

UTILITY CONTACTS

COMMUNICATIONS

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ELECTRICITY

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MICHAEL.LYDON@DAIRYLANDPOWER.COM

XCEL ENERGY - ELECTRICITY, TRANSMISSION
PAM TAYLOR
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DNR CONTACT

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WISDOT NW REGION CONTACTS

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NICK MAKI, PROJECT DESIGNER
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ORDER OF SECTION 2 SHEETS

PROJECT OVERVIEW
TYPICAL SECTIONS
CONSTRUCTION DETAILS
PAVEMENT MARKING
TRAFFIC CONTROL
DETOUR

GENERAL NOTES

THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING AND FIELD LOCATING ALL UTILITIES. THE CONTRACTOR SHALL NOTIFY DIGGERS HOTLINE AND AFFECTED UTILITIES PRIOR TO THE START OF THE WORK. ANY UTILITY WHICH IS NOT A MEMBER OF THE DIGGERS HOTLINE MUST BE CONTACTED SEPARATELY. UTILITY REFERENCE LINES ON THE CROSS SECTIONS ARE FOR HORIZONTAL REFERENCE ONLY.

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCLUSIVE OF THE ROADBED (WITHIN THE FINISHED SHOULDER POINT), SHALL BE FERTILIZED, SEEDED, AND MULCHED AS DIRECTED BY THE ENGINEER. DO NOT APPLY FERTILIZER WITHIN 20 FEET OF A WATER BODY OR WETLAND.

WETLANDS EXIST IN THE PROJECT AREA. NO DISTURBANCE IS ALLOWED OUTSIDE THE SLOPE INTERCEPTS. NO EQUIPMENT OR MATERIALS SHALL BE STORED IN WETLAND AREAS.

EROSION CONTROL FEATURES AS SHOWN IN THE PLANS ARE AT SUGGESTED LOCATIONS, EXACT LOCATIONS WILL BE DETERMINED BY THE E.C.I.P. AND APPROVED BY THE ENGINEER IN THE FIELD.

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

THE DEPARTMENT OF TRANSPORTATION WILL FURNISH THE CONTRACTOR WITH A MONUMENT TO BE INSTALLED ON THE STRUCTURE BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.

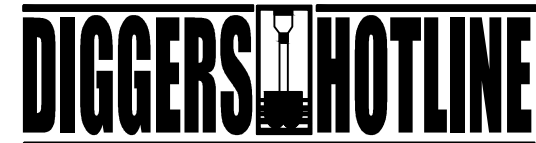
ACCESS TO ALL RESIDENCES SHALL BE MAINTAINED DURING CONSTRUCTION. THE DRIVEWAY WITHIN THE PROJECT LIMITS IS A FIELD ENTRANCE WITH ALTERNATIVE ACCESS OPTIONS ELSEWHERE.

A BUTT JOINT WILL BE REQUIRED WHERE NEW PAVEMENT IS TO MEET AN EXISTING PAVED SURFACE.

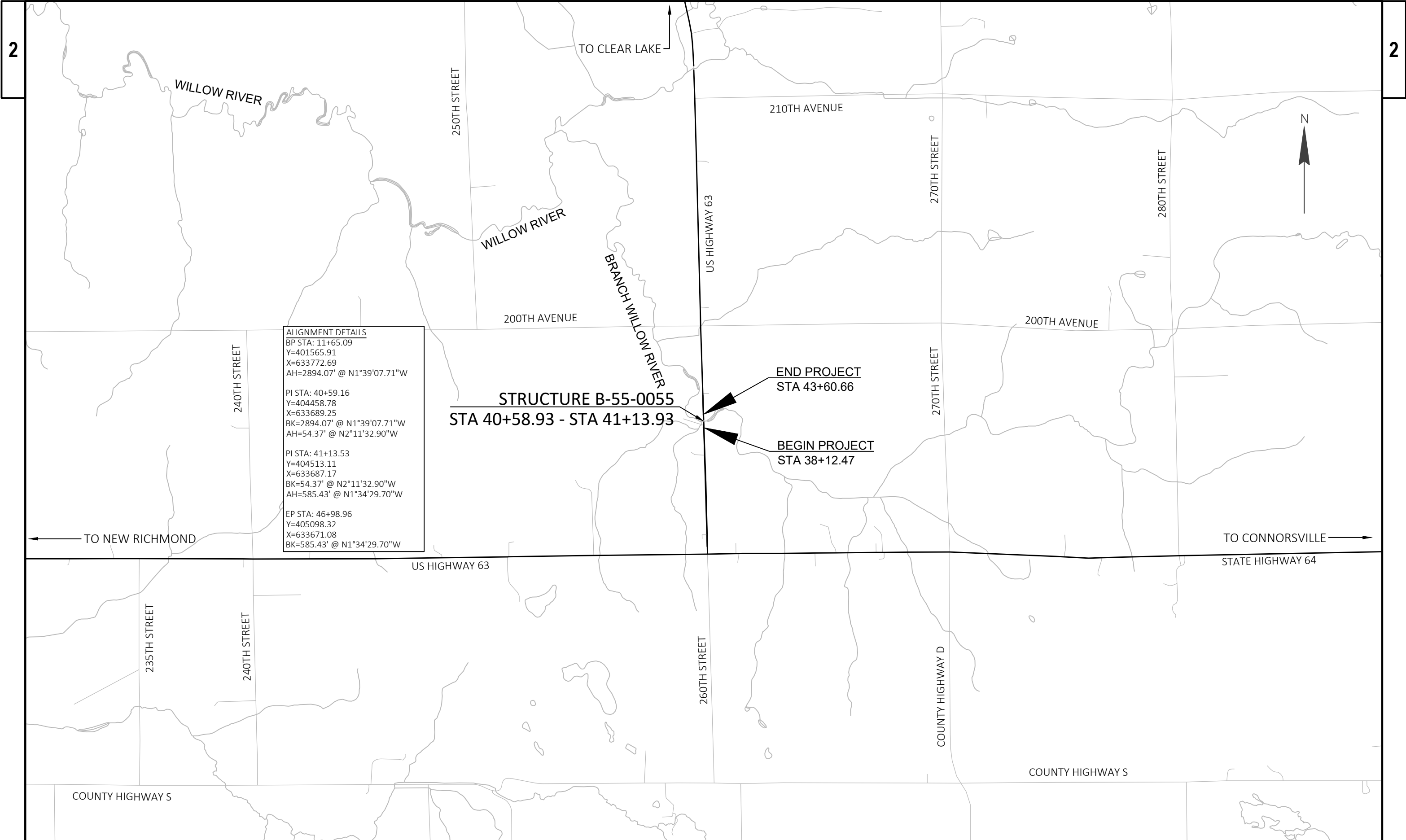
PRIOR TO THE REINSTALLATION OF GUARDRAIL, THE BASE AGGREGATE SHOULDERS SHALL BE CONSTRUCTED, SHAPED, AND COMPACTED UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

LIST OF STANDARD ABBREVIATIONS

ABUT.	ABUTMENT	INL.	INLET
AGG.	AGGREGATE	LT.	LEFT
AH.	AHEAD	L.H.F.	LEFT-HAND FORWARD
APPROX.	APPROXIMATE	LIN.	LINEAR
A.E.W.	APRON ENDWALL	LIN. FT.	LINEAR FOOT
ASPH.	ASPHALTIC	L.S.	LUMP SUM
A.D.T.	AVERAGE DAILY TRAFFIC	MAX.	MAXIMUM
AZ.	AZIMUTH	MI.	MILE
BK.	BACK	MISC.	MISCELLANEOUS
BEG.	BEGIN	N.E.	NORTH EAST
B.M.	BENCH MARK	N.W.	NORTH WEST
C/L	CENTER LINE	PAV'T	PAVEMENT
CONC.	CONCRETE	P.C.	POINT OF CURVATURE
CONST.	CONSTRUCTION	P.T.	POINT OF TANGENCY
CO.	COUNTY	P.O.T.	POINT ON TANGENT
C.T.H.	COUNTY TRUNK HIGHWAY	LB.	POUND
X-SEC.	CROSS SECTION	P.E.	PRIVATE ENTRANCE
CR.	CRUSHED	PROJ.	PROJECT
CFS	CUBIC FEET / SECOND	R.	RANGE
C.Y., CU. YD.	CUBIC YARD	REQ'D	REQUIRED
CULV.	CULVERT	RT.	RIGHT
C.P.	CULVERT PIPE	R.H.F.	RIGHT-HAND FORWARD
D.O.T.	DEPARTMENT OF TRANSPORTATION	R/W	RIGHT OF WAY
D.H.V.	DESIGN HOUR VOLUME	RD.	ROAD
DIA.	DIAMETER	SHR.	SHRINKAGE
D.	DIRECTIONAL DISTRIBUTION	SL.	SLOPE
DISCH. OR DIS	DISCHARGE	STD.	STANDARD
EA.	EACH	S.D.D.	STANDARD DETAIL DRAWINGS
ELECT.	ELECTRIC	S.T.H.	STATE TRUNK HIGHWAY
EL. OR ELEV.	ELEVATION	STA.	STATION
EMB.	EMBANKMENT	S.P.P.A.	STRUCTURAL PLATE PIPE ARCH
E.B.S.	EXCAVATION BELOW SUBGRADE	STRUCT.	STRUCTURE
EXIST.	EXISTING	SURF.	SURFACE
FERT.	FERTILIZE	TEL.	TELEPHONE
F.E.	FIELD ENTRANCE	TN.	TOWN
FIN.	FINISHED.	T.	TRUCKS (PERCENT OF)
FT.	FOOT	UNCL.	UNCLASSIFIED
F.L.	FLOW LINE	U.G.	UNDERGROUND
GA.	GAUGE	V.	VELOCITY OR DESIGN SPEED
HORIZ.	HORIZONTAL	V.C.	VERTICAL CURVE
CWT.	HUNDRED WEIGHT		

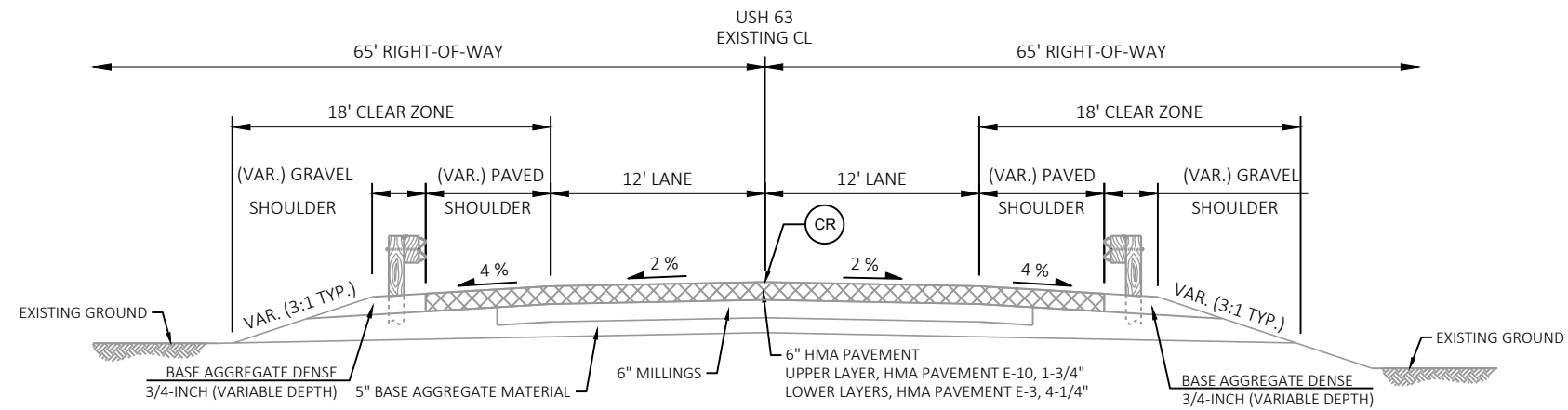


Dial 811 or (800)242-8511
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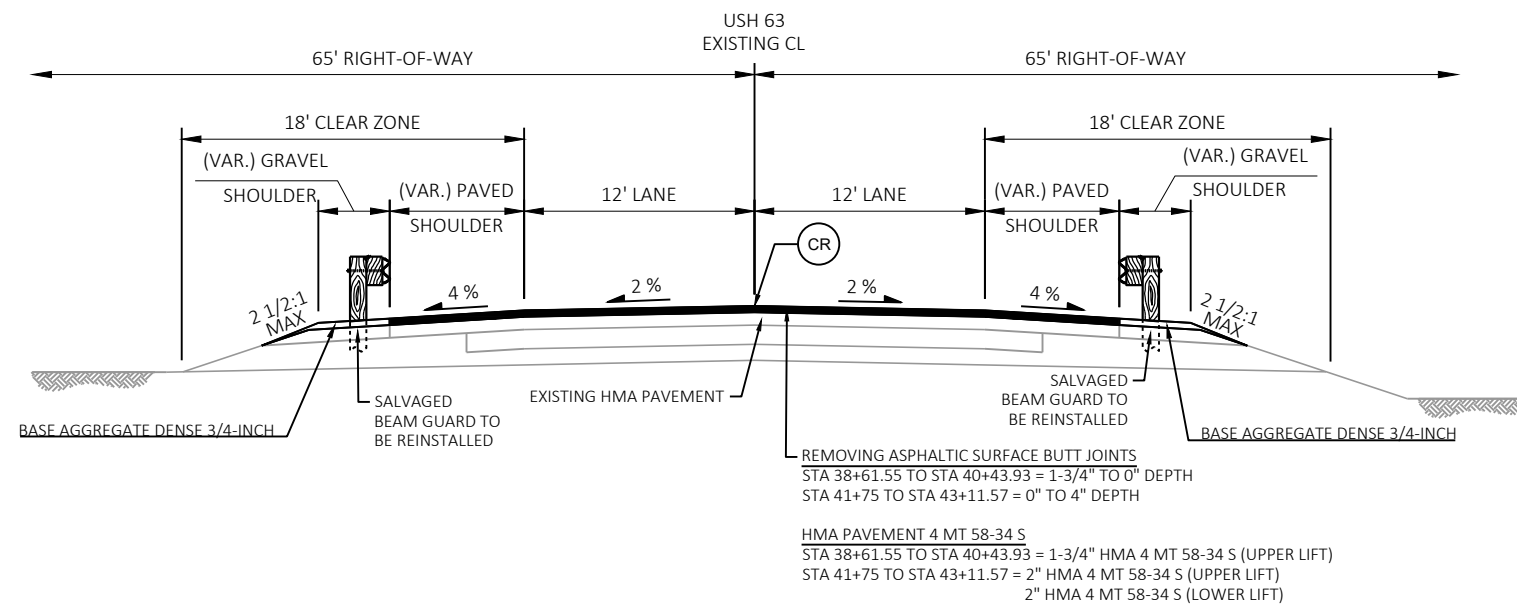


ALIGNMENT DETAILS	
BP STA: 11+65.09	
Y=401565.91	
X=633772.69	
AH=2894.07' @ N1°39'07.71"W	
PI STA: 40+59.16	
Y=404458.78	
X=633689.25	
BK=2894.07' @ N1°39'07.71"W	
AH=54.37' @ N2°11'32.90"W	
PI STA: 41+13.53	
Y=404513.11	
X=633687.17	
BK=54.37' @ N2°11'32.90"W	
AH=585.43' @ N1°34'29.70"W	
EP STA: 46+98.96	
Y=405098.32	
X=633671.08	
BK=585.43' @ N1°34'29.70"W	

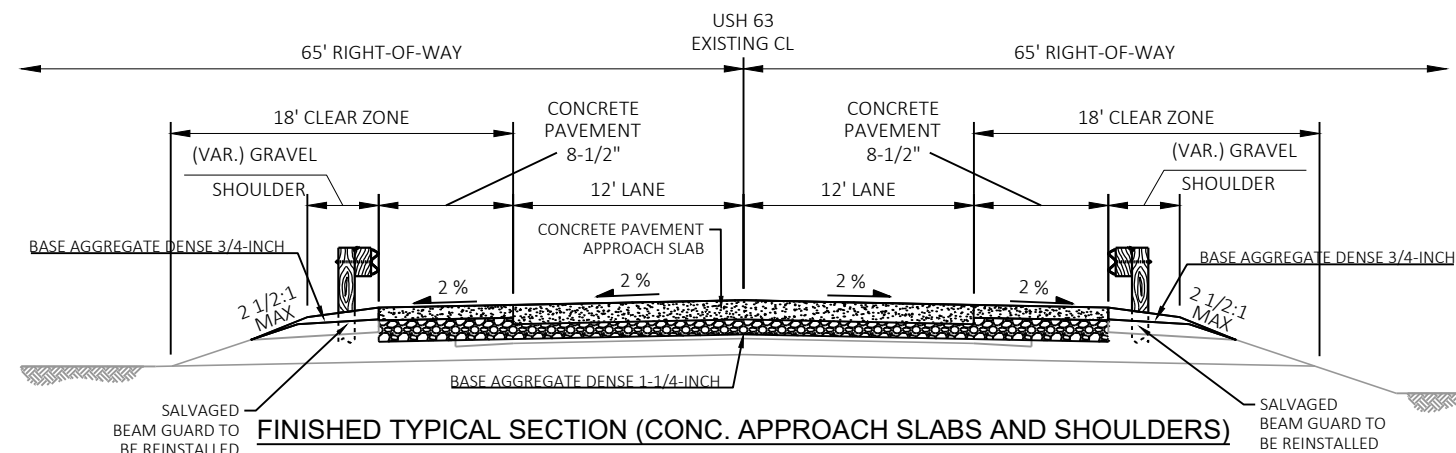
PROJECT NO: 1550-02-75	HWY: USH 63	COUNTY: ST. CROIX	PROJECT OVERVIEW	SHEET	E
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**EXISTING TYPICAL SECTION**

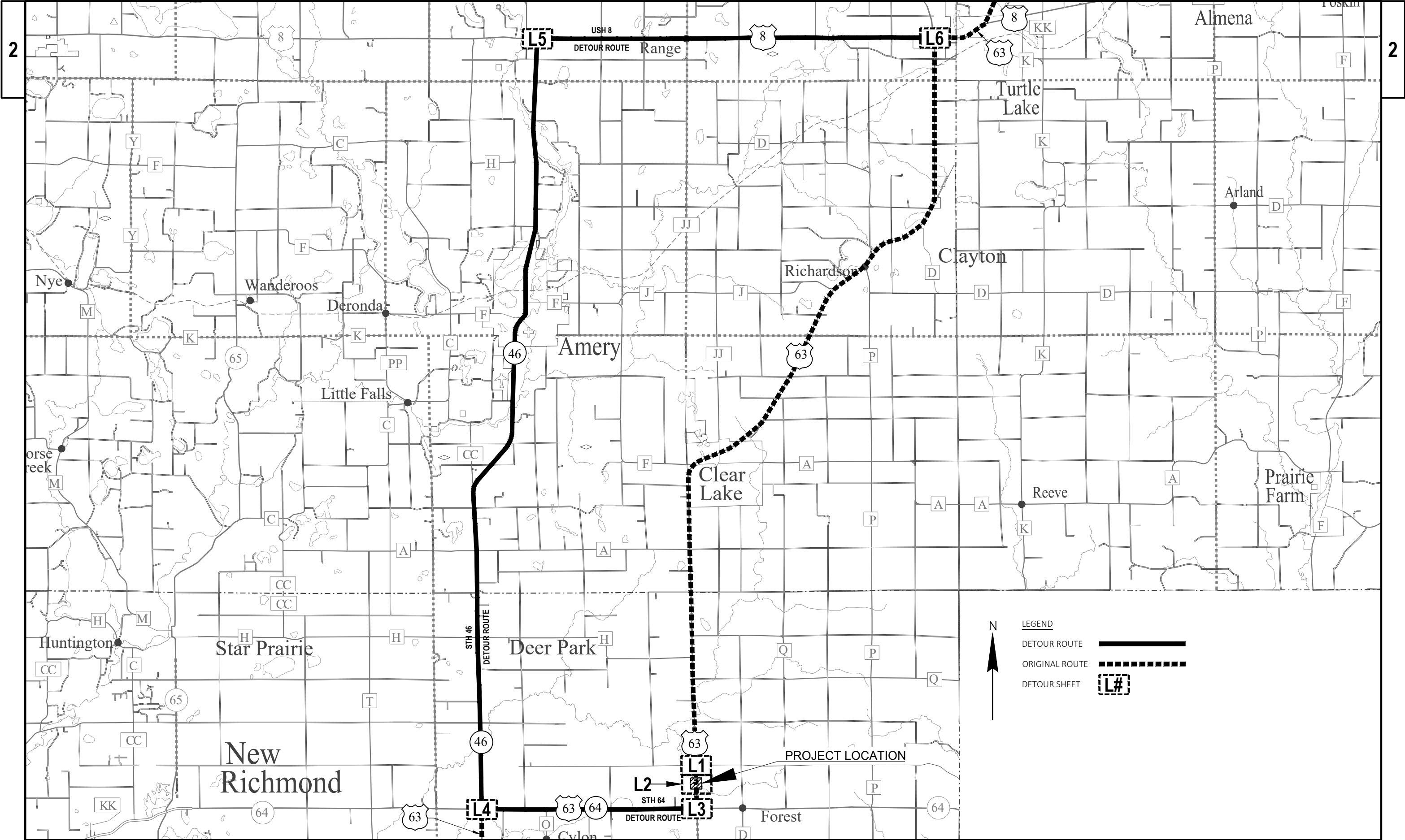
STA 38+12.47 - 40+59.14
STA 41+14.14 - 43+60.66

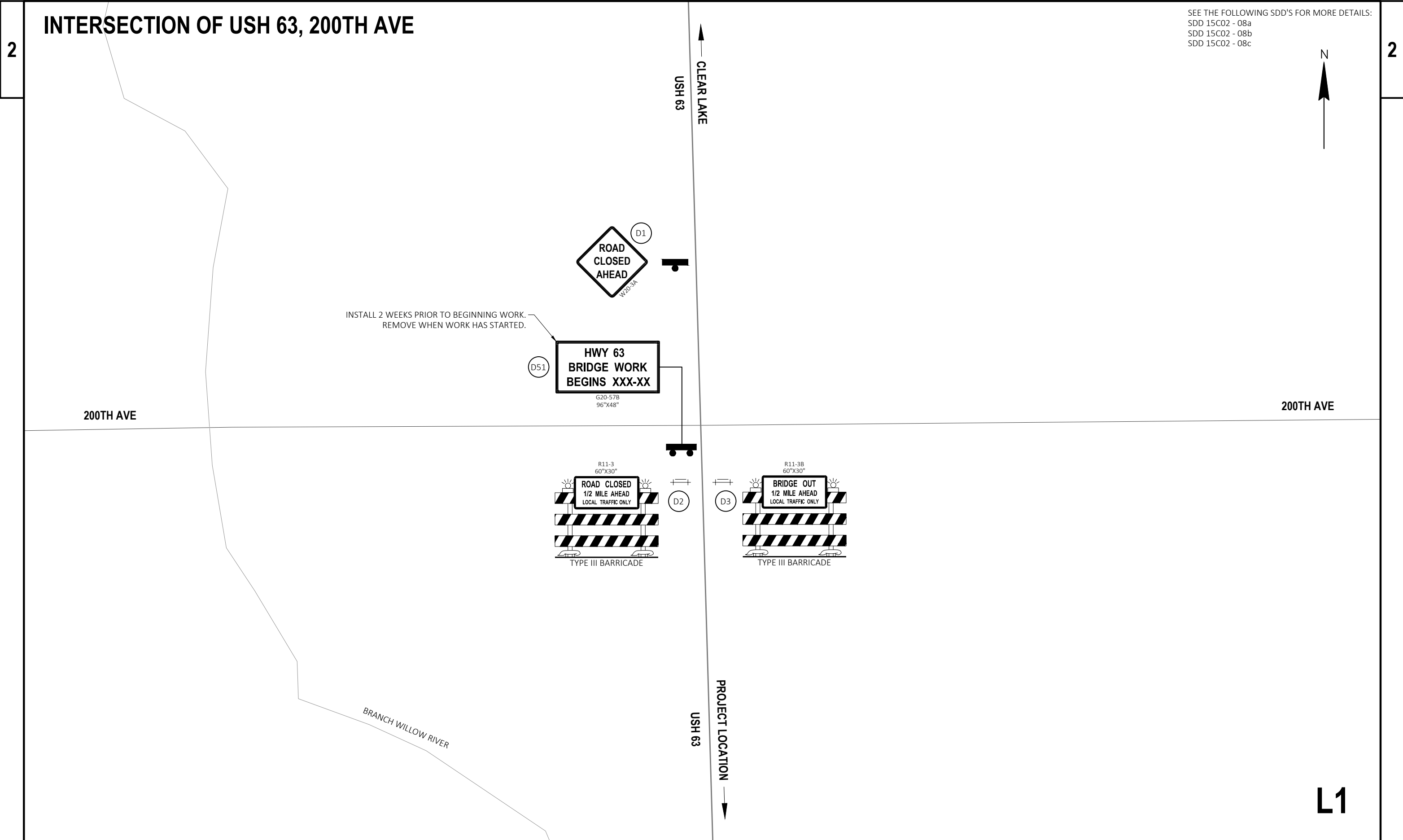
**FINISHED TYPICAL SECTION (ASPHALT APPROACHES)**

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STA 41+29.14 - 43+60.66

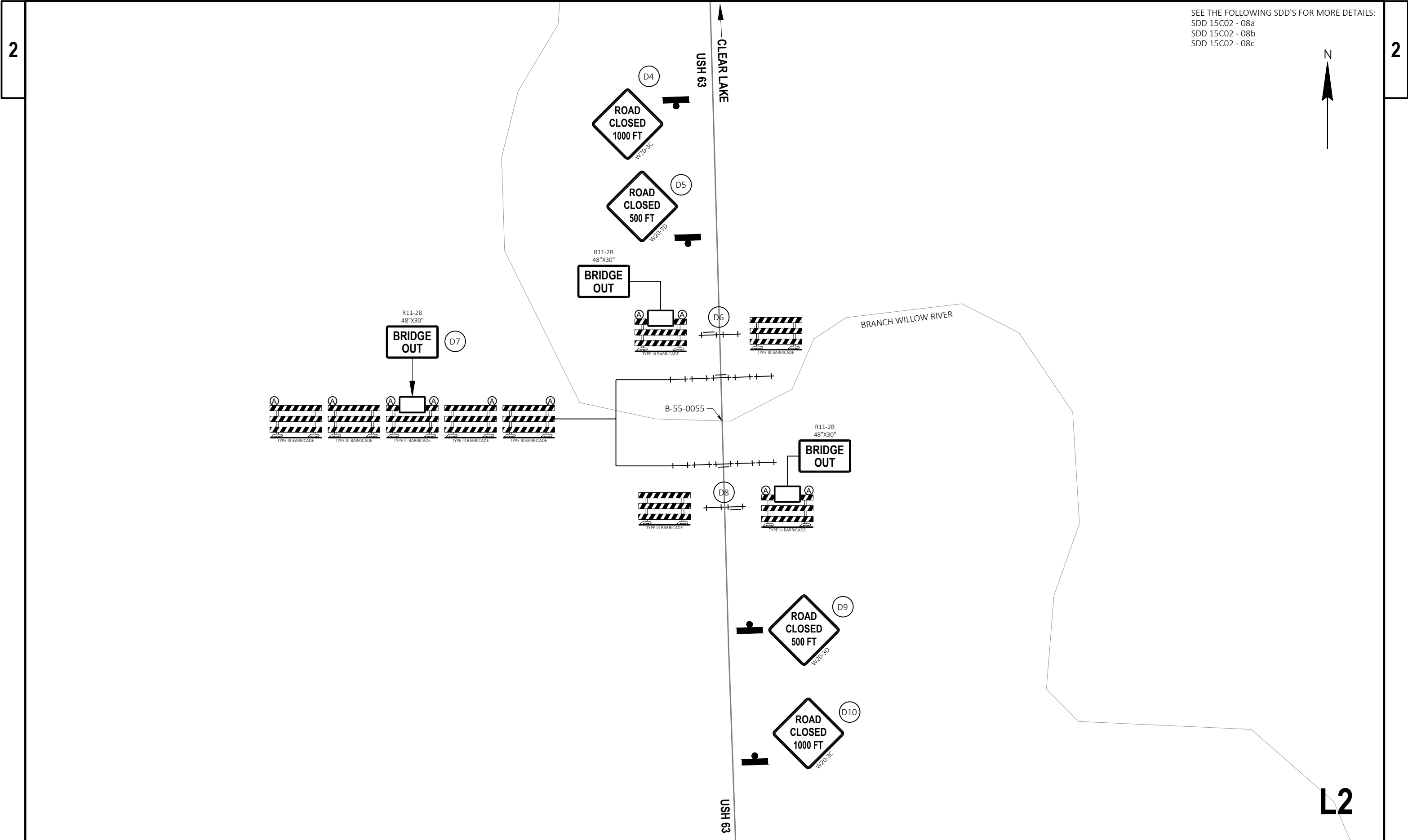
**FINISHED TYPICAL SECTION (CONC. APPROACH SLABS AND SHOULDERS)**

STA 40+44.14 - 40+59.14
STA 41+14.14 - 41+29.14





PROJECT NO: 1550-02-75	HWY: USH 63	COUNTY: ST. CROIX	DETOUR	SHEET	E
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SEE THE FOLLOWING SDD'S FOR MORE DETAILS:
SDD 15C02 - 08a
SDD 15C02 - 08b
SDD 15C02 - 08c

N

INTERSECTION OF USH 63, STH 64

SEE THE FOLLOWING SDD'S FOR MORE DETAILS:
SDD 15C02 - 08a
SDD 15C02 - 08b
SDD 15C02 - 08c

N

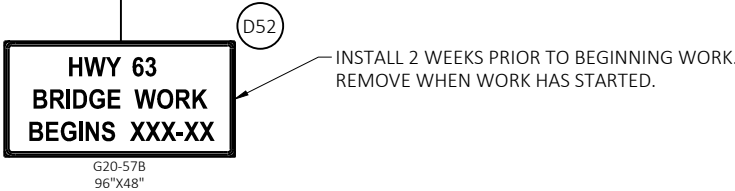
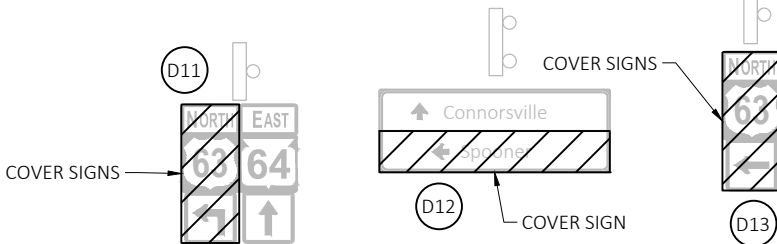
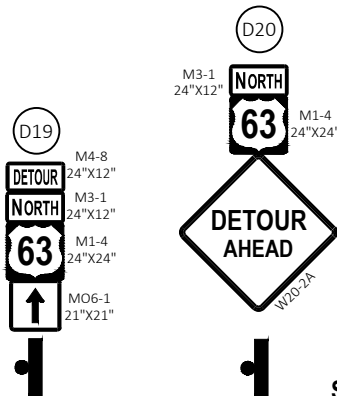
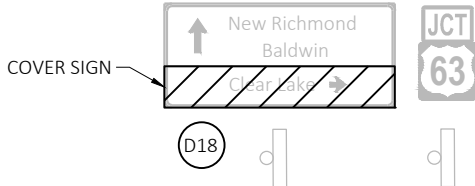
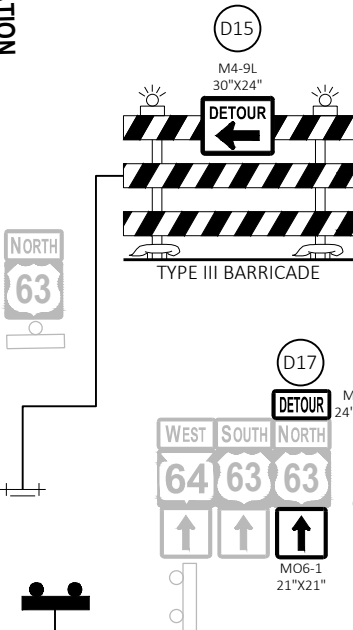
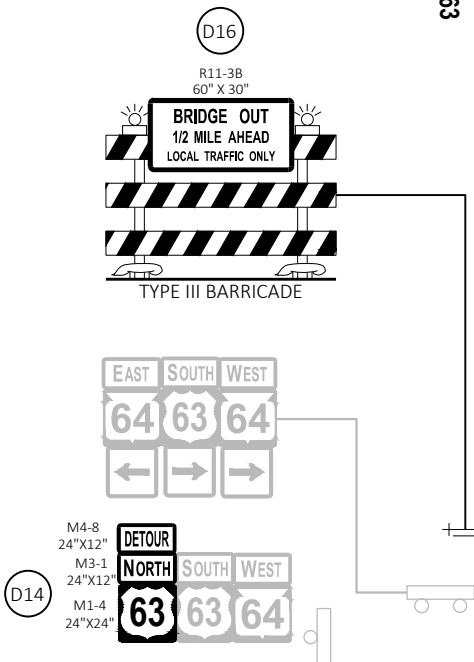
USH 63
NEW RICHMOND

USH 63
PROJECT LOCATION

CONNORSVILLE
STH 64

260TH ST

L3



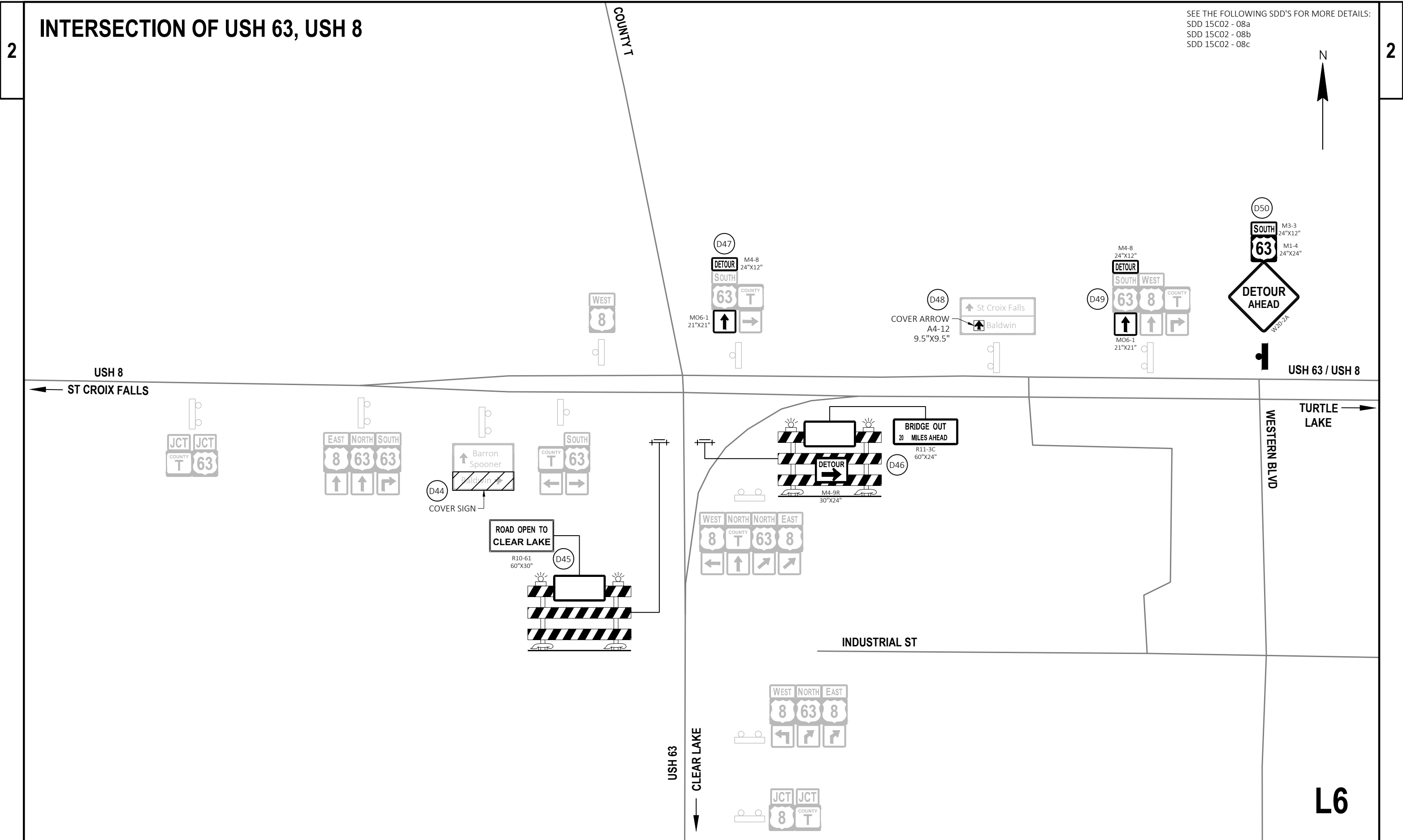
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PROJECT NO: 1550-02-75	HWY: USH 63	COUNTY: ST. CROIX	DETOUR	SHEET	E
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SEE THE FOLLOWING SDD'S FOR MORE DETAILS:
SDD 15C02 - 08a
SDD 15C02 - 08b
SDD 15C02 - 08c





Estimate Of Quantities

1550-02-75

Line	Item	Item Description	Unit	Total	Qty
0002	203.0260	Removing Structure Over Waterway Minimal Debris (structure) 01. B-55-0055	EACH	1.000	1.000
0004	204.0110	Removing Asphaltic Surface	SY	130.000	130.000
0006	204.0115	Removing Asphaltic Surface Butt Joints	SY	1,432.000	1,432.000
0008	205.0100	Excavation Common	CY	44.000	44.000
0010	206.1001	Excavation for Structures Bridges (structure) 01. B-55-0055	EACH	1.000	1.000
0012	210.1500	Backfill Structure Type A	TON	140.000	140.000
0014	213.0100	Finishing Roadway (project) 01. 1550-02-75	EACH	1.000	1.000
0016	305.0110	Base Aggregate Dense 3/4-Inch	TON	67.000	67.000
0018	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	82.000	82.000
0020	415.0085	Concrete Pavement 8 1/2-Inch	SY	50.000	50.000
0022	415.0410	Concrete Pavement Approach Slab	SY	80.000	80.000
0024	455.0605	Tack Coat	GAL	100.000	100.000
0026	460.6244	HMA Pavement 4 MT 58-34 S	TON	224.000	224.000
0028	465.0560	Asphaltic Rumble Strips, Centerline	LF	314.000	314.000
0030	502.0100	Concrete Masonry Bridges	CY	76.000	76.000
0032	502.3200	Protective Surface Treatment	SY	248.000	248.000
0034	502.3210	Pigmented Surface Sealer	SY	55.000	55.000
0036	502.4205	Adhesive Anchors No. 5 Bar	EACH	192.000	192.000
0038	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	15,680.000	15,680.000
0040	506.4000	Steel Diaphragms (structure) 01. B-55-0055	EACH	6.000	6.000
0042	509.1500	Concrete Surface Repair	SF	10.000	10.000
0044	516.0500	Rubberized Membrane Waterproofing	SY	16.000	16.000
0046	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	115.000	115.000
0048	614.0010	Barrier System Grading Shaping Finishing	EACH	4.000	4.000
0050	614.0150	Anchor Assemblies for Steel Plate Beam Guard	EACH	4.000	4.000
0052	618.0100	Maintenance and Repair of Haul Roads (project) 01. 1550-02-75	EACH	1.000	1.000
0054	619.1000	Mobilization	EACH	1.000	1.000
0056	628.1504	Silt Fence	LF	1,100.000	1,100.000
0058	628.1520	Silt Fence Maintenance	LF	1,100.000	1,100.000
0060	628.1905	Mobilizations Erosion Control	EACH	2.000	2.000
0062	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0064	628.6005	Turbidity Barriers	SY	104.000	104.000
0066	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0068	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0070	638.2602	Removing Signs Type II	EACH	4.000	4.000
0072	638.3000	Removing Small Sign Supports	EACH	4.000	4.000
0074	642.5001	Field Office Type B	EACH	1.000	1.000
0076	643.0420	Traffic Control Barricades Type III	DAY	1,400.000	1,400.000
0078	643.0705	Traffic Control Warning Lights Type A	DAY	1,960.000	1,960.000
0080	643.0900	Traffic Control Signs	DAY	8,120.000	8,120.000
0082	643.0920	Traffic Control Covering Signs Type II	EACH	11.000	11.000
0084	643.1000	Traffic Control Signs Fixed Message	SF	76.500	76.500
0086	643.5000	Traffic Control	EACH	1.000	1.000
0088	645.0111	Geotextile Type DF Schedule A	SY	78.000	78.000
0090	646.2040	Marking Line Grooved Wet Ref Epoxy 6-Inch	LF	1,023.000	1,023.000
0092	650.6501	Construction Staking Structure Layout (structure) 01. B-55-0055	EACH	1.000	1.000
0094	650.8000	Construction Staking Resurfacing Reference	LF	394.000	394.000
0096	650.9911	Construction Staking Supplemental Control (project) 01. 1550-02-75	EACH	1.000	1.000
0098	715.0502	Incentive Strength Concrete Structures	DOL	500.000	500.000

Estimate Of Quantities

1550-02-75

Line	Item	Item Description	Unit	Total	Qty
0100	999.2000.S	Installing and Maintaining Bird Deterrent System (station) 01. 40+86	EACH	1.000	1.000
0102	SPV.0060	Special 01. Cleaning and Sealing Concrete Girder Ends	EACH	1.000	1.000
0104	SPV.0090	Special 01. Remove and Reinstall Existing Guardrail	LF	469.000	469.000

BASE AGGREGATE DENSE						
CATEGORY	STATION	TO	STATION	LOCATION	305.0110	305.0120
					BASE AGGREGATE DENSE 3/4-INCH TON	BASE AGGREGATE DENSE 1 1/4-INCH TON
0010	38+12	-	40+59	SHOULDERS	19	
0010	41+14	-	43+61	SHOULDERS	48	
0010	40+44	-	40+59	CONC. APPROACH SLABS AND SHOULDERS		41
0010	41+14	-	41+29	CONC. APPROACH SLABS AND SHOULDERS		41
				TOTAL 0010	67	82

PROJECT								
CATEGORY	STATION	TO	STATION	LOCATION	213.0100.01 FINISHING ROADWAY (PROJECT) (01. 1550-02-75)	618.0100.01 MAINTENANCE AND REPAIR OF HAUL ROADS (PROJECT) (01. 1550-02-75)	619.1000 MOBILIZATION	642.5001 FIELD OFFICE TYPE B
					EACH	EACH	EACH	EACH
0010	39+33	-	42+40	ROADWAY	1	1	0.5	1
				TOTAL 0010	1	1	0.5	1
0020	40+59	-	41+14	B-55-0055			0.5	
				TOTAL 0020	0	0	0.5	0
				PROJECT TOTAL	1	1	1	1

BEAM GUARD			
CATEGORY	LOCATION	LF	REMARKS
0010	SW QUADRANT	71	STEEL PLATE BEAM GUARD
0010	SE QUADRANT	132	MGS BEAM GUARD
0010	NW QUADRANT	133	MGS BEAM GUARD
0010	NE QUADRANT	133	MGS BEAM GUARD
	TOTAL 0010	469	

BEAM GUARD FINISHING								
CATEGORY	LOCATION	FINISHING EACH	BORROW CY	TOPSOIL SY	E MAT URBAN CLASS I TYPE B SY	FERTILIZER TYPE B CWT	SEEDING MIXTURE NO. 40 LB	SEED WATER MGAL
0010	SW QUADRANT	1	17	206	206	0.13	4	12
0010	SE QUADRANT	1	15	174	174	0.11	3	10
0010	NW QUADRANT	1	27	323	323	0.20	6	18
0010	NE QUADRANT	1	20	234	234	0.15	4	13
	TOTAL 0010	4						
					THE ABOVE ITEMS ARE INCIDENTAL TO THE ITEM BARRIER SYSTEM GRADING SHAPING FINISHING			

SIGNAGE							
CATEGORY	STATION	LOCATION	634.0612	637.2230	638.2602	638.3000	REMARKS
			POSTS WOOD 4X6- INCH X 12-FT	SIGNS TYPE II REFLECTIVE F	REMOVING SIGNS TYPE II	REMOVING SMALL SIGN SUPPORTS	
			EACH	SF	EACH	EACH	
0010	40+57	LT	1	3	1	1	W5-52L
0010	40+57	RT	1	3	1	1	W5-52R
0010	41+15	LT	1	3	1	1	W5-52L
0010	41+15	RT	1	3	1	1	W5-52R
		TOTAL 0010	4	12	4	4	

TACK COAT						
455.0605						
TACK COAT						
CATEGORY	STATION	TO	STATION	LOCATION	GAL	REMARKS
0010	38+62	-	40+44	SOUTH APPROACH	49	APPLICATION RATE 0.07 GAL/SY
0010	41+29	-	43+11	NORTH APPROACH	51	APPLICATION RATE 0.07 GAL/SY
TOTAL 0010					100	

PAVEMENT												
					204.0110	204.0115	205.0100	415.0085	415.0410	460.6244	465.0560	
					REMOVING ASPHALTIC SURFACE	REMOVING ASPHALTIC SURFACE BUTT JOINTS	EXCAVATION COMMON	CONCRETE PAVEMENT 8 1/2-INCH	CONCRETE PAVEMENT APPROACH SLAB	HMA PAVEMENT 4 MT 58-34 S	ASPHALTIC RUMBLE STRIPS, CENTERLINE	
CATEGORY	STATION	TO	STATION	LOCATION	SY	SY	CY	SY	SY	TON	LF	REMARKS
0010	38+62	-	40+44	SOUTH APPROACH		707				64		
0010	41+29	-	43+11	NORTH APPROACH		725				160		
0010	40+44	-	40+59	SOUTH CONCRETE	65		22	25	40			SEE SDD 13B02-09A
0010	41+14	-	41+29	NORTH CONCRETE	65		22	25	40			SEE SDD 13B02-09A
0010	38+62	-	38+62	SOUTH MATCH LINE								
0010	43+11	-	43+11	NORTH MATCH LINE								
0010	38+62	-	40+19	NEW ASPHALT, 25' O/S CONC.							157	SEE SDD 13A11-04D
0010	41+54	-	43+11	NEW ASPHALT, 25' O/S CONC.							157	SEE SDD 13A11-04D
TOTAL 0010					130	1,432	44	50	80	224	314	

EROSION CONTROL										PAINT MARKING													
					628.1504	628.1520	628.1905	628.1910	628.6005						646.2040								
					SILT FENCE	SILT FENCE	MOBILIZATIONS	MOBILIZATIONS	TURBIDITY						MARKING LINE								
					LF	LF	EROSION CONTROL	EROSION CONTROL	BARRIERS						GROOVED WET REF EPOXY 6-INCH								
CATEGORY	STATION	TO	STATION	LOCATION			EACH	EACH	SY	REMARKS	CATEGORY	STATION	TO	STATION	LOCATION	LF	REMARKS						
0010	38+05 LT	-	39+85 LT	SW	185	185					0010	38+62	-	43+11	EDGELINES	898	WHITE						
0010	40+06 LT	-	40+73 LT	SW	73	73					0010	38+62	-	43+11	CENTERLINE	125	YELLOW, 10 SKIPS						
0010	40+94 LT	-	43+68 LT	NW	284	284					TOTAL 0010					1,023							
0010	38+05 RT	-	40+74 RT	SE	277	277																	
0010	40+96 RT	-	43+68 RT	NE	281	281																	
0010				PROJECT			2	2															
0010	40+78	-	40+78	SOUTH					50	ESTIMATED 3' DEPTH, VERIFY IN FIELD													
0010	40+91	-	40+91	NORTH					54	ESTIMATED 3' DEPTH, VERIFY IN FIELD													
TOTAL 0010					1,100	1,100	2	2	104														

CONSTRUCTION STAKING				CONSTRUCTION STAKING RESURFACE				BIRD DETERRENT			
		650.6500.01	650.9910.01								
		CONSTRUCTION STAKING STRUCTURE LAYOUT (project) (01. 1550-02-75)	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (project) (01. 1550-02-75)			650.8000	CONSTRUCTION STAKING RESURFACING REFERENCE			999.2000.S.01	INSTALLING AND MAINTAINING BIRD DETERRENT SYSTEM (40+87) (01. TBD)
CATEGORY	LOCATION	LS	LS	CATEGORY	LOCATION	LF		CATEGORY	LOCATION	EACH	REMARKS
0010	PROJECT		1	0010	PROJECT	394		0020	BRIDGE	1	INSTALL PRIOR TO APRIL 15
	TOTAL 0010	0	1		TOTAL 0010	394			TOTAL 0020	1	
0020	PROJECT	1	0								
	TOTAL 0020	1	0								
PROJECT TOTAL		1	1								

PROJECT NO: 1550-02-75				HWY: USH 63			COUNTY: ST. CROIX			MISCELLANEOUS QUANTITIES				SHEET:		E
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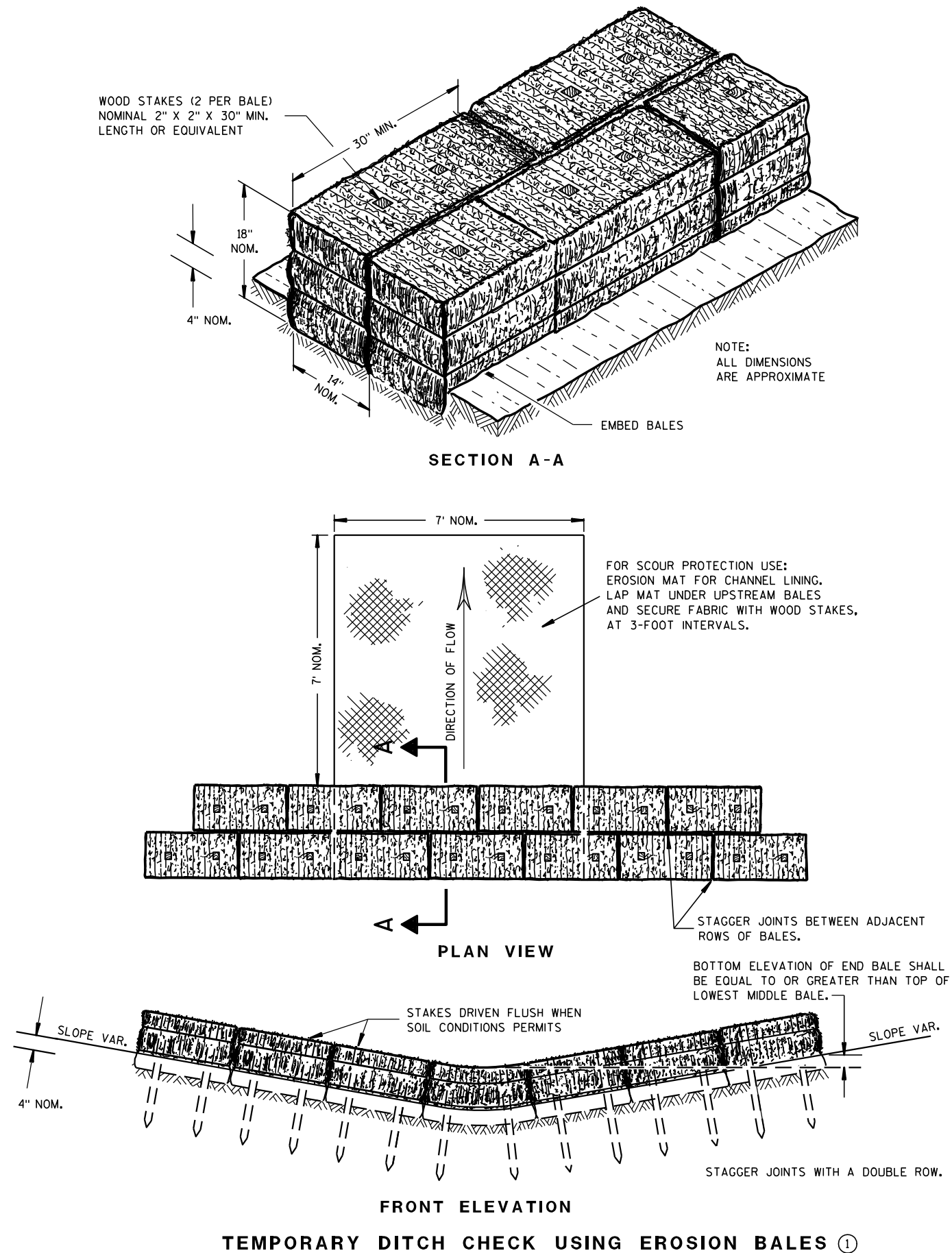
TRAFFIC CONTROL										
					643.0420	643.0705	643.0900	643.0920	643.1000	643.5000
SIGN		# OF	SIGN		TRAFFIC CONTROL	TRAFFIC CONTROL	TRAFFIC CONTROL	TRAFFIC CONTROL	TRAFFIC CONTROL	
GROUP #	LAYOUT #	SIGNS	CODE	DESCRIPTION	BARRICADES TYPE III	WARNING LIGHTS TYPE A	SIGNS	COVERING SIGNS TYPE II	SIGNS FIXED MESSAGE	TRAFFIC CONTROL
					DAY	DAY	DAY	EACH	SF	EACH
D1	L1	1	W20-3A	ROAD CLOSED AHEAD	0	0	70			1
D2	L1	1	R11-3	ROAD CLOSED 1/2 MILE AHEAD LOCAL TRAFFIC ONLY	70	140	70			
D3	L1	1	R11-3B	BRIDGE OUT 1/2 MILE AHEAD LOCAL TRAFFIC ONLY	70	140	70			
D4	L2	1	W20-3C	ROAD CLOSED 1000 FT	0	0	70			
D5	L2	1	W20-3D	ROAD CLOSED 500 FT	0	0	70			
D6	L2	1	R11-2B	BRIDGE OUT	140	140	70			
D7	L2	2	R11-2B	BRIDGE OUT	700	840	140			
D8	L2	1	R11-2B	BRIDGE OUT	140	140	70			
D9	L2	1	W20-3D	ROAD CLOSED 500 FT	0	0	70			
D10	L2	1	W20-3C	ROAD CLOSED 1000 FT	0	0	70			
D11	L3			COVER SIGNS: NORTH 63 ADVANCE ARROW LEFT	0	0	0	1		
D12	L3			COVER SIGNS: SPOONER [LA]	0	0	0	1		
D13	L3			COVER SIGNS: NORTH 63 ARROW LEFT	0	0	0	1		
D14	L3	3	M4-8	DETOUR	0	0	210			
			M3-1	NORTH	0	0	0			
			M1-4	USH 63	0	0	0			
D15	L3	1	M4-9L	DETOUR LEFT	70	140	70			
D16	L3	1	R11-3B	BRIDGE OUT 1/2 MILE AHEAD LOCAL TRAFFIC ONLY	70	140	70			
D17	L3	2	M4-8	DETOUR	0	0	140			
			MO6-1	ARROW AHEAD - ORANGE	0	0	0			
D18	L3			COVER SIGNS: CLEAR LAKE [RA]	0	0	0	1		
D19	L3	4	M4-8	DETOUR	0	0	280			
			M3-1	NORTH	0	0	0			
			M1-4	USH 63	0	0	0			
			MO6-1	ARROW AHEAD - ORANGE	0	0	0			
D20	L3	3	M3-1	NORTH	0	0	210			
			M1-4	USH 63	0	0	0			
			W20-2A	DETOUR AHEAD	0	0	0			
D21	L4	3	M3-1	NORTH	0	0	210			
			M1-4	USH 63	0	0	0			
			W20-2A	DETOUR AHEAD	0	0	0			
D22	L4	4	M4-8	DETOUR	0	0	280			
			M3-1	NORTH	0	0	0			
			M1-4	USH 63	0	0	0			
			MO5-1L	ADVANCE ARROW LEFT TURN - ORANGE	0	0	0			
D23	L4			COVER SIGNS: NORTH USH 63	0	0	0	1		
D24	L4	4	M4-8	DETOUR	0	0	280			
			M3-1	NORTH	0	0	0			
			M1-4	USH 63	0	0	0			
			MO6-1	ARROW TILT LEFT - ORANGE	0	0	0			
D25	L4	4	M4-8	DETOUR	0	0	280			
			M3-1	NORTH	0	0	0			
			M1-4	USH 63	0	0	0			
			MO6-2	ARROW TILT RIGHT - ORANGE	0	0	0			

TRAFFIC CONTROL (CONT.)											
				643.0420		643.0705	643.0900	643.0920	643.1000	643.5000	
SIGN		# OF	SIGN		TRAFFIC CONTROL BARRICADES TYPE III	TRAFFIC CONTROL WARNING LIGHTS TYPE A	TRAFFIC CONTROL SIGNS	TRAFFIC CONTROL COVERING SIGNS TYPE II	TRAFFIC CONTROL SIGNS FIXED MESSAGE	TRAFFIC CONTROL	
GROUP #	LAYOUT #	SIGNS	CODE	DESCRIPTION	DAY	DAY	DAY	EACH	SF	EACH	
D26	L4			COVER SIGNS: NORTH USH 63	0	0	0	1			
D27	L4	1	A4-12	[LA] - LEFT ARROW	0	0	70				
D28	L4			COVER SIGNS: NORTH USH 63	0	0	0	1			
D29	L4			COVER SIGNS: NORTH USH 63	0	0	0	1			
D30	L4			COVER SIGNS: NORTH USH 63	0	0	0	1			
D31	L4	3	M4-8	DETOUR	0	0	210				
			M3-1	NORTH	0	0	0				
			M1-4	USH 63	0	0	0				
D32	L4	4	M4-8	DETOUR	0	0	280				
			M3-1	NORTH	0	0	0				
			M1-4	USH 63	0	0	0				
			MO6-1	ARROW RIGHT - ORANGE	0	0	0				
D33	L4	4	M4-8	DETOUR	0	0	280				
			M3-1	NORTH	0	0	0				
			M1-4	USH 63	0	0	0				
			MO5-1R	ADVANCE ARROW RIGHT TURN - ORANGE	0	0	0				
D34	L5	3	M3-3	SOUTH	0	0	210				
			M1-4	USH 63	0	0	0				
			W20-2A	DETOUR AHEAD	0	0	0				
D35	L5	4	M4-8	DETOUR	0	0	280				
			M3-3	SOUTH	0	0	0				
			M1-4	USH 63	0	0	0				
			MO5-1R	ADVANCE ARROW RIGHT TURN - ORANGE	0	0	0				
D36	L5	4	M4-8	DETOUR	0	0	280				
			M3-3	SOUTH	0	0	0				
			M1-4	USH 63	0	0	0				
			MO6-2	ARROW TILT RIGHT - ORANGE	0	0	0				
D37	L5	4	M4-8	DETOUR	0	0	280				
			M3-3	SOUTH	0	0	0				
			M1-4	USH 63	0	0	0				
			MO6-1	ARROW RIGHT - ORANGE	0	0	0				
D38	L5	4	M4-8	DETOUR	0	0	280				
			M3-1	NORTH	0	0	0				
			M1-4	USH 63	0	0	0				
			MO6-2	ARROW TILT RIGHT - ORANGE	0	0	0				
D39	L5	4	M4-8	DETOUR	0	0	280				
			M3-3	SOUTH	0	0	0				
			M1-4	USH 63	0	0	0				
			MO6-1	ARROW LEFT - ORANGE	0	0	0				
D40	L5	4	M4-8	DETOUR	0	0	280				
			M3-3	SOUTH	0	0	0				
			M1-4	USH 63	0	0	0				
			MO5-1L	ADVANCE ARROW LEFT TURN - ORANGE	0	0	0				

TRAFFIC CONTROL (CONT.)										

Standard Detail Drawing List

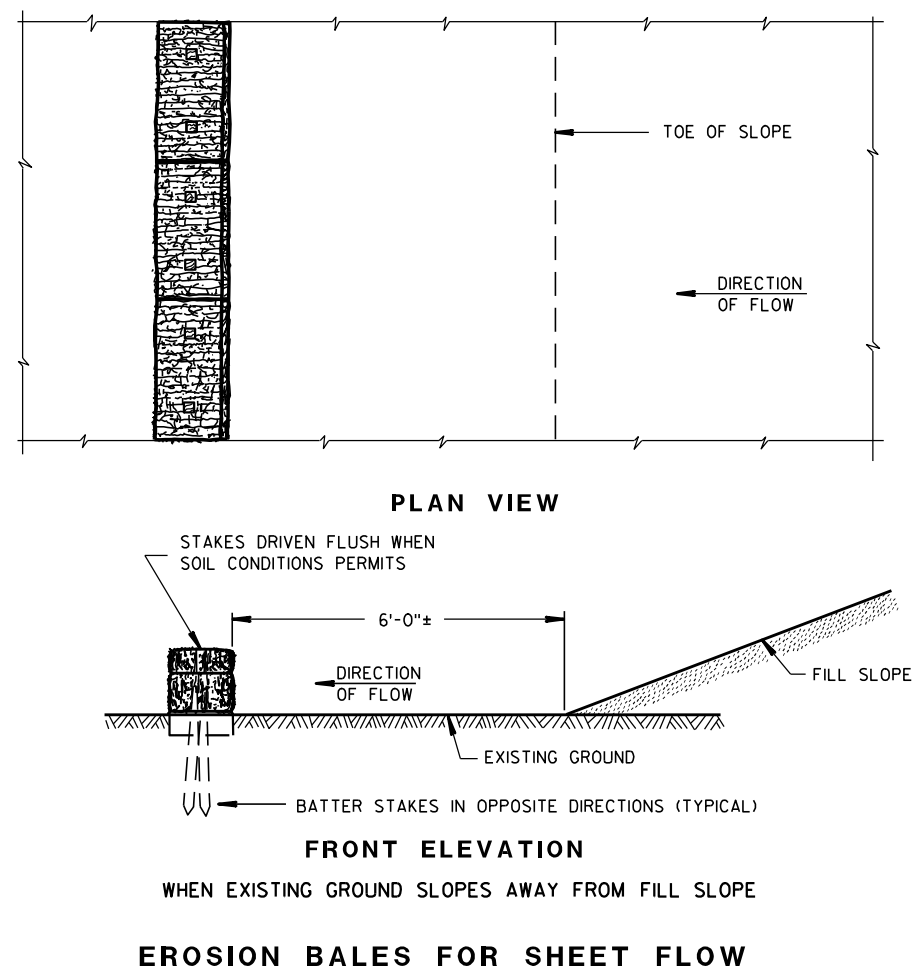
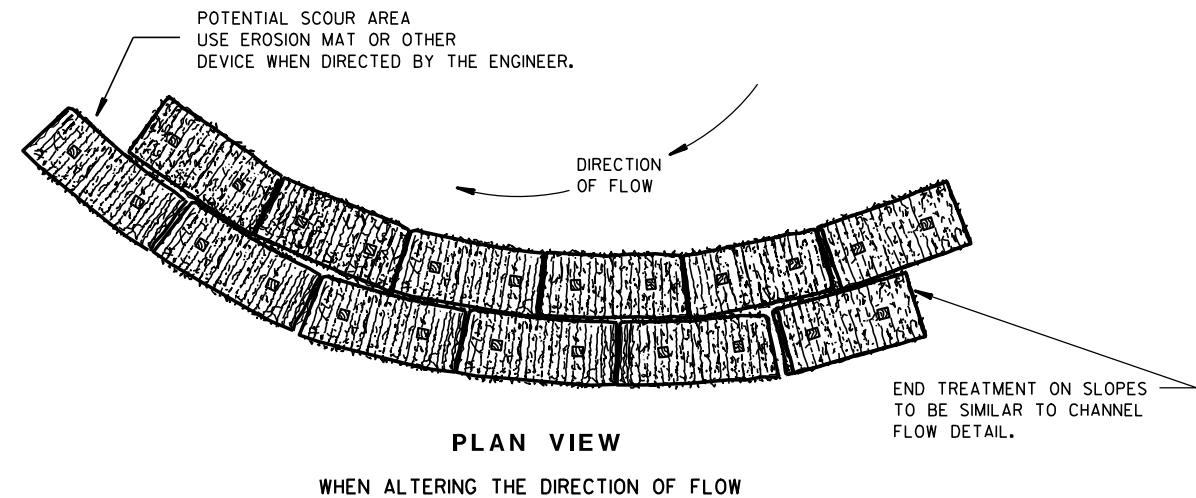
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
12A03-10	NAME PLATE (STRUCTURES)
13A11-04D	CENTERLINE RUMBLE STRIPS - INTERSECTIONS, DRIVEWAYS, BRIDGES, RAILROADS
13B02-09A	CONCRETE PAVEMENT APPROACH SLAB
13C19-03	HMA LONGITUDINAL JOINTS
14B15-11A	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-11B	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-11C	STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS
14B18-06A	STEEL PLATE BEAM GUARD, CLASS "A" (AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS)
14B20-12A	STEEL THRIE BEAM STRUCTURE APPROACH
14B24-09A	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-09B	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-09C	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B27-01A	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B27-01B	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B27-01C	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B42-07A	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)
15C02-09A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-09B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C02-09C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C06-12	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-23A	PERMANENT LONGITUDINAL PAVEMENT MARKINGS
15C11-10B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS



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

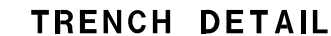
6/04/02
DATE

FHWA

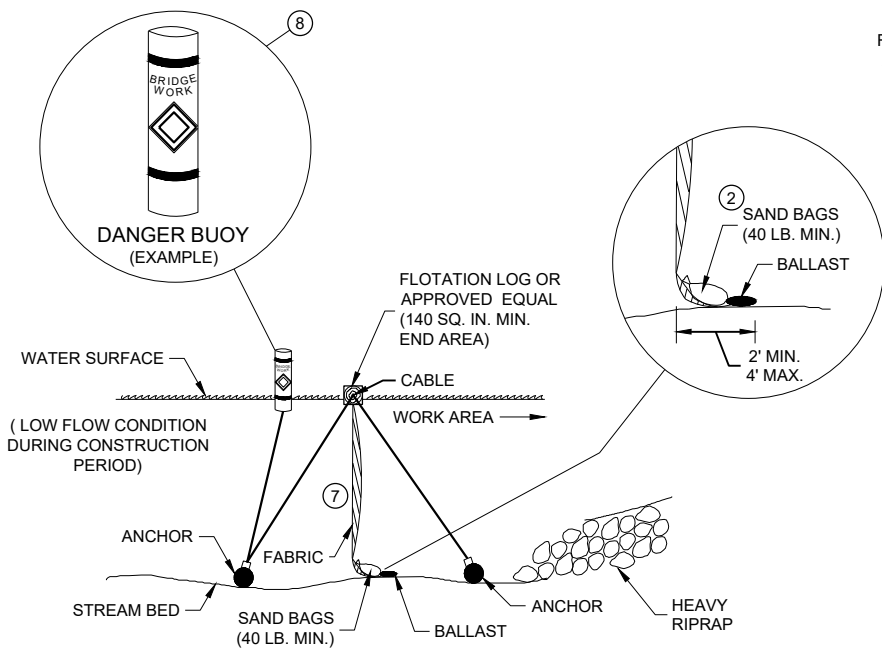
/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER



- 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.

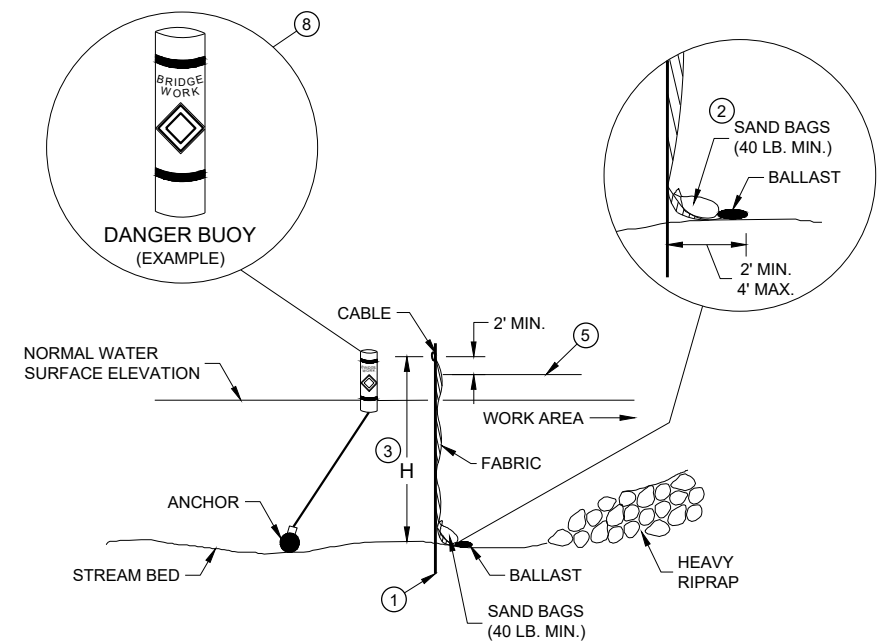


SILT FENCE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED <u>4-29-05</u> <u>DATE</u>	<u>/S/ Beth Canestra</u> CHIEF ROADWAY DEVELOPMENT ENGINEER



SECTION B - B

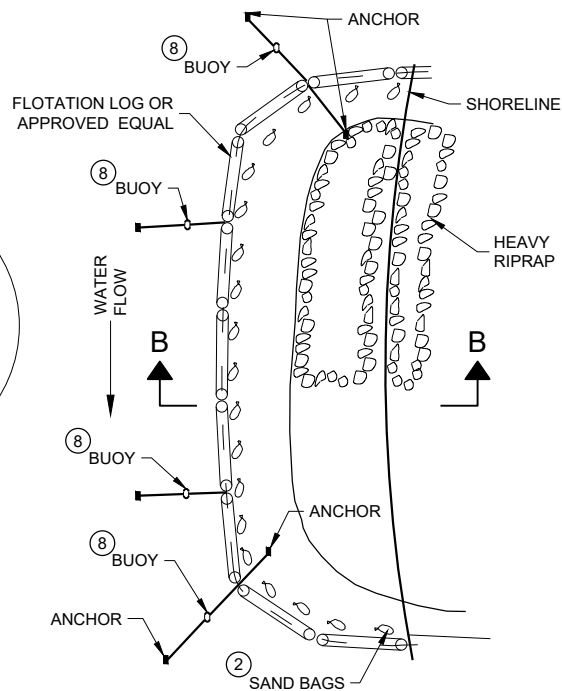
TURBIDITY BARRIER - FLOAT ALTERNATIVE
CAUTION - SEE NOTE 6



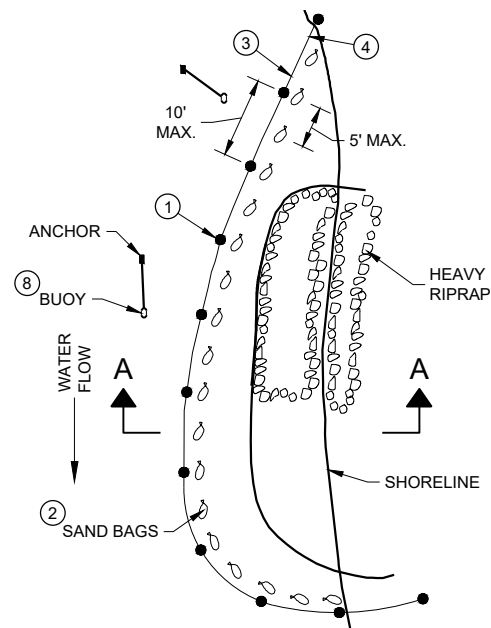
SECTION A - A

TURBIDITY BARRIER - STANDARD POST INSTALLATION

TURBIDITY BARRIER PLACEMENT DETAILS



PLAN VIEW



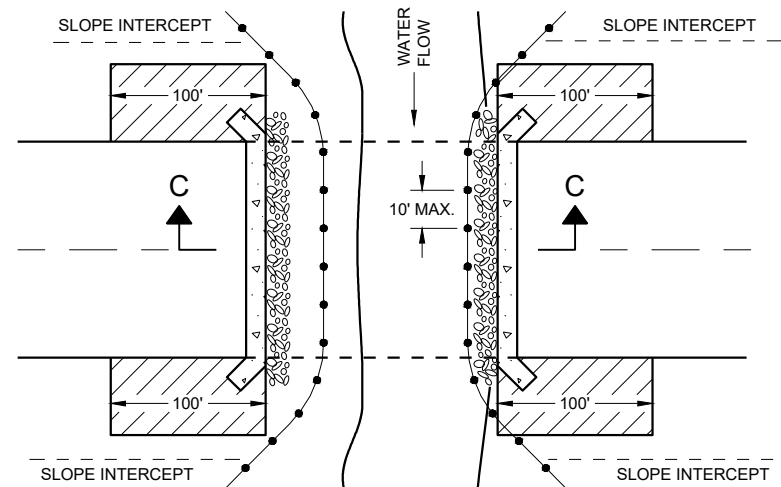
PLAN VIEW

GENERAL NOTES

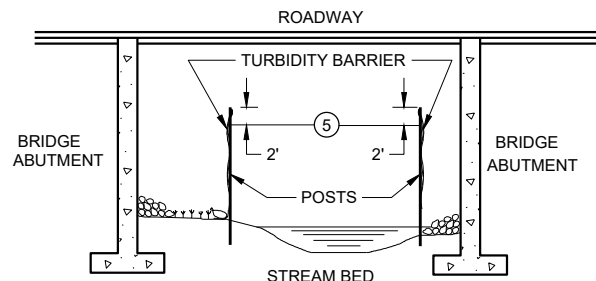
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

- 1 DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.
- 2 SAND BAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.
- 3 WHEN BARRIER HEIGHT "H" EXCEEDS 8 FEET, POST SPACING MAY NEED TO BE DECREASED.
- 4 IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.
- 5 ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MINIMUM BARRIER HEIGHT SHALL BE 2' GREATER THAN EITHER THE Q2 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WHICHEVER IS GREATER.
- 6 FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BEDROCK PREVENTS THE INSTALLATION OF POSTS.
- 7 ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.
- 8 USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



PLAN VIEW



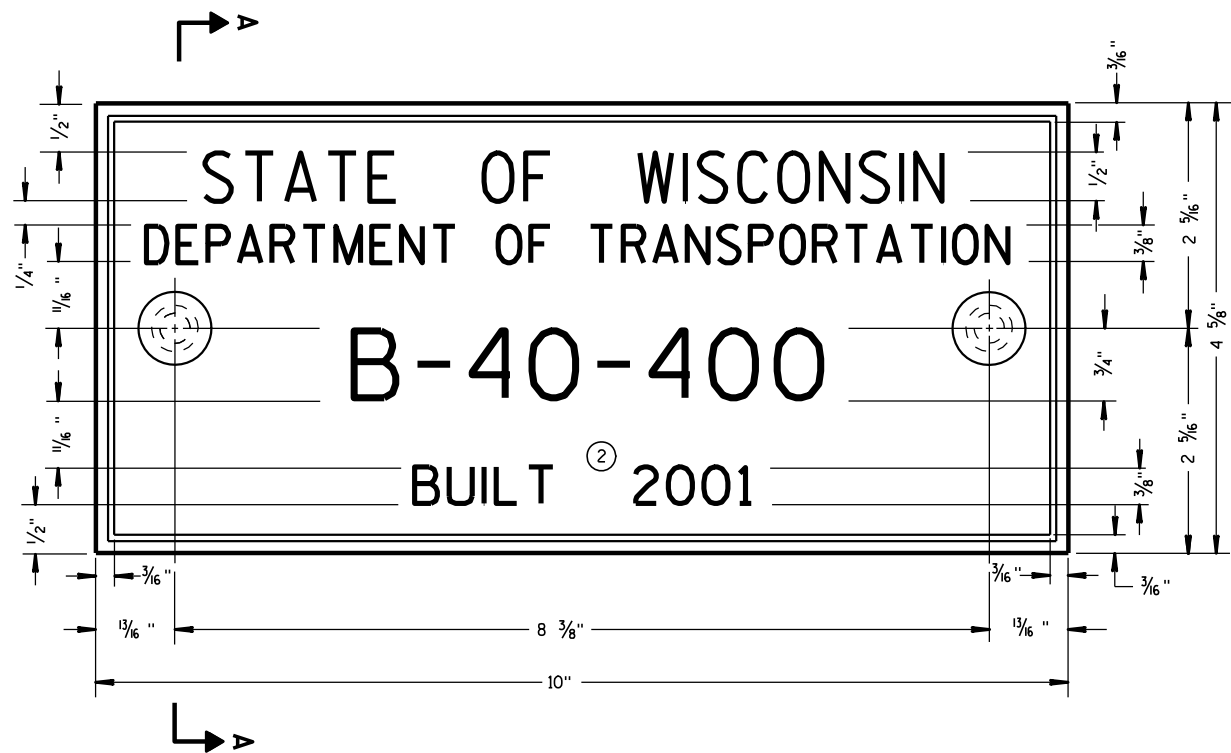
SECTION C - C

TURBIDITY BARRIER DETAIL SHOWING
TYPICAL PLACEMENT AT STRUCTURES

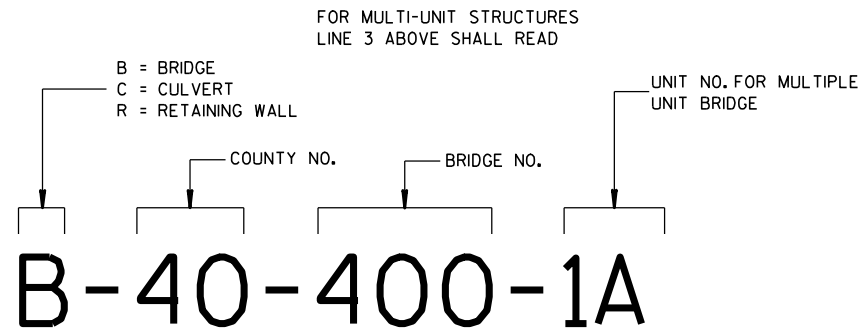
TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/4/02 DATE /S/ Beth Cannestra
DATE CHIEF ROADWAY DEVELOPMENT
ENGINEER
FHWA



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



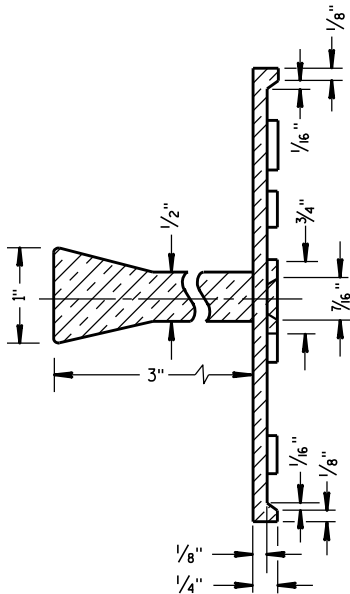
NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

GENERAL NOTES

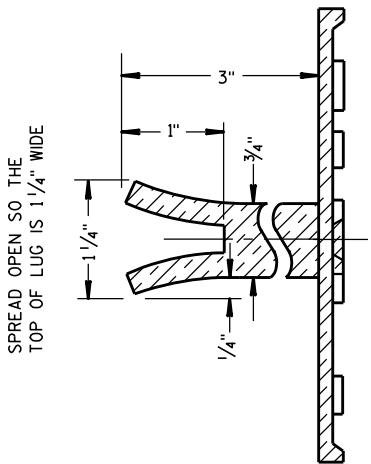
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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.

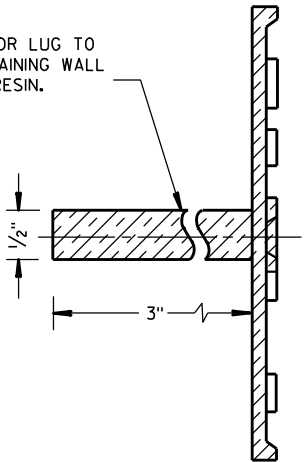


SECTION A-A



ALTERNATE LUG

- ① ADHERE ANCHOR LUG TO PRECAST RETAINING WALL WITH EPOXY RESIN.

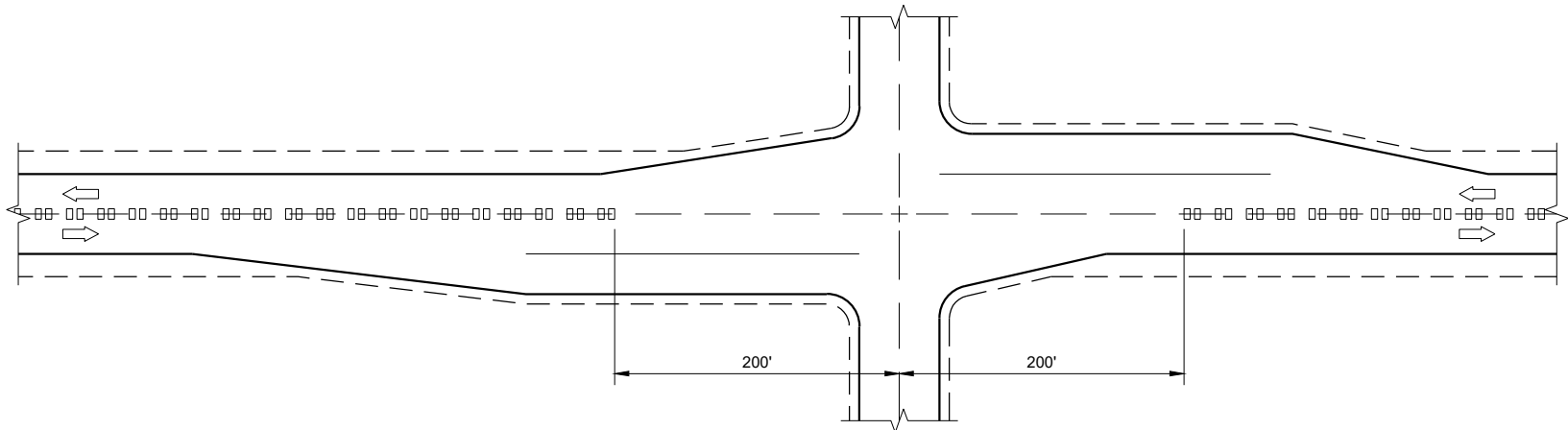


ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

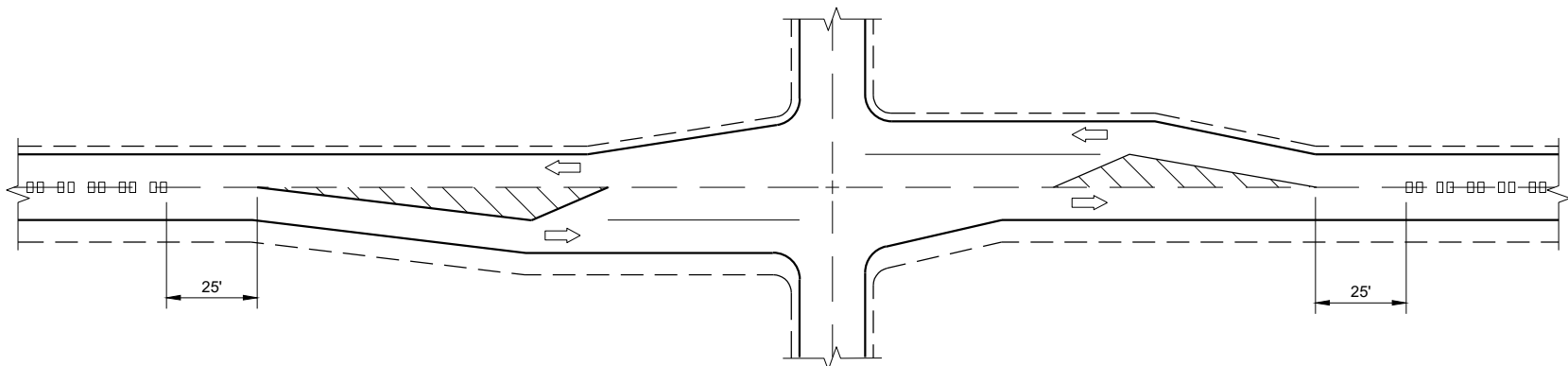
NAME PLATE
(STRUCTURES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

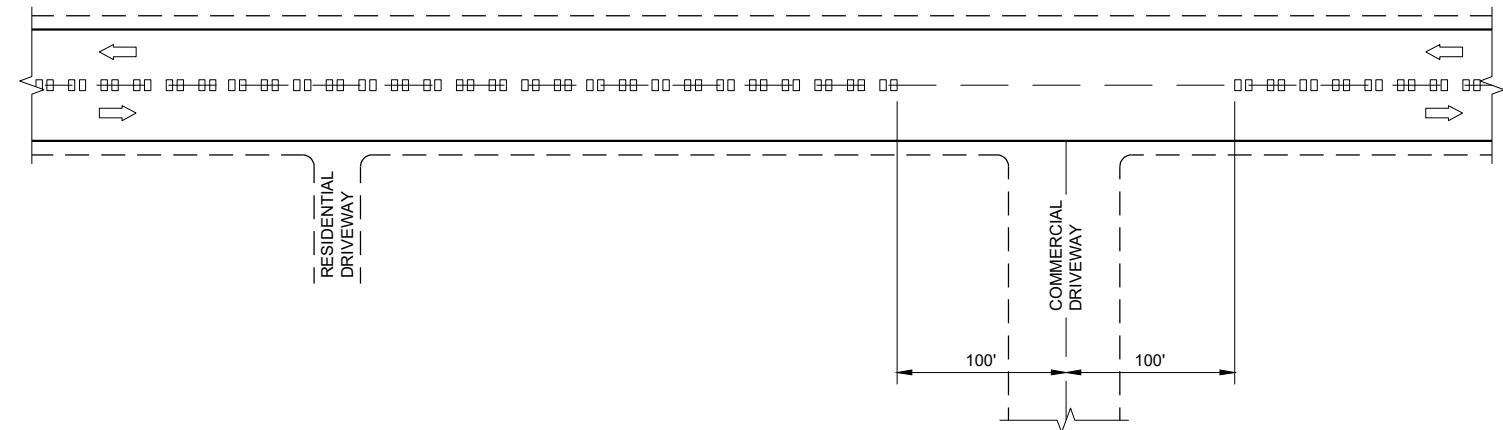
APPROVED
3/26/10
DATE
/S/ Scot Becker
CHIEF STRUCTURAL DEVELOPMENT ENGINEER
FHWA



CENTERLINE GROOVES AT INTERSECTIONS



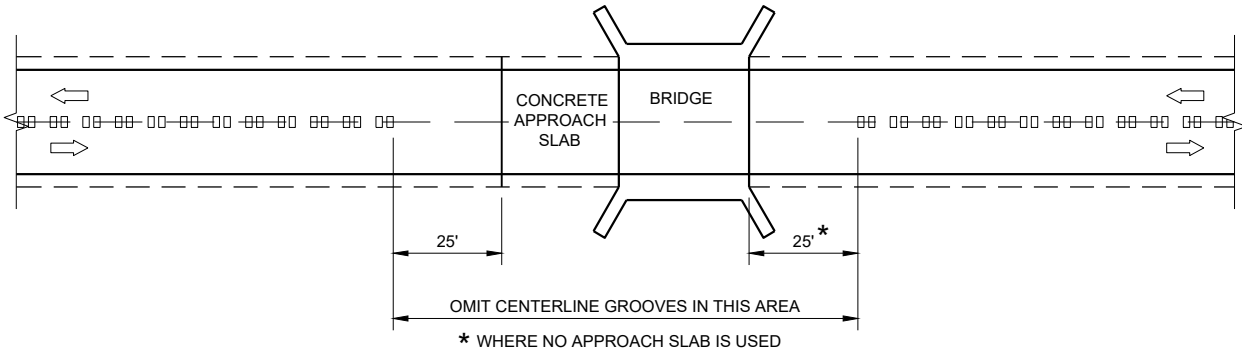
CENTERLINE GROOVES AT INTERSECTIONS
(WITH LEFT TURN LANES)



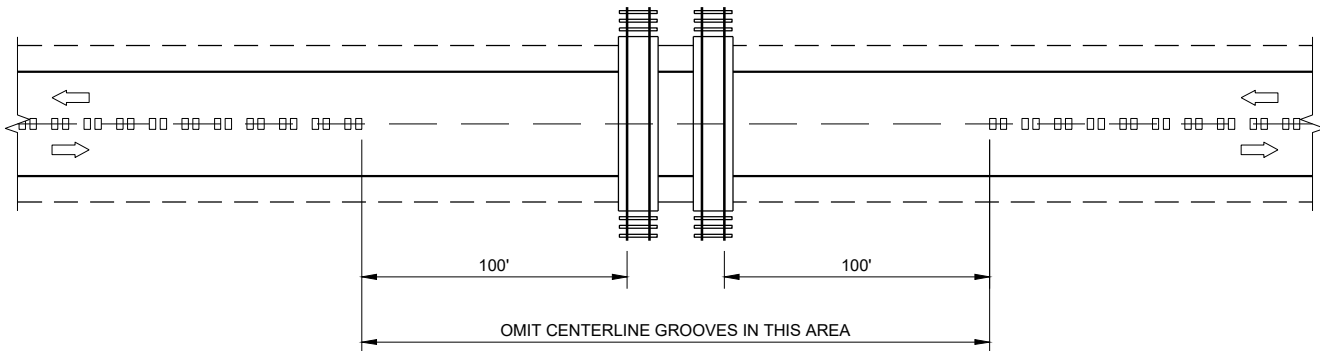
CENTERLINE GROOVES AT DRIVEWAYS^①

GENERAL NOTES

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



CENTERLINE GROOVES AT BRIDGES

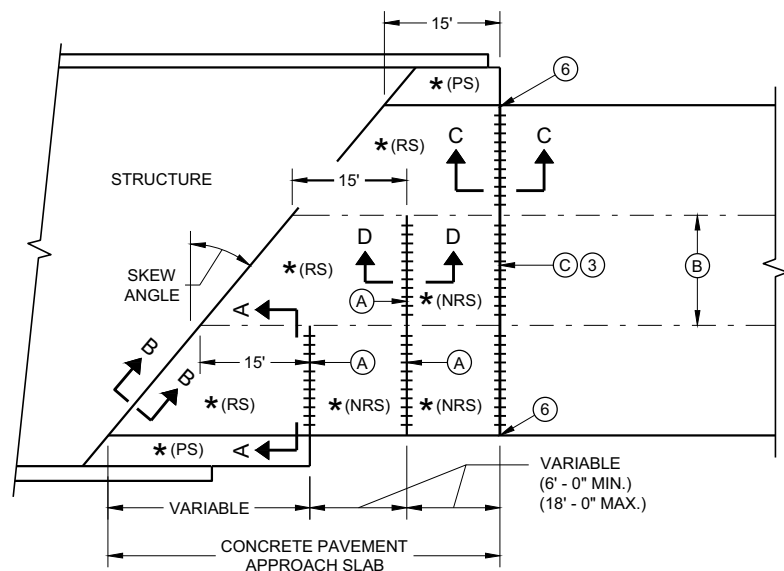


CENTERLINE GROOVES AT RAILROADS

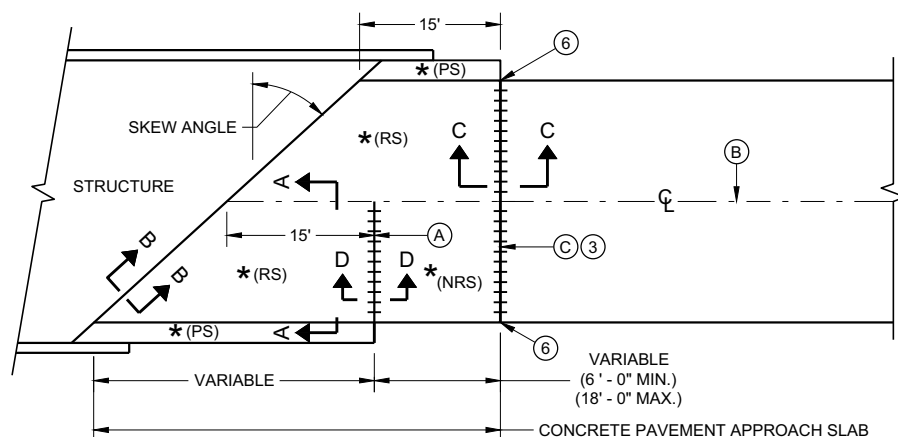
CENTER LINE
RUMBLE STRIPS -
INTERSECTIONS, DRIVEWAYS,
BRIDGES, RAIL ROADS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

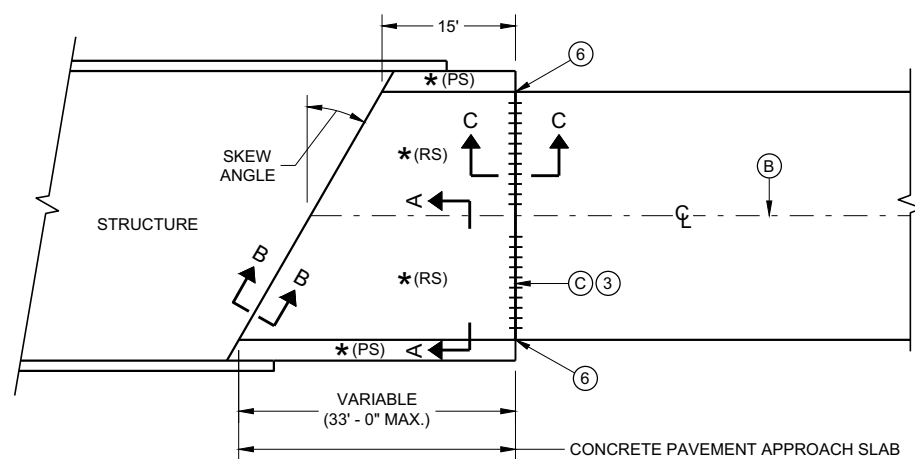
APPROVED
May 2023
DATE /S/ John Jenkins
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA



**SKewed APPROACH
(PAVEMENT MORE THAN TWO LANES)**



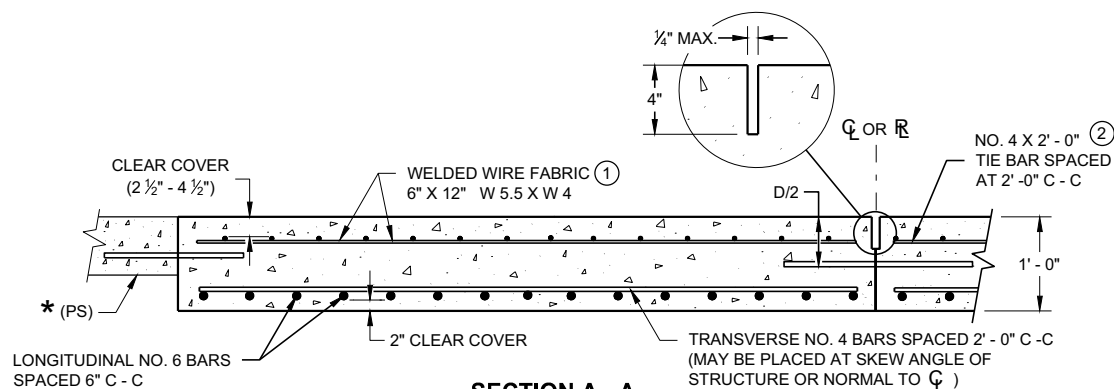
**SKews > 20°
(PAVEMENT WIDTH ≤ 30')**



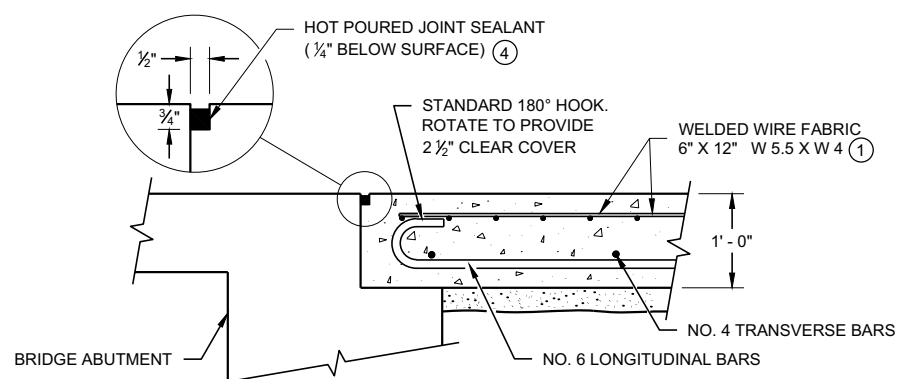
**SKews ≤ 20°
(PAVEMENT WIDTH ≤ 30')**

APPROACH SLAB AND ADJACENT PAVEMENT

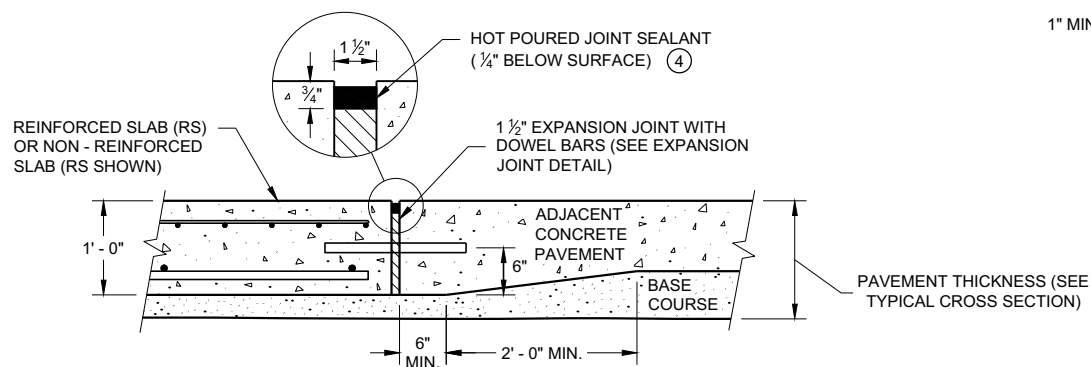
- * (RS) = REINFORCED CONCRETE SLAB
- * (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
- * (NRS) = NON - REINFORCED CONCRETE SLAB
- *** STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11 AND SDD 13C13)



**SECTION A - A
REINFORCEMENT POSITIONING DETAIL**



**SECTION B - B
BEND DETAIL
BOTTOM REINFORCEMENT**



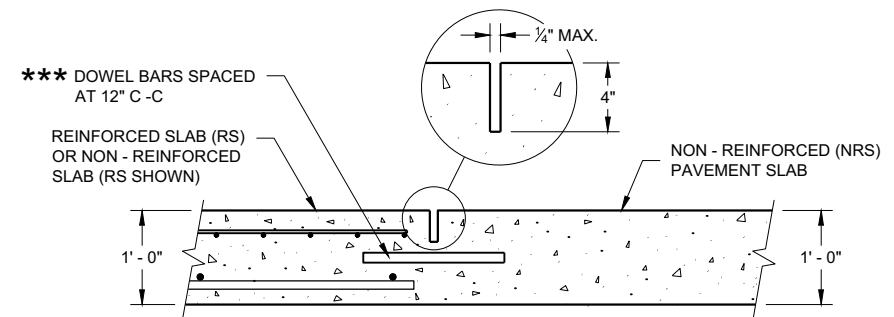
**SECTION C - C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT**

GENERAL NOTES

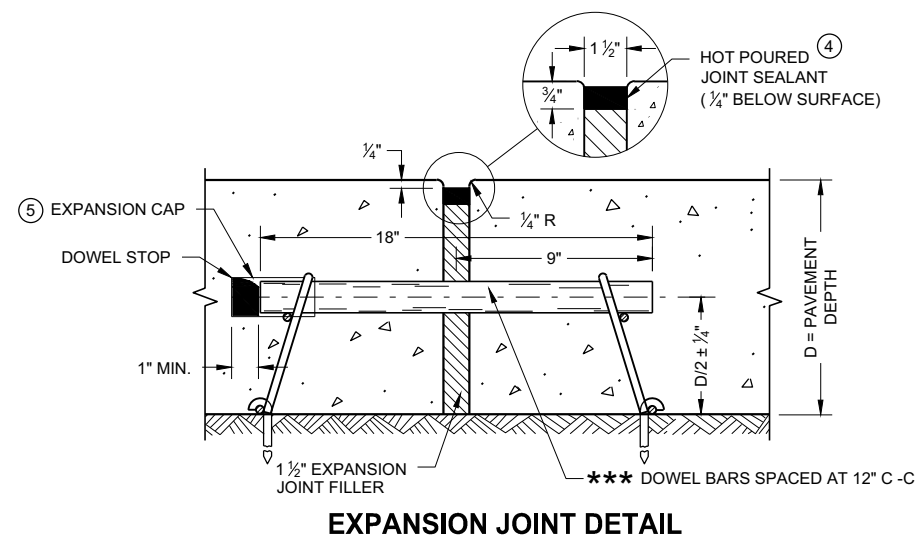
THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

- ① THE CONTRACTOR MAY USE NO. 4 BARS SPACED AT 2' - 0" C - C IN BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTIONS FOR TOP REINFORCEMENT AS AN ALTERNATIVE TO THE WELDED WIRE FABRIC.
- ② THE CONTRACTOR MAY OMIT THE BARS BETWEEN REINFORCED SLABS WHERE SLAB REINFORCEMENT BARS EXTEND ACROSS THE CENTERLINE OR REFERENCE LINE.
- ③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.
- ④ USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- ⑤ PLACE EXPANSION CAP ON THE END OF THE DOWEL THAT IS NOT TACK WELDED TO THE BASKET. DO NOT FORCE DOWEL BAR PAST THE DOWEL STOP.
- ⑥ EXTEND EXPANSION JOINT THROUGH ANY ADJACENT TIED CONCRETE.
- A STANDARD CONTRACTION JOINT NORMAL TO $\mathcal{C}$ OR $\mathcal{R}$.
- B STANDARD LONGITUDINAL JOINT WITH TIE BARS.
- C 1 1/2" EXPANSION JOINT WITH DOWEL BARS NORMAL TO $\mathcal{C}$ OR $\mathcal{R}$.



**SECTION D - D
CONTRACTION JOINT**

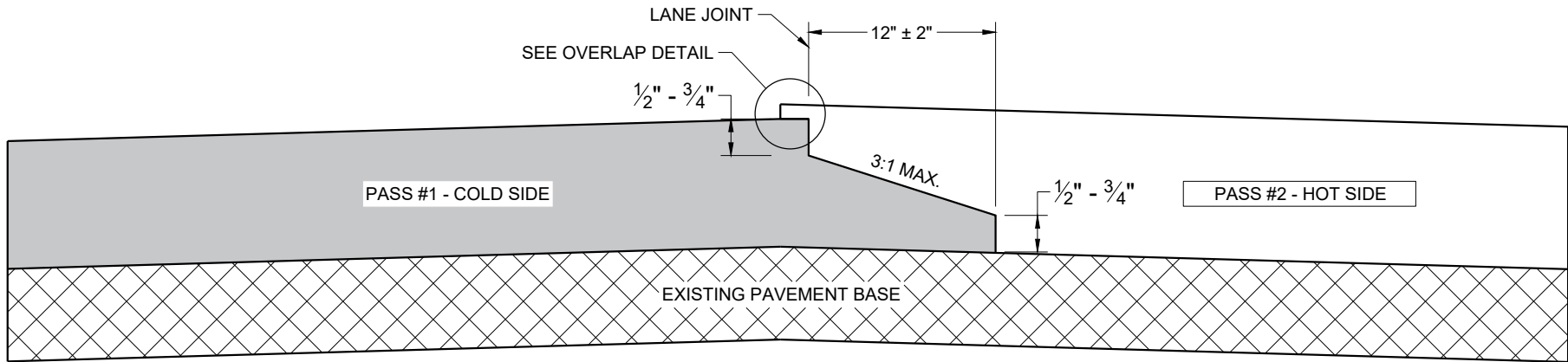


EXPANSION JOINT DETAIL

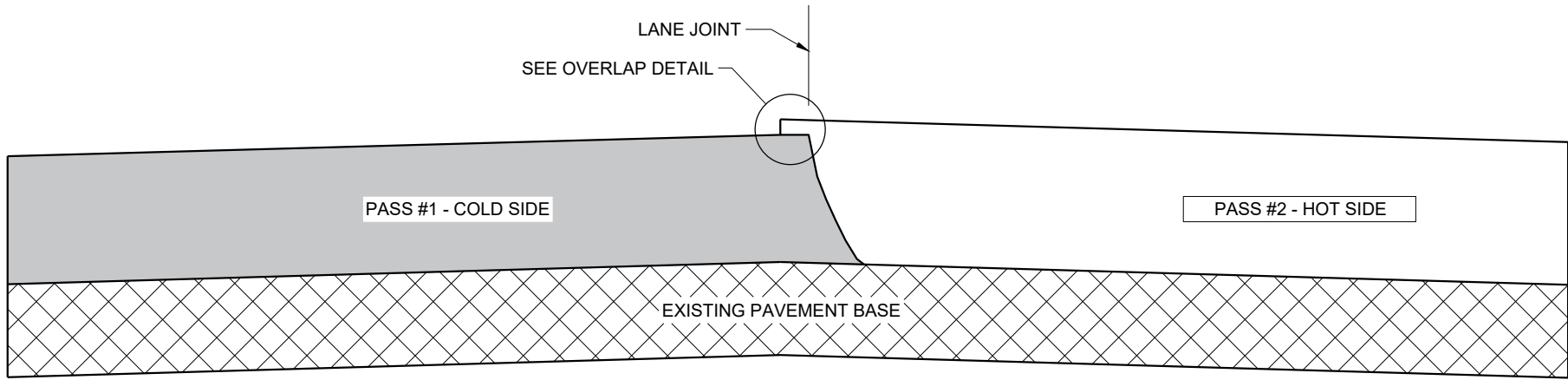
CONCRETE PAVEMENT APPROACH SLAB

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

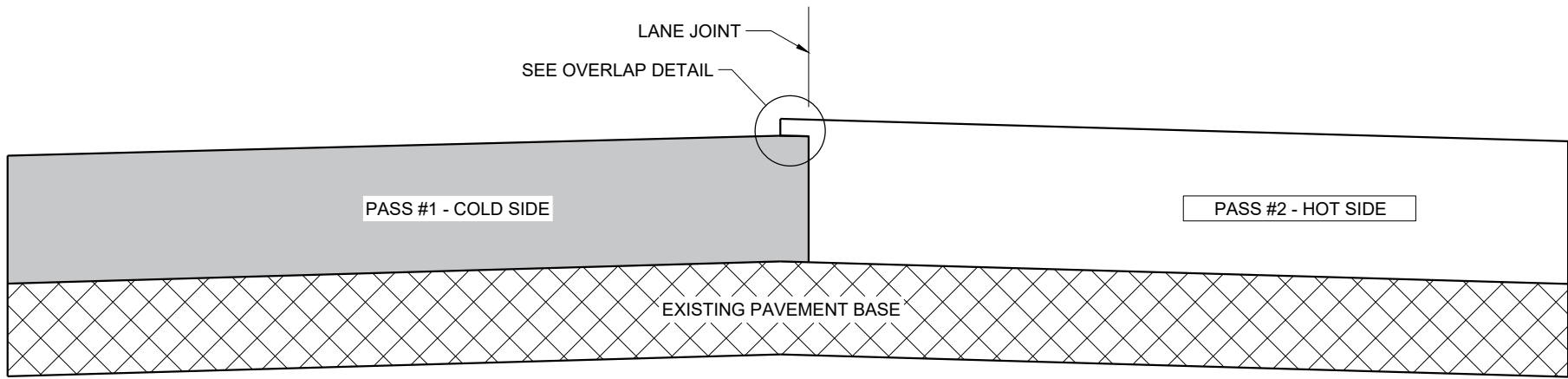
APPROVED
November 2018 /S/ Peter Kemp, P.E.
DATE PAVEMENT SUPERVISOR
FHWA



TYPICAL PAVEMENT CROSS SECTION
NOTCHED WEDGE JOINT



TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT



TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT (MILLED)

GENERAL NOTES

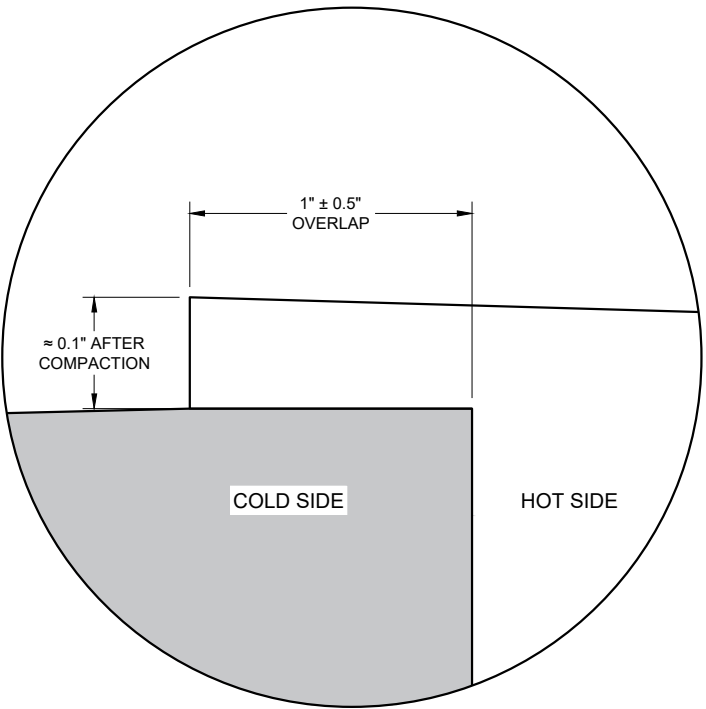
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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

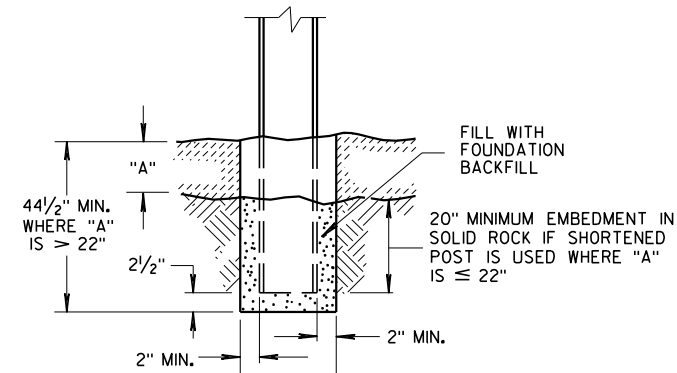
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

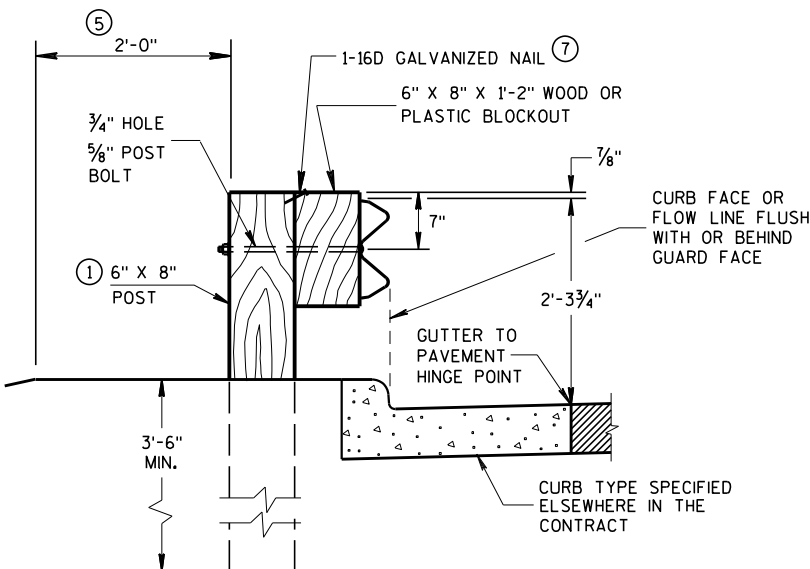
GENERAL NOTES

- W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. APPROVED PLASTIC BLOCKOUT DESIGNS MAY VARY FROM THIS TYPICAL DETAIL WHEN USED IN CONJUNCTION WITH STEEL POSTS. DO NOT MIX STEEL POSTS AND WOOD POSTS IN A SINGLE INSTALLATION.
- USE STRUCTURAL STEEL POSTS CONFORMING TO ASTM A 36. GALVANIZED POSTS ACCORDING TO AASHTO M 111. EITHER SET THE POSTS IN DRILLED HOLES OR DRIVE TO GRADE. REMOVE MUSHROOMING CAUSED BY DRIVING AND REPAIR DAMAGED SPELTER COATING ON GALVANIZED POSTS.
- INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- USE EITHER WOOD OR APPROVED PLASTIC BLOCKOUTS ON WOOD POSTS.
- IF THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING, W BEAM (LHW).
- IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE ENGINEER MAY APPROVE USING A 12 INCH DIAMETER POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE APPROXIMATELY 2 1/2 INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN THE HOLE. BACKFILL WITH MATERIAL EXCAVATED FROM THE HOLE AND COMPACT ADEQUATELY.
- WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

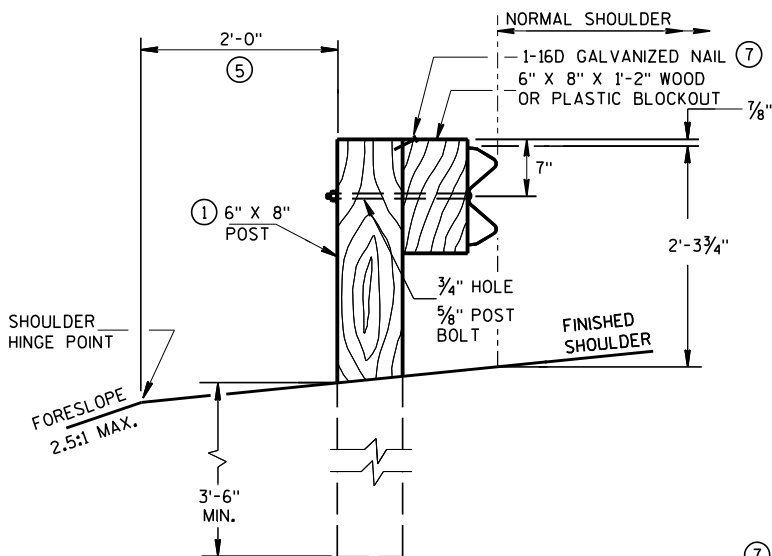
INSTALL BEAM GUARD SECTIONS AND ALL NECESSARY HARDWARE ACCORDING TO THE APPLICABLE PLAN AND CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



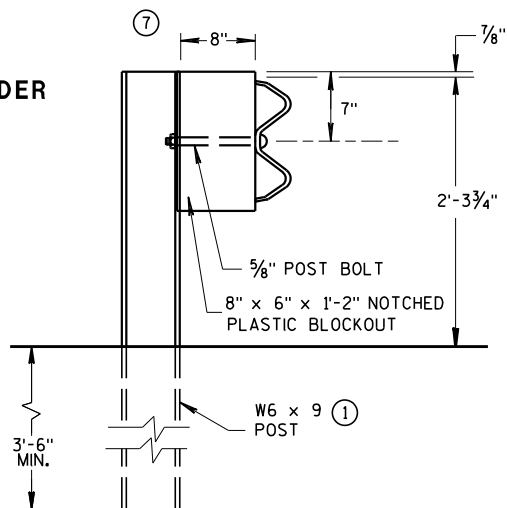
END VIEW
SETTING STEEL OR WOOD POST IN ROCK ⑥



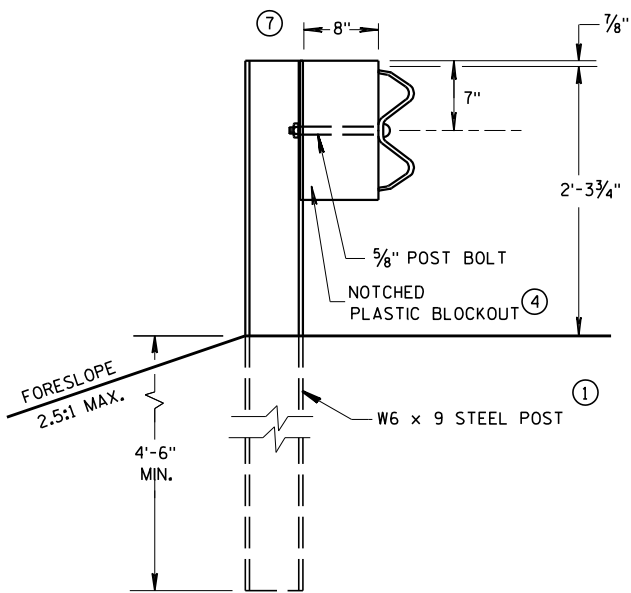
END VIEW
LOCATED ALONG A CURBED ROADWAY



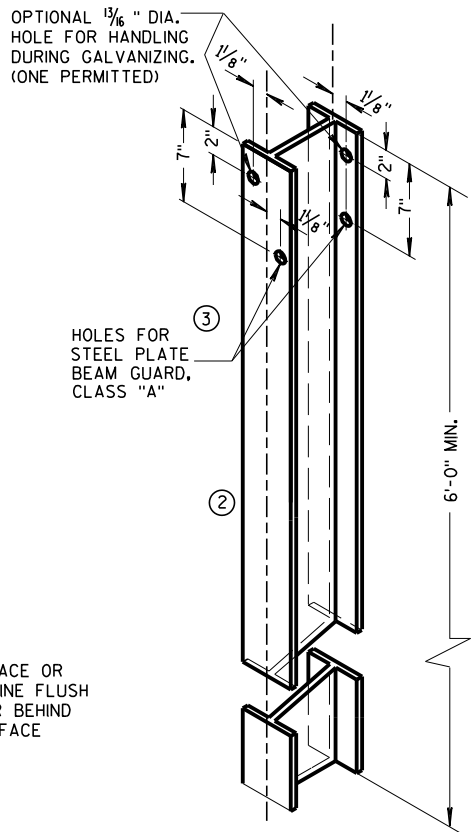
END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



END VIEW
STEEL POST & NOTCHED
PLASTIC BLOCKOUT ALTERNATIVE
STANDARD INSTALLATION

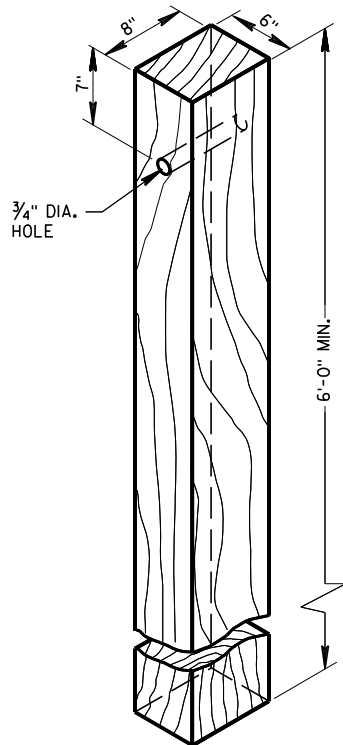


END VIEW
LONGER POST AT HALF
POST SPACING W BEAM
(LHW)

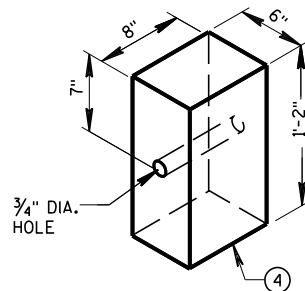


STEEL POST &
HOLE PUNCHING DETAIL
(W6 X 9) ①

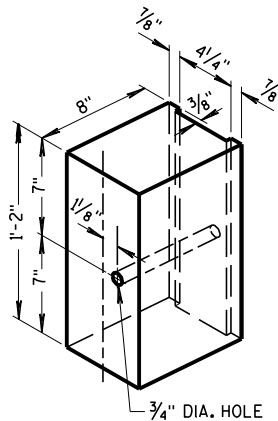
ALL HOLES 1/8" DIAMETER EXCEPT AS NOTED



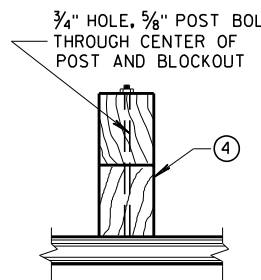
WOOD POST
(6"X8") NOMINAL



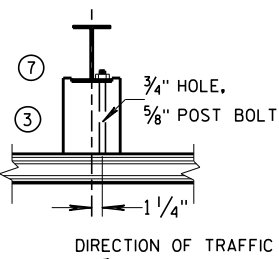
WOOD OR PLASTIC
BLOCKOUT FOR
WOOD POSTS



TYPICAL NOTCHED
PLASTIC BLOCKOUT
FOR STEEL POSTS ①



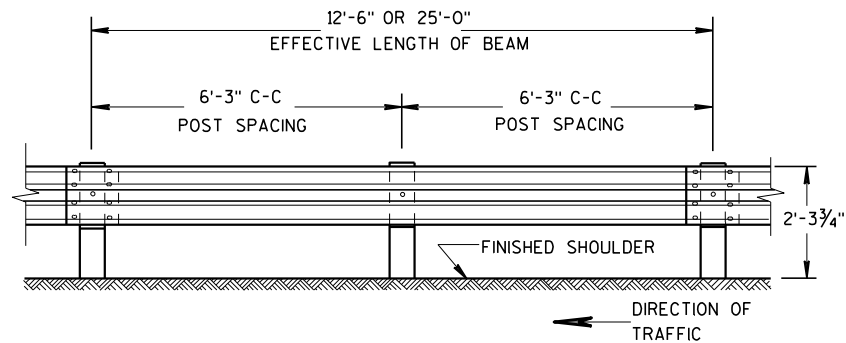
PLAN VIEW
WOOD POST, BLOCKOUT & BEAM



PLAN VIEW
STEEL POST, NOTCHED
PLASTIC BLOCKOUT & BEAM

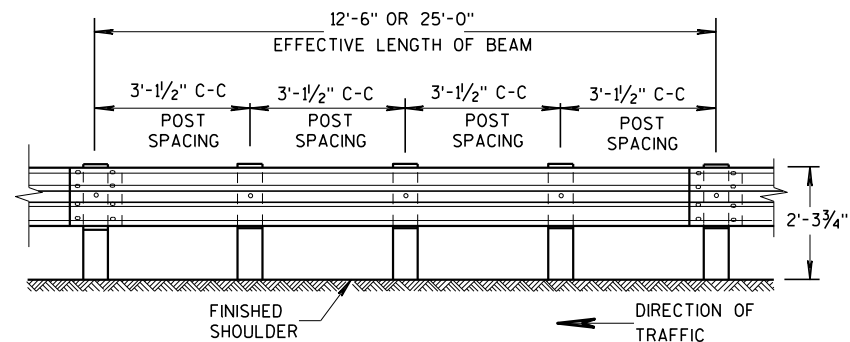
STEEL PLATE BEAM GUARD,
CLASS "A"
INSTALLATION & ELEMENTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



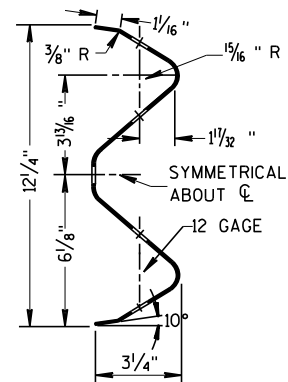
FRONT VIEW

POST SPACING STANDARD INSTALLATION

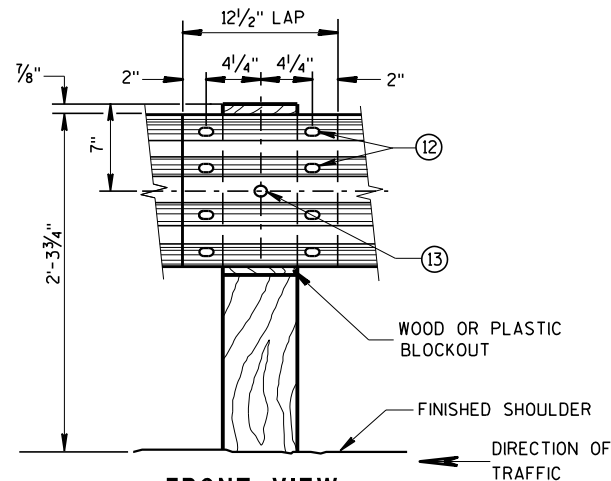


FRONT VIEW

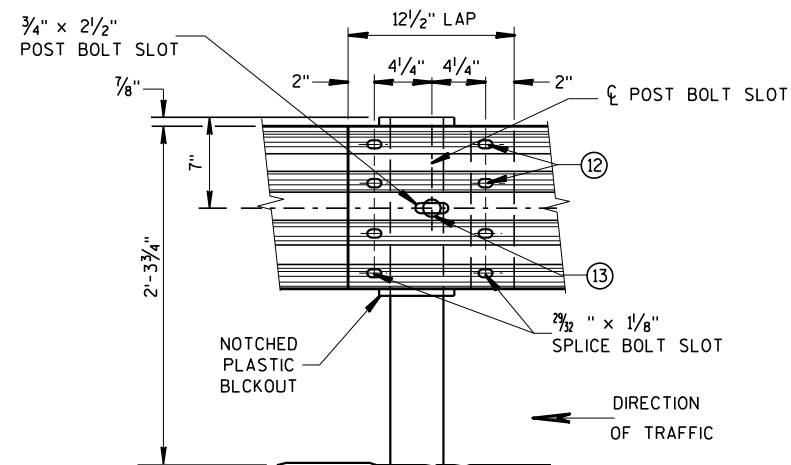
POST SPACING FOR LONGER POST
AT HALF POST SPACING W BEAM (LHW)



SECTION THRU W BEAM



FRONT VIEW
BEAM SPLICE AT WOOD POST
AND POST MOUNTING DETAIL



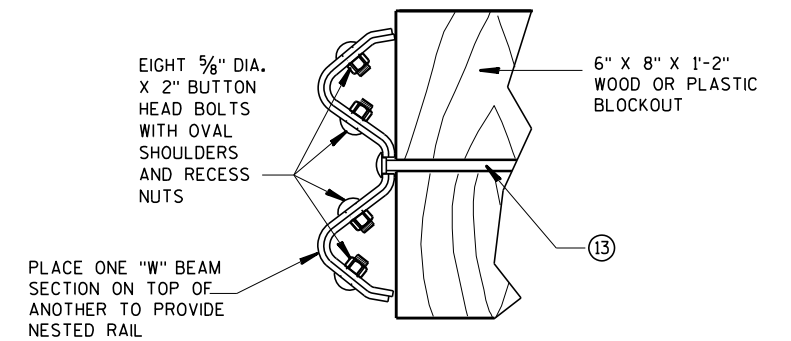
FRONT VIEW
BEAM SPLICE AT STEEL POST

TYPICAL SPLICING DETAILS
OF STEEL PLATE BEAM GUARD

GENERAL NOTES

FURNISH GUARDRAIL DEFLECTORS FROM APPROVED PRODUCTS LIST.

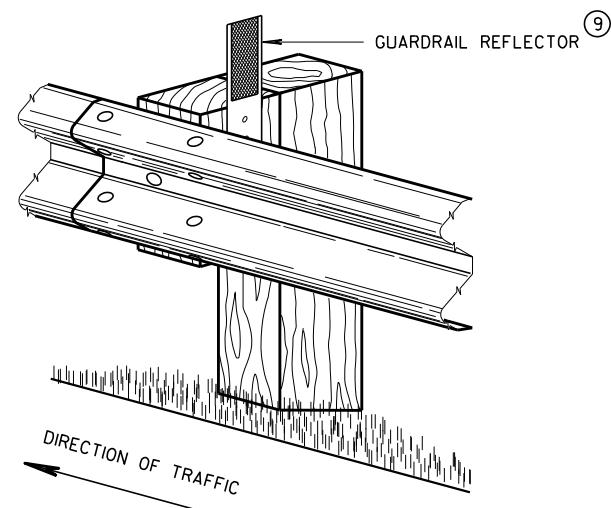
- ⑨ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINA. START REFLECTORS AT POST #9 AND SPACE EVENLY EVERY 100 FEET (MAX.) TO THE END OF GUARDRAIL RUN, USING A MINIMUM OF 3 REFLECTORS.
- ⑫ 8 - 5/8" ϕ X 2" BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.
- ⑬ 5/8" DIA. BUTTON HEAD BOLT AND RECESS NUT WITH 5/8" DIA. F844 FLAT WASHER UNDER NUT.



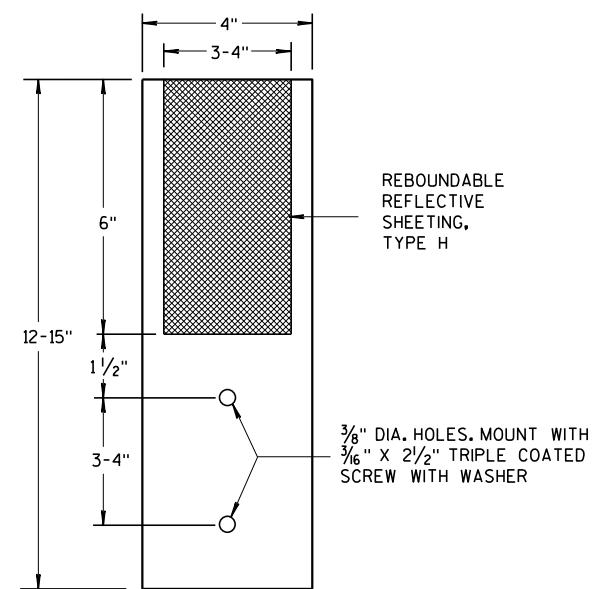
NESTED W BEAM (NW)

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

* USE DOUBLE SIDED WHITE GUARDRAIL REFLECTORS ON ROADWAYS WITH BI-DIRECTIONAL TRAFFIC (NO MEDIAN). USE SINGLE SIDED WHITE (RIGHT SIDE) AND SINGLE SIDED YELLOW (LEFT SIDE) ON ROADWAYS WITH MEDIAN SEPARATION.



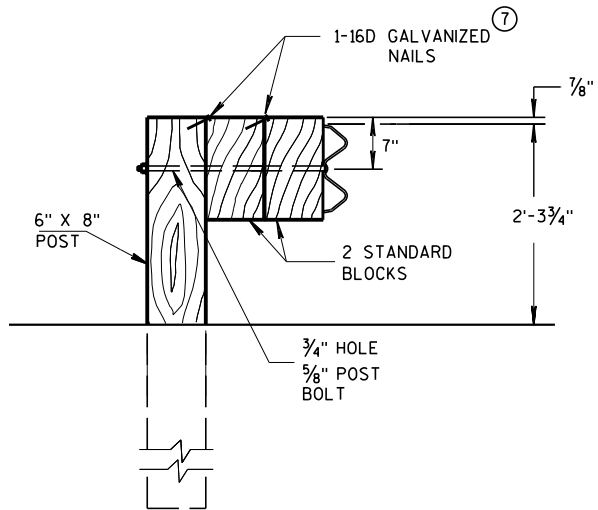
4" X 12" GUARDRAIL REFLECTOR DETAIL
AND TYPICAL INSTALLATION *



4"x 12" GUARDRAIL REFLECTOR

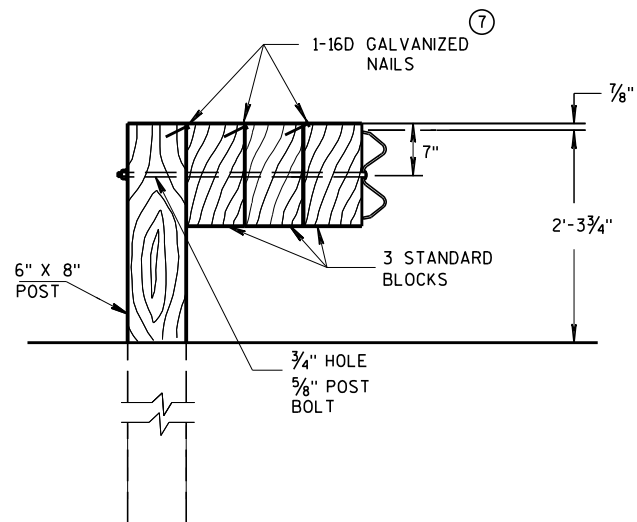
STEEL PLATE BEAM GUARD,
CLASS "A",
INSTALLATION & ELEMENTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR DOUBLE BLOCKS

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

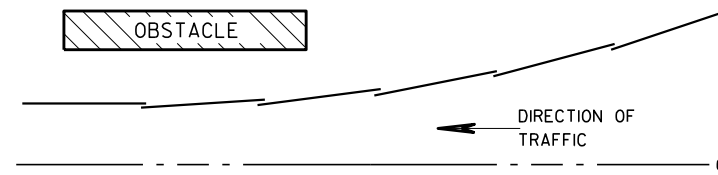


DETAIL FOR TRIPLE BLOCKS

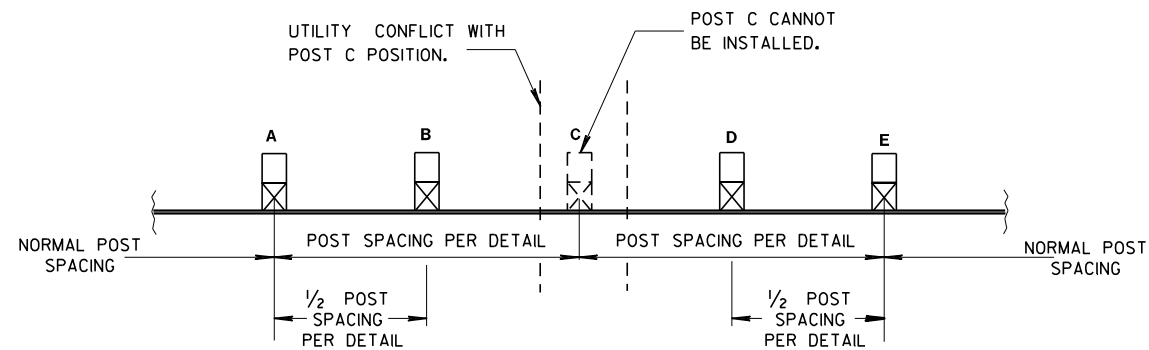
TRIPLE BLOCK DETAIL IS LIMITED TO ONE
LOCATION WITHIN A BEAM GUARD RUN.

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

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



PLAN VIEW BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June 2017

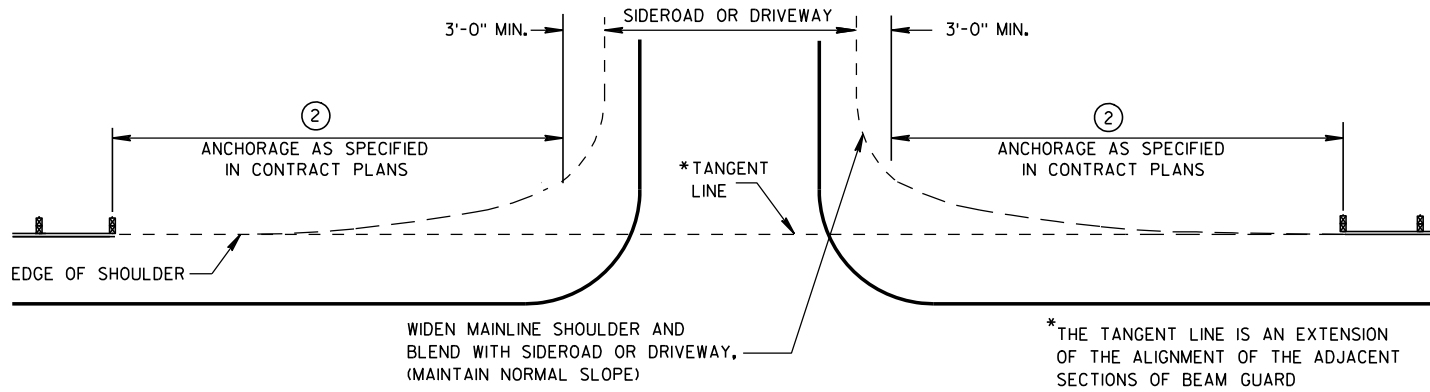
DATE

FHWA

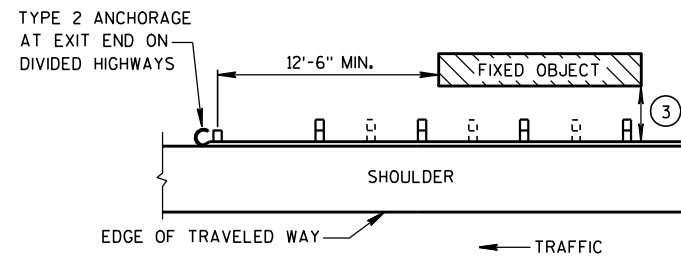
/S/ Rodney Taylor

ROADWAY STANDARDS DEVELOPMENT

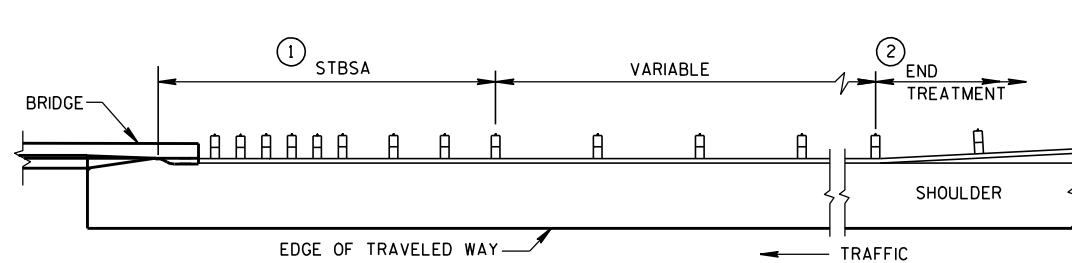
UNIT SUPERVISOR



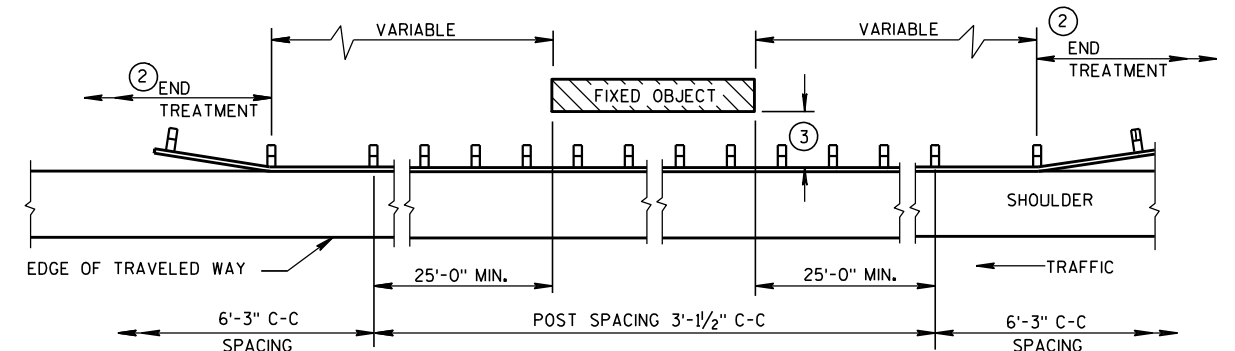
BEAM GUARD AT SIDEROADS OR DRIVEWAYS



BEAM GUARD AT OBSTACLES EXIT END - ONE WAY TRAFFIC



BEAM GUARD AT FULL WIDTH BRIDGES

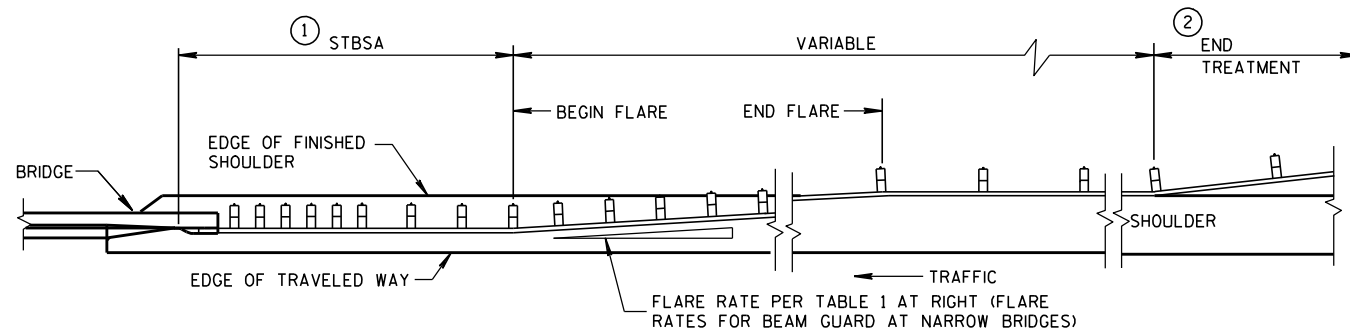


BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC

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

TABLE 1
FLARE RATES FOR BEAM
GUARD AT NARROW BRIDGES

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



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

GENERAL NOTES

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

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

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

- STEEL THRIE BEAM STRUCTURAL APPROACH (STBSA) - SEE CURRENT SDD 14B20.
- USE AN APPROVED END TREATMENT FOR THE TRAFFIC APPROACH SIDE OF BRIDGE/OBSTACLES. USE TYPE 2 ANCHORAGE ONLY AT THE DOWNSTREAM ENDS OF BEAM GUARD LOCATED ALONG ROADWAYS WITH ONE WAY TRAFFIC.

MINIMUM LATERAL DISTANCE FROM FACE OF BEAM GUARD TO FIXED OBJECT	POST SPACING
3'-6"	3' - 1 1/2"
4'-6"	6' - 3"

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

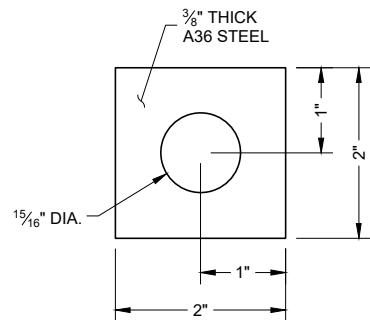
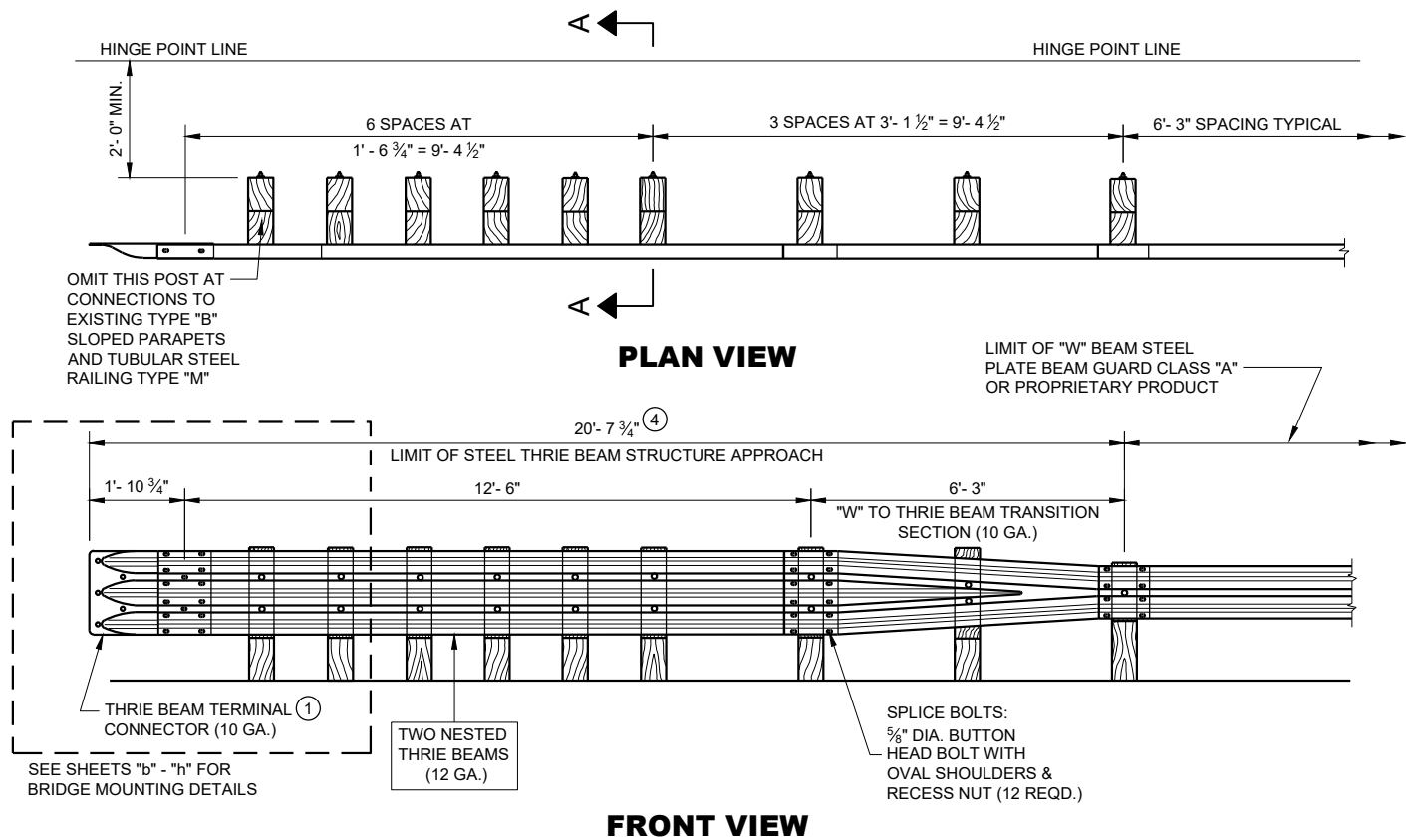


PLATE WASHER DETAIL

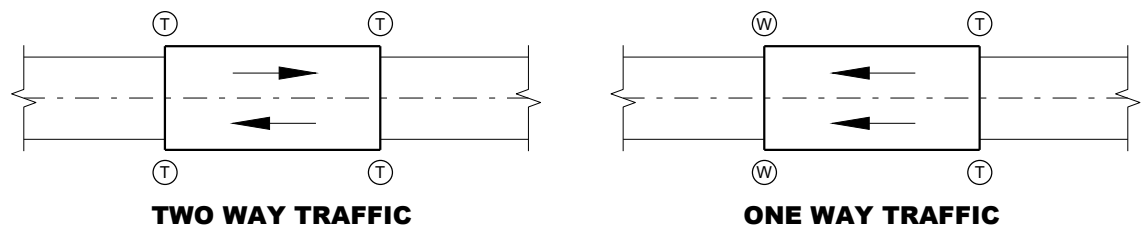
GENERAL NOTES

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

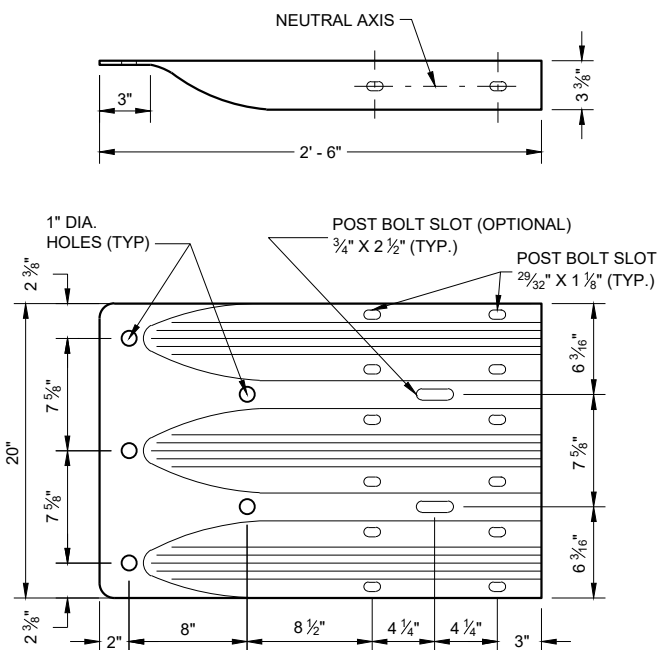
DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

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

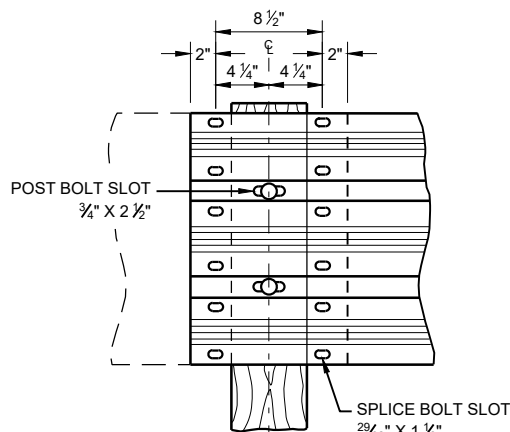
- ① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.
- ② MINIMUM EMBEDMENT SHALL BE 4'-0".
- ③ POST BOLTS ARE 5/8" DIAMETER ASTM A307 BUTTON HEAD BOLT. A POST BOLT REQUIRES A 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX AND A 5/8" DIAMETER F844 FLAT WASHER. LENGTH OF POST BOLT MAY VARY.
- ④ ALL WOOD POSTS MUST BE 6" X 8" AND AT LEAST 7'-0" LONG.



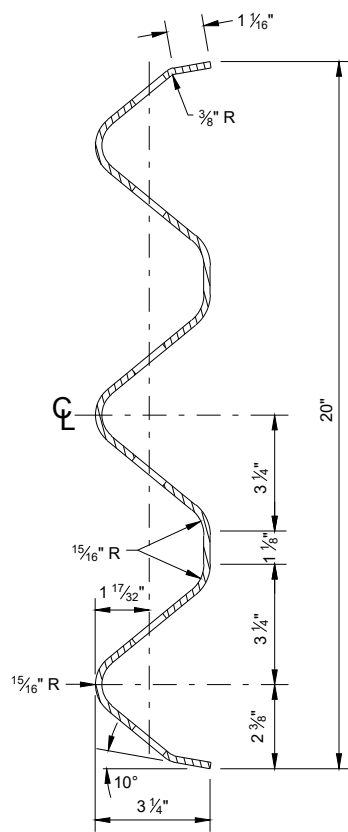
TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE



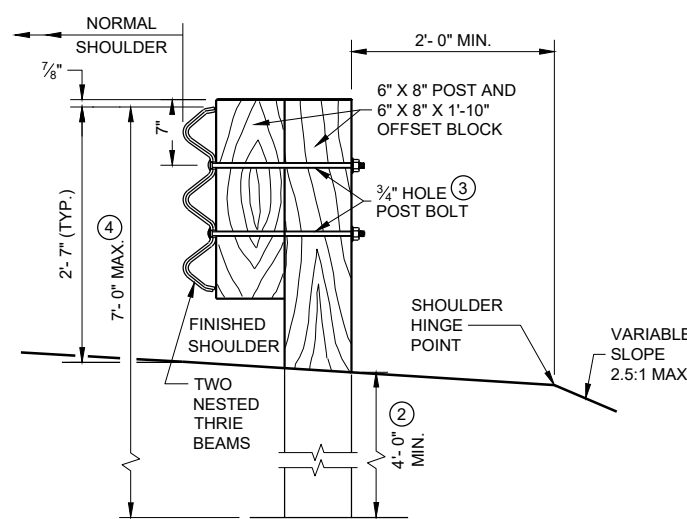
THRIE BEAM TERMINAL CONNECTOR



THRIE BEAM SPLICE



SECTION THRU BEAM RAIL ELEMENT



SECTION A-A

STEEL THRIE BEAM STRUCTURE APPROACH

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2022
DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

BILL OF MATERIALS

NOTE NO.	DESCRIPTION
①	WOOD BREAKAWAY TERMINAL POST: 5½" X 7½" X 3'-9"
②	STEEL TUBE TS 8" X 6" X 0.188", 6'-0"
④	WOOD BREAKAWAY CRT POST: 6" X 8" X 6'-0"
⑤	WOOD OFFSET BLOCKS: 6' X 8" X 1'-2"
⑥	PIPE SLEEVE: 2" X 5 ½" STANDARD PIPE
⑦	BEARING PLATE
⑧	BCT CABLE ASSEMBLY
⑨	CABLE ANCHOR BOX
⑩	STRUT & YOKE
⑪	STEEL PLATE BEAM, END PANEL 12 GA.
⑫	STEEL PLATE BEAM: 12 GA. 13'-6½"
⑬	IMPACT HEAD
⑭	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE F PER SECTION 637 OF THE STANDARD SPECIFICATIONS

GENERAL NOTES

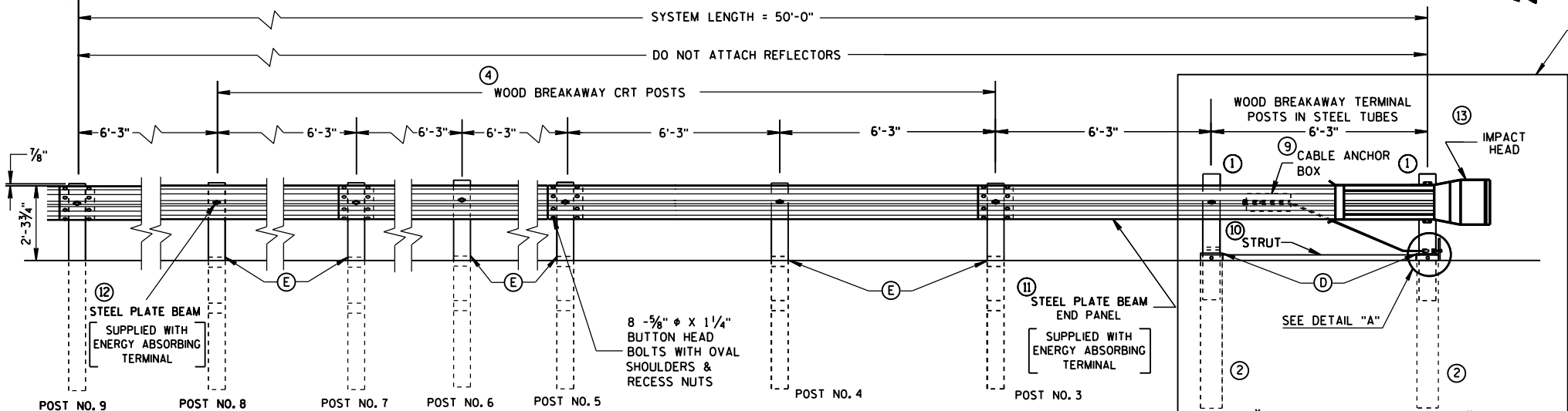
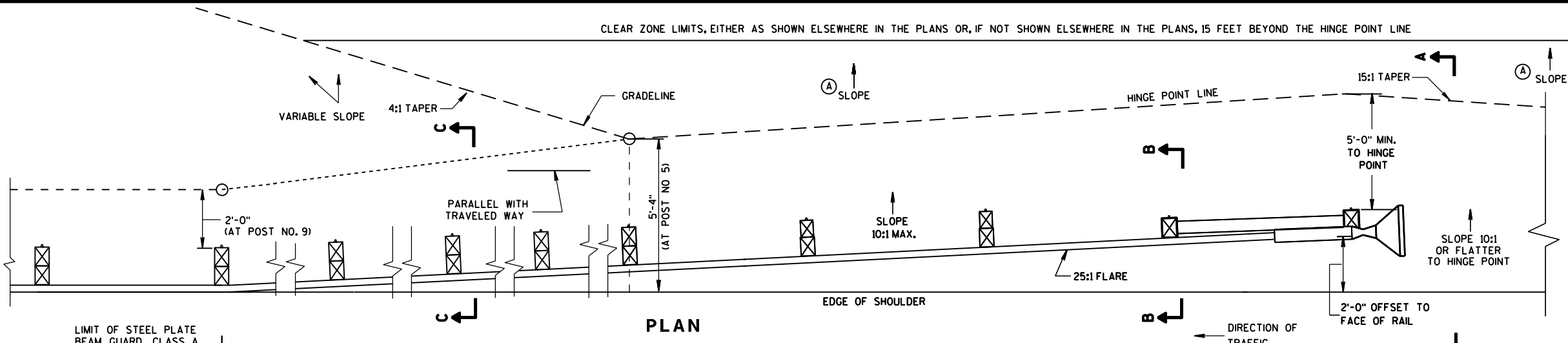
FOLLOW MANUFACTURE'S BOLTING RECOMMENDATIONS.

- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL), AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.
- (D) THE TOP OF THE STEEL TUBE ON POSTS 1 AND 2 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.
- (E) THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST 3 THROUGH 8 SHALL BE ¾" ABOVE THE FINISHED GROUND LINE.
- (F) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS, ONE SCREW PER CORNER.

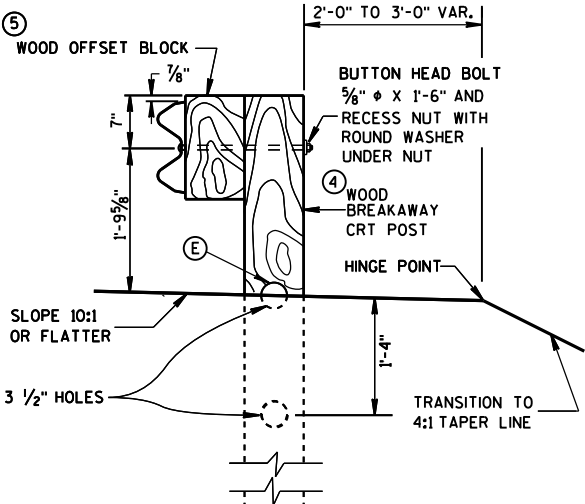
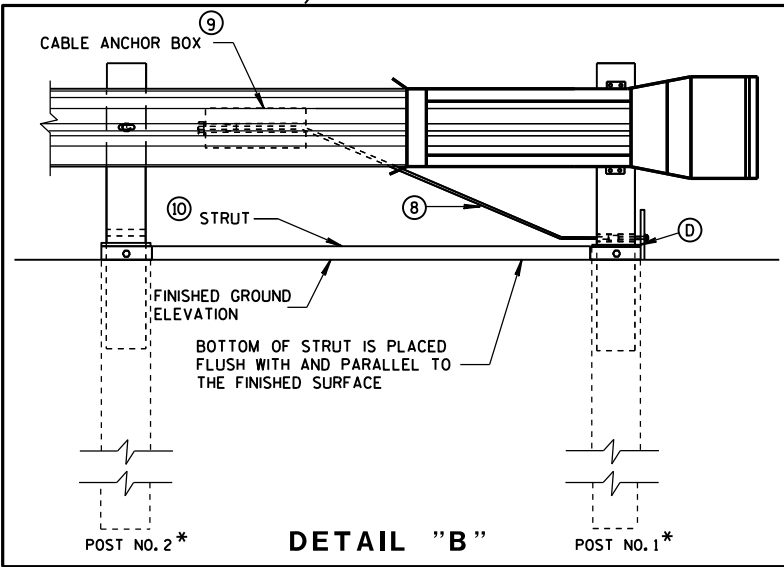
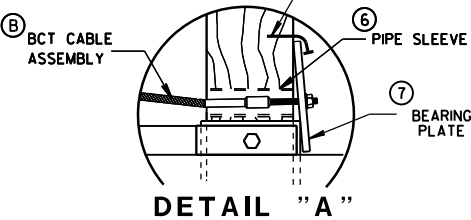
STEEL POSTS SHALL NOT BE ALLOWED FOR USE WITH ENERGY ABSORBING TERMINALS.

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

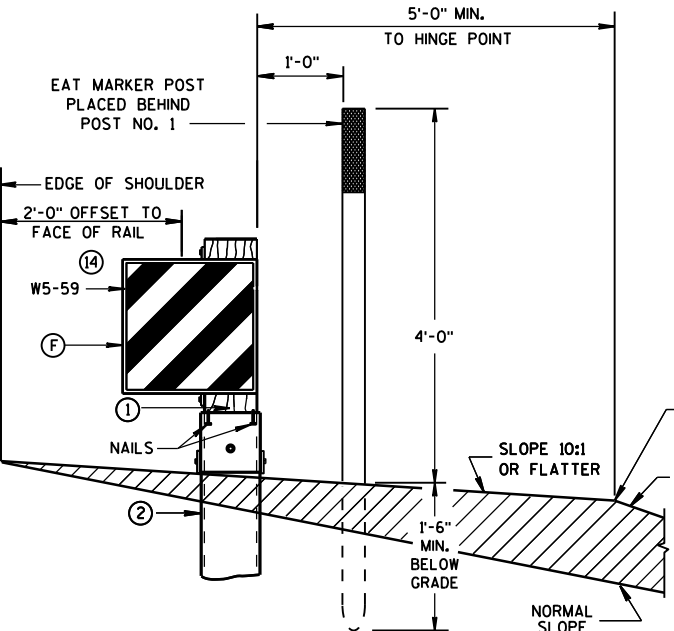
*DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.



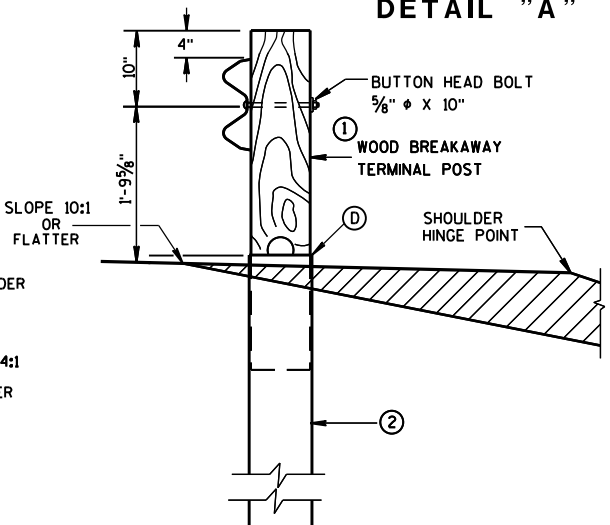
ELEVATION



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



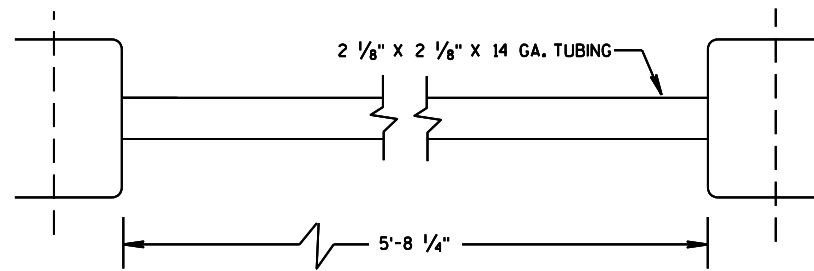
SECTION A-A
TYPICAL AT POST NO. 1*



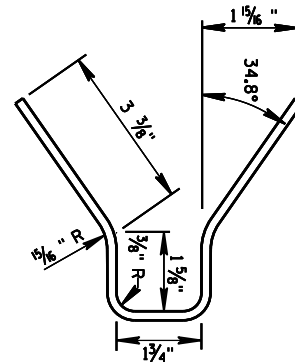
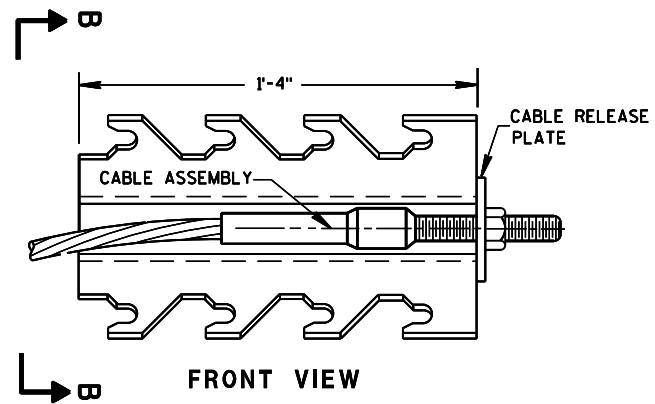
SECTION B-B
TYPICAL AT POST NO. 2*

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

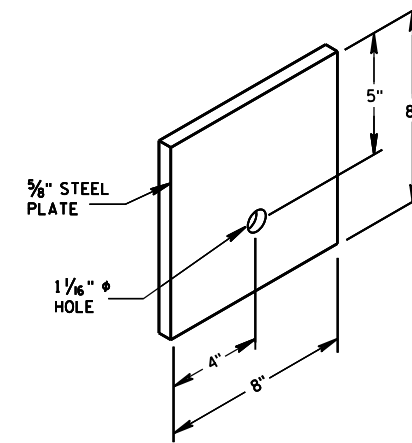


⑩ STRUT DETAIL



SECTION B-B

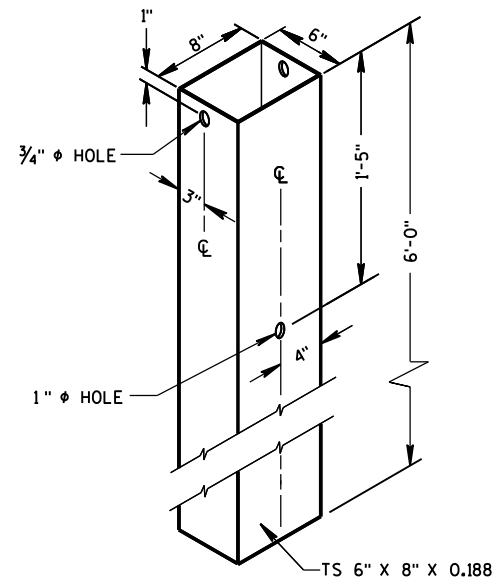
⑨ CABLE ANCHOR BOX



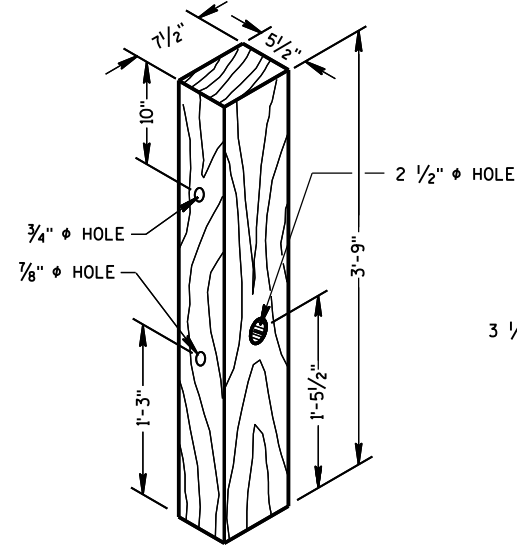
⑦ STEEL BEARING PLATE

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

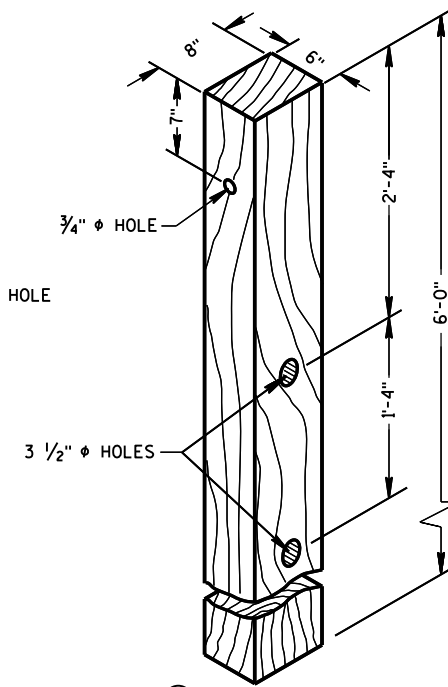
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



② **72" STEEL TUBE**
(POSTS NO. 1-2)



① **TERMINAL POST**

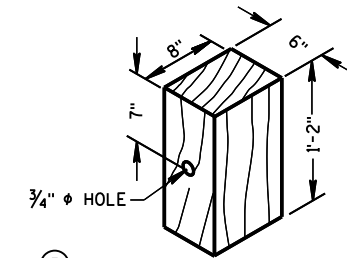


④ **CRT POST**
(POSTS NO'S 5-8)

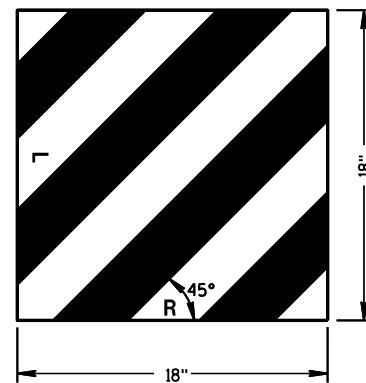
WOOD BREAKAWAY POSTS

GENERAL NOTES

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

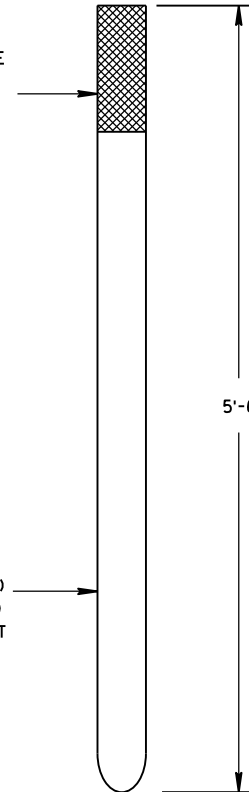


⑤ **WOOD OFFSET BLOCK**
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



⑭ **REFLECTIVE SHEETING DETAILS**

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



FRONT VIEW



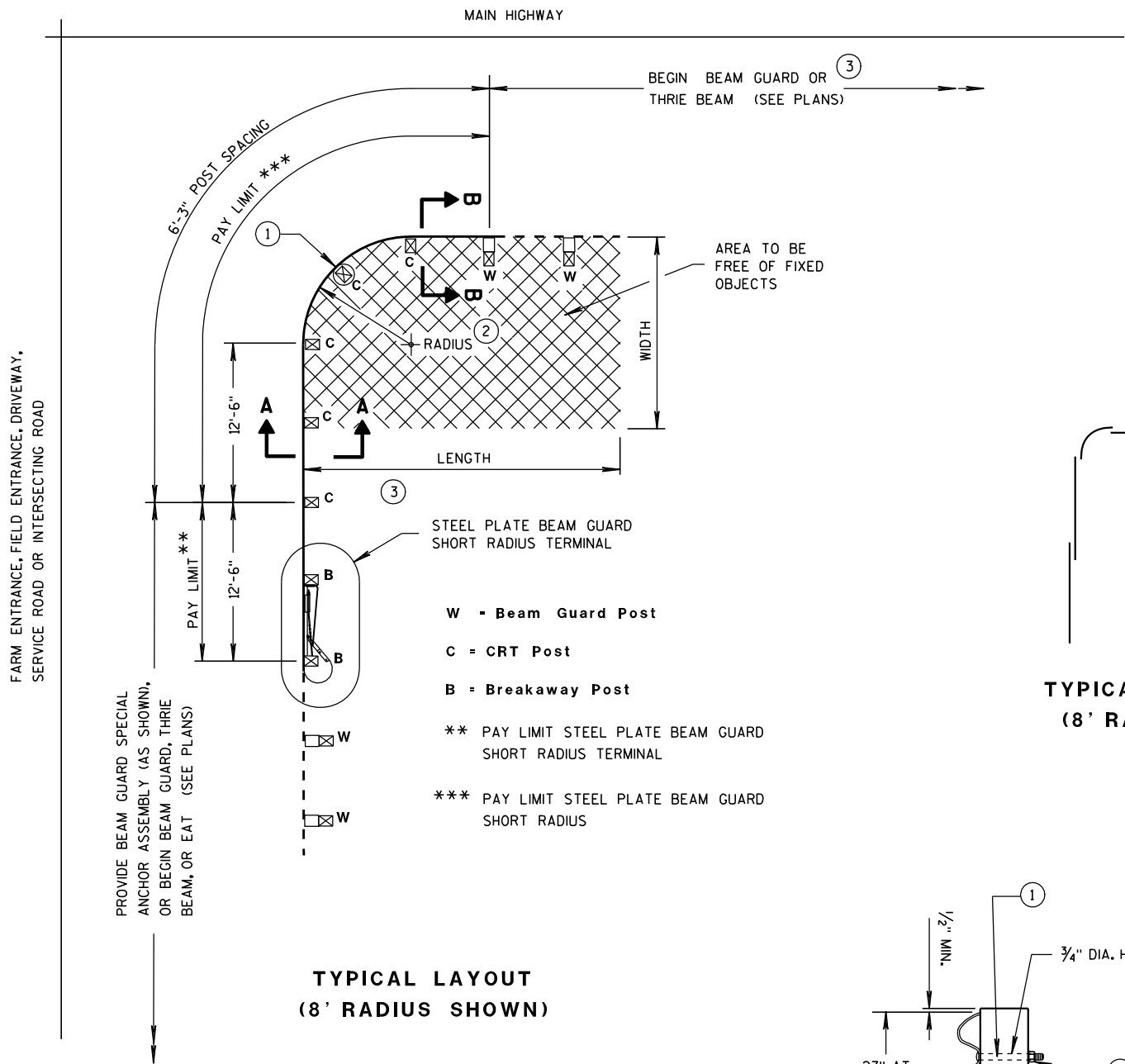
SIDE VIEW

E.A.T. MARKER POST

**STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



TYPICAL LAYOUT
(8' RADIUS SHOWN)

W - Beam Guard Post
C = CRT Post
B = Breakaway Post

** PAY LIMIT STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
*** PAY LIMIT STEEL PLATE BEAM GUARD SHORT RADIUS

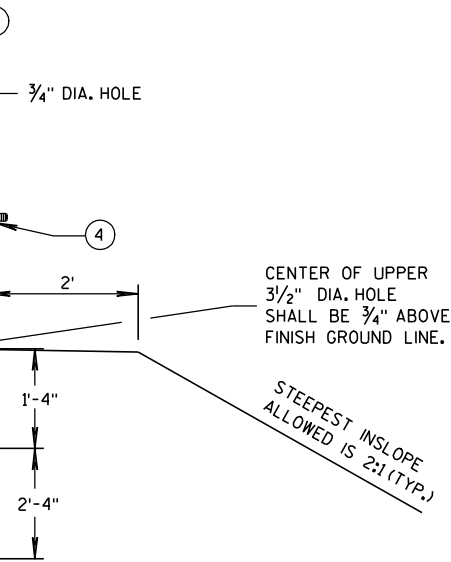
SLOPE SHALL BE 15:1 OR FLATTER (TYP.)

27" AT FACE OF RAIL

3 1/2" DIA. HOLES CENTERED IN SIDE OF POST

6"x8"x6'-0" WOOD POST MODIFIED AS SHOWN AND SHALL BE PRESERVATIVE TREATED AFTER DRILLING

SECTION A-A
(CRT POST)



CENTER OF UPPER 3 1/2" DIA. HOLE SHALL BE 3/4" ABOVE FINISH GROUND LINE.

STEEPEST INSLOPE ALLOWED IS 2:1 (TYP.)

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

GENERAL NOTES

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

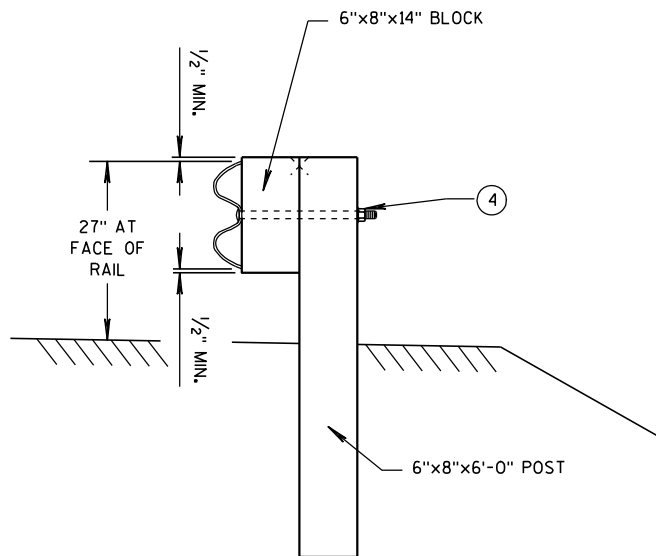
SHOP BEND CURVED RAIL SECTIONS.

SEE STANDARD DETAIL DRAWING 14 B 15 FOR OTHER DETAIL.

- 1 ON THE 8 FOOT RADIUS INSTALLATION, DO NOT INSTALL BUTTON HEAD BOLT AT CENTER CRT POST.
- 2 RADIUS FROM 8' - 36'. SEE PLAN.
- 3 HEIGHT TRANSITION MAY BE REQUIRED. SEE PLAN OR PROJECT ENGINEER.
- 4 5/8" Ø X 1'-6" BUTTON HEAD BOLT AND RECESS NUT WITH ROUND WASHER UNDER NUT.

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

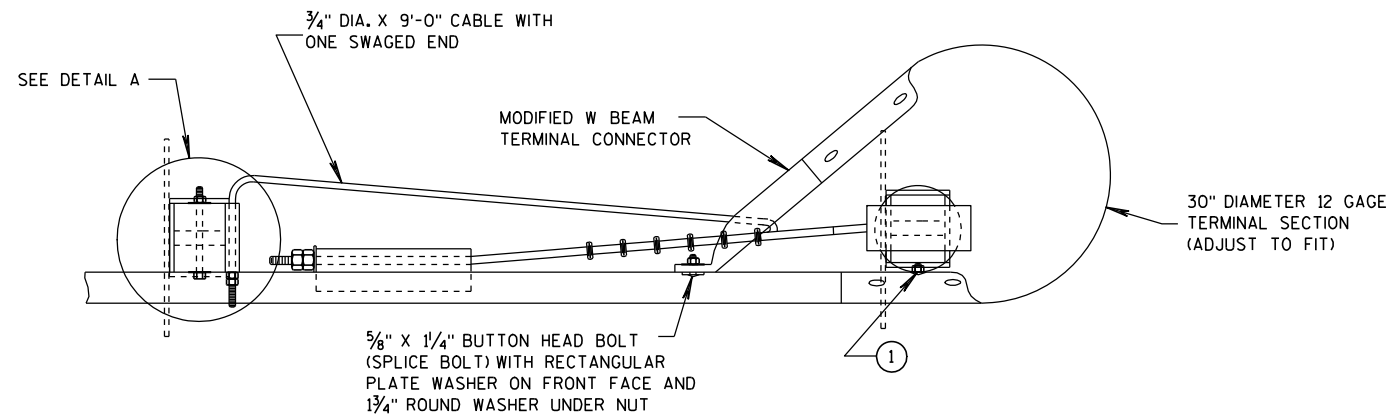
* THE NUMBER OF RAILS IS BASED ON A 90° INTERSECTION. SEE PLAN FOR NON 90° INSTALLATIONS.



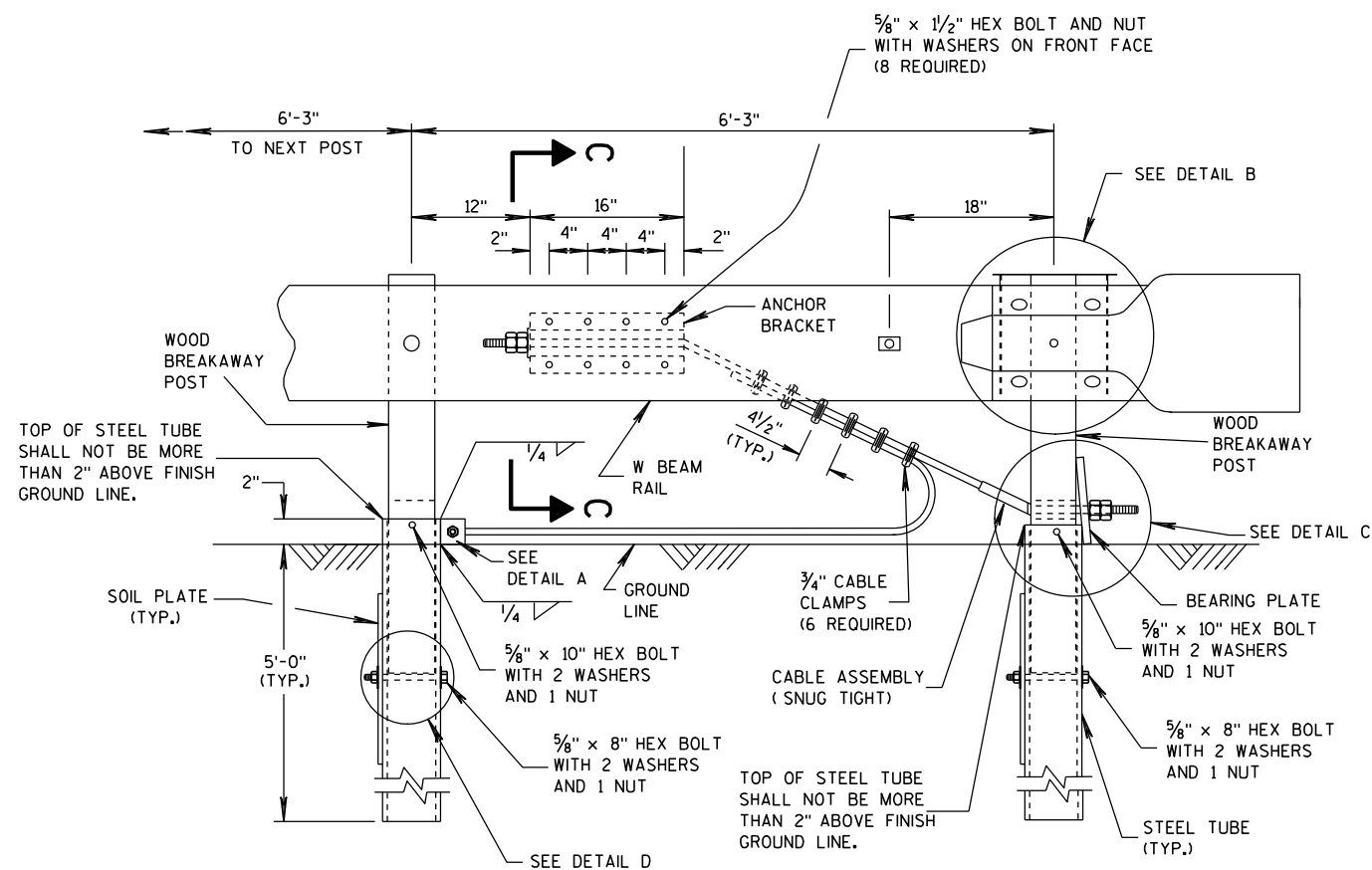
SECTION B-B
(BEAM GUARD POST)

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



PLAN VIEW

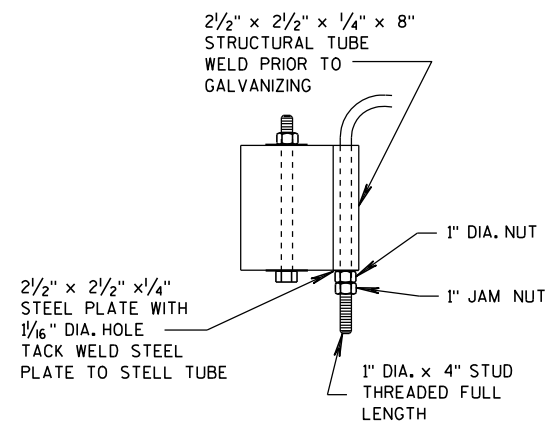


ELEVATION VIEW

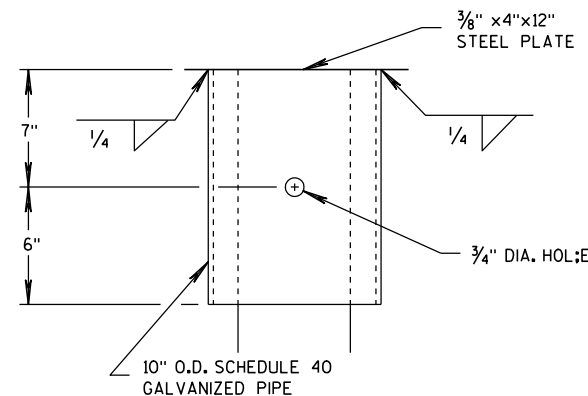
STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

GENERAL NOTES

- 1 ATTACH W BEAM RAIL TO THE STEEL PIPE WITH A 5/8" X 2" BUTTON HEAD BOLT WITH NO WASHER. CONNECTION TO THE POST IS NOT REQUIRED.
- INSTALL GALVANIZED 3/4" (6X19) PREFORMED WIRE OR INDEPENDENT WIRE ROPE CORE CONFORMING TO AASHTO M 30. MANUFACTURE WIRE ROPE OUT OF IMPROVED PLOW STEEL WITH A MINIMUM BREAKING STRENGTH OF 42,800 PSI.



DETAIL A

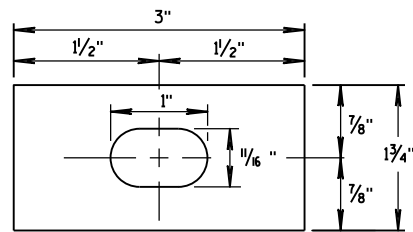


DETAIL B

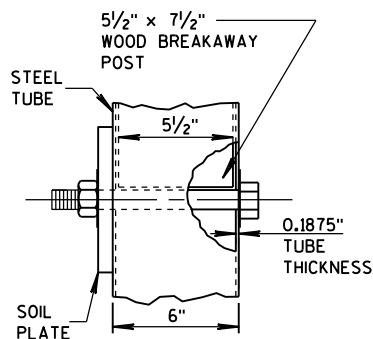
(BEAM GUARD AND TERMINAL SECTION NOT SHOWN)

STEEL PLATE BEAM GUARD
SHORT RADIUS TERMINAL

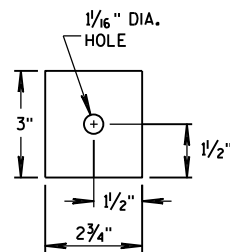
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



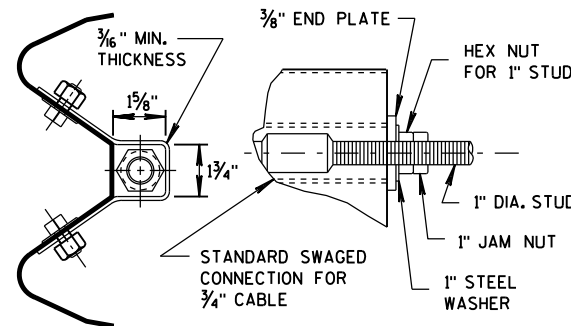
**RECTANGULAR
PLATE WASHER**



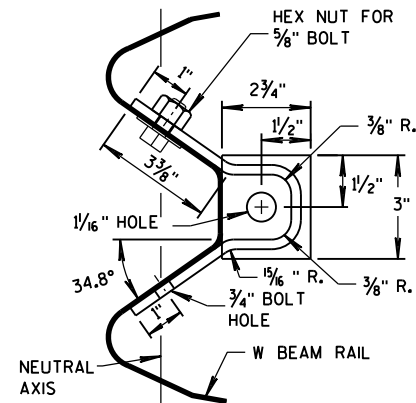
DETAIL D



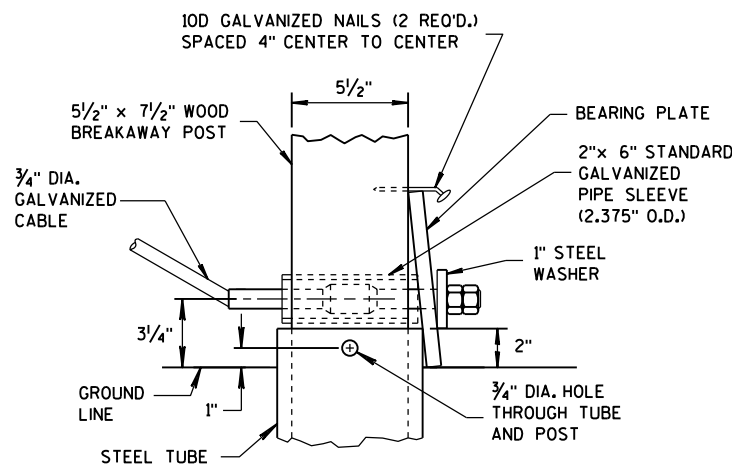
END PLATE



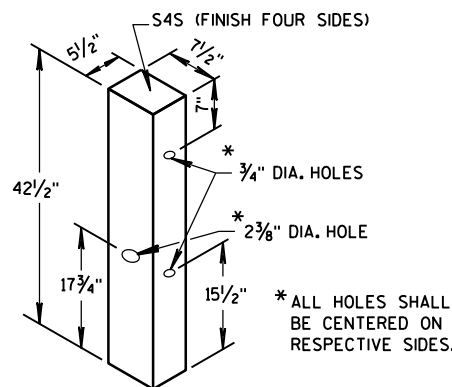
**SECTION C-C
(END PLATE REMOVED)**



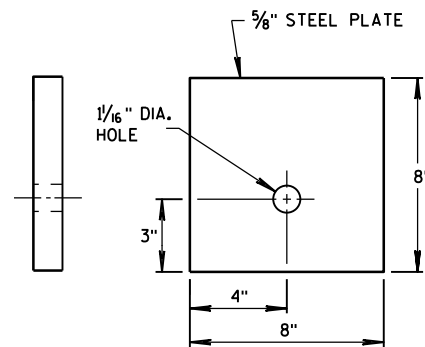
ANCHOR BRACKET



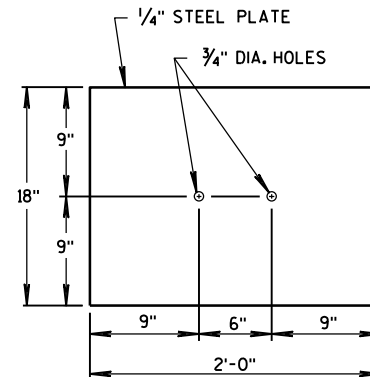
DETAIL C



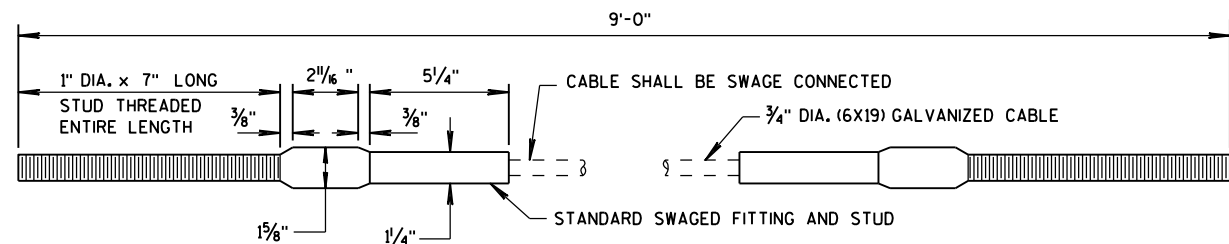
WOOD BREAKAWAY POST



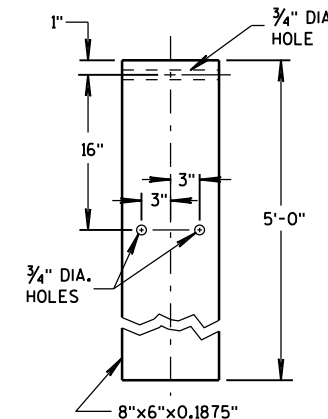
BEARING PLATE



SOIL PLATE



CABLE ASSEMBLY



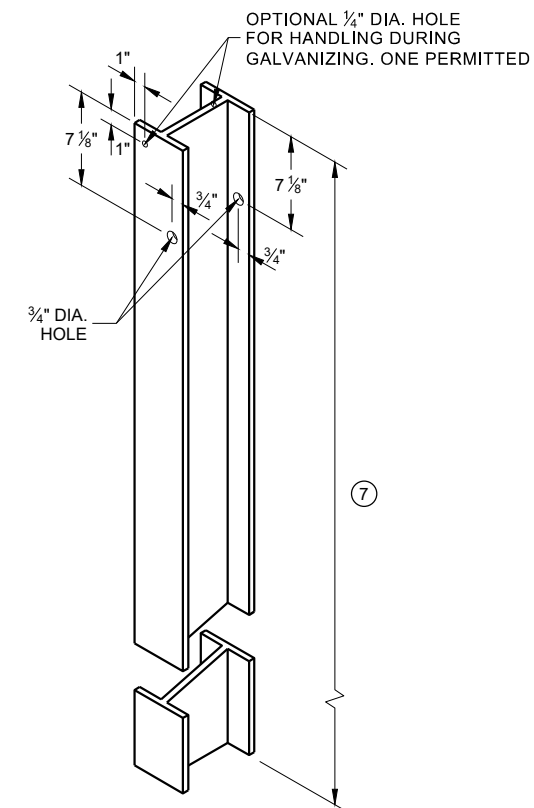
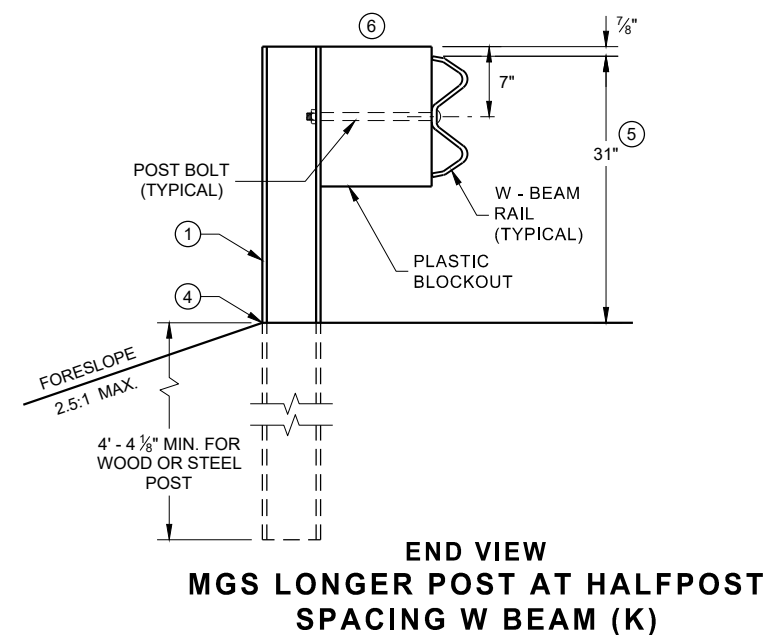
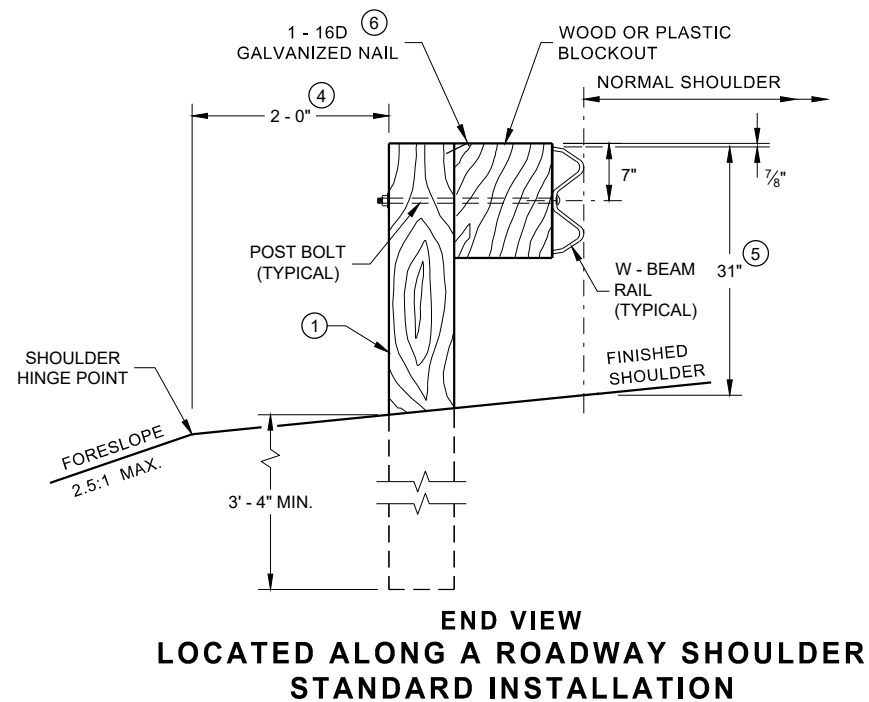
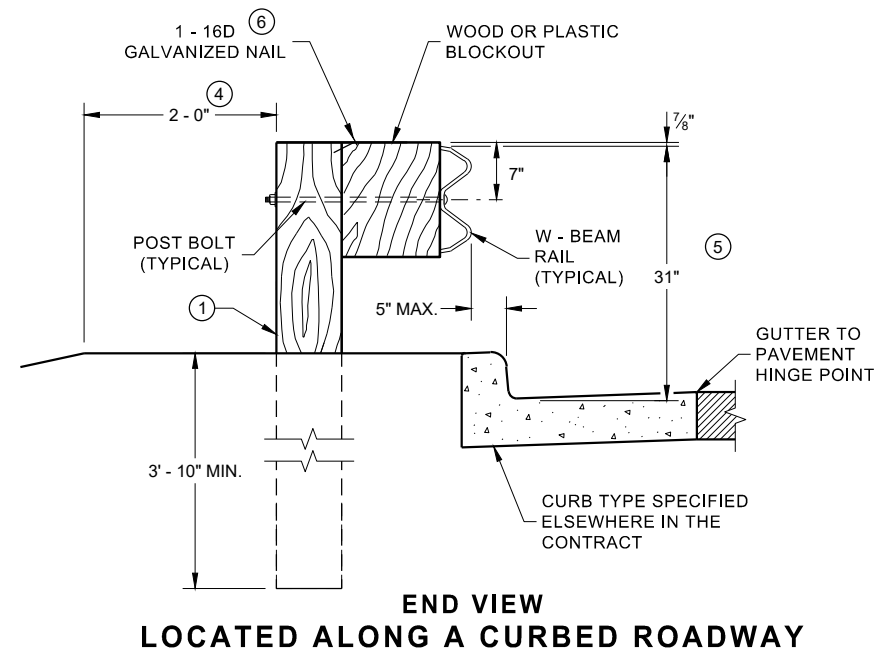
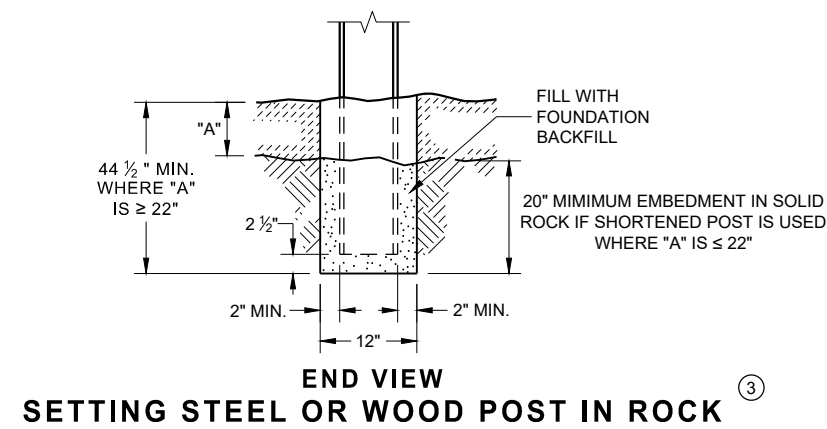
STEEL TUBE

**STEEL PLATE BEAM GUARD
SHORT RADIUS TERMINAL**

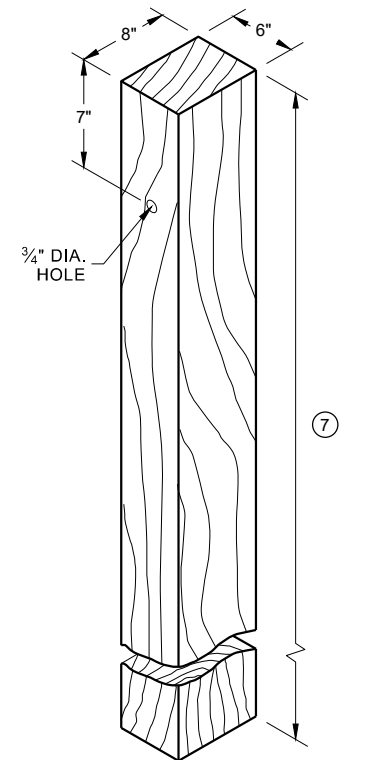
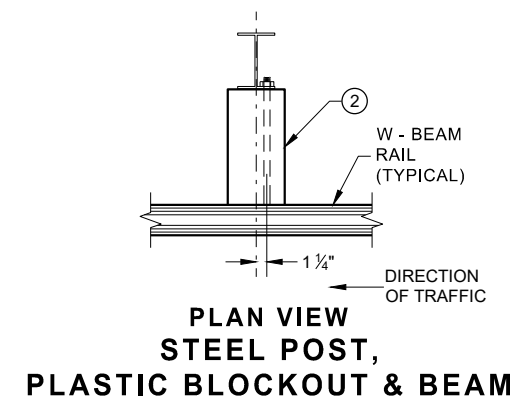
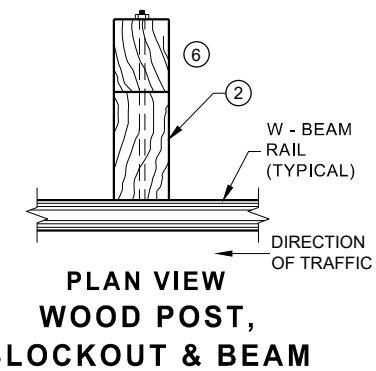
**STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION**

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

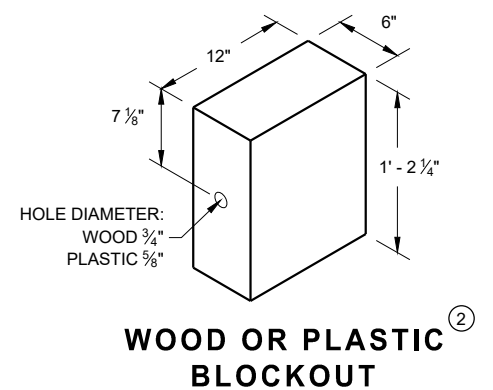
- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL.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



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

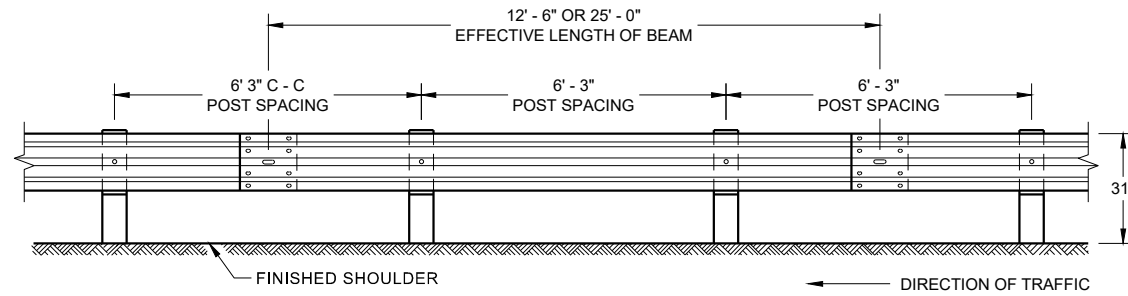


WOOD POST (6" X 8") NOMINAL ⁽¹⁾

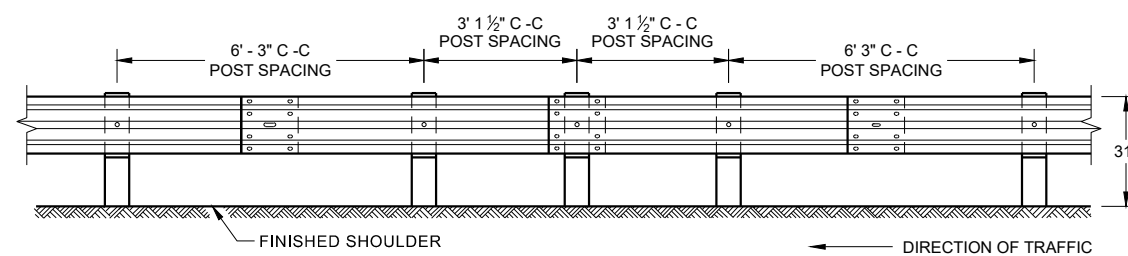


**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

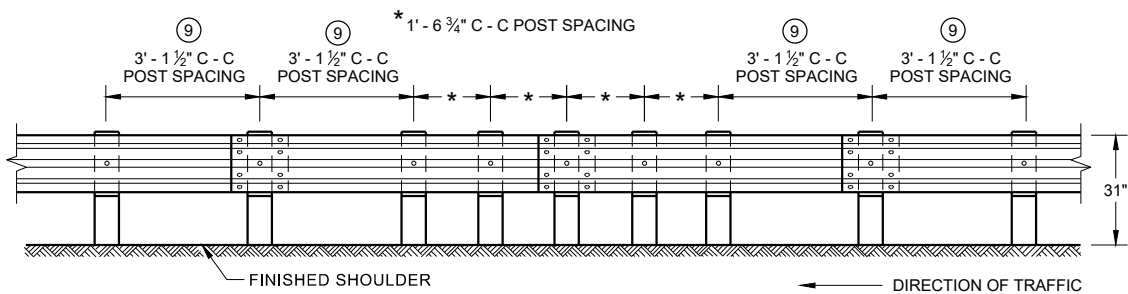
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



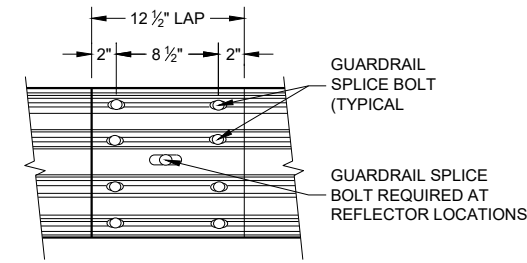
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



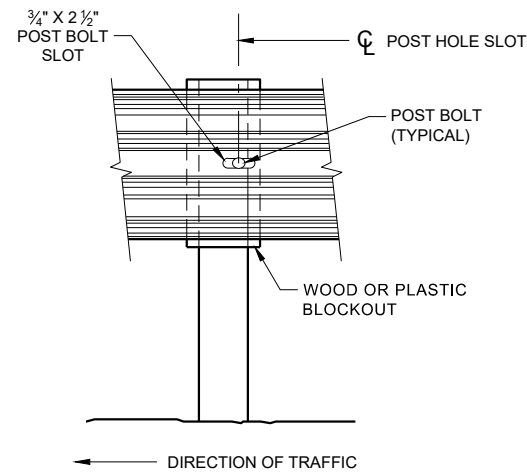
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



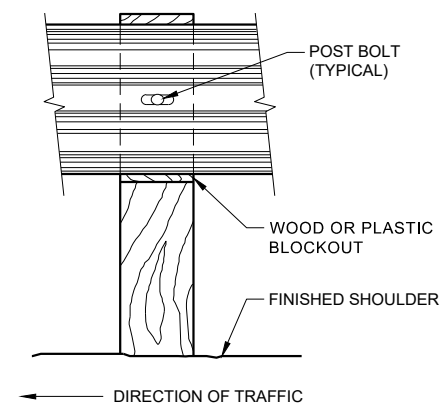
**FRONT VIEW
QUARTER POST SPACING (QS)**



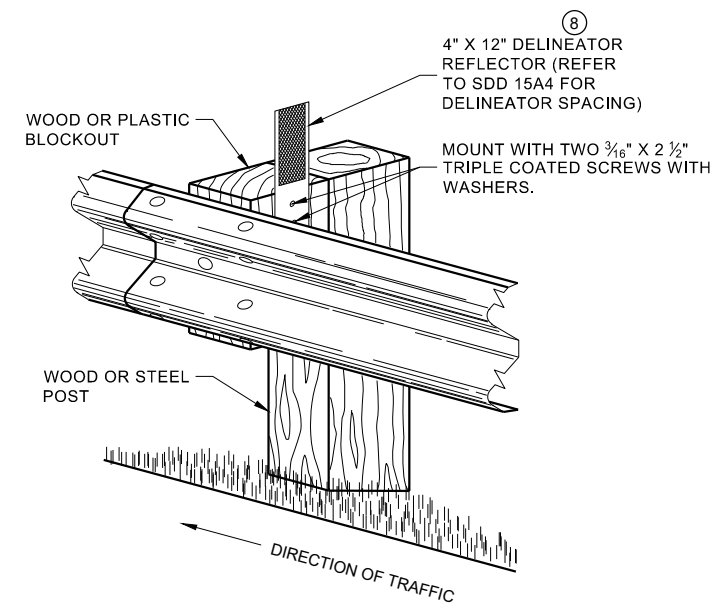
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



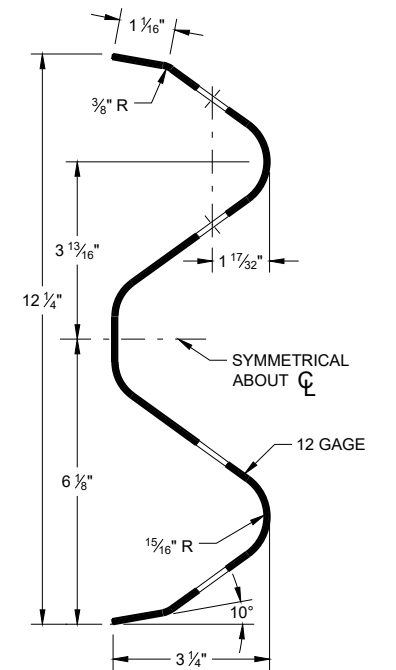
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

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.

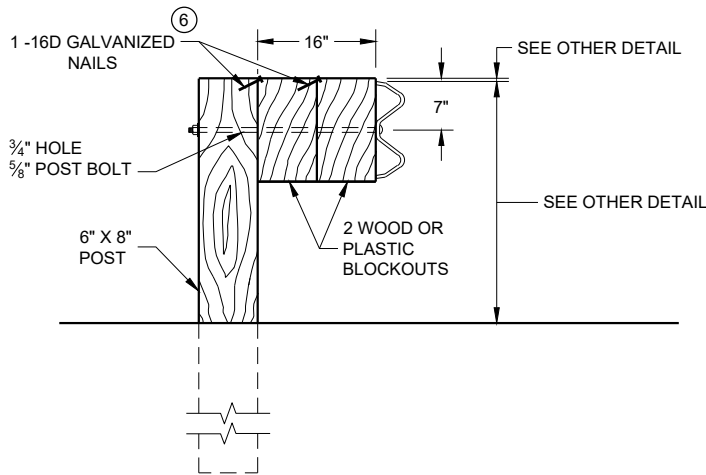
GUARD RAIL SPLICE BOLTS ARE A 3/4" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

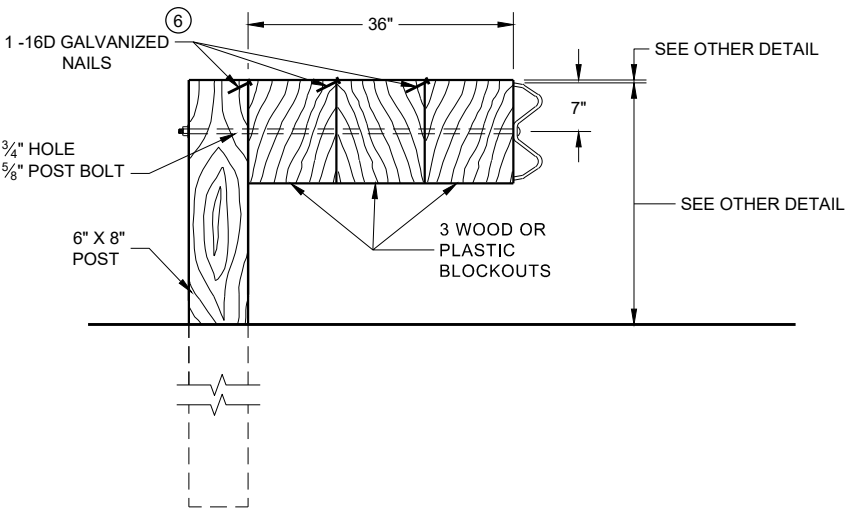
**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

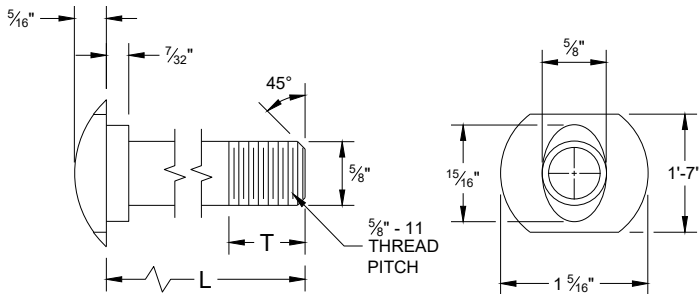
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



DETAIL FOR 36" BLOCKOUT DEPTH

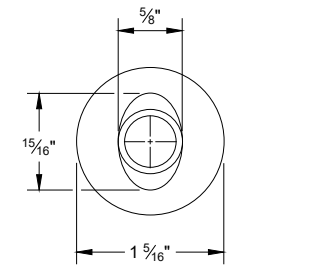
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT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

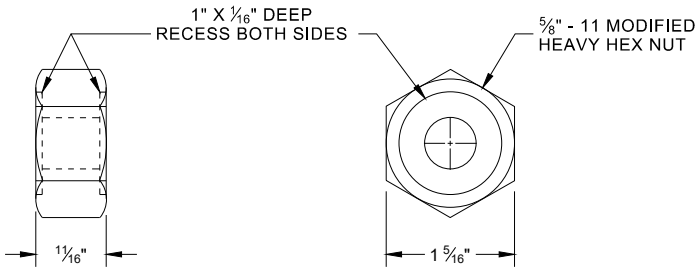


POST BOLT TABLE

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"

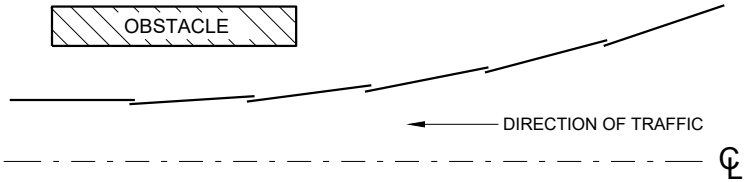


ALTERNATE BOLT HEAD

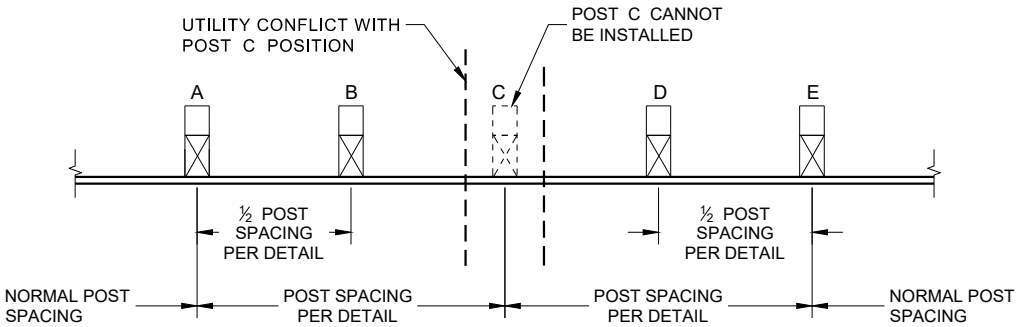


POST BOLT, SPLICE BOLT AND RECESS NUT

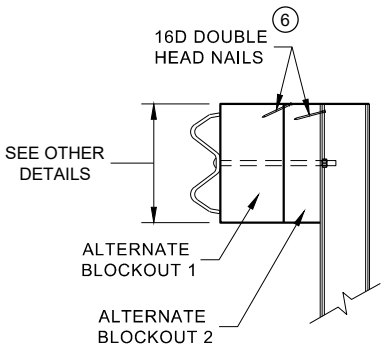
- 6 WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



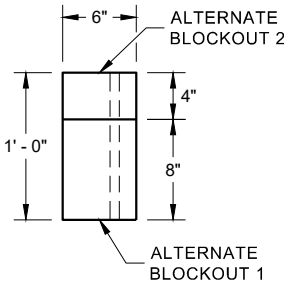
PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



SIDE VIEW

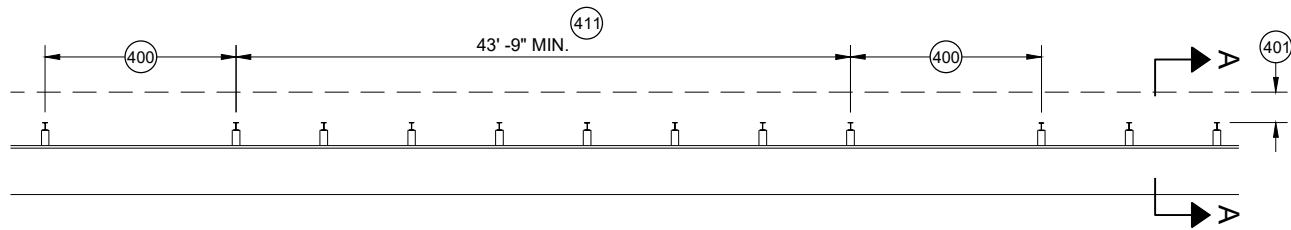


PLAN VIEW

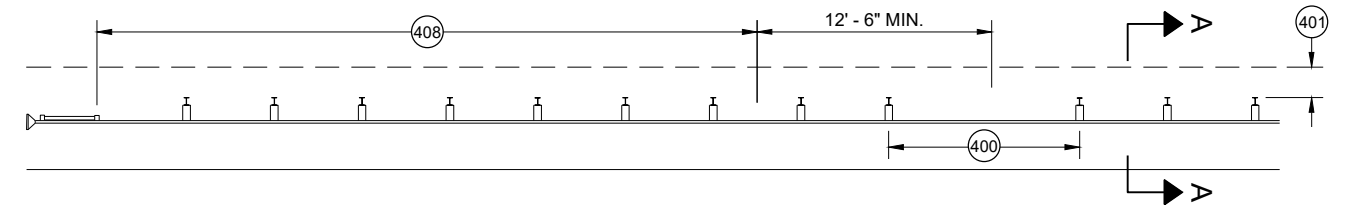
ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

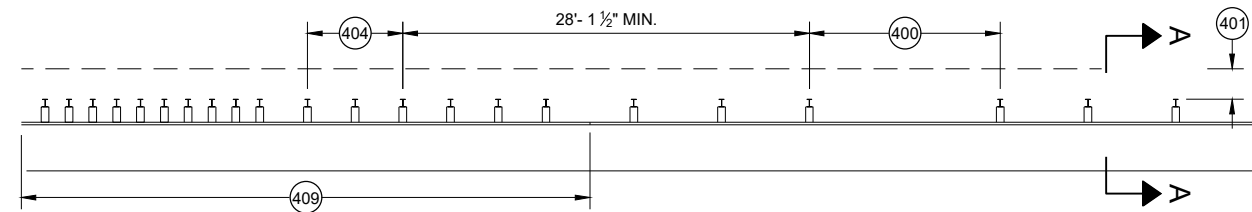
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



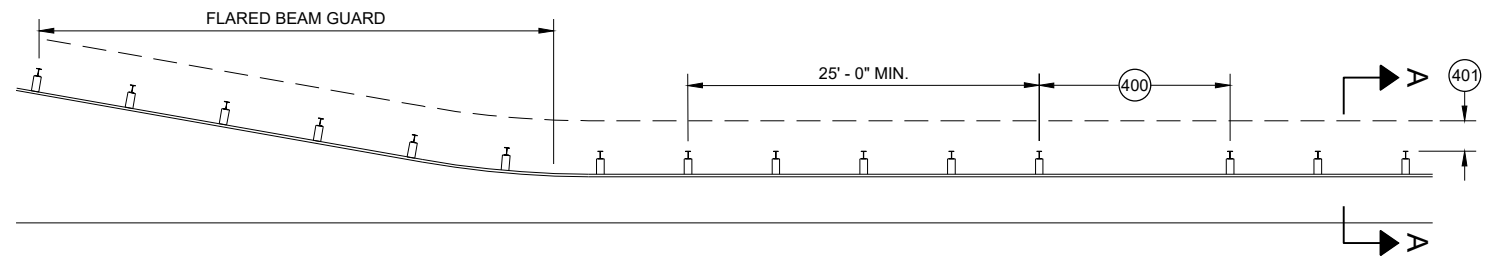
MISSING POST IN MGS GUARDRAIL



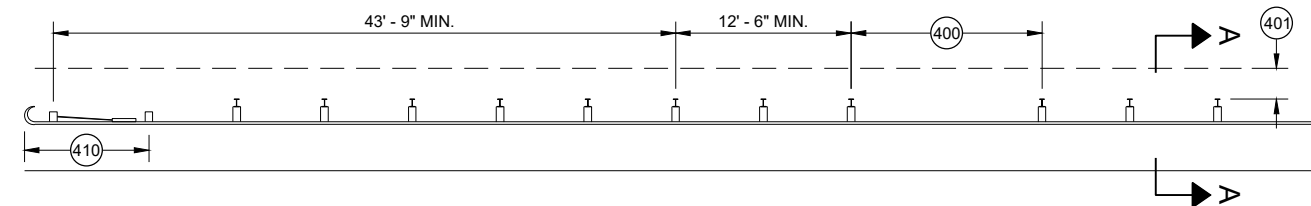
MISSING POST IN MGS GUARDRAIL NEAR EAT



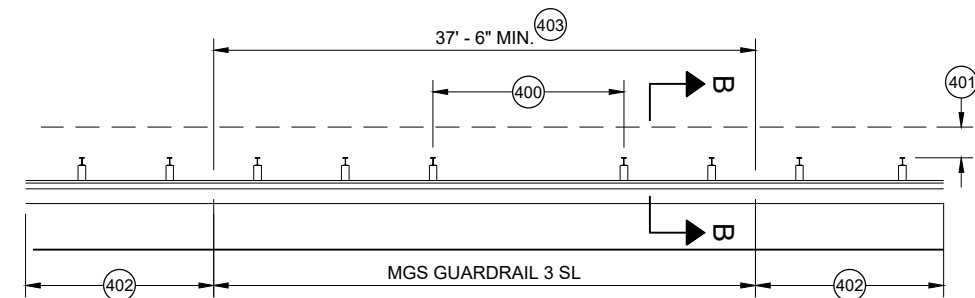
MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD

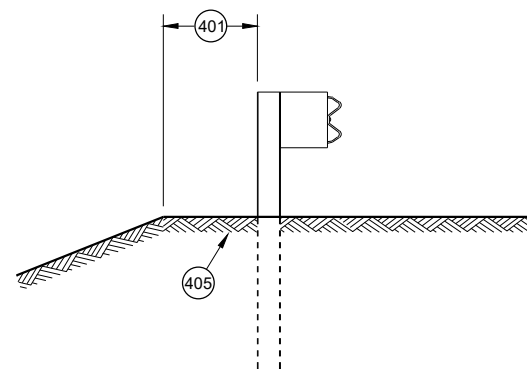


MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL

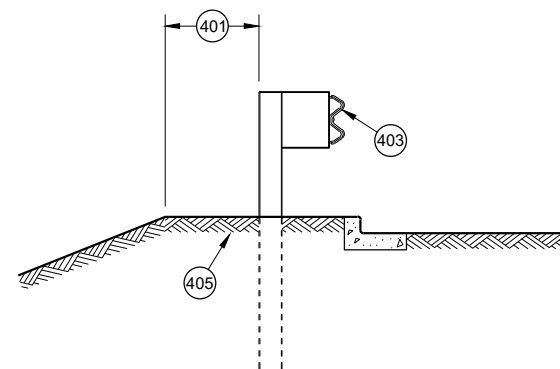


MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)

- (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

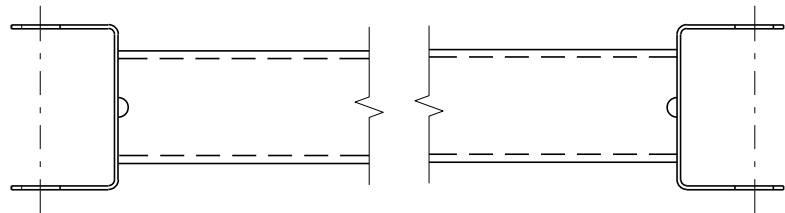
- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
- (C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS.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

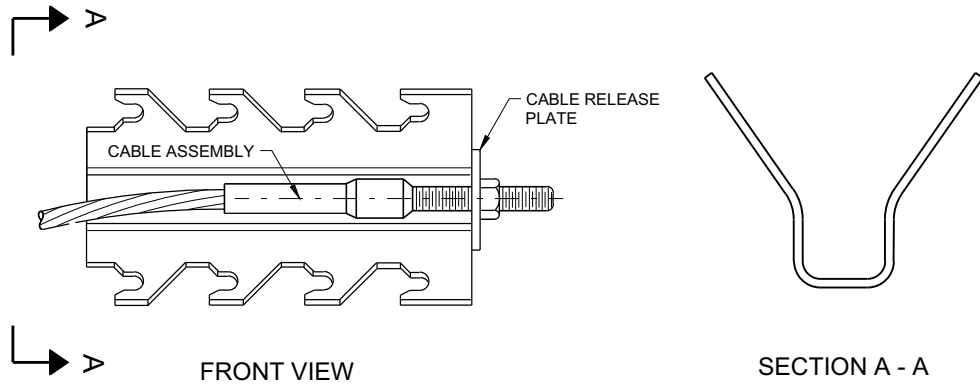


STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

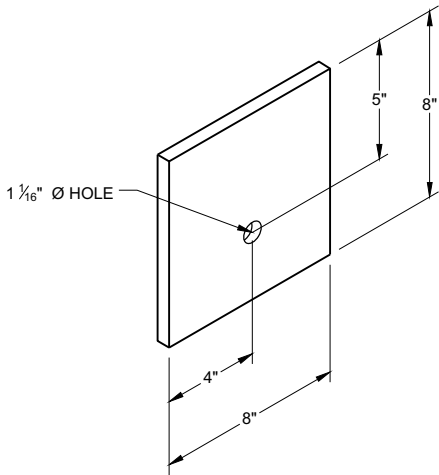


GENERIC GROUND STRUT 9 E

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



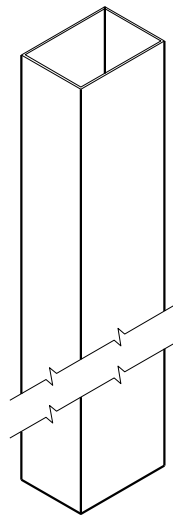
GENERIC ANCHOR CABLE BOX 9 E



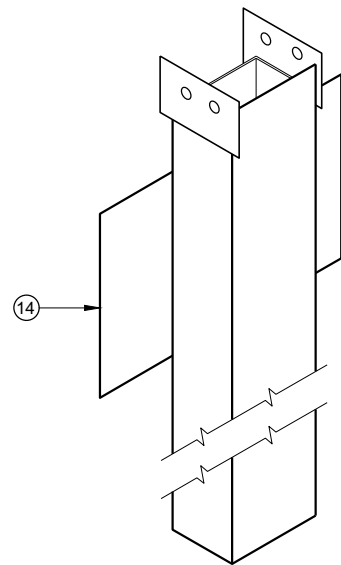
BEARING PLATE 6 E

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

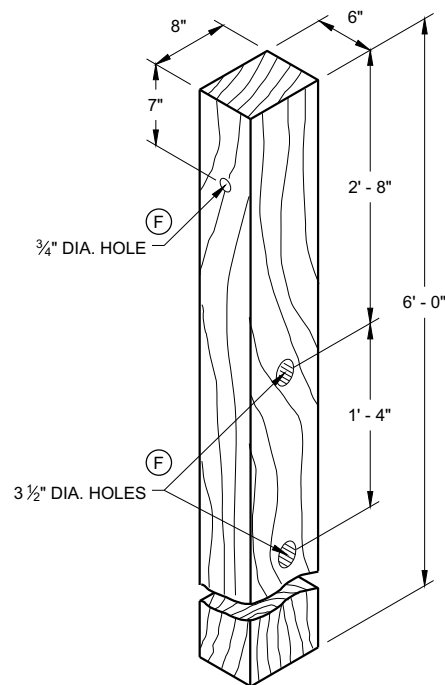
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



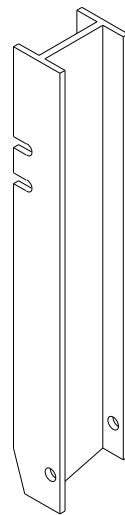
UPPER POST NO. 1 ⁽¹⁾ (E)



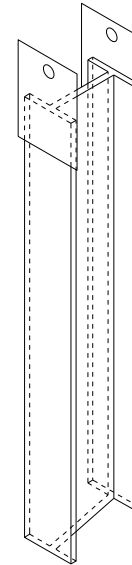
LOWER POST NO. 1 ⁽²⁾ (E)



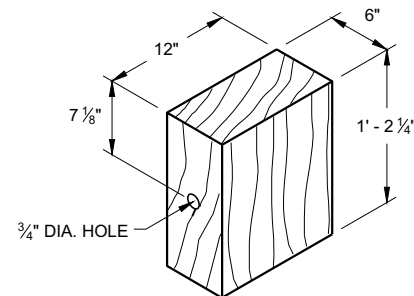
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



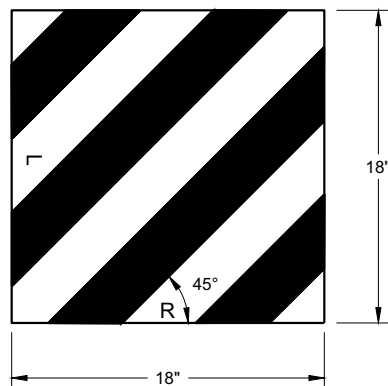
UPPER POST NO. 2 ⁽¹⁵⁾ (E)



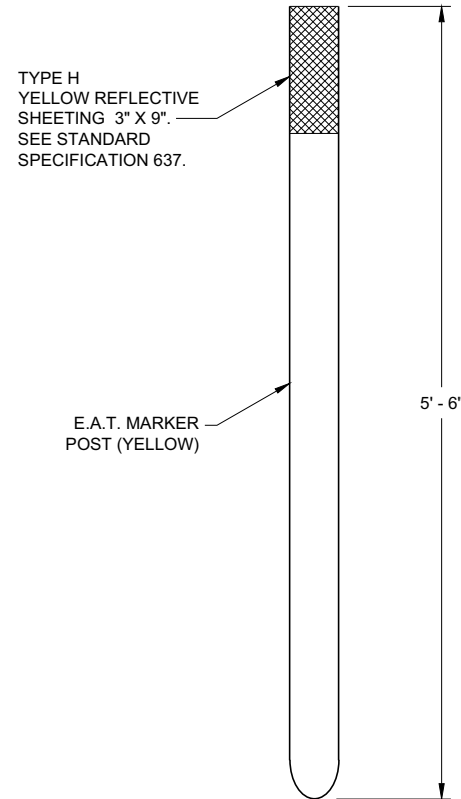
LOWER POST NO. 2 ⁽¹⁶⁾ (E)



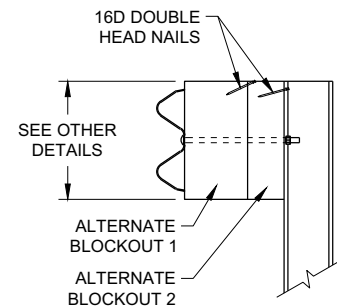
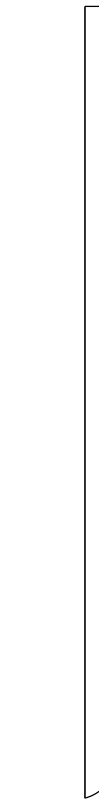
WOOD BLOCKOUT ⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



REFLECTIVE SHEETING DETAIL ^(E)

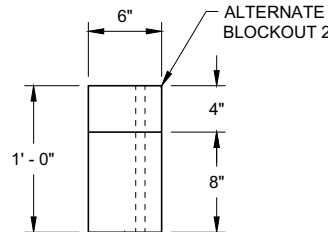


E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

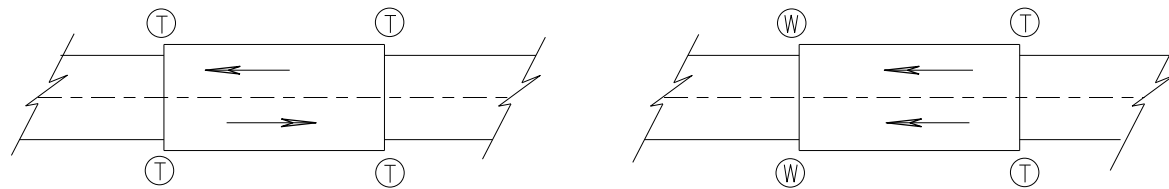


TOP VIEW

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



TWO WAY TRAFFIC

ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

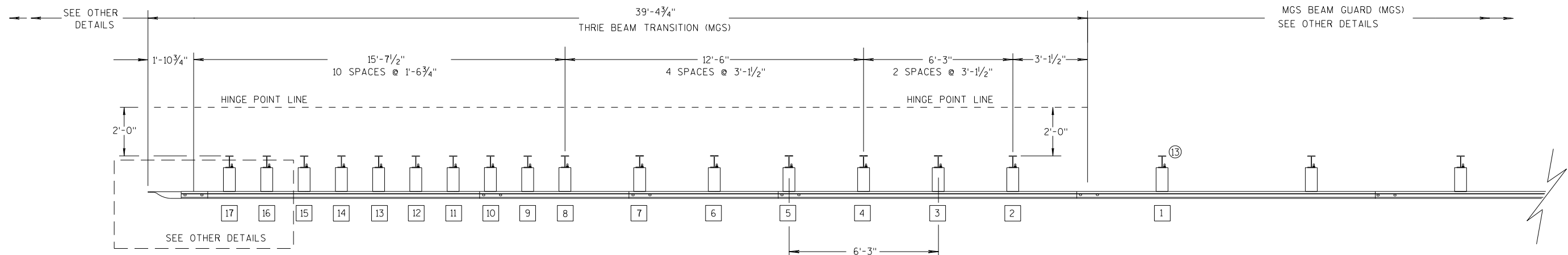
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

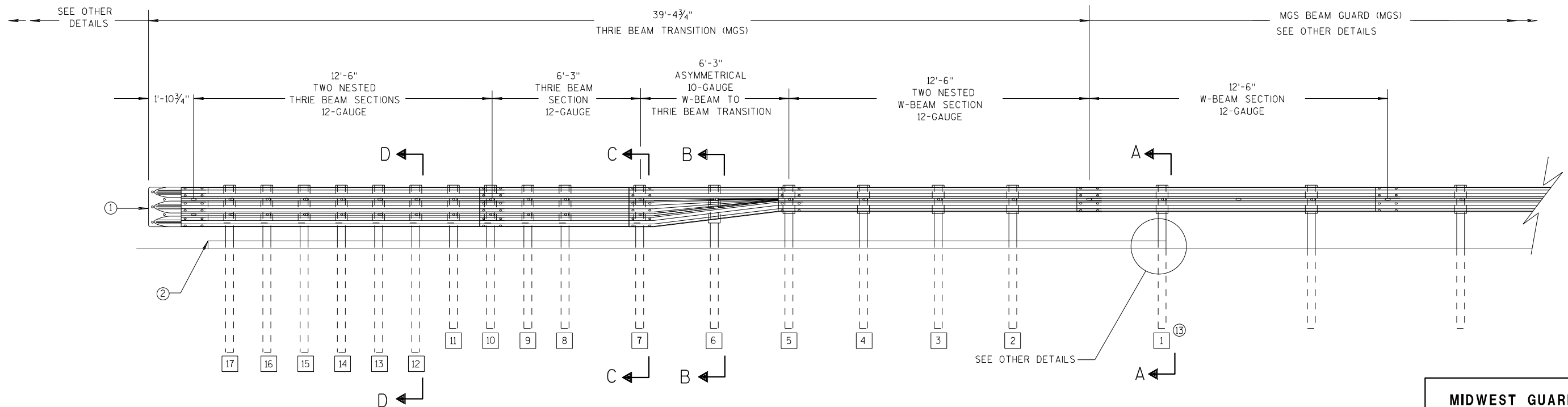
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

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



PLAN VIEW



ELEVATION VIEW

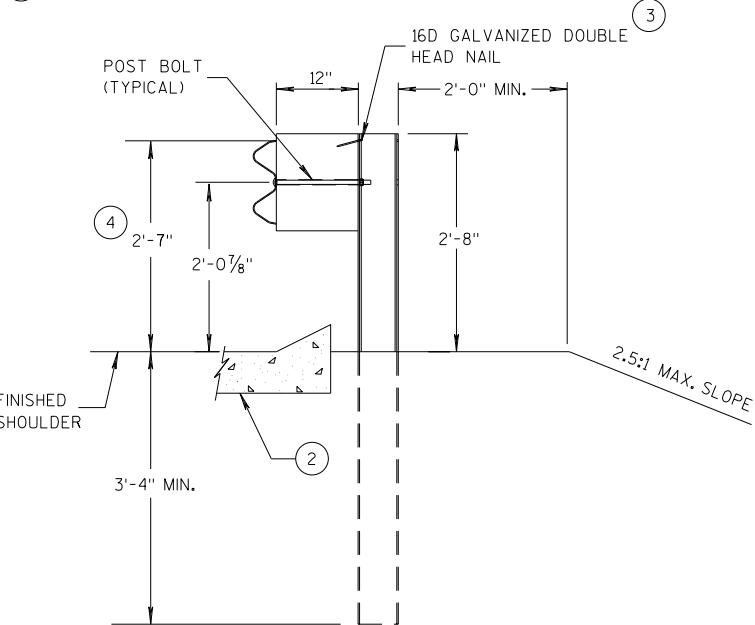
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

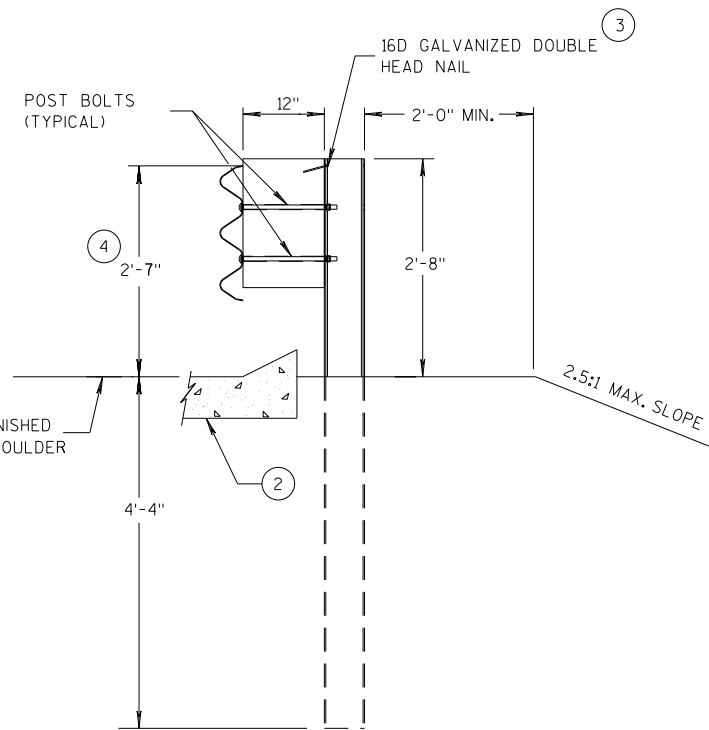
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

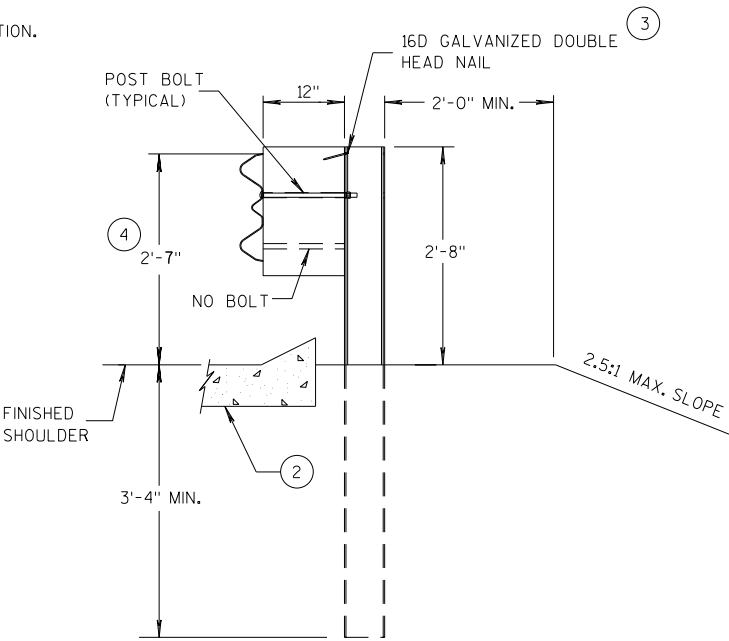
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm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



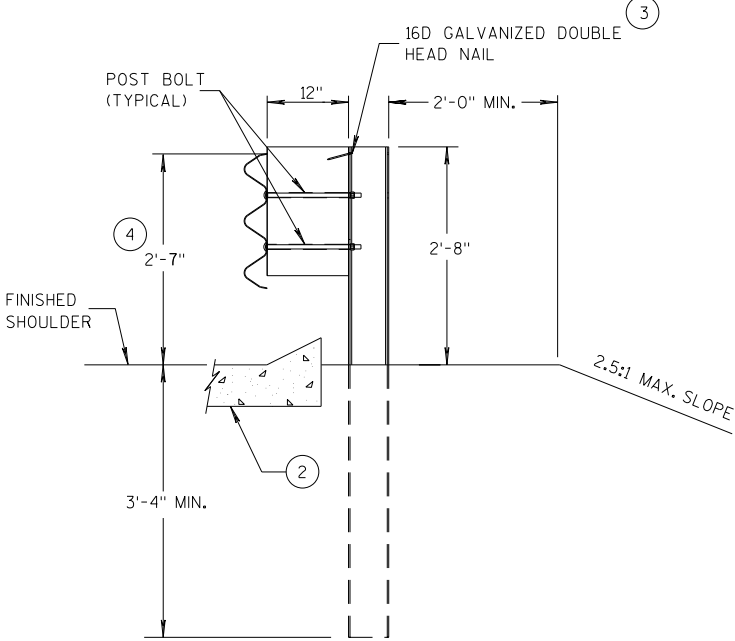
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

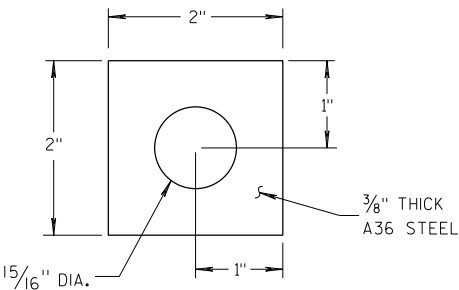
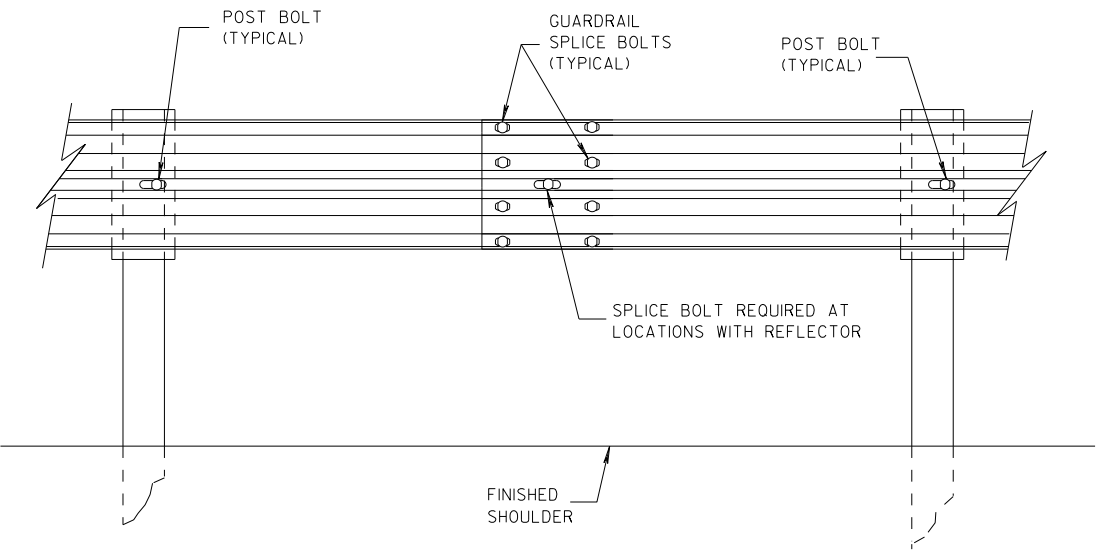
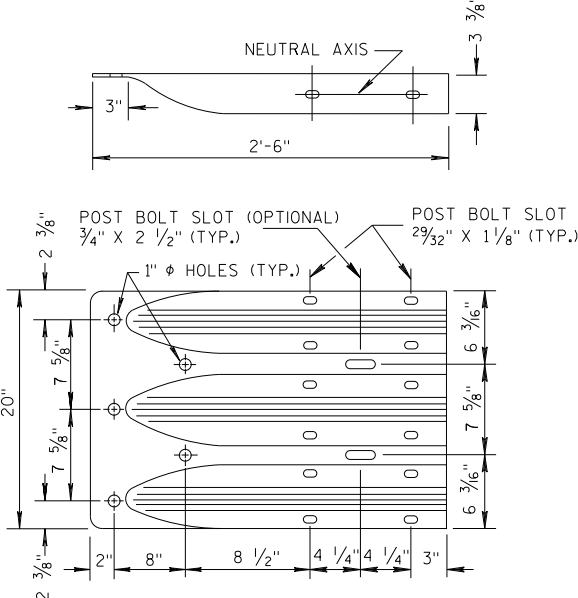


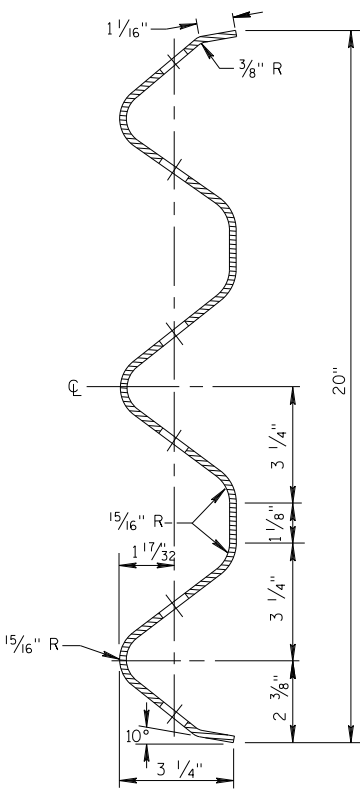
PLATE WASHER DETAIL



SPLICE DETAIL



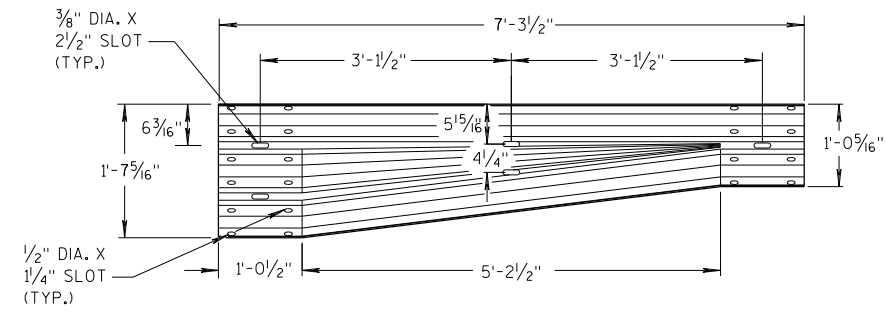
THRIE BEAM
TERMINAL CONNECTOR



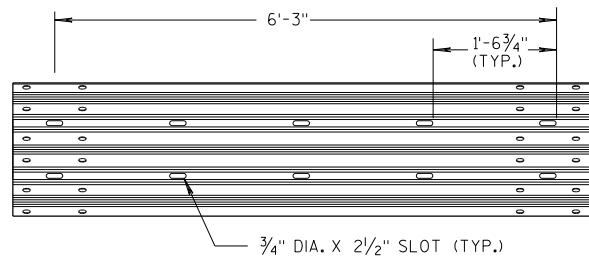
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

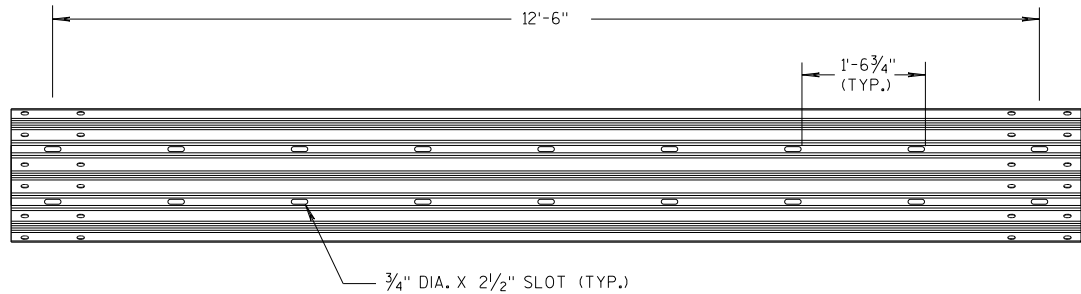
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



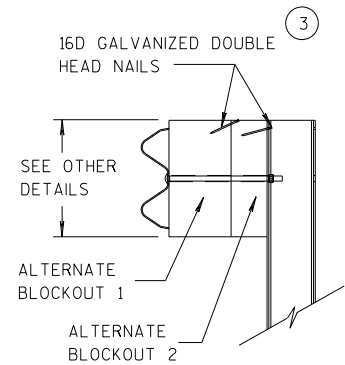
W-BEAM TO THRIE BEAM TRANSITION SECTION



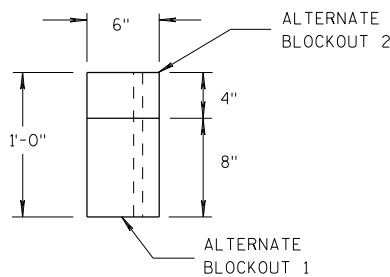
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

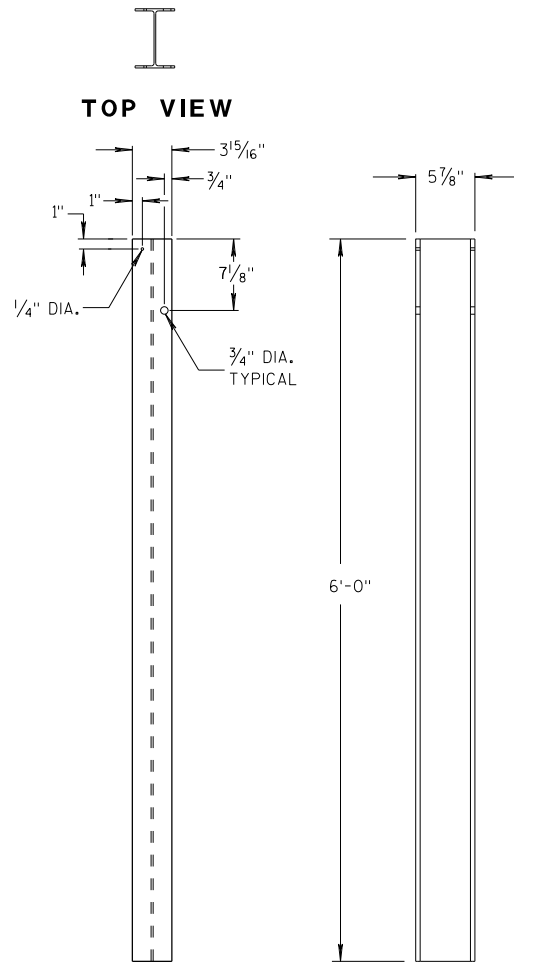


SIDE VIEW



TOP VIEW

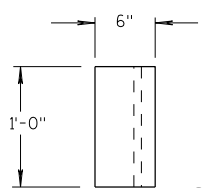
ALTERNATE WOOD BLOCKOUT DETAIL



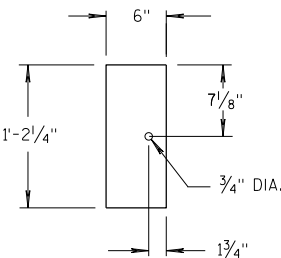
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

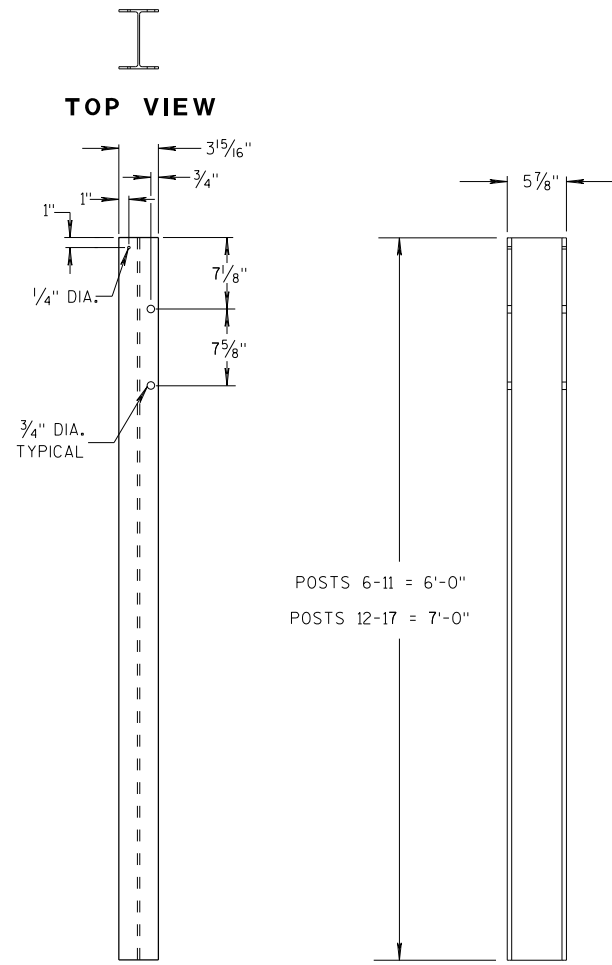


TOP VIEW



FRONT VIEW

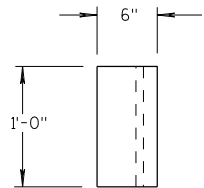
BLOCKOUT POSTS 1-5



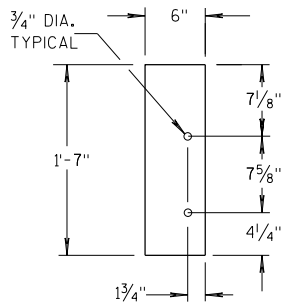
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

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

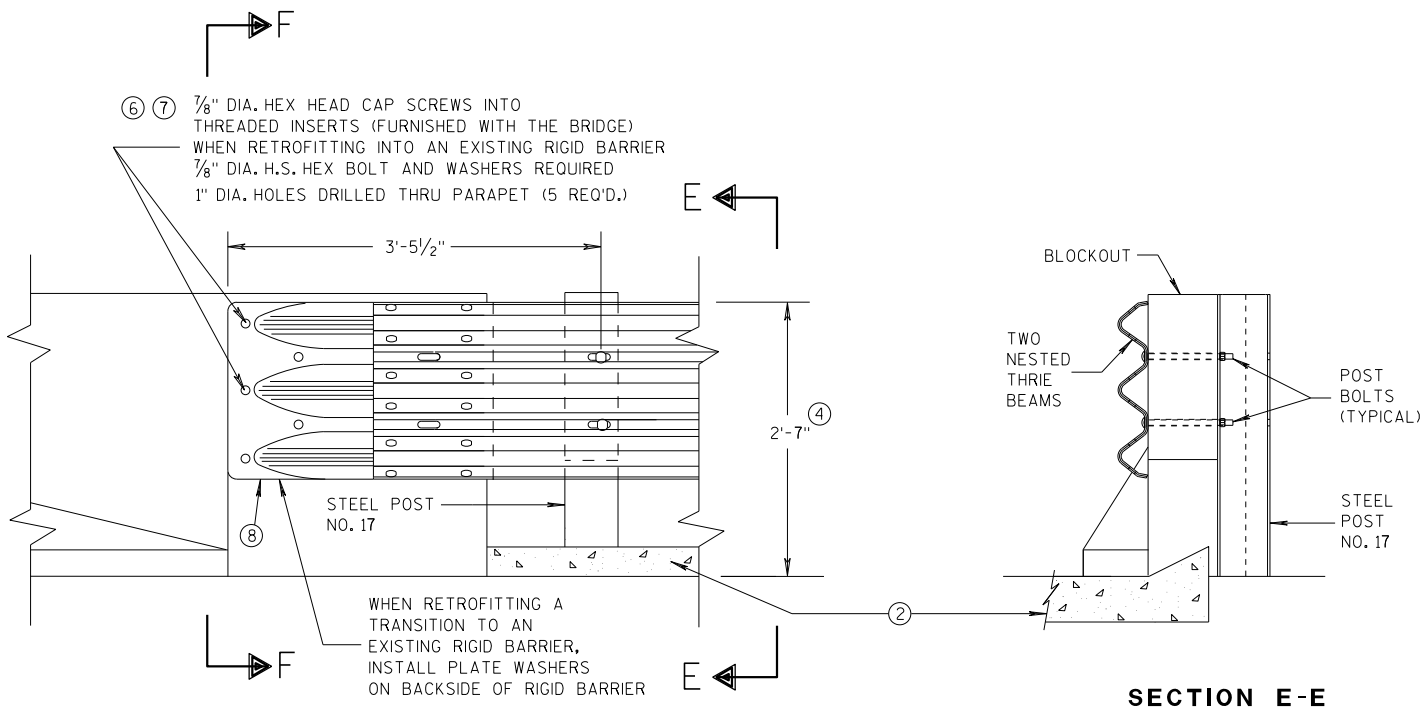
3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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

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

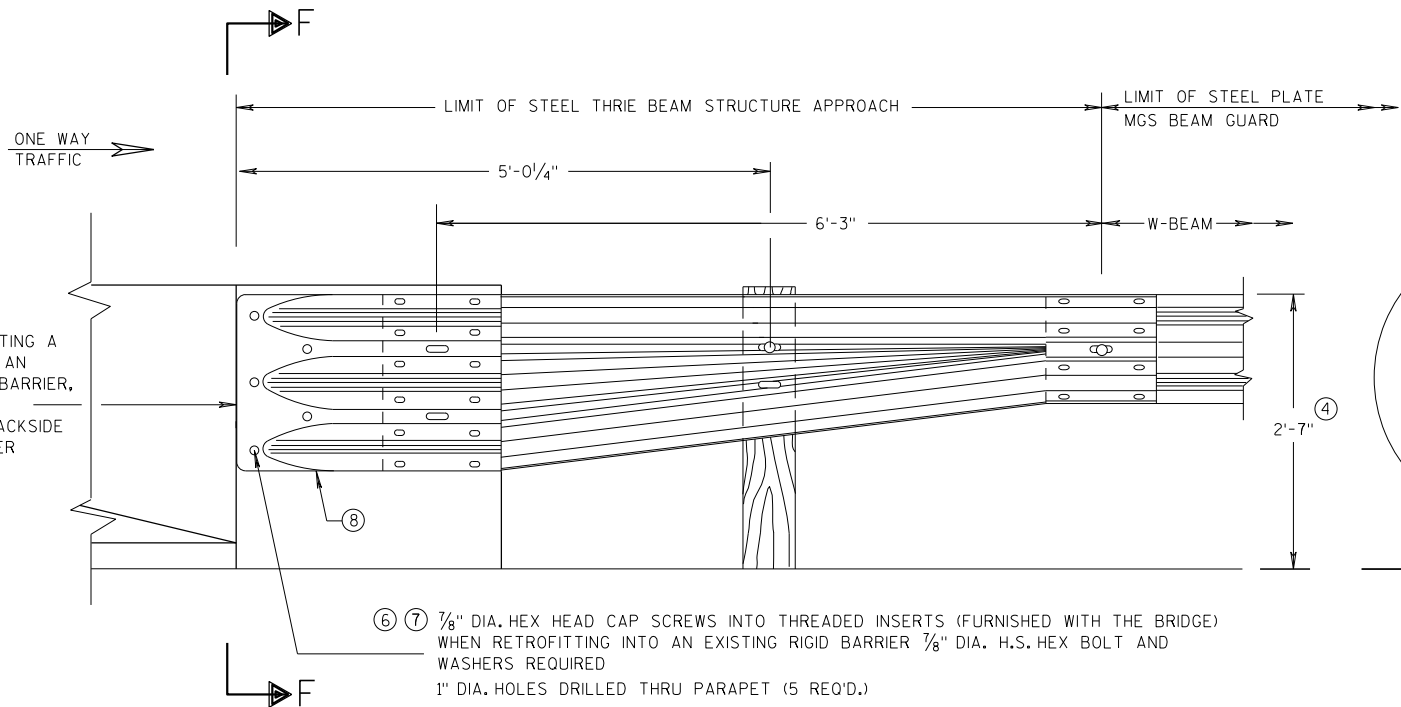
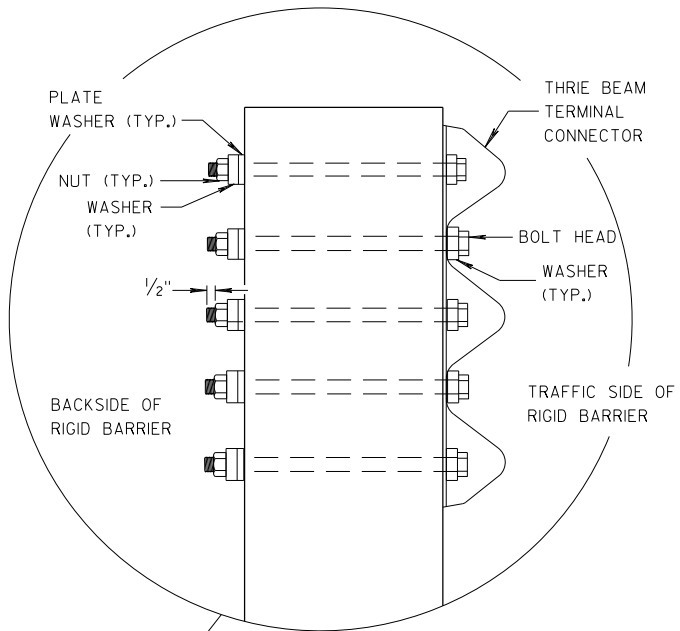
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

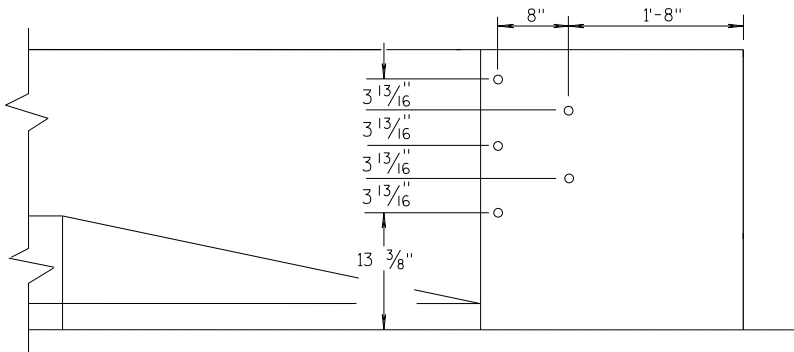


GENERAL NOTES

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



SECTION F-F



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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

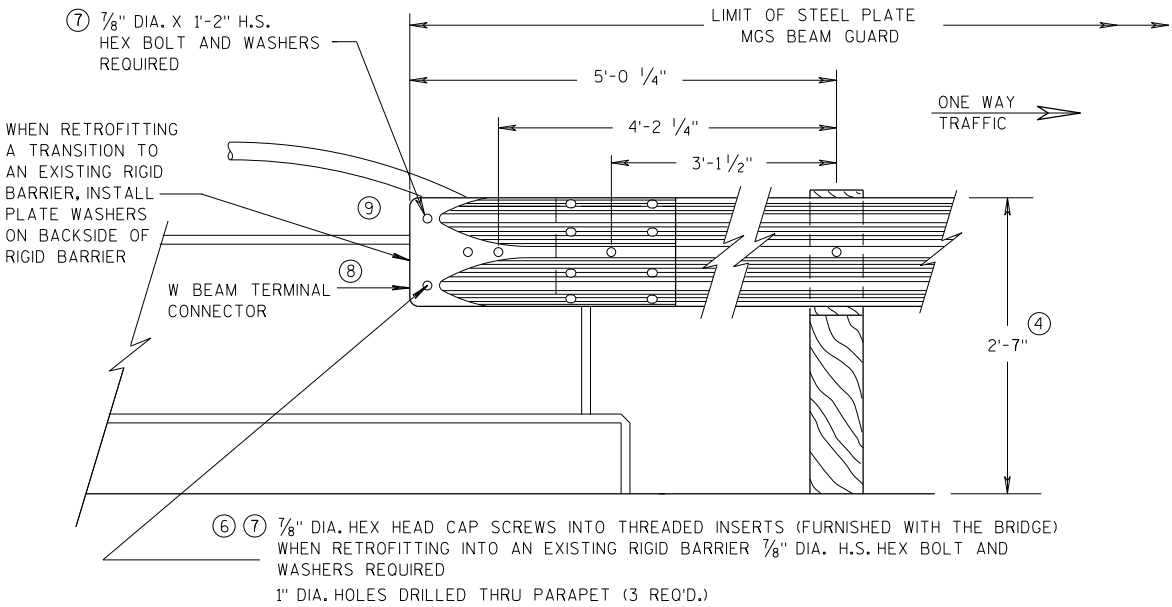
APPROVED
07/2018
DATE
FHWA

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

GENERAL NOTES

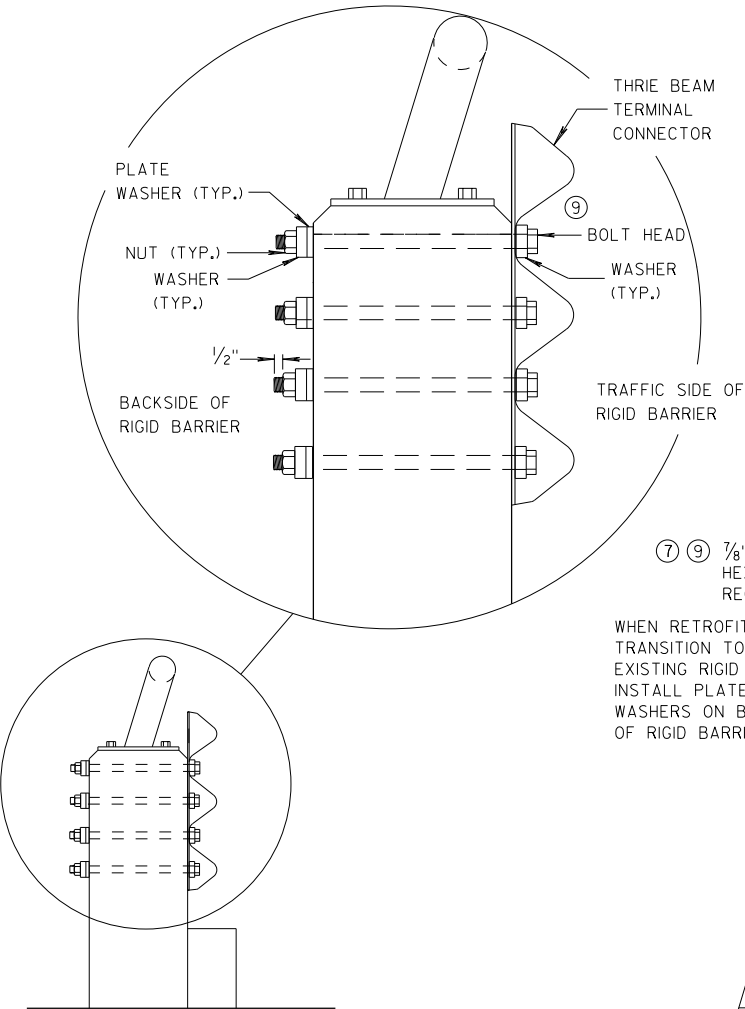
THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

- 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.

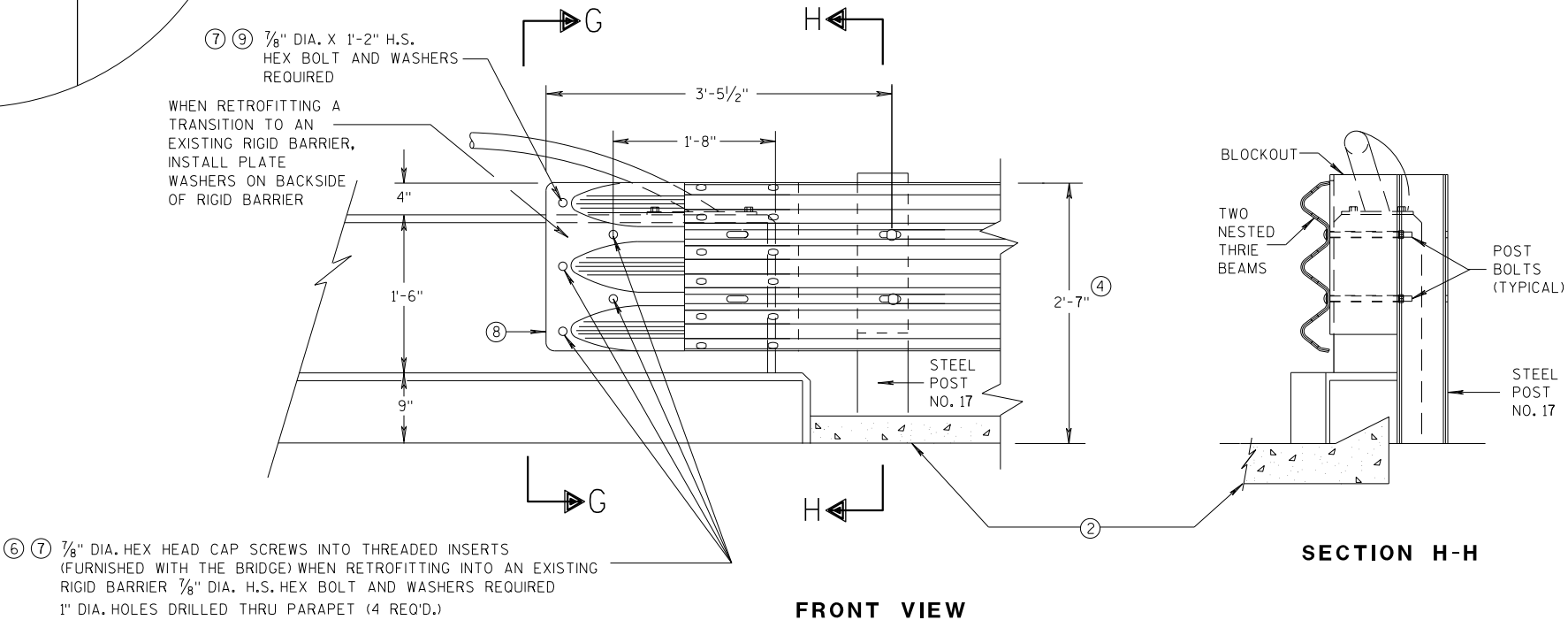


FRONT VIEW

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



SECTION G-G



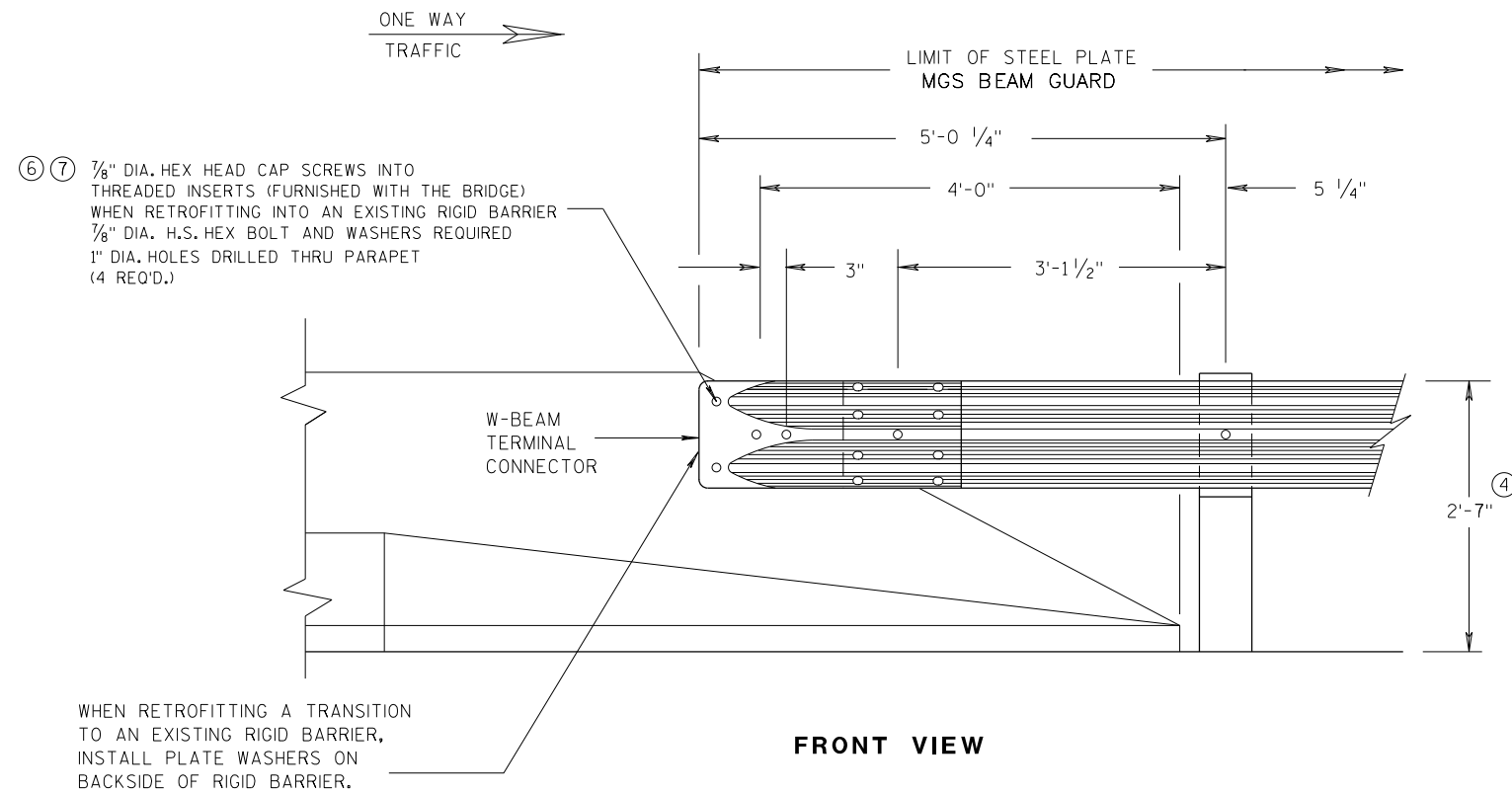
FRONT VIEW

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

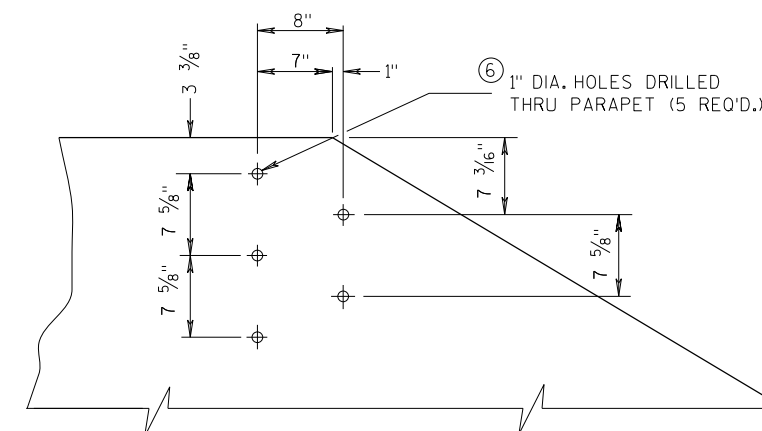
APPROVED
07/2018
DATE
FHWA
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR



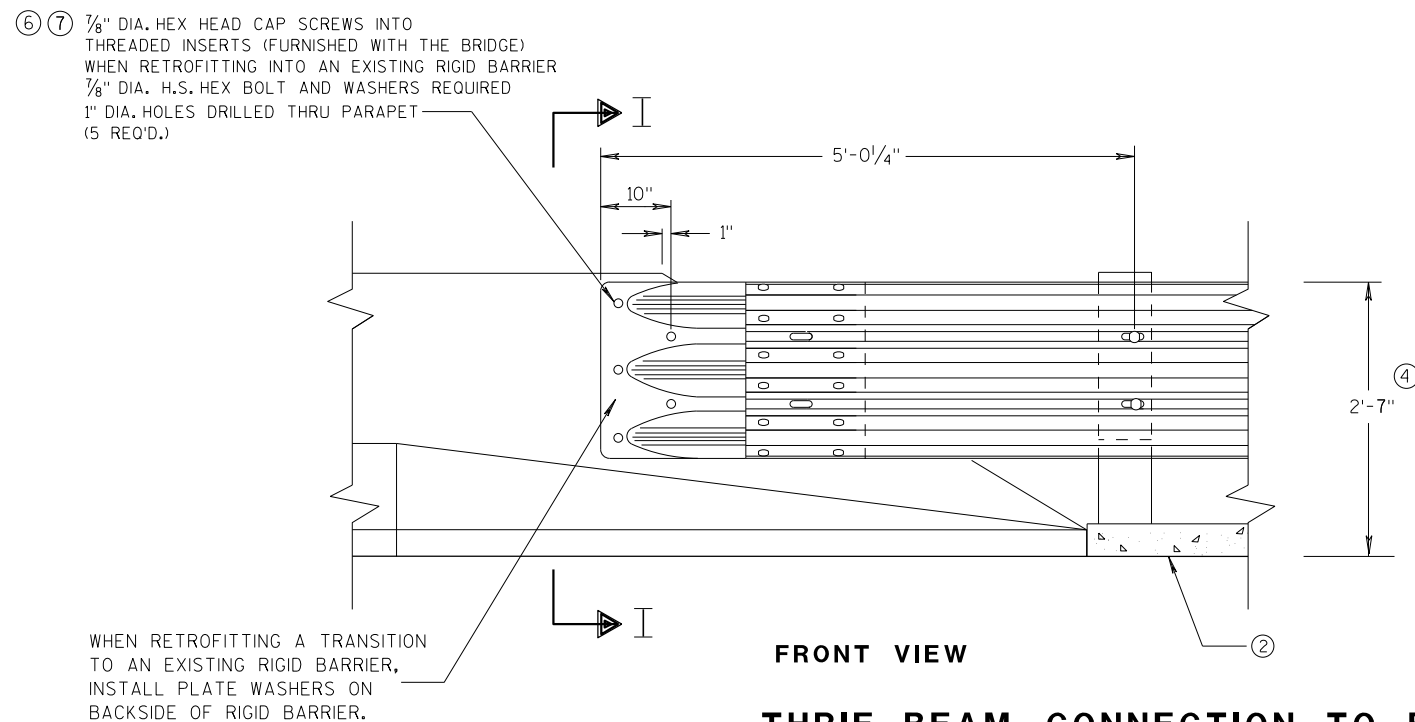
**W BEAM CONNECTION TO
PARAPETS WITH SLOPED ENDS
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)**

GENERAL NOTES

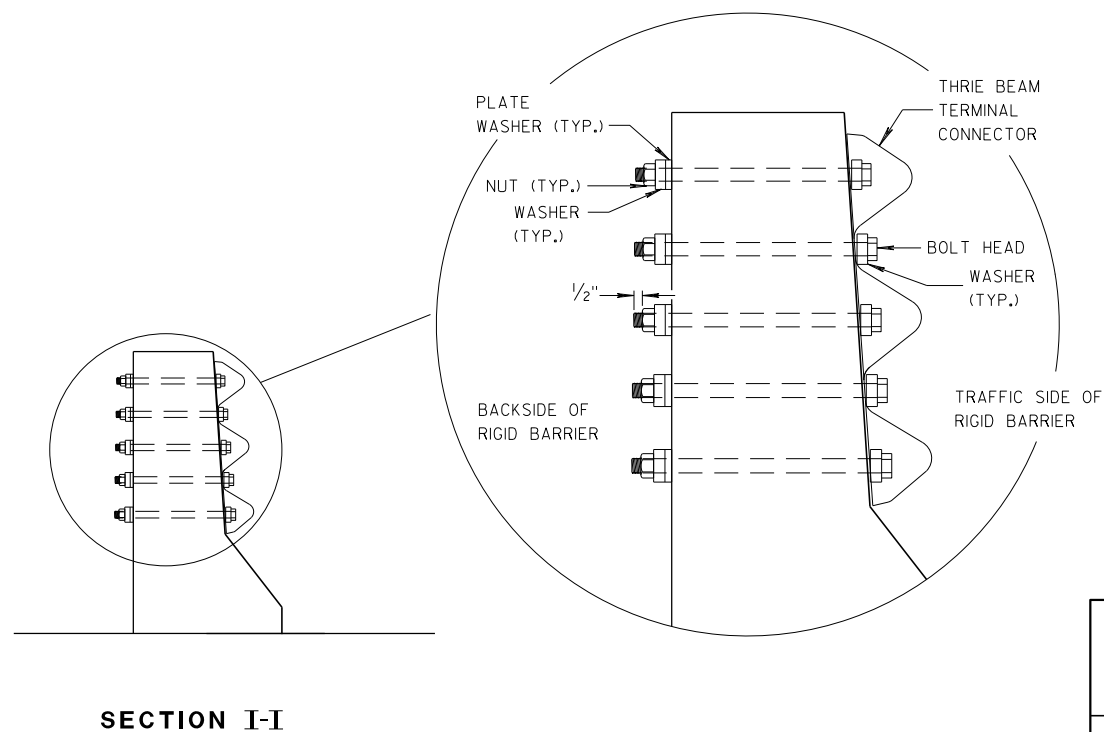
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH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



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



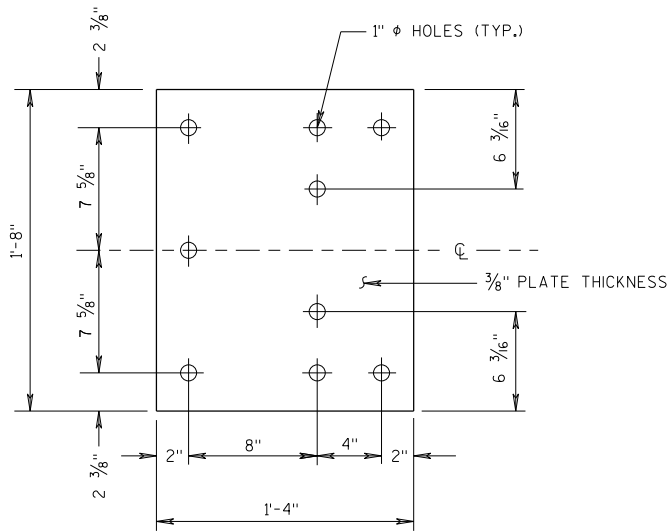
**THRIE BEAM CONNECTION TO BRIDGE
PARAPETS WITH SLOPED ENDS**



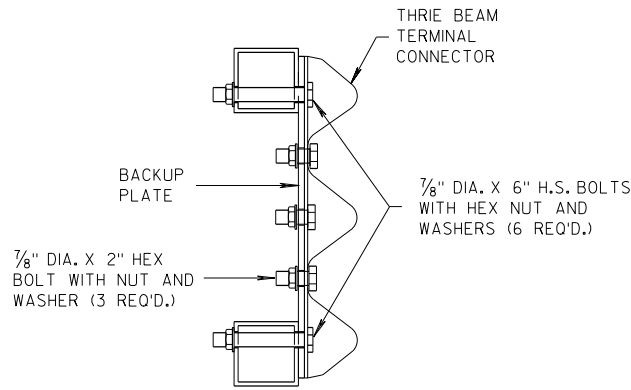
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

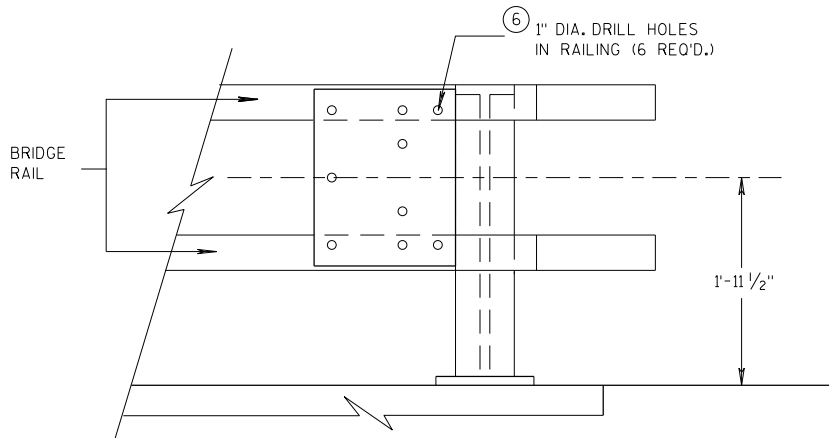
APPROVED
07/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



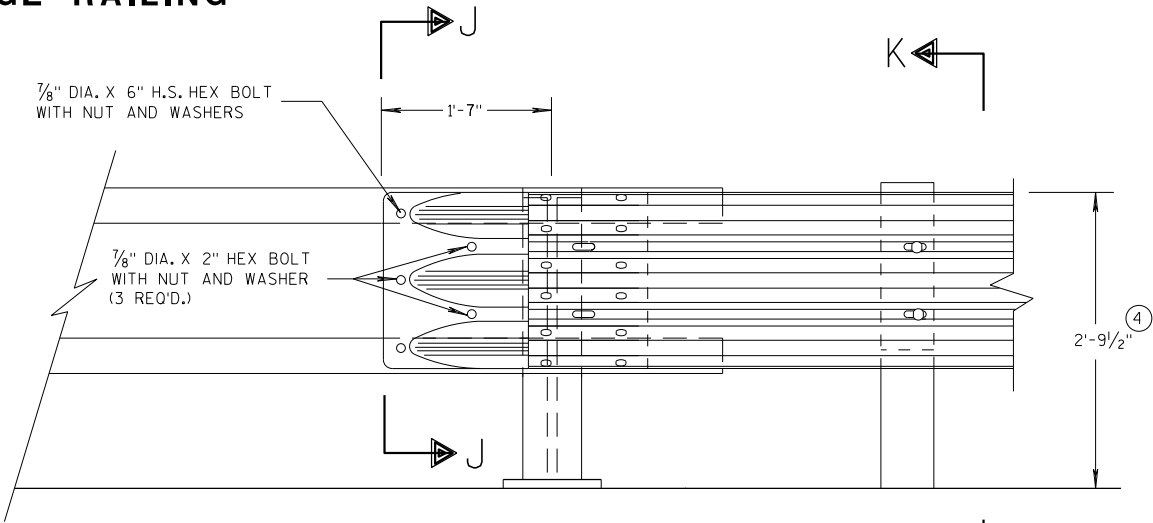
BACK-UP PLATE DETAIL



SECTION J-J

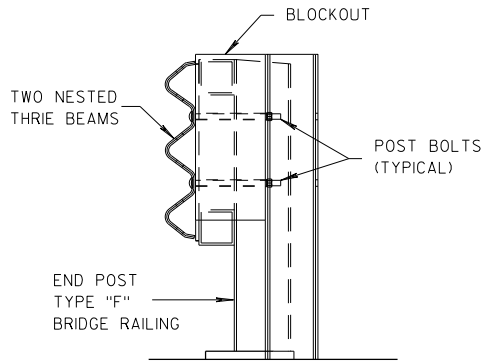


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

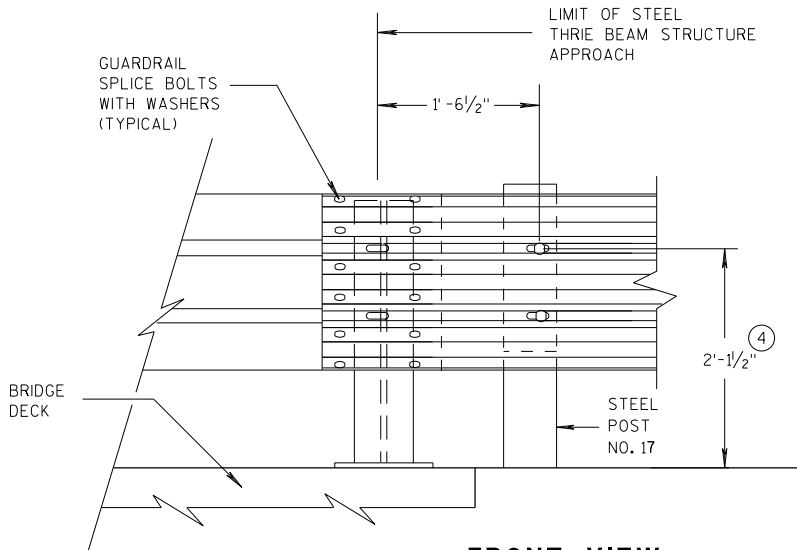
THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



SECTION K-K

GENERAL NOTES

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



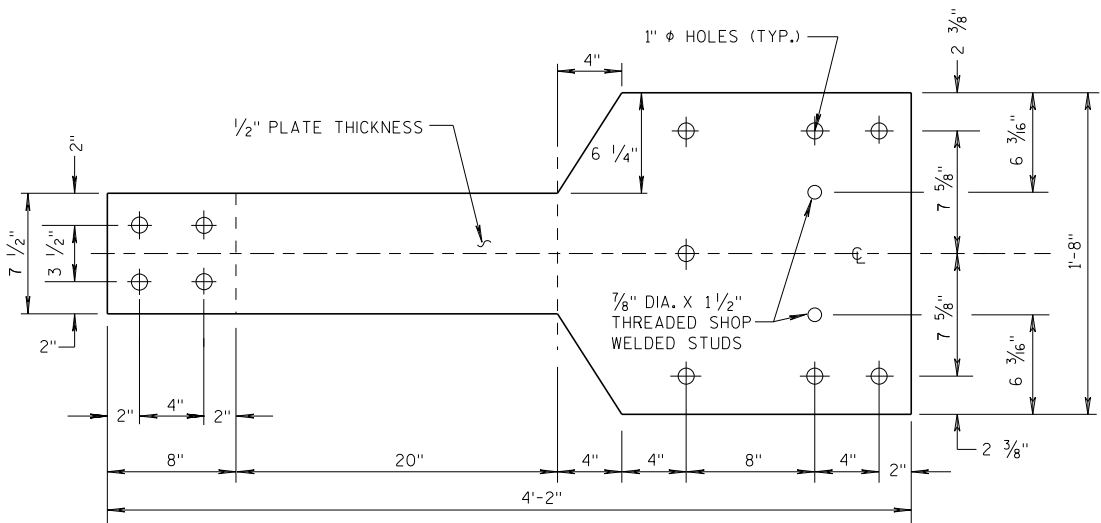
FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

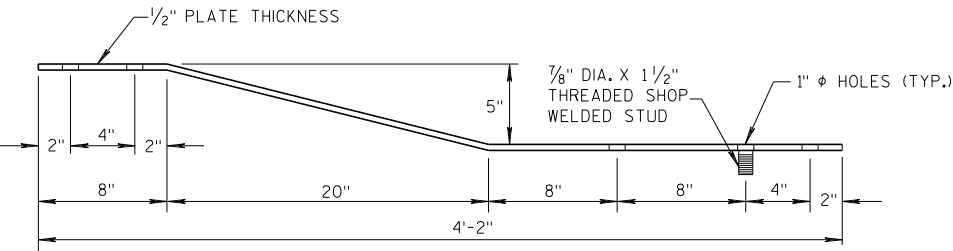
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

GENERAL NOTES

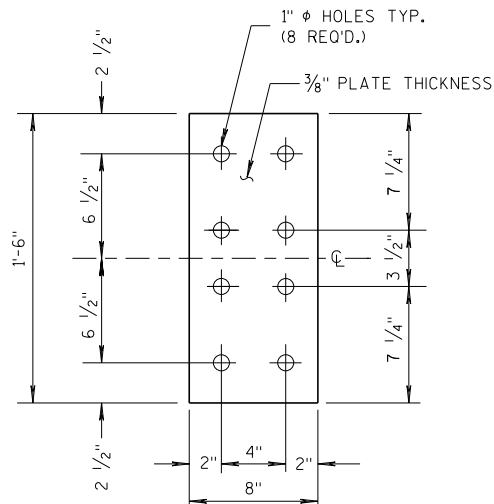
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



FRONT VIEW

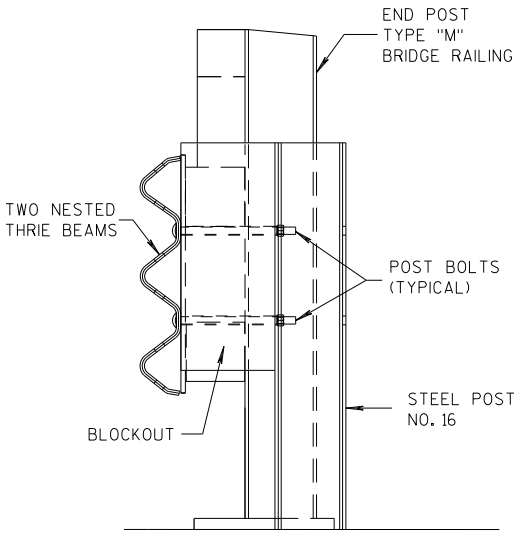


PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"

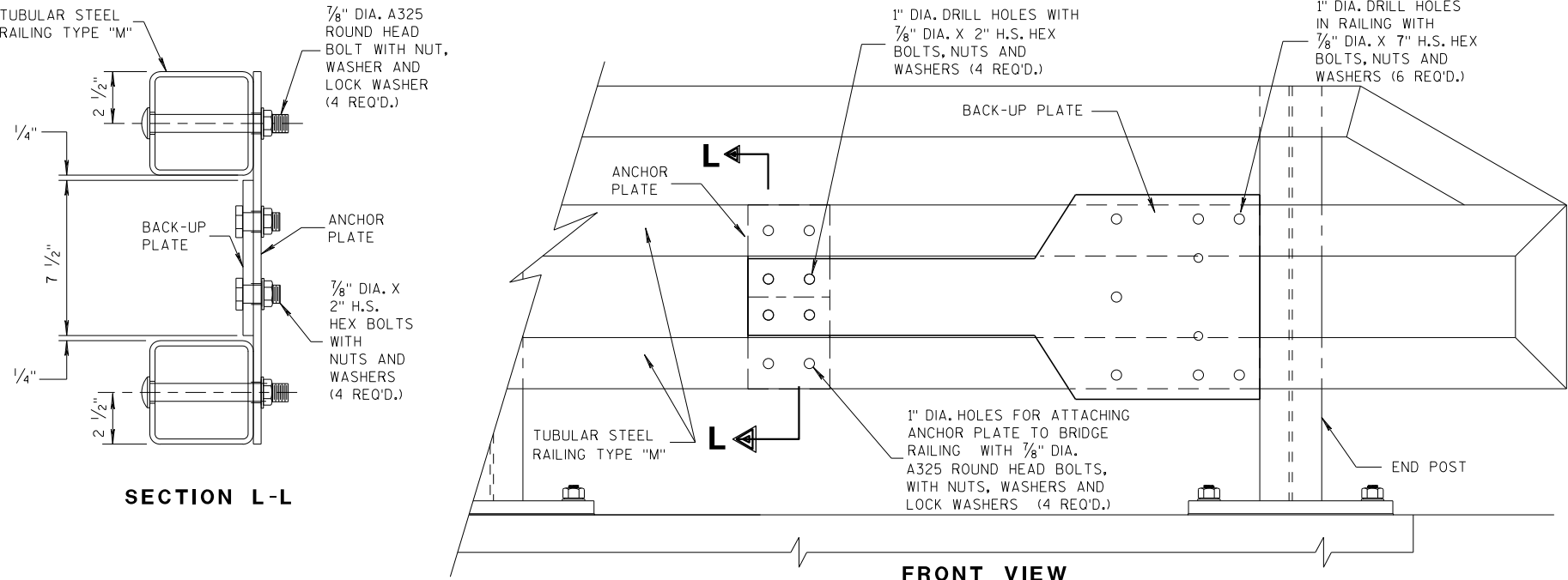


FRONT VIEW

ANCHOR
PLATE DETAIL,
TYPE "M"



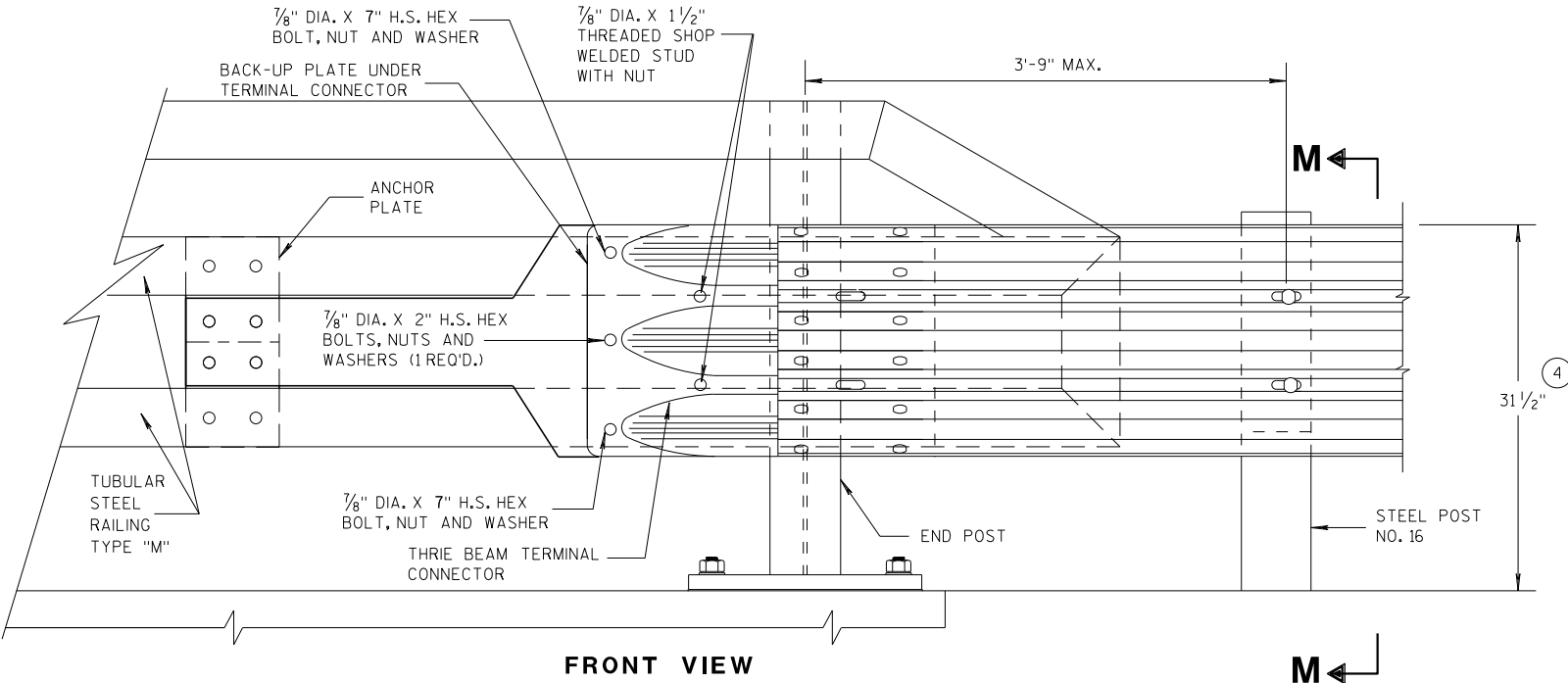
SECTION M-M



SECTION L-L

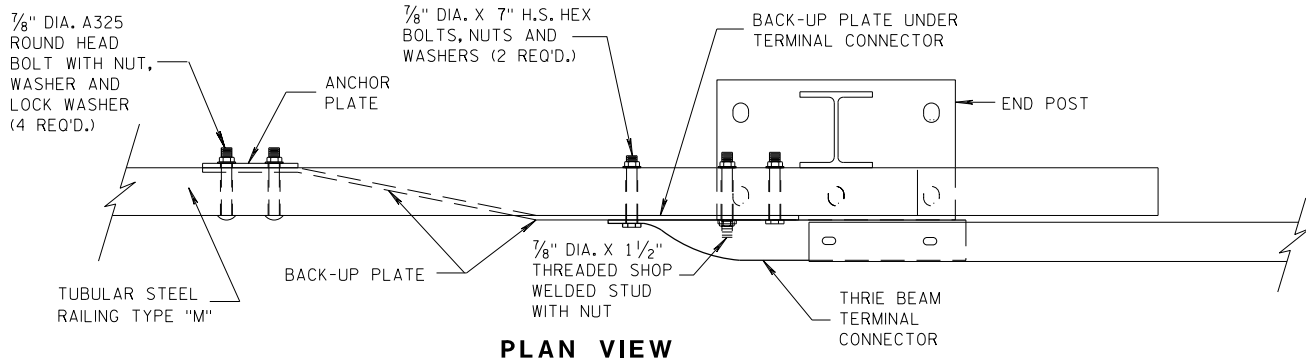
FRONT VIEW

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



FRONT VIEW

M



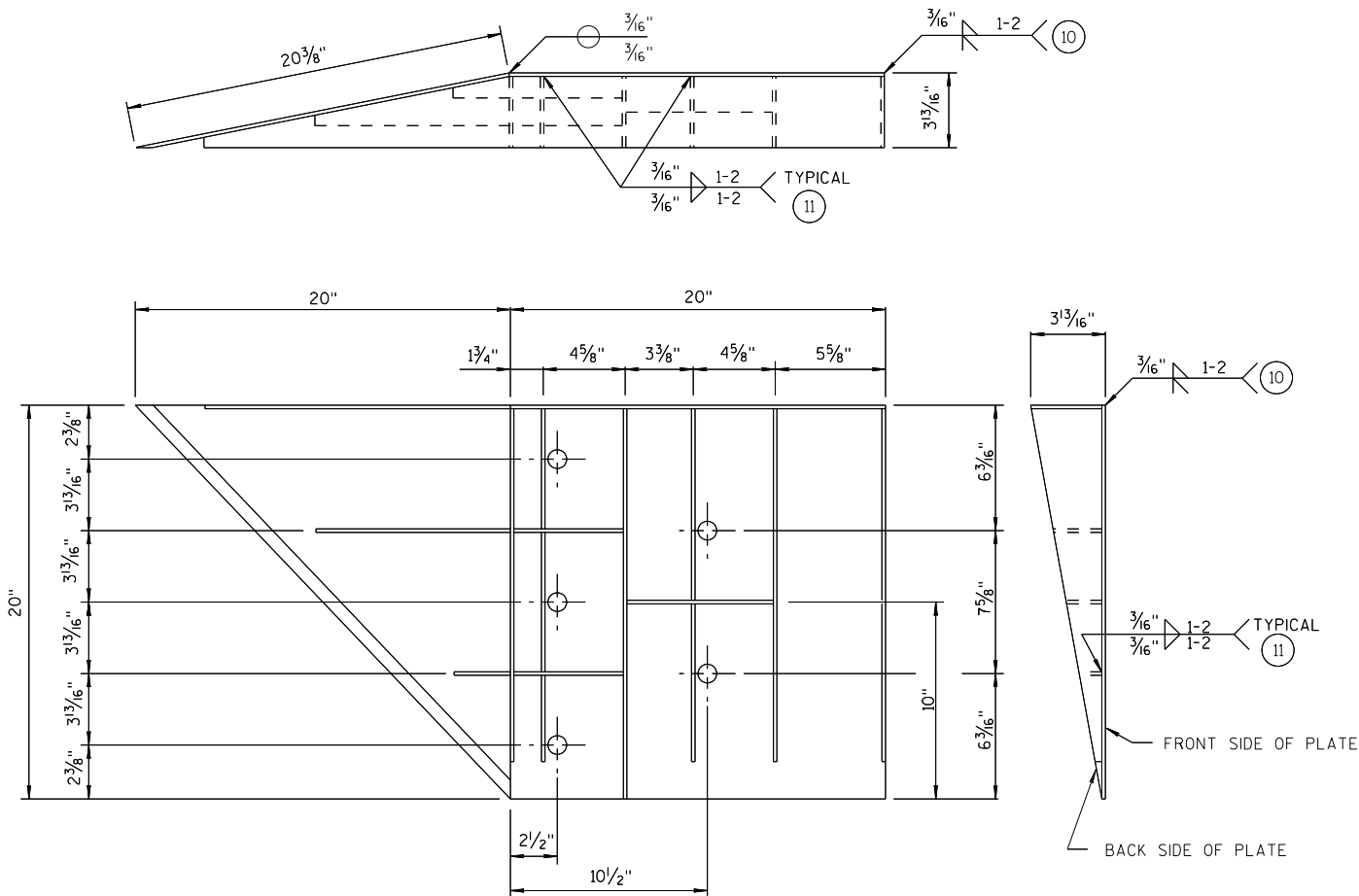
PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
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WELDING INSTRUCTION

(VIEWED FROM BACK SIDE OF PLATE)

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

SINGLE SLOPE CONNECTION PLATE

GENERAL NOTES

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

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

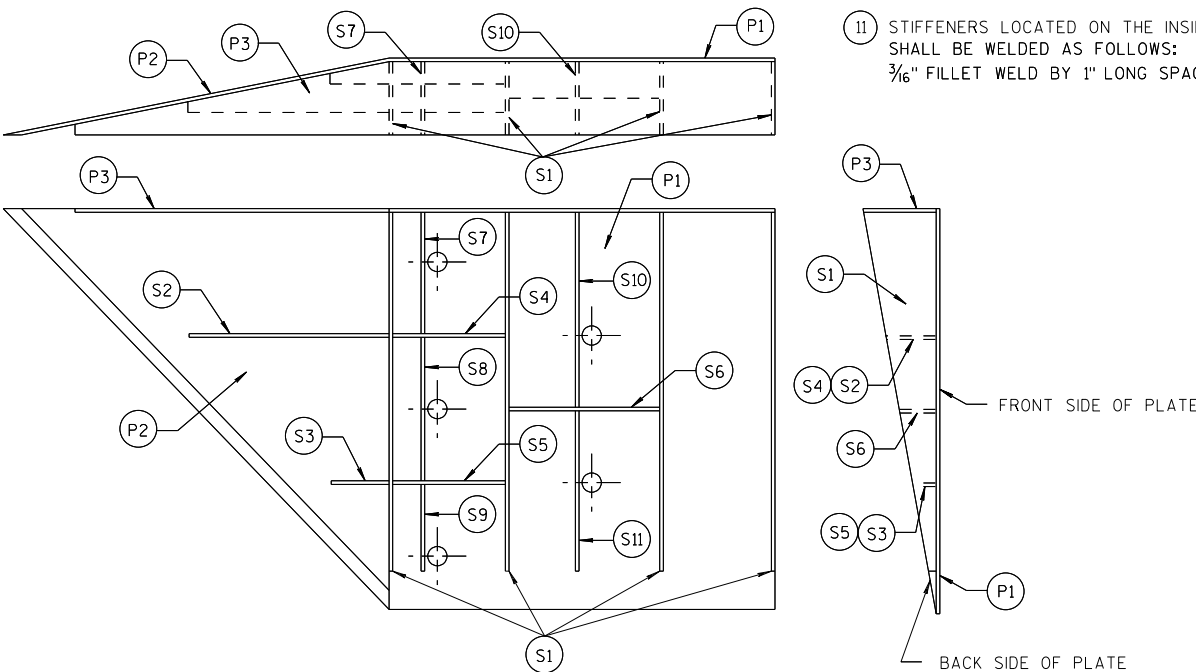


PLATE AND STIFFENER IDENTIFICATION

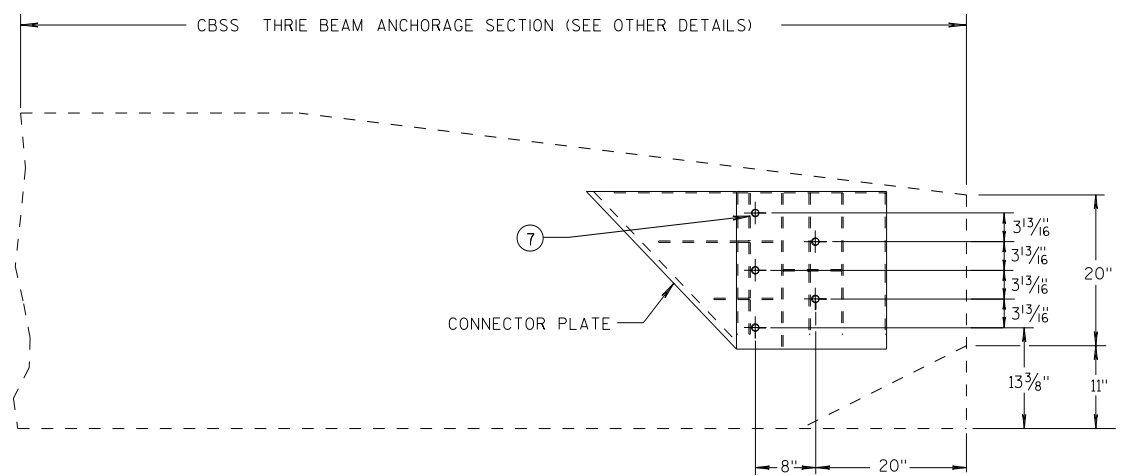
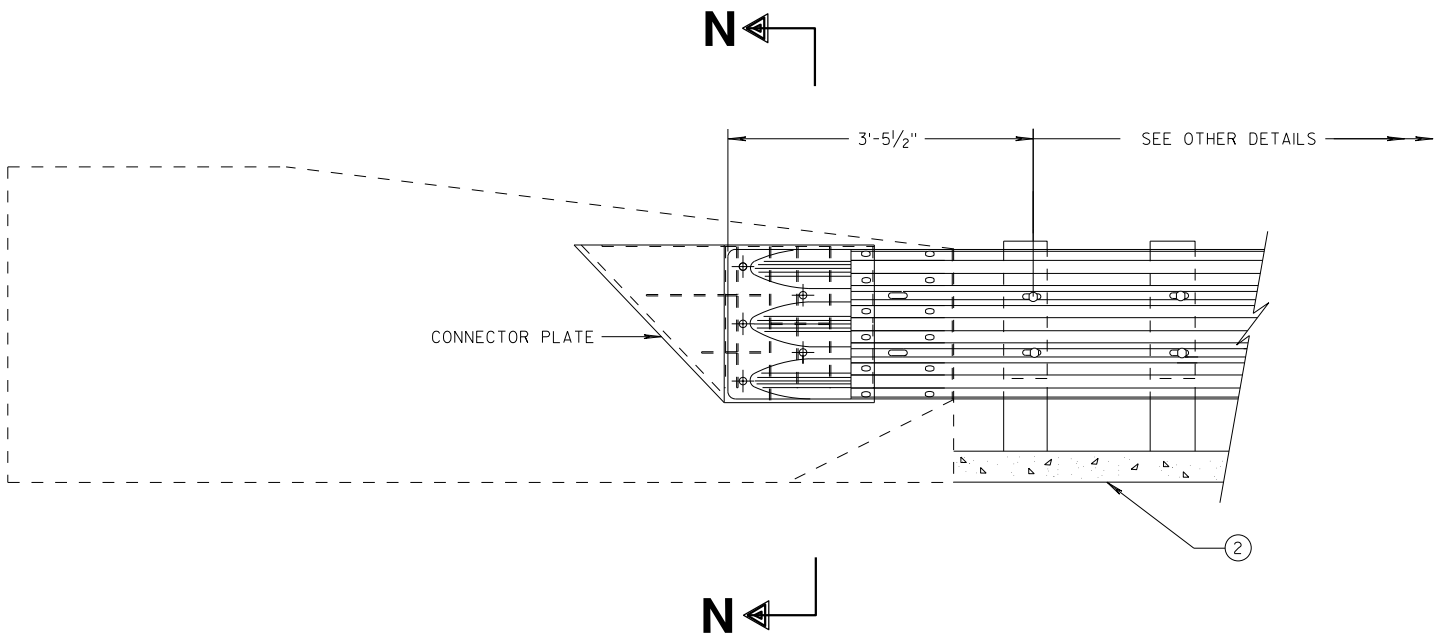
(VIEWED FROM BACK SIDE OF PLATE)

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
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ROADWAY STANDARDS DEVELOPMENT
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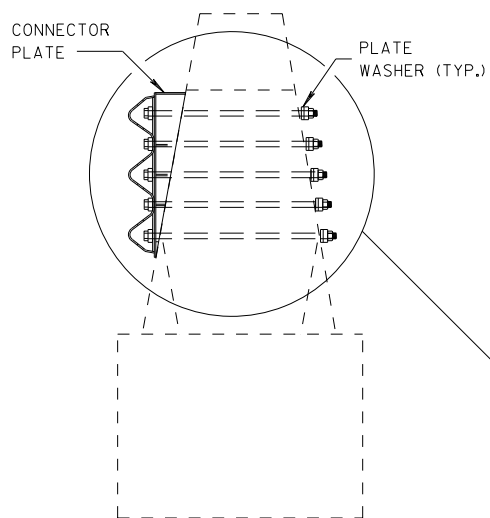
THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



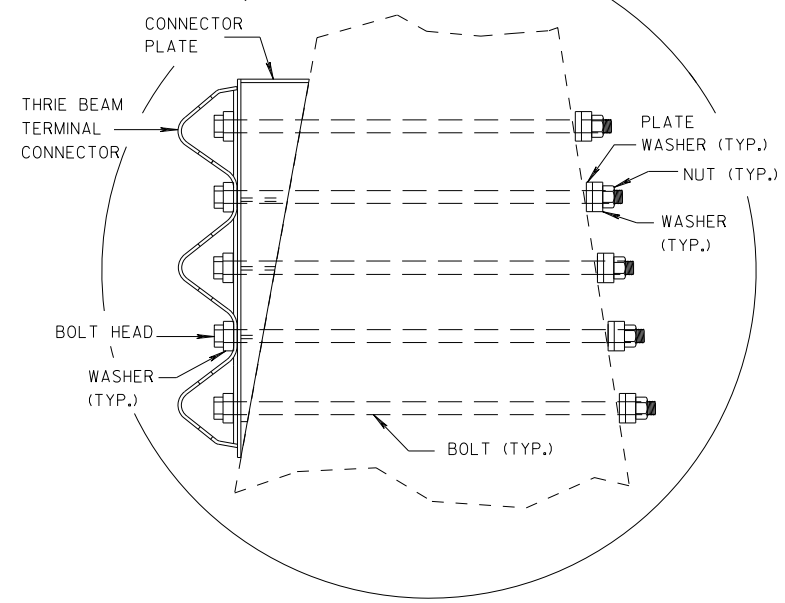
SINGLE SLOPE CONNECTION PLATE PLACEMENT

GENERAL NOTES

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



SECTION N-N



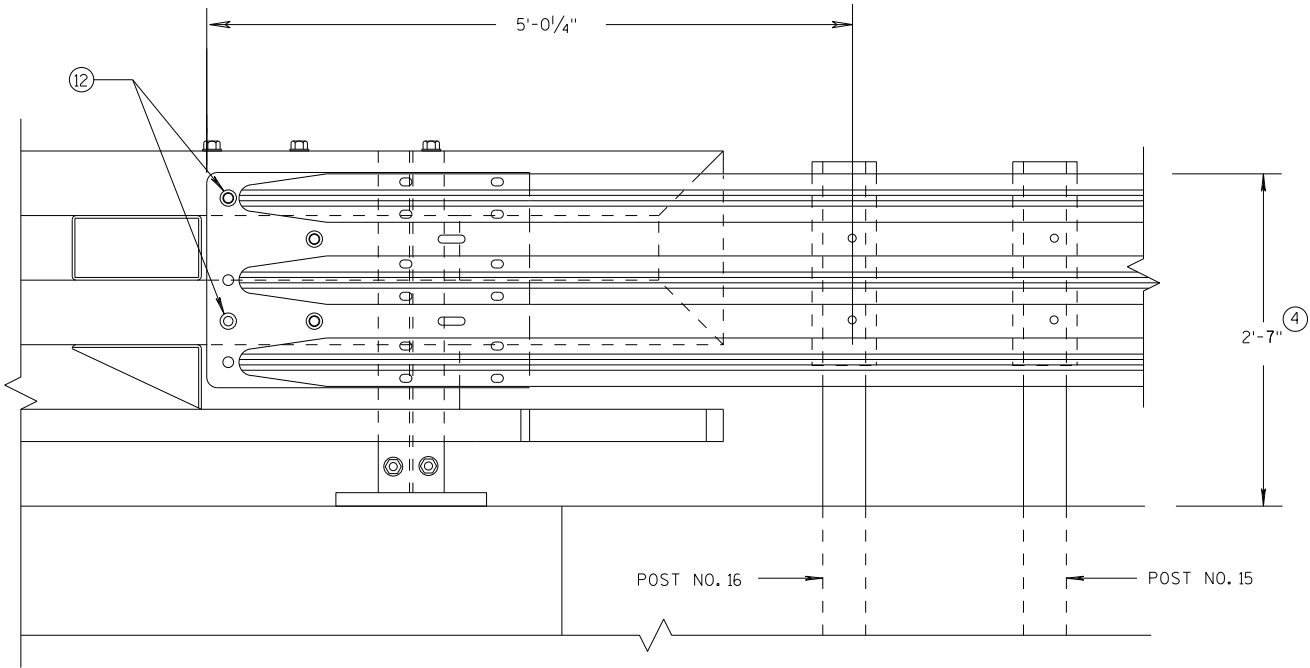
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

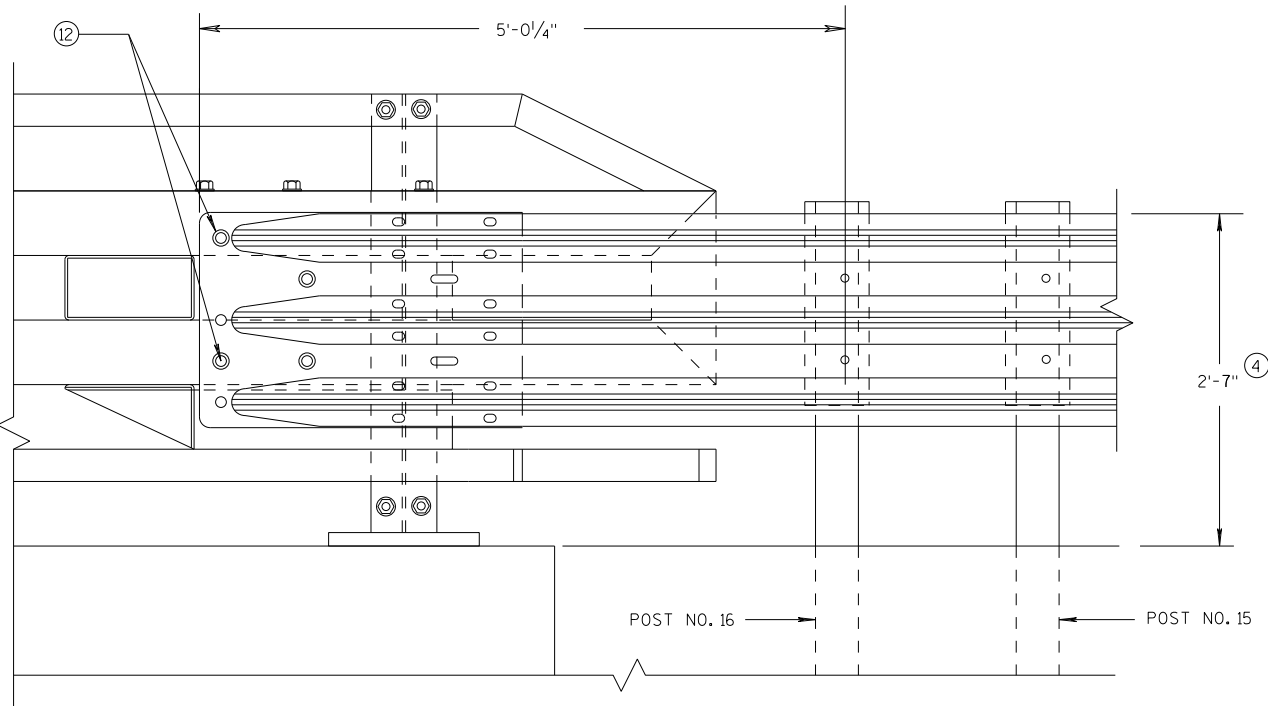
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7/2018
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/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA

GENERAL NOTES

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



ELEVATION OF DETAIL AT NY3 END POST
THRIE BEAM RAIL ATTACHMENT

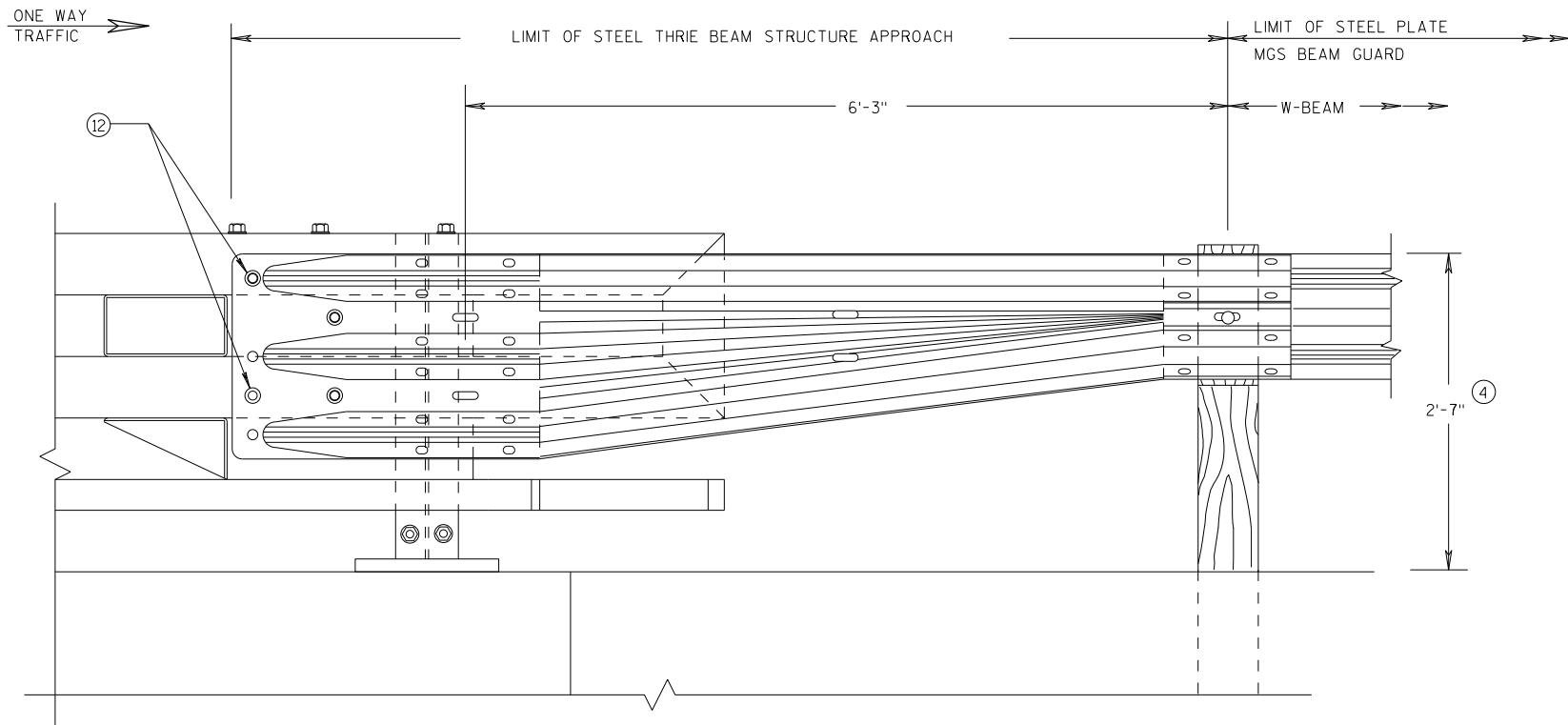


ELEVATION OF DETAIL AT NY4 END POST
THRIE BEAM RAIL ATTACHMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



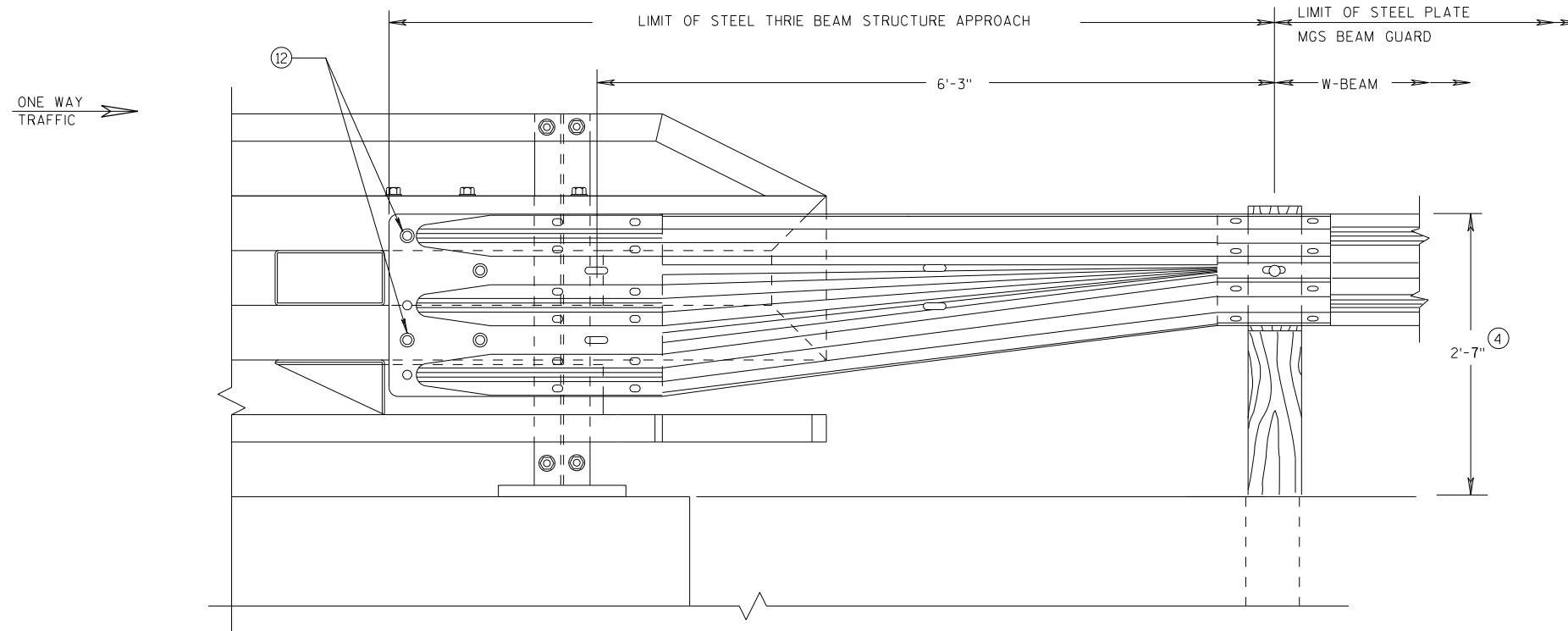
GENERAL NOTES

(4) TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.

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

FRONT VIEW

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



FRONT VIEW

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

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
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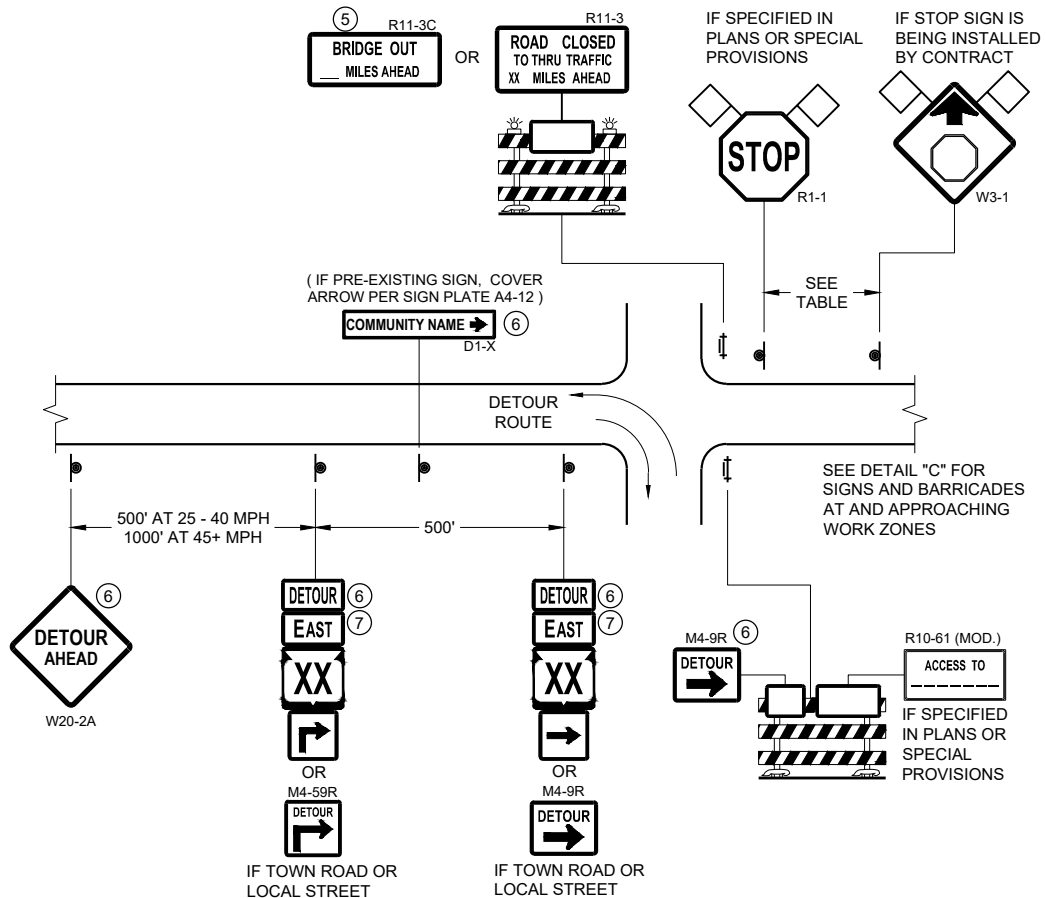
DATE

FHWA

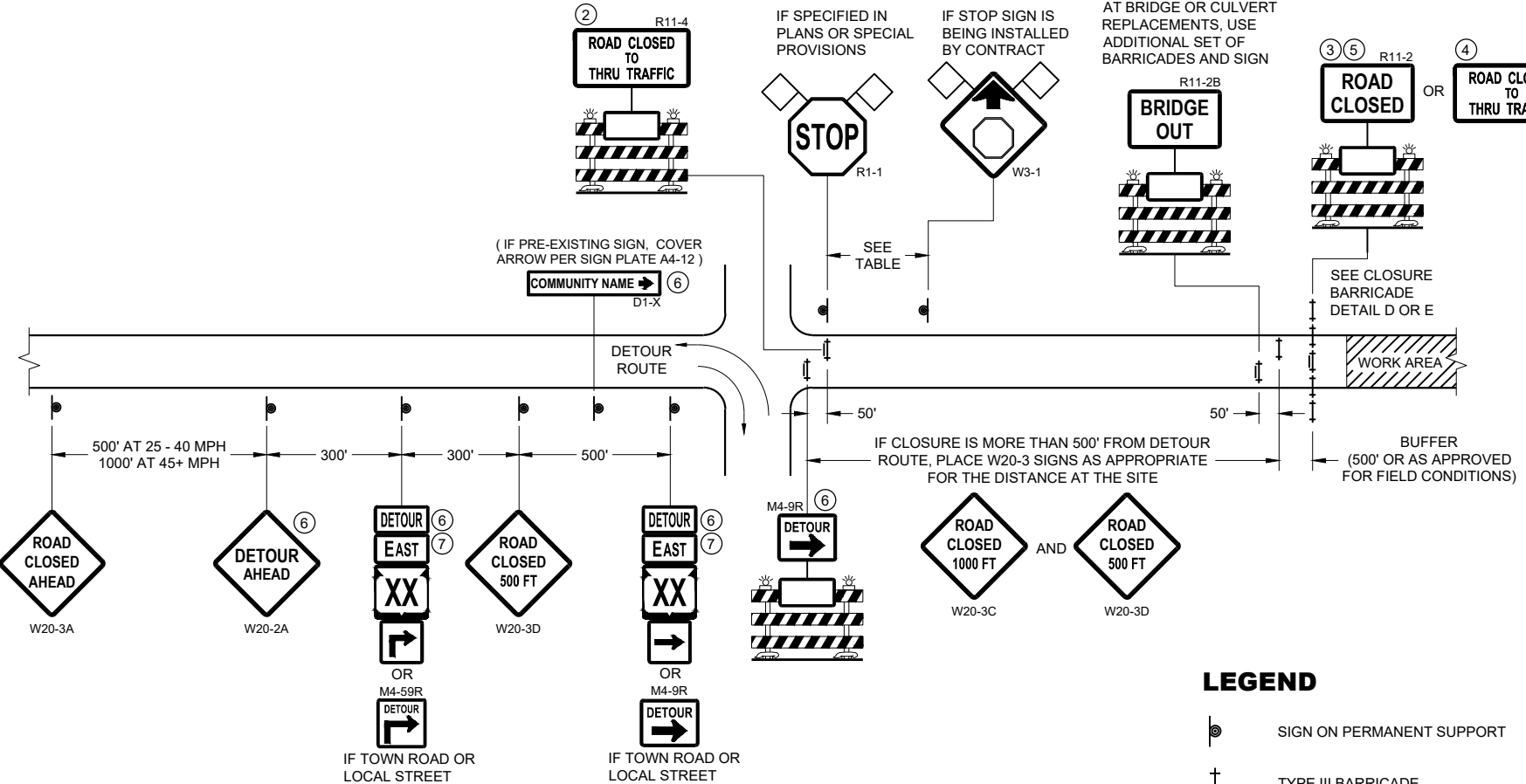
/S/ Rodney Taylor

ROADWAY STANDARDS DEVELOPMENT

UNIT SUPERVISOR



DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR
WORK ZONE GREATER THAN OR EQUAL TO ½ MILE FROM
DETOUR ROUTE (1000 FEET IF URBAN)



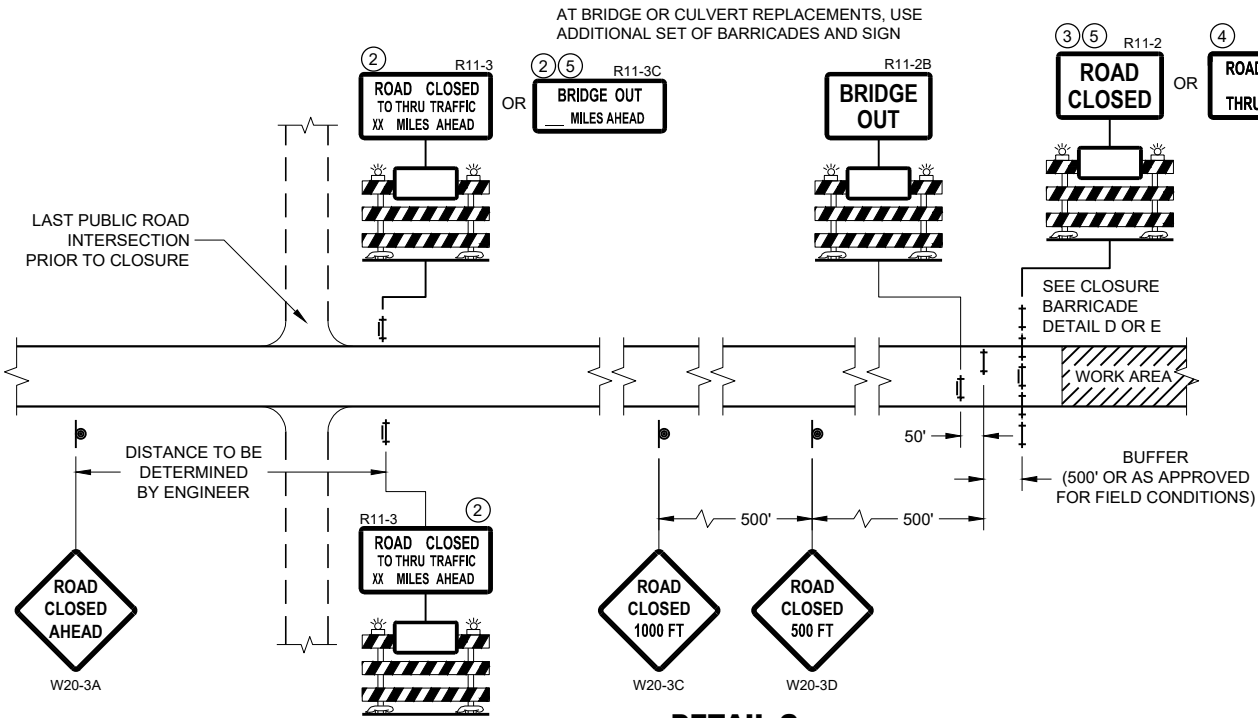
DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR
WORK ZONE LESS THAN ½ MILE FROM
DETOUR ROUTE (1000 FEET IF URBAN)

- 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)

- DETOUR M4 - 8
- EAST M3 - X
- XX M1 - 4 OR XX M1 - 6 OR COUNTY M1 - 5A
- OR M05 - 1 OR M06 - 1

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



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

**BARRICADES AND SIGNS
FOR MAINLINE CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2023 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER
FHWA



SEE SDD 15C2 - SHEET "a" FOR LEGEND

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

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

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

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

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

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

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

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

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

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:

LESS 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.

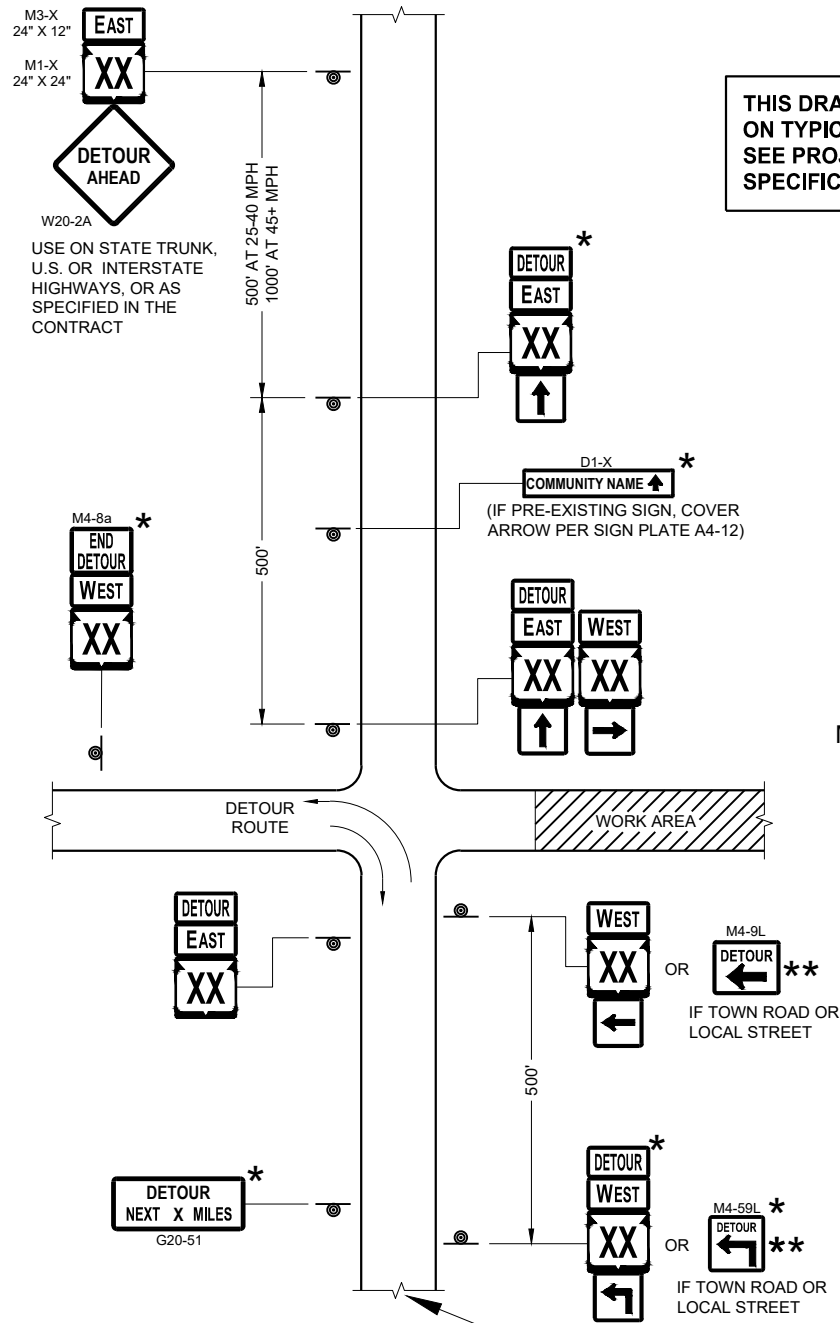
R1 - 1 SHALL BE 36" X 36"

- 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.

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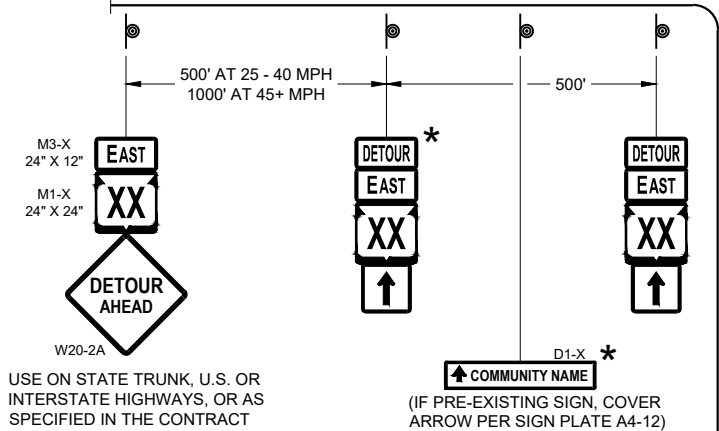
/S/ Andrew Heidtknecht
WORK ZONE ENGINEER



SEE SPECIFIC PROJECT DETOUR
SIGNING DETAIL SHEETS AND
DETAIL A OR B ON SDD SHEET 15C02 - SHEET "a"

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

MATCH POINT



DETAIL F
DETOUR SIGNING

LEGEND

- SIGN ON PERMANENT SUPPORT
- WORK AREA
- DETOUR EAST (M4 - 8)
- DETOUR WEST (M4 - 8)
- DETOUR AHEAD (M1 - 4)
- DETOUR NEXT X MILES (M1 - 6)
- DETOUR END (M1 - 5A)
- DETOUR WEST (M05 - 1)
- DETOUR EAST (M06 - 1)
- DETOUR AHEAD (M06 - 1)

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.

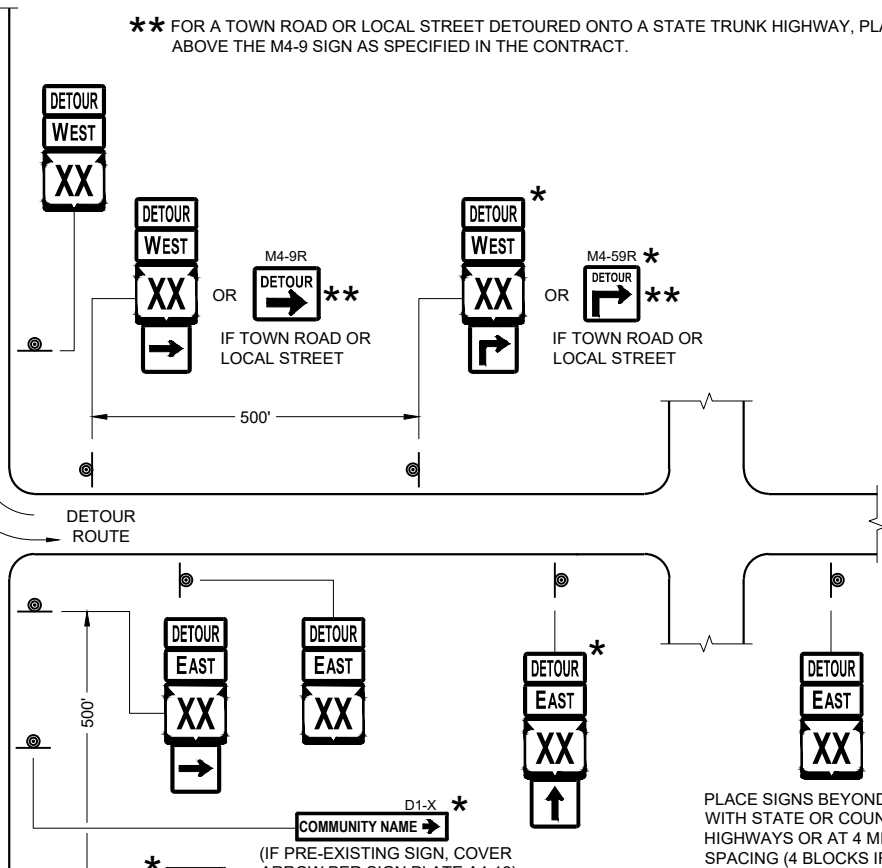
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

"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 M4-9R 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.

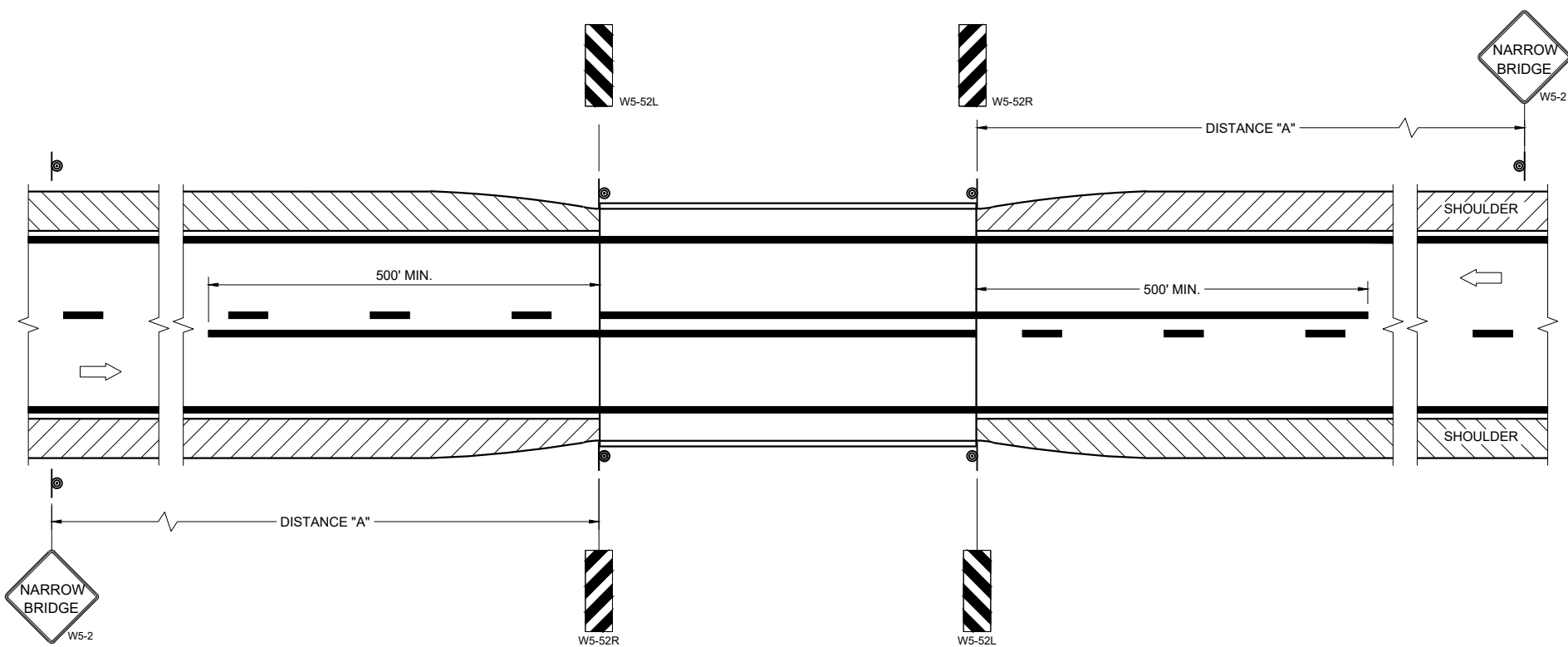


PLACE SIGNS BEYOND INTERSECTIONS
WITH STATE OR COUNTY TRUNK
HIGHWAYS OR AT 4 MILE MAXIMUM
SPACING (4 BLOCKS IF URBAN AREA)

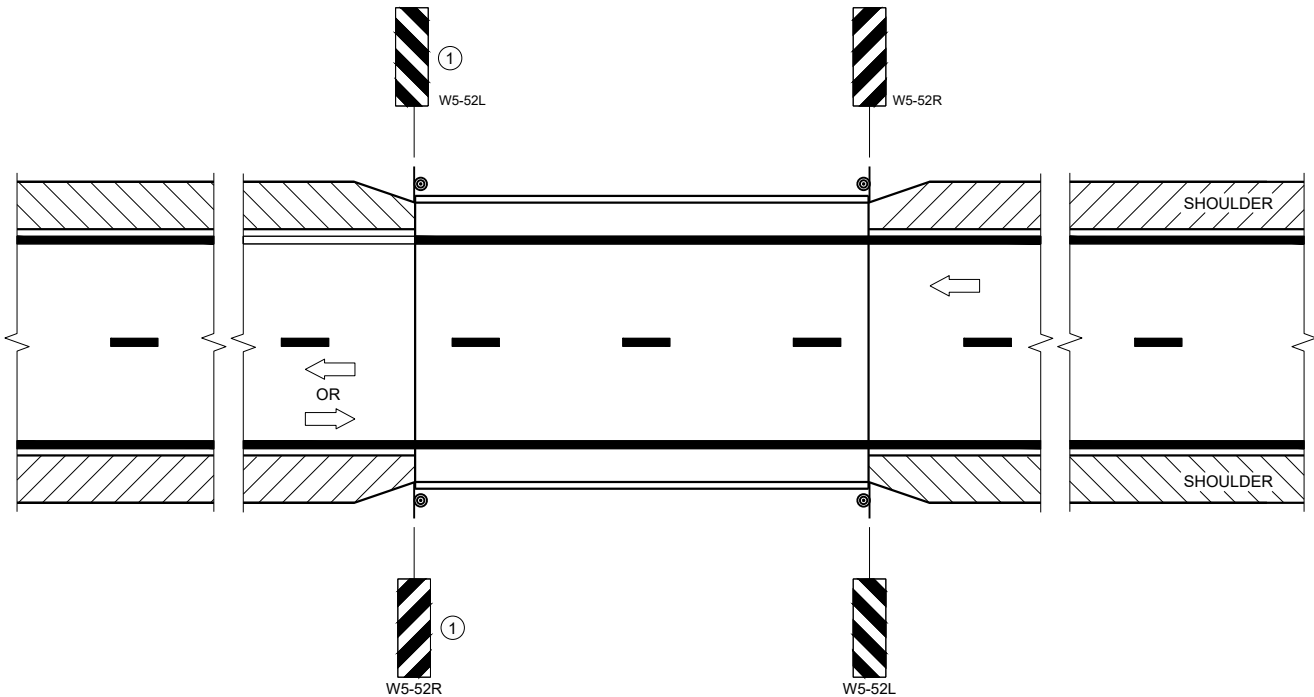
DETOUR SIGNING
FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2023 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER
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

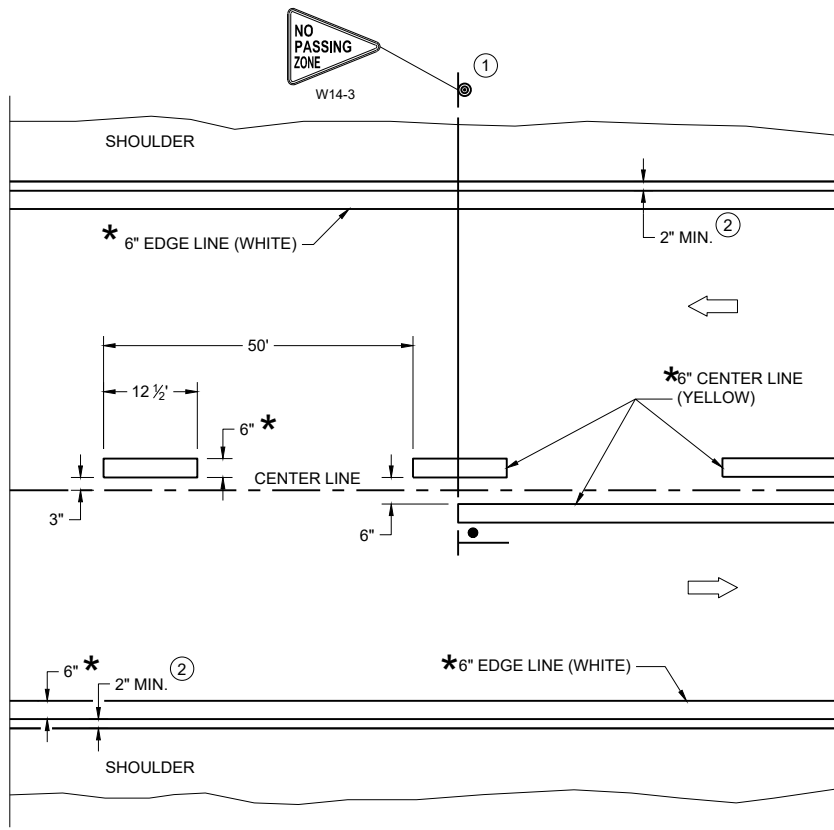
DISTANCE TABLE

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

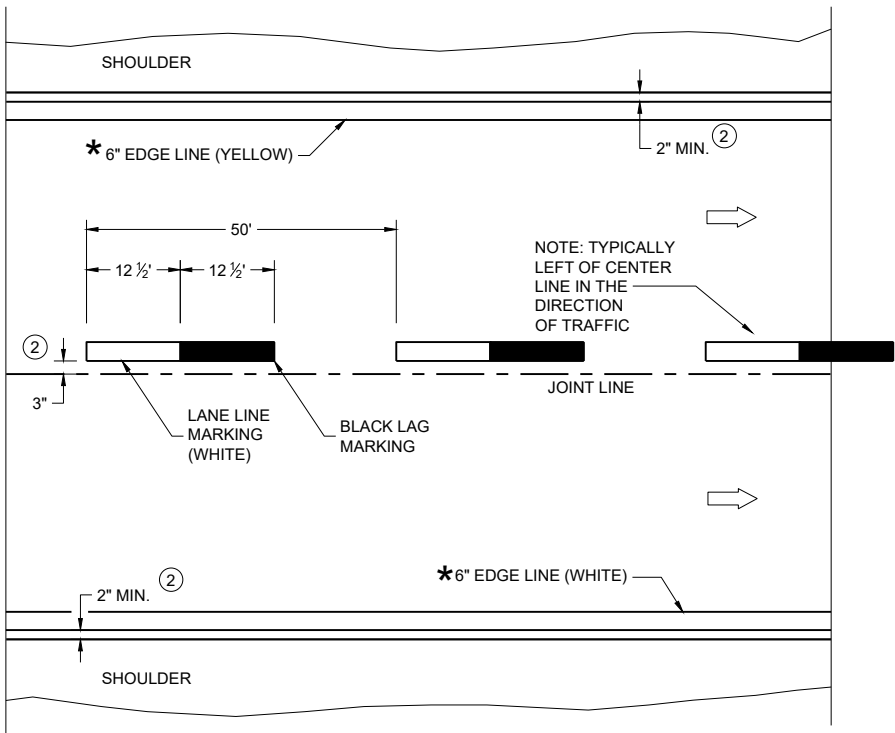
SIGNING AND MARKING
FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2023 /S/ Jeannie Silver
DATE Statewide Pavement Marking Engineer
FHWA



TWO WAY TRAFFIC



ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING

*CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES

GENERAL NOTES

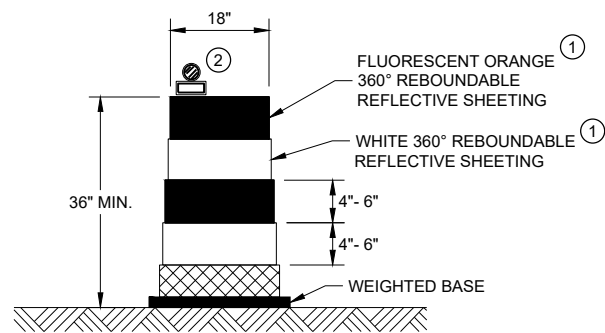
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

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

LEGEND

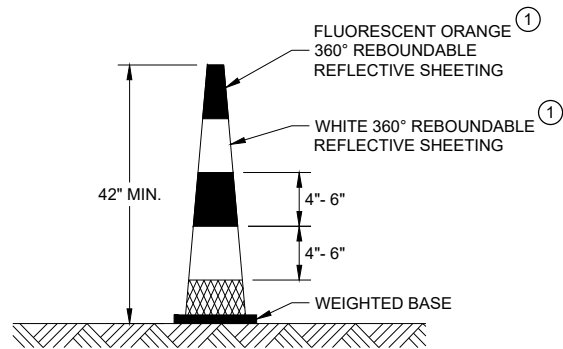
- "T" MARKING
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC

PERMANENT LONGITUDINAL PAVEMENT MARKINGS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2023 DATE	/S/ Jeannie Silver Statewide Pavement Marking Engineer
FHWA	



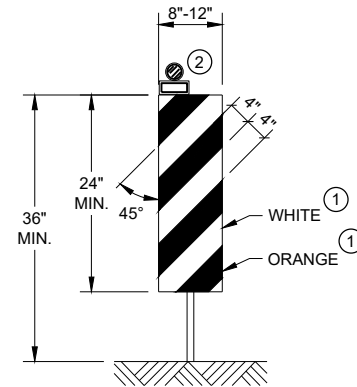
DRUM

BALLAST WIDTHS
RANGE FROM 24"-36"



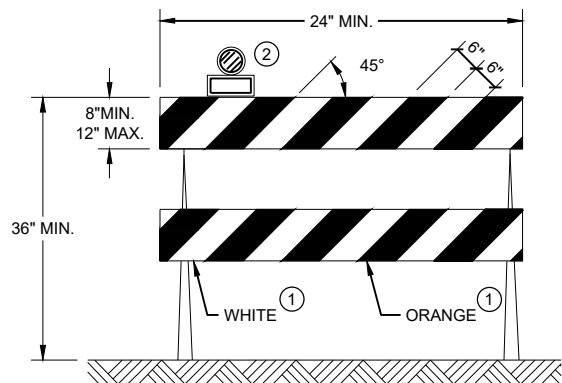
42" CONE

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



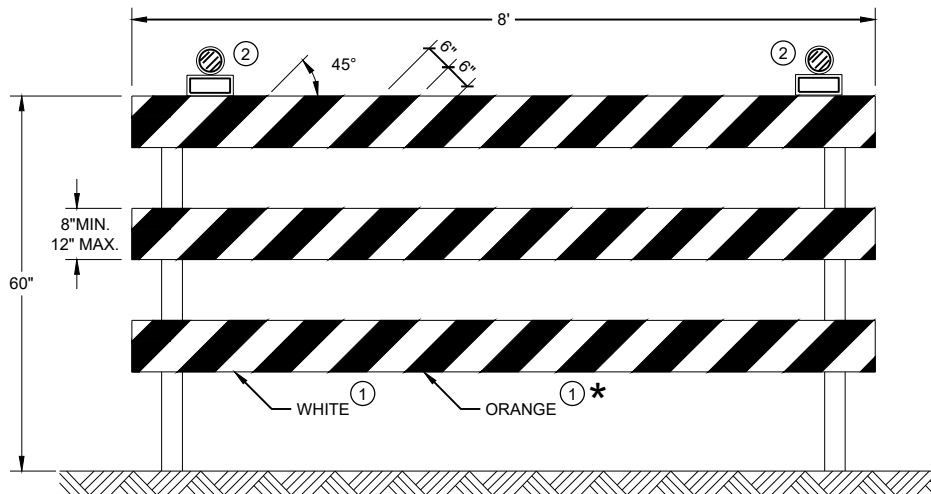
VERTICAL PANEL

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



TYPE II BARRICADE

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



TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

GENERAL NOTES

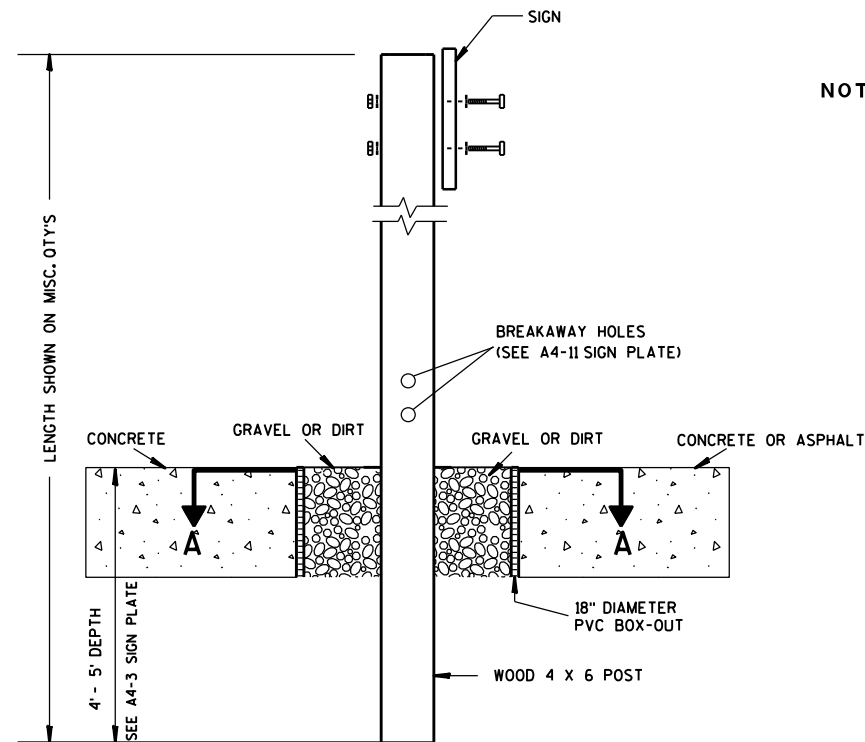
- ① REFLECTIVE SHEETING SHALL FOLLOW THE REQUIREMENTS IN THE APPROVED PRODUCTS LISTING FOR SIGN SHEETING.
- ② LOCATION OF WARNING LIGHTS WHEN SHOWN ON THE PLAN.

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

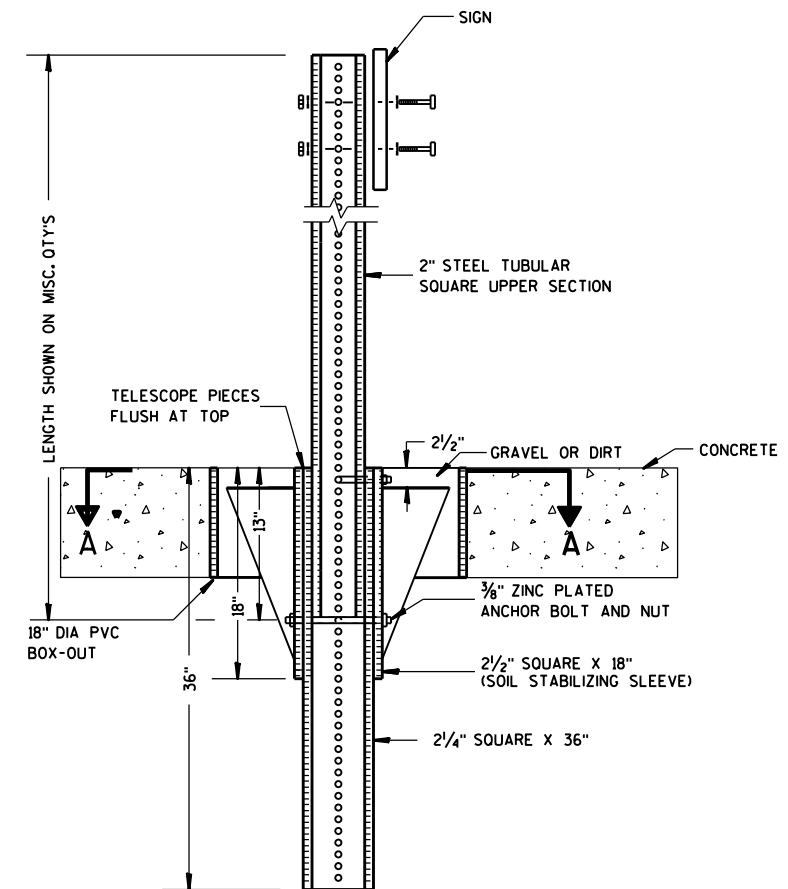
FHWA



ELEVATION VIEW

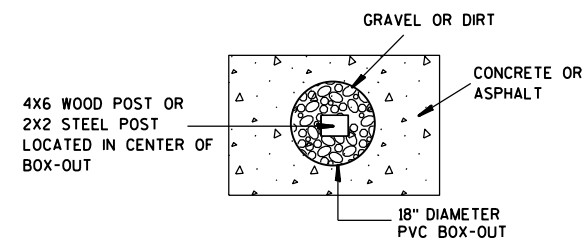
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

- 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 PLATE NO. A4-3B.1

PROJECT NO:

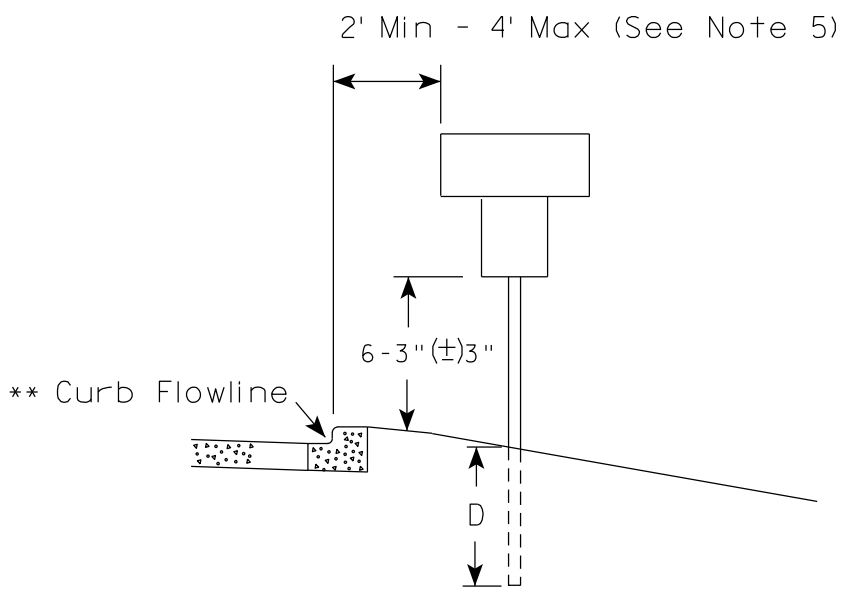
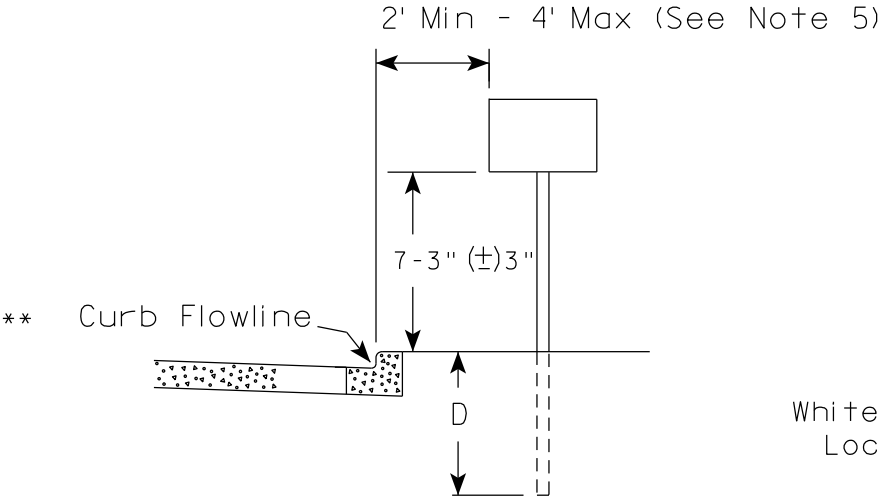
HWY:

COUNTY:

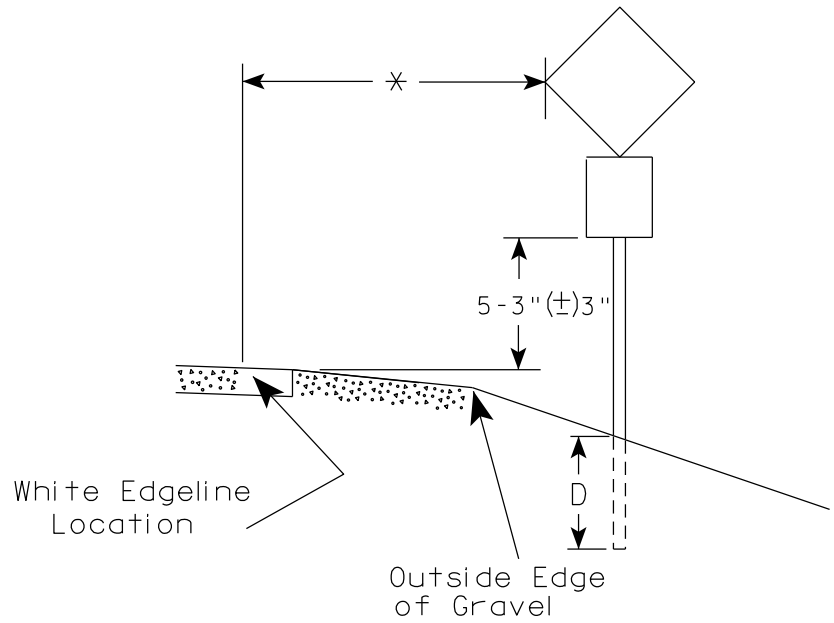
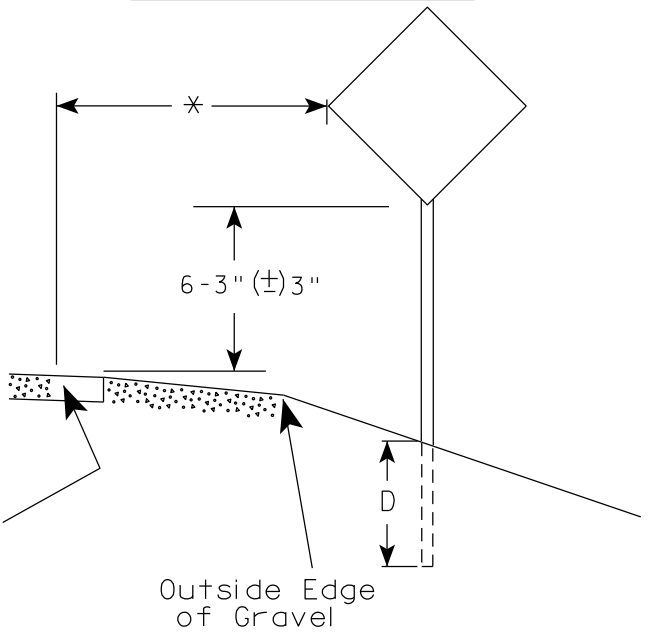
SHEET NO:

E

URBAN AREA



RURAL AREA (See Note 2)



POST EMBEDMENT DEPTH

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

GENERAL NOTES

1. Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on 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.

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

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

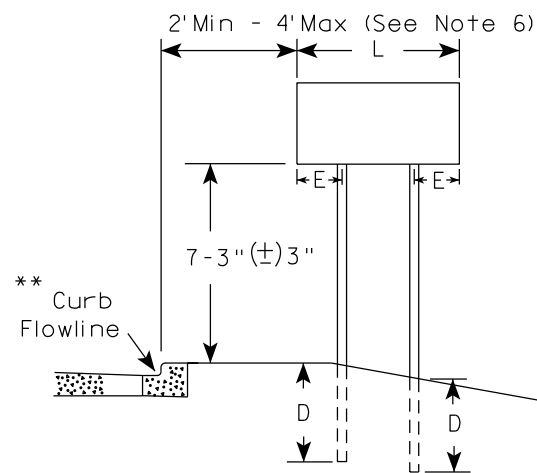
TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

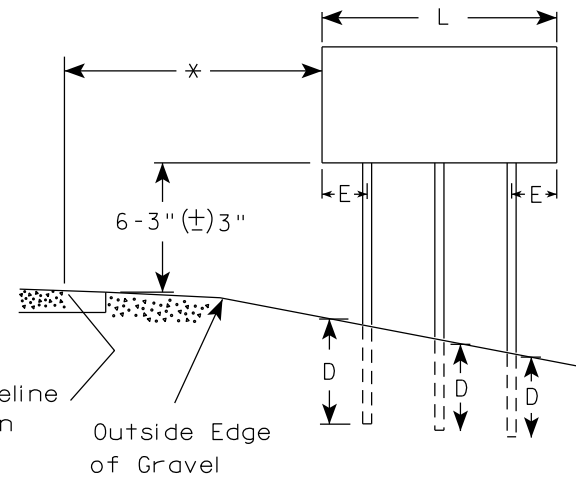
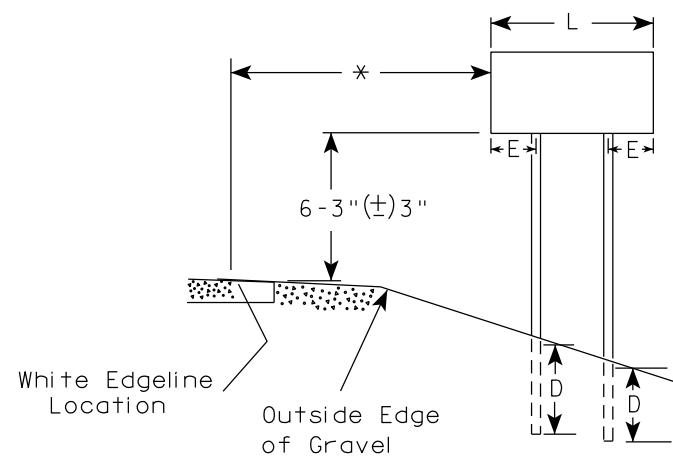
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 12/6/23 PLATE NO. A4-3.23

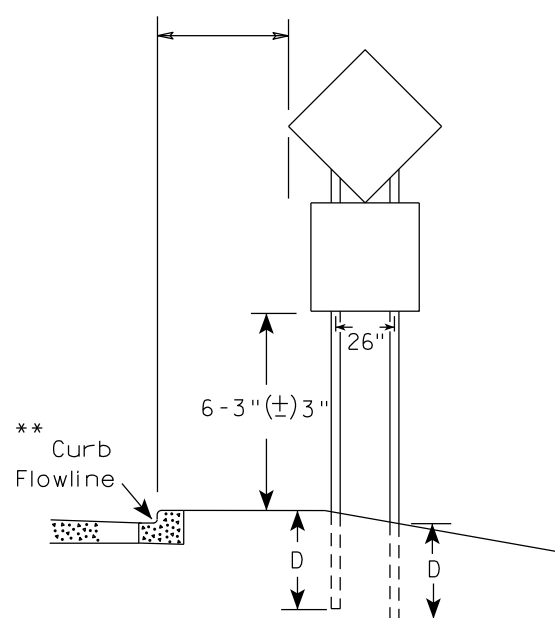
URBAN AREA



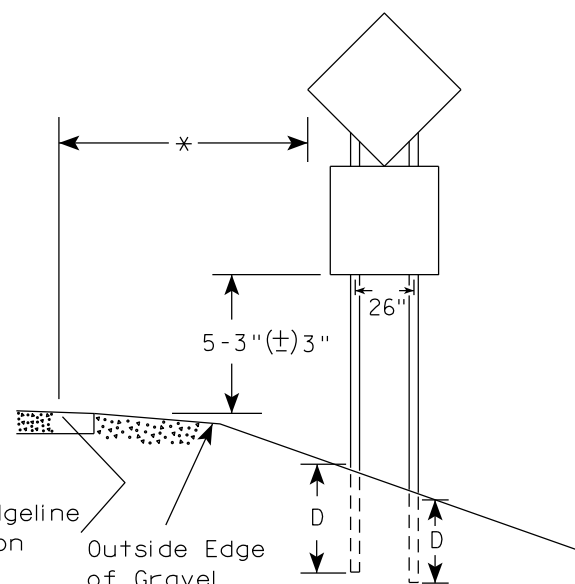
RURAL AREA (See Note 3)



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



48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

GENERAL NOTES

1. For 3 or 4 post installations, individual post spacing shall be greater than 3'-6".
2. See tables below for required number of posts.
3. For expressways and freeways, mounting height is 7'-3" (±) 3" or 6'-3" (±) 3" depending upon existence of sub-sign.
4. The (±) tolerance for mounting height is 3 inches.
5. J-Assemblies are considered to be one sign for mounting height.
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. Folding signs shall be mounted at a height of 5'-3" (±) 3" or as directed by the engineer.
8. 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 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

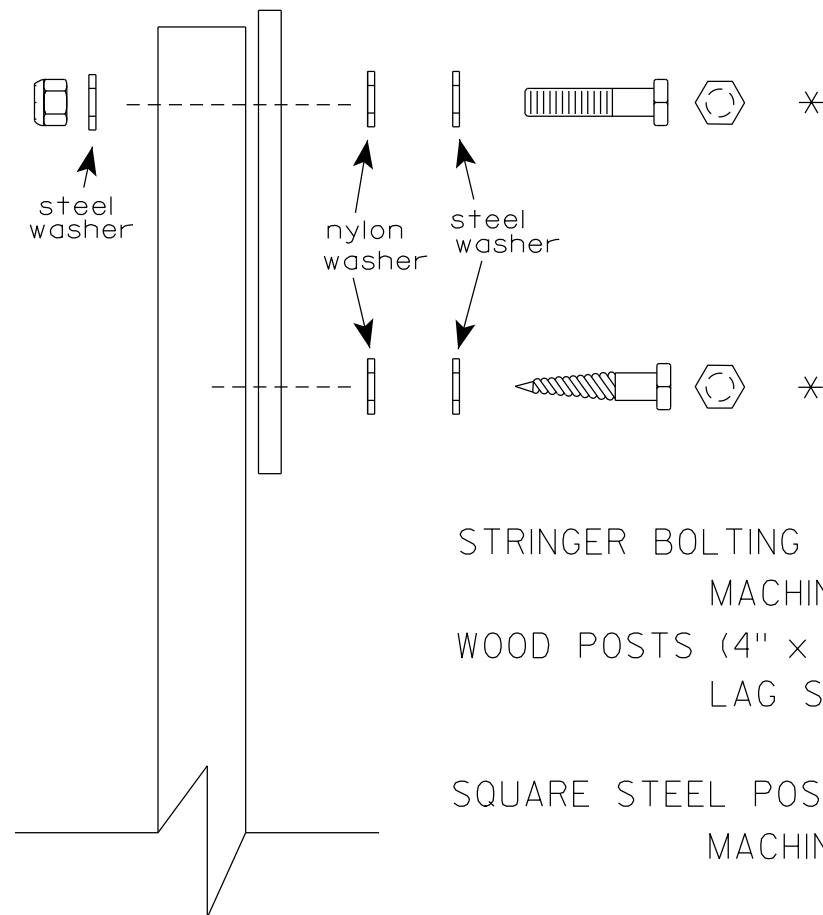
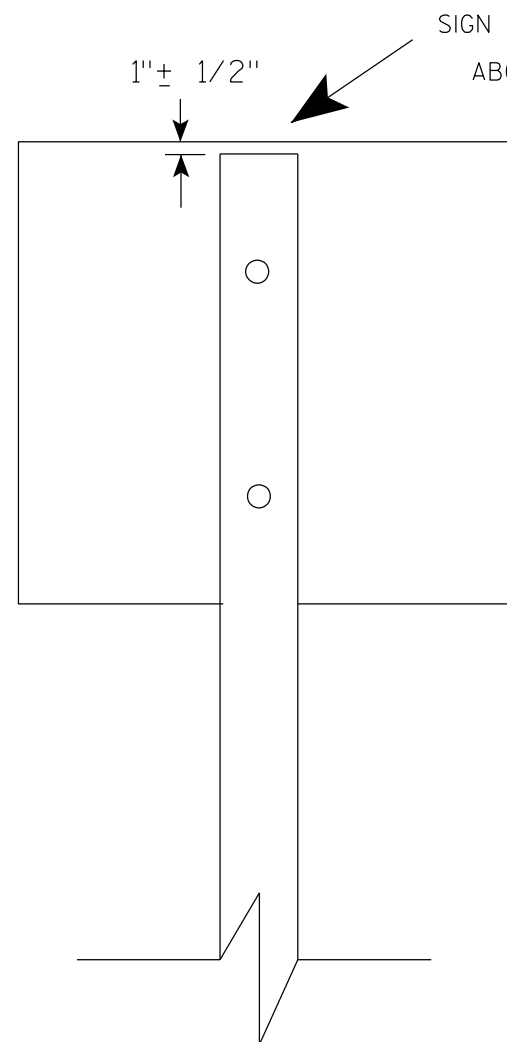
Area of Sign Installation (Sq.Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

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



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.

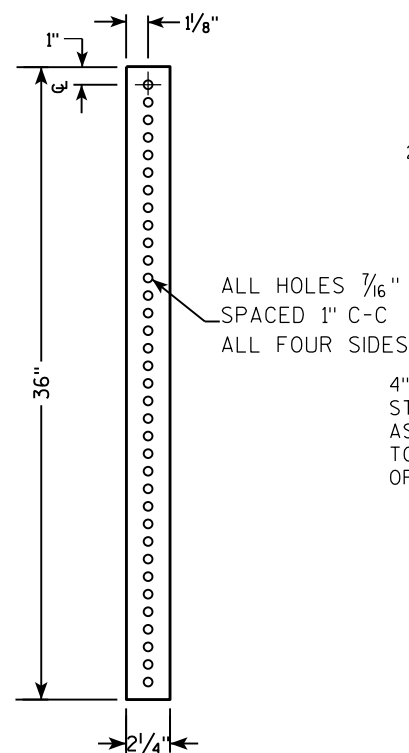
Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

- 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

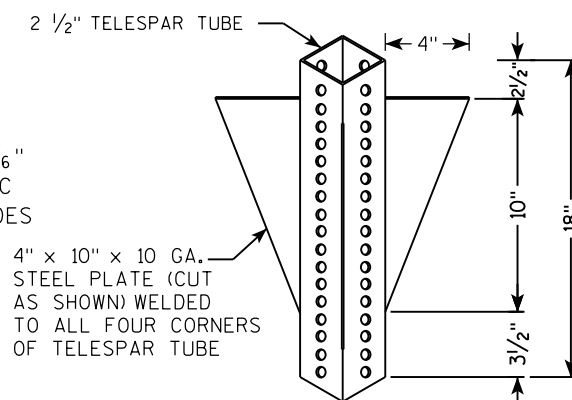
* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require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

ATTACHMENT OF SIGNS TO POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 4/1/2020	PLATE NO. A4-8.9

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

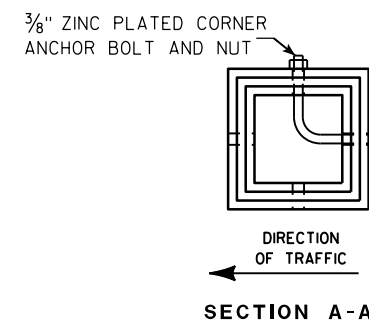


**2 1/2" SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH**

[illegible]

TECHNICAL DRAWING OF A SIGNPOST ASSEMBLY:

- Dimensions:**
 - Overall height: LENGTH SHOWN ON MISC. Q'TYS
 - Section A-A: 36" (total), 18" (upper), 12" (lower)
 - Section B-B: 1"
- Components:**
 - SIGN
 - SEE SIGN PLATE A4-8 FOR BOLT WASHER, & NUT MATERIAL
 - 2" STEEL TUBULAR SQUARE UPPER SECTION
 - ALL HOLES $\frac{7}{16}$ " SPACED 1" C-C
 - ALL FOUR SIDES
 - $\frac{3}{8}$ " ZINC PLATED CORNER ANCHOR BOLT AND NUT
 - $\frac{3}{8}$ " ZINC PLATED ANCHOR BOLT AND NUT
 - 2 1/2" SQUARE X 18" (SOIL STABILIZING SLEEVE)
 - 2 1/4" SQUARE X 36"
 - TELESCOPE PIECES FLUSH AT TOP



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 PLATE NO. A4-9.9

PROJECT NO:

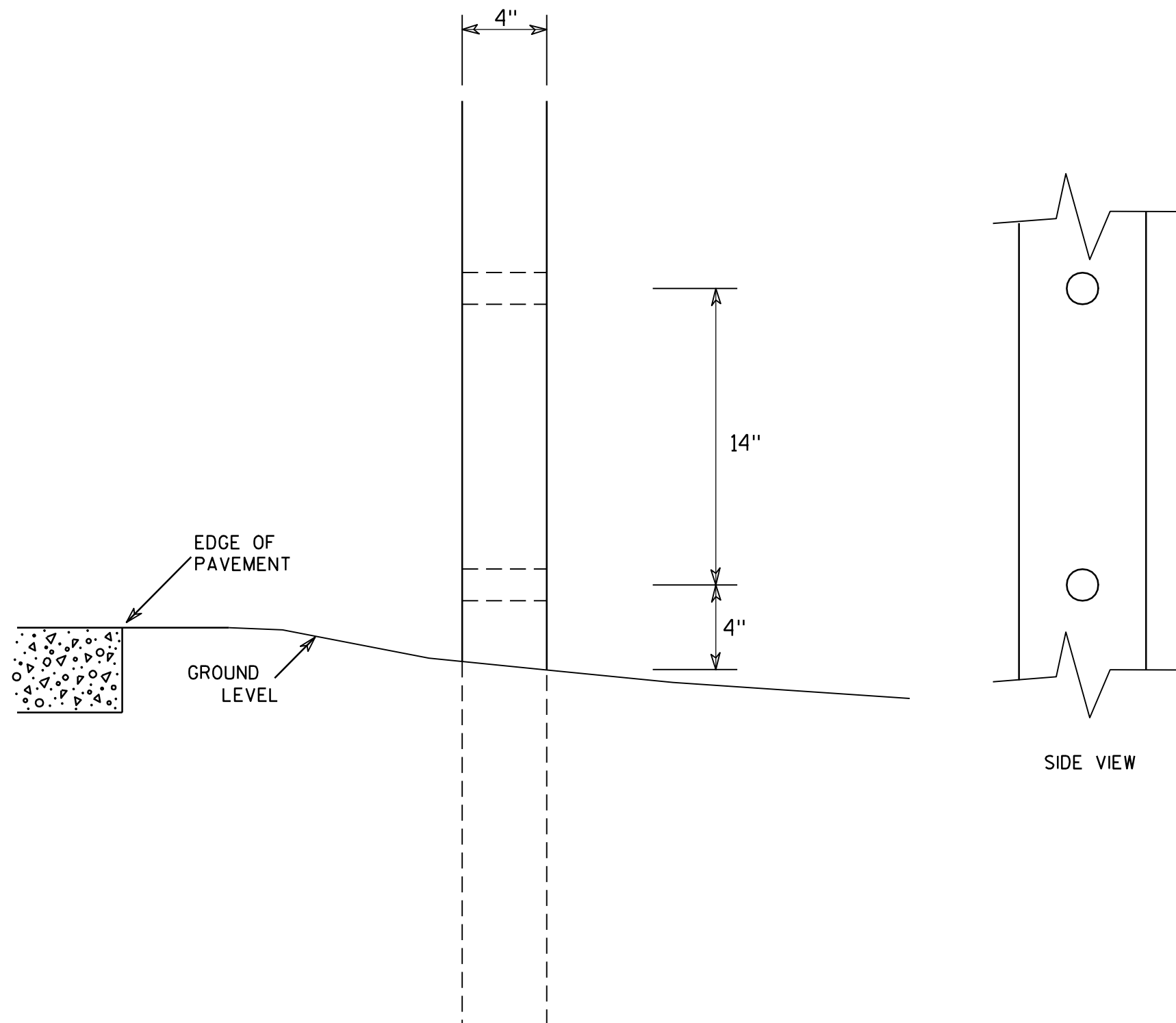
HWY:

COUNTY:

SHEET NO:

T

7



GENERAL NOTES

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

7

4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Chester J. Spang
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

HWY:

COUNTY:

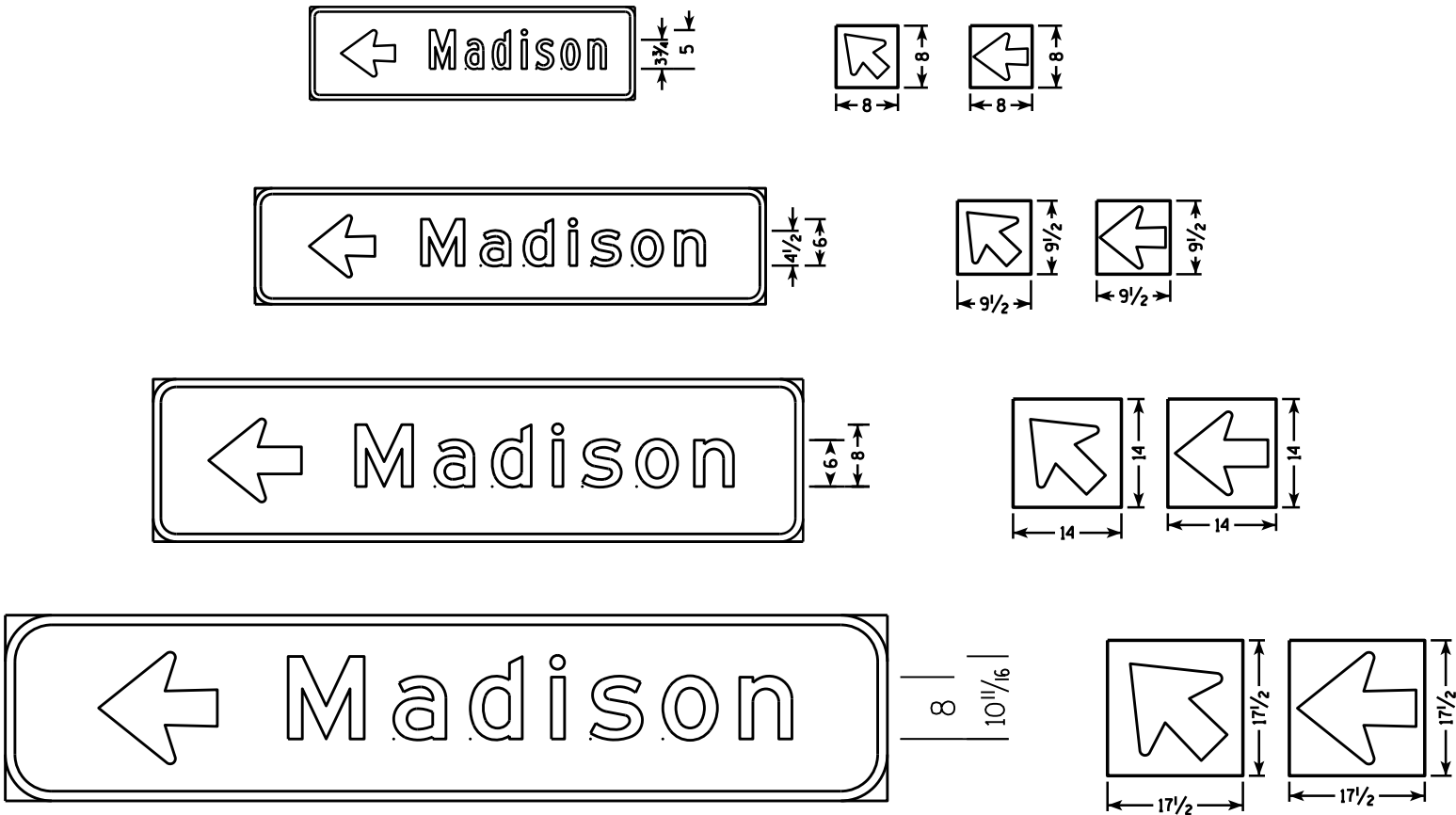
SHEET NO:

E

SIGN LAYOUT WITH VARIOUS SIZED MESSAGES

GENERAL NOTES

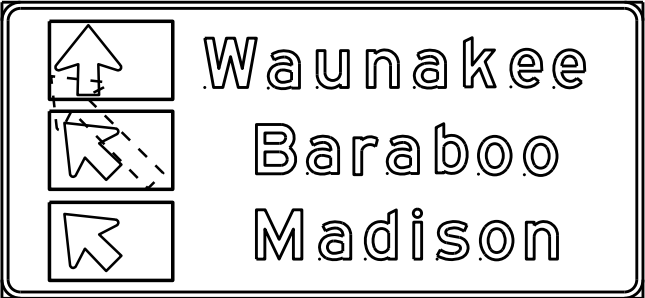
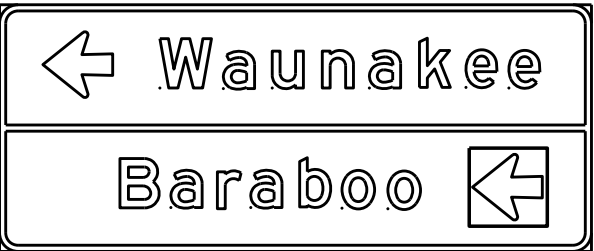
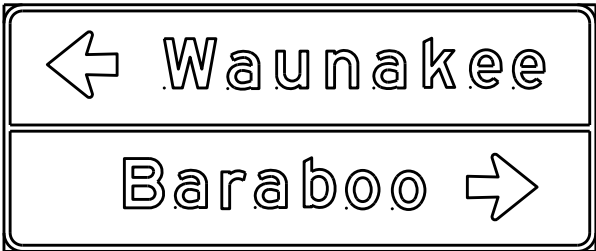
- 1. Materials shall conform to Standard Specification Section 637.
Base - Sheet Aluminum 0.040" Thickness
Sheeting - Orange Type F Reflective
Arrow - Black Non-Reflective
- 2. Arrow signs shall be fastened to permanent sign by either aluminum rivets or aluminum self-tapping sheet metal screws.
There shall be a minmum of 2 fasteners used per arrow sign.
- 3. There shall be a spacer consisting of a 0.08" nylon washer between the back of the arrow sign and the face of the permanent sign.
- 4. Arrows are per standard plate A1-2
- 5. Use separate arrow sign for each destination
- 6. Tilt arrow is always at 45 degrees
- 7. Arrow is centered on arrow sign



Lower Case Copy Size	Standard Width (Single Arrow)	2 Line Tilt Arrow Cover Width	3 Line Tilt Arrow Cover Width	Height
3 3/4" Series C	8	9 1/2	14 1/2	8
4 1/2" Series D & E	9 1/2	10	15	9 1/2
6" Series D & E	14	16	20 1/2	14
8" Series E	17 1/2	20 1/2	25	17 1/2

BEFORE

AFTER



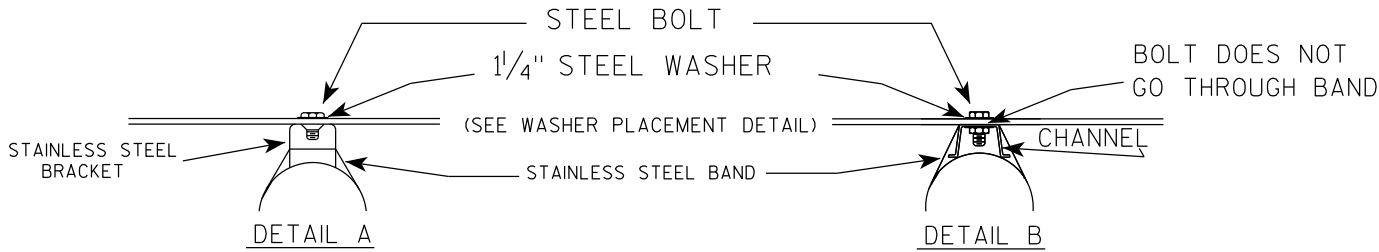
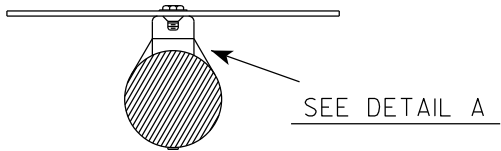
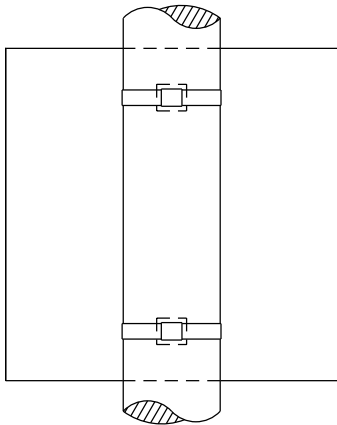
DESTINATION DIRECTIONAL ARROW
FOR DETOUR SIGNS

WISCONSIN DEPT OF TRANSPORTATION

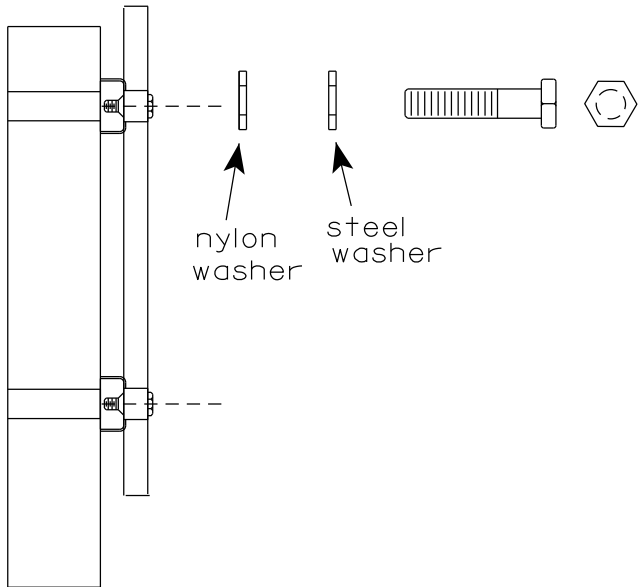
APPROVED *Matthew R. Rauch*
For State Traffic Engineer
DATE 10/08/14 PLATE NO. A4-12.2

BANDING

SINGLE SIGN



WASHER PLACEMENT

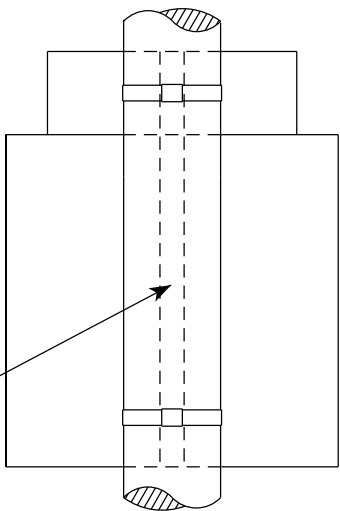


WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON
FOR ALL TYPE H SIGNS

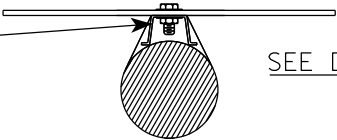
GENERAL NOTES

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

"J" ASSEMBLY



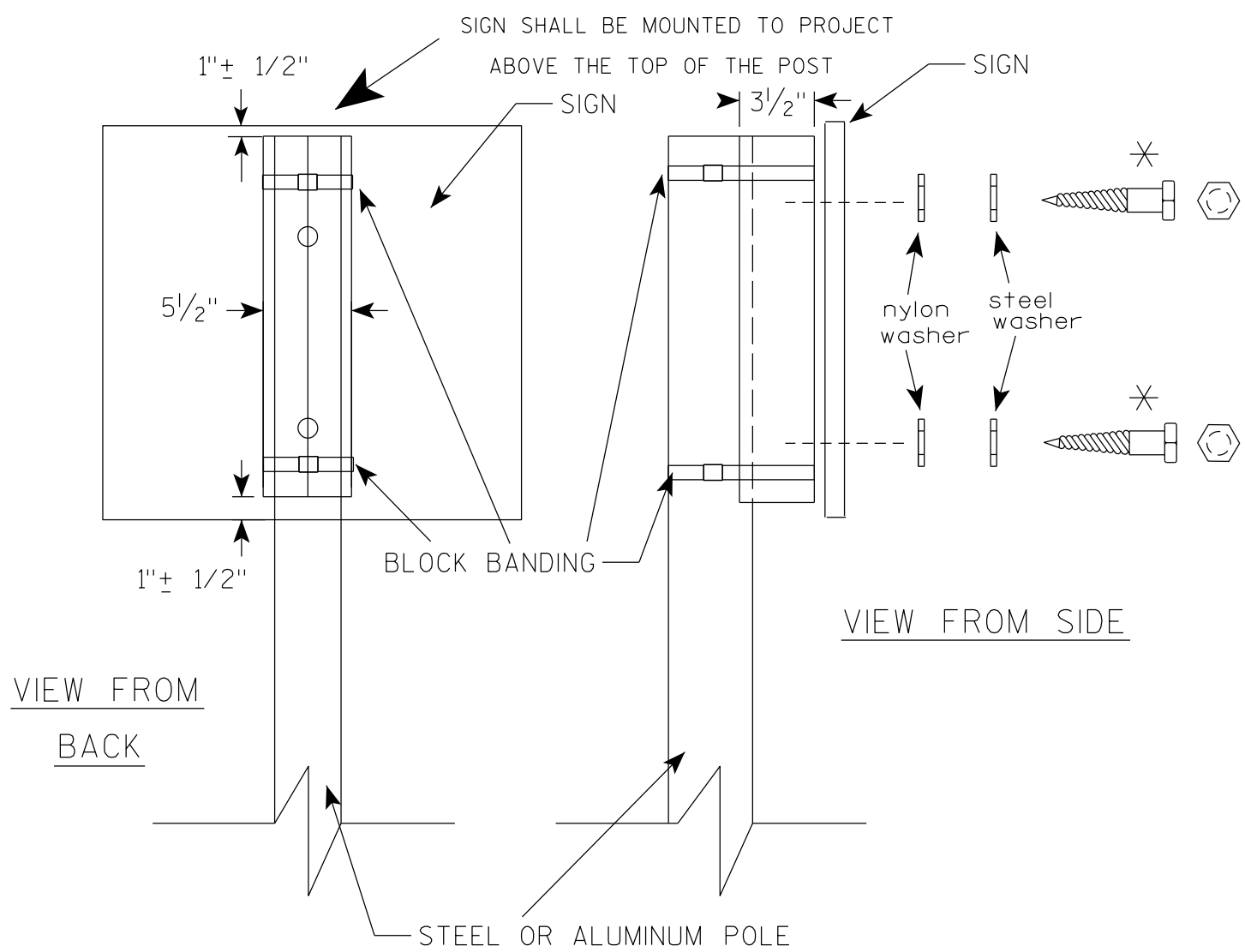
CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET



STANDARD SIGN
SIGN BANDING DETAILS

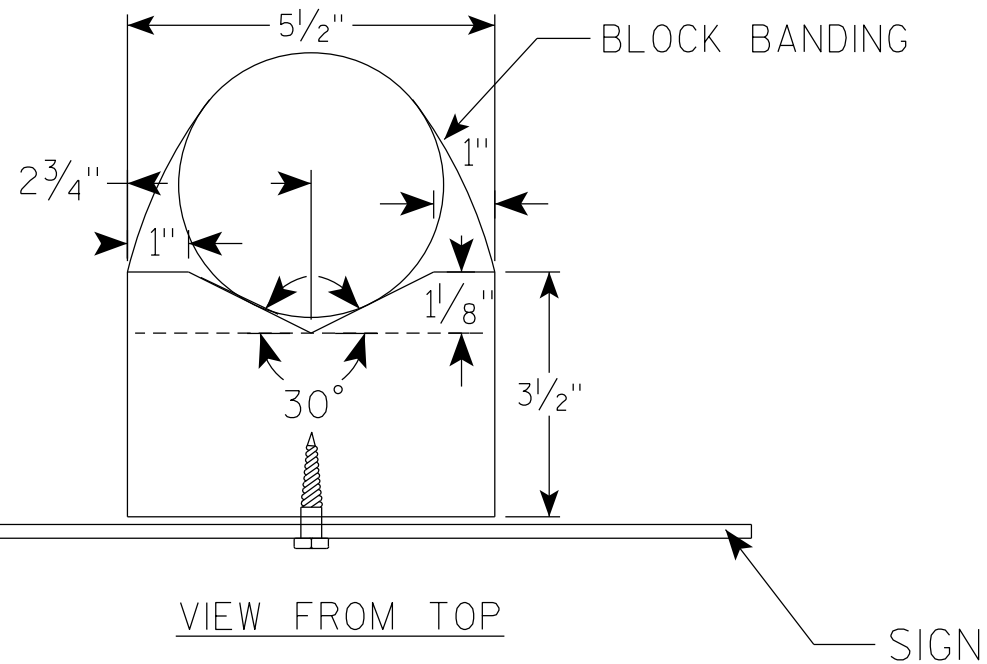
WISCONSIN DEPT OF TRANSPORTATION

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



VIEW FROM
BACK

VIEW FROM SIDE



VIEW FROM TOP

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 *Matthew R. Rauch*
for State Traffic Engineer

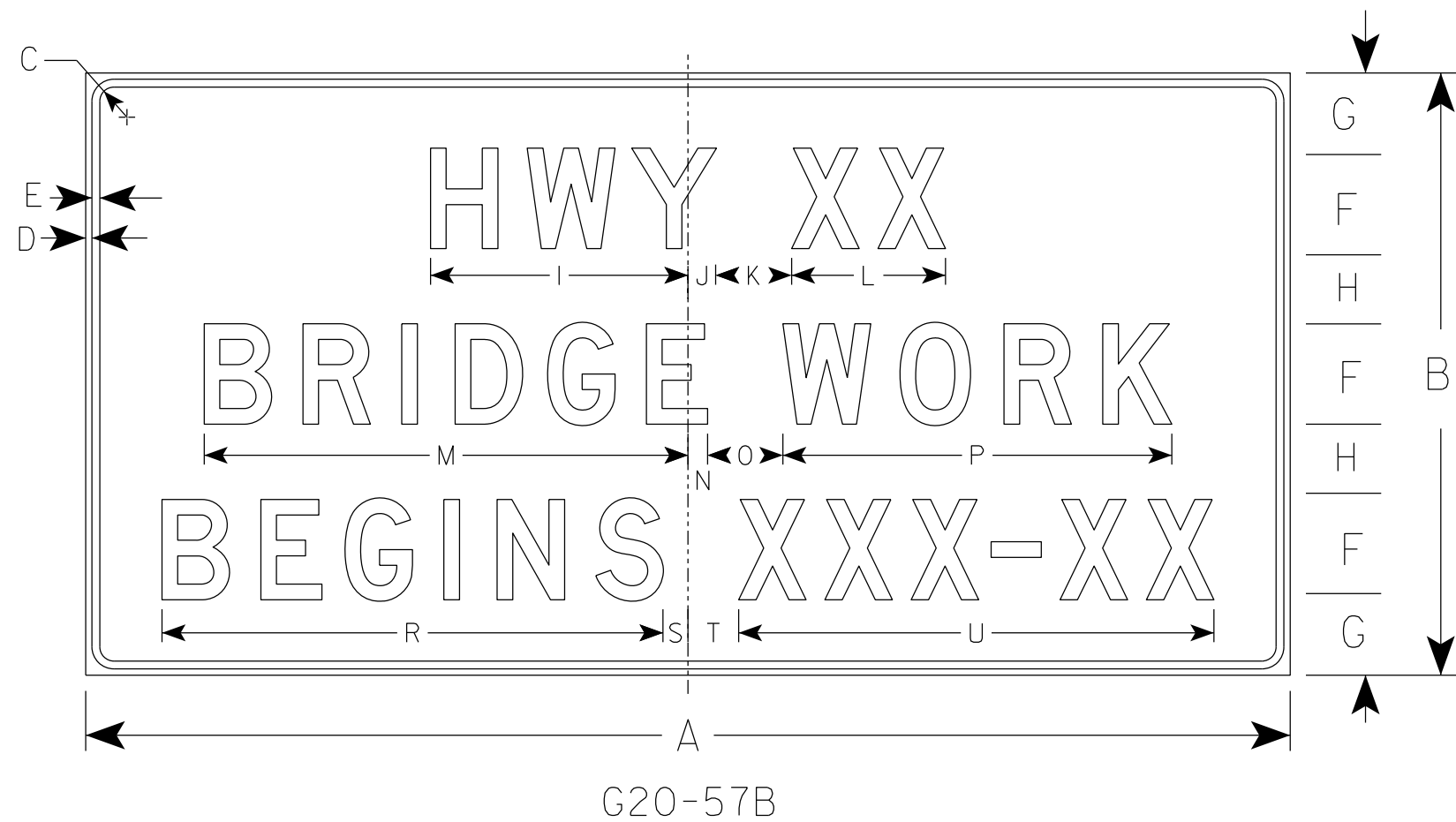
DATE 4/19/2022 PLATE NO. A5-10.3

PROJECT NO:

SHEET NO:

E

7



NOTES

1. Sign is Type II - Type F Reflective
2. Color:
Background - Orange
Message - Black
3. Message Series - D
4. Substitute appropriate numeral and adjust spacing to achieve proper balance.

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																											
3	72	36	1 1/8	1/2	5/8	6	5	4	15 5/8	1 5/8	5	9 1/4	29 1/8	7/8	5	23 1/4		29 7/8	1 3/4	3 1/4	28 1/2						18.0
4	96	48	2 1/4	3/4	1	8	6 1/2	5 1/2	20 5/8	2 1/4	6	12 1/4	38 1/2	1 1/2	6	31		39 1/4	2	4	37 7/8						32.0
5																											

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

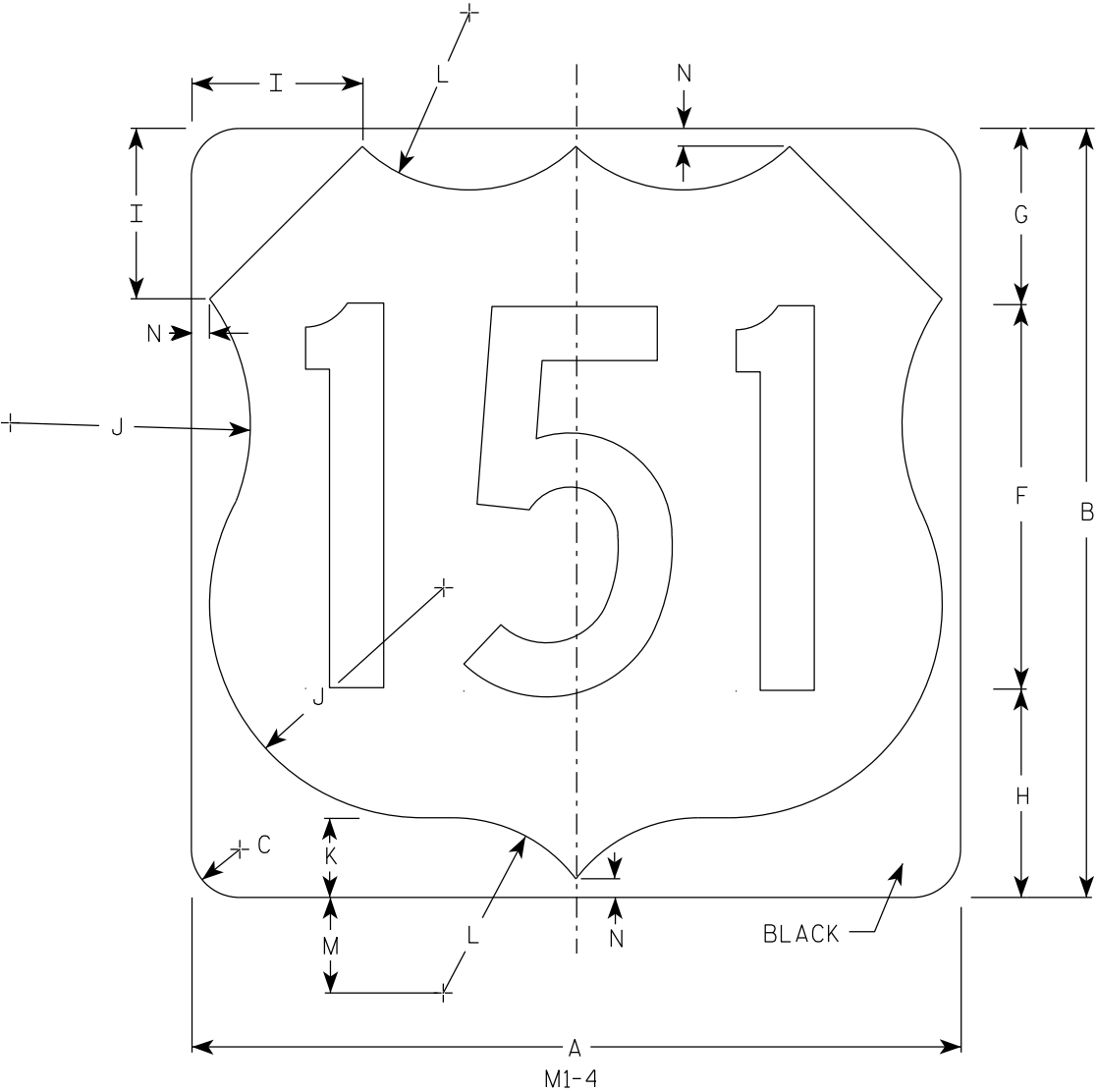
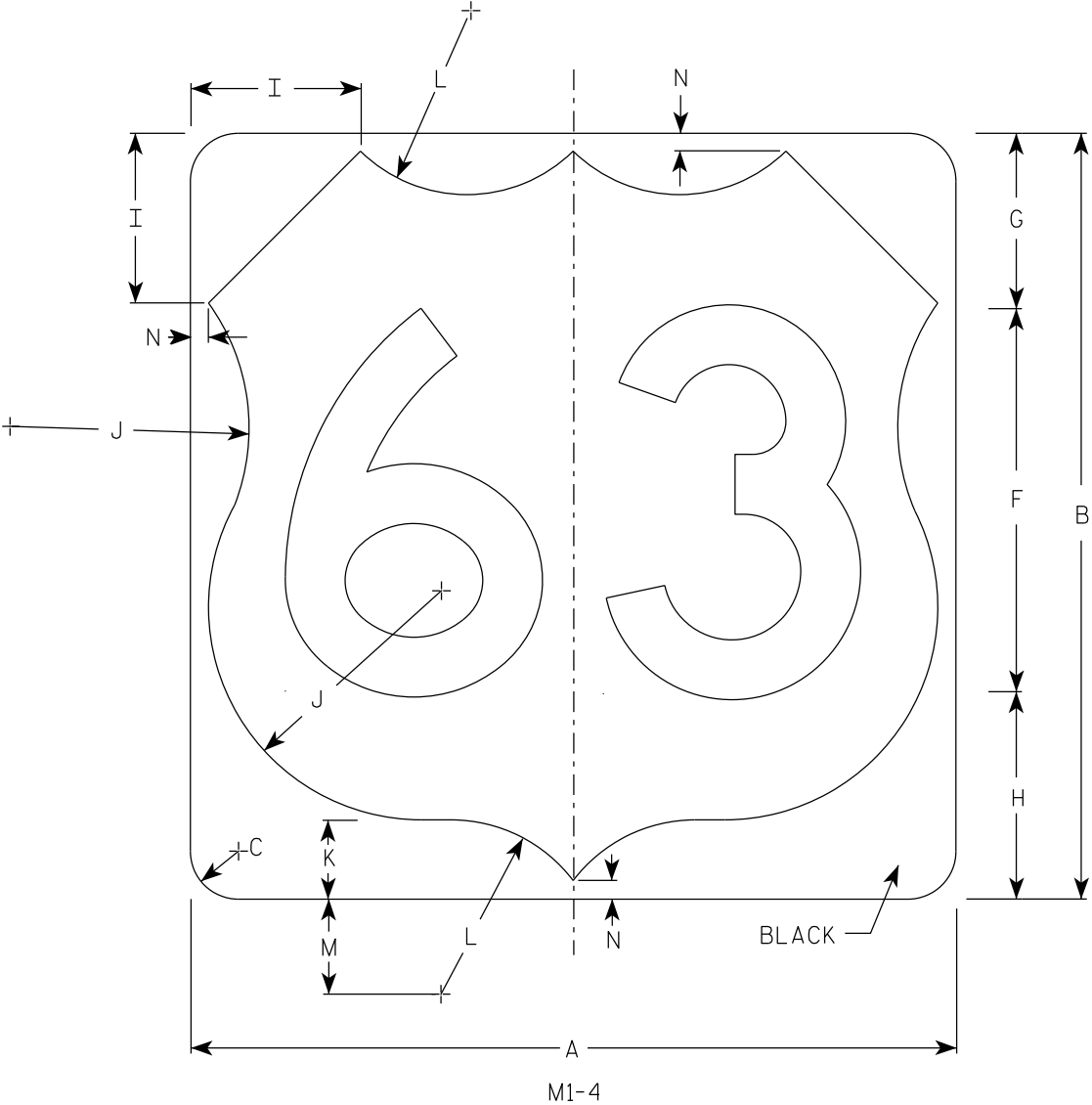
E

STANDARD SIGN
G20-57B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/22/19 PLATE NO. G20-57B.1



NOTES

- 1. Sign is Type II - Type H Reflective
- 2. Color:
Background - White
Message - Black
- 3. Message Series - D except 3 number signs Series C

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	24	1 1/2			12	5 1/2	6 1/2	5	7 1/2	2 1/2	5 1/2	3	1/2													4.0
2M	24	24	1 1/2			12	5 1/2	6 1/2	5	7 1/2	2 1/2	5 1/2	3	1/2													4.0
3	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0
4	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0
5	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0

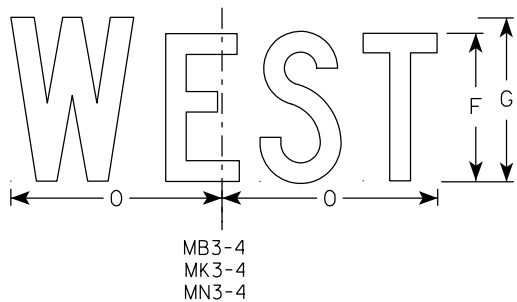
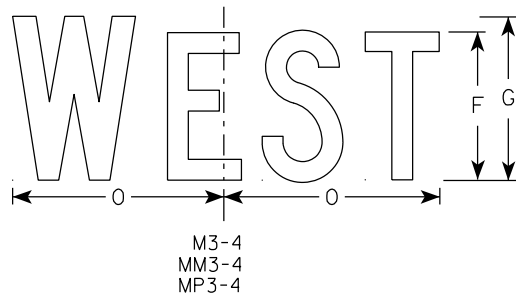
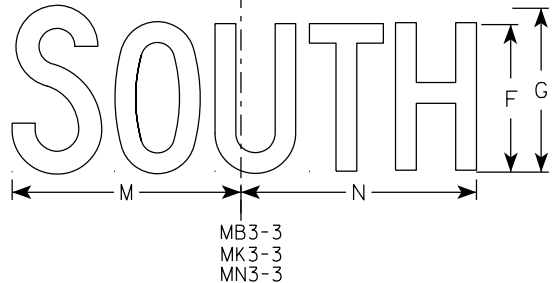
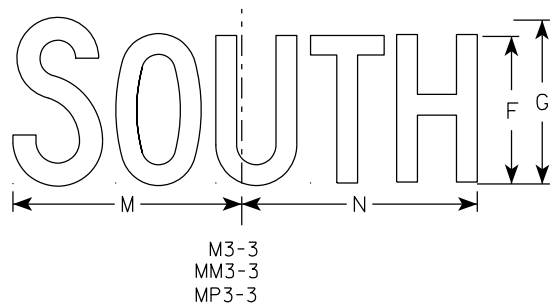
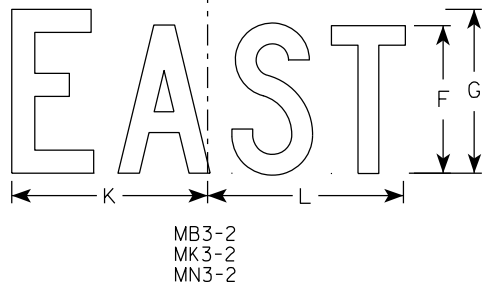
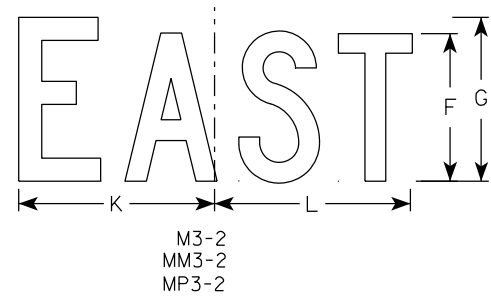
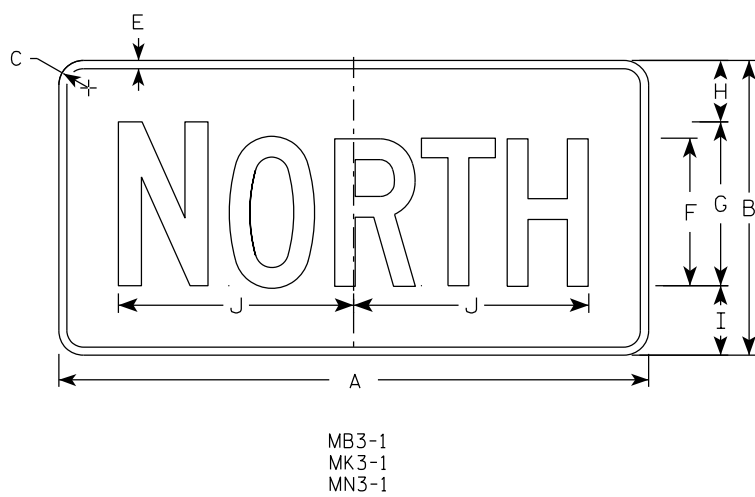
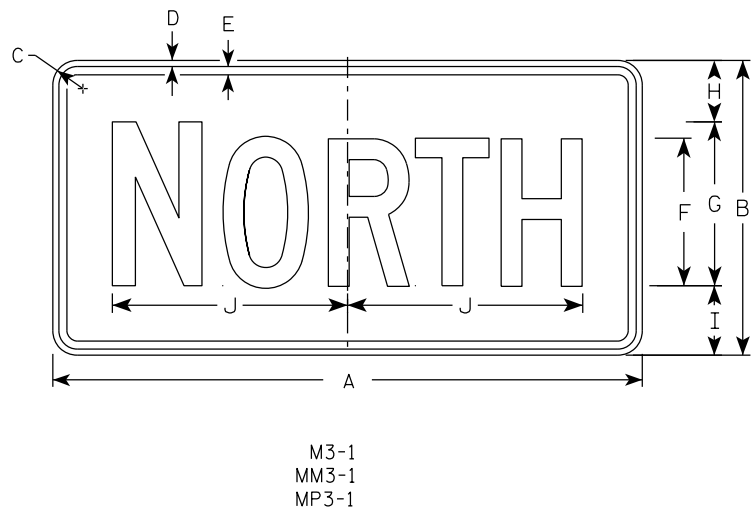
USH MARKER

M1-4 FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 12/20/22 PLATE NO. M1-4.11



NOTES

1. All Signs Type II - Type H Reflective
2. Color:
Background - See note 5
Message - See note 5
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. 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
6. Note the first letter of each direction is larger than the remainder of the message.

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:	E
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STANDARD SIGNS
M3-1 THRU M3-4
SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

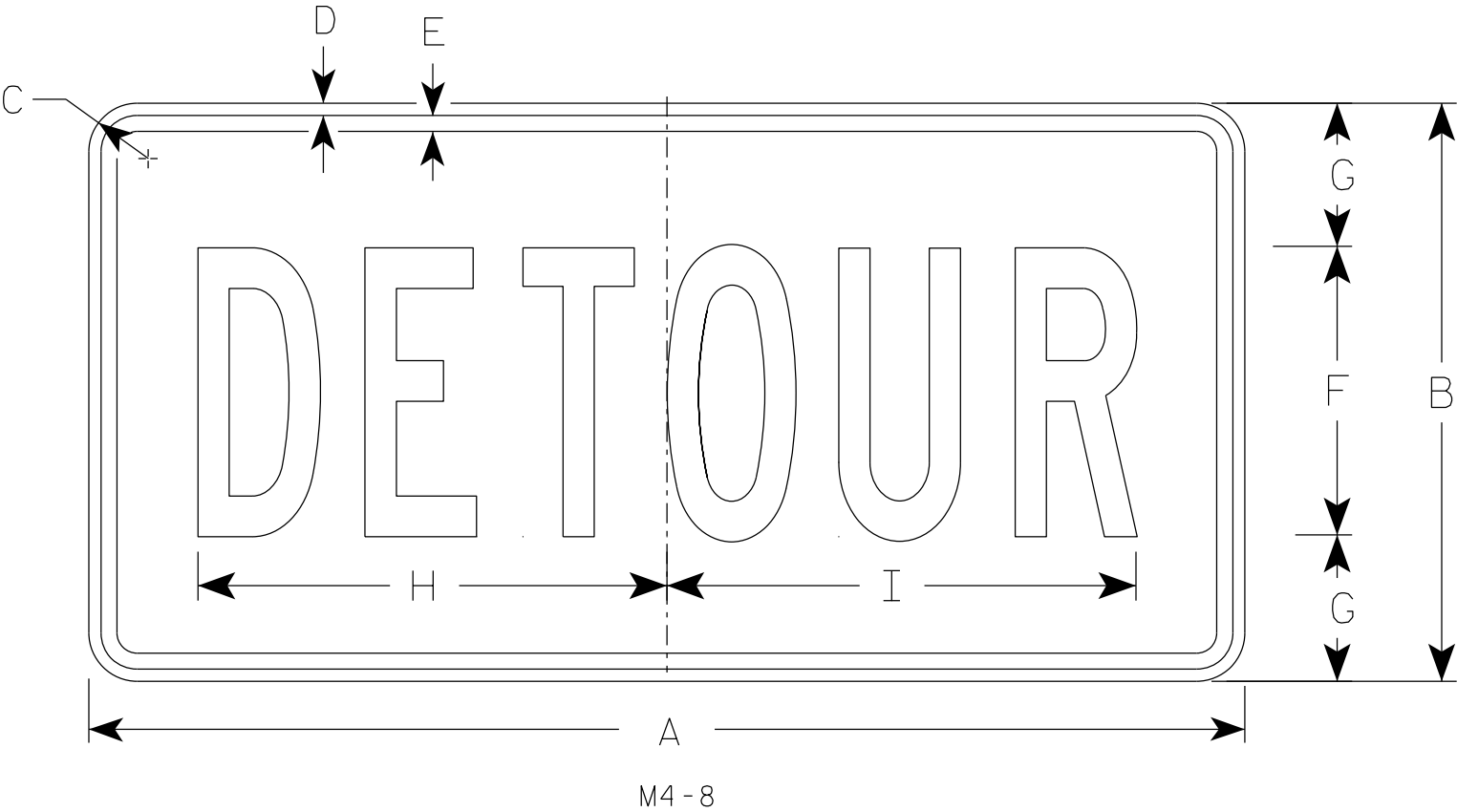
DATE 2/8/2023 PLATE NO. M3-1.15

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

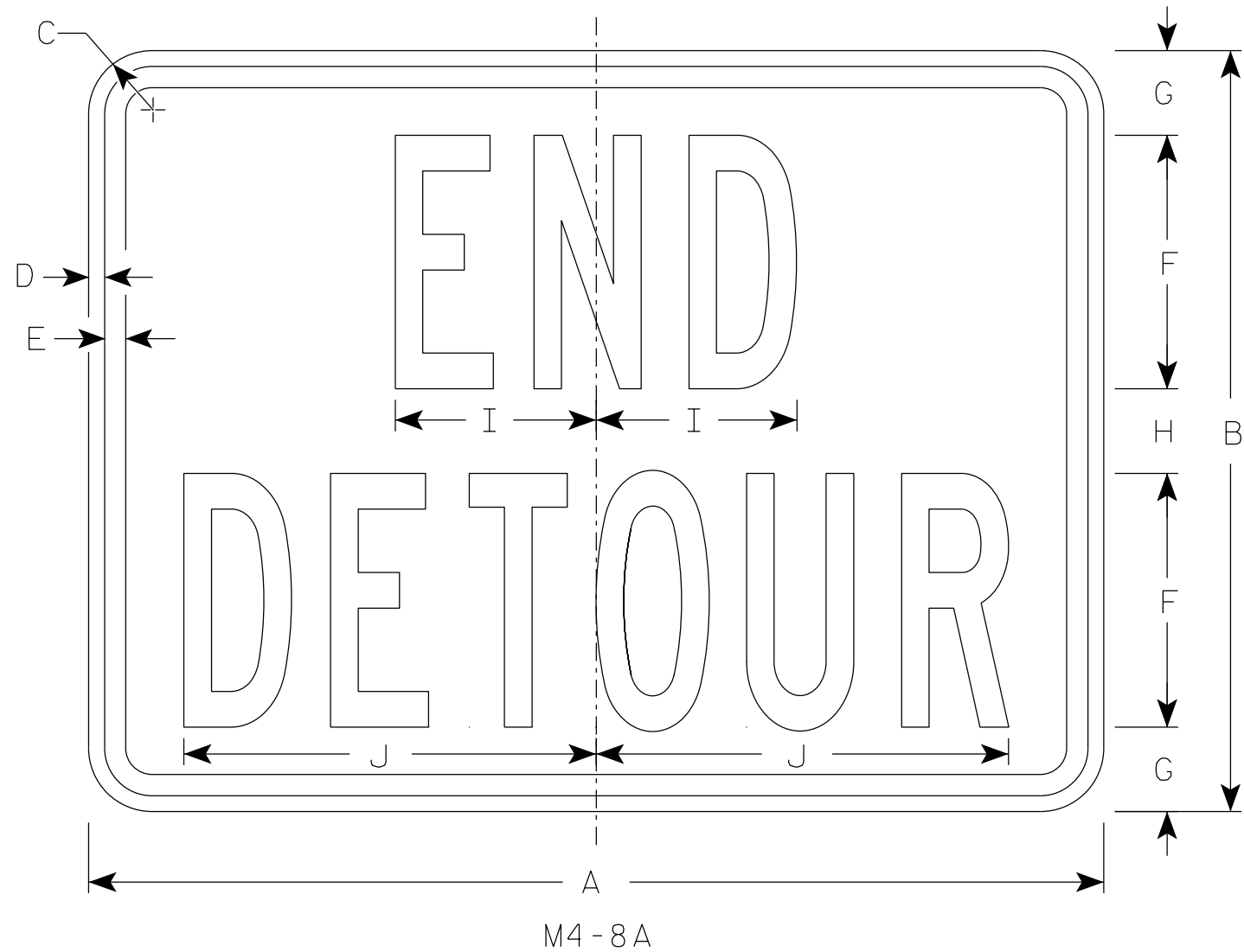
M4-8

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

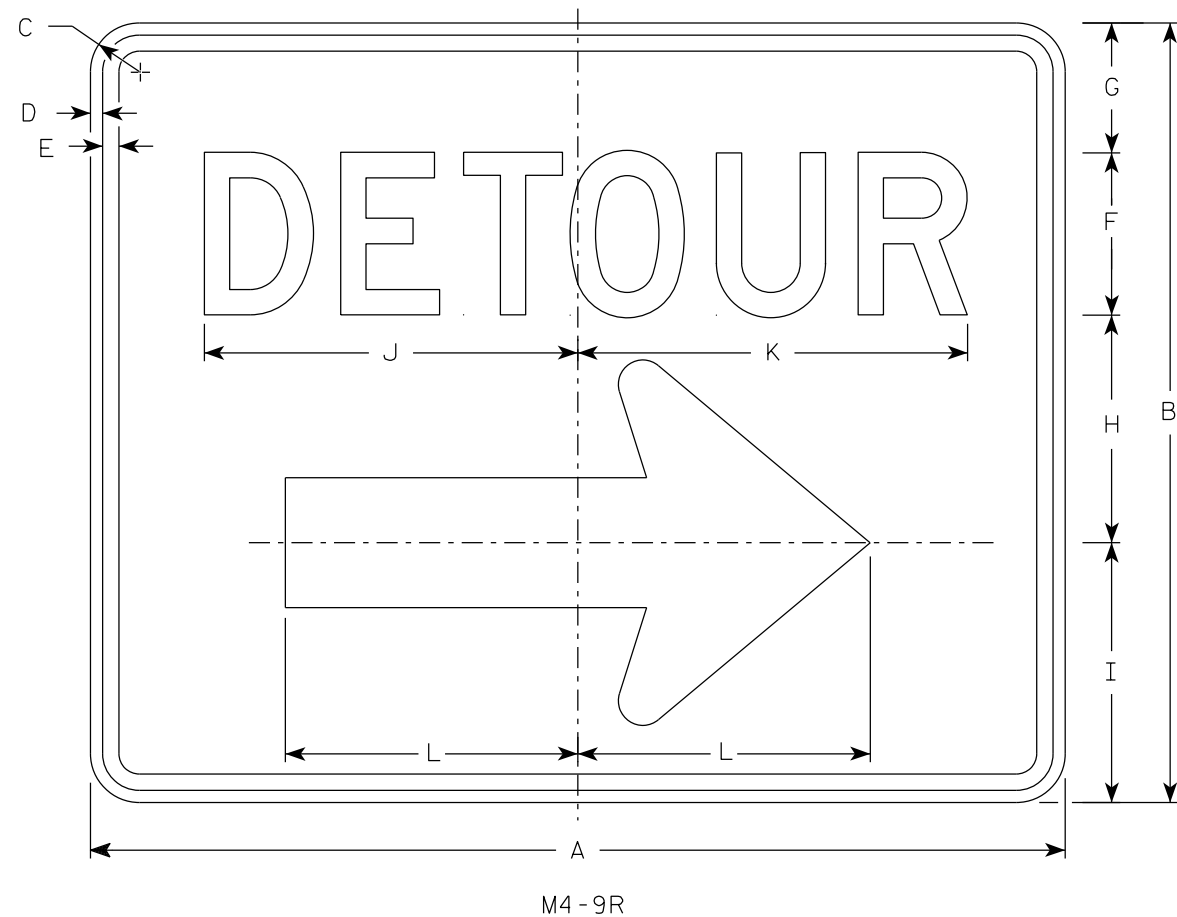
STANDARD SIGN

M4-8A

WISCONSIN DEPT OF TRANSPORTATION

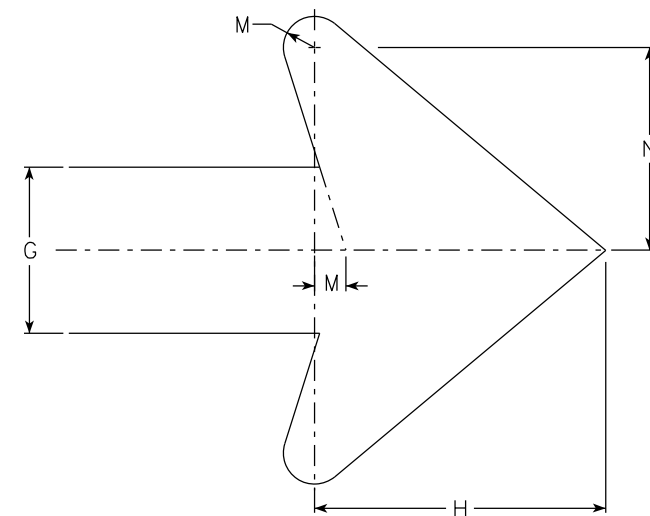
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

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

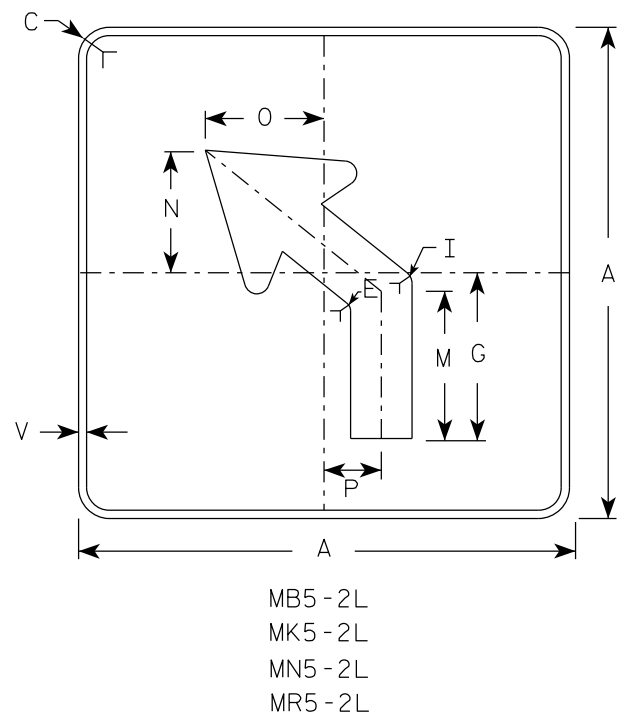
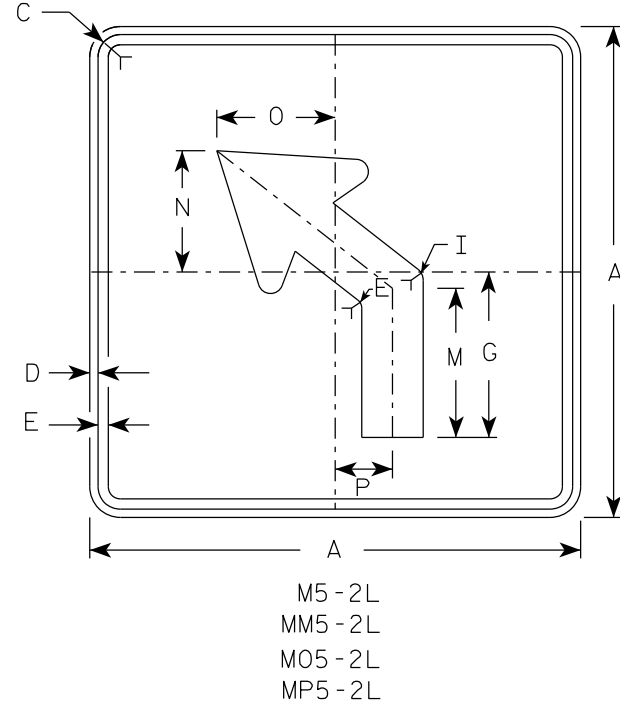
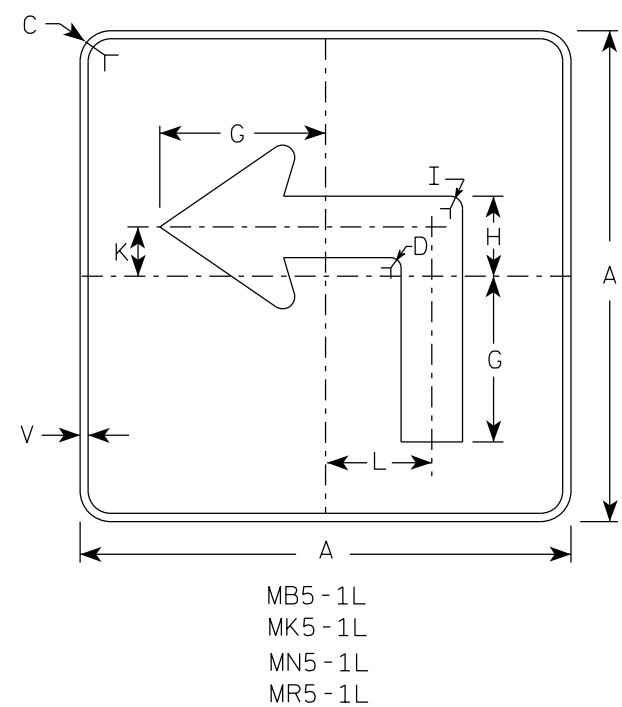
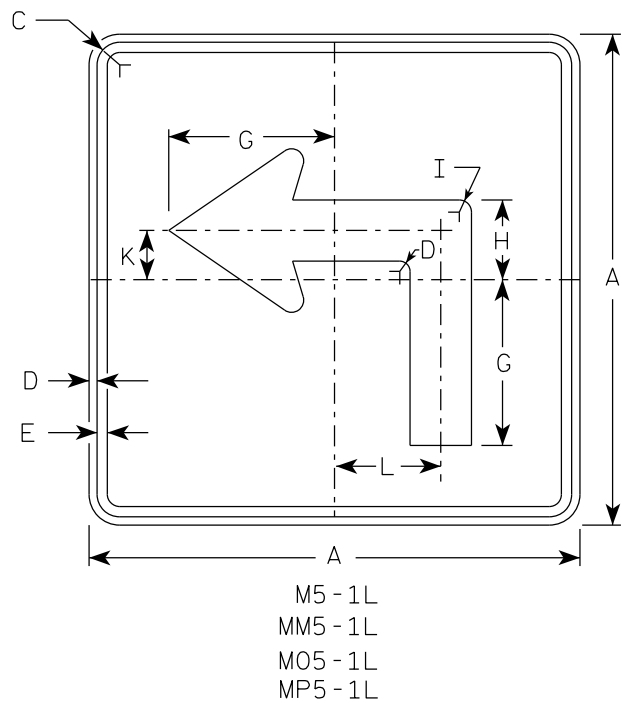
STANDARD SIGN
M4-9 R & L

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

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

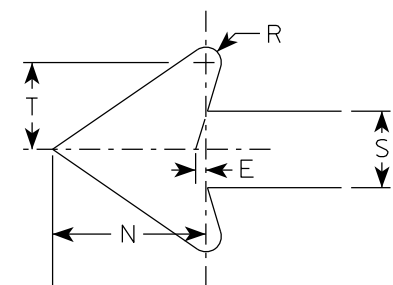
PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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NOTES

- 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

STANDARD SIGN

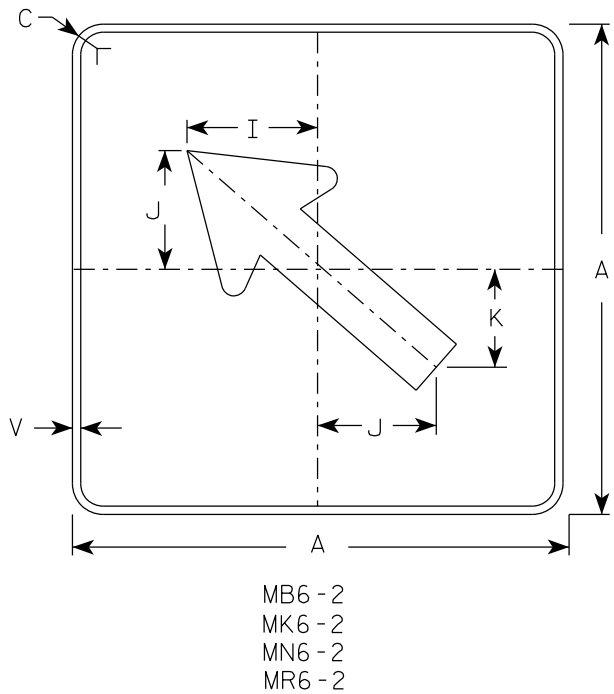
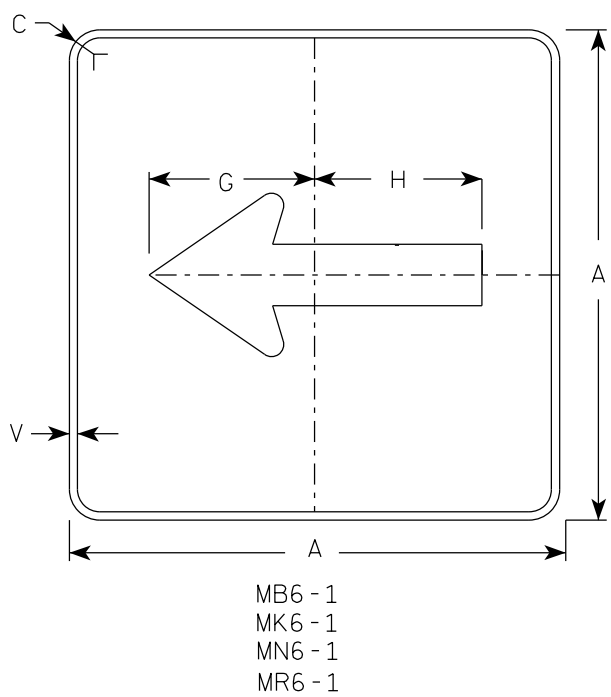
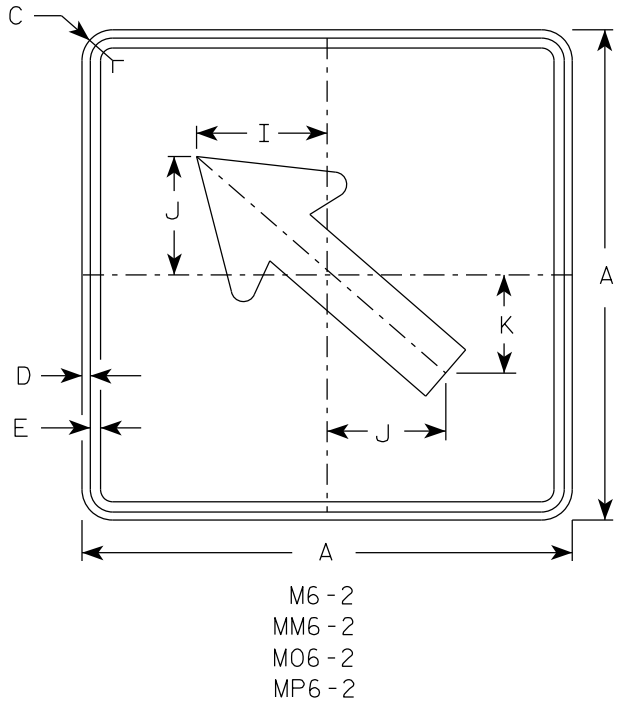
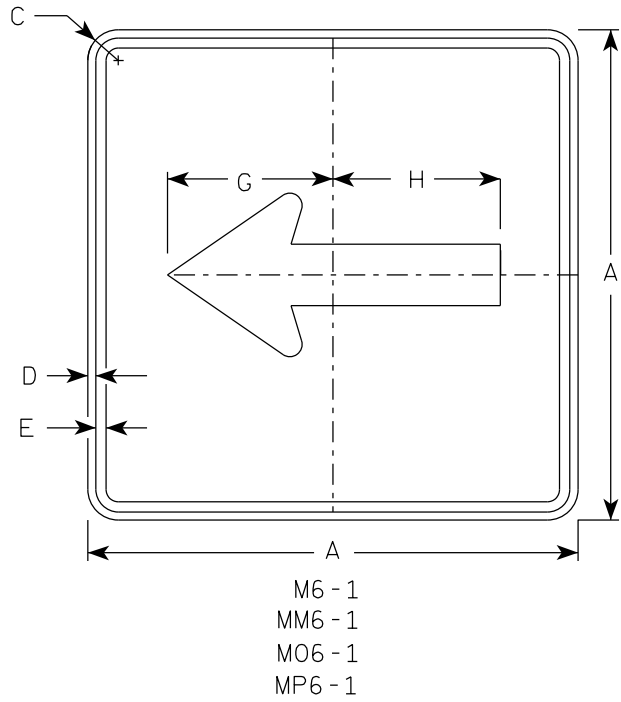
M5-1 & M5-2

WISCONSIN DEPT OF TRANSPORTATION

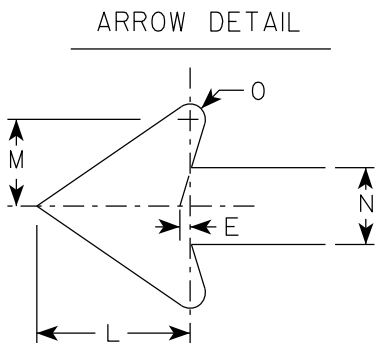
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 2/13/2023 PLATE NO. M5-1.15

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

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E

STANDARD SIGN
M6-1 & M6-2
SERIES

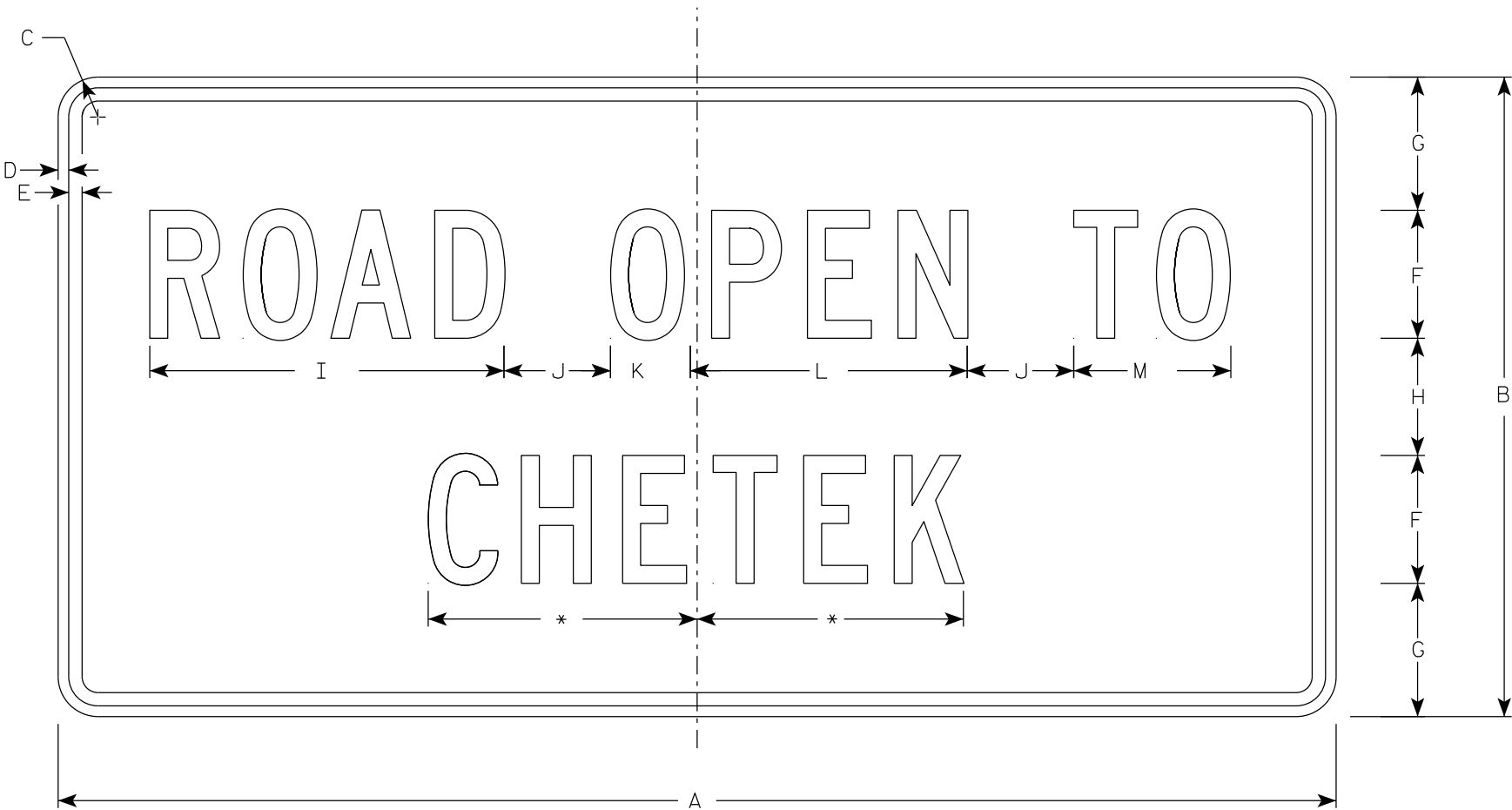
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 2/13/2023 PLATE NO. M6-1.16

7

7



R10-61

*See note 5

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 message and optically balance.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	24	1 1/2	1/2	5/8	4	5 1/2	5	10 3/4	2	2 1/8	8 3/8	4 5/8														6.0
2S	60	30	1 7/8	1/2	5/8	6	6 1/4	5 1/2	16 5/8	5	3 3/4	13	7 3/8														12.5
2M	60	30	1 7/8	1/2	5/8	6	6 1/4	5 1/2	16 5/8	5	3 3/4	13	7 3/8														12.5
3																											
4																											
5																											

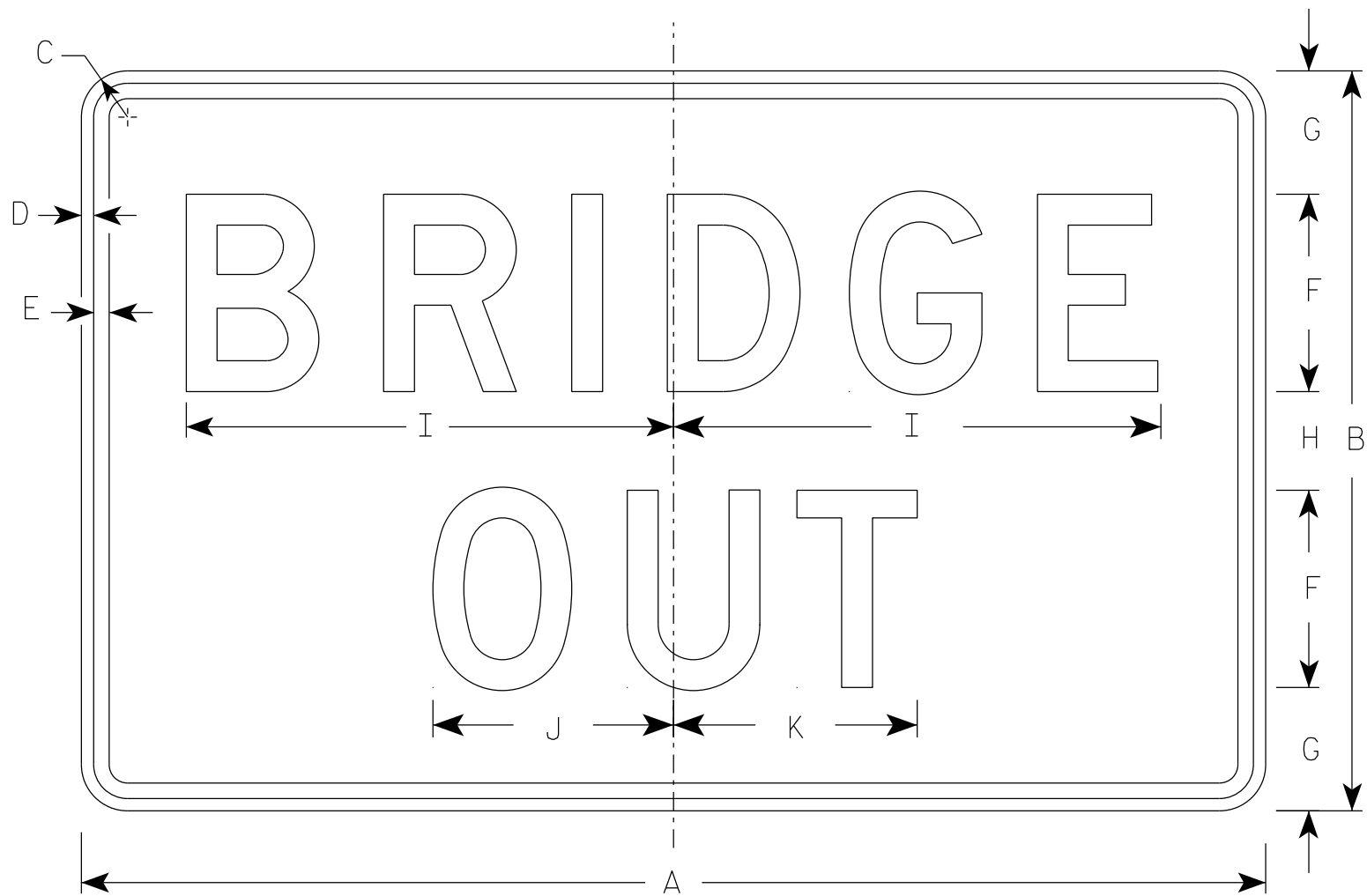
STANDARD SIGN

R10-61

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 2/5/24 PLATE NO. R10-61.6



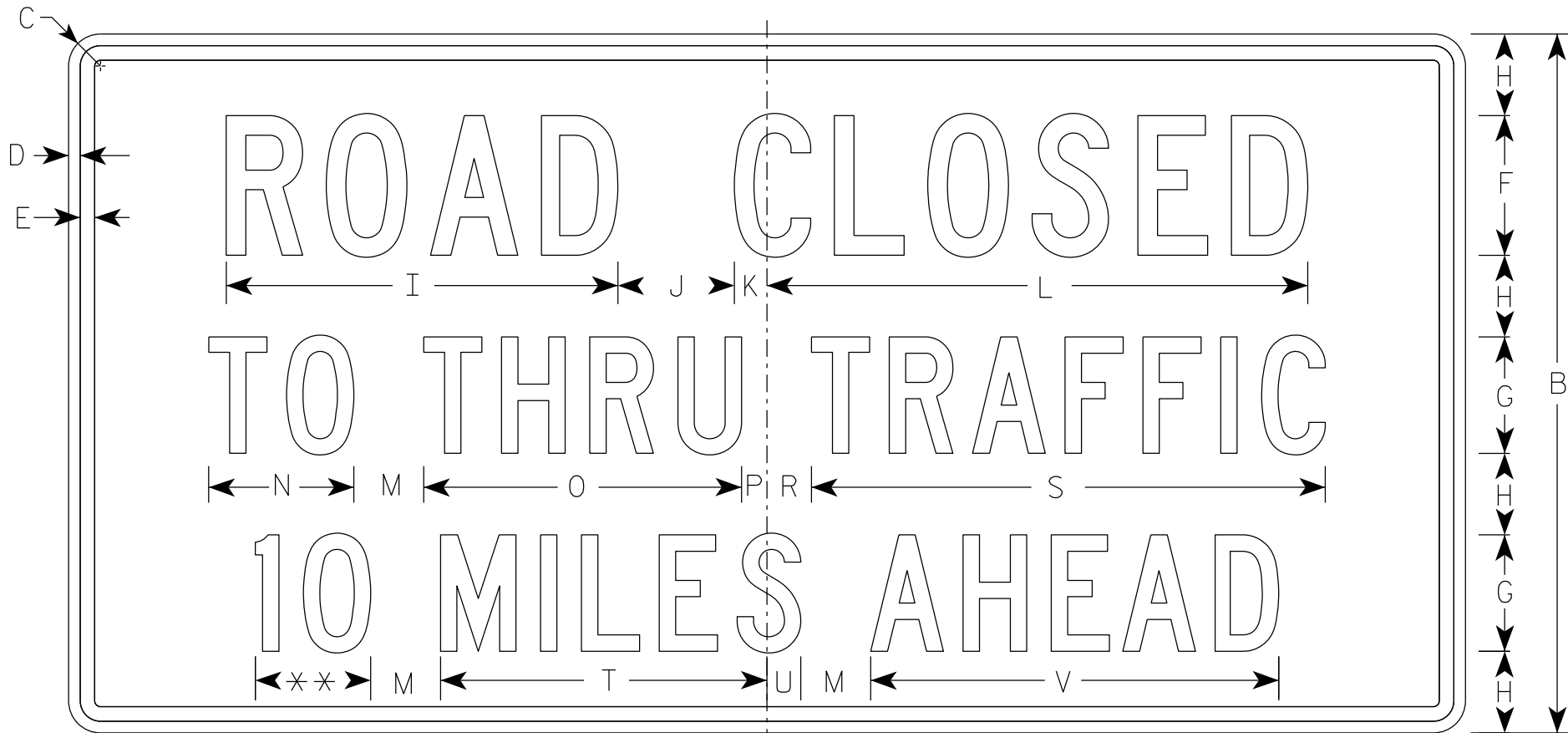
R11-2B

NOTES

- 1. Sign is Type II - Type H Reflective
- 2. Color:
 - Background - White
 - 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.

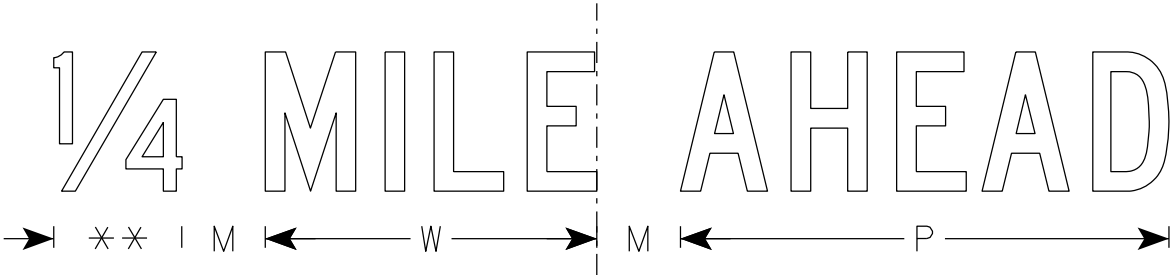
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48	30	1 7/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
2M	48	30	1 7/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
3	48	30	1 7/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
4	48	30	1 7/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
5	48	30	1 7/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0

7



R11-3

** See Note 5



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

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																											

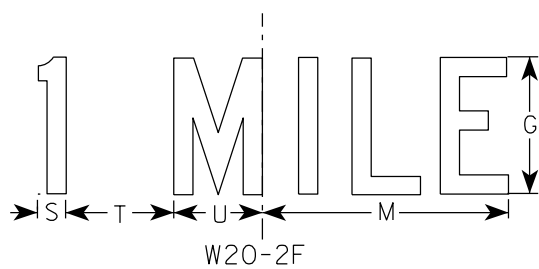
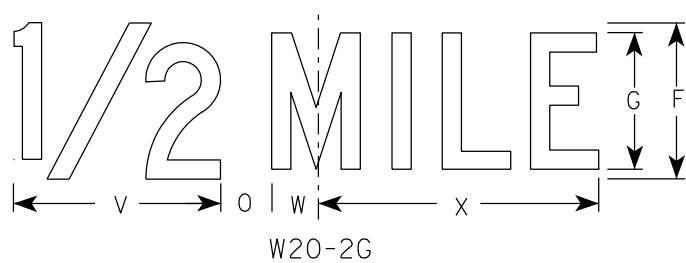
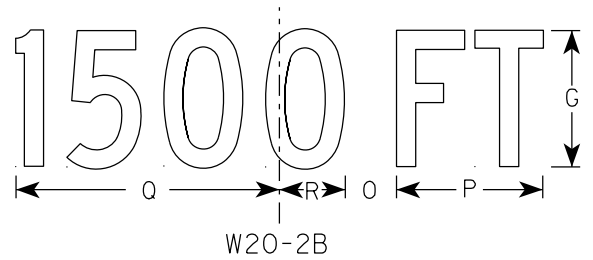
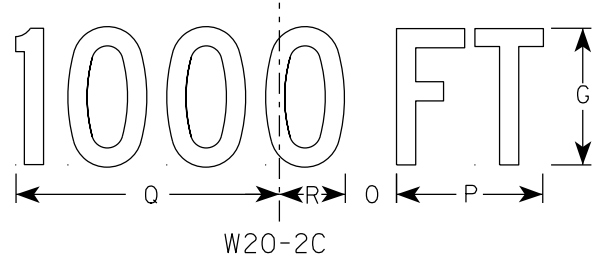
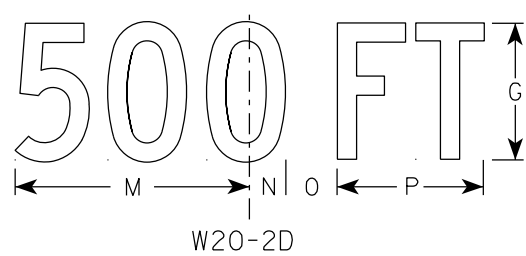
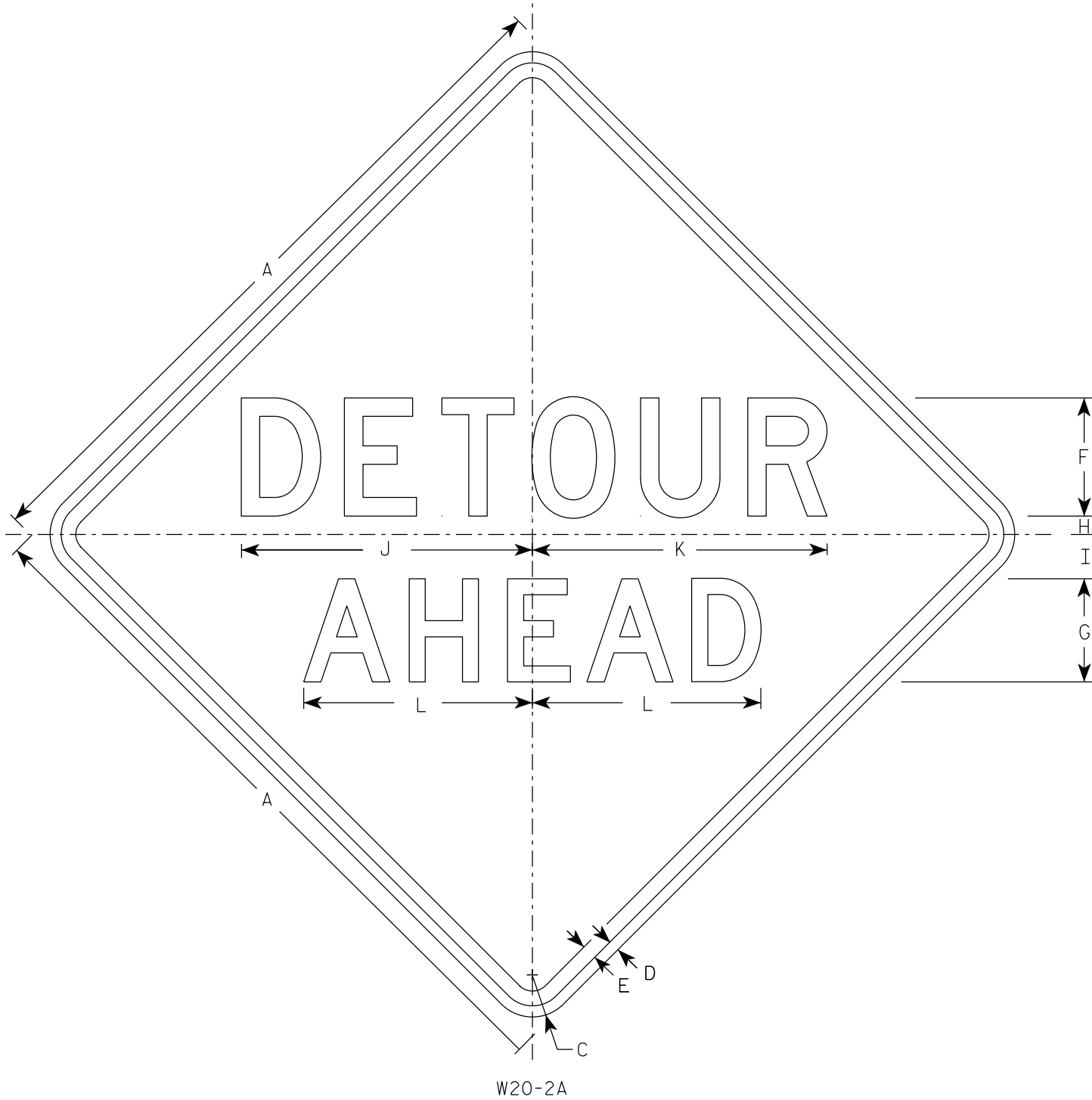
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



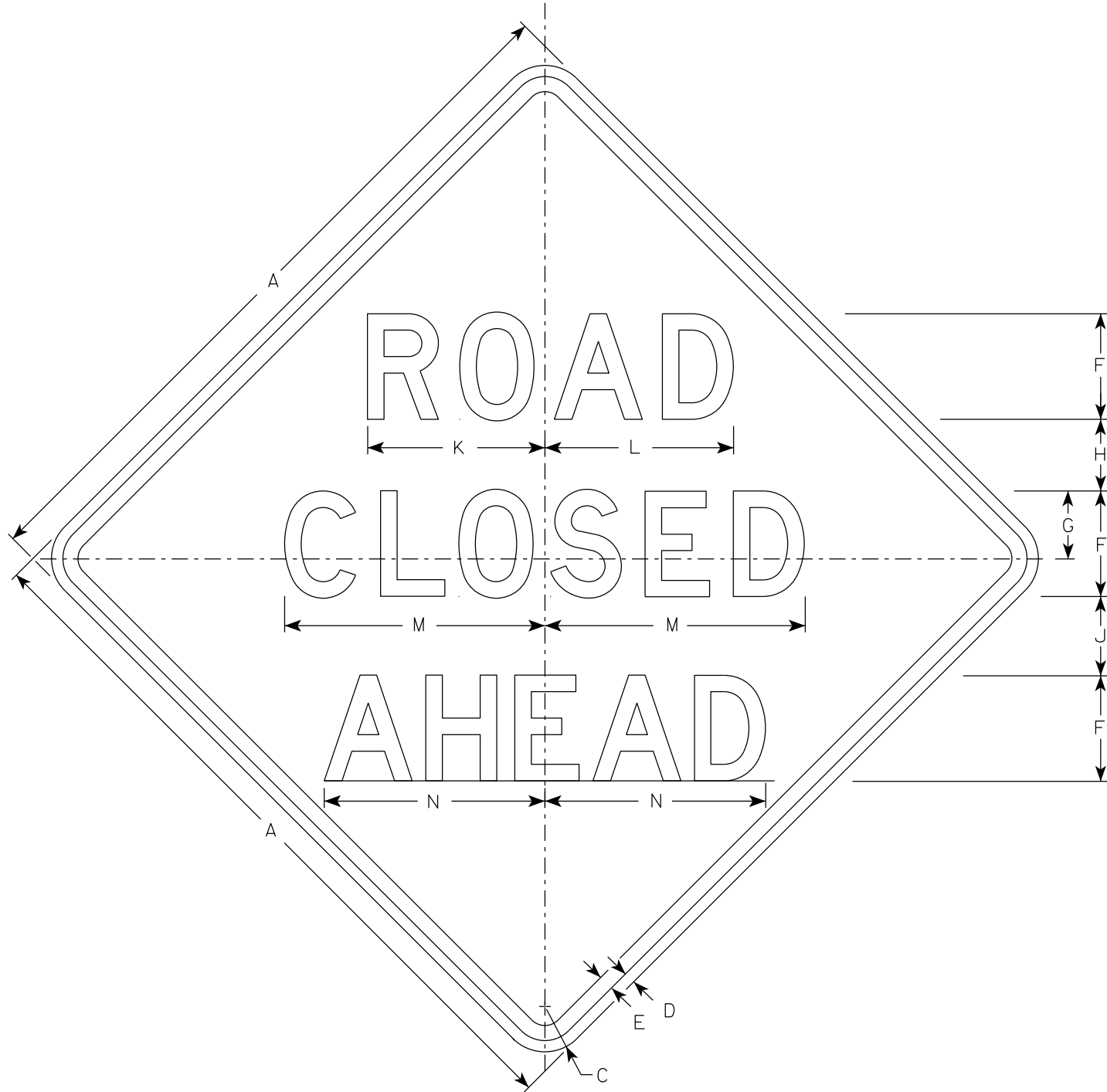
NOTES

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

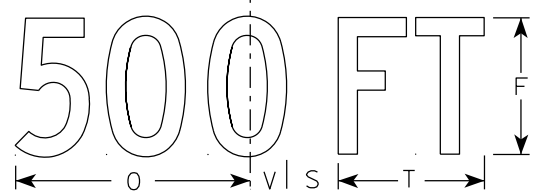
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		2 1/4	5/8	3/4	6	5	1	2 1/4	14 3/4	15	11 5/8	9	1 3/8	1 7/8	5 5/8	10 1/8	2 1/2	1 1/8	4 1/2	3 1/2	8	1 3/4	10 3/4			9.0
2S	48		3	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			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	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 1/10/2024	PLATE NO. W20-2.7

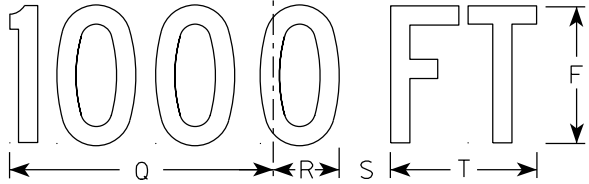
PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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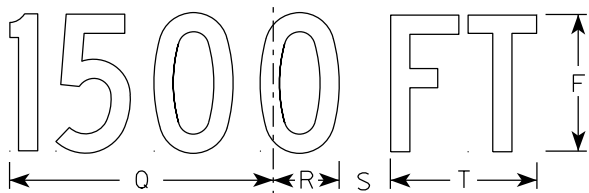
W20-3A



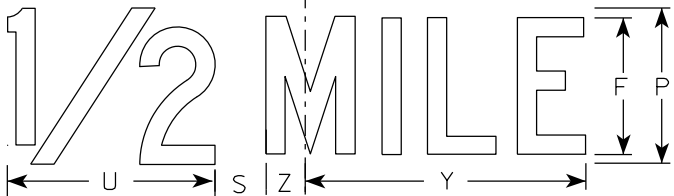
W20-3D



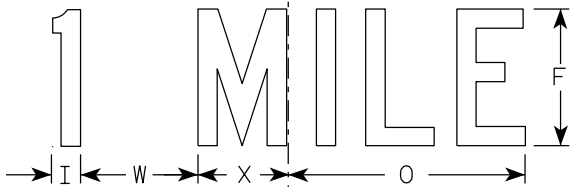
W20-3C



W20-3B



W20-3G



W20-3F

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. Lines 1 and 2 are Series D.
Line 3 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	5	3 3/8	3 1/2	1 1/8	4	8 3/8	8 7/8	12 1/2	11	9	6	10 1/8	2 1/2	1 7/8	5 5/8	8	1 3/8	4 1/2	3 1/2	10 3/4	1 3/4	9.0
2S	48		3	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0
2M	48		3	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0
3	48		3	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0
4	48		3	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0
5	48		3	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0

STANDARD SIGN
W20-3A, B, C, D, F & G

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/10/2024 PLATE NO. W20-3.8

A.D.T. = 4290 (2020)
R.D.S. = 60 MPH

1. REMOVE AND REPLACE EXISTING CONCRETE DECK AND PARAPETS.
2. CONCRETE SURFACE REPAIR SHALL BE DONE AS SHOWN IN THE PLANS AND AS DIRECTED BY THE ENGINEER.
3. REPAIR EXPOSED GIRDER REBAR AS SHOWN IN THE PLANS AND DIRECTED BY THE SPECIAL PROVISION AND ENGINEER.
4. SEAL BACK FACE OF ABUTMENT SEAM WITH RUBBERIZED MEMBRANE WATERPROOFING.

DESCRIPTION	ELEV.
CHISELED SQUARE IN SE BRIDGE ABUTMENT	1081.84
RAILROAD SPIKE IN POWER POLE AT EAST R/W, 85 FT. N. OF NORTH ABUT.	1075.52
RAILROAD SPIKE IN POWER POLE AT WEST R/W, 250 FT. N. OF NORTH ABUT.	1078.36

1. GENERAL PLAN (DECK REPLACEMENT)
2. CROSS SECTION & QUANTITIES
3. REMOVAL DETAILS
4. STEEL DIAPHRAGM
5. SUPERSTRUCTURE CROSS SECTIONS
6. SUPERSTRUCTURE DETAILS
7. SUPERSTRUCTURE PLAN
8. SINGLE SLOPE PARAPET 425S
9. SUPERSTRUCTURE BAR DETAILS
10. CONCRETE SURFACE REPAIR DETAILS

JONATHON RESHESKE	608-266-8491
DOMINIQUE BECHLE	608-261-8205

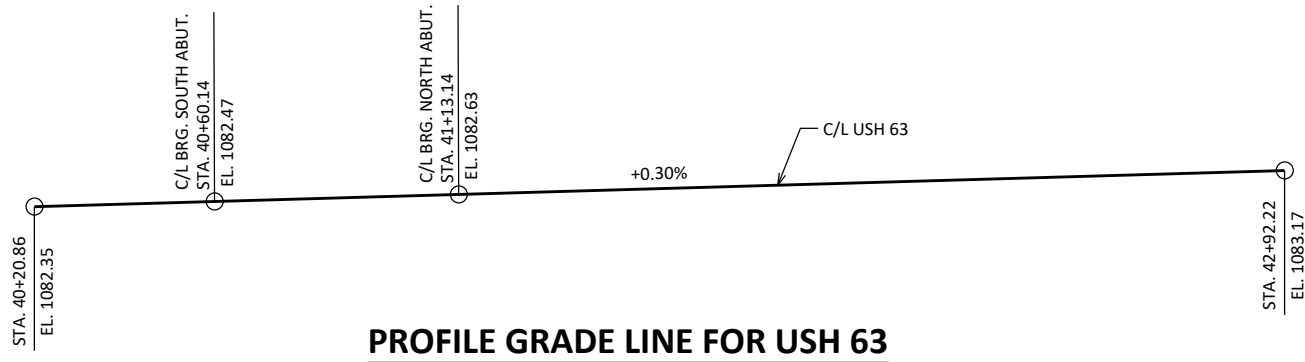


I.D. 1550-02-05A	DATE: FEB. 2024
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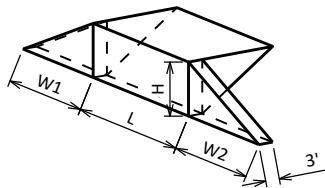
TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	TOTALS
203.0260	REMOVING STRUCTURE OVER WATERWAY MINIMAL DEBRIS B-55-55	EACH	1
206.1001	EXCAVATION FOR STRUCTURES BRIDGES B-55-55	EACH	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	140
502.0100	CONCRETE MASONRY BRIDGES	CY	76
502.3200	PROTECTIVE SURFACE TREATMENT	SY	248
502.3210	PIGMENTED SURFACE SEALER	SY	55
502.4205	ADHESIVE ANCHORS NO. 5 BAR	EACH	192
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	15,680
506.4000	STEEL DIAPHRAGMS B-55-55	EACH	6
509.1500	CONCRETE SURFACE REPAIR	SF	10
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	16
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	115
614.0150	ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD	EACH	4
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	78
★ SPV.0060	CLEANING AND SEALING CONCRETE GIRDER ENDS	EACH	1

★ "CLEANING AND SEALING CONCRETE GIRDER ENDS" WORK IS REQUIRED ON THE EXTERIOR FACE OF GIRDER 7 SOUTH END NEAR THE SOUTH ABUTMENT.



PROFILE GRADE LINE FOR USH 63



ABUTMENT BACKFILL DIAGRAM

- L = OUT TO OUT OF ABUTMENT BODY (FT)
- H = AVERAGE ABUTMENT FILL HEIGHT (FT)
- W1 = WING 1 LENGTH (FT)
- W2 = WING 2 LENGTH (FT)
- EF = EXPANSION FACTOR (1.20 FOR CY BID ITEMS AND 1.00 FOR TON BID ITEMS)
- $V_{CF} = (L)(3.0')(H) + (L)(0.5)(1.5H)(H) + (3')(0.5)(W1 + W2)(H)$
- $V_{CY} = V_{CF}(EF)/27$
- $V_{TON} = V_{CY}(2.0)$

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

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

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

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

PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE ENTIRE EXPOSED TOP OF DECK AND TO THE VERTICAL AND HORIZONTAL SURFACES OF THE PAVING NOTCHES AT ABUTMENT DIAPHRAGMS.

PIGMENTED SURFACE SEALER TO BE APPLIED TO THE FRONT FACE AND THE TOP OF THE PARAPETS.

THE GIRDER HAUNCH CONCRETE QUANTITY IS BASED ON THE AVERAGE HAUNCH SHOWN ON THE "SUPERSTRUCTURE DETAILS" SHEET.

HAUNCH HEIGHTS MAY VARY. MINIMUM HAUNCH HEIGHTS ARE ANTICIPATED TO BE 1/2"± IN HEIGHT AT SOME LOCATIONS. UNCONVENTIONAL DECK FORMING METHODS MAY BE REQUIRED.

SOME DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL STRUCTURE PLANS.

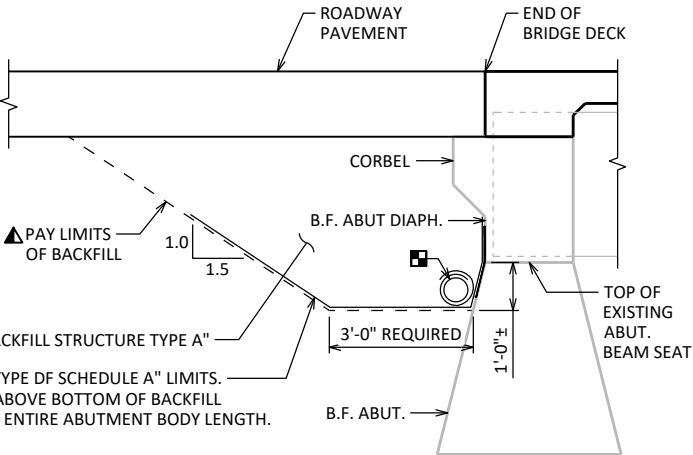
THE CONTRACTOR SHALL SUPPLY A NEW NAME PLATE IN ACCORDANCE WITH SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS AND THE STANDARD DETAIL DRAWINGS. NAME PLATE TO SHOW ORIGINAL CONSTRUCTION YEAR 1962.

AT THE BACK FACE OF ABUTMENT ALL VOLUME SHALL BE BACKFILLED WITH "STRUCTURE BACKFILL TYPE A".

THE QUANTITY FOR BACKFILL STRUCTURE IS CALCULATED BASED ON THE DETAIL SHOWN ON THE PLANS.

STATE PROJECT NUMBER

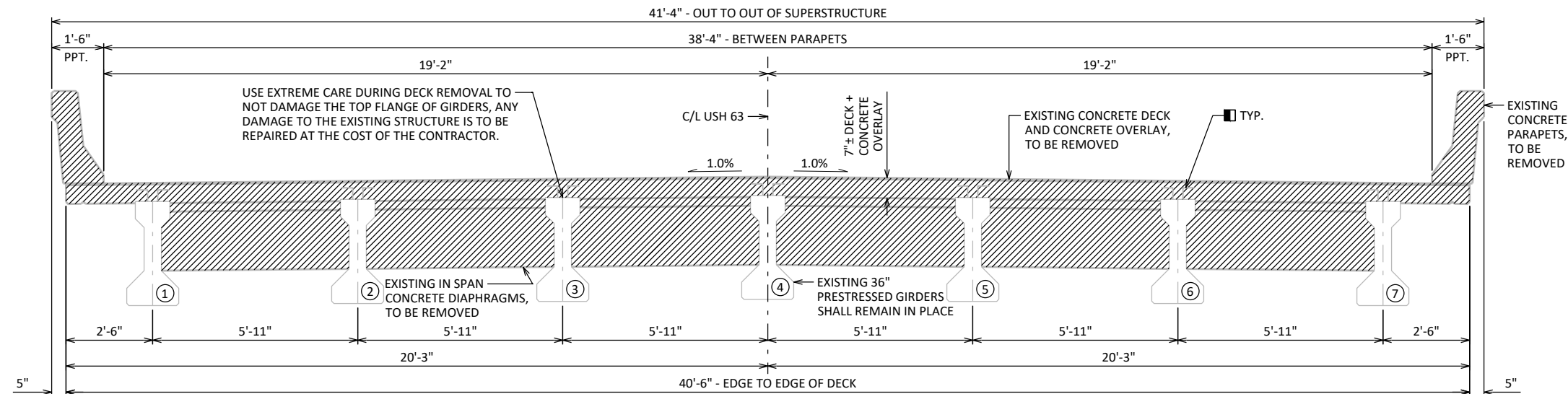
1550-02-75



TYPICAL SECTION THRU ABUTMENT

- ▲ BACKFILL PAY LIMITS. BACKFILL BEYOND PAY LIMITS SHALL BE INCIDENTAL TO "EXCAVATION FOR STRUCTURES BRIDGES B-55-55". LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.
- PIPE UNDERDRAIN WRAPPED (6-INCH) TO EXTEND THE ENTIRE LENGTH OF ABUTMENTS/WINGS. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.

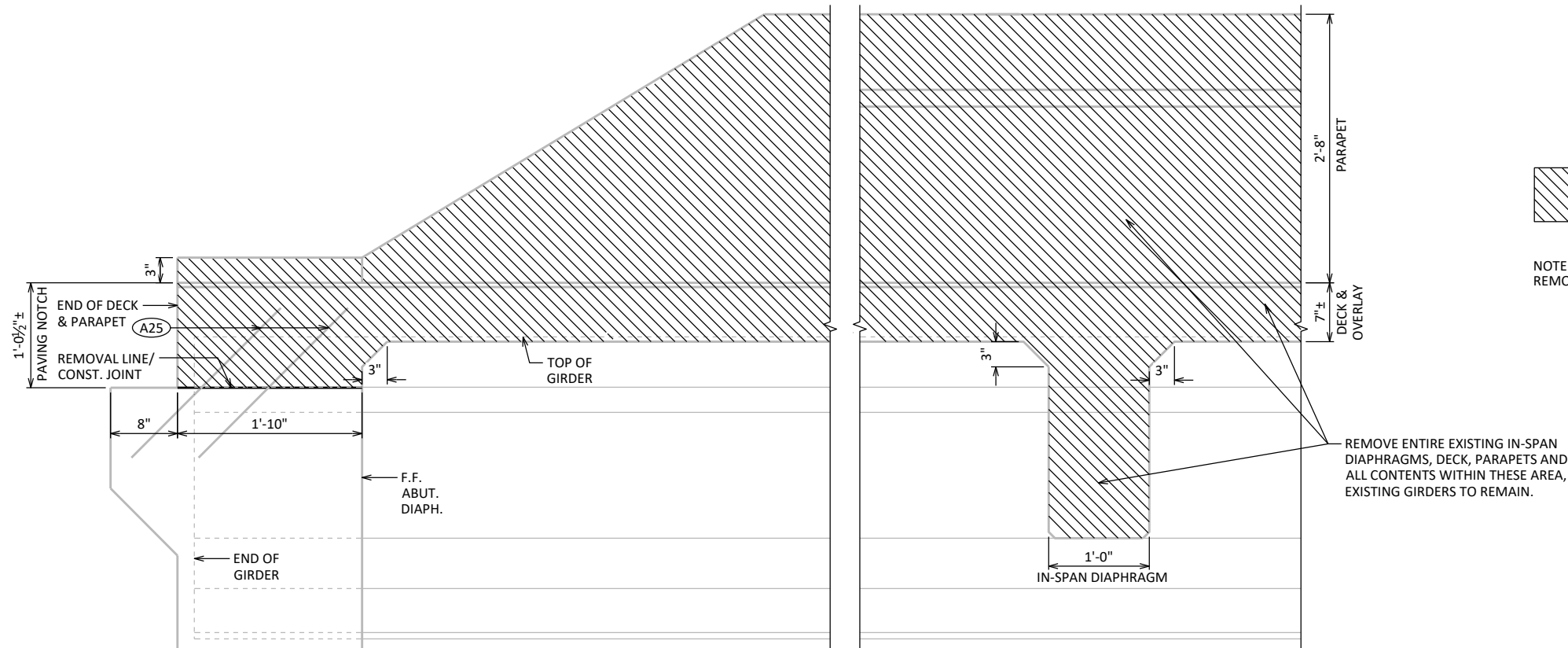
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-55-55		DRAWN BY JPH	PLANS CK'D JLR
CROSS SECTIONS & QUANTITIES		SHEET 2	



EXISTING CROSS SECTION THRU SUPERSTRUCTURE LOOKING NORTH - SHOWING REMOVAL AREAS

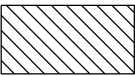
○ GIRDER NUMBERS

■ DO NOT DAMAGE EXISTING SHEAR STIRRUPS AT TOPS OF GIRDERS DURING DECK REMOVAL. IF SHEAR STIRRUPS ARE DAMAGED, THEY SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE ENGINEER AT NO COST TO THE DEPARTMENT.



AT ABUT. (TYP AT BOTH ABUTS.)

EXISTING PARTIAL LONGITUDINAL SECTION OF SUPERSTRUCTURE SHOWING REMOVAL AREAS



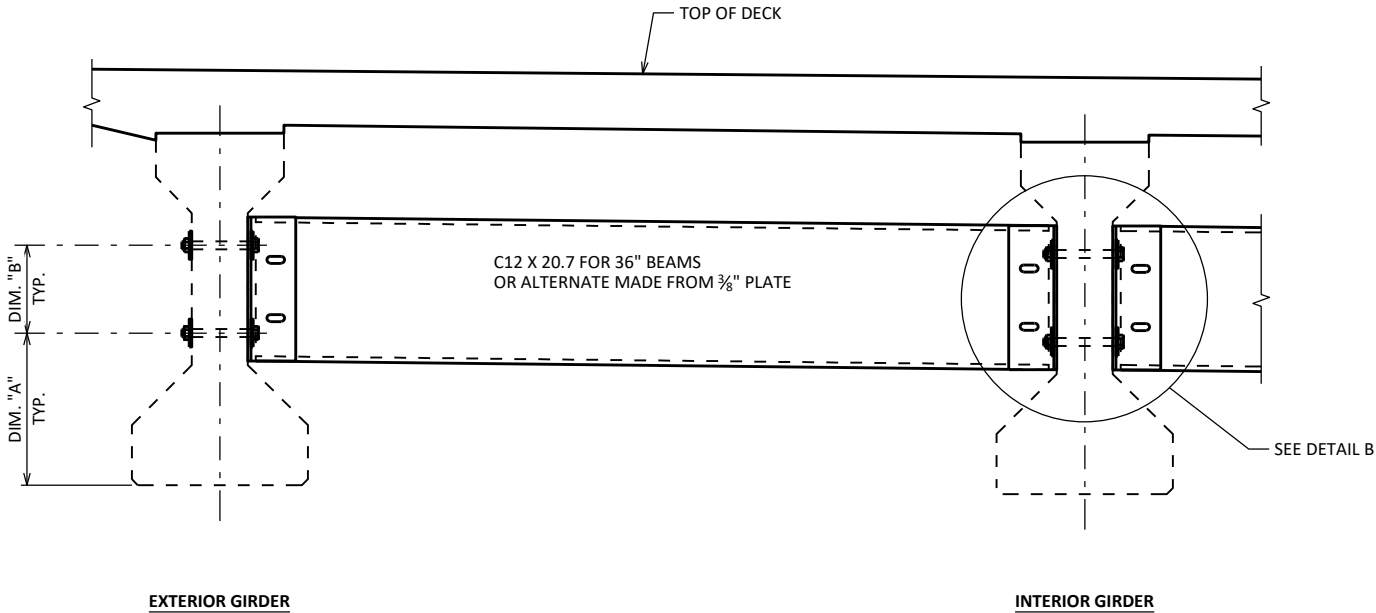
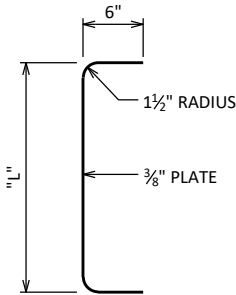
REMOVAL AREAS

NOTE: REMOVAL LINES SHALL BE DEFINED BY A 1" SAW-CUT.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-55-55			
DRAWN BY JPH		PLANS CK'D JLR	
REMOVAL DETAILS		SHEET 3	

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 ¹ / 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 "



NOTES

ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-55-55", EACH.

EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

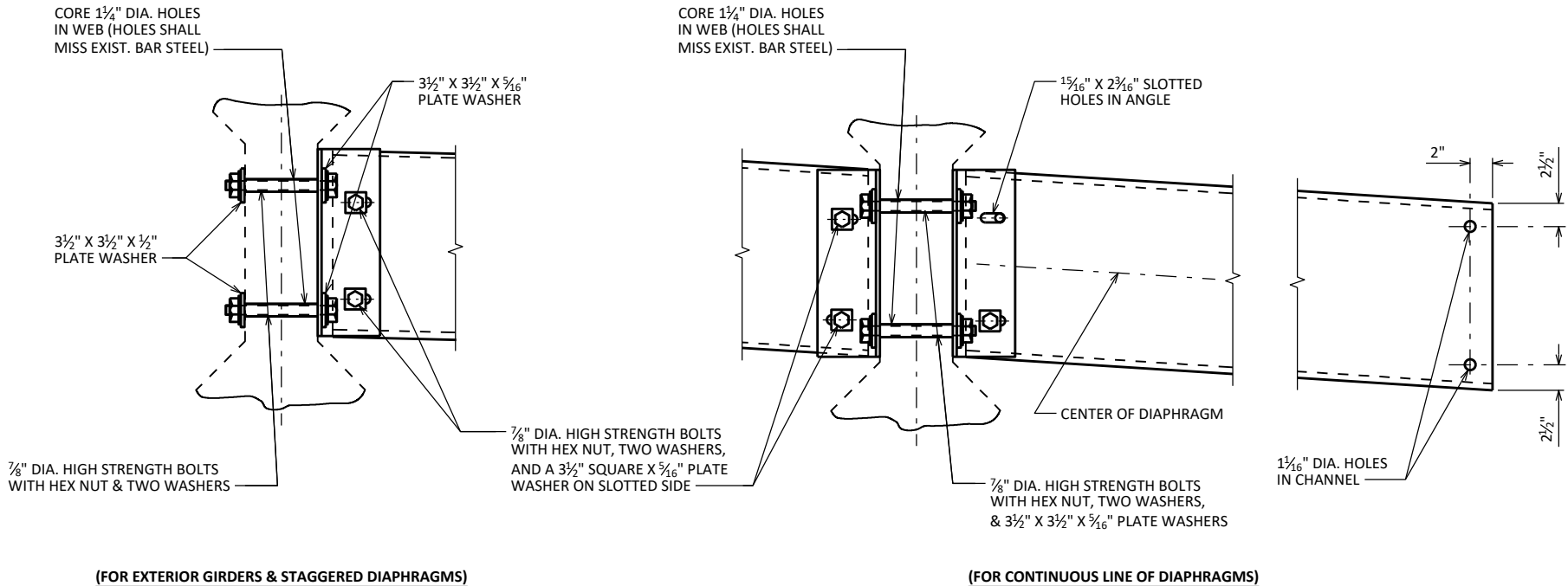
ALL DIAPHRAGM MATERIAL INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.

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.

SECTION THRU ALTERNATE DIAPHRAGM

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

PART TRANSVERSE SECTION AT DIAPHRAGM

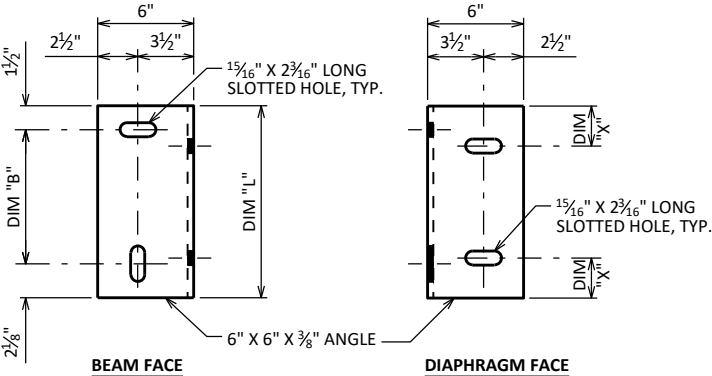


(FOR EXTERIOR GIRDERS & STAGGERED DIAPHRAGMS)

(FOR CONTINUOUS LINE OF DIAPHRAGMS)

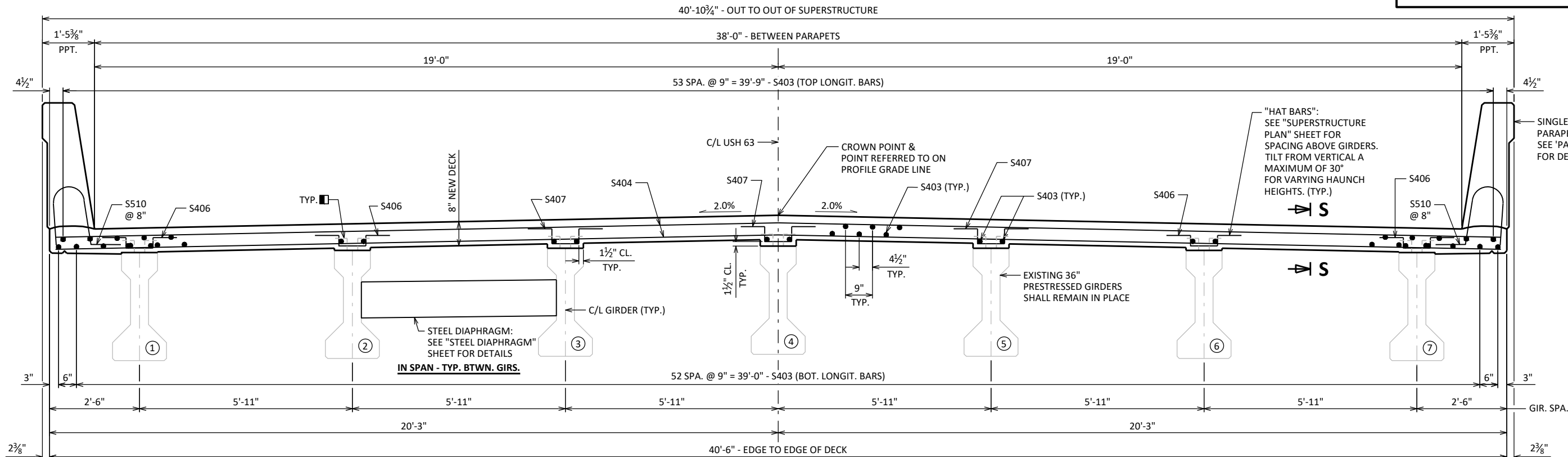
DETAIL B

DIAPHRAGM SUPPORT



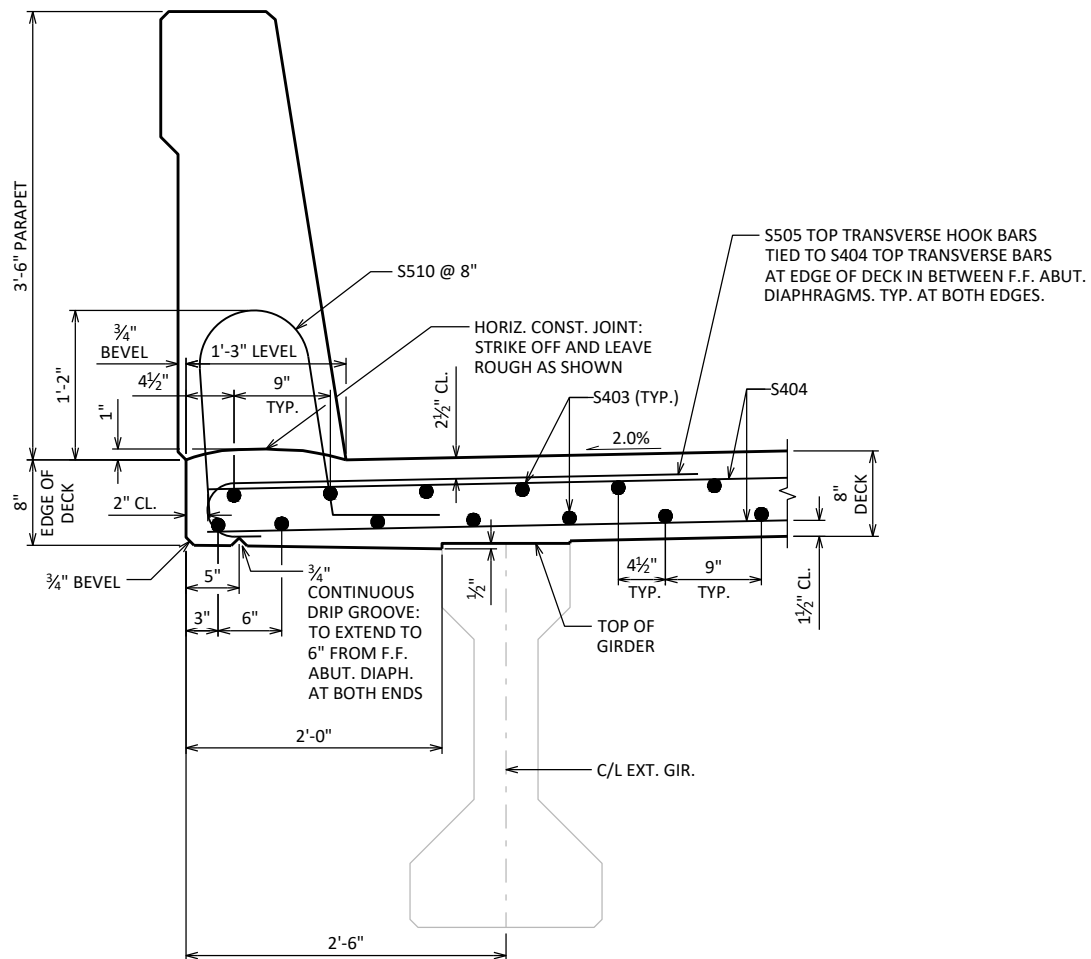
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-55-55			
DRAWN BY JPH		PLANS CK'D JLR	
STEEL DIAPHRAGM		SHEET 4	

SCALE = 2.00



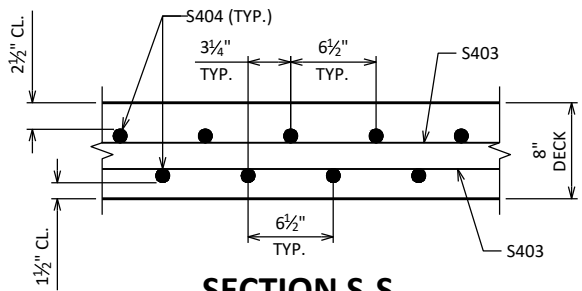
PROPOSED CROSS SECTION THRU SUPERSTRUCTURE LOOKING NORTH

■ DO NOT DAMAGE EXISTING SHEAR STIRRUPS AT TOPS OF GIRDERS DURING DECK REMOVAL. IF SHEAR STIRRUPS ARE DAMAGED, THEY SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE ENGINEER AT NO COST TO THE DEPARTMENT.



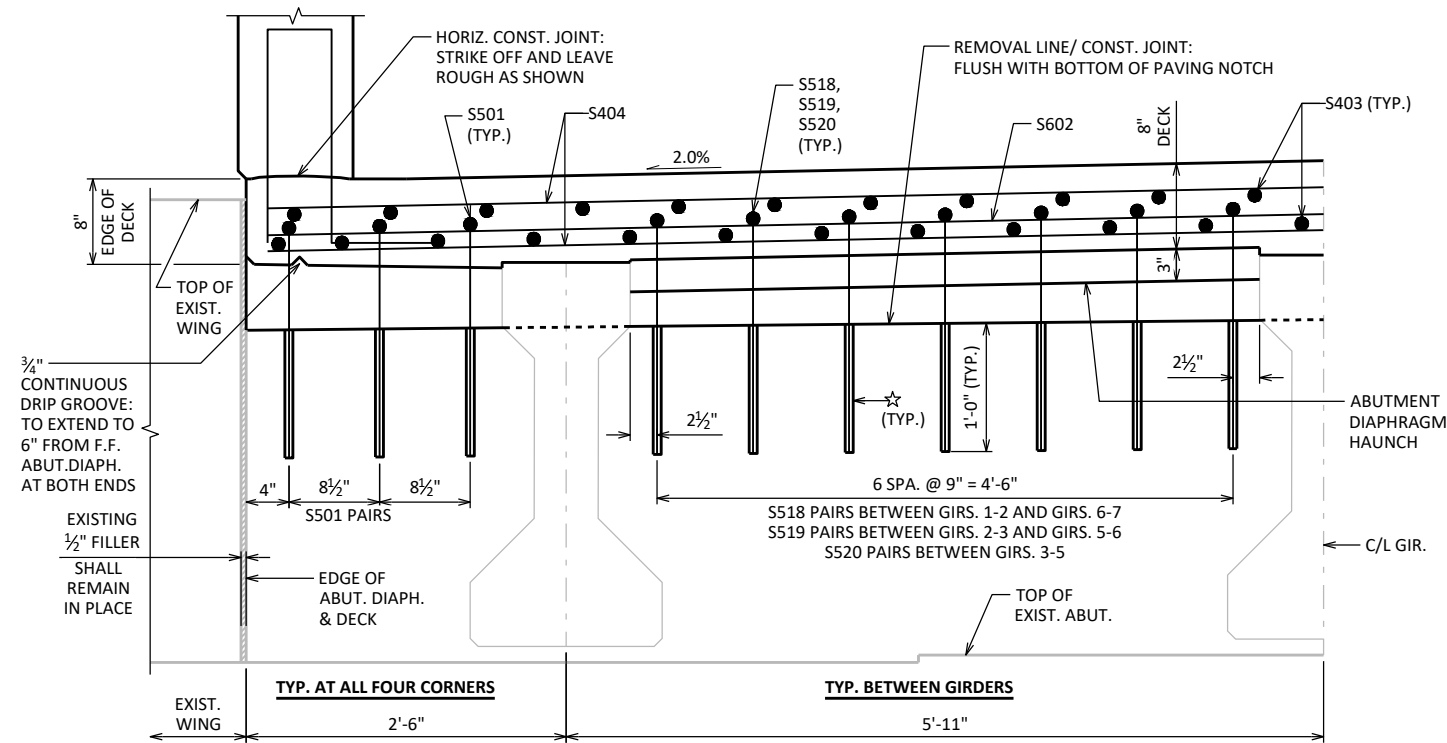
EDGE OF DECK DETAIL

(TYP. AT BOTH EDGES - "HAT BARS" NOT SHOWN FOR CLARITY)



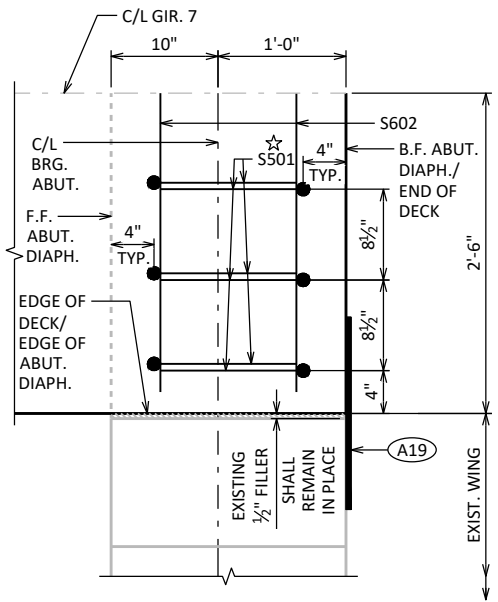
SECTION S-S

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-55-55			
DRAWN BY JPH		PLANS CK'D JLR	
SUPERSTRUCTURE CROSS SECTIONS		SHEET 5	



PARTIAL NEW ABUTMENT DIAPHRAGM & DECK CROSS SECTION

("HAT BARS" NOT SHOWN FOR CLARITY)

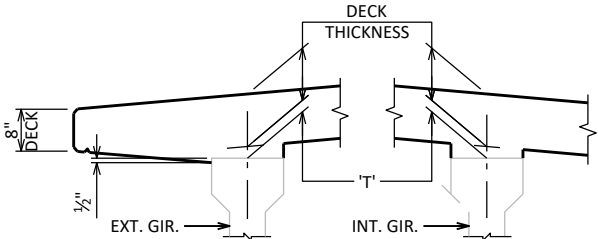


TYP. ABUT. DIAPHRAGM CORNER DETAIL

SHOWING WING 4 CORNER, ALL OTHER CORNERS SIMILAR
PARAPET NOT SHOWN FOR CLARITY

☆ ADHESIVE ANCHORS NO. 5 BAR:
EMBED 1'-0" INTO EXISTING DIAPHRAGM CONCRETE.

- A15 PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED.
- A19 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING: SEAL THE ENTIRE HORIZ. LENGTH OF ABUTMENT BODY BACKFACE JOINT AND THE ADJACENT VERTICAL JOINTS AT BACKFACE OF WINGS.
- A25 SALVAGE EXIST. REINF. & EXTEND FULL LENGTH INTO NEW WORK.



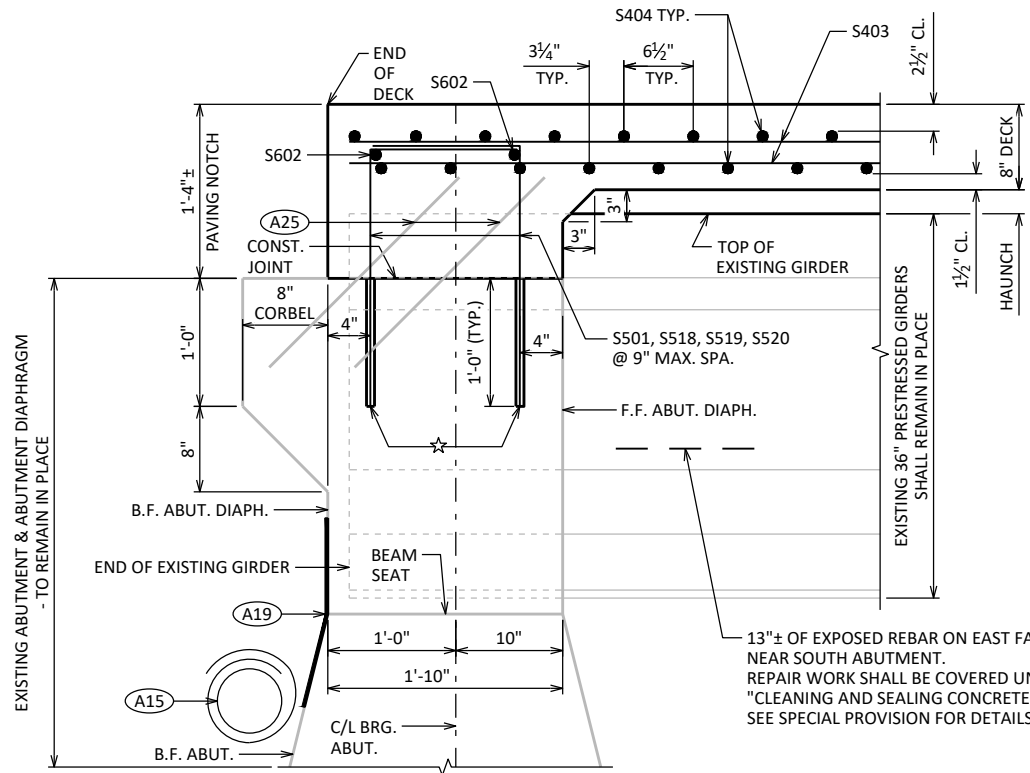
DECK HAUNCH DETAIL

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".

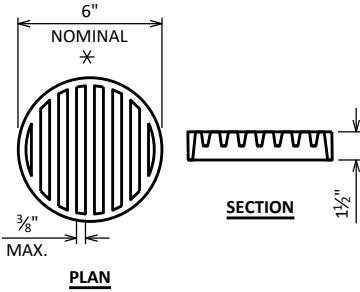
TO DETERMINE 'T', ELEV. OF TOP OF GIR'S. AT C/L OF SUBSTRUCTURE UNITS & AT 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. THEN FOLLOW THIS PROCESS:

TOP OF DECK ELEV. AT FINAL GRADE
- TOP OF GIRDER ELEVATION
+ DEAD LOAD DEFLECTION
- DECK THICKNESS
= HAUNCH HEIGHT 'T'

NOTE:
AN AVERAGE HAUNCH ('T') OF 1.58" WAS USED FOR COMPUTING THE QUANTITY "CONCRETE MASONRY BRIDGES".



CROSS SECTION THRU ABUTMENT DIAPHRAGMS



RODENT SHIELD DETAIL

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

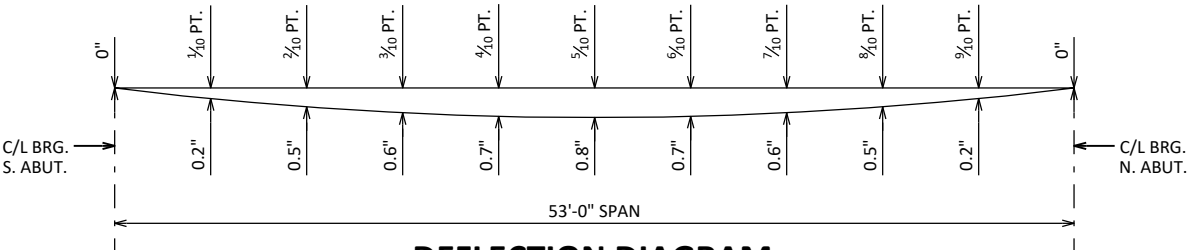
THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

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

TOP OF DECK ELEVATIONS

LOCATION	C/L BRG. S. ABUT.	1/10 PT.	2/10 PT.	3/10 PT.	4/10 PT.	5/10 PT.	6/10 PT.	7/10 PT.	8/10 PT.	9/10 PT.	C/L BRG. N. ABUT.
WEST EOD	1082.09	1082.10	1082.12	1082.14	1082.15	1082.17	1082.18	1082.20	1082.22	1082.23	1082.25
C/L GIRDER 1	1082.11	1082.13	1082.14	1082.16	1082.18	1082.19	1082.21	1082.22	1082.24	1082.26	1082.27
C/L GIRDER 2	1082.23	1082.25	1082.26	1082.28	1082.29	1082.31	1082.33	1082.34	1082.36	1082.37	1082.39
C/L GIRDER 3	1082.35	1082.37	1082.38	1082.40	1082.41	1082.43	1082.44	1082.46	1082.48	1082.49	1082.51
C/L GIRDER 4	1082.47	1082.48	1082.50	1082.52	1082.53	1082.55	1082.56	1082.58	1082.60	1082.61	1082.63
C/L GIRDER 5	1082.35	1082.37	1082.38	1082.40	1082.41	1082.43	1082.44	1082.46	1082.48	1082.49	1082.51
C/L GIRDER 6	1082.23	1082.25	1082.26	1082.28	1082.29	1082.31	1082.33	1082.34	1082.36	1082.37	1082.39
C/L GIRDER 7	1082.11	1082.13	1082.14	1082.16	1082.18	1082.19	1082.21	1082.22	1082.24	1082.26	1082.27
EAST EOD	1082.09	1082.10	1082.12	1082.14	1082.15	1082.17	1082.18	1082.20	1082.22	1082.23	1082.25

EOD = EDGE OF DECK



DEFLECTION DIAGRAM

SHOWING DEADLOAD DEFLECTION ONLY.
DEFLECTIONS ARE GIVEN TO THE NEAREST 0.1 INCH.
1/10 POINTS ARE ALONG C/L OF THE GIRDER.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-55-55			
DRAWN BY JPH		PLANS CK'D JLR	
SUPERSTRUCTURE DETAILS		SHEET 6	

Ⓢ INDICATES WING NUMBERS
○ INDICATES GIRDER NUMBER



55'-0" - BACK TO BACK OF ABUTMENTS/END TO END OF DECK

53'-0" - SPAN

101 EQ. SPA. @ 6½" MAX. = 54'-6" - S404 TOP TRANSVERSE BARS

95 EQ. SPA. @ 6½" MAX. - S505 TOP TRANSVERSE HOOK BARS

TIED TO S404 TOP TRANSVERSE BARS AT EDGE OF DECK IN BETWEEN F.F. ABUT. DIAPHRAGMS, TYP. AT BOTH EDGES

S515, S516, S517

1'-9" MIN.
LAPS (TYP.)

WEST EDGE OF DECK

S515, S516, S517

S510 @ 8"
(PARAPET BARS)

S505 (TOP TRANSVERSE
HOOK BARS)

S404 (TOP
TRANSVERSE BARS)

6½" (TYP.)

C/L GIRDER (TYP.)

S404 (BOT.
TRANSVERSE BARS)

END OF EXISTING
CORBEL (TYP.)

B.F. ABUT. DIAPH./
END OF DECK

F.F. ABUT. DIAPH.

25'-10" (TYP.)
FROM END OF GIRDER

IN-SPAN/IN-LINE
STEEL DIAPHRAGMS (TYP.)
SEE "STEEL DIAPHRAGM"
SHEET FOR DETAILS

F.F. ABUT. DIAPH.

28'-10" (TYP.)
FROM END OF GIRDER

STEEL
DIAPHRAGM
SPACING

B.F. CORBEL

C/L BRG. SOUTH ABUT.

S403 (TOP & BOTTOM
LONGITUDINAL BARS,
TYP.)

1'-8" MIN.
LAPS (TYP.)

9" TYP.

B.F. CORBEL

B.F. ABUT. DIAPH./
END OF DECK

11'-0"
(TYP.)

8"
PAVING
NOTCH/
CORBEL

"HAT BARS":
SEE DETAIL ON THIS
SHEET FOR SPACING

S404 (TOP
TRANSVERSE BARS)

C/L USH 63/
CROWN POINT/
C/L GIRDER 4

S404 (BOTTOM
TRANSVERSE BARS)

C/L BRG. NORTH ABUT.

8"
PAVING
NOTCH/
CORBEL

S403 (TYP. ABOVE ALL GIRDERS)

1'-8" MIN.
LAPS (TYP.)

S403 (TYP. ABOVE ALL GIRDERS)

S404 (BOTTOM
TRANSVERSE BARS)

5'-11"
(TYP. GIRDER SPA.)

90° TYP.

6½" TYP.

END OF
EXISTING
CORBEL
(TYP.)

S505 (TOP TRANSVERSE
HOOK BARS)

S510 @ 8"
(PARAPET BARS)

1'-9" MIN.
LAPS (TYP.)

EAST EDGE OF DECK

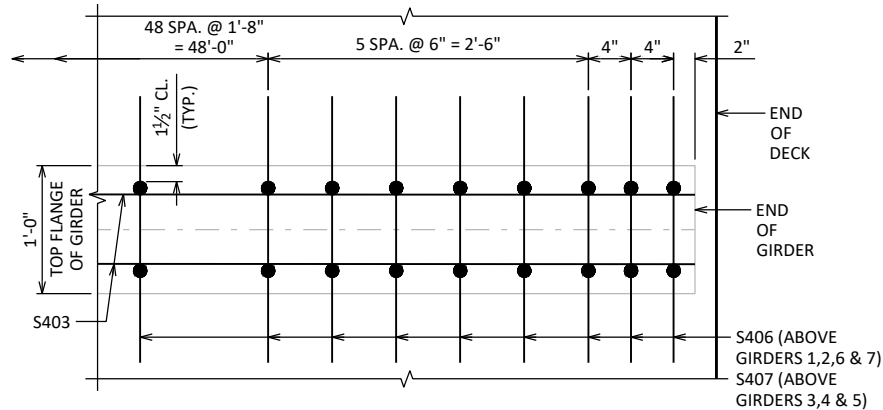
1'-5⅝"
PPT.

S515, S516, S517

LOCATION OF CONCRETE
SURFACE CLEANING WORK
REQUIRED AT GIRDER 7.

100 SPA. @ 6½" = 54'-2" - S404 BOT. TRANSVERSE BARS

PLAN

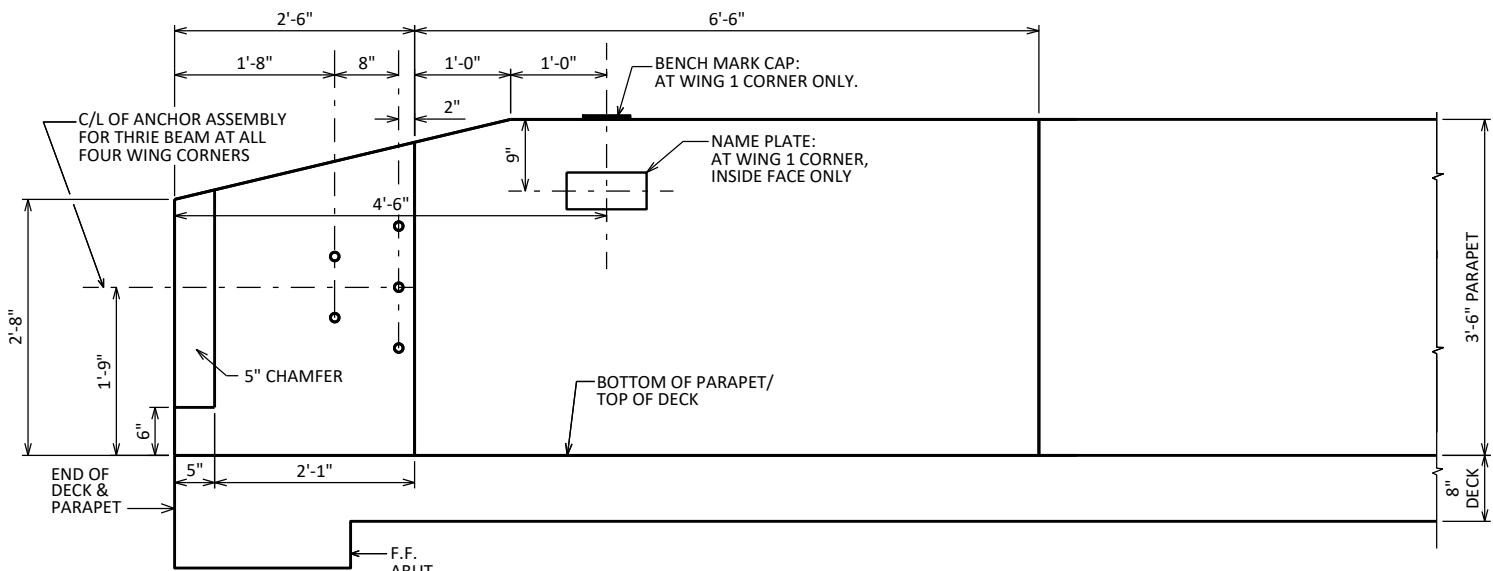


"HAT BAR" SPACING DETAIL

TYP. SPACING AT BOTH ENDS FOR ALL GIRDERS

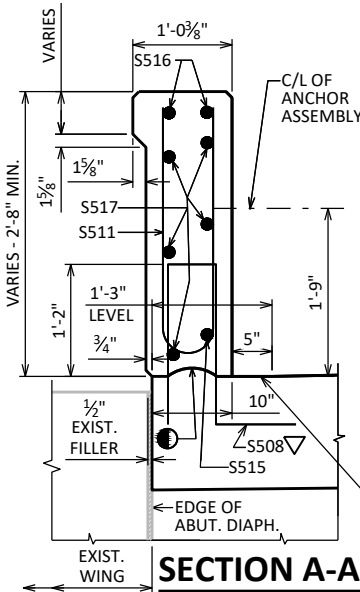
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-55-55			
DRAWN BY JPH		PLANS CK'D JLR	
SUPERSTRUCTURE PLAN			SHEET 7

NOTE:
FOR THE PARAPET 'BILL OF BARS' & 'BAR DETAILS'
SEE THE "SUPERSTRUCTURE BAR DETAILS" SHEET.

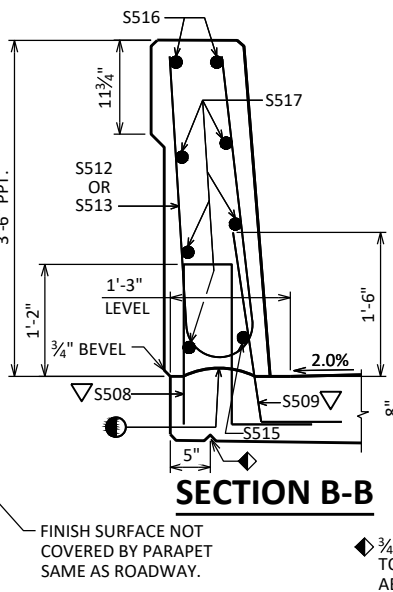


INSIDE ELEVATION

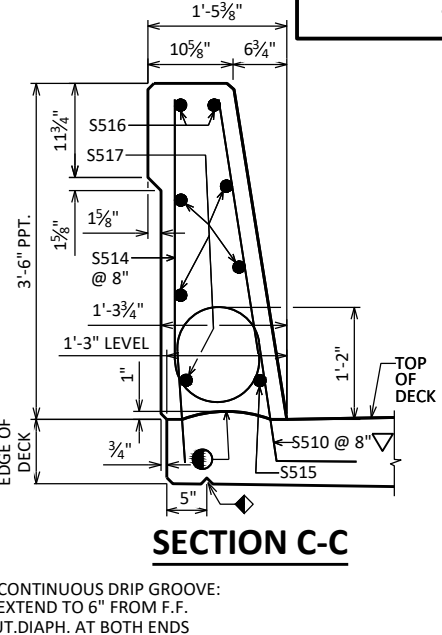
(WINGS 2&4 CORNERS SHOWN, OTHER CORNERS SIMILAR)



SECTION A-A

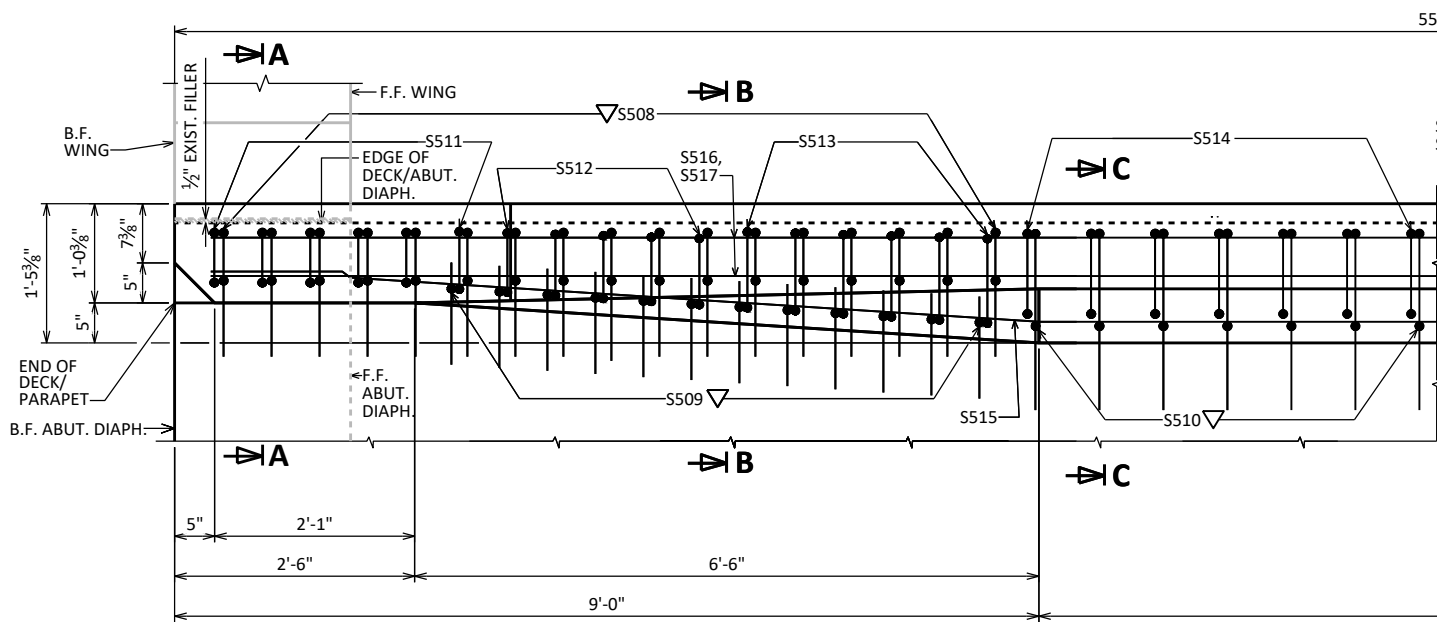


SECTION B-B



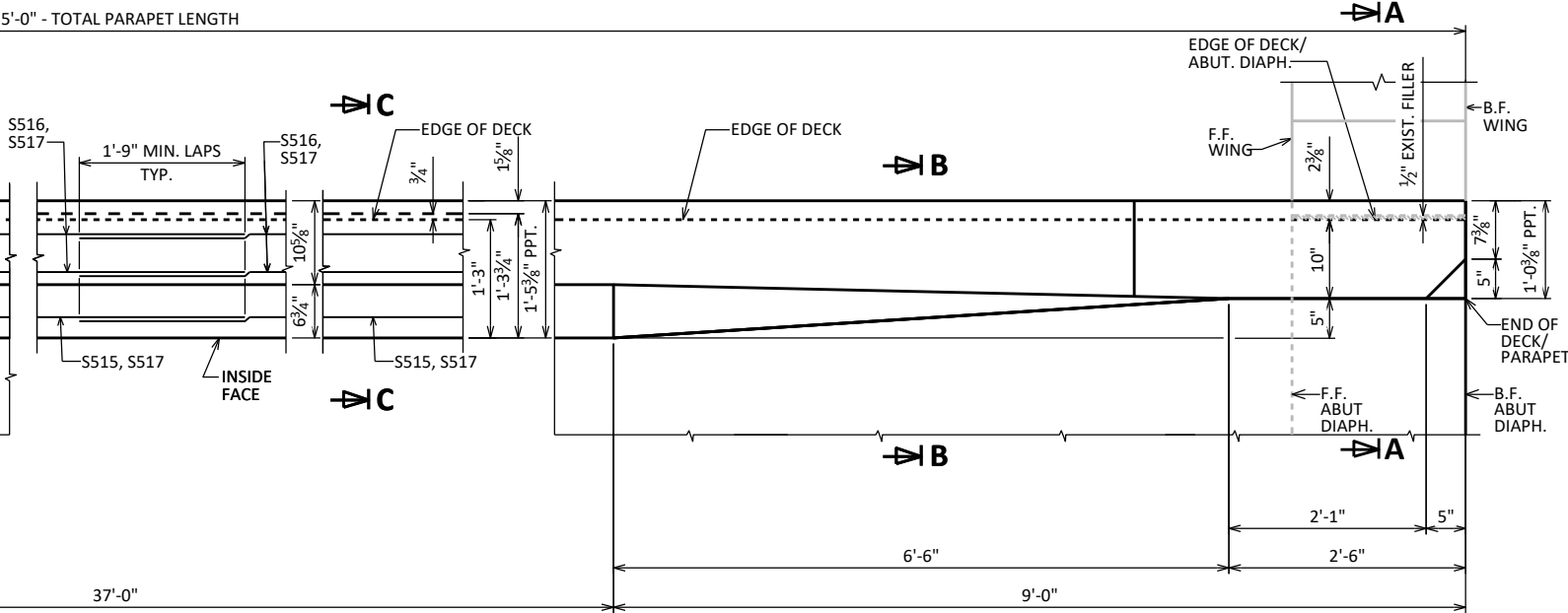
SECTION C-C

3/4" CONTINUOUS DRIP GROOVE:
TO EXTEND TO 6" FROM F.F.
ABUT. DIAPH. AT BOTH ENDS



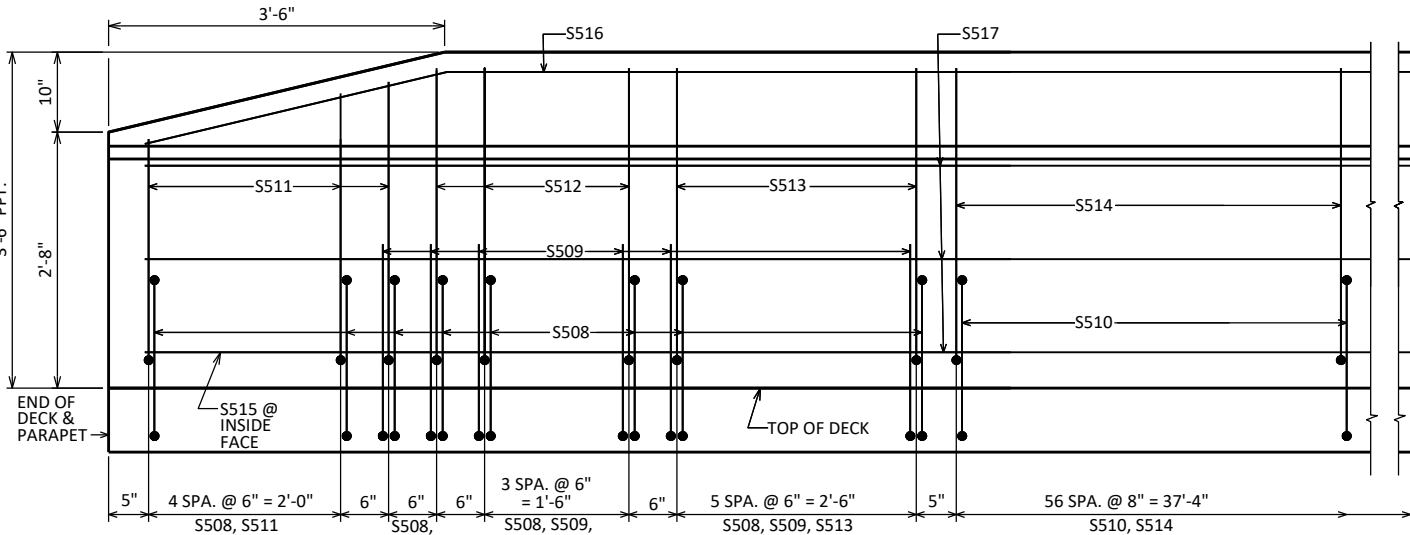
PLAN

(WINGS 2&4 CORNERS SHOWN, OTHER CORNERS SIMILAR)



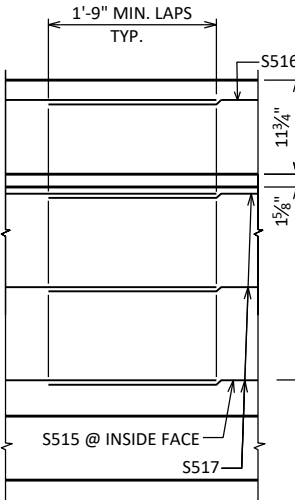
PLAN

(WINGS 1&3 CORNERS SHOWN)



OUTSIDE ELEVATION

WING NOT SHOWN FOR CLARITY
(WINGS 1&3 CORNERS SHOWN, OTHER CORNERS SIMILAR)



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.

HORIZ. CONST. JOINT - STRIKE OFF
AS SHOWN AND LEAVE ROUGH.

S508, S509 & S510 PARAPET BARS TO BE
TIED TO DECK STEEL BEFORE DECK IS POURED.
USE CARE TO PLACE S509 BARS CORRECTLY
ALONG TRANSITION OF PARAPET.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-55-55			
DRAWN BY JPH		PLANS CK'D JLR	
SINGLE SLOPE PARAPET 42SS			SHEET 8

BILL OF BARS

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
S501	X	24	2'-11"	X		ABUT. DIAPHS./DECK-VERT.-AT EXTERIOR GIRDER CORNERS ONLY
S602	X	4	40'-2"			ABUT. DIAPHS./DECK-HORIZ.-TRANSVERSE
S403	X	246	28'-3"			DECK & GIRDER HAUNCHES-TOP & BOT.-HORIZ.-LONGITUDINAL
S404	X	203	40'-2"			DECK-TOP & BOT.-HORIZ.-TRANSVERSE
S505	X	192	4'-5"	X		DECK-TOP-VERTICAL-TRANSVERSE-AT BOTH EDGES OF DECK
S406	X	252	2'-4"	X		DECK/GIRDER HAUNCHES-BOT.-VERT.-TRANSVERSE-HAT BARS-ABOVE GIRDERS 1,2,6 & 7 ONLY
S407	X	189	2'-7"	X		DECK/GIRDER HAUNCHES-BOT.-VERT.-TRANSVERSE-HAT BARS-ABOVE GIRDERS 3,4 & 5 ONLY
S508	X	68	4'-4"	X		PARAPETS/DECK-VERTICAL-TRANSVERSE-AT ALL FOUR PPT. CORNERS
S509	X	48	2'-9"	X		PARAPETS/DECK-INSIDE FACE-VERTICAL-TRANSVERSE-AT ALL FOUR PPT. CORNERS
S510	X	114	4'-5"	X		PARAPETS/DECK-VERTICAL-TRANSVERSE
S511	X	24	5'-5"	X	▲	PARAPETS-UNDER TAPER-VERTICAL-TRANSVERSE-AT ALL FOUR PPT. CORNERS
S512	X	20	6'-5"	X		PARAPETS-VERTICAL-TRANSVERSE-AT ALL FOUR PPT. CORNERS
S513	X	24	6'-6"	X		PARAPETS-VERTICAL-TRANSVERSE-AT ALL FOUR PPT. CORNERS
S514	X	114	6'-8"	X		PARAPETS-VERTICAL-TRANSVERSE
S515	X	4	28'-3"	X		PARAPETS-BOT.-INSIDE FACE-HORIZONTAL-LONGITUDINAL-END TO END
S516	X	8	28'-3"	X		PARAPETS-TOP-BOTH FACES-VERTICAL-LONGITUDINAL-END TO END
S517	X	20	28'-3"			PARAPETS-BOTH FACES-HORIZ.-LONGIT.-END TO END
S518	X	56	3'-0"	X		ABUT. DIAPHS./DECK-VERT.-IN BETWEEN GIRDERS 1-2 AND 6-7
S519	X	56	3'-0"	X		ABUT. DIAPHS./DECK-VERT.-IN BETWEEN GIRDERS 2-3 AND 5-6
S520	X	56	3'-1"	X		ABUT. DIAPHS./DECK-VERT.-IN BETWEEN GIRDERS 3-5

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

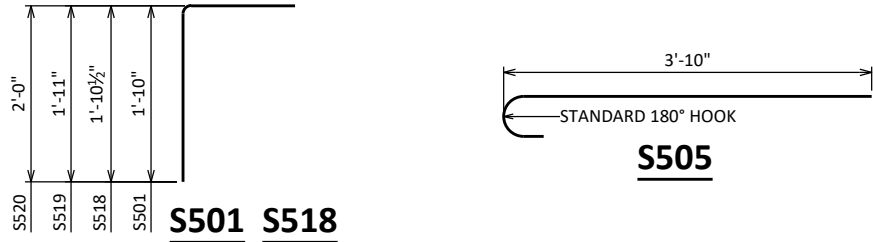
BAR SERIES TABLE

BAR MARK	NUMBER REQUIRED	TOTAL BAR LENGTH
R511	4 SERIES OF 6 BARS	4'-9" TO 6'-1"

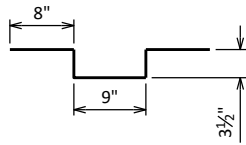
BUNDLE AND TAG EACH SERIES SEPARATELY.

STATE PROJECT NUMBER

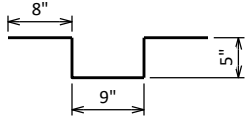
1550-02-75



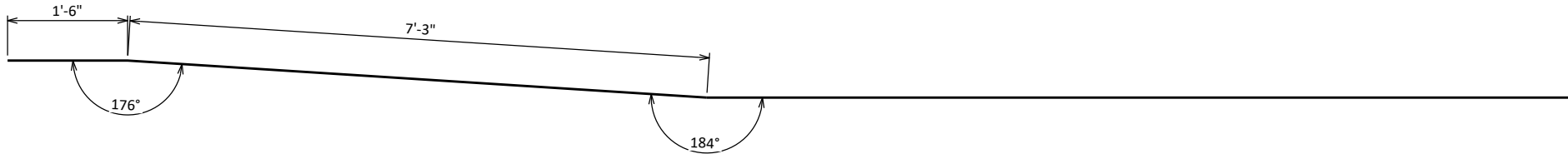
S501 S518
S519 S520



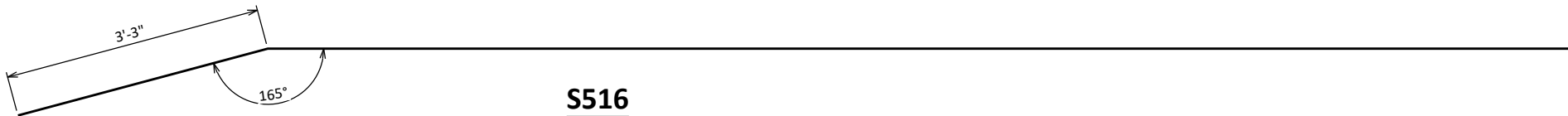
S406



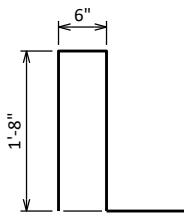
S407



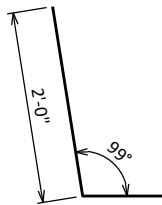
S515



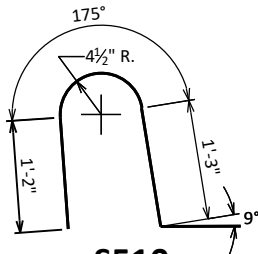
S516



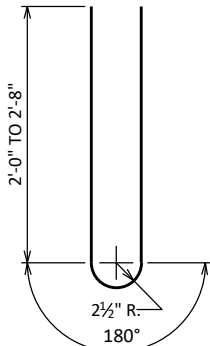
S508



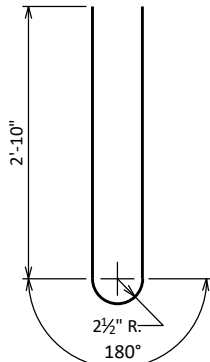
S509



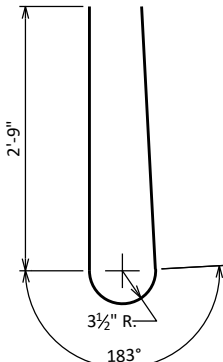
S510



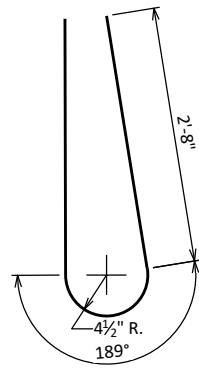
S511



S512

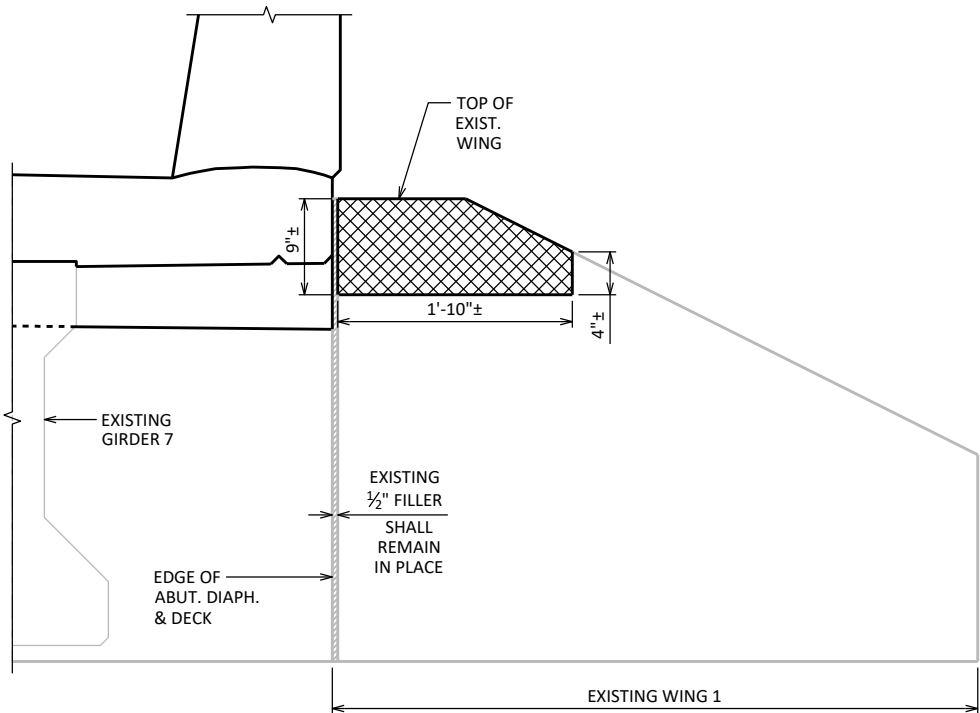


S513

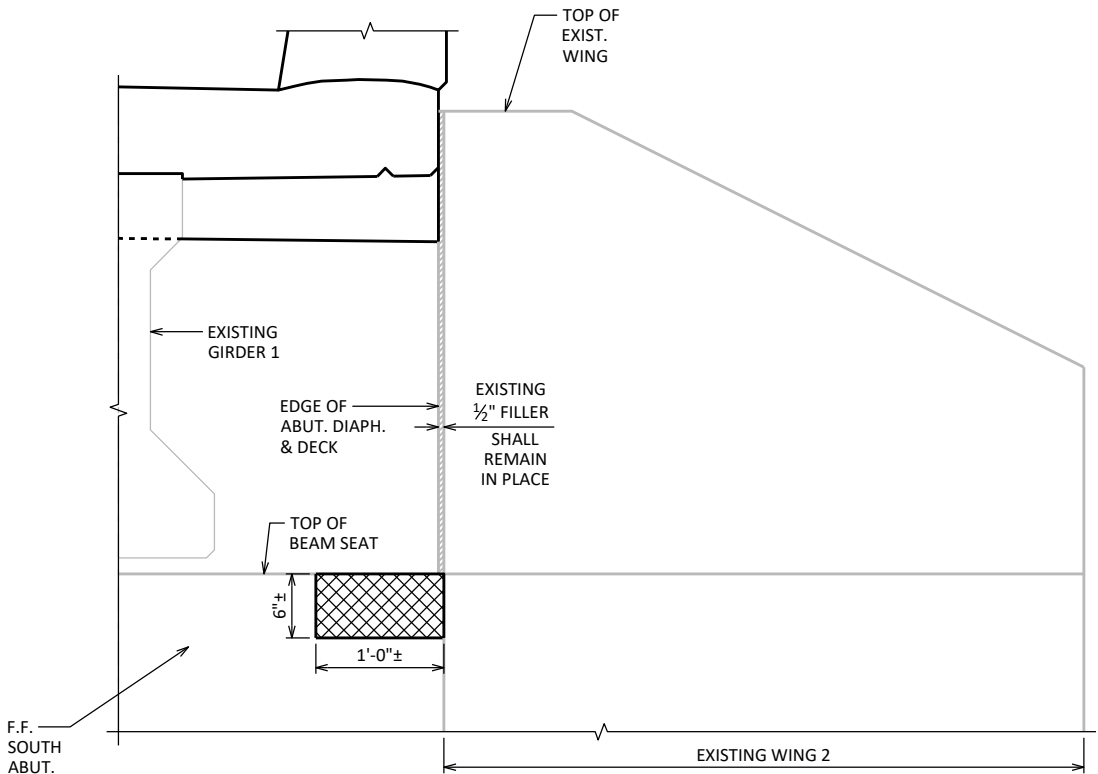


S514

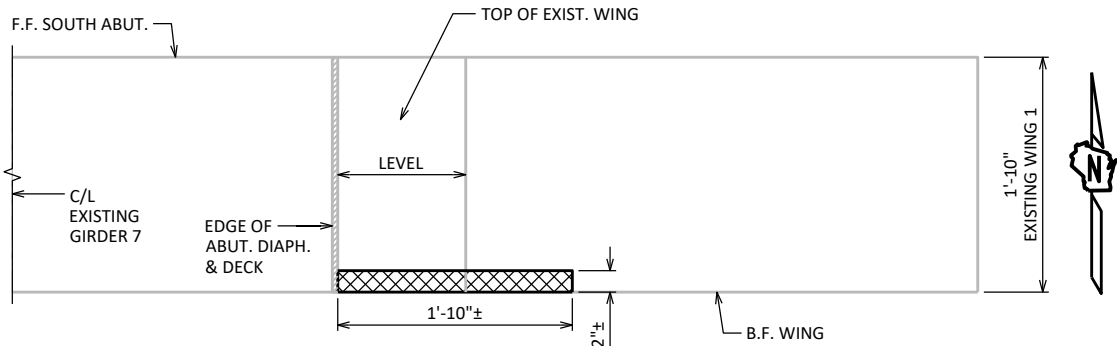
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE		B-55-55	
		DRAWN BY	PLANS CK'D
		JPH	JLR
SUPERSTRUCTURE BAR DETAILS		SHEET 9	



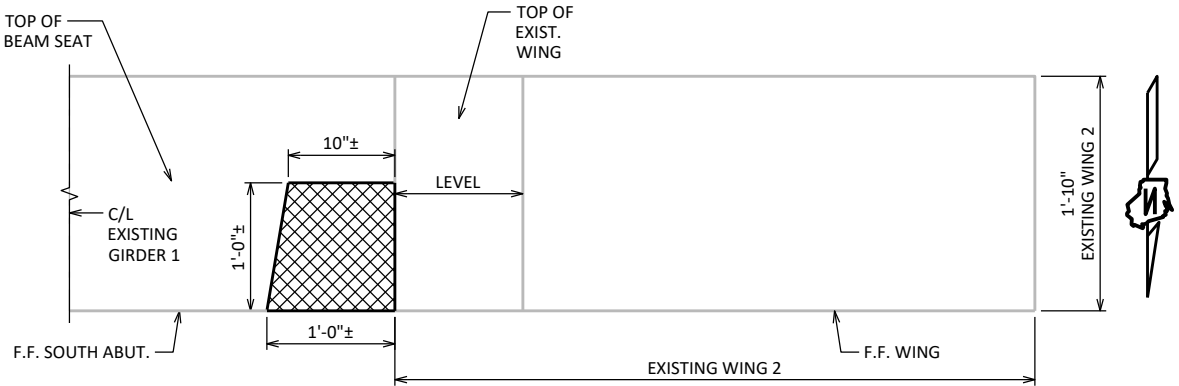
ELEVATION OF BACK FACE OF SOUTH ABUT. WING 1
LOOKING NORTH



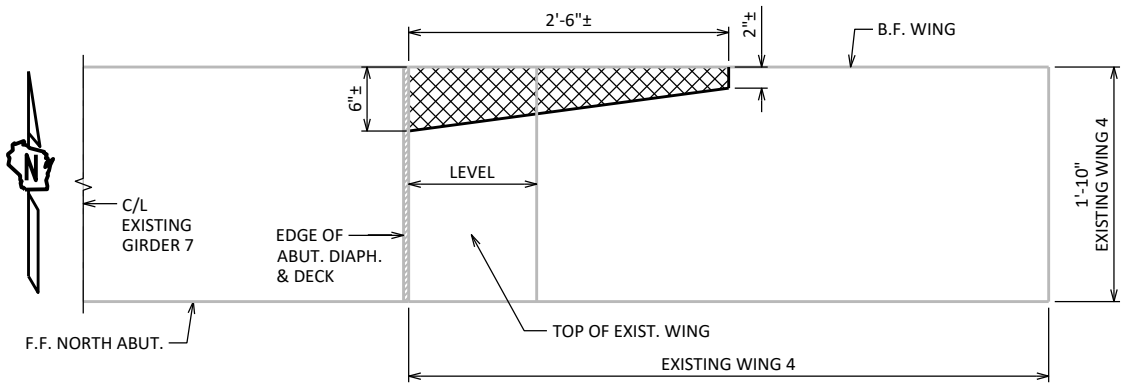
ELEVATION OF FRONT FACE OF SOUTH ABUT. WING 2
LOOKING SOUTH



PLAN OF SOUTH ABUT. WING 1

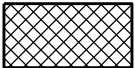


PLAN OF SOUTH ABUT. WING 2



PLAN OF NORTH ABUT. WING 4

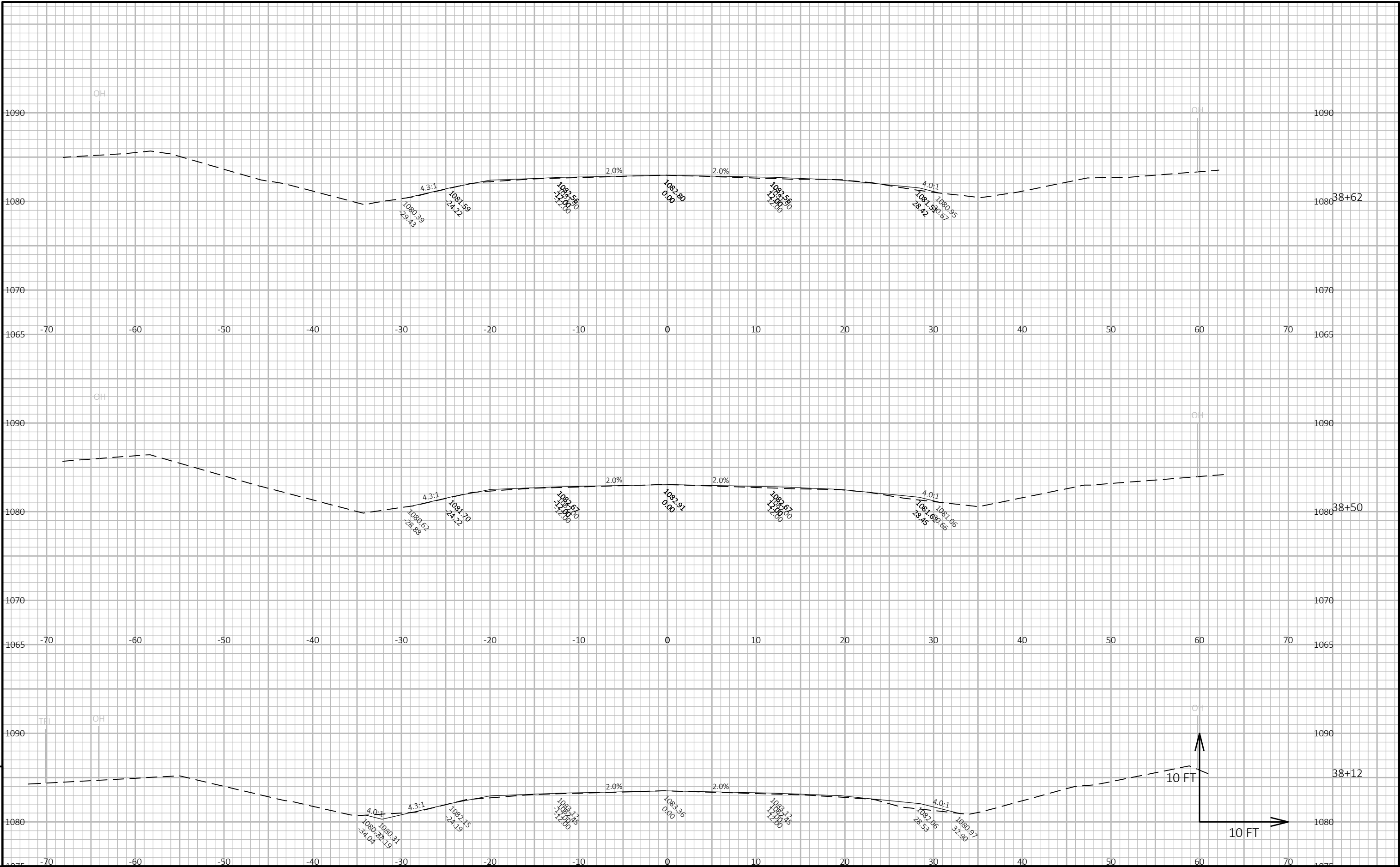
NOTE:
"CONCRETE SURFACE REPAIR" LOCATIONS SHOWN MAY NOT BE ALL
INCLUSIVE AND QUANTITIES SHOWN ARE APPROXIMATE. ADDITIONAL
CONCRETE SURFACE REPAIRS MAY BE REQUIRED DURING CONSTRUCTION
AND SHALL BE PERFORMED AS DIRECTED BY THE FIELD ENGINEER.

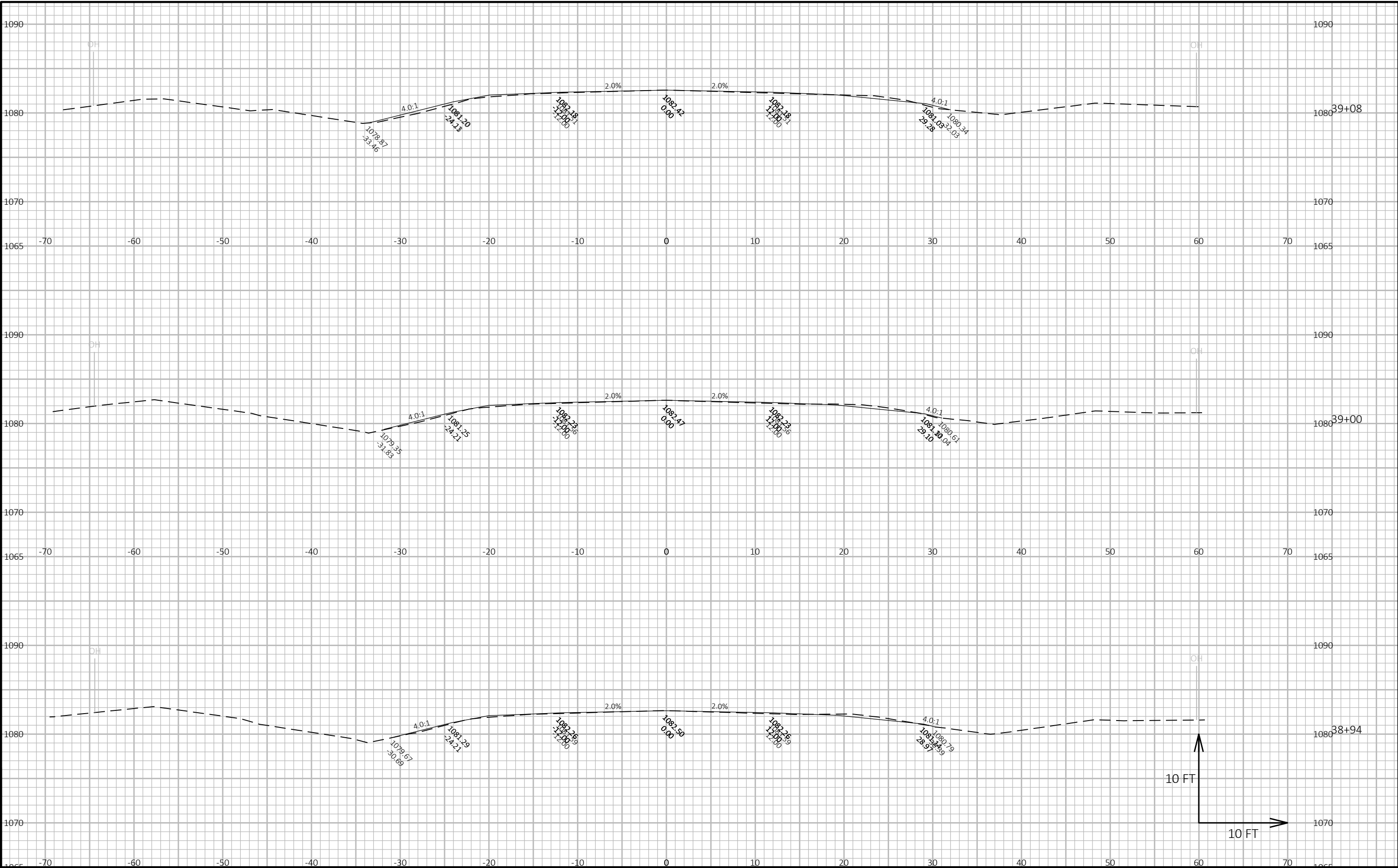


"CONCRETE SURFACE REPAIR"
AREAS

NOTE:
INSPECTION REPORTS NOTE 2 VERTICAL CRACKS IN SOUTH ABUTMENT AND
1 VERTICAL CRACK IN NORTH ABUTMENT. "CONCRETE SURFACE REPAIR"
WORK FOR THESE CRACKS SHALL BE DONE AS DIRECTED BY THE ENGINEER.

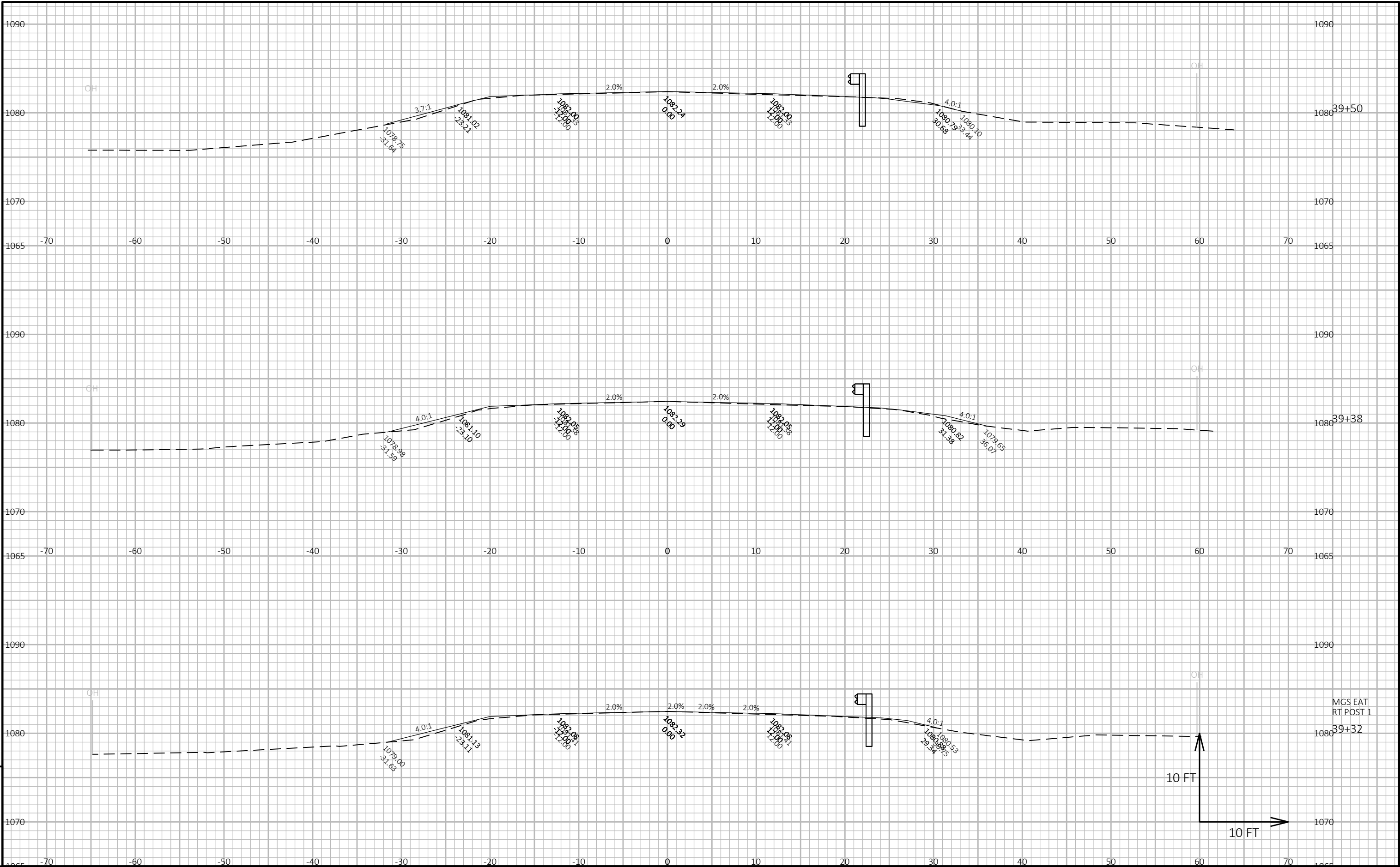
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-55-55			
DRAWN BY JPH		PLANS CK'D JLR	
CONCRETE SURFACE REPAIR DETAILS			SHEET 10





9

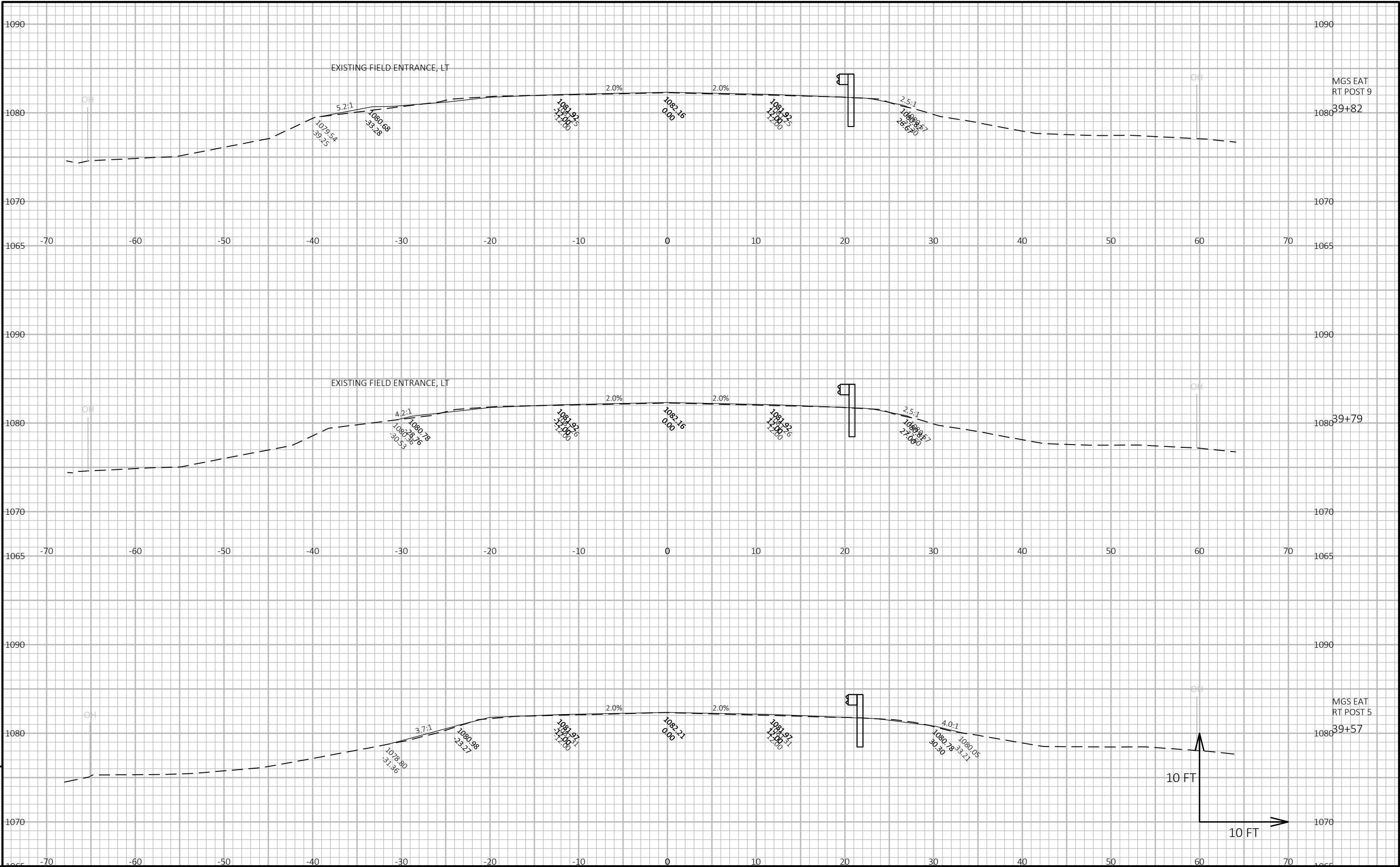
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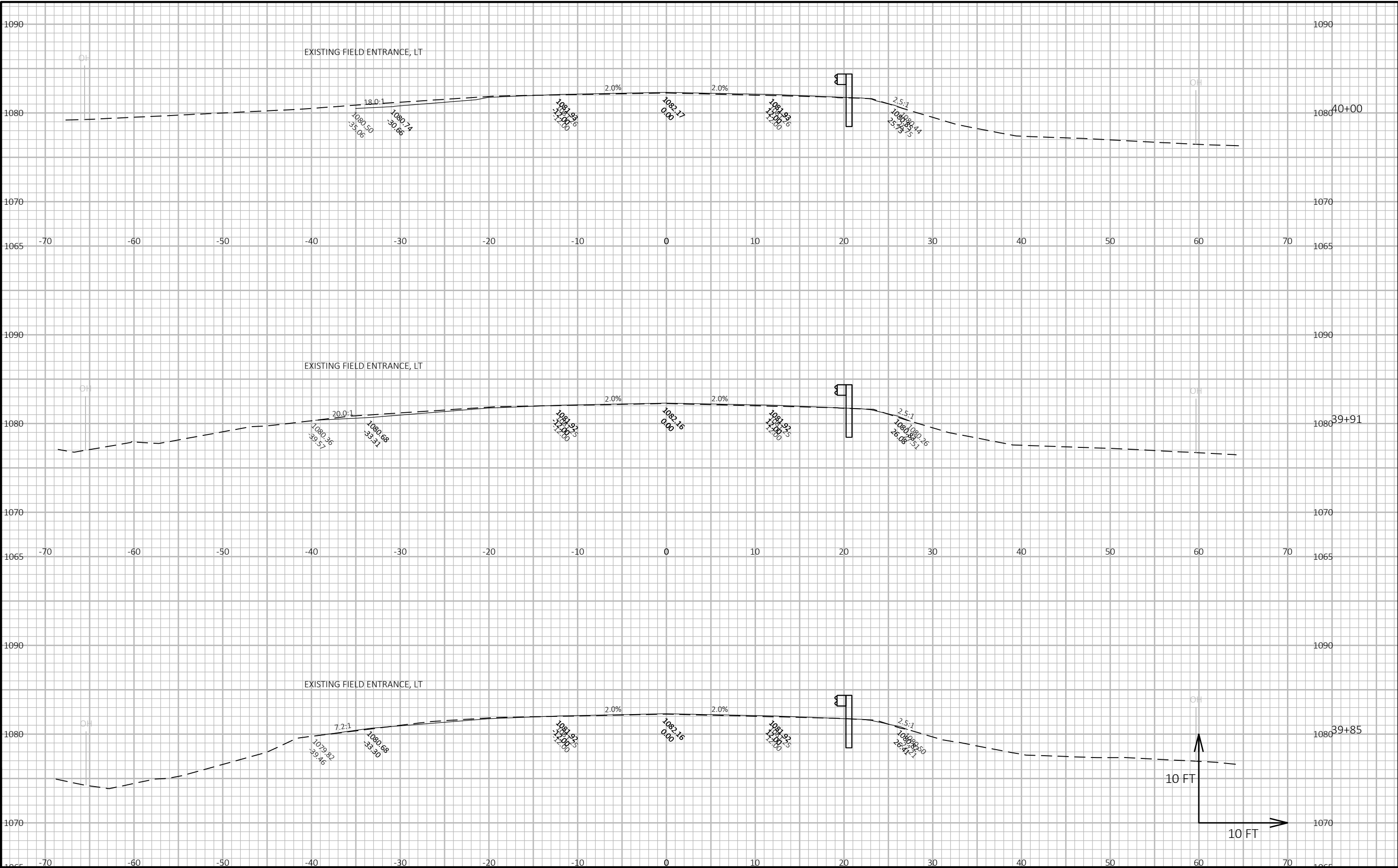


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9

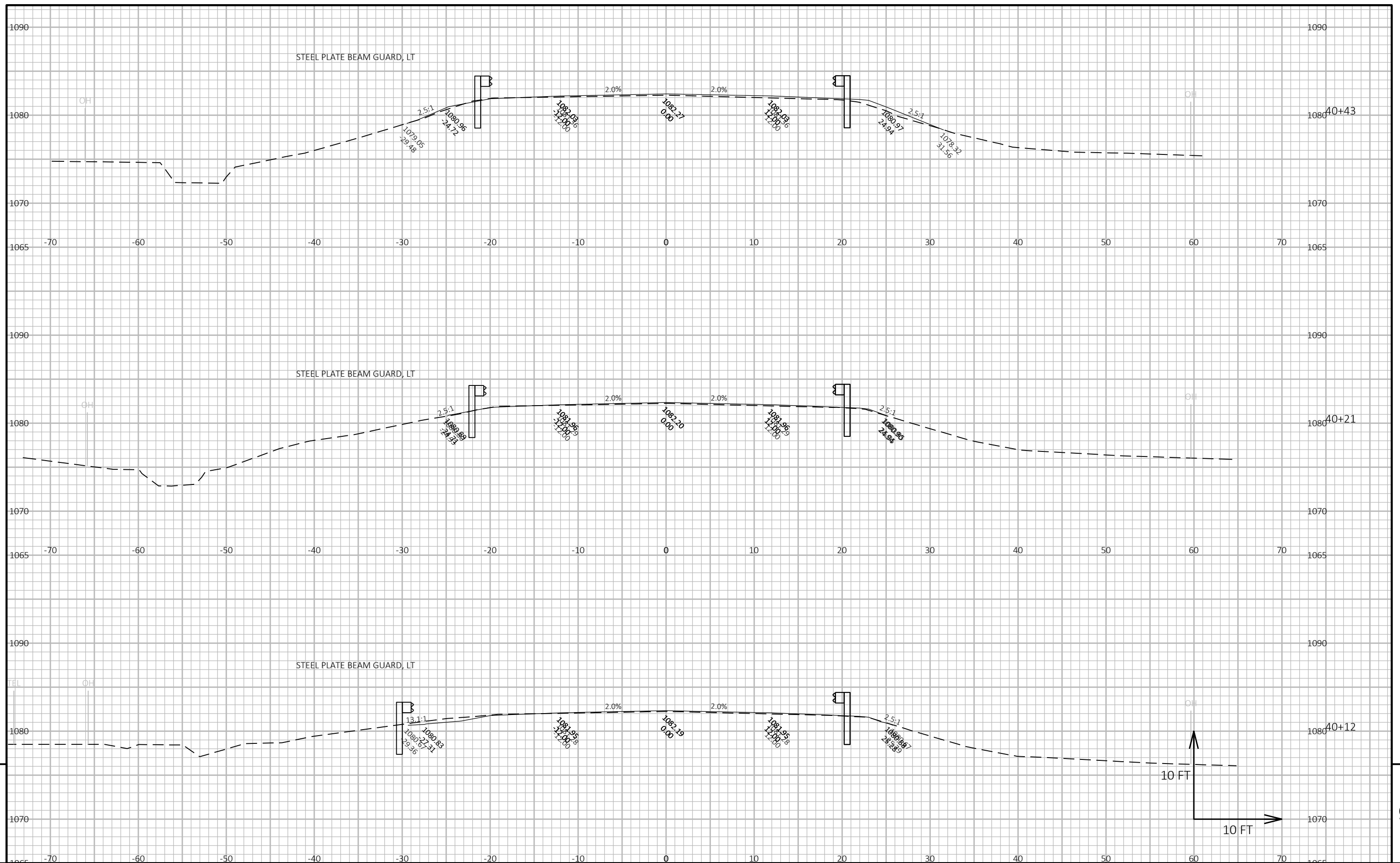
PROJECT NO: 1550-02-75	HWY: USH 63	COUNTY: ST. CROIX	CROSS SECTIONS: SECTION VIEW GROUP - 1	SHEET E
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9

PROJECT NO: 1550-02-75	HWY: USH 63	COUNTY: ST. CROIX	CROSS SECTIONS: SECTION VIEW GROUP - 1	SHEET	E
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PROJECT NO:	1550-02-75
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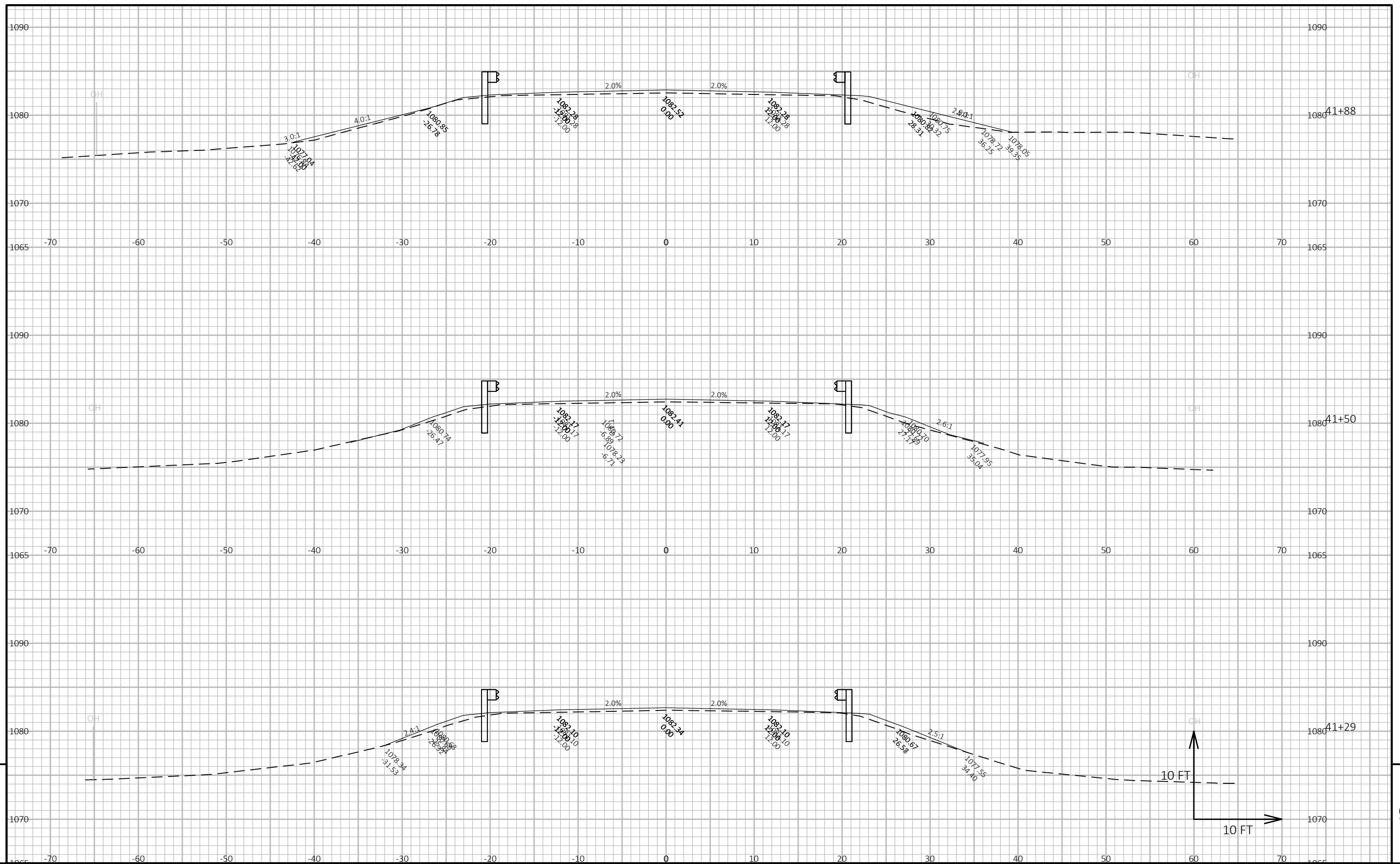
HWY: USH 63

COUNTY: ST. CROIX

CROSS SECTIONS: SECTION VIEW GROUP - 1

SHEET

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PROJECT NO:	1550-02-75
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HWY: USH 63

COUNTY: ST. CROIX

CROSS SECTIONS: SECTION VIEW GROUP - 1

SHEET

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LAYOUT NAME - 07

LAYOUT NAME - 07

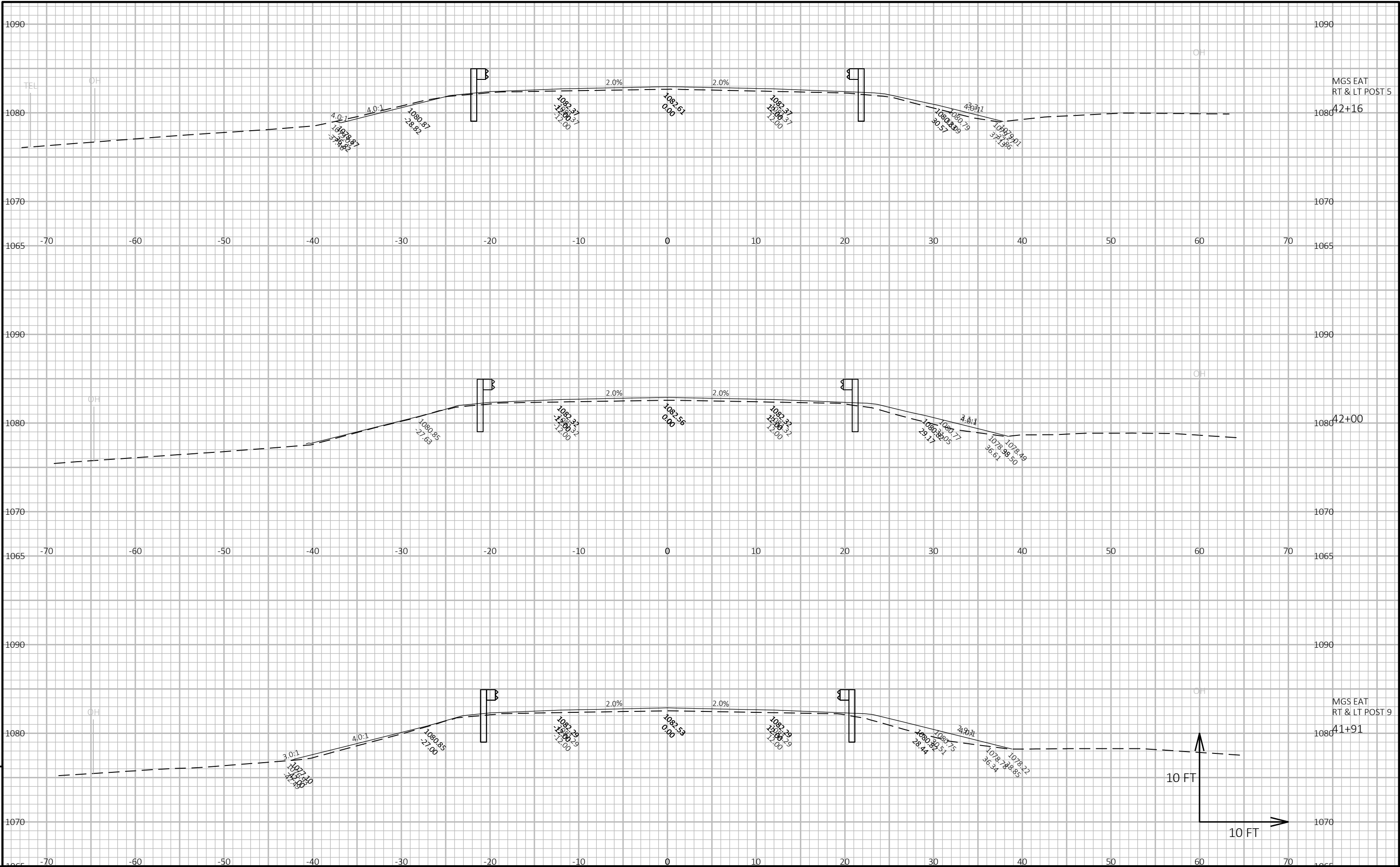
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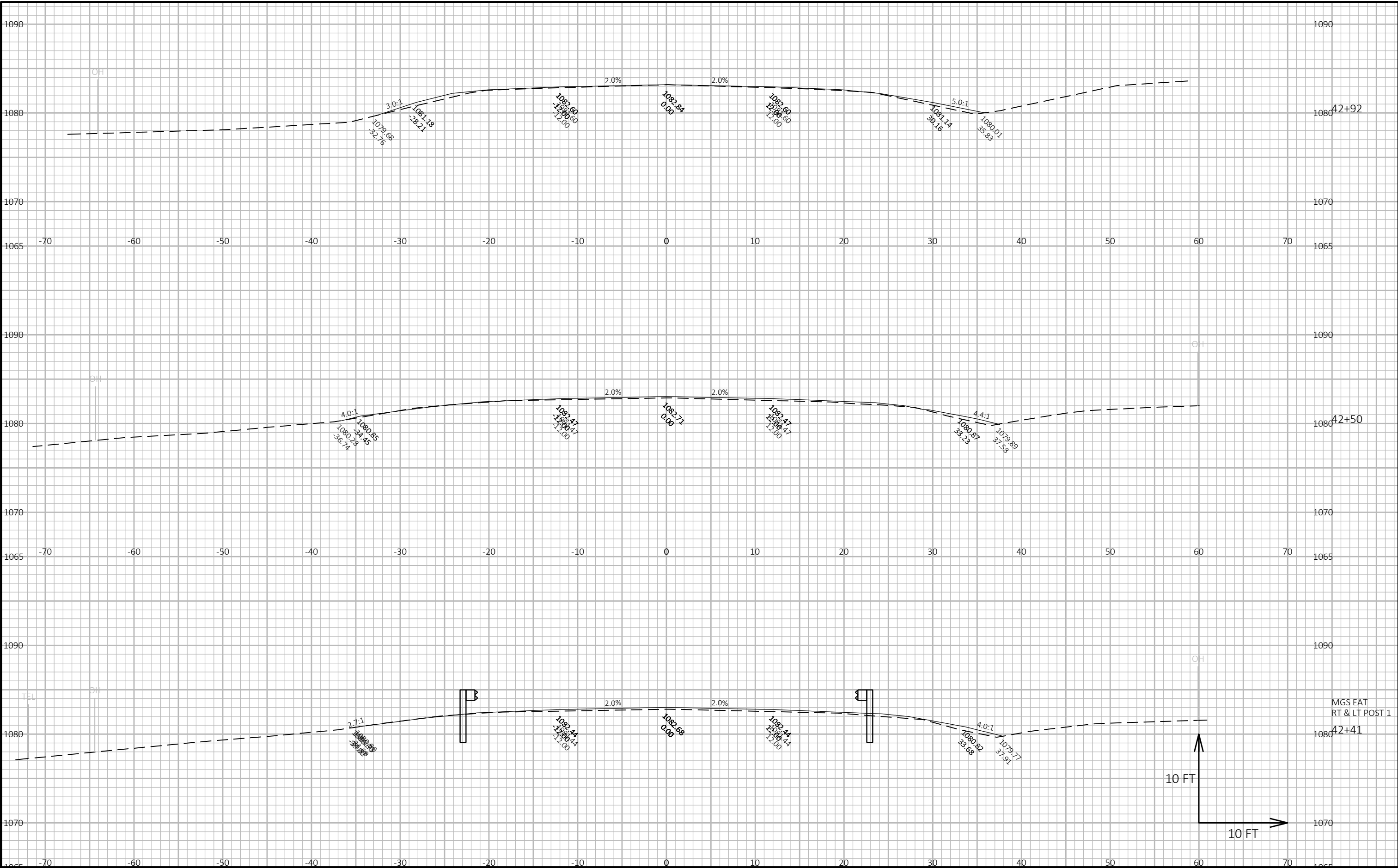
PLOT BY : MAKI, NICHOLAS DANIE

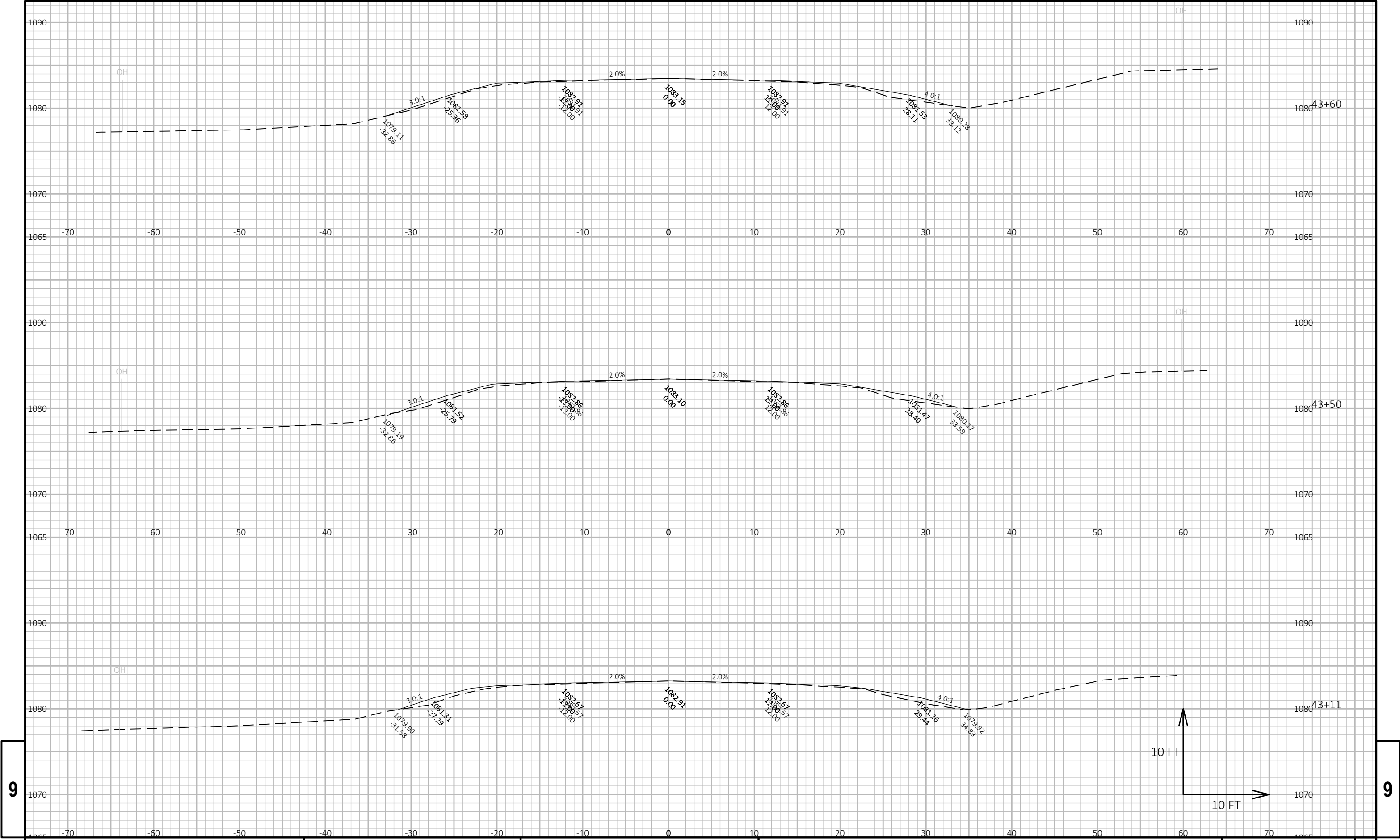
PLOT NAME :

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

WISDOT/CADDS SHEET 49



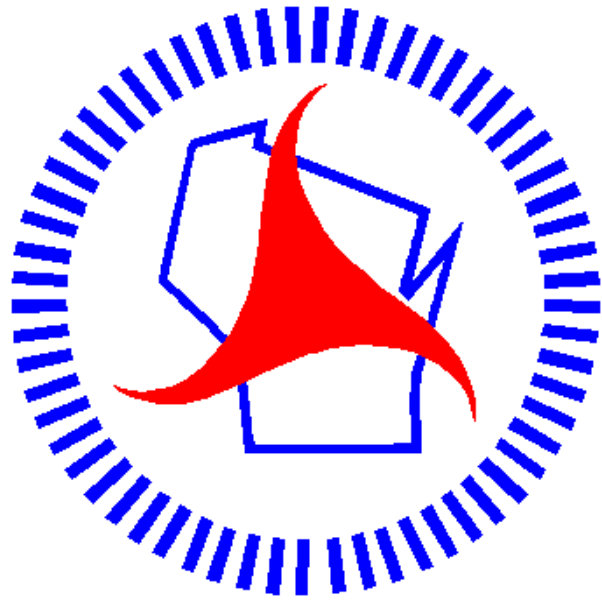




9

9

PROJECT NO: 1550-02-75	HWY: USH 63	COUNTY: ST. CROIX	CROSS SECTIONS: SECTION VIEW GROUP - 1	SHEET E
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