

MARCH 2026

ORDER OF SHEETS

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

TOTAL SHEETS = 90



## DESIGN DESIGNATION

A.A.D.T. (2026) = 1446  
 A.A.D.T. (2046) = 1703  
 D.H.V. = 152  
 D.D. = 51/49  
 T. = 9.6%  
 DESIGN SPEED = 45 MPH  
 ESALS = 340,000

## CONVENTIONAL SYMBOLS

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

**STATE OF WISCONSIN**  
**DEPARTMENT OF TRANSPORTATION**

## PLAN OF PROPOSED IMPROVEMENT

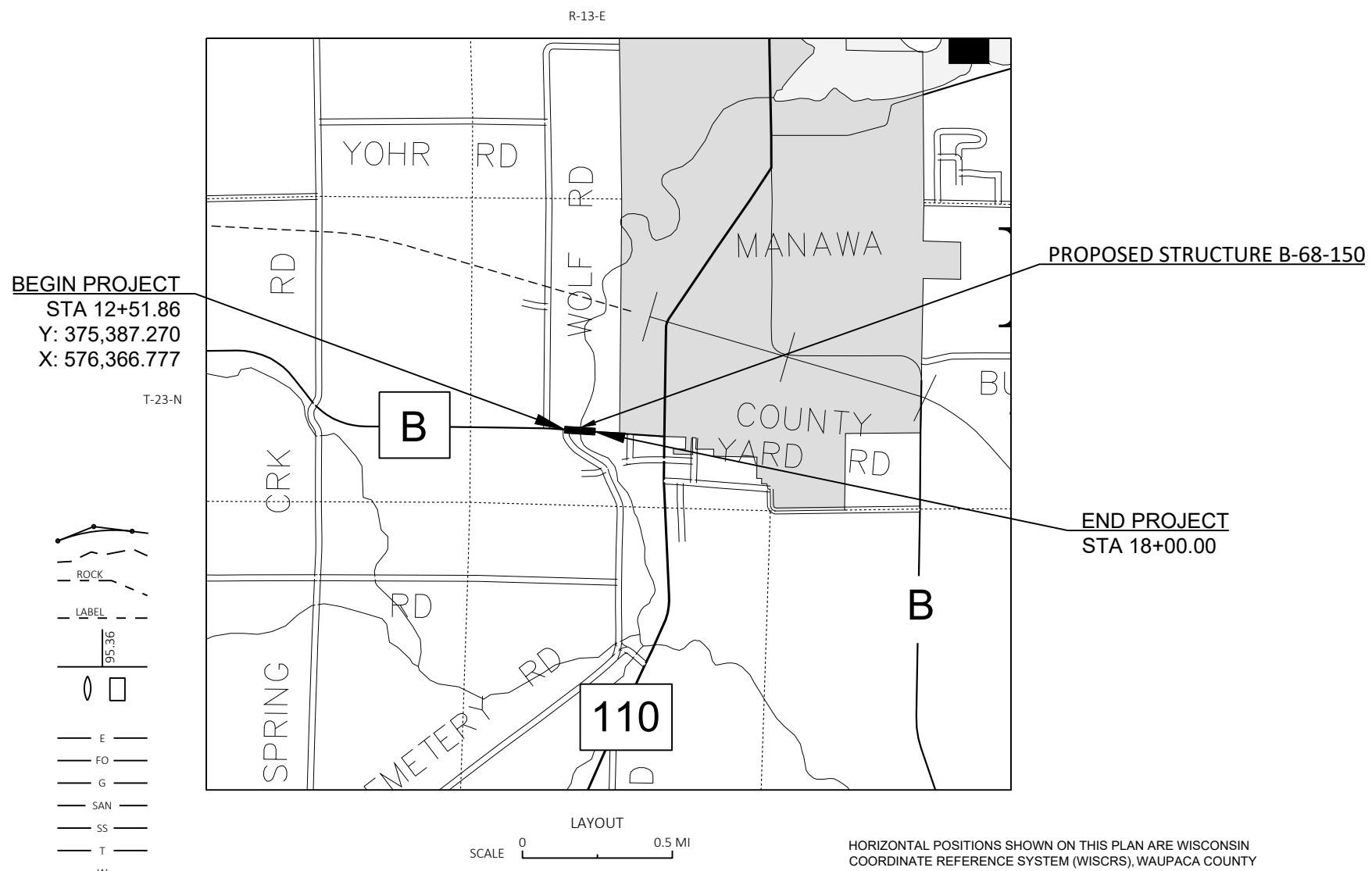
## OGDENSBURG - MANAWA

LITTLE WOLF RIVER BRIDGE, B-68-150

**CTH B**  
**WAUPACA COUNTY**

STATE PROJECT NUMBER  
**6832-06-72**

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
6832-06-72	WISC 2026234	1



ACCEPTED FOR WAUPACA COUNTY

Date 10/7/2025 *Larry A. Reynolds* County Commissioner  
(Signature and Title of Official)

ORIGINAL PLANS PREPARED BY:

**SA**  
**STRAND**  
 ASSOCIATES®  
 910 WEST WINGRA DRIVE  
 MADISON, WISCONSIN 53715  
 (608) 251-4843

*TERA R MEYER*  
 E-43318  
 MADISON  
 WI

WISCONSIN  
 PROFESSIONAL ENGINEERS

STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	STRAND ASSOCIATES, INC.
Designer	STRAND ASSOCIATES, INC.
Project Manager	JASON SCHAEFFER
Regional Examiner	NC REGION
Regional Supervisor	DAN ERVA

APPROVED FOR THE DEPARTMENT

DATE: 10/7/2025 *Mike J. Schaeffer* (Signature)

UTILITIES CONTACTS

## \*\* ALLIANT ENERGY (ELECTRIC)

TESS FREDRICKSON  
4902 N BILTMORE LN  
MADISON, WI 53718  
PHONE: 608-458-3162  
EMAIL: tessfredrickson@alliantenergy.com

## \*\* ALLIANT ENERGY (GAS)

TESS FREDRICKSON  
4902 N BILTMORE LN  
MADISON, WI 53718  
PHONE: 608-458-3162  
EMAIL: tessfredrickson@alliantenergy.com

## \*\* SOLARUS (COMMUNICATIONS)

DENNIS PIERCE  
440 E GRAND AVE  
WISCONSIN RAPIDS, WI 54495  
PHONE: 715-572-0152  
EMAIL: pierce@solarus.net

## \*\* WAUPACA COUNTY (COMMUNICATIONS)

BRENT WYLAND  
811 HARDING ST  
WAUPACA, WI 54981  
PHONE: 715-258-6237  
EMAIL: brent.wyland@co.waupaca.wi.us



Dial **811** or (800)242-8511

[www.DiggersHotline.com](http://www.DiggersHotline.com)

\*\* DENOTES DIGGERS HOTLINE MEMBER

GENERAL NOTES

THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE ARE UTILITY FACILITIES WITHIN THE PROJECT AREA WHICH ARE NOT SHOWN ON THE PLANS. COORDINATE CONSTRUCTION ACTIVITIES WITH A CALL TO DIGGERS HOTLINE AND/OR A DIRECT CALL TO THE UTILITIES THAT HAVE FACILITIES IN THAT AREA.

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

EROSION CONTROL FEATURES AS SHOWN ON THE PLANS ARE AT SUGGESTED LOCATIONS. EXACT LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR'S EROSION CONTROL IMPLEMENTATION PLAN (ECIP) AND APPROVED BY THE ENGINEER IN CONSULTATION WITH THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL SUCH TIME AS THE ENGINEER DETERMINES THE MEASURE IS NO LONGER NECESSARY.

WETLANDS EXIST IN THE PROJECT AREA. DO NOT DISTURB AREAS OUTSIDE THE SLOPE INTERCEPTS.

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, SHALL BE FERTILIZED, AND SEEDED.

MISCELLANEOUS REMOVAL ITEMS SHALL BE REMOVED TO AN EXISTING JOINT, SAWCUT WHERE SHOWN ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

SILT FENCE SHALL BE PLACED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER AND IN PLACE PRIOR TO CONSTRUCTION.

GRADES SHOWN ON THE PLANS MAY BE ADJUSTED BY THE ENGINEER TO FIT EXISTING FIELD CONDITIONS.

THE CONTRACTOR'S PAVING OPERATIONS SHALL BE CONSISTENT WITH THE PLAN TYPICAL SECTIONS AND CONSTRUCTED TO PREVENT HMA LONGITUDINAL JOINTS FROM BEING LOCATED WITHIN A DRIVING OR TURNING LANE.

PRIOR TO PLACEMENT OF MGS GUARDRAIL, THE SHOULDERS SHALL BE IN PLACE, SHAPED, AND COMPAKTED UNLESS SHOWN OTHERWISE.

EXISTING SIGNS SHALL REMAIN IN PLACE UNLESS MOVED AS PART OF THE PLAN OR THE ENGINEER APPROVES THE REMOVAL.

SECTION 2 ORDER OF SHEETS

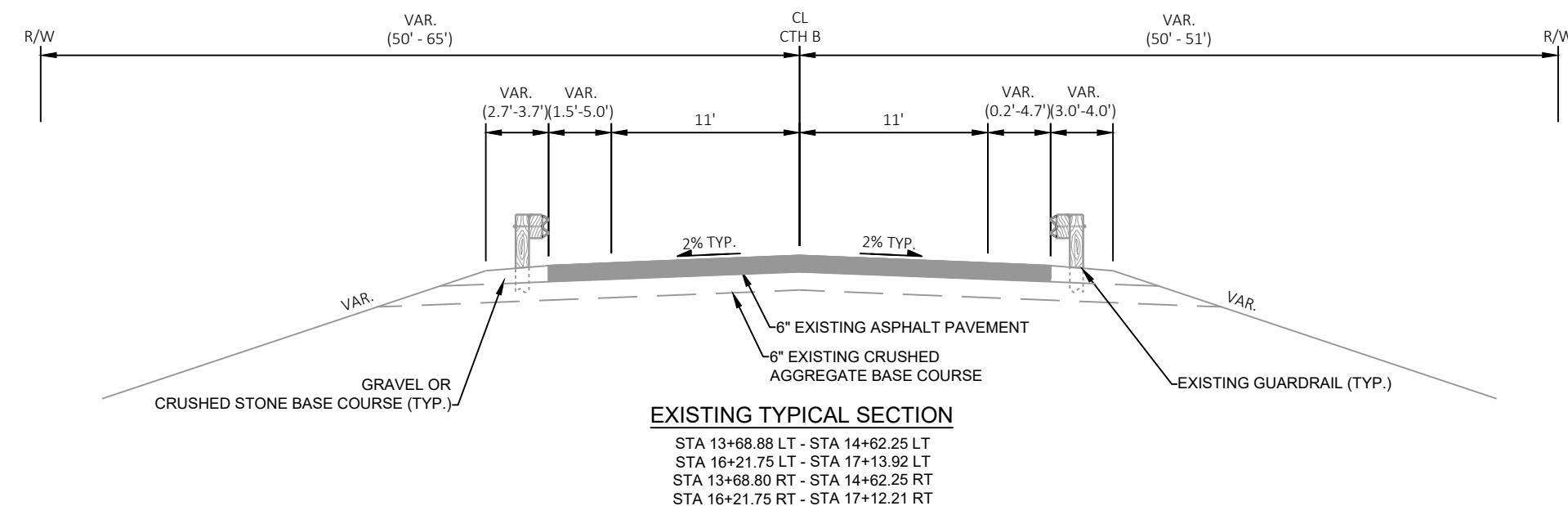
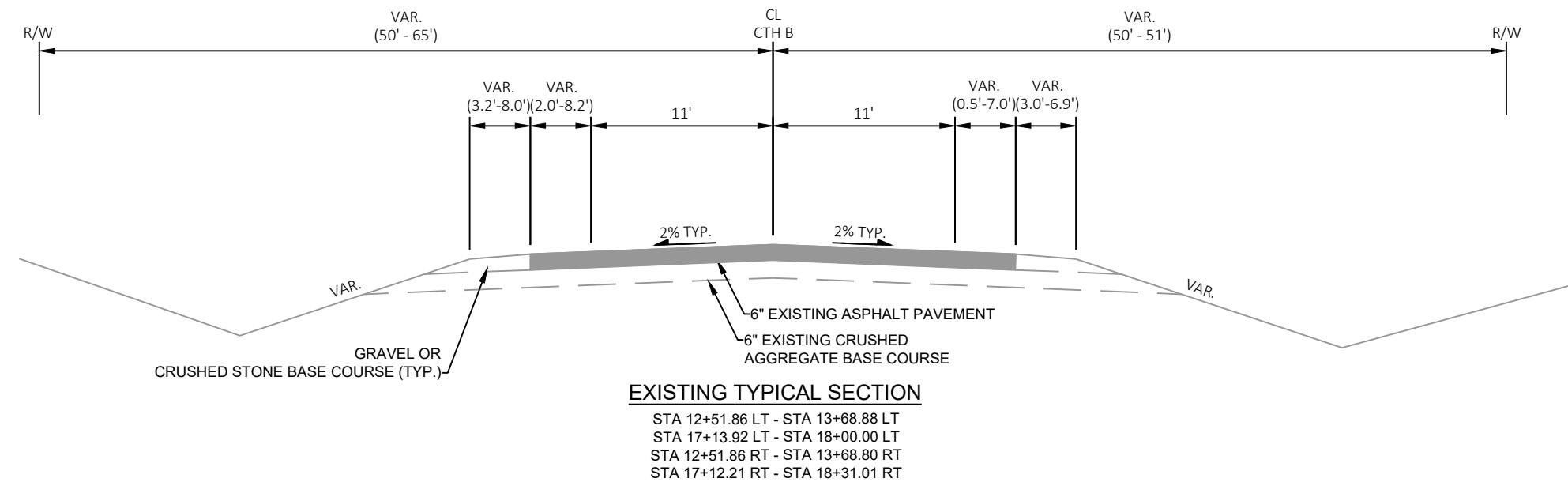
GENERAL NOTES  
TYPICAL SECTIONS  
WETLAND DETAIL  
CONSTRUCTION DETAIL - BOAT TRAFFIC CONTROL  
PLAN DETAILS  
EROSION CONTROL  
PERMANENT SIGNING & MARKING  
DETOUR ROUTE

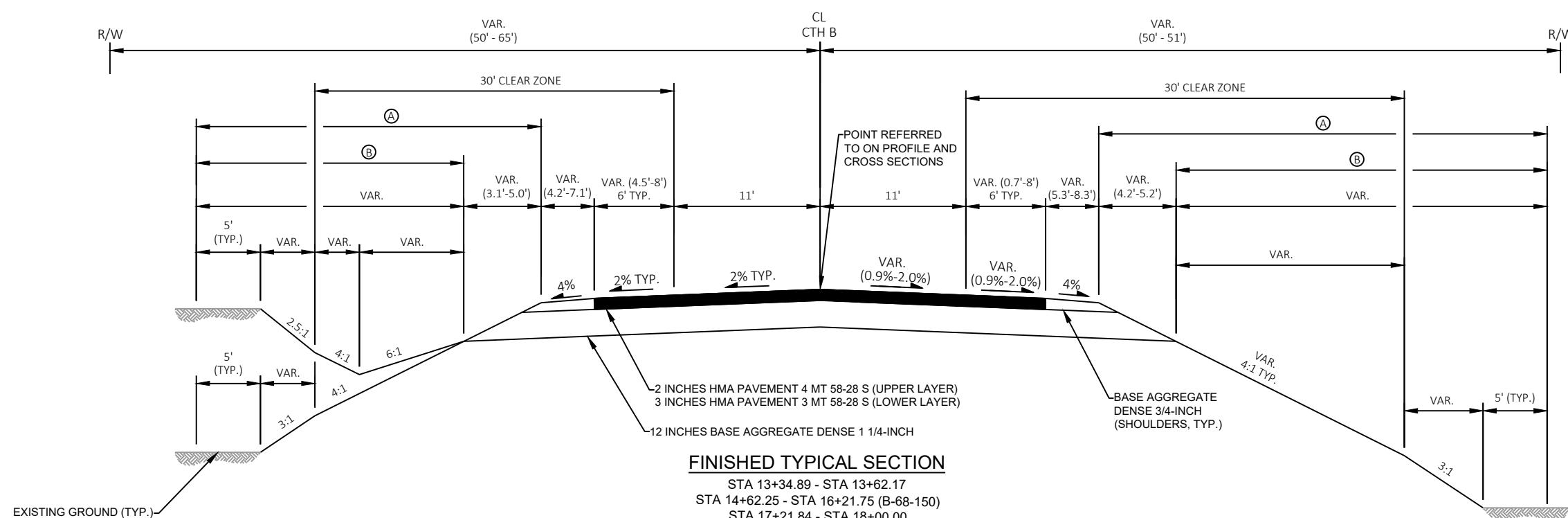
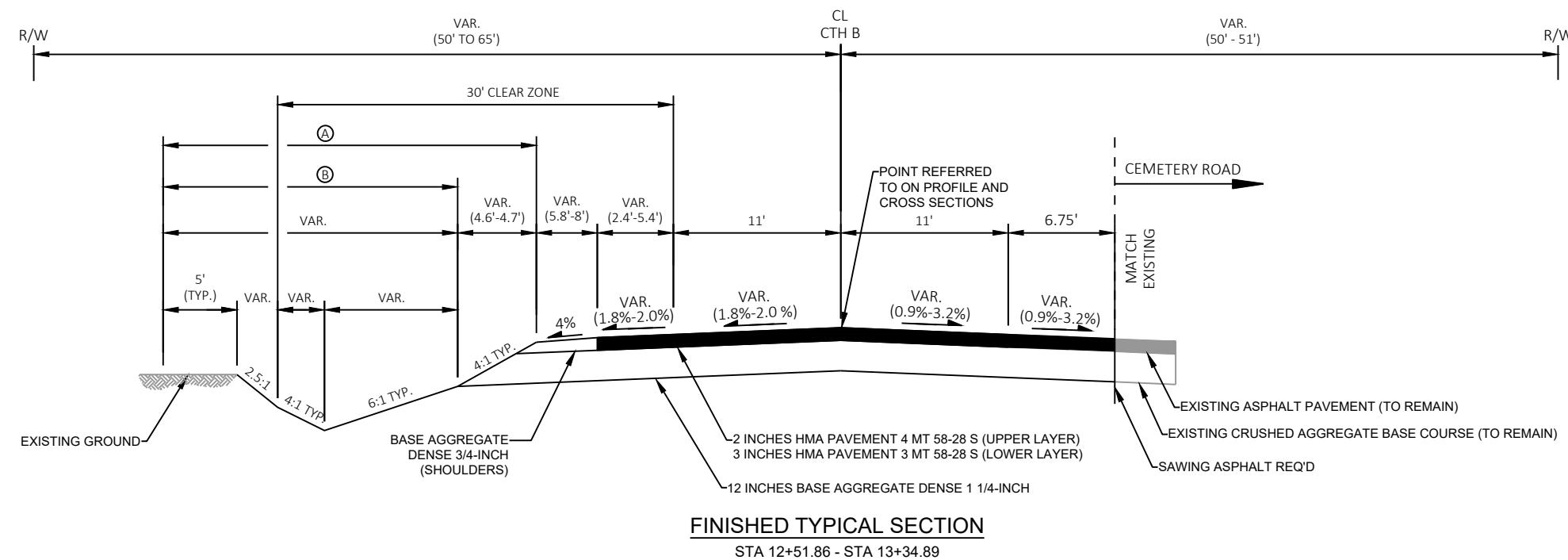
RUNOFF COEFFICIENT TABLE

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

TOTAL PROJECT AREA = 1.351 ACRES

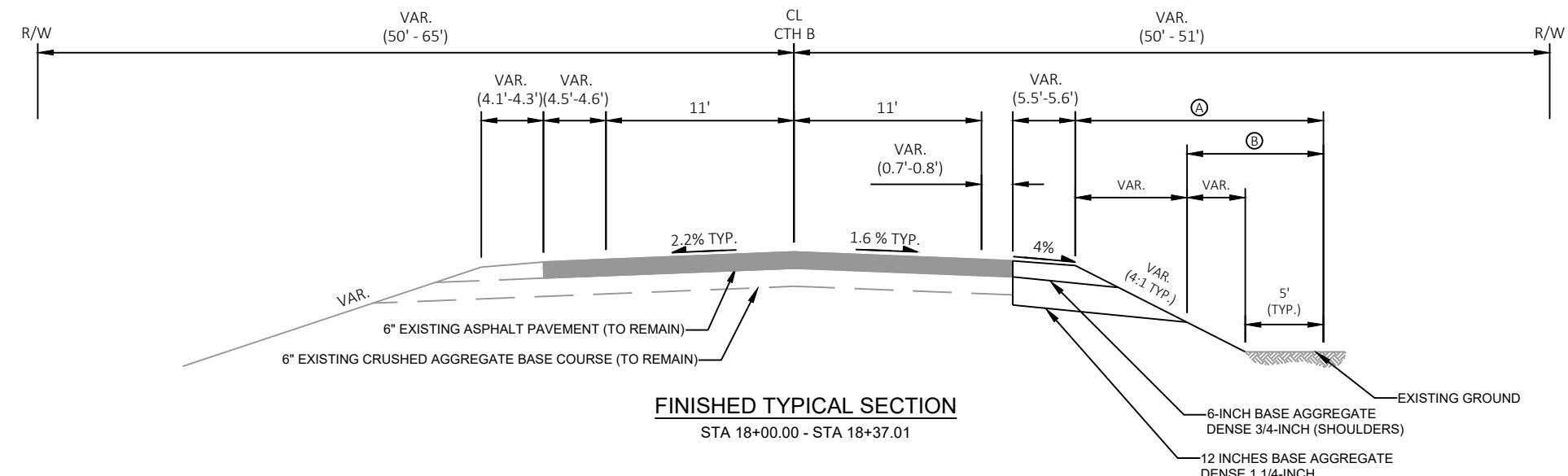
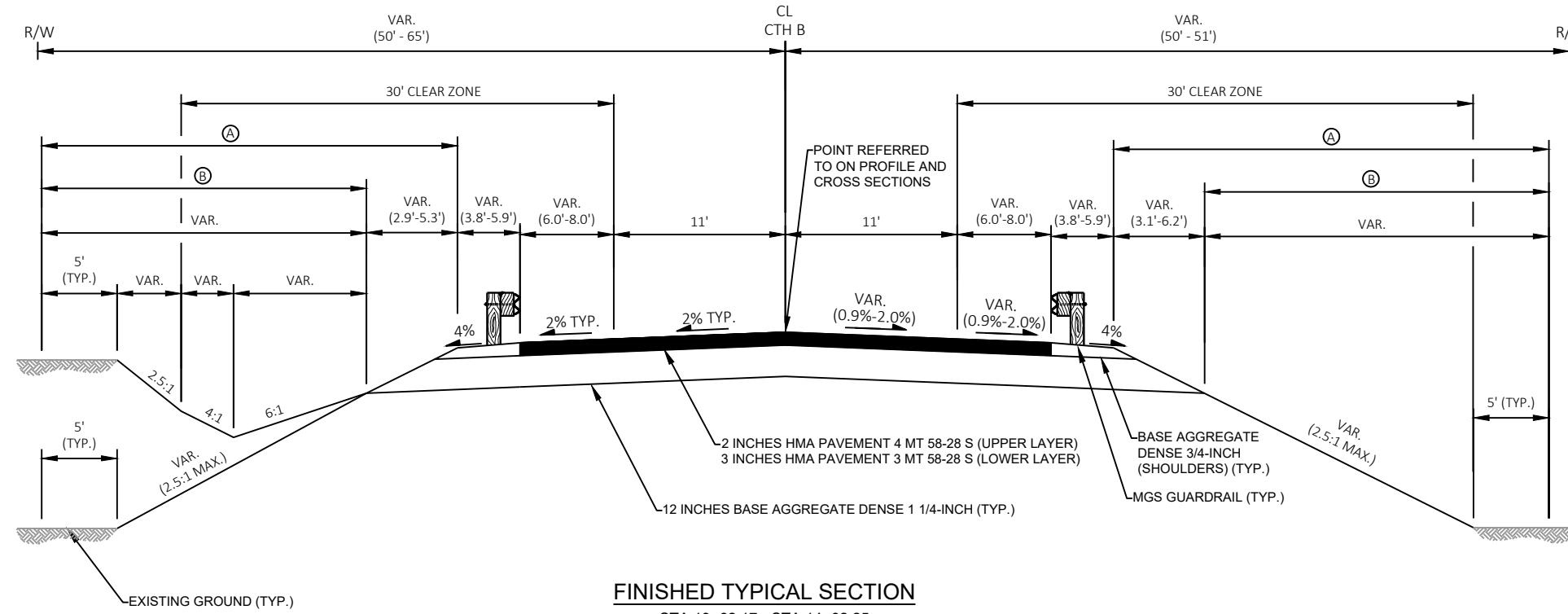
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.718 ACRES





(A) SEEDING MIXTURE NO. 20 AND FERTILIZER TYPE A.

(B) SALVAGED TOPSOIL; AND EROSION MAT URBAN CLASS I TYPE B



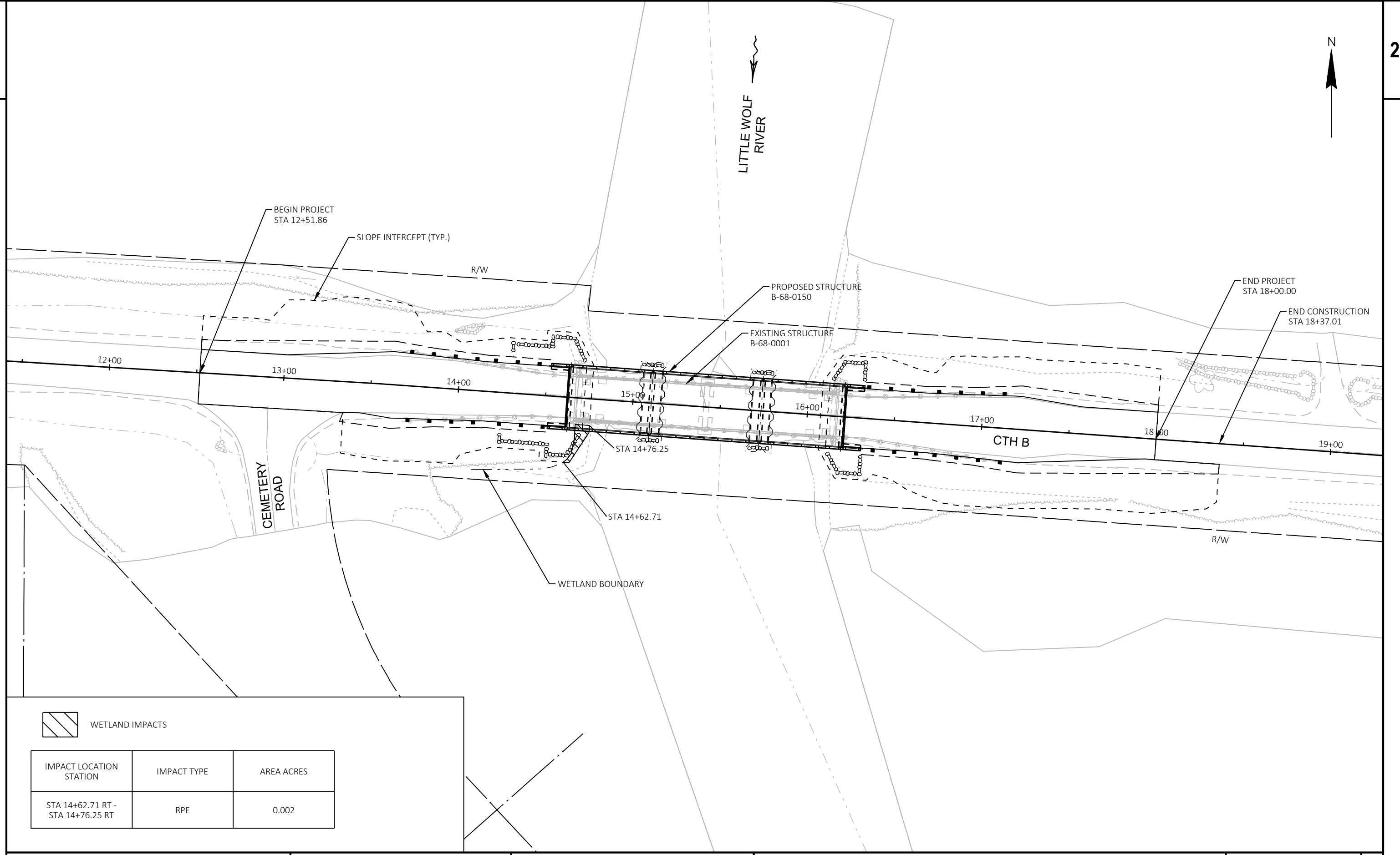
(A) SEEDING MIXTURE NO. 20  
AND FERTILIZER TYPE A.

(B) SALVAGED TOPSOIL;  
AND EROSION MAT URBAN CLASS I TYPE B

2

2

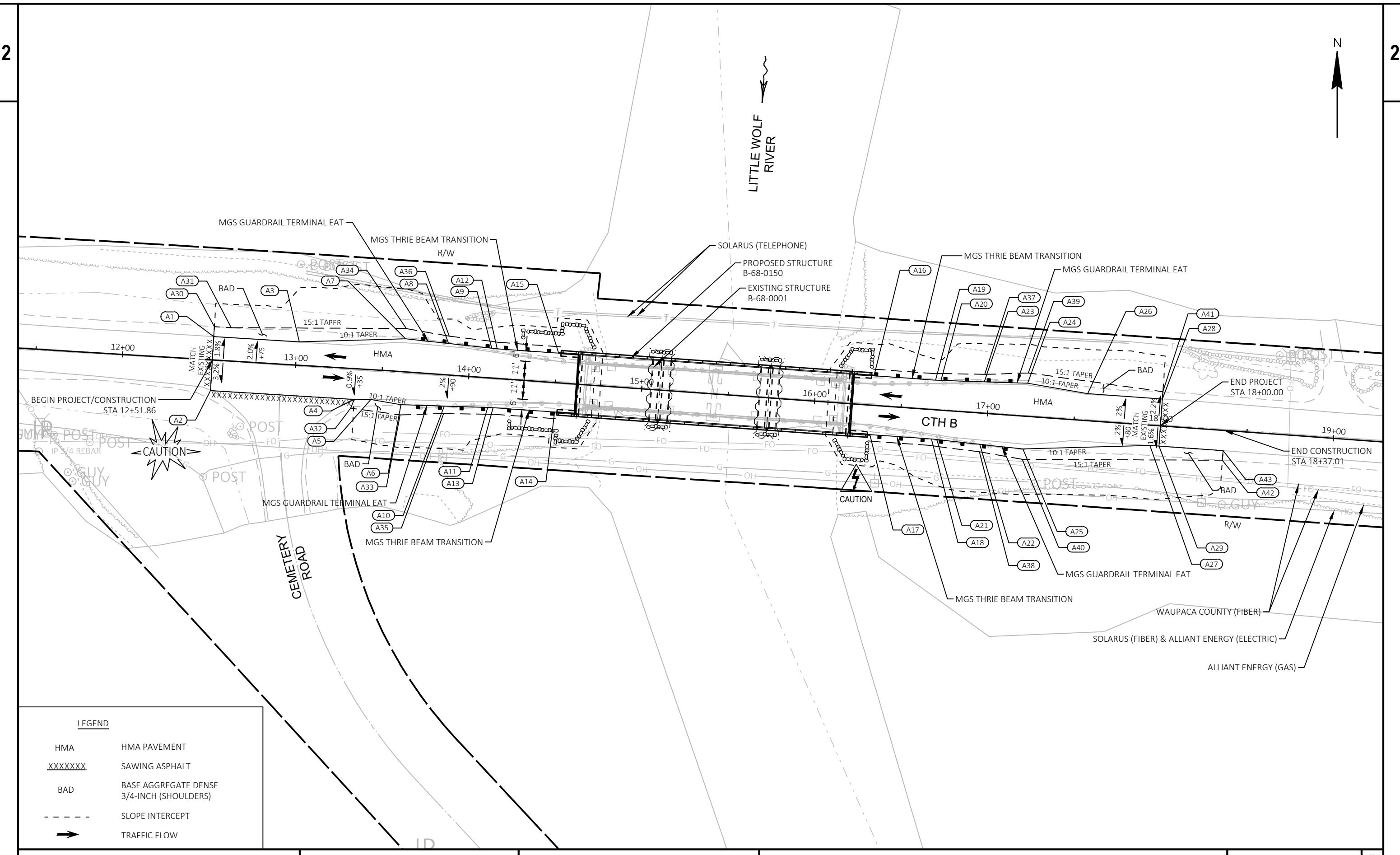
N





2

2



PROJECT NO: 6832-06-72

HWY: CTH

COUNTY: WAUPAC

## PLAN DETAIL

SHEET

E

FILE NAME : S:\MAD\5100-5199\5114\004\DRAWINGS\CAD\CIVIL 3D\Sheets\021201-PD.DWG  
LAYOUT NAME - 021201-pd

PLOT DATE : 10/22/2025 10:13 A

PLOT BY : CARPENTER, Z

PLOT NAM

PLOT SCALE : #####

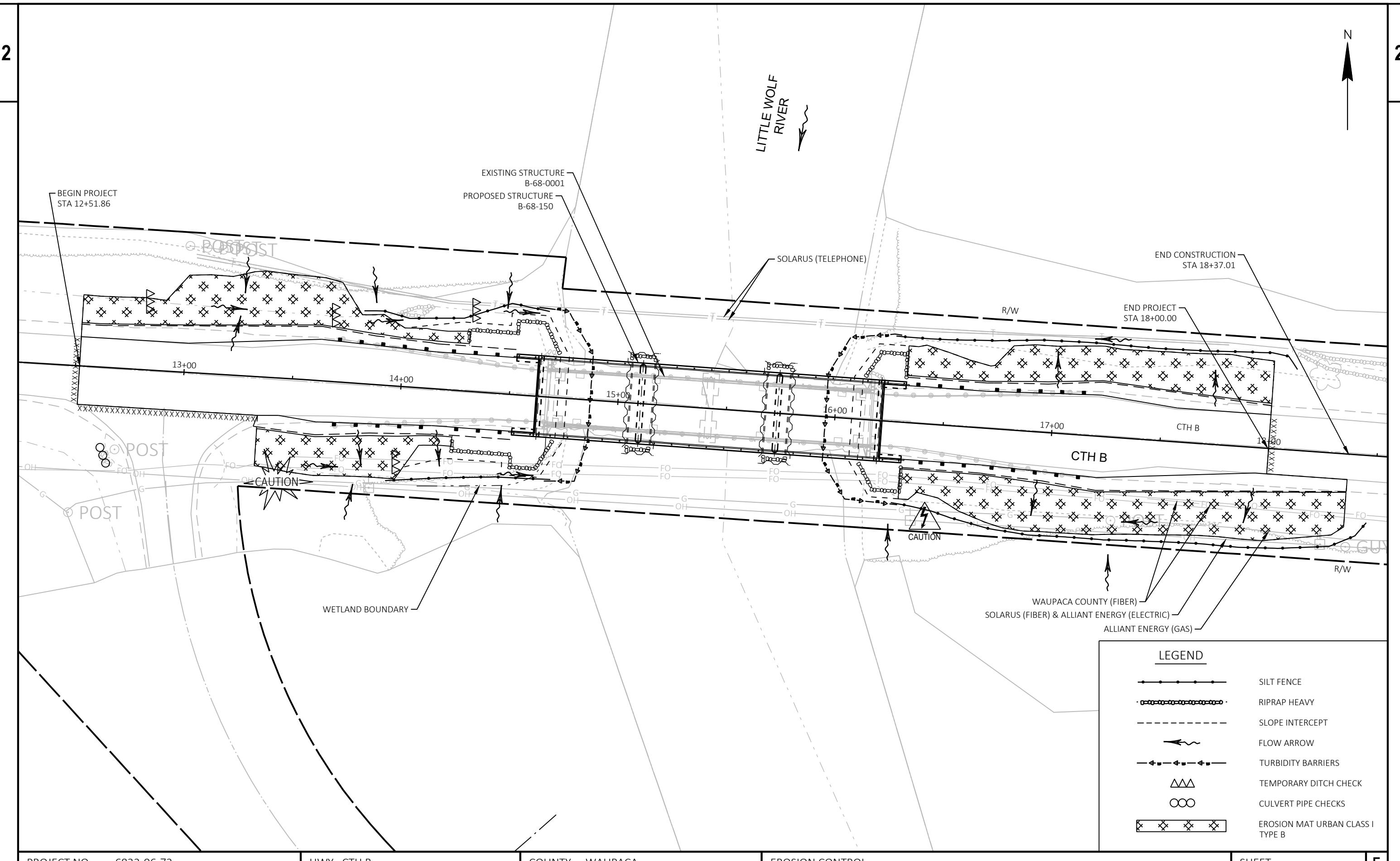
WISDOT/CADD\$ SHEET 42

STATION & OFFSET TABLE					
POINT	STATION	OFFSET	Y COORDS	X COORDS	REMARKS
A1	12+51.86	13.42 LT	375400.662	576367.592	MATCH EXIST.; EOP
A2	12+51.86	17.75 RT	375369.552	576365.698	MATCH EXIST.; EOP
A3	13+01.34	13.47 LT	375397.707	576416.978	EOP
A4	13+34.89	17.75 RT	375364.507	576448.568	MATCH EXIST.; EOP
A5	13+44.47	17.24 RT	375364.436	576458.162	EOP
A6	13+62.17	19.07 RT	375361.466	576475.510	EOP; POST #1
A7	13+62.16	19.00 LT	375399.443	576478.220	EOP; POST #1
A8	13+87.14	18.06 LT	375396.724	576503.072	EOP; POST #5
A9	14+12.13	17.12 LT	375394.005	576527.924	EOP; POST #9
A10	13+87.15	18.10 RT	375360.659	576500.497	EOP; POST #5
A11	14+12.13	17.12 RT	375359.853	576525.484	EOP; POST #9
A12	14+15.25	17.00 LT	375393.666	576531.030	END EAT; BEGIN THRIE BEAM
A13	14+15.25	17.00 RT	375359.752	576528.607	END EAT; BEGIN THRIE BEAM
A14	14+50.83	17.00 RT	375357.216	576564.100	END OF RAILING
A15	14+50.83	17.00 LT	375391.130	576566.523	END OF RAILING
A16	16+33.17	17.00 LT	375378.137	576748.393	END OF RAILING
A17	16+33.17	17.00 RT	375344.224	576745.970	END OF RAILING
A18	16+68.75	17.00 RT	375341.688	576781.463	END EAT; BEGIN THRIE BEAM
A19	16+68.75	17.00 LT	375375.602	576783.886	END EAT; BEGIN THRIE BEAM
A20	16+71.87	17.12 LT	375375.497	576787.009	EOP; POST #9
A21	16+71.87	17.12 RT	375341.348	576784.569	EOP; POST #9
A22	16+96.86	18.06 RT	375338.629	576809.421	EOP; POST #5

STATION & OFFSET TABLE					
POINT	STATION	OFFSET	Y COORDS	X COORDS	REMARKS
A23	16+96.86	18.06 LT	375374.655	576811.995	EOP; POST #5
A24	17+21.84	19.00 LT	375373.814	576836.981	EOP; POST #1
A25	17+21.84	19.00 RT	375335.910	576834.273	EOP; POST #1
A26	17+56.80	15.50 LT	375367.835	576871.607	EOP
A27	17+94.65	11.72 RT	375337.985	576907.420	EOP
A28	18+00.00	15.53 LT	375364.787	576914.698	MATCH EXIST.; EOP
A29	18+00.00	11.72 RT	375337.604	576912.756	MATCH EXIST.; EOP
A30	12+51.86	19.21 LT	375406.442	576367.944	MATCH EXIST.; HINGE POINT
A31	12+61.67	19.21 LT	375405.846	576377.733	HINGE POINT
A32	13+33.18	22.91 RT	375359.463	576446.547	MATCH EXIST.; HINGE POINT
A33	13+62.17	25.01 RT	375355.542	576475.095	HINGE POINT
A34	13+62.16	24.94 LT	375405.366	576478.643	HINGE POINT
A35	13+87.15	22.37 RT	375356.395	576500.198	HINGE POINT
A36	13+87.15	22.33 LT	375400.988	576503.377	HINGE POINT
A37	16+96.86	22.33 LT	375378.918	576812.299	HINGE POINT
A38	16+96.85	22.33 RT	375334.366	576809.116	HINGE POINT
A39	17+21.84	24.94 LT	375379.737	576837.404	HINGE POINT
A40	17+21.84	24.94 RT	375329.987	576833.850	HINGE POINT
A41	18+00.00	19.73 LT	375368.970	576914.996	MATCH EXIST.; HINGE POINT
A42	18+37.01	17.26 RT	375329.439	576949.272	MATCH EXIST.; HINGE POINT
A43	18+37.01	11.72 RT	375334.967	576949.667	MATCH EXIST.; EOP

2

2



PROJECT NO: 6832-06-72

HWY: CTH

COUNTY: WAUPAC

## EROSION CONTROL

SHEET

E

FILE NAME : S:\MAD\5100-5199\5114\004\DRAWINGS\CAD\CIVIL 3D\Sheets\022001-EC.DWG  
LAYOUT NAME - 022001-ec

PLOT DATE : 10/22/2025 10:13 A

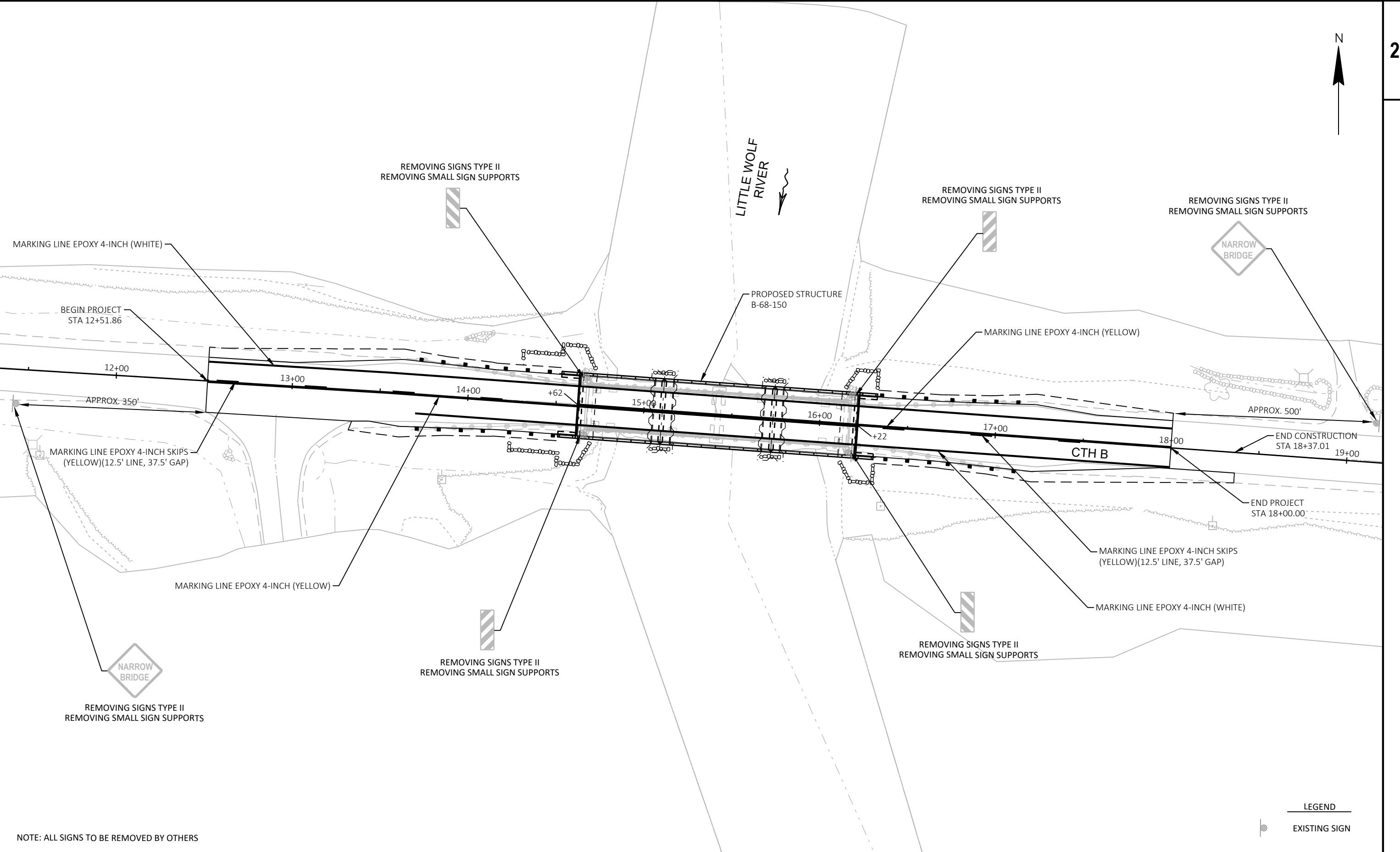
PLOT BY : CARPENTER, Z

PLOT SCALE : #####

WISDOT/CADD SHEET 43

2

2



PROJECT NO: 6832-06-72

HWY: CTH B

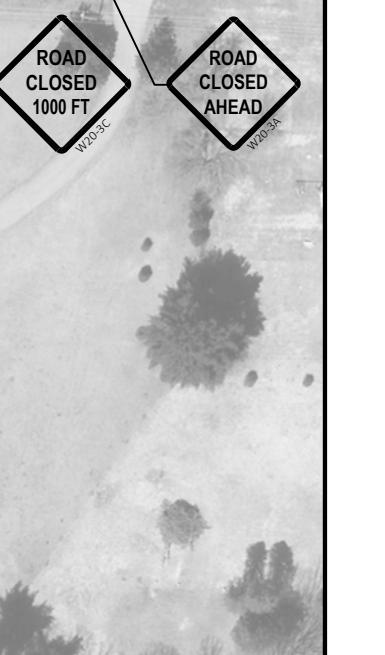
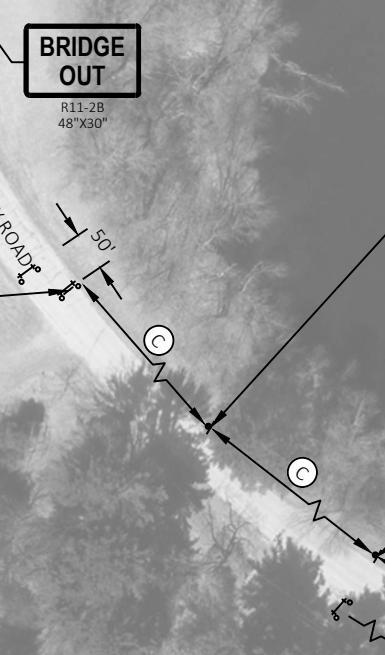
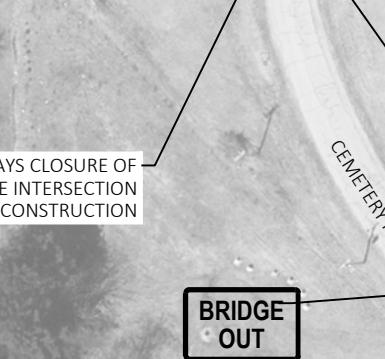
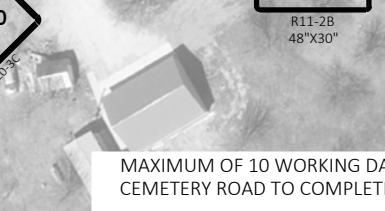
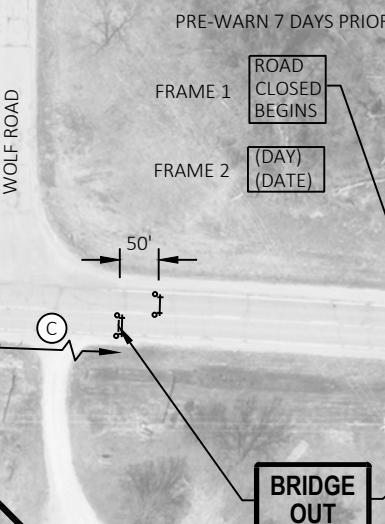
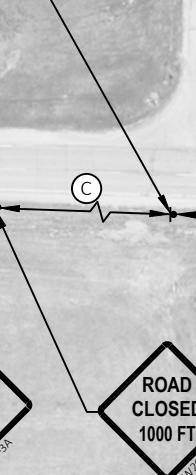
COUNTY: WAUPACA

PERMANENT SIGNING AND MARKING

SHEET

E



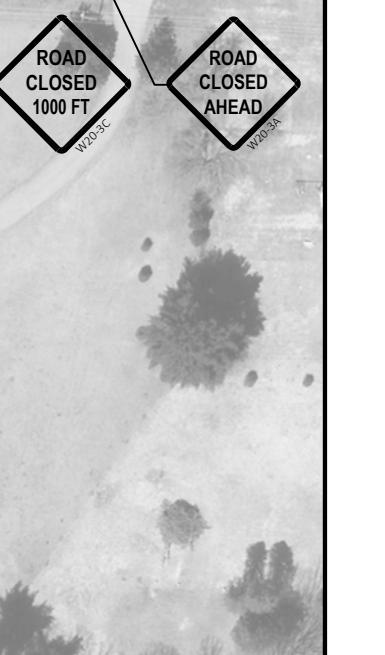
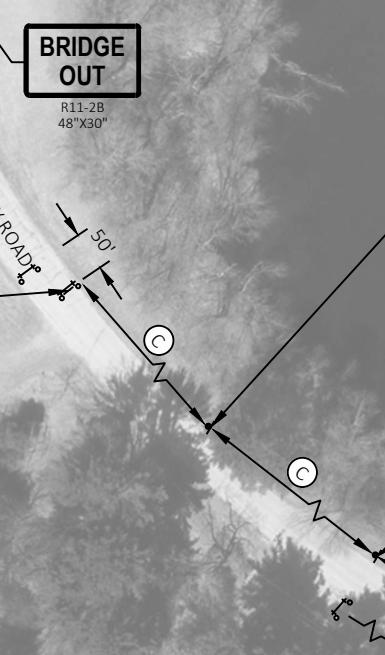
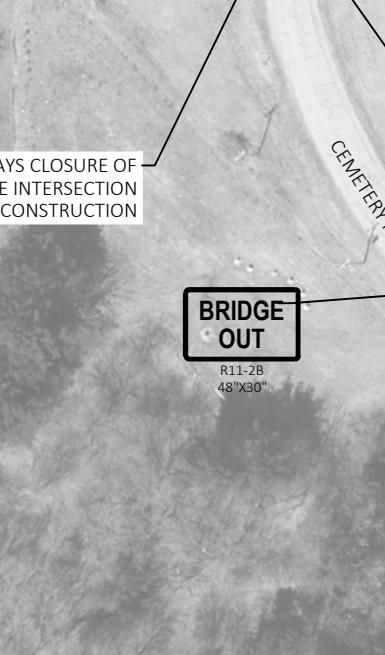
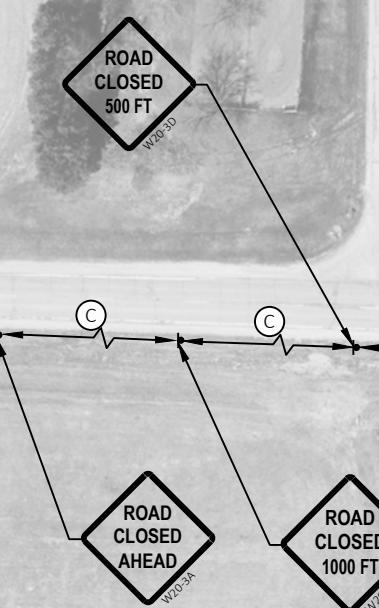


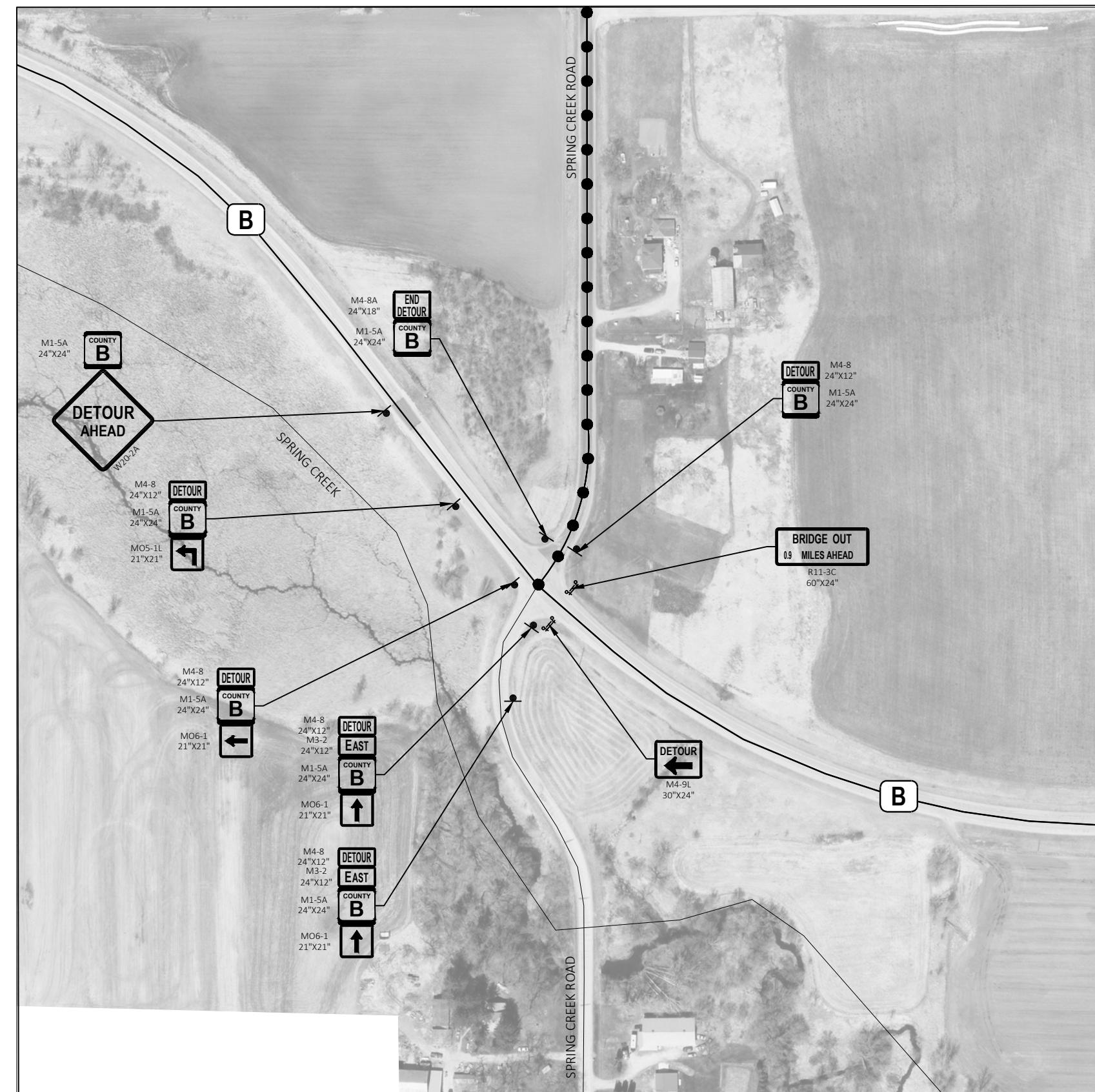
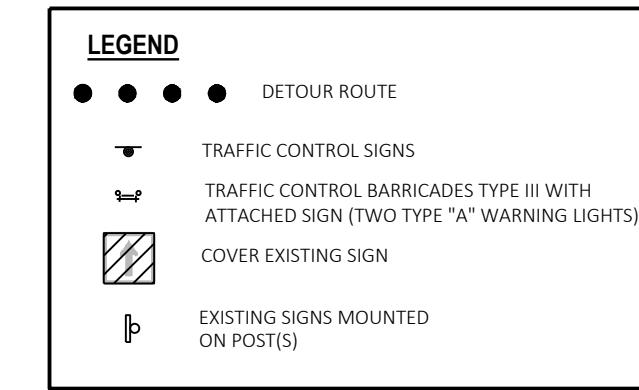
#### LEGEND

- TYPE III BARRICADE WITH ATTACHED SIGN TYPE 2  
(TWO WARNING LIGHTS TYPE A REQ'D)
- TYPE III BARRICADE WITHOUT SIGN (TWO WARNING LIGHTS  
TYPE A REQ'D)
- TYPE III BARRICADE WITHOUT SIGN (ONE WARNING LIGHT  
TYPE A REQ'D)
- TRAFFIC CONTROL SIGN ON POST
- WORK ZONE

SEE S.D.D "DETOUR SIGNING FOR MAINLINE CLOSURES",  
"BARRICADES AND SIGNS FOR MAINLINE CLOSURES" FOR  
ADDITIONAL INFORMATION AND SPACING.

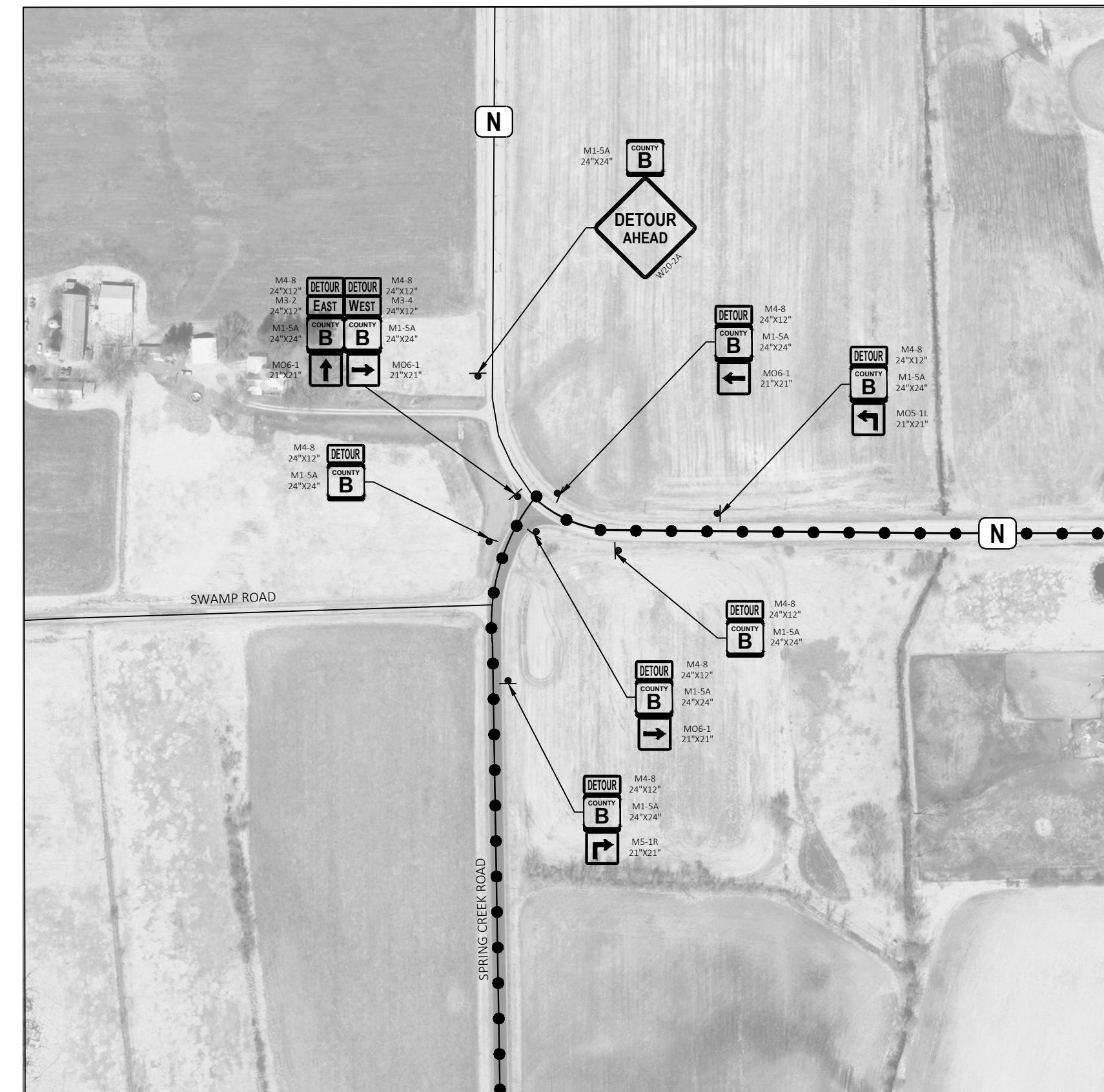
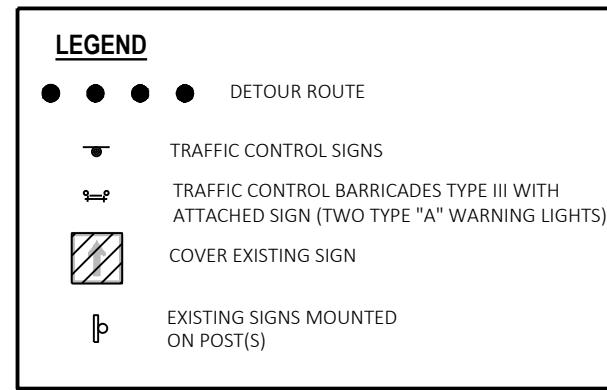
- (C) SEE S.D.D "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" DETAIL C
- (D) SEE S.D.D "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" DETAIL D



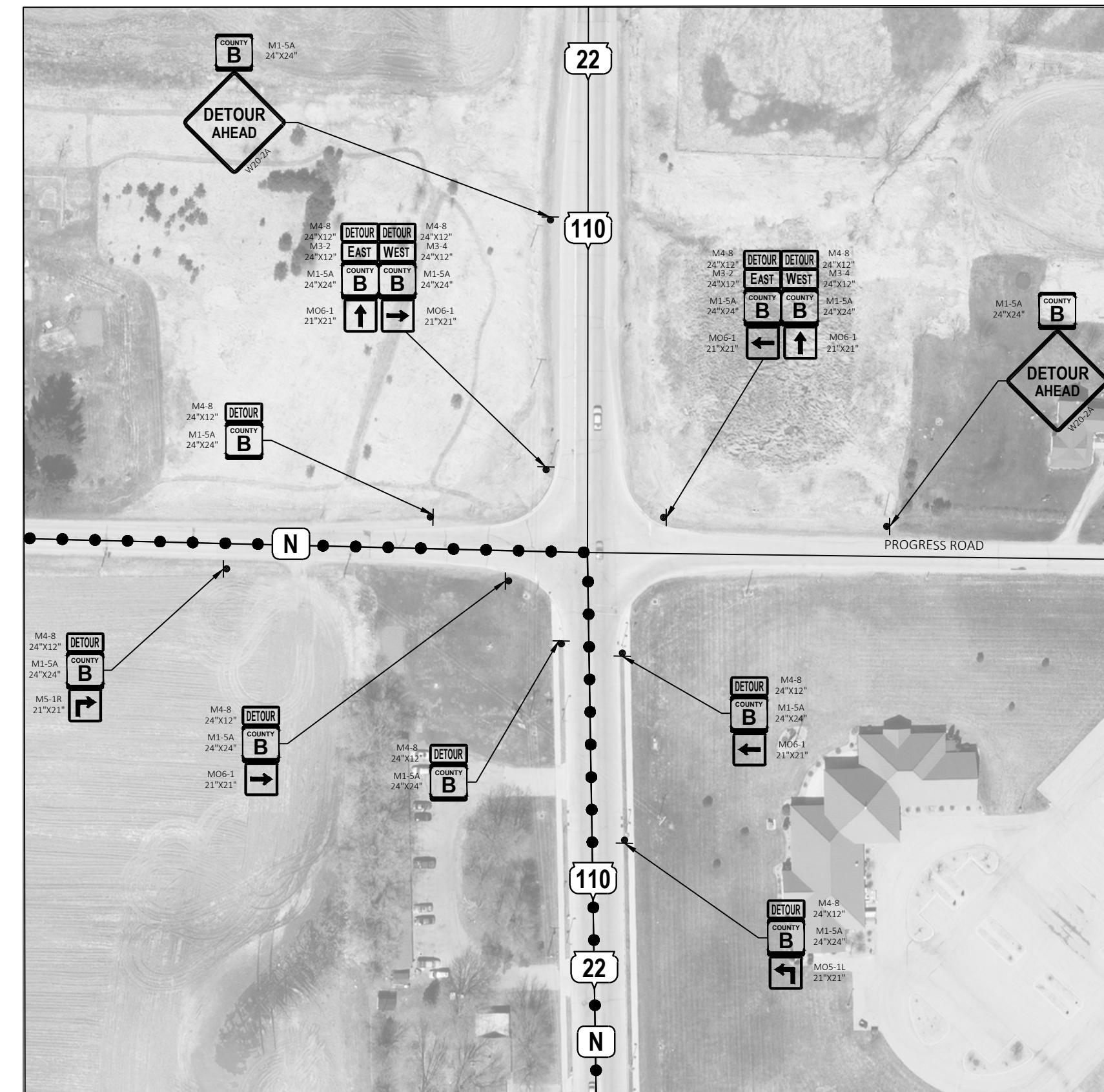
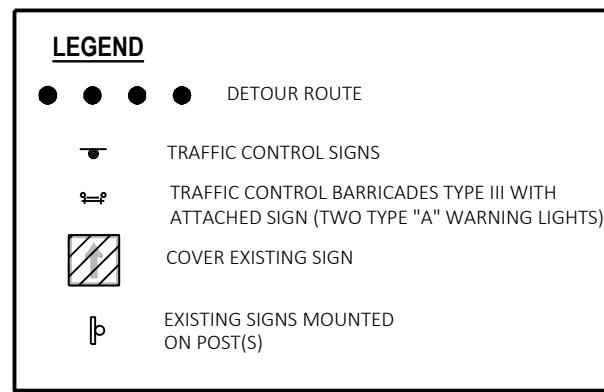


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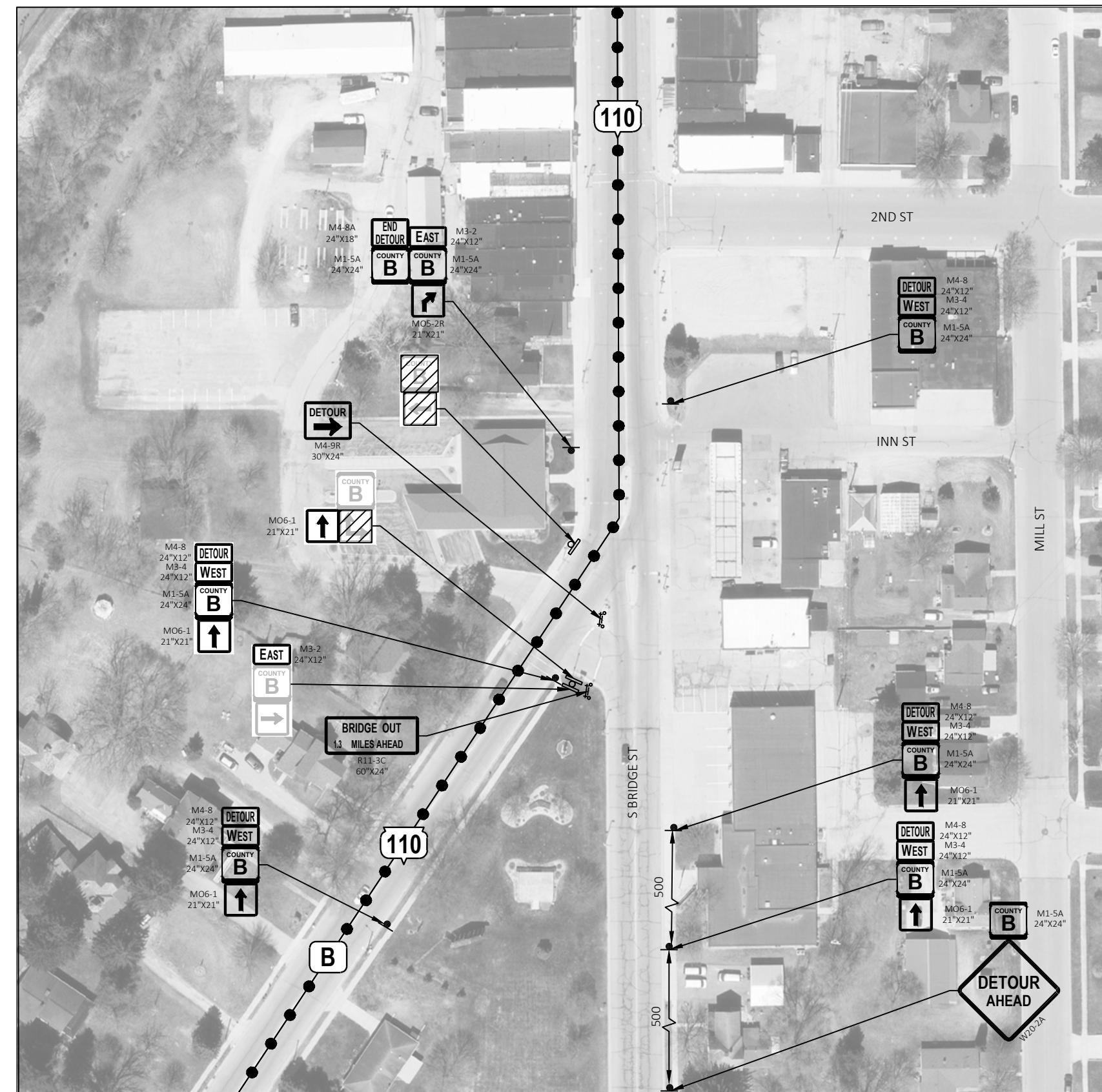
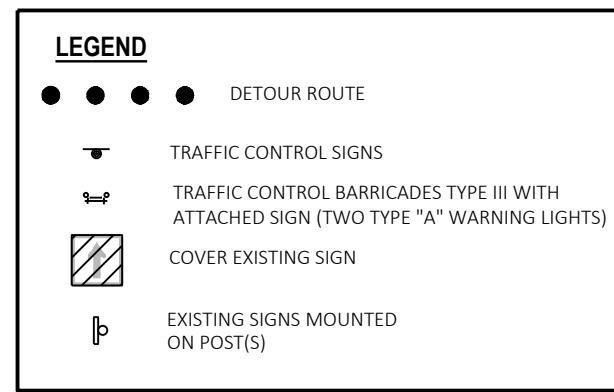


100



2

1



PROJECT NO: 6832-06-72

HWY: CTH E

COUNTY: WAUPACA

## DETOUR ROUTE - DETAIL E

SHEET

E

FILE NAME : S:\MAD\5100--5199\5114\004\DRAWINGS\CAD\CIVIL 3D\SHEETS\027001-DT.DWG  
LAYOUT NAME - 027006-dt

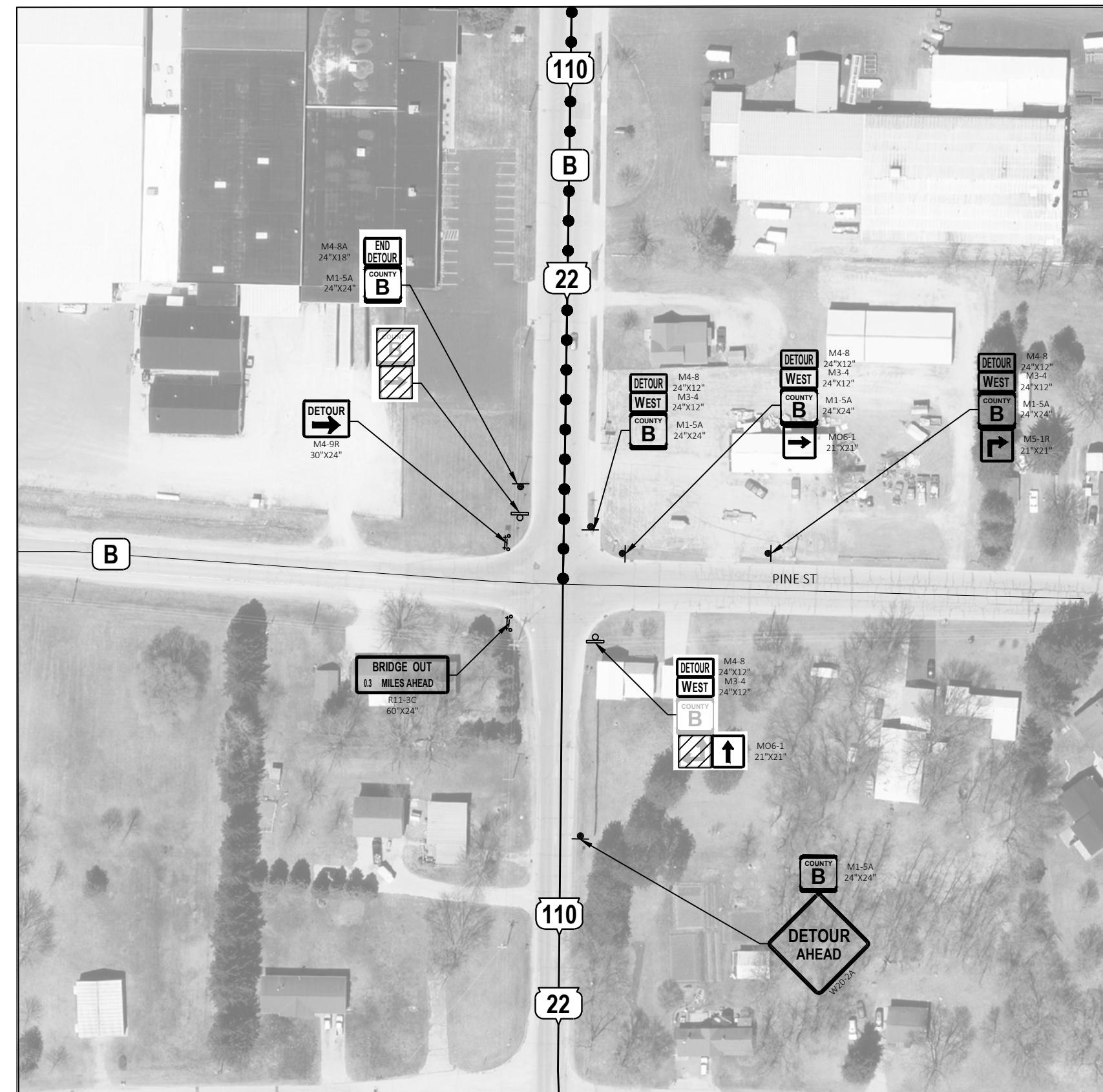
PLOT DATE : 10/22/2025 10:13 AM

PLOT BY : CARPENTER, ZAC

PLOT NAME

PLOT SCALE : 1 IN:40 FT

WISDOT/CADD SHEET 42



6832-06-72

Line	Item	Item Description	Unit	Total	Qty
0002	201.0205	Grubbing	STA	3.000	3.000
0004	203.0260	Removing Structure Over Waterway Minimal Debris (structure) 01. B-68-0001	EACH	1.000	1.000
0006	204.0165	Removing Guardrail	LF	460.000	460.000
0008	205.0100	Excavation Common	CY	939.000	939.000
0010	206.1001	Excavation for Structures Bridges (structure) 01. B-68-0150	EACH	1.000	1.000
0012	206.5001	Cofferdams (structure) 01. B-68-0150	EACH	1.000	1.000
0014	210.1500	Backfill Structure Type A	TON	278.000	278.000
0016	213.0100	Finishing Roadway (project) 01. 6832-02-72	EACH	1.000	1.000
0018	305.0110	Base Aggregate Dense 3/4-Inch	TON	120.000	120.000
0020	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,390.000	1,390.000
0022	312.0110	Select Crushed Material	TON	79.000	79.000
0024	455.0605	Tack Coat	GAL	73.000	73.000
0026	460.2000	Incentive Density HMA Pavement	DOL	270.000	270.000
0028	460.6223	HMA Pavement 3 MT 58-28 S	TON	245.000	245.000
0030	460.6224	HMA Pavement 4 MT 58-28 S	TON	163.000	163.000
0032	502.0100	Concrete Masonry Bridges	CY	604.000	604.000
0034	502.3200	Protective Surface Treatment	SY	786.000	786.000
0036	502.9000.S	Underwater Substructure Inspection (structure) 01. B-68-0150	EACH	2.000	2.000
0038	505.0400	Bar Steel Reinforcement HS Structures	LB	8,860.000	8,860.000
0040	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	82,560.000	82,560.000
0042	513.7084	Railing Steel Type NY4	LF	365.000	365.000
0044	516.0500	Rubberized Membrane Waterproofing	SY	20.000	20.000
0046	550.0500	Pile Points	EACH	34.000	34.000
0048	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	1,720.000	1,720.000
0050	606.0300	Riprap Heavy	CY	255.000	255.000
0052	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	218.000	218.000
0054	614.2500	MGS Thrie Beam Transition	LF	157.600	157.600
0056	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0058	618.0100	Maintenance and Repair of Haul Roads (project) 01. 6832-06-72	EACH	1.000	1.000
0060	619.1000	Mobilization	EACH	1.000	1.000
0062	624.0100	Water	MGAL	29.800	29.800
0064	625.0500	Salvaged Topsoil	SY	1,156.000	1,156.000
0066	627.0200	Mulching	SY	340.000	340.000
0068	628.1504	Silt Fence	LF	960.000	960.000
0070	628.1520	Silt Fence Maintenance	LF	1,455.000	1,455.000
0072	628.1905	Mobilizations Erosion Control	EACH	5.000	5.000
0074	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0076	628.2008	Erosion Mat Urban Class I Type B	SY	1,450.000	1,450.000
0078	628.6005	Turbidity Barriers	SY	381.000	381.000
0080	628.7504	Temporary Ditch Checks	LF	60.000	60.000
0082	628.7555	Culvert Pipe Checks	EACH	3.000	3.000
0084	628.7560	Tracking Pads	EACH	2.000	2.000
0086	629.0205	Fertilizer Type A	CWT	1.500	1.500
0088	630.0120	Seeding Mixture No. 20	LB	64.000	64.000
0090	630.0300	Seeding Borrow Pit	LB	9.000	9.000
0092	630.0500	Seed Water	MGAL	50.000	50.000
0094	642.5001	Field Office Type B	EACH	1.000	1.000
0096	643.0420	Traffic Control Barricades Type III	DAY	1,666.000	1,666.000
0098	643.0705	Traffic Control Warning Lights Type A	DAY	2,660.000	2,660.000

## Estimate Of Quantities

6832-06-72

Line	Item	Item Description	Unit	Total	Qty
0100	643.0900	Traffic Control Signs	DAY	11,788.000	11,788.000
0102	643.0920	Traffic Control Covering Signs Type II	EACH	6.000	6.000
0104	643.1050	Traffic Control Signs PCMS	DAY	28.000	28.000
0106	643.5000	Traffic Control	EACH	1.000	1.000
0108	645.0111	Geotextile Type DF Schedule A	SY	58.000	58.000
0110	645.0120	Geotextile Type HR	SY	512.000	512.000
0112	646.1020	Marking Line Epoxy 4-Inch	LF	1,781.000	1,781.000
0114	650.4500	Construction Staking Subgrade	LF	425.000	425.000
0116	650.5000	Construction Staking Base	LF	425.000	425.000
0118	650.6501	Construction Staking Structure Layout (structure) 01. B-68-0150	EACH	1.000	1.000
0120	650.9911	Construction Staking Supplemental Control (project) 01. 6832-06-72	EACH	1.000	1.000
0122	650.9920	Construction Staking Slope Stakes	LF	425.000	425.000
0124	690.0150	Sawing Asphalt	LF	142.000	142.000
0126	715.0502	Incentive Strength Concrete Structures	DOL	3,624.000	3,624.000
0128	999.2005.S	Maintaining Bird Deterrent System (station) 01. Station 15+50	EACH	1.000	1.000
0130	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	1,200.000	1,200.000
0132	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	600.000	600.000
0134	SPV.0195	Special 01. Infill Riprap B-68-150	TON	71.000	71.000

GRUBBING				REMOVING GUARDRAIL				FINISHING ROADWAY				BASE AGGREGATE SUMMARY												
CATEGORY	STATION - STATION	LOCATION	STA	201.0205 GRUBBING				204.0165				213.0100				305.0110 BASE AGGREGATE DENSE 3/4-INCH TON				305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON				
				0010	13+00 - 14+00	LT/RT	1	0010	13+69 - 14+79	LT	110	0010	6832-06-72	1	0010	12+51 - 14+62	LT/RT	60	0010	16+22 - 18+37	LT/RT	60	TOTALS	120
0010	13+00 - 14+00	LT/RT	1		13+69 - 14+90	RT	120																	
0010	16+00 - 17+00	LT/RT	1		15+95 - 17+14	LT	120																	
0010	17+00 - 18+00	LT/RT	1		16+05 - 17+12	RT	110																	
	TOTAL		3		TOTAL		460																	
3				3				3				3				3				3				

3

3

FINISHING ITEMS										FIELD OFFICE TYPE B		
CATEGORY	STATION - STATION	LOCATION	625.0500	627.0200	628.2008	629.0205	630.0120	630.0300	630.0500	642.5001	PROJECT	EACH
			SALVAGED TOPSOIL SY	MULCHING SY	URBAN CLASS I TYPE B SY	FERTILIZER TYPE A CWT	SEEDING MIXTURE NO. 20 LB	SEEDING BORROW PIT LB	SEED WATER MGAL			
0010	12+51 - 14+62	LT/RT	355	---	460	0.4	27	---	14			
	16+22 - 18+37	LT/RT	570	---	700	0.6	24	---	20			
	WASTE SITE		---	270	---	0.2	---	7	6			
	UNDISTRIBUTED		231	70	290	0.3	13	2	10			
	TOTALS		1,156	340	1,450	1.5	64	9	50			

CONSTRUCTION STAKING										CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT)					
CATEGORY	STRUCTURE	650.6501 EACH	650.4500 650.5000 650.9920			650.9911 EACH	PROJECT	650.9911 EACH							
			STATION - STATION	LOCATION	SUBGRADE LF	BASE LF	SLOPE STAKES LF								
0020	B-68-0150	1													
	0010	12+51 - 14+62	LT/RT	210	210	210				0010	6832-06-72	1			
		16+22 - 18+37	LT/RT	215	215	215									
		TOTALS		425	425	425									

TRAFFIC CONTROL										TRAFFIC CONTROL		
CATEGORY	PROJECT	643.5000 EACH	643.0900 643.1050 643.0420 643.0705			643.0920 COVERING SIGNS	PROJECT	643.0920 COVERING SIGNS				
			TRAFFIC CONTROL OPERATIONS	DURATION (DAYS)	NUMBER OF CYCLES	SIGNS EACH	SIGNS DAY	PCMS	BARRICADES TYPE III	WARNING LIGHTS TYPE A	TYPE II EACH	
0010	6832-06-72	1										
	0010	CTH B DETOUR AND CLOSURE CEMETERY RD CLOSURE	77	1	152	11,704	2	14	20	1,540	32	2,464
			14	1	6	84	2	14	9	126	14	196
		TOTALS			11,788		28		1,666		2,660	6

MARKING LINE ITEMS										SAWING					
CATEGORY	STATION - STATION	LOCATION	646.1020 MARKING LINE EPOXY 4-INCH (12.5' SEG., 37.5' GAP)			690.0150 ASPHALT LF	PROJECT	699.2005.S.01 EACH							
			(WHITE) LF	(YELLOW) LF	(YELLOW) LF										
0010	12+51 - 18+00	LT/RT	980	96	705										
	TOTAL		1,781												

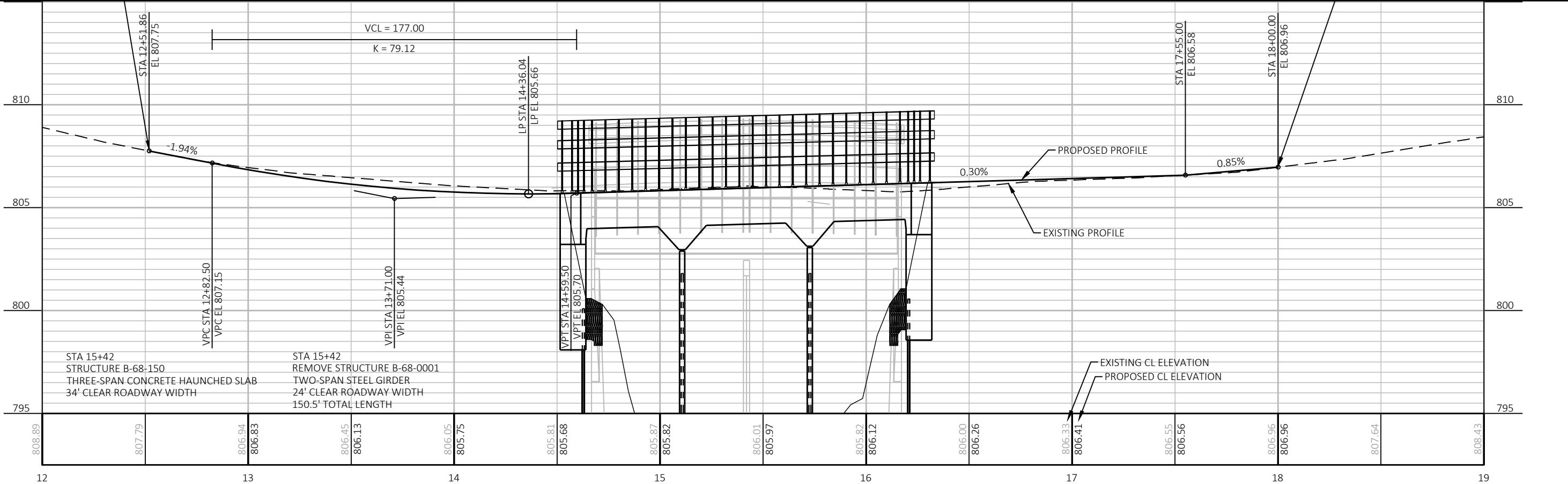
MAINTAINING BIRD DETERRENT SYSTEM						
CATEGORY	STATION	LF	699.2005.S.01			
			0010	12+51	32	0010
	12+52 - 13+35			83		
	18+00			27		
	TOTAL			142		

NO.	STATION	OFFSET	Y	X
CP 5	20+47.12	11.78' RT	375319.43	577159.17
CP 10	17+11.29	16.99' LT	375372.56	576826.32
CP 15	13+99.54	14.74' RT	375363.13	576513.10

## ▲ CONTROL POINTS

BENCHMARKS				
NO.	STATION	OFFSET	ELEV.	DESCRIPTION
BM 100	20+14.61	39.87' RT	813.20	RR SPIKE
BM 101	16+15.95	14.17' RT	806.45	CHISELED SQUARE
BM 102	11+59.04	47.50' RT	810.18	10-INCH SPIKE

## BENCHMARKS



PROJECT NO: 6832-06-72

HWY: CTH

COUNTY: WAUPACA

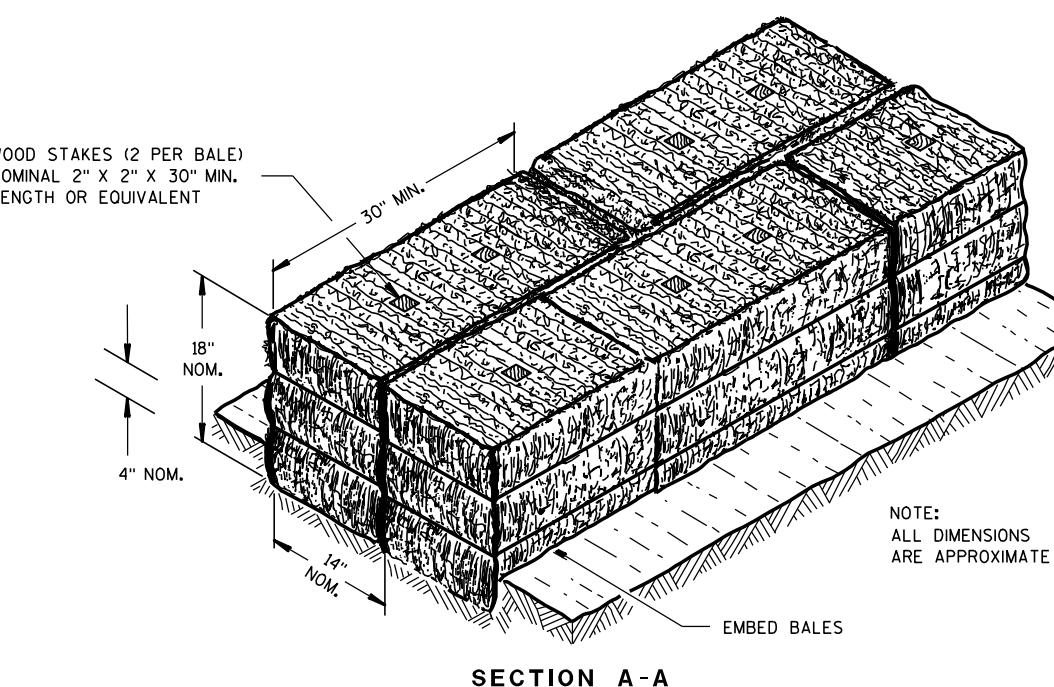
**PLAN AND PROFILE:** CTH B

SHEET

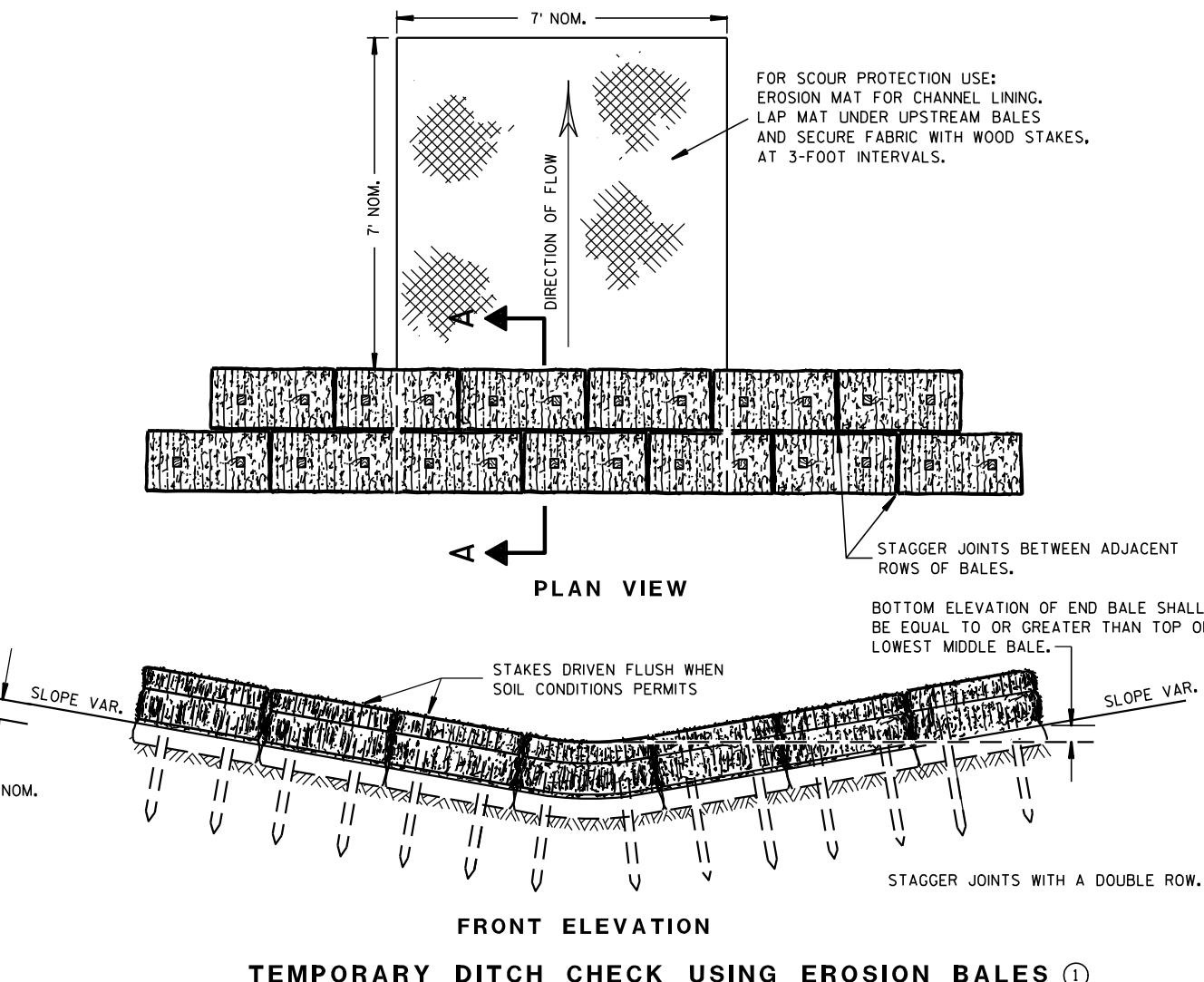
E

## Standard Detail Drawing List

08E08-03	TYPI CAL I NSTALLATI ONS OF EROSI ON BALES / TEMPORARY DITCH CHECKS
08E09-06	SI LT FENCE
08E11-02	TURBI DI TY BARRI ER
08E14-01	TRACKI NG PAD
08E15-01	CULVERT PI PE CHECK
12A03-10	NAME PLATE (STRUCTURES)
13C19-03	HMA LONGI TUDI NAL JOI NTS
14B42-07A	MI DWEST GUARDRAI L SYSTEM (MGS) GUARDRAI L
14B42-07B	MI DWEST GUARDRAI L SYSTEM (MGS) GUARDRAI L
14B42-07C	MI DWEST GUARDRAI L SYSTEM (MGS) GUARDRAI L
14B42-07D	MI DWEST GUARDRAI L SYSTEM (MGS) GUARDRAI L
14B44-04A	MI DWEST GUARDRAI L SYSTEM ENERGY ABSORBI NG TERMI NAL (MGS)
14B44-04B	MI DWEST GUARDRAI L SYSTEM ENERGY ABSORBI NG TERMI NAL (MGS)
14B44-04C	MI DWEST GUARDRAI L SYSTEM ENERGY ABSORBI NG TERMI NAL (MGS)
14B45-05A	MI DWEST GUARDRAI L SYSTEM THRI E BEAM TRANSI TI ON (MGS)
14B45-05B	MI DWEST GUARDRAI L SYSTEM THRI E BEAM TRANSI TI ON (MGS)
14B45-05C	MI DWEST GUARDRAI L SYSTEM THRI E BEAM TRANSI TI ON (MGS)
14B45-05H	MI DWEST GUARDRAI L SYSTEM THRI E BEAM TRANSI TI ON (MGS)
15C02-09A	BARRI CADES AND SI GNS FOR MAI NLI NE CLOSURES
15C02-09B	BARRI CADES AND SI GNS FOR VARIOUS CLOSURES
15C02-09C	DETOUR SI GNI NG FOR MAI NLI NE CLOSURES
15C03-05	BARRI CADES AND SI GNS FOR SI DEROAD CLOSURES
15C04-05	TRAFFIC CONTROL, ADVANCE WARNI NG SI GNS 45 M. P. H. OR GREATER TWO-WAY UNDI VI DED ROAD OPEN TO TRAFFI C
15C08-24A	PERMANENT LONGI TUDI NAL PAVEMENT MARKI NGS



SECTION A-A

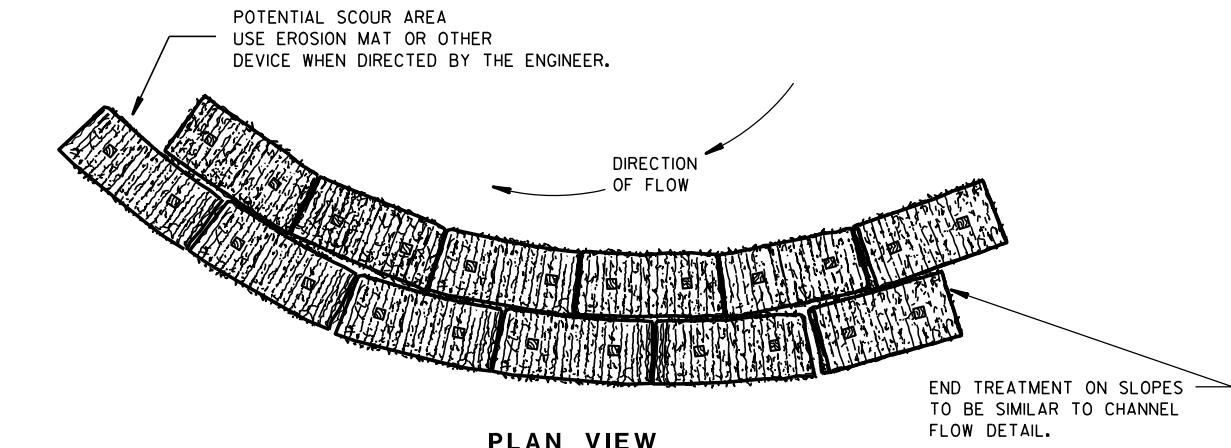


TEMPORARY DITCH CHECK USING EROSION BALES (1)

## GENERAL NOTES

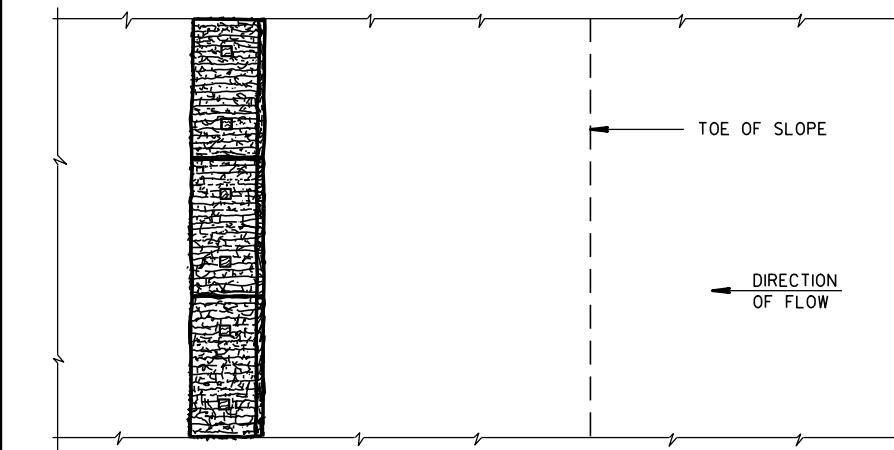
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

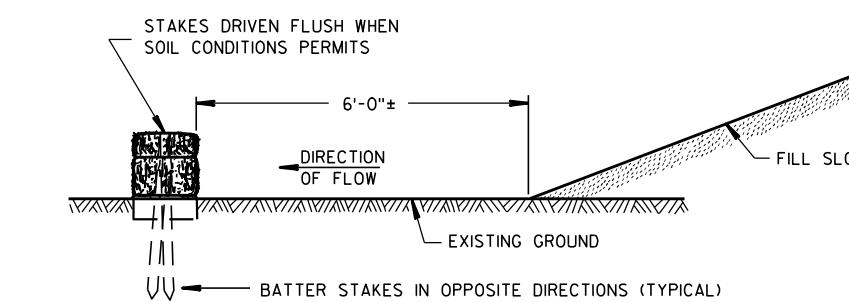


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



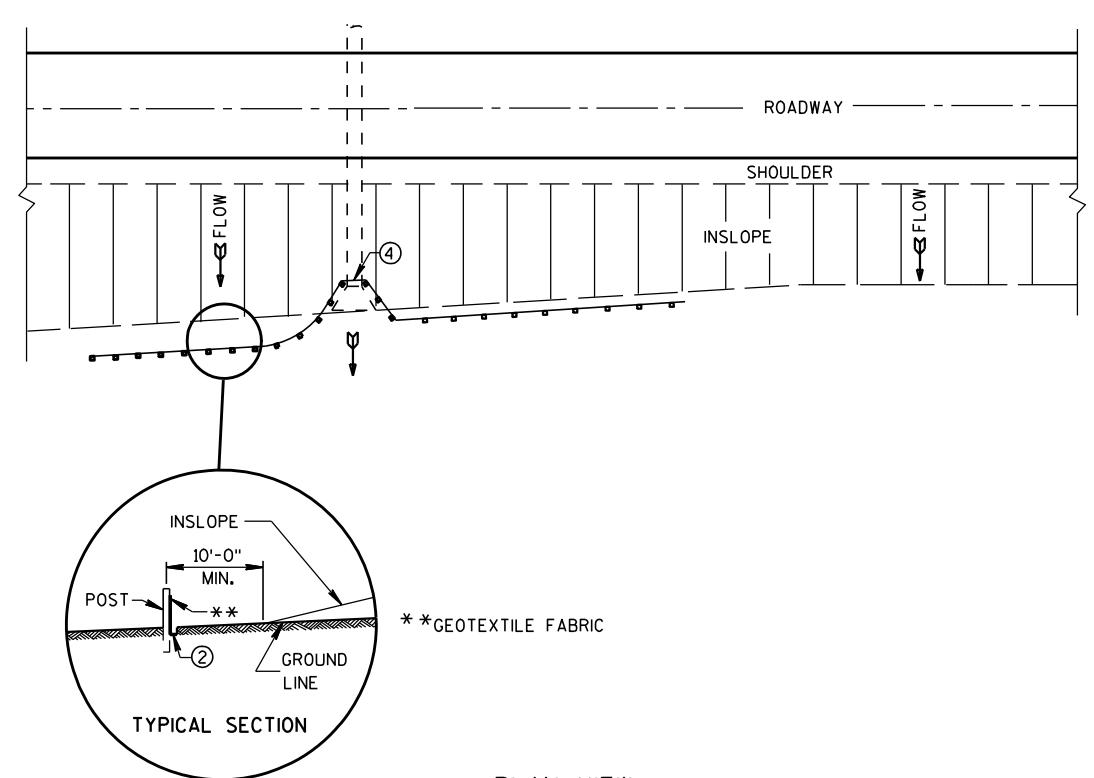
FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

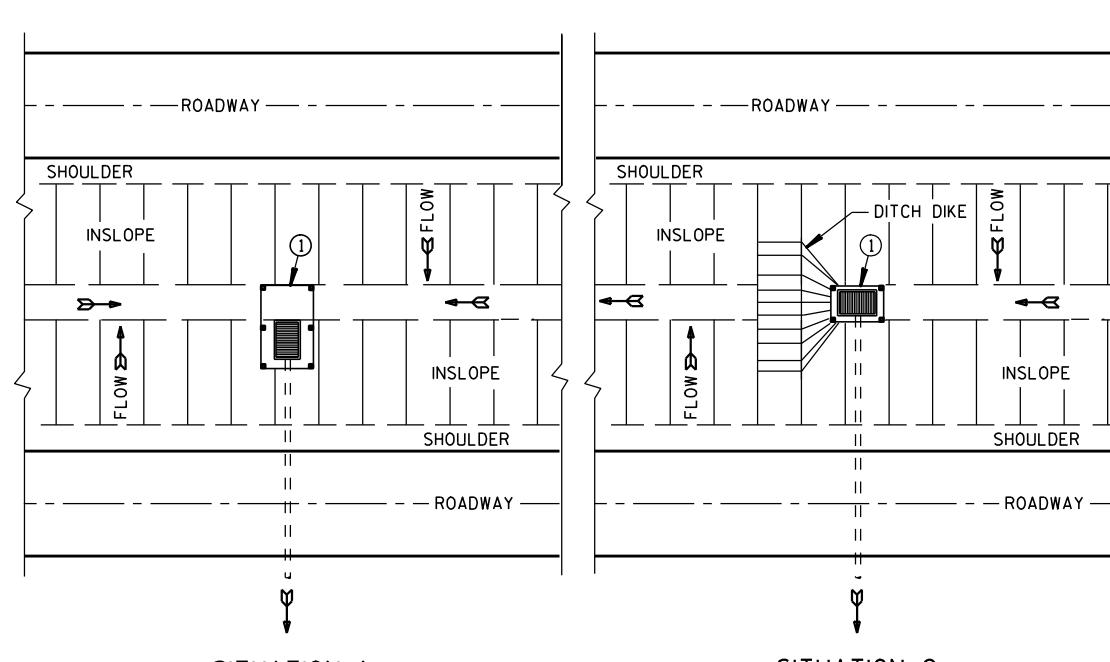
## EROSION BALES FOR SHEET FLOW

## TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

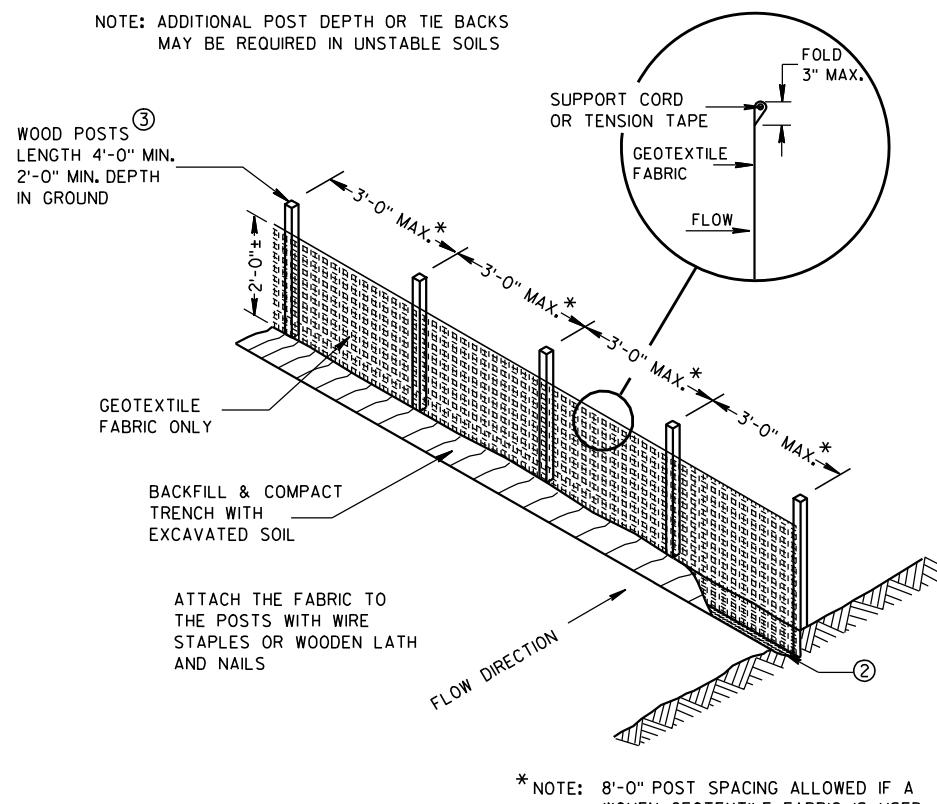
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATIONAPPROVED  
6/04/02 /S/ Beth Cannestra  
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER  
FHWA



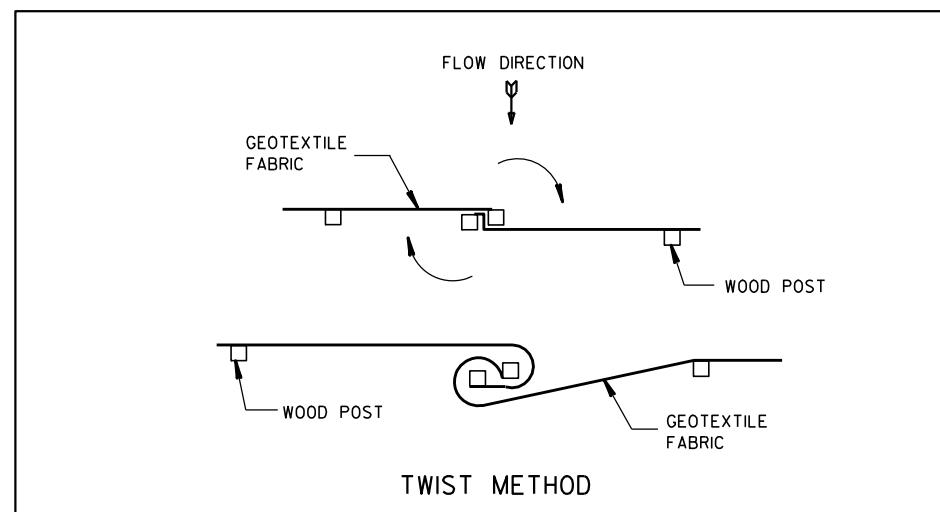
PLAN VIEW  
TYPICAL APPLICATION OF SILT FENCE



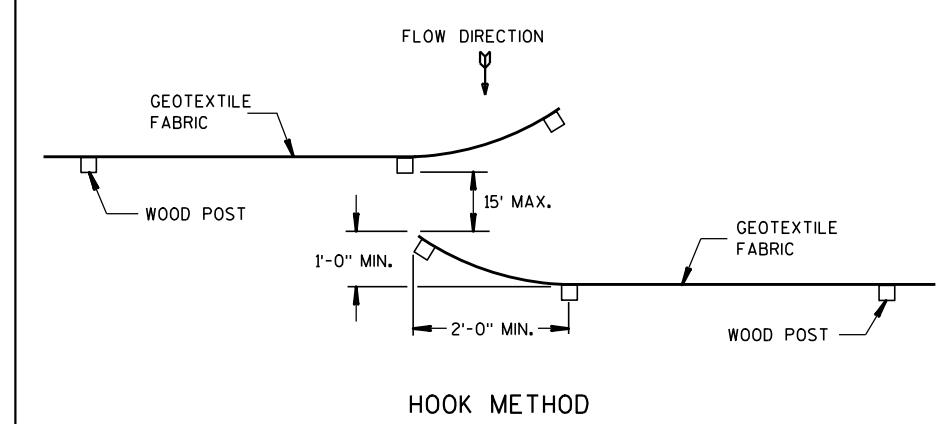
### SILT FENCE AT MEDIAN SURFACE DRAINS



SILT FENCE



TWIST METHOD

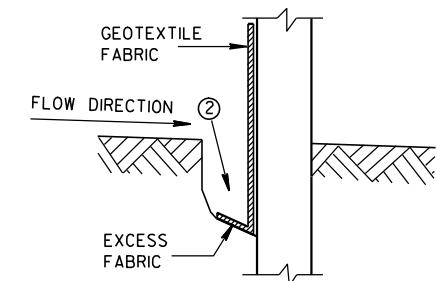


JOINING TWO LENGTHS OF SILT FENCE<sup>⑤</sup>

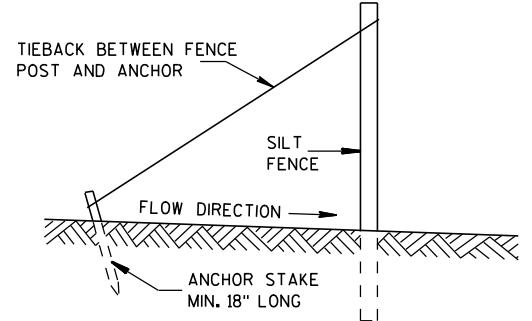
### GENERAL NOTES

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 1/8" X 1/8" OF OAK OR HICKORY.
- ④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
- ⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.

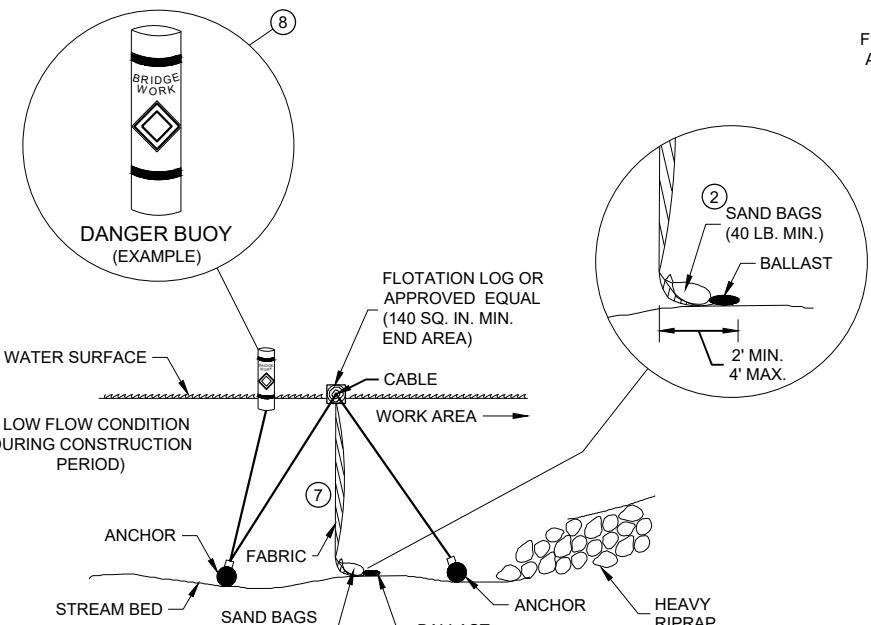


TRENCH DETAIL

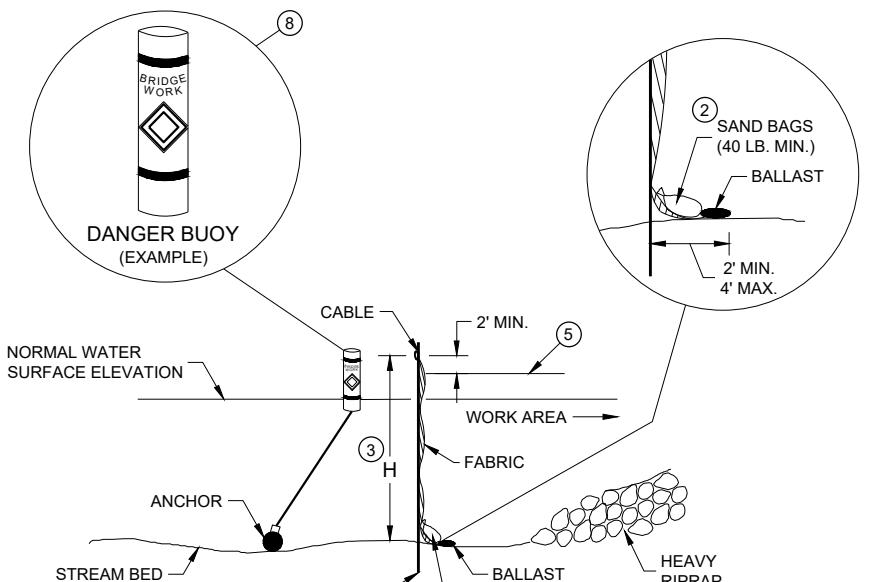


SILT FENCE TIE BACK  
(WHEN REQUIRED BY THE ENGINEER)

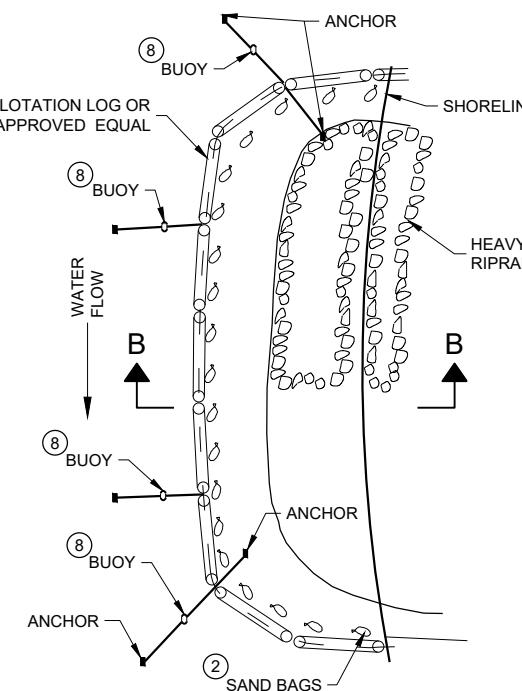
SILT FENCE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 4-29-05 DATE	/S/ Beth Cannestra CHIEF ROADWAY DEVELOPMENT ENGINEER FHWA



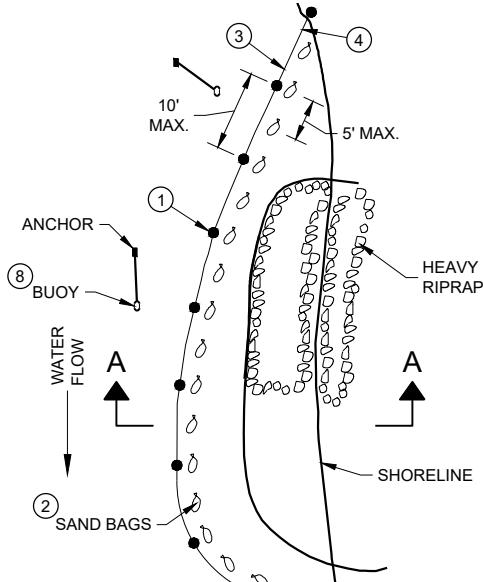
SECTION B - B

**TURBIDITY BARRIER - FLOAT ALTERNATIVE**  
**CAUTION - SEE NOTE 6**


SECTION A - A

**TURBIDITY BARRIER - STANDARD POST INSTALLATION**
**TURBIDITY BARRIER PLACEMENT DETAILS**


PLAN VIEW



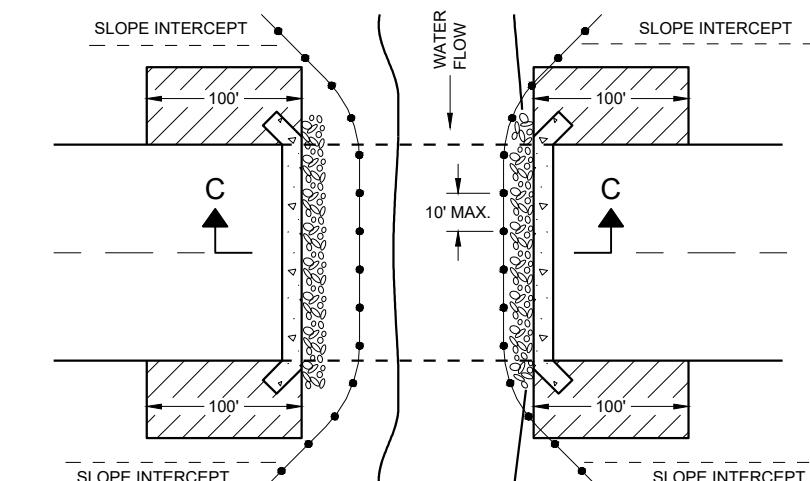
PLAN VIEW

**GENERAL NOTES**

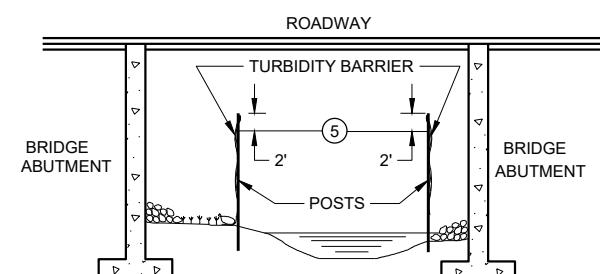
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

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



PLAN VIEW

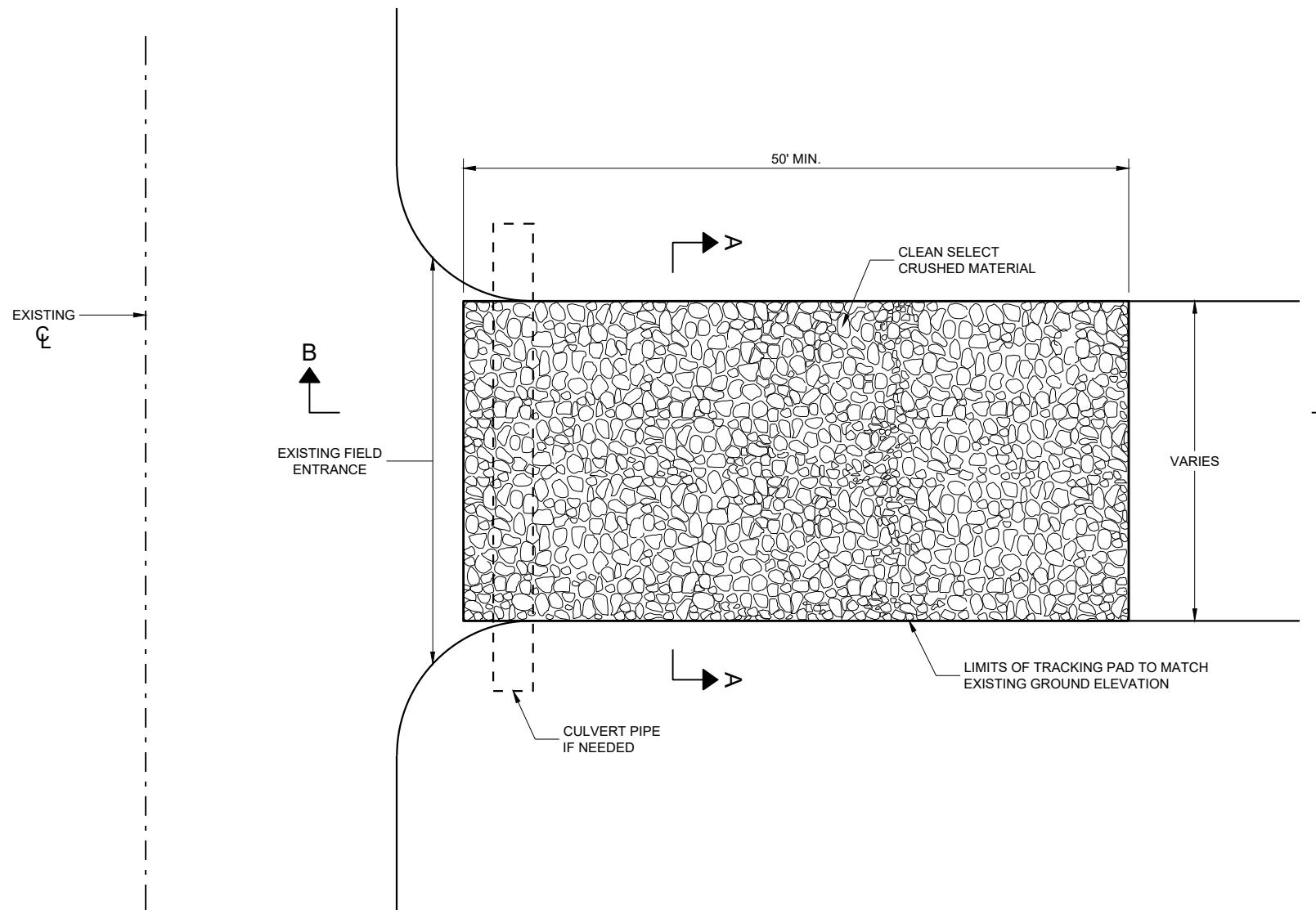


SECTION C - C

**TURBIDITY BARRIER DETAIL SHOWING**  
**TYPICAL PLACEMENT AT STRUCTURES**
**TURBIDITY BARRIER**

STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

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

TRACKING PAD SHALL BE INSPECTED DAILY. DEFICIENT AREAS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

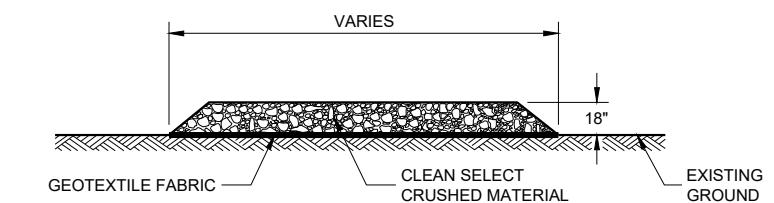
TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT.

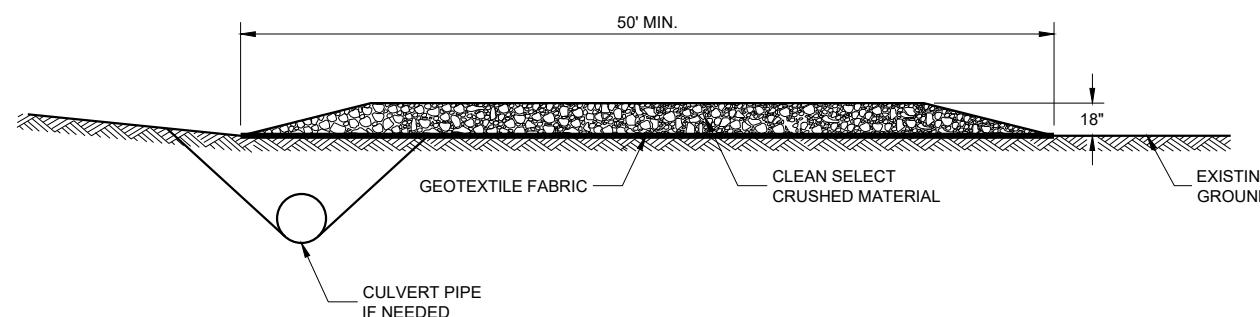
SURFACE WATER MUST BE PREVENTED FROM PASSING THROUGH THE TRACKING PAD. FLOWS SHALL BE DIVERTED AWAY, AROUND OR CONVEYED UNDER THE TRACKING PAD.

CULVERT PIPE OR OTHER BMP USED TO DIVERT WATER AWAY, AROUND OR UNDER THE TRACKING PAD SHALL BE DESIGNED TO CONVEY THE 2 YEAR - 24 HOUR EVENT.

THE COST OF ADDITIONAL BMP TO DIVERT WATER ARE INCIDENTAL TO THE TRACKING PAD BID ITEM.



### SECTION A - A

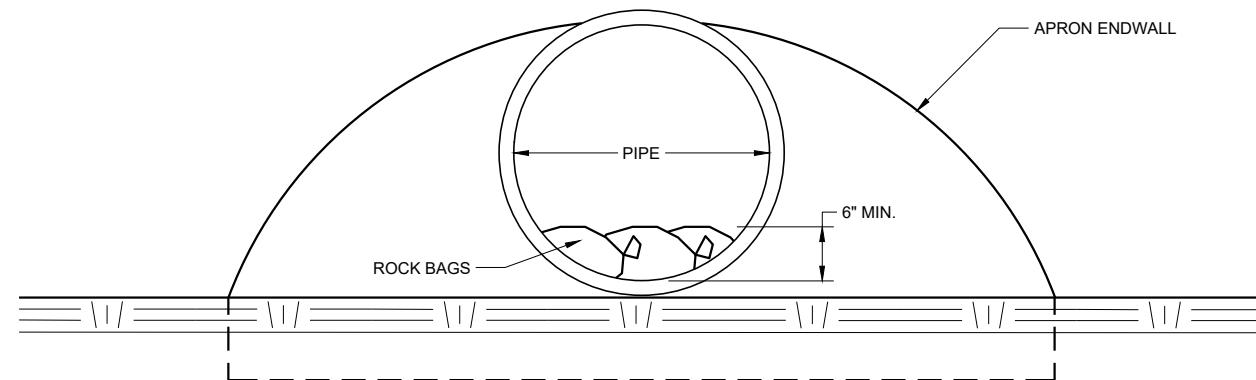


### SECTION B - B

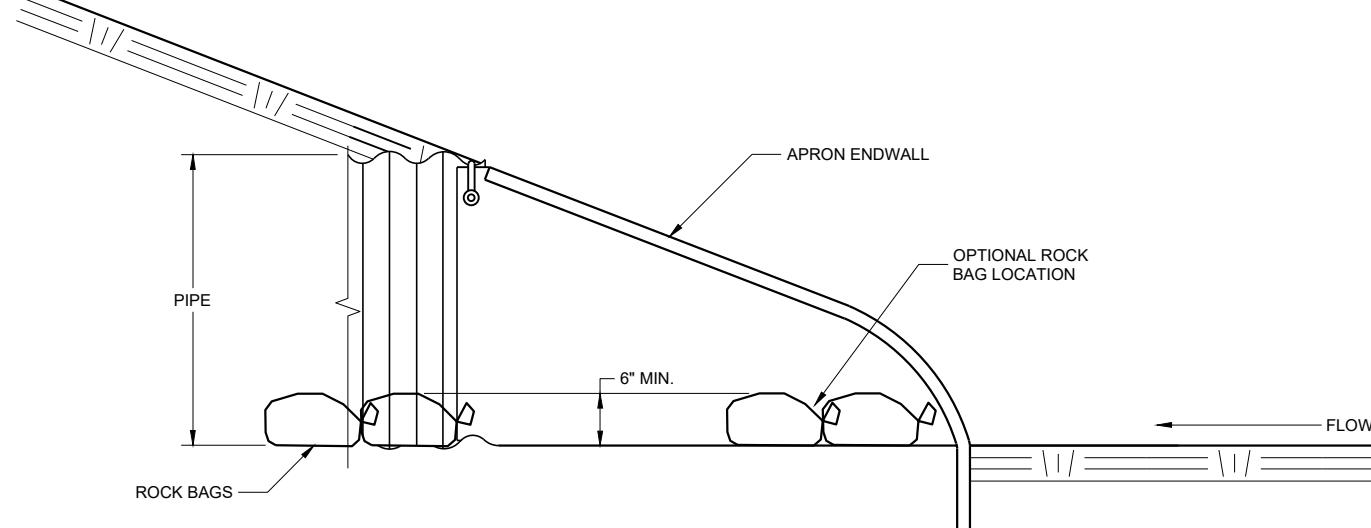
### TRACKING PAD

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
3/24/2011 /S/ Jerry H. Zogg  
DATE ROADWAY STANDARDS DEVELOPMENT  
FHWA ENGINEER



**END VIEW**



**SIDE VIEW**

**CULVERT PIPE CHECK**

(INSTALL ON INLET END ONLY)

**CULVERT PIPE CHECK**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

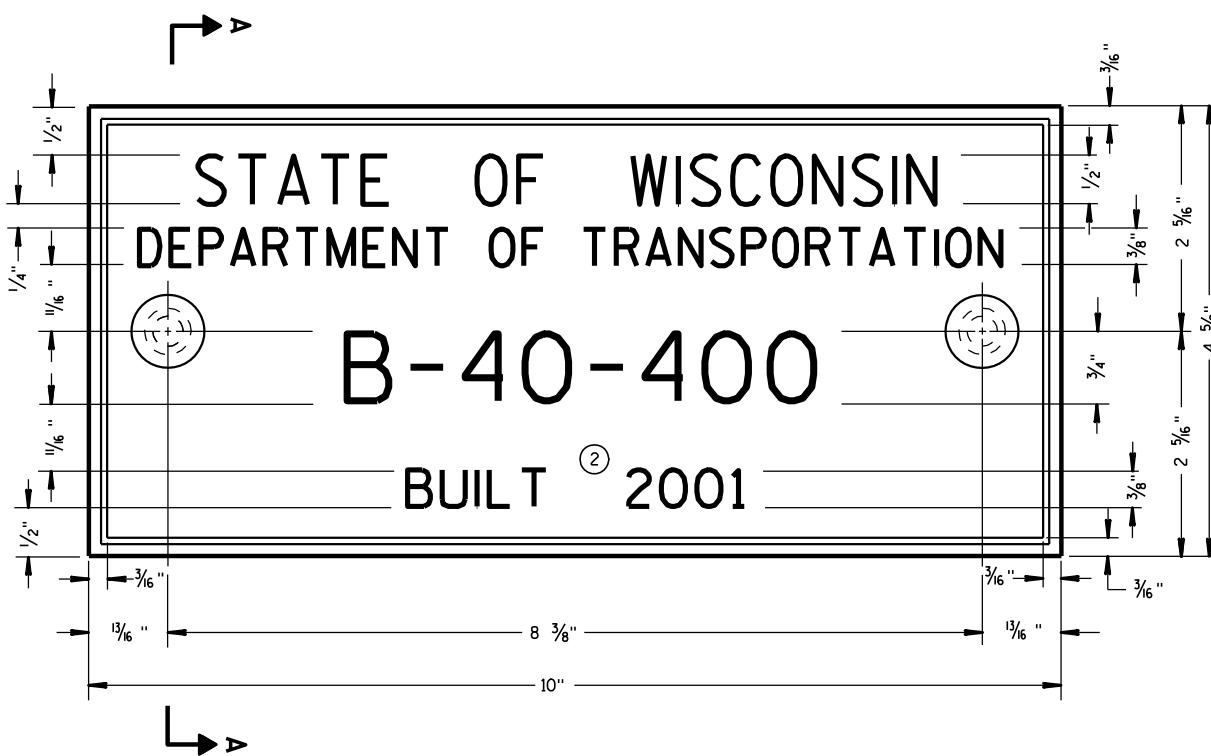
APPROVED	May 2019	/S/ Daniel Schave
DATE		
FHWA		
EROSION CONTROL ENGINEER		

## 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.

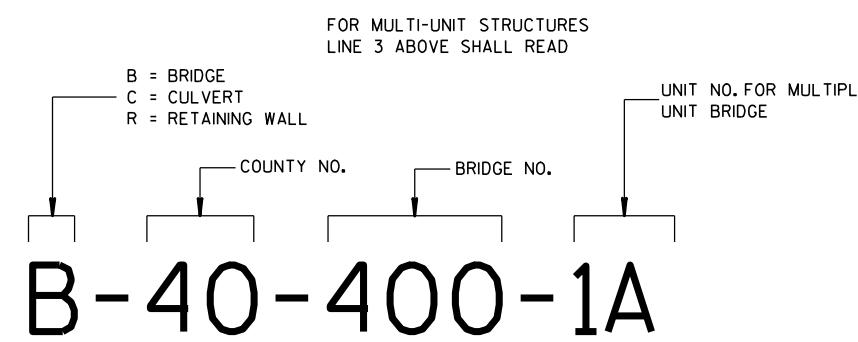
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

- 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.



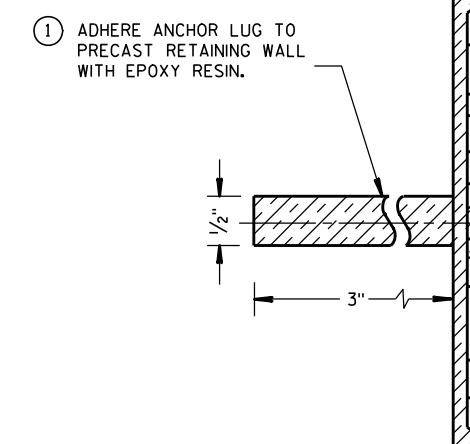
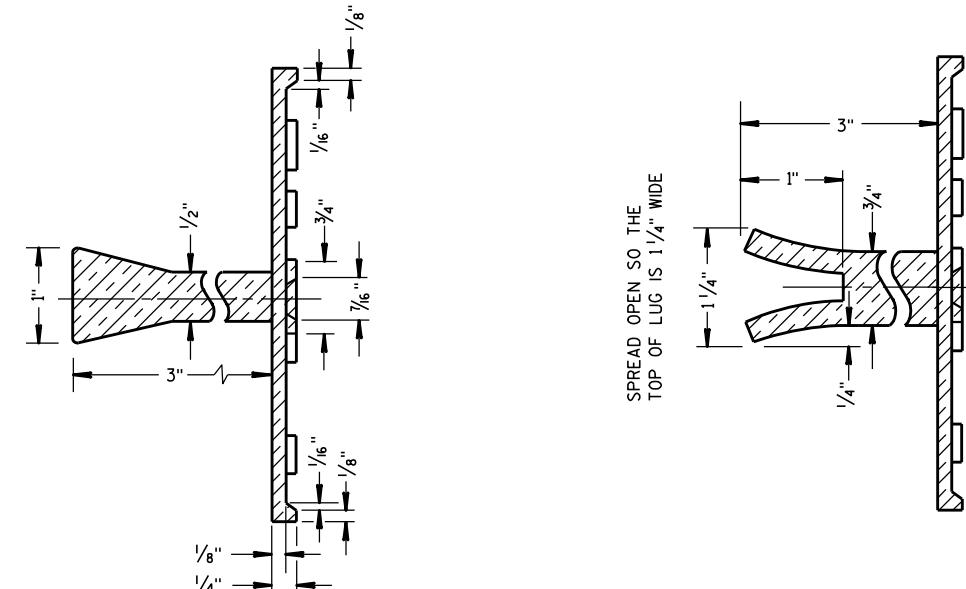
**TYPICAL NAME PLATE**  
(BRIDGES, CULVERTS, AND RETAINING WALLS)

6



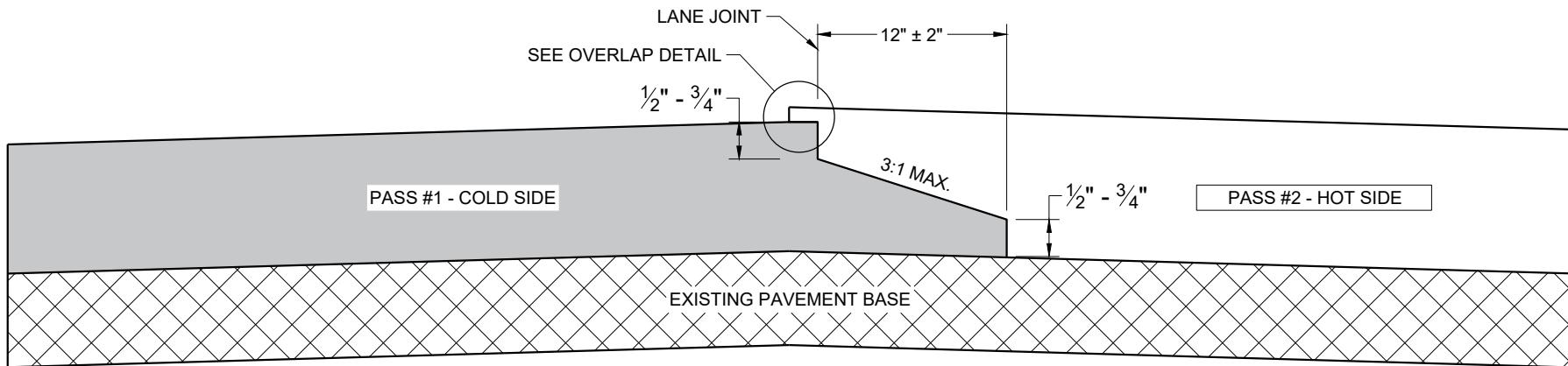
**NUMBERING DESIGNATION**  
**MULTI-UNIT STRUCTURES**

S.D.D. 12 A 3-10



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

<b>NAME PLATE (STRUCTURES)</b>
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION
APPROVED 3/26/10      /S/ Scot Becker DATE              CHIEF STRUCTURAL DEVELOPMENT ENGINEER FHWA



**TYPICAL PAVEMENT CROSS SECTION  
NOTCHED WEDGE JOINT**

**GENERAL NOTES**

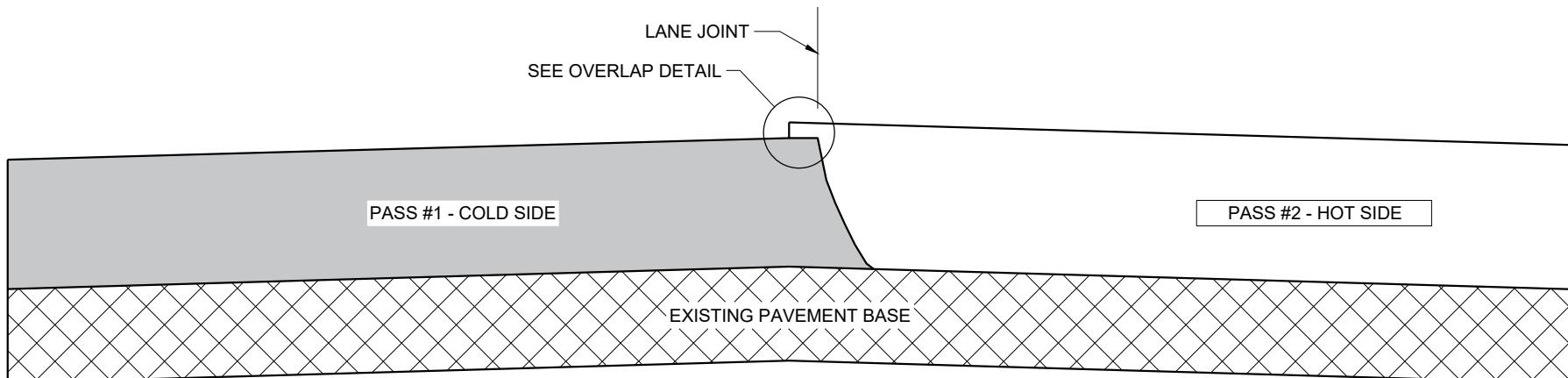
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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

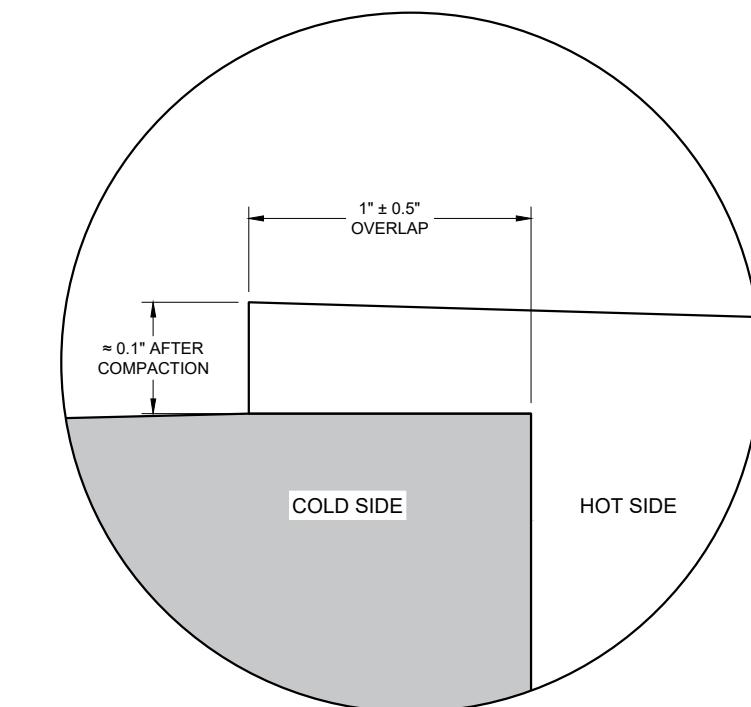
ONLY REMOVE THE LONGITUDINAL NOTCHED WEDGE JOINT FOR SMA PAVEMENT OR AS DIRECTED BY THE ENGINEER TO ADDRESS SPECIFIC LENGTHS OF JOINT DAMAGED BY TRAFFIC.

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

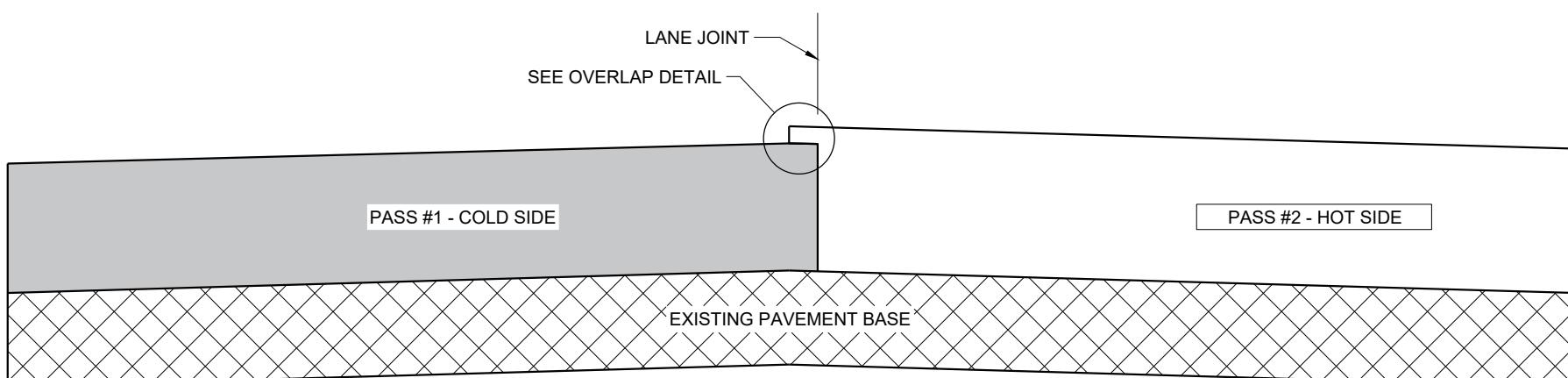
USE LONGITUDINAL MILLED JOINT AS PLANS SHOW OR AS THE ENGINEER DIRECTS.



**TYPICAL PAVEMENT CROSS SECTION  
VERTICAL JOINT**



**OVERLAP DETAIL (TYPICAL)**



**TYPICAL PAVEMENT CROSS SECTION  
VERTICAL JOINT (MILLED)**

**HMA LONGITUDINAL JOINTS**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

① WOOD OR STEEL POSTS (W6X9 OR W6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

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

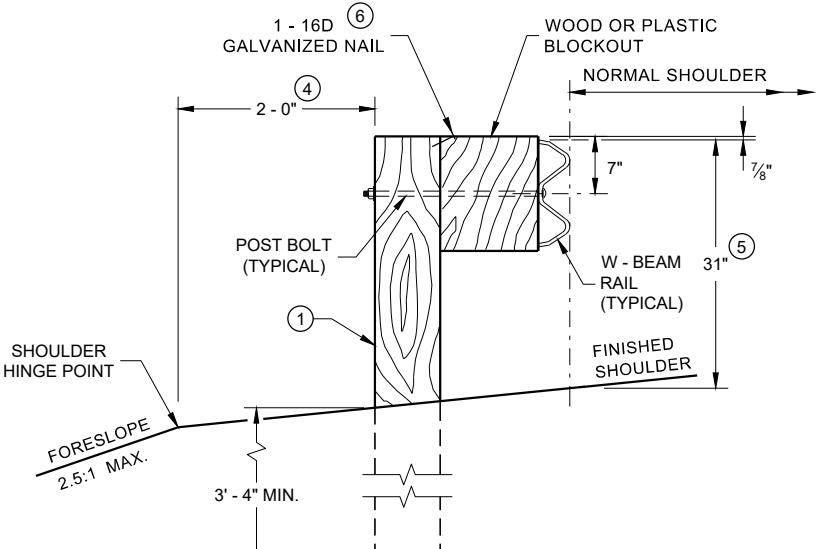
③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2 INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS TO LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.

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

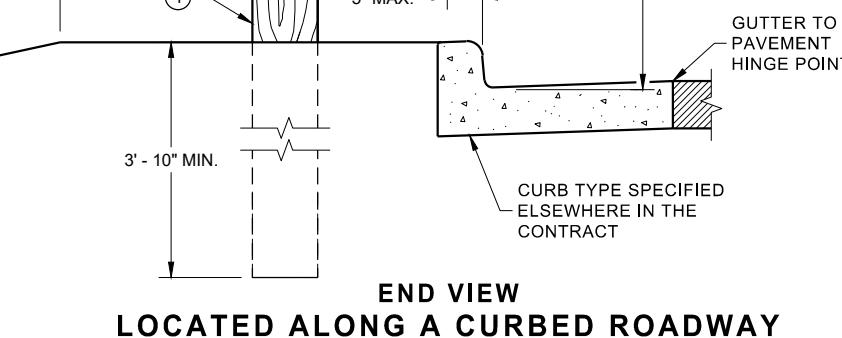
⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS  $\pm 1$ ". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27  $\frac{3}{4}$ " TO 32".

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.

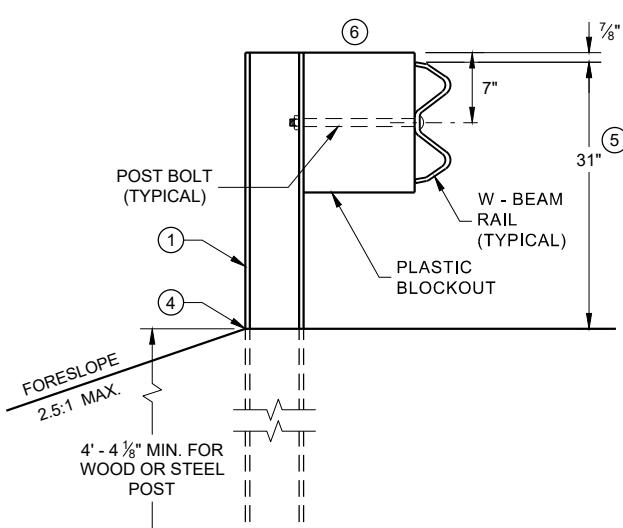
⑦ TOTAL POST LENGTH FOR TYPE K IS 7' - 0".  
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".



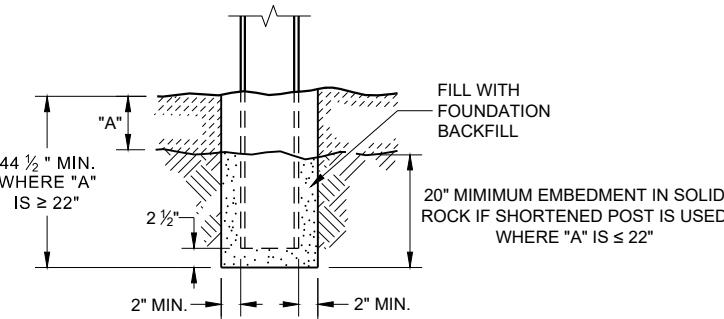
END VIEW  
LOCATED ALONG A ROADWAY SHOULDER  
STANDARD INSTALLATION



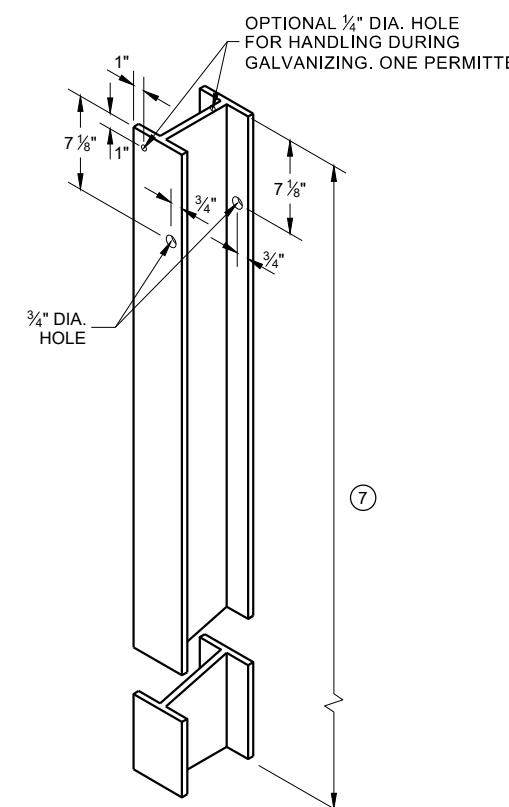
END VIEW  
LOCATED ALONG A CURBED ROADWAY



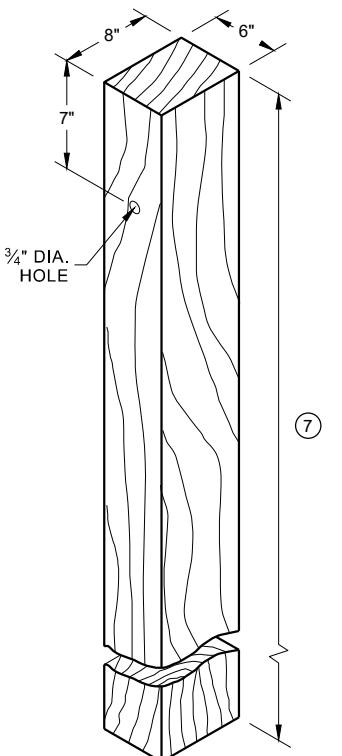
END VIEW  
MGS LONGER POST AT HALFPOST  
SPACING W BEAM (K)



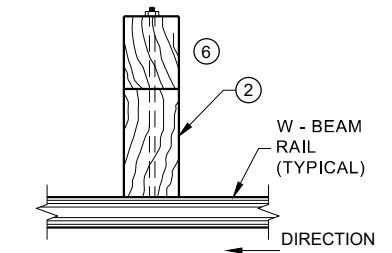
END VIEW  
SETTING STEEL OR WOOD POST IN ROCK



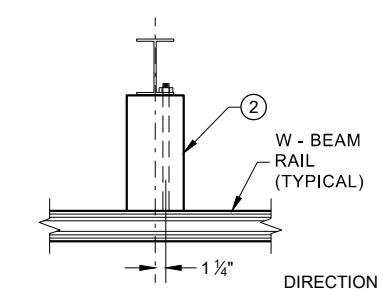
STEEL POST & HOLE  
PUNCHING DETAIL  
(W 6 X 9) ①



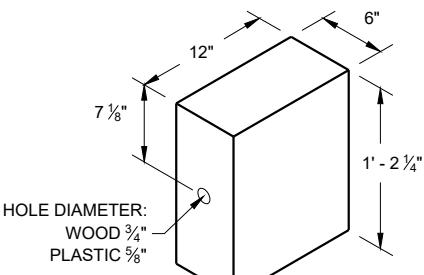
WOOD POST  
(6" X 8") NOMINAL ①



PLAN VIEW  
WOOD POST,  
BLOCKOUT & BEAM



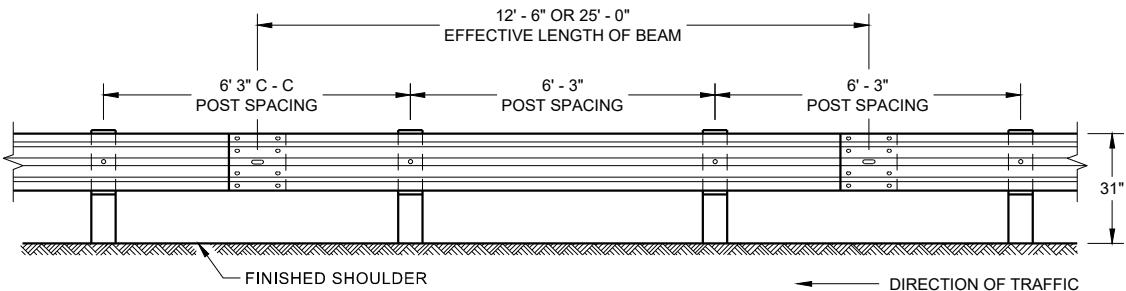
PLAN VIEW  
STEEL POST,  
PLASTIC BLOCKOUT & BEAM



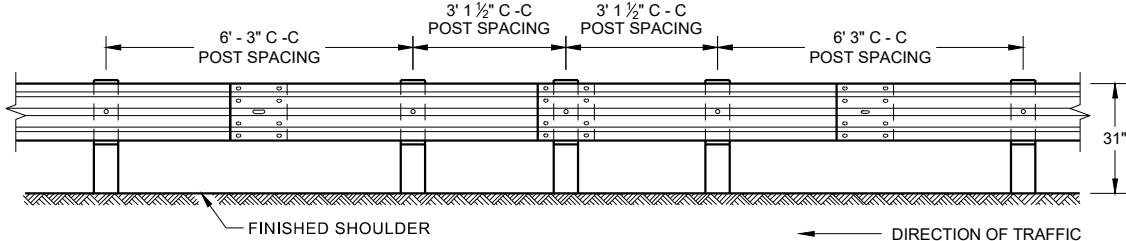
WOOD OR PLASTIC  
BLOCKOUT ②

MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL

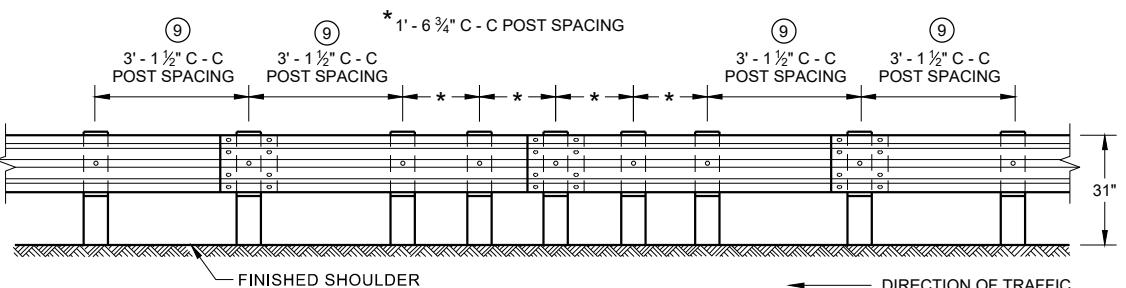
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



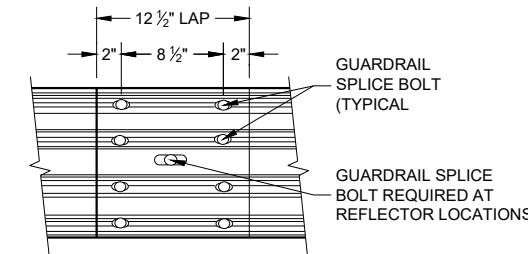
**FRONT VIEW  
POST SPACING STANDARD INSTALLATION**



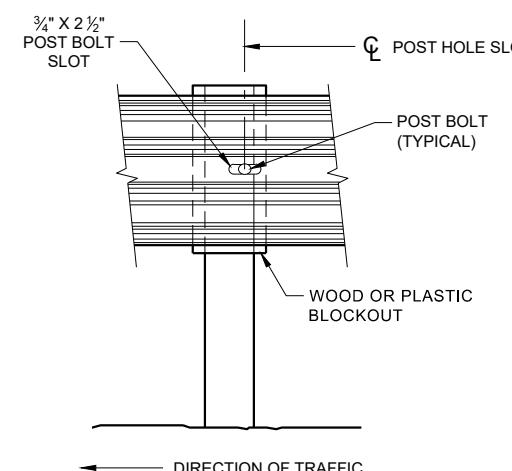
**FRONT VIEW  
HALF POST SPACING (HS) AND  
HALF POST SPACING WITH LONGER POSTS (K)**



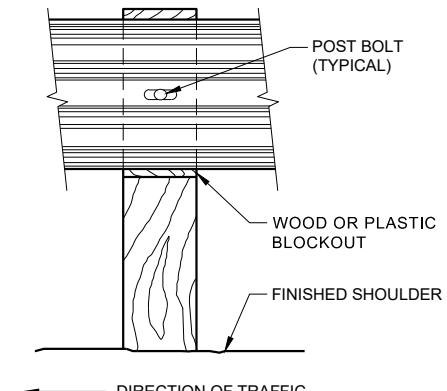
**FRONT VIEW  
QUARTER POST SPACING (QS)**



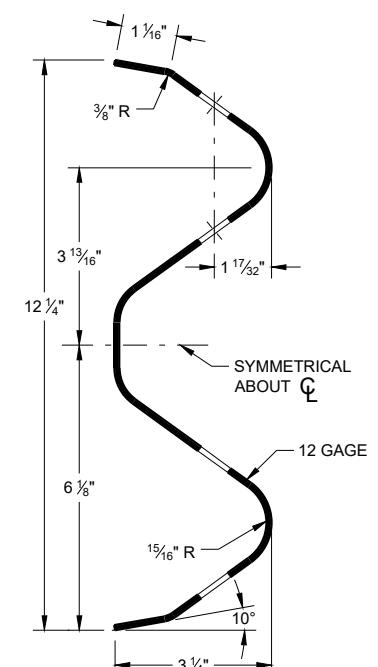
**FRONT VIEW  
MID-SPAN BEAM SPLICE**



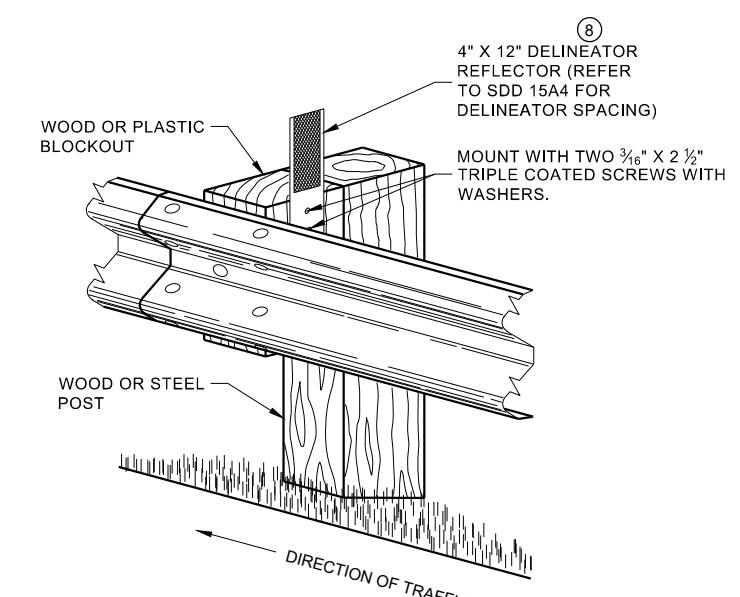
**FRONT VIEW AT STEEL POST**



**FRONT VIEW AT WOOD POST**



**SECTION THRU W-BEAM RAIL**



**ONE SIDED REFLECTOR DETAIL  
AND TYPICAL INSTALLATION**

## GENERAL NOTES

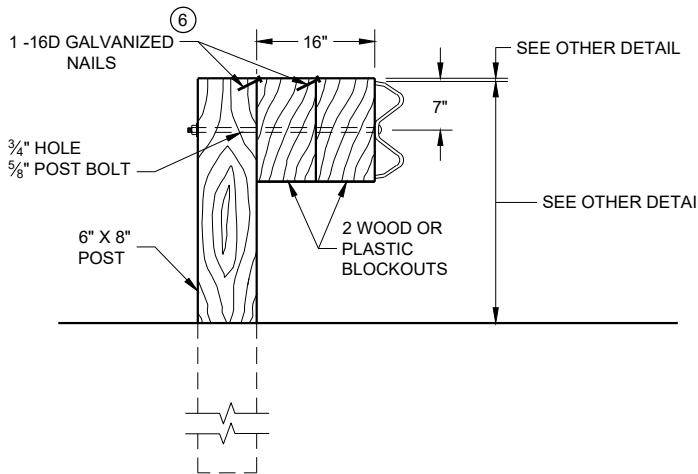
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
- ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

POST BOLTS ARE A  $\frac{5}{8}$ " DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES  $\frac{3}{8}$ " DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND  $\frac{5}{16}$ " DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

GUARD RAIL SPLICE BOLTS ARE A  $\frac{5}{8}$ " DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES  $\frac{5}{8}$ " DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

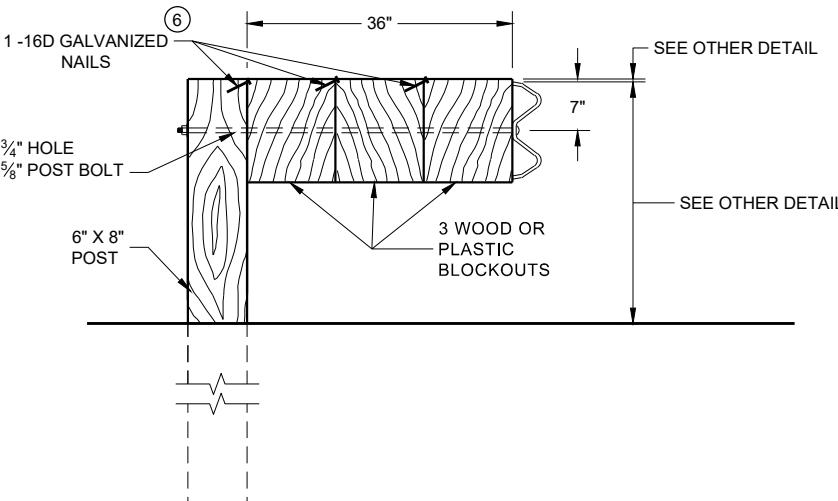
**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

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.

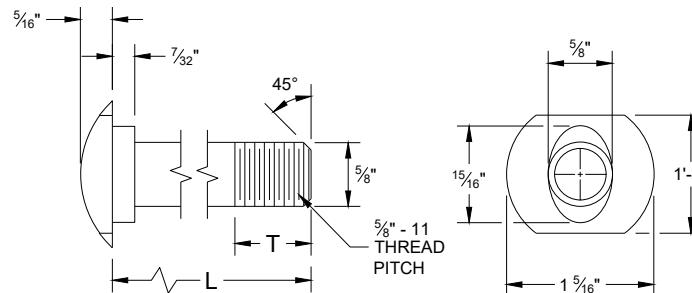


#### DETAIL FOR 36" BLOCKOUT DEPTH

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.

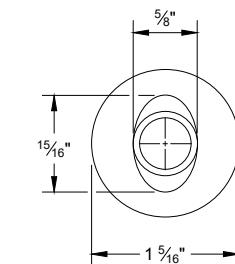
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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

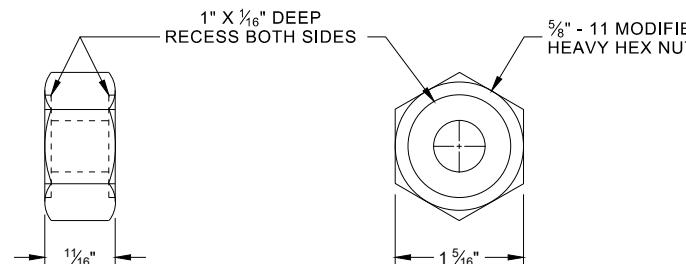


#### POST BOLT TABLE

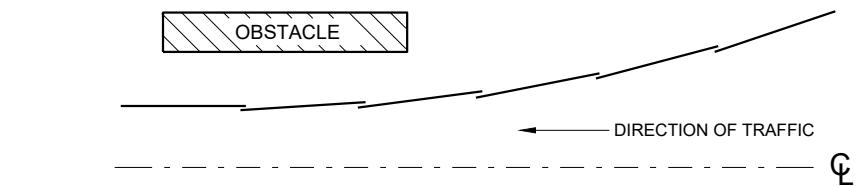
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



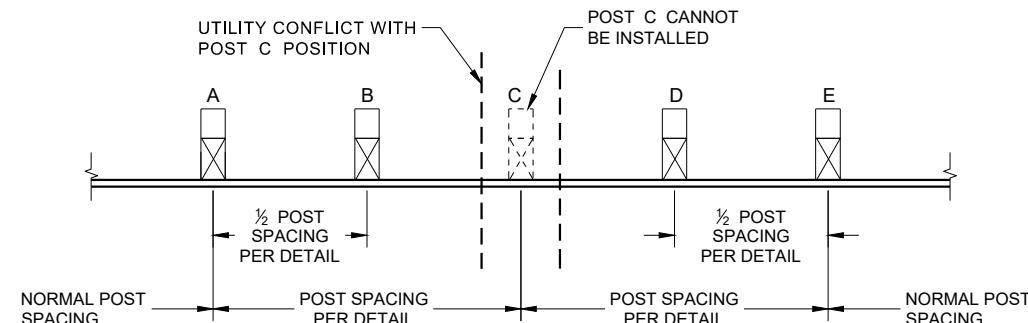
ALTERNATE BOLT HEAD



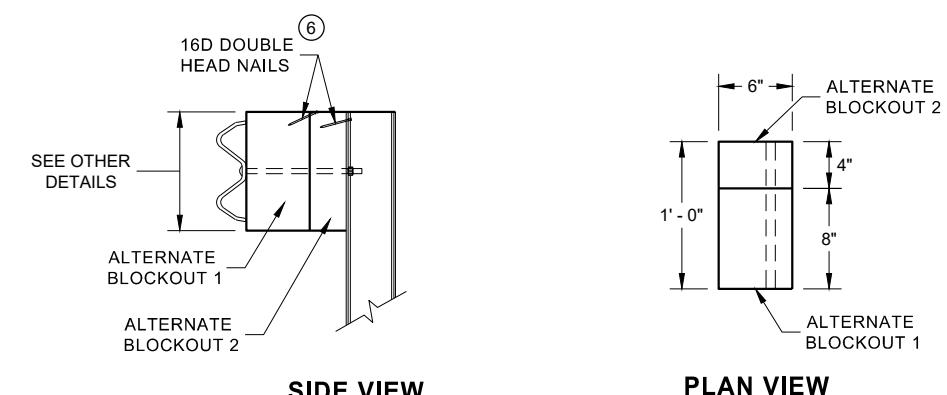
POST BOLT, SPLICE BOLT  
AND RECESS NUT



PLAN VIEW  
BEAM LAPPING DETAIL



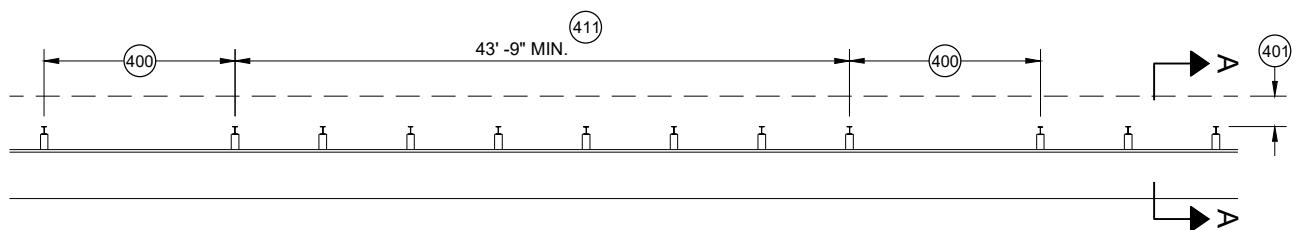
POST DRIVING FOR CONTINUOUS  
UNDERGROUND OBSTRUCTION



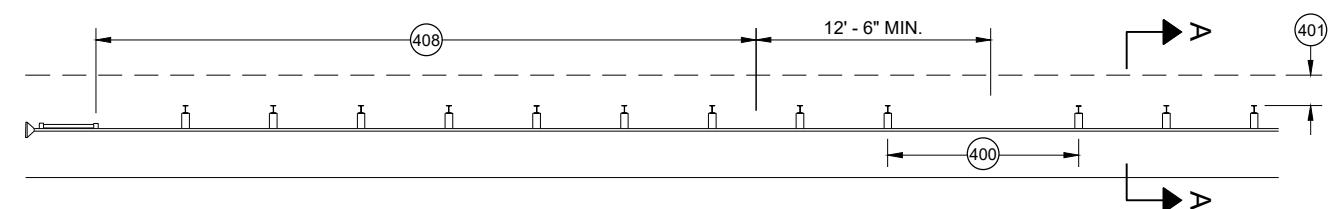
SIDE VIEW  
ALTERNATE WOOD  
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL

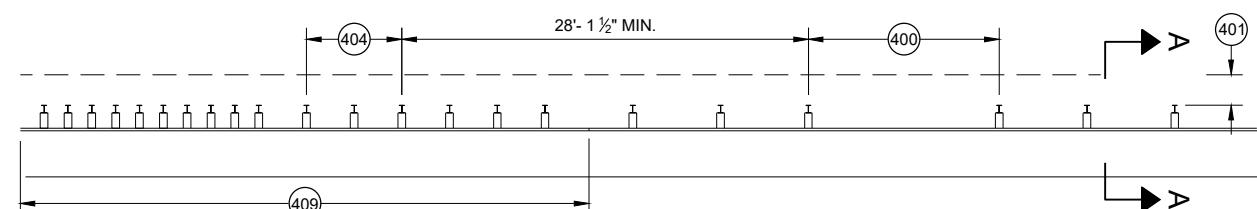
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



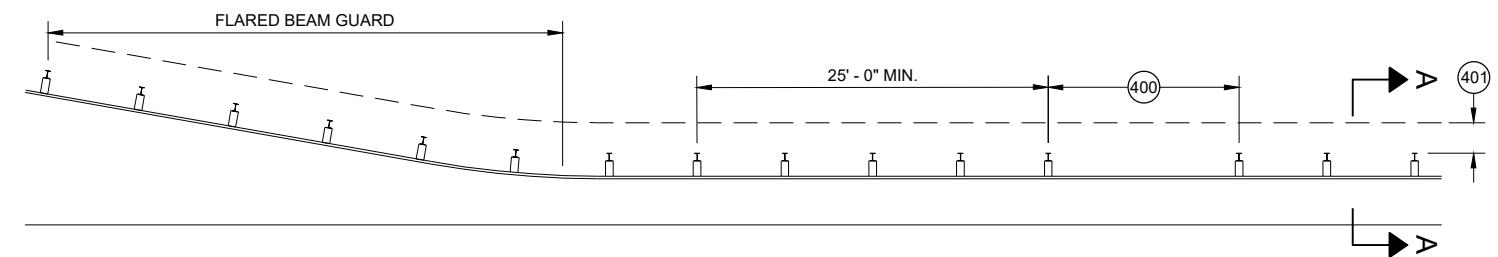
**MISSING POST IN MGS GUARDRAIL**



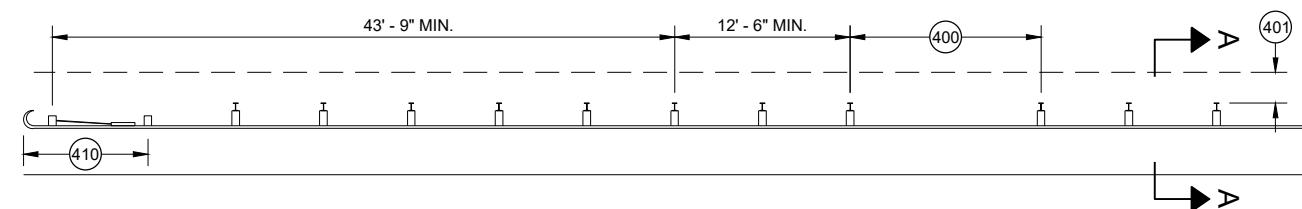
**MISSING POST IN MGS GUARDRAIL NEAR END**



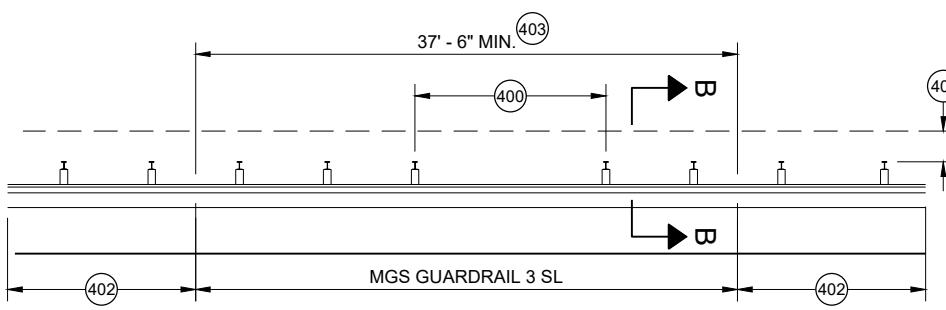
**MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION**



**MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD**

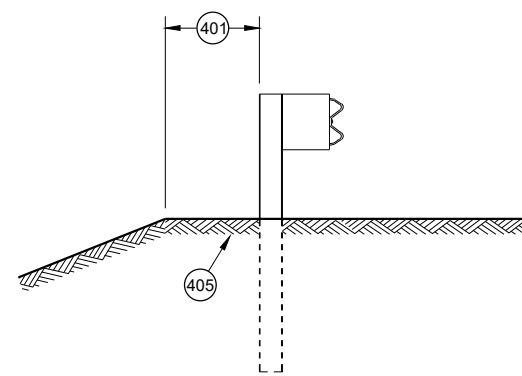


**MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL**

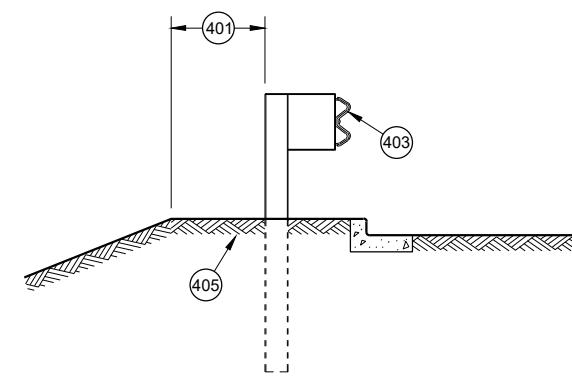


**MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)**

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



**SECTION A - A**



**SECTION B - B**

**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

## GENERAL NOTES

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

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

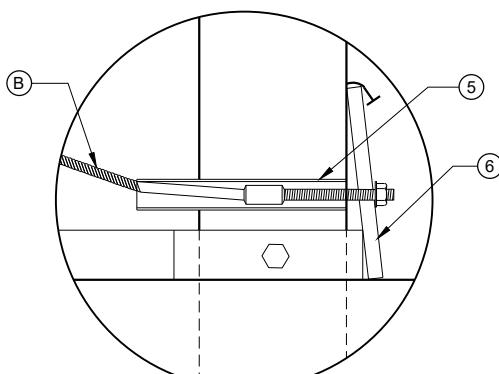
SEE SDD 14B42 FOR MORE INFORMATION.

\* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

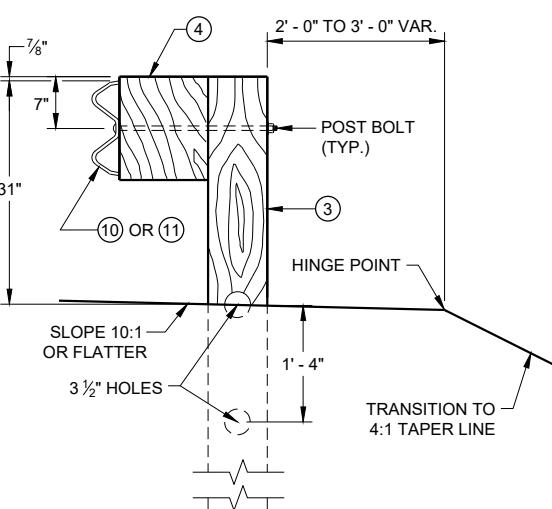
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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

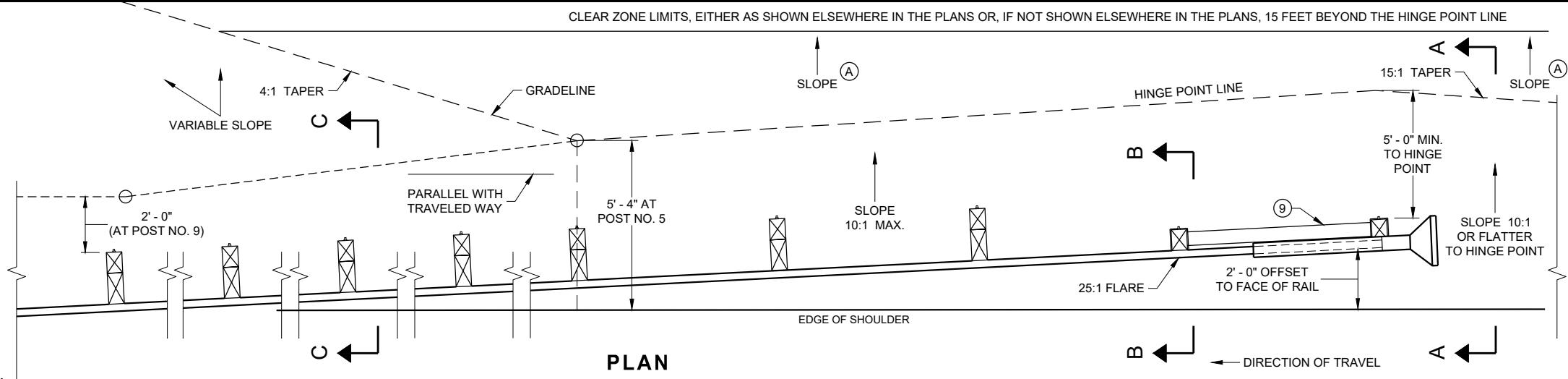
THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



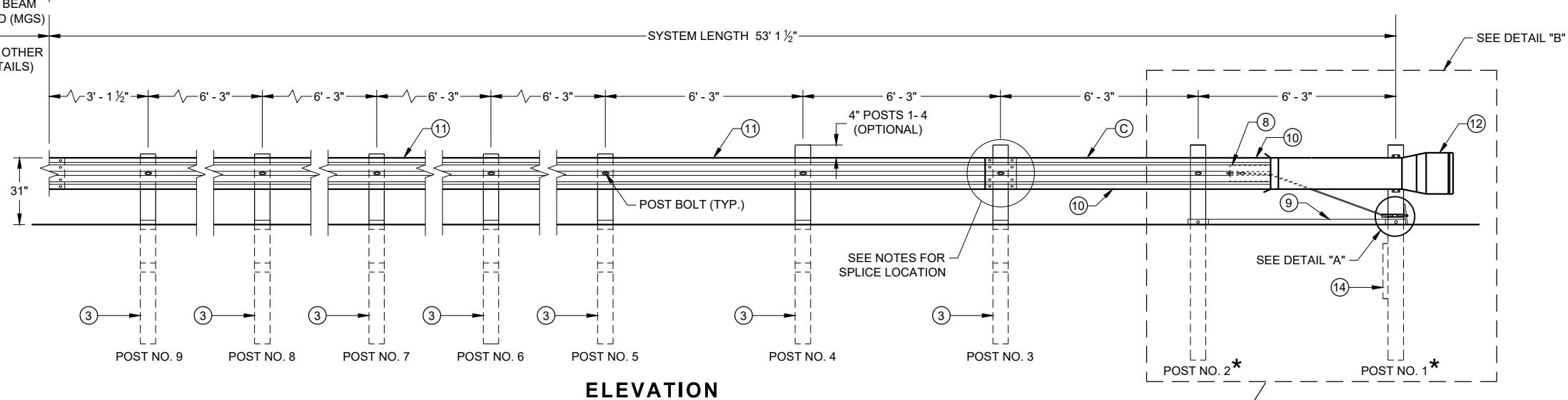
DETAIL "A" (E)



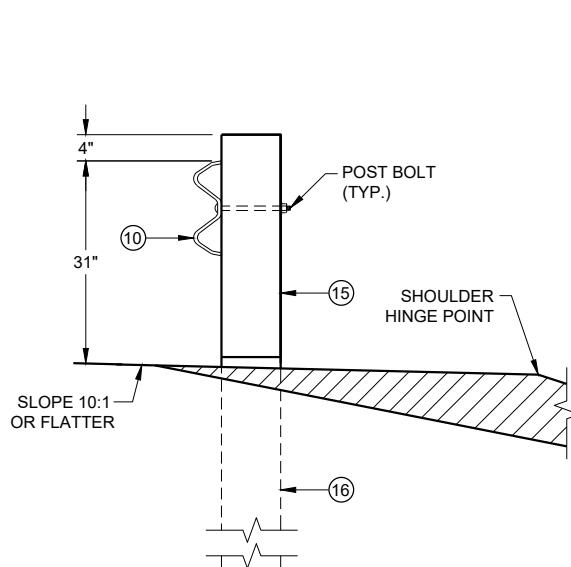
SECTION C - C  
TYPICAL AT POST NOS. 3 - 9



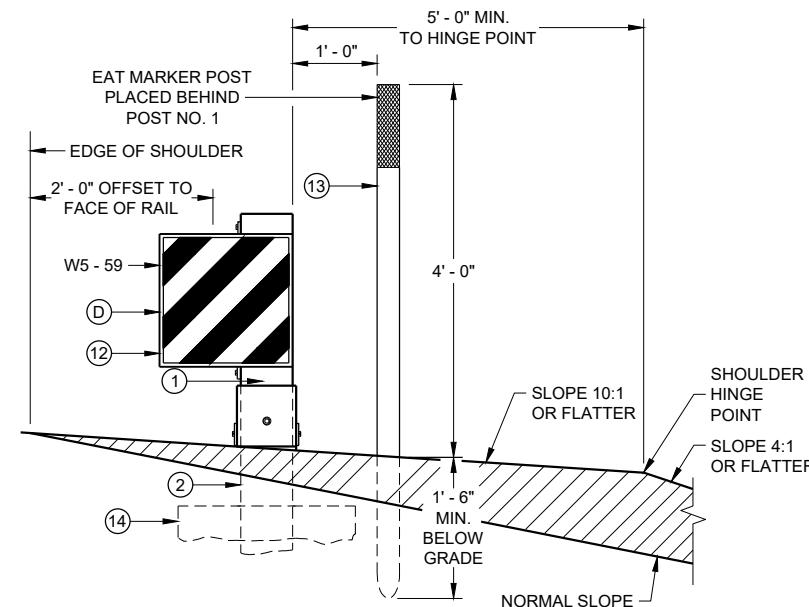
PLAN



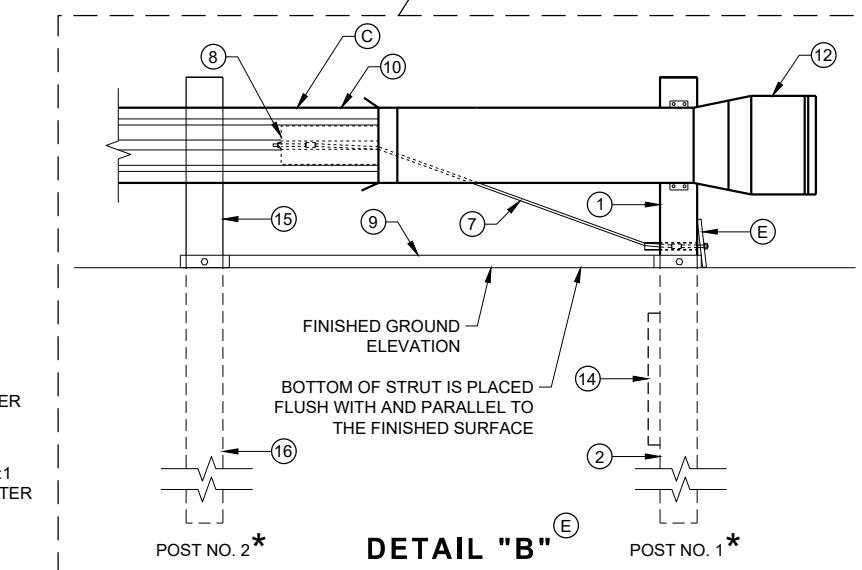
ELEVATION



SECTION B - B  
TYPICAL AT POST NO. 2\*



SECTION A - A  
TYPICAL AT POST NO. 1\*



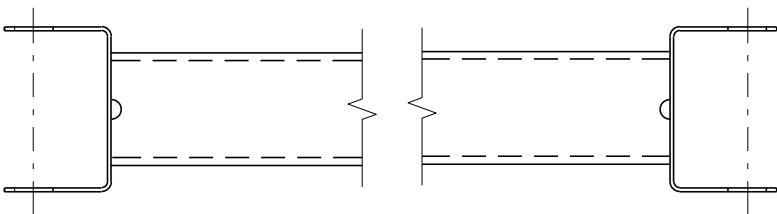
DETAIL "B" (E)

MIDWEST GUARDRAIL SYSTEM  
ENERGY ABSORBING TERMINAL  
(MGS)

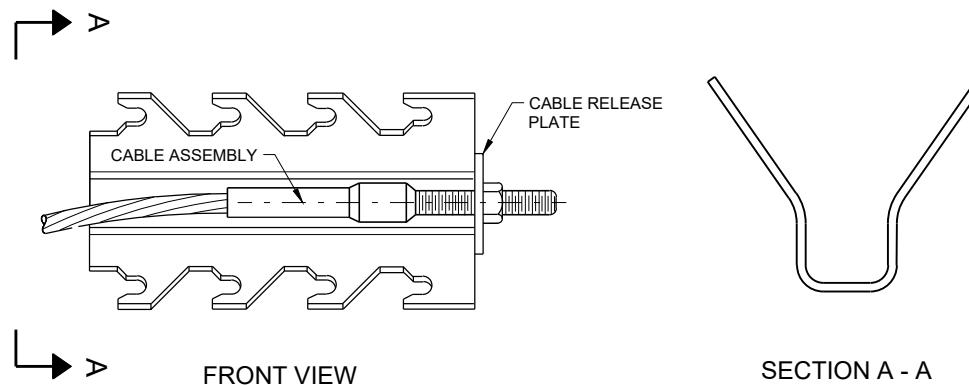
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

## 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

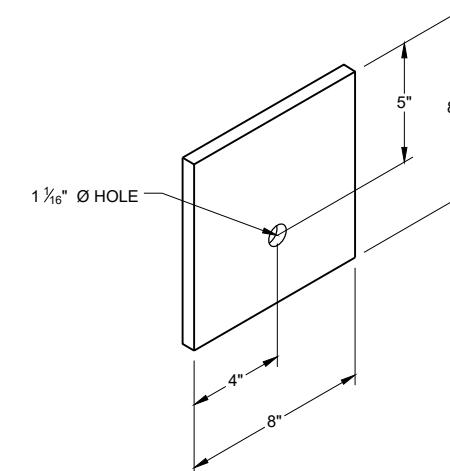


GENERIC GROUND STRUT <sup>⑨ (E)</sup>

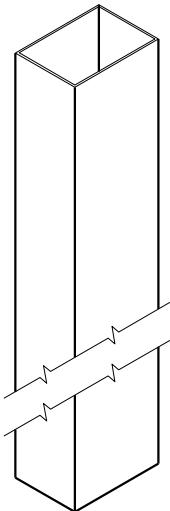
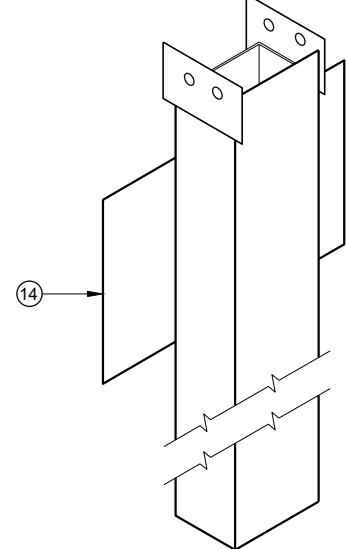
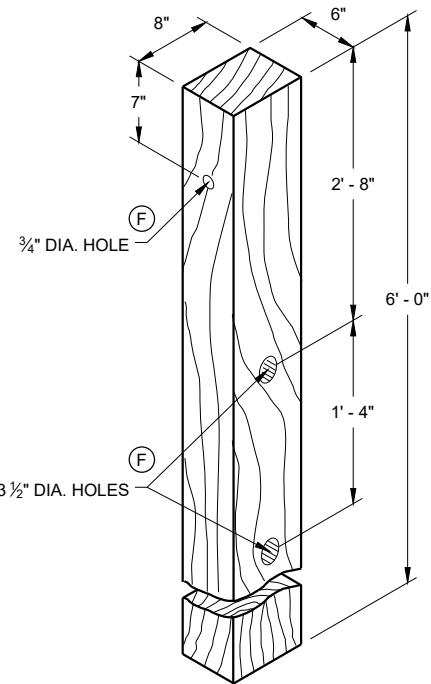
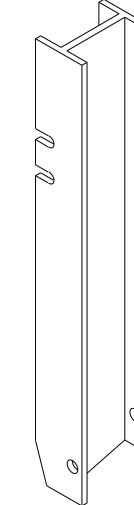
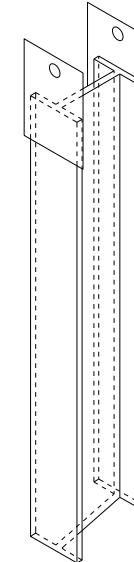
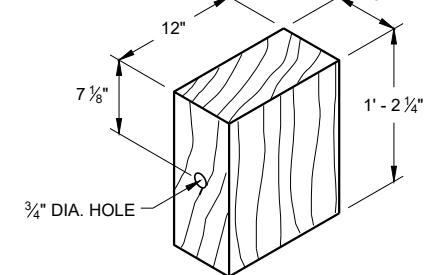


SECTION A - A

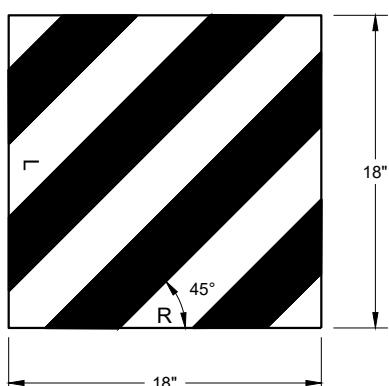
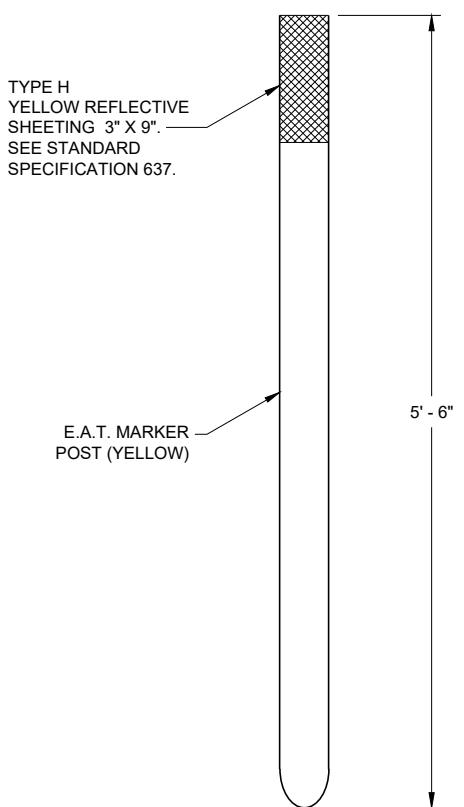
GENERIC ANCHOR CABLE BOX <sup>⑨ (E)</sup>



BEARING PLATE <sup>⑯ (E)</sup>

UPPER POST NO. 1 <sup>①</sup><sub>(E)</sub>LOWER POST NO. 1 <sup>②</sup><sub>(E)</sub>WOOD CRT POST  
POSTS NUMBER 3-9 <sup>③</sup><sub>(E)</sub>UPPER POST NO. 2 <sup>⑮</sup><sub>(E)</sub>LOWER POST NO. 2 <sup>⑯</sup><sub>(E)</sub>WOOD BLOCKOUT <sup>④</sup>

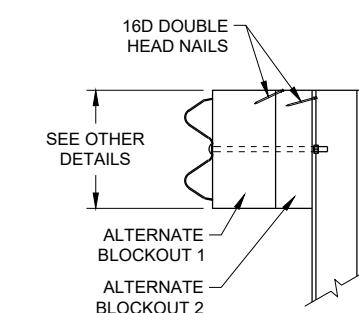
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 &amp; 2

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

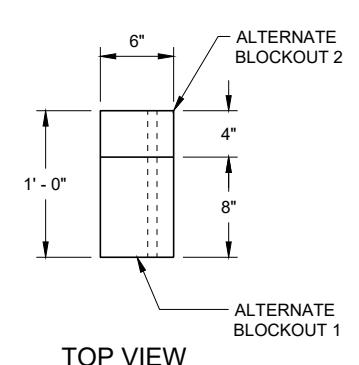
FRONT VIEW



SIDE VIEW

E.A.T. MARKER POST <sup>⑯</sup>

SIDE VIEW



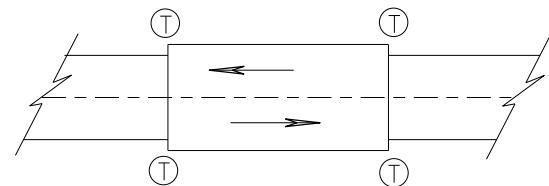
TOP VIEW

ALTERNATE WOOD  
BLOCKOUT DETAIL

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

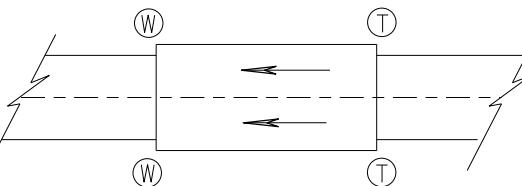
APPROVED  
7/2018 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS DEVELOPMENT  
FHWA UNIT SUPERVISOR



**TWO WAY TRAFFIC**

① THRIE BEAM CONNECTION

② W-BEAM CONNECTION WHEN REQUIRED



**ONE WAY TRAFFIC**

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

**GENERAL NOTES**

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

TRANSITION USES STEEL POSTS ONLY.

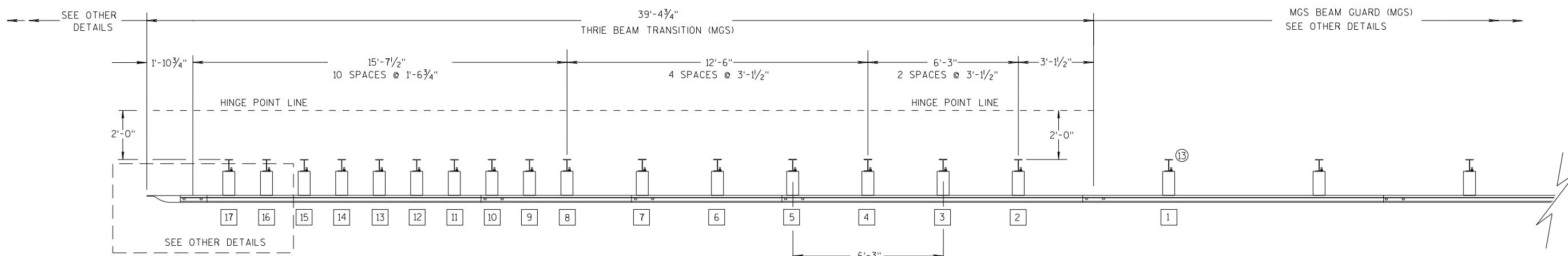
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

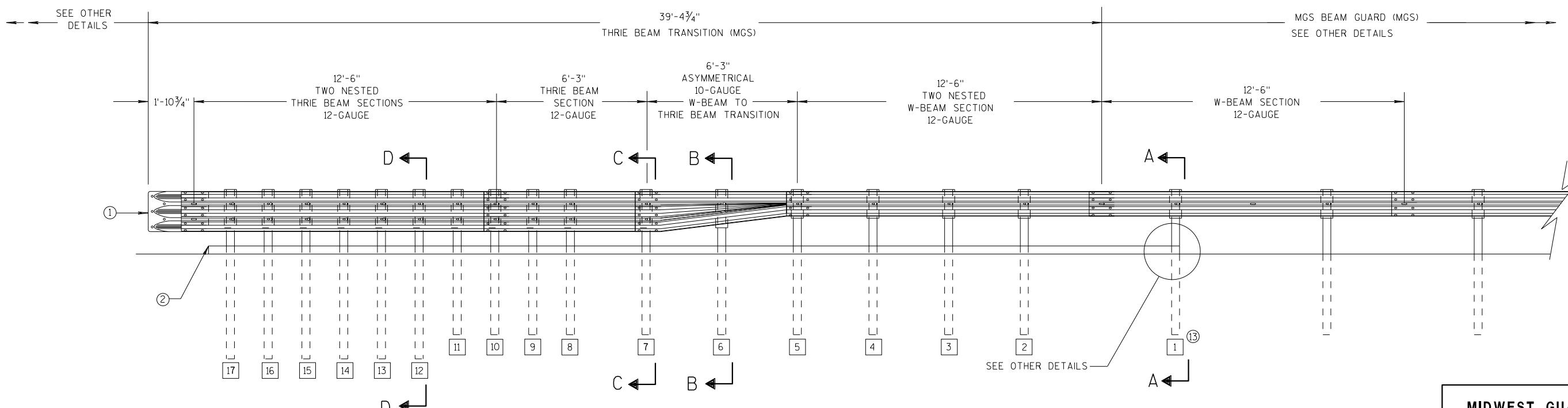
① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

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**

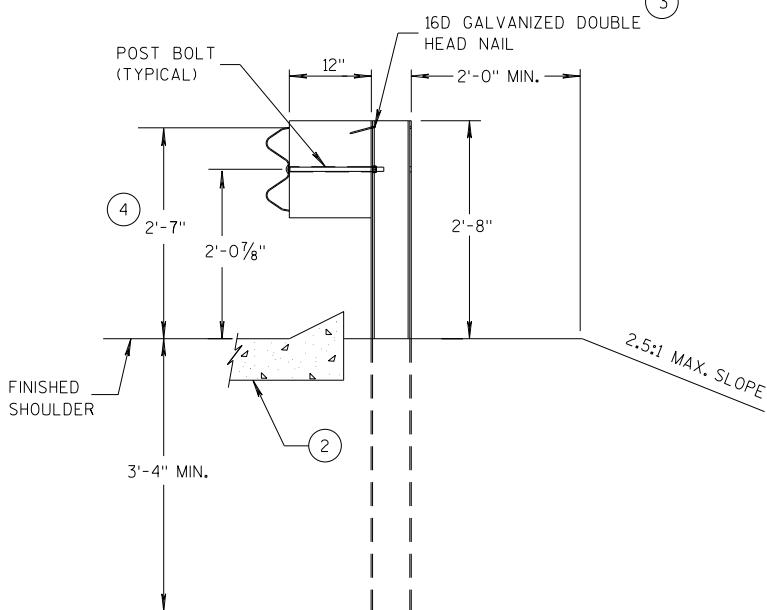
**MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION**

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

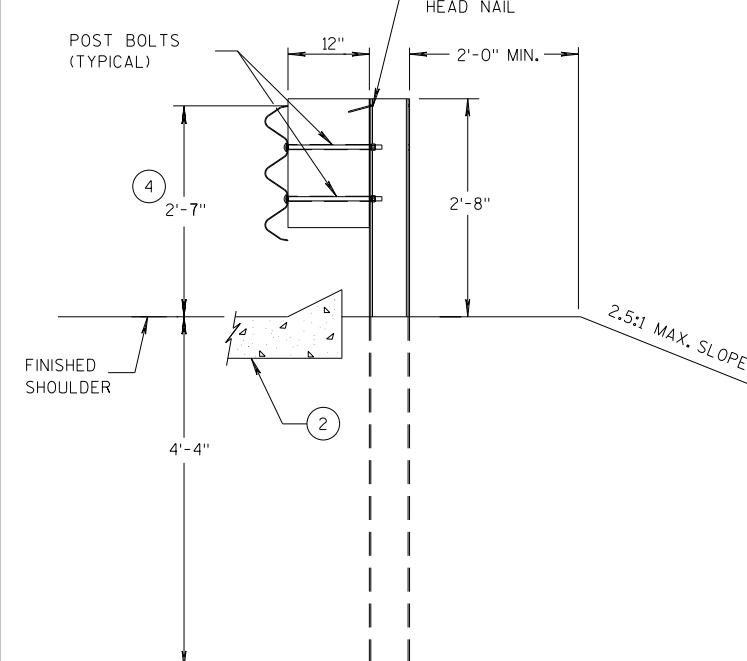
## GENERAL NOTES

- (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



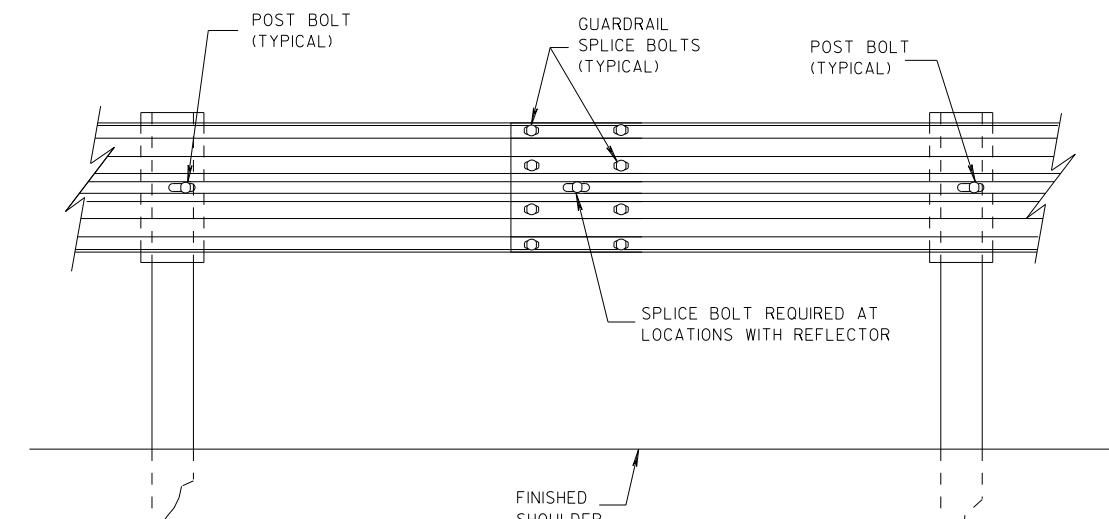
**SECTION A-A**  
**POSTS 1-5**

6

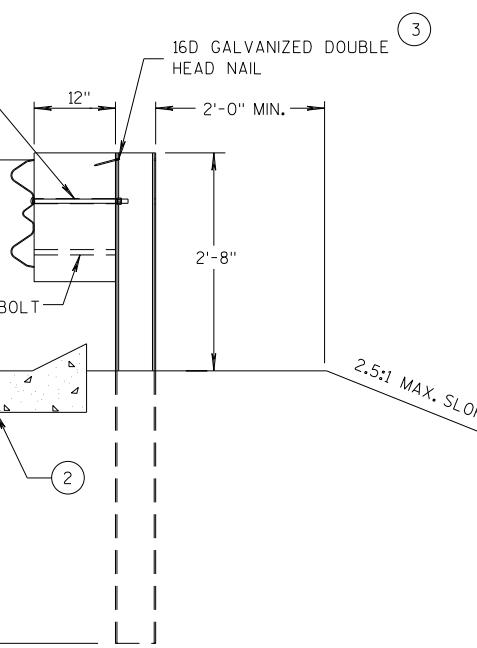


**SECTION D-D**  
**POSTS 12-17**

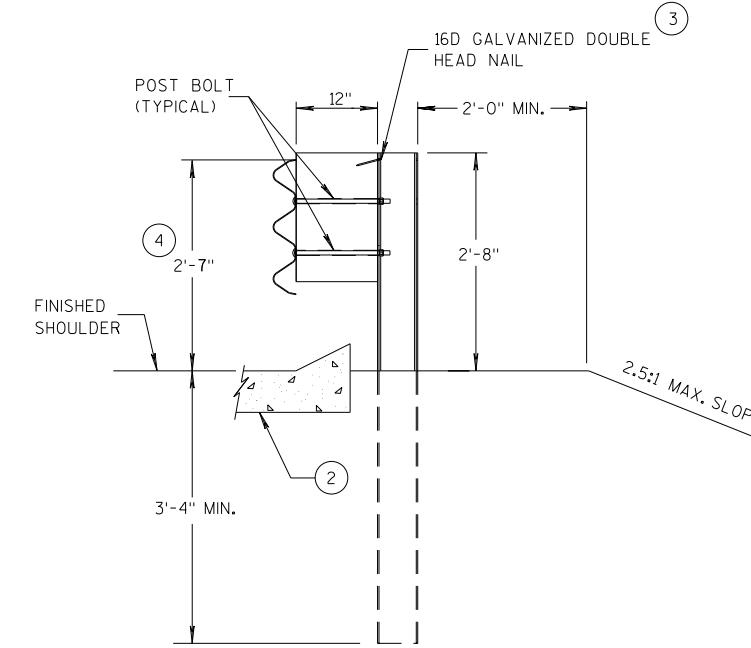
S.D.D. 14 B 45-5b



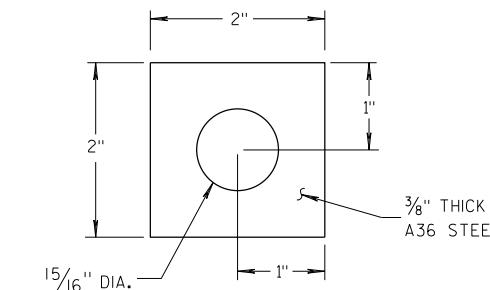
**SPICE DETAIL**



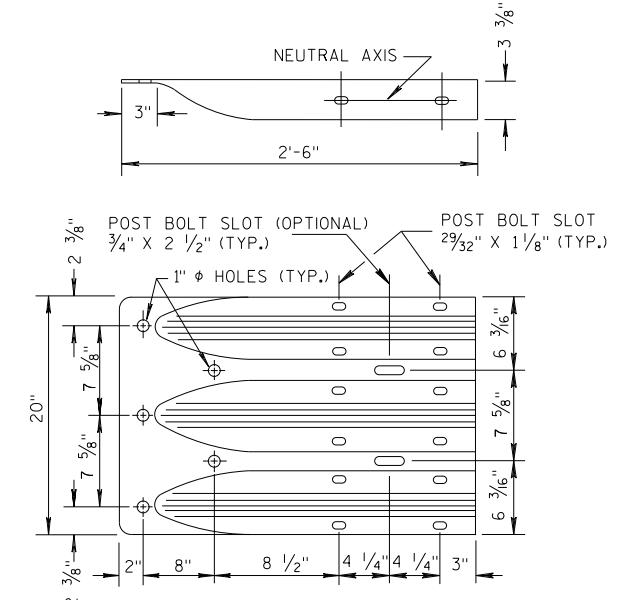
**SECTION B-B**  
**POST 6**



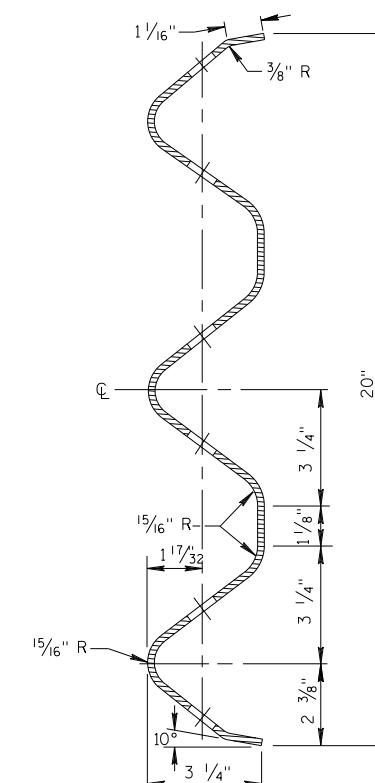
**SECTION C-C**  
**POSTS 7-11**



**PLATE WASHER DETAIL**



**THRIE BEAM**  
**TERMINAL CONNECTOR**

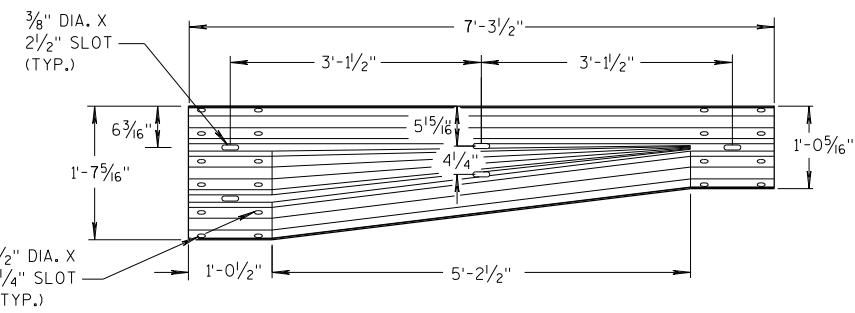


**SECTION THRU THRIE**  
**BEAM RAIL ELEMENT**

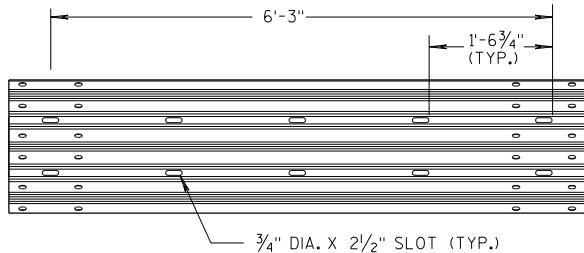
**MIDWEST GUARDRAIL SYSTEM**  
**THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

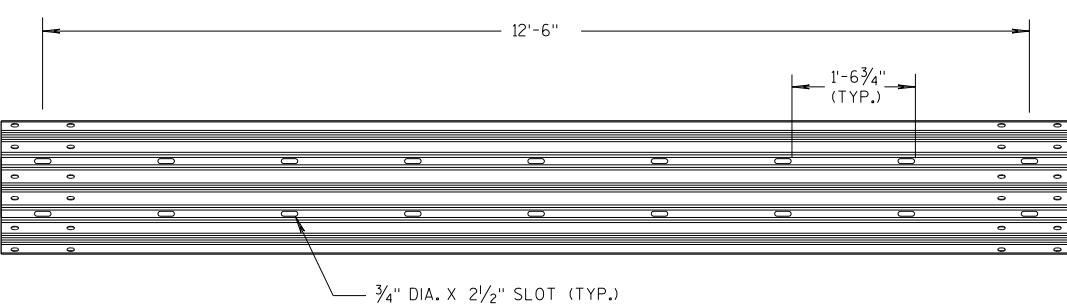
S.D.D. 14 B 45-5b



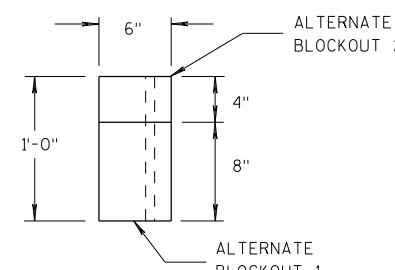
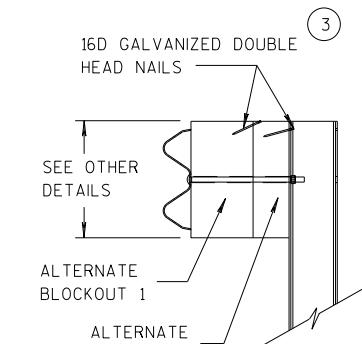
## W-BEAM TO THRIE BEAM TRANSITION SECTION



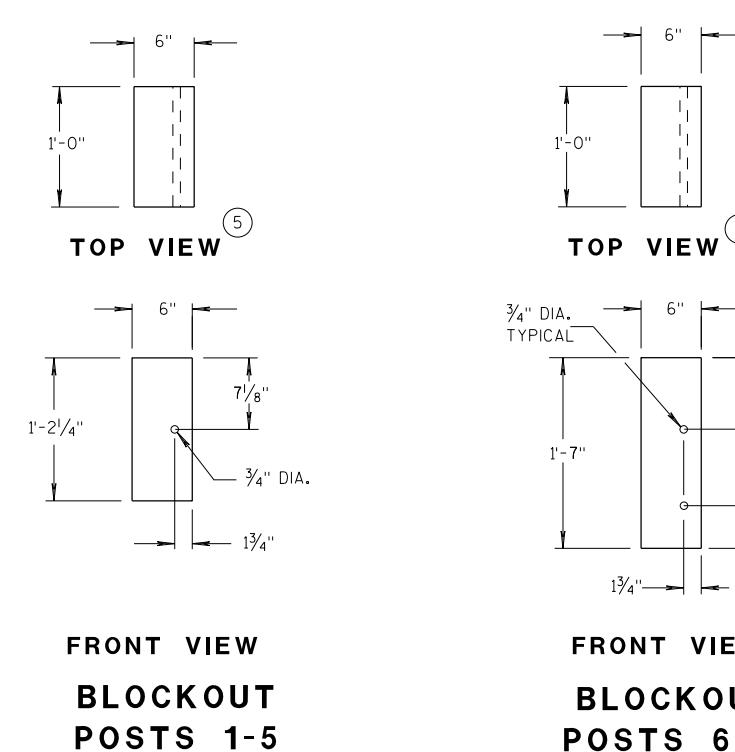
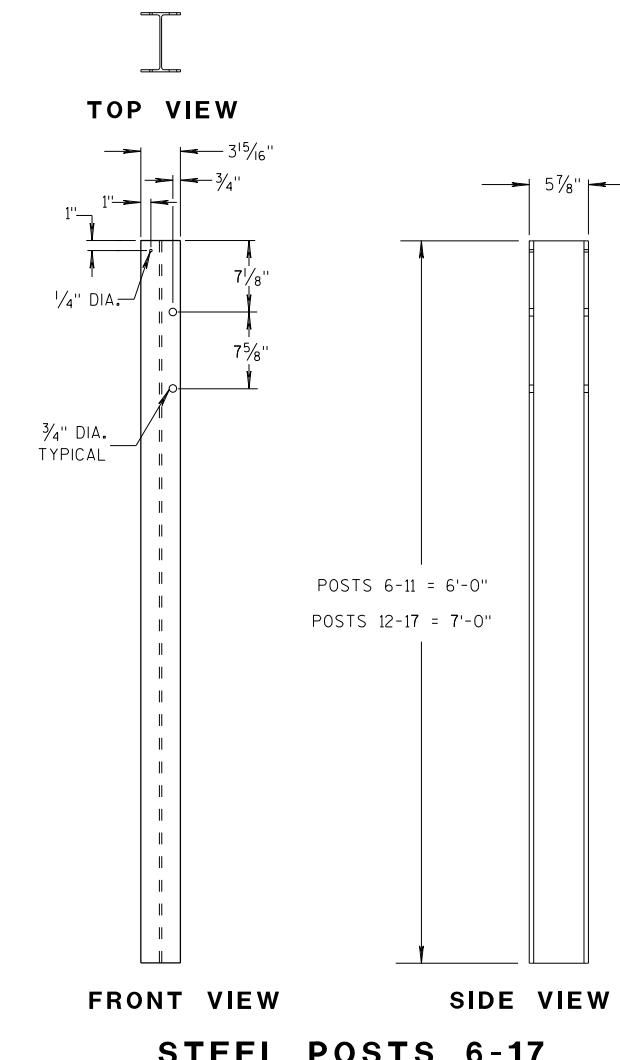
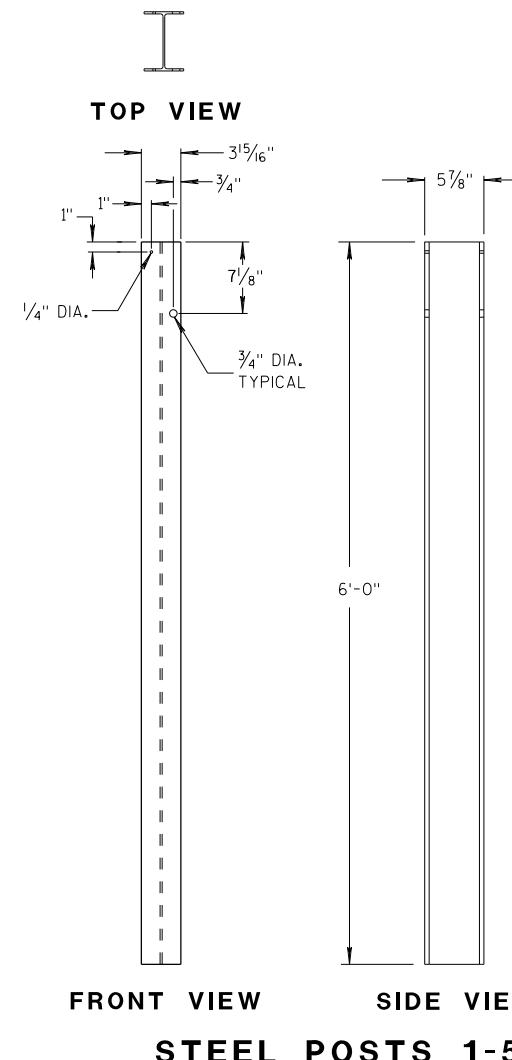
## 6'-3" THRIE BEAM SECTION



## 12'-6" THRIE BEAM SECTION



## ALTERNATE WOOD BLOCKOUT DETAIL



## GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

BOLT HOLES FOR POST ARE ON FRONT AND 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.

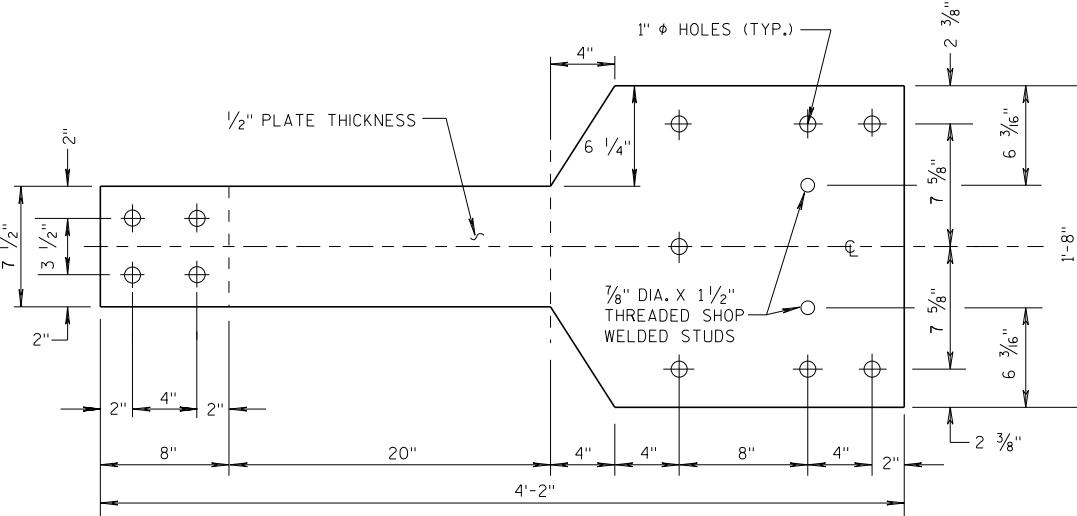
(13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

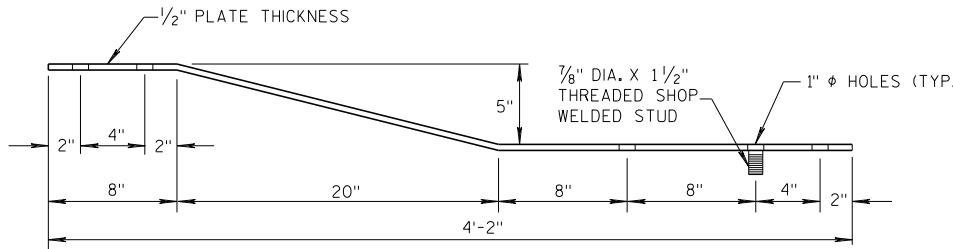
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

## GENERAL NOTES

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

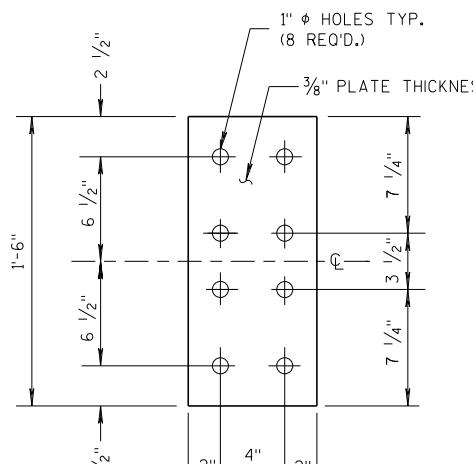


FRONT VIEW



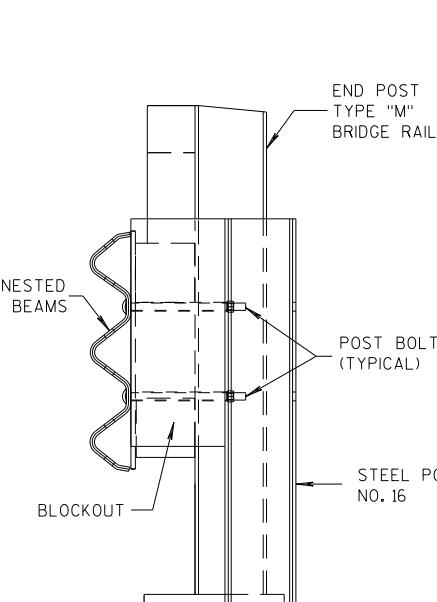
PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

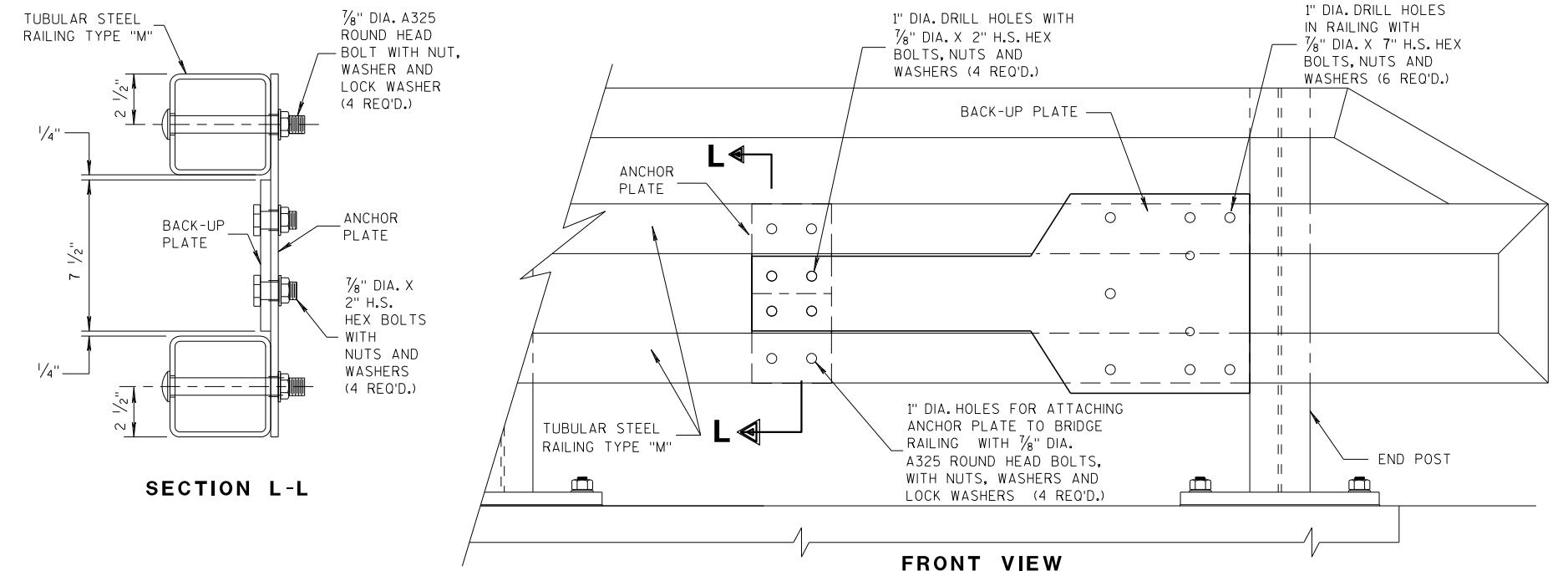


FRONT VIEW

ANCHOR PLATE DETAIL, TYPE "M"

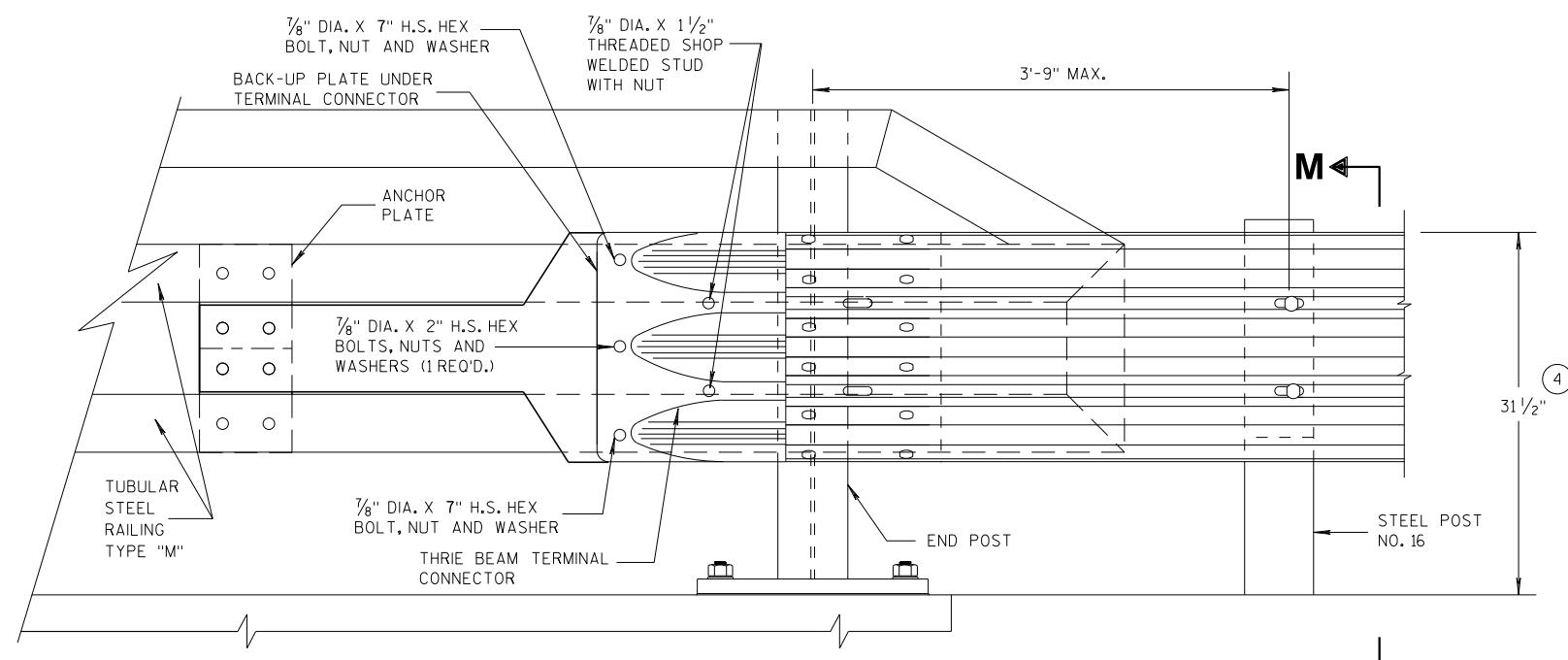


SECTION M-M

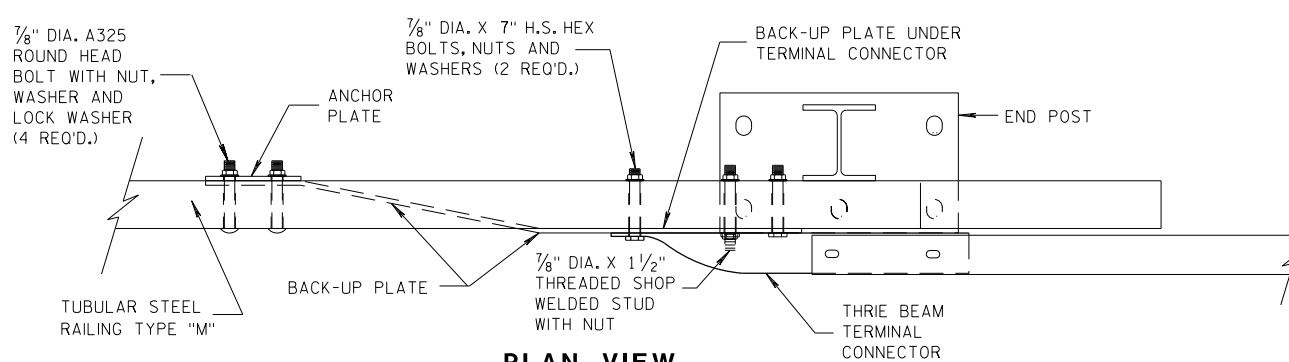


FRONT VIEW

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



FRONT VIEW

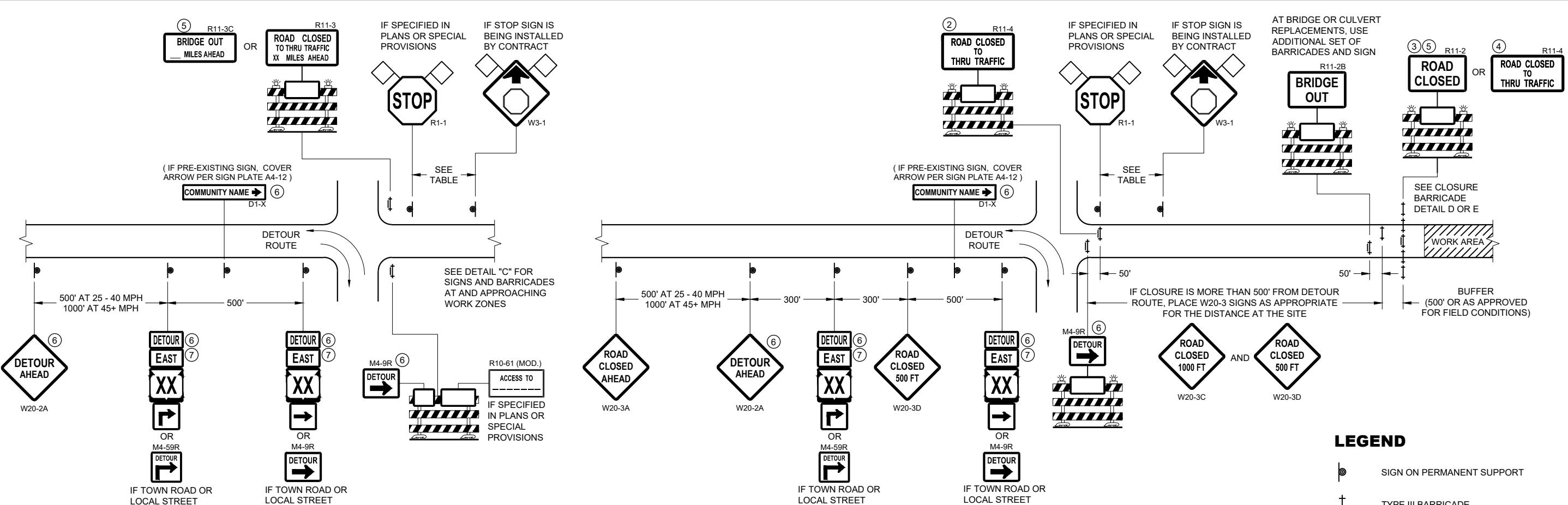


THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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



### DETAIL A MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE GREATER THAN OR EQUAL TO  $\frac{1}{2}$  MILE FROM  
DETOUR ROUTE (1000 FEET IF URBAN)

### DETAIL B MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE LESS THAN  $\frac{1}{2}$  MILE FROM  
DETOUR ROUTE (1000 FEET IF URBAN)

#### LEGEND

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



WORK AREA



FLAGS, 16" X 16" MIN. (ORANGE)



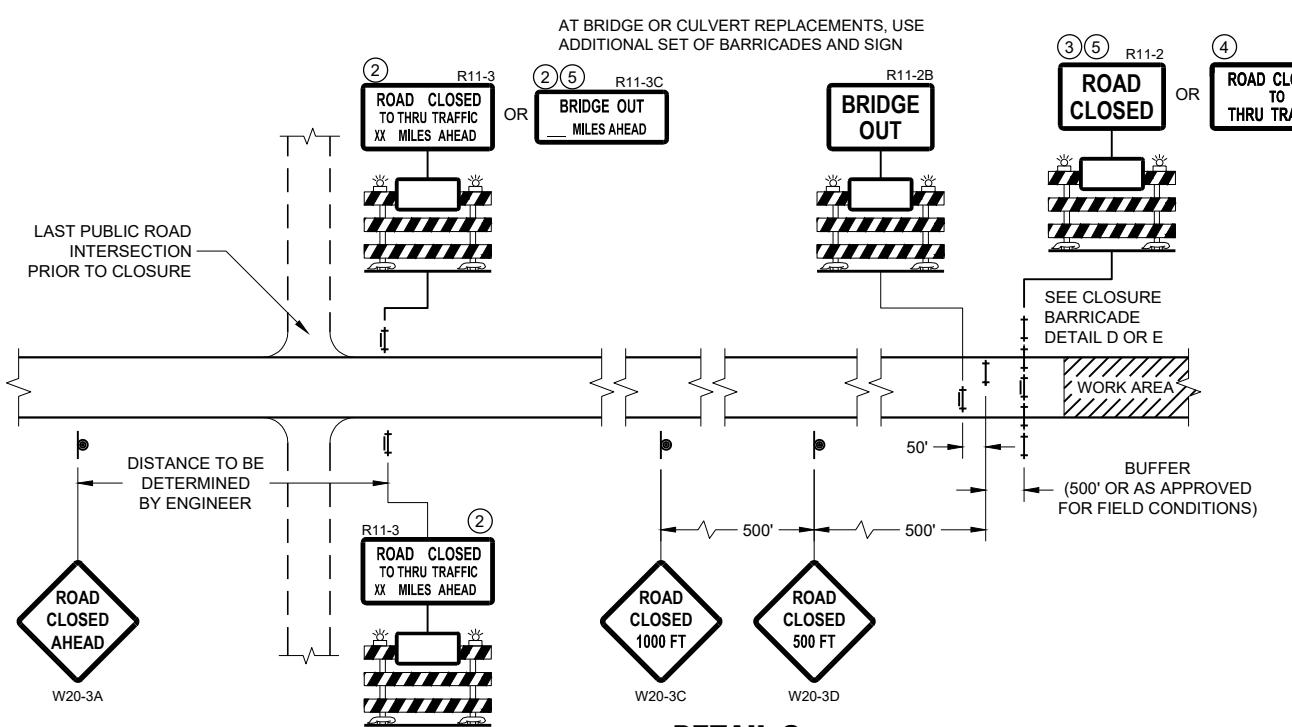
M1 - 5A



M05 - 1



M06 - 1



### 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

### BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

## 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)

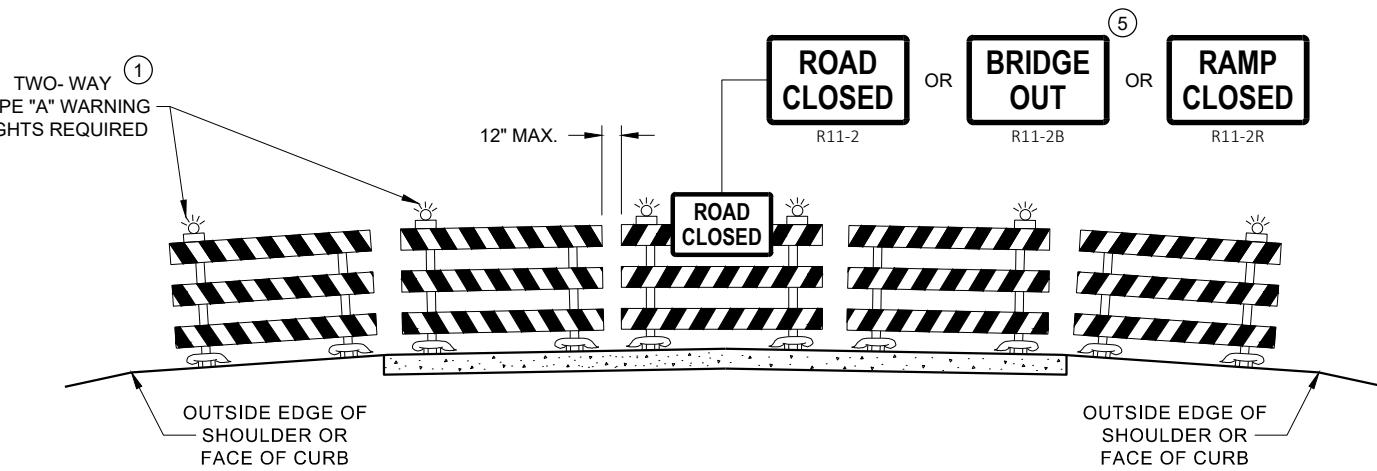
M4 - 8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)

M1 - 4, M1 - 5A AND M1 - 6 SHALL BE 24" X 24" (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS)

M05 - 1 AND M06 - 1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)

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

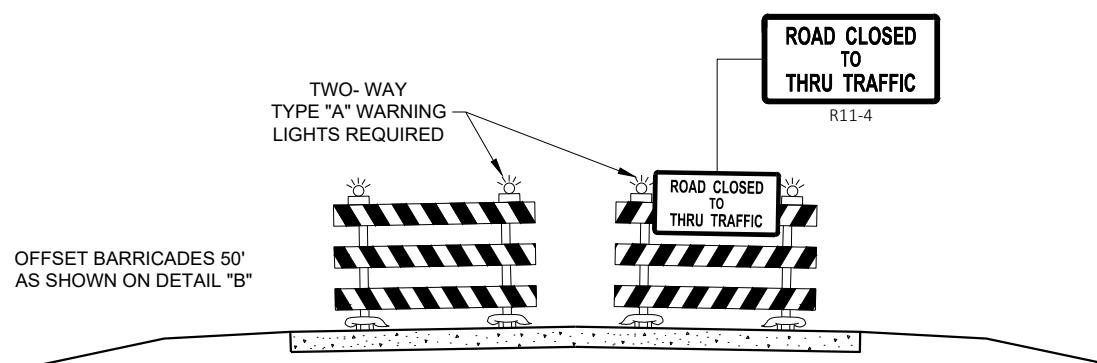
R1 - 1 SHALL BE 36" X 36"



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

6

6



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

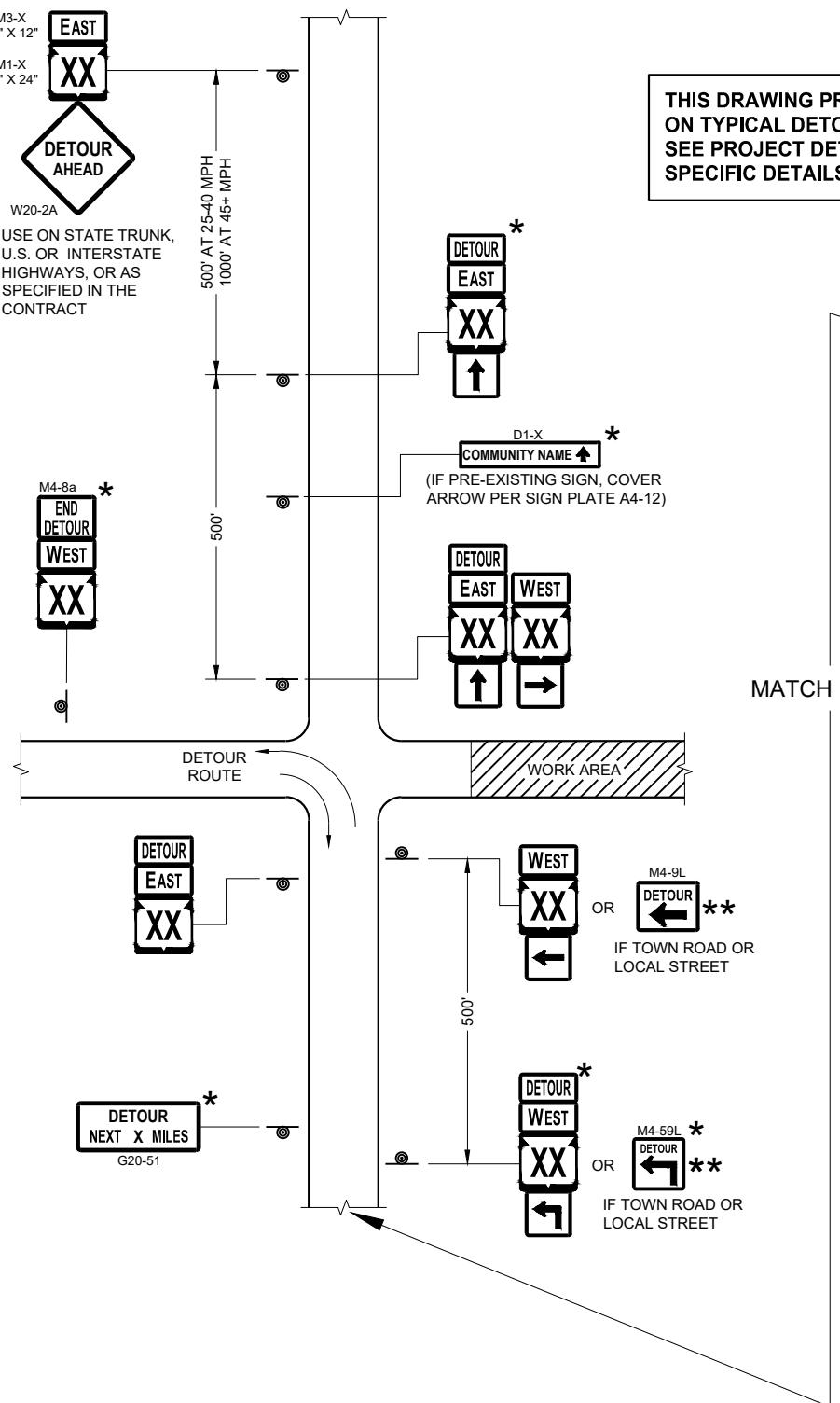
SEE SDD 15C2 - SHEET "a" FOR LEGEND

- 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

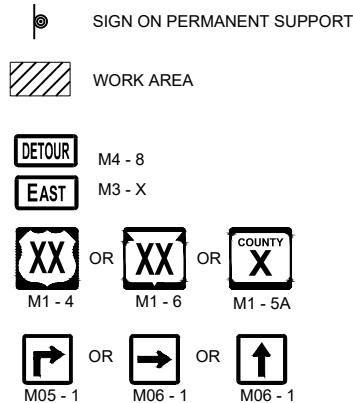
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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



## **DETAIL F DETOUR SIGNING**

## LEGEND



## **GENERAL NOTES**

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

IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. MODIFY EXISTING SIGNS WHERE POSSIBLE.

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

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

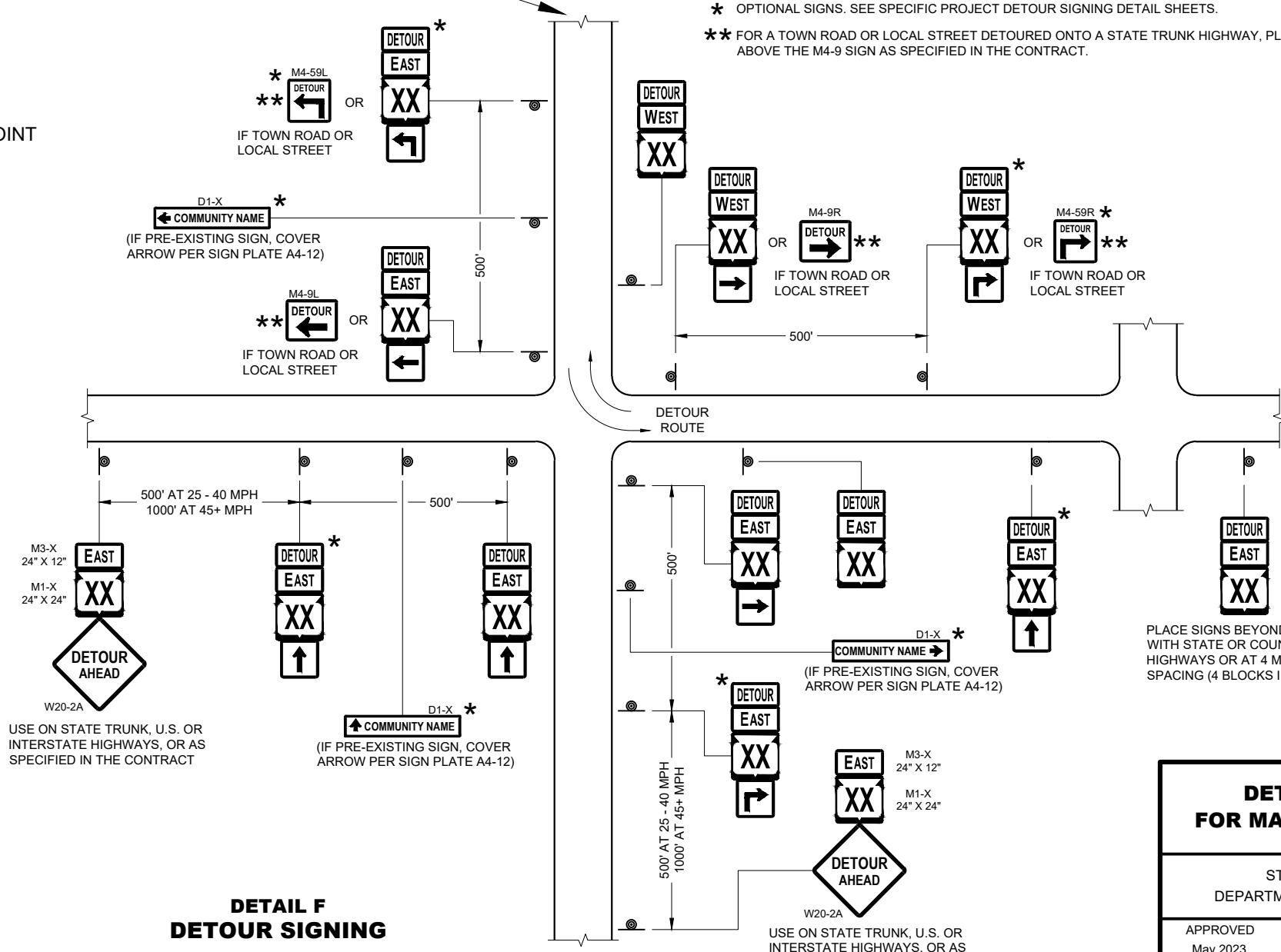
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY

"MO" SIGNS ARE THE SAME AS "M" S

M3-X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)  
M4-8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)  
M1-4, M1-5A AND M1-6 SHALL BE 24" X 24" (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS)  
M05-1 AND M06-1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)  
M4-9 AND M4-59 SHALL BE 30" X 24"  
M4-8a SHALL BE 24" X 18"  
G20-51 SHALL BE 60" X 24"  
W20-2A SHALL BE 48" X 48"  
D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS

\* OPTIONAL SIGNS SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS

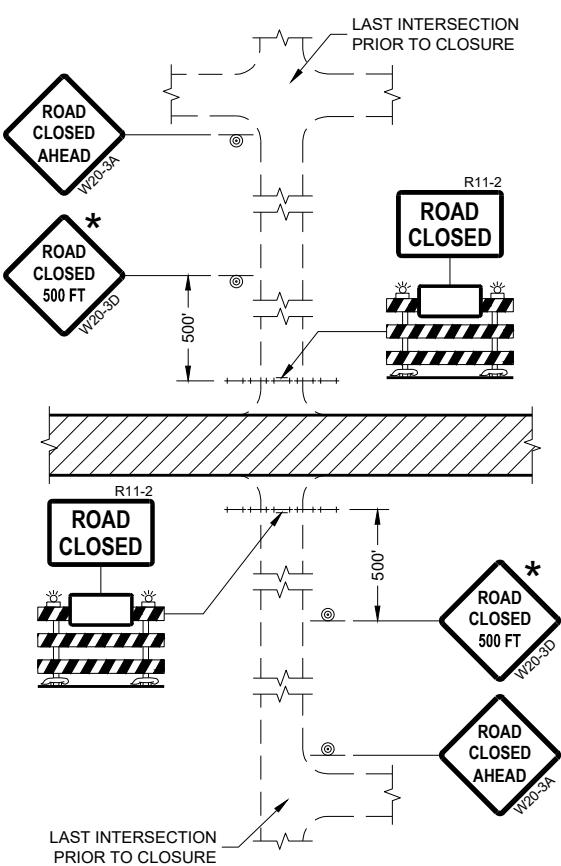
**\* \* FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.**



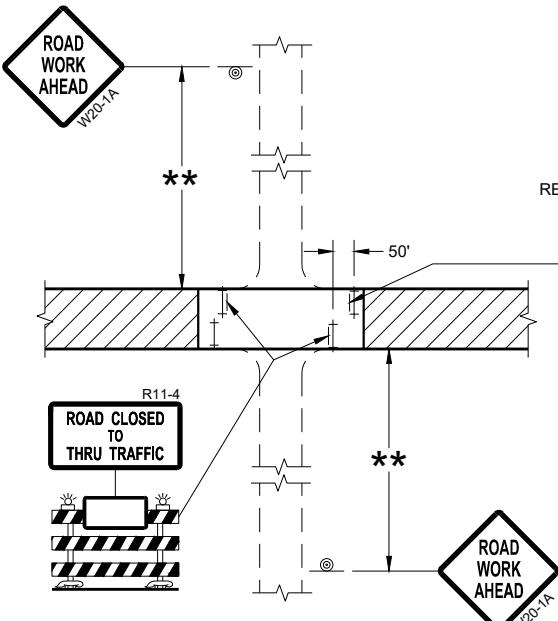
## **DETOUR SIGNING FOR MAINLINE CLOSURES**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

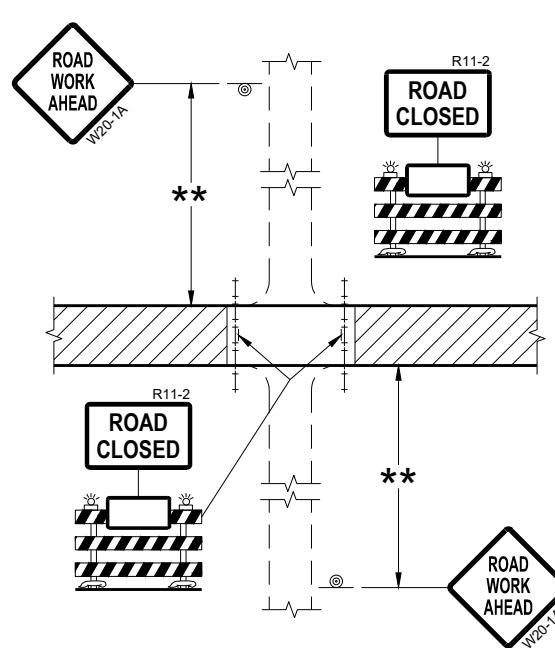
APPROVED \_\_\_\_\_  
May 2023 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER



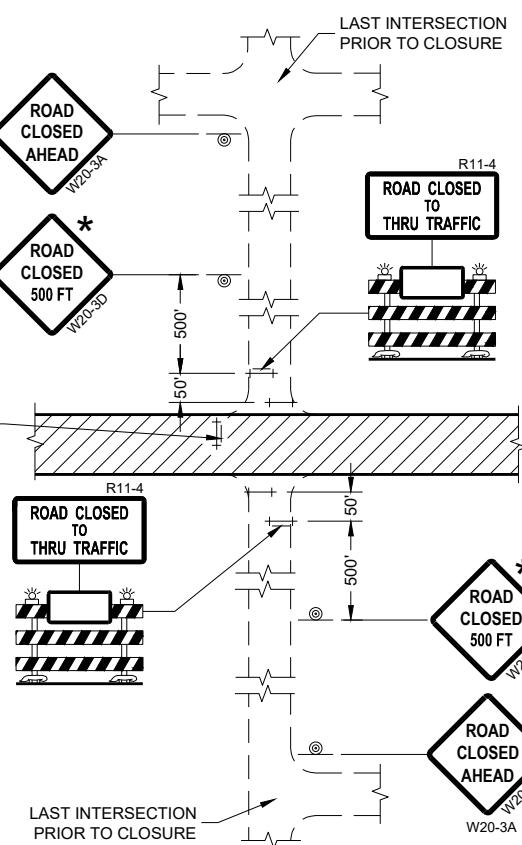
**DETAIL 1**  
(NO ACCESS TO PROJECT)



**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

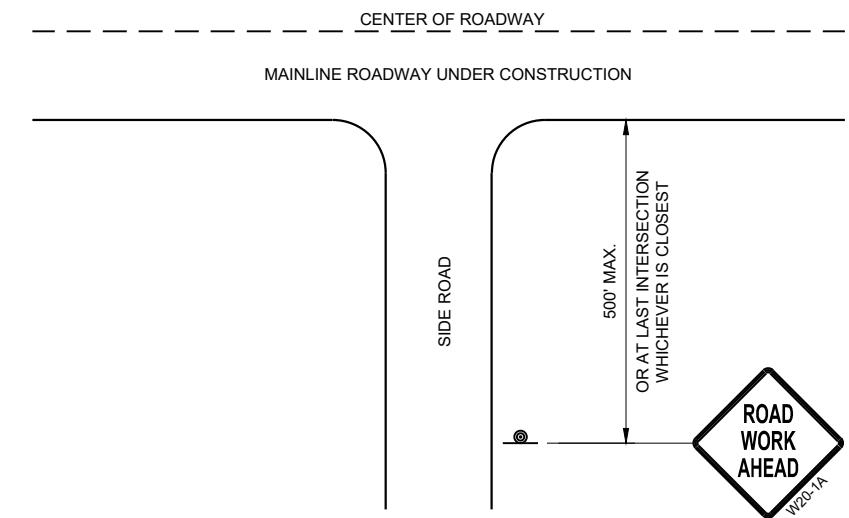
## BARRICADES AND SIGNS FOR SIDEROAD CLOSURES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
July 2018 /S/ Andrew Heidke  
DATE  
FHWA  
WORK ZONE ENGINEER

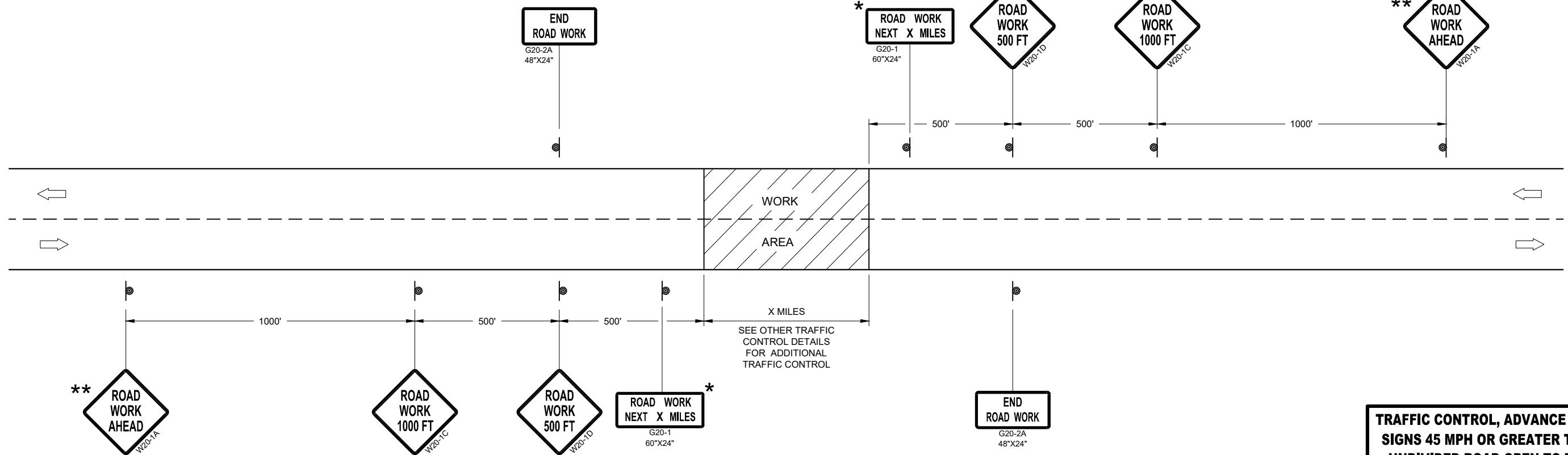
## GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS.  
 THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.  
 ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.  
 SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.  
 IF A "STOP" SIGN MUST BE REMOVED FOR A WORK OPERATION, A TEMPORARY "STOP" SIGN SHALL BE PLACED PRIOR TO THE SIGN REMOVAL, OR A FLAGGER SHALL BE PROVIDED UNTIL THE SIGN IS REESTABLISHED.  
 \* OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS  
 \*\* PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.



## LEGEND

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

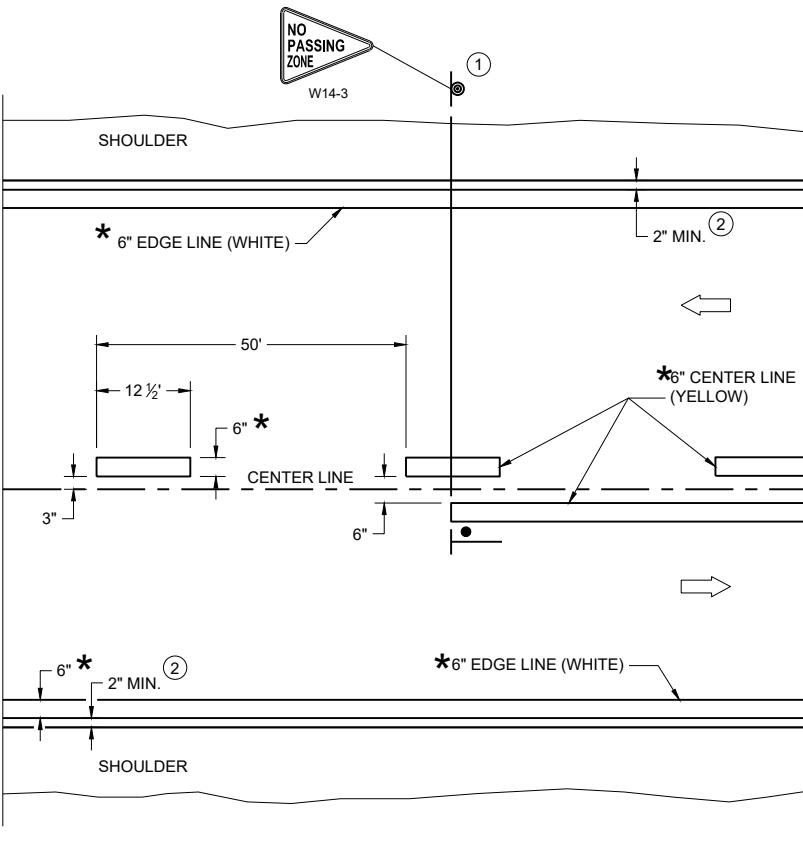


## TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

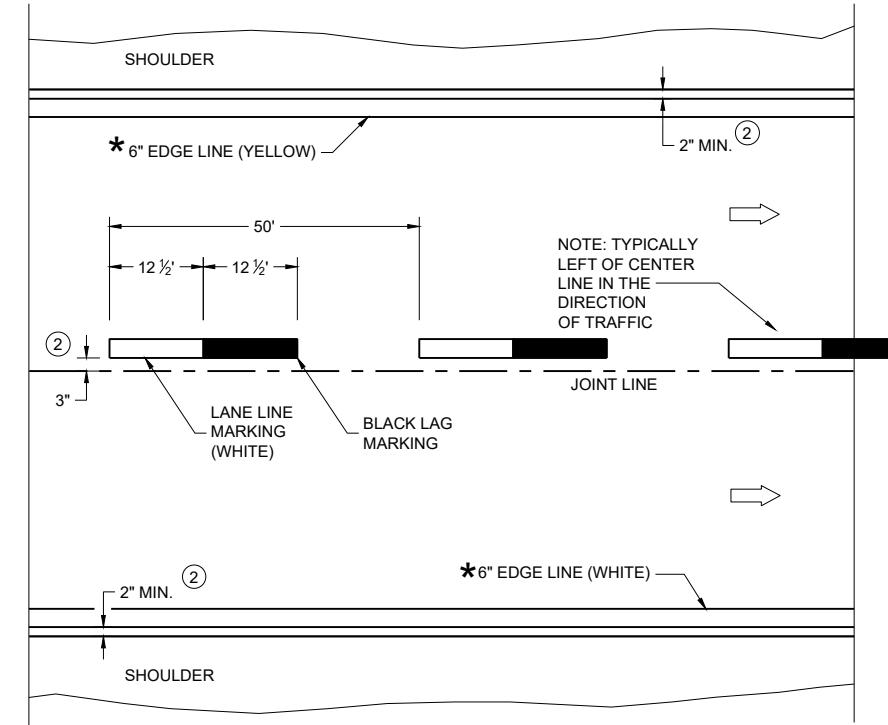
**TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 MPH OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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



PERMANENT PAVEMENT MARKING

**GENERAL NOTES**

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

\* CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES

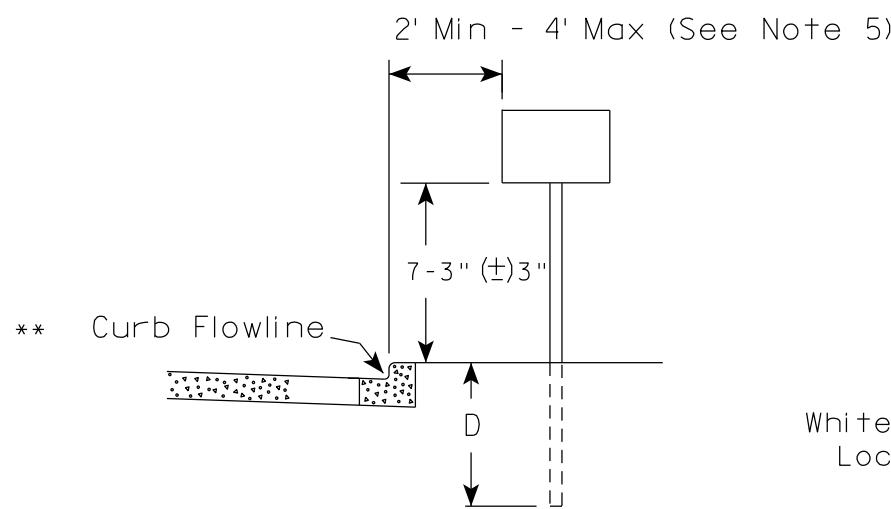
- ① LOCATE THE NO PASSING ZONE W14-3 SIGN WITHIN 50 FEET OF THE "T" MARKING
- ② MEASURE FROM EDGE OF MARKING TO JOINT LINE. THIS DOES NOT INCLUDE SPACE NEEDED FOR GROOVING OPERATIONS.

**LEGEND**

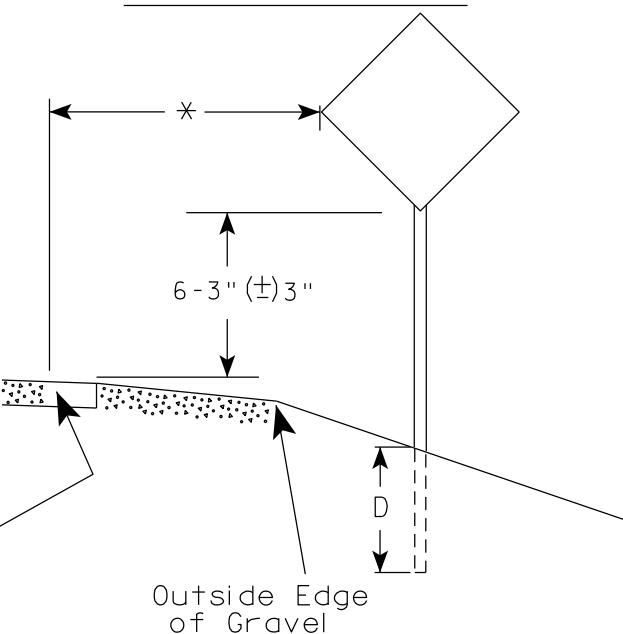
- "T" MARKING
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC

<b>PERMANENT LONGITUDINAL PAVEMENT MARKINGS</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED December 2024	/S/ Jeannie Silver DATE Statewide Pavement Marking Engineer FHWA

## URBAN AREA



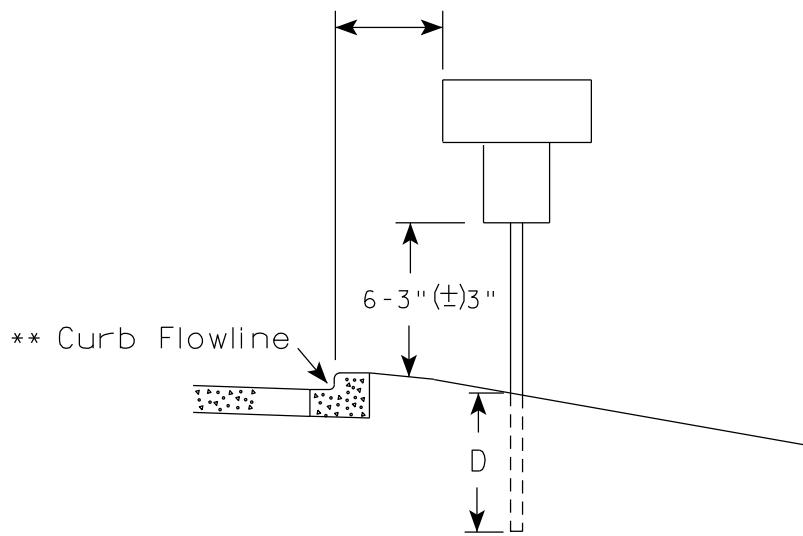
## RURAL AREA (See Note 2)



### GENERAL NOTES

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

2' Min - 4' Max (See Note 5)



White Edgeline Location



\*\* 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.

### POST EMBEDMENT DEPTH

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

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

TYPICAL INSTALLATION  
OF PERMANENT TYPE II  
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew P. Rauch*  
for State Traffic Engineer

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

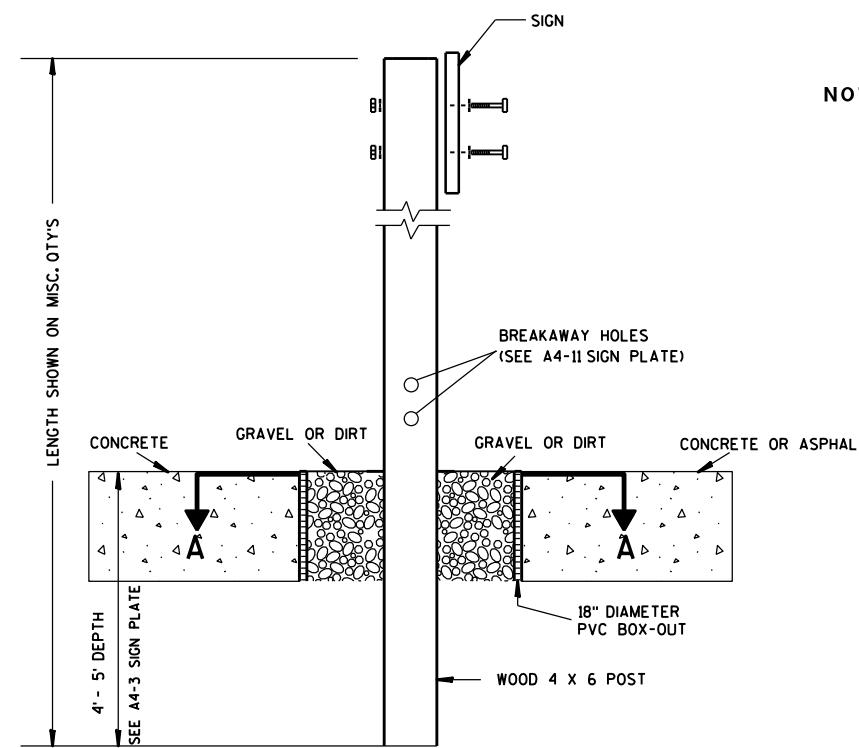
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E

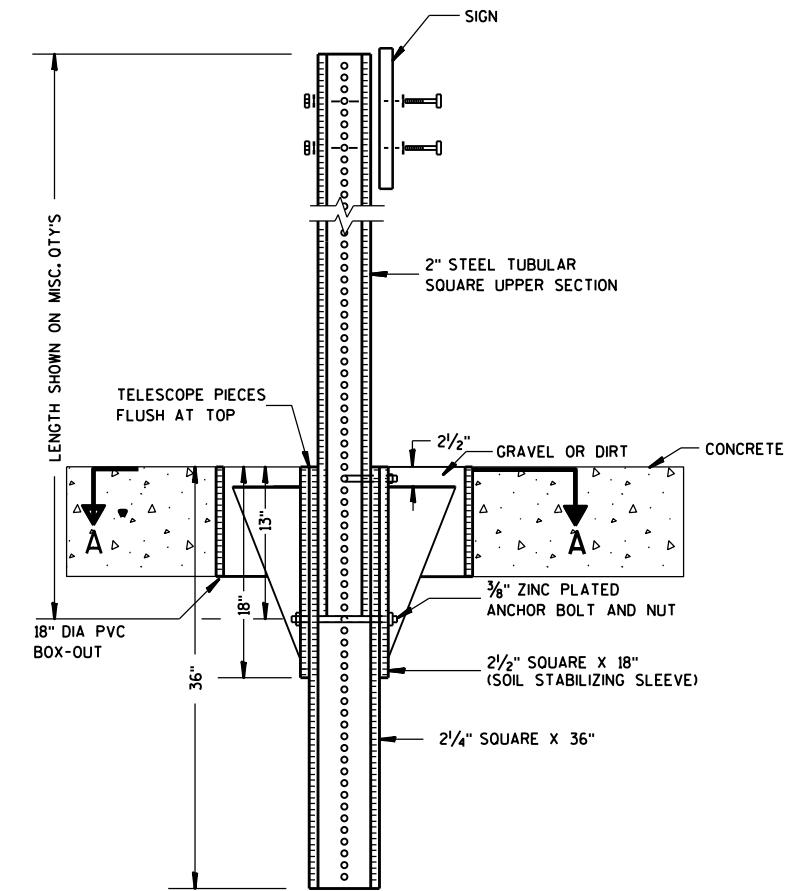


**ELEVATION VIEW**

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

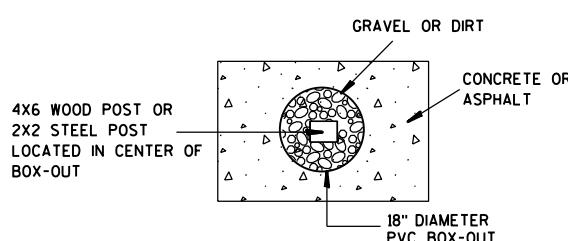
NOTES:

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



**ELEVATION VIEW**

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



**PLAN VIEW**

**FOR NEW CONCRETE/ASPHALT INSTALLATIONS**

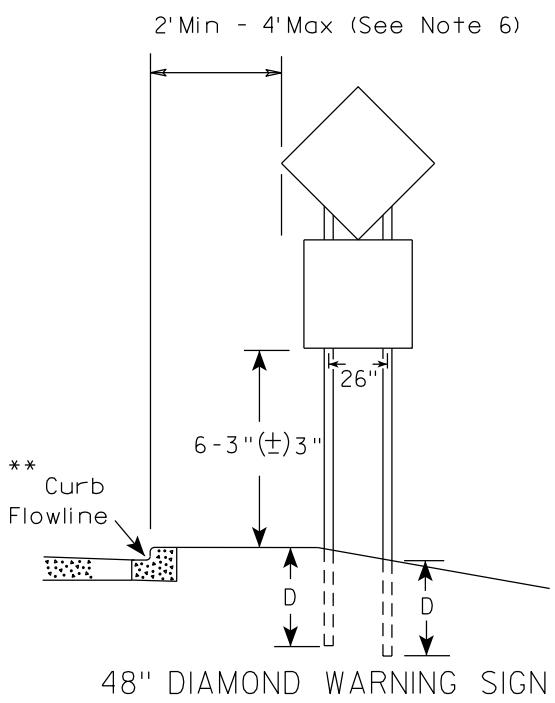
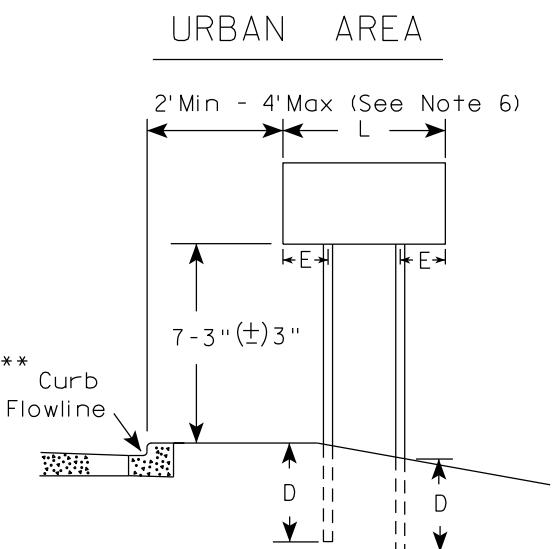
**SIGN POST  
BOX-OUTS  
A4-3B**

WISCONSIN DEPT OF TRANSPORTATION

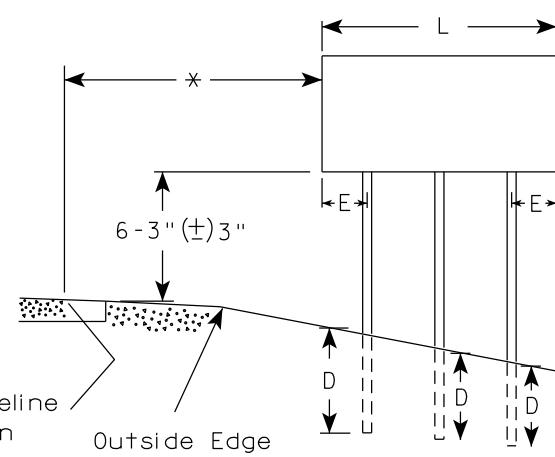
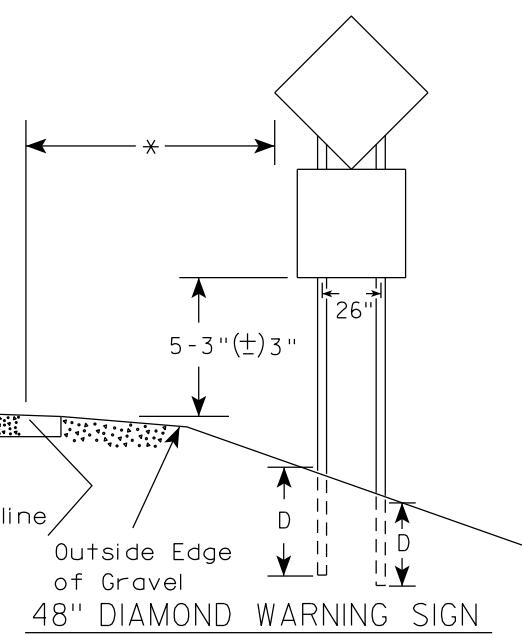
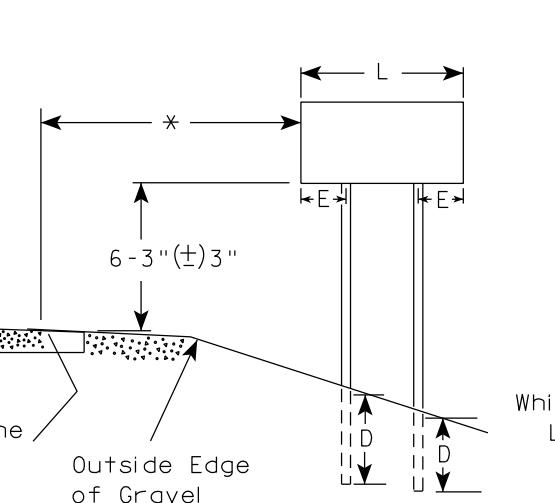
APPROVED  
*Matthew P. Rauch*  
for State Traffic Engineer  
DATE 1/27/14 PLATE NO. A4-3B.1

GENERAL NOTES

- For 3 or 4 post installations, individual post spacing shall be greater than 3'-6".
- See tables below for required number of posts.
- For expressways and freeways, mounting height is 7'-3" ( $\pm$  3") or 6'-3" ( $\pm$  3") depending upon existence of sub-sign.
- The ( $\pm$ ) tolerance for mounting height is 3 inches.
- J-Assemblies are considered to be one sign for mounting height.
- Offset distance shall be consistent with existing signs or consistent throughout length of project.
- Folding signs shall be mounted at a height of 5'-3" ( $\pm$  3") or as directed by the engineer.
- The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" ( $\pm$  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" ( $\pm$  3").



**RURAL AREA (See Note 3)**



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

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

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

**SIGN SHAPE OTHER THAN DIAMOND (TWO POSTS REQUIRED)**

L	E
Greater than 48"	12"
Less than 60"	
60" to 108"	L/5

**SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED)**

L	E
Greater than 108" to 144"	12"

**POST EMBEDMENT DEPTH**

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

**TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS**

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

*Matthew R Rauch*  
for State Traffic Engineer

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

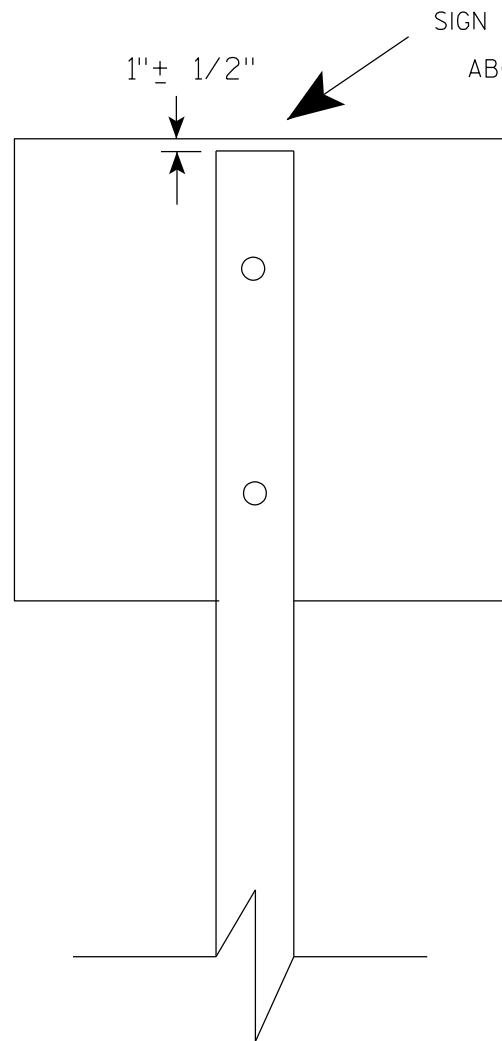
PROJECT NO:

HWY:

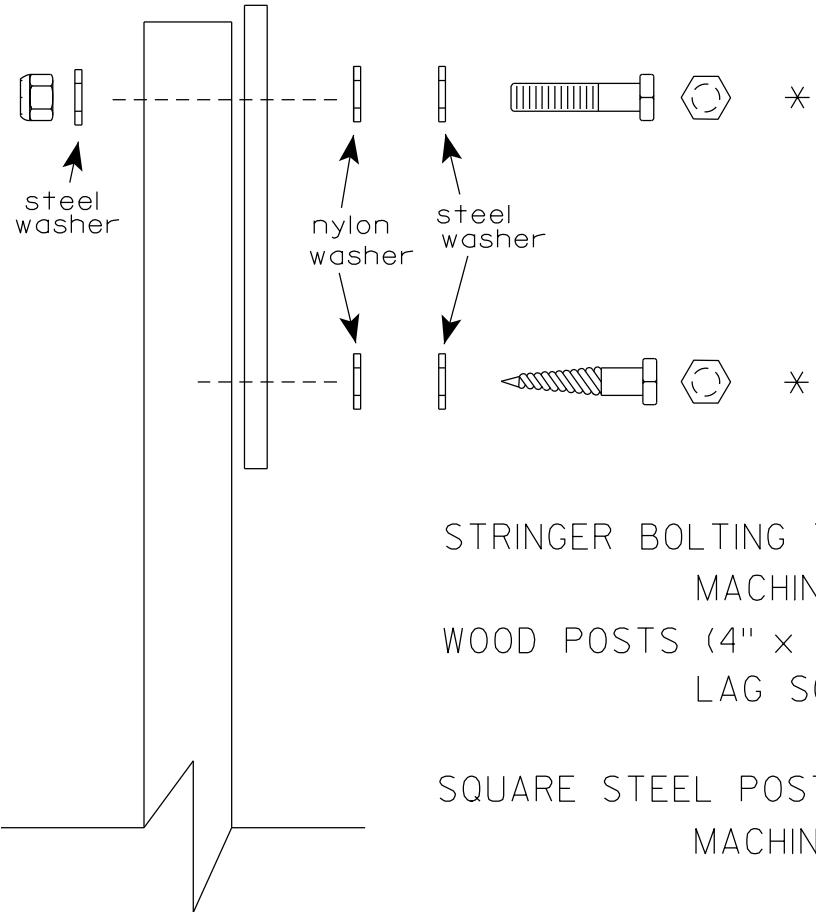
COUNTY:

SHEET NO:

**E**



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.

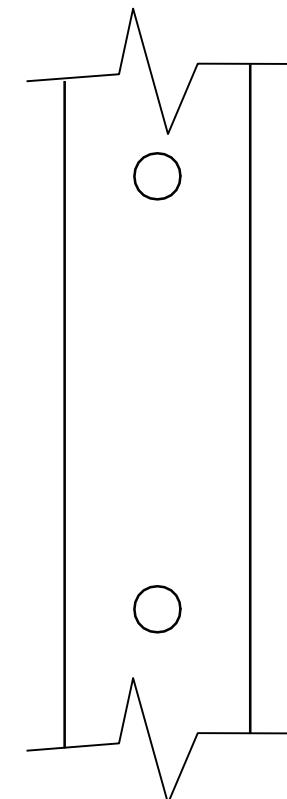
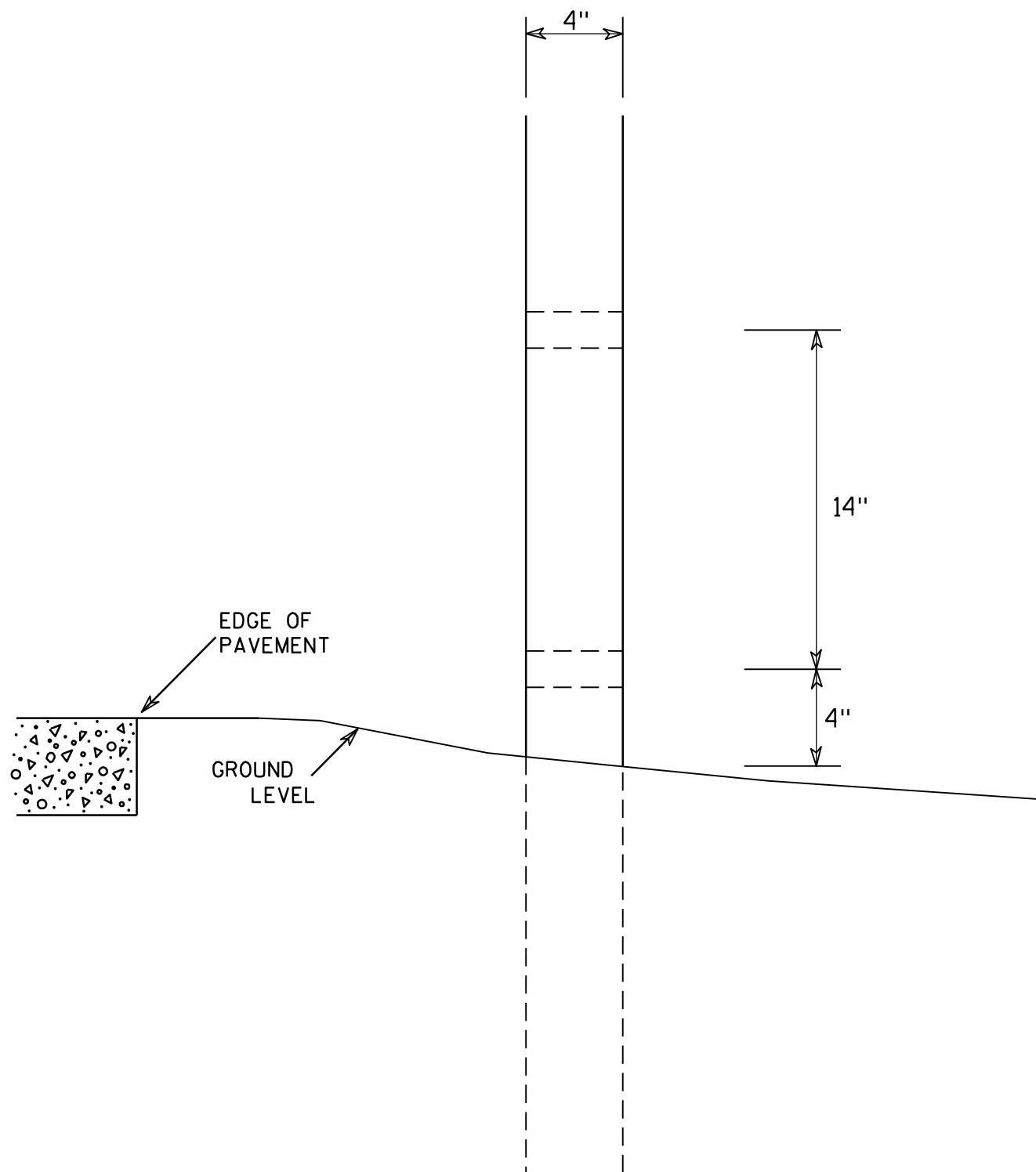
#### ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R Rauch*  
for State Traffic Engineer

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





SIDE VIEW

GENERAL NOTES

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

4 X 6 WOOD POST  
MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

*Cheska J. Sprey*  
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

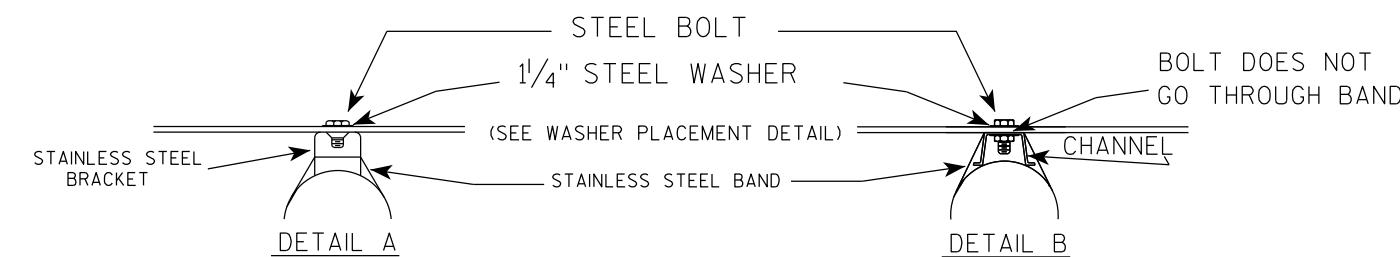
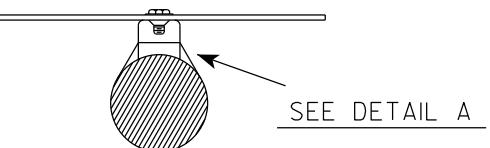
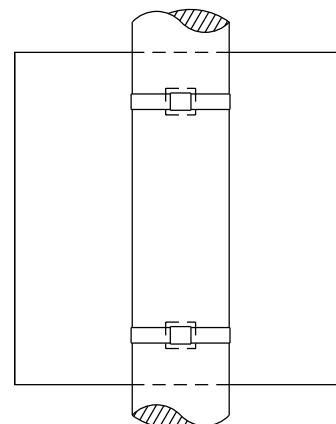
E

## GENERAL NOTES

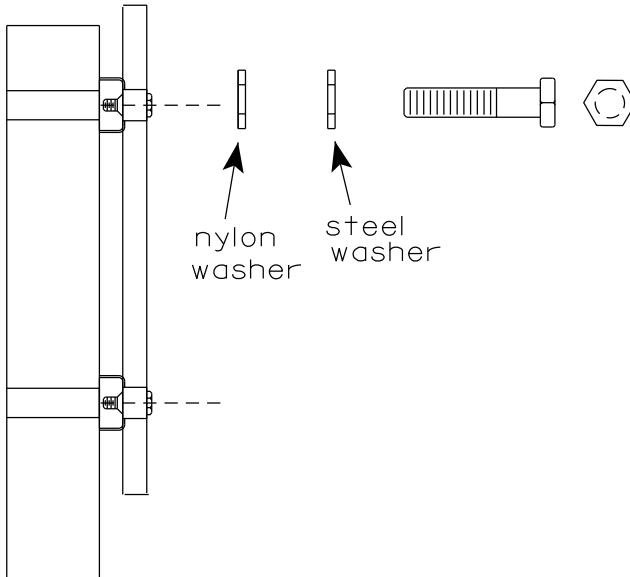
1. Any sign over 3 feet in width shall use the V-Block banding method. See A5-10 standard plate.
2. Signs 3 feet or greater in height shall have three bracket bands installed. Signs less than 3 feet in height shall have two bracket bands installed.
3. Banding and assembly bracket shall be stainless steel. All bands shall be  $\frac{3}{4}$ " 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

## BANDING

### SINGLE SIGN

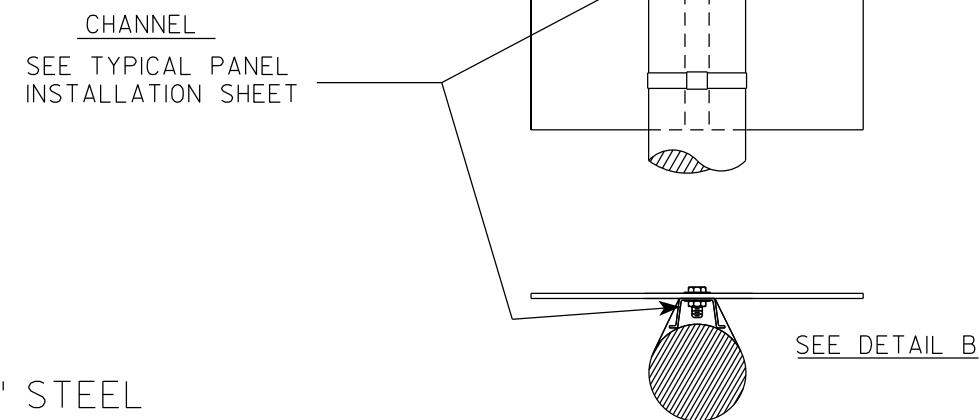


### WASHER PLACEMENT



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  
 FOR ALL TYPE H SIGNS

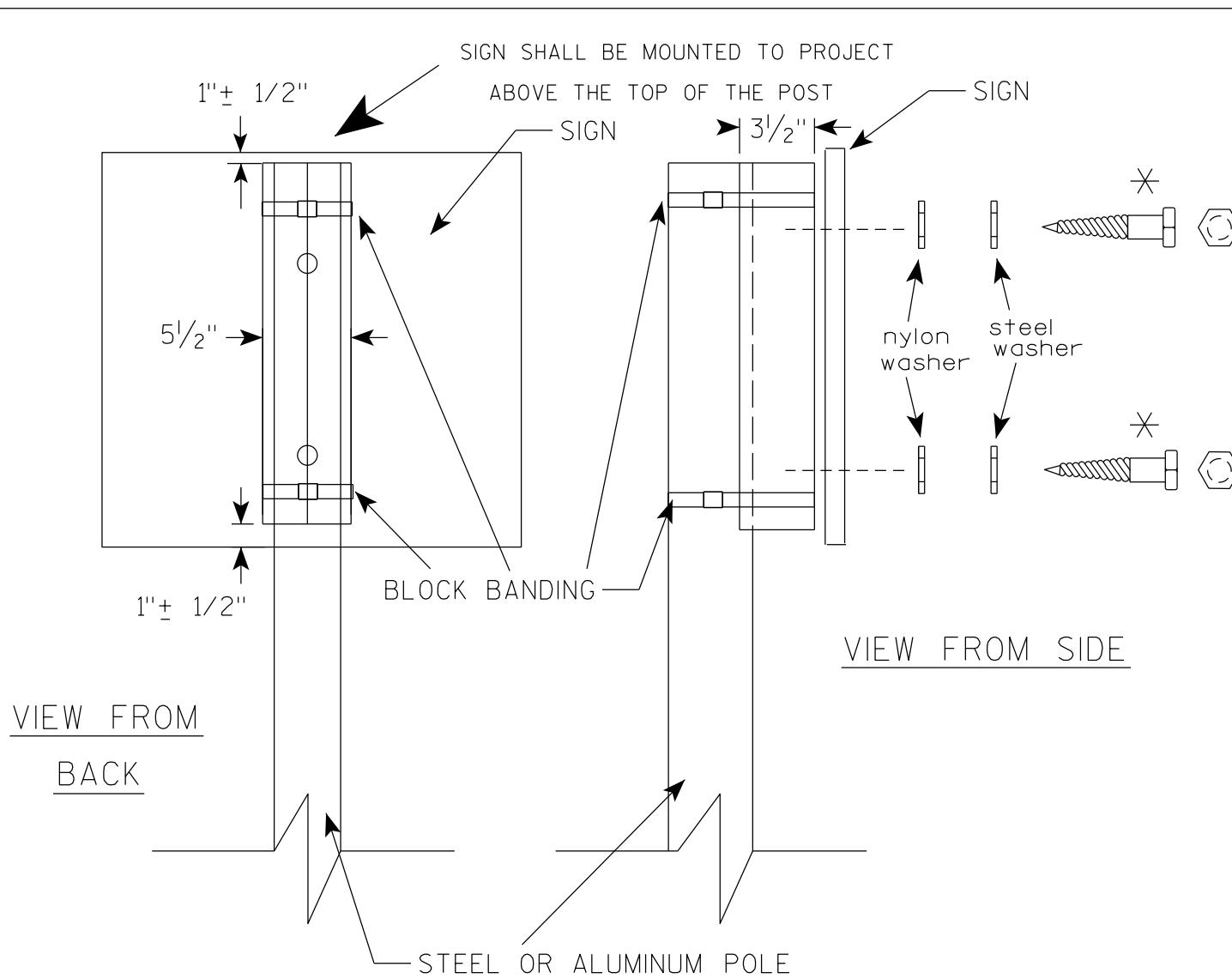
### "J" ASSEMBLY



### STANDARD SIGN SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

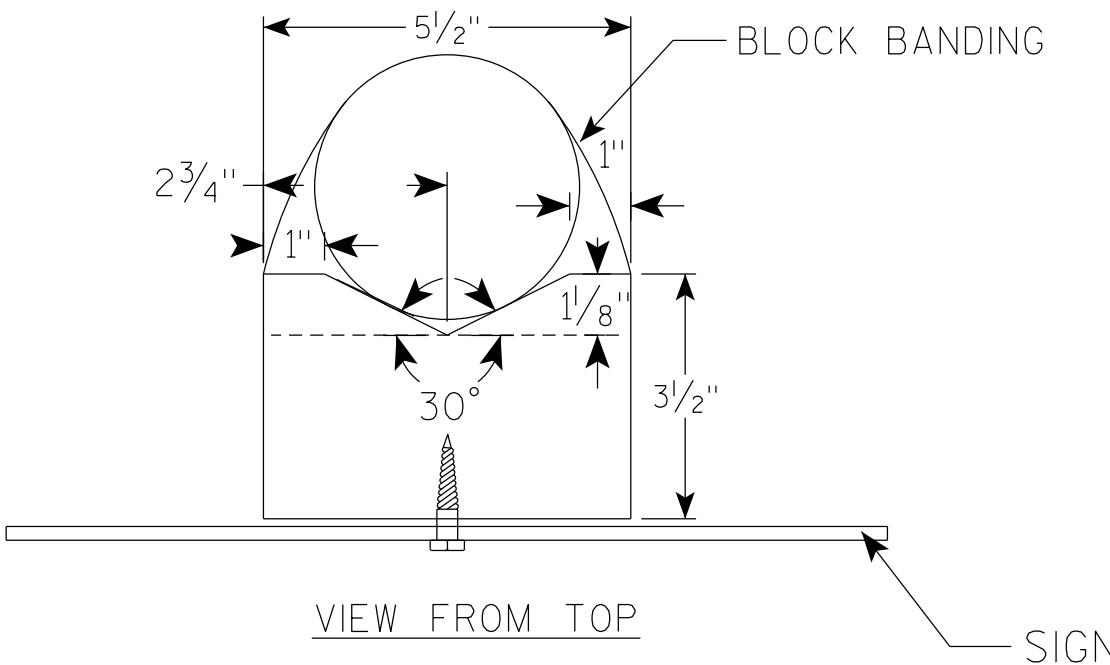
APPROVED  
  
 for State Traffic Engineer  
 DATE 6/10/19 PLATE NO. A5-9.4



### GENERAL NOTES

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

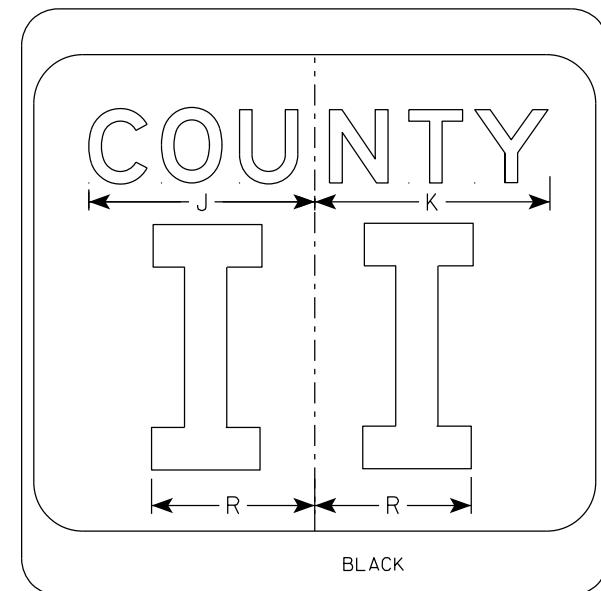
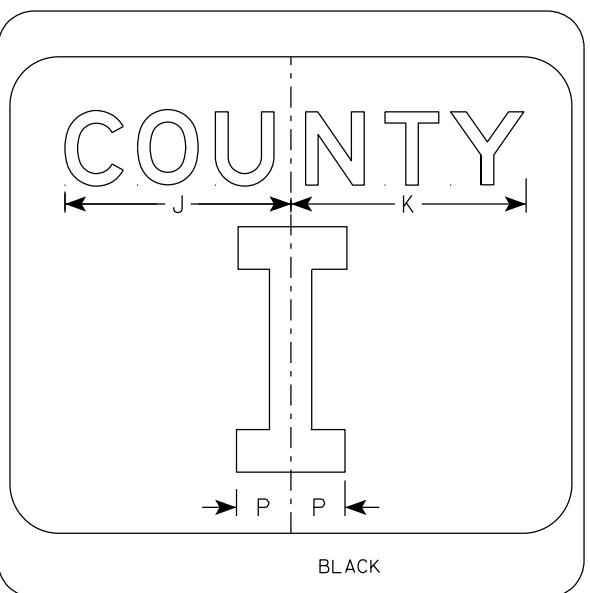
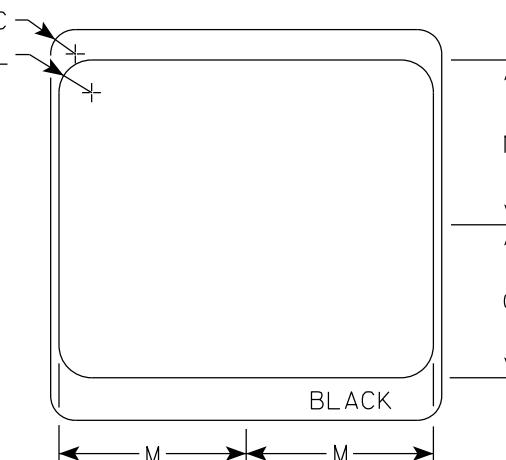
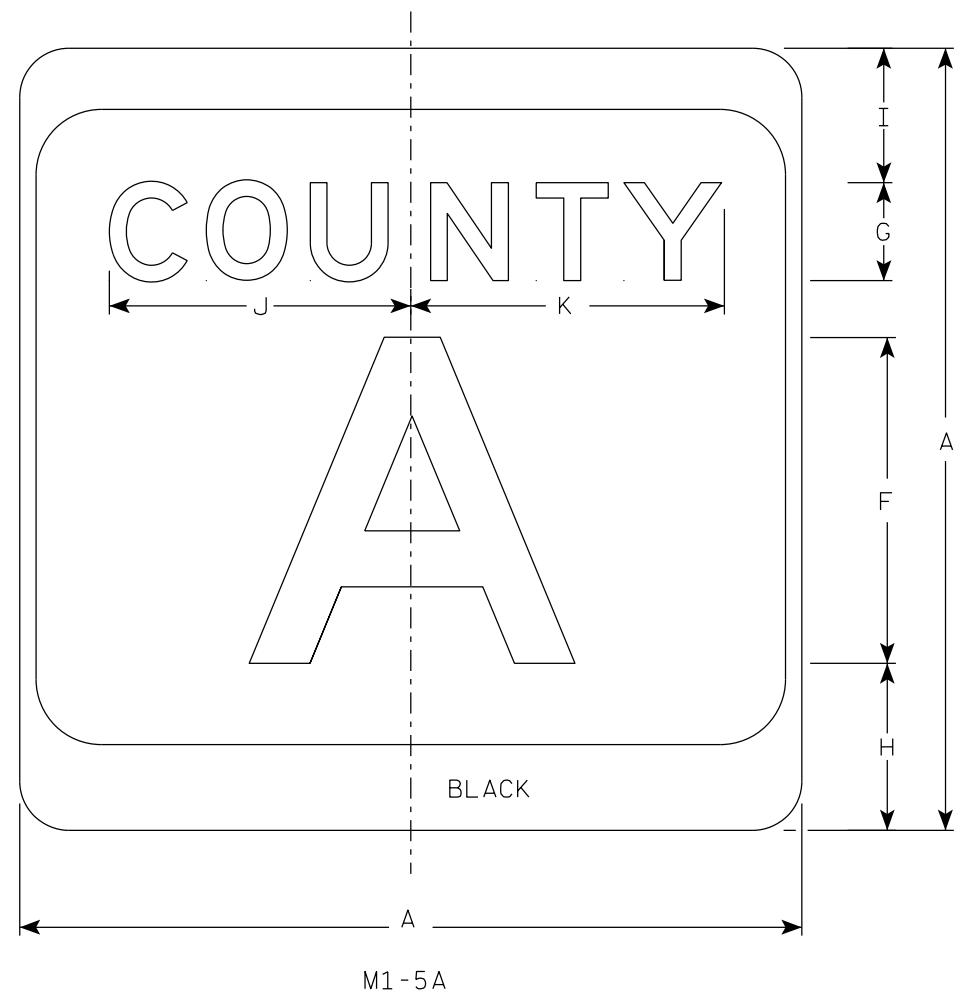
APPROVED *Matthew R Rauch*  
for State Traffic Engineer

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

PROJECT NO:

SHEET NO:

E



#### NOTES

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

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

PROJECT NO:

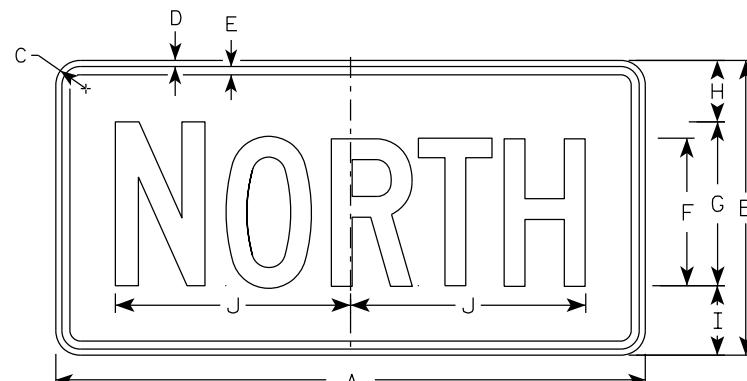
HWY:

COUNTY:

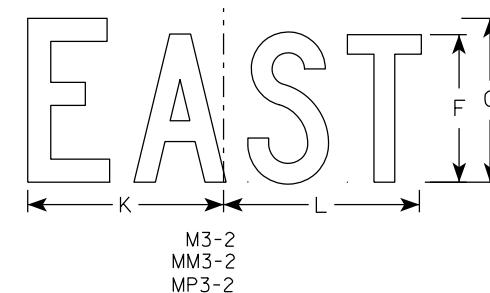
SHEET NO:

E

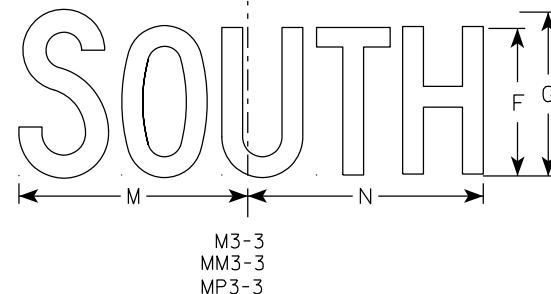
CTH MARKER  
M1-5A FOR ASSEMBLIES  
WISCONSIN DEPT OF TRANSPORTATION  
APPROVED *Matthew R Rauch*  
for State Traffic Engineer  
DATE 11/8/2022 PLATE NO. M1-5A.9



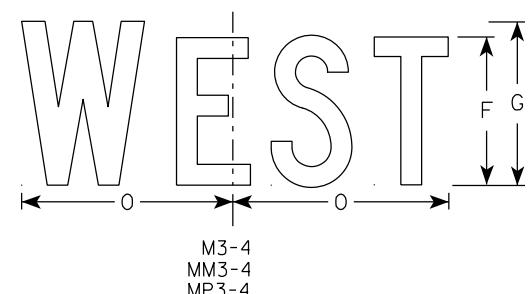
M3-1  
MM3-1  
MP3-1



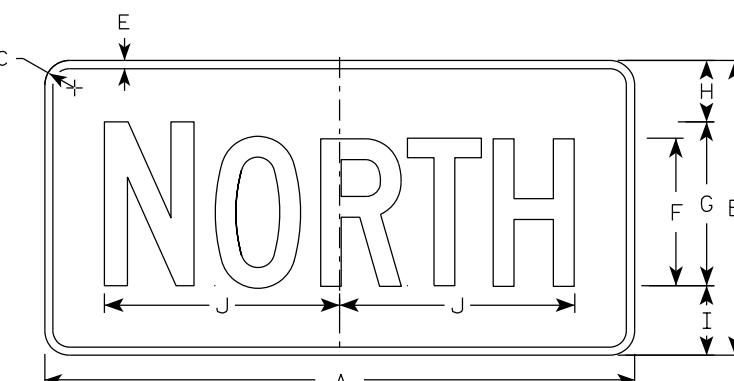
M3-2  
MM3-2  
MP3-2



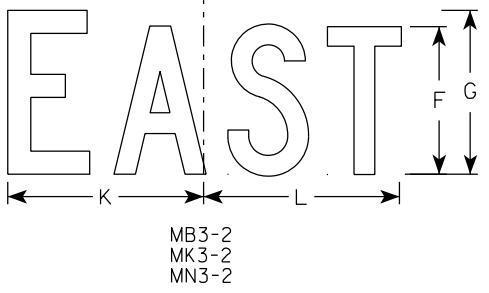
M3-3  
MM3-3  
MP3-3



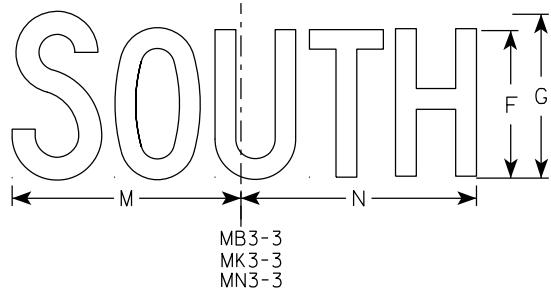
M3-4  
MM3-4  
MP3-4



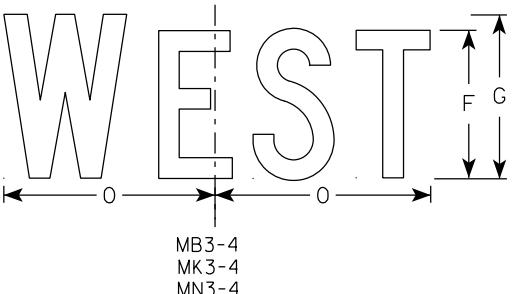
MB3-1  
MK3-1  
MN3-1



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 Reflective
2. Color:  
Background - See note 5  
Message - See note 5
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. M3-1 thru M3-4      Background - White  
                            Message - Black  
                            MB3-1 thru MB3-4      Background - Blue  
                            Message - White  
                            MK3-1 thru MK3-4      Background - Green  
                            Message - White  
                            MM3-1 thru MM3-4      Background - White  
                            Message - Green  
                            MN3-1 thru MN3-4      Background - Brown  
                            Message - White  
                            MP3-1 thru MP3-4      Background - White  
                            Message - Blue
6. Note the first letter of each direction is larger than the remainder of the message.

7

7

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

PROJECT NO:

HWY:

COUNTY:

STANDARD SIGNS
M3-1 THRU M3-4
SERIES
WISCONSIN DEPT OF TRANSPORTATION
APPROVED

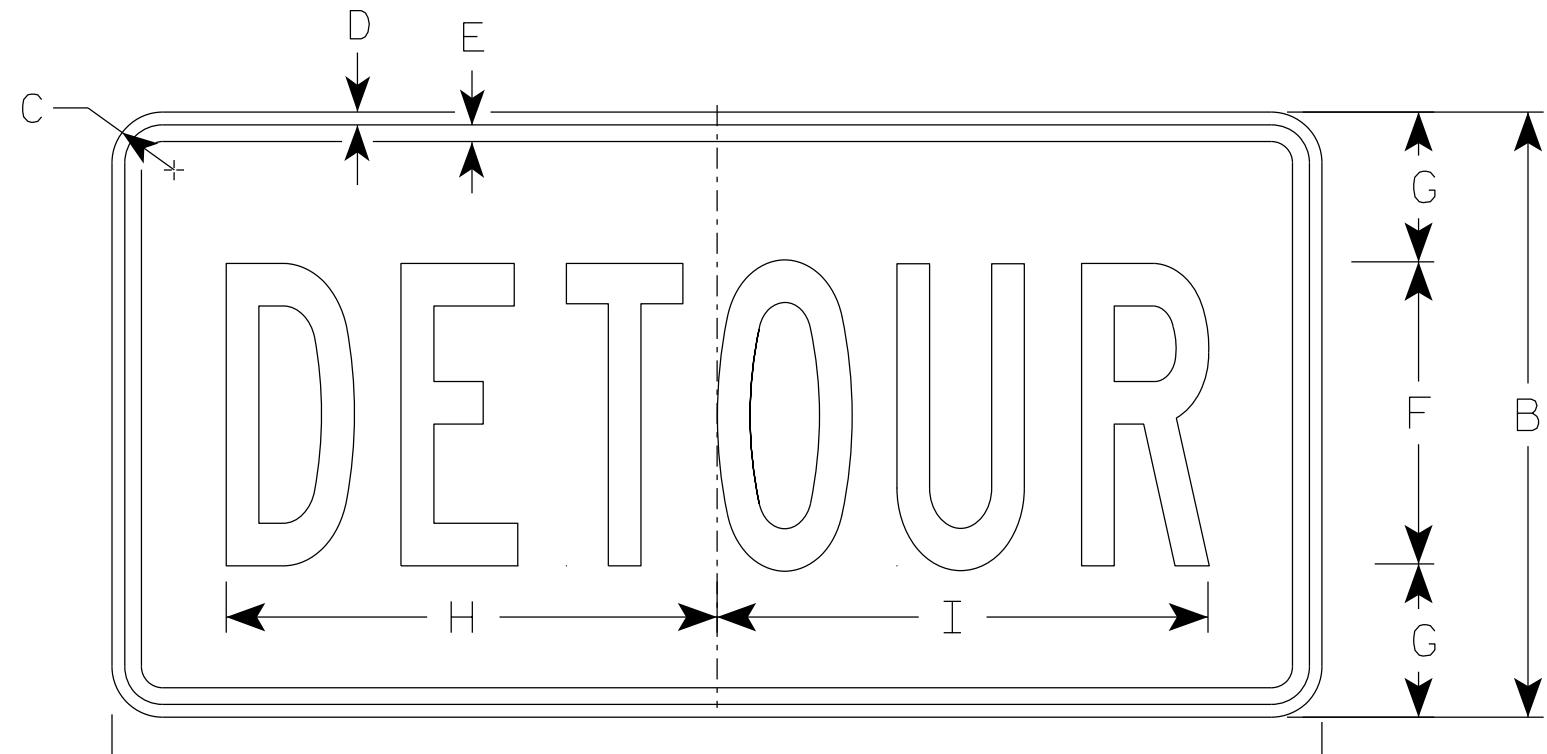
*Matthew P. Rauch*  
for State Traffic Engineer  
DATE 2/8/2023 PLATE NO. M3-1.15

SHEET NO:

E

NOTES

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



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 1/2	3/8	3/8	6	3	10	10 1/4																	2.0	
2M	24	12	1 1/2	3/8	3/8	6	3	10	10 1/4																	2.0	
3	36	18	1 1/2	3/8	1/2	9	4 1/2	14 5/8	14 1/2																	4.5	
4	36	18	1 1/2	3/8	1/2	9	4 1/2	14 5/8	14 1/2																	4.5	
5	36	18	1 1/2	3/8	1/2	9	4 1/2	14 5/8	14 1/2																	4.5	

PROJECT NO:

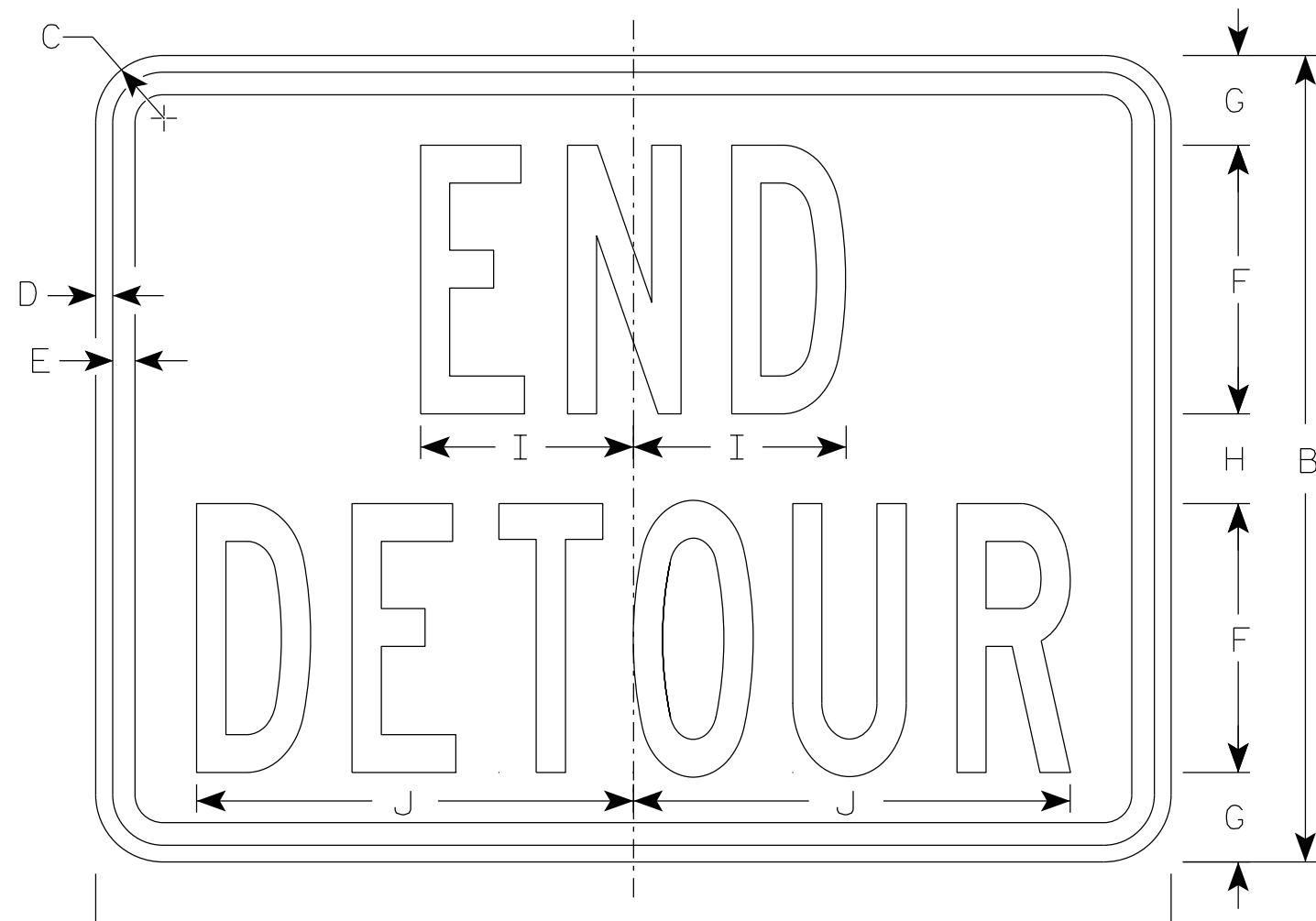
HWY:

COUNTY:

SHEET NO:

**E**

STANDARD SIGN	
M4 - 8	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R Rauch</i> for State Traffic Engineer
DATE	2/9/2023
PLATE NO.	M4-8.4



7

M4-8A

7

### NOTES

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

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

PROJECT NO:

HWY:

COUNTY:

STANDARD SIGN  
M4-8A

WISCONSIN DEPT OF TRANSPORTATION

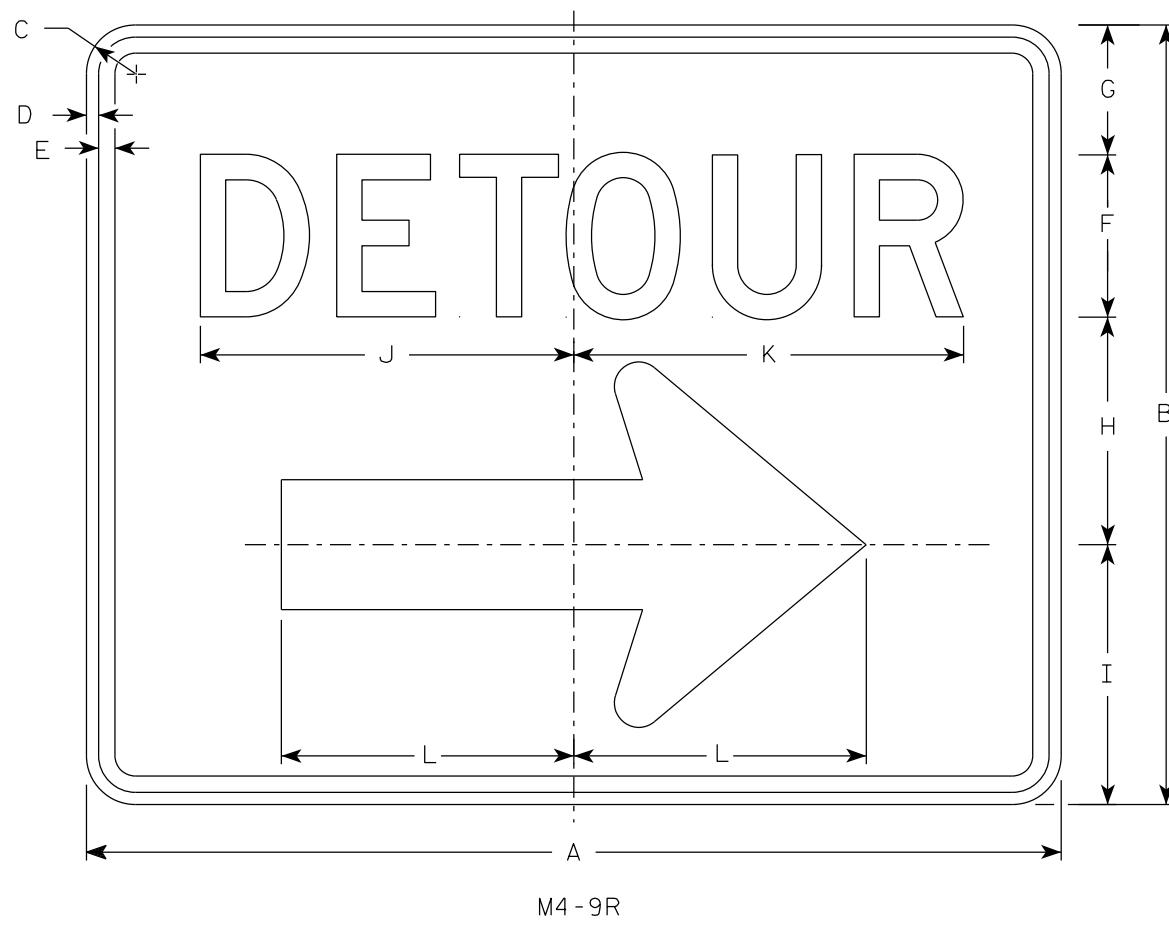
APPROVED *Matthew R Rauch*

for State Traffic Engineer

DATE 2/9/2023 PLATE NO. M4-8A.4

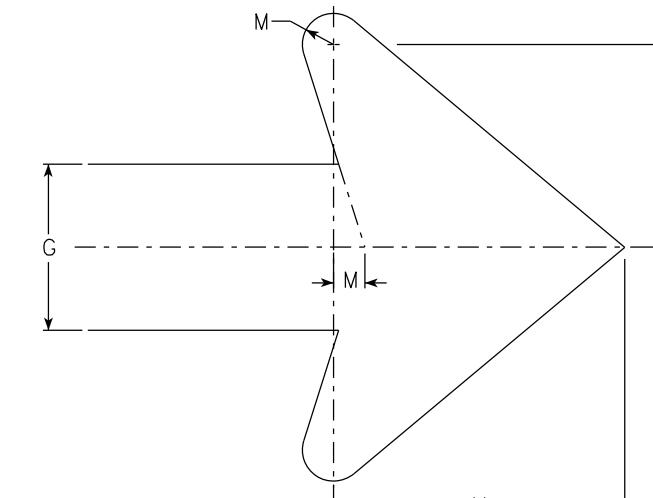
SHEET NO:

E



#### NOTES

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



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

STANDARD SIGN  
M4-9 R & L  
WISCONSIN DEPT OF TRANSPORTATION  
APPROVED *Matthew R Rauch*  
for State Traffic Engineer  
DATE 2/9/2023 PLATE NO. M4-9R.6

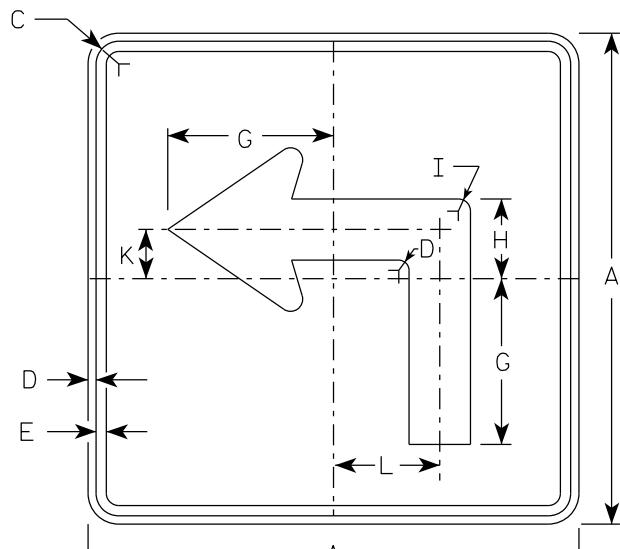
PROJECT NO:

HWY:

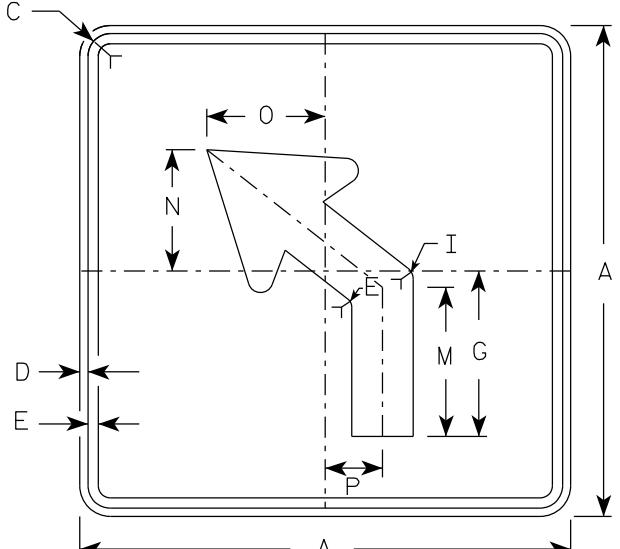
COUNTY:

SHEET NO:

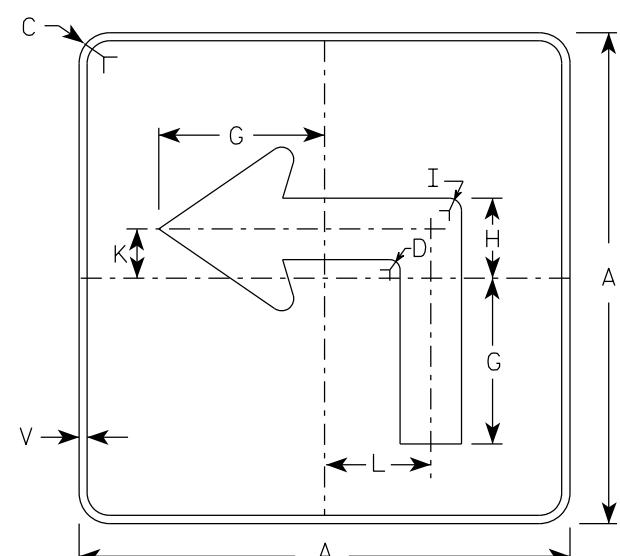
E



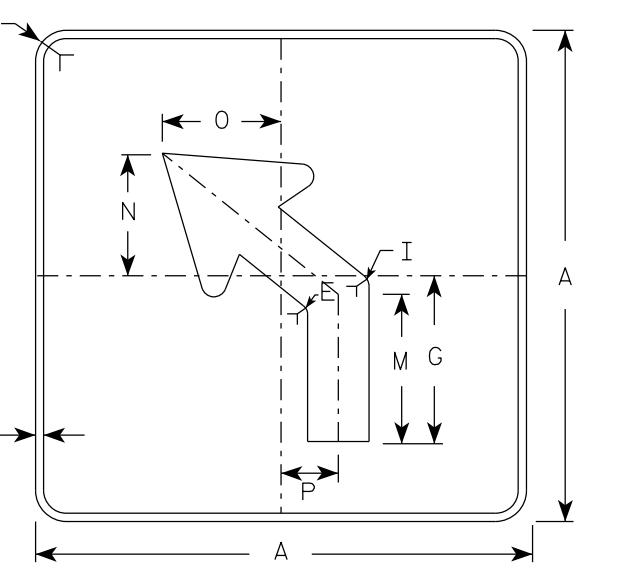
M5-1L  
MM5-1L  
M05-1L  
MP5-1L



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



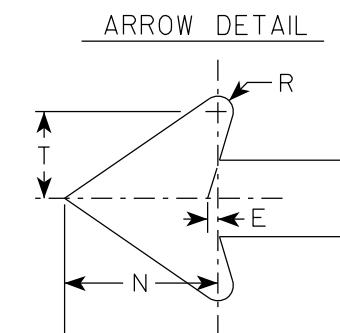
MB5-1L  
MK5-1L  
MN5-1L  
MR5-1L



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

#### NOTES

1. Signs are Type II - Type H reflective 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.
  - M5-1 and M5-2 Background - White  
Message - Black
  - MB5-1 and MB5-2 Background - Blue  
Message - White
  - MK5-1 and MK5-2 Background - Green  
Message - White
  - MM5-1 and MM5-2 Background - White  
Message - Green
  - MN5-1 and MN5-2 Background - Brown  
Message - White
  - M05-1 and M05-2 Background - Orange - Type F Reflective  
Message - Black
  - MP5-1 and MP5-2 Background - White  
Message - Blue
  - MR5-1 and MR5-2 Background - Brown  
Message - Yellow
5. M5-1R same as M5-1L except arrow points right.
6. 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																											
2S	21		1 1/2	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3		1/2					3.06
2M	21		1 1/2	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3		1/2					3.06
3	30		1 7/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4		1/2					6.25
4	30		1 7/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4		1/2					6.25
5	30		1 7/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4		1/2					6.25

PROJECT NO:

HWY:

COUNTY:

#### STANDARD SIGN

M5-1 & M5-2

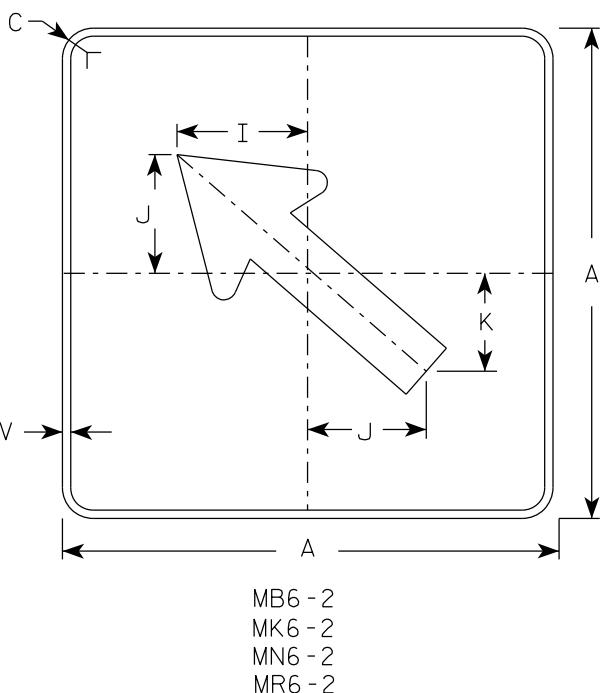
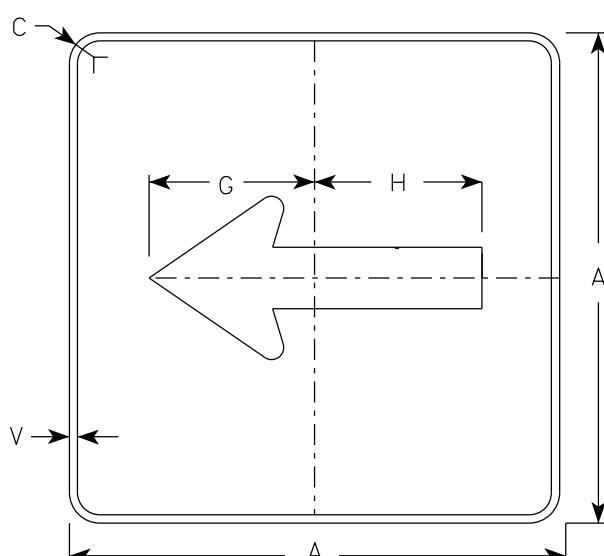
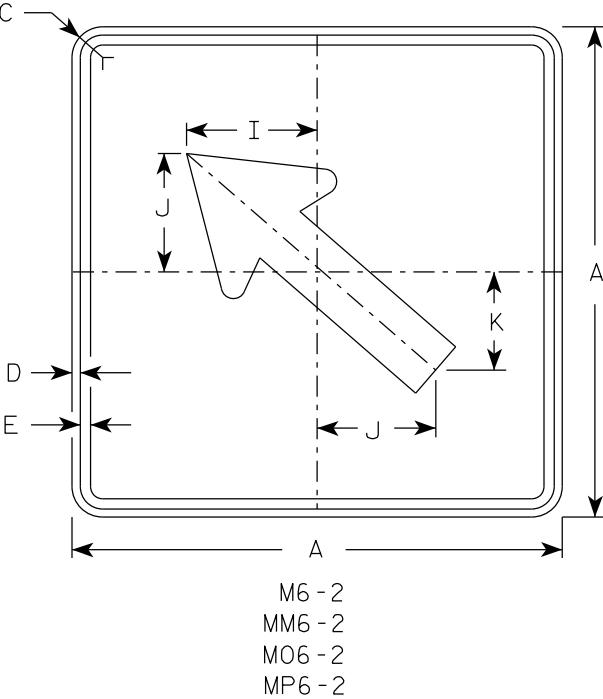
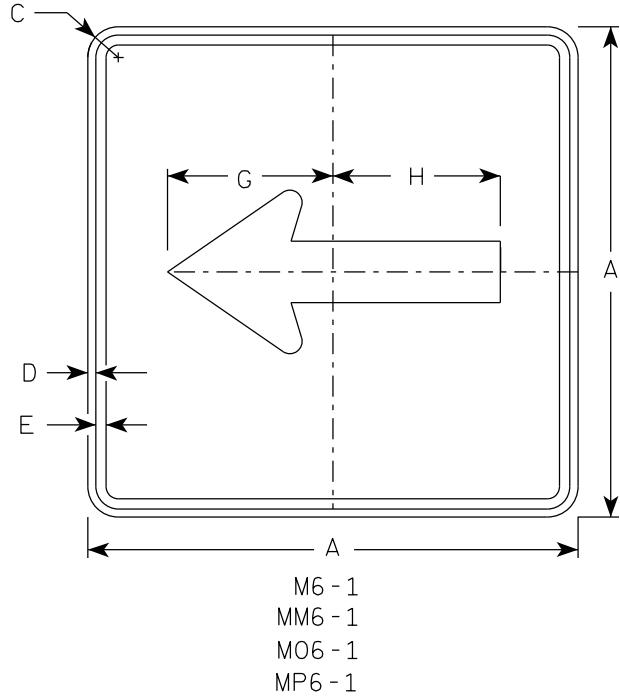
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R Rauch*

For State Traffic Engineer

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

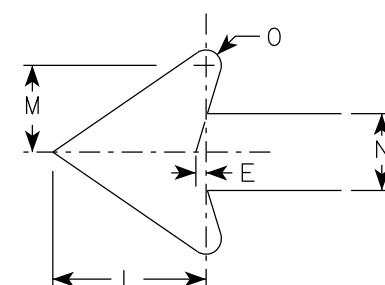
SHEET NO: **E**



### NOTES

1. Signs are Type II - Type H Reflective 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

### ARROW DETAIL



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

PROJECT NO:

HWY:

COUNTY:

STANDARD SIGN  
M6-1 & M6-2  
SERIES

WISCONSIN DEPT OF TRANSPORTATION

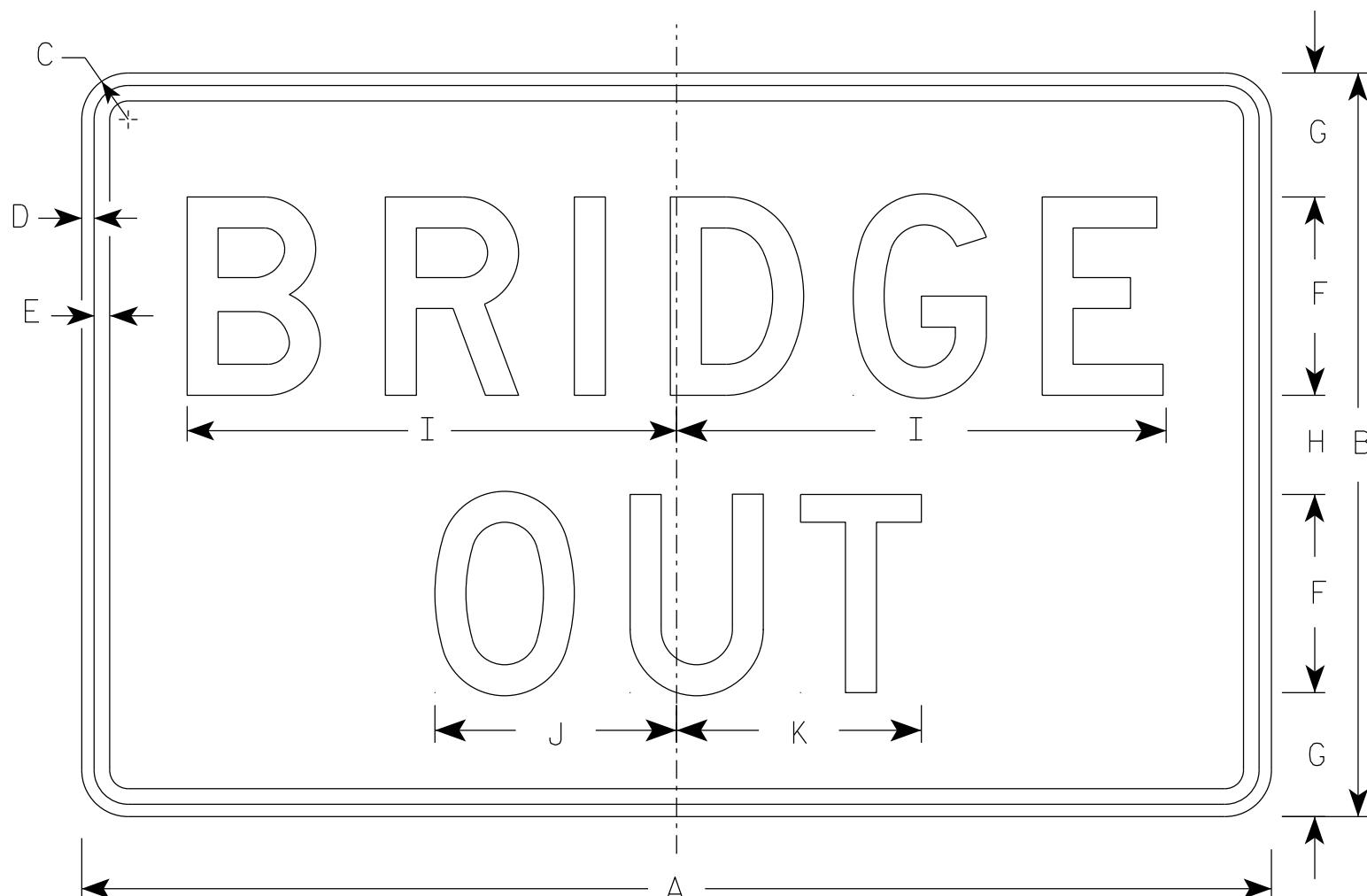
APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

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

SHEET NO: **E**

NOTES

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



R11-2B

7

7

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

PROJECT NO:

FILE NAME : C:\CAEfiles\Projects\tr\_stdplate\R112B.dgn

PLOT DATE : 5-FEB 2024 2:20

PLOT BY : mscj9h

STANDARD SIGN
R11-2B
WISCONSIN DEPT OF TRANSPORTATION
APPROVED
<i>Matthew R. Rauch</i> for State Traffic Engineer
DATE 2/5/24 PLATE NO. R11-2B.3

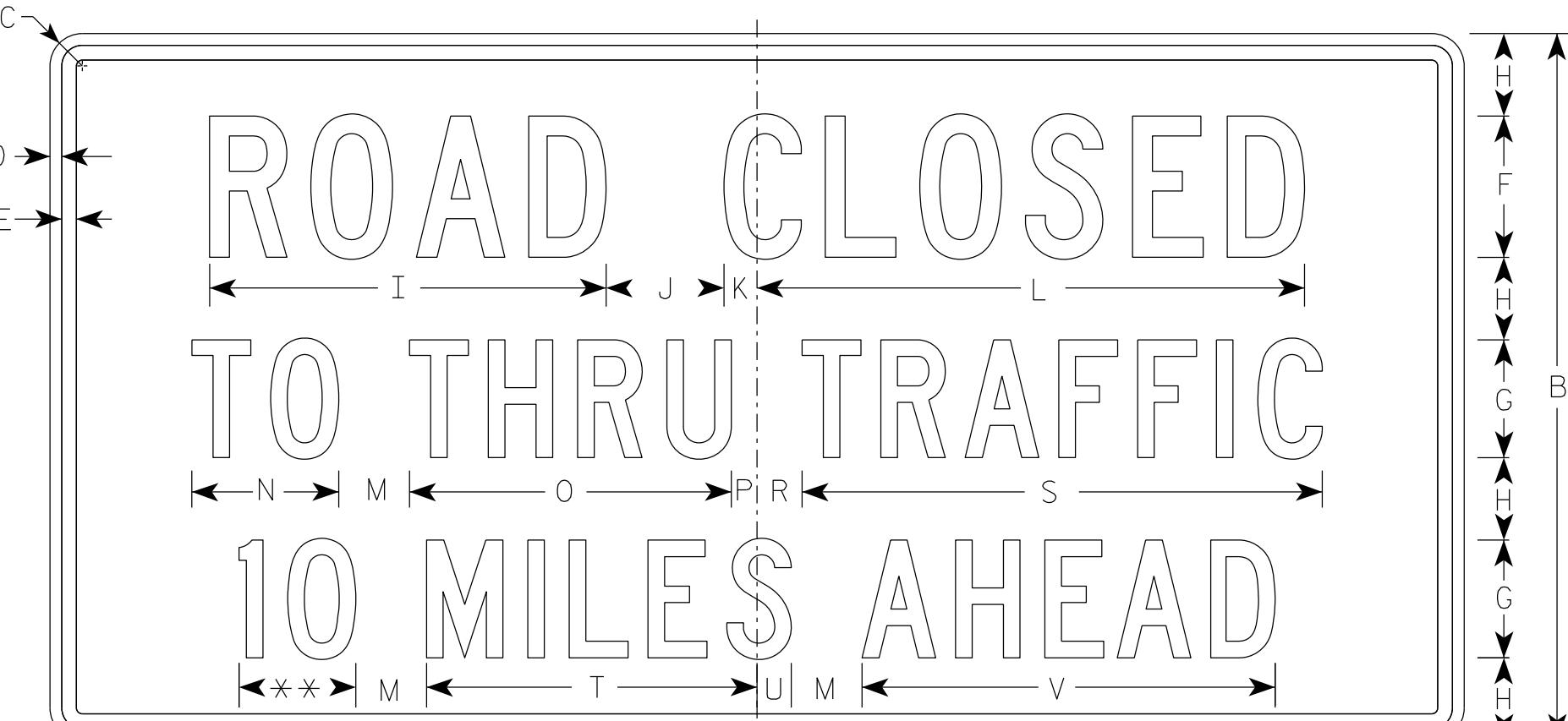
SHEET NO:

**E**

WISDOT/CADD'S SHEET 42

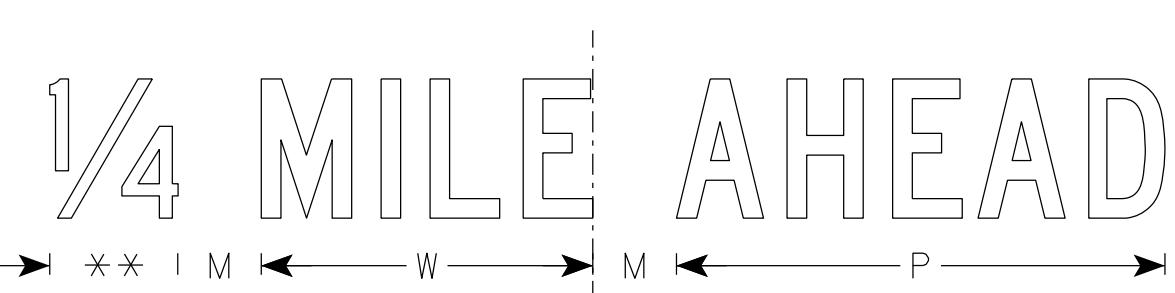
NOTES

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.



R11-3

\*\* See Note 5



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

PROJECT NO:

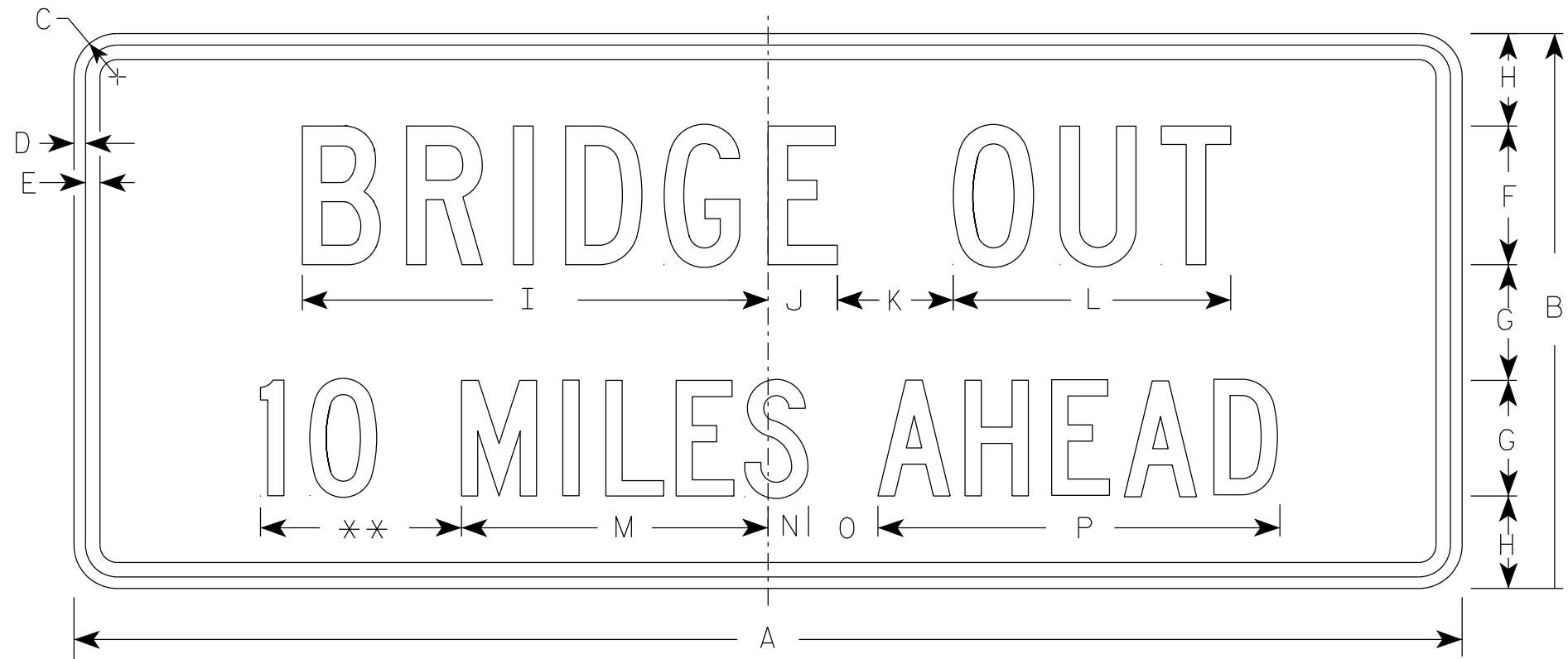
HWY:

COUNTY:

STANDARD SIGN	
R11-3	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> for State Traffic Engineer
DATE	2/5/24
PLATE NO.	R11-3.10

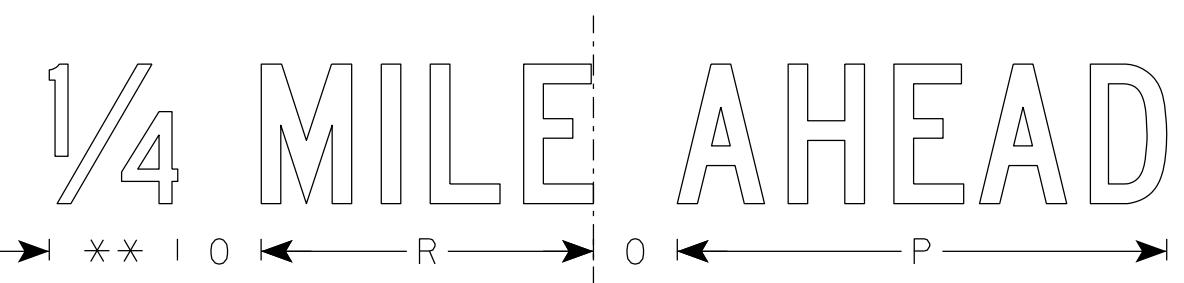
NOTES

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.



R11-3C

\*\* See Note 5



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	15	1 1/2	1/2	5/8	4	3	2 1/2	13 1/4	2 1/4	3	8	8	1 1/2	2	10 3/4	7 1/8									3.75	
2S	60	24	1 7/8	1/2	5/8	6	5	4	20 1/8	3	5	12	13 1/4	1 3/4	3	17 3/8	11 7/8									10.0	
2M	60	24	1 7/8	1/2	5/8	6	5	4	20 1/8	3	5	12	13 1/4	1 3/4	3	17 3/8	11 7/8									10.0	
3																											
4																											
5																											

PROJECT NO:

FILE NAME : C:\CAEfiles\Projects\tr\_stdplate\R113C.dgn

PLOT DATE : 5-FEB 2024 2:52

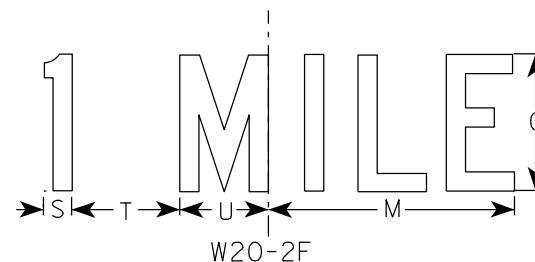
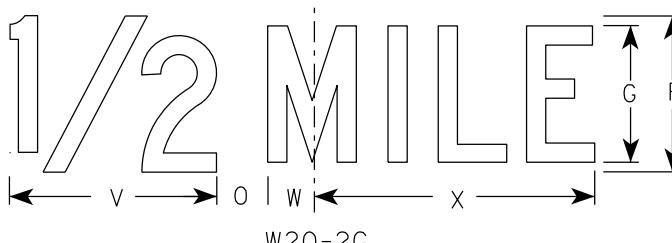
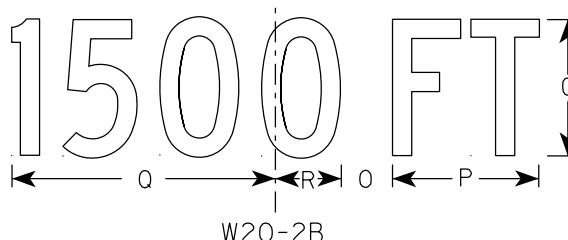
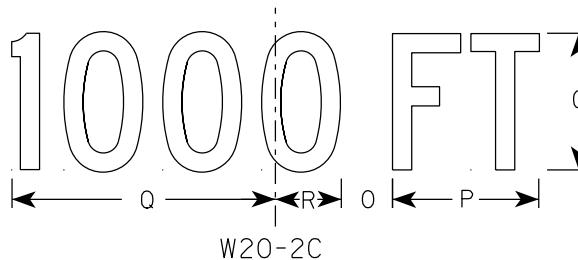
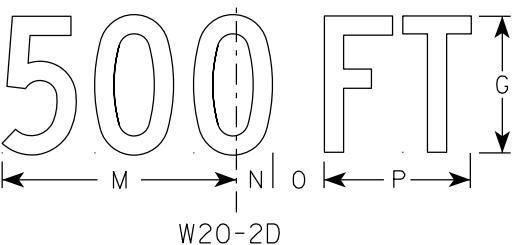
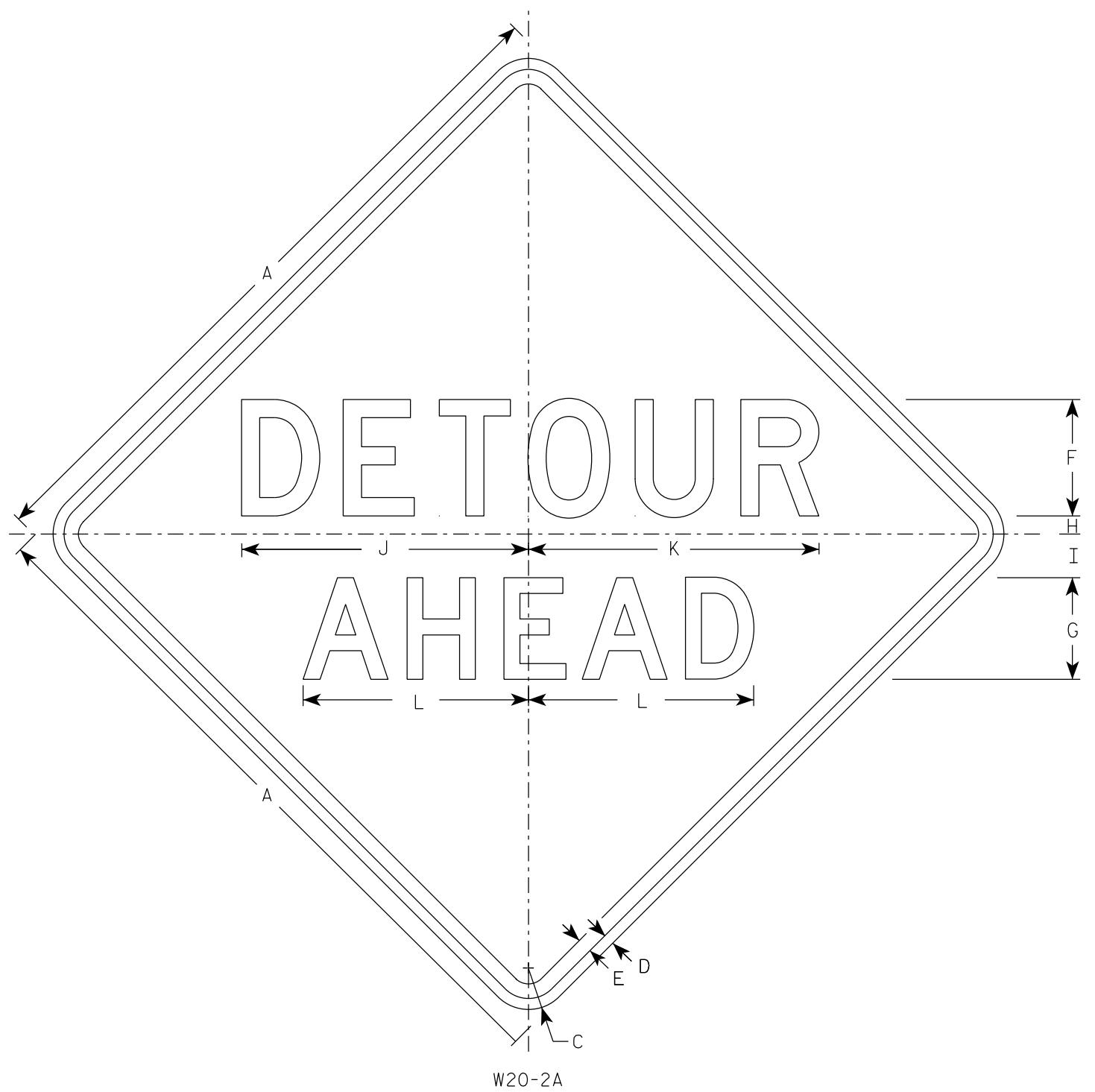
PLOT BY : mscj9h

STANDARD SIGN  
R11-3C  
WISCONSIN DEPT OF TRANSPORTATION  
APPROVED  
Matthew R Rauch  
for State Traffic Engineer  
DATE 2/5/24 PLATE NO. R11-3C.4

SHEET NO:

E

WISDOT/CADD'S SHEET 42



## NOTES

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

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

STANDARD SIGN	
W20-2A, B, C, D, F & G	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R Rauch</i> for State Traffic Engineer
DATE <u>1/10/2024</u>	PLATE NO. <u>W20-2.7</u>

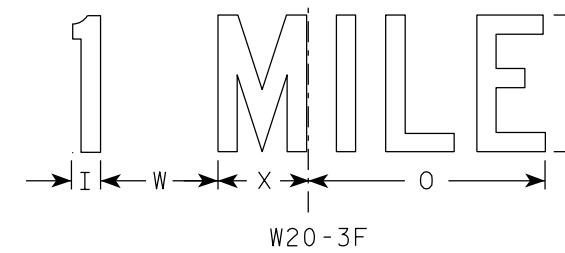
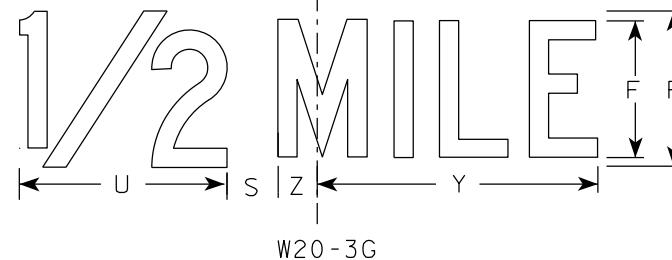
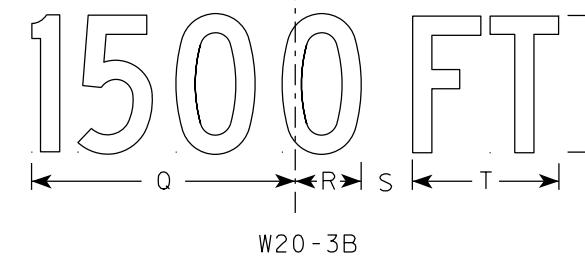
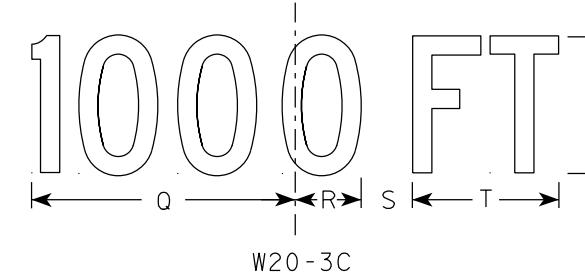
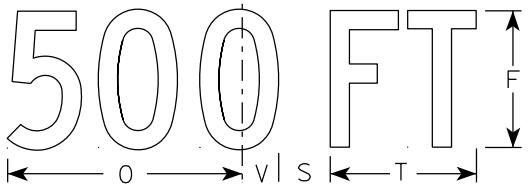
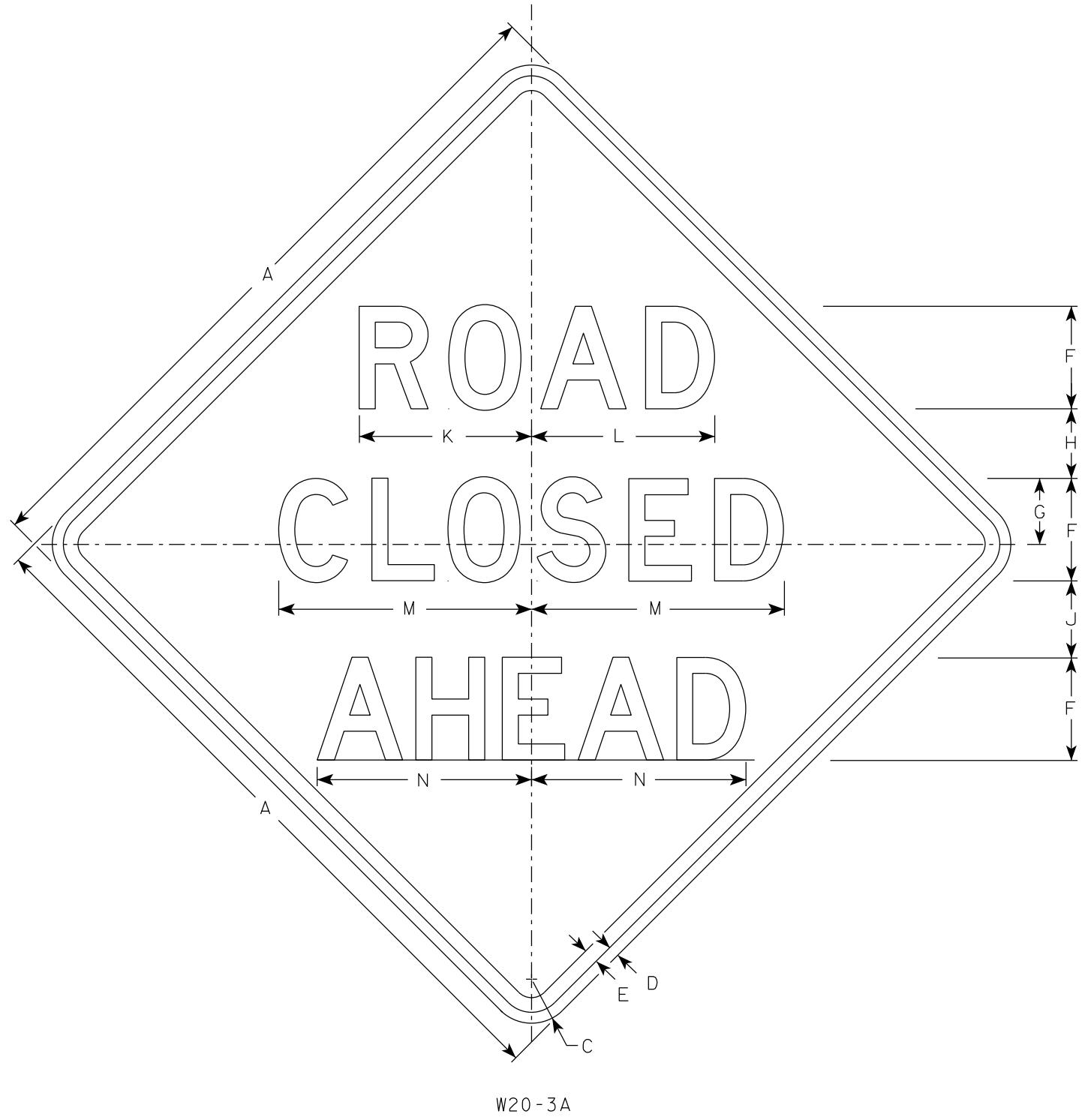
PROJECT NO:

HW

COUNTY:

SHEET NO:

1



#### NOTES

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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		$2 \frac{1}{4}$	$\frac{5}{8}$	$\frac{3}{4}$	5	$3 \frac{3}{8}$	$3 \frac{1}{2}$	$1 \frac{1}{8}$	4	$8 \frac{3}{8}$	$8 \frac{7}{8}$	$12 \frac{1}{2}$	11	9	6	$10 \frac{1}{8}$	$2 \frac{1}{2}$	$1 \frac{7}{8}$	$5 \frac{5}{8}$	8	$1 \frac{3}{8}$	$4 \frac{1}{2}$	$3 \frac{1}{2}$	$10 \frac{3}{4}$	$1 \frac{3}{4}$	9.0
2S	48		3	$\frac{3}{4}$	1	7	$4 \frac{1}{2}$	$4 \frac{3}{4}$	$1 \frac{1}{2}$	$5 \frac{1}{4}$	$11 \frac{3}{4}$	$12 \frac{1}{2}$	$17 \frac{1}{4}$	$14 \frac{5}{8}$	12	8	$13 \frac{1}{2}$	$3 \frac{3}{8}$	$2 \frac{5}{8}$	$7 \frac{1}{2}$	$10 \frac{5}{8}$	$1 \frac{7}{8}$	6	$4 \frac{5}{8}$	$14 \frac{3}{8}$	$2 \frac{3}{8}$	16.0
2M	48		3	$\frac{3}{4}$	1	7	$4 \frac{1}{2}$	$4 \frac{3}{4}$	$1 \frac{1}{2}$	$5 \frac{1}{4}$	$11 \frac{3}{4}$	$12 \frac{1}{2}$	$17 \frac{1}{4}$	$14 \frac{5}{8}$	12	8	$13 \frac{1}{2}$	$3 \frac{3}{8}$	$2 \frac{5}{8}$	$7 \frac{1}{2}$	$10 \frac{5}{8}$	$1 \frac{7}{8}$	6	$4 \frac{5}{8}$	$14 \frac{3}{8}$	$2 \frac{3}{8}$	16.0
3	48		3	$\frac{3}{4}$	1	7	$4 \frac{1}{2}$	$4 \frac{3}{4}$	$1 \frac{1}{2}$	$5 \frac{1}{4}$	$11 \frac{3}{4}$	$12 \frac{1}{2}$	$17 \frac{1}{4}$	$14 \frac{5}{8}$	12	8	$13 \frac{1}{2}$	$3 \frac{3}{8}$	$2 \frac{5}{8}$	$7 \frac{1}{2}$	$10 \frac{5}{8}$	$1 \frac{7}{8}$	6	$4 \frac{5}{8}$	$14 \frac{3}{8}$	$2 \frac{3}{8}$	16.0
4	48		3	$\frac{3}{4}$	1	7	$4 \frac{1}{2}$	$4 \frac{3}{4}$	$1 \frac{1}{2}$	$5 \frac{1}{4}$	$11 \frac{3}{4}$	$12 \frac{1}{2}$	$17 \frac{1}{4}$	$14 \frac{5}{8}$	12	8	$13 \frac{1}{2}$	$3 \frac{3}{8}$	$2 \frac{5}{8}$	$7 \frac{1}{2}$	$10 \frac{5}{8}$	$1 \frac{7}{8}$	6	$4 \frac{5}{8}$	$14 \frac{3}{8}$	$2 \frac{3}{8}$	16.0
5	48		3	$\frac{3}{4}$	1	7	$4 \frac{1}{2}$	$4 \frac{3}{4}$	$1 \frac{1}{2}$	$5 \frac{1}{4}$	$11 \frac{3}{4}$	$12 \frac{1}{2}$	$17 \frac{1}{4}$	$14 \frac{5}{8}$	12	8	$13 \frac{1}{2}$	$3 \frac{3}{8}$	$2 \frac{5}{8}$	$7 \frac{1}{2}$	$10 \frac{5}{8}$	$1 \frac{7}{8}$	6	$4 \frac{5}{8}$	$14 \frac{3}{8}$	$2 \frac{3}{8}$	16.0

STANDARD SIGN	
W20-3A, B, C, D, F & G	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R Rauch</i>
For State Traffic Engineer	
DATE 1/10/2024	
PLATE NO. W20-3.8	

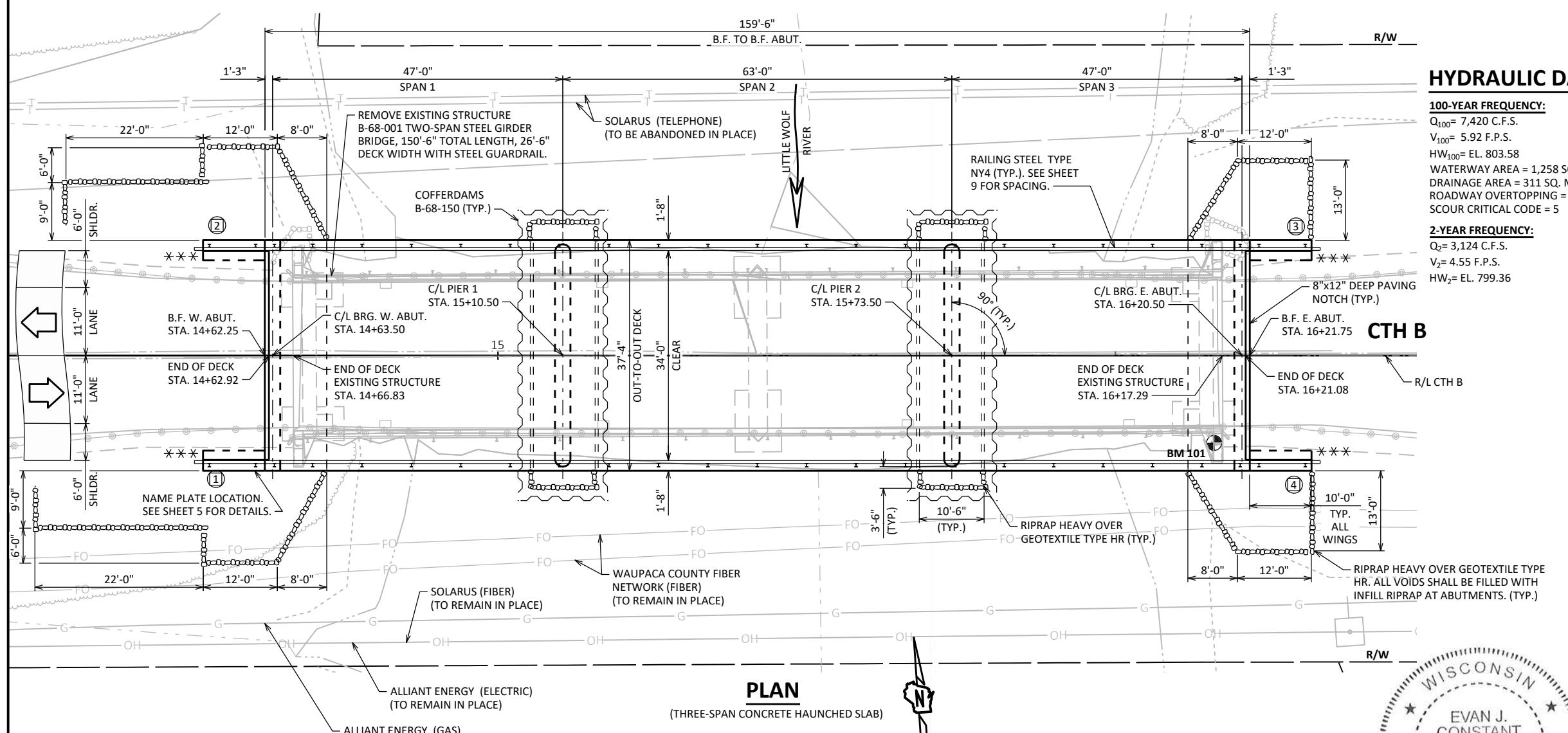
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



## HYDRAULIC DATA

100-YEAR FREQUENCY:  
 $Q_{100} = 7,420 \text{ C.F.S.}$   
 $V_{100} = 5.92 \text{ F.P.S.}$   
 $HW_{100} = \text{EL. 803.58}$   
WATERWAY AREA = 1,258 SQ. FT.  
DRAINAGE AREA = 311 SQ. MI.  
ROADWAY OVERTOPPING = N/A  
SCOUR CRITICAL CODE = 5

**2-YEAR FREQUENCY**  
 $Q_2 = 3,124 \text{ C.F.S.}$   
 $V_2 = 4.55 \text{ F.P.S.}$   
 $HW_2 = \text{EL. } 799.36$

## DESIGN DATA

**LIVE LOAD:**  
DESIGN LOADING: HL-93  
INVENTORY RATING: RF = 1.05  
OPERATING RATING: RF = 1.37  
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV): 250 (KIPS)  
STRUCTURE IS DESIGNED FOR A FUTURE WEARING

## MATERIAL PROPERTIES:

CONCRETE MASONRY:  
SUPERSTRUCTURE —————  $f'_c = 4,000$  PSI  
ALL OTHER —————  $f'_c = 2,500$  PSI

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

## FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON PILING STEEL HP 10-INCH X 42 LB PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 150 TONS \*\* PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA.

ESTIMATED 40'-0" LONG AT WEST ABUTMENT.

ESTIMATED 45'-0" LONG AT EAST ABUTMENT.

PIERS TO BE SUPPORTED ON PILING STEEL HP 10-INCH X 42 LB  
PILE DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 180  
TONS \*\* PER PILE AS DETERMINED BY THE MODIFIED GATES  
DYNAMIC FORMULA.

ESTIMATED 55'-0" LONG AT PIER 1.  
ESTIMATED 55'-0" LONG AT PIER 2

\*\*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 PILE CAPACITY

## TRAFFIC DATA

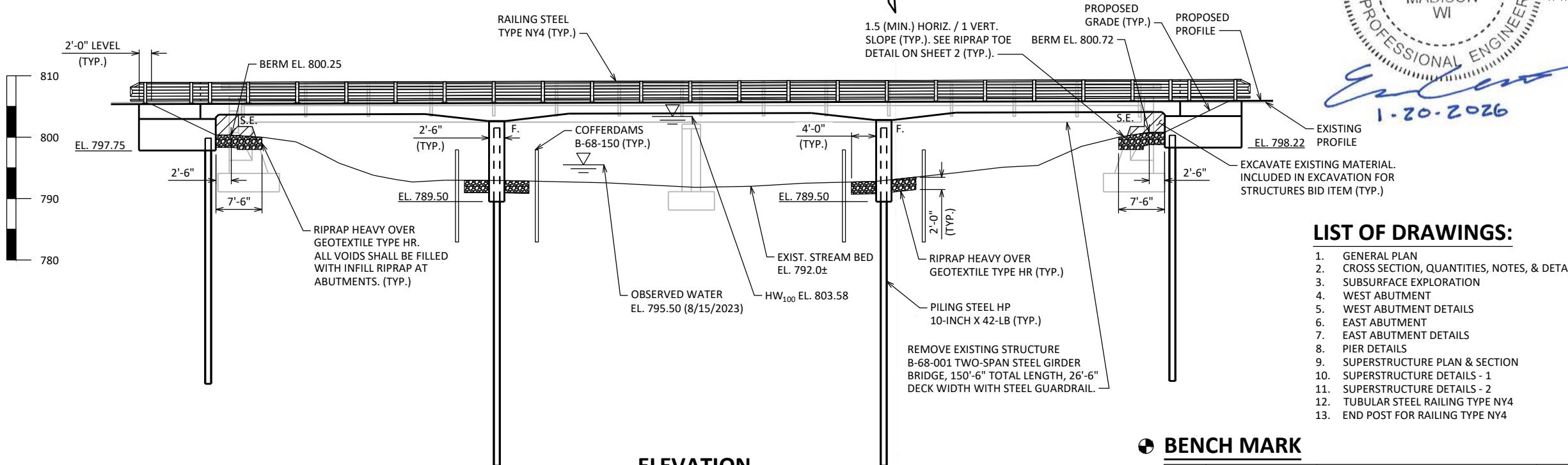
**FEATURE ON: CTH B**

## LEGEND

1 INDICATES WING NUMBER

**STRUCTURE DESIGN CONTACTS:**

BOARDS OF STRUCTURES, AARON BONK			800-261-3232		
NO.	DATE	REVISION			BY
 <b>STRAND</b> ASSOCIATES®			MADISON, WISCONSIN 53715 (608)-251-4843 (608) 251-8655 FAX WWW.STRAND.COM		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION					
ACCEPTED				JLR	01/21/26
CHIEF STRUCTURES DESIGN ENGINEER      DATE					
<b>STRUCTURE      B-68-150</b>					
CTH B OVER LITTLE WOLF RIVER					
COUNTY		TOWN		LITTLE WOLF	
WAUPACA					
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATION					
DESIGNED BY	DESIGNED JRP	DRAWN BY	PLANS JRP	CK'D	EJC
			SHEET 1 OF 13		
<b>GENERAL PLAN</b>					



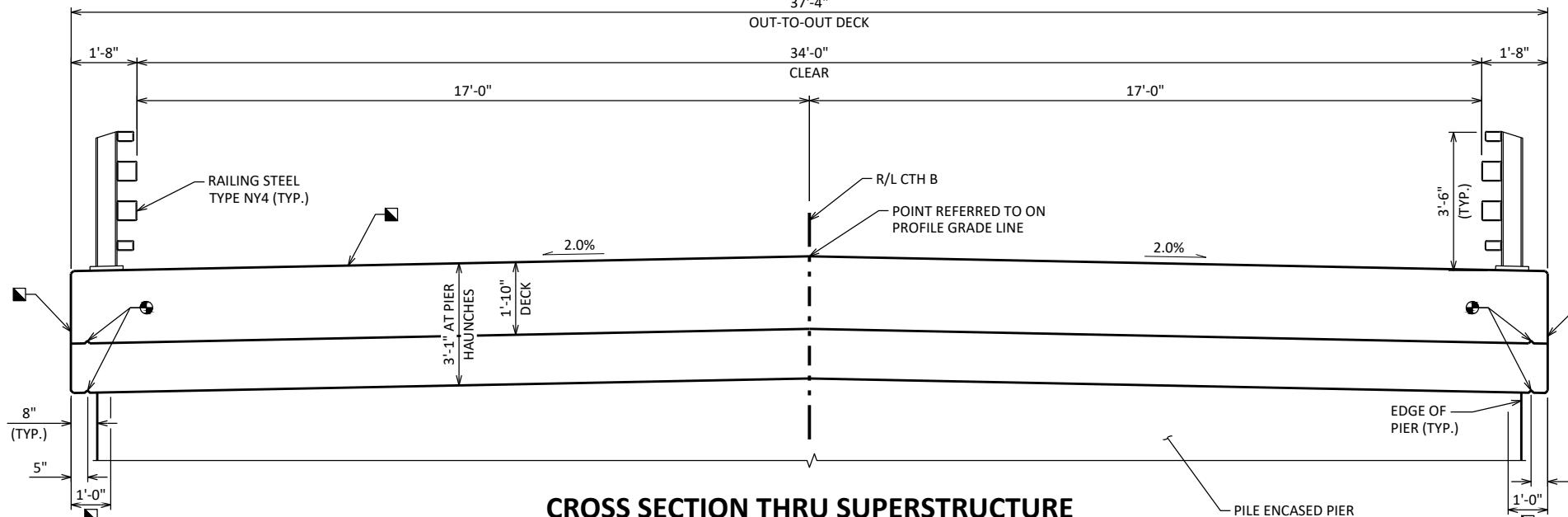
## LIST OF DRAWINGS:

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1. GENERAL PLAN
2. CROSS SECTION, QUANTITIES, NOTES, & DETAILS
3. SUBSURFACE EXPLORATION
4. WEST ABUTMENT
5. WEST ABUTMENT DETAILS
6. EAST ABUTMENT
7. EAST ABUTMENT DETAILS
8. PIER DETAILS
9. SUPERSTRUCTURE PLAN & SECTION
10. SUPERSTRUCTURE DETAILS - 1
11. SUPERSTRUCTURE DETAILS - 2
12. TUBULAR STEEL RAILING TYPE NY4
13. END POST FOR RAIIING TYPE NY4

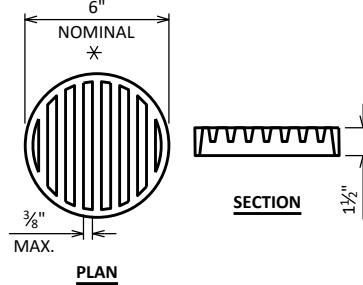
## BENCH MARK

NO.	STATION	DESCRIPTION	ELEV.
101	16+15.95, 14.17' RT	CHISELED SQUARE ON TOP OF WINGWALL	806.45



CROSS SECTION THRU SUPERSTRUCTURE

(LOOKING EAST)

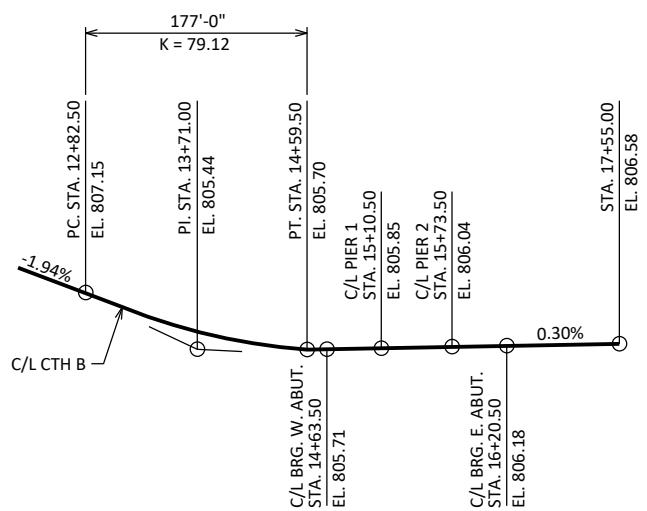


## RODENT SHIELD DETAIL

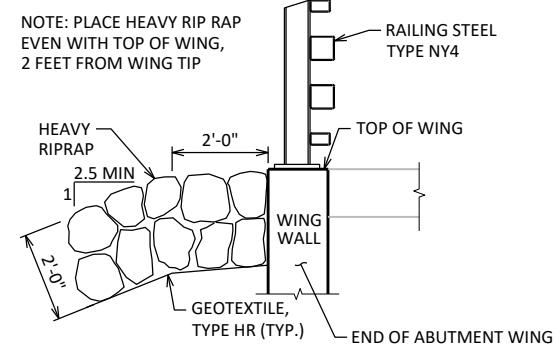
\* DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

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

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



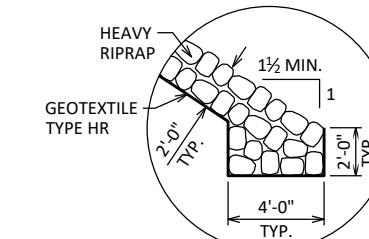
PROFILE GRADE LINE



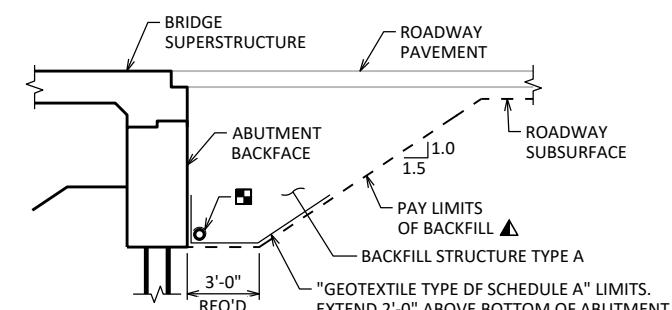
TYPICAL FILL SECTION AT WING TIPS

## TOTAL ESTIMATED QUANTITIES

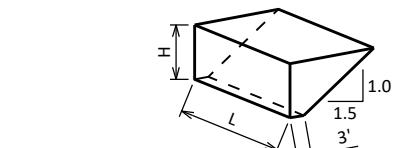
BID ITEM NUMBER	BID ITEMS	UNIT	WEST ABUT.	PIER 1	PIER 2	EAST ABUT.	SUPERS.	TOTAL
203.0260	REMOVING STRUCTURE OVER WATERWAY MINIMAL DEBRIS B-68-001	EACH	---	---	---	---	---	1
206.1001	EXCAVATION FOR STRUCTURES BRIDGES B-68-150	EACH	---	---	---	---	---	1
206.5001	COFFERDAMS B-68-150	EACH	---	---	---	---	---	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	139	---	---	139	---	278
502.0100	CONCRETE MASONRY BRIDGES	CY	33.4	42.8	43.4	33.4	450.8	604
502.3200	PROTECTIVE SURFACE TREATMENT	SY	9	---	---	9	768	786
502.9000.S	UNDERWATER SUBSTRUCTURE INSPECTION B-68-150	EACH	---	1	1	---	---	2
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	2,330	2,090	2,110	2,330	---	8,860
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1,380	70	70	1,380	79,660	82,560
513.7084	RAILING STEEL TYPE NY4	LF	---	---	---	---	365	365
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	10	---	---	10	---	20
550.0500	PILE POINTS	EACH	6	11	11	6	---	34
550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	240	605	605	270	---	1,720
606.0300	RIPRAP HEAVY	CY	123	28	28	76	---	255
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	112	---	---	106	---	218
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	29	---	---	29	---	58
645.0120	GEOTEXTILE TYPE HR	SY	227	76	76	133	---	512
SPV.0195	INFILL RIPRAP B-68-150	TON	45	---	---	26	---	71
	NON-BID ITEMS	EACH					1	
	NAME PLATE	EACH						1/2" & 3/4"
	FILLER	SIZE						



RIPRAP TOE DETAIL



TYPICAL SECTION THRU ABUTMENT



ABUTMENT BACKFILL DIAGRAM

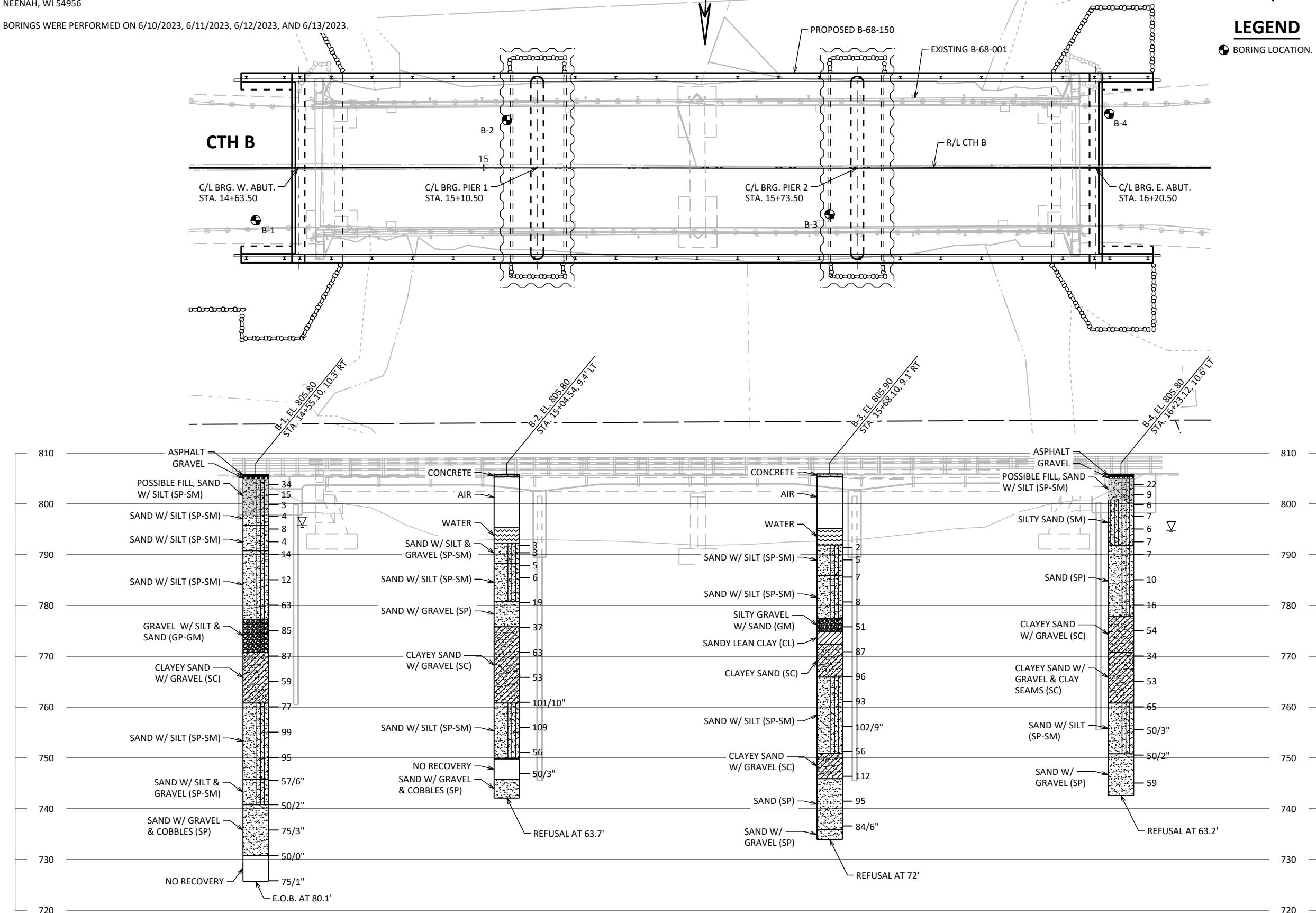
$L$  = OUT TO OUT OF ABUTMENT BODY INCLUDING WINGS (FT)  
 $H$  = AVERAGE ABUTMENT FILL HEIGHT (FT)  
 $EF$  = EXPANSION FACTOR (1.20 FOR CY BID ITEMS AND 1.00 FOR TON BID ITEMS)  
 $V_{CF}$  =  $(L)(3.0')(H) + (L)(0.5)(1.5H)(H)$   
 $V_{CY}$  =  $V_{CF}(EF)/27$   
 $V_{TON}$  =  $V_{CY}(2.0)$

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-68-150			
DRAWN BY JRP PLANS CK'D EJC			
CROSS SECTION, QUANTITIES, NOTES, & DETAILS			SHEET 2

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
B-1	6/10/2023	375,363.58	576,568.83
B-2	6/11/2023	375,379.69	576,619.55
B-3	6/12/2023	375,356.70	576,681.63
B-4	6/13/2023	375,372.51	576,737.92
BORINGS COMPLETED BY: ENGINEERING CONSULTING SERVICES (ECS)			
REPORT COMPLETED BY: ENGINEERING CONSULTING SERVICES (ECS)			
ALL COORDINATES REFERENCED TO WISCRS, WAUPACA COUNTY, NAD 83 (2011)			

BORINGS PERFORMED AND REPORT COMPLETED BY:  
ENGINEERING CONSULTING SERVICES (ECS)  
1060 BREEZEWOOD LANE, SUITE 102  
NEENAH, WI 54956

BORINGS WERE PERFORMED ON 6/10/2023, 6/11/2023, 6/12/2023, AND 6/13/2023.



STATE PROJECT NUMBER

**6832-06-72**

## MATERIAL SYMBOLS

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

## LEGEND OF BORING

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

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 OVERTBURDEN PRESSURE OR HAMMER EFFICIENCY.

#### GROUND WATER ELEVATION

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

## ABBREVIATIONS

E-FINE    M-MEDIUM    C-COARSE    ST-SHEET BY 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.

\_\_\_\_\_

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

**STRUCTURE B-68-150**

DRAWN BY PLANS  
J. R. D. J. R. D. FIG.

# SUBSURFACE EXPLORATION

## NOTES

SEE THIS SHEET FOR PILE SPLICING DETAILS

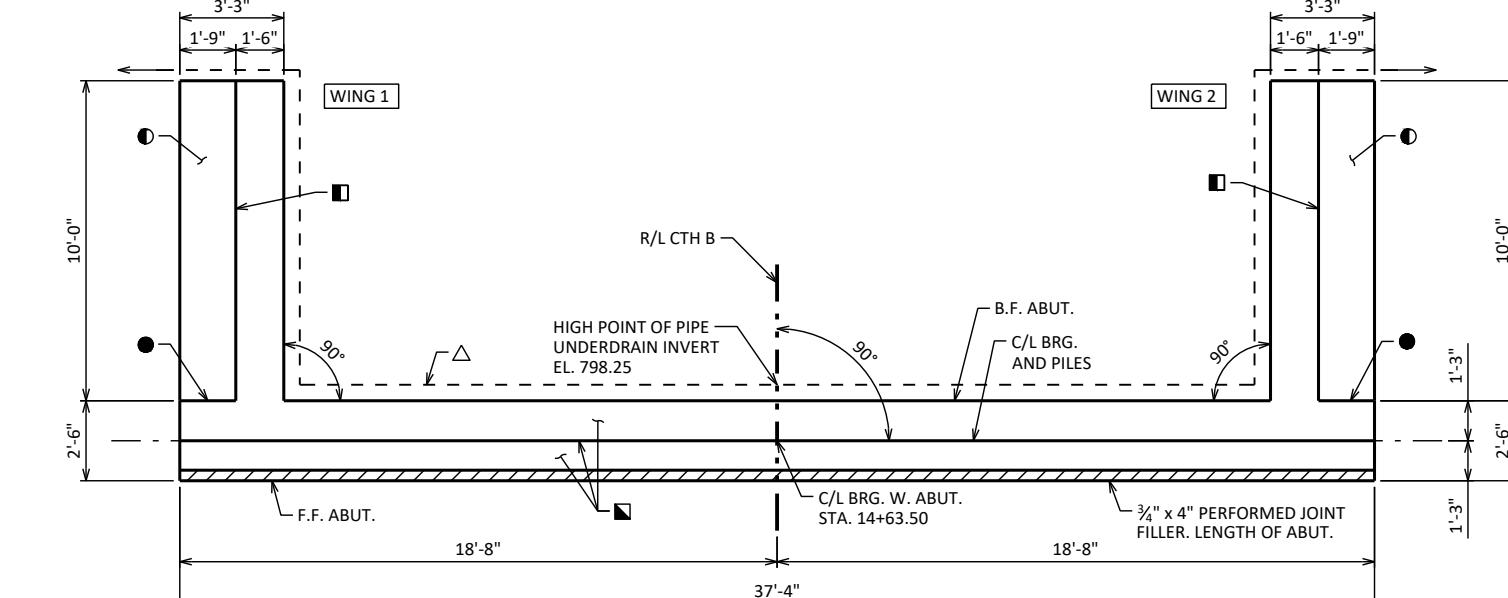
SEE SHEET 5 FOR REINFORCING DETAILS.

SUPPORT WEST ABUTMENT ON PILING STEEL HP 10-INCH x 42 LB DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED 40'-0" LONG AT WEST ABUTMENT.

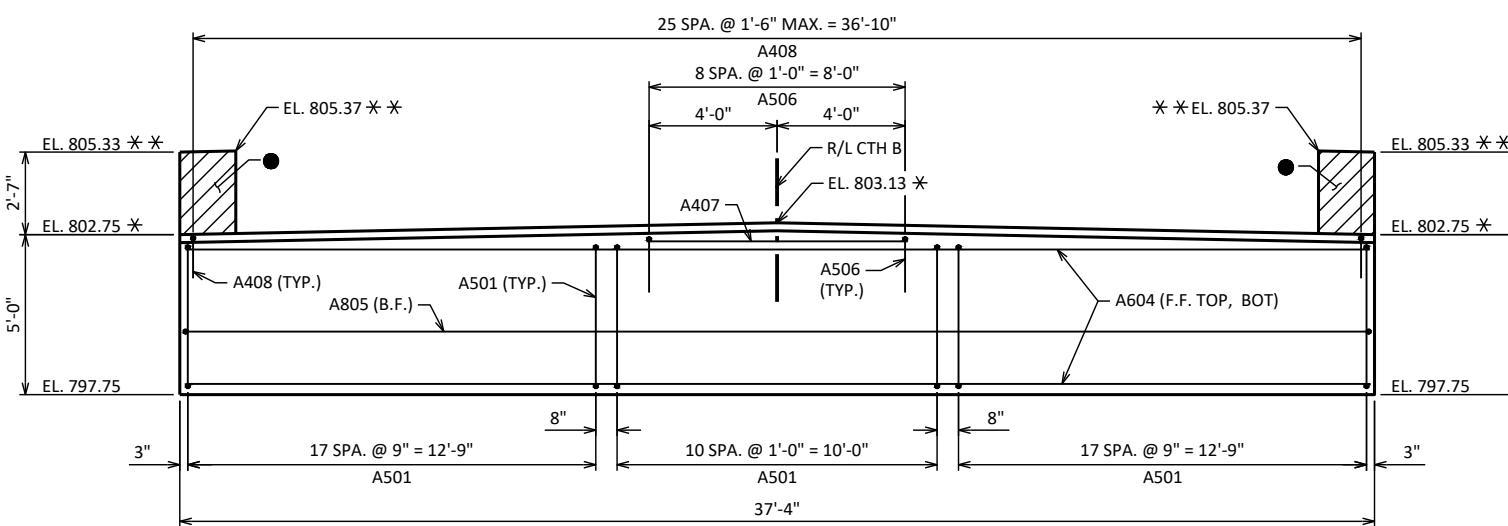
SEE SHEET 2 FOR TYPICAL FILL SECTION AT WING TIPS.

## LEGEND

- △ PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. HIGH POINT EL. 798.25. RODENT SHIELD REQUIRED AT ENDS. SEE DETAIL ON SHEET 2.
- $\frac{1}{2}$ " FILLER TO EXTEND FROM ABUTMENT SEAT TO TOP OF DECK (INCLUDED IN WING LENGTH). SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF  $\frac{1}{2}$ " FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD  $\frac{1}{8}$ " BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW ROADWAY SURFACE AT INSIDE FACE.
- 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.
- STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".
- COAT TOP OF WING WITH "PROTECTIVE SURFACE TREATMENT".
- \* ELEVATION GIVEN AT C/L BRG. ABUT.
- \* \* ELEVATION GIVEN AT B.F. ABUT.



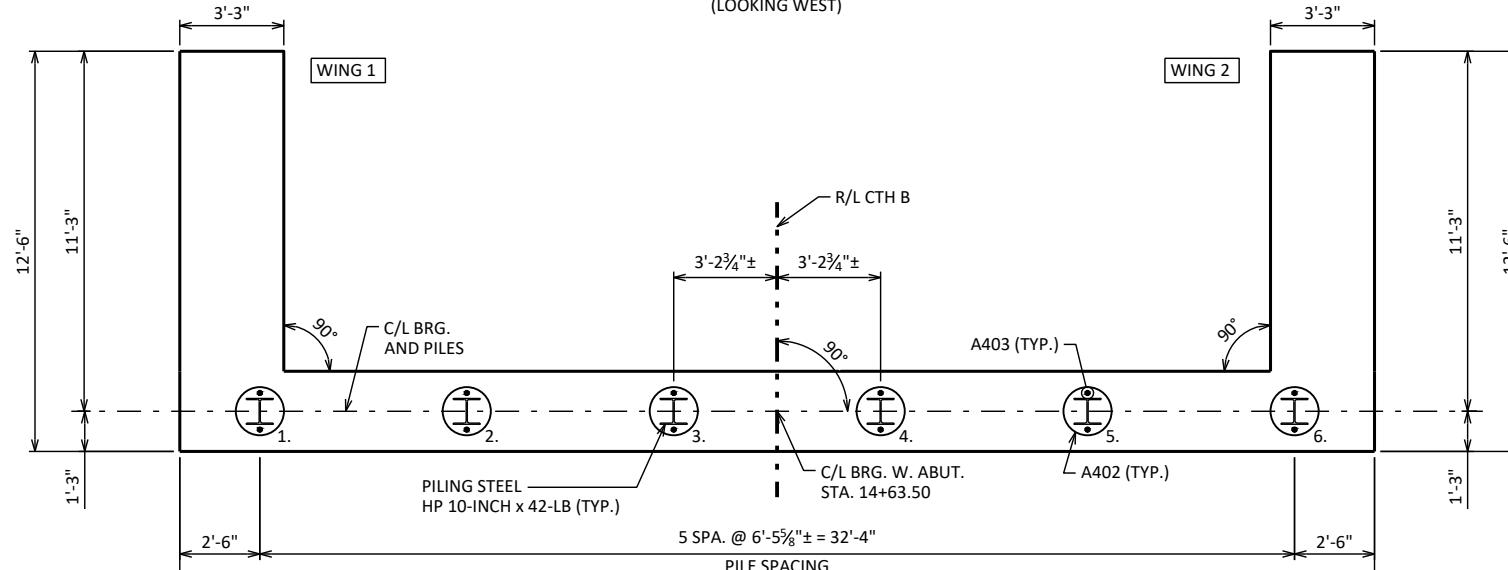
## PLAN



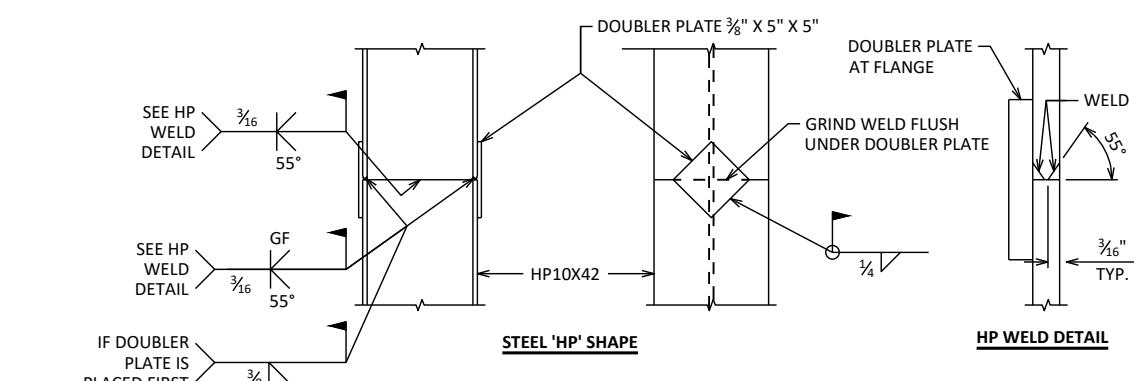
# **ELEVATION**

---

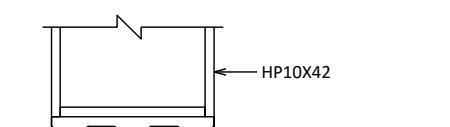
(LOOKING WEST)



## PILE PLATE



## 'HP' PILE DETAILS

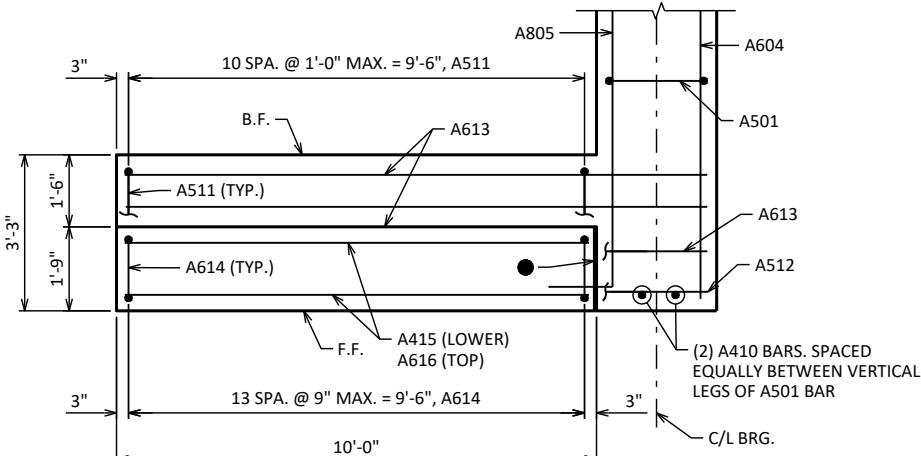


## PILE POINT FOR H-PILING

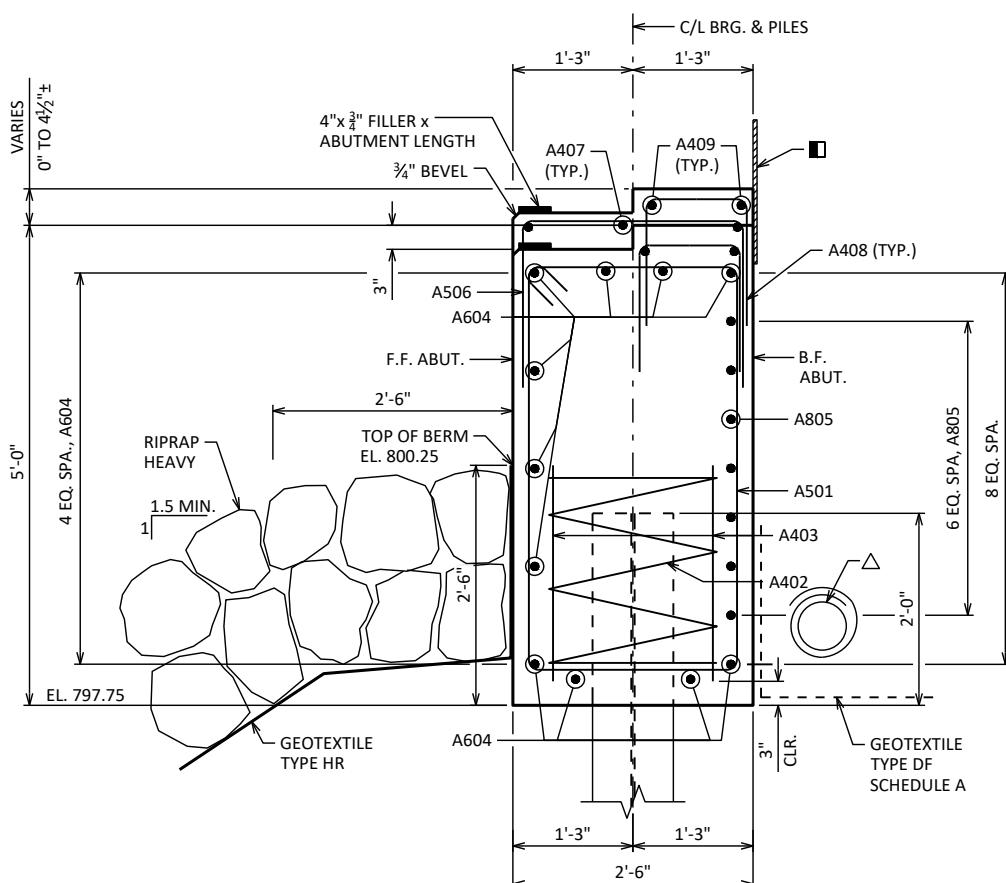
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PILE POINT SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS

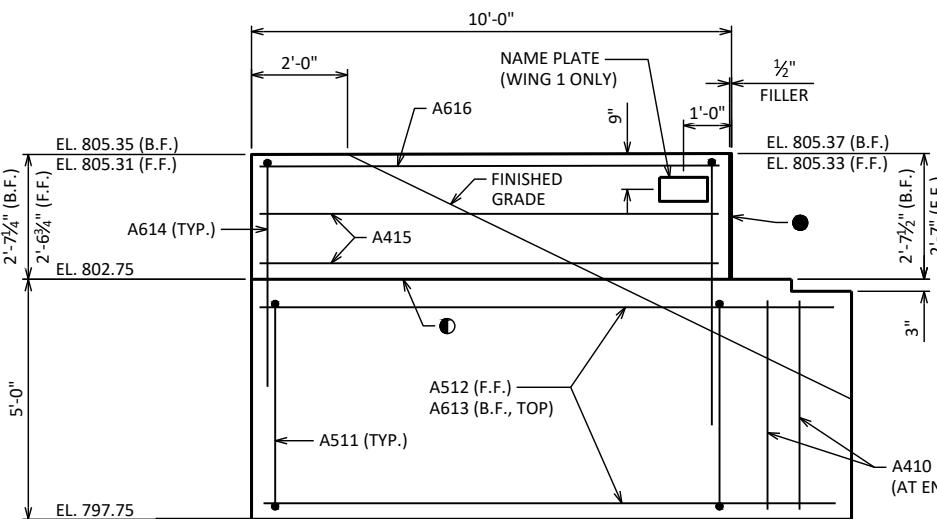
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
<b>STRUCTURE B-68-150</b>			
<b>DRAWN BY</b>		<b>JRP</b>	<b>PLANS CK'D</b>
<b>WEST ABUTMENT</b>		<b>SHEET 4</b>	



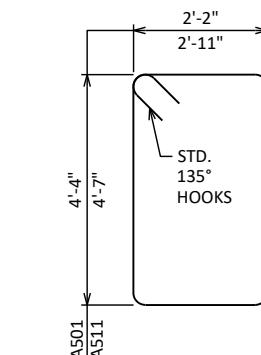
WING 1 PLAN



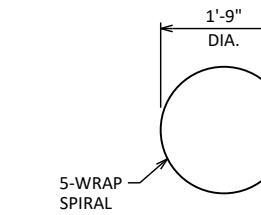
SECTION THRU BODY



TYPICAL WING SECTION



A501, A511



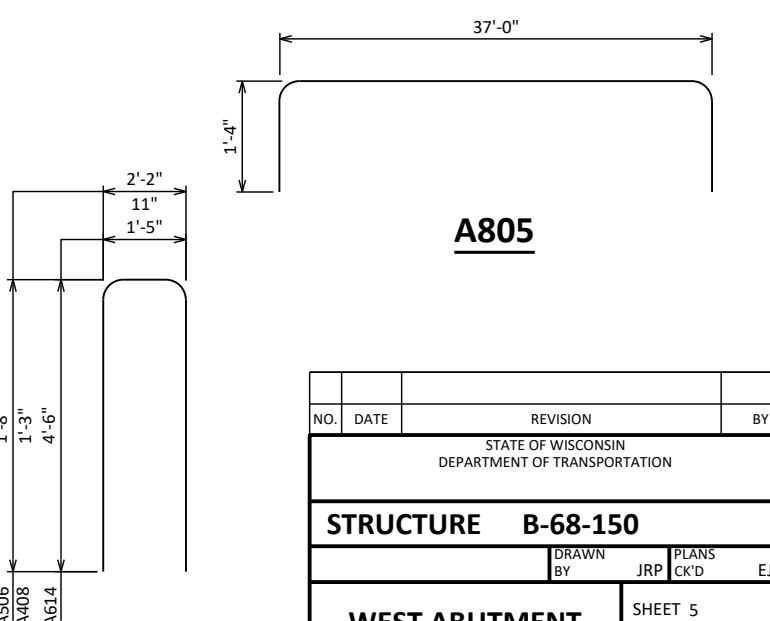
A402

## LEGEND

- OPTIONAL CONST. JOINT, KEYWAY FORMED BY BEVELED 2 x 6.
- △ PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. HIGH POINT EL. 798.25. RODENT SHIELD REQUIRED AT ENDS. SEE DETAIL ON SHEET 2.
- $\frac{1}{2}$ " FILLER TO EXTEND FROM ABUTMENT SEAT TO TOP OF DECK (INCLUDED IN WING LENGTH). SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF  $\frac{1}{2}$ " FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD  $\frac{1}{8}$ " BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW ROADWAY SURFACE AT INSIDE FACE.
- 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.

WEST ABUTMENT  
BILL OF BARS

BAR MARK	NO. REQ'D	LENGTH	BENT	COAT	LOCATION
A501	47	13'-8"	X		BODY - VERT.
A402	6	28'-0"	X		BODY - PILES - SPIRAL
A403	12	2'-3"			BODY - PILES - VERT
A604	11	37'-0"			BODY - TOP, BOT., & F.F. - HORIZ
A805	7	39'-3"	X		BODY - B.F. - HORIZ
A506	9	5'-3"	X		BODY - TOP - VERT
A407	3	8'-0"			BODY - TOP, HORIZ
A408	26	3'-3"	X		BODY - TOP - VERT.
A409	2	37'-0"			BODY - TOP, HORIZ
A410	4	4'-4"			BODY - ENDS - VERT.
A511	22	15'-8"	X	X	LOWER WING - VERT. - WINGS 1 & 2
A512	12	12'-2"		X	LOWER WING - F.F. - HORIZ - WINGS 1 & 2
A613	16	12'-2"		X	LOWER WING - B.F., TOP - HORIZ - WINGS 1 & 2
A614	28	10'-1"	X	X	UPPER WING - VERT. - WINGS 1 & 2
A415	14	9'-7"		X	UPPER WING - F.F., B.F. - HORIZ - WINGS 1 & 2
A616	4	9'-7"		X	UPPER WING - TOP - HORIZ - WINGS 1 & 2

UNCOATED: 2,330 LBS  
COATED: 1,380 LBS

A805

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-68-150			
DRAWN BY	JRP	PLANS CK'D	EJC
WEST ABUTMENT DETAILS			
SHEET 5			

**NOTES**

SEE SHEET 4 FOR PILE SPLICE DETAILS.

SEE SHEET 7 FOR REINFORCING DETAILS.

SUPPORT EAST ABUTMENT ON PILING STEEL HP 10-INCH x 42 LB DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED 45'-0" LONG AT WEST ABUTMENT.

SEE SHEET 2 FOR TYPICAL FILL SECTION AT WING TIPS.

**LEGEND**

△ PIPE UNDERDRAIN WRAPPED (6-INCH), SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. HIGH POINT EL. 798.72. RODENT SHIELD REQUIRED AT ENDS. SEE DETAIL ON SHEET 2.

●  $\frac{1}{2}$ " FILLER TO EXTEND FROM ABUTMENT SEAT TO TOP OF DECK (INCLUDED IN WING LENGTH). SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF  $\frac{1}{2}$ " FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD  $\frac{1}{8}$ " BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW ROADWAY SURFACE AT INSIDE FACE.

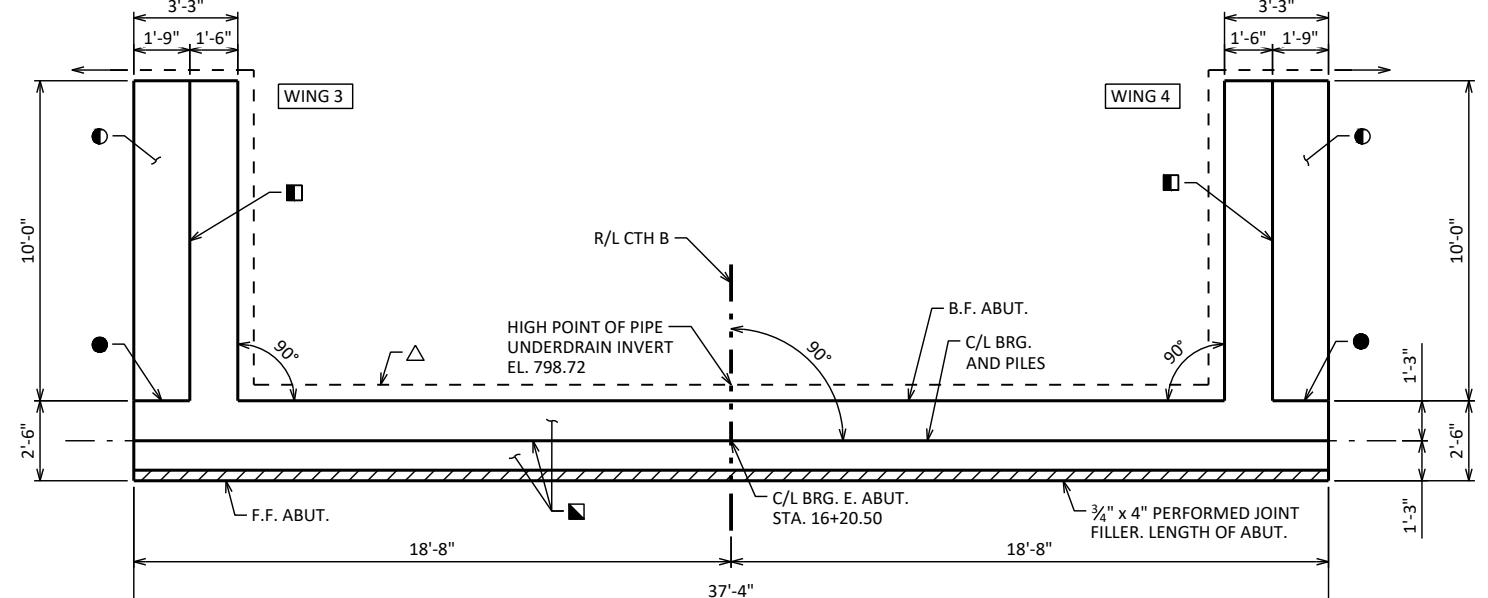
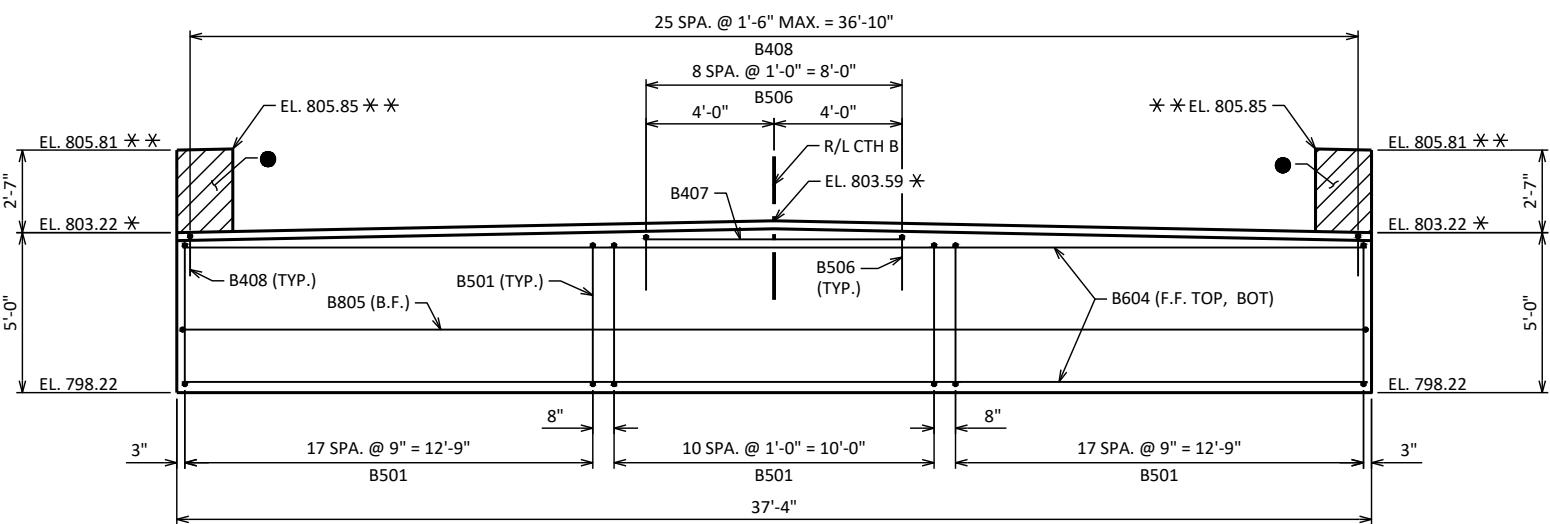
■ 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.

▣ STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".

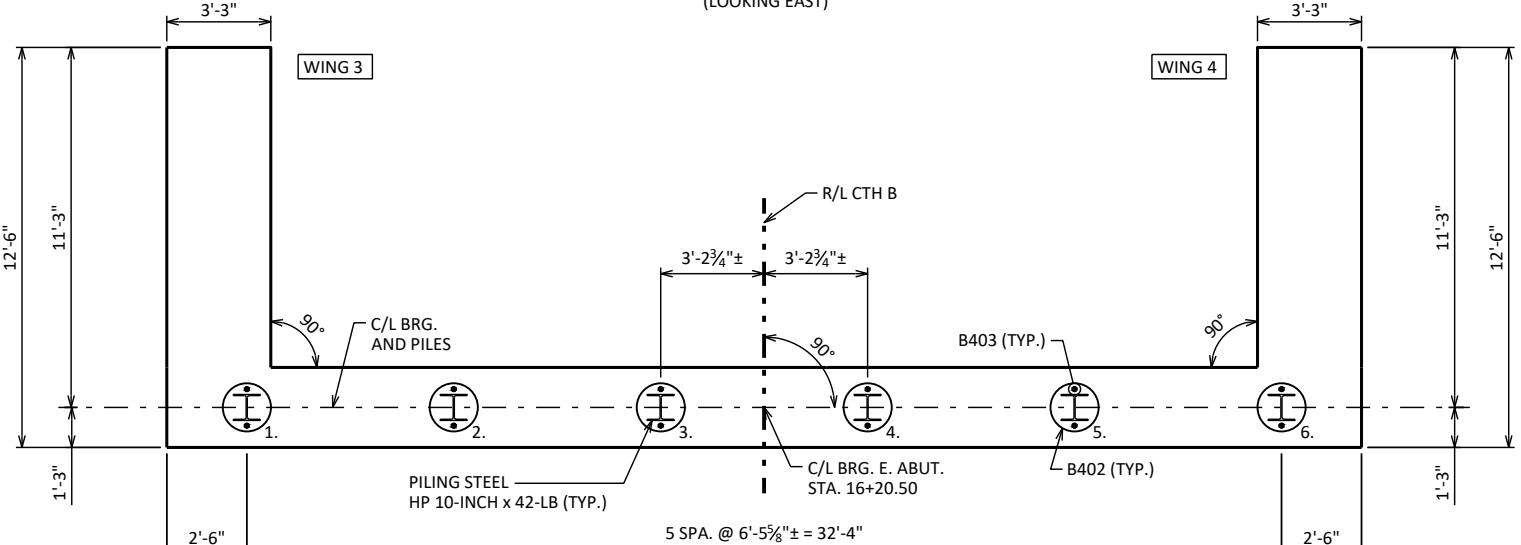
● COAT TOP OF WING WITH "PROTECTIVE SURFACE TREATMENT".

\* THESE ELEVATIONS GIVEN AT C/L BRG. ABUT.

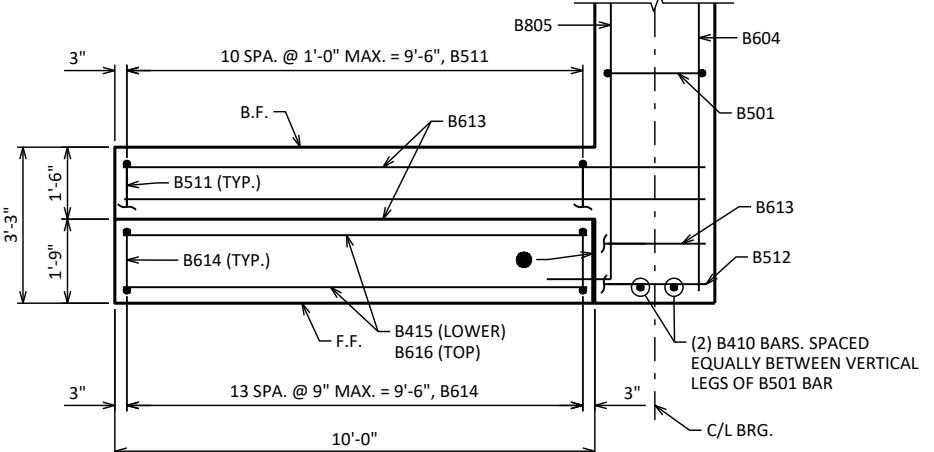
\*\* THESE ELEVATIONS GIVEN AT B.F. ABUT.

**PLAN****ELEVATION**

(LOOKING EAST)

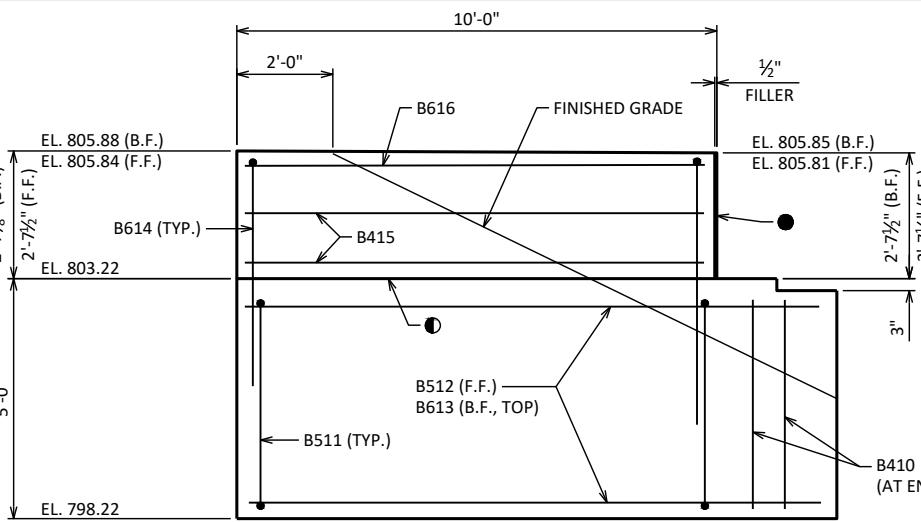
**PILE PLAN**

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
<b>STRUCTURE B-68-150</b>			
	DRAWN BY	PLANS CK'D	EJC
	JRP		
EAST ABUTMENT		SHEET 6	
SCALE =			



## **WING 3 PLAN**

(WING 4 SIMILAR)



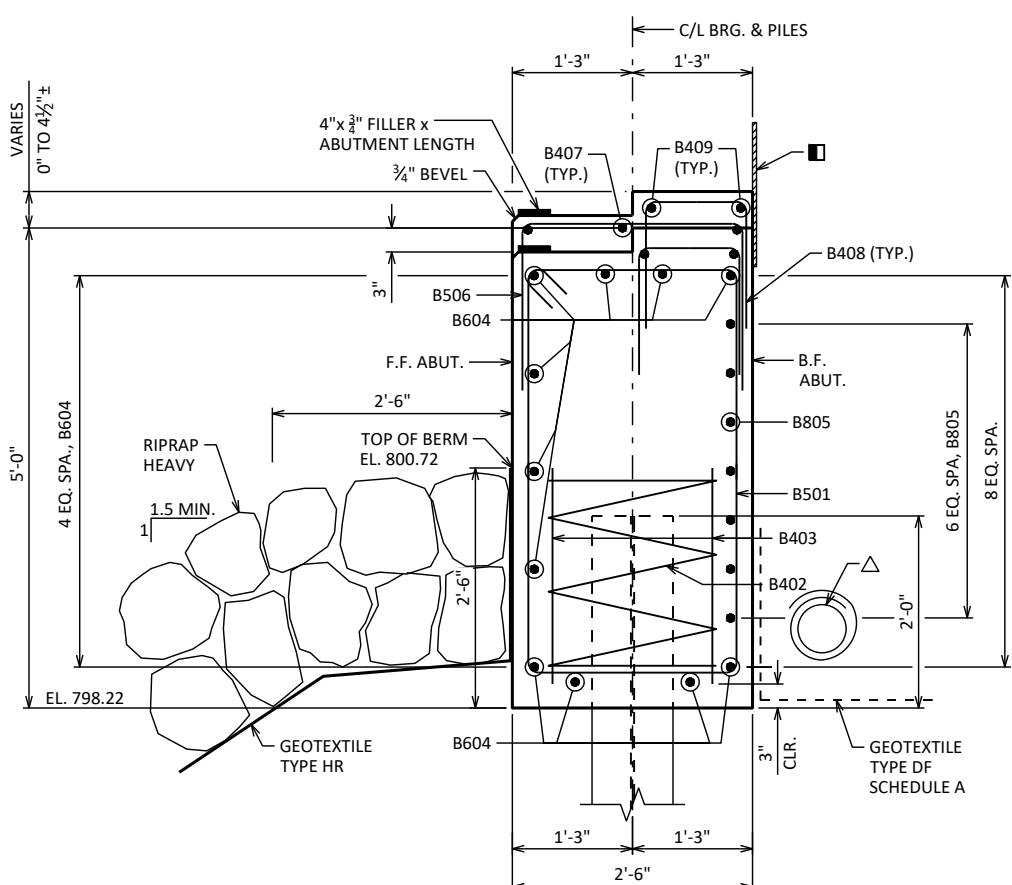
## LEGEND

- OPTIONAL CONST. JOINT, KEYWAY FORMED BY BEVELED 2 x 6.
- △ PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. HIGH POINT EL. 798.25. RODENT SHIELD REQUIRED AT ENDS. SEE DETAIL ON SHEET 2.
- $\frac{1}{2}$ " FILLER TO EXTEND FROM ABUTMENT SEAT TO TOP OF DECK (INCLUDED IN WING LENGTH). SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF  $\frac{1}{2}$ " FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD  $\frac{1}{8}$ " BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW ROADWAY SURFACE AT INSIDE FACE.
- 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.

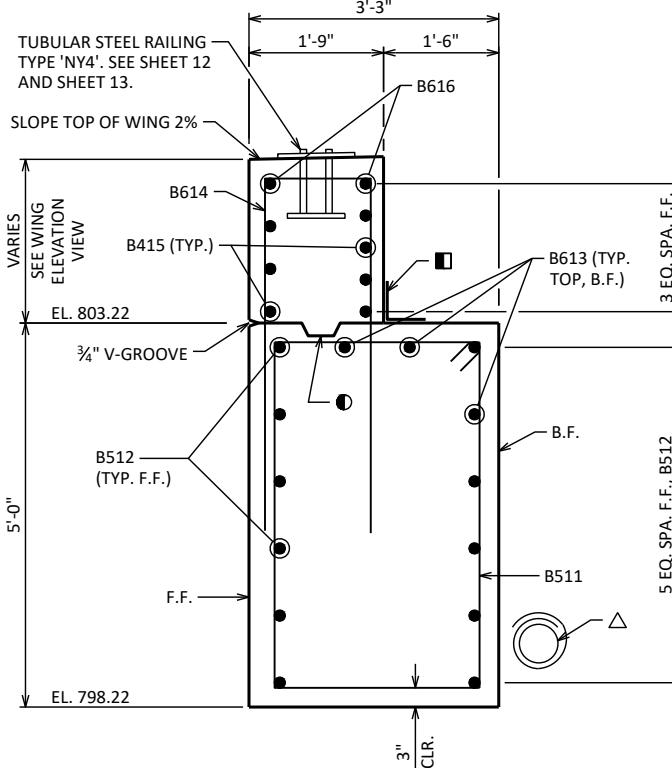
## **EAST ABUTMENT** **BILL OF BARS**

**UNCOATED: 2,330 LBS  
COATED: 1,380 LBS**

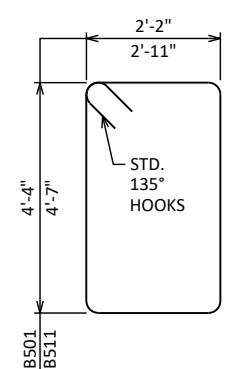
BAR MARK	NO. REQ'D	LENGTH	BENT	COAT	LOCATION
B501	47	13'-8"	X		BODY - VERT.
B402	6	28'-0"	X		BODY - PILES - SPIRAL
B403	12	2'-3"			BODY - PILES - VERT.
B604	11	37'-0"			BODY - TOP, BOT., & F.F. - HORIZ
B805	7	39'-3"	X		BODY - B.F. - HORIZ.
B506	9	5'-3"	X		BODY - TOP - VERT.
B407	3	8'-0"			BODY - TOP, HORIZ
B408	26	3'-3"	X		BODY - TOP - VERT.
B409	2	37'-0"			BODY - TOP, HORIZ
B410	4	4'-4"			BODY - ENDS - VERT.
B511	22	15'-8"	X	X	LOWER WING - VERT. - WINGS 3 & 4
B512	12	12'-2"		X	LOWER WING - F.F. - HORIZ. - WINGS 3 & 4
B613	16	12'-2"		X	LOWER WING - B.F., TOP - HORIZ. - WINGS 3 & 4
B614	28	10'-1"	X	X	UPPER WING - VERT. - WINGS 3 & 4
B415	14	9'-7"		X	UPPER WING - FF., B.F. - HORIZ. - WINGS 3 & 4
B616	4	9'-7"		X	UPPER WING - TOP - HORIZ. - WINGS 3 & 4



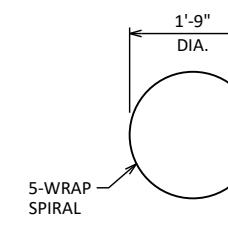
## SECTION THRU BODY



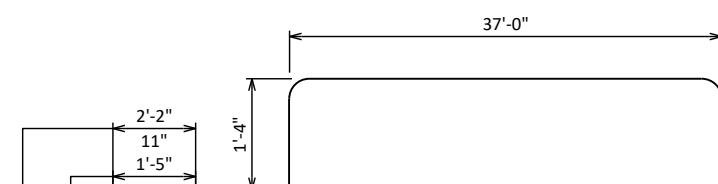
## TYPICAL WING SECTION



## B501, B511



B40



**B805**

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
<b>STRUCTURE B-68-150</b>			
<b>DRAWN BY</b>		PLANS JRP	CK'D EJC
<b>EAST ABUTMENT DETAILS</b>		<b>SHEET 7</b>	

## LEGEND

▲ KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2" x 6".

## NOTES

PIER TO BE SUPPORTED ON PILING STEEL HP 10-INCH x 42-LB WITH A REQUIRED DRIVING RESISTANCE OF 180 TONS PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC EQUATION. ESTIMATED 55'-0" LONG AT PIER 1. ESTIMATED 55'-0" LONG AT PIER 2.

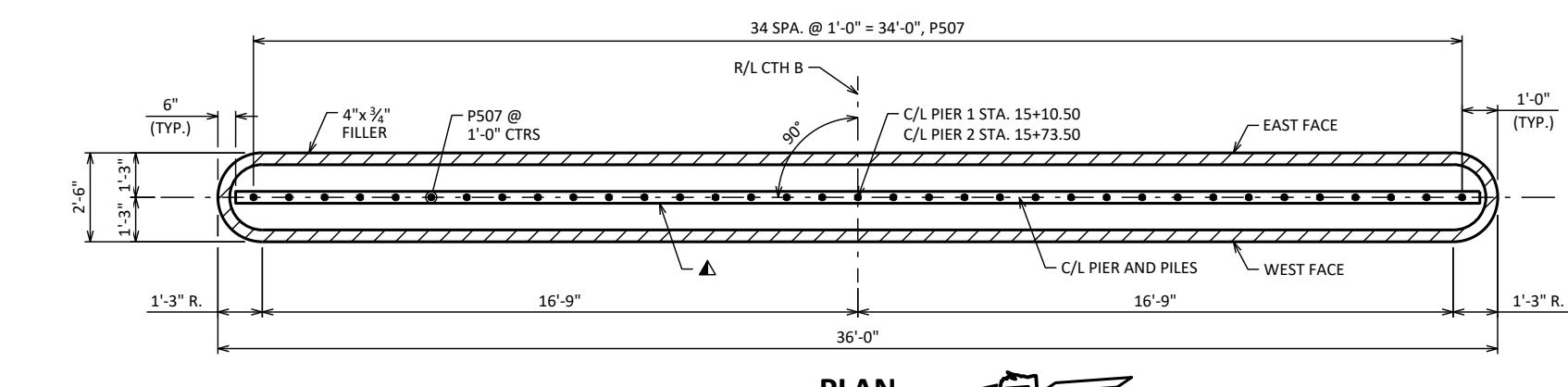
AT PIER 1 & PIER 2, COFFERDAM REQUIRED. CONCRETE POURED UNDERWATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH STANDARD SPEC 502.3.5.3. CONCRETE POURED UNDERWATER SHALL NOT EXCEED 10.0 FEET IN DEPTH, UNLESS APPROVED OTHERWISE.

PIERS  
BILL OF BARS

BAR MARK	NO. REQ'D		LENGTH	BENT	COAT	LOCATION
	PIER 1	PIER 2				
P501	76	-	12'-2"			PIER 1 - VERT.
P502	-	76	12'-4"			PIER 2 - VERT.
P503	18	18	4'-3"	X		PIERS 1 & 2 - STIRRUPS - TOP - VERT.
P404	28	28	33'-6"			PIERS 1 & 2 - SIDES - HORIZ.
P405	28	28	6'-1"	X		PIERS 1 & 2 - ENDS - HORIZ.
P406	154	154	2'-11"	X		PIERS 1 & 2 - TIES - HORIZ.
P507	35	35	2'-0"		X	PIERS 1 & 2 - DOWELS - VERT.

UNCOATED: 4,180 LBS  
COATED: 150 LBS

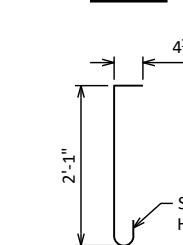
## PLAN



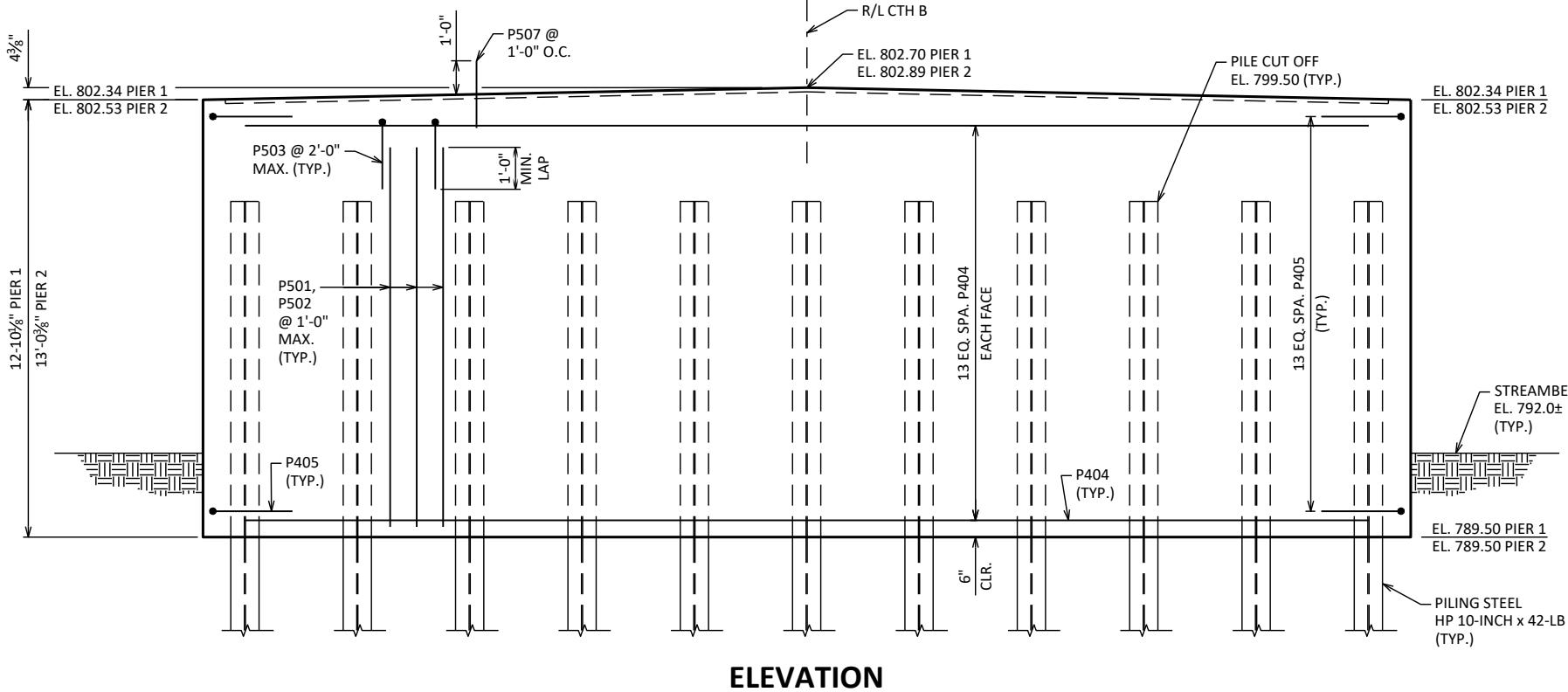
P503

R=12 1/2"

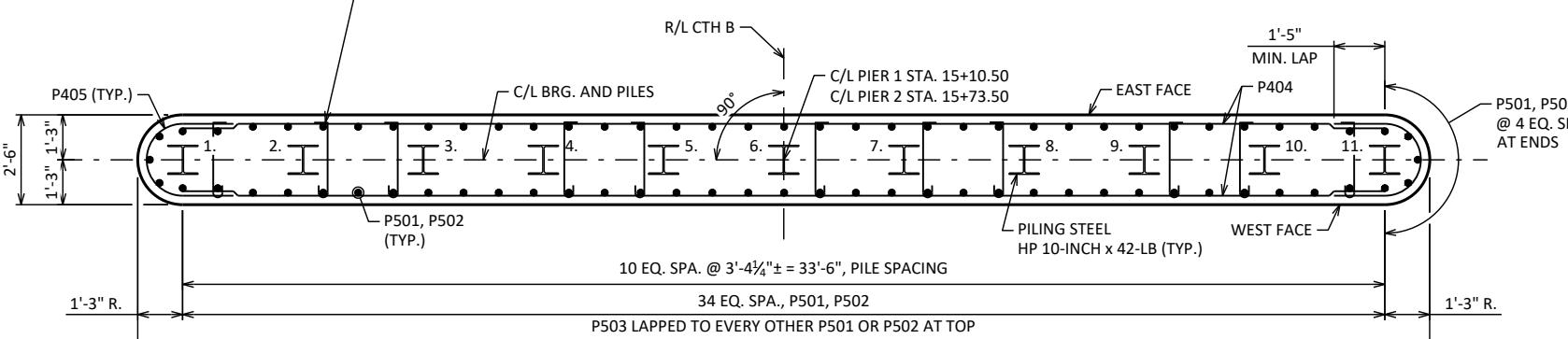
P405



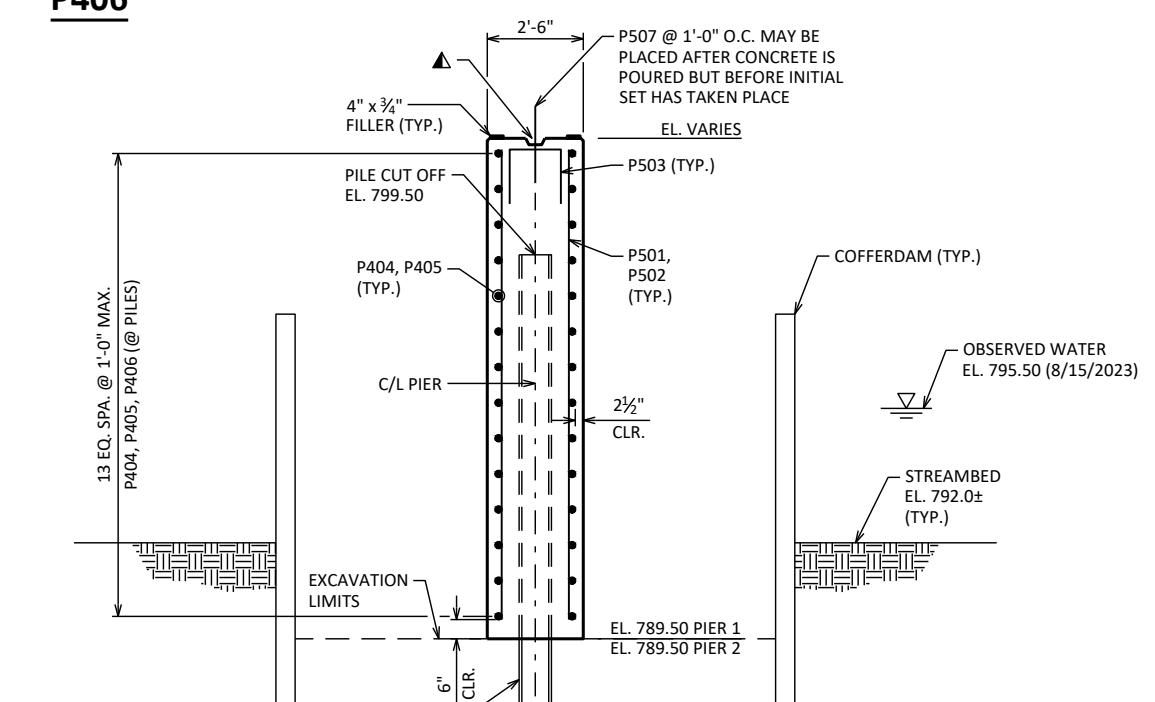
P406



## ELEVATION



## PILE AND REINFORCING PLAN



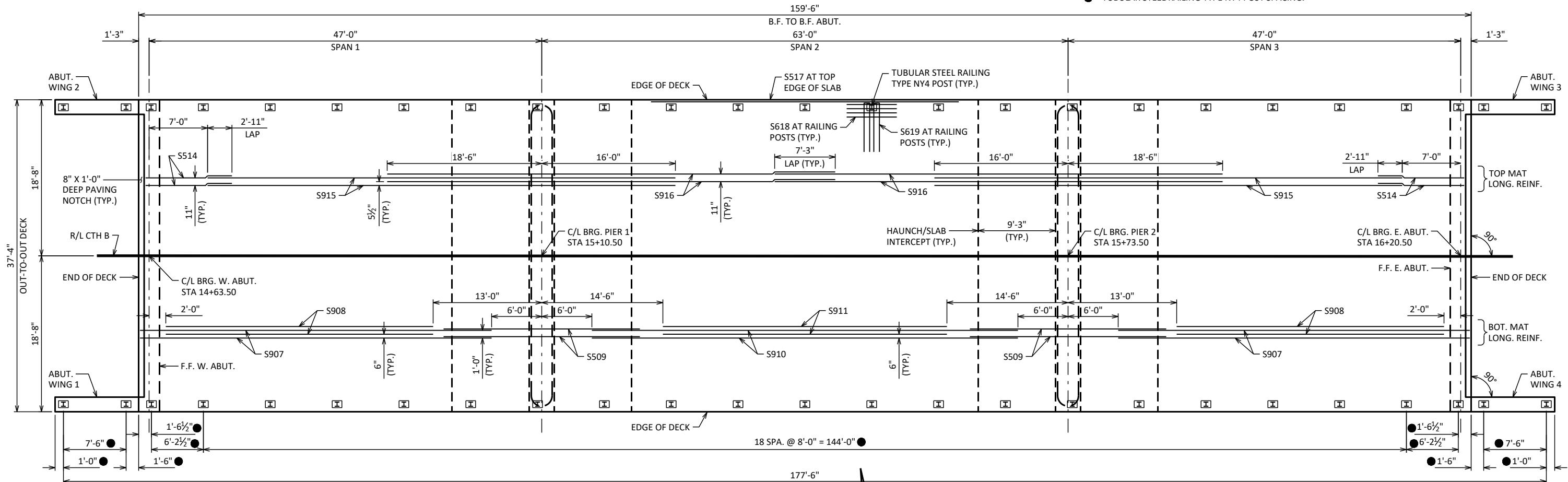
## END VIEW

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-68-150			
DRAWN BY	JRP	PLANS CK'D	EJC
PIER DETAILS			
SCALE =			

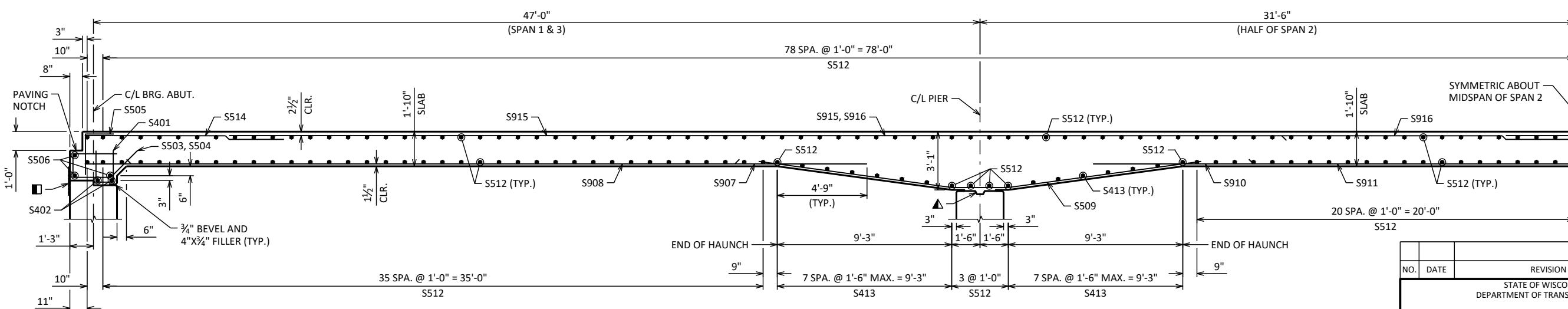
■ 18" RUBBERIZED MEMBRANE WATERPROOFING.

▲ KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2"x6".

● TUBULAR STEEL RAILING TYPE NY4 POST SPACING.



# PLAN



## HALF LONGITUDINAL SECTION

**STRUCTURE B-68-150**

DRAWN  
BY

BY

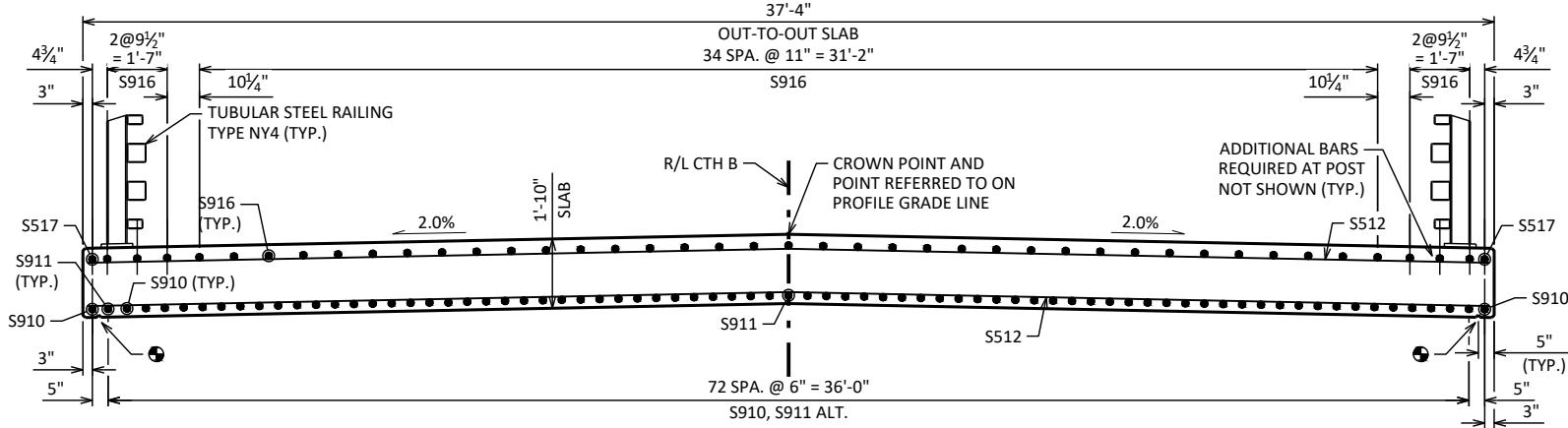
#### **SUPERSTRUCTURE**

## SUPERSTRUCTURE

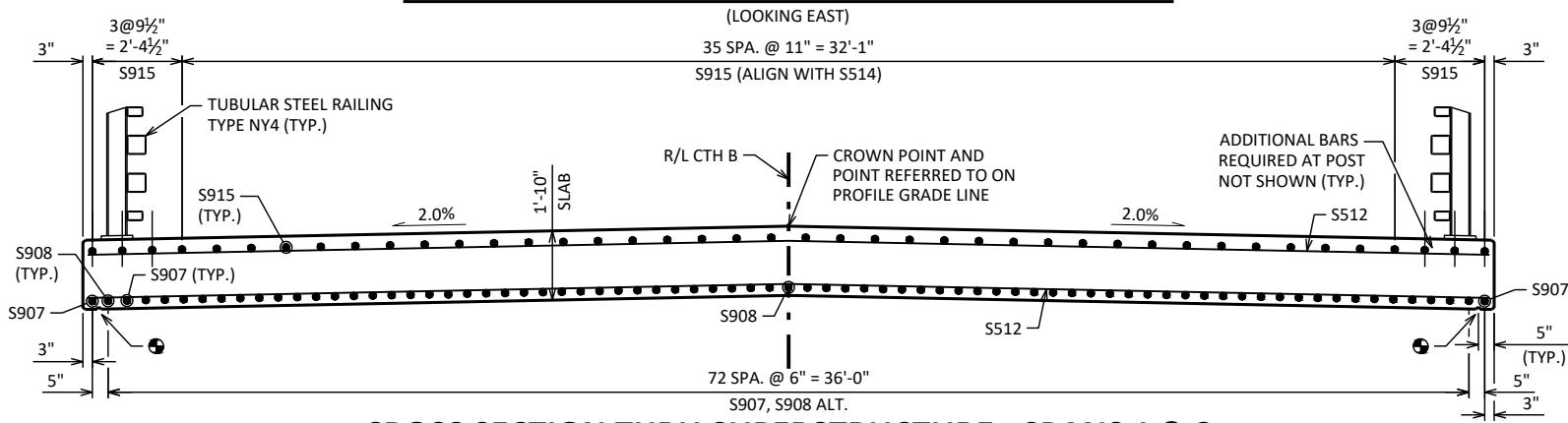
## PLAN & SECTION

## REFERENCES

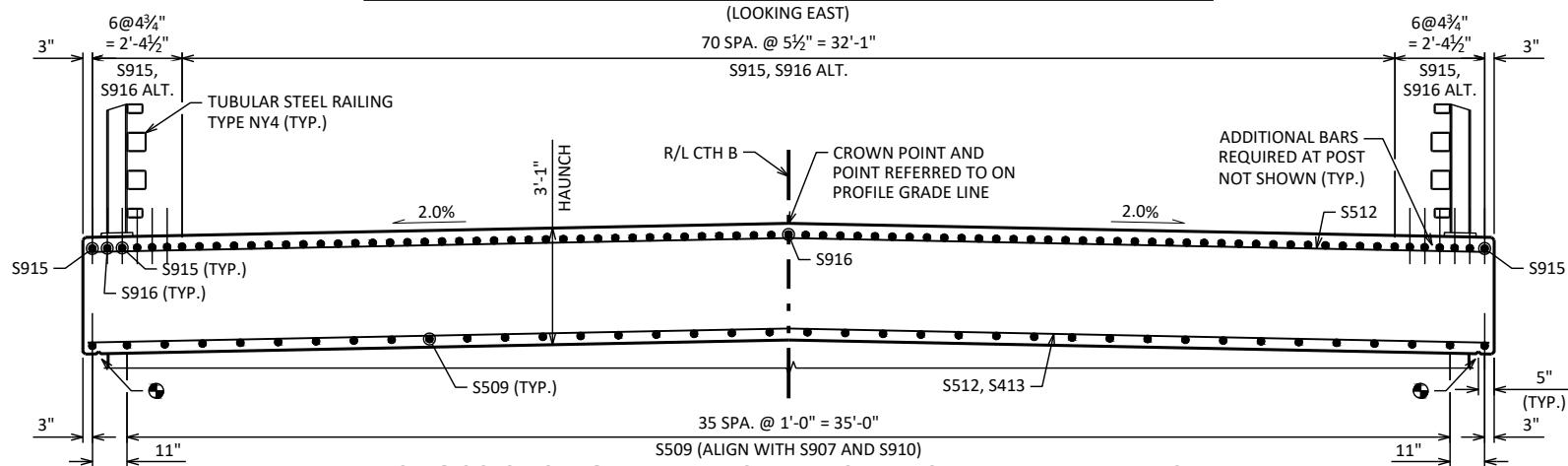
Page 1 of 1



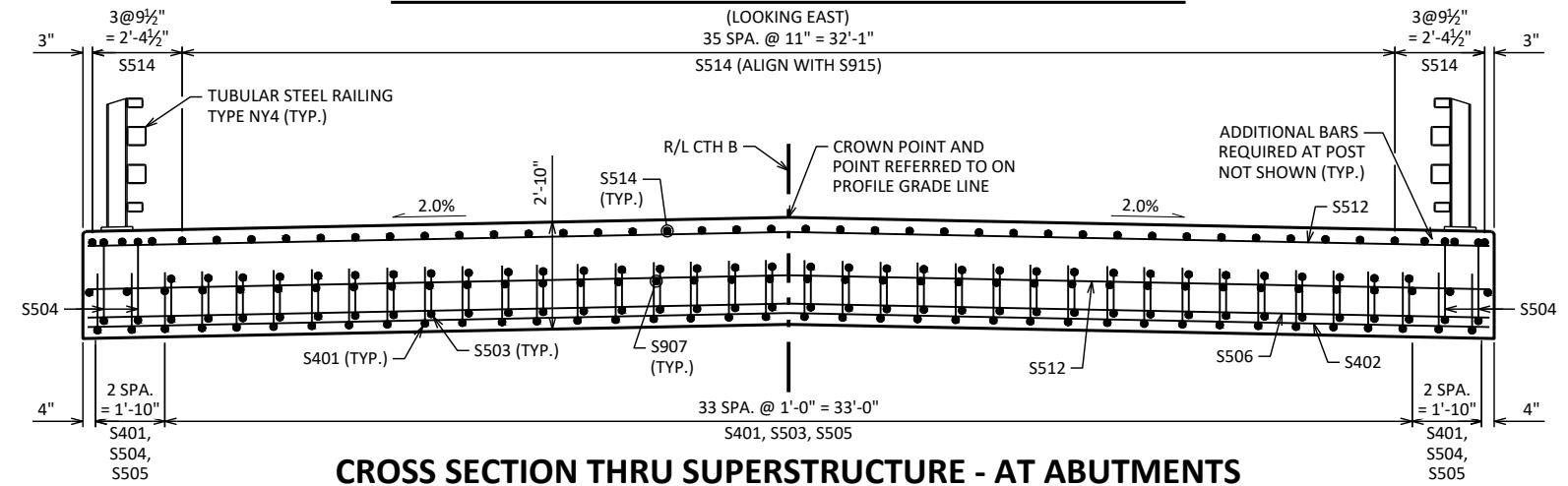
CROSS SECTION THRU SUPERSTRUCTURE - SPAN 2



CROSS SECTION THRU SUPERSTRUCTURE - SPANS 1 &amp; 3



CROSS SECTION THRU SUPERSTRUCTURE - AT PIERS

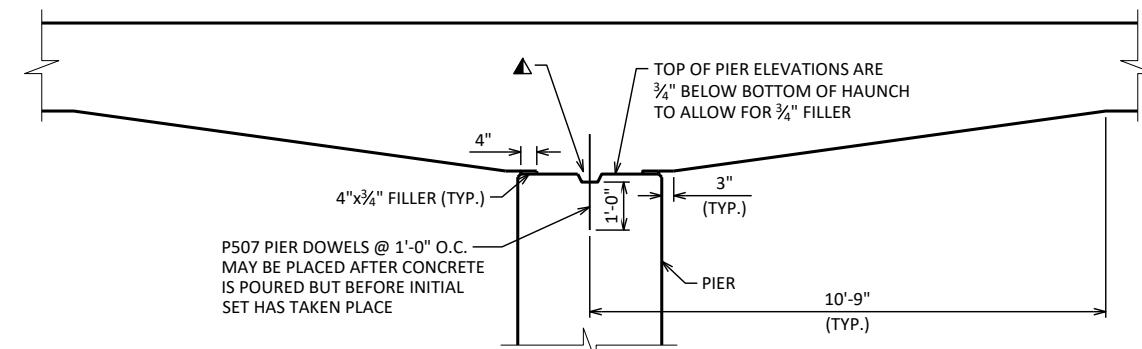
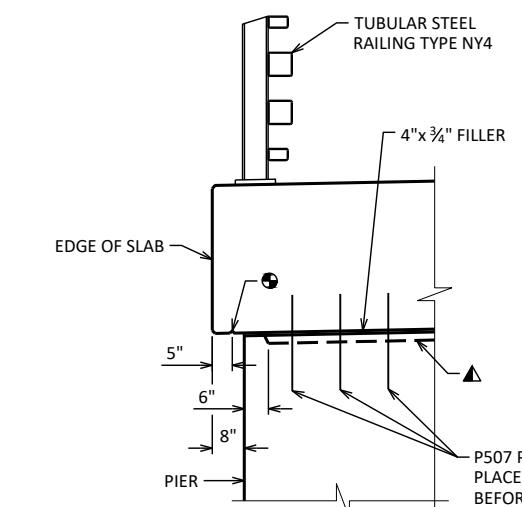


CROSS SECTION THRU SUPERSTRUCTURE - AT ABUTMENTS

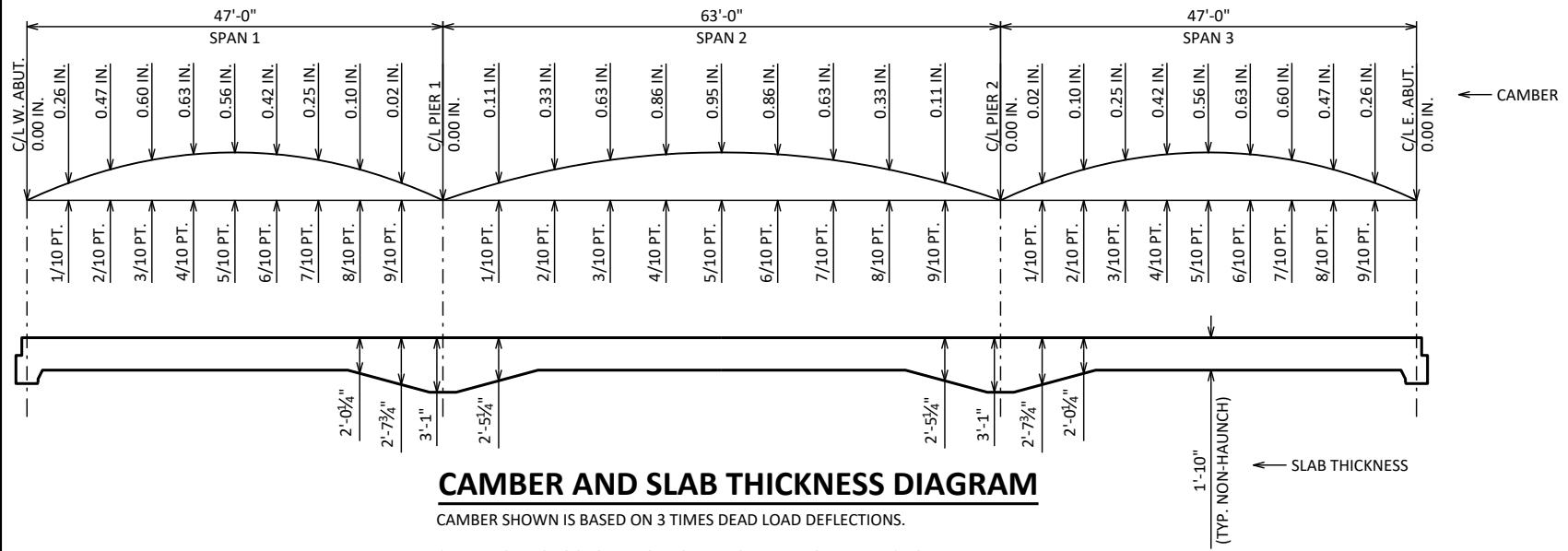
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-68-150			
DRAWN BY	JRP	PLANS CK'D	EJC
SUPERSTRUCTURE DETAILS - 1			
SHEET 10			
SCALE =			

## LEGEND

- ¾" V-GROOVE REQ'D EXTEND TO 6" FROM F.F. OF ABUT. DIAPHRAGMS.
- ▲ KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2"x6".



PIER DETAILS



# CAMBER AND SLAB THICKNESS DIAGRAM

CAMBER SHOWN IS BASED ON 3 TIMES DEAD LOAD DEFLECTIONS.

CAMBER SPANS AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION AND FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT.

TO DETERMINE FALSEWORK ELEVATION AT EDGE OF SLAB, CROWN OR REFERENCE LINE FOLLOW THIS PROCEDURE:

LESS TOP OF SLAB ELEVATION AT FINAL GRADE  
SLAB THICKNESS  
PLUS CAMBER  
PLUS FORM SETTLEMENT/DEFLECTION DUE TO PLACEMENT OF SLAB CONCRETE (TO BE COMPUTED BY THE CONTRACTOR)  
EQUALS TOP OF SLAB FALSEWORK ELEVATION

## TOP OF DECK ELEVATIONS

LOCATION	STATION	NORTH EDGE OF DECK	R/L, CTH B	SOUTH EDGE OF DECK
		18.67' LT	-	18.67' RT
C/L W. ABUT.	14+63.50	805.34	805.71	805.34
0.1L POINT	14+68.20	805.36	805.72	805.36
0.2L POINT	14+72.90	805.37	805.74	805.37
0.3L POINT	14+77.60	805.38	805.75	805.38
0.4L POINT	14+82.30	805.39	805.77	805.39
0.5L POINT	14+87.00	805.41	805.78	805.41
0.6L POINT	14+91.70	805.42	805.79	805.42
0.7L POINT	14+96.40	805.43	805.81	805.43
0.8L POINT	15+01.10	805.45	805.82	805.45
0.9L POINT	15+05.80	805.46	805.84	805.46
C/L PIER 1	15+10.50	805.48	805.85	805.48
0.1L POINT	15+16.80	805.50	805.87	805.50
0.2L POINT	15+23.10	805.51	805.89	805.51
0.3L POINT	15+29.40	805.53	805.91	805.53
0.4L POINT	15+35.70	805.55	805.92	805.55
0.5L POINT	15+42.00	805.57	805.94	805.57
0.6L POINT	15+48.30	805.58	805.95	805.59
0.7L POINT	15+54.60	805.61	805.98	805.61
0.8L POINT	15+60.90	805.63	806.00	805.63
0.9L POINT	15+67.20	805.65	806.02	805.65
C/L PIER 2	15+73.50	805.66	806.04	805.66
0.1L POINT	15+78.20	805.68	806.05	805.68
0.2L POINT	15+82.90	805.69	806.07	805.69
0.3L POINT	15+87.60	805.71	806.08	805.71
0.4L POINT	15+92.30	805.72	806.09	805.72
0.5L POINT	15+97.00	805.73	806.11	805.73
0.6L POINT	16+01.70	805.75	806.12	805.75
0.7L POINT	16+06.40	805.76	806.13	805.76
0.8L POINT	16+11.10	805.78	806.15	805.78
0.9L POINT	16+15.80	805.79	806.16	805.79
C/L E. ABUT.	16+20.50	805.80	806.18	805.80

ELEVATIONS SHOWN ARE FINISHED GRADE ELEVATIONS.

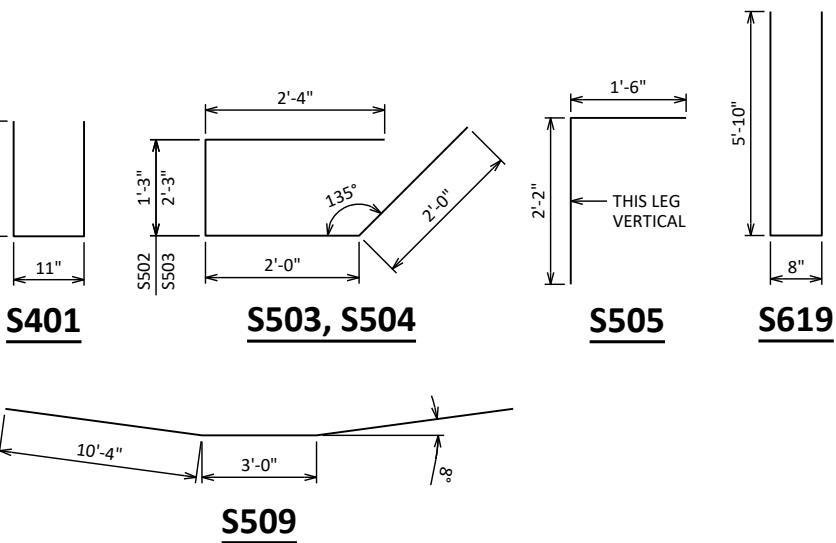
# **SUPERSTRUCTURE** **BILL OF BARS**

STATE PROJECT NUMBER

**6832-06-72**

**COATED: 79,660 LBS**

BAR MARK	NO. REQ'D	LENGTH	BENT	COAT	LOCATION
S401	76	3'-9"	X	X	ABUT. DIAPHRAGM - S.E. POCKET - VERT.
S402	4	37'-0"		X	ABUT. DIAPHRAGM - S.E. POCKET - HORIZ.
S503	68	7'-4"	X	X	ABUT. DIAPHRAGM - VERT.
S504	8	8'-4"	X	X	ABUT. DIAPHRAGM - VERT. - ENDS
S505	76	3'-7"	X	X	ABUT. DIAPHRAGM - VERT.
S506	6	37'-0"		X	ABUT. DIAPHRAGM - HORIZ.
S907	76	42'-1"		X	SLAB - LONG. - BOTTOM - SPAN 1 & 3
S908	74	32'-0"		X	SLAB - LONG. - BOTTOM - SPAN 1 & 3
S509	76	23'-8"	X	X	SLAB - LONG. - BOTTOM - HAUNCH OVER PIERS
S910	38	51'-0"		X	SLAB - LONG. - BOTTOM - SPAN 2
S911	37	34'-0"		X	SLAB - LONG. - BOTTOM - SPAN 2
S512	286	37'-0"		X	SLAB - TRANSVERSE - TOP & BOTTOM
S413	24	37'-0"		X	SLAB - TRANSVERSE - BOTTOM - HAUNCH
S514	84	10'-4"		X	SLAB - LONG. - TOP - SPAN 1 & 3
S915	84	56'-0"		X	SLAB - LONG. - TOP - OVER PIERS
S916	82	53'-8"		X	SLAB - LONG. - TOP - OVER PIERS
S517	2	36'-10"		X	SLAB - LONG. - TOP - SPAN 2
S618	168	6'-0"		X	SLAB - LONG. - TUBULAR RAILING TYPE 'NY4'
S619	84	12'-0"	X	X	SLAB - TRANS. - TUBULAR RAILING TYPE 'NY4'



## **SURVEY TOP OF SLAB ELEVATIONS**

	W. ABUT	5/10 PT.	PIER 1	5/10 PT.	PIER 2	5/10 PT.	E. ABUT.
NORTH EDGE OF SLAB							
CROWN ON R/L							
SOUTH EDGE OF SLAB							

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF DECK ELEVATIONS AT THE C/L OF ABUTMENTS, THE C/L OF PIERS, AND AT 5/10 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG EDGE OF SLAB AND CROWN ON R/L. RECORD THE ELEVATIONS IN THE ABOVE TABLE FOR THE "AS BUILT" PLANS.

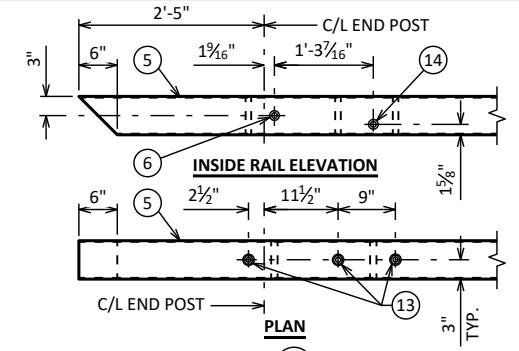
## NOTES

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

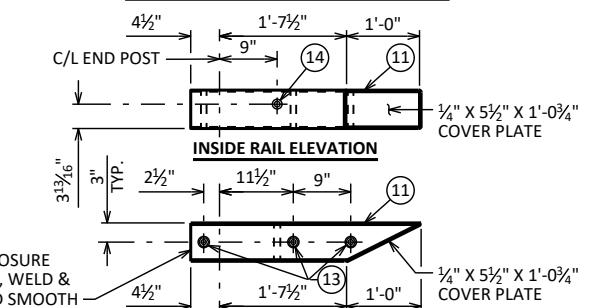
ALL SLAB THICKNESS DIMENSIONS ARE MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
<b>STRUCTURE B-68-150</b>			
	DRAWN BY	JRP	PLANS CK'D
<b>SUPERSTRUCTURE</b> <b>DETAILS - 2</b>		SHEET 11	
CALE =			

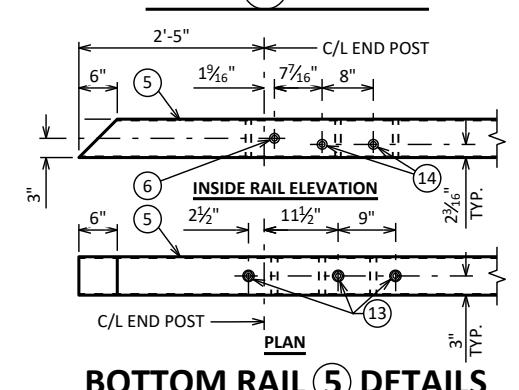




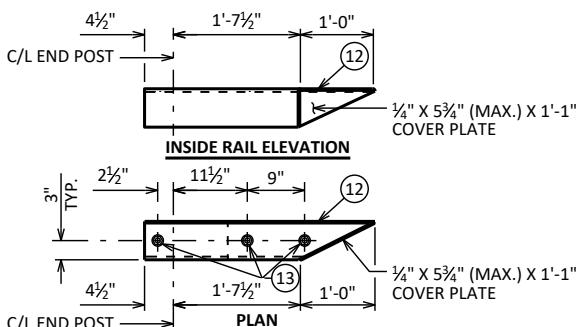
TOP RAIL (5) DETAILS



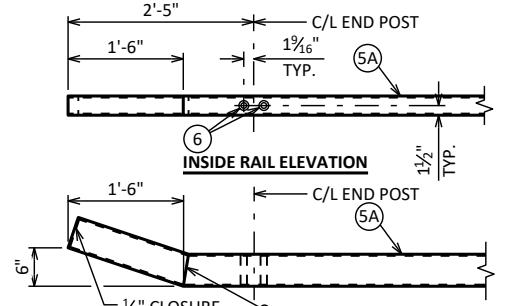
TUBE (11) DETAILS



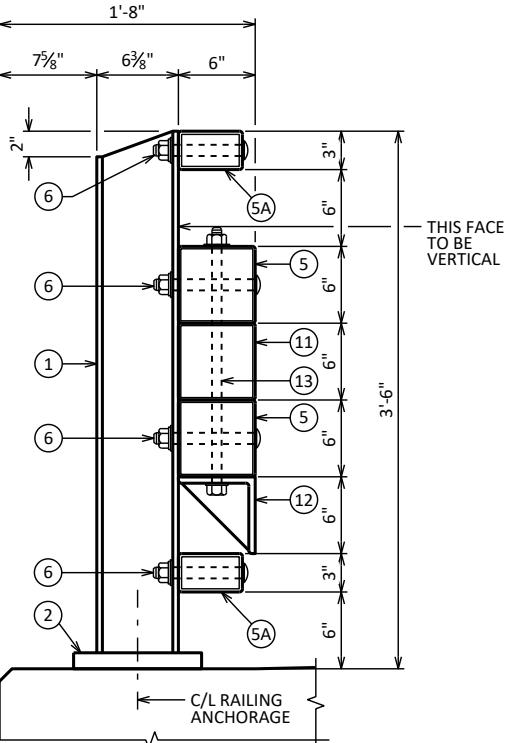
BOTTOM RAIL (5) DETAILS



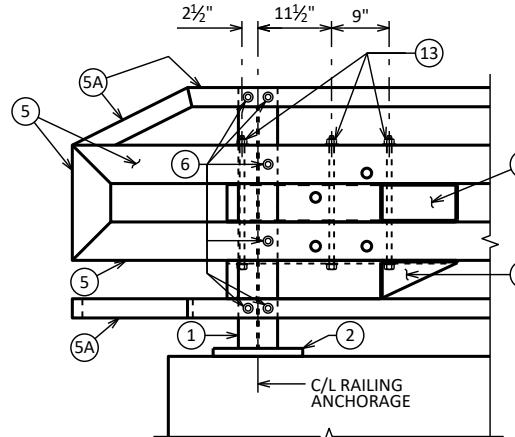
ANGLE (12) DETAILS



BOTTOM RAIL (5A) DETAILS

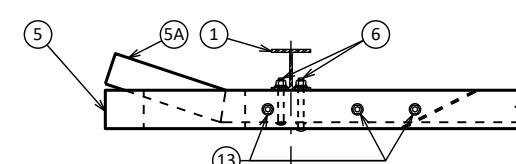


SECTION THRU RAILING END POST

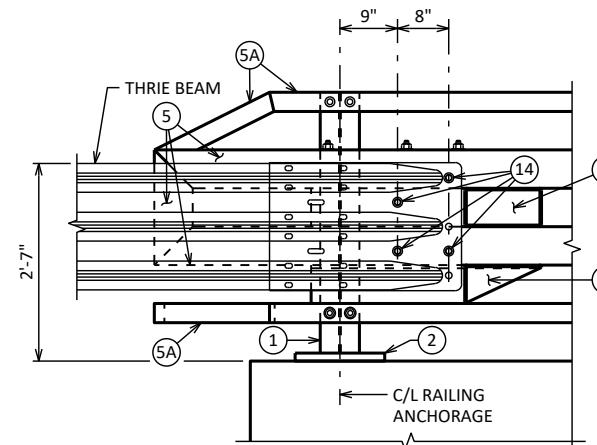


ELEVATION DETAIL AT END POST

INTERIOR ELEVATION

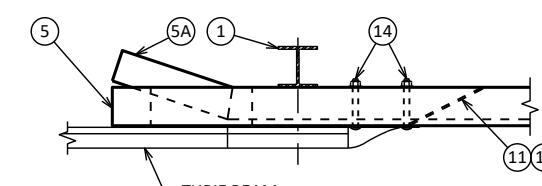


PLAN OF DETAIL AT END POST



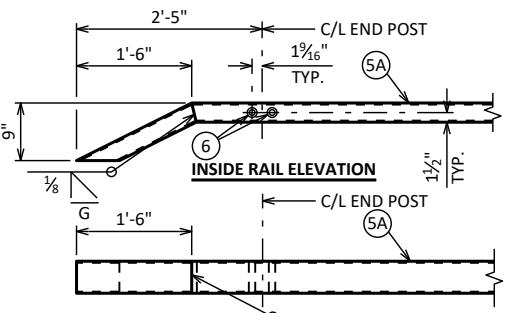
ELEVATION DETAIL AT END POST

THRIE BEAM RAIL ATTACHMENT



PLAN OF DETAIL AT END POST

THRIE BEAM RAIL ATTACHMENT



TOP RAIL (5A) DETAILS

## LEGEND

- ① W6 X 25 WITH 1 1/16" X 1 3/8" HORIZONTAL SLOTTED HOLES ON EACH SIDE OF POST FOR BOLT NO. 6 AT NO. 5 & AT TOP RAIL NO. 5A. USE 1" DIA. HOLE FOR BOLT NO. 6 AT NO. 5A BOTTOM RAIL. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
- ② PLATE 1 1/4" X 10" X 1'-2". SEE SHEET "TUBULAR STEEL RAILING NY4" FOR MORE INFORMATION.
- ⑤ TS 6 X 6 X 3/16" STRUCTURAL TUBING. USE 7/8" DIA. HOLES IN TOP AND BOTTOM OF RAILS FOR BOLT NO. 13 AS SHOWN IN PLAN DETAILS. USE 1" DIA. HOLES IN FRONT AND BACK OF RAILS FOR BOLTS NO. 6 & NO. 14 AS SHOWN IN ELEVATION DETAILS.
- ⑤A TS 5 X 3 X 3/4" STRUCTURAL TUBING. USE 1" DIA. HOLES FOR TOP RAIL NO. 5A (FRONT & BACK). USE 1 1/4" X 1 3/8" HORIZONTAL SLOTTED HOLES FOR BOLT NO. 6 IN BOTTOM RAIL (FRONT & BACK) AND A 2" O.D. WASHER UNDER BOLT HEAD.
- ⑥ 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH HEX NUT, 3/16" X 1 1/4" X 1 3/4" WASHER, AND SPRING LOCK WASHER (1 REQUIRED AT RAIL NO. 5 TO POST NO. 1 CONNECTION LOCATIONS SHOWN. 2 REQUIRED AT RAIL NO. 5A TO POST NO. 1 CONNECTION LOCATIONS SHOWN).
- ⑪ TS 6 X 6 X 3/4" STRUCTURAL TUBING. USE 1" DIA. HOLES IN FRONT AND BACK FOR BOLT NO. 14 & 7/8" DIA. HOLES IN TOP & BOTTOM FOR BOLT NO. 13.
- ⑫ L 6 X 6 X 1 1/2" STRUCTURAL ANGLE. USE 7/8" DIA. HOLES IN TOP FLANGE FOR BOLT NO. 13.
- ⑬ 3/4" DIA. A325 FULLY THREADED BOLTS, 2 WASHERS AND HEAVY HEX NUT ON EACH BOLT. NUT TO BE FINGER TIGHT. 3 BOLTS AT EACH END POST.
- ⑭ 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH HEX NUT AND 3/16" X 2" X 2" WASHER FOR CONNECTION OF THRIE BEAM (4 REQUIRED).

## NOTES

STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED  $f_y = 50$  KSI. STRUCTURAL ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50.

WORK THIS SHEET WITH SHEET 12.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE	B-68-150	DRAWN BY	JRP
PLANS CK'D	EJC		
END POST FOR RAILING TYPE NY4	SHEET 13	SCALE =	

## DIVISION 1 - CTH B

STATION	DISTANCE	AREA (SF)			INCREMENTAL VOL (CY) (UNADJUSTED)			CUMULATIVE VOL (CY)			
		CUT	FILL	EBS	CUT	FILL	EBS	CUT 1.00	EXPANDED FILL 1.25	EXPANDED EBS 1.25	MASS ORDINATE
12+51.86	---	54.57	1.34	2.73	0	0	0	0	0	0	0
13+00.00	48.14	60.11	3.36	3.01	102	4	5	102	5	6	97
13+50.00	50.00	88.16	12.80	4.41	137	15	7	239	24	15	215
13+62.16	12.16	92.69	16.27	4.63	41	7	2	280	33	18	248
13+87.14	24.98	73.80	10.28	3.69	77	12	4	357	48	23	310
14+00.00	12.86	71.07	14.71	3.55	35	6	2	392	55	25	337
14+12.13	12.13	68.98	0.53	3.45	31	3	2	423	59	28	364
14+50.00	37.87	57.06	6.15	2.85	88	5	4	511	65	33	446
14+62.42	12.42	52.86	17.62	2.64	25	5	1	536	71	34	465
16+21.58	---	28.76	69.54	1.44	0	0	0	536	71	34	465
16+50.00	28.42	37.35	19.23	1.87	35	47	2	571	130	36	441
16+71.87	21.87	42.79	37.05	2.14	32	23	2	603	159	39	444
16+96.86	24.99	47.69	58.01	2.38	42	44	2	645	214	41	431
17+00.00	3.14	48.13	58.39	2.41	6	7	0	651	223	41	429
17+21.84	21.84	52.16	59.22	2.61	41	48	2	692	283	44	410
17+50.00	28.16	55.98	45.88	2.80	56	55	3	748	351	48	397
18+00.00	50.00	52.75	32.08	2.64	101	72	5	849	441	54	408
18+37.01	37.01	12.72	24.75	0.64	45	39	2	894	490	56	404
		COLUMN TOTALS			894	392	45				

9

9

PROJECT NO: 6832-06-72

HWY: CTH B

COUNTY: WAUPACA

EARTHWORK

SHEET:

E

FILE NAME: \_\_\_\_\_

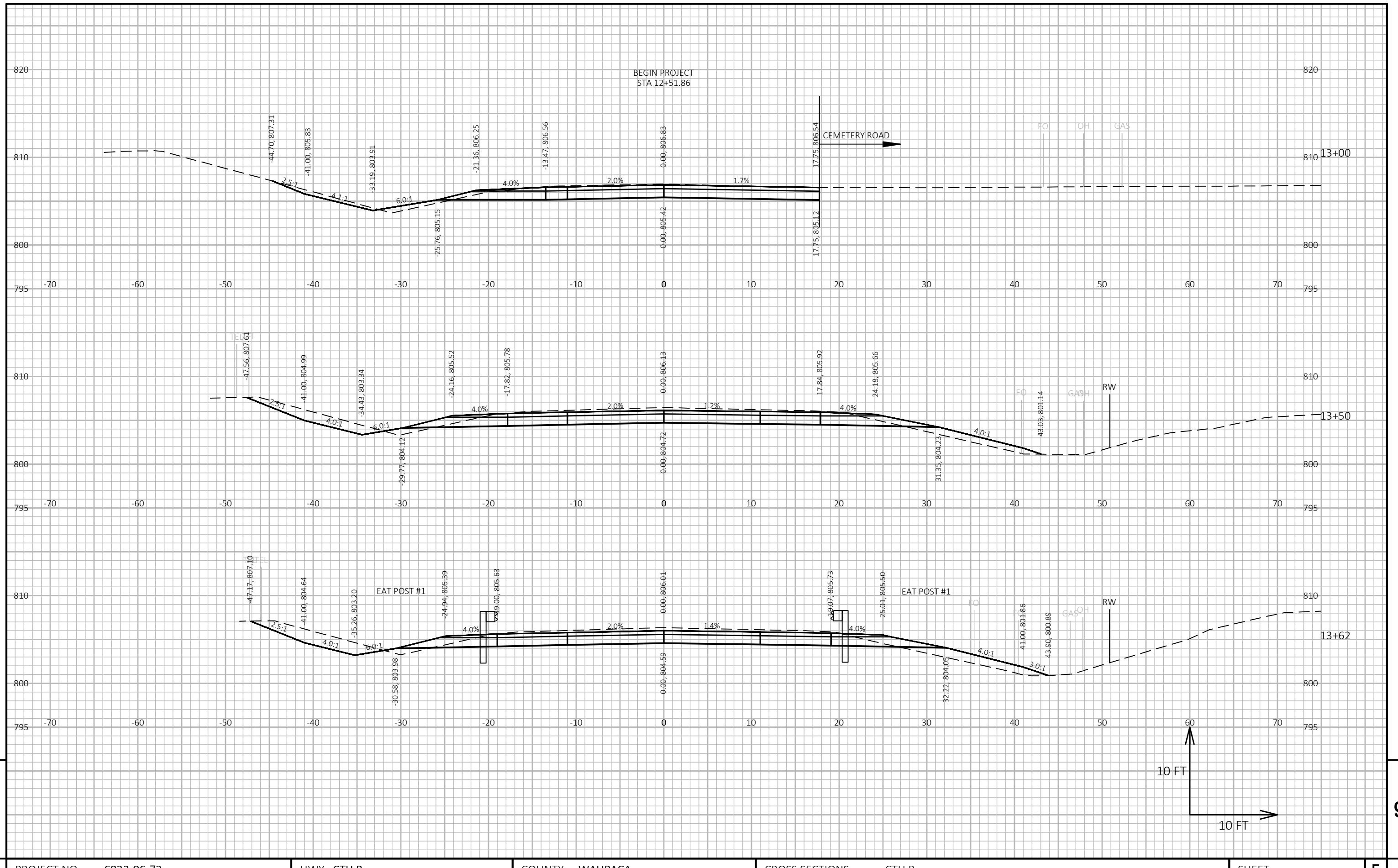
PLOT DATE: \_\_\_\_\_

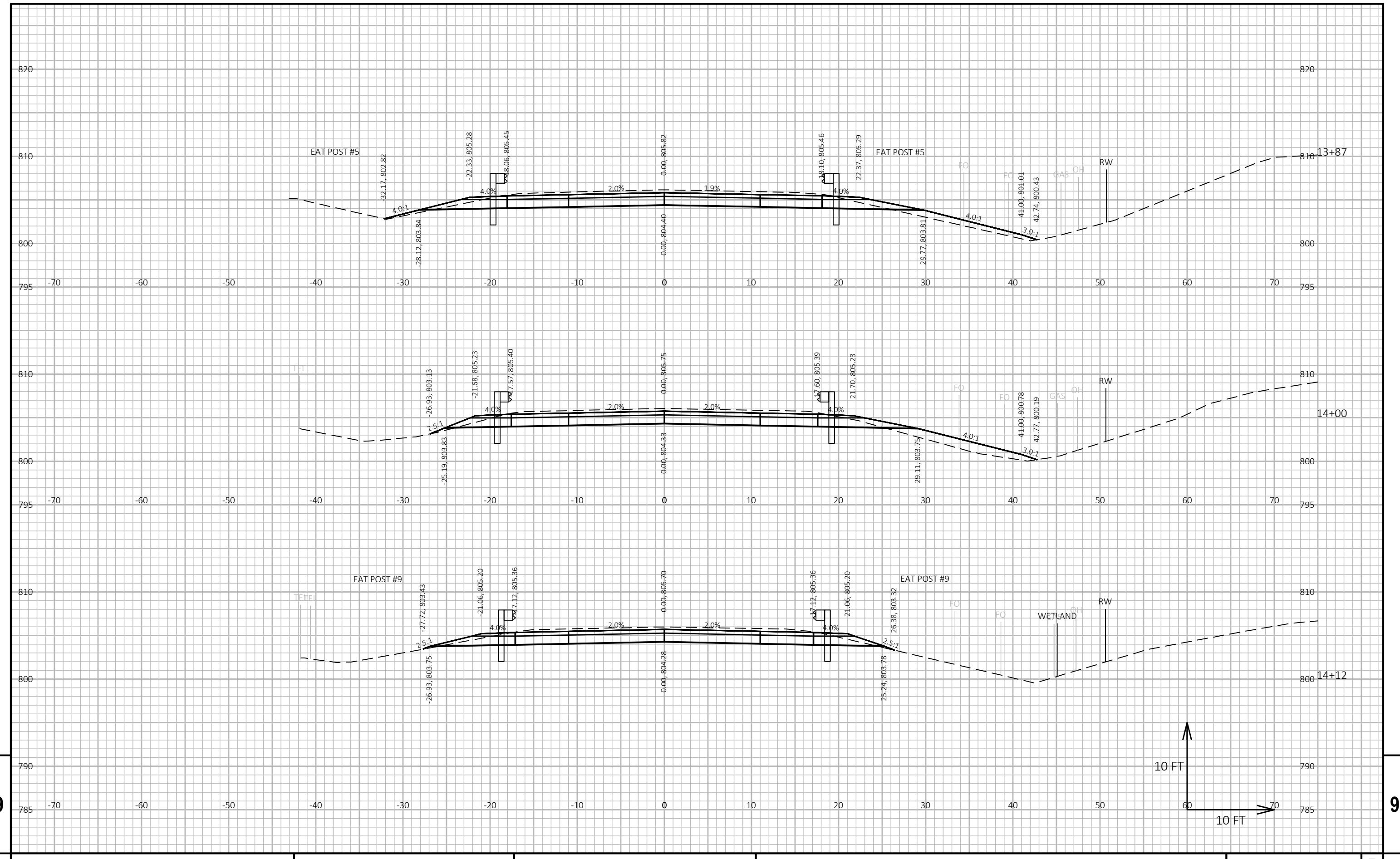
PLOT BY: \_\_\_\_\_

PLOT NAME: \_\_\_\_\_

PLOT SCALE: 1" = 1"

WISDOT/CADD'S SHEET 42





PROJECT NO: 6832-06-72

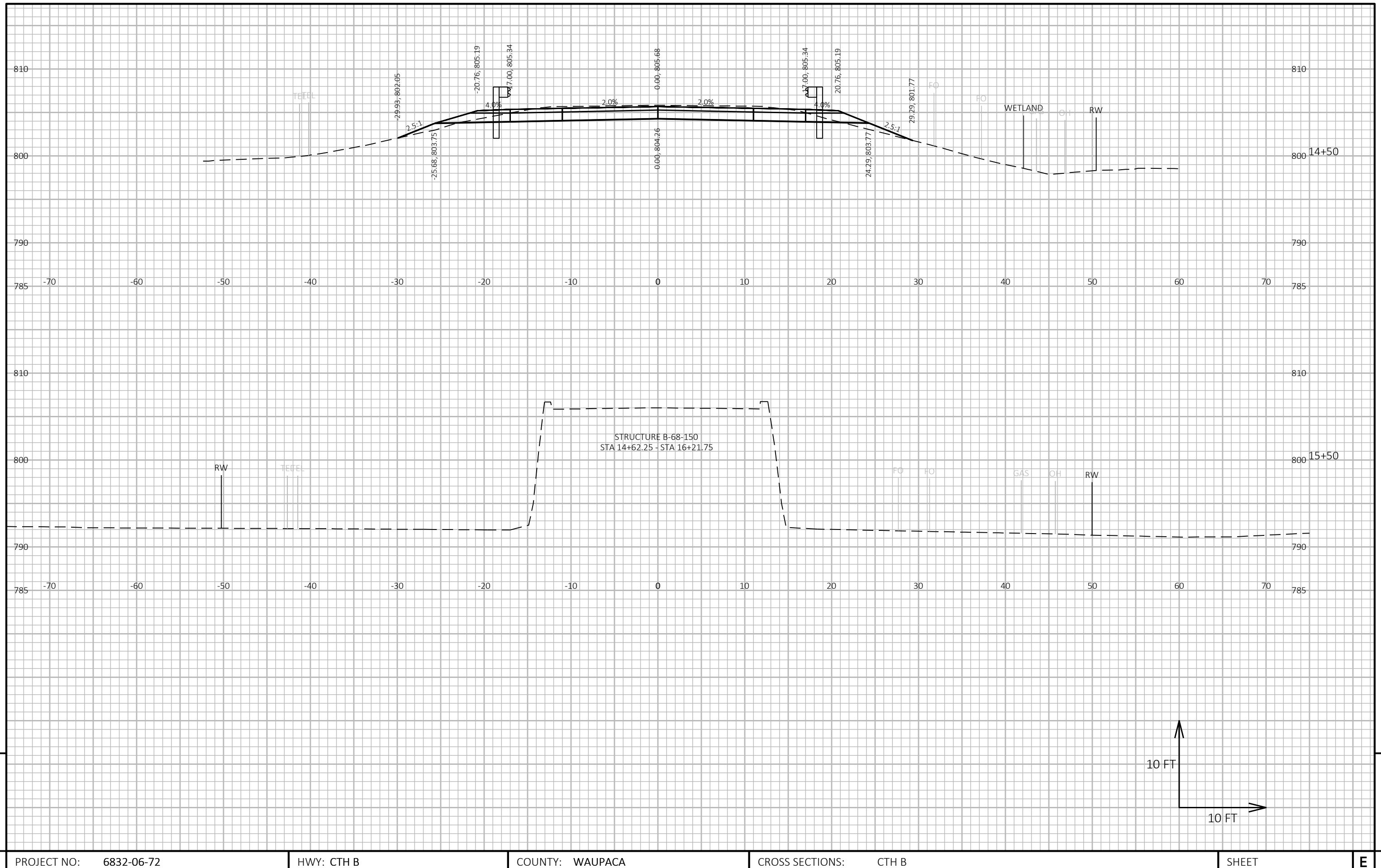
HWY: CTH B

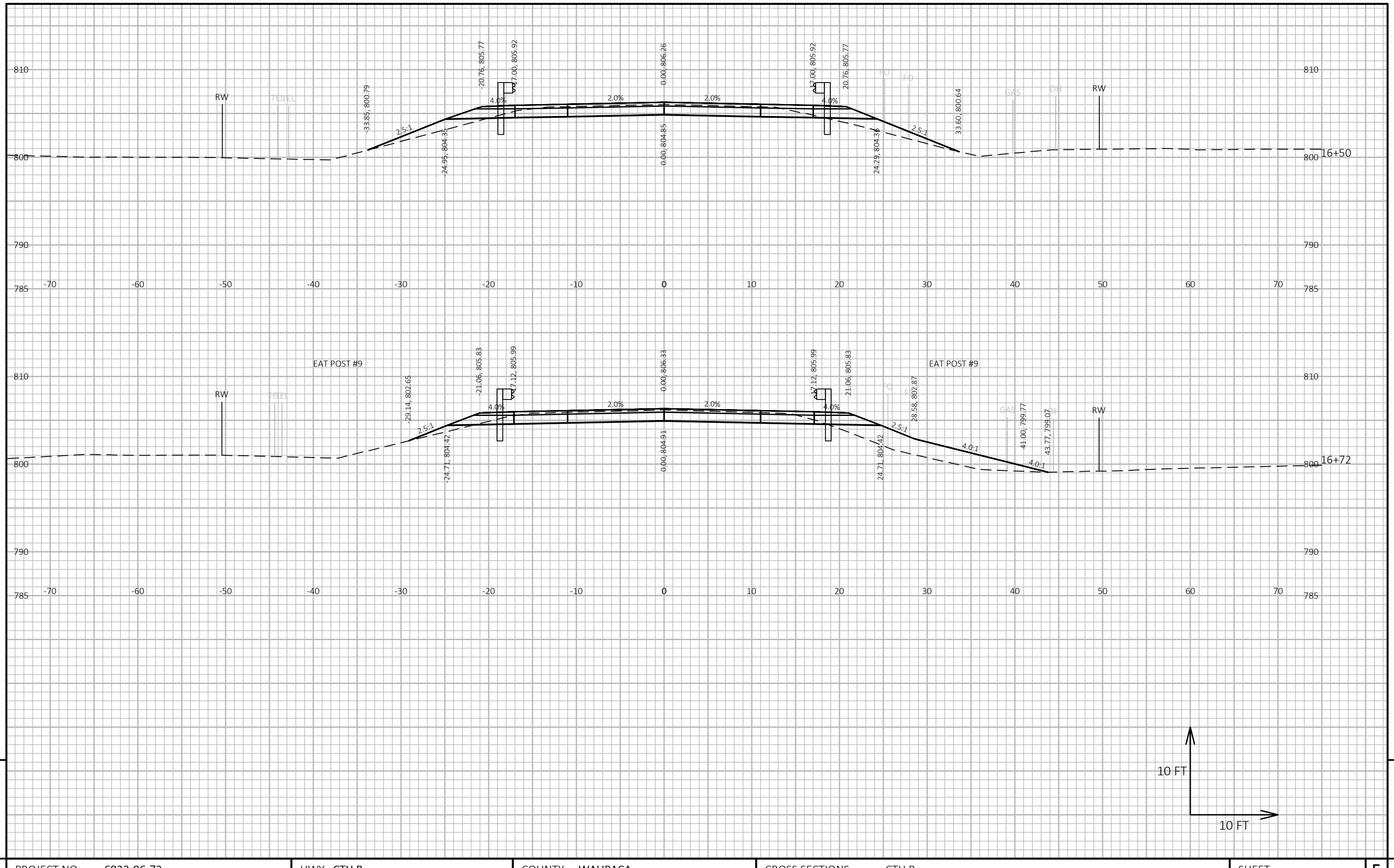
COUNTY: WAUPACA

CROSS SECTIONS: CTH B

SHEET

E





PROJECT NO: 6832-06-72

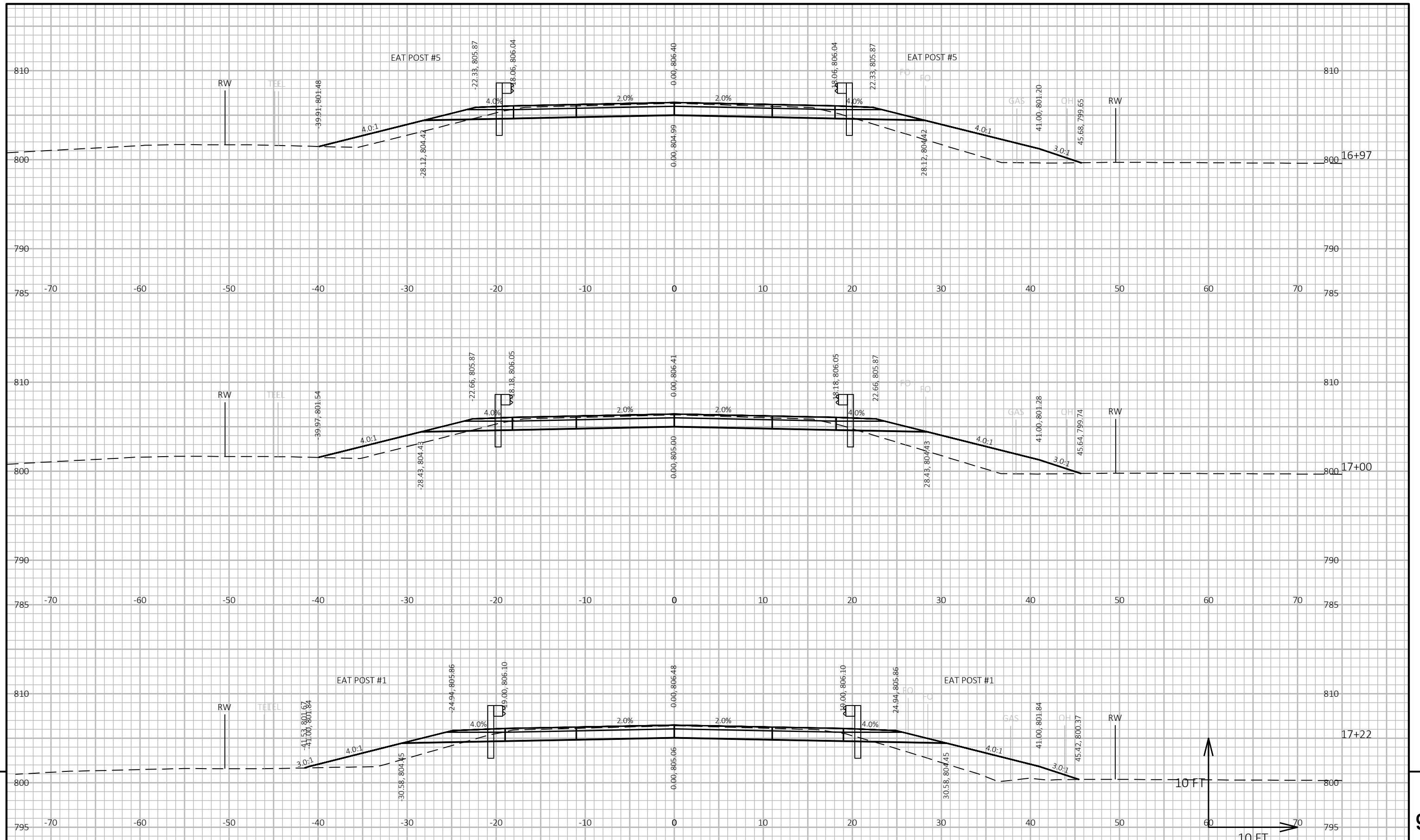
HWY: CTH B

COUNTY: WAUPACA

CROSS SECTIONS: CTH B

SHEET

E



PROJECT NO: 6832-06-72

HWY: CTH

COUNTY: WAUPACA

## CROSS SECTIONS: CTH B

SHEET

E

FILE NAME : S:\MAD\5100-5199\5114\004\DRAWINGS\CAD\CIVIL 3D\Sheets\090201-XS.DWG  
LAYOUT NAME - 090205-xs

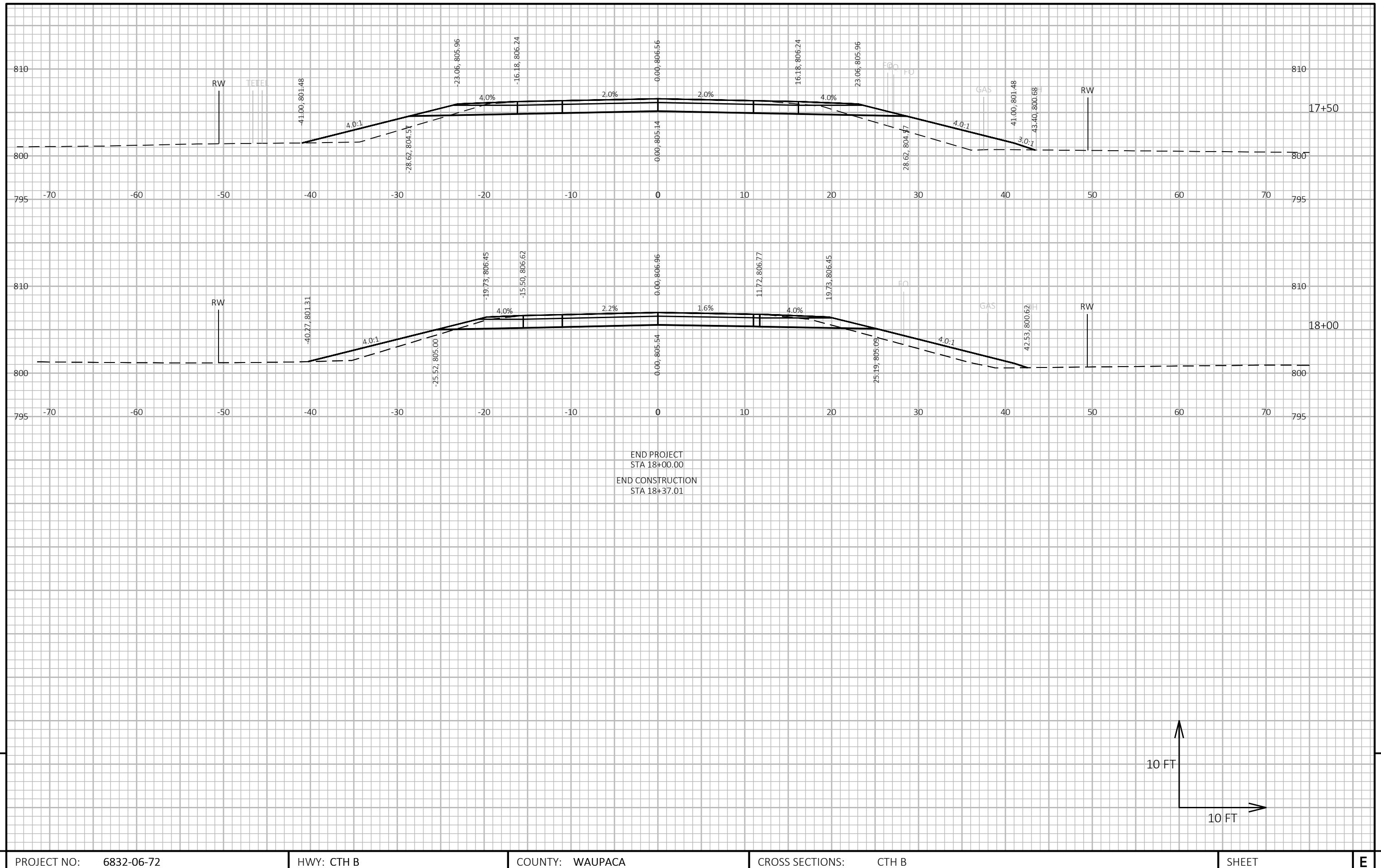
PLOT DATE : 10/22/2025 10:13 AM

PLOT BY : CARPENTER, ZACH

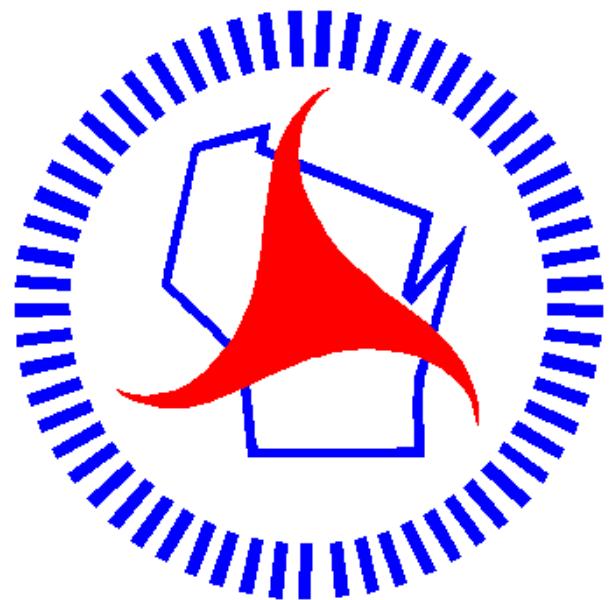
PLOT NAME :

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

WISDOT/CARDS SHEET 49



# Notes



## ***Wisconsin Department of Transportation***

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through innovation and exceptional service.

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