

RHI

PROJECT ID:
WITH: N/A

6666-03-71

COUNTY:

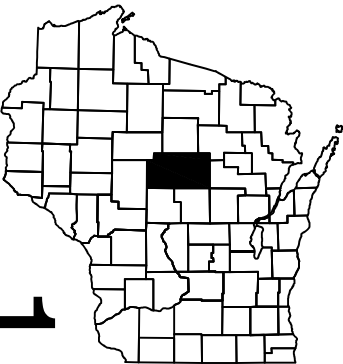
MARATHON

OCTOBER 2026

ORDER OF SHEETS

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

TOTAL SHEETS = 124



DESIGN DESIGNATION 6666-03-01

A.A.D.T.	2027	=	635
A.A.D.T.	2047	=	635
D.H.V.	2047	=	65
D.D.		=	50/50
T.		=	5% (ASSUMED)
DESIGN SPEED		=	55 MPH
ESALS		=	N/A

CONVENTIONAL SYMBOLS

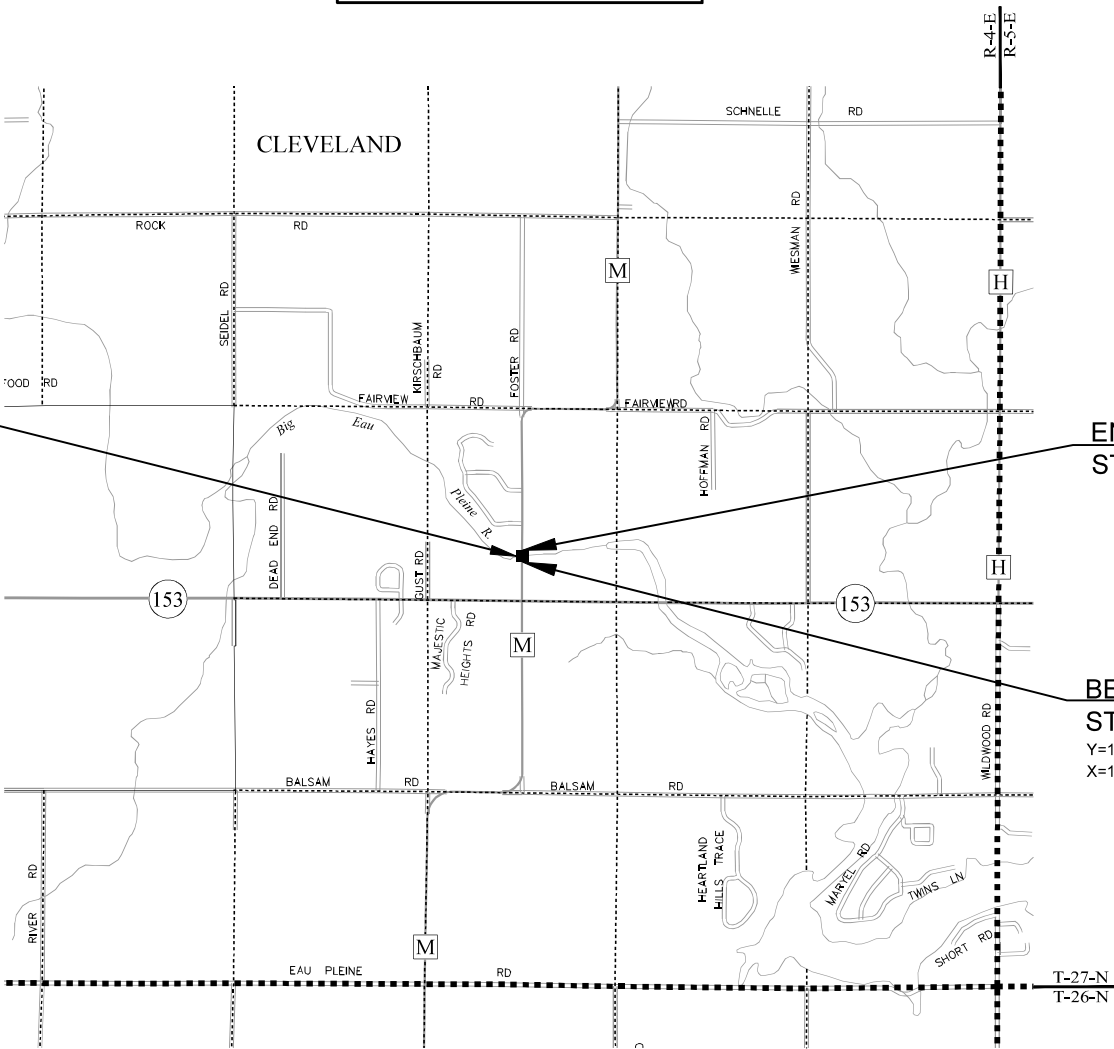
PLAN

CORPORATE LIMITS	
PROPERTY LINE	
LOT LINE	
LIMITED HIGHWAY EASEMENT	
EXISTING RIGHT OF WAY	
PROPOSED OR NEW R/W LINE	
SLOPE INTERCEPT	
REFERENCE LINE	
EXISTING CULVERT	
PROPOSED CULVERT (Box or Pipe)	
COMBUSTIBLE FLUIDS	
MARSH AREA	
WOODED OR SHRUB AREA	

PROFILE

GRADE LINE	
ORIGINAL GROUND	
MARSH OR ROCK PROFILE (To be noted as such)	
SPECIAL DITCH	
GRADE ELEVATION	
CULVERT (Profile View)	
UTILITIES	
ELECTRIC	
FIBER OPTIC	
GAS	
SANITARY SEWER	
STORM SEWER	
TELEPHONE	
WATER	
UTILITY PEDESTAL	
POWER POLE	
TELEPHONE POLE	

STRUCTURE B-37-0171



LAYOUT
SCALE 0 1 MI

TOTAL NET LENGTH OF CENTERLINE = 0.156 MILES

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), MARATHON COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES.

ELEVATIONS ARE REFERENCED TO NAVD 88 (2012). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 18.

STATE PROJECT

6666-03-71

FEDERAL PROJECT

PROJECT

WISC 2027016

CONTRACT

1

ACCEPTED FOR
MARATHON COUNTY

6/3/2026

Date

HIGHWAY COMMISSIONER
(Signature and Title of Official)

ORIGINAL PLANS PREPARED BY



327 N 17th Avenue, Suite 304
Wausau, WI 54401
Phone: 715-845-1081
Fax: 414-347-1347



7/17/26

(Date)

(Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	EMCS, INC.
Designer	EMCS, INC.
Project Manager	MICHAEL GRAGE
Regional Examiner	NA
Regional Supervisor	DANIEL ERVA

APPROVED FOR THE DEPARTMENT

DATE: 7/17/2026

(Signature)

E

GENERAL NOTES

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

ORDER OF SECTION 2 SHEETS

- PROJECT OVERVIEW
- TYPICAL SECTIONS
- CONSTRUCTION DETAILS
- EROSION CONTROL
- DETOUR

UTILITIES

COMMUNICATIONS

FRONTIER COMMUNICATIONS OF WI LLC
JEREMY ZEHM
154 E 2ND ST
NEW RICHMOND, WI, 54017
PHONE: 715-243-924
EMAIL: JEREMY.ZEHM@FTR.COM

SPECTRUM
SCOTT GOHDES
853 MCINTOSH ST
WAUSAU, WI. 54403
PHONE : 715-803-2989
MOBILE :715-519-0065
EMAIL: SCOTT.GOHDES@SPECTRUM.COM

ELECTRIC - DISTRIBUTION

WISCONSIN PUBLIC SERVICE
JESSE PATTEN
1700 SHERMAN ST
P.O. BOX 1166
WAUSAU, WI, 54402-1166
PHONE: 715-848-7405
MOBILE: 715-573-0349
EMAIL: JESSE.PATTEN@WISCONSINPUBLICSERVICE.COM

RUNOFF COEFFICIENT TABLE

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

TOTAL PROJECT AREA = 2.90 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.77 ACRE

DIGGERSHOTLINE

Dial 811 or (800)242-8511

www.DiggersHotline.com

OTHER CONTACTS

WISDOT

MICHAEL GRAGE
WISDOT NORTH CENTRAL REGION
510 HANSON LAKE RD
RHINELAND WI 54501
(715) 365-5705
MICHAEL.GRAGE@DOT.WI.GOV

MARATHON COUNTY COMMISSIONER

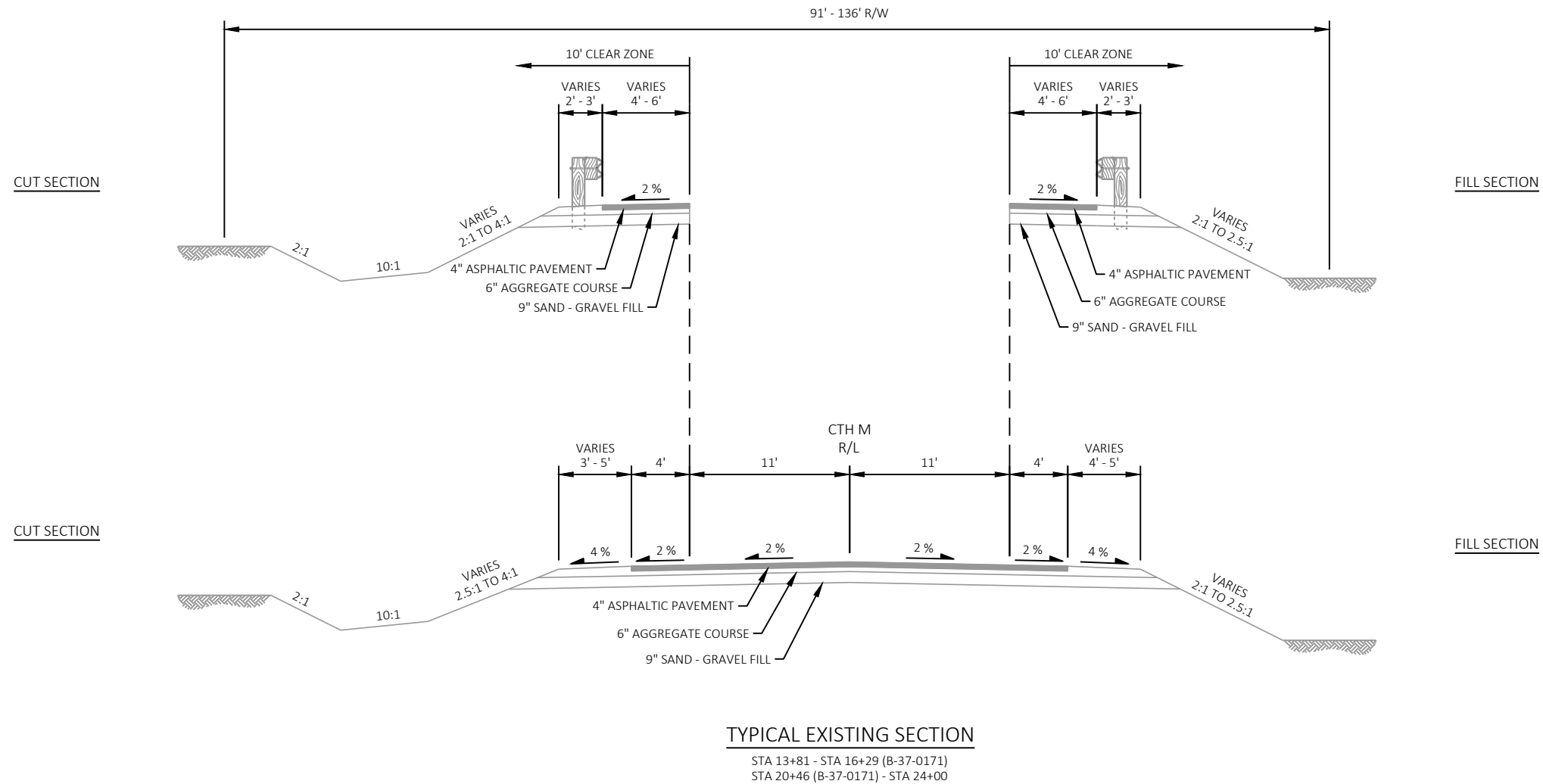
KEVIN LANG
MARATHON COUNTY HIGHWAY DEPARTMENT
500 FOREST STREET
WAUSAU, WI 54403
(715) 261-1801
KEVIN.LANG@MARATHONCOUNTY.GOV

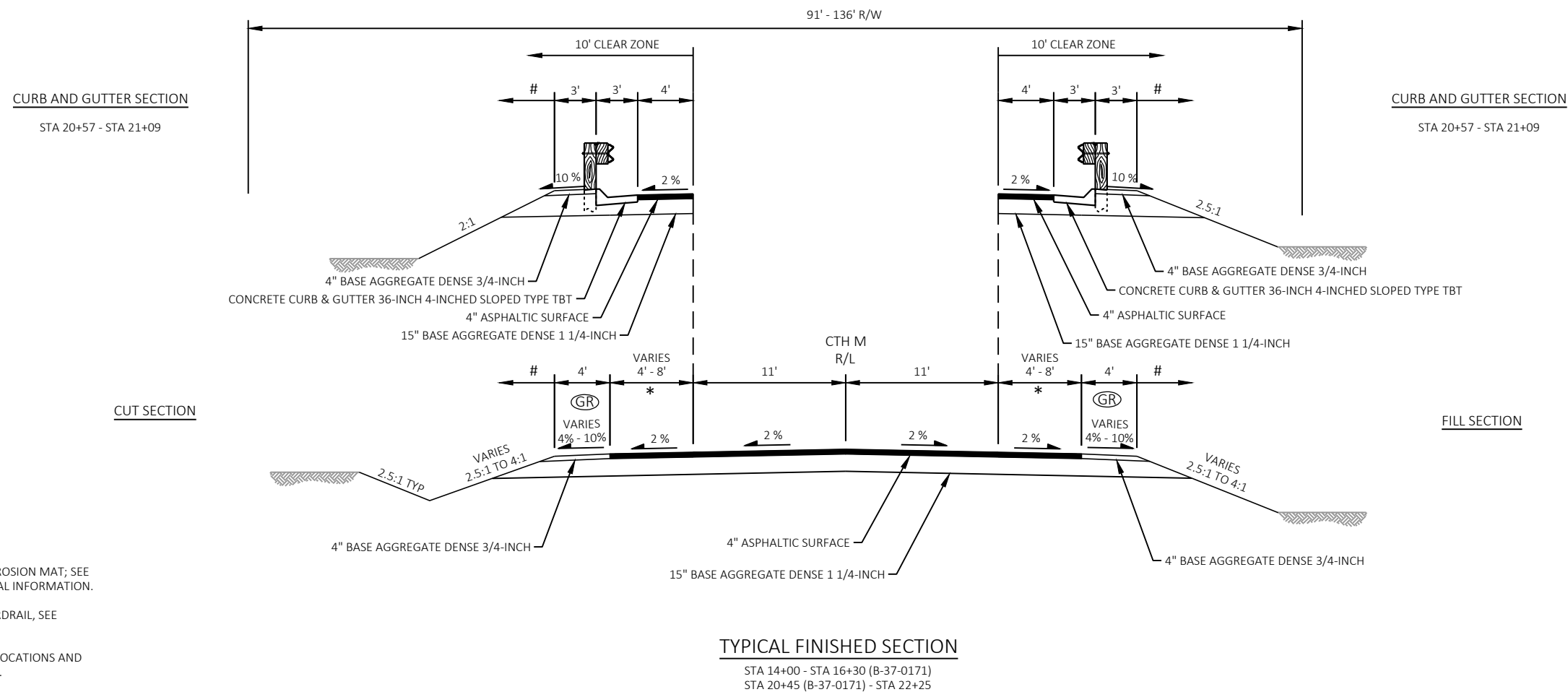
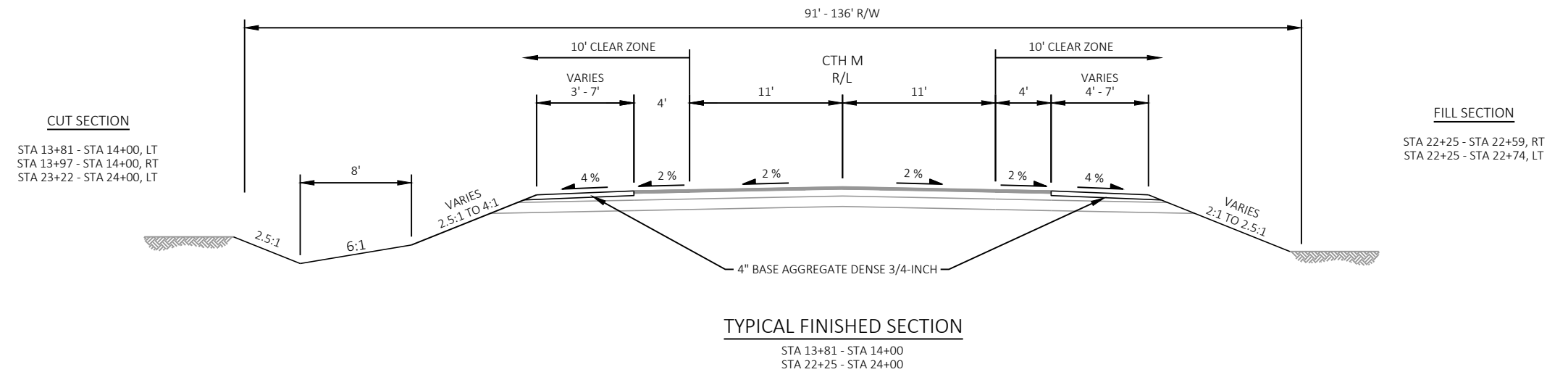
DESIGNER CONTACT

EMCS, INC.
327 N 17TH AVE, SUITE 304
WAUSAU, WI 54401
OFFICE: 715-845-1081

DNR LIAISON

JAY SCHIEFELBEIN
DNR NORTHEAST REGIONAL HEADQUARTERS
2984 SHAWANO AVENUE
GREEN BAY, WI 54313
(920) 360-3784
JEREMIAH.SCHIEFELBEIN@WISCONSIN.GOV





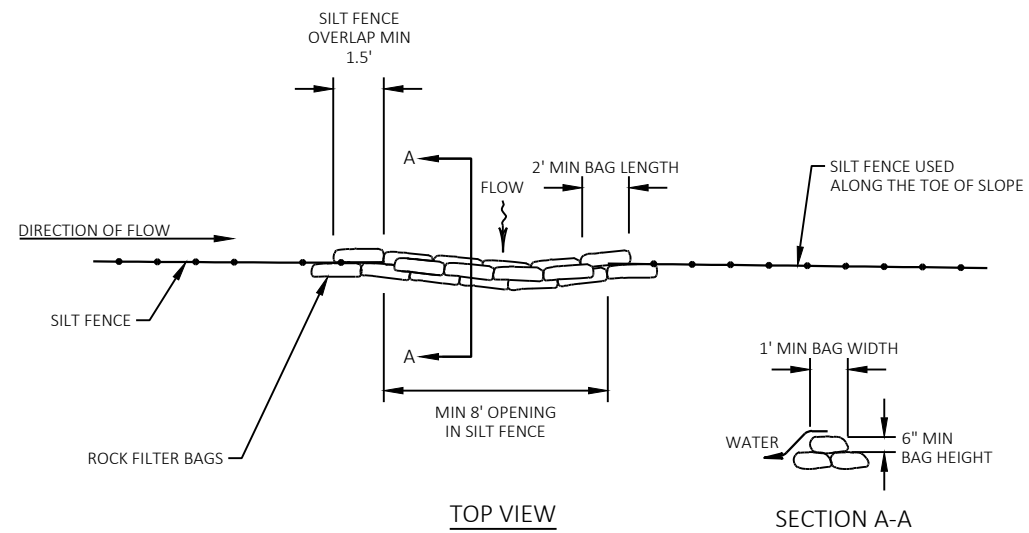
NOTES

TOPSOIL, SEED, FERTILIZER, AND EROSION MAT; SEE EROSION CONTROL FOR ADDITIONAL INFORMATION.

* PAVE SHOULDER TO FACE OF GUARDRAIL, SEE CONSTRUCTION DETAILS.

GR SEE CONSTRUCTION DETAILS FOR LOCATIONS AND LAYOUT OF PROPOSED GUARDRAIL.

COVER EXPOSED GRAVEL INSLOPES WITH 3" BASE AGGREGATE DENSE 3/4-INCH PER STANDARD SPEC.

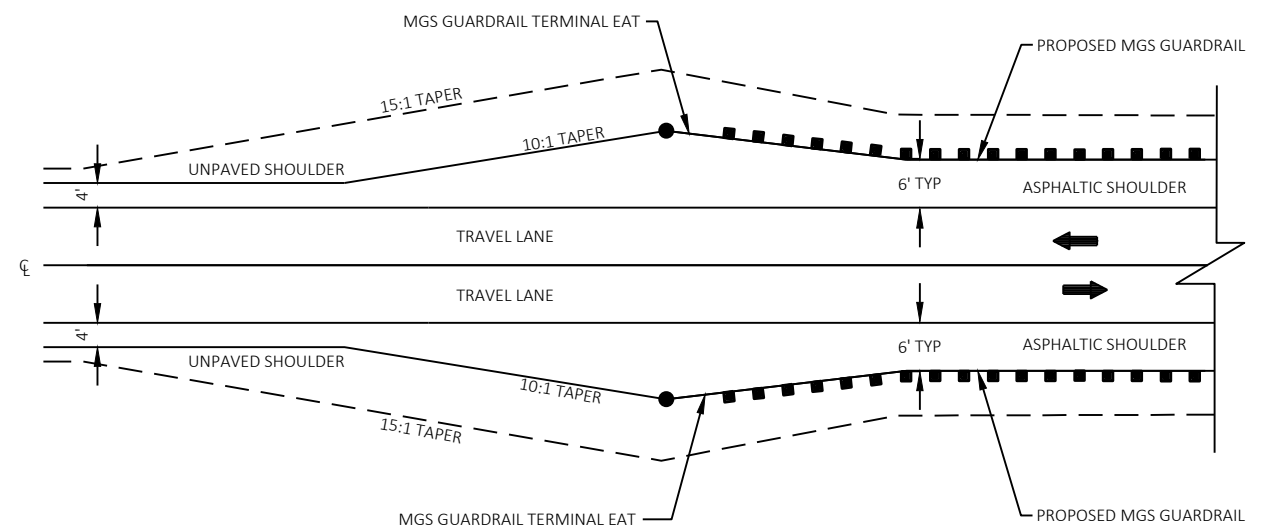


ROCK BAGS USED FOR SILT FENCE RELIEF

NOTES

PLACE AT LOW POINT OF SILT FENCE AS DIRECTED BY THE ENGINEER.

17 ROCK BAGS MINIMUM PER 8' OPENING.

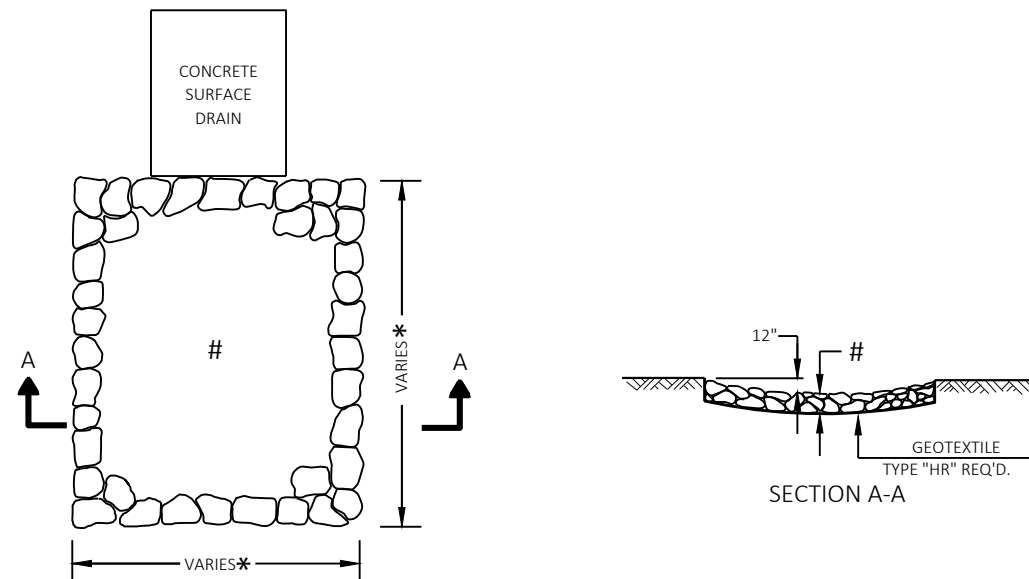


PAVED SHOULDER AT GUARDRAIL DETAIL

STA 14+85, LT
STA 14+86, RT
STA 21+84, RT
STA 31+85, LT

NOTE

SEE GUARDRAIL DETAILS AND SDD
"MIDWEST GUARDRAIL SYSTEM (MGS) EAT"
FOR ADDITIONAL INFORMATION



RIPRAP TREATMENT DETAIL

SEE EROSION CONTROL PLANS FOR LOCATIONS AND TYPES OF RIPRAP

NOTES

* SEE EROSION CONTROL PLANS FOR AREA OF RIPRAP

THICKNESS FOR RIPRAP MEDIUM = 18" MIN.,
THICKNESS FOR RIPRAP HEAVY = 24" MIN.

2

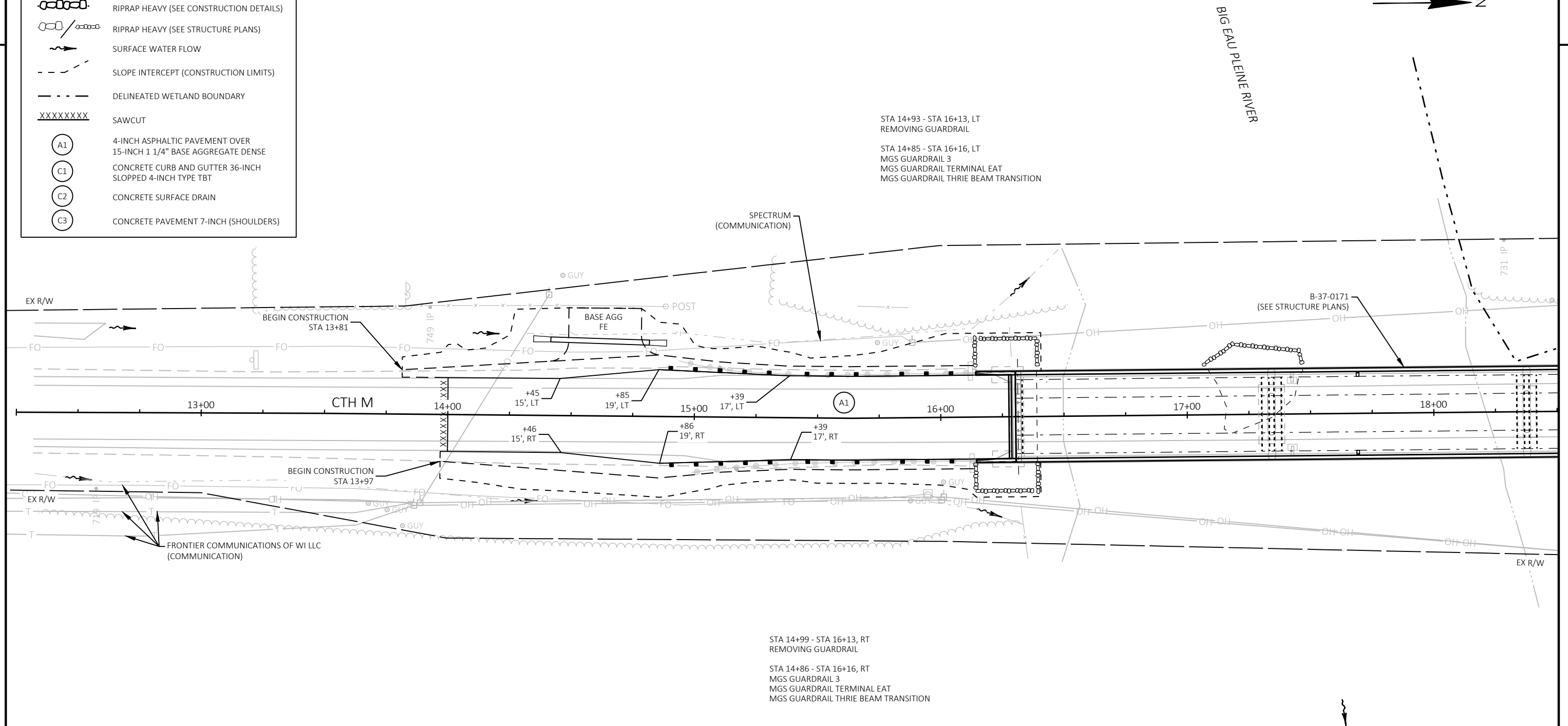
2

<u>LEGEND</u>	
	RIPRAP MEDIUM (SEE CONSTRUCTION DETAILS)
	RIPRAP HEAVY (SEE CONSTRUCTION DETAILS)
	RIPRAP HEAVY (SEE STRUCTURE PLANS)
	SURFACE WATER FLOW
	SLOPE INTERCEPT (CONSTRUCTION LIMITS)
	DELINEATED WETLAND BOUNDARY
	SAWCUT
	4-INCH ASPHALTIC PAVEMENT OVER 15-INCH 1 1/4" BASE AGGREGATE DENSE
	CONCRETE CURB AND GUTTER 36-INCH SLOPPED 4-INCH TYPE TBT
	CONCRETE SURFACE DRAIN
	CONCRETE PAVEMENT 7-INCH (SHOULDERS)

NOTE

SEE PLAN AND PROFILE FOR DRAINAGE AND REMOVAL INFORMATION

CONCRETE PAVEMENT SHOULDERS ARE 9' - 4" X 6' IN DIMENSION



PROJECT NO: 6666-03-71
 FILE NAME : Y:\57XX\5757.DP.25.CTHM.MAR\CADD\66660371\SHEETS\021002-CD.DWG
 LAYOUT NAME - 01

HWY: CTH M

COUNTY: MARATHON

CONSTRUCTION DETAILS - GUARDRAIL AND PAVING LIMITS

SHEET 7



WISDOT/CADDS SHEET 42

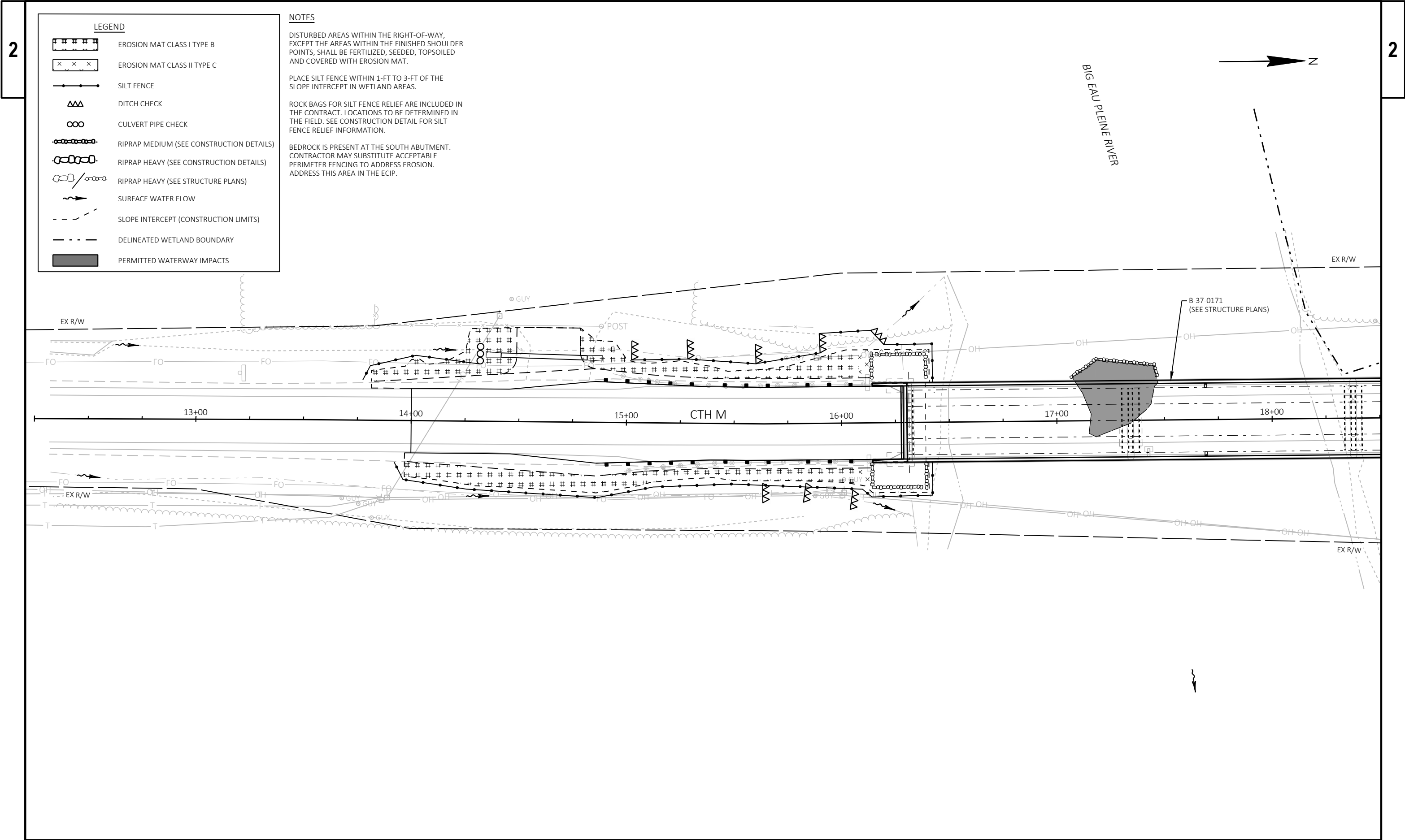
NOTE

SEE PLAN AND PROFILE FOR DRAINAGE AND REMOVAL INFORMATION

CONCRETE SHOULDERS ARE 9' - 4" X 6' IN DIMENSION

-



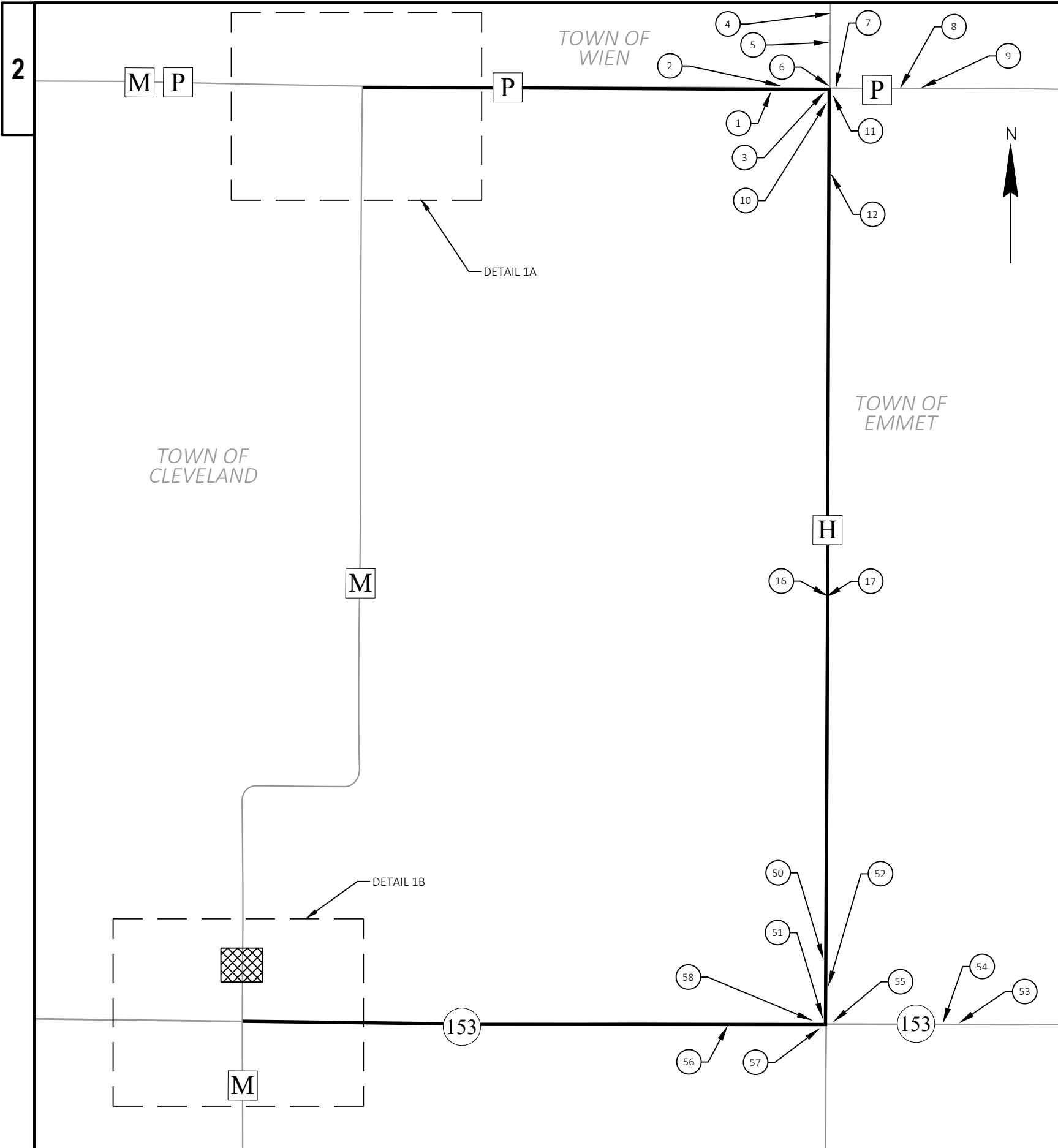


NOTES

- DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, SHALL BE FERTILIZED, SEEDED, TOPSOILED AND COVERED WITH EROSION MAT.

ROCK BAGS FOR SILT FENCE RELIEF ARE INCLUDED IN THE CONTRACT. LOCATIONS TO BE DETERMINED IN THE FIELD. SEE CONSTRUCTION DETAIL FOR SILT FENCE RELIEF INFORMATION.





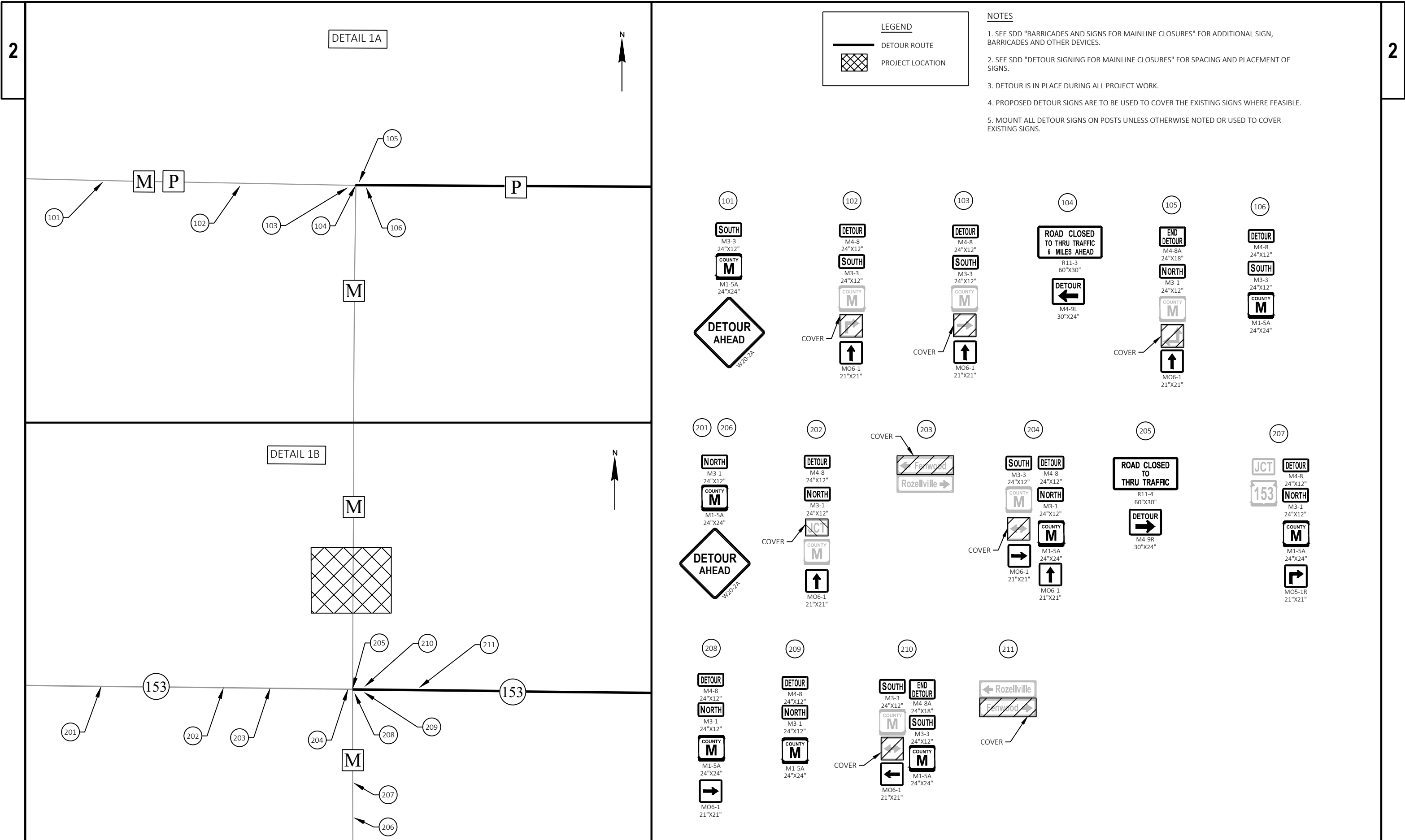
LEGEND

— DETOUR ROUTE

▨ PROJECT LOCATION

- NOTES**
1. SEE SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" FOR ADDITIONAL SIGN, BARRICADES AND OTHER DEVICES.
 2. SEE SDD "DETOUR SIGNING FOR MAINLINE CLOSURES" FOR SPACING AND PLACEMENT OF SIGNS.
 3. DETOUR IS IN PLACE DURING ALL PROJECT WORK.
 4. PROPOSED DETOUR SIGNS ARE TO BE USED TO COVER THE EXISTING SIGNS WHERE FEASIBLE.
 5. MOUNT ALL DETOUR SIGNS ON POSTS UNLESS OTHERWISE NOTED OR USED TO COVER EXISTING SIGNS.
- * PAID AS TRAFFIC CONTROL COVERING SIGNS TYPE II

1	2	3	4	5	6	7
JCT COUNTY H	DETOUR M4-8 24"x12" SOUTH M3-3 24"x12" COUNTY M M1-5A 24"x24" MO5-1R 21"x21"	DETOUR M4-8 24"x12" NORTH M3-1 24"x12" COUNTY M M1-5A 24"x24"	DETOUR M4-8 24"x12" SOUTH M3-3 24"x12" COUNTY M M1-5A 24"x24" DETOUR AHEAD W20-2A	JCT COUNTY P DETOUR M4-8 24"x12" SOUTH M3-3 24"x12" COUNTY M M1-5A 24"x24" MO6-1 21"x21"	Fenwood → COUNTY P COUNTY H DETOUR M4-8 24"x12" SOUTH M3-3 24"x12" COUNTY M M1-5A 24"x24" MO6-1 21"x21"	COUNTY H DETOUR M4-8 24"x12" SOUTH M3-3 24"x12" COUNTY M M1-5A 24"x24" MO6-1 21"x21"
8	10	11	12	50	51	
JCT COUNTY H	DETOUR M4-8 24"x12" SOUTH M3-3 24"x12" COUNTY M M1-5A 24"x24" MO5-1L 21"x21"	DETOUR M4-8 24"x12" SOUTH M3-3 24"x12" COUNTY M M1-5A 24"x24"	COUNTY P COUNTY H DETOUR M4-8 24"x12" NORTH M3-1 24"x12" COUNTY M M1-5A 24"x24" MO6-1 21"x21"	DETOUR M4-8 24"x12" NORTH M3-1 24"x12" COUNTY M M1-5A 24"x24" MO5-1L 21"x21"	JCT 153 DETOUR M4-8 24"x12" SOUTH M3-3 24"x12" COUNTY M M1-5A 24"x24" MO5-1R 21"x21"	DETOUR M4-8 24"x12" SOUTH M3-3 24"x12" COUNTY M M1-5A 24"x24" MO6-1 21"x21"
53	54	55	56	57	58	
NORTH M3-1 24"x12" COUNTY M M1-5A 24"x24" DETOUR AHEAD W20-2A	JCT COUNTY H DETOUR M4-8 24"x12" NORTH M3-1 24"x12" COUNTY M M1-5A 24"x24" MO5-1R 21"x21"	COUNTY H DETOUR M4-8 24"x12" NORTH M3-1 24"x12" COUNTY M M1-5A 24"x24" MO6-1 21"x21"	JCT COUNTY H DETOUR M4-8 24"x12" NORTH M3-1 24"x12" COUNTY M M1-5A 24"x24" MO5-1L 21"x21"	COUNTY H DETOUR M4-8 24"x12" NORTH M3-1 24"x12" COUNTY M M1-5A 24"x24" MO6-1 21"x21"	WEST 153 DETOUR M4-8 24"x12" SOUTH M3-3 24"x12" COUNTY M M1-5A 24"x24"	



Estimate Of Quantities

6666-03-71

Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	3.000	3.000
0004	201.0205	Grubbing	STA	3.000	3.000
0006	203.0100	Removing Small Pipe Culverts	EACH	2.000	2.000
0008	203.0260	Removing Structure Over Waterway Minimal Debris (structure) 01. B-37-171	EACH	1.000	1.000
0010	204.0100	Removing Concrete Pavement	SY	12.000	12.000
0012	204.0165	Removing Guardrail	LF	500.000	500.000
0014	204.0190	Removing Surface Drains	EACH	2.000	2.000
0016	205.0100	Excavation Common	CY	1,043.000	1,043.000
0018	206.1001	Excavation for Structures Bridges (structure) 01. B-37-171	EACH	1.000	1.000
0020	210.1500	Backfill Structure Type A	TON	330.000	330.000
0022	213.0100	Finishing Roadway (project) 01. 6666-03-71	EACH	1.000	1.000
0024	305.0110	Base Aggregate Dense 3/4-Inch	TON	155.000	155.000
0026	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,815.000	1,815.000
0028	415.0070	Concrete Pavement 7-Inch	SY	12.000	12.000
0030	416.0610	Drilled Tie Bars	EACH	16.000	16.000
0032	455.0605	Tack Coat	GAL	75.000	75.000
0034	465.0105	Asphaltic Surface	TON	340.000	340.000
0036	502.0100	Concrete Masonry Bridges	CY	650.000	650.000
0038	502.3101	Expansion Device	LF	68.000	68.000
0040	502.3200	Protective Surface Treatment	SY	1,594.000	1,594.000
0042	502.3210	Pigmented Surface Sealer	SY	436.000	436.000
0044	502.4205	Adhesive Anchors No. 5 Bar	EACH	58.000	58.000
0046	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	163,740.000	163,740.000
0048	506.4000	Steel Diaphragms (structure) 01. B-37-171	EACH	32.000	32.000
0050	506.6000	Bearing Assemblies Expansion (structure) 01. B-37-171	EACH	10.000	10.000
0052	506.7050.S	Removing Bearings (structure) 01. B-37-171	EACH	10.000	10.000
0054	509.1500	Concrete Surface Repair	SF	25.000	25.000
0056	509.9025.S	Epoxy Injection Crack Repair	LF	35.000	35.000
0058	509.9026.S	Cored Holes 2-Inch Diameter	EACH	10.000	10.000
0060	514.0445	Floor Drains Type GC	EACH	4.000	4.000
0062	514.2625	Downspout 6-Inch	LF	22.000	22.000
0064	516.0500	Rubberized Membrane Waterproofing	SY	21.000	21.000
0066	521.1524	Apron Endwalls for Culvert Pipe Sloped Side Drains Steel 24-Inch 6 to 1	EACH	2.000	2.000
0068	521.3124	Culvert Pipe Corrugated Steel 24-Inch	LF	40.000	40.000
0070	601.0588	Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type TBT	LF	92.000	92.000
0072	602.3010	Concrete Surface Drains	CY	4.000	4.000
0074	606.0200	Riprap Medium	CY	15.000	15.000
0076	606.0300	Riprap Heavy	CY	348.000	348.000
0078	606.9105.S	Underwater Substructure Backfill or Riprap Inspection (Structure) 01. B-37-171	EACH	1.000	1.000
0080	614.0150	Anchor Assemblies for Steel Plate Beam Guard	EACH	4.000	4.000
0082	614.2300	MGS Guardrail 3	LF	150.000	150.000
0084	614.2500	MGS Thrie Beam Transition	LF	157.600	157.600
0086	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0088	618.0100	Maintenance and Repair of Haul Roads (project) 01. 6666-03-71	EACH	1.000	1.000
0090	619.1000	Mobilization	EACH	1.000	1.000
0092	624.0100	Water	MGAL	50.000	50.000
0094	625.0100	Topsoil	SY	1,420.000	1,420.000
0096	628.1504	Silt Fence	LF	1,300.000	1,300.000
0098	628.1520	Silt Fence Maintenance	LF	1,300.000	1,300.000

Estimate Of Quantities

6666-03-71

Line	Item	Item Description	Unit	Total	Qty
0100	628.1905	Mobilizations Erosion Control	EACH	5.000	5.000
0102	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0104	628.2004	Erosion Mat Class I Type B	SY	1,160.000	1,160.000
0106	628.2027	Erosion Mat Class II Type C	SY	260.000	260.000
0108	628.7504	Temporary Ditch Checks	LF	175.000	175.000
0110	628.7555	Culvert Pipe Checks	EACH	5.000	5.000
0112	628.7570	Rock Bags	EACH	170.000	170.000
0114	629.0210	Fertilizer Type B	CWT	1.000	1.000
0116	630.0120	Seeding Mixture No. 20	LB	70.000	70.000
0118	630.0500	Seed Water	MGAL	35.000	35.000
0120	634.0614	Posts Wood 4x6-Inch x 14-FT	EACH	4.000	4.000
0122	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0124	638.2602	Removing Signs Type II	EACH	4.000	4.000
0126	638.3000	Removing Small Sign Supports	EACH	4.000	4.000
0128	642.5001	Field Office Type B	EACH	1.000	1.000
0130	643.0420	Traffic Control Barricades Type III	DAY	1,980.000	1,980.000
0132	643.0705	Traffic Control Warning Lights Type A	DAY	3,080.000	3,080.000
0134	643.0900	Traffic Control Signs	DAY	17,050.000	17,050.000
0136	643.0920	Traffic Control Covering Signs Type II	EACH	8.000	8.000
0138	643.5000	Traffic Control	EACH	1.000	1.000
0140	645.0120	Geotextile Type HR	SY	281.000	281.000
0142	646.2020	Marking Line Epoxy 6-Inch	LF	2,510.000	2,510.000
0144	650.4500	Construction Staking Subgrade	LF	556.000	556.000
0146	650.5000	Construction Staking Base	LF	556.000	556.000
0148	650.6501	Construction Staking Structure Layout (structure) 01. B-37-171	EACH	1.000	1.000
0150	650.9911	Construction Staking Supplemental Control (project) 01. 6666-03-71	EACH	1.000	1.000
0152	650.9920	Construction Staking Slope Stakes	LF	556.000	556.000
0154	690.0150	Sawing Asphalt	LF	60.000	60.000
0156	715.0502	Incentive Strength Concrete Structures	DOL	3,900.000	3,900.000
0158	715.0720	Incentive Compressive Strength Concrete Pavement	DOL	500.000	500.000
0160	999.2000.S	Installing and Maintaining Bird Deterrent System (station) 01. STA 18+38	EACH	1.000	1.000
0162	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	1,200.000	1,200.000
0164	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	600.000	600.000
0166	SPV.0060	Special 01. Foam Void Filling B-37-171	EACH	1.000	1.000
0168	SPV.0180	Special 01. Abutment Seat Cleaning and Sealing	SY	20.000	20.000

CLEARING AND GRUBBING ITEMS

CATEGORY	STATION	TO	STATION	OFFSET	201.0105 CLEARING STA	201.0205 GRUBBING STA
0010	20+34	--	21+06	LT	2	2
	23+23	--	23+73	LT	1	1
TOTALS					3	3

REMOVAL ITEMS

CATEGORY	STATION	TO	STATION	OFFSET	204.0100 REMOVING CONCRETE PAVEMENT SY	204.0190 REMOVING SURFACE DRAINS EACH
0010	20+48	--	20+63	LT & RT	12	2
TOTALS					12	2

EARTHWORK SUMMARY											
CATEGORY	DIVISION	STATION	TO	STATION	LOCATION	205.0100 EXCAVATION COMMON (NOTE 1) (CY)	SALVAGED/UNUSABLE PAVEMENT MATERIAL (NOTE 2) (CY)	AVAILABLE MATERIAL (NOTE 3)	UNEXPANDED FILL	EXPANDED FILL (NOTE 4)	MASS ORDINATE +/- (NOTE 5)
										FACTOR 1.25	
0010	1	13+81	-	16+30	SOUTH APPROACH	527	92	435	23	29	407
SUBTOTALS						527	92	435	23	29	407
0010	2	20+45	-	22+74	NORTH APPROACH	392	73	319	141	176	143
0010	3	23+22		24+00	DRIVEWAY REMOVAL	124	--	124	7	9	115
SUBTOTALS						516	73	443	148	185	258
PROJECT TOTALS						1,043	165	878	171	214	665

NOTES:
1) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT
2) SALVAGED/UNUSABLE PAVEMENT MATERIAL = (AREA OF PROJECT PAVEMENT) * (TYPICAL DEPTH)
3) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSABLE PAVEMENT MATERIAL
4) EXPANDED FILL = (UNEXPANDED FILL) * (FILL FACTOR)
5) MASS ORDINATE = AVAILABLE MATERIAL - (EXPANDED FILL); POSITIVE INDICATES AN EXCESS OF MATERIAL; NEGATIVE INDICATES A SHORTAGE OF MATERIAL

BASE AGGREGATE ITEMS

		305.0110			305.0120	
		BASE AGGREGATE DENSE 3/4-INCH			BASE AGGREGATE DENSE 1 1/4-INCH	
CATEGORY	STATION	TO	STATION	OFFSET	TON	TON
0010	13+81	--	16+13	LT & RT	85	1,014
	20+48	--	22+74	LT & RT	62	801
	23+22	--	24+00	LT	8	--
	TOTALS				155	1,815

ASPHALTIC ITEMS

		455.0605			465.0105	
		TACK COAT			ASPHALTIC SURFACE	
CATEGORY	STATION	TO	STATION	GAL	TON	
0010	14+00	--	16+30	43	194	
	20+45	--	22+25	32	146	
	TOTALS				75	340

CONCRETE PAVEMENT ITEMS

		415.0070			416.0610	
		CONCRETE PAVEMENT 7-INCH SY			DRILLED TIE BARS EACH	
CATEGORY	STATION	TO	STATION	OFFSET		
0010	20+48	--	20+57	LT	6	8
	20+48	--	20+57	RT	6	8
	TOTALS				12	16

CONCRETE SURFACE DRAINS

		602.3010		
		CONCRETE SURFACE DRAINS CY		
CATEGORY	STATION	TO	STATION	OFFSET
0010	20+57	--	20+63	LT
	20+57	--	20+63	RT
	TOTAL			

CONCRETE CURB & GUTTER

		601.0588		
		CONCRETE CURB & GUTTER 4-INCH SLOPED 36-INCH TYPE TBT		
CATEGORY	STATION	TO	STATION	OFFSET
0010	20+57	--	21+09	LT
	20+57	--	21+09	RT
	TOTAL			

RIPRAP ITEMS

						606.0200	606.0300	645.0120
						RIPRAP MEDIUM	RIPRAP HEAVY	GEOTEXTILE
CATEGORY	STATION	TO	STATION	OFFSET		CY	CY	TYPE HR
0010	20+59	--	20+94	LT	--	--	16	42
	20+97	--	21+03	LT		4	--	13
	20+97	--	21+04	LT		11	--	35
	TOTALS					15	16	90

CULVERT PIPE ITEMS

				203.0100	521.1524	521.3124								
				REMOVING SMALL PIPE	APRON ENDWALLS FOR	CULVERT PIPE								
				CULVERTS	CULVERT PIPE SLOPED SIDE	CORRUGATED								
					DRAINS STEEL 24-INCH 6 TO	STEEL 24-INCH								
					1	LF								
CATEGORY	STATION	OFFSET		EACH	EACH		THICKNESS	APPROX.	APPROX.	UPSTREAM	DOWNSTREAM	UPSTREAM	DOWNSTREAM	COMMENTS
0010	14+72	LT		1	2	40	0.064	14+42/31' LT	14+82/30' LT	1,178.66	1,177.46			24" CPCM
	23+49	LT		1	--	--	--	--	--	--	--	--	--	24" CPCM
TOTALS				2	2	40								

RESTORATION ITEMS

						625.0100	629.0210	630.0120	630.0500
						TOPSOIL	FERTILIZER TYPE B	SEEDING	SEED WATER
CATEGORY	STATION	TO	STATION	OFFSET		SY	CWT	MIXTURE	MGAL
0010	13+77	--	16+30	LT & RT		380	0.2	17	8
	20+21	--	24+00	LT & RT		760	0.5	34	17
	UNDISTRIBUTED					280	0.3	19	10
	TOTALS					1,420	1.0	70	35

EROSION CONTROL ITEMS

						628.1504	628.1520	628.2004	628.2027	628.7504	628.7555	628.7570
						SILT FENCE	SILT FENCE	EROSION MAT	EROSION MAT	TEMPORARY	CULVERT PIPE	ROCK BAGS
						LF	MAINTENANCE	CLASS I TYPE B	CLASS II TYPE C	DITCH CHECKS	CHECKS	EACH
CATEGORY	STATION	TO	STATION	OFFSET			LF	SY	SY	LF	EACH	EACH
0010	13+77	--	16+30	LT & RT		490	490	360	20	100	4	68
	20+21	--	24+00	LT & RT		550	550	570	190	38	--	68
	UNDISTRIBUTED					260	260	230	50	37	1	34
	TOTALS					1,300	1,300	1,160	260	175	5	170

GUARDRAIL ITEMS								
CATEGORY	STATION	TO	STATION	OFFSET	204.0165	614.2300	614.2500	614.2610
					REMOVING GUARDRAIL LF	MGS GUARDRAIL 3 LF	MGS THRIE BEAM TRANSITION LF	MGS GUARDRAIL TERMINAL EAT EACH
0010	14+85	--	16+19	LT & RT	248	75	78.8	2
	20+52	--	21+85	LT & RT	252	75	78.8	2
	TOTALS				500	150	157.6	4

TYPE II SIGNS AND SUPPORTS

CATEGORY	SIGN NUMBER	SIGN CODE	SIGN SIZE	SIGN TYPE	SIGN DIMENSION W X H			DESCRIPTION	634.0614	637.2230
					IN	X	IN		POSTS WOOD 4X6-INCH X 14-FT EACH	SIGNS TYPE II REFLECTIVE F SF
0010	1-1	W5-52R	2S	II	12	X	36	BRIDGE HASH MARKS	1	3.00
	1-2	W5-52L	2S	II	12	X	36	BRIDGE HASH MARKS	1	3.00
	1-3	W5-52R	2S	II	12	X	36	BRIDGE HASH MARKS	1	3.00
	1-4	W5-52L	2S	II	12	X	36	BRIDGE HASH MARKS	1	3.00
TOTALS									4	12.00

REMOVING AND MOVING SIGNS

CATEGORY	STATION	OFFSET	SIGN NUMBER	SIGN MESSAGE	638.2602	638.3000
					REMOVING SIGNS TYPE II EACH	REMOVING SMALL SIGN SUPPORTS EACH
0010	16+13	RT	1-1	BRIDGE HASH MARKS	1	1
	16+13	LT	1-2	BRIDGE HASH MARKS	1	1
	20+57	RT	1-3	BRIDGE HASH MARKS	1	1
	20+57	LT	1-4	BRIDGE HASH MARKS	1	1
	TOTALS				4	4

3

		TRAFFIC CONTROL ITEMS								
		643.0420 TRAFFIC CONTROL BARRICADES TYPE III			643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A		643.0900 TRAFFIC CONTROL SIGNS		643.0920 TRAFFIC CONTROL COVERING SIGNS TYPE II	
CATEGORY	LOCATION	STAGE DURATION DAYS	NO.	DAY	NO.	DAY	NO.	DAY	NO.	EACH
0010	PROJECT DETOUR	110	18	1,980	28	3,080	12	1,320	--	--
		110	--	--	--	--	143	15,730	8	8
TOTALS				1,980	3,080	17,050		8		

LONG LINE PAVEMENT MARKING ITEMS

				646,200		
				MARKING LINE EPOXY 6-INCH		SOLID
				SOLID YELLOW	12.5' LINE 37.5' SKIP YELLOW	WHITE
CATEGORY	STATION	TO	STATION	LF	LF	LF
0010	14+00	--	22+25	660	200	1,650
TOTAL				2,510		

3

STAKING ITEMS

					650.4500	650.5000	650.9920
					CONSTRUCTION STAKING SUBGRADE LF	CONSTRUCTION STAKING BASE LF	CONSTRUCTION STAKING SLOPE STAKES LF
CATEGORY	STATION	TO	STATION	OFFSET			
0010	13+81	--	16+30	LT & RT	249	249	249
	20+45	--	22+74	LT & RT	229	229	229
	23+22	--	24+00	LT	78	78	78
PROJECT					--	--	--
TOTALS					556	556	556

WATER

CATEGORY	LOCATION	624.0100 MGAL
0010	PROJECT	50
TOTAL		50

SAWING

	690.0150
CATEGORY STATION	SAWING ASPHALT LF
0010	
14+00	30
22+25	30
TOTAL	60

PROJECT NO: 6666-03-71

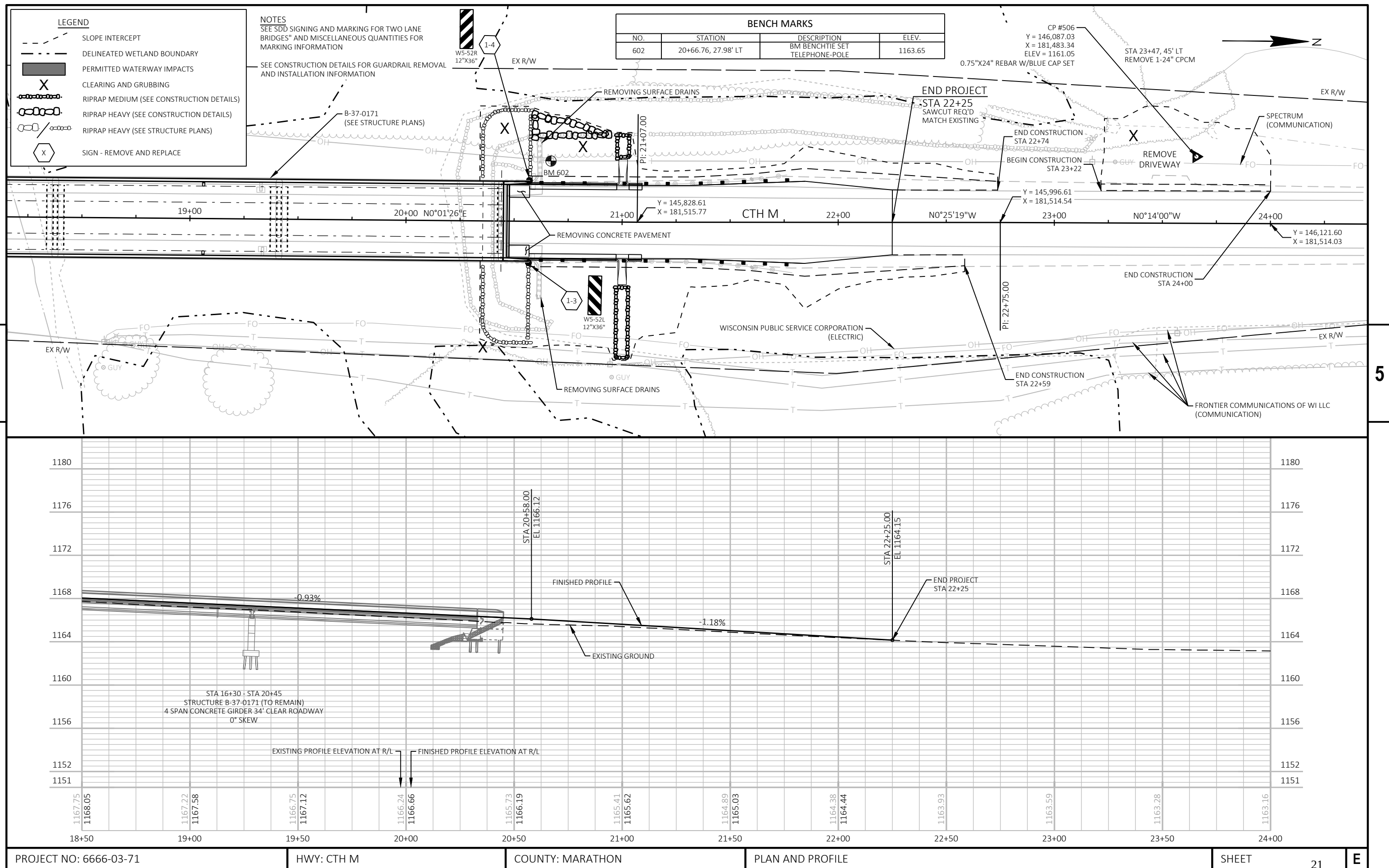
HWY: CTH M

COUNTY: MARATHON

MISCELLANEOUS QUANTITIES

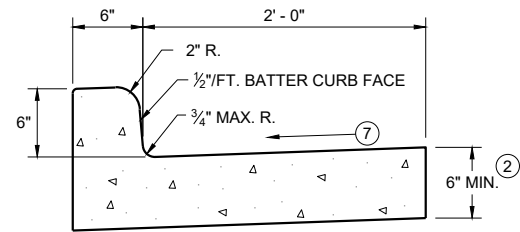
SHEET	19
-------	----

E

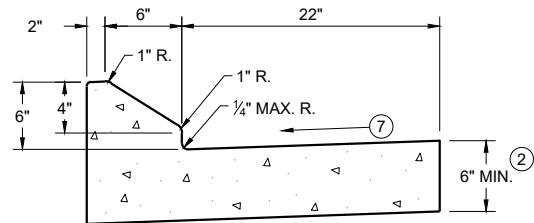


Standard Detail Drawing List

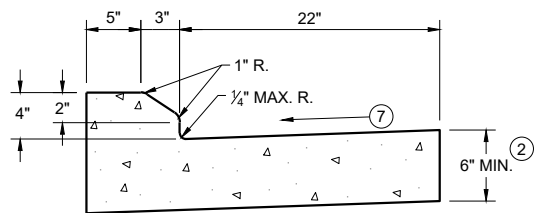
08D01-24A	CONCRETE CURB AND GUTTER
08D01-24B	CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS
08D02-08A	CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES
08D02-08B	CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES
08D02-08C	CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES
08D04-07	CONCRETE SURFACE DRAINS AND ASPHALTIC FLUMES
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E15-01	CULVERT PIPE CHECK
08F07-05	STEEL APRON ENDWALLS FOR CULVERT PIPE AND PIPE ARCH SLOPED SIDE DRAINS
09A14-01	DRIVEWAYS WITHOUT CURB AND GUTTER
12A03-10	NAME PLATE (STRUCTURES)
13A03-07	CONCRETE PAVEMENT SHOULDERS
13C19-03	HMA LONGITUDINAL JOINTS
14B42-07A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05E	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05F	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05I	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05J	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05K	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05L	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-10A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-10B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C02-10C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C06-12	SIGNING AND MARKING FOR TWO LANE BRIDGES
15C08-24A	PERMANENT LONGITUDINAL PAVEMENT MARKINGS
15C11-11B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-09B	TRAFFIC CONTROL, LANE CLOSURE WITH AUTOMATED FLAGGER ASSISTANCE DEVICE



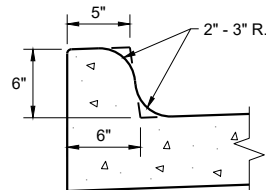
TYPES A^① & D



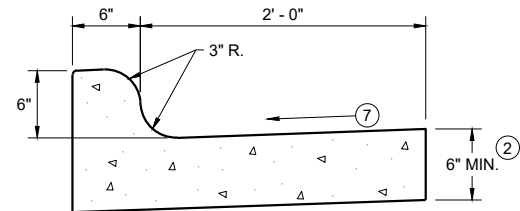
6" SLOPED CURB TYPES G^① & J



4" SLOPED CURB TYPES G^① & J

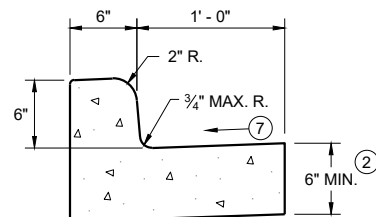


TYPES K^① & L
(OPTIONAL CURB SHAPE)



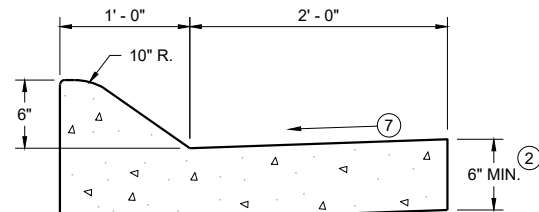
TYPES K^① & L

CONCRETE CURB AND GUTTER 30"

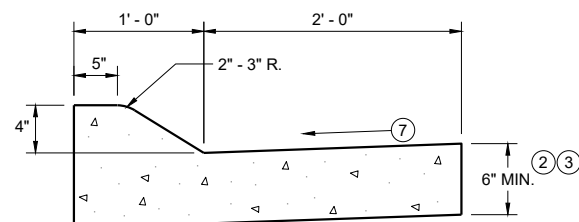


TYPES A^① & D

CONCRETE CURB AND GUTTER 18"

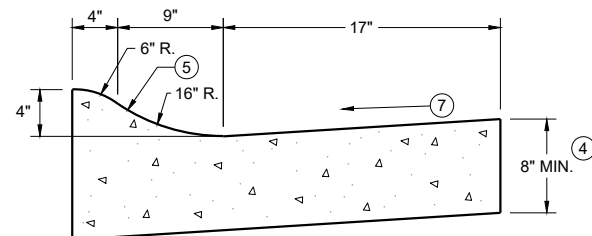


6" SLOPED CURB TYPES A^① & D



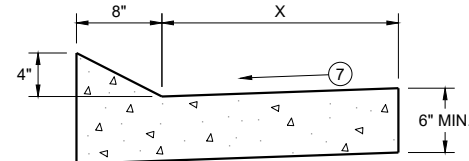
4" SLOPED CURB TYPES A^① & D

CONCRETE CURB AND GUTTER 36"



4" SLOPED CURB TYPES R^① & T
CONCRETE CURB AND GUTTER 30"

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

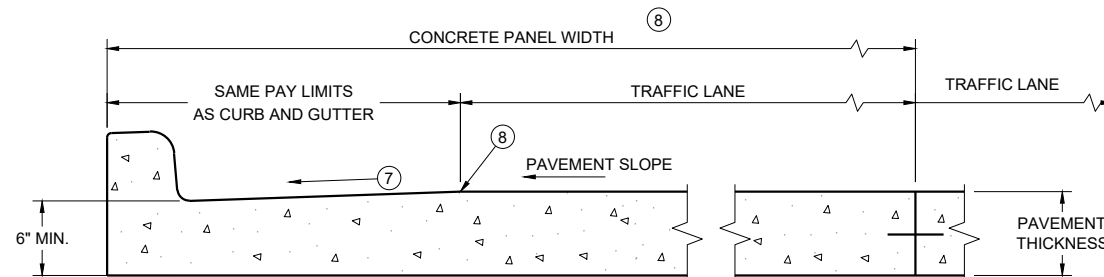


TYPES TBT & TBTT^①

CONCRETE CURB AND GUTTER

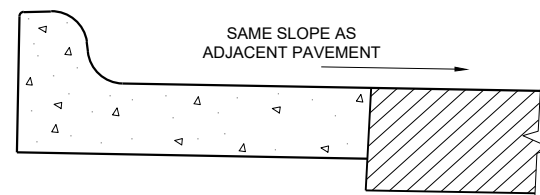
PAVEMENT THICKNESS
AND MAXIMUM CONCRETE
PANEL WIDTH TABLE

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

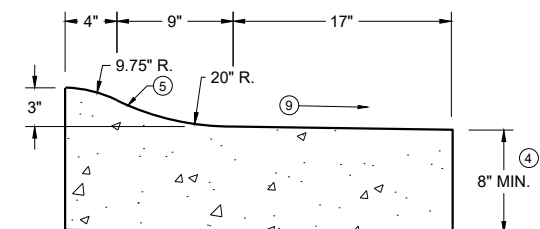


PARTIAL SECTION OF PAVEMENT
WITH INTEGRAL CURB AND GUTTER

* BIKE LANE IS NOT SHOWN



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



3" SLOPED CURB TYPES R^① & T

CONCRETE CURB AND GUTTER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

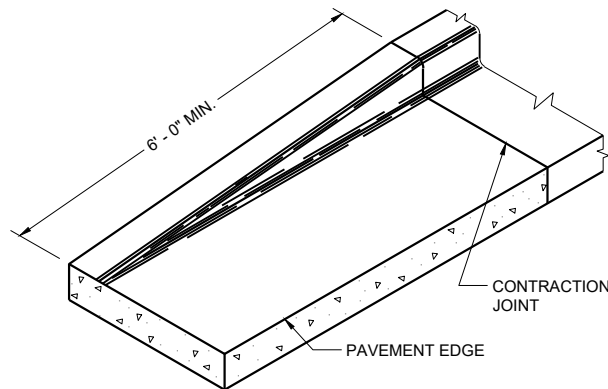
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

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

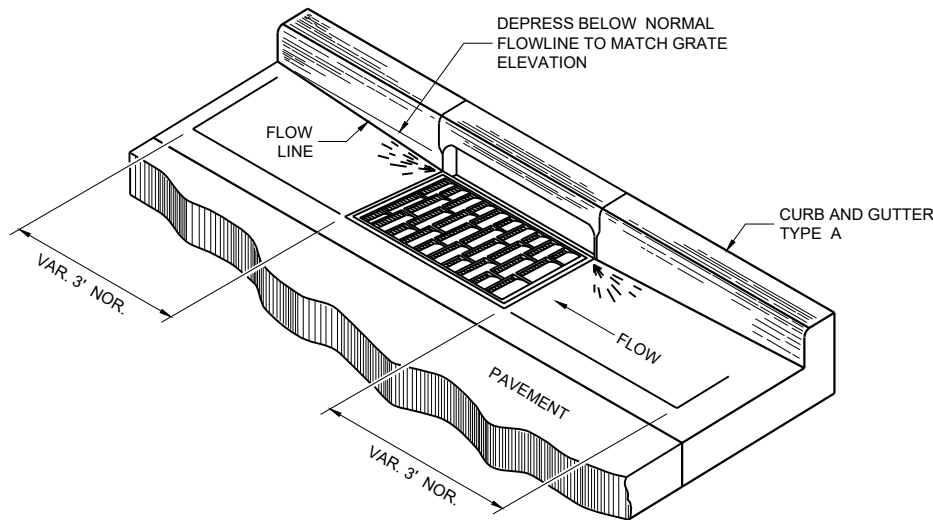
INTEGRAL CURB AND GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB AND GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

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

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

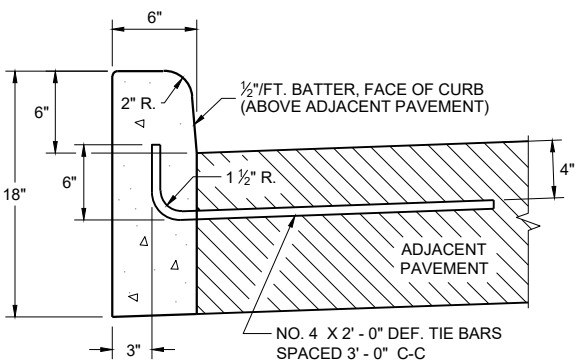


END SECTION CURB AND GUTTER

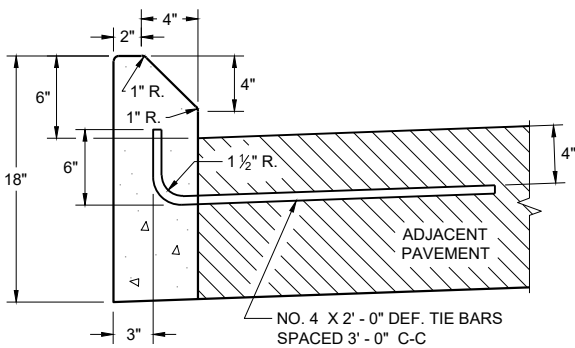


DETAIL OF CURB AND GUTTER AT INLETS

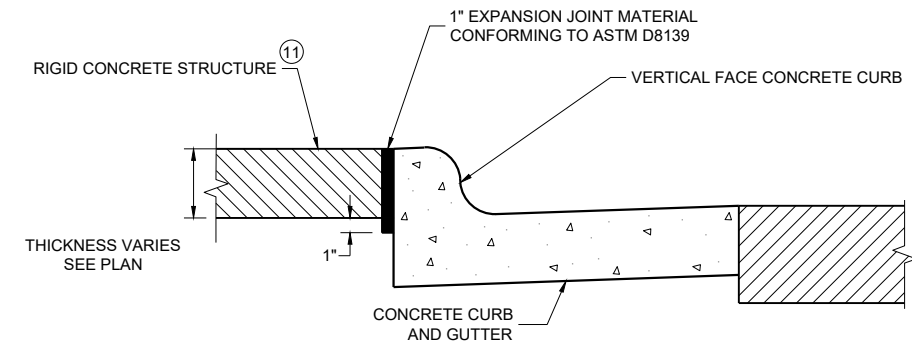
(TYPICAL H INLET COVER SHOWN)



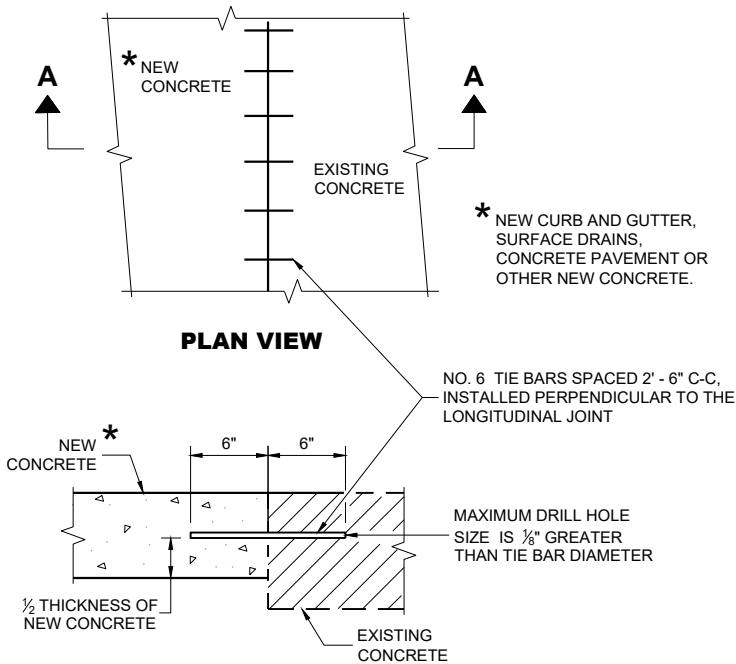
TYPES A^① & D



TYPES G^① & J
CONCRETE CURB



EXPANSION JOINT DETAIL FOR VERTICAL CURB ABUTTING A RIGID STRUCTURE^⑪



SECTION A - A
TIE BARS DRILLED INTO EXISTING PAVEMENT

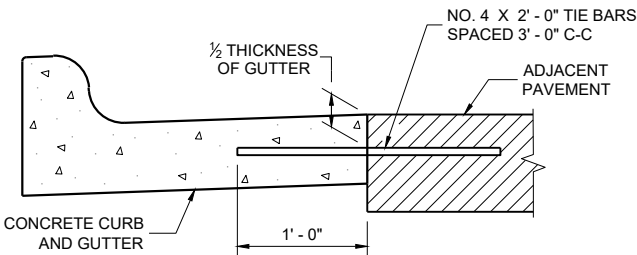
GENERAL NOTES

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

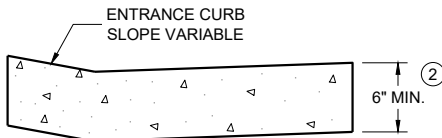
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

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

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑩ REFER TO SDD 08D18 AND 08D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.
- ⑪ PLACE 1" THICK EXPANSION JOINT MATERIAL BETWEEN VERTICAL FACE CURB TYPES EXTENDING FROM THE TOP OF CURB TO 1 INCH BELOW THE ADJOINING CONCRETE SURFACE. RIGID CONCRETE STRUCTURES INCLUDE RAISED CONCRETE MEDIANS, CONCRETE SAFETY ISLANDS, SPLITTER ISLANDS, OR LOCATIONS IDENTIFIED ON THE PLANS.



TYPICAL TIE BAR LOCATION^①



DRIVEWAY ENTRANCE CURB^⑩
(WHEN DIRECTED BY THE ENGINEER)

CONCRETE CURB, TIES
AND CURB AND GUTTER
APPLICATIONS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2025
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

FHWA

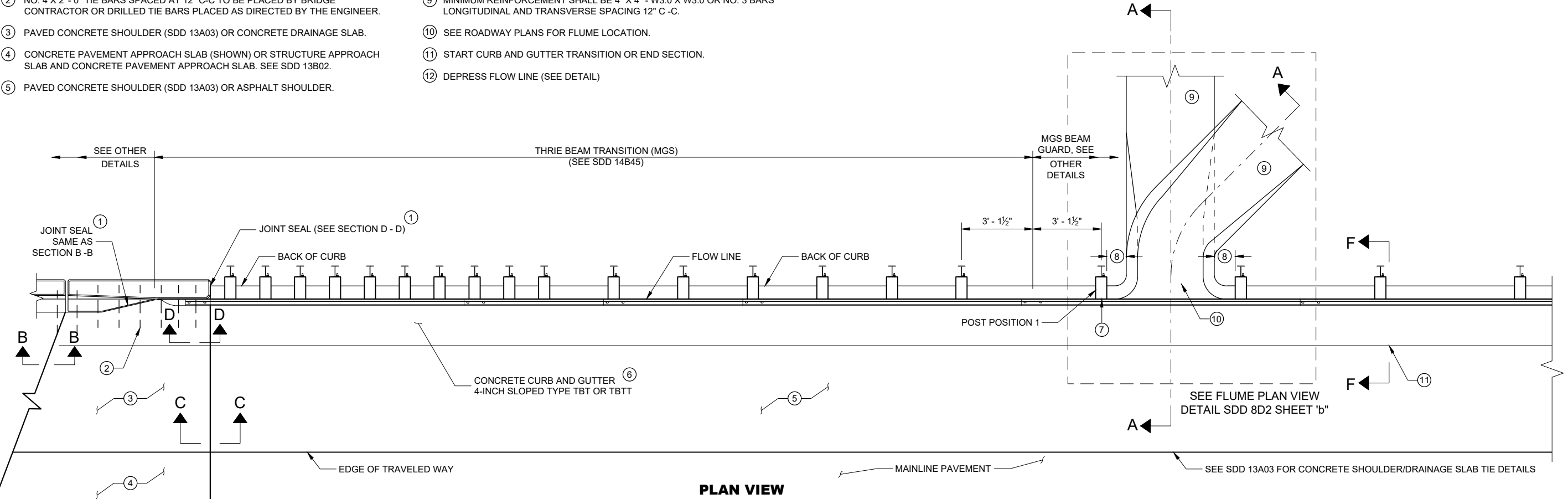
GENERAL NOTES

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

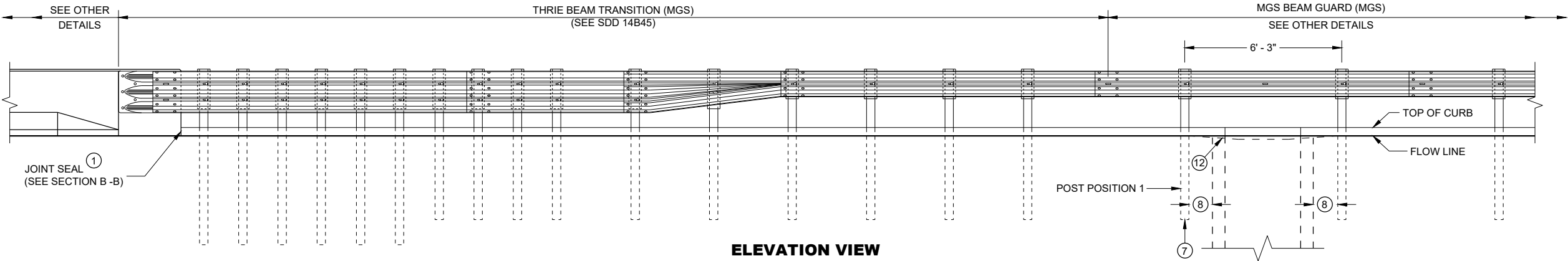
ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

- 1 USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- 2 NO. 4 X 2' - 0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- 3 PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- 4 CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02.
- 5 PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.

- 6 CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBTT. USE TYPE TBTT CURB WITH NO. 4 X 2' - 0" TIE BARS SPACED AT 3' - 0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.
- 7 PLACE FLUME BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- 8 CENTER FLUME BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE EDGE OF FLUME TO POSTS.
- 9 MINIMUM REINFORCEMENT SHALL BE 4" X 4" - W3.0 X W3.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.
- 10 SEE ROADWAY PLANS FOR FLUME LOCATION.
- 11 START CURB AND GUTTER TRANSITION OR END SECTION.
- 12 DEPRESS FLOW LINE (SEE DETAIL)



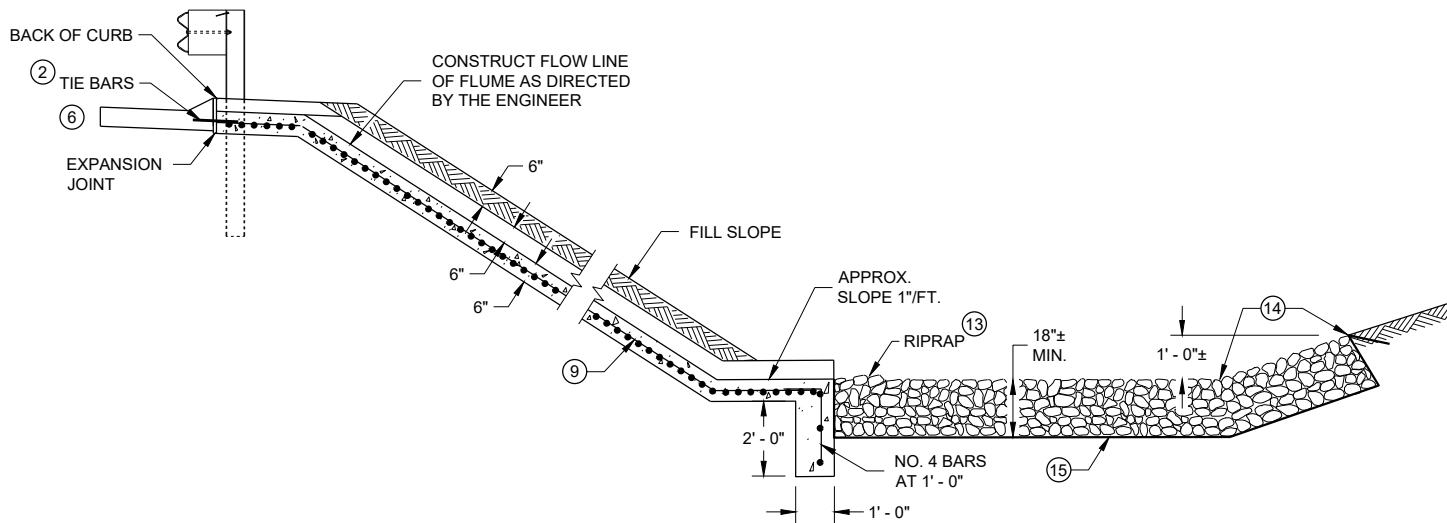
PLAN VIEW



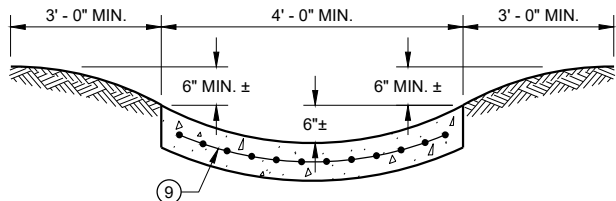
ELEVATION VIEW

CONCRETE SURFACE
DRAINS FLUME TYPE
AT STRUCTURES

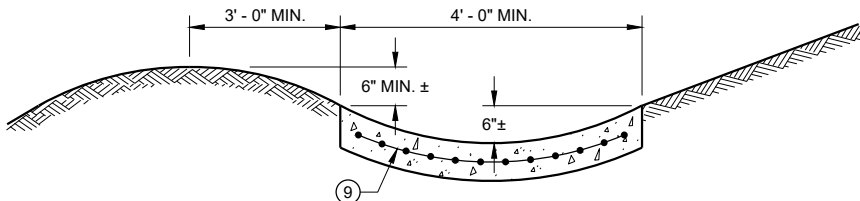
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



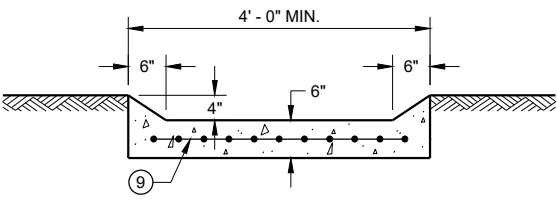
SECTION A - A



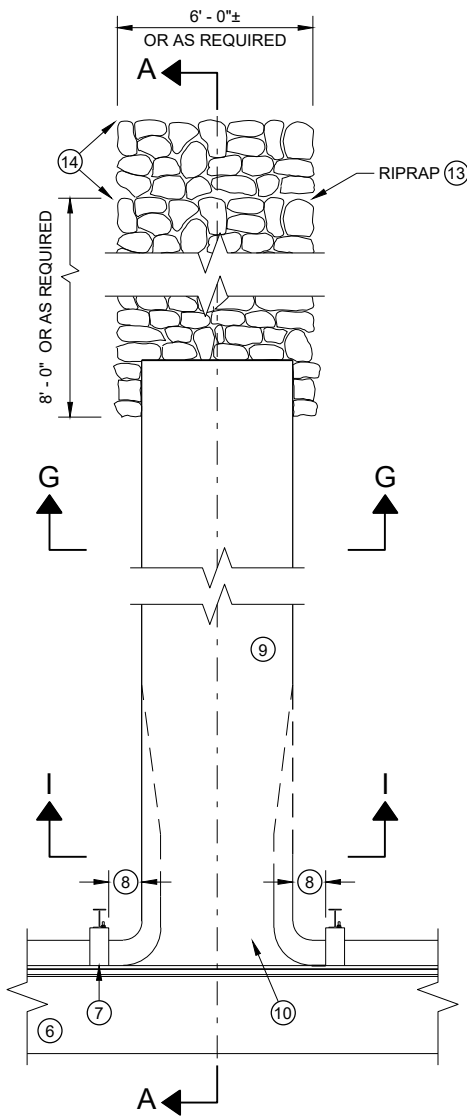
SECTION G - G



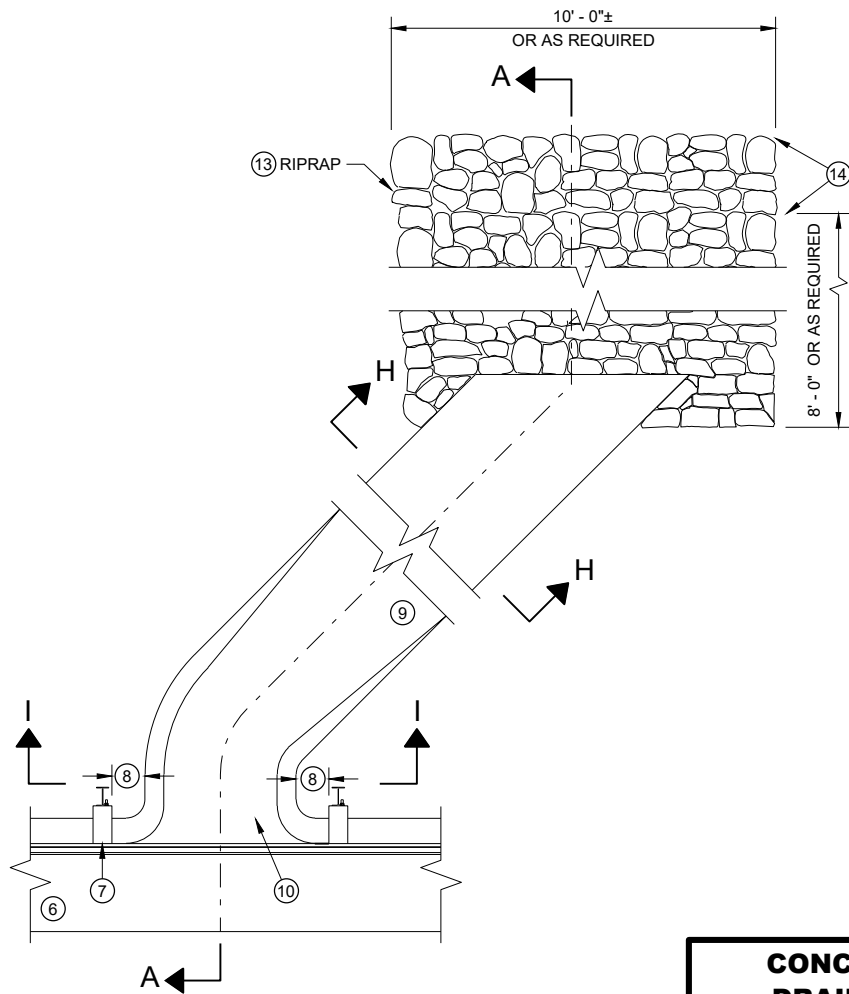
SECTION H - H



SECTION I - I



PLAN VIEW
PERPENDICULAR FLUME



PLAN VIEW
SKEWED FLUME

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.

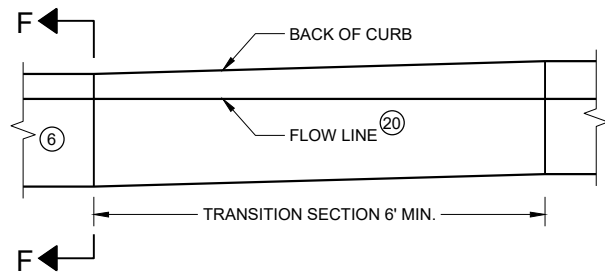
ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

- 1 USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- 2 NO. 4 X 2' - 0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- 3 PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- 4 CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02 AND STRUCTURE PLANS.
- 5 PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.
- 6 CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBT. USE TYPE TBT CURB WITH NO. 4 X 2' - 0" TIE BARS SPACED AT 3' - 0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.

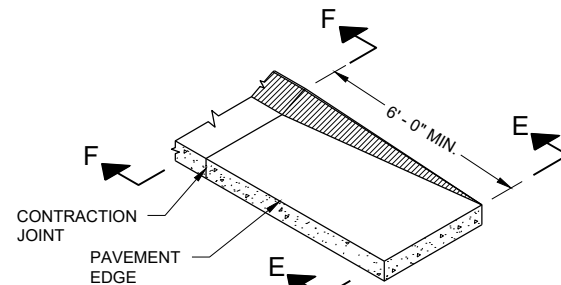
- 7 PLACE FLUME BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- 8 CENTER FLUME BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE EDGE OF FLUME TO POSTS.
- 9 MINIMUM REINFORCEMENT SHALL BE 4" X 4" - W3.0 X W3.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C -C.
- 10 SEE ROADWAY PLANS FOR FLUME LOCATION.
- 11 START CURB AND GUTTER TRANSITION OR END SECTION.
- 12 DEPRESS FLOW LINE (SEE DETAIL)
- 13 MEDIUM RIPRAP UNLESS OTHERWISE SPECIFIED.
- 14 LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH AS REQUIRED.
- 15 GEOTEXTILE TYPE HR.

CONCRETE SURFACE
DRAINS FLUME TYPE
AT STRUCTURES

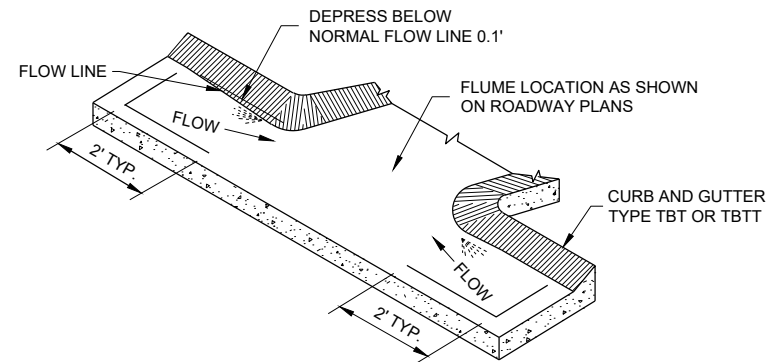
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



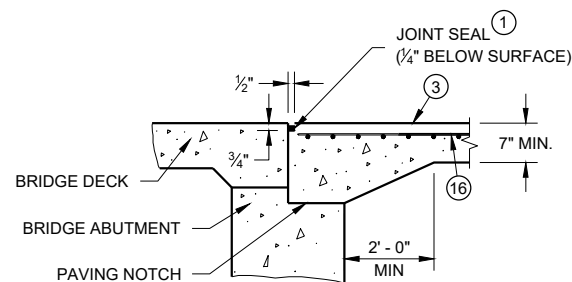
**CURB AND GUTTER TRANSITION SECTION
CONCRETE CURB AND GUTTER 4-INCH SLOPED
36 INCH TYPE TBT OR TBTT**



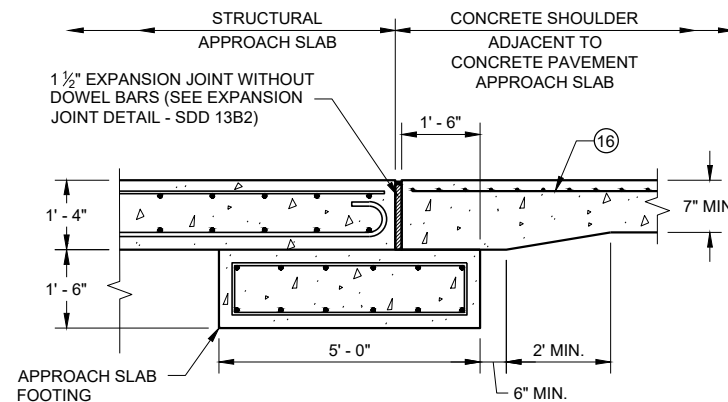
**CURB AND GUTTER END SECTION
CONCRETE CURB AND GUTTER 4-INCH SLOPED
36 INCH TYPE TBT OR TBTT**



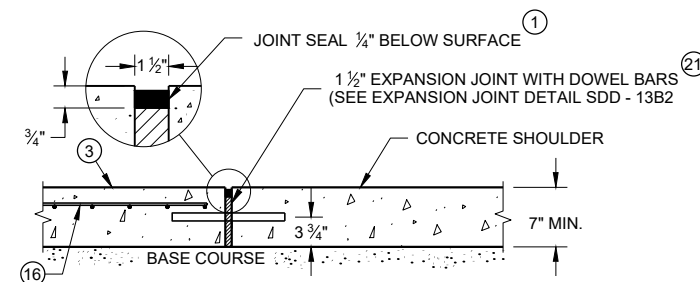
**CURB AND GUTTER FLOW LINE DEPRESSION
AT FLUMES CONCRETE CURB AND GUTTER
4-INCH SLOPED 36 INCH TYPE TBT OR TBTT**



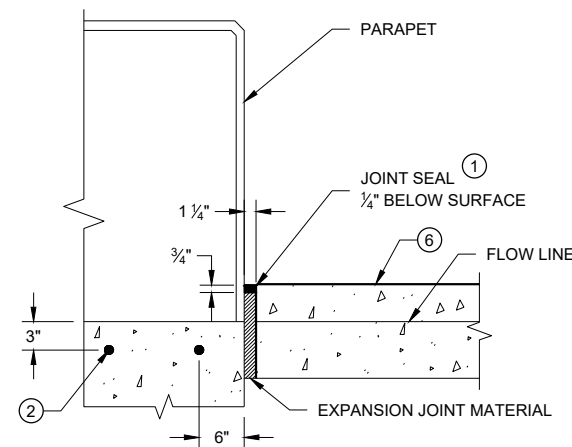
SECTION B-B



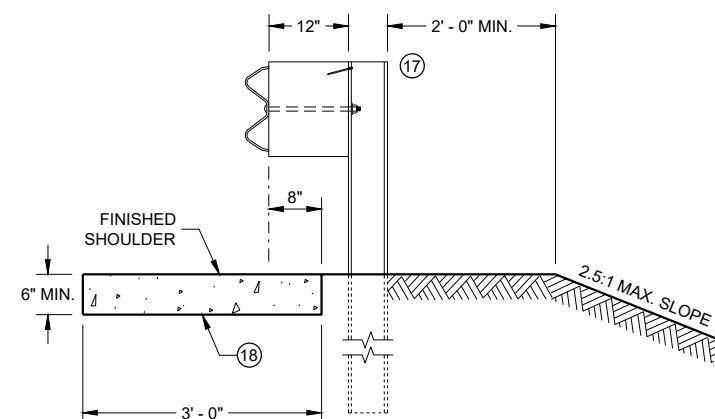
**SECTION C - C
JOINT DETAIL FOR BRIDGE WITH STRUCTURAL
APPROACH SLAB AND CONCRETE APPROACH SLAB**



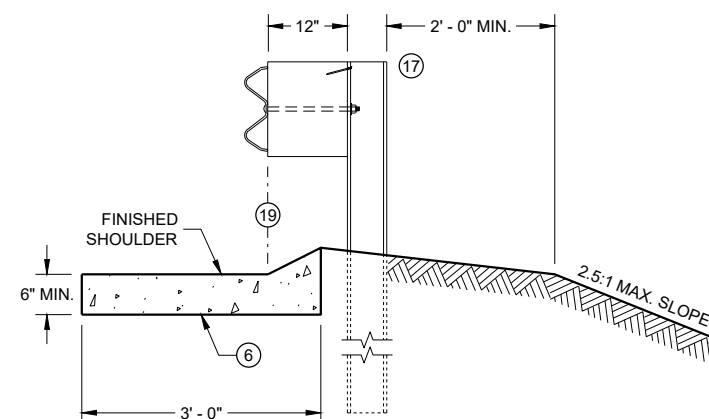
**SECTION C - C
JOINT DETAIL FOR BRIDGE APPROACH
WITH CONCRETE SHOULDERS**



SECTION D - D



SECTION E - E



SECTION F - F

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.

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

- ① USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- ② NO. 4 X 2' - 0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- ③ PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- ④ CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02 AND STRUCTURE PLANS.
- ⑤ PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.
- ⑥ CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBTT. USE TYPE TBTT CURB WITH NO. 4 X 2' - 0" TIE BARS SPACED AT 3' - 0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.
- ⑦ PLACE FLUME BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- ⑧ CENTER FLUME BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE EDGE OF FLUME TO POSTS.
- ⑨ MINIMUM REINFORCEMENT SHALL BE 4" X 4" - W3.0 X W3.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C - C.
- ⑩ SEE ROADWAY PLANS FOR FLUME LOCATION.
- ⑪ START CURB AND GUTTER TRANSITION OR END SECTION.
- ⑫ DEPRESS FLOW LINE (SEE DETAIL)
- ⑬ MEDIUM RIPRAP UNLESS OTHERWISE SPECIFIED.
- ⑭ LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH IS REQUIRED.
- ⑮ GEOTEXTILE TYPE HR.
- ⑯ MINIMUM REINFORCEMENT SHALL BE 6" X 6" - W4.0 X W4.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C - C.
- ⑰ MSG THRIE BEAM TRANSITION POST 1. SEE SDD 14B45 FOR ADDITIONAL CONSTRUCTION DETAILS AND ACCEPTABLE MATERIALS.
- ⑱ MAINTAIN WIDTH, THICKNESS AND CROSS SLOPE OF ADJACENT TYPE TBT OR TBTT CURB. SEE NOTE 6 FOR TIE BAR SPACING.
- ⑲ ALIGN FACE OF POST BLOCK WITH FLOW LINE.
- ⑳ MAINTAIN FLOW LINE AT EDGE OF PAVEMENT/FACE OF BEAM GUARD AS APPLICABLE.
- ㉑ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING HMA PAVEMENTS.

CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

May 2023

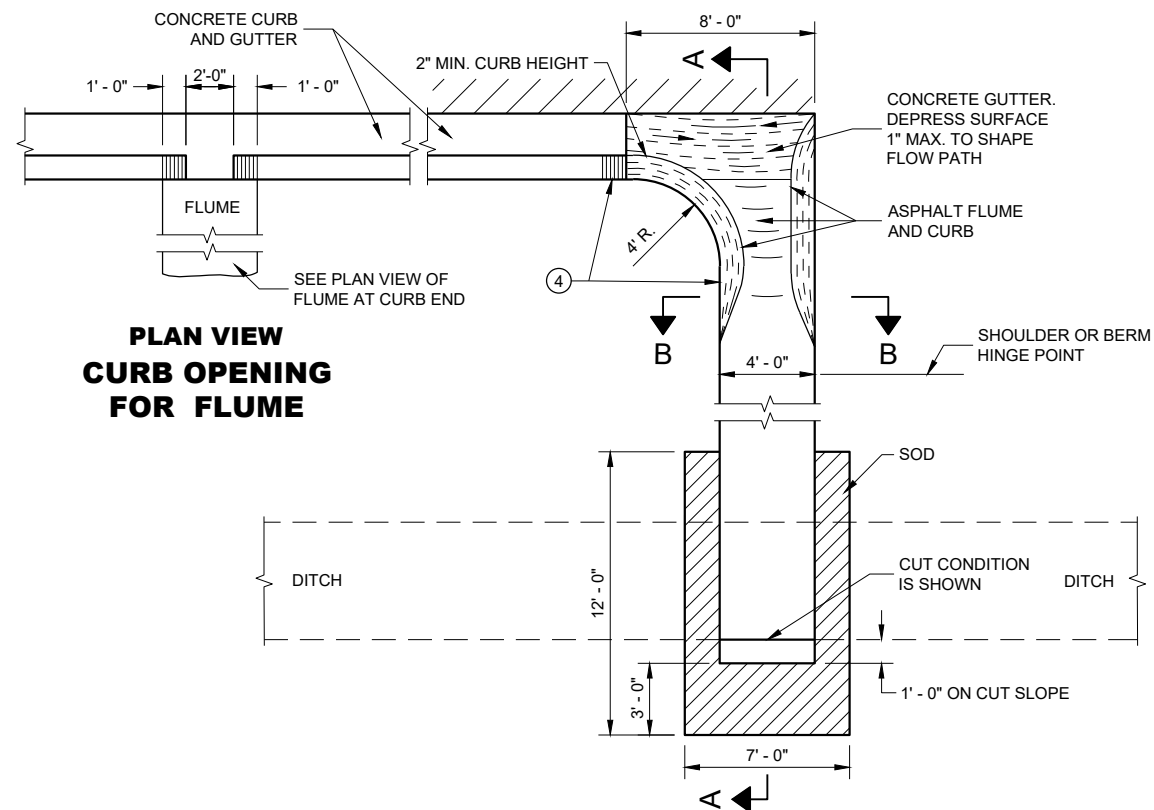
DATE

FHWA

/S/ Rodney Taylor
ROADWAY STANDARDS DEVE
ENGINEER

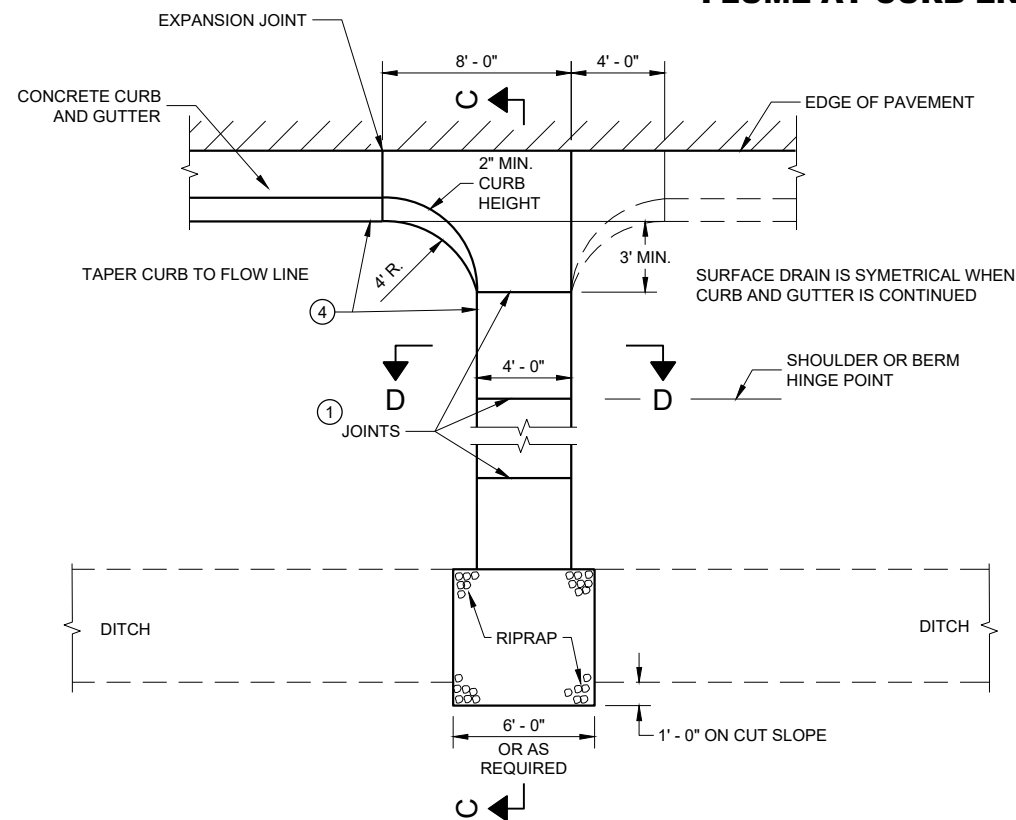
27

ASPHALTIC FLUME



**PLAN VIEW
CURB OPENING
FOR FLUME**

PLAN VIEW
FLUME AT CURB END

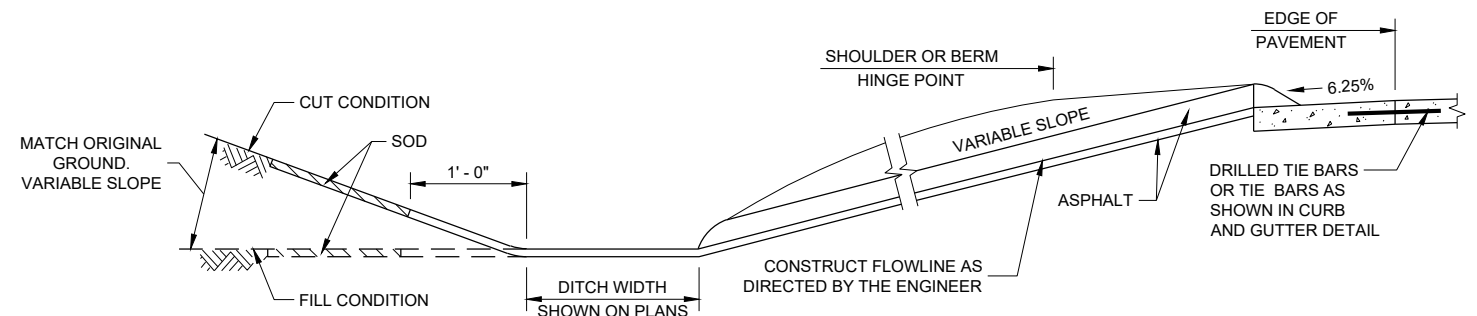


PLAN VIEW

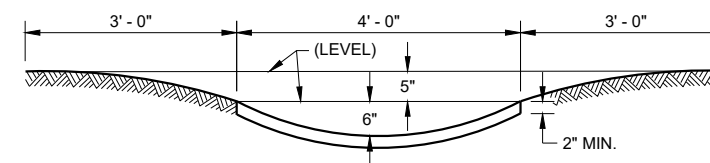
CONCRETE SURFACE DRAIN

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

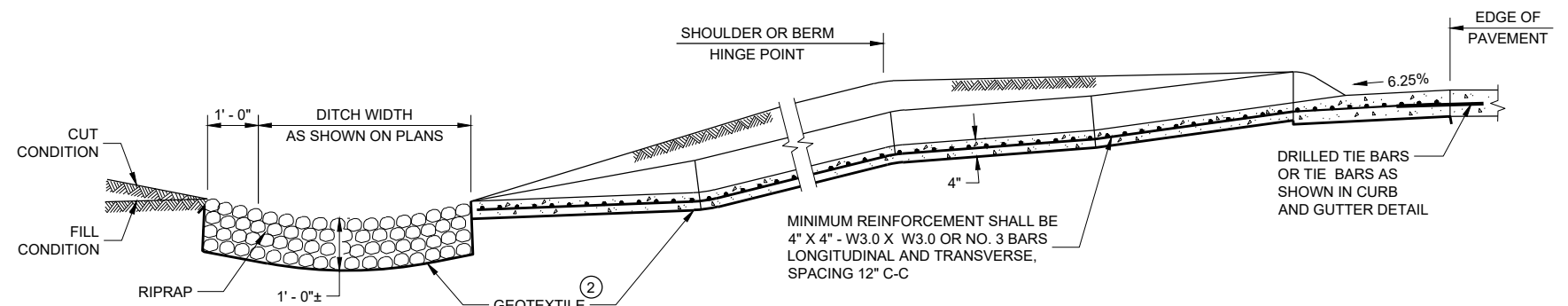
- ① JOINTS SHALL BE $\frac{1}{8}$ " TO $\frac{1}{4}$ " WIDE BY $\frac{1}{2}$ " DEEP AND SPACED AT UNIFORM INTERVALS OF APPROXIMATELY 4 FEET.
- ② GEOTEXTILE TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.
- ③ CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED.
- ④ ANGLE OF FLUME IN RELATION TO BACK OF CURB TO BE CONSTRUCTED PER THE PLAN DETAILS OR AS DIRECTED BY THE ENGINEER. ANGLE OF FLUME MAY BE OTHER THAN 90 DEGREES AS SHOWN.



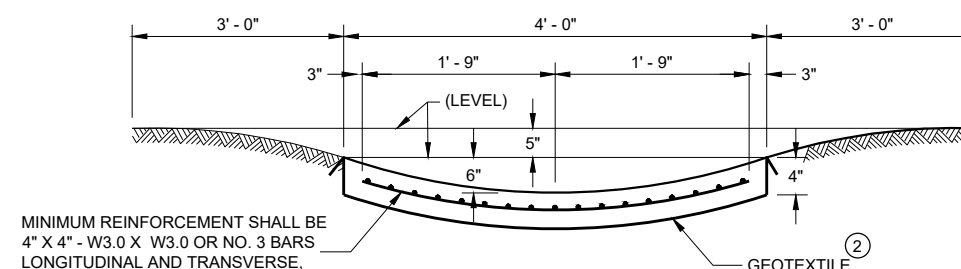
SECTION A - A



SECTION B - B



SECTION C - C



SECTION D - D

APPROVED
May 2023
DATE

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

28

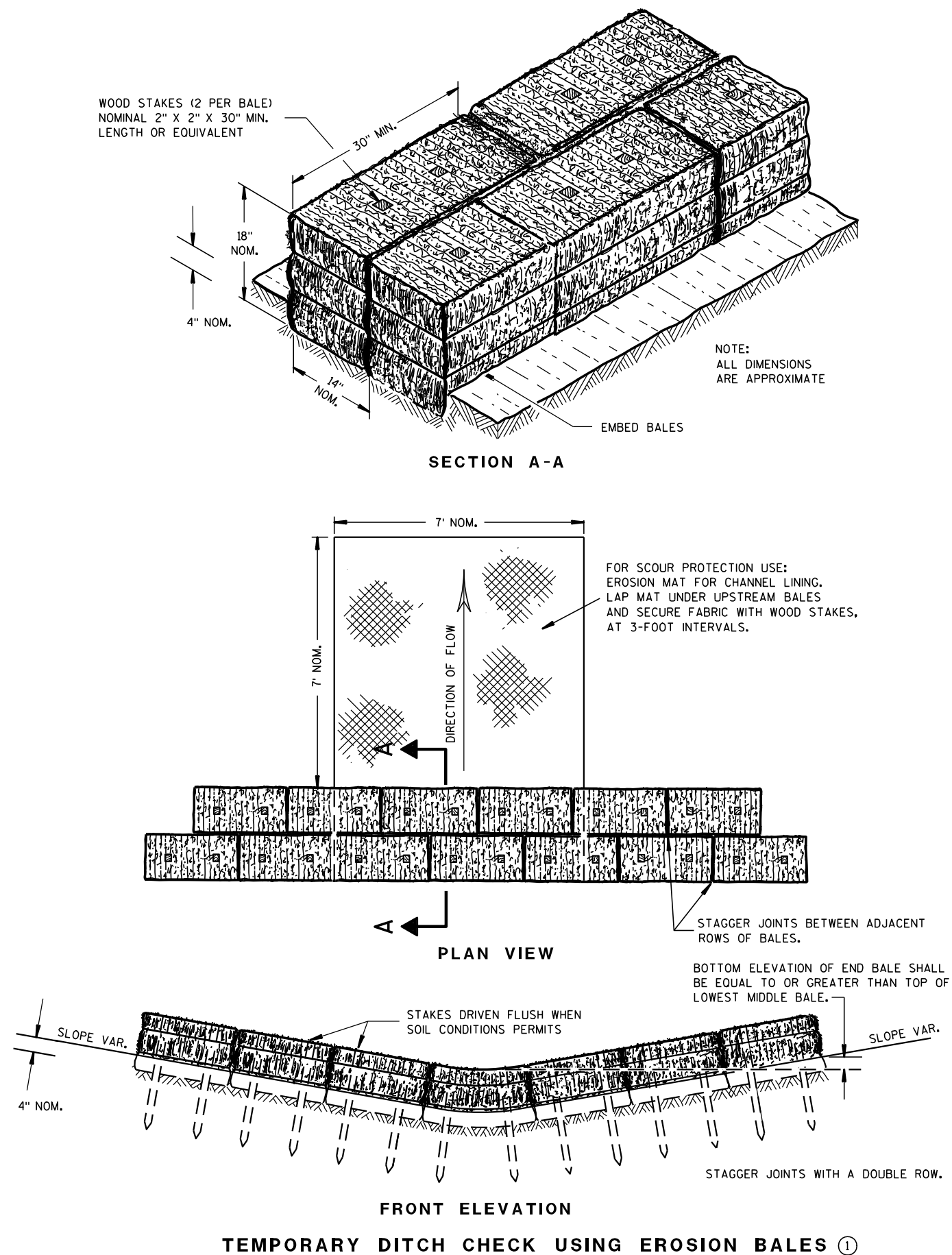
FHWA

6

SDD 08D04 - 07

6 |

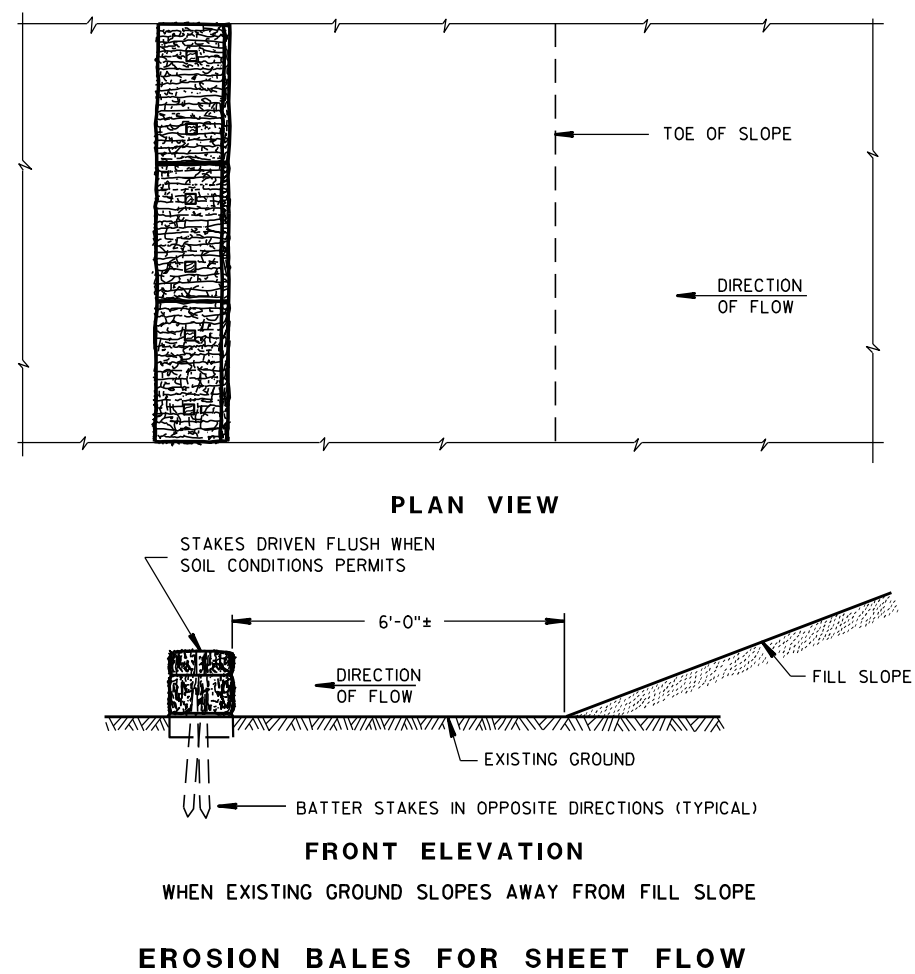
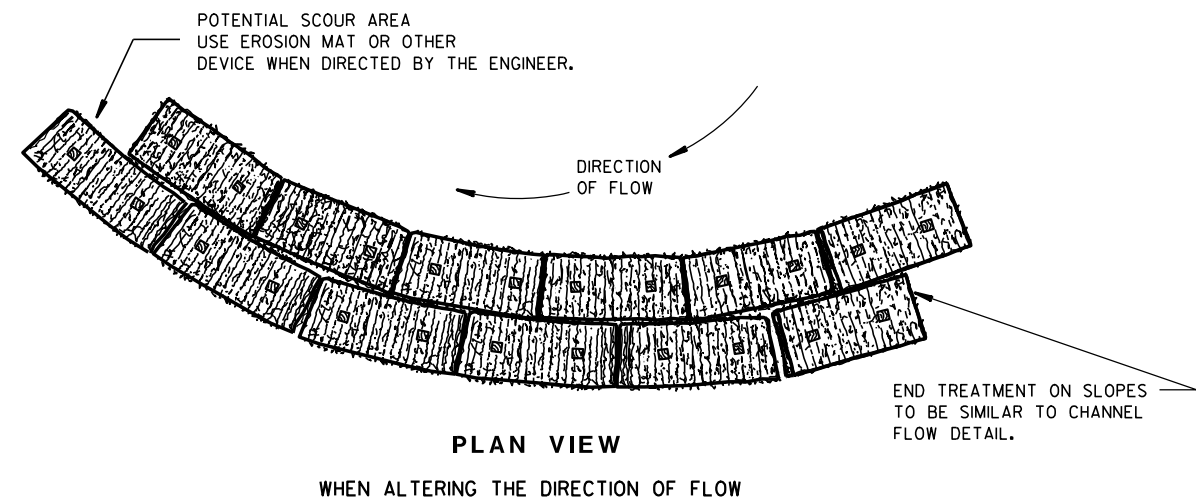
SDD 08D04 - 07



GENERAL NOTES

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

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



TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

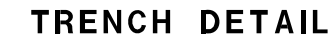
6/04/02
DATE

/S/ Beth Conn-----
CHIEF ROADWAY DEVELOP 29 ENGINEER

FHWA



- ① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
- ② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- ③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1½" X 1½" OF OAK OR HICKORY.
- ④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
- ⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.

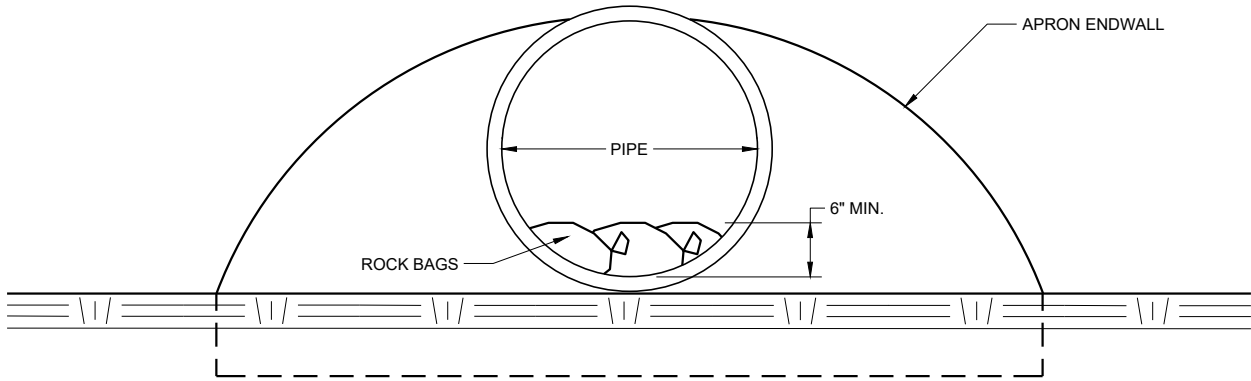


SILT FENCE

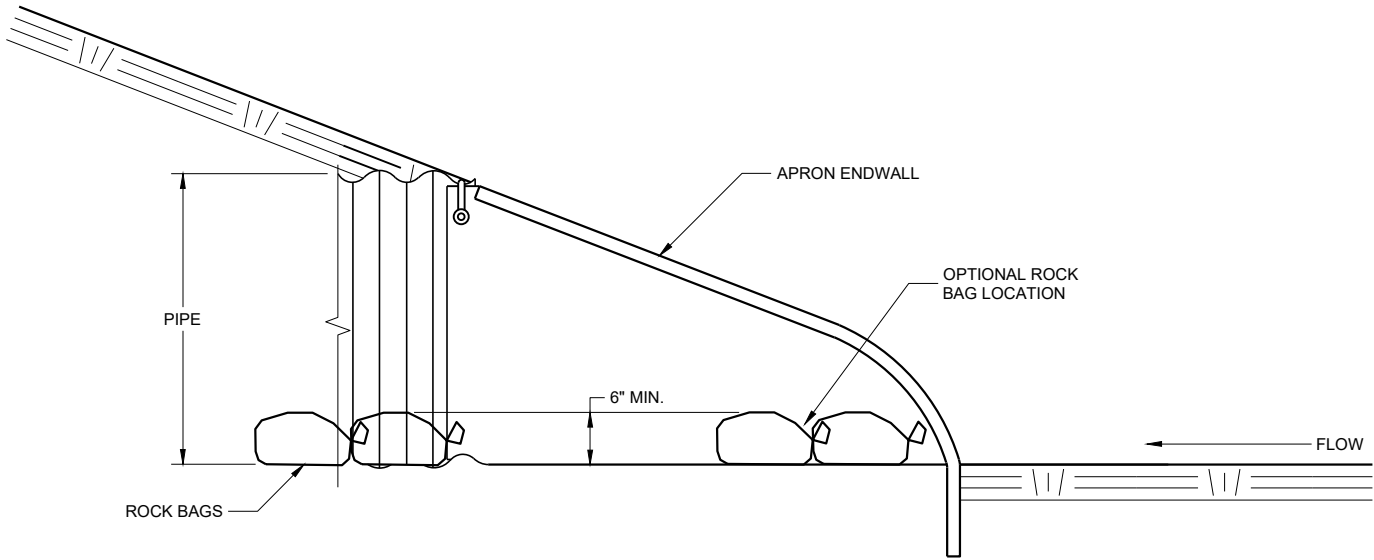
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-29-05 /S/ Beth Connolly
DATE CHIEF ROADWAY DEVELOP 30 INEER

FHWA



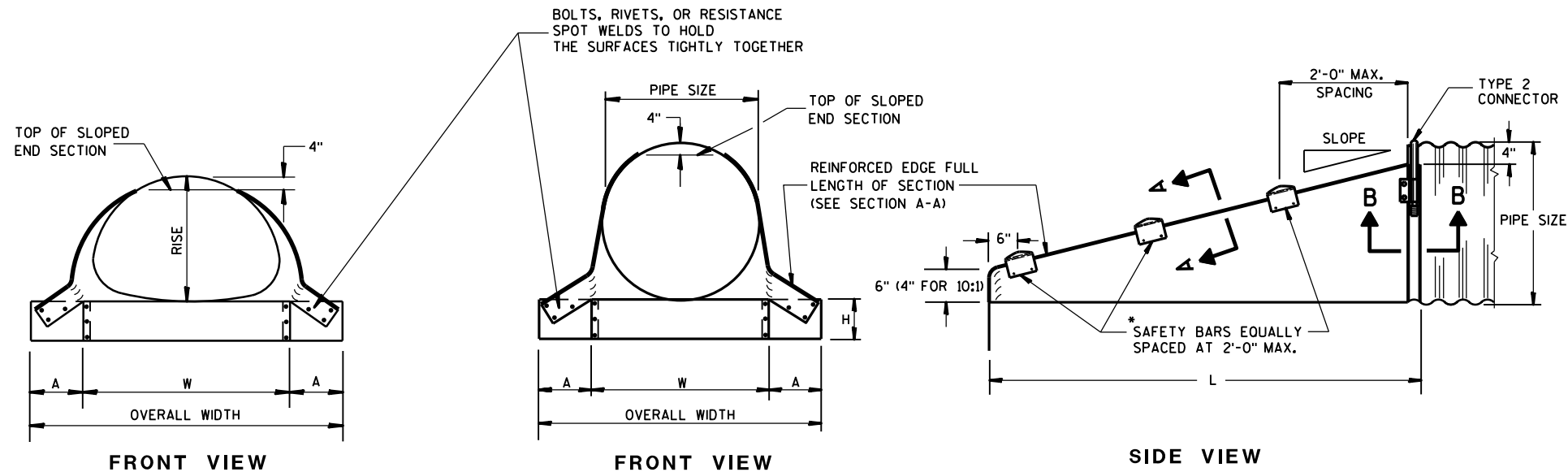
END VIEW



SIDE VIEW

CULVERT PIPE CHECK
(INSTALL ON INLET END ONLY)

CULVERT PIPE CHECK	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2019 DATE	/S/ Daniel Schave EROSION CONTROL ENGI 31
FHWA	



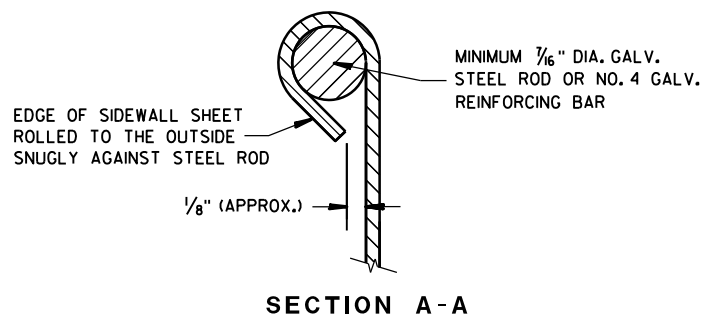
GENERAL NOTES

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

SLOPED END SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS, SECTION 521 FOR STEEL APRON ENDWALLS.

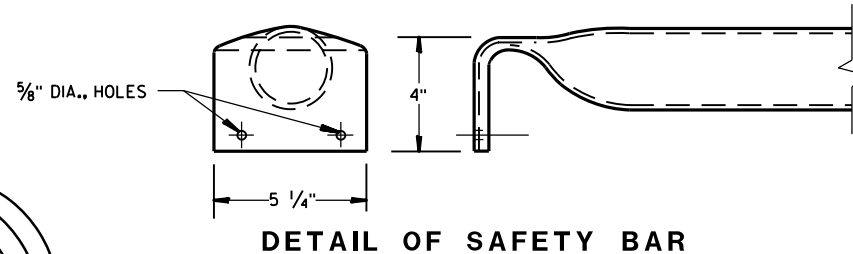
SAFETY BARS SHALL BE FABRICATED FROM GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A-53, GRADE B, SCHEDULE 40 OR APPROVED EQUAL.

STEEL APRON ENDWALLS FOR CULVERT PIPE SLOPED SIDE DRAINS											
PIPE DIA. (IN.)	MIN. THICK. (Inches)	DIMENSIONS (Inches)				L DIMENSIONS					
		A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
15	.064	8	6	21	37	4:1	20	6:1	30	10:1	70
18	.064	8	6	24	40	4:1	32	6:1	48	10:1	100
21	.064	8	6	27	43	4:1	44	6:1	66	10:1	130
24	.064	8	6	30	46	4:1	56	6:1	84	10:1	160
30	.109	12	9	36	60	4:1	80	6:1	120	10:1	220
36	.109	12	9	42	66	4:1	104	6:1	156	10:1	280
42	.109	16	12	48	80	4:1	128	6:1	192	—	—
48	.109	16	12	54	86	4:1	152	6:1	228	—	—
54	.109	16	12	60	92	4:1	176	6:1	264	—	—
60	.109	16	12	66	98	4:1	200	6:1	300	—	—



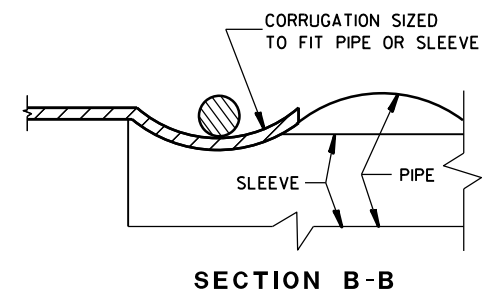
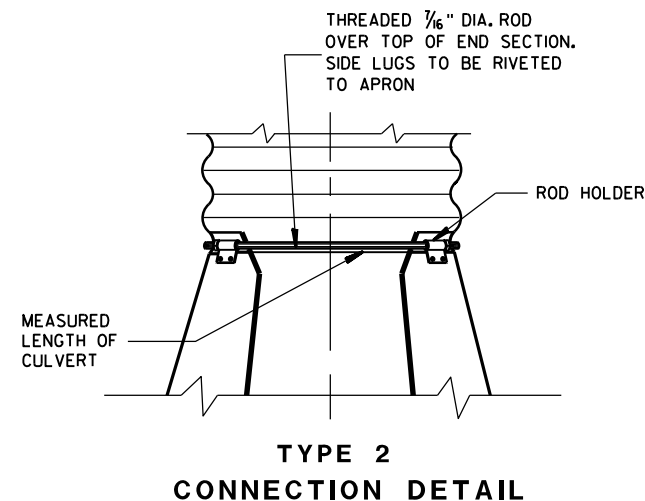
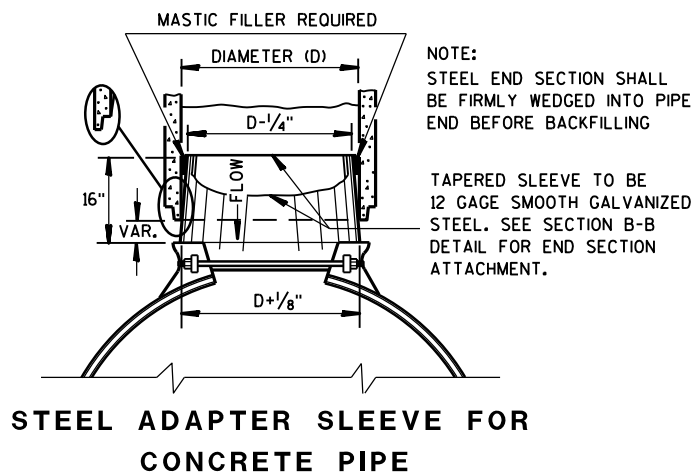
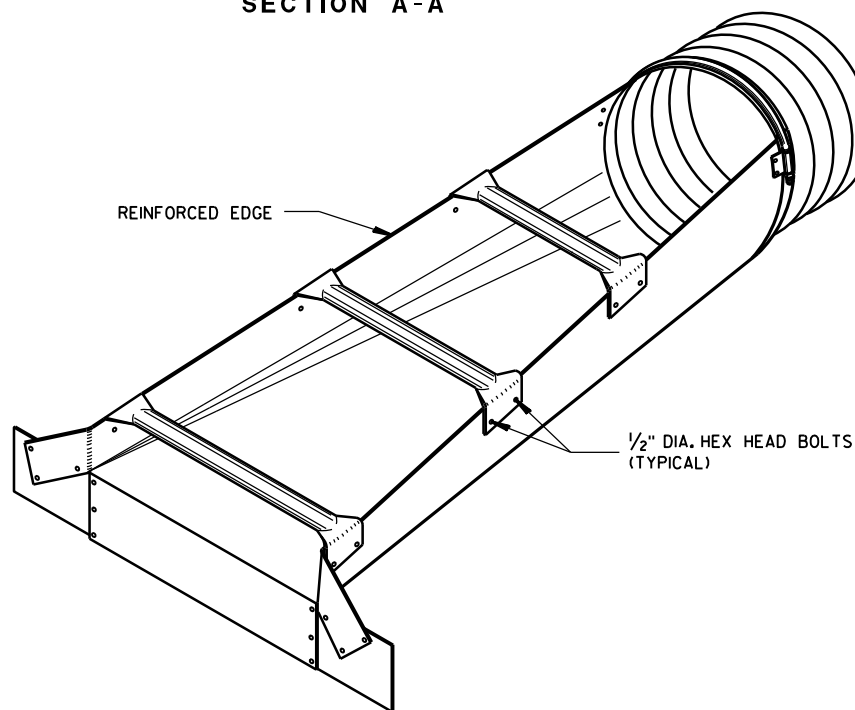
*NOTE:
THREE SAFETY BARS ARE SHOWN.
ACTUAL NUMBER OF BARS REQUIRED AT
A 2'-0" C-C MAX. SPACING WILL VARY
DEPENDING ON THE LENGTH OF THE
END SECTION.

3" GALVANIZED PIPE, FLATTEN
ENDS, THEN BEND OUTSIDE 4"
TO MATCH END SECTION SIDES.



STEEL APRON ENDWALLS FOR PIPE ARCH SLOPED SIDE DRAINS													
EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches) ①	DIMENSIONS (Inches)				L DIMENSIONS					
	SPAN	RISE		A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
15	17	13	.064 *	7	6	30	44	4:1	19	6:1	30	10:1 ②	70
18	21	15	.064 *	8	6	27	43	4:1	20	6:1	30	10:1	70
21	24	18	.064 *	8	6	30	46	4:1	32	6:1	48	10:1	100
24	28	20	.064 *	8	6	34	50	4:1	40	6:1	60	10:1	120
30	35	24	.079 *	12	9	41	65	4:1	56	6:1	84	10:1	160
36	42	29	.109 *	12	9	48	72	4:1	76	6:1	114	10:1	210
42	49	33	.109	16	12	55	87	4:1	92	6:1	138	—	—
48	57	38	.109	16	12	63	95	4:1	112	6:1	168	—	—
54	64	43	.109	16	12	70	102	4:1	132	6:1	198	—	—

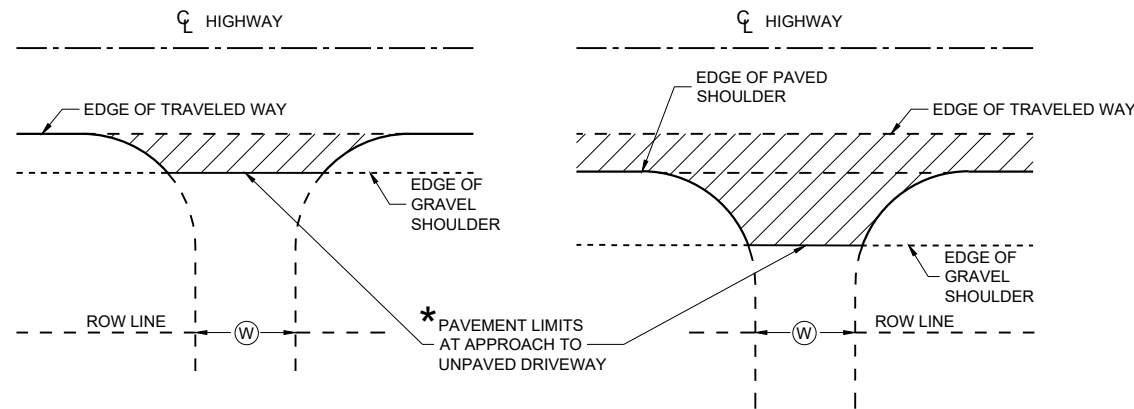
① * MINIMUM THICKNESS OF ALL 10:1 SLOPED SIDE DRAINS IS 0.109".
② ACTUAL SLOPE GREATER THAN 10:1.



STEEL APRON ENDWALLS FOR CULVERT PIPE AND PIPE ARCH SLOPED SIDE DRAINS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9/14/2012 /S/ Jerry H. Zoia
DATE ROADWAY STANDARDS ENGINEER
FHWA

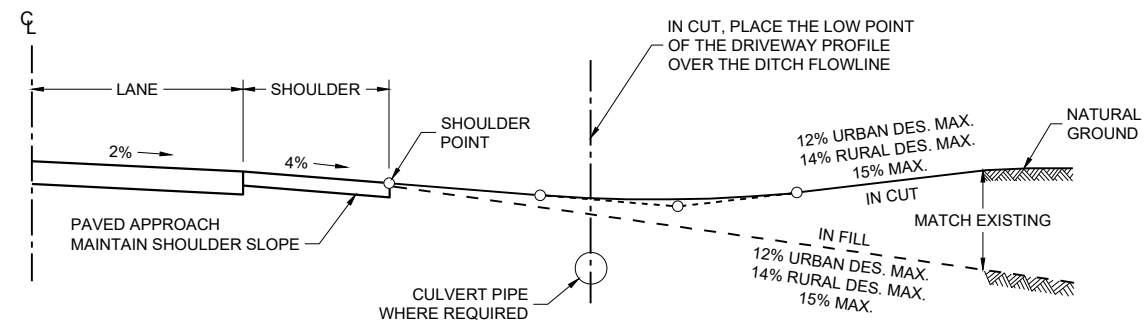


* WHERE DRIVEWAY IS PAVED, APPROACH PAVEMENT SHOULD BE EXTENDED TO MATCH DRIVEWAY PAVEMENT.

PLAN VIEW
(UNPAVED SHOULDER ON HIGHWAY)

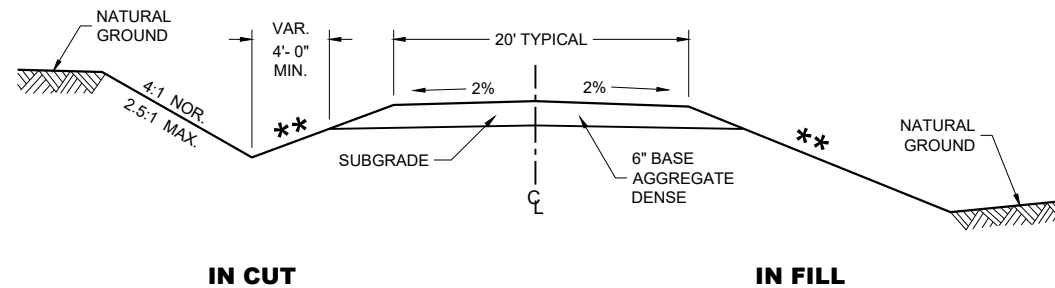
PLAN VIEW
(PAVED SHOULDER ON HIGHWAY)

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



TYPICAL DRIVEWAY PROFILES

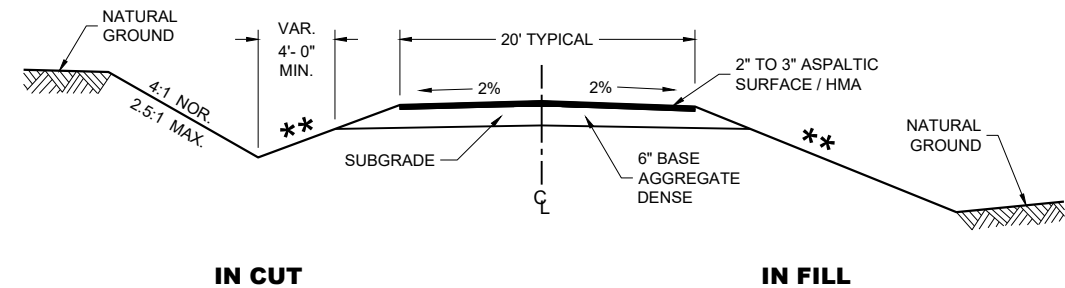
Ⓢ : DRIVEWAY WIDTHS (MEASURED AT ROW LINE)
 ~ COMMERCIAL & INDUSTRIAL 16' MIN. - 35' MAX.
 ~ RESIDENTIAL & AGRICULTURAL 16' MIN. - 24' MAX. (NONCOMMERCIAL)



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

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

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

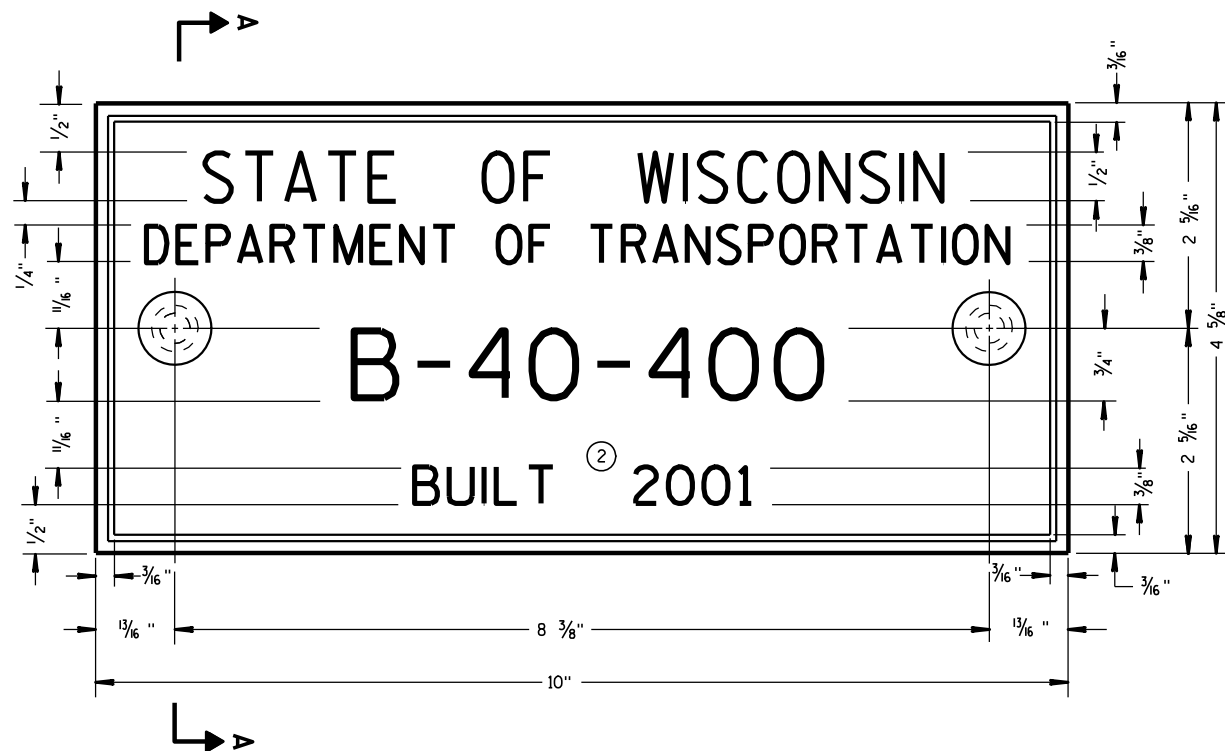


**TYPICAL CROSS SECTION FOR
PRIVATE DRIVE OR FIELD ENTRANCE
ASPALTIC SURFACE**

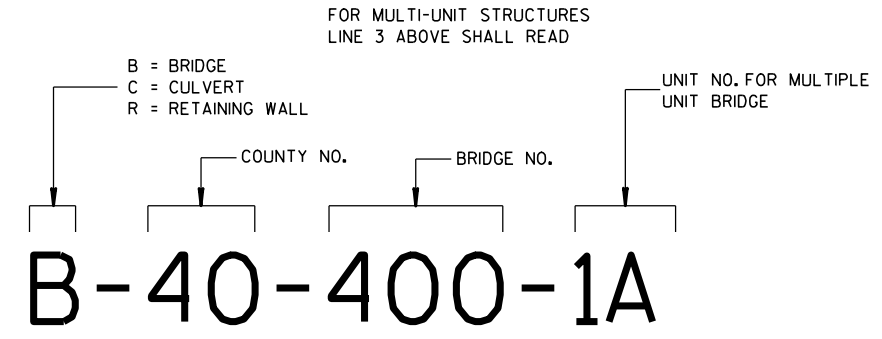
**DRIVEWAYS WITHOUT
CURB AND GUTTER**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
 November 2025 /S/ Rodney Taylor
 DATE ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
 FHWA



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



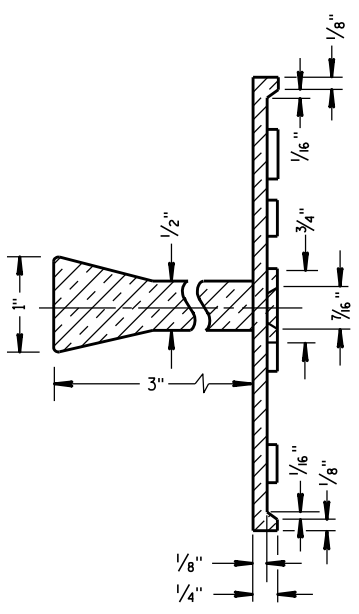
NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

GENERAL NOTES

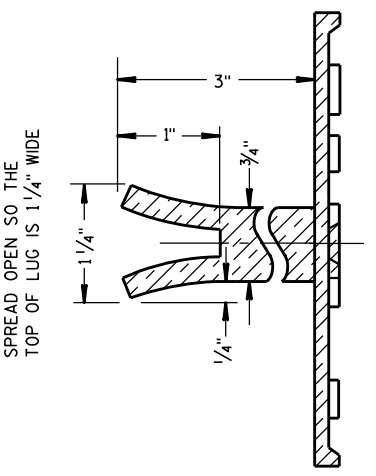
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

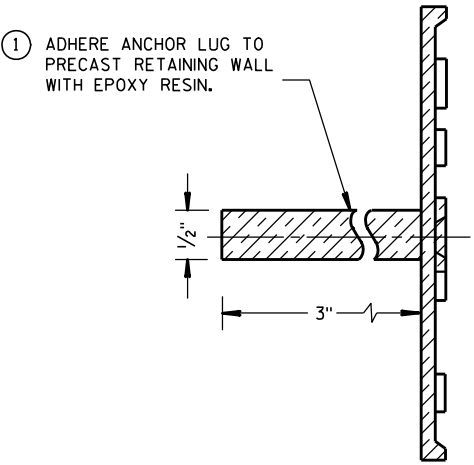
- 1 EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 2 REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A

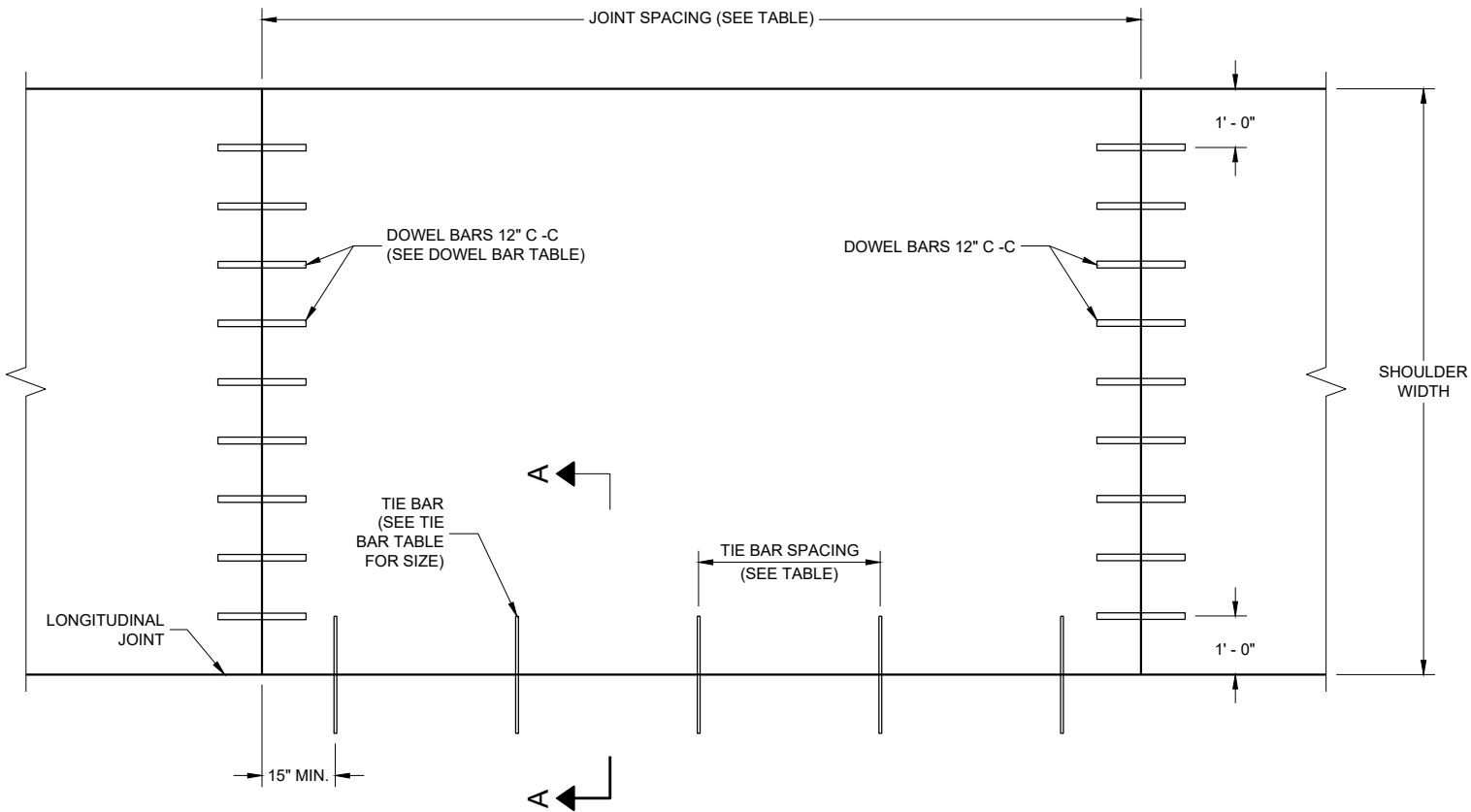


ALTERNATE LUG



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 DEVELOPER 34 JEER
FHWA	



PLAN VIEW
CONCRETE PAVEMENT SHOULDER

TIE BAR TABLE

PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
<10 1/2"	NO. 4	30"	36"
>10 1/2"	NO. 5	36"	36"
	NO. 4 *	30"	24" **

* SUBSTITUTE BENT BATS AT LONGITUDINAL JOINTS WHEN EQUIPMENT LIMITATIONS DURING CONSTRUCTION WARRANT (e.g. AUXILIARY LANES OR TURN LANES).

** CONFORM TO 15" MINIMUM SPACING FROM TRANSVERSE JOINTS; SPACING BETWEEN TIE BARS WILL BE 30" AT TRANSVERSE JOINTS.

PAVEMENT DEPTH, DOWEL BAR SIZE
AND JOINT SPACING TABLE

PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER ***	CONTRACTION JOINT SPACING
6", 6 1/2"	NONE	12"
7", 7 1/2"	1"	14"
8" & ABOVE	1 1/4"	15"

*** FOR DOWELED CONCRETE SHOULDERS WITH TRAPEZOIDAL CROSS SECTIONS, CHOSE THE APPROPRIATE DOWEL BAR DIAMETER BASED ON THE SMALLER PAVEMENT DEPTH (LIKELY THE OUTSIDE EDGE OF THE SHOULDER). IF USING BASKETS, USE BASKETS FRO THE AVERAGE THICKNESS OF THE CROSS SECTION.

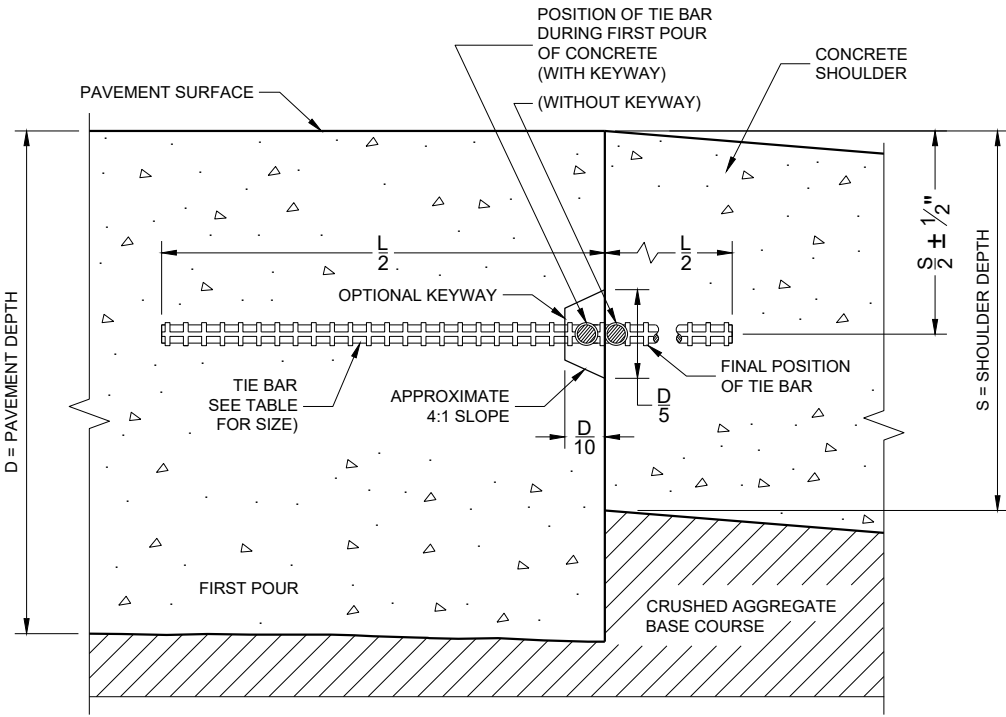
GENERAL NOTES

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

TRANSVERSE JOINT DETAILS ARE SHOWN ELSEWHERE IN THE PLAN.

FINISH THE SHOULDER PAVEMENT CONFORMING TO SUBSECTION 415.3.8 OF THE STANDARD SPECIFICATIONS.

TIE BARS SHALL CONFORM TO SUBSECTION 505.2.4 OF THE STANDARD SPECIFICATIONS.

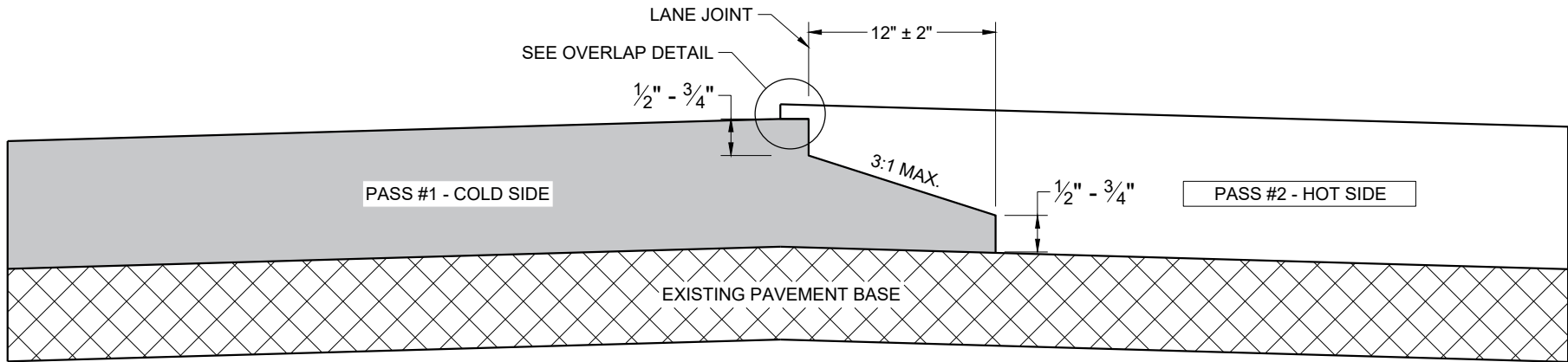


SECTION A - A
LONGITUDINAL CONSTRUCTION JOINT

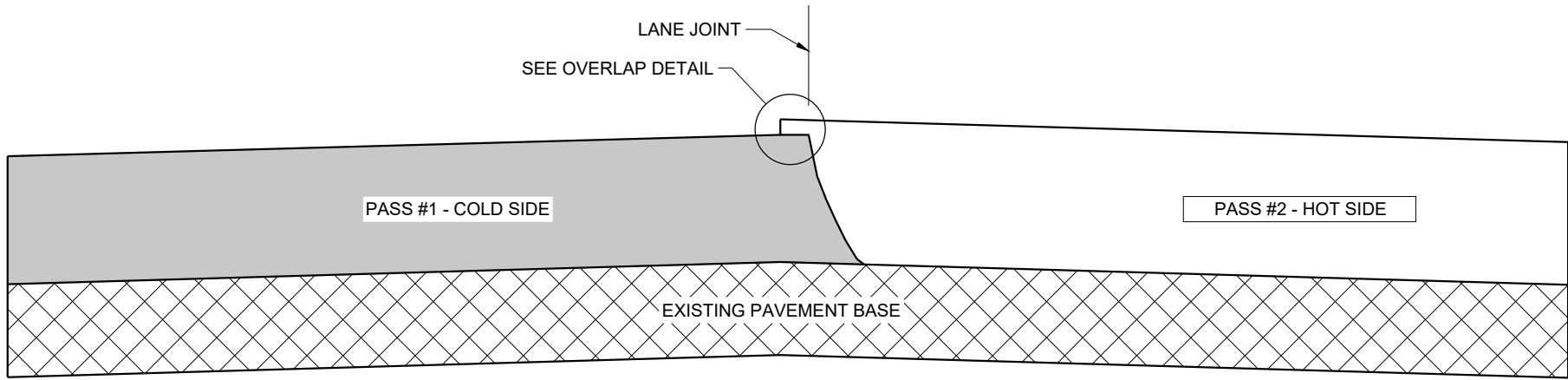
CONCRETE PAVEMENT
SHOULDERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

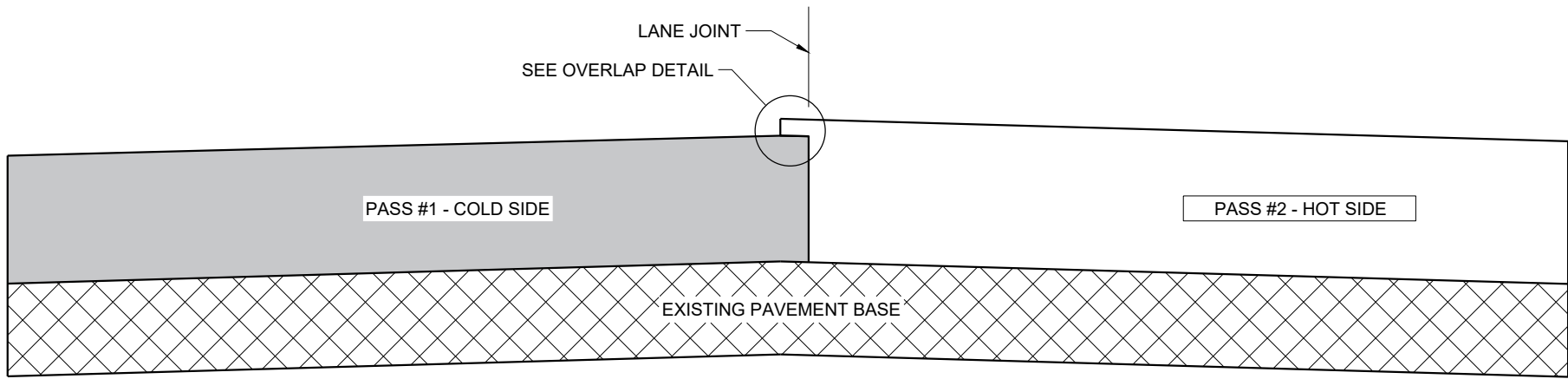
APPROVED
November 2022 /S/ Peter Kemp
DATE PAVEMENT SUPERVISOR 35
FHWA



TYPICAL PAVEMENT CROSS SECTION
NOTCHED WEDGE JOINT



TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT



TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT (MILLED)

GENERAL NOTES

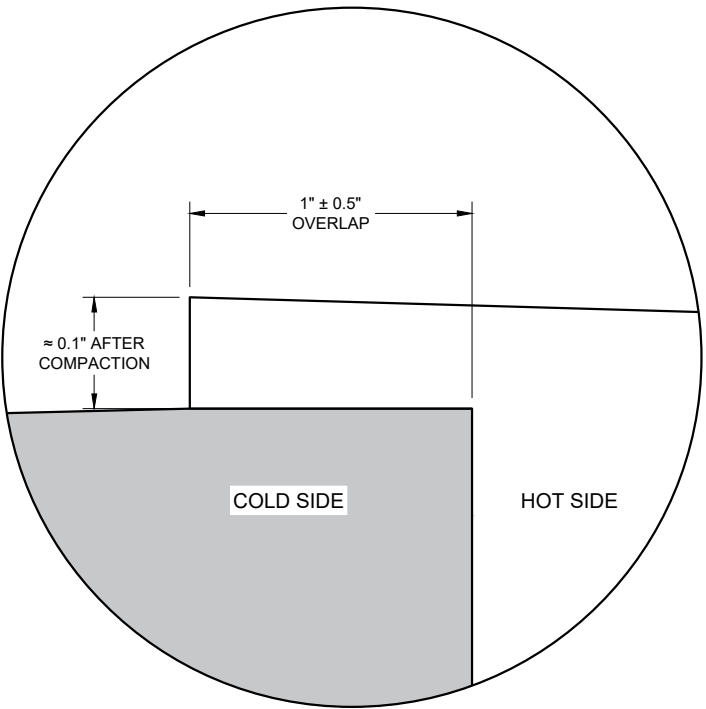
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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

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

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

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



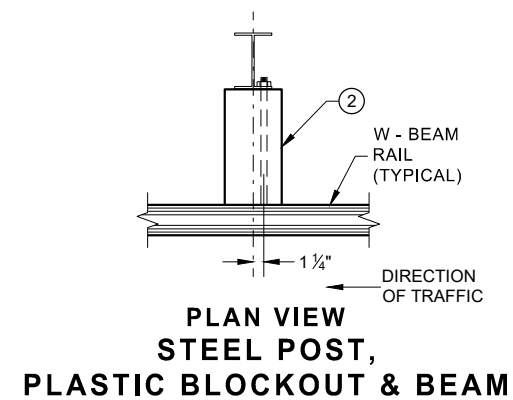
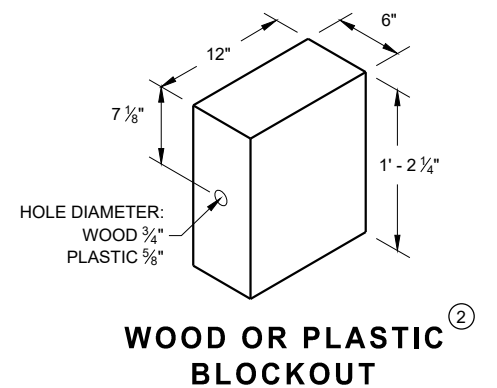
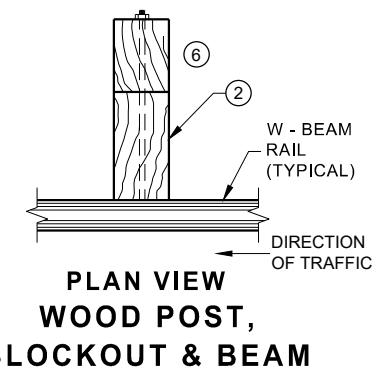
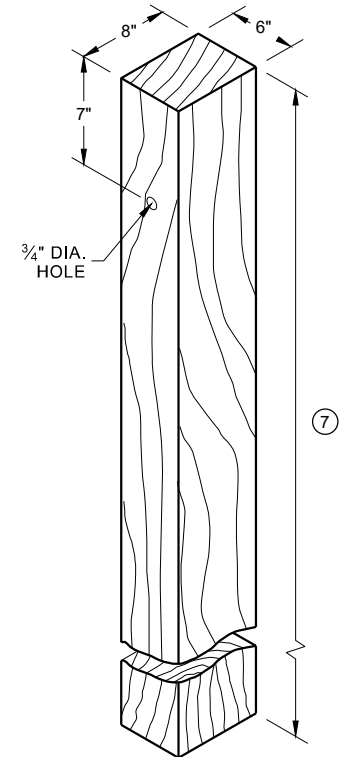
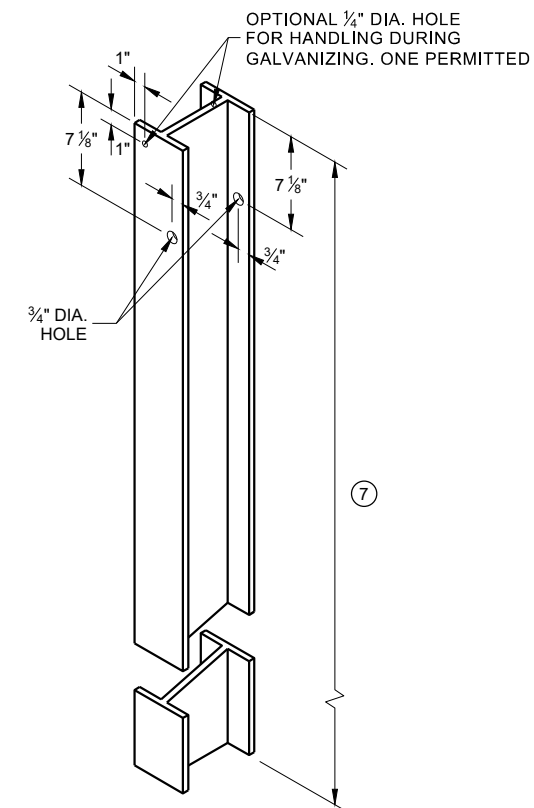
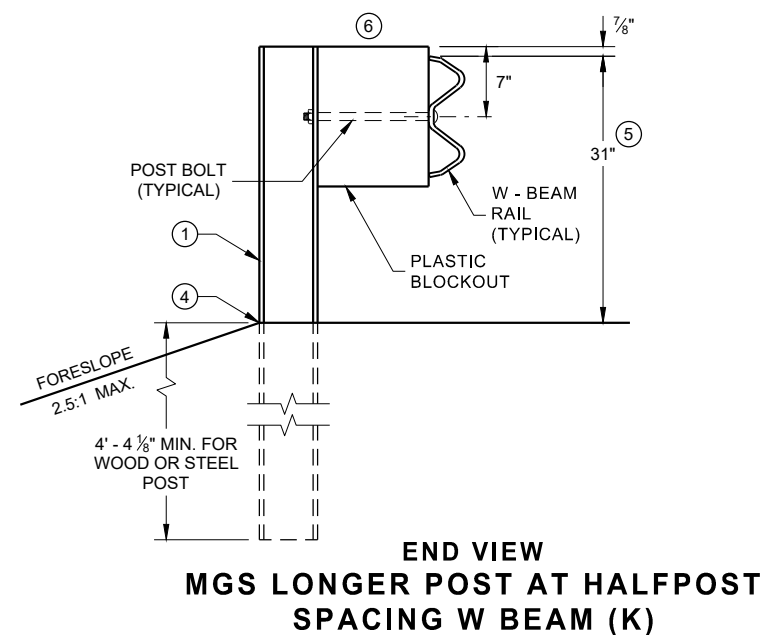
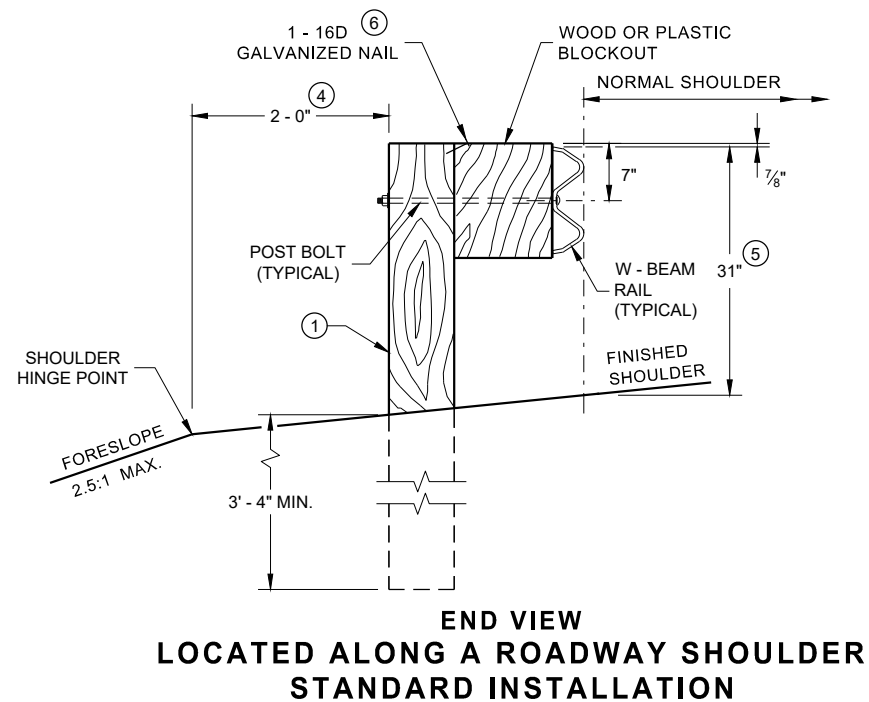
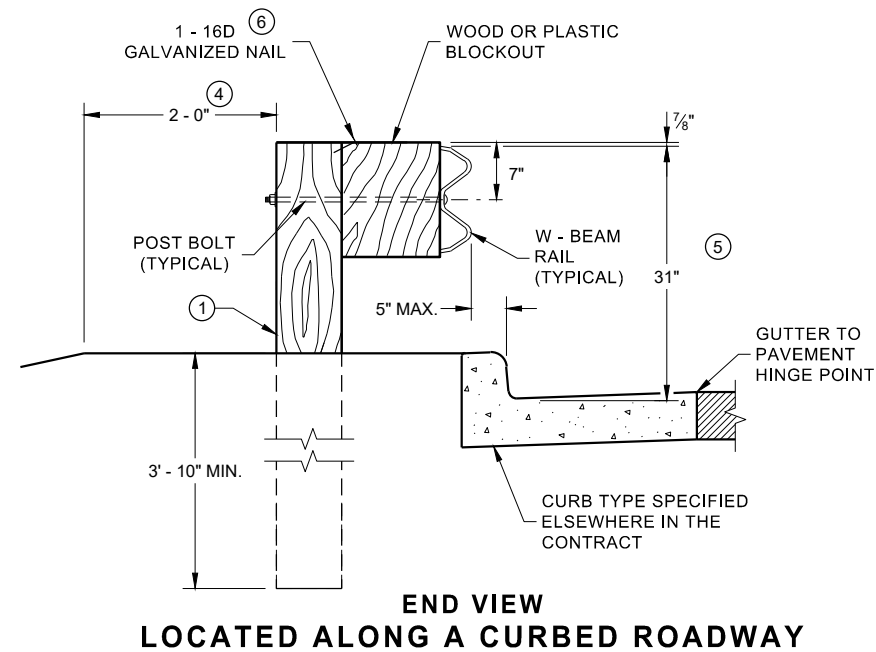
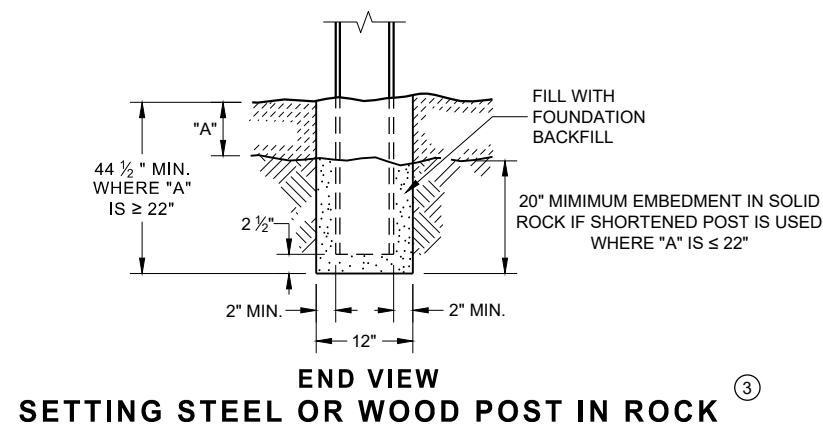
OVERLAP DETAIL (TYPICAL)

HMA LONGITUDINAL JOINTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

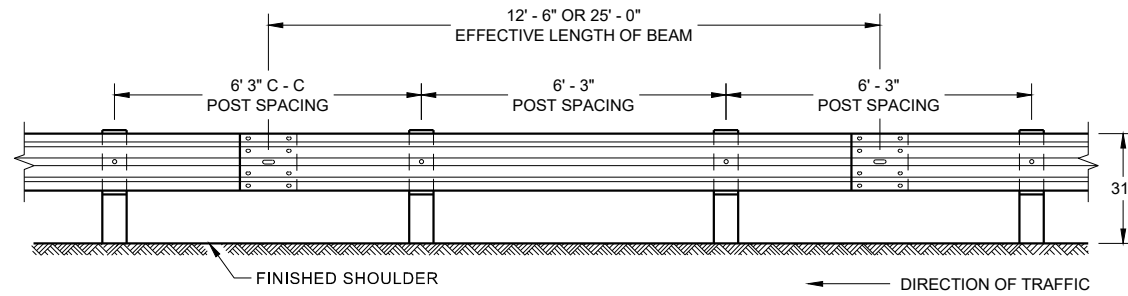
APPROVED
November 2020 /S/ Steven Hefel
DATE HMA PAVEMENT ENGIN 36
FHWA

- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.
- ③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- ④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- ⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS $\pm 1"$. FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 3/4" TO 32".
- ⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ⑦ TOTAL POST LENGTH FOR TYPE K IS 7' - 0".
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".

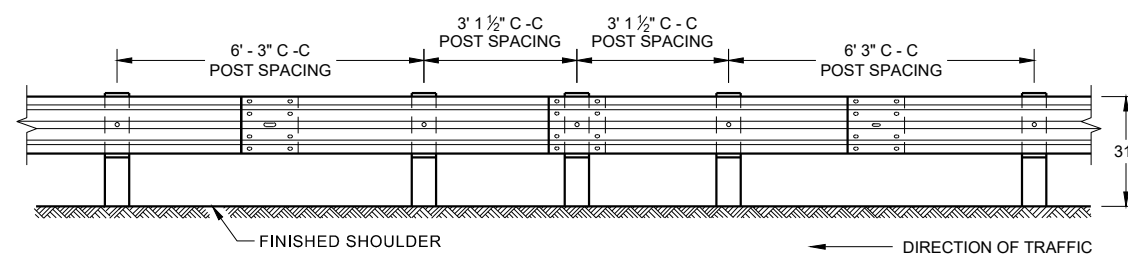


**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

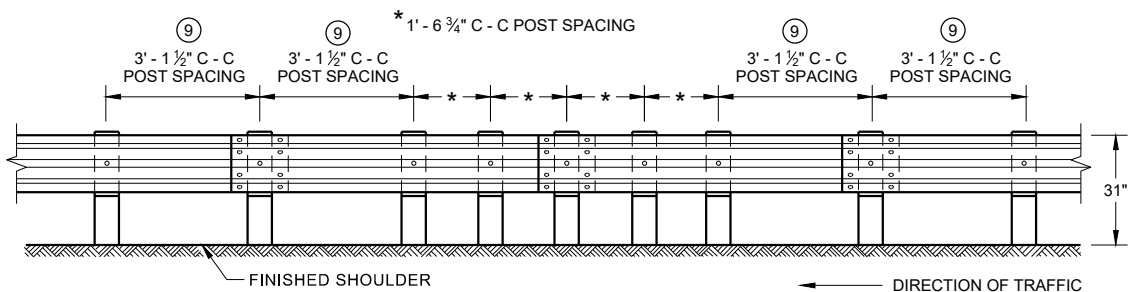
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 37



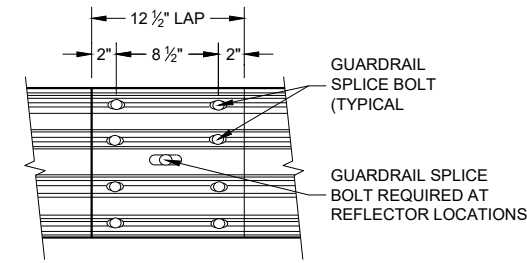
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



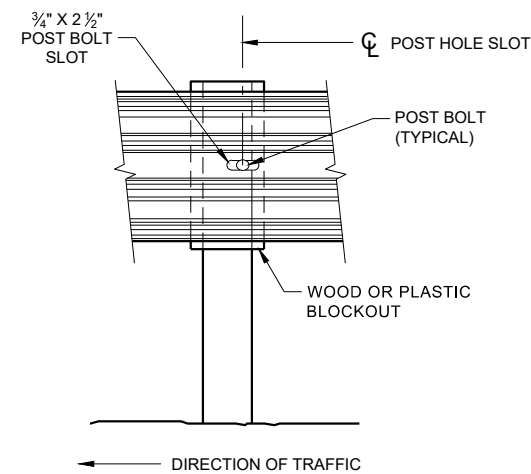
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



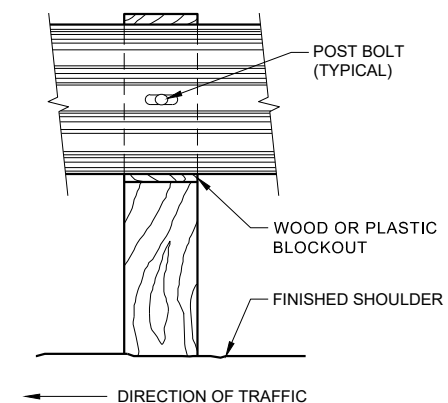
**FRONT VIEW
QUARTER POST SPACING (QS)**



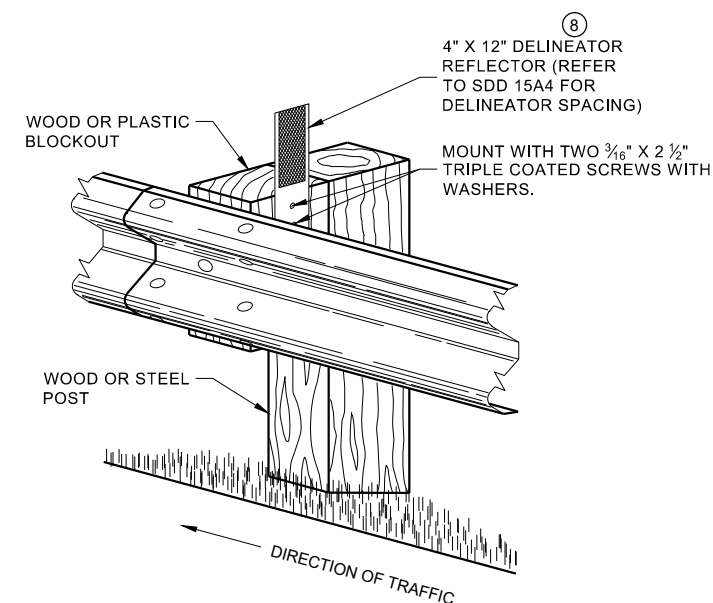
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



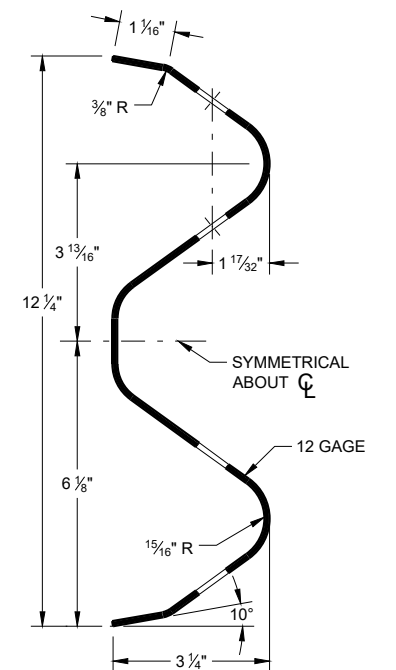
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

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

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

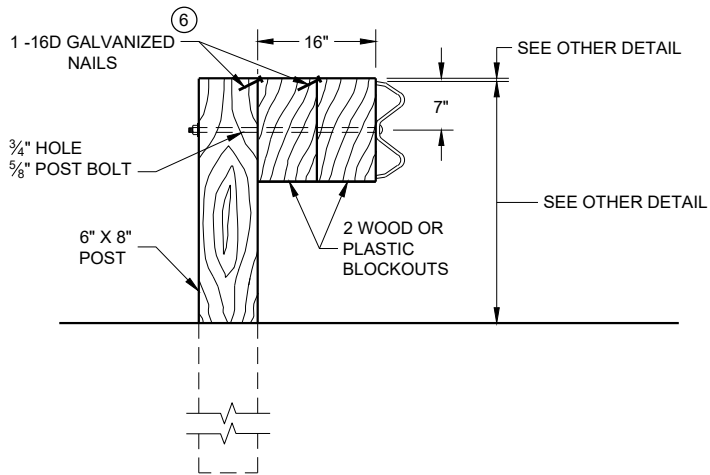
GUARD RAIL SPLICE BOLTS ARE A 3/4" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

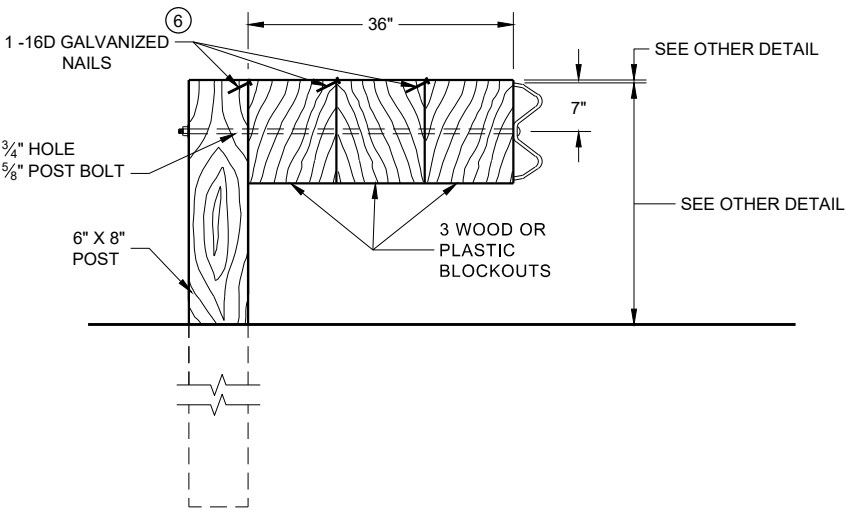
**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 38



DETAIL FOR 16" BLOCKOUT DEPTH

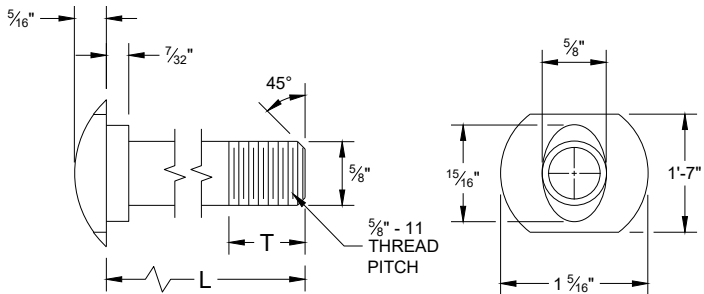
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



DETAIL FOR 36" BLOCKOUT DEPTH

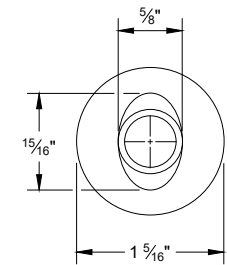
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT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

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

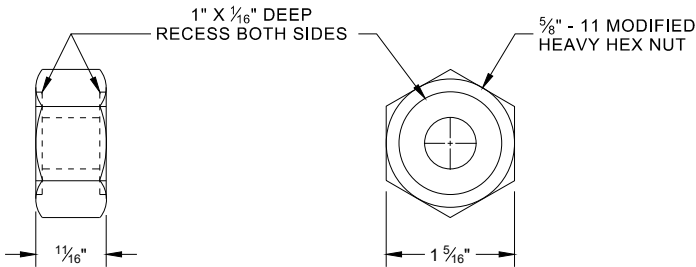


POST BOLT TABLE

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

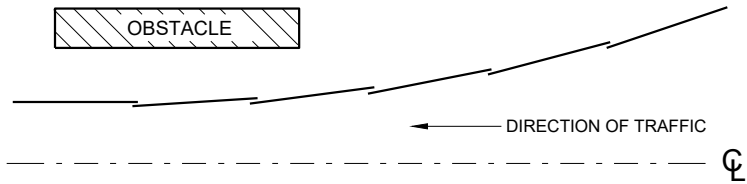


ALTERNATE BOLT HEAD

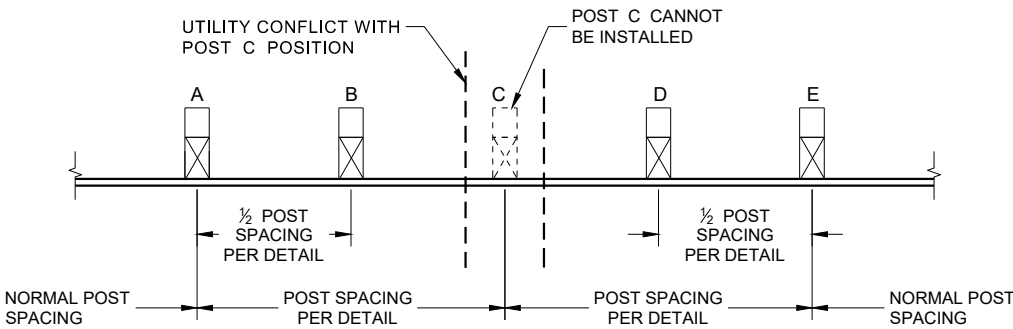


POST BOLT, SPLICE BOLT AND RECESS NUT

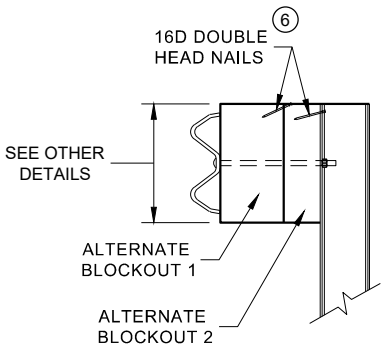
- 6 WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



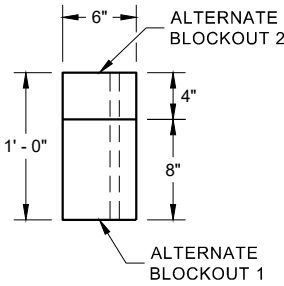
PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



SIDE VIEW

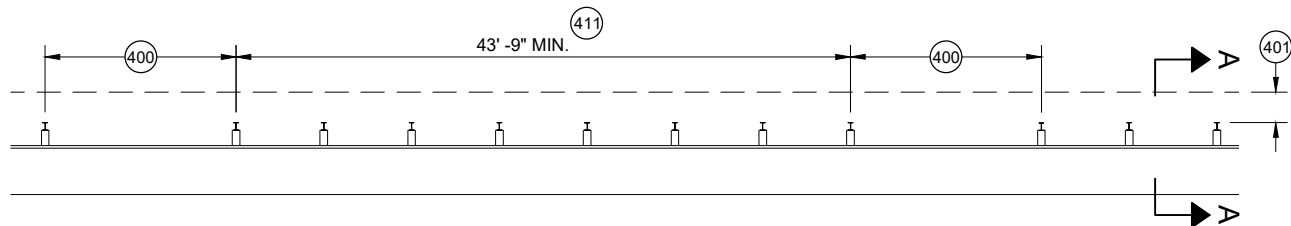


PLAN VIEW

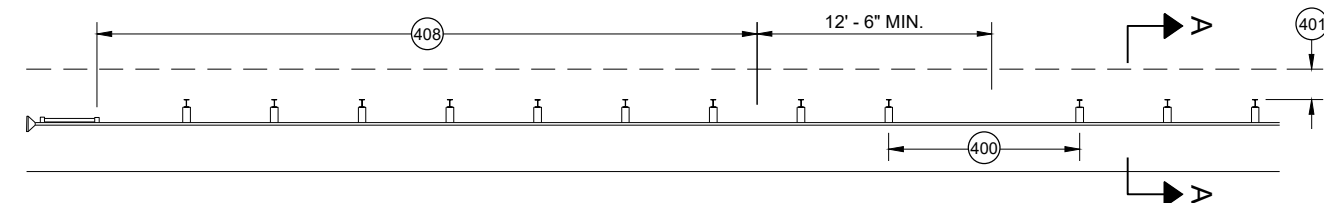
ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

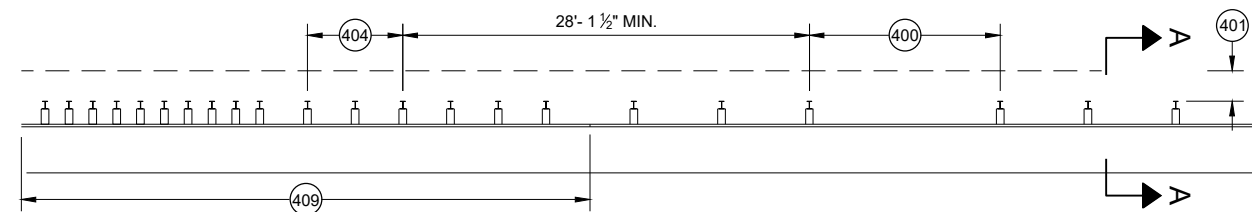
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



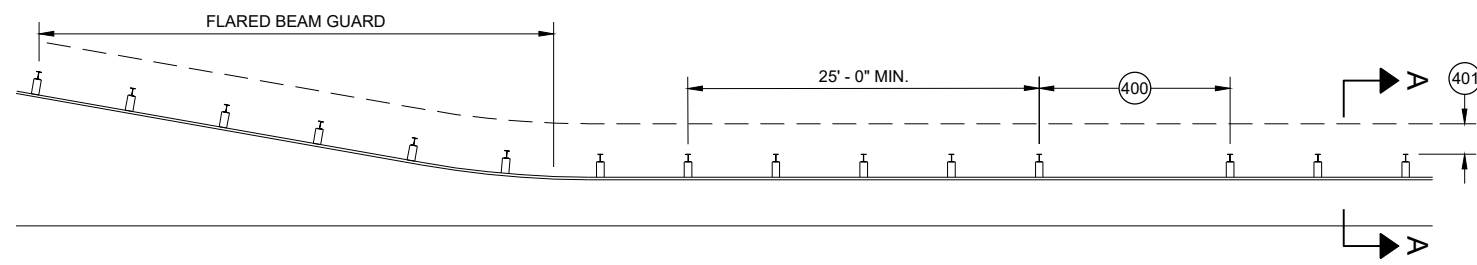
MISSING POST IN MGS GUARDRAIL



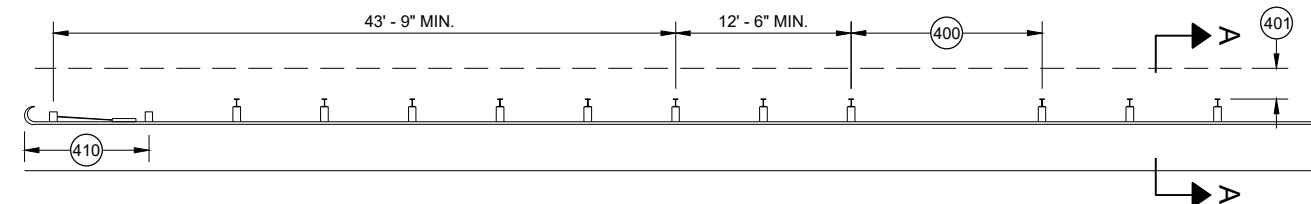
MISSING POST IN MGS GUARDRAIL NEAR EAT



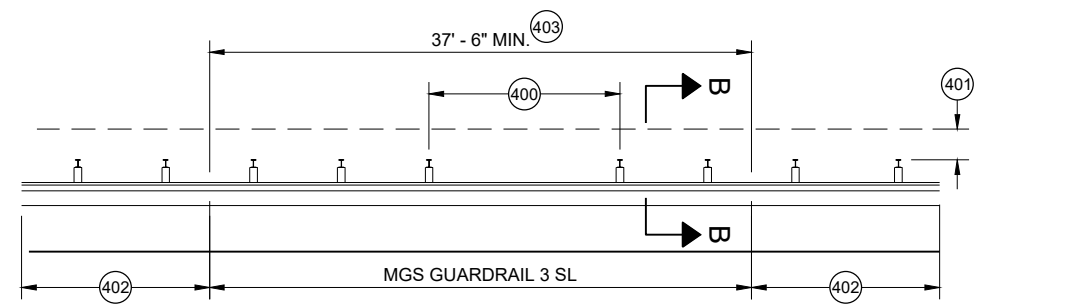
MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD

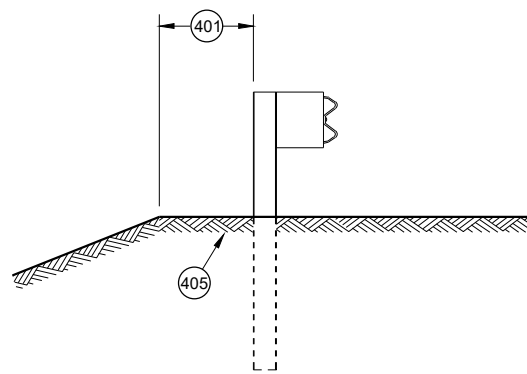


MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL

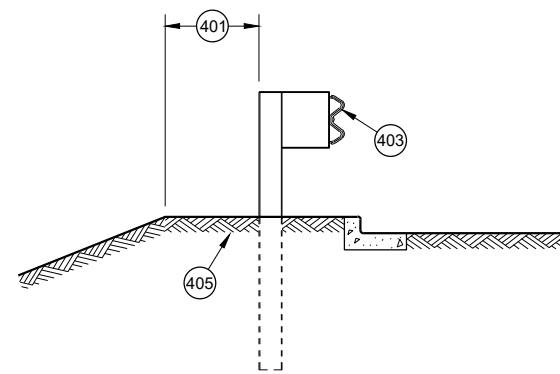


MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)

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



SECTION A - A



SECTION B - B

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

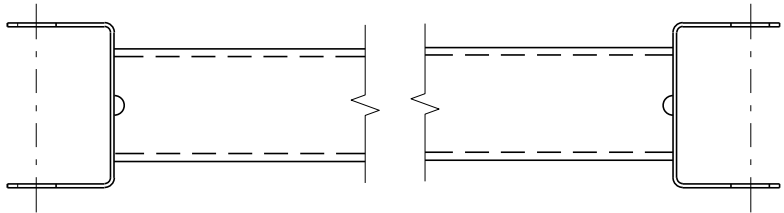
- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
- (C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS.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

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

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

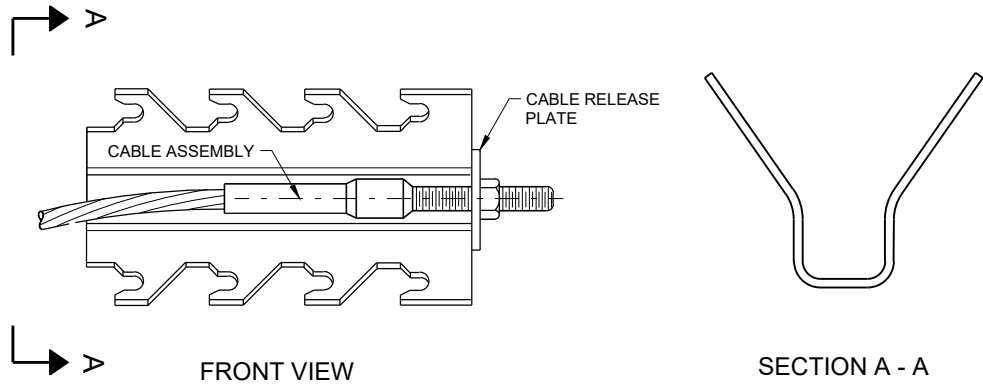


STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 41

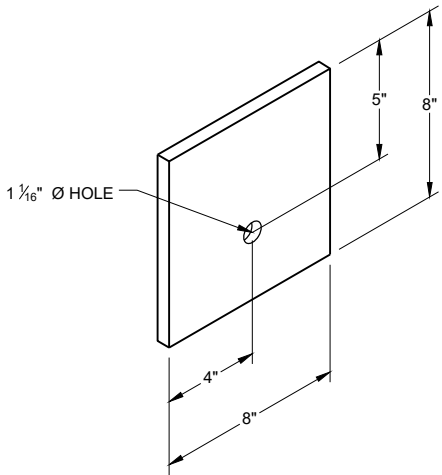


GENERIC GROUND STRUT⁹ E

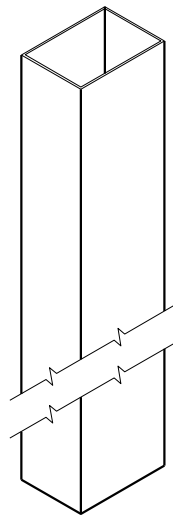
BILL OF MATERIALS	
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED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



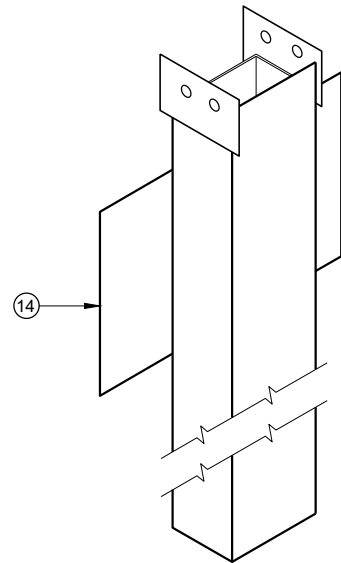
GENERIC ANCHOR CABLE BOX⁹ E



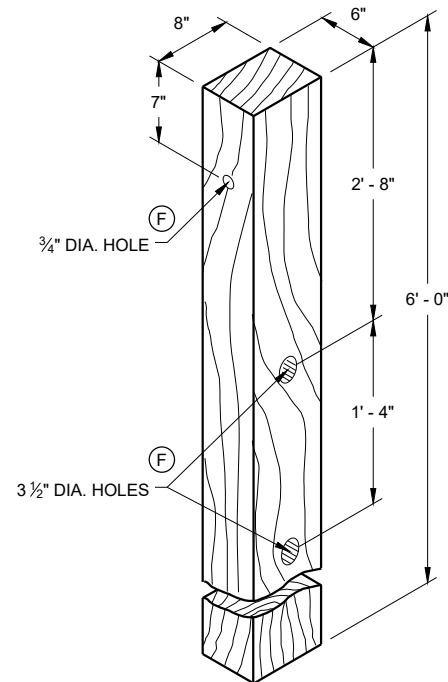
BEARING PLATE⁶ E



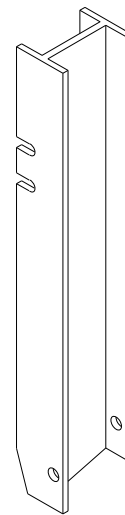
UPPER POST NO. 1 ⁽¹⁾ (E)



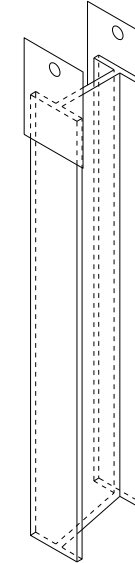
LOWER POST NO. 1 ⁽²⁾ (E)



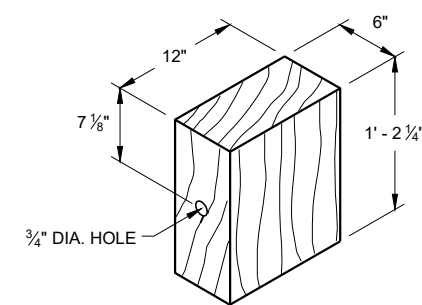
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



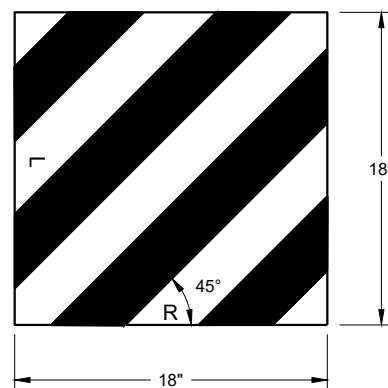
UPPER POST NO. 2 ⁽¹⁵⁾ (E)



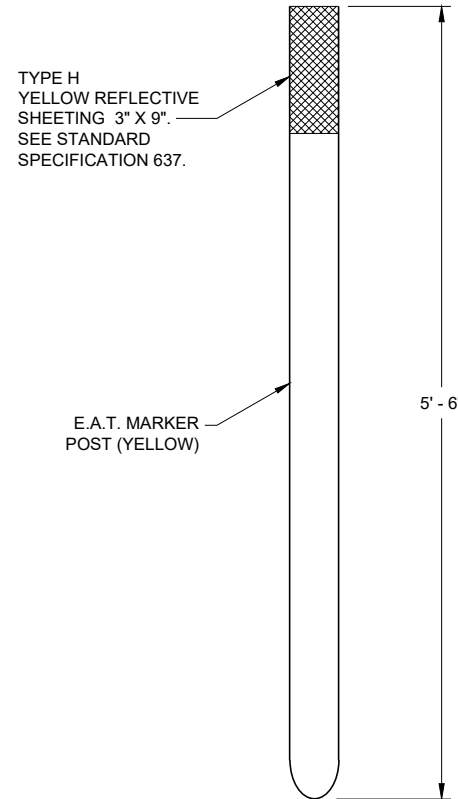
LOWER POST NO. 2 ⁽¹⁶⁾ (E)



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



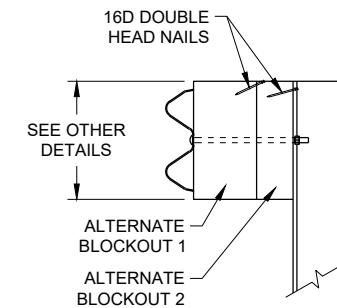
REFLECTIVE SHEETING DETAIL ^(E)



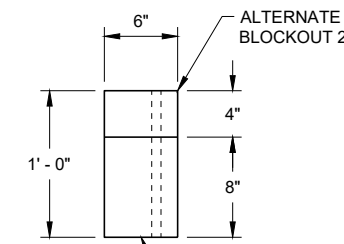
FRONT VIEW

SIDE VIEW

E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW



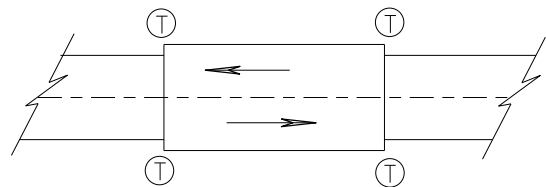
TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

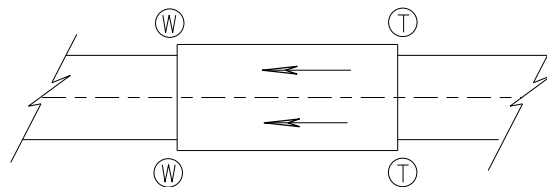
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA 43



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

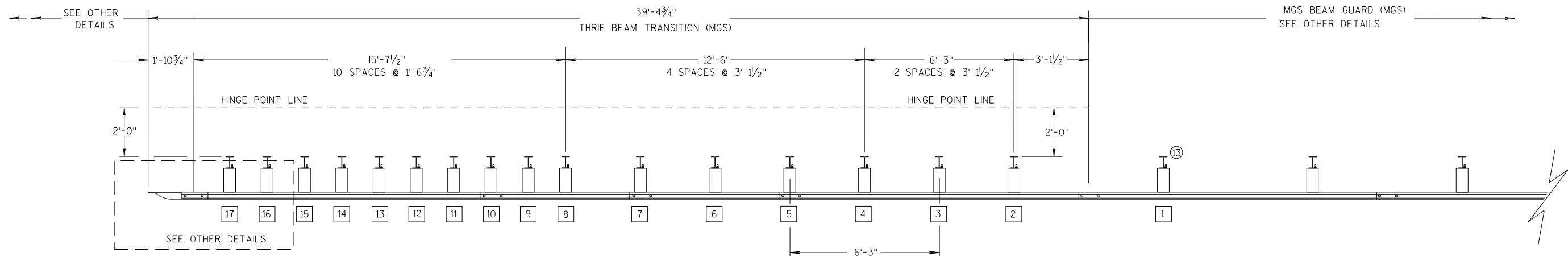
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

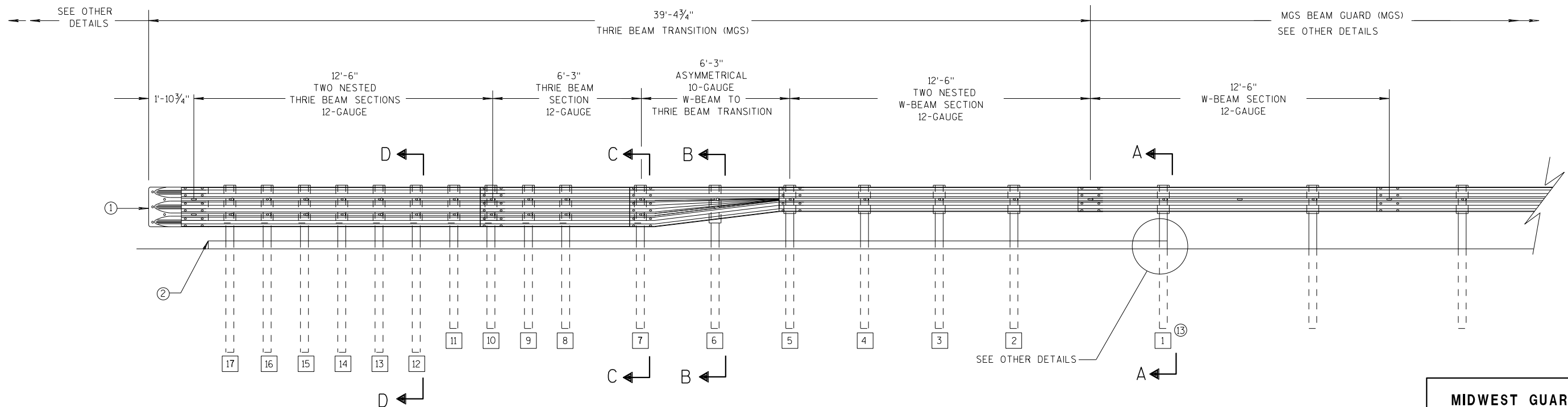
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

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



PLAN VIEW



ELEVATION VIEW

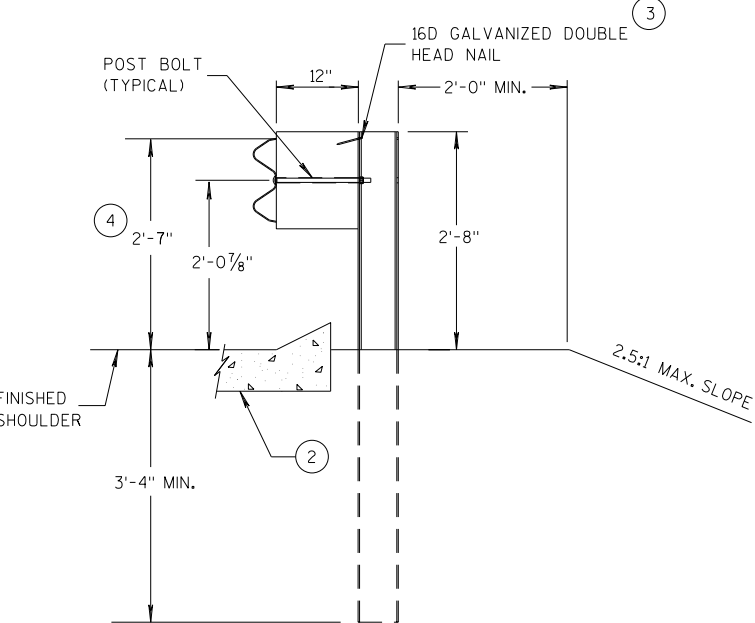
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

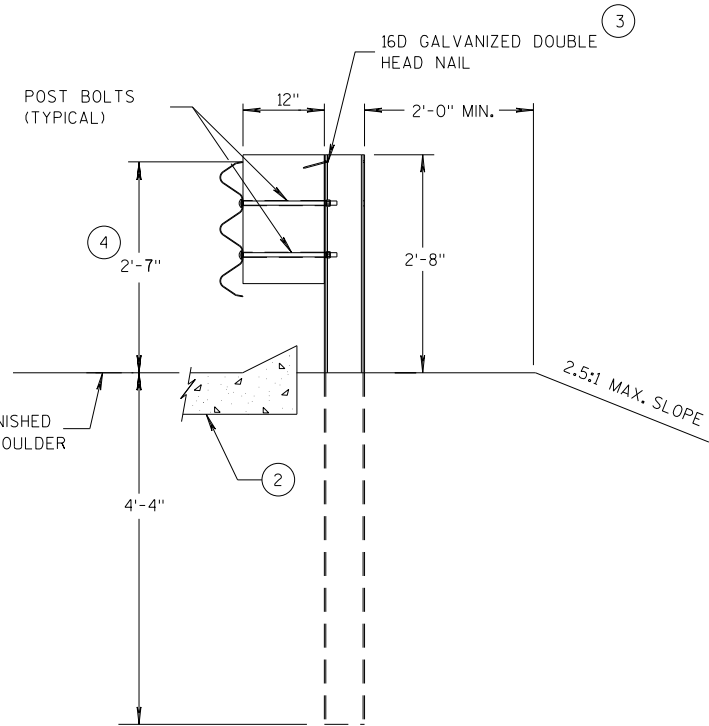
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

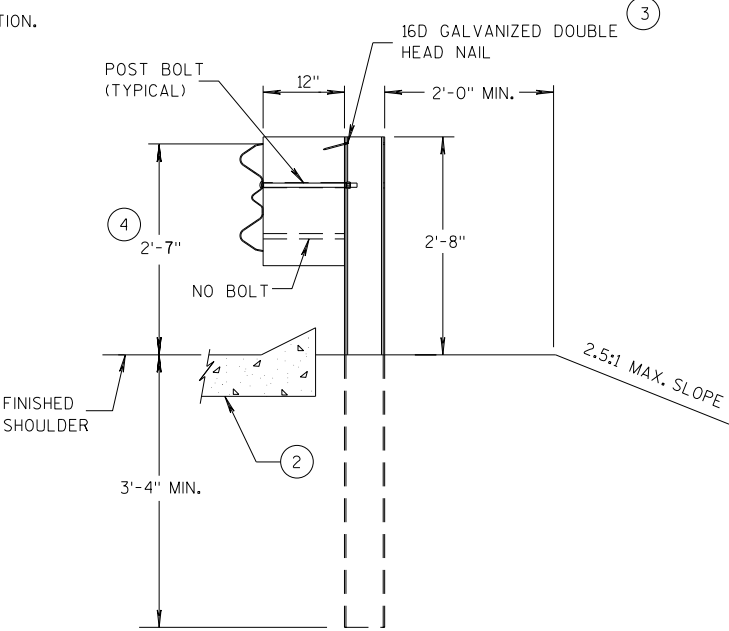
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".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



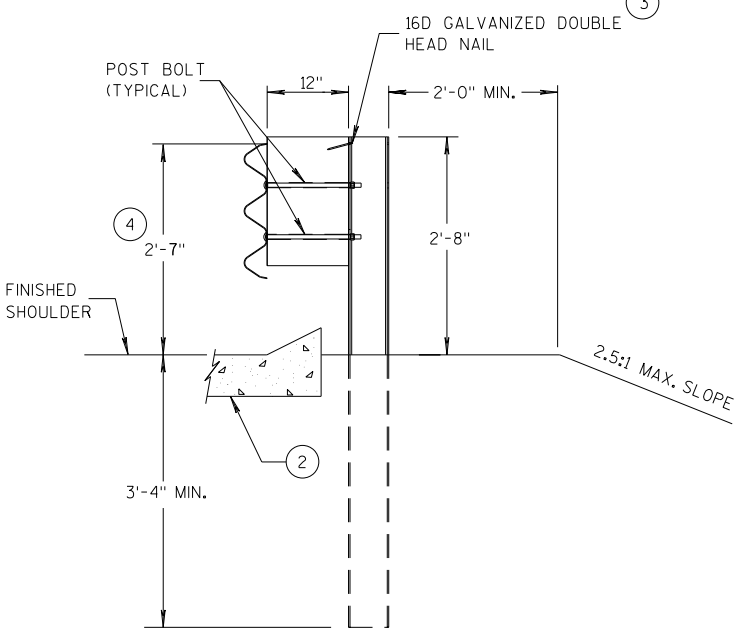
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

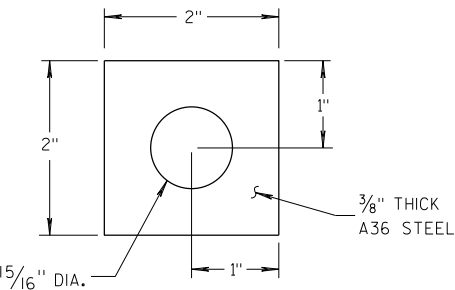
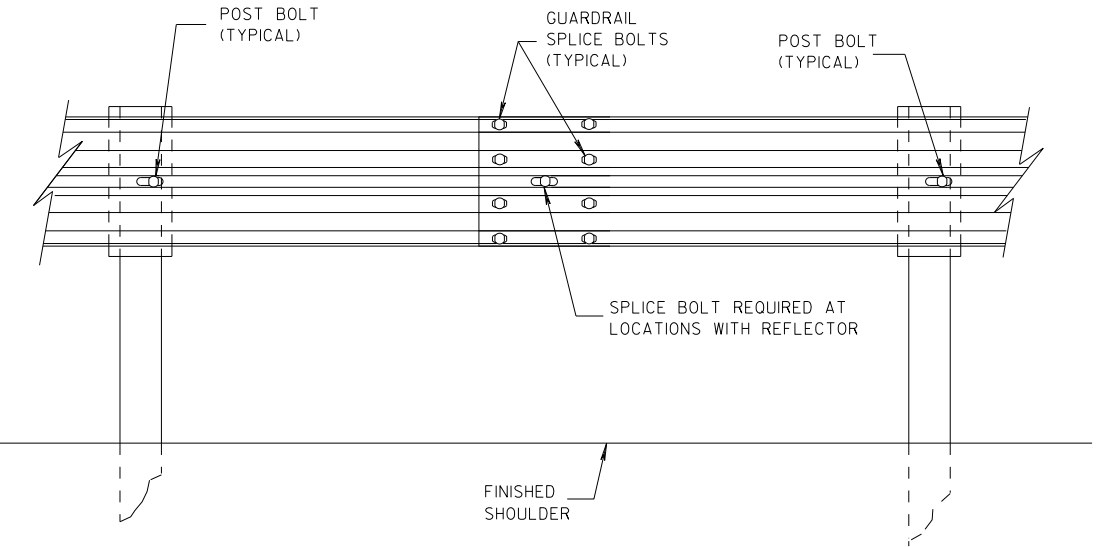
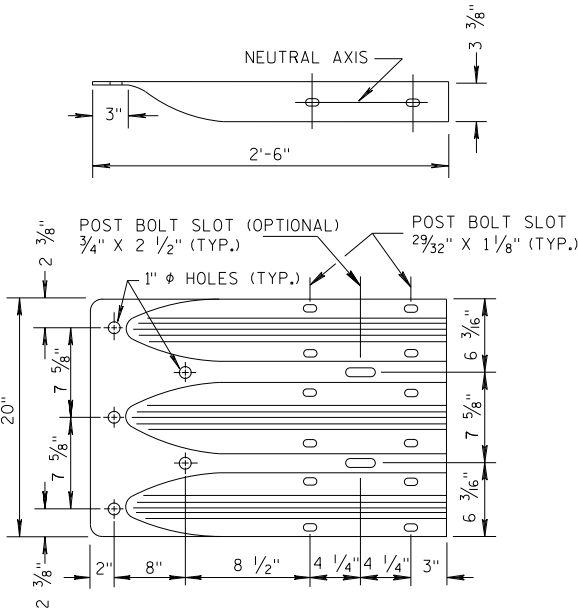


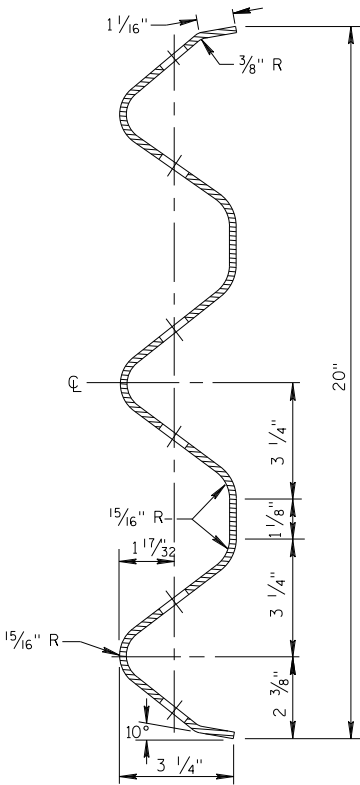
PLATE WASHER DETAIL



SPlice DETAIL



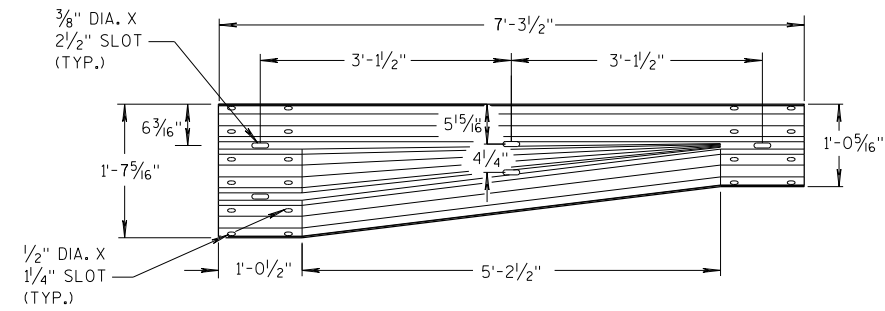
THRIE BEAM
TERMINAL CONNECTOR



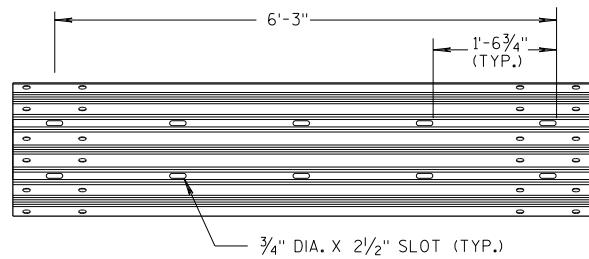
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

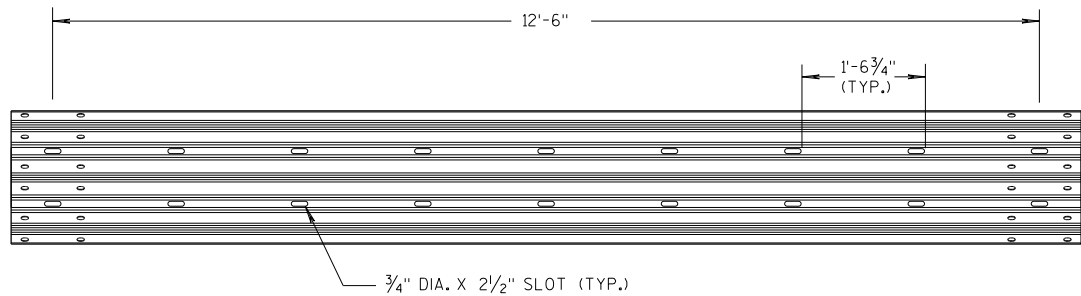
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



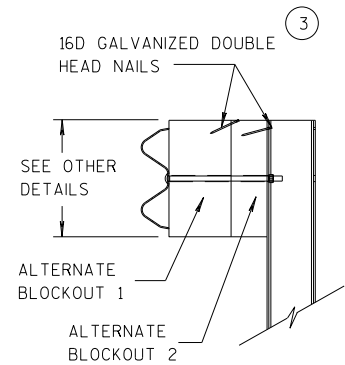
W-BEAM TO THRIE BEAM TRANSITION SECTION



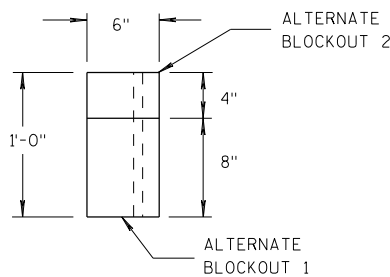
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

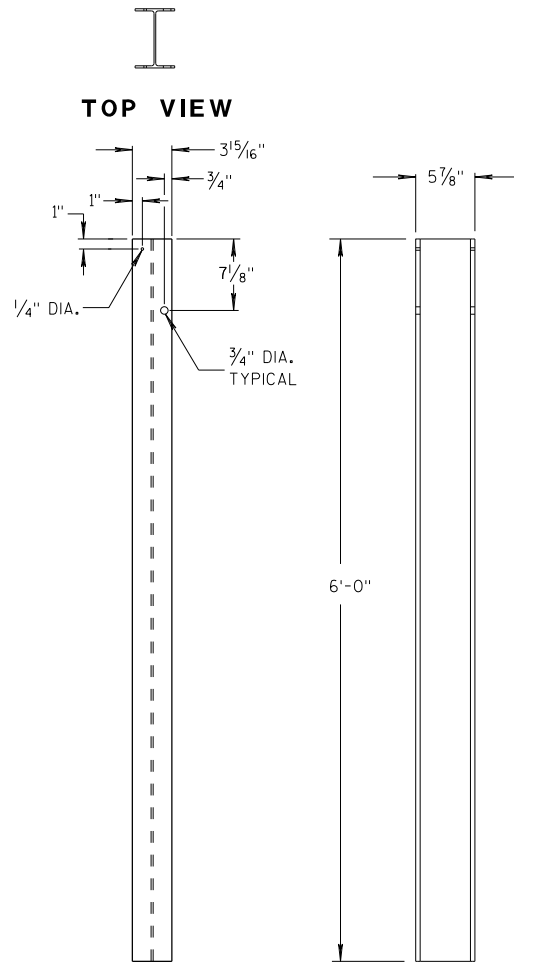


SIDE VIEW



TOP VIEW

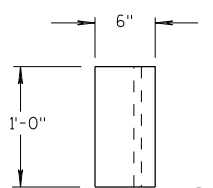
ALTERNATE WOOD BLOCKOUT DETAIL



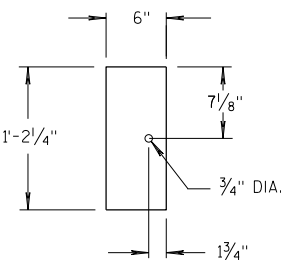
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

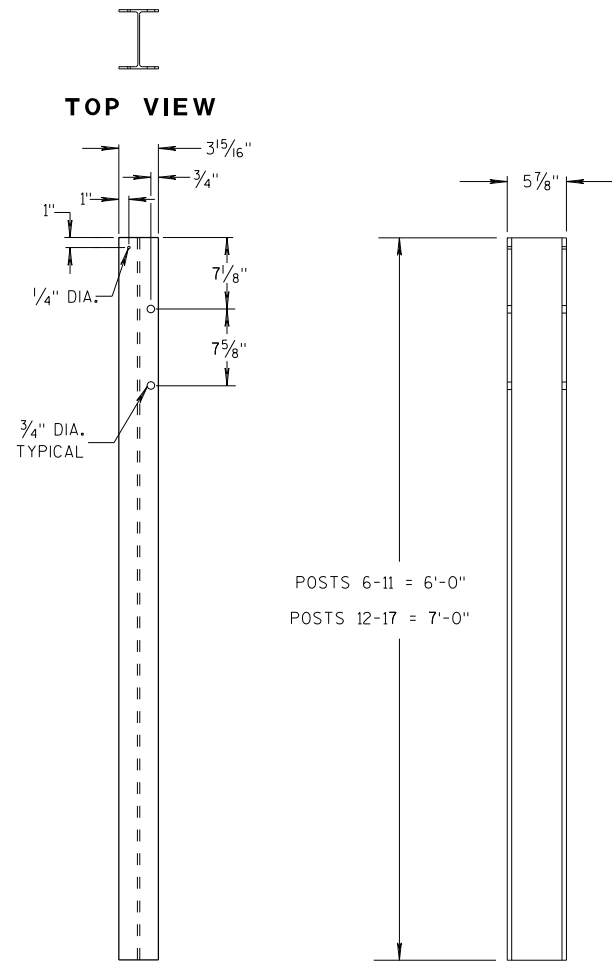


TOP VIEW



FRONT VIEW

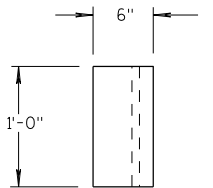
BLOCKOUT POSTS 1-5



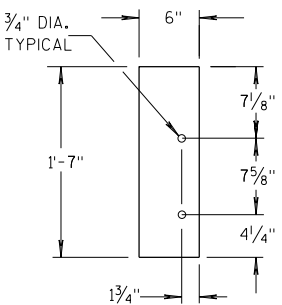
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

BOLT HOLES FOR POST ARE ON FRONT AND OF SIDE OF POST.

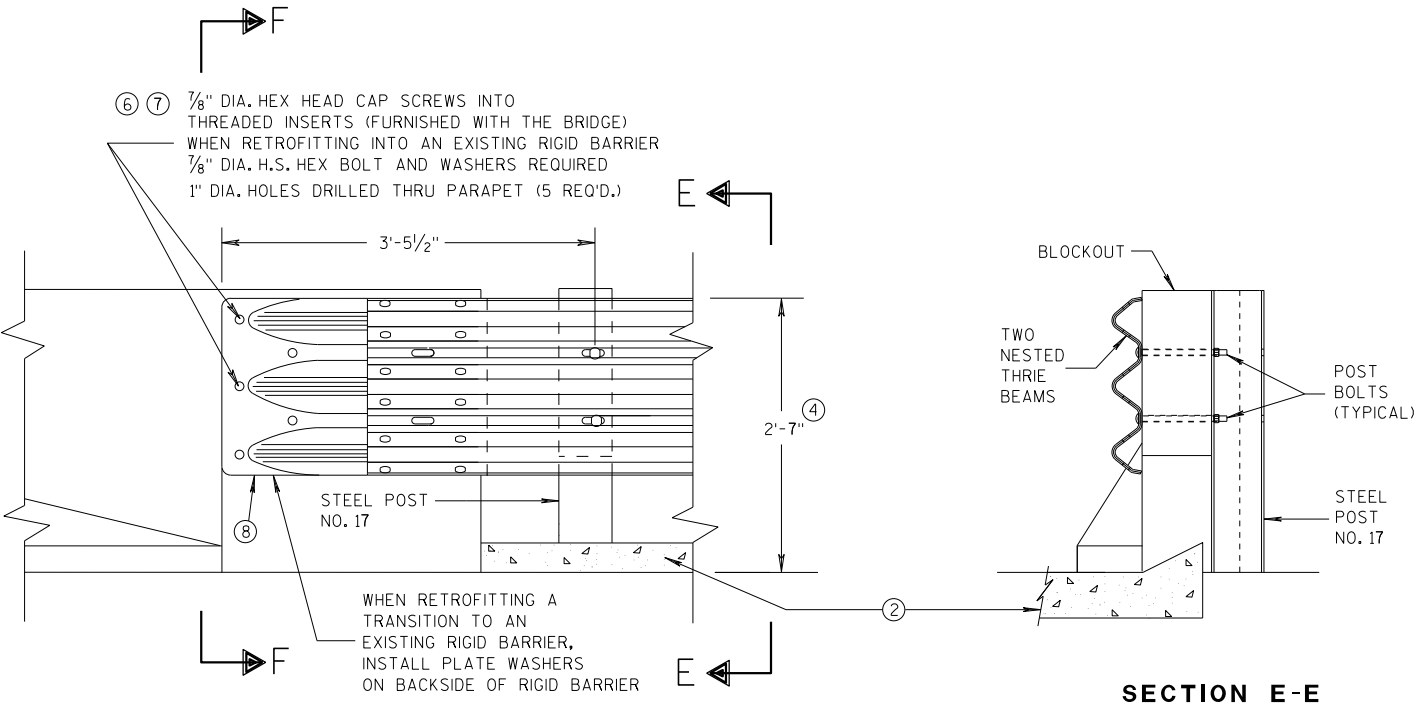
(3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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

(13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

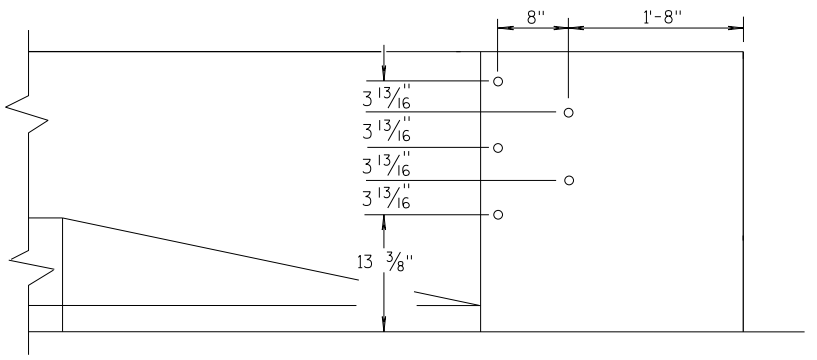
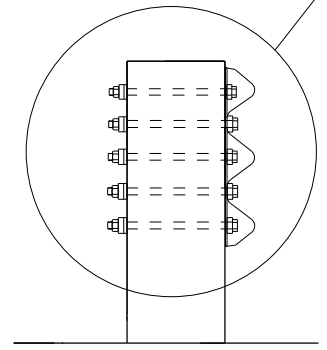
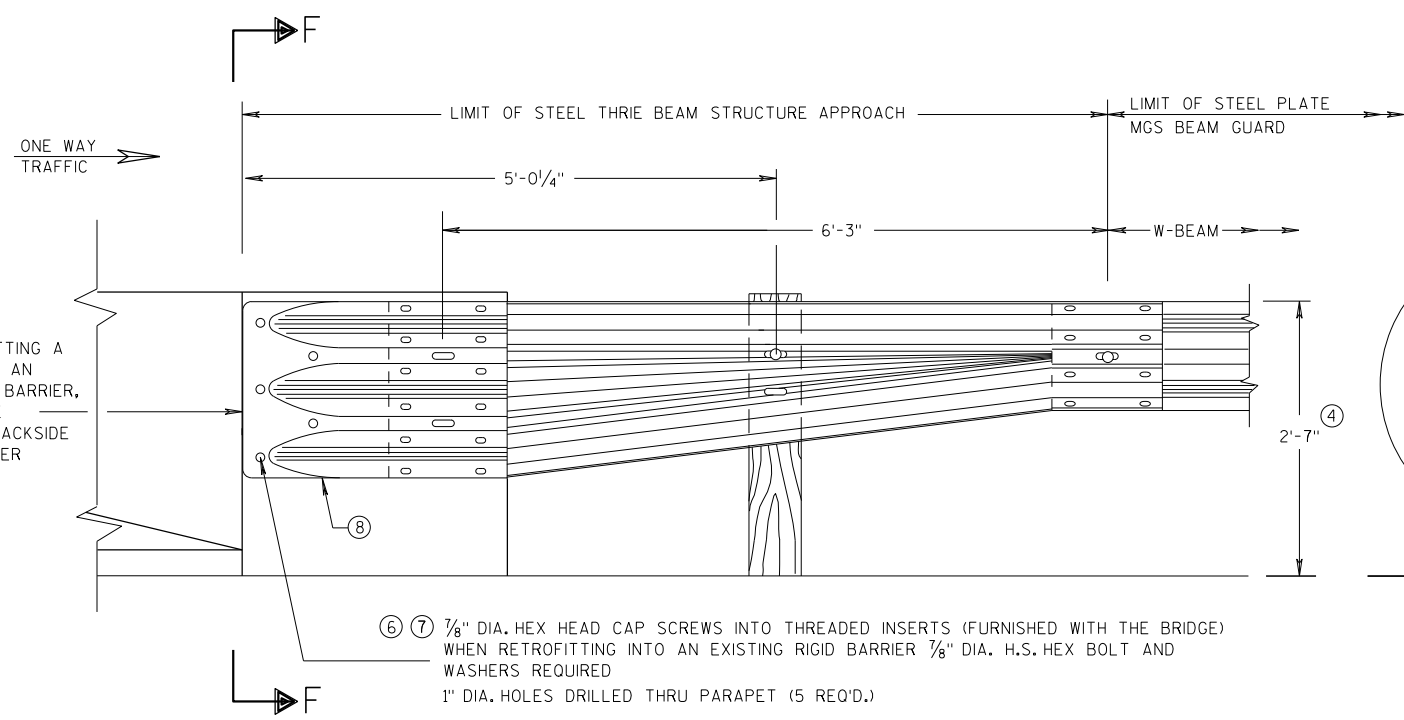
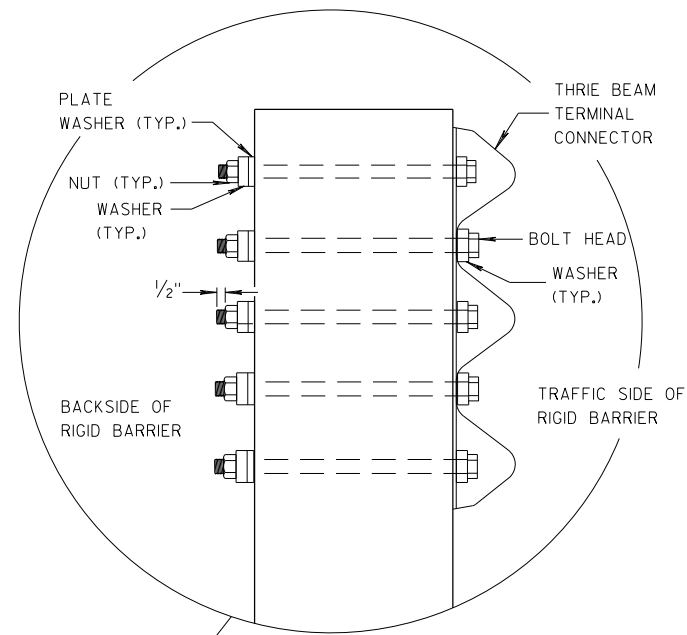
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



GENERAL NOTES

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

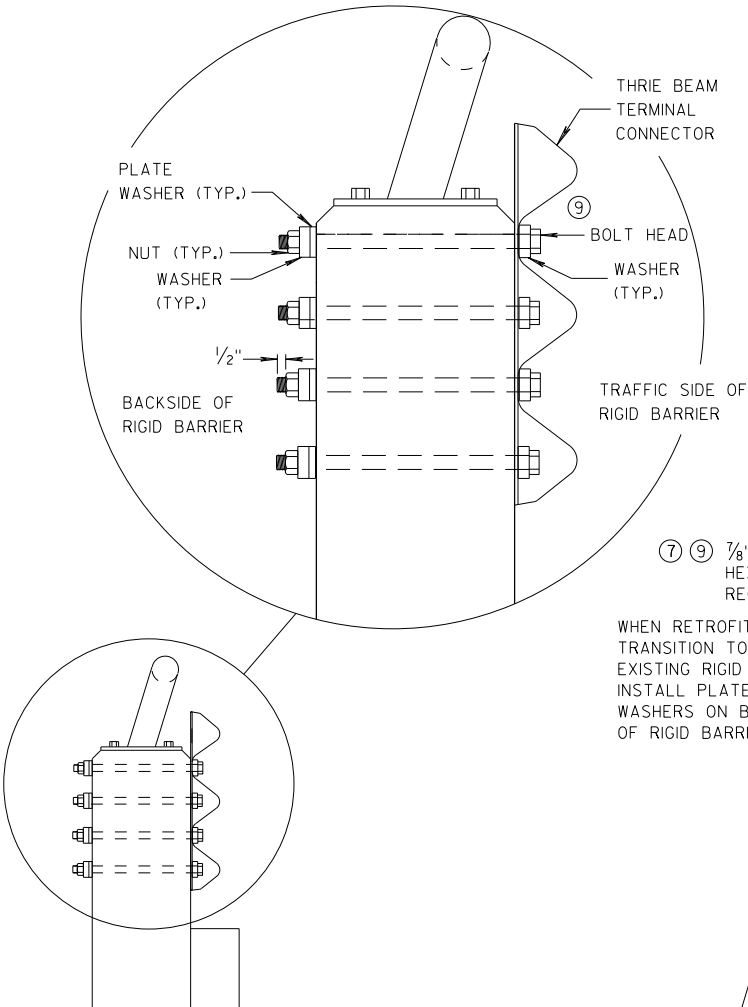


MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS UNIT SUPERVISOR		
FHWA	47	NT	

GENERAL NOTES

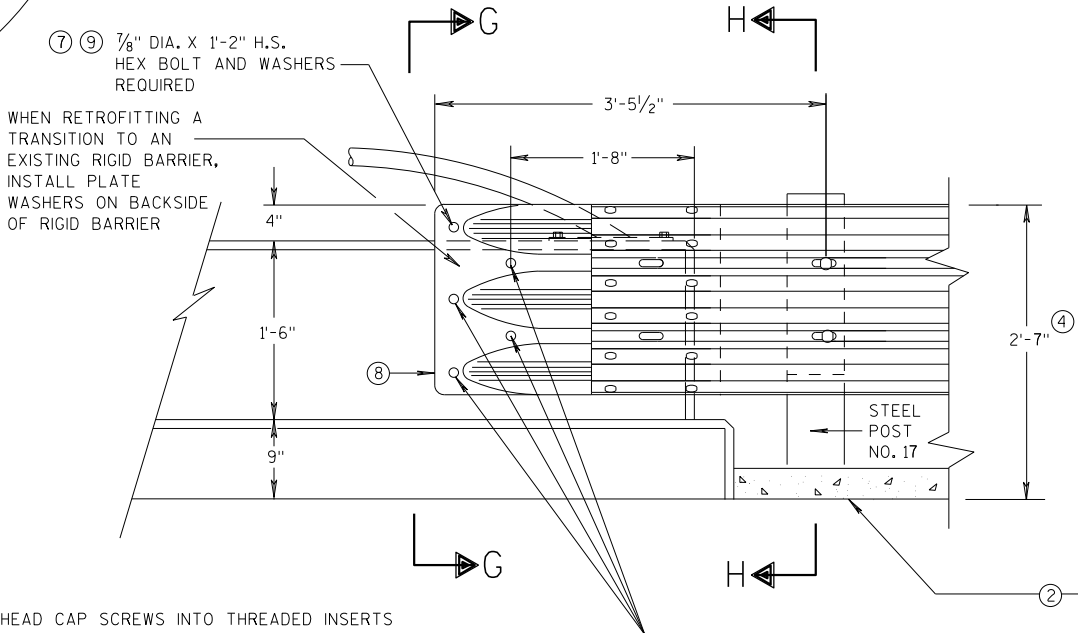
THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

- 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 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧
- THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".
- ⑨
- BOLT, NUT AND WASHERS NOT REQUIRED FOR THIS LOCATION WHEN RETROFITTING AN EXISTING PAPAPET AND THE HOLE IS EITHER ABOVE PARAPET OR WITHIN 4 INCHES OF THE EDGE OF PARAPET.



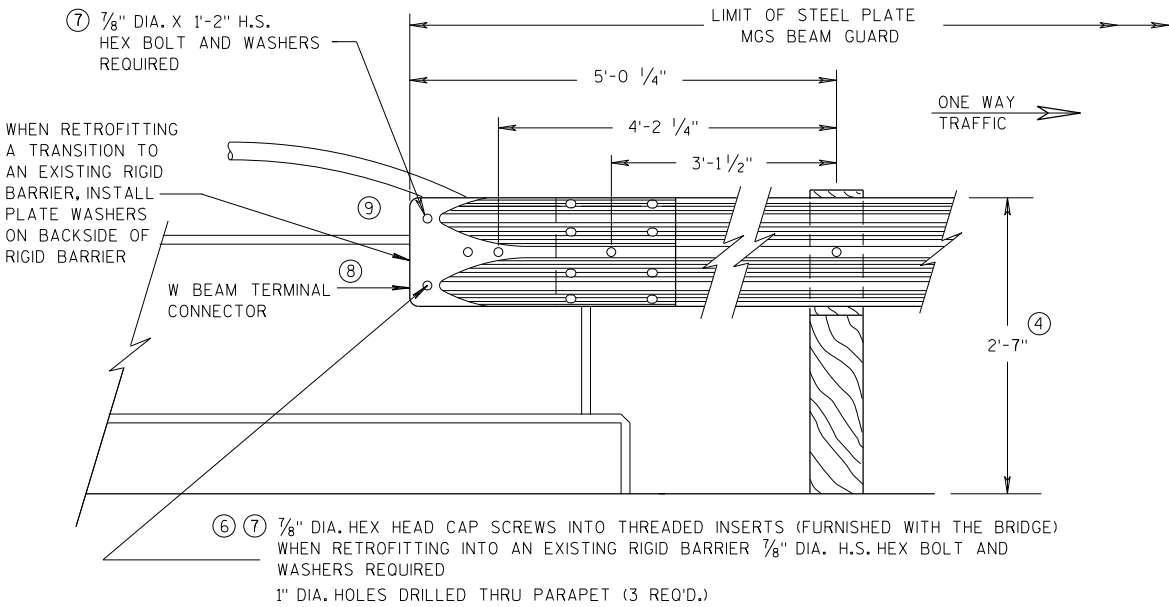
SECTION G-G

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



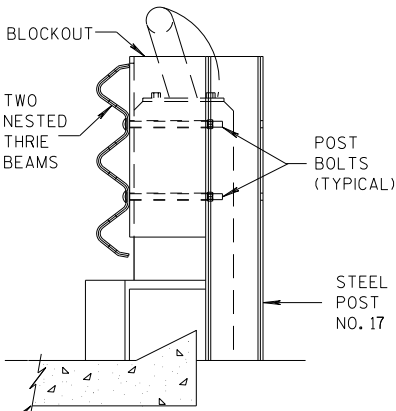
FRONT VIEW

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS



FRONT VIEW

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

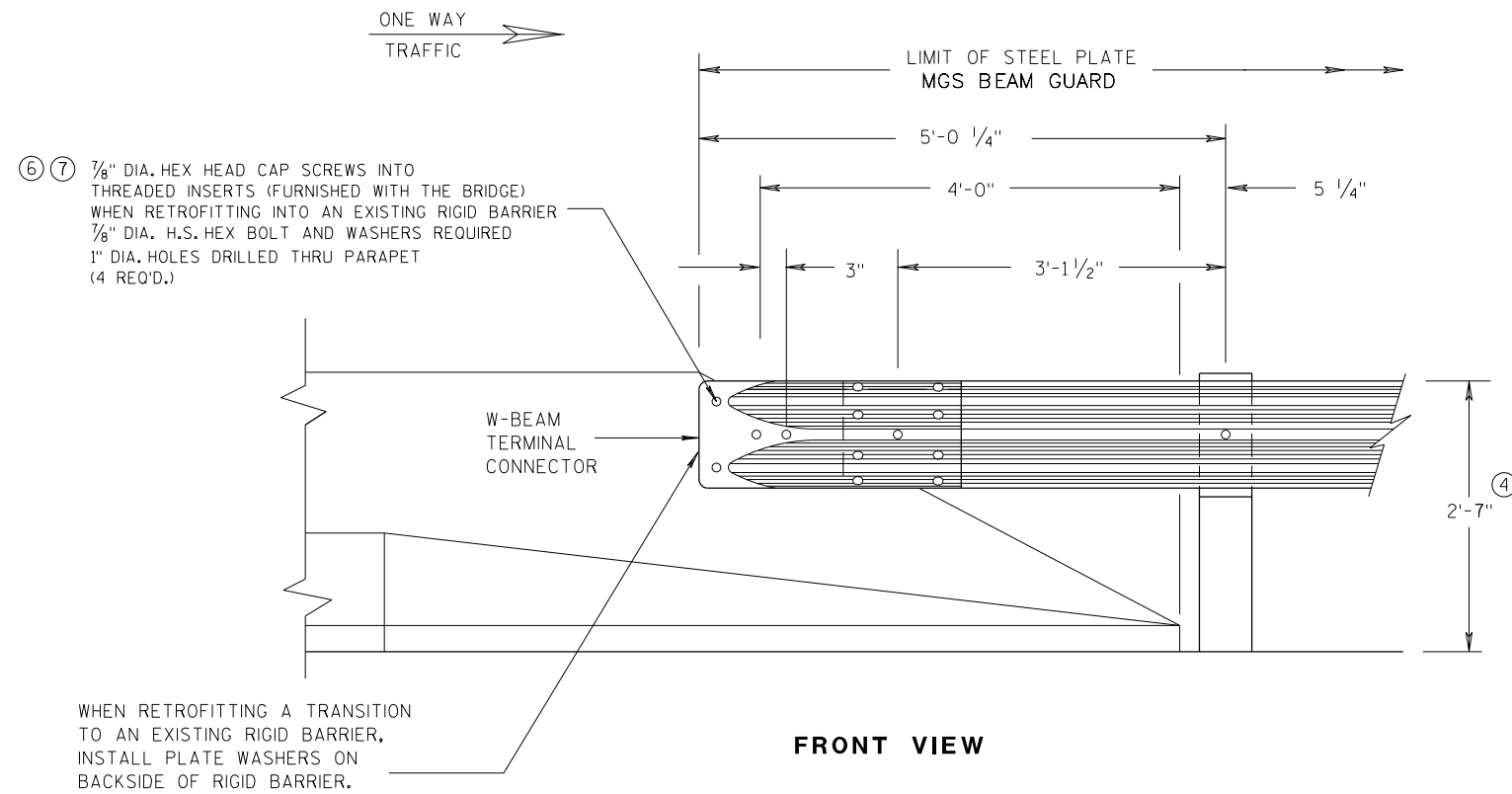


SECTION H-H

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

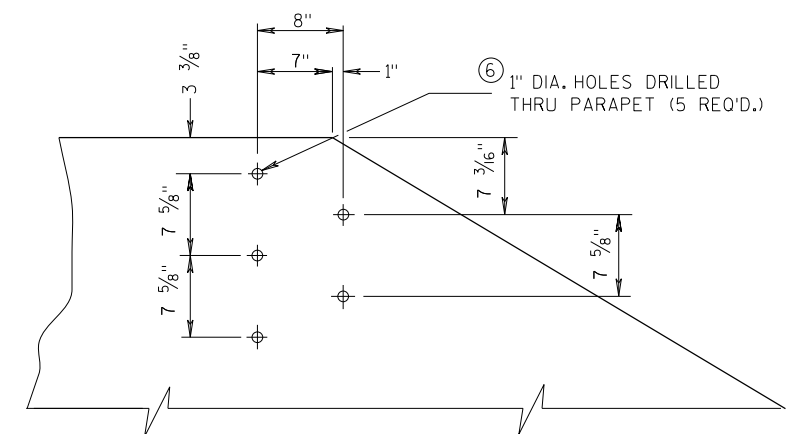
APPROVED
07/2018 /S/ Rodney Taylor
DATE ROADWAY STANDARDS UNIT SUPERVISOR
FHWA 48



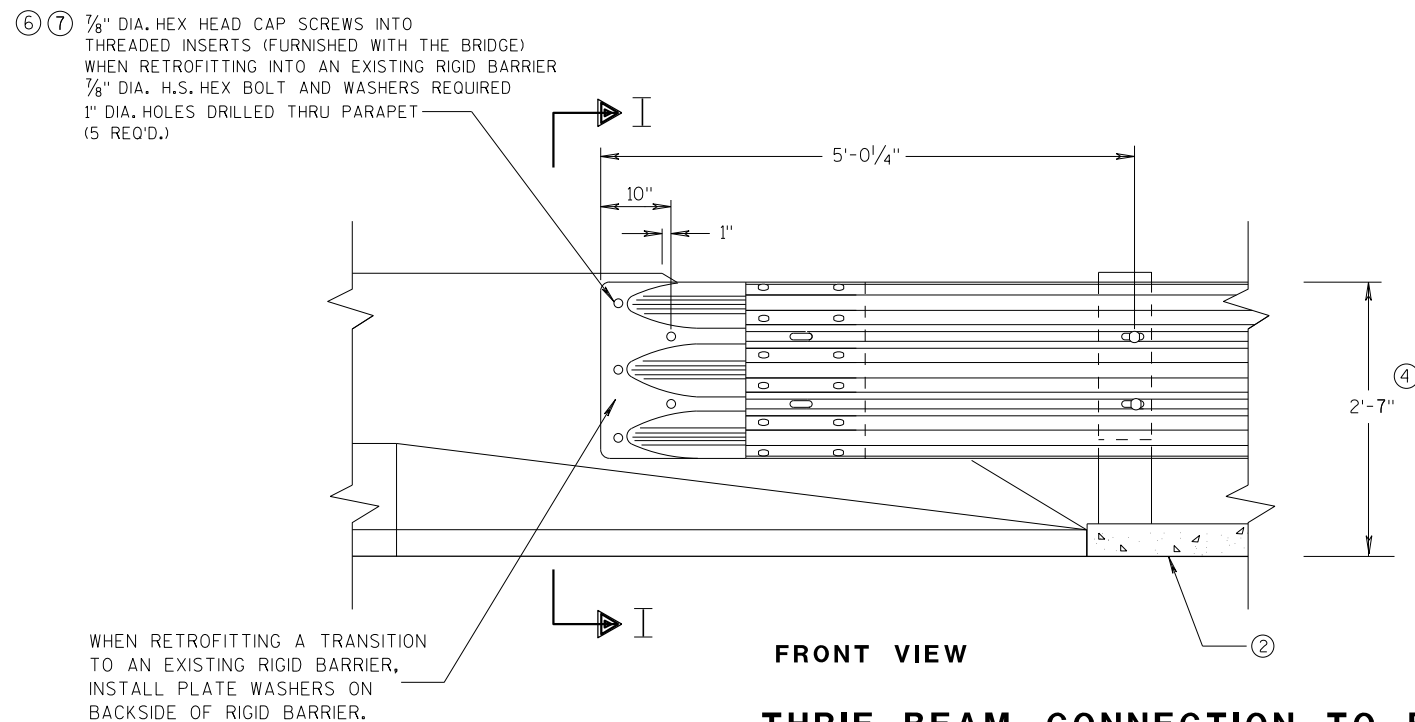
**W BEAM CONNECTION TO
PARAPETS WITH SLOPED ENDS**
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

GENERAL NOTES

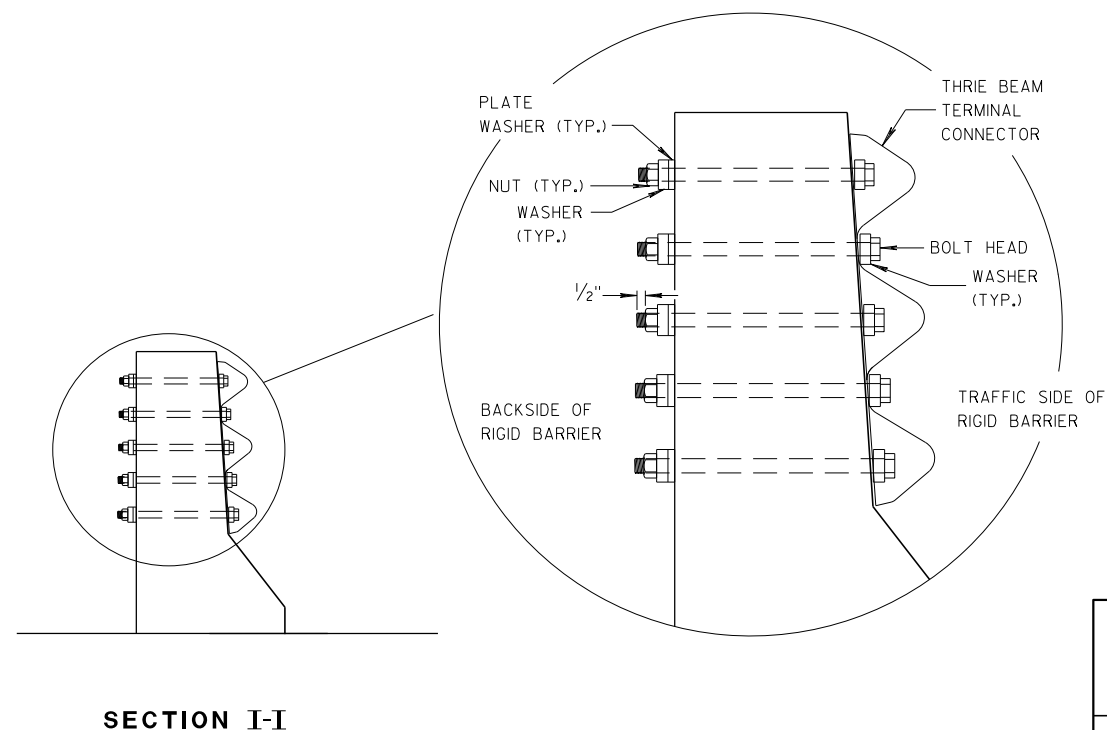
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH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



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



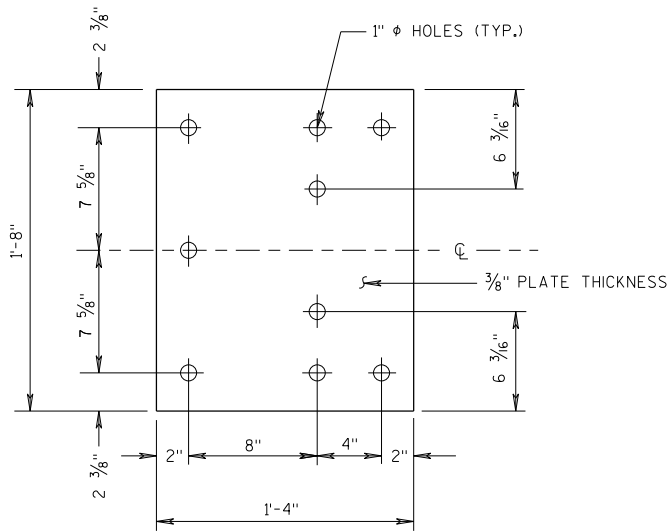
**THRIE BEAM CONNECTION TO BRIDGE
PARAPETS WITH SLOPED ENDS**



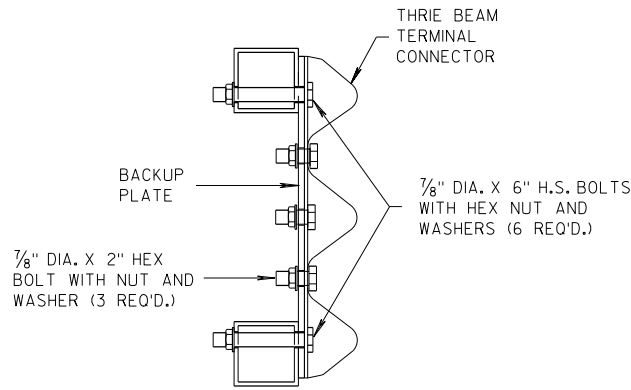
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

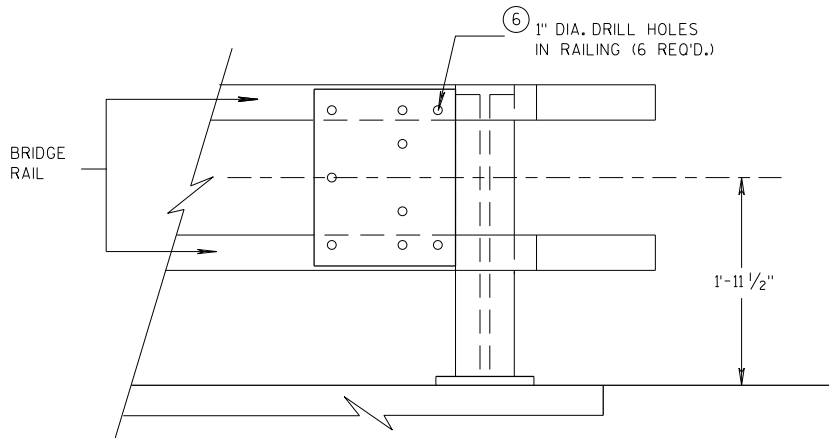
APPROVED
DATE 07/2018 /S/ Rodney Taylor
ROADWAY STANDARDS UNIT SUPERVISOR 49
FHWA



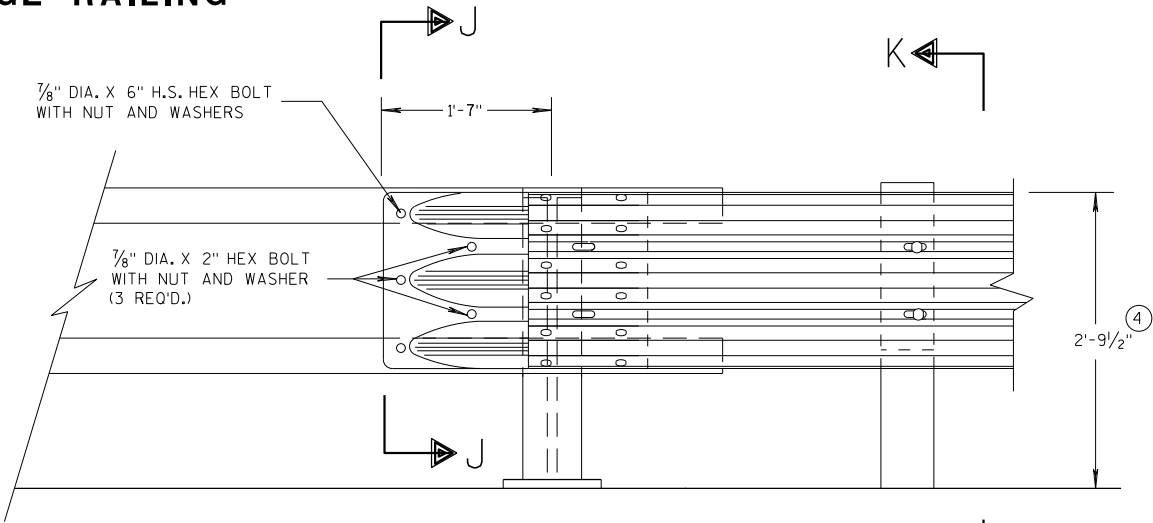
BACK-UP PLATE DETAIL



SECTION J-J

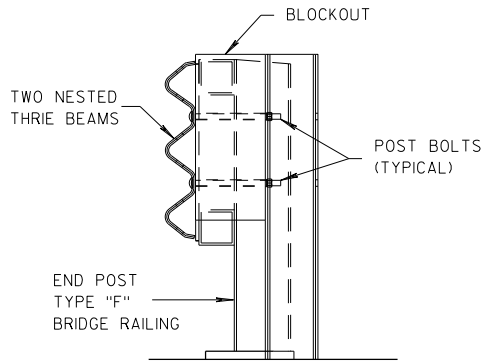


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

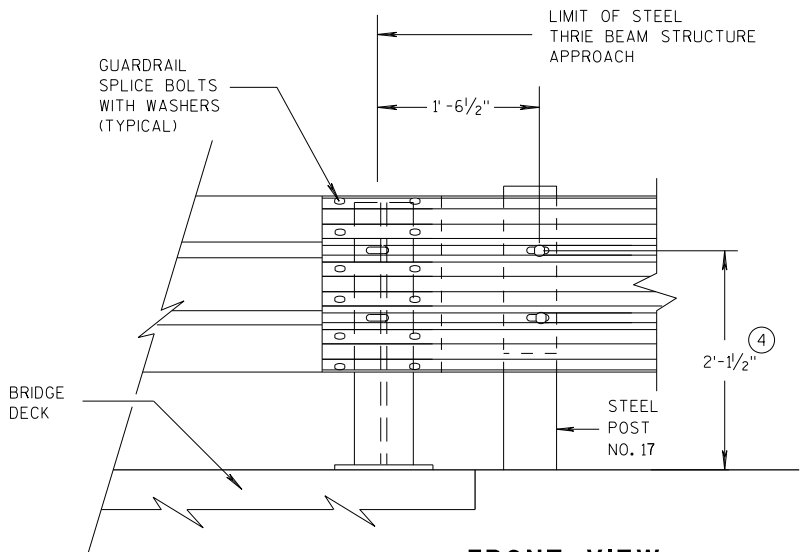
THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



SECTION K-K

GENERAL NOTES

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



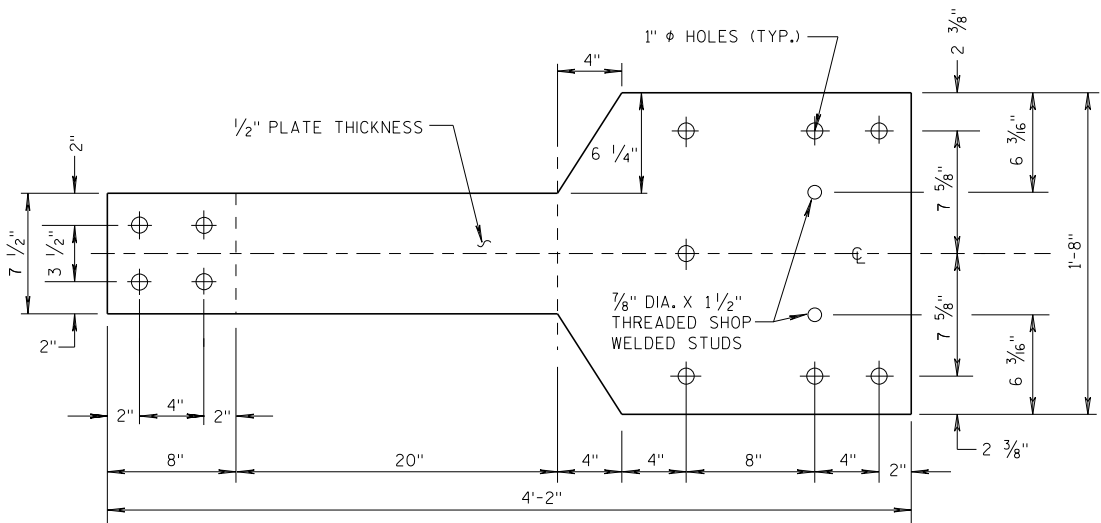
FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

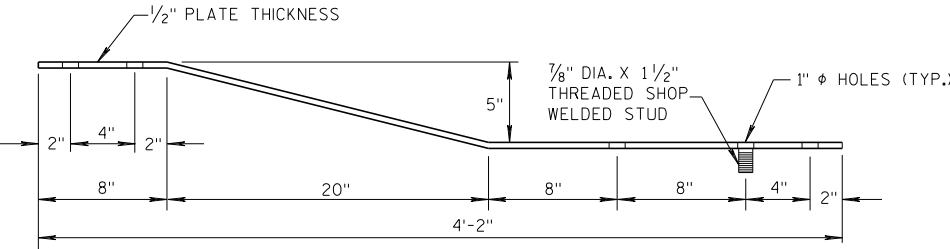
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
APPROVED 07/2018	/S/ Rodney Taylor	50
DATE	ROADWAY STANDARDS DEVELOPMENT	UNIT SUPERVISOR
FHWA		

GENERAL NOTES

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

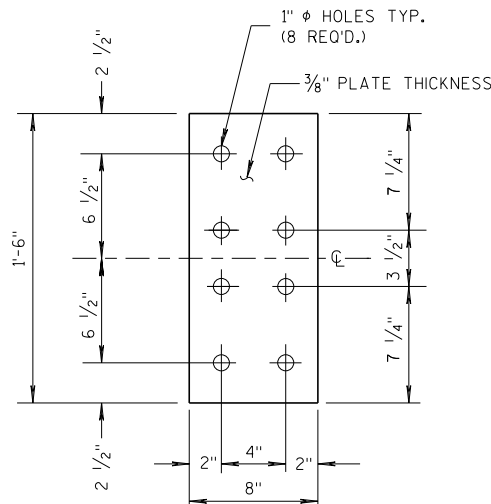


FRONT VIEW



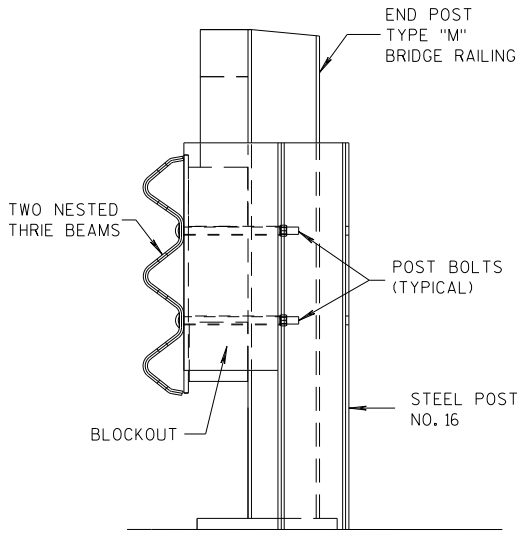
PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

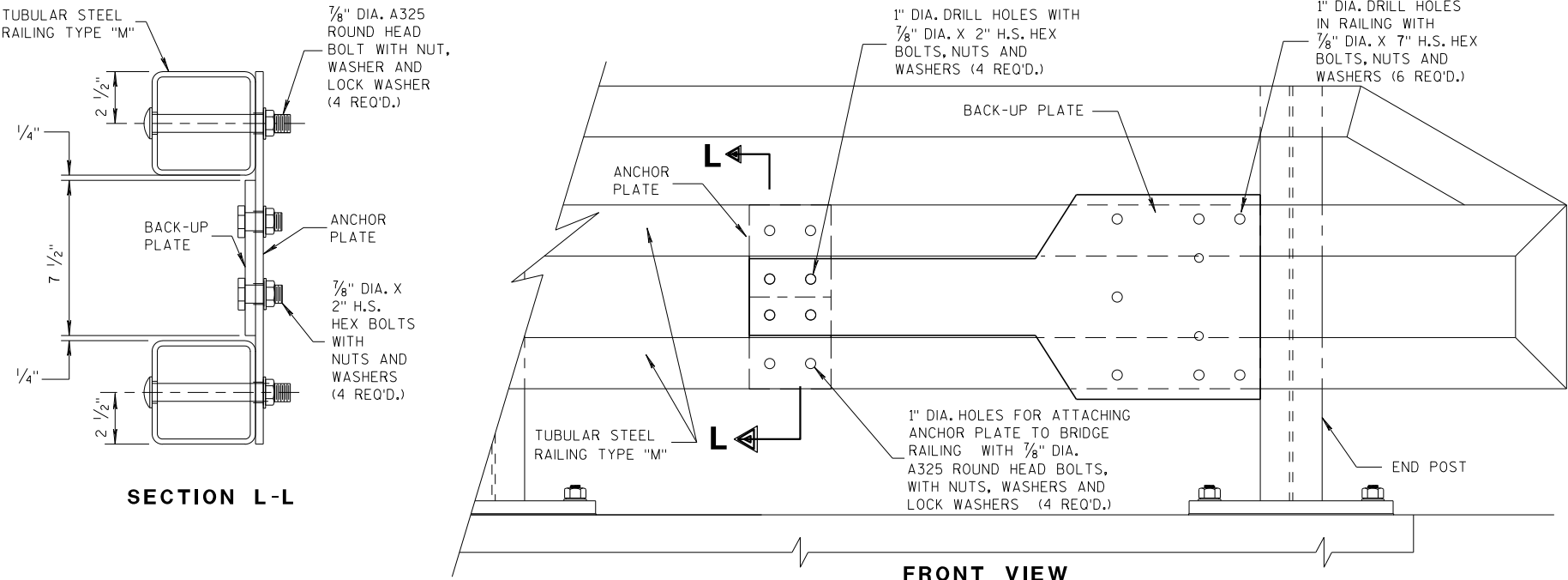


FRONT VIEW

ANCHOR
PLATE DETAIL,
TYPE "M"



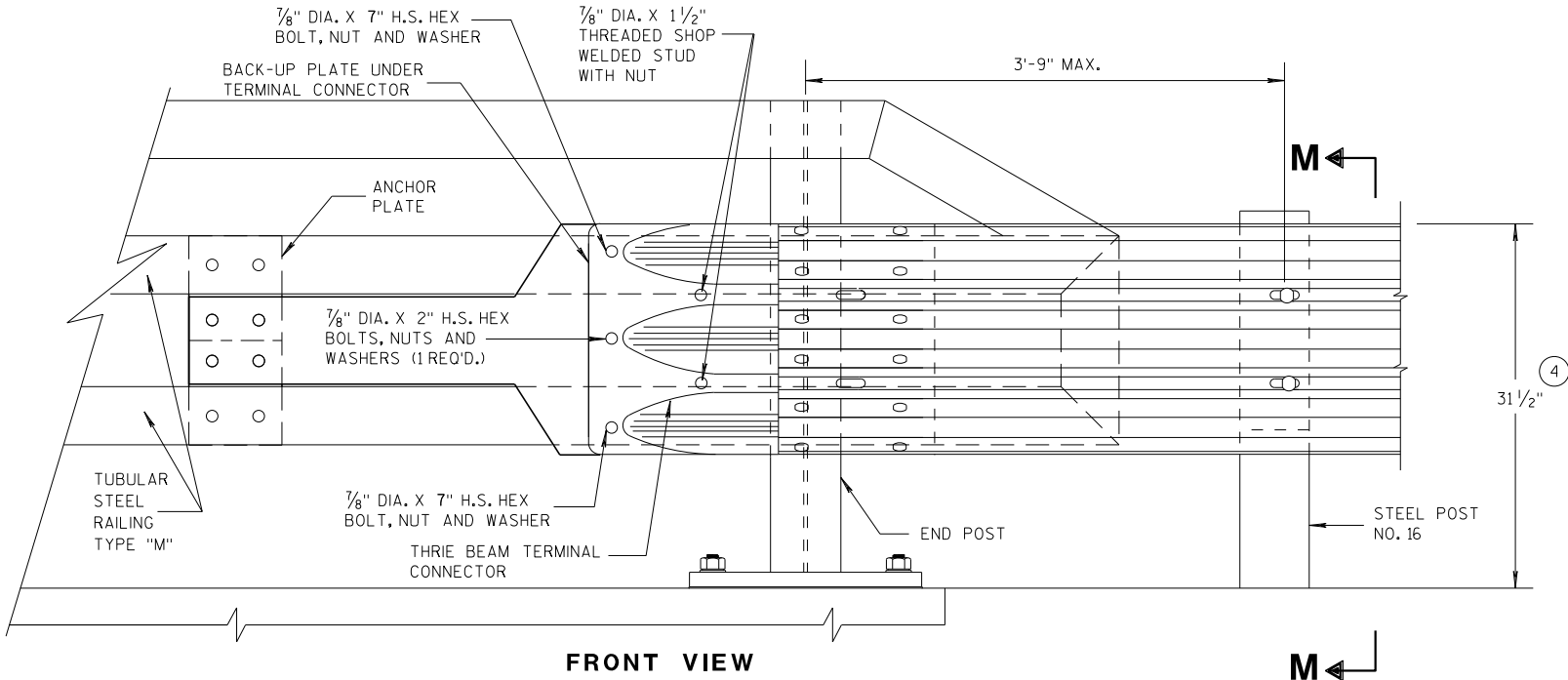
SECTION M-M



SECTION L-L

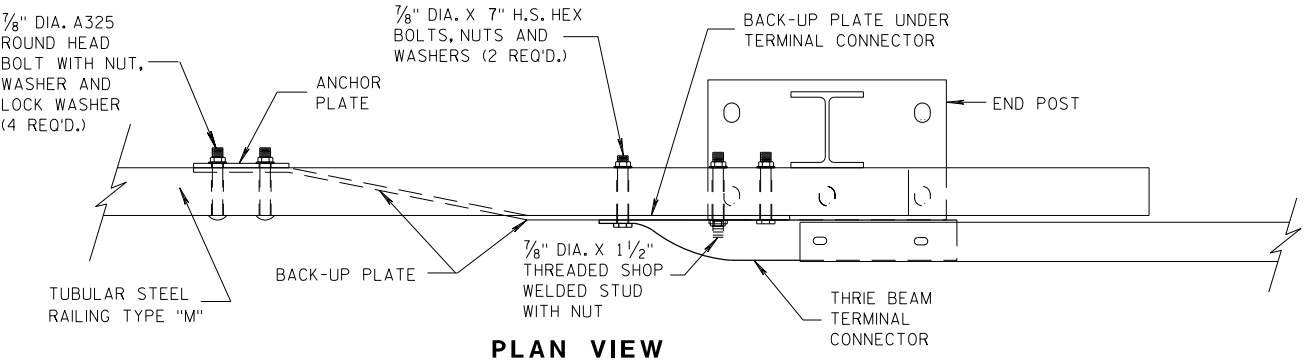
FRONT VIEW

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



FRONT VIEW

M



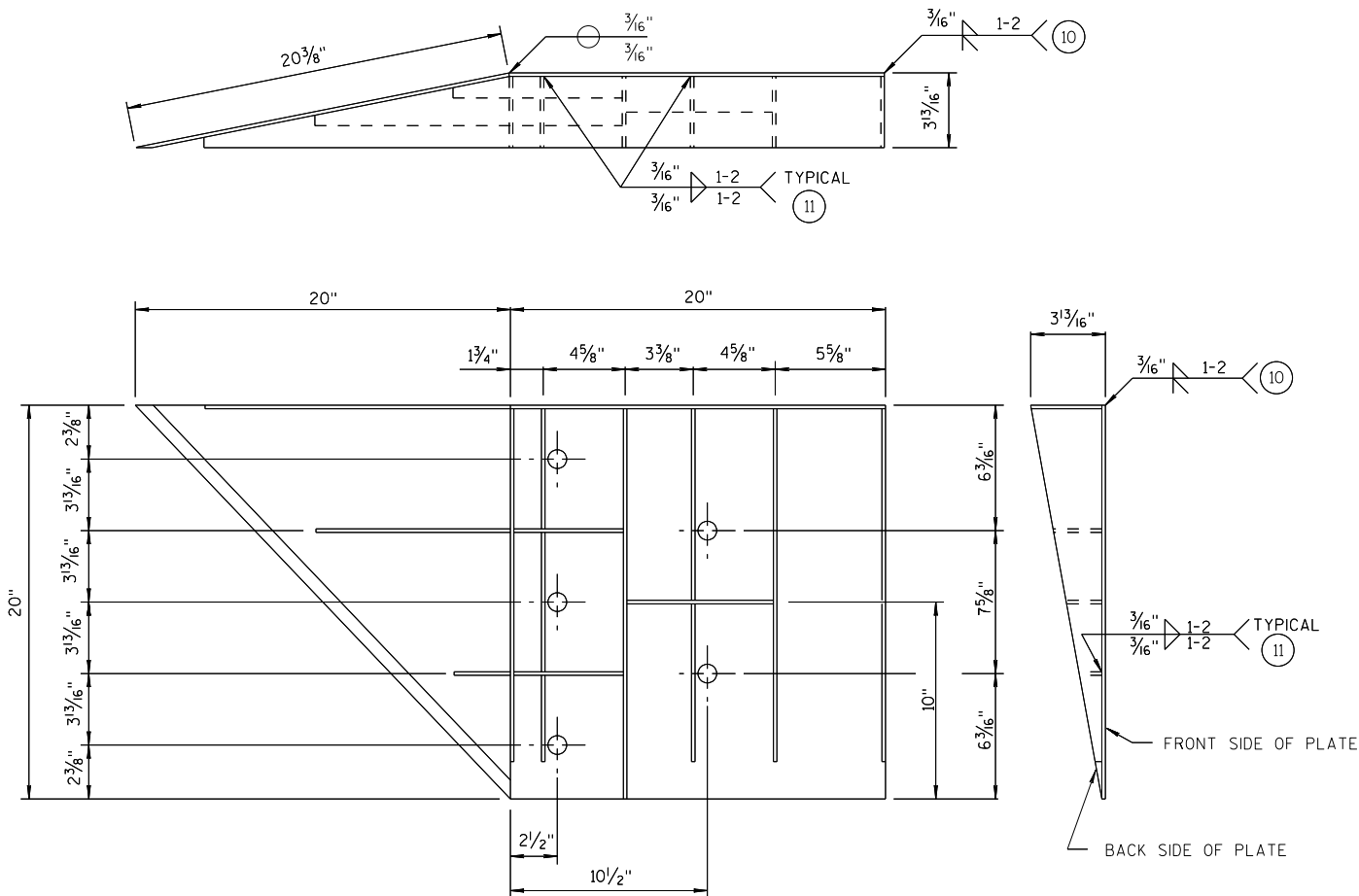
PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
07/2018 /S/ Rodney Taylor
DATE ROADWAY STANDARDS UNIT SUPERVISOR
FHWA 51 ENT

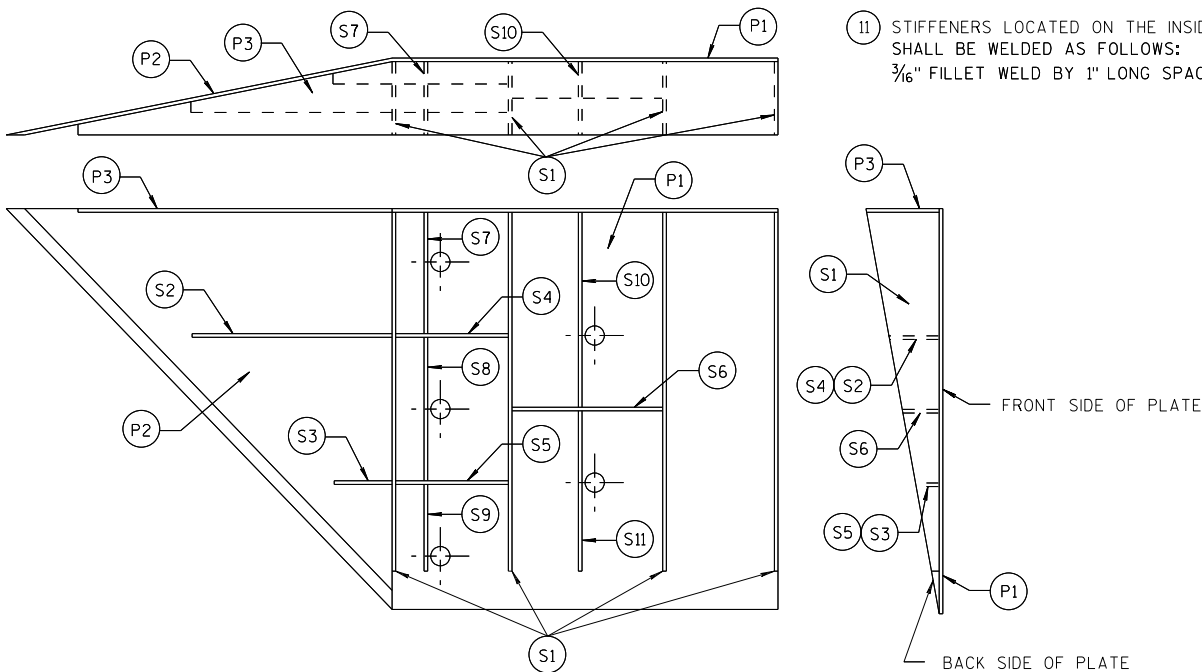


WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

SINGLE SLOPE CONNECTION PLATE

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)				
PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 3/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 5/16"	3/16"
S1	4		18 7/16" x 3 5/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 1/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 3/8" x 1/2"	1/4"
S4	1		6 1/8" x 2 7/16"	1/4"
S5	1		6 1/8" x 1 1/16"	1/4"
S6	1		7 3/4" x 1 3/4"	1/4"
S7	1		2 3/16" x 6" x 3 5/8" x 5 7/8"	1/4"
S8	1		1 5/32" x 7 1/2" x 2 1/2" x 7 3/8"	1/4"
S9	1		6 1/16" x 6 3/16" x 1 3/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 5/8" x 9 11/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 3/16"	1/4"

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



GENERAL NOTES

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

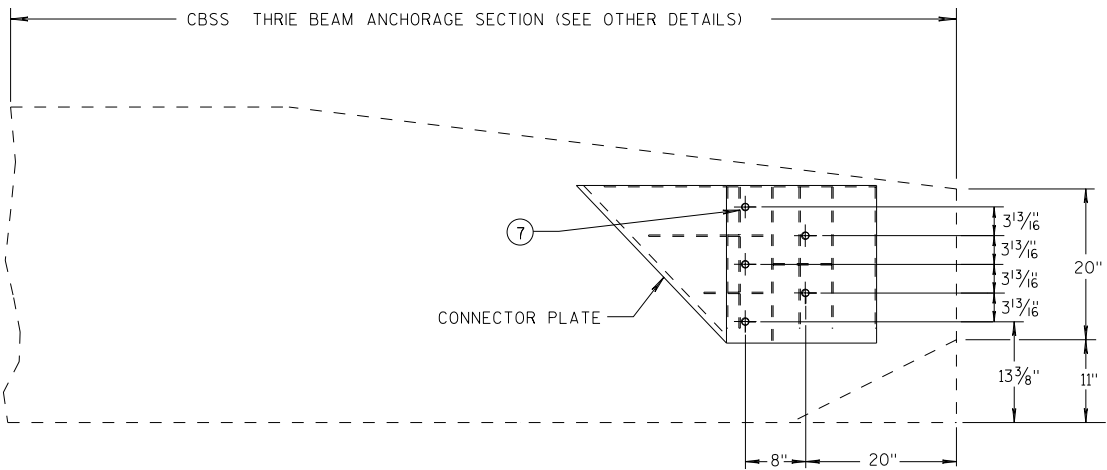
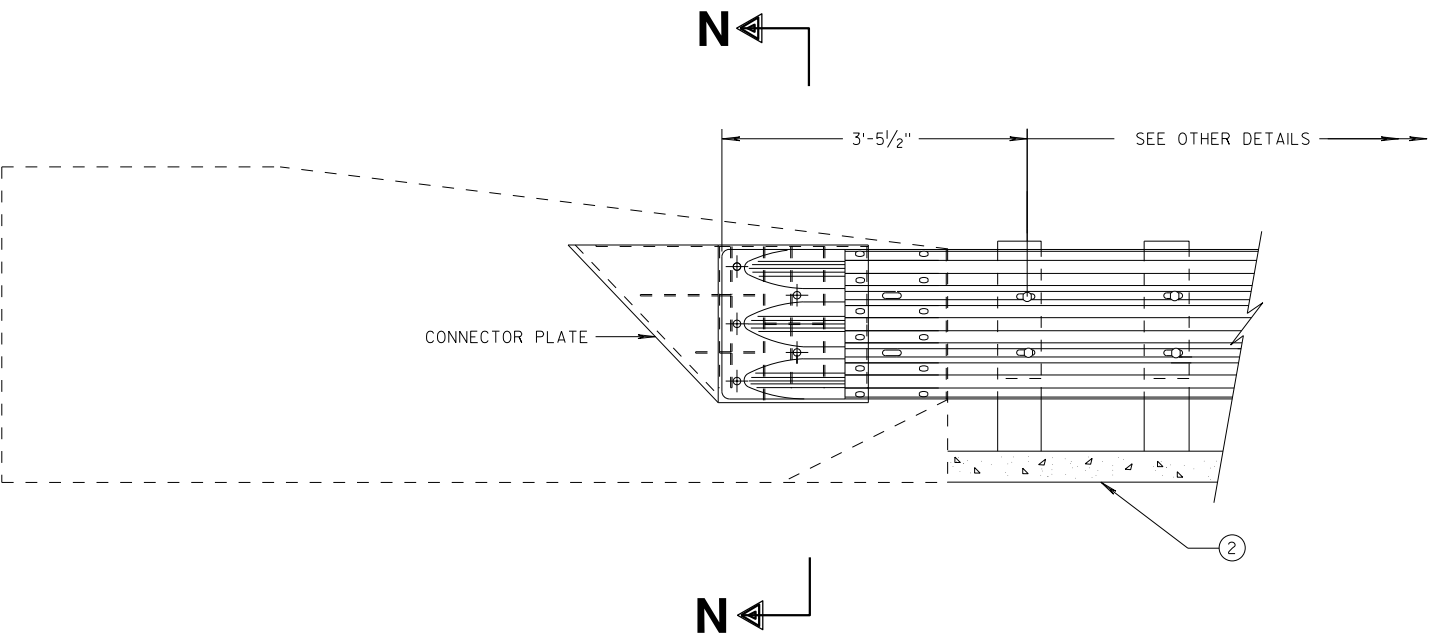
- 10 STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS FOLLOWS:
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 3/16" FILLET WELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.
- 11 STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
3/16" FILLET WELD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

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 /S/ Rodney Taylor
DATE ROADWAY STANDARDS UNIT SUPERVISOR
FHWA 52 ENT

THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



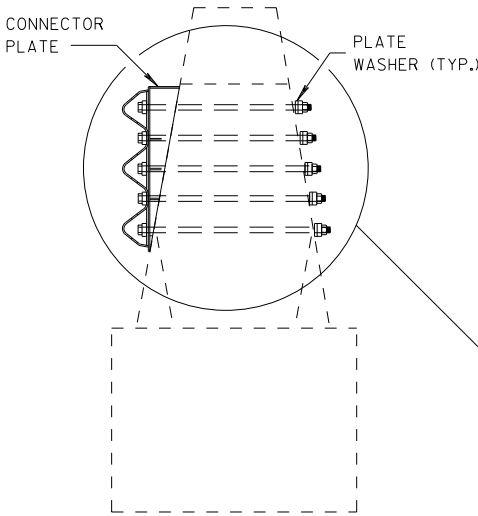
SINGLE SLOPE CONNECTION PLATE PLACEMENT

GENERAL NOTES

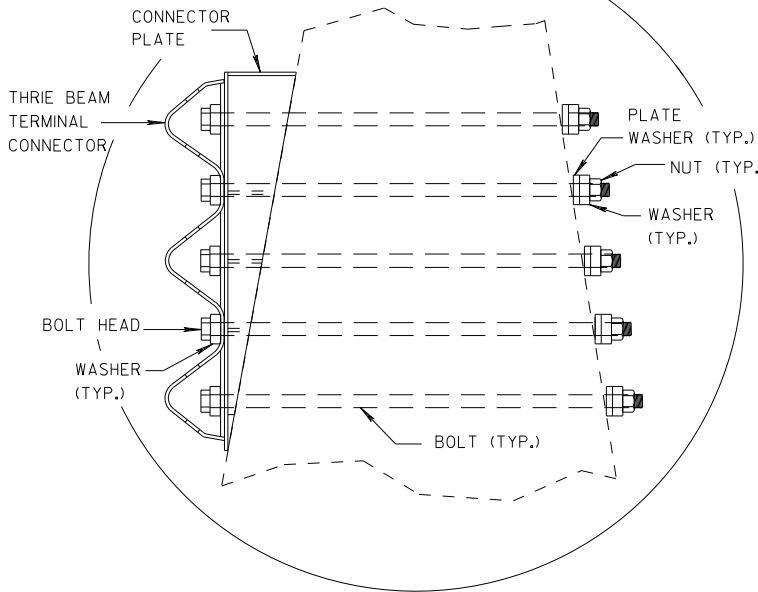
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

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

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



SECTION N-N



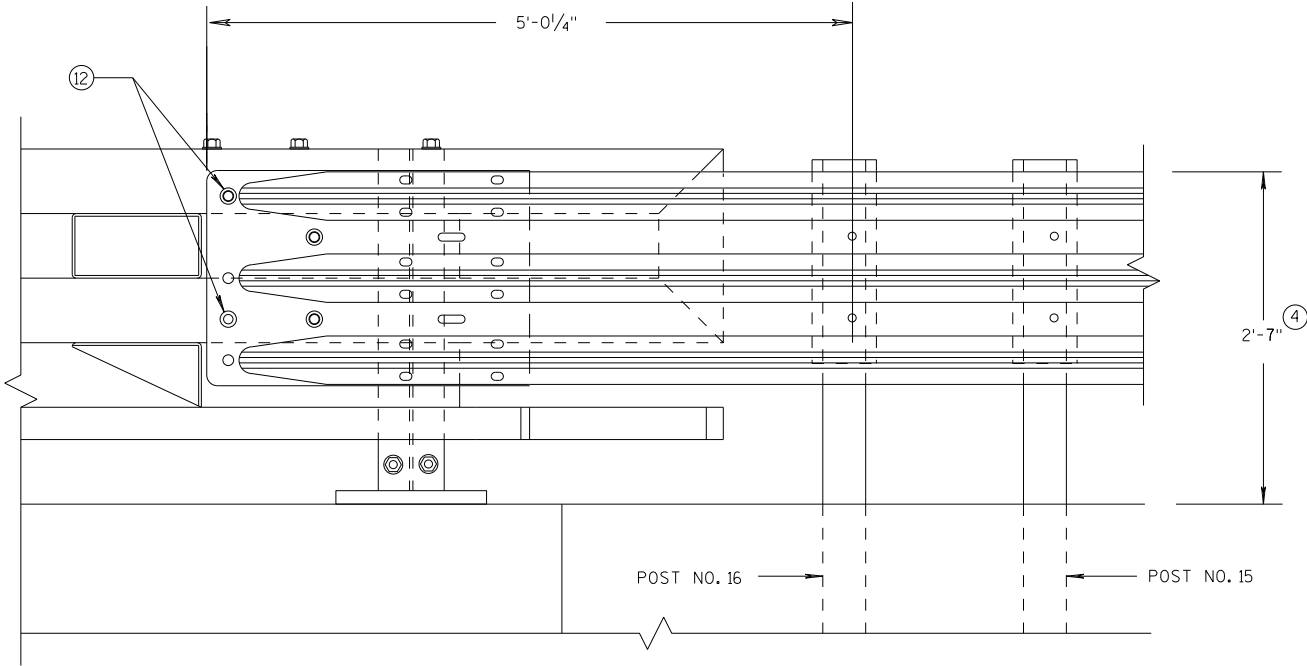
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

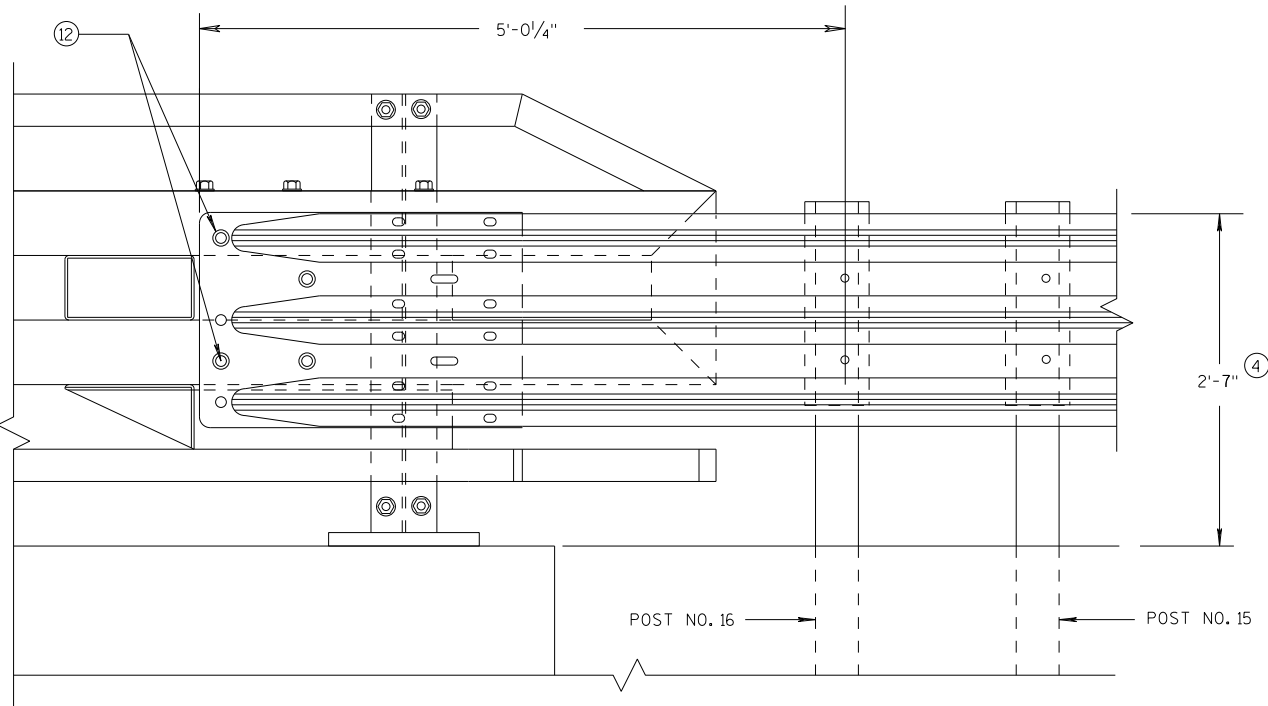
APPROVED
DATE 7/2018
ROADWAY STANDARDS DIVISION
UNIT SUPERVISOR /S/ Rodney Taylor
53
FHWA

GENERAL NOTES

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



ELEVATION OF DETAIL AT NY3 END POST
THRIE BEAM RAIL ATTACHMENT

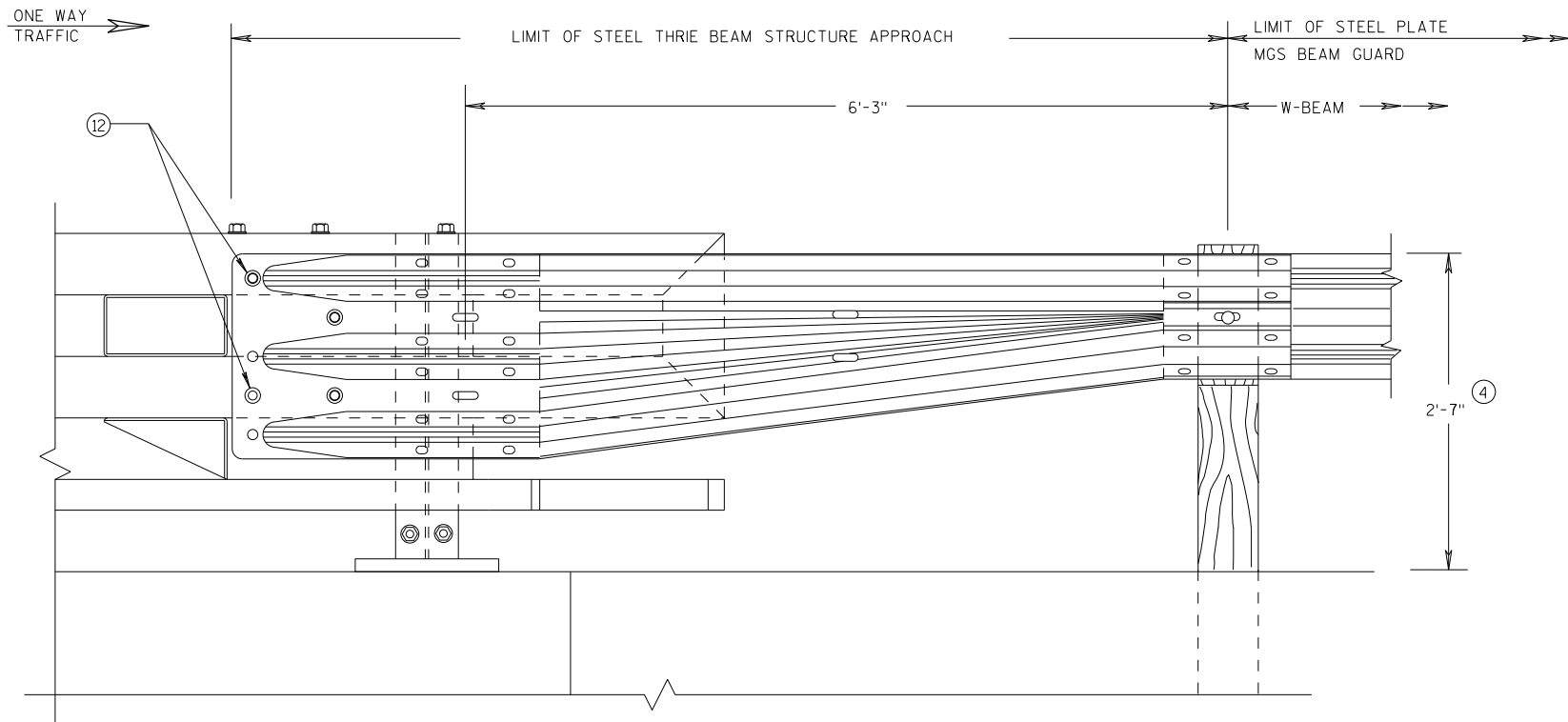


ELEVATION OF DETAIL AT NY4 END POST
THRIE BEAM RAIL ATTACHMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED	/S/ Rodney Taylor
DATE	7/2018
FHWA	ROADWAY STANDARDS C 54 UNIT SUPERVISOR NT

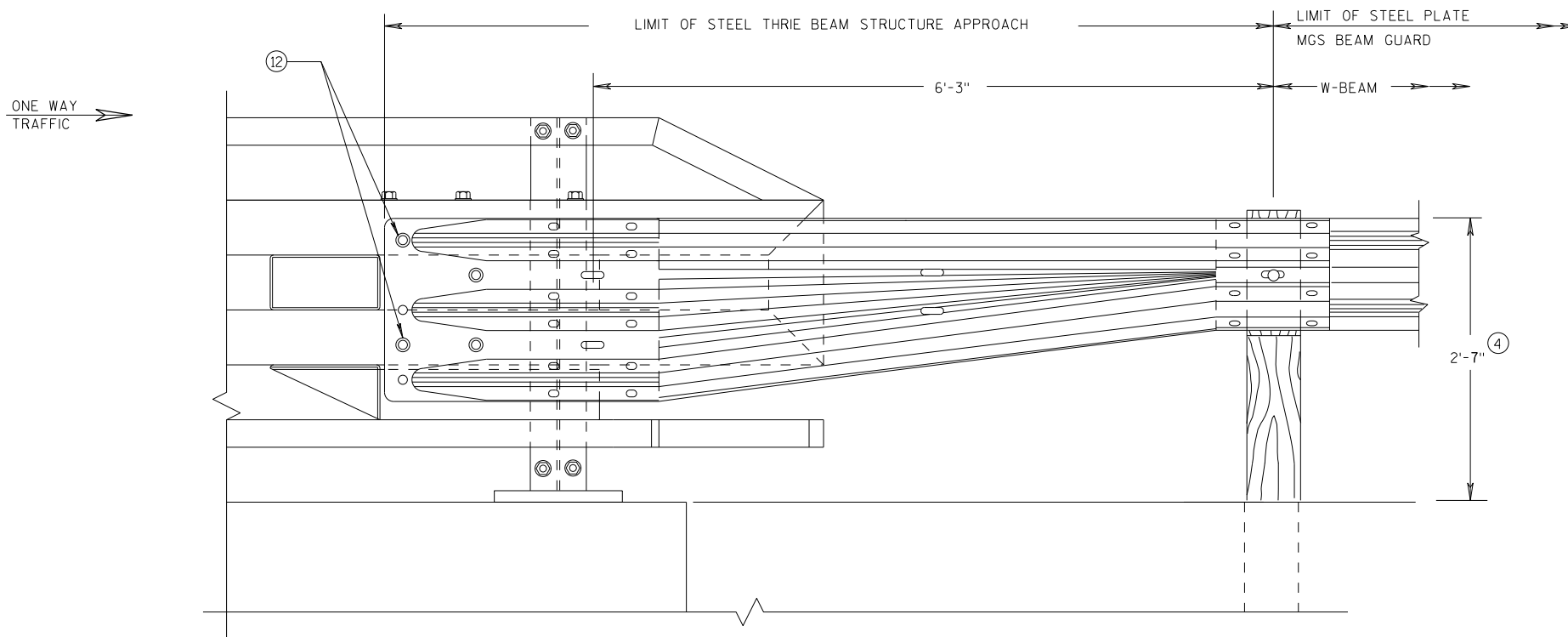


FRONT VIEW

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



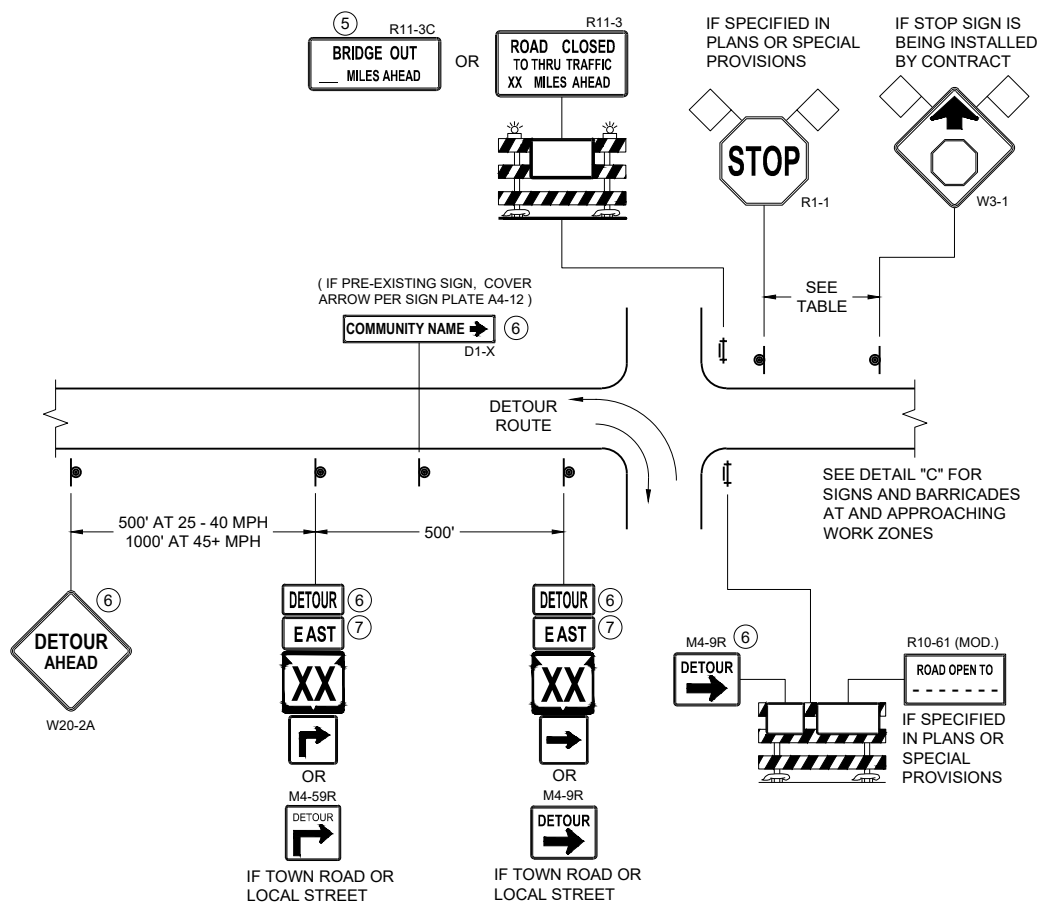
FRONT VIEW

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

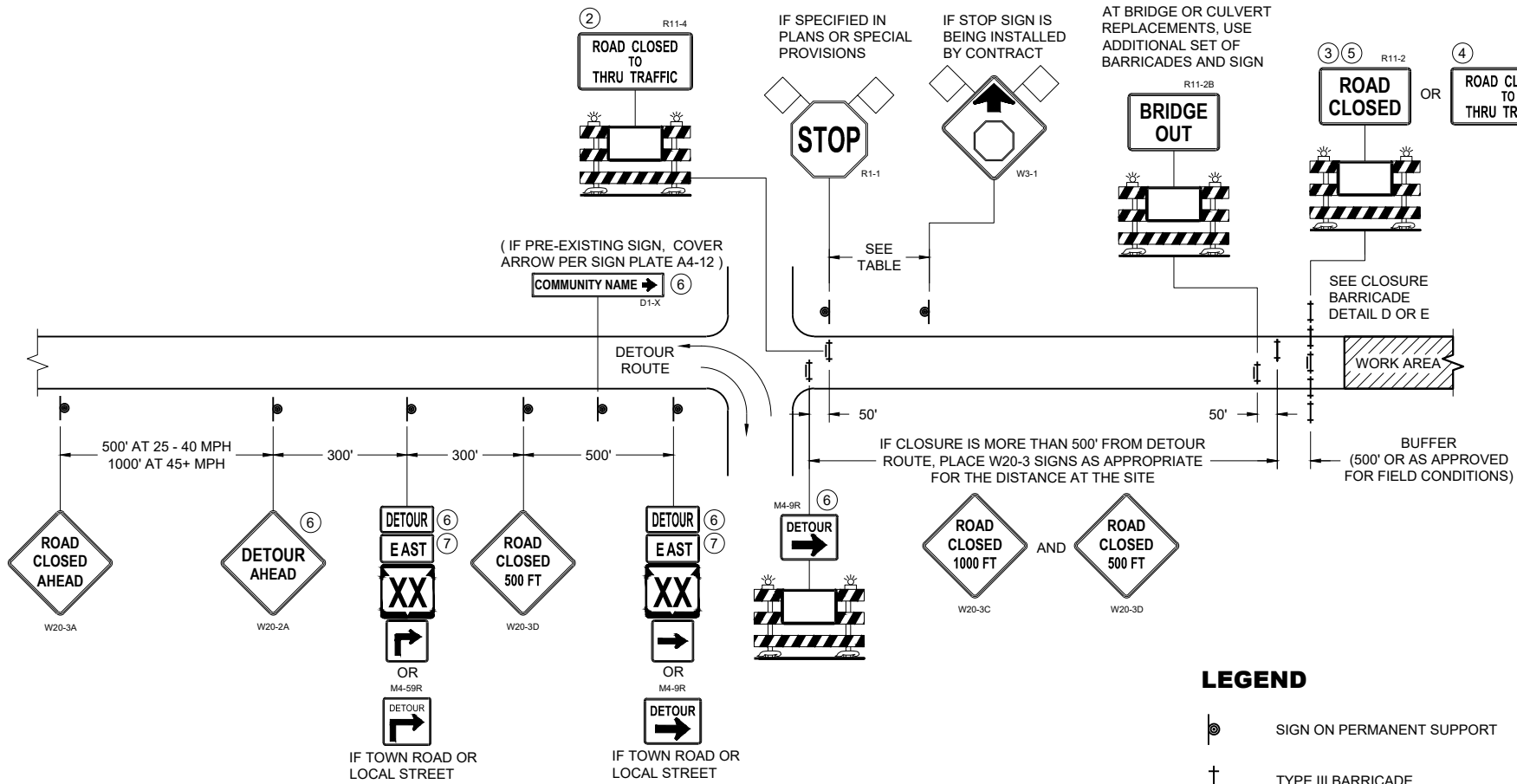
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

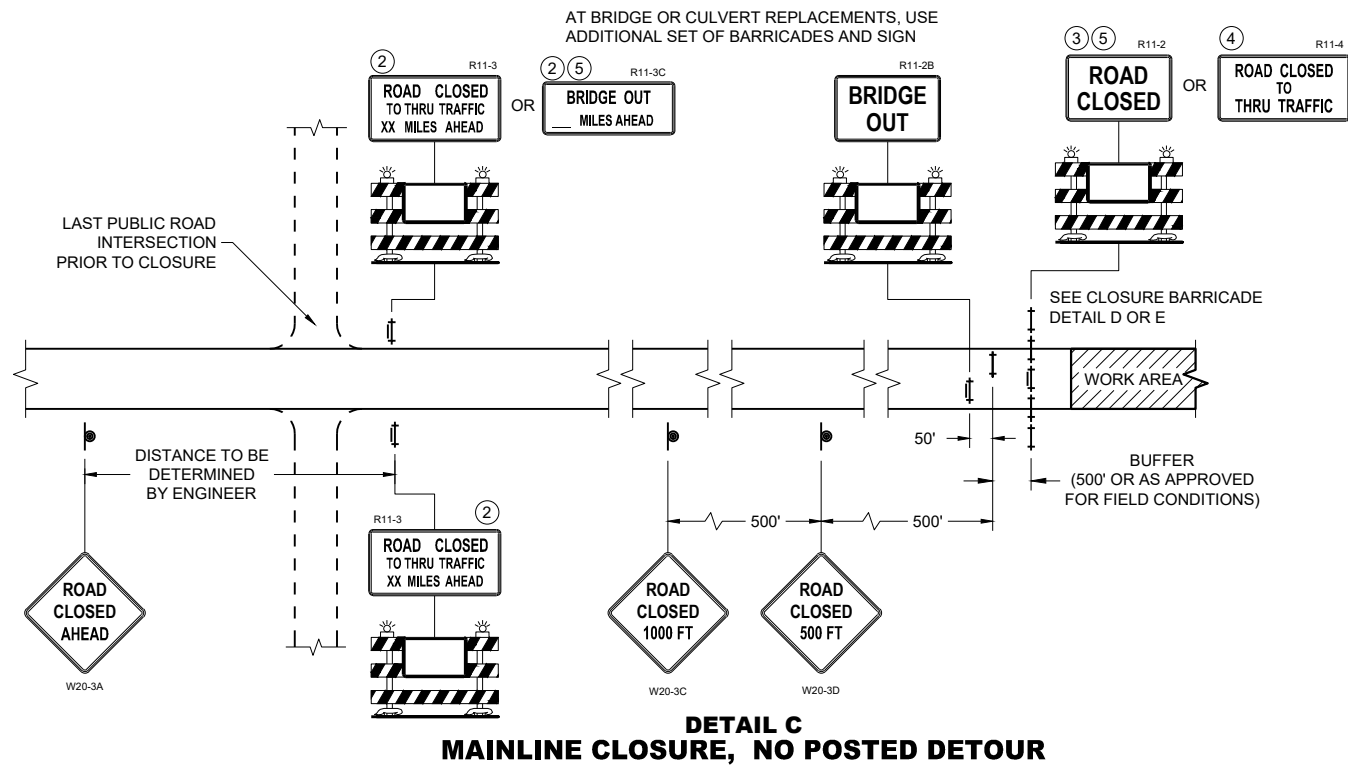
APPROVED 7/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS C 55 UNIT SUPERVISOR	NT
FHWA		



DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR
WORK ZONE GREATER THAN OR EQUAL TO 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
- TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA
- FLAGS, 16" X 16" MIN. (ORANGE)

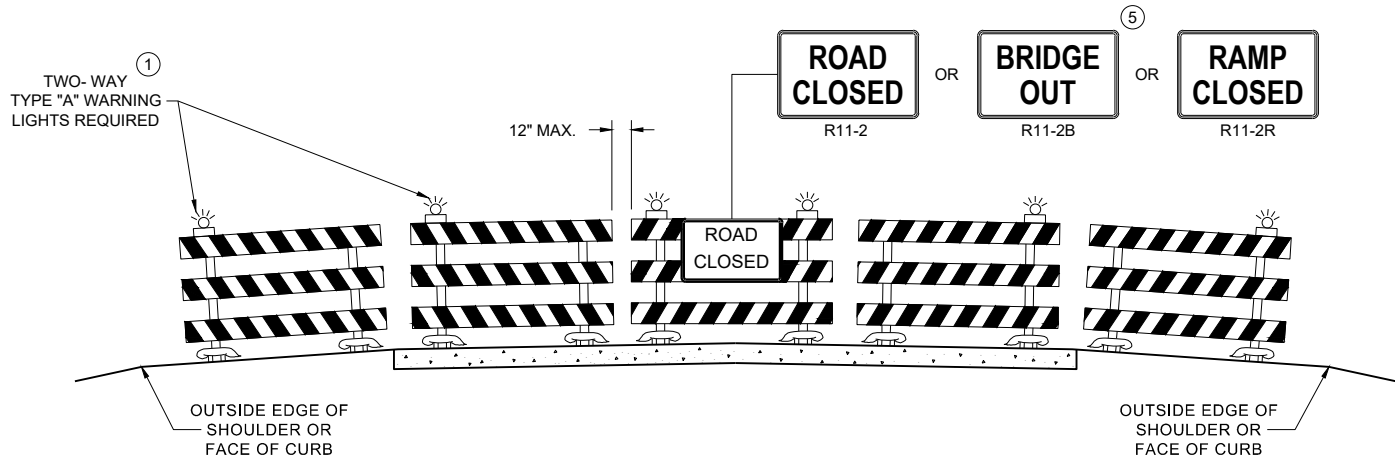
- M4 - 8
- M3 - X
- M1 - 4
- M1 - 6
- M1 - 5A
- M05 - 1
- M06 - 1

**BARRICADES AND SIGNS
FOR MAINLINE CLOSURES**

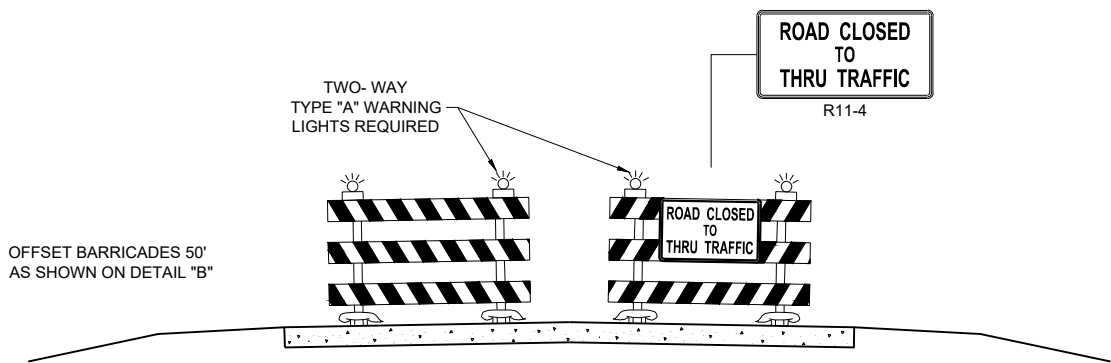
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2025 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA



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.

PARTIAL NUMBERS ON SIGNS SHALL BE DISPLAYED AS A WHOLE NUMBER(AS NEEDED) FOLLOWED BY A FRACTION. SIGNS SHALL NOT DISPLAY NUMBERS IN DECIMAL FORM.

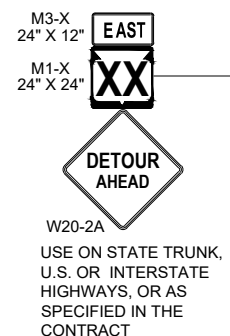
"WO" AND "MO" SIGNS ARE THE SAME AS "W" AND "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
R11 - 2 SHALL BE 48" X 30"
R11 - 3 SHALL, 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" (36" X 18" 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)
MO5 - 1 AND MO6 - 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"

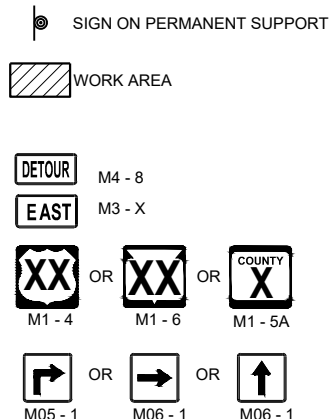
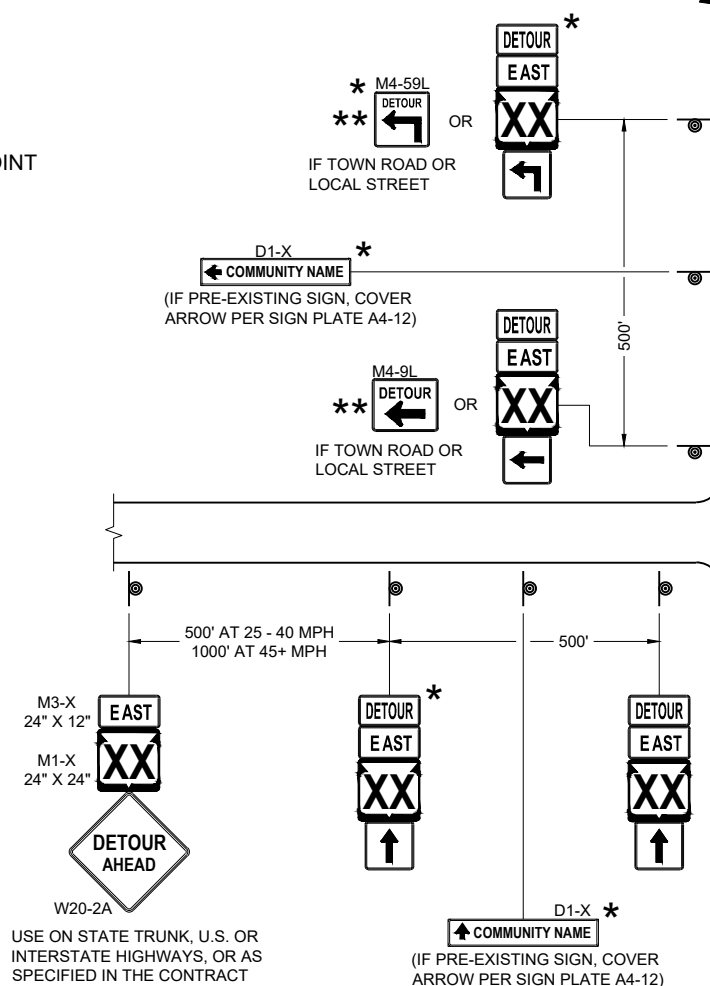
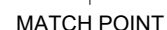
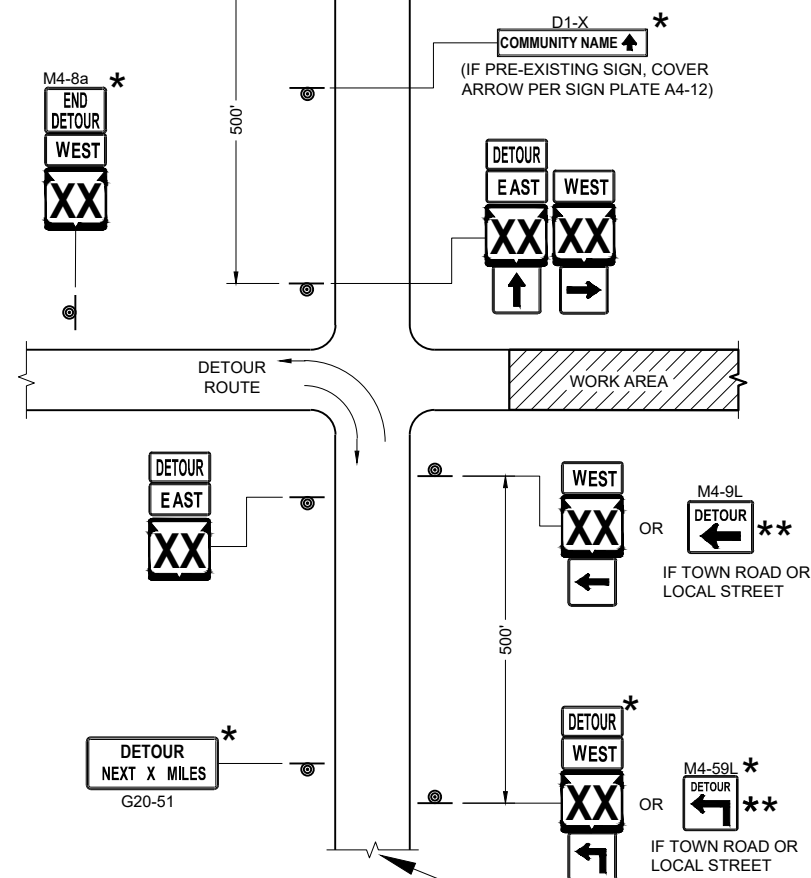
SIGNS PLACED ON TYPE III BARRICADES THAT ARE SIZES OTHER THAN 48"X30" SHALL HAVE A CORRUGATED POLYPROPYLENE OR POLYETHYLENE PLASTIC SIGN BASE.

- 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 AN 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 ROAD 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 VARIOUS CLOSURES	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED November 2025 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	



THIS DRAWING PROVIDES GENERAL GUIDANCE
ON TYPICAL DETOUR SIGN LAYOUT AND SPACING.
SEE PROJECT DETOUR SIGNING SHEETS FOR
SPECIFIC DETAILS FOR EACH PROJECT.



GENERAL NOTES

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

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. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. MODIFY EXISTING SIGNS WHERE POSSIBLE.

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

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

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

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

SIGN SIZES SHALL BE AS FOLLOWS:

M3-X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)

M4-8 SHALL BE 24" X 12" (36" X 18" 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)

M4-9 AND M4-59 SHALL BE 30" X 24"

M4-8a SHALL BE 24" X 18"

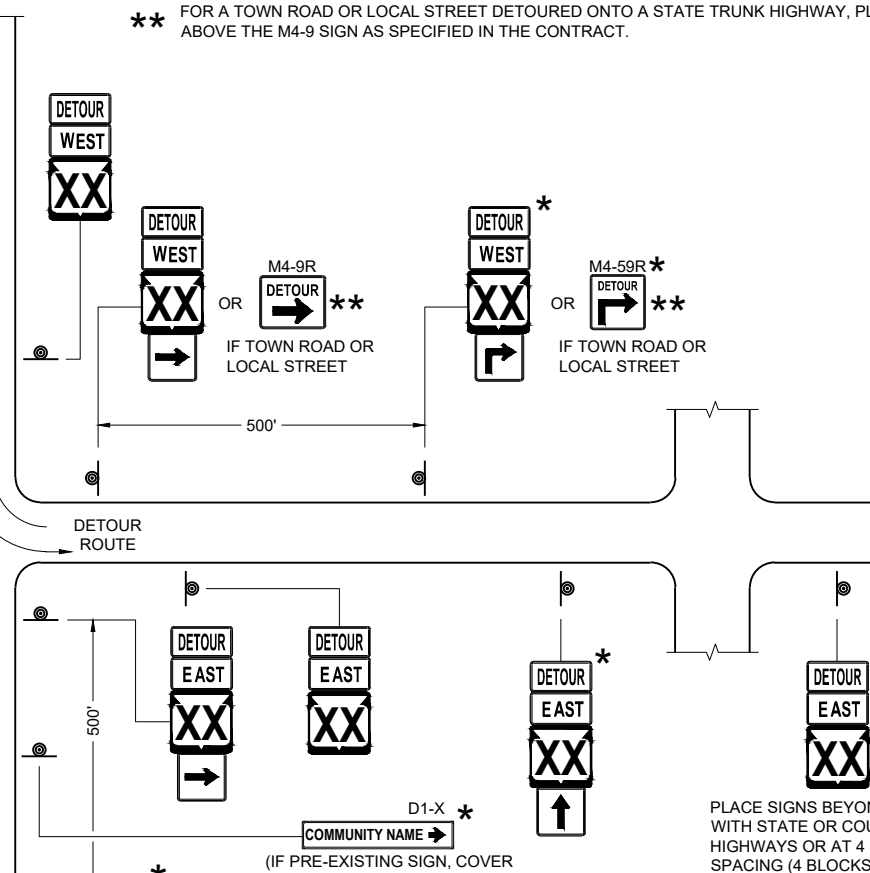
G20-51 SHALL BE 60" X 24"

W20-2A SHALL BE 48" X 48"

D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

* OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.

**** FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.**



PLACE SIGNS BEYOND INTERSECTIONS
WITH STATE OR COUNTY TRUNK
HIGHWAYS OR AT 4 MILE MAXIMUM
SPACING (4 BLOCKS IF URBAN AREA)

DETOUR SIGNING FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2025 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA

GENERAL NOTES

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

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

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

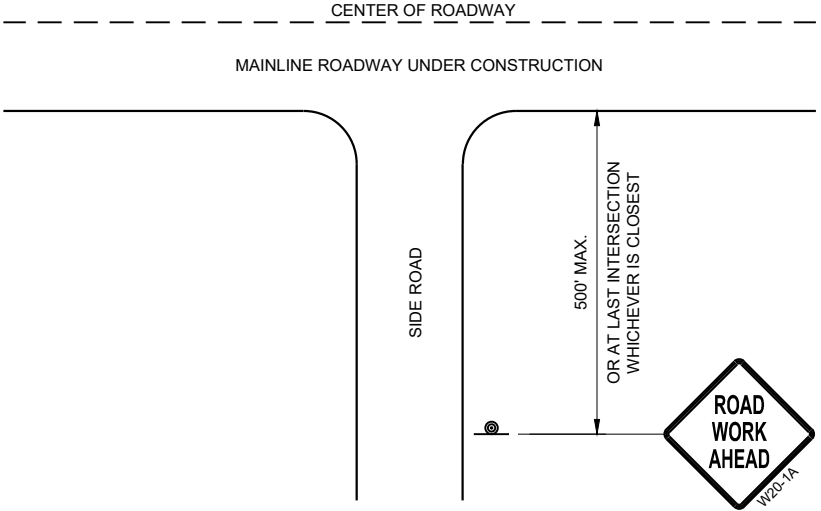
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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

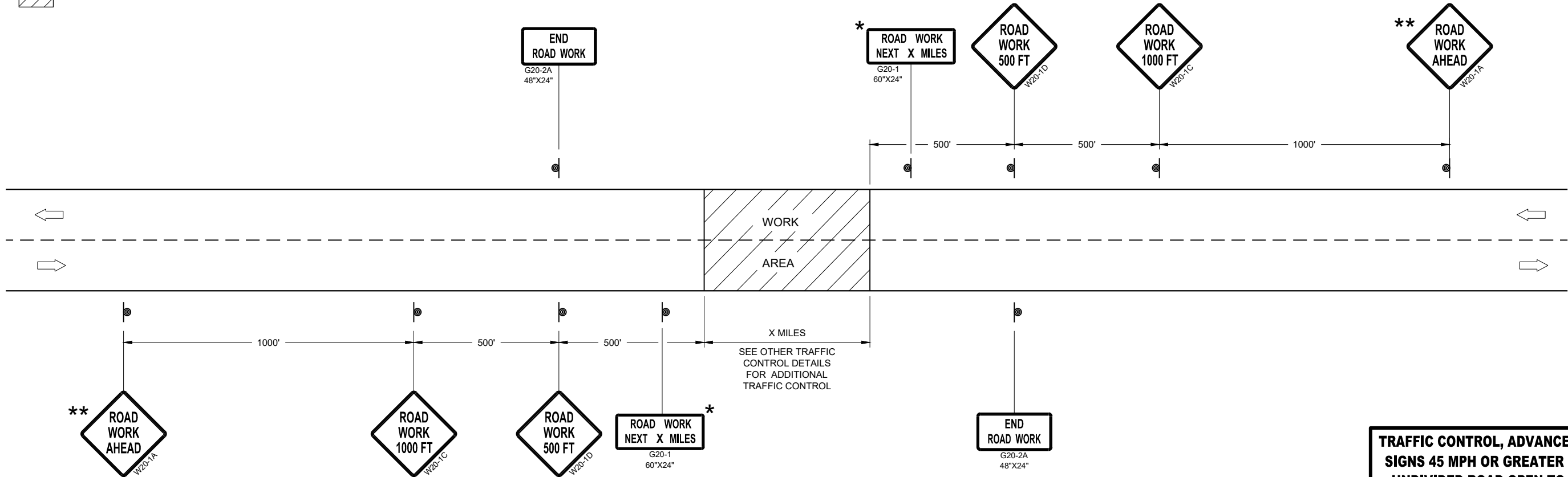
- * OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- ** PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.

LEGEND

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



TYPICAL SIDE ROAD APPROACH
WARNING SIGN DETAIL

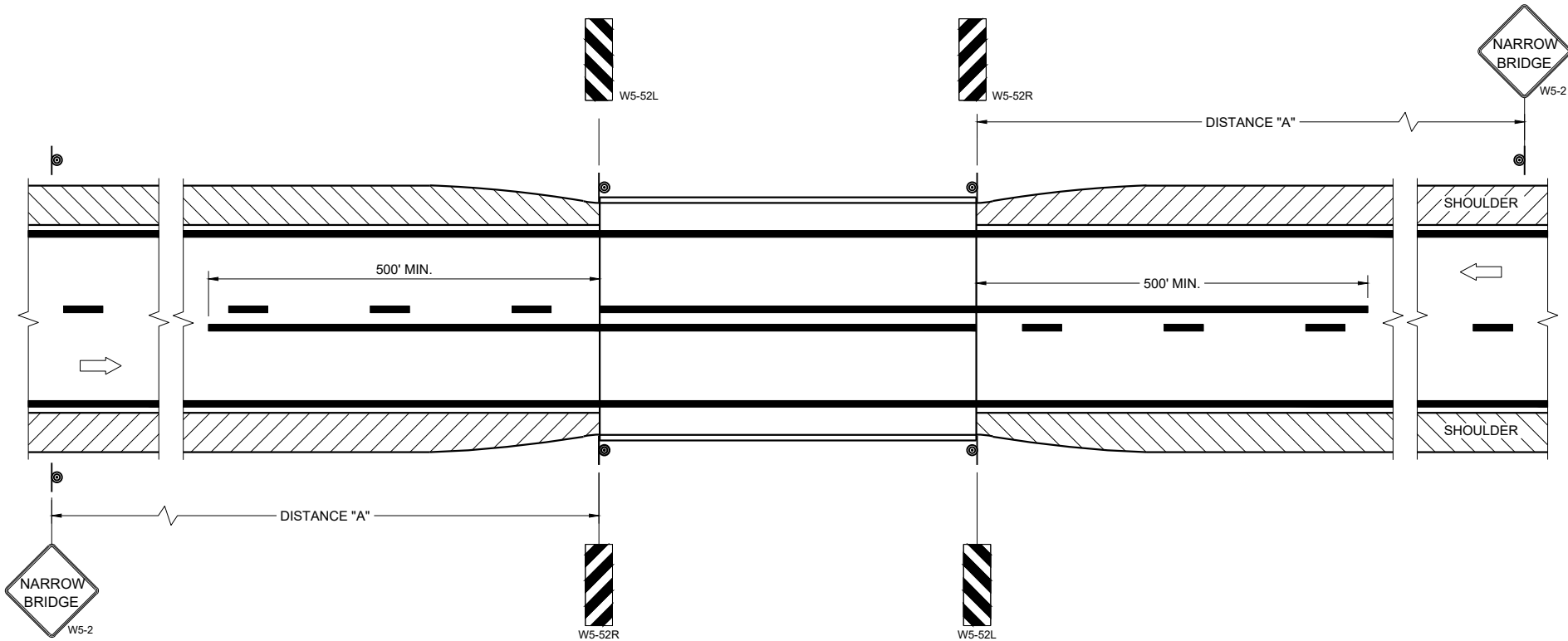


TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

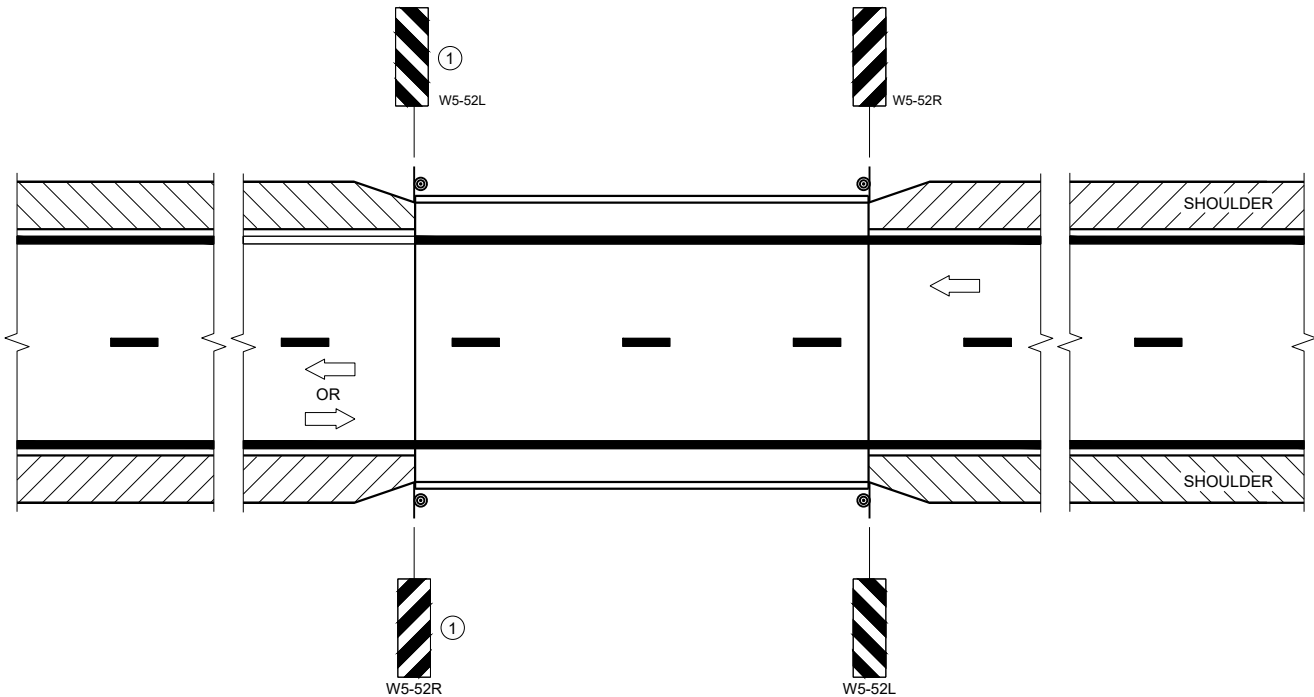
TRAFFIC CONTROL, ADVANCE WARNING
SIGNS 45 MPH OR GREATER TWO-WAY
UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
July 2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 59
FHWA



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



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

GENERAL NOTES

DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THE 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.

ON BRIDGE ONLY PROJECTS, PLACE 300 FEET OF EDGELINE.

OMIT EDGELINES ON ROADWAYS WITHOUT EXISTING EDGELINES.

① OMIT ON ONE-WAY TRAVELED WAYS.

LEGEND

⊙ SIGN ON PERMANENT SUPPORT

➡ DIRECTION OF TRAFFIC

DISTANCE TABLE

POSTED OR 85TH PERCENTILE SPEED	DISTANCE "A"
25	150'
30	200'
35	250'
40	300'
45	400'
50	550'
55	700'

**SIGNING AND MARKING
FOR TWO LANE BRIDGES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2023
DATE

/S/ Jeannie Silver
Statewide Pavement Marking Engineer

FHWA

SDD 15C08-24a



PERMANENT PAVEMENT MARKING

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

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

LEGEND

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

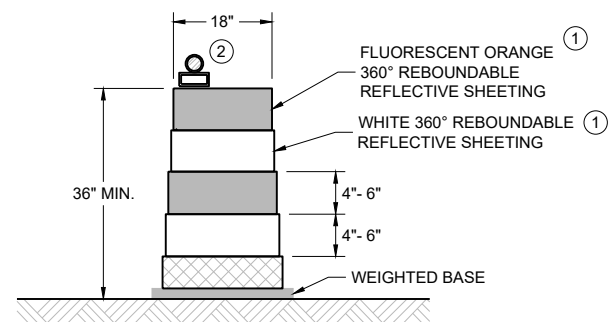
PERMANENT LONGITUDINAL PAVEMENT MARKINGS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

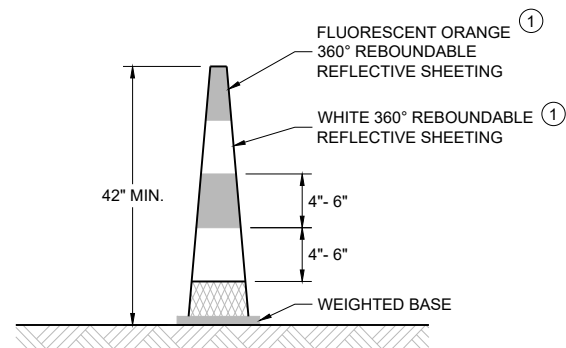
APPROVED
December 2024
DATE

/S/ Jeannie Silver
Statewide Pavement Marking Engineer

000 15000 01

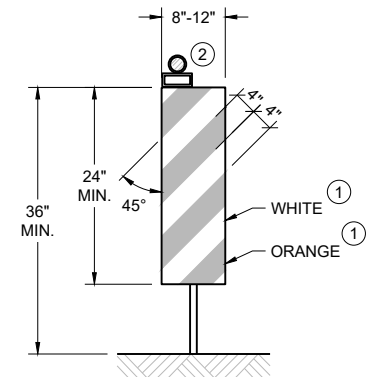
**DRUM**

BALLAST WIDTHS
RANGE FROM 24"-36"

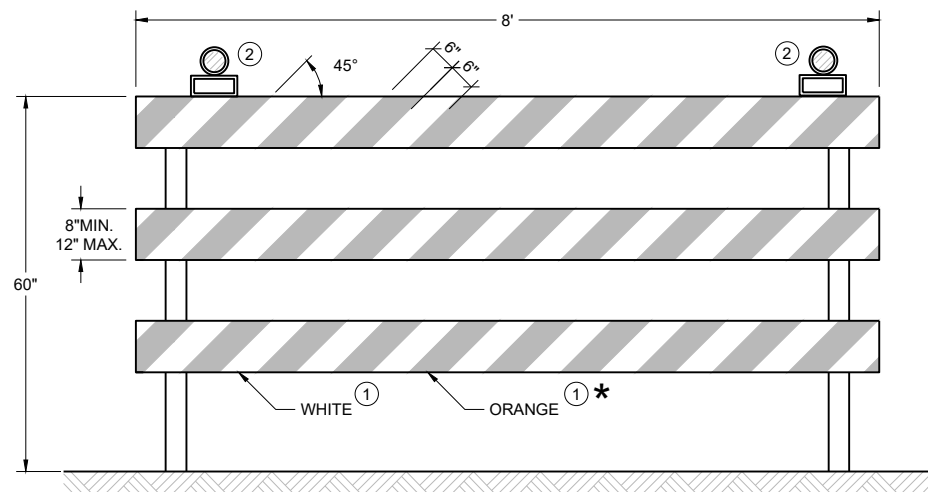
**42" CONE**

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

BALLAST WIDTHS
RANGE FROM 14"-20"

**VERTICAL PANEL**

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

**TYPE III BARRICADE**

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

GENERAL NOTES

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2026 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA

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

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

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

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

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

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

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

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

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

- ① SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.
- ② IF FLAGGERS ARE PHYSICALLY NEEDED TO FLAG, REPLACE W03-4 SIGNS WITH W20-7A SIGNS.

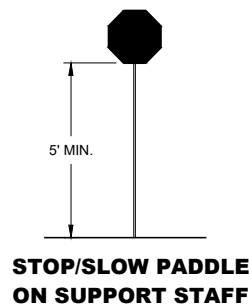
UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.

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

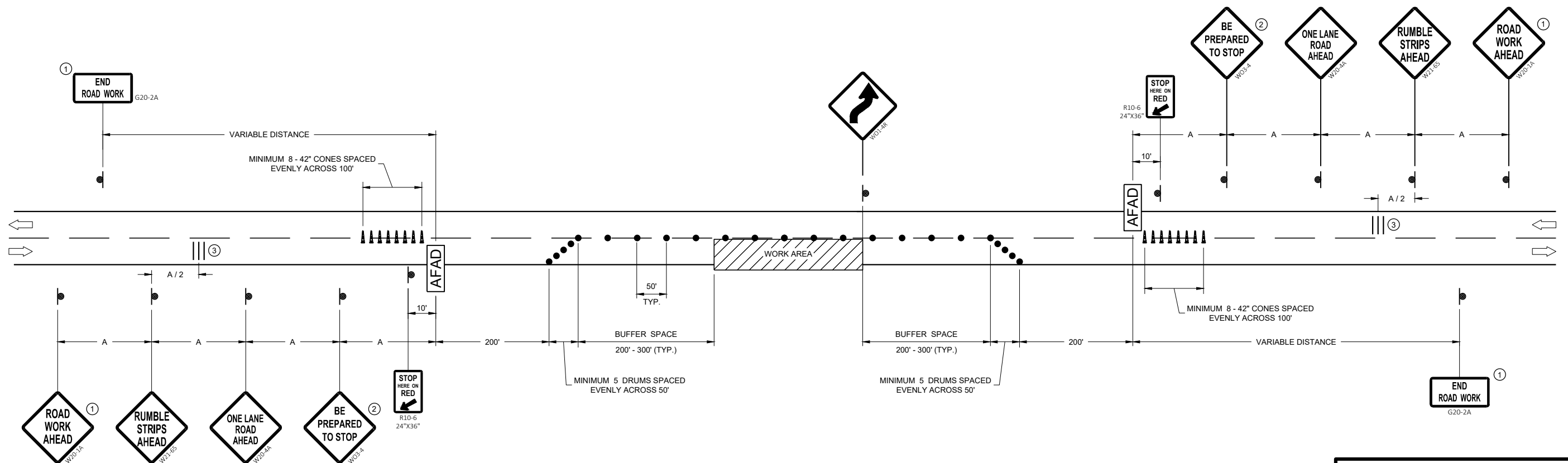
PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

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

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



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



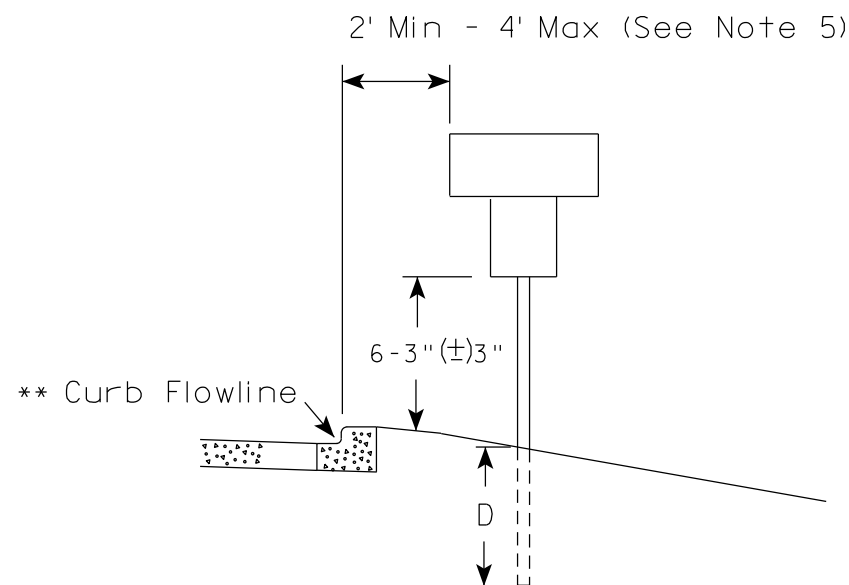
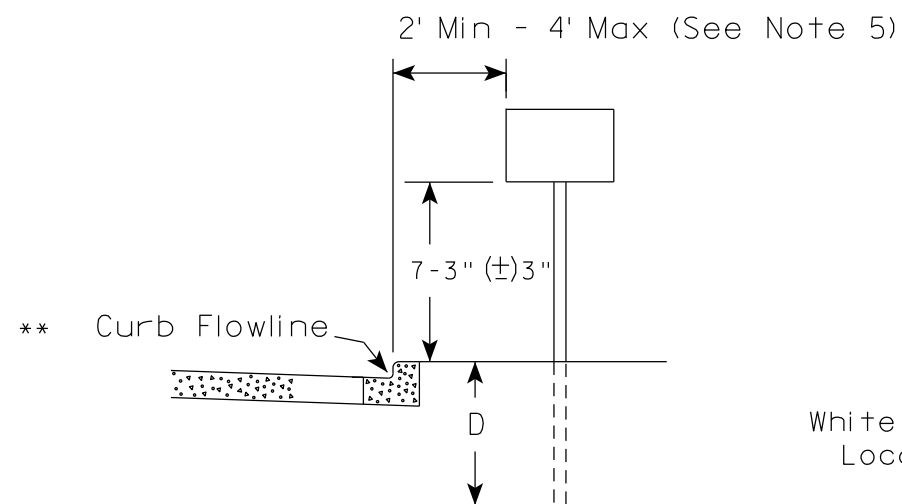
TRAFFIC CONTROL, LANE CLOSURE WITH AUTOMATED FLAGGER ASSISTANCE DEVICE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2022 /S/ Andrew Heidtke
 DATE WORK ZONE ENGINEER 63

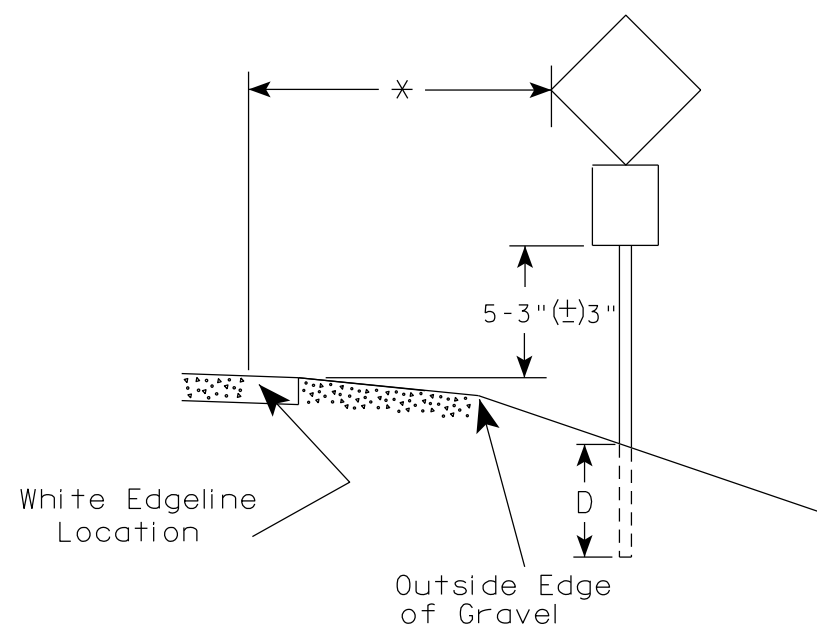
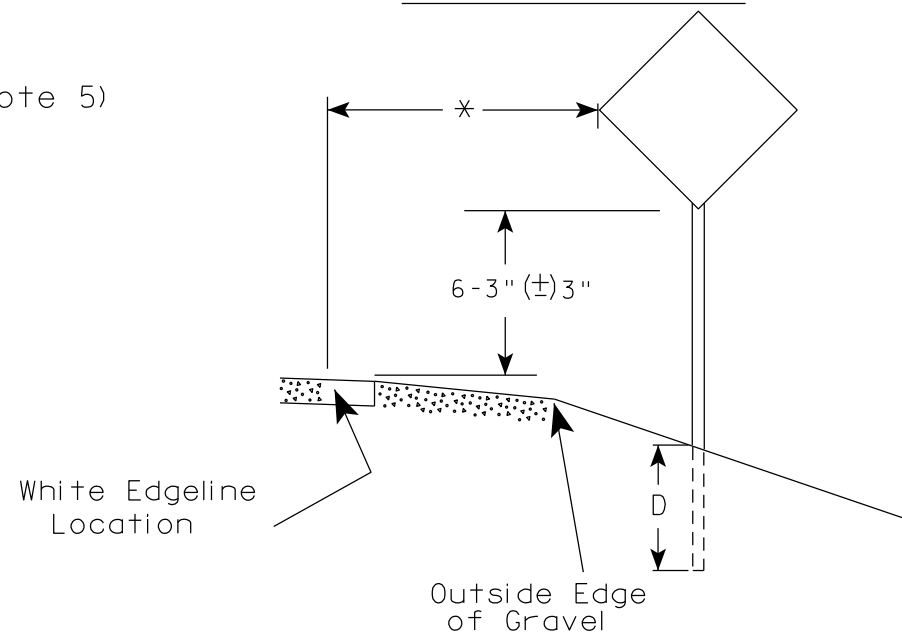
FHWA

URBAN AREA



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

RURAL AREA (See Note 2)



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

GENERAL NOTES

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

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Matthew R. Rauch
for State Traffic Engineer

DATE 12/6/23

PLATE NO. A4-3.23

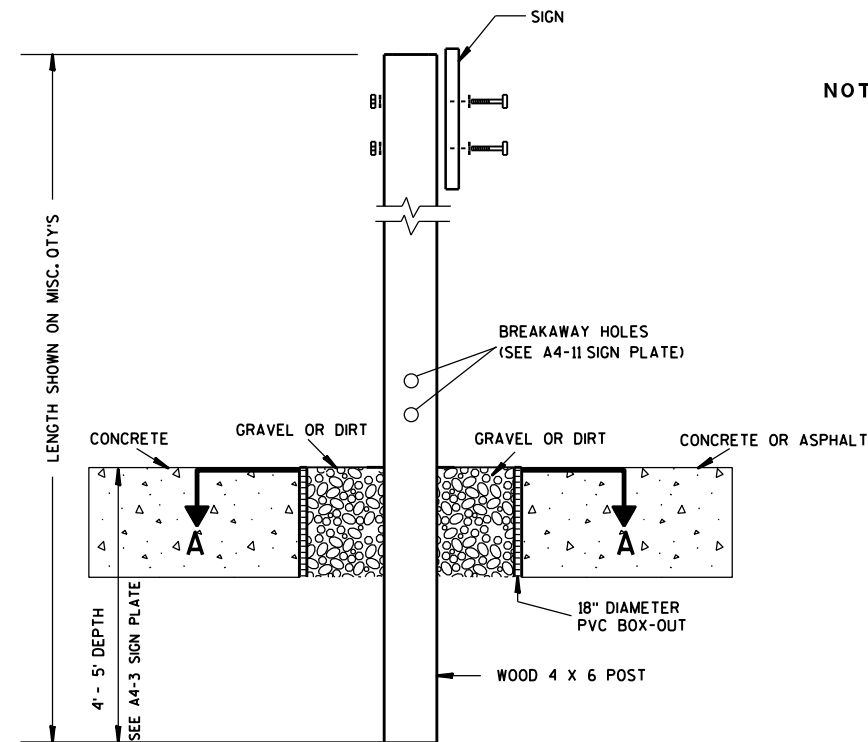
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 64

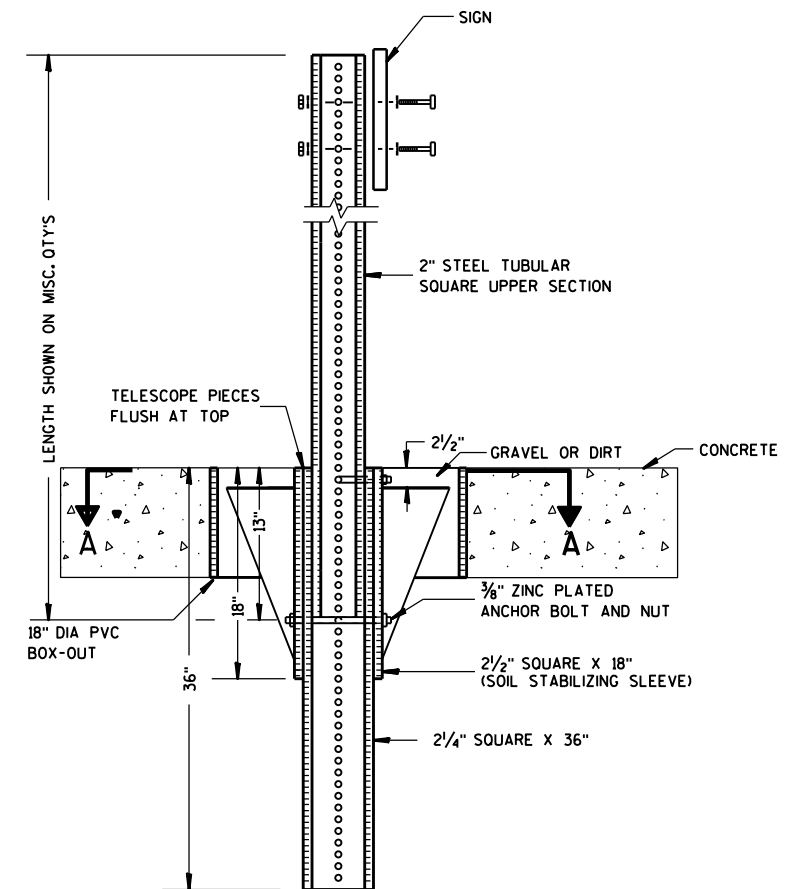
E



ELEVATION VIEW

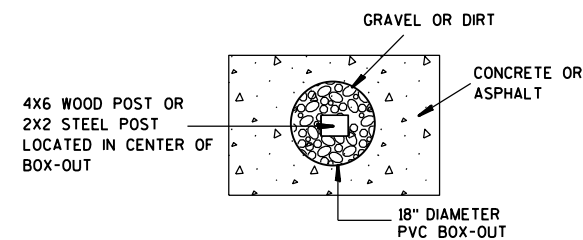
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST
BOX-OUTS
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/27/14 PLAT 65 A4-3B.1

PROJECT NO:

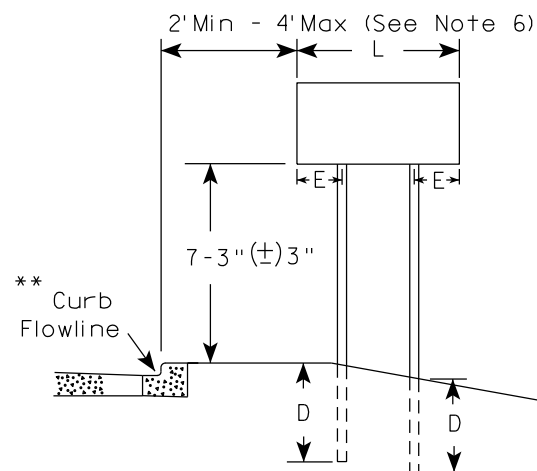
HWY:

COUNTY:

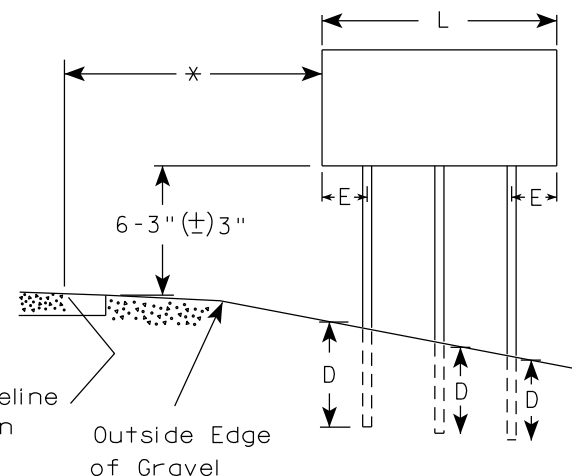
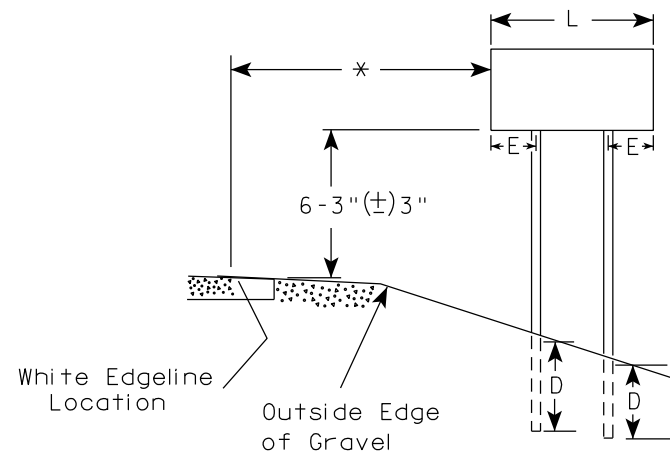
SHEET NO:

E

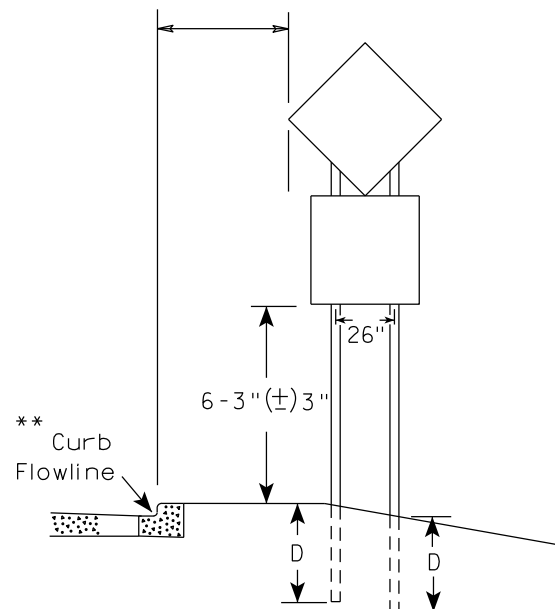
URBAN AREA



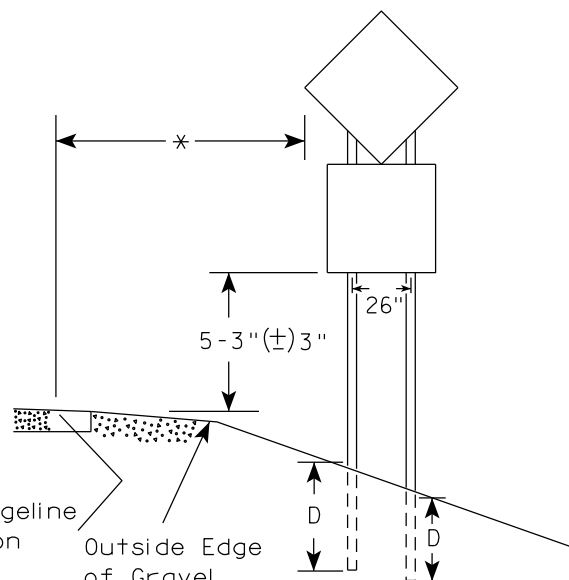
RURAL AREA (See Note 3)



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



48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

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

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

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION
OF TYPE II SIGNS
ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

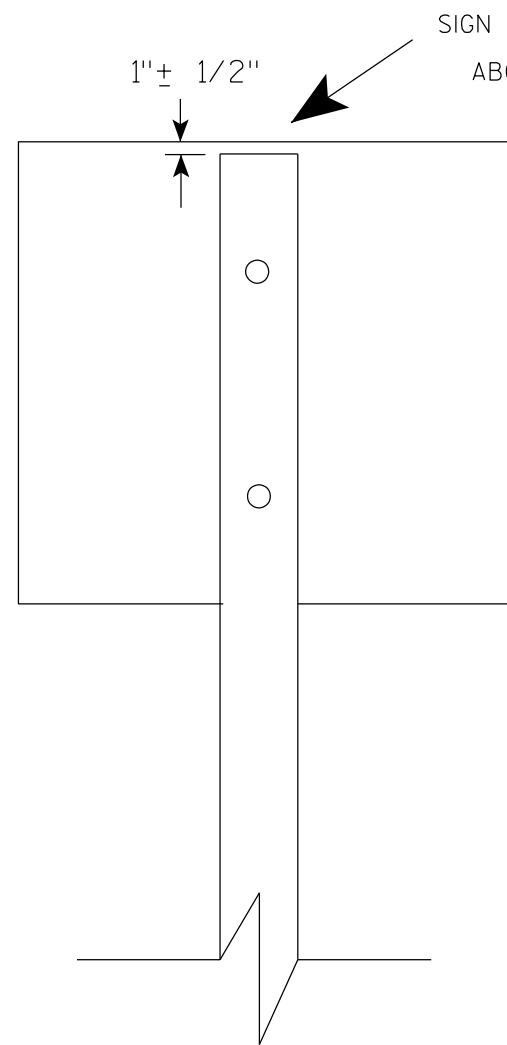
DATE 12/6/23 PLATE NO. A4-4.16

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

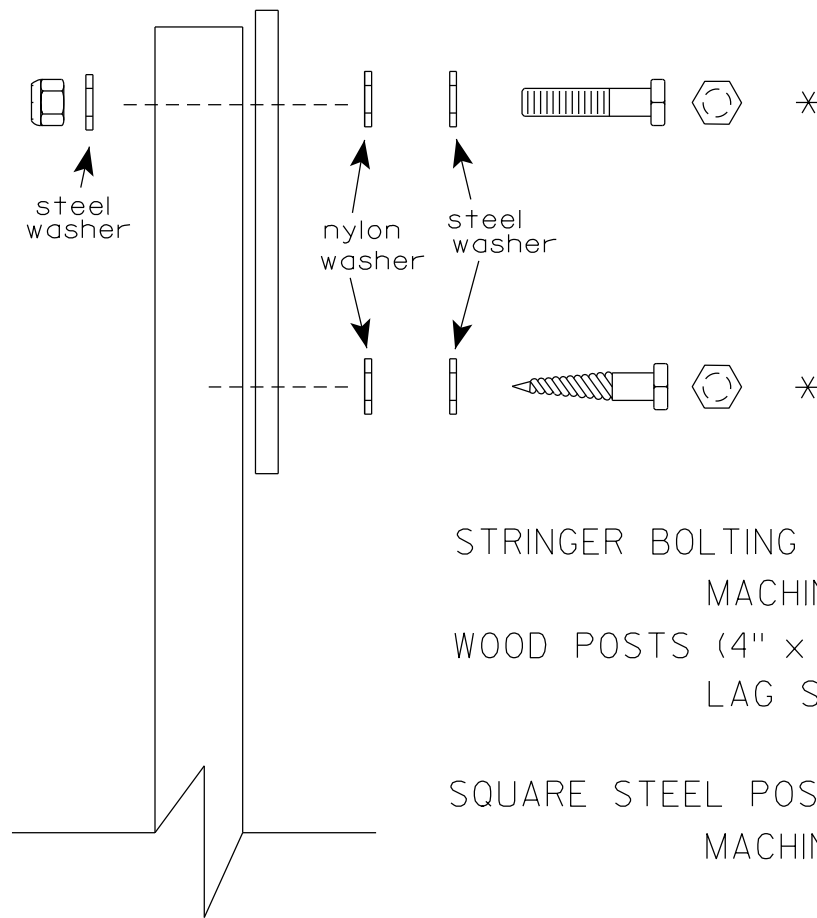
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

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

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



SIGN SHALL BE MOUNTED TO PROJECT
ABOVE THE TOP OF THE POST



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

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

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

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

MACHINE BOLTS - $\frac{5}{16}$ " X 1-3/4" Length w/ lock nuts

WOOD POSTS (4" x 6")

LAG SCREWS - $\frac{3}{8}$ " X 3" (NO STRINGERS ON BACK OF SIGN)
 $\frac{3}{8}$ " X 4" (STRINGERS ON BACK OF SIGN)

SQUARE STEEL POSTS (2" x 2")

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

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

WASHERS (ALL POSTS) -

1-1/4" O.D. X $\frac{3}{8}$ " I.D. X $\frac{1}{16}$ " STEEL

1-1/4" O.D. X $\frac{3}{8}$ " I.D. X .080 NYLON

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

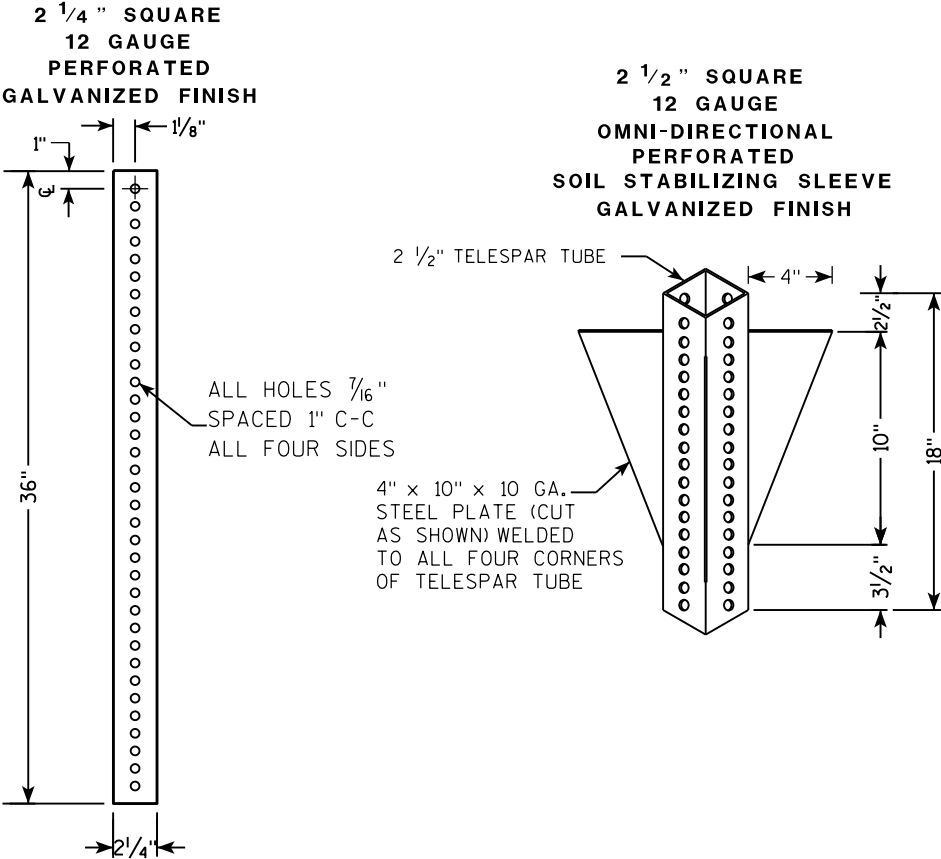
ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

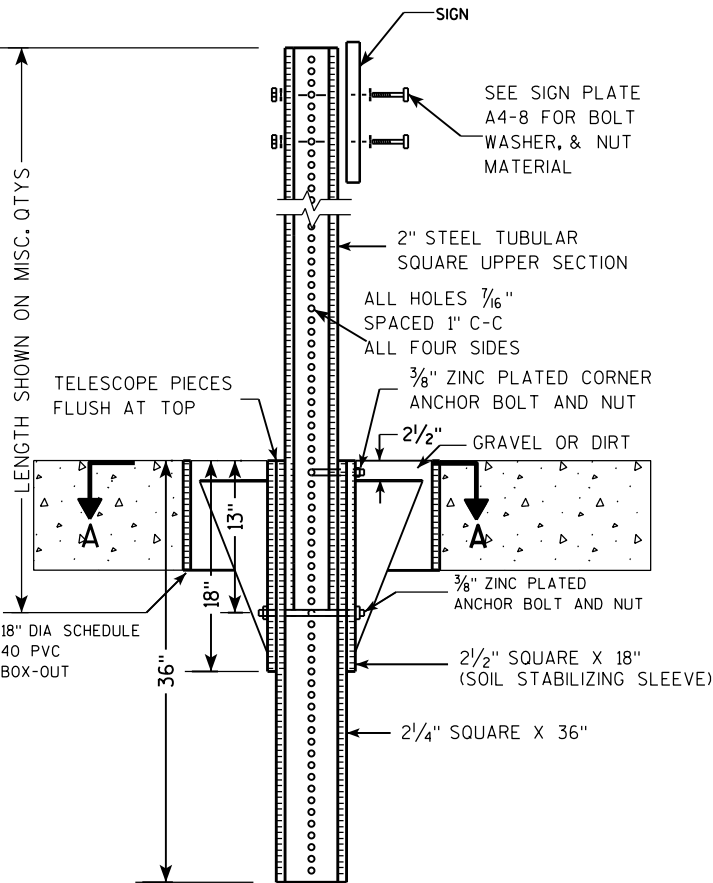
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 4/1/2020 PLATE NO. A4-8.9

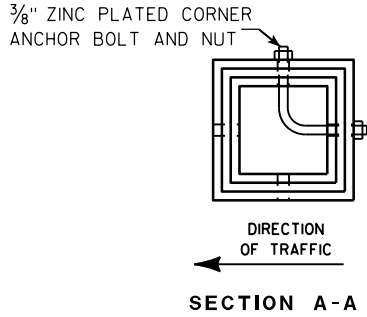
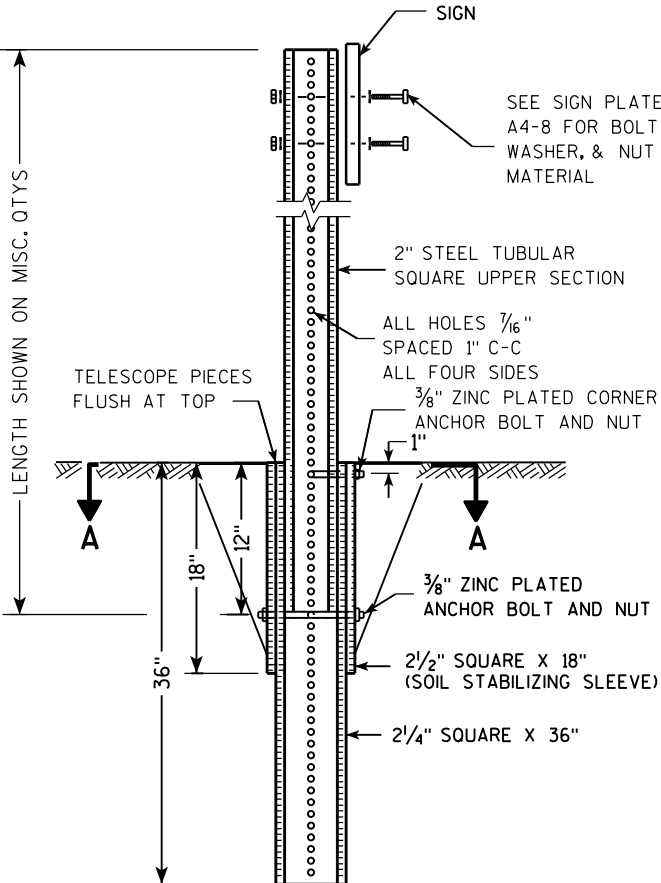
TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM



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



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



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

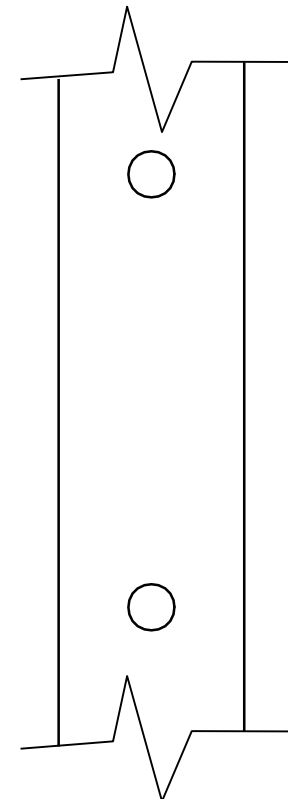
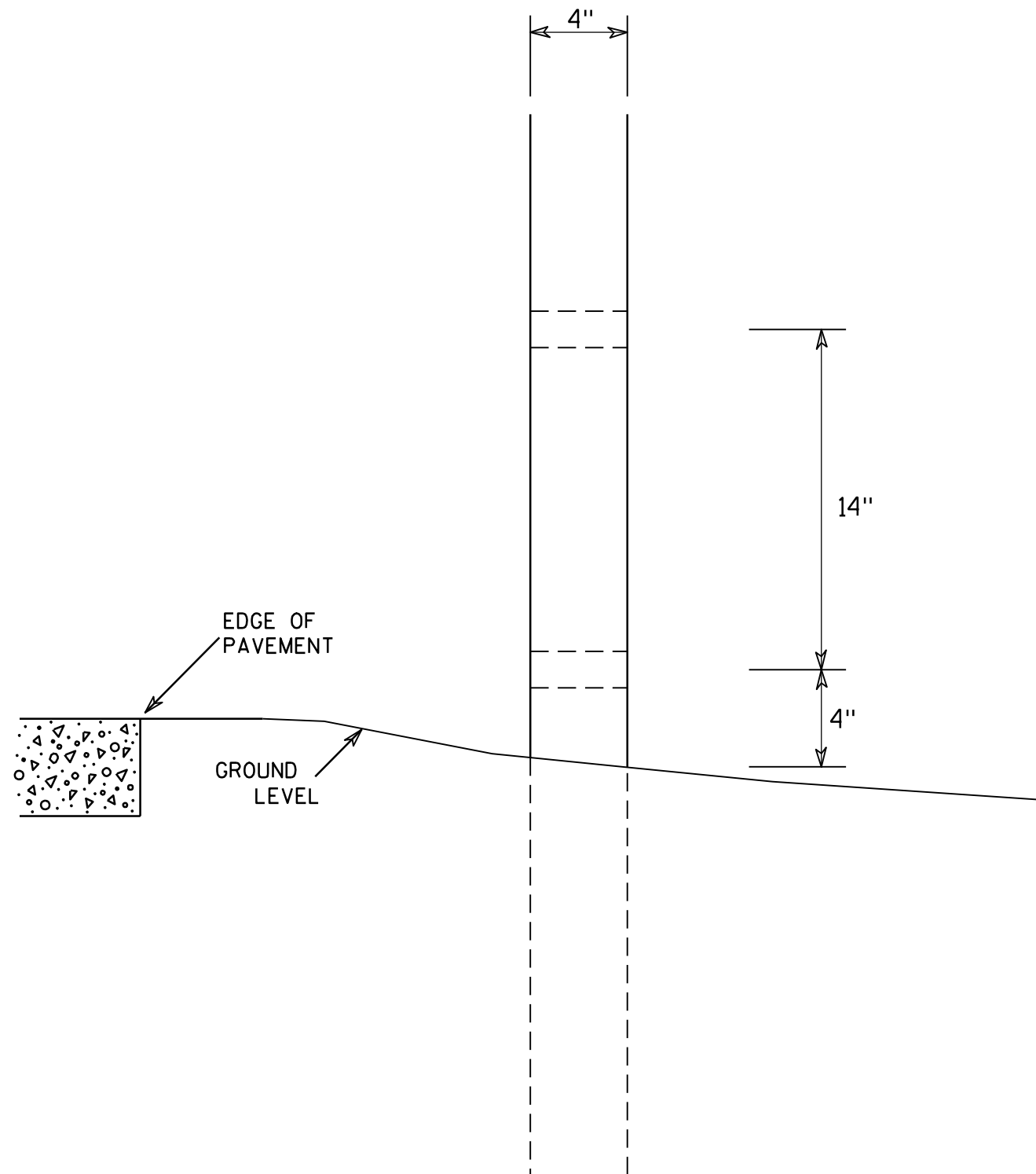
Signs wider than 3 feet or larger than 9 sq. ft shall be mounted on multiple posts (see above table).

TUBULAR STEEL
SIGN POST
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 2/05/15 PLAT 68 14-9.9



SIDE VIEW

GENERAL NOTES

1. All 4 x 6 Wood Posts shall be modified by having two 1 1/2" diameter holes drilled perpendicular to the roadway centerline.

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:

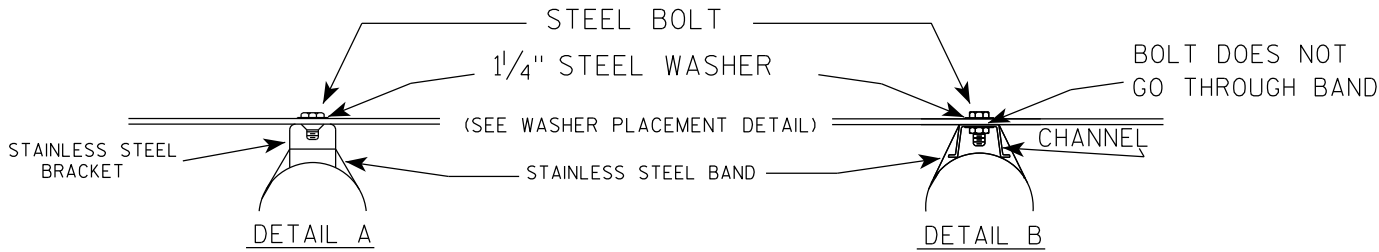
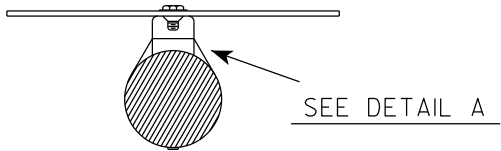
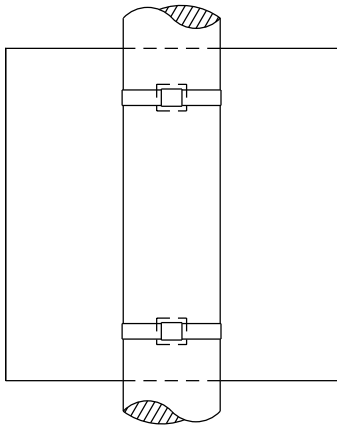
COUNTY:

SHEET NO: 69

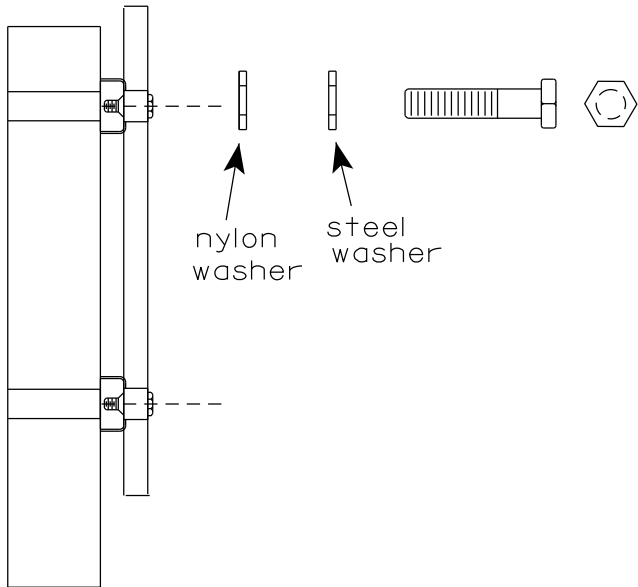
E

BANDING

SINGLE SIGN



WASHER PLACEMENT

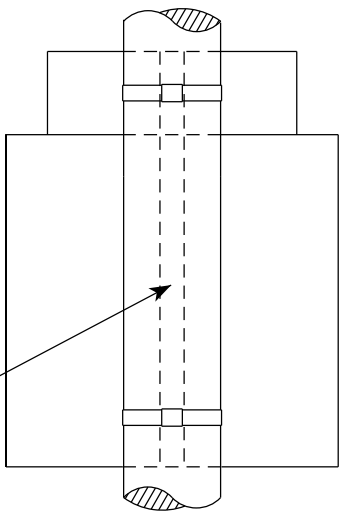


WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON
FOR ALL TYPE H SIGNS

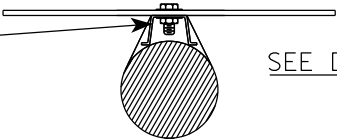
GENERAL NOTES

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

"J" ASSEMBLY



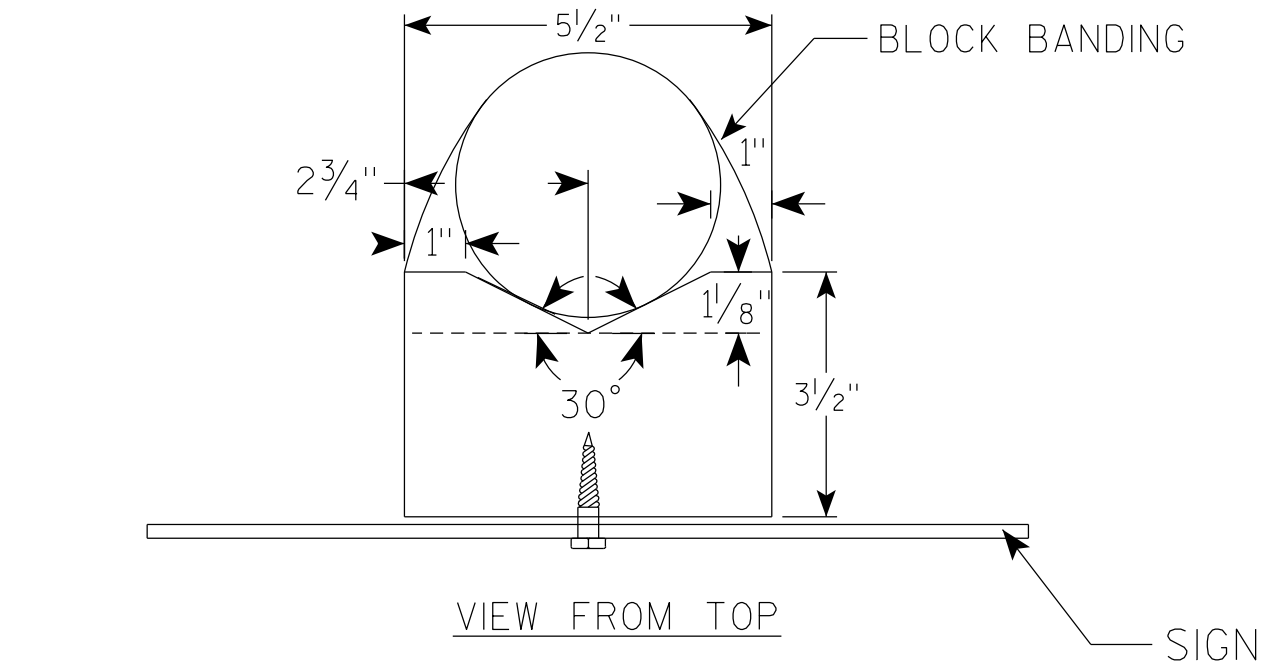
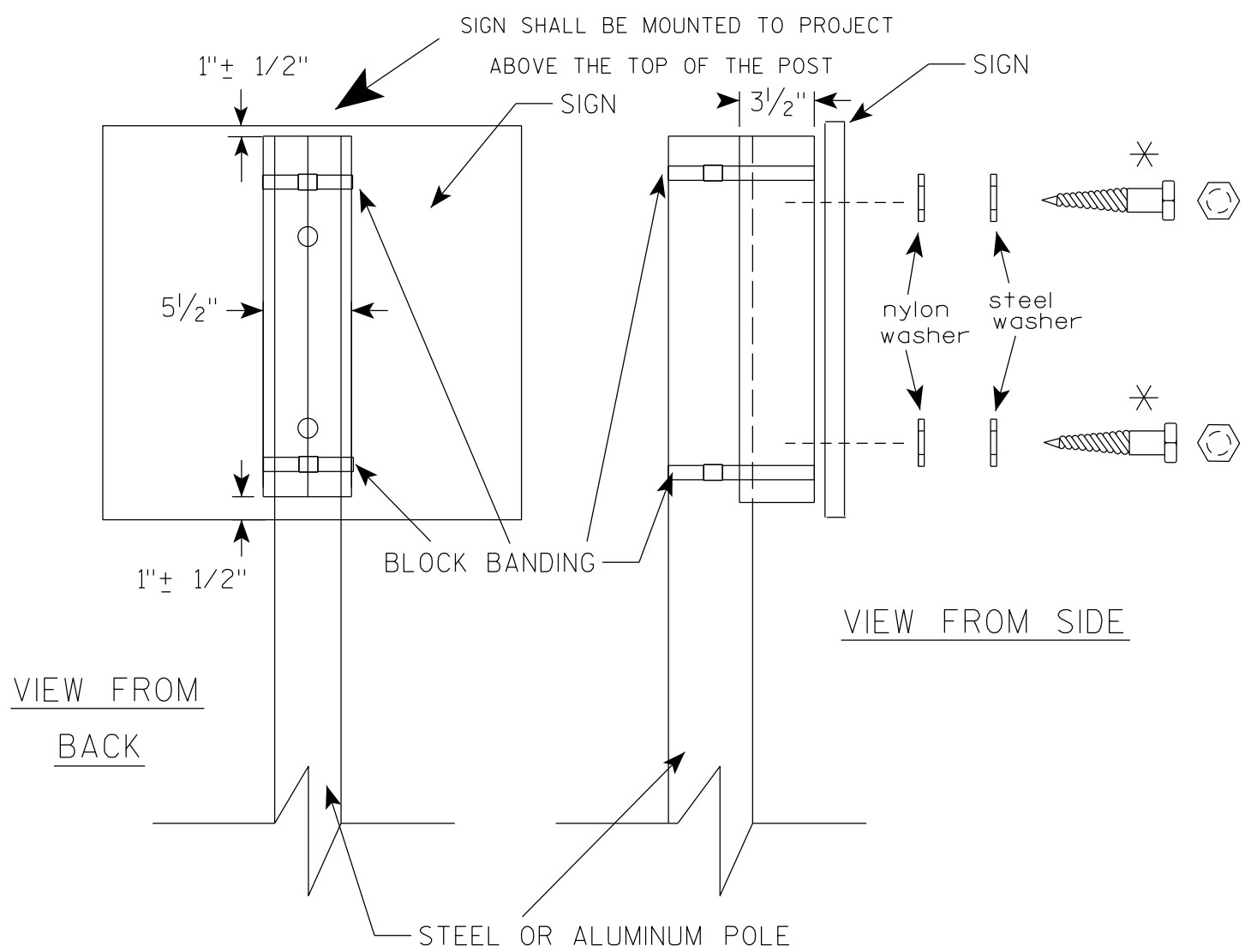
CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET



STANDARD SIGN
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

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



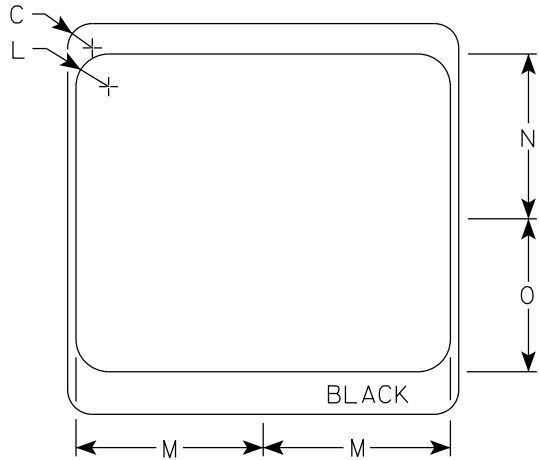
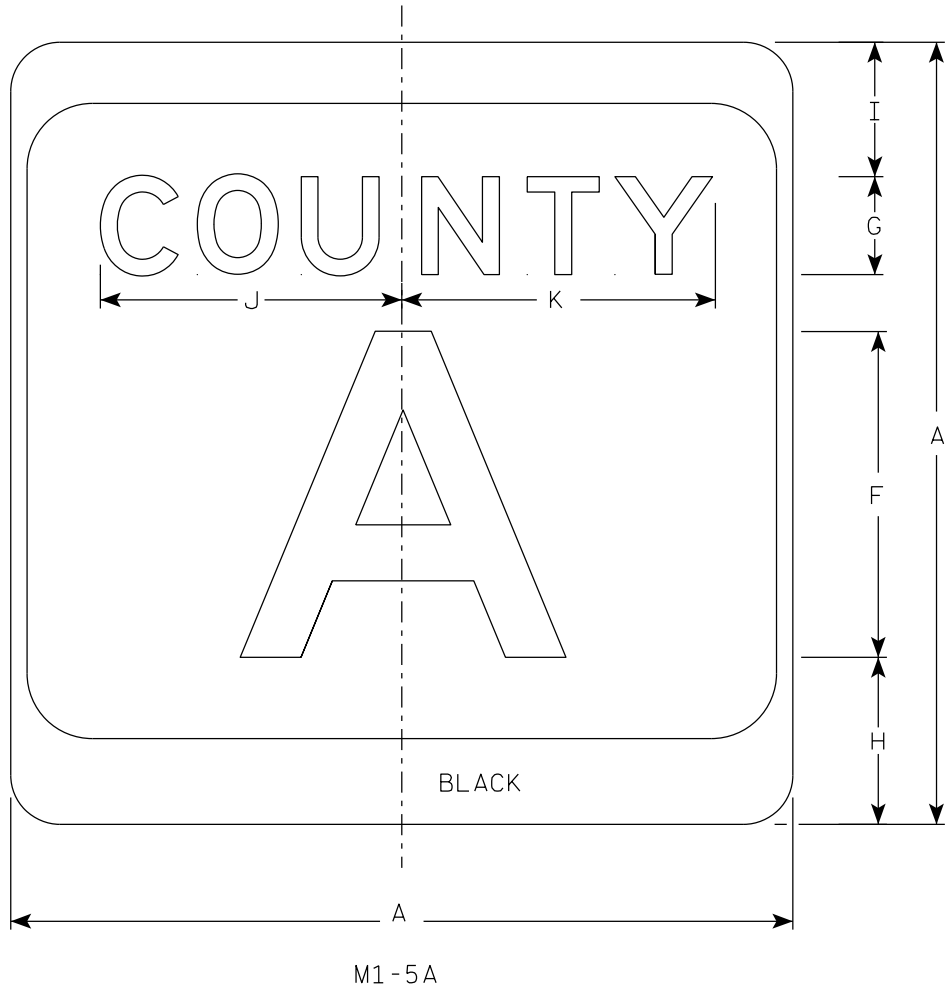
GENERAL NOTES

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

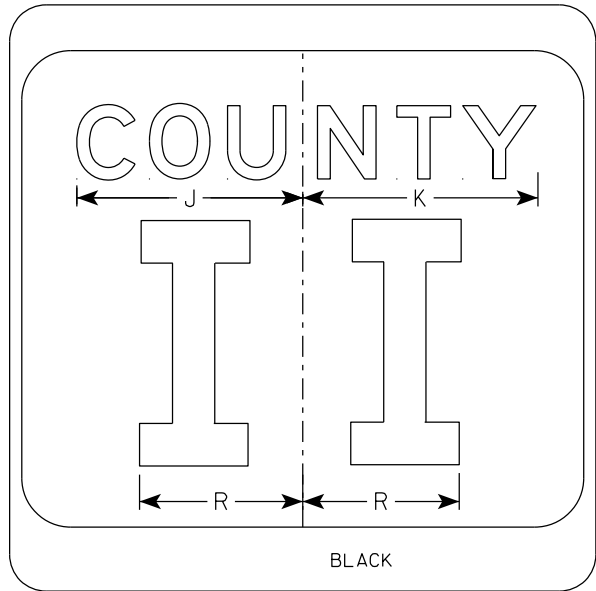
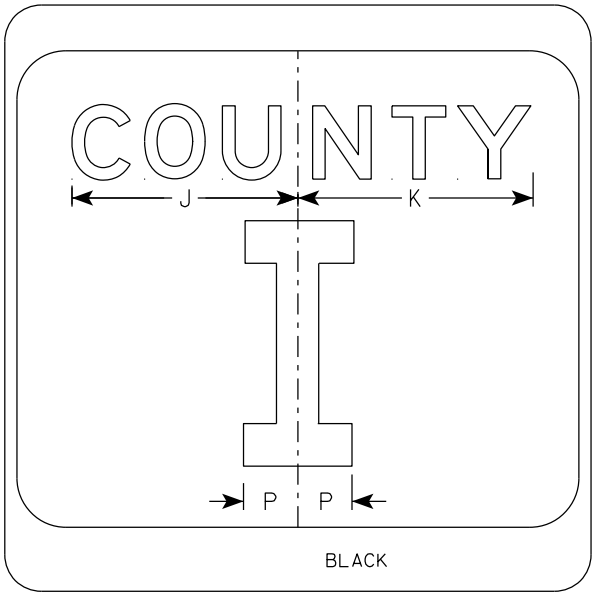
✱ LAG BOLTS SHALL BE $\frac{3}{8}$ " X $2\frac{1}{2}$ "

BLOCK BANDING DETAIL (V-BLOCK OPTION)	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> for State Traffic Engineer
DATE 4/19/2022	PLATE NO. A5-10.3

7



- NOTES
- Sign is Type II - Type H Reflective
 - Color:
Background - White & Black
Message - Black
 - Message Series - see Note 4
 - Message Series E for 1 letter.
Message Series D for 2 letters unless message is too big then Series C.
Message Series C for 3 letters unless message is too big then Series B.
 - Substitute appropriate letters & optically center to achieve proper balance.



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24		1 1/2			10	3	5 1/8	4 1/8	9 1/4	9 5/8	2	11 1/2	10 1/8	9 3/8	2 1/4		6 5/8									4.0
2M	24		1 1/2			10	3	5 1/8	4 1/8	9 1/4	9 5/8	2	11 1/2	10 1/8	9 3/8	2 1/4		6 5/8									4.0
3	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0
4	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0
5	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0

CTH MARKER

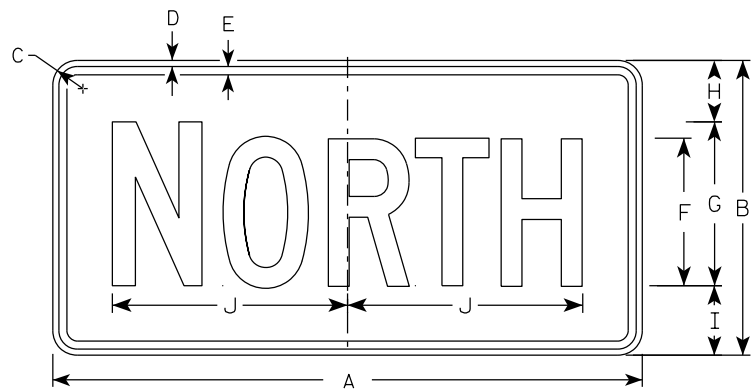
M1-5A FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

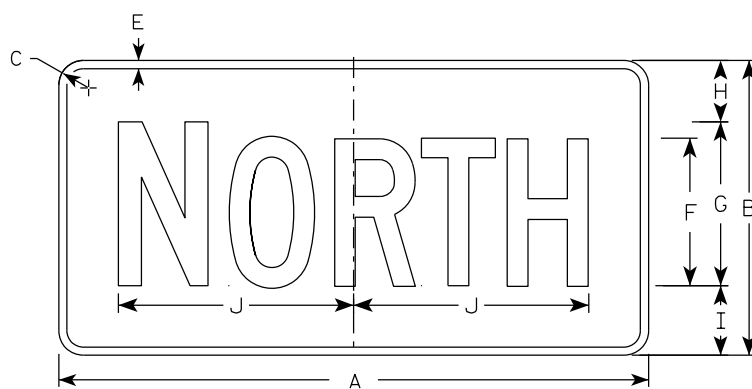
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 11/8/2022 PLATE NO. M1-5A.9

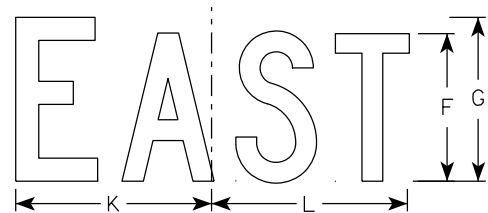
7



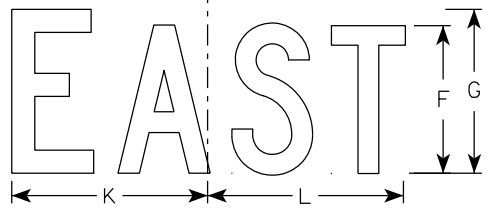
M3-1
MM3-1
MP3-1



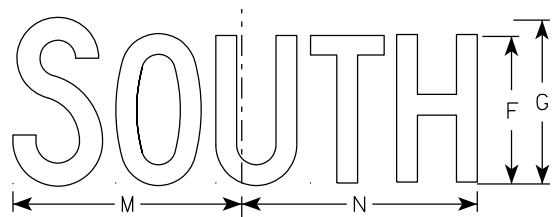
MB3-1
MK3-1
MN3-1



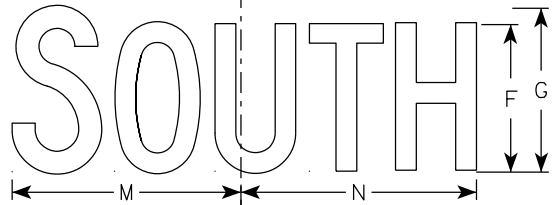
M3-2
MM3-2
MP3-2



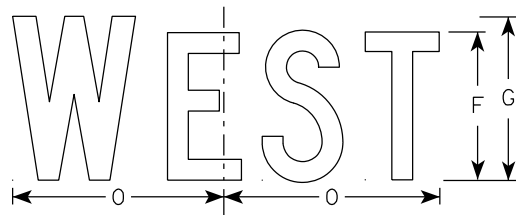
MB3-2
MK3-2
MN3-2



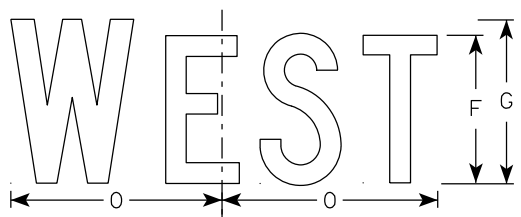
M3-3
MM3-3
MP3-3



MB3-3
MK3-3
MN3-3



M3-4
MM3-4
MP3-4



MB3-4
MK3-4
MN3-4

NOTES

- All Signs Type II - Type H Reflective
- Color:
 - Background - See note 5
 - Message - See note 5
- Message Series - C
- 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.
- M3-1 thru M3-4 Background - White
Message - Black
MB3-1 thru MB3-4 Background - Blue
Message - White
MK3-1 thru MK3-4 Background - Green
Message - White
MM3-1 thru MM3-4 Background - White
Message - Green
MN3-1 thru MN3-4 Background - Brown
Message - White
MP3-1 thru MP3-4 Background - White
Message - Blue
- Note the first letter of each direction is larger than the remainder of the message.

7

7

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24	12	1 1/2	3/8	3/8	6	7	2 1/4	2 3/4	10 1/4	7 7/8	8 3/8	10 1/4	9 3/4	8 3/4												2.00
2M	24	12	1 1/2	3/8	3/8	6	7	2 1/4	2 3/4	10 1/4	7 7/8	8 3/8	10 1/4	9 3/4	8 3/4												2.00
3	36	18	1 1/2	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13												4.5
4	36	18	1 1/2	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13												4.5
5	36	18	1 1/2	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13												4.5

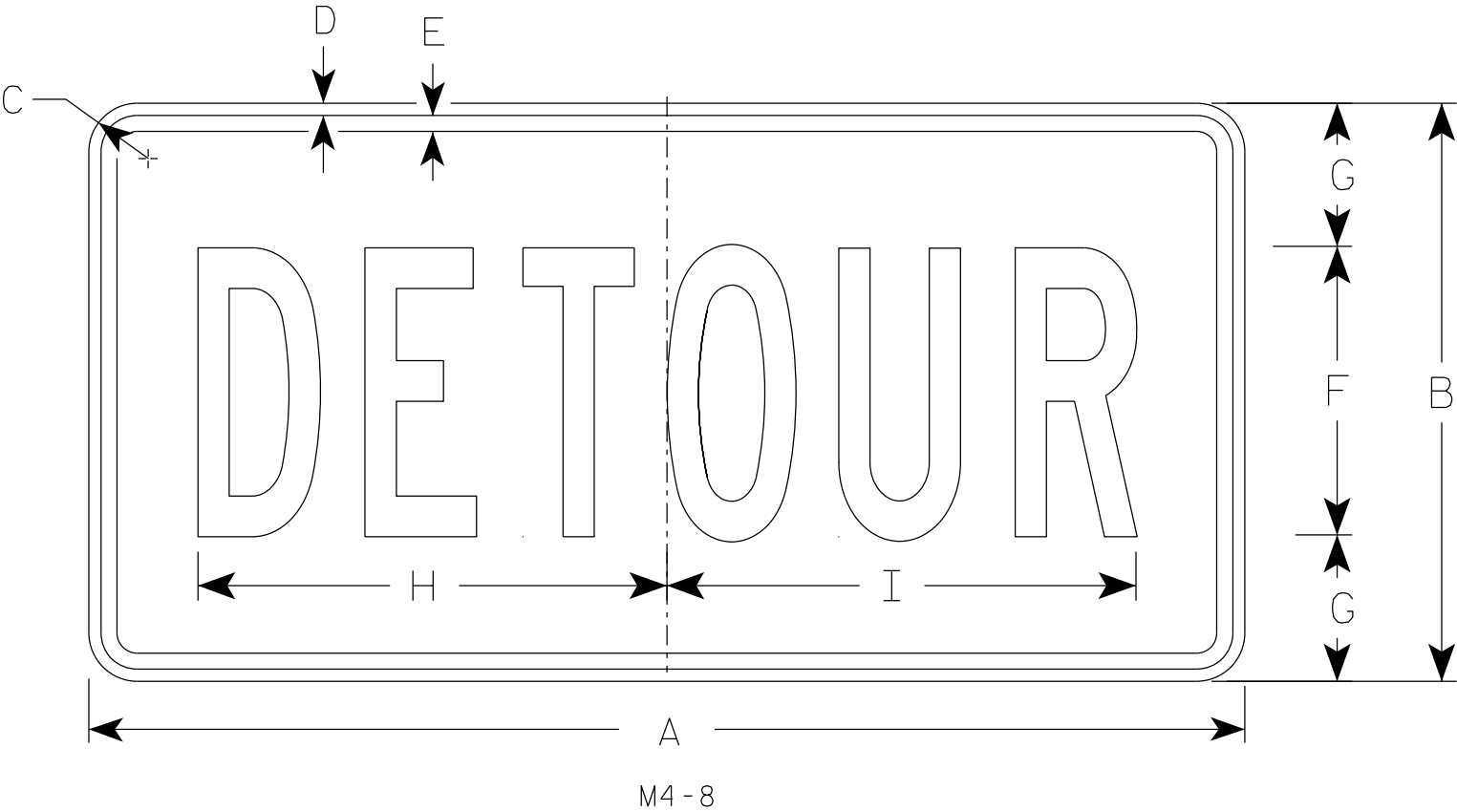
PROJECT NO:	HWY:	COUNTY:	SHEET NO: 73	E
-------------	------	---------	--------------	---

7

7

NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
Background - Orange
Message - Black
- 3. Message Series - B
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/2	3/8	3/8	6	3	10	10 1/4																		2.0
2M	24	12	1 1/2	3/8	3/8	6	3	10	10 1/4																		2.0
3	36	18	1 1/2	3/8	1/2	9	4 1/2	14 5/8	14 1/2																		4.5
4	36	18	1 1/2	3/8	1/2	9	4 1/2	14 5/8	14 1/2																		4.5
5	36	18	1 1/2	3/8	1/2	9	4 1/2	14 5/8	14 1/2																		4.5

STANDARD SIGN

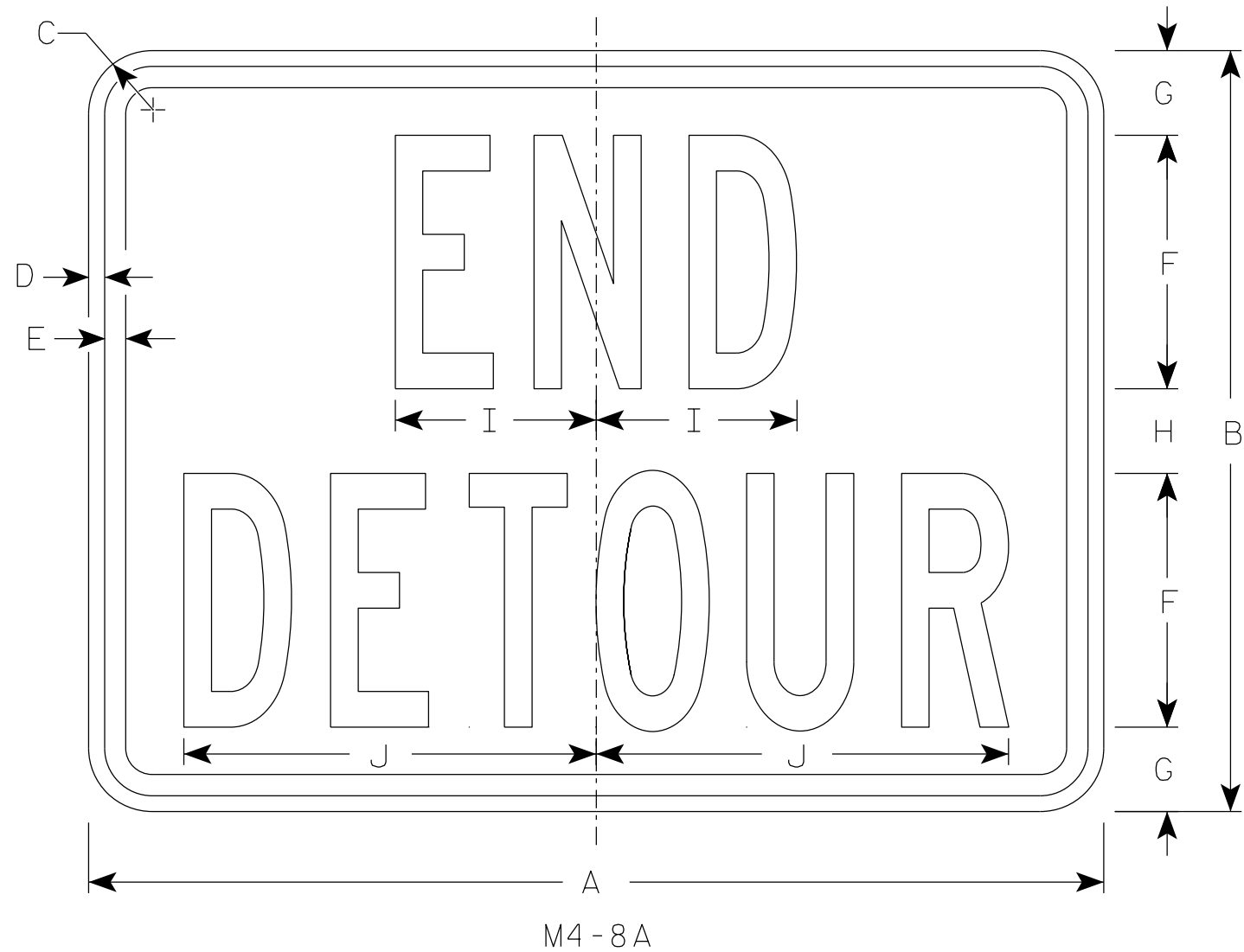
M4-8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 2/9/2023 PLATE NO. M4-8.4

7



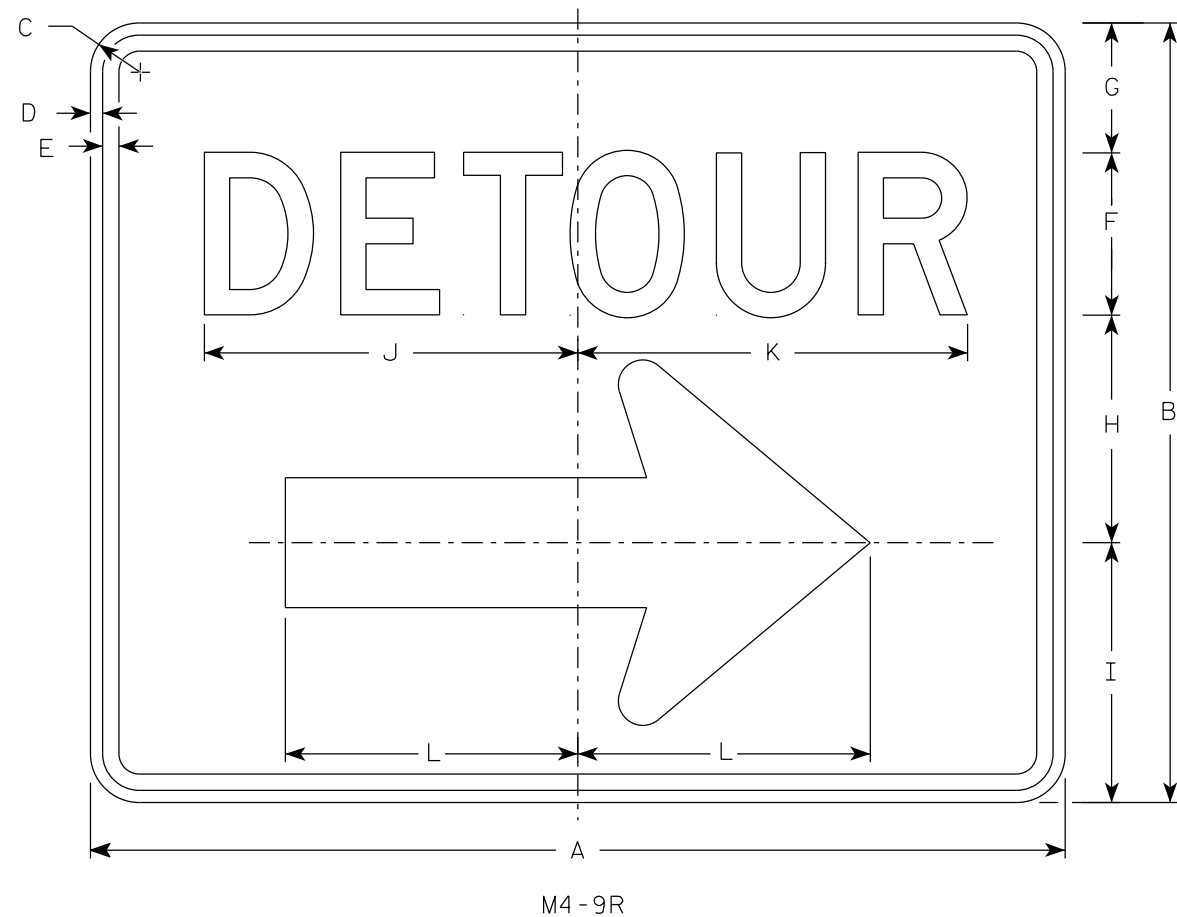
NOTES

1. Sign is Type II - Type F Reflective
2. Color:
Background - Orange
Message - Black
3. Message Series - B
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

7

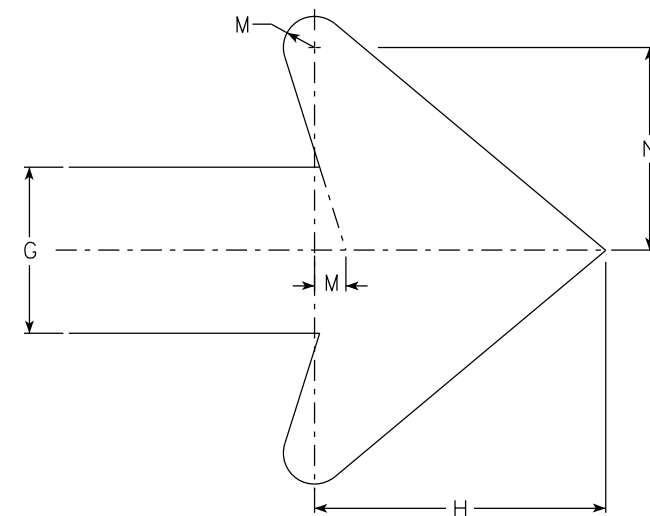
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	18	1 1/2	3/8	1/2	6	2	2	4 3/4	9 3/4																	3.0
2M	24	18	1 1/2	3/8	1/2	6	2	2	4 3/4	9 3/4																	3.0
3	30	24	1 1/2	3/8	1/2	8	2 1/2	3	6 3/4	13																	5.0
4	30	24	1 1/2	3/8	1/2	8	2 1/2	3	6 3/4	13																	5.0
5	30	24	1 1/2	3/8	1/2	8	2 1/2	3	6 3/4	13																	5.0

STANDARD SIGN	
M4-8A	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 2/9/2023	PLATE NO. M4-8A.4



NOTES

1. Sign is Type II - Type F Reflective
2. Color:
Background - Orange
Message - Black
3. Message Series - D
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. M4-9L is the same as M4-9R except the arrow is reversed.



Arrow Detail

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	30	24	1 1/2	3/8	1/2	5	4	7	8	11 1/2	12	9	3/4	4 7/8													5.00
2M	30	24	1 1/2	3/8	1/2	5	4	7	8	11 1/2	12	9	3/4	4 7/8													5.00
3	30	24	1 1/2	3/8	1/2	5	4	7	8	11 1/2	12	9	3/4	4 7/8													5.00
4	48	36	1 7/8	1/2	5/8	8	6	10 1/2	11 5/8	20 5/8	20 1/2	13 1/4	1 1/8	6 7/8													12.0
5	48	36	1 7/8	1/2	5/8	8	6	10 1/2	11 5/8	20 5/8	20 1/2	13 1/4	1 1/8	6 7/8													12.0

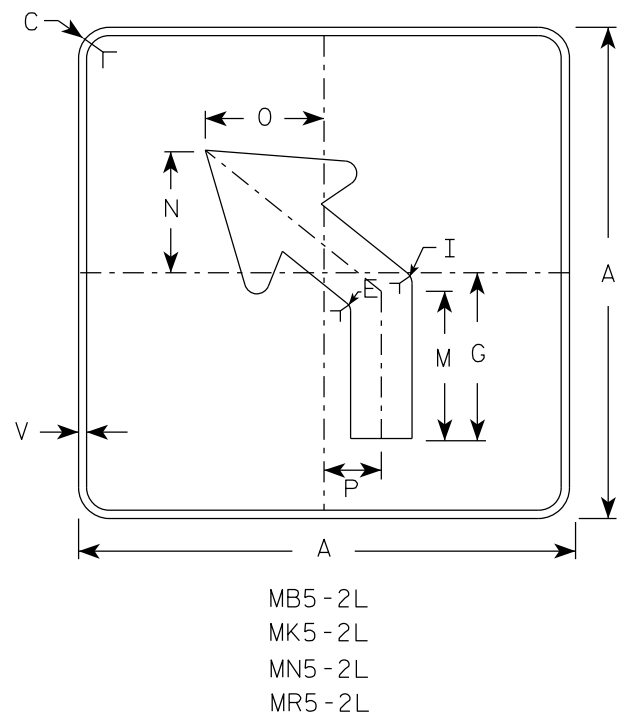
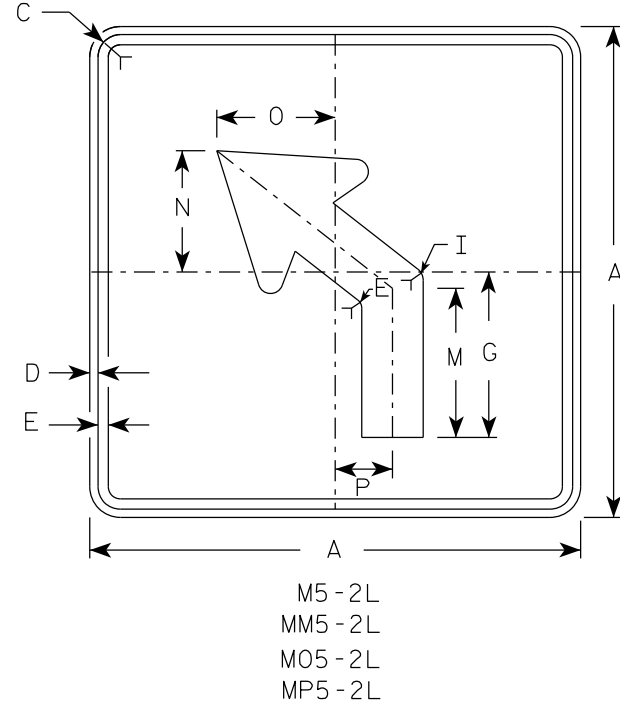
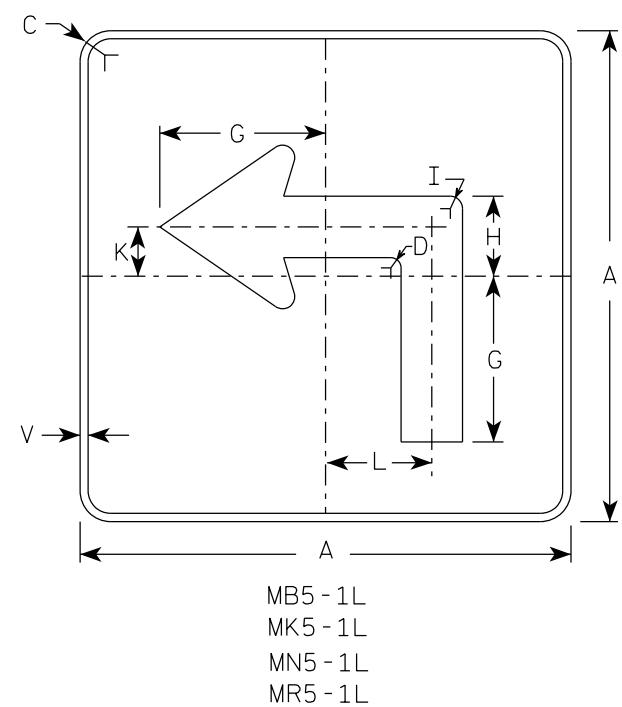
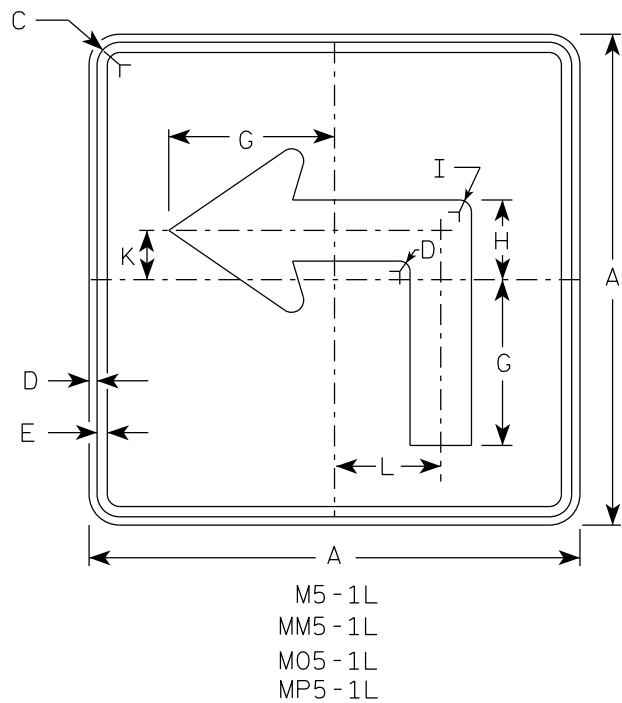
STANDARD SIGN
M4-9 R & L

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 2/9/2023 PLATE NO. M4-9R.6

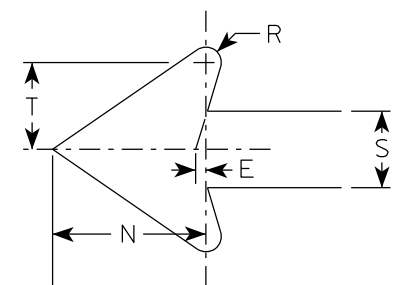
PROJECT NO: HWY: COUNTY: SHEET NO: 76 E



NOTES

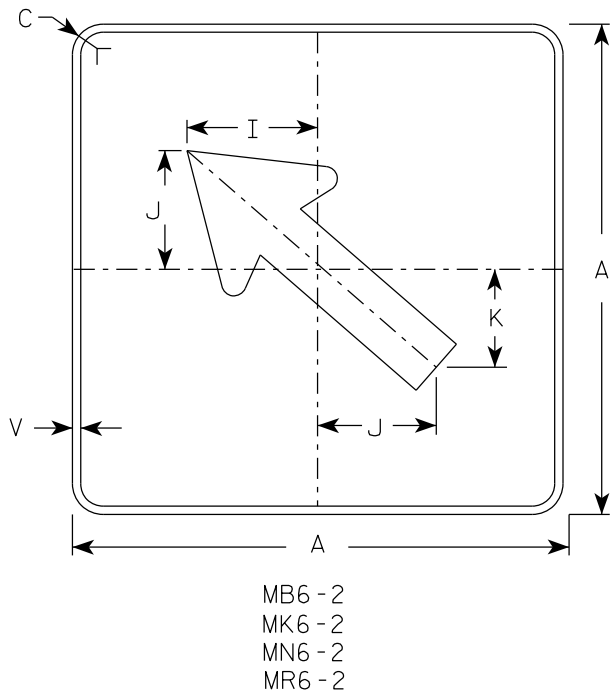
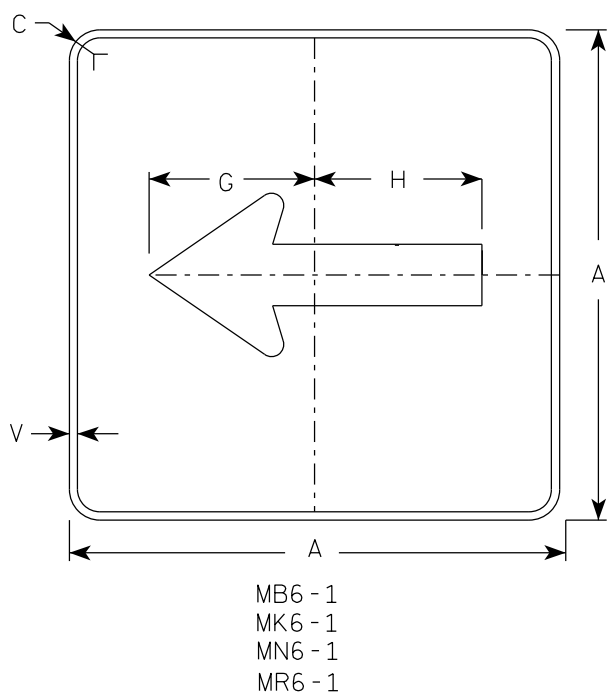
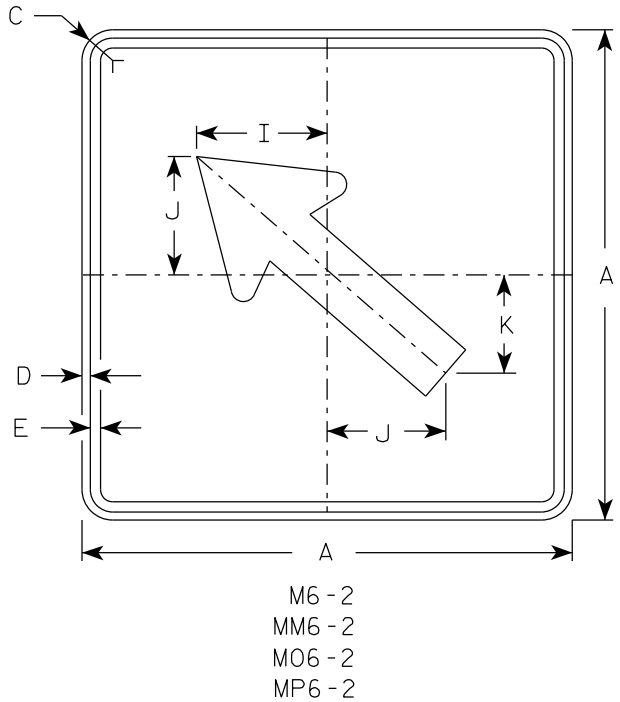
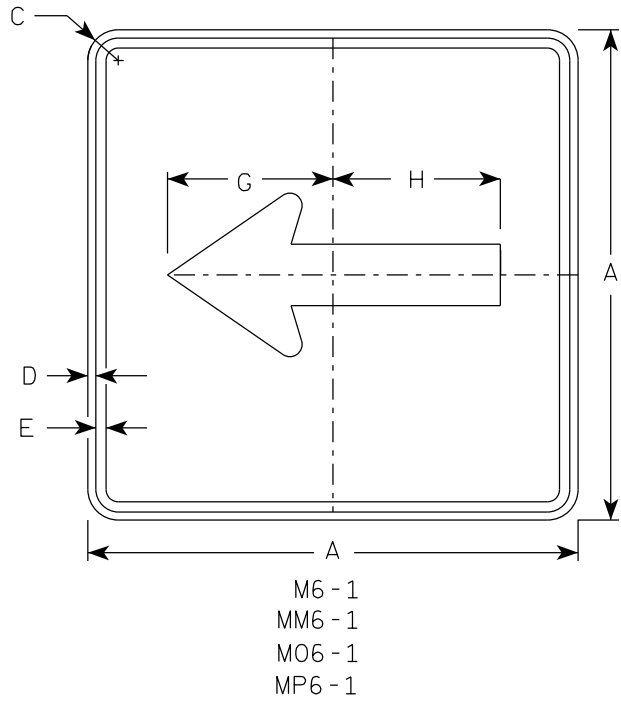
- Signs are Type II - Type H reflective except as shown
- Color:
Background - See note 4
Message - See note 4
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- | | | |
|-----------|-------|---|
| M5-1 and | M5-2 | Background - White |
| | | Message - Black |
| MB5-1 and | MB5-2 | Background - Blue |
| | | Message - White |
| MK5-1 and | MK5-2 | Background - Green |
| | | Message - White |
| MM5-1 and | MM5-2 | Background - White |
| | | Message - Green |
| MN5-1 and | MN5-2 | Background - Brown |
| | | Message - White |
| M05-1 and | M05-2 | Background - Orange - Type F Reflective |
| | | Message - Black |
| MP5-1 and | MP5-2 | Background - White |
| | | Message - Blue |
| MR5-1 and | MR5-2 | Background - Brown |
| | | Message - Yellow |
- M5-1R same as M5-1L except arrow points right.
- M5-2R same as M5-2L except arrow tilts right.

ARROW DETAIL

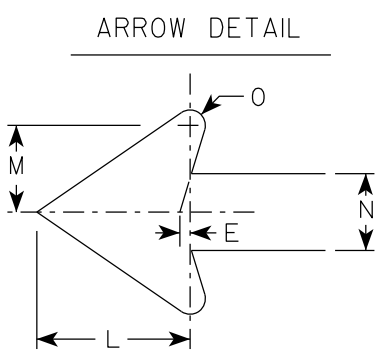


SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	21		1 1/2	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3		1/2					3.06
2M	21		1 1/2	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3		1/2					3.06
3	30		1 7/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4		1/2					6.25
4	30		1 7/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4		1/2					6.25
5	30		1 7/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4		1/2					6.25

PROJECT NO:		HWY:		COUNTY:		SHEET NO: 77		E
-------------	--	------	--	---------	--	--------------	--	---



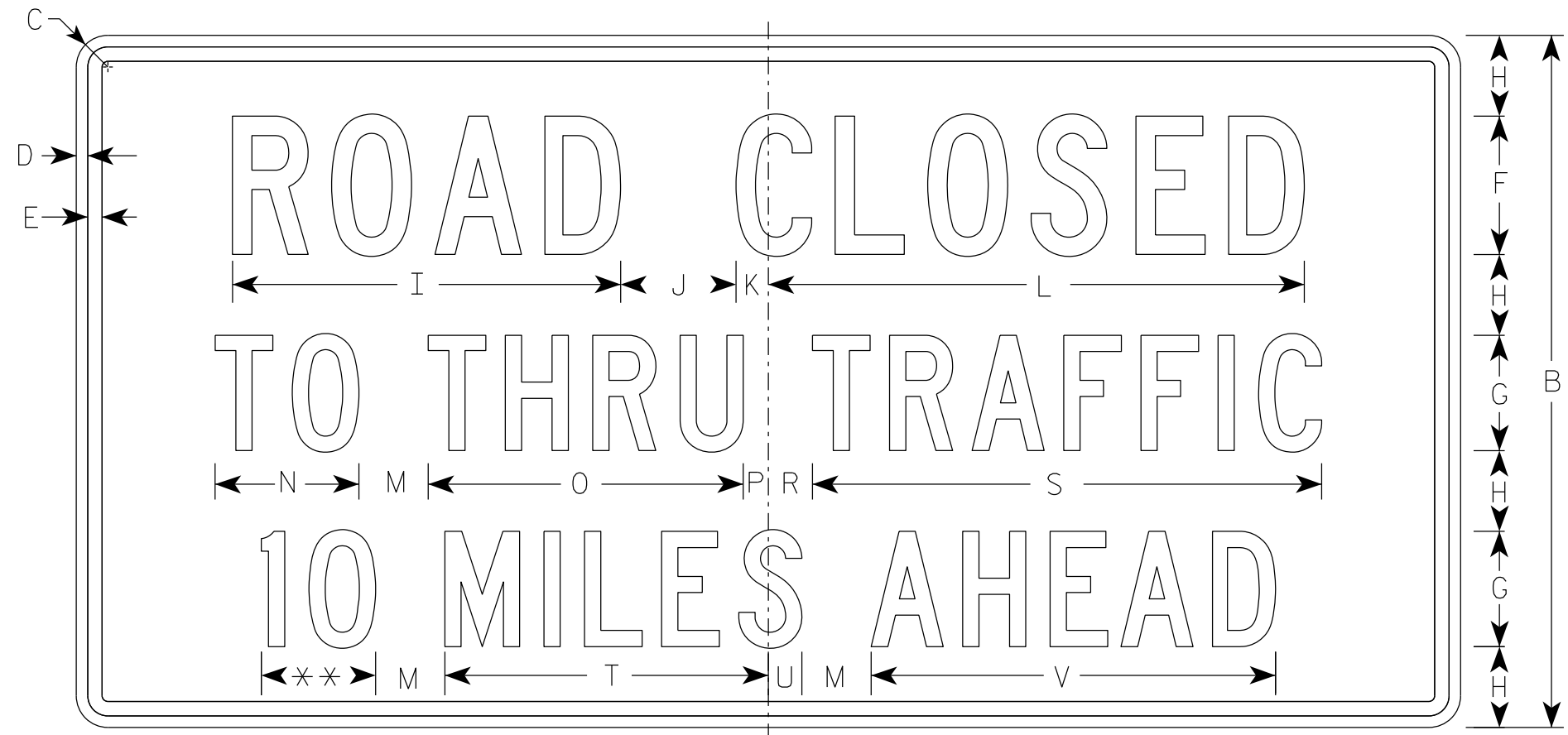
- NOTES**
- Signs are Type II - Type H Reflective except as Shown
 - Color:
Background - See note 4
Message - See note 4
 - Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
 - M6-1 and M6-2 Background - White
Message - Black
MB6-1 and MB6-2 Background - Blue
Message - White
MK6-1 and MK6-2 Background - Green
Message - White
MM6-1 and MM6-2 Background - White
Message - Green
MN6-1 and MN6-2 Background - Brown
Message - White
M06-1 and M06-2 Background - Orange - Type F Reflective
Message - Black
MP6-1 and MP6-2 Background - White
Message - Blue
MR6-1 and MR6-2 Background - Brown
Message - Yellow



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	21		1 1/2	3/8	3/8		7 1/2	7 1/8	5 5/8	5	4 1/4	5 1/4	3	2 5/8	1/2							1/2					3.06
2M	21		1 1/2	3/8	3/8		7 1/2	7 1/8	5 5/8	5	4 1/4	5 1/4	3	2 5/8	1/2							1/2					3.06
3	30		1 7/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4							1/2					6.25
4	30		1 7/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4							1/2					6.25
5	30		1 7/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4							1/2					6.25

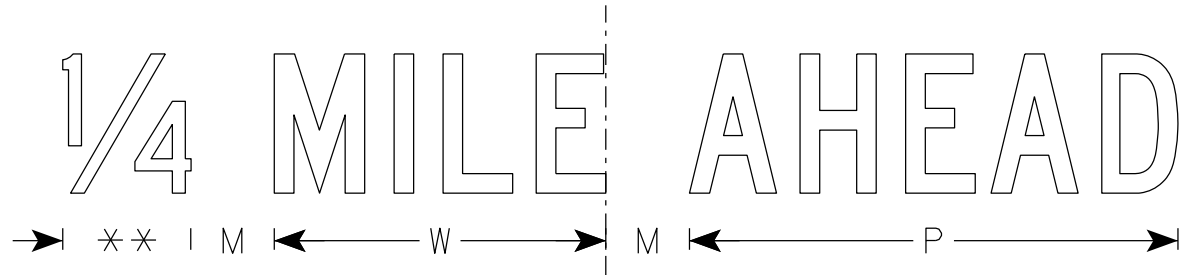
7

7



R11-3

** See Note 5



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	18	1 1/2	3/8	3/8	4	3	2	11 1/4	3	1 1/8	15 3/8	2	3 3/4	8 1/4	5/8		1 3/8	13 1/4	8 3/8	7/8	10 1/2	7 1/8				4.5
2S	60	30	1 7/8	1/2	5/8	6	5	3 1/2	16 7/8	5	1 3/8	23 1/4	3	6 1/4	13 5/8	1 1/8		1 7/8	22 1/8	14	1 1/2	17 1/2	11 7/8				12.5
2M	60	30	1 7/8	1/2	5/8	6	5	3 1/2	16 7/8	5	1 3/8	23 1/4	3	6 1/4	13 5/8	1 1/8		1 7/8	22 1/8	14	1 1/2	17 1/2	11 7/8				12.5
3																											
4																											
5																											

PROJECT NO:

HWY:

COUNTY:

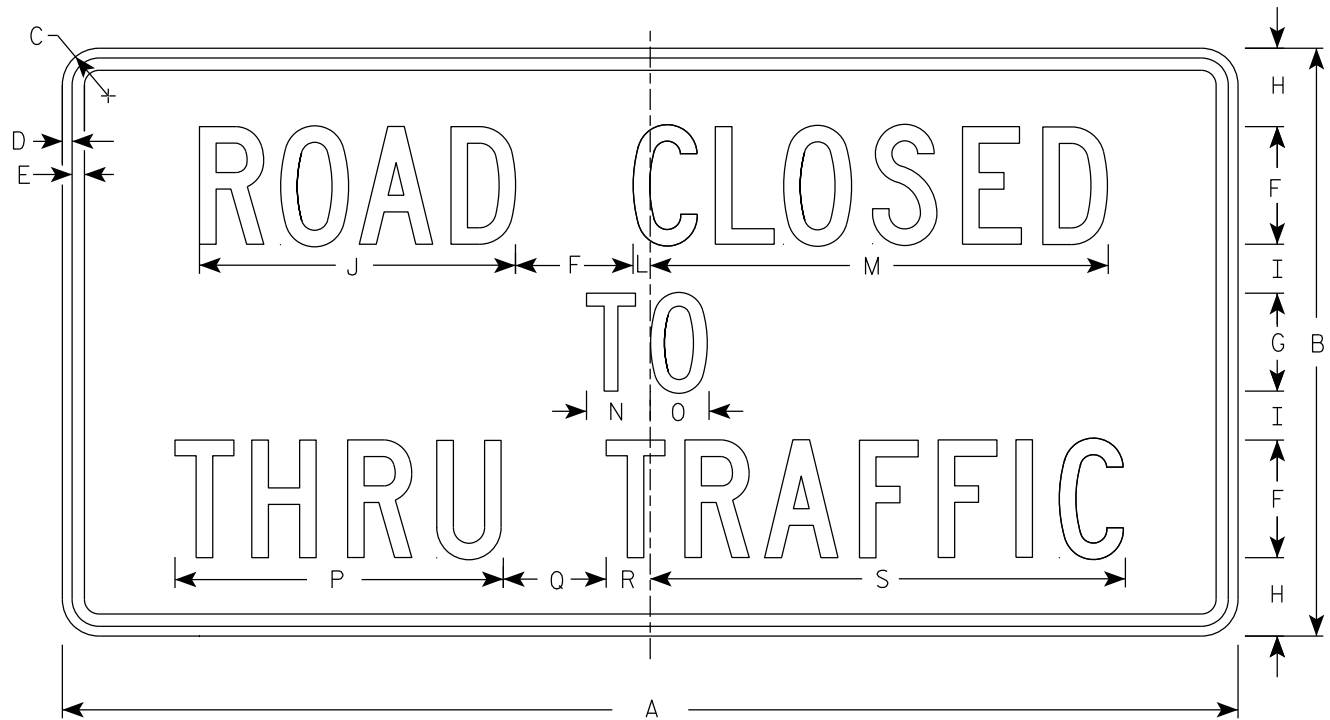
SHEET NO: 79

E

NOTES

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

7



R11-4

NOTES

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

7

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	60	30	1 7/8	1/2	5/8	6	5	4	2 1/2	16 1/8		7/8	23 3/8	3 1/4	3	16 3/4	5 1/4	2 1/4	24 1/4								12.5
2M	60	30	1 7/8	1/2	5/8	6	5	4	2 1/2	16 1/8		7/8	23 3/8	3 1/4	3	16 3/4	5 1/4	2 1/4	24 1/4								12.5
3																											
4																											
5																											

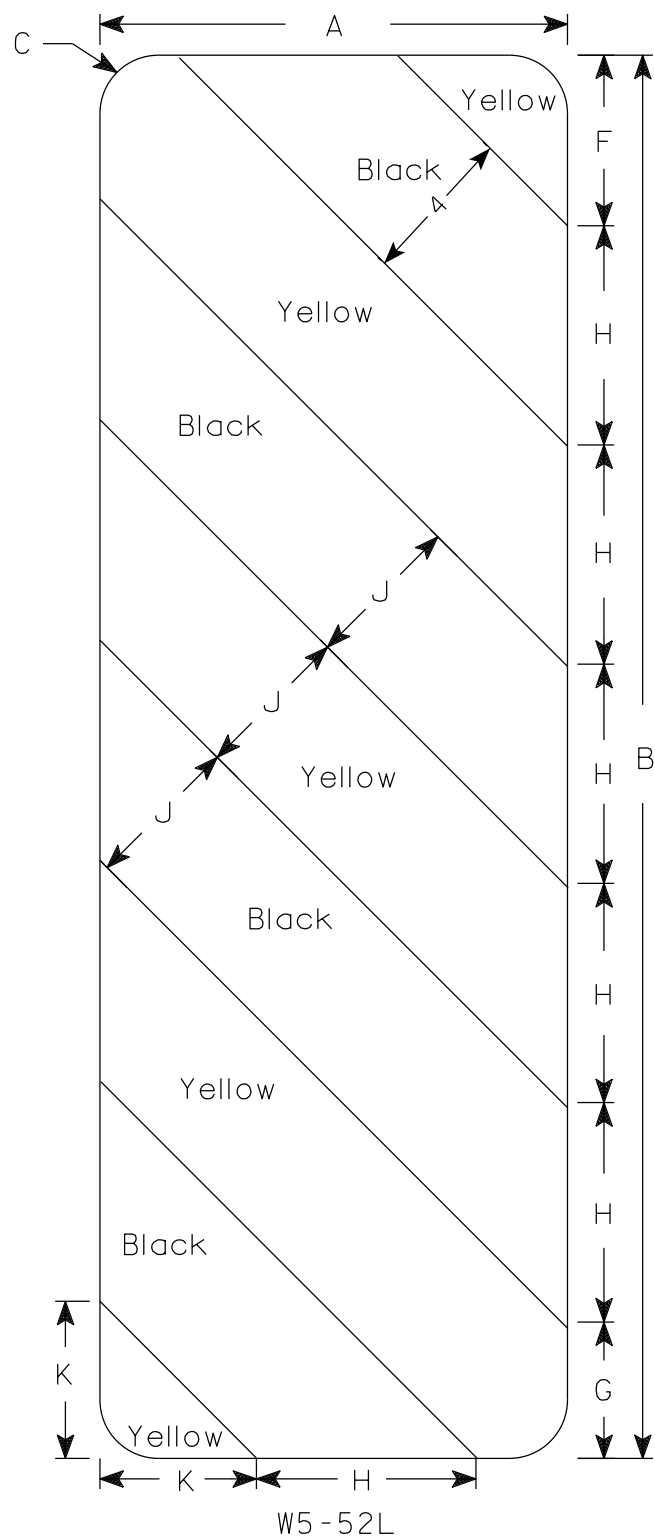
PROJECT NO:

HWY:

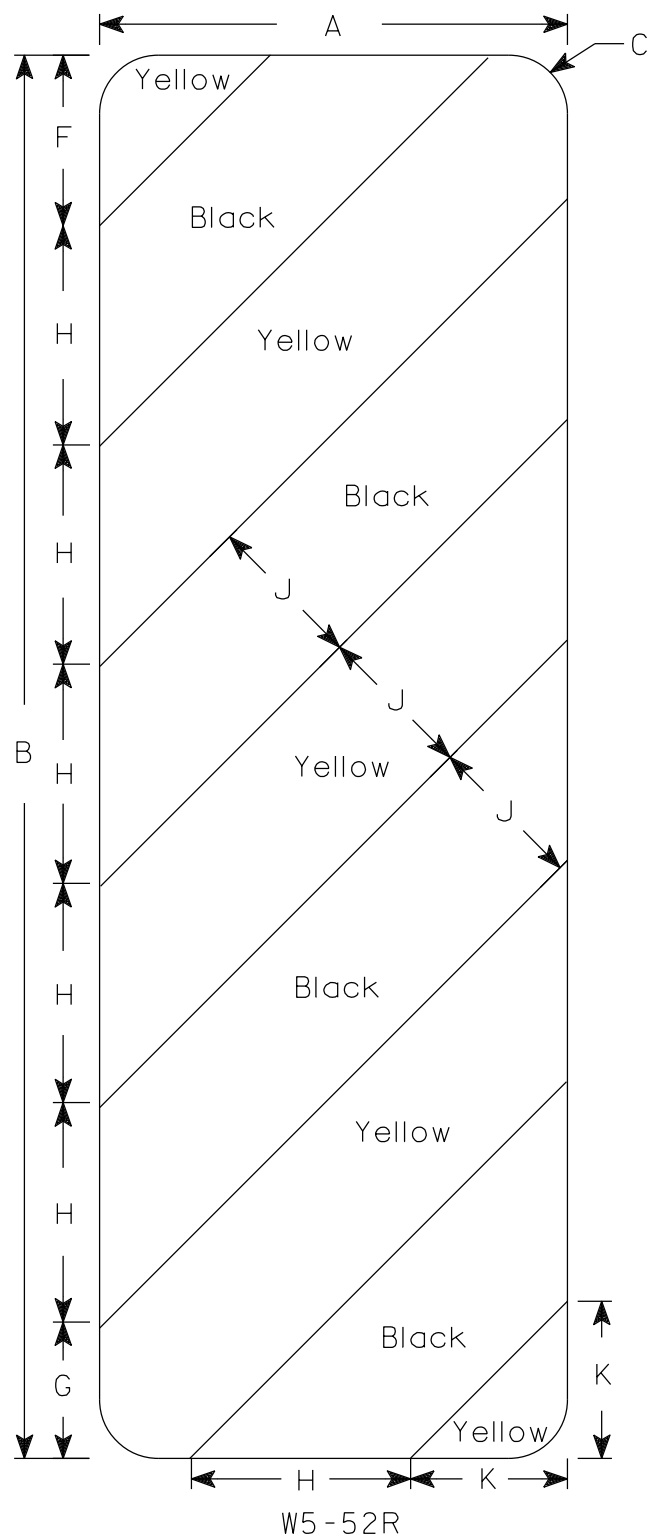
COUNTY:

SHEET NO: 80

E



W5-52L



W5-52R

NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
 - Background - Yellow
 - Message - Black
- 3. 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	1 1/2			4 3/8	3 1/2	5 5/8	45°	4	4																3.0
2M	12	36	1 1/2			4 3/8	3 1/2	5 5/8	45°	4	4																3.0
3	18	54	1 1/2			6	5 1/2	8 1/2	45°	6	6 9/16																6.75
4																											
5																											

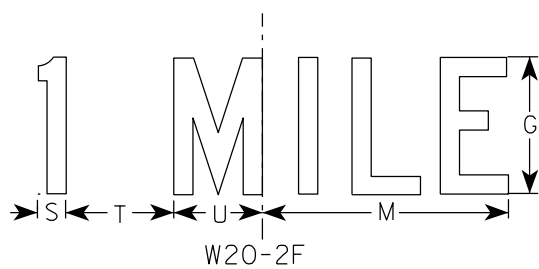
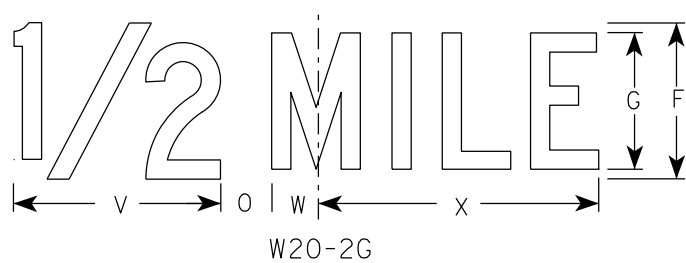
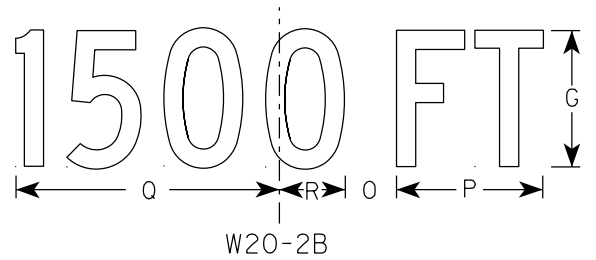
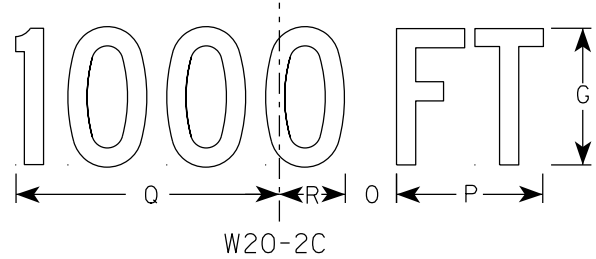
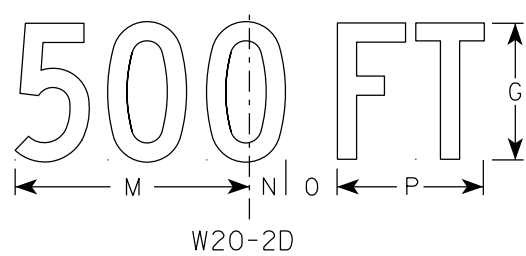
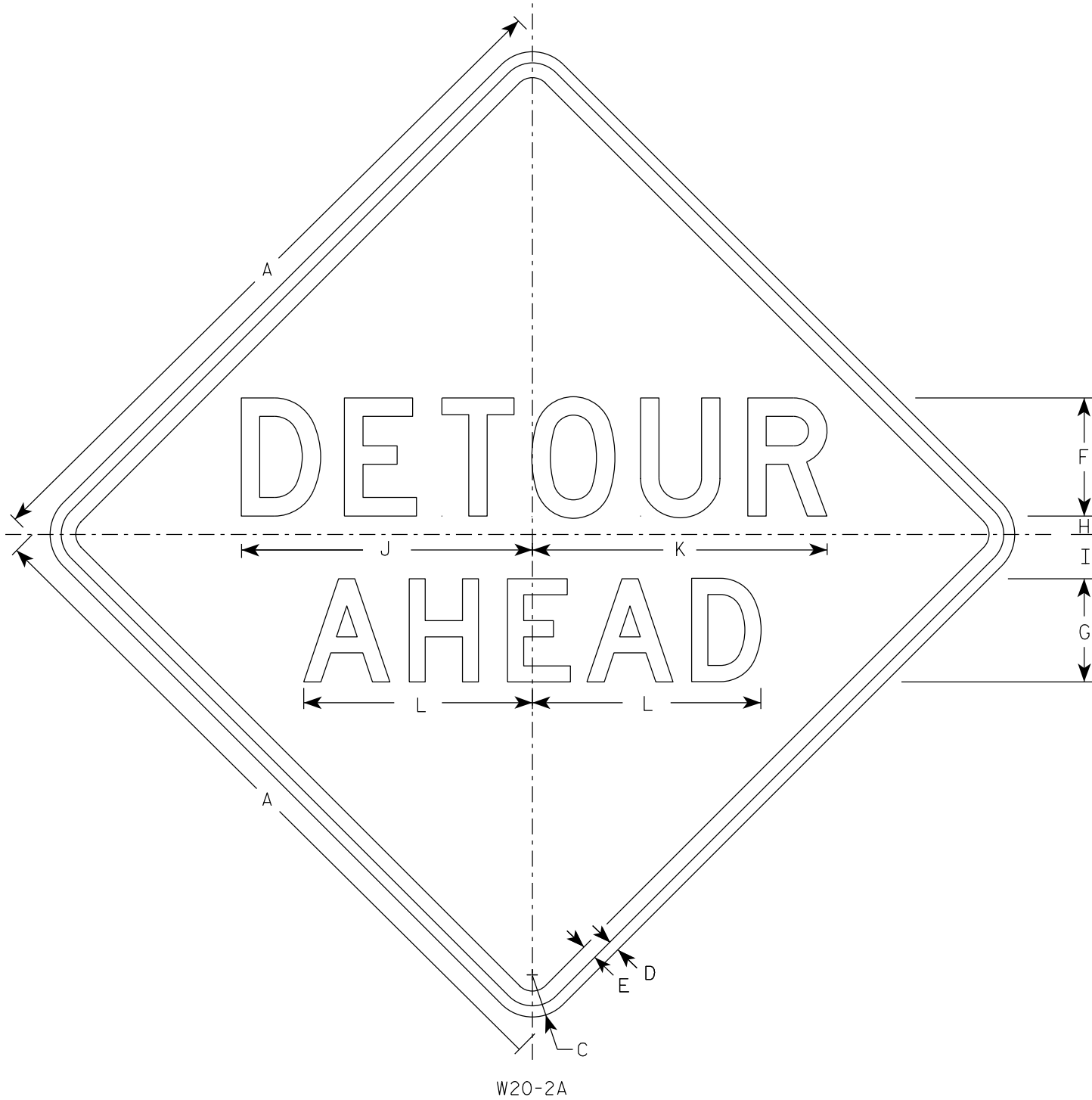
STANDARD SIGN

W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 3/4/2024 PLATE NO. W5-52.10



NOTES

1. Sign is Type II - Type F Reflective
2. Color:
Background - Orange
Message - Black
3. Message Series - See note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Line 1 is Series D.
Line 2 is Series D for AHEAD and Series C for all other distances.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	v	w	X	Y	Z	Area sq. ft.
1	36		2 1/4	5/8	3/4	6	5	1	2 1/4	14 3/4	15	11 5/8	9	1 3/8	1 7/8	5 5/8	10 1/8	2 1/2	1 1/8	4 1/2	3 1/2	8	1 3/4	10 3/4			9.0
2S	48		3	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
2M	48		3	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
3	48		3	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
4	48		3	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
5	48		3	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0

STANDARD SIGN
W20-2A,B,C,D,F & G

WISCONSIN DEPT OF TRANSPORTATION

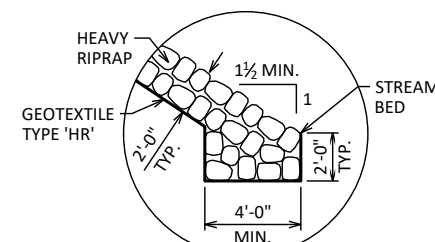
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 1/10/2024 PLATE NO. W20-2.7



ELEVATION

ELEVATION



REQUIRED IN AREAS
WITHOUT EXISTING RIPRAP
AT NORTH ABUTMENT

 DENOTES WINGWALL NUMBER

- ★ REMOVE EXISTING EXPANSION BEARING ASSEMBLIES. WORK TO BE INCLUDED IN BID ITEM "REMOVING BEARINGS". CLEAN AND SEAL ABUTMENT SEATS INCLUDED IN BID ITEM "ABUTMENT SEAT CLEANING AND SEALING". INSTALL NEW EXPANSION BEARING ASSEMBLIES INCLUDED IN BID ITEM "BEARING ASSEMBLIES EXPANSION 8-37-171".

CTH M:

ADT = 635 (2027)
ADT = 635 (2047)
R.D.S. = 55 MPH

- REMOVE EXISTING CONCRETE DECK, PARAPETS, DIAPHRAGMS, AND EXPANSION DEVICES AND REPLACE THE DECK AND EXPANSION DEVICES. NEW INTERMEDIATE DIAPHRAGMS SHALL BE STEEL.
- REMOVE EXISTING EXPANSION BEARING ASSEMBLIES AT ABUTMENTS AND REPLACE WITH NEW EXPANSION BEARING ASSEMBLIES.
- REMOVE EXISTING ABUTMENT BACKWALLS AND UPPER WINGWALLS AND REPLACE AS SHOWN IN THE PLANS.
- SCOUR REPAIR AT N. ABUT AND PIER 1. PLACE RIPRAP HEAVY IN THE WATER AT PIER 1 AS SHOWN IN THE PLACE. REPAIR SCOUR AT N. ABUT. WITH FOAM FILLING.
- CONCRETE SURFACE REPAIR AND EPOXY CRACK INJECTION AT THE ABUTMENTS AS DIRECTED BY THE ENGINEER IN THE FIELD. CONCRETE SURFACE REPAIR AT ABUTMENT GIRDER ENDS AS DIRECTED BY THE ENGINEER IN THE FIELD.
- PLACE RIPRAP HEAVY AND GEOTEXTILE TYPE HR AT ABUTMENTS AS SHOWN IN THE PLANS. IF GEOTEXTILE FABRIC AND RIPRAP EXISTS, REBUILD BERMS WITH RIPRAP HEAVY ONLY TO ELEVATIONS SHOWN AFTER SCOUR REPAIRS.

LIVE LOAD:

DESIGN LOADING: HS-20
INVENTORY RATING: HS = 13
OPERATING RATING: HS = 38
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV): 230 (KIPS)

MATERIAL PROPERTIES:

CONCRETE MASONRY:

SUPERSTRUCTURE _____	$f'_c = 4,000$ PSI
ALL OTHER _____	$f'_c = 3,500$ PSI

BAR STEEL REINFORCEMENT
GRADE 60 ————— $f_y = 60,000$ PSI

● BENCH MARK

NO.	STATION	DESCRIPTION	ELEV.
509	STA. 16+19.53, 32.19' RT.	MON WISDOT ALUMINUM DISK	1175.47
602	STA. 20+66.82, 27.96' LT.	BM BENCH TIE SET IN TELEPHONE POLE	1163.65

1. GENERAL PLAN & ELEVATION
2. CROSS SECTIONS, NOTES, & QUANTITIES
3. REMOVAL DETAILS
4. REMOVAL DETAILS 2
5. REMOVAL DETAILS 3
6. SOUTH ABUTMENT
7. SOUTH ABUTMENT DETAILS
8. NORTH ABUTMENT
9. NORTH ABUTMENT DETAILS
10. ABUTMENT DETAILS
11. PRESTRESSED GIRDER STEEL BEARINGS
12. STEEL DIAPHRAGM
13. FRAMING PLAN
14. SUPERSTRUCTURE PLAN
15. SUPERSTRUCTURE CROSS SECTIONS
16. SUPERSTRUCTURE DETAILS
17. SUPERSTRUCTURE DETAILS 2
18. SUPERSTRUCTURE DETAILS 3
19. FLOOR DRAIN TYPE 'GC'
20. EXPANSION DEVICE
21. COVER PLATE DETAILS
22. SINGLE SLOPE PARAPET 42SS

NO.	DATE	REVISION	BY



STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED  JLR 08/11/26
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE B-37-171

CTH M OVER BIG EAU PLEINE RIVER

COUNTY	MARATHON	TOWN	CLEVELAND
--------	----------	------	-----------

DESIGN SPEC.			
N/A REHABILITATION			
DESIGNED BY	VJD	DESIGN CK'D	AJC
DRAWN BY	VJD	PLANS CK'D	AJC

GENERAL PLAN
& ELEVATION

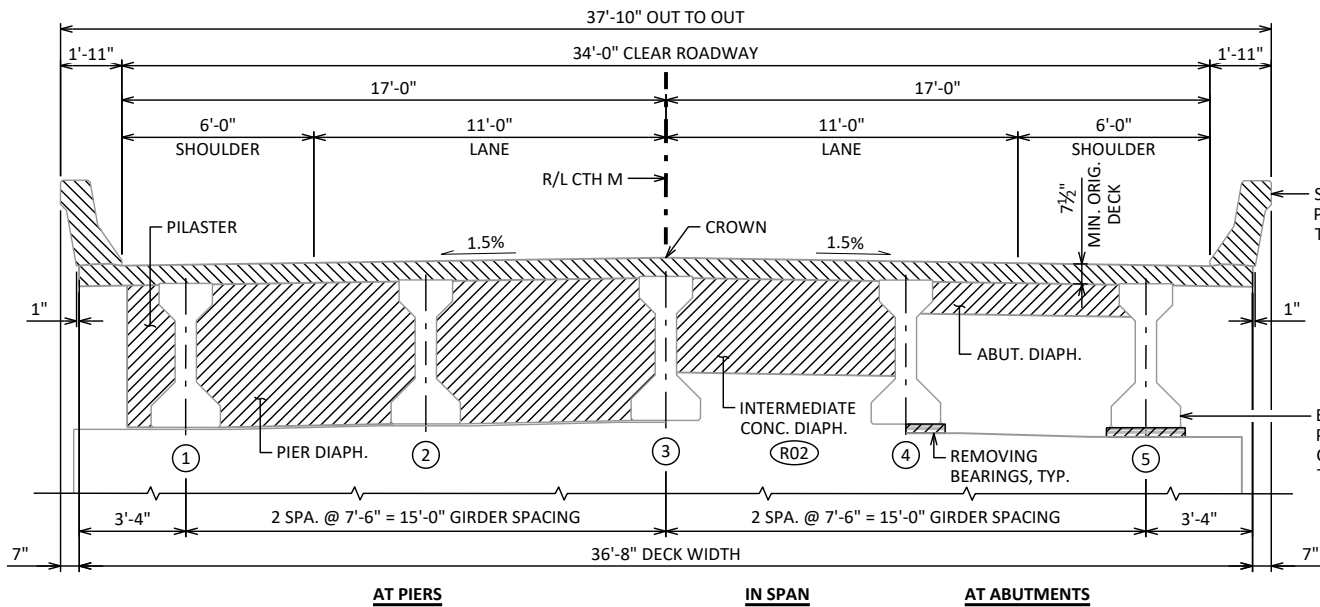
WISCONSIN

VINCENT J.
DIFRANCESCO
E-45790
MILWAUKEE,
WI.

PROFESSIONAL ENGINEER

7/30/2022

STRUCTURE DESIGN CONTACTS:
CONSULTANT: VINCENT DIFRANCES 414-383-2644
BRIDGE OFFICE: AARON BONK 608-261-0261



CROSS SECTION THRU EXISTING BRIDGE

LOOKING NORTH
SHOWING REMOVALS

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL CONSTRUCTION PLANS UNLESS NOTED OTHERWISE.

ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS NOTED OTHERWISE.

ALL STATIONS AND ELEVATIONS ARE IN FEET. ELEVATIONS ARE REFERENCED TO THE NAVD88 DATUM (2012 ADJUSTMENT).

PROTECTIVE SURFACE TREATMENT SHALL BE APPLIED TO THE ENTIRE TOP SURFACE OF THE NEW CONCRETE DECK AND ALL SURFACES OF THE PAVING NOTCH.

PIGMENTED SURFACE SEALER SHALL BE APPLIED TO THE TOP AND ROADWAY FACES OF PARAPETS.

THE SLOPE OF THE FILL AT WINGS AND IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH HEAVY RIPRAP AND GEOTEXTILE TYPE "HR" TO THE EXTENT SHOWN ON SHEET 1 AND THE ABUTMENT DETAILS. GEOTEXTILE TYPE "HR" IS ONLY REQUIRED IN AREAS NOT ALREADY COVERED WITH RIPRAP. ANY EXCAVATION REQUIRED TO PLACE RIPRAP HEAVY AS SHOWN SHALL BE INCLUDED IN BID ITEM "RIPRAP HEAVY"

CONCRETE SURFACE REPAIR QUANTITIES ARE AN ESTIMATE ONLY. ACTUAL QUANTITIES AND LOCATIONS TO BE DETERMINED BY THE ENGINEER IN THE FIELD. REPAIR AREAS INCLUDED IN THE TOTAL ESTIMATED QUANTITIES INCLUDE THE NORTH AND SOUTH ABUTMENTS AND GIRDER ENDS AT ABUTMENTS.

BEVEL EXPOSED EDGES OF CONCRETE 3/4" UNLESS NOTED OTHERWISE.

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

THE FIRST DIGIT OF A 3-DIGIT OR FIRST TWO DIGITS OF A 4-DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

UTILIZE EXISTING REINFORCEMENT WHERE SHOWN AND EXTEND 24 BAR DIAMETERS INTO NEW WORK, UNLESS SPECIFIED OTHERWISE.

VARIATIONS TO THE NEW GRADE LINE OVER 1/2" MUST BE SUBMITTED BY THE ENGINEER IN THE FIELD TO THE STRUCTURES DESIGN SECTION FOR REVIEW.

THE CONTRACTOR SHALL SUPPLY A NEW NAME PLATE IN ACCORDANCE WITH SECTION 502.3.11 OF THE STANDARD SPECIFICATION AND THE STANDARD DETAIL DRAWINGS. NAME PLATE TO SHOW ORIGINAL CONSTRUCTION YEAR OF 1975.

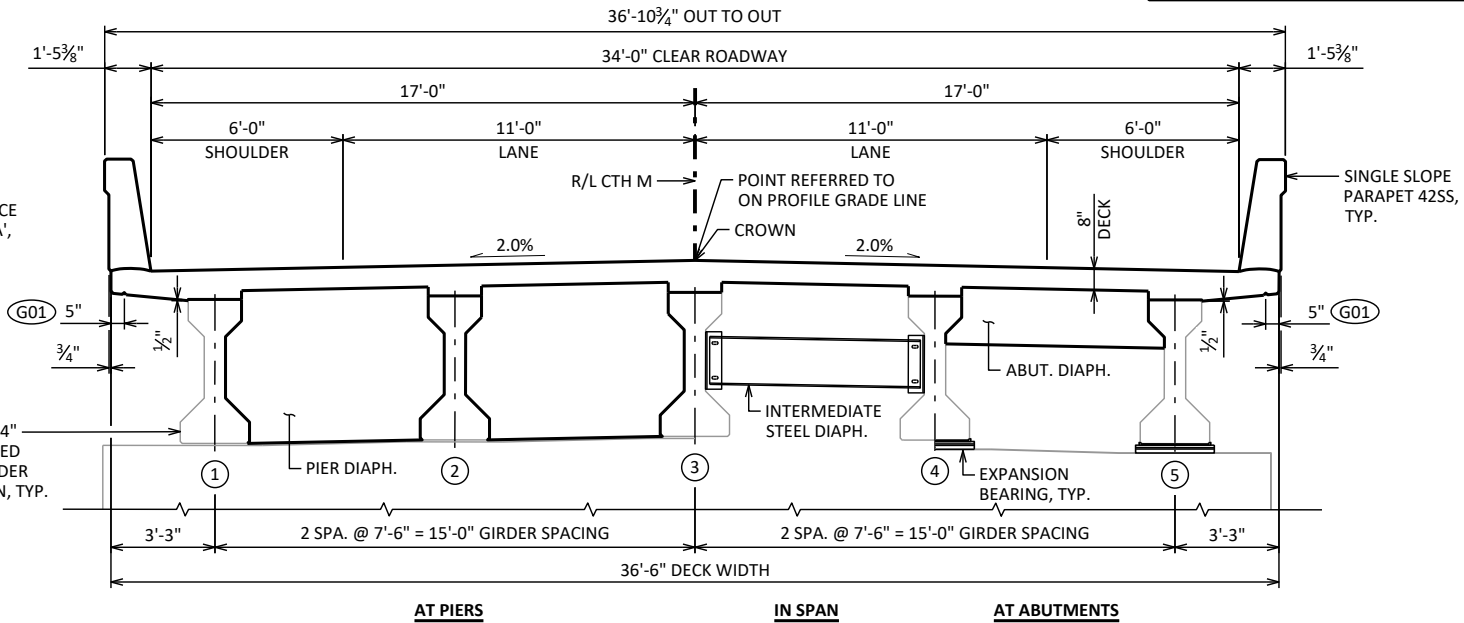
CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE EXISTING GIRDER, INCLUDING SHEAR STIRRUPS. SAW CUTTING OF THE EXISTING SHEAR STIRRUPS IS NOT ALLOWED. STIRRUPS AND GIRDERS DAMAGED DURING THE REMOVAL OF THE EXISTING DECK AND DIAPHRAGMS SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND REPAIRED AT NO ADDITIONAL COST TO THE DEPARTMENT.

ALL CONCRETE REMOVALS SHALL BE DEFINED BY A 1" DEEP SAWCUT AT THE CONCRETE SURFACE.

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-37-171" SHALL BE THE EXISTING GROUNDLINE.

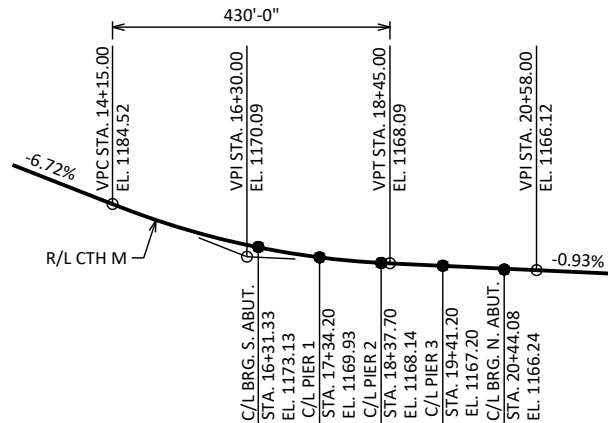
THE BACKFILL QUANTITIES ARE BASED ON THE PAY LIMITS SHOWN ON THE PLANS AND MAY NOT REFLECT ACTUAL PLACED QUANTITIES. BACKFILL PLACED BEYOND THE PAY LIMITS OR EXCEEDING PLAN QUANTITIES SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES.

THE EXISTING STRUCTURE, B-37-171, IS A FOUR SPAN 54" PRESTRESSED CONCRETE GIRDER BRIDGE WITH AN OVERALL LENGTH OF 418'-1" AND AN OVERALL WIDTH OF 37'-10". THE EXISTING DECK, PARAPETS, DIAPHRAGMS, EXPANSION BEARINGS, AND EXPANSION DEVICES ARE TO BE REMOVED AND REPLACED AS SHOWN ON THE PLANS. REMOVE AND REPLACED PORTIONS OF THE ABUTMENTS AS SHOWN ON THE PLANS.



CROSS SECTION THRU DECK REPLACEMENT

LOOKING NORTH



PROFILE GRADE LINE

LEGEND

(R02) EXISTING INTERMEDIATE CONCRETE DIAPHRAGMS ARE TIED TO THE EXISTING GIRDERS. TAKE CARE AS TO NOT DAMAGE GIRDERS DURING REMOVAL OF THE DIAPHRAGMS. CUT EXISTING REINFORCEMENT FLUSH WITH GIRDER CONCRETE AND PAINT WITH EPOXY PRIOR TO INSTALLATION OF STEEL DIAPHRAGMS. REPAIRS REQUIRED AFTER DIAPHRAGM REMOVAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE COMPLETED AT NO COST TO THE DEPARTMENT.

(G01) 3/4" V-GROOVE REQUIRED. EXTEND V-GROOVE TO 6" FROM FRONT FACE OF ABUTMENT DIAPHRAGM.

/// DENOTES LIMITS OF REMOVAL

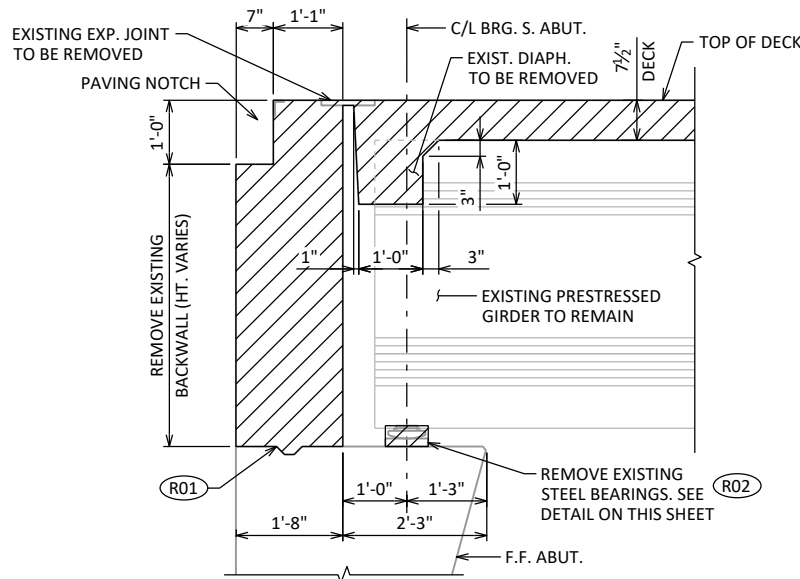
(X) INDICATES GIRDER NUMBER

TOTAL ESTIMATED QUANTITIES

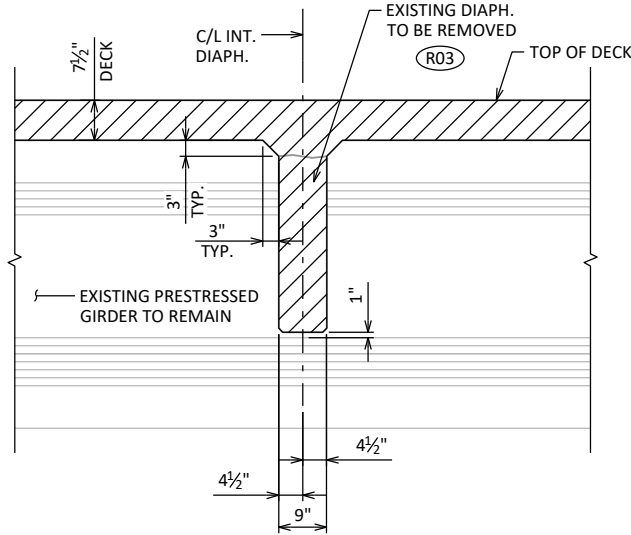
BID ITEM NUMBER	BID ITEMS	UNIT	S. ABUT.	PIER 1	N. ABUT.	SUPER	TOTALS
203.0260	REMOVING STRUCTURE OVER WATERWAY MINIMAL DEBRIS B-37-171	EACH	-	-	-	-	1
206.1001	EXCAVATION FOR STRUCTURES BRIDGES B-37-171	EACH	-	-	-	-	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	165	-	165	-	330
502.0100	CONCRETE MASONRY BRIDGES	CY	29.5	-	24.3	595.6	650
502.3101	EXPANSION DEVICE	LF	-	-	-	68	68
502.3200	PROTECTIVE SURFACE TREATMENT	SY	14	-	14	1,566	1,594
502.3210	PIGMENTED SURFACE SEALER	SY	16	-	12	408	436
502.4205	ADHESIVE ANCHORS NO. 5 BAR	EACH	20	-	38	-	58
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	3,320	-	2,860	157,560	163,740
506.4000	STEEL DIAPHRAGMS B-37-171	EACH	-	-	-	32	32
506.6000	BEARING ASSEMBLIES EXPANSION B-37-171	EACH	5	-	5	-	10
506.7050.S	REMOVING BEARINGS B-37-171	EACH	5	-	5	-	10
509.1500	CONCRETE SURFACE REPAIR	SF	19	-	6	-	25
509.9025.S	EPOXY INJECTION CRACK REPAIR	LF	35	-	-	-	35
509.9026.S	CORED HOLES 2-INCH DIAMETER	EACH	10	-	-	-	10
514.0445	FLOOR DRAINS TYPE GC	EACH	-	-	-	4	4
514.2625	DOWNSPOUT 6-INCH	LF	-	-	-	22	22
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	9	-	12	-	21
606.0300	RIPRAP HEAVY	CY	70	106	156	-	332
606.9105.S	UNDERWATER SUBSTRUCTURE BACKFILL OR RIPRAP INSPECTION B-37-171	EACH	-	-	-	-	1
614.0150	ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD	EACH	2	-	2	-	4
645.0120	GEOTEXTILE TYPE HR	SY	74	-	117	-	191
SPV.0060	FOAM VOID FILLING B-37-171	EACH	-	-	-	-	1
SPV.0180	ABUTMENT SEAT CLEANING AND SEALING	SY	10	-	10	-	20
	NON-BID ITEMS						
	FILLER	SIZE					3/4"
	NAME PLATE	EACH					1

ALL B-37-171 BID ITEMS ARE CATEGORY 0020

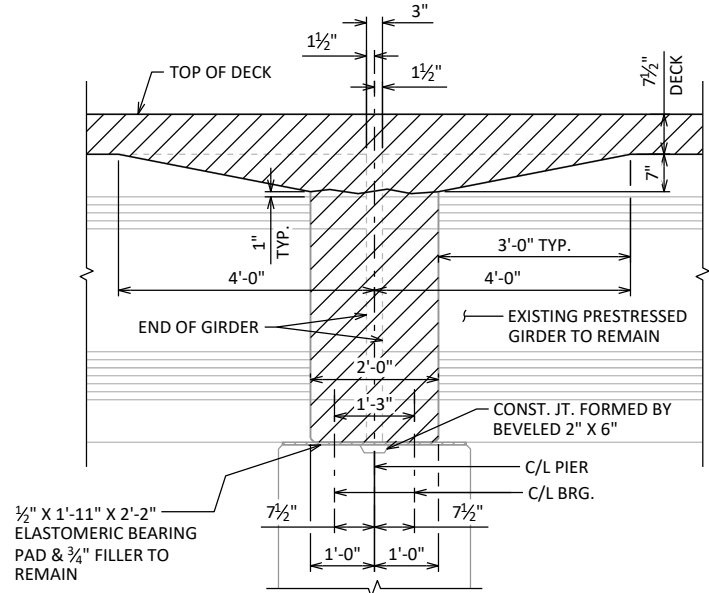
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
		DRAWN BY	PLANS CK'D
		VJD	AJC
CROSS SECTIONS, NOTES, & QUANTITIES		SHEET 2 OF 22	
		84	



ABUTMENT END DIAPHRAGMS
S. ABUT. SHOWN, N. ABUT. SIMILAR



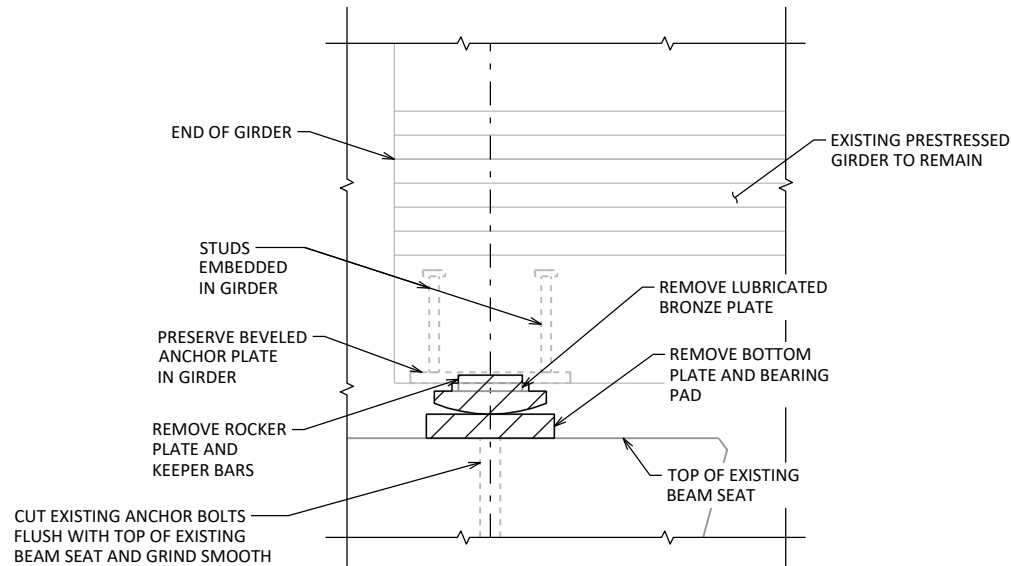
INTERMEDIATE DIAPHRAGMS
ALL INTERMEDIATE DIAPH. LOCATION SIMILAR



PIER DIAPHRAGMS
ALL PIER DIAPHRAGMS SIMILAR

EXISTING LONGITUDINAL SECTION

LOOKING WEST, SHOWING REMOVALS



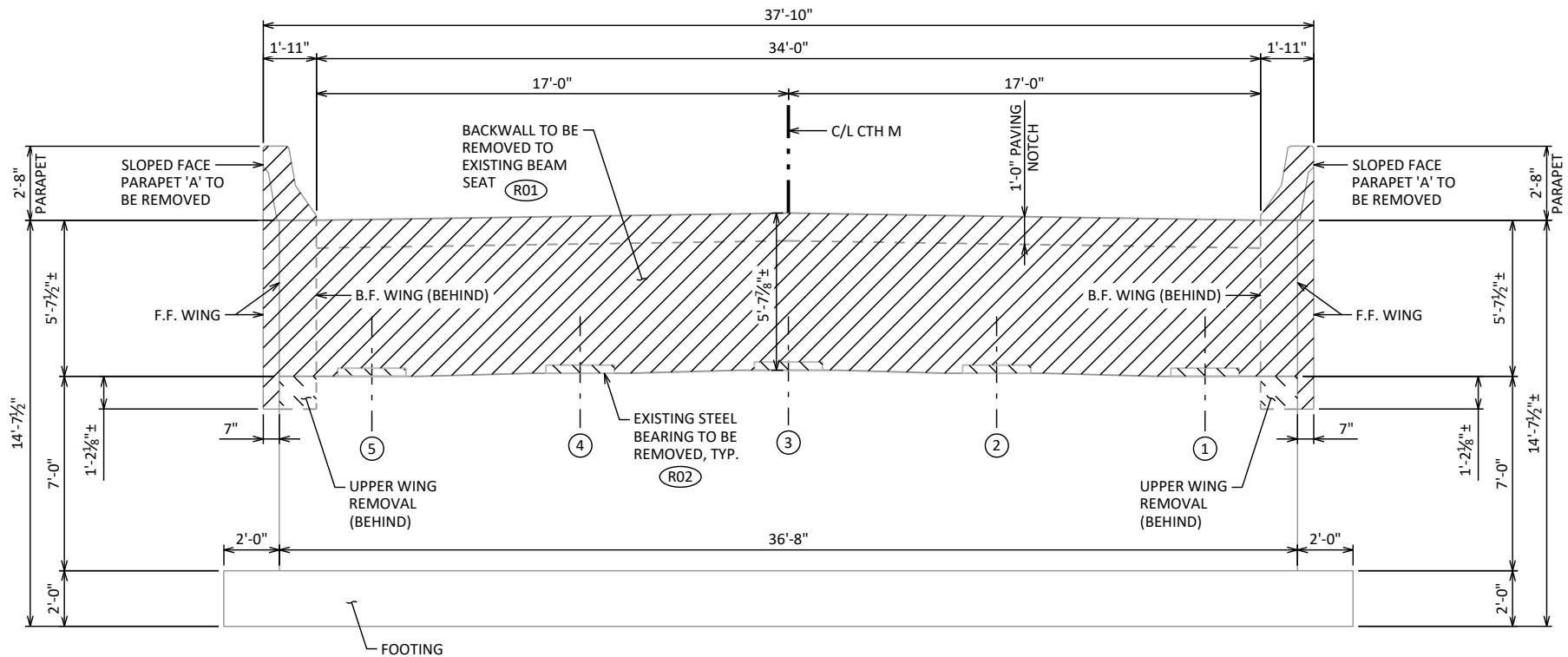
BEARING REMOVAL DETAIL

REMOVAL AND DISPOSAL OF EXISTING BEARINGS AS SHOWN, INCLUDING JACKING OF THE BRIDGE AS REQUIRED TO REMOVE AND INSTALL THE NEW BEARING ASSEMBLIES, SHALL BE INCLUDED IN THE BID ITEM "REMOVING BEARINGS B-37-171".

LEGEND

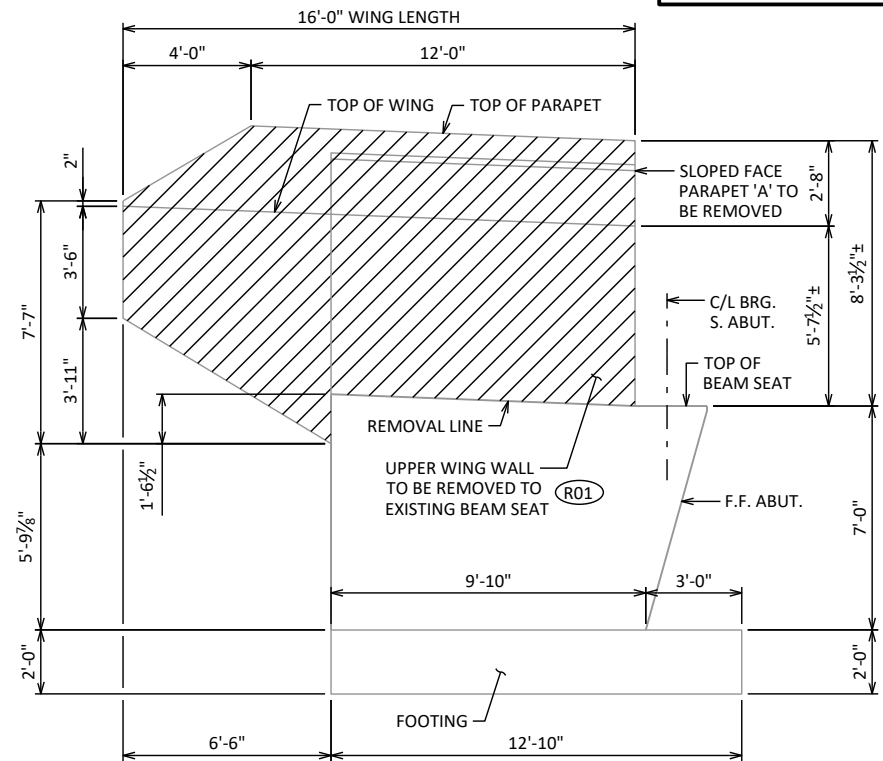
- (R01)** REMOVAL LINE SHALL BE DEFINED BY A 1" DEEP SAW CUT. IF CONSTRUCTION JOINTS ARE PRESENT, MATCH REMOVAL LINE LOCATION WITH EXISTING CONSTRUCTION JOINTS. PRESERVE EXISTING VERTICAL REINFORCEMENT AS SHOWN AND EXCEPT AS NOTED ON THE ABUTMENT DETAIL SHEETS.
- (R02)** ESTABLISH EXISTING BOTTOM OF GIRDER ELEVATION PRIOR TO REMOVAL OF THE EXISTING BEARINGS. BOTTOM OF GIRDER ELEVATION SHALL REMAIN UNCHANGED FOR THE PROPOSED CONDITION.
- (R03)** REINFORCEMENT IN EXISTING INTERMEDIATE DIAPHRAGMS IS CONNECTED TO GIRDERS THROUGH SLEEVES AND INSERTS. TAKE CARE AS TO NOT DAMAGE GIRDERS DURING REMOVAL OF THE DIAPHRAGMS. CUT EXISTING REINFORCEMENT FLUSH WITH GIRDER CONCRETE AND FILL SLEEVES AND INSERTS WITH EPOXY. PAINT EXPOSED ENDS OF REINFORCEMENT THRU GIRDERS WITH EPOXY CONFORMING TO AASHTO M-235, TYPE III, GRADE 2, CLASS B OR C. COST FOR THIS WORK SHALL BE INCIDENTAL TO BID ITEM "STEEL DIAPHRAGMS B-37-171". REPAIRS REQUIRED AFTER DIAPHRAGM REMOVAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE COMPLETED AT NO COST TO THE DEPARTMENT.

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY VJD		PLANS CK'D AIC	
REMOVAL DETAILS		SHEET 3 OF 22	
		85	



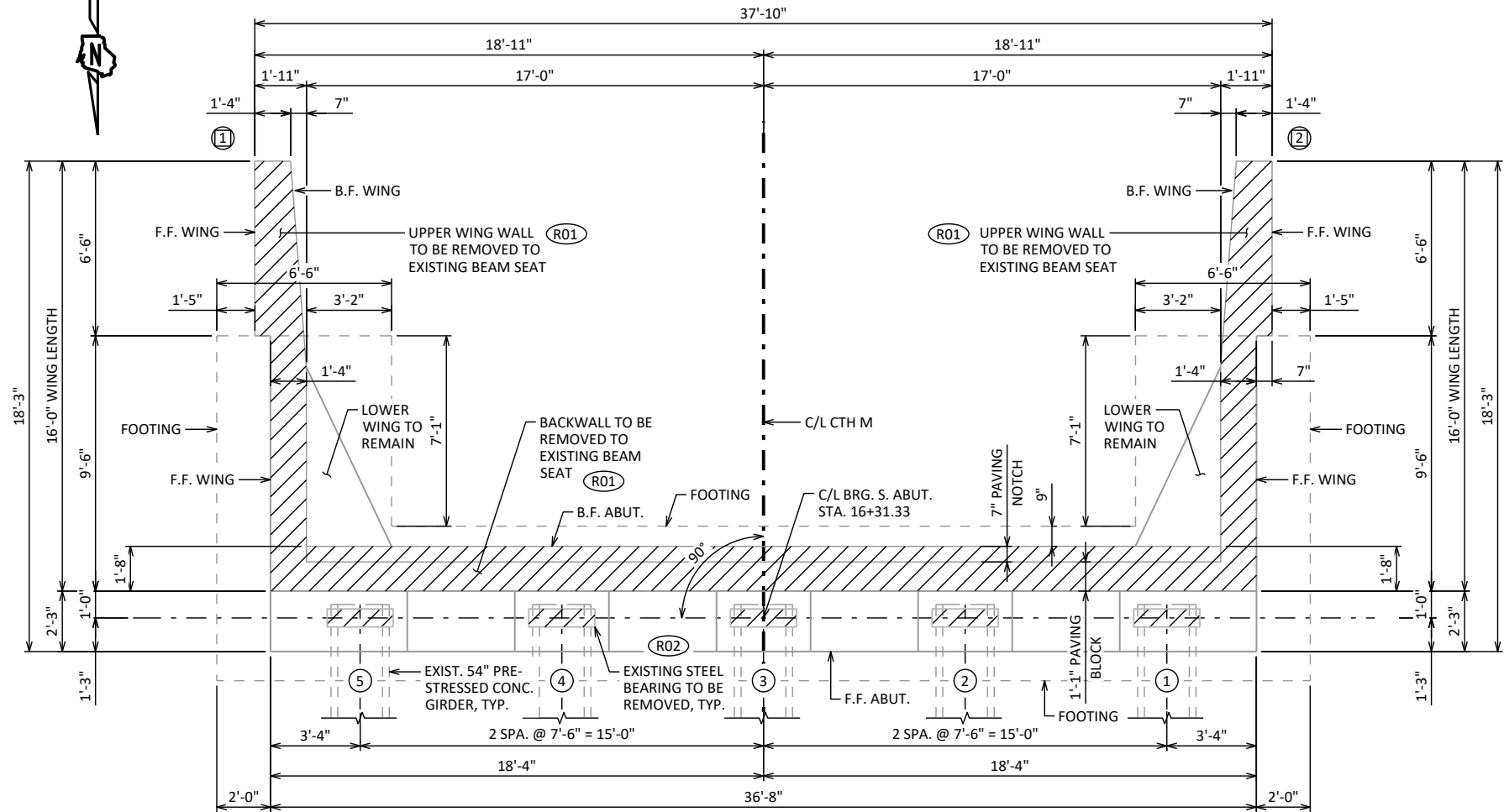
ELEVATION

LOOKING SOUTH AT FRONT FACE
SHOWING REMOVALS



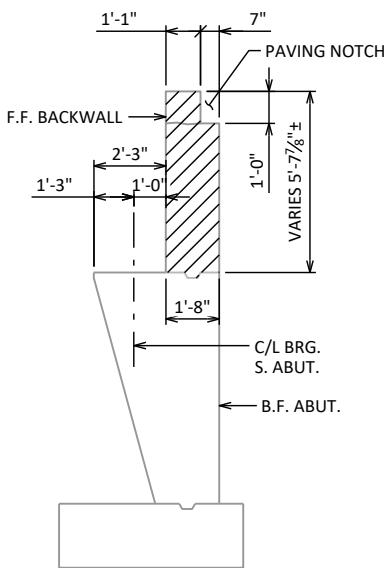
WINGWALL ELEVATION

LOOKING AT FRONT FACE
WINGS 1 AND WING 2 SIMILAR

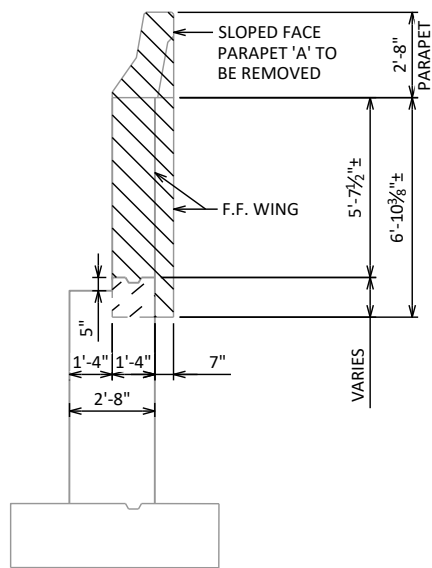


PLAN

SHOWING REMOVALS AT S. ABUT.



SECTION THRU ABUTMENT



SECTION THRU WING

LEGEND

- (X) DENOTES EXISTING GIRDER NUMBER
- (R01) REMOVAL LINE SHALL BE DEFINED BY A 1" DEEP SAW CUT. IF CONSTRUCTION JOINTS ARE PRESENT, MATCH REMOVAL LINE LOCATION WITH EXISTING CONSTRUCTION JOINTS. PRESERVE EXISTING VERTICAL REINFORCEMENT
- (R02) ESTABLISH EXISTING BOTTOM OF GIRDER ELEVATION PRIOR TO REMOVAL OF THE EXISTING BEARINGS. BOTTOM OF GIRDER ELEVATION SHALL REMAIN UNCHANGED FOR THE PROPOSED CONDITION.
- /// DENOTES LIMITS OF REMOVAL
- (X) DENOTES WING WALL NUMBER

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY VJD		PLANS CK'D AIC	
REMOVAL DETAILS 2		SHEET 4 OF 22 86	



LOOKING AT FRONT FACE
WINGS 3 AND WING 4 SIMILAR

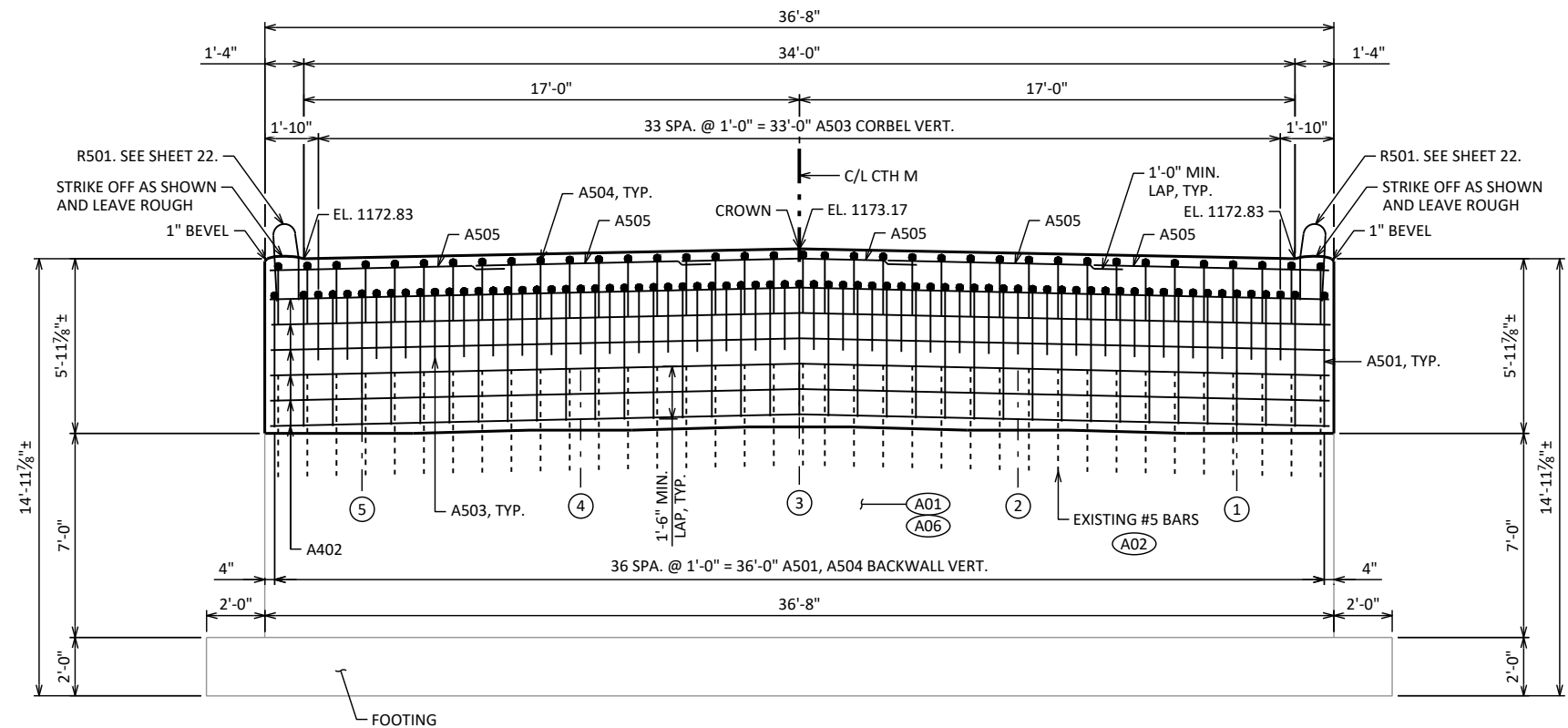


SHOWING REMOVALS AT S. ABUT.



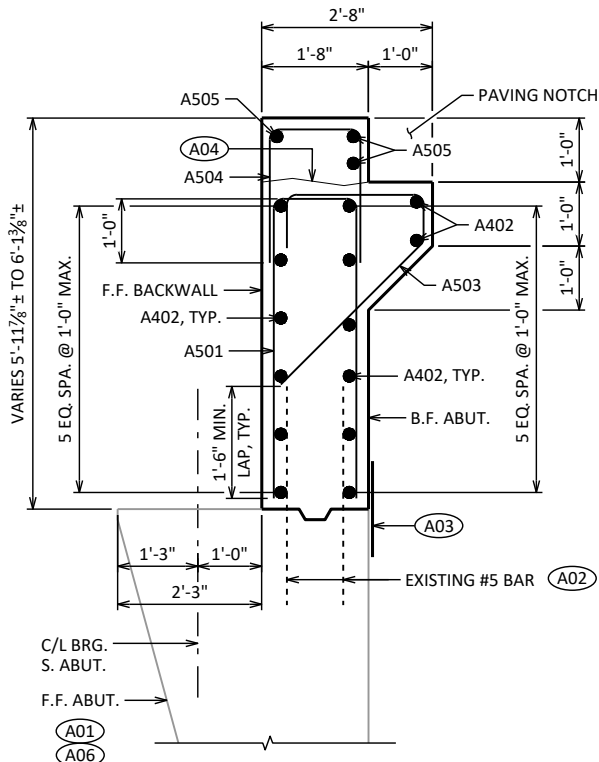
 DENOTES WING WALL NUMBER

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-37-171	
		DRAWN BY	PLANS CK'D
		VJD	ALC
REMOVAL DETAILS 3		SHEET 5 OF 22	
		87	



ELEVATION

LOOKING SOUTH AT FRONT FACE
SHOWING REINFORCEMENT
NEW BEARINGS NOT SHOWN FOR CLARITY

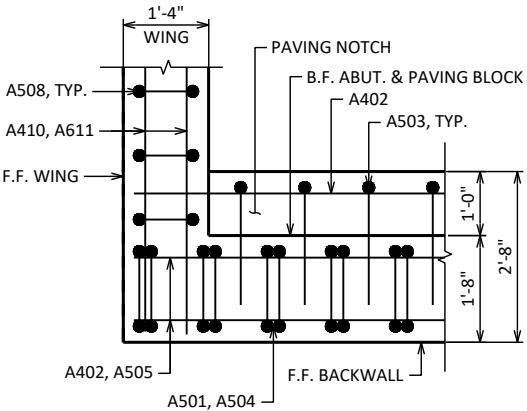


SECTION THRU BACKWALL

LOOKING EAST
SHOWING REINFORCEMENT

LEGEND

- (A01) "EPOXY INJECTION CRACK REPAIR" AND "CORED HOLES 2-INCH DIAMETER" REQUIRED AT ABUTMENT FRONT FACE. LOCATIONS AS DIRECTED BY THE ENGINEER IN THE FIELD.
- (A02) PRESERVE, CLEAN, AND STRAIGHTEN EXISTING VERTICAL REINFORCEMENT AND INCORPORATE INTO NEW WORK. EXISTING BARS MAY BE INCORPORATED FULL LENGTH OR MAY BE CUT TO PROVIDE THE MINIMUM LAP LENGTH AT THE DISCRETION OF THE CONTRACTOR.
- (A03) 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. AND VERT. JOINTS ON BACK FACE.
- (A04) CONSTRUCTION JOINT. POUR CONCRETE ABOVE THIS JOINT AFTER SUPERSTRUCTURE IS IN PLACE. STRIKE OFF AND LEAVE ROUGH.
- (A06) "CONCRETE SURFACE REPAIR" AS DIRECTED BY THE ENGINEER IN THE FIELD.
- (X) DENOTES EXISTING GIRDER NUMBER
- (XI) DENOTES WING WALL NUMBER



CORNER PLAN DETAIL

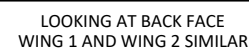
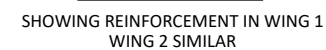
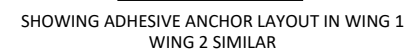
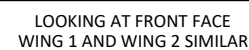
SHOWING BACKWALL & WING REINFORCEMENT
WING 1 CORNER SHOWN, WING 2 CORNER SIMILAR

NOTES

SEE BILL OF BARS ON "ABUTMENT DETAILS" SHEET.

EXPANSION DEVICE AND BACKWALL ANCHORAGE ARE NOT SHOWN FOR CLARITY. SEE "EXPANSION DEVICE" SHEET FOR DETAILS.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY VJD		PLANS CK'D AIC	
SOUTH ABUTMENT		SHEET 6 OF 22 88	



SECTION A-A

SECTION B-B

SEE BILL OF BARS ON "ABUTMENT DETAILS" SHEET.

FOR PARAPET REINFORCEMENT AND TRANSITION DETAILS, AND
PARAPET BILL OF BARS, SEE "SINGLE SLOPE PARAPET 42SS" SHEET.

(A01) "EPOXY INJECTION CRACK REPAIR" AND "CORED HOLES 2-INCH DIAMETER" REQUIRED AT ABUTMENT FRONT FACE. LOCATIONS AS DIRECTED BY THE ENGINEER IN THE FIELD.

(A02) PRESERVE, CLEAN, AND STRAIGHTEN EXISTING VERTICAL REINFORCEMENT AND INCORPORATE INTO NEW WORK. EXISTING BARS MAY BE INCORPORATED FULL LENGTH OR MAY BE CUT TO PROVIDE THE MINIMUM LAP LENGTH AT THE DISCRETION OF THE CONTRACTOR.

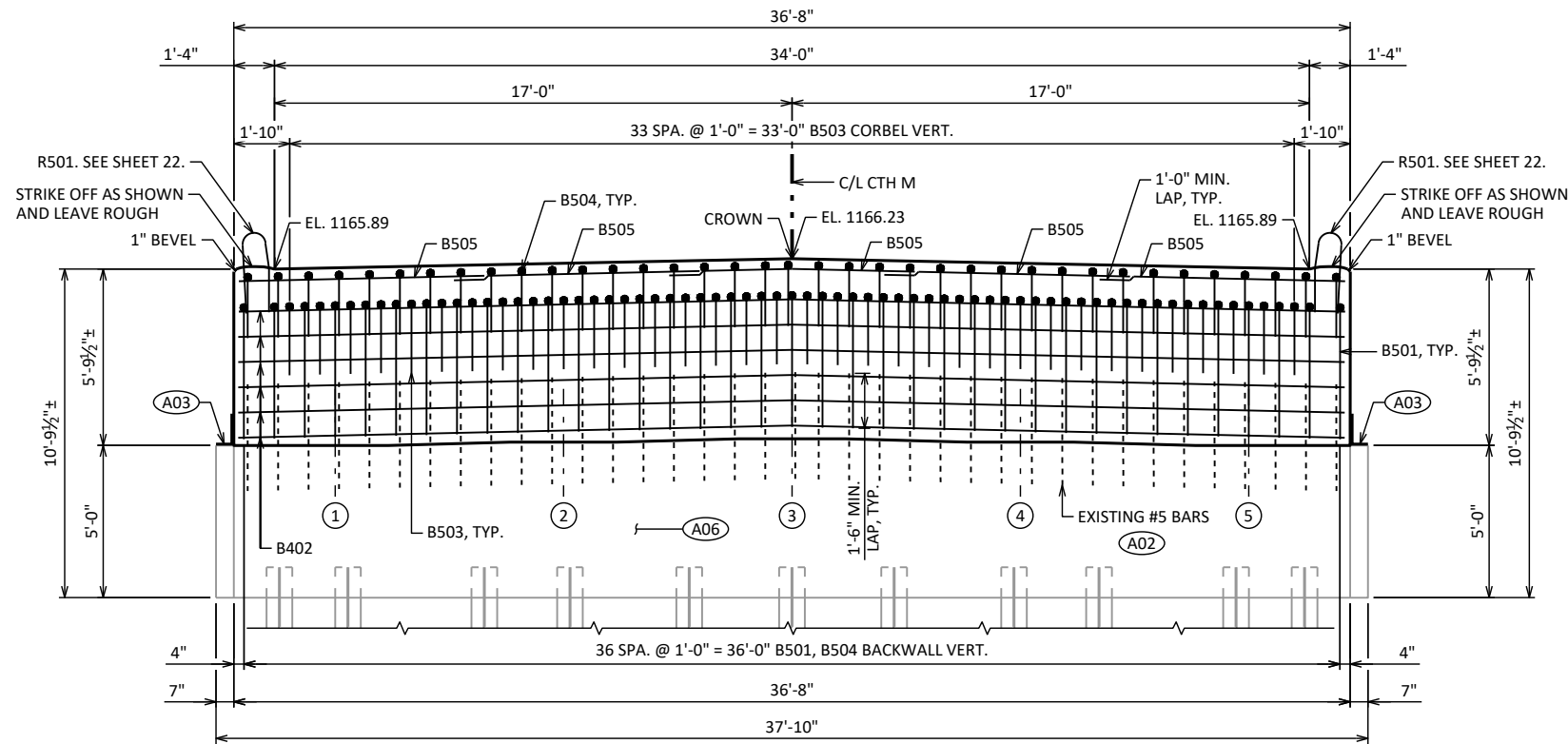
(A03) 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. AND VERT. JOINTS ON BACK FACE.

(A05) ADHESIVE ANCHORS NO. 5 BAR. EMBED 1'-0" INTO EXISTING CONCRETE. SEE DETAILS ON THIS SHEET FOR ADHESIVE ANCHORS NO. 5 BAR LAYOUT.

(A06) "CONCRETE SURFACE REPAIR" AS DIRECTED BY THE ENGINEER IN THE FIELD.

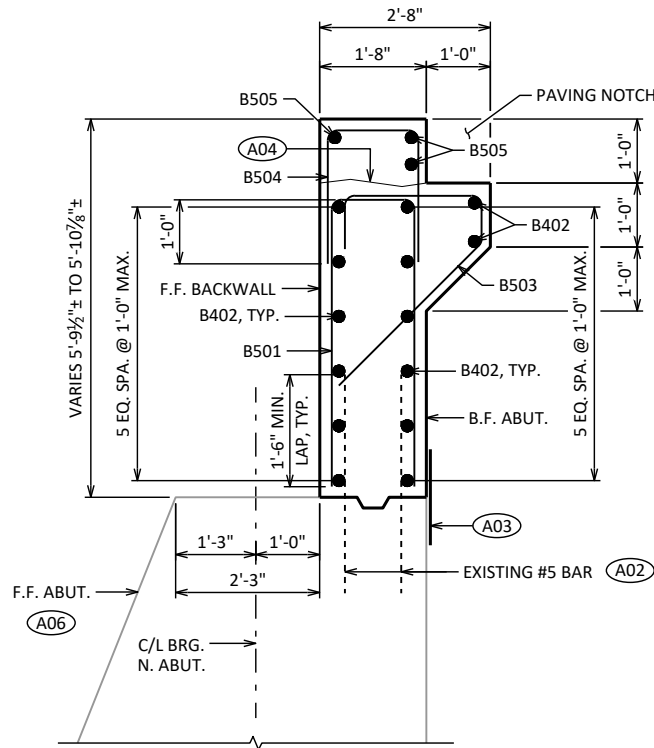
(X) INDICATES WING WALL NUMBER

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-37-171	
		DRAWN BY	PLANS CK'D
		VJD	AJC
SOUTH ABUTMENT DETAILS		SHEET 7 OF 22 89	



ELEVATION

LOOKING NORTH AT FRONT FACE
SHOWING REINFORCEMENT
NEW BEARINGS NOT SHOWN FOR CLARITY

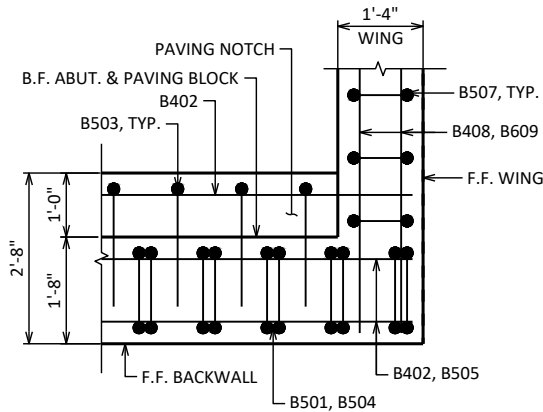


SECTION THRU BACKWALL

LOOKING WEST
SHOWING REINFORCEMENT

LEGEND

- (A02) PRESERVE, CLEAN, AND STRAIGHTEN EXISTING VERTICAL REINFORCEMENT AND INCORPORATE INTO NEW WORK. EXISTING BARS MAY BE INCORPORATED FULL LENGTH OR MAY BE CUT TO PROVIDE THE MINIMUM LAP LENGTH AT THE DISCRETION OF THE CONTRACTOR.
- (A03) 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. AND VERT. JOINTS ON BACK FACE AND HORIZ. JOINTS ON FRONT FACE AS NOTED.
- (A04) CONSTRUCTION JOINT. POUR CONCRETE ABOVE THIS JOINT AFTER SUPERSTRUCTURE IS IN PLACE. STRIKE OFF AND LEAVE ROUGH.
- (A06) "CONCRETE SURFACE REPAIR" AS DIRECTED BY THE ENGINEER IN THE FIELD.
- (X) DENOTES EXISTING GIRDER NUMBER
- (X) DENOTES WING WALL NUMBER



CORNER PLAN DETAIL

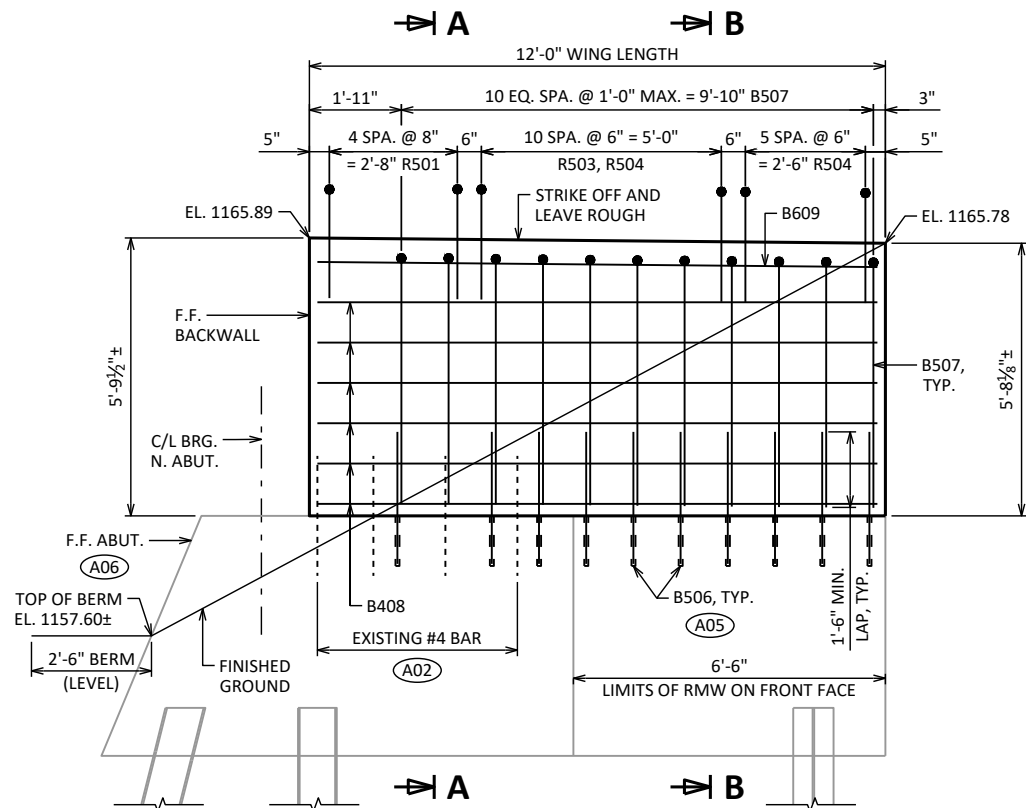
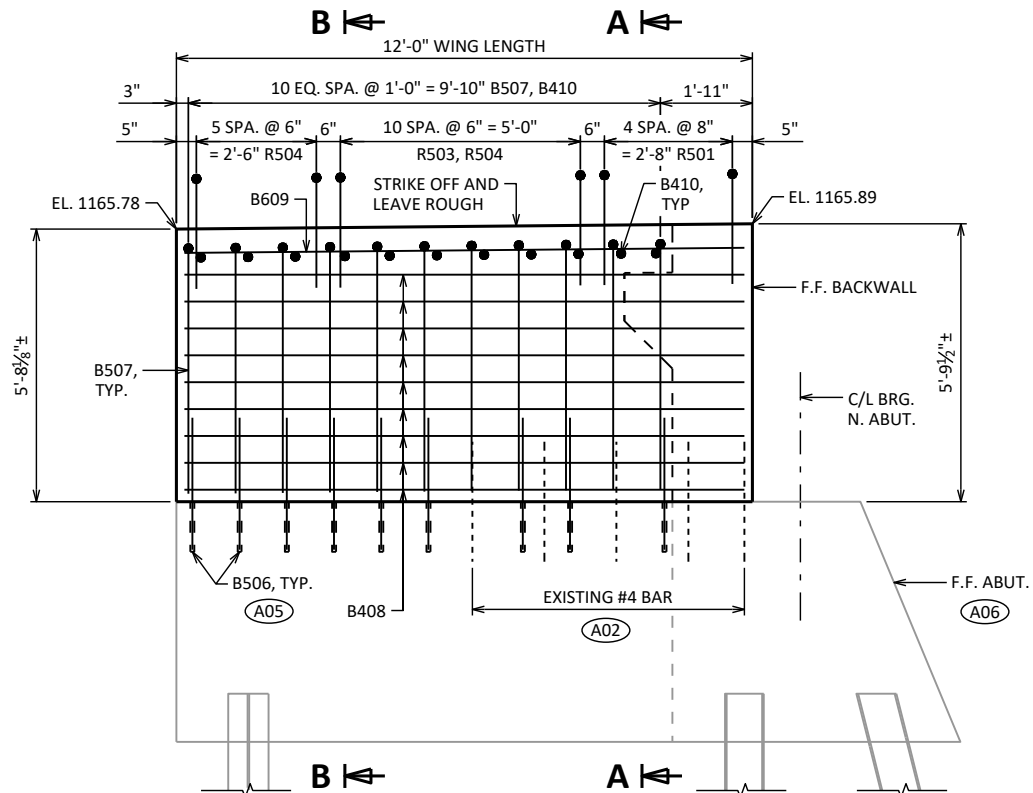
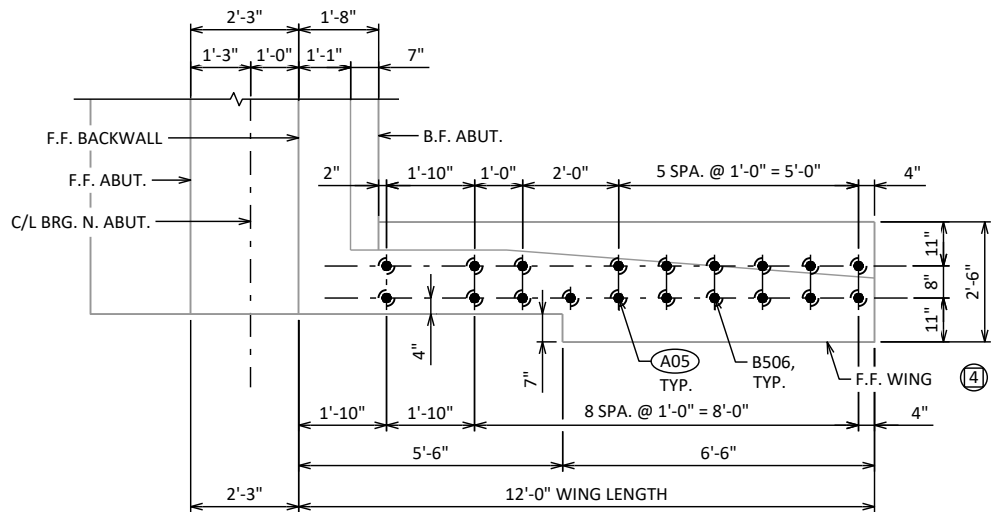
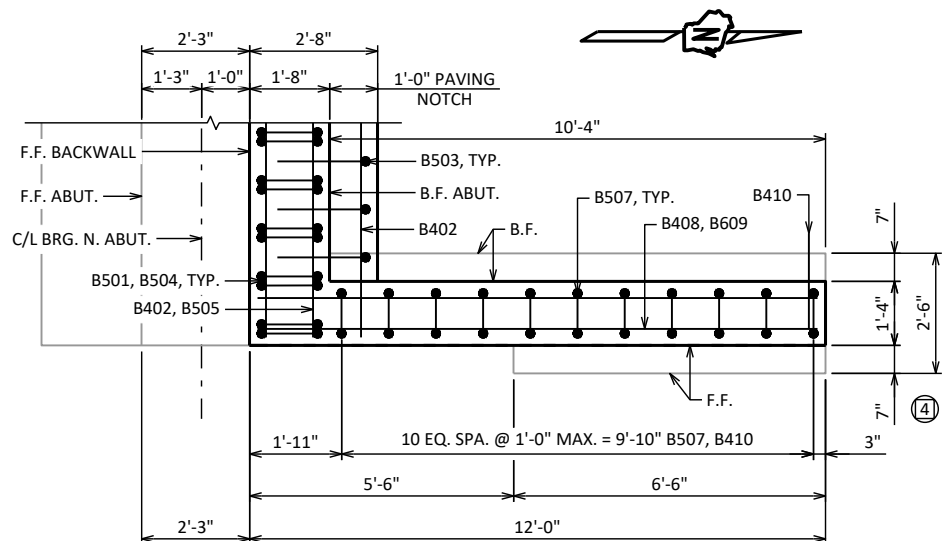
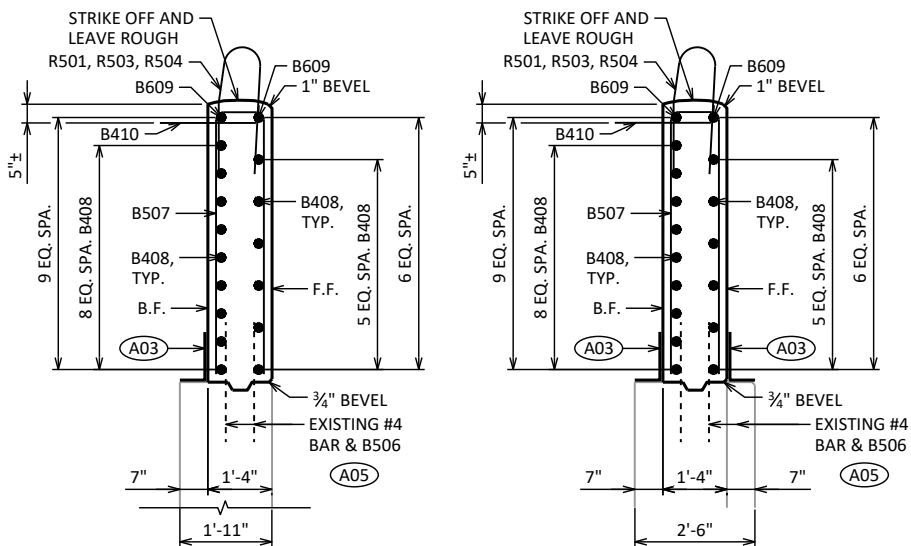
SHOWING BACKWALL & WING REINFORCEMENT
WING 4 CORNER SHOWN, WING 3 CORNER SIMILAR

NOTES

SEE BILL OF BARS ON "ABUTMENT DETAILS" SHEET.

EXPANSION DEVICE AND BACKWALL ANCHORAGE ARE NOT SHOWN FOR CLARITY. SEE "EXPANSION DEVICE" SHEET FOR DETAILS.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY VJD		PLANS CK'D AJC	
NORTH ABUTMENT		SHEET 8 OF 22	
		90	

**WING ELEVATION**LOOKING AT FRONT FACE
WING 3 AND WING 4 SIMILAR**WING ELEVATION**LOOKING AT BACK FACE
WING 3 AND WING 4 SIMILAR**WING PLAN**SHOWING ADHESIVE ANCHOR LAYOUT IN WING 4
WING 3 SIMILAR**WING PLAN**SHOWING ADHESIVE ANCHOR LAYOUT IN WING 4
WING 3 SIMILAR**SECTION A-A****SECTION B-B****NOTES**

SEE BILL OF BARS ON "ABUTMENT DETAILS" SHEET.

FOR PARAPET REINFORCEMENT AND TRANSITION DETAILS, AND
PARAPET BILL OF BARS, SEE "SINGLE SLOPE PARAPET 42SS" SHEET.**LEGEND**

- (A02) PRESERVE, CLEAN, AND STRAIGHTEN EXISTING VERTICAL REINFORCEMENT AND INCORPORATE INTO NEW WORK. EXISTING BARS MAY BE INCORPORATED FULL LENGTH OR MAY BE CUT TO PROVIDE THE MINIMUM LAP LENGTH AT THE DISCRETION OF THE CONTRACTOR.
- (A03) 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. AND VERT. JOINTS ON BACK FACE.
- (A05) ADHESIVE ANCHORS NO. 5 BAR. EMBED 1'-0" INTO EXISTING CONCRETE. SEE DETAILS ON THIS SHEET FOR ADHESIVE ANCHORS NO. 5 BAR LAYOUT.
- (A06) "CONCRETE SURFACE REPAIR" AS DIRECTED BY THE ENGINEER IN THE FIELD.
- (X) INDICATES WING WALL NUMBER

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY		VJD	PLANS CK'D AJC
NORTH ABUTMENT DETAILS		SHEET 9 OF 22 91	

BILL OF BARS - SOUTH ABUTMENT

UNCOATED: 0 LB
COATED: 2,270 LB

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

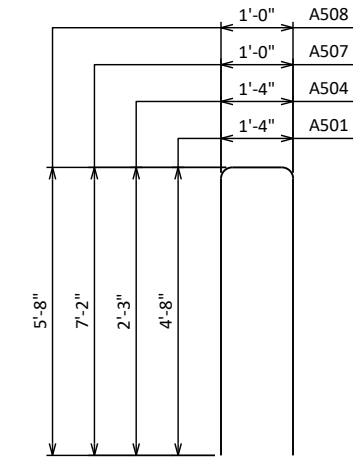
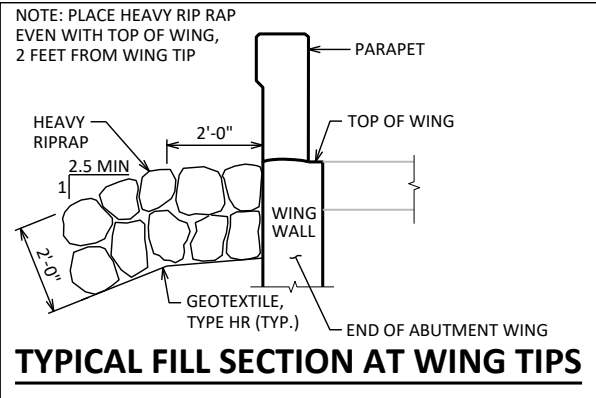
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
A501	X	37	10'-5"	X		ABUT. BACKWALL - VERT.
A402	X	14	36'-3"			ABUT. BACKWALL - HORIZ.
A503	X	34	6'-9"	X		ABUT. BACKWALL - VERT. - CORBEL
A504	X	37	5'-7"	X		ABUT. BACKWALL - VERT. - PAVING BLOCK
A505	X	15	8'-3"			ABUT. BACKWALL - HORIZ. - PAVING BLOCK
A506	X	20	3'-0"			WINGS - VERT. - DOWEL - ADHESIVE ANCHORS
A507	X	14	15'-1"	X		WINGS - VERT.
A508	X	16	12'-1"	X		WINGS - VERT.
A409	X	10	6'-2"			WINGS - HORIZ. - EACH FACE
A410	X	30	15'-8"			WINGS - HORIZ. - EACH FACE
A611	X	4	15'-8"			WINGS - HORIZ. - EACH FACE - TOP WING

BILL OF BARS - NORTH ABUTMENT

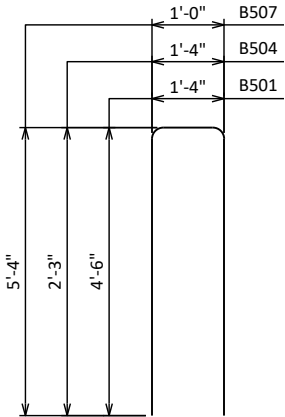
UNCOATED: 0 LB
COATED: 2,040 LB

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

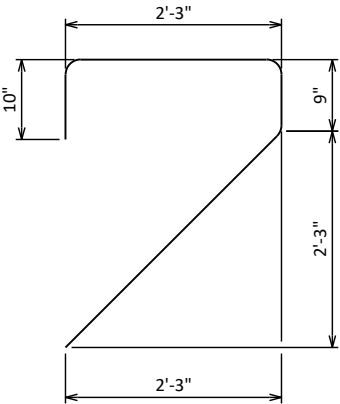
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
B501	X	37	10'-1"	X		ABUT. BACKWALL - VERT.
B402	X	14	36'-3"			ABUT. BACKWALL - HORIZ.
B503	X	34	6'-9"	X		ABUT. BACKWALL - VERT. - CORBEL
B504	X	37	5'-7"	X		ABUT. BACKWALL - VERT. - PAVING BLOCK
B505	X	15	8'-3"			ABUT. BACKWALL - HORIZ. - PAVING BLOCK
B506	X	38	3'-0"			WINGS - VERT. - DOWEL - ADHESIVE ANCHORS
B507	X	22	11'-5"	X		WINGS - VERT.
B408	X	30	11'-8"			WINGS - HORIZ. - EACH FACE
B609	X	4	11'-8"			WINGS - HORIZ. - EACH FACE - TOP WING
B410	X	22	2'-0"			WINGS - SURF. DRAIN DOWELS



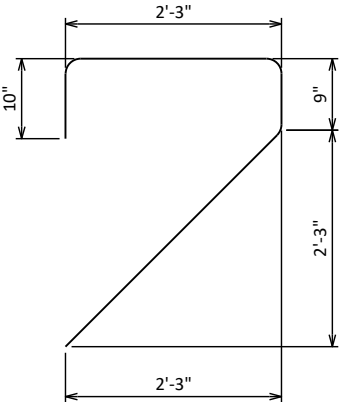
A501, A504, A507, A508



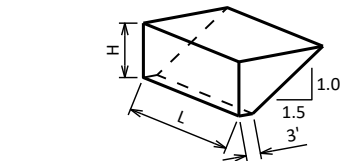
B501, B504, B507



A503

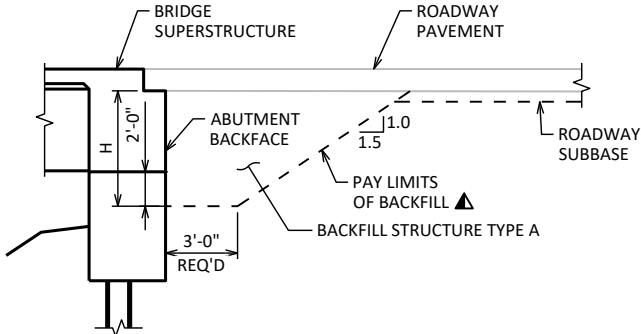


A503



ABUTMENT BACKFILL DIAGRAM

L = OUT TO OUT OF ABUTMENT BODY INCLUDING WINGS (FT)
H = AVERAGE ABUTMENT FILL HEIGHT (FT)
EF = EXPANSION FACTOR (1.00 FOR TON BID ITEMS)
 $V_{CF} = (L)(3.0')(H) + (L)(0.5)(1.5H)(H)$
 $V_{CY} = V_{CF}(EF)/27$
 $V_{TON} = V_{CY}(2.0)$



TYPICAL SECTION THRU ABUTMENT

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

STATE PROJECT NUMBER
6666-03-71

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY VJD		PLANS CK'D AJC	
ABUTMENT DETAILS		SHEET 10 OF 22	
		92	

BEARING NOTES

ALL BEARINGS ARE SYMMETRICAL ABOUT C/L OF GIRDER AND C/L OF BEARING.

ALL MATERIAL IN BEARINGS, BUT EXCLUDING STAINLESS STEEL PLATE, TEFLON SURFACE, PINTLES, ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A709 GRADE 50W.

STAINLESS STEEL PLATE SHALL CONFORM TO ASTM A240, TYPE 304.

STEEL PINTLES SHALL CONFORM TO ASTM A449 OR ASTM A572 GRADE 50.

ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM F1554 GRADE 55, OR MATERIAL OF EQUIVALENT YIELD STRENGTH AND ELONGATION.

ALL STRUCTURAL STEEL BEARING PLATES SHALL BE FLAT ROLLED STEEL PLATES WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT, AND VERTICAL.

ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.

ALL FINISHED SURFACES SHALL BE MACHINE FINISHED BY AN AUTOMATIC PROCESS.

ANCHOR BOLTS SHALL BE THREADED 3". PROVIDE ONE STANDARD WROUGHT WASHER AND ONE HEX NUT PER BOLT. PROJECT ANCHOR BOLTS, MASONRY PLATE "D" THICKNESS + 2¼", ABOVE TOP OF CONCRETE.

CHAMFER ANCHOR BOLTS PRIOR TO THREADING.

MASONRY PLATE "D", ROCKER PLATE "C", ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153, CLASS "C". STEEL PLATE "B" SHALL BE SHOP PAINTED. DO NOT PAINT TEFLON SURFACE.

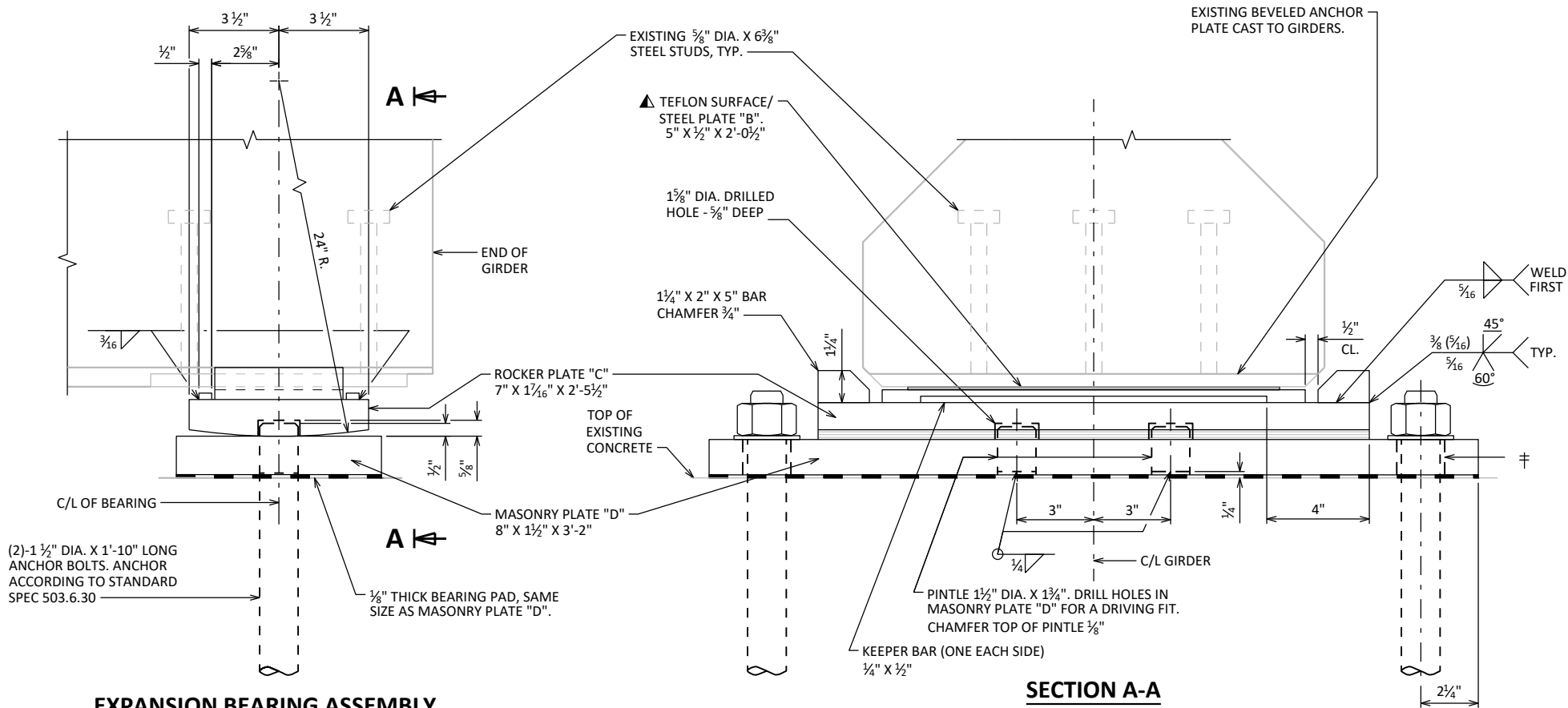
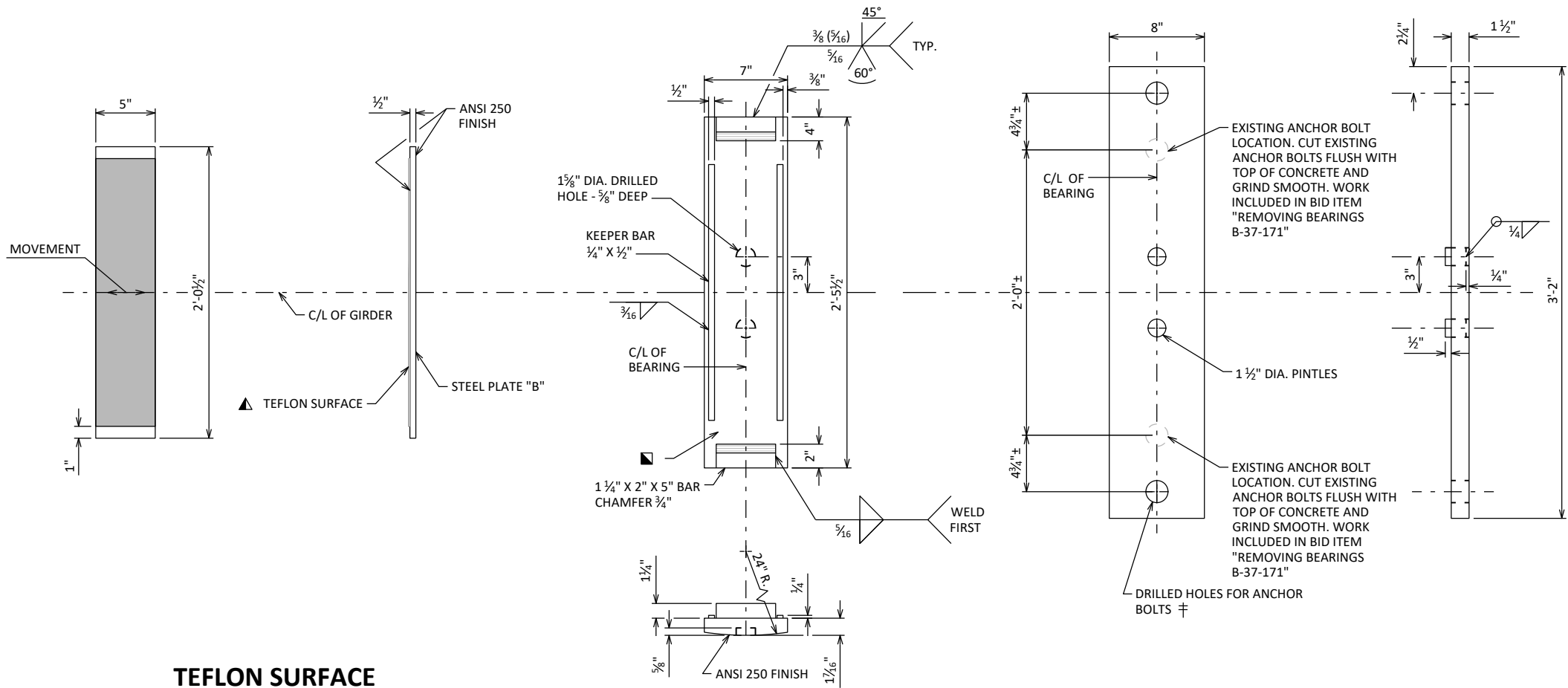
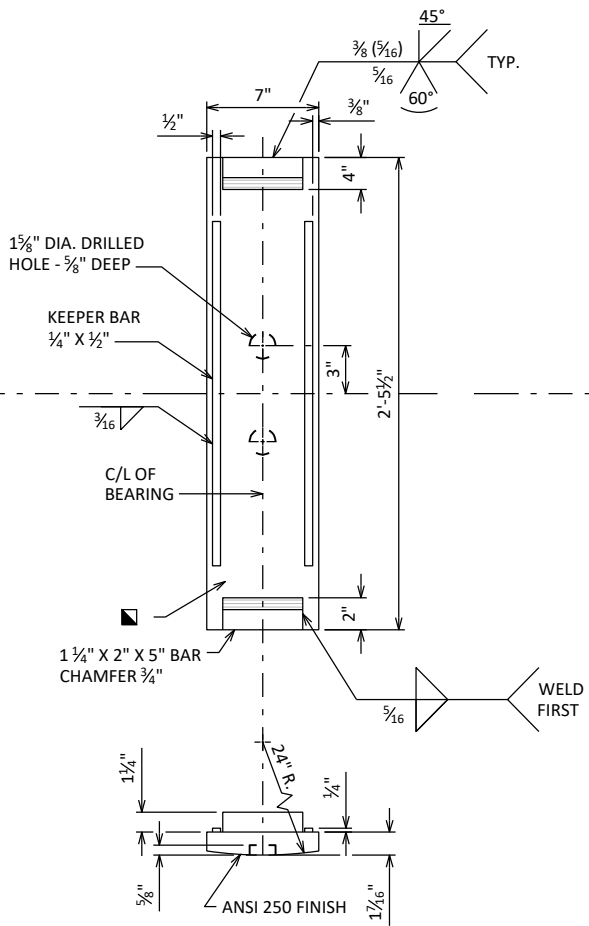
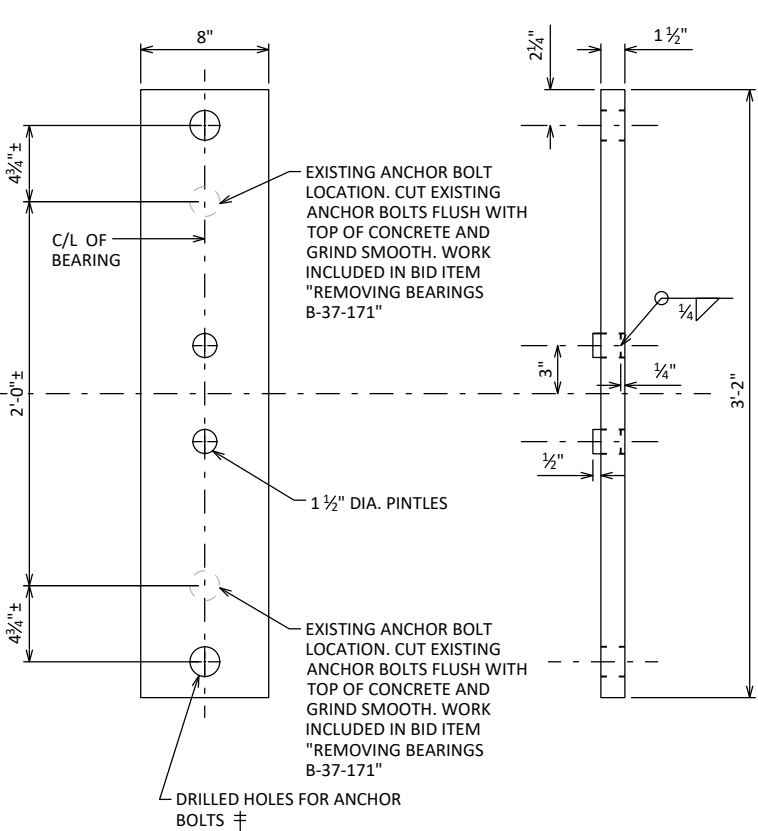
ALL MATERIAL IN "PRESTRESSED GIRDER STEEL BEARINGS", INCLUDING BEARING PADS, SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "BEARING ASSEMBLIES EXPANSION B-37-171", EACH.

⊕ DRILLED HOLES FOR ANCHOR BOLTS IN MASONRY PLATE "D" SHALL HAVE A DIAMETER ⅜" LARGER THAN ANCHOR BOLT.

▲ TEFLON SURFACE, USE UNFILLED WITH MINIMUM ⅛" THICKNESS. PLACE WITH SCRIBE MARKS IN DIRECTION OF MOVEMENT. BOND STEEL PLATE "B" AND TEFLON WITH ADHESIVE MATERIAL MEETING THE REQUIREMENTS FOUND IN THE STANDARD SPECIFICATION.

■ PROVIDE A METHOD FOR HANDLING ROCKER PLATE "C" DURING GALVANIZING.

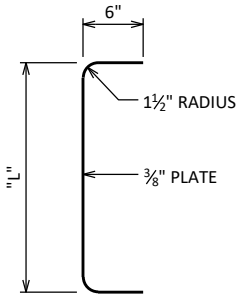
AT INSTALLATION, ENSURE STAINLESS STEEL SLIDING FACE OF THE UPPER ELEMENT AND THE TFE SLIDING FACE OF THE LOWER ELEMENT HAVE THE SURFACE FINISH SPECIFIED AND ARE CLEAN AND FREE OF ALL DUST, MOISTURE, AND OTHER FOREIGN MATTER.

**EXPANSION BEARING ASSEMBLY****TEFLON SURFACE
ON PLATE "B"****ROCKER PLATE "C"
EXPANSION BEARING****MASONRY PLATE "D"**

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY		VJD	PLANS CK'D AJC
PRESTRESSED GIRDER STEEL BEARINGS		SHEET 11 OF 22 93	

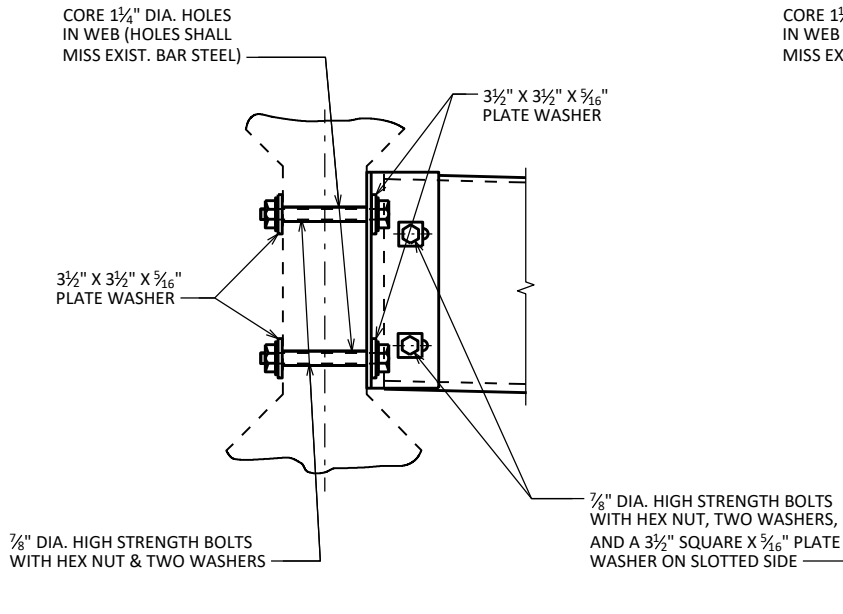
TABLE

GIRDER HEIGHT	DIM. "A"	DIM. "B"	DIM. "L"	* DIM. "X"
28"	1'-0 ⁷ / ₈ "	5 ⁷ / ₈ "	9 ¹ / ₂ "	2 ¹ / ₄ "
36"	1'-2 ⁷ / ₈ "	9 ⁷ / ₈ "	1'-1 ¹ / ₂ "	3 ³ / ₄ "
45"	1'-5 ³ / ₈ "	1'-1 ⁷ / ₈ "	1'-5 ¹ / ₂ "	2 ³ / ₄ "
45W"	1'-9 ¹ / ₈ "	8 ⁷ / ₈ "	1'-0 ¹ / ₂ "	2 ³ / ₄ "
54"	1'-7 ⁷ / ₈ "	1'-5 ⁷ / ₈ "	1'-9 ¹ / ₂ "	4 ¹ / ₄ "
54W"	1'-9 ¹ / ₈ "	1'-5 ⁷ / ₈ "	1'-9 ¹ / ₂ "	4 ¹ / ₄ "



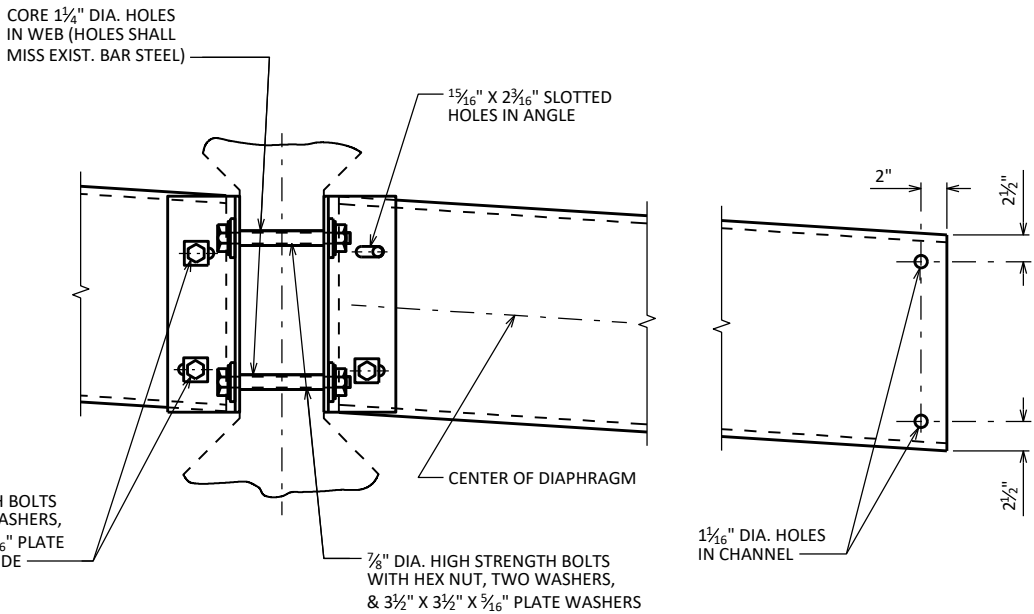
SECTION THRU ALTERNATE DIAPHRAGM

*DIM "X" = 2 1/2" FOR ALTERNATE PLATE DIAPHRAGM



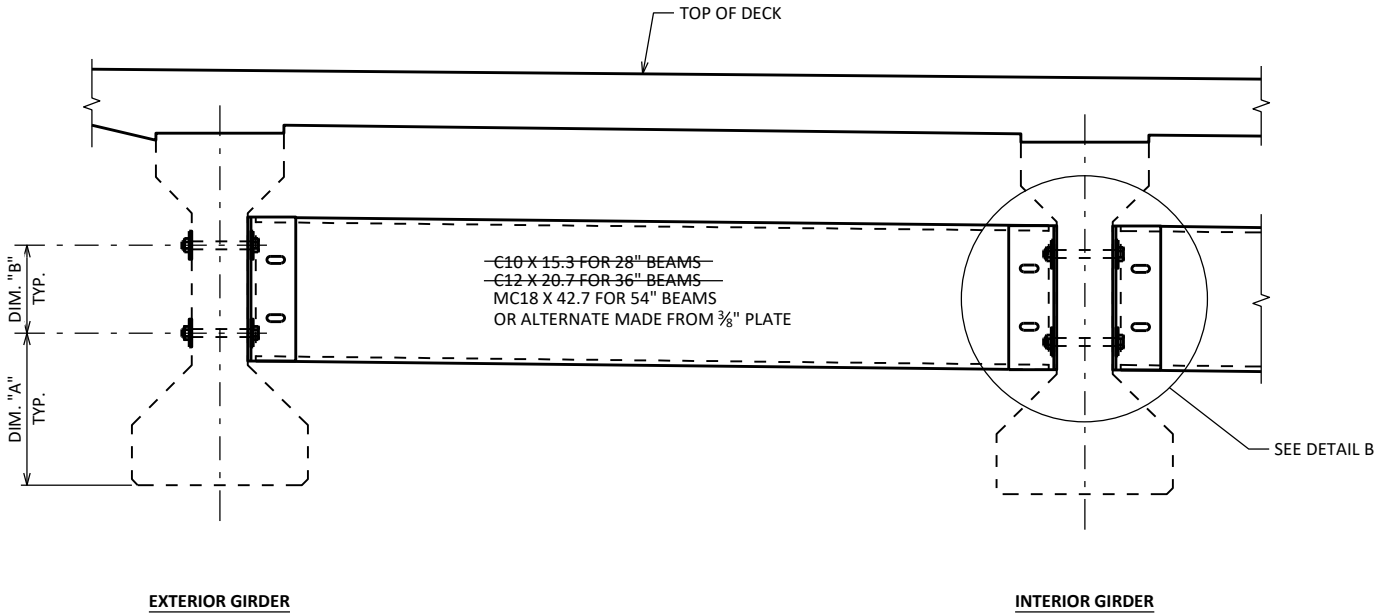
(FOR EXTERIOR GIRDERS & STAGGERED DIAPHRAGMS)

PART TRANSVERSE SECTION AT DIAPHRAGM



(FOR CONTINUOUS LINE OF DIAPHRAGMS)

DETAIL B



NOTES

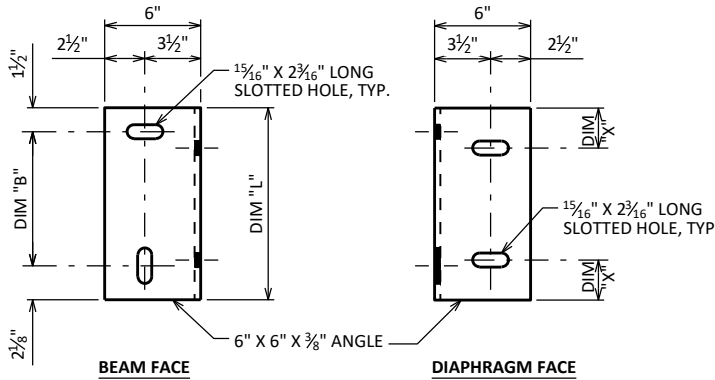
ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-37-171", EACH. PAYMENT FOR CORED HOLES FOR STEEL DIAPHRAGMS IS INCLUDED IN BID ITEM "STEEL DIAPHRAGMS B-37-171".

EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

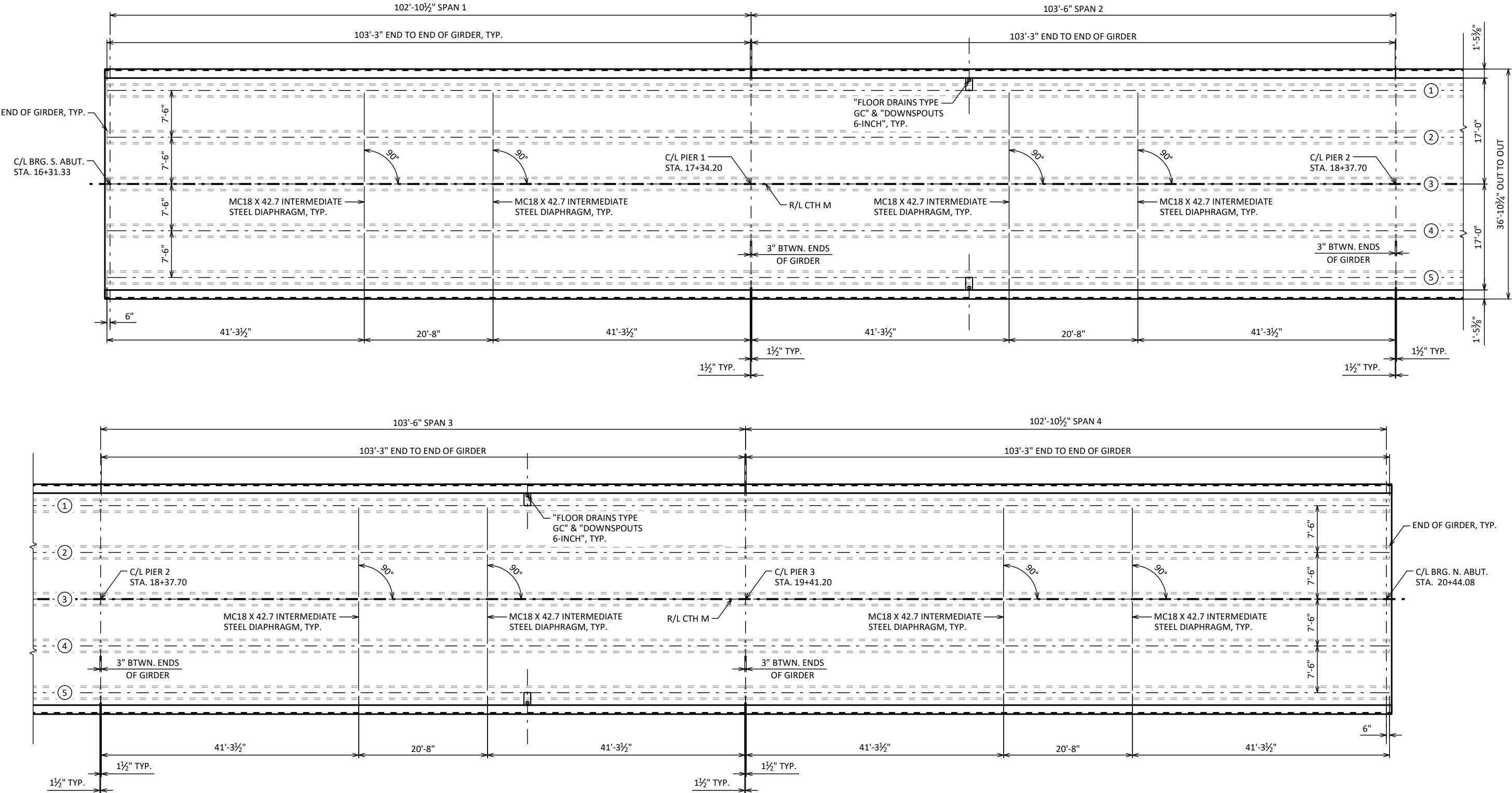
ALL DIAPHRAGM MATERIAL INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.

STEEL DIAPHRAGM TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS 1/4 TURN, UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.



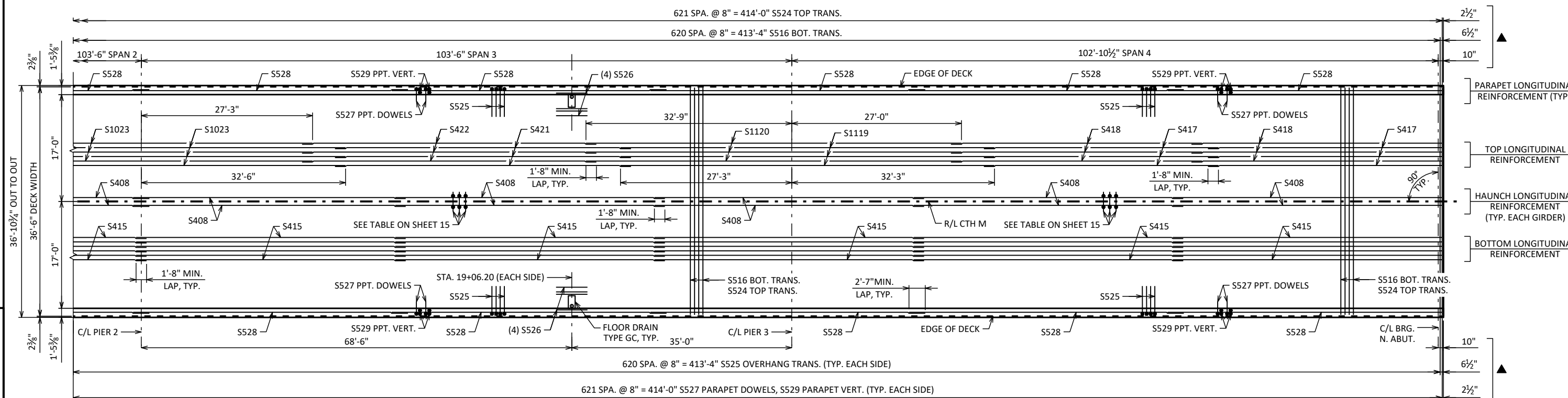
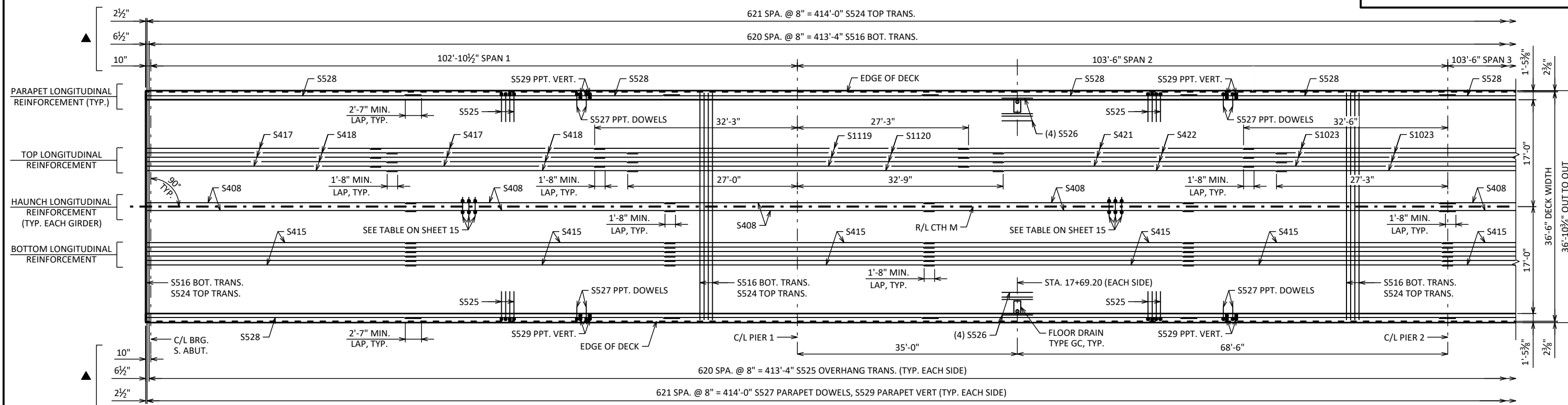
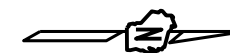
DIAPHRAGM SUPPORT

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY VJD		PLANS CK'D AJC	
STEEL DIAPHRAGM		SHEET 12 OF 22 94	



FRAMING PLAN

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY VJD		PLANS CK'D AJC	
FRAMING PLAN		SHEET 13 OF 22	
		95	

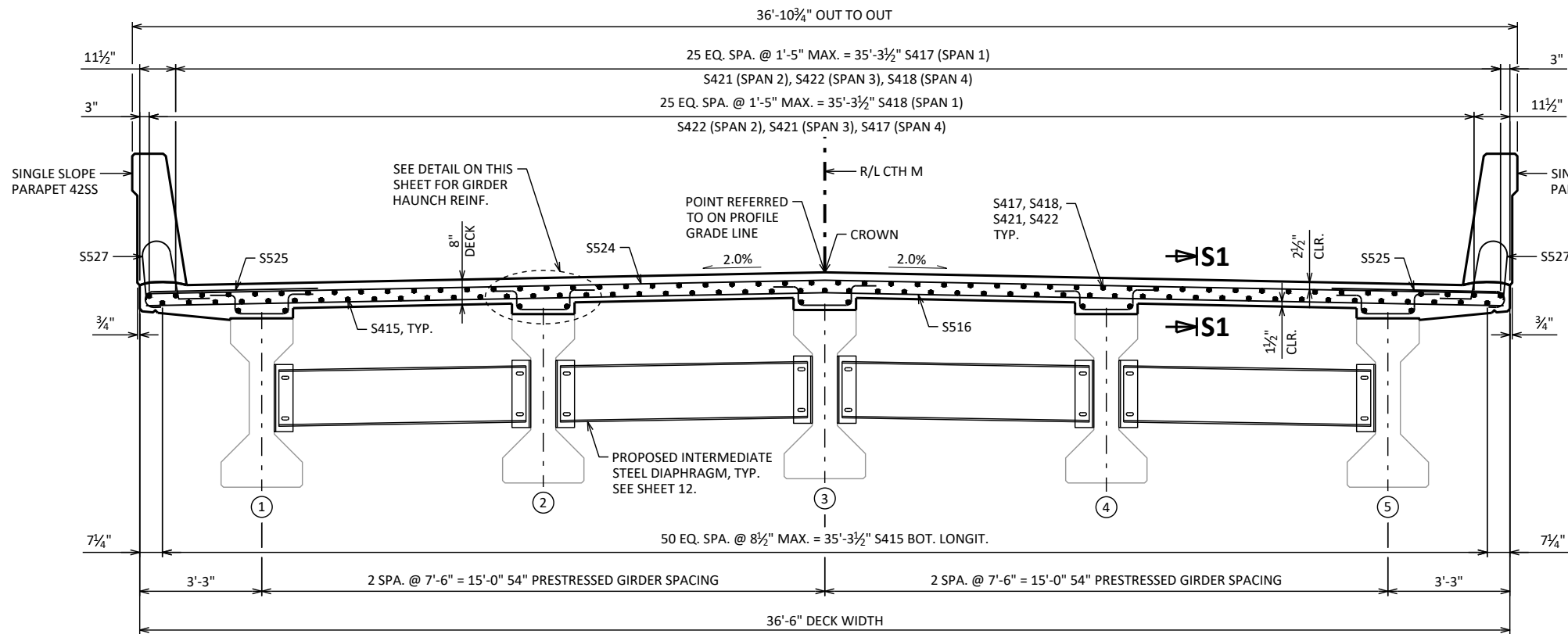


DECK REINFORCEMENT PLAN

NOTE

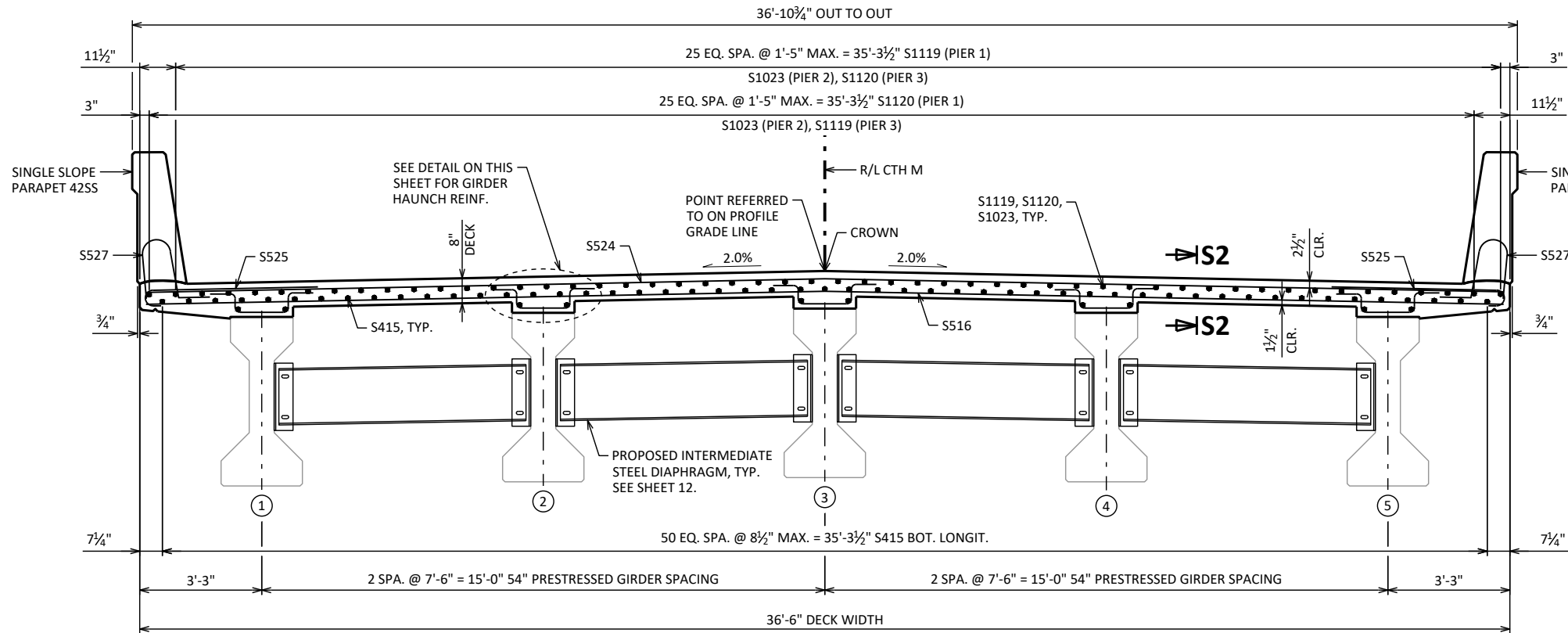
▲ DIMENSIONS SHOWN AT THE END OF THE DECK
ASSUME A 2" JOINT OPENING DURING INSTALLATION.
ADJUST BAR SPACING AND LAPS AS NECESSARY TO
ACCOMMODATE OTHER JOINT WIDTHS AT THE
VARIOUS INSTALLATION TEMPERATURES. SEE SHEET 20
FOR JOINT OPENING DETAILS.

NO.	DATE	REVISION
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
STRUCTURE B-37-171		
DRAWN BY		VJD PLANS CK'D
SUPERSTRUCTURE PLAN		SHEET 14 OF 22 96



REINFORCEMENT CROSS SECTION

LOOKING NORTH
SHOWING REINFORCEMENT IN SPANS

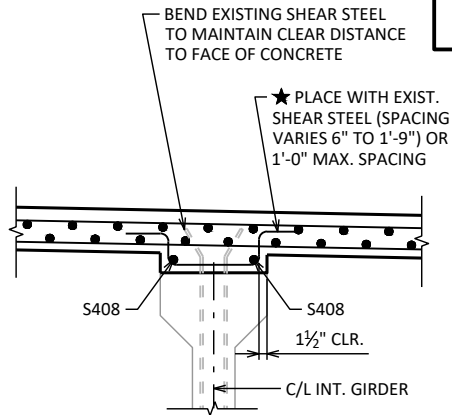


REINFORCEMENT CROSS SECTION

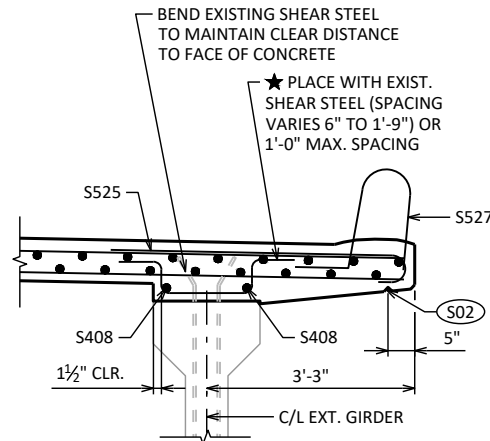
LOOKING NORTH
SHOWING REINFORCEMENT OVER PIERS

LEGEND

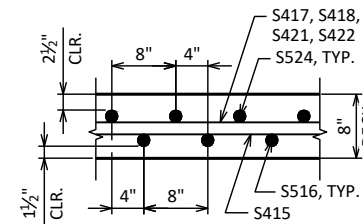
- (X) DENOTES EXISTING GIRDER NUMBER
- (S02) 3/4\" V-GROOVE REQUIRED. EXTEND V-GROOVE TO 2'-0\" FROM FRONT FACE OF ABUTMENT BODY.



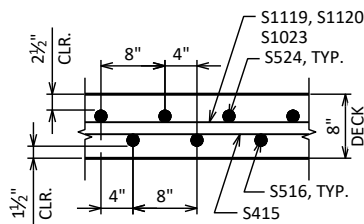
SECTION THRU INTERIOR GIRDER



SECTION THRU EXTERIOR GIRDER



SECTION S1



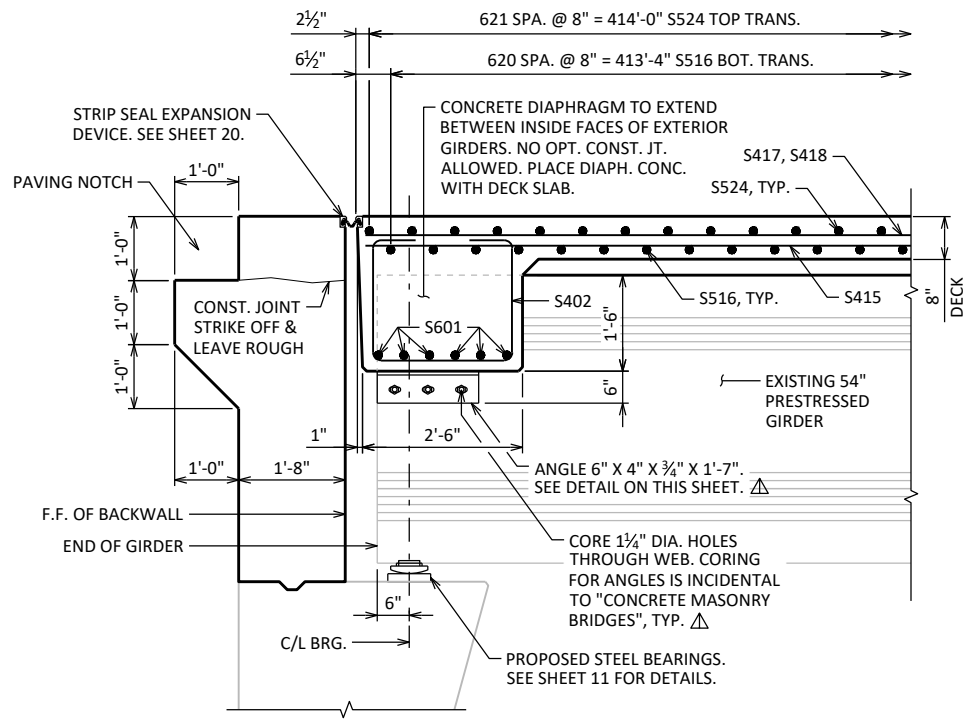
SECTION S2

HAT BAR LOCATION TABLE ★

GIRDER LINE	SPAN	BAR MARK
1	1 & 2	S409
1	3 & 4	S410
2	1 & 2	S411
2	3 & 4	S412
3	1 & 2	S413
3	3 & 4	S414
4	1 & 2	S411
4	3 & 4	S412
5	1 & 2	S409
5	3 & 4	S410

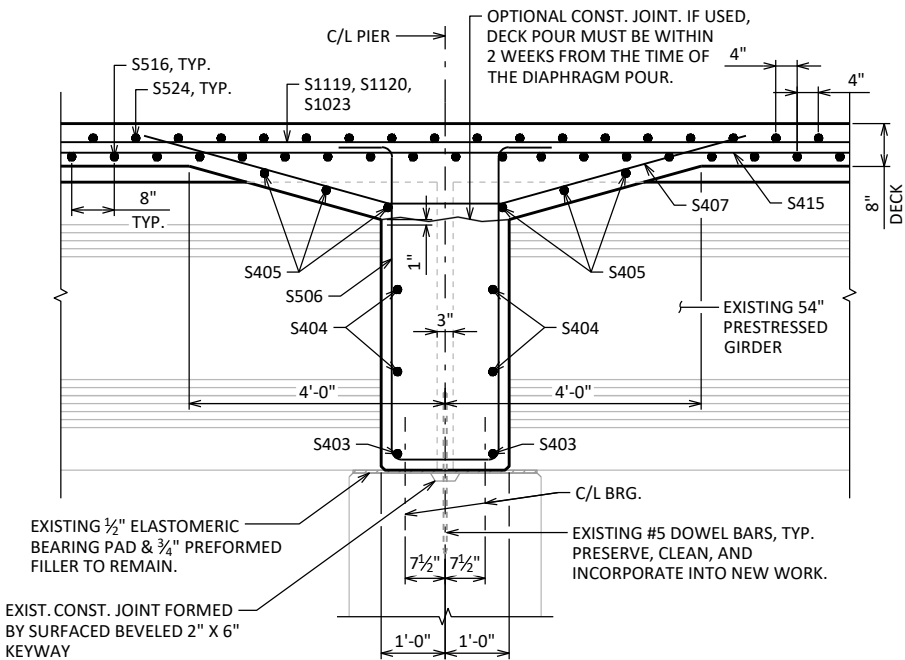
THE CONTRACTOR MAY ADJUST THE VERTICAL ORIENTATION OF HAT BARS TO FIT. MAINTAIN A 3" MINIMUM DECK EMBEDMENT AND 2 1/2" CLEAR FROM TOP OF DECK. AN UNDISTRIBUTED QUANTITY OF S431 IS INCLUDED WHERE ADDITIONAL HEIGHT MAY BE REQUIRED TO MAINTAIN MIN. EMBEDMENT.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY VJD		PLANS CK'D AJC	
SUPERSTRUCTURE CROSS SECTIONS		SHEET 15 OF 22 97	



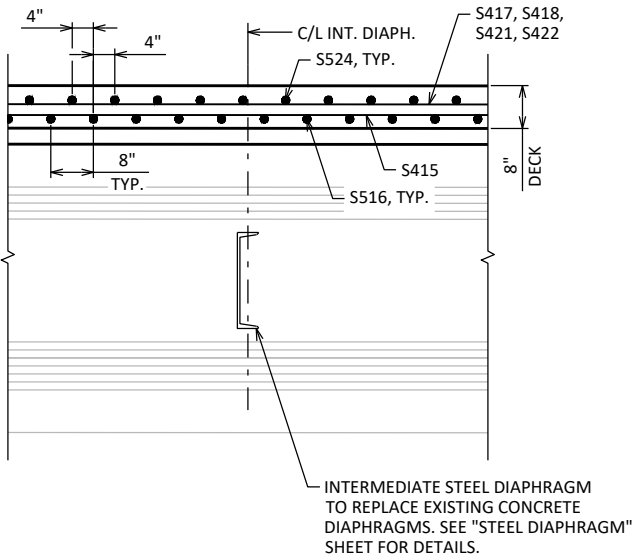
LONGIT. SECTION THRU ABUT. DIAPHRAGM
EXPANSION END

LOOKING WEST AT S. ABUT.
N. ABUT. SIMILAR



LONGIT. SECTION THRU PIER DIAPHRAGM

ALL PIERS SIMILAR



LONGIT. SECTION THRU
INTERMEDIATE DIAPHRAGM

ALL INTERMEDIATE DIAPHRAGM LOCATIONS SIMILAR

NOTES

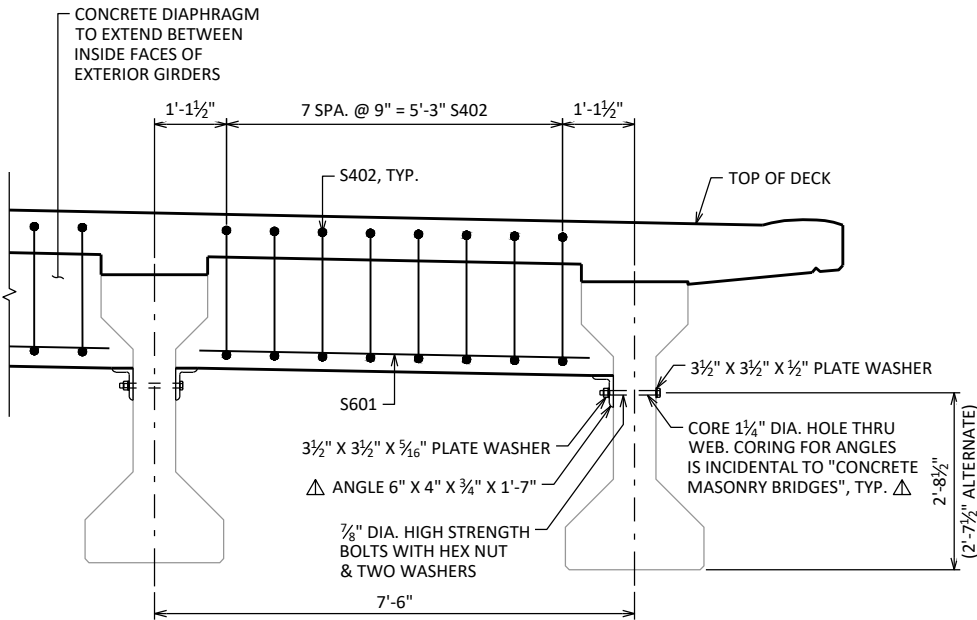
ALL DIAPHRAGM SUPPORT HARDWALL SHALL BE INCIDENTAL TO "CONCRETE MASONRY BRIDGES".

DIAPHRAGM SUPPORT ANGLE SHALL BE ASTM A709 GRADE 36.

ALL DIAPHRAGM SUPPORT HARDWARE INCLUDING BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.

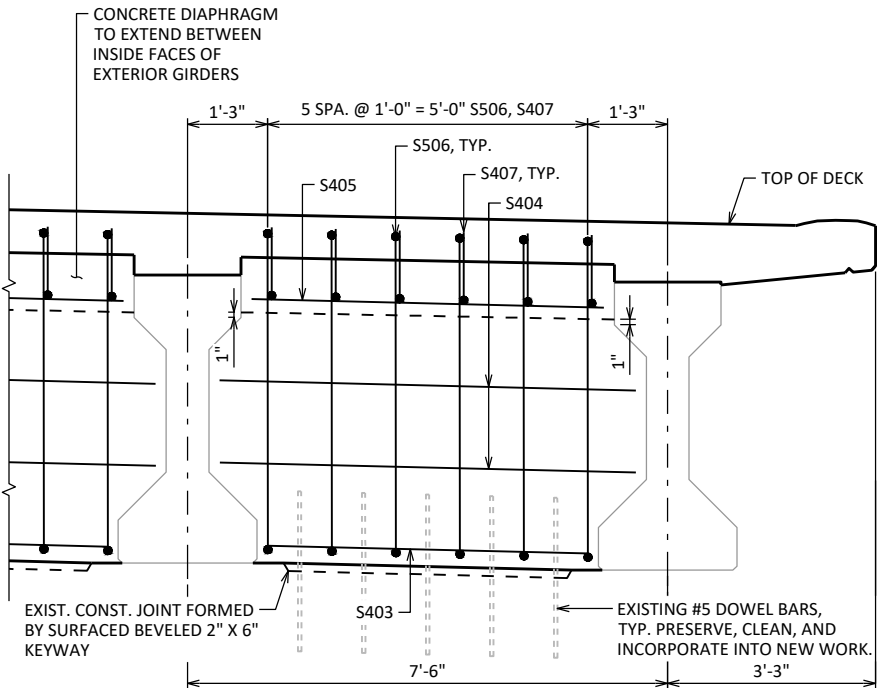
STEEL DIAPHRAGM SUPPORT ANGLE TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS 1/4 TURN. HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.

△ VERIFY THE PRESTRESSING STRAND ARRANGEMENT AFTER BACKWALL REMOVAL AND PRIOR TO CORING HOLES INTO THE EXISTING GIRDER. THE LOCATIONS SHOWN FOR CORED HOLES PROVIDE CLEARANCE ASSUMING A 42 STRAND PATTERN WITH A DRAPED STRAND CENTER OF 3'-7" FROM THE BOTTOM OF GIRDER. NOTIFY THE ENGINEER IN THE FIELD IF AN ALTERNATE PATTERN IS FOUND AND USE THE ALTERNATE ANGLE AS SHOWN IN THE ANGLE DETAIL, IF NECESSARY.



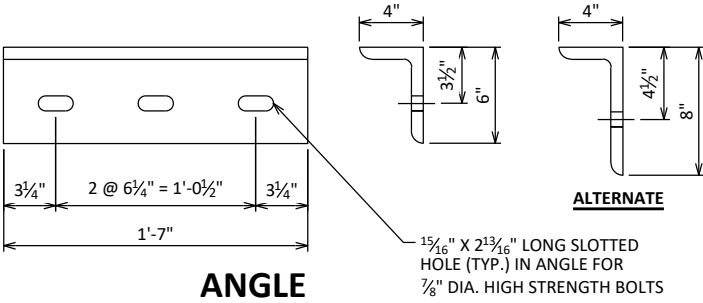
PART TRANSVERSE SECTION AT DIAPHRAGM
EXPANSION END

PARAPET NOT SHOWN FOR CLARITY
REINFORCEMENT TYPICAL BETWEEN GIRDERS



PART TRANSVERSE SECTION AT DIAPHRAGM
AT PIERS

PARAPET NOT SHOWN FOR CLARITY
REINFORCEMENT TYPICAL BETWEEN GIRDERS



NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY VJD		PLANS CK'D AJC	
SUPERSTRUCTURE DETAILS		SHEET 16 OF 22 98	

TOP OF DECK ELEVATIONS

LOCATION	C/L BRG. S. ABUT.	SPAN 1									C/L PIER 1	SPAN 2									C/L PIER 2
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
W. FLOW LINE	1172.79	1172.41	1172.04	1171.68	1171.34	1171.01	1170.70	1170.40	1170.12	1169.85	1169.59	1169.35	1169.12	1168.90	1168.70	1168.52	1168.35	1168.19	1168.05	1167.92	1167.80
GIRDER 1	1172.83	1172.45	1172.08	1171.72	1171.38	1171.05	1170.74	1170.44	1170.16	1169.89	1169.63	1169.39	1169.16	1168.94	1168.74	1168.56	1168.39	1168.23	1168.09	1167.96	1167.84
GIRDER 2	1172.98	1172.60	1172.23	1171.87	1171.53	1171.20	1170.89	1170.59	1170.31	1170.04	1169.78	1169.54	1169.31	1169.09	1168.89	1168.71	1168.54	1168.38	1168.24	1168.11	1167.99
CROWN/GIRDER 3	1173.13	1172.75	1172.38	1172.02	1171.68	1171.35	1171.04	1170.74	1170.46	1170.19	1169.93	1169.69	1169.46	1169.24	1169.04	1168.86	1168.69	1168.53	1168.39	1168.26	1168.14
GIRDER 4	1172.98	1172.60	1172.23	1171.87	1171.53	1171.20	1170.89	1170.59	1170.31	1170.04	1169.78	1169.54	1169.31	1169.09	1168.89	1168.71	1168.54	1168.38	1168.24	1168.11	1167.99
GIRDER 5	1172.83	1172.45	1172.08	1171.72	1171.38	1171.05	1170.74	1170.44	1170.16	1169.89	1169.63	1169.39	1169.16	1168.94	1168.74	1168.56	1168.39	1168.23	1168.09	1167.96	1167.84
E. FLOW LINE	1172.79	1172.41	1172.04	1171.68	1171.34	1171.01	1170.70	1170.40	1170.12	1169.85	1169.59	1169.35	1169.12	1168.90	1168.70	1168.52	1168.35	1168.19	1168.05	1167.92	1167.80

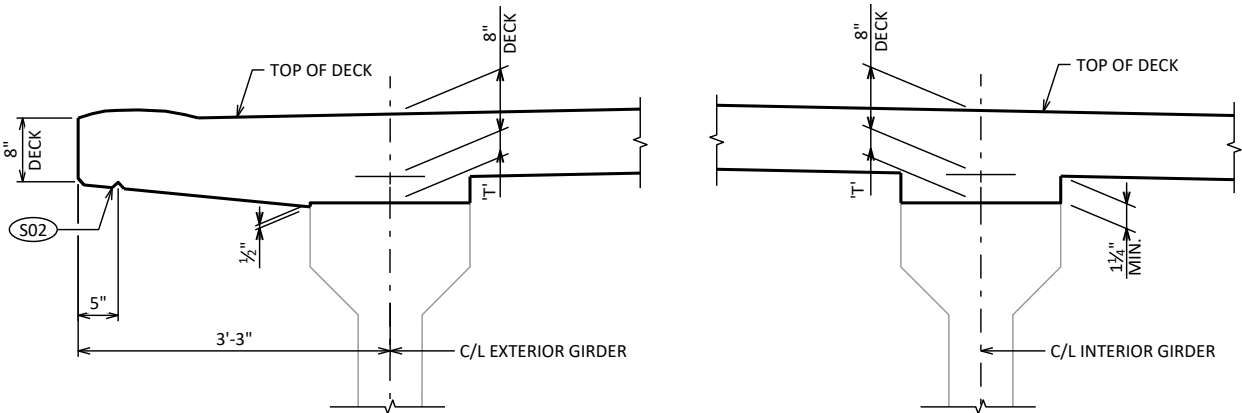
LOCATION	C/L PIER 2	SPAN 3									C/L PIER 3	SPAN 4									C/L BRG. N. ABUT.
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
W. FLOW LINE	1167.80	1167.72	1167.63	1167.53	1167.43	1167.34	1167.24	1167.14	1167.05	1166.95	1166.86	1166.76	1166.66	1166.57	1166.47	1166.38	1166.28	1166.19	1166.09	1165.99	1165.90
GIRDER 1	1167.84	1167.76	1167.67	1167.57	1167.47	1167.38	1167.28	1167.18	1167.09	1166.99	1166.90	1166.80	1166.70	1166.61	1166.51	1166.42	1166.32	1166.23	1166.13	1166.03	1165.94
GIRDER 2	1167.99	1167.91	1167.82	1167.72	1167.62	1167.53	1167.43	1167.33	1167.24	1167.14	1167.05	1166.95	1166.85	1166.76	1166.66	1166.57	1166.47	1166.38	1166.28	1166.18	1166.09
CROWN/GIRDER 3	1168.14	1168.06	1167.97	1167.87	1167.77	1167.68	1167.58	1167.48	1167.39	1167.29	1167.20	1167.10	1167.00	1166.91	1166.81	1166.72	1166.62	1166.53	1166.43	1166.33	1166.24
GIRDER 4	1167.99	1167.91	1167.82	1167.72	1167.62	1167.53	1167.43	1167.33	1167.24	1167.14	1167.05	1166.95	1166.85	1166.76	1166.66	1166.57	1166.47	1166.38	1166.28	1166.18	1166.09
GIRDER 5	1167.84	1167.76	1167.67	1167.57	1167.47	1167.38	1167.28	1167.18	1167.09	1166.99	1166.90	1166.80	1166.70	1166.61	1166.51	1166.42	1166.32	1166.23	1166.13	1166.03	1165.94
E. FLOW LINE	1167.80	1167.72	1167.63	1167.53	1167.43	1167.34	1167.24	1167.14	1167.05	1166.95	1166.86	1166.76	1166.66	1166.57	1166.47	1166.38	1166.28	1166.19	1166.09	1165.99	1165.90

STATE PROJECT NUMBER

6666-03-71

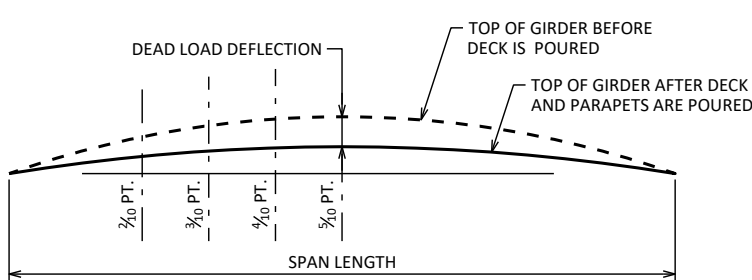
DEAD LOAD DEFLECTION

SPAN	GIRDER	DEAD LOAD DEFLECTION (IN.)									
		$\frac{1}{10}$	$\frac{2}{10}$	$\frac{3}{10}$	$\frac{4}{10}$	$\frac{5}{10}$	$\frac{6}{10}$	$\frac{7}{10}$	$\frac{8}{10}$	$\frac{9}{10}$	$\frac{10}{10}$
1	1,5	0.5	0.9	1.3	1.5	1.5	1.5	1.2	0.9	0.5	
1	2,4	0.5	0.9	1.3	1.5	1.5	1.5	1.2	0.9	0.5	
1	3	0.5	0.9	1.3	1.5	1.6	1.5	1.3	0.9	0.5	
2	1,5	0.4	0.9	1.2	1.4	1.5	1.4	1.2	0.9	0.4	
2	2,4	0.4	0.9	1.2	1.4	1.5	1.4	1.2	0.9	0.4	
2	3	0.4	0.9	1.2	1.4	1.5	1.4	1.2	0.9	0.5	
3	1,5	0.4	0.9	1.2	1.4	1.5	1.4	1.2	0.9	0.4	
3	2,4	0.4	0.9	1.2	1.4	1.5	1.4	1.2	0.9	0.4	
3	3	0.5	0.9	1.2	1.4	1.5	1.4	1.2	0.9	0.4	
4	1,5	0.5	0.9	1.2	1.5	1.5	1.5	1.3	0.9	0.5	
4	2,4	0.5	0.9	1.2	1.5	1.5	1.5	1.3	0.9	0.5	
4	3	0.5	0.9	1.3	1.5	1.6	1.5	1.3	0.9	0.5	



DECK HAUNCH DETAIL

IF 1 1/4" MINIMUM HAUNCH HEIGHT AT EDGE OF GIRDER CANNOT BE MAINTAINED, THE GRADE LINE MAY BE REVISED BY THE ENGINEER AT THE OPTION OF THE CONTRACTOR. THE PLAN DECK THICKNESS SHALL BE HELD. NOTIFY THE STRUCTURES SECTION IF THE GRADE LINE IS RAISED FROM THE PLAN PROFILE BY MORE THAN 1/2" OR, ** IF 3" MINIMUM DECK EMBEDMENT OF THE HAT BAR CANNOT BE OBTAINED.



DEAD LOAD DEFLECTION DIAGRAM

NOTE: DEAD LOAD DEFLECTIONS ARE THEORETICAL AND MAY VARY FROM ACTUAL FIELD CONDITIONS

TO DETERMINE 'T', ELEVATION OF TOP OF GIRDERS AT C/L OF SUBSTRUCTURE UNITS AND 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. THEN FOLLOW THIS PROCESS:

- TOP OF DECK ELEV. AT FINAL GRADE
- TOP GIRDER ELEVATION
- + DEAD LOAD DEFLECTION
- DECK THICKNESS

= HAUNCH HEIGHT 'T'

NOTE: AN AVERAGE HAUNCH ('T') OF 4 1/4" WAS USED IN THE QUANTITY OF "CONCRETE MASONRY BRIDGES"

LEGEND

S02 3/4" V-GROOVE REQUIRED. EXTEND V-GROOVE TO 2'-0" FROM FRONT FACE OF ABUTMENT BODY.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
		DRAWN BY VJD	PLANS CK'D AJC
SUPERSTRUCTURE DETAILS 2		SHEET 17 OF 22 99	

BILL OF BARS

UNCOATED: 0 LB
COATED: 157,560 LB

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

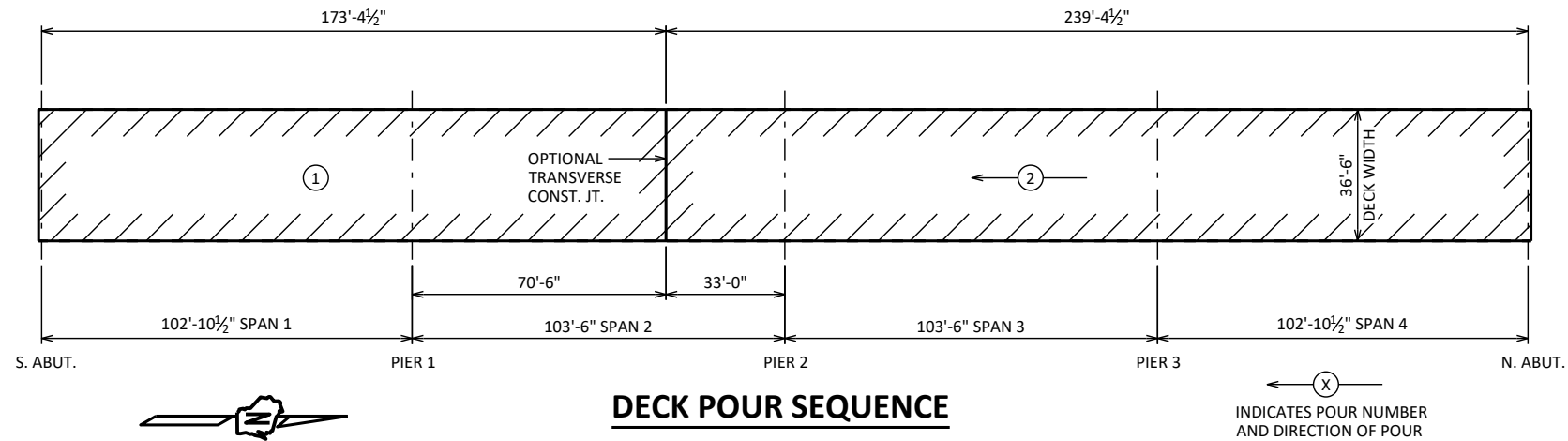
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
S601	X	48	6'-1"			DIAPHRAGM - HORIZ. - EXPANSION END
S402	X	64	6'-10"	X		DIAPHRAGM - VERT. - EXPANSION END
S403	X	24	5'-0"			DIAPHRAGM - HORIZ. - PIERS
S404	X	48	6'-6"			DIAPHRAGM - HORIZ. - PIERS
S405	X	72	5'-6"			DIAPHRAGM - HORIZ. - PIERS
S506	X	72	12'-5"	X		DIAPHRAGM - VERT. - PIERS
S407	X	72	9'-11"	X		DIAPHRAGM - VERT. - PIERS
S408	X	100	43'-0"			GIRDER HAUNCH - LONGIT.
S409	X	550	3'-6"	X		HAT BAR - SPANS 1 & 2 - GIRDER LINES 1 & 5
S410	X	550	3'-4"	X		HAT BAR - SPANS 3 & 4 - GIRDER LINES 1 & 5
S411	X	550	3'-8"	X		HAT BAR - SPANS 1 & 2 - GIRDER LINES 2 & 4
S412	X	550	3'-6"	X		HAT BAR - SPANS 3 & 4 - GIRDER LINES 2 & 4
S413	X	275	3'-8"	X		HAT BAR - SPANS 1 & 2 - GIRDER LINE 3
S414	X	275	3'-6"	X		HAT BAR - SPANS 3 & 4 - GIRDER LINE 3
S415	X	510	43'-0"			DECK - BOT. LONGITUDINAL
S516	X	621	36'-2"			DECK - BOT. TRANSVERSE
S417	X	104	37'-4"			DECK - TOP LONGITUDINAL - SPANS 1 & 4
S418	X	104	40'-0"			DECK - TOP LONGITUDINAL - SPANS 1 & 4
S1119	X	52	59'-6"			DECK - TOP LONGIT. - OVER PIERS 1 & 3
S1120	X	52	59'-9"			DECK - TOP LONGIT. - OVER PIERS 1 & 3
S421	X	52	47'-1"			DECK - TOP LONGITUDINAL - SPANS 2 & 3
S422	X	52	46'-10"			DECK - TOP LONGITUDINAL - SPANS 2 & 3
S1023	X	52	59'-9"			DECK - TOP LONGIT. - OVER PIER 2
S524	X	622	36'-2"			DECK - TOP TRANSVERSE
S525	X	1,242	5'-3"	X		DECK - OVERHANG - TOP TRANS.
S526	X	16	5'-0"			DECK - LONGIT. - AT FLOOR DRAINS
S527	X	1,244	4'-5"	X		DECK - PARAPET DOWELS
S528	X	160	43'-9"			PARAPET - HORIZ.
S529	X	1,244	6'-8"	X		PARAPET - VERT.
S430	X	4	29'-6"			DECK - TRANS. - AT EXPANSION DEVICE
S431	X	150	3'-10"	X		HAT BAR - UNDISTRIBUTED - ADD. HEIGHT

NOTES

TWO SEQUENTIAL POURS MAY BE COMBINED AND PLACED IN ONE CONTINUOUS OPERATION.

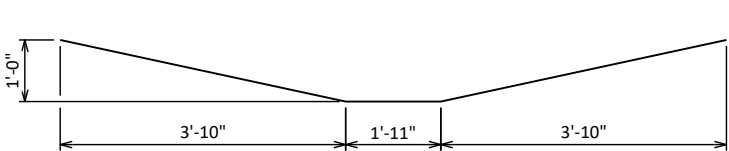
THE CONTRACTOR SHALL NOT PLACE CONCRETE IN AN ADJACENT POUR UNTIL A MINIMUM OF 72 HOURS HAS PASSED AFTER THE COMPLETION OF THE PROCEEDING POUR.

THE CONTRACTOR MAY SUBMIT AN ALTERNATE POURING SEQUENCE SUBJECT TO THE APPROVAL OF THE STRUCTURES DESIGN SECTION.

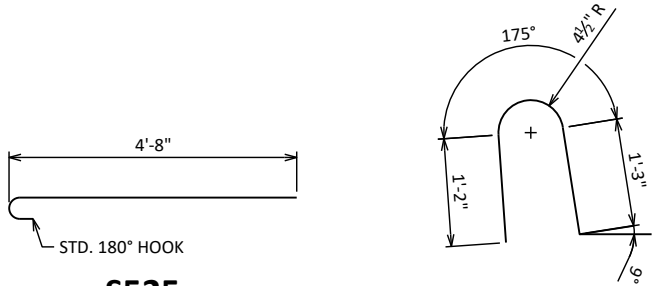


DECK POUR SEQUENCE

NOTE: THE CONTRACTOR MAY ADJUST THE VERTICAL ORIENTATION OF S409, S410, S411, S412, S413, S414 TO FIT. MAINTAIN A 3" MINIMUM DECK EMBEDMENT AND 2½" CLEAR FROM TOP OF DECK. AN UNDISTRIBUTED QUANTITY OF S431 IS INCLUDED WHERE ADDITIONAL HEIGHT MAY BE REQUIRED TO MAINTAIN MIN. EMBEDMENT.

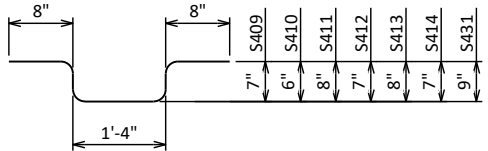


S407

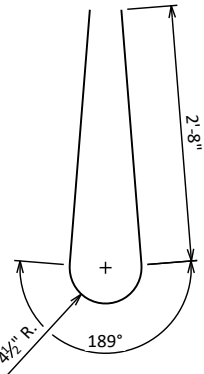


S525

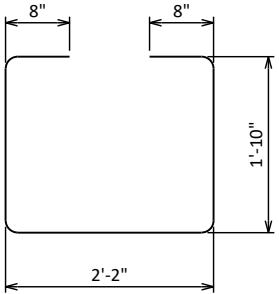
S527



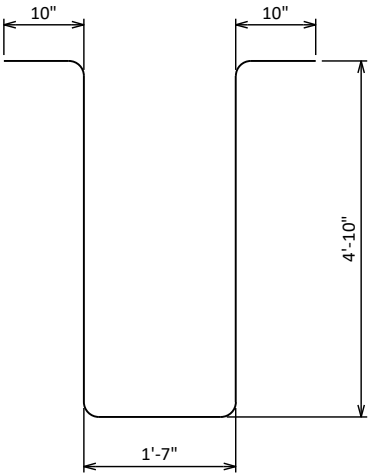
S409, S410, S411,S412,
S413, S414, S431



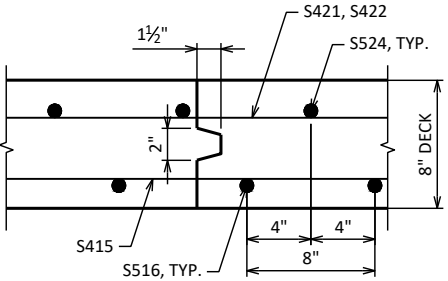
S529



S402



S506



SECTION THRU OPT.
TRANSVERSE JOINT

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY VJD		PLANS CK'D AJC	
SUPERSTRUCTURE DETAILS 3		SHEET 18 OF 22 100	

NOTES

ALL MATERIAL FOR TYPE "GC" CASTING, EXCLUDING GRATE HOLD DOWN SCREWS, SHALL BE GRAY IRON CONFORMING TO ASTM A48, CLASS 30. (APPROXIMATE WEIGHT = 225#)

MATERIAL FOR BRACKETS SHALL CONFORM TO ASTM A36.

ALL MATERIAL FOR FLOOR DRAINS TO BE INCLUDED IN THE BID ITEM "FLOOR DRAINS TYPE GC".

ALL MATERIAL FOR DOWNSPOUTS, DOWNSPOUT CONNECTIONS, AND BRACKETS TO BE INCLUDED IN THE BID ITEM "DOWNSPOUT 6-INCH".

ALTERNATE BRACKETS ARE NOT ALLOWED.

FLANGED 6" DIA. DOWNSPOUTS SHALL BE REINFORCED THERMOSETTING RESIN PIPE (RTRP) OR GALVANIZED STANDARD PIPE CONFORMING TO ASTM A53.

GRATE CASTING DETAIL

ATTACH GRATE TO FRAME FOR SHIPMENT

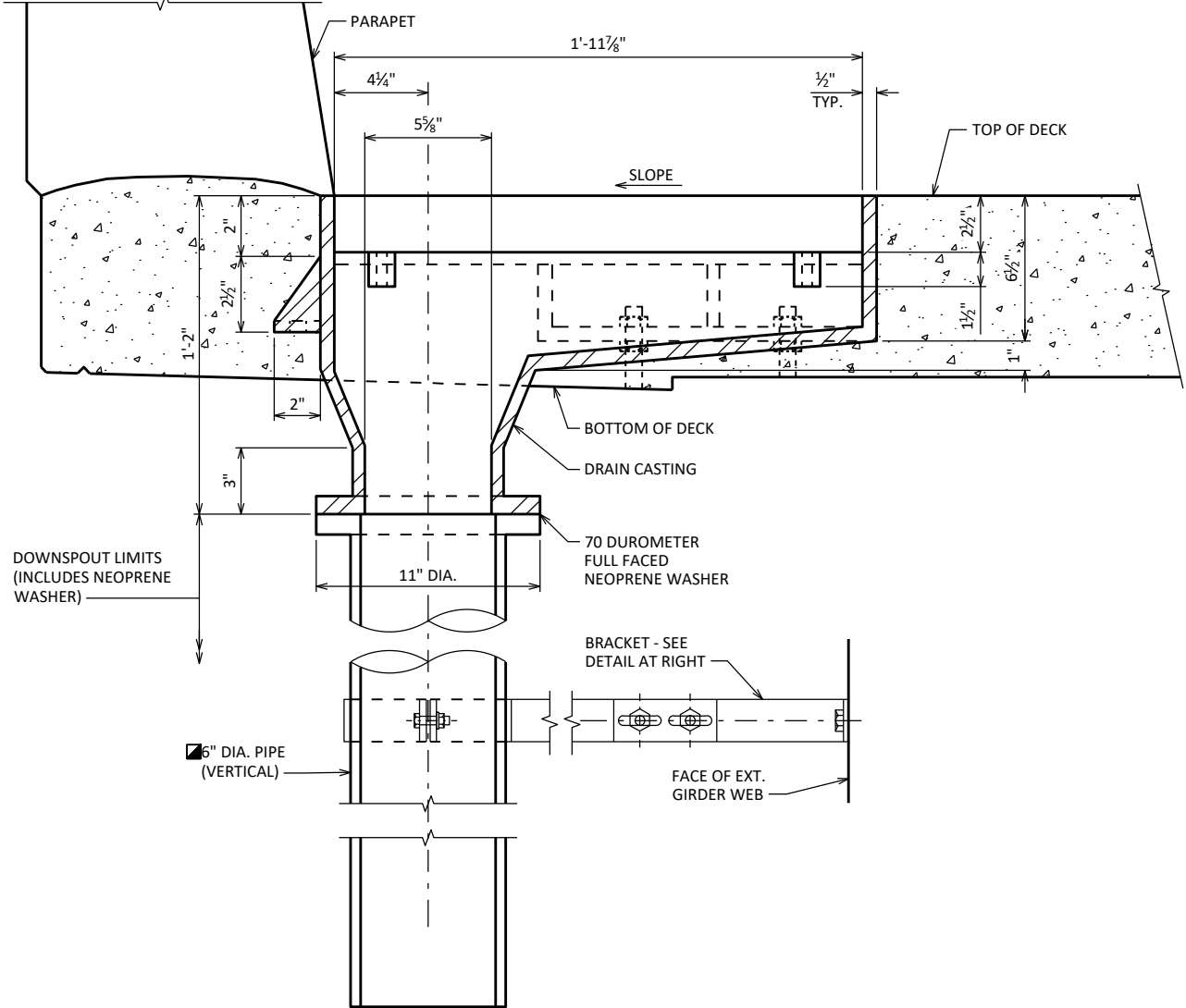
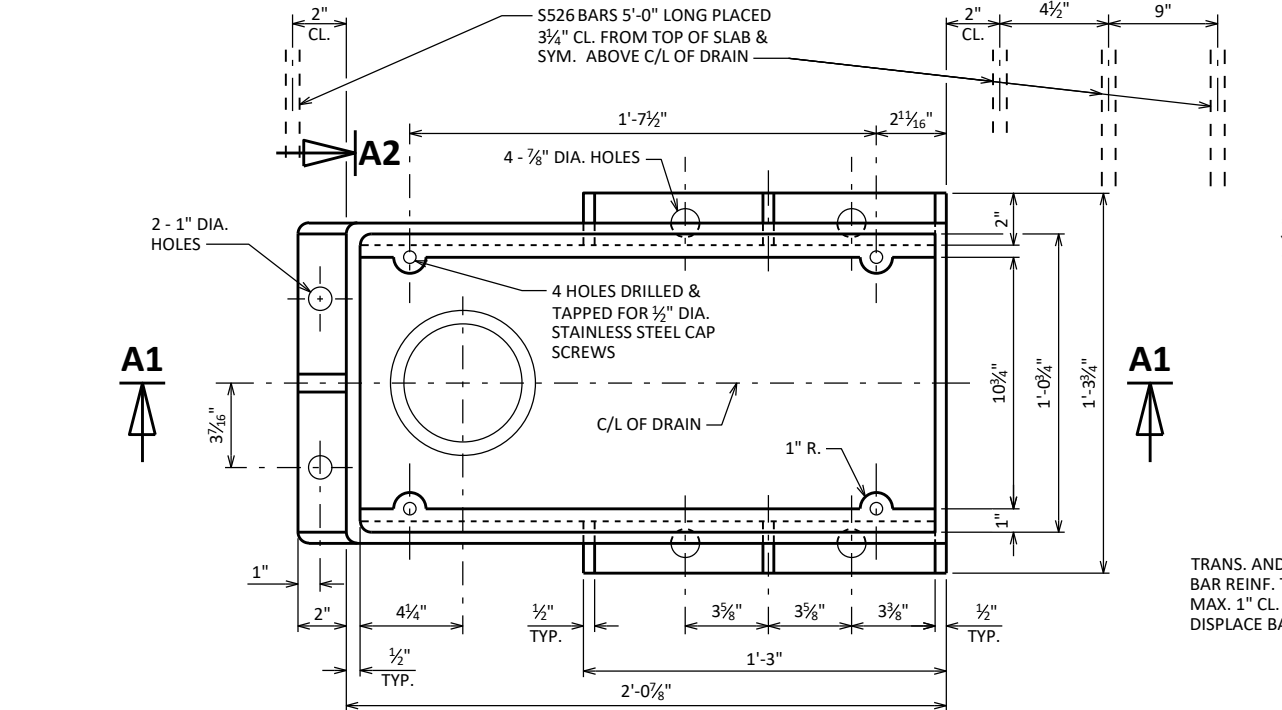
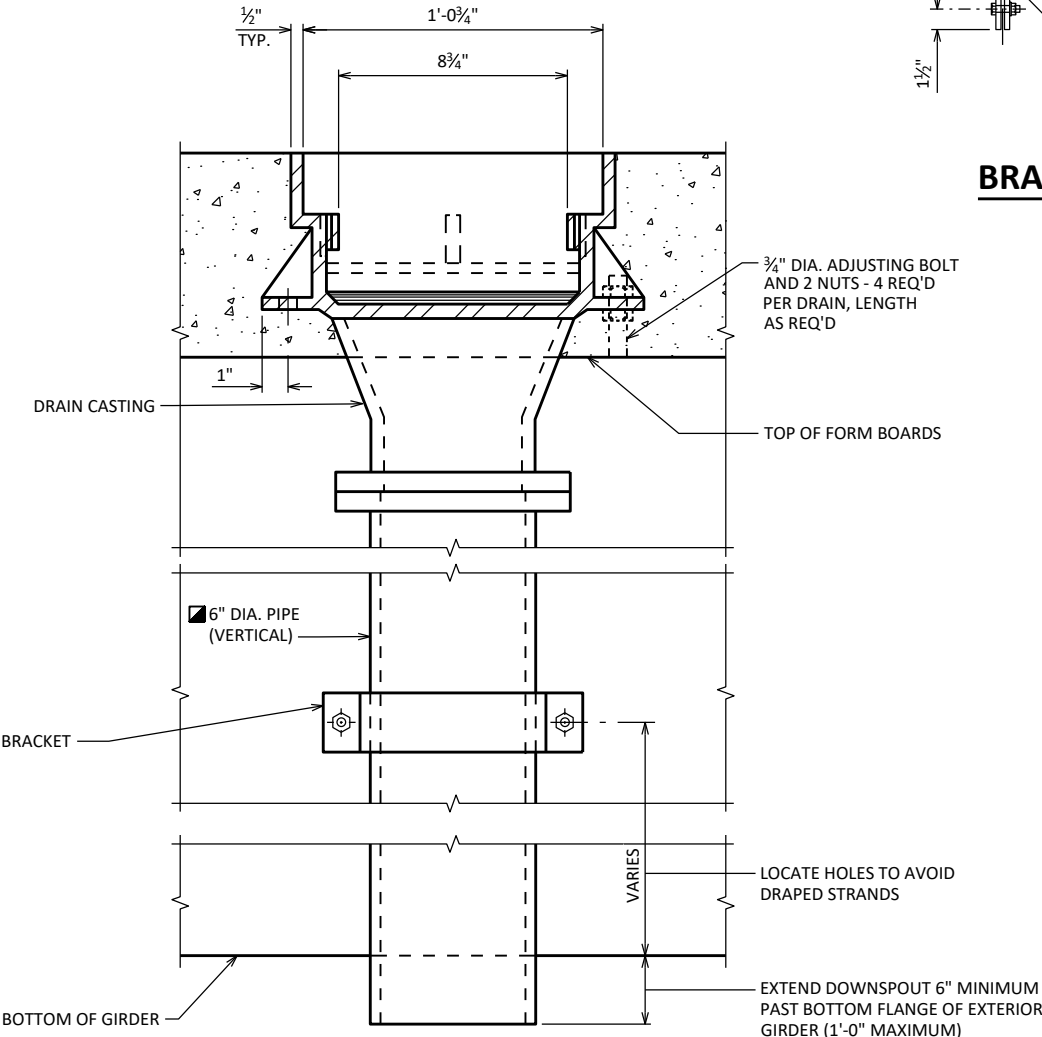
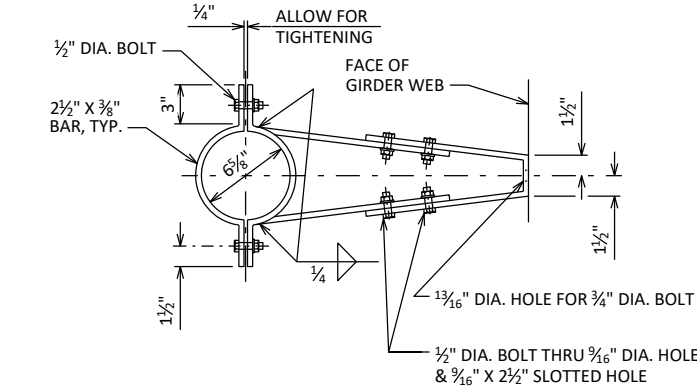
BRACKET DETAIL

PLAN

SECTION A1

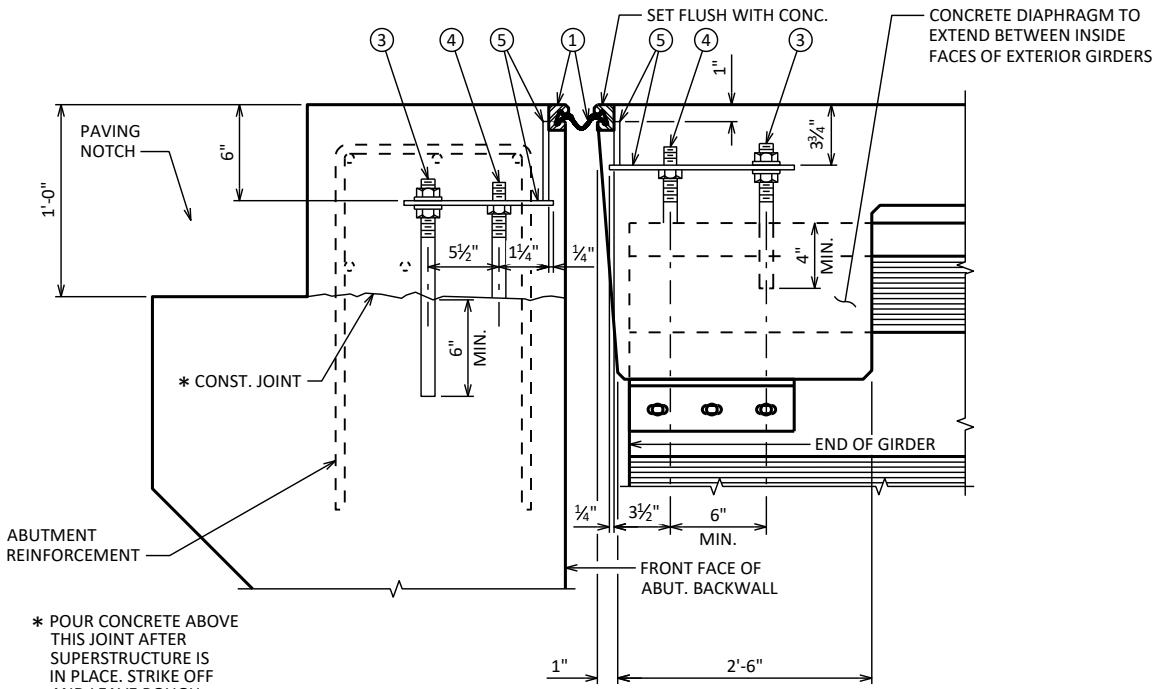
SECTION A2

TRANS. AND LONGIT. SLAB BAR REINF. TO BE CUT A MAX. 1" CL. FROM DRAIN FRAME DISPLACE BARS WHERE POSSIBLE



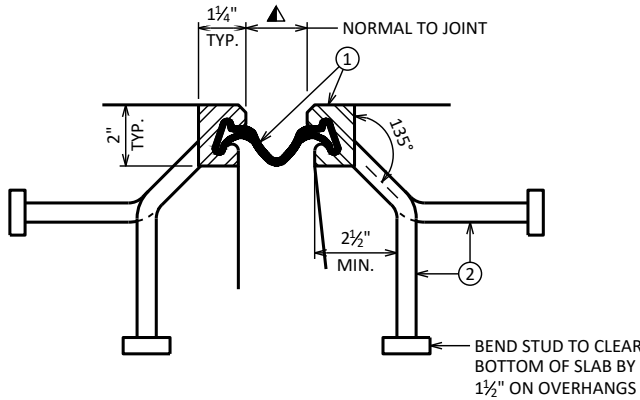
LEGEND

- ① NEOPRENE STRIP SEAL (4 -INCH) AND STEEL EXTRUSIONS.
- ② STUDS 5/8" DIA. X 6 3/4" LONG AT 6" ALTERNATE CENTERS. WELD TO EXTRUSIONS AND BEND AS SHOWN AFTER WELDING.
- ②A 1/2" THICK ANCHOR PLATE WITH 5/8" DIA. ROD (OR ALTERNATE STRIP SEAL ANCHOR). WELD ROD TO ANCHOR PLATE, WELD ANCHOR PLATE TO NO. 1 AT 1'-6" CENTERS BETWEEN GIRDERS.
- ③ 3/4" DIA. THREADED ROD WITH 2 NUTS AND PLATE WASHERS. GROUT THREADED ROD INTO FIELD DRILLED HOLES ON C/L OF GIRDER. ON ABUTMENT SIDE GROUT THREADED ROD INTO FIELD DRILLED HOLES IN ABUTMENT BACKWALL AS SHOWN.
- ④ 3/4" DIA. THREADED ROD WITH NUT. TACK WELD NUT TO NO. 5.
- ⑤ FABRICATE SUPPORT FROM 3" X 1/2" BAR AS SHOWN OR EQUIVALENT, ONE PER GIRDER PER SIDE. SHOP OR FIELD WELD TO NO. 1. IF FIELD WELDED, COVER WELDED AREAS WITH EPOXY-COATING MATERIAL. PROVIDE 1 1/2" DIA. HOLE FOR NO. 3 AND 1" DIA. HOLE FOR NO. 4.
- ⑥ GALVANIZED PLATE 3/8" X 10" X 2'-2" LONG WITH HOLES FOR NO.7.
- ⑦ 3/4" DIA. X 1 1/2" STAINLESS STEEL SOCKET FLAT HEAD SCREWS WITH ANTI-SEIZE LUBRICANT. PLACE IN COUNTERSUNK HOLE. RECESS 1/16" BELOW PLATE SURFACE.
- ⑧ 3/4" DIA. X 4" GALVANIZED HEX HEAD BOLT. BEND 45°.
- ⑨ 3/4" DIA. X 2 1/4" GALVANIZED THREADED COUPLING.
- ⑪ 1" X 5" SLOTTED COUNTERSUNK HOLE FOR NO. 7. PLACE SLOT PARALLEL TO DIRECTION OF MOVEMENT.



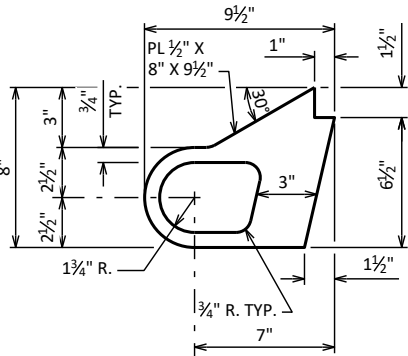
SECTION THRU JOINT AT ABUTMENT

NORMAL TO C/L SUBSTRUCTURE

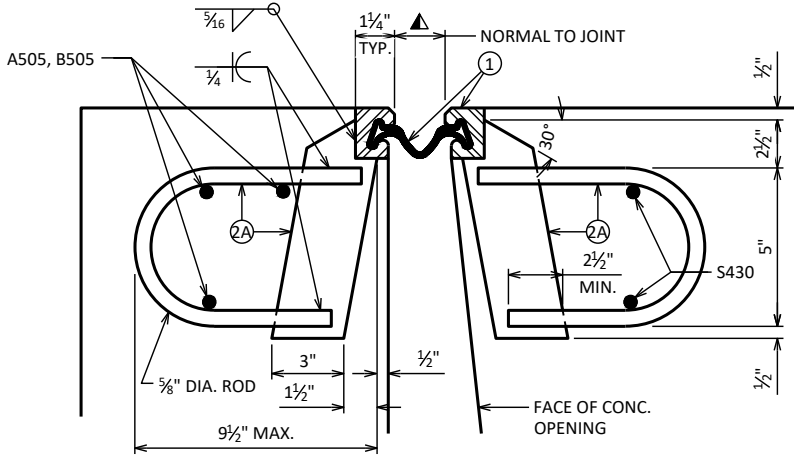


SECTION THRU JOINT

EXTERIOR GIRDER TO EDGE OF DECK AND AT PARAPETS, MEDIANS AND SIDEWALKS

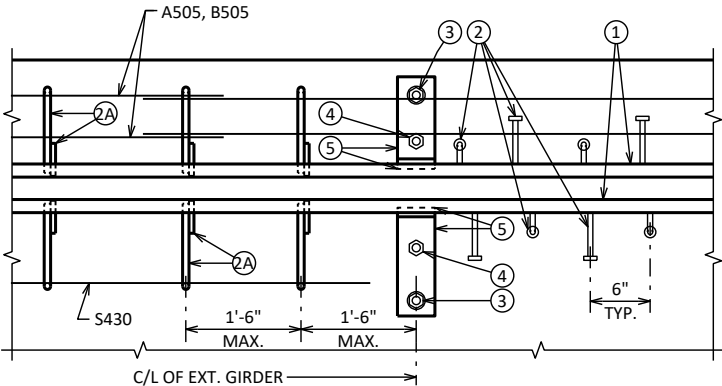


ALTERNATE STRIP SEAL ANCHOR



SECTION THRU JOINT

ROADWAY TRAFFIC AREA BETWEEN EXTERIOR GIRDERS



PART PLAN

NOTES

ONE FIELD SPLICE PERMITTED IN STEEL EXTRUSIONS, UNLESS MORE ARE REQUIRED FOR HANDLING OR GALVANIZING REQUIREMENTS. IF USED, ANCHOR PLATES SHALL BE PROVIDED 3" FROM EACH SIDE OF THE FIELD SPLICE. DETAILS SHALL BE SUBMITTED FOR APPROVAL. NO SPLICING PERMITTED IN NEOPRENE STRIP SEAL.

AFTER FABRICATION, BUT BEFORE SHIPMENT, STRAIGHTEN STEEL EXTRUSIONS SUCH THAT THEY SHALL BE FREE FROM WARP, TWIST AND SWEEP.

FABRICATOR SHALL PROVIDE MEANS OF KEEPING GALVANIZED EXTRUSIONS CLEAN AND SMOOTH DURING SHIPMENT AND PRIOR TO APPLYING LUBRICANT ADHESIVE FOR NEOPRENE GLAND INSTALLATION.

SANDBLAST PLATES, SUPPORTS AND EXTRUSIONS AFTER FABRICATION IN ACCORDANCE WITH SSPC SP. #6 "COMMERCIAL BLAST CLEANING". AFTER BLAST CLEANING, THE PLATES, SUPPORTS AND EXTRUSIONS SHALL BE HOT DIPPED GALVANIZED.

ANCHOR SYSTEM NO. 8 AND NO. 9 SHALL CONFORM TO ASTM A307 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C AND D.

ALL MATERIAL IN THE EXPANSION JOINT ASSEMBLY, INCLUDING ANCHOR STUDS AND HARDWARE SHALL BE PAID AT THE UNIT PRICE BID FOR "EXPANSION DEVICE B-37-171".

TEMPERATURE TABLE

SHADED UNDERSIDE DECK TEMP. (°F)	JOINT OPENING (NOR. TO JOINT)
85°	1 1/2"
75°	1 3/4"
65°	1 7/8"
55°	2 1/8"
45°	2 1/4"
35°	2 3/8"
25°	2 5/8"
15°	2 3/4"
5°	3"

A SMALL JOINT OPENING DUE TO HIGH TEMPERATURE AT TIME OF CONSTRUCTION MAY REQUIRE NEOPRENE STRIP SEAL INSTALLATION INTO STEEL EXTRUSIONS PRIOR TO SETTING THE EXPANSION JOINT.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY VJD		PLANS CK'D AIC	
EXPANSION DEVICE		SHEET 20 OF 22 102	



■ JOINT OPENING DIMENSION PLUS ½".

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY		VJD	PLANS CK'D AJC
COVER PLATE DETAILS		SHEET 21 OF 22	
		103	

BILL OF BARS

FOR WING PARAPETS

COATED (S. ABUT.): 1,050 LB
COATED (N. ABUT.): 820 LB

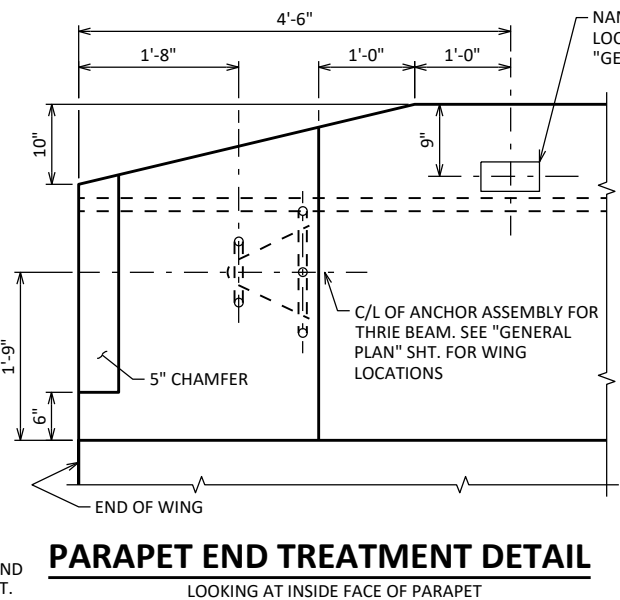
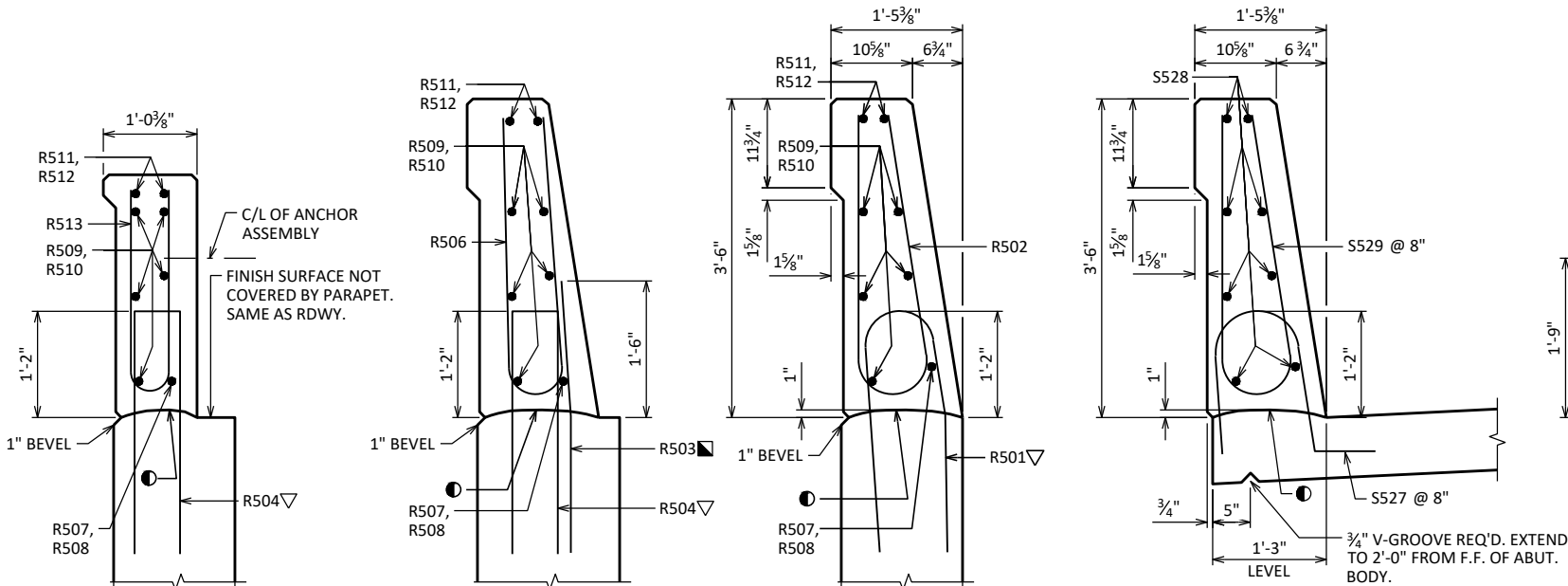
BAR MARK	COAT	S. ABUT.	N. ABUT.	LENGTH	BENT	BAR SERIES	LOCATION
R501	X	22	10	5'-10"	X		PARAPET VERT.
R502	X	22	10	6'-8"	X		PARAPET VERT.
R503	X	24	24	3'-0"	X		PARAPET VERT.
R504	X	34	34	5'-7"	X		PARAPET VERT.
R505	X	10	10	6'-5"	X		PARAPET VERT.
R506	X	12	12	6'-6"	X		PARAPET VERT.
R507	X	2	-	15'-8"	X		PARAPET HORIZ. (S. ABUT.)
R508	X	-	2	11'-8"	X		PARAPET HORIZ. (N. ABUT.)
R509	X	10	-	15'-8"			PARAPET HORIZ. (S. ABUT.)
R510	X	-	10	11'-8"			PARAPET HORIZ. (N. ABUT.)
R511	X	4	-	15'-9"	X		PARAPET HORIZ. (S. ABUT.)
R512	X	-	4	11'-9"	X		PARAPET HORIZ. (N. ABUT.)
R513	X	12	12	5'-5"	X	▲	PARAPET VERT.

▲ LENGTH SHOWN FOR BAR IS AN AVERAGE AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.

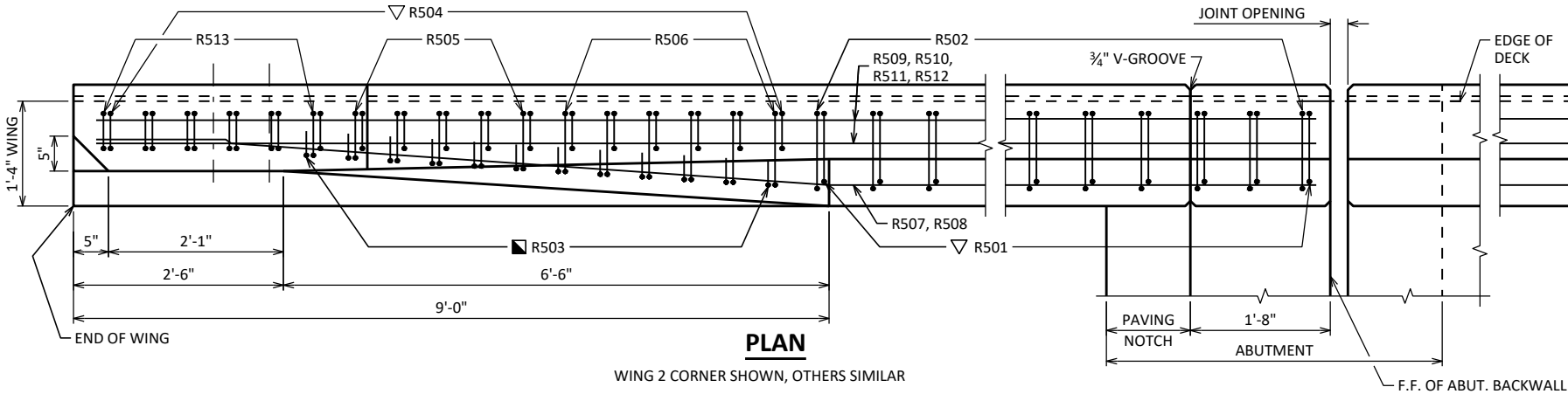
BAR SERIES TABLE

BUNDLE AND TAG EACH SERIES SEPARATELY.

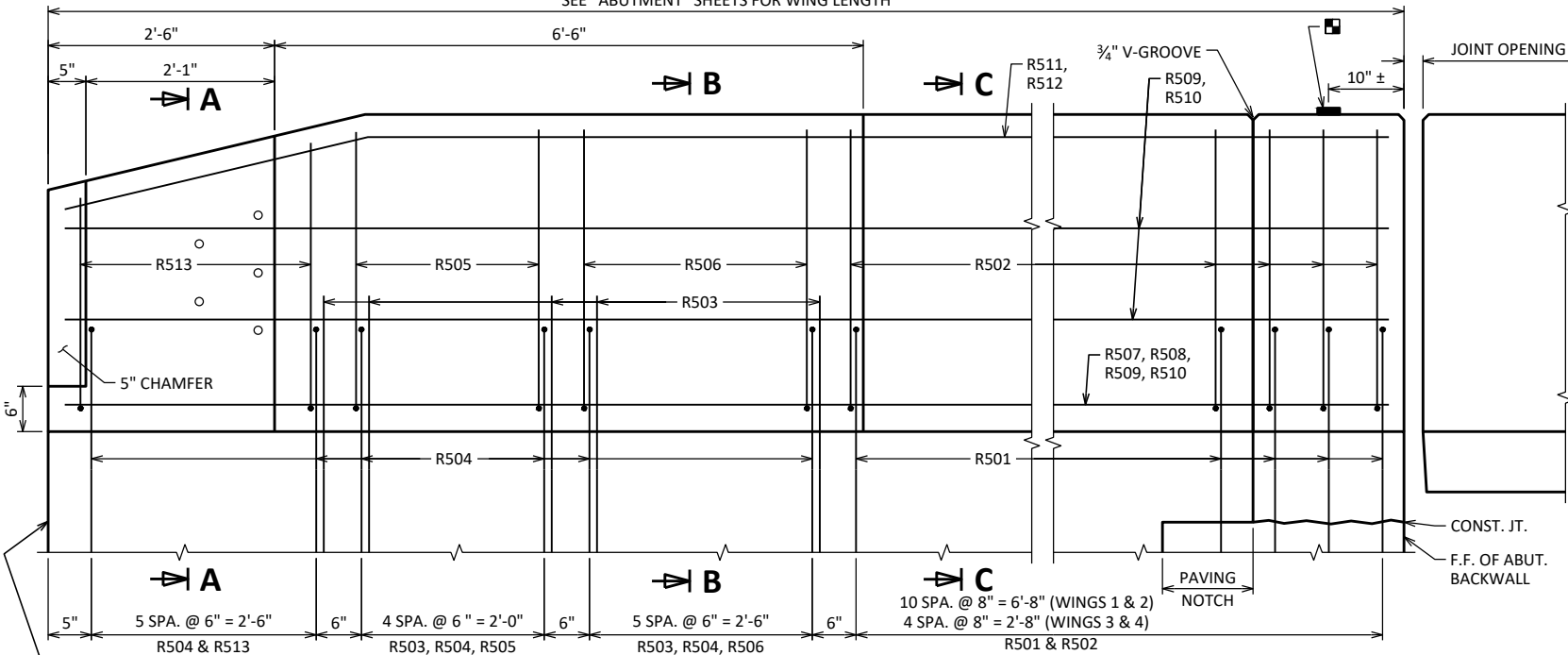
BAR MARK	NO. REQ'D.	LENGTH
R513	4 SERIES OF 6	4'-9" TO 6'-1"



SECTION THRU PARAPET ON DECK

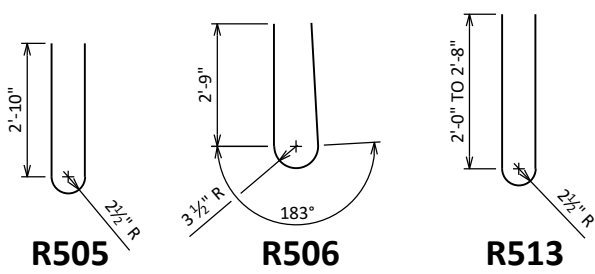
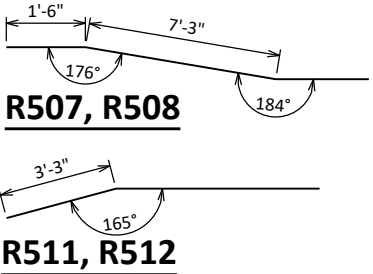
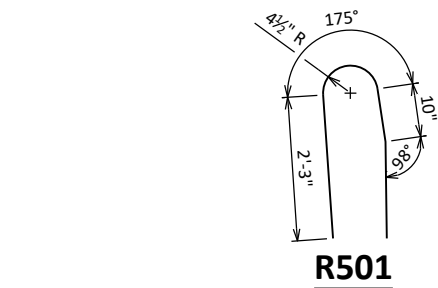


WING 2 CORNER SHOWN, OTHERS SIMILAR
SEE "ABUTMENT" SHEETS FOR WING LENGTH

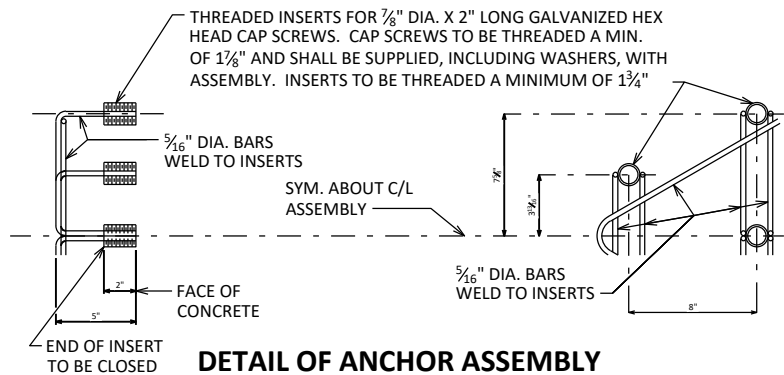


WING 2 CORNER SHOWN, OTHERS SIMILAR

OPTIONAL CONSTRUCTION JOINTS IN THE PARAPETS MAY BE USED. RUN BAR REINF. THRU THE JOINT. LAP LONGIT. BARS A MIN. OF 1'-9". MIN. JOINT SPACING OF 80'-0". DEFINE CONST. JOINT WITH A 3/4"-V GROOVE



■ BENCH MARK CAP (WHEN SUPPLIED).



DETAIL OF ANCHOR ASSEMBLY

NOTE: HEX HEAD CAP SCREWS & WASHERS TO BE GALVANIZED IN ACCORDANCE WITH ASTM F2329.

ASSEMBLY SHALL BE BID ITEM "ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD", EACH.

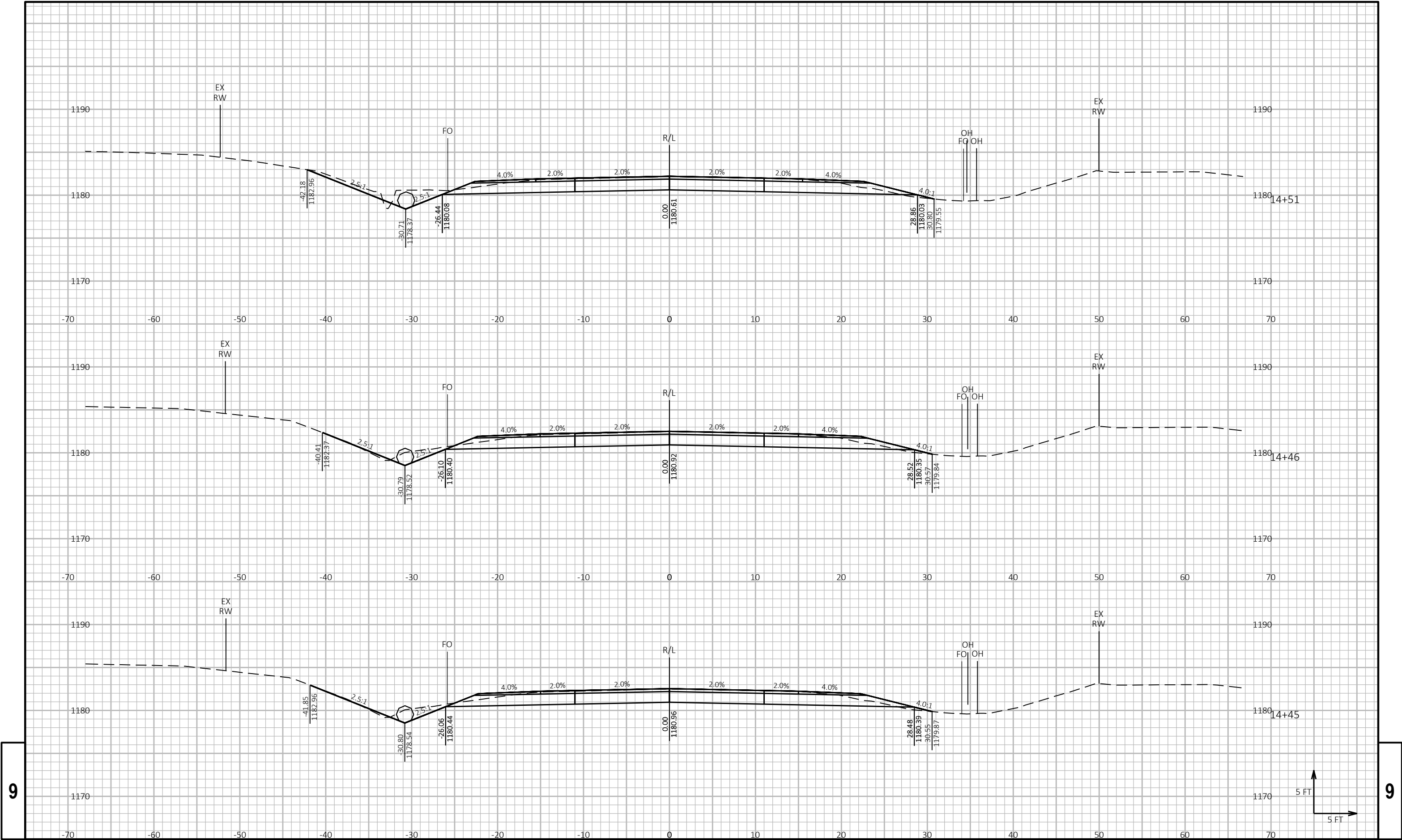
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-37-171			
DRAWN BY		VJD	PLANS CK'D AJC
SINGLE SLOPE PARAPET 42SS		SHEET 22 OF 22 104	

DIVISION 1 - SOUTH APPROACH								
STATION	DISTANCE	AREA (SF)		INCREMENTAL VOLUME (CY) (UNADJUSTED)		CUMULATIVE VOLUME (CY)		MASS ORDNATE
		CUT	FILL	CUT	FILL	CUT	EXPANDED FILL	
				NOTE 1	NOTE 2	1.00	NOTE 3	
							1.25	
13+81	0	0	1	0	0	0	0	0
13+97	16	1	3	0	1	0	1	-1
14+00	3	47	2	3	0	3	2	1
14+11	11	66	0	24	0	27	2	24
14+27	16	64	1	38	0	64	3	62
14+30	3	63	1	7	0	71	3	69
14+45	15	73	1	39	1	110	4	107
14+46	1	73	1	2	0	112	4	108
14+51	5	81	1	14	0	126	4	122
14+70	19	87	1	59	1	185	5	180
14+85	15	80	1	48	1	233	5	228
14+86	1	79	1	2	0	235	5	229
14+91	5	70	0	14	0	248	6	243
15+00	9	67	0	23	0	271	6	266
15+10	10	65	0	25	0	297	6	291
15+11	1	64	0	2	0	298	6	293
15+35	24	59	0	55	0	354	6	348
15+36	1	59	0	1	0	355	6	350
15+38	2	58	0	5	0	360	6	355
15+39	1	58	0	1	0	362	6	356
16+00	61	47	9	118	10	480	18	462
16+03	3	46	12	6	1	486	20	466
16+13	10	44	23	17	6	502	28	474
16+16	3	39	0	4	1	506	29	477
16+30	15	39	0	21	0	527	29	498
				527	23			

DIVISION 2 - NORTH APPROACH								
STATION	DISTANCE	AREA (SF)		INCREMENTAL VOLUME (CY) (UNADJUSTED)		CUMULATIVE VOLUME (CY)		MASS ORDNATE
		CUT	FILL	CUT	FILL	CUT	EXPANDED FILL	
				NOTE 1	NOTE 2	1.00	NOTE 3	
							1.25	
20+45	0	39	0	0	0	0	0	0
20+55	10	39	0	14	0	14	0	14
20+57	3	43	129	4	6	18	7	10
20+67	10	46	87	16	40	34	57	-23
21+00	33	52	24	60	68	94	142	-48
21+09	9	53	18	17	7	111	151	-40
21+31	22	57	1	46	8	157	161	-4
21+32	0	57	1	1	0	157	161	-3
21+34	3	57	1	6	0	163	161	3
21+35	0	57	1	1	0	164	161	3
21+57	22	61	0	48	0	212	161	50
21+59	3	62	0	6	0	218	161	57
21+60	0	62	0	1	0	219	161	58
21+84	25	67	5	59	2	278	164	114
21+85	0	67	5	1	0	279	164	114
22+00	15	68	2	38	2	317	167	150
22+25	25	53	3	56	2	373	170	203
22+44	19	1	5	19	3	391	173	218
22+59	15	1	2	1	2	392	175	216
22+74	15	1	1	1	1	392	176	216
				392	141			

DIVISION 2 - DRIVEWAY REMOVAL								
STATION	DISTANCE	AREA (SF)		INCREMENTAL VOLUME (CY) (UNADJUSTED)		CUMULATIVE VOLUME (CY)		MASS ORDNATE
		CUT	FILL	CUT	FILL	CUT	EXPANDED FILL	
				NOTE 1	NOTE 2	1.00	NOTE 3	
							1.25	
23+22	0	1	0	0	0	0	0	0
23+24	3	10	1	1	0	1	0	1
23+53	29	94	0	56	1	56	1	56
23+91	38	2	6	68	4	124	6	118
24+00	9	0	5	0	2	124	8	116
				124	7			

NOTES:
1) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT
2) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSABLE PAVEMENT MATERIAL
3) EXPANDED FILL = (UNEXPANDED FILL) * (FILL FACTOR)
4) MASS ORDNATE = AVAILABLE MATERIAL - (EXPANDED FILL); POSITIVE INDICATES AN EXCESS OF MATERIAL; NEGATIVE INDICATES A SHORTAGE OF MATERIAL



9

9

PROJECT NO: 6666-03-71

HWY: CTH M

COUNTY: MARATHON

CROSS SECTIONS: GUARDRAIL

SHEET

108

E

FILE NAME : Y:\57XX\5757.DP.25.CTHM.MAR\CADD\66660371\SHEETS\090201-XS.DWG
LAYOUT NAME - 03

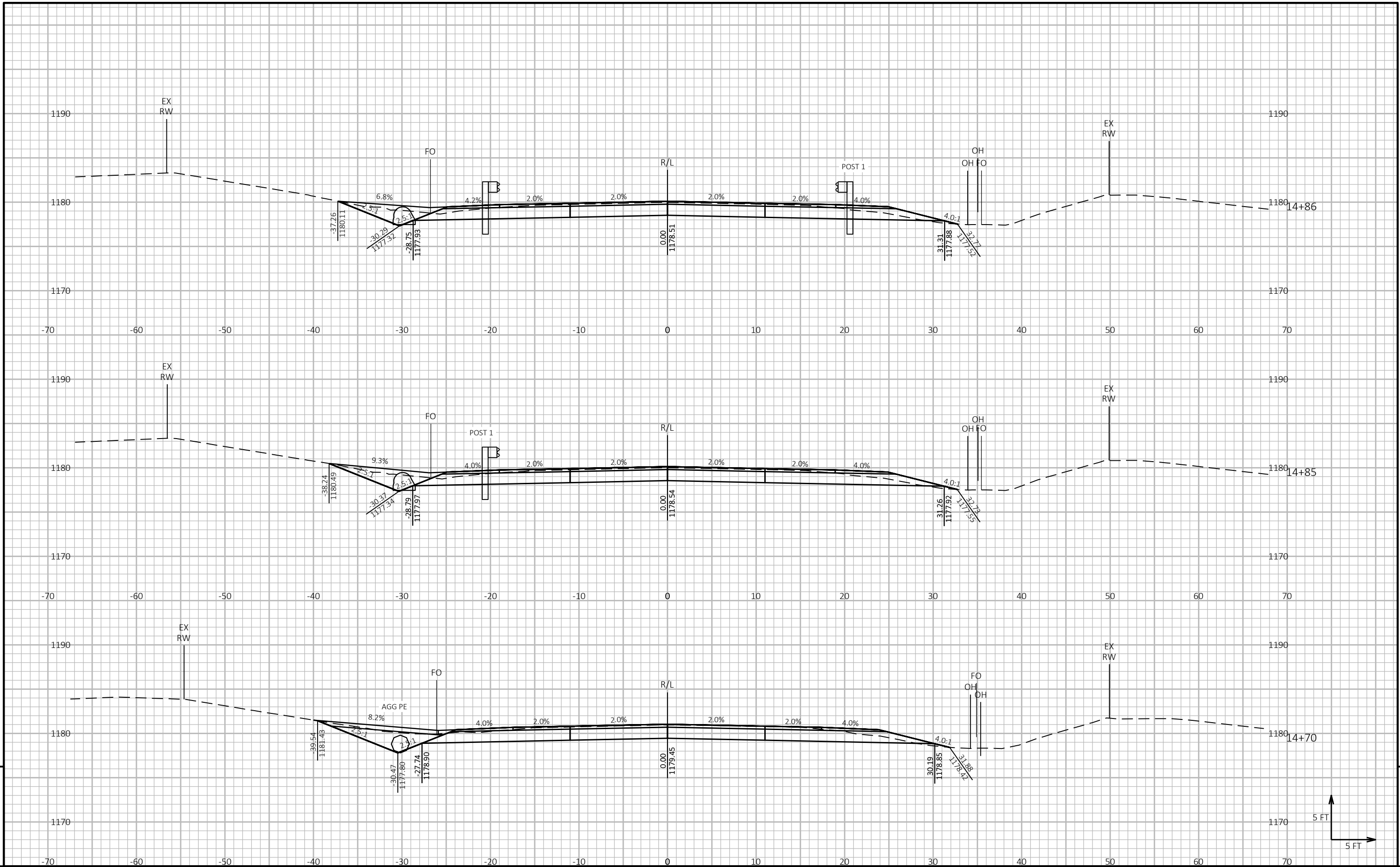
PLOT DATE : 7/23/2026 9:05 AM

PLOT BY : PARKER TISCHAUSER

PLOT NAME :

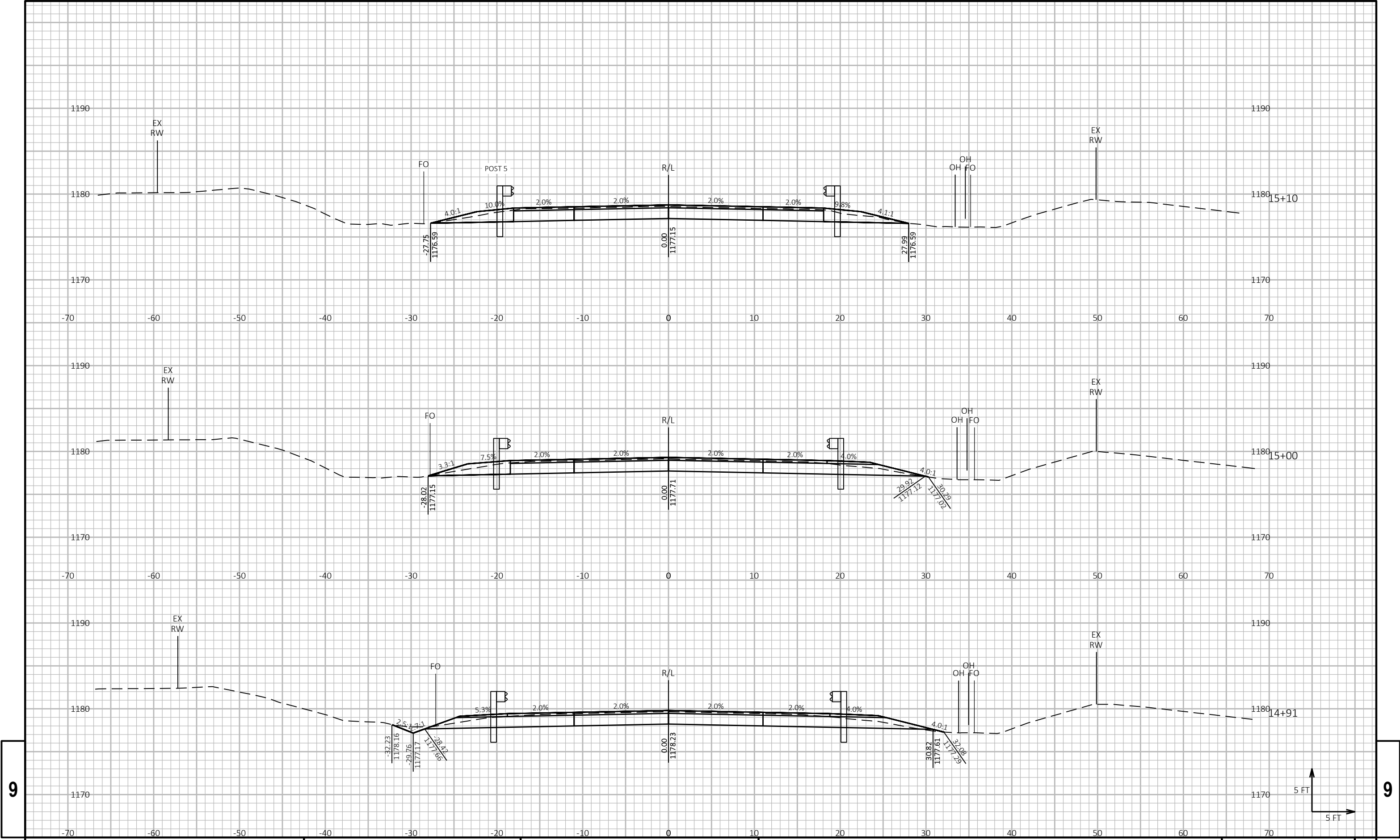
PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

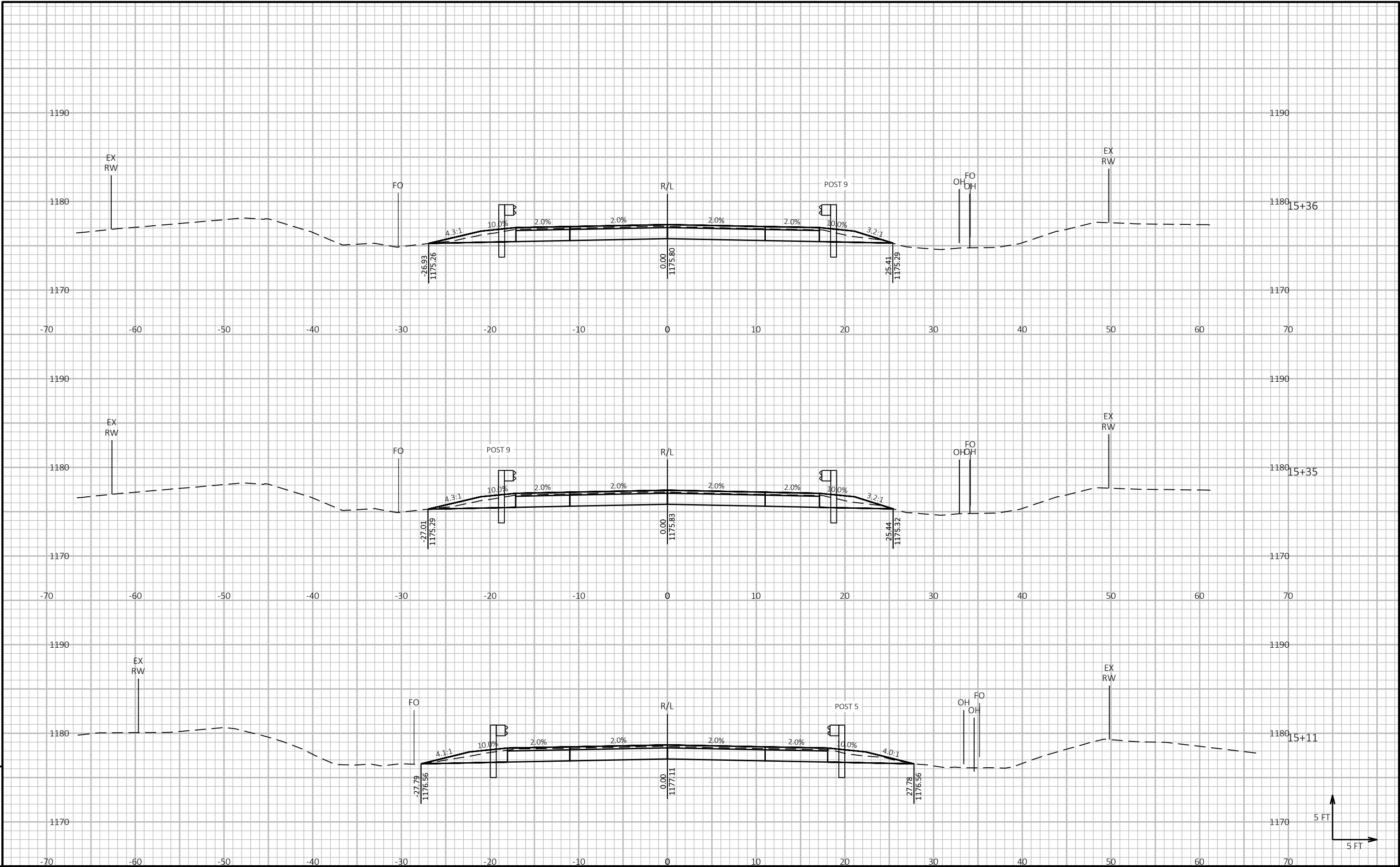
WISDOT/CADD SHEET 49



9

9

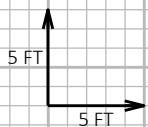
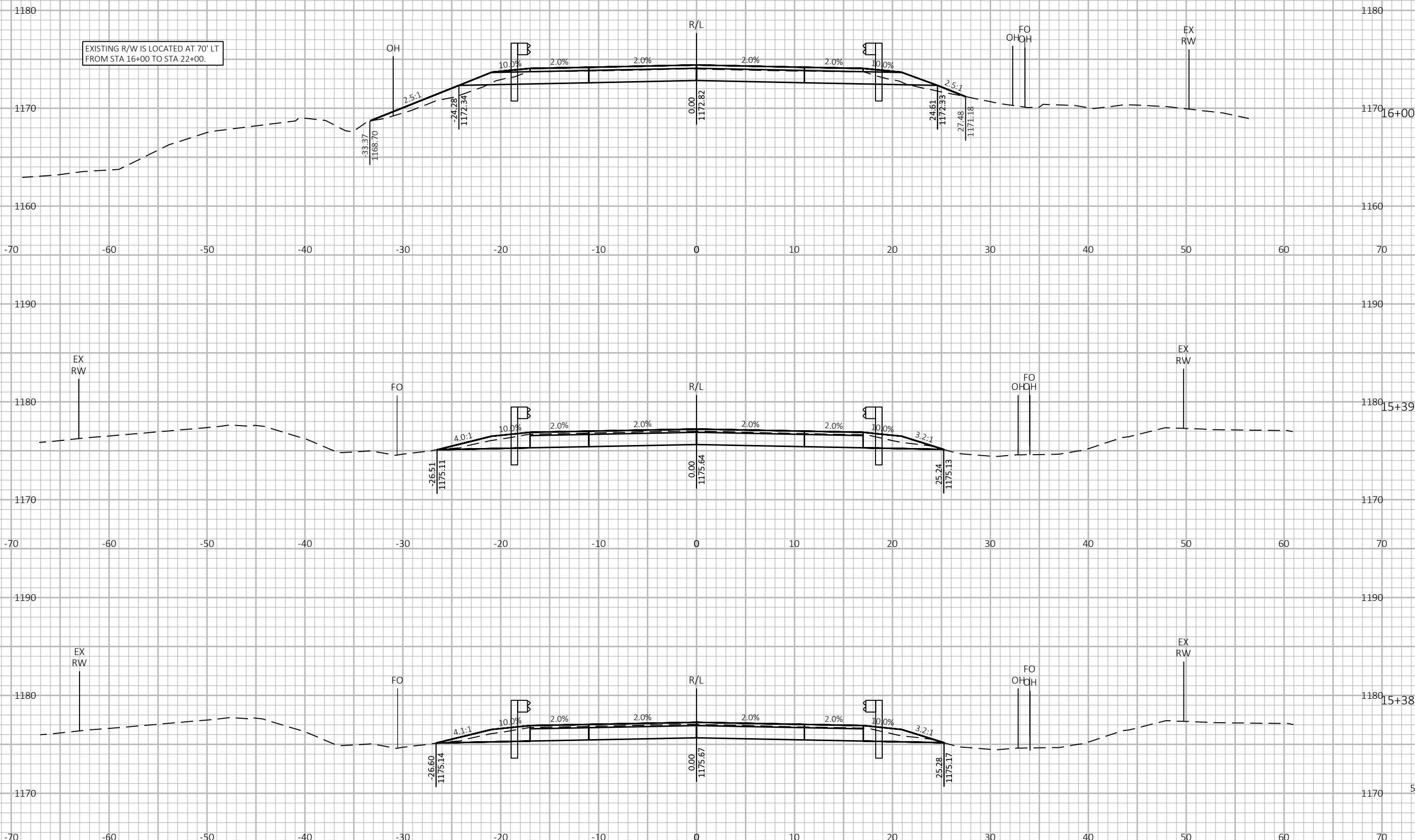




9

9

EXISTING R/W IS LOCATED AT 70' LT
FROM STA 16+00 TO STA 22+00.



PROJECT NO: 6666-03-71

HWY: CTH M

COUNTY: MARATHON

CROSS SECTIONS: GUARDRAIL

SHEET

112

E

FILE NAME : Y:\57XX\5757.DP.25.CTHM.MAR\CADD\66660371\SHEETS\090201-XS.DWG
LAYOUT NAME - 07

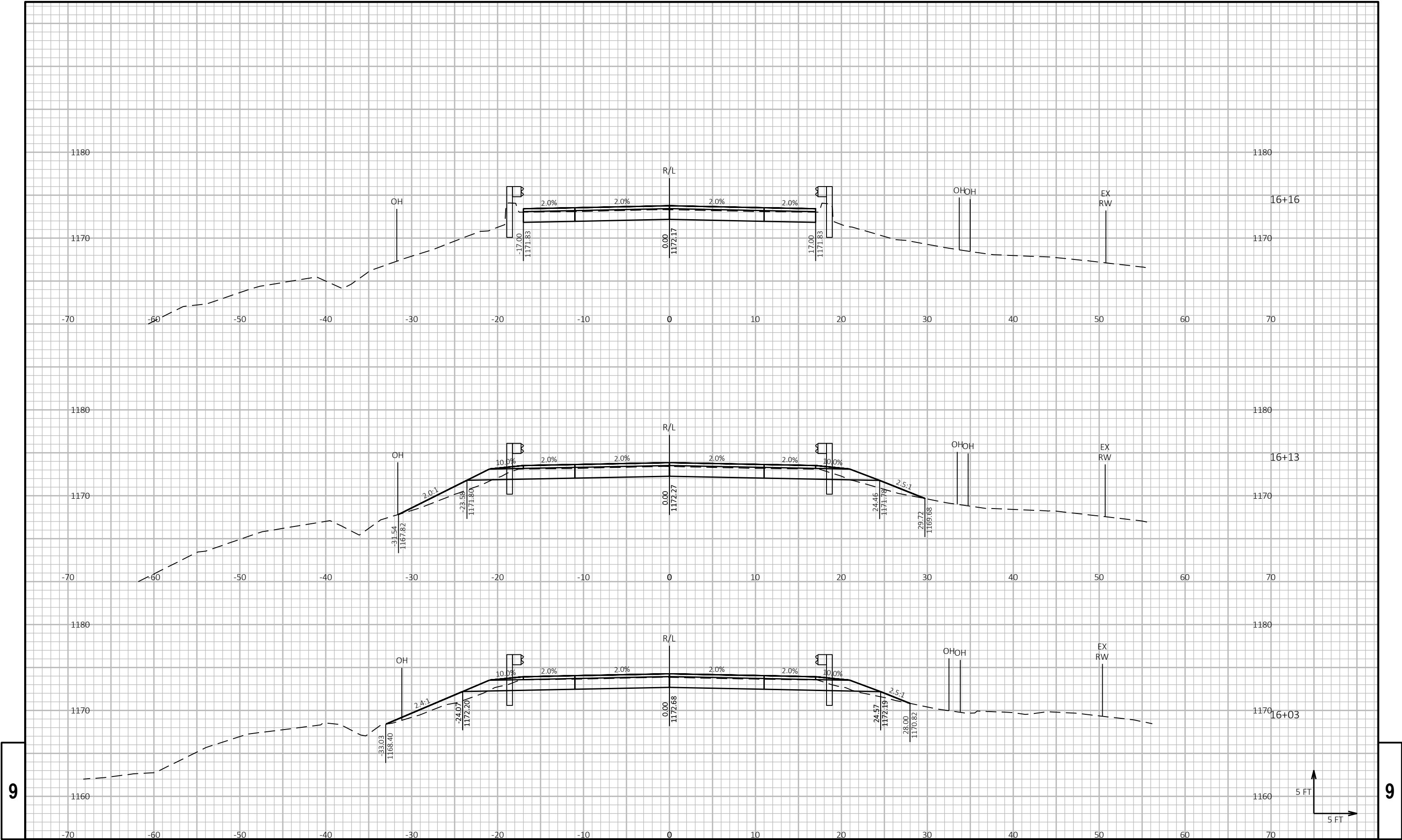
PLOT DATE : 7/23/2026 9:06 AM

PLOT BY : PARKER TISCHAUSER

PLOT NAME :

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

WISDOT/CADD SHEET 49



9

9

PROJECT NO: 6666-03-71

HWY: CTH M

COUNTY: MARATHON

CROSS SECTIONS: GUARDRAIL

SHEET

113

E

FILE NAME : Y:\57XX\5757.DP.25.CTHM.MAR\CADD\66660371\SHEETS\090201-XS.DWG
LAYOUT NAME - 08

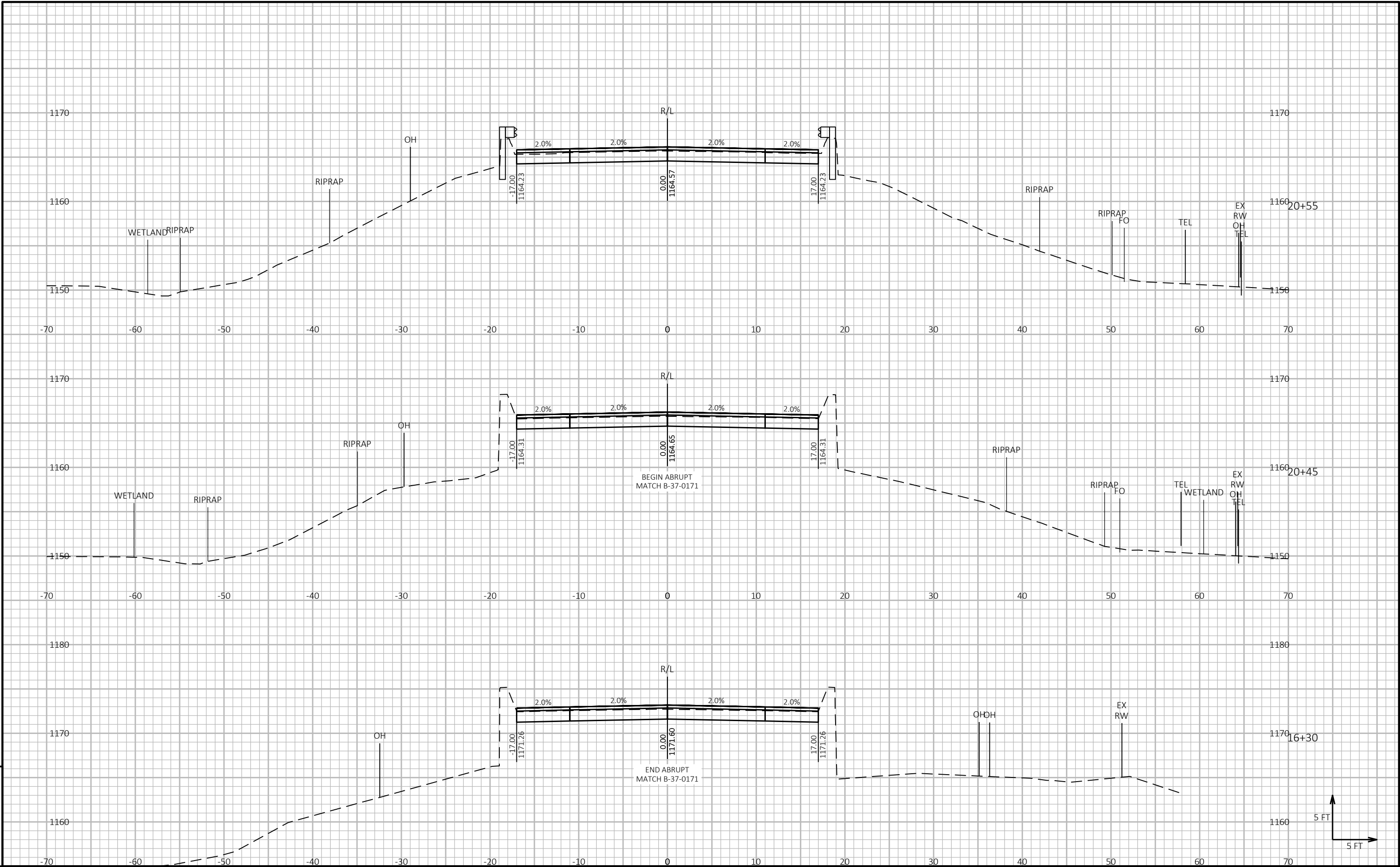
PLOT DATE : 7/23/2026 9:06 AM

PLOT BY : PARKER TISCHAUSER

PLOT NAME :

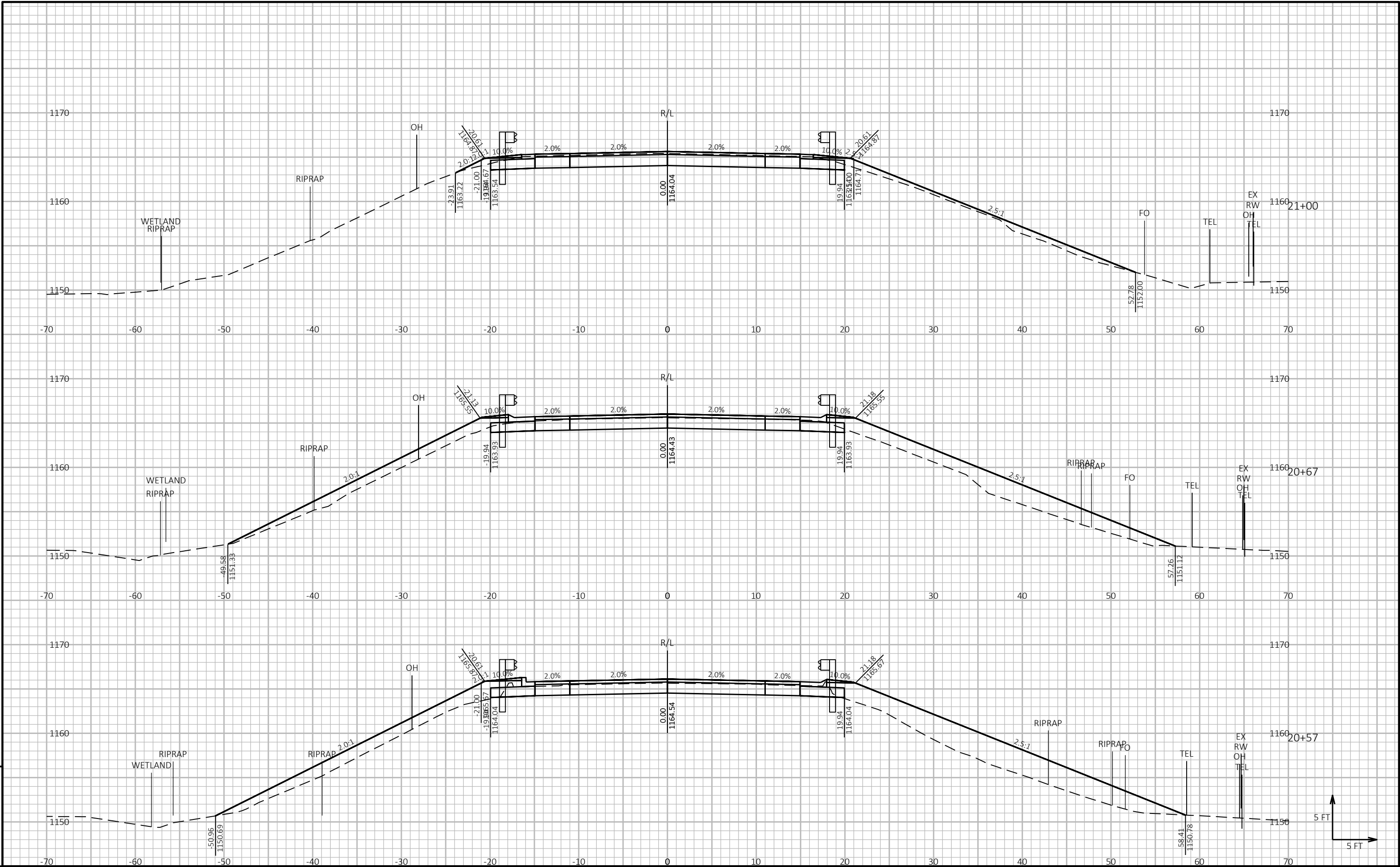
PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADD SHEET 49



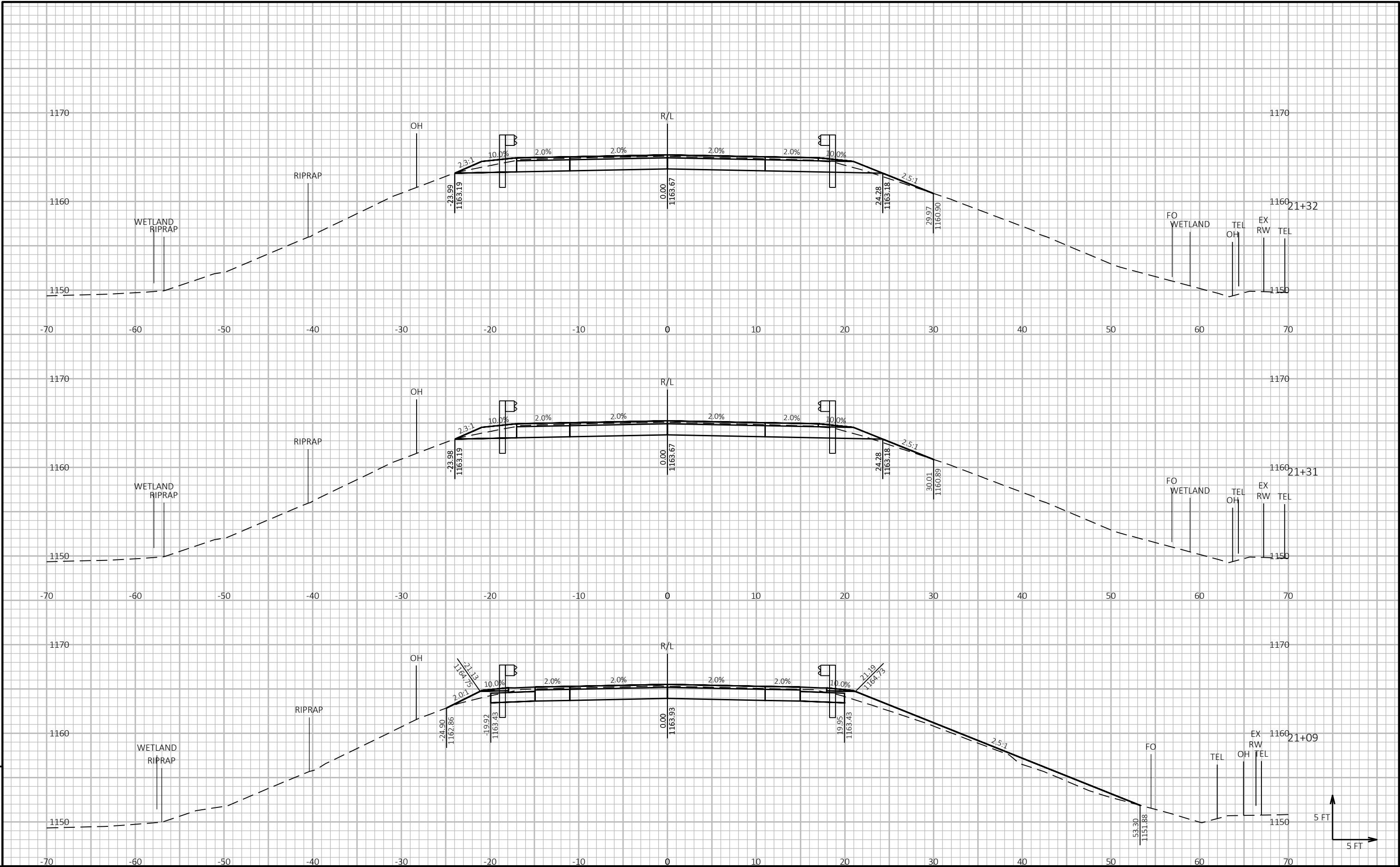
9

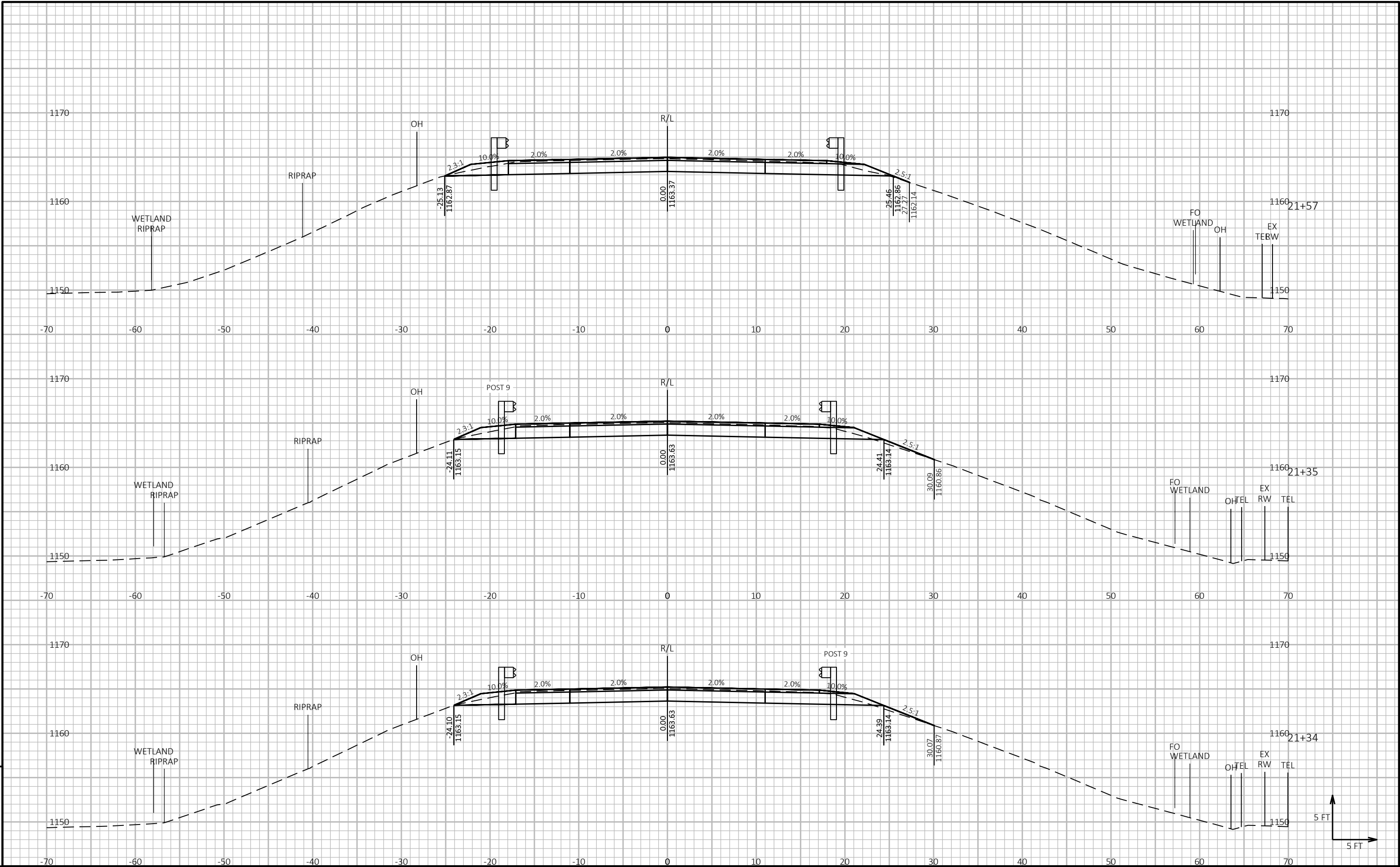
9

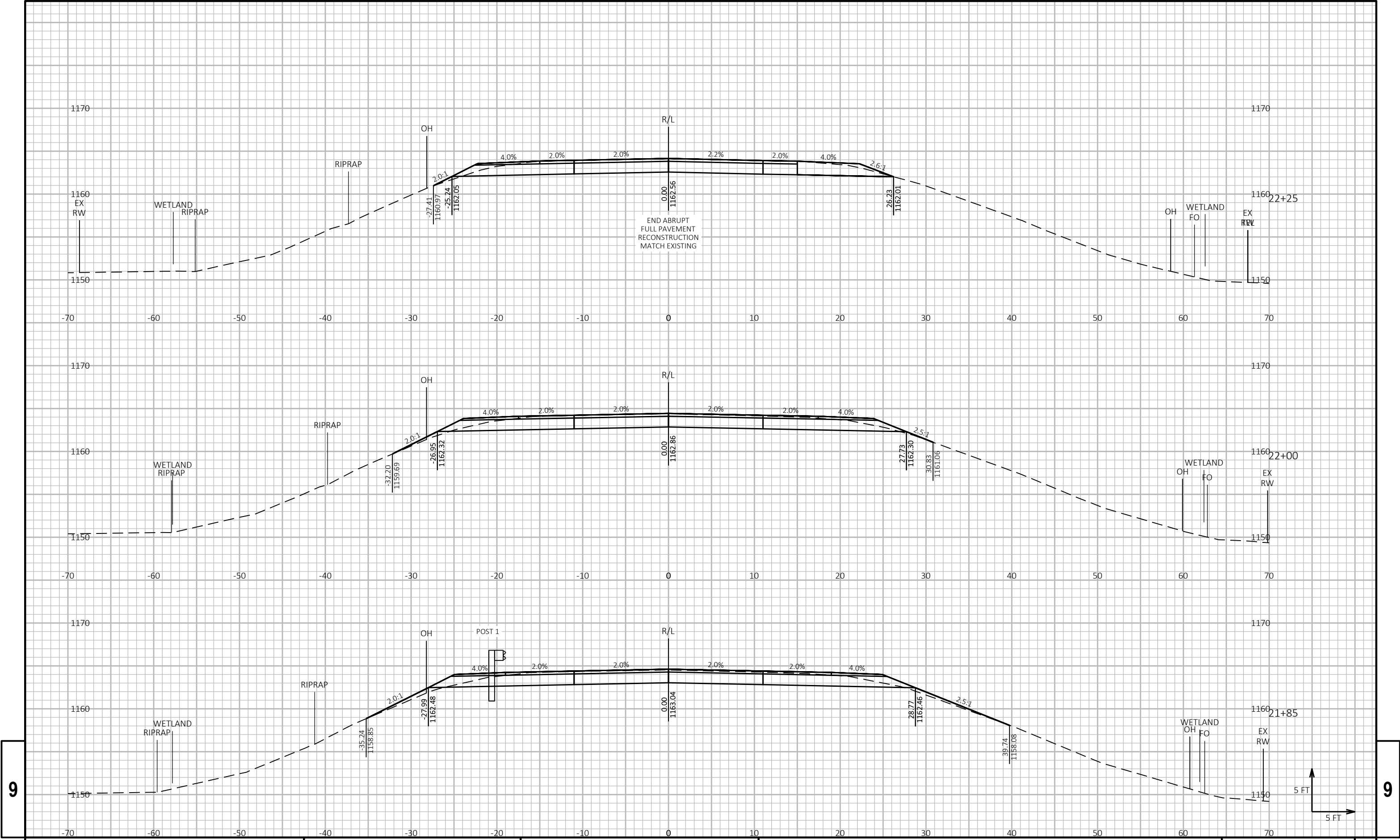


9

9

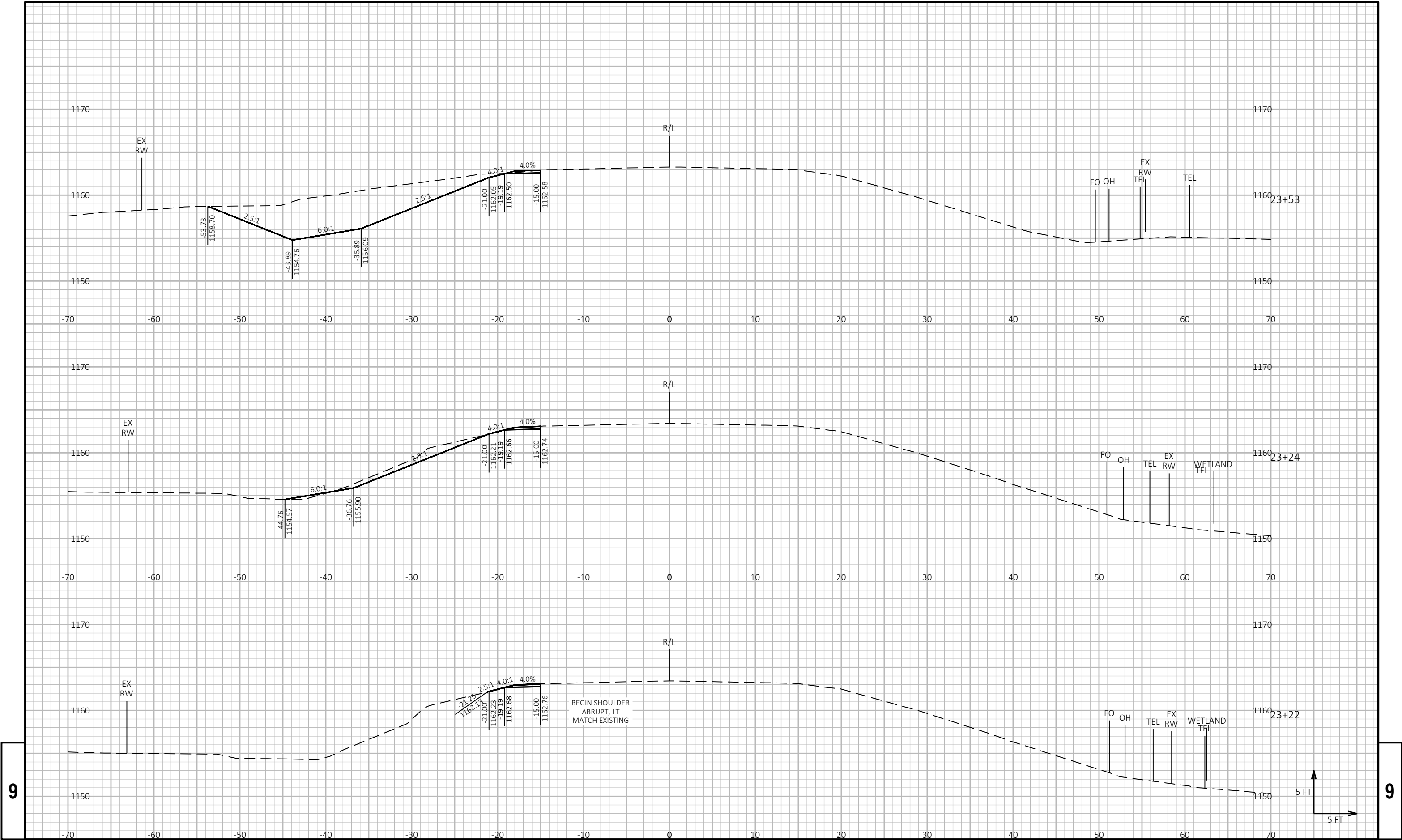






9

9



9

9

PROJECT NO: 6666-03-71

HWY: CTH M

COUNTY: MARATHON

CROSS SECTIONS: DRIVEWAY REMOVAL

SHEET

121

E

FILE NAME : Y:\57XX\5757.DP.25.CTHM.MAR\CADD\66660371\SHEETS\090201-XS.DWG
LAYOUT NAME - 16

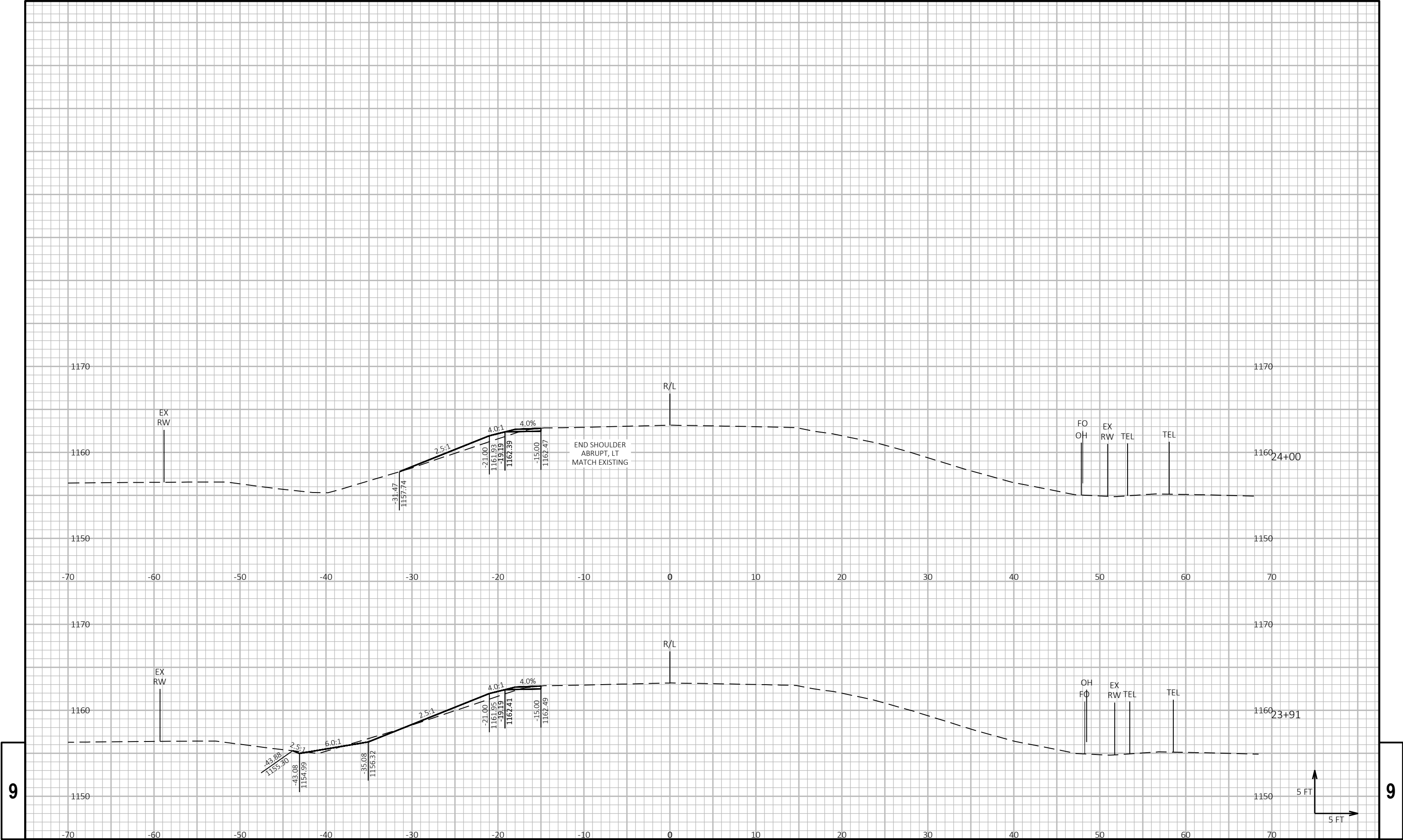
PLOT DATE : 7/23/2026 9:06 AM

PLOT BY : PARKER TISCHAUSER

PLOT NAME :

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

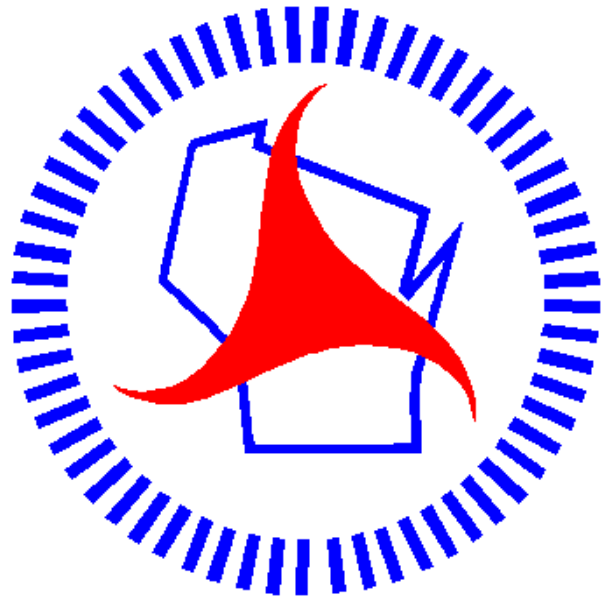
WISDOT/CADD SHEET 49



9

9

Notes



Wisconsin Department of Transportation

Dedicated people creating transportation solutions through innovation and exceptional service.

<http://www.dot.wisconsin.gov>