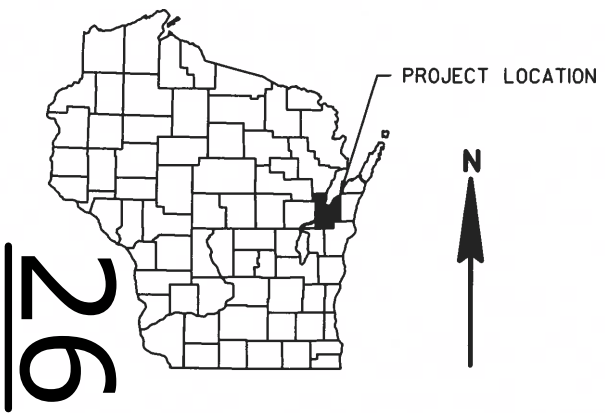


GRE JANUARY 2021  
PROJECT ID: 9267-04-71  
WITH: N/A  
COUNTY: BROWN

ORDER OF SHEETS

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

TOTAL SHEETS = 88



DESIGN DESIGNATION

A.A.D.T.	2018	=	1,500
A.A.D.T.	2038	=	2,100
O.H.V.		=	235
D.D.		=	60/40
T.		=	3.7%
DESIGN SPEED		=	40 MPH
ESALS		=	160,000

CONVENTIONAL SYMBOLS	
PLAN	
CORPORATE LIMITS	
PROPERTY LINE	
LOT LINE	
LIMITED HIGHWAY EASEMENT	
EXISTING RIGHT OF WAY	
PROPOSED OR NEW R/W LINE	
SLOPE INTERCEPT	
REFERENCE LINE	
EXISTING CULVERT	
PROPOSED CULVERT (Box or Pipe)	
COMBUSTIBLE FLUIDS	
MARSH AREA	
WOODED OR SHRUB AREA	
PROFILE	
GRADE LINE	
ORIGINAL GROUND	
MARSH OR ROCK PROFILE (To be noted as such)	
SPECIAL DITCH	
GRADE ELEVATION	
CULVERT (Profile View)	
UTILITIES	
ELECTRIC	
FIBER OPTIC	
GAS	
SANITARY SEWER	
STORM SEWER	
TELEPHONE	
WATER	
UTILITY PEDESTAL	
POWER POLE	
TELEPHONE POLE	

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

V SUAMICO, CTH M  
SUAMICO RIVER BRIDGE & APPROACHES

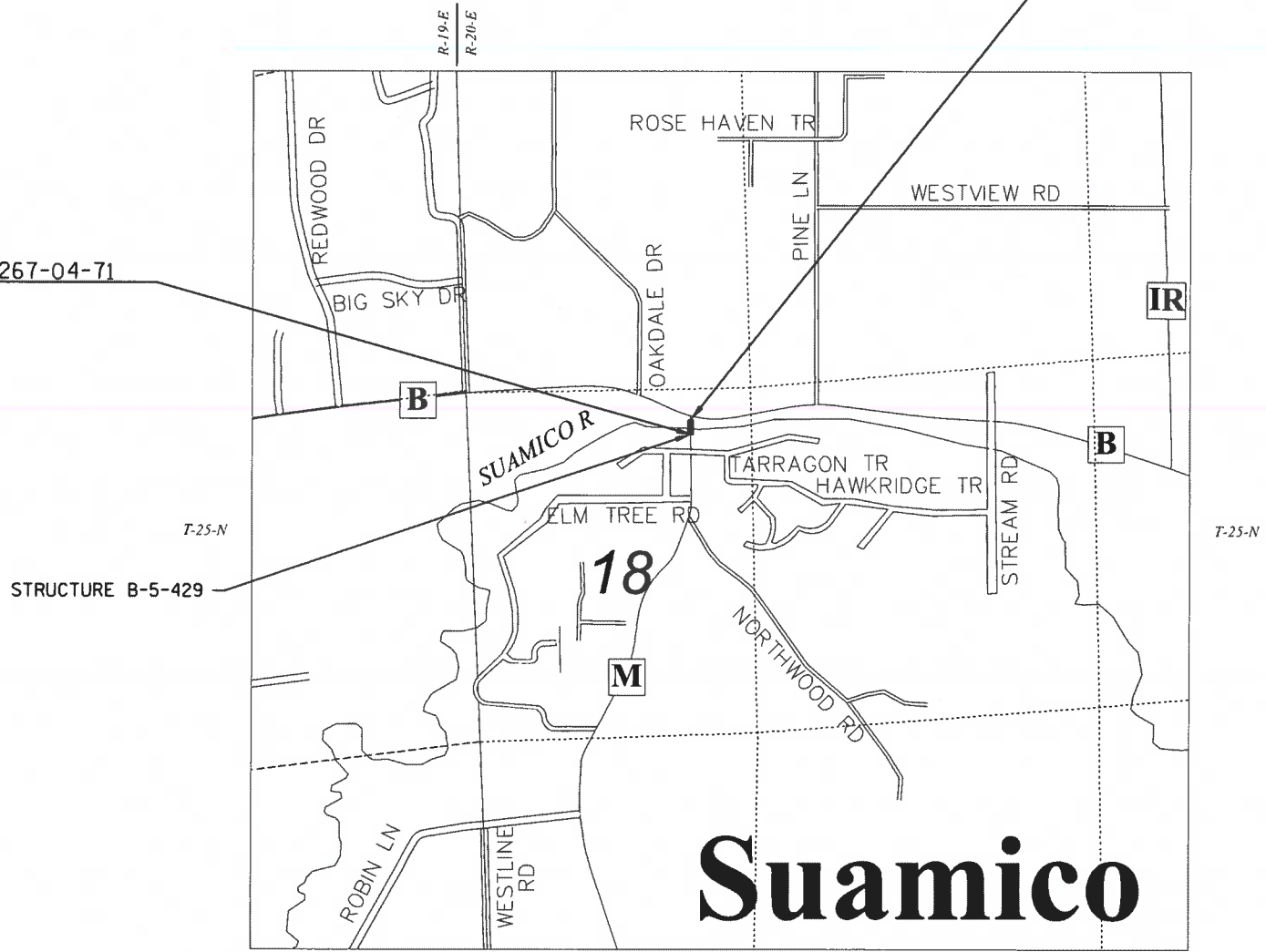
CTH M  
BROWN COUNTY

STATE PROJECT NUMBER
9267-04-71

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
9267-04-71		

END PROJECT 9267-04-71  
STA 5+89.30  
Y= 615384.958  
X= 72944.897

BEGIN PROJECT 9267-04-71  
STA 2+25.00  
Y= 615020.676  
X= 72941.317



LAYOUT  
SCALE 0 0.5 MILE  
TOTAL NET LENGTH OF CENTERLINE = 0.069 MILES

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATE SYSTEM, BROWN COUNTY, NAD83 (1991), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES. VERTICAL DATUM IS NAVD 88.

ACCEPTED FOR  
BROWN COUNTY  
DATE: 7/20/20  
(Signature)  
SINCE 1988  
TITLE

Omni  
ASSOCIATES  
a Westwood company  
WISCONSIN  
KRISTOPHER R. OLSON  
E-35236  
APPLETON, WI  
PROFESSIONAL ENGINEER  
7/22/20

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION  
PREPARED BY  
Surveyor  
Omni Associates  
Designer  
Omni Associates

APPROVED FOR THE DEPARTMENT  
DATE: 7/23/2020  
(Signature)  
E

2

GENERAL NOTES

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

FILL AS SHOWN ON THE PLANS PERTAINS TO EMBANKMENTS CONSTRUCTED FROM COMMON EXCAVATION. THE ALLOWANCE USED FOR EXPANDING THE FILLS TO COMPUTE THE VOLUME OF MATERIAL REQUIRED IS 25 PERCENT. ALL FILL VOLUMES SHOWN ARE THE ACTUAL VOLUMES.

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

HMA PAVEMENT  
2" UPPER LAYER (TYPE 4 MT 58-28 S)  
2 1/2" LOWER LAYER (TYPE 3 MT 58-28 S)

ALL DISTURBED AREAS, NOT OTHERWISE SURFACED ARE TO BE TOPSOILED, FERTILIZED, SEEDED AND EROSION MAT APPLIED.

USE SEED MIXTURE NO. 30 ON ALL DISTURBED AREAS.

PLACE FINISHING ITEMS ON DISTURBED AREAS AND 5 FEET BEYOND THE SLOPE INTERCEPT WITH THE ORIGINAL GROUND AS SHOWN ON THE CROSS SECTIONS.

PLACE SILT FENCE AND TEMPORARY DITCH CHECKS AS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER IN THE FIELD. PLACE SILT FENCE PRIOR TO CONSTRUCTION AND PRIOR TO STRUCTURE REMOVAL.

THE ENGINEER IN THE FIELD WILL DETERMINE THE EXACT LOCATIONS OF ALL EROSION CONTROL ITEMS.

STORE AND PROTECT SIGNS WHICH ARE TO BE SALVAGED OR MOVED TO PREVENT DAMAGE OR THEFT. THE COST FOR PROTECTING SIGNS IS INCIDENTAL TO MOVING SIGNS.

PRIOR TO ORDERING DRAINAGE PIPES AND STRUCTURES, VERIFY RELATED DRAINAGE INFORMATION IN THE PLAN WITH FIELD CONDITIONS. PIPE ELEVATIONS AS SHOWN ON THE PLANS MAY BE ADJUSTED BY THE ENGINEER TO FIT FIELD CONDITIONS.

CONSTRUCT EROSION CONTROL PROTECTION IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS AND IMMEDIATELY AFTER GRADING HAS BEEN COMPLETED.

EROSION CONTROL NOTES

RUNOFF COEFFICIENTS FOR THIS PROJECT: EXISTING PAVEMENT 0.95, EXISTING SLOPES 0.30, NEW PAVEMENT 0.95, NEW SLOPES 0.30.

TOTAL PROJECT AREA = 1.011 ACRES  
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.702 ACRES

CONTACTS

ELECTRIC & GAS

WISCONSIN PUBLIC SERVICE CORPORATION  
700 NORTH ADAMS STREET, PO BOX 19001  
GREEN BAY, WI 54307-9001  
ATTN: LORI BUTRY  
TELEPHONE: (920) 433-1703  
EMAIL: LAButry@integrysgroup.com

LOCAL CONTACT (ELECTRIC): ROBERT SMITH  
TELEPHONE: (920) 617-5284  
EMAIL: robert.smith@wisconsinpublicservice.com

LOCAL CONTACT (GAS): JIM EIDEN  
TELEPHONE: 920-617-5231  
EMAIL: james.eiden@wisconsinpublicservice.com

BROWN COUNTY

WILLIAM BERG  
2198 GLENDALE AVENUE  
GREEN BAY, WI 54303  
TELEPHONE: (920) 662-2171  
EMAIL: WILLIAM.BERG@BROWNCOUNTYWI.GOV

COMMUNICATIONS

CHARTER COMMUNICATIONS  
3520 DESTINATION DRIVE  
APPLETON, WI 54915  
ATTN: VINCE ALBIN  
TELEPHONE: (920) 831-9249  
EMAIL: vince.albin@charter.com

DNR LIAISON

JIM DOPERALSKI  
DEPARTMENT OF NATURAL RESOURCES  
2984 SHAWANO AVENUE  
GREEN BAY, WI 54313  
TELEPHONE: (920) 412-0165  
EMAIL: james.doperalski@wisconsin.gov

COMMUNICATIONS

NSIGHT; ATTN: RICK VINCENT  
470 SECURITY BLVD.  
GREEN BAY, WI 54313  
TELEPHONE: 920-617-7316  
EMAIL: rick.vincent@nsight.com

DIGGERSHOTLINE

Dial 811 or (800)242-8511

www.DiggersHotline.com

\*\* DENOTES UTILITIES THAT ARE NOT DIGGERS HOTLINE MEMBERS

PROJECT NO: 9267-04-71

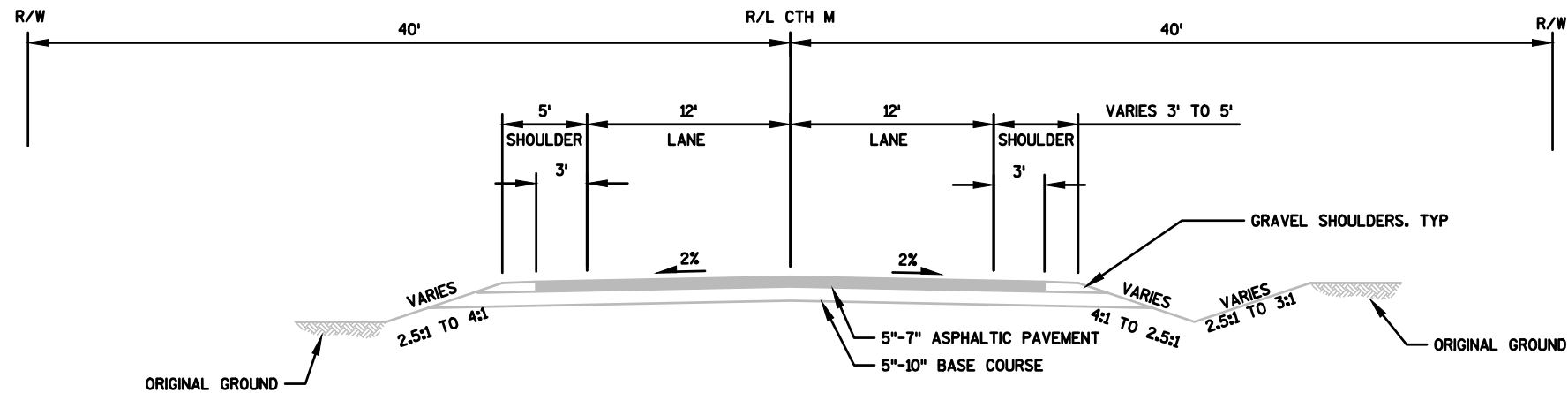
HWY: CTH M

COUNTY: BROWN

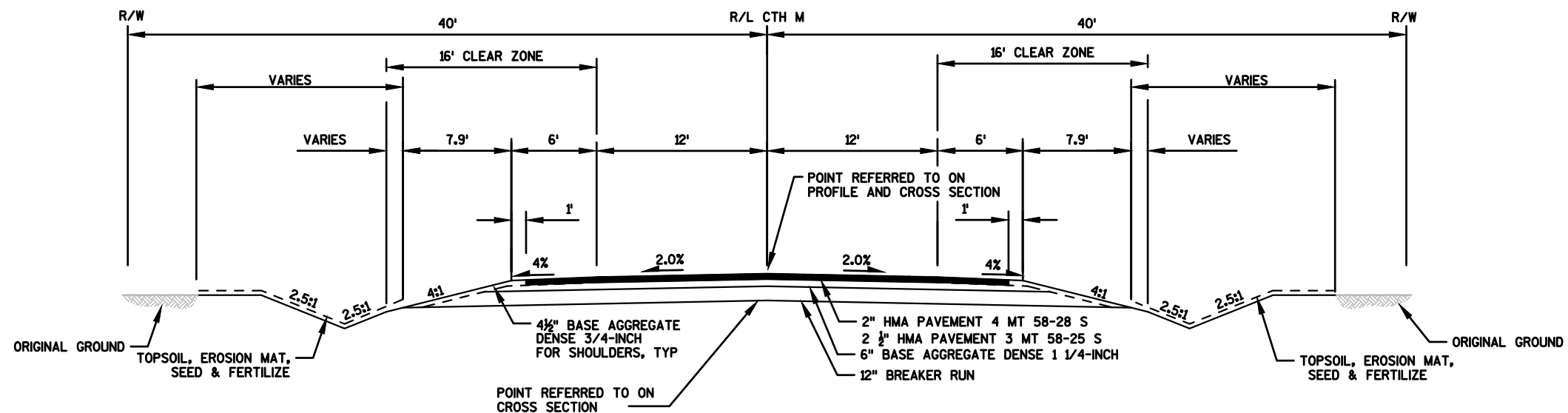
GENERAL NOTES

SHEET:

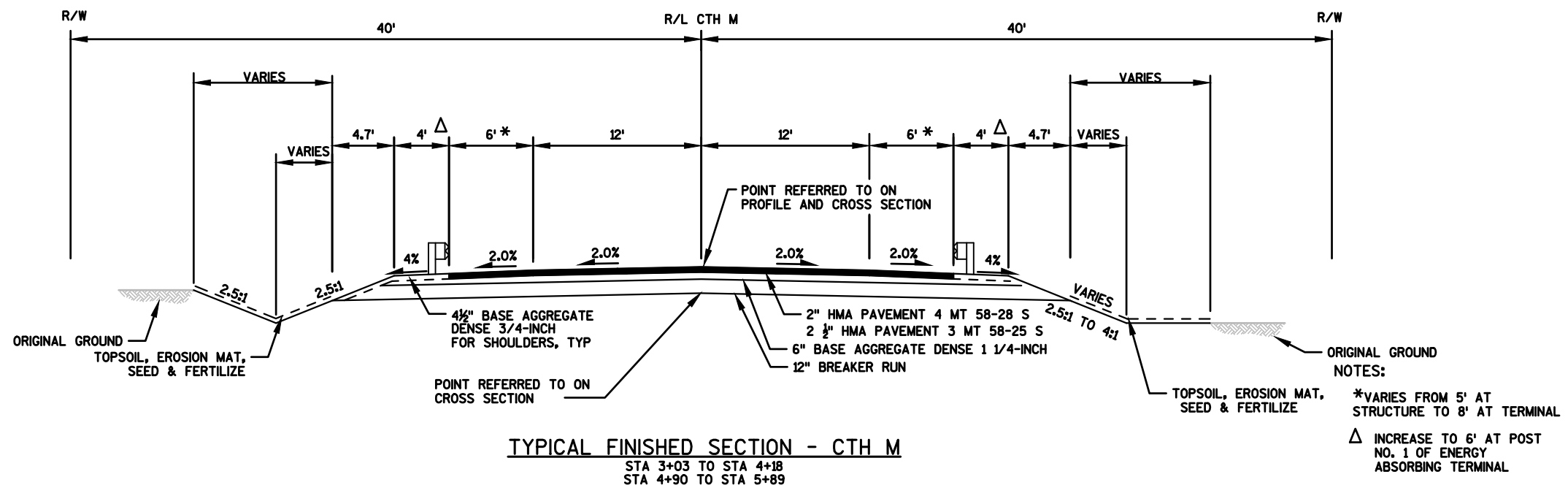
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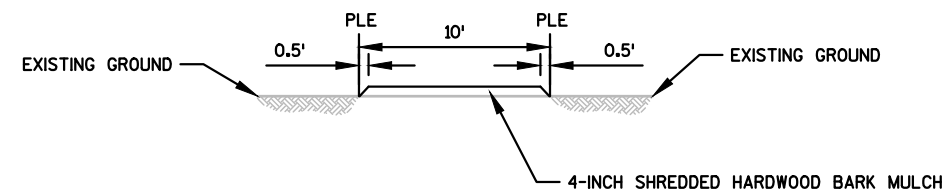
**TYPICAL EXISTING SECTION - CTH M**  
STA 2+25 TO STA 5+89



**TYPICAL FINISHED SECTION - CTH M**  
STA 2+25 TO STA 3+03



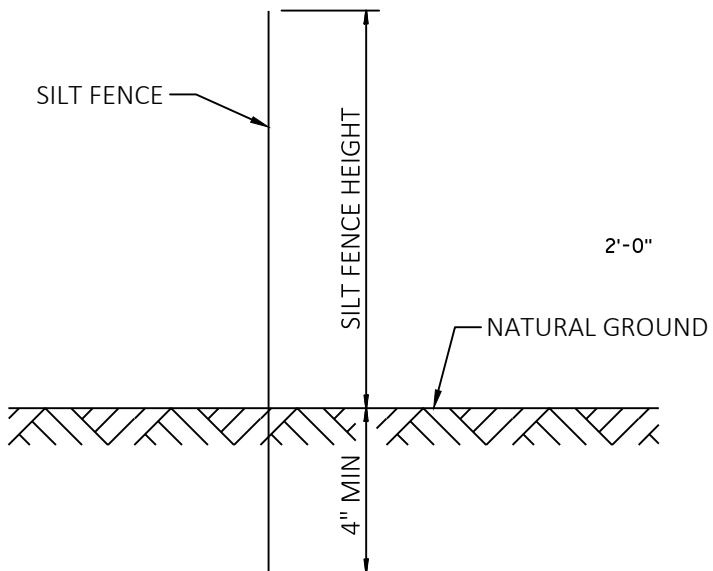
**TYPICAL FINISHED SECTION - CTH M**  
STA 3+03 TO STA 4+18  
STA 4+90 TO STA 5+89



TYPICAL FINISHED SECTION - NATURE TRAIL  
STA 2+25 LT TO STA 2+80 LT

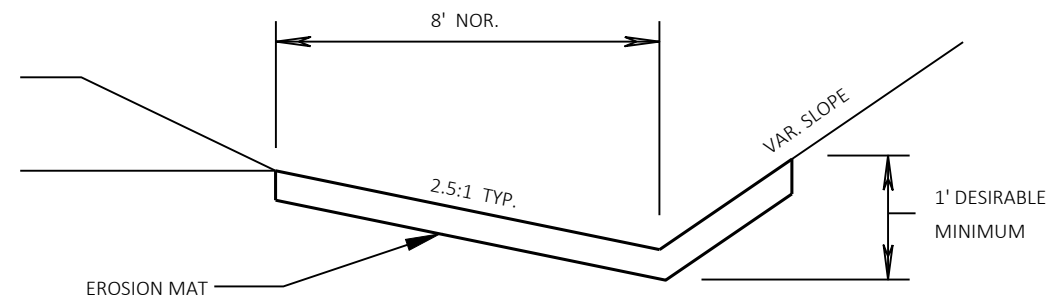
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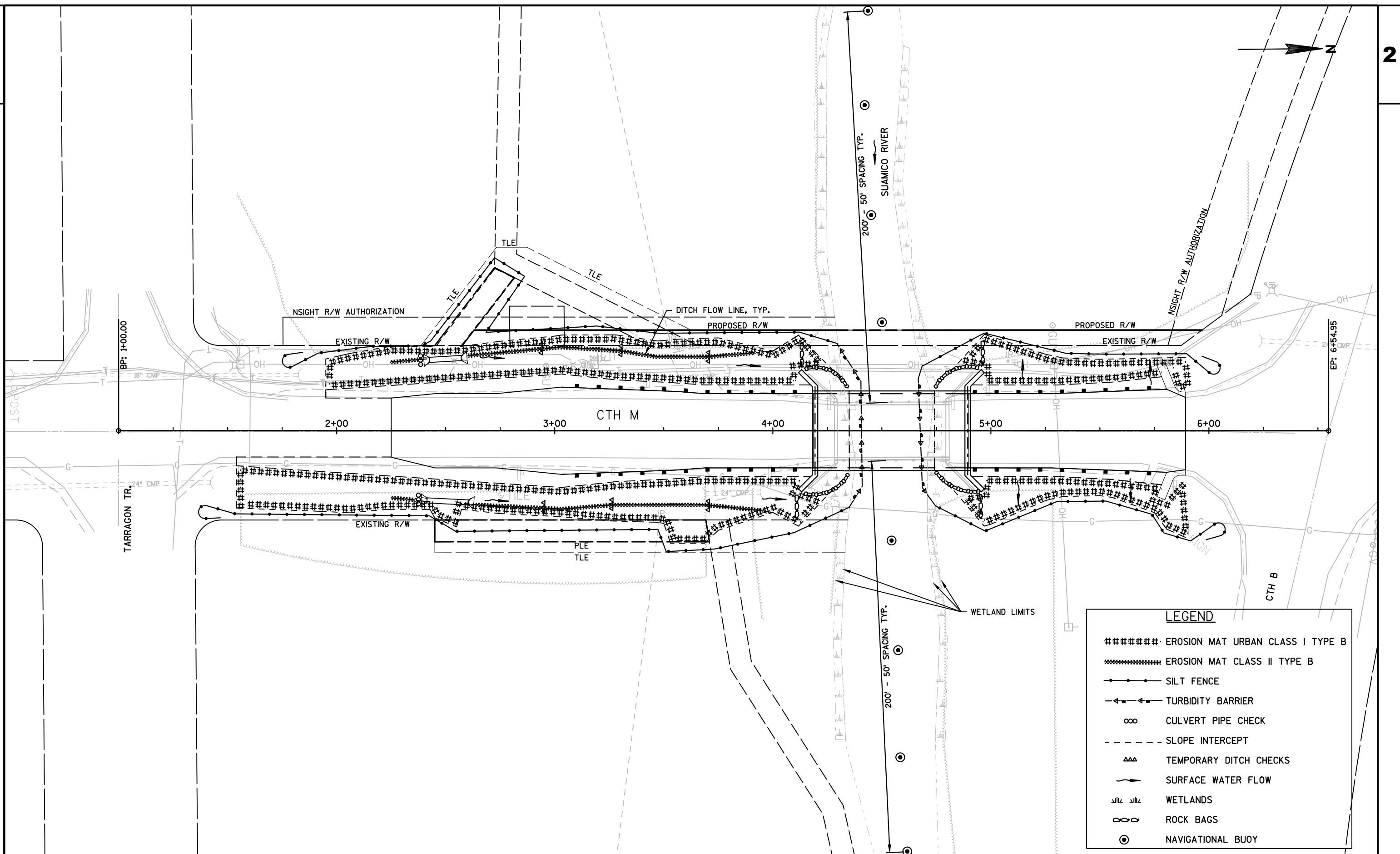


## SILT FENCE TURN-AROUND DETAIL

SIDE VIEW



### EROSION MAT DETAIL FOR DITCHES



PROJECT NO: 9267-04-71

HWY: CTH M

COUNTY: BROWN

EROSION CONTROL

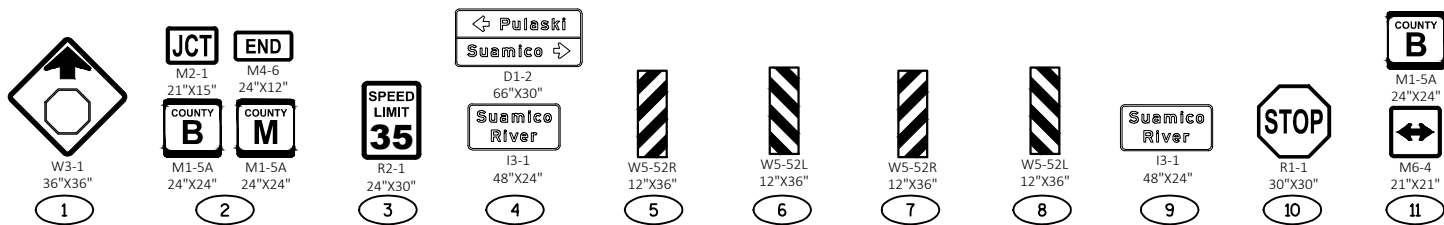
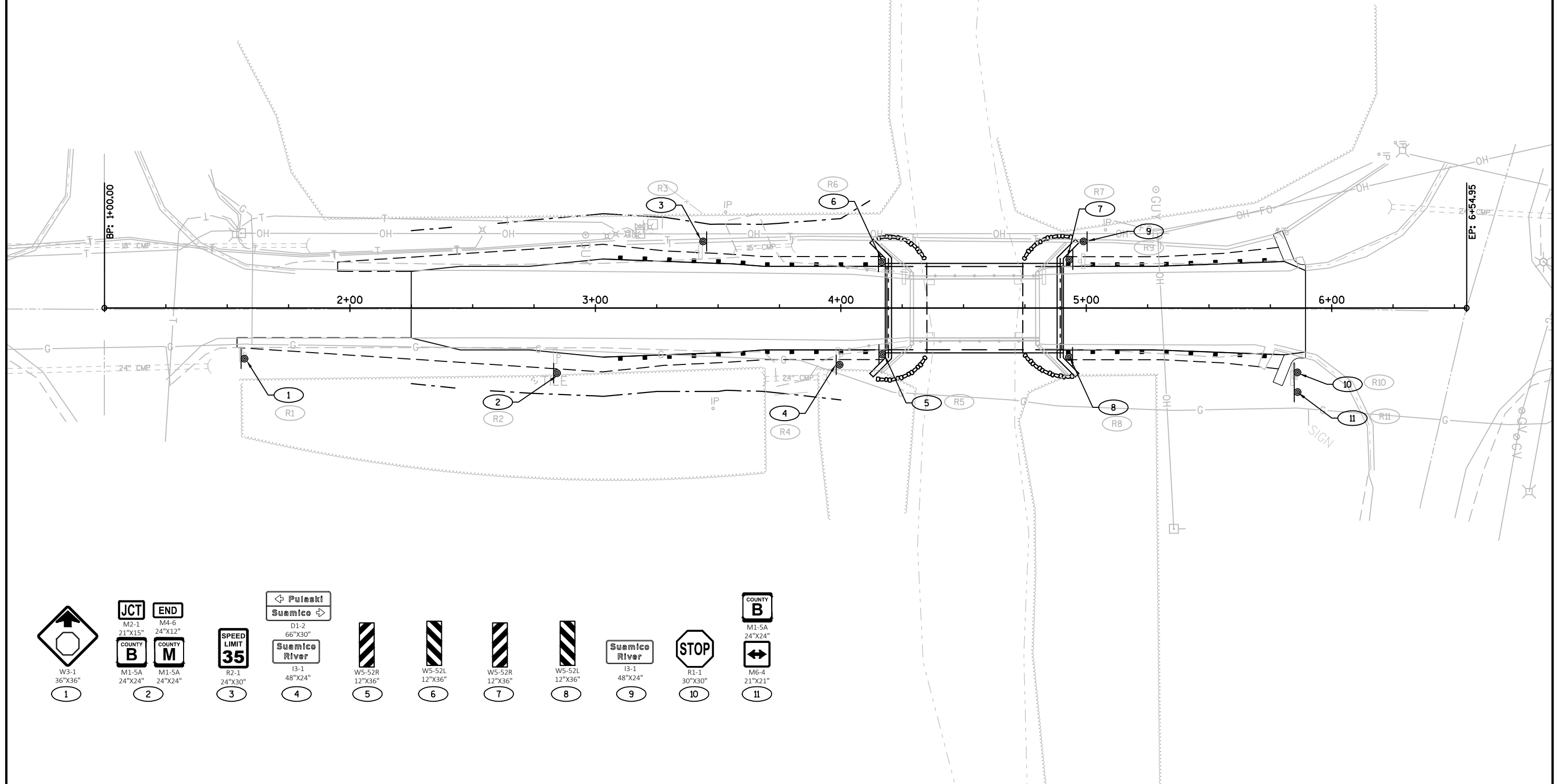
SHEET

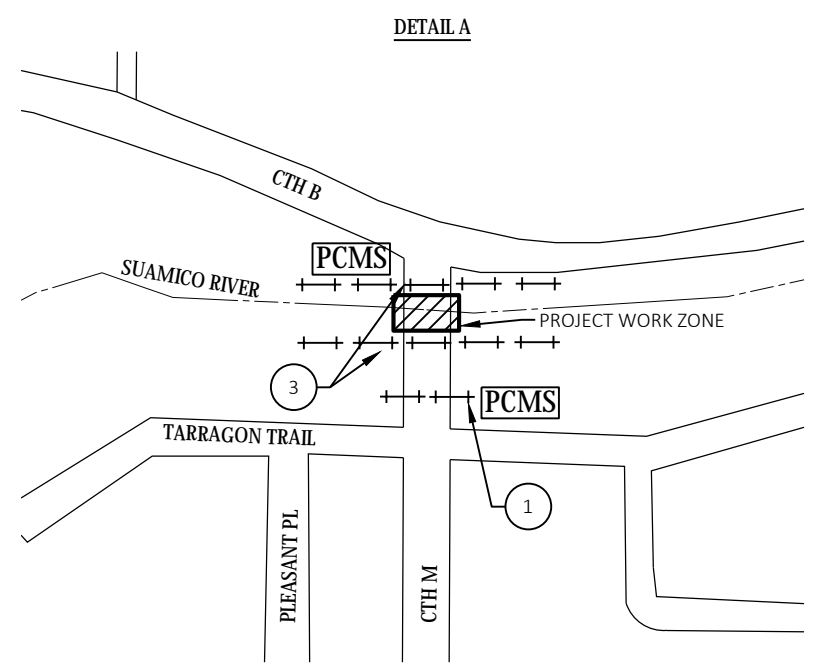
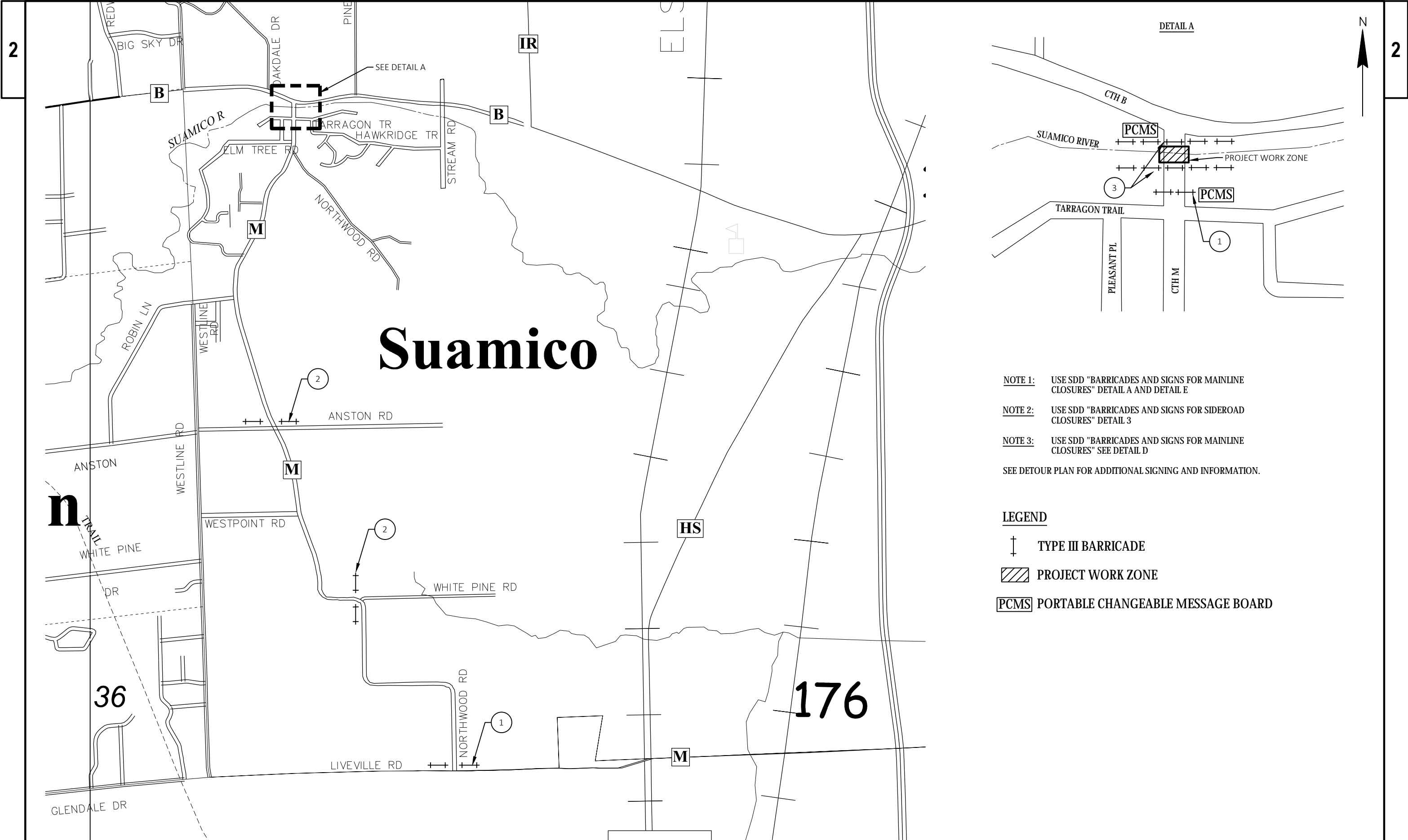
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**LEGEND**

- REMOVE EXISTING SIGN
- PROPOSED SIGN
- PROPOSED SIGN MOUNTED ON POST
- EXISTING SIGN MOUNTED ON POST



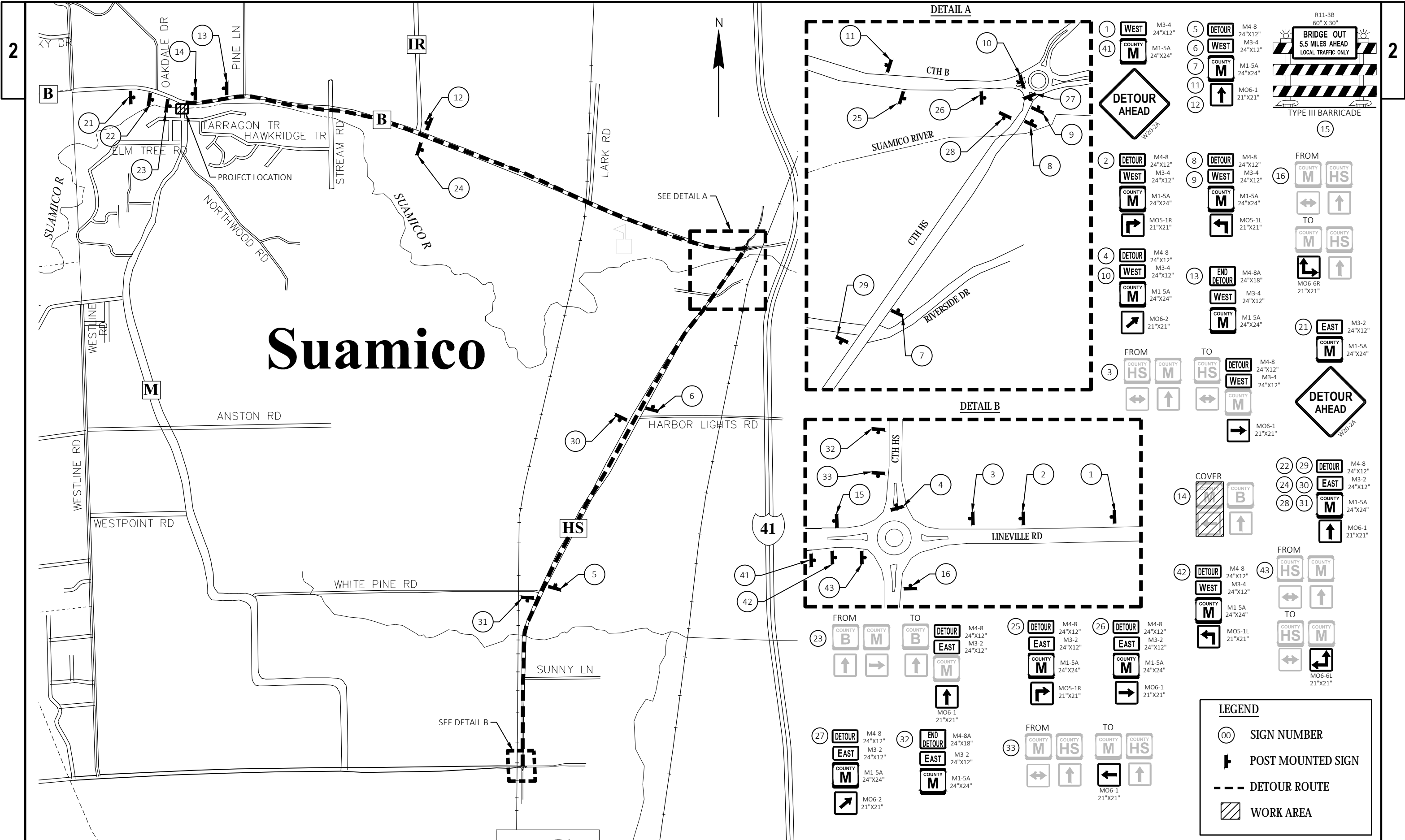


- NOTE 1:** USE SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" DETAIL A AND DETAIL E
- NOTE 2:** USE SDD "BARRICADES AND SIGNS FOR SIDEROAD CLOSURES" DETAIL 3
- NOTE 3:** USE SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" SEE DETAIL D
- SEE DETOUR PLAN FOR ADDITIONAL SIGNING AND INFORMATION.

**LEGEND**

- † TYPE III BARRICADE
- ▨ PROJECT WORK ZONE
- PCMS PORTABLE CHANGEABLE MESSAGE BOARD

PROJECT NO: 9267-04-71	HWY: CTH M	COUNTY: BROWN	TRAFFIC CONTROL OVERVIEW	SHEET	E
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PROJECT NO: 9267-04-71

HWY: CTH M

COUNTY: BROWN

DETOUR PLAN

SHEET

E

Estimate Of Quantities

9267-04-71

Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	6.000	6.000
0004	201.0205	Grubbing	STA	6.000	6.000
0006	203.0100	Removing Small Pipe Culverts	EACH	2.000	2.000
0008	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. 4+54	LS	1.000	1.000
0010	204.0150	Removing Curb & Gutter	LF	14.000	14.000
0012	204.0165	Removing Guardrail	LF	60.000	60.000
0014	205.0100	Excavation Common	CY	737.000	737.000
0016	206.1000	Excavation for Structures Bridges (structure) 01. B-5-429	LS	1.000	1.000
0018	210.1500	Backfill Structure Type A	TON	640.000	640.000
0020	213.0100	Finishing Roadway (project) 01. 9287-03-71	EACH	1.000	1.000
0022	305.0110	Base Aggregate Dense 3/4-Inch	TON	120.000	120.000
0024	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	600.000	600.000
0026	311.0110	Breaker Run	TON	1,300.000	1,300.000
0028	455.0605	Tack Coat	GAL	80.000	80.000
0030	460.6223	HMA Pavement 3 MT 58-28 S	TON	170.000	170.000
0032	460.6224	HMA Pavement 4 MT 58-28 S	TON	140.000	140.000
0034	465.0315	Asphaltic Flumes	SY	24.000	24.000
0036	502.0100	Concrete Masonry Bridges	CY	210.000	210.000
0038	502.3200	Protective Surface Treatment	SY	390.000	390.000
0040	503.0137	Prestressed Girder Type I 36W-Inch	LF	284.000	284.000
0042	505.0400	Bar Steel Reinforcement HS Structures	LB	5,730.000	5,730.000
0044	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	21,640.000	21,640.000
0046	506.2605	Bearing Pads Elastomeric Non-Laminated	EACH	8.000	8.000
0048	506.4000	Steel Diaphragms (structure) 01. B-5-429	EACH	3.000	3.000
0050	513.4061	Railing Tubular Type M	LF	150.000	150.000
0052	516.0500	Rubberized Membrane Waterproofing	SY	24.000	24.000
0054	521.1228	Apron Endwalls for Pipe Arch Steel 28x20-Inch	EACH	4.000	4.000
0056	521.3728	Pipe Arch Corrugated Steel 28x20-Inch	LF	36.000	36.000
0058	550.0020	Pre-Boring Rock or Consolidated Materials	LF	90.000	90.000
0060	550.0500	Pile Points	EACH	9.000	9.000
0062	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	315.000	315.000
0064	606.0300	Riprap Heavy	CY	200.000	200.000
0066	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	150.000	150.000
0068	614.2300	MGS Guardrail 3	LF	50.000	50.000
0070	614.2500	MGS Thrie Beam Transition	LF	157.600	157.600
0072	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0074	619.1000	Mobilization	EACH	1.000	1.000
0076	624.0100	Water	MGAL	4.000	4.000

Estimate Of Quantities

9267-04-71

Line	Item	Item Description	Unit	Total	Qty
0078	625.0100	Topsoil	SY	1,600.000	1,600.000
0080	628.1504	Silt Fence	LF	1,015.000	1,015.000
0082	628.1520	Silt Fence Maintenance	LF	1,015.000	1,015.000
0084	628.1905	Mobilizations Erosion Control	EACH	3.000	3.000
0086	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0088	628.2008	Erosion Mat Urban Class I Type B	SY	1,250.000	1,250.000
0090	628.2023	Erosion Mat Class II Type B	SY	350.000	350.000
0092	628.6005	Turbidity Barriers	SY	150.000	150.000
0094	628.7504	Temporary Ditch Checks	LF	80.000	80.000
0096	628.7555	Culvert Pipe Checks	EACH	8.000	8.000
0098	628.7570	Rock Bags	EACH	50.000	50.000
0100	629.0210	Fertilizer Type B	CWT	1.000	1.000
0102	630.0130	Seeding Mixture No. 30	LB	24.000	24.000
0104	630.0200	Seeding Temporary	LB	28.000	28.000
0106	630.0500	Seed Water	MGAL	36.000	36.000
0108	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0110	634.0616	Posts Wood 4x6-Inch X 16-FT	EACH	7.000	7.000
0112	637.2210	Signs Type II Reflective H	SF	61.460	61.460
0114	637.2230	Signs Type II Reflective F	SF	21.000	21.000
0116	638.2602	Removing Signs Type II	EACH	13.000	13.000
0118	638.3000	Removing Small Sign Supports	EACH	11.000	11.000
0120	642.5001	Field Office Type B	EACH	1.000	1.000
0122	643.0420	Traffic Control Barricades Type III	DAY	1,307.000	1,307.000
0124	643.0705	Traffic Control Warning Lights Type A	DAY	2,614.000	2,614.000
0126	643.0900	Traffic Control Signs	DAY	871.000	871.000
0128	643.0920	Traffic Control Covering Signs Type II	EACH	1.000	1.000
0130	643.1050	Traffic Control Signs PCMS	DAY	14.000	14.000
0132	643.5000	Traffic Control	EACH	1.000	1.000
0134	645.0111	Geotextile Type DF Schedule A	SY	124.000	124.000
0136	645.0120	Geotextile Type HR	SY	302.000	302.000
0138	646.1020	Marking Line Epoxy 4-Inch	LF	1,456.000	1,456.000
0140	650.4500	Construction Staking Subgrade	LF	302.000	302.000
0142	650.5000	Construction Staking Base	LF	302.000	302.000
0144	650.6500	Construction Staking Structure Layout (structure) 01. B-5-429	LS	1.000	1.000
0146	650.9910	Construction Staking Supplemental Control (project) 01. 9287-03-71	LS	1.000	1.000
0148	650.9920	Construction Staking Slope Stakes	LF	302.000	302.000
0150	690.0150	Sawing Asphalt	LF	60.000	60.000
0152	690.0250	Sawing Concrete	LF	5.000	5.000

Estimate Of Quantities

9267-04-71

Line	Item	Item Description	Unit	Total	Qty
0154	715.0502	Incentive Strength Concrete Structures	DOL	1,260.000	1,260.000
0156	SPV.0105	Special 01. Superstructure 3/4" Drip Edge B-5-429	LS	1.000	1.000
0158	SPV.0180	Special 01. Shredded Hardwood Bark Mulch	SY	50.000	50.000

EARTHWORK - CTH M								
Division	From/To Station	Location	Common Excavation	Available Material	Unexpanded Fill	Expanded Fill	Mass Ordinate +/- (14)	Waste
			Cut (2)			Factor 1.25		
CATEGORY 0010								
	2+25/3+68	CTH M	394	394	108	135	259	259
	5+31/5+89	CTH M	170	170	19	24	147	
Category 0010 Subtotal			564	564	127	158	406	259
CATEGORY 0030								
	3+68/5+31	CTH M	173	173	182	227	- 54	0
Category 0030 Subtotal			173	173	182	227	- 54	0
Grand Total			738	738	308	385	352	259
Total Common Exc			738					

2) Salvaged/Unsuable Pavement Material is included in Cut.  
14) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material within the Division. Minus indicates a shortage of material within the Division.

CLEARING AND GRUBBING

STATION TO STATION		DIR	LOCATION	201. 0105 CLEARI NG STA	201. 0205 GRUBBI NG STA
CATEGORY 0010					
1+50	- 4+25	LT & RT	CTH M	4	4
4+75	- 5+25	LT & RT	CTH M	2	2
PROJECT TOTALS				6	6

REMOVING SMALL CULVERT PIPE

STA	DIR	LOCATION	203. 0100 REMOVI NG SMALL PI PE CULVERTS EACH
CATEGORY 0010			
3+60	LT	CTH M	1
3+80	RT	CTH M	1
PROJECT TOTAL			2

REMOVING CURB AND GUTTER

STATION TO STATION		DIR	LOCATION	204. 0150 REMOVI NG CURB AND GUTTER LF
CATEGORY 0010				
5+75	- 5+89	RT	CTH M	14
PROJECT TOTAL				14

REMOVING GUARDRAIL

STATION	TO	STATION	DIR	LOCATION	204. 0165 REMOVI NG GUARDRAI L LF
CATEGORY 0010					
4+00	-	4+30	RT	CTH M	30
4+00	-	4+30	LT	CTH M	30
PROJECT TOTAL					60

BASE COURSE

		305. 0110 BASE AGGREGATE DENSE 3/4-INCH	305. 0120 BASE AGGREGATE DENSE 1 1/4-INCH	311. 0110 BREAKER RUN	624. 0100 WATER
STATION TO STATION	LOCATION	TON	TON	TON	MGAL
CATEGORY 0010					
2+25 - 3+68	CTH M	30	140	310	1
5+31 - 5+89	CTH M	10	60	130	0
CATEGORY TOTAL		40	200	440	1
CATEGORY 0030					
3+68 - 4+20	CTH M	60	280	600	2
4+90 - 5+31	CTH M	20	120	260	1
CATEGORY TOTAL		80	400	860	3
PROJECT TOTALS		120	600	1, 300	4

ASPHALTIC ITEMS

STATION	TO	STATION	LOCATION	455. 0600 TACK COAT GAL	460. 6224 HMA PAVEMENT 4 MT 58-28 S TON	460. 6223 HMA PAVEMENT 3 MT 58-28 S TON	465. 0315 ASPHALTIC FLUMES SY
CAT 0010							
2+25	-	3+68	CTH M	18	30	40	12
5+31	-	5+89	CTH M	9	20	20	12
CATEGORY TOTAL				27	50	60	24
CAT 0030							
3+68	-	4+20	CTH M	35	60	70	---
4+90	-	5+31	CTH M	18	30	40	---
CATEGORY TOTAL				53	90	110	0
PROJECT TOTALS				80	140	170	24

BEAM GUARD

STATION	TO	STATION	DIR	LOCATION	614. 2300 MGS GUARDRAIL 3 LF	614. 2500 MGS THREE BEAM TRANSITION LF	614. 2610 MGS GUARDRAIL TERMINAL EACH
3+03	-	4+20	LT	CTH M	25	39. 4	1
3+03	-	4+20	RT	CTH M	25	39. 4	1
4+88	-	5+81	LT	CTH M	--	39. 4	1
4+88	-	5+81	RT	CTH M	--	39. 4	1
TOTAL					50	157. 6	4

EROSION CONTROL ITEMS

STATION TO STATION	DIR	LOCATION	628. 1504 SILT FENCE LF	628. 1520 SILT FENCE MAINT LF	628. 1905 MOB. EROSION CONTROL EA	628. 1910 MOB. EROSION CONTROL EMERGENCY EA	628. 6005 TURBIDITY BARRIERS SY	628. 7504 TEMP. DITCH CHECKS LF	628. 7555 CULVERT PIPE CHECKS EACH	628. 7570 ROCK BAGS EACH
CATEGORY 0010										
2+25	-	4+18	LT	CTH M	340	340	---	30	3	10
2+25	-	4+18	RT	CTH M	300	300	---	30	3	10
4+90	-	5+89	LT	CTH M	150	150	---	---	---	10
4+90	-	5+89	RT	CTH M	150	150	---	---	---	10
UNDISTRIBUTED					75	75	3	20	2	10
PROJECT TOTALS					1, 015	1, 015	3	80	8	50

CULVERT PIPE

STA	DIR	LOCATION	521. 1228 AEW OF PIPE ARCH STEEL 28X20-INCH EACH	521. 3728 PIPE ARCH CORR. STEEL 28X20-INCH LF	MINIMUM WALL THICKNESS INCH
CATEGORY 0010					
2+50	LT	CTH M	2	16	0. 064
2+50	RT	CTH M	2	20	0. 064
PROJECT TOTAL			4	36	

LANDSCAPING ITEMS

STATION TO STATION			DIR	LOCATION	625. 0100  TOPSOIL SY	628. 2008 EROSION MAT URBAN CLASS I TYPE B SY	628. 2023 EROSION MAT CLASS II TYPE B SY	629. 0210  FERTILIZER TYPE B  CWT	630. 0130 SEEDING MIX NO. 30 LB	630. 0200  TEMP SEEDING  LB	630. 0500  SEED WATER  MGAL
CATEGORY 0010											
2+25	-	4+18	LT	CTH M	460	310	150	0. 29	8	10	10
2+25	-	4+18	RT	CTH M	550	410	140	0. 34	10	10	12
4+90	-	5+89	LT	CTH M	160	160	0	0. 10	2	2	4
4+90	-	5+89	RT	CTH M	160	160	0	0. 10	0	2	4
UNDISTRIBUTED					270	210	60	0. 17	4	4	6
PROJECT TOTALS					1, 600	1, 250	350	1. 00	24	28	36

PAVEMENT MARKING

			646. 1020 MARKING LINE EPOXY 4-INCH (WHITE) LF		EPOXY 4-INCH (YELLOW) LF	
STATION - STATION			LOCATION			
CATEGORY 0010						
2+25	-	5+89	CTH M		728	728
PROJECT TOTALS					1, 456	

SIGNS REFLECTIVE TYPE II & POSTS WOOD

SIGN NO.	STATION	D/R	LOCATION	CODE	SIGN SIZE HORIZONTAL X VERTICAL X IN X IN	634.0612 POSTS WOOD 4X6-INCH X 12-FT EACH	634.0616 POSTS WOOD 4X6-INCH X 16-FT EACH	637.2210 SIGNS TYPE II REFLECTIVE H SF	637.2230 SIGNS TYPE II REFLECTIVE F SF	COMMENT
1	1+57	RT	CTH M	W3-1	36 X 36	---	1	---	9.00	STOP AHEAD
2	2+85	RT	CTH M	M2-1	21 X 15	---	1	2.19	---	JCT
--	2+85	RT	CTH M	M1-5A	24 X 24	---	---	4.00	---	CTH B - ON SIGN 2
--	2+85	RT	CTH M	M4-6	24 X 12	---	---	2.00	---	END - ON SIGN 2
--	2+85	RT	CTH M	M1-5A	24 X 24	---	---	4.00	---	CTH M - ON SIGN 2
3	3+44	LT	CTH M	R2-1	24 X 30	---	1	5.00	---	SPEED LIMIT 35
4	3+99	RT	CTH M	D1-2	66 X 30	---	1	13.75	---	PULASKI LT & SUAMI CO RT
---	3+99	RT	CTH M	I3-1	48 X 24	---	---	8.00	---	SUAMI CO RIVER - ON SIGN 4
5	4+16	RT	CTH M	W5-52R	12 X 36	1	---	---	3.00	OBJECT MARKER
6	4+16	LT	CTH M	W5-52L	12 X 36	1	---	---	3.00	OBJECT MARKER
7	4+93	LT	CTH M	W5-52R	12 X 36	1	---	---	3.00	OBJECT MARKER
8	4+93	RT	CTH M	W5-52L	12 X 36	1	---	---	3.00	OBJECT MARKER
9	5+00	LT	CTH M	I3-1	48 X 24	---	1	8.00	---	SUAMI CO RIVER
10	5+85	RT	CTH M	R1-1	30 X 30	---	1	7.46	---	STOP
11	5+85	RT	CTH M	M6-4	21 X 21	---	1	3.06	---	LT & RT ARROW
---	5+85	RT	CTH M	M1-5A	24 X 24	---	---	4.00	---	CTH B - ON SIGN 11
PROJECT TOTAL						4	7	61.46	21.00	

REMOVING SIGNS TYPE II AND REMOVING SMALL SIGN SUPPORTS

STATION	D/R	LOCATION	DESCRIPTION	638.2602 REMOVING SIGNS TYPE II EACH	638.3000 REMOVING SMALL SIGN SUPPORTS EACH
CATEGORY 0010					
1+57	RT	CTH M	STOP AHEAD	1	1
2+85	RT	CTH M	JCT CTH B	1	1
2+85	RT	CTH M	END CTH M	1	---
3+41	LT	CTH M	35 MPH SPEED LIMIT	1	1
4+00	RT	CTH M	PULASKI LT / SUAMI CO RT	1	1
4+00	RT	CTH M	SUAMI CO RIVER	1	---
4+27	RT	CTH M	OBJECT MARKER	1	1
4+27	LT	CTH M	OBJECT MARKER	1	1
4+81	RT	CTH M	OBJECT MARKER	1	1
4+81	LT	CTH M	OBJECT MARKER	1	1
4+97	LT	CTH M	SUAMI CO RIVER	1	1
5+86	RT	CTH M	STOP SIGN	1	1
5+87	RT	CTH M	CTH B RT & LT	1	1
PROJECT TOTALS				13	11

TRAFFIC CONTROL

LOCATION	APPROX. SERVICE PERIOD  DAYS	643.0420 BARRICADES TYPE III  NO. DAYS	643.0705 WARNING LIGHTS TYPE A  NO. DAYS	643.0900  SIGNS  NO. DAYS	643.1050  SIGNS PCMS  DAY	643.5000  TRAFFIC CONTROL  EACH
CATEGORY 0010						
TRAFFIC CONTROL SIGNING						
CTH M AT CTH B	66	12 792	24 1,584	3 198	14	1
CTH M (LINEVILLE RD) AT NORTHWOOD ROAD	66	2 132	4 264	2 132	--	--
CTH M AT WHITE PINE RD	66	2 132	4 264	3 198	--	--
CTH M AT ANSTON RD	66	2 132	4 264	4 264	--	--
PROJECT SUBTOTALS		1,188	2,376	792	14	1
UNDISTRIBUTED		119	238	79	0	0
TOTALS		1,307	2,614	871	14	1

CONSTRUCTION STAKING

		650. 4500 CONSTRUCTI ON STAKI NG SUBGRADE	650. 5000 CONSTRUCTI ON STAKI NG BASE	650. 6500 CONSTRUCTI ON STAKI NG STRUCTURE LAYOUT B-5-429	650. 9910 CONSTRUCTI ON STAKI NG SUPPLEMENTAL CONTROL	650. 9920 CONSTRUCTI ON STAKI NG SLOPE STAKES
STATI ON TO STATI ON	LOCATI ON	LF	LF	LS	LS	LF
CATEGORY 0010						
2+25 - 4+18	CTH M	193	193	---	---	193
4+80 - 5+89	CTH M	109	109	---	1	109
CATEGORY TOTALS		302	302	0	1	302
CATEGORY 0020						
STR B-5-429	CTH M	---	---	1	---	---
CATEGORY TOTALS		0	0	1	0	0
PROJECT TOTALS		302	302	1	1	302

COVERING SIGNS

LOCATI ON	643. 0920 TRAFFI C CONTROL COVERI NG SIG NS TYPE I I		
	EACH	NUMBER OF CYCLES	NUMBER OF SI GNS
CATEGORY 0010			
CTH M DETOUR	1	1	1
PROJECT TOTAL		1	

SAW CUTTING











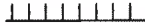


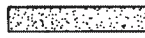

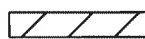











STA	DI R	LOCATI ON	690. 0150 SAWI NG ASPHALT LF	690. 0250 SAWI NG CONCRETE LF
CATEGORY 0010				
2+25	R/L	CTH M	30	---
5+89	R/L	CTH M	30	5
PROJECT TOTALS			60	5

SHREDDED HARDWOOD BARK MULCH

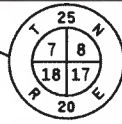
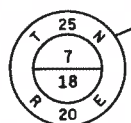
STA	TO	STA	DI R	LOCATI ON	SPV. 0180. 01 SY
CATEGORY 0010					
2+25	-	2+80	LT	CTH M	50*
PROJECT TOTALS					50

\* I NSTALL ON WEST SI DE OF ROAD ONLY

## Conventional Signs and Abbreviations

_____	SECTION LINE		
_____	QUARTER LINE		
_____	TOWNSHIP AND RANGE LINE		
_____	PROPOSED OR NEW CENTERLINE		
_____	PROPOSED OR NEW R/W LINE		
_____	EXISTING R/W LINE		
_____	LOT LINE		
P.L. _____	PROPERTY LINE		
	COUNTY LIMITS LINE		
	SLOPE INTERCEPTS		
—X—  —X—	EXISTING MONUMENTATION		
	FENCE		
	SECTION OR QUARTER CORNER		
—T—  —T—	TELEPHONE		
—G—  —G—	GAS		
—W—  —W—	WATER		
—E—  —E—	ELECTRIC		
—FO—  —FO—	FIBER OPTIC		
—SAN—  —SAN—	SANITARY		
—SS—  —SS—	STORM SEWER		
	NO ACCESS (BY ACQUISITION)		
	NO ACCESS (BY STATUTORY AUTHORITY)		
	NO ACCESS (BY PREVIOUS PROJECT)		
	TEMPORARY LIMITED EASEMENT		
	PERMANENT LIMITED EASEMENT		
	FEE TITLE		
	RIGHT-OF-WAY MONUMENTS SET		
	AT NEWLY ACQUIRED R/W ANGLE POINTS		
	PARCEL NUMBER		
	UTILITY PARCEL NUMBER		
	R/W POINT NUMBER		
	PLE POINT NUMBER		
	COMPENSABLE	NON-COMPENSABLE	
POWER POLE			
TELEPHONE POLE			
TELEPHONE PEDESTAL			
AC	ACRES	LCB	LONG CHORO BE
Δ	CENTRAL ANGLE	MI	MILE
C/L	CENTERLINE	N.	NORTH
COR.	CORNER	N.T.S.	NOT TO SCALE
CTH	COUNTY TRUNK HIGHWAY	PC	POINT OF CURV
O	DEGREE OF CURVE	PI	POINT OF INTER
E.	EAST	PT	POINT OF TANG
L	LENGTH OF CURVE	PLE	PERMANENT LIM
LC	LONG CHORO	P/L	PROPERTY LINE
		PC LINE	PRIVATE CLAIM

P.K. FOUND  
Y=615972.492  
X=72218.679



COMPUTED  
Y=616061.237  
X=74852.992

UTILITY INTEREST REQUIRED		
PARCEL NUMBER	OWNER	INTEREST REQUIRED
90	NSIGHT	RELEASE OF RIGHTS

# VILLAGE

**END RELOCATION ORDER**  
**STATION 6+54.95**

S21.88' SOUTH OF AND T26.78' EAST OF THE NORTH QUARTER  
CORNER OF SECTION 18, T25N, R20E, VILLAGE OF SUAMICO,  
BROWN COUNTY WISCONSIN.  
Y: 615450.606  
X: 72945.461

### SCHEDULE OF LANDS AND INTERESTS

PARCEL NUMBER	OWNER	INTEREST REQUIRED	AREA ACRES REQUIRED			TLE AREA	PLE AREA
			NEW	EXISTING	TOTAL		
1	STEVEN CHERNEY	FEE TLE PLE	1185 SQ. FT.	---	1185 SQ. FT.	2227 SQ.FT.	420 SQ.FT.
2	DENNIS C. O'DONNELL & TAMMY M. O'DONNELL	TLE PLE	---	---	---	1579 SQ.FT.	1251 SQ.FT.
3	TOOO STACHURA & CARLYNN R. JACOBS	FEE	888 SQ. FT.	---	888 SQ. FT.	---	---

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N51°54'13"W	8.83'
L2	N00°32'45"E	140.79'
L3	N00°32'45"E	107.66'
L4	S35°57'51"E	11.77'
L5	S00°32'45"W	12.61'
L6	N51°54'13"W	44.99'
L7	N27°18'26"E	10.18'
L8	S51°54'13"E	39.21'
L9	S80°29'04"E	80.99'
L10	N81°09'07"E	10.14'
L11	N89°27'15"W	10.00'
L12	S89°26'48"E	39.14'
L13	N00°32'45"E	99.58'
L14	S27°18'26"W	84.39'
L15	S00°32'45"W	13.94'
L16	S51°54'13"E	66.31'
L17	N00°32'45"E	5.37'

TODD STACHURA &amp; CARLYNN R. JACOBS

SUAMIC  
RIVER

WISCONSIN AGRICULTURE SHORELAND  
MANAGEMENT COST SHARE  
SNOWBIROS SNOWMOBILE CLUB  
J25710, 115, OOC. NO. 1470915  
J25874, 128, OOC. NO. 1475220

NSIGHT RW AUTHORIZATION \_\_\_\_\_  
J21460, I16, OOC. NO. 1361263

10' WIDE NATURE TRAIL EASEMENT  
PER CSM 7286, OOC NO. 2180844

# TITLE FOR - GRAVING AND SLOPING

STEVEN CHERNEY

# TARRAGON TRAIL

# SUAMICO

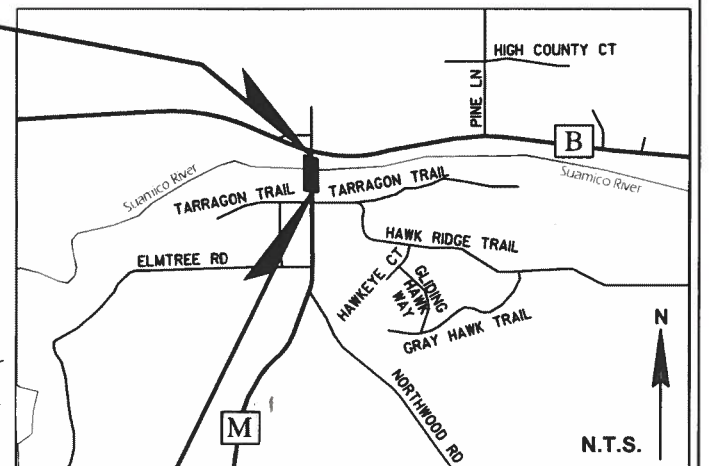
# CTH 'M'

4+34.50  
40.88' TLE

DENNIS C. O'DONNELL &  
TAMMY M. O'DONNELL

**BEGIN RELOCATION ORDER**  
**STATION 1+00.00**

1076.81' SOUTH OF AND 721.431' EAST OF THE NORTH QUARTER  
CORNER OF SECTION 18, T25N, R20E, VILLAGE OF SUAMICO,  
BROWN COUNTY, WISCONSIN.  
Y: 614895.682  
X: 72940.113



SCALE 0 80' 160'

TOTAL NET LENGTH OF CENTERLINE = 0.105 MI.

ACCEPTED FOR  
BROWN COUNTY

1/22/2020  
(Date)

**Public Works Director/  
Highway Commissioner**

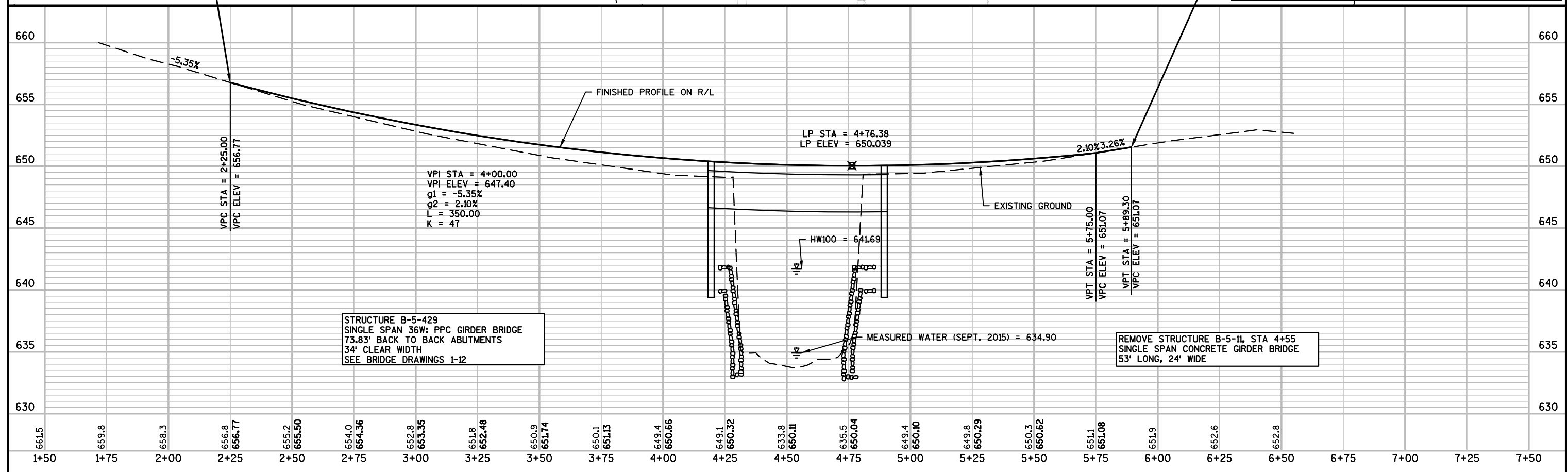
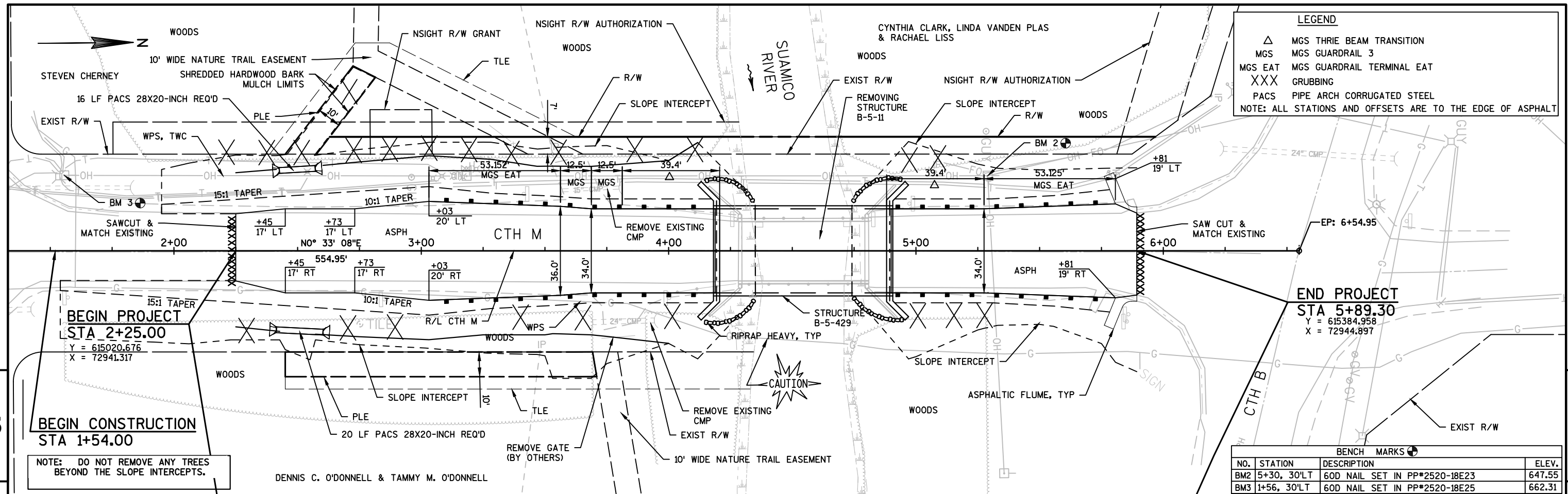
ORIGINAL PLANS PREPARED BY

**OMNI**  
ASSOCIATES  
APPLETON, WISCONSIN

A red circular stamp with a dotted border. The text "WISCONSIN" is at the top and "PROFESSIONAL LAND SURVEYOR" is at the bottom, separated by two stars. In the center, the text reads: "DAVID A. YURK", "S-2648", "OSHKOSH.", "WI".

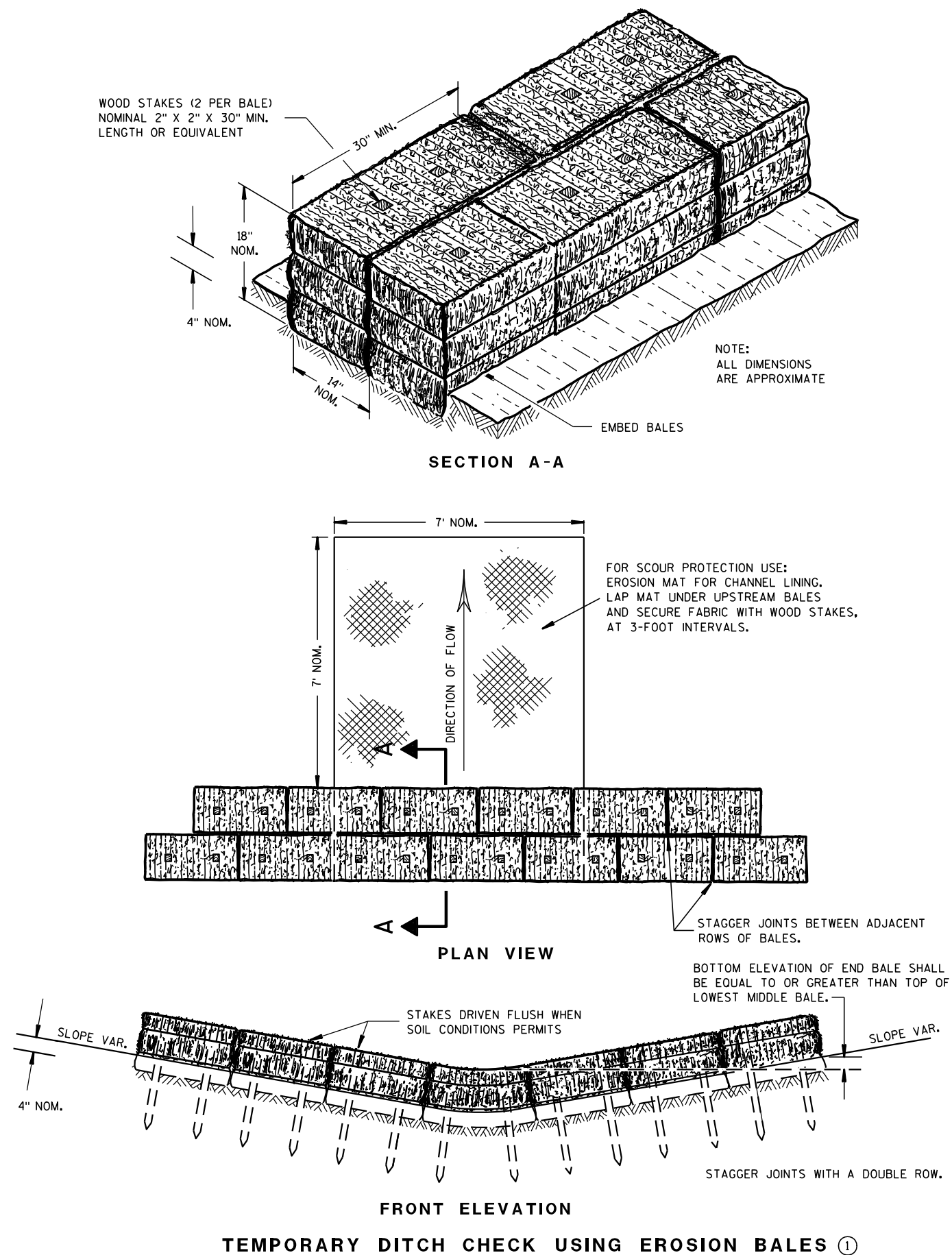
1-9-2020  
(Date)

David C. Yunk  
(Signature)



Standard Detail Drawing List

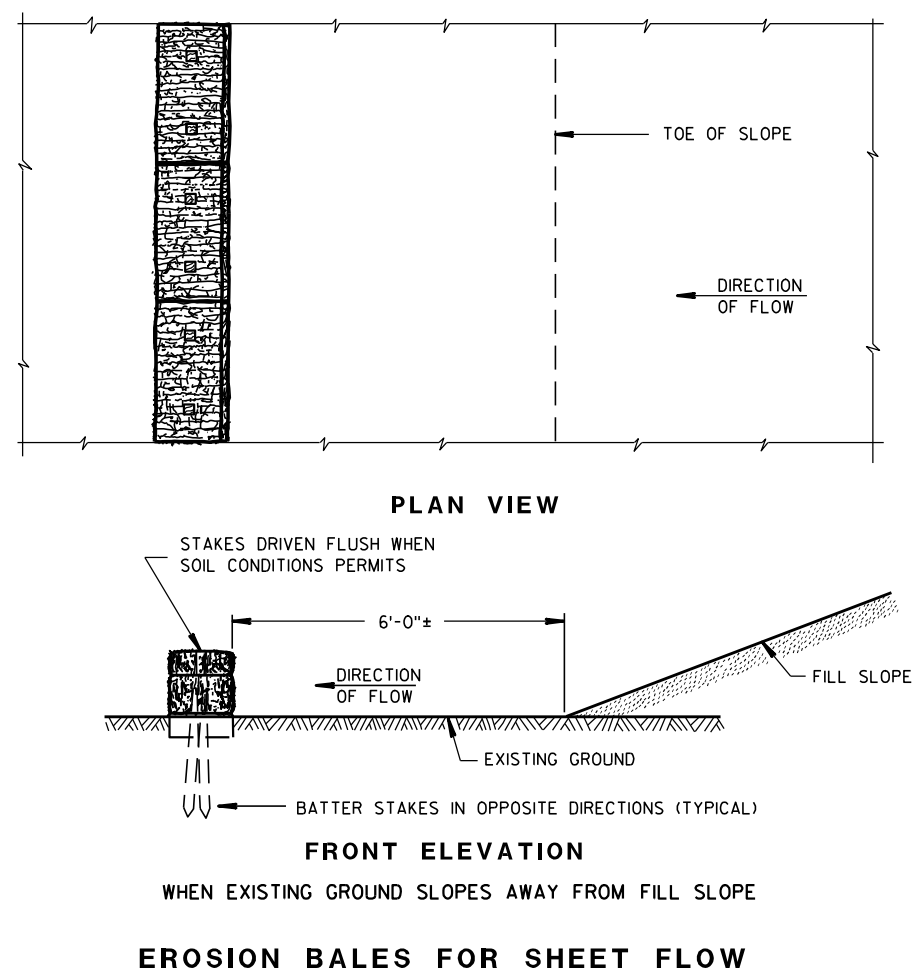
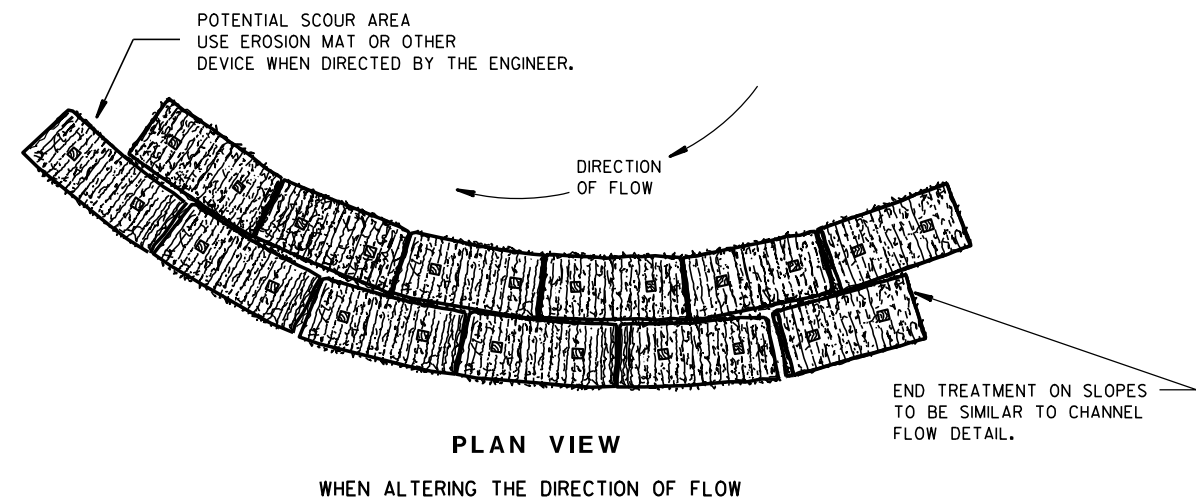
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
08E15-01	CULVERT PIPE CHECK
08F02-01	APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE
12A03-10	NAME PLATE (STRUCTURES)
13C19-02	HMA LONGITUDINAL JOINTS
14B42-06A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-08A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-08B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C03-05	BARRICADES AND SIGNS FOR SIDEROAD CLOSURES
15C06-09	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-20A	LONGITUDINAL MARKING (MAINLINE)
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS



## GENERAL NOTES

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

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

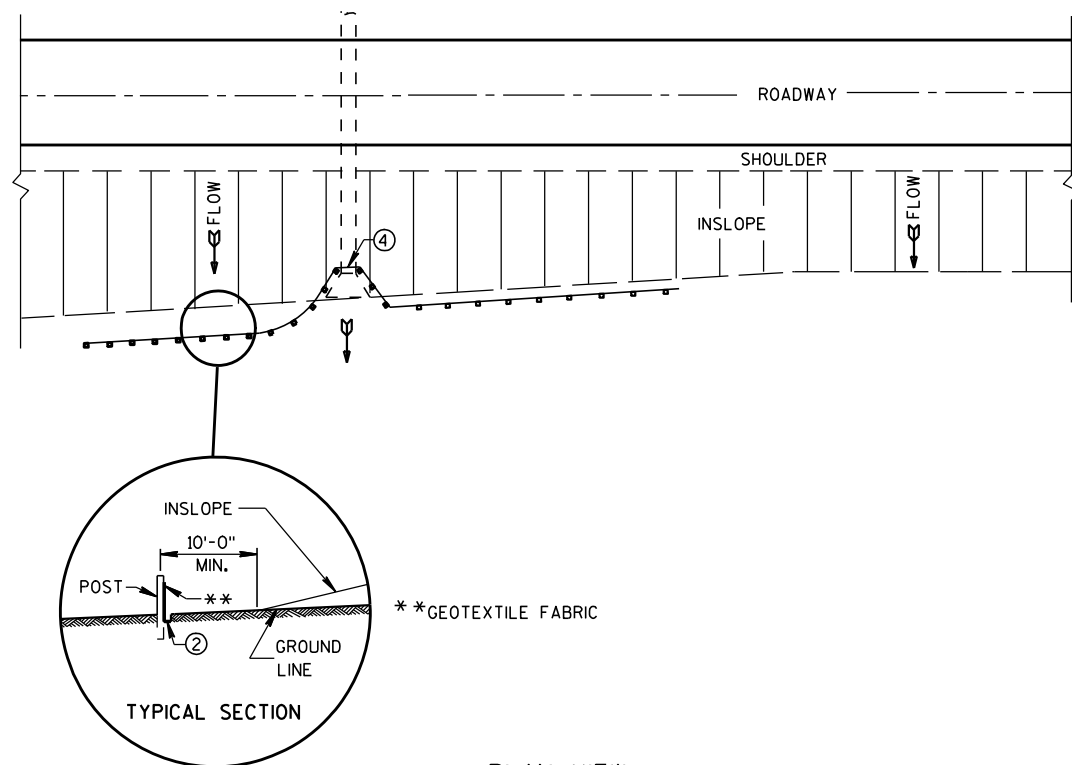
TYPICAL INSTALLATIONS OF  
EROSION BALES / TEMPORARY  
DITCH CHECKS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

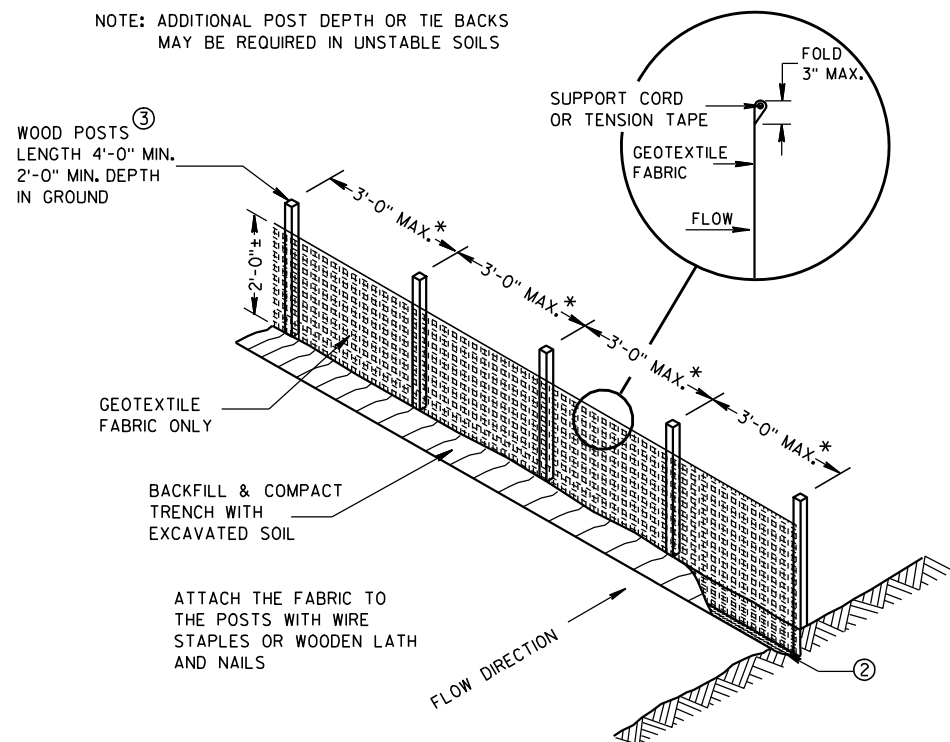
6/04/02  
DATE/S/ Beth Canestra  
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA



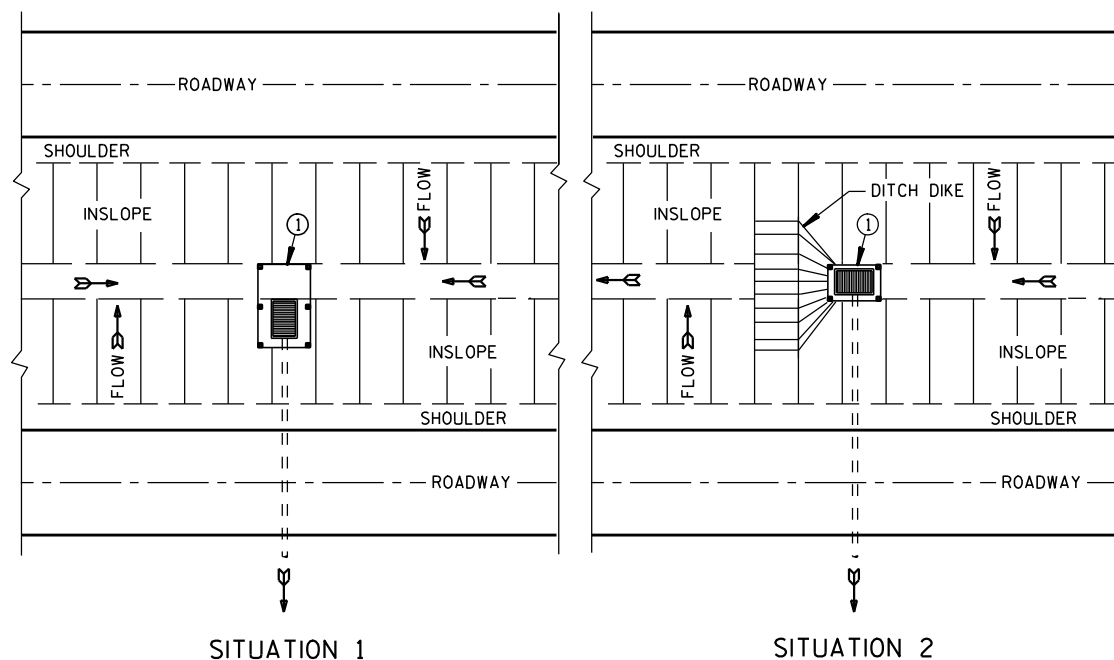
PLAN VIEW  
TYPICAL APPLICATION OF SILT FENCE

NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS

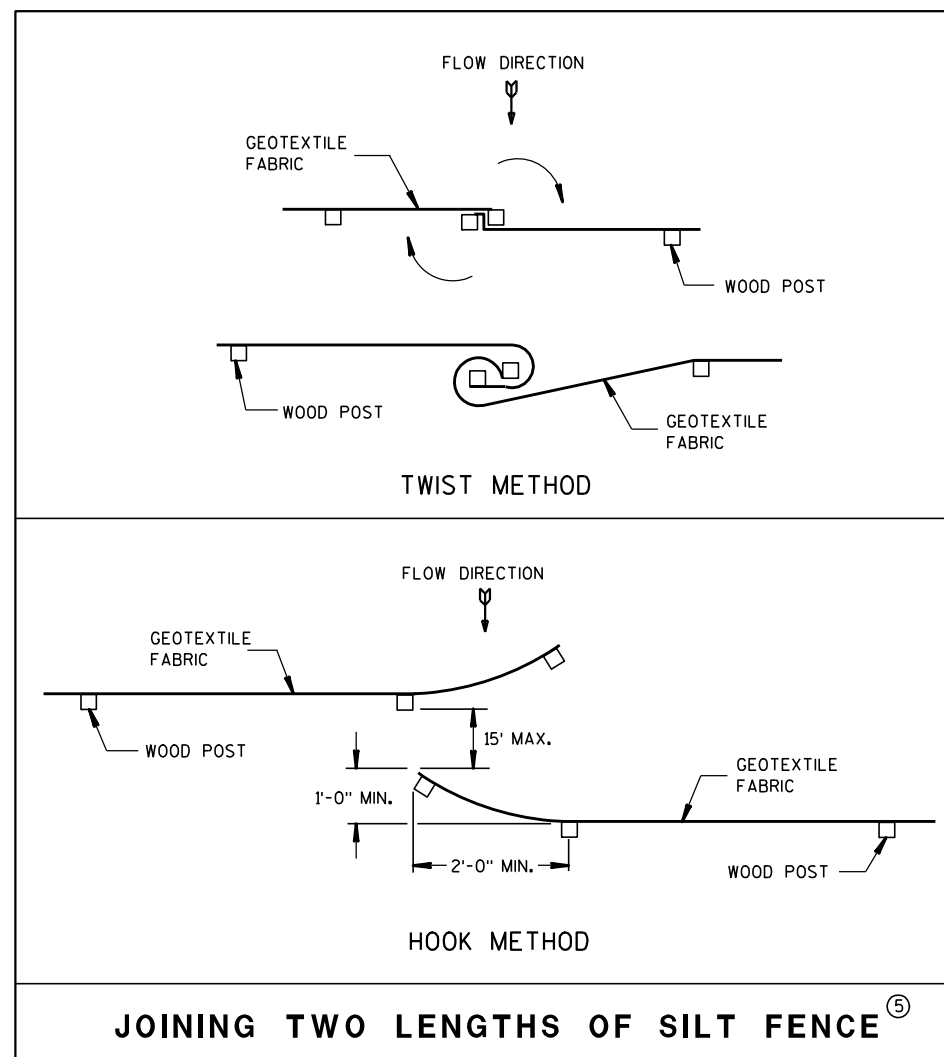


SILT FENCE

\* NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.



PLAN VIEW  
SILT FENCE AT MEDIAN SURFACE DRAINS

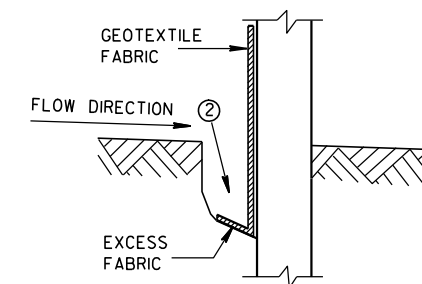


JOINING TWO LENGTHS OF SILT FENCE<sup>⑤</sup>

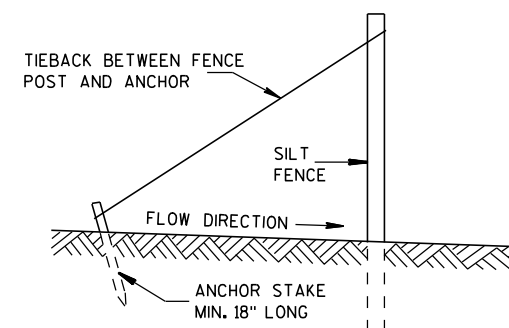
## GENERAL NOTES

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

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



TRENCH DETAIL



SILT FENCE TIE BACK  
(WHEN REQUIRED BY THE ENGINEER)

## SILT FENCE

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

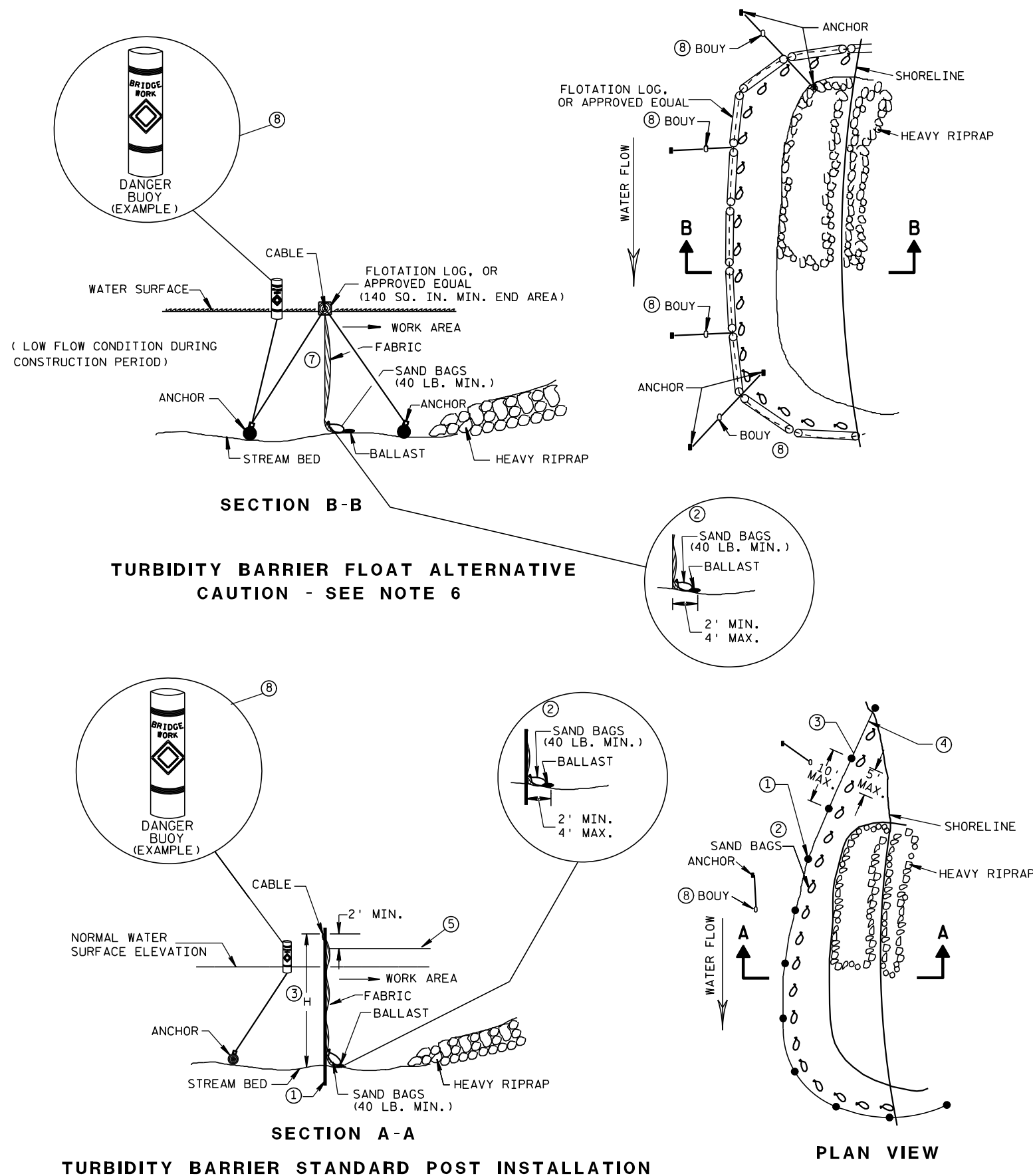
APPROVED

4-29-05

DATE

FHWA

/S/ Beth Canestra  
CHIEF ROADWAY DEVELOPMENT ENGINEER

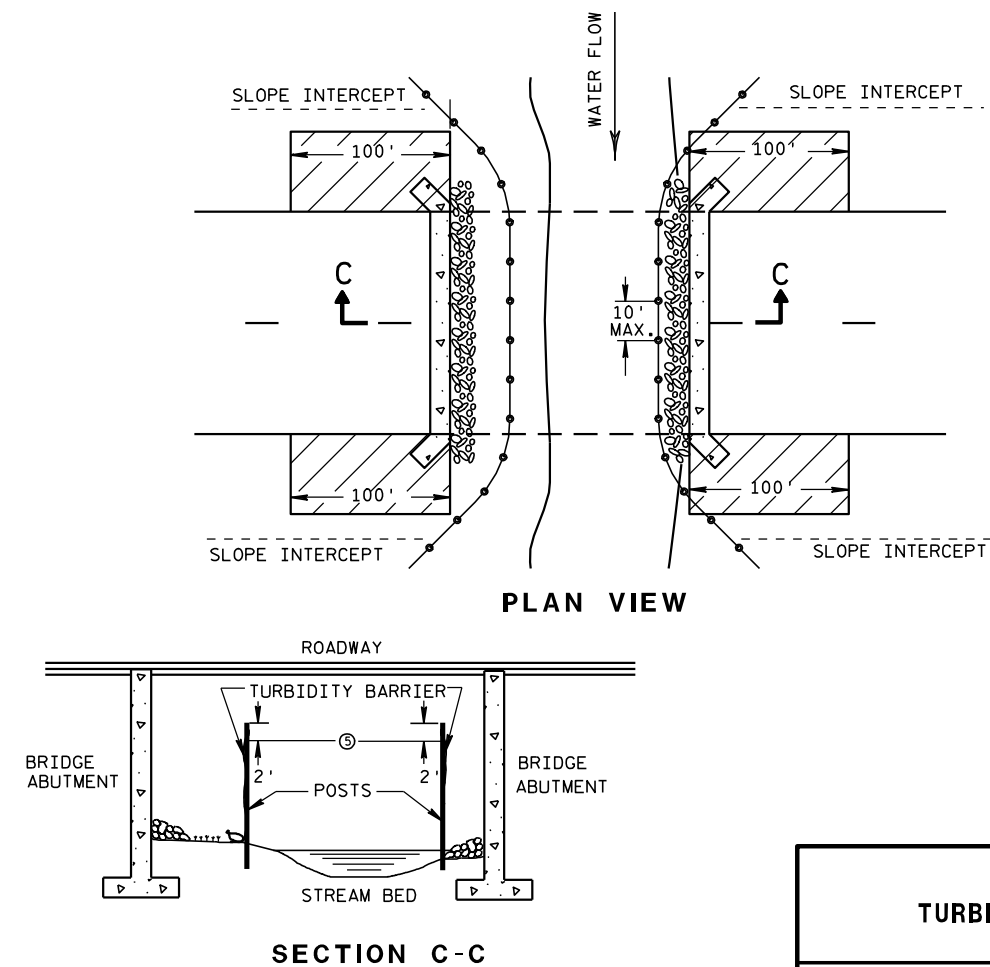


## GENERAL NOTES

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

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

- ① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.
- ② SANDBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.
- ③ WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.
- ④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.
- ⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MINIMUM BARRIER HEIGHT SHALL BE 2' GREATER THAN EITHER THE 02 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 BED ROCK PREVENTS THE INSTALLATION OF POSTS.
- ⑦ ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.
- ⑧ USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



## TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

### TURBIDITY BARRIER

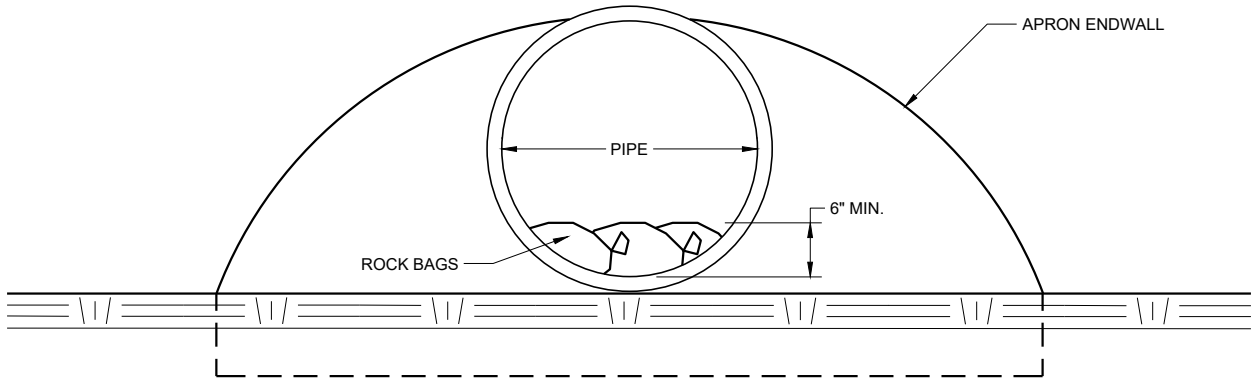
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

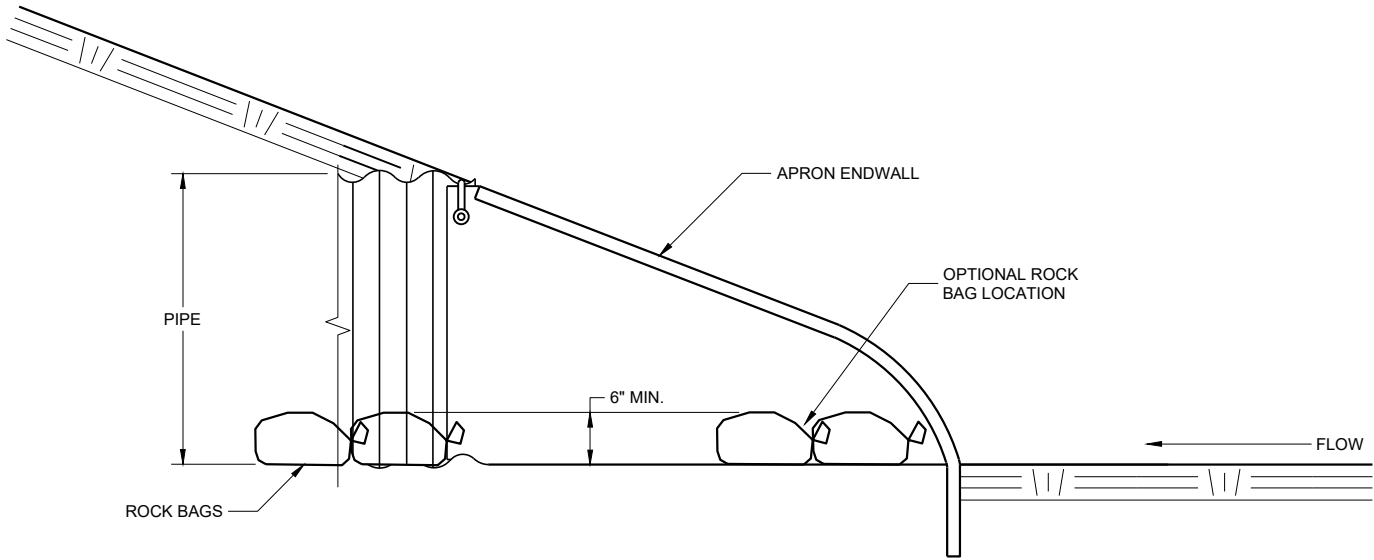
6/04/02  
DATE

FHWA

/S/ Beth Canestra  
CHIEF ROADWAY DEVELOPMENT ENGINEER



END VIEW

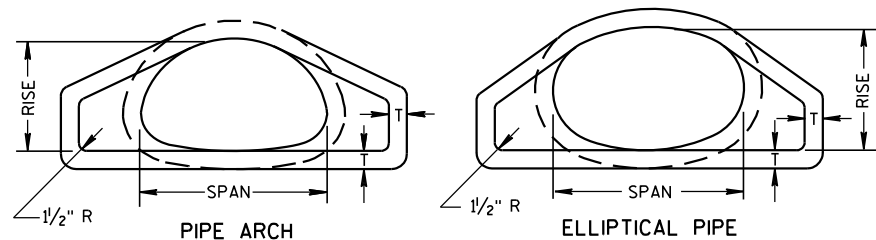


SIDE VIEW

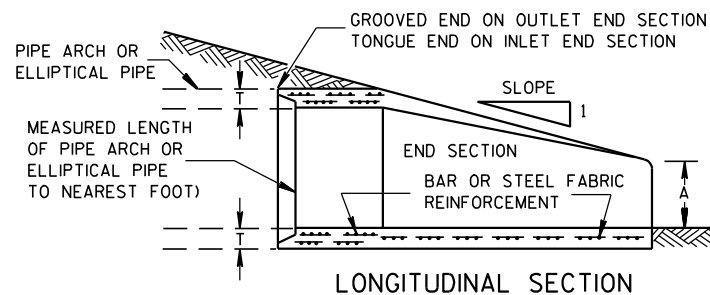
**CULVERT PIPE CHECK**  
(INSTALL ON INLET END ONLY)

<b>CULVERT PIPE CHECK</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2019 DATE	/S/ Daniel Schave EROSION CONTROL ENGINEER

FHWA

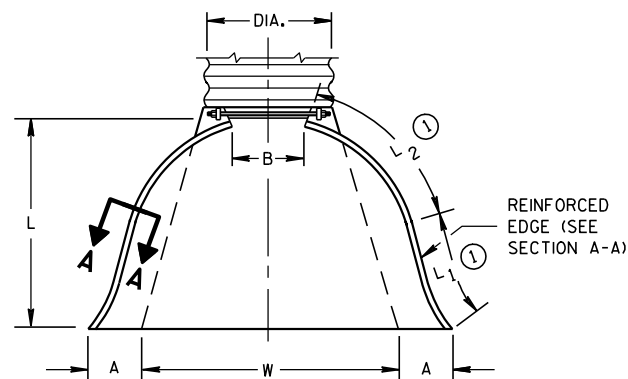


END VIEW



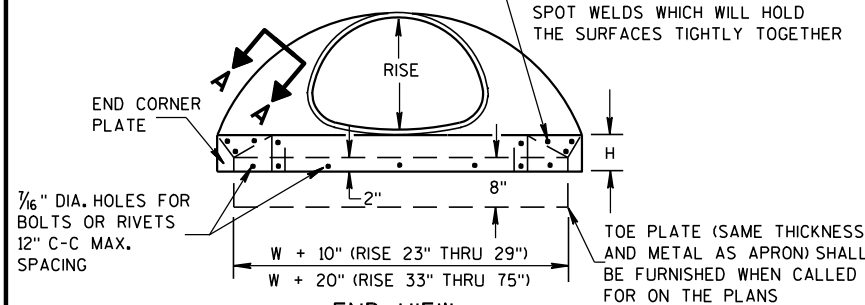
LONGITUDINAL SECTION

## CONCRETE ENDWALLS

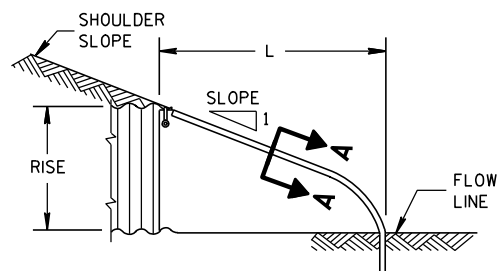
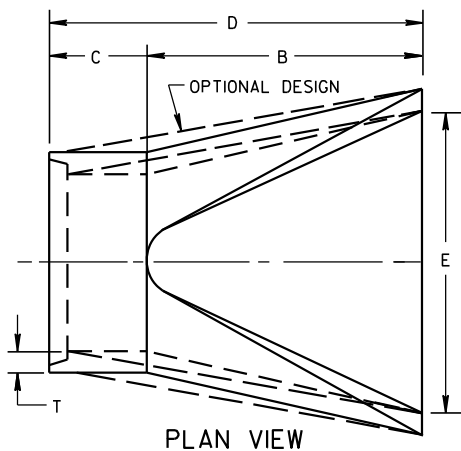


PLAN VIEW

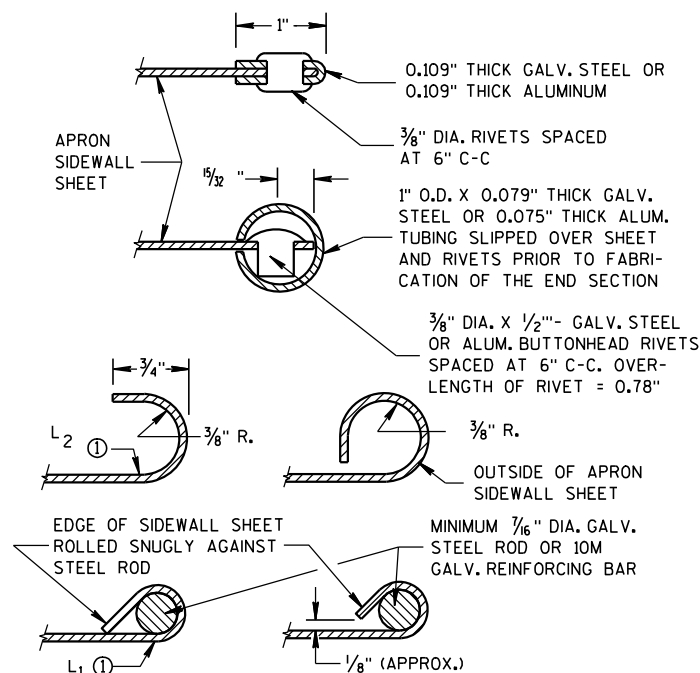
END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER



END VIEW

SIDE ELEVATION  
METAL ENDWALLS

PLAN VIEW

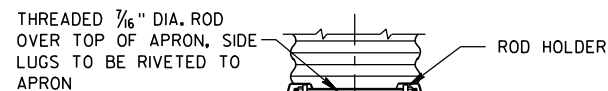


SECTION A-A

2- 2 2/3" X 1/2" CORRUGATIONS													
EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	SPAN	RISE	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")		
15	17	13	.064	.060	7	9	6	19	14	16	30	2 1/2 to 1	1 Pc.
18	21	15	.064	.060	7	10	6	23	14	19 3/8	36	2 1/2 to 1	1 Pc.
21	24	18	.064	.060	8	12	6	28	18	21 3/4	42	2 1/2 to 1	1 Pc.
24	28	20	.064	.060	9	14	6	32	18	27 1/2	48	2 1/2 to 1	1 Pc.
30	35	24	.079	.075	10	16	6	39	18	37 5/8	60	2 1/2 to 1	1 Pc.
36	42	29	.079	.075	12	18	8	46	24	45 3/8	75	2 1/2 to 1	1 Pc.
42	49	33	.109	.105	13	21	9	53	24	54 3/4	85	2 1/2 to 1	2 Pc.
48	57	38	.109	.105	18	26	12	63	24	68	90	2 1/2 to 1	3 Pc.
54	64	43	.109	.105	18	30	12	70	24	72 3/4	102	2 1/4 to 1	3 Pc.
60	71	47	.109*	.105*	18	33	12	77	30	82 1/4	114	2 1/4 to 1	3 Pc.
66	77	52	.109*	.105*	18	36	12	77	—	—	126	2 to 1	3 Pc.
72	83	57	.109*	.105*	18	39	12	77	—	—	138	2 to 1	3 Pc.

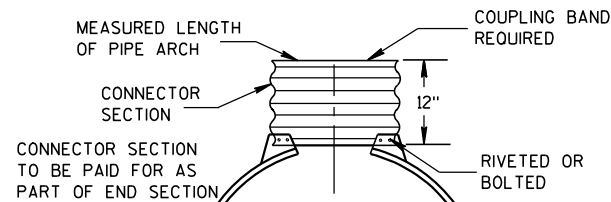
3" X 1" CORRUGATIONS													
EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	SPAN	RISE	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")		
48	53	41	.109	.105	18	26	12	63	24	72 3/4	90	2 1/2 to 1	2 Pc.
54	60	46	.109	.105	18	30	12	70	30	82 1/4	102	2 to 1	2 Pc.
60	66	51	.109*	.105*	18	33	12	77	—	—	114	1 1/2 to 1	3 Pc.
66	73	55	.109*	.105*	18	36	12	77	—	—	126	1 1/2 to 1	3 Pc.
72	81	59	.109*	.105*	18	39	12	77	—	—	138	2 to 1	3 Pc.
78	87	63	.109*	.105*	22	38	12	77	—	—	148	1 1/2 to 1	3 Pc.
84	95	67	.109*	.105*	22	34	12	77	—	—	162	1 1/2 to 1	3 Pc.
90	103	71	.109*	.105*	22	38	12	77	—	—	174	1 1/2 to 1	3 Pc.
96	112	75	.109*	.105*	24	40	12	77	—	—	174	1 1/2 to 1	3 Pc.

NOTE: ALL SPLICES TO BE LAP RIVETED OR BOLTED.

\* EXCEPT CENTER PANEL  
SEE GENERAL NOTES

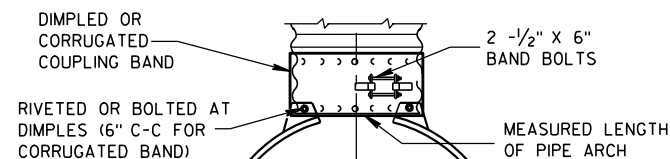
TYPE 2

FOR 17" X 13" THRU 112" X 75" PIPE ARCH



TYPE 3

FOR 64" X 43" THRU 112" X 75" PIPE ARCH



TYPE 5

ALTERNATE FOR:

ALL SIZES CORRUGATED PIPE ARCHES

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

## CONNECTION DETAILS

## REINFORCED CONCRETE PIPE ARCH

EQUIV. DIA. (Inches)	DIMENSIONS (Inches)								APPROX. SLOPE
	** SPAN	** RISE	T	A	B	C	D	E	
24	29	18	3	8 1/2	39	33	72	48	3 to 1
30	36	22	3 1/2	9 1/2	50	46	96	60	3 to 1
36	44	27	4	11 1/8	60	36	96	72	3 to 1
42	51	31	4 1/2	15 1/8	60	36	96	78	3 to 1
48	58	36	5	21	60	36	96	84	3 to 1
54	65	40	5 1/2	25 1/2	60	36	96	90	3 to 1
60	73	45	6	31	60	36	96	96	3 to 1
72	88	54	7	31	60	39	99	120	2 to 1
84	102	62	8	28 1/2	83	19	102	144	2 to 1

## REINFORCED CONCRETE ELLIPTICAL PIPE

EQUIV. DIA. (Inches)	DIMENSIONS (Inches)								APPROX. SLOPE
	** SPAN	** RISE	T	A	B	C	D	E	
24	30	19	3 1/4	8 1/2	39	33	72	48	3 to 1
30	38	24	3 3/4	9 1/2	54	18	72	60	3 to 1
36	45	29	4 1/2	11 1/8	60	24	84	72	2 1/2 to 1
42	53	34	5	15 1/4	60	36	96	78	2 1/2 to 1
48	60	38	5 1/2	21	60	36	96	84	2 1/2 to 1
54	68	43	6	25 1/2	60	36	96	90	2 1/2 to 1
60	76	48	6 1/2	30	60	36	96	96	2 1/2 to 1

\*\*NOMINAL SIZE

## GENERAL NOTES

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

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

ALL THREE PIECE STEEL APRON ENDWALLS FOR 66" X 51" PIPE ARCH AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 66" X 51" PIPE ARCH AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE ARCH PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 77" X 52" THROUGH 112" X 75" APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.

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

① FOR PIPE ARCH SIZES UP TO 73" X 55" A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

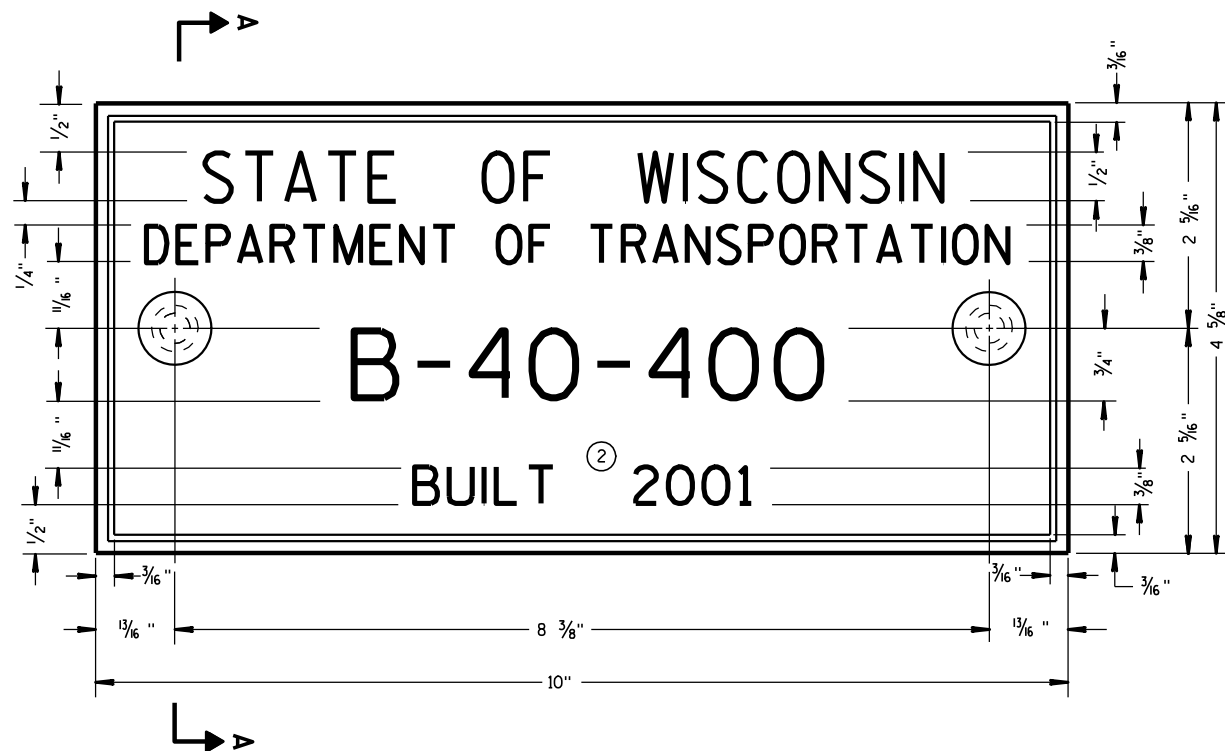
APRON ENDWALLS FOR  
PIPE ARCH AND  
ELLIPTICAL PIPESTATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

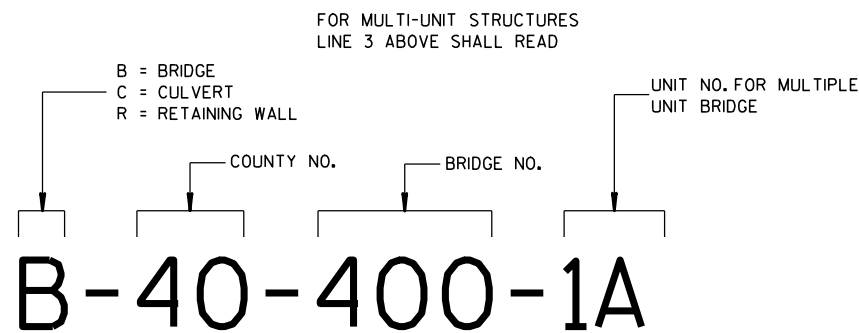
11/30/94  
DATE

FHWA

/S/ Rory L. Rhinesmith  
CHIEF ROADWAY DEVELOPMENT ENGINEER



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



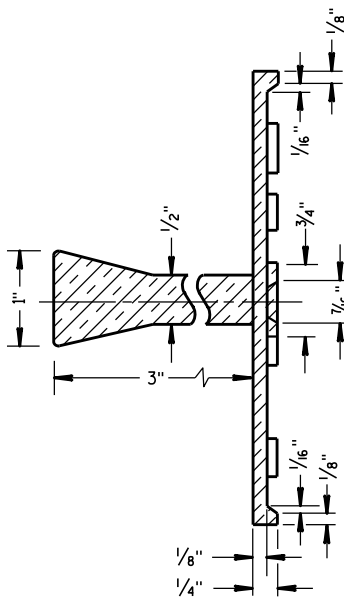
**NUMBERING DESIGNATION  
MULTI-UNIT STRUCTURES**

**GENERAL NOTES**

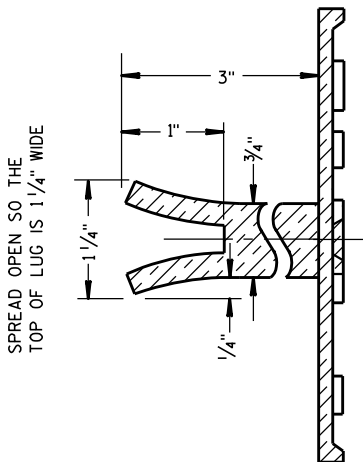
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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.

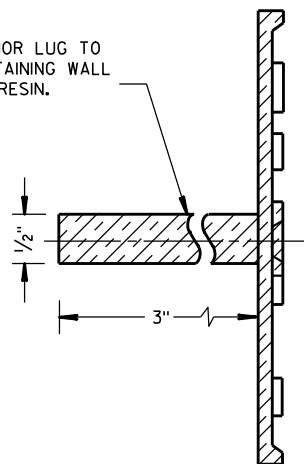


**SECTION A-A**



**ALTERNATE LUG**

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

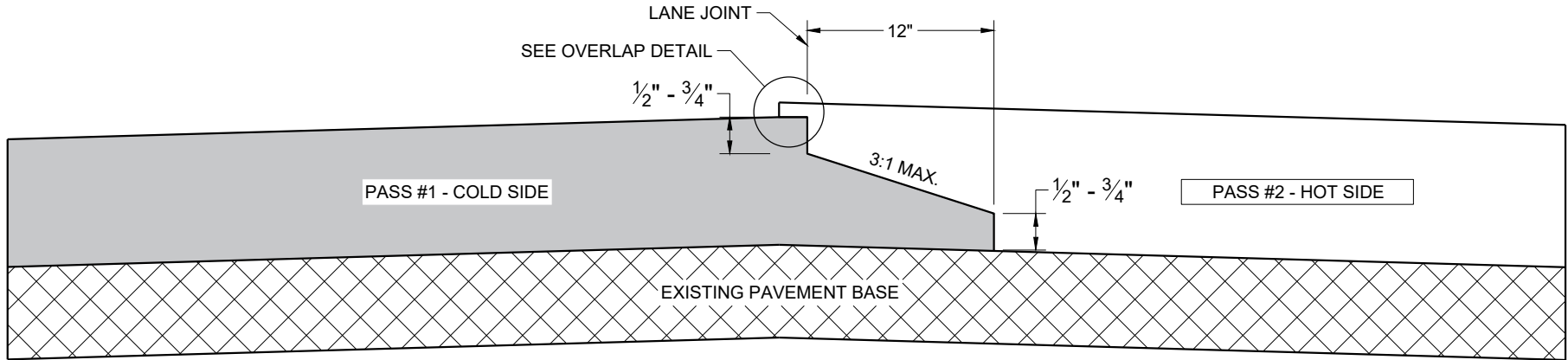


**ALTERNATE LUG**  
(FOR ATTACHMENT TO PRECAST STRUCTURES)

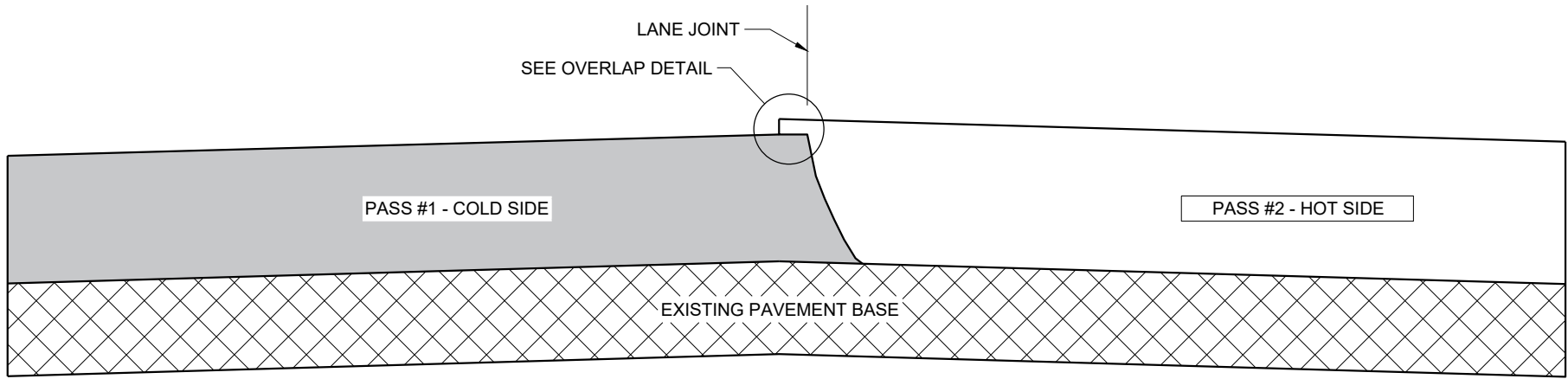
**NAME PLATE  
(STRUCTURES)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

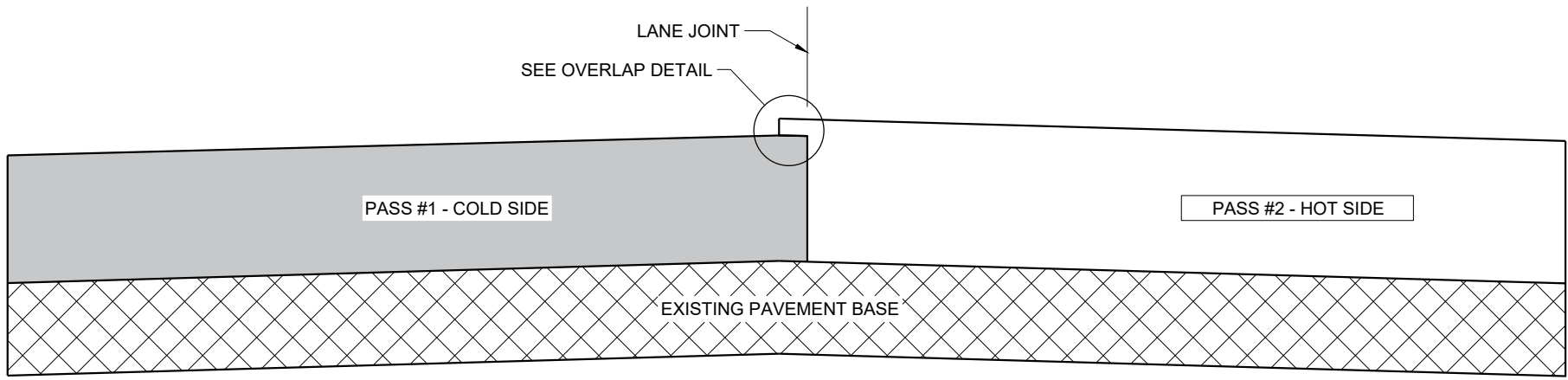
APPROVED  
3/26/10  
DATE  
/S/ Scot Becker  
CHIEF STRUCTURAL DEVELOPMENT ENGINEER  
FHWA



TYPICAL PAVEMENT CROSS SECTION  
OF NOTCHED WEDGE LONGITUDINAL JOINT



TYPICAL PAVEMENT CROSS SECTION  
VERTICAL LONGITUDINAL JOINT



TYPICAL PAVEMENT CROSS SECTION  
OF MILLED LONGITUDINAL JOINT

GENERAL NOTES

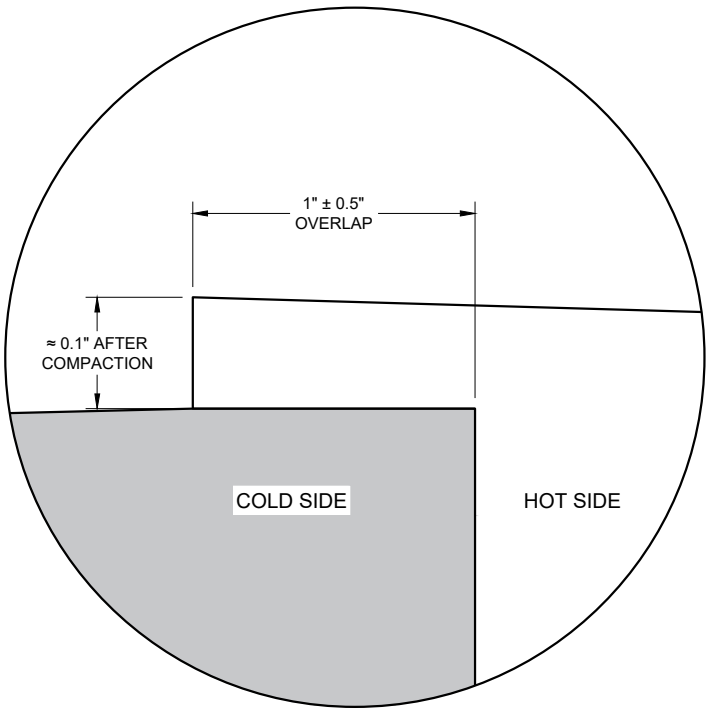
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

FOR ALL LONGITUDINAL JOINTS, ENSURE THE PAVER SCREED OVERLAPS THE PREVIOUSLY PLACED PAVEMENT BY 1" ± 0.5" AND THE HOT SIDE OF THE JOINT REMAINS HIGHER THAN THE COLD SIDE BY APPROXIMATELY 0.1" AFTER FINAL COMPACTION.

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)

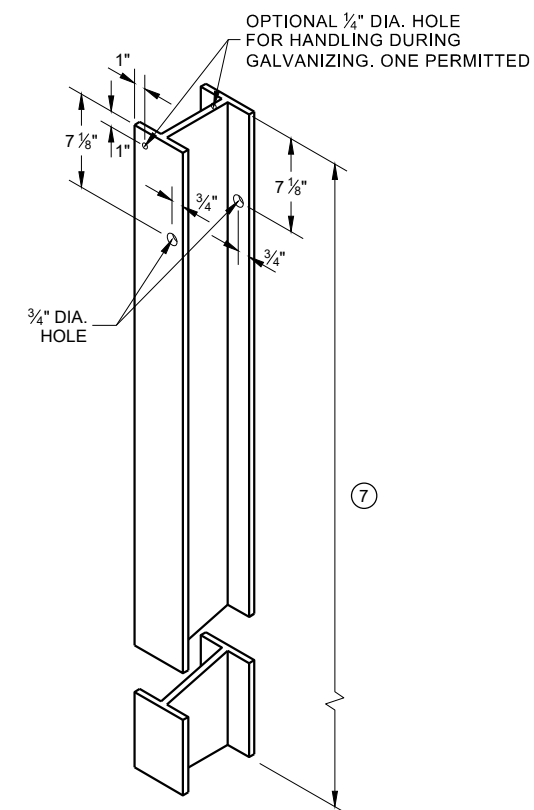
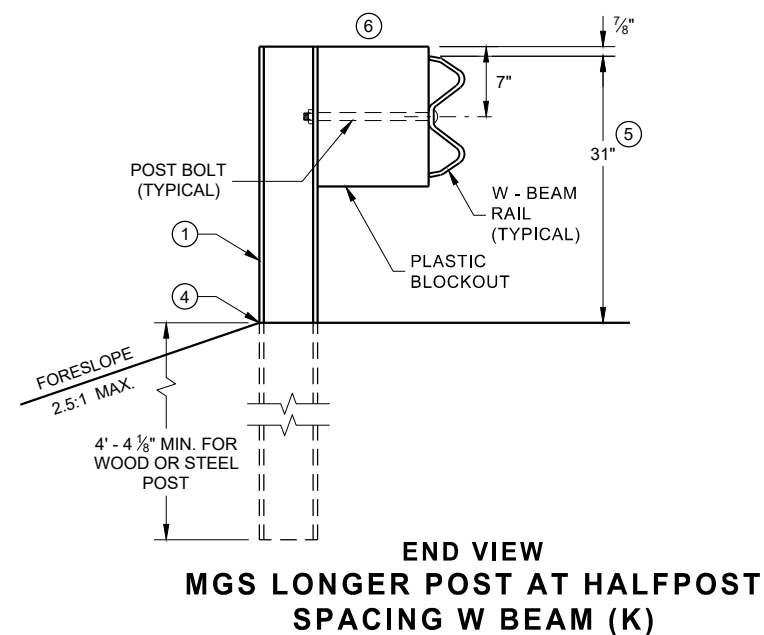
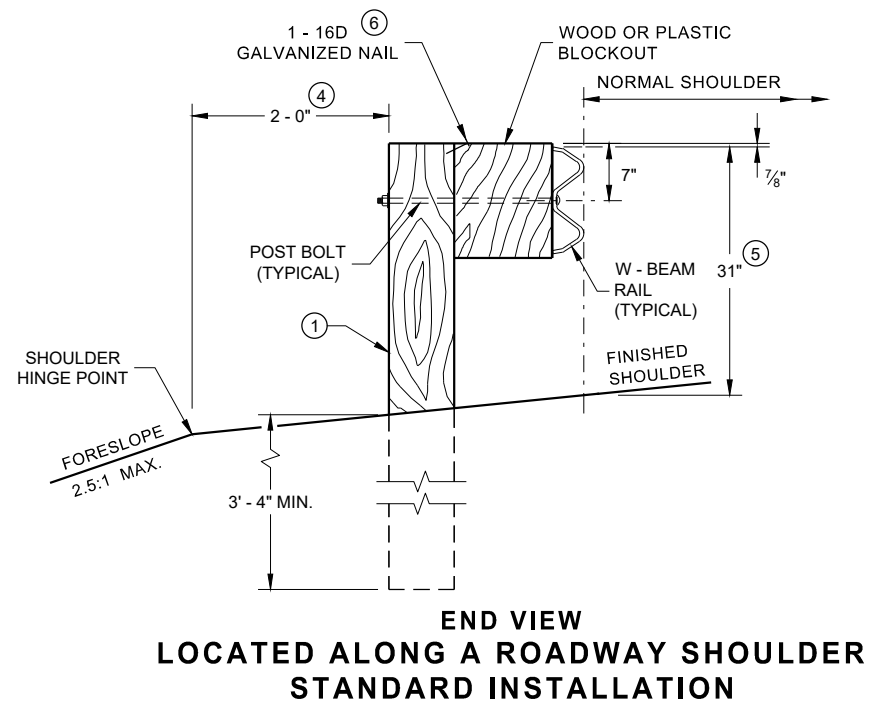
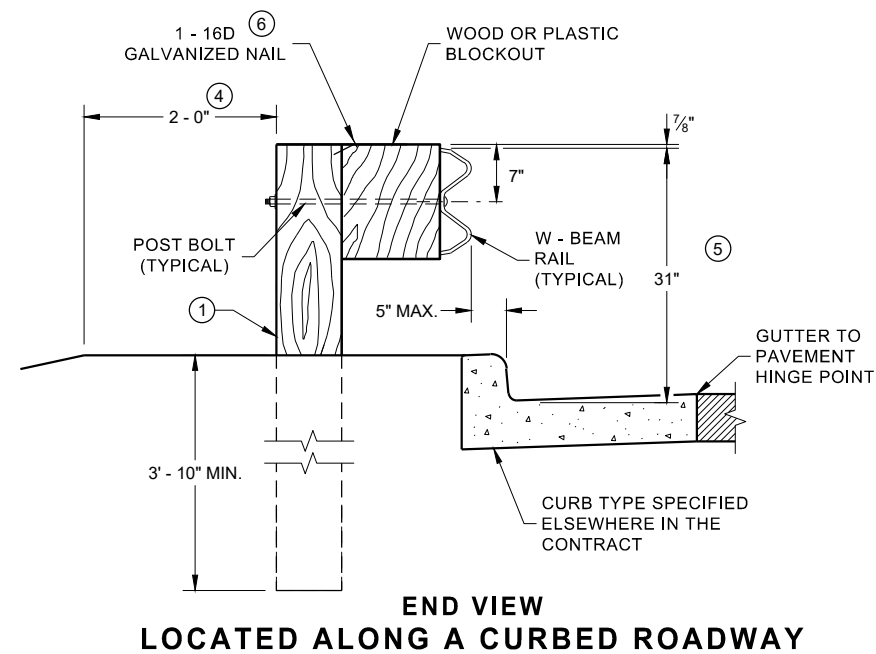
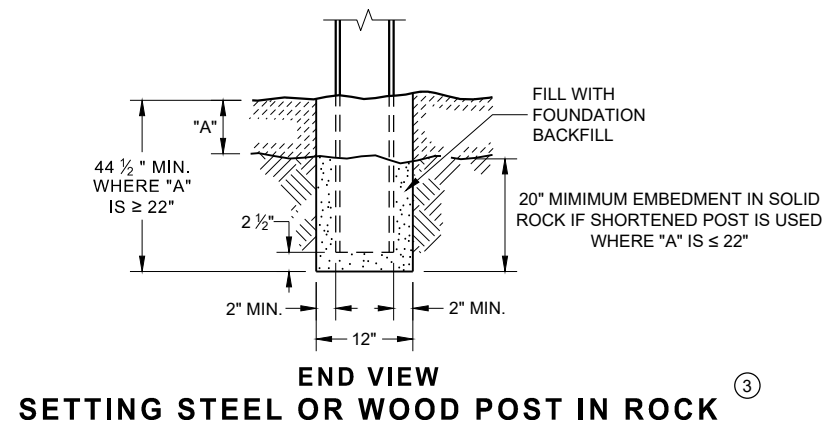
HMA LONGITUDINAL JOINTS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

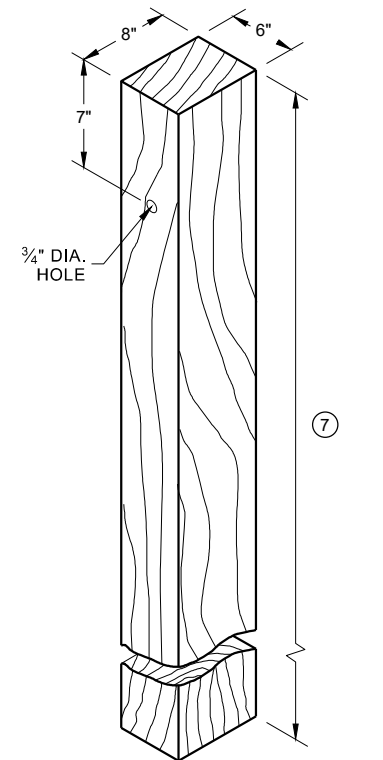
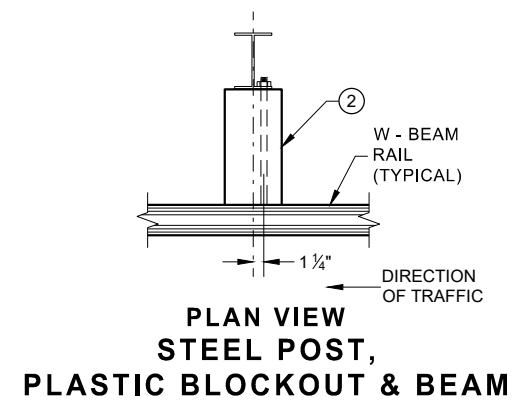
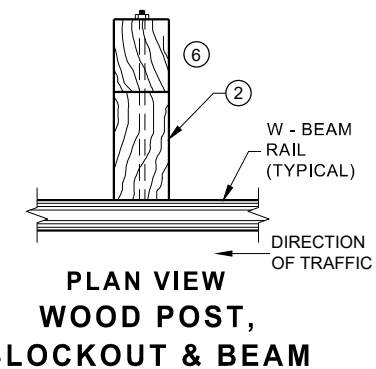
APPROVED  
February 2020 /S/ Steven Hefel  
DATE HMA PAVEMENT ENGINEER

FHWA

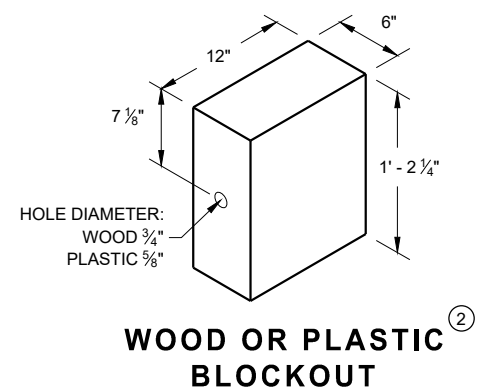
- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. 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 TO LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- ④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- ⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS +1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 3/4" TO 32".
- ⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ⑦ TOTAL POST LENGTH FOR TYPE K IS 7' - 0".  
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".

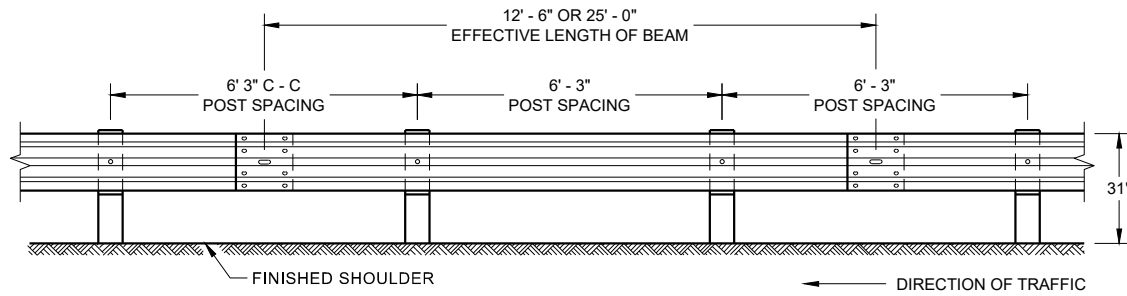


**STEEL POST & HOLE  
PUNCHING DETAIL  
(W 6 X 9) ①**

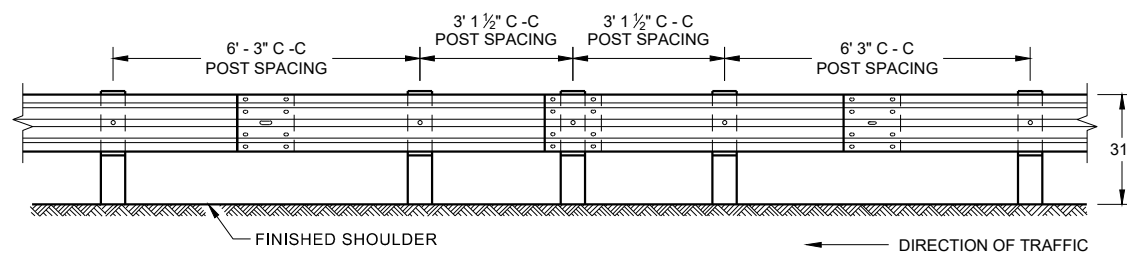


**WOOD POST (6" X 8") NOMINAL** <sup>(1)</sup>

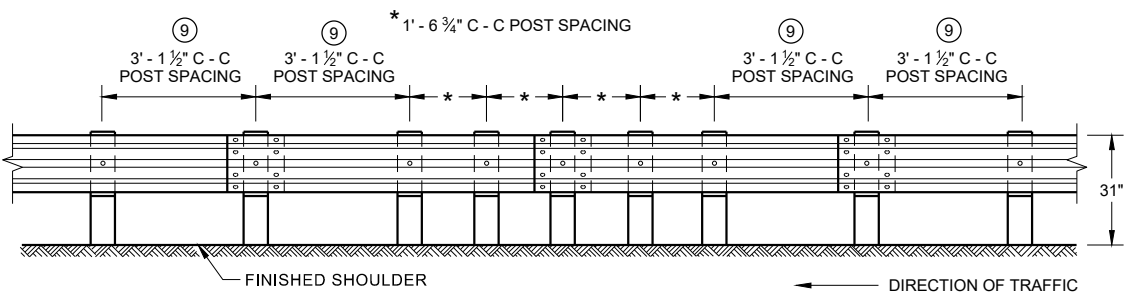




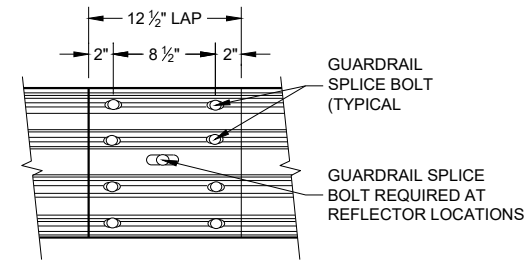
**FRONT VIEW  
POST SPACING STANDARD INSTALLATION**



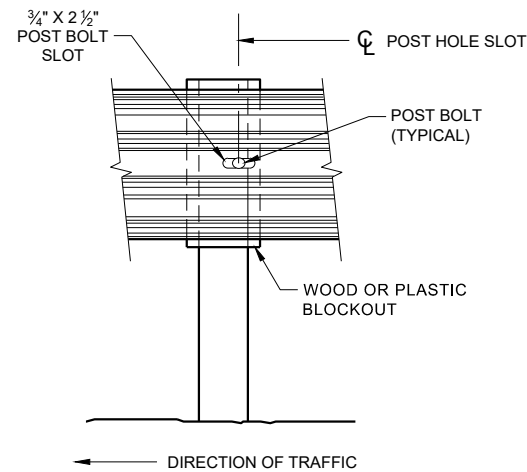
**FRONT VIEW  
HALF POST SPACING (HS) AND  
HALF POST SPACING WITH LONGER POSTS (K)**



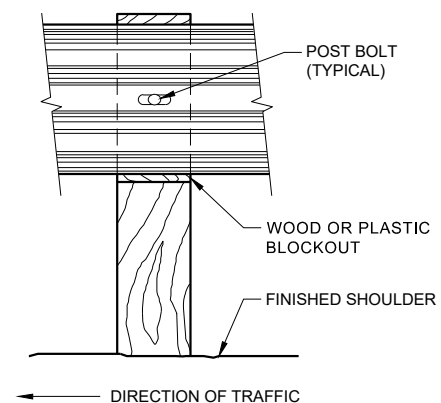
**FRONT VIEW  
QUARTER POST SPACING (QS)**



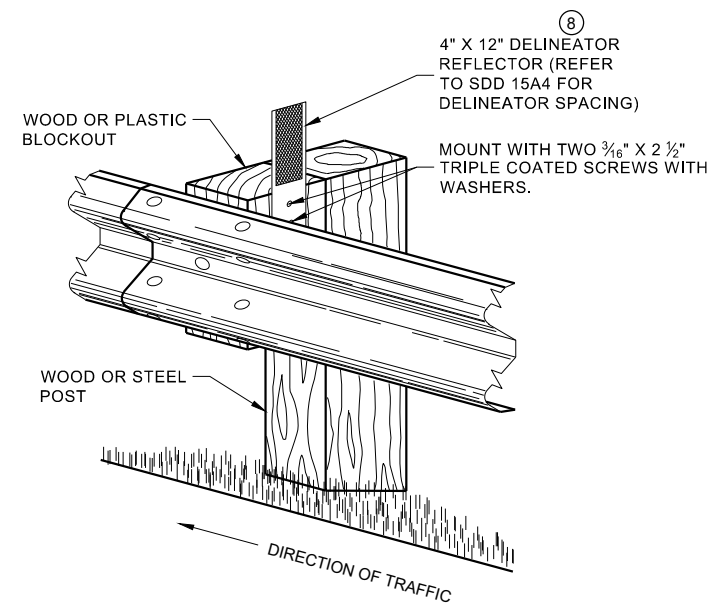
**FRONT VIEW  
MID-SPAN BEAM SPLICE**



**FRONT VIEW AT STEEL POST**



**FRONT VIEW AT WOOD POST**



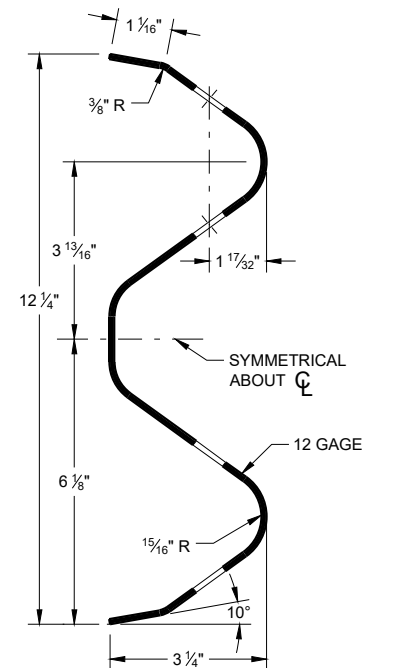
**ONE SIDED REFLECTOR DETAIL  
AND TYPICAL INSTALLATION**

## 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 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 3/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

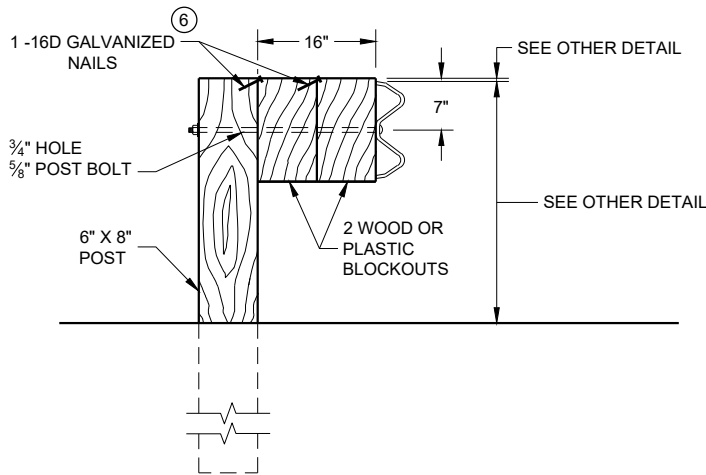
GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



**SECTION THRU W-BEAM RAIL**

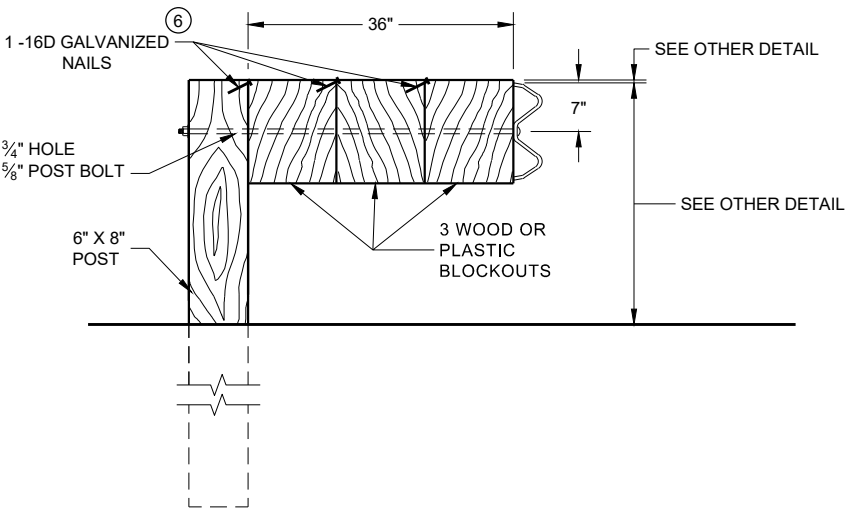
**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

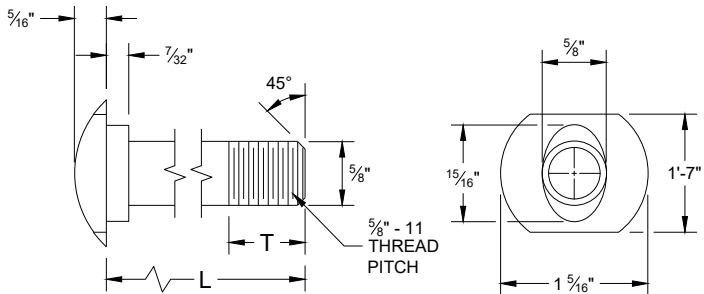
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



DETAIL FOR 36" BLOCKOUT DEPTH

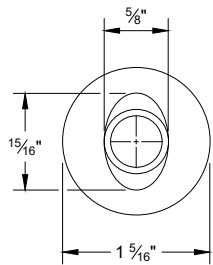
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.  
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE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

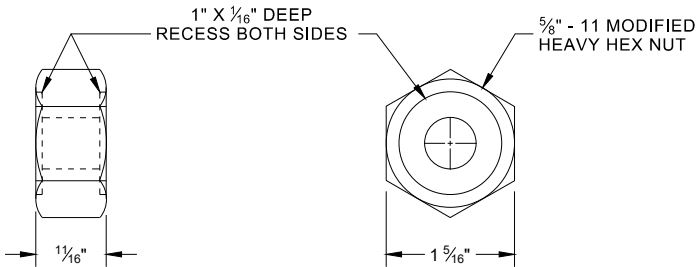


POST BOLT TABLE

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"

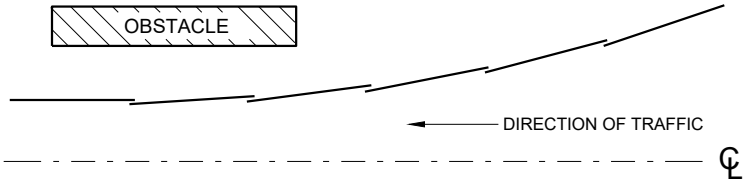


ALTERNATE BOLT HEAD

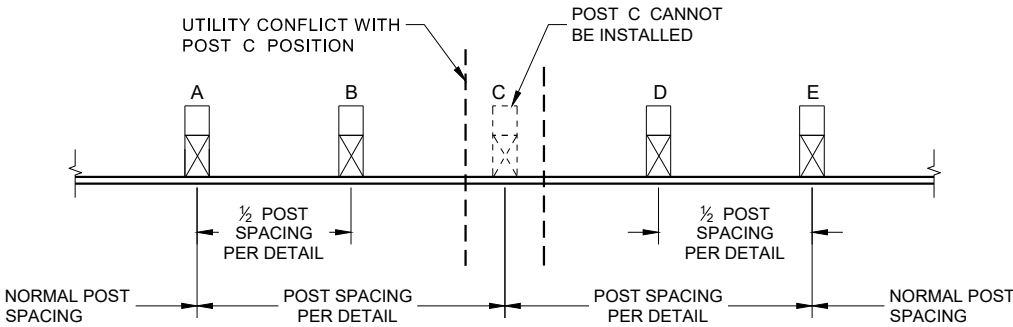


POST BOLT, SPLICE BOLT AND RECESS NUT

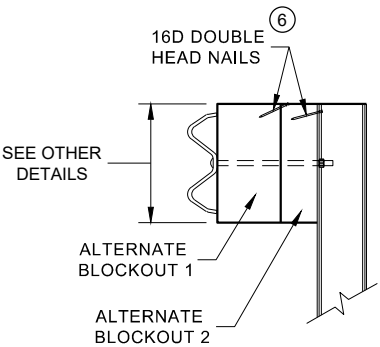
- 6 WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



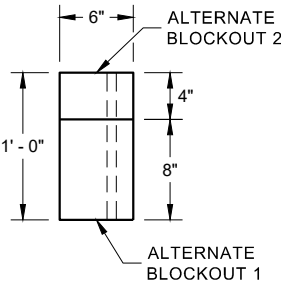
PLAN VIEW  
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS  
UNDERGROUND OBSTRUCTION



SIDE VIEW

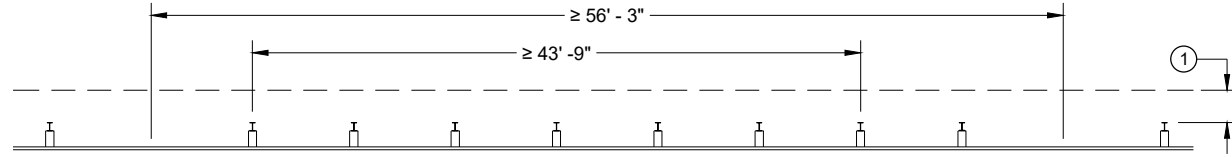


PLAN VIEW

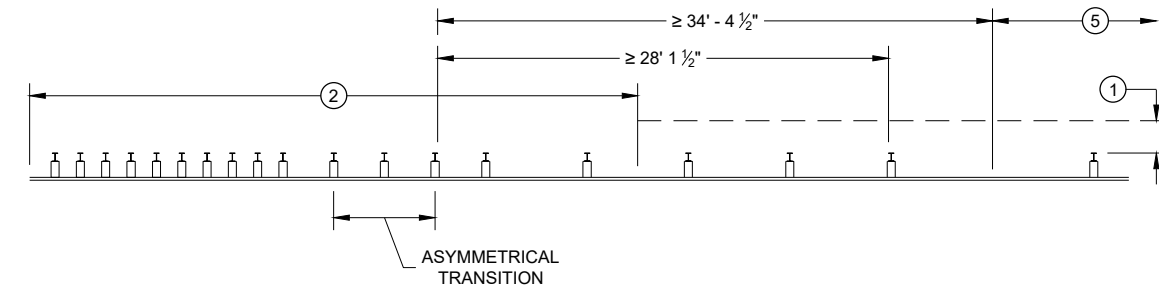
ALTERNATE WOOD  
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL

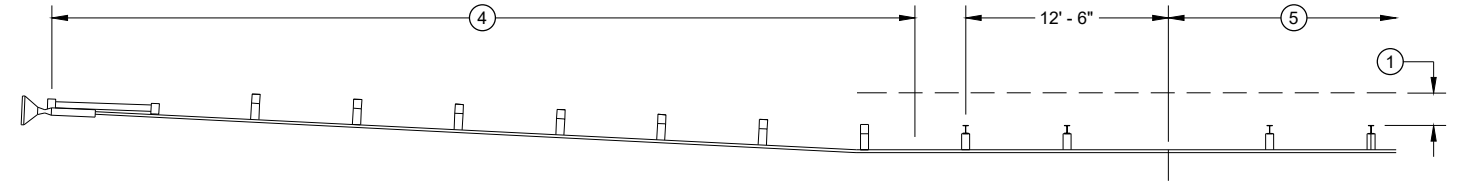
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



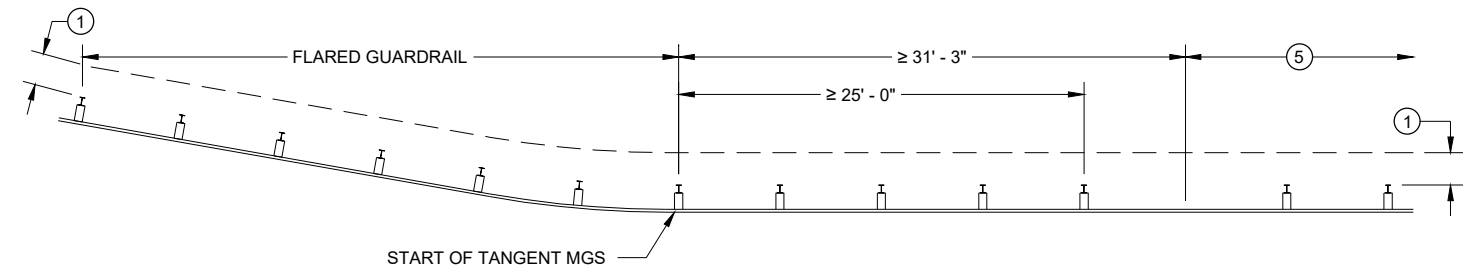
MISSING POST IN NORMAL BEAM GUARD RUN



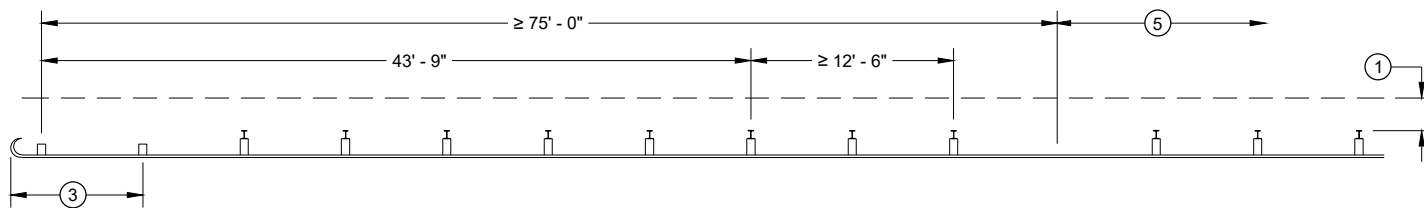
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



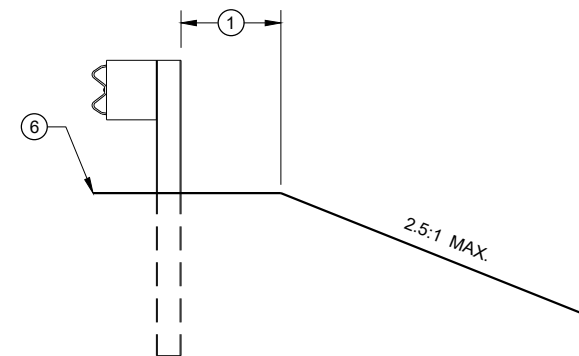
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



MISSING POST IN NORMAL BEAM GUARD RUN  
NEAR FLARED BEAM GUARD



MISSING POST IN NORMAL BEAM GUARD RUN  
NEAR TYPE 2 TERMINAL



CROSS SECTION VIEW

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

**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

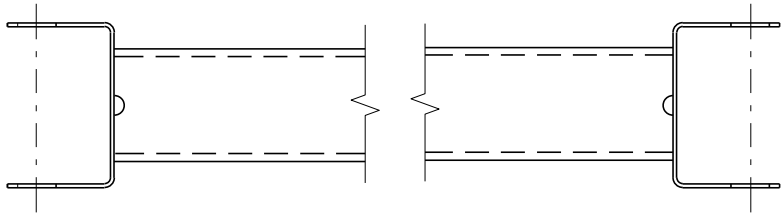
- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
- (C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS.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

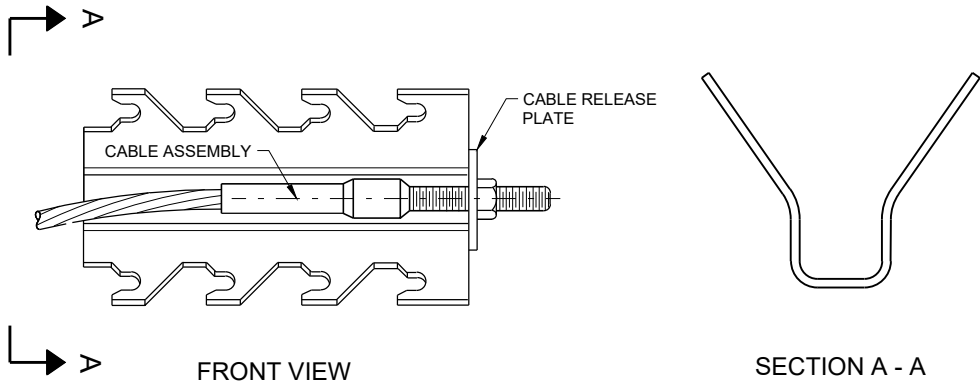


STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

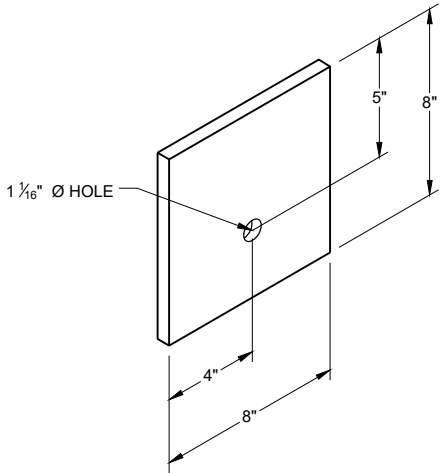


GENERIC GROUND STRUT <sup>9</sup> <sup>E</sup>

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



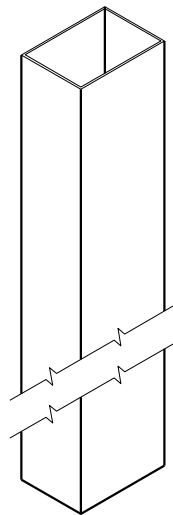
GENERIC ANCHOR CABLE BOX <sup>9</sup> <sup>E</sup>



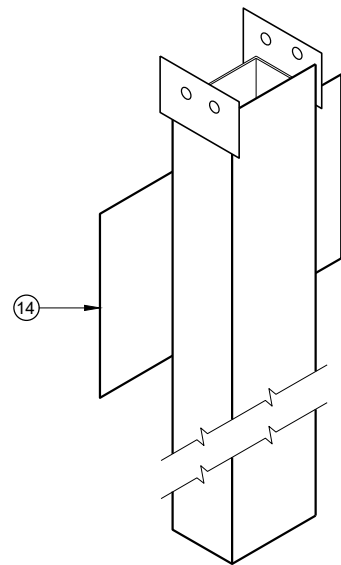
BEARING PLATE <sup>6</sup> <sup>E</sup>

MIDWEST GUARDRAIL SYSTEM  
ENERGY ABSORBING TERMINAL  
(MGS)

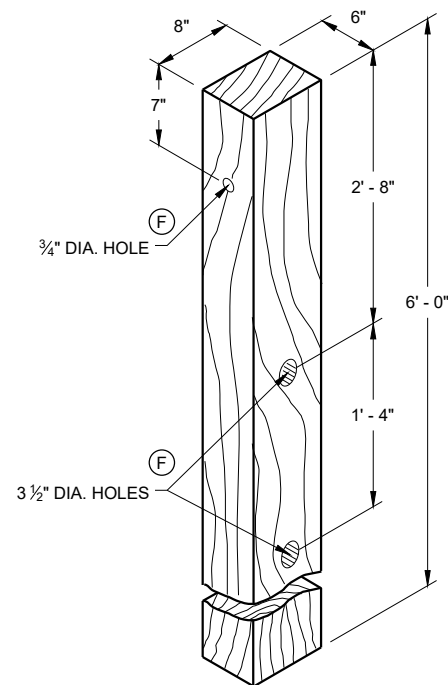
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



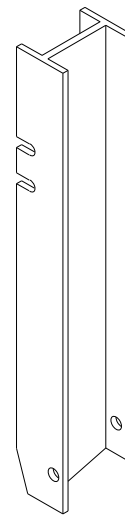
UPPER POST NO. 1 <sup>(1)</sup> (E)



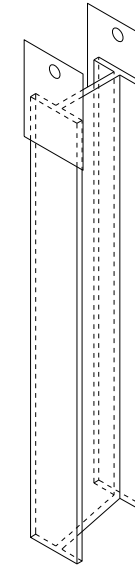
LOWER POST NO. 1 <sup>(2)</sup> (E)



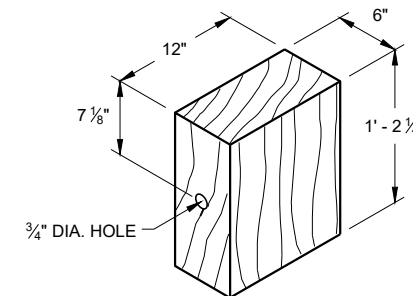
WOOD CRT POST <sup>(3)</sup> (E)  
POSTS NUMBER 3-9



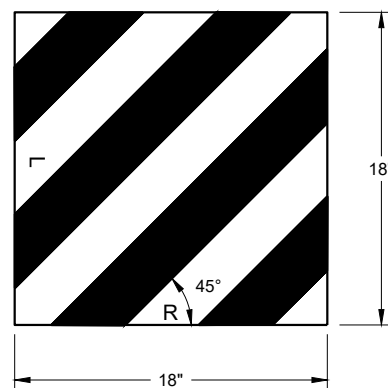
UPPER POST NO. 2 <sup>(15)</sup> (E)



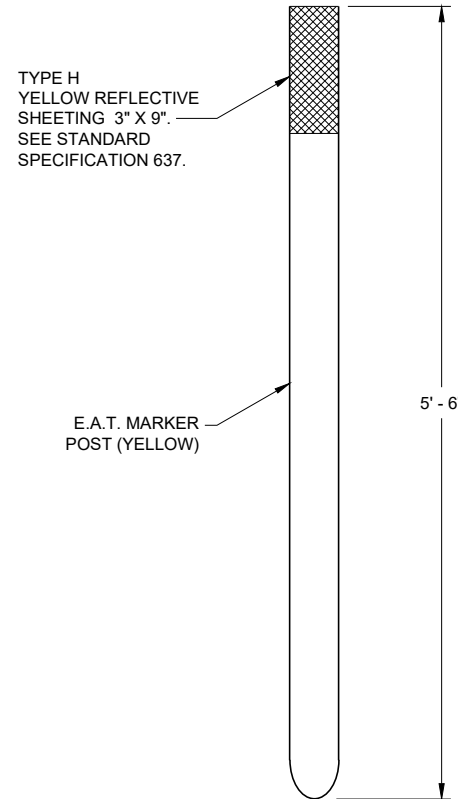
LOWER POST NO. 2 <sup>(16)</sup> (E)



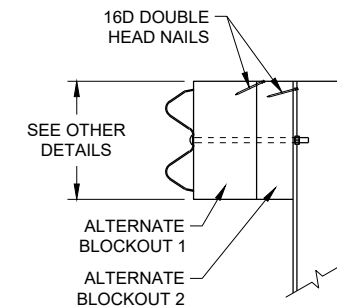
WOOD BLOCKOUT <sup>(4)</sup>  
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



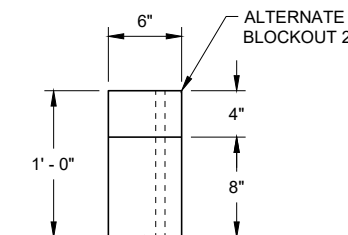
REFLECTIVE SHEETING DETAIL <sup>(E)</sup>



FRONT VIEW  
SIDE VIEW  
E.A.T. MARKER POST <sup>(13)</sup>



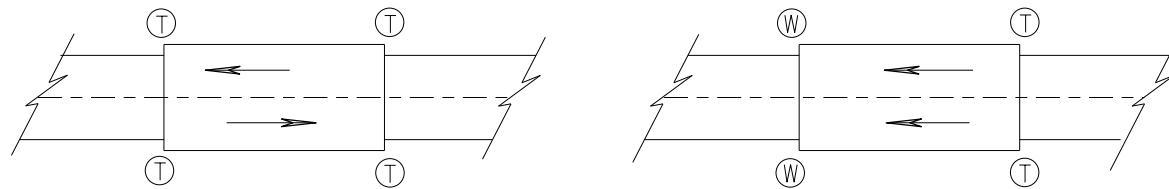
SIDE VIEW



TOP VIEW

ALTERNATE WOOD  
BLOCKOUT DETAIL

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



**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

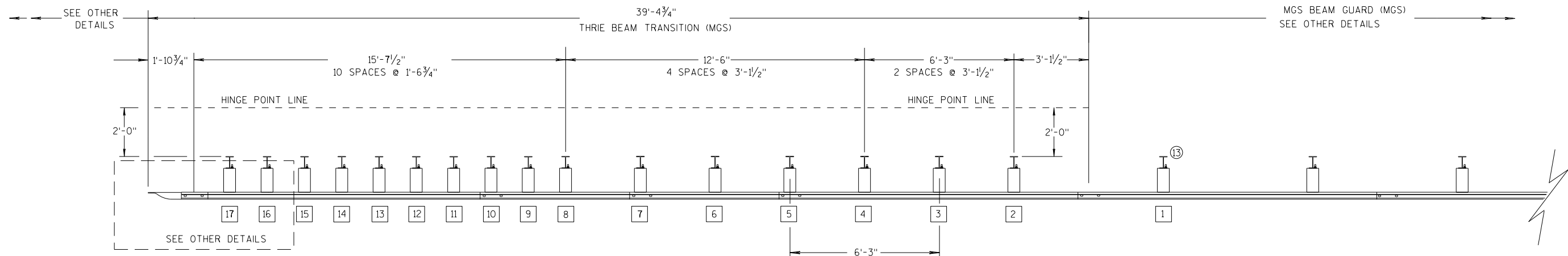
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

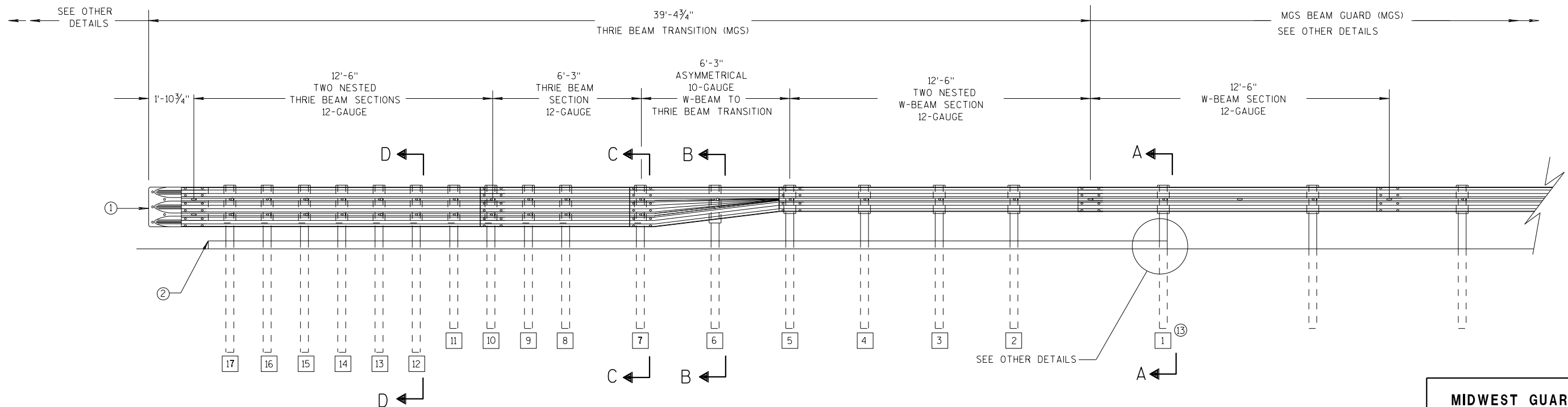
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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**

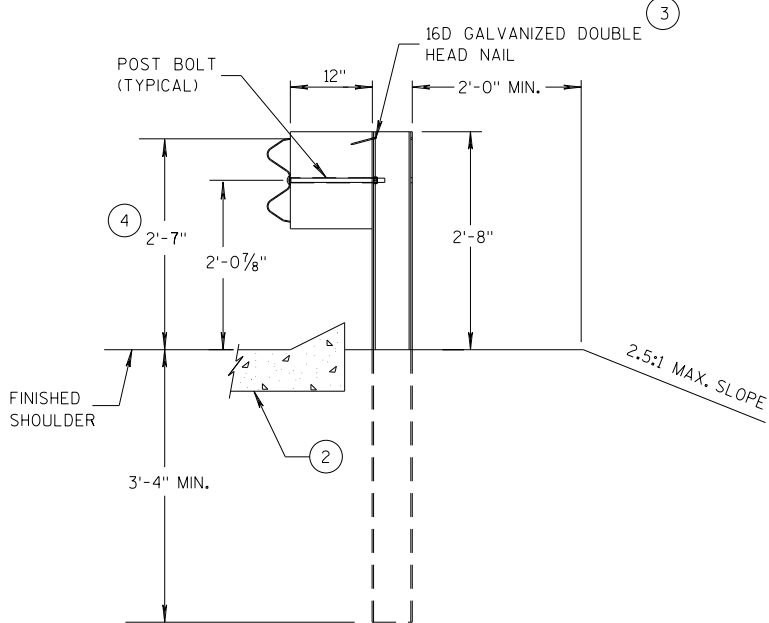
## MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

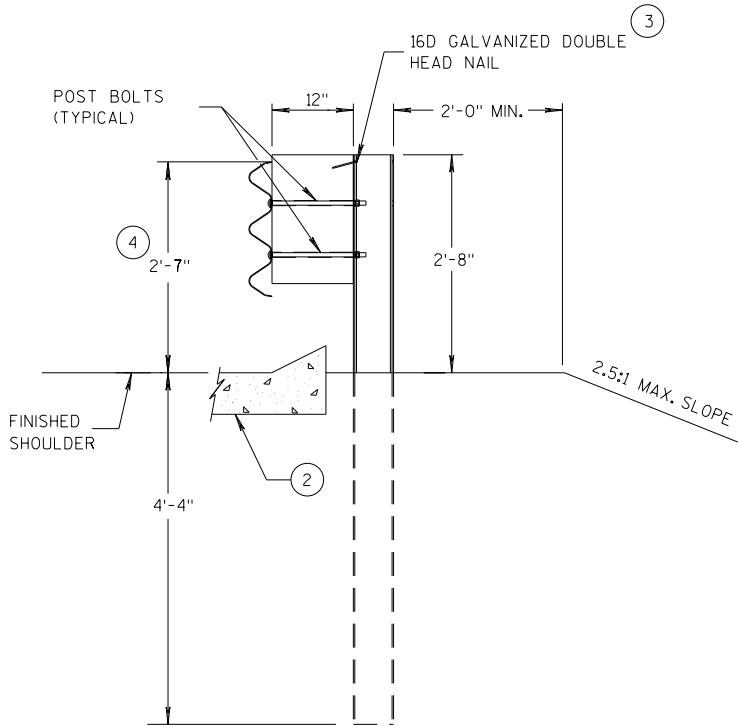
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

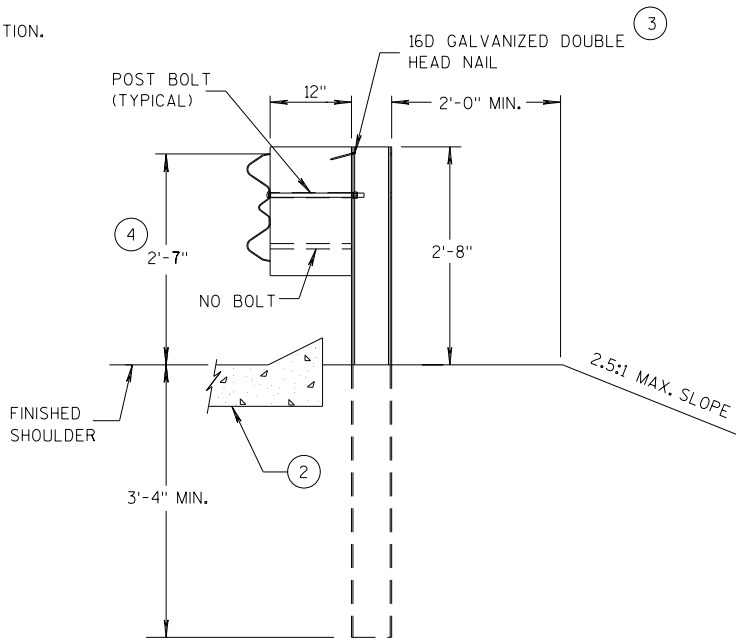
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS  $\pm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



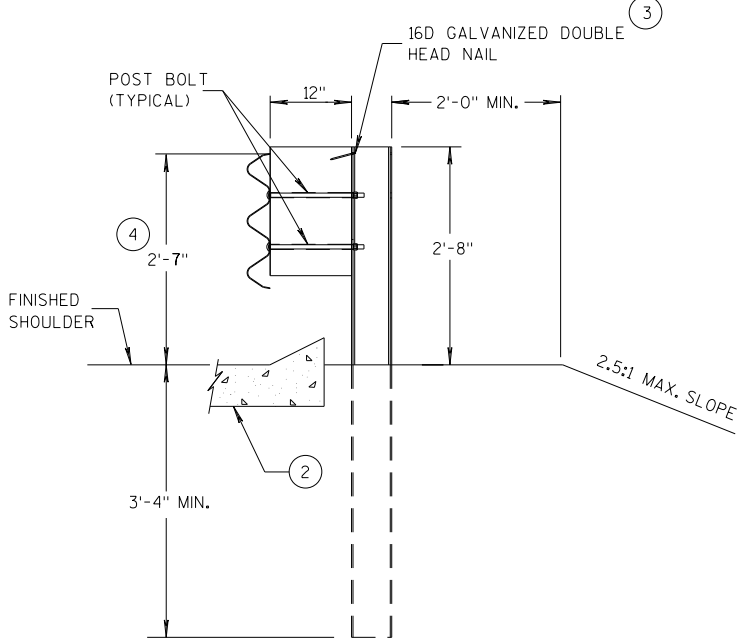
SECTION A-A  
POSTS 1-5



SECTION D-D  
POSTS 12-17



SECTION B-B  
POST 6



SECTION C-C  
POSTS 7-11

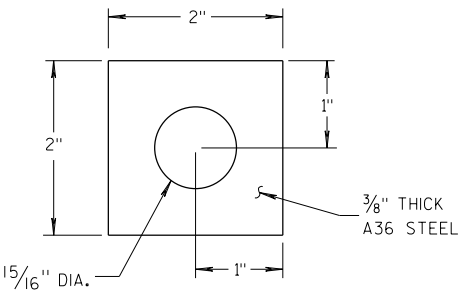
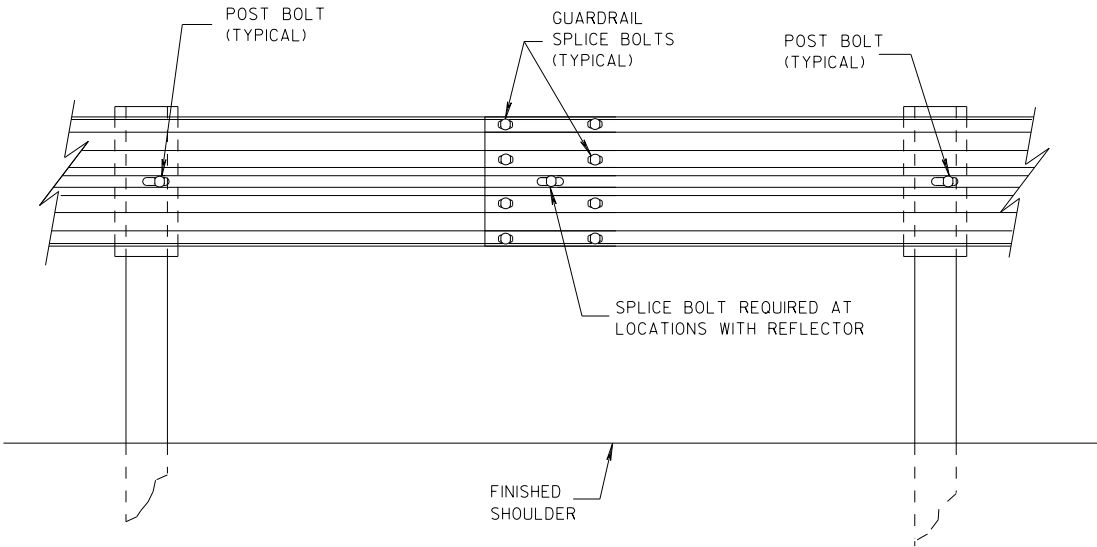
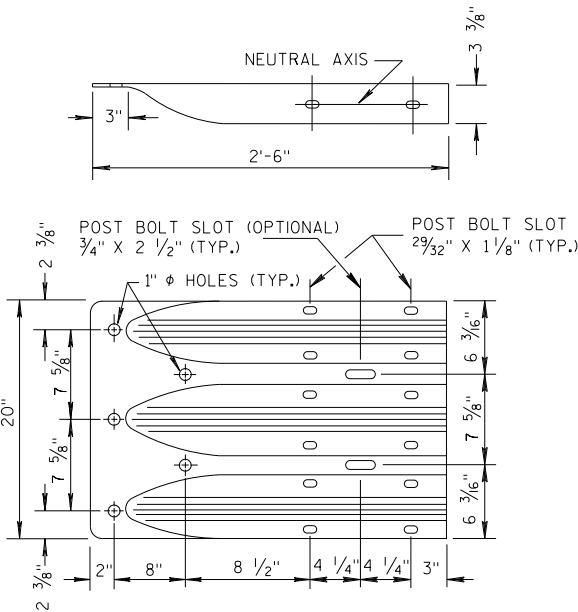


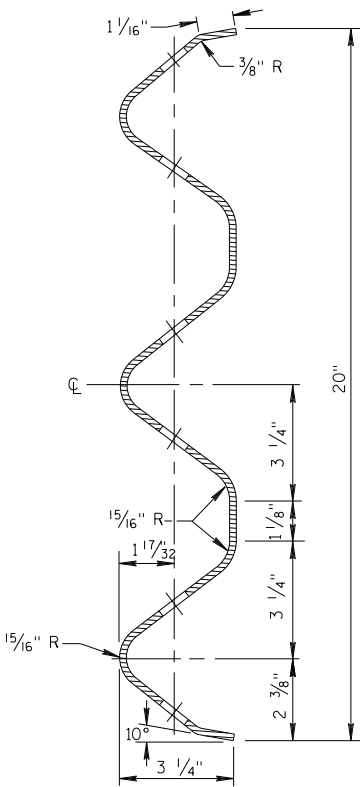
PLATE WASHER DETAIL



SPlice DETAIL



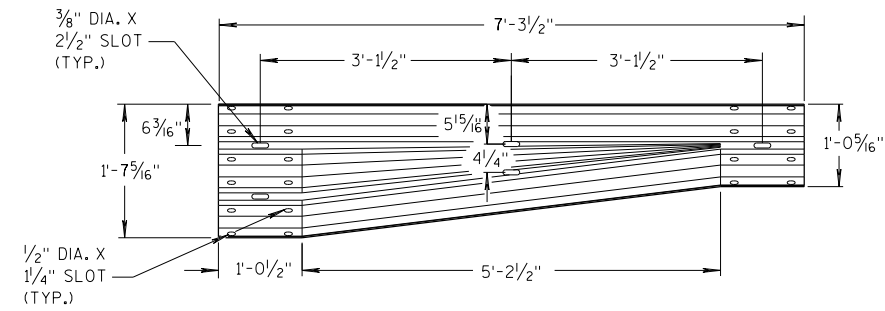
THRIE BEAM  
TERMINAL CONNECTOR



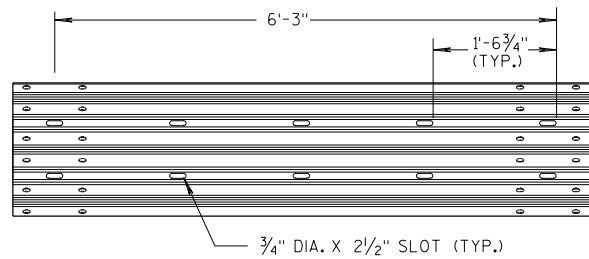
SECTION THRU THRIE  
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

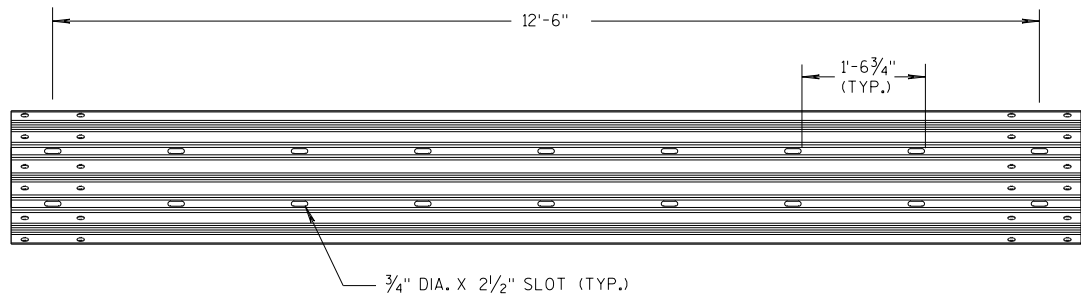
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



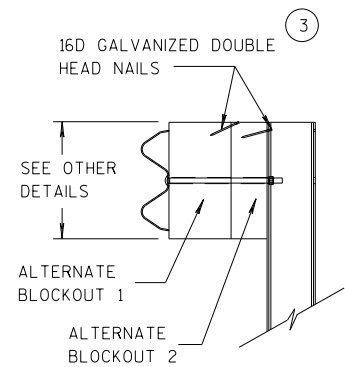
W-BEAM TO THRIE BEAM TRANSITION SECTION



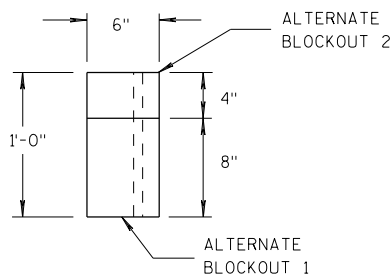
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

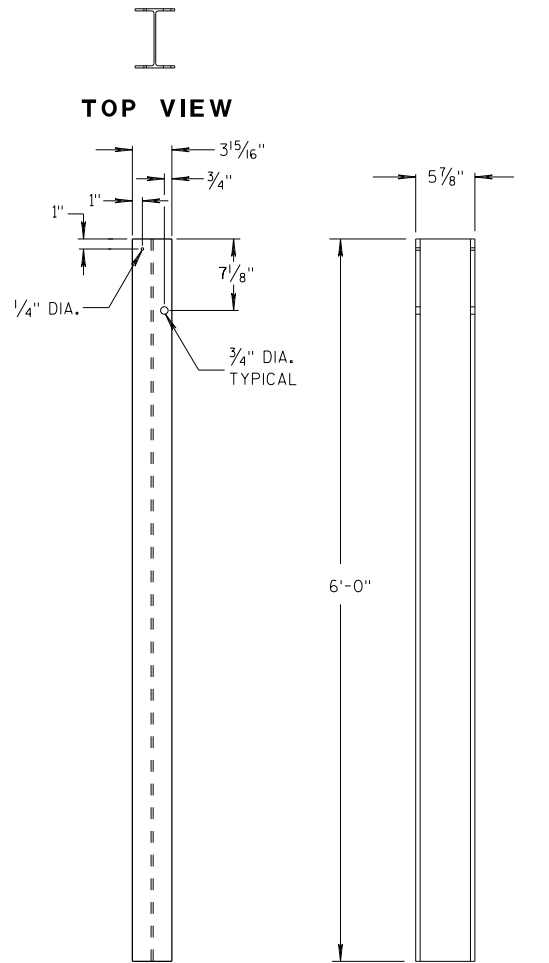


SIDE VIEW



TOP VIEW

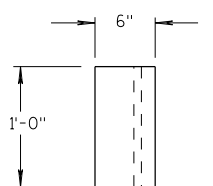
ALTERNATE WOOD BLOCKOUT DETAIL



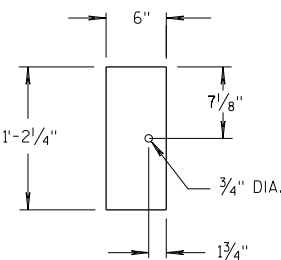
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

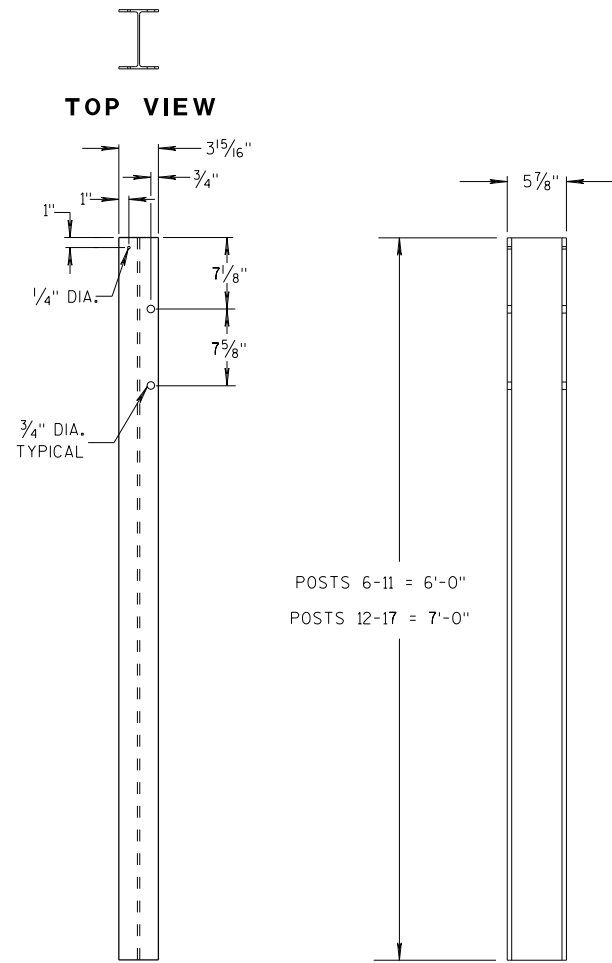


TOP VIEW



FRONT VIEW

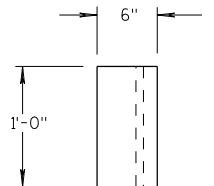
BLOCKOUT POSTS 1-5



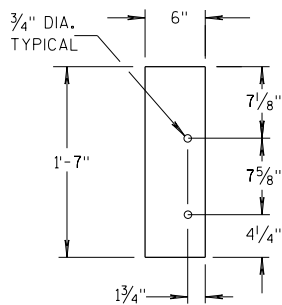
FRONT VIEW

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.

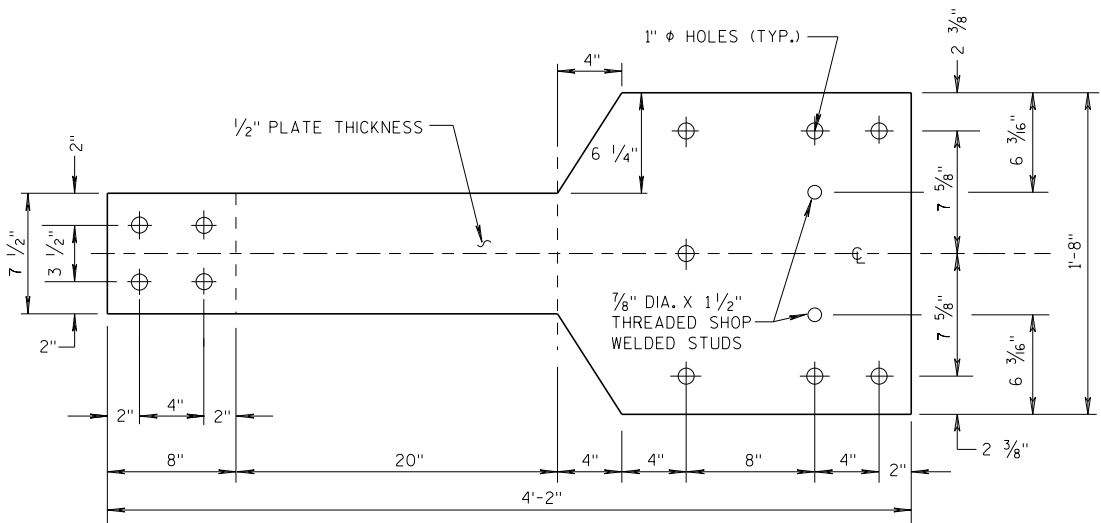
⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

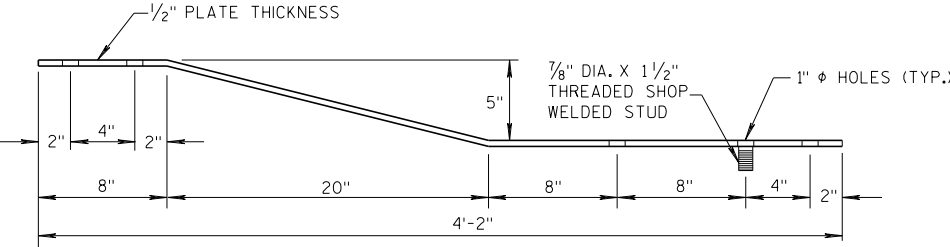
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

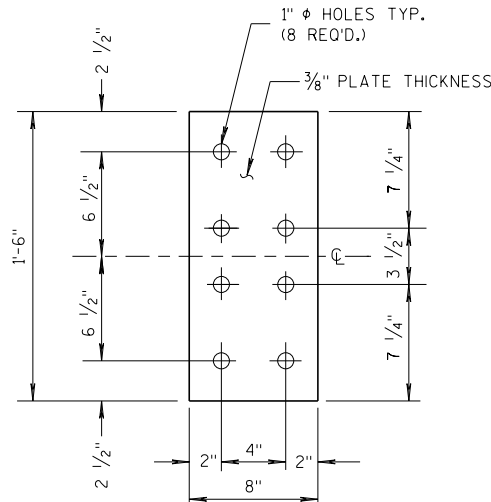
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS  $\pm 1"$ .



FRONT VIEW

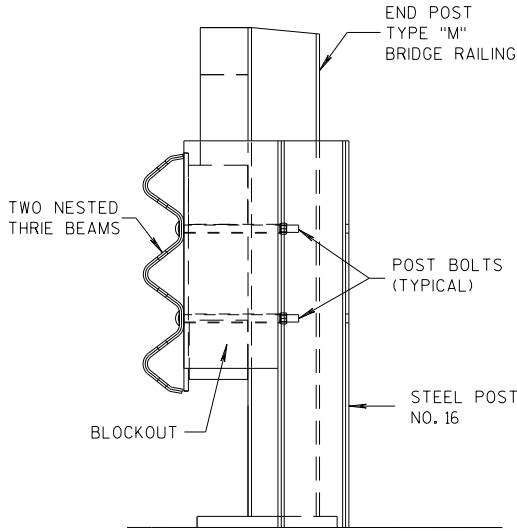


PLAN VIEW  
BACK-UP PLATE DETAIL, TYPE "M"

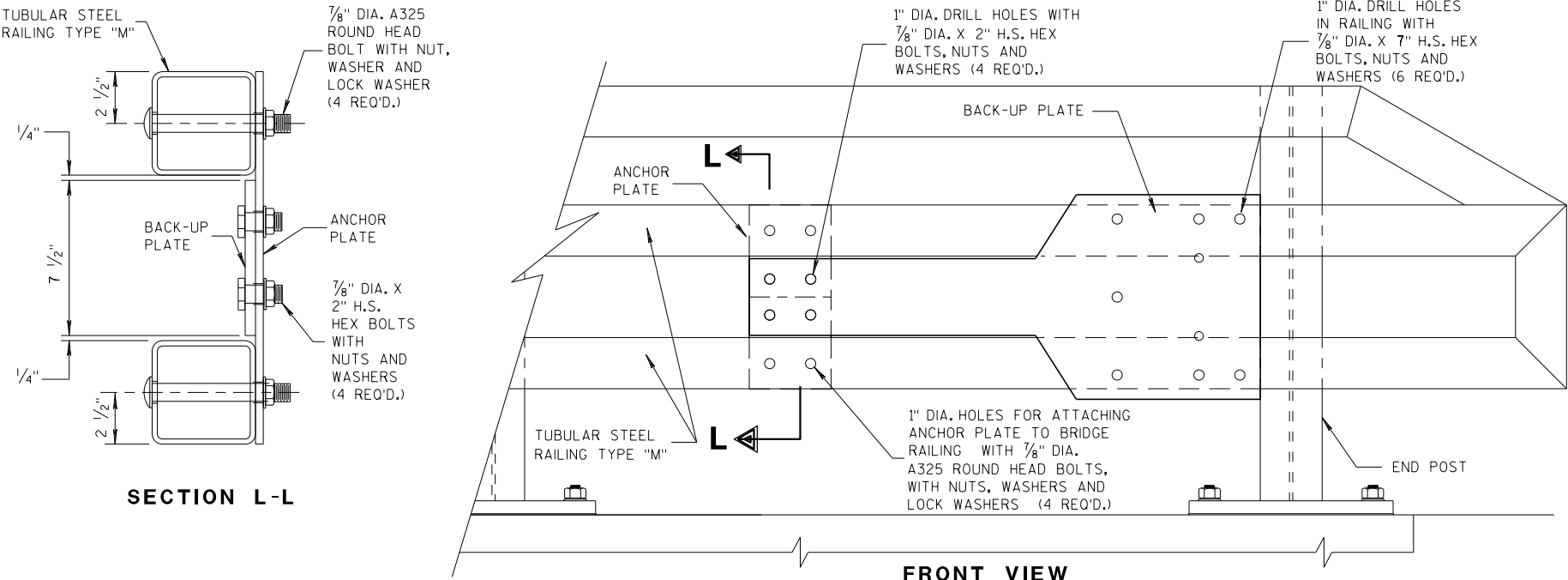


FRONT VIEW

ANCHOR  
PLATE DETAIL,  
TYPE "M"



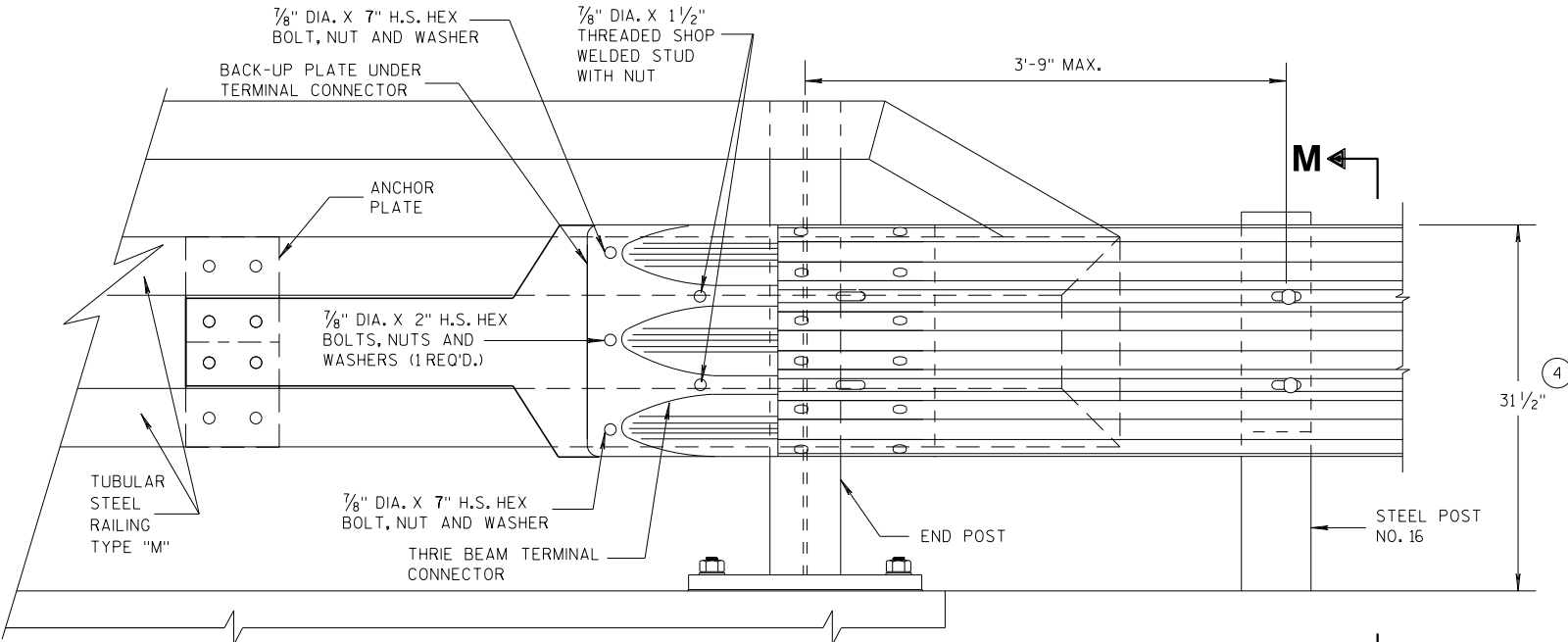
SECTION M-M



SECTION L-L

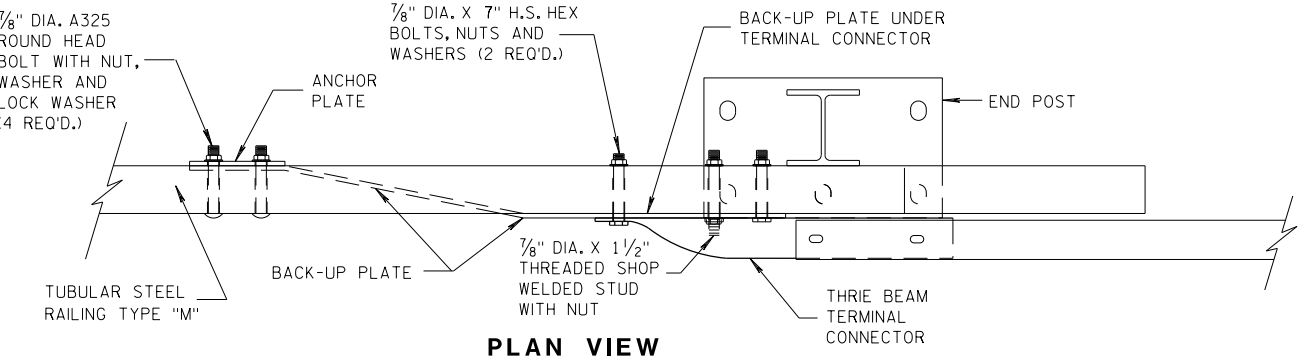
FRONT VIEW

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



FRONT VIEW

M



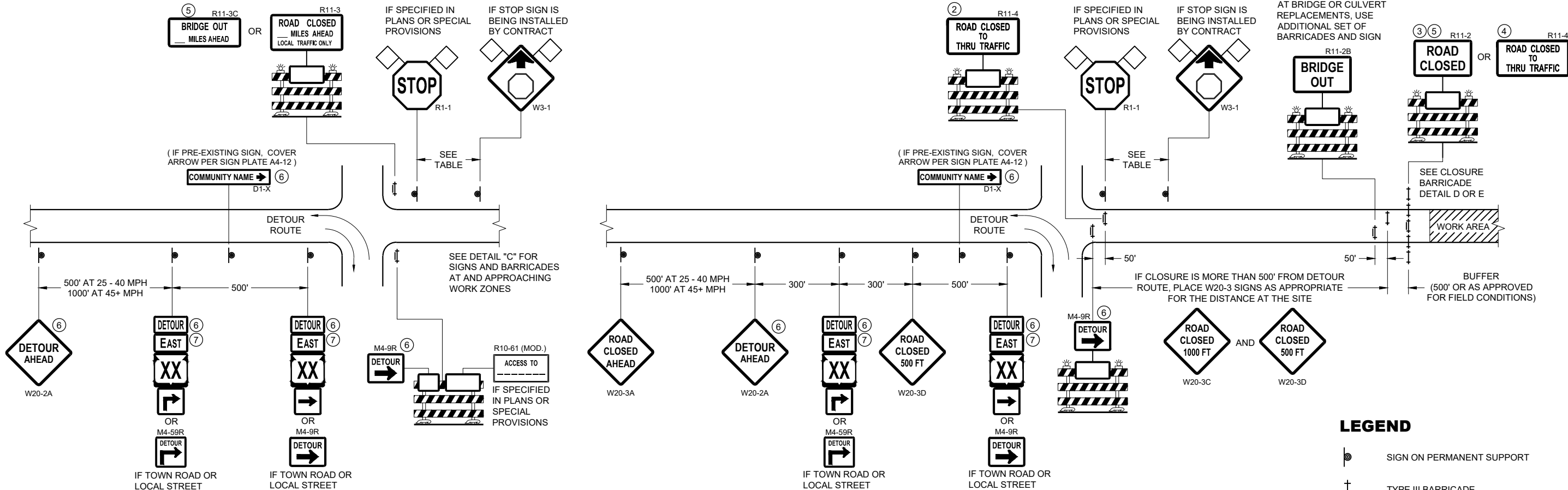
PLAN VIEW

THREE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM  
THREE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

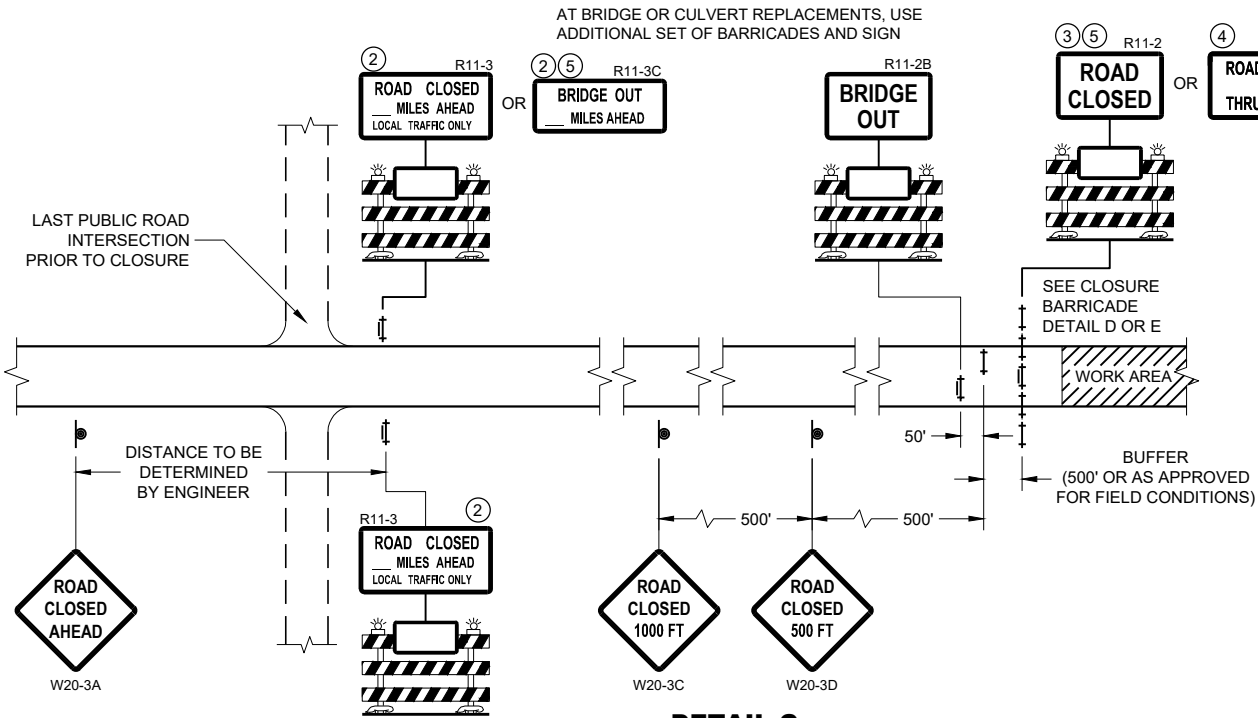


**DETAIL A**  
**MAINLINE CLOSURE WITH POSTED DETOUR**

WORK ZONE GREATER THAN OR EQUAL TO 1/2 MILE FROM  
DETOUR ROUTE ( 1000 FEET IF URBAN )

**DETAIL B**  
**MAINLINE CLOSURE WITH POSTED DETOUR**

WORK ZONE LESS THAN 1/2 MILE FROM  
DETOUR ROUTE ( 1000 FEET IF URBAN )



**DETAIL C**  
**MAINLINE CLOSURE, NO POSTED DETOUR**

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

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

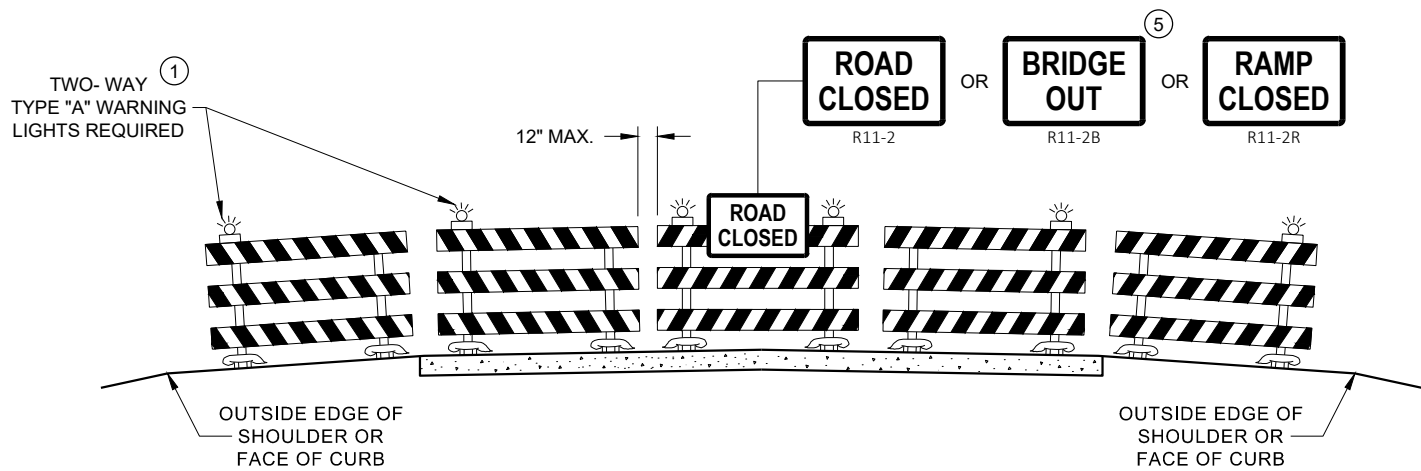
**LEGEND**

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

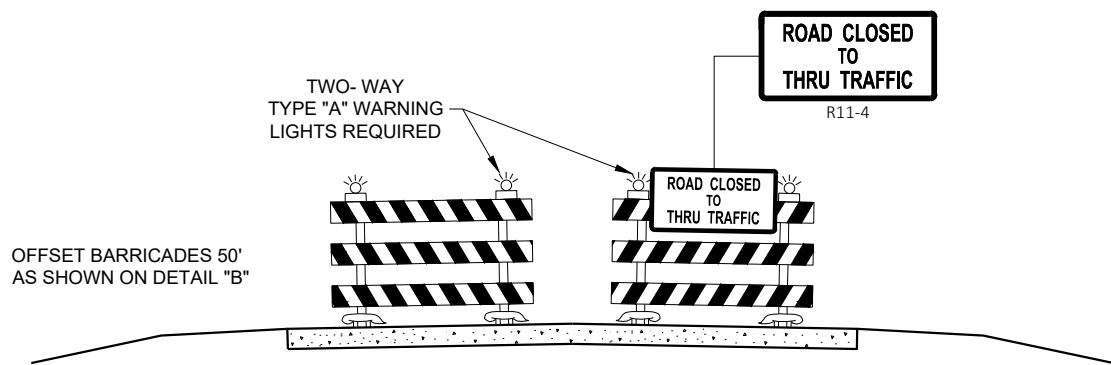
**BARRICADES AND SIGNS  
FOR MAINLINE CLOSURES**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2020 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER  
FHWA



**DETAIL D**  
**ROAD CLOSURE BARRICADE DETAIL**  
**APPROACH VIEW**



**DETAIL E**  
**LANE CLOSURE BARRICADE DETAIL**  
**APPROACH VIEW**

SEE SDD 15C2 - SHEET "a" FOR LEGEND

**GENERAL NOTES**

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

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

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

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

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

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

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

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:

- 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"

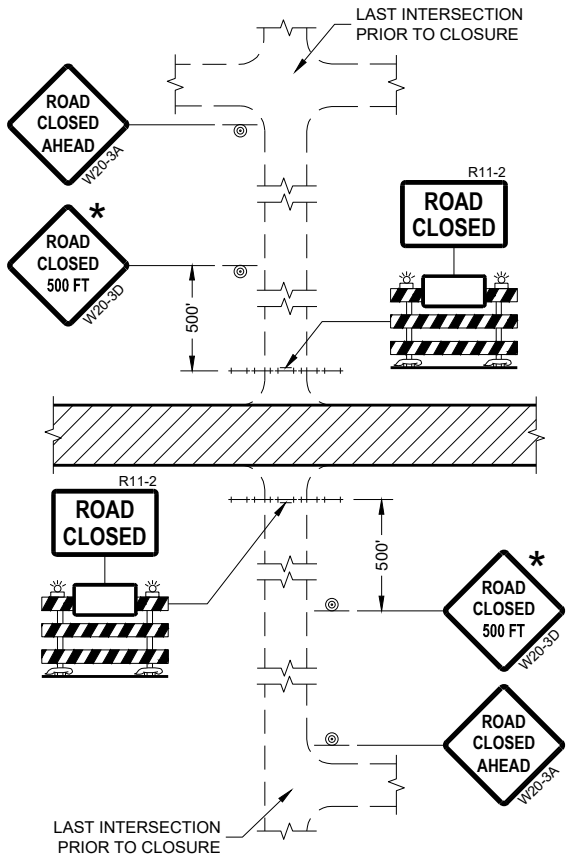
- 1 TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8 FOOT LIGHT SPACING).
- 2 THESE SIGNS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

**BARRICADES AND SIGNS**  
**FOR**  
**VARIOUS CLOSURES**

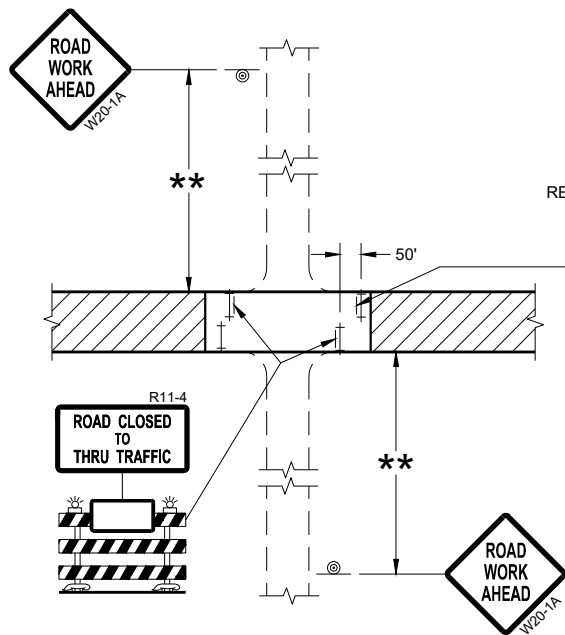
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2020 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER

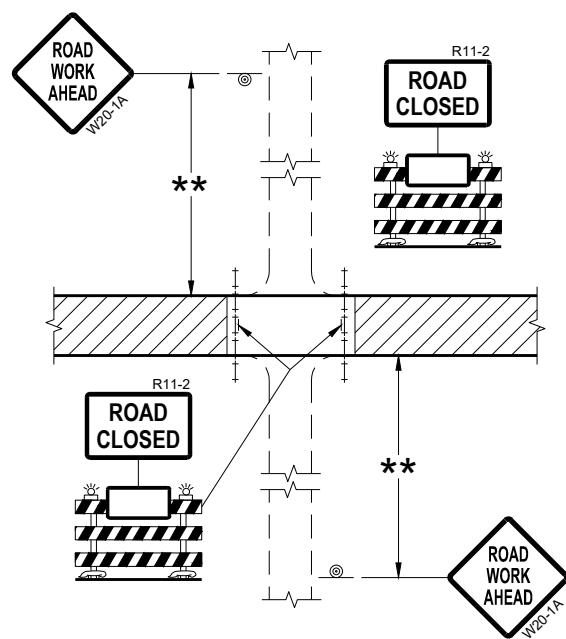
FHWA



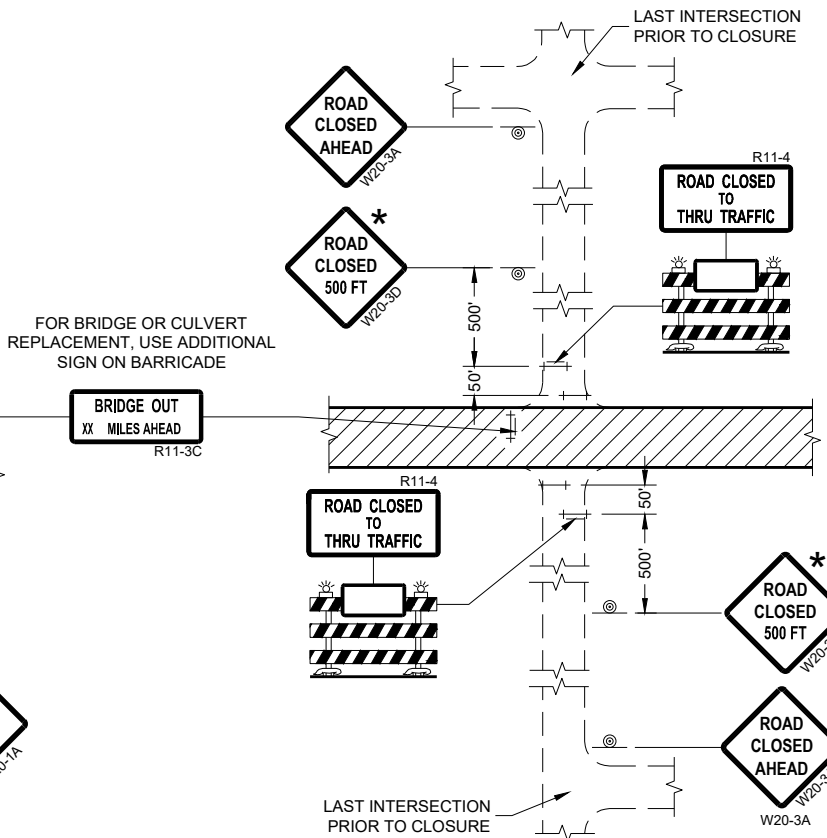
**DETAIL 1**  
(NO ACCESS TO PROJECT)



**DETAIL 3**  
(PUBLIC CROSS-TRAFFIC MAINTAINED.  
CONTRACTOR, LOCAL BUSINESS AND  
RESIDENT ACCESS TO PROJECT)



**DETAIL 2**  
(PUBLIC CROSS-TRAFFIC MAINTAINED.  
NO ACCESS TO PROJECT)



**DETAIL 4**  
(CONTRACTOR, LOCAL BUSINESS AND  
RESIDENT ACCESS TO PROJECT)

**GENERAL NOTES**

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

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

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

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

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

SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN 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, AND R11-4 SIGNS PLACED ON BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE OR BOTTOM RAILS.

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:  
R11-2 SHALL BE 48" X 30".  
R11-4 AND R11-3 SHALL BE 60" X 30".

- \* OMIT THE "ROAD CLOSED 500 FT." SIGN IF THE LAST INTERSECTION IS 500 FEET OR LESS FROM THE WORK ZONE.
- \*\* 500' MAX. OR AT LAST INTERSECTION, WHICHEVER IS CLOSEST.

**LEGEND**

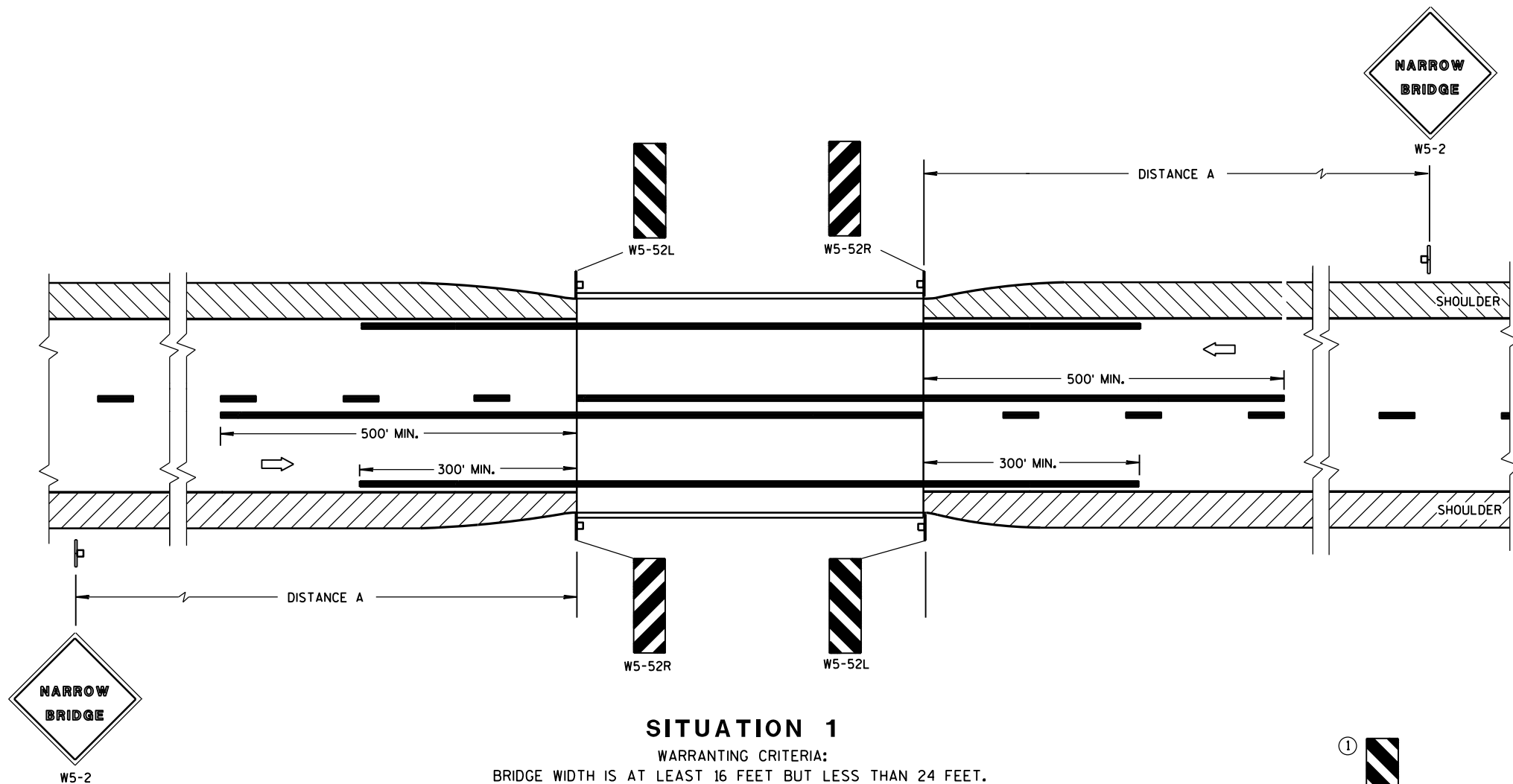
- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA

**BARRICADES AND SIGNS  
FOR  
SIDEROAD CLOSURES**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

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### SITUATION 1

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

DISTANCE TABLE

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

### GENERAL NOTES

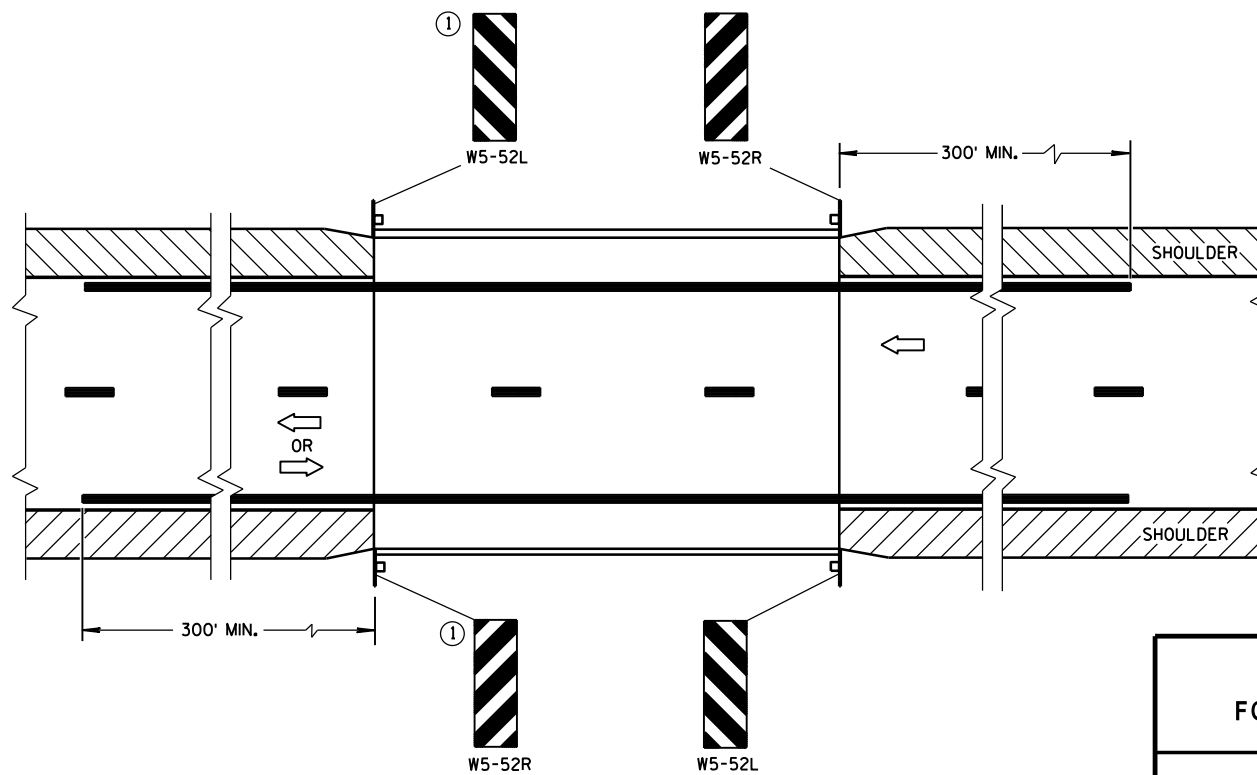
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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

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

① OMIT ON ONE-WAY TRAVELLED WAYS.

➡ DIRECTION OF TRAFFIC



### SITUATION 2

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

### SIGNING & MARKING FOR TWO LANE BRIDGES

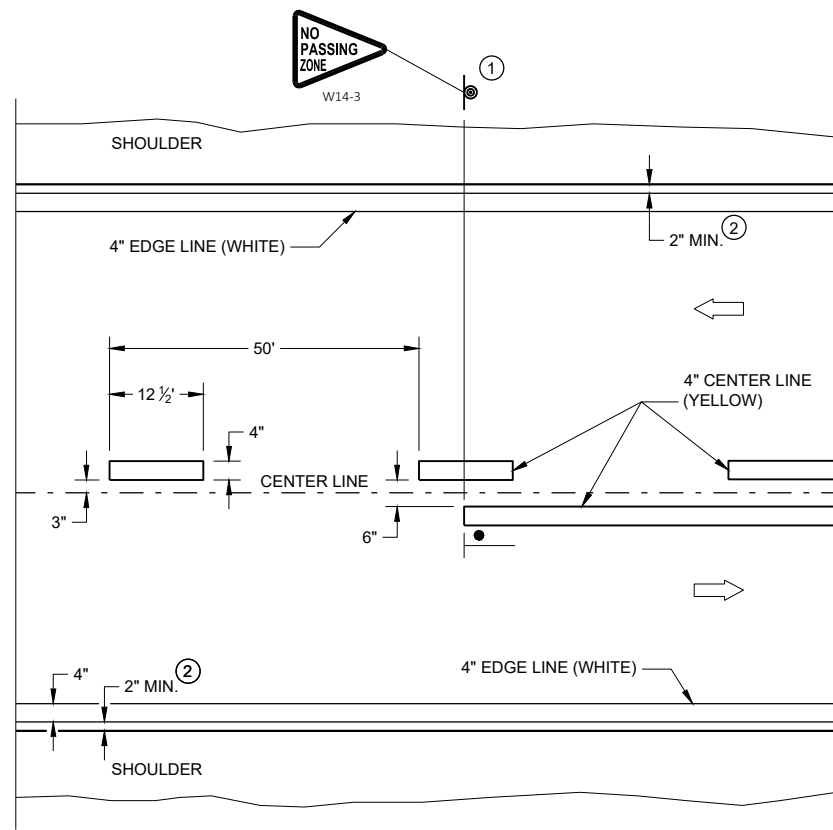
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

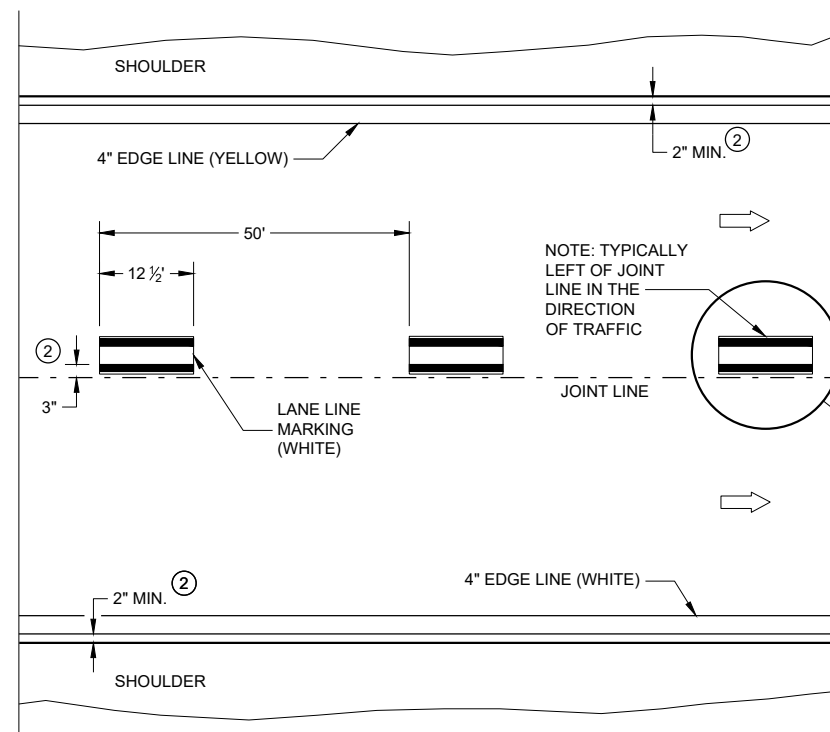
June 2017  
DATE

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

FHWA

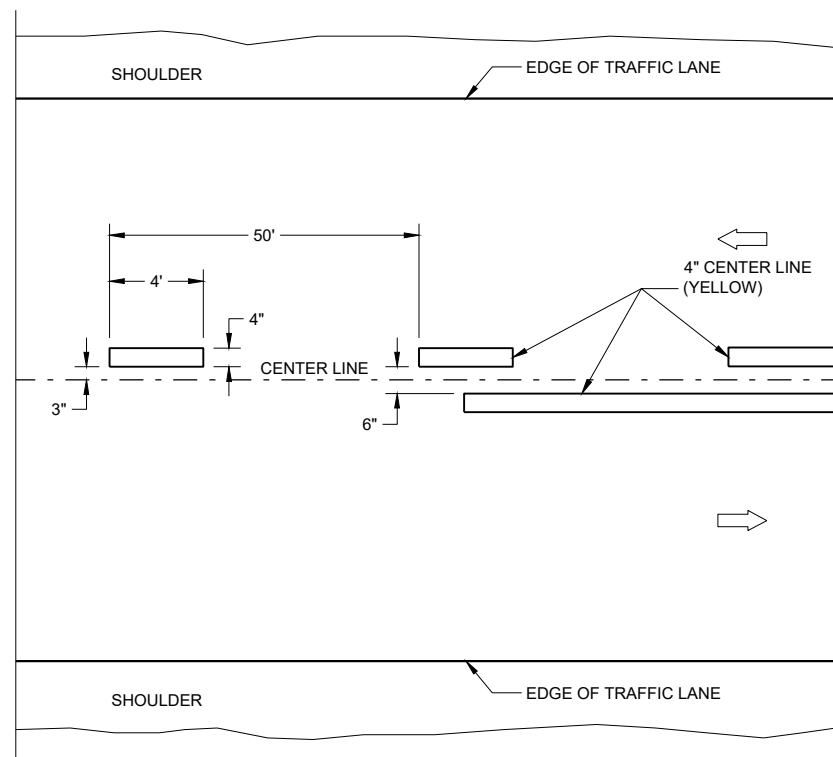


## TWO WAY TRAFFIC

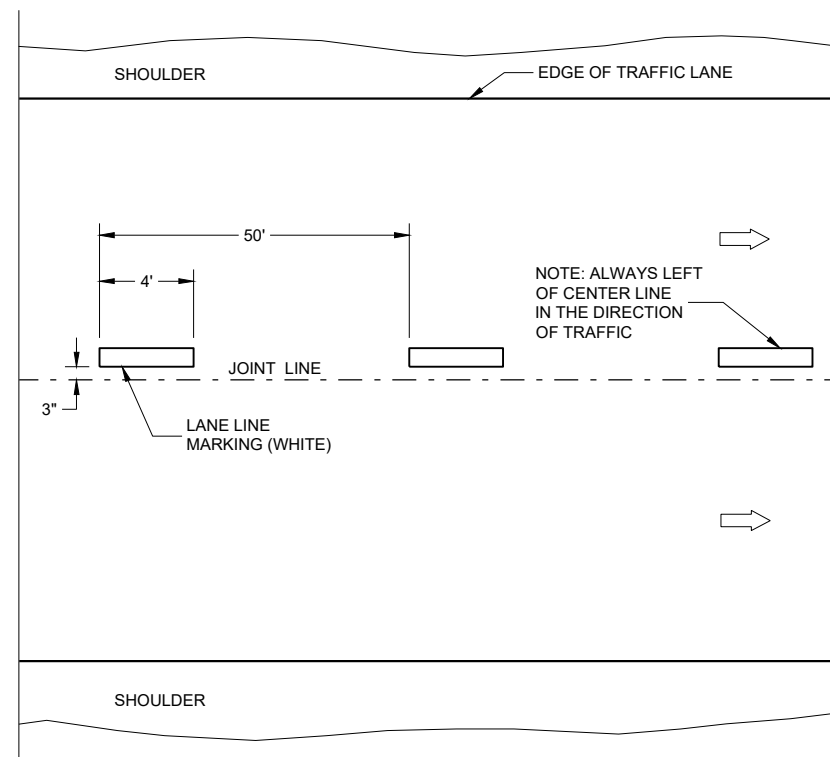


## ONE WAY TRAFFIC

## PERMANENT PAVEMENT MARKING



## TWO WAY TRAFFIC



## ONE WAY TRAFFIC




## TEMPORARY PAVEMENT MARKING

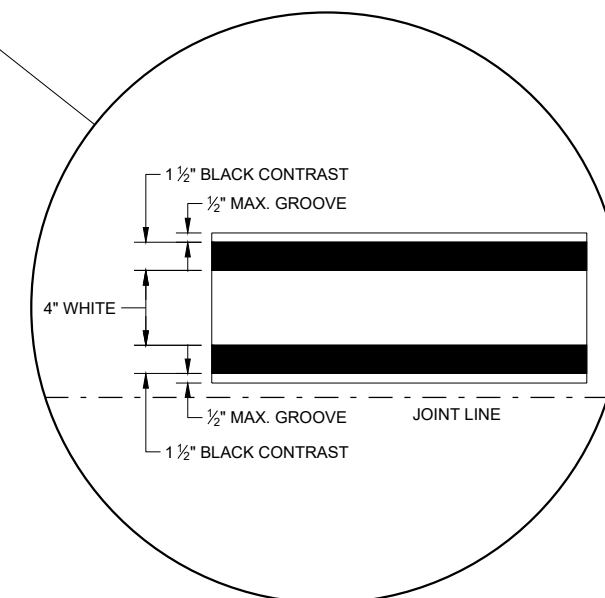
## GENERAL NOTES

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

- ① LOCATE THE NO PASSING ZONE W14-3 SIGN WITH 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

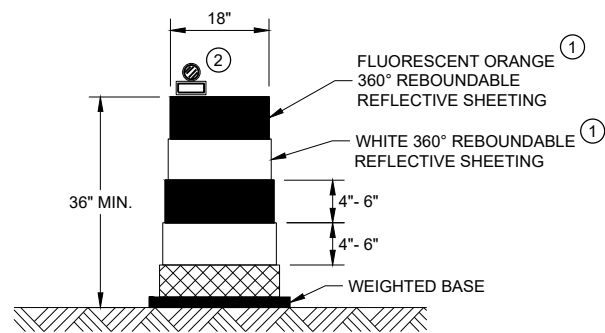


## LONGITUDINAL MARKING (MAINLINE)

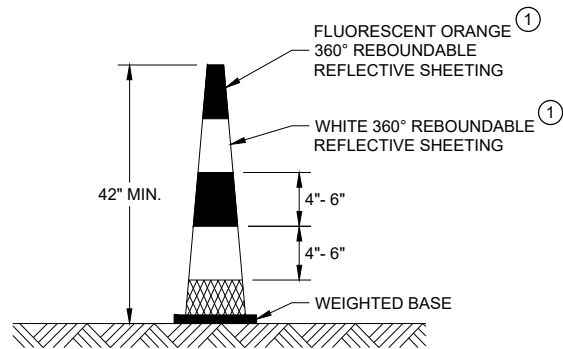
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2020  
DATE

/S/ Matthew Rauch  
STATEWIDE SIGNING AND MARKING  
ENGINEER

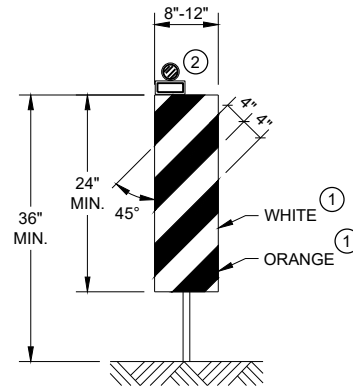


DRUM



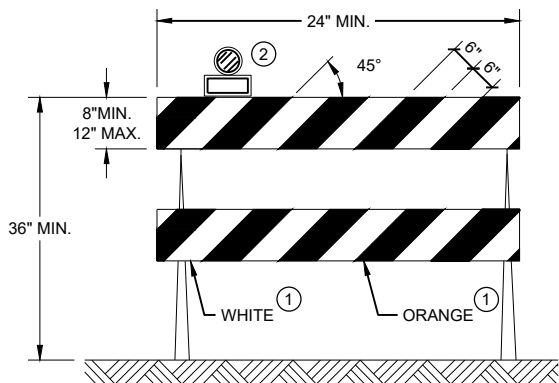
42" CONE

DO NOT USE IN TAPERS  
½ SPACING OF DRUMS



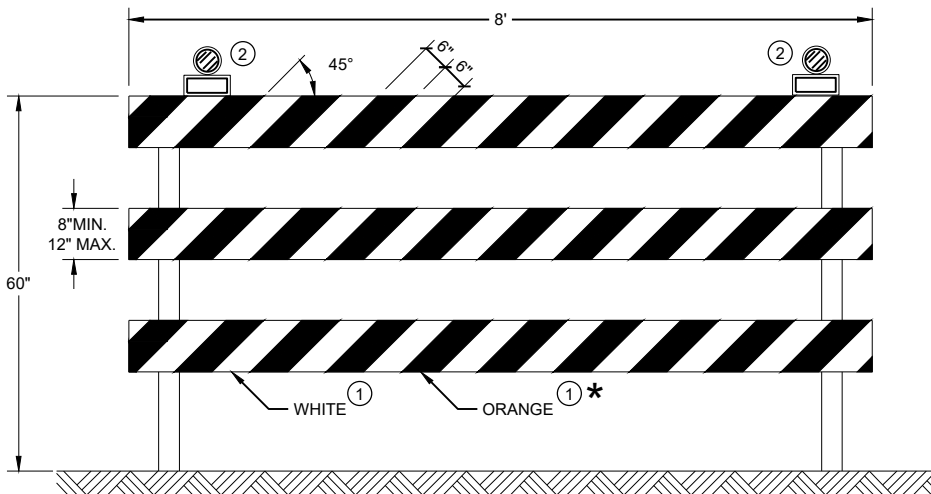
VERTICAL PANEL

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



TYPE II BARRICADE

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



TYPE III BARRICADE

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

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

GENERAL NOTES

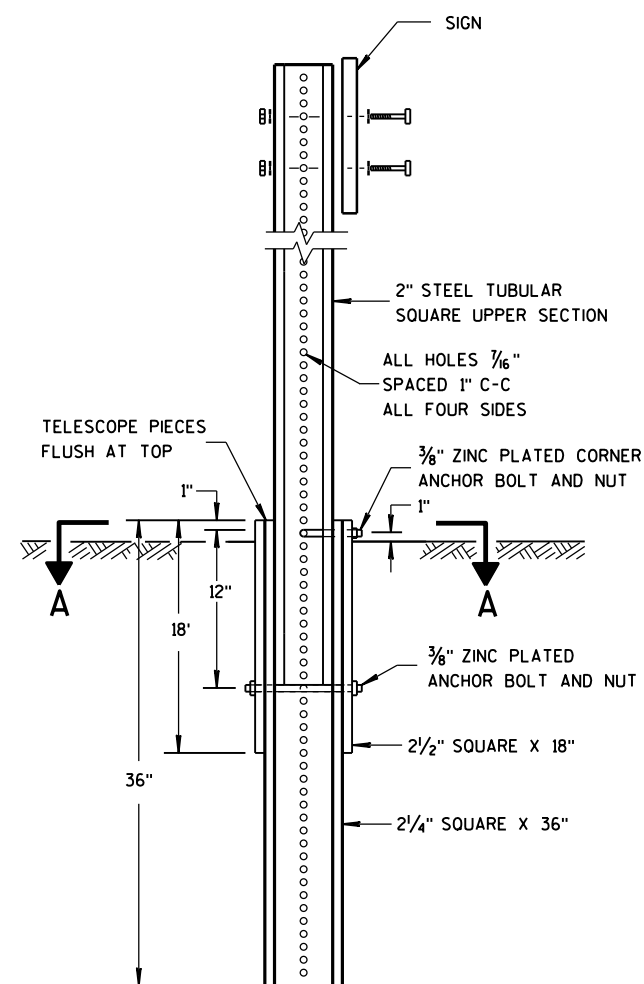
- ① REFLECTIVE SHEETING SHALL FOLLOW THE REQUIREMENTS IN THE APPROVED PRODUCTS LISTING FOR SIGN SHEETING.
- ② LOCATION OF WARNING LIGHTS WHEN SHOWN ON THE PLAN.

CHANNELIZING DEVICES  
DRUMS, CONES, BARRICADES  
AND VERTICAL PANELS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

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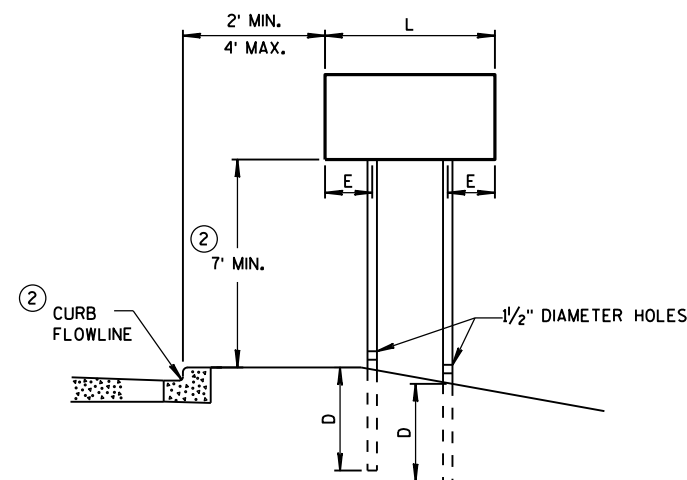
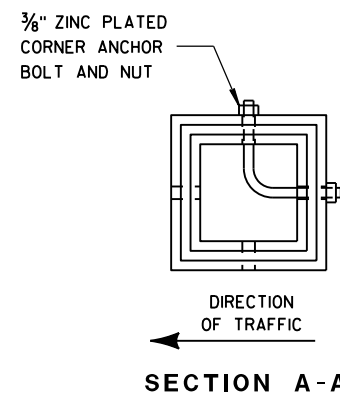
## DETAIL OF TUBULAR STEEL SIGN POST

## TUBULAR STEEL POSTS

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

SIGNS WIDER THAN 3 FEET OR LARGER THAN 9 SQ. FT. SHALL BE MOUNTED ON MULTIPLE POSTS (SEE ABOVE TABLE).

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

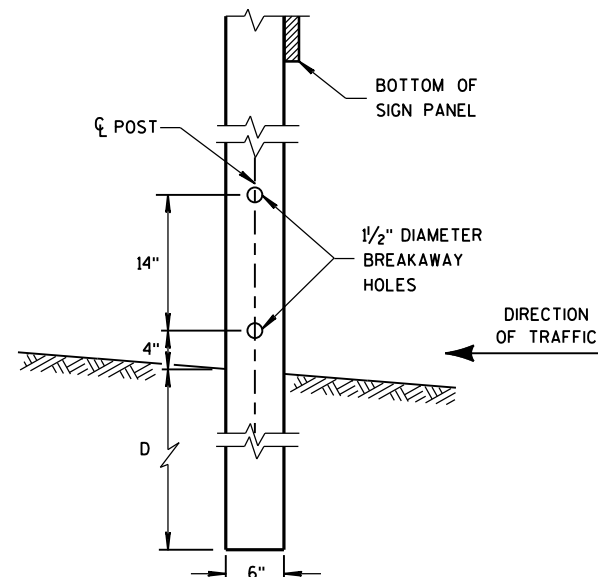


**URBAN AREA**

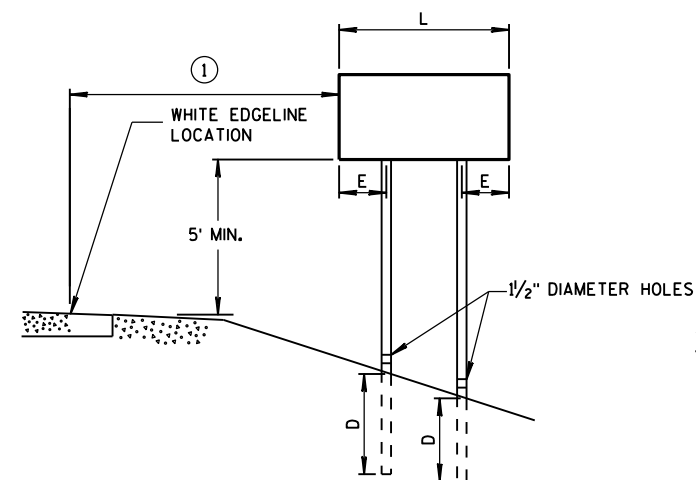
## POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST  
EMBEDMENT DEPTH

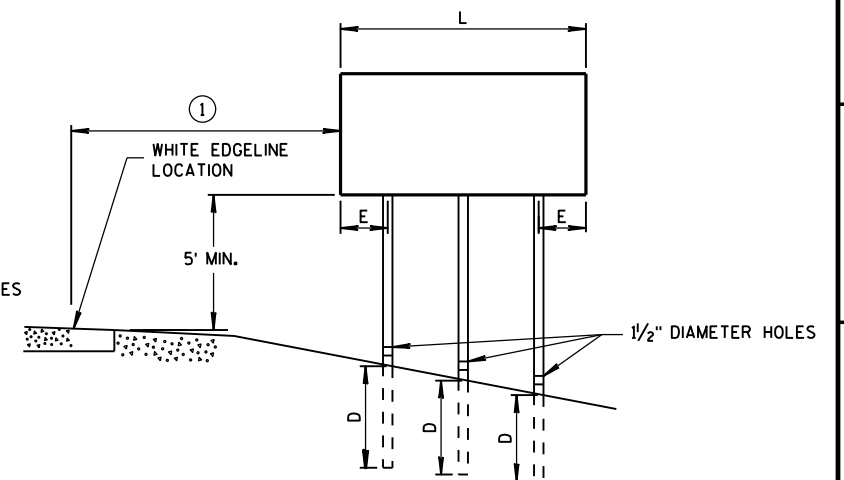
AREA OF SIGN INSTALLATION (SQ. FT.)	D (MIN)
20 OR LESS	4'
GREATER THAN 20	5'



## 4" x 6" WOOD POST MODIFICATION



## RURAL AREA



4" X 6" WOOD POST

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

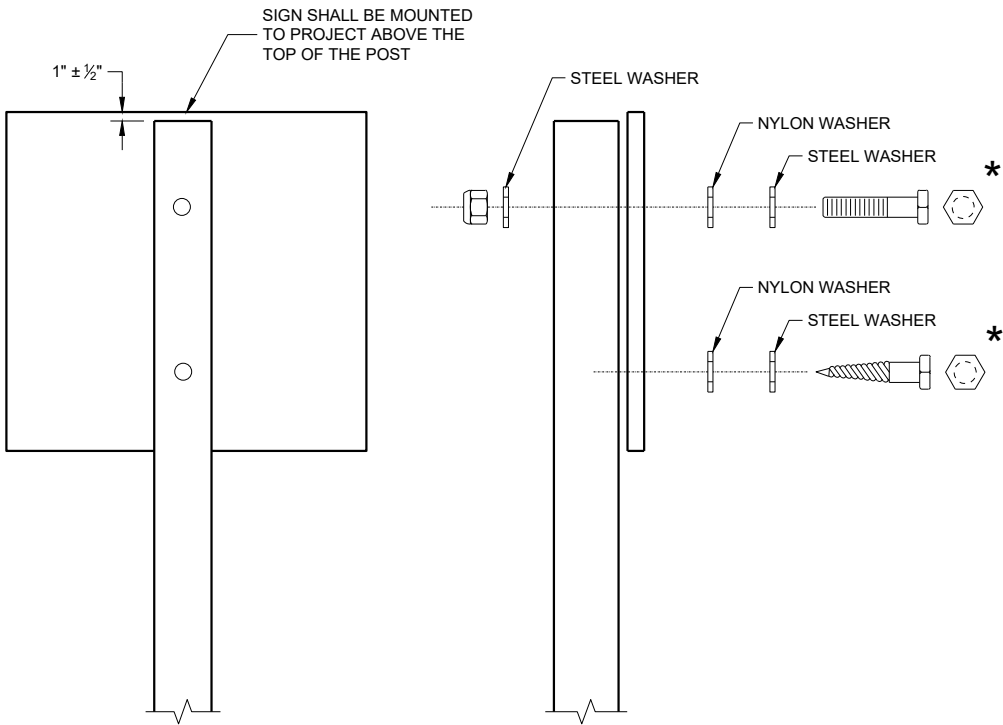
SEE NOTE (3)

## GENERAL NOTES

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

## TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



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

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

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

WOOD POST (4" x 6")  
LAG SCREWS - ¾" x 3"  
MACHINE BOLTS - ⅝" x 6 ½" OR 7" LENGTH W/NUTS

SQUARE STEEL POST (2" x 2")  
MACHINE BOLTS - ¾" x 3 ¼" LENGTH W/NUTS  
RIVETS - ⅝" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM  
BODY/MANDREL O.D. FLANGE 0.720 - 0.765 INCH,  
GRIP RANGE 0.042 - 0.375 INCH

WASHERS (ALL POSTS) -  
1 ¼" O.D. x ⅜" I.D. x ⅛" STEEL  
1 ¼" O.D. x ⅜" I.D. x 0.080 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. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

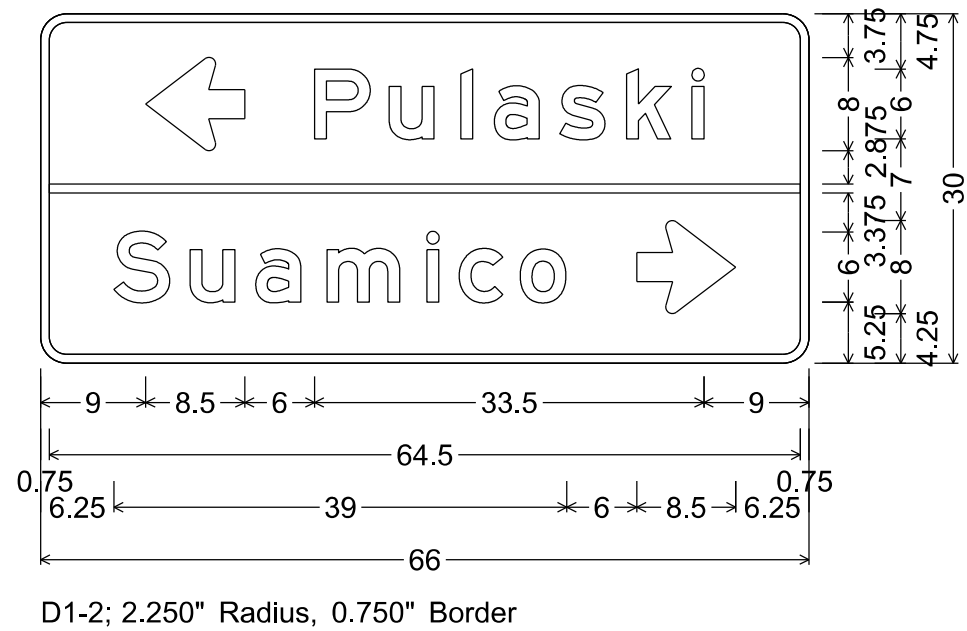
**ATTACHMENT OF SIGNS  
TO POSTS**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
June 2017  
DATE

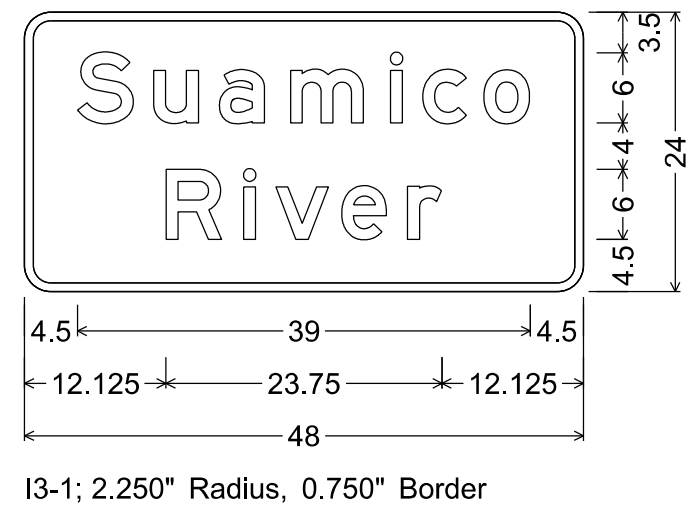
/S/ Andrew Heidtke  
WORK ZONE ENGINEER

FHWA

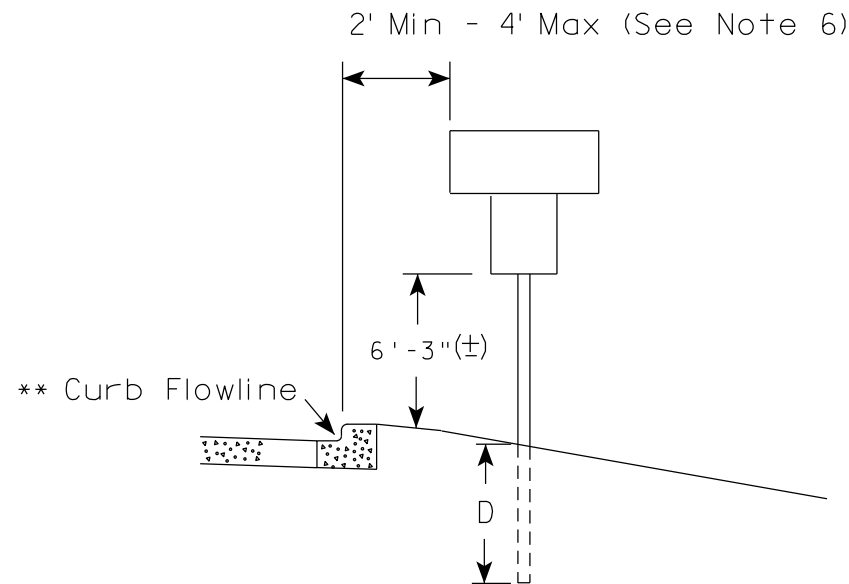
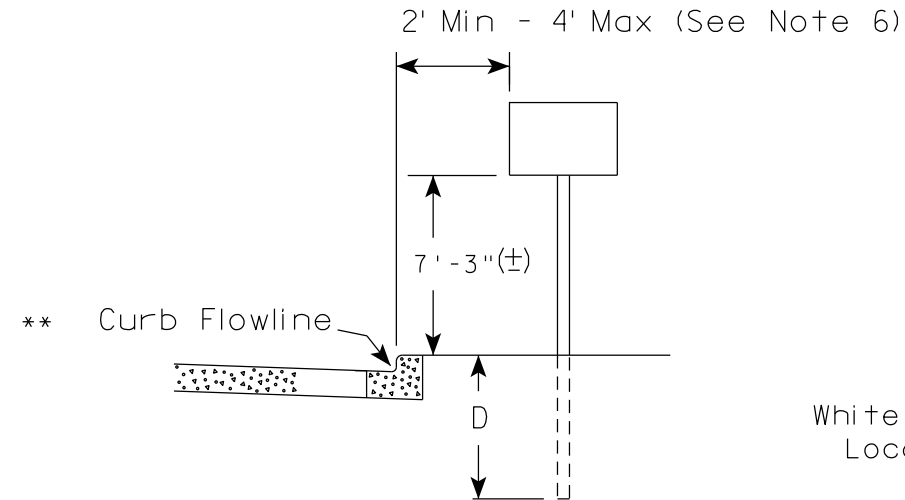


NOTES

1. All Signs Type II - Type H Reflective
2. Color:  
Background - Green  
Message - White
3. Message Series - E

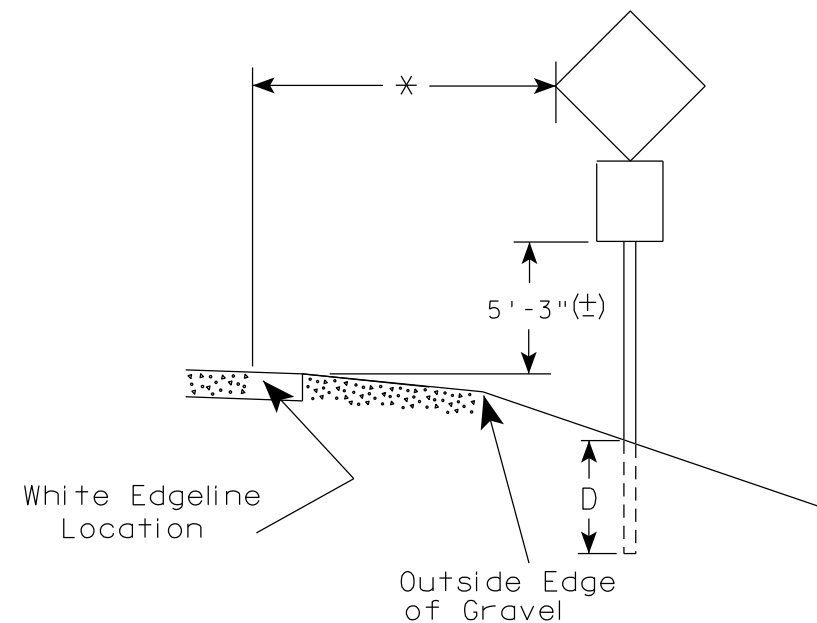
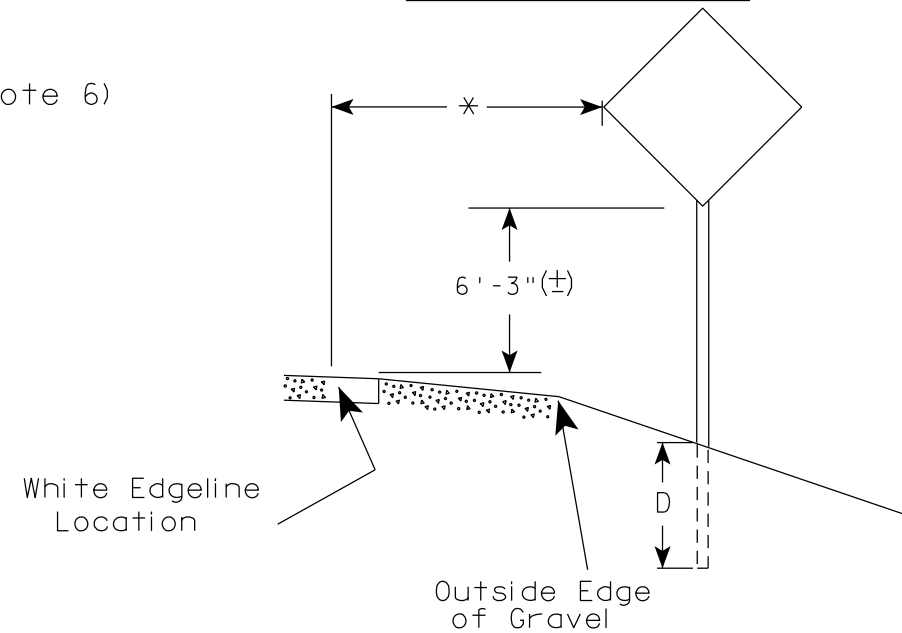


## URBAN AREA



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

## RURAL AREA (See Note 2)



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

### POST EMBEDMENT DEPTH

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

### GENERAL NOTES

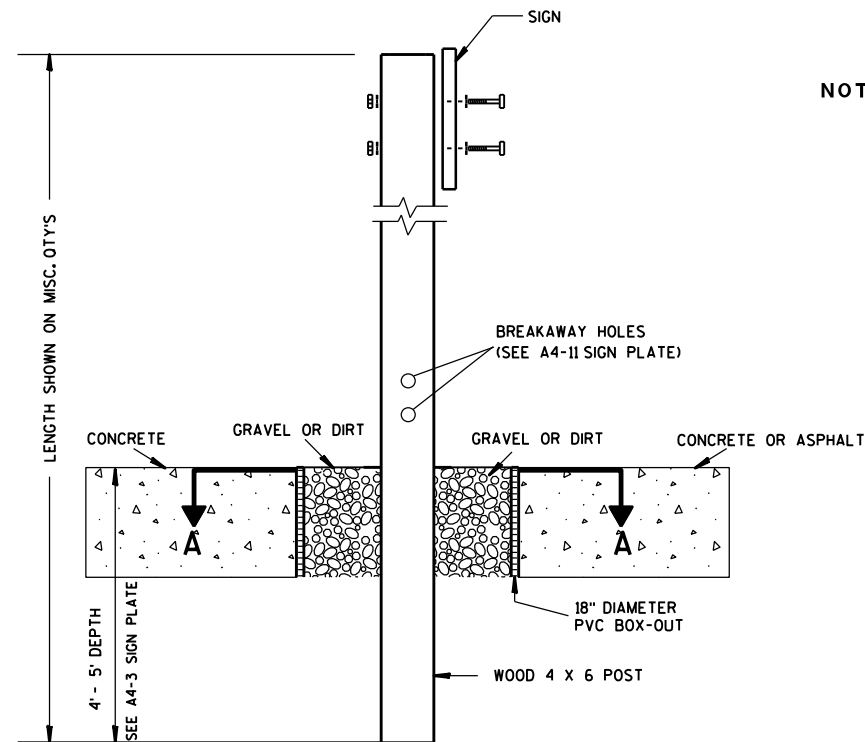
- Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
- If signs are mounted on or behind barrier wall, see A4-10 sign plate.  
The Double Arrow sign (W12-1D) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel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

### TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

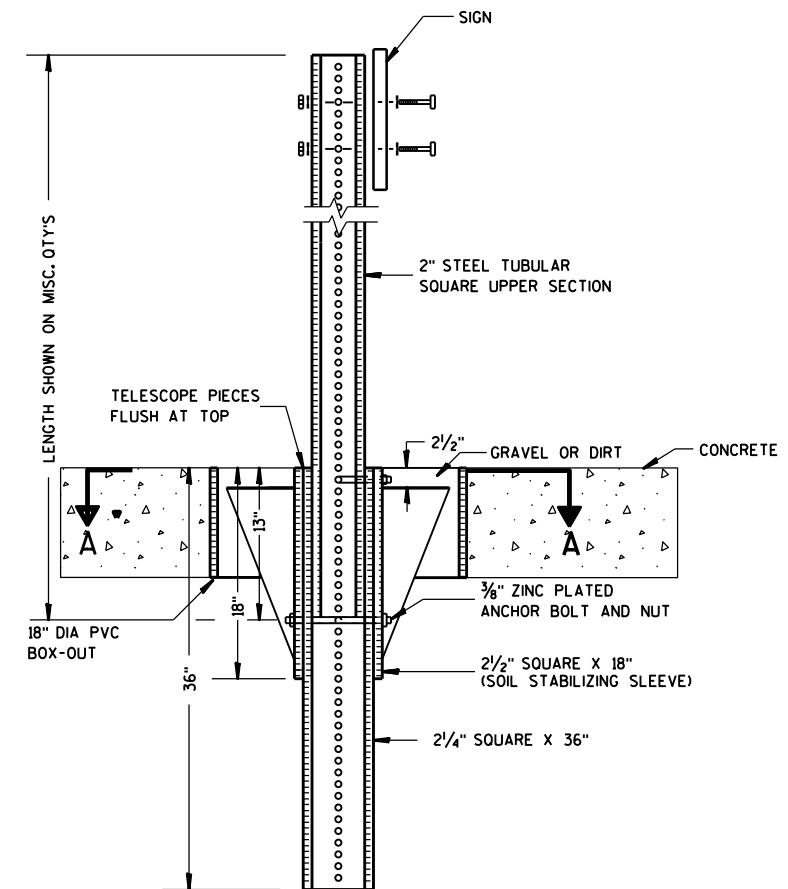
DATE 5/13/2020 PLATE NO. A4-3.22



### ELEVATION VIEW

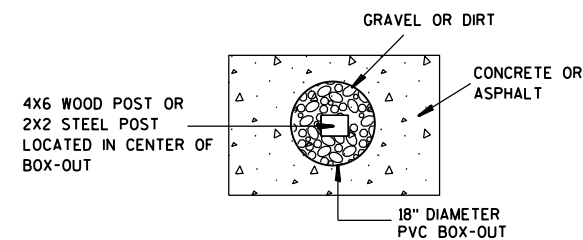
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

- 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

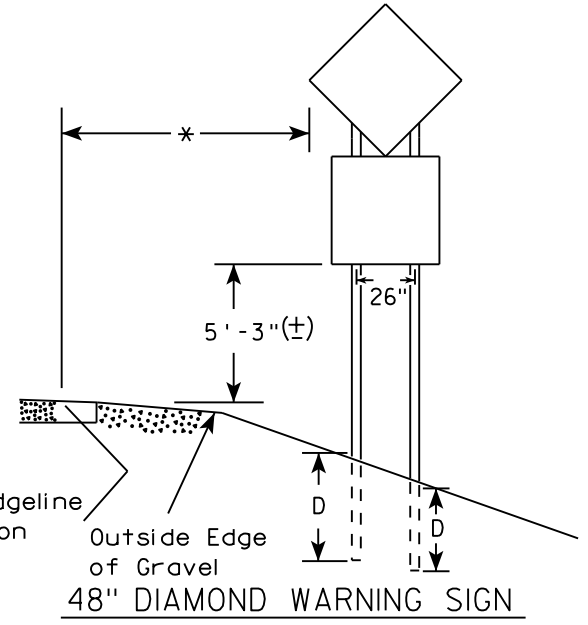
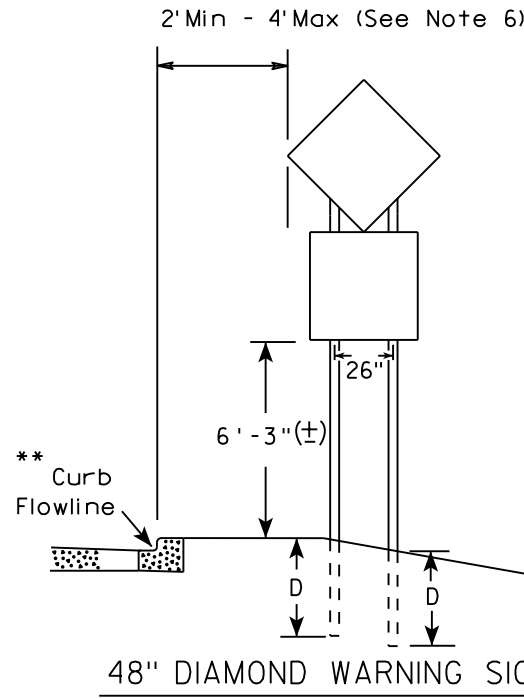
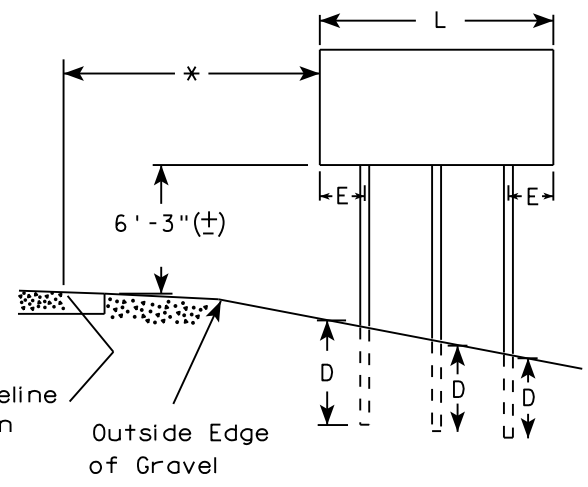
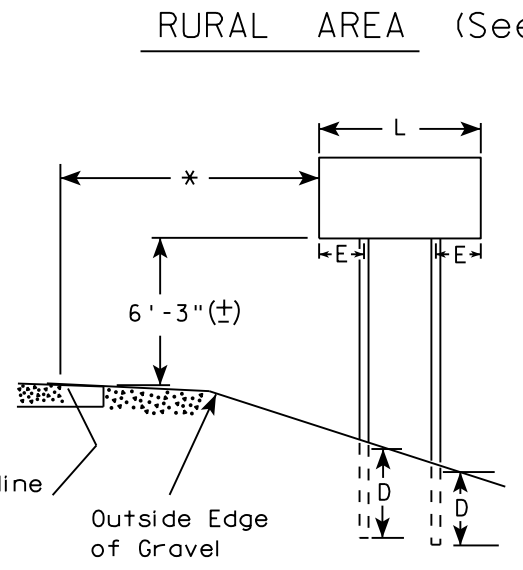
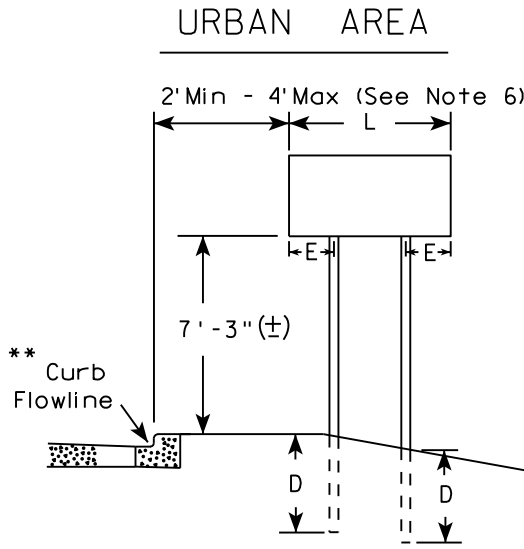
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



\*\*\*

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

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

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION  
OF TYPE II SIGNS  
ON MULTIPLE POSTS

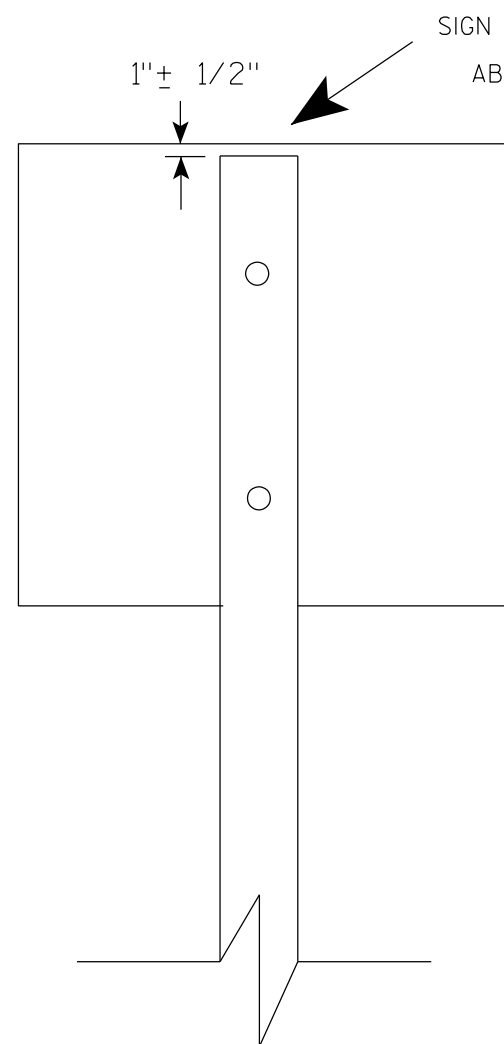
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

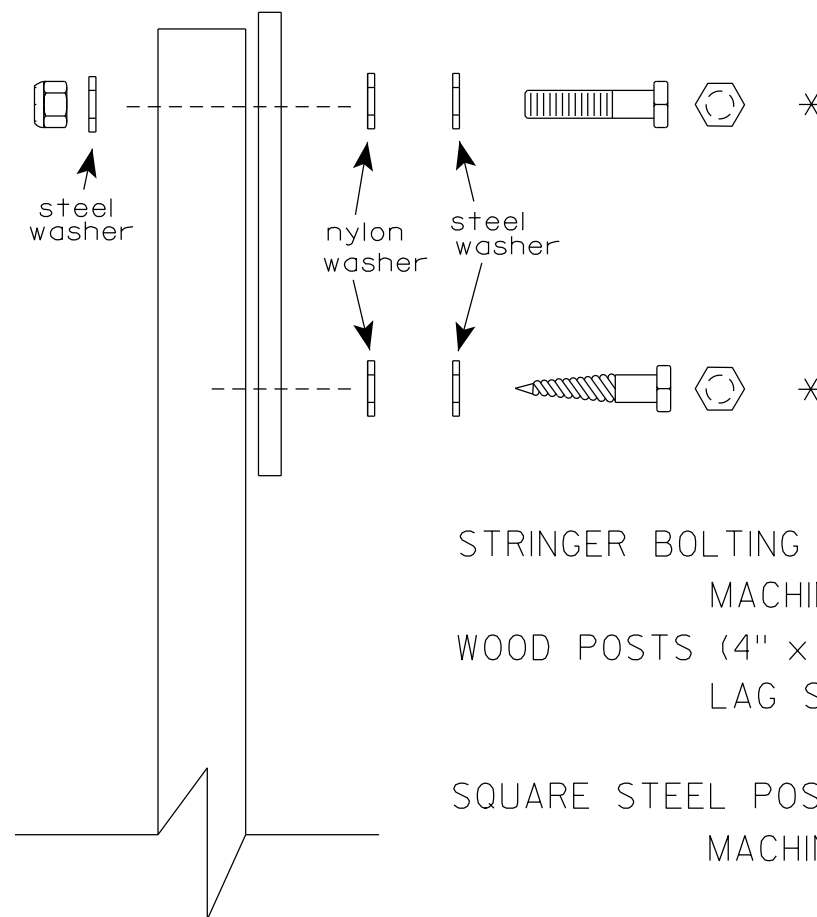
DATE 8/21/17 PLATE NO. A4-4.15

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

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



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



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

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

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

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

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

WOOD POSTS (4" x 6")

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

SQUARE STEEL POSTS (2" x 2")

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

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

WASHERS (ALL POSTS) -

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

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

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


ATTACHMENT OF SIGNS  
TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R. Rauch  
For State Traffic Engineer

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

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

4" x 10" x 10 GA. —   
STEEL PLATE (CUT  
AS SHOWN) WELDED  
TO ALL FOUR CORNERS  
OF TELESPAR TUBE

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

2 1/2" TELESPAR TUBE

4"

2 1/2"

10"

3 1/2"

19"

4" x 10" x 10 GA. STEEL PLATE (CUT AS SHOWN) WELDED TO ALL FOUR CORNERS OF TELESPAR TUBE

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

LENGTH SHOWN ON MISC. QTY'S

TELESCOPE PIECES FLUSH AT TOP

2" STEEL TUBULAR SQUARE UPPER SECTION

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

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

1"

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

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


2 1/4" SQUARE X 36"

SIGN

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

3/8" ZINC PLATED CORNER  
ANCHOR BOLT AND NUT

DIRECTION  
OF TRAFFIC



SECTION A-A

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

TUBULAR STEEL  
SIGN POST  
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthieu R. Rauch

for State Traffic Engineer

DATE 2/05/15 PLATE NO. A4-9.9

PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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FILE NAME : C:\CAEFiles\Projects\tr\_stdplate\A49.DGN

PLOT DATE : 05-FEB-2015 17:09

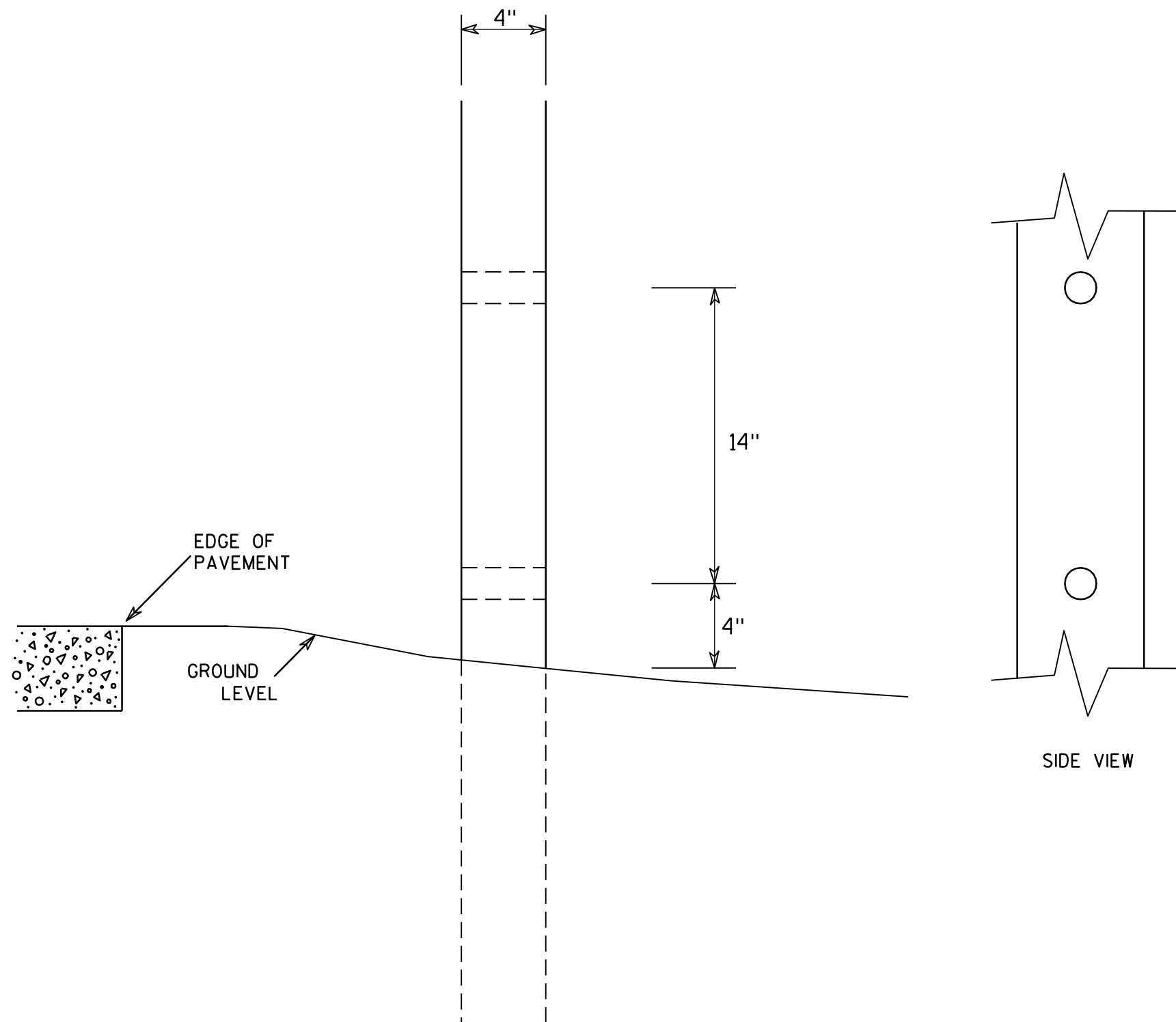
PLOT BY : mscs\_ja

PLOT NAME :

PLOT SCALE : 13.659812:1.000000

WISDOT/CADDS SHEET 42

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:

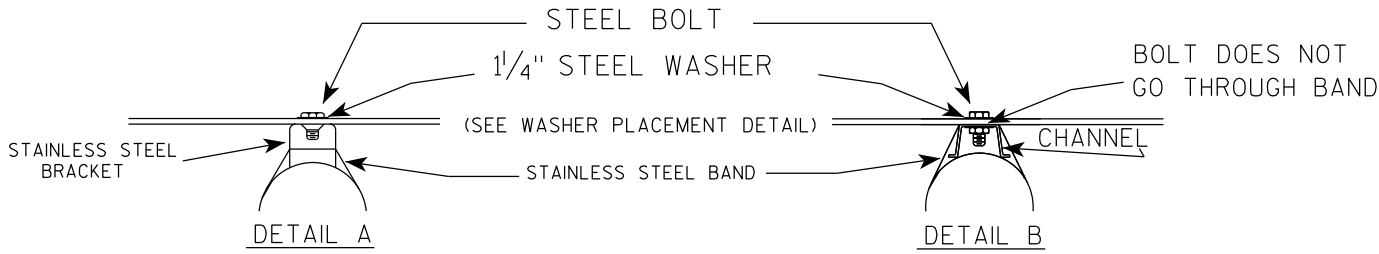
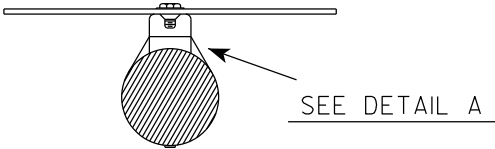
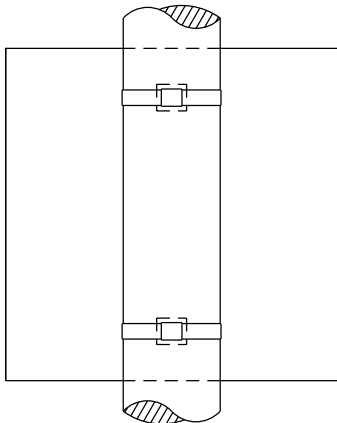
COUNTY:

SHEET NO:

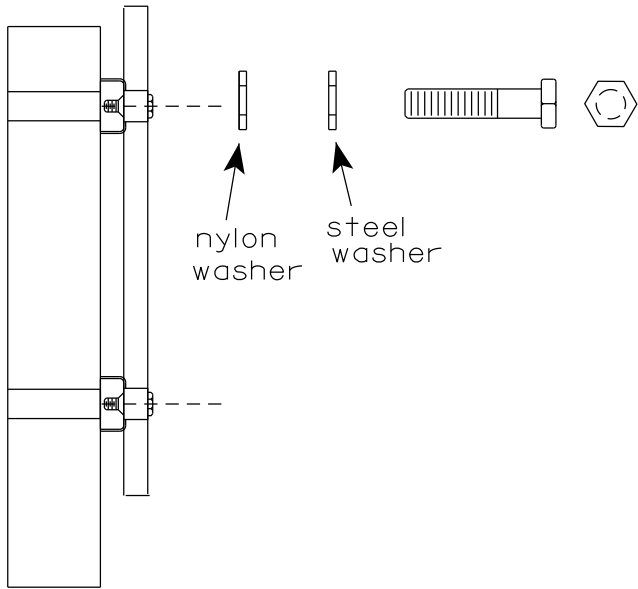
E

BANDING

SINGLE SIGN



WASHER PLACEMENT

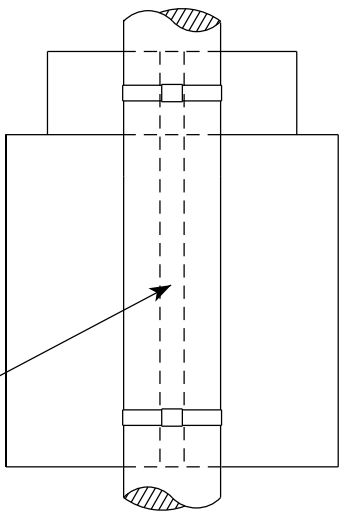


WASHERS (ALL POSTS) -  
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL  
1-1/4" O.D. X 3/8" I.D. X .080 NYLON  
FOR ALL TYPE H SIGNS

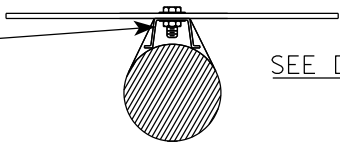
GENERAL NOTES

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

"J" ASSEMBLY



CHANNEL  
SEE TYPICAL PANEL  
INSTALLATION SHEET

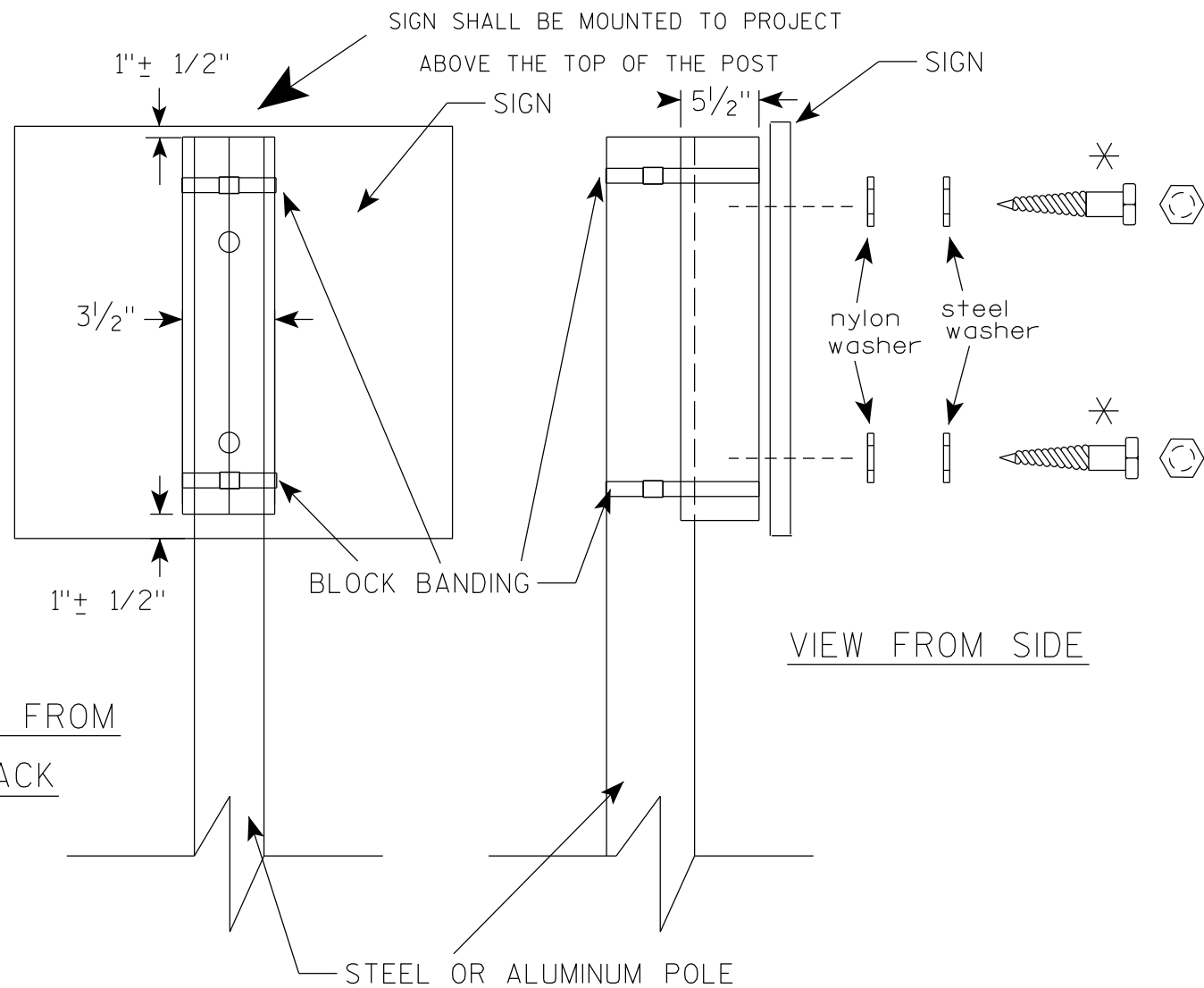


STANDARD SIGN  
SIGN BANDING DETAILS

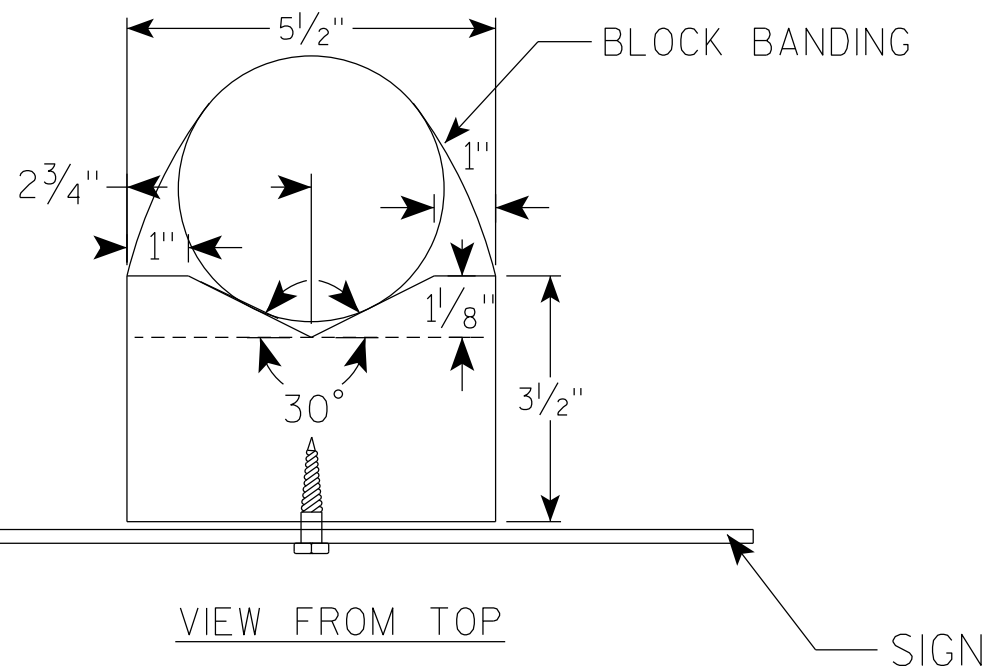
WISCONSIN DEPT OF TRANSPORTATION

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

VIEW FROM  
BACK



VIEW FROM SIDE



## GENERAL NOTES

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

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

BLOCK BANDING DETAIL  
( V-BLOCK OPTION )

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R. Rauch  
for State Traffic Engineer

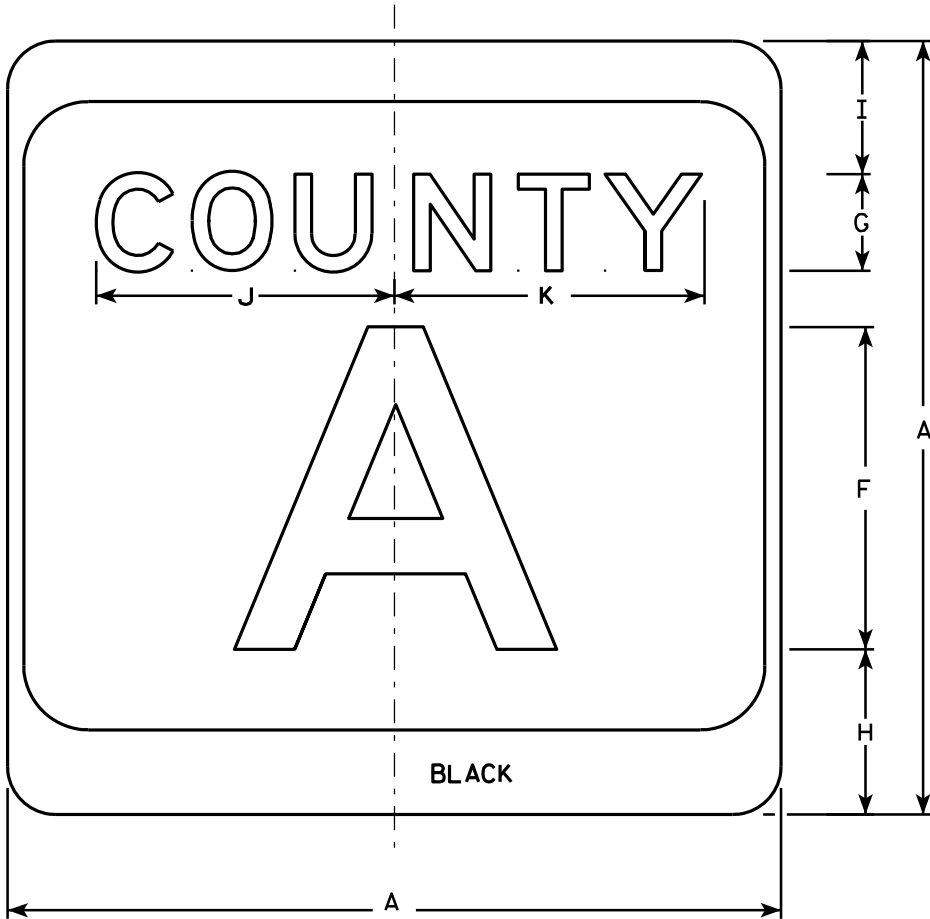
DATE 6/10/19 PLATE NO. A5-10.2

PROJECT NO:

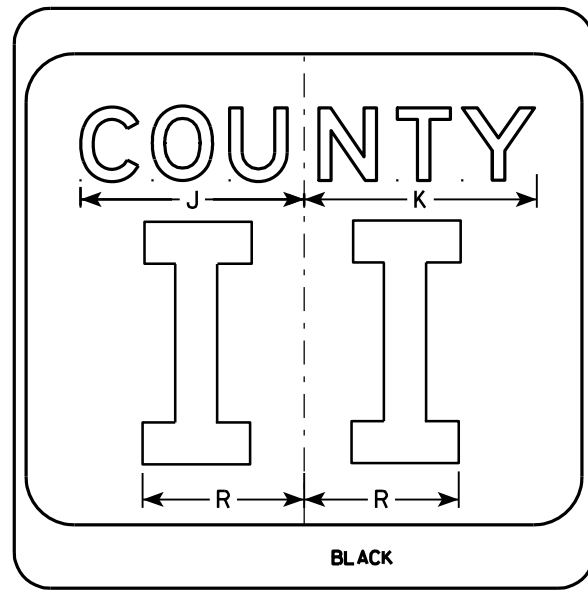
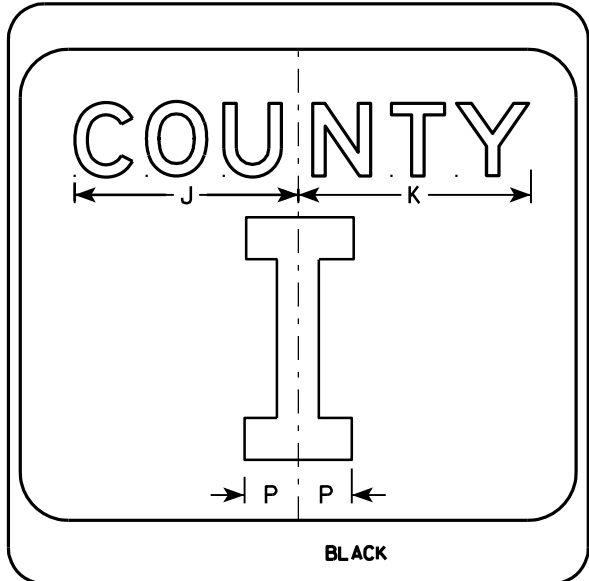
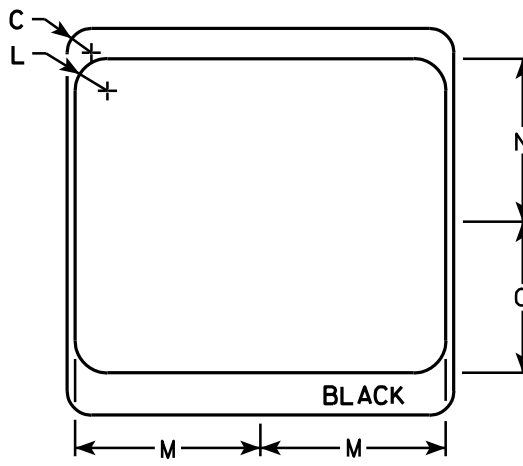
SHEET NO:

E

7



M1-5A



NOTES

1. Sign is Type II - see Note 7 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:  
Background - White & Black - See Note 7  
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. Message Series E for 1 letter.  
Message Series D for 2 letters unless message is too big then Series C.  
Message Series C for 3 letters unless message is too big then Series B.
6. Substitute appropriate letters & optically center to achieve proper balance.
7. Permanent Signs  
Background - Type H Reflective  
Detour or temporary Signs  
Background - Reflective

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

CTH MARKER  
M1-5A FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
For State Traffic Engineer

DATE 9/27/11 PLATE NO. M1-5A.8

PROJECT NO:

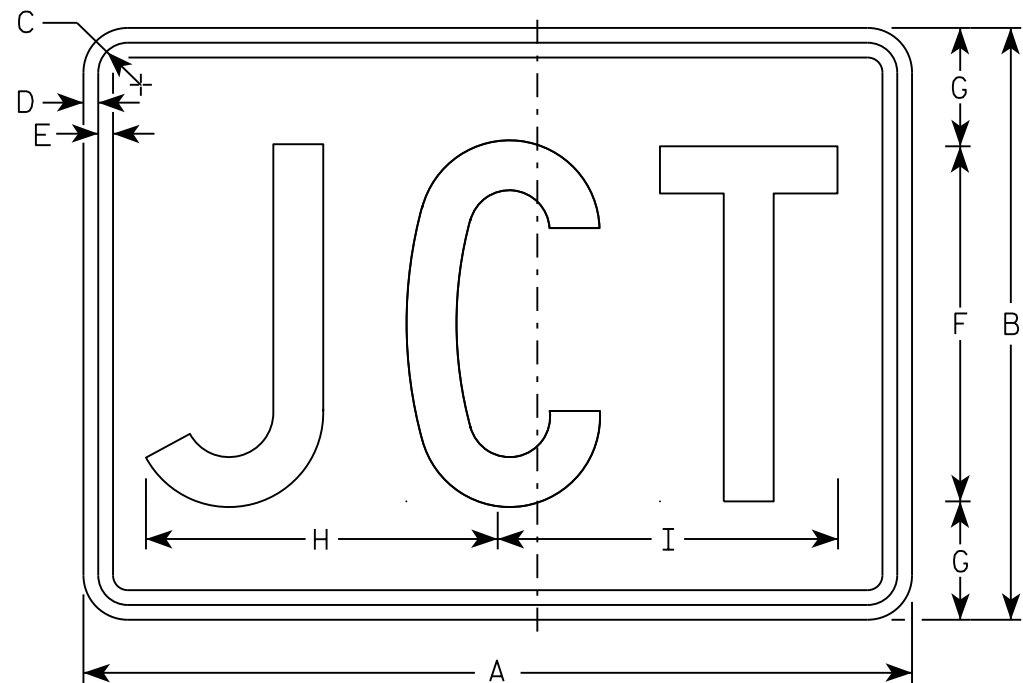
HWY:

COUNTY:

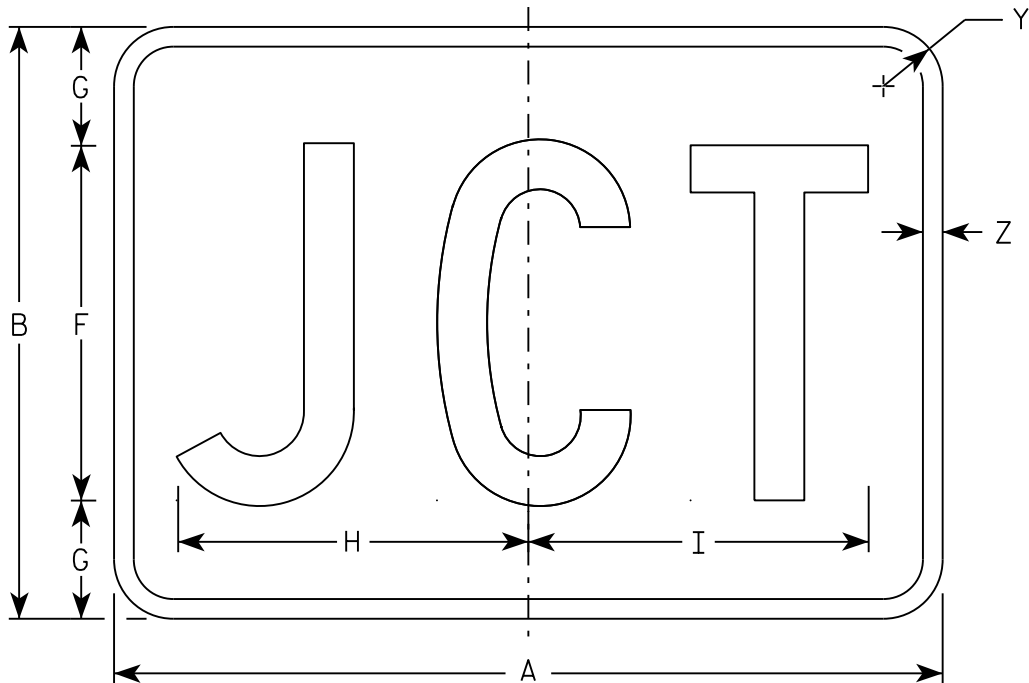
SHEET NO:

E

7



M2-1  
MM2-1  
MP2-1



MB2-1  
MK2-1  
MN2-1  
MR2-1

NOTES

- 1. Sign is Type II - Type H
- 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. M2-1 Background - White  
    Message - Black  
    MB2-1 Background - Blue  
    Message - White  
    MK2-1 Background - Green  
    Message - White  
    MM2-1 Background - White  
    Message - Green  
    MN2-1 Background - Brown  
    Message - White  
    MP2-1 Background - White  
    Message - Blue  
    MR2-1 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																											
2	21	15	1 1/8	3/8	3/8	9	3	8 7/8	8 5/8																1 1/2	1/2	2.20
3	30	21	1 1/8	3/8	3/8	13	4	12 7/8	12 3/8																1 1/2	1/2	4.40
4	30	21	1 1/8	3/8	3/8	13	4	12 7/8	12 3/8																1 1/2	1/2	4.40
5	30	21	1 1/8	3/8	3/8	13	4	12 7/8	12 3/8																1 1/2	1/2	4.40

STANDARD SIGN

M2 - 1

WISCONSIN DEPT OF TRANSPORTATION

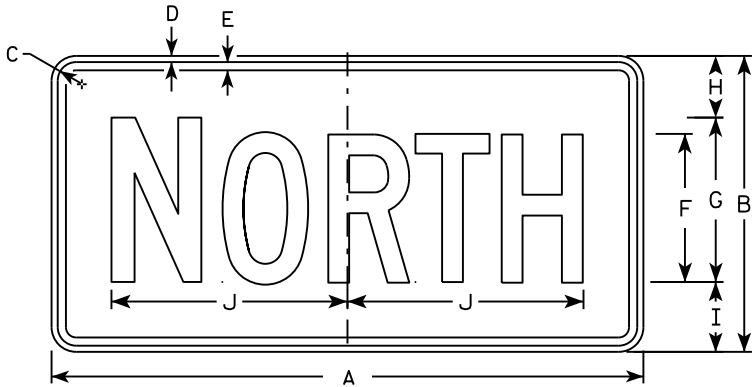
APPROVED

Matthew R. Rauch

For State Traffic Engineer

DATE 10/15/15

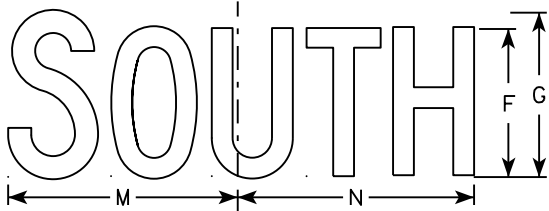
PLATE NO. M2-1.12



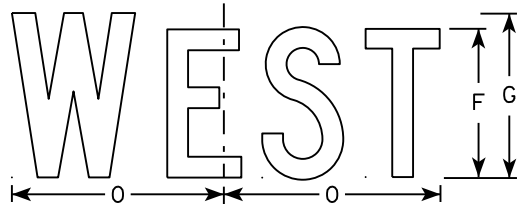
M3-1  
MM3-1  
MP3-1



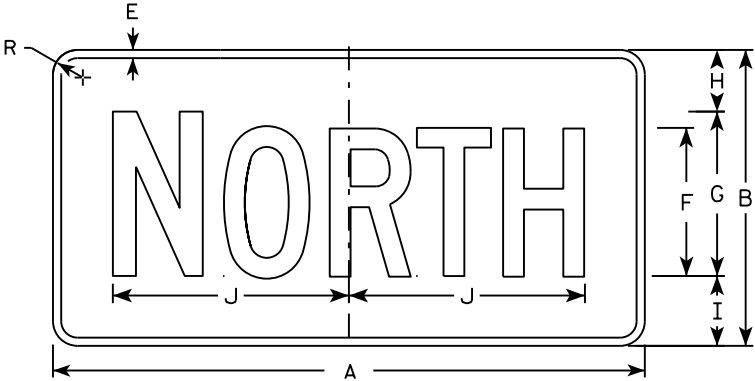
M3-2  
MM3-2  
MP3-2



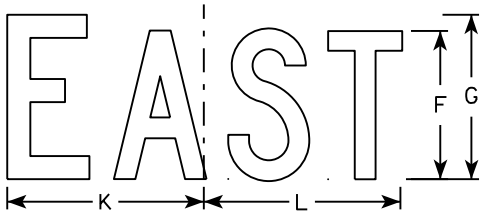
M3-3  
MM3-3  
MP3-3



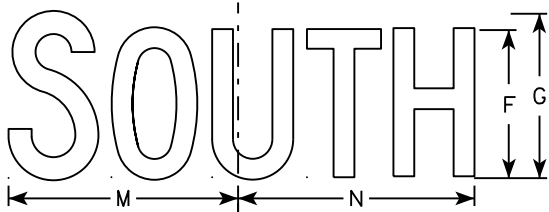
M3-4  
MM3-4  
MP3-4



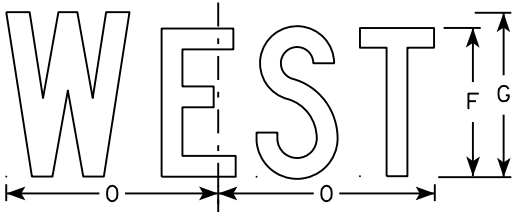
MB3-1  
MK3-1  
MN3-1



MB3-2  
MK3-2  
MN3-2



MB3-3  
MK3-3  
MN3-3



MB3-4  
MK3-4  
MN3-4

NOTES

1. All Signs Type II - Type H
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.

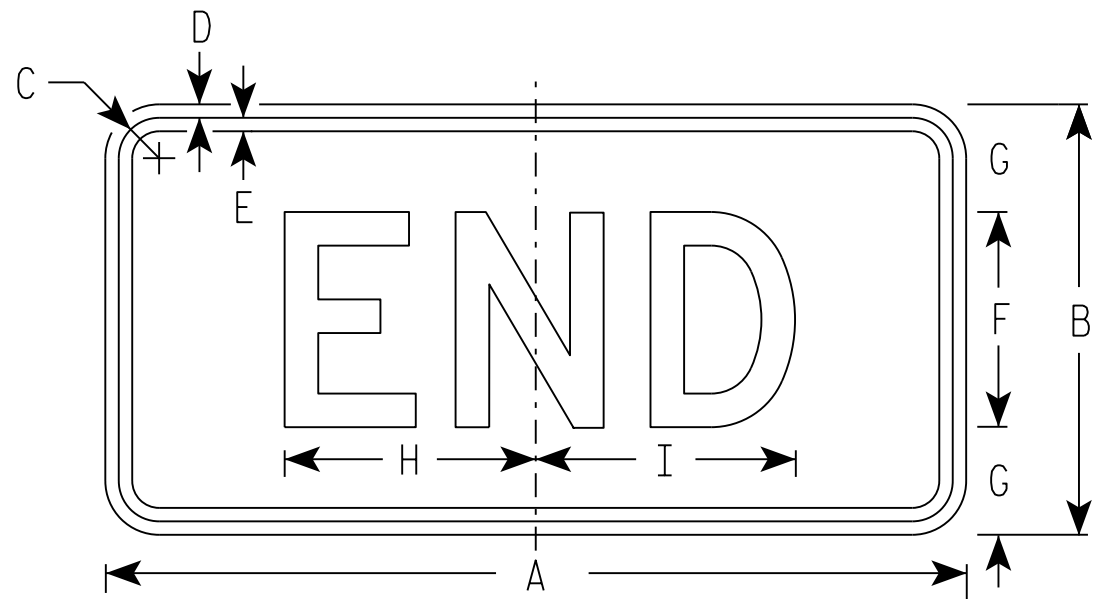
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/8	3/8	3/8	6	7	2 1/4	2 3/4	10 1/4	7 7/8	8 3/8	10 1/4	9 3/4	8 3/4			1 1/2									2.00
3	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
4	36	18	1 1/8	3/8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

STANDARD SIGNS  
M3-1 thru M3-4  
SERIES

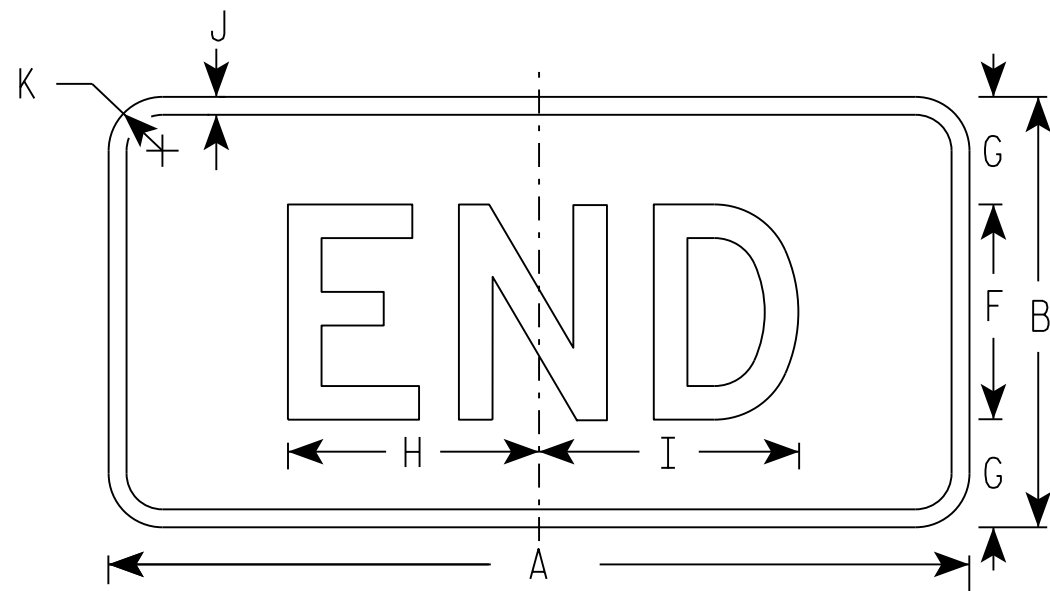
WISCONSIN DEPT OF TRANSPORTATION

APPROVED  
*Matthew R. Rauch*  
for State Traffic Engineer

DATE 10/15/15 PLATE NO. M3-1.14



M4-6  
MM4-6  
MP4-6



MB4-6  
MK4-6  
MN4-6  
MR4-6

### NOTES

- Sign is Type II - Type H
- Color:  
Background - See note 5  
Message - See note 5
- Message Series - D
- 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.
- M4-6 Background - White  
Message - Black  
MB4-6 Background - Blue  
Message - White  
MK4-6 Background - Green  
Message - White  
MM4-6 Background - White  
Message - Green  
MN4-6 Background - Brown  
Message - White  
MP4-6 Background - White  
Message - Blue  
MR4-6 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																											
2	24	12	1 1/8	3/8	3/8	6	3	7	7 1/4	1/2	1 1/2																2.00
3	36	18	1 1/8	3/8	1/2	9	4 1/2	12	11 7/8	1/2	1 1/2																4.5
4	36	18	1 1/8	3/8	1/2	9	4 1/2	12	11 7/8	1/2	1 1/2																4.5
5	36	18	1 1/8	3/8	1/2	9	4 1/2	12	11 7/8	1/2	1 1/2																4.5

### STANDARD SIGN M4-6

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 10/15/15 PLATE NO. M4-7.9

PROJECT NO:

HWY:

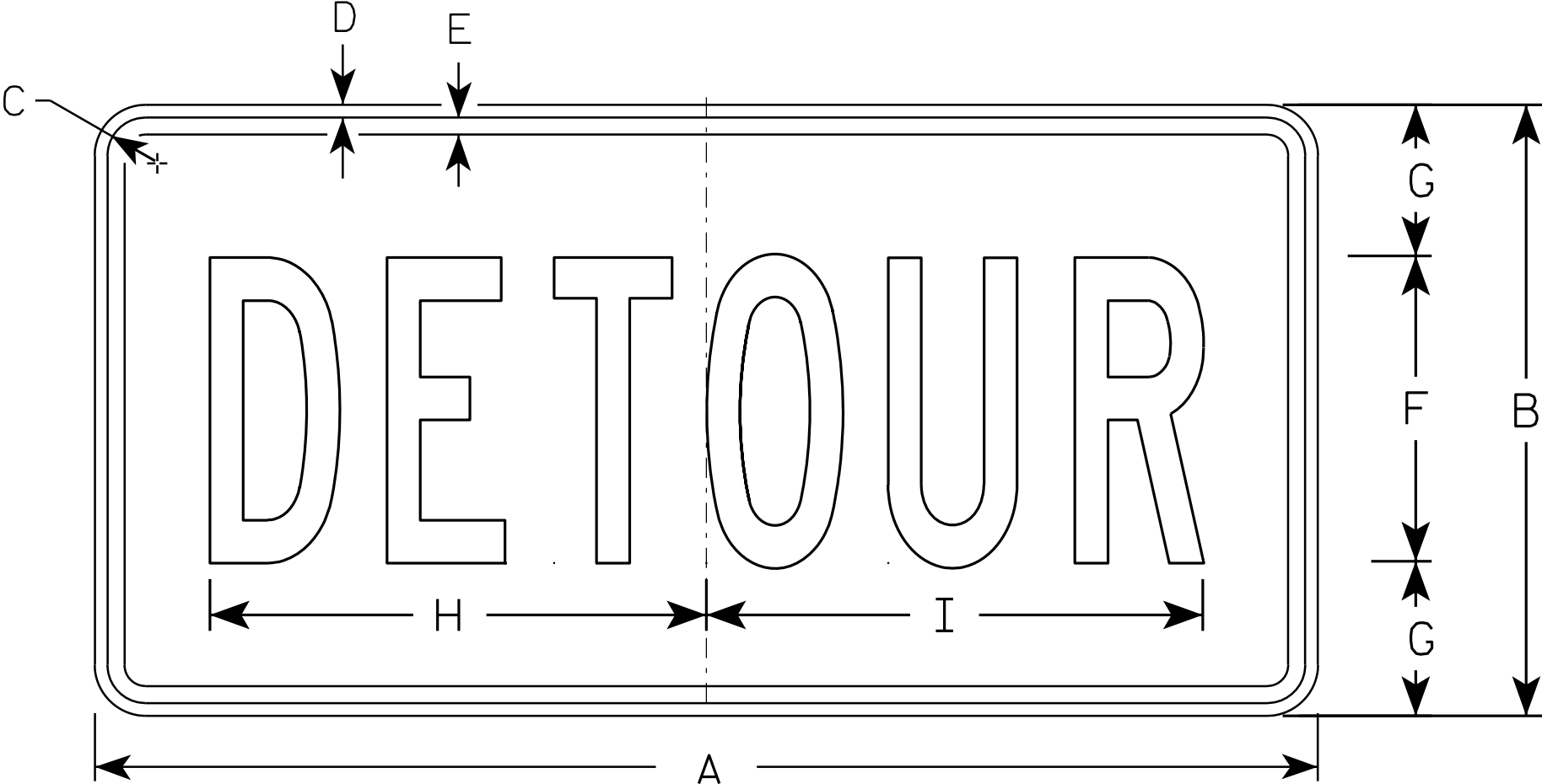
COUNTY:

SHEET NO:

E

NOTES

- 1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color:
  - Background - Orange
  - Message - Black
- 3. Message Series - 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.



M4 - 8

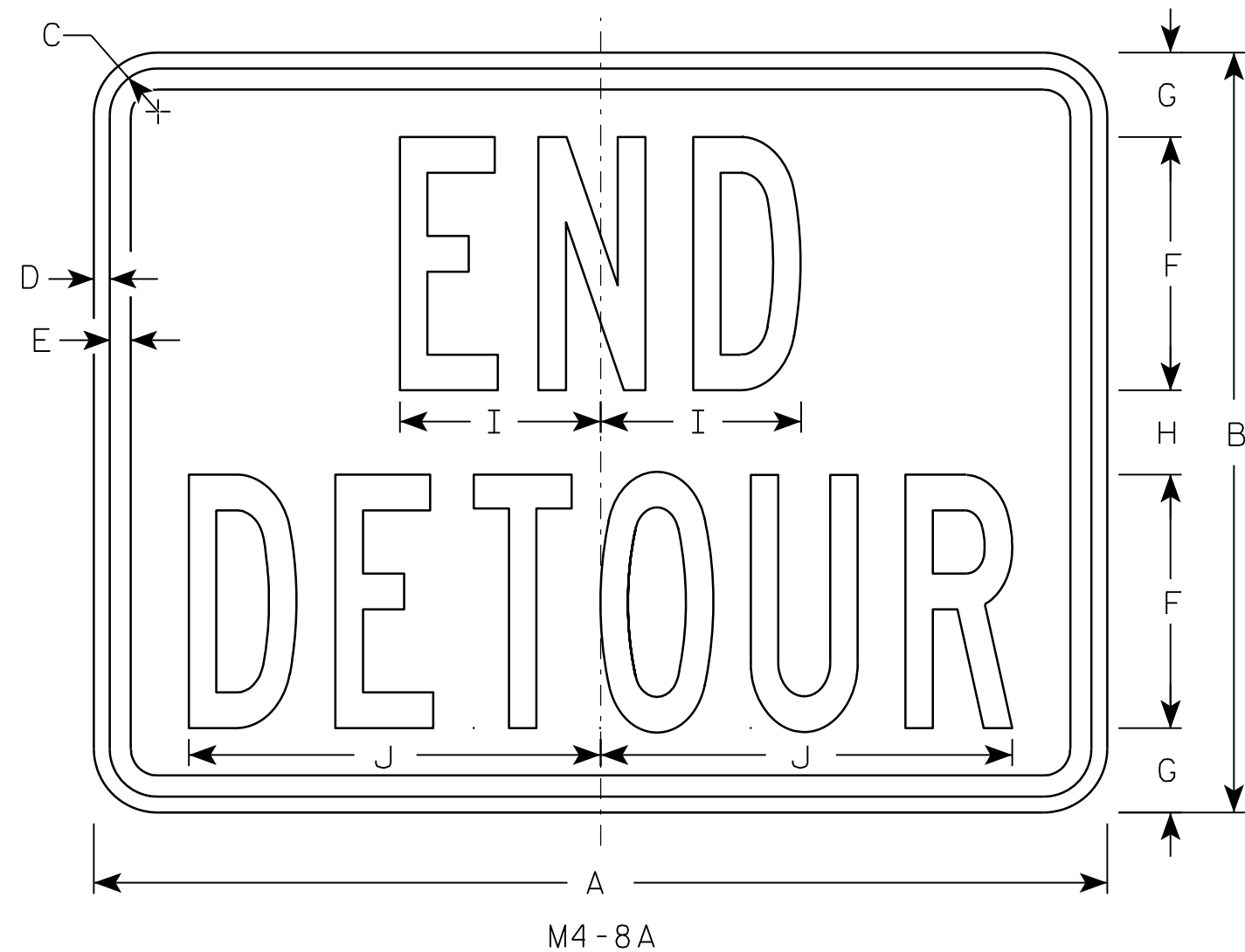
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/8	3/8	3/8	6	3	10	10 1/4																		2.0
3	36	18	1 1/8	3/8	1/2	9	4 1/2	14 5/8	14 1/2																		4.5
4																											
5																											

STANDARD SIGN  
M4 - 8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED  
*Matthew R. Rauch*  
for State Traffic Engineer

DATE 11/10/10 PLATE NO. M4-8.2



NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:  
Background - Orange  
Message - Black
3. Message Series - 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	18	1 1/8	3/8	1/2	6	2	2	4 3/4	9 3/4																	3.0
3	30	24	1 1/8	3/8	1/2	8	2 1/2	3	6 3/4	13																	5.0
4																											
5																											

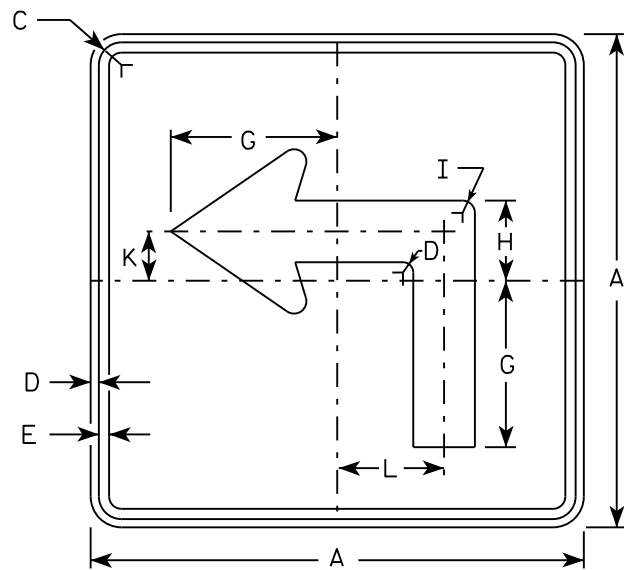
PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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STANDARD SIGN  
M4-8A

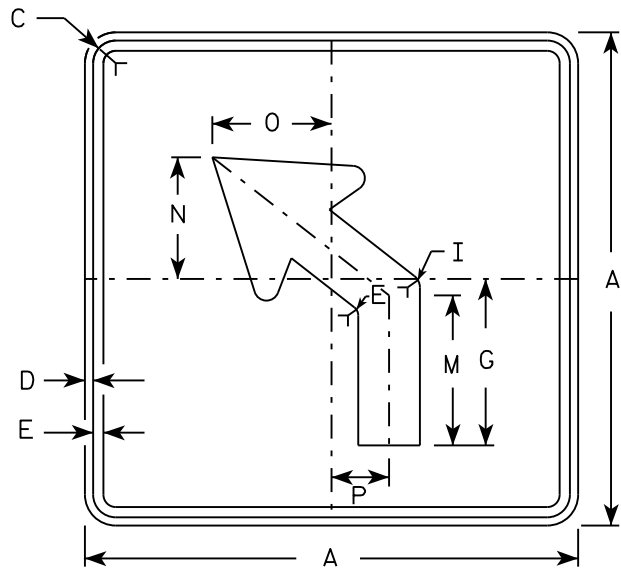
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

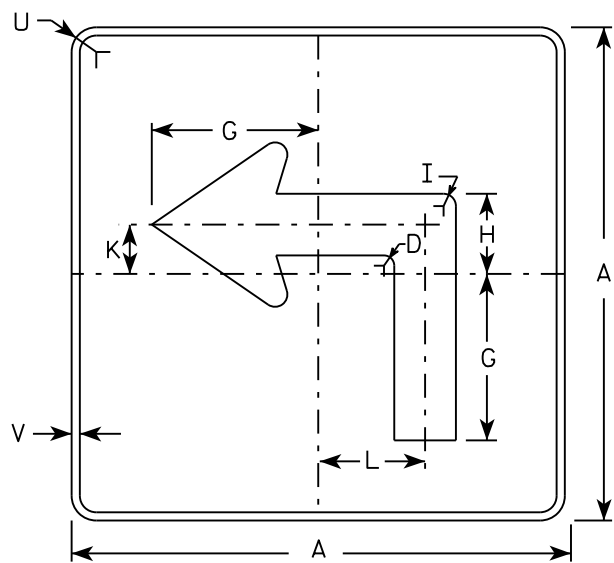
DATE 3/9/11 PLATE NO. M4-8A.2



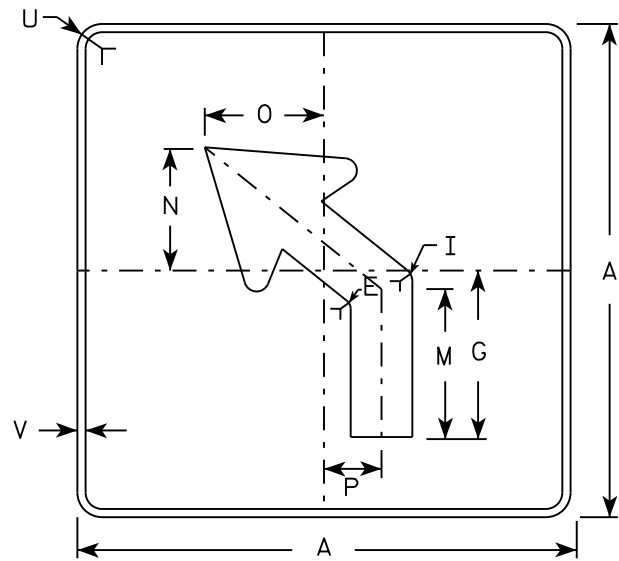
M5-1L  
MM5-1L  
M05-1L  
MP5-1L



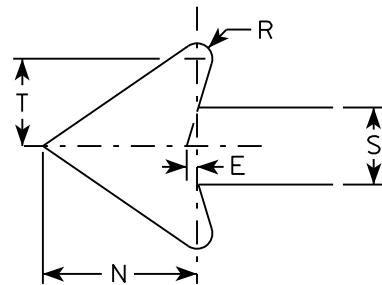
M5-2L  
MM5-2L  
M05-2L  
MP5-2L



MB5-1L  
MK5-1L  
MN5-1L  
MR5-1L



MB5-2L  
MK5-2L  
MN5-2L  
MR5-2L



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 - Type H Reflective  |
|                 | 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.

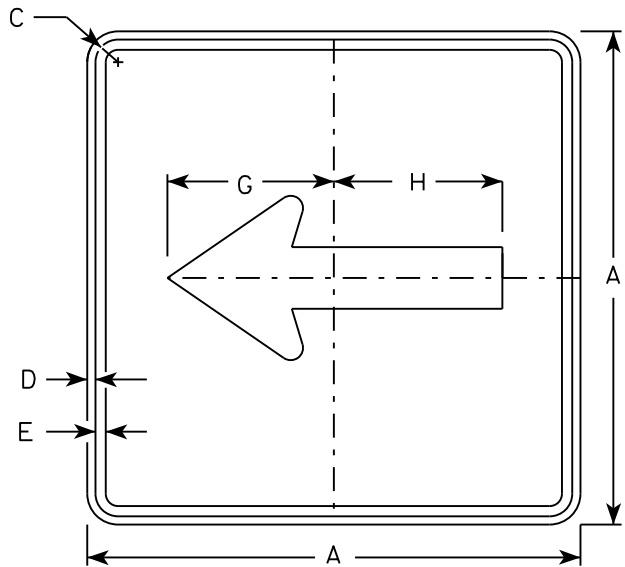
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	21		1 1/8	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3	1 1/2	1/2					3.06
3	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25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

STANDARD SIGN  
M5-1 & M5-2

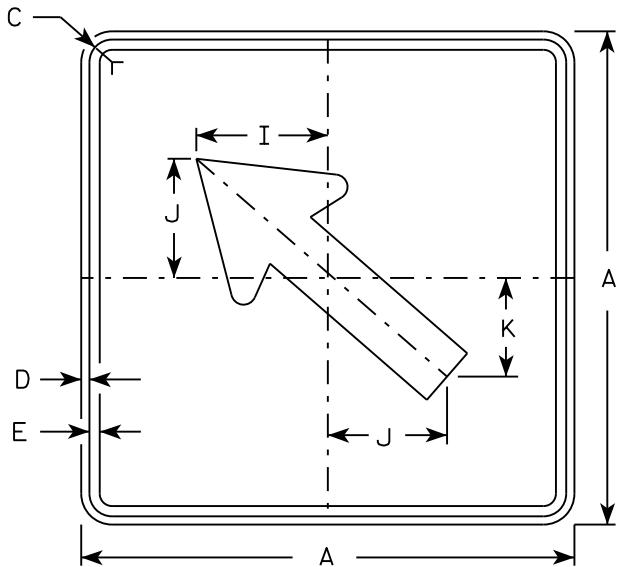
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

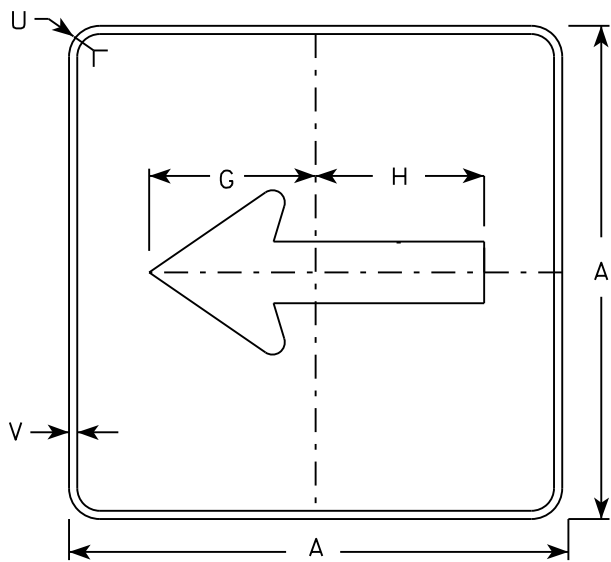
DATE 10/15/15 PLATE NO. M5-1.13



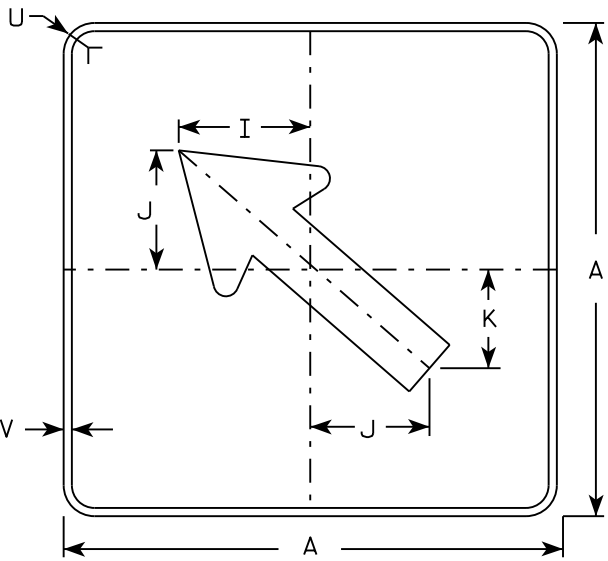
M6 - 1  
MM6 - 1  
M06 - 1  
MP6 - 1



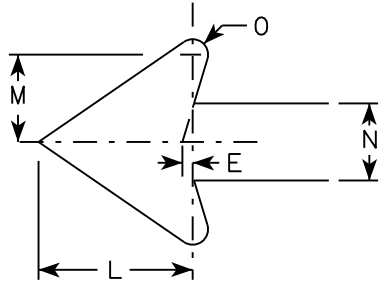
M6 - 2  
MM6 - 2  
M06 - 2  
MP6 - 2



MB6 - 1  
MK6 - 1  
MN6 - 1  
MR6 - 1



MB6 - 2  
MK6 - 2  
MN6 - 2  
MR6 - 2



NOTES

- 1. Signs are Type II - Type H except as Shown
- 2. Color:  
Background - See note 4  
Message - See note 4
- 3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 4. 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																											
2	21		1 1/8	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 1/2	1/2					3.06
3	30		1 3/8	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 7/8	1/2					6.25
4	30		1 3/8	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 7/8	1/2					6.25
5	30		1 3/8	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 7/8	1/2					6.25

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

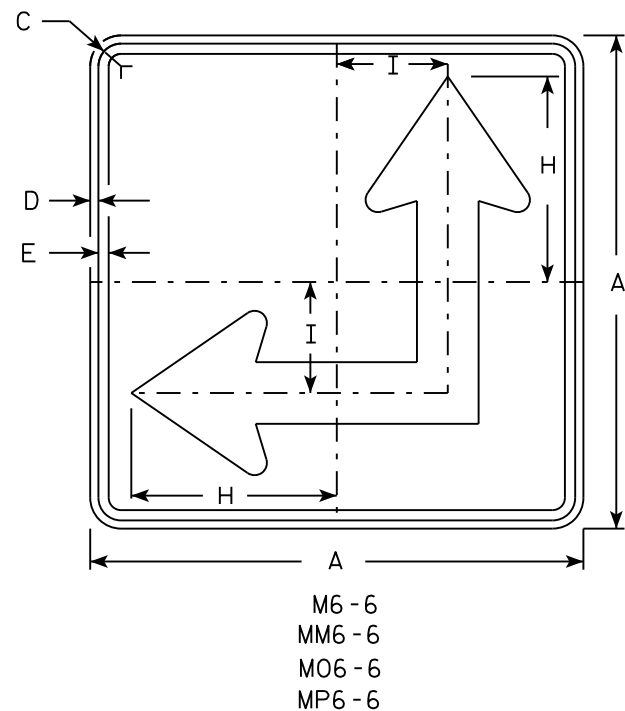
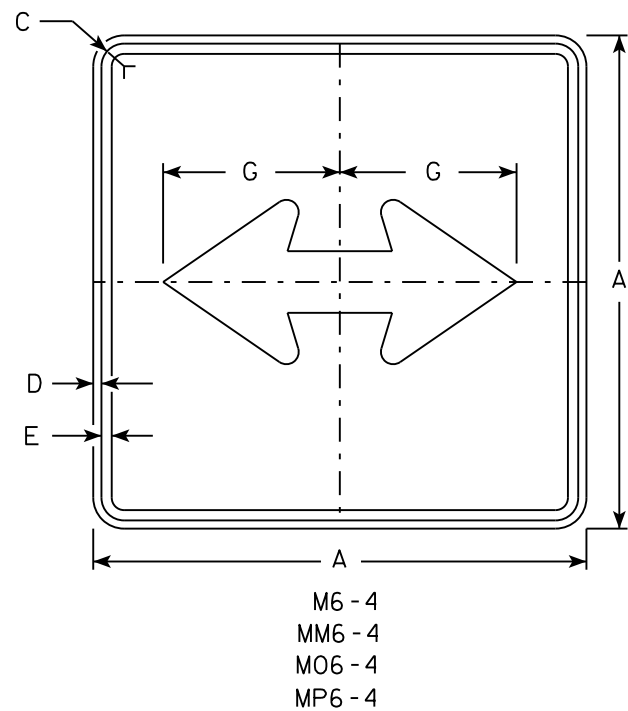
E

STANDARD SIGN  
M6 - 1 & M6 - 2  
SERIES

WISCONSIN DEPT OF TRANSPORTATION

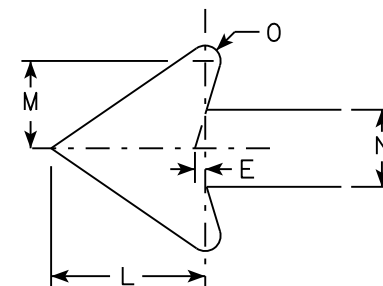
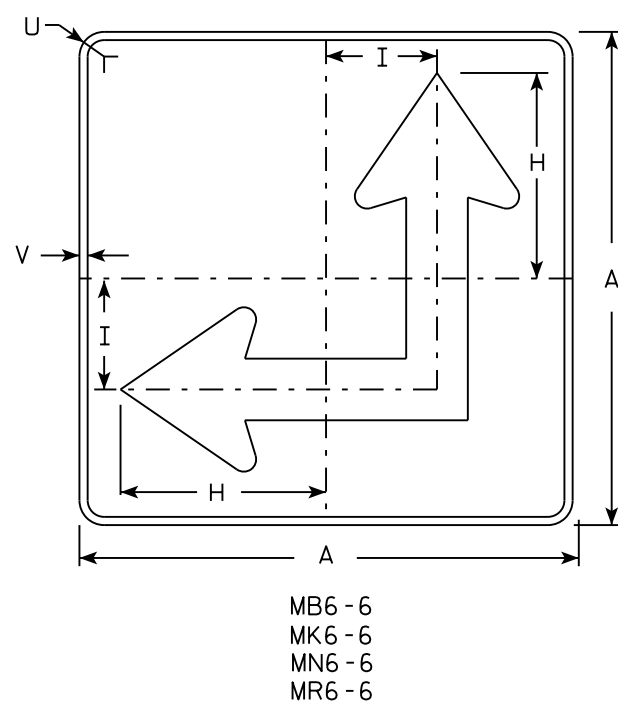
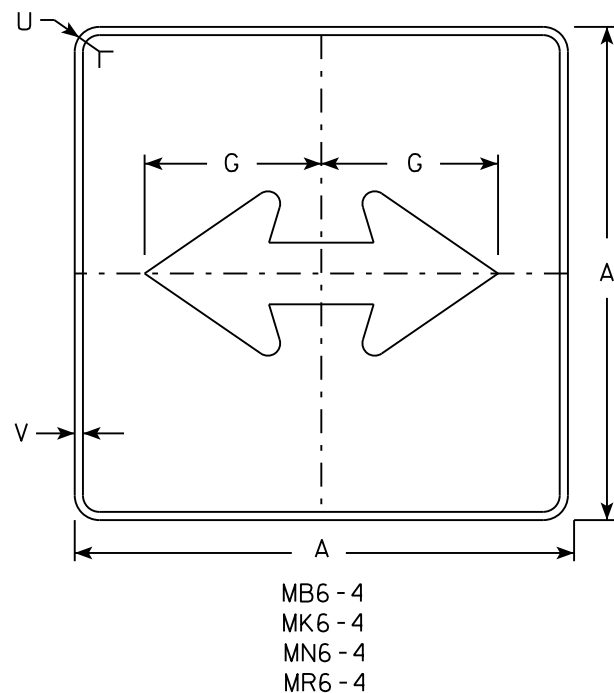
APPROVED  
*Matthew R. Rauch*  
for State Traffic Engineer

DATE 10/15/15 PLATE NO. M6-1.15



NOTES

- Signs are Type II - Type H 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.
- M6-4 and M6-6 Background - White  
Message - Black  
MB6-4 and MB6-6 Background - Blue  
Message - White  
MK6-4 and MK6-6 Background - Green  
Message - White  
MM6-4 and MM6-6 Background - White  
Message - Green  
MN6-4 and MN6-6 Background - Brown  
Message - White  
M06-4 and M06-6 Background - Orange - Type F Reflective  
Message - Black  
MP6-4 and MP6-6 Background - White  
Message - Blue  
MR6-4 and MR6-6 Background - Brown  
Message - Yellow
- M6-6R same as M6-6L except arrow points ahead and right.



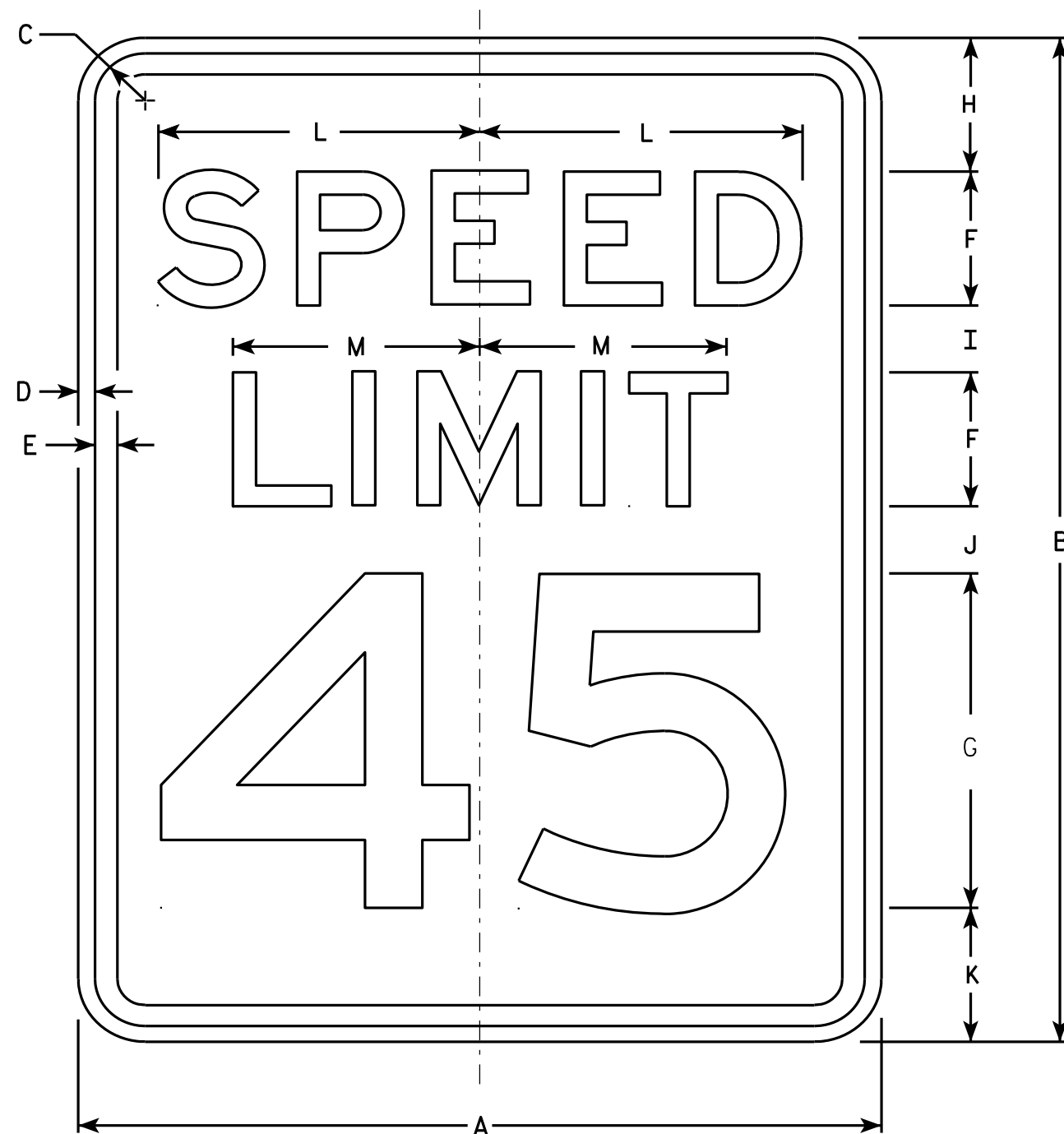
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	21		1 1/8	3/8	3/8		7 1/2	8 3/4	4 1/4			5 1/4	3	2 5/8	1/2						1 1/2	1/2					3.06
3	30		1 3/8	1/2	5/8		10 3/4	12 1/2	6 3/4			7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25
4	30		1 3/8	1/2	5/8		10 3/4	12 1/2	6 3/4			7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25
5	30		1 3/8	1/2	5/8		10 3/4	12 1/2	6 3/4			7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25

STANDARD SIGN  
M6 - 4 & M6 - 6  
SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED  
*Matthew R. Rauch*  
for State Traffic Engineer

DATE 10/15/15 PLATE NO. M6-4.10



R2-1

### NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:  
Background - White  
Message - Black
3. Message Series - E
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 and optically adjust spacing to achieve proper balance.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	18	24	1 1/8	3/8	1/2	3	8	3	2	2	3	7 1/4	5 1/2														3.0
2S	24	30	1 1/8	3/8	1/2	4	10	3	2 1/4	3 3/8	3 3/8	9 5/8	7 3/8														5.0
2M	30	36	1 3/8	1/2	5/8	5	12	5	2 1/2	2 1/2	4	12	9 1/4														7.5
3	36	48	1 3/8	1/2	5/8	6	14	6	5	5	6	14 3/8	11														12.0
4	36	48	1 3/8	1/2	5/8	6	14	6	5	5	6	14 3/8	11														12.0
5	48	60	2 1/4	3/4	1	8	20	6	4 1/2	6 3/4	6 3/4	19 1/4	14 5/8														20.0

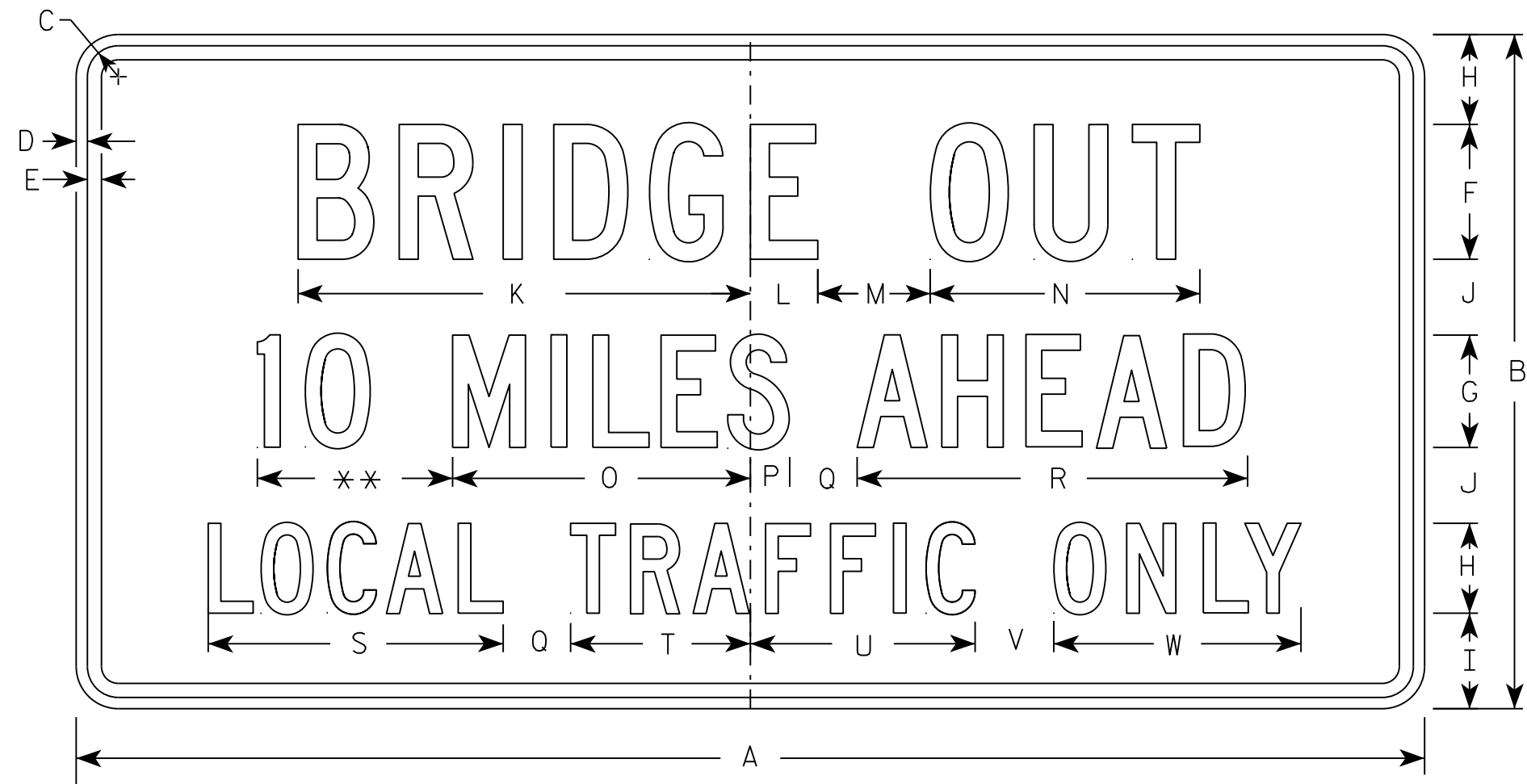
### STANDARD SIGN R2-1

WISCONSIN DEPT OF TRANSPORTATION  
APPROVED *Matthew R. Rauch*  
For State Traffic Engineer  
DATE 5/26/10 PLATE NO. R2-1.13

PROJECT NO: HWY: COUNTY: SHEET NO: E

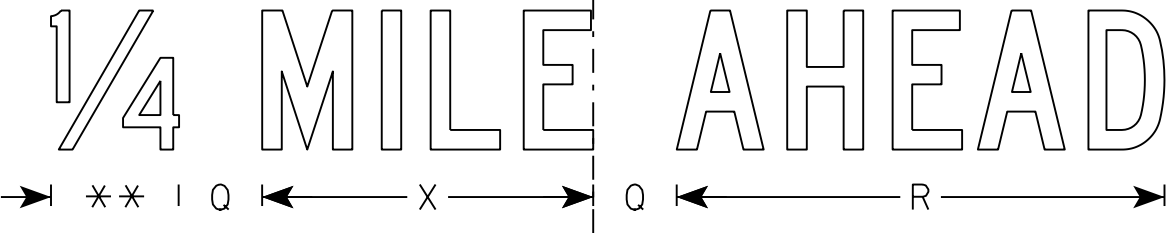
NOTES

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



\*\* See Note 5

R11-3B



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 3⁄8	1⁄2	5⁄8	4	3	2 1⁄2	2	2	13 1⁄4	2 1⁄4	3	8	8	1 1⁄2	2	10 3⁄4	8 3⁄8	4 3⁄4	6 1⁄2	2	6 3⁄4	7 1⁄8			4.5
2S	60	30	1 3⁄8	1⁄2	5⁄8	6	5	4	4 1⁄4	3 3⁄8	20 1⁄8	3	5	12	13 1⁄4	1 3⁄4	3	17 3⁄8	13 1⁄8	8	10	3 1⁄2	11	11 7⁄8			12.5
2M	60	30	1 3⁄8	1⁄2	5⁄8	6	5	4	4 1⁄4	3 3⁄8	20 1⁄8	3	5	12	13 1⁄4	1 3⁄4	3	17 3⁄8	13 1⁄8	8	10	3 1⁄2	11	11 7⁄8			12.5
3																											
4																											
5																											

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

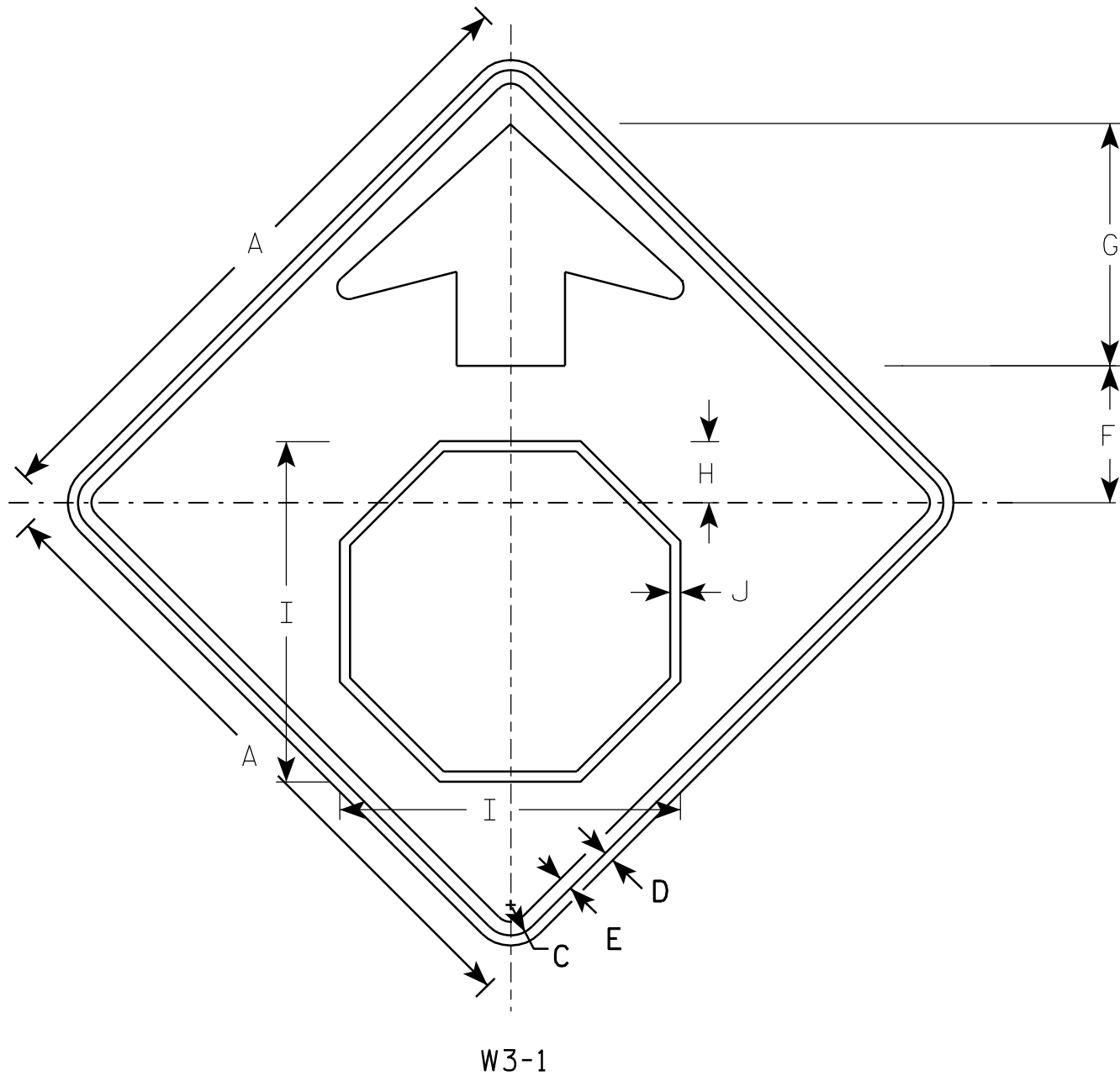
E

STANDARD SIGN  
R11-3B

WISCONSIN DEPT OF TRANSPORTATION

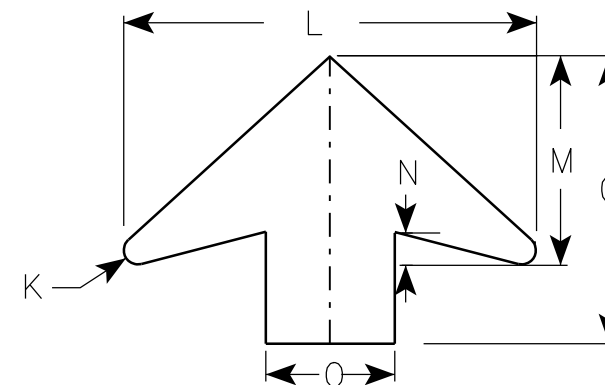
APPROVED  
*Matthew R. Rauch*  
For State Traffic Engineer

DATE 3/21/17 PLATE NO. R11-3B.3



### NOTES

1. All Signs Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:  
Background - YELLOW  
Arrow & Border - BLACK  
Stop Symbol - WHITE BORDER ON RED BACKGROUND



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	30		1 3/8	1/2	5/8	6 1/4	11 1/4	2 7/8	15 3/4	1/2	1/2	16	8	1 1/4	5												6.25
2S	36		1 5/8	5/8	3/4	7 1/2	13 1/2	3 1/2	19	5/8	5/8	19 1/4	9 3/4	1 5/8	6												9.0
2M	36		1 5/8	5/8	3/4	7 1/2	13 1/2	3 1/2	19	5/8	5/8	19 1/4	9 3/4	1 5/8	6												9.0
3	36		1 5/8	5/8	3/4	7 1/2	13 1/2	3 1/2	19	5/8	5/8	19 1/4	9 3/4	1 5/8	6												9.0
4	48		2 1/4	3/4	1	10	17 7/8	4 1/2	25 1/8	3/4	7/8	25 5/8	13	2	8												16.0
5	48		2 1/4	3/4	1	10	17 7/8	4 1/2	25 1/8	3/4	7/8	25 5/8	13	2	8												16.0

PROJECT NO:

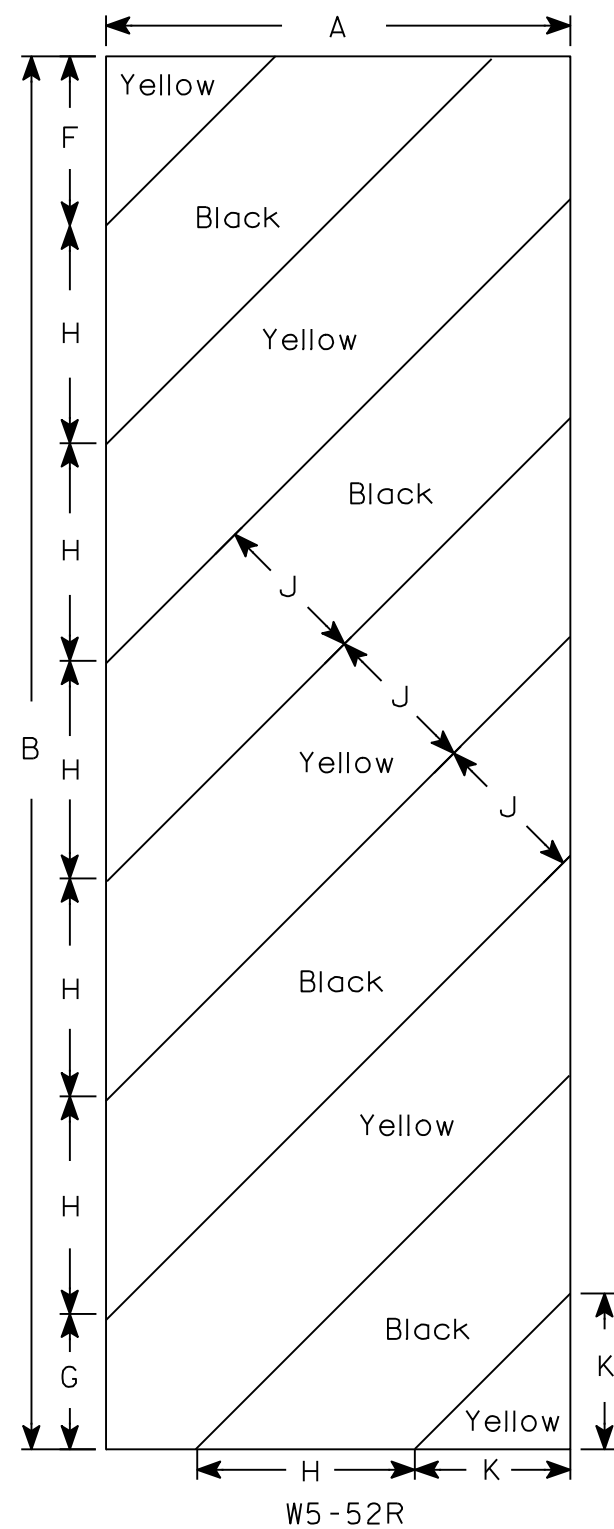
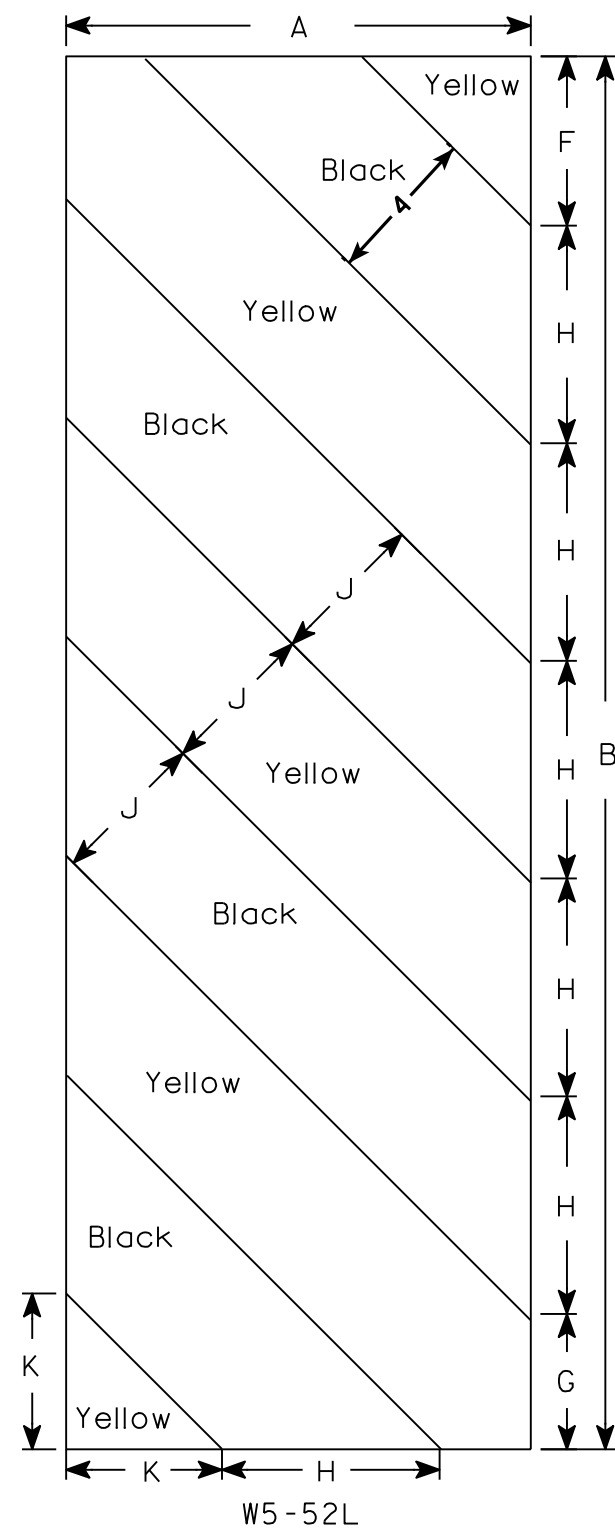
STANDARD SIGN  
W3-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer  
DATE 6/7/10 PLATE NO. W3-1.12

SHEET NO:

E



NOTES

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

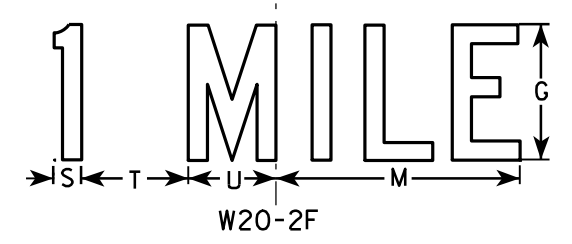
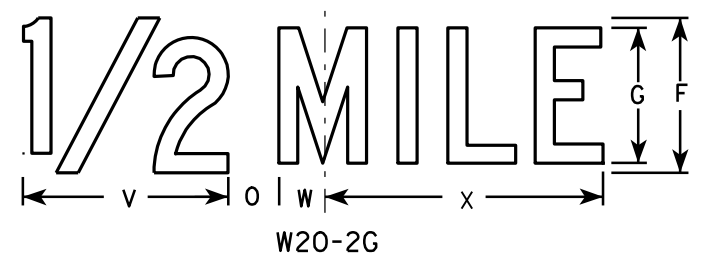
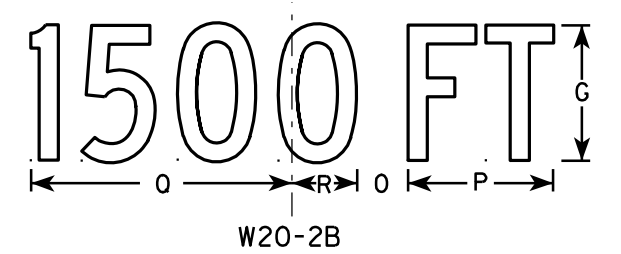
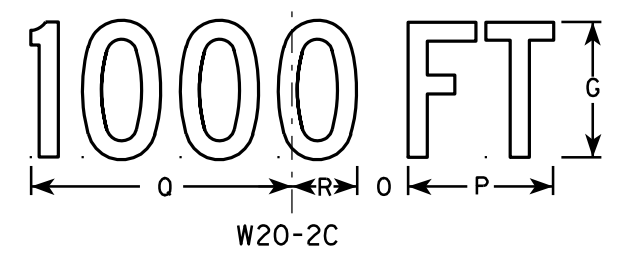
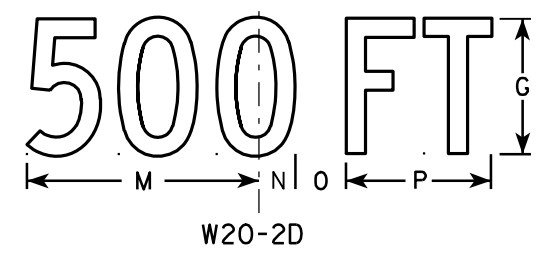
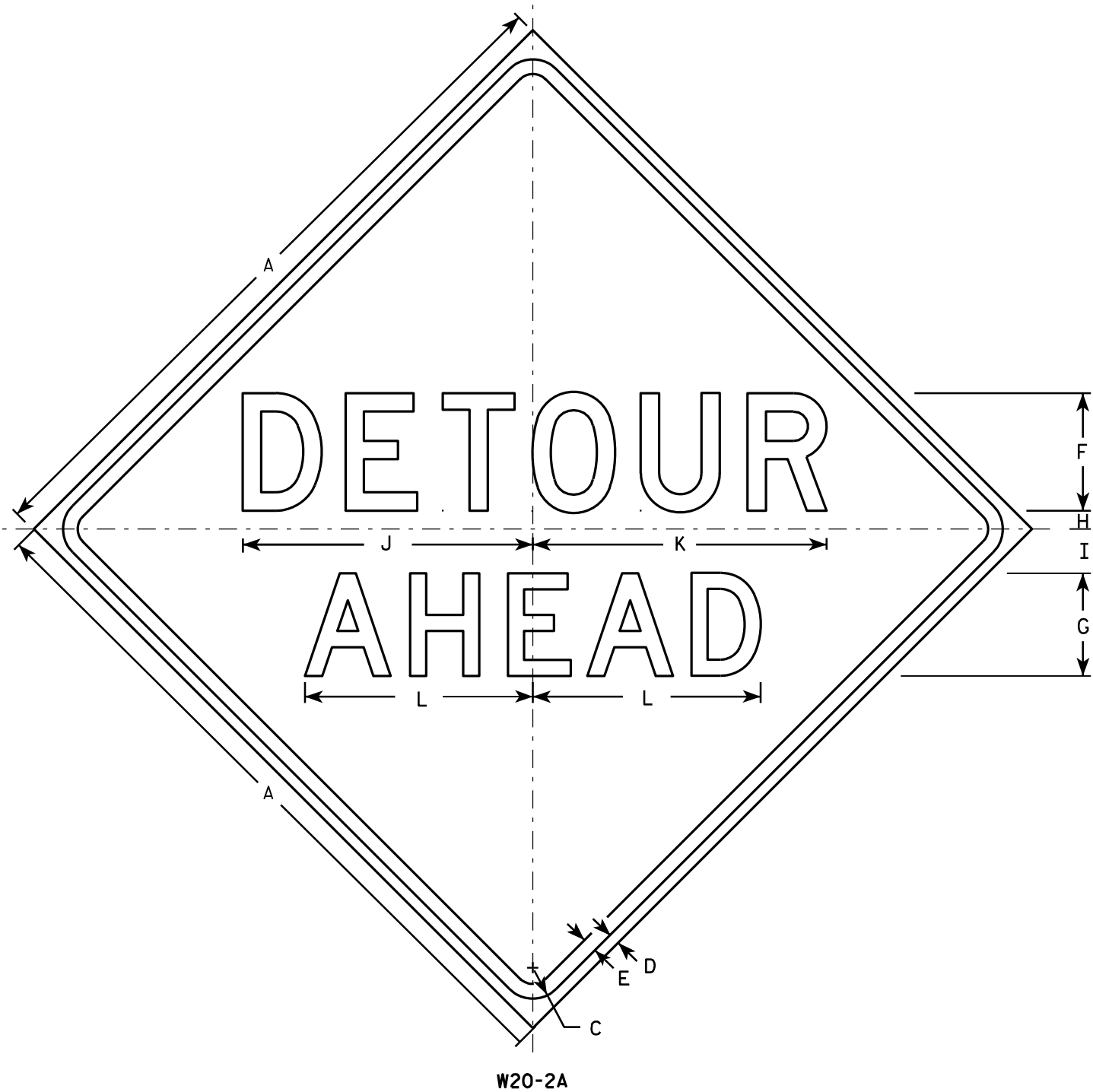
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	12	36				4 3⁄8	3 1⁄2	5 5⁄8	45°	4	4																3.0
2M	12	36				4 3⁄8	3 1⁄2	5 5⁄8	45°	4	4																3.0
3	18	54				6	5 1⁄2	8 1⁄2	45°	6	6 9⁄16																6.75
4																											
5																											

STANDARD SIGN  
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

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



NOTES

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

7

7

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

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

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 3/18/11 PLATE NO. W20-2.6

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E

TRAFFIC DATA

ADT = 1,500 (2018)  
2,100 (2038)  
RDS = 40 M.P.H.

DESIGN DATA

STRUCTURE IS DESIGNED FOR FUTURE WEARING  
SURFACE OF 20#/SQ. FT.

LIVE LOAD:

DESIGN LOADING \_\_\_\_\_ HL-93  
INVENTORY RATING FACTOR \_\_\_\_\_ RF = 1.10  
OPERATING RATING FACTOR \_\_\_\_\_ RF = 1.59  
WISCONSIN STANDARD PERMIT  
VEHICLE (Wis-SPV) \_\_\_\_\_ 250 KIPS

MATERIAL PROPERTIES:

CONCRETE MASONRY  
DECK \_\_\_\_\_  $f'_c$  = 4,000 P.S.I.  
ALL OTHER \_\_\_\_\_  $f'_c$  = 3,500 P.S.I.  
36W" PRESTRESSED  
GIRDERS CONCRETE MASONRY \_\_\_\_\_  $f'_c$  = 8,000 P.S.I.  
HIGH STRENGTH BAR STEEL  
REINFORCEMENT, GRADE 60 \_\_\_\_\_  $f_y$  = 60,000 P.S.I.  
PRESTRESSED STRANDS - 0.6" DIA.  
WITH ULTIMATE TENSILE STRENGTH \_\_\_\_\_  $f_y$  = 270,000 P.S.I.

HYDRAULIC DATA

100 YEAR FREQUENCY

$Q_{100}$  \_\_\_\_\_ 2,300 C.F.S.  
VELOCITY \_\_\_\_\_ 7.17 F.P.S.  
HIGH WATER \_\_\_\_\_ EL. 641.69 (100 YEAR)  
WATERWAY AREA \_\_\_\_\_ 321 S.F.  
DRAINAGE AREA \_\_\_\_\_ 50.5 SQ. MILES  
ROADWAY OVERTOPPING = N/A  
SCOUR CRITICAL CODE = 8

2 YEAR FREQUENCY

$Q_2$  \_\_\_\_\_ 564 C.F.S.  
VELOCITY \_\_\_\_\_ 4.29 F.P.S.  
HIGH WATER \_\_\_\_\_ EL. 638.01 (2 YEAR)

FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON HP 10 X 42 STEEL PILING.  
PILING AT SOUTH ABUTMENT SHALL BE PREBORED A MINIMUM OF  
10' BELOW BOTTOM OF ABUTMENT. IF ROCK IS ENCOUNTERED  
PRE-BORE A MINIMUM OF 4.5' INTO ROCK. PILING AT NORTH  
ABUTMENT SHALL BE FITTED WITH PILE POINTS AND DRIVEN TO A  
REQUIRED DRIVING RESISTANCE OF 180 TONS\*\* PER PILE.  
SOUTH ABUTMENT ESTIMATED LENGTH = 15'  
NORTH ABUTMENT ESTIMATED LENGTH = 20'

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

LIST OF DRAWINGS

1. GENERAL PLAN
2. CROSS SECTION & QUANTITIES
3. SUBSURFACE EXPLORATION
4. SOUTH ABUTMENT
5. SOUTH ABUTMENT DETAILS
6. NORTH ABUTMENT
7. NORTH ABUTMENT DETAILS
8. 36W" PRESTRESSED GIRDER DETAILS
9. STEEL DIAPHRAGM
10. SUPERSTRUCTURE
11. SUPERSTRUCTURE DETAILS
12. RAILING TUBULAR TYPE 'M'

CONSULTANT CONTACT

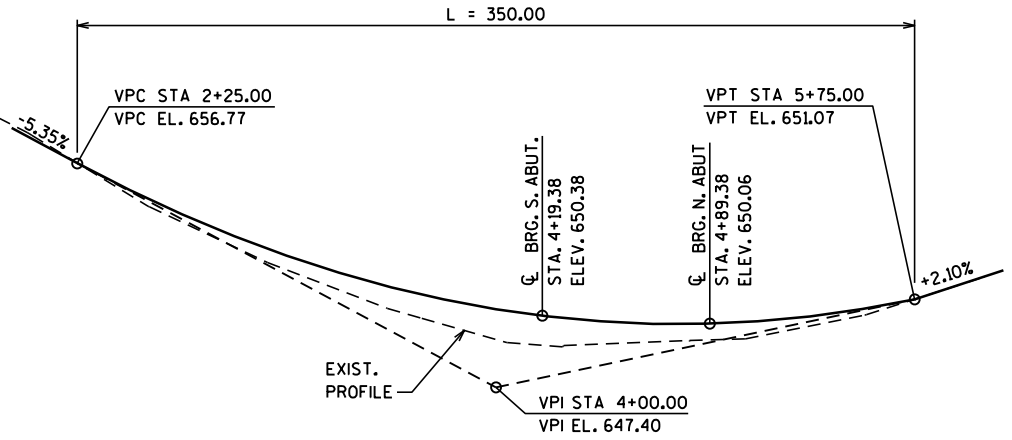
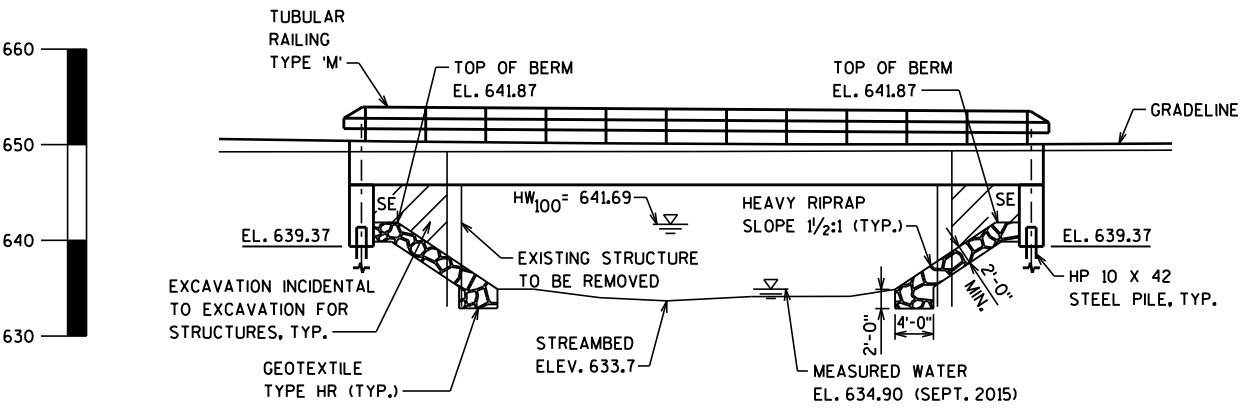
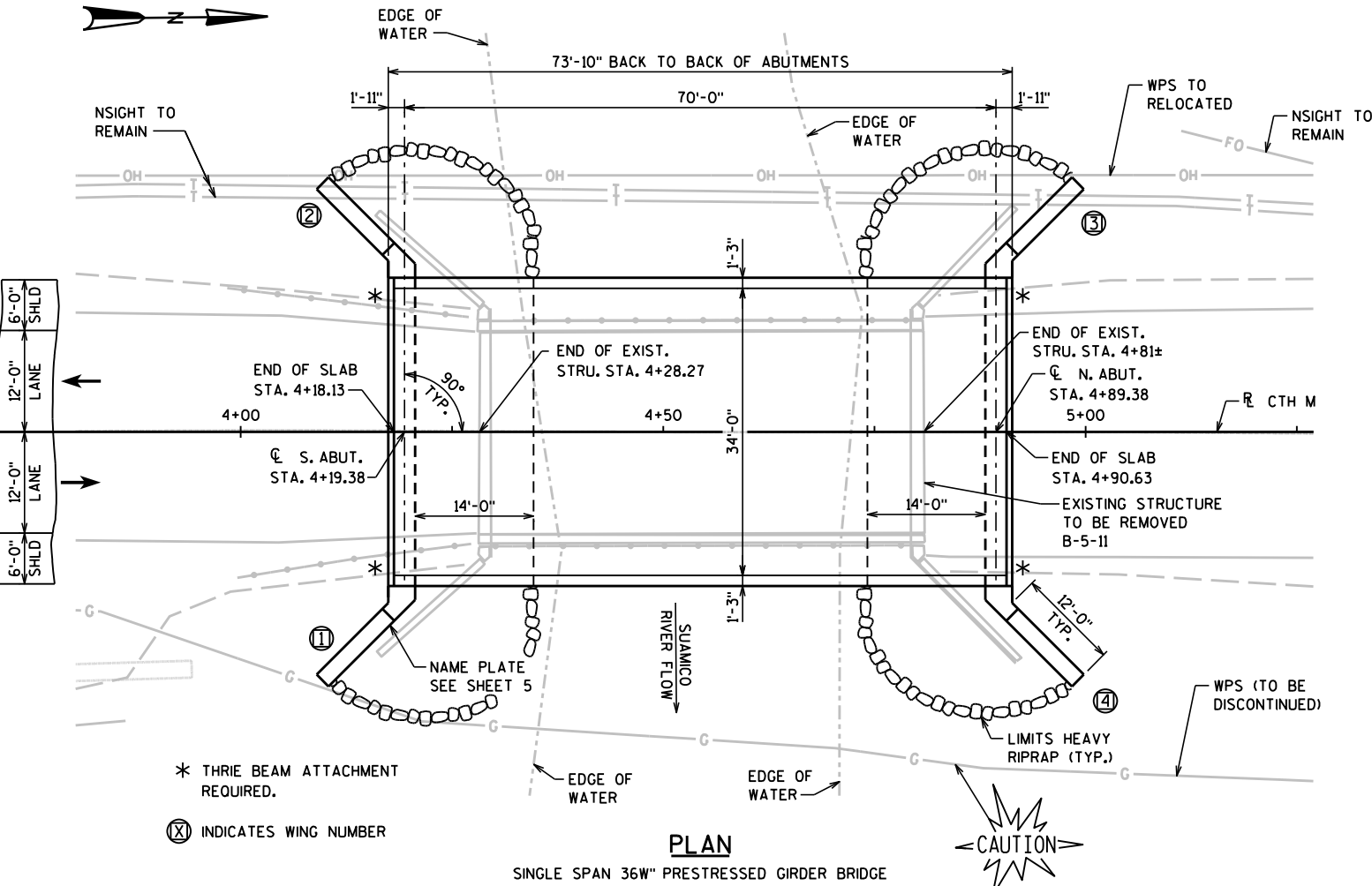
KRISTOFER OLSON  
OMNI ASSOCIATES, INC.  
(920) 735-6900

BRIDGE OFFICE CONTACT

AARON BONK  
(608) 261-0261



5/31/20



NO.	DATE	REVISION	BY
ORIGINAL PLANS PREPARED BY			
<b>Omni</b> ASSOCIATES			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
ACCEPTED	SDR	08/06/20	DATE
CHIEF STRUCTURES DESIGN ENGINEER			
STRUCTURE B-5-429			
CTH M OVER SUAMICO RIVER			
COUNTY	BROWN	TOWN	SUAMICO
DESIGN SPEC.	AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS		LOAD HL-93
DESIGNED BY	BRE	CK'D. KRO	DRAWN BY NRT
GENERAL PLAN			SHEET 1 OF 12

DRAWINGS SHALL NOT BE SCALED. BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

THE SLOPE OF FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH HEAVY RIPRAP AND GEOTEXTILE TO THE EXTENT SHOWN ON SHEET 1 AND IN THE ABUTMENT DETAILS.

THIS BRIDGE WILL REPLACE THE EXISTING SINGLE SPAN STEEL GIRDER BRIDGE SUPPORTED ON CONCRETE RETAINING ABUTMENTS. THE STRUCTURE WAS BUILT IN 1949.

ELASTOMERIC BEARING PADS NEED NOT BE INDIVIDUALLY MOLDED PROVIDED THE CUT EDGES ARE SMOOTH AND TRUE.

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

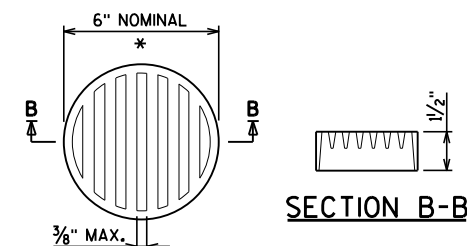
THE EXISTING GROUND LINE SHALL BE USED AS THE UPPER LIMITS OF EXCAVATION.

THE HAUNCH CONCRETE QUANTITY IS BASED ON THE AVERAGE HAUNCH SHOWN ON THE PRESTRESSED GIRDER DETAIL SHEET, WHICH IS THE MAXIMUM HAUNCH QUANTITY FOR WHICH THE CONTRACTOR WILL BE PAID.

☆ PROTECTIVE SURFACE TREATMENT SHALL BE APPLIED TO THE ENTIRE TOP, SIDES, EXTERIOR 1'-0" OF THE UNDERSIDE OF THE DECK, TOP AND EXTERIOR EXPOSED FACE OF WINGS, AND THE END 1'-0" OF THE FRONT FACE OF ABUTMENT.

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

(A15) PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SOUTH SLOPES.  
ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. SEE SHEET 2 FOR  
DETAIL.

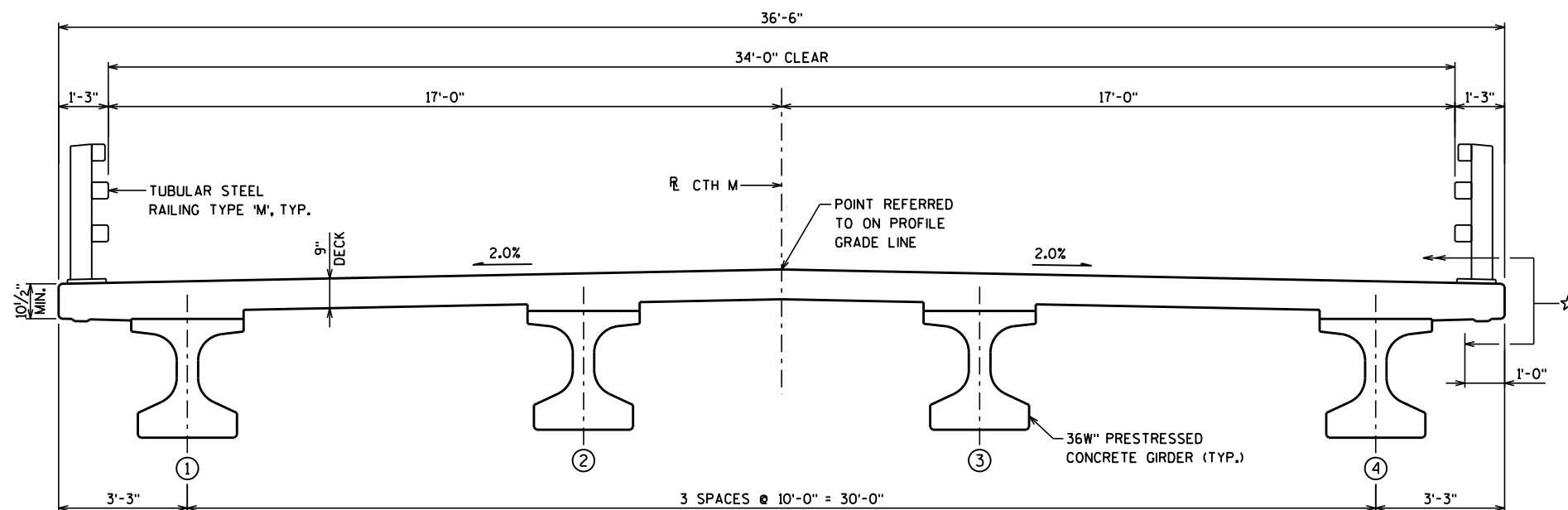


\* DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

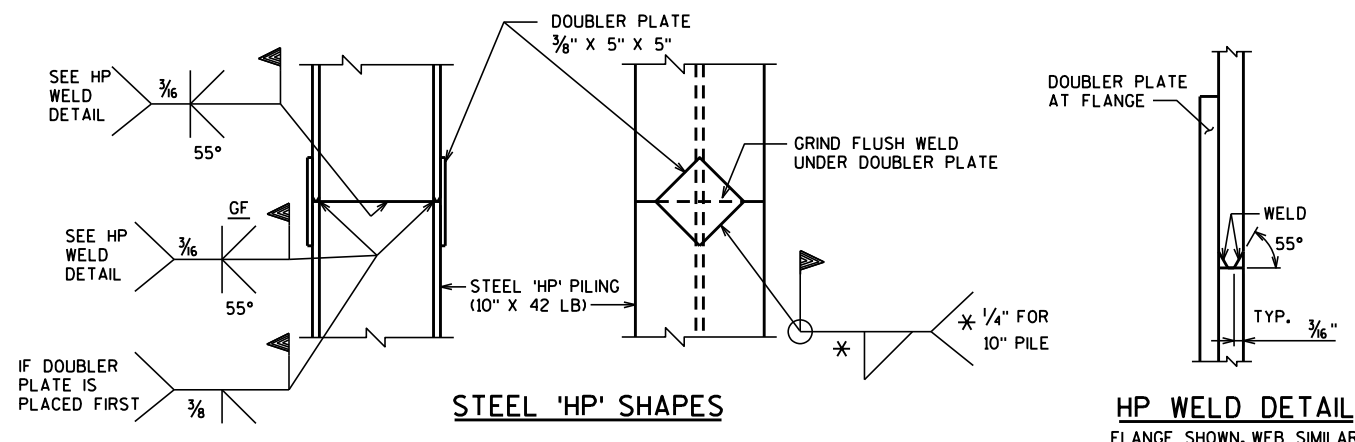
THE RODENT SCREEN, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

THE RODENT SCREEN 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 SCREEN TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SCREEN SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH SHEET METAL SCREWS.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-429			
DRAWN BY		NRT	PLANS CK'D. BRE
CROSS SECTION & QUANTITIES		SHEET 2 OF 12	



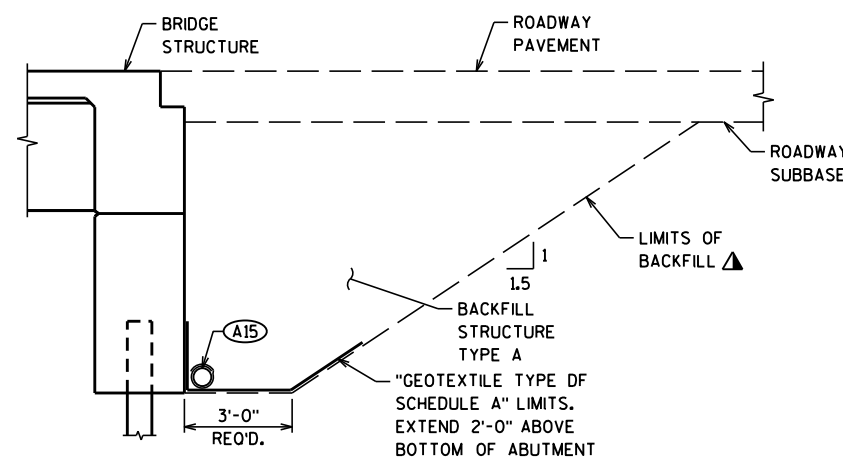
CROSS SECTION THRU ROADWAY



NO.	STATION	DESCRIPTION	ELEV.
BM2	5+30, 30' LT.	60D NAIL SET IN PP#2520-18E23	647.55
BM3	1+56, 30' LT.	60D NAIL SET IN PP#2520-18E25	662.31

## TOTAL ESTIMATED QUANTITIES

ITEM NO.	BID ITEMS	UNIT	SUPER.	SOUTH ABUT.	NORTH ABUT.	TOTALS
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STA 4+54	LS	-----	-----	-----	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-5-429	LS	-----	-----	-----	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	-----	330	310	640
502.0100	CONCRETE MASONRY BRIDGES	CY	110	51	49	210
502.3200	PROTECTIVE SURFACE TREATMENT	SY	390	-----	-----	390
503.0137	PRESTRESSED GIRDER TYPE 136W-INCH	LF	284	-----	-----	284
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	-----	2,880	2,850	5,730
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	17,760	1,950	1,930	21,640
506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	8	-----	-----	8
506.4000	STEEL DIAPHRAGMS B-5-429	EACH	3	-----	-----	3
513.4061	RAILING TUBULAR TYPE M	LF	150	-----	-----	150
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	-----	12	12	24
550.0020	PRE-BORING ROCK OR CONSOLIDATED MATERIALS	LF	-----	90	-----	90
550.0500	PILE POINTS	EACH	-----	-----	9	9
550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	-----	135	180	315
606.0300	RIPRAP HEAVY	CY	-----	100	100	200
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	-----	75	75	150
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	-----	62	62	124
645.0120	GEOTEXTILE TYPE HR	SY	-----	151	151	302
SPV.0105	SUPERSTRUCTURE 3/4" DRIP EDGE B-5-429	LS	1	-----	-----	1
	NON-BID ITEMS					
	FILLER	SIZE	-----	-----	-----	1/2" & 3/4"



TYPICAL SECTION THRU ABUTMENT

STATE PROJECT NUMBER

9267-04-71

MATERIAL SYMBOLS

ASPHALT

CONCRETE

SAND

BOULDERS OR COBBLES

SHALE

TOPSOIL

FILL

CLAY

LIMESTONE

SANDSTONE

PEAT

GRAVEL

SILT

BEDROCK (UNKNOWN)

IGNEOUS/META

LEGEND OF BORING

BORING #/ELEV. STA./OFFSET

ST

0.25

17

F-C

COBBLE OR BOULDER

WEATHERED LIMESTONE

CORE RUN #1 - 24'-29'

REC=80%, ROD=72%

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

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

GROUND WATER ELEVATION

▽ AT TIME OF DRILLING

▽ END OF DRILLING

▽ AFTER DRILLING

ABBREVIATIONS

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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-429			
DRAWN BY		NRT	PLANS CK'D. BRE
SUBSURFACE EXPLORATION		SHEET 3 OF 12	

The drawing includes a plan view of Structure B-5-429, showing existing and proposed structures, water edges, and the Suamico River flow. Boring locations B01 and B02 are marked. A table provides boring data:

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
B01	2/11/2016	615,296	72,956
B02	2/12/2016	615,193	72,953

Additional text: BORINGS COMPLETED BY: SUBSURFACE EXPLORATION SERVICES, LLC. REPORT COMPLETED BY: OMNI ASSOCIATES, INC. ALL COORDINATES REFERENCED TO WCCS NAD 83(91) BROWN COUNTY.

The boring logs show soil profiles for Boring B02 (Elev. 650.5) and Boring B01 (Elev. 649.8). Boring B02 log details: 50/0.4 SP, 15 SP, 6 SP-SM, 17 SP-SM, 3 SP, 12 SM, 66 SP, DOLOMITE, ROD=51%, END OF BORING B02 ELEV. 628.5. Boring B01 log details: 34 SP, 10 SP-SM, 12 SP-SM, 12 SM, 20 CL, 16 CL, 17 ML, 17 ML, 27 SM, 10 NO RECOVERY, 50/0.4 CL, DOLOMITE, ROD=63%, SHALE, ROD=63%, DOLOMITE, ROD=63%, CLAYEY SHALE, ROD=63%, END OF BORING B01 ELEV. 618.6. Groundwater elevations are indicated at various depths.

FILE NAME : F:\TR\JOBS\E2165A15\Sheets\B-5-429 03 sub explr.dgn

PLOT BY : BREpley

PLOT DATE: 5/31/2020

5:39:22 PM

(A06) ABUTMENTS TO BE SUPPORTED ON HP 10 X 42 STEEL PILING. PILING AT SOUTH ABUTMENT SHALL BE PREBORED A MINIMUM OF 10' BELOW BOTTOM OF ABUTMENT. IF ROCK IS ENCOUNTERED PRE-BORE A MINIMUM OF 4.5' INTO ROCK. SOUTH ABUTMENT ESTIMATED LENGTH = 15'

- (A15) PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SOUTH SLOPES. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. SEE SHEET 2 FOR DETAIL.

- (A17) 1/2" FILLER INCLUDED IN WING LENGTH, SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER, (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.) EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.

- (A18) 3/4" CORK FILLER UP VERT. BEAM SEAT FACES THAT RUN PARALLEL WITH GIRDER.

- (A19) 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE.

- STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING BEARING PADS AND/OR SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".

SEE SHEET 5 FOR WINGWALL DETAILS, BILL OF BARS AND BAR BENDING DIAGRAM. SEE SHEET 2 FOR PILE SPLICE DETAIL.



ELEVATION  
(LOOKING SOUTH)



NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-429			
DRAWN BY		NRT	PLANS CK'D. BRE
SOUTH ABUTMENT		SHEET 4 OF 12	

BILL OF BARS

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	SERIES	LOCATION
A501		82	7'-8"	X		BODY - VERTICAL
A502		41	9'-7"	X		BODY - VERTICAL TOP
A403		15	3'-11"	X		BODY - VERTICAL TOP
A404		33	3'-7"	X		BODY - TIE BARS
A405		6	8'-6"			BODY - HORIZONTAL TOP
A506		9	39'-8"			BODY - HORIZONTAL F.F.
A807		18	26'-9"	X		BODY - HORIZONTAL B.F.
A408	X	60	10'-11"	X	△	WINGS - VERTICAL
A409	X	12	12'-9"	X		WINGS - VERTICAL
A510	X	18	15'-8"	X		WINGS - HORIZONTAL F.F.
A811	X	18	17'-2"	X		WINGS - HORIZONTAL B.F.
A412	X	6	12'-10"	X		WINGS - VERTICAL
A413	X	4	14'-1"			WINGS - HORIZONTAL
A414	X	4	12'-6"			WINGS - HORIZONTAL
A415	X	4	10'-2"			WINGS - HORIZONTAL
A416	X	4	7'-11"			WINGS - HORIZONTAL
A417	X	4	5'-8"			WINGS - HORIZONTAL
A418	X	4	14'-8"	X		WINGS - HORIZONTAL, TOP
A419	X	12	7'-11"	X		WINGS - HORIZONTAL

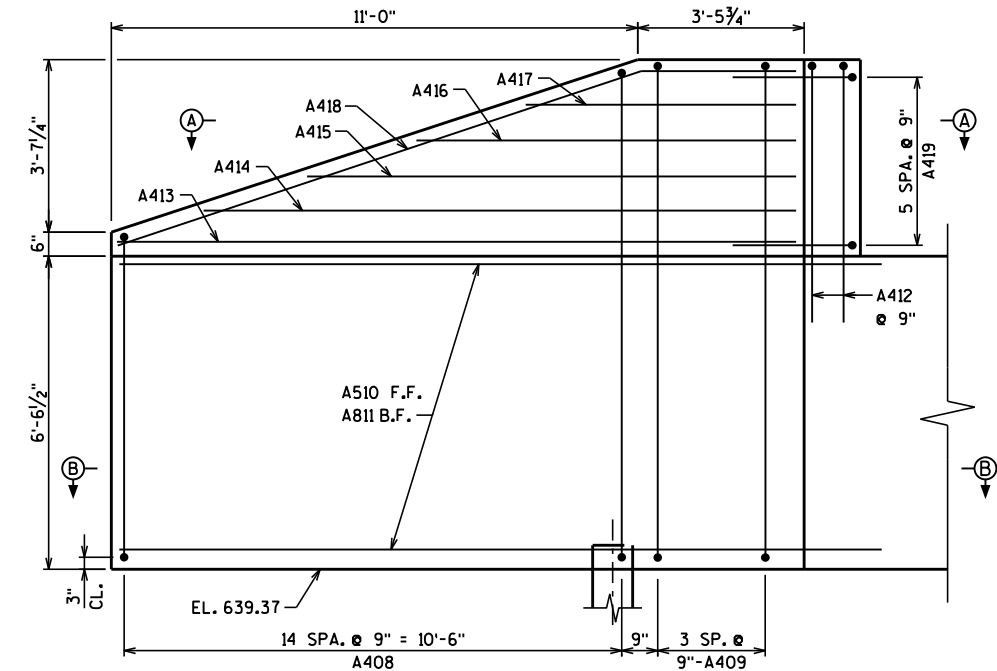
△ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.

BAR SERIES

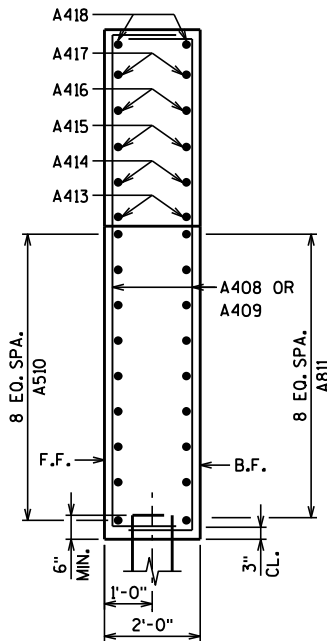
BAR NO.	NO. REQ'D.	LENGTH
A408	2 SERIES OF 15	9'-2" TO 12'-8"

NOTES

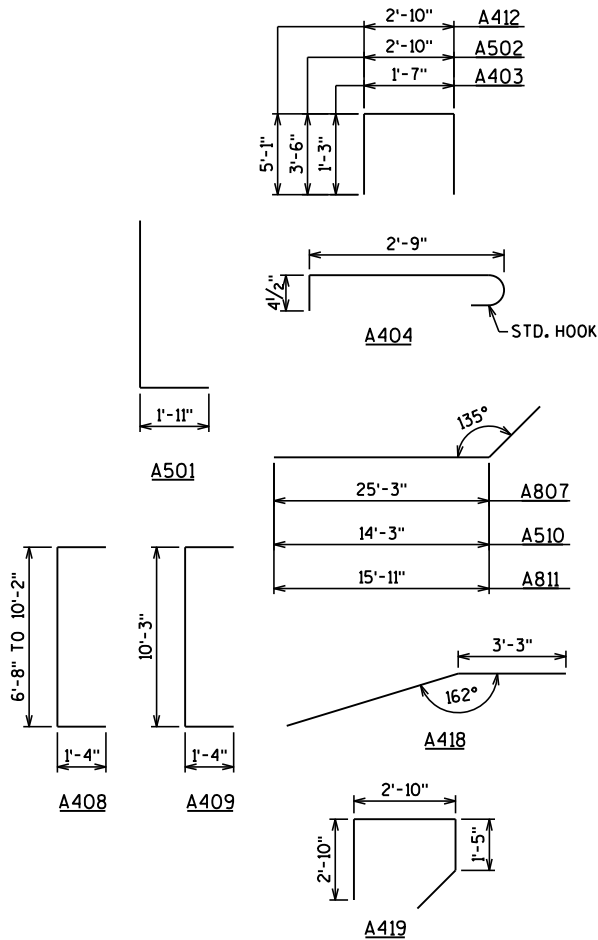
- (A17) 1/2" FILLER INCLUDED IN WING LENGTH, SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.) EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.



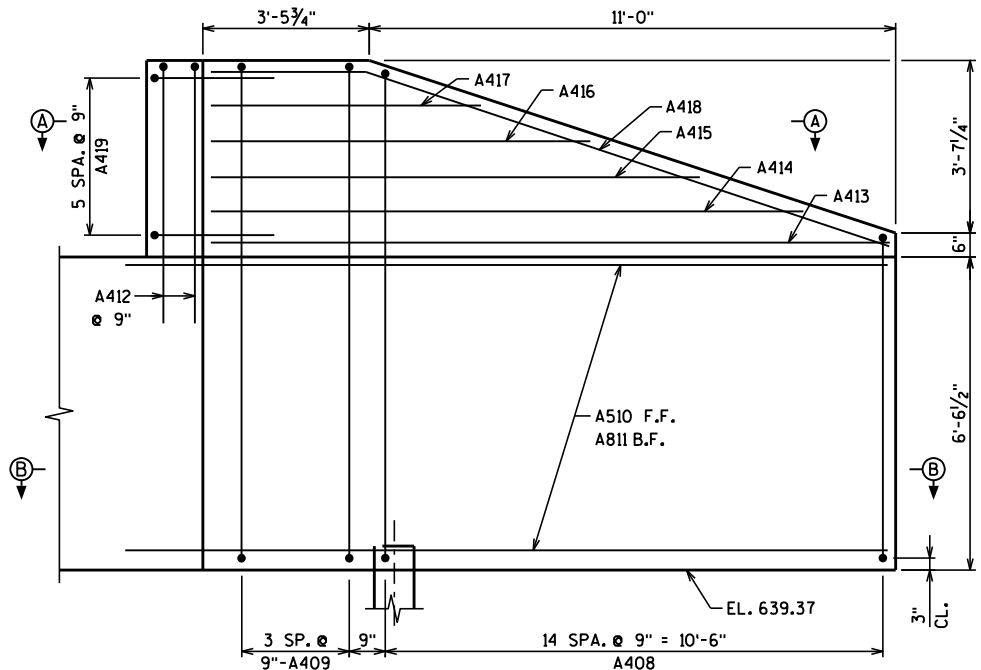
WING 1 ELEVATION



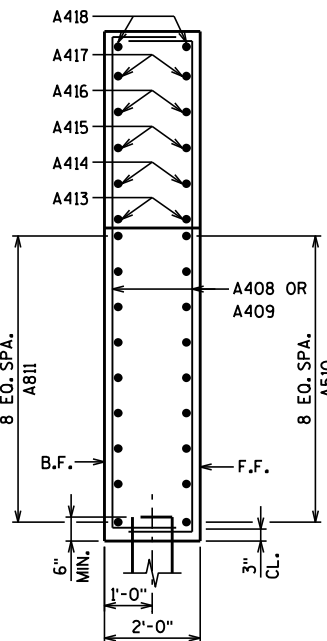
WING 1 SECTION



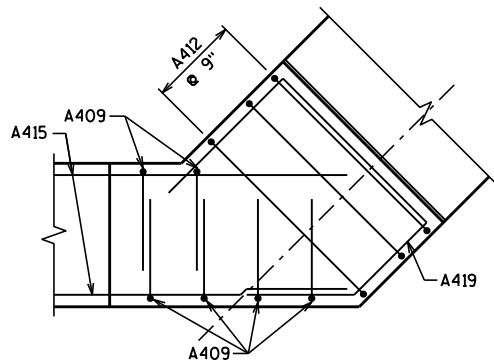
BAR BENDING DIAGRAMS



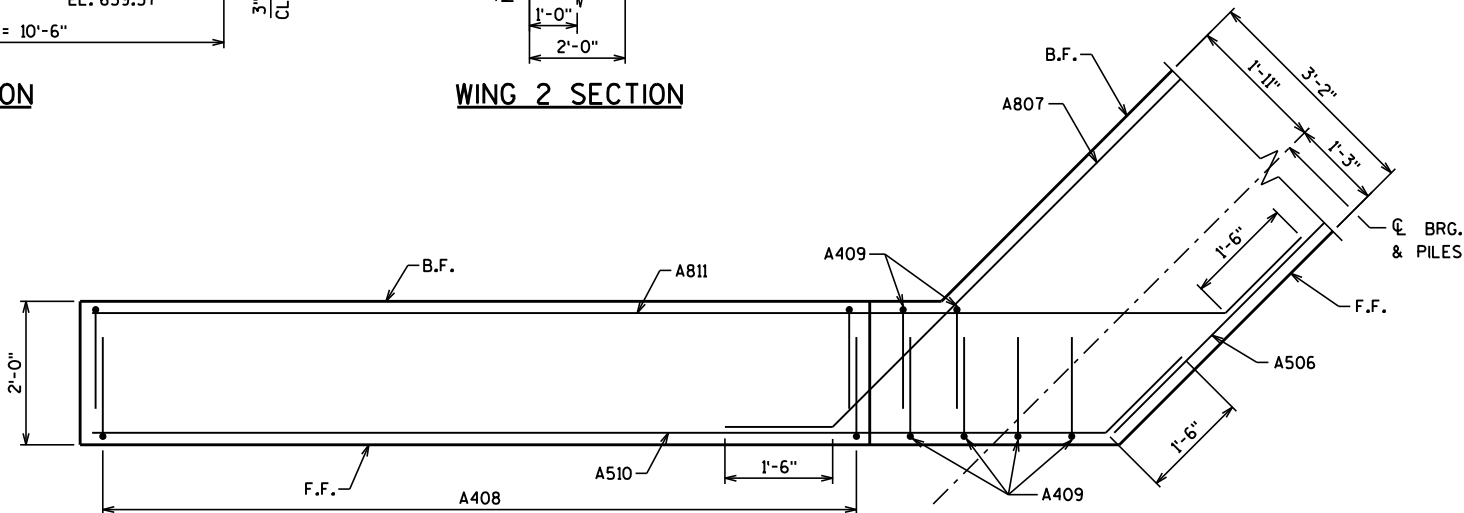
WING 2 ELEVATION



WING 2 SECTION



SECTION A-A  
TYPICAL BOTH WINGS



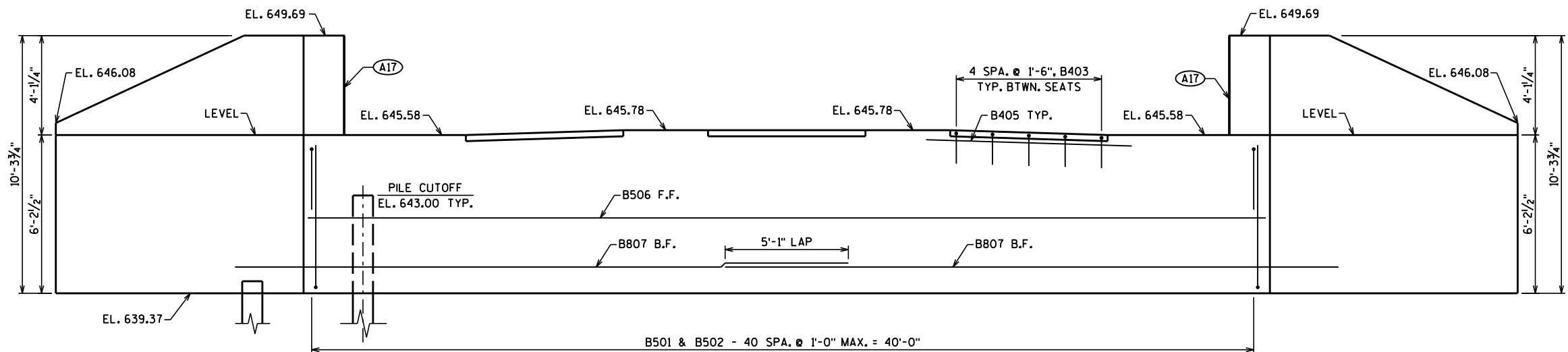
SECTION B-B  
TYPICAL BOTH WINGS

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-429			
DRAWN BY		NRT	PLANS CK'D. BRE
SOUTH ABUTMENT DETAILS		SHEET 5 OF 12	

**LEGEND**

- (A06) ABUTMENT TO BE SUPPORTED ON HP 10 X 42 STEEL PILING. PILING AT NORTH ABUTMENT SHALL BE FITTED WITH PILE POINTS AND DRIVEN TO A REQUIRED RESISTANCE OF 180 TONS\*\* PER PILE. NORTH ABUTMENT ESTIMATED LENGTH = 20'
- (A15) PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SOUTH SLOPES. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. SEE SHEET 2 FOR DETAIL.
- (A17) 1/2" FILLER INCLUDED IN WING LENGTH, SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.) EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- (A18) 3/4" CORK FILLER UP VERT. BEAM SEAT FACES THAT RUN PARALLEL WITH GIRDER.
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- STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING BEARING PADS AND/OR SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".

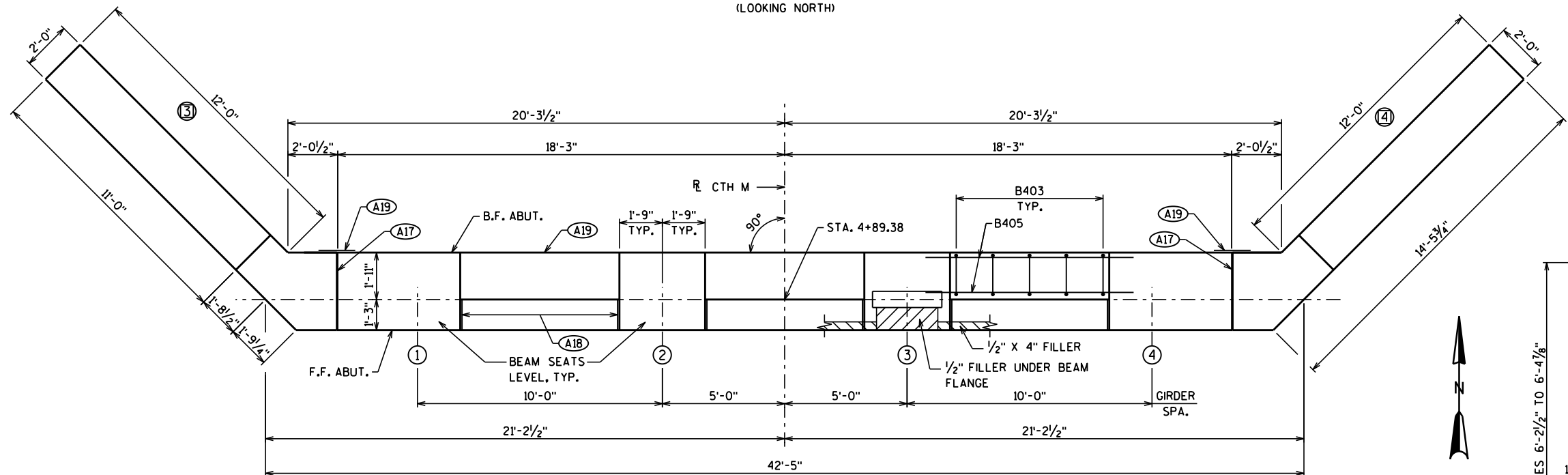
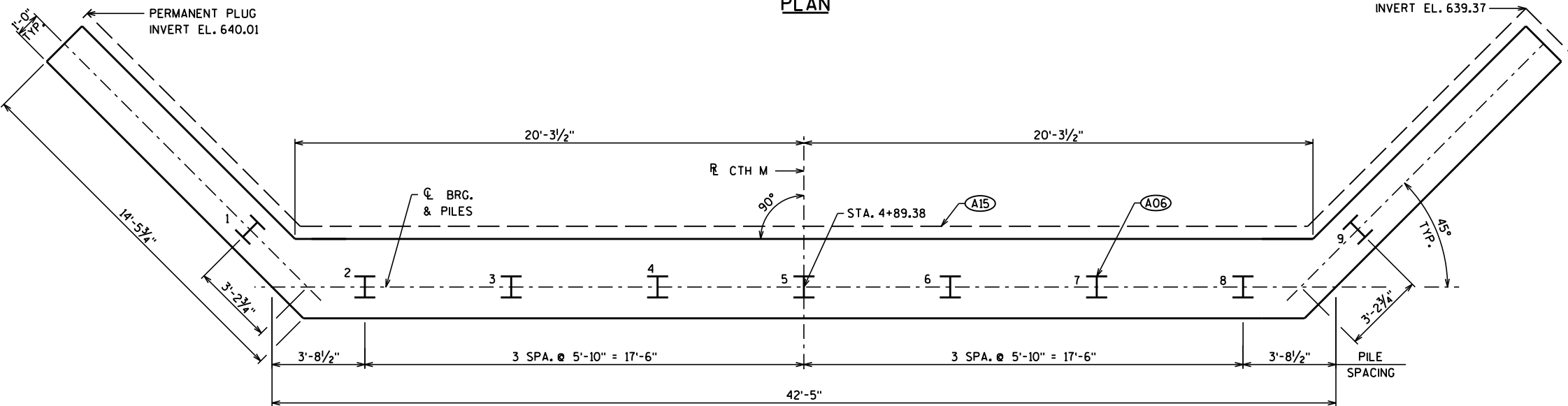
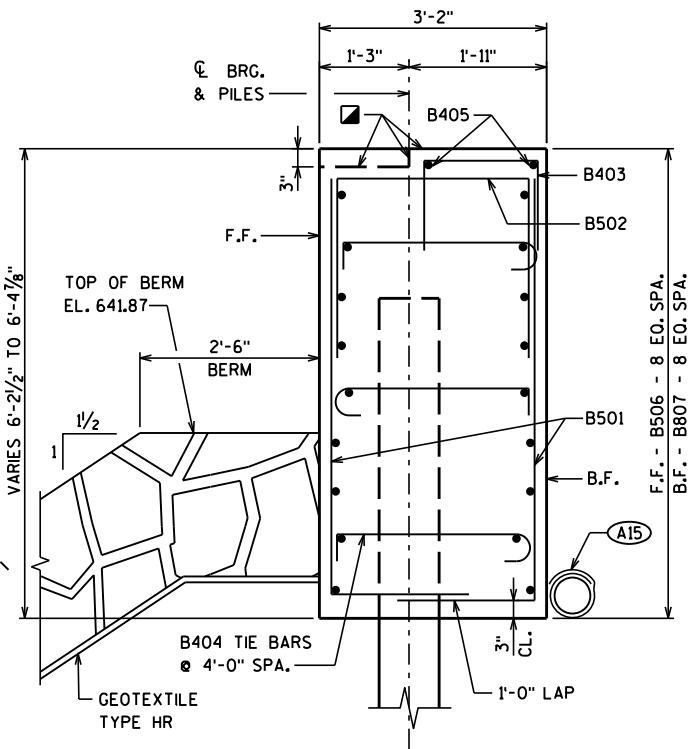
SEE SHEET 7 FOR WINGWALL DETAILS, BILL OF BARS AND BAR BENDING DIAGRAMS. SEE SHEET 2 FOR PILE SPICE DETAIL.



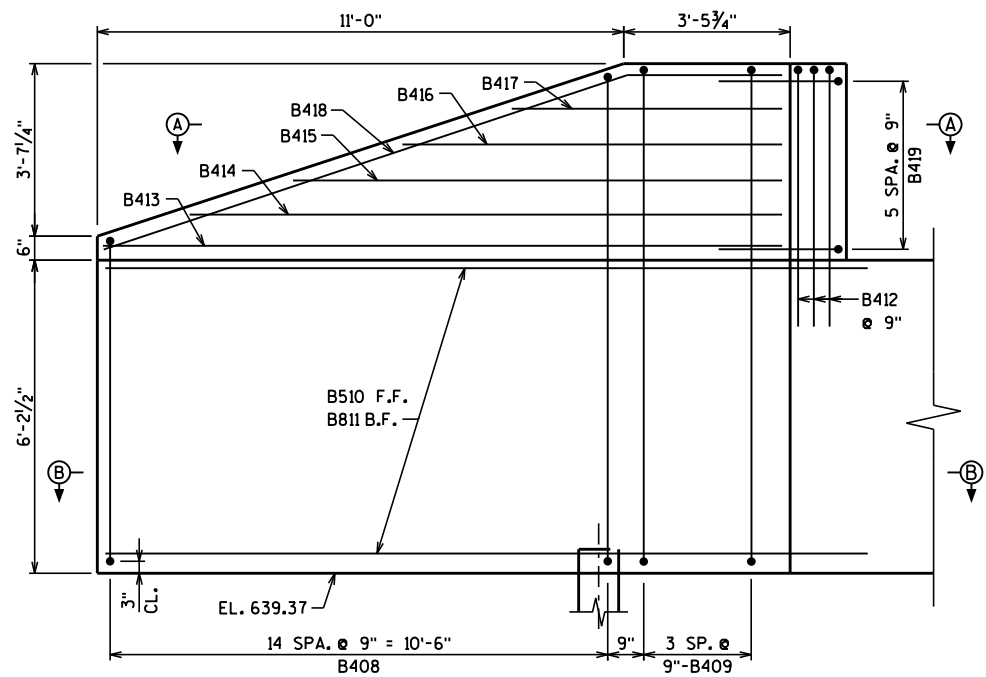
NOTE: SPACE B501 BARS TO MISS PILING.

**ELEVATION**

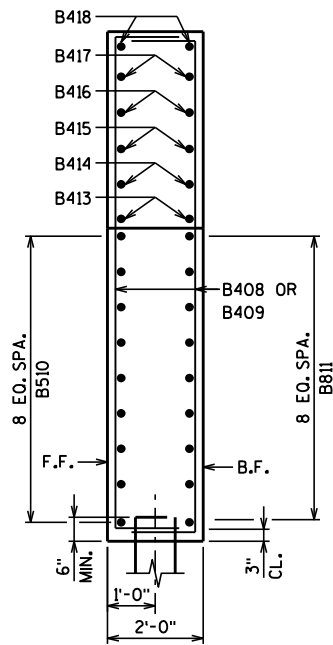
(LOOKING NORTH)

**PLAN****PILE PLAN****SECTION THRU BODY**

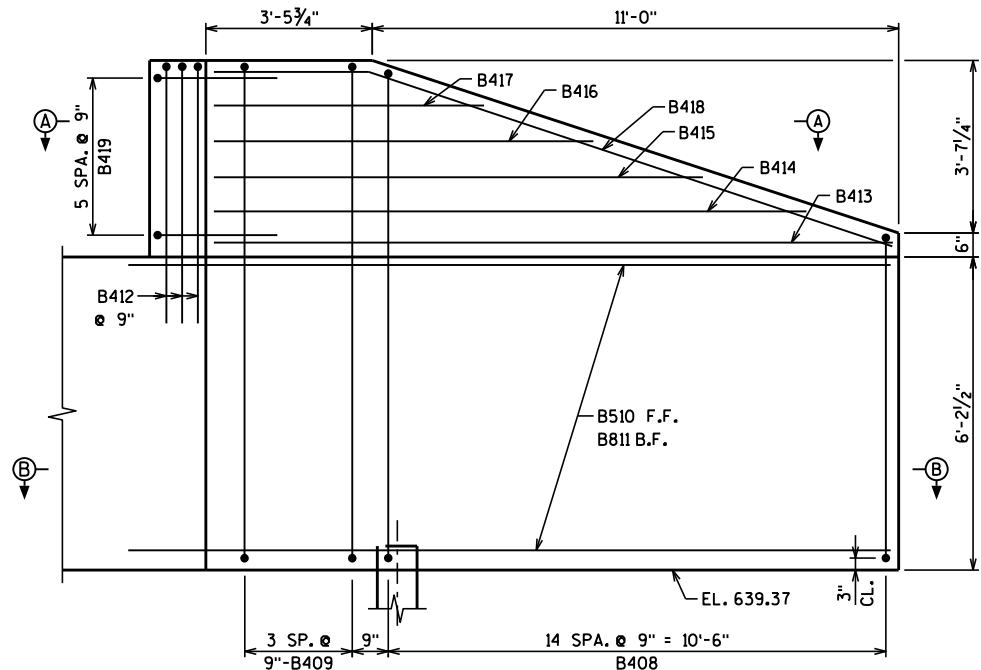
NO.	DATE	REVISION	BY
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NORTH ABUTMENT		SHEET 6 OF 12	



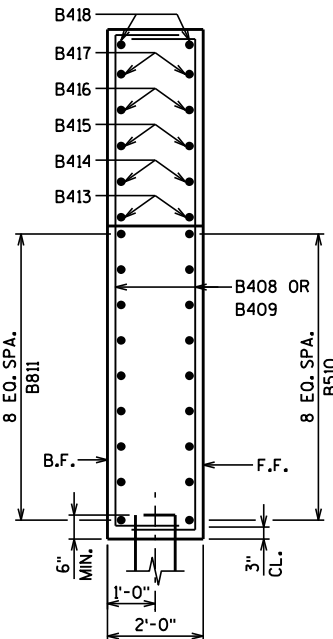
WING 3 ELEVATION



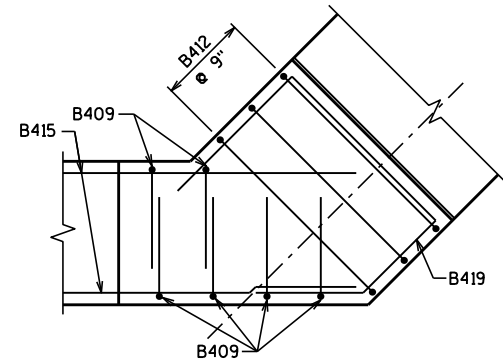
WING 3 SECTION



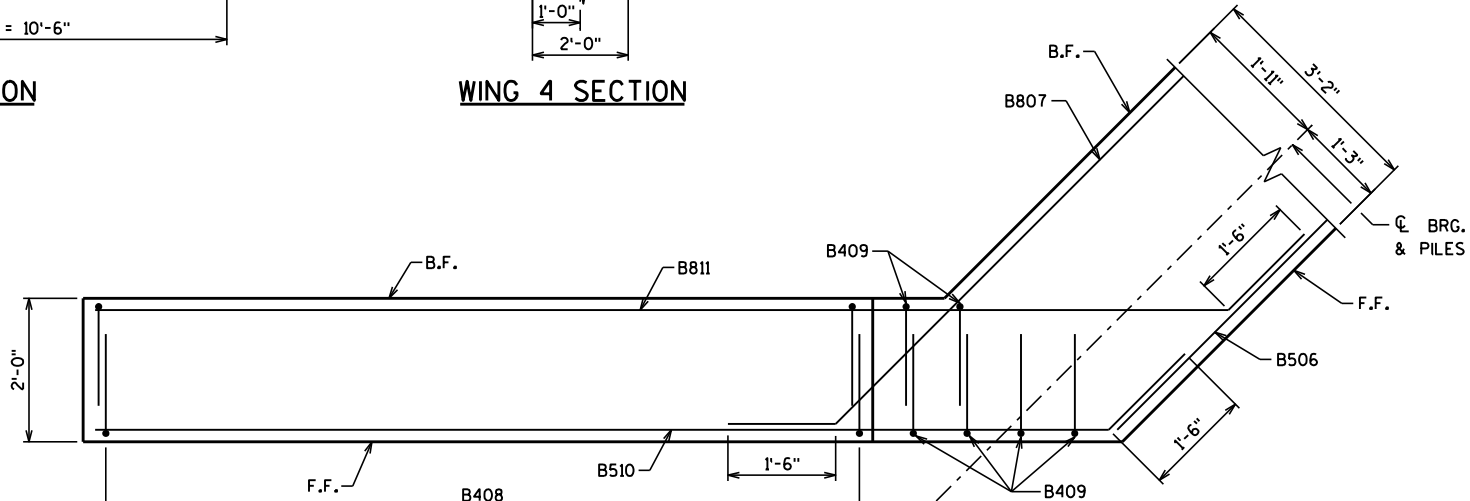
WING 4 ELEVATION



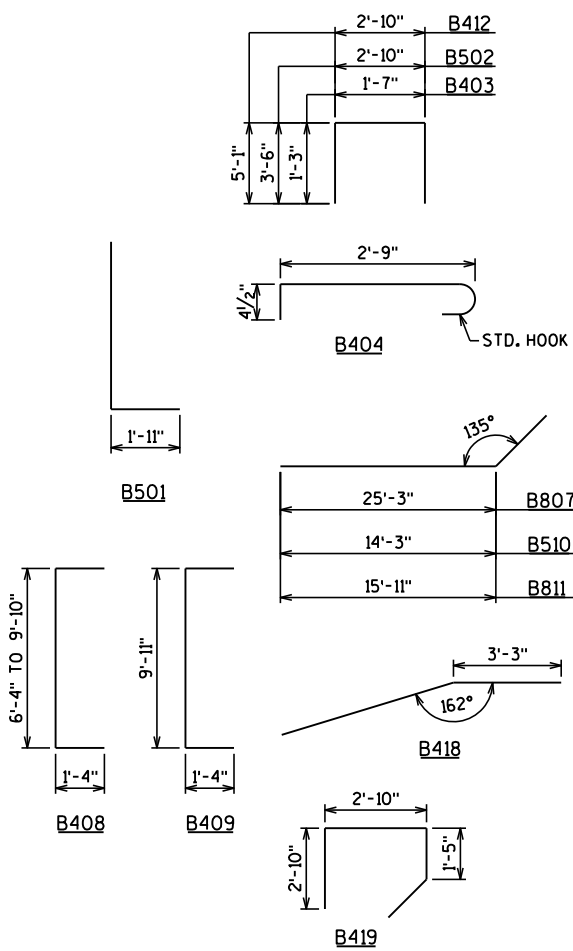
WING 4 SECTION



SECTION A-A  
TYPICAL BOTH WINGS



SECTION B-B  
TYPICAL BOTH WINGS



BAR BENDING DIAGRAMS

BILL OF BARS

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	SERIES	LOCATION
B501		82	7'-4"	X		BODY - VERTICAL
B502		41	9'-7"	X		BODY - VERTICAL TOP
B403		15	3'-11"	X		BODY - VERTICAL TOP
B404		33	3'-7"	X		BODY - TIE BARS
B405		6	8'-6"			BODY - HORIZONTAL TOP
B506		9	39'-8"			BODY - HORIZONTAL F.F.
B807		18	26'-9"	X		BODY - HORIZONTAL B.F.
B408	X	60	10'-7"	X	△	WINGS - VERTICAL
B409	X	12	12'-5"	X		WINGS - VERTICAL
B510	X	18	15'-8"	X		WINGS - HORIZONTAL F.F.
B811	X	18	17'-2"	X		WINGS - HORIZONTAL B.F.
B412	X	6	12'-10"	X		WINGS - VERTICAL
B413	X	4	14'-1"			WINGS - HORIZONTAL
B414	X	4	12'-6"			WINGS - HORIZONTAL
B415	X	4	10'-2"			WINGS - HORIZONTAL
B416	X	4	7'-11"			WINGS - HORIZONTAL
B417	X	4	5'-8"			WINGS - HORIZONTAL
B418	X	4	14'-8"	X		WINGS - HORIZONTAL, TOP
B419	X	12	7'-11"	X		WINGS - HORIZONTAL

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

BAR SERIES

BAR NO.	NO. REQ'D.	LENGTH
B408	2 SERIES OF 15	8'-10" TO 12'-4"

NOTES

- (A17) 1/2" FILLER INCLUDED IN WING LENGTH, SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.) EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.

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## GIRDER NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 8" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 8" OF THE TOP FLANGE.

DO NOT APPLY CONCRETE SEALER OR EPOXY TO SURFACES RECEIVING APPLICATION OF CONCRETE STAINING.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS. SEE SECT. 503.3.3 OF STANDARD SPECIFICATIONS FOR GUIDANCE.

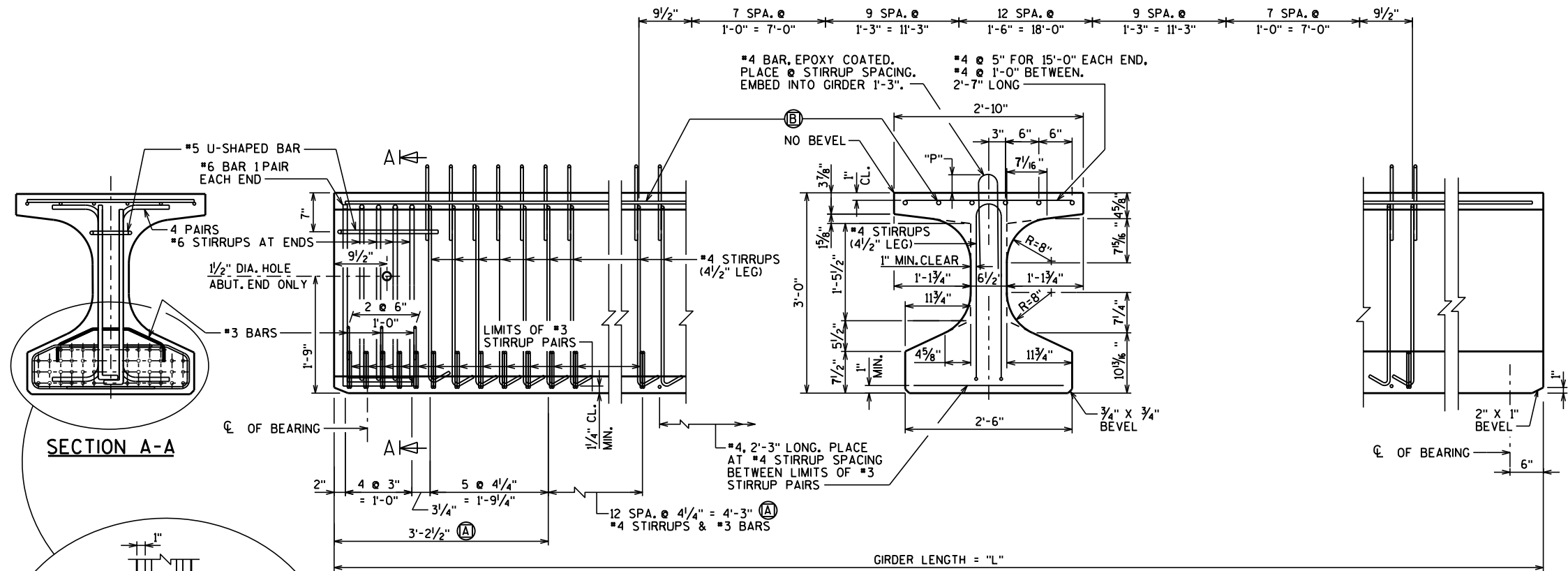
STRANDS SHALL BE FLUSH WITH END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE III, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.  
AN EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A1064 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON ACCEPTANCE OF THE STRUCTURES MAINTENANCE SECTION. IF USED, WWF SUBSTITUTION DETAILS SHALL BE SUBMITTED ELECTRONICALLY TO THE WISDOT FABRICATION LIBRARY AND ACCEPTED PRIOR TO SHOP DRAWING SUBMITTAL.

PRESTRESSING STRANDS SHALL BE (0.6" DIA.)-7 WIRE LOW-RELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 PSI.

FOR DIAPHRAGM INSERT & CONNECTION DETAILS SEE "STEEL DIAPHRAGM" SHEET.



## SIDE VIEW &amp; TYPICAL SECTION IN SPAN

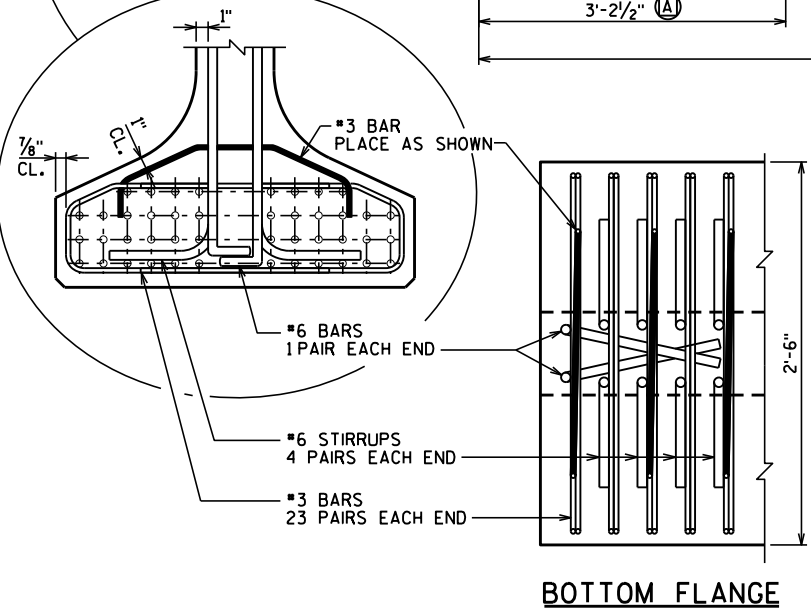
(A) DETAIL TYP. AT EACH END

(B) 6 #4 BARS, FULL LENGTH, MIN. LAP = 1'-11"

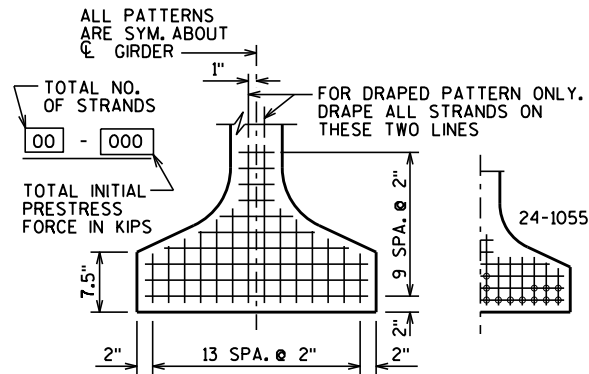
\* THE THEORETICAL INITIAL CAMBER VALUE AT THE TIME OF STRAND RELEASE AT MIDSPAN MULTIPLIED BY A FACTOR OF 1.4 TO ACCOUNT FOR CAMBER GROWTH FROM THE TIME OF STRAND RELEASE TO JOBSITE PLACEMENT.

SPAN	CAMBER (IN.) *
1	1.94

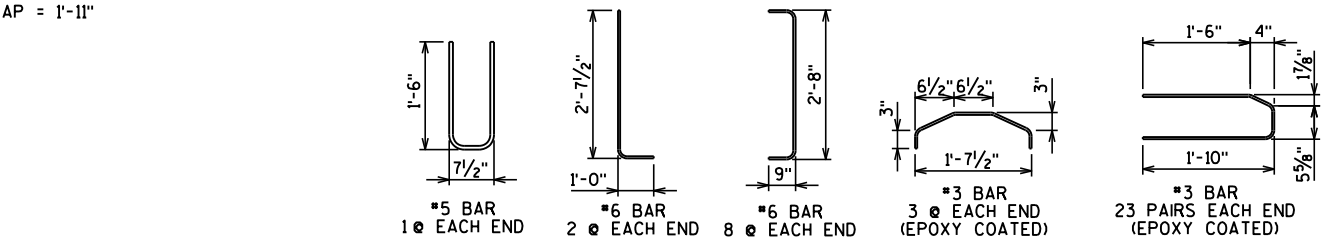
THESE VALUES ARE NOT TO BE USED IN DETERMINING 'T'. USE ACTUAL GIRDER SHOTS. THESE VALUES ARE FOR INFORMATIONAL PURPOSES ONLY.



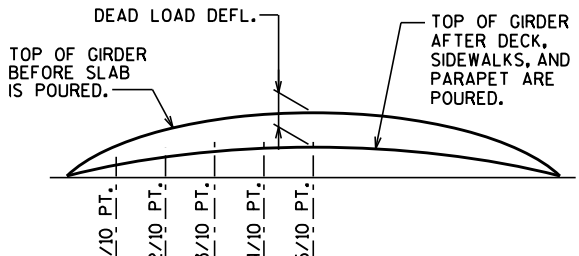
## BOTTOM FLANGE



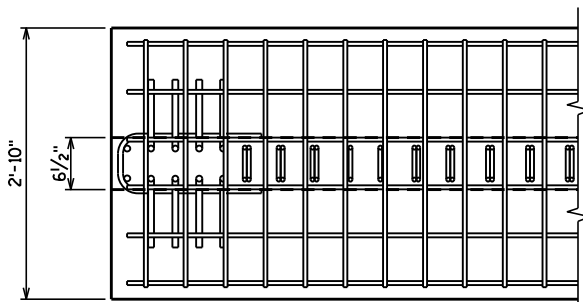
## TYP. STRAND PATTERN



## DRAPED STRAND PROFILE



## DEAD LOAD DEFLECTION DIAGRAM

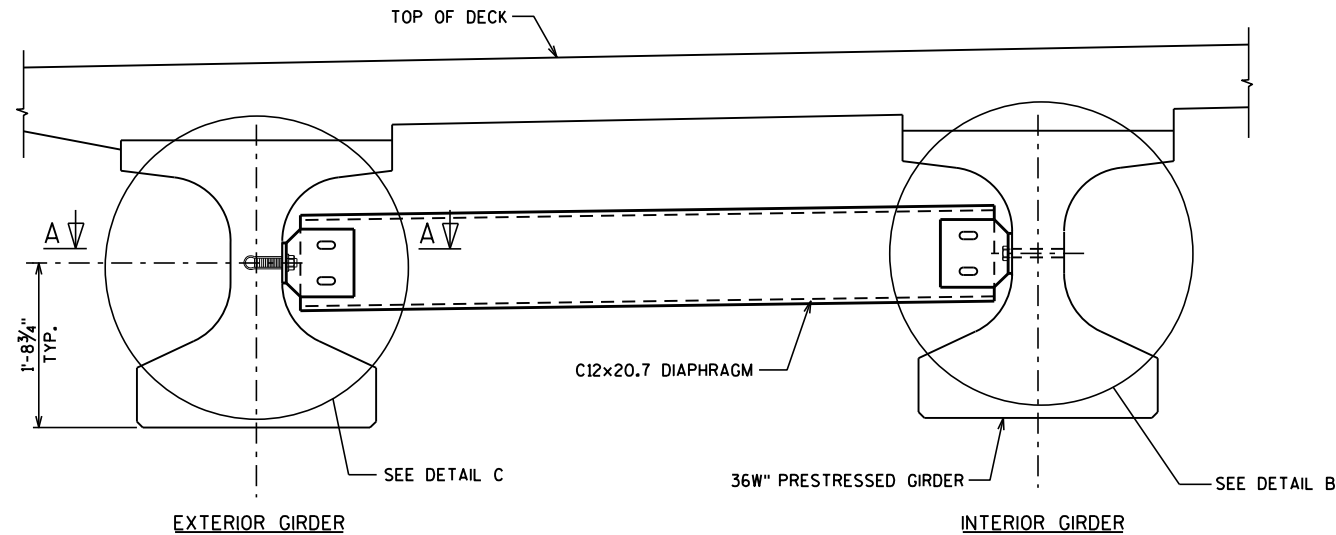


## TOP FLANGE

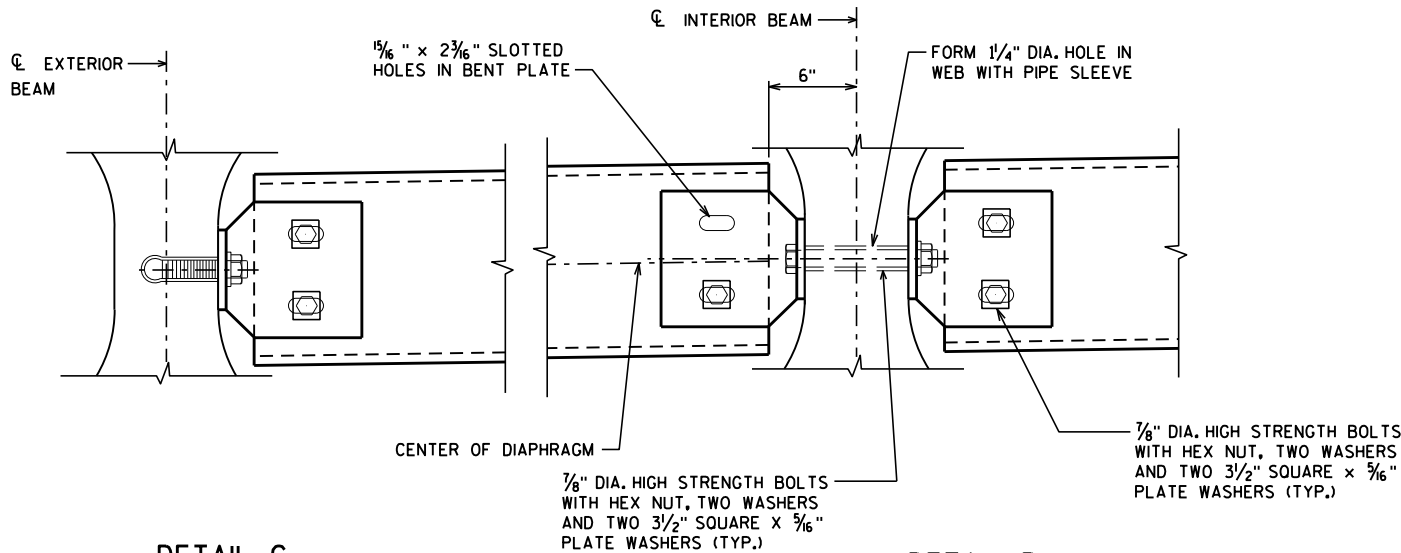
\* MINIMUM CYLINDER STRENGTH OF CONCRETE @ TIME OF TRANSFER OF PRESTRESS FORCE.

GIRDER DATA																								
SPAN	GIRDER	GIRDER LENGTH "L"	DEAD LOAD DEFL. (IN.)									CONC. STRGTH. f'c (P.S.I.)	"P" 1/3 IST OF GIRDER	"P" MID 1/3 OF GIRDER	"P" END 1/3 OF GIRDER	DIA. OF STRAND (IN.)	DRAPED PATTERN					UNDRAPED PATTERN		
			1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10						TOTAL NO. OF STRANDS	f'ci (P.S.I.) *	(IN.)				TOTAL NO. OF STRANDS	f'ci (P.S.I.) *
																			"A"	"B" MIN.	"B" MAX.	"C"		
1	ALL	71.0'	0.32	0.63	0.87	1.03	1.08	1.03	0.87	0.63	0.32	8,000	8"	7"	8"	0.6	24	6,800	32"	11"	14"	4"	---	---

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36W" PRESTRESSED GIRDER DETAILS			SHEET 8 OF 12

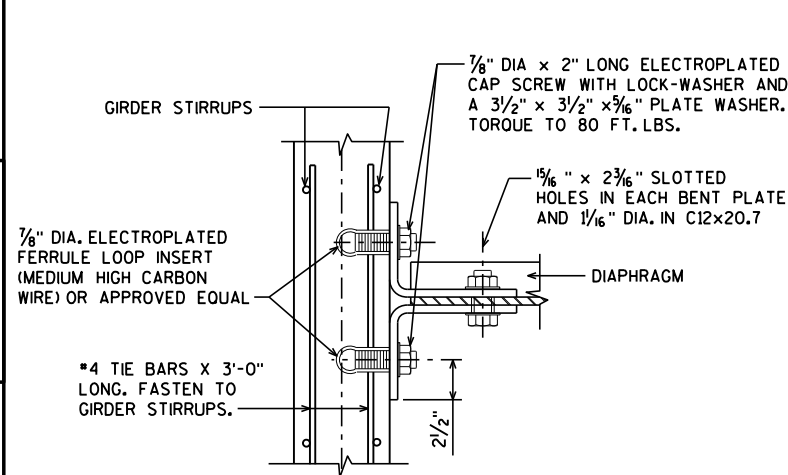


PART TRANSVERSE SECTION AT DIAPHRAGM



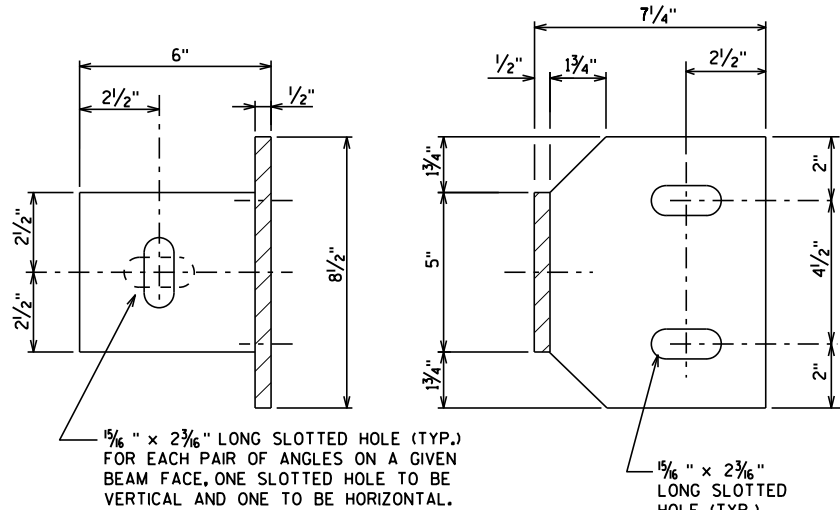
DETAIL C

DETAIL B



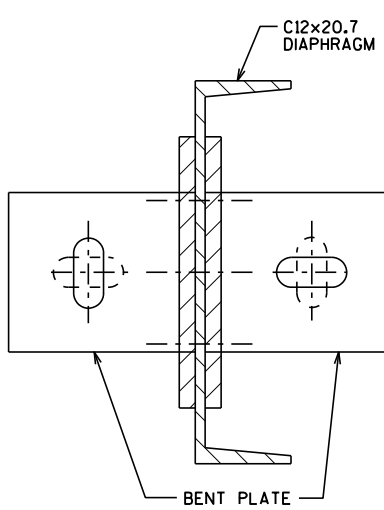
SECTION A-A

(FOR EXTERIOR ATTACHMENT)

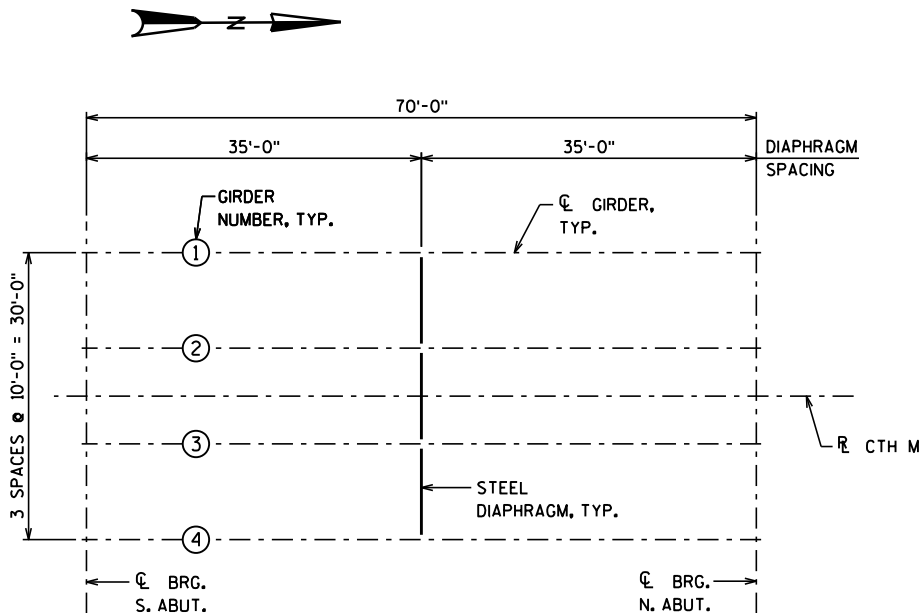


BEAM FACE

DIAPHRAGM FACE



ATTACHMENT TO CHANNEL



FRAMING PLAN

NOTES

ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-5-429", EACH.

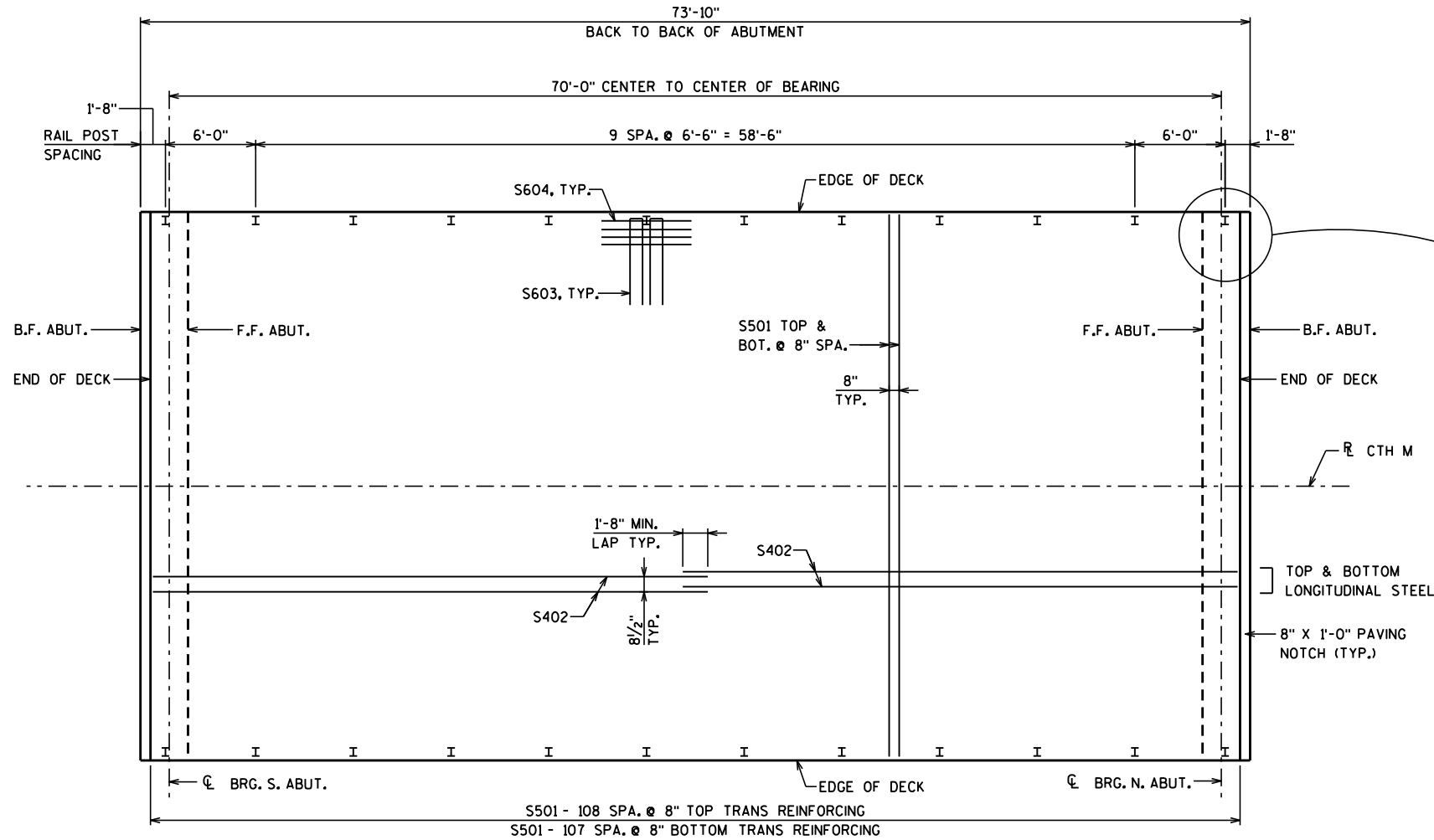
EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

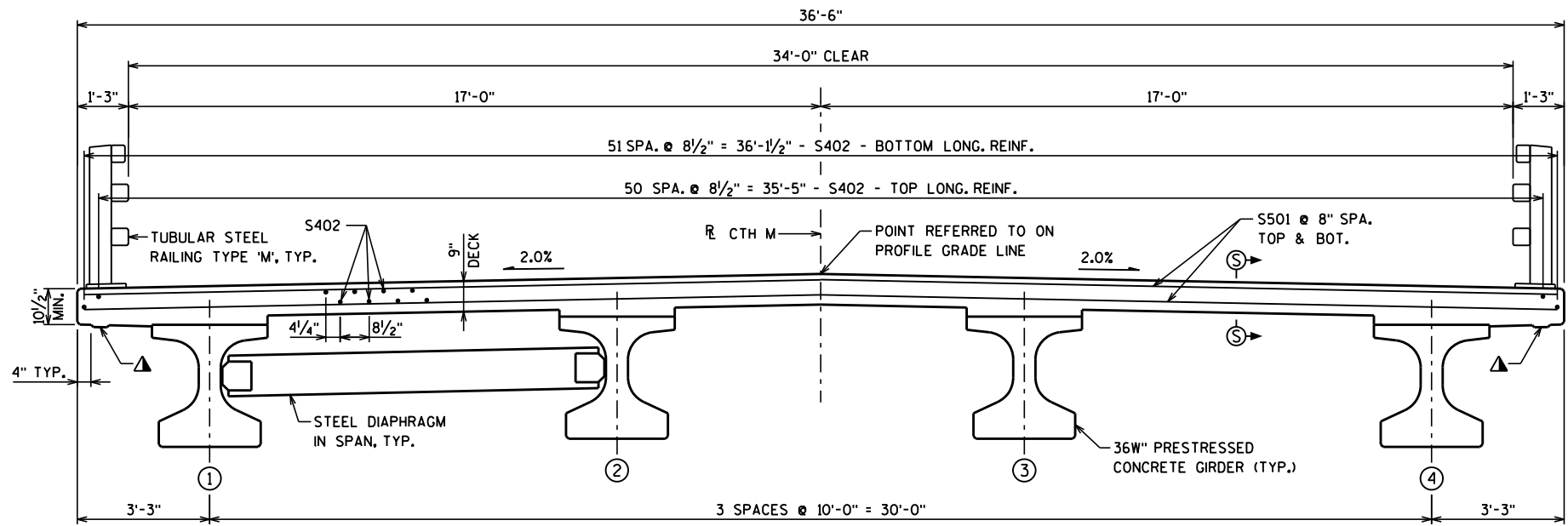
ALL DIAPHRAGM MATERIAL INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.

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.

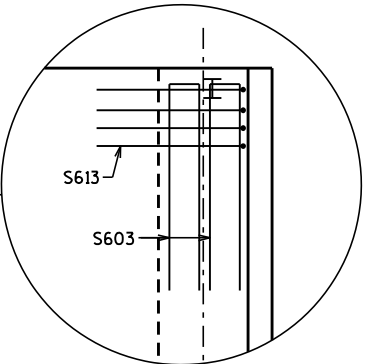
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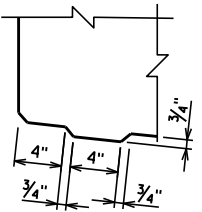
SUPERSTRUCTURE PLAN



CROSS SECTION THRU ROADWAY

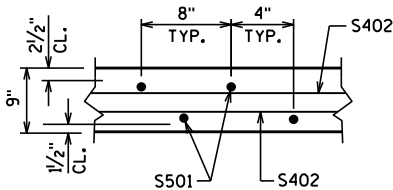


RAIL POST REINFORCEMENT AT DECK CORNERS

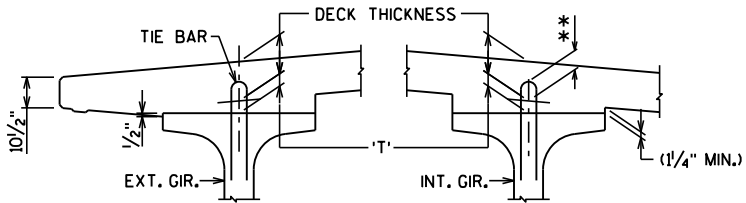


DRIP EDGE DETAIL

3/4" DRIP-EDGE. EXTEND DRIP-EDGE TO 6" FROM FRONT FACE OF ABUTMENT DIAPHRAGM.



SECTION S-S



DECK HAUNCH DETAIL

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

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

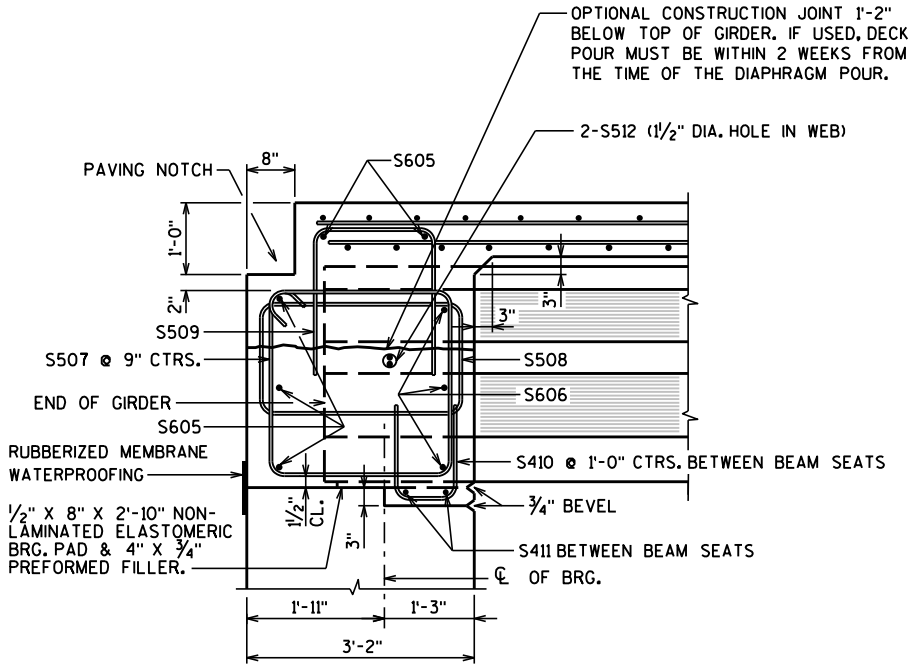
- TOP OF DECK ELEV. AT FINAL GRADE
- TOP OF GIRDER ELEVATION
- + DEAD LOAD DEFLECTION
- DECK THICKNESS
- = HAUNCH HEIGHT 'T'

NOTE: AN AVERAGE HAUNCH ('T') OF 3/4" WAS USED IN THE QUANTITY "CONCRETE MASONRY BRIDGES".

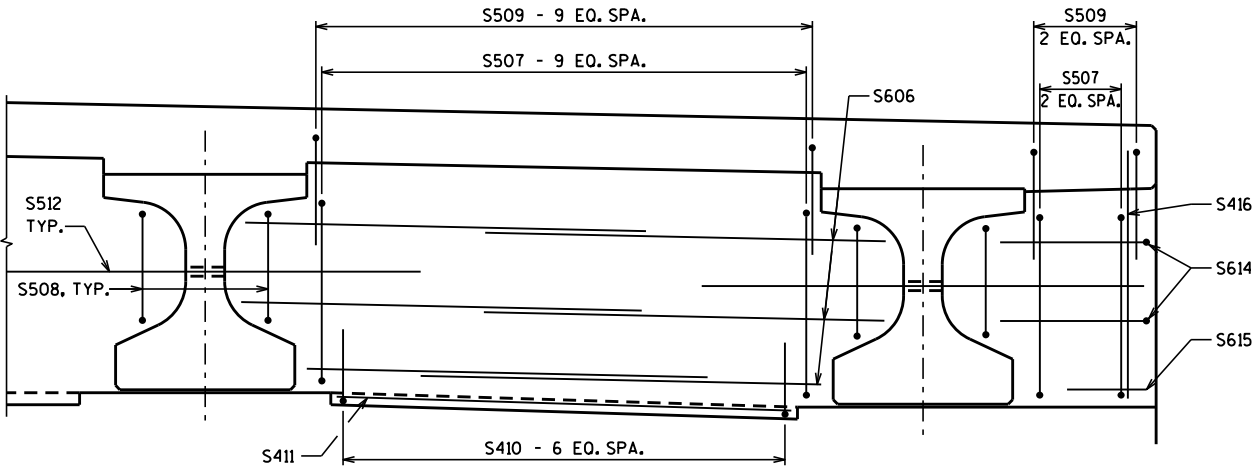
NO.	DATE	REVISION	BY
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SUPERSTRUCTURE		SHEET 10 OF 12	

BILL OF BARS

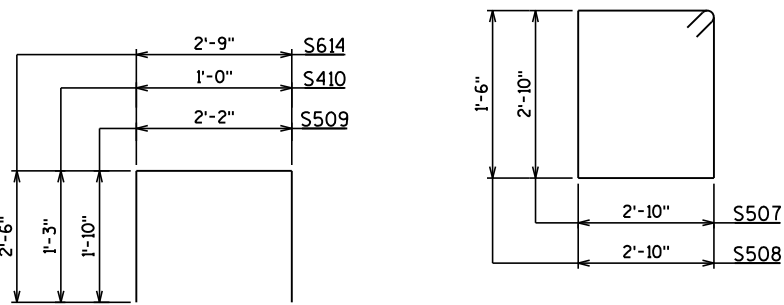
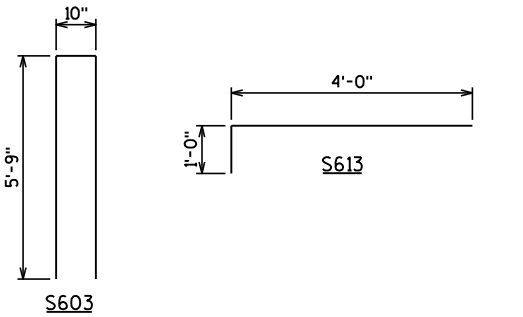
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	LOCATION
S501	X	217	36'-2"		TRANS. TOP & BOT.
S402	X	206	36'-11"		LONG. TOP & BOT.
S603	X	48	12'-0"	X	AT RAIL POST
S604	X	80	6'-0"		AT RAIL POST
S605	X	10	36'-2"		DIAPH. HORIZONTAL B.F., & TOP
S606	X	36	5'-7"		DIAPH. HORIZONTAL F.F.
S507	X	78	12'-0"	X	DIAPH. VERTICAL
S508	X	16	9'-4"	X	DIAPH. VERTICAL
S509	X	78	5'-7"	X	DIAPH. VERTICAL, TOP
S410	X	42	3'-4"	X	DIAPH. VERTICAL, BTW. BEAM SEAT
S411	X	12	6'-2"		DIAPH. HORIZONTAL, BTW. BEAM SEAT
S512	X	16	6'-0"		DIAPH. HORIZONTAL, THRU GIRDERS
S613	X	16	4'-10"	X	AT END RAIL POSTS
S614	X	8	7'-6"	X	DIAPH. ENDS, HORIZ.
S615	X	4	1'-8"		DIAPH. ENDS, HORIZ.
S416	X	8	3'-8"		DIAPH. ENDS, VERT.



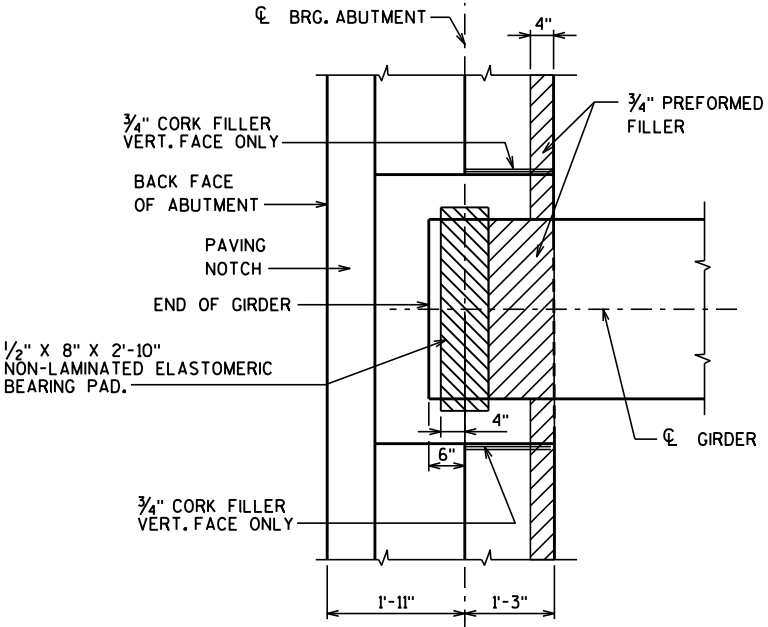
PART LONGIT. SECTION



DIAPHRAGM DETAILS AT ABUTMENT



BAR BEND DIAGRAMS



BEARING PAD DETAIL

TOP OF DECK ELEVATIONS

LOCATION	S.ABUT.	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	N. ABUT.
W. EDGE	650.02	649.94	649.87	649.81	649.76	649.73	649.70	649.68	649.67	649.68	649.69
GIRDER 1	650.08	650.00	649.94	649.88	649.83	649.79	649.76	649.75	649.74	649.74	649.76
GIRDER 2	650.28	650.20	650.14	650.08	650.03	649.99	649.96	649.95	649.94	649.94	649.96
GIRDER 3	650.28	650.20	650.14	650.08	650.03	649.99	649.96	649.95	649.94	649.94	649.96
GIRDER 4	650.08	650.00	649.94	649.88	649.83	649.79	649.76	649.75	649.74	649.74	649.76
E. EDGE	650.02	649.94	649.87	649.81	649.76	649.73	649.70	649.68	649.67	649.68	649.69

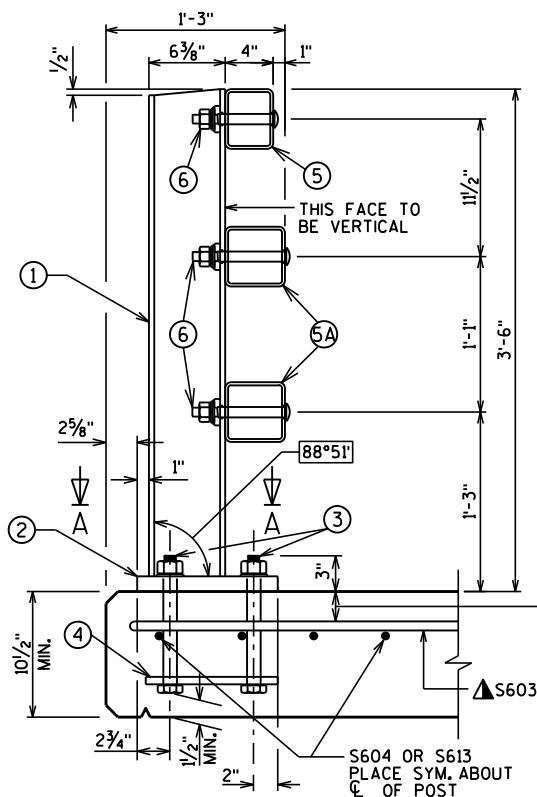
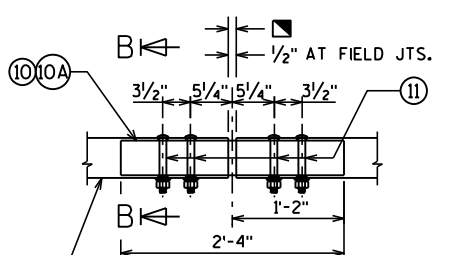
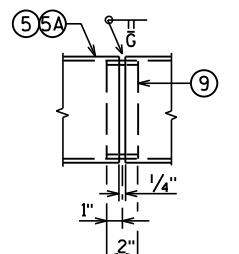
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DRAWN BY		NRT	PLANS CK'D. BRE
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**LEGEND**

- ① W6 x 25 WITH 1/8" x 1/2" HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
- ② PLATE 1/4" x 11 3/4" x 1'-8" WITH 1 5/8" x 1 5/8" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.
- ③ ASTM A449 - 1/8" DIA. ANCHOR BOLTS WITH NUT AND HARDENED WASHER (ALL GALVANIZED), 5 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. USE 1'-9" LONG IN ABUTMENT WINGS. AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 16" USE 1'-3" LONG. USE 10 3/4" LONG AT ALL OTHER LOCATIONS. (AN EQUIVALENT THREADED ROD WITH NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQ'D. FOR CONSTRUCTIBILITY.)
- ④ 5/8" x 11" x 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1 3/8" DIA. HOLES FOR ANCHOR BOLTS NO. 3
- ⑤ TS 5 x 4 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- ⑤A TS 5 x 5 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- ⑥ 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, 3/16" x 1 5/8" x 1 5/8" WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)
- ⑦ 1/2" THK. BACK-UP PLATE WITH 2 - 7/8" x 1/2" THREADED SHOP WELDED STUDS (NO. 12). BOLT TO RAIL AS SHOWN IN DETAIL. REQUIRED AT THREE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYMMETRICALLY ABOUT TUBES NO. 5A.
- ⑧ 1" DIA. HOLES IN PLATE NO. 7 & TUBES NO. 5A FOR 7/8" DIA. A325 BOLTS WITH HEX NUTS AND WASHERS. 6 HOLES IN TUBES AND PLATE NO. 7.
- ⑨ SPLICE SLEEVE FABRICATED FROM 1/4" PLATE. PROVIDE "SLIDING FIT".
- ⑩ 3/8" x 3 5/8" x 2'-4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.
- ⑩A 3/8" x 2 5/8" x 2'-4" PLATE USED IN NO. 5. 3/8" x 3 5/8" x 2'-4" PLATE USED IN NO. 5A. 2 PER RAIL.
- ⑪ 7/8" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 1 1/4" x 1/4" LONGIT. SLOTTED HOLES AT FIELD JOINTS AND 1 5/8" x 2 1/4" MIN. LONGIT. SLOTTED HOLES AT EXP. JOINTS IN PLATE NO. 10A.
- ⑫ 7/8" DIA. x 1 1/2" LONG THREADED SHOP WELDED STUDS (2 REQ'D.).
- ⑬ 3/8" x 8" x 1'-6" PLATE. BOLT TO RAIL AS SHOWN IN DETAIL. REQ'D. AT THREE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYM. ABOUT TUBES NO. 5A.
- ⑭ 7/8" DIA. x 2" LONG A325 HEX BOLT WITH NUT AND WASHER (5 REQ'D.).
- ⑮ 1" DIA. HOLES IN TUBES NO. 5A FOR 7/8" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.

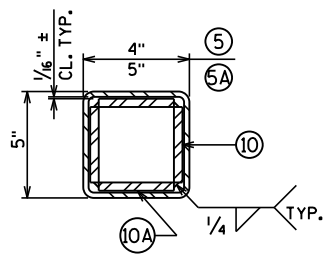
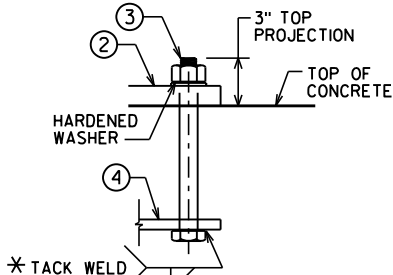
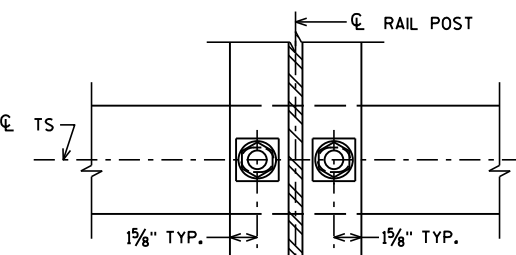
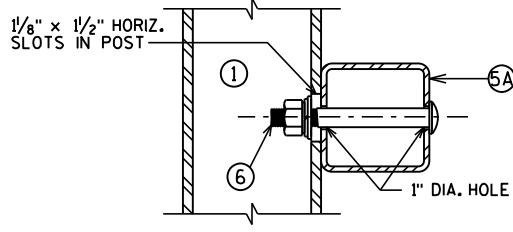
**GENERAL NOTES**

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

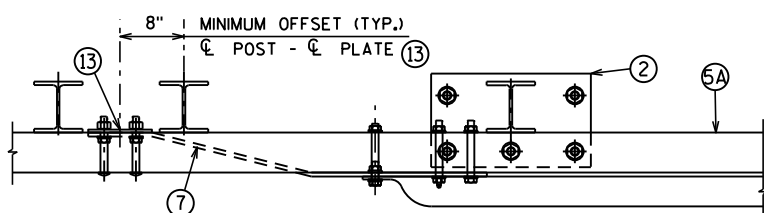
**SECTION THRU RAILING ON DECK****FIELD ERECTION JOINT DETAIL****SHOP RAIL SPLICE DETAIL**

LOCATION MUST BE SHOWN ON SHOP DRAWINGS

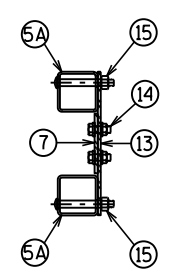
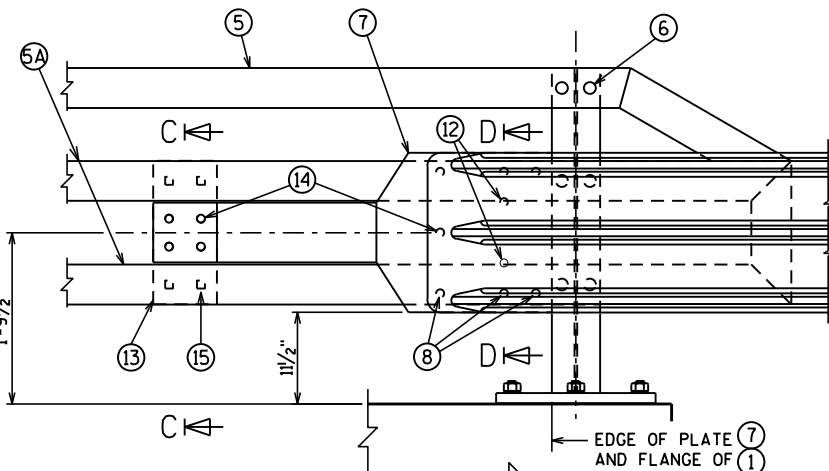
2 1/2" FOR SLABS ON GIRDERS; FOR OTHER STRUCTURES, PLACE BELOW TOP MAT SLAB REINFORCEMENT.

**SECTION B-B****ANCHOR BOLTS****SECTION THRU POST WEB****SECTION THRU RAIL**

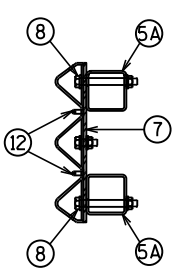
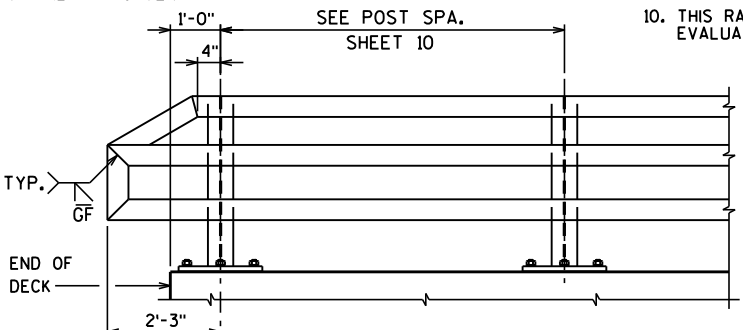
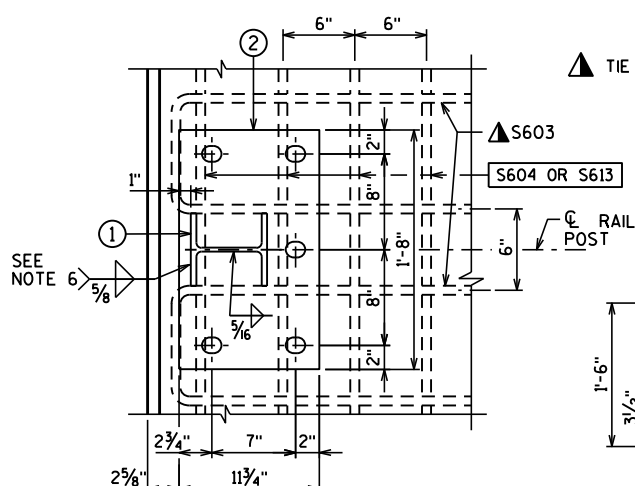
NOTE: CONNECTIONS AT LOWER RAILS SHOWN. CONNECTIONS AT TOP RAIL SIMILAR.

**TYPICAL RAIL TO POST CONNECTIONS****TOP VIEW AT END POST**

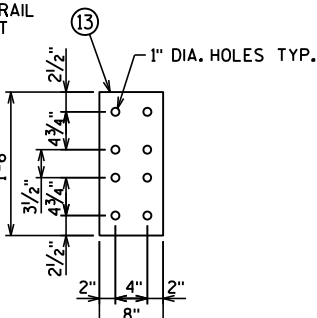
THREE BEAM RAIL ATTACHMENT

**SECTION C-C****DETAIL AT END POST**

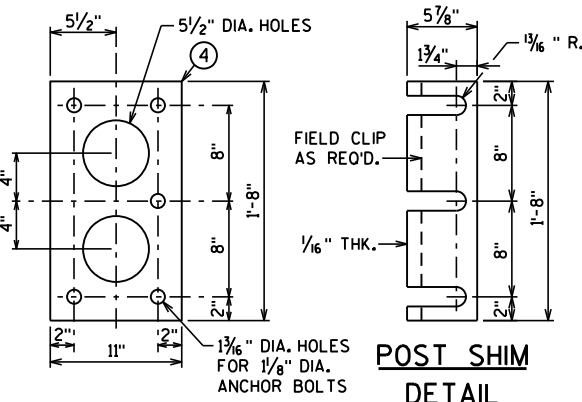
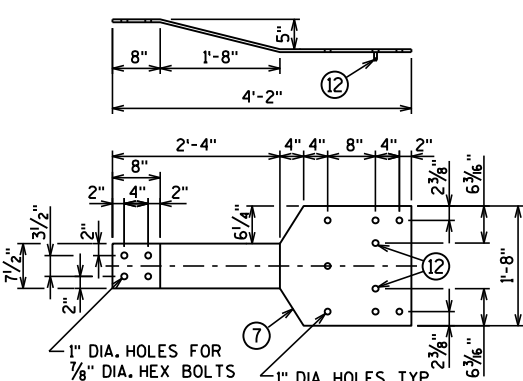
THREE BEAM RAIL ATTACHMENT

**SECTION D-D****PART ELEVATION OF RAILING****SECTION A-A**

▲ TIE TO TOP MAT OF STEEL.

**ANCHOR PLATE**

AT BEAM GUARD ATTACHMENT

**POST SHIM DETAIL****BACK-UP PLATE DETAIL**

AT BEAM GUARD ATTACHMENT

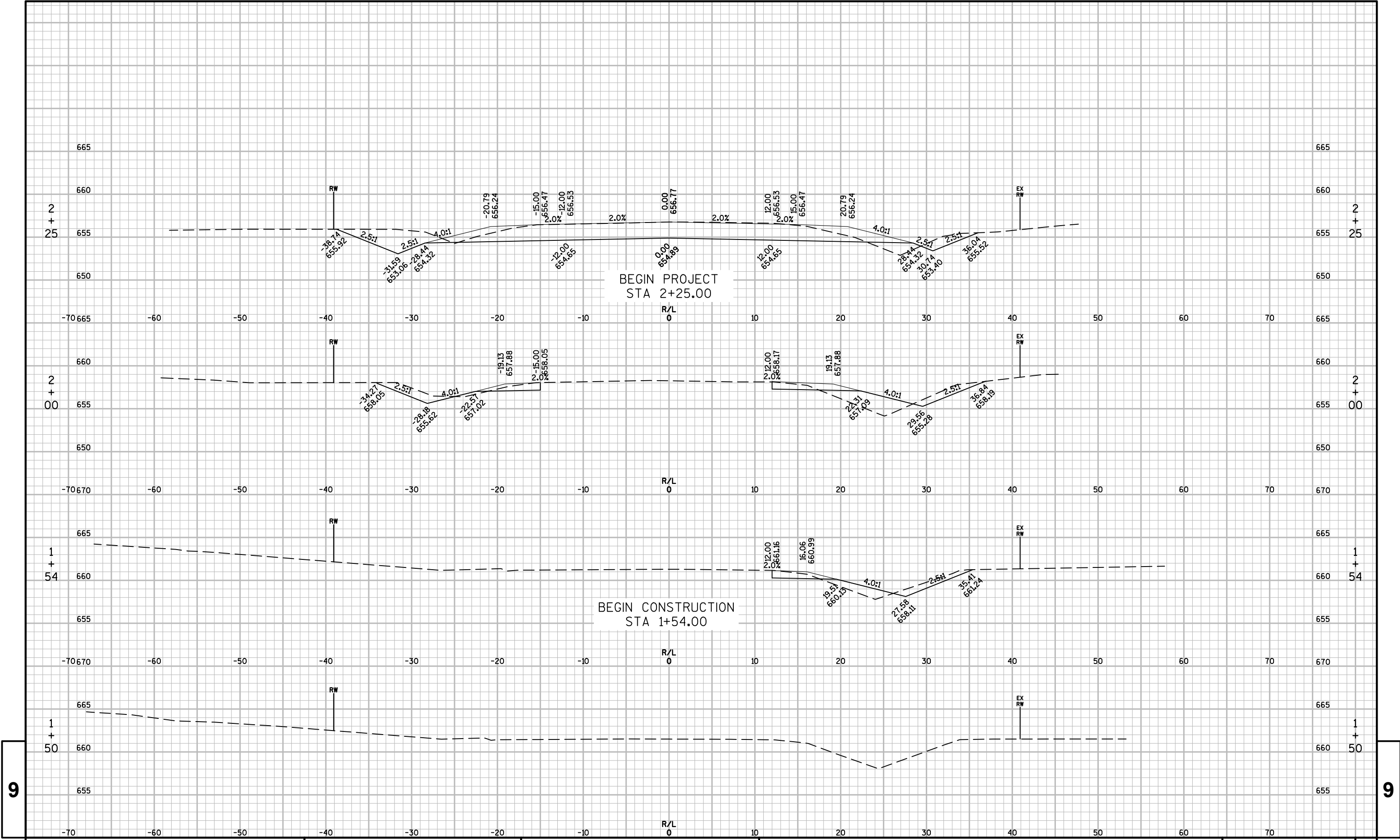
**ANCHOR PLATE**

AT RAIL TO DECK CONNECTION

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-429			
DRAWN BY		NRT	PLANS CK'D. BRE
RAILING TUBULAR TYPE 'M'		SHEET 12 OF 12	

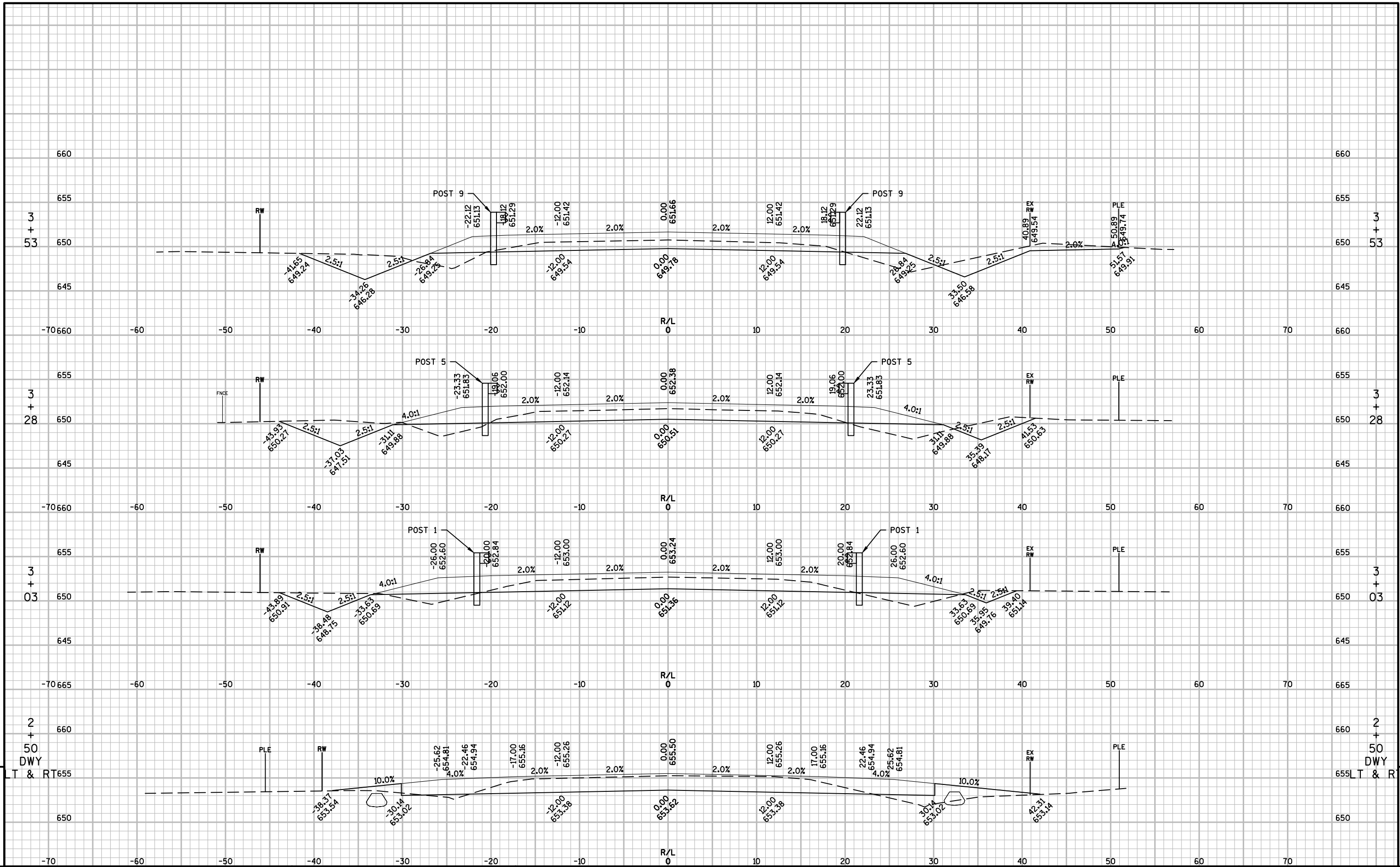
EARTHWORK - CTH M

STATION	AREA (SF)		Incremental Vol (CY) (Unadjusted)		Cumulative Vol (CY)		Mass Ordinate
	Cut	Fill	Cut	Fill	Cut 1.00	Expanded Fill 1.25	
01+53.05	0.00	0.00	0	0	0	0	0
01+54.05	5.50	6.29	0	0	0	0	0
02+00	12.38	14.29	15	18	15	22	-7
02+25	99.59	4.97	52	9	67	33	34
02+50	63.84	21.40	76	12	143	48	94
03+03.11	62.37	15.16	124	36	267	93	174
03+28.11	71.11	18.51	62	16	329	113	216
03+53.11	69.68	18.94	65	17	394	135	259
03+68.73	81.71	11.54	44	9	438	146	292
04+00	22.34	96.61	60	63	498	224	274
04+11.77	21.10	182.93	9	61	507	300	207
STR	0.00	0.00	0	0	507	300	207
	0.00	0.00	0	0	507	300	207
04+96.99	35.04	148.03	5	22	513	328	185
05+30.66	52.57	21.93	55	27	567	362	206
05+55.66	70.57	6.94	57	13	624	378	246
05+80.66	97.88	2.95	78	5	702	384	318
05+89.3	110.10	2.64	33	1	736	385	350
05+90.3	0.00	0.00	2	0	738	385	352



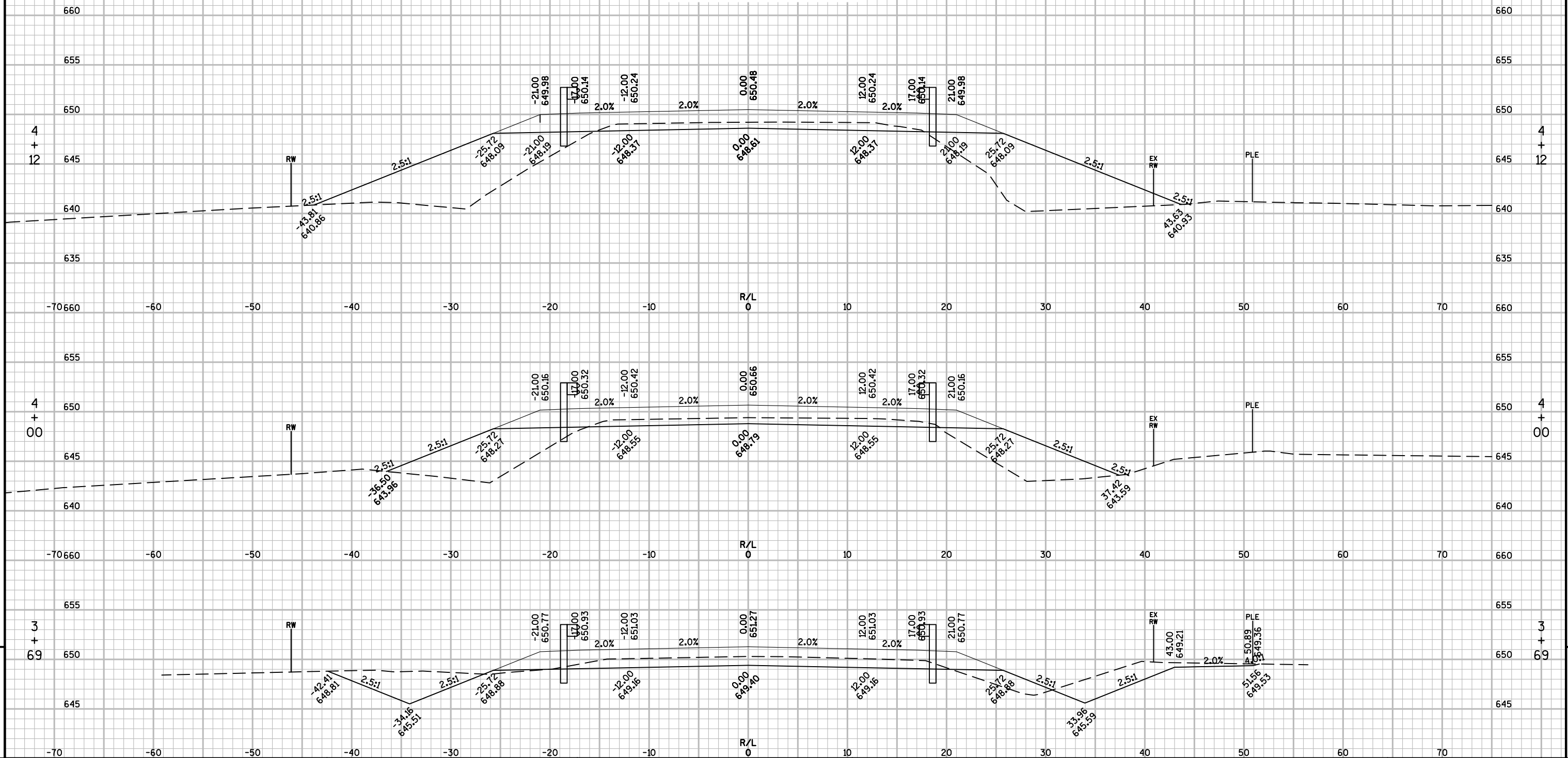
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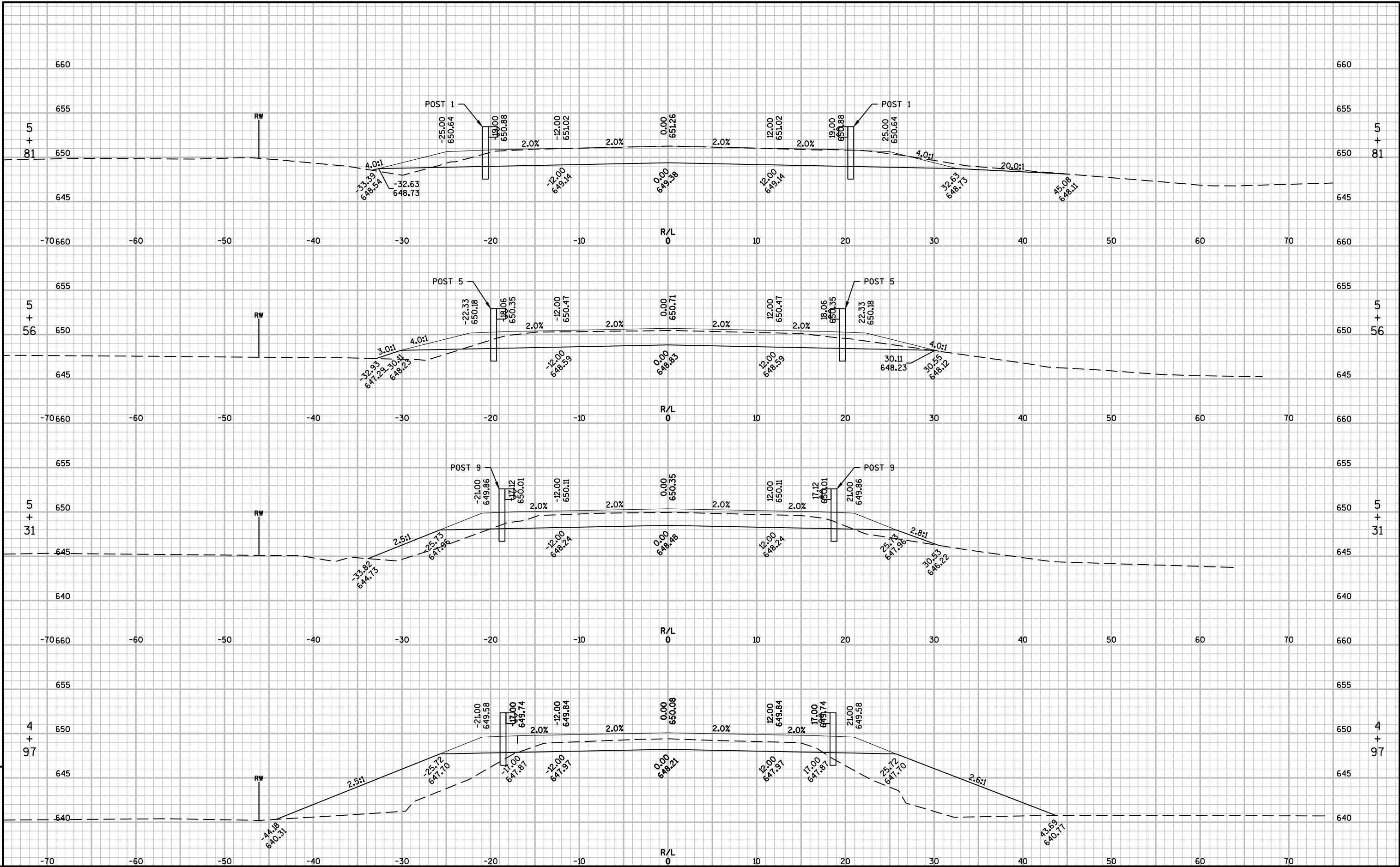
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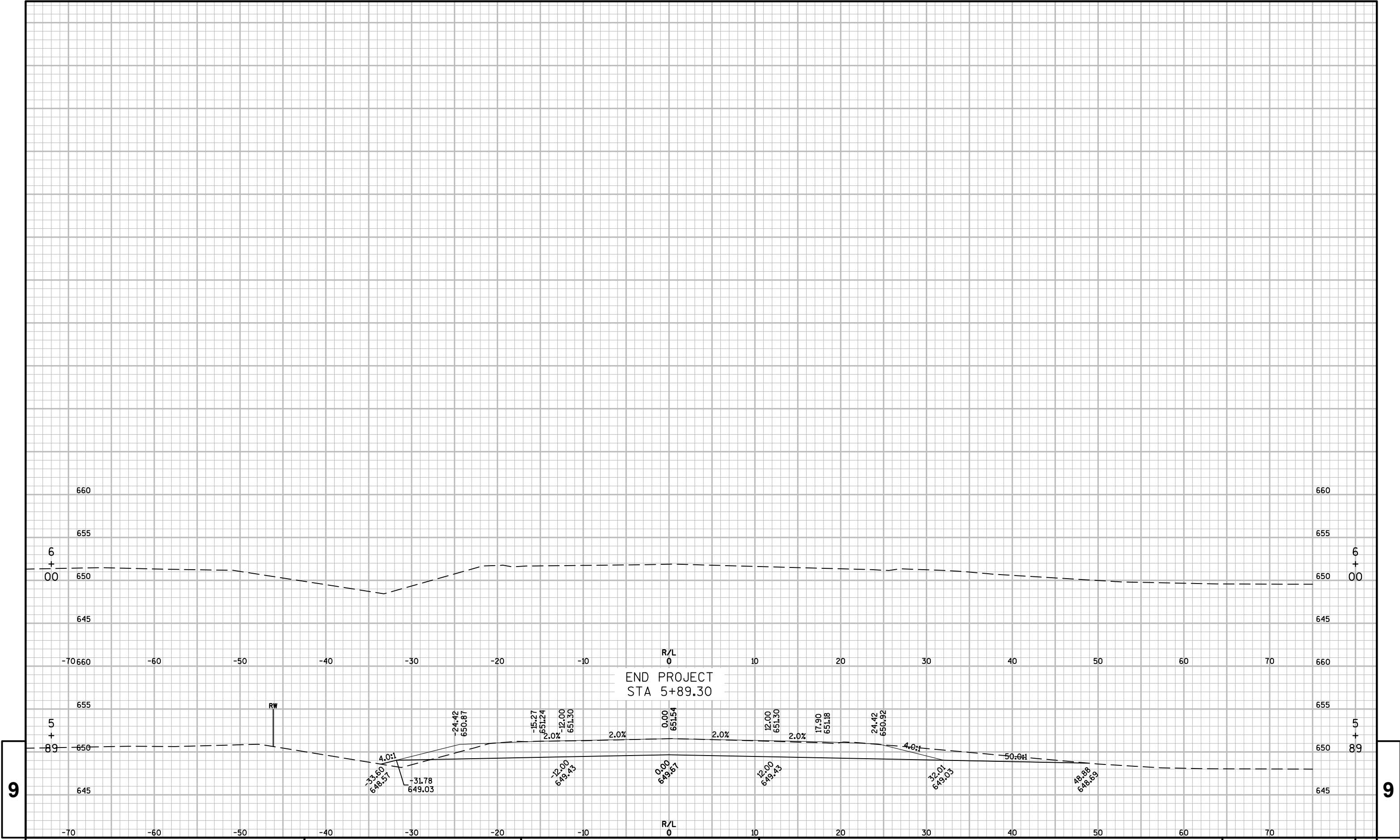


PROJECT NO: 9267-04-71	HWY: CTH M	COUNTY: BROWN	CROSS SECTIONS: CTH M	SHEET	9
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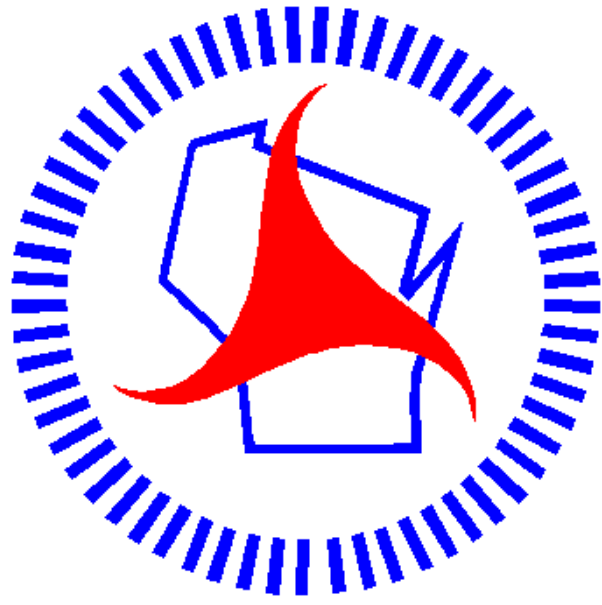
STRUCTURE B-5-429  
STA 4+18.13 TO 4+90.63







## Notes



## *Wisconsin Department of Transportation*

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through innovation and exceptional service.

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