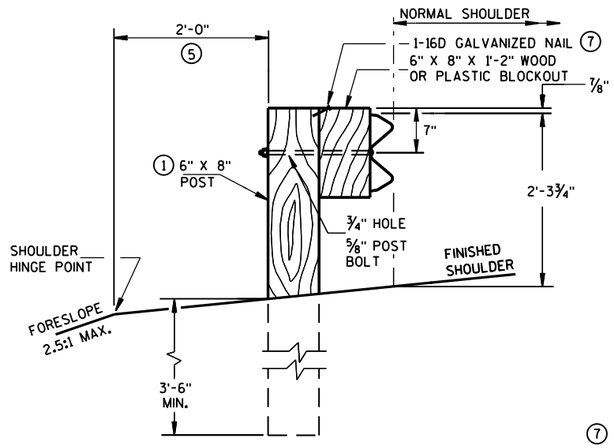
6

S.D.D. 12 A 3-10

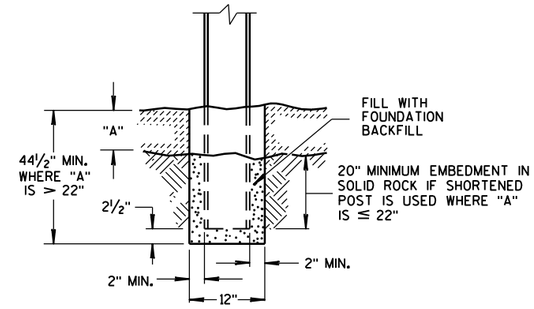
GENERAL NOTES

1. W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. APPROVED PLASTIC BLOCKOUT DESIGNS MAY VARY FROM THIS TYPICAL DETAIL WHEN USED IN CONJUNCTION WITH STEEL POSTS.
   DO NOT MIX STEEL POSTS AND WOOD POSTS IN A SINGLE INSTALLATION.
2. USE STRUCTURAL STEEL POSTS CONFORMING TO ASTM A 36. GALVANIZED POSTS ACCORDING TO AASHTO M 111. EITHER SET THE POSTS IN DRILLED HOLES OR DRIVE TO GRADE. REMOVE MUSHROOMING CAUSED BY DRIVING AND REPAIR DAMAGED SPELTER COATING ON GALVANIZED POSTS.
3. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
4. USE EITHER WOOD OR APPROVED PLASTIC BLOCKOUTS ON WOOD POSTS.
5. IF THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING, W BEAM (LHW).
6. IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE ENGINEER MAY APPROVE USING A 12 INCH DIAMETER POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE APPROXIMATELY 2½ INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN YHE HOLE. BACKFILL WITH MATERIAL EXCAVATED FROM THE HOLE AND COMPACT ADEQUATEY.
7. 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.

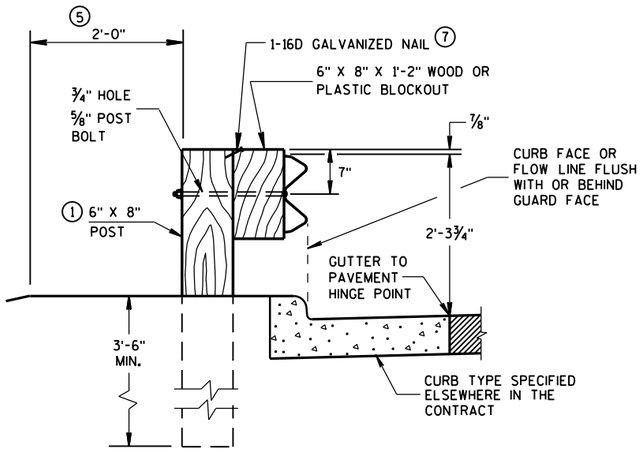
INSTALL BEAM GUARD SECTIONS AND ALL NECESSARY HARDWARE ACCORDING TO THE APPLICABLE PLAN AND CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS.
ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



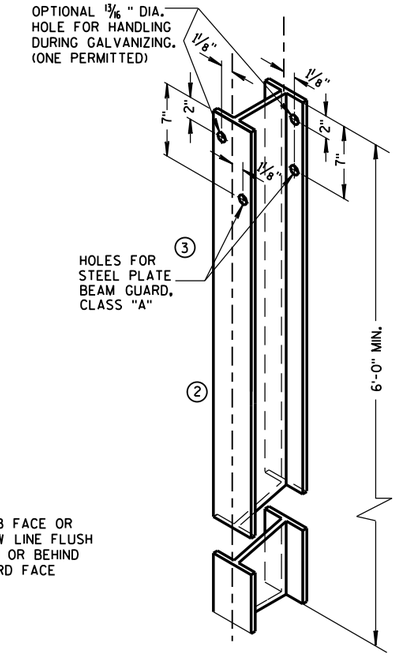
END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



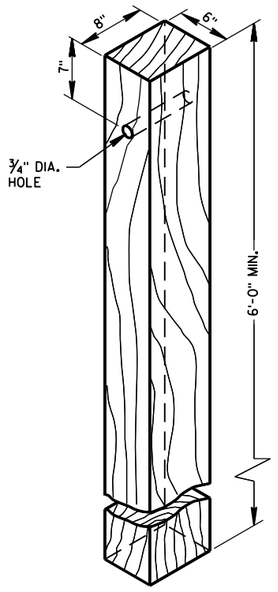
END VIEW
SETTING STEEL OR WOOD POST IN ROCK ⑥



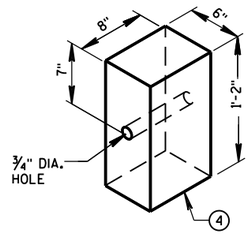
END VIEW
LOCATED ALONG A CURBED ROADWAY



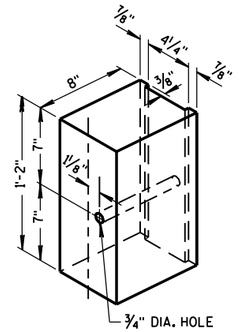
STEEL POST &
HOLE PUNCHING DETAIL
(W6 X 9) ①
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED



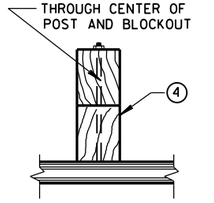
WOOD POST
(6"X8") NOMINAL



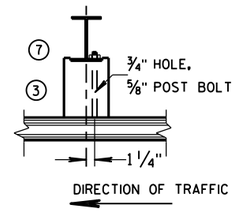
WOOD OR PLASTIC
BLOCKOUT FOR
WOOD POSTS



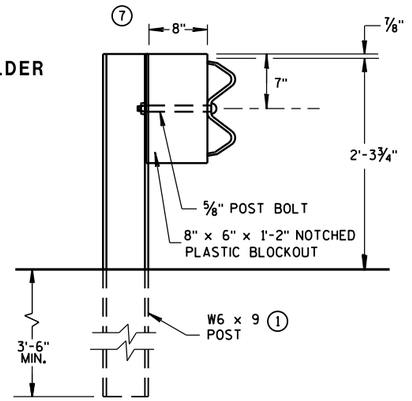
TYPICAL NOTCHED ①
PLASTIC BLOCKOUT
FOR STEEL POSTS



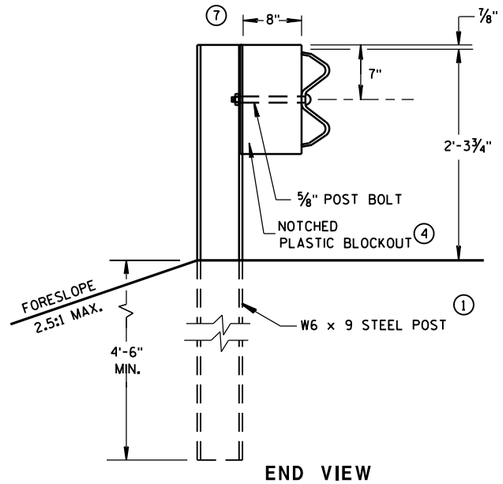
PLAN VIEW
WOOD POST, BLOCKOUT & BEAM



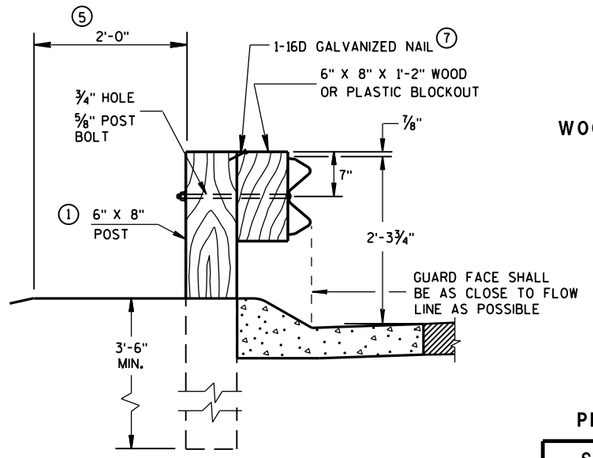
PLAN VIEW
STEEL POST, NOTCHED
PLASTIC BLOCKOUT & BEAM



END VIEW
STEEL POST & NOTCHED
PLASTIC BLOCKOUT ALTERNATIVE
STANDARD INSTALLATION



END VIEW
LONGER POST AT HALF
POST SPACING W BEAM
(LHW)



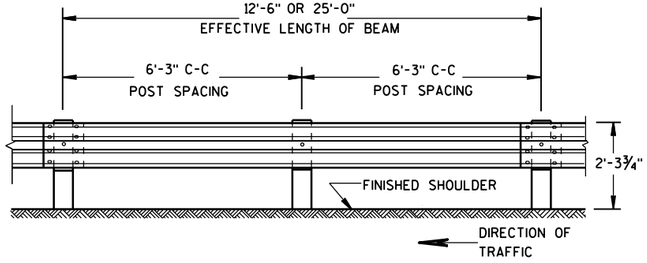
END VIEW
LOCATED ALONG A
MOUNTABLE CURBED ROADWAY

TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD

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

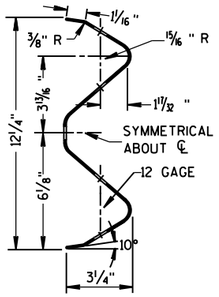
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6
S.D.D. 14 B 15-10a

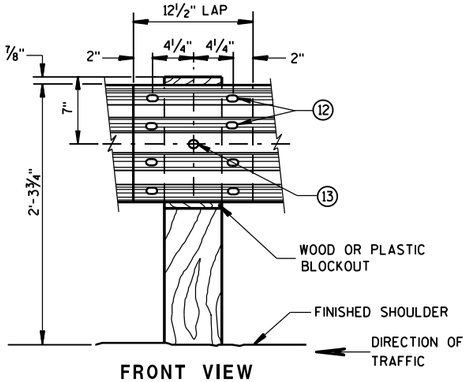


FRONT VIEW

POST SPACING STANDARD INSTALLATION



SECTION THRU W BEAM



FRONT VIEW

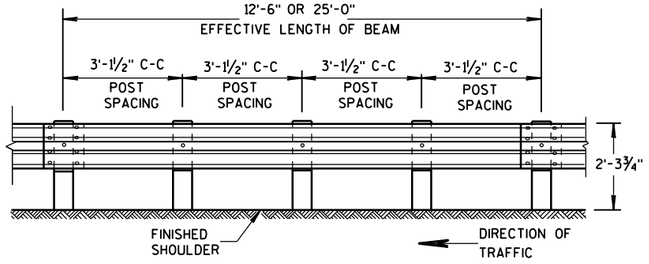
BEAM SPLICE AT WOOD POST AND POST MOUNTING DETAIL

GENERAL NOTES

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

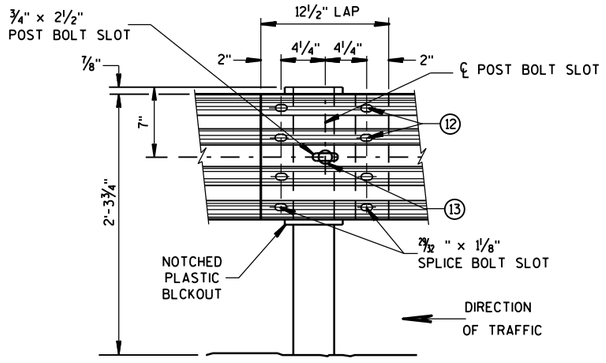
(12) 8 -5/8" ϕ X 2" BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.

(13) 5/8" DIA. BUTTON HEAD BOLT AND RECESS NUT WITH 5/8" DIA. F844 FLAT WASHER UNDER NUT.



FRONT VIEW

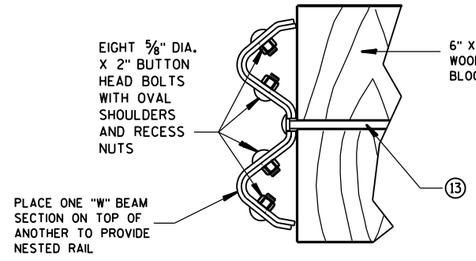
POST SPACING FOR LONGER POST AT HALF POST SPACING W BEAM (LHW)



FRONT VIEW

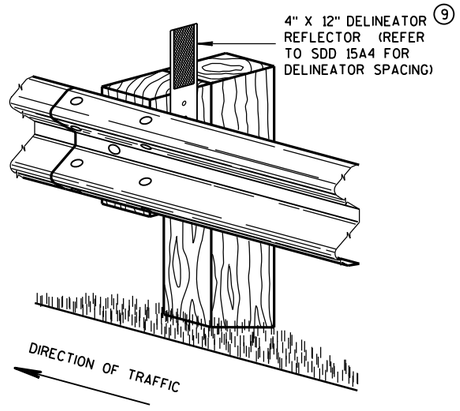
BEAM SPLICE AT STEEL POST

TYPICAL SPLICING DETAILS OF STEEL PLATE BEAM GUARD



NESTED W BEAM (NW)

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

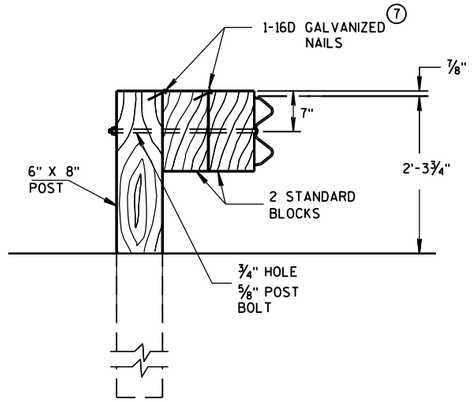


ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

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

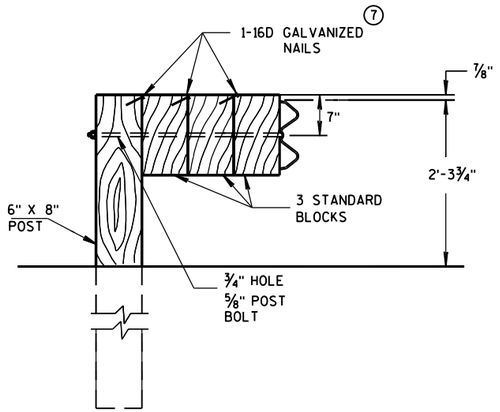
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6
S.D.D. 14 B 15-10b



DETAIL FOR DOUBLE BLOCKS

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

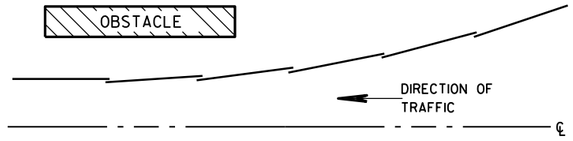


DETAIL FOR TRIPLE BLOCKS

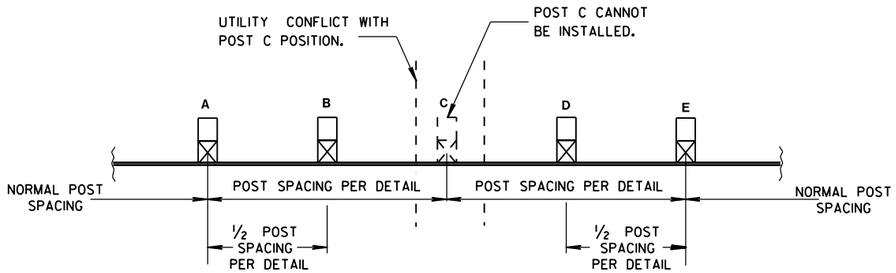
TRIPLE BLOCK DETAIL IS LIMITED TO ONE LOCATION WITHIN A BEAM GUARD RUN.

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

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



PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 — DATE
/S/ Rodney Taylor
ROADWAY STANDARDS D UNIT SUPERVI:NT
FHWA

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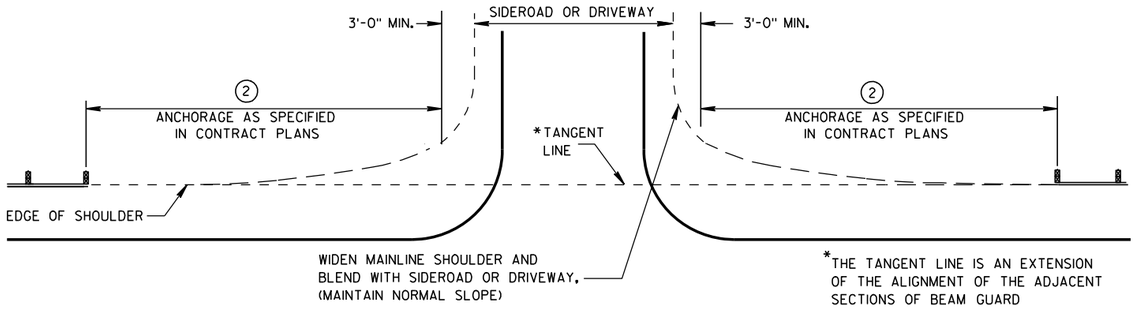
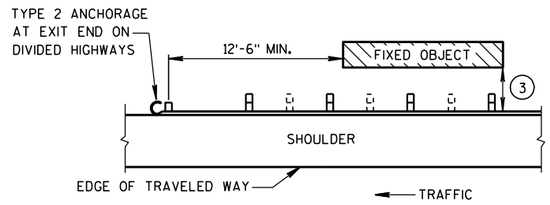
S.D.D. 14 B 15-10c



BEAM GUARD AT SIDEROADS OR DRIVEWAYS



BEAM GUARD AT OBSTACLES EXIT END - ONE WAY TRAFFIC

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE PERTINENT STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

W6 X 9 OR W6 X 8.5 STEEL POSTS WITH NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

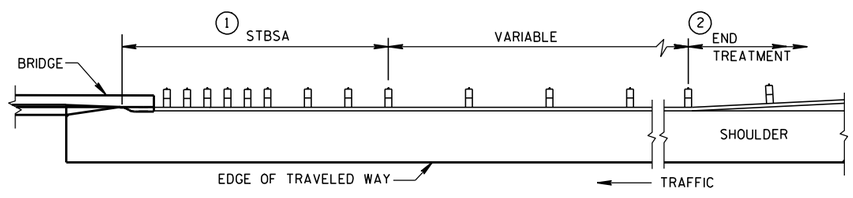
THE LOCATIONS AND LENGTHS OF BEAM GUARD ARE SHOWN ELSEWHERE IN THE PLAN.

(1) STEEL THRIE BEAM STRUCTURAL APPROACH (STBSA) - SEE CURRENT SDD 14B20.

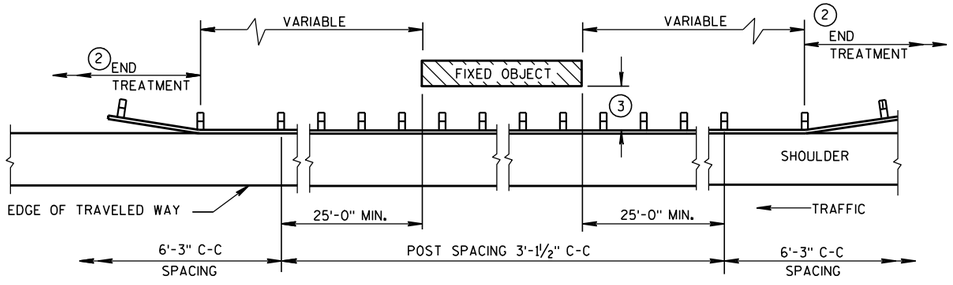
(2) USE AN APPROVED END TREATMENT FOR THE TRAFFIC APPROACH SIDE OF BRIDGE/OBSTACLES. USE TYPE 2 ANCHORAGE ONLY AT THE DOWNSTREAM ENDS OF BEAM GUARD LOCATED ALONG ROADWAYS WITH ONE WAY TRAFFIC.

(3)

MINIMUM LATERAL DISTANCE FROM FACE OF BEAM GUARD TO FIXED OBJECT	POST SPACING
3'-6"	3' - 1½"
4'-6"	6' - 3"

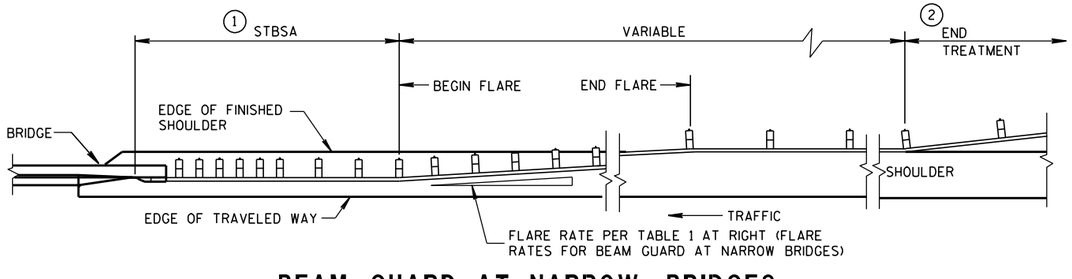


BEAM GUARD AT FULL WIDTH BRIDGES



BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC

(RAIL TO OBSTACLE CLEARANCE 3'-6" TO 4'-6")



BEAM GUARD AT NARROW BRIDGES
(FLARED TO SHOULDER EDGE, THEN PARALLEL TO ROADWAY)

TABLE 1
FLARE RATES FOR BEAM GUARD AT NARROW BRIDGES

POSTED SPEED (MPH)	FLARE RATE
25	13:1
30	15:1
35	16:1
40	18:1
45	21:1
50	24:1
55	26:1
65	30:1

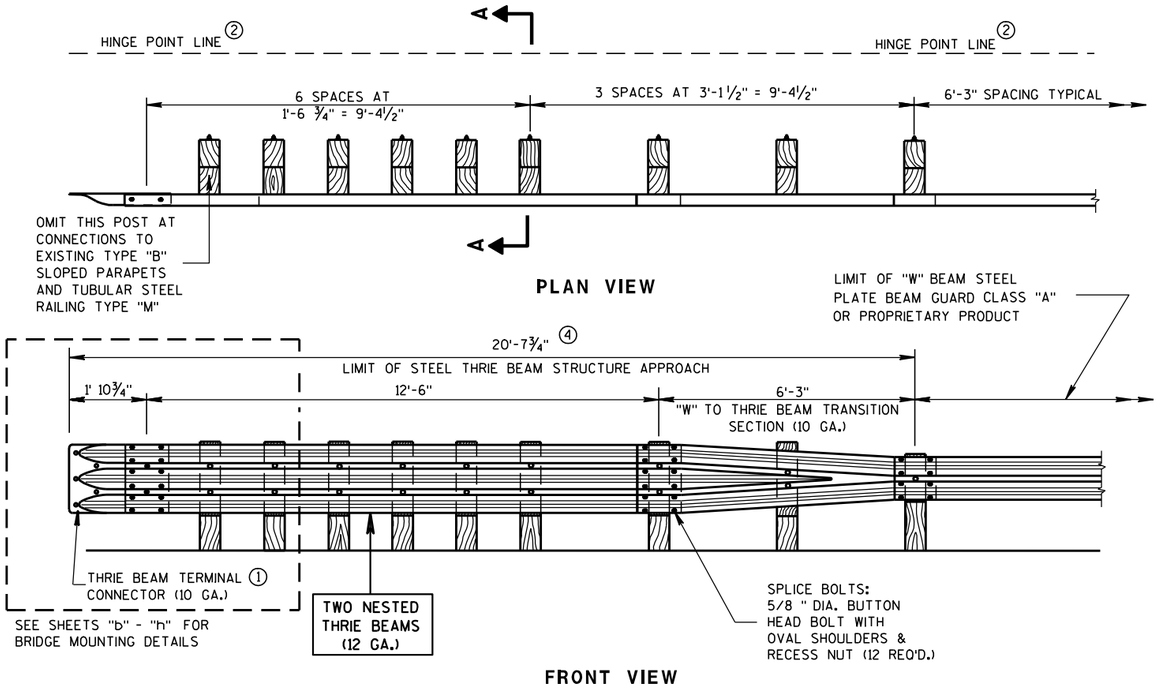
STEEL PLATE BEAM GUARD CLASS "A" AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8-21-07 DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 14 B 18-6a



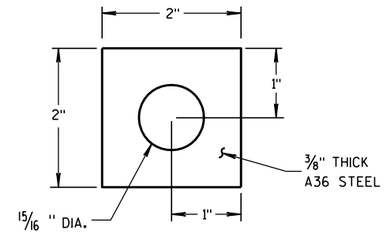


PLATE WASHER DETAIL

GENERAL NOTES

BOLT THE THRIE BEAM TO ALL POSTS AND BLOCKOUTS. DRILL OR PUNCH BOLT HOLES IN THE BEAM IF THE POST SPACING IS LESS THAN 6'-3".

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

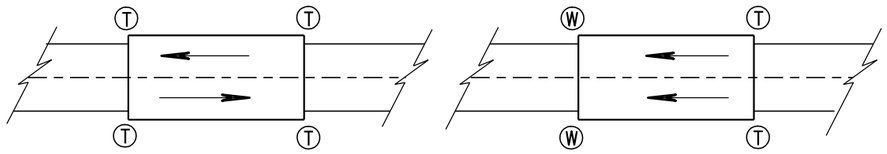
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2" , AND 12" DIAMETER AROUND POST. SEE 14B15 FOR MORE DETAILS.

① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

② MINIMUM EMBEDMENT SHALL BE 4'-0". WHERE EXISTING CONDITIONS DO NOT PERMIT THE APPROPRIATE EARTHWORK SHOWN ON THE PLAN TYPICAL SECTIONS OR DETAILS, THE ENGINEER MAY ALLOW THE REDUCTION OR ELIMINATION OF THE 2 FOOT DISTANCE TO THE HINGE POINT. OTHERWISE BUILD AS THE PLAN SHOWS OR AS THE ENGINEER DIRECTS. IF THE 2 FOOT DISTANCE TO THE HINGE POINT IS REDUCED OR ELIMINATED, INCREASE THE POST EMBEDMENT DEPTH TO 4'-6" OR MORE.

③ POST BOLTS ARE 5/8" DIAMETER ASTM A307 BUTTON HEAD BOLT. A POST BOLT REQUIRES A 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX AND A 5/8" DIAMETER F844 FLAT WASHER. LENGTH OF POST BOLT MAY VARY.

④ ALL WOOD POSTS MUST BE 6" X 8" AND AT LEAST 7'-0" LONG.



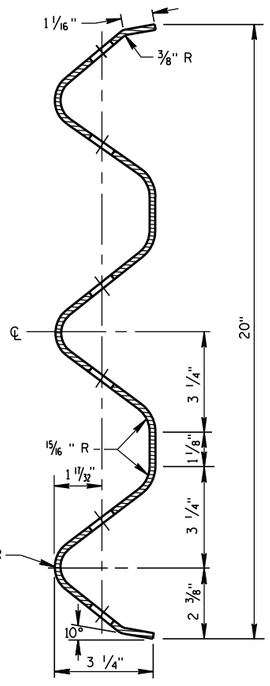
TWO WAY TRAFFIC

ONE WAY TRAFFIC

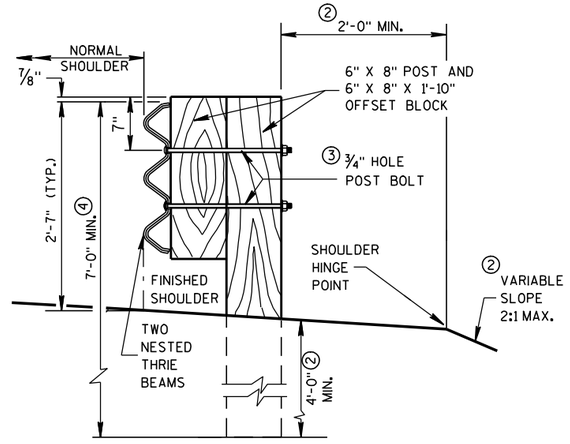
(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

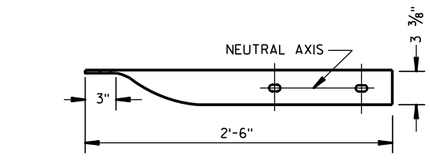
TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

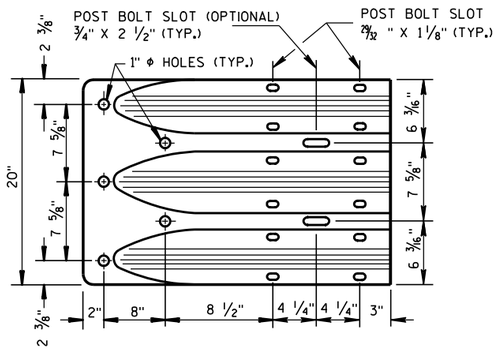


SECTION THRU THRIE BEAM RAIL ELEMENT

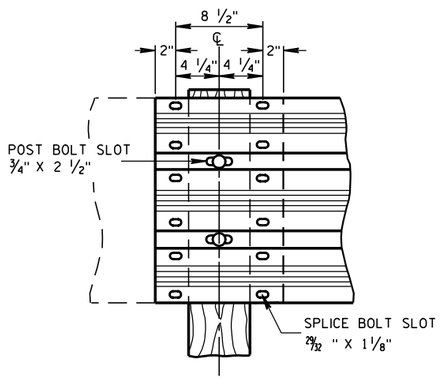


SECTION A-A





THRIE BEAM TERMINAL CONNECTOR



THRIE BEAM SPLICE

STEEL THRIE BEAM STRUCTURE APPROACH

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012 — DATE

/S/ Jerry H. Zogg — ROADWAY STANDARDS 127 ENGINEER

FHWA

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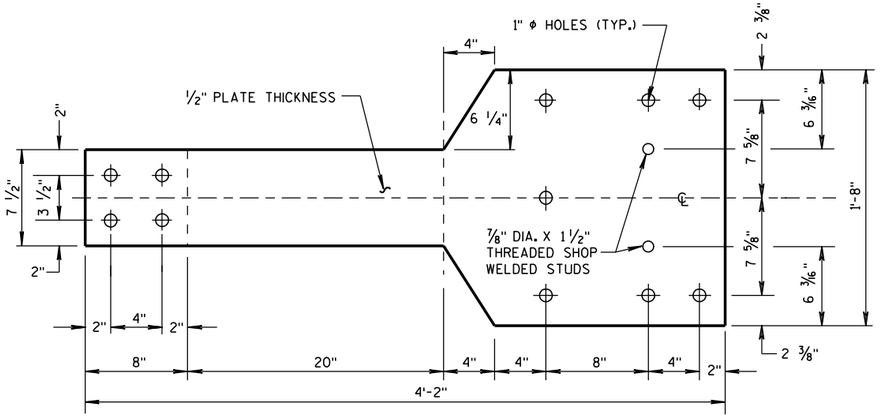
S.D.D. 14 B 20-11a

6

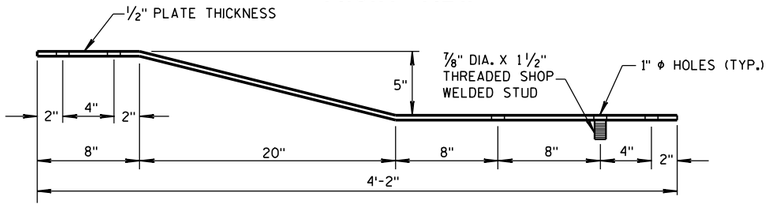
S.D.D. 14 B 20-11a

GENERAL NOTES

① VARY THIS DIMENSION DEPENDING ON ABUTMENT TYPE, WINGWALL DETAILS, AND ANGLE OF SKEW. PLACE THE FIRST WOOD POST OFF THE BRIDGE SHALL BE AS CLOSE AS FEASIBLE TO THE STEEL END POST.

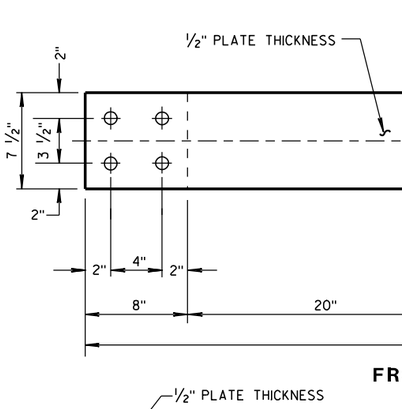


FRONT VIEW



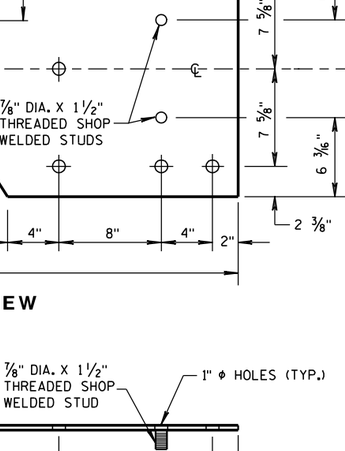
PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

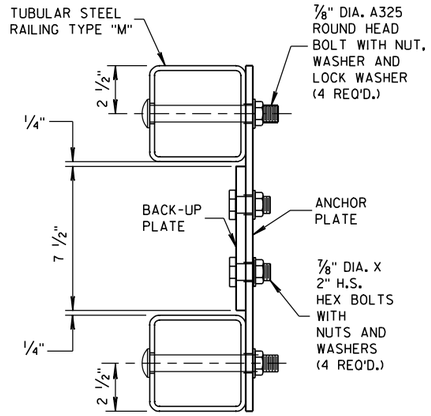


FRONT VIEW

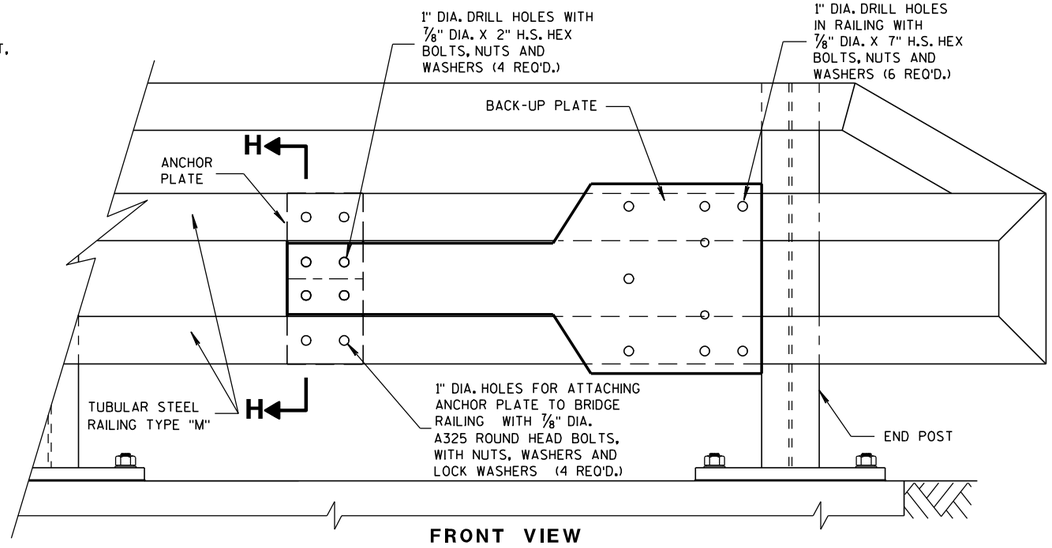
ANCHOR PLATE DETAIL, TYPE "M"



SECTION I-I

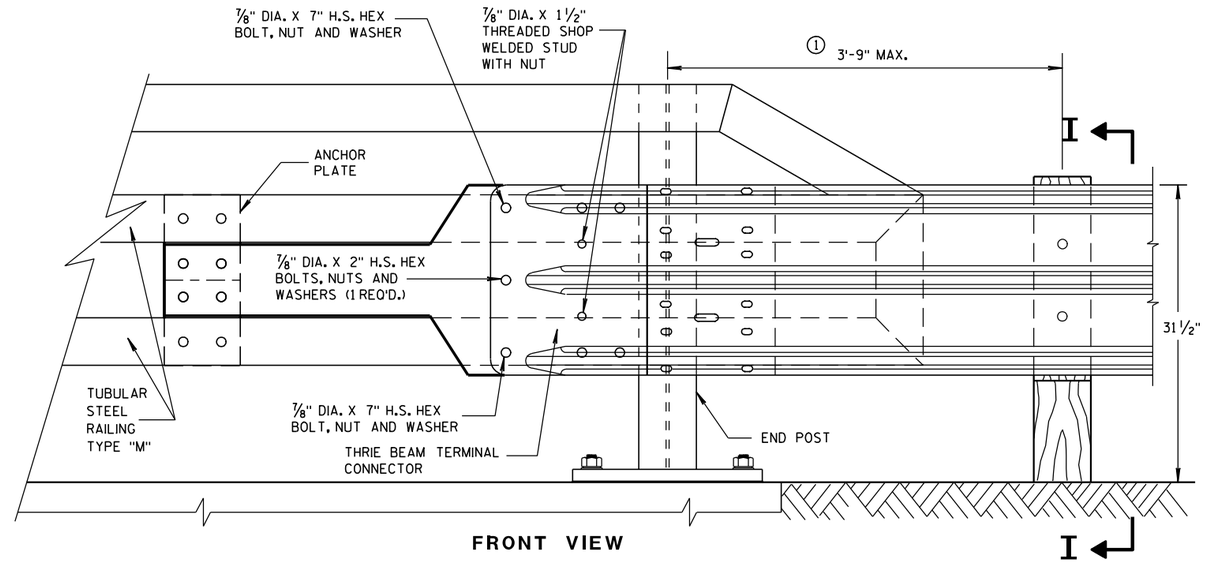


SECTION H-H

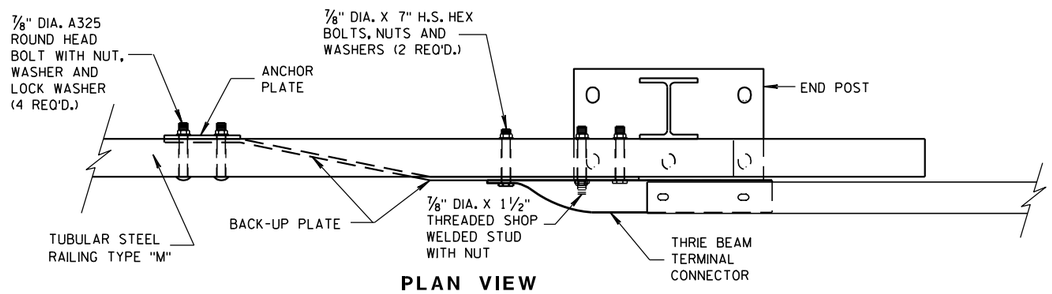


FRONT VIEW

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



FRONT VIEW



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPE "M"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/31/2012 — DATE
/S/ Jerry H. [illegible] — ROADWAY STANDARDS ENGINEER

FHWA

6

S.D.D. 14 B 20-11f

6

S.D.D. 14 B 20-11f

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.

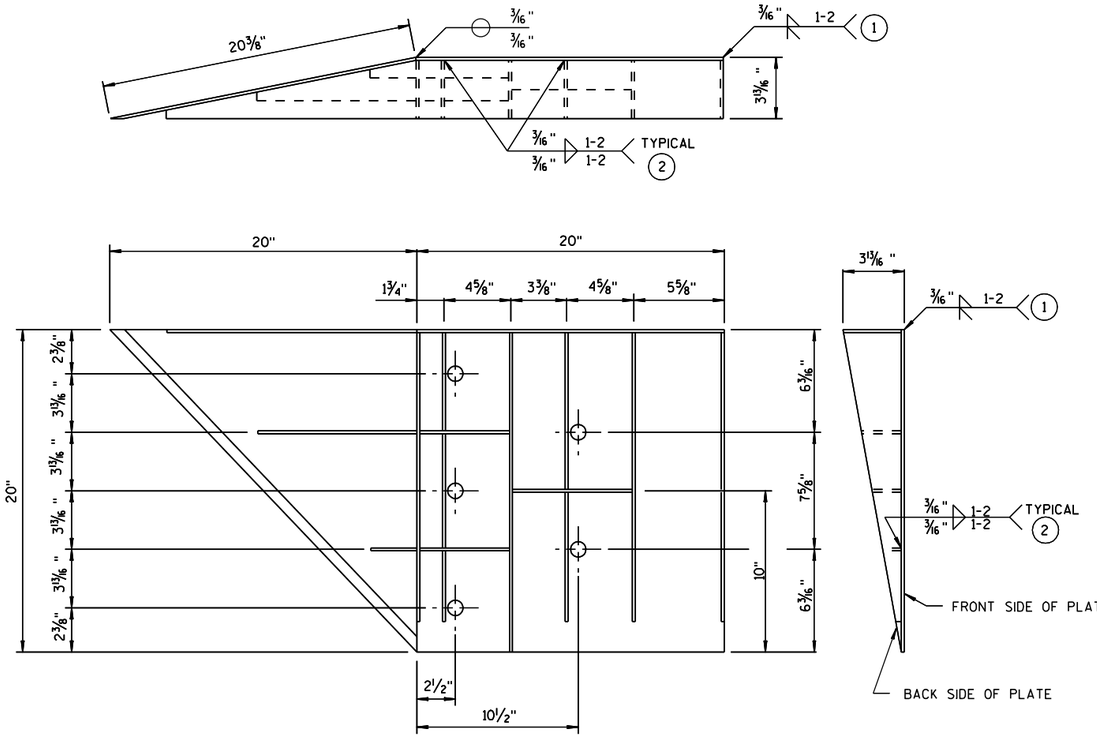
FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.

ALL HOLE DIAMETERS SHALL BE 1".

FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.

(1) 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.

(2) STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
3/16" FILLET WELD BY 1" LONG SPACED AT 2".



WELDING INSTRUCTION

(VIEWED FROM BACK SIDE OF PLATE)

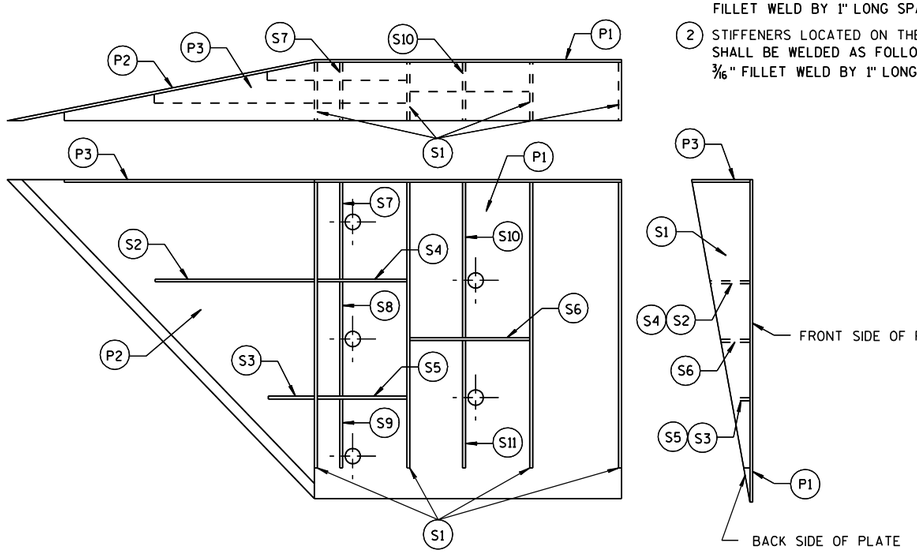


PLATE AND STIFFENER IDENTIFICATION

(VIEWED FROM BACK SIDE OF PLATE)

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)

PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 9/16"	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 7/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 1/8" 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 9/16" 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 13/16"	1/4"

STEEL THRIE BEAM STRUCTURE APPROACH

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTOR PLATE DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/31/2012 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA

6
S.D.D. 14 B 20-11g

BILL OF MATERIALS

NOTE NO.	DESCRIPTION
①	WOOD BREAKAWAY TERMINAL POST: 5½" X 7½" 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 ½" 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'-6½"
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.

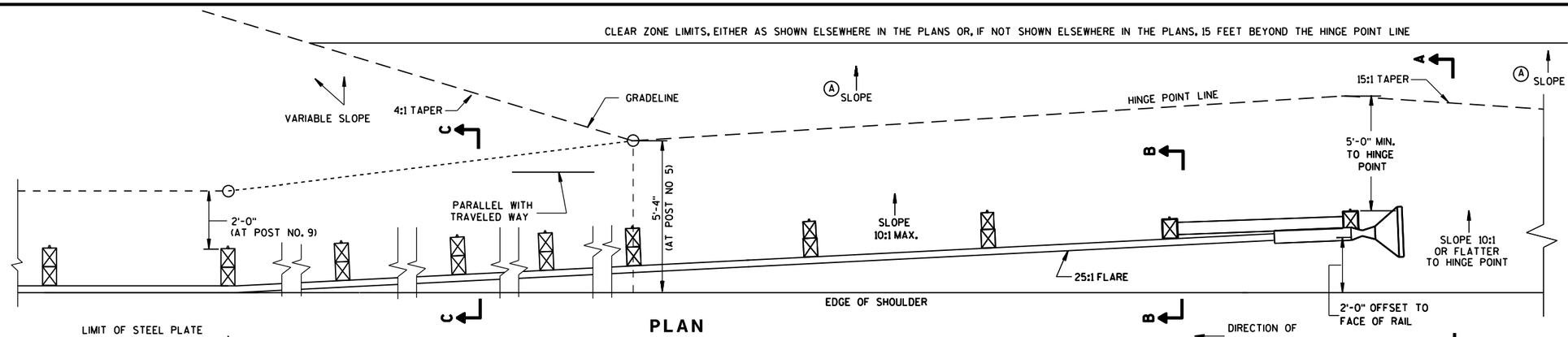
(E) THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST 3 THROUGH 8 SHALL BE ¾" ABOVE THE FINISHED GROUND LINE.

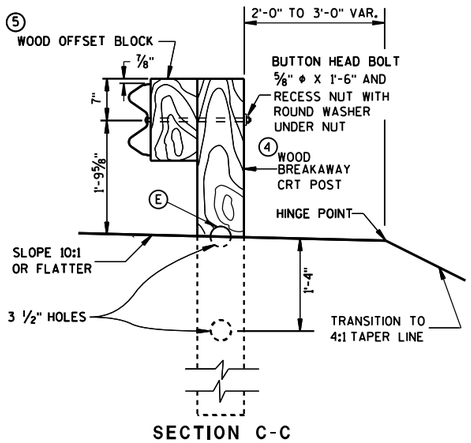
(F) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS. ONE SCREW PER CORNER.

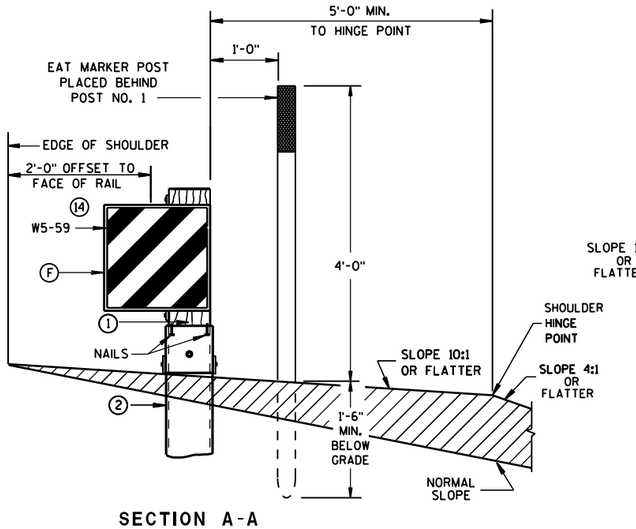
STEEL POSTS SHALL NOT BE ALLOWED FOR USE WITH ENERGY ABSORBING TERMINALS.

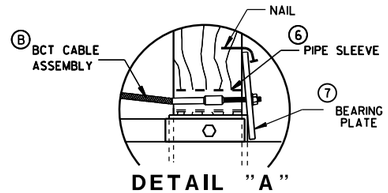
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

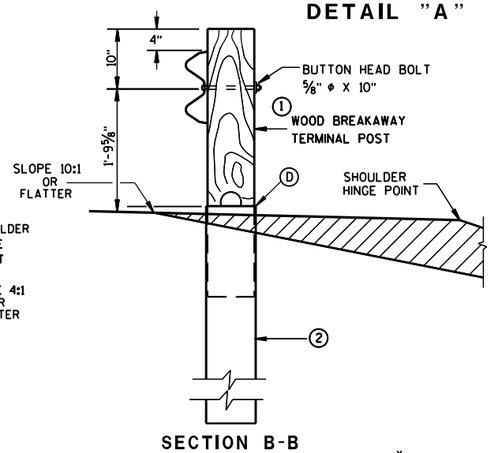
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

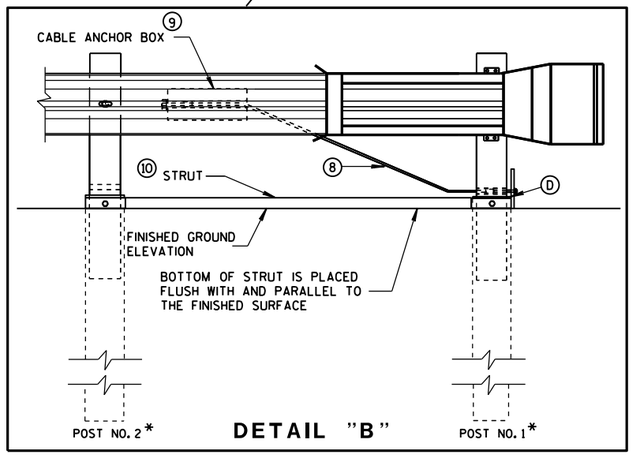










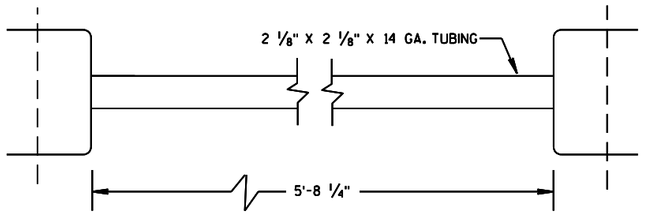


STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL

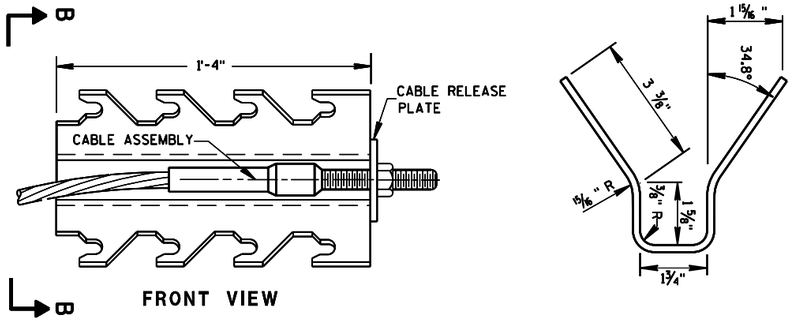
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

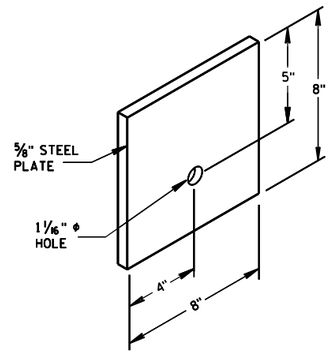
S.D.D. 14 B 24-9a



⑩ STRUT DETAIL



⑨ CABLE ANCHOR BOX



⑦ STEEL BEARING PLATE

6

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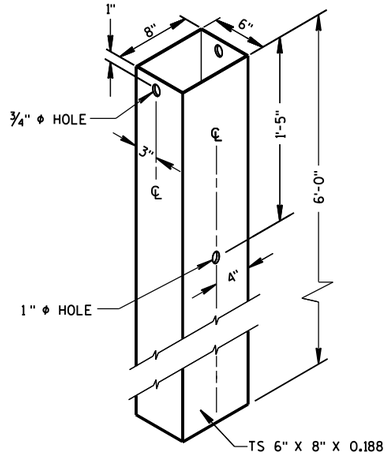
S.D.D. 14 B 24-9b

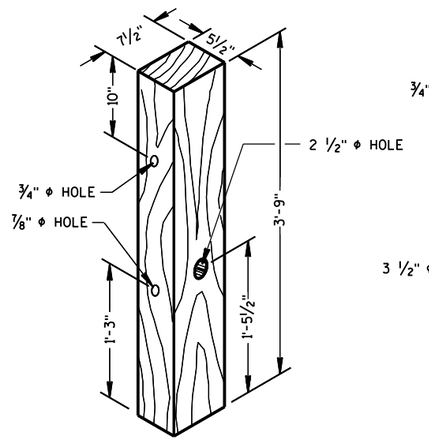
S.D.D. 14 B 24-9b

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

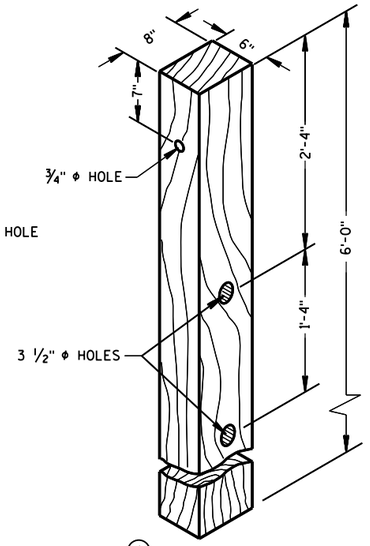
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI



② 72" STEEL TUBE
(POSTS NO. 1-4



① TERMINAL POST

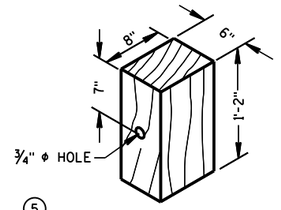


④ CRT POST
(POSTS NO'S 5-8)

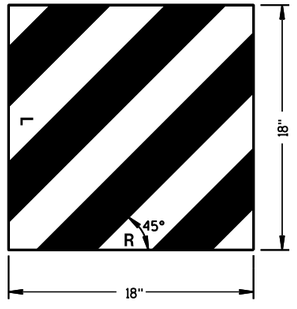
WOOD BREAKAWAY POSTS

GENERAL NOTES

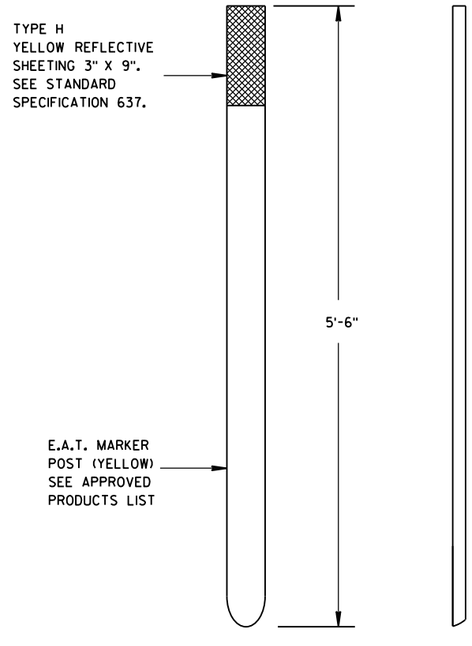
WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 12 INCH DIA. POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL SHALL BE PLACED IN THE BOTTOM OF THE HOLE APPROXIMATELY 2 ½" INCHES DEEP TO PROVIDE DRAINAGE. THE SOIL TUBES SHALL BE FIELD CUT TO LENGTH, 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



E.A.T. MARKER POST

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017
DATE
FHWA

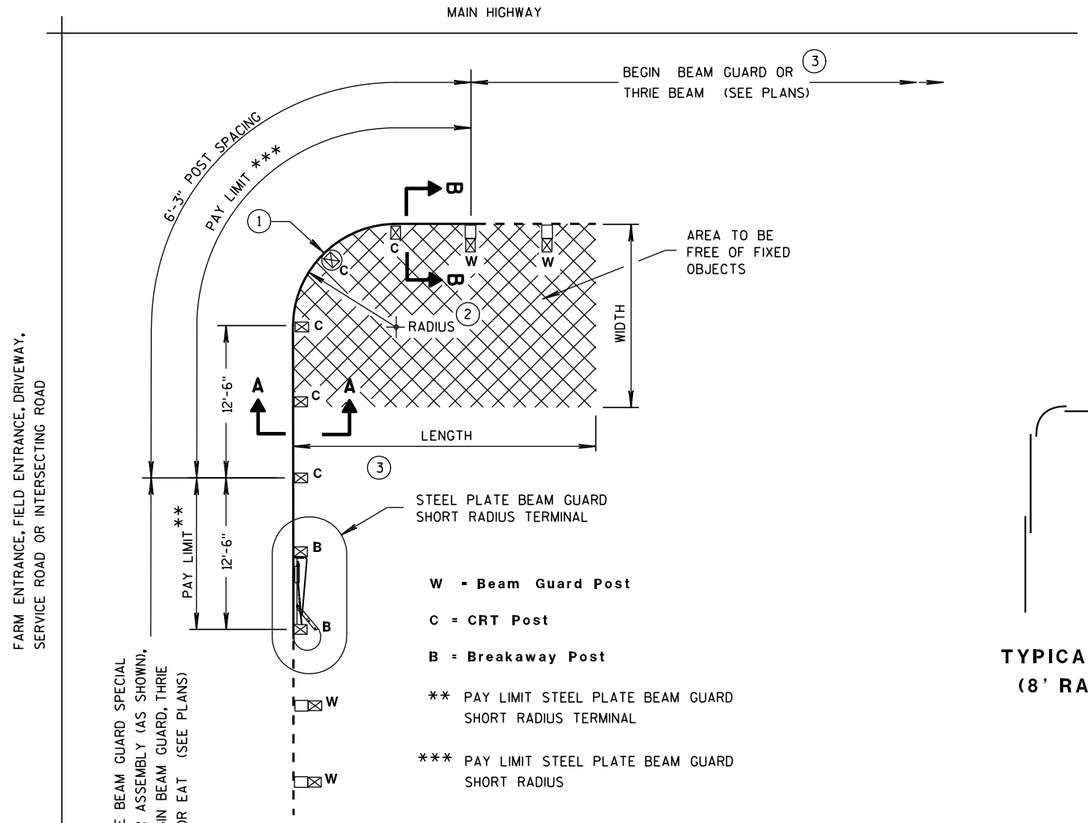
/S/ Rodney Taylor
ROADWAY STANDARDS 32 ENT
UNIT SUPERV...

6

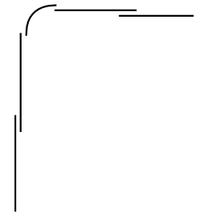
S.D.D. 14 B 24-9c

6

S.D.D. 14 B 24-9c



TYPICAL LAYOUT
(8' RADIUS SHOWN)



TYPICAL LAP SPLICES
(8' RADIUS SHOWN)

GENERAL NOTES

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

SHOP BEND CURVED RAIL SECTIONS.

SEE STANDARD DETAIL DRAWING 14 B 15 FOR OTHER DETAIL.

(1) ON THE 8 FOOT RADIUS INSTALLATION, DO NOT INSTALL BUTTON HEAD BOLT AT CENTER CRT POST.

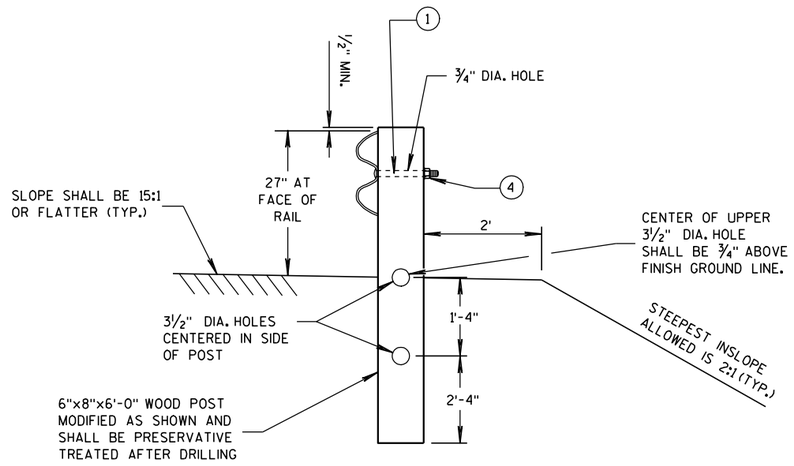
(2) RADIUS FROM 8' - 36'. SEE PLAN.

(3) HEIGHT TRANSITION MAY BE REQUIRED. SEE PLAN OR PROJECT ENGINEER.

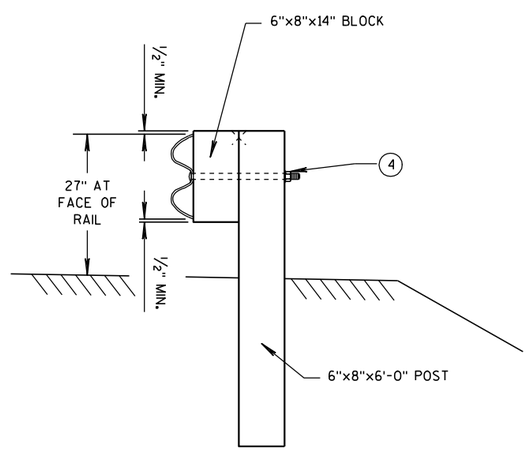
(4) 5/8" ø X 1'-6" BUTTON HEAD BOLT AND RECESS NUT WITH ROUND WASHER UNDER NUT.

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

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



SECTION A-A
(CRT POST)



SECTION B-B
(BEAM GUARD POST)

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

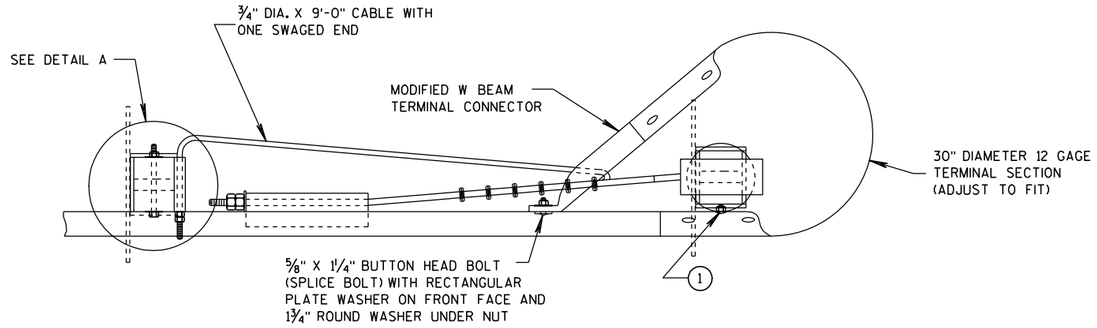
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

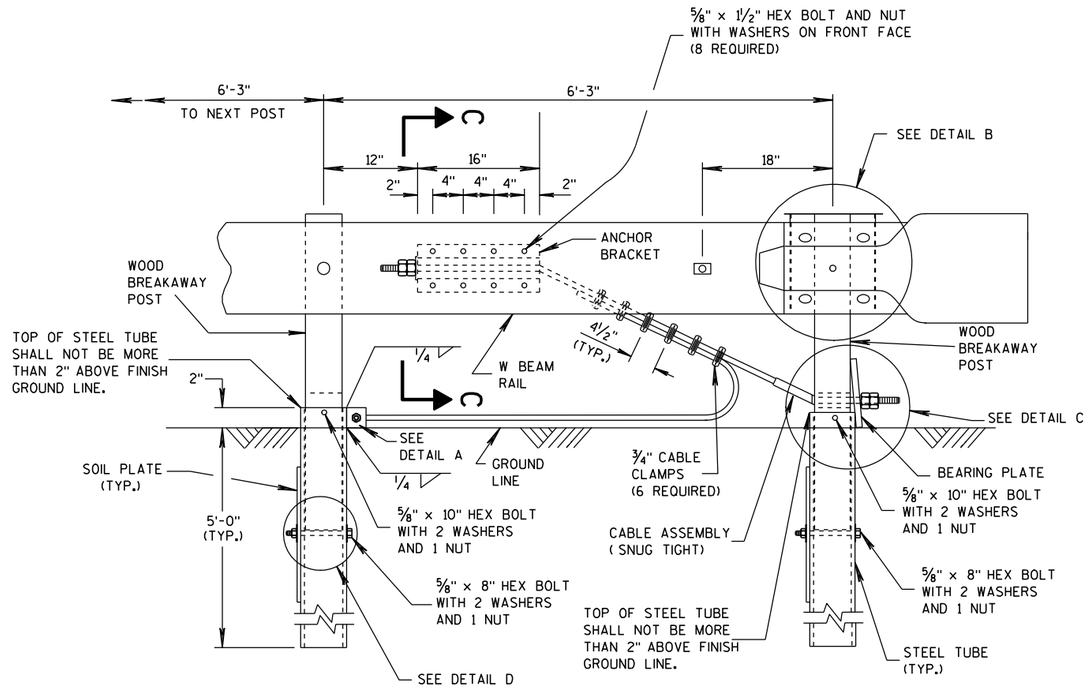
S.D.D. 14 B 27-1a

6

S.D.D. 14 B 27-1a



PLAN VIEW



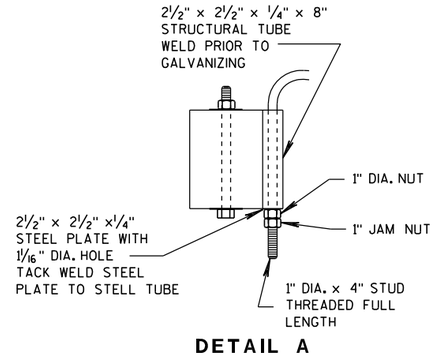
ELEVATION VIEW

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

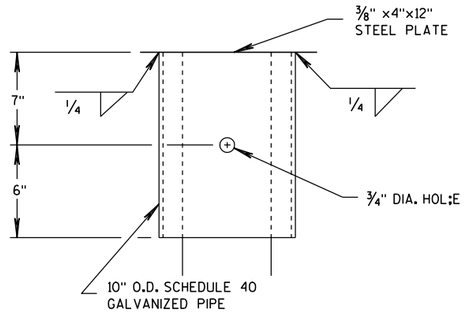
GENERAL NOTES

(1) ATTACH W BEAM RAIL TO THE STEEL PIPE WITH A ⅝" X 2" BUTTON HEAD BOLT WITH NO WASHER. CONNECTION TO THE POST IS NOT REQUIRED.

INSTALL GALVANIZED ¾" (6X19) PREFORMED WIRE OR INDEPENDENT WIRE ROPE CORE CONFORMING TO AASHTO M 30. MANUFACTURE WIRE ROPE OUT OF IMPROVED PLOW STEEL WITH A MINIMUM BREAKING STRENGTH OF 42,800 PSI.



DETAIL A



DETAIL B

(BEAM GUARD AND TERMINAL SECTION NOT SHOWN)

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

S.D.D. 14 B 27-1b

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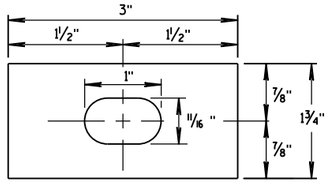
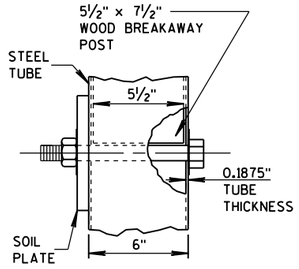
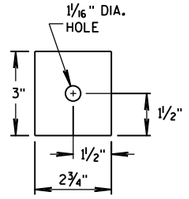
S.D.D. 14 B 27-1b



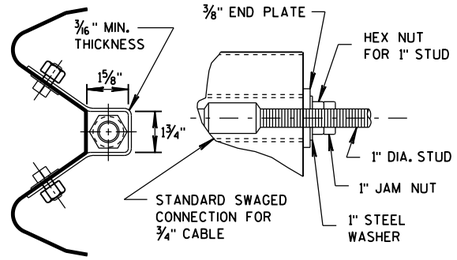
RECTANGULAR PLATE WASHER



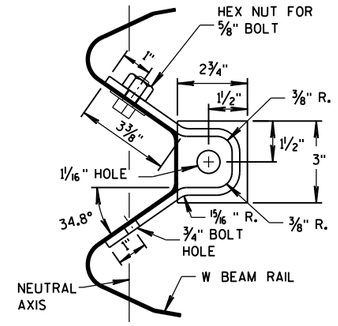
DETAIL D



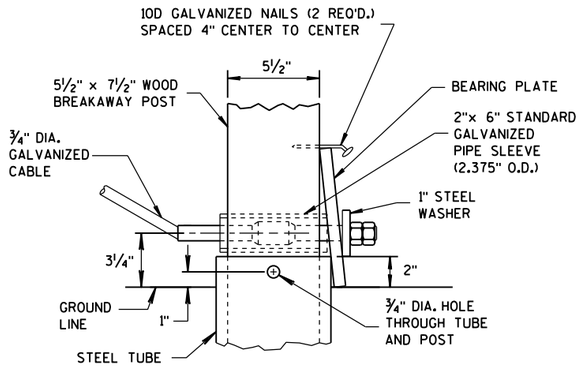
END PLATE



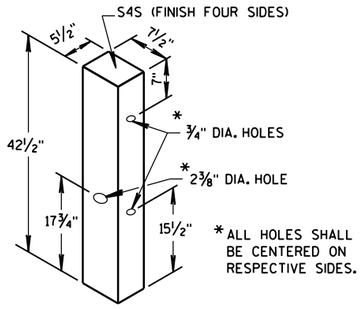
SECTION C-C
(END PLATE REMOVED)



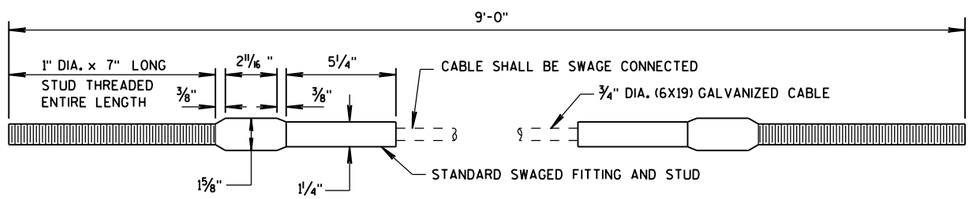
ANCHOR BRACKET



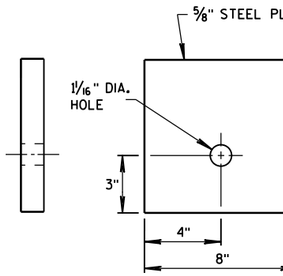
DETAIL C



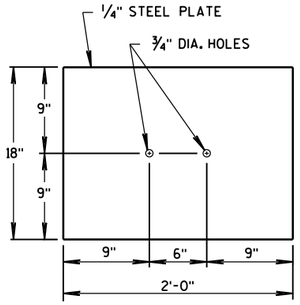
WOOD BREAKAWAY POST



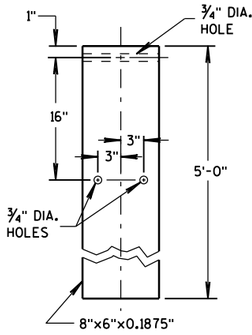
CABLE ASSEMBLY



BEARING PLATE



SOIL PLATE



STEEL TUBE

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
12/18/08 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 14 B 27-1c

6

S.D.D. 14 B 27-1c

① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

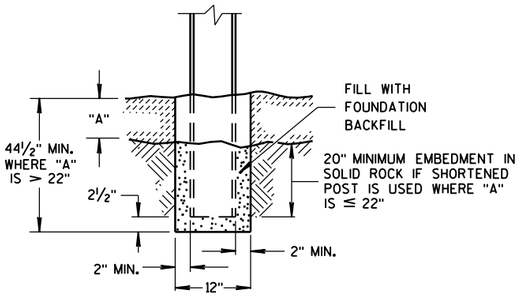
② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2½ INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.

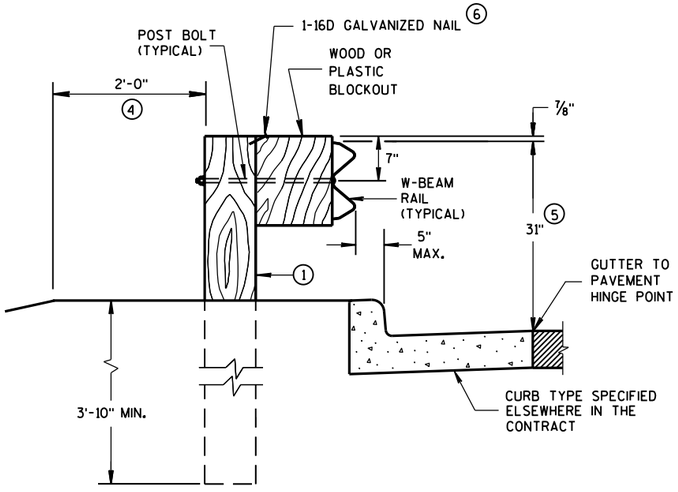
④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).

⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".

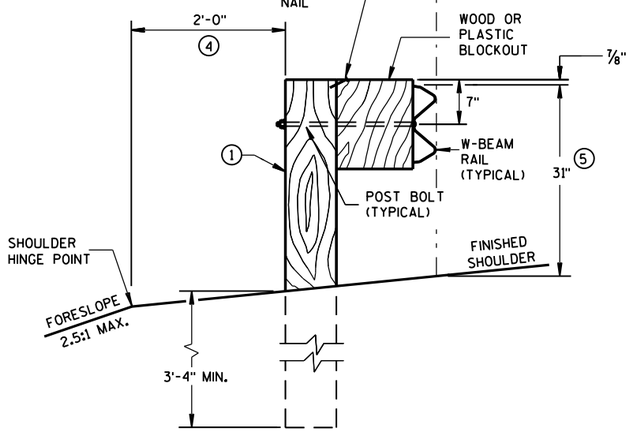
⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



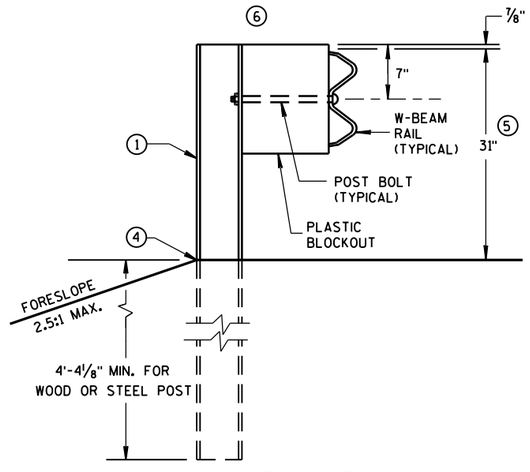
END VIEW
SETTING STEEL OR WOOD POST IN ROCK ③



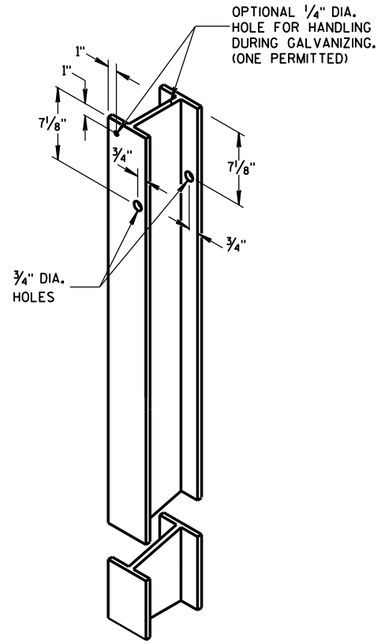
END VIEW
LOCATED ALONG A CURBED ROADWAY



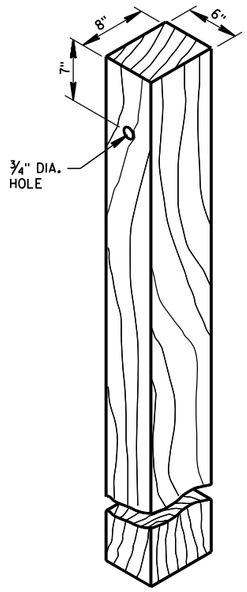
END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



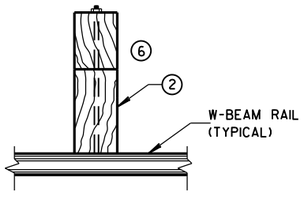
END VIEW
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



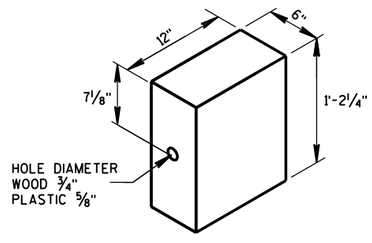
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) ①



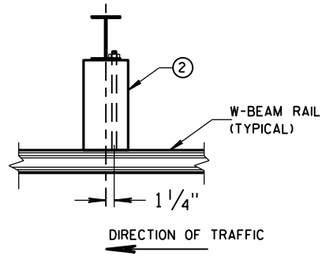
WOOD POST
(6" X 8") NOMINAL ①



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT ②



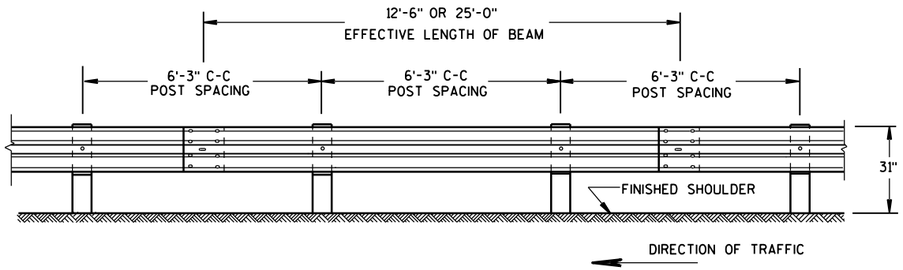
PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

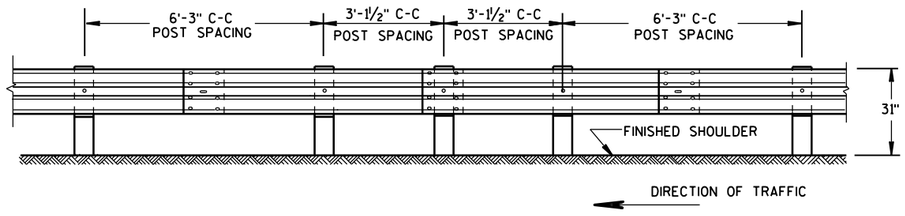
6

S.D.D. 14 B 42-5a



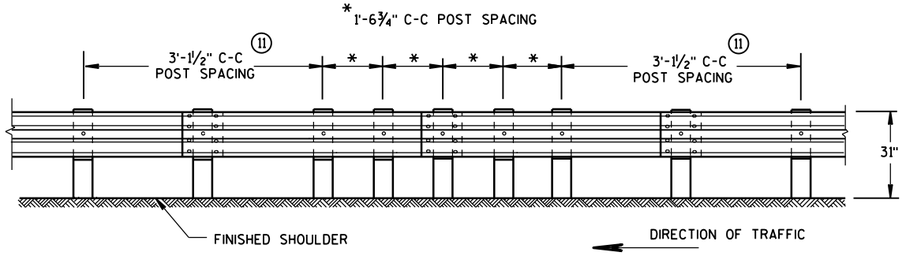
FRONT VIEW

POST SPACING STANDARD INSTALLATION



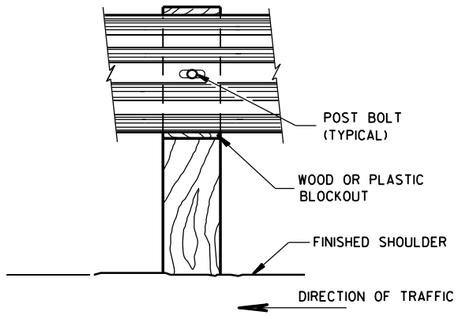
FRONT VIEW

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

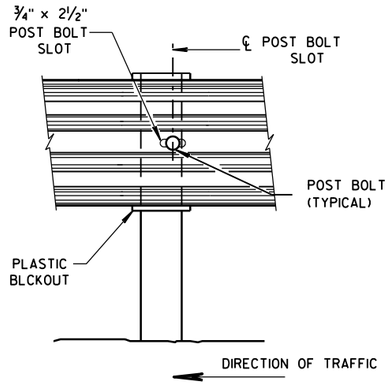


FRONT VIEW

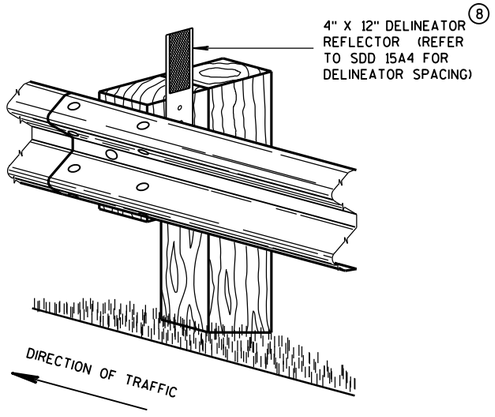
QUARTER POST SPACING (QS)



FRONT VIEW AT WOOD POST



FRONT VIEW AT STEEL POST



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

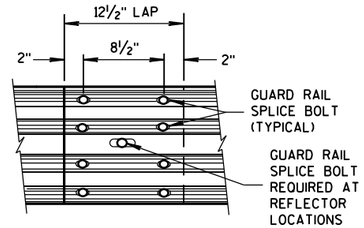
GENERAL NOTES

(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.

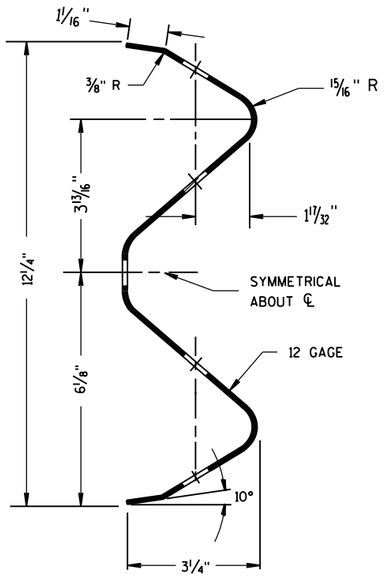
(11) 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

POST BOLTS ARE A ⅝" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES ⅝" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND ⅝" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

GUARD RAIL SPLICE BOLTS ARE A ⅝" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES ⅝" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



FRONT VIEW
MID-SPAN BEAM SPLICE

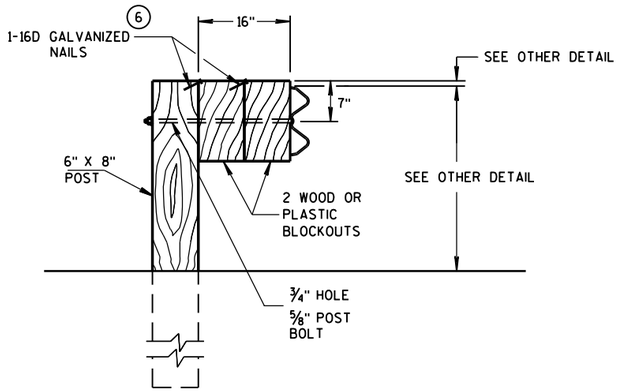


SECTION THRU W-BEAM RAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

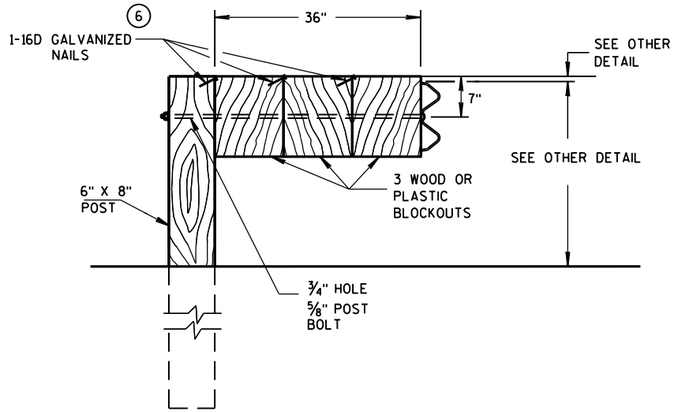
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6
S.D.D. 14 B 42-5b



DETAIL FOR 16" BLOCKOUT DEPTH

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

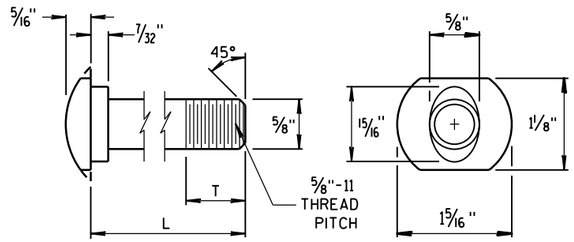


DETAIL FOR 36" BLOCKOUT DEPTH

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

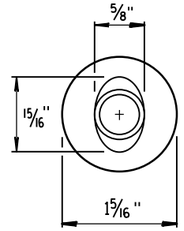
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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

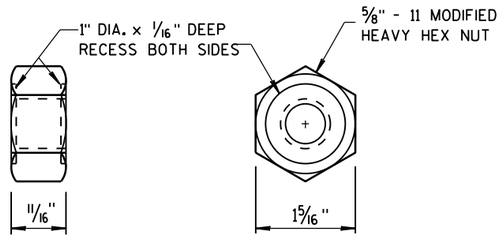


POST BOLT TABLE

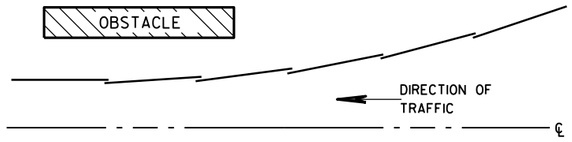
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

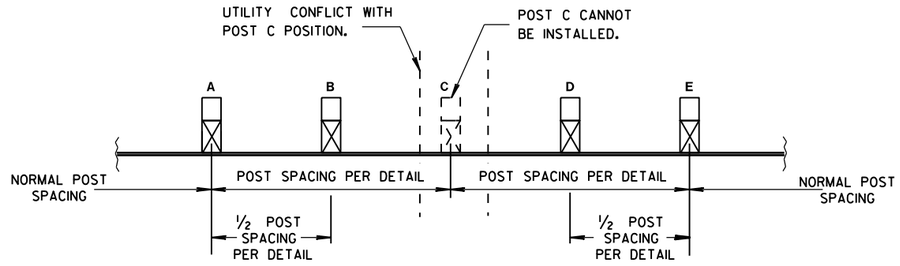


POST BOLT, SPLICE BOLT AND RECESS NUT

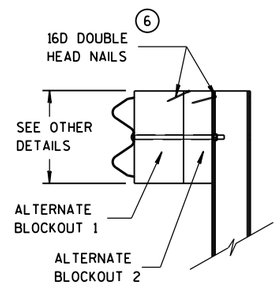


PLAN VIEW

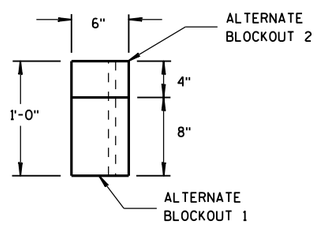
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

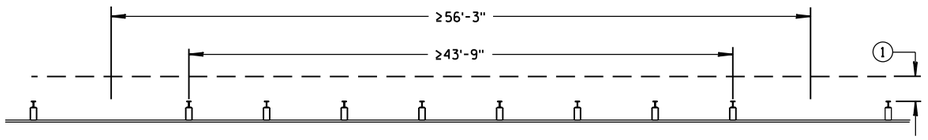
ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

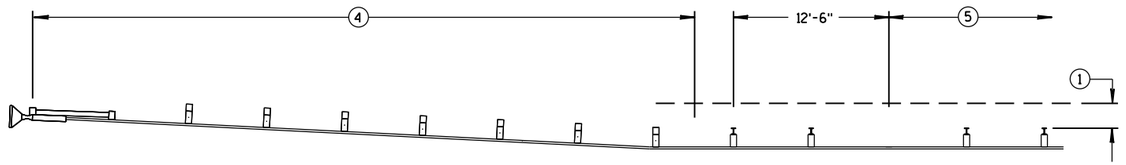
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

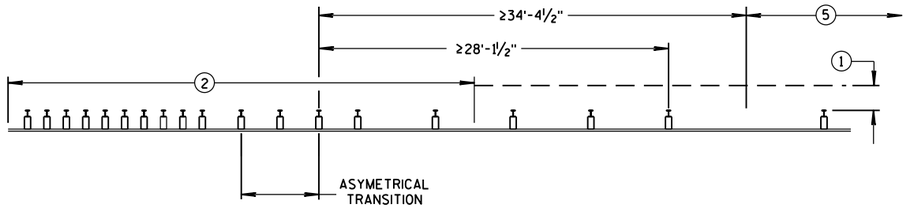
S.D.D. 14 B 42-5c



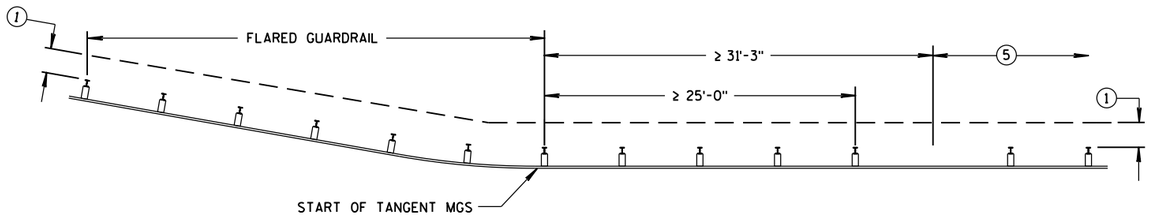
MISSING POST IN NORMAL BEAM GUARD RUN



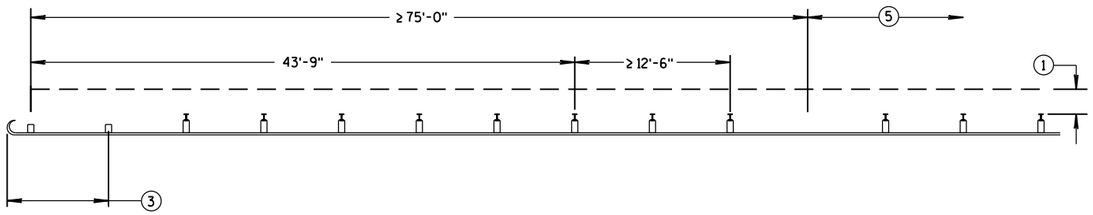
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



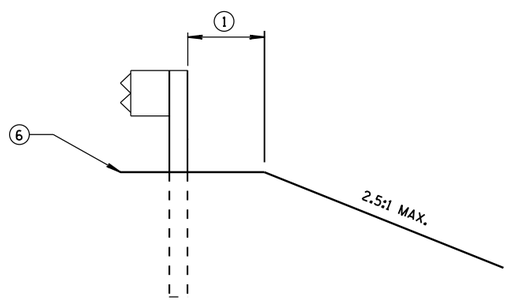
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



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
June 2017
DATE
FHWA

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

6

S.D.D. 14 B 42-5d

6

S.D.D. 14 B 42-5d

GENERAL NOTES

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

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

(C) DIFFERENT MANUFACTURES REQUIRE DIFFERENT PERFORATED W-BEAM RAIL END PANELS. SEE MANUFACTURES INFORMATION.

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

(H) HARDWARE VARIES BETWEEN DIFFERENT MANUFACTURES. SEE MANUFACTURE'S DRAWING FOR INFORMATION.

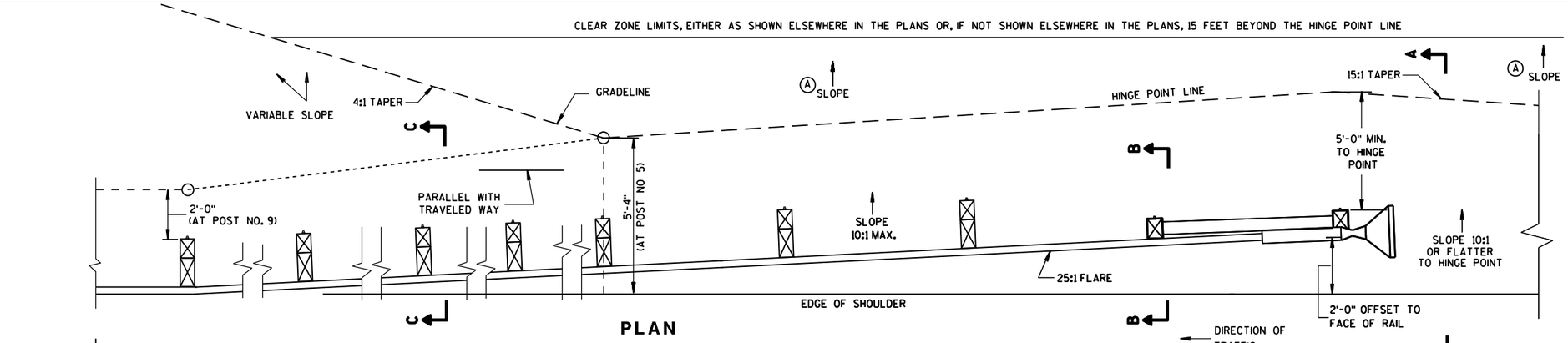
SEE SDD 14B42 FOR MORE INFORMATION.

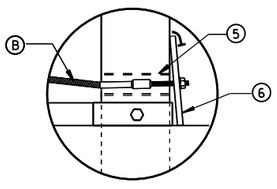
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

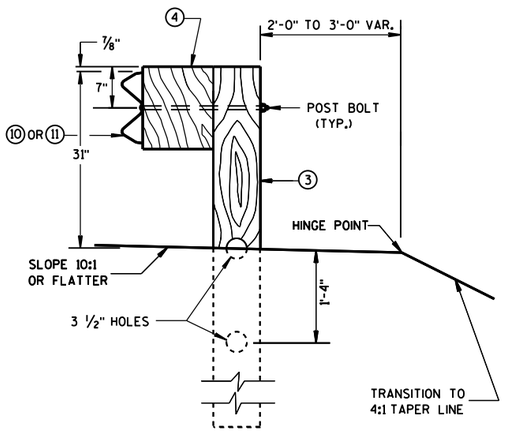
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

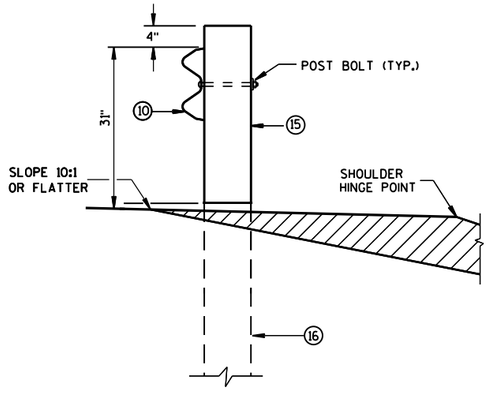
SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

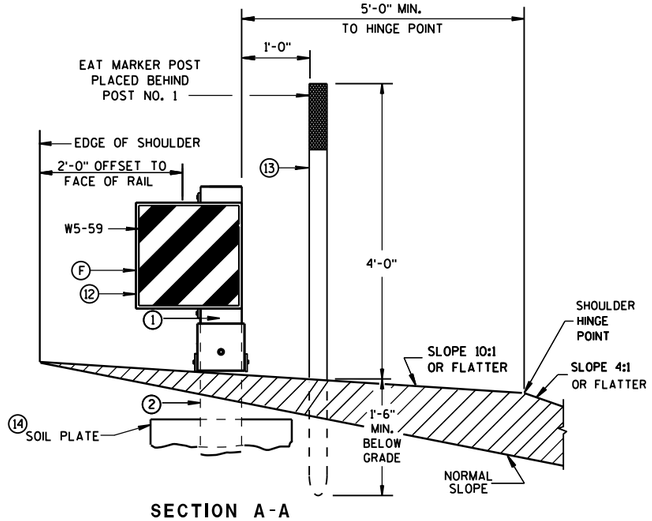
THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE.

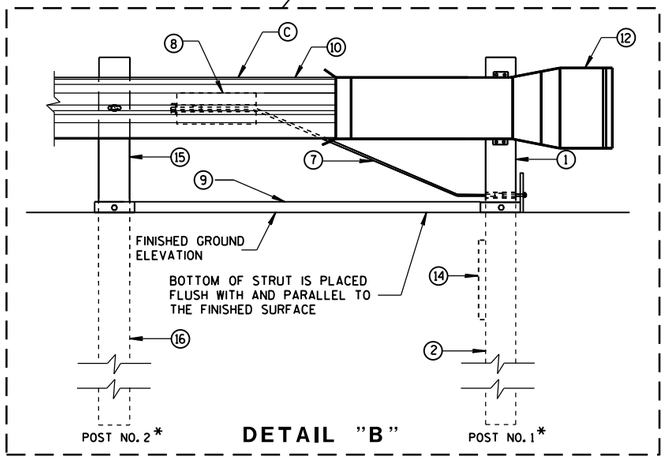












MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6

S.D.D. 14 B 44-3a

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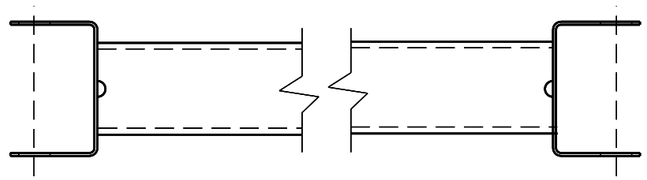
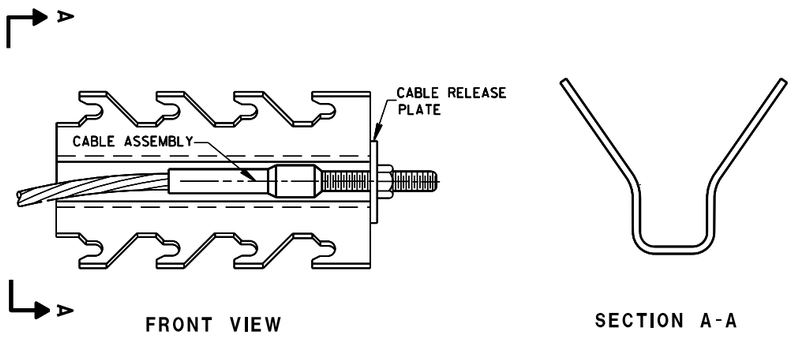
S.D.D. 14 B 44-3a



GENERIC GROUND STRUT (9) (H)



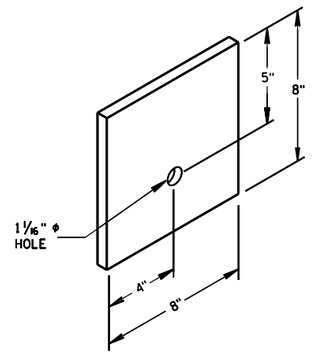
FRONT VIEW

SECTION A-A

GENERIC ANCHOR CABLE BOX (8) (H)

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



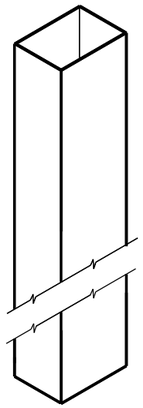
BEARING PLATE (6)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

S.D.D. 14 B 44-3b



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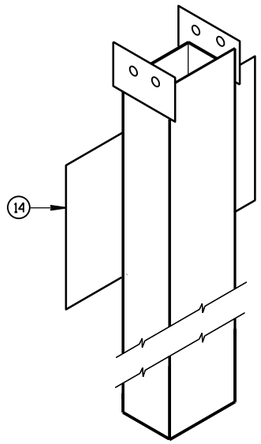

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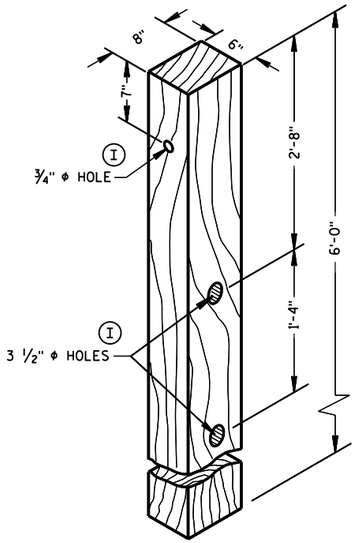
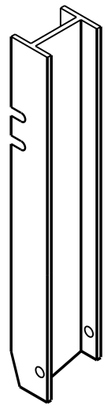
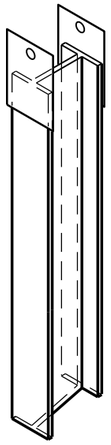


POSTS NUMBER 3-9

WOOD CRT POST (3)



UPPER POST NO. 2 (15)



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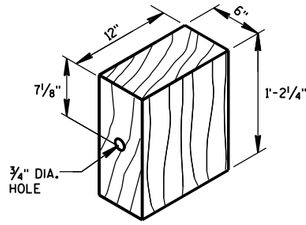
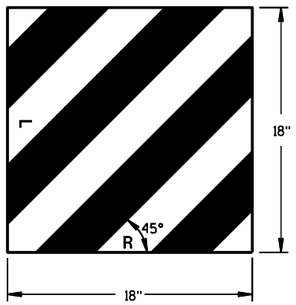


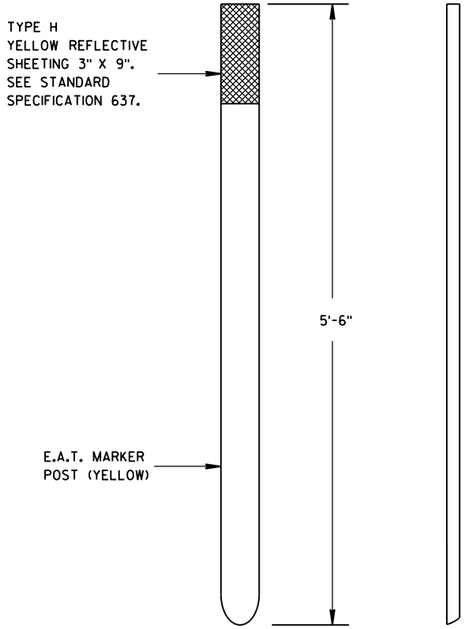
WOOD BLOCKOUT (4)

REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



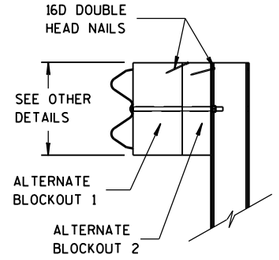
W5-59

REFLECTIVE SHEETING DETAIL (H)

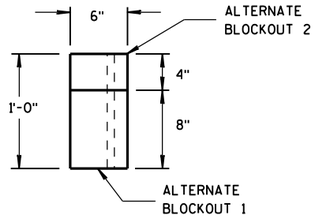


FRONT VIEW SIDE VIEW

E.A.T. MARKER POST (13)



SIDE VIEW



TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

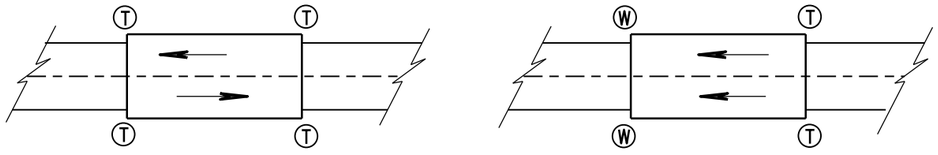
June 2017
DATE

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

FHWA

6

S.D.D. 14 B 44-3c



TWO WAY TRAFFIC

ONE WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION

Ⓦ W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

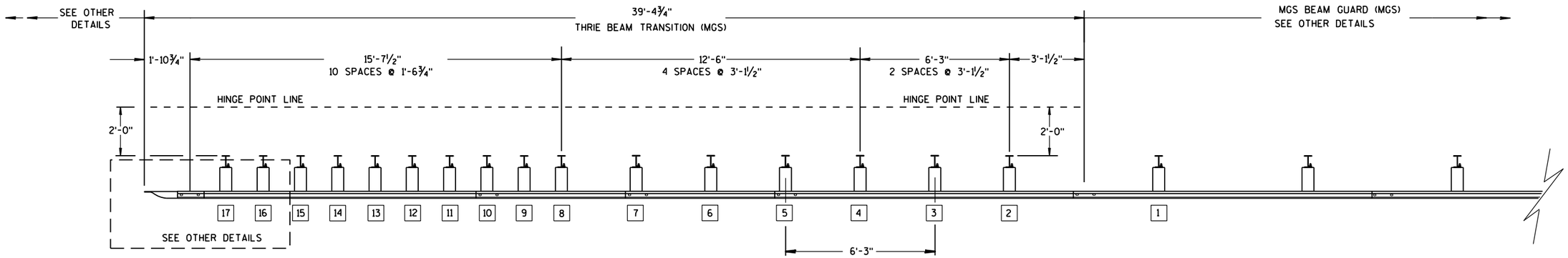
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

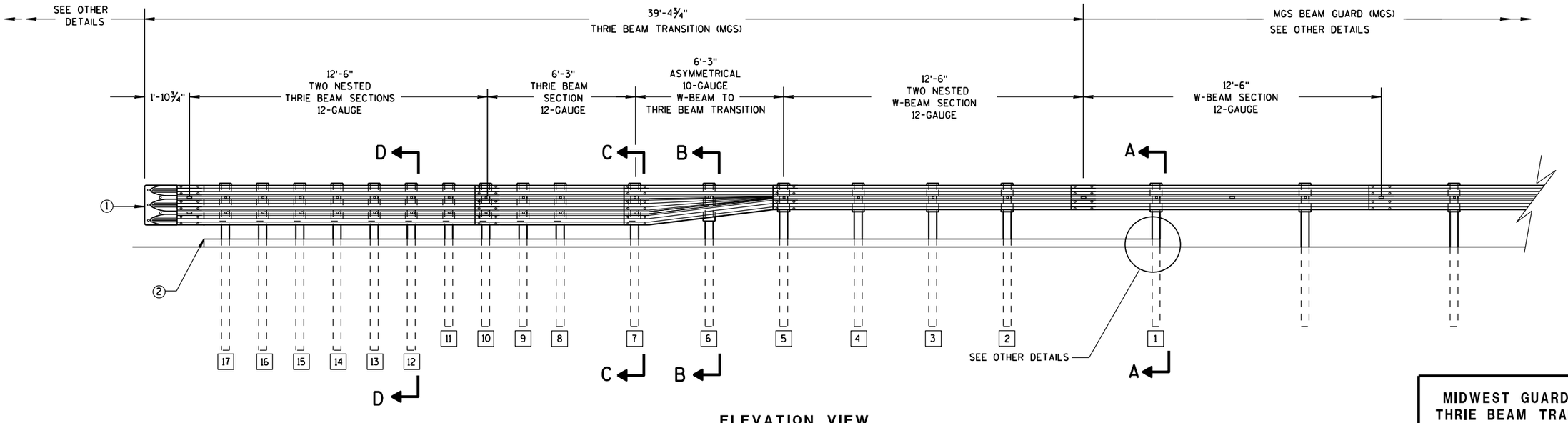
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

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



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

S.D.D. 14 B 45-4a

6

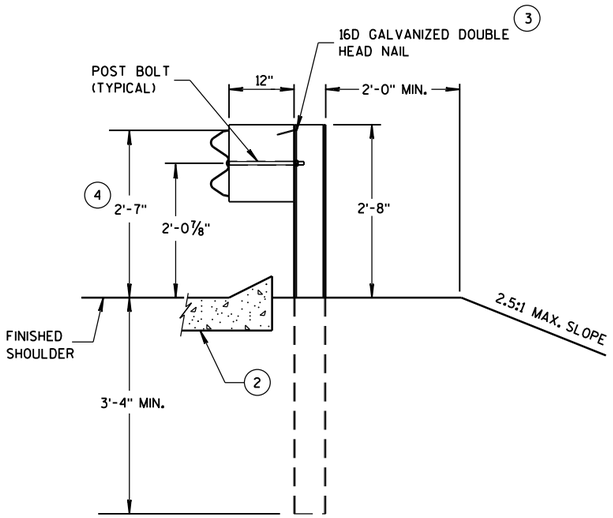
S.D.D. 14 B 45-4a

GENERAL NOTES

(2) OPTIONAL CURB AND GUTTER OR DRAINAGE_FEATURE SEE PLAN FOR INFORMATION.

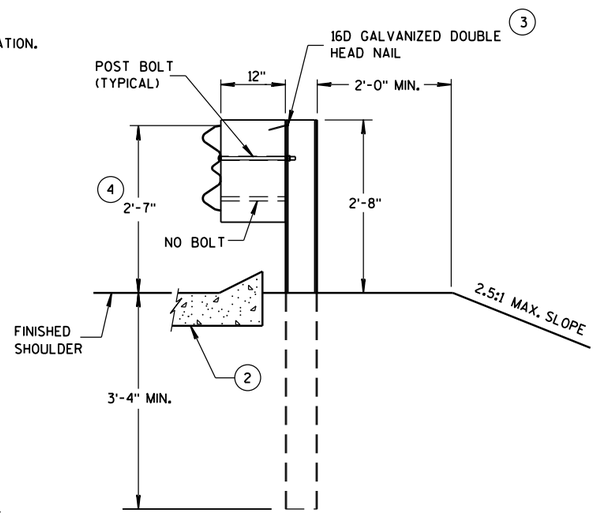
(3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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



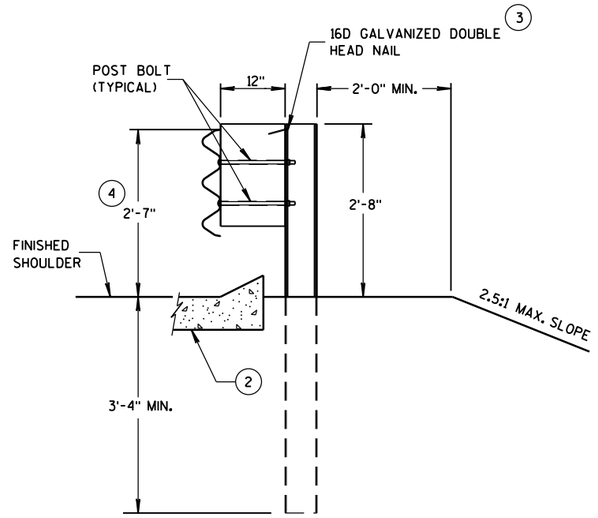
SECTION A-A

POSTS 1-5



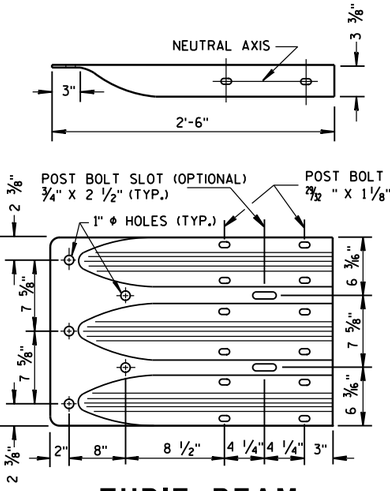
SECTION B-B

POST 6



SECTION C-C

POSTS 7-11



THRIE BEAM TERMINAL CONNECTOR

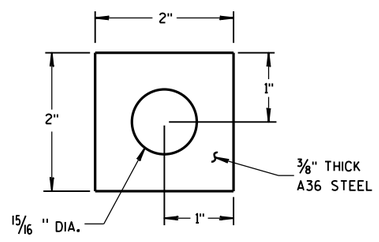
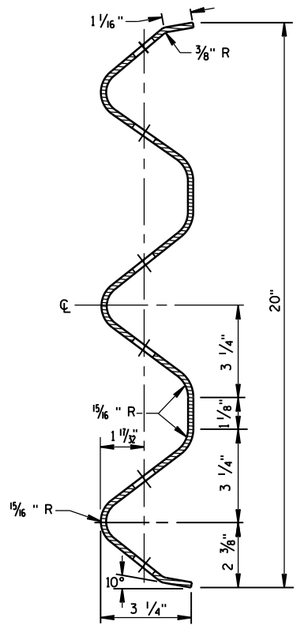
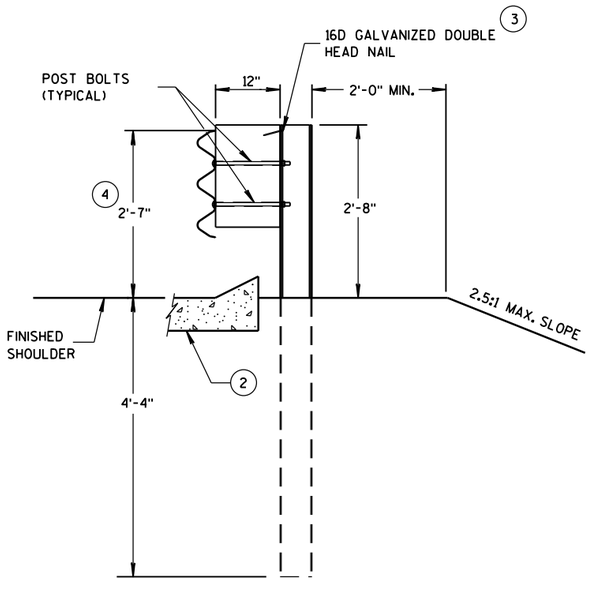


PLATE WASHER DETAIL

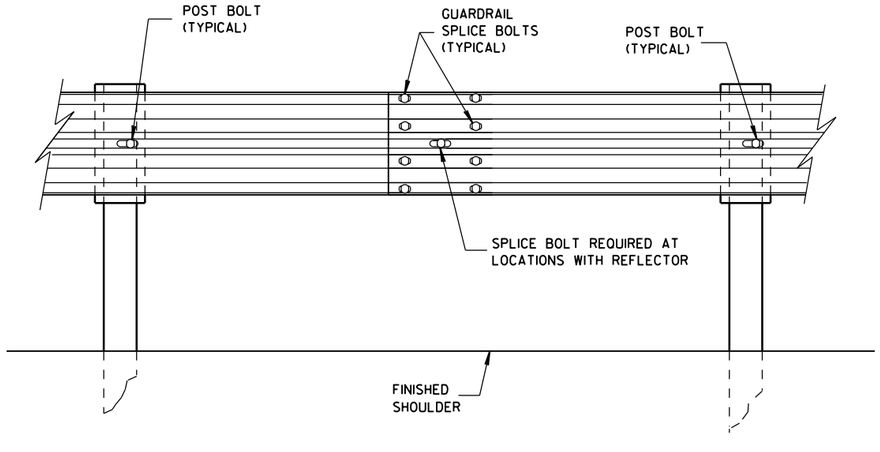


SECTION THRU THRIE BEAM RAIL ELEMENT



SECTION D-D

POSTS 12-17



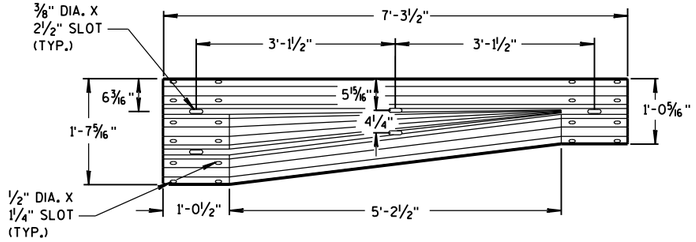
SPLICE DETAIL

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

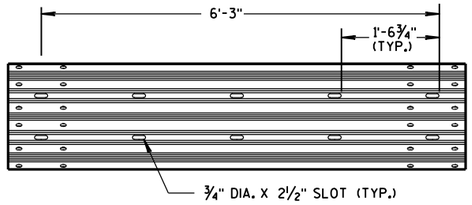
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6

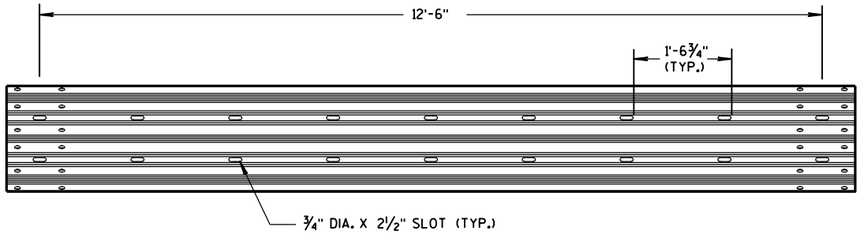
S.D.D. 14 B 45-4b



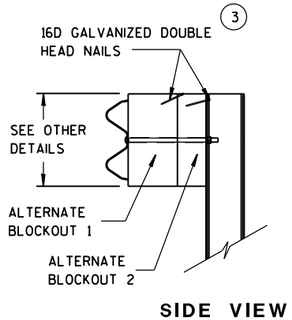
W-BEAM TO THRIE BEAM TRANSITION SECTION



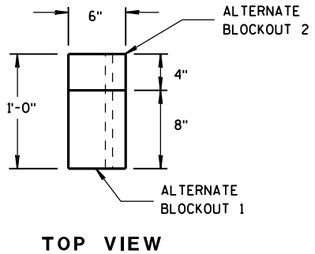
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

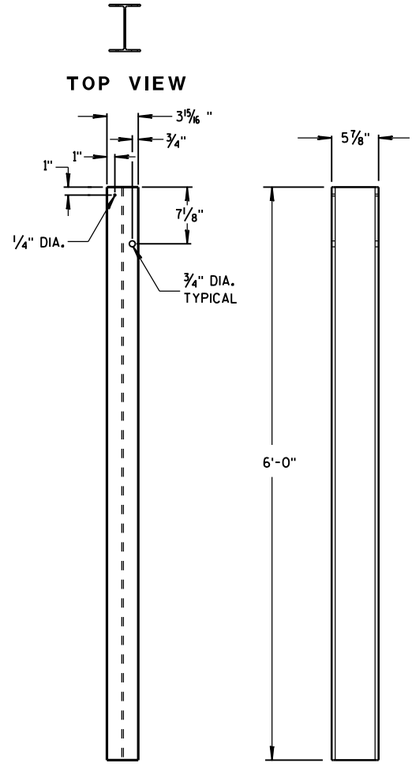


SIDE VIEW



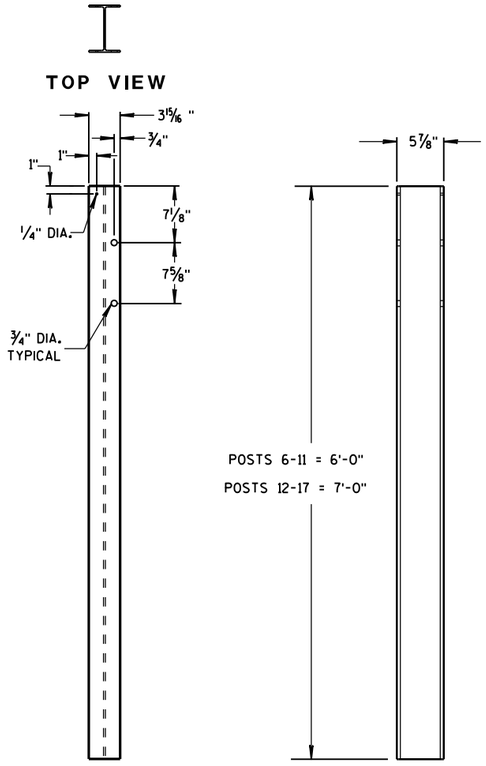
TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL



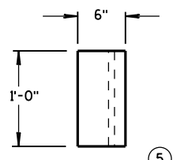
FRONT VIEW SIDE VIEW

STEEL POSTS 1-5

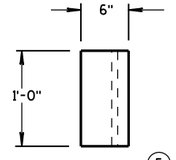


FRONT VIEW SIDE VIEW

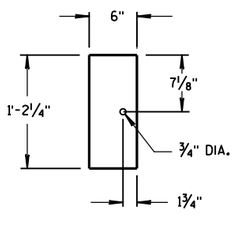
STEEL POSTS 6-17



TOP VIEW (5)

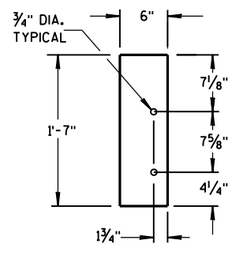


TOP VIEW (5)



FRONT VIEW

BLOCKOUT POSTS 1-5



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.

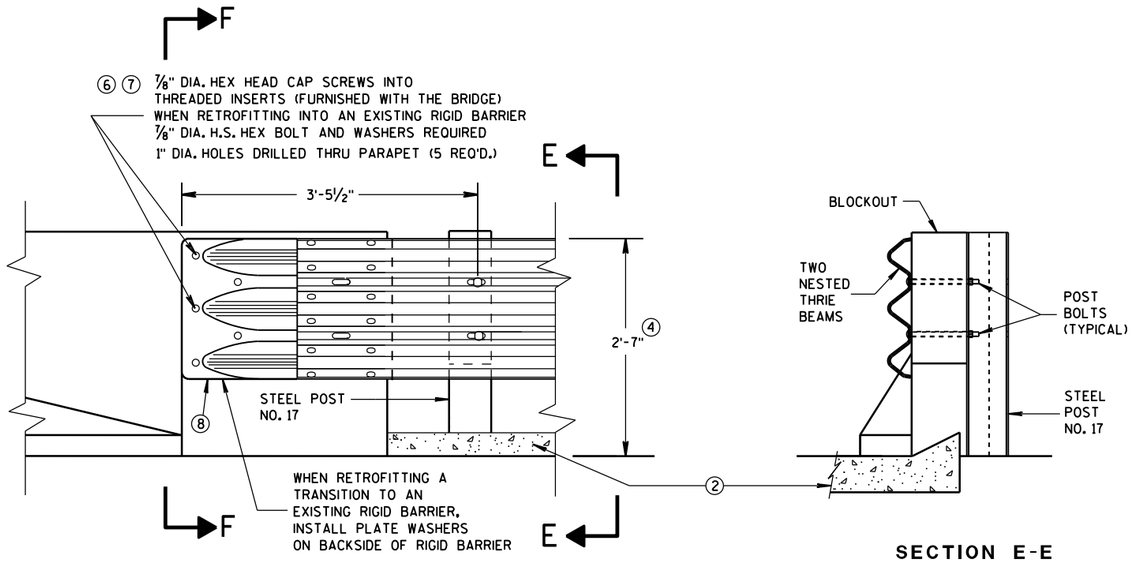
(5) WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

S.D.D. 14 B 45-4c



FRONT VIEW

SECTION E-E

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

GENERAL NOTES

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

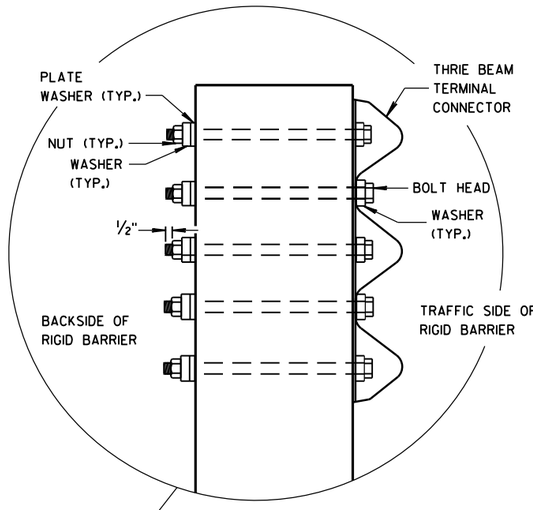
② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

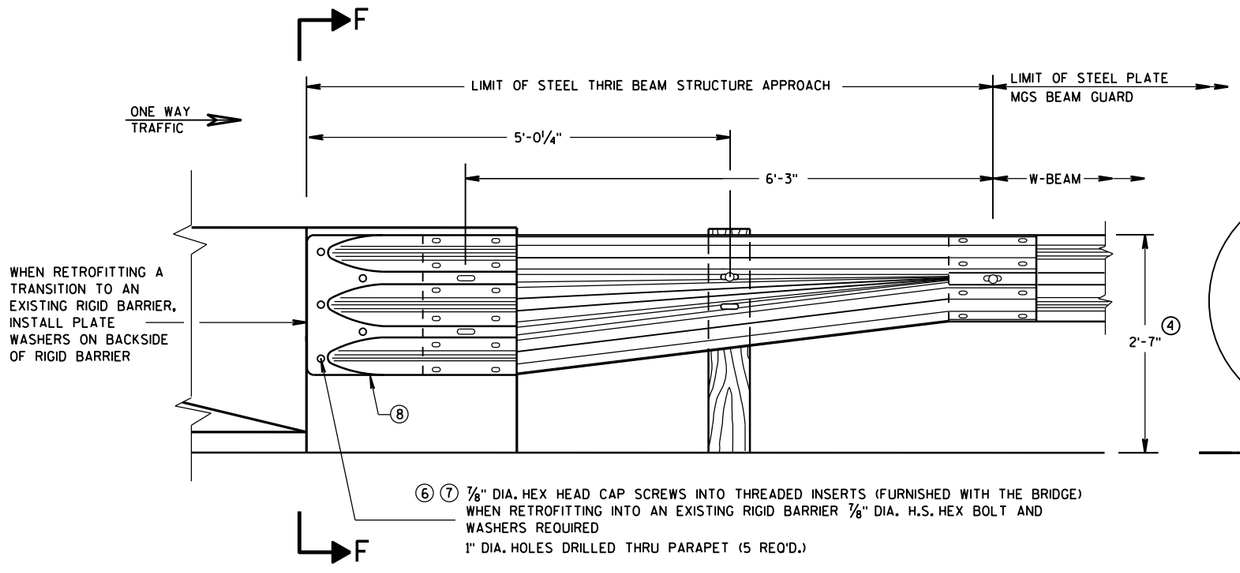
④ TOLERANCE FOR TOP OF BEAM IS ± 1".

⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

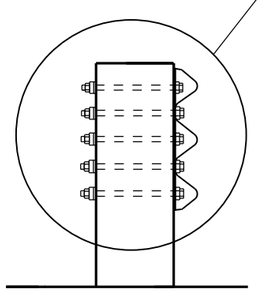
⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. 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".

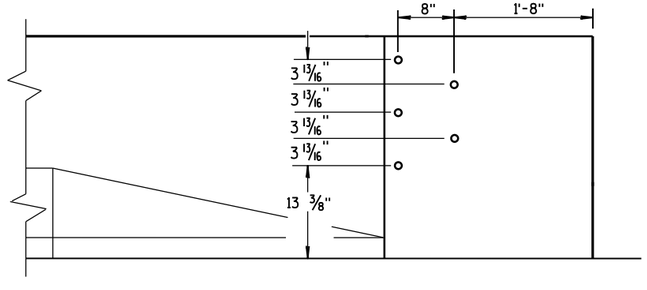




FRONT VIEW



SECTION F-F



DRILL HOLE LOCATION

W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS

(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
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA
NT

6

S.D.D. 14 B 45-4d

6

S.D.D. 14 B 45-4d

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.

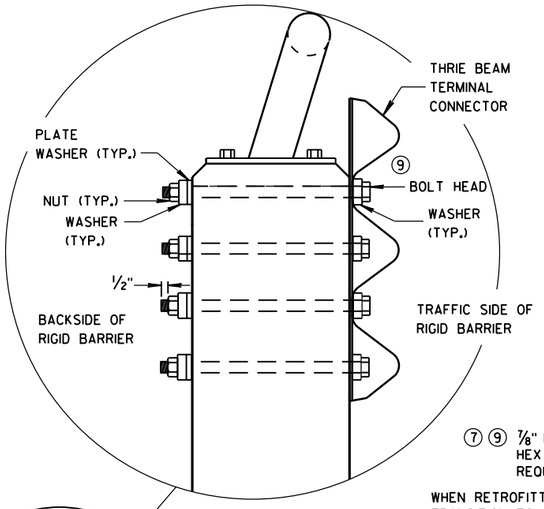
(4) TOLERANCE FOR TOP OF BEAM IS ± 1".

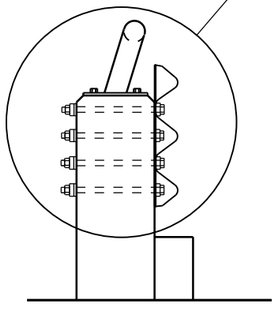
(6) DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

(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.

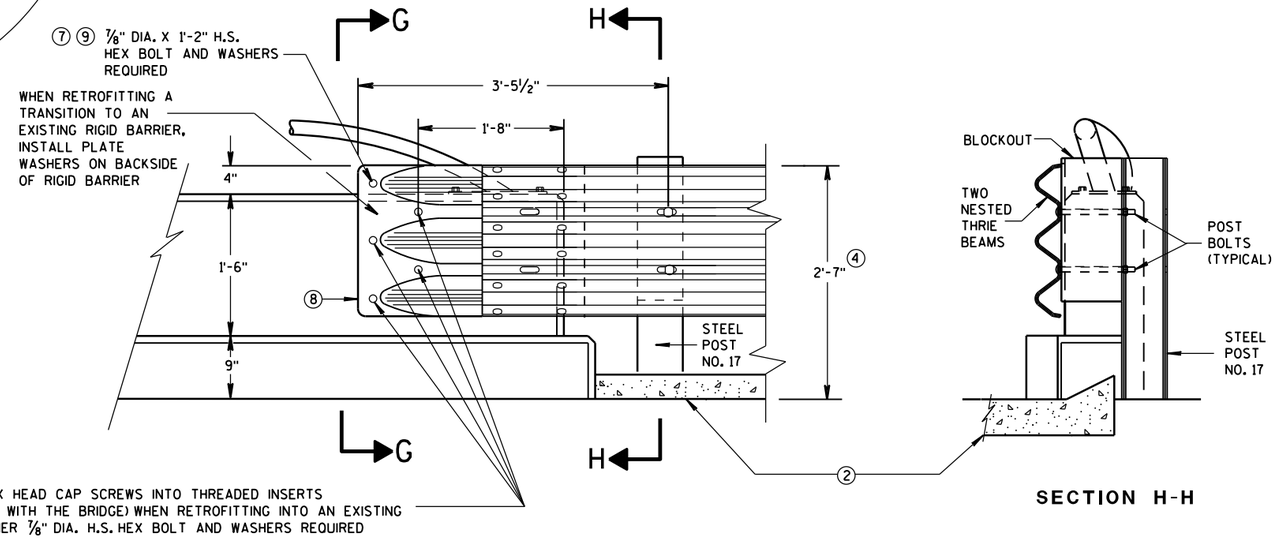
(8) THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".

(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.





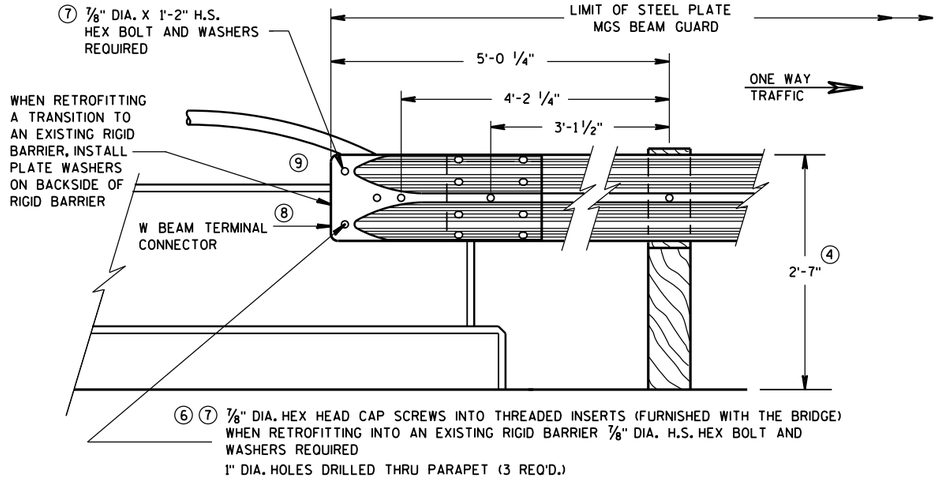
SECTION G-G



FRONT VIEW

SECTION H-H

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)

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
NT
FHWA

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S.D.D. 14 B 45-4e

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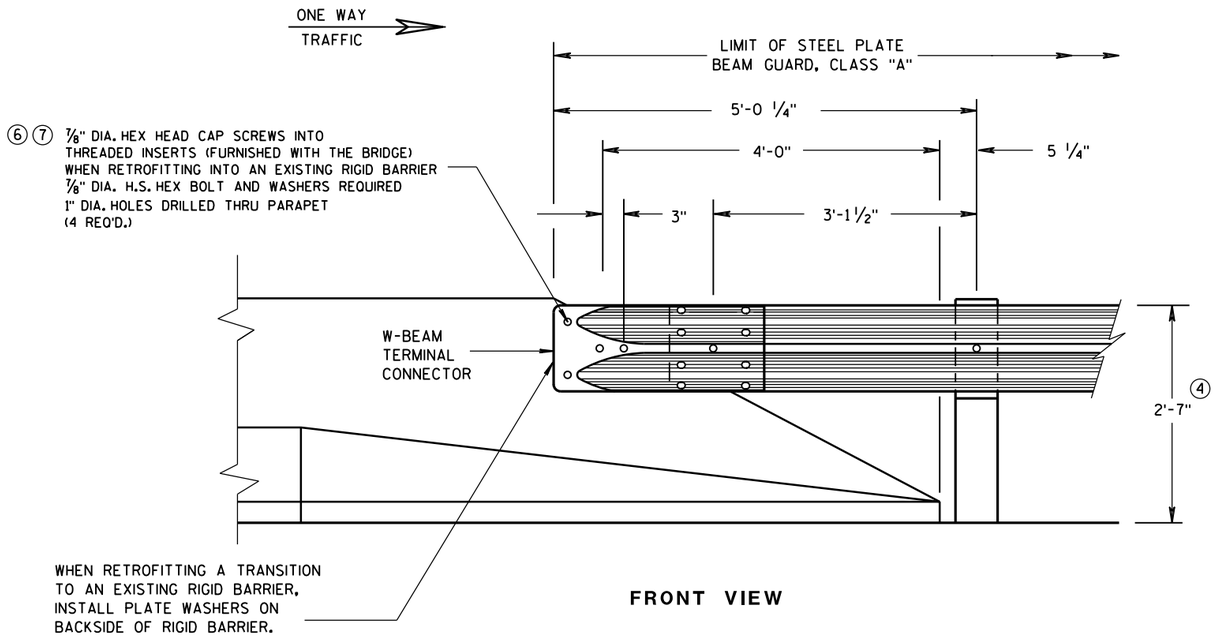
S.D.D. 14 B 45-4e



FRONT VIEW

W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS

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

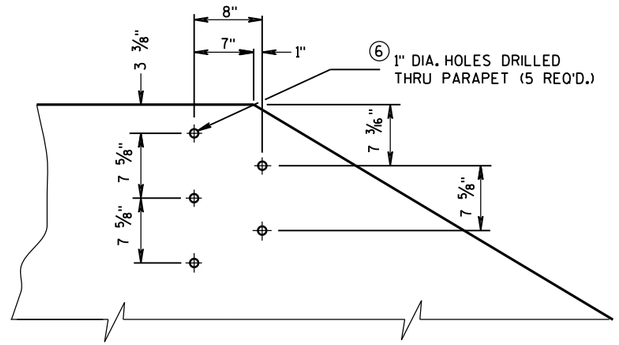
GENERAL NOTES

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

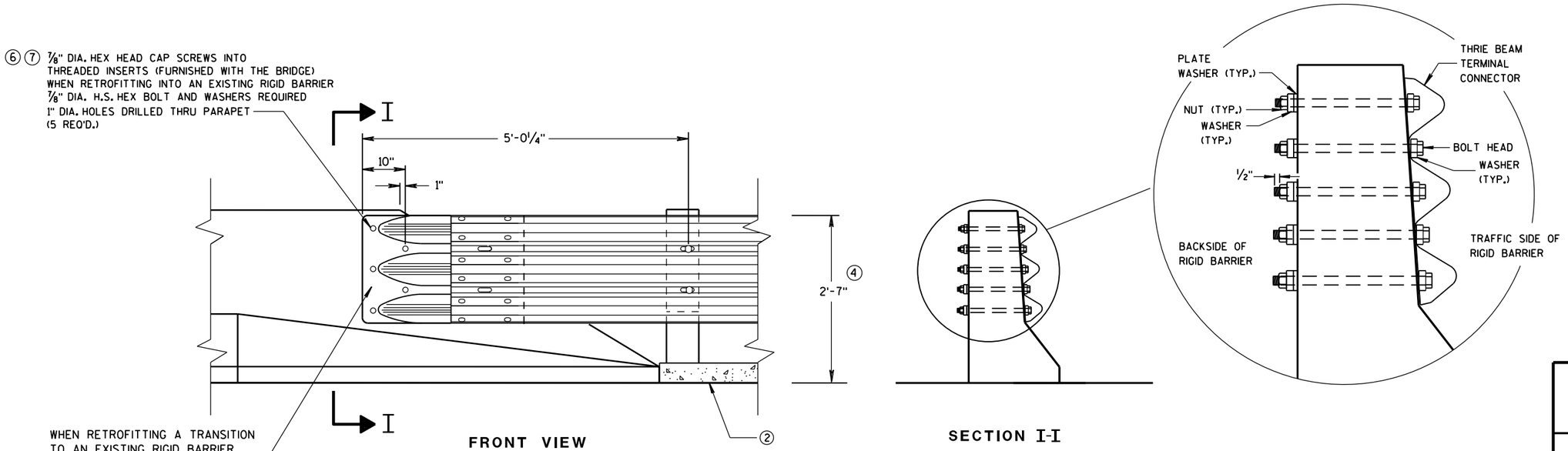
④ TOLERANCE FOR TOP OF BEAM IS ± 1".

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



FRONT VIEW

SECTION I-I

THRIE BEAM CONNECTION TO BRIDGE PARAPETS WITH SLOPED ENDS

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS [illegible] ENGINEER
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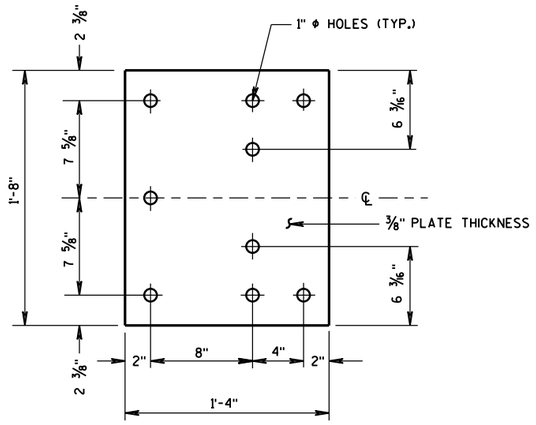
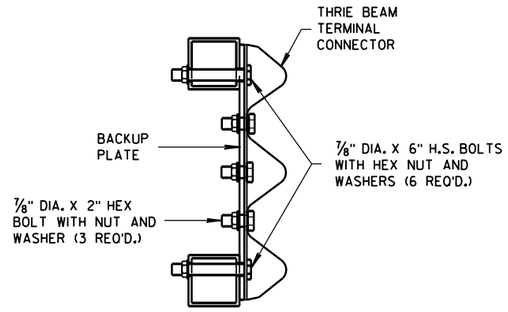
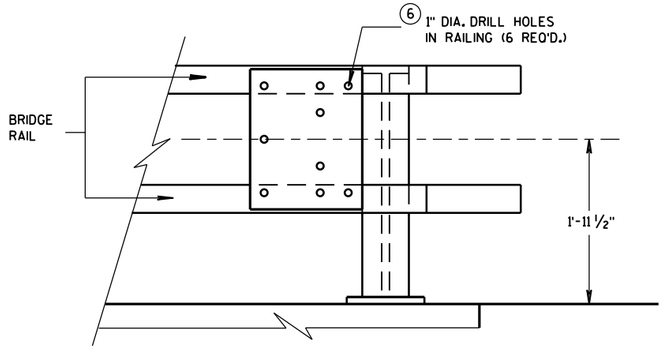


BACK-UP PLATE DETAIL



SECTION J-J

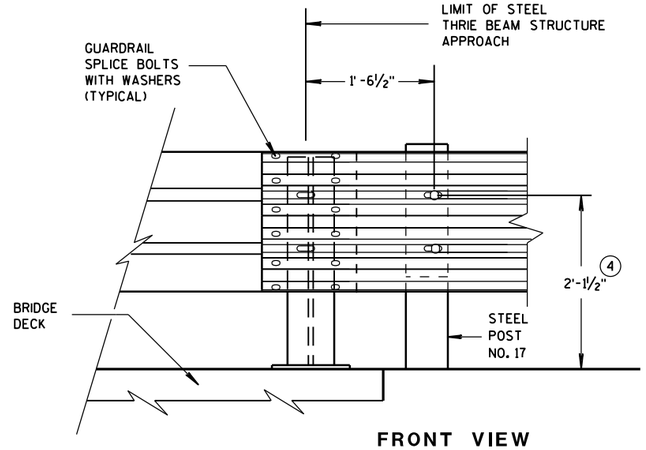


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

GENERAL NOTES

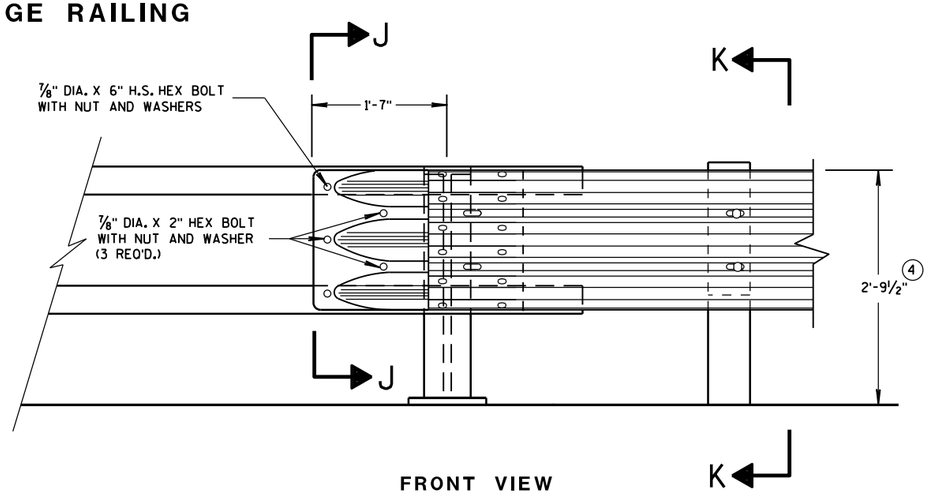
④ TOLERANCE FOR TOP OF BEAM IS ± 1".

⑥ DRILLING HOLES THROUGH THE PAPRPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

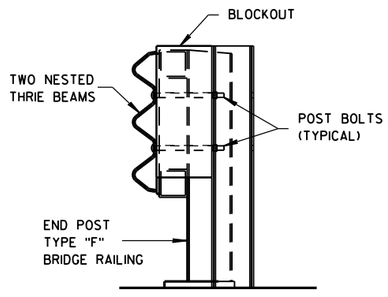


FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"



FRONT VIEW



SECTION K-K

THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

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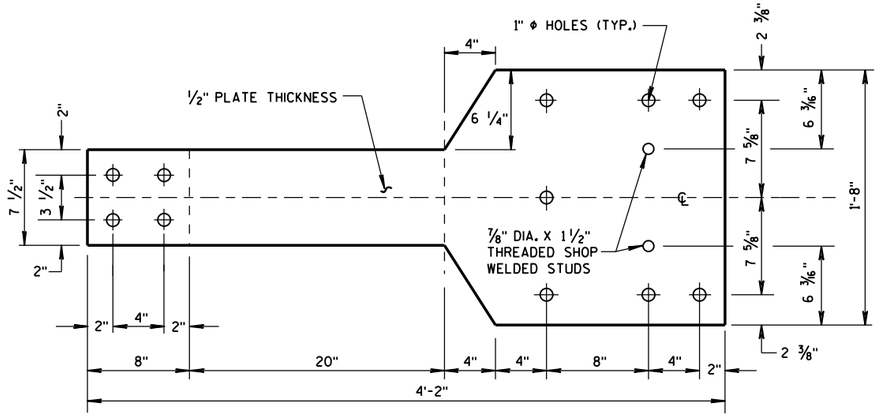
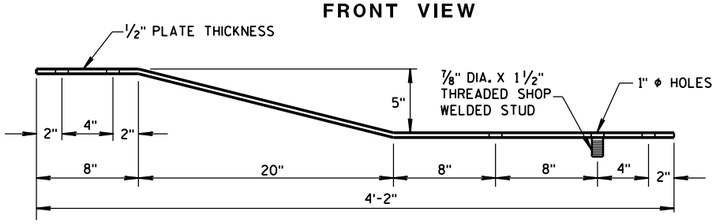
S.D.D. 14 B 45-4g

GENERAL NOTES

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

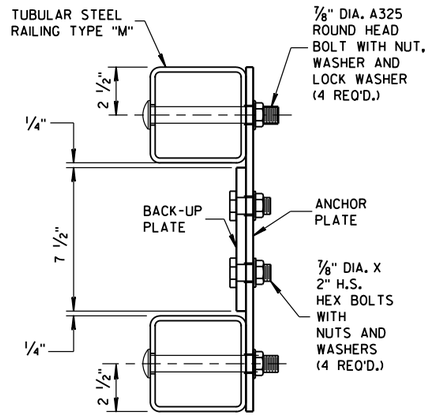


FRONT VIEW

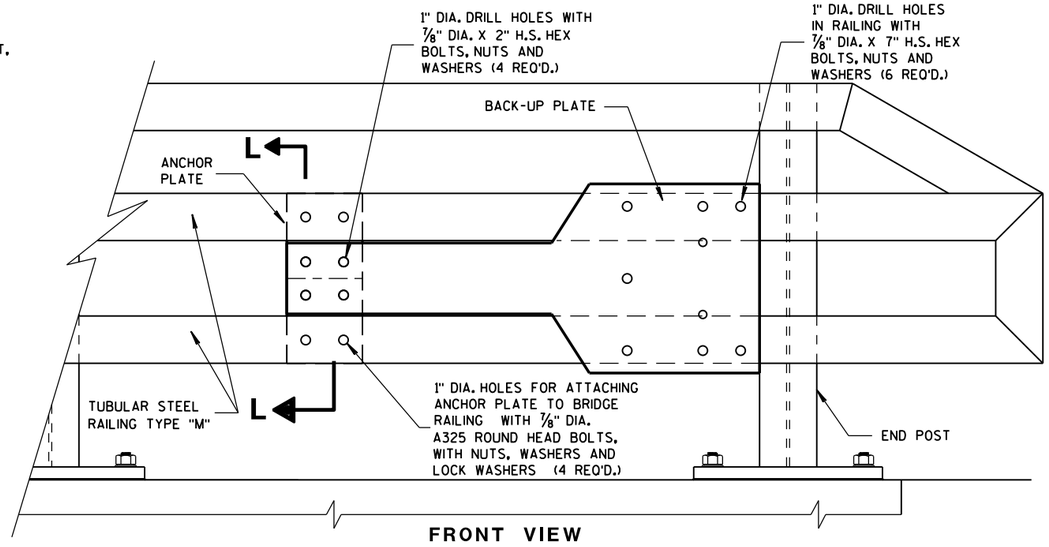


PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

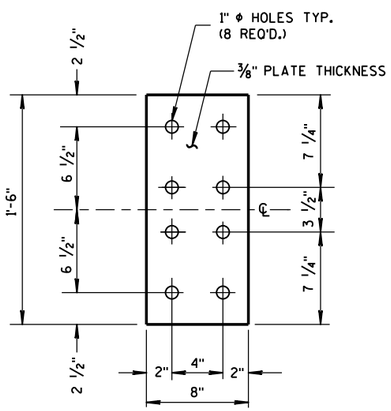


SECTION L-L



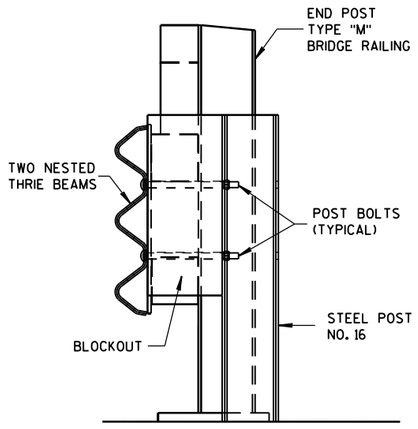
FRONT VIEW

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

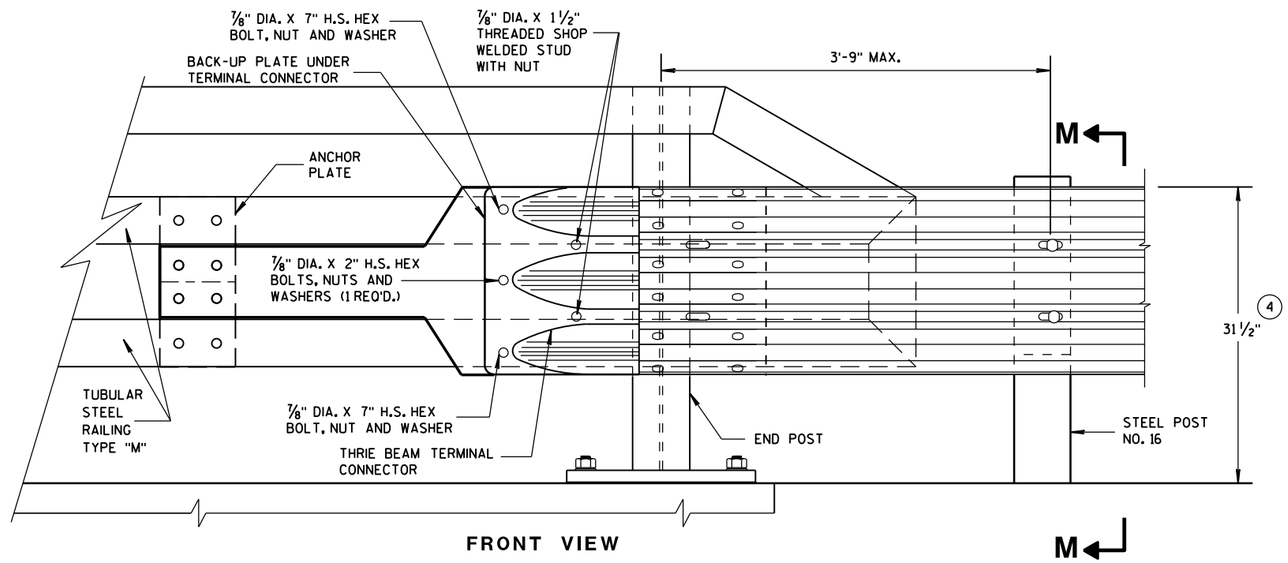


FRONT VIEW

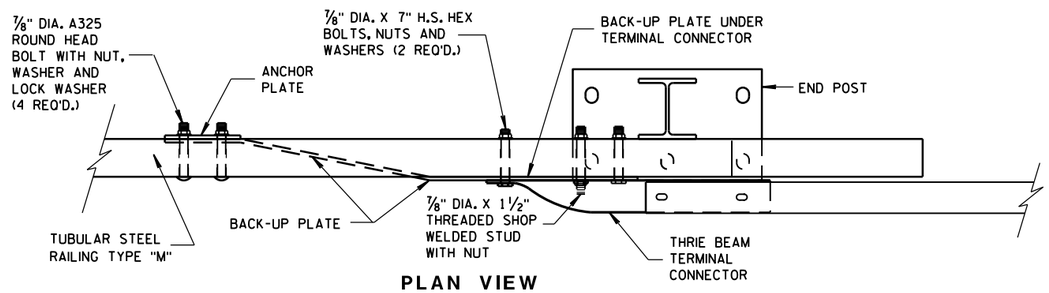
ANCHOR PLATE DETAIL, TYPE "M"



SECTION M-M



FRONT VIEW



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	
June, 2015	/S/ Jerry H. Zogg
DATE	ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	

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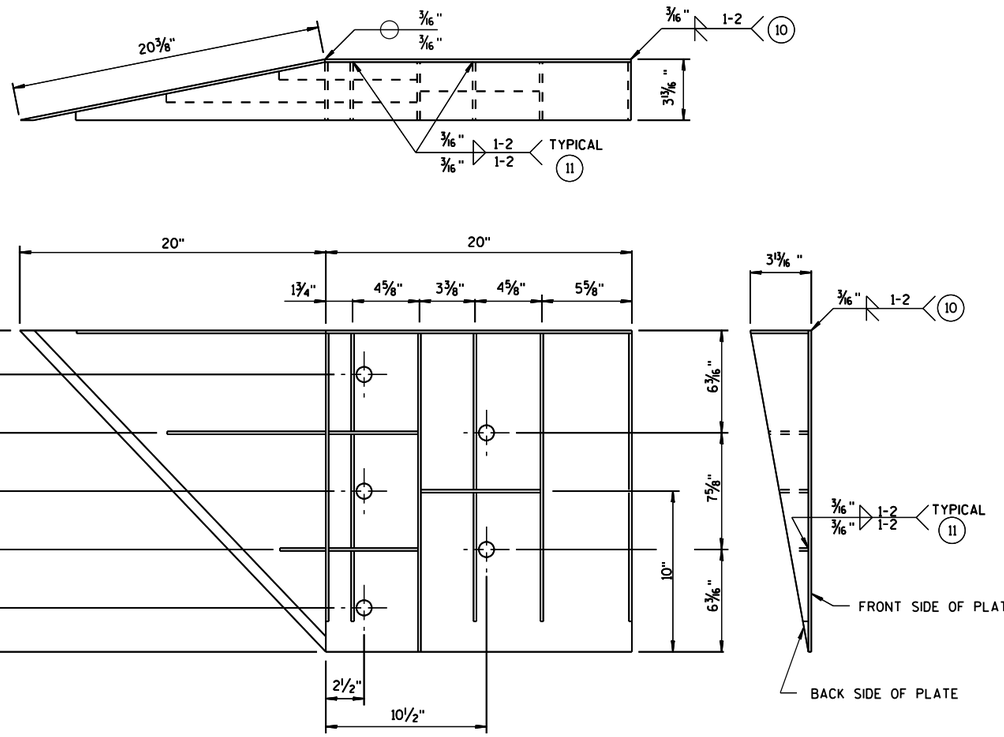

WELDING INSTRUCTION

(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".

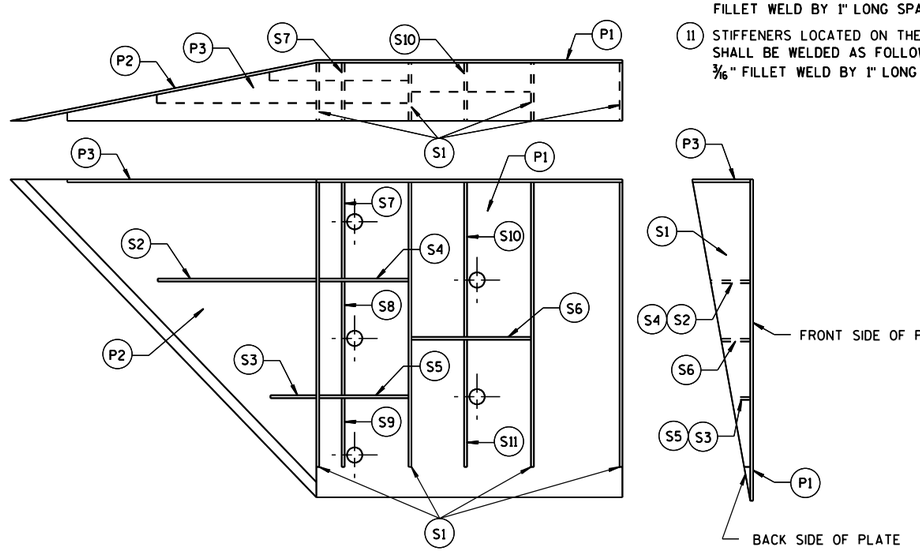

PLATE AND STIFFENER IDENTIFICATION

(VIEWED FROM BACK SIDE OF PLATE)

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)

PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 9/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 5/16"	3/16"
S1	4		18 7/16" x 3 3/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 7/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 1/8" 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 9/16" 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 1/32"	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 13/16"	1/4"

SINGLE SLOPE CONNECTION PLATE

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA

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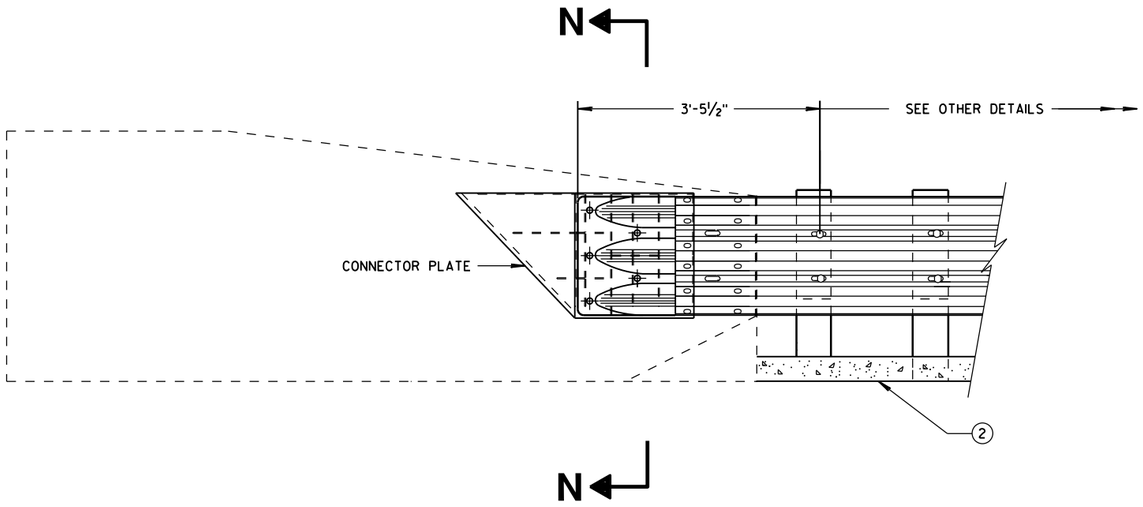
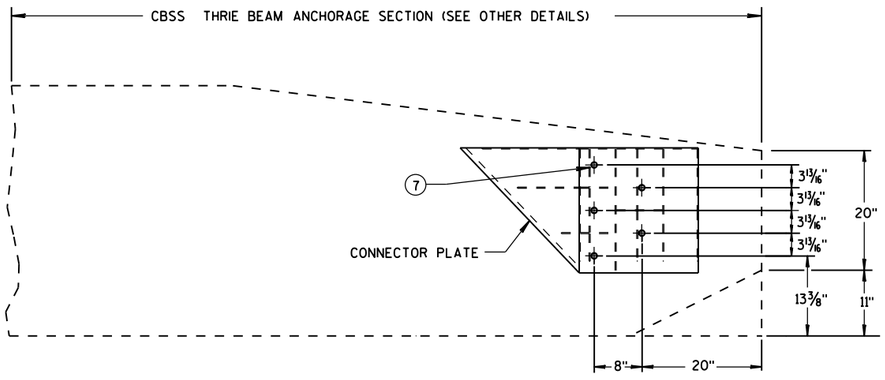
S.D.D. 14 B 45-4i



THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



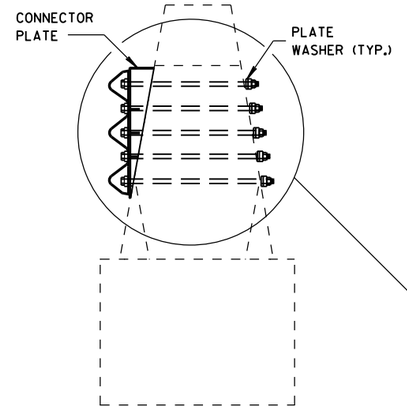
SINGLE SLOPE CONNECTION PLATE PLACEMENT

GENERAL NOTES

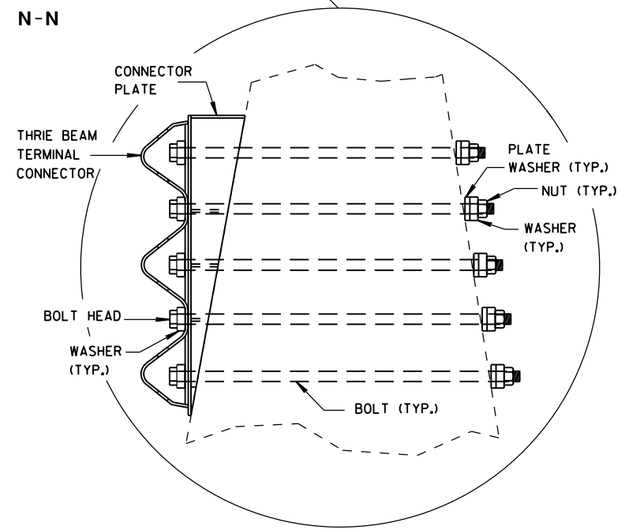
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

(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
June, 2015 — DATE
/S/ Jerry H. Zoga — ROADWAY STANDARDS DEVELOPMENT ENGINEER
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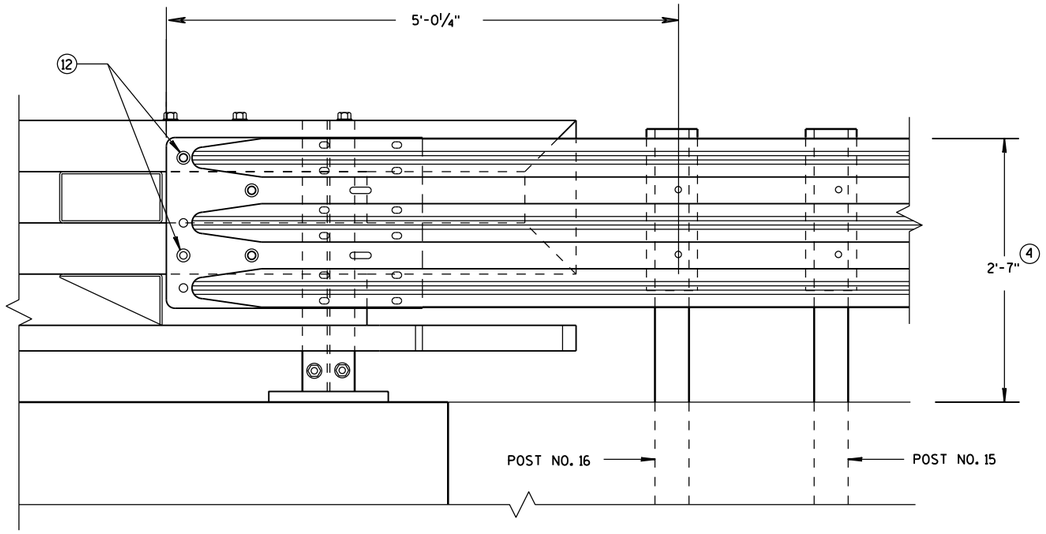
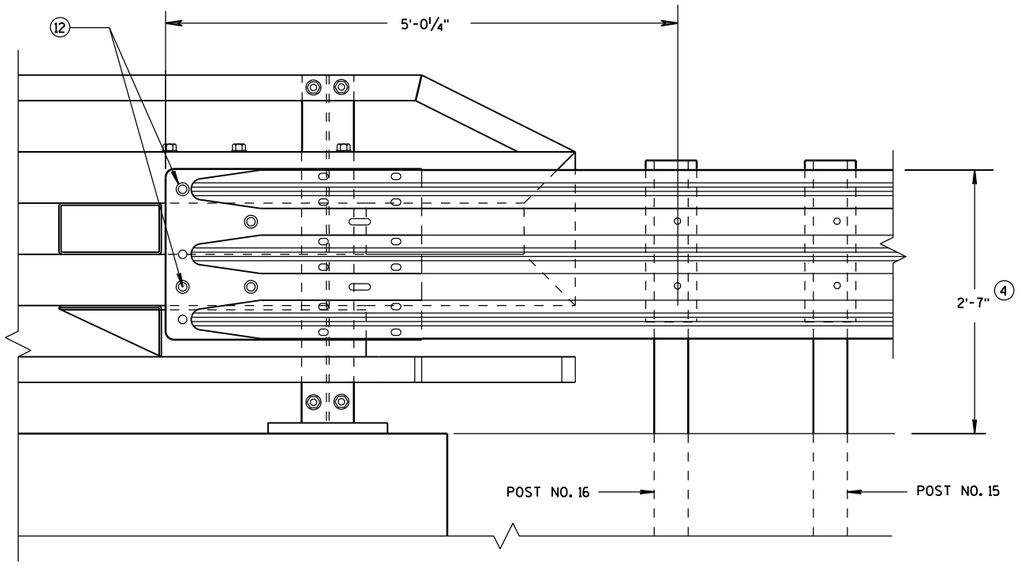


ELEVATION OF DETAIL AT NY3 END POST

THRIE BEAM RAIL ATTACHMENT



ELEVATION OF DETAIL AT NY4 END POST

THRIE BEAM RAIL ATTACHMENT

GENERAL NOTES

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

(12) BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND ½-INCH BEYOND NUT.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015
DATE
FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS D 53 NT
ENGINEER

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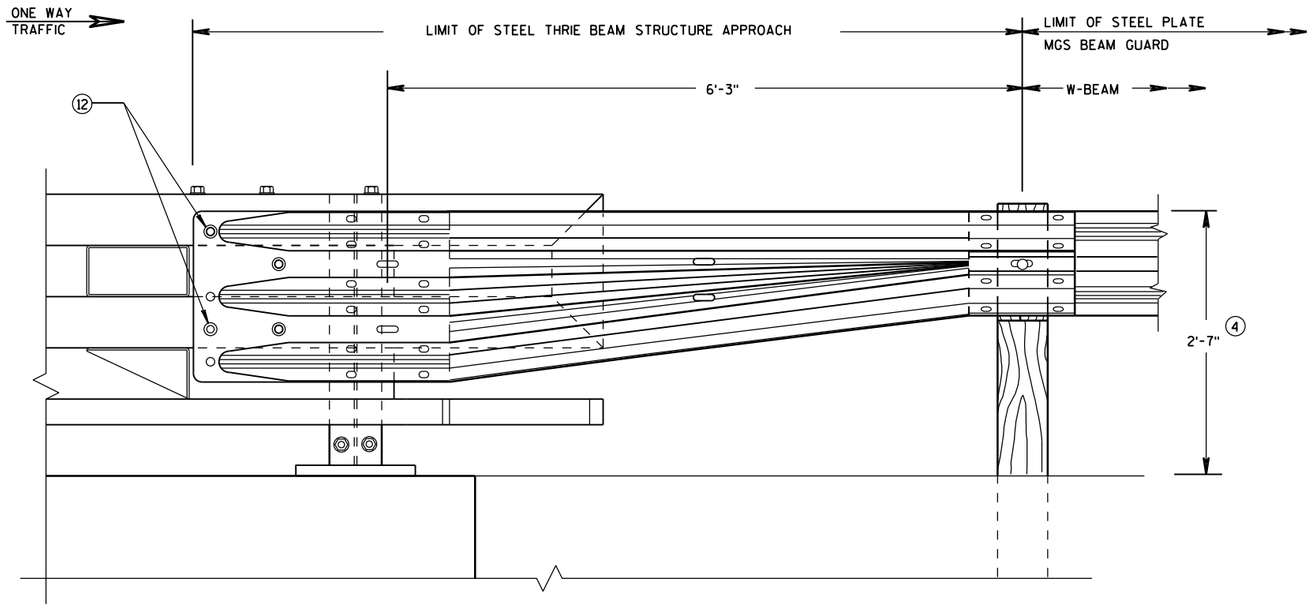
S.D.D. 14 B 45-4k



FRONT VIEW

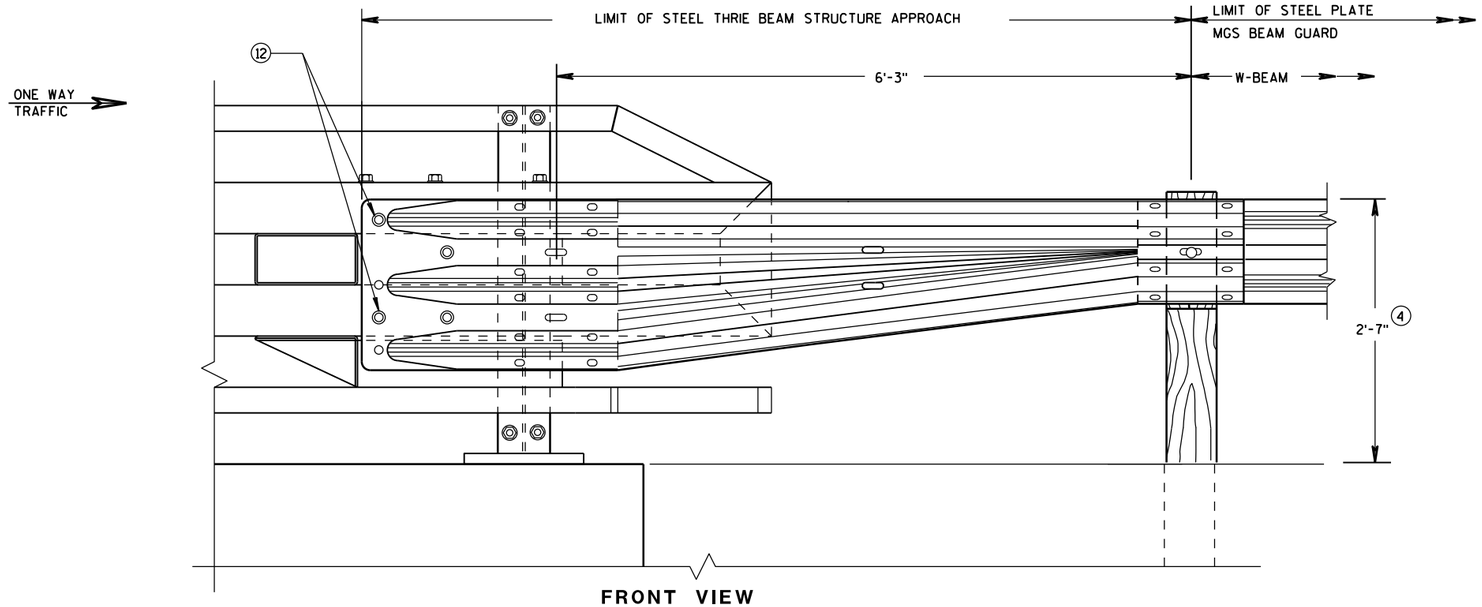
W BEAM TRANSITION AND CONNECTION TO BRIDGE RAILING TYPE "NY3"

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

GENERAL NOTES

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

(12) BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND ½-INCH BEYOND NUT.



FRONT VIEW

W BEAM TRANSITION AND CONNECTION TO BRIDGE RAILING TYPE "NY4"

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

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
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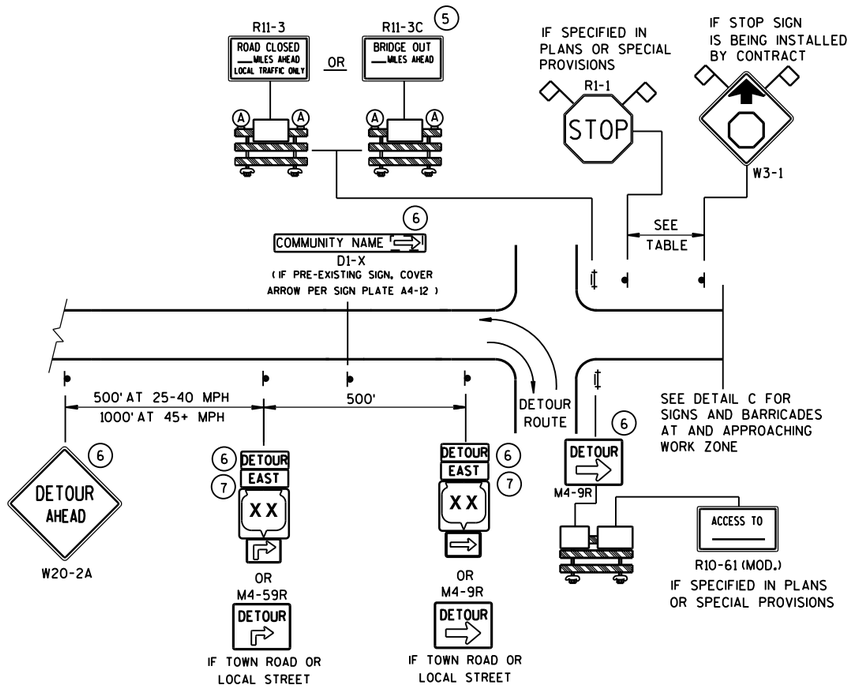
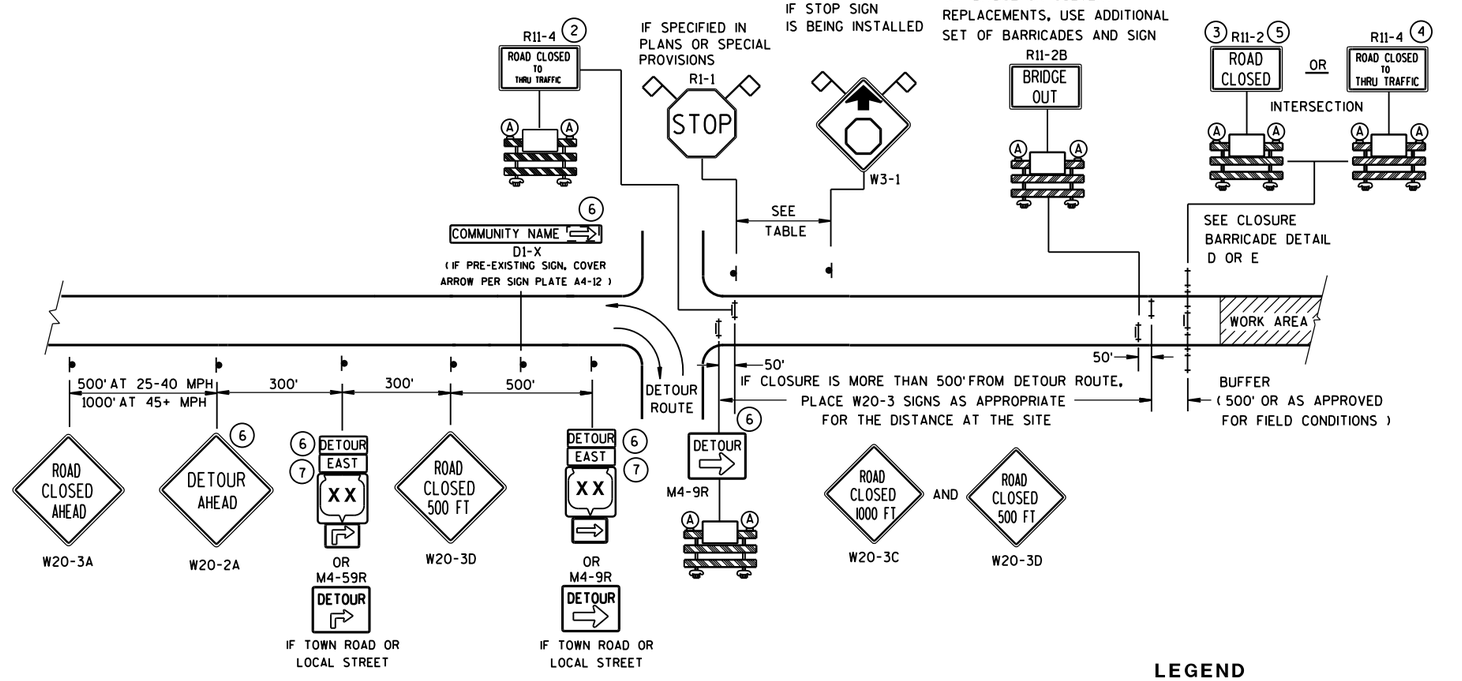


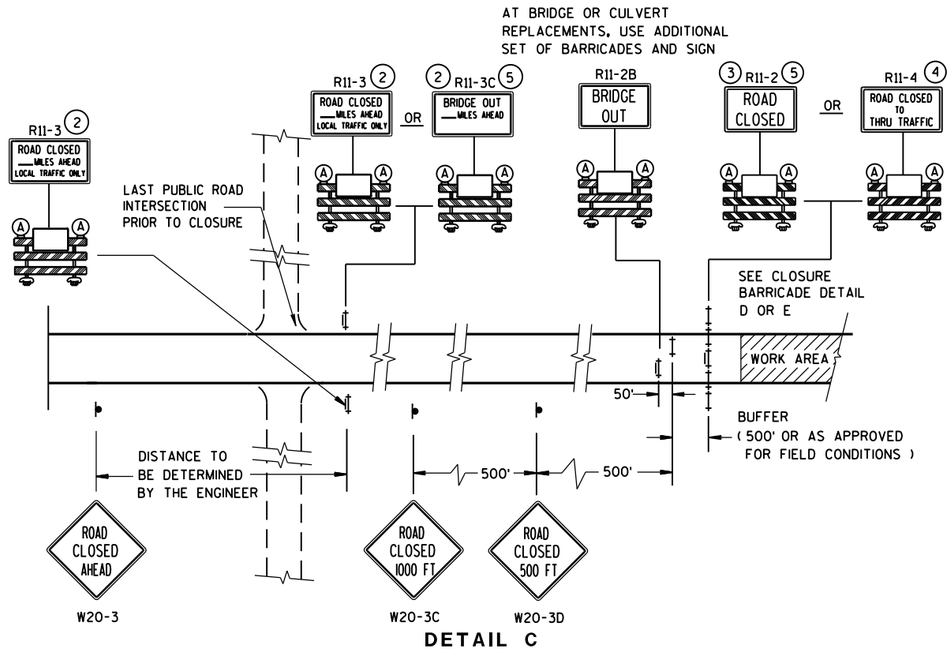
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE GREATER THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE LESS THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

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

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

LEGEND

- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- (A) TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA
- DETOUR / EAST — M4-8 / M3-X
- XX — M1-4; COUNTY XX — M1-5A; XX — M1-6
- M05-1 OR M06-1
- FLAGS, 16" X 16" MIN., (ORANGE)

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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S.D.D. 15 C 2-6a

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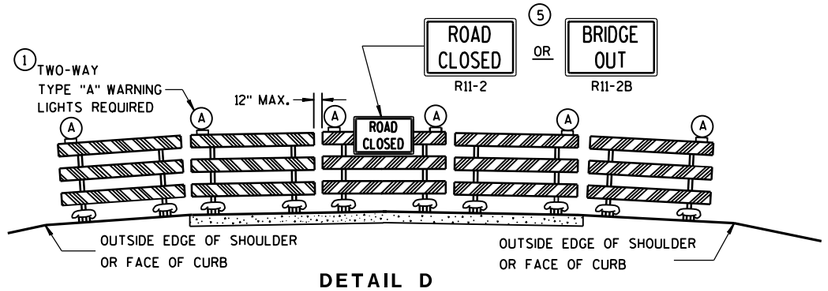
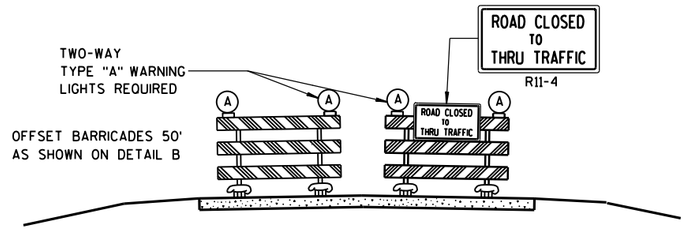
S.D.D. 15 C 2-6a



DETAIL D

ROAD CLOSURE BARRICADE DETAIL

APPROACH VIEW



DETAIL E

LANE CLOSURE BARRICADE DETAIL

APPROACH VIEW

SEE SDD 15C2-SHEET "**a**" FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
- R11-2 SHALL BE 48" X 30".
- R11-3, R11-4 AND R10-61 SHALL BE 60" X 30".
- M4-9 SHALL BE 30" X 24".
- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1-1 SHALL BE 36" X 36".

(1) TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8-FOOT LIGHT SPACING).

(2) THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT INTERSECTION.

(3) FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL D.

(4) FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE LANE CLOSURE BARRICADE DETAIL E.

(5) FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11-2 AND R11-3 SIGNS.

(6) INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.

(7) "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

Sept. 2015 — DATE

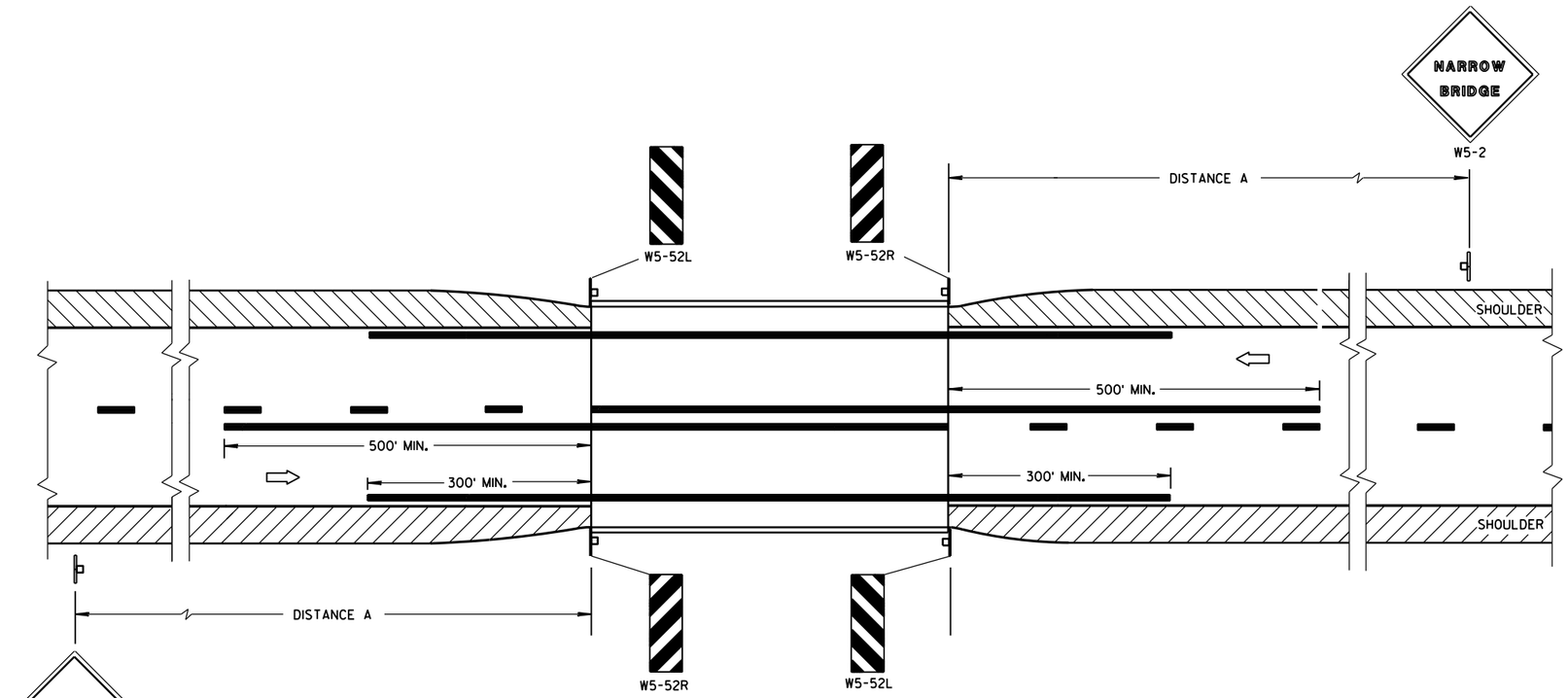
/S/ Peter Amakobe Atepe
STATEWIDE WORK ZO SAFETY ENGI — FIC
FHWA

6

S.D.D. 15 C 2-6b

6

S.D.D. 15 C 2-6b



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'

GENERAL NOTES

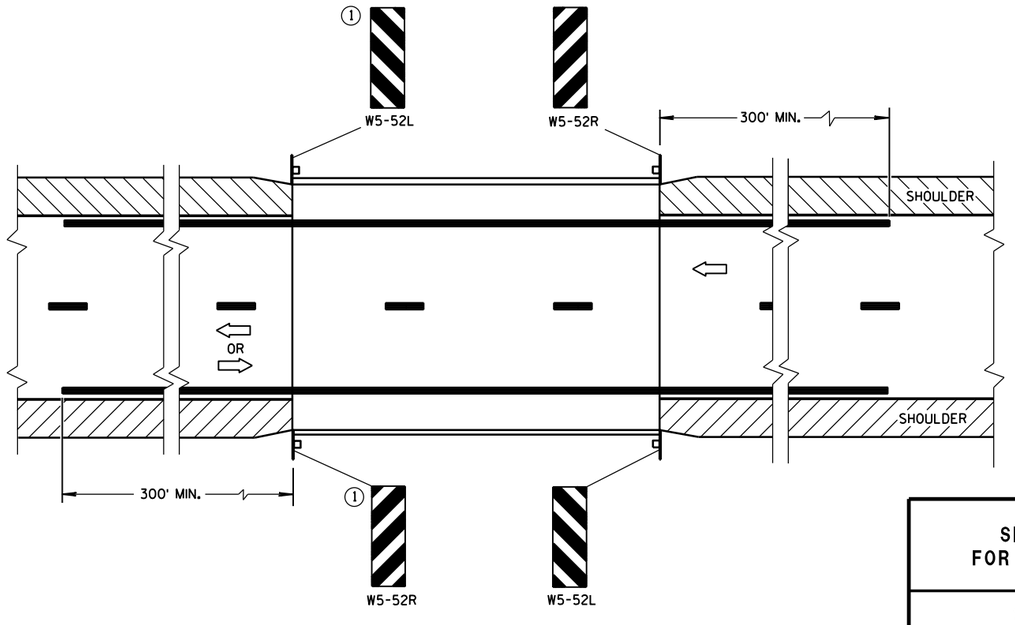
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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



SITUATION 2

WARRANTING CRITERIA:

1. BRIDGE WIDTH IS AT LEAST 24 FEET AND
2. BRIDGE SHOULDER WIDTH IS LESS THAN 6 FEET.

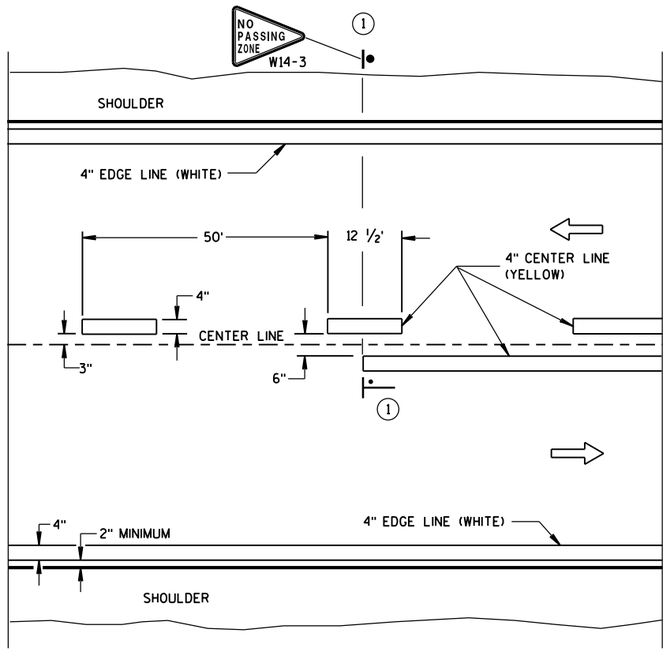
SIGNING & MARKING FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

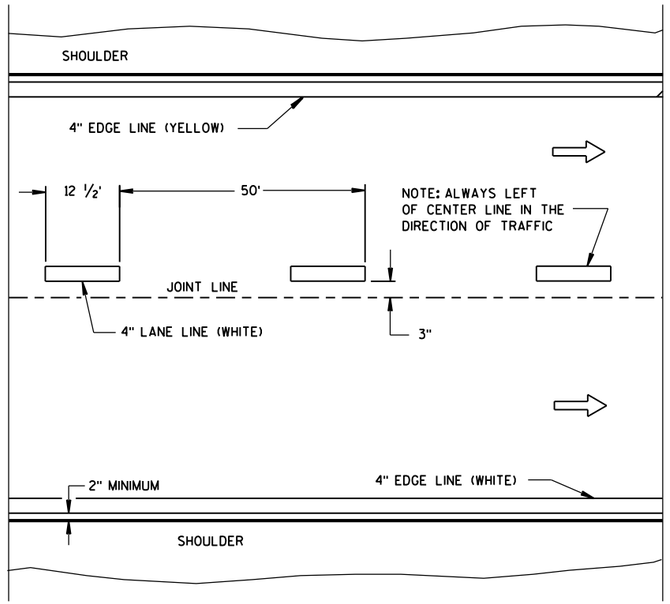
APPROVED
June 2017 — DATE
/S/ Matthew R. Rauch — STATE SIGNING AND MARKING ENGINEER
FHWA

S.D.D. 15 C 6-9

S.D.D. 15 C 6-9



TWO WAY TRAFFIC



ONE WAY TRAFFIC

PERMANENT 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.

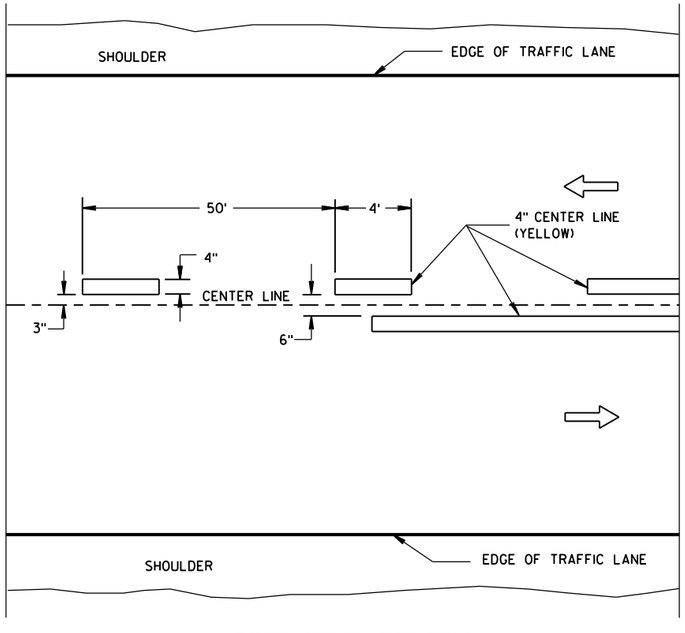
NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL

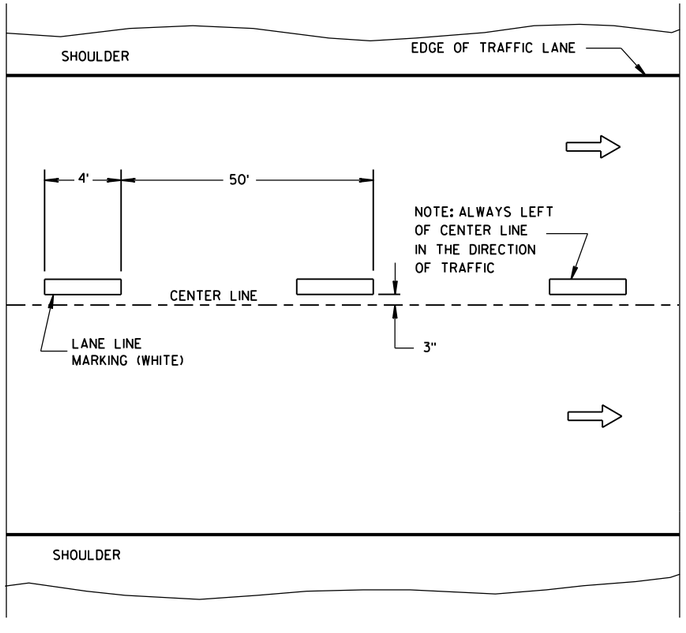
LEGEND

"T" MARKING

POST MOUNTED SIGN



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

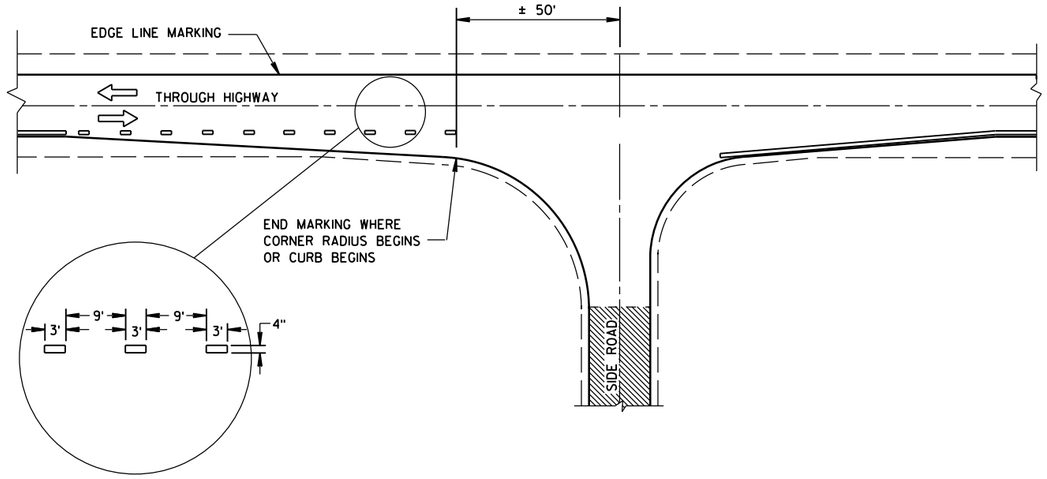
APPROVED
June 2017 — DATE
/S/ Matthew R. Rauch — STATE SIGNING AND MAR[illegible]INEER
FHWA

6

S.D.D. 15 C 8-18a

6

S.D.D. 15 C 8-18a



MINOR INTERSECTION WITHOUT CURBS

GENERAL NOTES

EDGE LINES SHALL BE OMITTED THROUGH INTERSECTIONS. EDGE LINES SHALL BE CONTINUED THROUGH DRIVEWAYS.

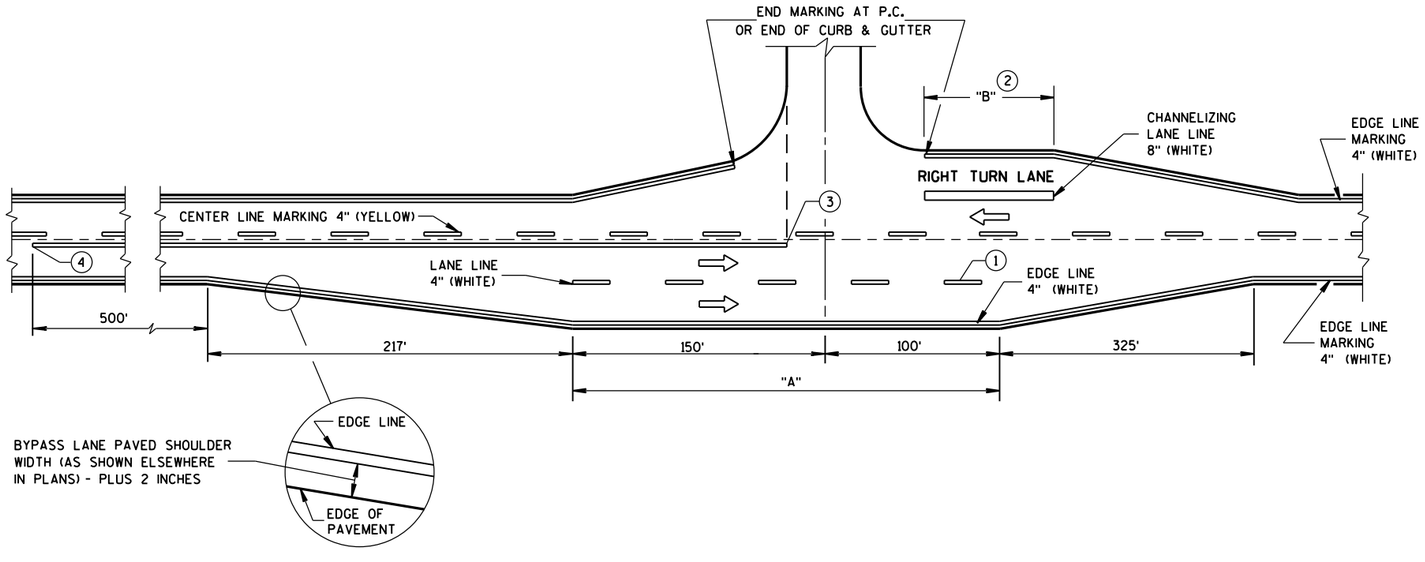
(1) WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT LANE LINE.

(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



MAJOR INTERSECTIONS

(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANES)

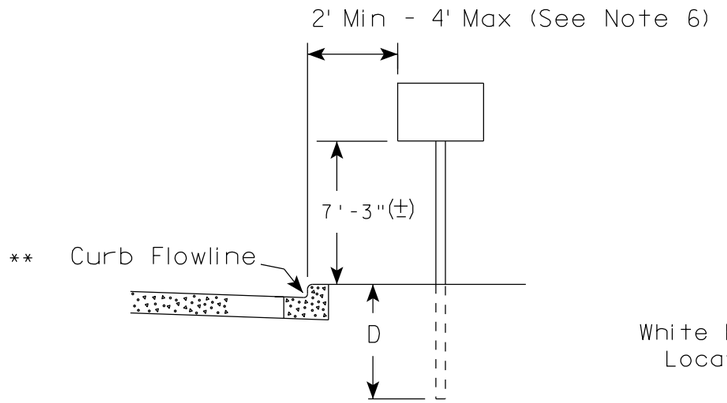
PAVEMENT MARKING
(INTERSECTIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

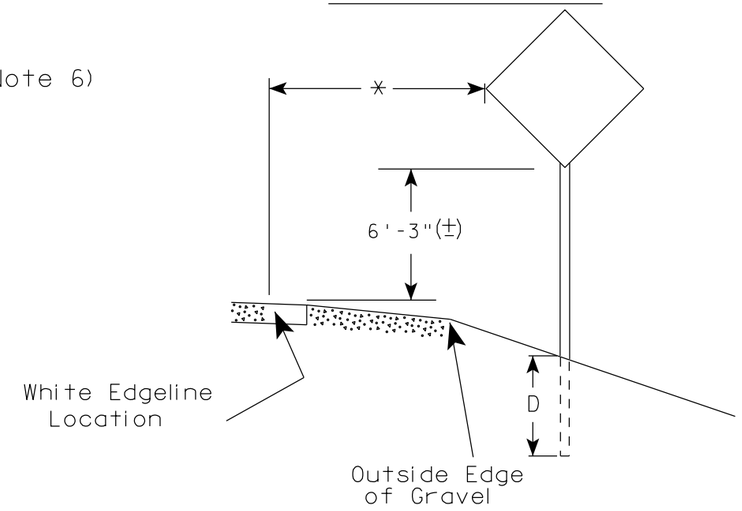
6

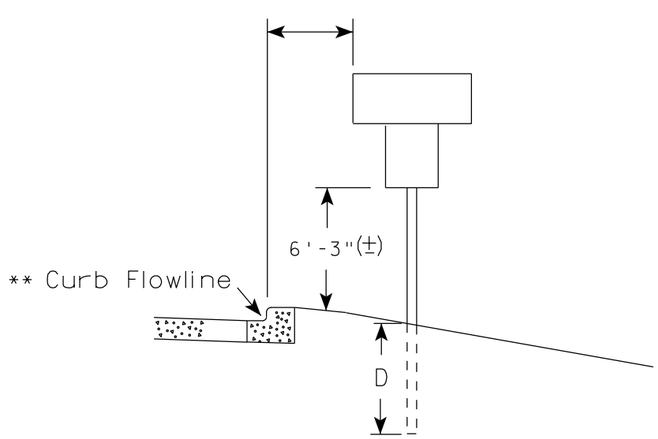
S.D.D. 15 C 35-1a

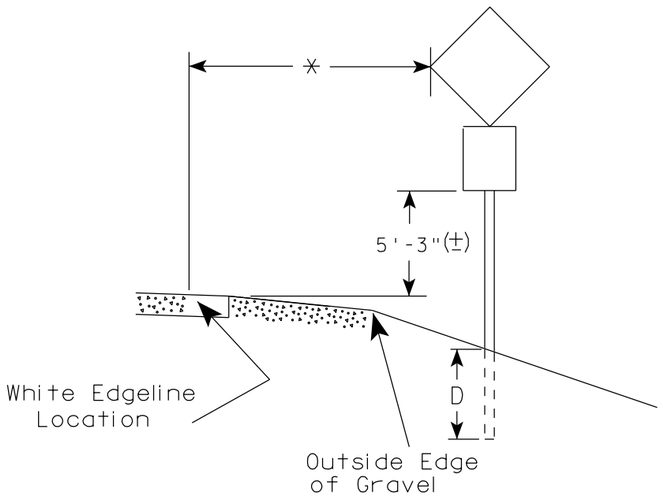
URBAN AREA



RURAL AREA (See Note 2)







GENERAL NOTES

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

POST EMBEDMENT DEPTH

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

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

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

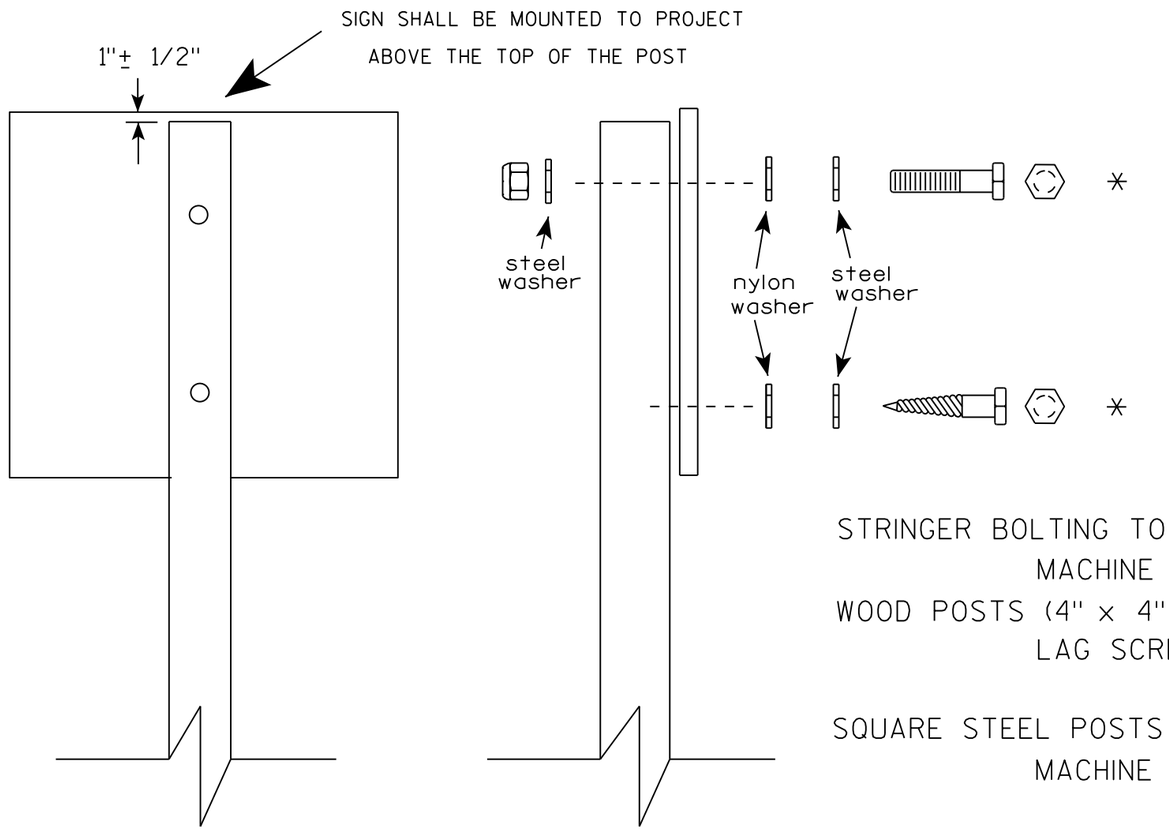
TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch for State Traffic Engineer

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

PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E



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

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

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

STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)

MACHINE BOLTS - 5/16" X 1-3/4" Length w/ lock nuts

WOOD POSTS (4" x 4" or 4" x 6")

LAG SCREWS - 3/8" X 3" (NO STRINGERS ON BACK OF SIGN)
3/8" X 4" (STRINGERS ON BACK OF SIGN)

SQUARE STEEL POSTS (2" x 2")

MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
3/8" X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)

RIVETS - 9/32 " (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

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

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

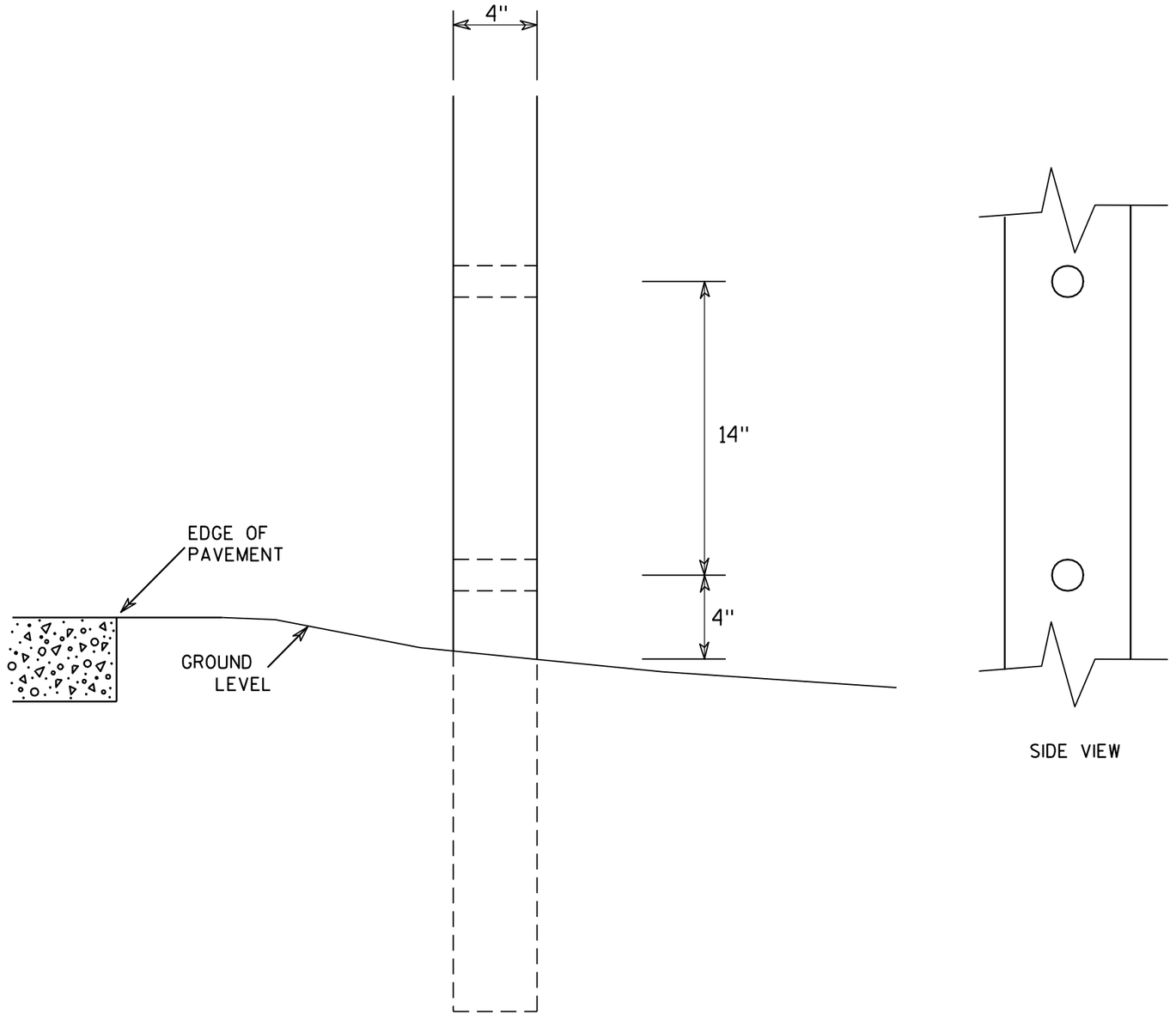
ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
For State Traffic Engineer

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

PROJECT NO: SHEET NO: E



SIDE VIEW

GENERAL NOTES

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

7

7

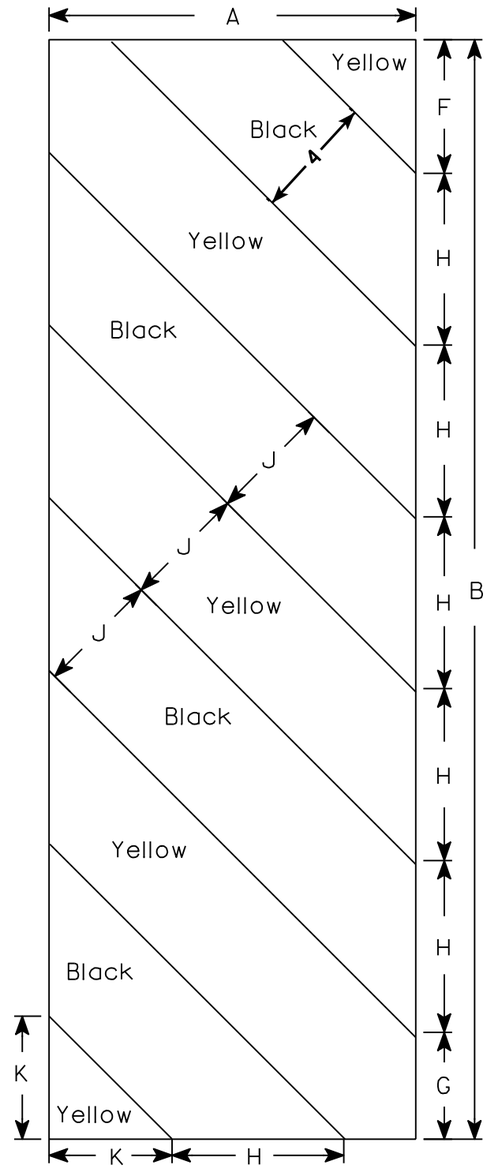
4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

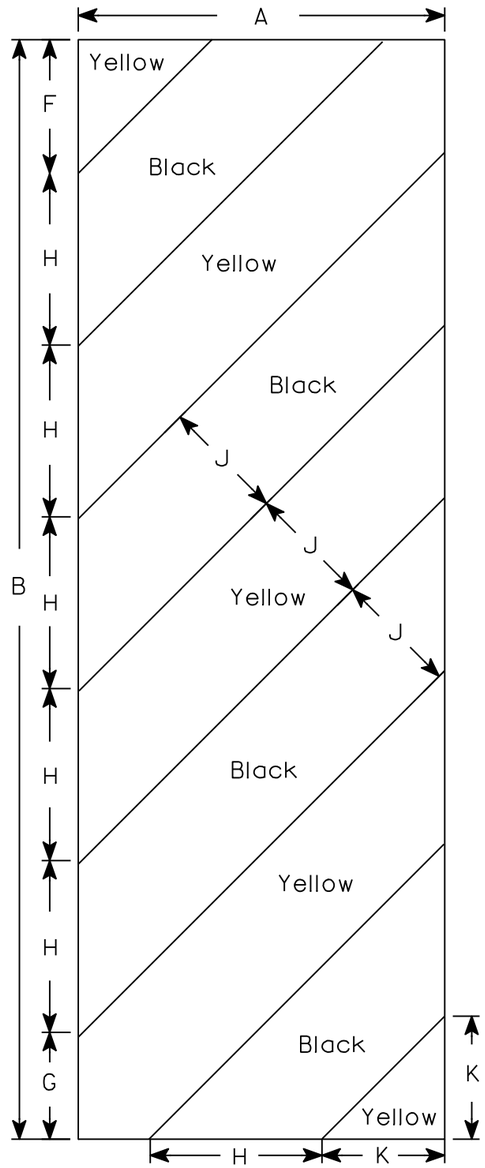
APPROVED Chester J Spang
for State Traffic Engineer

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

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 62	E



W5-52L



W5-52R

NOTES

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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	12	36				4 3/8	3 1/2	5 5/8	45°	4	4																3.0
2M	12	36				4 3/8	3 1/2	5 5/8	45°	4	4																3.0
3	18	54				6	5 1/2	8 1/2	45°	6	6 9/16																6.75
4																											
5																											

STANDARD SIGN

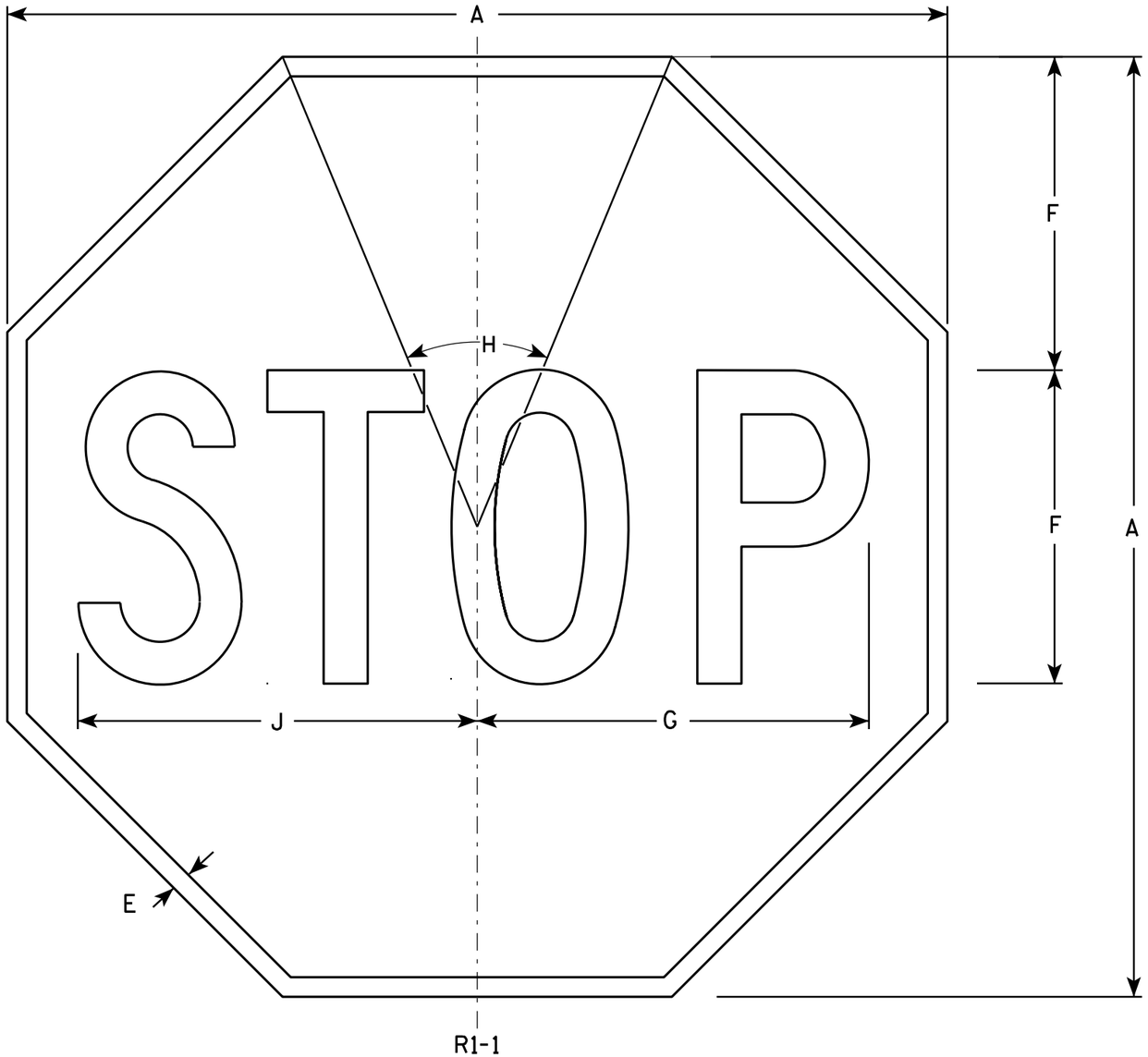
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 5/29/12 PLATE NO. W5-52.9

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 63	E



NOTES

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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24				3/8	8	10	45°		10 1/4																	3.31
2S	30				5/8	10	12 1/2	45°		12 3/4																	5.18
2M	36				3/4	12	15	45°		15 3/8																	7.46
3	36				3/4	12	15	45°		15 3/8																	7.46
4	48				1	16	20	45°		20 1/2																	13.25
5	48				1	16	20	45°		20 1/2																	13.25
6	18				3/8	6	7 3/4	45°		7 3/4																	1.86
7	12				1/4	4	5	45°		5 1/8																	0.78

STANDARD SIGN
R1-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 12/03/10 PLATE NO. R1-1.12

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 64	E

PLOT TIME: 9:43:41 AM
PLOT DATE: 5/30/2017
FILE NAME : S:\PT\T\Trem\V32859\5-final-dsgn\5f-drawings\20-Struct\bridge\b61223gl.dgn

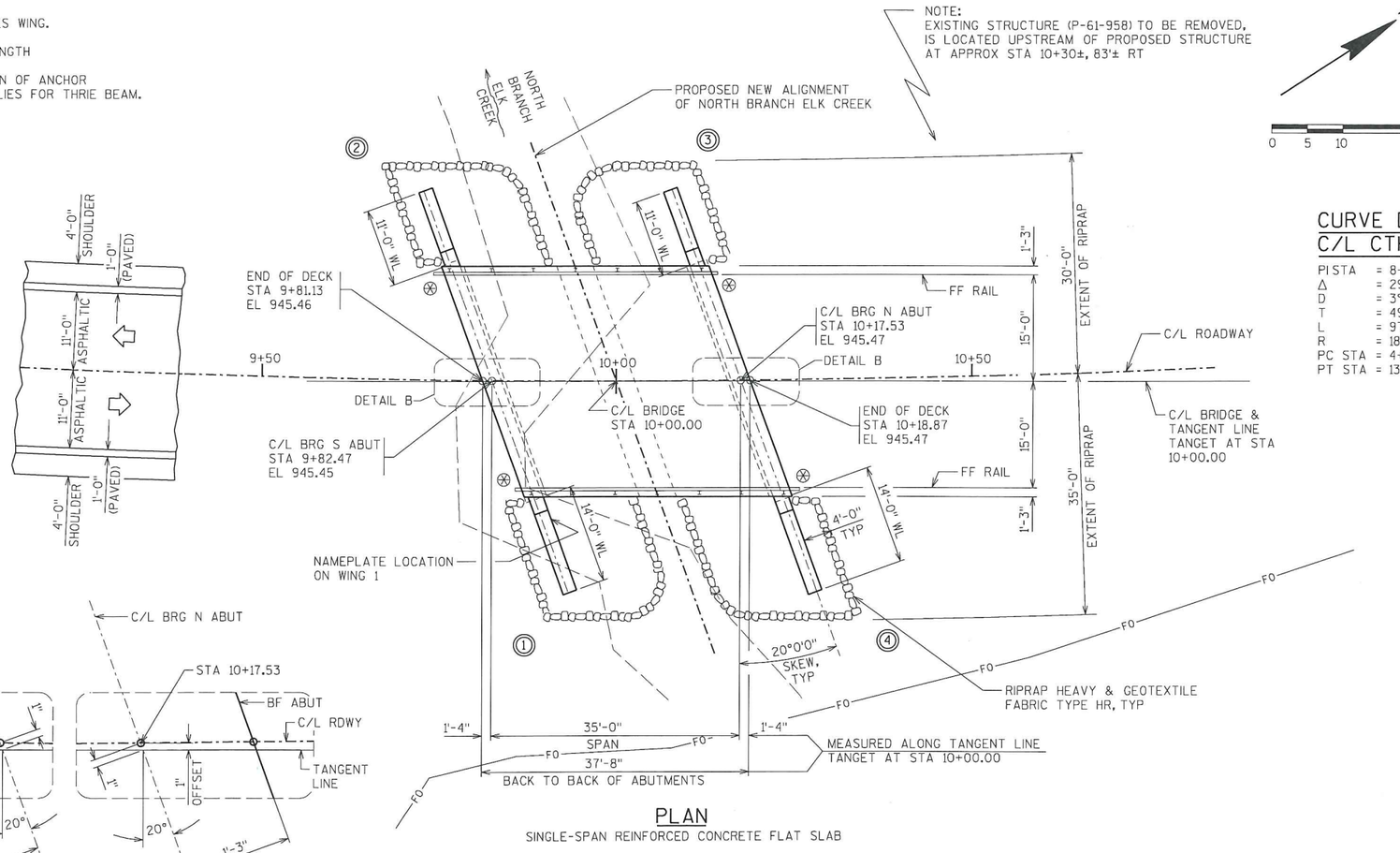
STATE PROJECT NUMBER
7175-00-71

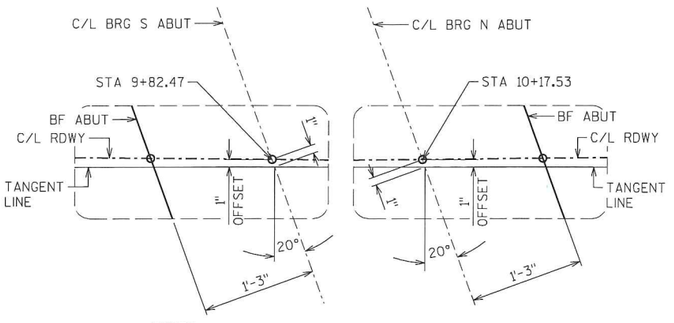
◎ INDICATES WING.

WL WING LENGTH

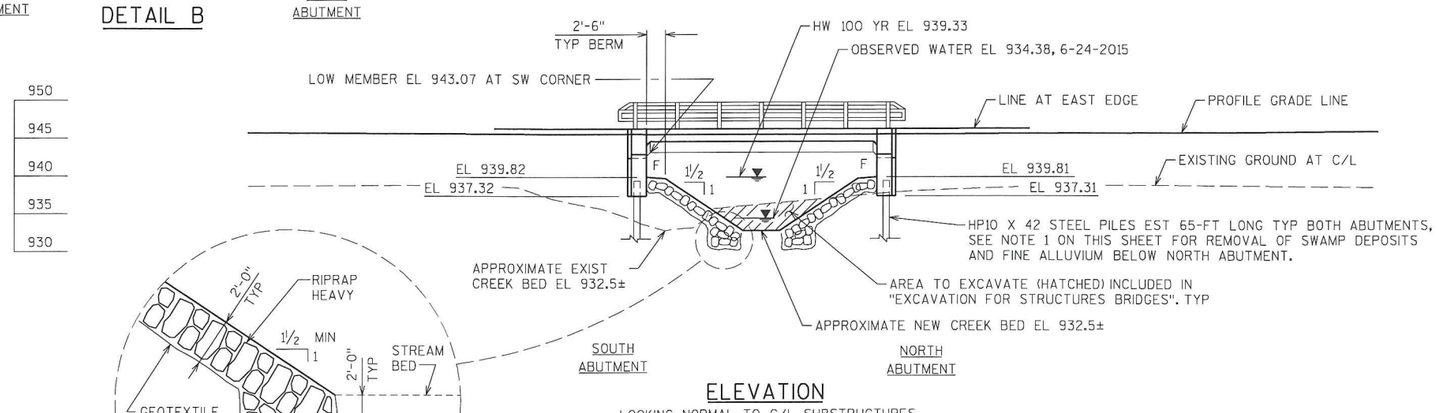
⊛ LOCATION OF ANCHOR ASSEMBLIES FOR THRIE BEAM.

NOTE:
EXISTING STRUCTURE (P-61-958) TO BE REMOVED, IS LOCATED UPSTREAM OF PROPOSED STRUCTURE AT APPROX STA 10+30±, 83'± RT



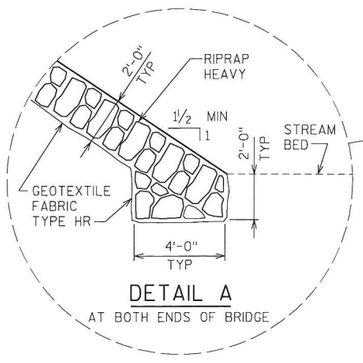


DETAIL B



ELEVATION

LOOKING NORMAL TO C/L SUBSTRUCTURES



DETAIL A

AT BOTH ENDS OF BRIDGE

CURVE DATA
C/L CTH O

PI STA	= 8+96.77
Δ	= 29°54' 25.76"
D	= 3°4' 49.51"
T	= 496.77'
L	= 970.880'
R	= 1860.00'
PC STA	= 4+00.00
PT STA	= 13+70.88

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
INVENTORY RATING FACTOR: RF = 1.31
OPERATING RATING FACTOR: RF = 1.70
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 PSF

INVENTORY AND OPERATING RATINGS DO NOT INCLUDE FUTURE WEARING SURFACE.

MATERIAL PROPERTIES:

CONCRETE MASONRY - SUPERSTRUCTURE	f'c = 4,000 psi
- ALL OTHER	f'c = 3,500 psi
HIGH STRENGTH BAR STEEL REINFORCEMENT AASHTO GRADE 60	fy = 60,000 psi

FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON HP 10X42 STEEL PILING WITH A REQUIRED DRIVING RESISTANCE OF 140 TONS* PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC EQUATION. ESTIMATED 65-FEET LONG AT EACH ABUTMENT.

*THE FACTORED AXIAL RESISTANCE OF PILES IN COMPRESSION USED FOR DESIGN IS THE REQUIRED DRIVING RESISTANCE MULTIPLIED BY A RESISTANCE FACTOR OF 0.5 USING MODIFIED GATES TO DETERMINE DRIVEN PILE CAPACITY.

HYDRAULIC DATA

100 YEAR FREQUENCY

Q_{100}	400	CFS
Q_{100} THRU STRUCTURE	400	CFS
VELOCITY	6.21	FPS
HIGH WATER EL	939.33	FT
WATERWAY AREA	64	SQ FT
DRAINAGE AREA	1.2	SQ MI

2 YEAR FREQUENCY

Q_2	90	CFS
HIGH WATER EL	936.40	FT

SCOUR CODE 8

TRAFFIC DATA

ADT (2018)	= 440
ADT (2038)	= 590
DD	= 50/50
T	= 10 %
DESIGN SPEED	= 55 MPH

NOTE 1

RECOMMENDATION TO REMOVE SWAMP DEPOSITS AND FINE ALLUVIUM BELOW NORTH ABUTMENT PER GEOTECHNICAL REPORT. EL 937.3± TO 925.5± (12' MATERIAL). EXCAVATION OF SWAMP DEPOSITS AND ALLUVIUM MATERIAL AS WELL AS BACKFILL MATERIAL IS INCLUDED IN ROADWAY QUANTITIES, SEE ROADWAY PLANS FOR DETAILS.

LIST OF DRAWINGS

BENCHMARK (DATUM = NAVD 88)

NO	STATION	DESCRIPTION	ELEV
1	9+02.26 130.4'RT	POWER POLE, SW CORNER HOLMEN RD AND CTH O	944.48
2	10+27.90 72.8'RT	PINK PAINT MARK, NORTH RAILING OF PROJECT BRIDGE CENTER, CENTER TOP RAILING	945.70

WISCONSIN PROFESSIONAL ENGINEER
CHRISTOPHER J. BLUM
E-33157
MADISON
WI
5-30-17

SEH CONTACT: CHRIS BLUM, PE, 608.620.6192
WISDOT BRIDGE OFFICE CONTACT: BILL DREHER, PE, 608.266.8489

NO.	DATE	REVISION	BY

SEH
SHORT ELLIOTT HENDRICKSON INC.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher SDR 08/28/17
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE B-61-223

CTH O OVER NORTH BRANCH ELK CREEK

COUNTY	TOWN/~~CITY/VILLAGE~~
TREMPEALEAU	HALE

DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
CJB	NCK	DLF	CJB

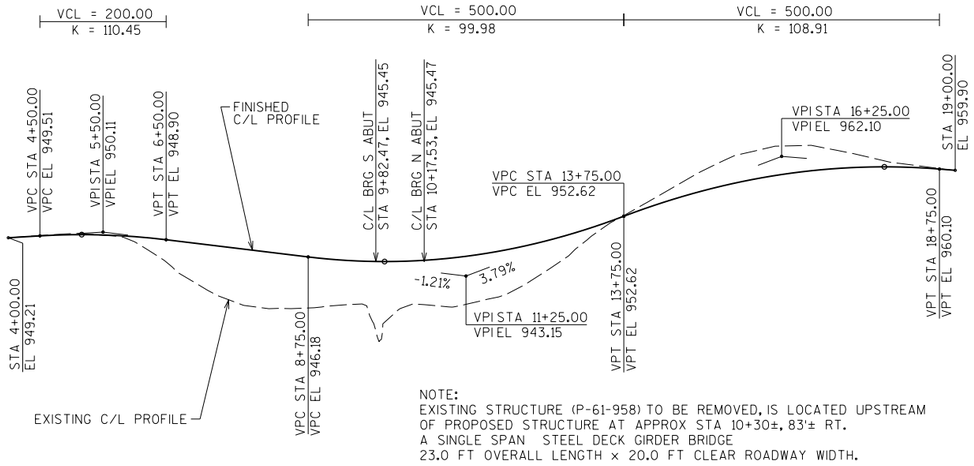
GENERAL PLAN

SHEET 65 OF 9

8

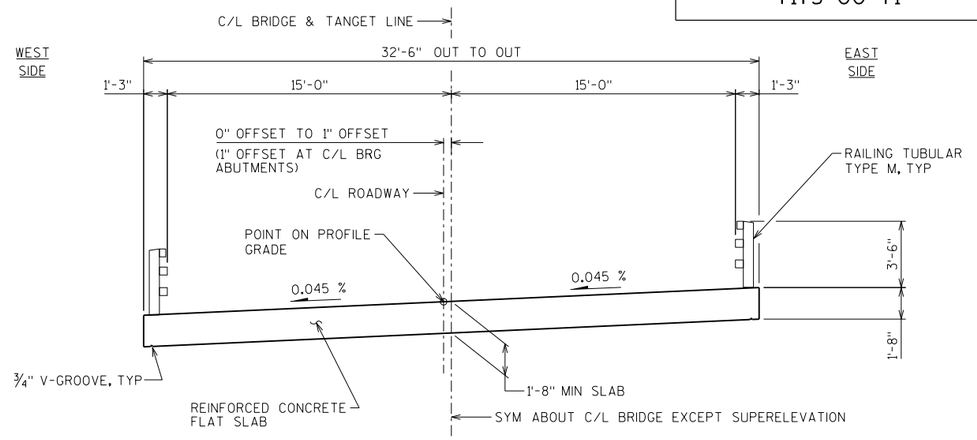
8

STATE PROJECT NUMBER
7175-00-71

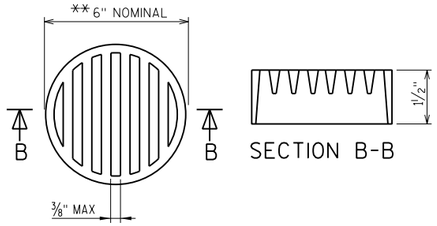


NOTE:
EXISTING STRUCTURE (P-61-958) TO BE REMOVED, IS LOCATED UPSTREAM OF PROPOSED STRUCTURE AT APPROX STA 10+30±, 83'± RT.
A SINGLE SPAN STEEL DECK GIRDER BRIDGE
23.0 FT OVERALL LENGTH x 20.0 FT CLEAR ROADWAY WIDTH.

PROFILE GRADE LINE



CROSS SECTION THRU BRIDGE
(LOOKING NORTH)



RODENT SHEILD

**NOTE: DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SHIELD SO SLOTS ARE VERTICAL.

RODENT SHIELD, PIPE COUPLING, AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

THE RODENT SHIELD SHALL BE A PVC GRATE SIMLAR TO THIS DETAIL. THE GRATE IS COMMERCIALLY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.

TOTAL ESTIMATED QUANTITIES - B-61-223

	BID ITEM NUMBER	BID ITEMS	UNIT	SOUTH ABUT	NORTH ABUT	SUPER	TOTALS
	203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS (STATION) 10+30	LS	-	-	-	1
(1)	206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-61-223	LS	-	-	-	1
(2)	210.1500	BACKFILL STRUCTURE TYPE A	TON	190	190	-	380
	502.0100	CONCRETE MASONRY BRIDGES	CY	33	33	81	147
	502.3200	PROTECTIVE SURFACE TREATMENT	SY	-	-	160	160
	505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	2555	2555	-	5110
	505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1355	1355	17,255	19,965
	513.4061	RAILING TUBULAR TYPE M B-61-223	LF	-	-	80	80
	516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	12.5	12.5	-	25
	550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	325	325	-	650
	606.0300	RIPRAP HEAVY	CY	115	115	-	230
(3)	612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	80	80	-	160
	645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	50	50	-	100
	645.0120	GEOTEXTILE TYPE HR	SY	230	230	-	460
		NON-BID ITEMS					
		FILLER	SIZE	———	———	———	½ & ¾

(1) REMOVAL OF SWAMP DEPOSITS AND FINE ALLUVIUM BELOW NORTH ABUTMENT PER GEOTECHNICAL REPORT. AS WELL AS BACKFILL MATERIAL IS INCLUDED IN ROADWAY QUANTITIES.

(2) A FACTOR OF 2.0 WAS USED TO CONVERT CU YDS TO TONS.

(3) INCLUDES RODENT SHEILD FOR PIPE UNDERDRAIN PER SDD 8F6-4.

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

FOR EXISTING STRUCTURE SEE PROFILE GRADE LINE THIS SHEET.

REFER TO ROADWAY DRAWINGS FOR EXISTING UTILITY LOCATIONS.

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

THE FIRST DIGIT OF A THREE DIGIT BAR MARK OR THE FIRST TWO DIGITS OF A FOUR DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

BEVEL EXPOSED EDGES OF CONCRETE ¾" UNLESS OTHERWISE NOTED.

SLAB FALSEWORK SHALL BE SUPPORTED ON PILES OR THE SUBSTRUCTURE UNLESS AN ALTERNATE METHOD IS APPROVED BY THE ENGINEER.

THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY AND GEOTEXTILE TYPE HR TO THE EXTENT SHOWN ON THE GENERAL PLAN SHEET AND IN THE ABUTMENTS DETAILS.

SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-ASPHALTIC JOINT SEALER (1" DEEP & HOLD ⅛" BELOW SURFACE OF CONCRETE).

THE EXISTING GROUNDLINE SHALL BE THE UPPER LIMITS OF EXCAVATION FOR STRUCTURES.

EXCAVATION BELOW THE ABUTMENTS AND ABUTMENTS BEDDING MATERIALS REQUIRES ENGINEER APPROVAL. GEOTEXTILE SHALL BE SET AT THE BOTTOM OF EXCAVATION AND EXTEND 2'-0" ABOVE BOTTOM OF ABUTMENT

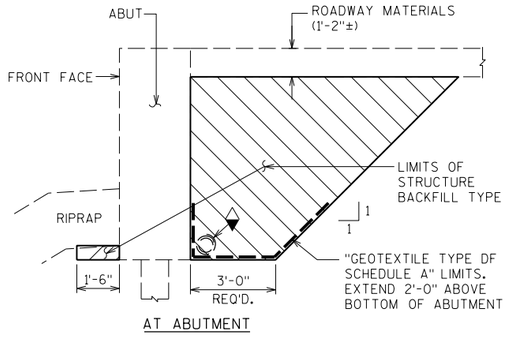
AT THE BACKFACE OF ABUTMENTS ALL VOLUME WHICH CANNOT BE PLACED BEFORE ABUTMENT CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL.

THE QUANTITY FOR BACKFILL STRUCTURE TYPE A, BID ITEM 210.1500 IS CALCULATED BASED ON THE BACKFILL STRUCTURE LIMITS DETAILS SHOWN ON THIS SHEET.

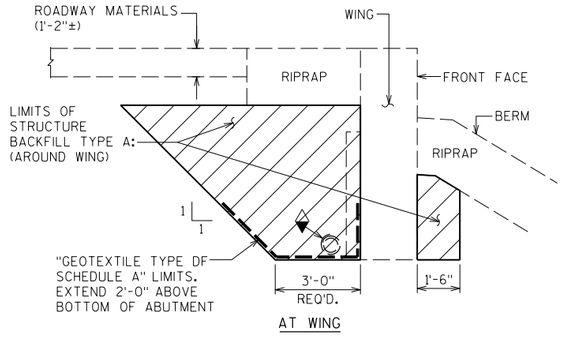
BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO "EXCAVATION FOR STRUCTURES". LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

JOINT FILLER SHALL CONFORM TO THE REQUIREMENTS OF AASHTO DESIGNATION M153 TYPE 1, 2, OR 3 OR AASHTO DESIGNATION M213.

APPLY A "PROTECTIVE SURFACE TREATMENT" PER THE STANDARD SPECIFICATIONS AND THE SUPERSTRUCTURE DETAILS SHEET.



AT ABUTMENT

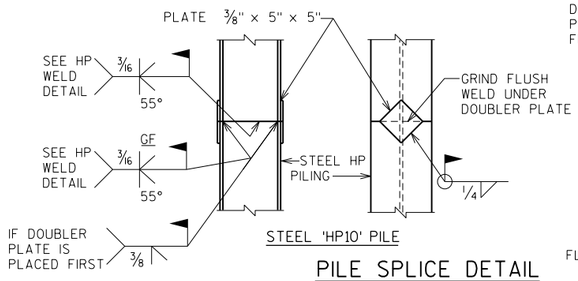


AT WING

BACKFILL STRUCTURE LIMITS

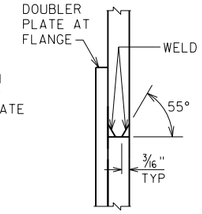
A FACTOR OF 2.0 WAS USED TO CONVERT CU YDS TO TONS

◆ PIPE UNDERDRAIN WRAPPED (6-INCH) SLOPE 0.5% MIN TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE.



STEEL 'HP10' PILE

PILE SPLICE DETAIL



'HP10' WELD DETAIL
FLANGE SHOWN, WEB SIMILAR

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-223

DRAWN BY	DLF	PLANS CK'D.	CJB

CROSS SECTION AND QUANTITIES

SHEET 2 OF 9

66

PLOT TIME: 9:43:41 AM
PLOT DATE: 5/30/2017
FILE NAME : S:\PTV\Tremn\32859\5-final-dsgn\5i-drawings\20-Struct\bridge\b6223g2.dgn

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BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
B-3	1/20/2016	490872.415	862754.465
B-4	1/21/2016	490900.302	862783.140
BORINGS COMPLETED BY:	AMERICAN ENGINEERING TESTING, INC		
REPORT COMPLETED BY:	AMERICAN ENGINEERING TESTING, INC		
ALL COORDINATES REFERENCED TO NAVD 88 TREMPEALEAU COUNY			

SOIL BORINGS PERFORMED BY:

American Engineering Testing, Inc.
1837 County Highway 00
Chippewa Falls, WI 54729
715-861-5045 Fax 715-861-5048
www.amengtest.com

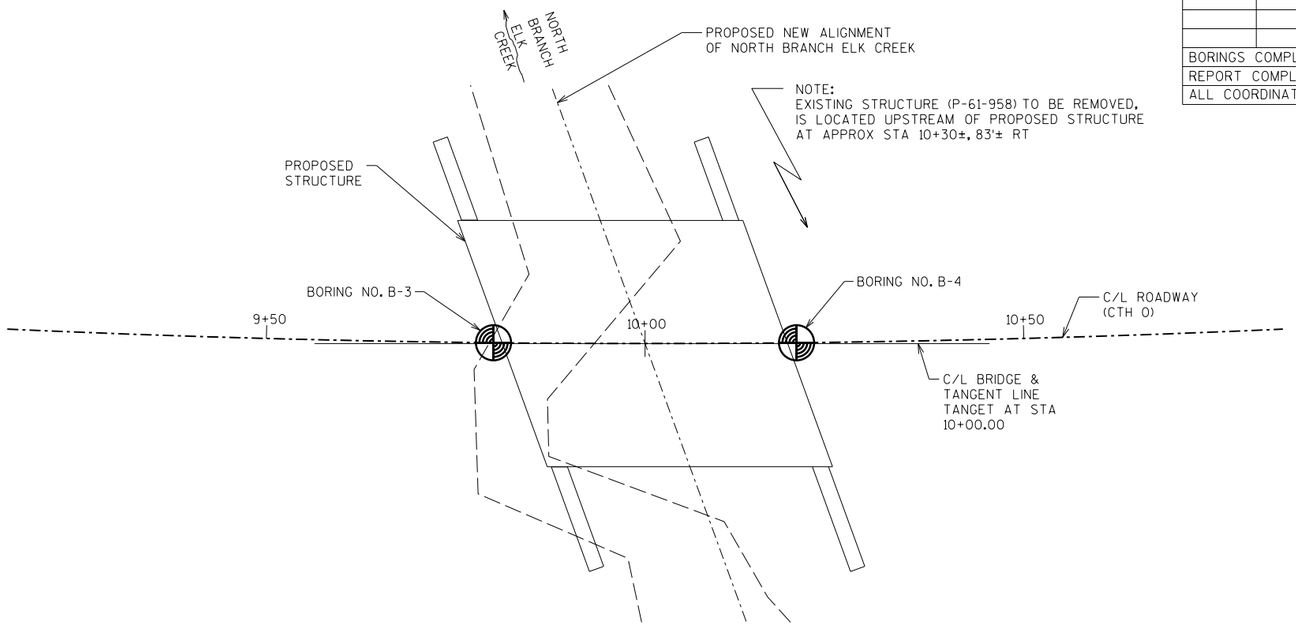
REPORT BY:
Benjamin B. Mattson, P.E.
Geotechnical Engineer

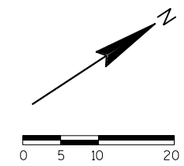
STATE PROJECT NUMBER

7175-00-71

MATERIAL SYMBOLS

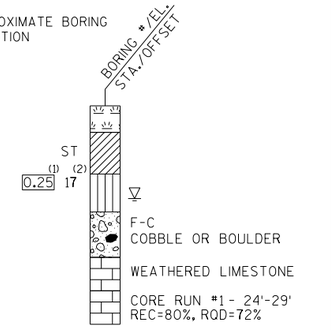
ASPHALT	TOPSOIL	PEAT
CONCRETE	FILL	GRAVEL
SAND	CLAY	SILT
BOULDERS OR COBBLES	LIMESTONE	BEDROCK (UNKNOWN)
SHALE	SANDSTONE	IGNEOUS/ META





LEGEND OF BORING

= APPROXIMATE BORING LOCATION



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

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

GROUND WATER ELEVATION

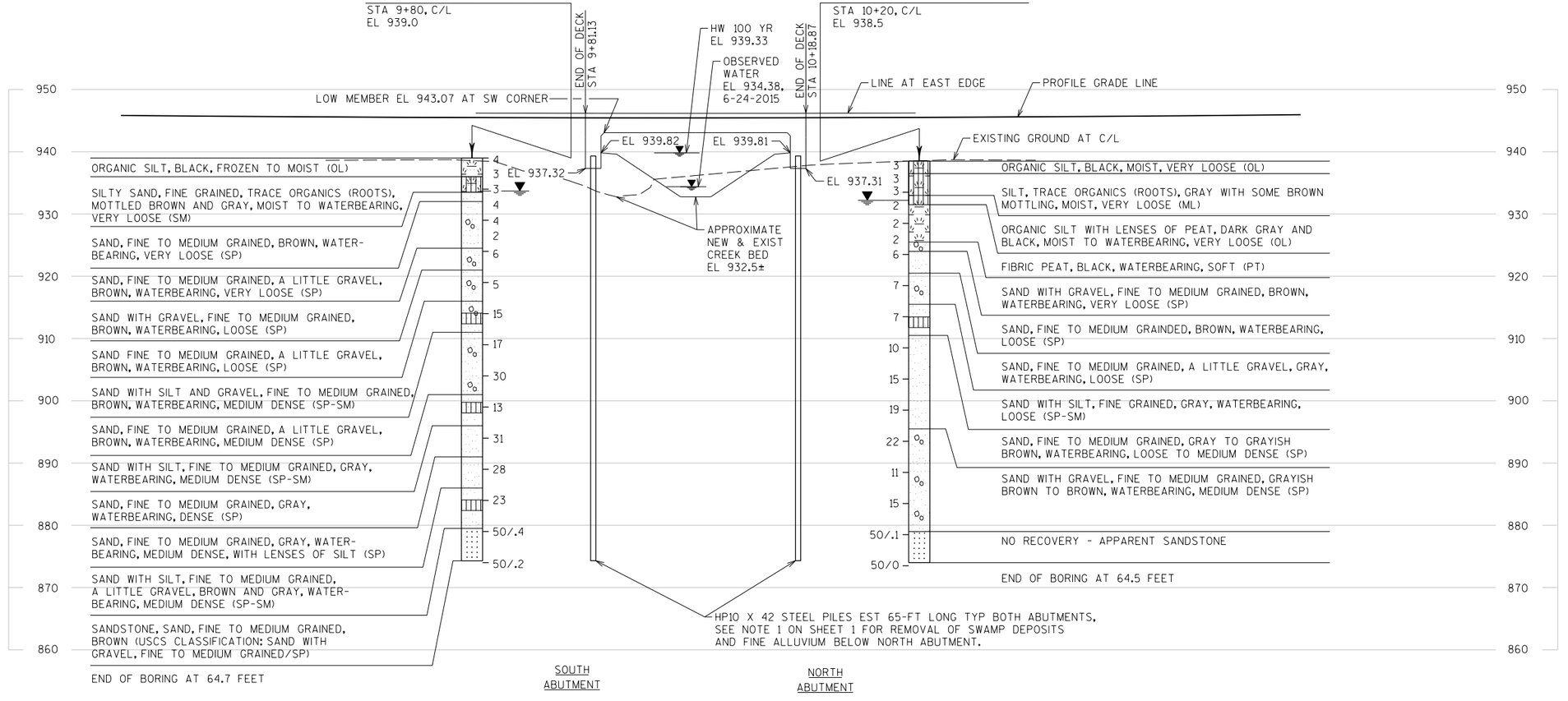
- ▽ AT TIME OF DRILLING
- ▼ END OF DRILLING
- ▽ AFTER DRILLING

ABBREVIATIONS

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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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



NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-223

DRAWN BY DLF | PLANS CK'D. CJB

SUBSURFACE EXPLORATION

SHEET 3 OF 9

67

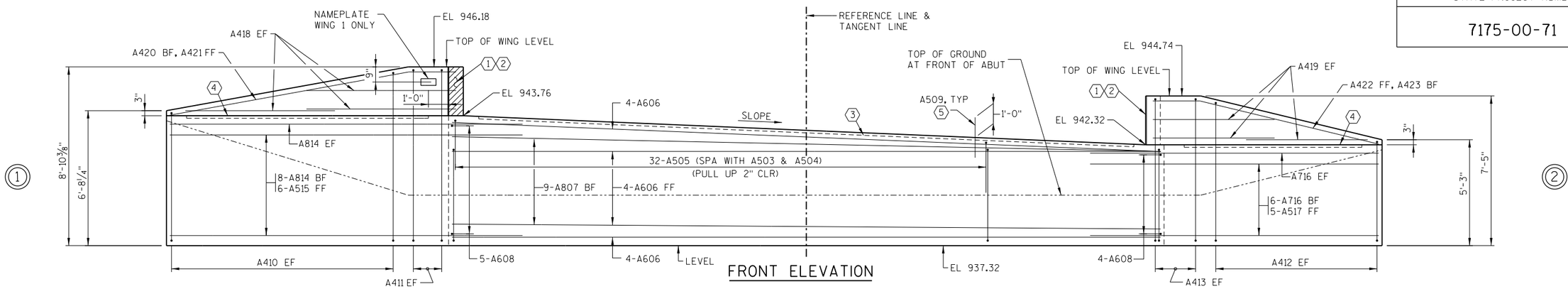
8

8

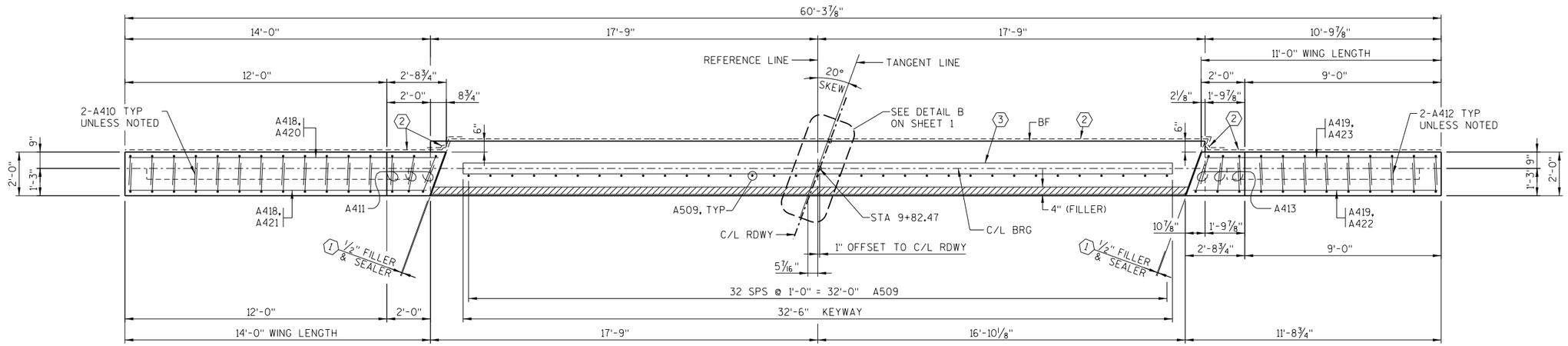
PLOT DATE: 5/30/2017 PLOT TIME: 9:43:41 AM

FILE NAME : S:\PT\T\Tremn\32859\5-final-dsgn\5l-drawings\20-Struct\bridge\b61223bl.dgn

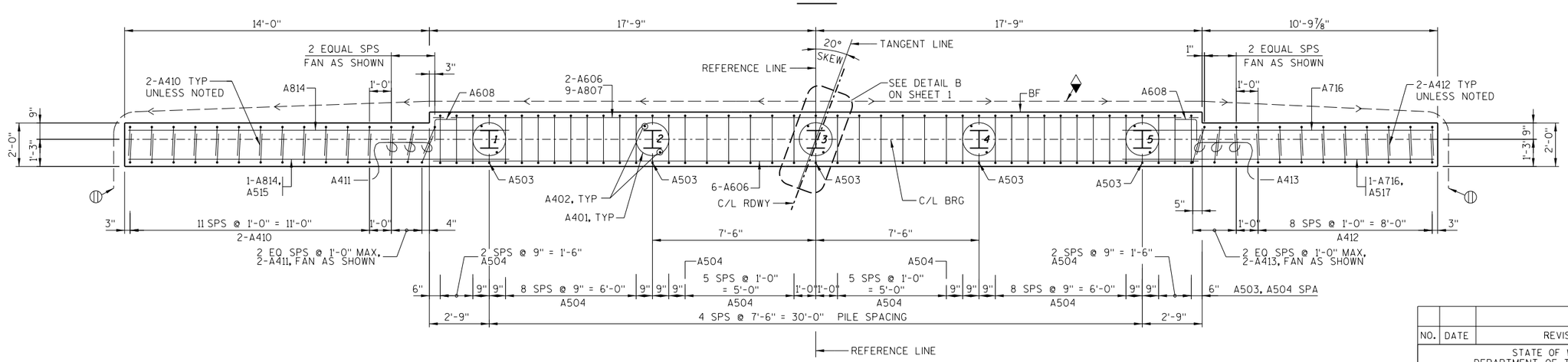
STATE PROJECT NUMBER
7175-00-71



FRONT ELEVATION



PLAN



FOOTING PLAN

ABUTMENT NOTES

SEE ABUTMENT NOTES ON SHEET 5 (①THRU⑤, ◆and Ⓘ).

FF = FRONT FACE
BF = BACK FACE
EF = EACH FACE

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-223

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SOUTH ABUTMENT DETAILS

SHEET 4 OF 9
68

PLOT DATE: 5/30/2017 PLOT TIME: 9:43:42 AM

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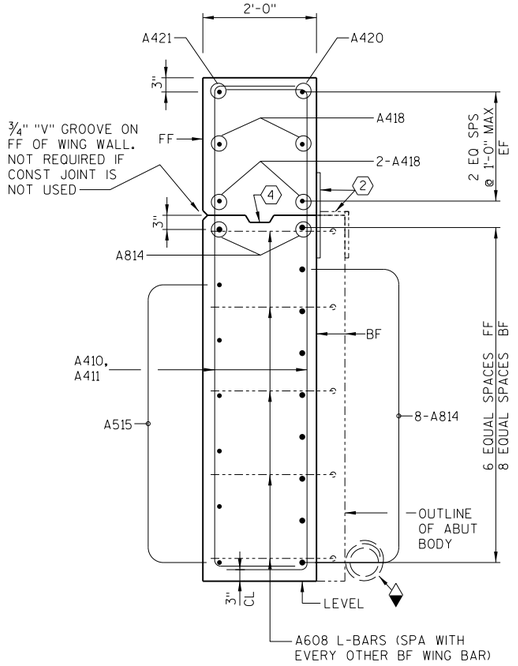
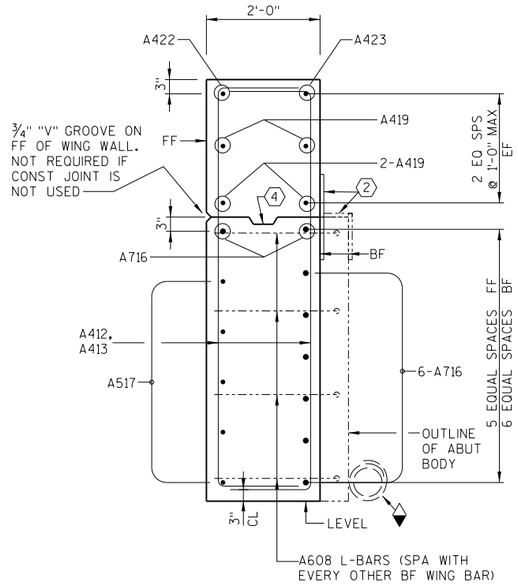
STATE PROJECT NUMBER
7175-00-71

NOTE: THE FIRST DIGIT OF THE BAR MARK SIGNIFIES THE ENGLISH BAR DIAMETER SIZE.

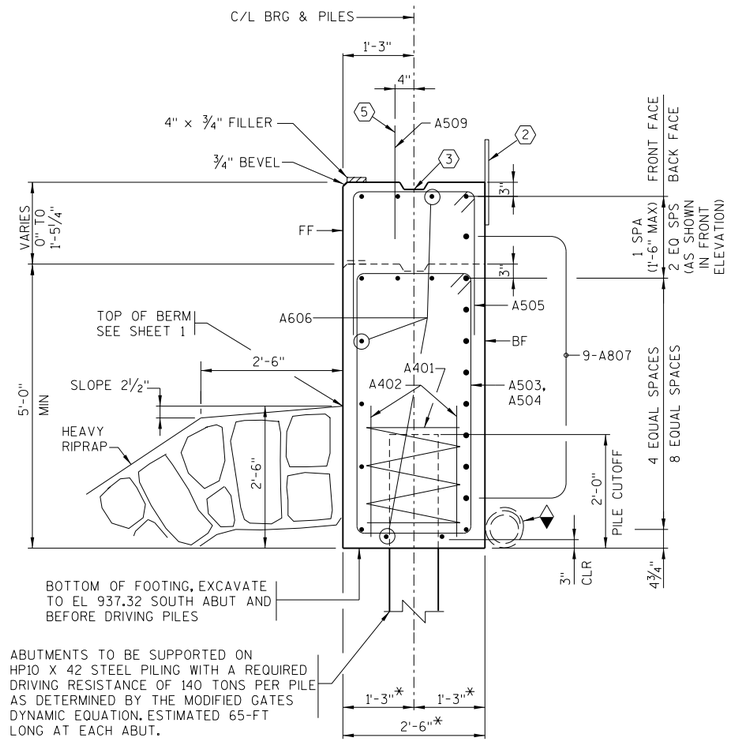
DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT.



SECTION THRU WINGWALL 1



SECTION THRU WINGWALL 2



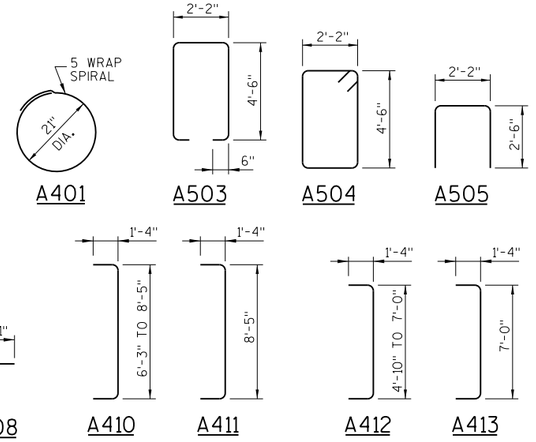
TYPICAL SECTION THRU BODY

ALL HORIZ BARS TO BE A606 UNLESS OTHERWISE SHOWN OF NOTED

* MEASURED PERPENDICULAR TO ABUTMENT BODY

BILL OF BARS — SOUTH ABUTMENT

BAR MARK	COAT	NO. REQ'D.	LENGTH (FT-IN)	BAR SERIES	BENT	LOCATION
A401		5	28 - 0		X	BODY AT PILES
A402		10	2 - 3			BODY AT PILES
A503		5	11 - 8		X	BODY STIRRUPS
A504		38	13 - 9		x	BODY STIRRUPS
A505		32	6 - 11		X	BODY TIE
A606		14	35 - 1			BODY HORIZ
A807		9	35 - 1			BODY HORIZ BF
A608		9	2 - 0		X	BODY L-BAR
A509	X	33	2 - 0			BODY DOWELS
A410	X	24	9 - 10	X	X	W 1 VERTS
A411	X	6	10 - 11		X	W 1 VERTS
A412	X	18	8 - 5	X	X	W 2 VERTS
A413	X	6	9 - 6		X	W 2 VERTS
A814	X	10	17 - 8			W 1 BODY HOR BF & TOP
A515	X	6	15 - 9			W 1 BODY HOR FF
A716	X	8	13 - 6			W 2 BODY HOR BF & TOP
A517	X	5	12 - 7			W 2 BODY HOR FF
A418	X	6	7 - 6			W 1 HORIZ EF
A419	X	6	6 - 2			W 2 HORIZ EF
A420	X	1	14 - 5		X	W 1 TOP
A421	X	1	13 - 10		X	W 1 TOP
A422	X	1	11 - 5		X	W 2 TOP
A423	X	1	10 - 10		X	W 2 TOP



ABUTMENT NOTES

1. SEAL ALL EXPOSED HORIZ. AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-ASPHALTIC JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE). FILLER INCLUDED IN WING LENGTH.
2. 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ & VERT JOINTS ON BACKFACE. VERTICAL WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING.
3. KEYED CONSTRUCTION JOINT FORMED BY A BEVELED 2" X 6".
4. OPTIONAL KEYED CONSTRUCTION JOINT FORMED BY A BEVELED 2" X 6" WITH MEMBRANE ON BACKFACE.
5. A509 BARS MAY BE PLACED AFTER CONC HAS BEEN POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE.
- PIPE UNDERDRAIN WRAPPED (6-INCH) SLOPE 0.5% MIN TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT END OF PIPE.
11. ATTACH RODENT SHIELD AT END OF PIPE UNDERDRAIN. FOR RODENT SHIELD DETAIL SEE SHEET 2.

S ABUT = SOUTH ABUTMENT
N ABUT = NORTH ABUTMENT

FF = FRONT FACE
BF = BACK FACE
EF = EACH FACE

BAR SERIES TABLE — SOUTH ABUTMENT

BAR MARK	NO. REQ'D.	LENGTH	BENT	LOCATION
A410	2 SETS OF 12	8'-9" TO 10'-11"	X	WING 1 VERTS
A412	2 SETS OF 9	7'-4" TO 9'-6"	X	WING 2 VERTS

BUNDLE AND TAG EACH SERIES SEPARATELY

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-223

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SOUTH ABUTMENT DETAILS

SHEET 5 OF 9

69

PLOT DATE: 5/30/2017 PLOT TIME: 9:43:42 AM
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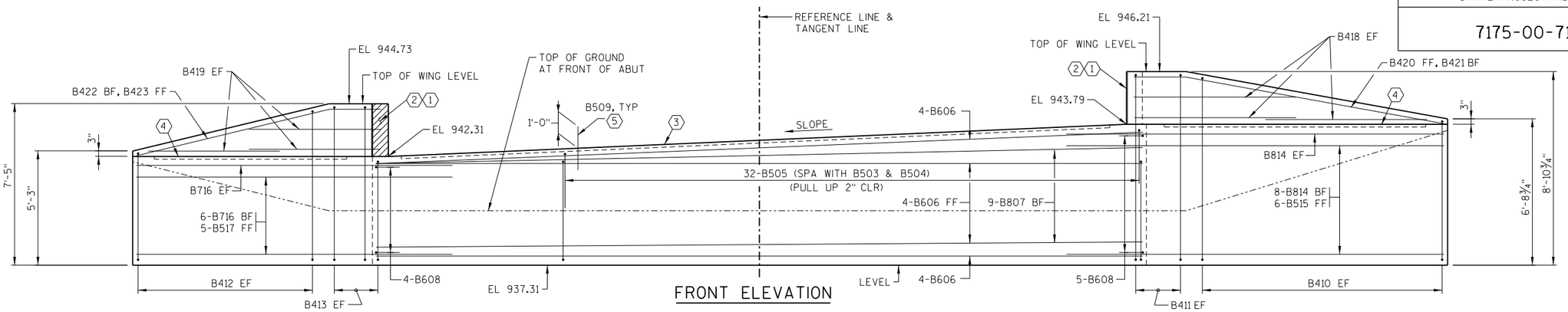
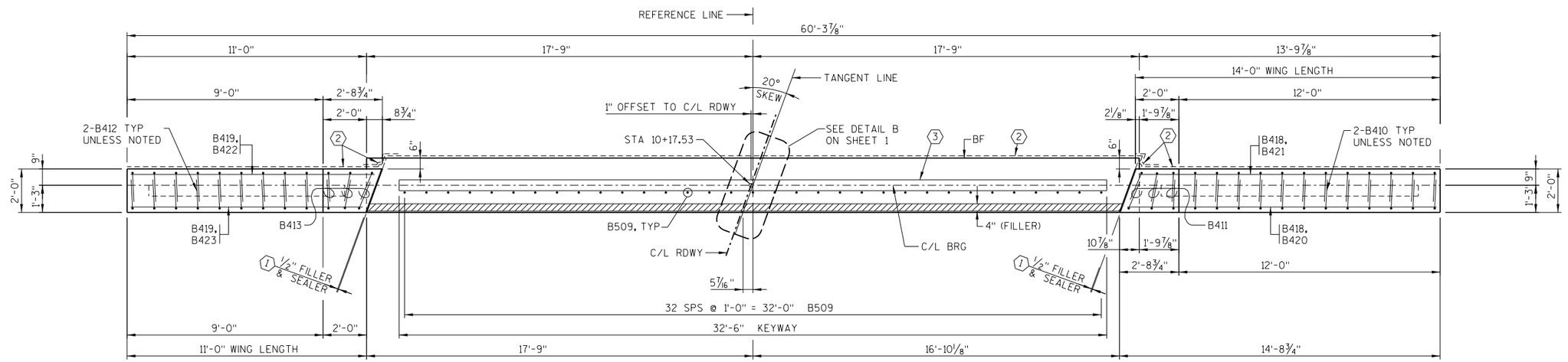
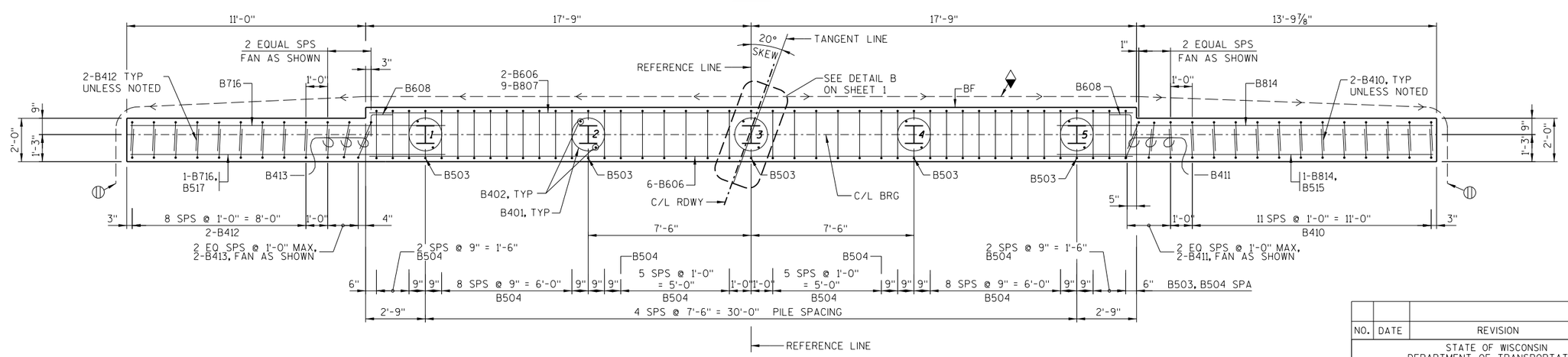
STATE PROJECT NUMBER
7175-00-71



FRONT ELEVATION



PLAN



FOOTING PLAN

ABUTMENT NOTES

SEE ABUTMENT NOTES ON SHEET 7 (①THRU⑤, ◆and Ⓑ).

FF = FRONT FACE
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NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-223

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NORTH ABUTMENT DETAILS

SHEET 6 OF 9
70

PLOT DATE: 5/30/2017 PLOT TIME: 9:43:42 AM

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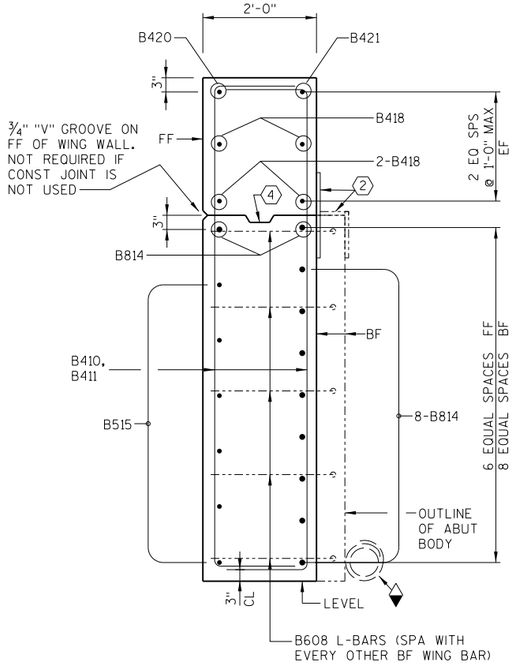
7175-00-71

NOTE: THE FIRST DIGIT OF THE BAR MARK SIGNIFIES THE ENGLISH BAR DIAMETER SIZE.

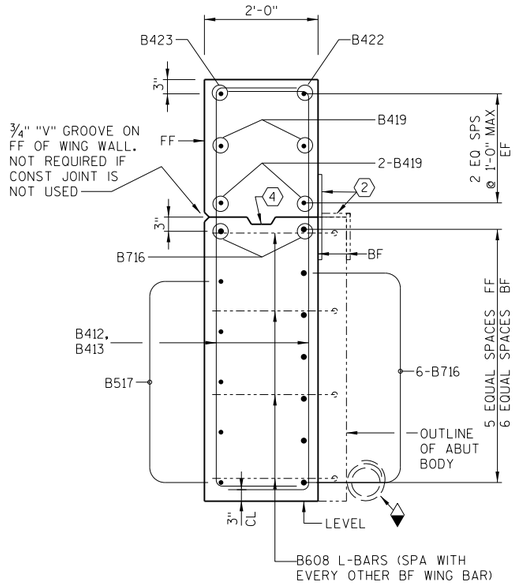
DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT.

BILL OF BARS — NORTH ABUTMENT

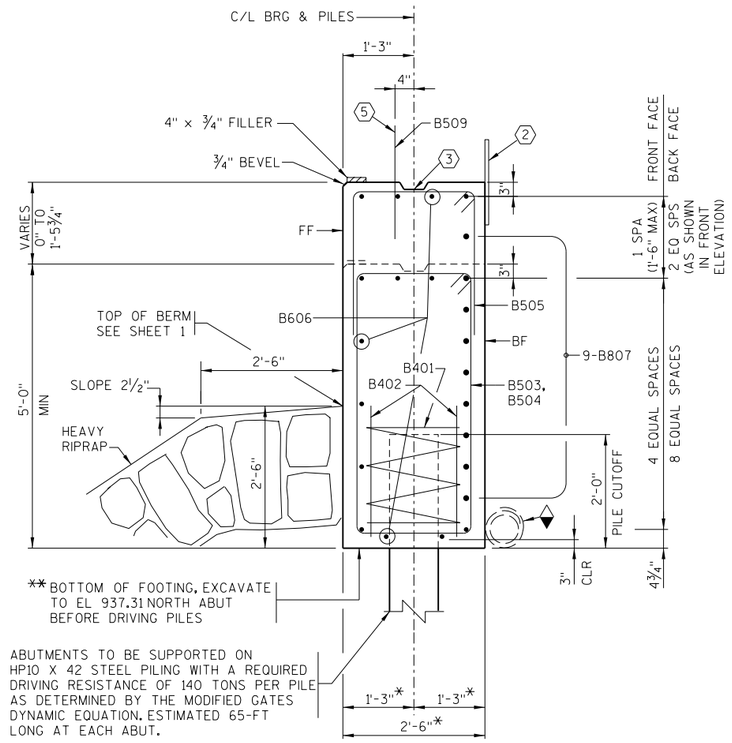
BAR MARK	COAT	NO. REQ'D.	LENGTH (FT-IN)	BAR SERIES	BENT	LOCATION
B401		5	28 - 0		X	BODY AT PILES
B402		10	2 - 3			BODY AT PILES
B503		5	11 - 8		X	BODY STIRRUPS
B504		38	13 - 9		X	BODY STIRRUPS
B505		32	6 - 11		X	BODY TIE
B606		14	35 - 1			BODY HORIZ
B807		9	35 - 1			BODY HORIZ BF
B608		9	2 - 0		X	BODY L-BAR
B509	X	33	2 - 0			BODY DOWELS
B410	X	24	9 - 10	X	X	W 4 VERTS
B411	X	6	10 - 11		X	W 4 VERTS
B412	X	18	8 - 5	X	X	W 3 VERTS
B413	X	6	9 - 6		X	W 3 VERTS
B814	X	10	17 - 8			W 4 BODY HOR BF & TOP
B515	X	6	15 - 9			W 4 BODY HOR FF
B716	X	8	13 - 6			W 3 BODY HOR BF & TOP
B517	X	5	12 - 7			W 3 BODY HOR FF
B418	X	6	7 - 6			W 4 HORIZ EF
B419	X	6	6 - 2			W 3 HORIZ EF
B420	X	1	14 - 5		X	W 4 TOP
B421	X	1	13 - 10		X	W 4 TOP
B422	X	1	11 - 5		X	W 3 TOP
B423	X	1	10 - 10		X	W 3 TOP



SECTION THRU WINGWALL 4



SECTION THRU WINGWALL 3

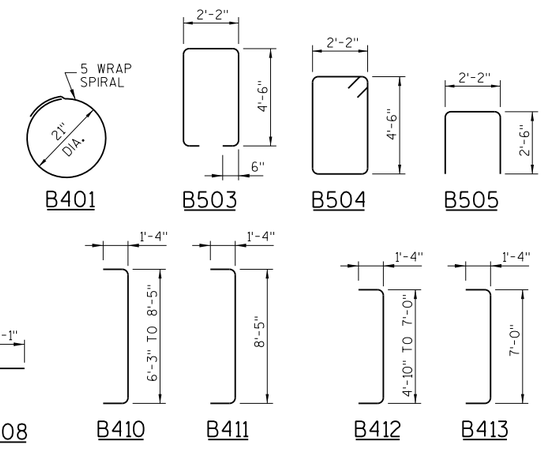


TYPICAL SECTION THRU BODY

ALL HORIZ BARS TO BE B606 UNLESS OTHERWISE SHOWN OF NOTED

* MEASURED PERPENDICULAR TO ABUTMENT BODY

** RECOMMENDATION TO REMOVE SWAMP DEPOSITS AND FINE ALLUVIUM BELOW NORTH ABUTMENT PER GEOTECHNICAL REPORT. EL 937.3± TO 925.5± (12' MATERIAL). EXCAVATION OF THIS MATERIAL AND BACKFILL MATERIAL IS INCLUDED IN ROADWAY QUANTITIES, SEE ROADWAY PLANS FOR DETAILS.



ABUTMENT NOTES

1. SEAL ALL EXPOSED HORIZ. AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-ASPHALTIC JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE). FILLER INCLUDED IN WING LENGTH.
2. 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ & VERT JOINTS ON BACKFACE. VERTICAL WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING.
3. KEYED CONSTRUCTION JOINT FORMED BY A BEVELED 2" X 6".
4. OPTIONAL KEYED CONSTRUCTION JOINT FORMED BY A BEVELED 2" X 6" WITH MEMBRANE ON BACKFACE.
5. B509 BARS MAY BE PLACED AFTER CONC HAS BEEN POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE.

◆ PIPE UNDERDRAIN WRAPPED (6-INCH) SLOPE 0.5% MIN TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT END OF PIPE.

(11) ATTACH RODENT SHIELD AT END OF PIPE UNDERDRAIN, FOR RODENT SHIELD DETAIL SEE SHEET 2.

S ABUT = SOUTH ABUTMENT
N ABUT = NORTH ABUTMENT

FF = FRONT FACE
BF = BACK FACE
EF = EACH FACE

BAR SERIES TABLE — NORTH ABUTMENT

BAR MARK	NO. REQ'D.	LENGTH	BENT	LOCATION
B410	2 SETS OF 12	8'-9" TO 10'-11"	X	WING 4 VERTS
B412	2 SETS OF 9	7'-4" TO 9'-6"	X	WING 3 VERTS

BUNDLE AND TAG EACH SERIES SEPARATELY

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-223

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NORTH ABUTMENT DETAILS

SHEET 7 OF 9
71

PLOT DATE: 5/30/2017 PLOT TIME: 9:43:42 AM

FILE NAME : S:\PTV\Tremn\32859\5-final-dsgn\5i-drawings\20-Struct\bridge\b6223a2.dgn

8

8

PLOT TIME: 9:43:43 AM
PLOT DATE: 5/30/2017
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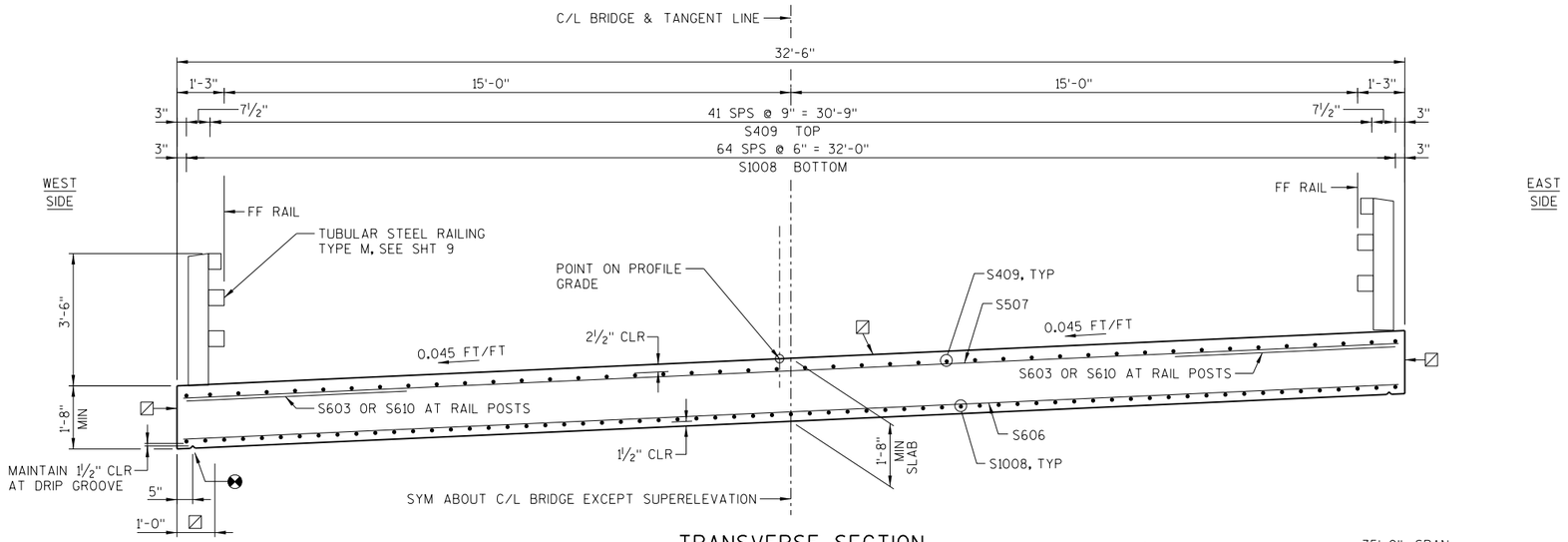
STATE PROJECT NUMBER
7175-00-71

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE ENGLISH BAR DIAMETER SIZE.

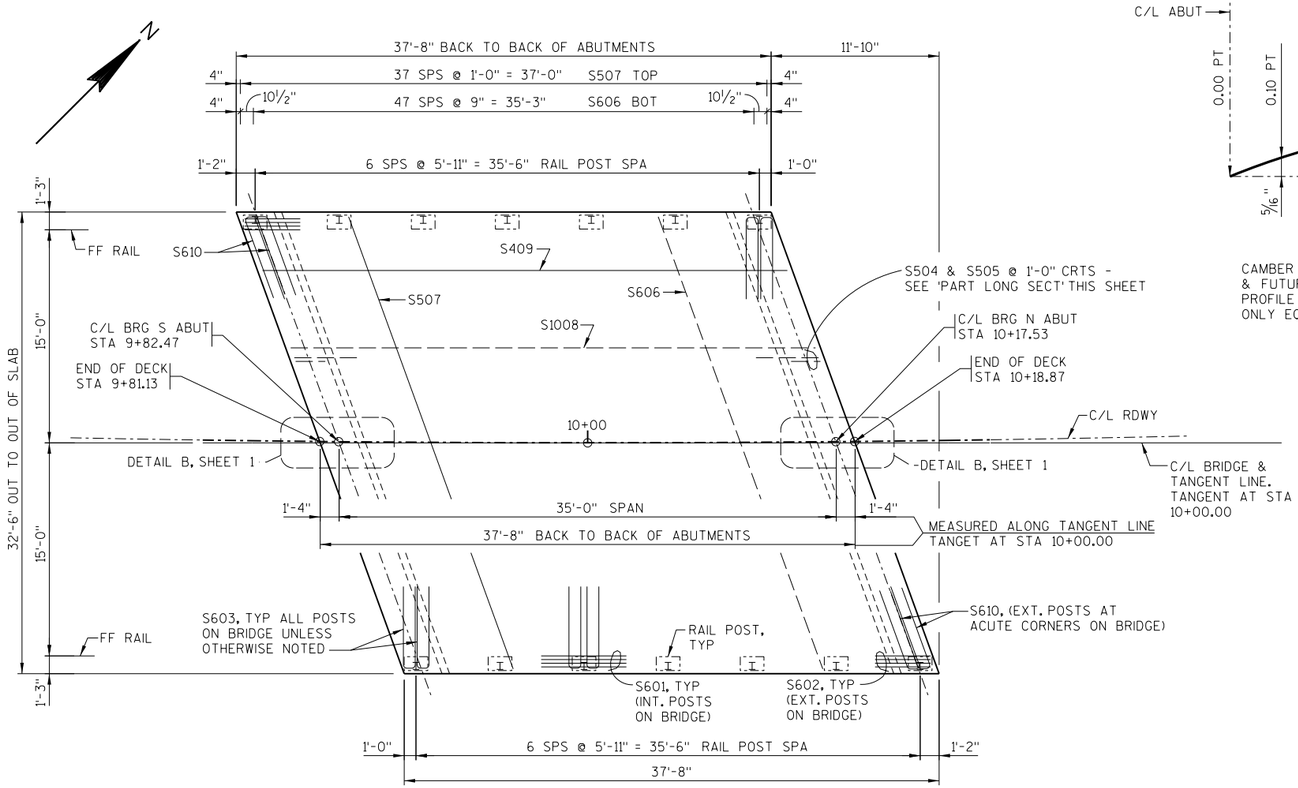
DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT.

BILL OF BARS SUPERSTRUCTURE

BAR MARK	COAT	NO. REQ'D.	LENGTH (FT-IN)	BAR SERIES	BENT	LOCATION
S601	X	40	6 - 0			RAIL POST
S602	X	16	6 - 0		X	RAIL POST
S603	X	24	12 - 0		X	RAIL POST
S504	X	66	5 - 10		X	END OF DECK
S505	X	66	3 - 4		X	END OF DECK
S606	X	54	34 - 2			BOT TRANS
S507	X	38	34 - 2			TOP TRANS
S1008	X	65	37 - 2			BOT LONG
S409	X	44	37 - 2			TOP LONG
S610	X	4	12 - 0		X	RAIL POST EXT.

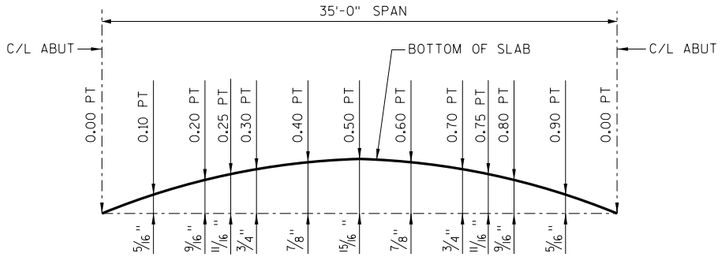


TRANSVERSE SECTION



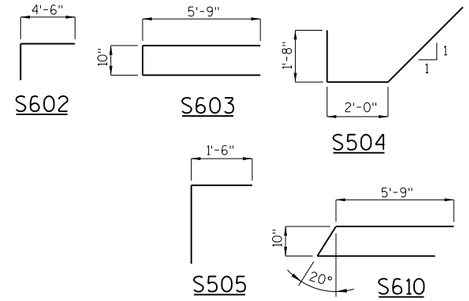
——— INDICATES TOP BAR STEEL REINFORCEMENT
— — — — — — INDICATES BOTTOM BAR STEEL REINFORCEMENT

DECK PLAN



CAMBER DIAGRAM

CAMBER SPAN AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION & FUTURE CREEP. CAMBER DOES NOT INCLUDE VERTICAL ROADWAY PROFILE OR ALLOWANCE FOR FORM SETTLEMENT. DEAD LOAD DEFLECTION ONLY EQUALS APPROXIMATELY 1/3 OF CAMBER VALUES SHOWN.



SUPERSTRUCTURE NOTES:

ALL SLAB THICKNESS DIMENSIONS ARE MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

TRANSVERSE BARS SHALL BE PLACED PLACED PARALLEL TO THE C/L OF SUBSTRUCTURE UNITS.

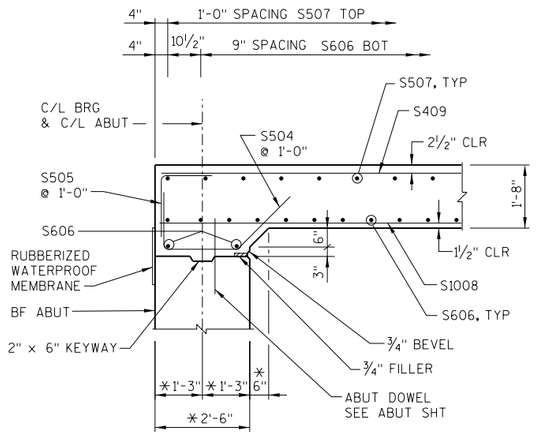
TOP TRANSVERSE BARS IN SLAB SHALL BE SUPPORTED BY INDIVIDUAL BAR CHAIRS AT APPROXIMATELY 3'-0" CENTERS EACH WAY. BOTTOM LONGITUDINAL BARS SHALL BE SUPPORTED ON CONTINUOUS BAR CHAIRS APPROXIMATELY 4'-0" CENTERS.

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATION AT THE C/L OF ABUTMENTS AND AT 5/10 POINTS TO VERIFY CAMBER. TAKE ELEVATIONS ALONG EDGE LINES AND C/L.

◐ ¾" V-GROOVE, EXTEND V-GROOVE TO 6" FROM FRONT FACE OF ABUTMENT DIAPHRAGM.

▨ COAT WITH "PROTECTIVE SURFACE TREATMENT" PER THE STANDARD SPECIFICATIONS.

FF = FRONT FACE
BF = BACK FACE
EF = EACH FACE



AT ABUTMENTS

* DIMENSION IS TAKEN NORMAL TO C/L SUBSTRUCTURE UNITS.

PARTIAL LONGITUDINAL SECTION

FINAL TOP OF DECK ELEVATIONS

	SOUTH ABUT	.1	.2	.3	.4	.5	.6	.7	.8	.9	NORTH ABUT
WEST EDGE OF DECK	944.74	944.73	944.72	944.72	944.72	944.72	944.72	944.72	944.72	944.72	944.73
C/L	945.45	945.45	945.45	945.45	945.45	945.45	945.45	945.45	945.46	945.46	945.47
EAST EDGE OF DECK	946.18	946.18	946.18	946.18	946.18	946.18	946.18	946.19	946.20	946.21	946.22

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
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STRUCTURE B-61-223

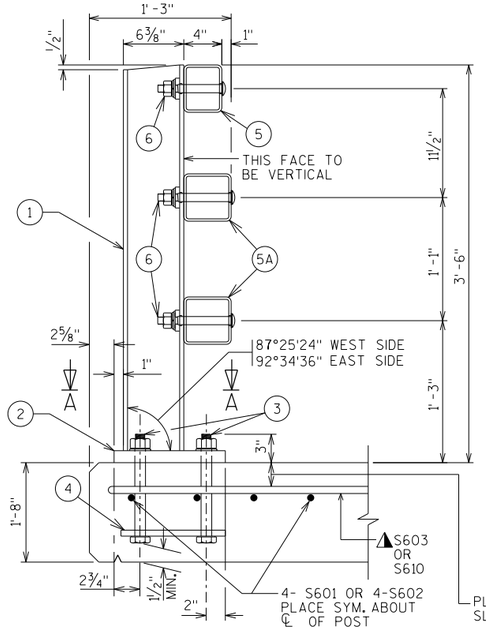
DRAWN BY DLF | PLANS CK'D. CJB

SUPERSTRUCTURE DETAILS

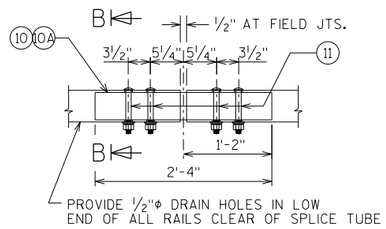
SHEET 8 OF 9
72

8

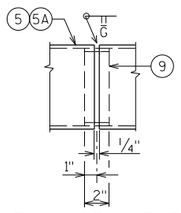
8



SECTION THRU RAILING ON SLAB

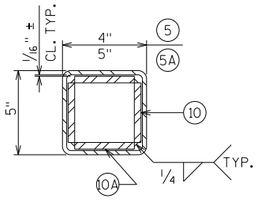


FIELD ERECTION JOINT DETAIL

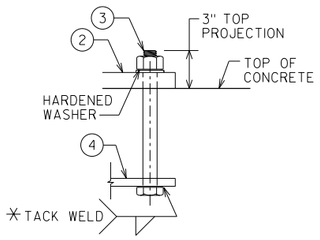


SHOP RAIL SPLICE DETAIL

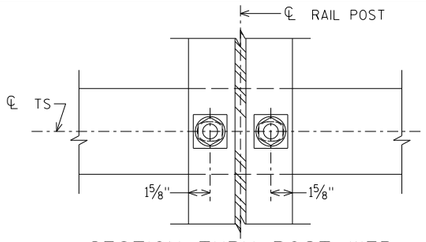
LOCATION MUST BE SHOWN ON SHOP DRAWINGS



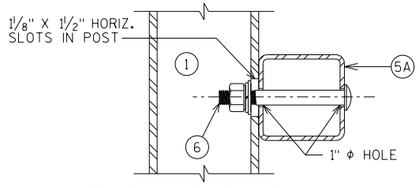
SECTION B-B



ANCHOR BOLTS



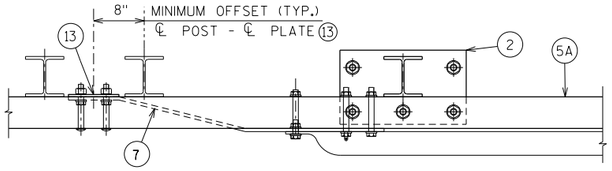
SECTION THRU POST WEB



SECTION THRU RAIL

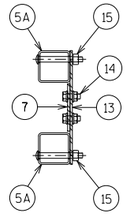
NOTE: CONNECTIONS AT LOWER RAILS SHOWN. CONNECTIONS AT TOP RAIL SIMILAR.

TYPICAL RAIL TO POST CONNECTIONS



TOP VIEW AT END POST

THRIE BEAM RAIL ATTACHMENT



SECTION C-C

LEGEND

(1) W6 x 25 WITH 1 1/8" X 1 1/2" HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.

(2) PLATE 1 1/4" x 11 3/4" x 1'-8" WITH 1 5/16" X 1 5/8" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.

(3) ASTM A449 - 1 1/8" DIA. ANCHOR BOLTS WITH NUT AND HARDENED WASHER (ALL GALVANIZED). 5 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. USE 1'-9" LONG IN ABUTMENT WINGS. AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 16" USE 1'-3" LONG. USE 10 3/4" LONG AT ALL OTHER LOCATIONS. (AN EQUIVALENT THREADED ROD WITH NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQ'D. FOR CONSTRUCTIBILITY.)

(4) 5/8" x 11" x 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1 3/16" DIA. HOLES FOR ANCHOR BOLTS NO. 3

(5) TS 5 x 4 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.

(5A) TS 5 x 5 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.

(6) 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, 3/16" X 1 5/8" X 1 5/8" WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)

(7) 1/2" THK. BACK-UP PLATE WITH 2 - 7/8" X 1 1/2" THREADED SHOP WELDED STUDS (NO. 12). BOLT TO RAIL AS SHOWN IN DETAIL. REQUIRED AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYMMETRICALLY ABOUT TUBES NO. 5A.

(8) 1" DIA. HOLES IN PLATE NO. 7 & TUBES NO. 5A FOR 7/8" DIA. A325 BOLTS WITH HEX NUTS AND WASHERS. 6 HOLES IN TUBES AND PLATE NO. 7.

(9) SPLICE SLEEVE FABRICATED FROM 1/4" PLATE. PROVIDE "SLIDING FIT".

(10) 3/8" X 3 5/8" X 2'-4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.

(10A) 3/8" X 2 5/8" X 2'-4" PLATE USED IN NO. 5, 3/8" X 3 5/8" X 2'-4" PLATE USED IN NO. 5A. 2 PER RAIL.

(11) 7/8" ϕ A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 15/16" X 1 1/4" LONGIT. SLOTTED HOLES AT FIELD JOINTS AND 15/16" X 2 1/4" MIN. LONGIT. SLOTTED HOLES AT EXP. JOINTS IN PLATE NO. 10A.

(12) 7/8" DIA. X 1 1/2" LONG THREADED SHOP WELDED STUDS (2 REQ'D).

(13) 3/8" X 8" X 1'-6" PLATE. BOLT TO RAIL AS SHOWN IN DETAIL. REQ'D. AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYM. ABOUT TUBES NO. 5A.

(14) 7/8" DIA. X 2" LONG A325 HEX BOLT WITH NUT AND WASHER (5 REQ'D.).

(15) 1" ϕ HOLES IN TUBES NO. 5A FOR 7/8" DIA. A325, ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.

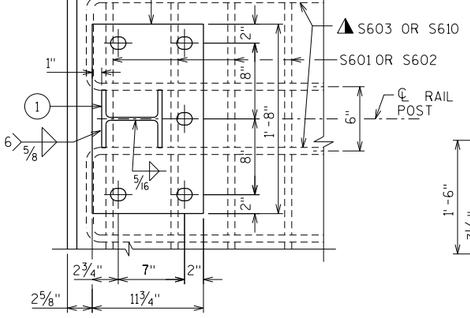
GENERAL NOTES

1. BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-61-223" WHICH INCLUDES ALL ITEMS SHOWN.
2. RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 KSI. ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.
3. THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.
4. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN A PANEL OVER EXPANSION JOINTS.
5. ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
6. WELD IS THE SAME ON BOTH FLANGES. FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING.
7. FILL BOLT SLOT OPENINGS IN POST SHIMS AND PLATE NO. 2 AND CAULK AROUND PERIMETER OF PLATE NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D. FOR ALIGNMENT.
8. POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
9. ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS & STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY SSPC SPECIFICATIONS.
10. THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL-4).

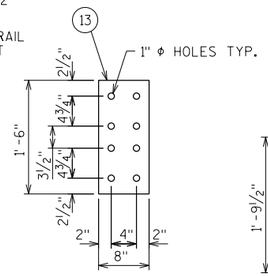
▲ TIE TO TOP MAT OF STEEL.

✳ FOR ANCHOR BOLTS IN WINGS, TACK WELD MAY BE USED IN FIELD AFTER ANCHOR PLATE IS IN POSITION IF REQ'D. FOR CONSTRUCTIBILITY.

SEE SHEET 8 FOR RAIL POST SPACING.

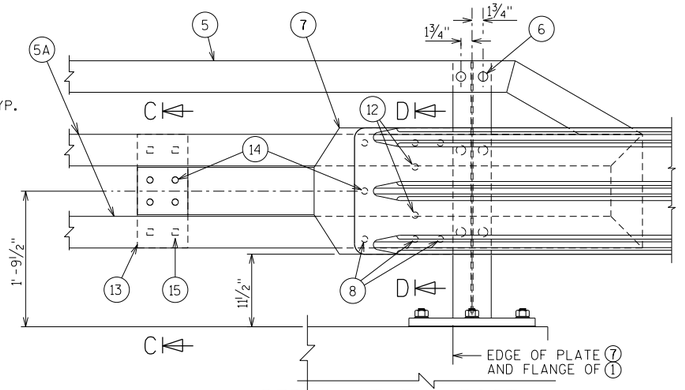


SECTION A-A



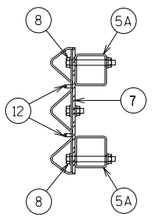
ANCHOR PLATE

AT BEAM GUARD ATTACHMENT

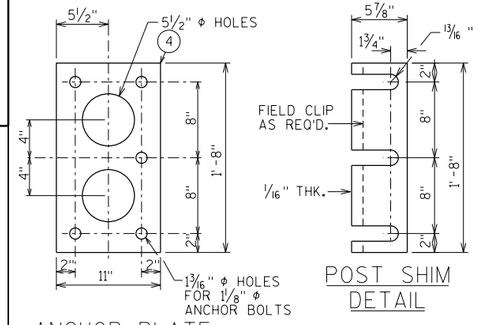


DETAIL AT END POST

THRIE BEAM RAIL ATTACHMENT



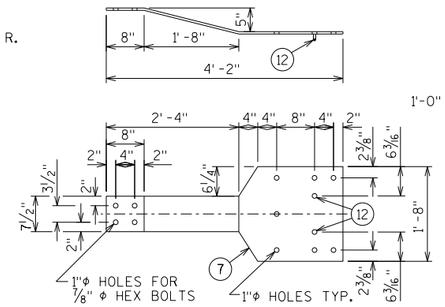
SECTION D-D



ANCHOR PLATE

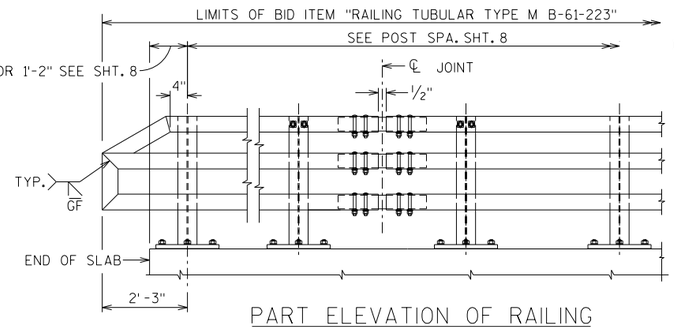
AT RAIL TO SLAB CONNECTION

POST SHIM DETAIL



BACK-UP PLATE DETAIL

AT BEAM GUARD ATTACHMENT



PART ELEVATION OF RAILING

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-223

DRAWN BY DLF | PLANS CK'D. CJB

TUBULAR STEEL RAILING TYPE M

SHEET 9 OF 9

73

RAILM
7-16

PLOT DATE: 5/30/2017 PLOT TIME: 9:43:43 AM
FILE NAME : S:\PTV\Tremtv\32859\5-final-dsgn\5i-drawings\20-Struct\bridge\b6i223ml.dgn

8 8

CTH O

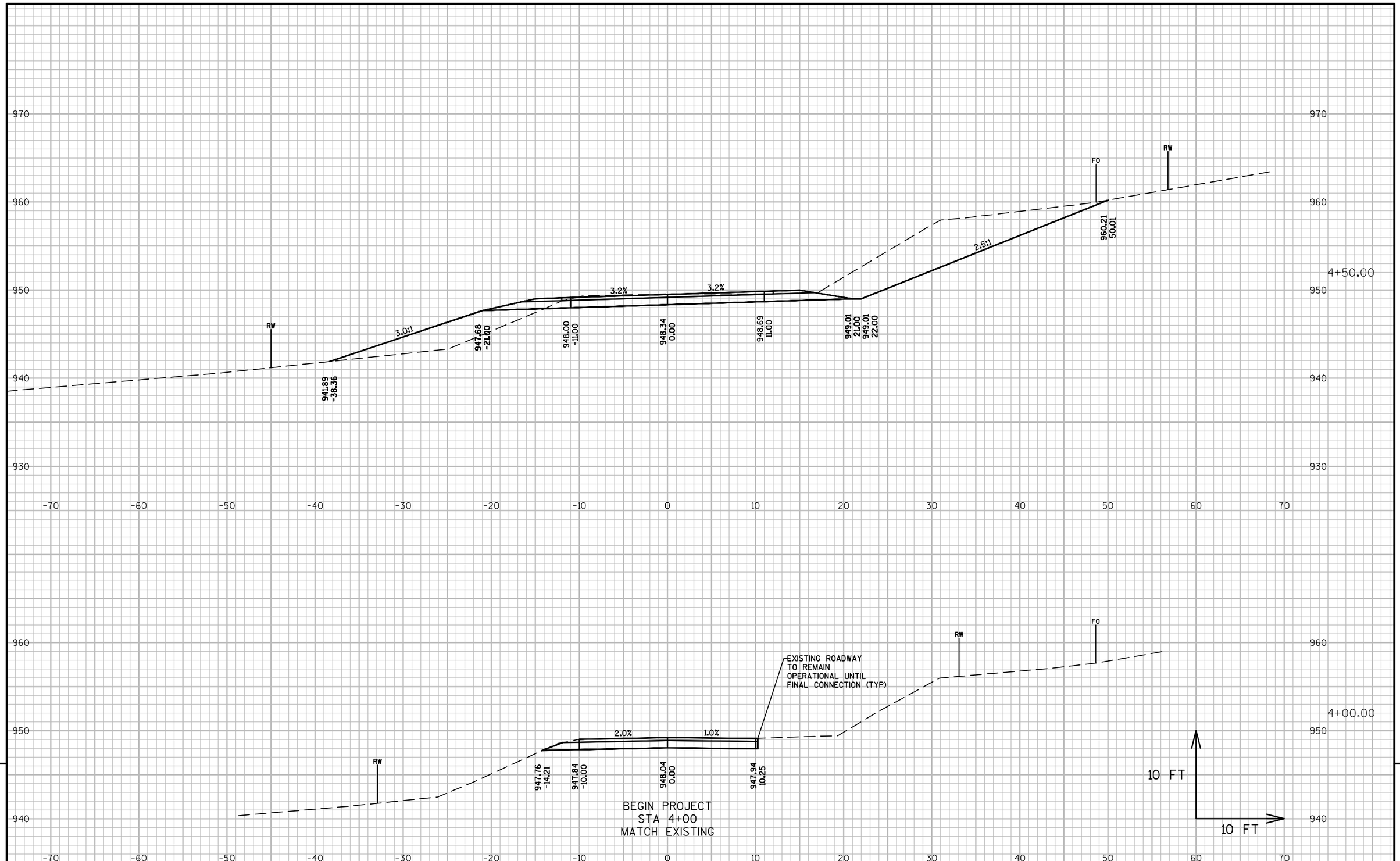
Station	Distance	AREA (SF)			Incremental Vol (CY)				Cumulative Vol (CY)					Mass Ordinate
		Cut Note 1	Fill	Marsh Exc	Cut Unadjusted Note 2	Fill Unadjusted Note 3	Reduced Marsh in Fill Factor = 0.6 Note 6	Marsh Exc Unadjusted	Cut 1.00 Note 2	Expanded Fill 1.30 Note 4	Borrow Note 8	Expanded Marsh Backfill 1.50 Note 5	Reduced Marsh in Fill Note 6	Note 7
4+00	0.00	26.5	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
4+50	50.00	140.2	46.8	0.0	154.3	28.4	14.9	0.0	154	37	-19	0	15	98
5+00	50.00	287.3	37.7	0.0	395.8	53.6	24.6	0.0	550	107	-51	0	40	392
5+50	50.00	332.2	55.9	0.0	573.6	66.1	20.6	0.0	1124	193	-78	0	60	853
6+00	50.00	9.1	79.8	0.0	316.0	103.6	22.0	0.0	1440	328	-107	0	82	1005
6+50	50.00	8.9	127.3	0.0	16.6	168.3	23.4	0.0	1457	547	16	0	106	926
7+00	50.00	15.5	274.2	399.0	22.6	334.2	37.5	369.4	1480	981	450	554	143	949
7+50	50.00	0.0	424.3	440.8	14.4	581.0	65.7	777.5	1494	1736	1205	1720	209	963
8+00	50.00	0.0	494.2	509.4	0.0	764.0	86.5	879.8	1494	2729	2198	3040	295	963
8+42	41.54	0.0	471.4	552.3	0.0	666.0	76.9	816.7	1494	3595	3064	4265	372	963
8+85	42.98	0.0	311.9	386.0	0.0	571.3	52.1	746.7	1494	4338	3807	5385	424	963
9+10	25.21	0.0	269.4	371.8	0.0	258.3	13.1	353.8	1494	4674	4143	5916	437	963
9+35	25.18	0.0	231.1	363.2	0.0	227.4	6.0	342.8	1494	4970	4439	6430	443	963
9+81	46.09	0.0	429.7	451.8	0.0	564.0	0.0	695.6	1494	5703	5172	7473	443	963
10+19	38.00	0.0	401.6	484.5	0.0	585.0	0.0	658.9	1494	6463	5932	8461	443	963
10+50	31.00	0.0	231.1	526.6	0.0	353.5	9.7	580.4	1494	6923	6392	9332	453	963
10+64	14.05	0.0	339.5	532.9	0.0	139.5	8.9	275.6	1494	7104	6573	9745	462	963
10+79	14.50	0.0	353.7	523.3	0.0	176.5	9.6	283.5	1494	7333	6802	10170	472	963
10+89	10.29	0.0	394.6	544.6	0.0	132.5	10.1	203.4	1494	7505	6974	10475	482	963
11+04	14.90	0.0	421.1	576.1	0.0	206.3	18.8	309.2	1494	7773	7242	10939	500	963
11+14	9.86	0.0	459.9	540.6	0.0	148.9	11.9	203.8	1494	7967	7436	11245	512	963
11+29	15.36	0.0	444.6	567.8	0.0	239.6	17.6	315.2	1494	8278	7747	11718	530	963
11+50	21.06	0.0	398.5	518.0	0.0	302.9	26.0	423.5	1494	8672	8141	12353	556	963
12+00	50.00	0.0	286.8	434.6	0.0	579.8	54.7	882.0	1494	9426	8895	13676	611	963
12+50	50.00	0.0	174.2	0.0	0.0	393.5	33.3	402.4	1494	9938	9407	14280	644	963
13+00	50.00	0.0	65.5	0.0	0.0	210.5	11.5	0.0	1494	10212	9681	14280	655	963
13+50	50.00	16.4	1.6	0.0	15.2	62.1	0.0	0.0	1509	10293	9762	14280	655	978
14+00	50.00	81.6	0.0	0.0	90.7	1.5	0.0	0.0	1600	10295	9764	14280	655	1069
14+50	50.00	267.5	0.0	0.0	323.2	0.0	0.0	0.0	1923	10295	9764	14280	655	1392
15+00	50.00	486.6	0.0	0.0	698.2	0.0	0.0	0.0	2621	10295	9764	14280	655	2090
15+50	50.00	685.9	0.0	0.0	1,085.7	0.0	0.0	0.0	3707	10295	9764	14280	655	3176
16+00	50.00	727.2	0.0	0.0	1,308.4	0.0	0.0	0.0	5015	10295	9764	14280	655	4484
16+50	50.00	714.6	0.0	0.0	1,334.9	0.0	0.0	0.0	6350	10295	9764	14280	655	5819
17+00	50.00	567.0	0.0	0.0	1,186.7	0.0	0.0	0.0	7537	10295	9764	14280	655	7006
17+50	50.00	295.3	0.0	0.0	798.5	0.0	0.0	0.0	8336	10295	9764	14280	655	7805
18+00	50.00	117.4	0.0	0.0	382.2	0.0	0.0	0.0	8718	10295	9764	14280	655	8187
18+50	50.00	58.9	24.8	0.0	163.3	23.0	0.0	0.0	8881	10325	9764	14280	655	8320
19+00	50.00	30.9	0.0	0.0	83.1	23.0	0.0	0.0	8964	10355	9764	14280	655	8373

HOLMEN ROAD

Station	Distance	AREA (SF)			Incremental Vol (CY)				Cumulative Vol (CY)					Mass Ordinate
		Cut Note 1	Fill	Marsh Exc	Cut Unadjusted Note 2	Fill Unadjusted Note 3	Reduced Marsh in Fill Factor = 0.6 Note 6	Marsh Exc Unadjusted	Cut 1.00 Note 2	Expanded Fill 1.30 Note 4	Borrow Note 7	Expanded Marsh Backfill 1.50 Note 5	Reduced Marsh in Fill Note 6	Note 7
1000+15	0.00	0.0	625.5	539.5	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1000+50	35.00	0.0	366.6	594.2	0.0	628.9	14.1	734.8	0	818	818	1102	14	0
1000+74	23.89	0.0	156.7	533.6	0.0	218.0	13.6	498.9	0	1101	1101	1850	28	0
1000+87	12.68	0.0	75.9	0.0	0.0	52.5	2.1	125.3	0	1169	1146	2038	30	-23
1001+12	25.00	0.1	5.4	0.0	0.0	37.6	0.0	0.0	0	1218	1146	2038	30	-72
1001+37	25.00	18.5	4.7	0.0	8.6	4.7	0.0	0.0	9	1224	1146	2038	30	-69
1001+50	13.43	21.7	22.2	0.0	10.0	6.7	0.0	0.0	19	1233	1146	2038	30	-68
1002+00	50.00	31.8	0.0	0.0	49.6	20.6	0.0	0.0	69	1260	1146	2038	30	-45

Notes:

1) Salvaged/Unusable Pavement Material is included in Cut.
2) Excavation Common is the sum of the Cut column. Item number 205.0100
3) Does not include Unusable Pavement Excavation volume. Fill = Unexpanded Fill - Reduced Marsh.
4) Will be backfilled with Excavation Common or Borrow.
5) Marsh backfill is material is Backfill Granular Grade 1 item number 209.1500.
6) Reduced Marsh in Fill - Excavated Marsh material is usuable in Fills outside the 2:1 slope. Marsh in Fill Reduction factor = 0.6.
7) Plus quantity indicates an excess of material. Minus indicates a shortage of material. Borrow item number 208.0100.
8) Due to CTH O remaining open until final connection, the majority of Common cannot be used as Borrow

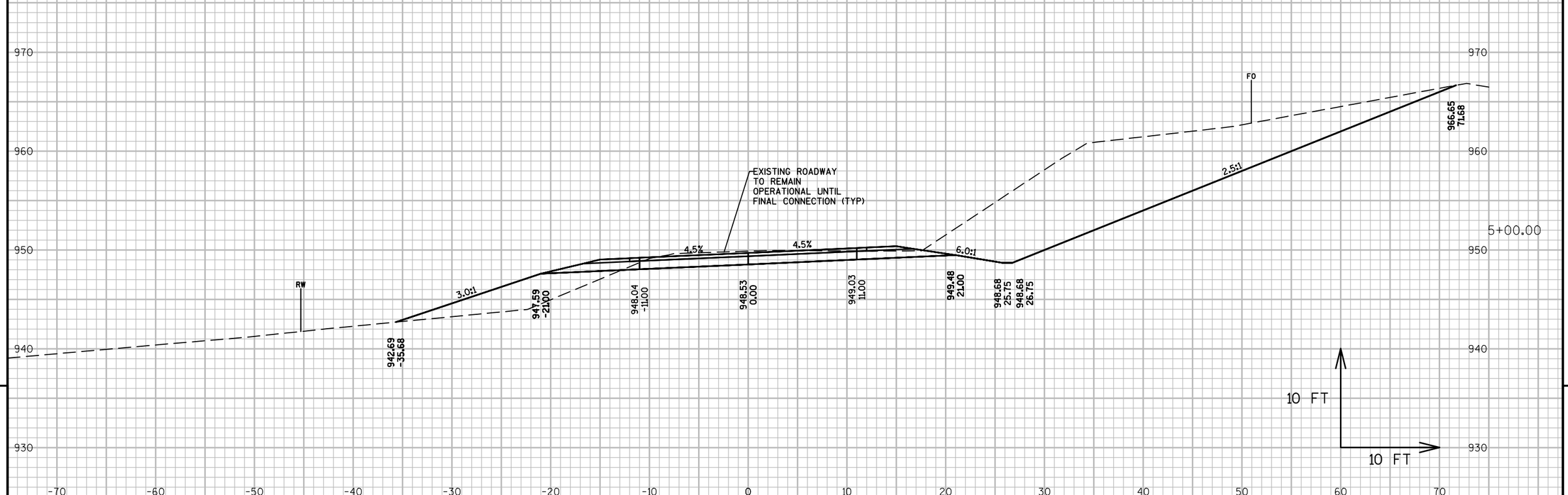


PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 75	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 01

PLOT DATE : 7/9/2017 2:13 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

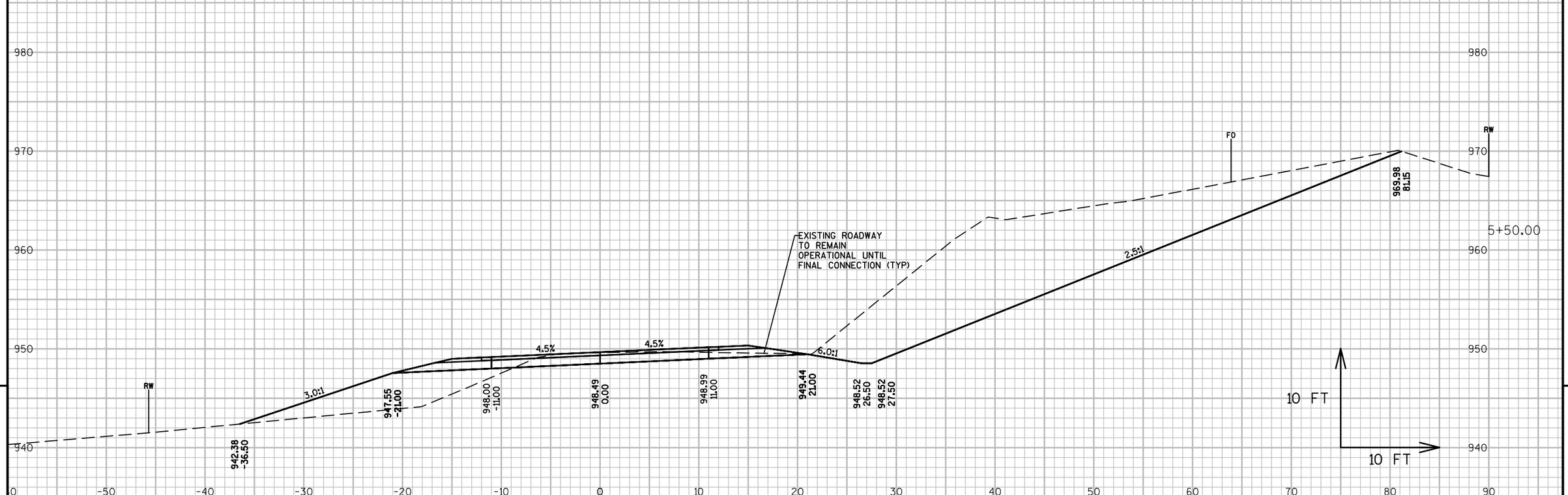


PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 76	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 02

PLOT DATE : 7/9/2017 2:13 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49



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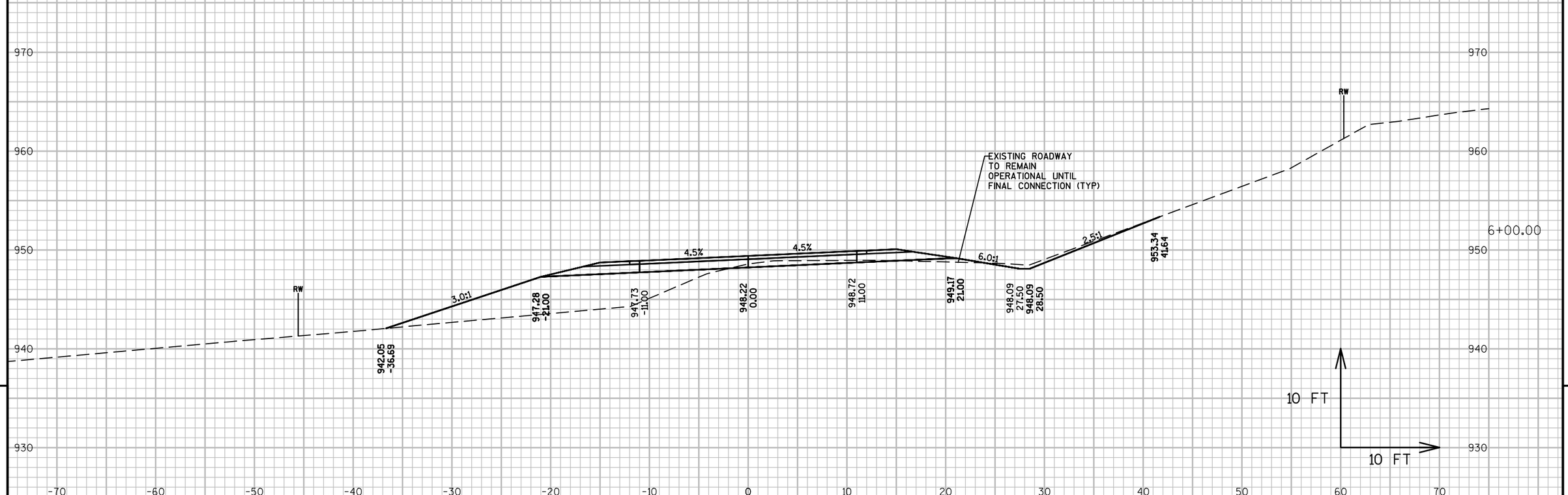
9

PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 77	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 03

PLOT DATE : 7/9/2017 2:13 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

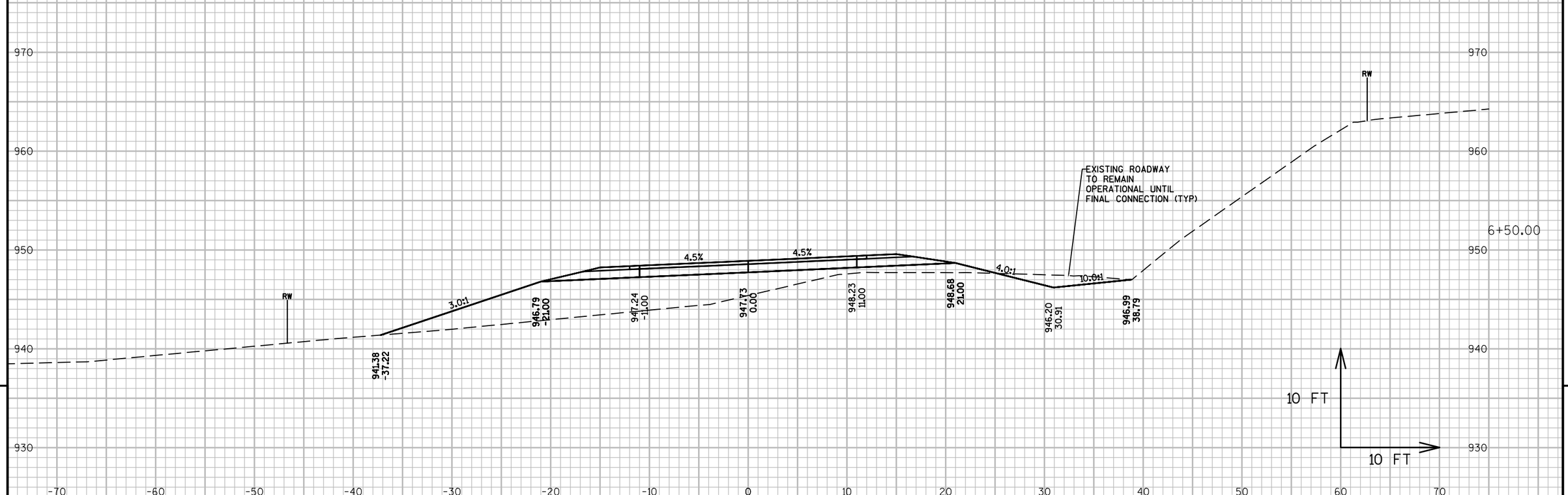


PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 78	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 04

PLOT DATE : 7/9/2017 2:13 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

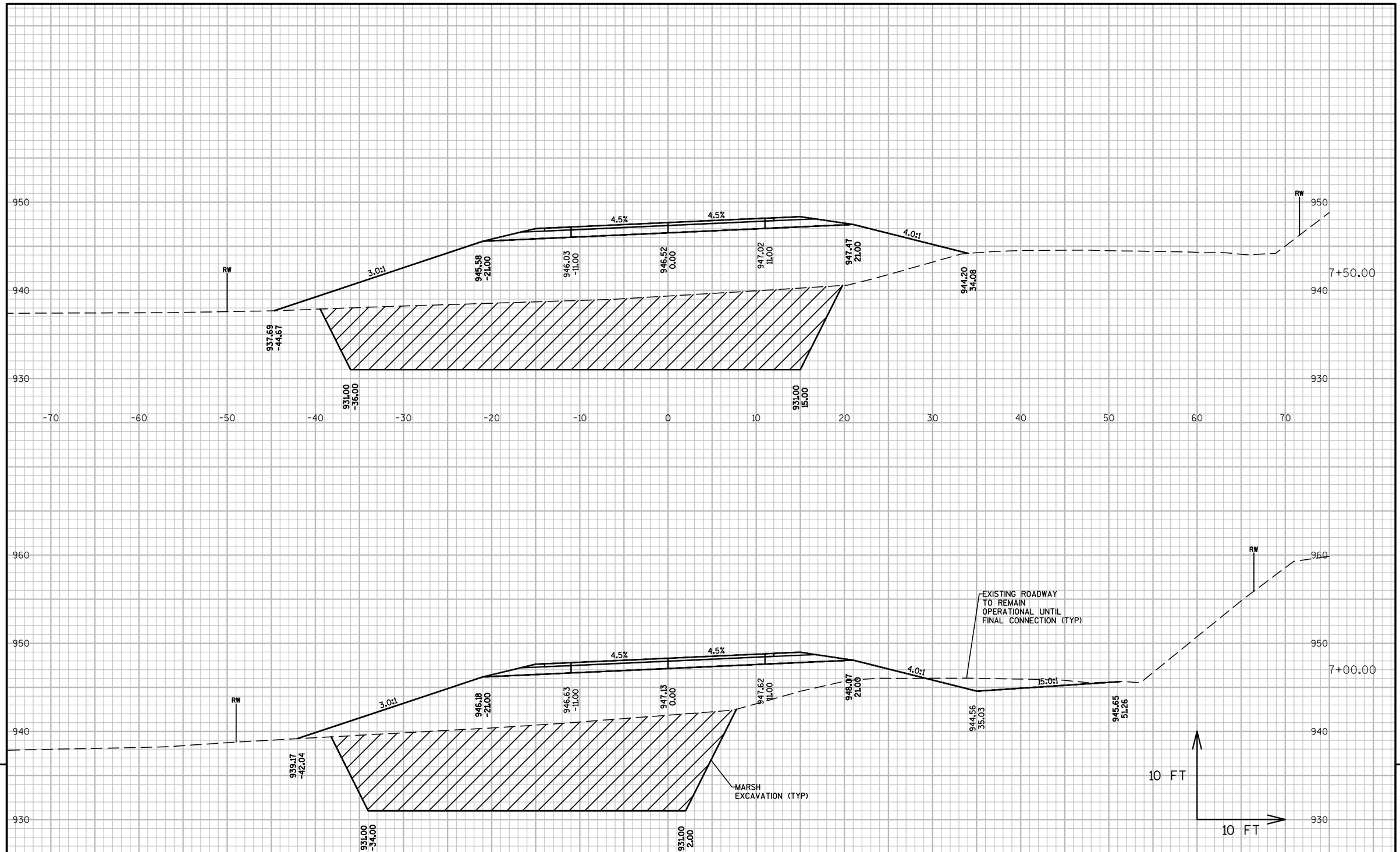


PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 79	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 05

PLOT DATE : 7/9/2017 2:14 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49



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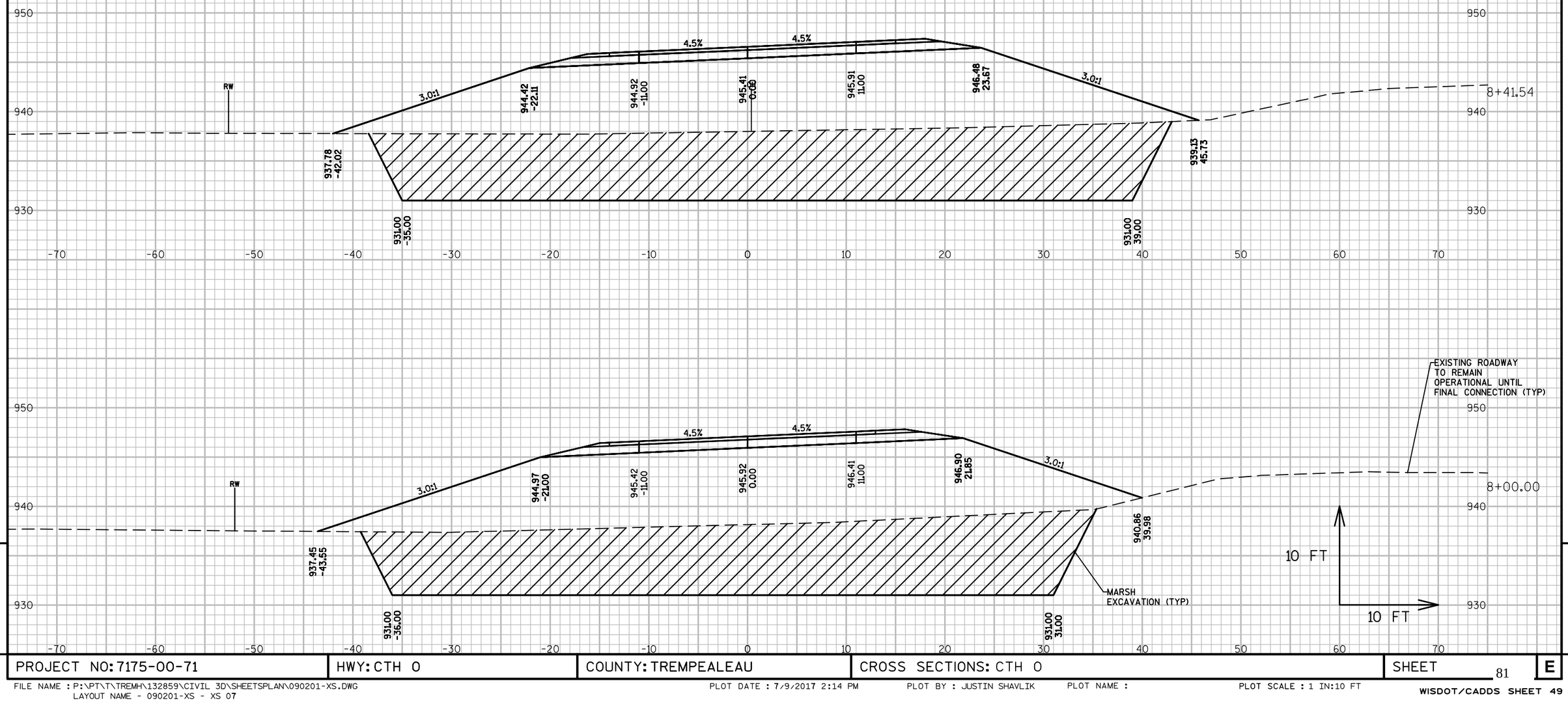
PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 80	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 06

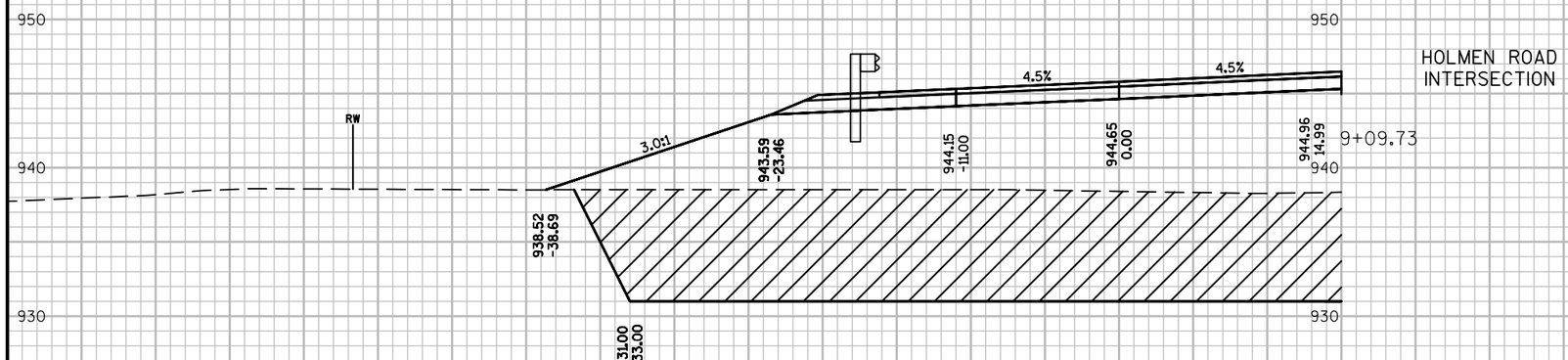
PLOT DATE : 7/9/2017 2:14 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

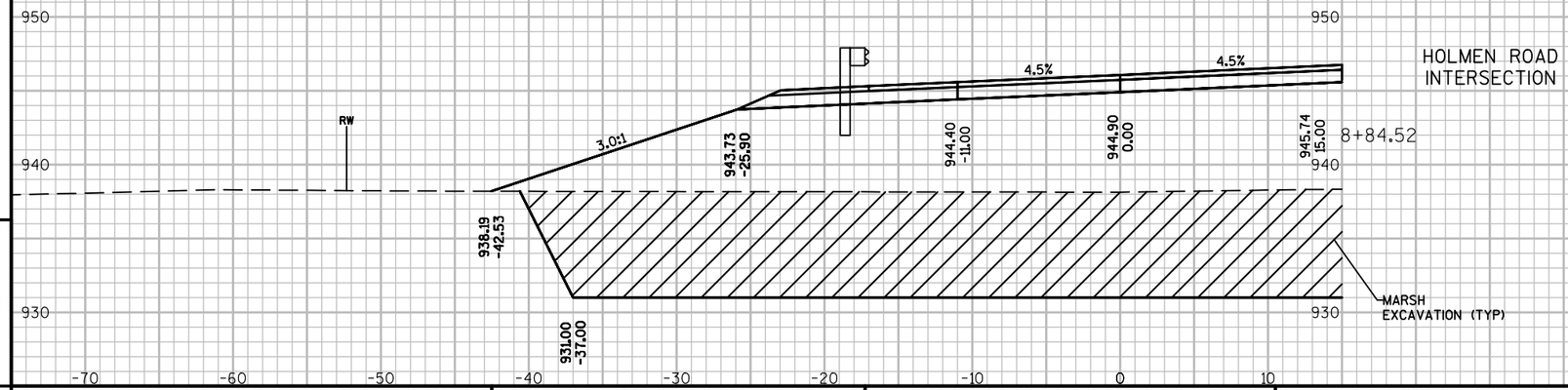


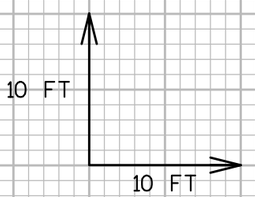
PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 81	E

MGS GUARDRAIL TERMINAL EAT
POST 5 LT



MGS GUARDRAIL TERMINAL EAT
POST 1 LT





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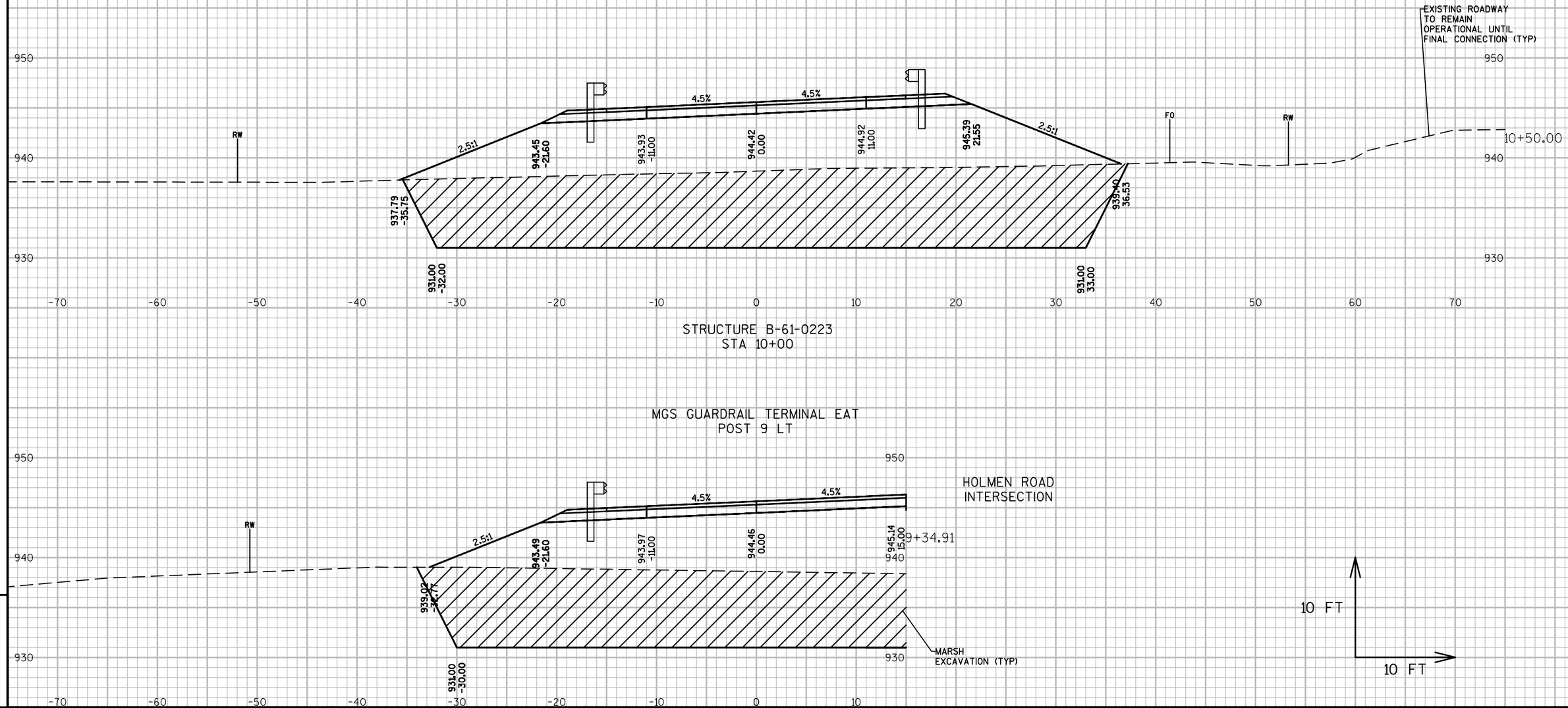
PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 82	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 08

PLOT DATE : 7/9/2017 2:14 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49



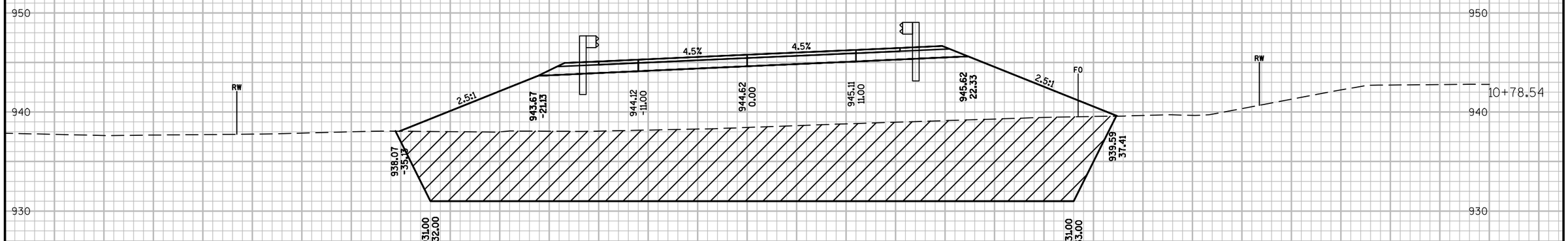
PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 83	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 09

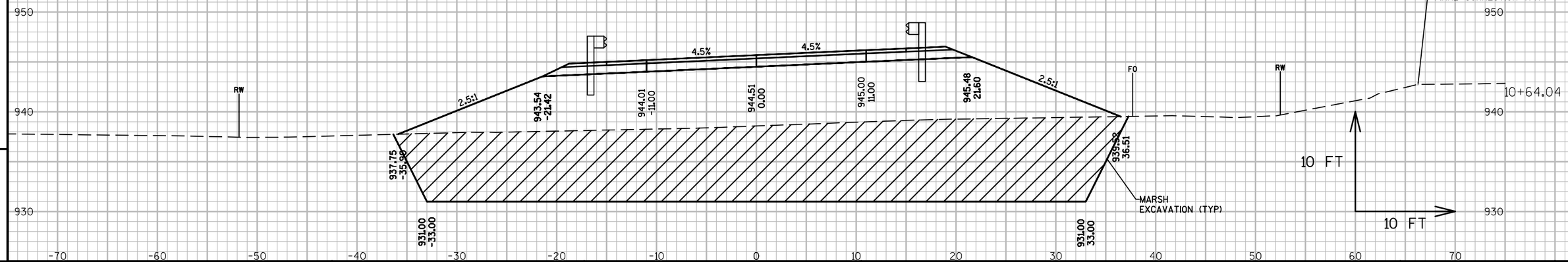
PLOT DATE : 7/9/2017 2:14 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

MGS GUARDRAIL TERMINAL EAT
POST 9 LT



MGS GUARDRAIL TERMINAL EAT
POST 9 RT



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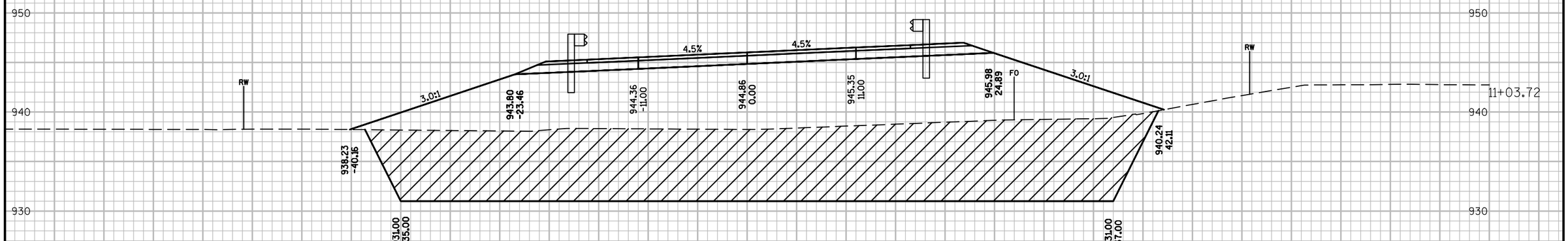
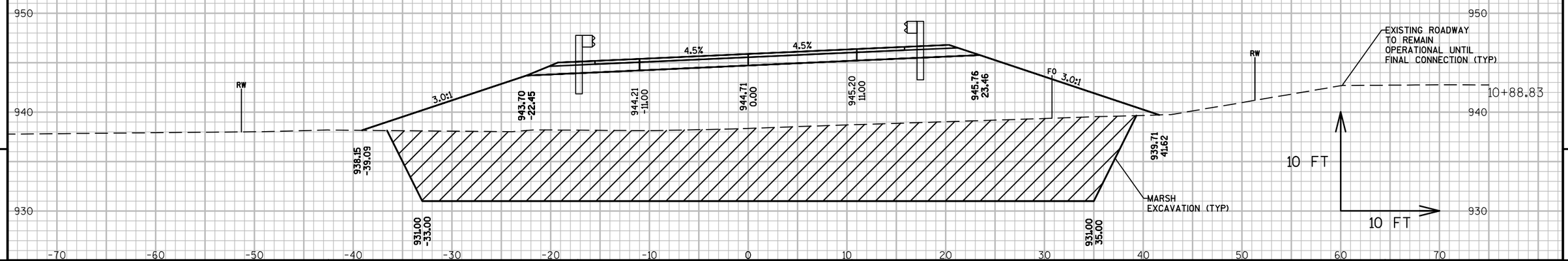
PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 84	E

MGS GUARDRAIL TERMINAL EAT
POST 5 LT



MGS GUARDRAIL TERMINAL EAT
POST 5 RT



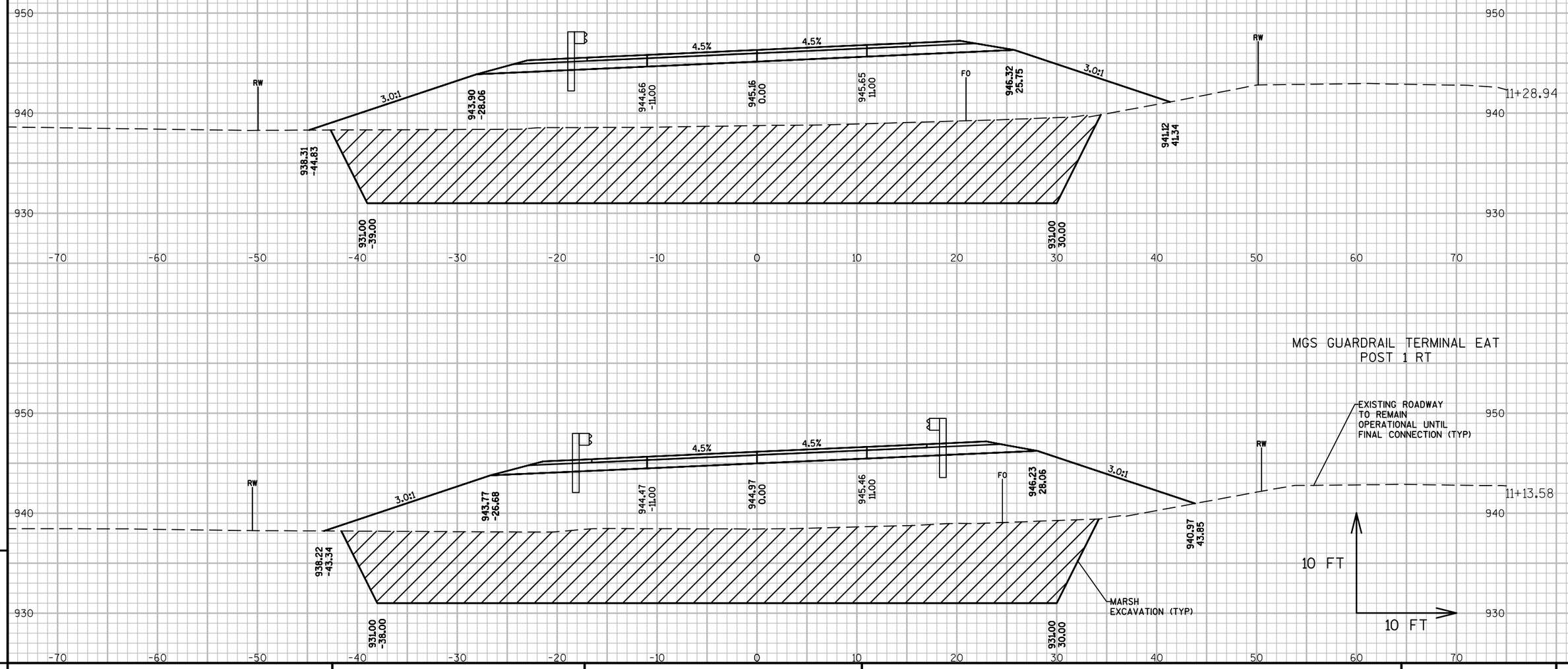
PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 85	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 11

PLOT DATE : 7/9/2017 2:14 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

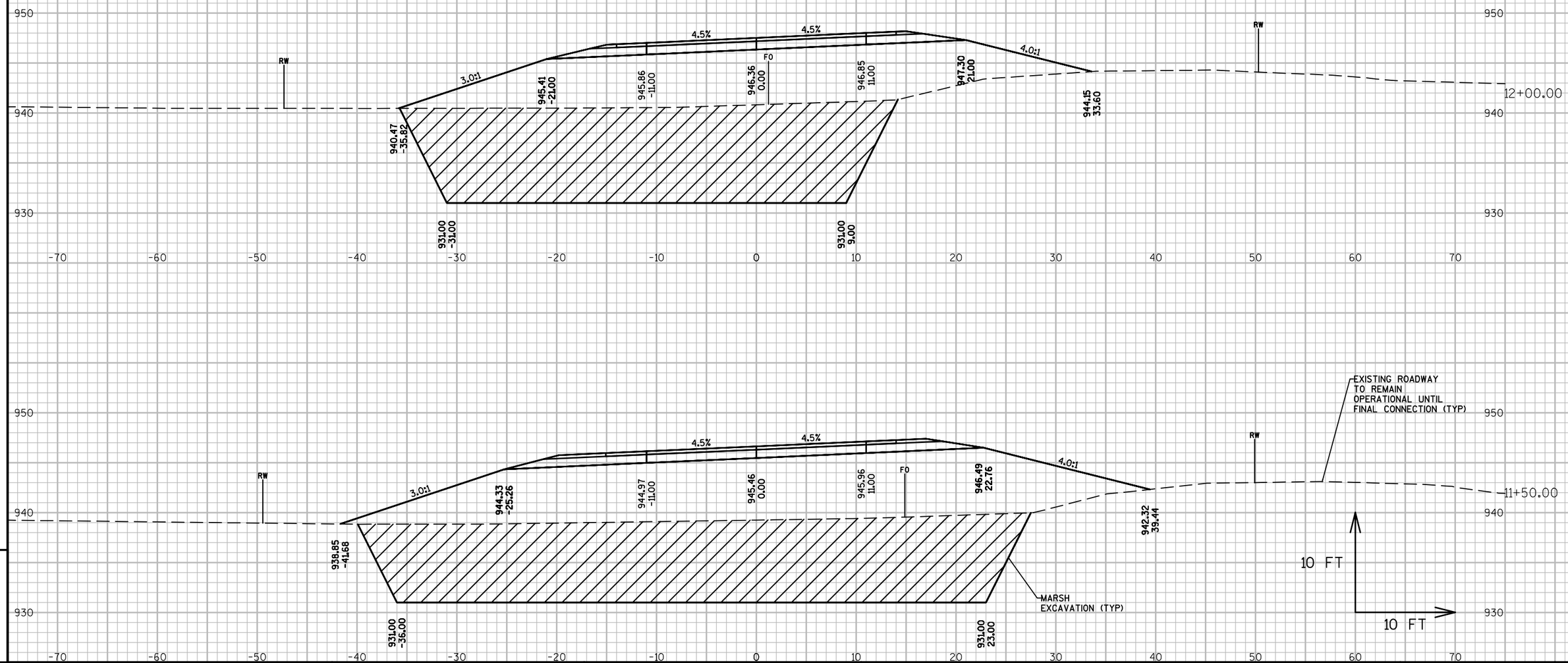
MGS GUARDRAIL TERMINAL EAT
POST 1 LT



MGS GUARDRAIL TERMINAL EAT
POST 1 RT

9 9

PROJECT NO: 7175-00-71	HWY: CTH 0	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH 0	SHEET 86	E

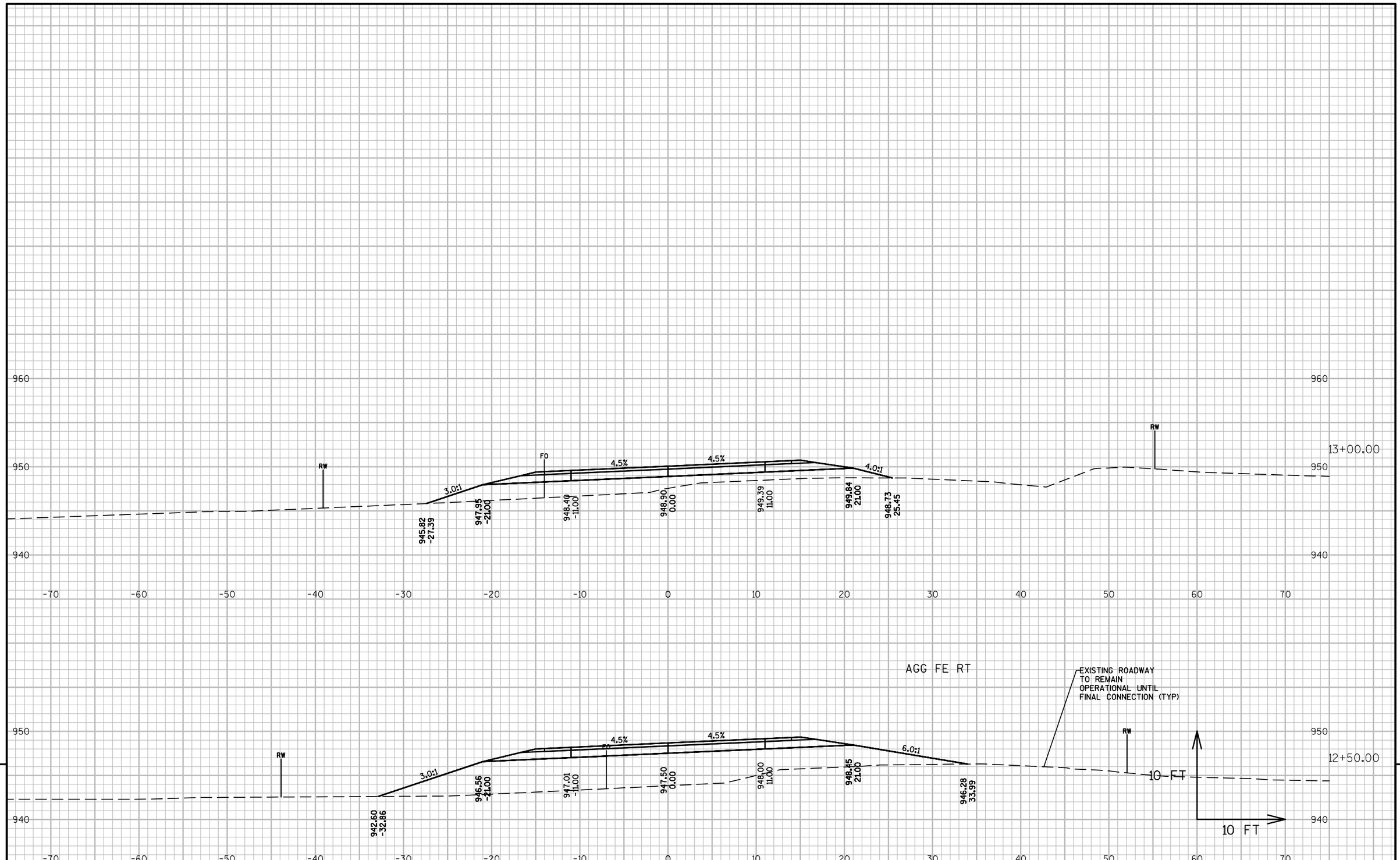


PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 87	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 13

PLOT DATE : 7/9/2017 2:15 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

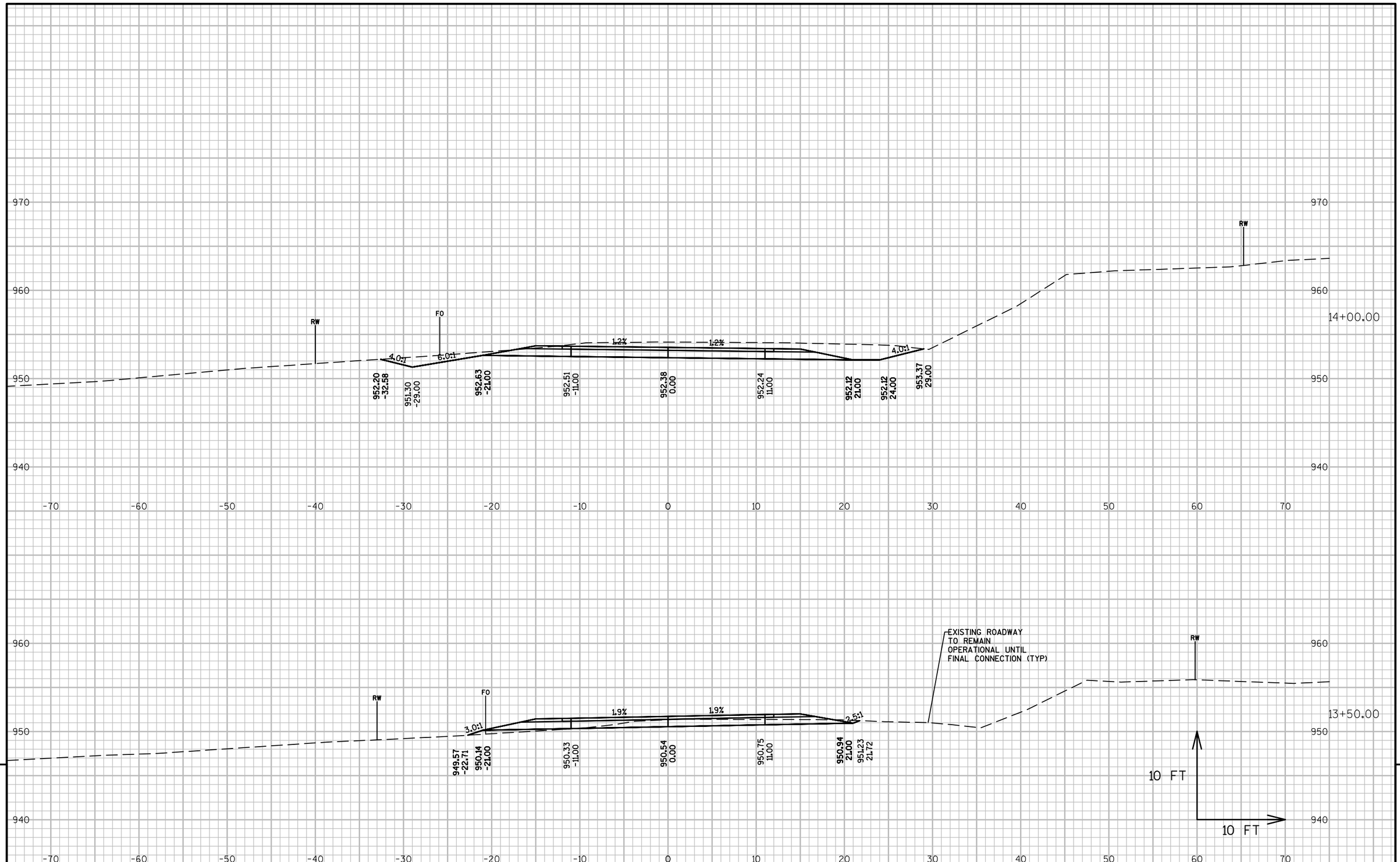


PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 88	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 14

PLOT DATE : 7/9/2017 2:15 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

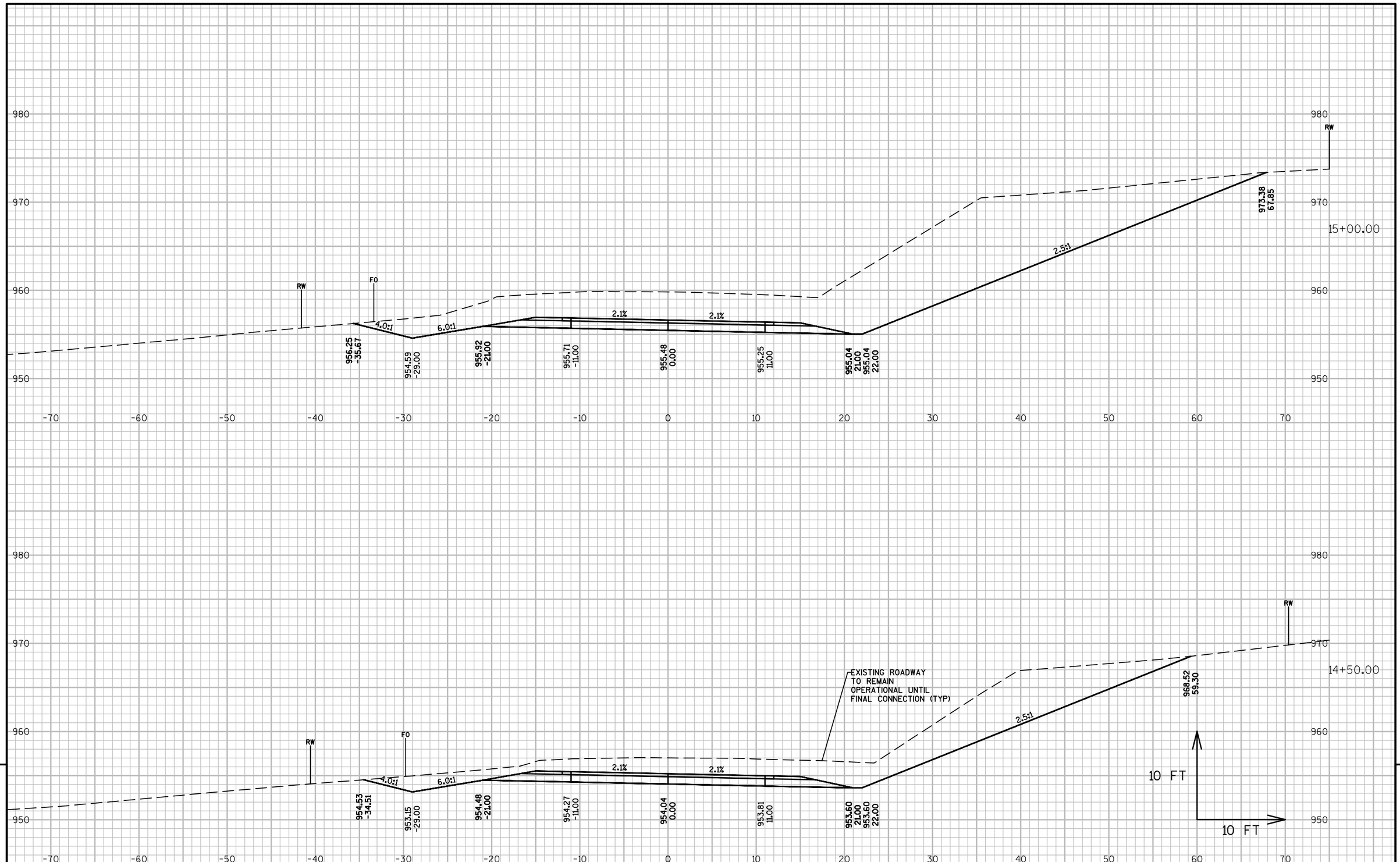


PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 89	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 15

PLOT DATE : 7/9/2017 2:15 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

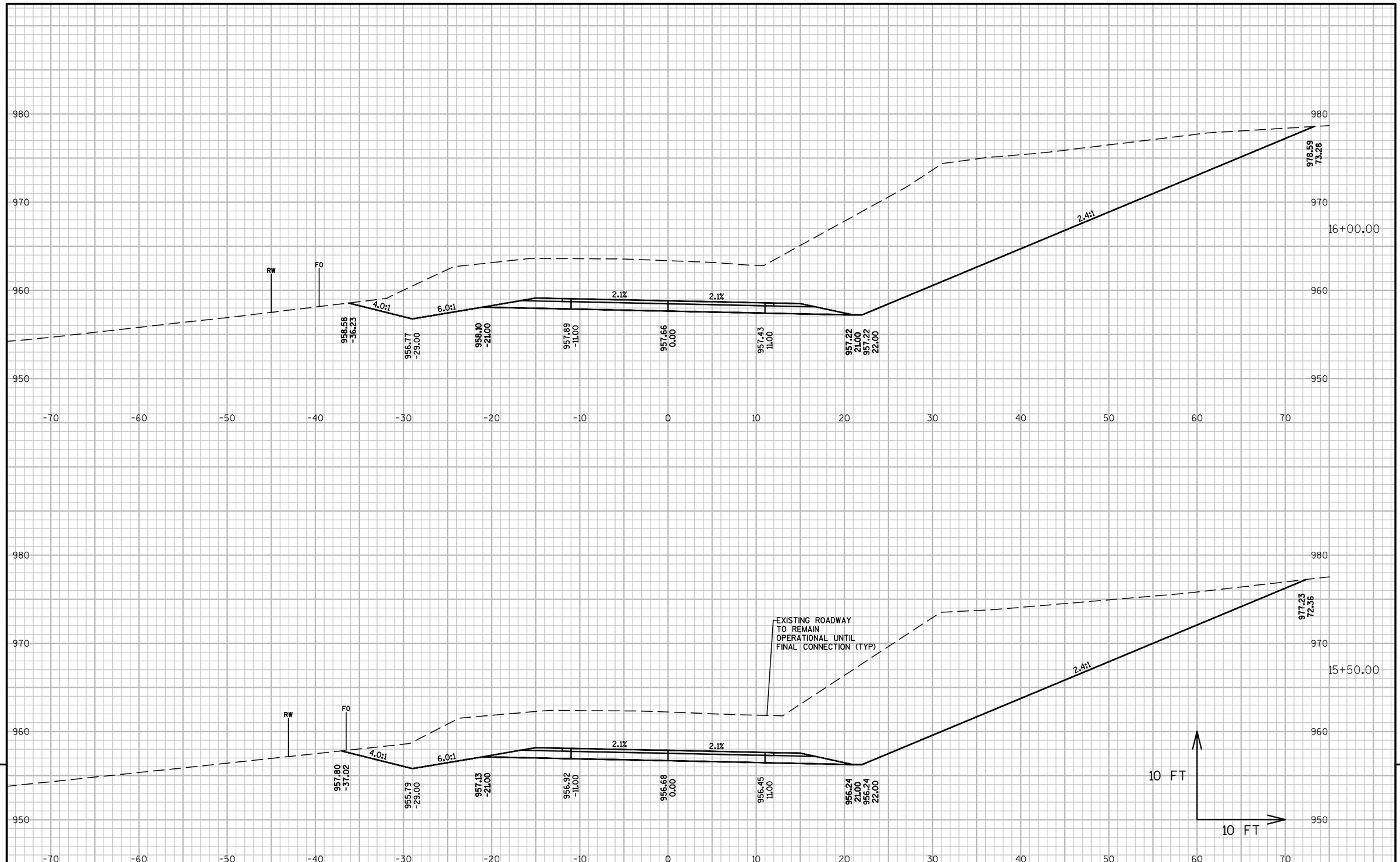


PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 90	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 16

PLOT DATE : 7/9/2017 2:15 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

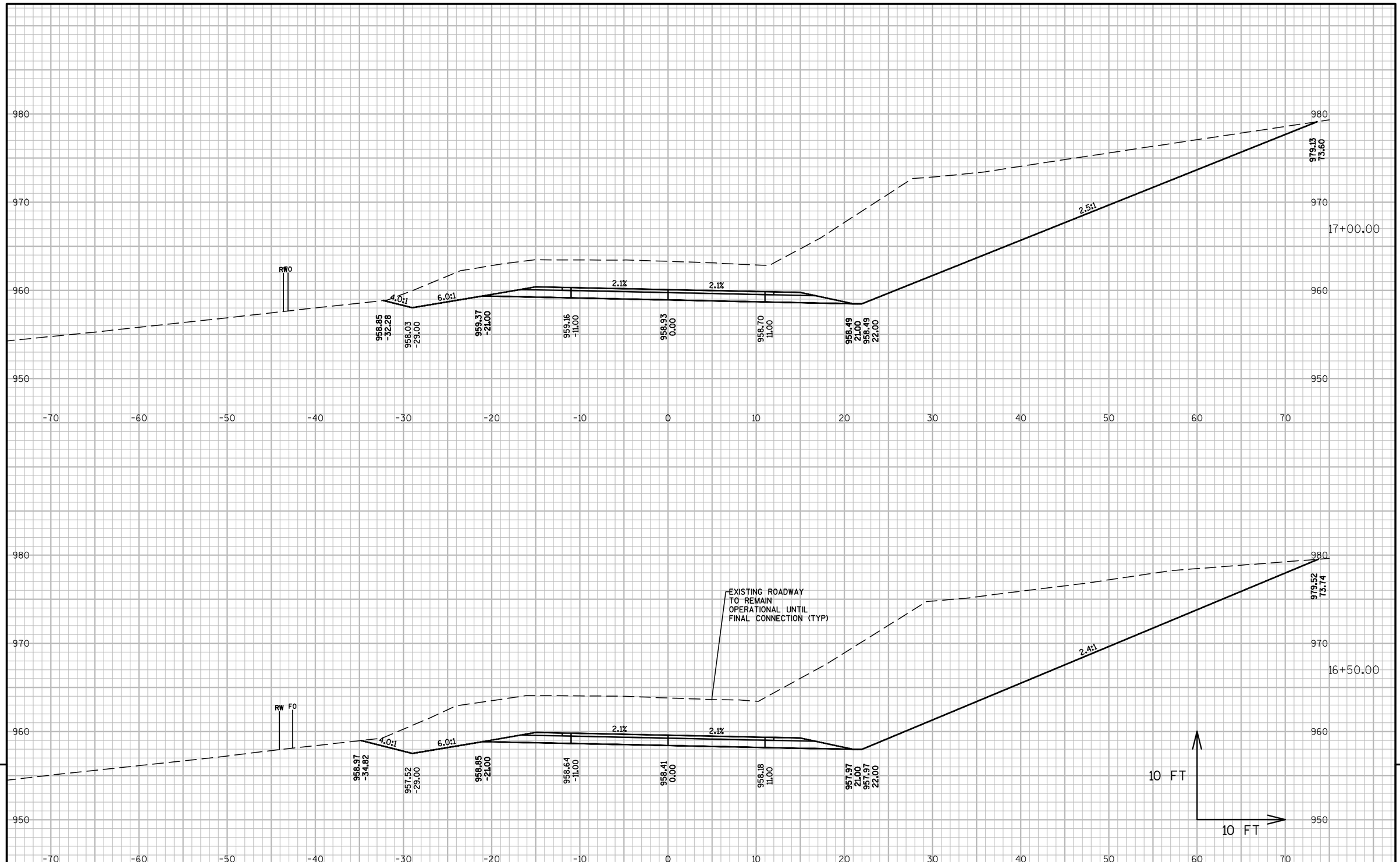


PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 91	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 17

PLOT DATE : 7/9/2017 2:15 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

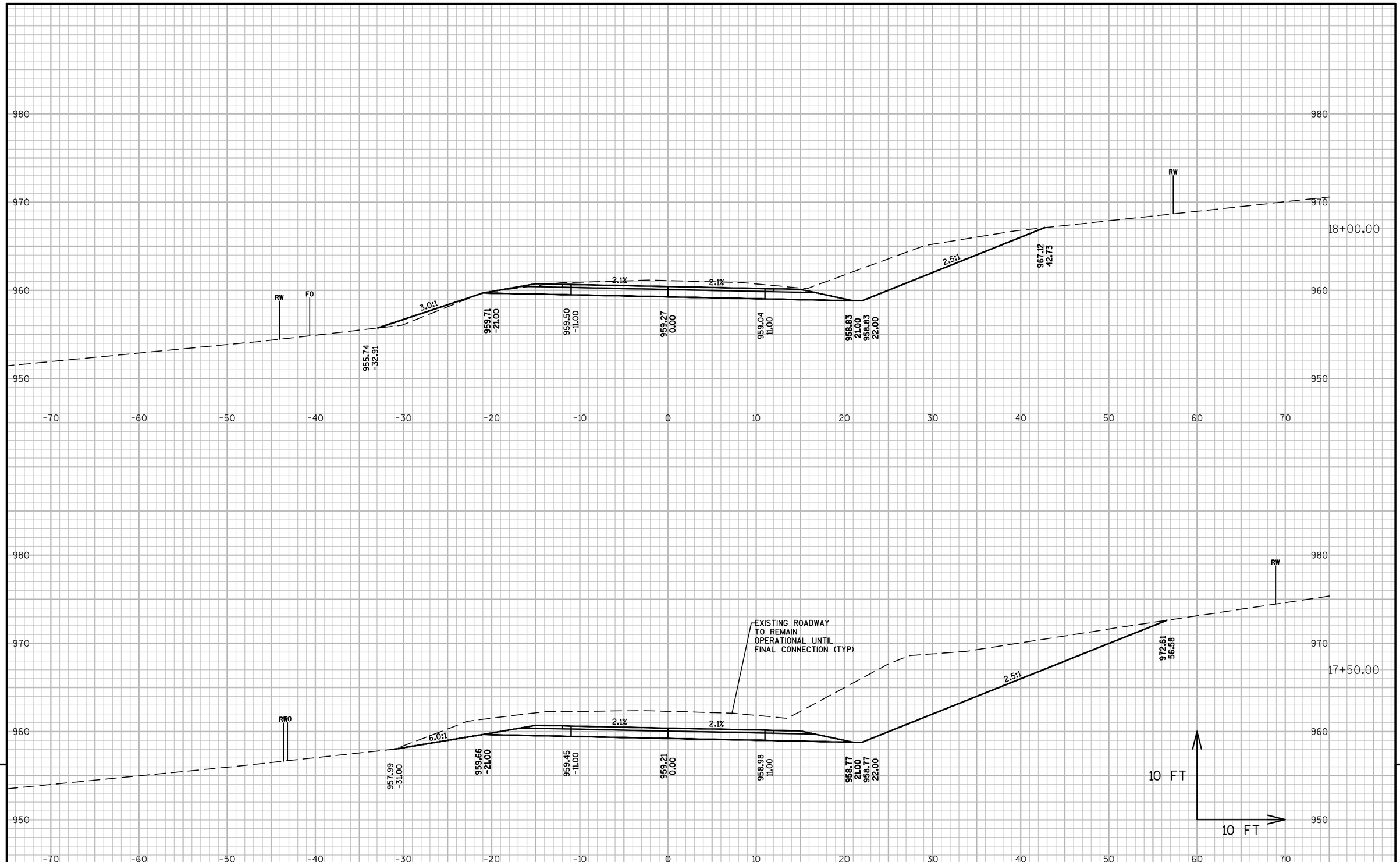


PROJECT NO: 7175-00-71	HWY: CTH 0	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH 0	SHEET 92	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 18

PLOT DATE : 7/9/2017 2:15 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49



9

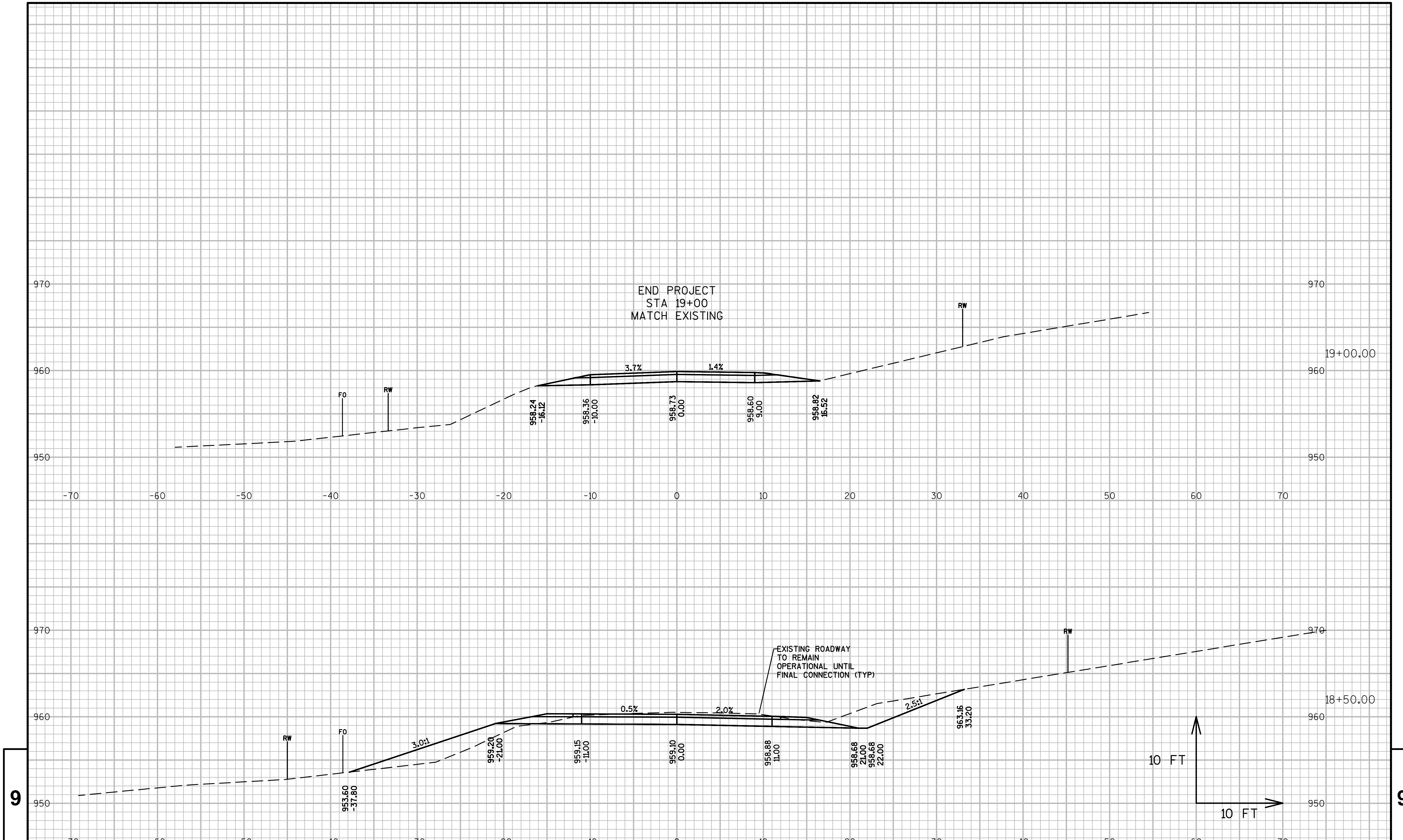
9

PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 93	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 19

PLOT DATE : 7/9/2017 2:15 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49



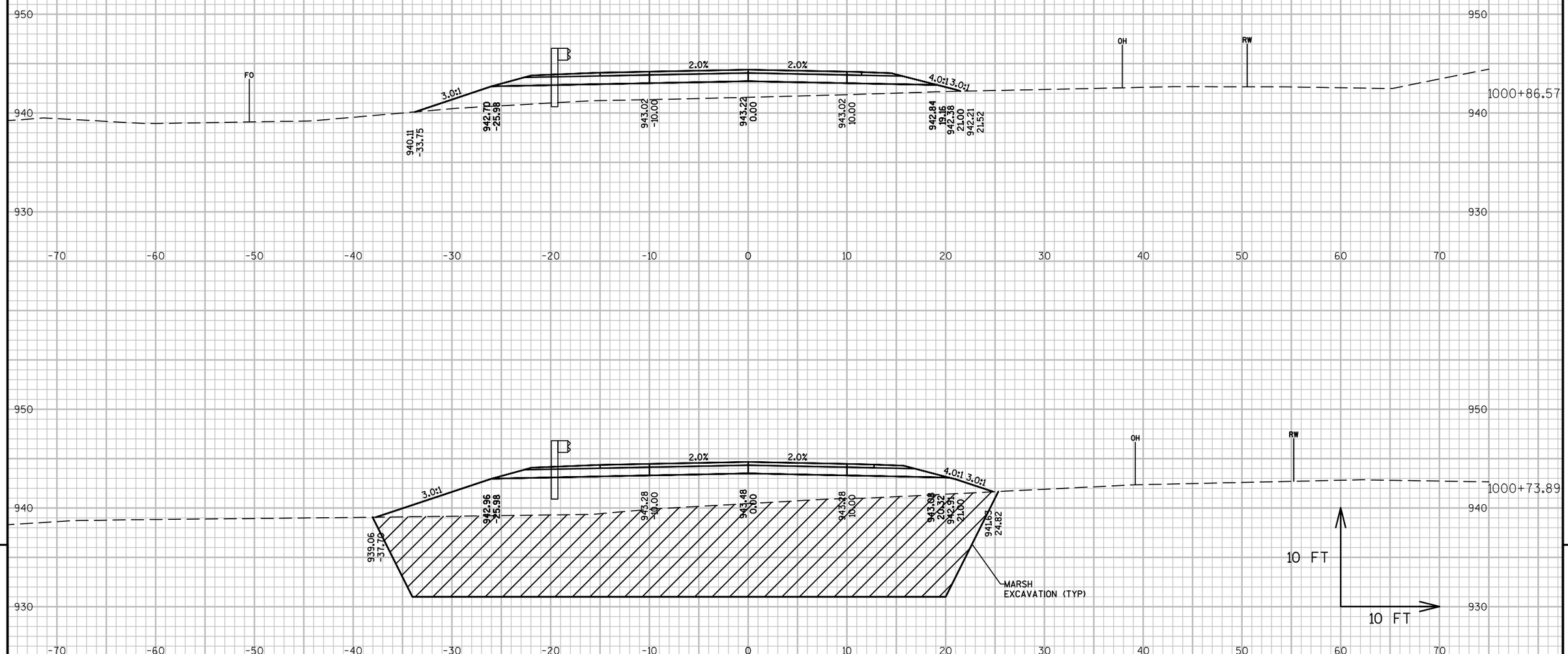
PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: CTH O	SHEET 94	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 20

PLOT DATE : 7/9/2017 2:16 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

STEEL PLATE BEAMGUARD EAT
POST 9 LT

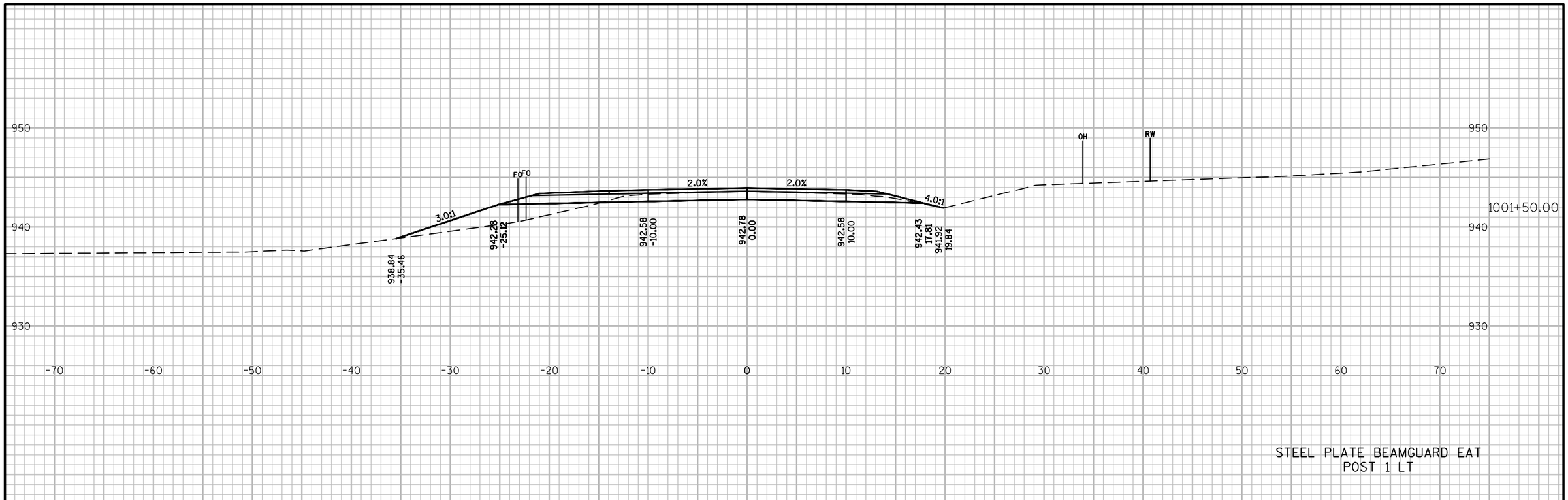


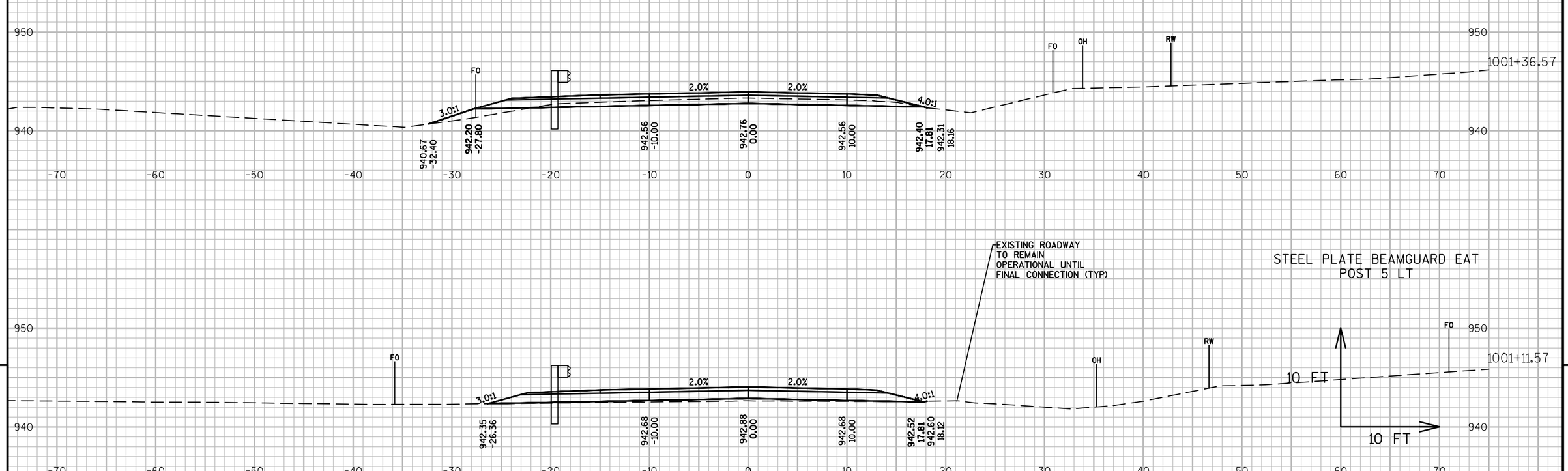
PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: HOLMEN ROAD	SHEET 95	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 1001

PLOT DATE : 7/9/2017 2:16 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49





9

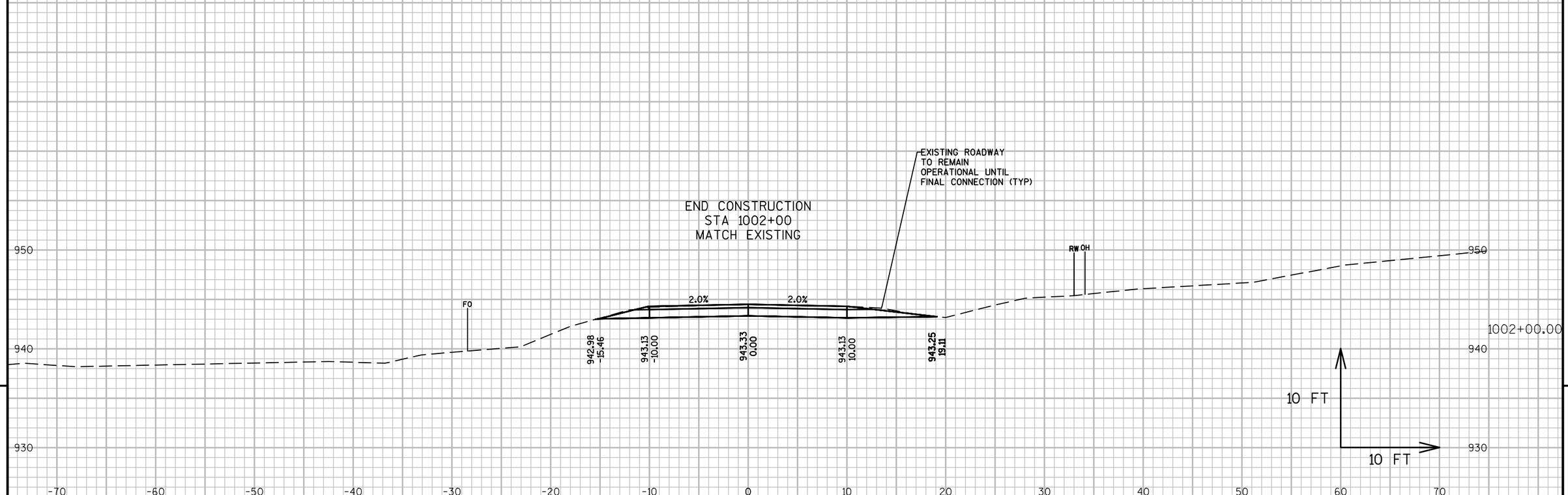
9

PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: HOLMEN ROAD	SHEET 96	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 1002

PLOT DATE : 7/9/2017 2:16 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49



PROJECT NO: 7175-00-71	HWY: CTH O	COUNTY: TREMPEALEAU	CROSS SECTIONS: HOLMEN ROAD	SHEET 97	E

FILE NAME : P:\PT\T\TREMH\132859\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS 1003

PLOT DATE : 7/9/2017 2:16 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

Wisconsin Department of Transportation

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