

GRE

PROJECT ID:
WITH: N/A

6832-06-72

COUNTY:

WAUPACA

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

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

PROFILE

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

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

OGDENSBURG - MANAWA

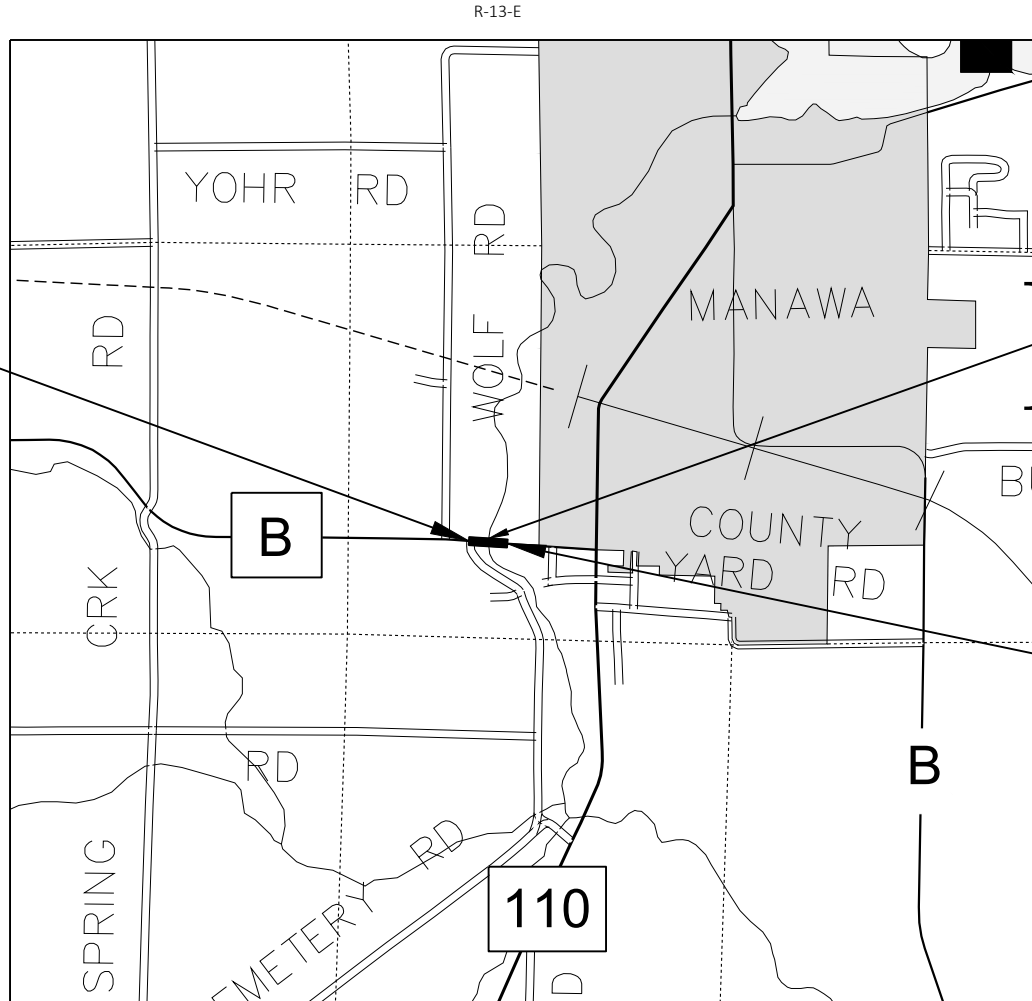
LITTLE WOLF RIVER BRIDGE, B-68-150

CTH B
WAUPACA COUNTY

STATE PROJECT NUMBER
6832-06-72

BEGIN PROJECT
STA 12+51.86
Y: 375,387.270
X: 576,366.777

T-23-N



LAYOUT
SCALE 0 0.5 MI

TOTAL NET LENGTH OF CENTERLINE = 0.104 MI

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

ELEVATIONS ARE REFERENCED TO NAVD 88 (2012). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 12A

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

ACCEPTED FOR
WAUPACA COUNTY

Date 10/7/2025  County Commissioner
(Signature and Title of Official)

ORIGINAL PLANS PREPARED BY:

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



STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

APPROVED FOR THE DEPARTMENT
DATE: 10/7/2025  (Signature)

E

UTILITIES CONTACTS

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Dial 811 or (800)242-8511

www.DiggersHotline.com

** DENOTES DIGGERS HOTLINE MEMBER

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WAUPACA COUNTY

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WISCONSIN DNR LIAISON

MARTY DILLENBURG
NORTH CENTRAL REGION
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OSHKOSH, WI 54901
PHONE: (920) 410-7428
EMAIL: marty.dillenburg@wisconsin.gov

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 SCHRUBS 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 COMPACTED UNLESS SHOWN OTHERWISE.

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

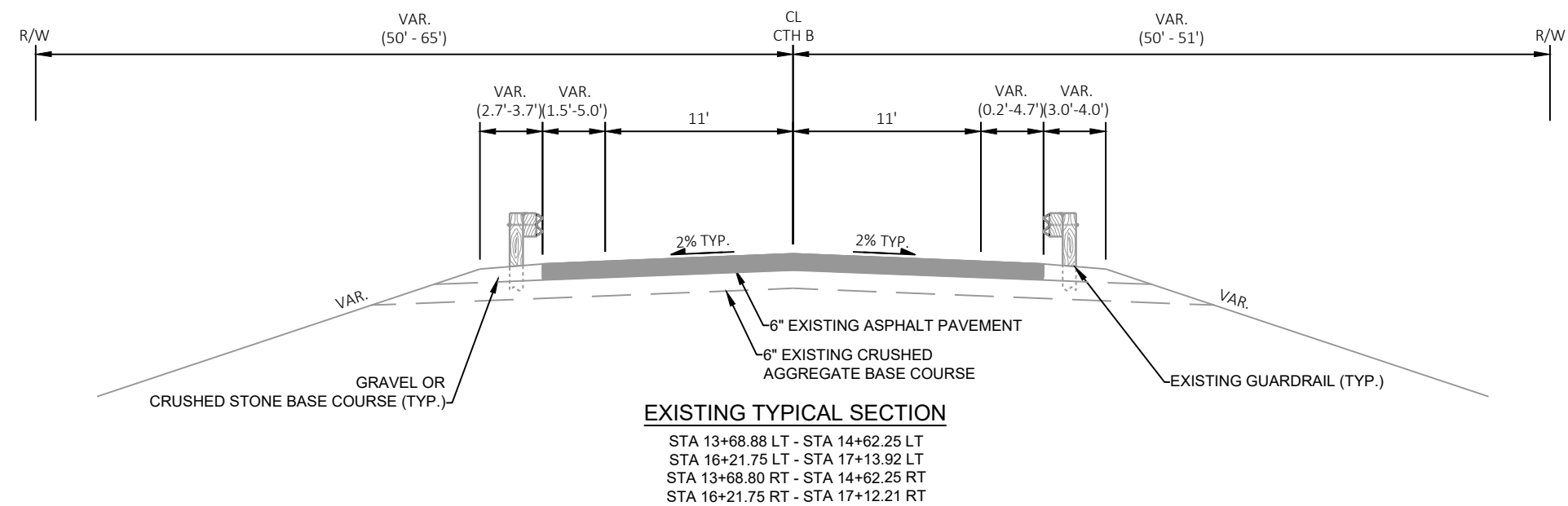
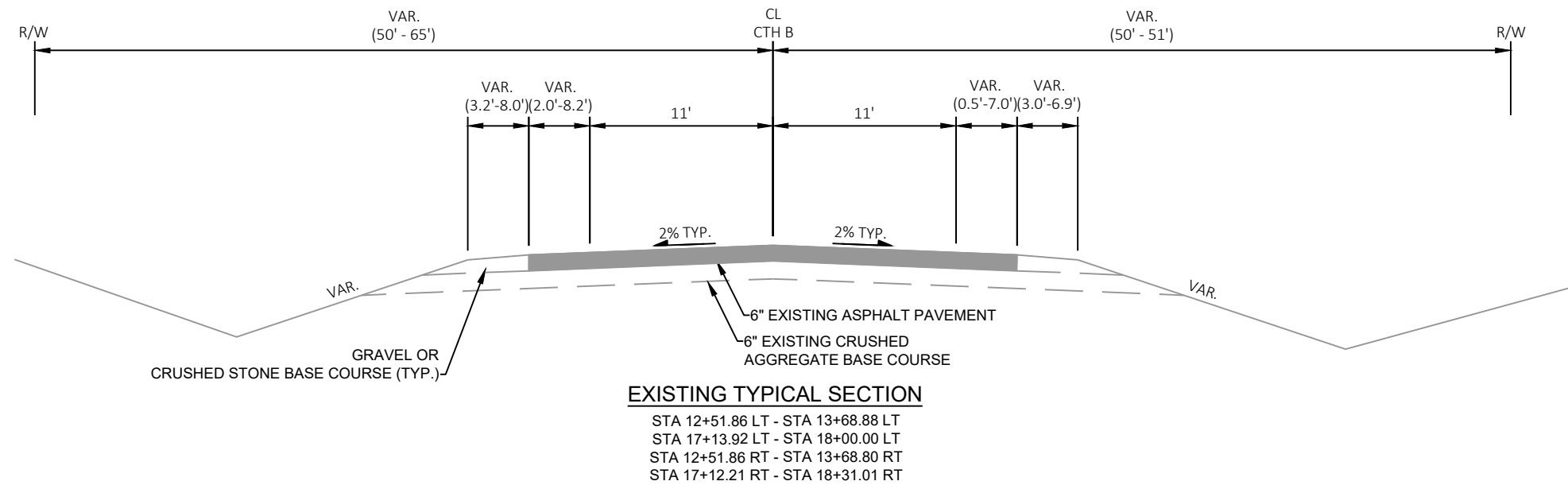
RUNOFF COEFFICIENT TABLE

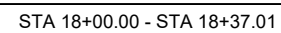
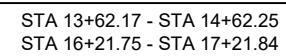
LAND USE:	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER
ROW CROPS:	.08	.16	.22	.12	.20	.27	.15	.24	.33	.19	.28	.38
	.22	.30	.38	.26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

TOTAL PROJECT AREA = 1.351 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.718 ACRES

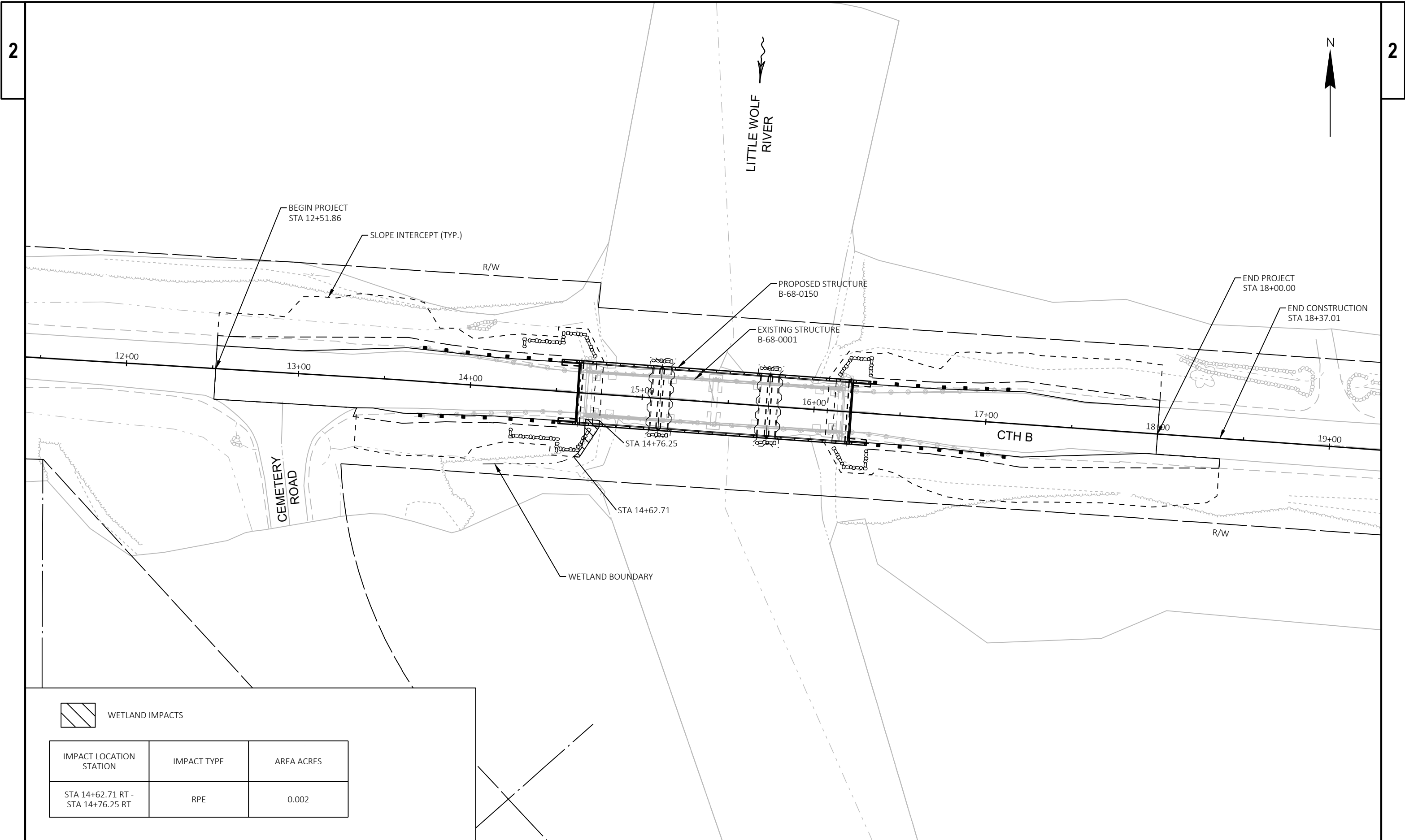
SECTION 2 ORDER OF SHEETS

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

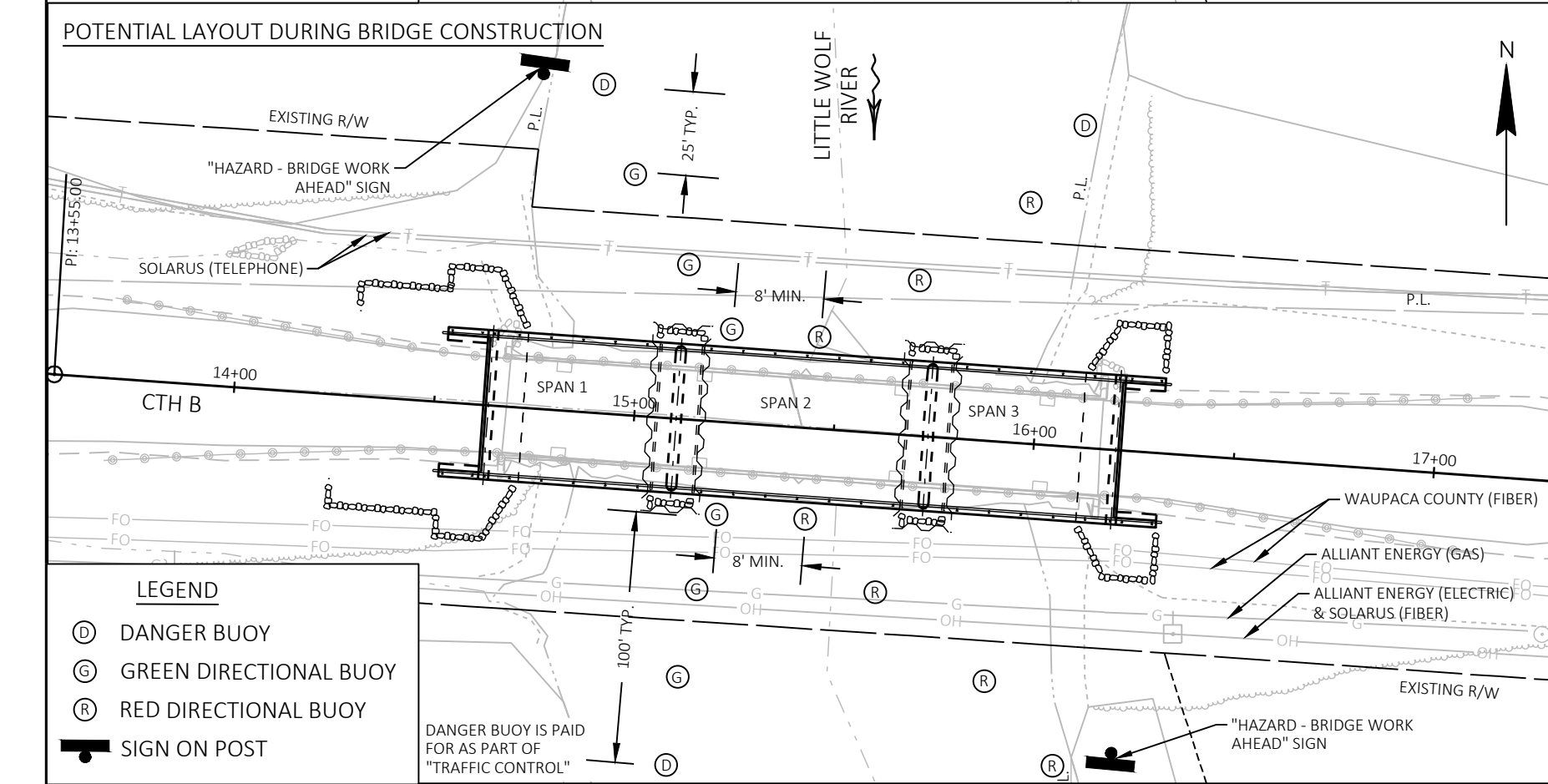
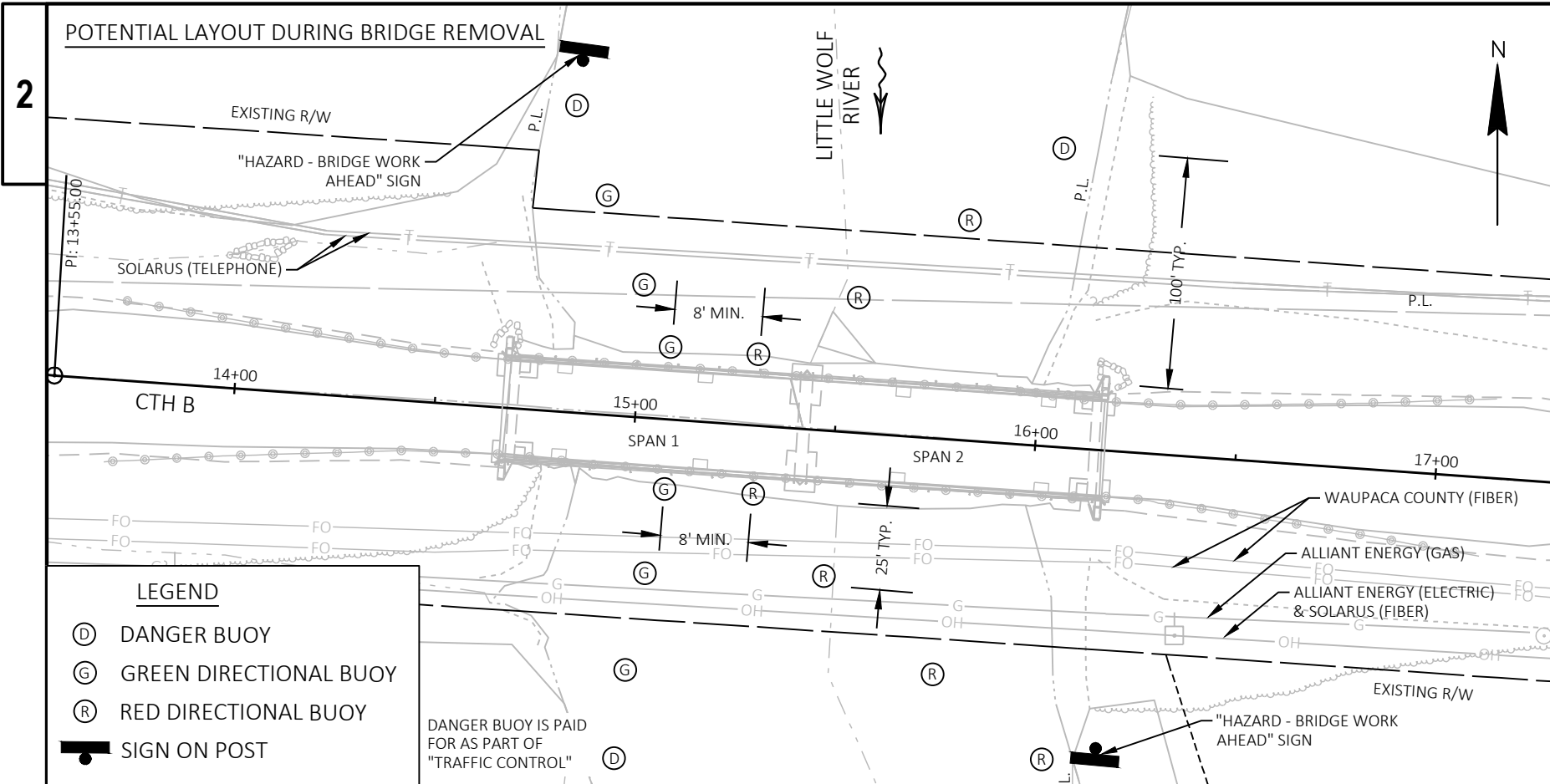




- (A) SEEDING MIXTURE NO. 20
AND FERTILIZER TYPE A.
- (B) SALVAGED TOPSOIL;
AND EROSION MAT URBAN CLASS I TYPE B



<div><div></div>WETLAND IMPACTS</div>		
IMPACT LOCATION STATION	IMPACT TYPE	AREA ACRES
STA 14+62.71 RT - STA 14+76.25 RT	RPE	0.002



MAINTAIN BOAT TRAFFIC AT ALL TIMES ON THE LITTLE WOLF RIVER THROUGH THE WORK ZONE. LITTLE WOLF RIVER CAN BE CLOSED TO BOAT TRAFFIC DURING SPECIFIC CONSTRUCTION TASKS OR WHEN APPROVED BY THE ENGINEER (SEE SPECIAL PROVISIONS).

MINIMIZE FULL CLOSURES WHEN POSSIBLE TO ACCOMMODATE BOAT TRAFFIC. DIRECT BOAT TRAFFIC WITH TRAFFIC CONTROL AWAY FROM CONSTRUCTION TO SPANS THAT ARE NOT BEING WORKED ON.

PLACE "RIVER CLOSED" SIGNS WHEN LITTLE WOLF RIVER IS CLOSED TO BOAT TRAFFIC. PLACE "HAZARD - BRIDGE WORK AHEAD" SIGNS UPSTREAM AND DOWNSTREAM OF THE BRIDGE (LOCATION TO BE DIRECTED BY THE ENGINEER).

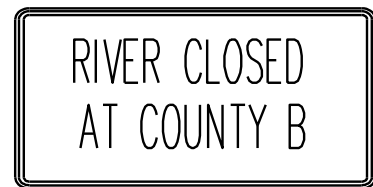
ACCESS LOCATION UNDER BRIDGE TO BE DETERMINED BY CONTRACTOR'S OPERATIONS AND AS DIRECTED BY THE ENGINEER.

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



36" X 18"

HAZARD SIGN DETAIL
NOT TO SCALE

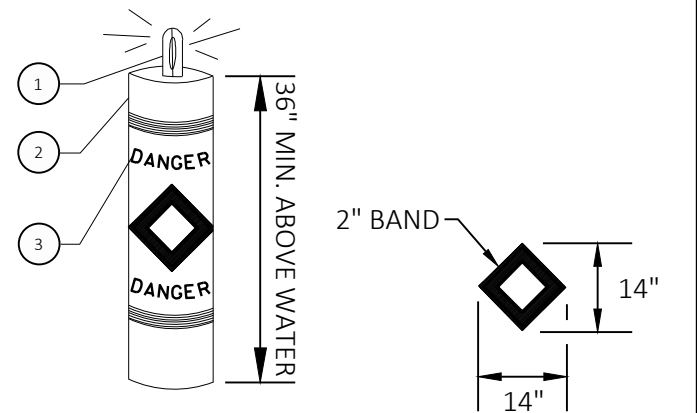


66" X 30"

RIVER CLOSED TRAFFIC
CONTROL SIGNS
FIXED MESSAGE

FOR USE WHEN LITTLE WOLF
RIVER CLOSED TO BOAT
TRAFFIC (SEE SPECIAL
PROVISIONS) NOT TO SCALE

- 1 FLASHING LIGHT REQ'D
- 2 WHITE BUOY WITH ORANGE MARKING
- 3 DANGER (BLACK LETTERS)(TYP.)



TYPICAL DANGER
BUOY DETAIL

PROJECT NO: 6832-06-72

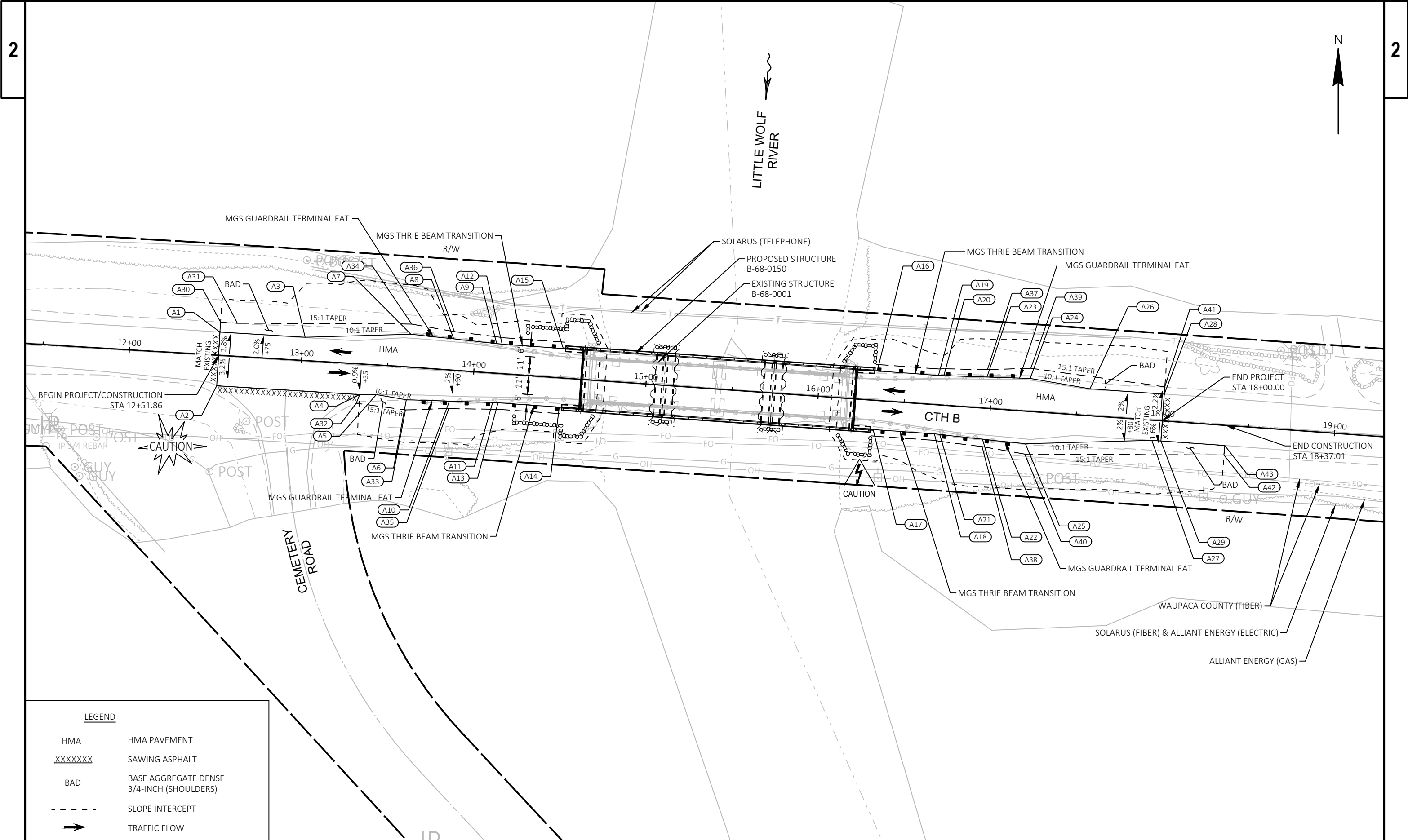
HWY: CTH B

COUNTY: WAUPACA

CONSTRUCTION DETAIL - BOAT TRAFFIC CONTROL

SHEET

E



LEGEND

HMA

HMA PAVEMENT

XXXXXXX

SAWING ASPHALT

BAD

BASE AGGREGATE DENSE
3/4-INCH (SHOULDERS)

- - - -

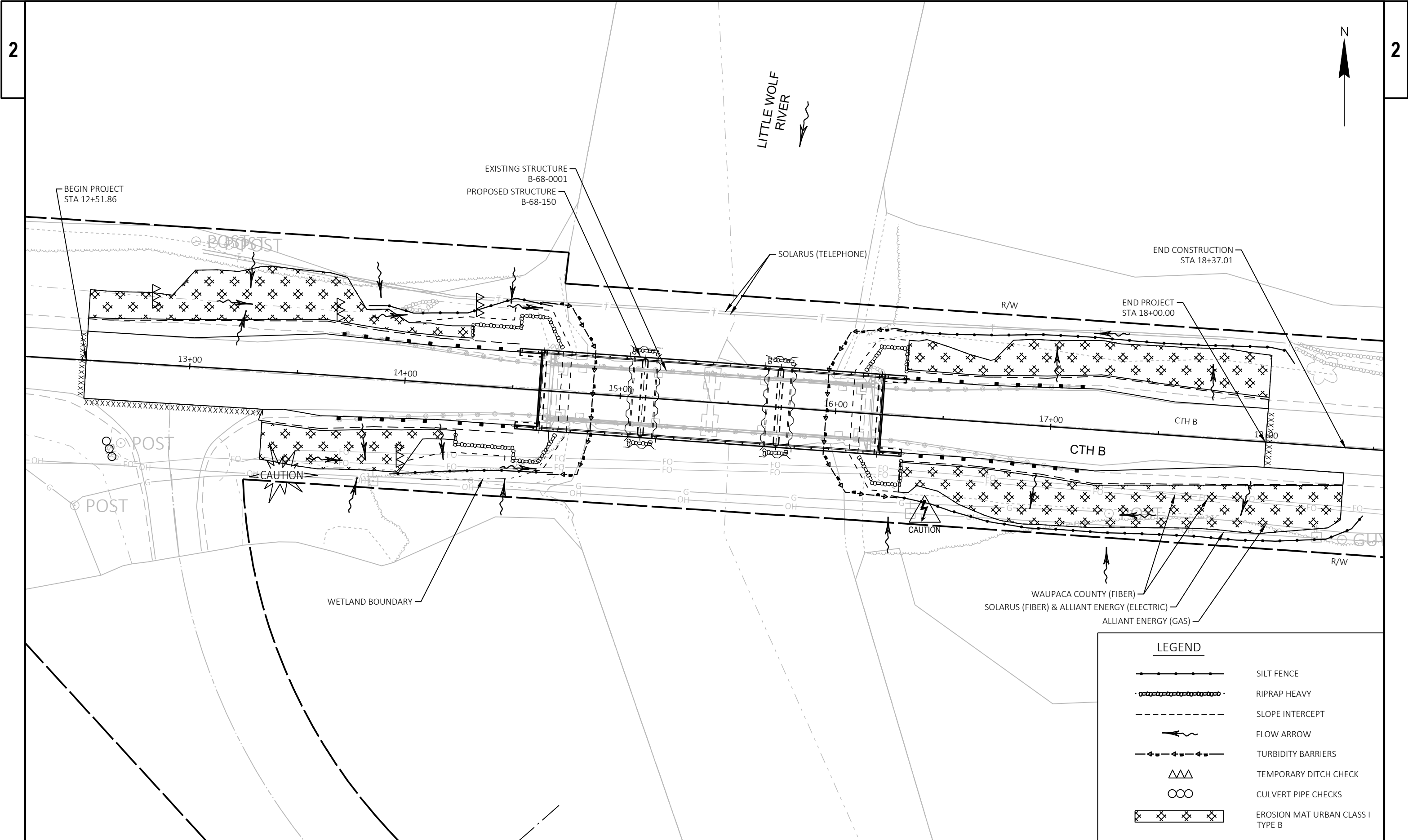
SLOPE INTERCEPT

➔

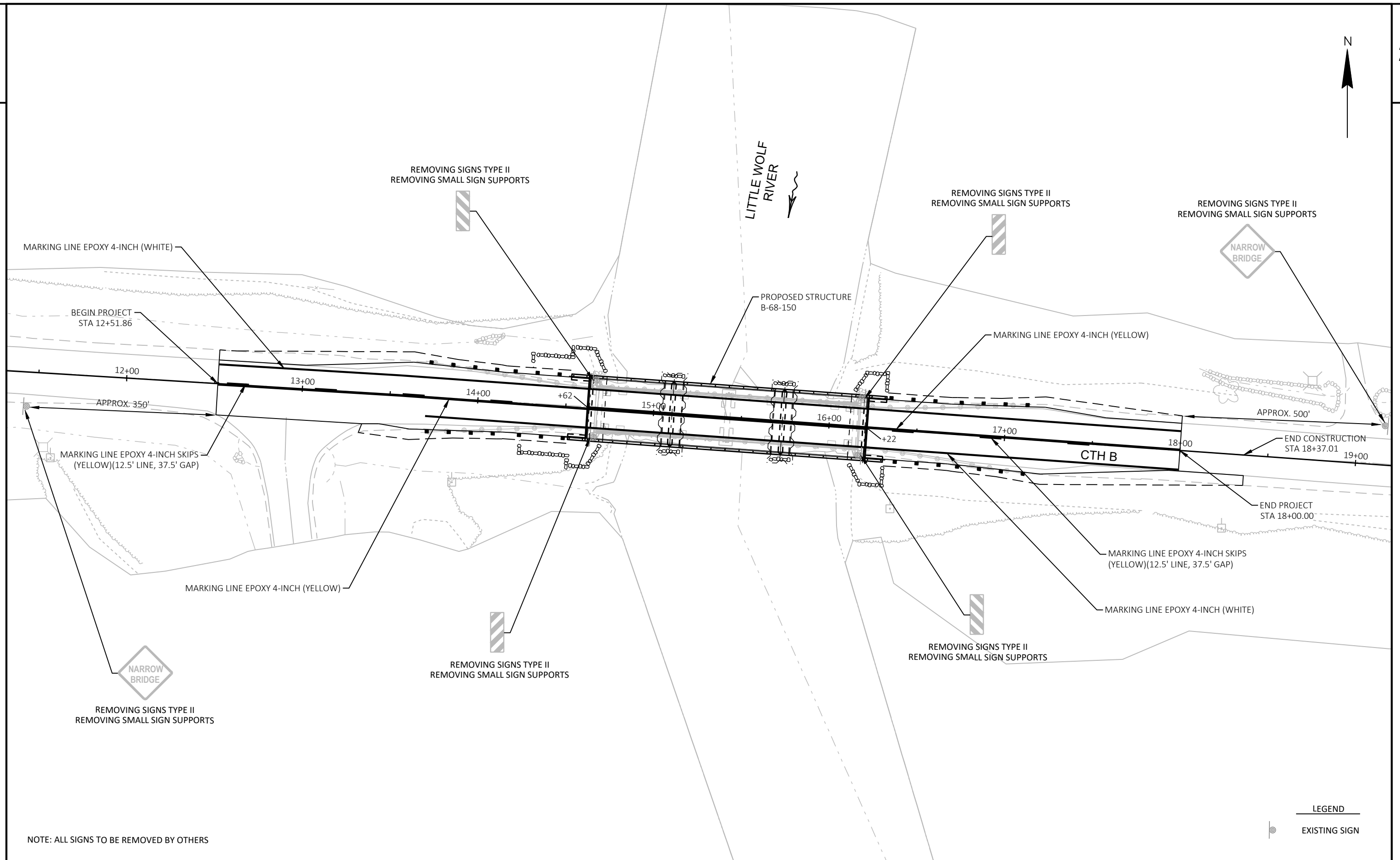
TRAFFIC FLOW

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



LEGEND	
	SILT FENCE
	RIPRAP HEAVY
	SLOPE INTERCEPT
	FLOW ARROW
	TURBIDITY BARRIERS
	TEMPORARY DITCH CHECK
	CULVERT PIPE CHECKS
	EROSION MAT URBAN CLASS I TYPE B



PROJECT NO: 6832-06-72	HWY: CTH B	COUNTY: WAUPACA	PERMANENT SIGNING AND MARKING	SHEET	E
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GENERAL NOTES

DETOUR ROUTE MARKER SIGNING TO BE INSTALLED AND MAINTAINED BY CONTRACTOR.

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

REMOVE OR COVER ANY SIGN, TEMPORARY OR EXISTING, WHICH CONFLICTS WITH TRAFFIC CONTROL "IN USE", OR AS APPROVED BY THE ENGINEER.

"WO" AND "W" SIGNS SHALL BE 48"x48" UNLESS OTHERWISE NOTED.

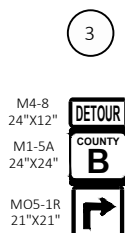
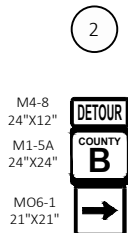
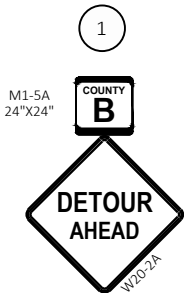
TRAFFIC CONTROL SIGNS PORTABLE CHANGEABLE MESSAGE TO BE INSTALLED ONE WEEK PRIOR TO IMPLEMENTATION OF DETOUR ROUTE

SEE S.D.D. "DETOUR SIGNING FOR MAINLINE CLOSURES", "BARRICADES AND SIGNS FOR MAINLINE CLOSURES". ALL M3 SERIES SIGNS (NORTH, SOUTH EAST, WEST) WHICH ARE PART OF ANY DETOUR ROUTE MARKER SIGNING ASSEMBLY OR ATTACHED TO ANY WARNING SIGN SHALL BE BLACK LETTERING ON A WHITE BACKGROUND.

ALL M05 AND M06 ARROW SIGNS SHALL BE THE SAME AS "M" SIGNS EXCEPT THAT THE BACKGROUND IS ORANGE.

LEGEND

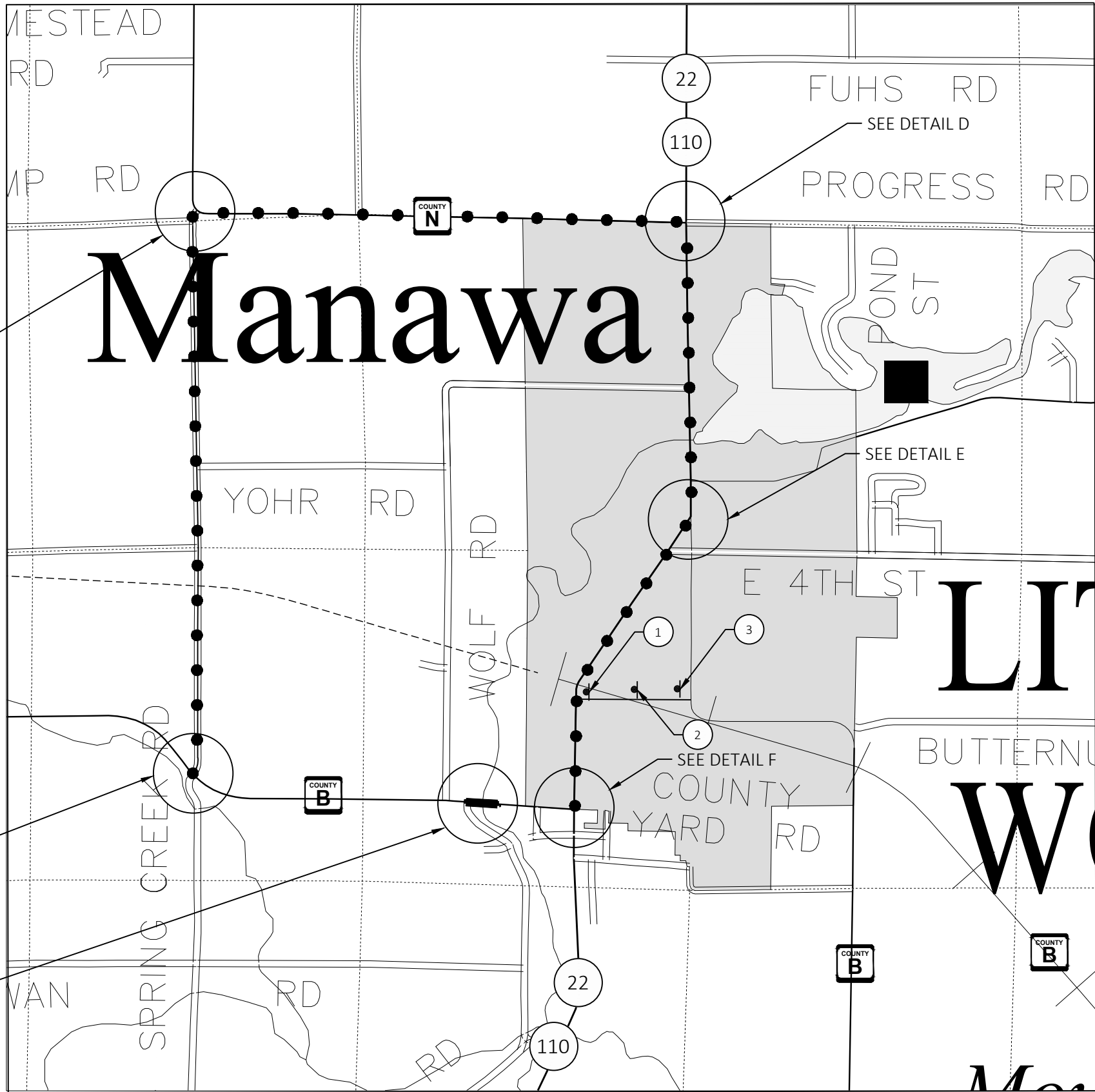
- ● ● ● DETOUR ROUTE
- ⏏ TRAFFIC CONTROL SIGNS
- ⏏ TRAFFIC CONTROL BARRICADES TYPE III WITH ATTACHED SIGN (TWO TYPE "A" WARNING LIGHTS)
- ▨ COVER EXISTING SIGN
- ⏏ EXISTING SIGNS MOUNTED ON POST(S)



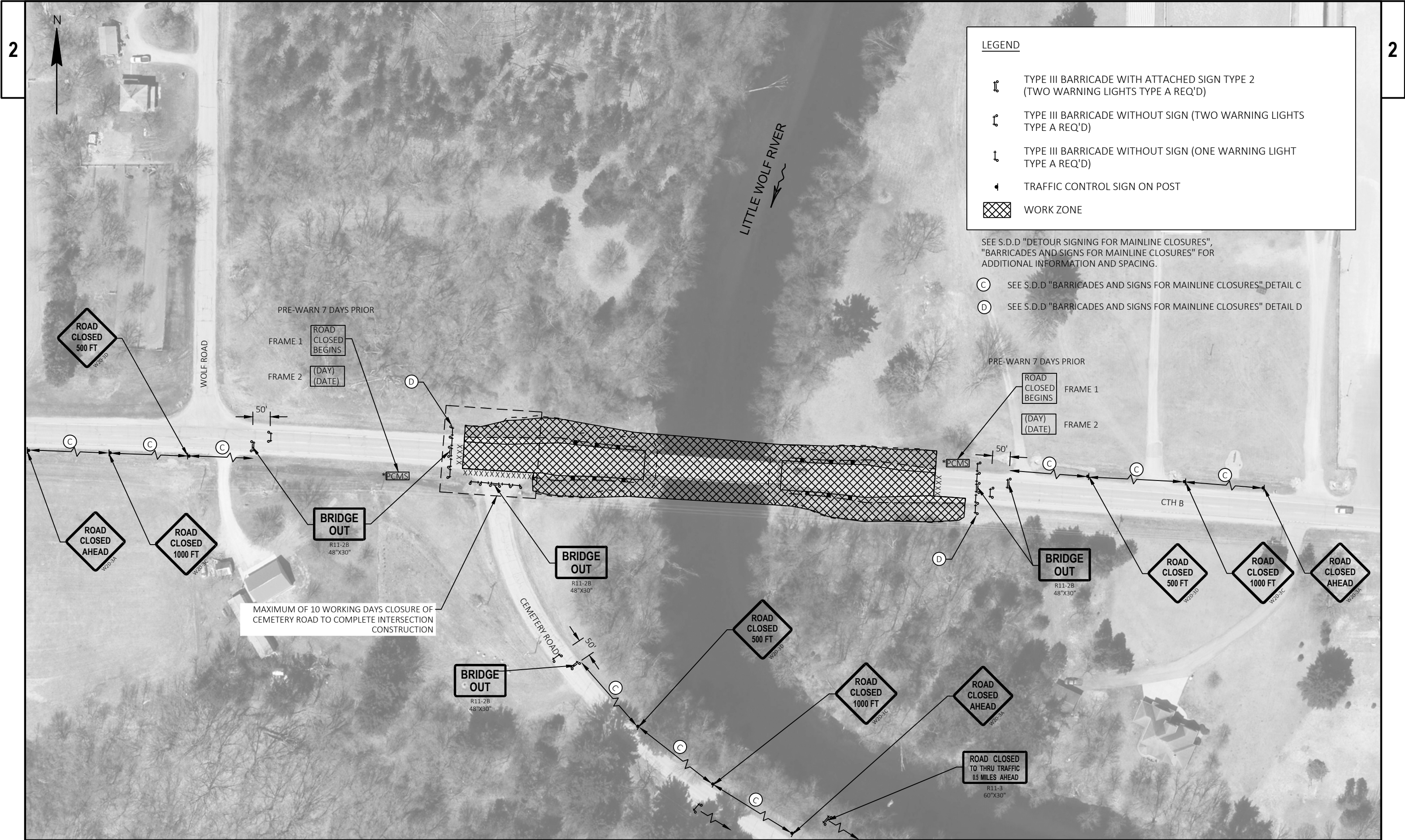
SEE DETAIL C

SEE DETAIL B

CTH B CLOSED AT PROJECT LOCATION (SEE DETAIL A)



SIGNED DETOUR ROUTE



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)

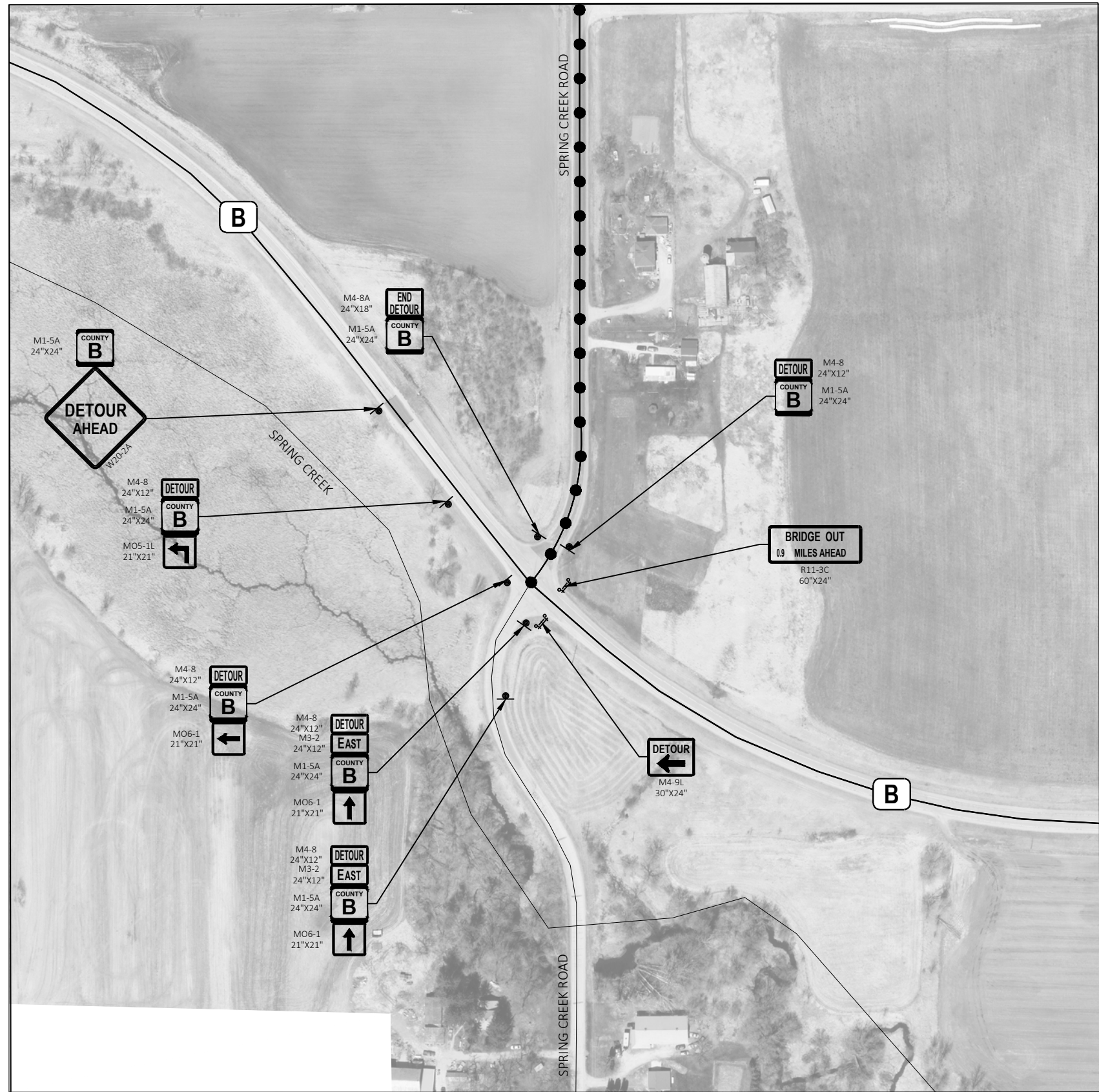
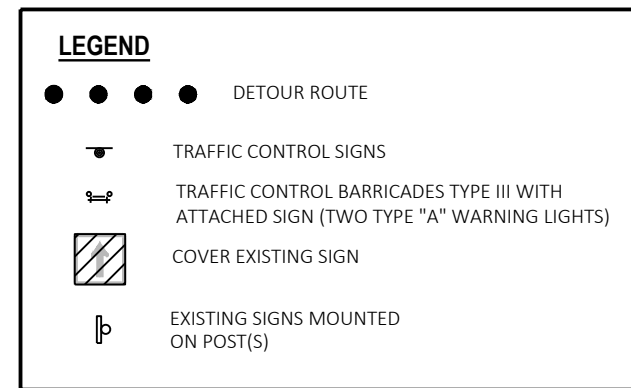
TRAFFIC CONTROL SIGN ON POST

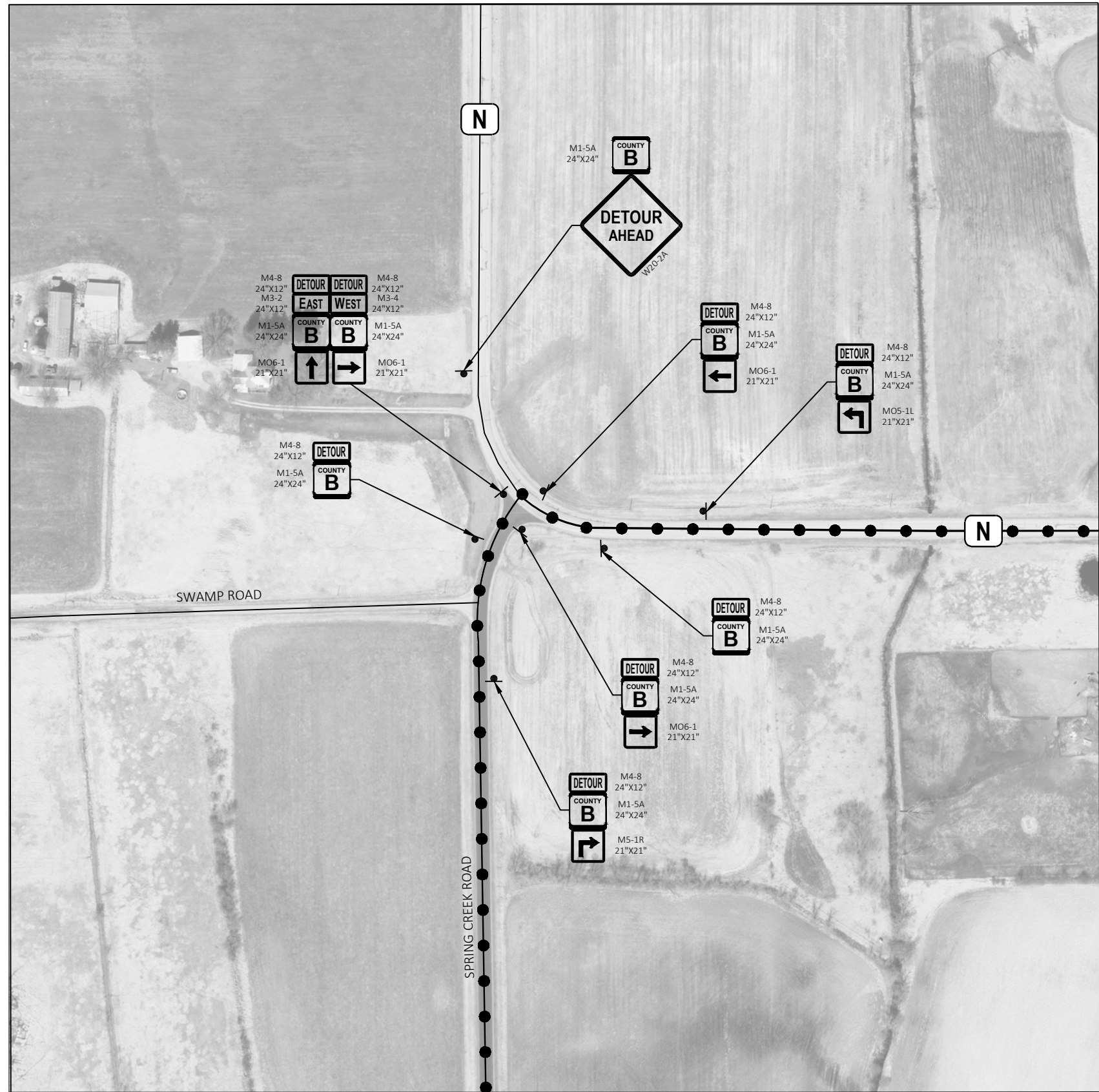
WORK ZONE

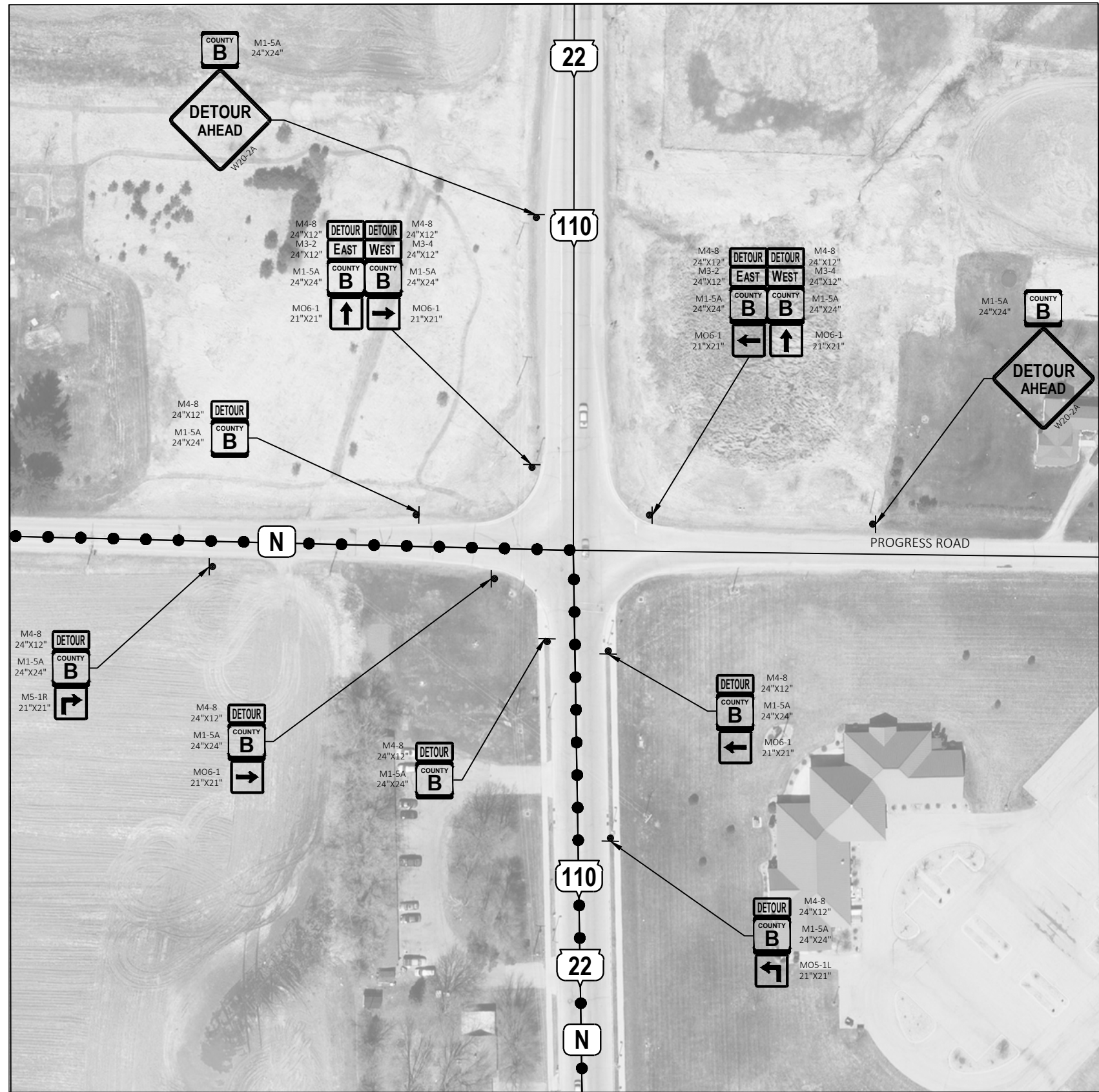
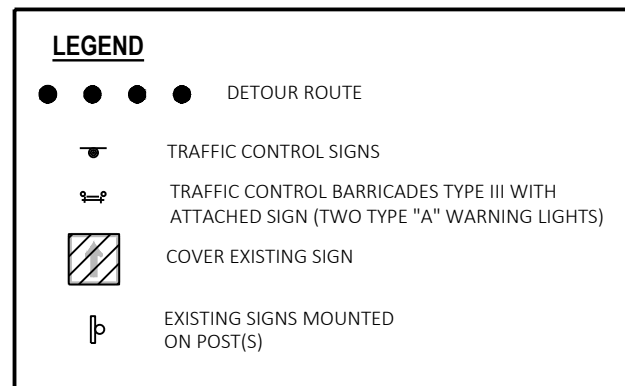
SEE S.D.D "DETOUR SIGNING FOR MAINLINE CLOSURES",
"BARRICADES AND SIGNS FOR MAINLINE CLOSURES" FOR
ADDITIONAL INFORMATION AND SPACING.

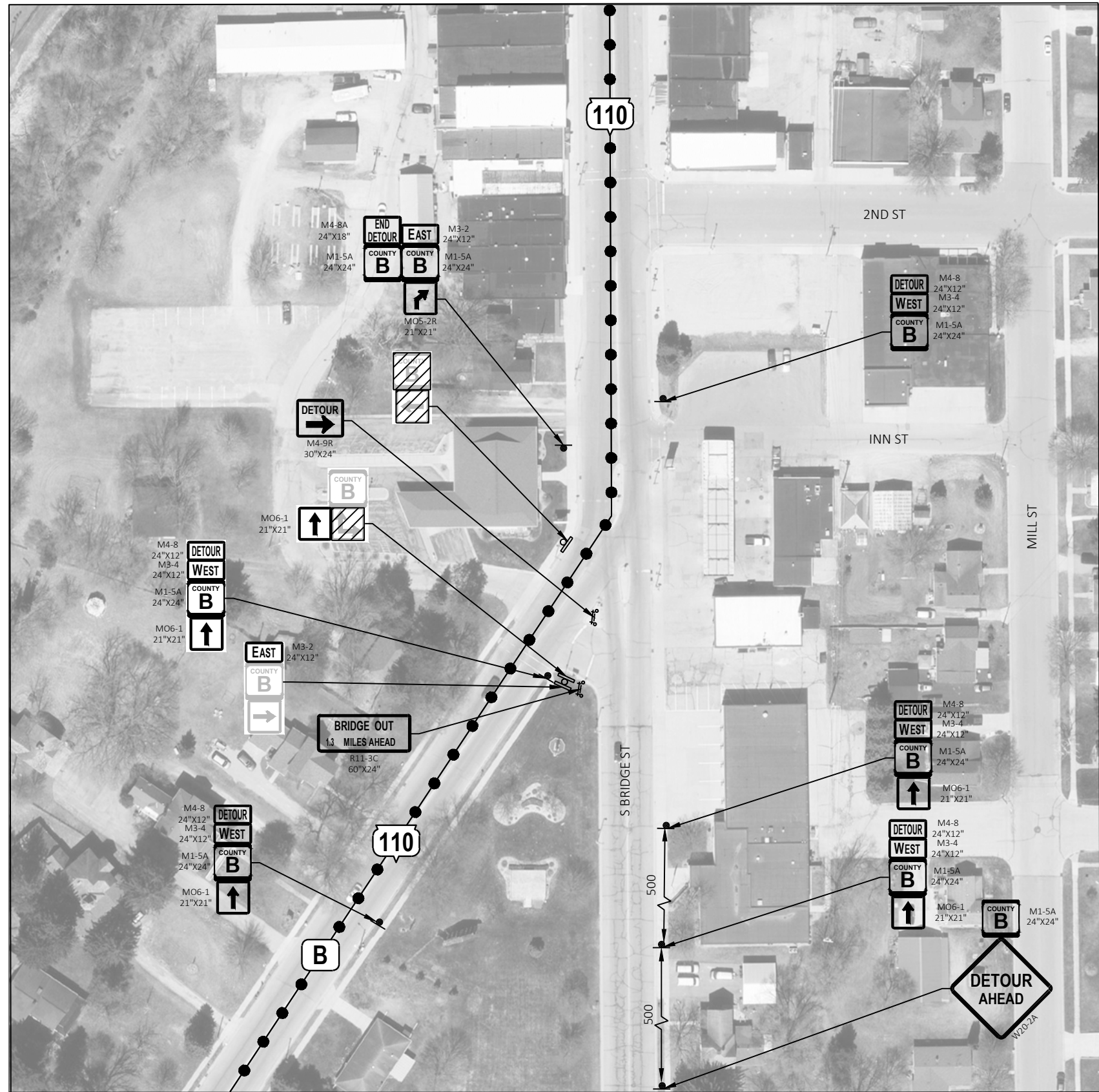
(C) SEE S.D.D "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" DETAIL C

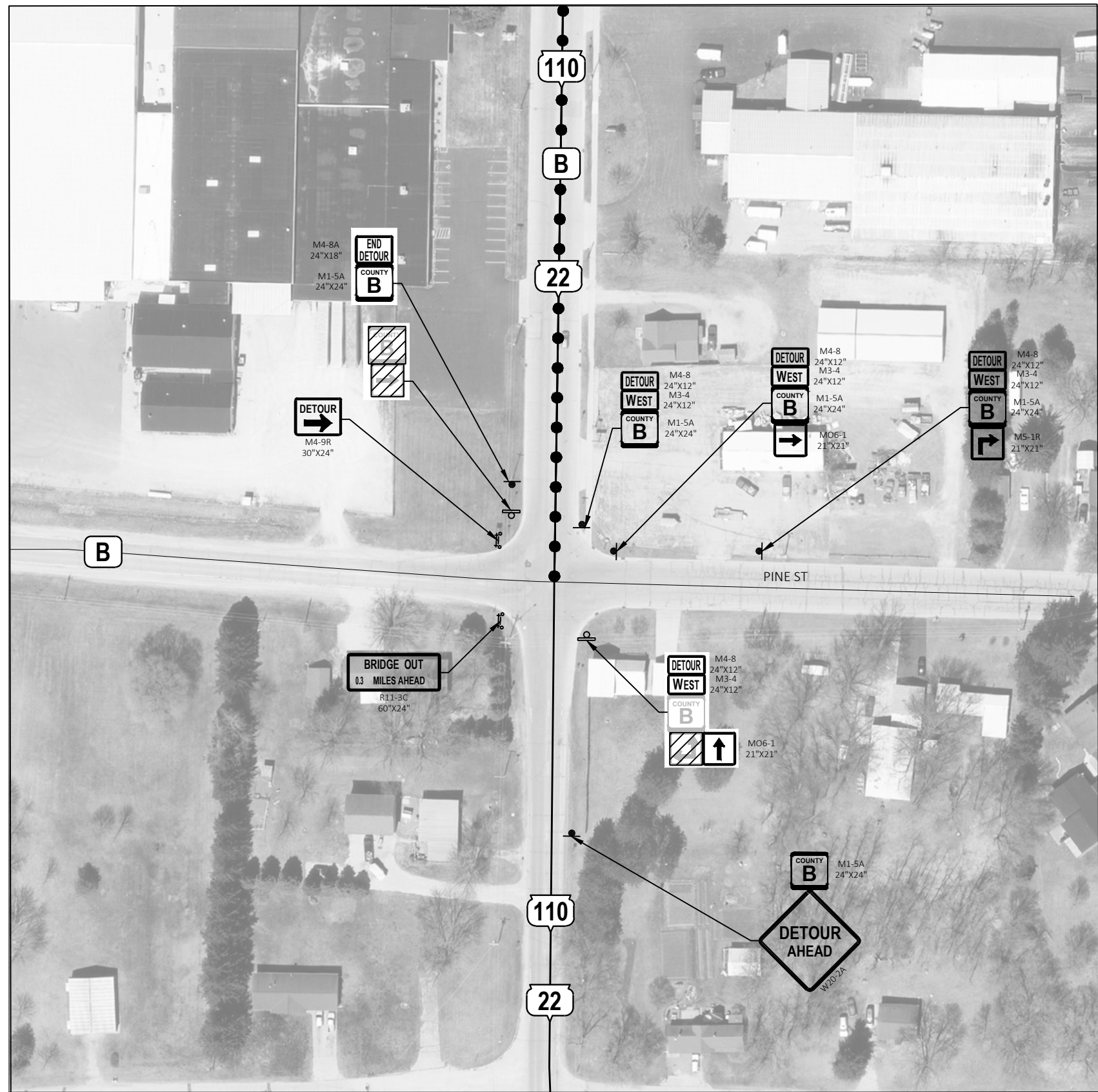
(D) SEE S.D.D "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" DETAIL D











Estimate Of Quantities

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			
CATEGORY	STATION - STATION	LOCATION	201.0205 GRUBBING STA
0010	13+00 - 14+00	LT/RT	1
	16+00 - 17+00	LT/RT	1
	17+00 - 18+00	LT/RT	1
	TOTAL		3

REMOVING GUARDRAIL			
CATEGORY	STATION - STATION	LOCATION	204.0165 LF
0010	13+69 - 14+79	LT	110
	13+69 - 14+90	RT	120
	15+95 - 17+14	LT	120
	16+05 - 17+12	RT	110
TOTAL			460

FINISHING ROADWAY		
CATEGORY	PROJECT	213.0100 EACH
0010	6832-06-72	1

BASE AGGREGATE SUMMARY				
CATEGORY	STATION - STATION	LOCATION	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON
0010	12+51 - 14+62	LT/RT	60	720
	16+22 - 18+37	LT/RT	60	670
TOTALS			120	1,390

CATEGORY	DIVISION	FROM/TO STATION	LOCATION	205.0100 EXCAVATION COMMON (1)		SALVAGED/UNUSABLE PAVEMENT MATERIAL	AVAILABLE MATERIAL (5)	UNEXPANDED FILL	EXPANDED FILL (6)	MASS ORDINATE +/- (7)	WASTE (8)	312.0110 SELECT CRUSHED MATERIAL	*624.0100 WATER (FOR DUST CONTROL)
				CUT (2)	EBS EXCAVATION (3)(4)				FACTOR 1.25				
	DIVISION 1												
0010	CTH B	12+51.86/18+00.00	LT/RT	894	45	0	894	392	490	404	449	79	1.8
	DIVISION 1 SUBTOTAL			894	45	0	894	392	490	404	449	79	1.8
	GRAND TOTAL			894	45	0	894	392	490	404	449	79	1.8
	TOTAL COMMON EXC			939									

NOTES:
(1) COMMON EXCAVATION IS THE SUM OF THE CUT AND EBS EXCAVATION COLUMNS. ITEM NUMBER 205.0100
(2) SALVAGED/UNSUABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
(3) EBS EXCAVATION TO BE BACKFILLED WITH SELECT CRUSHED MATERIAL ITEM NUMBER 312.0110
(4) EBS CALCULATED AS 5 PERCENT OF CUT.
(5) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSUABLE PAVEMENT MATERIAL
(6) EXPANDED FILL = (UNEXPANDED FILL)*EXPANDED FILL FACTOR. EXPANDED FILL FACTOR=1.25
(7) MASS ORDINATE: MASS ORDINATE=CUT-EXPANDED FILL
(8) WASTE = MASS ORDINATE + EBS EXCAVATION

*ADDITIONAL QUANTITY LISTED ELSEWHERE

WATER			
CATEGORY	STATION - STATION	*624.0100 MGAL	REMARKS
0010	12+52 - 18+37	5 23	DUST CONTROL COMPACTION
	TOTAL	28	
*ADDITIONAL QUANTITY LISTED ELSEWHERE			

ASPHALTIC ITEMS				
CATEGORY	STATION - STATION	460.6223 HMA PAVEMENT 3 MT 58-28 S TON	460.6224 HMA PAVEMENT 4 MT 58-28 S TON	455.0605 TACK COAT GAL
0010	12+51 - 14+62	135	89	40
	16+22 - 18+37	110	74	33
TOTALS		245	163	73

NOTE: HMA PAVEMENT WEIGHT CALCULATIONS BASED ON 112 LB/SY/IN. TACK COAT APPLICATION RATE IS 0.05 GAL/SY.

MAINTENANCE AND REPAIR OF HAUL ROADS		
CATEGORY	PROJECT	618.0100 EACH
0030	6832-06-72	1

GUARDRAIL SUMMARY					
CATEGORY	STATION - STATION	LOCATION	614.2610 MGS GUARDRAIL TERMINAL EAT EACH	614.2500 MGS THRIE BEAM TRANSITION LF	
0010	13+62 - 14+55	RT	1	39.4	
	13+62 - 14+55	LT	1	39.4	
	16+29 - 17+22	RT	1	39.4	
	16+29 - 17+22	LT	1	39.4	
TOTALS			4	157.6	

MOBILIZATION		
CATEGORY	PROJECT	619.1000 EACH
0010	6832-06-72	1

MOBILIZATIONS EROSION CONTROL			
CATEGORY	PROJECT	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH
0010	6832-06-72	5	3

TRACKING PADS		
CATEGORY	LOCATION	628.7560 EACH
0010	UNDISTRIBUTED	2

EROSION CONTROL							
CATEGORY	STATION - STATION	LOCATION	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.6005 TURBIDITY BARRIERS SY	628.7504 TEMPORARY DITCH CHECKS LF	628.7555 CULVERT PIPE CHECKS EACH
0010	12+51 - 14+62	LT/RT	160	245	140	48	3
	16+22 - 18+37	LT/RT	410	620	165	---	---
		WASTE SITE	200	300	---	---	---
		UNDISTRIBUTED	190	290	76	12	---
TOTALS			960	1,455	381	60	3

FINISHING ITEMS									
CATEGORY	STATION - STATION	LOCATION	625.0500	627.0200	628.2008	629.0205	630.0120	630.0300	630.0500
			SALVAGED TOPSOIL SY	MULCHING SY	EROSION MAT 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 16+22 - 18+37	LT/RT	355	---	460	0.4	27	---	14
		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

FIELD OFFICE TYPE B		
CATEGORY	PROJECT	642.5001 EACH
0010	6832-06-72	1

CONSTRUCTION STAKING STRUCTURE LAYOUT (STRUCTURE)		
CATEGORY	STRUCURE	650.6501 EACH
0020	B-68-0150	1

CONSTRUCTION STAKING					
			650.4500	650.5000	650.9920
CATEGORY	STATION - STATION	LOCATION	SUBGRADE LF	BASE LF	SLOPE STAKES LF
0010	12+51 - 14+62	LT/RT	210	210	210
	16+22 - 18+37	LT/RT	215	215	215
	TOTALS		425	425	425

CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT)		
CATEGORY	PROJECT	650.9911 EACH
0010	6832-06-72	1

TRAFFIC CONTROL		
CATEGORY	PROJECT	643.5000 EACH
0010	6832-06-72	1

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

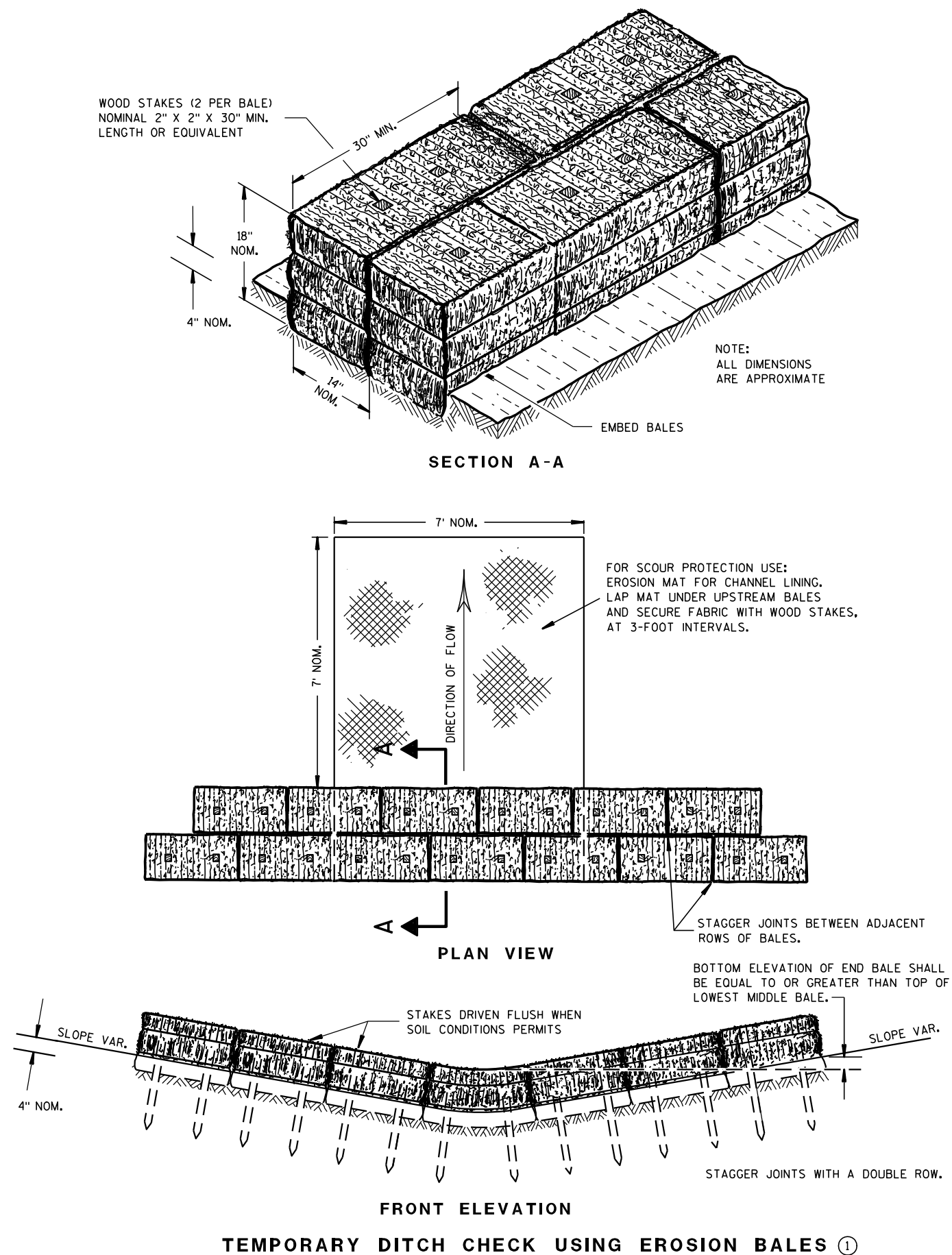
MARKING LINE ITEMS					
CATEGORY	STATION - STATION	LOCATION	646.1020 MARKING LINE EPOXY 4-INCH (12.5' SEG., 37.5' GAP) (WHITE) LF		
			(WHITE) LF	(YELLOW) LF	(YELLOW) LF
0010	12+51 - 18+00	LT/RT	980	96	705
		TOTAL	1,781		

SAWING		
CATEGORY	STATION	690.0150 ASPHALT LF
0010	12+51	32
	12+52 - 13+35	83
	18+00	27
TOTAL		142

MAINTAINING BIRD DETERRENT SYSTEM		
CATEGORY	STATION	999.2005.S.01 EACH
0010	15+42	1

Standard Detail Drawing List

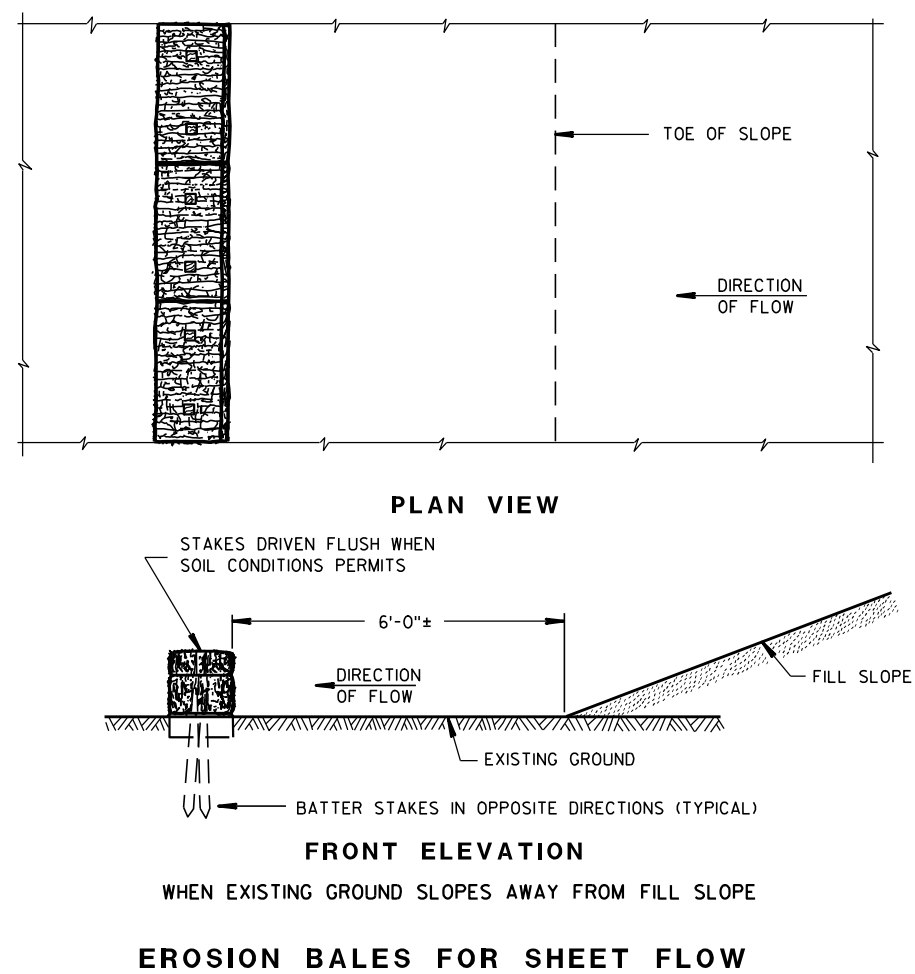
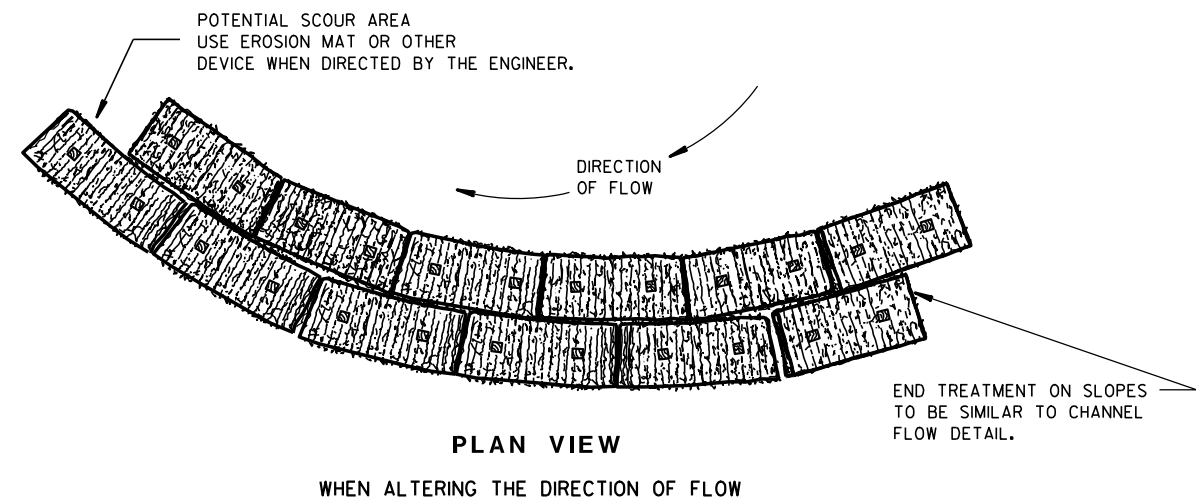
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
08E14-01	TRACKING PAD
08E15-01	CULVERT PIPE CHECK
12A03-10	NAME PLATE (STRUCTURES)
13C19-03	HMA LONGITUDINAL JOINTS
14B42-07A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-09A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-09B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C02-09C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C03-05	BARRICADES AND SIGNS FOR SIDEROAD CLOSURES
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M. P. H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C08-24A	PERMANENT LONGITUDINAL PAVEMENT MARKINGS



GENERAL NOTES

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

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



TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

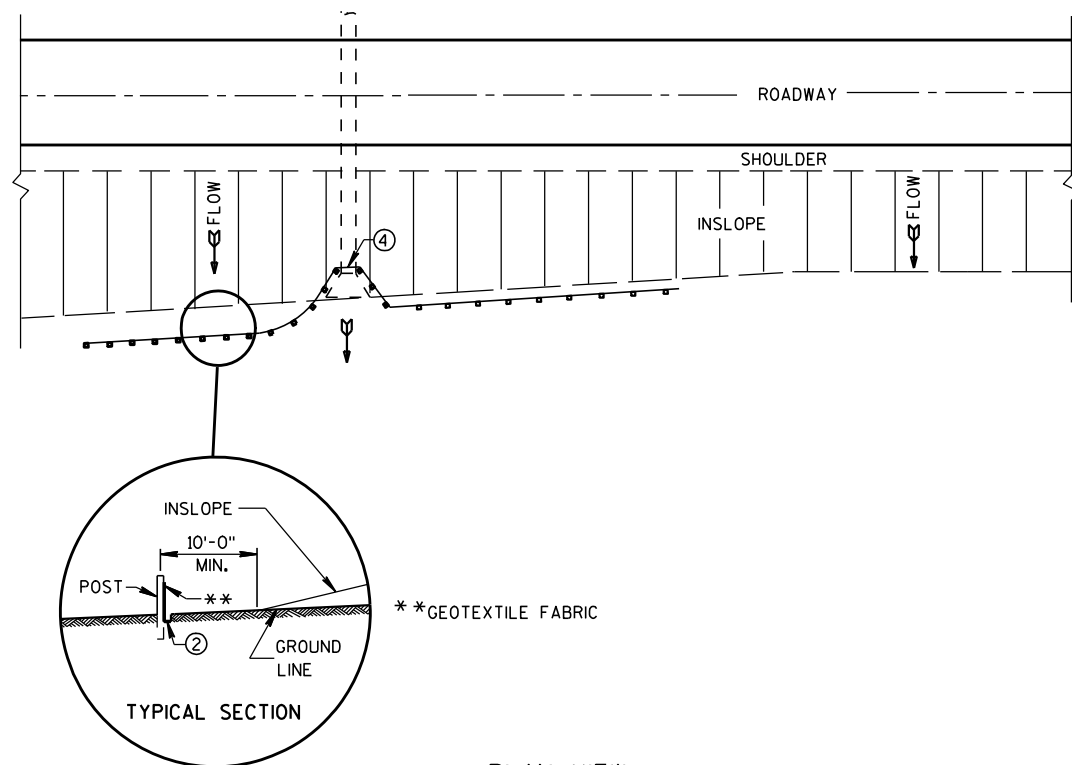
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

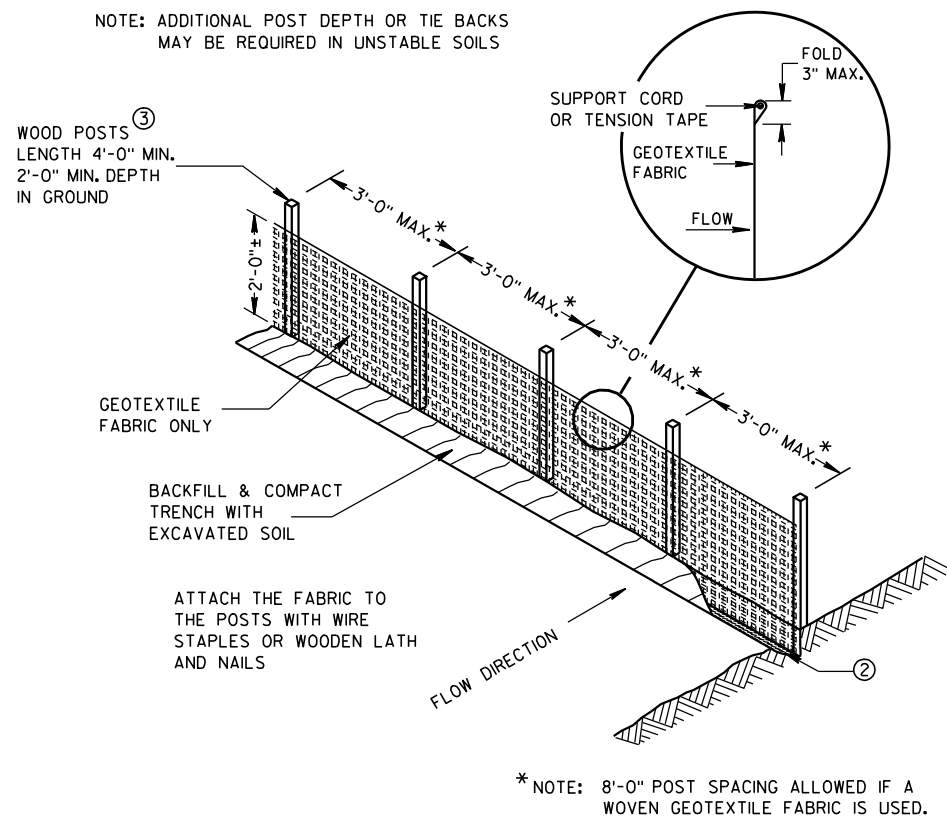
6/04/02
DATE

/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER

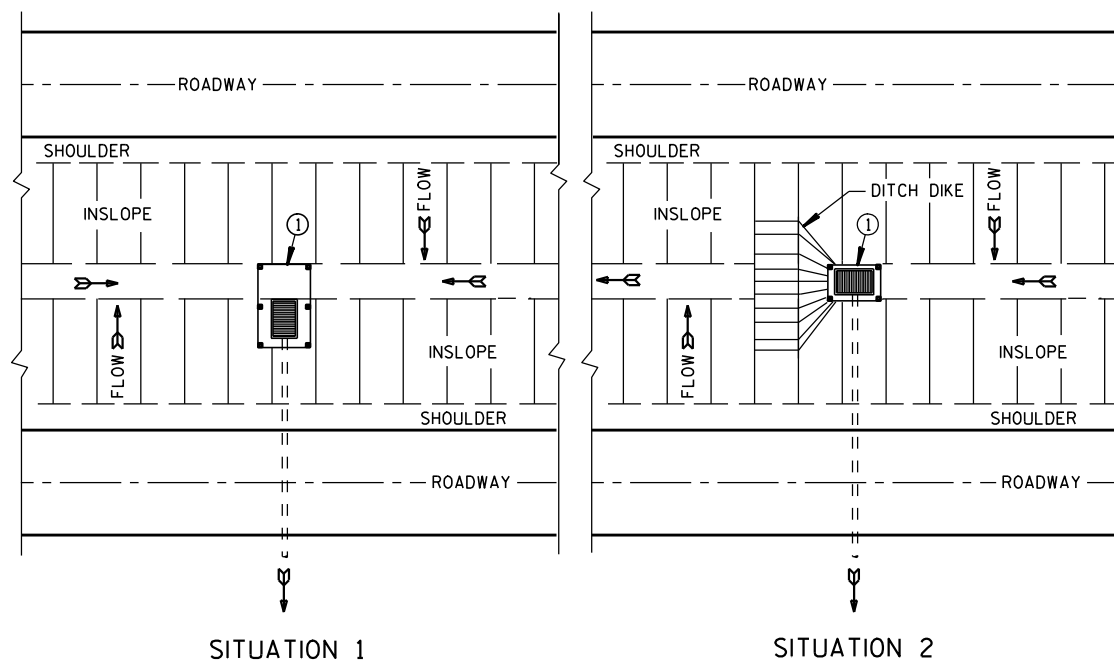
FHWA



TYPICAL APPLICATION OF SILT FENCE

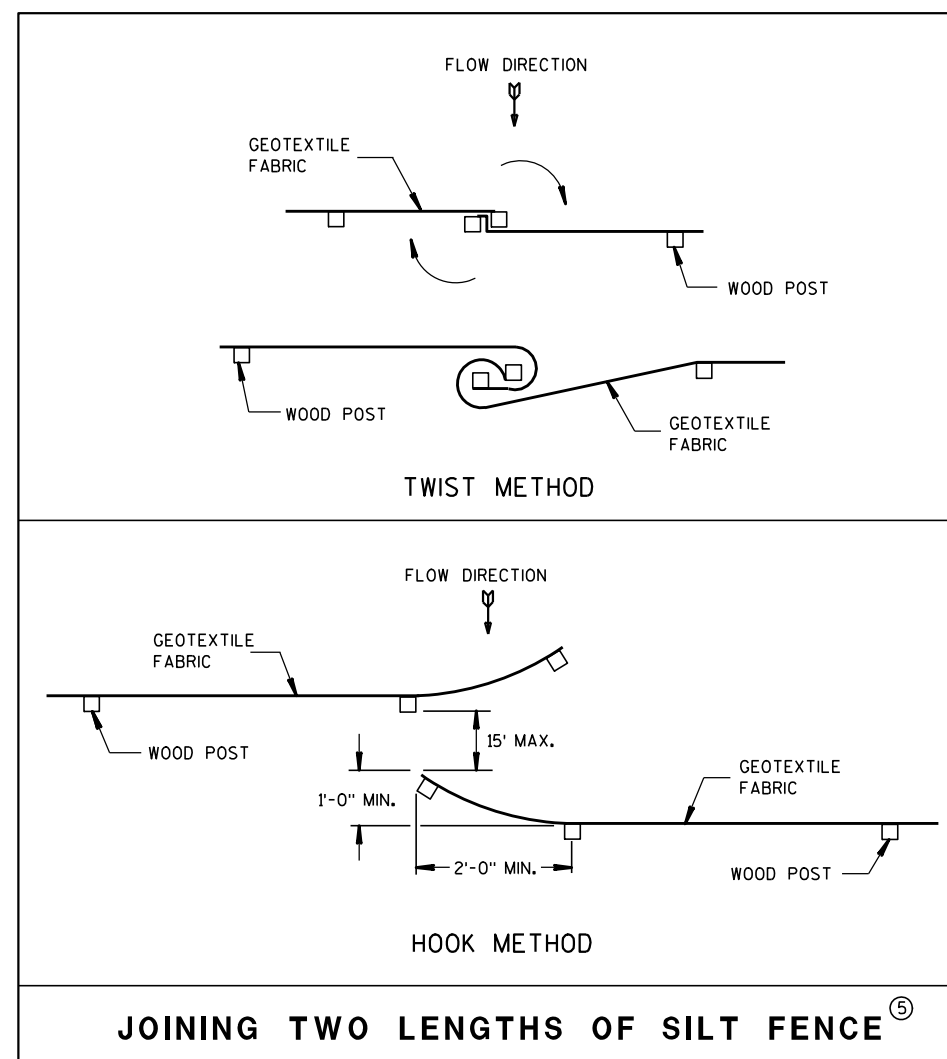


SILT FENCE



PLAN VIEW

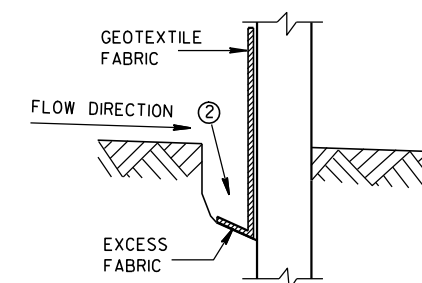
SILT FENCE AT MEDIAN SURFACE DRAINS



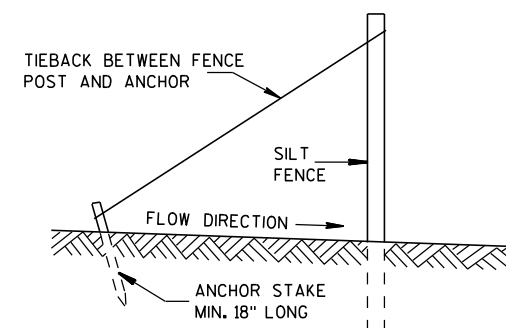
GENERAL NOTES

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

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



TRENCH DETAIL



SILT FENCE TIE BACK (WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

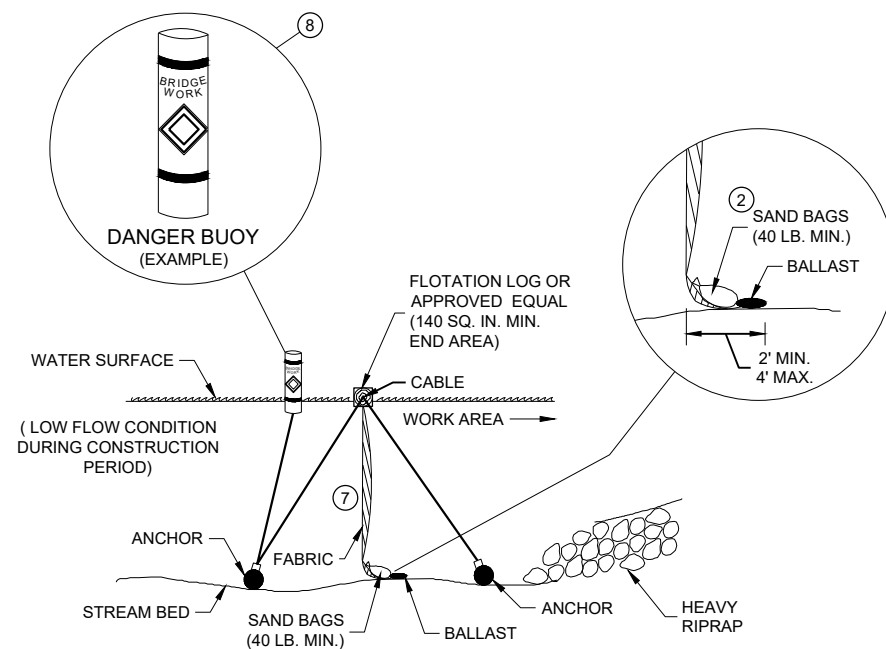
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

4-29-05
DATE

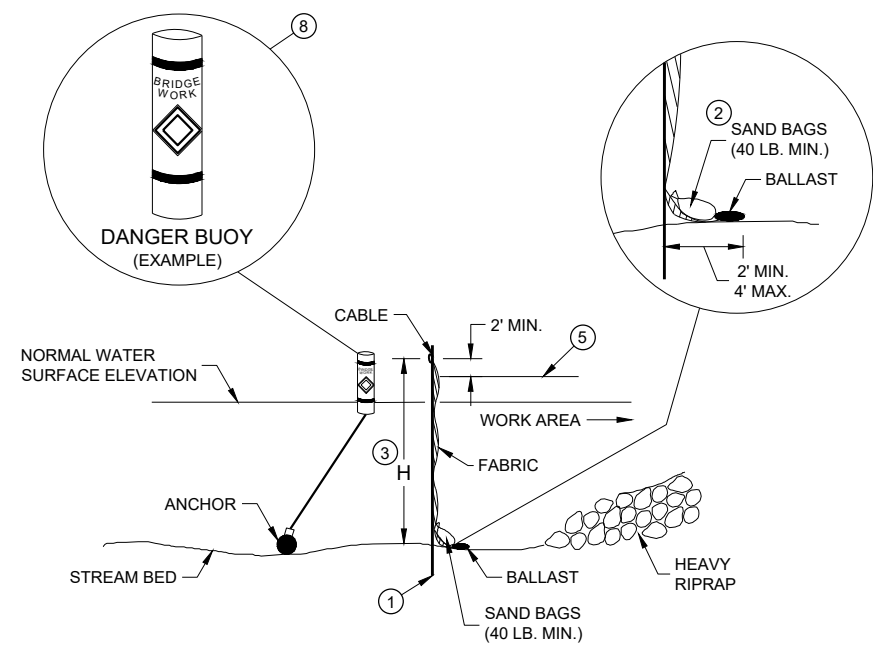
FHWA

/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER



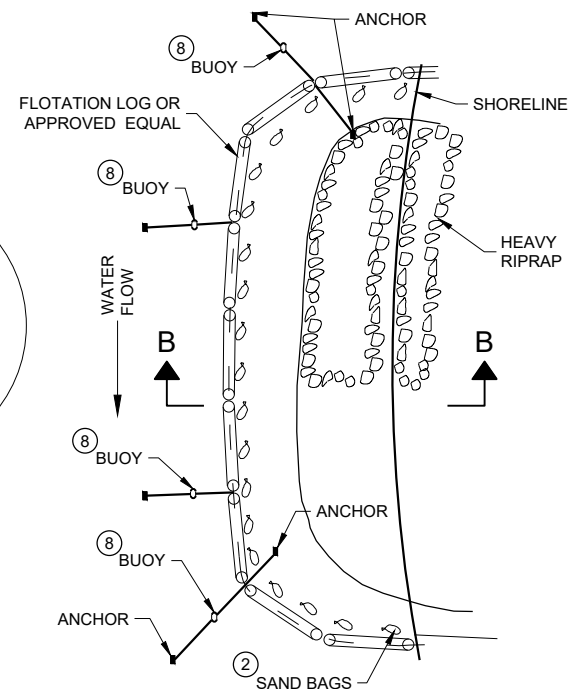
SECTION B - B

TURBIDITY BARRIER - FLOAT ALTERNATIVE CAUTION - SEE NOTE 6

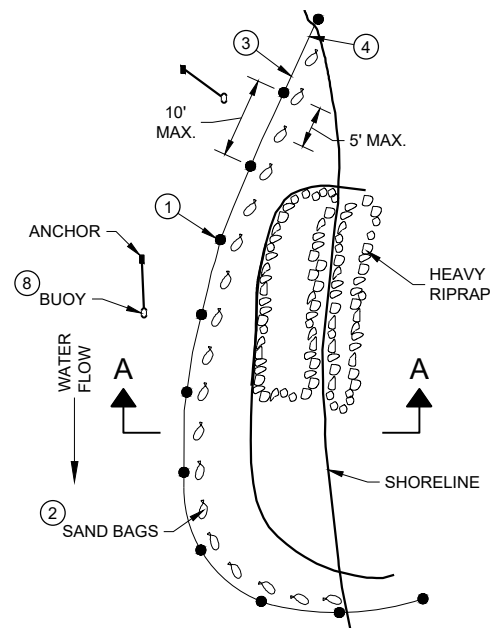


SECTION A - A

TURBIDITY BARRIER - STANDARD POST INSTALLATION



PLAN VIEW



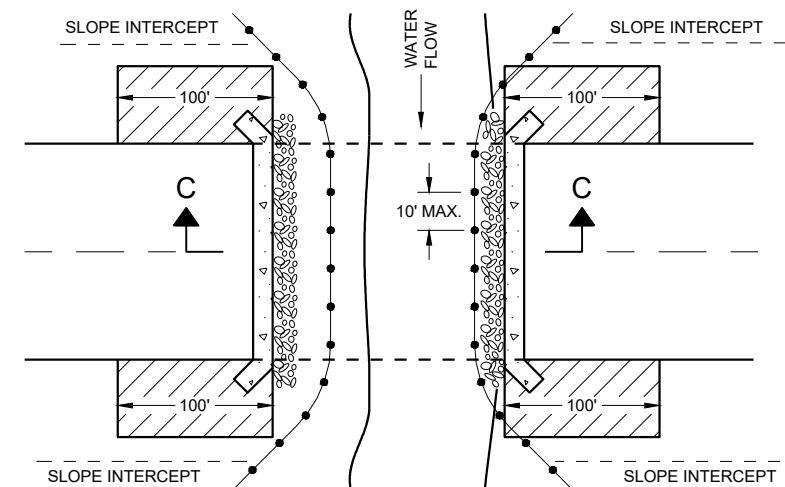
PLAN VIEW

GENERAL NOTES

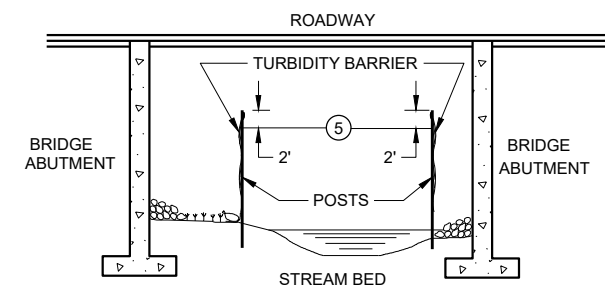
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

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



PLAN VIEW



SECTION C - C

TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

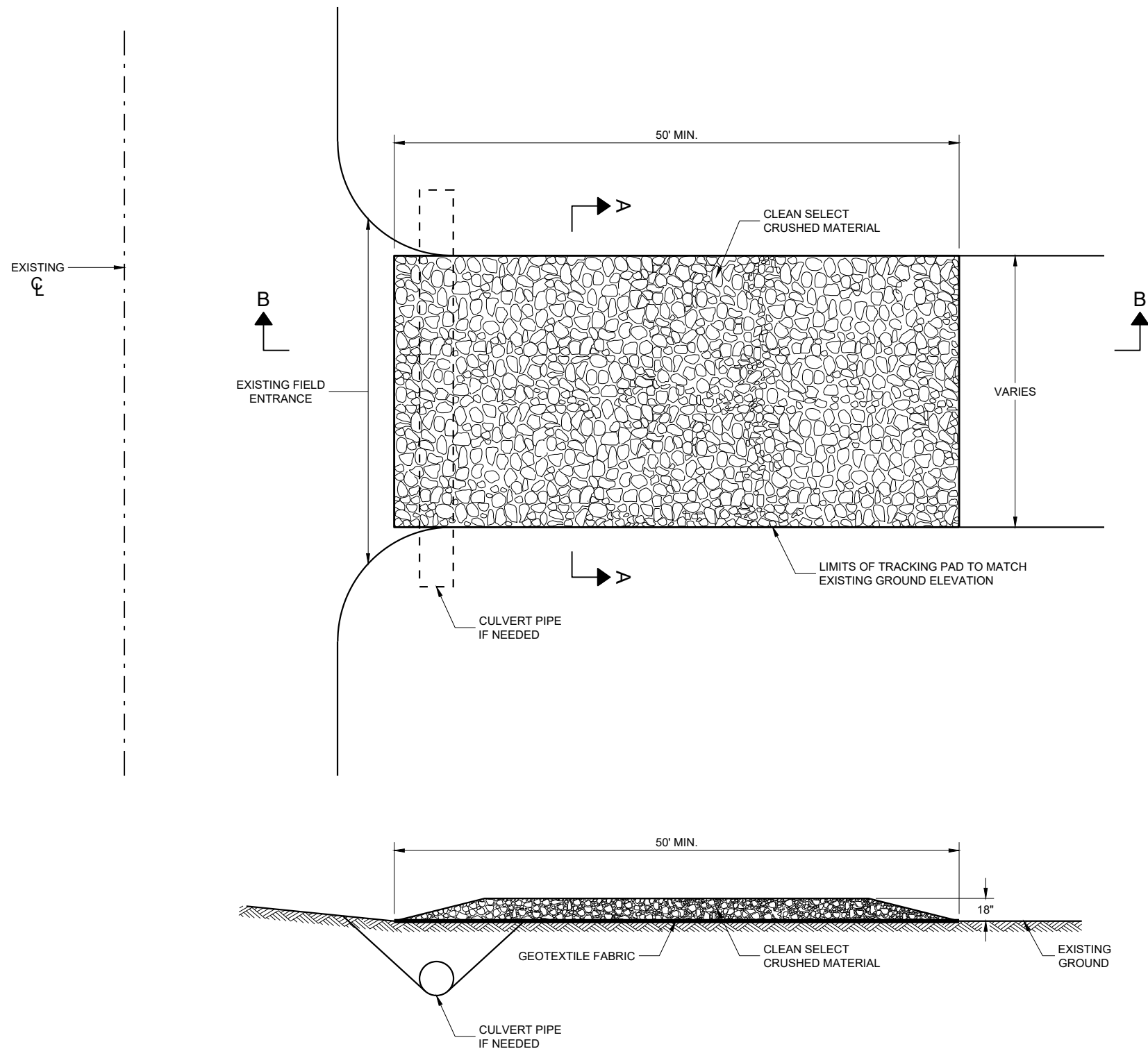
APPROVED

6/4/02

DATE

FHWA

/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT
ENGINEER



SECTION B - B

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.

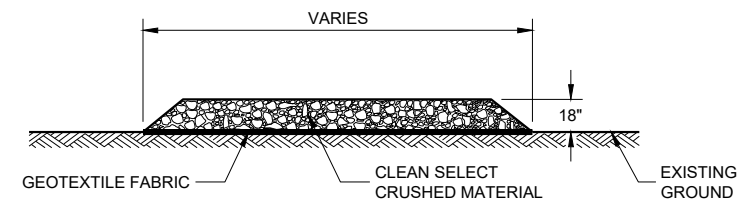
TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

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.



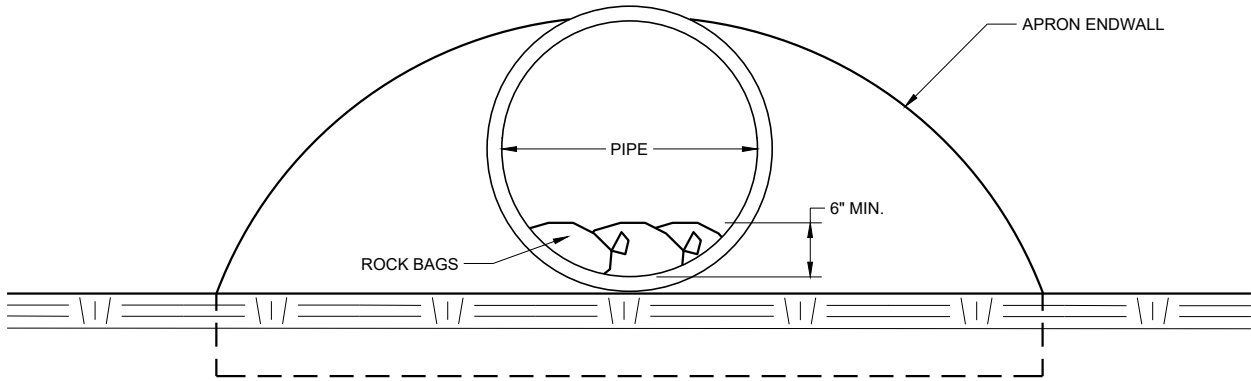
SECTION A - A

TRACKING PAD

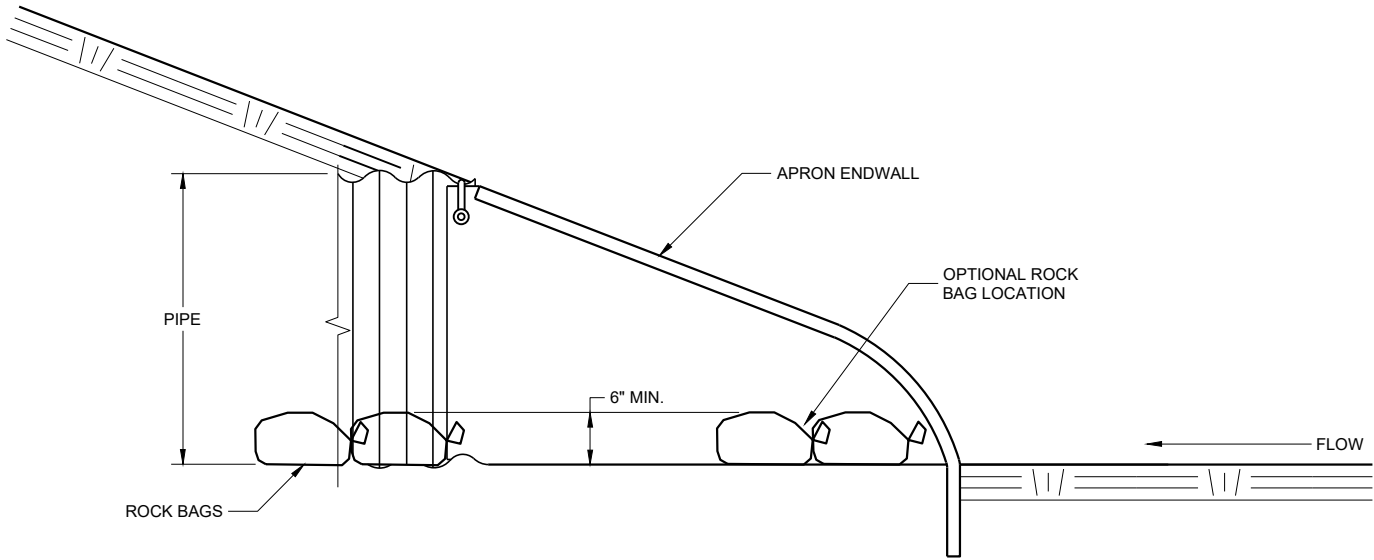
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA



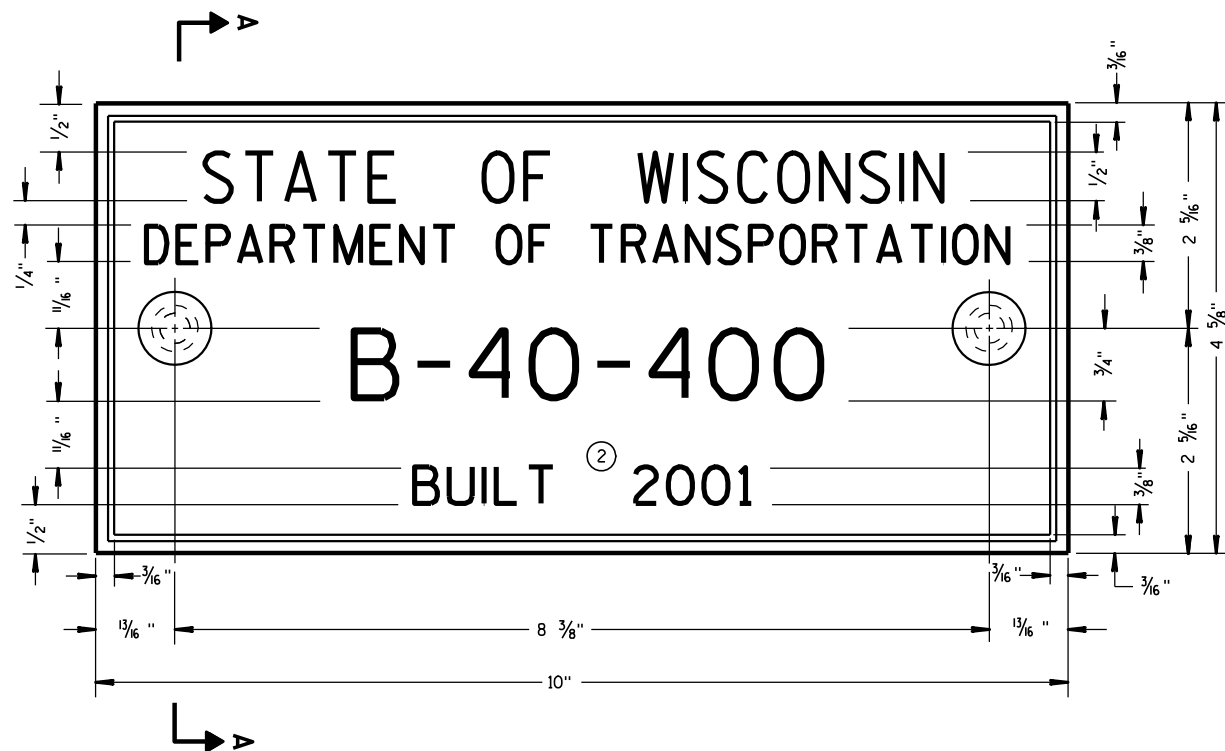
END VIEW



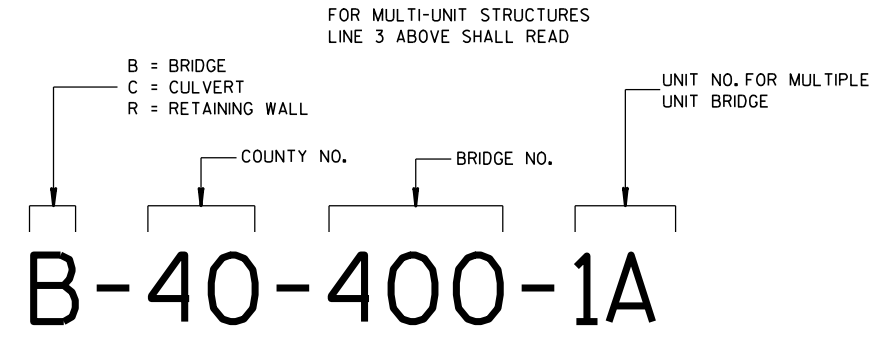
SIDE VIEW

CULVERT PIPE CHECK
(INSTALL ON INLET END ONLY)

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



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



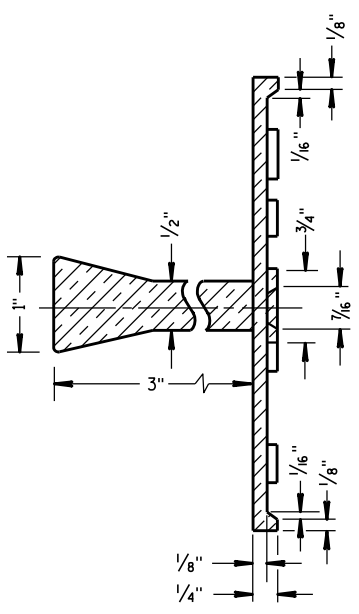
**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

GENERAL NOTES

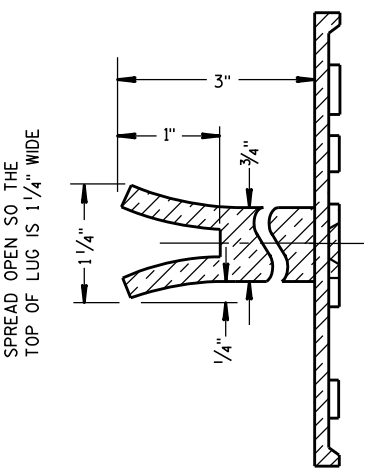
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

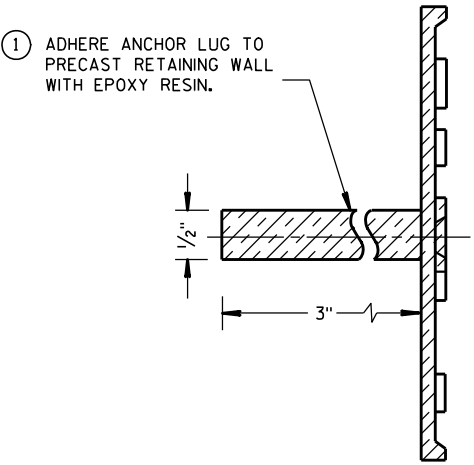
- ① EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ② REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A

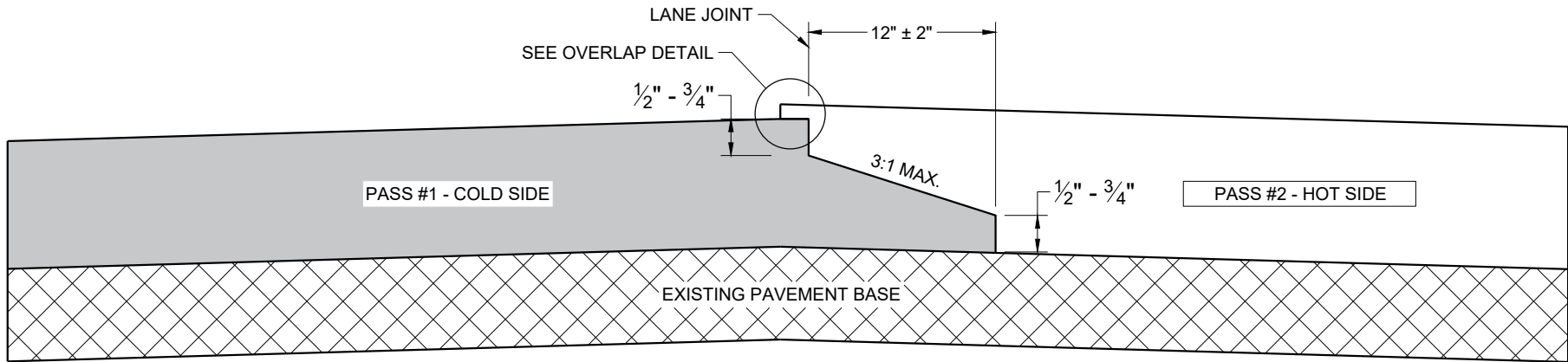


ALTERNATE LUG

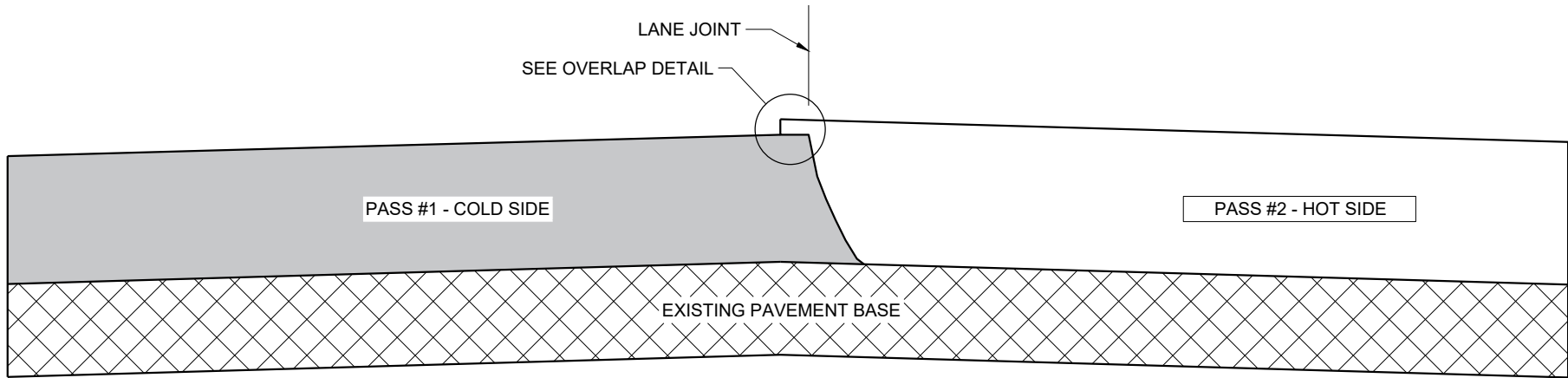


ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

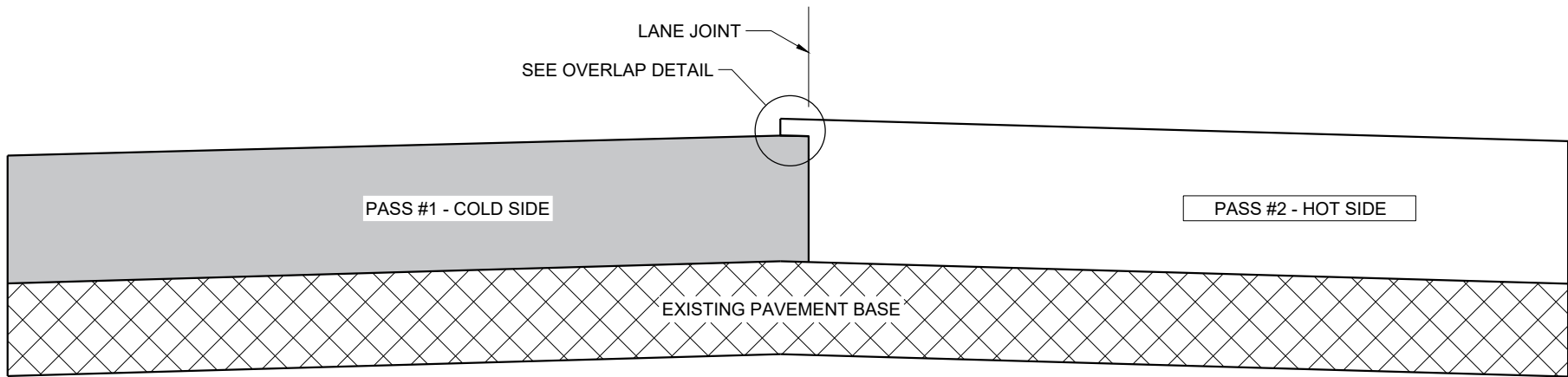
NAME PLATE (STRUCTURES)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 3/26/10 DATE	/S/ Scot Becker CHIEF STRUCTURAL DEVELOPMENT ENGINEER
FHWA	



TYPICAL PAVEMENT CROSS SECTION
NOTCHED WEDGE JOINT



TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT



TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT (MILLED)

GENERAL NOTES

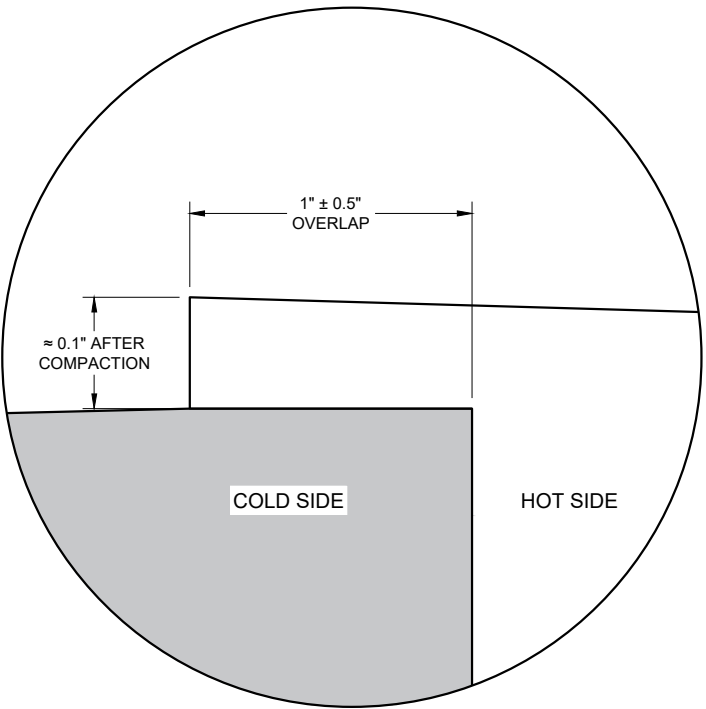
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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

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

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

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



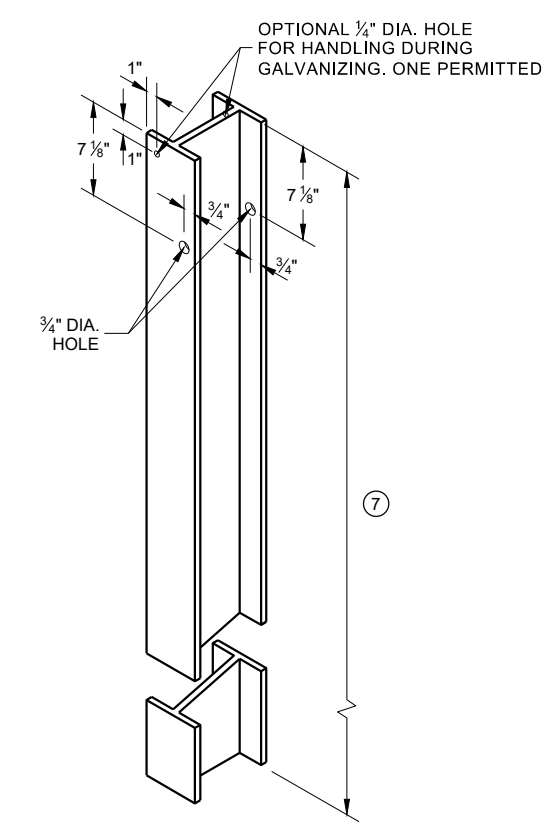
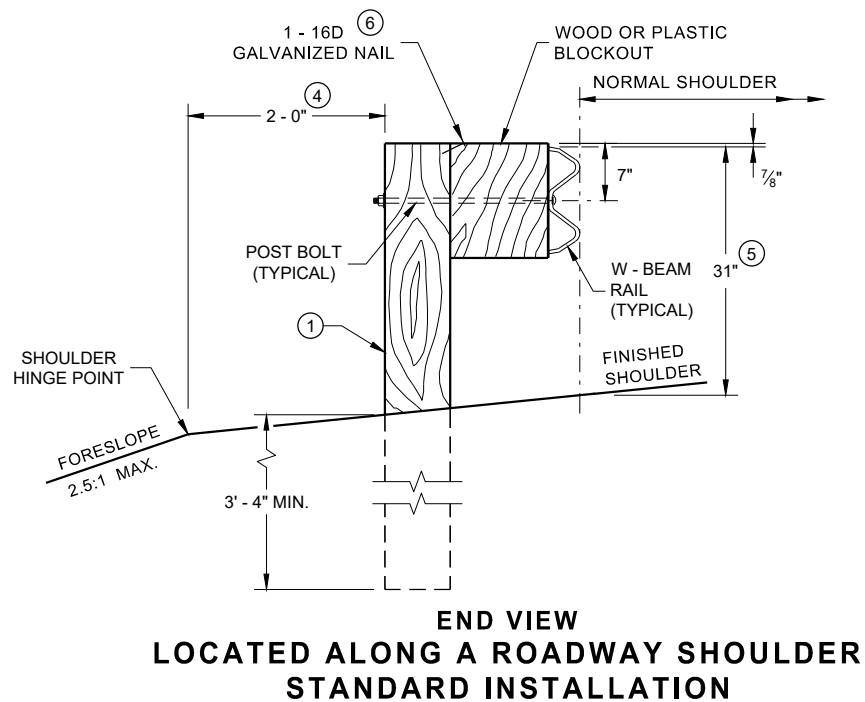
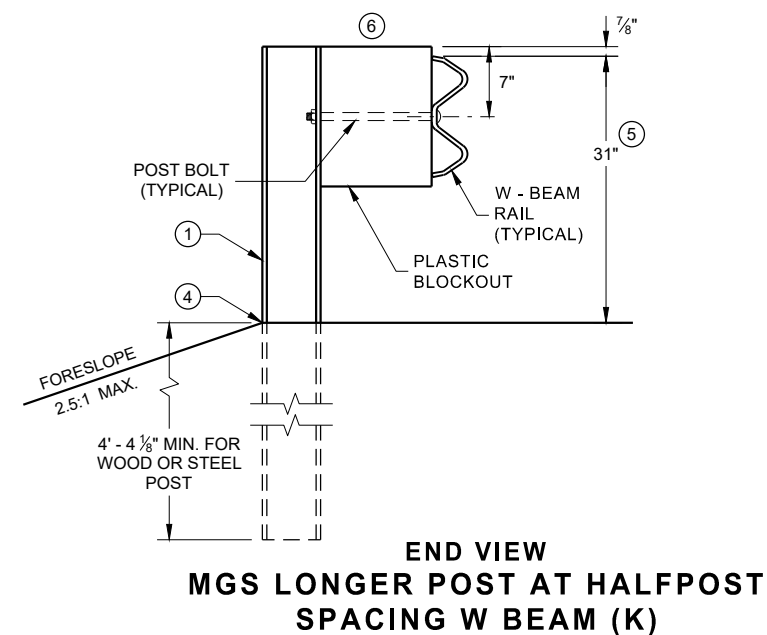
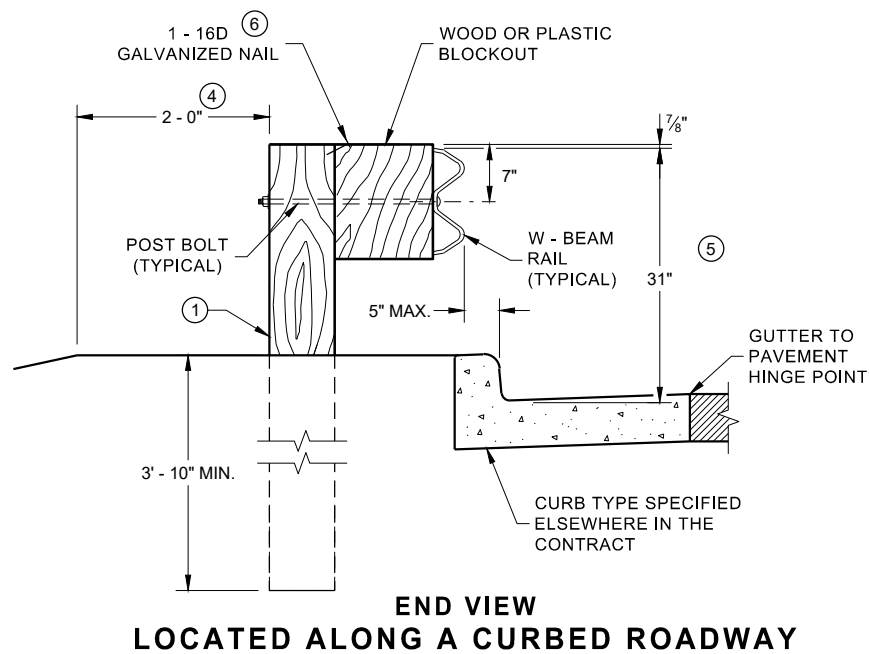
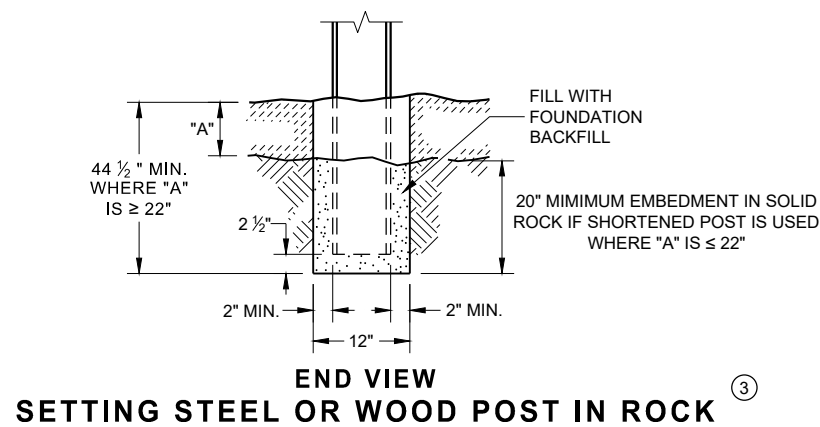
OVERLAP DETAIL (TYPICAL)

HMA LONGITUDINAL JOINTS

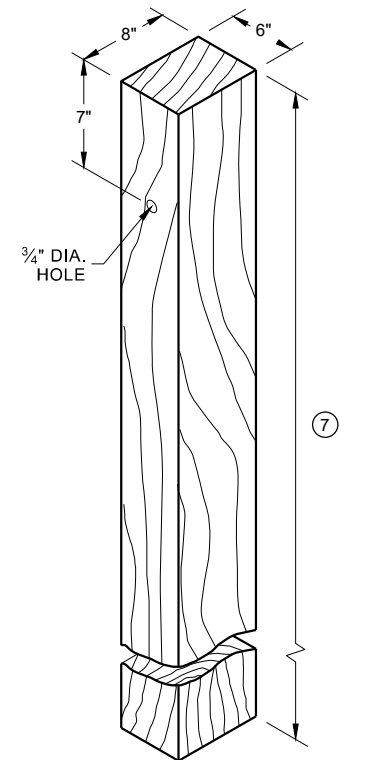
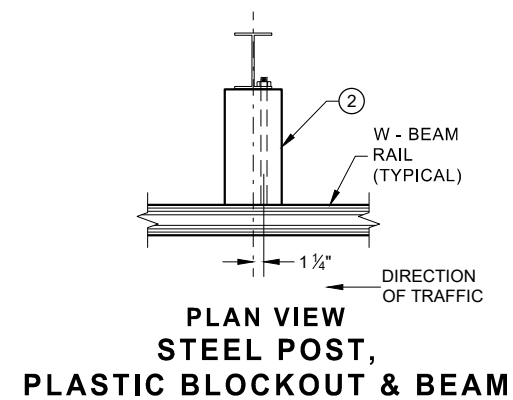
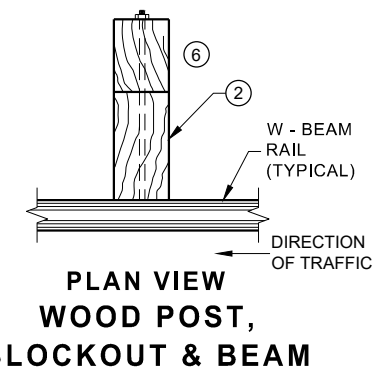
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

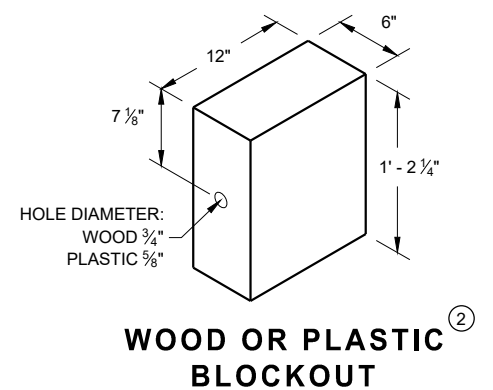
- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL.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



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



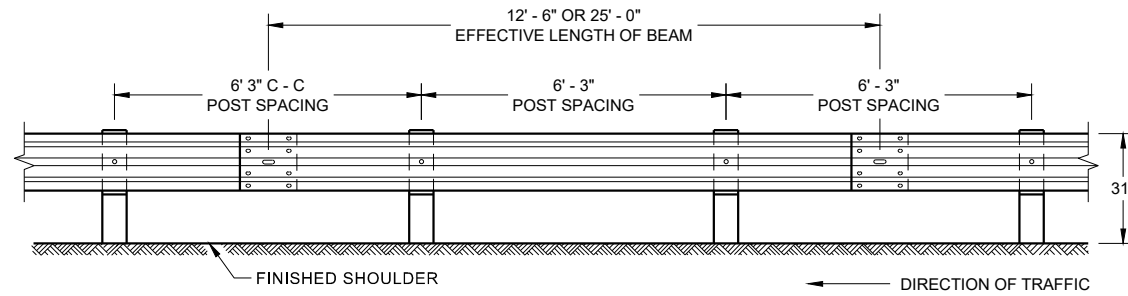
WOOD POST (6" X 8") NOMINAL ①



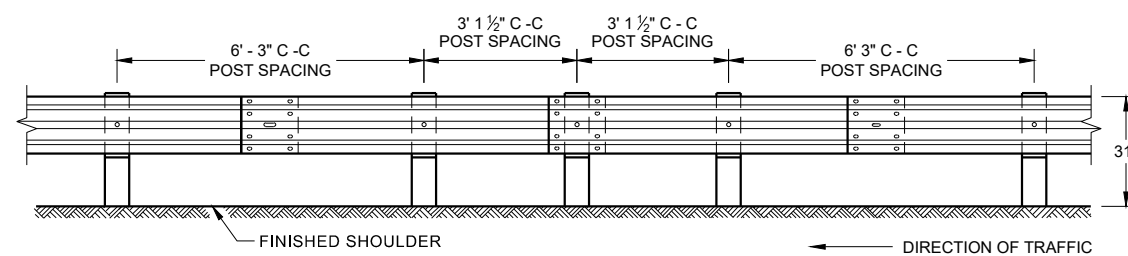
WOOD OR PLASTIC BLOCKOUT ②

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

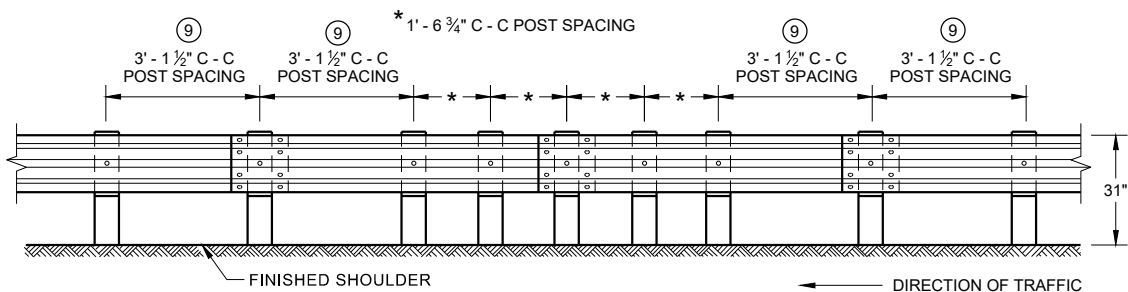
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



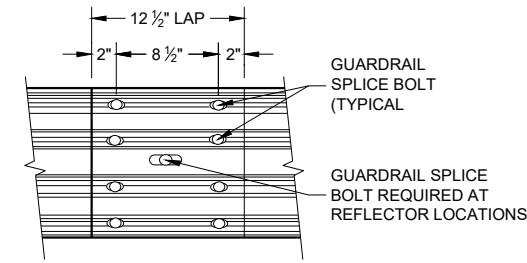
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



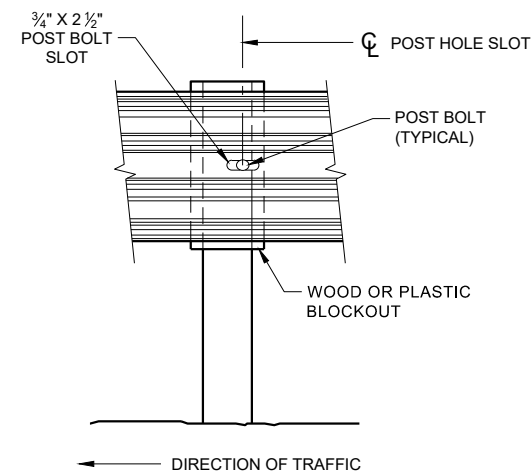
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



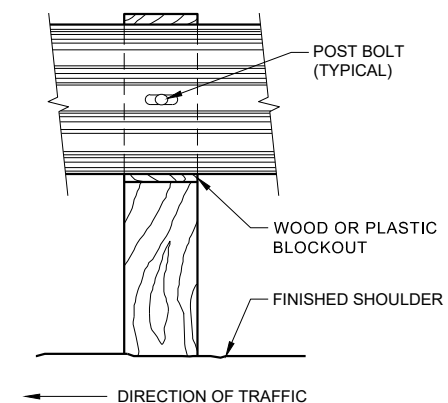
**FRONT VIEW
QUARTER POST SPACING (QS)**



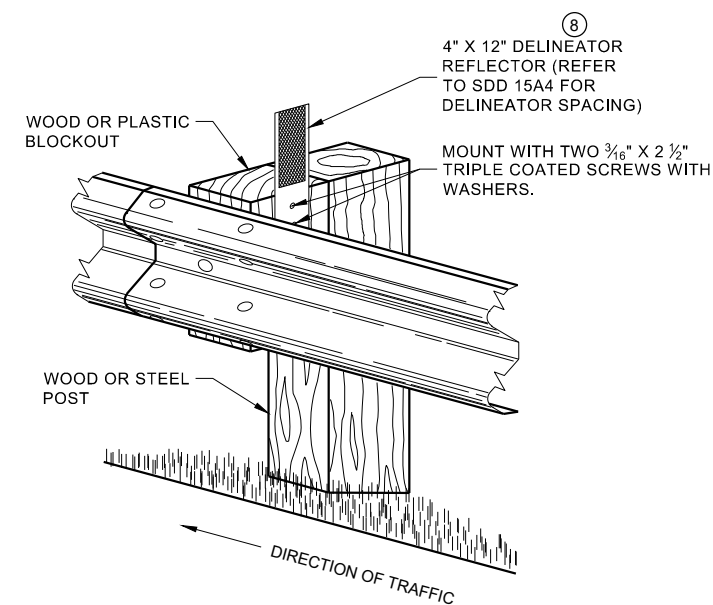
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



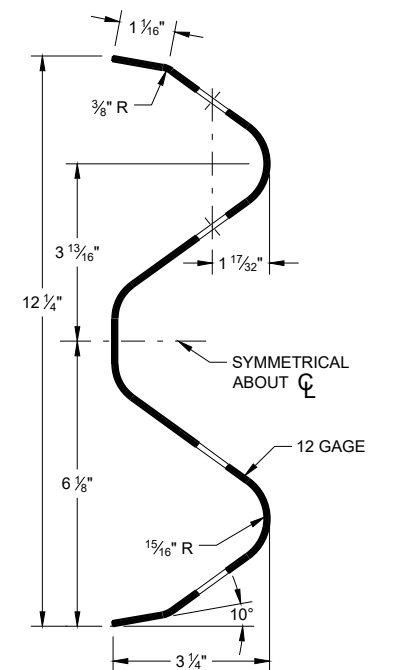
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

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

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

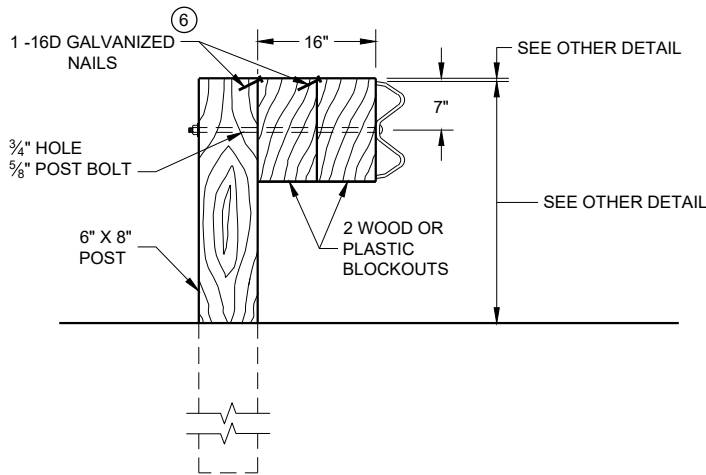
GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

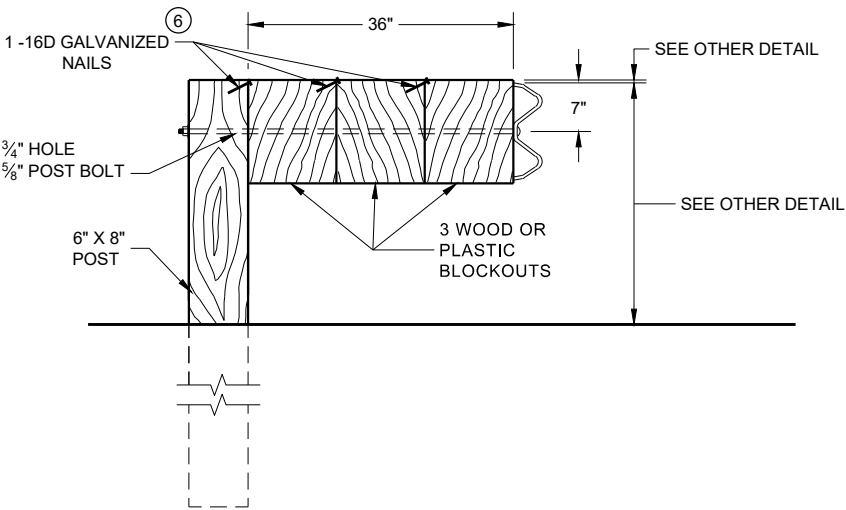
**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

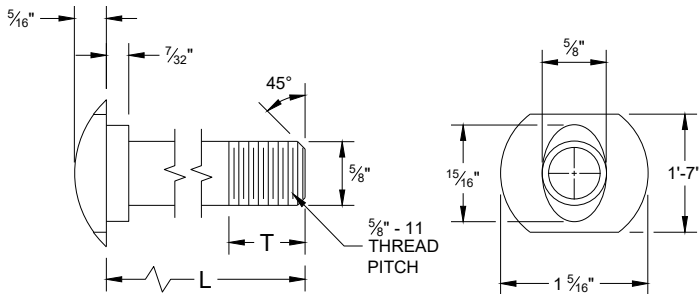
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



DETAIL FOR 36" BLOCKOUT DEPTH

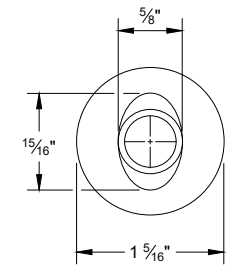
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT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

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

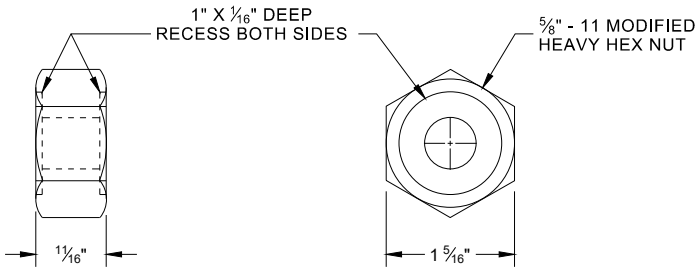


POST BOLT TABLE

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

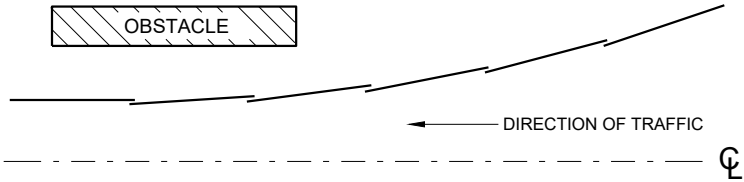


ALTERNATE BOLT HEAD

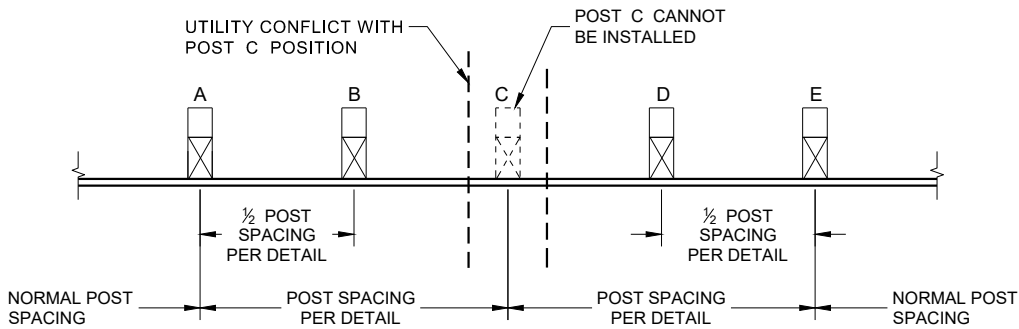


POST BOLT, SPLICE BOLT
AND RECESS NUT

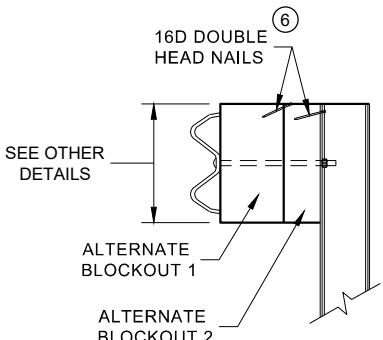
- 6 WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



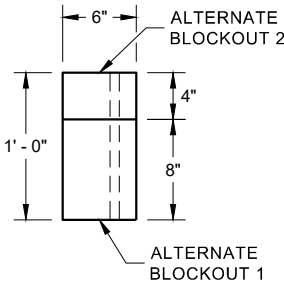
PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



SIDE VIEW

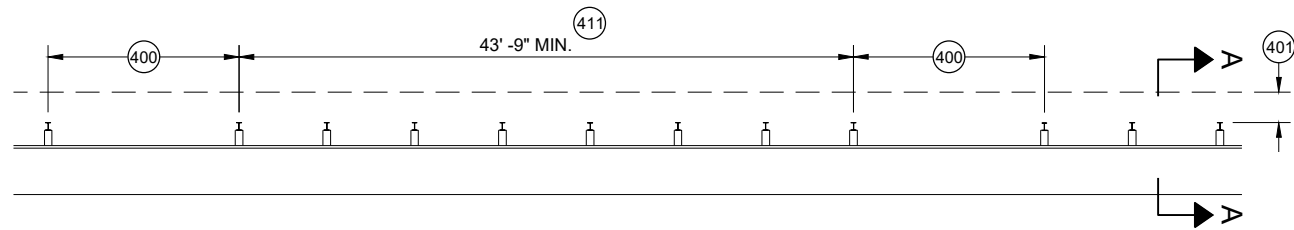


PLAN VIEW

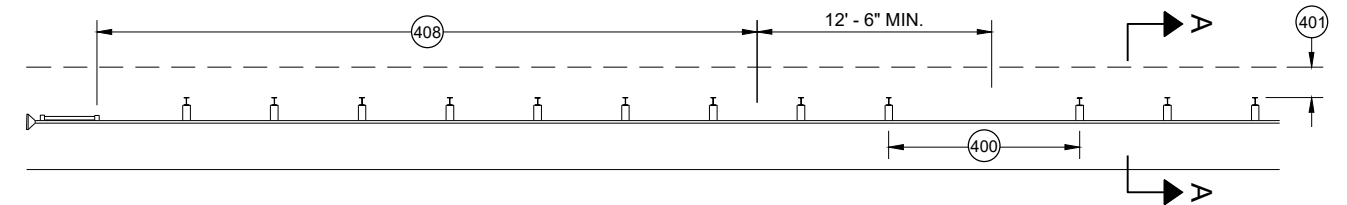
ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

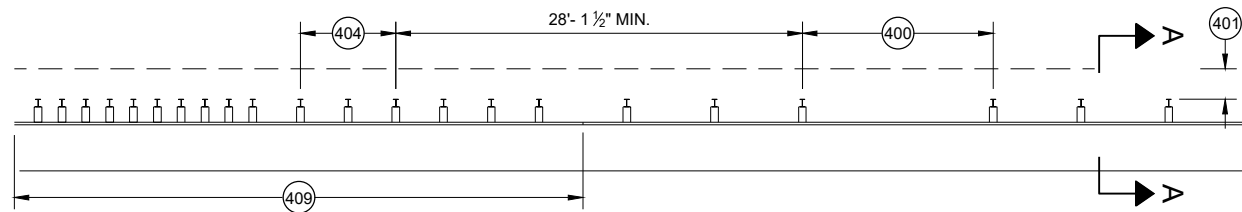
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



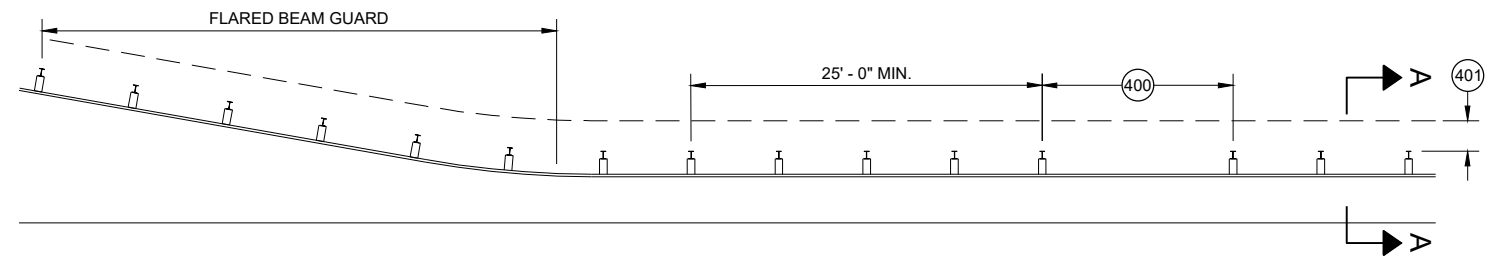
MISSING POST IN MGS GUARDRAIL



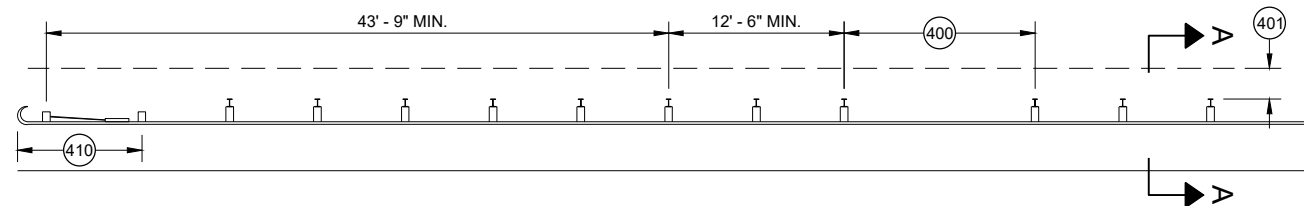
MISSING POST IN MGS GUARDRAIL NEAR EAT



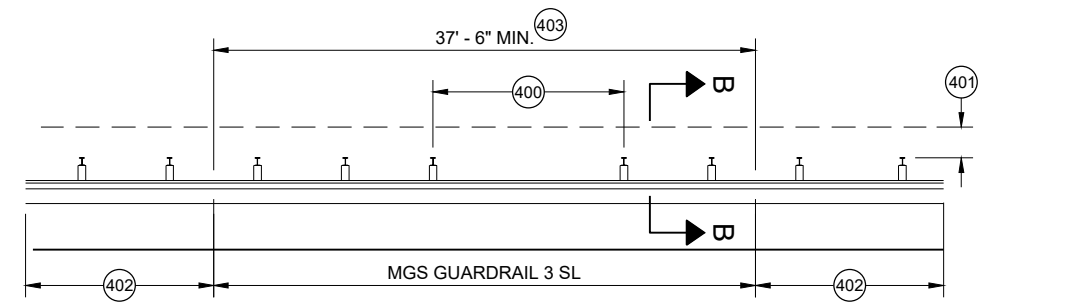
MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD

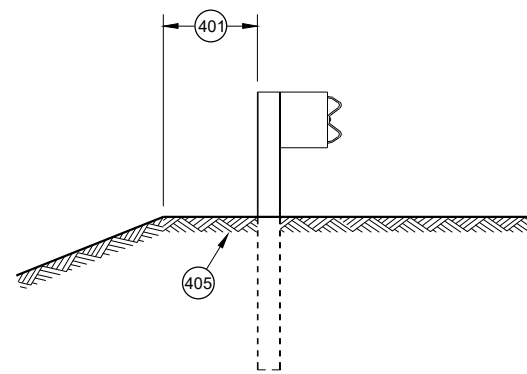


MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL

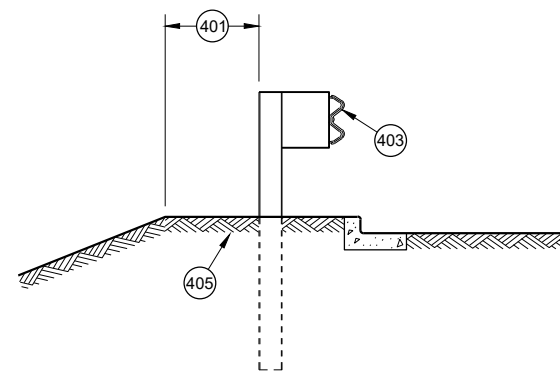


MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)

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



SECTION A - A



SECTION B - B

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2021 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

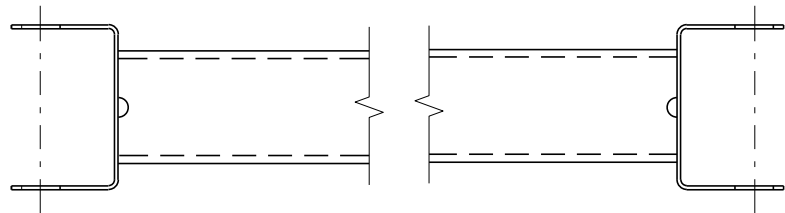
- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
- (C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS.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

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.

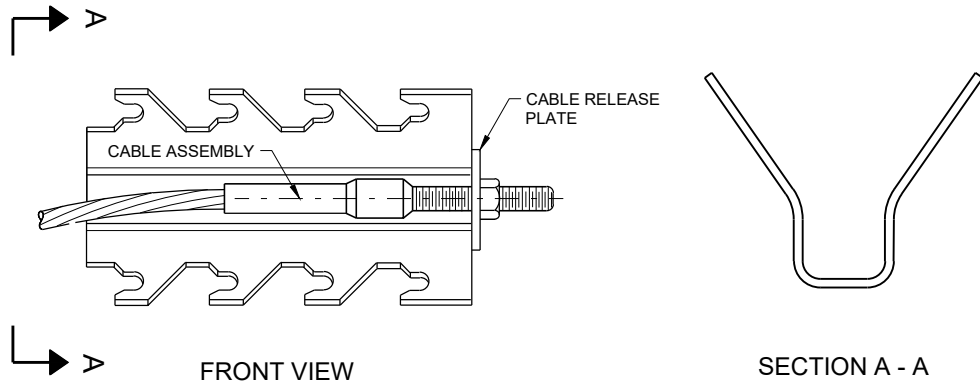


STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

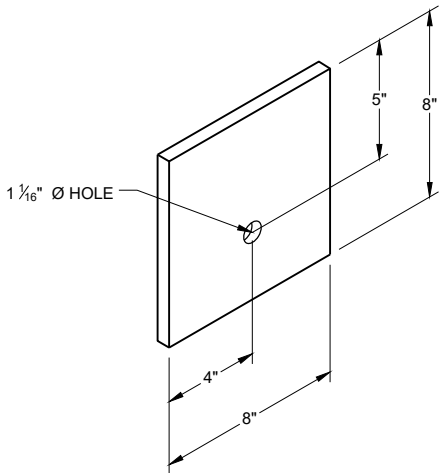


GENERIC GROUND STRUT^⑨ [Ⓔ]

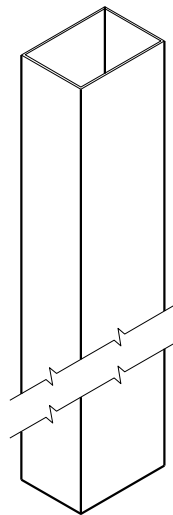
BILL OF MATERIALS	
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED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



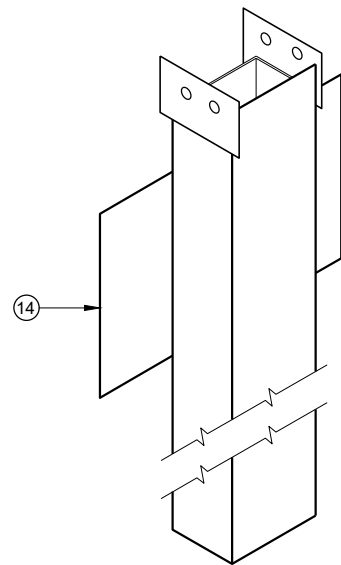
GENERIC ANCHOR CABLE BOX^⑨ [Ⓔ]



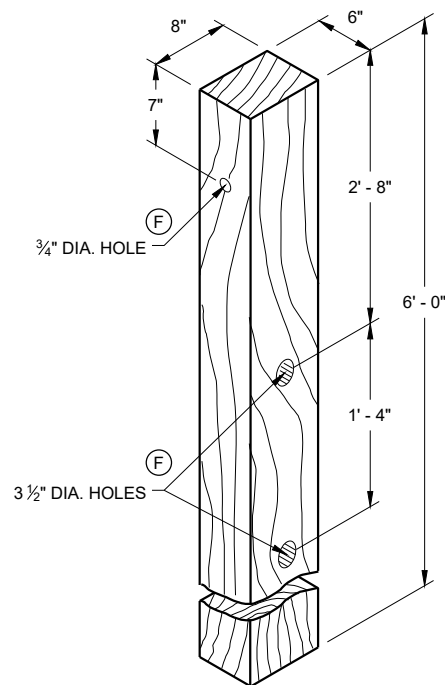
BEARING PLATE^⑥ [Ⓔ]



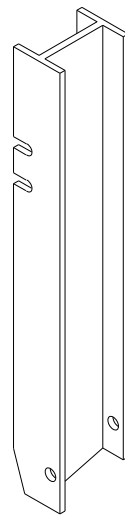
UPPER POST NO. 1 ⁽¹⁾ (E)



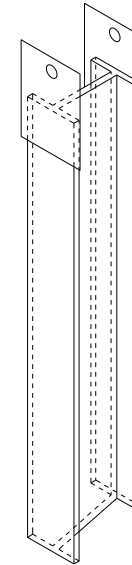
LOWER POST NO. 1 ⁽²⁾ (E)



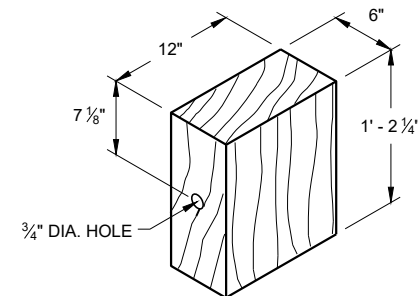
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



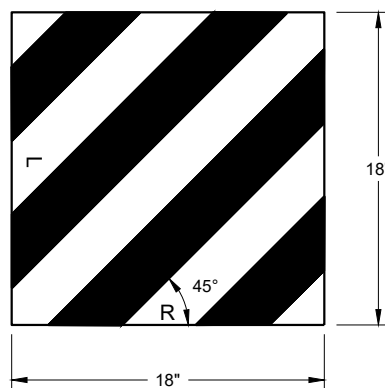
UPPER POST NO. 2 ⁽¹⁵⁾ (E)



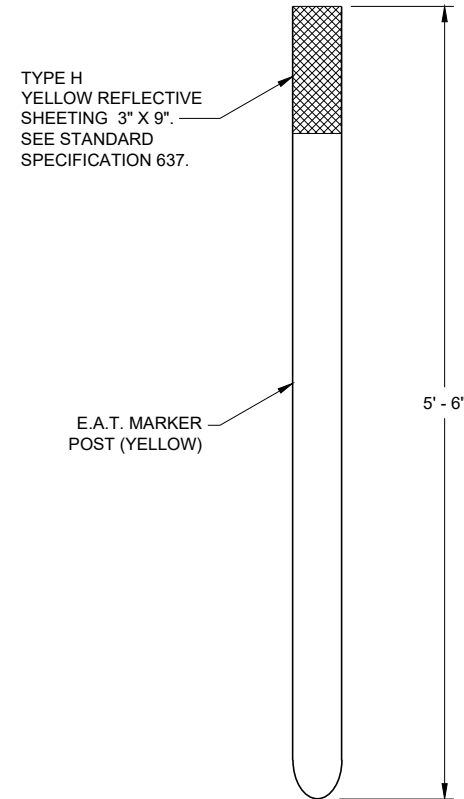
LOWER POST NO. 2 ⁽¹⁶⁾ (E)



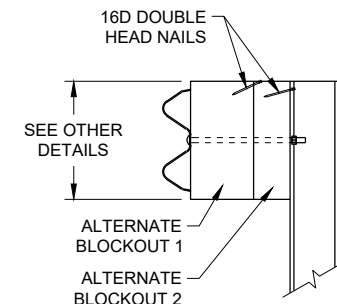
WOOD BLOCKOUT ⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



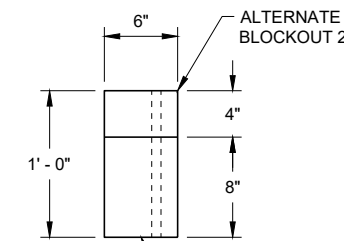
REFLECTIVE SHEETING DETAIL ^(E)



E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW



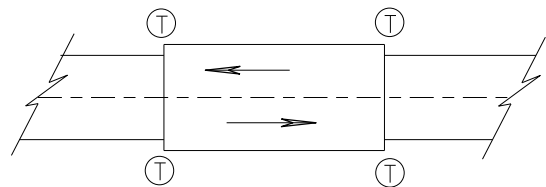
TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

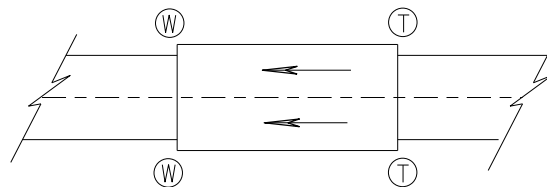
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

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



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

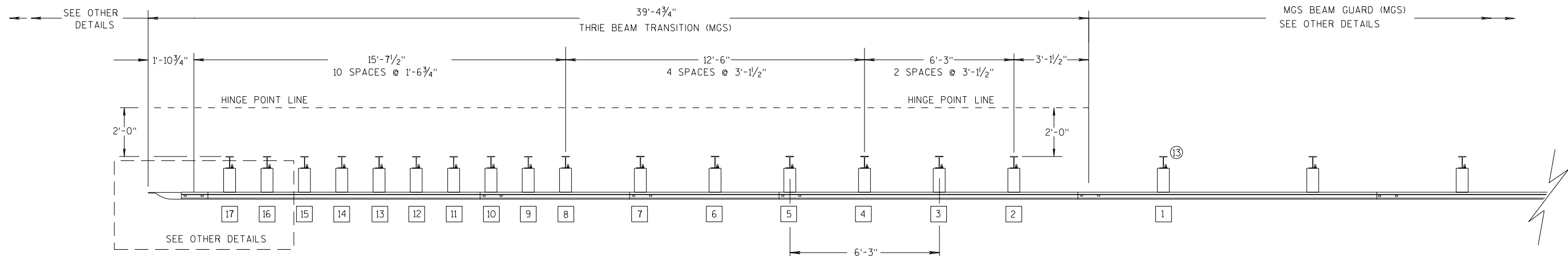
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

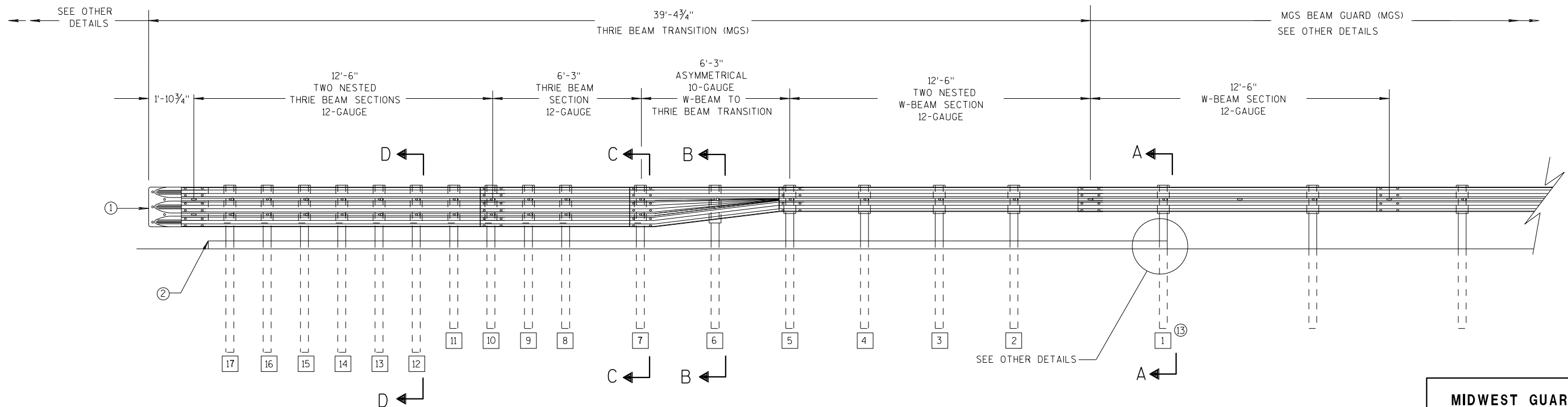
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

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



PLAN VIEW



ELEVATION VIEW

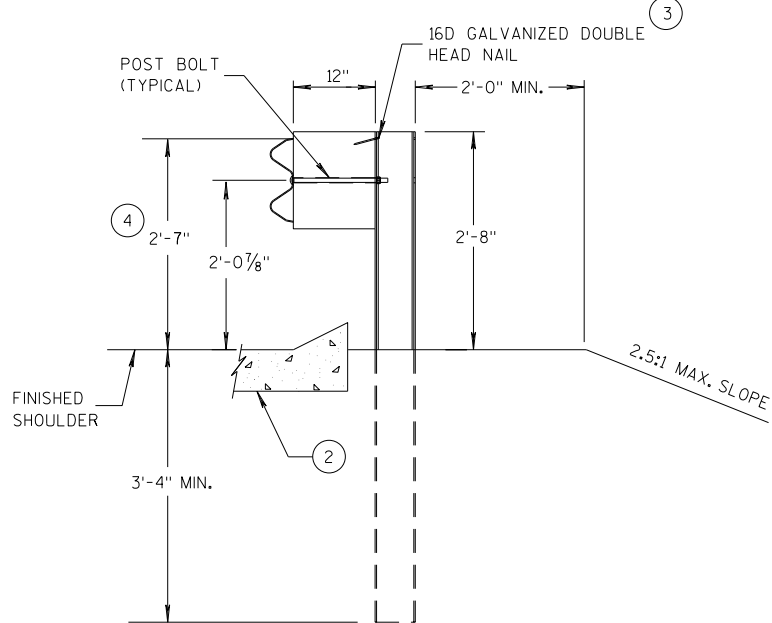
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

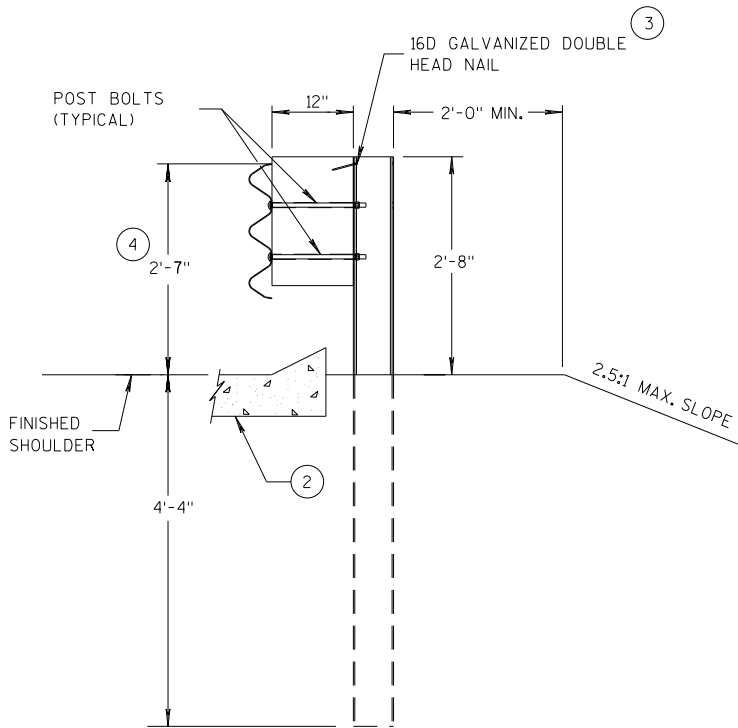
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

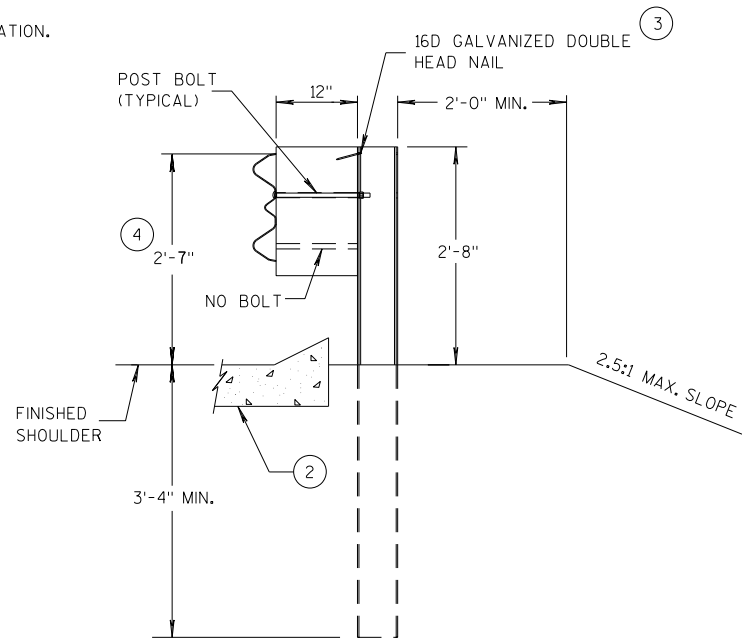
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm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



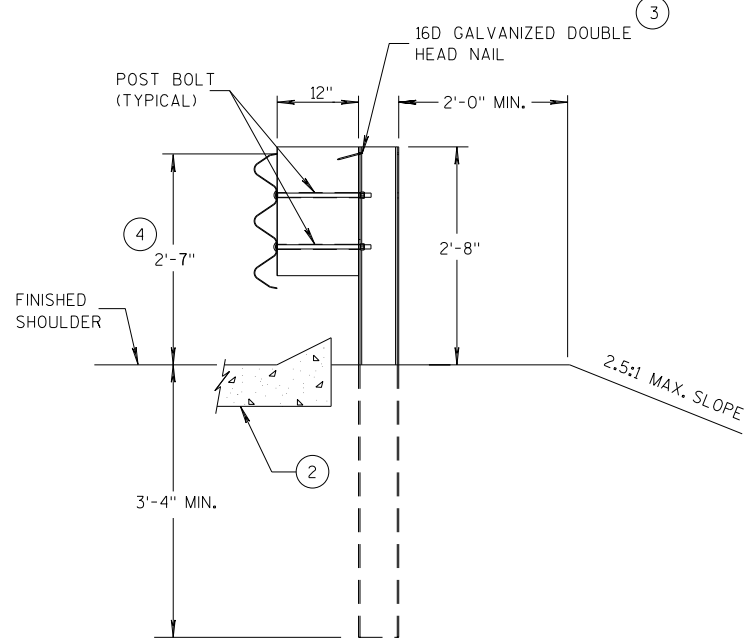
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

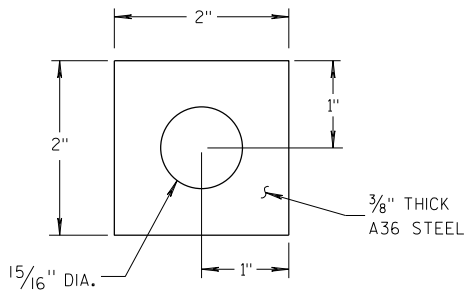
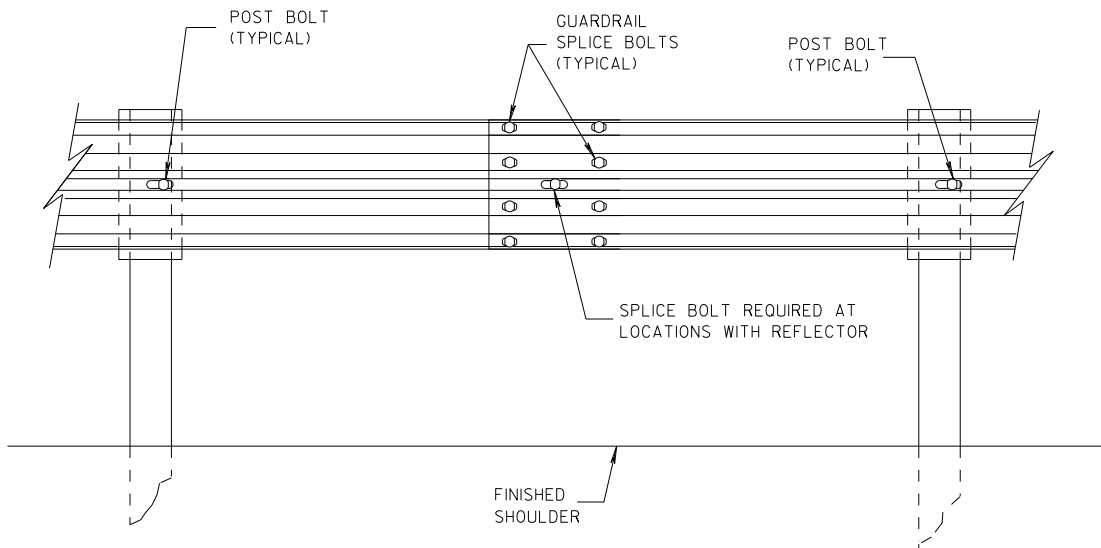
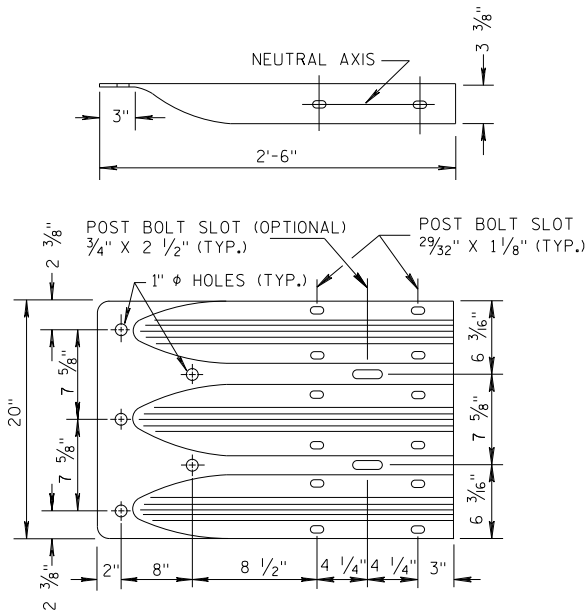


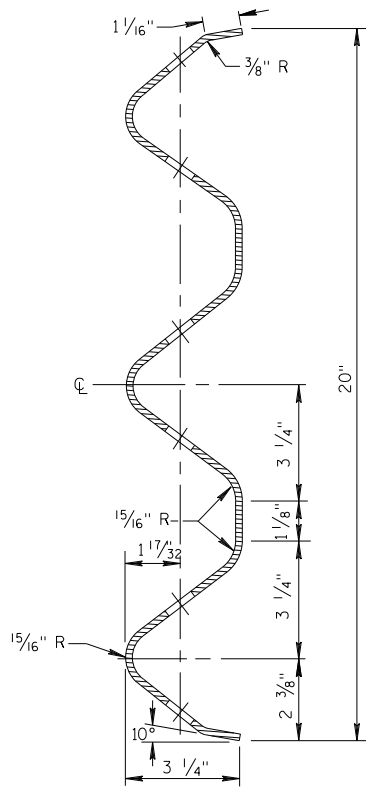
PLATE WASHER DETAIL



SPlice DETAIL



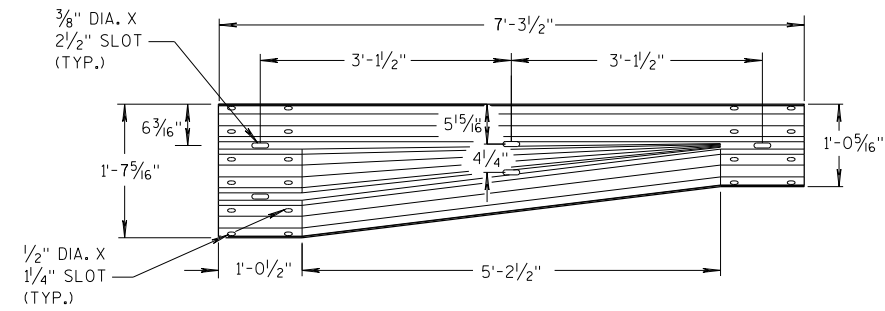
THRIE BEAM
TERMINAL CONNECTOR



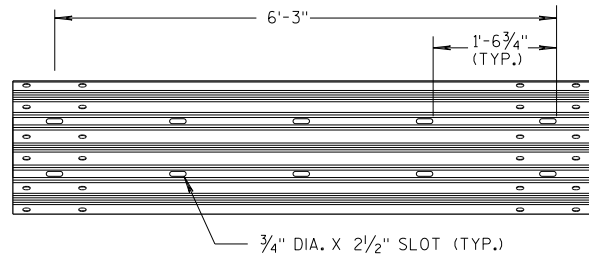
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

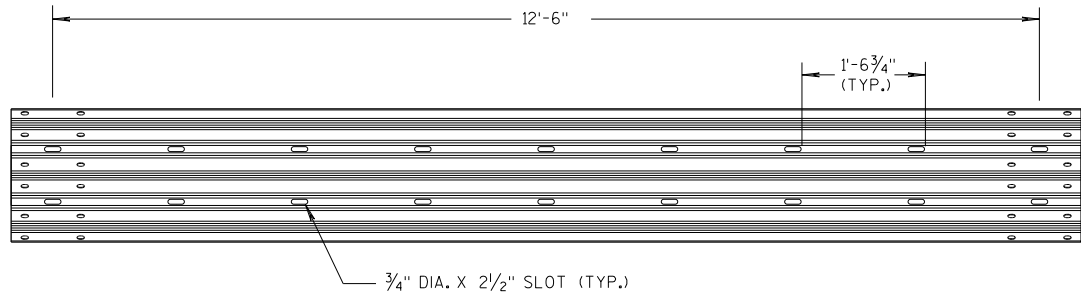
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



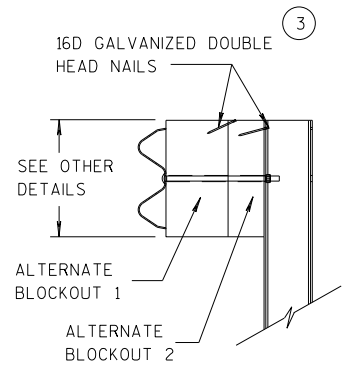
W-BEAM TO THRIE BEAM TRANSITION SECTION



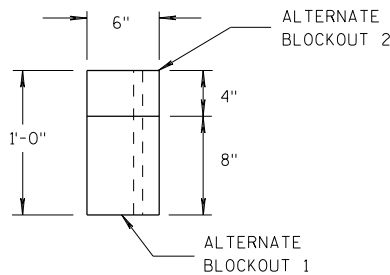
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

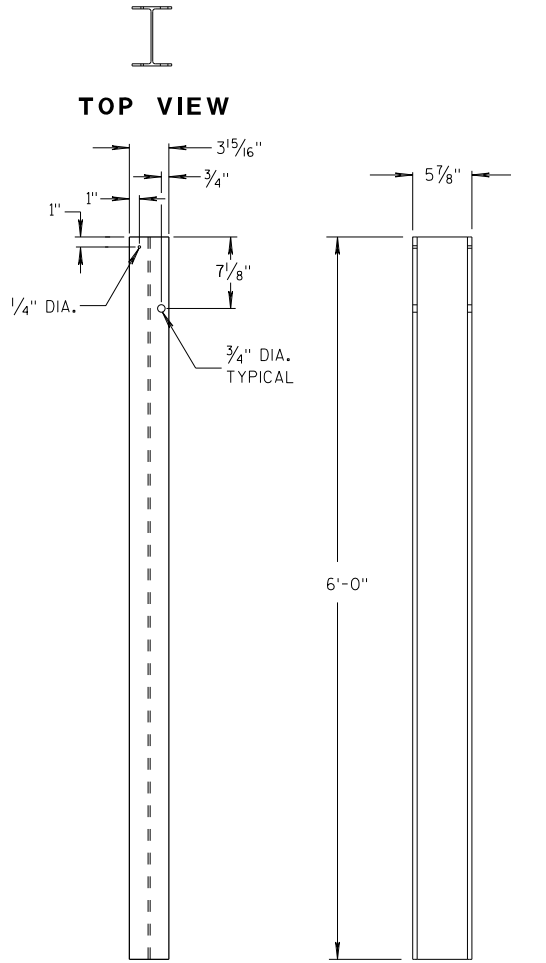


SIDE VIEW



TOP VIEW

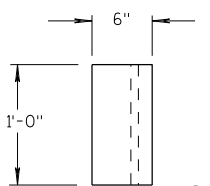
ALTERNATE WOOD BLOCKOUT DETAIL



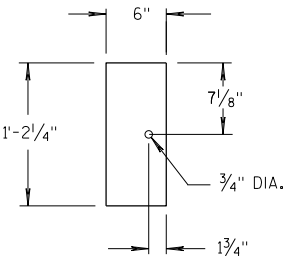
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

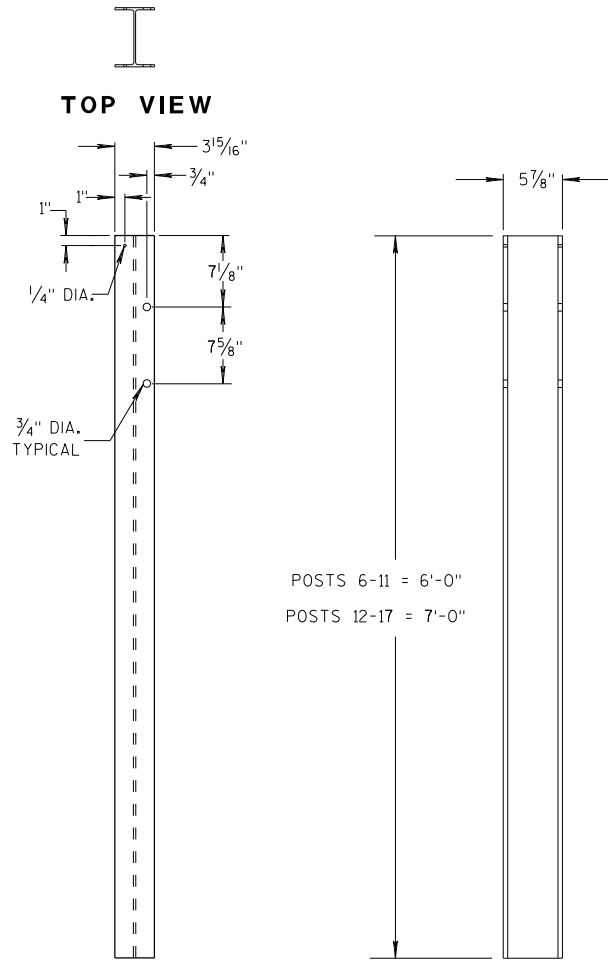


TOP VIEW



FRONT VIEW

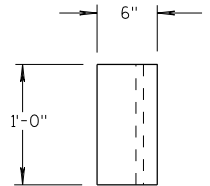
BLOCKOUT POSTS 1-5



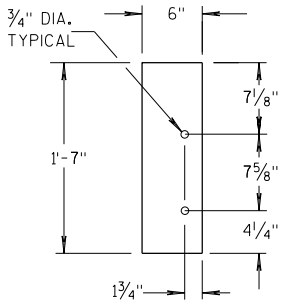
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

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

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

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

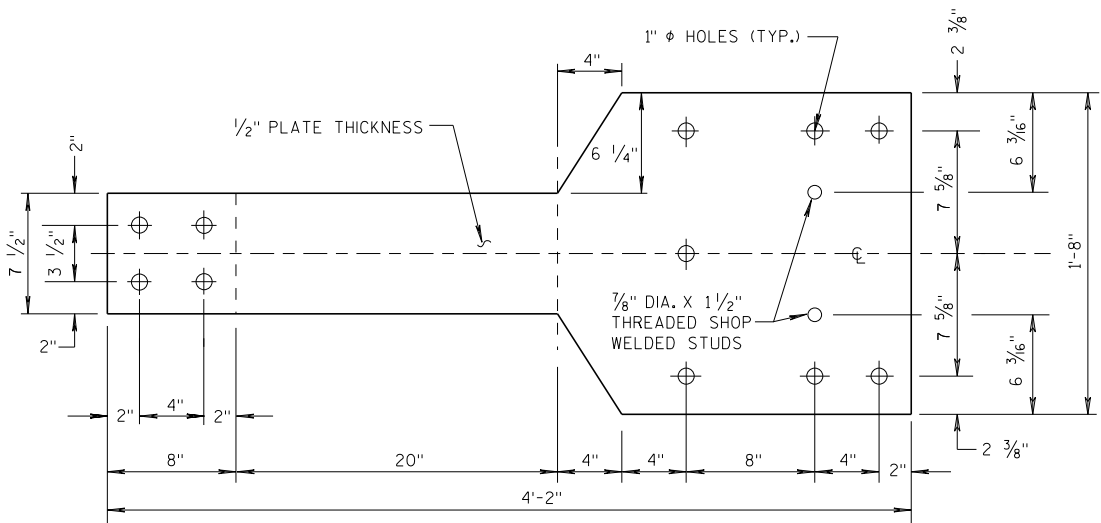
⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

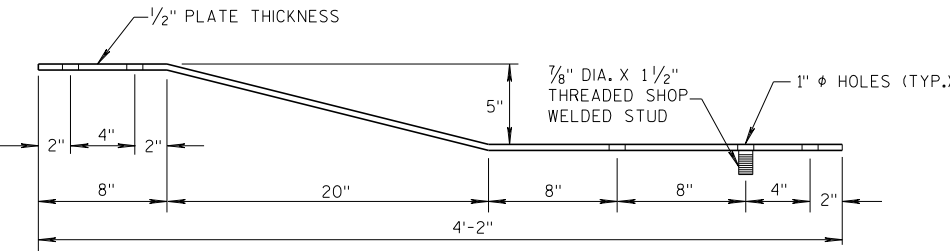
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

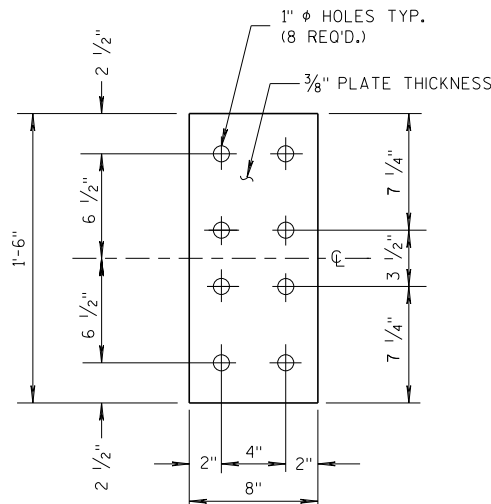
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



FRONT VIEW

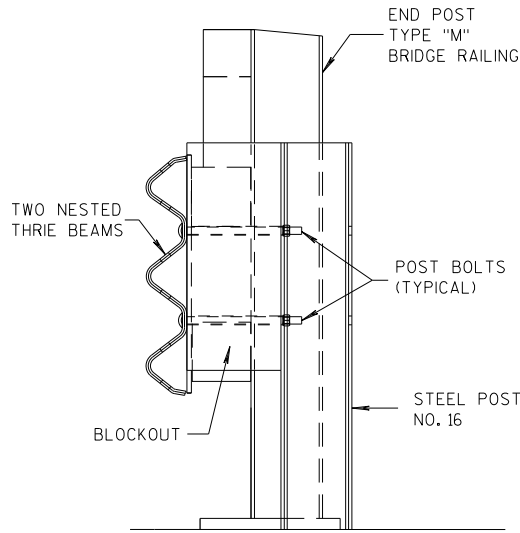


PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"

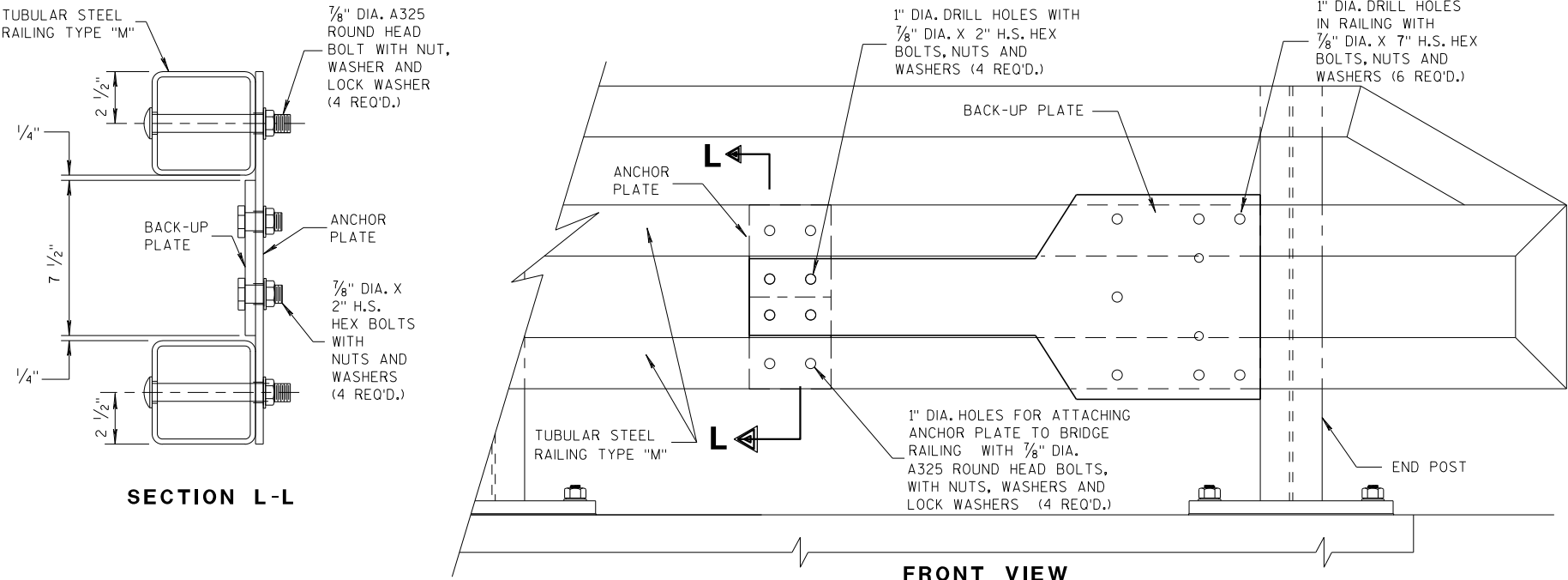


FRONT VIEW

ANCHOR
PLATE DETAIL,
TYPE "M"



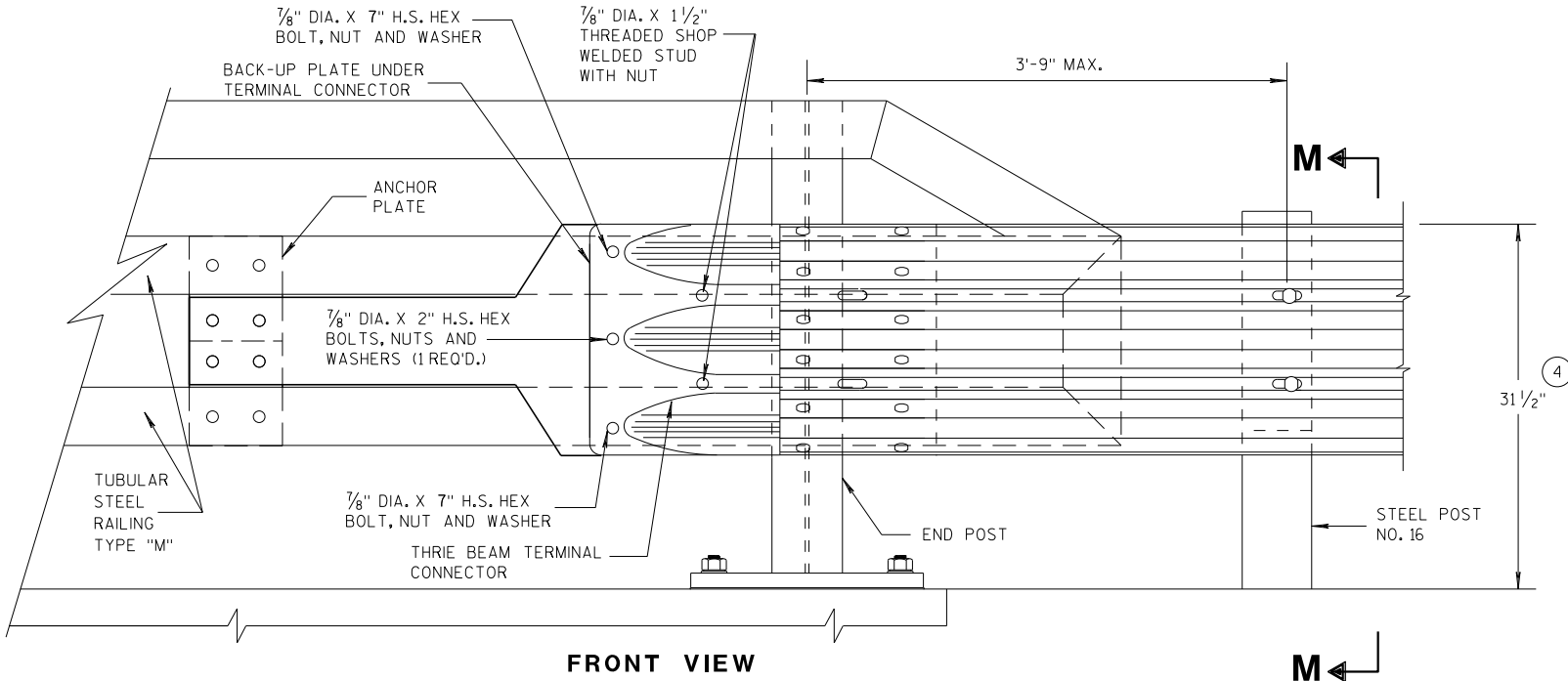
SECTION M-M



SECTION L-L

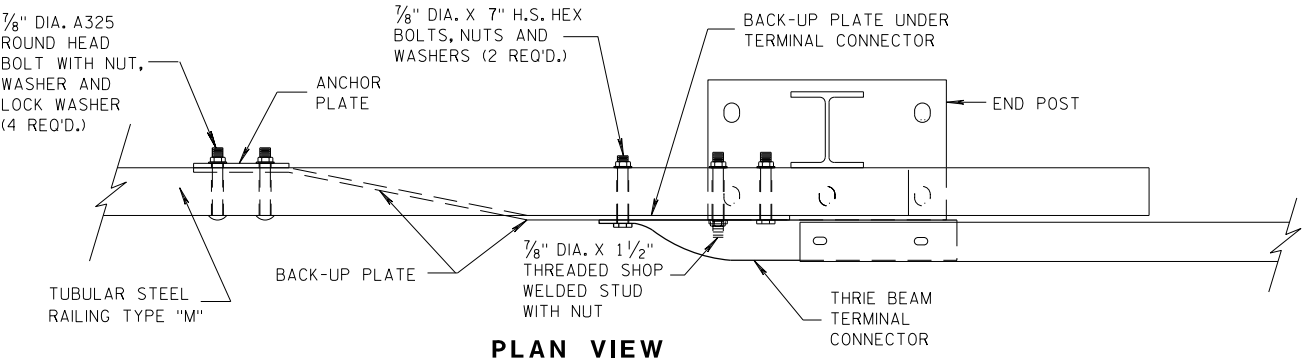
FRONT VIEW

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



FRONT VIEW

M



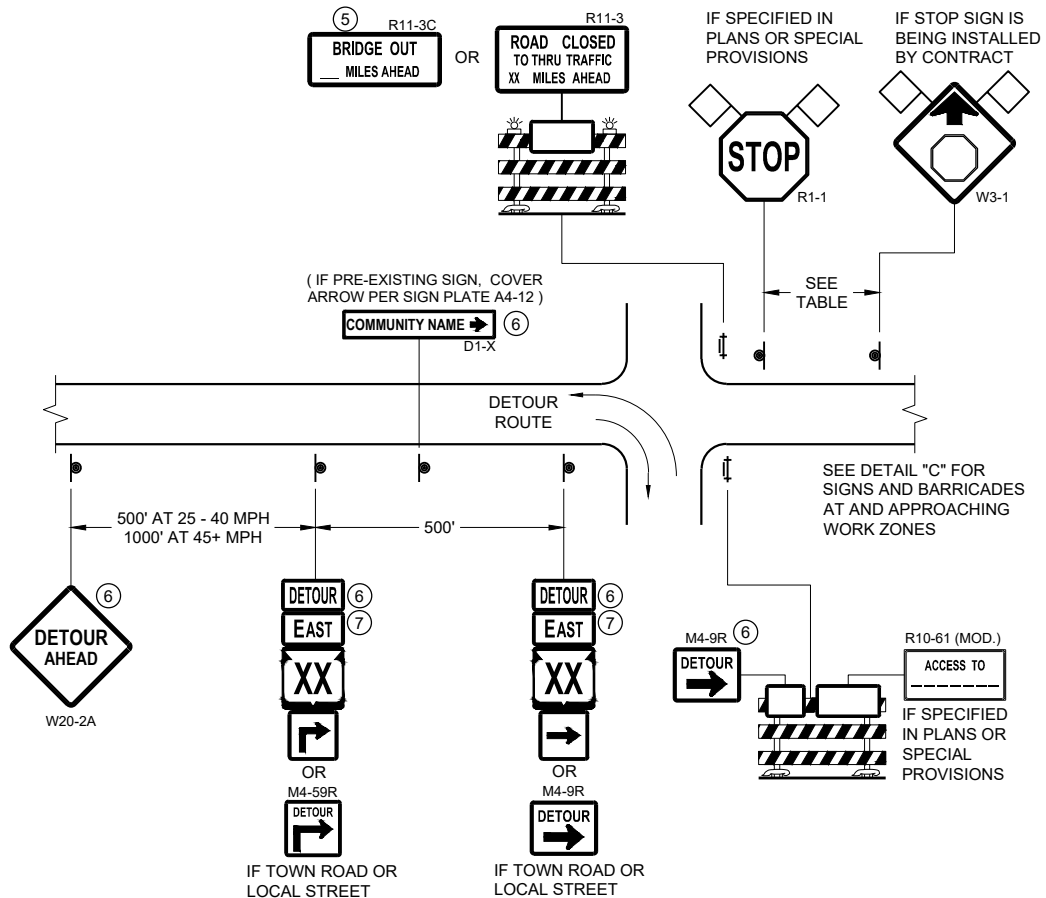
PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

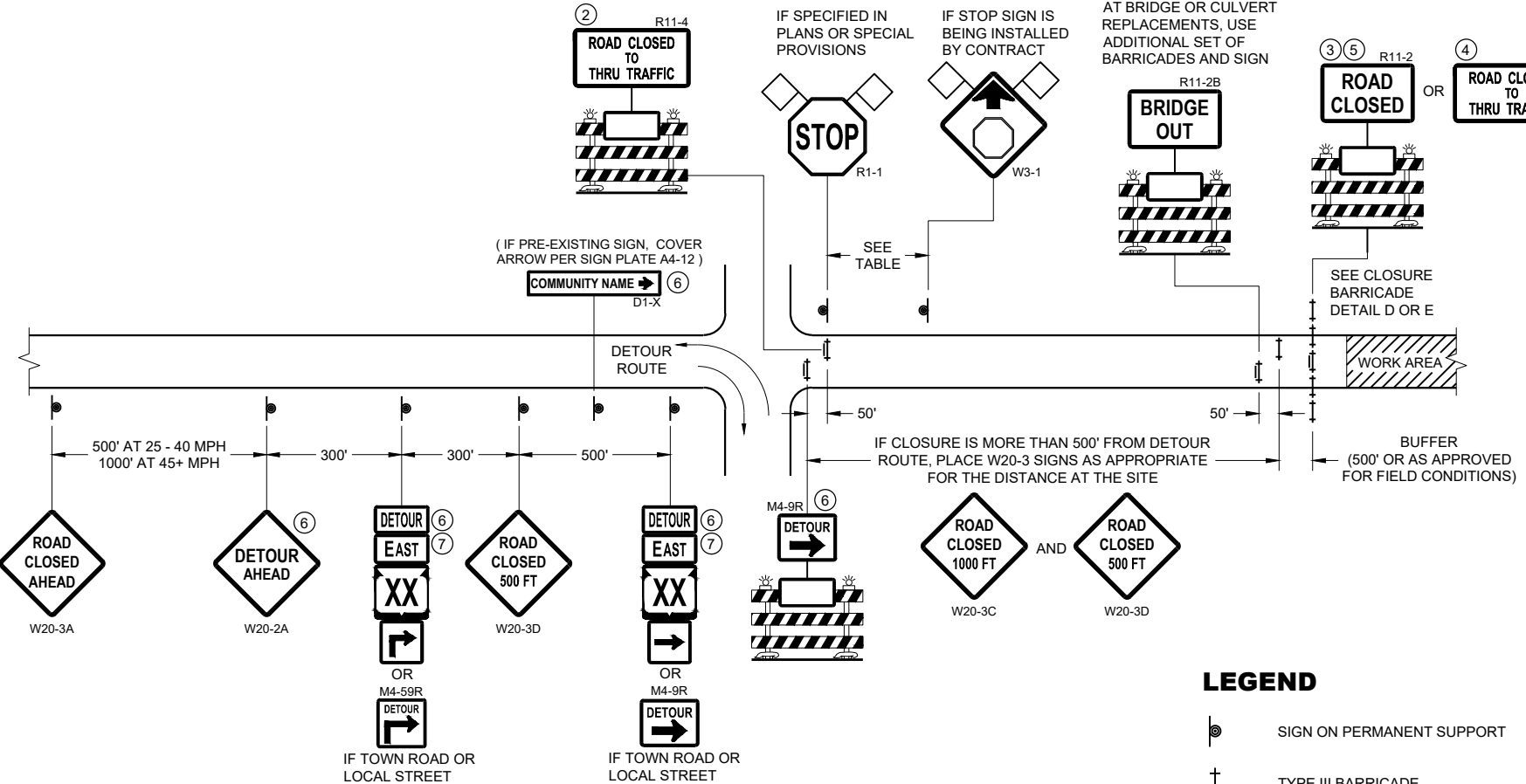
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



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



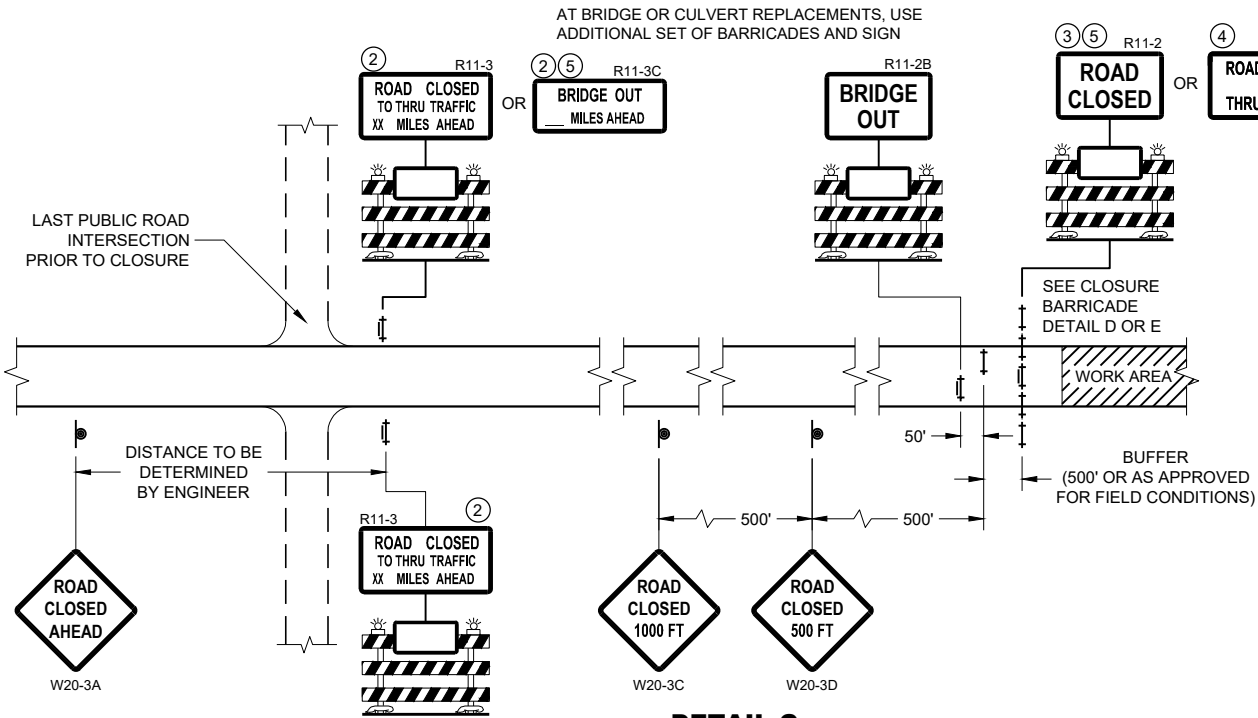
DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR
WORK ZONE LESS THAN ½ MILE FROM
DETOUR ROUTE (1000 FEET IF URBAN)

- LEGEND**
- SIGN ON PERMANENT SUPPORT
 - TYPE III BARRICADE
 - TYPE III BARRICADE WITH ATTACHED SIGN
 - TYPE "A" WARNING LIGHT (FLASHING)
 - WORK AREA
 - FLAGS, 16" X 16" MIN. (ORANGE)

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

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

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



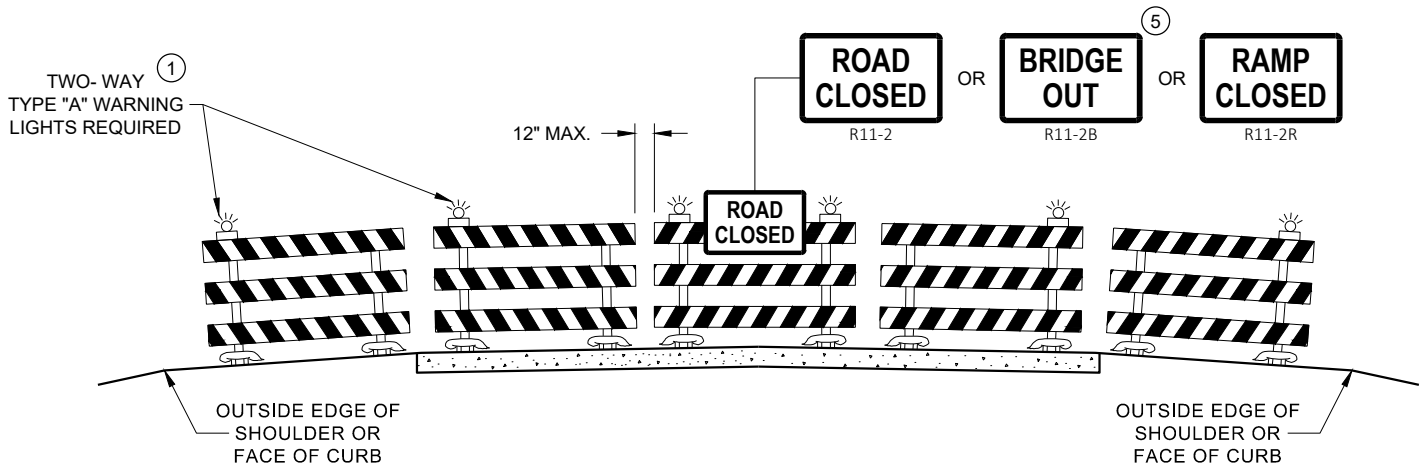
DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

**BARRICADES AND SIGNS
FOR MAINLINE CLOSURES**

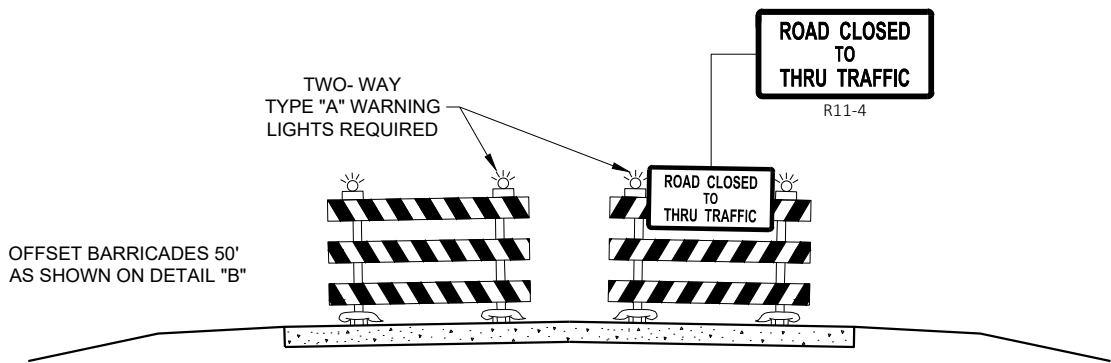
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May 2023 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA



DETAIL D
ROAD CLOSURE BARRICADE DETAIL
APPROACH VIEW



DETAIL E
LANE CLOSURE BARRICADE DETAIL
APPROACH VIEW

SEE SDD 15C2 - SHEET "a" FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

- R11 - 2 SHALL BE 48" X 30"
- R11 - 3 SHALL, R11 - 4 AND R10 - 61 SHALL BE 60 " X 30"
- M4 - 9 SHALL BE 30" X 24"
- M3 - X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4 - 8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1 - 4, M1 - 5A AND M1 - 6 SHALL BE 24" X 24" (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS)
- MO5 - 1 AND MO6 - 1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- D1 - X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1 - 1 SHALL BE 36" X 36"

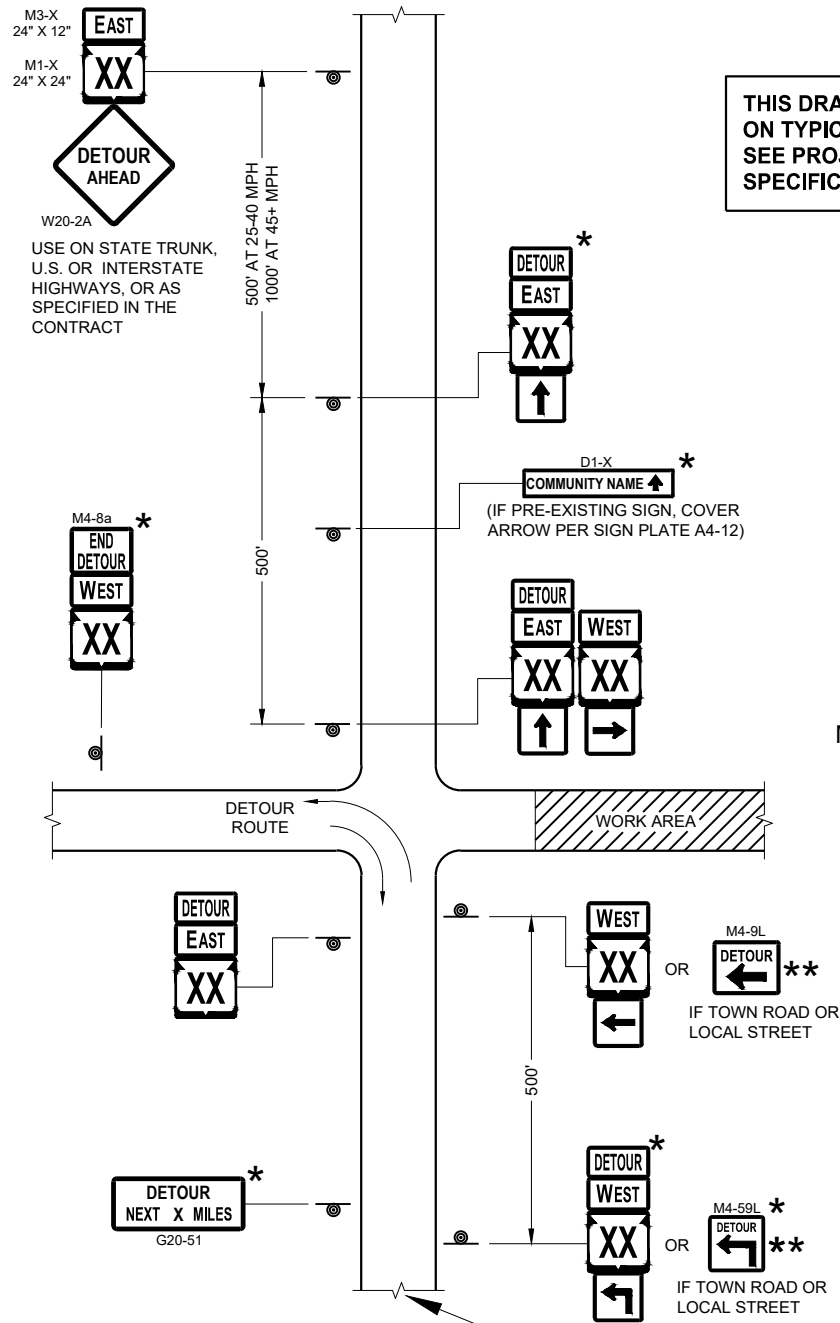
- 1 TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8 FOOT LIGHT SPACING).
- 2 THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT AN INTERSECTION.
- 3 FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "D".
- 4 FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "E".
- 5 FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11 - 2 AND R11 - 3 SIGNS.
- 6 INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.
- 7 "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

BARRICADES AND SIGNS
FOR
VARIOUS CLOSURES

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

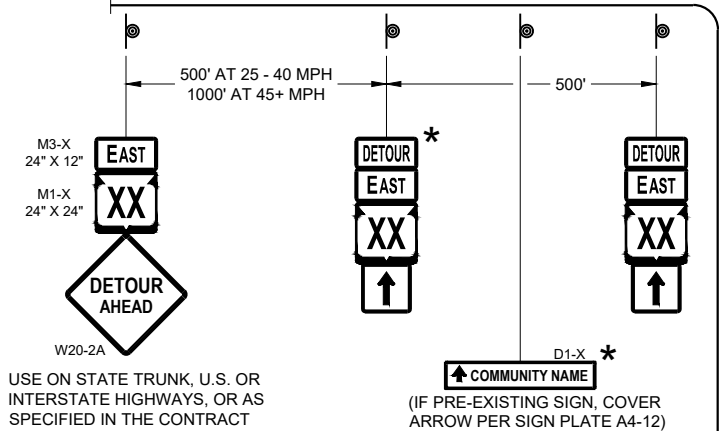
FHWA



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

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

MATCH POINT



DETAIL F
DETOUR SIGNING

LEGEND

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

GENERAL NOTES

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

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

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

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

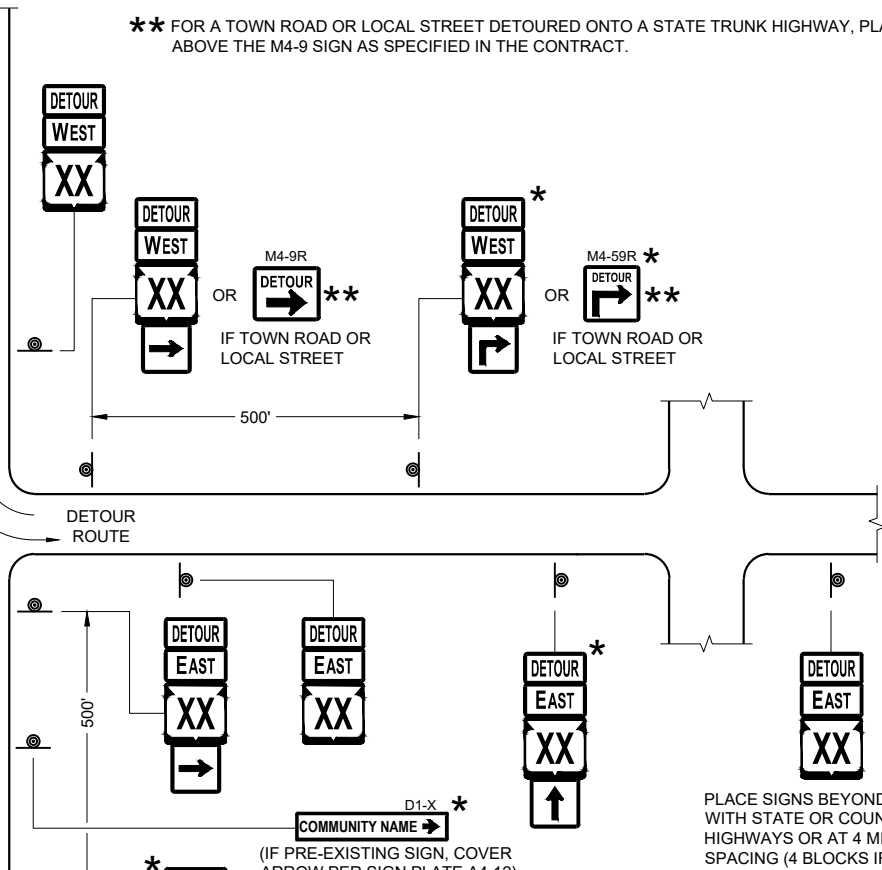
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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

SIGN SIZES SHALL BE AS FOLLOWS:

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

- * OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.
- ** FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.



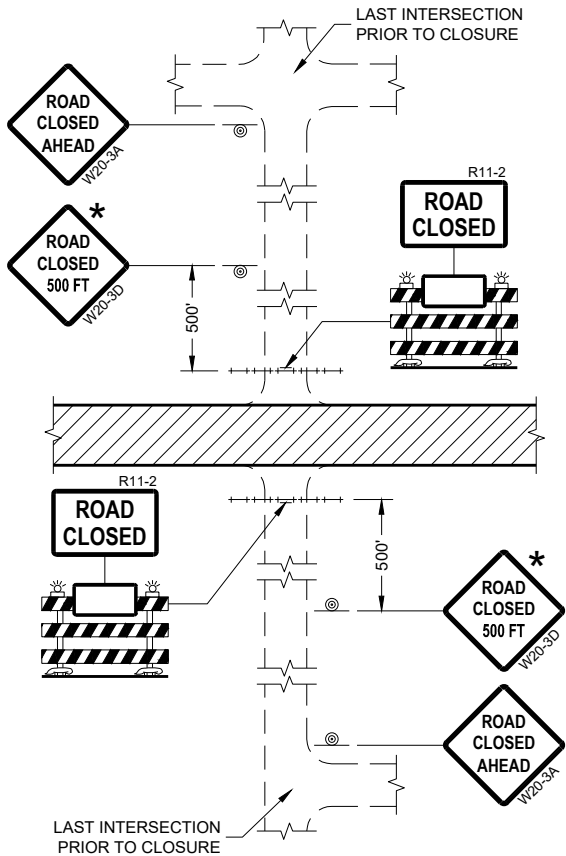
PLACE SIGNS BEYOND INTERSECTIONS
WITH STATE OR COUNTY TRUNK
HIGHWAYS OR AT 4 MILE MAXIMUM
SPACING (4 BLOCKS IF URBAN AREA)

DETOUR SIGNING
FOR MAINLINE CLOSURES

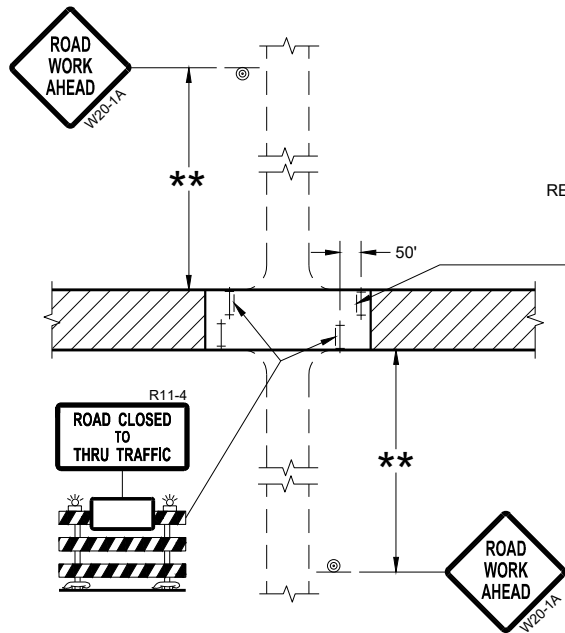
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

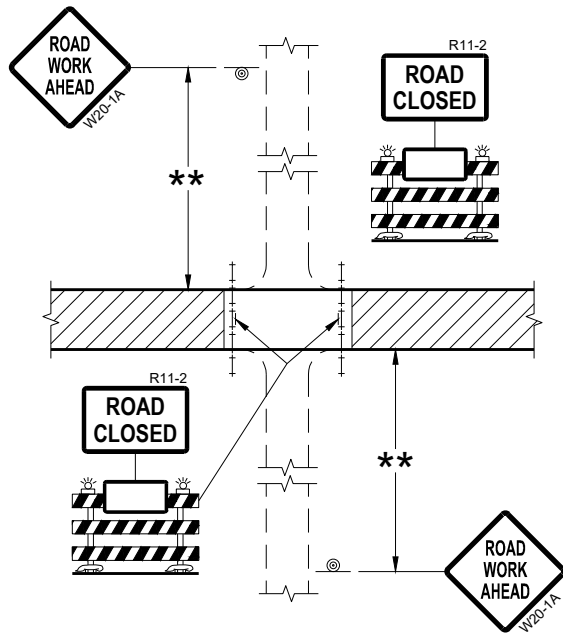
FHWA



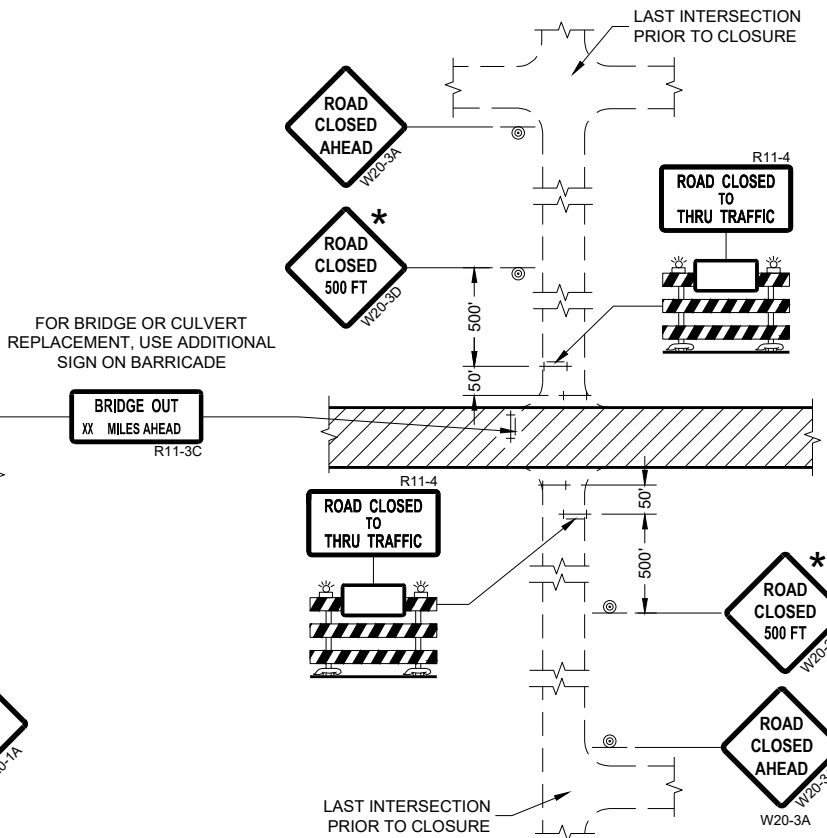
DETAIL 1
(NO ACCESS TO PROJECT)



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



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



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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

LEGEND

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

BARRICADES AND SIGNS FOR SIDEROAD CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

GENERAL NOTES

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

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




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

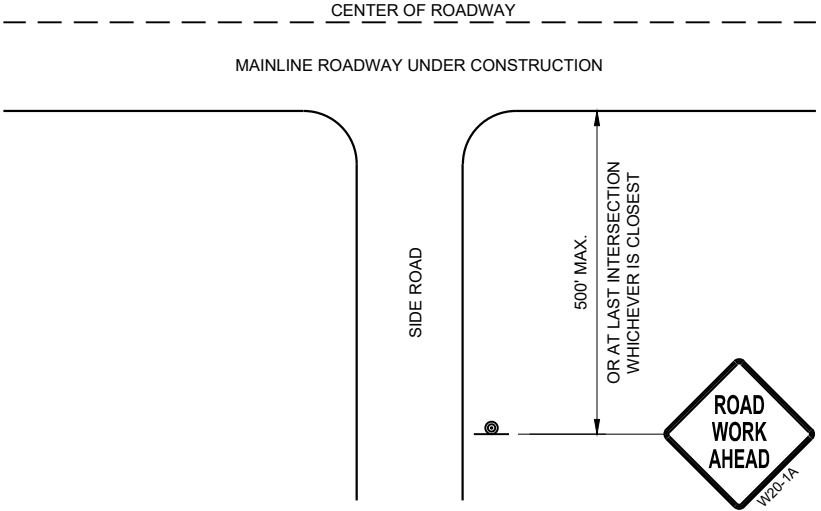
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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

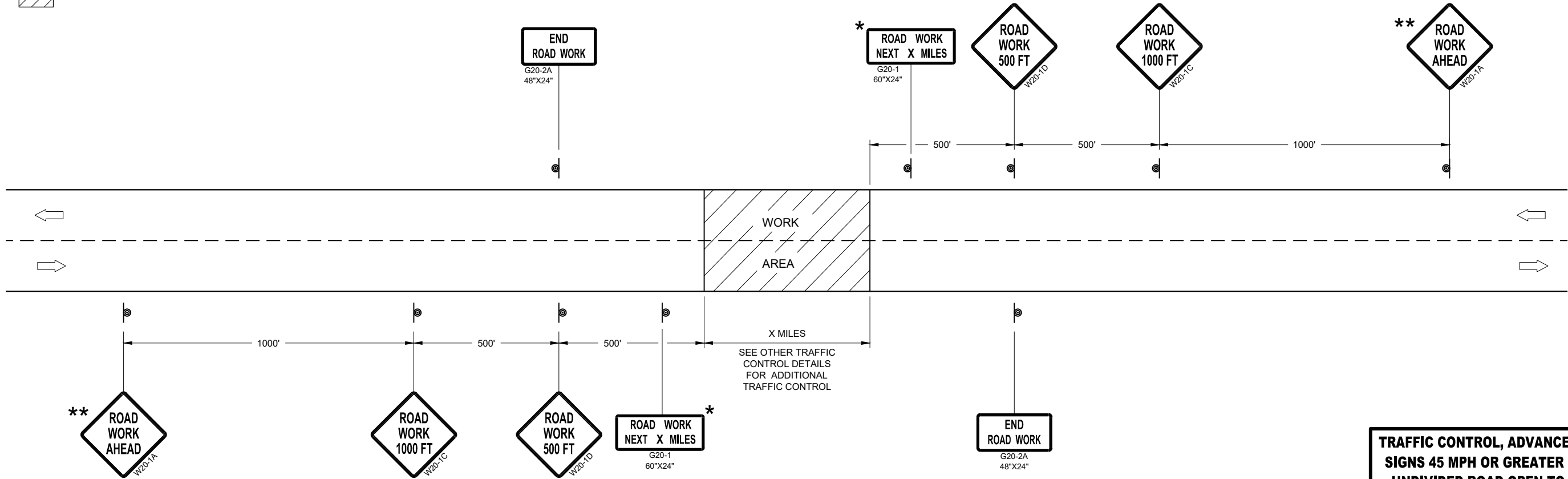
- * OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- ** PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.

LEGEND

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



TYPICAL SIDE ROAD APPROACH
WARNING SIGN DETAIL

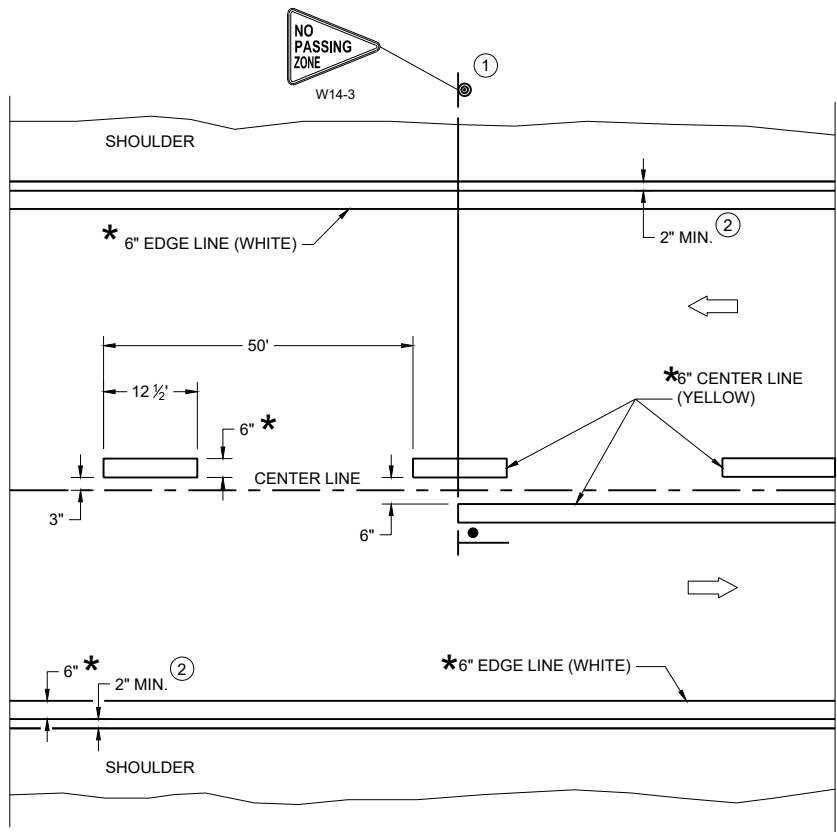


TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

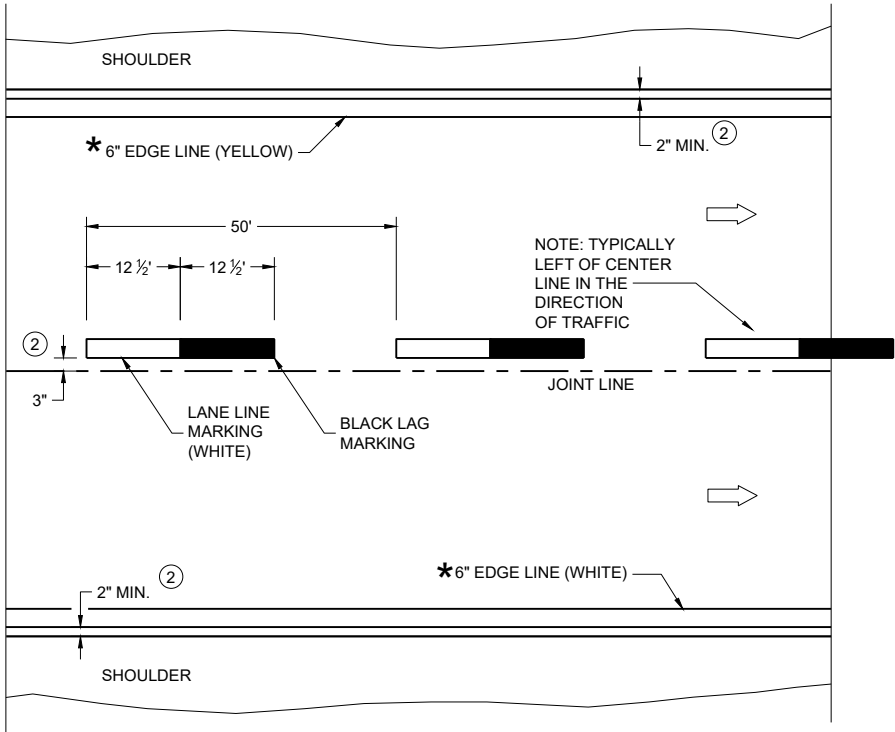
TRAFFIC CONTROL, ADVANCE WARNING
SIGNS 45 MPH OR GREATER TWO-WAY
UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



TWO WAY TRAFFIC



ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING

*CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES

GENERAL NOTES

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

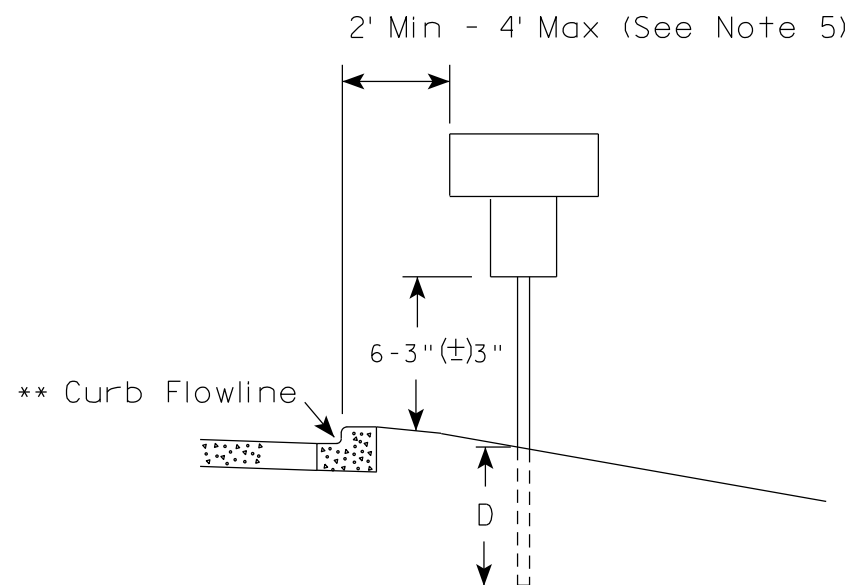
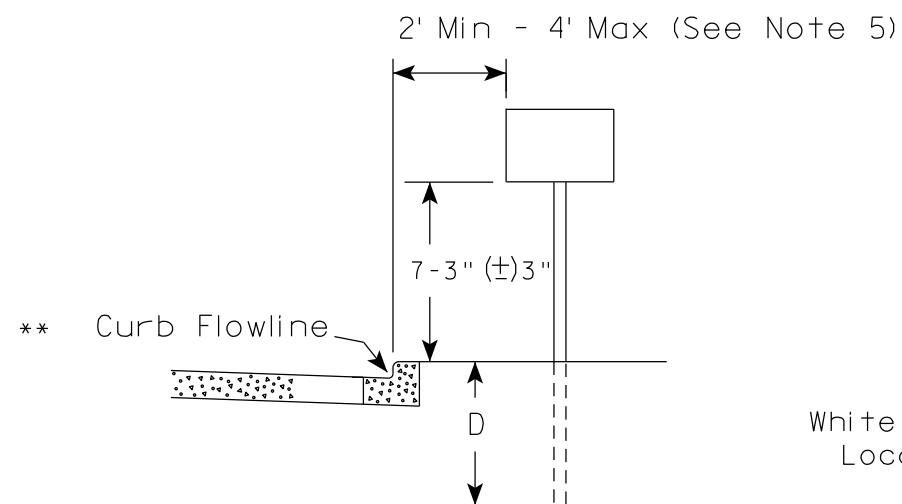
- ① LOCATE THE NO PASSING ZONE W14-3 SIGN WITHIN 50 FEET OF THE "T" MARKING
- ② MEASURE FROM EDGE OF MARKING TO JOINT LINE. THIS DOES NOT INCLUDE SPACE NEEDED FOR GROOVING OPERATIONS.

LEGEND

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

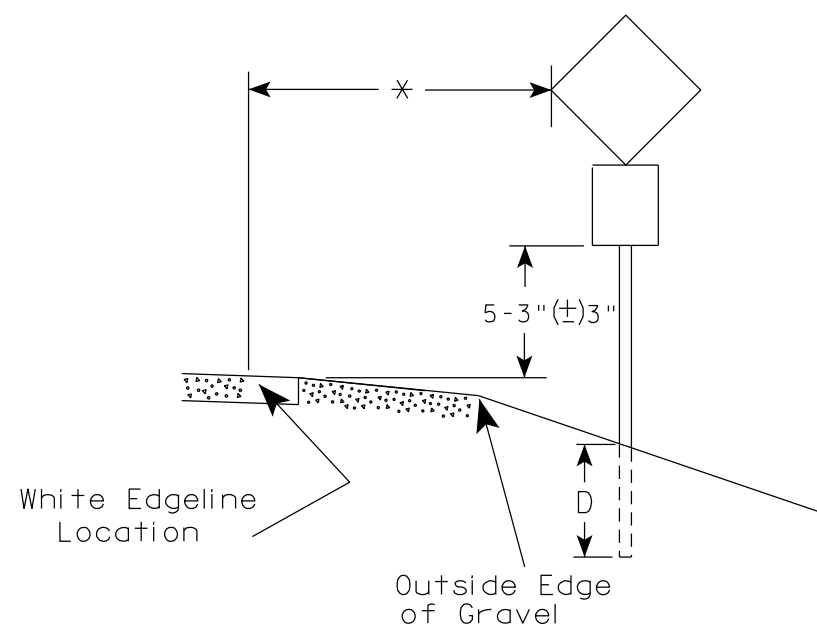
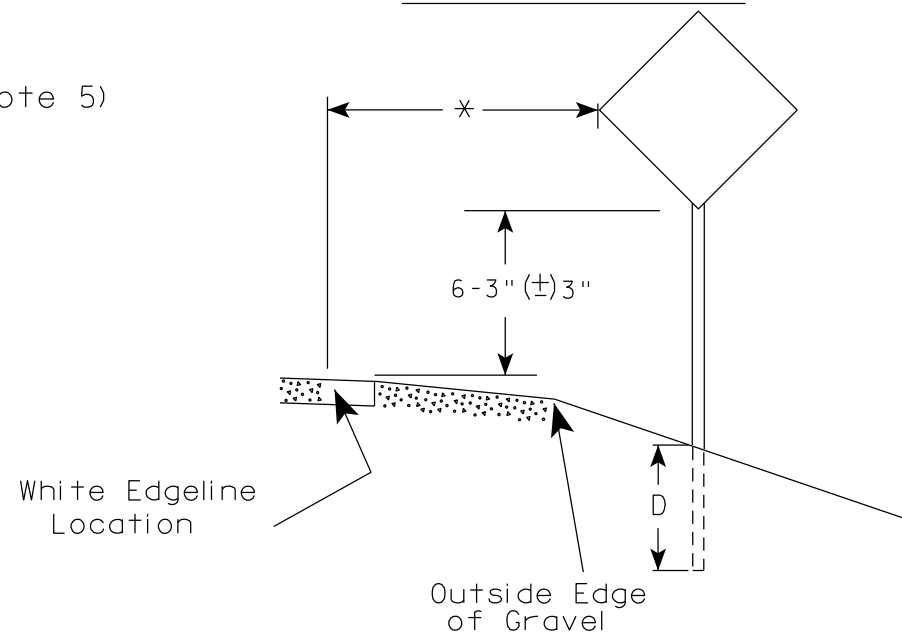
PERMANENT LONGITUDINAL PAVEMENT MARKINGS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED December 2024 DATE	/S/ Jeannie Silver Statewide Pavement Marking Engineer
FHWA	

URBAN AREA



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

RURAL AREA (See Note 2)



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

POST EMBEDMENT DEPTH

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

GENERAL NOTES

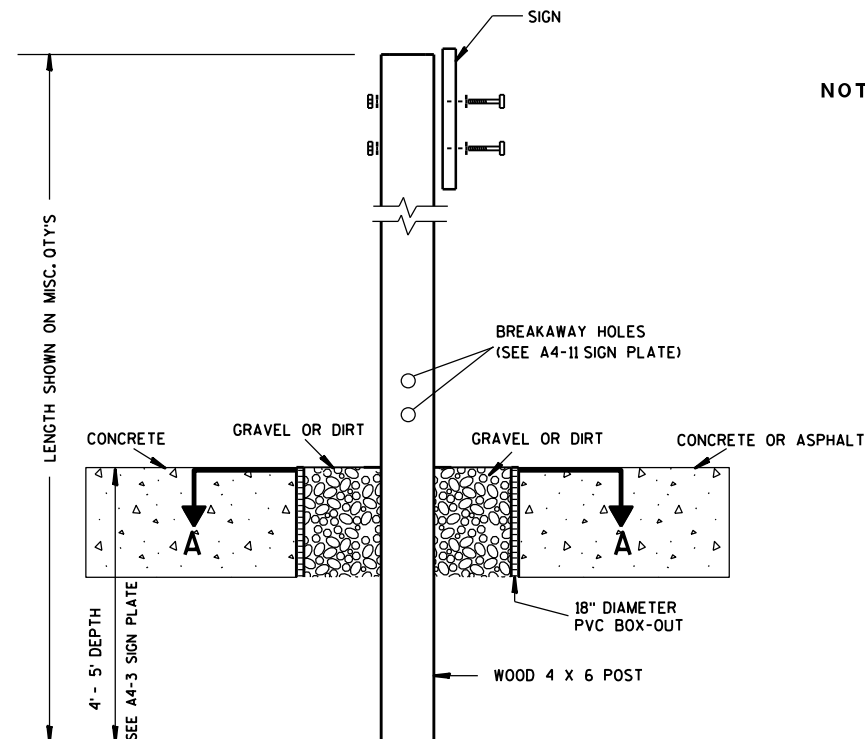
- Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
- If signs are mounted on or behind barrier wall, see A4-10 sign plate.
The Double Arrow sign (W12-1D) shall be mounted at a height of 2'-3" (±) 3". The Chevron sign (W1-8), Roundabout Chevron panel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

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

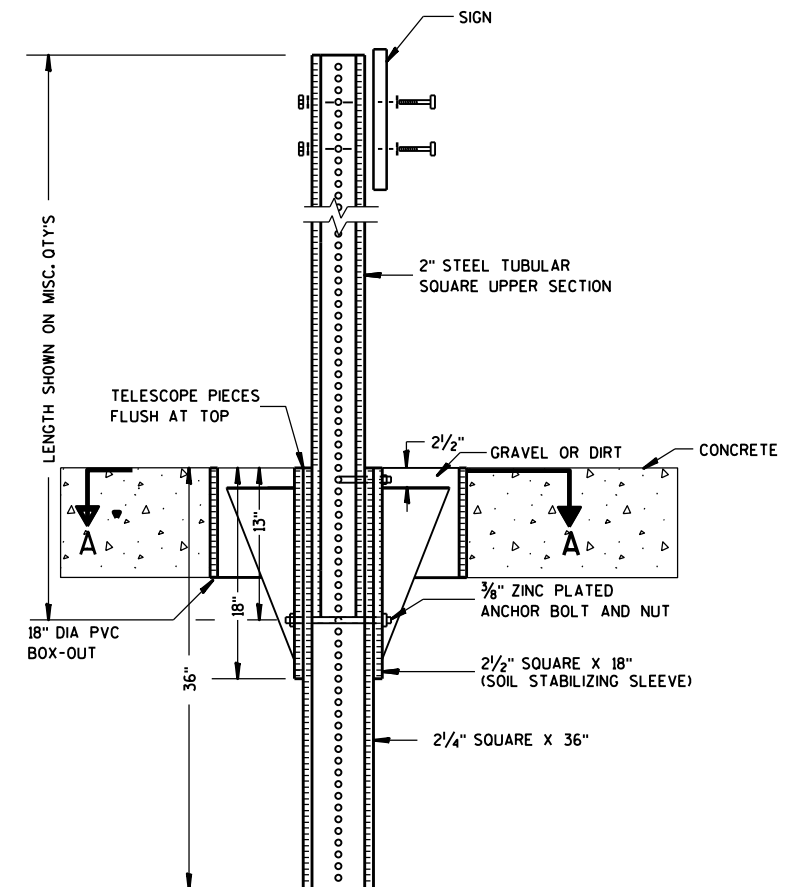
DATE 12/6/23 PLATE NO. A4-3.23



ELEVATION VIEW

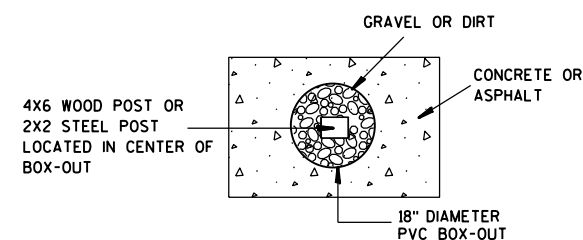
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST
BOX-OUTS
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/27/14 PLATE NO. A4-3B.1

PROJECT NO:

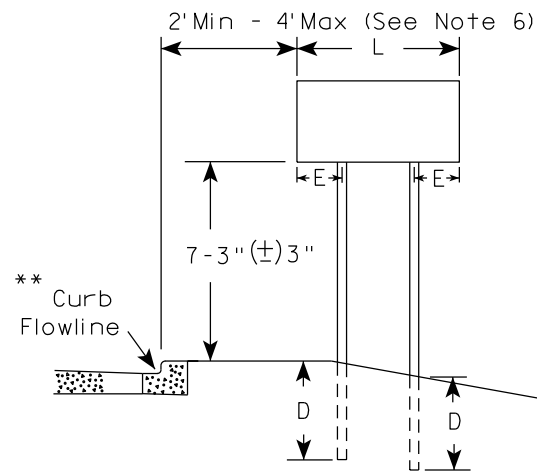
HWY:

COUNTY:

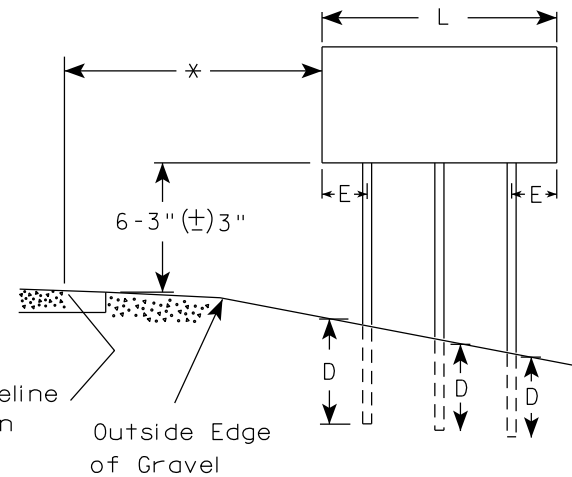
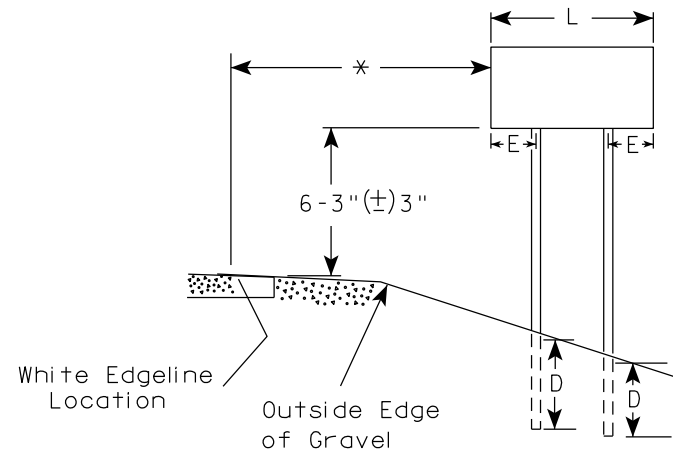
SHEET NO:

E

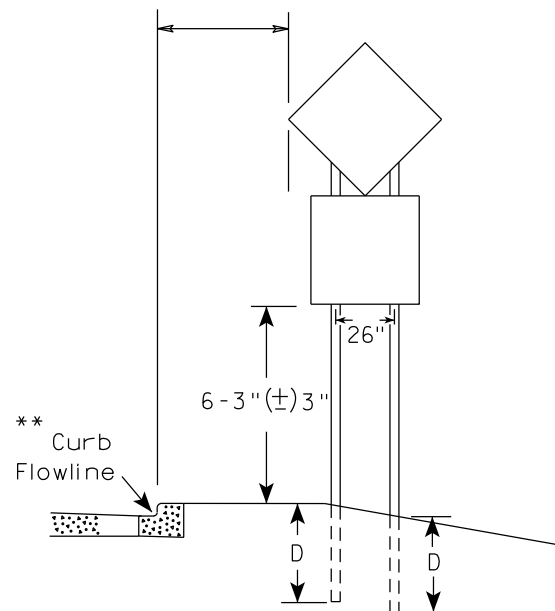
URBAN AREA



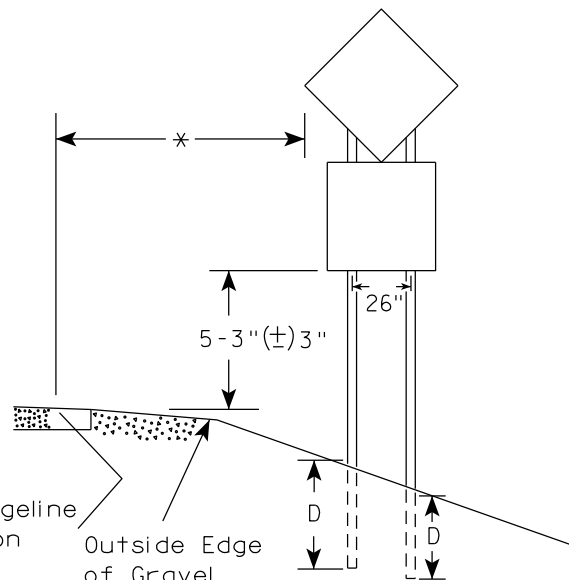
RURAL AREA (See Note 3)



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



48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

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

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

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION
OF TYPE II SIGNS
ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

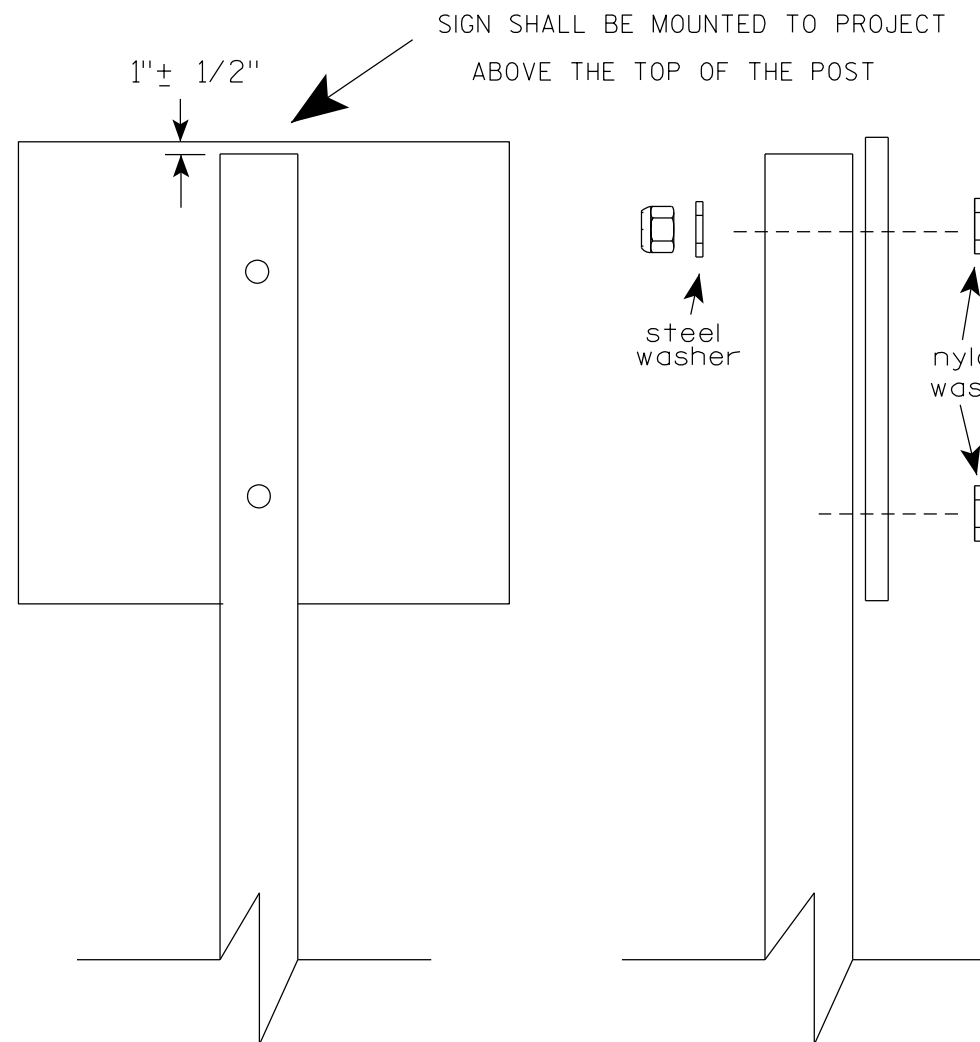
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



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

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

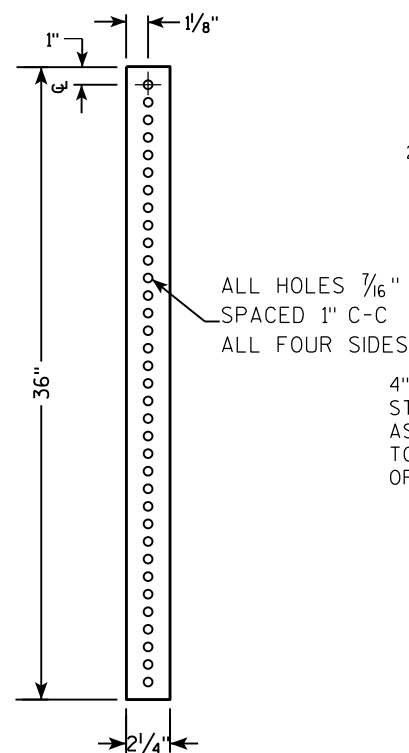
Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

- STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)
- MACHINE BOLTS - $\frac{5}{16}$ " X 1-3/4" Length w/ lock nuts
- WOOD POSTS (4" x 6")
- LAG SCREWS - $\frac{3}{8}$ " X 3" (NO STRINGERS ON BACK OF SIGN)
 $\frac{3}{8}$ " X 4" (STRINGERS ON BACK OF SIGN)
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - $\frac{3}{8}$ " X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
 $\frac{3}{8}$ " X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)
- RIVETS - $\frac{9}{32}$ " (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH
- WASHERS (ALL POSTS) -
- 1-1/4" O.D. X $\frac{3}{8}$ " I.D. X $\frac{1}{16}$ " STEEL
- 1-1/4" O.D. X $\frac{3}{8}$ " I.D. X .080 NYLON

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

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

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



2 1/2" TELESPAR TUBE

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

4"

2 1/2"

10"

3 1/2"

18"

TECHNICAL DRAWING OF A VERTICAL SIGN POST ASSEMBLY.

Labels and Dimensions:

- 18" DIA SCHEDULE 40 PVC BOX-OUT**: The base of the post.
- 36"**: Total height of the post assembly.
- 18"**: Height of the box-out section.
- 13"**: Height of the gravel/dirt section.
- 2 1/2" GRAVEL OR DIRT**: The base layer of the box-out.
- 2 1/2" SQUARE X 18" (SOIL STABILIZING SLEEVE)**: The sleeve around the box-out.
- 2 1/4" SQUARE X 36"**: The main post body.
- 2" STEEL TUBULAR SQUARE UPPER SECTION**: The upper part of the post.
- ALL HOLES 7/16" SPACED 1" C-C ALL FOUR SIDES**: Specification for the post holes.
- 3/8" ZINC PLATED CORNER ANCHOR BOLT AND NUT**: The bolt securing the post to the box-out.
- 3/16" ZINC PLATED ANCHOR BOLT AND NUT**: The bolt securing the sleeve to the box-out.
- SEE SIGN PLATE A4-8 FOR BOLT WASHER, & NUT MATERIAL**: Reference to the sign plate for hardware details.
- SIGN**: The sign plate at the top of the post.
- TELESCOPE PIECES FLUSH AT TOP**: Note about the top of the post assembly.

TECHNICAL DRAWING OF A SIGNPOST ASSEMBLY.

Side View Dimensions:

- Overall height: LENGTH SHOWN ON MISC. QTYS
- Top section height: 81"
- Section below top: 18"
- Section below that: 12"
- Section below that: 36"

End View Dimensions:

- Top section width: 2"
- Section below top: 2 1/2" SQUARE X 18" (SOIL STABILIZING SLEEVE)
- Bottom section width: 2 1/4" SQUARE X 36"

Labels and Notes:

- SIGN
- SEE SIGN PLATE A4-8 FOR BOLT WASHER, & NUT MATERIAL
- 2" STEEL TUBULAR SQUARE UPPER SECTION
- ALL HOLES 7/16" SPACED 1" C-C
- ALL FOUR SIDES
- 3/8" ZINC PLATED CORNER ANCHOR BOLT AND NUT
- TELESCOPE PIECES FLUSH AT TOP
- 3/8" ZINC PLATED ANCHOR BOLT AND NUT

A schematic diagram of a square microfluidic chip. It features a central square channel with rounded corners. Four inlet/outlet ports are located at the midpoints of the outer edges of the chip. The ports are connected to a network of channels that form a frame around the central channel. The top and bottom ports have straight vertical connections, while the left and right ports have horizontal connections. The central channel is wider than the connecting channels.

DIRECTION
OF TRAFFIC

SECTION A-A

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

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

TUBULAR STEEL
SIGN POST
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R. Rauch

for State Traffic Engineer

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

PROJECT NO:

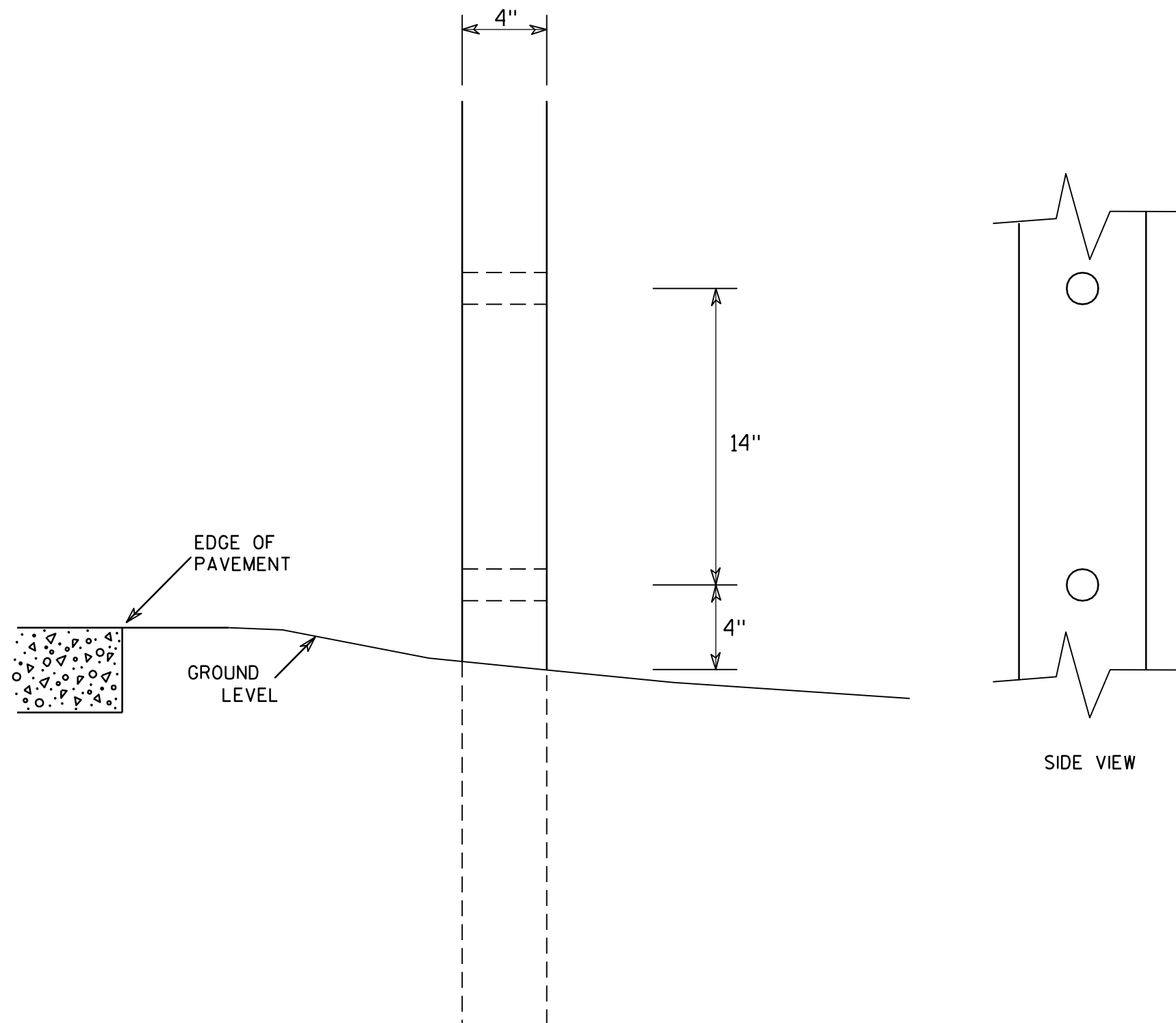
HWY:

COUNTY:

SHEET NO:

T

7



GENERAL NOTES

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

7

4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Chester J. Spang
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

HWY:

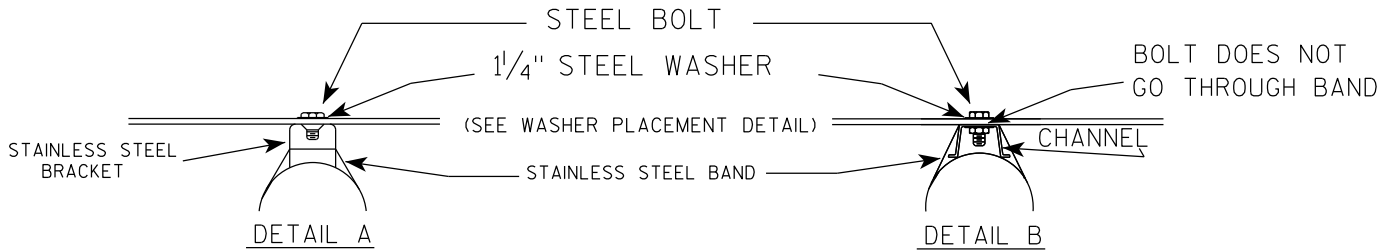
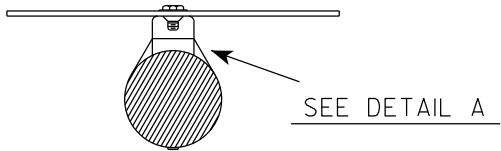
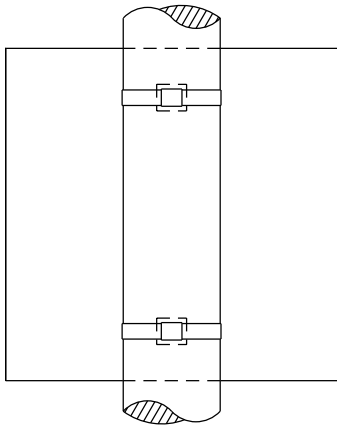
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SHEET NO:

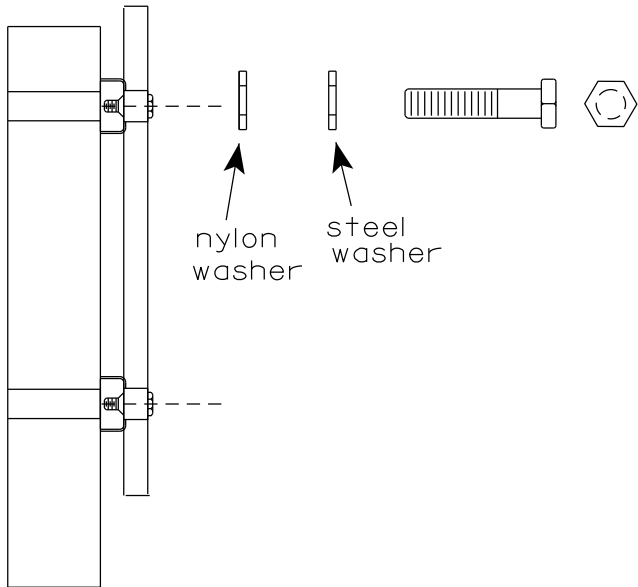
E

BANDING

SINGLE SIGN



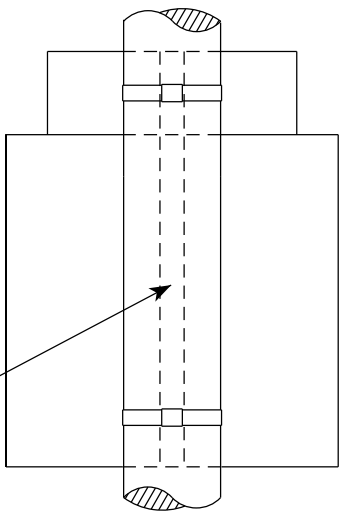
WASHER PLACEMENT



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

CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET

"J" ASSEMBLY



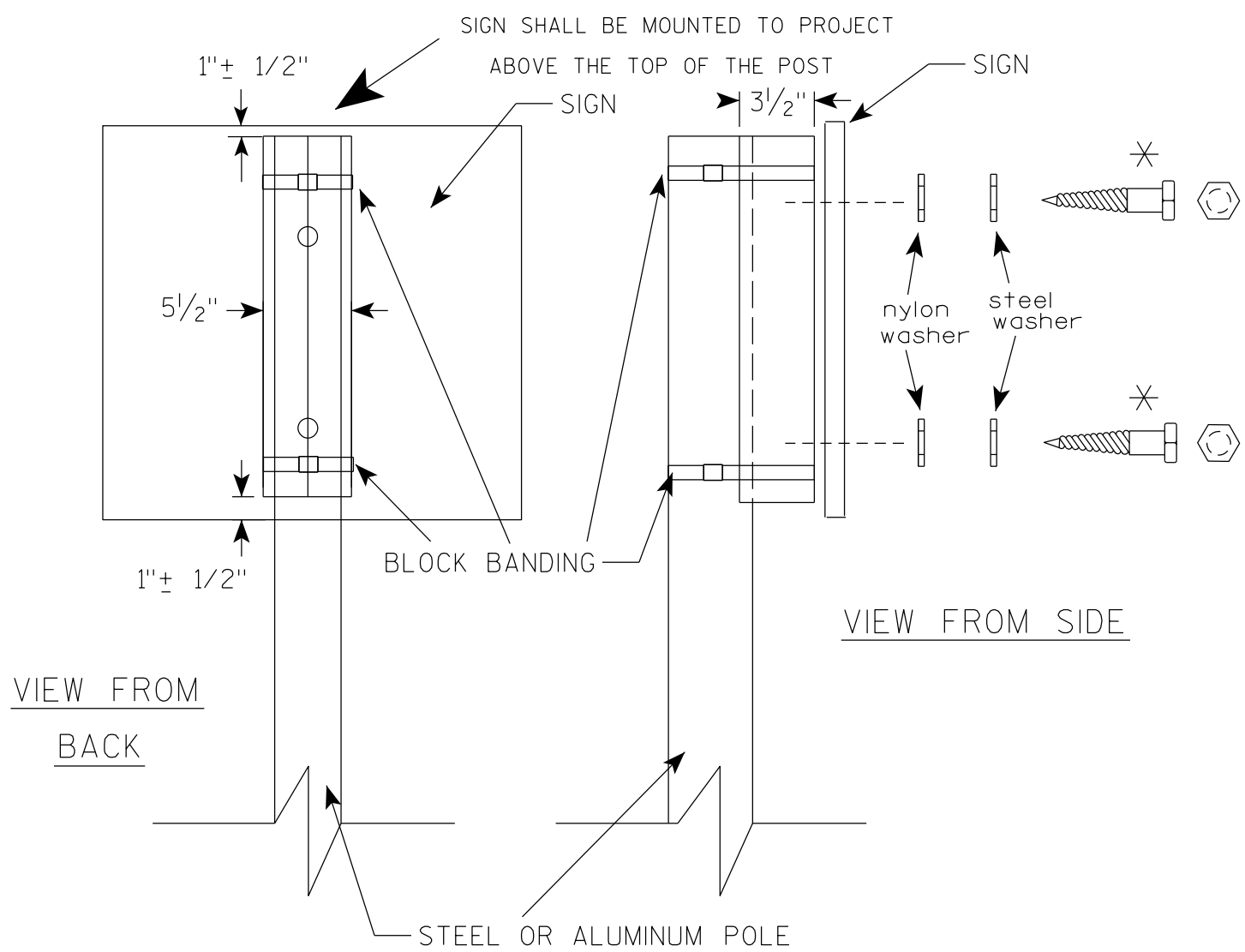
SEE DETAIL B

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

STANDARD SIGN
SIGN BANDING DETAILS

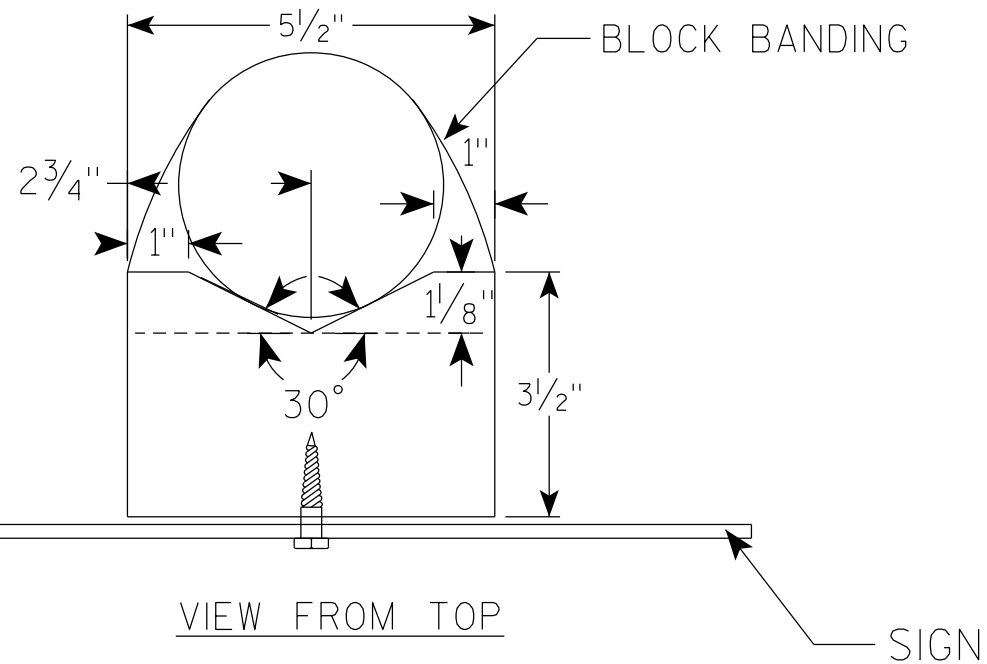
WISCONSIN DEPT OF TRANSPORTATION

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



VIEW FROM
BACK

VIEW FROM SIDE



VIEW FROM TOP

GENERAL NOTES

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

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

BLOCK BANDING DETAIL
(V-BLOCK OPTION)

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

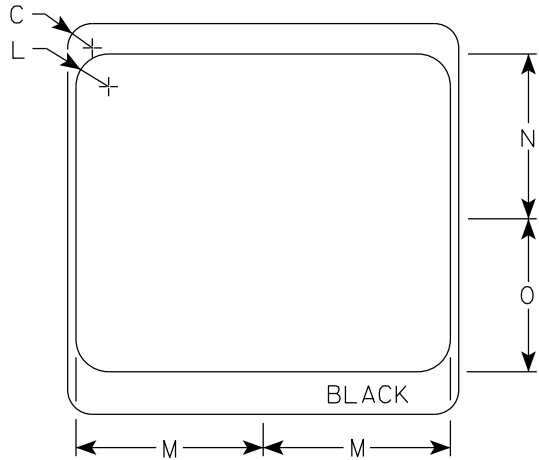
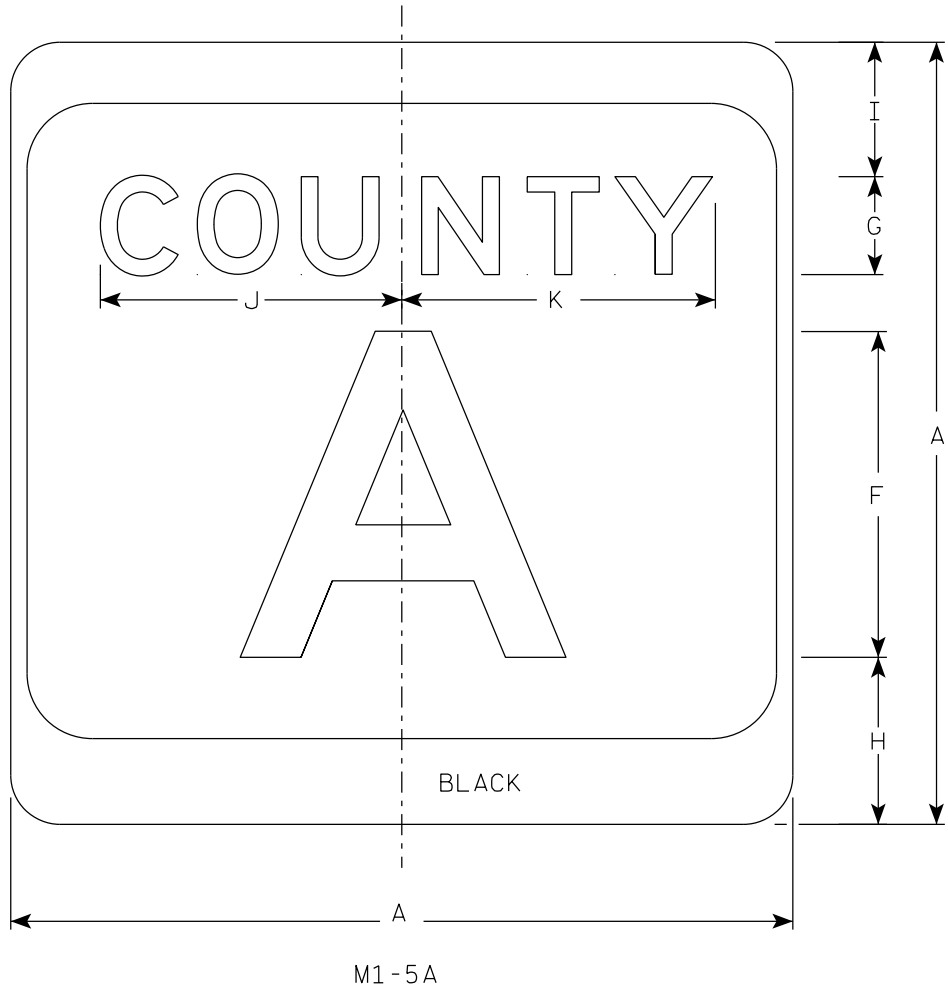
DATE 4/19/2022 PLATE NO. A5-10.3

PROJECT NO:

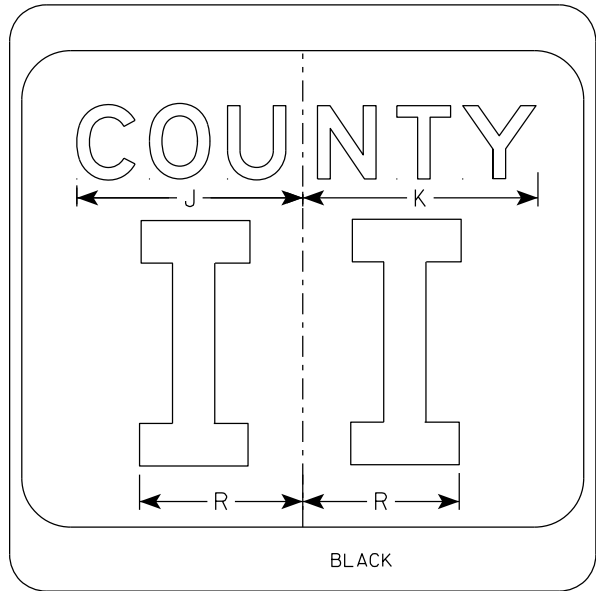
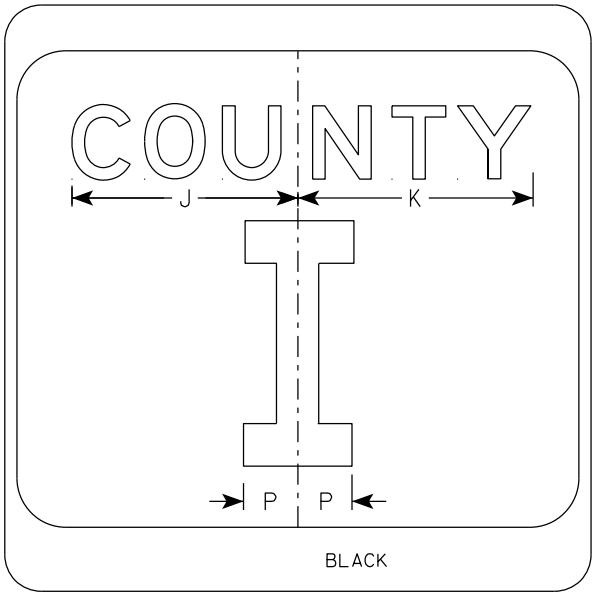
SHEET NO:

E

7



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



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

CTH MARKER

M1-5A FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

PROJECT NO:

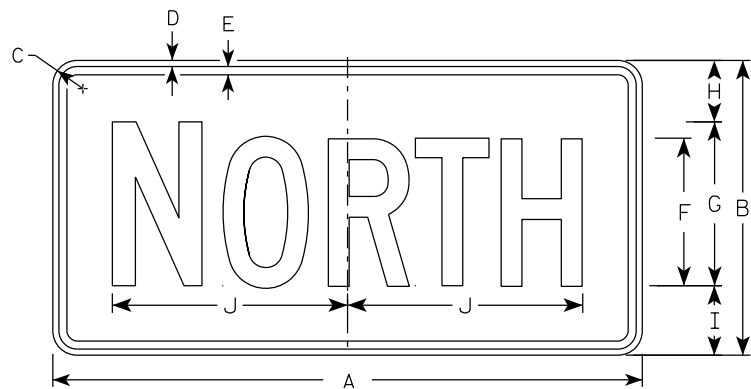
HWY:

COUNTY:

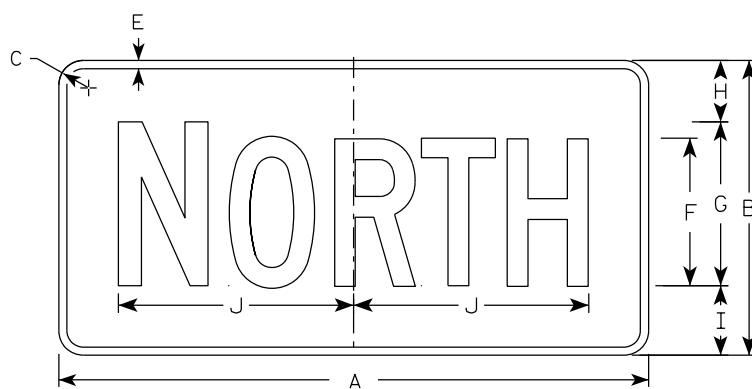
SHEET NO:

E

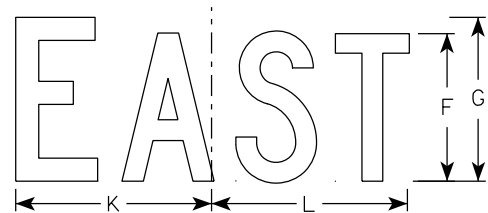
7



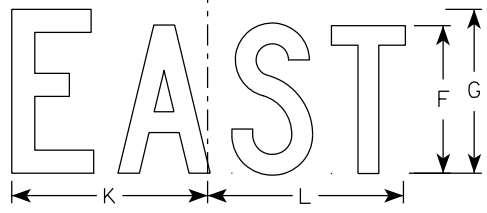
M3-1
MM3-1
MP3-1



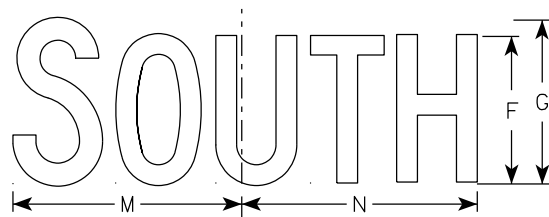
MB3-1
MK3-1
MN3-1



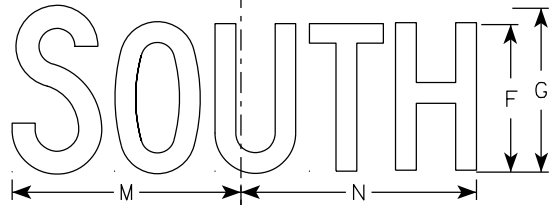
M3-2
MM3-2
MP3-2



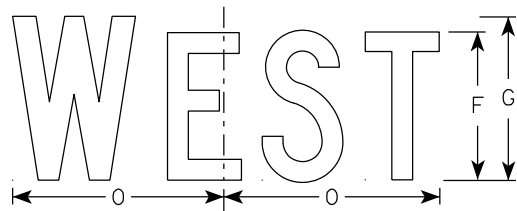
MB3-2
MK3-2
MN3-2



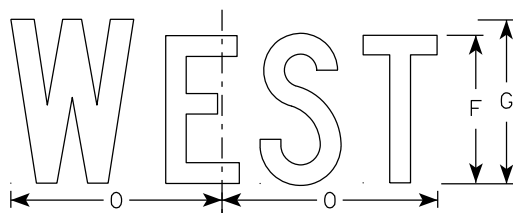
M3-3
MM3-3
MP3-3



MB3-3
MK3-3
MN3-3



M3-4
MM3-4
MP3-4



MB3-4
MK3-4
MN3-4

NOTES

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

7

7

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

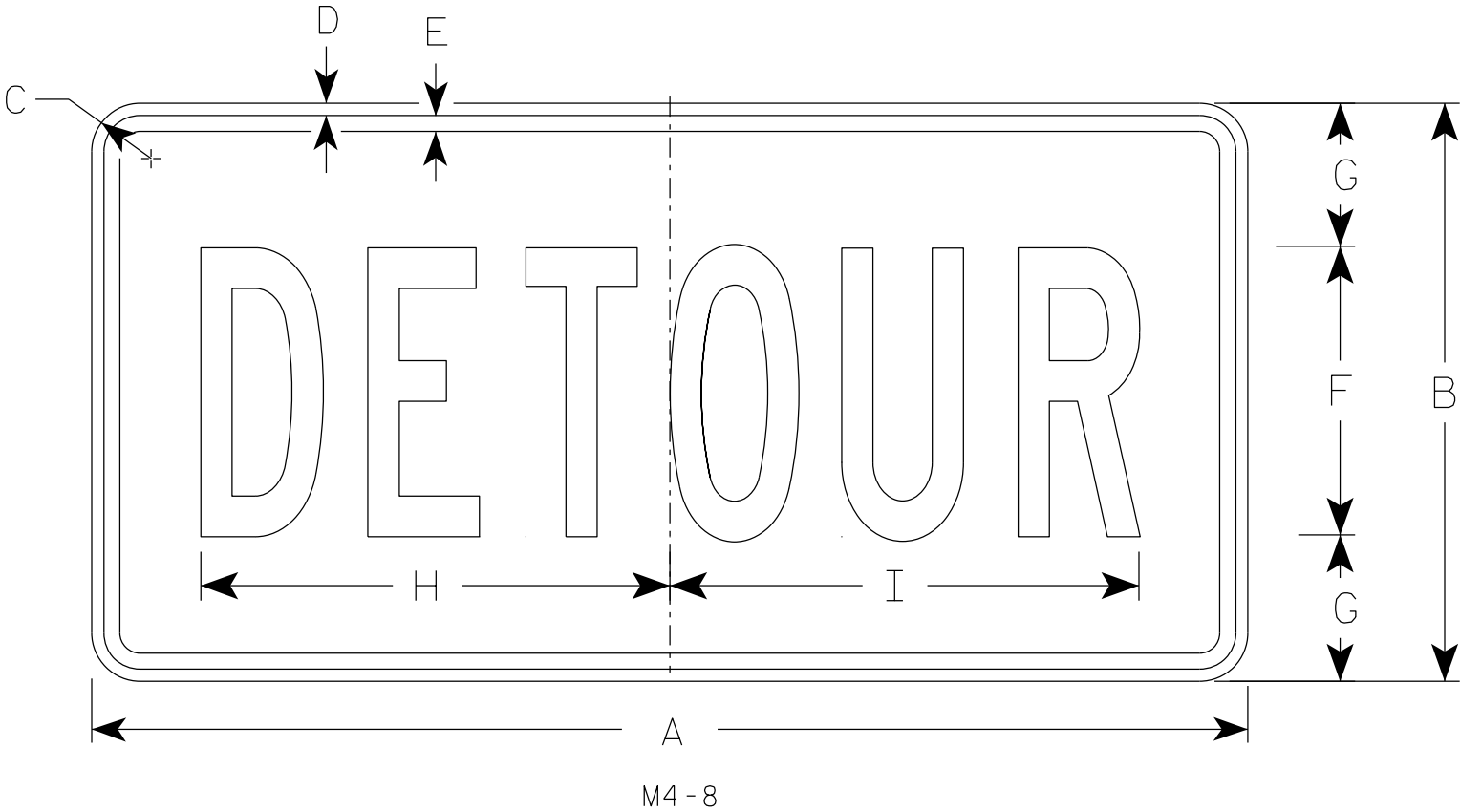
PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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7

7

NOTES

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



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

STANDARD SIGN

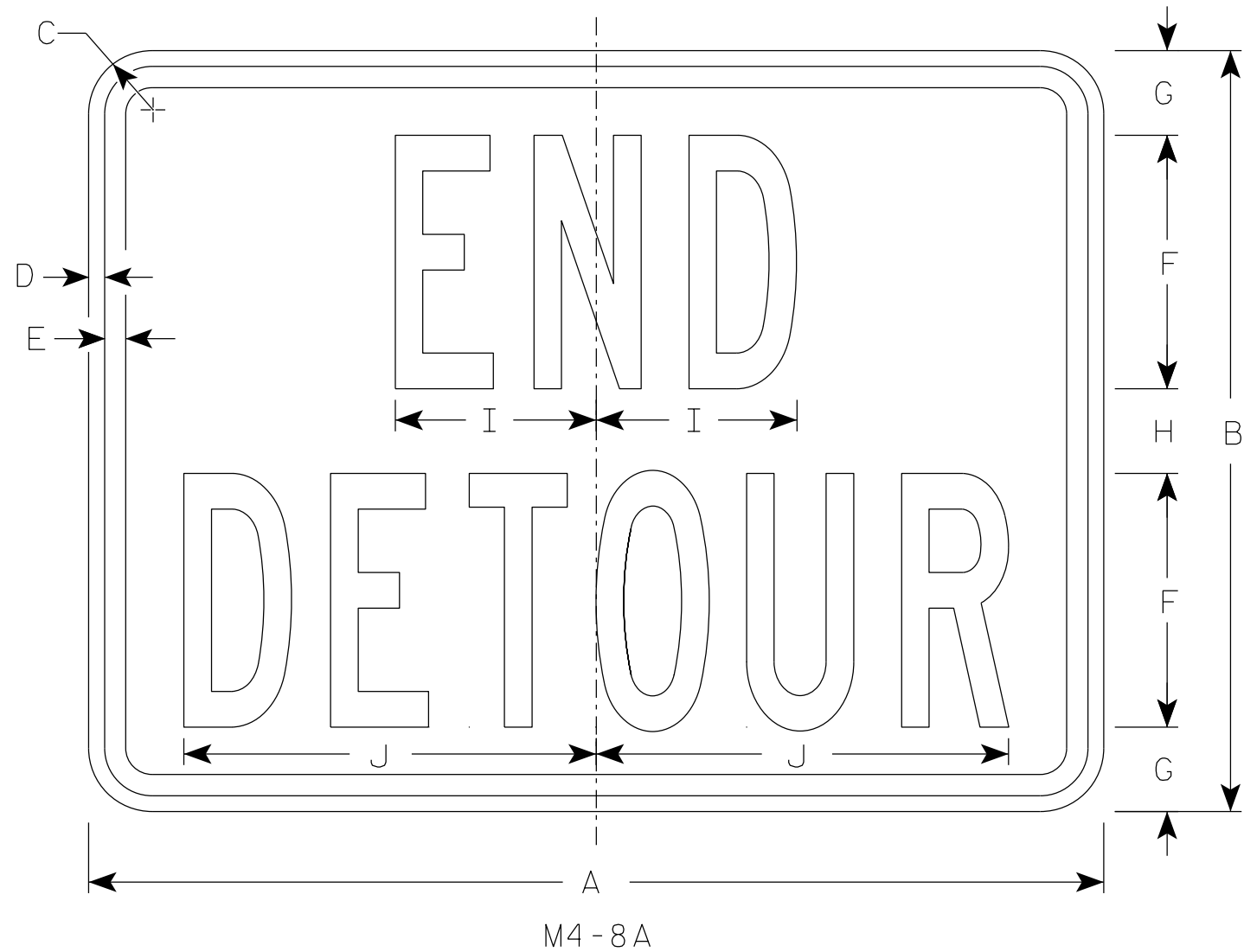
M4-8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

7



NOTES

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

7

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

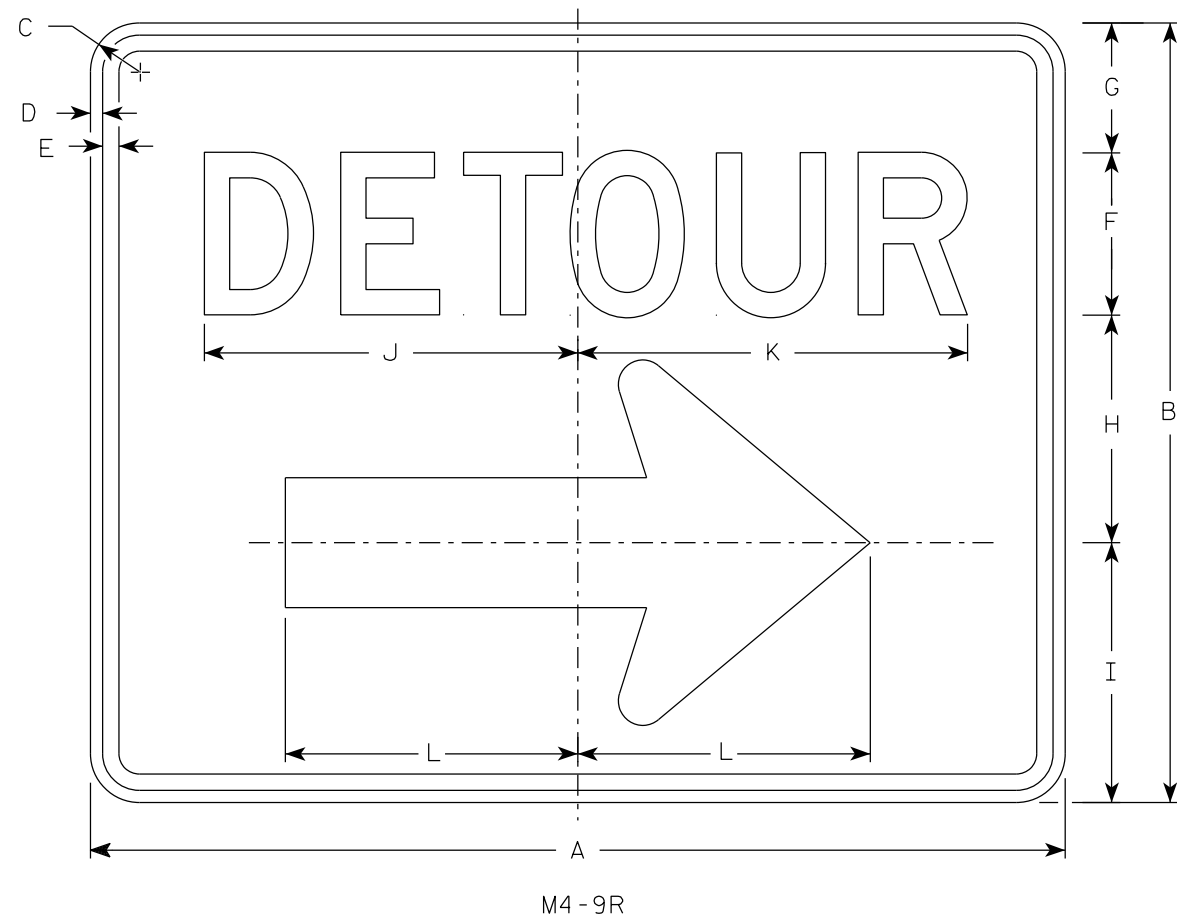
STANDARD SIGN

M4-8A

WISCONSIN DEPT OF TRANSPORTATION

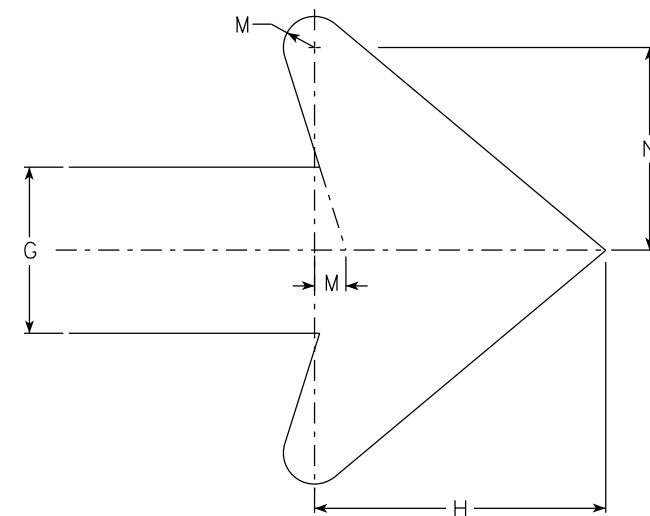
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

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



NOTES

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



Arrow Detail

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

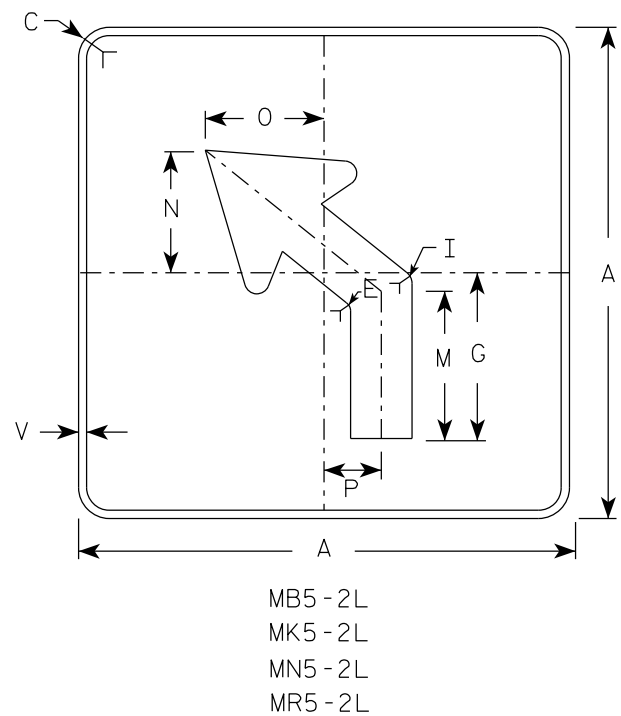
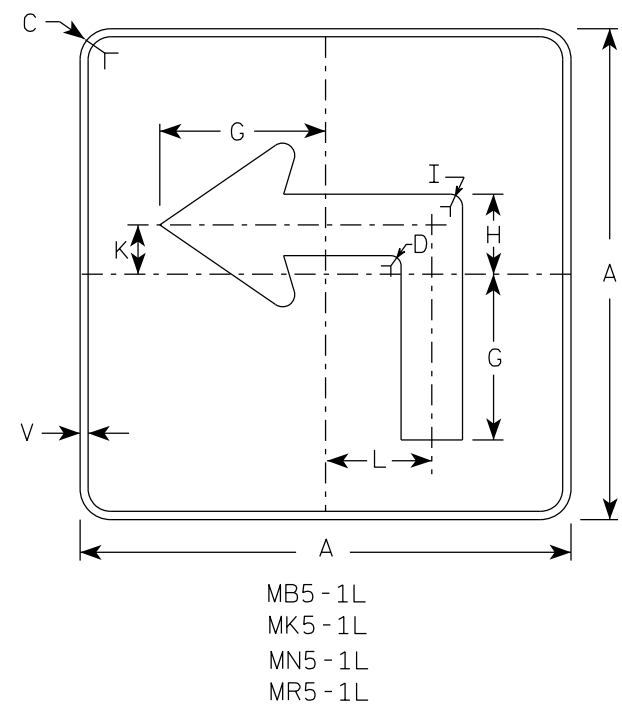
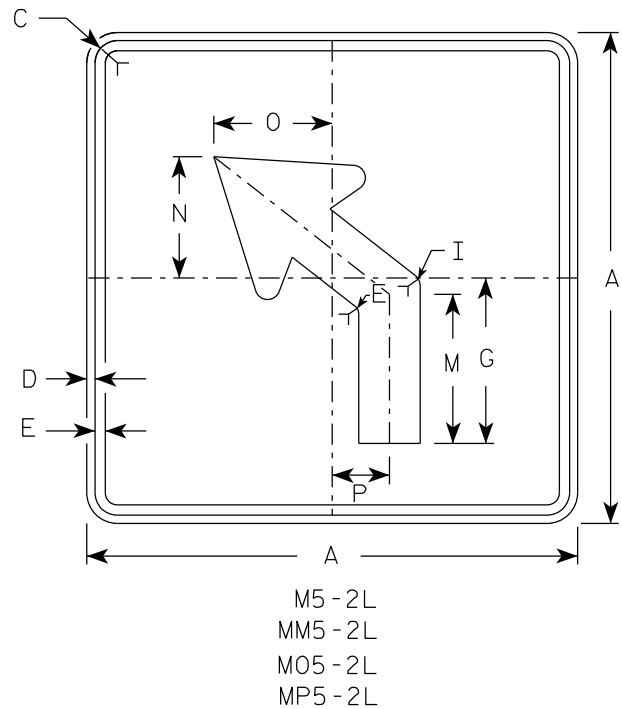
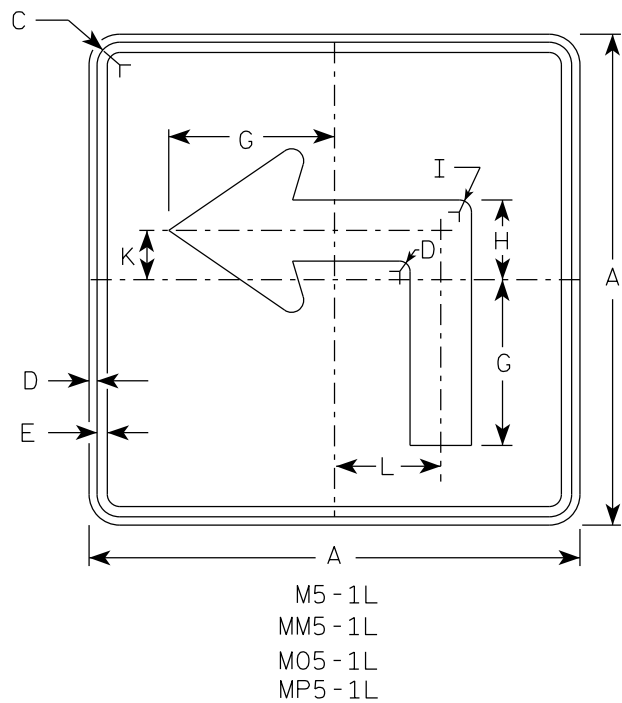
STANDARD SIGN
M4-9 R & L

WISCONSIN DEPT OF TRANSPORTATION

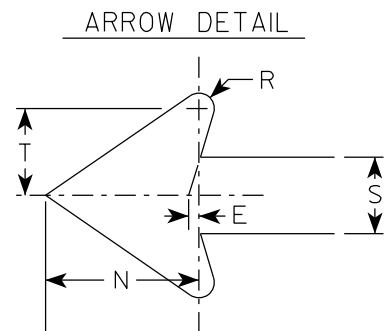
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

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

PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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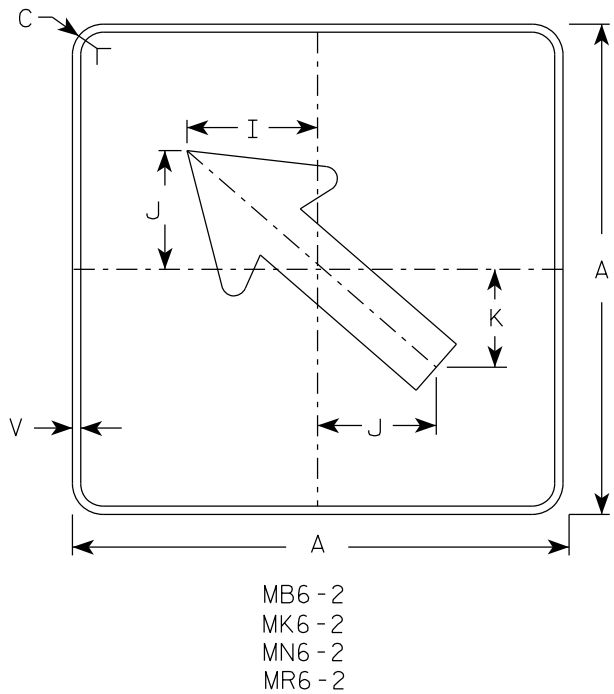
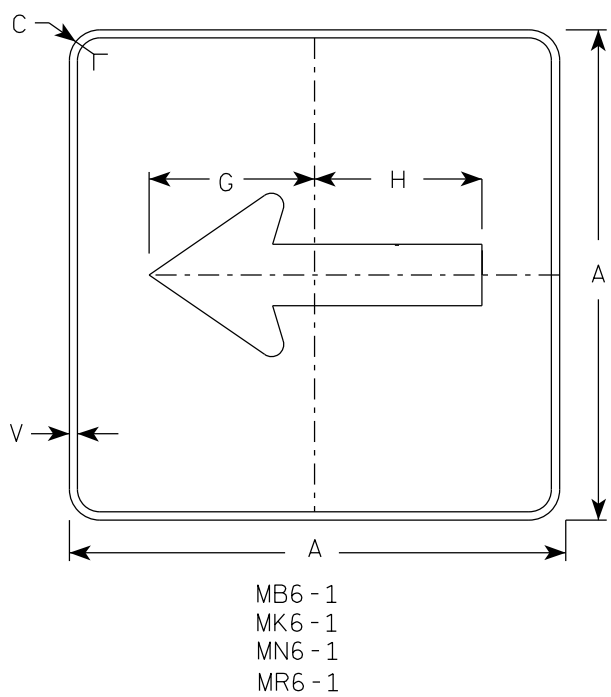
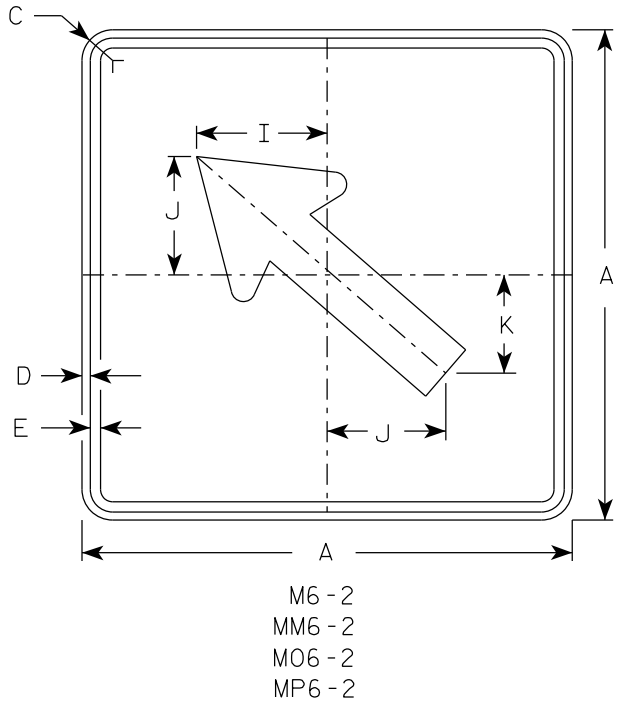
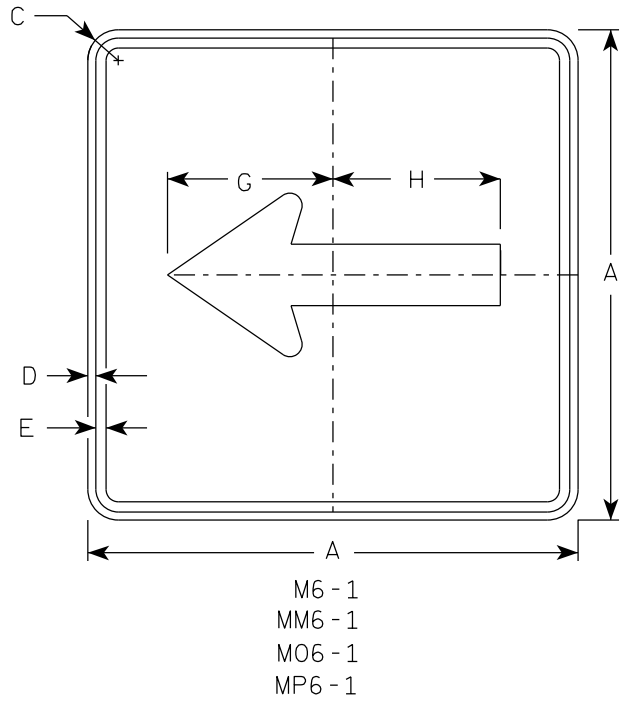


- NOTES
- Signs are Type II - Type H reflective except as shown
 - Color:
Background - See note 4
Message - See note 4
 - Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
 - | |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

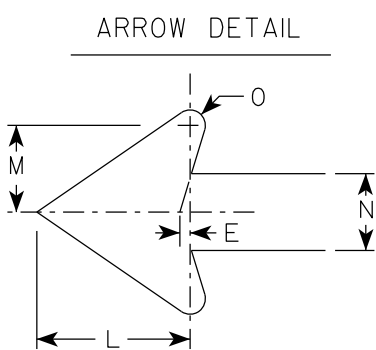


SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	21		1 1/2	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3		1/2					3.06
2M	21		1 1/2	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3		1/2					3.06
3	30		1 7/8	1/2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

PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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- NOTES**
- Signs are Type II - Type H Reflective except as Shown
 - Color:
Background - See note 4
Message - See note 4
 - Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
 - M6-1 and M6-2 Background - White
Message - Black
MB6-1 and MB6-2 Background - Blue
Message - White
MK6-1 and MK6-2 Background - Green
Message - White
MM6-1 and MM6-2 Background - White
Message - Green
MN6-1 and MN6-2 Background - Brown
Message - White
M06-1 and M06-2 Background - Orange - Type F Reflective
Message - Black
MP6-1 and MP6-2 Background - White
Message - Blue
MR6-1 and MR6-2 Background - Brown
Message - Yellow



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

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

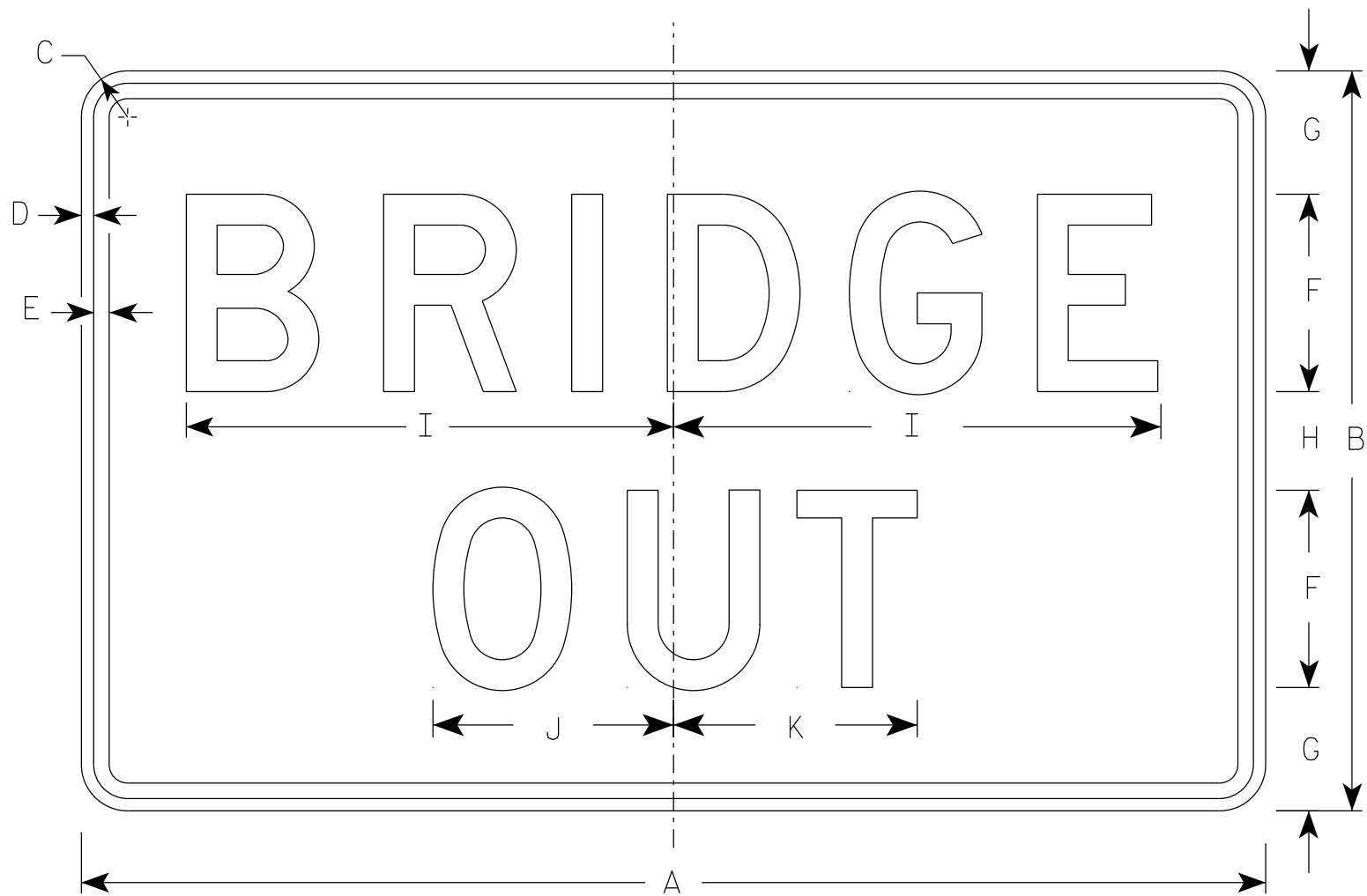
E

STANDARD SIGN
M6-1 & M6-2
SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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



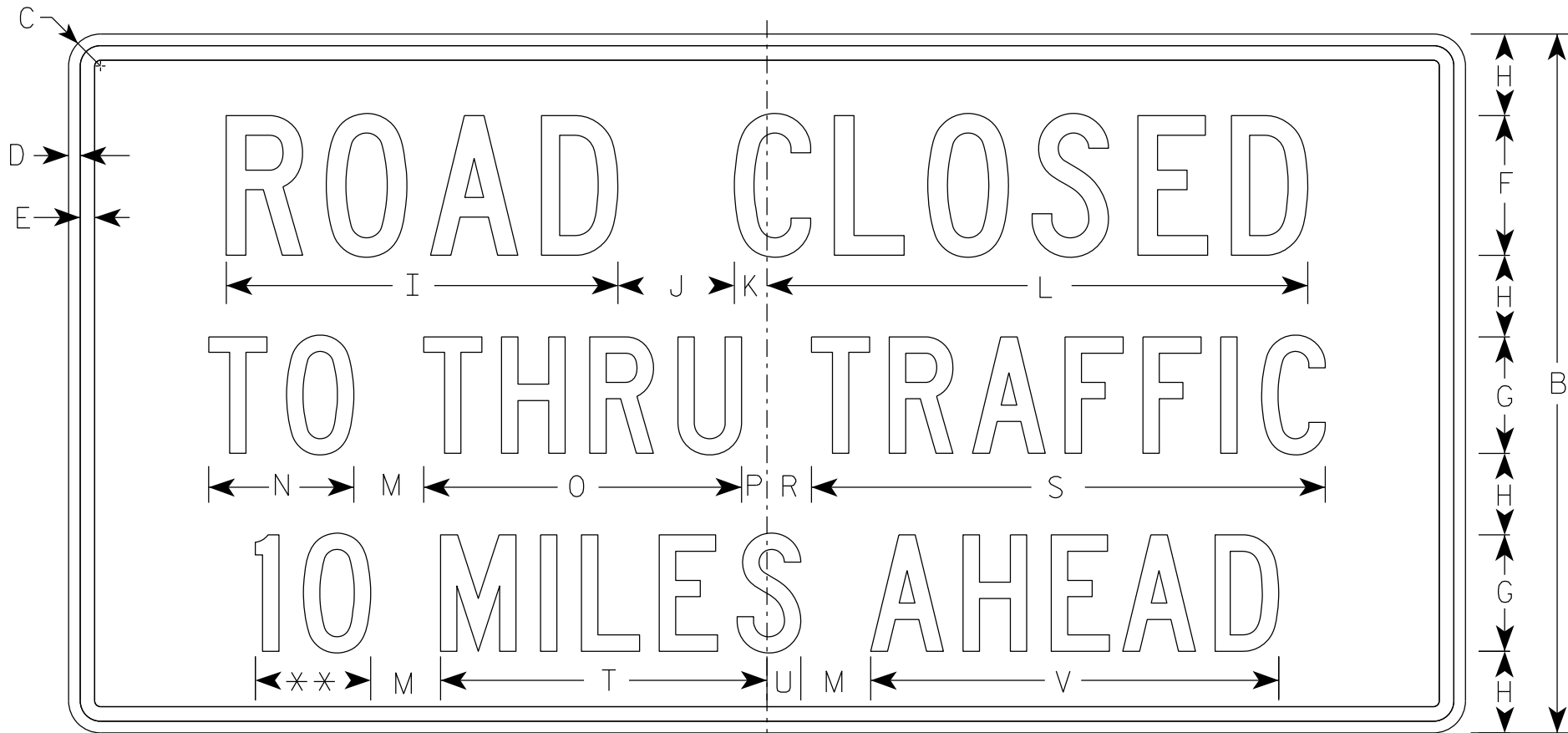
R11-2B

NOTES

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

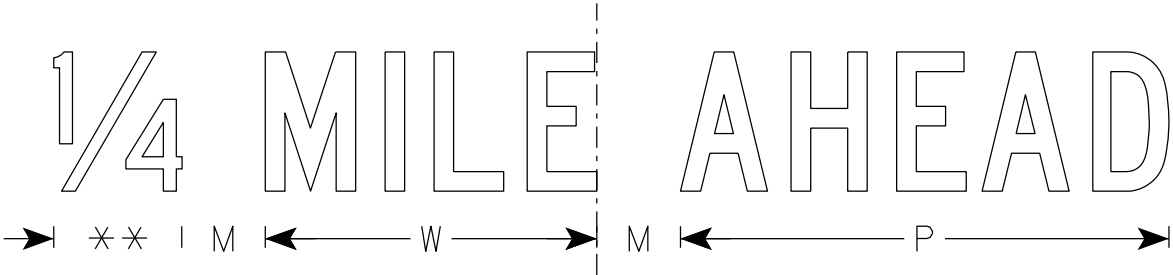
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48	30	1 7/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
2M	48	30	1 7/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
3	48	30	1 7/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0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

7



R11-3

** See Note 5



NOTES

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

7

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

STANDARD SIGN
R11-3

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

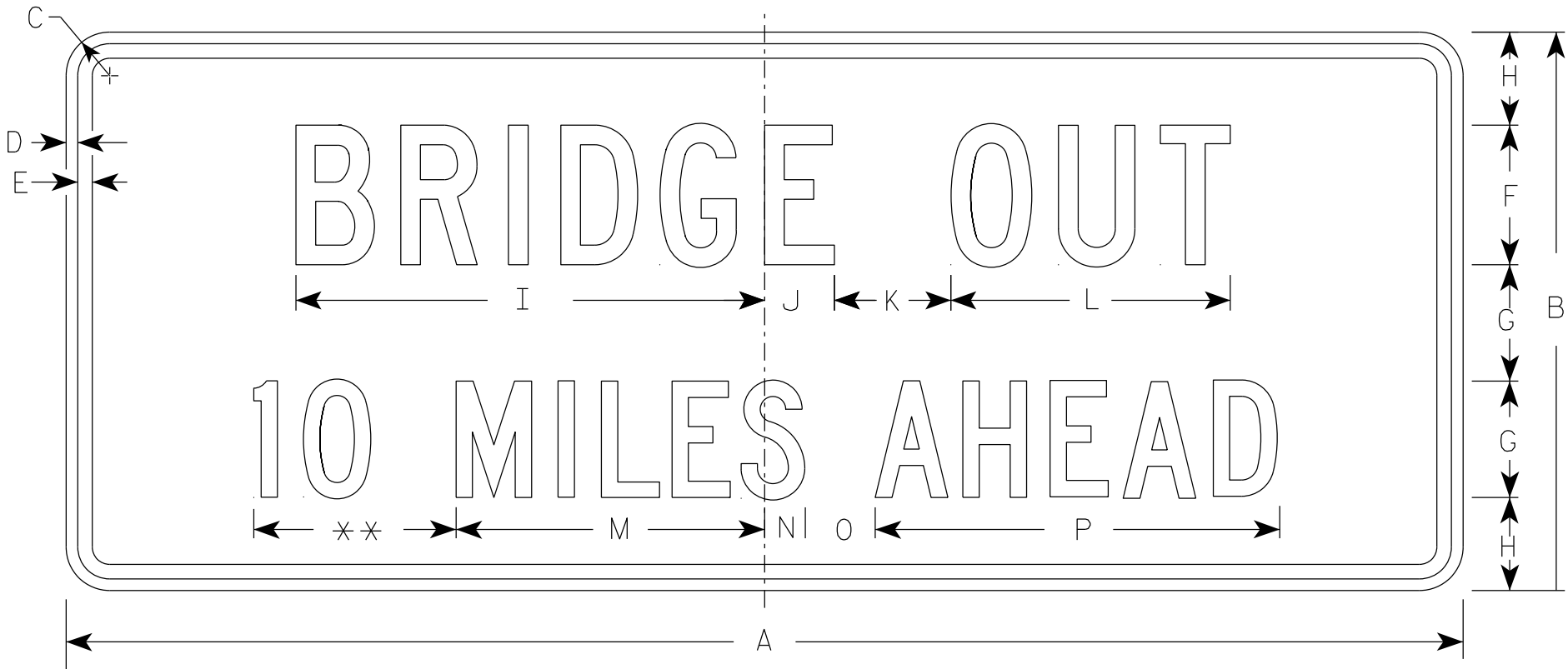
DATE 2/5/24 PLATE NO. R11-3.10

NOTES

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

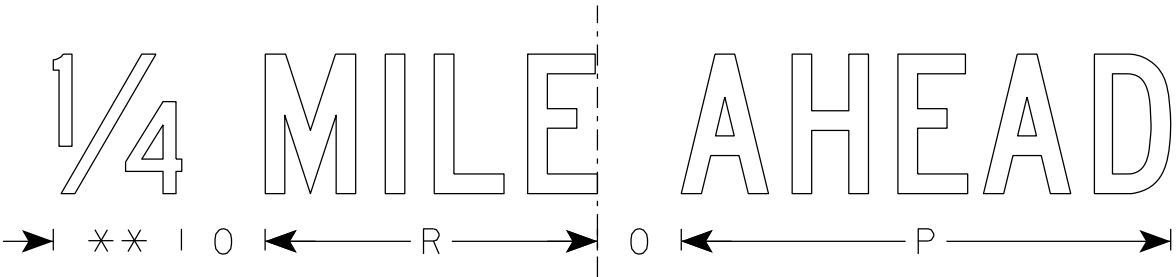
Background - White

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																											

STANDARD SIGN
R11-3C

WISCONSIN DEPT OF TRANSPORTATION

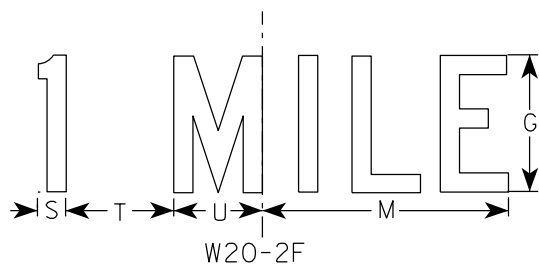
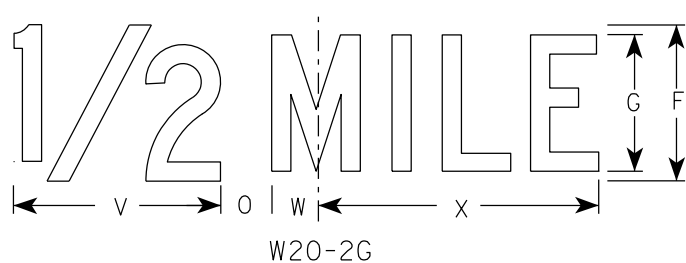
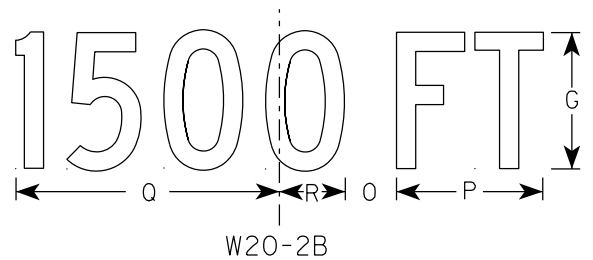
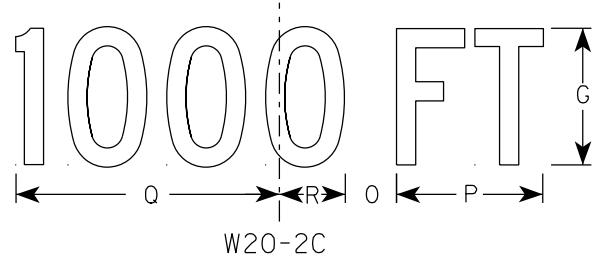
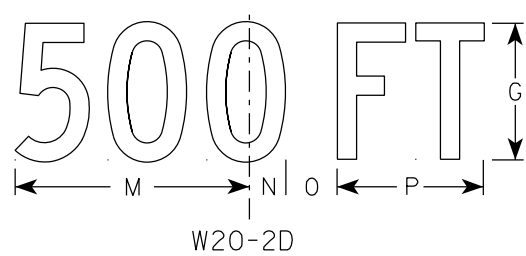
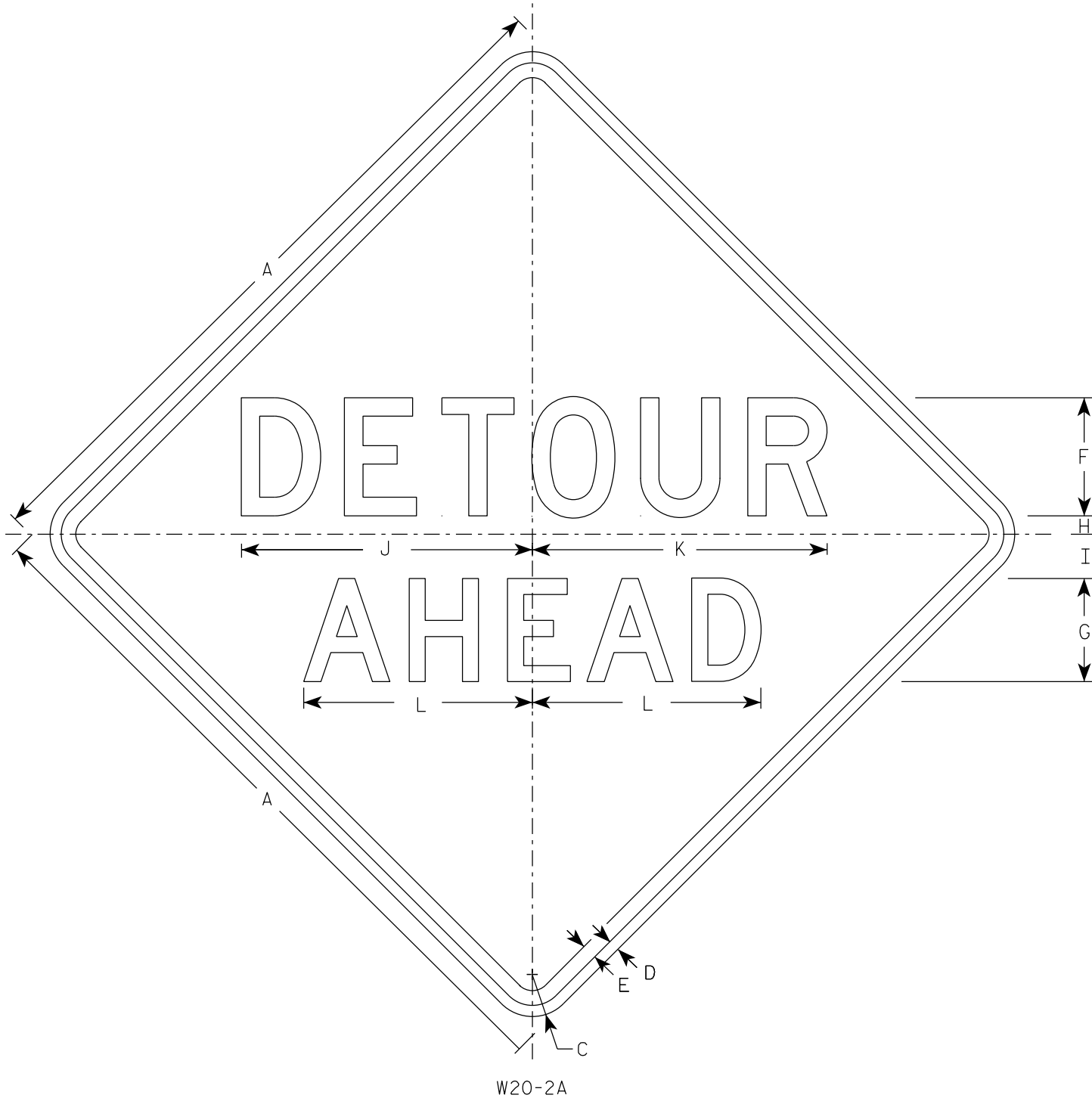
APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 2/5/24 PLATE NO. R11-3C.4

PROJECT NO:

SHEET NO:

E



NOTES

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

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

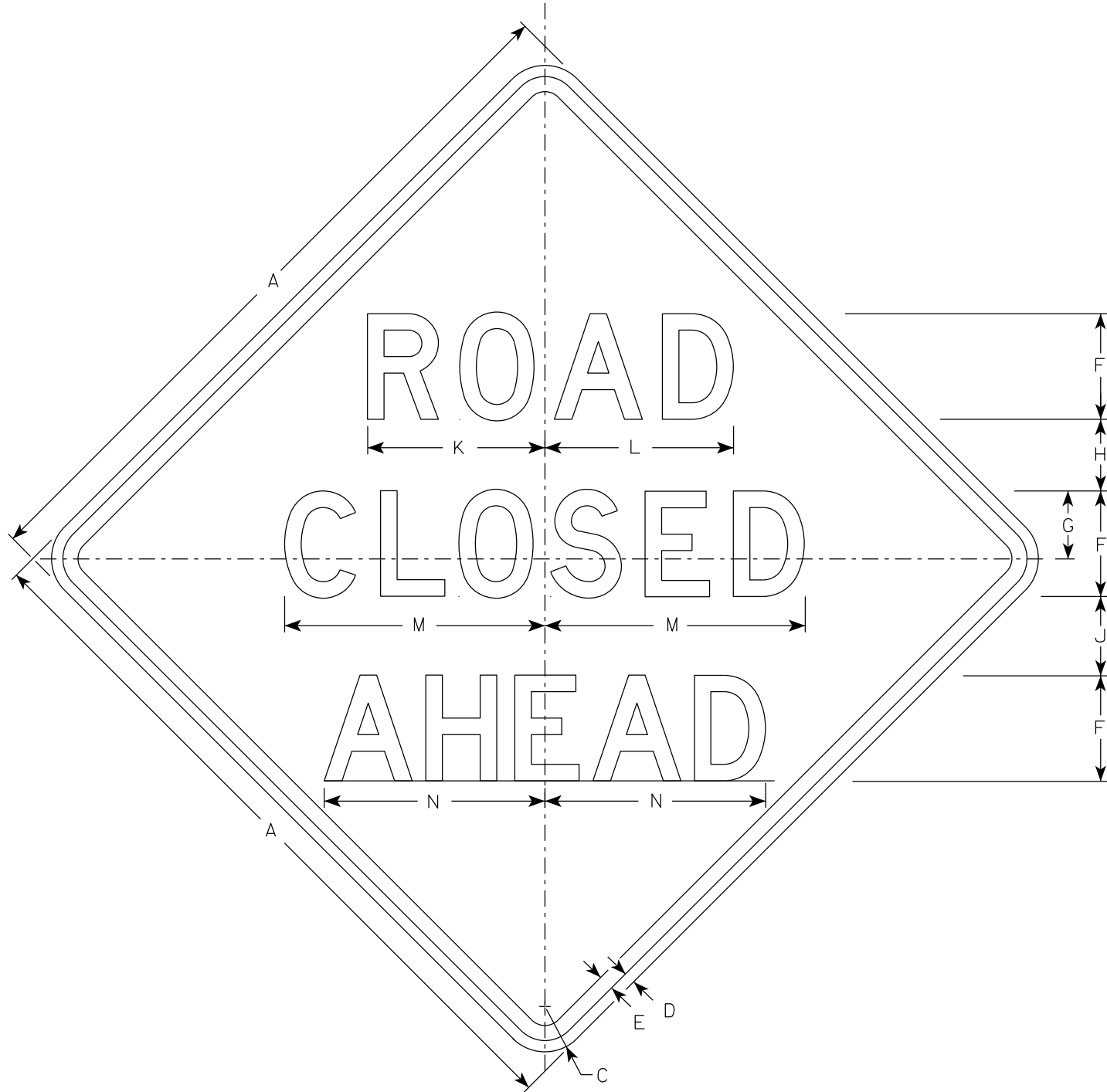
STANDARD SIGN
W20-2A,B,C,D,F & G

WISCONSIN DEPT OF TRANSPORTATION

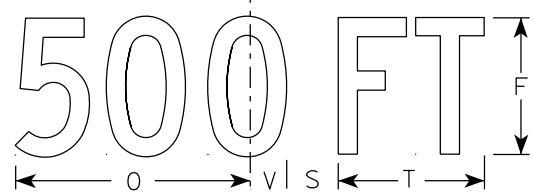
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

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

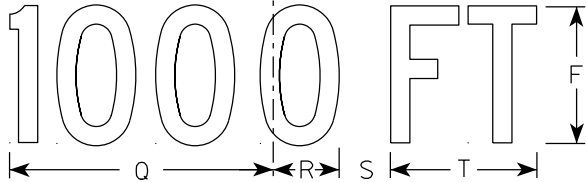
7



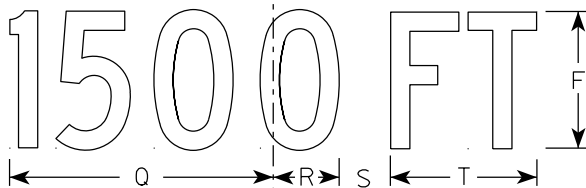
W20-3A



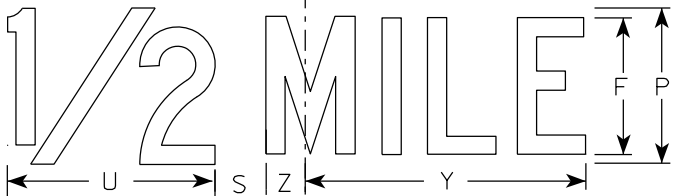
W20-3D



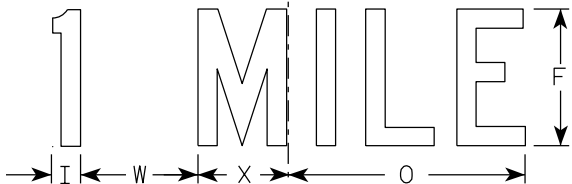
W20-3C



W20-3B



W20-3G



W20-3F

NOTES

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

7

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

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

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

HYDRAULIC DATA

100-YEAR FREQUENCY:

$Q_{100} = 7,420$ C.F.S.
 $V_{100} = 5.92$ 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:

$Q_2 = 3,124$ C.F.S.
 $V_2 = 4.55$ 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 SURFACE OF 20 POUNDS PER SQUARE FOOT.

MATERIAL PROPERTIES:

CONCRETE MASONRY:
SUPERSTRUCTURE $f'_c = 4,000$ PSI
ALL OTHER $f'_c = 3,500$ PSI

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

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 PILING 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

ADT = 1,446 (2026)
ADT = 1,703 (2046)
R.D.S. = 45 MPH

LEGEND

(X) INDICATES WING NUMBER

*** PROVIDE FOR THREE BEAM GUARD RAIL ATTACHMENT

STRUCTURE DESIGN CONTACTS:

DESIGN CONSULTANT: EVAN CONSTANT 608-251-4843
BUREAU OF STRUCTURES: AARON BONK 608-261-0261



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

STRUCTURE B-68-150

CTH B OVER LITTLE WOLF RIVER

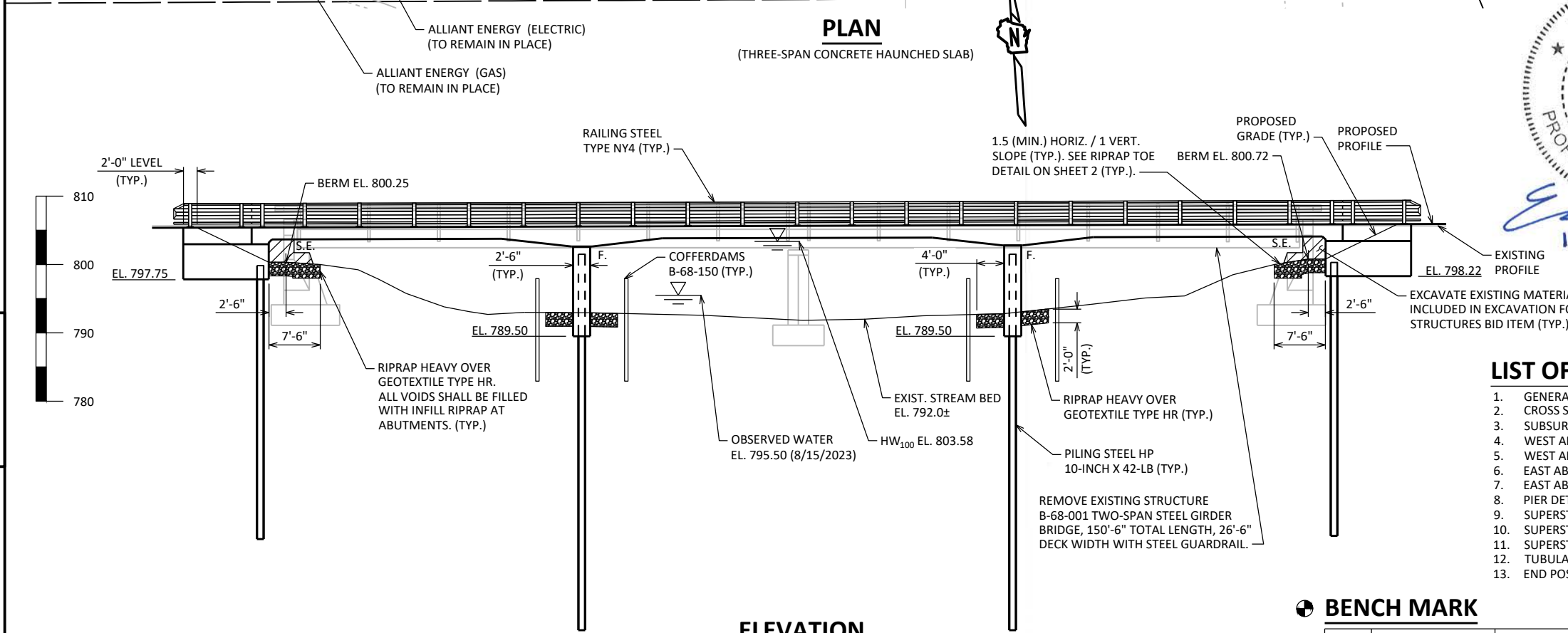
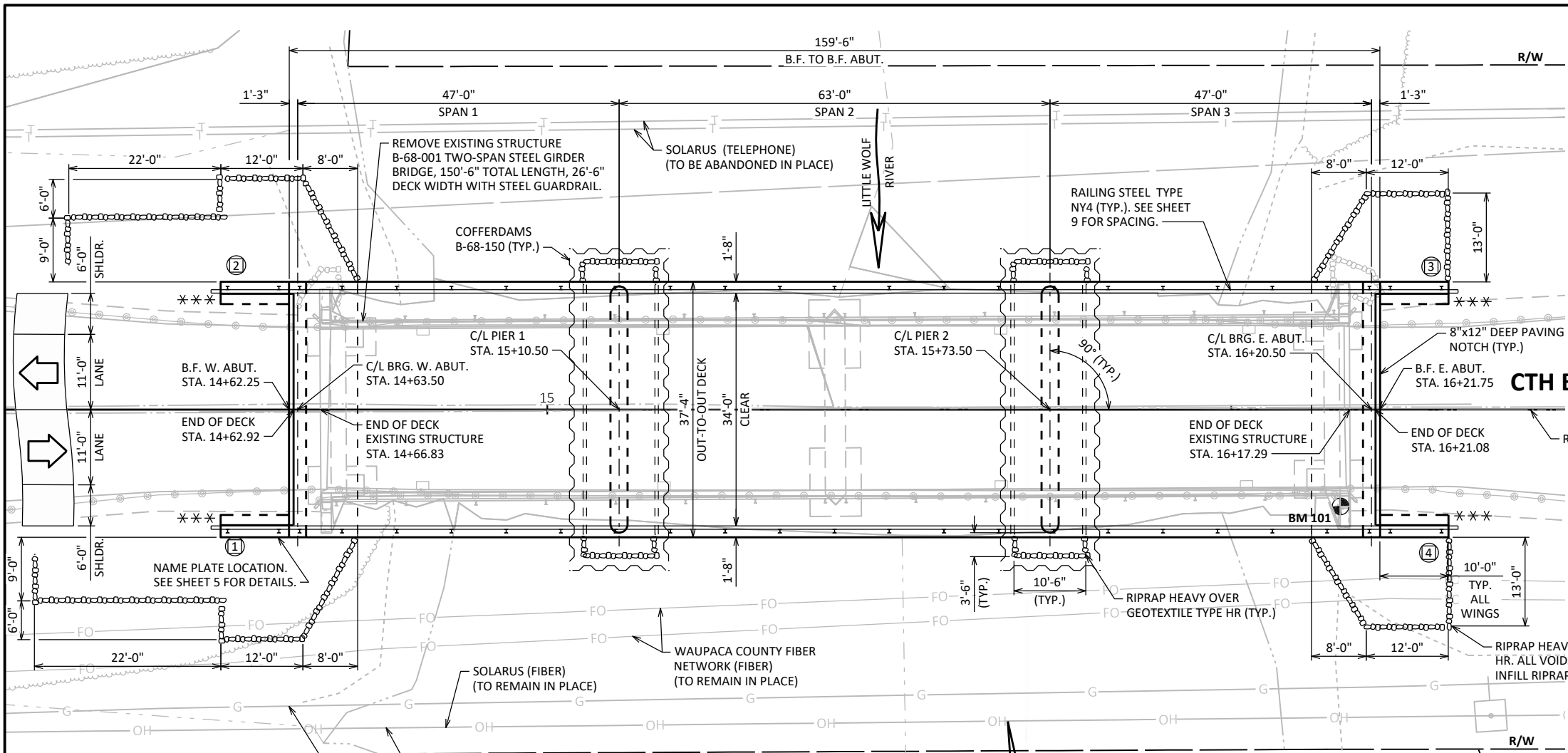
COUNTY WAUPACA TOWN LITTLE WOLF

DESIGN SPEC.
AASHTO LRFD BRIDGE DESIGN SPECIFICATION

DESIGNED BY JRP CK'D KRB DRAWN BY JRP PLANS CK'D EJC

GENERAL PLAN

SHEET 1 OF 13



LIST OF DRAWINGS:

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 RAILING TYPE NY4

BENCH MARK

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

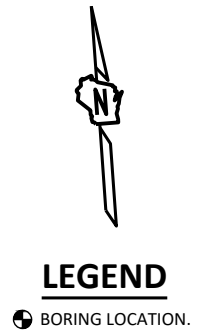
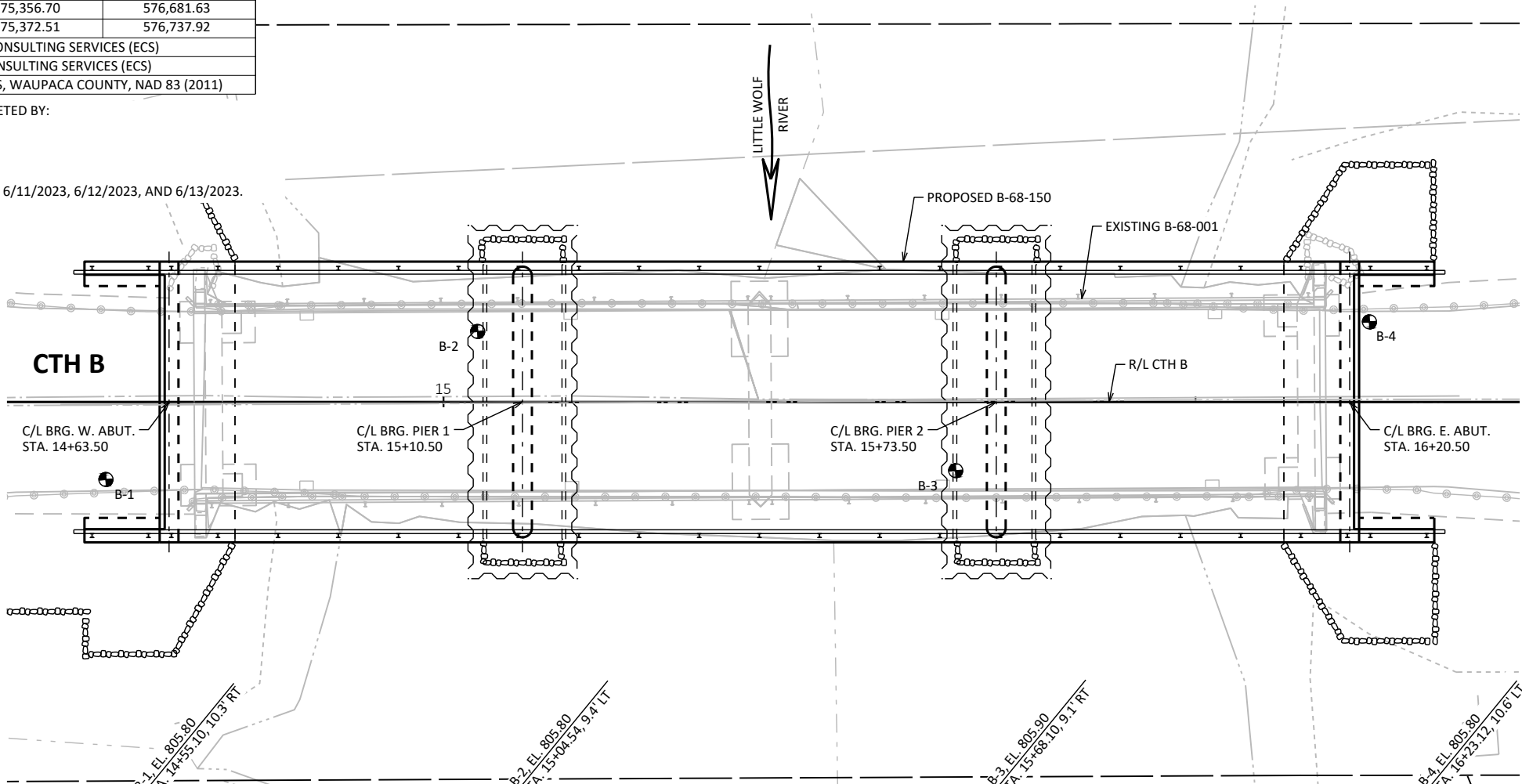
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-68-150			
		DRAWN BY	PLANS CK'D
		JRP	EJC
CROSS SECTION, QUANTITIES, NOTES, & DETAILS		SHEET 2	

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							
	NAME PLATE	EACH						1
	FILLER	SIZE						1/2" & 3/4"

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.

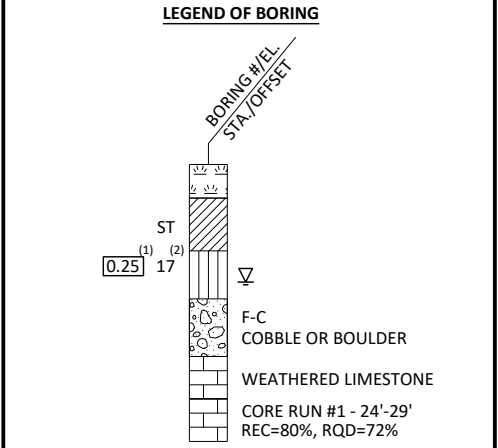


STATE PROJECT NUMBER




6832-06-72

MATERIAL SYMBOLS

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



- (1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)
- (2) UNLESS OTHERWISE, SPECIFIED THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

<u>GROUND WATER ELEVATION</u>	
	AT TIME OF DRILLING
	END OF DRILLING
	AFTER DRILLING
<u>ABBREVIATIONS</u>	
F-FINE	M-MEDIUM C-COARSE ST-SHELBY TUBE

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

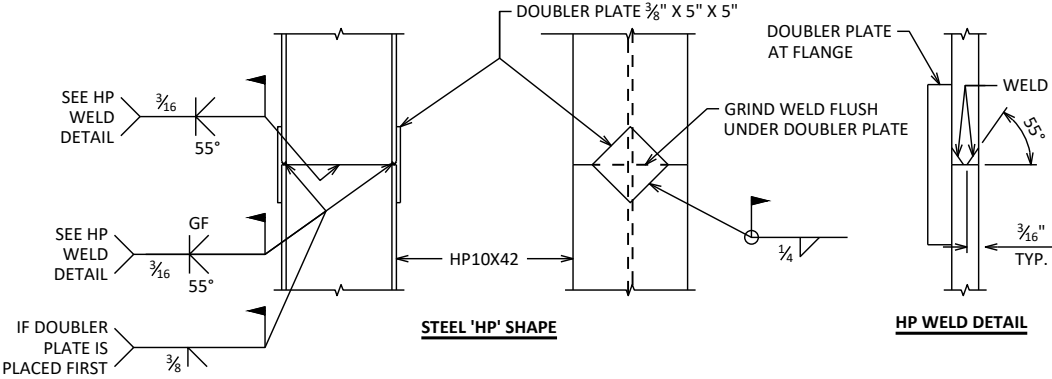
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-68-150			
DRAWN BY		JRP	PLANS CK'D EJC
SUBSURFACE EXPLORATION		SHEET 3	

NOTES

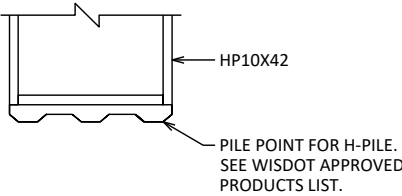
- SEE THIS SHEET FOR PILE SPICE DETAILS.
- SEE SHEET 5 FOR REINFORCING DETAILS.
- SUPPORT WEST ABUTMENT ON PILING STEEL HP 10-INCH x 42 LB
DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE
AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA.
ESTIMATED 40'-0" LONG AT WEST ABUTMENT.
- SEE SHEET 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.
- ½" FILLER TO EXTEND FROM ABUTMENT SEAT TO TOP OF DECK (INCLUDED IN WING LENGTH). SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ½" 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.



'HP' PILE DETAILS

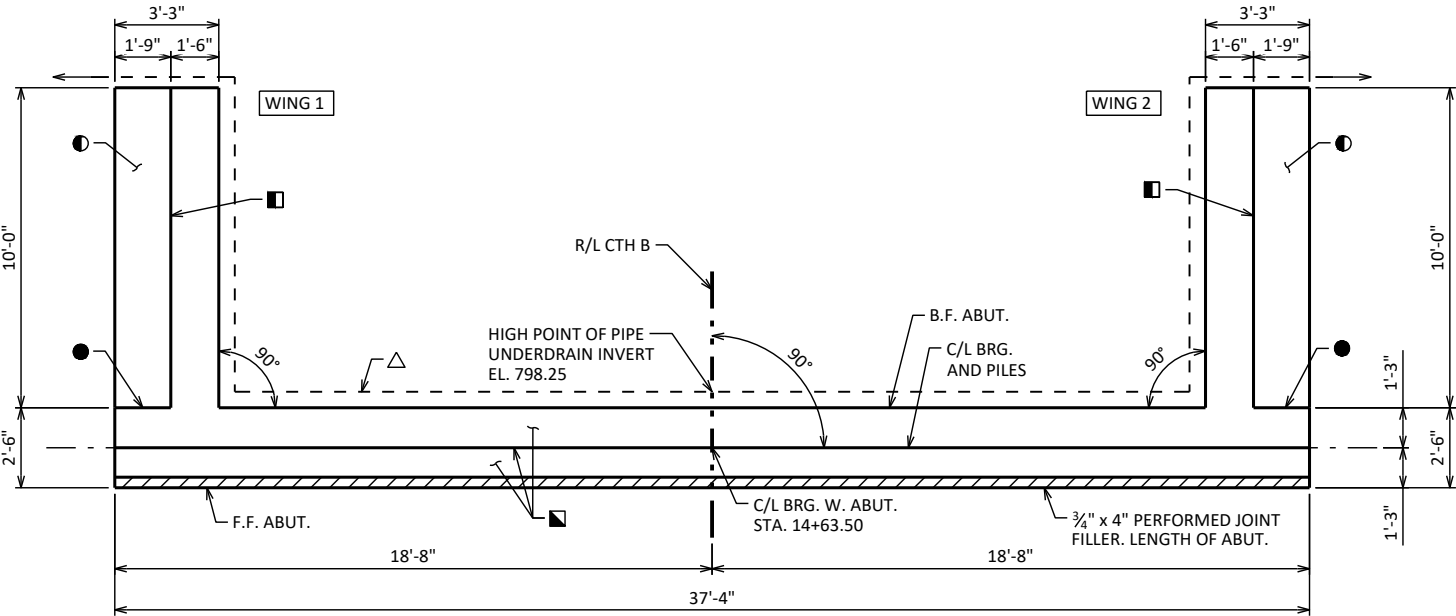


PILE POINT FOR H-PILING

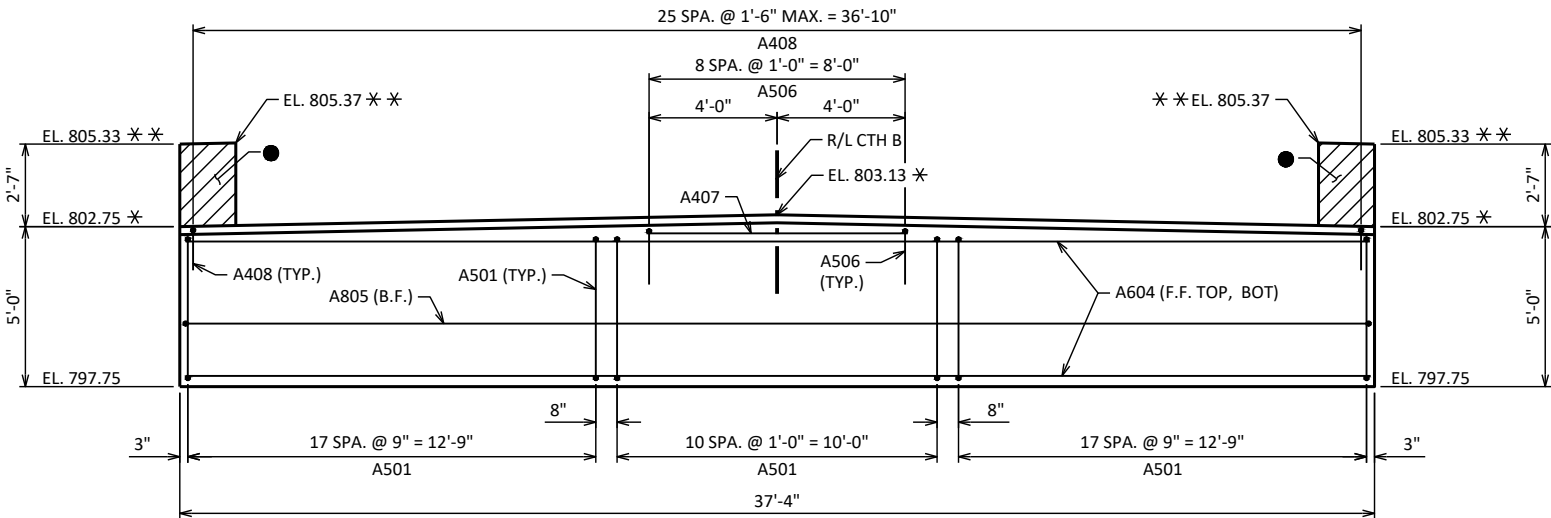
PILE POINT SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS

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

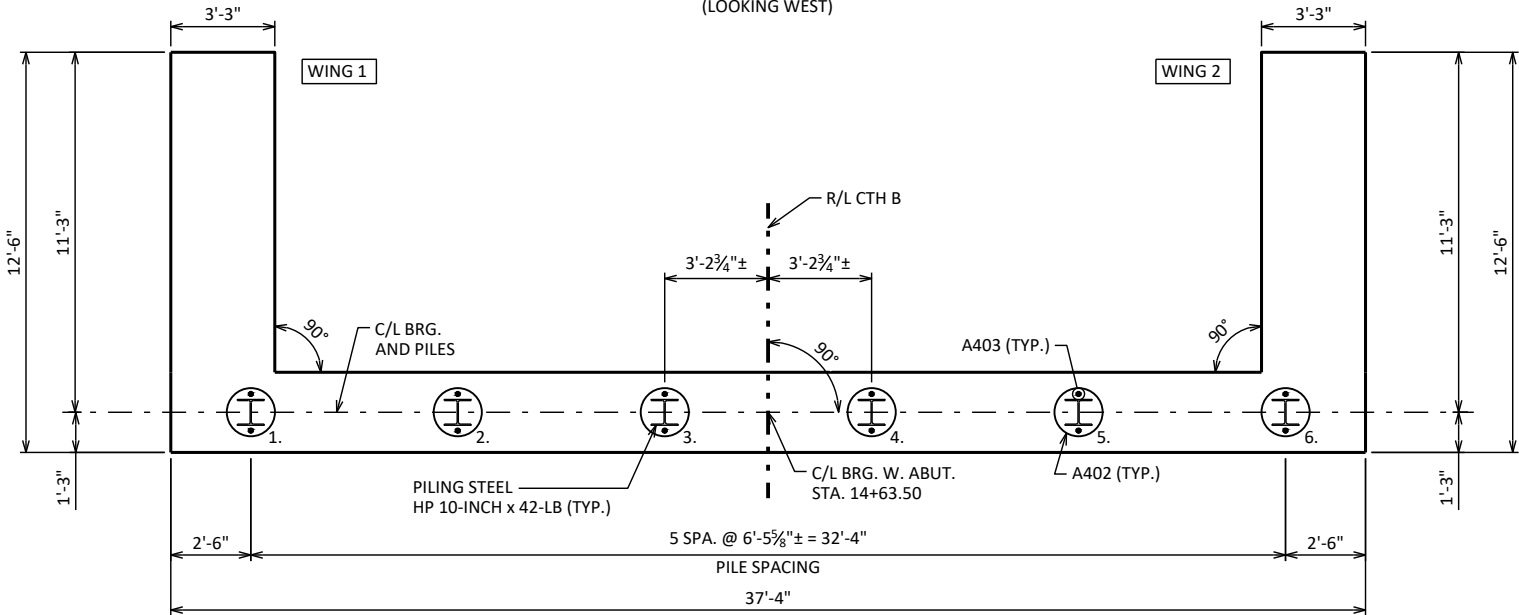
SCALE =



PLAN



ELEVATION
(LOOKING WEST)



PILE PLAN

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.
- 1/2" FILLER TO EXTEND FROM ABUTMENT SEAT TO TOP OF DECK (INCLUDED IN WING LENGTH). SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/2" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW ROADWAY SURFACE AT INSIDE FACE.
- 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.

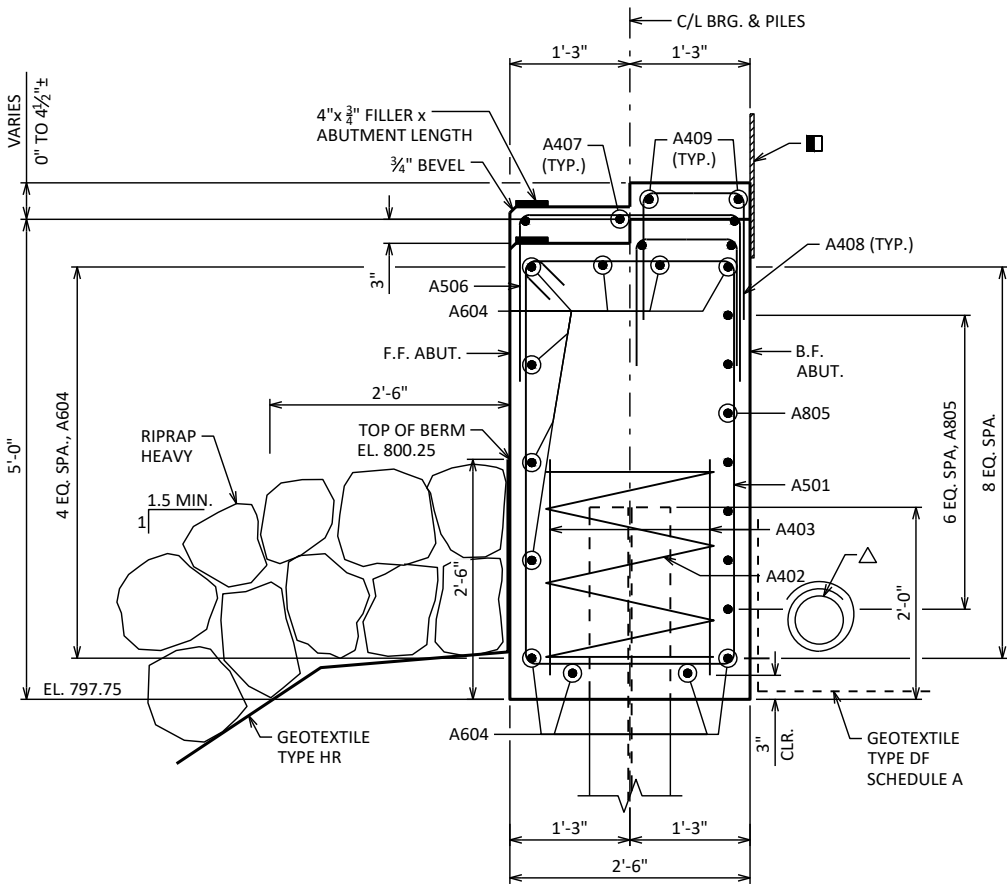
WEST ABUTMENT
BILL OF BARS

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

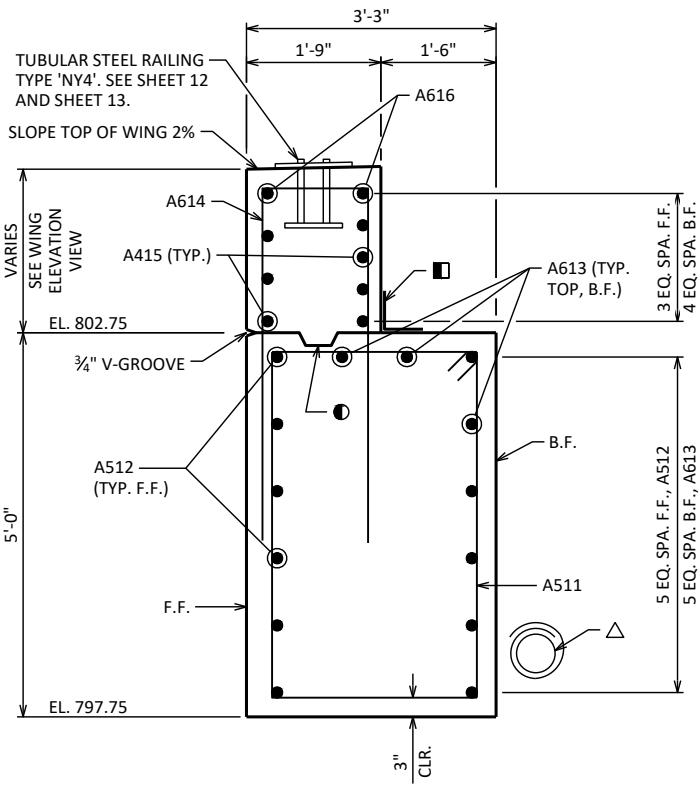
BAR MARK	NO. REQ'D	LENGTH	BENT	COAT	LOCATION
A501	47	13'-8"	X		BODY - VERT.
A402	6	28'-0"	X		BODY - PILES - SPIRAL
A403	12	2'-3"			BODY - PILES - VERT
A604	11	37'-0"			BODY - TOP, BOT., & F.F. - HORIZ
A805	7	39'-3"	X		BODY - B.F. - HORIZ
A506	9	5'-3"	X		BODY - TOP - VERT
A407	3	6'-0"			BODY - TOP, HORIZ
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 - FF., B.F. - HORIZ - WINGS 1 & 2
A616	4	9'-7"		X	UPPER WING - TOP - HORIZ - WINGS 1 & 2

WING 1 PLAN
(WING 2 SIMILAR)

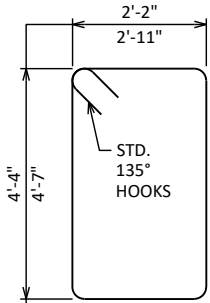
WING 1 ELEVATION
(LOOKING AT FRONT FACE)
(WING 2 SIMILAR)



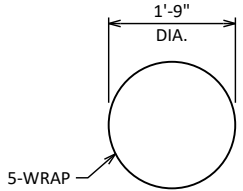
SECTION THRU BODY



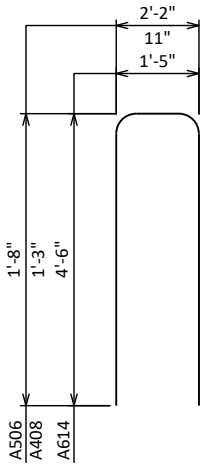
TYPICAL WING SECTION



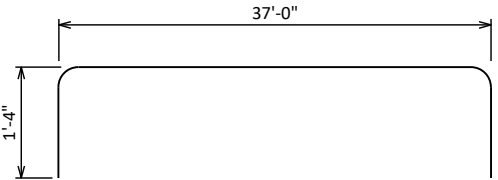
A501, A511



A402



A506, A408, A614



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	

SCALE =

NOTES

SEE SHEET 4 FOR PILE SPICE 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.

● ½" FILLER TO EXTEND FROM ABUTMENT SEAT TO TOP OF DECK (INCLUDED IN WING LENGTH). SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ½" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW ROADWAY SURFACE AT INSIDE FACE.

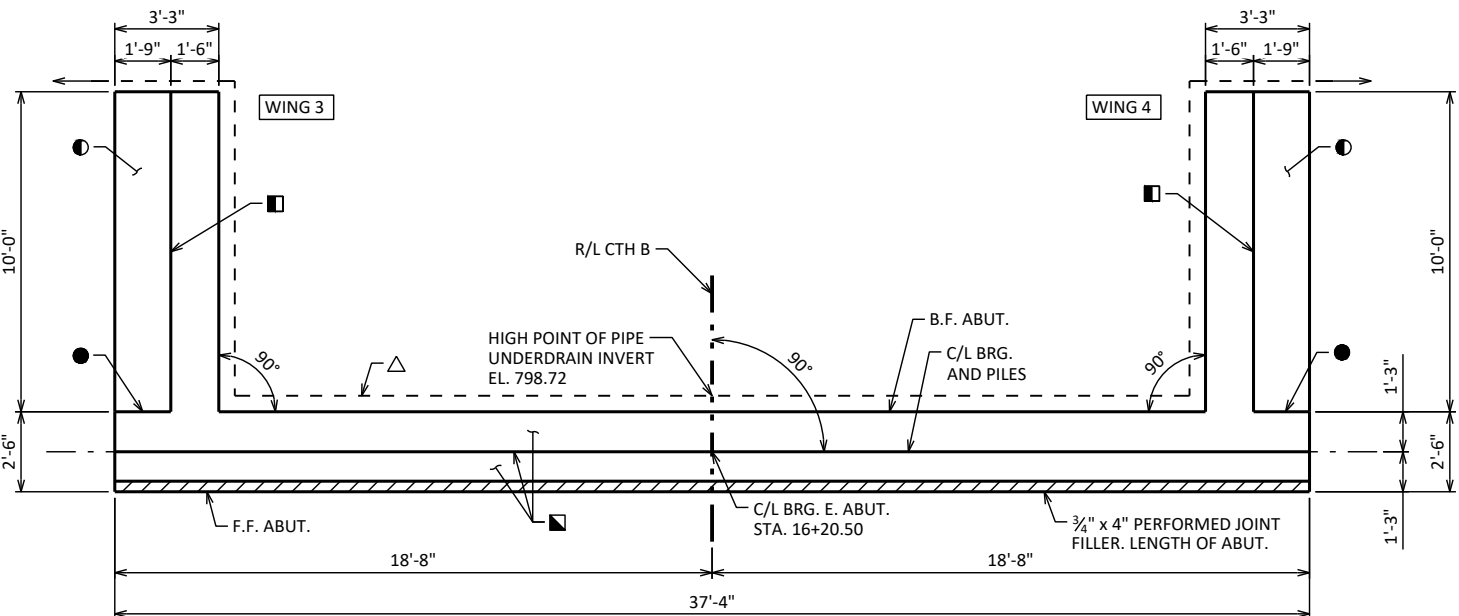
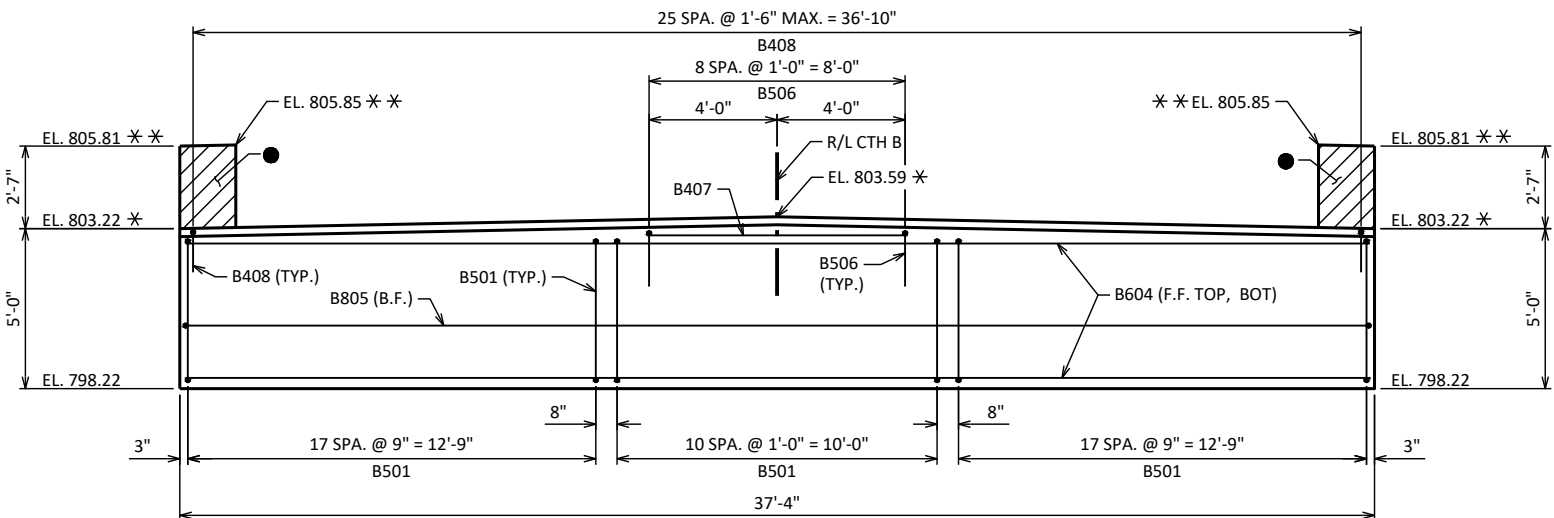
■ 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.

■ 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".

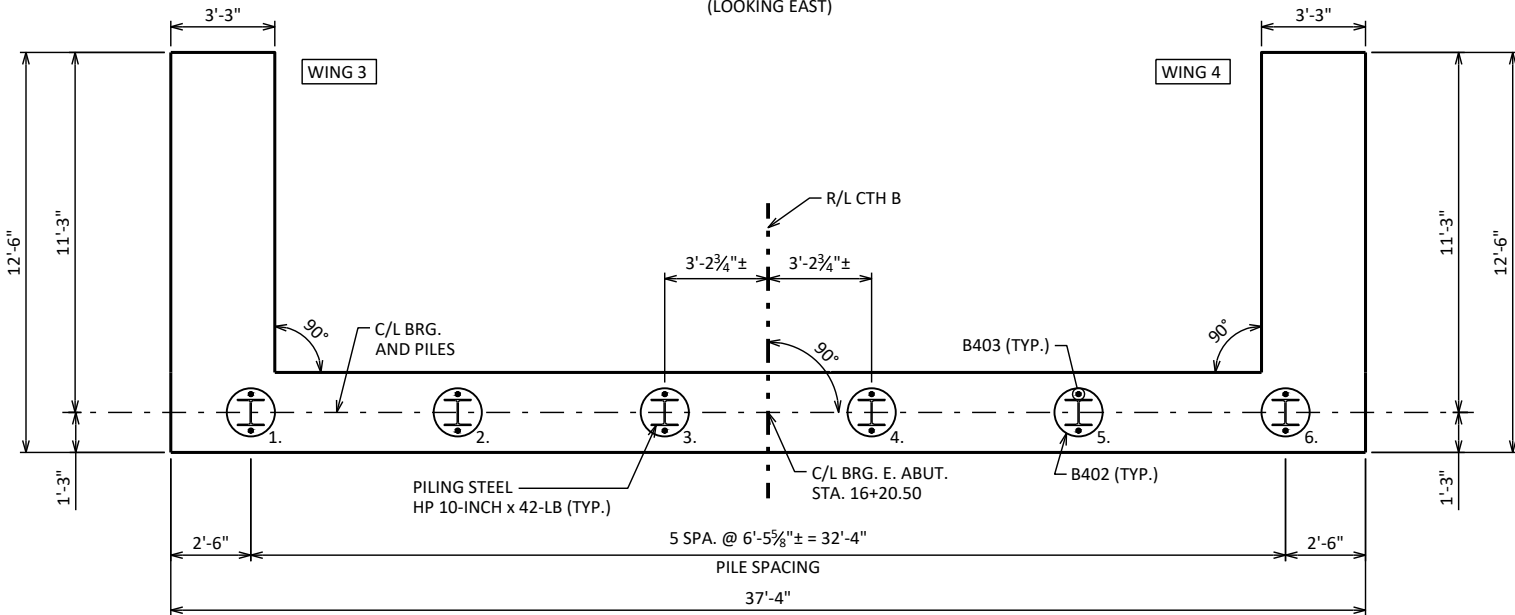
● COAT TOP OF WING WITH "PROTECTIVE SURFACE TREATMENT".

* 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			
STRUCTURE B-68-150			
DRAWN BY		JRP	PLANS CK'D EJC
EAST ABUTMENT		SHEET 6	

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.
- 1/2" FILLER TO EXTEND FROM ABUTMENT SEAT TO TOP OF DECK (INCLUDED IN WING LENGTH). SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/2" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW ROADWAY SURFACE AT INSIDE FACE.
- 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.

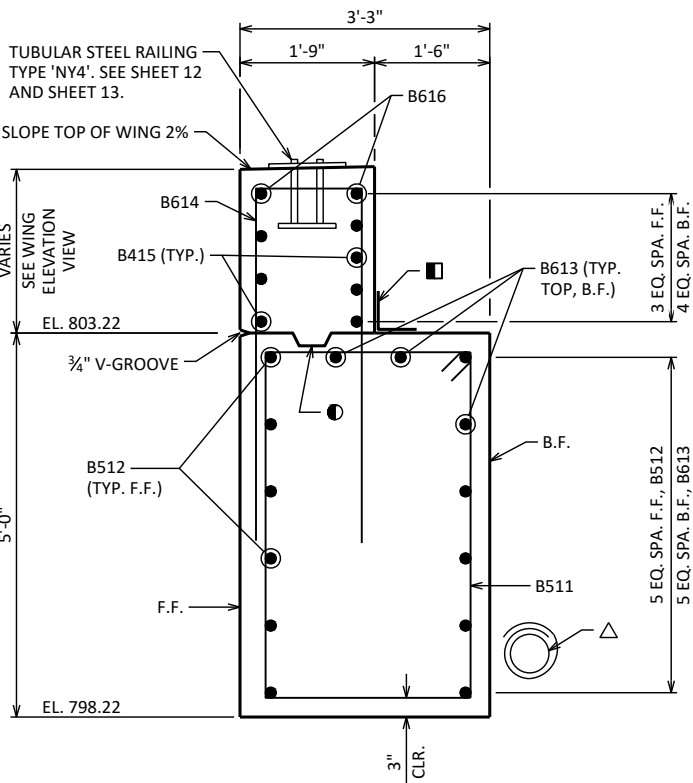
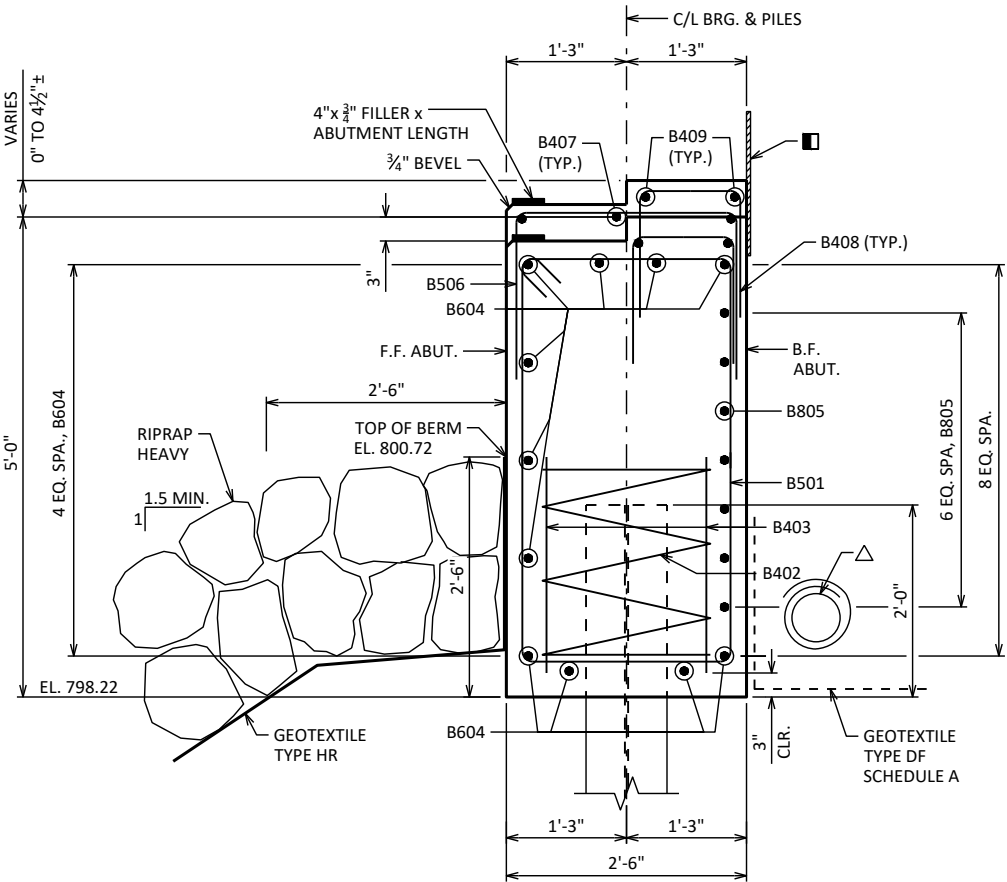
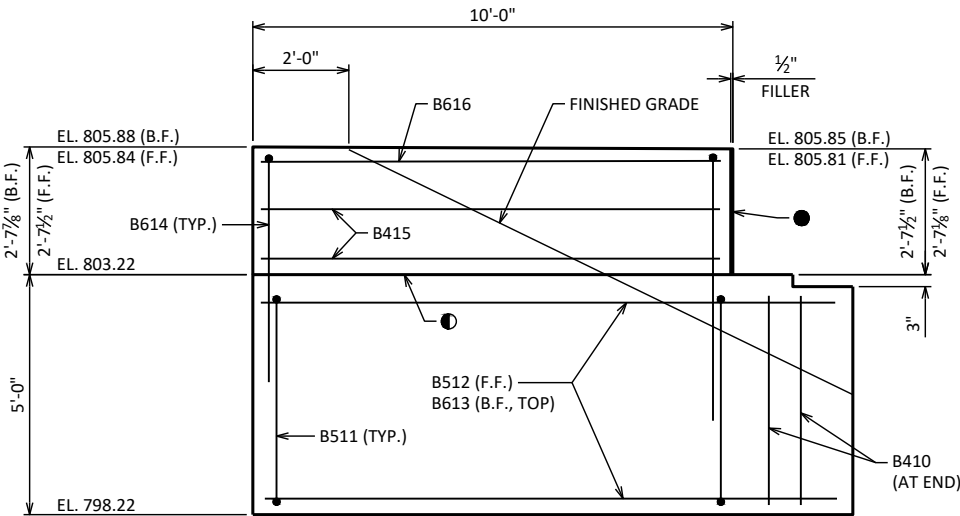
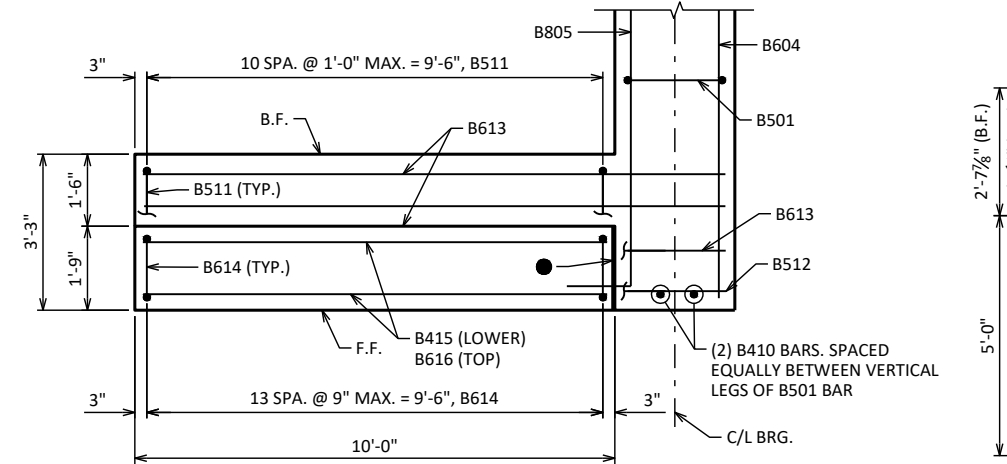
EAST ABUTMENT
BILL OF BARS

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

WING 3 PLAN
(WING 4 SIMILAR)

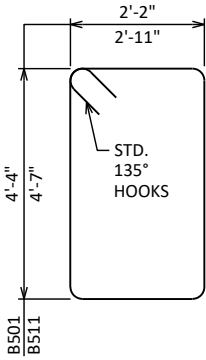
WING 3 ELEVATION
(LOOKING AT FRONT FACE)
(WING 4 SIMILAR)



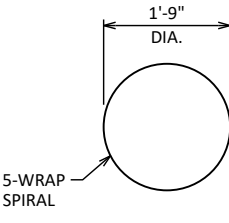
TYPICAL WING SECTION

SECTION THRU BODY

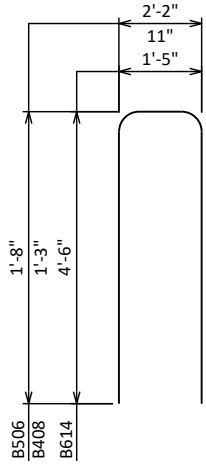
B805



B501, B511



B402



B506, B408, B614

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

SCALE =

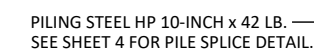
▲ KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2"x6".

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.

UNCOATED: 4,180 LBS
COATED: 150 LBS

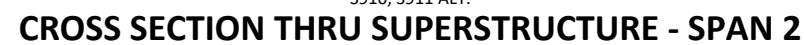
BAR MARK	NO. REQ'D		LENGTH	BENT	COAT	LOCATION
	PIER 1	PIER 2				
P501	76	-	12'-2"			PIER 1 - VERT.
P502	-	76	12'-4"			PIER 2 - VERT.
P503	18	18	4'-3"	X		PIERS 1 & 2 - STIRRUPS - TOP - VERT.
P404	28	28	33'-6"			PIERS 1 & 2 - SIDES - HORIZ.
P405	28	28	6'-1"	X		PIERS 1 & 2 - ENDS - HORIZ.
P406	154	154	2'-11"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



NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-68-150	
DRAWN BY		JRP	PLANS CK'D EJC
PIER DETAILS		SHEET 8	

3/4" V-GROOVE REQ'D EXTEND TO 6" FROM F.F. OF ABUT. DIAPHRAGMS.

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



(LOOKING EAST)



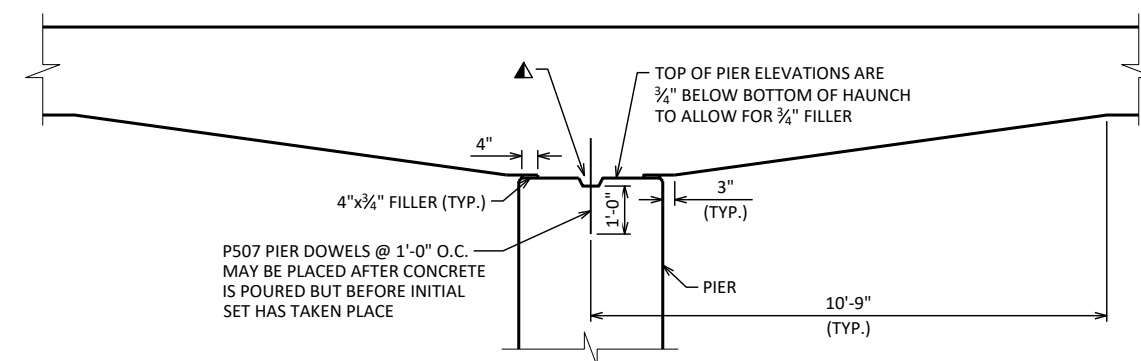
(LOOKING EAST)



(LOOKING EAST)



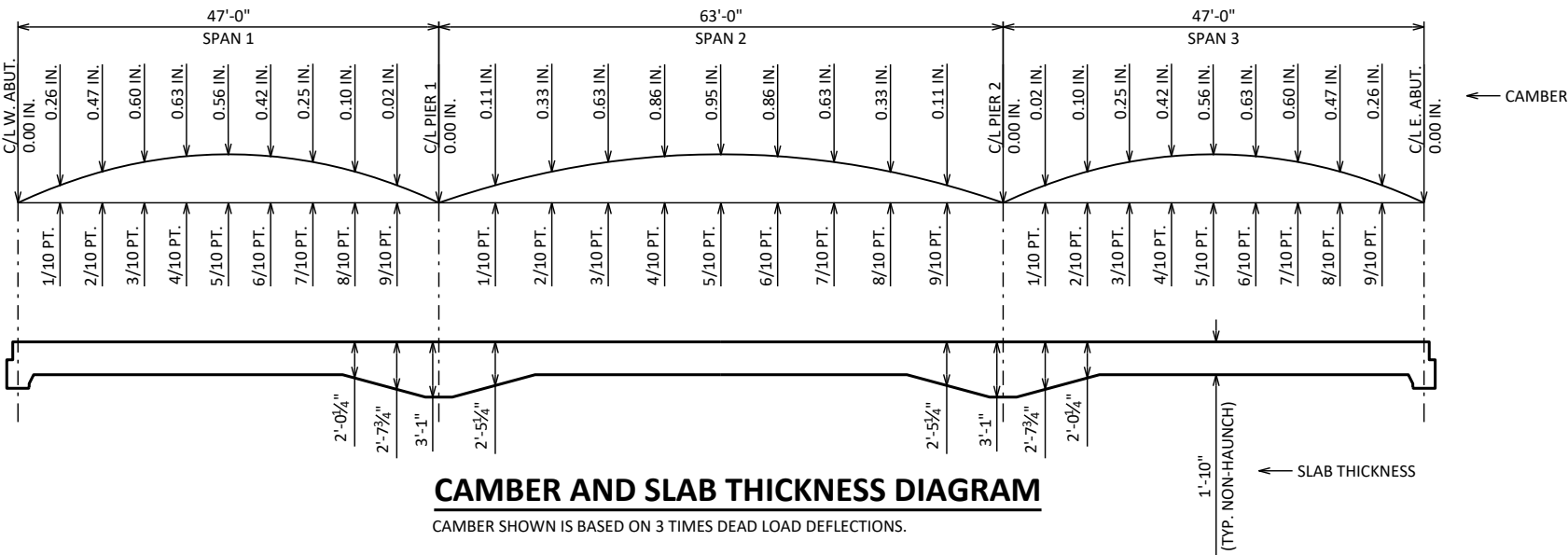
(LOOKING EAST)



PIER DETAILS

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 =



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
PLUS
PLUS
EQUALS

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

TOP OF DECK ELEVATIONS

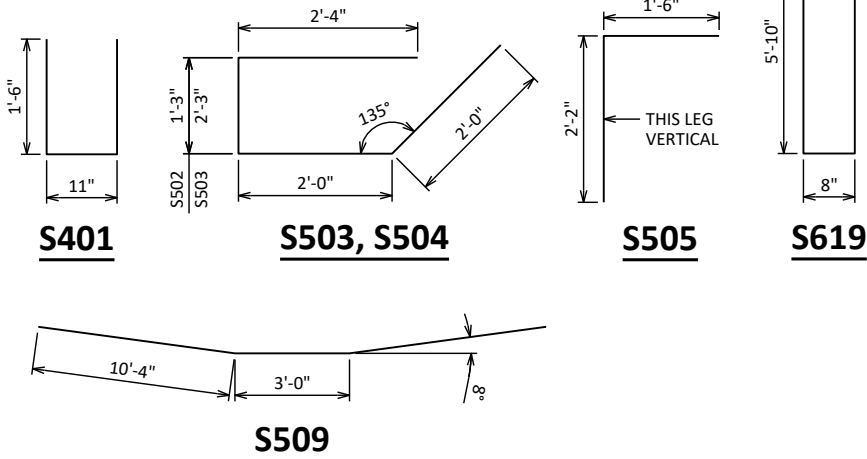
LOCATION	STATION	NORTH EDGE OF DECK 18.67' LT	R/L CTR	SOUTH EDGE OF DECK 18.67' RT
C/L W. ABUT.	14+63.50	805.34	805.71	805.34
0.1L POINT	14+68.20	805.35	805.72	805.35
0.2L POINT	14+72.90	805.37	805.74	805.37
0.3L POINT	14+77.60	805.38	805.75	805.38
0.4L POINT	14+82.30	805.39	805.77	805.39
0.5L POINT	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	805.59	805.96	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.

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.



SUPERSTRUCTURE BILL OF BARS

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'

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			
STRUCTURE B-68-150			
DRAWN BY		JRP	PLANS CK'D EJC
SUPERSTRUCTURE DETAILS - 2		SHEET 11	

SCALE =

- (1) W6 X 25 WITH $1\frac{3}{8}$ " X $1\frac{3}{8}$ " HORIZONTAL SLOTTED HOLES ON EACH SIDE OF POST FOR BOLT NO. 6 AT TOP TOP RAILS. USE 1" DIA. HOLES FOR BOLTS NO. 6 AT BOTTOM NO. 5A AND FOR BOLT NO. 6A AT NO. 7. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
- (2) PLATE $1\frac{1}{4}$ " X 10" X 1'-2" WITH $1\frac{1}{8}$ " X $1\frac{1}{16}$ " SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.
- (3) ASTM A449 - 1" DIA. ANCHOR BOLTS WITH HEAVY HEX NUT AND 2" O.D. HARDENED WASHER (ALL GALVANIZED). 4 REQUIRED PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. USE $1\frac{1}{2}$ " LONG BOLT FOR CONCRETE DECKS. ON CONCRETE SLAB SUPERSTRUCTURES, USE 1'-3" LONG BOLT FOR SLAB THICKNESS > 16" AND $1\frac{1}{2}$ " LONG FOR THICKNESS \leq 16". USE 1'-9" LONG IN ABUTMENT WINGS. (AN EQUIVALENT THREADED ROD WITH HEAVY HEX NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQUIRED FOR CONSTRUCTABILITY.)
- (4) $\frac{3}{8}$ " X 10" X 1'-2" ANCHOR PLATE (GALVANIZED) WITH $1\frac{1}{16}$ " DIA. HOLES FOR ANCHOR BOLTS NO. 3.
- (5) TS 6 X 6 X $\frac{3}{16}$ " STRUCTURAL TUBING. USE 1" DIA. HOLES FOR BOLT NO. 6 (FRONT & BACK) & $\frac{7}{8}$ " DIA. HOLES FOR BOLT NO. 6A (TOP & BOTTOM).
- (5A) TS 5 X 3 X $\frac{3}{4}$ " STRUCTURAL TUBING. USE 1" DIA. HOLES FOR BOLT NO. 6 IN TOP RAIL (FRONT & BACK). USE $1\frac{1}{4}$ " X $1\frac{3}{8}$ " HORIZONTAL SLOTTED HOLES FOR BOLT NO. 6 IN BOTTOM RAIL (FRONT & BACK) AND A 2" O.D. WASHER UNDER BOLT HEAD.
- (6) $\frac{7}{8}$ " DIA. A325 SLOTTED ROUND HEAD BOLT WITH HEX NUT, $\frac{3}{16}$ " X $1\frac{3}{4}$ " X $1\frac{3}{4}$ " WASHER, AND SPRING LOCK WASHER (2 REQUIRED AT RAIL TO POST LOCATIONS SHOWN).
- (6A) $\frac{3}{4}$ " DIA. A325 BOLT WITH HEX NUT & SPRING LOCK WASHER (1 REQUIRED AT RAIL TO ANGLE & 2 REQUIRED AT ANGLE TO POST LOCATIONS SHOWN WITH $\frac{3}{16}$ " X $1\frac{3}{4}$ " X $1\frac{3}{4}$ " WASHER).
- (7) L 5 X 5 X $\frac{5}{8}$ " STRUCTURAL ANGLE. ATTACH TO NO. 1 AND NO. 5 AS SHOWN.
- (8) TS 5 X 5 X $\frac{5}{16}$ " X 2'-4" LONG SPLICE TUBE. 1 PER RAIL. USED IN NO. 5.
- (8A) $4\frac{1}{4}$ " X $2\frac{5}{8}$ " X 2'-4" LONG SPLICE BAR. 1 PER RAIL. USED IN NO. 5A.
- (9) $\frac{3}{4}$ " DIA. A325 FULLY THREADED BOLTS, $7\frac{1}{2}$ " LONG, WITH 2 WASHERS AND HEAVY HEX NUT ON EACH BOLT. NUT TO BE FINGER TIGHT. (4 REQUIRED PER SPLICE). USE 1" X 4" SLOTTED HOLES IN TOP AND BOTTOM OF NO. 5.
- (9A) $\frac{3}{4}$ " DIA. A325 FULLY THREADED BOLTS, $4\frac{1}{2}$ " LONG, WITH 2 WASHERS AND HEAVY HEX NUT ON EACH BOLT. NUT TO BE FINGER TIGHT. (4 REQUIRED PER SPLICE). USE 1" X 4" SLOTTED HOLES IN TOP AND BOTTOM OF NO. 5A.
- (10) SPLICE SLEEVE FABRICATED FROM $\frac{1}{4}$ " PLATE. PROVIDE "SLIDING FIT".

WORK THIS SHEET WITH SHEET 13.

PART ELEVATION OF RAILING

- ① W6 X 25 WITH $1\frac{1}{8}"$ X $1\frac{1}{2}"$ 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 $1\frac{1}{4}"$ X 10" X 1'-2". SEE SHEET "TUBULAR STEEL RAILING NY4" FOR MORE INFORMATION.
- ⑤ TS 6 X 6 X $\frac{3}{16}"$ STRUCTURAL TUBING. USE $\frac{7}{8}"$ 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 $\frac{3}{4}"$ STRUCTURAL TUBING. USE 1" DIA. HOLES FOR TOP RAIL NO. 5A (FRONT & BACK). USE $1\frac{1}{8}"$ X $1\frac{1}{8}"$ HORIZONTAL SLOTTED HOLES FOR BOLT NO. 6 IN BOTTOM RAIL (FRONT & BACK) AND A 2" O.D. WASHER UNDER BOLT HEAD.
- ⑥ $\frac{7}{8}"$ DIA. A325 SLOTTED ROUND HEAD BOLT WITH HEX NUT, $\frac{3}{16}"$ X $1\frac{1}{2}"$ X $1\frac{1}{2}"$ 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 $\frac{3}{16}"$ STRUCTURAL TUBING. USE 1" DIA. HOLES IN FRONT AND BACK FOR BOLT NO. 14 & $\frac{7}{8}"$ DIA. HOLES IN TOP & BOTTOM FOR BOLT NO. 13.
- ⑫ L 6 X 6 X $\frac{1}{2}"$ STRUCTURAL ANGLE. USE $\frac{7}{8}"$ DIA. HOLES IN TOP FLANGE FOR BOLT NO. 13.
- ⑬ $\frac{3}{4}"$ 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.
- ⑬A $\frac{7}{8}"$ DIA. A325 SLOTTED ROUND HEAD BOLT WITH HEX NUT AND $\frac{3}{16}"$ X 2" X 2" WASHER FOR CONNECTION OF THRIE BEAM (4 REQUIRED).

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.

WORK THIS SHEET WITH SHEET 12



INTERIOR ELEVATION



THREE BEAM RAIL ATTACHMENT



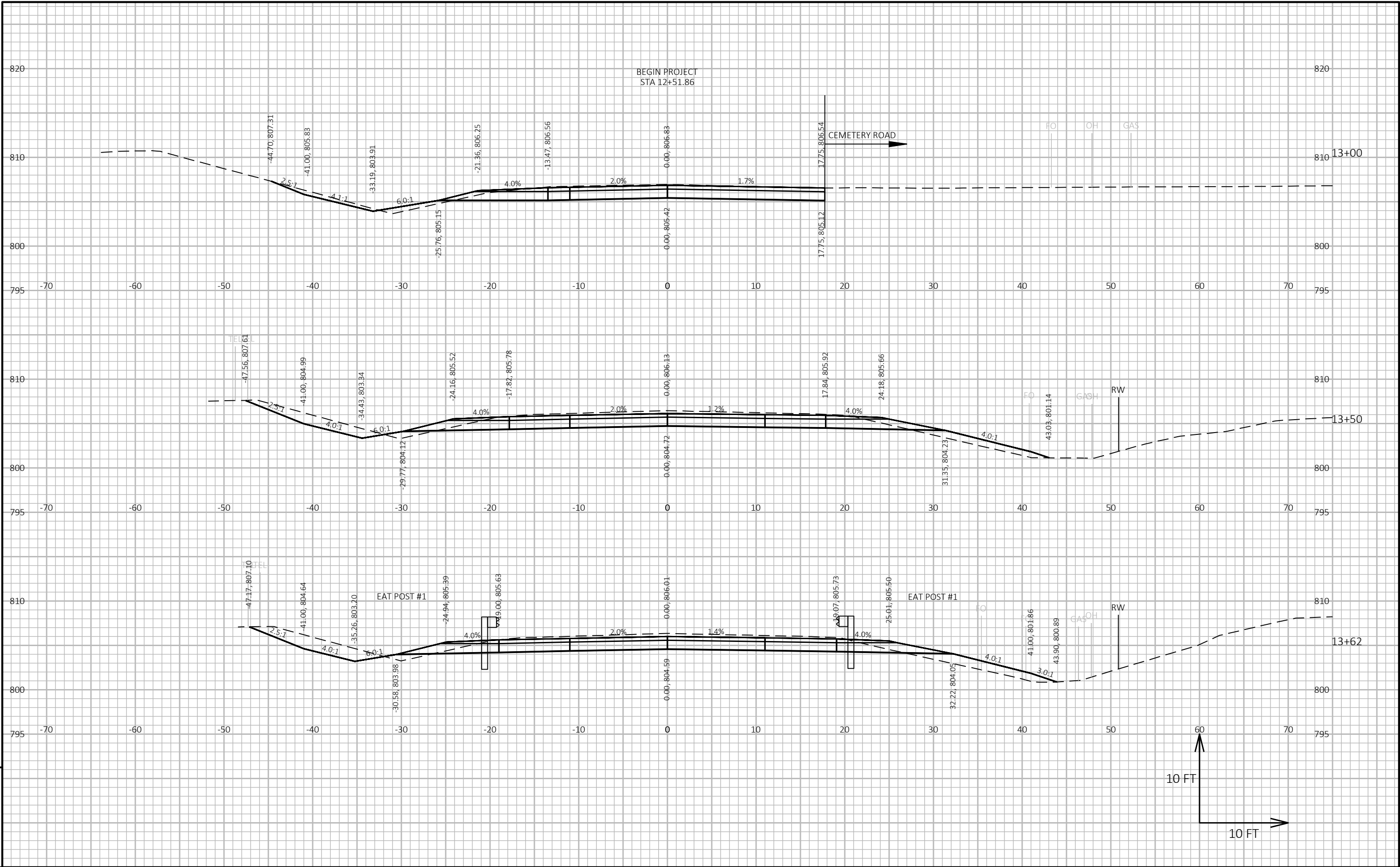
THREE BEAM RAIL ATTACHMENT

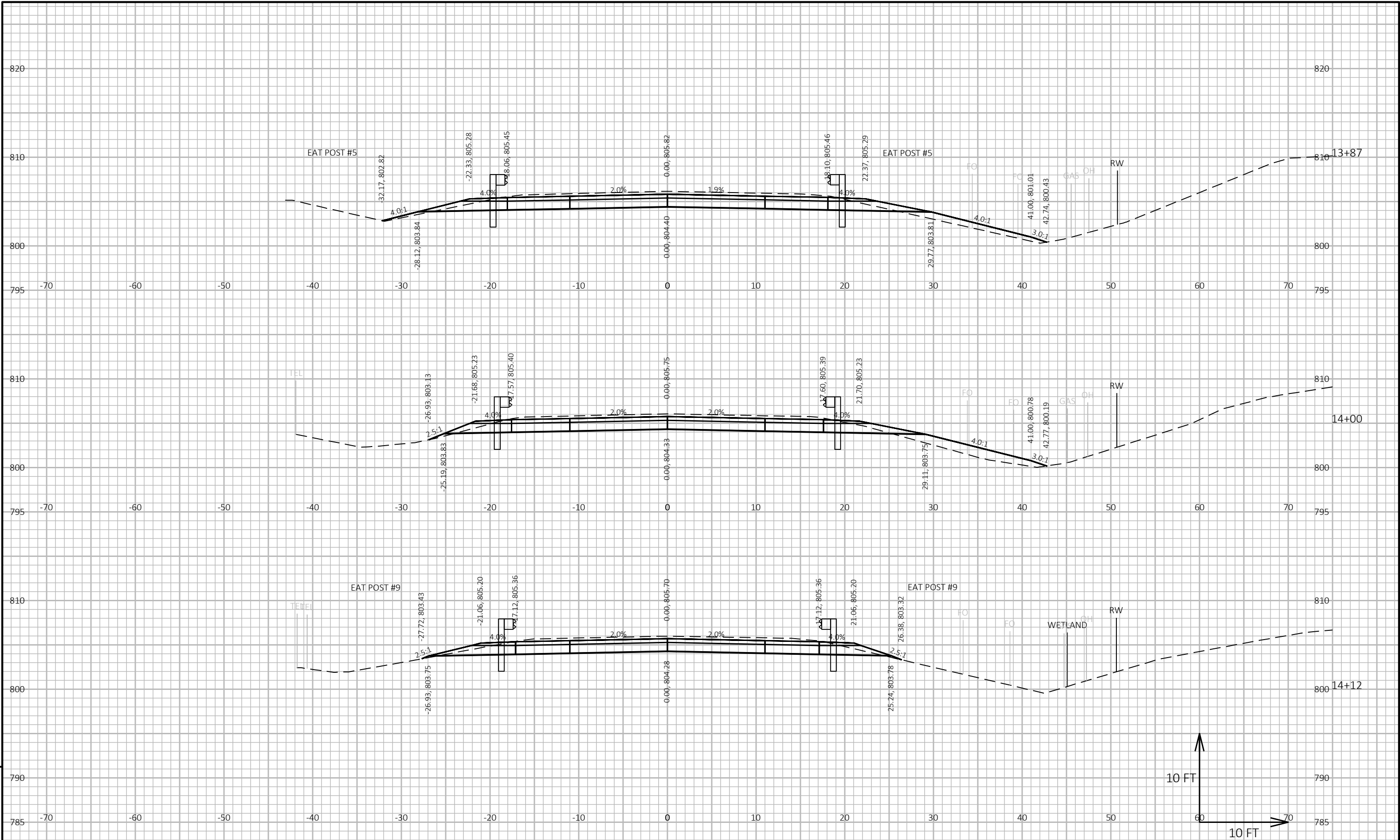
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-68-150	
		DRAWN BY	PLANS CK'D
		JRP	EJC
END POST FOR RAILING TYPE NY4		SHEET 13	

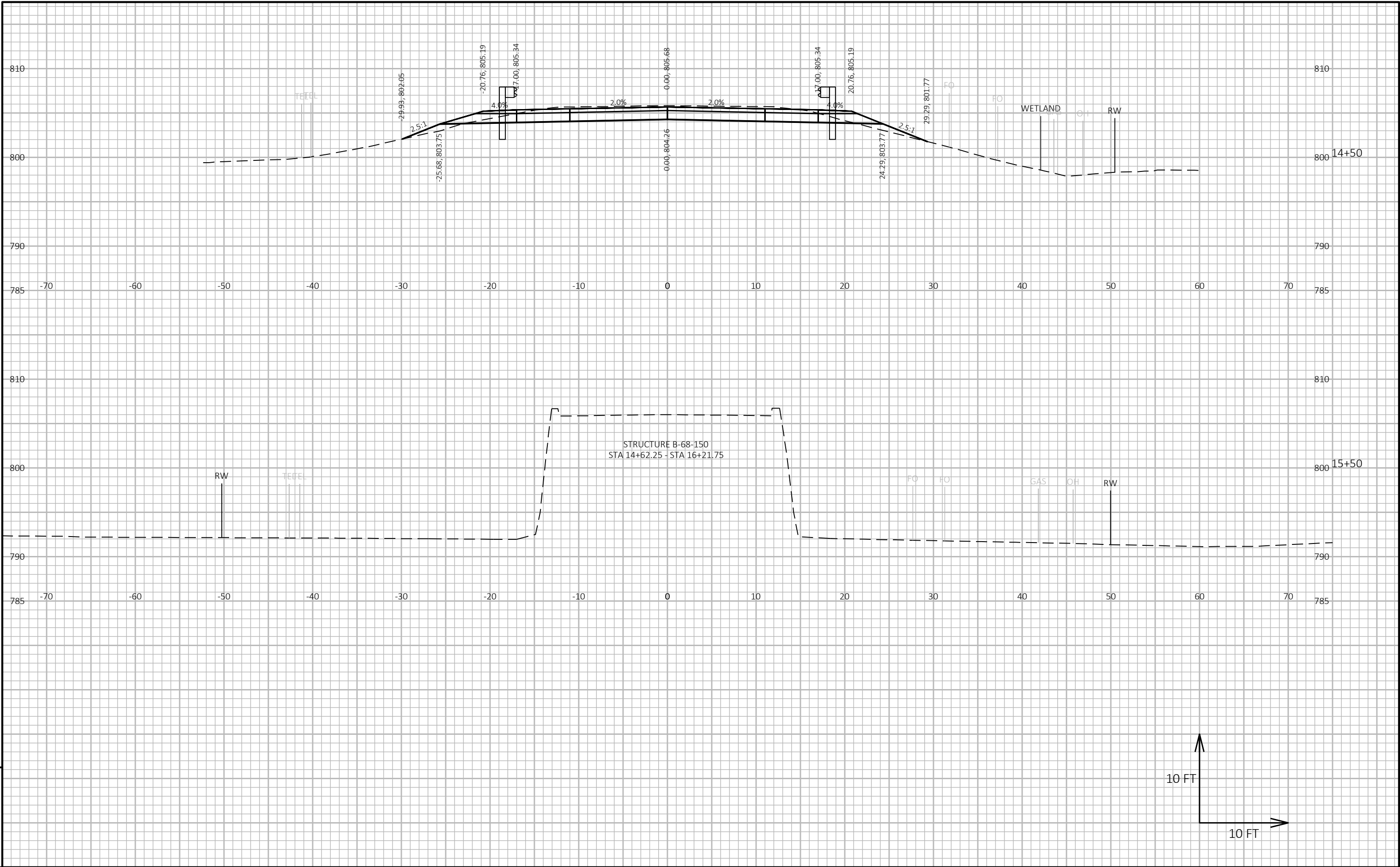
SCALE -

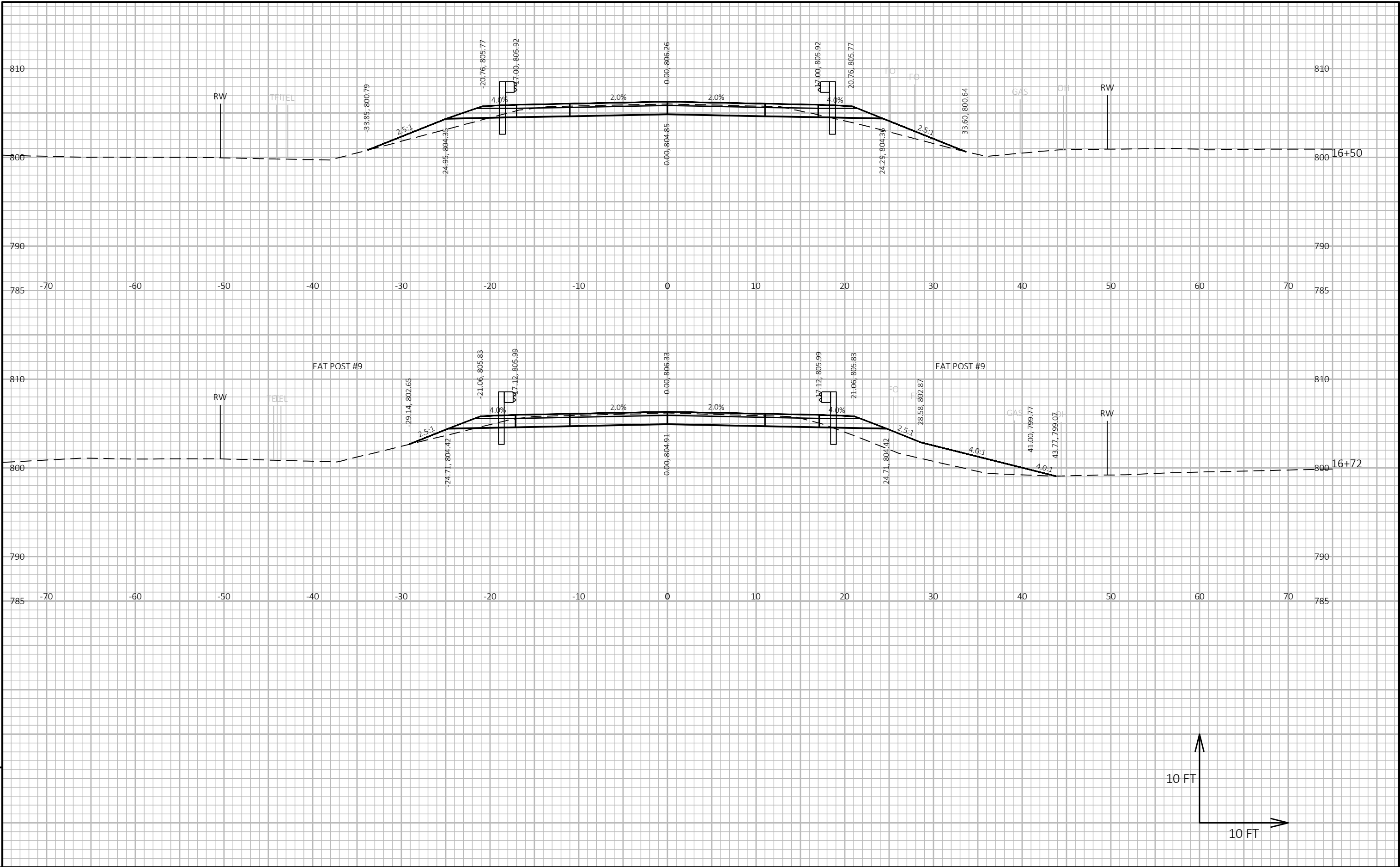
DIVISION 1 - CTH B

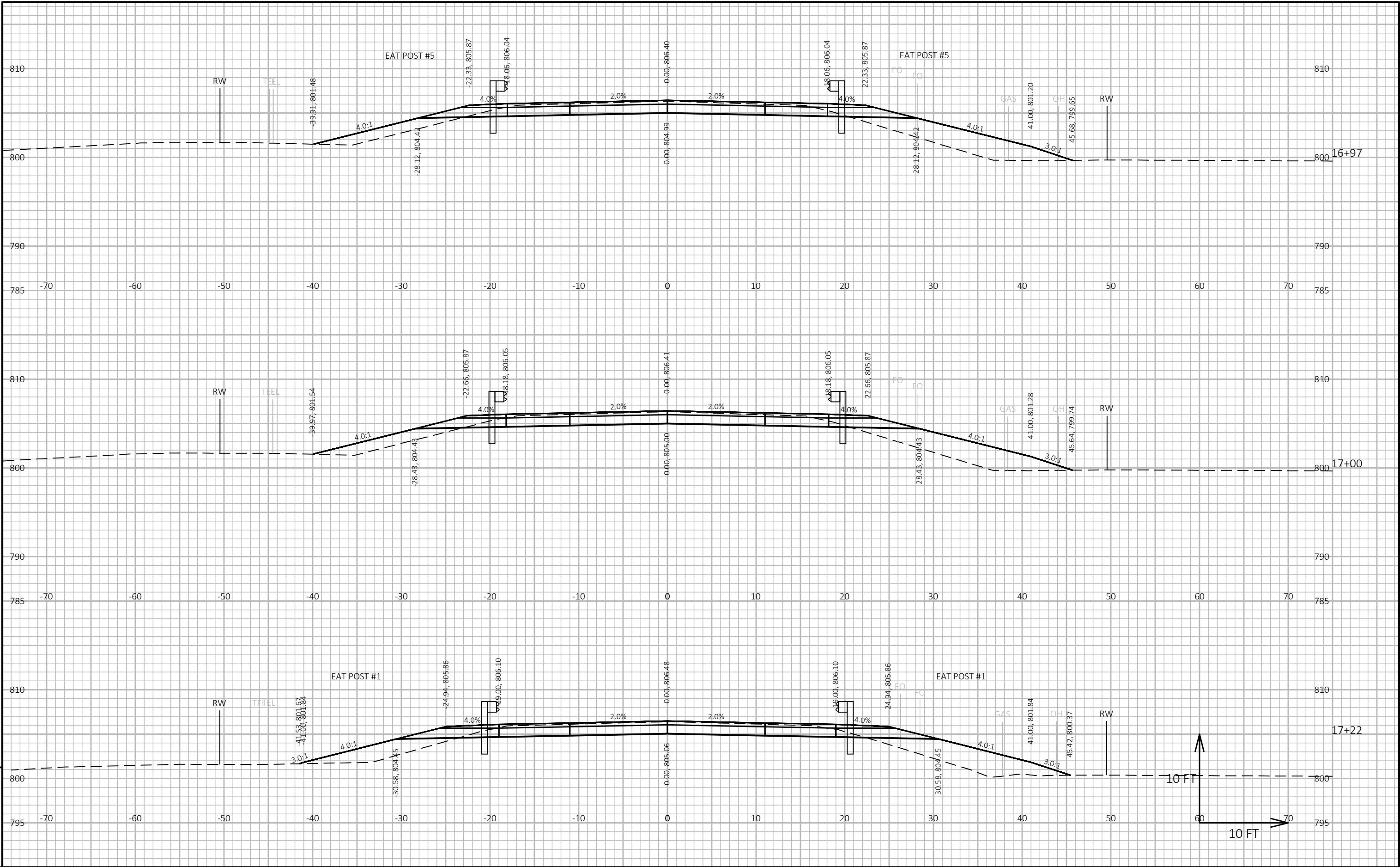
STATION	DISTANCE	AREA (SF)			INCREMENTAL VOL (CY) (UNADJUSTED)			CUMULATIVE VOL (CY)			
		CUT	FILL	EBS	CUT	FILL	EBS	CUT 1.00	EXPANDED FILL 1.25	EXPANDED EBS 1.25	MASS ORDINATE
12+51.86	---	54.57	1.34	2.73	0	0	0	0	0	0	0
13+00.00	48.14	60.11	3.36	3.01	102	4	5	102	5	6	97
13+50.00	50.00	88.16	12.80	4.41	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				



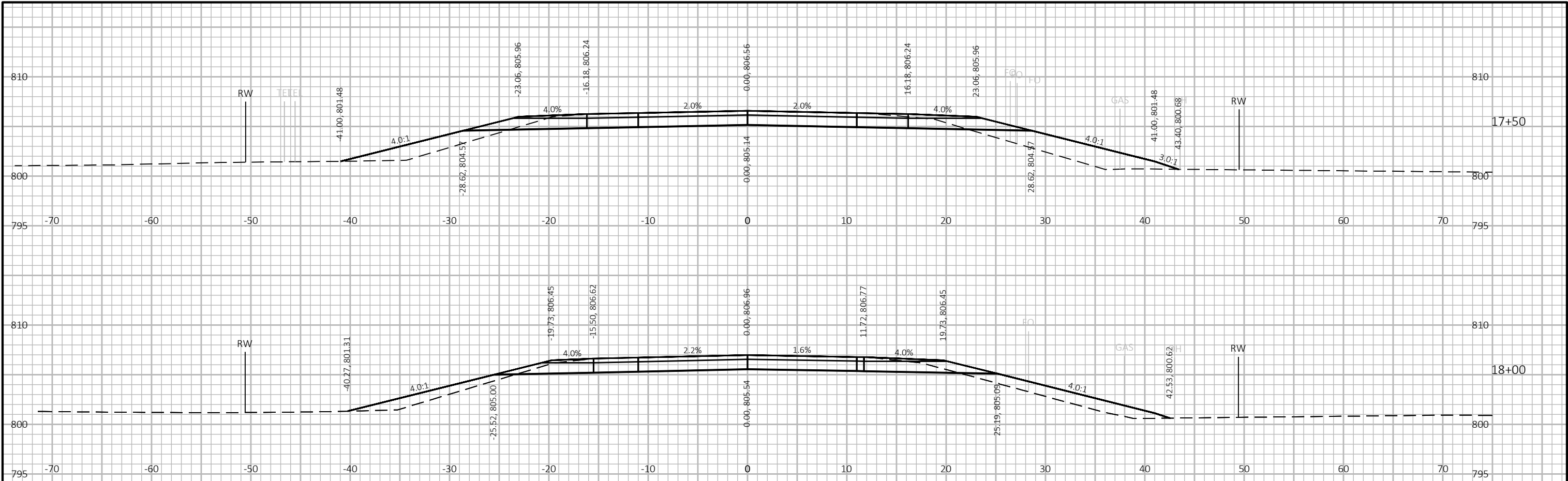




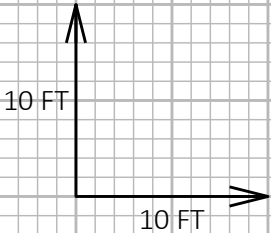




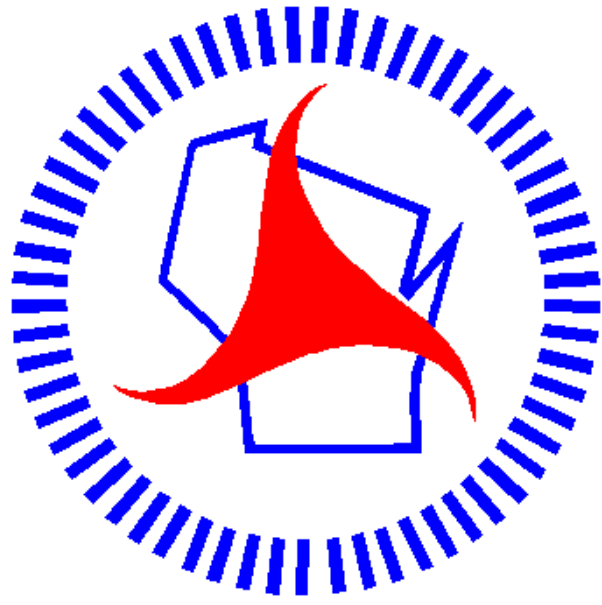
PROJECT NO: 6832-06-72	HWY: CTH B	COUNTY: WAUPACA	CROSS SECTIONS: CTH B	SHEET E
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END PROJECT
STA 18+00.00
END CONSTRUCTION
STA 18+37.01



Notes



Wisconsin Department of Transportation

Dedicated people creating transportation solutions
through innovation and exceptional service.

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