

RHI

Dec 14, 2021

ORDER OF SHEETS

Section No.	1	Title
Section No.	2	Typical Sections and Details
Section No.	3	Estimate of Quantities
Section No.	3	Miscellaneous Quantities
Section No.	4	Right of Way 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 = 88

PROJECT LOCATION



36

DESIGN DESIGNATION 9509-00-00

A.A.D.T.	2022	=	1624
A.A.D.T.	2042	=	1794
D.H.V.		=	224
D.D.		=	60/40
T.		=	15%
DESIGN SPEED		=	50 MPH
ESALS		=	580,000

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

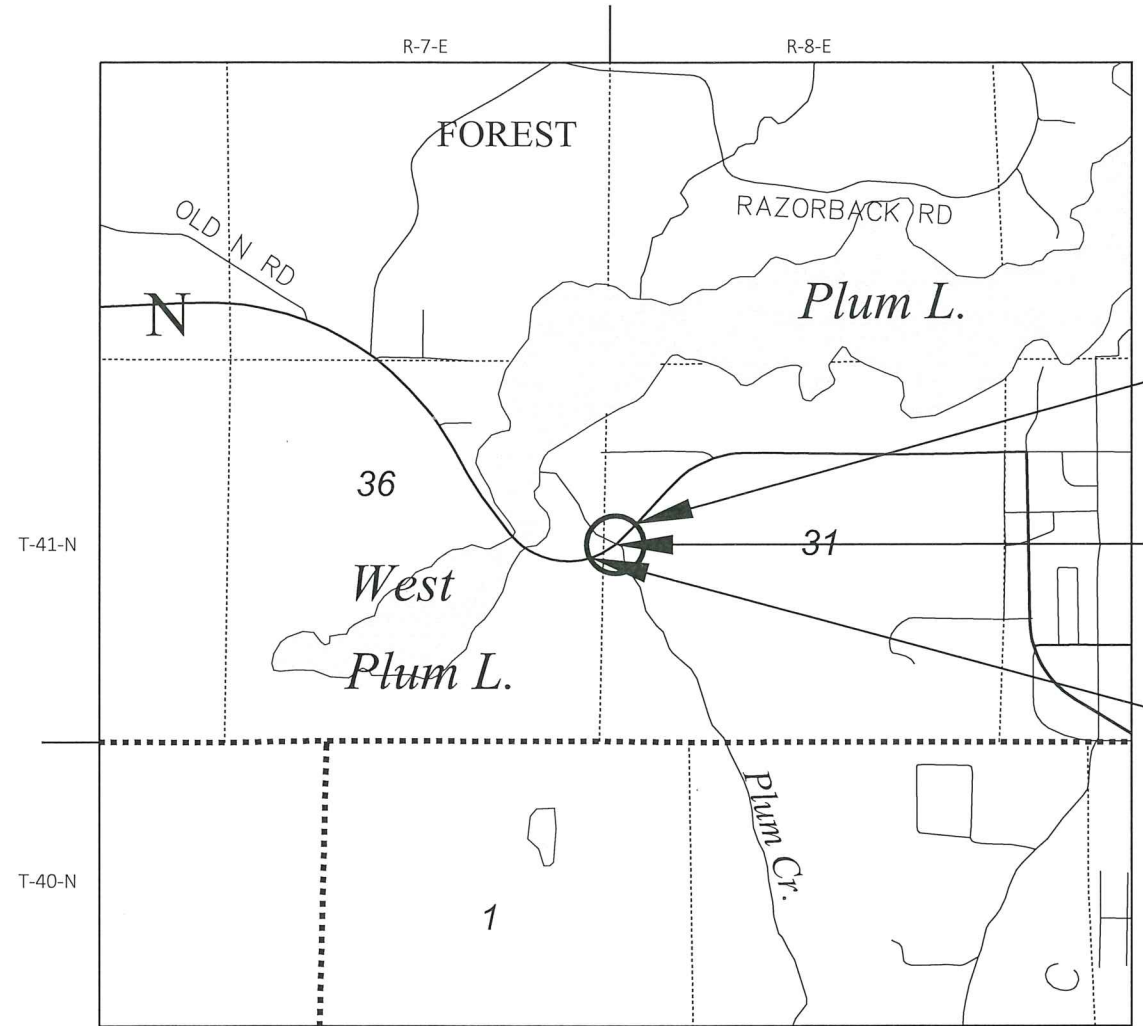
T PLUM LAKE, CTH N

PLUM CREEK BRIDGE B-63-0030

CTH N

VILAS COUNTY

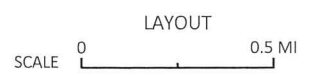
STATE PROJECT NUMBER
9509-00-70



BEGIN PROJECT
STA 7+50
Y = 132874.6837
X = 424199.4952

STRUCTURE B-63-0030
STA 10+00.00

END PROJECT
STA 12+00
Y = 133146.5117
X = 424554.1875



TOTAL NET LENGTH OF CENTERLINE = 0.085 MI

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), VILAS 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 (1991). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 12A.

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
9509-00-70	WISC 2022094	1

ACCEPTED FOR
VILAS COUNTY
DATE: 7/20/2021 *[Signature]*
CO Administrator
(Title)

ORIGINAL PLANS PREPARED BY
Cedar corporation
MENOMONIE - MADISON - GREEN BAY - CEDARBURG
www.cedarcorp.com
800-472-7372

WISCONSIN
TROY L. PETERSON
E-31102
MENOMONIE
WI
PROFESSIONAL ENGINEER
[Signature]
7-16-21

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
PREPARED BY
Surveyor: CEDAR CORPORATION
Designer: CEDAR CORPORATION
Project Manager: MICHAEL GRAGE, PE
Regional Examiner: WISDOT
Regional Supervisor: DAN ERVA, PE

APPROVED FOR THE DEPARTMENT
DATE: 7/27/2021 *[Signature]*
(Signature)

E

GENERAL NOTES

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

NO TREES OR SHRUBS ARE TO BE REMOVED UNLESS SUCH TREES OR SHRUBS HAVE FIRST BEEN INDICATED FOR REMOVAL BY THE ENGINEER IN THE FIELD.

DISTURBED AREAS WITHIN THE RIGHT OF WAY ARE TO BE TOPSOILED, FERTILIZED, SEEDED, AND COVERED WITH EROSION MAT OR MULCHED.

WETLANDS ARE PRESENT WITHIN THE PROJECT LIMITS. DO NOT OPERATE EQUIPMENT OUTSIDE OF THE SLOPE INTERCEPTS. DO NOT STORE OR STOCKPILE MATERIALS IN WETLANDS

WHEN THE QUANTITY OF ITEM BASE LAYER OR SURFACE LAYER IS MEASURED FOR PAYMENT BY THE TON, THE THICKNESS OF THE MATERIAL THAT IS SHOWN ON THE PLANS IS APPROXIMATE AND THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF MATERIAL AS DIRECTED BY THE ENGINEER.

THE WISCONSIN DEPARTMENT OF TRANSPORTATION WILL FURNISH THE CONTRACTOR A MONUMENT WHICH SHALL BE SET IN THE STRUCTURE AS DESIGNATED BY ENGINEER.

STANDARD ABBREVIATIONS

Table with 4 columns: Abbreviation, Description, Abbreviation, Description. Includes terms like ABUT, AGG, ET AL, AADT, BF, BM, C/L OR e, etc.

DNR CONTACT

DNR NORTHERN REGION HEADQUARTERS
107 SUTLIFF AVENUE
RHINELANDER, WI 54501
ATTN: JON SIMONSEN, DNR LIASON
PH: (715) 367-1936
EMAIL: jonathan.simonsen@wisconsin.gov

ATTN: CRAIG DALTON, DNR NHAL PROPERTY MANAGER - PIER ACCESS
PH: (715) 892-0095
EMAIL: craig.dalton@wisconsin.gov

DESIGN CONSULTANT CONTACT

CEDAR CORPORATION
604 WILSON AVENUE
MENOMONIE, WI 54751
ATTN: TROY L. PETERSON, P.E.
PH: (715) 235-9081
EMAIL: troy.peterson@cedarcorp.com

MUNICIPALITY

VILAS COUNTY HIGHWAY DEPARTMENT
2104 NORTH RAILROAD STREET
EAGLE RIVER, WI 54521
ATTN: TROY SCHALINSKE, HIGHWAY COMMISSIONER
PH: (715) 479-4641 EXT#3
EMAIL: trscha@vilascountywv.gov

UTILITY CONTACTS

COMMUNICATION
FRONTIER COMMUNICATIONS
5214 14TH STREET
WAUSAU, WI 54401
ATTN: RUSSELL W. RYAN
PH: (920) 583-3275
EMAIL: russell.w.ryan@ftr.com

COMMUNICATION
LAKELAND CABLEVISION
P.O. BOX 8
BONDUEL, WI 54107
ATTN: BRIAN REVAK
PH: (715) 853-5657
EMAIL: blrevak@hotmail.com

ELECTRIC
WISCONSIN PUBLIC SERVICE CORPORATION
2850 SOUTH ASHLAND AVENUE
GREEN BAY, WI 54304
ATTN: WENDY CHRIST, CSO
PH: (920) 617-5173
EMAIL: wendy.christ@wisconsinpublicservice.com

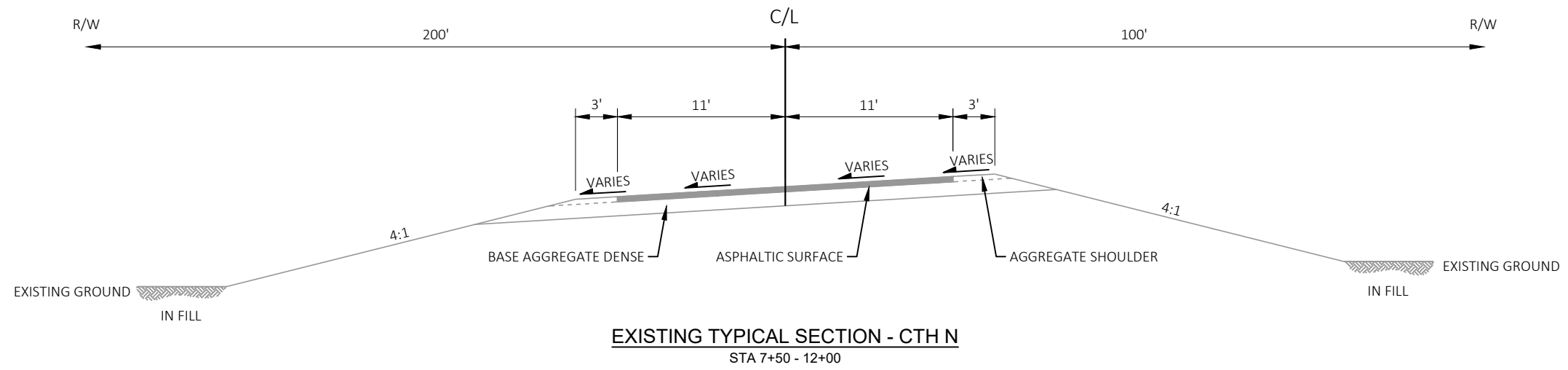
GAS
WE ENERGIES
1921 EIGHT STREET SOUTH
WISCONSIN RAPIDS, WI 54494-0789
ATTN: RYAN MIENTKE, DESIGN SPECIALIST
PH: (906) 779-5617
EMAIL: ryan.mientke@we-energies.com



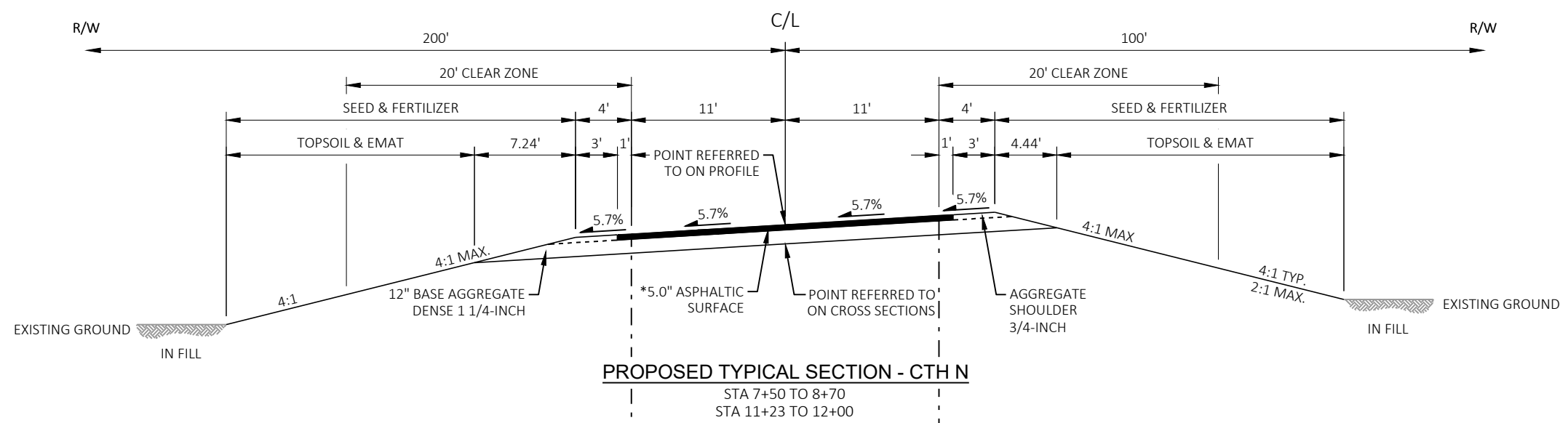
RUNOFF COEFFICIENT TABLE

Table with columns: LAND USE, HYDROLOGIC SOIL GROUP (A, B, C, D), and SLOPE RANGE (PERCENT). Rows include ROW CROPS, MEDIAN STRIP-TURF, SIDE SLOPE TURF, PAYMENT, ASPHALT, CONCRETE, BRICK, DRIVES, WALKS, ROOFS, GRAVEL ROADS, SHOULDERS.

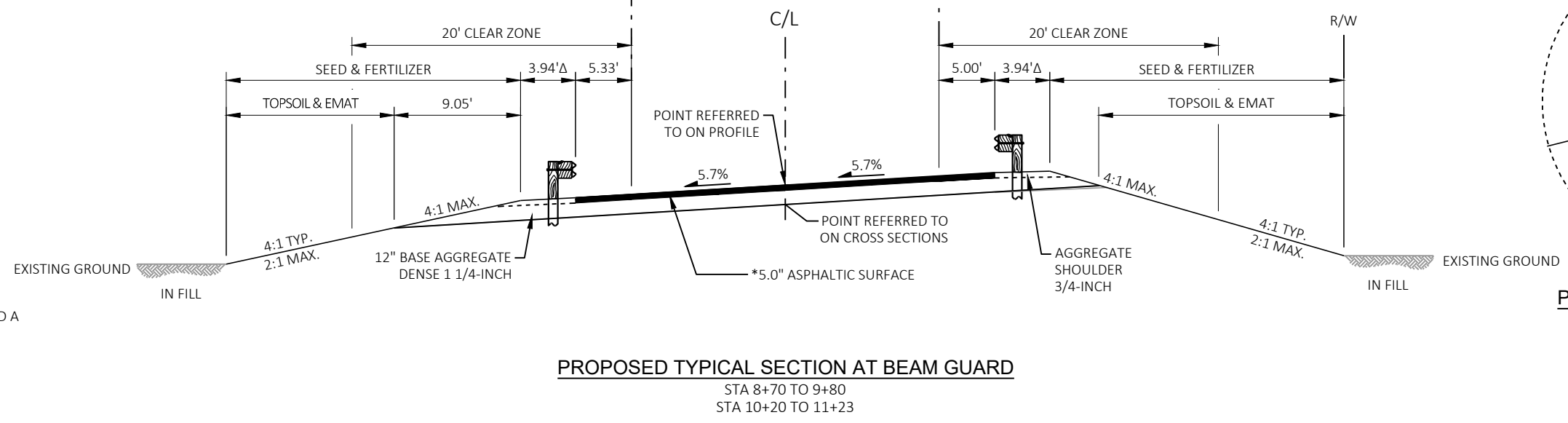
TOTAL PROJECT AREA = 2.07 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.69 ACRES



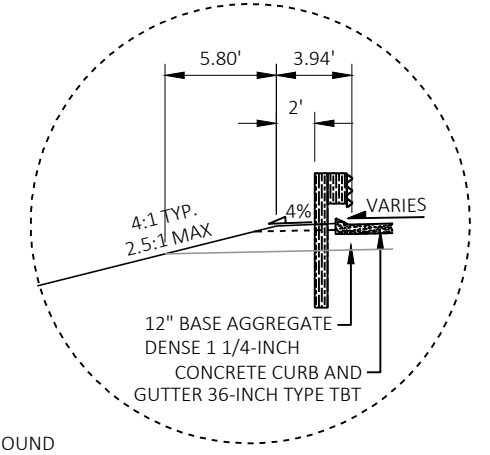
EXISTING TYPICAL SECTION - CTH N
STA 7+50 - 12+00



PROPOSED TYPICAL SECTION - CTH N
STA 7+50 TO 8+70
STA 11+23 TO 12+00



PROPOSED TYPICAL SECTION AT BEAM GUARD
STA 8+70 TO 9+80
STA 10+20 TO 11+23



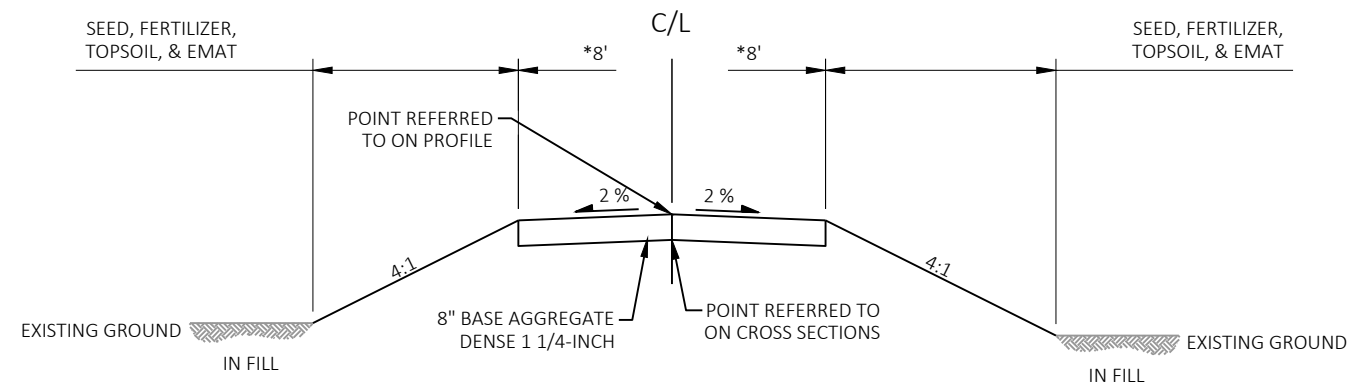
PROPOSED TYPICAL SECTION AT BEAM GUARD

STA 10+26 LT TO STA 10+64 LT

* THE 5.0-INCH OF ASPHALTIC SURFACE SHALL BE CONSTRUCTED WITH A 2.0-INCH UPPER LAYER (4LT-58-34 S) AND A 3.0-INCH LOWER LAYER (3LT-58-28 S).

Δ INCREASE TO 7' AT POST NO. 1 OF ENERGY ABSORBING TERMINAL.


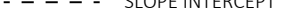



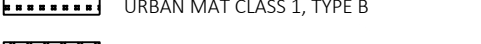
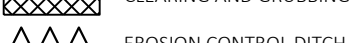

- * STA 21+50.00 TO STA 22+00.00 - 5' TO 8'
- * STA 22+00.00 TO STA 22+39.29 - 8'
- * STA 22+39.29 LT TO 22+59.52 LT - 8' TO 15.8'
- * STA 22+39.29 RT TO 22+61.52 RT - 8' TO 17.8'



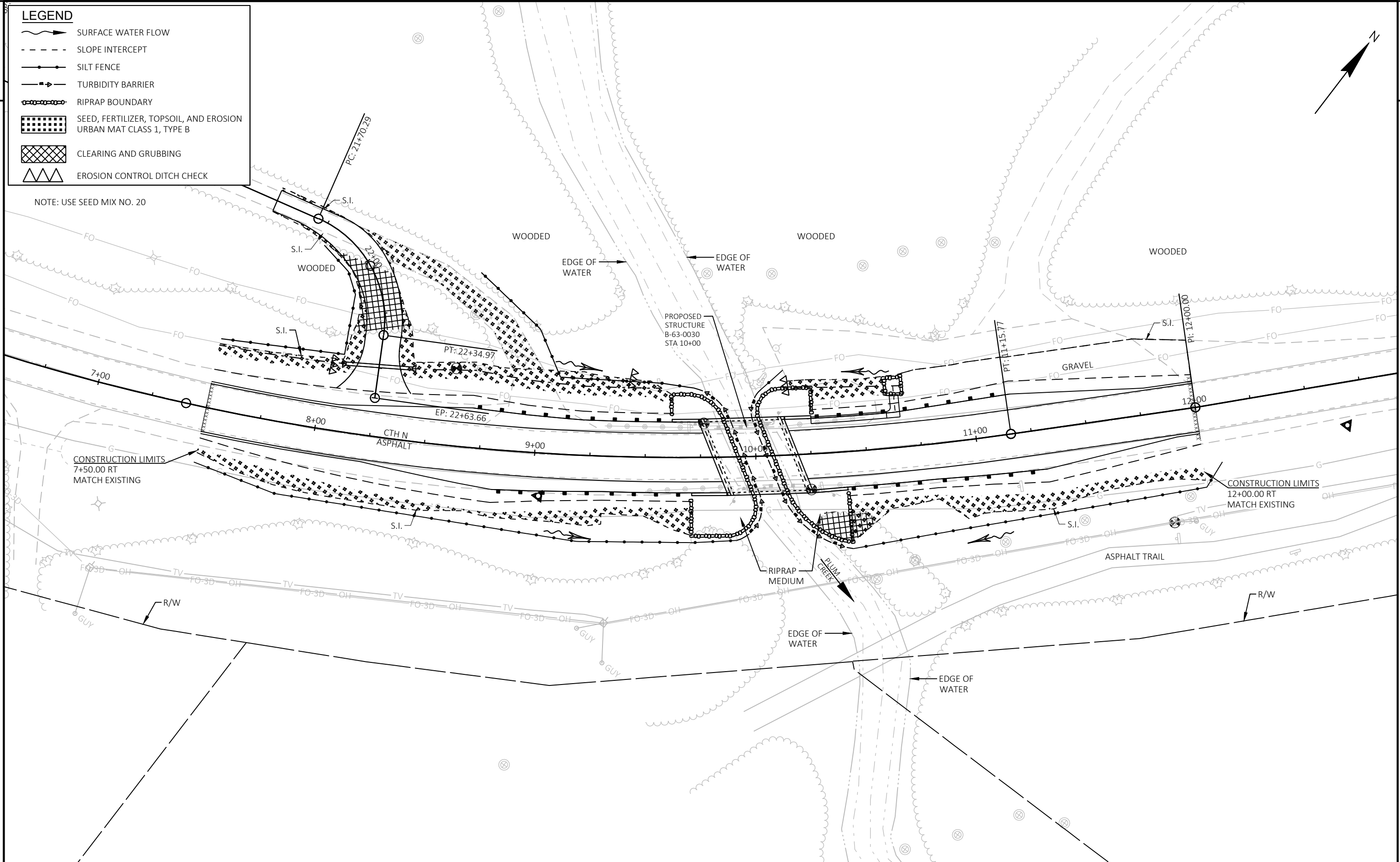
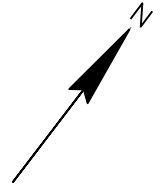
PROPOSED TYPICAL SECTION - DRIVEWAY

STA 21+50.00 TO 22+61.52

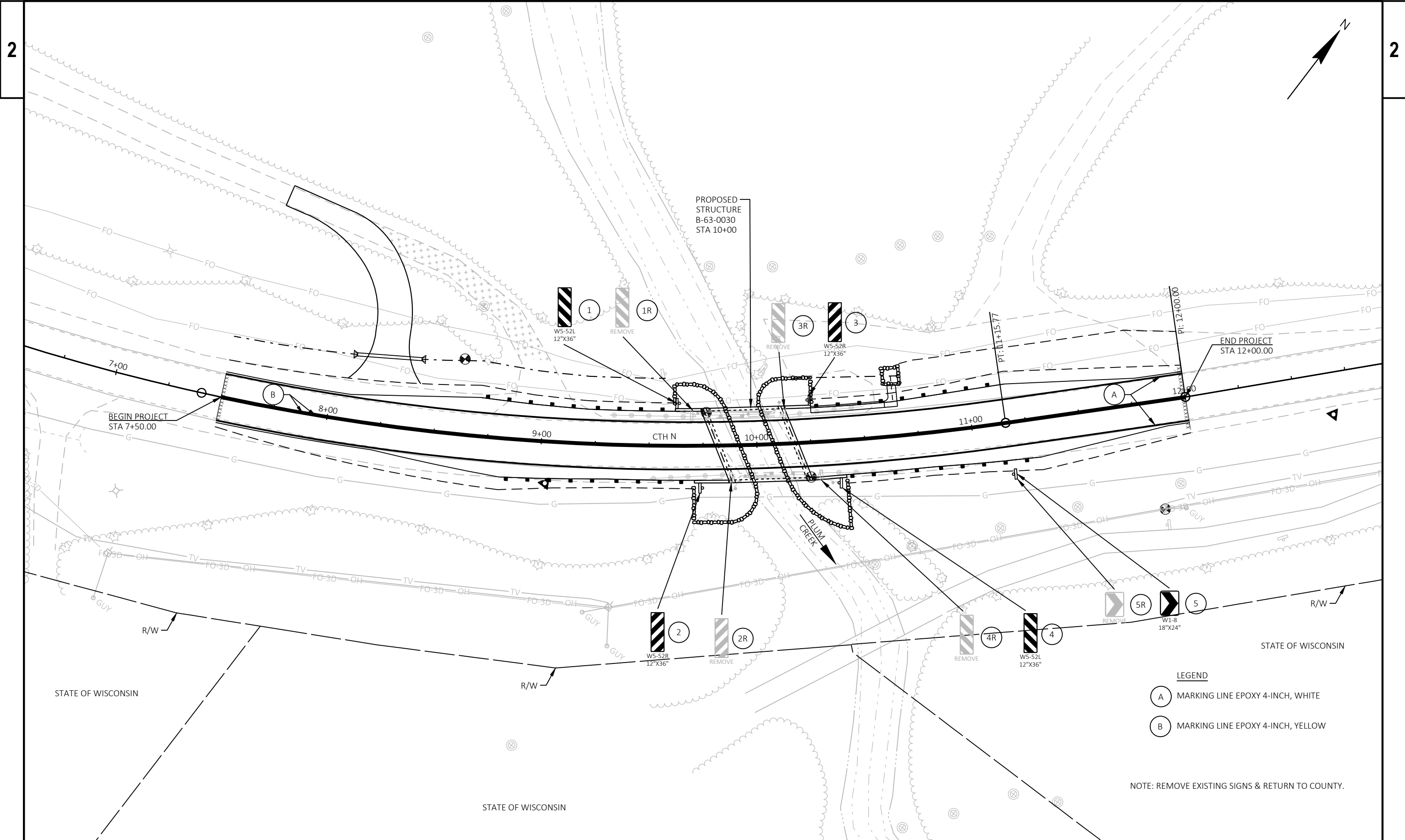
LEGEND

-  SURFACE WATER FLOW
-  SLOPE INTERCEPT
-  SILT FENCE
-  TURBIDITY BARRIER
-  RIPRAP BOUNDARY
-  SEED, FERTILIZER, TOPSOIL, AND EROSION URBAN MAT CLASS 1, TYPE B
-  CLEARING AND GRUBBING
-  EROSION CONTROL DITCH CHECK

NOTE: USE SEED MIX NO. 20



PROJECT NO: 9509-00-70	HWY: CTH N	COUNTY: VILAS	EROSION CONTROL	SHEET	E
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PROPOSED
STRUCTURE
B-63-0030
STA 10+00

END PROJECT
STA 12+00.00

BEGIN PROJECT
STA 7+50.00

CTH N

PLUM
CREEK

STATE OF WISCONSIN

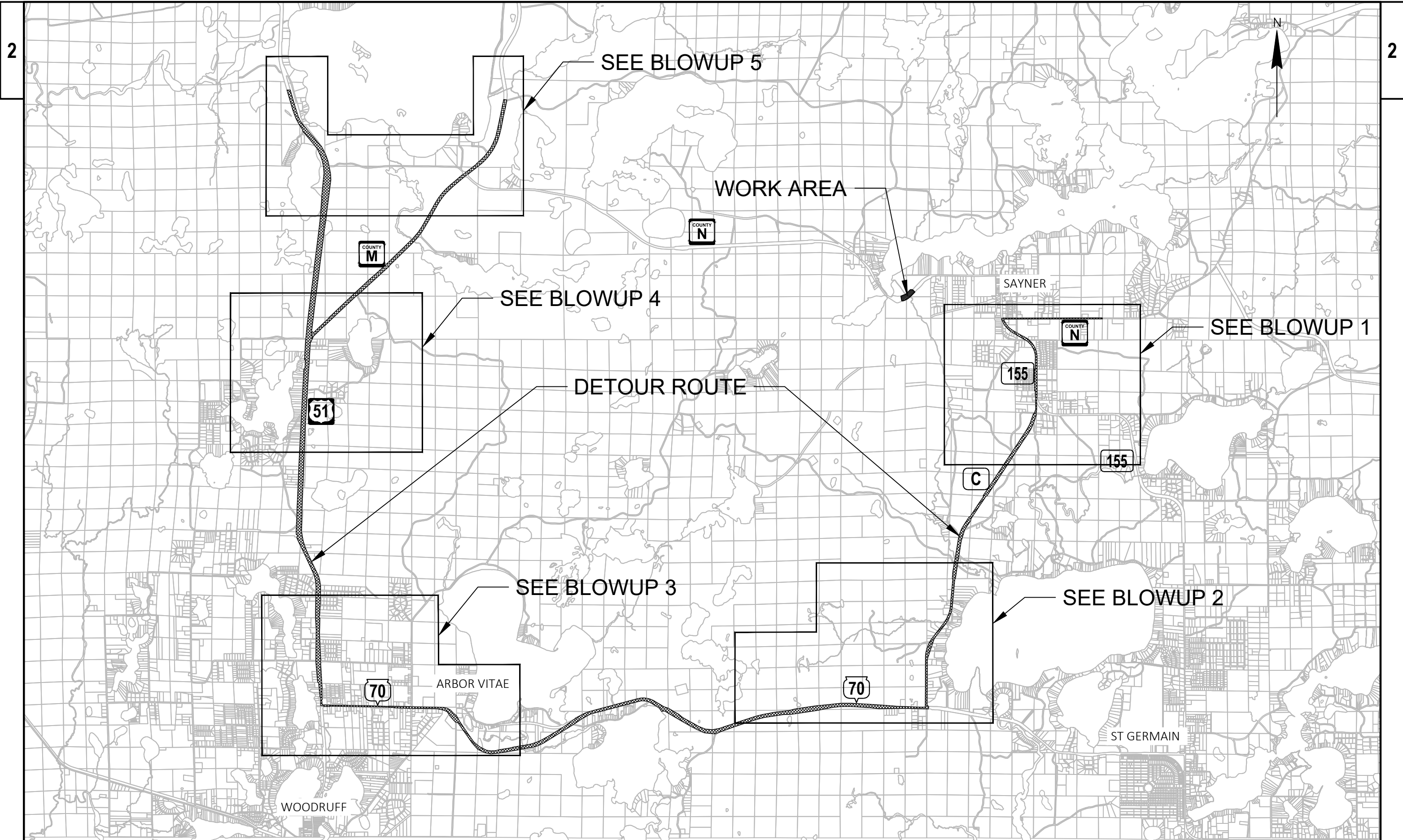
STATE OF WISCONSIN

STATE OF WISCONSIN

- LEGEND**
- (A) MARKING LINE EPOXY 4-INCH, WHITE
 - (B) MARKING LINE EPOXY 4-INCH, YELLOW

NOTE: REMOVE EXISTING SIGNS & RETURN TO COUNTY.

PROJECT NO: 9509-00-70	HWY: CTH N	COUNTY: VILAS	PERMANENT MARKING AND SIGNING	SHEET	E
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PROJECT NO: 9509-00-70

HWY: CTH N

COUNTY: VILAS

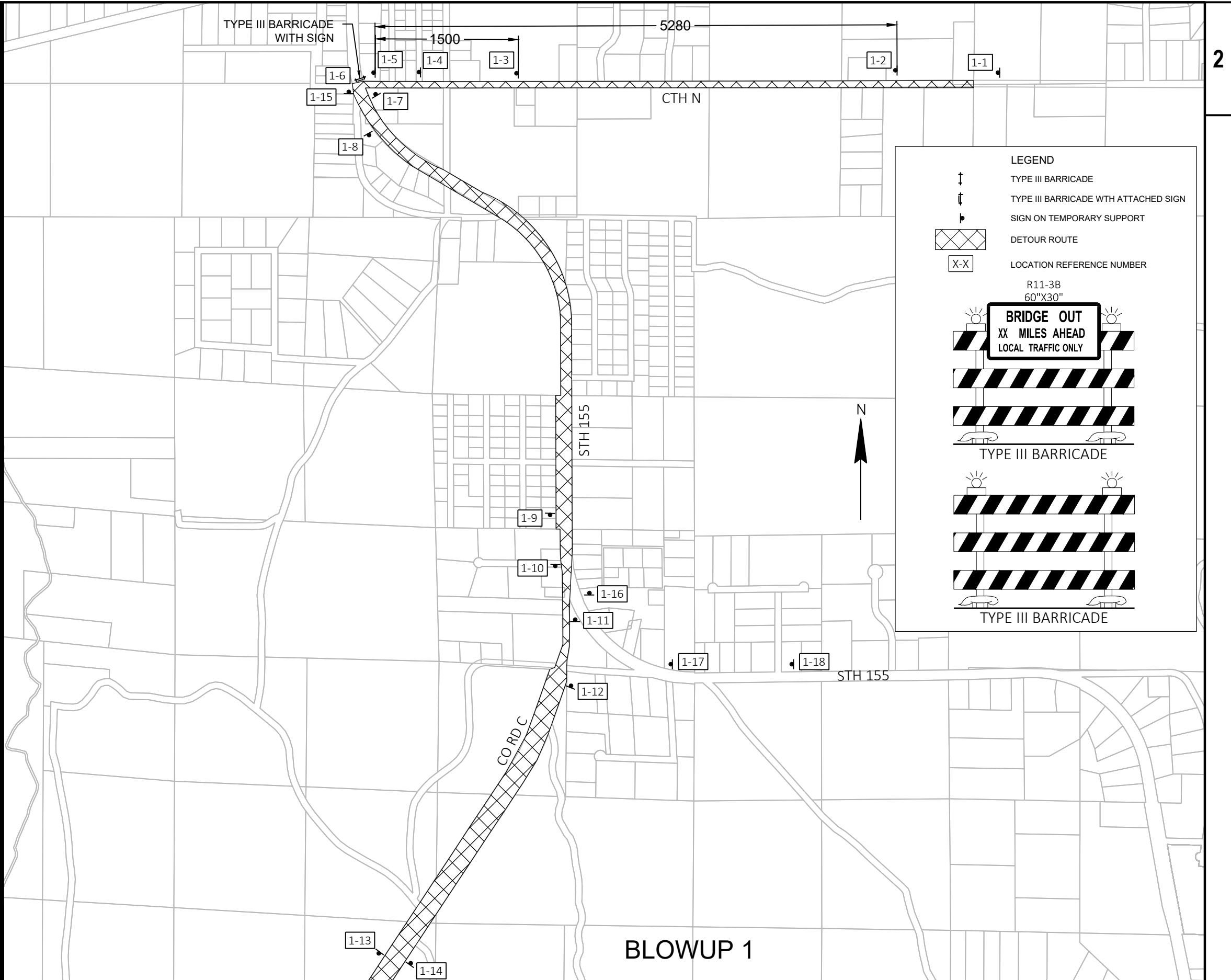
DETOUR

SHEET

E

NOTE: ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED.

1-1
1-2
1-3
1-4
1-5
1-6
1-7
1-8
1-9
1-10
1-11
1-12
1-13
1-14
1-15
1-16
1-17
1-18



LEGEND

- ↑ TYPE III BARRICADE
- ↑↓ TYPE III BARRICADE WITH ATTACHED SIGN
- ▶ SIGN ON TEMPORARY SUPPORT
- ▨ DETOUR ROUTE
- X-X LOCATION REFERENCE NUMBER

R11-3B
60"X30"

BRIDGE OUT
XX MILES AHEAD
LOCAL TRAFFIC ONLY

TYPE III BARRICADE

TYPE III BARRICADE

BLOWUP 2

 2-1	 2-2	 2-3	 2-4	 2-5
 2-6	 2-7	 2-8	 2-9	 2-10
 2-11	 2-12		 2-13	

NOTE: ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED

LEGEND

- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- SIGN ON TEMPORARY SUPPORT
- DETOUR ROUTE
- LOCATION REFERENCE NUMBER

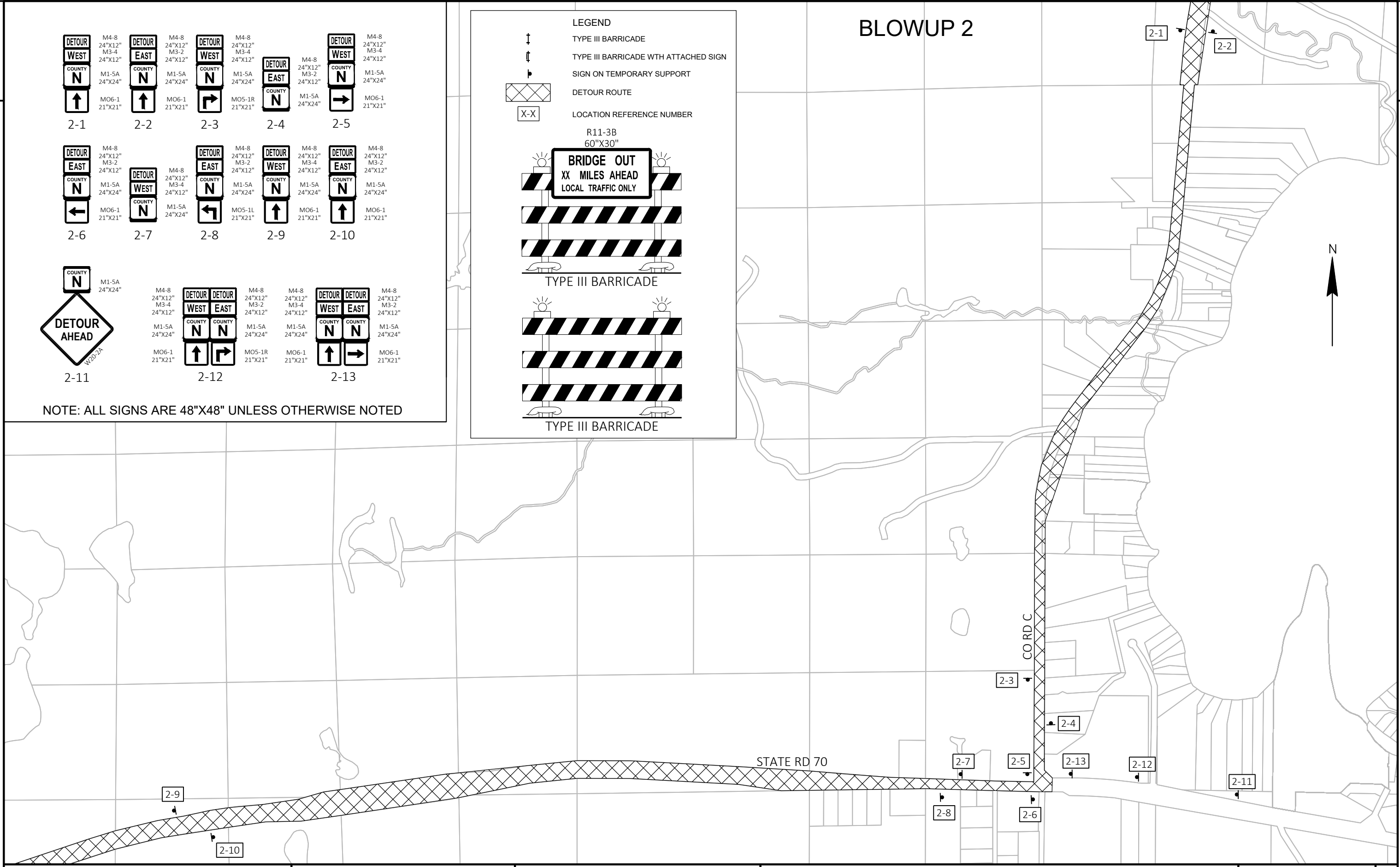
R11-3B
60"X30"

BRIDGE OUT
XX MILES AHEAD
LOCAL TRAFFIC ONLY

TYPE III BARRICADE

TYPE III BARRICADE

TYPE III BARRICADE



BLOWUP 3

LEGEND

- ↑ TYPE III BARRICADE
- ↑ TYPE III BARRICADE WITH ATTACHED SIGN
- ▶ SIGN ON TEMPORARY SUPPORT
- ▨ DETOUR ROUTE
- X-X LOCATION REFERENCE NUMBER

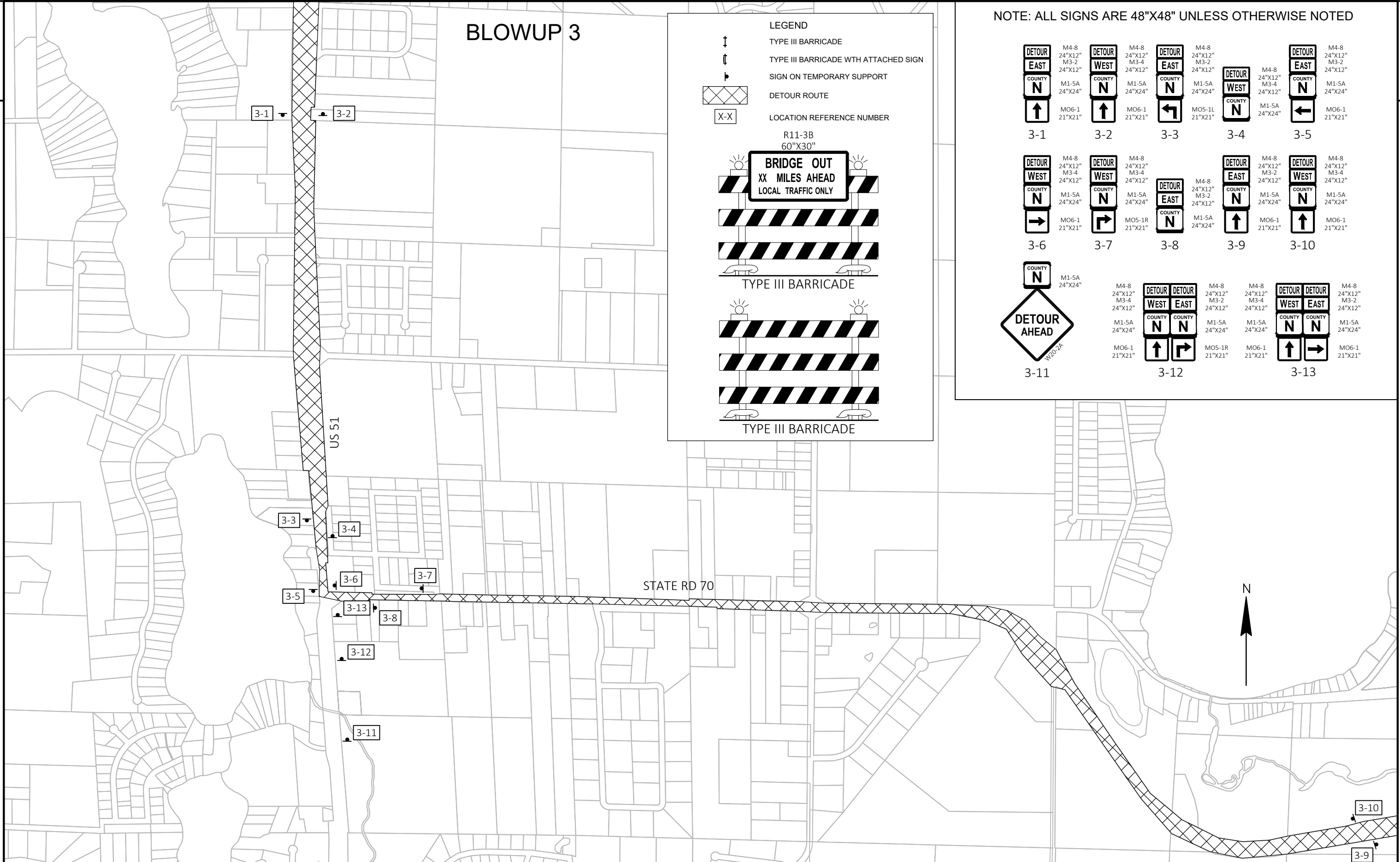
R11-3B
60"x30"

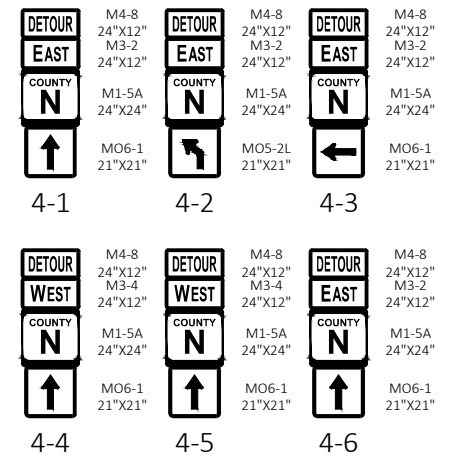
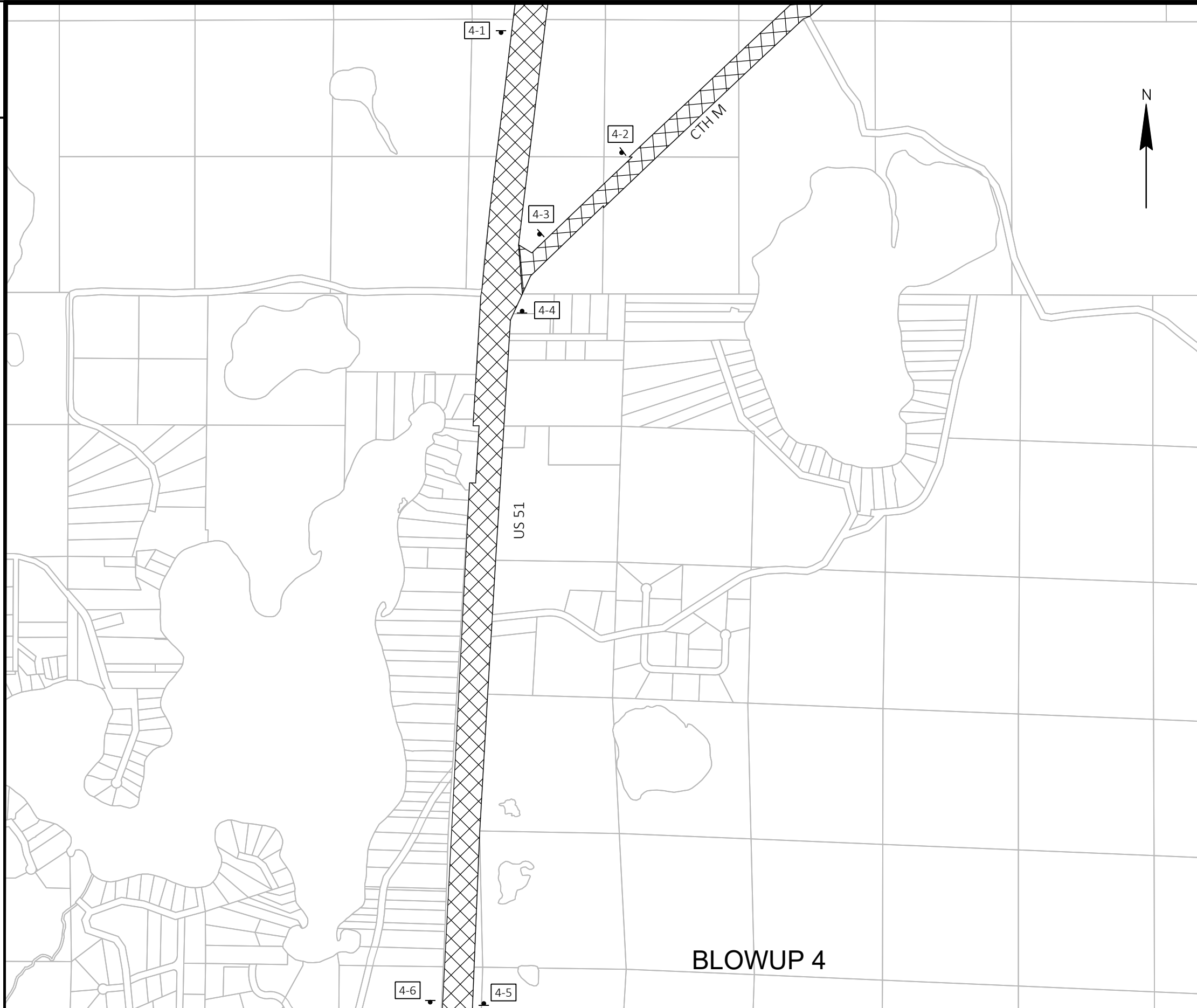
TYPE III BARRICADE

TYPE III BARRICADE

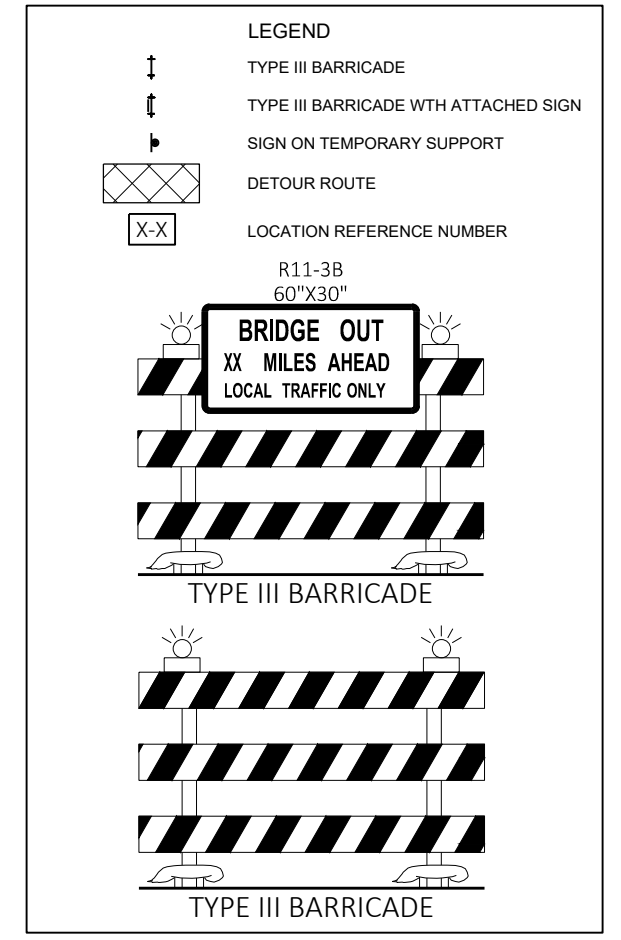
NOTE: ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED

3-1	3-2	3-3	3-4	3-5
3-6	3-7	3-8	3-9	3-10
3-11	3-12	3-13		





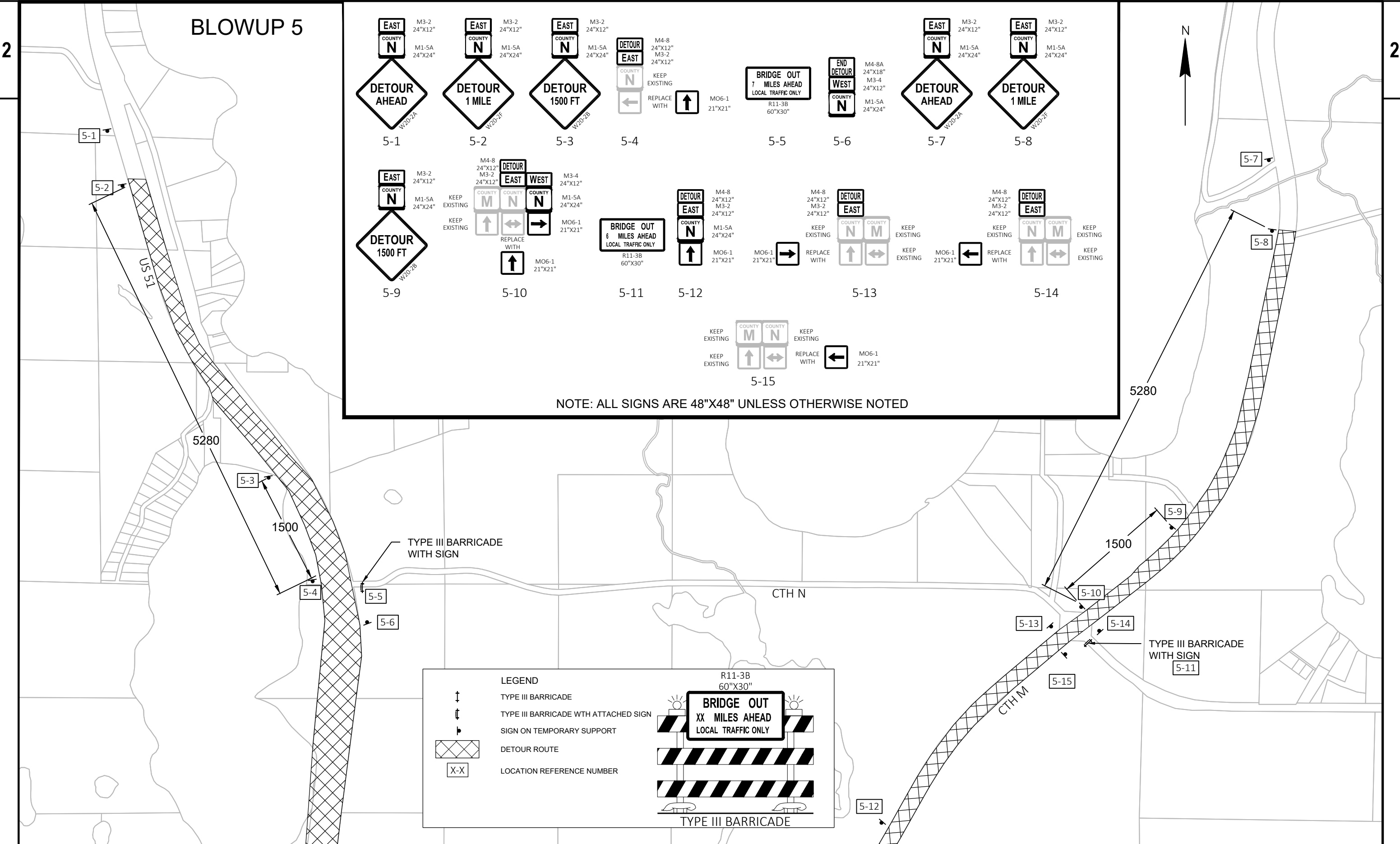
NOTE: ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED



BLOWUP 5

2

2



 EAST COUNTY N DETOUR AHEAD M3-2 24"x12" M1-5A 24"x24" W20-2A 5-1	 EAST COUNTY N DETOUR 1 MILE M3-2 24"x12" M1-5A 24"x24" W20-2F 5-2	 EAST COUNTY N DETOUR 1500 FT M3-2 24"x12" M1-5A 24"x24" W20-2B 5-3	 DETOUR EAST COUNTY N M4-8 24"x12" M3-2 24"x12" M3-2 24"x12" KEEP EXISTING REPLACE WITH MO6-1 21"x21" 5-4	 BRIDGE OUT 7 MILES AHEAD LOCAL TRAFFIC ONLY R11-3B 60"x30" 5-5	 END DETOUR WEST COUNTY N M4-8A 24"x18" M3-4 24"x12" M1-5A 24"x24" 5-6	 EAST COUNTY N DETOUR AHEAD M3-2 24"x12" M1-5A 24"x24" W20-2A 5-7	 EAST COUNTY N DETOUR 1 MILE M3-2 24"x12" M1-5A 24"x24" W20-2F 5-8
 EAST COUNTY N DETOUR 1500 FT M3-2 24"x12" M1-5A 24"x24" W20-2B 5-9	 DETOUR EAST WEST COUNTY N M4-8 24"x12" M3-2 24"x12" M3-2 24"x12" KEEP EXISTING REPLACE WITH MO6-1 21"x21" 5-10	 BRIDGE OUT 6 MILES AHEAD LOCAL TRAFFIC ONLY R11-3B 60"x30" 5-11	 DETOUR EAST COUNTY N M4-8 24"x12" M3-2 24"x12" M1-5A 24"x24" MO6-1 21"x21" 5-12	 DETOUR EAST COUNTY N M4-8 24"x12" M3-2 24"x12" M3-2 24"x12" KEEP EXISTING REPLACE WITH MO6-1 21"x21" 5-13	 DETOUR EAST COUNTY N M4-8 24"x12" M3-2 24"x12" M3-2 24"x12" KEEP EXISTING REPLACE WITH MO6-1 21"x21" 5-14	 DETOUR EAST WEST COUNTY N M4-8 24"x12" M3-2 24"x12" M3-2 24"x12" KEEP EXISTING REPLACE WITH MO6-1 21"x21" 5-15	

NOTE: ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED

LEGEND

- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- SIGN ON TEMPORARY SUPPORT
- DETOUR ROUTE
- LOCATION REFERENCE NUMBER

R11-3B 60"x30"

BRIDGE OUT
XX MILES AHEAD
LOCAL TRAFFIC ONLY

TYPE III BARRICADE

Estimate Of Quantities

9509-00-70

Line	Item	Item Description	Unit	Total	Qty
0002	201.0110	Clearing	SY	97.000	97.000
0004	201.0210	Grubbing	SY	97.000	97.000
0006	203.0270	Removing Structure Over Waterway Debris Capture (structure) 01. B-63-0006	EACH	1.000	1.000
0008	204.0165	Removing Guardrail	LF	160.000	160.000
0010	205.0100	Excavation Common	CY	752.000	752.000
0012	206.1000	Excavation for Structures Bridges (structure) 01. B-63-0030	LS	1.000	1.000
0014	210.1500	Backfill Structure Type A	TON	400.000	400.000
0016	213.0100	Finishing Roadway (project) 01. 9509-00-70	EACH	1.000	1.000
0018	214.0100	Obliterating Old Road	STA	1.000	1.000
0020	305.0110	Base Aggregate Dense 3/4-Inch	TON	77.000	77.000
0022	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,282.000	1,282.000
0024	455.0605	Tack Coat	GAL	96.000	96.000
0026	465.0105	Asphaltic Surface	TON	396.000	396.000
0028	465.0315	Asphaltic Flumes	SY	7.000	7.000
0030	502.0100	Concrete Masonry Bridges	CY	203.000	203.000
0032	502.3200	Protective Surface Treatment	SY	139.000	139.000
0034	502.3210	Pigmented Surface Sealer	SY	66.000	66.000
0036	505.0400	Bar Steel Reinforcement HS Structures	LB	5,420.000	5,420.000
0038	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	23,980.000	23,980.000
0040	516.0500	Rubberized Membrane Waterproofing	SY	20.000	20.000
0042	521.1217	Apron Endwalls for Pipe Arch Steel 17x13-Inch	EACH	2.000	2.000
0044	521.3717	Pipe Arch Corrugated Steel 17x13-Inch	LF	30.000	30.000
0046	550.0500	Pile Points	EACH	14.000	14.000
0048	550.2102	Piling CIP Concrete 10 3/4 X 0.219-Inch	LF	1,485.000	1,485.000
0050	601.0588	Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type TBT	LF	35.000	35.000
0052	606.0200	Riprap Medium	CY	2.000	2.000
0054	606.0300	Riprap Heavy	CY	175.000	175.000
0056	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	180.000	180.000
0058	614.0150	Anchor Assemblies for Steel Plate Beam Guard	EACH	4.000	4.000
0060	614.2500	MGS Thrie Beam Transition	LF	157.600	157.600
0062	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0064	618.0100	Maintenance And Repair of Haul Roads (project) .01 9509-00-70	EACH	1.000	1.000
0066	619.1000	Mobilization	EACH	1.000	1.000
0068	624.0100	Water	MGAL	21.000	21.000
0070	625.0100	Topsoil	SY	551.000	551.000
0072	628.1504	Silt Fence	LF	840.000	840.000
0074	628.1520	Silt Fence Maintenance	LF	840.000	840.000
0076	628.1905	Mobilizations Erosion Control	EACH	3.000	3.000
0078	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0080	628.2008	Erosion Mat Urban Class I Type B	SY	551.000	551.000
0082	628.6005	Turbidity Barriers	SY	150.000	150.000
0084	628.7504	Temporary Ditch Checks	LF	45.000	45.000
0086	628.7555	Culvert Pipe Checks	EACH	12.000	12.000
0088	629.0210	Fertilizer Type B	CWT	0.500	0.500
0090	630.0120	Seeding Mixture No. 20	LB	24.000	24.000
0092	630.0200	Seeding Temporary	LB	24.000	24.000
0094	630.0500	Seed Water	MGAL	11.000	11.000
0096	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	5.000	5.000
0098	637.2230	Signs Type II Reflective F	SF	15.000	15.000

Estimate Of Quantities

9509-00-70

Line	Item	Item Description	Unit	Total	Qty
0100	638.2602	Removing Signs Type II	EACH	5.000	5.000
0102	638.3000	Removing Small Sign Supports	EACH	5.000	5.000
0104	642.5001	Field Office Type B	EACH	1.000	1.000
0106	643.0300	Traffic Control Drums	DAY	70.000	70.000
0108	643.0420	Traffic Control Barricades Type III	DAY	1,470.000	1,470.000
0110	643.0705	Traffic Control Warning Lights Type A	DAY	2,380.000	2,380.000
0112	643.0900	Traffic Control Signs	DAY	17,570.000	17,570.000
0114	643.1050	Traffic Control Signs PCMS	DAY	14.000	14.000
0116	643.5000	Traffic Control	EACH	1.000	1.000
0118	645.0111	Geotextile Type DF Schedule A	SY	70.000	70.000
0120	645.0120	Geotextile Type HR	SY	335.000	335.000
0122	646.1020	Marking Line Epoxy 4-Inch	LF	1,800.000	1,800.000
0124	650.4500	Construction Staking Subgrade	LF	412.000	412.000
0126	650.5000	Construction Staking Base	LF	412.000	412.000
0128	650.6500	Construction Staking Structure Layout (structure) 01. B-63-0030	LS	1.000	1.000
0130	650.9910	Construction Staking Supplemental Control (project) 01. 9509-00-70	LS	1.000	1.000
0132	650.9920	Construction Staking Slope Stakes	LF	395.000	395.000
0134	690.0150	Sawing Asphalt	LF	44.000	44.000
0136	715.0502	Incentive Strength Concrete Structures	DOL	1,218.000	1,218.000
0138	ASP.1TOA	On-the-Job Training Apprentice at \$5.00/HR	HRS	1,200.000	1,200.000
0140	ASP.1TOG	On-the-Job Training Graduate at \$5.00/HR	HRS	600.000	600.000

CLEARING & GRUBBING

CATEGORY	STATION	TO	STATION	LOCATION	201.0110 CLEARING SY	201.0210 GRUBBING SY
0010	10+25	-	10+52	RT	29	29
0010	21+81	-	22+34	RELOCATED DRIVEWAY	68	68
TOTAL 0010					97	97

REMOVING GUARDRAIL

CATEGORY	STATION	TO	STATION	LOCATION	204.0165 REMOVING GUARDRAIL LF
0010	9+31	-	9+72	LT	40
0010	9+50	-	9+90	RT	40
0010	10+11	-	10+51	LT	40
0010	10+27	-	10+66	RT	40
TOTAL 0010					160

OBLITERATING OLD ROAD

CATEGORY	STATION	TO	STATION	LOCATION	214.0100 OBLITERATING OLD ROAD STA
0010	8+00	-	9+00	CTH N	1
TOTAL 0010					1

EXCAVATION COMMON

CATEGORY	STATION	TO	STATION	LOCATION	205.0100 EXCAVATION COMMON CY	REMARKS
0010	7+50.00	-	9+30.60	LT & RT SHOULDERS	101	
0010	9+30.60	-	9+70.94	MAINLINE & SHOULDERS	61	
0010	10+26.08	-	10+69.27	MAINLINE & SHOULDERS	74	
0010	10+69.27	-	12+00.00	LT & RT SHOULDERS	133	
0010	21+50.00	-	22+61.00	RELOCATED DRIVEWAY	25	
TOTAL 0010					394	
0030	7+50.00	-	9+30.60	MAINLINE	208	
0030	10+69.27	-	12+00.00	MAINLINE	150	
TOTAL 0030					358	
PROJECT TOTAL					752	

DIVISION	FROM/TO STATION	LOCATION	205.0100 COMMON EXCAVATION (1)		SALVAGED/UNUSABLE PAVEMENT MATERIAL (4)	AVAILABLE MATERIAL (5)	UNEXPANDED FILL	EXPANDED FILL (13) FACTOR X1.25	MASS ORDINATE +/- (14)	WASTE	COMMENT
			CUT (2)	EBS EXCAVATION (3)							
DIVISION 1											
	7+50-10+00 21+50-22+61	CTH N DRIVEWAY	369 25		61 0	308 25	42 39	53 49	256 -24	256 -24	
DIVISION 1 SUBTOTAL			394	0	61	333	81	101	232	232	
DIVISION 2											
	10+00-12+00	CTH N	358		49	309	57	71	238	238	
DIVISION 2 SUBTOTAL			358	0	49	309	57	71	238	238	
GRAND TOTAL			752	0	110	642	138	173	470	470	
TOTAL COMMON EXC			752								

NOTES:

- (1) COMMON EXCAVATION IS THE SUM OF THE CUT AND EBS EXCAVATION COLUMNS. ITEM NUMBER 205.0100
- (2) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
- (4) SALVAGED/UNUSABLE PAVEMENT MATERIAL
- (5) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSABLE PAVEMENT MATERIAL
- (13) EXPANDED FILL FACTOR = X1.25
- (14) THE MASS ORDINATE + OR - QTY CALCULATED FOR THE DIVISION. PLUS QUANTITY INDICATES AN EXCESS OF MATERIAL WITHIN THE DIVISION. MINUS INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.

CURB & GUTTER

RIPRAP

BASE AGGREGATES

<u>CURB & GUTTER</u>					<u>RIPRAP</u>			<u>BASE AGGREGATES</u>								
601.0588 CONCRETE CURB & GUTTER 4- INCH SLOPED 36- INCH TYPE TBT LF					606.0200 RIPRAP MEDIUM CY			305.0110 BASE AGGREGATE DENSE 3/4-INCH TON		305.0120 BASE AGGREGATE DENSE 1 1/4- INCH TON		624.0100 WATER MGAL		REMARKS		
CATEGORY	STATION	TO	STATION	LOCATION	CATEGORY	STATION	LOCATION	CATEGORY	STATION	TO	STATION	LOCATION				
0010	10+25.79	-	10+60.54	LT	0010	10+64.5	28' LT	0010	7+50	-	9+30.60	LT SHOULDER	32	119	2	
							TOTAL 0010		0010	7+50	-	9+30.60	RT SHOULDER	32	144	3
									0010	9+30.60	-	10+69.27	MAINLINE & SHOULDERS	16	273	4
									0010	10+69.27	-	12+00	LT SHOULDER	8	75	1
									0010	10+69.27	-	12+00	RT SHOULDER	21	114	2
									0010	21+50.00	-	22+61.52	DRIVEWAY	-	74	1
									0010	10+70.00	-	12+00.00	DRIVEWAY	-	39	1
												TOTAL 0010	77	838	14	
									0030	7+50	-	9+30.60	MAINLINE	-	258	4
									0030	10+69.27	-	12+00	MAINLINE	-	186	3
												TOTAL 0030	0	444	7	
												PROJECT TOTAL	77	1282	21	

GUARDRAIL

614.2500 MGS THRIE BEAM TRANSITION LF					614.2610 MGS GUARDRAIL TERMINAL EAT EACH	
CATEGORY	STATION	TO	STATION	LOCATION		
0010	9+24	-	9+64	LT	39.4	1
0010	9+34	-	9+73	RT	39.4	1
0010	10+24	-	10+64	LT	39.4	1
0010	10+39	-	10+77	RT	39.4	1
					TOTAL 0010	157.6

CULVERTS

521.1217 APRON ENDWALLS FOR PIPE ARCH STEEL 17X13-INCH EACH							521.3717 PIPE ARCH CORRUGATED STEEL 17X13- INCH LF		REMARKS
CATEGORY	STATION	OFFSET	TO	STATION	OFFSET	LOCATION			
0010	8+09.57	30.86' LT	-	8+40.46	32.72' LT	CTH N	2	30	CULVERT UNDER DRIVEWAY
						TOTAL 0010	2	30	

RESTORATION

625.0100 EROSION MAT URBAN CLASS I TOPSOIL SY					628.2008 FERTILIZER TYPE B CWT		629.0210 SEEDING MIXTURE NO. 20 LB		630.0200 SEEDING TEMPORARY LB		630.0500 SEED WATER MGAL	
CATEGORY	STATION	TO	STATION	LOCATION								
0010	7+50.00	-	9+62.14	LT	287	287	0.30	12	12	5		
0010	7+50.00	-	9+70.94	RT	119	119	0.10	6	6	3		
0010	10+16.03	-	12+00.00	LT	35	35	0.00	1	1	1		
0010	10+40.52	-	12+00.00	RT	110	110	0.10	5	5	2		
					TOTAL 0010	551	551	0.50	24	24	11	

ASPHALTIC ITEMS

455.0605 TACK COAT GAL					465.0105 ASPHALTIC SURFACE TON		465.0315 ASPHALTIC FLUMES SY	
CATEGORY	STATION	TO	STATION	LOCATION				
0010	7+50	-	9+30.60	LT SHOULDER	5	21	-	
0010	7+50	-	9+30.60	RT SHOULDER	5	20	-	
0010	9+30.60	-	10+69.27	MAINLINE & SHOULDERS	24	99	-	
0010	10+69.27	-	12+00	LT SHOULDER	4	18	-	
0010	10+69.27	-	12+00	RT SHOULDER	5	19	-	
0010	10+55	-	10+67	LT	-	-	7	
					TOTAL 0010	43	177	7
0030	7+50	-	9+30.60	MAINLINE	31	127	-	
0030	10+69.27	-	12+00	MAINLINE	22	92	-	
					TOTAL 0030	53	219	0
					PROJECT TOTAL	96	396	7

3

3

EROSION CONTROL

CATEGORY	STATION	TO	STATION	LOCATION	628.1504	628.1520	628.1905	628.1910	628.6005	628.7504	628.7555
					SILT FENCE LF	SILT FENCE MAINTENANCE LF	MOBILIZATIONS EROSION CONTROL EACH	MOBILIZATIONS EMERGENCY EROSION CONTROL EACH	TURBIDITY BARRIERS SY	TEMPORARY DITCH CHECKS LF	CULVERT PIPE CHECKS EACH
0010	7+50	-	10+00	LT & RT	484	484	1	1	71	-	-
0010	10+00	-	12+00	LT & RT	188	188	1	1	78	-	-
0010				RELOCATED DRIVEWAY	-	-	-	-	-	-	6
0010				DITCH CHECK	-	-	-	-	-	30	-
0010				UNDISTRIBUTED	168	168	1	1	-	15	6
TOTAL 0010					840	840	3	3	150	45	12

GEOTEXTILES

CATEGORY	STATION	LOCATION	645.0120
			GEOTEXTILE TYPE HR SY
0010	10+64.5	28' LT	7
TOTAL 0010			7

SIGNING

CATEGORY	STATION	LOCATION	SIGN NUMBER	SIGN CODE	SIZE	634.0612	637.2230	638.2602	638.3000	REMARKS
						POSTS WOOD 4X6-INCH X 12-FT EACH	SIGNS TYPE II REFLECTIVE F SF	REMOVING SIGNS TYPE II EACH	REMOVING SMALL SIGN SUPPORTS EACH	
0010	9+62	LT	1	W5-52L	12X36	1	3.0	-	-	BRIDGE HASH MARKS
0010	9+71	LT	1R	-	-	-	-	1	1	-
0010	9+73	RT	2	W5-52R	12X36	1	3.0	-	-	BRIDGE HASH MARKS
0010	9+89	RT	2R	-	-	-	-	1	1	-
0010	10+12	LT	3R	-	-	-	-	1	1	-
0010	10+26	LT	3	W5-52R	12X36	1	3.0	-	-	BRIDGE HASH MARKS
0010	10+28	RT	4R	-	-	-	-	1	1	-
0010	10+39	RT	4	W5-52L	12X36	1	3.0	-	-	BRIDGE HASH MARKS
0010	11+16	RT	5R	-	-	-	-	1	1	-
0010	11+16	RT	5	W1-8	18X24	1	3.0	-	-	CHEVRON
TOTAL 0010						5	15.0	5	5	

PAVEMENT MARKING

CATEGORY	STATION	TO	STATION	LOCATION	646.1020	
					MARKING LINE EPOXY 4-INCH YELLOW LF	WHITE
0010	9+30.60	-	10+69.27	LT EDGELINE	-	137
0010	9+30.60	-	10+69.27	CENTERLINE	278	-
0010	9+30.60	-	10+69.27	RT EDGELINE	-	140
SUBTOTAL 0010					278	277
TOTAL 0010					555	
0030	7+50	-	9+30.60	LT EDGELINE	-	179
0030	7+50	-	9+30.60	CENTERLINE	361	-
0030	7+50	-	9+30.60	RT EDGELINE	-	183
0030	10+69.27	-	12+00	LT EDGELINE	-	130
0030	10+69.27	-	12+00	CENTERLINE	261	-
0030	10+69.27	-	12+00	RT EDGELINE	-	131
SUBTOTAL 0030					622	623
TOTAL 0030					1,245	
PROJECT TOTAL					1800	

TRAFFIC CONTROL ITEMS

CATEGORY	LOCATION	643.0300	643.0420	643.0705	643.0900	643.1050	643.5000
		TRAFFIC CONTROL DRUMS DAY	TRAFFIC CONTROL BARRICADES TYPE III DAY	TRAFFIC CONTROL WARNING LIGHTS TYPE A DAY	TRAFFIC CONTROL SIGNS DAY	TRAFFIC CONTROL SIGNS PCMS DAY	TRAFFIC CONTROL EACH
0010	7-DAY ADVANCED WARNING	70	-	-	-	14	-
0010	PROJECT	-	1,260	1,960	980	-	1
0010	DETOUR	-	210	420	16,590	-	-
TOTAL 0010		70	1,470	2,380	17,570	14	1

MISC

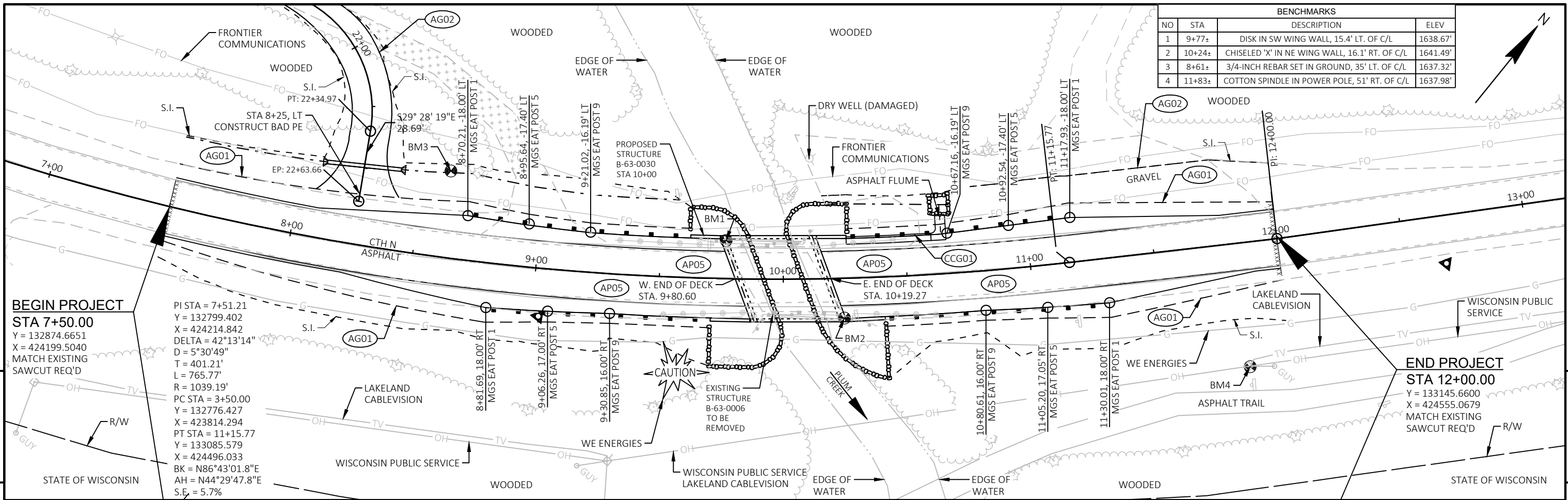
CATEGORY	LOCATION	619.1000	642.5001
		MOBILIZATION EACH	FIELD OFFICE TYPE B EACH
0010	PROJECT	0.3	1
0020	PROJECT	0.7	-
TOTAL 0010		1	1

CONSTRUCTION STAKING

CATEGORY	STATION	TO	STATION	LOCATION	650.4500	650.5000	650.9910.01	650.9920
					CONSTRUCTION STAKING SUBGRADE LF	CONSTRUCTION STAKING BASE LF	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) (01. 9509-00-70) LS	CONSTRUCTION STAKING SLOPE STAKES LF
0010	7+50.00	-	9+70.94	MAINLINE	-	-	-	221
0010	9+30.60	-	9+80.60	MAINLINE	50	50	-	-
0010	10+19.27	-	10+69.27	MAINLINE	50	50	-	-
0010	10+25.90	-	12+00.00	MAINLINE	-	-	-	174
0010				PROJECT	-	-	1	-
TOTAL 0010					100	100	1	395
0030	7+50.00	-	9+30.60	MAINLINE	181	181	-	-
0030	10+69.27	-	12+00.00	MAINLINE	131	131	-	-
TOTAL 0030					312	312	0	0
PROJECT TOTAL					412	412	1	395

SAWCUT

CATEGORY	STATION	LOCATION	690.0150
			SAWING ASPHALT LF
0010	7+50	CTH N	22
0010	12+00	CTH N	22
TOTAL 0010			44

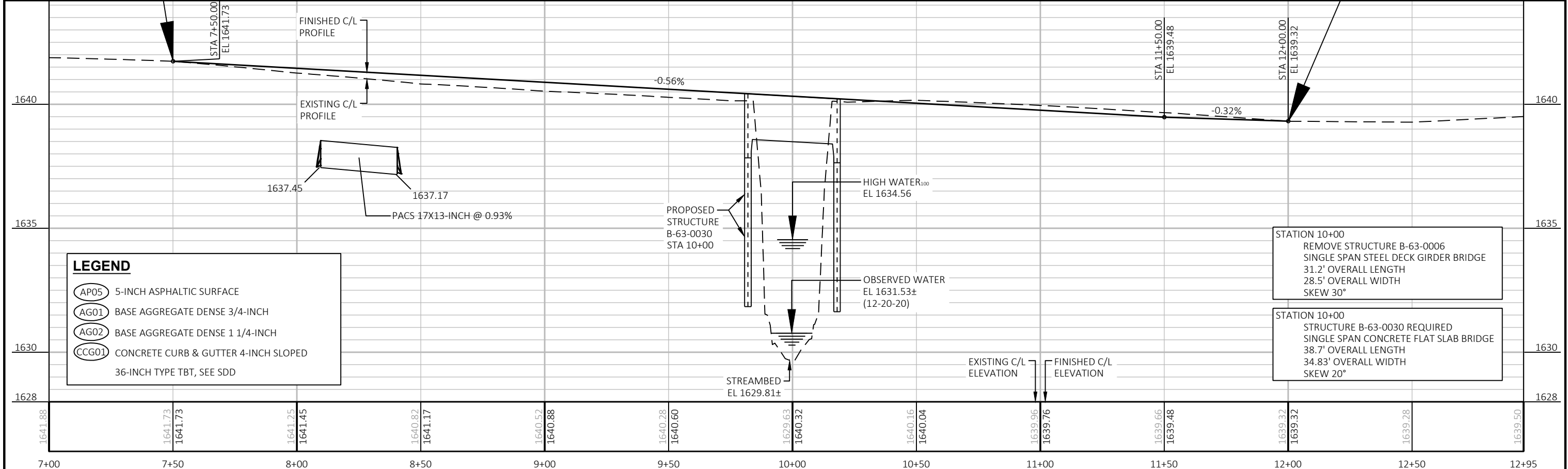


BENCHMARKS			
NO	STA	DESCRIPTION	ELEV
1	9+77±	DISK IN SW WING WALL, 15.4' LT. OF C/L	1638.67'
2	10+24±	CHISELED 'X' IN NE WING WALL, 16.1' RT. OF C/L	1641.49'
3	8+61±	3/4-INCH REBAR SET IN GROUND, 35' LT. OF C/L	1637.32'
4	11+83±	COTTON SPINDLE IN POWER POLE, 51' RT. OF C/L	1637.98'

BEGIN PROJECT
STA 7+50.00
 Y = 132874.6651
 X = 424199.5040
 MATCH EXISTING
 SAWCUT REQ'D

PI STA = 7+51.21
 Y = 132799.402
 X = 424214.842
 DELTA = 42°13'14"
 D = 5°30'49"
 T = 401.21'
 L = 765.77'
 R = 1039.19'
 PC STA = 3+50.00
 Y = 132776.427
 X = 423814.294
 PT STA = 11+15.77
 Y = 133085.579
 X = 424496.033
 BK = N86°43'01.8"E
 AH = N44°29'47.8"E
 S.E. = 5.7%

END PROJECT
STA 12+00.00
 Y = 133145.6600
 X = 424555.0679
 MATCH EXISTING
 SAWCUT REQ'D



LEGEND

AP05	5-INCH ASPHALTIC SURFACE
AG01	BASE AGGREGATE DENSE 3/4-INCH
AG02	BASE AGGREGATE DENSE 1 1/4-INCH
CCG01	CONCRETE CURB & GUTTER 4-INCH SLOPED 36-INCH TYPE TBT, SEE SDD

STATION 10+00
 REMOVE STRUCTURE B-63-0006
 SINGLE SPAN STEEL DECK GIRDER BRIDGE
 31.2' OVERALL LENGTH
 28.5' OVERALL WIDTH
 SKEW 30°

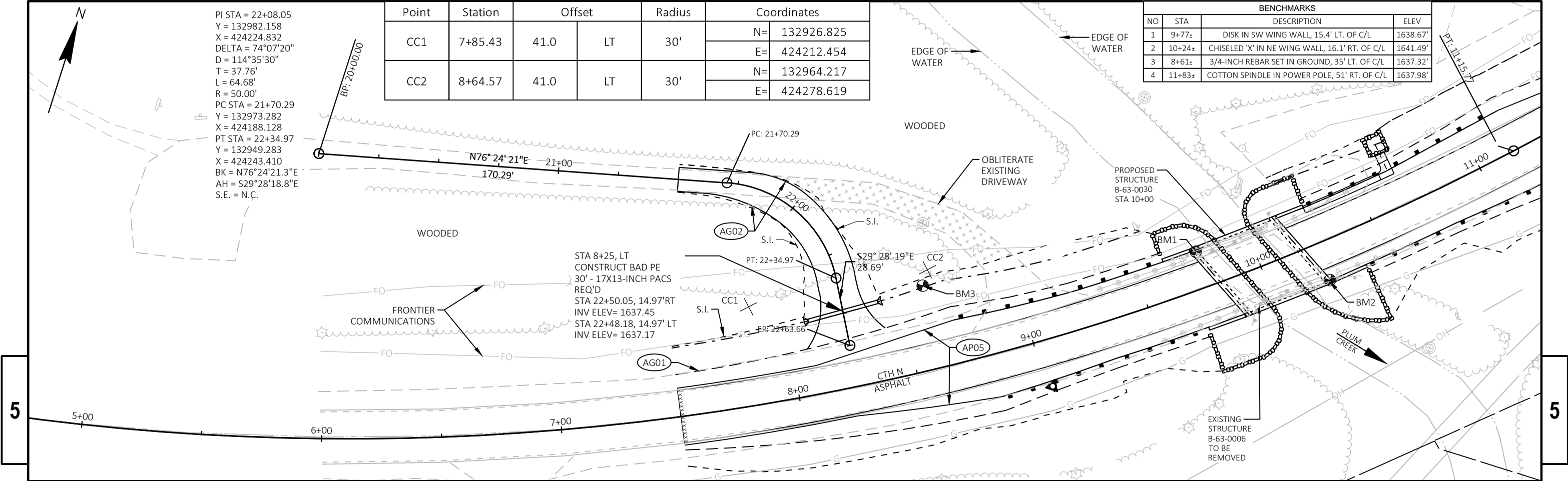
STATION 10+00
 STRUCTURE B-63-0030 REQUIRED
 SINGLE SPAN CONCRETE FLAT SLAB BRIDGE
 38.7' OVERALL LENGTH
 34.83' OVERALL WIDTH
 SKEW 20°

PROJECT NO: 9509-00-70 HWY: CTH N COUNTY: VILAS PLAN AND PROFILE: CTH N PLUM CREEK BRIDGE SHEET: E

PI STA = 22+08.05
 Y = 132982.158
 X = 424224.832
 DELTA = 74°07'20"
 D = 114°35'30"
 T = 37.76'
 L = 64.68'
 R = 50.00'
 PC STA = 21+70.29
 Y = 132973.282
 X = 424188.128
 PT STA = 22+34.97
 Y = 132949.283
 X = 424243.410
 BK = N76°24'21.3"E
 AH = S29°28'18.8"E
 S.E. = N.C.

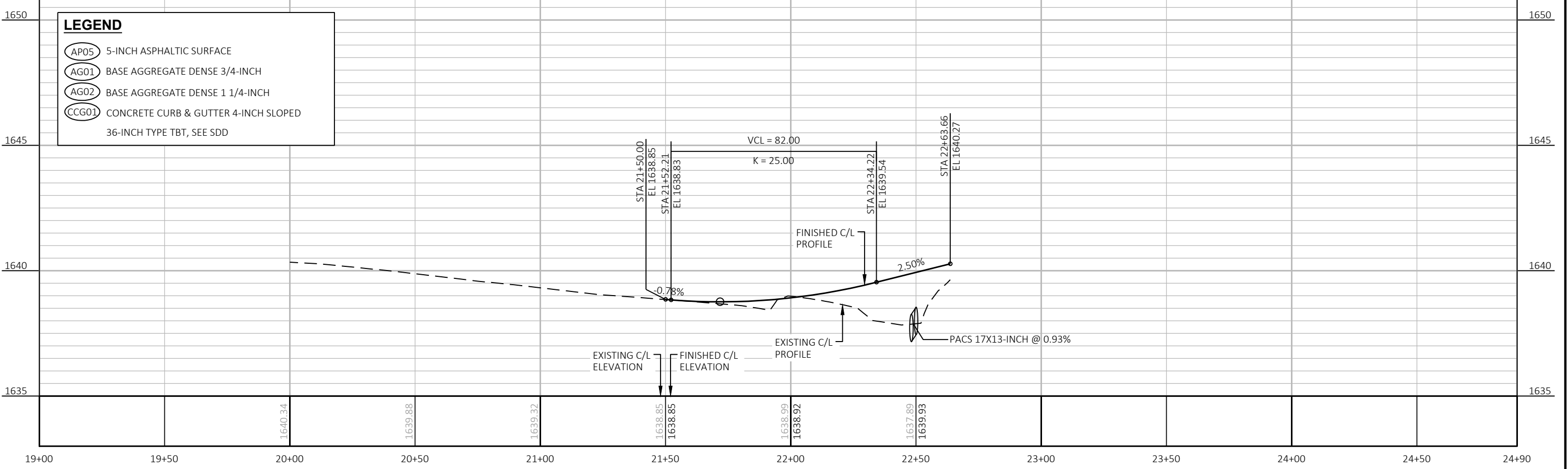
Point	Station	Offset	Radius	Coordinates	
CC1	7+85.43	41.0	LT	30'	N= 132926.825
					E= 424212.454
CC2	8+64.57	41.0	LT	30'	N= 132964.217
					E= 424278.619

BENCHMARKS			
NO	STA	DESCRIPTION	ELEV
1	9+77±	DISK IN SW WING WALL, 15.4' LT. OF C/L	1638.67'
2	10+24±	CHISELED 'X' IN NE WING WALL, 16.1' RT. OF C/L	1641.49'
3	8+61±	3/4-INCH REBAR SET IN GROUND, 35' LT. OF C/L	1637.32'
4	11+83±	COTTON SPINDLE IN POWER POLE, 51' RT. OF C/L	1637.98'



LEGEND

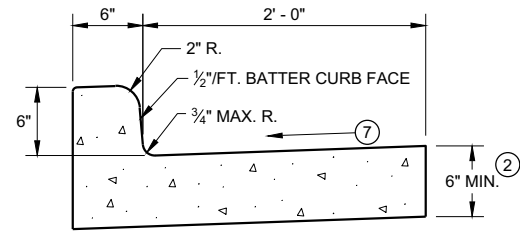
- (APOS) 5-INCH ASPHALTIC SURFACE
- (AG01) BASE AGGREGATE DENSE 3/4-INCH
- (AG02) BASE AGGREGATE DENSE 1 1/4-INCH
- (CCG01) CONCRETE CURB & GUTTER 4-INCH SLOPED
36-INCH TYPE TBT, SEE SDD



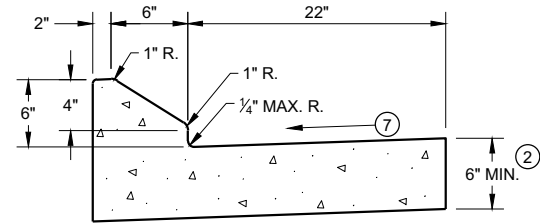
PROJECT NO: 9509-00-70 HWY: CTH N COUNTY: VILAS PLAN AND PROFILE: DRIVEWAY SHEET: E

Standard Detail Drawing List

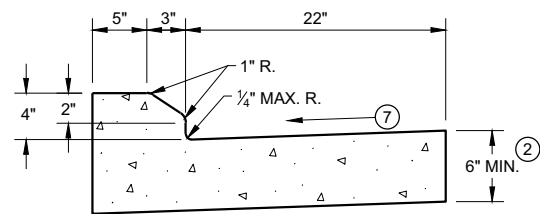
08D01-22A	CONCRETE CURB & GUTTER
08D01-22B	CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS
08D04-05	CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
08E15-01	CULVERT PIPE CHECK
08F02-01	APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE
08F07-05	STEEL APRON ENDWALLS FOR CULVERT PIPE AND PIPE ARCH SLOPED SIDE DRAINS
12A03-10	NAME PLATE (STRUCTURES)
14B42-07A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-08A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-08B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C02-08C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C06-09	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-20A	LONGITUDINAL MARKING (MAINLINE)
15C11-09B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS



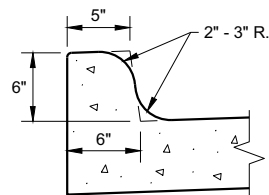
TYPES A¹ & D



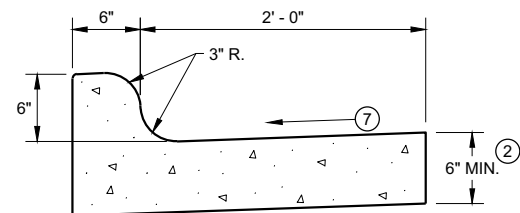
6" SLOPED CURB TYPES G¹ & J



4" SLOPED CURB TYPES G¹ & J

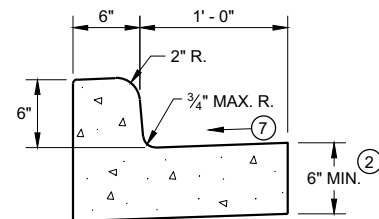


TYPES K¹ & L
(OPTIONAL CURB SHAPE)



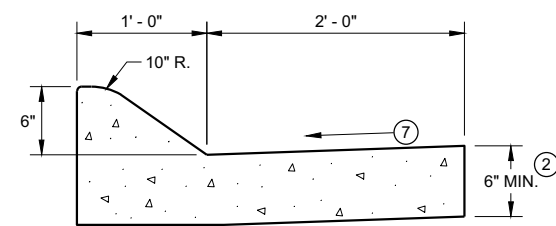
TYPES K¹ & L

CONCRETE CURB AND GUTTER 30"

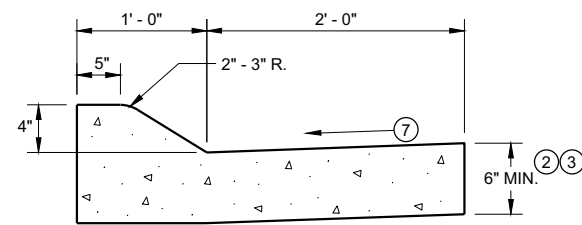


TYPES A¹ & D

CONCRETE CURB AND GUTTER 18"

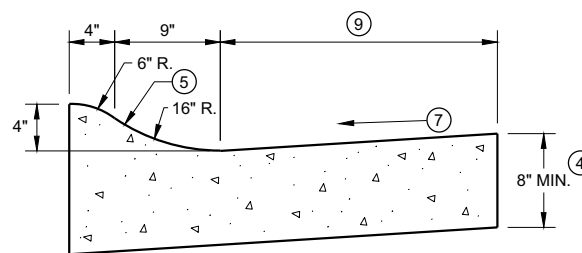


6" SLOPED CURB TYPES A¹ & D



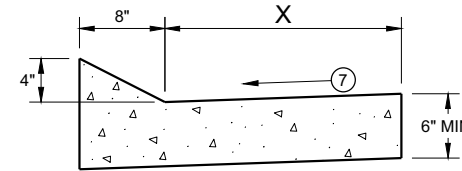
4" SLOPED CURB TYPES A¹ & D

CONCRETE CURB AND GUTTER 36"



4" SLOPED CURB TYPES R¹ & T

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

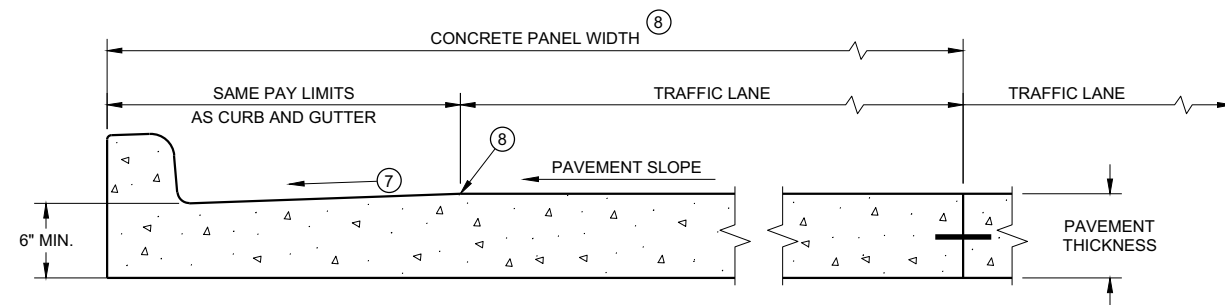


TYPES TBT & TBTT¹

CONCRETE CURB AND GUTTER

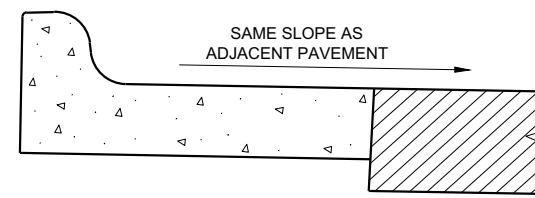
PAVEMENT THICKNESS AND MAXIMUM CONCRETE PANEL WIDTH TABLE

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



PARTIAL SECTION OF PAVEMENT *
WITH INTEGRAL CURB AND GUTTER

* BIKE LANE IS NOT SHOWN



REVERSE SLOPE GUTTER⁶
(TYPICAL FOR ALL CURB & GUTTER TYPES)

GENERAL NOTES

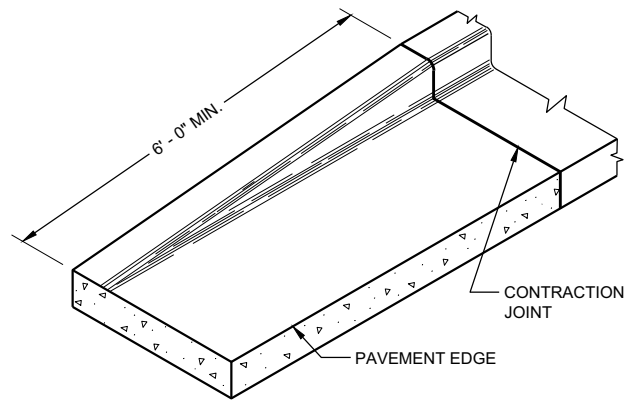
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

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

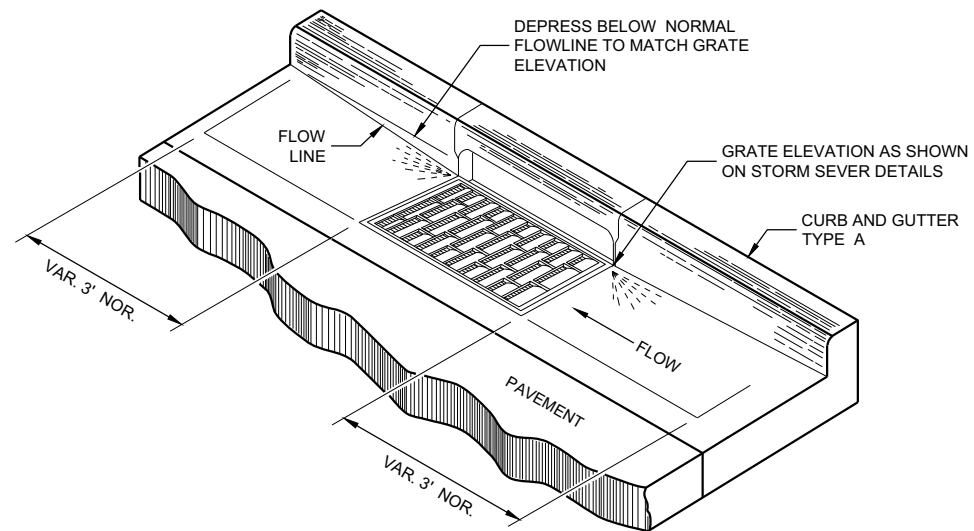
INTEGRAL CURB AND GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB AND GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

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

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.
- ④ THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑤ UNLESS OTHERWISE NOTED, FOR STAKING PURPOSES THE FACE OF CURB IS 6" FROM THE BACK OF CURB.
- ⑥ WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.
- ⑦ USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.
- ⑧ INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.
- ⑨ CONCRETE CURB AND GUTTER 4-INCH SLOPED 30-INCH TYPE "R" AND "T" = 17 INCHES
CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE "R" AND "T" = 23 INCHES



END SECTION CURB AND GUTTER



DETAIL OF CURB AND GUTTER AT INLETS
(TYPICAL H INLET COVER SHOWN)

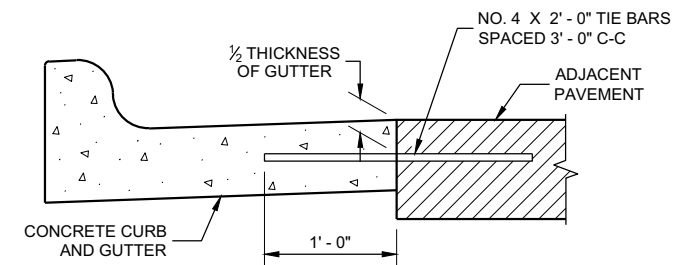
GENERAL NOTES

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

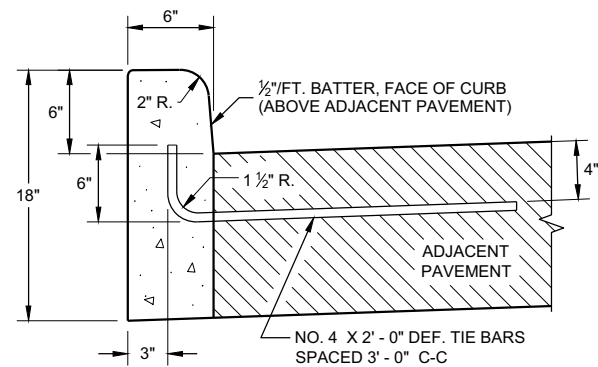
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

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

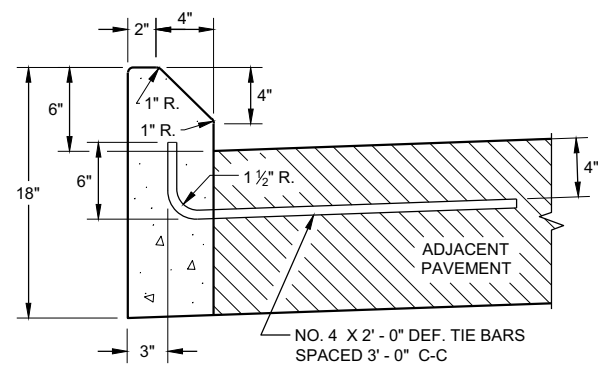
- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑨ REFER TO SDD 08D18 AND 08D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.



TYPICAL TIE BAR LOCATION ①

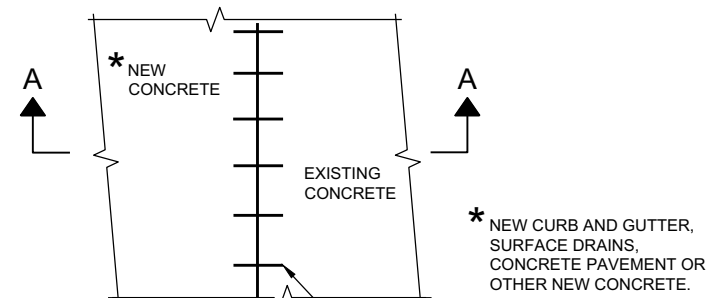


TYPES A ① & D

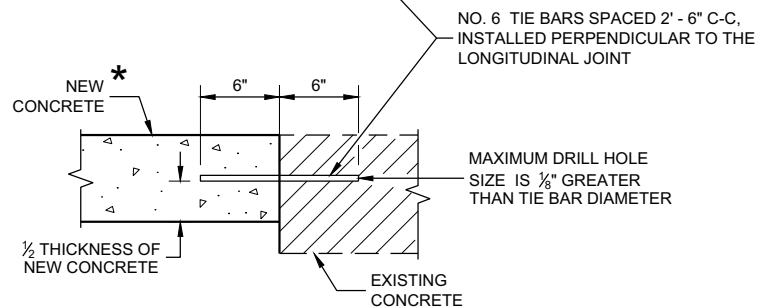


TYPES G ① & J

CONCRETE CURB

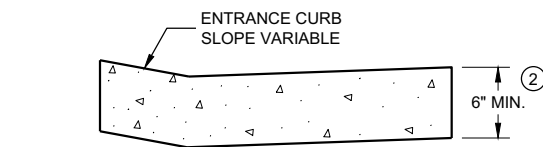


PLAN VIEW



SECTION A - A

TIE BARS DRILLED INTO EXISTING PAVEMENT



DRIVEWAY ENTRANCE CURB ⑨
(WHEN DIRECTED BY THE ENGINEER)

CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

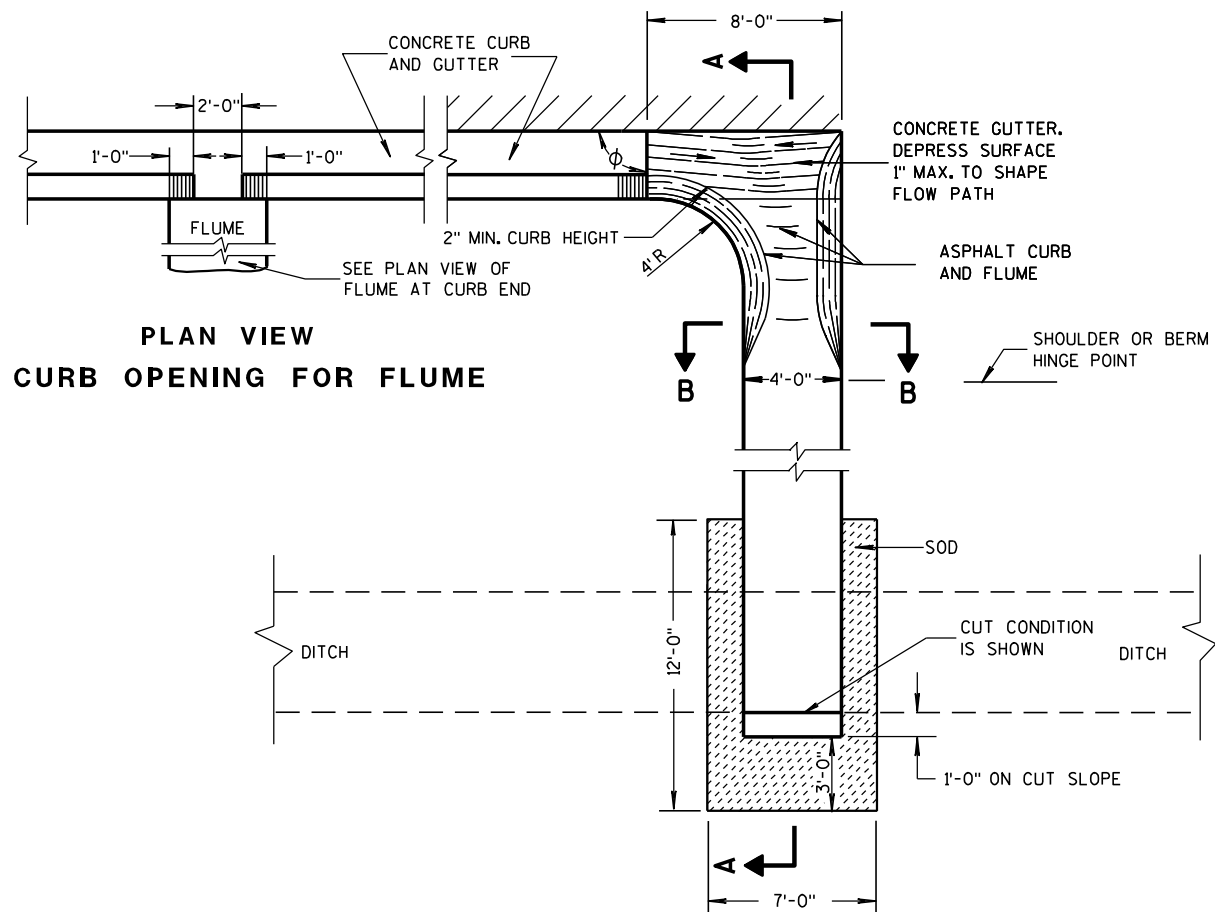
APPROVED
February 2021 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER

FHWA

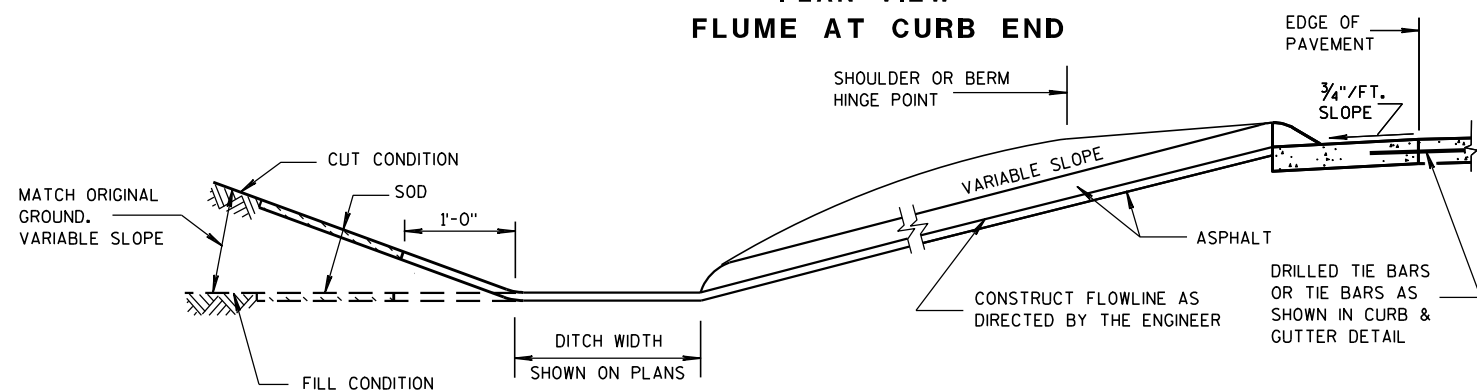
ASPHALTIC FLUME

NOTE: TAPER CURB ENDS TO GUTTER IN 1'-0"

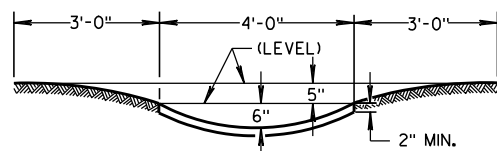
INCREASE ϕ FROM RIGHT ANGLE TO BEST FIT FIELD CONDITIONS



PLAN VIEW FLUME AT CURB END



SECTION B-B



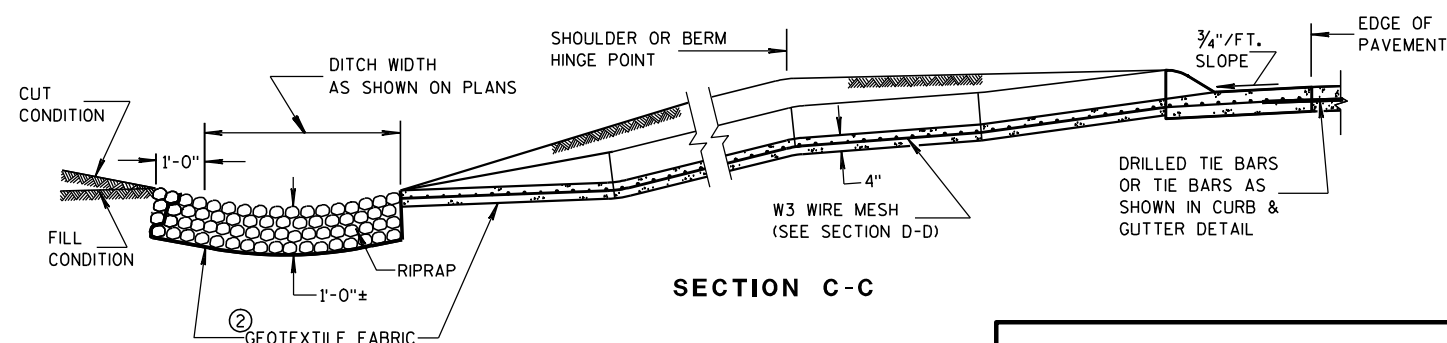
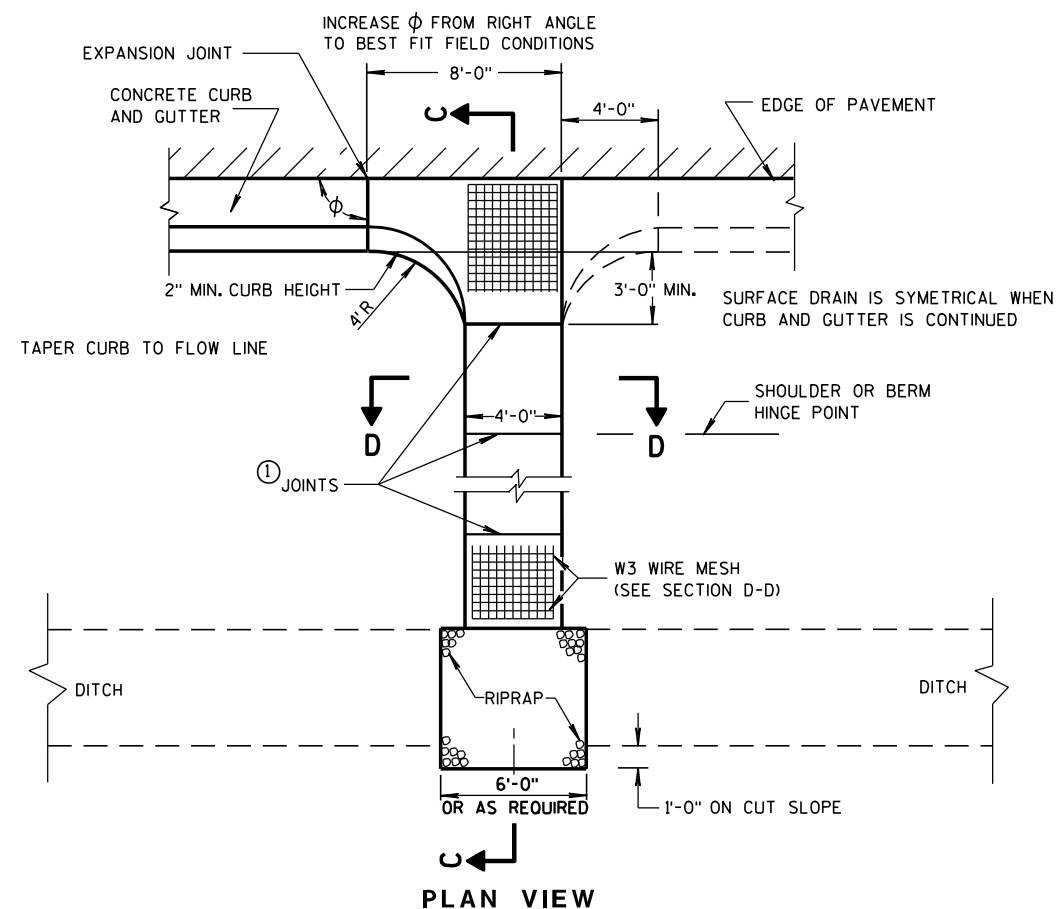
GENERAL NOTES

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

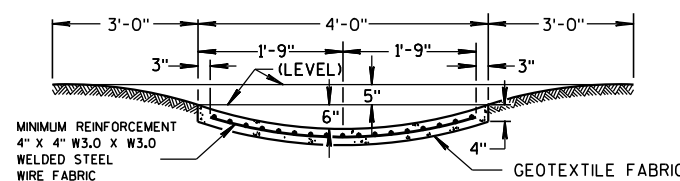
WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

- ① JOINTS SHALL BE 1/8 TO 1/4 INCH WIDE BY 1 1/2 INCHES DEEP AND SPACED AT UNIFORM INTERVALS OF APPROXIMATELY 4 FEET.
- ② GEOTEXTILE FABRIC TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.
- ③ CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED

③ CONCRETE SURFACE DRAIN



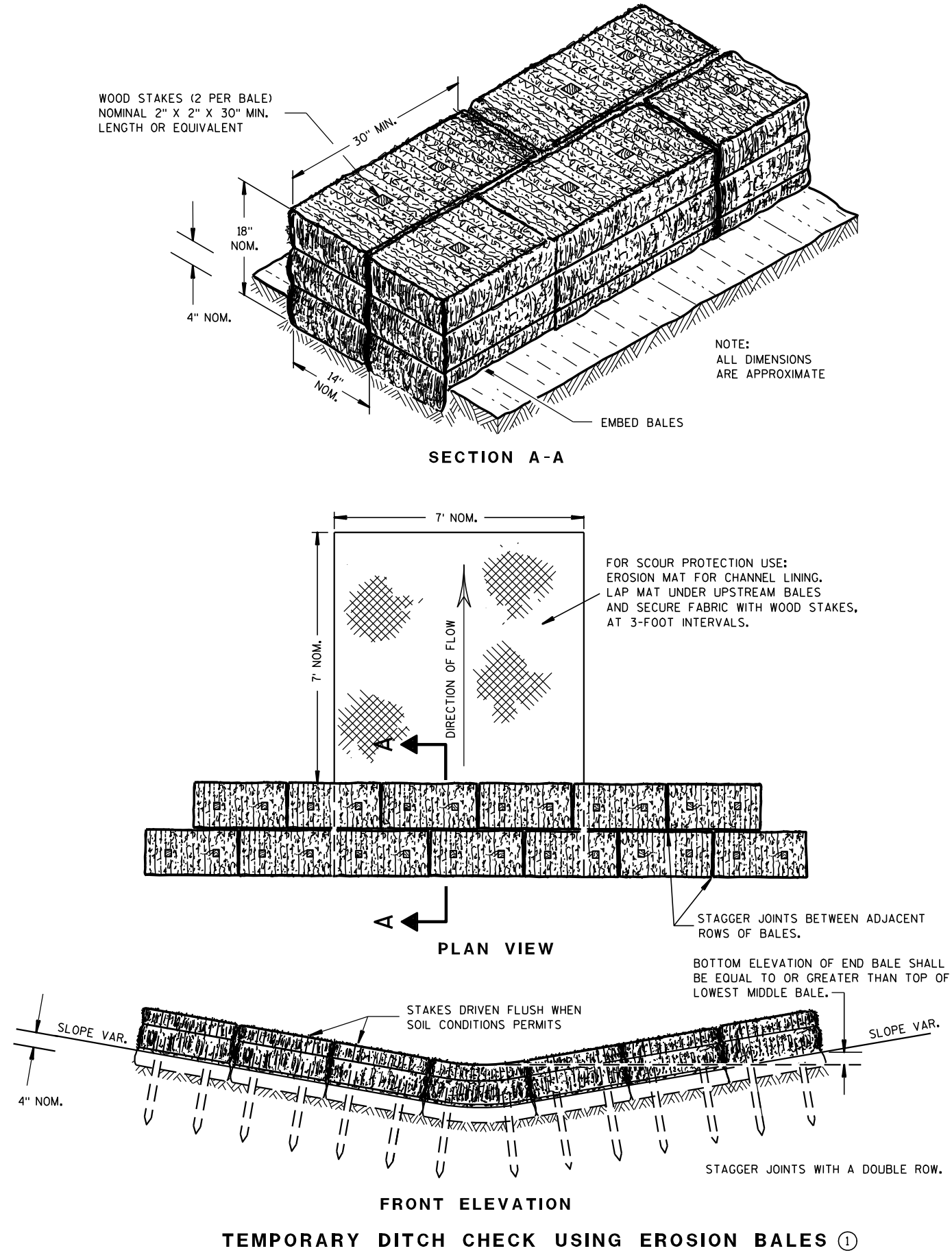
SECTION D-D



CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

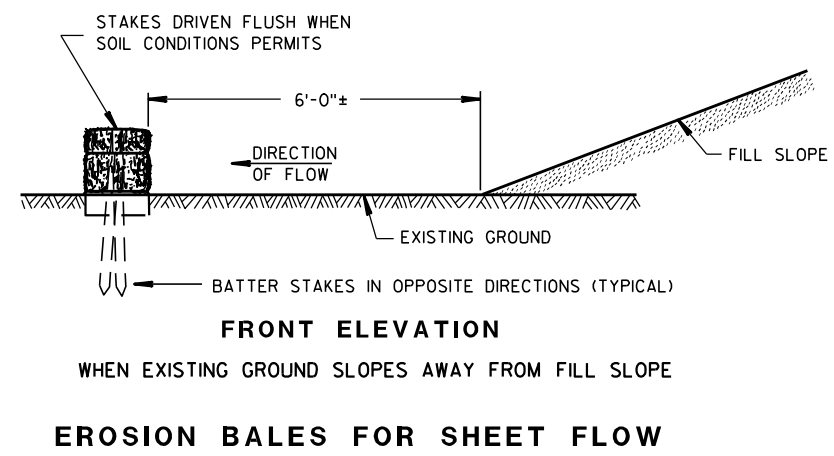
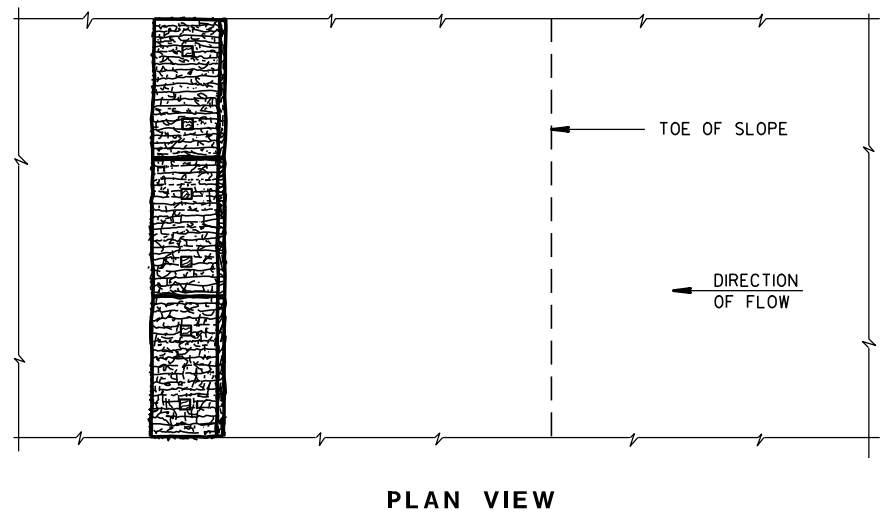
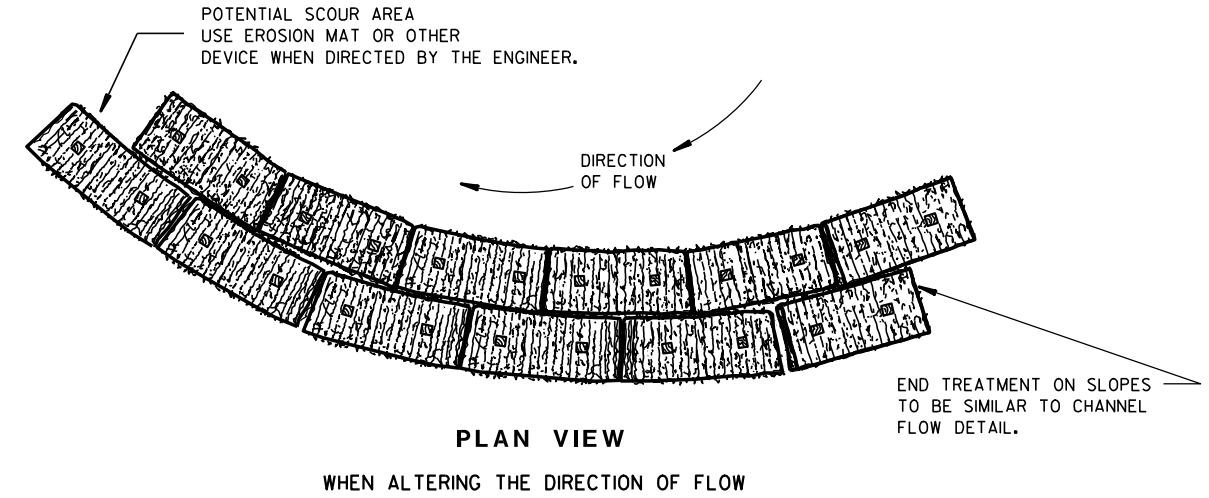
APPROVED
9-4-08 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA



GENERAL NOTES

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

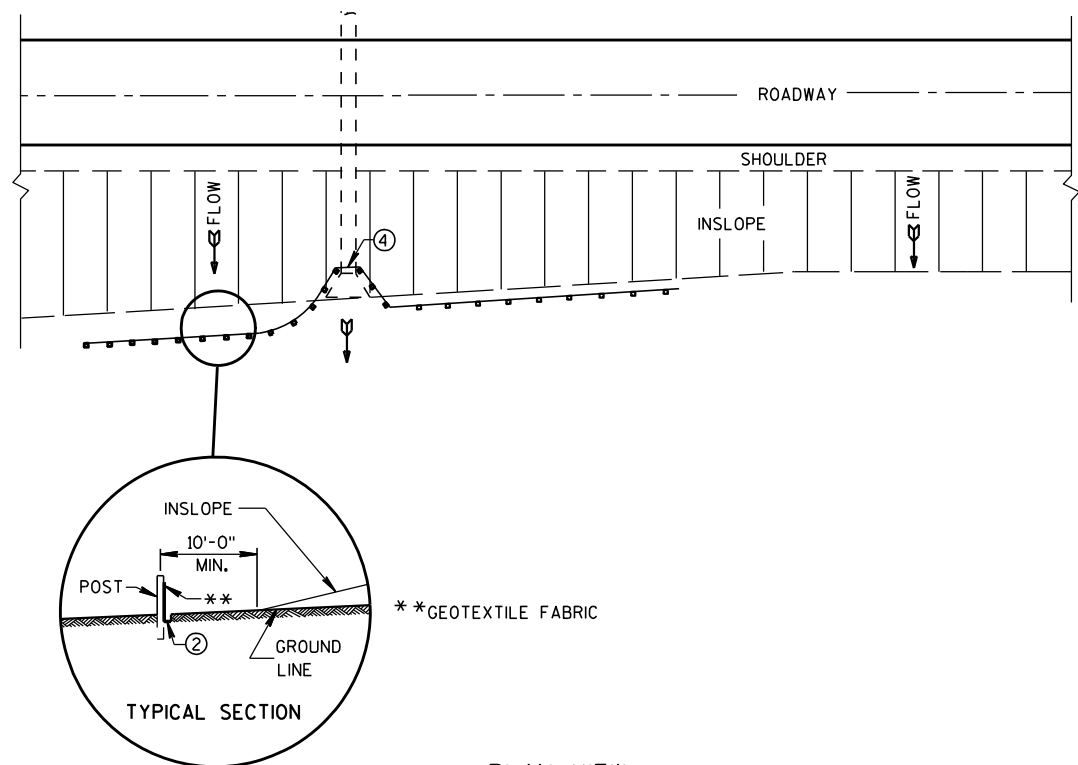
- ① TEMPORARY DITCH CHECKS EITHER EROSION BALES OR MANUFACTURED SHALL BE PAID FOR UNDER THE BID ITEM OF TEMPORARY DITCH CHECK. THE DEPARTMENT WILL NOT PAY FOR TEMPORARY DITCH CHECKS CONSTRUCTED OF A SINGLE ROW OF EROSION BALES.



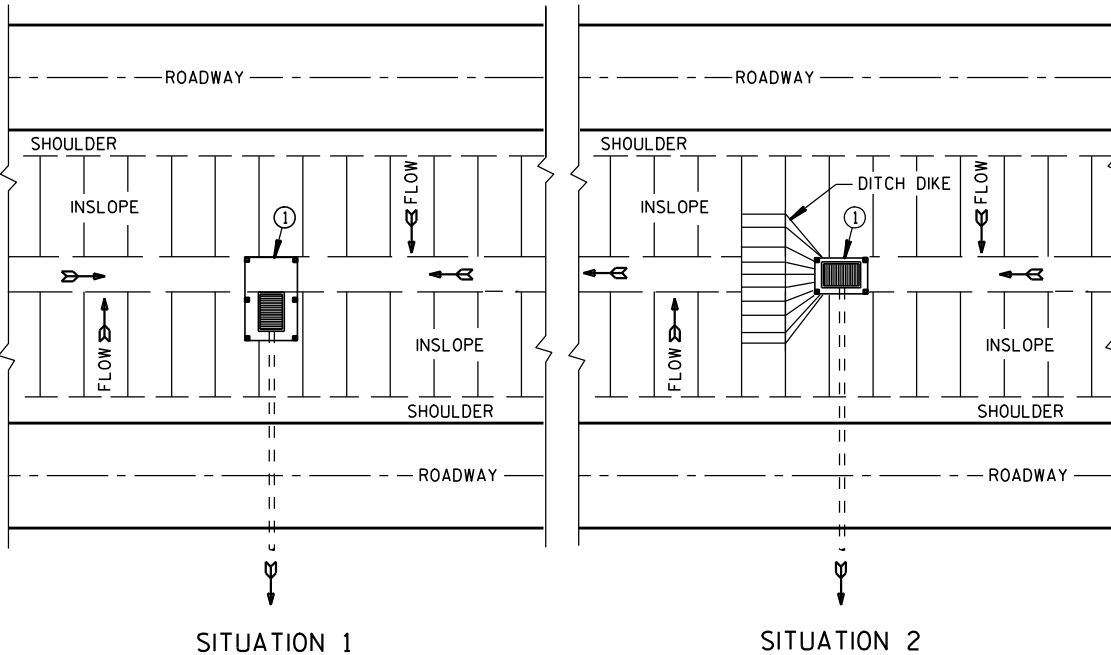
TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE

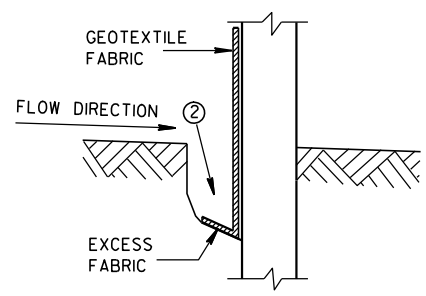


SITUATION 1 SITUATION 2
PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS

GENERAL NOTES

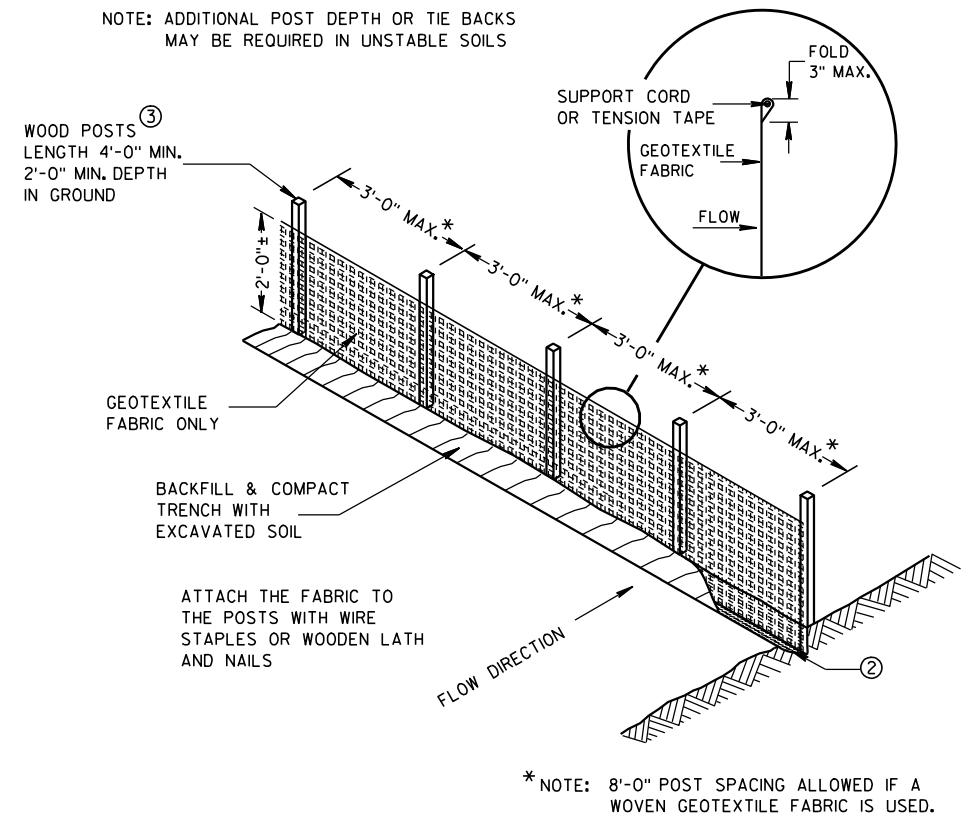
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

- 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.

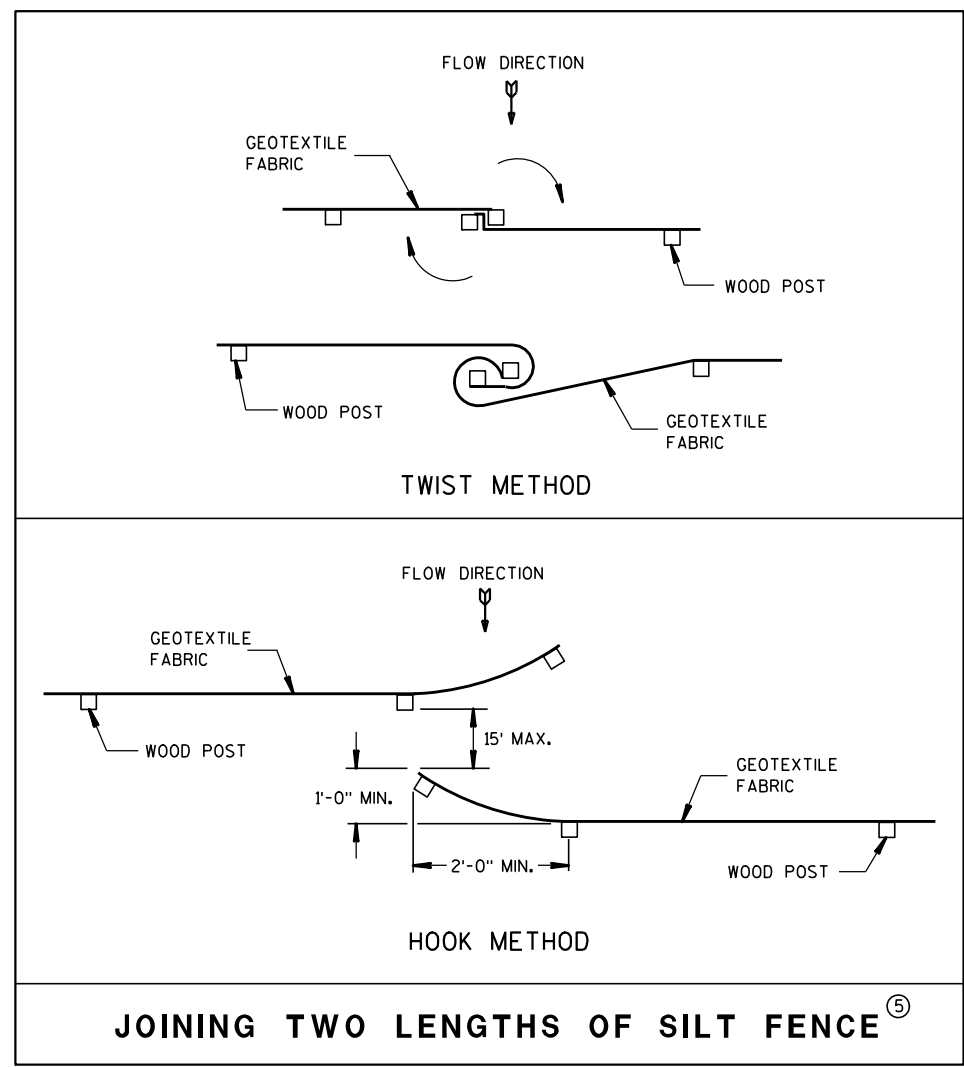


TRENCH DETAIL

6

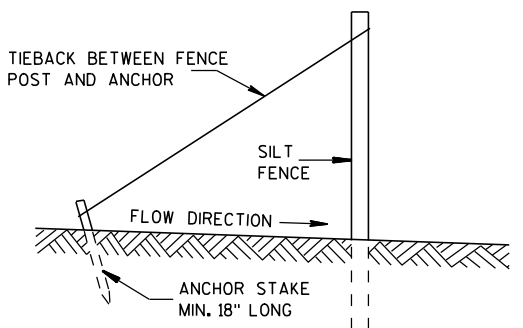


SILT FENCE



JOINING TWO LENGTHS OF SILT FENCE ⑤

6

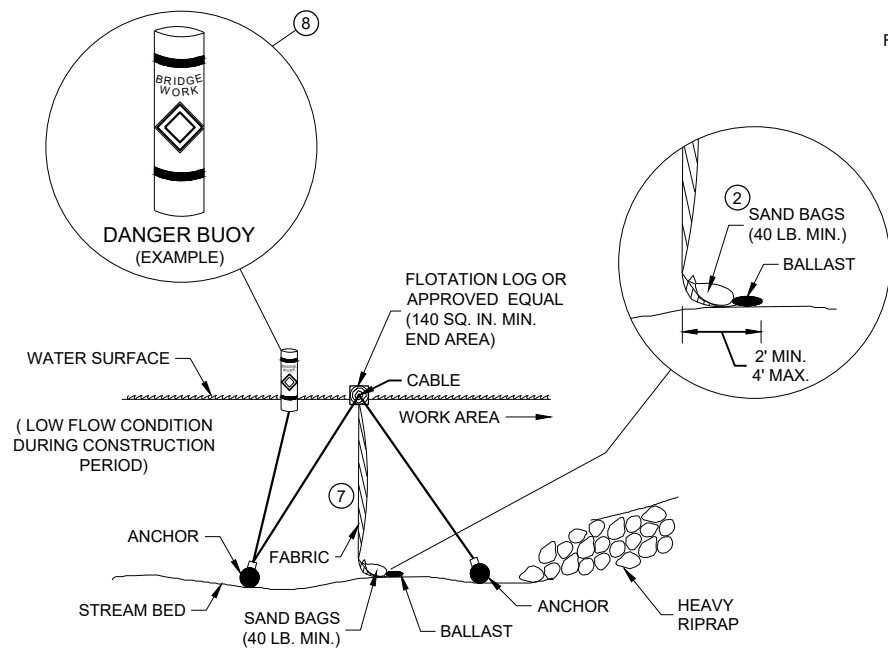


SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

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

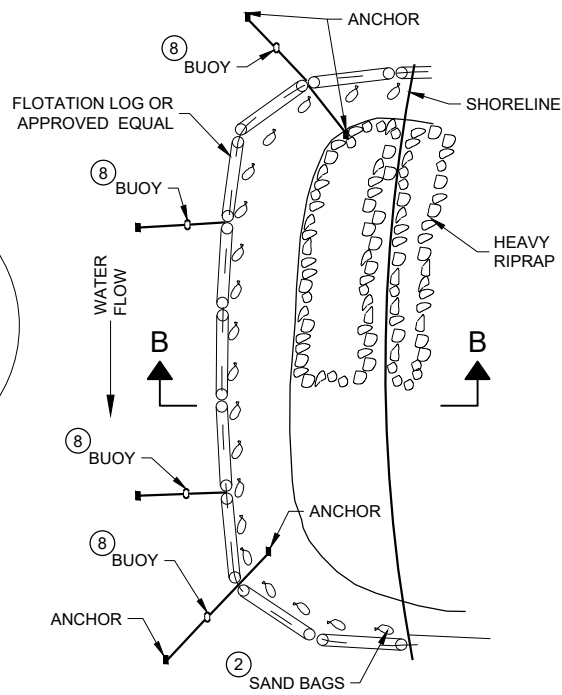
S.D.D. 8 E 9-6

S.D.D. 8 E 9-6

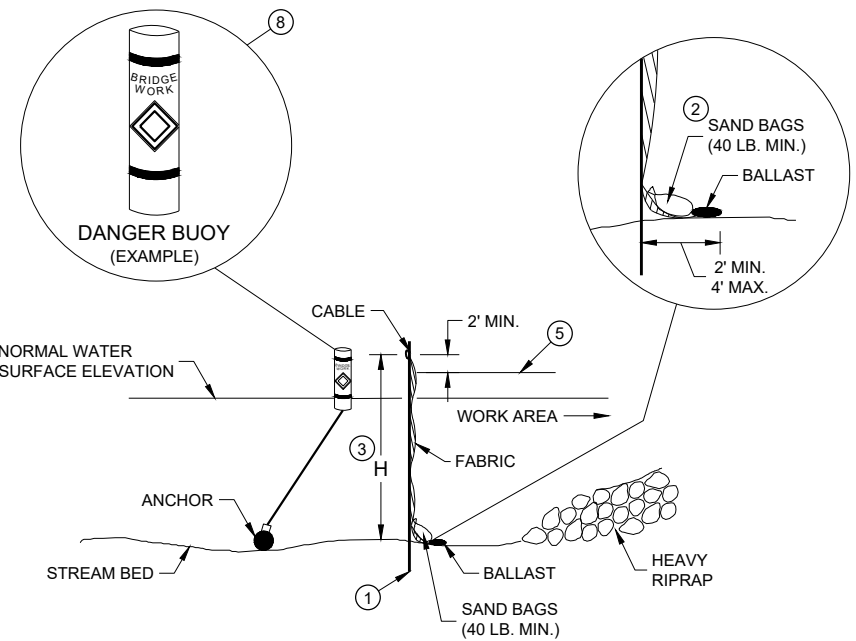


SECTION B - B

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

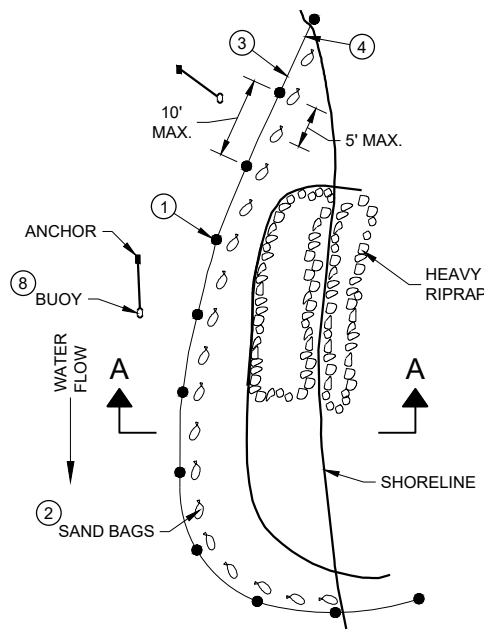


PLAN VIEW



SECTION A - A

TURBIDITY BARRIER - STANDARD POST INSTALLATION



PLAN VIEW

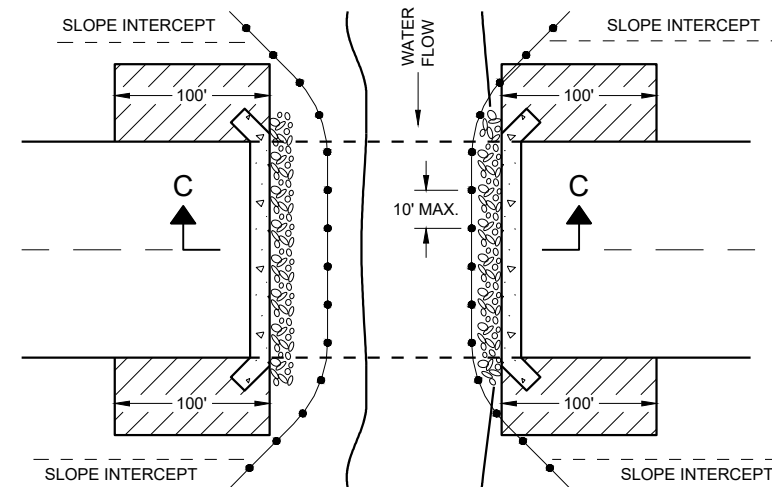
TURBIDITY BARRIER PLACEMENT DETAILS

GENERAL NOTES

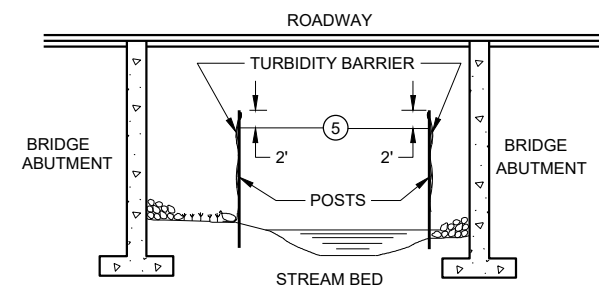
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

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



PLAN VIEW



SECTION C - C

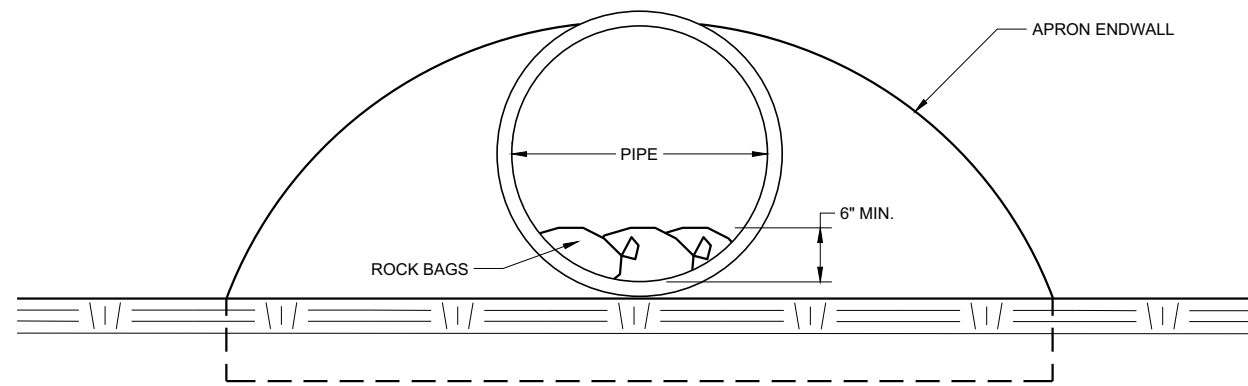
**TURBIDITY BARRIER DETAIL SHOWING
TYPICAL PLACEMENT AT STRUCTURES**

TURBIDITY BARRIER

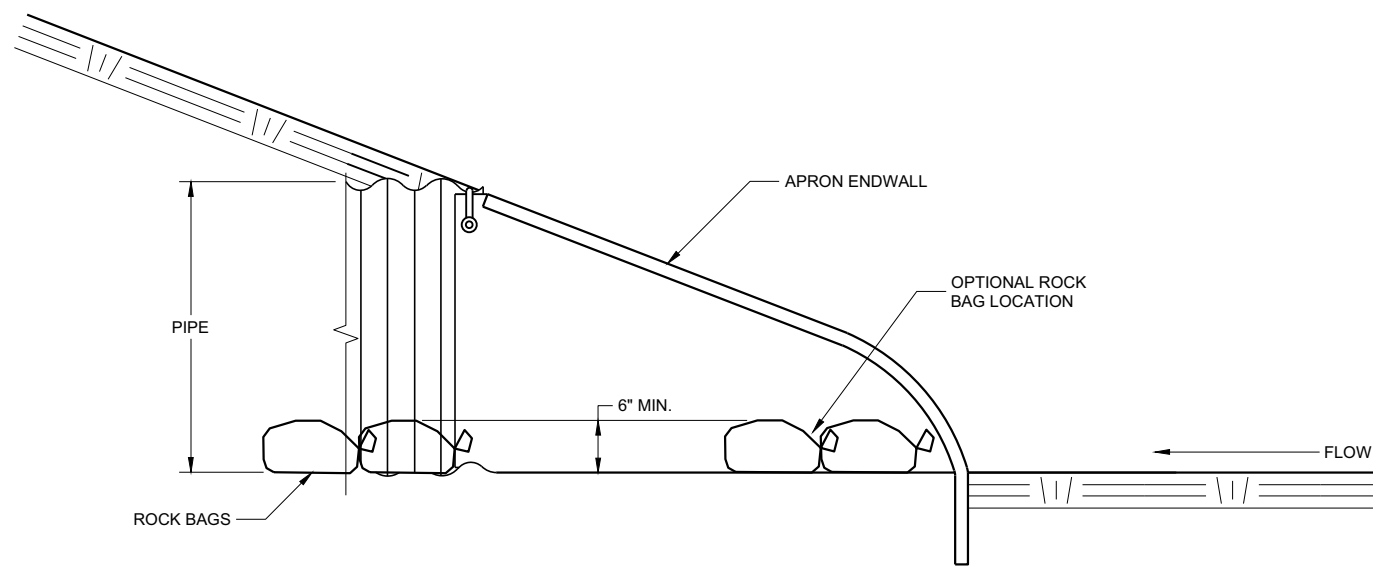
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA



END VIEW



SIDE VIEW

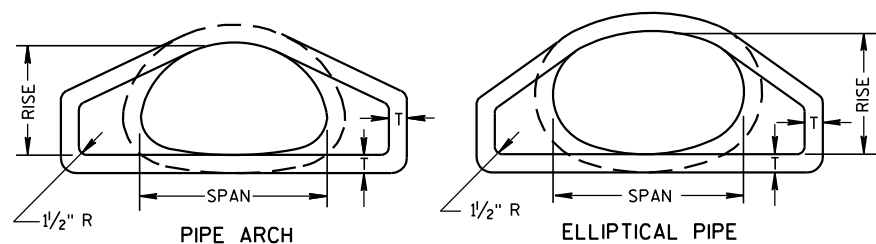
CULVERT PIPE CHECK
 (INSTALL ON INLET END ONLY)

CULVERT PIPE CHECK

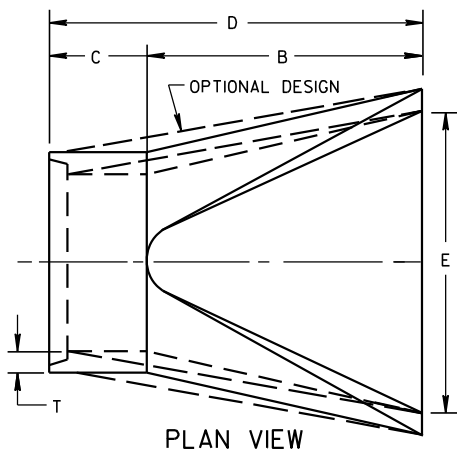
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

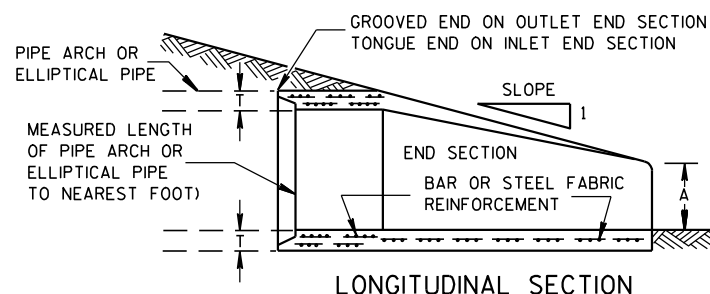
FHWA



END VIEW

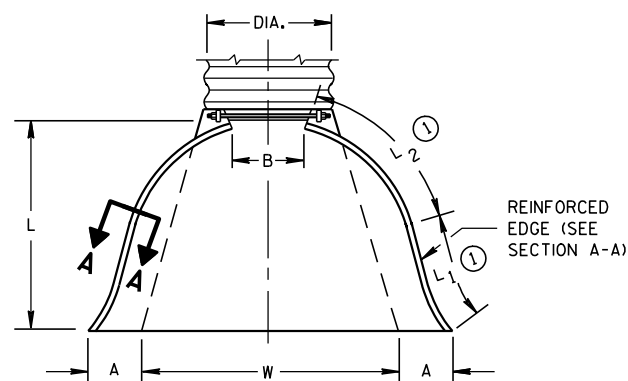


PLAN VIEW



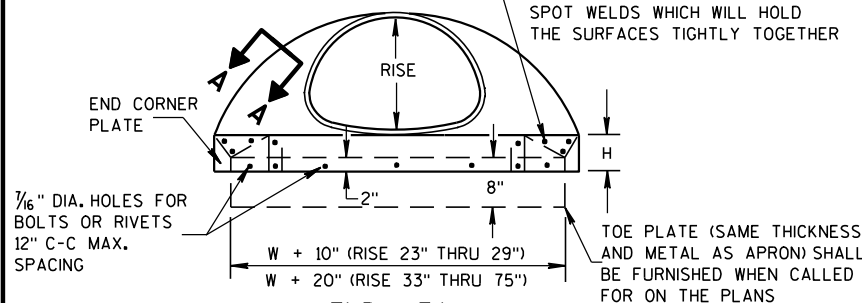
LONGITUDINAL SECTION

CONCRETE ENDWALLS

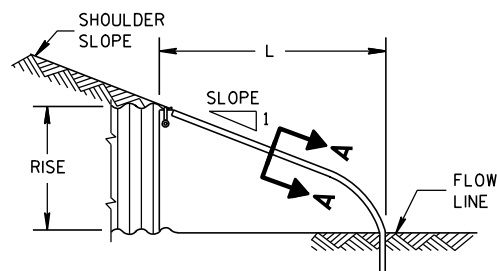


PLAN VIEW

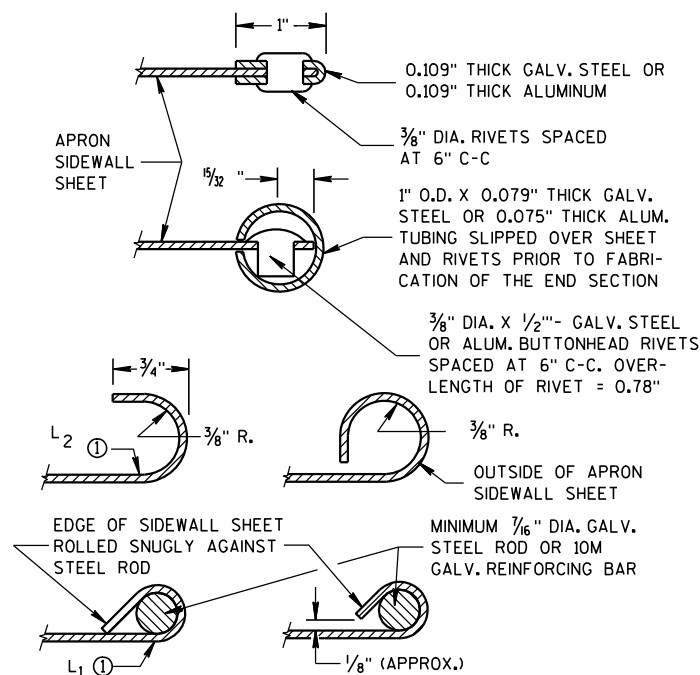
END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER



END VIEW



SIDE ELEVATION
METAL ENDWALLS



SECTION A-A

2- 2 2/3" X 1/2" CORRUGATIONS

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

3" X 1" CORRUGATIONS

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

NOTE: ALL SPLICES TO BE LAP RIVETED OR BOLTED. * EXCEPT CENTER PANEL SEE GENERAL NOTES

REINFORCED CONCRETE PIPE ARCH

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

REINFORCED CONCRETE ELLIPTICAL PIPE

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

**NOMINAL SIZE

GENERAL NOTES

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

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

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

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

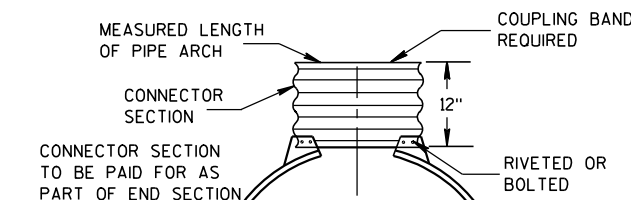
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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



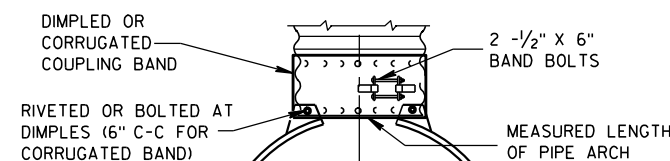
TYPE 2

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



TYPE 3

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



TYPE 5

ALTERNATE FOR:
ALL SIZES CORRUGATED PIPE ARCHES

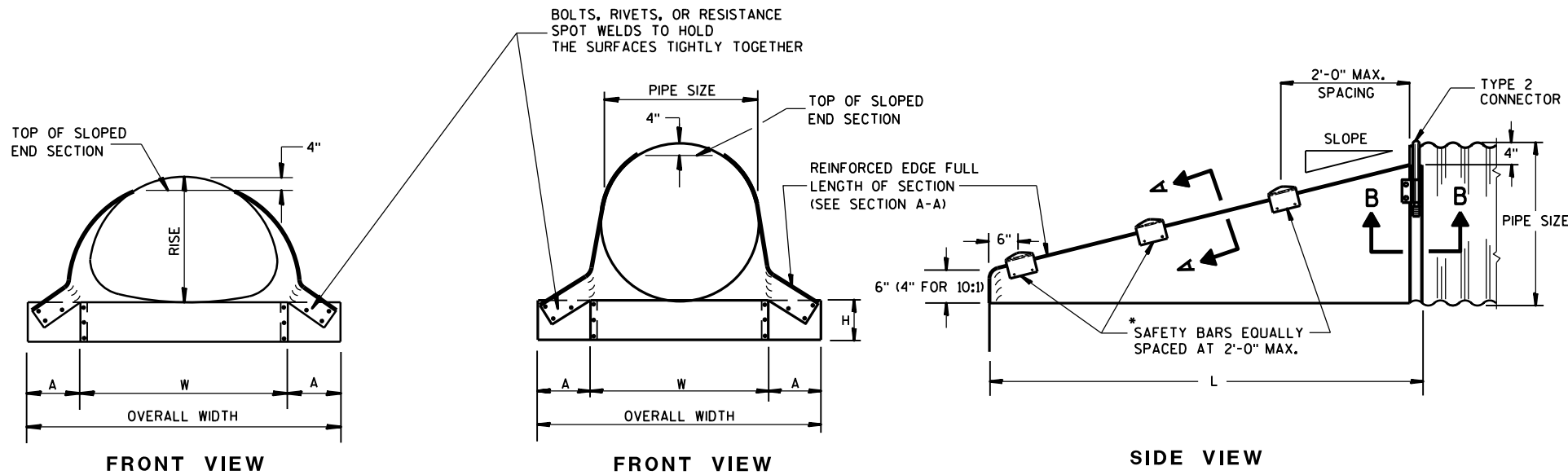
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL.

CONNECTION DETAILS

**APRON ENDWALLS FOR
PIPE ARCH AND
ELLIPTICAL PIPE**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/30/94 /S/ Rory L. Rhinesmith
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA



GENERAL NOTES

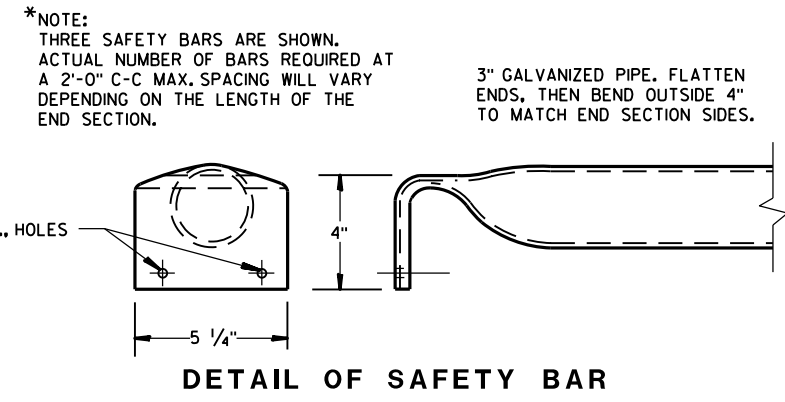
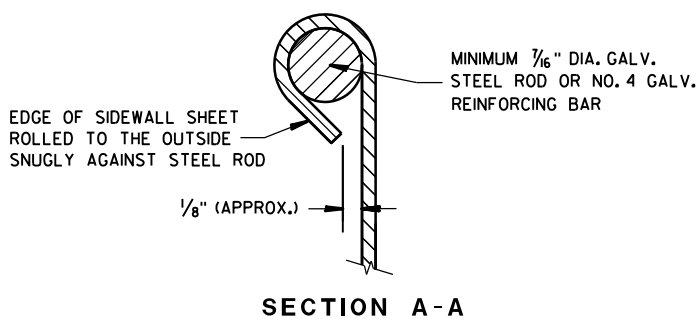
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

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

STEEL APRON ENDWALLS FOR CULVERT PIPE SLOPED SIDE DRAINS

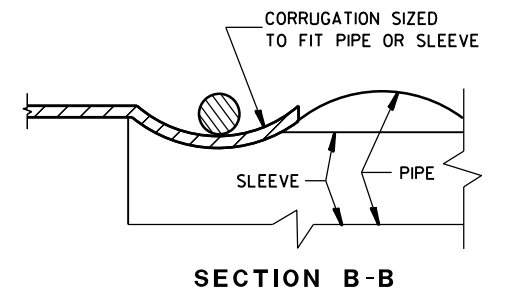
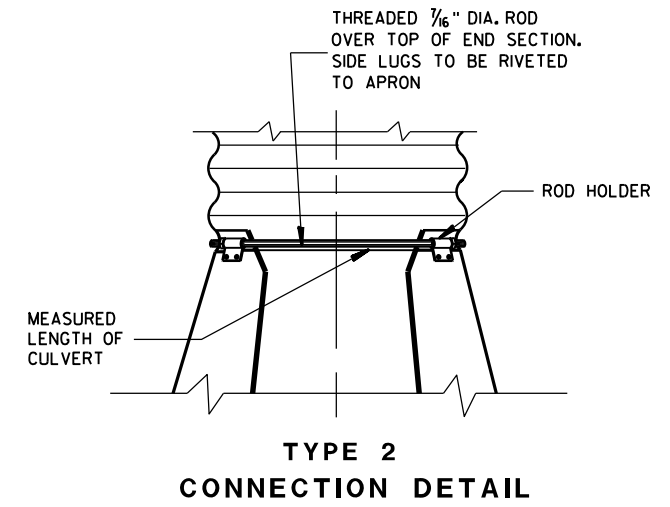
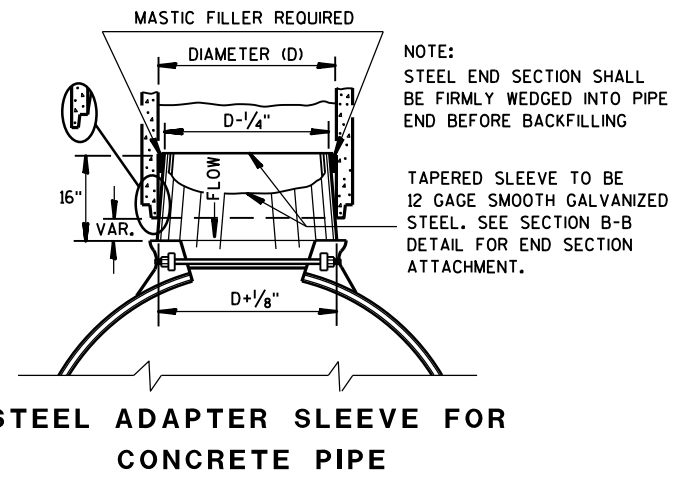
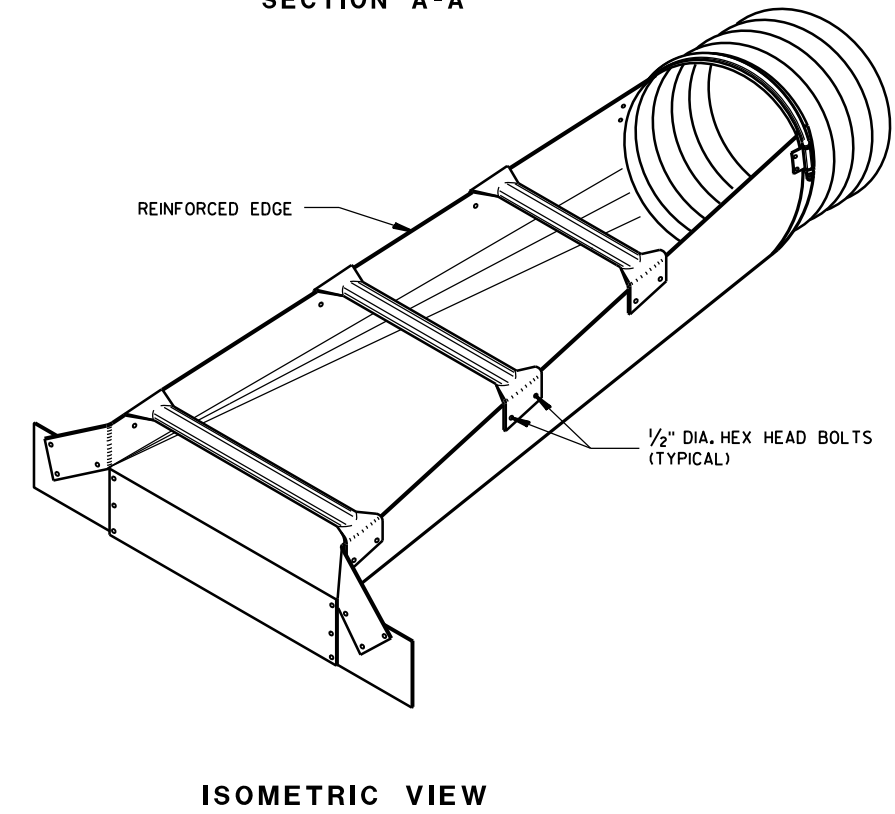
PIPE DIA. (IN.)	MIN. THICK. (Inches)	DIMENSIONS (Inches)				L DIMENSIONS					
		A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
15	.064	8	6	21	37	4:1	20	6:1	30	10:1	70
18	.064	8	6	24	40	4:1	32	6:1	48	10:1	100
21	.064	8	6	27	43	4:1	44	6:1	66	10:1	130
24	.064	8	6	30	46	4:1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



STEEL APRON ENDWALLS FOR PIPE ARCH SLOPED SIDE DRAINS

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

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

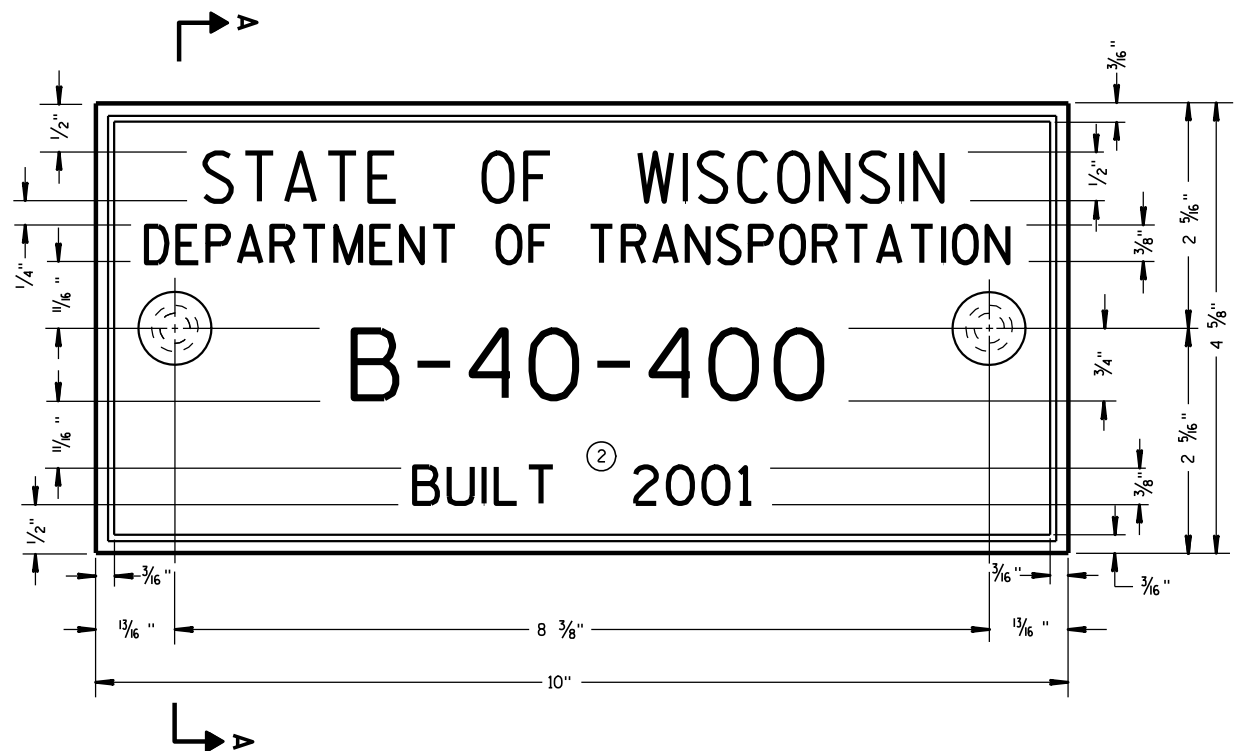


STEEL APRON ENDWALLS FOR CULVERT PIPE AND PIPE ARCH SLOPED SIDE DRAINS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE 9/14/2012 /S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA



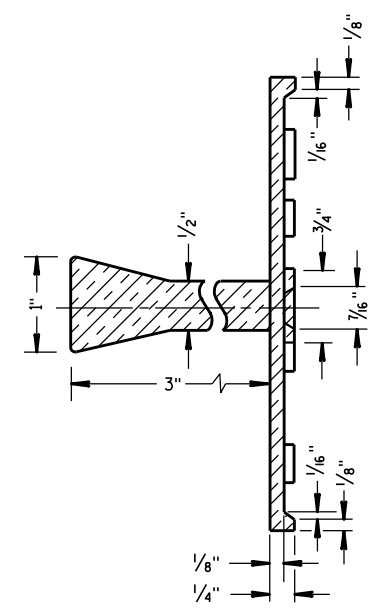
TYPICAL NAME PLATE
(BRIDGES, CULVERTS, AND RETAINING WALLS)

GENERAL NOTES

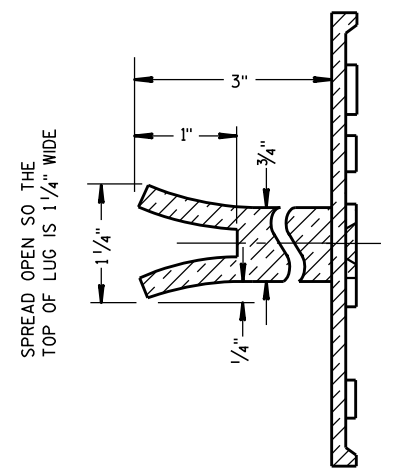
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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.



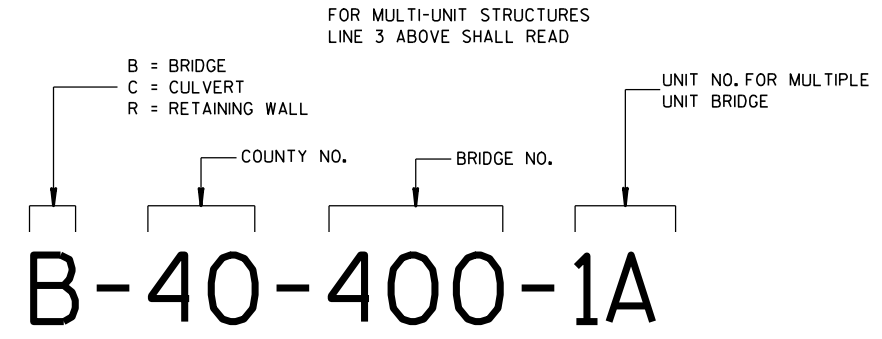
SECTION A-A



ALTERNATE LUG

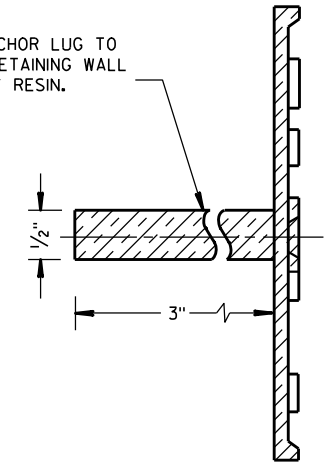
6

6



**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

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

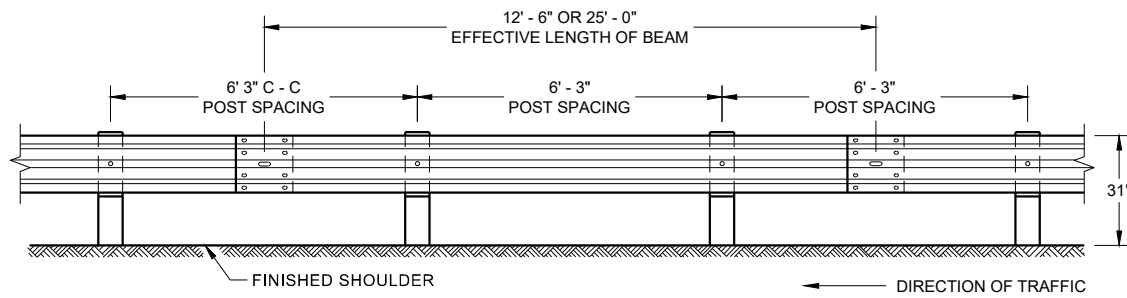


ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

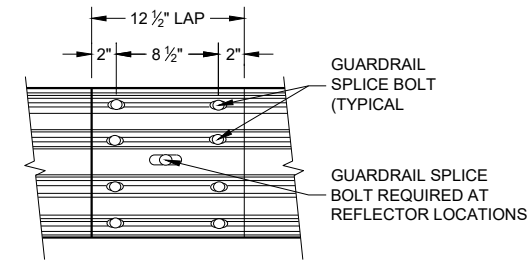
S.D.D. 12 A 3-10

S.D.D. 12 A 3-10

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



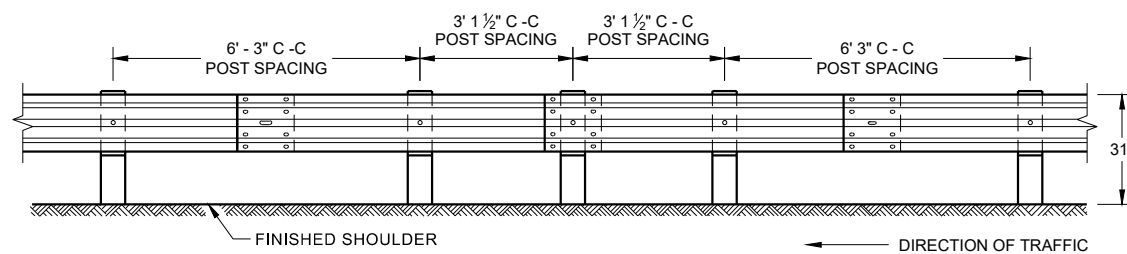
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



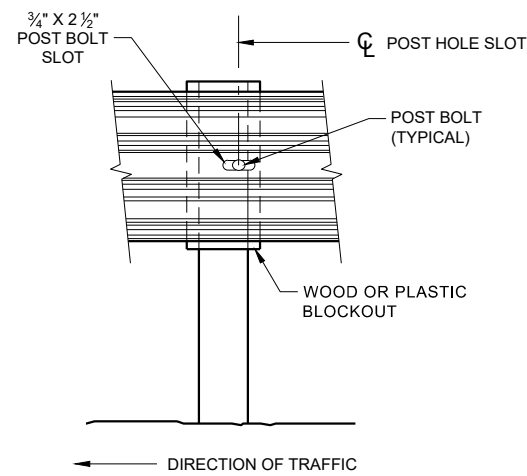
**FRONT VIEW
MID-SPAN BEAM SPLICE**

GENERAL NOTES

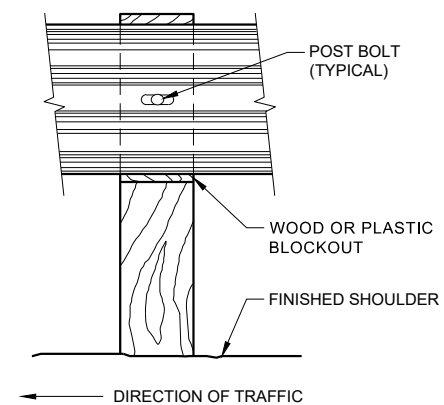
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
 - ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.
- GUARD RAIL SPLICE BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



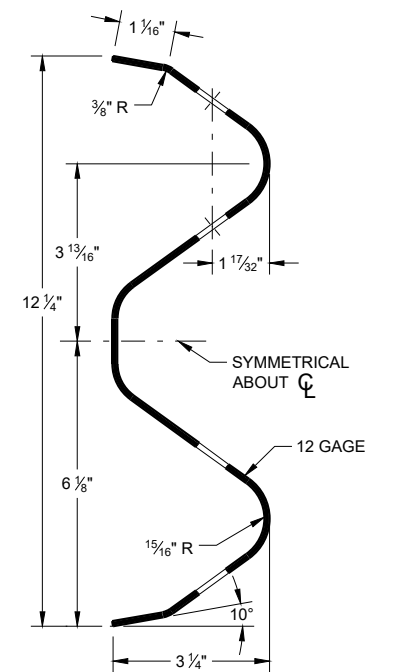
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



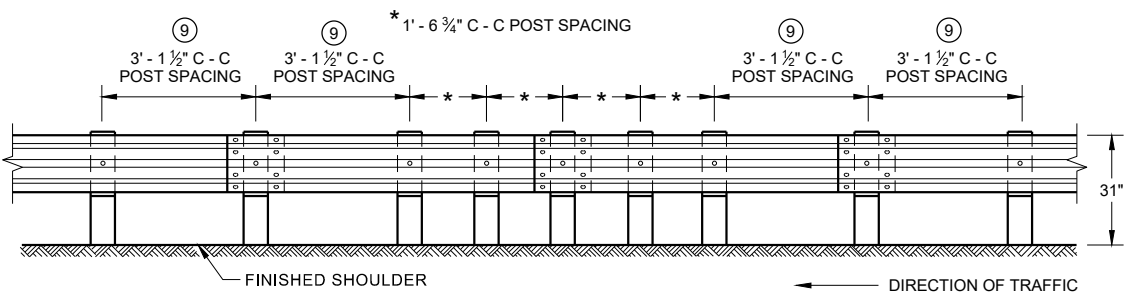
FRONT VIEW AT STEEL POST



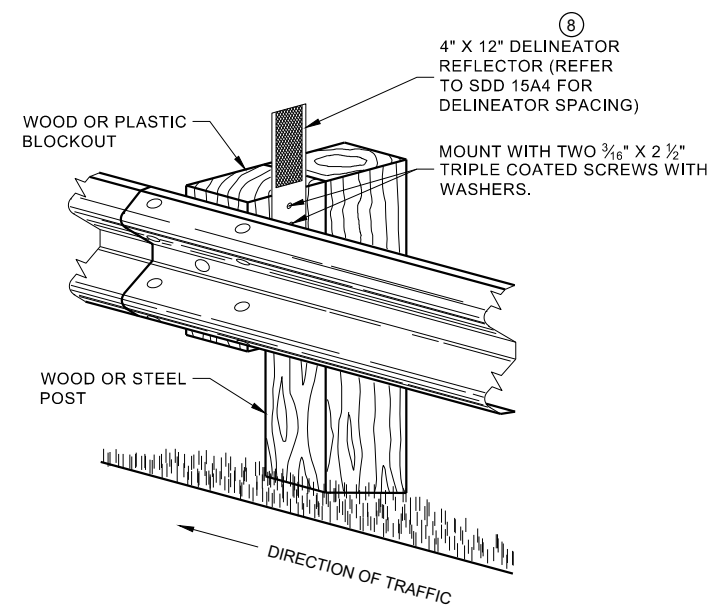
FRONT VIEW AT WOOD POST



SECTION THRU W-BEAM RAIL



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



**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

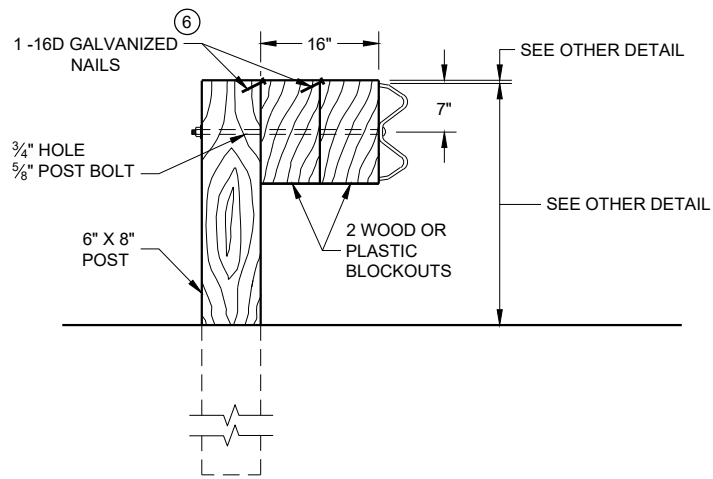
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

6

SDD 14B42 - 07b

SDD 14B42 - 07b

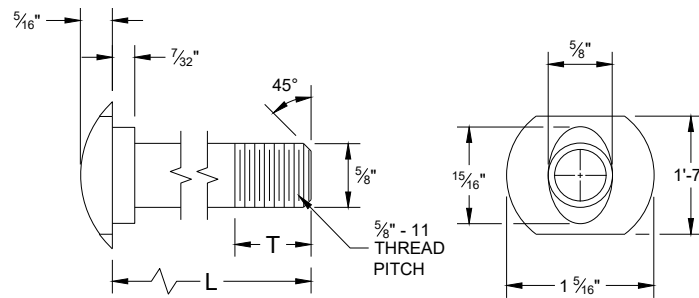


DETAIL FOR 16" BLOCKOUT DEPTH

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.

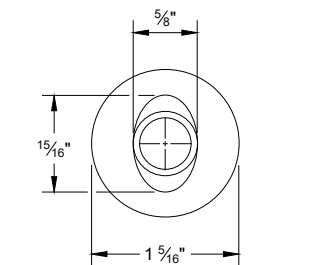
NOTE:

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.

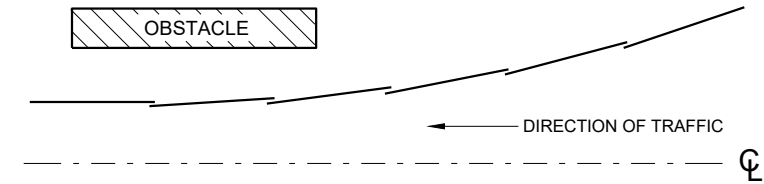


POST BOLT TABLE

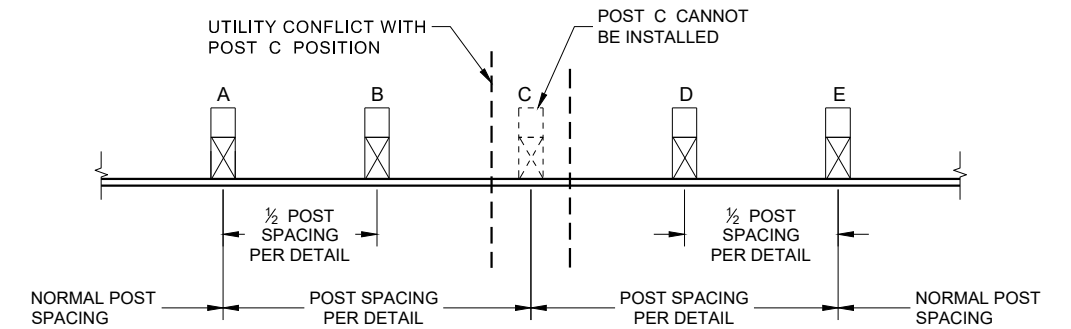
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



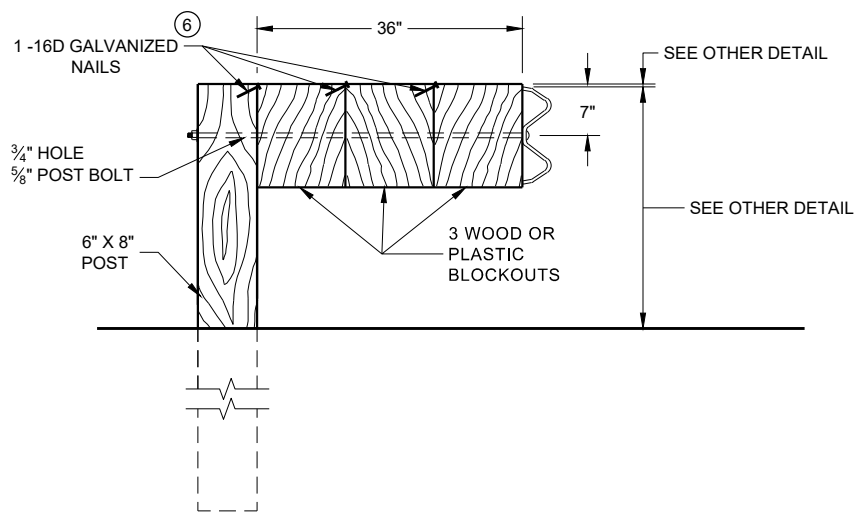
ALTERNATE BOLT HEAD



**PLAN VIEW
BEAM LAPPING DETAIL**

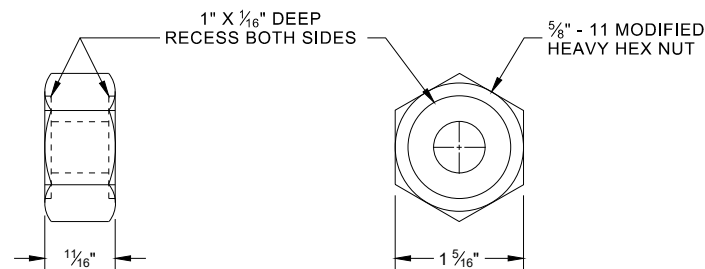


**POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION**

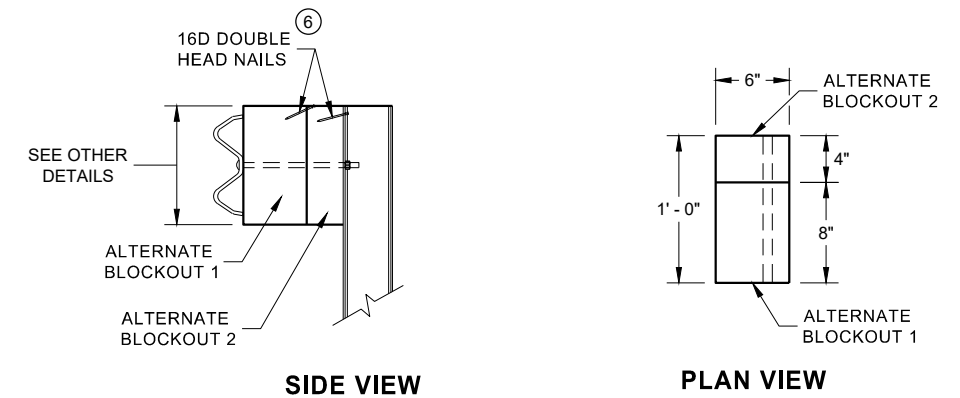


DETAIL FOR 36" BLOCKOUT DEPTH

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.



**POST BOLT, SPLICE BOLT
AND RECESS NUT**

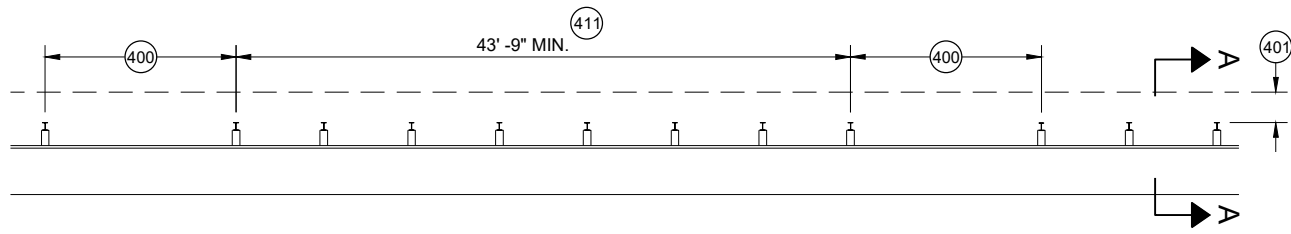


**ALTERNATE WOOD
BLOCKOUT DETAIL**

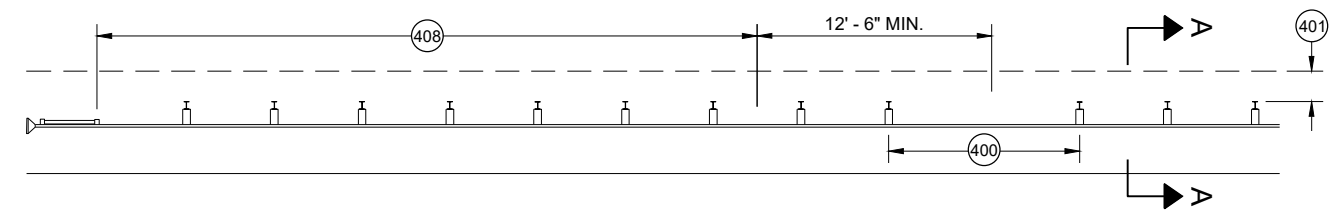
6 WHEN USING STEEL POST AND WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

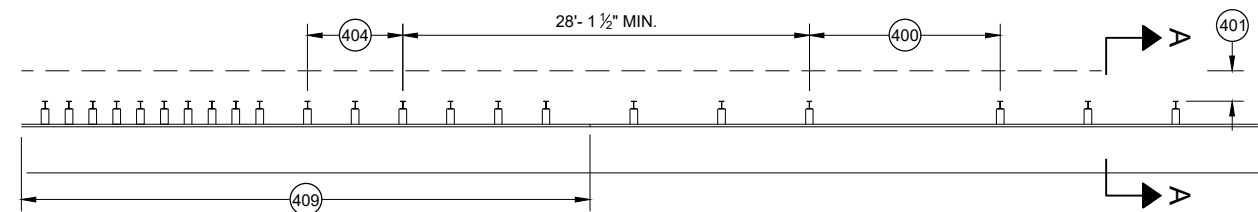
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



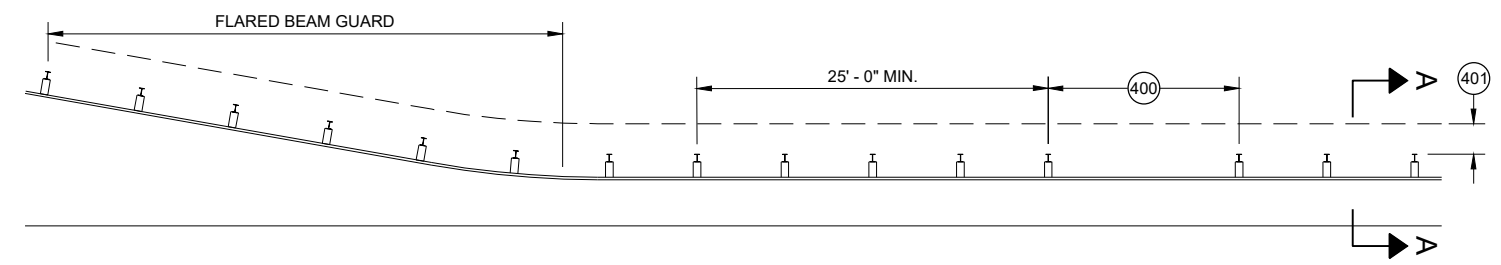
MISSING POST IN MGS GUARDRAIL



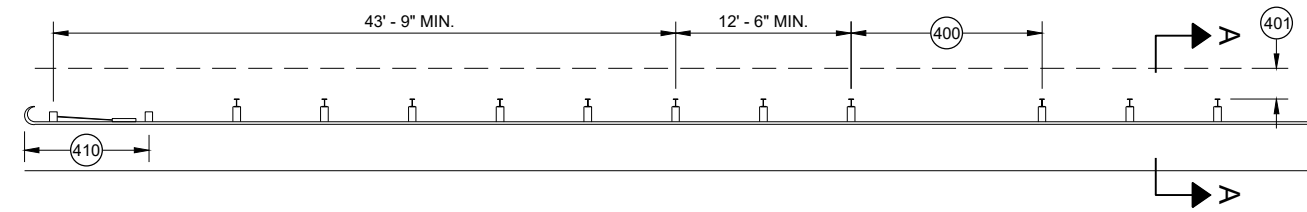
MISSING POST IN MGS GUARDRAIL NEAR EAT



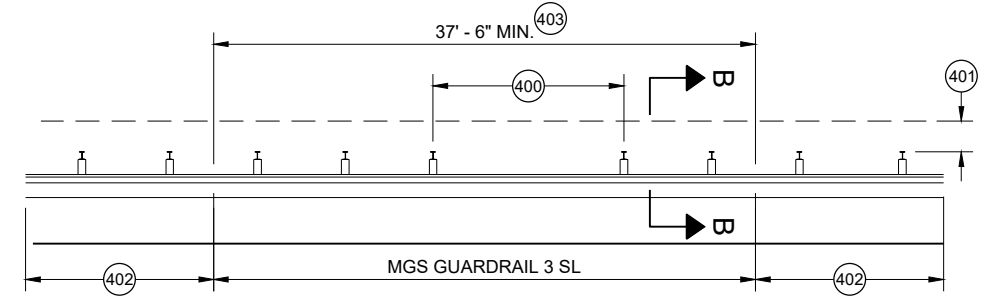
MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD

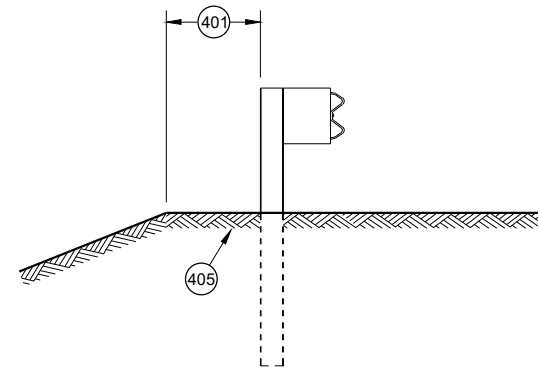


MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL

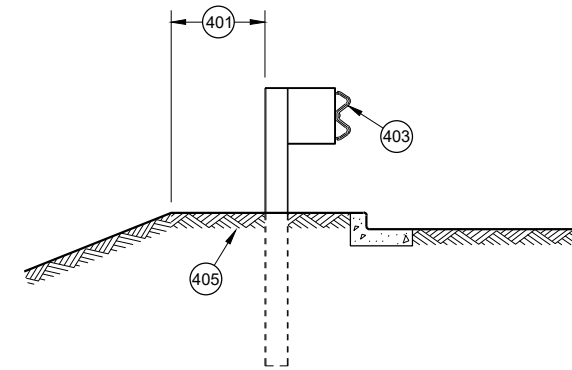


MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)

- (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
<small>FHWA</small>	

GENERAL NOTES

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

SEE SDD 14B42 FOR MORE INFORMATION.

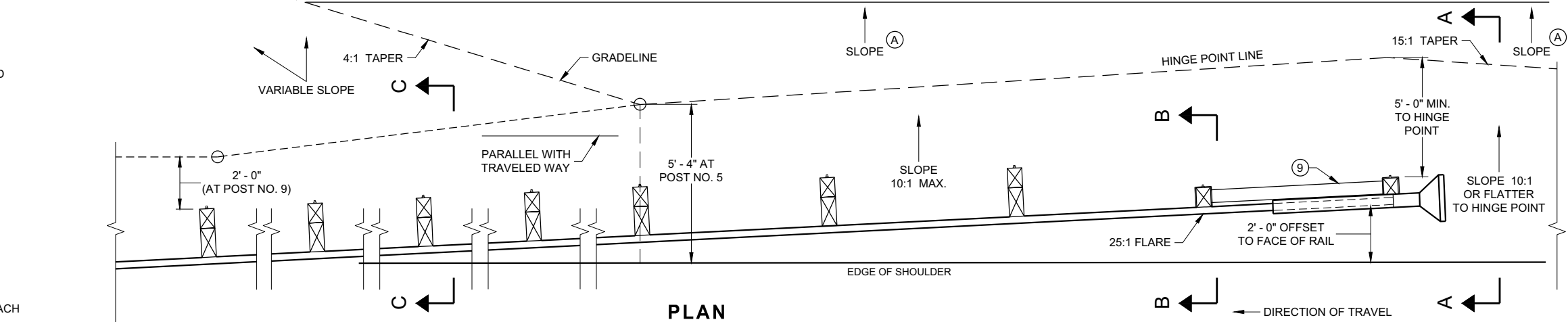
* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

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

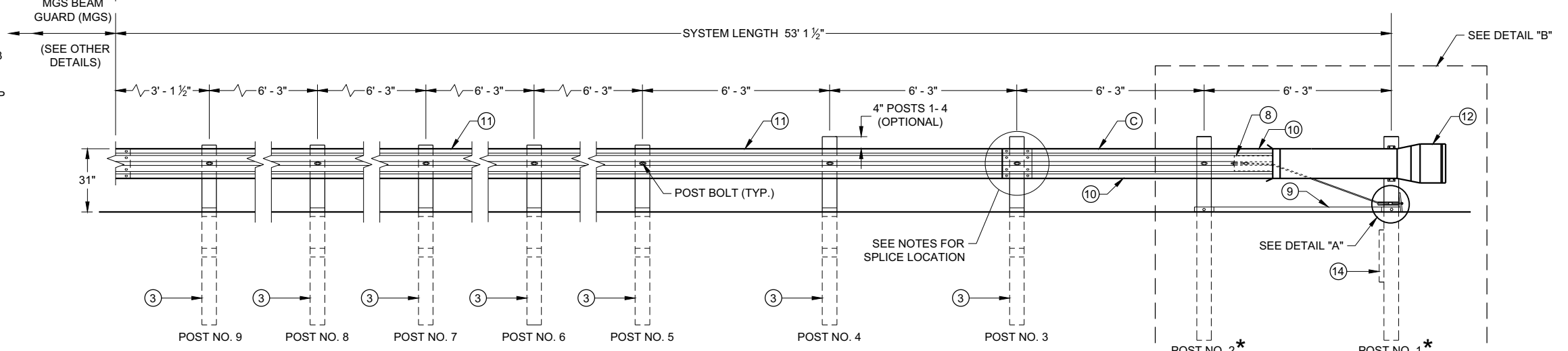
SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

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

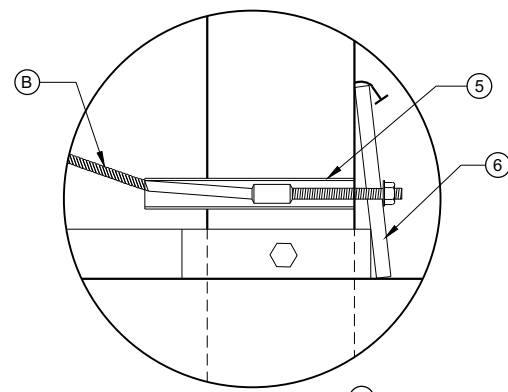
CLEAR ZONE LIMITS, EITHER AS SHOWN ELSEWHERE IN THE PLANS OR, IF NOT SHOWN ELSEWHERE IN THE PLANS, 15 FEET BEYOND THE HINGE POINT LINE



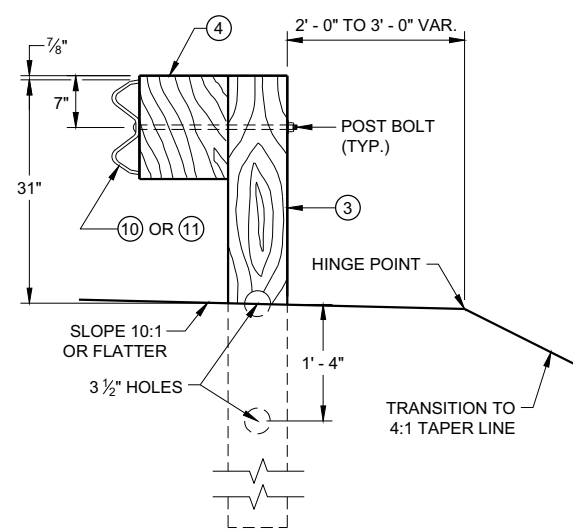
PLAN



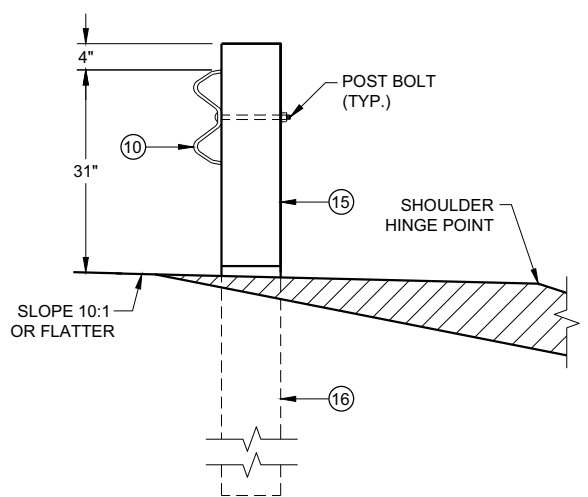
ELEVATION



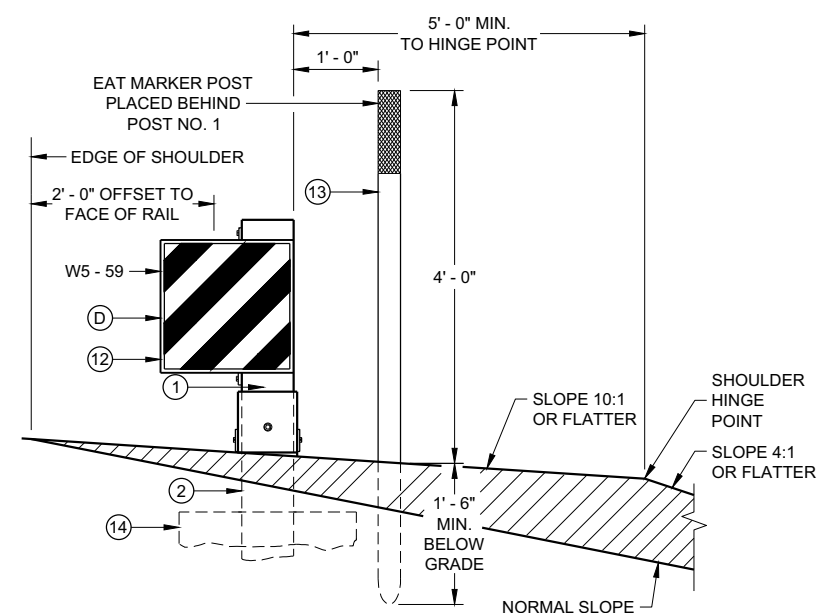
DETAIL "A"



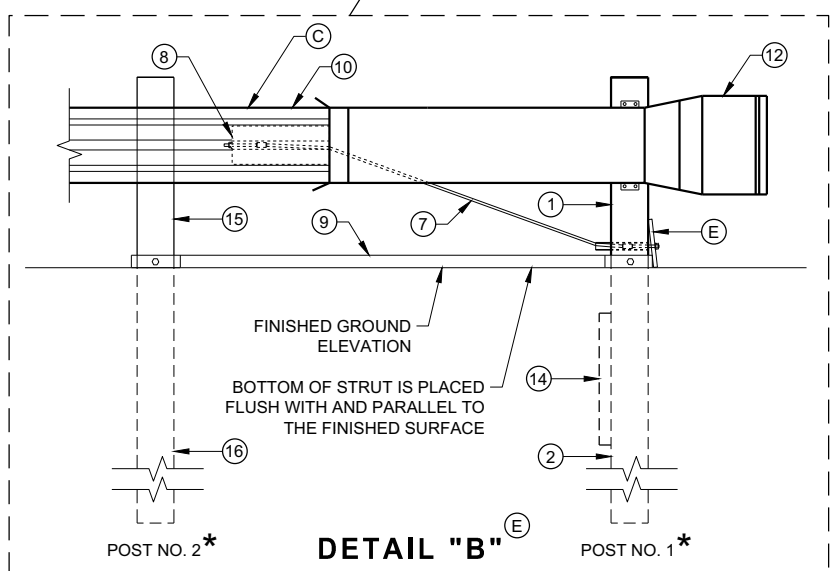
**SECTION C - C
TYPICAL AT POST NOS. 3 - 9**



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



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



DETAIL "B"

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

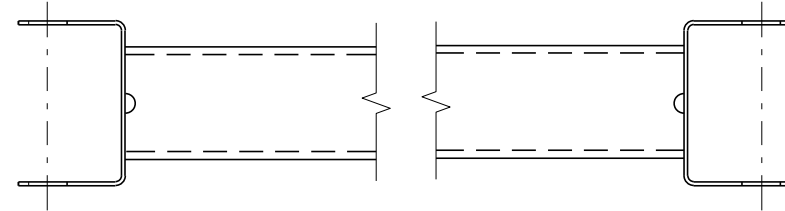
6

SDD 14B44 - 04a

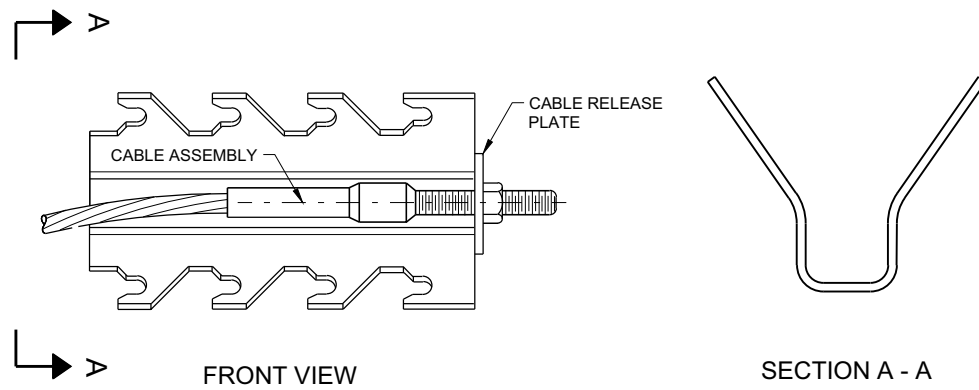
SDD 14B44 - 04a

BILL OF MATERIALS

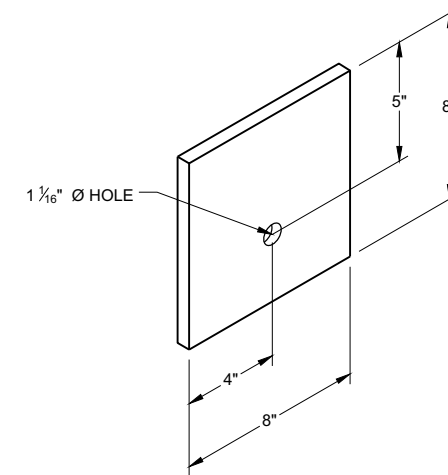
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED W-BEAM RAIL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



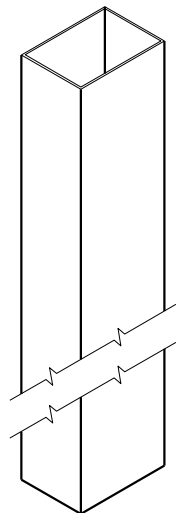
GENERIC GROUND STRUT ⑨ ⑤



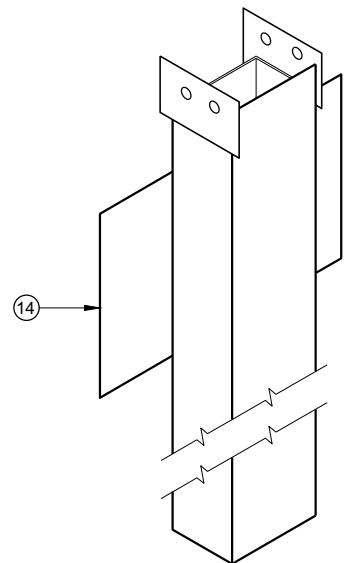
GENERIC ANCHOR CABLE BOX ⑨ ⑤



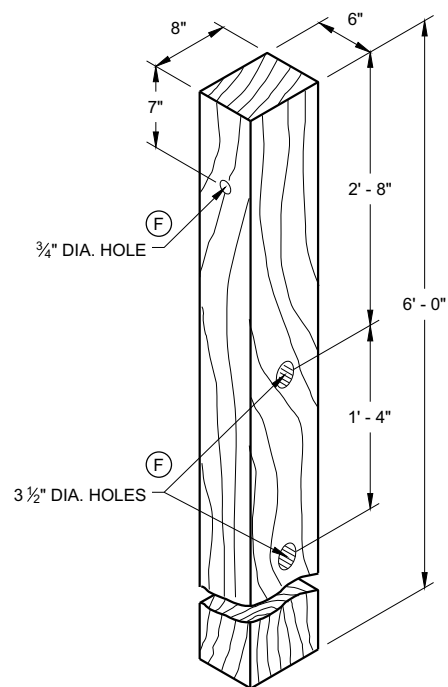
BEARING PLATE ⑥ ⑤



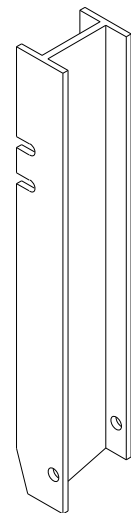
UPPER POST NO. 1 ⁽¹⁾ (E)



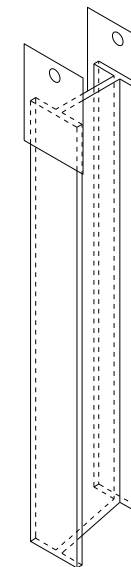
LOWER POST NO. 1 ⁽²⁾ (E)



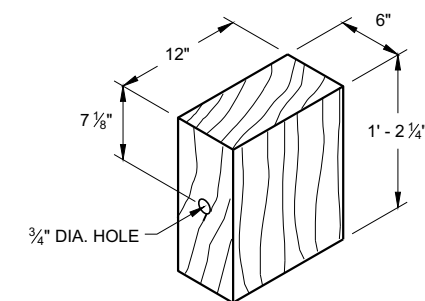
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



UPPER POST NO. 2 ⁽¹⁵⁾ (E)

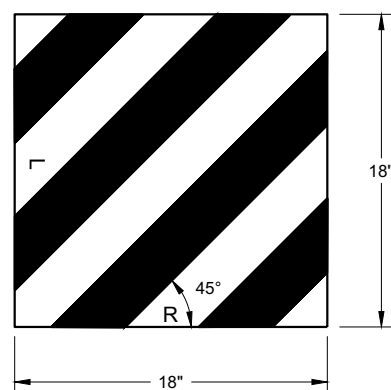


LOWER POST NO. 2 ⁽¹⁶⁾ (E)



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

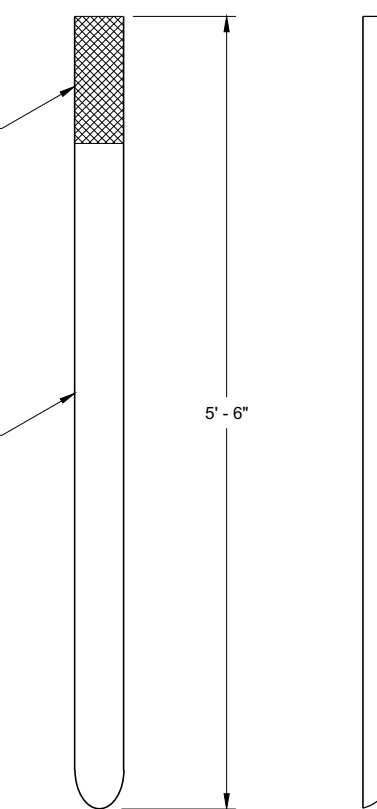
6



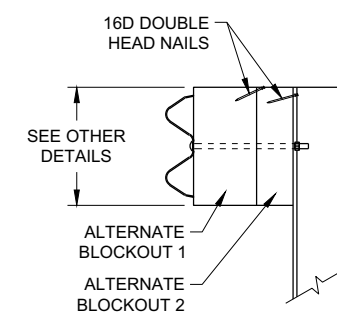
W5 - 59
REFLECTIVE SHEETING DETAIL ^(E)

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

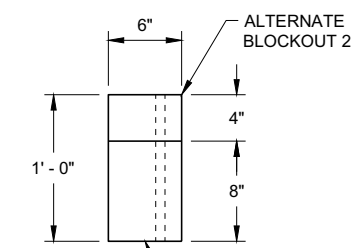
E.A.T. MARKER
POST (YELLOW)



FRONT VIEW SIDE VIEW
E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW



TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

6

SDD 14B44 - 04c

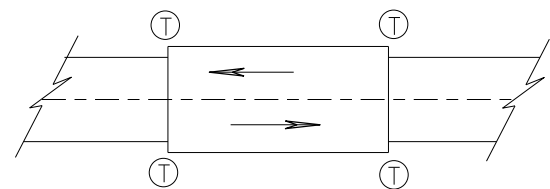
SDD 14B44 - 04c

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

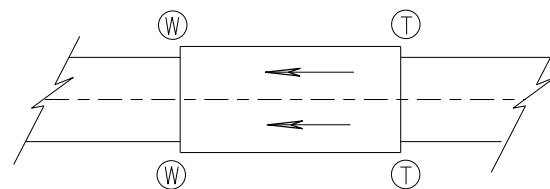
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 /S/ Rodney Taylor
DATE 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

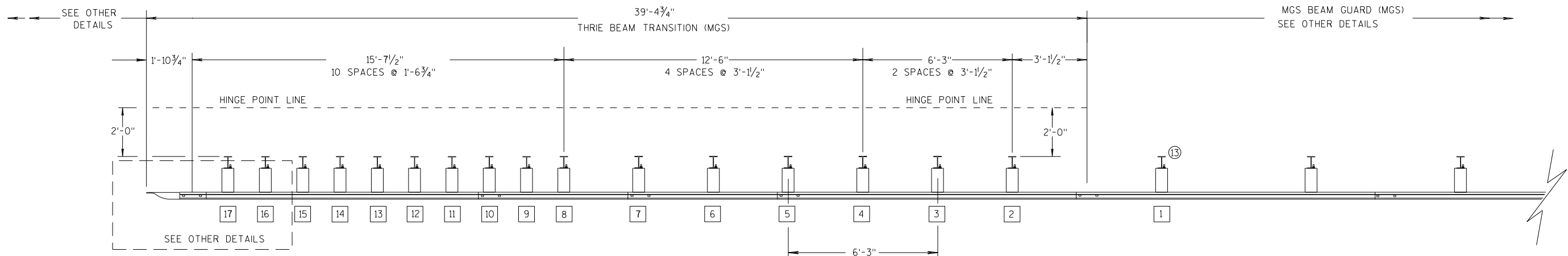
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

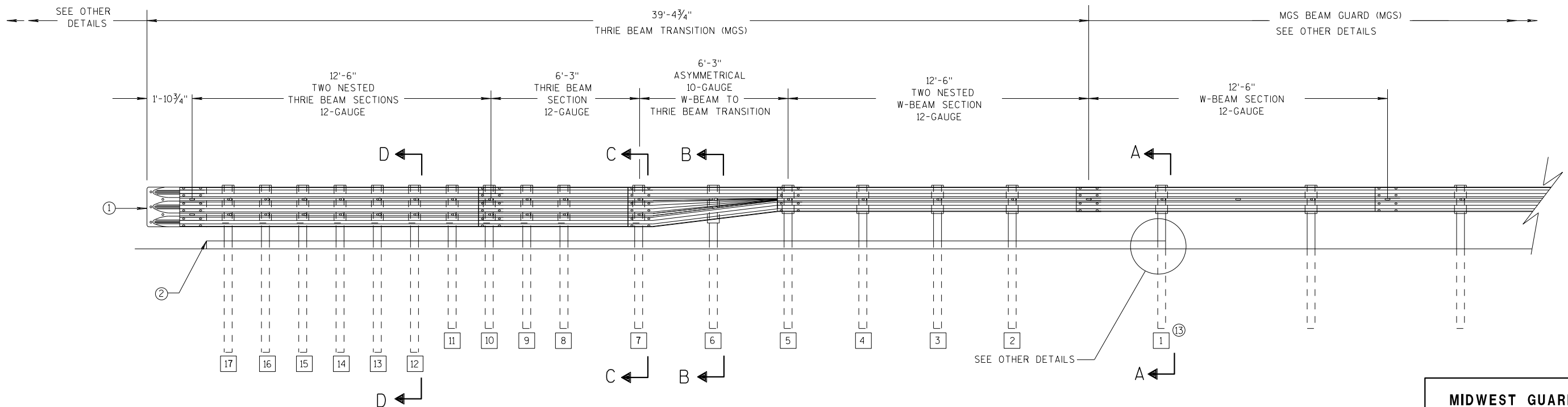
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

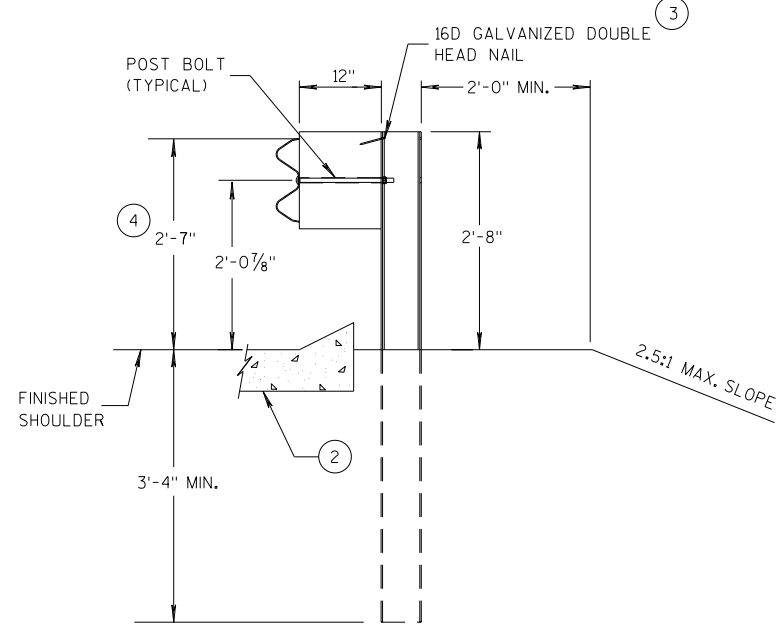
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

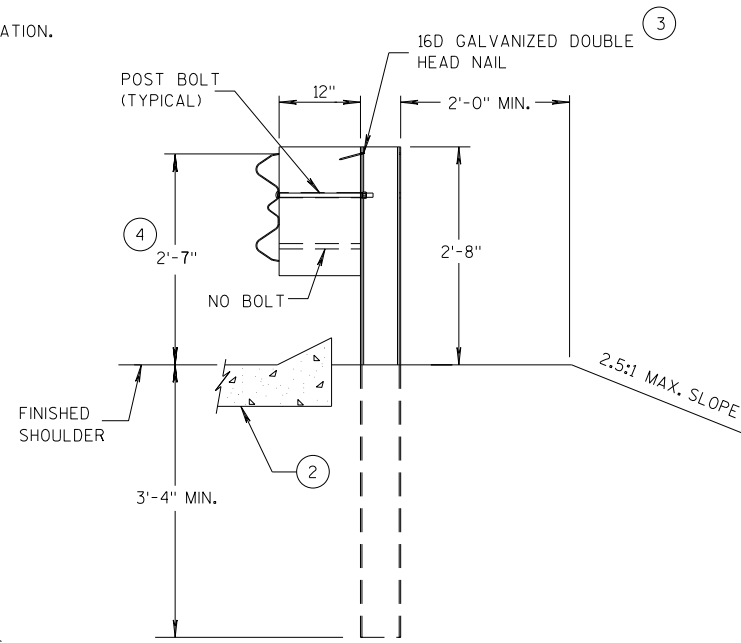
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

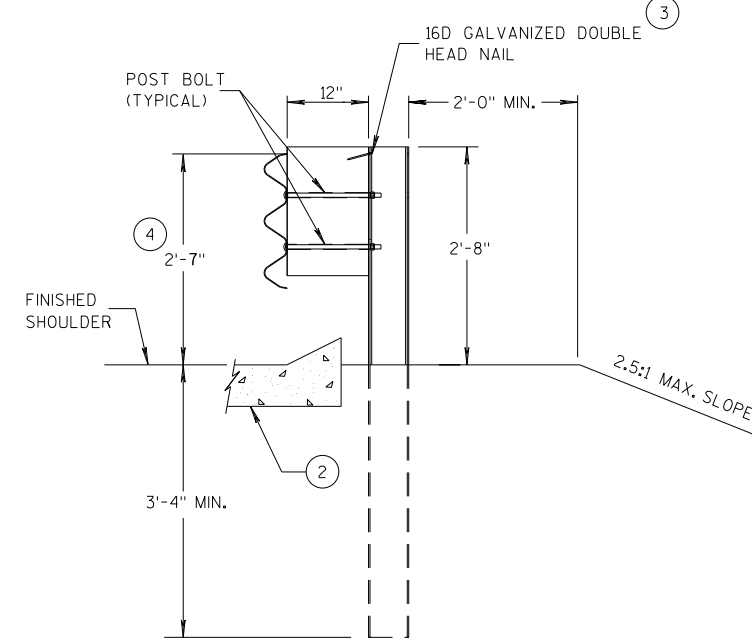
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".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



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



**SECTION B-B
POST 6**



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

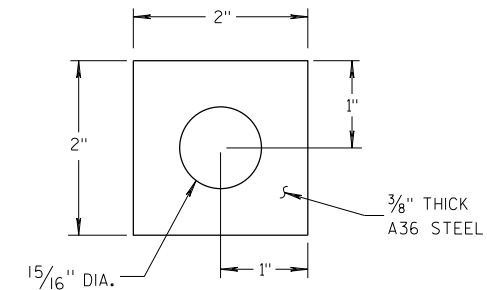
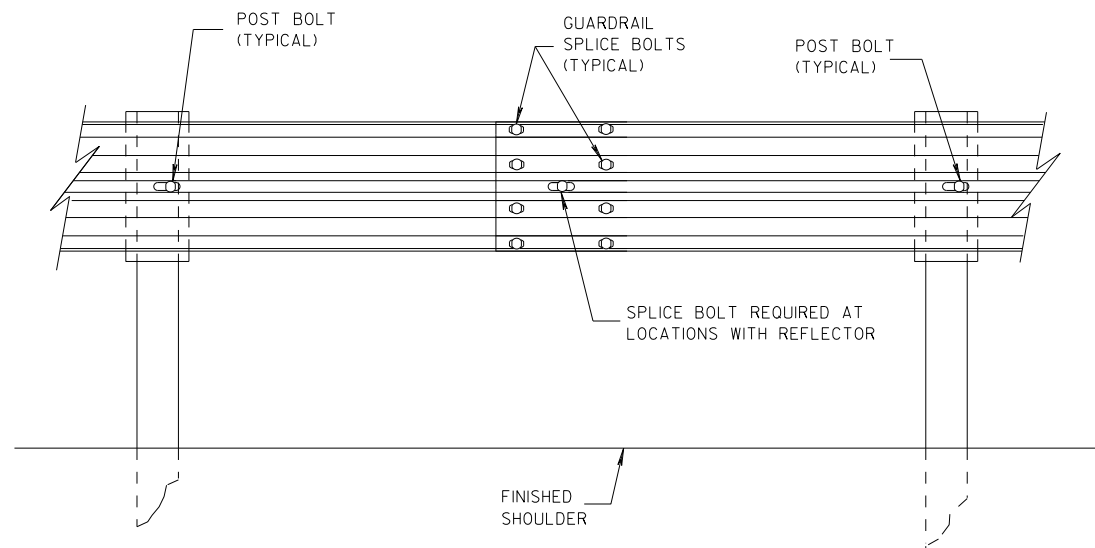
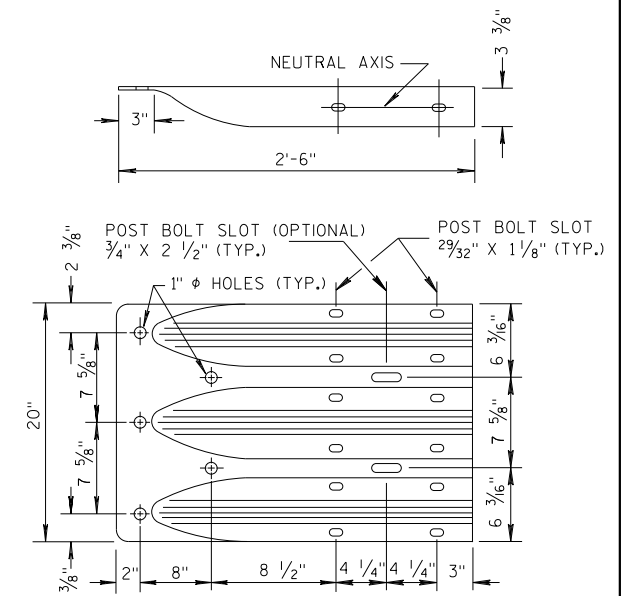


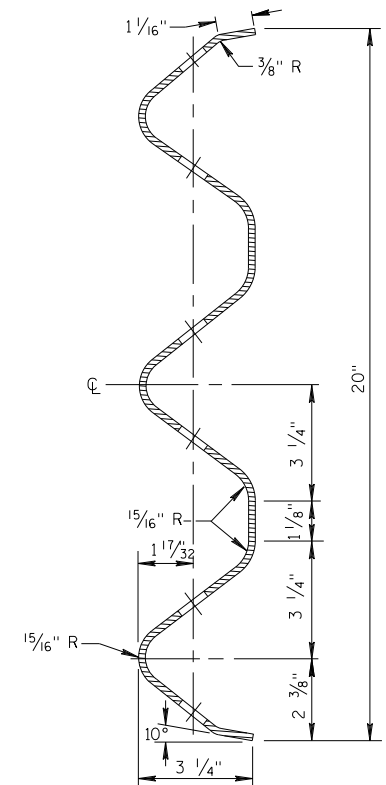
PLATE WASHER DETAIL



SPLICE DETAIL



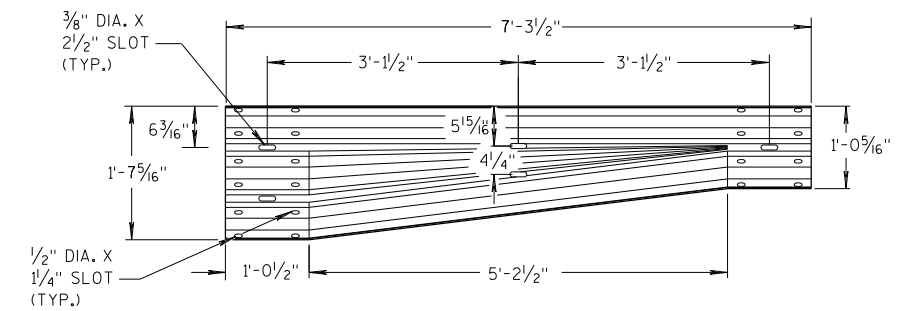
**THRIE BEAM
TERMINAL CONNECTOR**



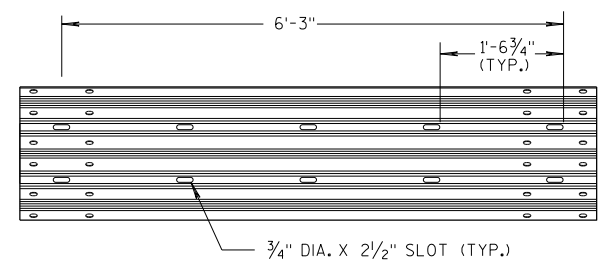
**SECTION THRU THRIE
BEAM RAIL ELEMENT**

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

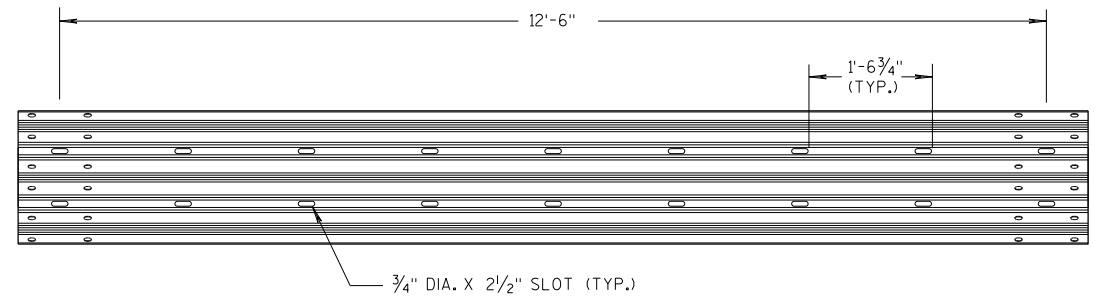
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



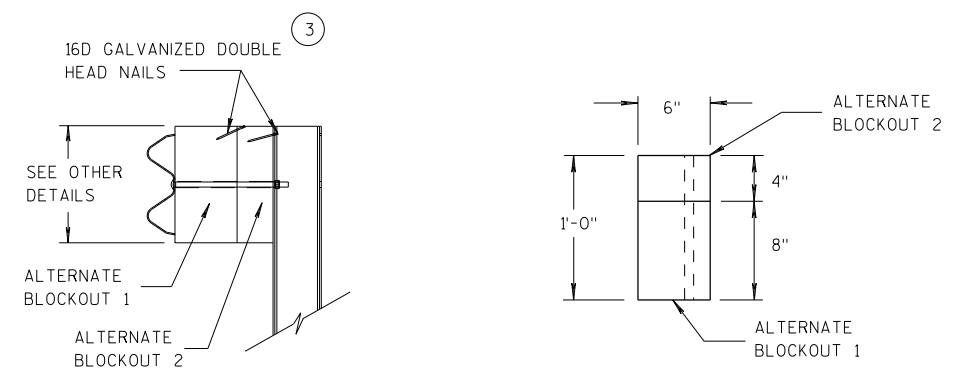
W-BEAM TO THRIE BEAM TRANSITION SECTION



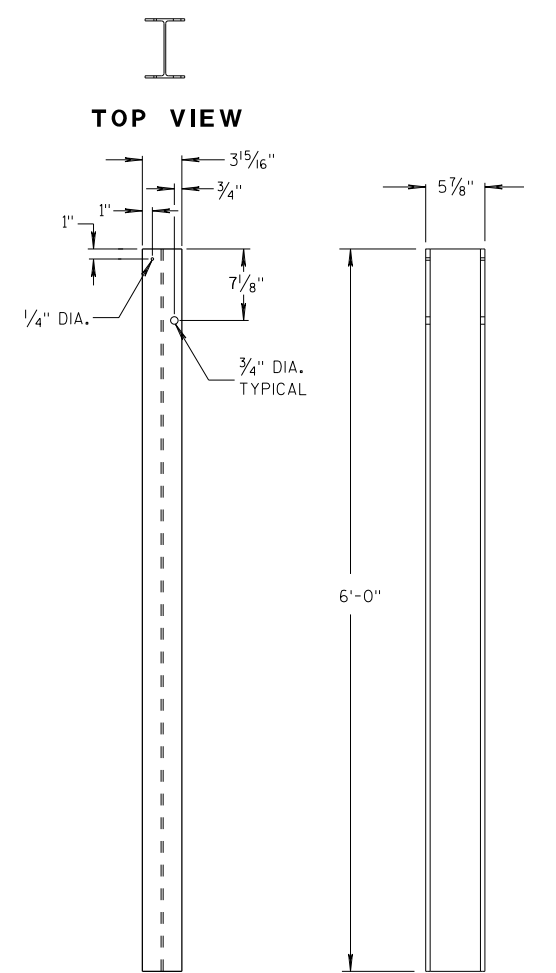
6'-3\"/>



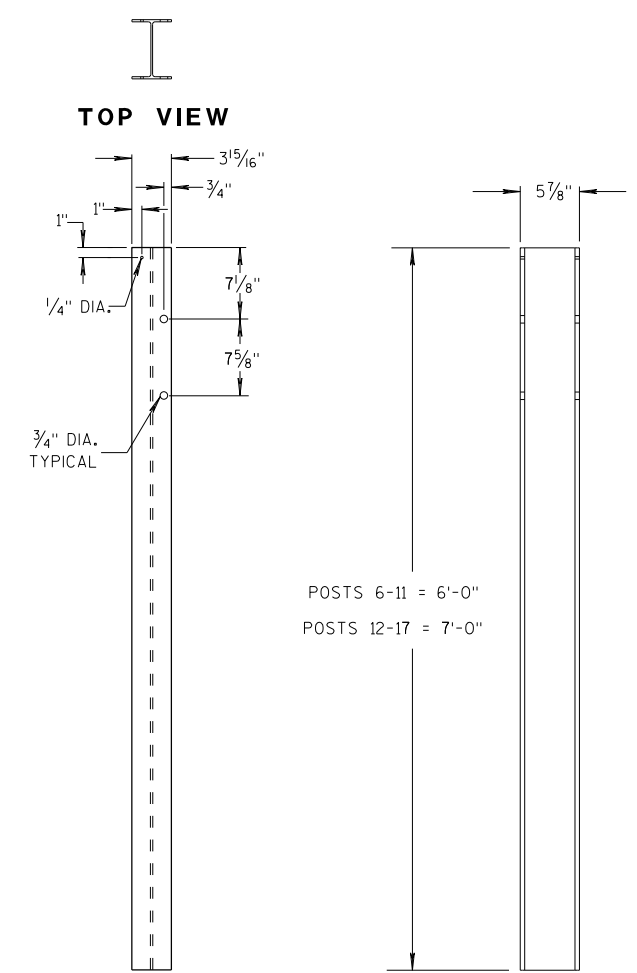
12'-6\"/>



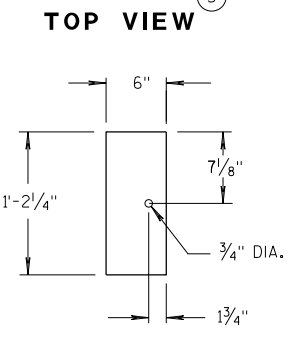
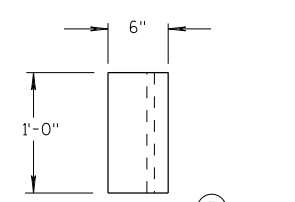
ALTERNATE WOOD BLOCKOUT DETAIL



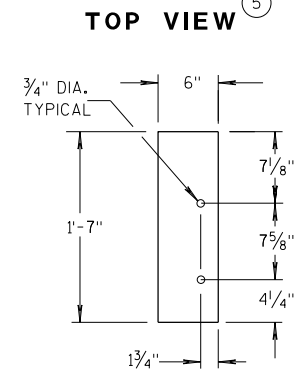
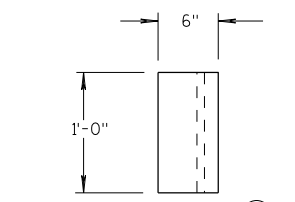
STEEL POSTS 1-5



STEEL POSTS 6-17



BLOCKOUT POSTS 1-5



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)**

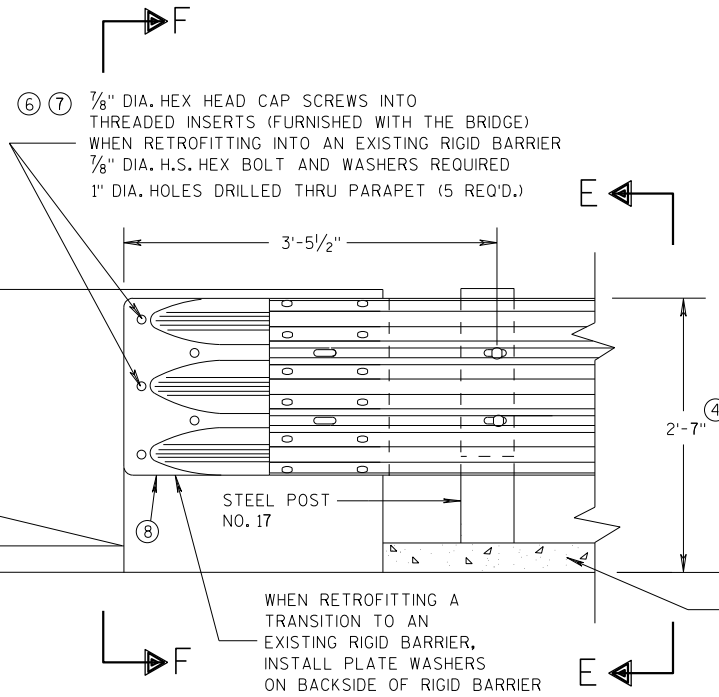
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

6

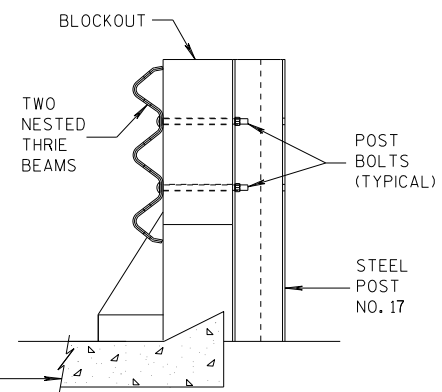
S.D.D. 14 B 45-5c

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

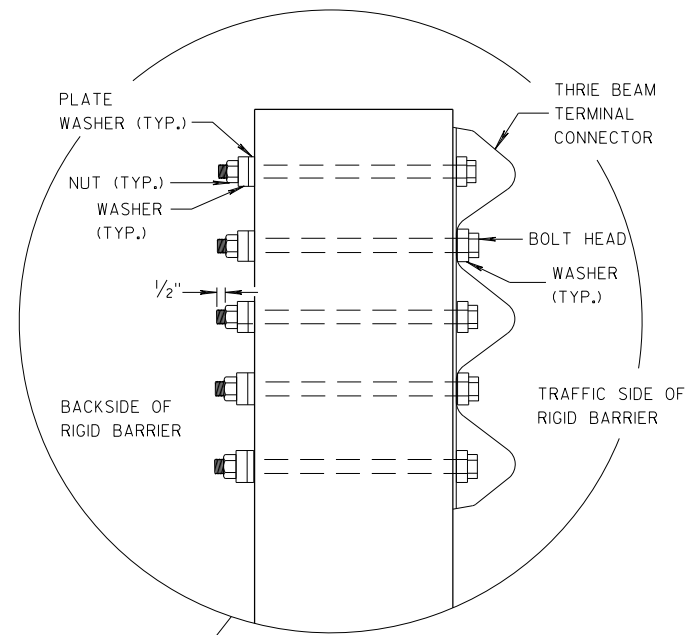


FRONT VIEW

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

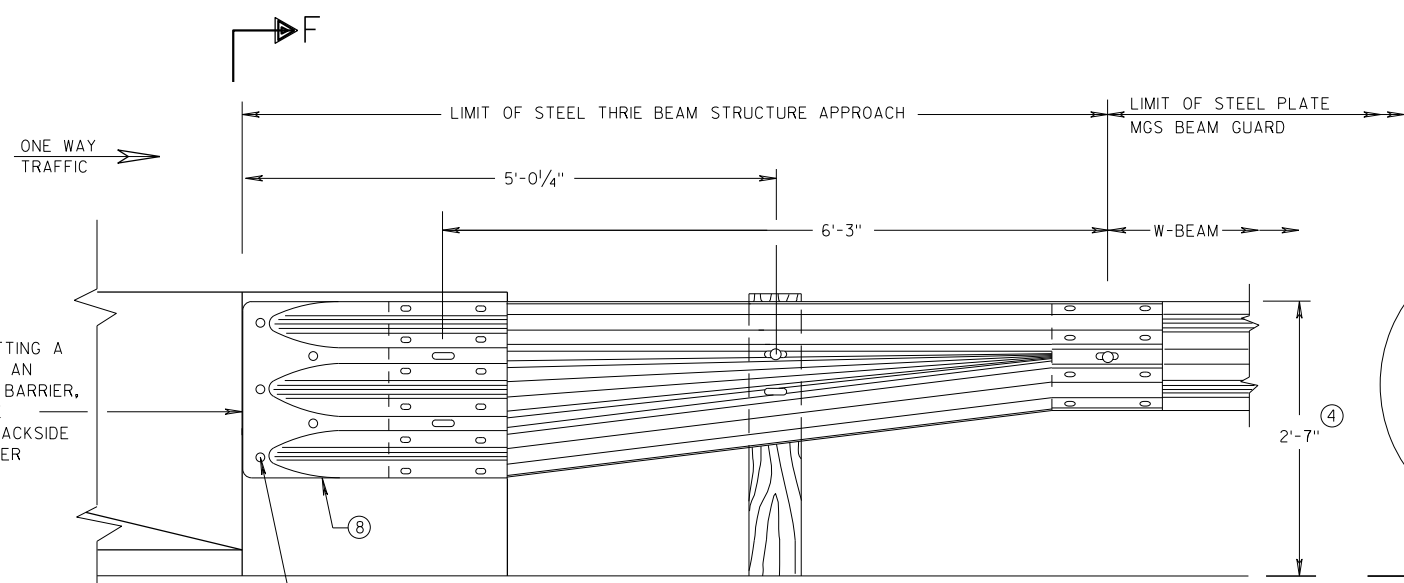


SECTION E-E



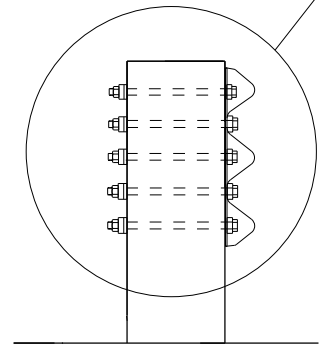
GENERAL NOTES

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

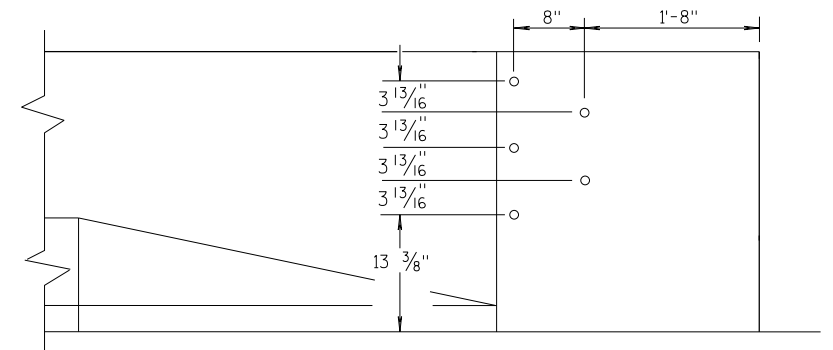


FRONT VIEW

W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)



SECTION F-F



DRILL HOLE LOCATION

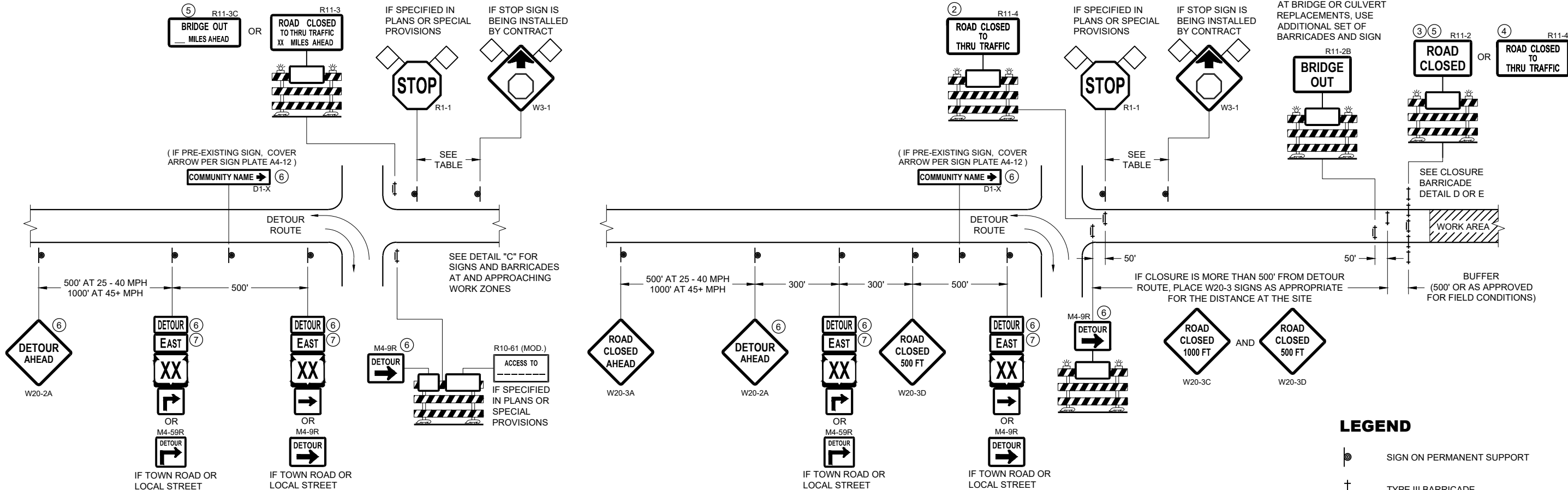
6

6

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

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

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 1/2 MILE FROM
DETOUR ROUTE (1000 FEET IF URBAN)

**DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR**

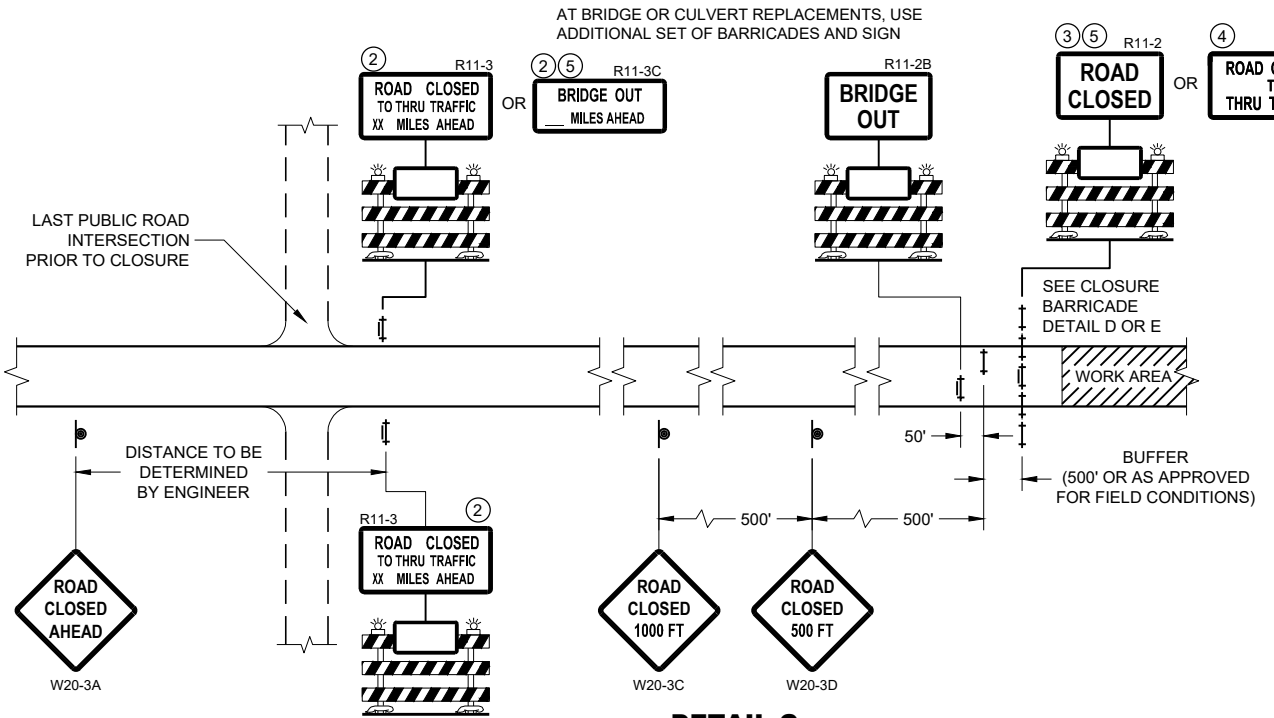
WORK ZONE LESS THAN 1/2 MILE FROM
DETOUR ROUTE (1000 FEET IF URBAN)

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)

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

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



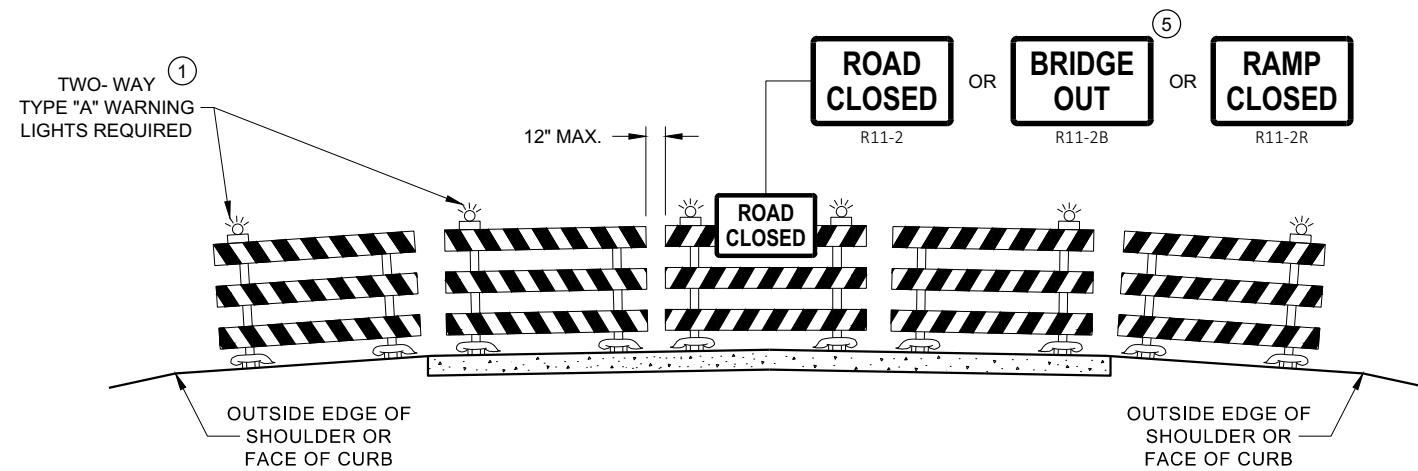
**DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR**

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

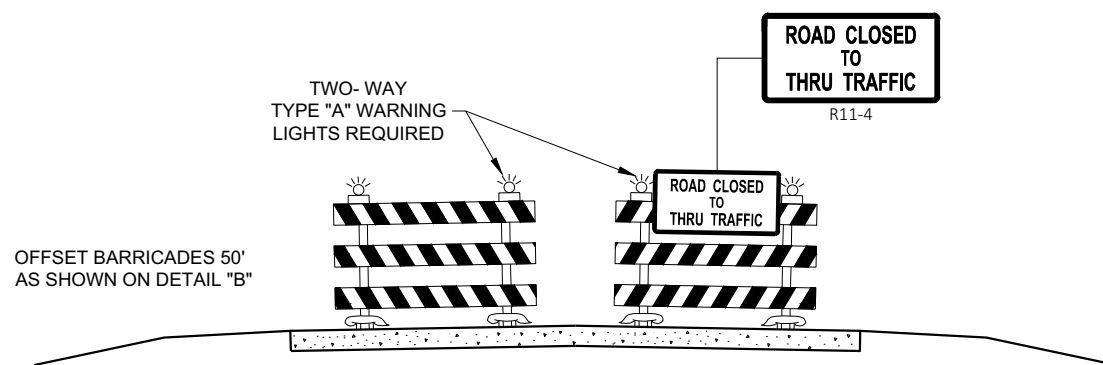
**BARRICADES AND SIGNS
FOR MAINLINE CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



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



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

SEE SDD 15C2 - SHEET "a" FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

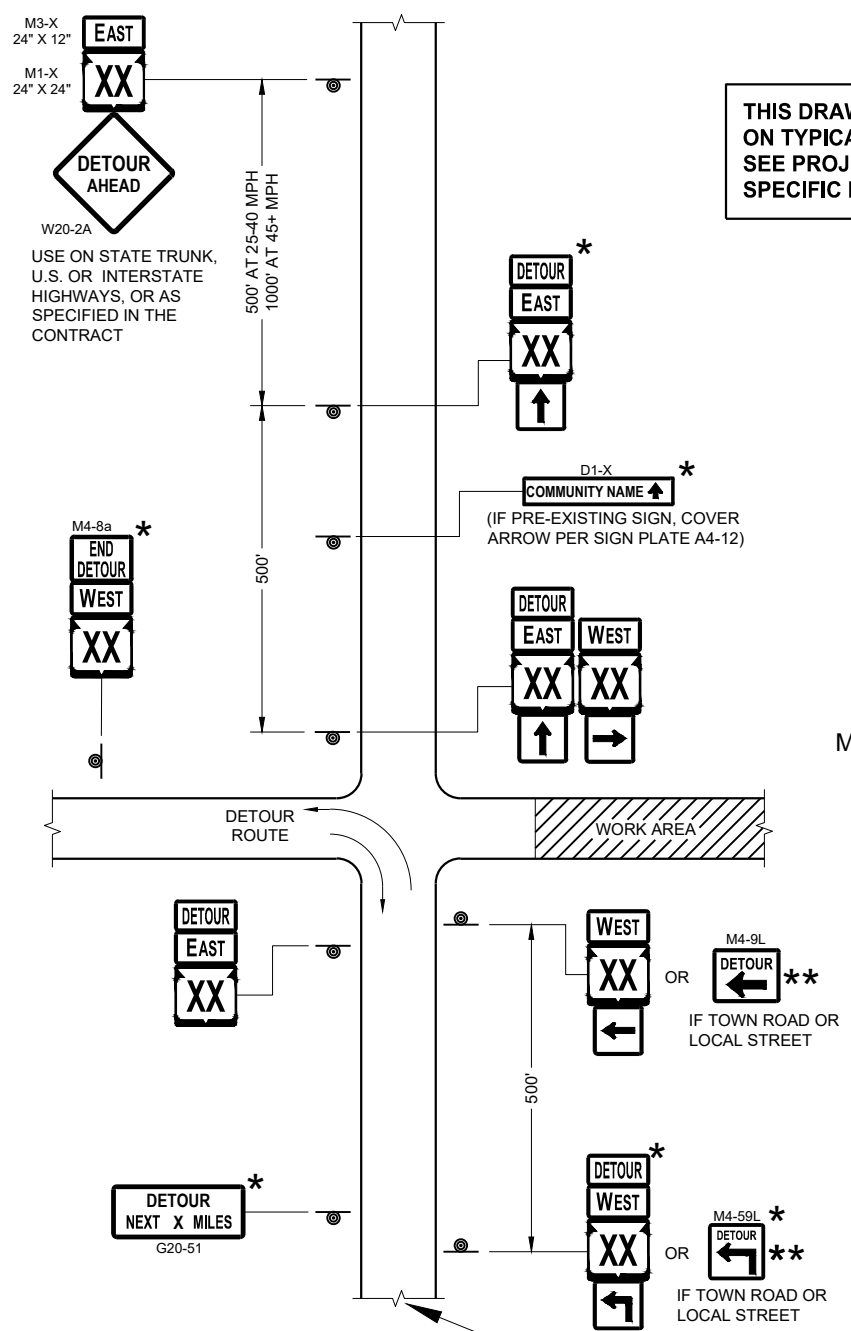
- R11 - 2 SHALL BE 48" X 30"
- R11 - 3 SHALL, R11 - 4 AND R10 - 61 SHALL BE 60" X 30"
- M4 - 9 SHALL BE 30" X 24"
- M3 - X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4 - 8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1 - 4, M1 - 5A AND M1 - 6 SHALL BE 24"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

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

**BARRICADES AND SIGNS
FOR
VARIOUS CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



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

LEGEND

- SIGN ON PERMANENT SUPPORT
- WORK AREA
- M4 - 8
- M3 - X
- M1 - 4
- M1 - 6
- M1 - 5A
- M05 - 1
- M06 - 1
- 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.

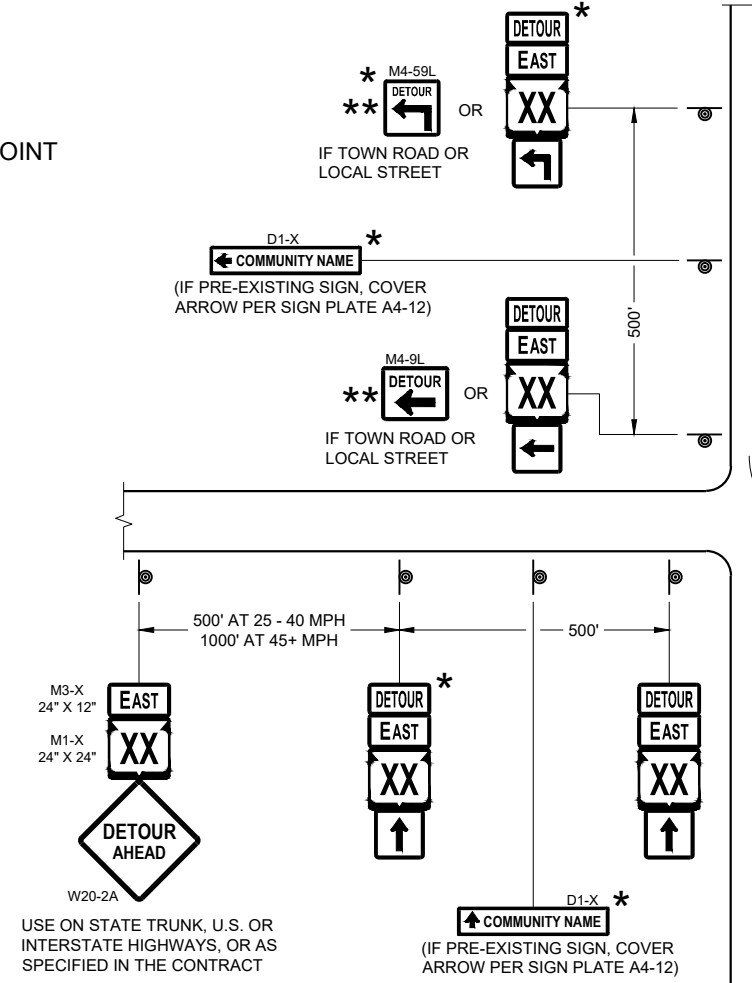
"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN SIZES SHALL BE AS FOLLOWS:

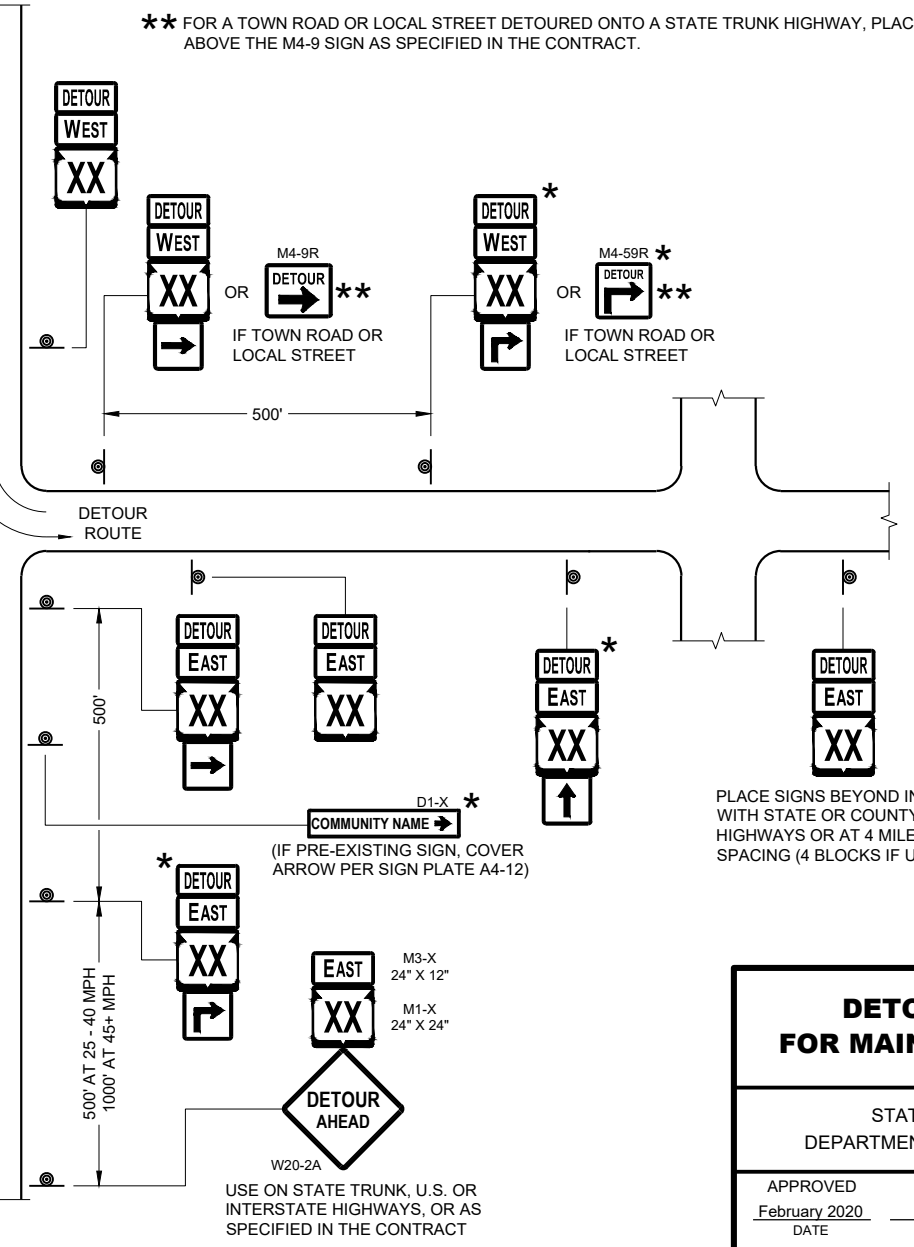
- M3-X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4-8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1-4, M1-5A AND M1-6 SHALL BE 24" X 24" (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS)
- M05-1 AND M06-1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING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

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

MATCH POINT



**DETAIL F
DETOUR SIGNING**



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

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

DETOUR SIGNING FOR MAINLINE CLOSURES	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED February 2020 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

GENERAL NOTES

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

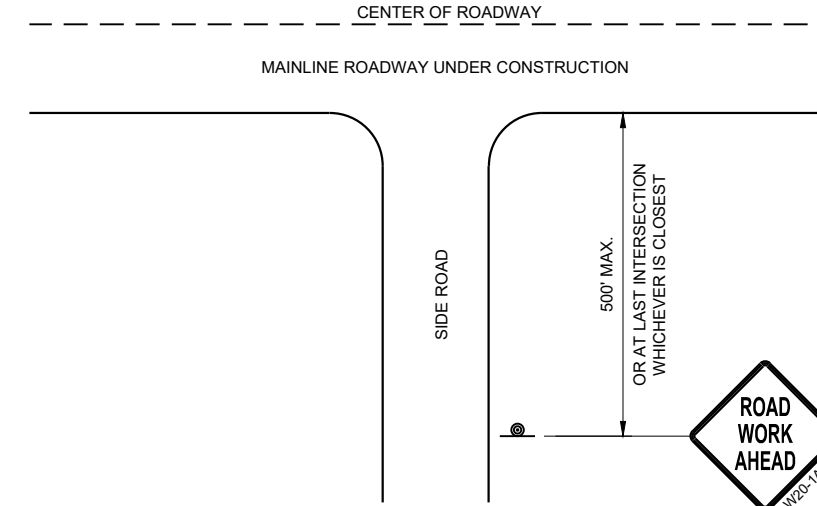
THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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.

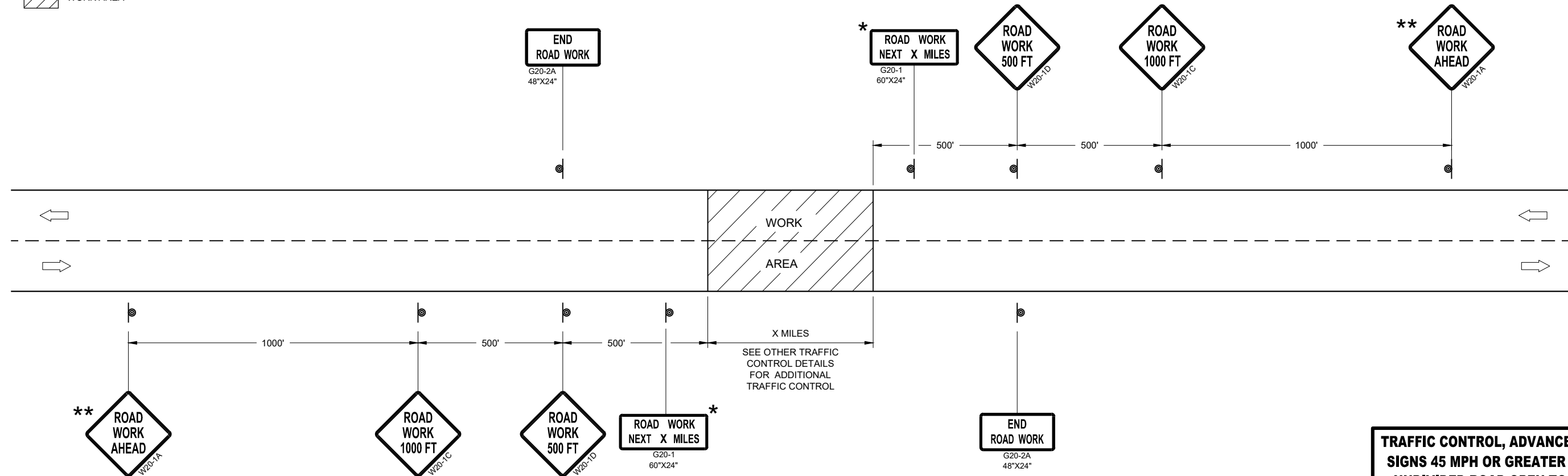
- * OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- ** PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.



TYPICAL SIDE ROAD APPROACH WARNING SIGN DETAIL

LEGEND

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



TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

GENERAL NOTES

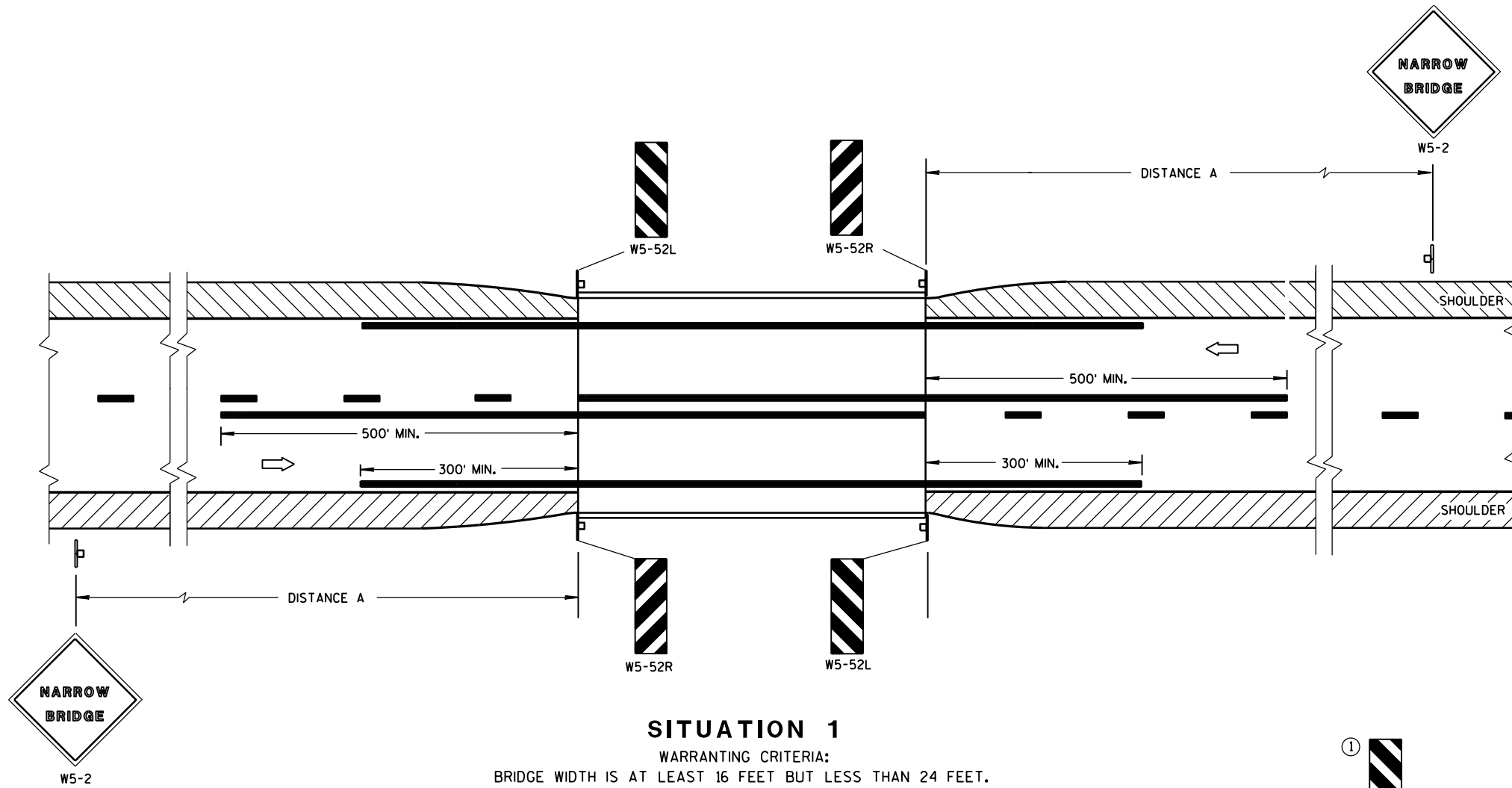
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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

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

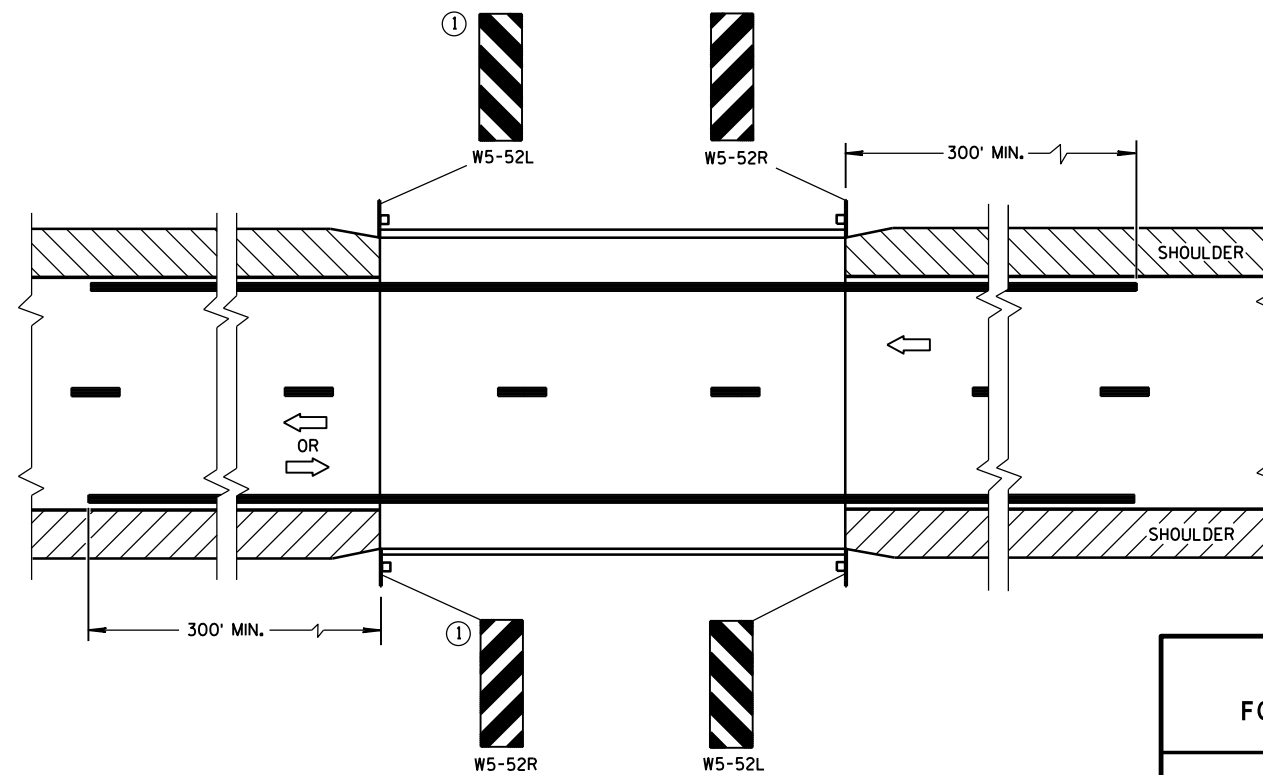
① OMIT ON ONE-WAY TRAVELLED WAYS.

➡ DIRECTION OF TRAFFIC



SITUATION 1

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



SITUATION 2

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

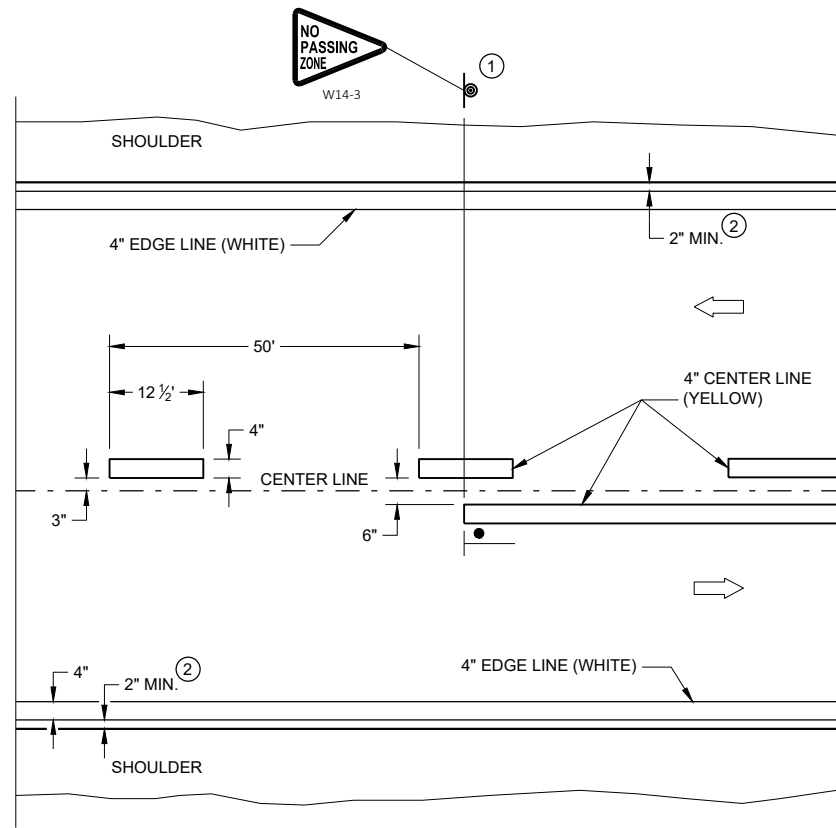
DISTANCE TABLE

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

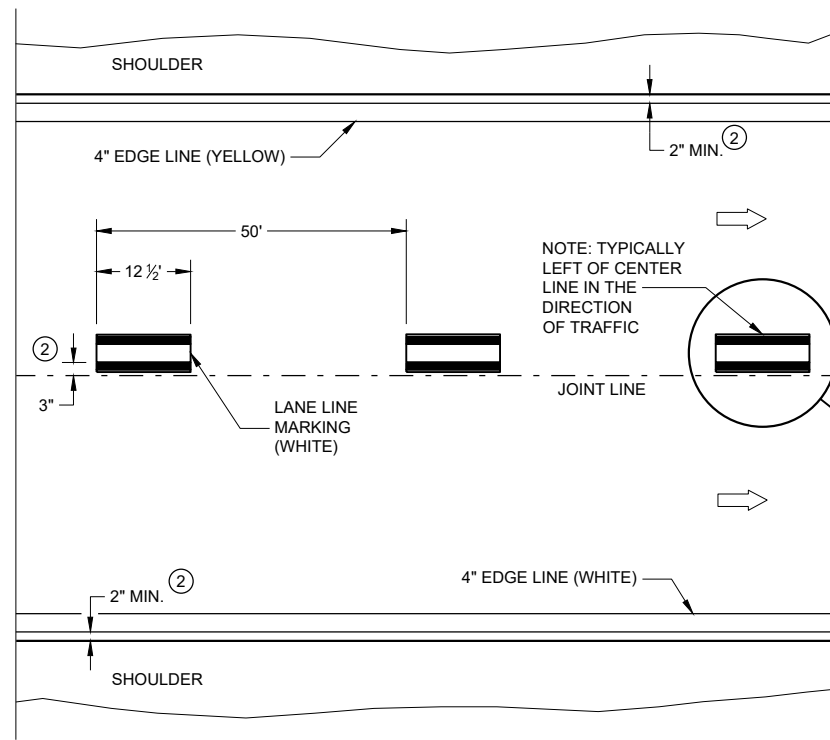
SIGNING & MARKING FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MARKING ENGINEER
FHWA

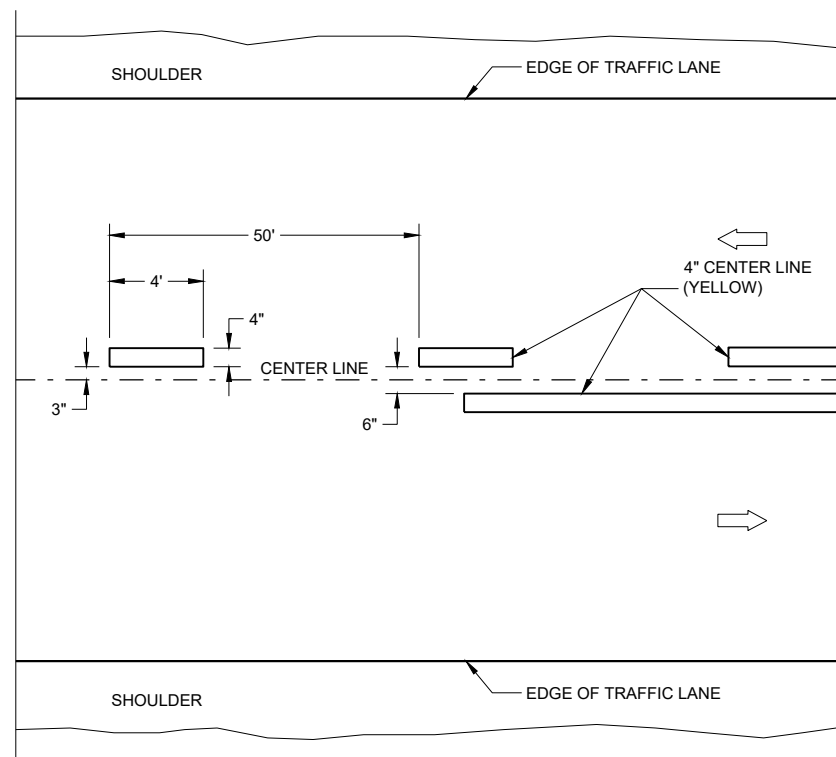


TWO WAY TRAFFIC

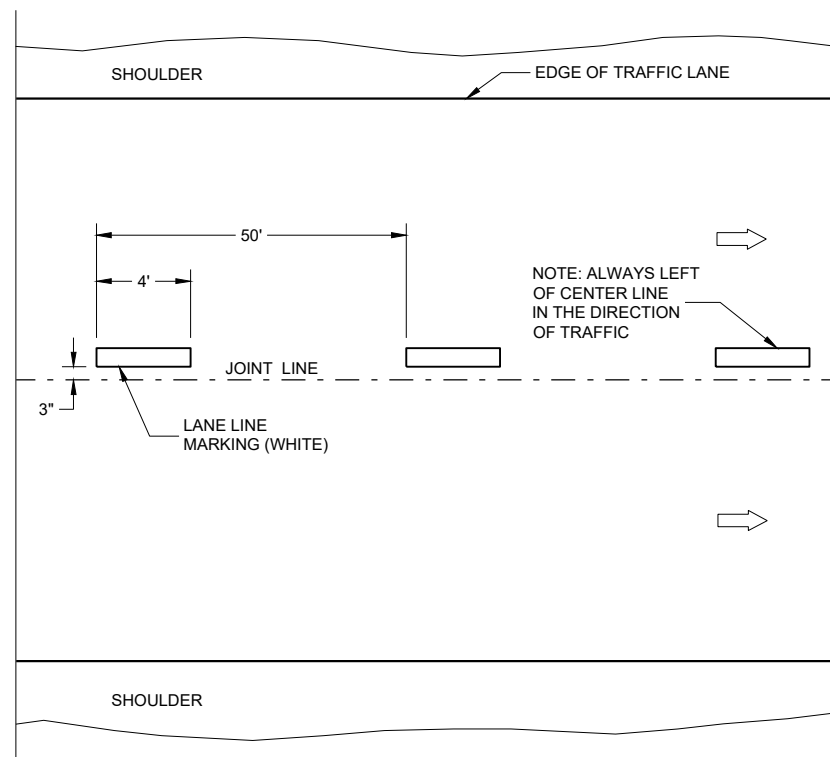


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

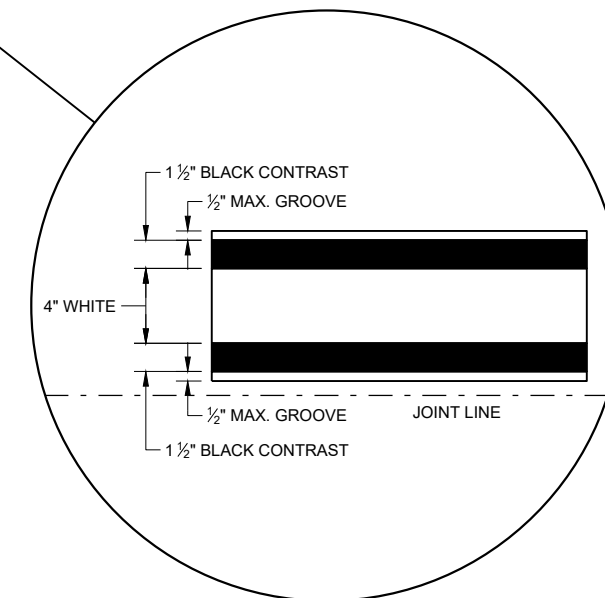
GENERAL NOTES

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

- ① LOCATE THE NO PASSING ZONE W14-3 SIGN 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

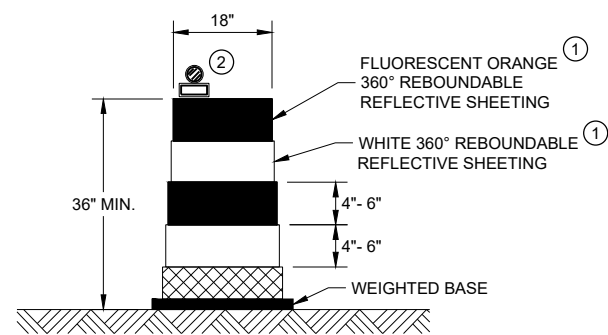
- "T" MARKING
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC



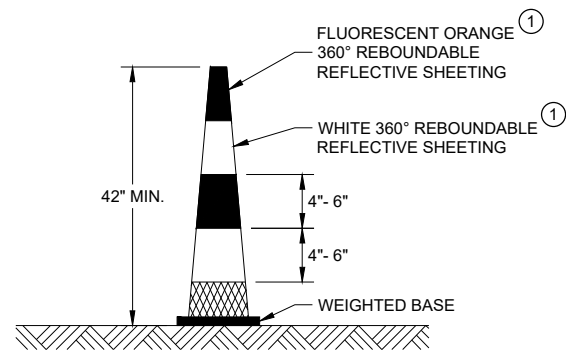
**LONGITUDINAL MARKING
(MAINLINE)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Matthew Rauch
DATE STATEWIDE SIGNING AND MARKING
ENGINEER

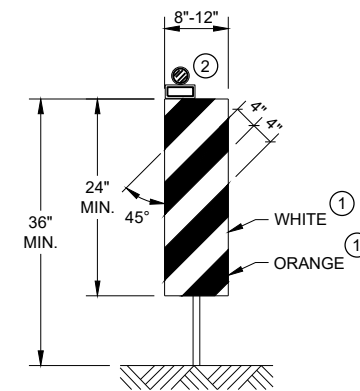


DRUM



42" CONE

DO NOT USE IN TAPERS
 1/2 SPACING OF DRUMS

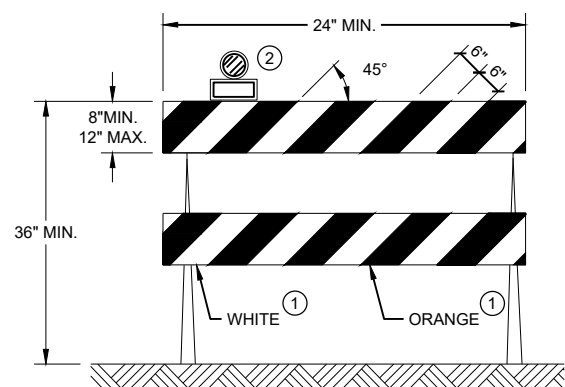


VERTICAL PANEL

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

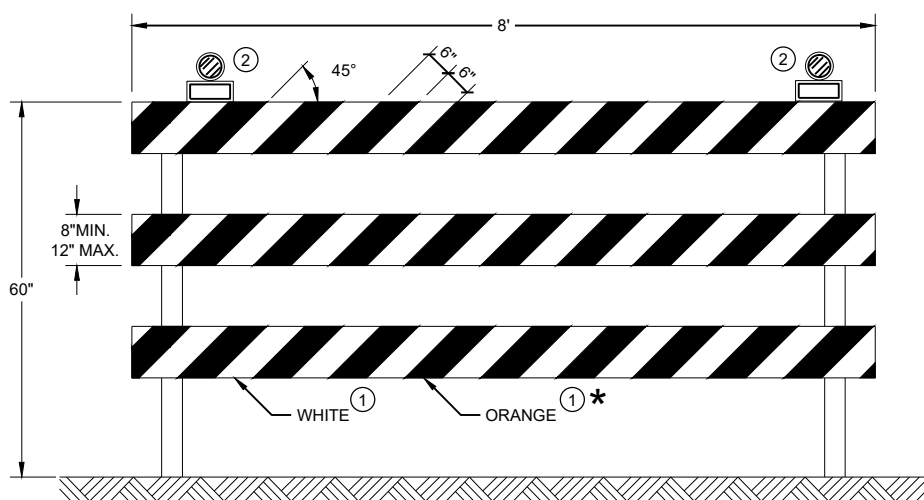
GENERAL NOTES

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



TYPE II BARRICADE

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

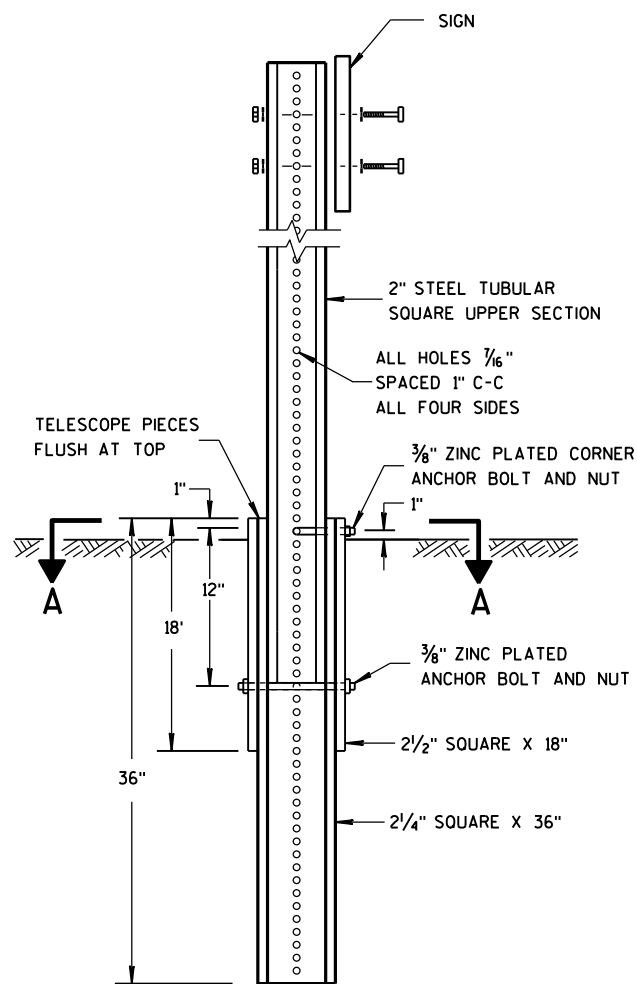


TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2021 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
<small>FHWA</small>	



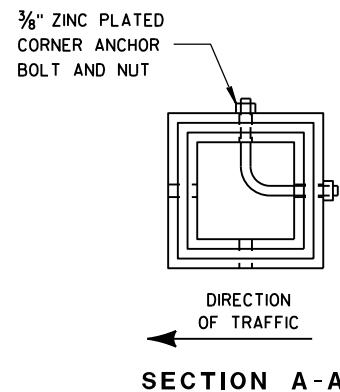
DETAIL OF TUBULAR STEEL SIGN POST

TUBULAR STEEL POSTS

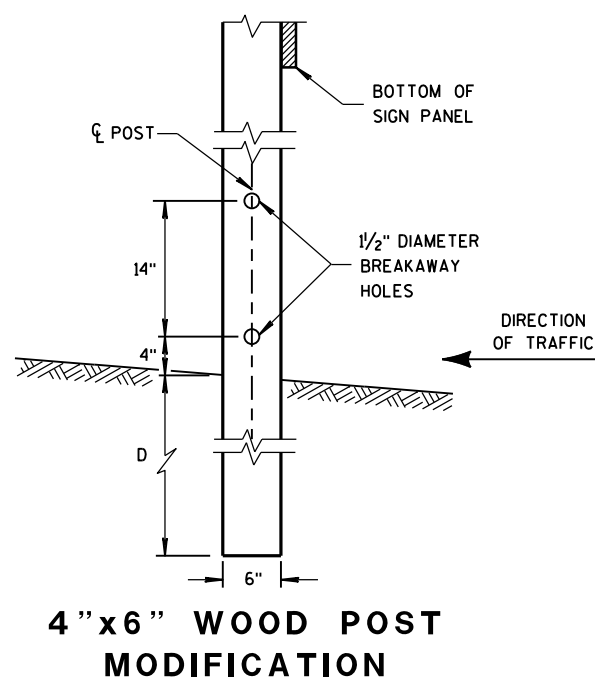
AREA OF SIGN INSTALLATION (SQ. FT.)	NUMBER OF REQUIRED TUBULAR STEEL POSTS
9 OR LESS	1
GREATER THAN 9 LESS THAN OR EQUAL TO 18	2
GREATER THAN 18 LESS THAN OR EQUAL TO 27	3

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

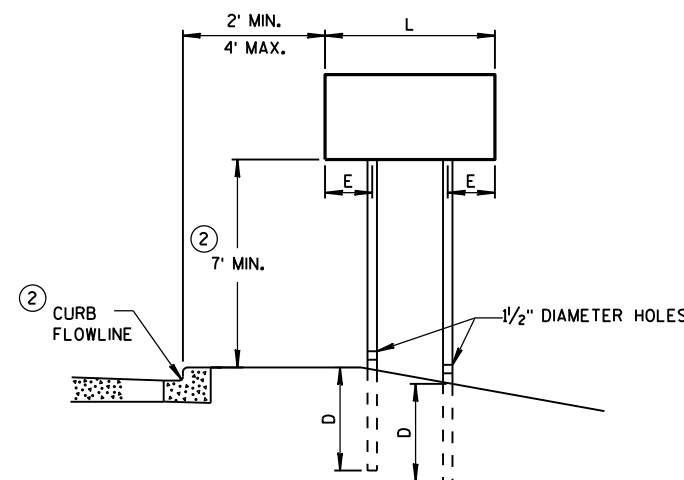
SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED ON TUBULAR STEEL POSTS.



SECTION A-A



4" X 6" WOOD POST MODIFICATION

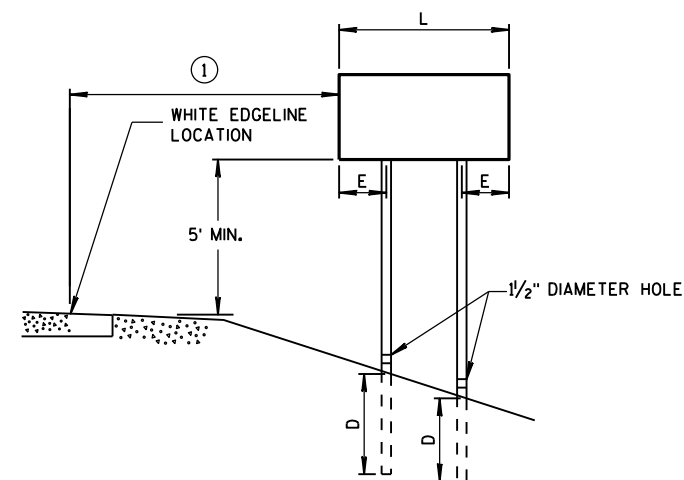


URBAN AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST EMBEDMENT DEPTH

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



RURAL AREA

4" X 6" WOOD POST

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

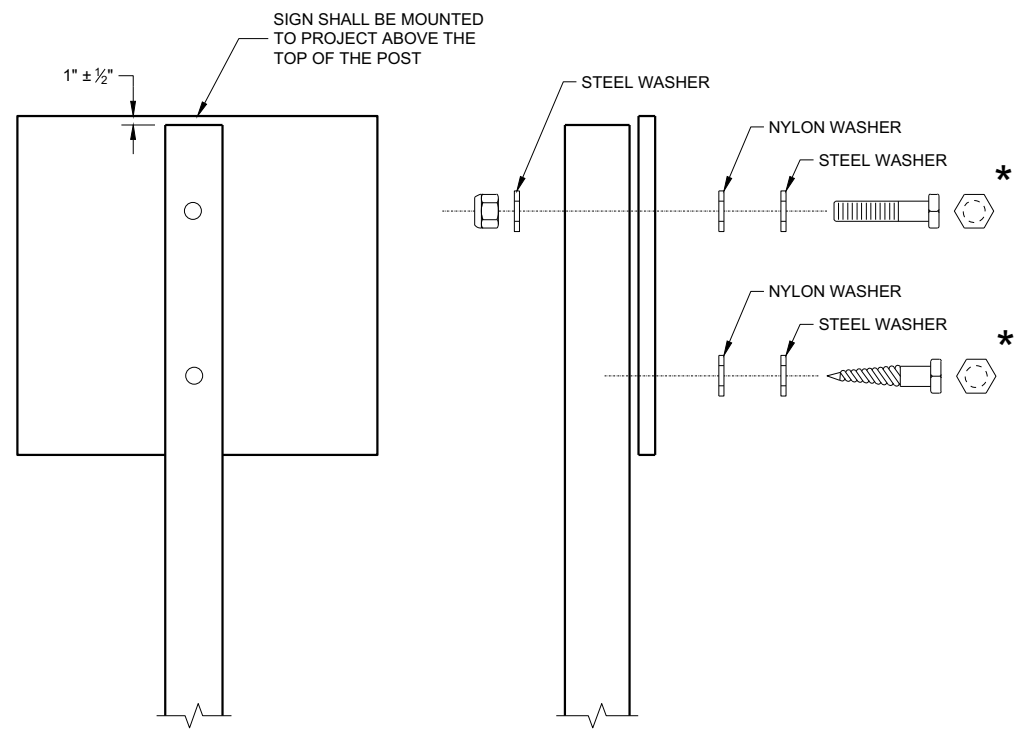
SEE NOTE ③

GENERAL NOTES

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

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION



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

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

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

WOOD POST (4" x 6")
LAG SCREWS - 3/8" x 3"
MACHINE BOLTS - 5/16" x 6 1/2" OR 7" LENGTH W/NUTS

SQUARE STEEL POST (2" x 2")
MACHINE BOLTS - 3/8" x 3 1/4" LENGTH W/NUTS
RIVETS - 3/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM
BODY/MANDREL O.D. FLANGE 0.720 - 0.765 INCH,
GRIP RANGE 0.042 - 0.375 INCH

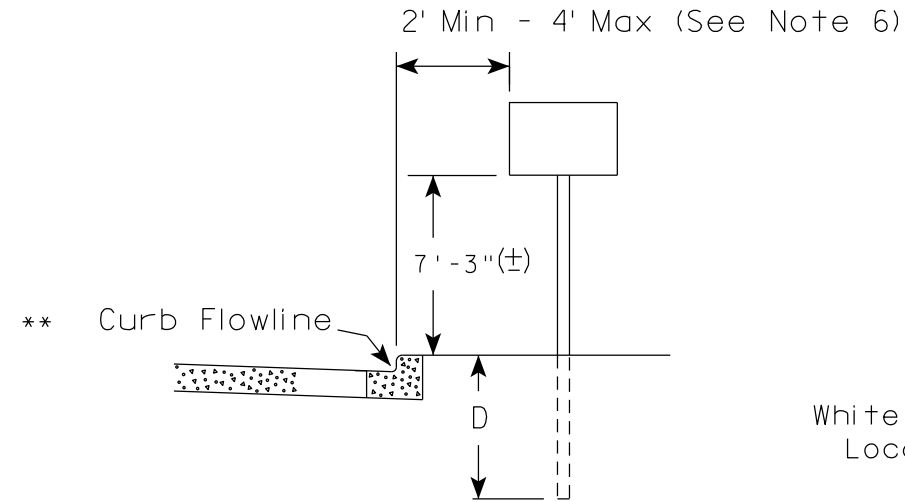
WASHERS (ALL POSTS) -
1 1/4" O.D. x 3/8" I.D. x 1/16" STEEL
1 1/4" O.D. x 3/8" I.D. x 0.080 NYLON

* TWO DIFFERENT FASTENING SYSTEMS ARE SHOWN FOR ILLUSTRATION PURPOSES. ON ANY INDIVIDUAL SIGN, EITHER ONE OR THE OTHER SYSTEM SHALL BE USED. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

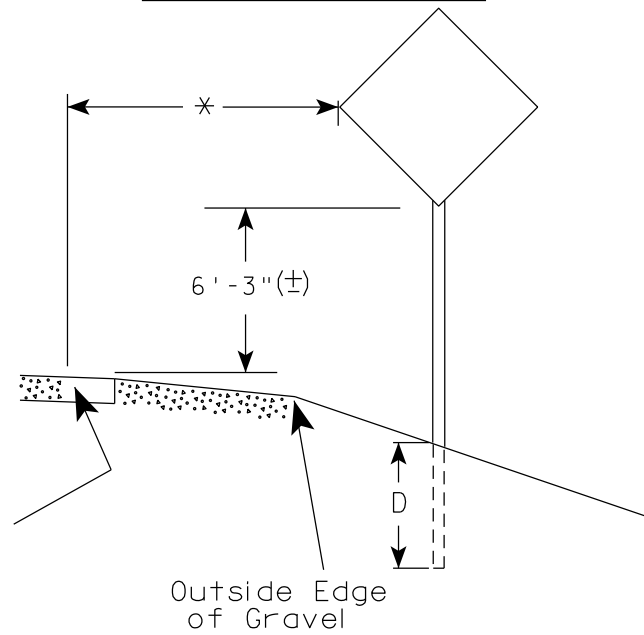
ATTACHMENT OF SIGNS TO POSTS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

URBAN AREA

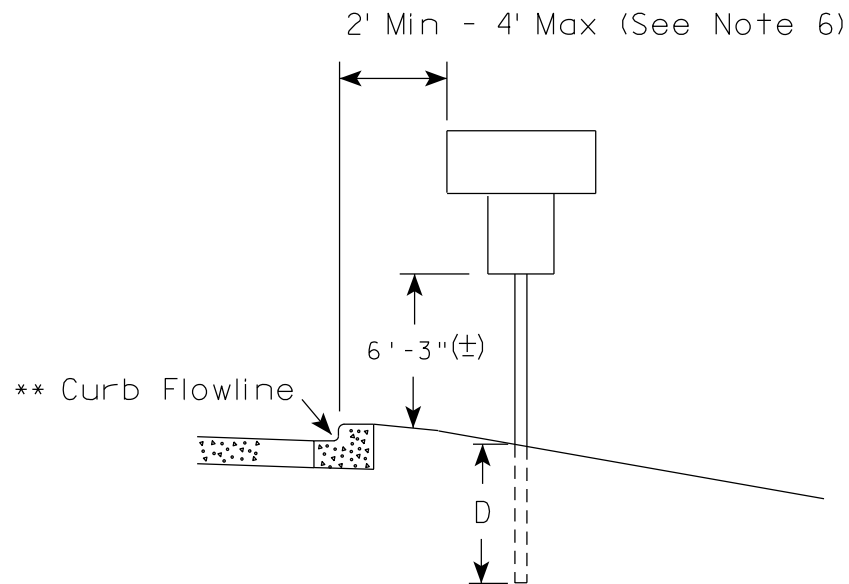
RURAL AREA (See Note 2)



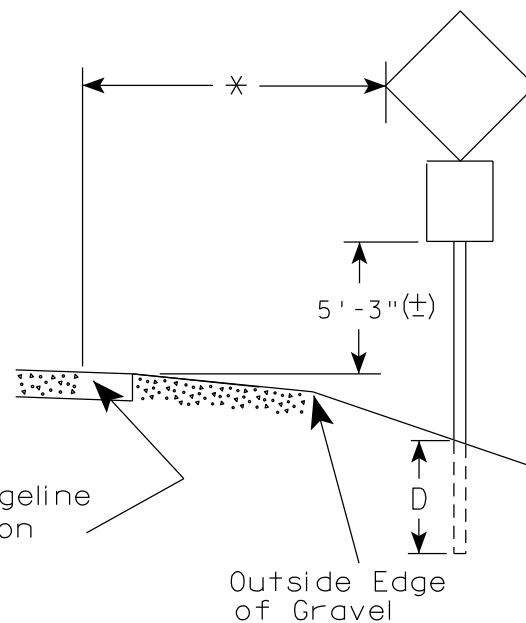
White Edgeline Location



Outside Edge of Gravel



White Edgeline Location



Outside Edge of Gravel

POST EMBEDMENT DEPTH

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

GENERAL NOTES

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

7

7

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

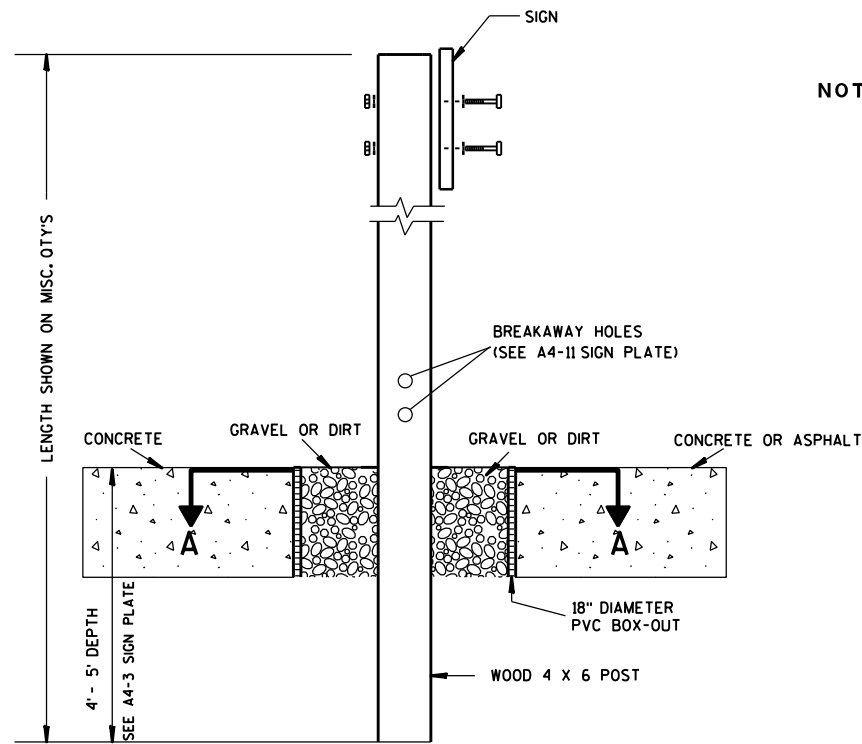
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

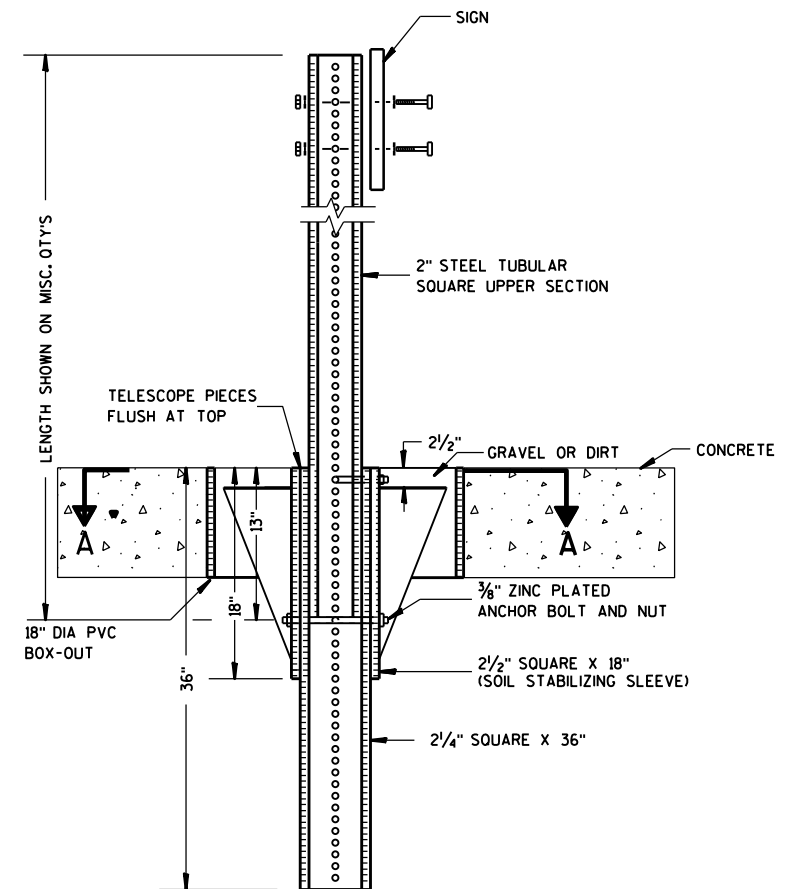
DATE 5/13/2020 PLATE NO. A4-3.22



ELEVATION VIEW

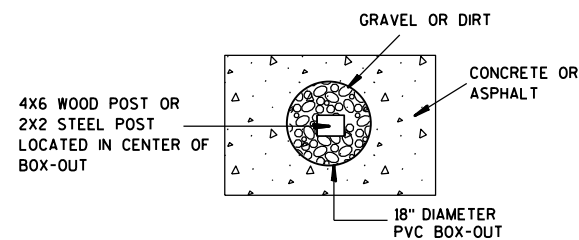
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ ASPHALT INSTALLATIONS

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

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

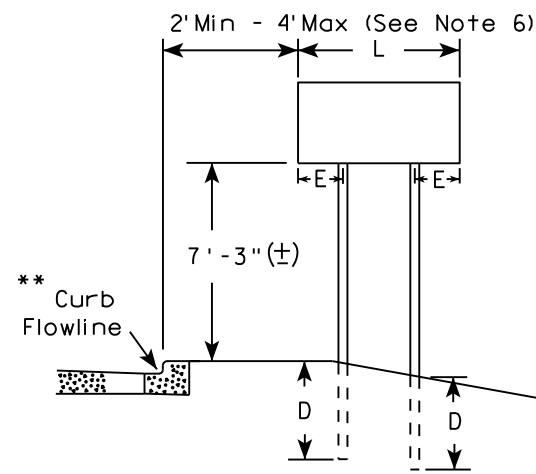
7

7

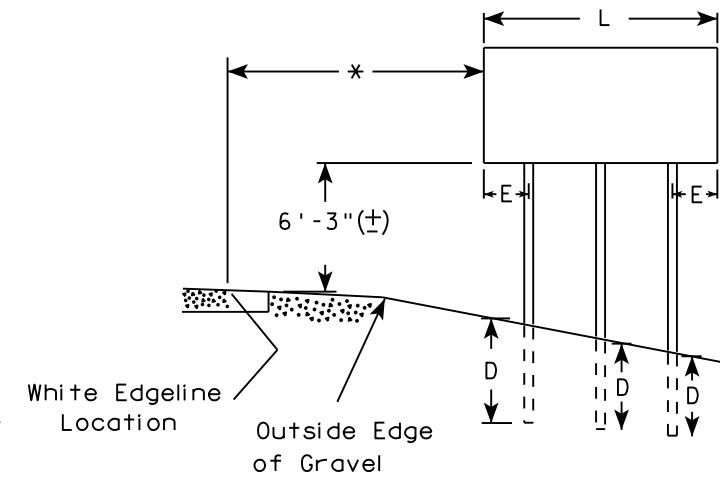
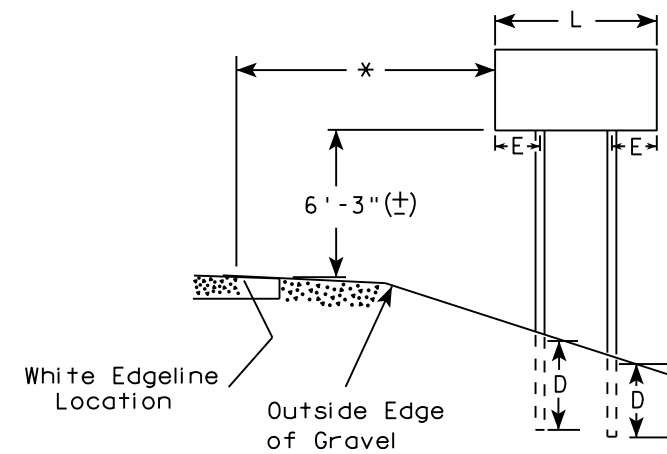
GENERAL NOTES

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

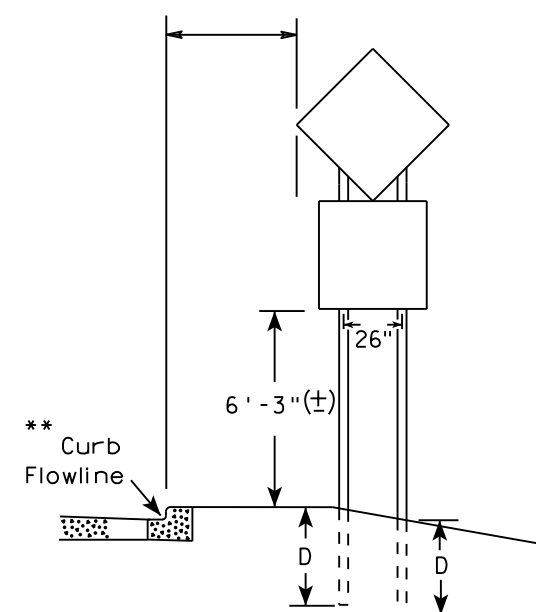
URBAN AREA



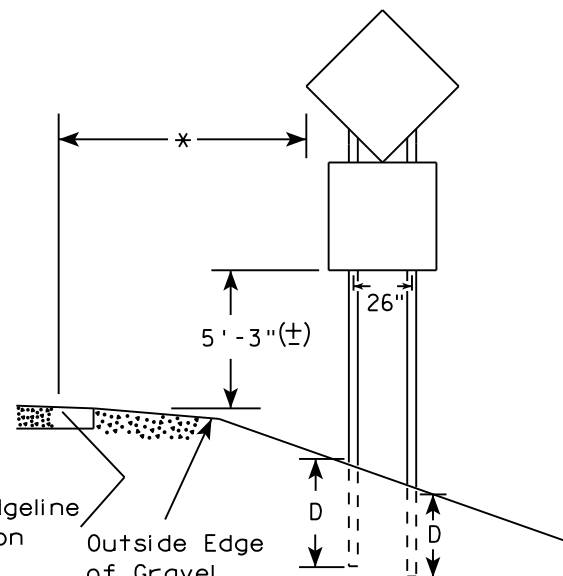
RURAL AREA (See Note 3)



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



48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

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

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

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

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

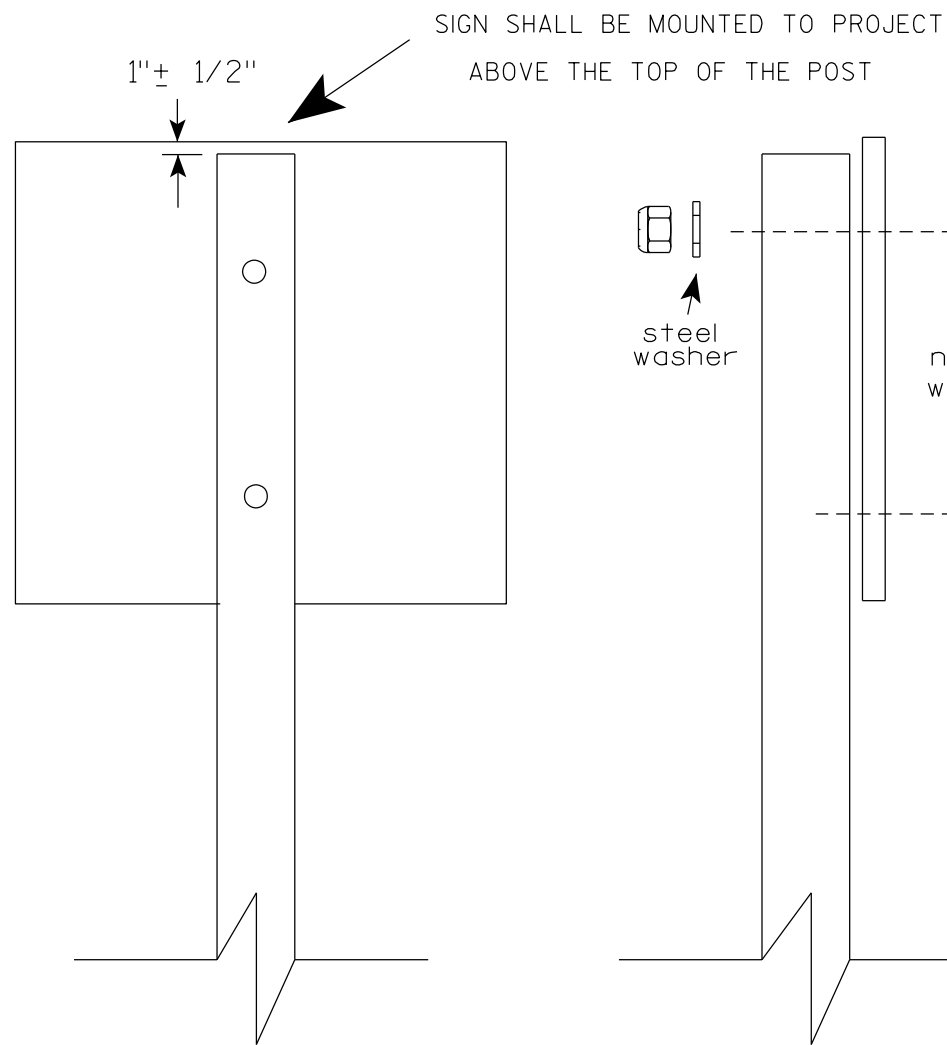
SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED)	
L	E
Greater than 108" to 144"	12"

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION
 APPROVED *Matthew R. Rauch*
 For State Traffic Engineer
 DATE 8/21/17 PLATE NO. A4-4.15



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

- Hot dip galvanized in accordance with ASTM Designation: A 153, Class D, or SC 3
- 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.

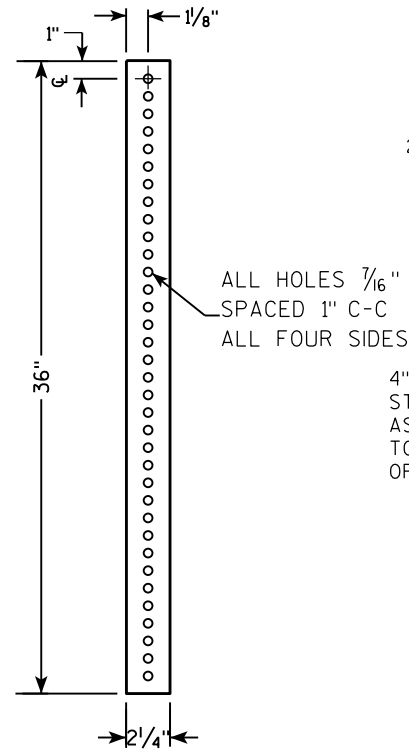
- STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)
- MACHINE BOLTS - $\frac{5}{16}$ " X 1-3/4" Length w/ lock nuts
- WOOD POSTS (4" x 6")
- LAG SCREWS - $\frac{3}{8}$ " X 3" (NO STRINGERS ON BACK OF SIGN)
 $\frac{3}{8}$ " X 4" (STRINGERS ON BACK OF SIGN)
- SQUARE STEEL POSTS (2" x 2")
- MACHINE 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.

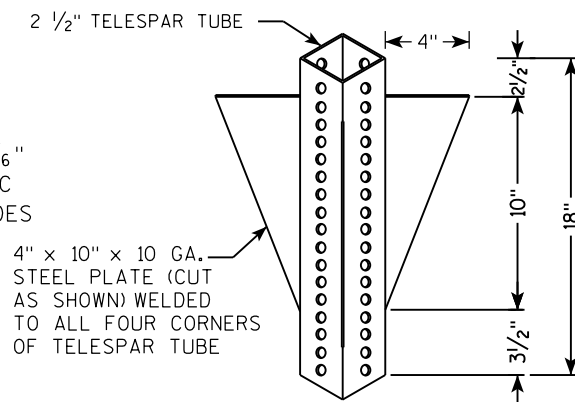
ATTACHMENT OF SIGNS TO POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R Rauch</i> For State Traffic Engineer
DATE 4/1/2020	PLATE NO. A4-8.9

**TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM**

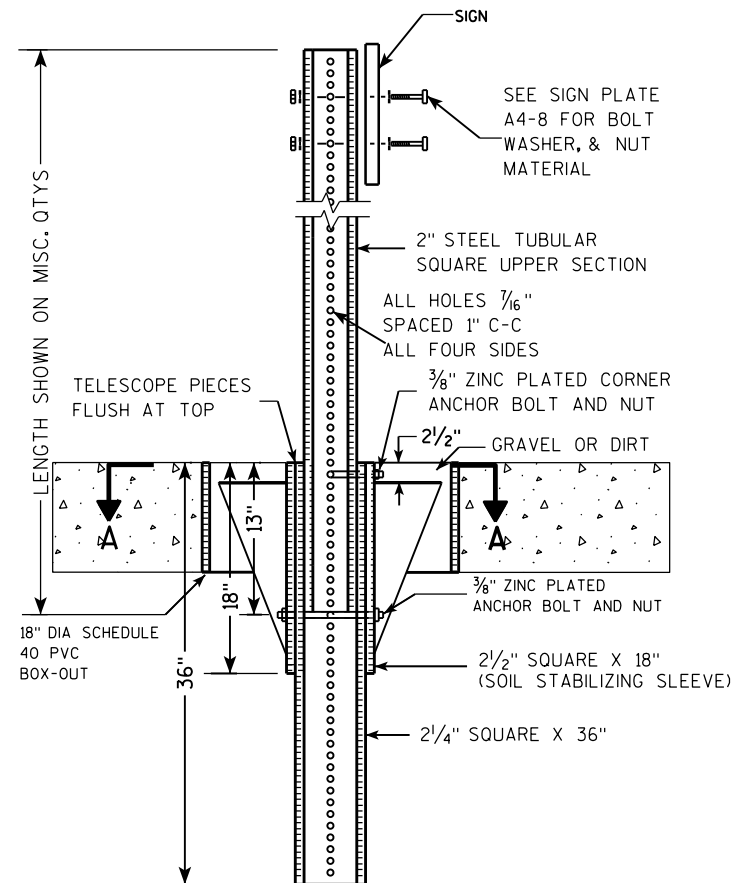
2 1/4" SQUARE
12 GAUGE
PERFORATED
GALVANIZED FINISH



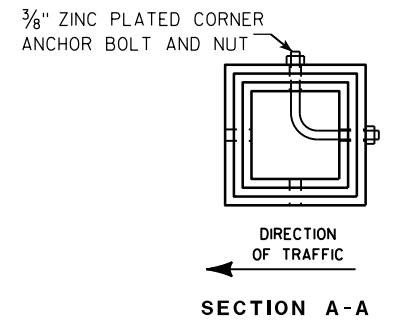
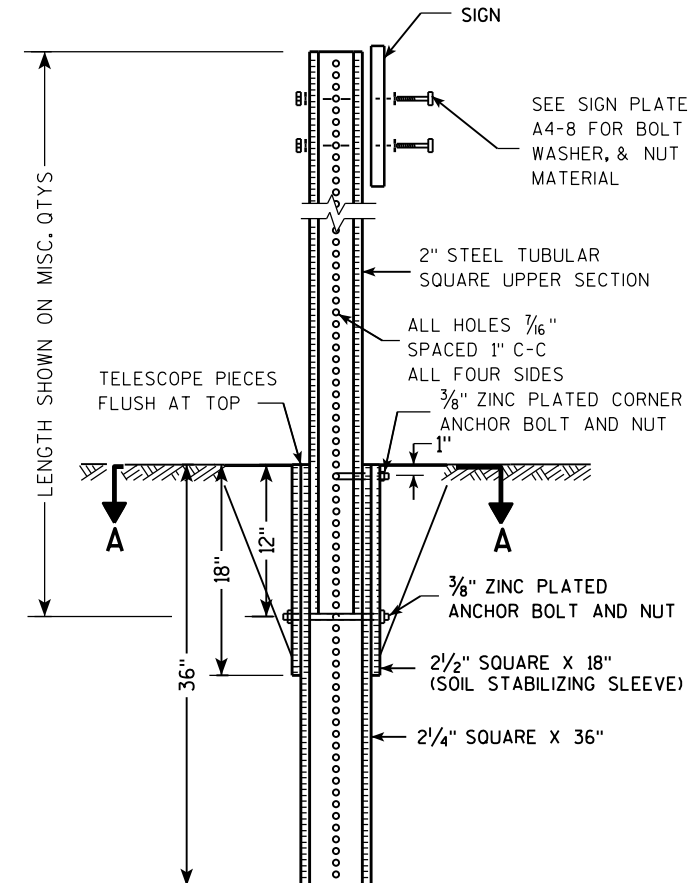
2 1/2" SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH



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



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



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

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

**TUBULAR STEEL
SIGN POST
A4-9**

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

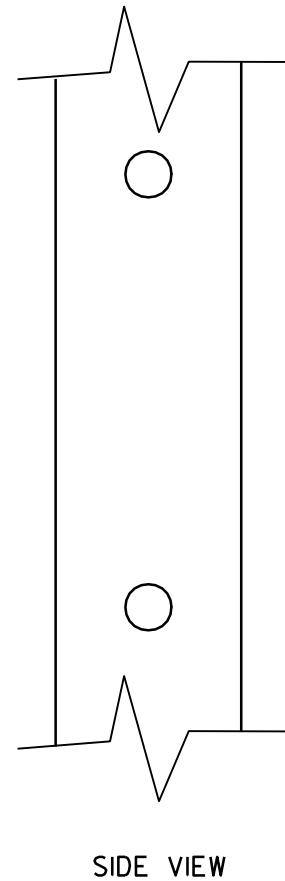
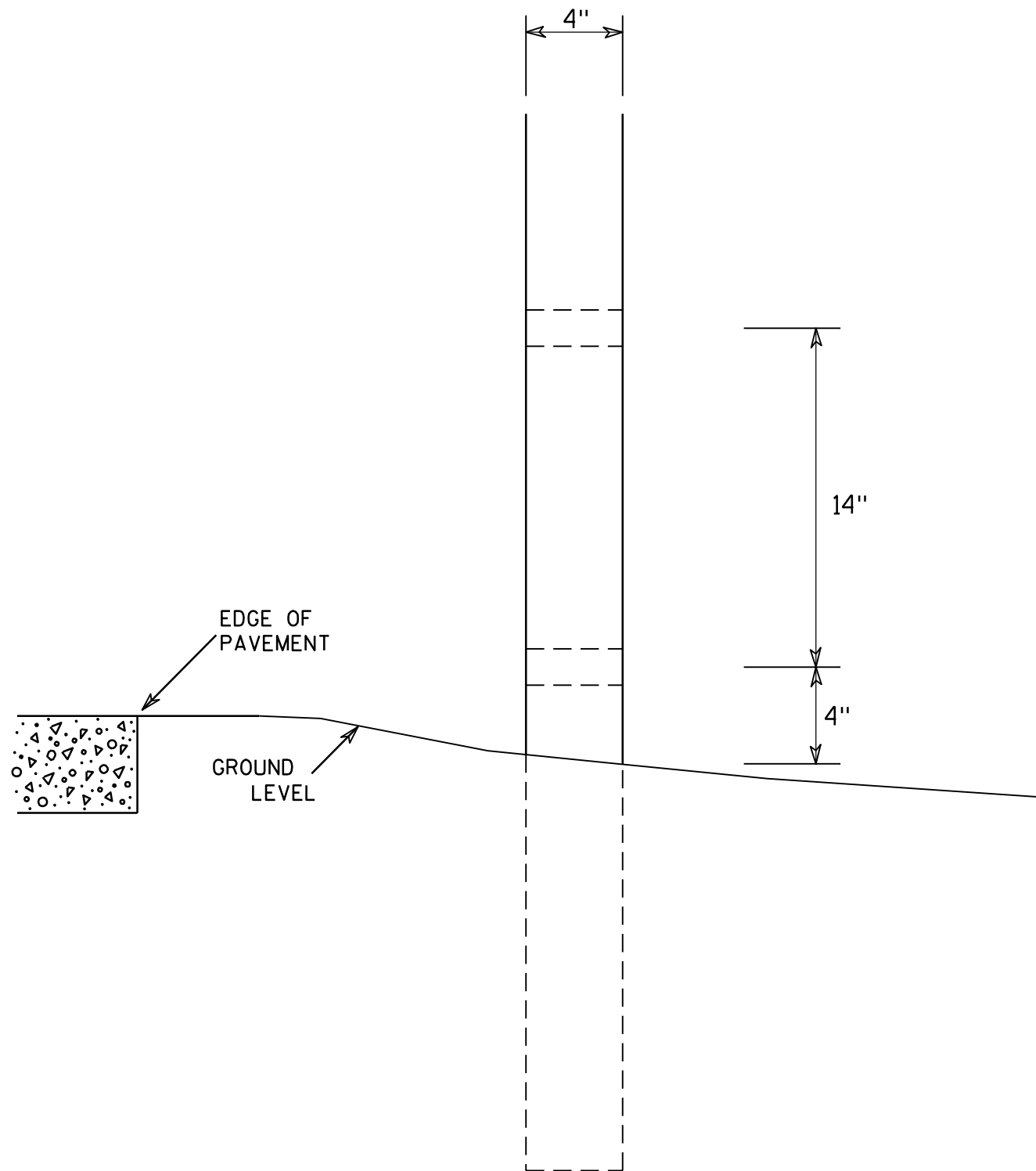
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



GENERAL NOTES

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

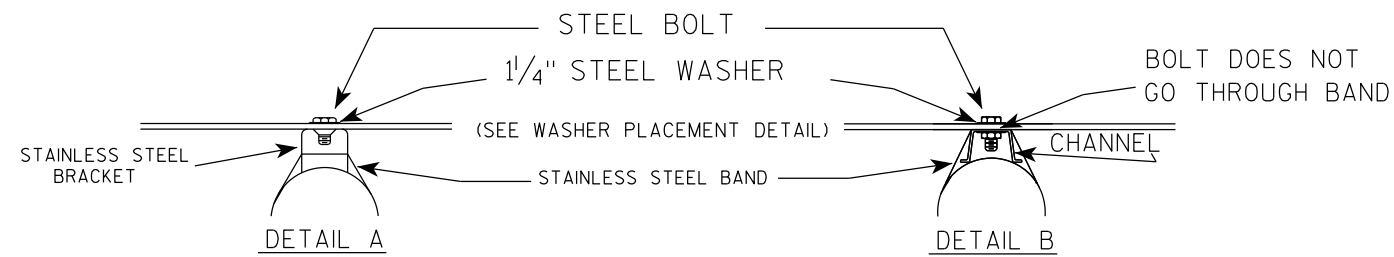
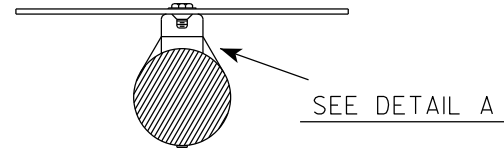
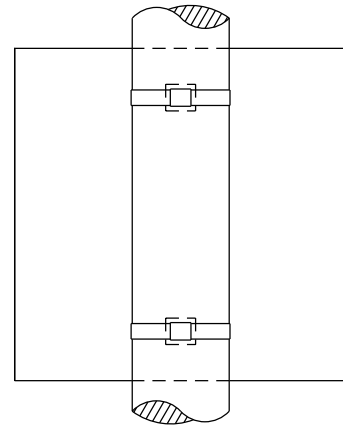
7

7

4 X 6 WOOD POST MODIFICATIONS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Chester J Spang</i> for State Traffic Engineer
DATE 3/27/97	PLATE NO. A4-11.2

BANDING

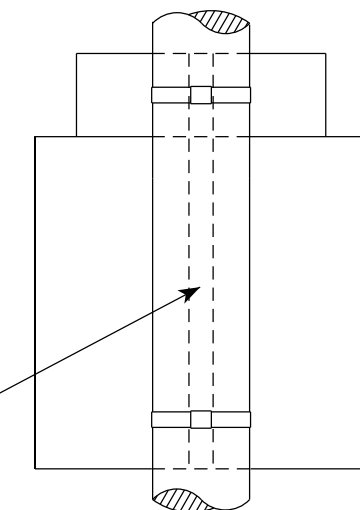
SINGLE SIGN



GENERAL NOTES

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

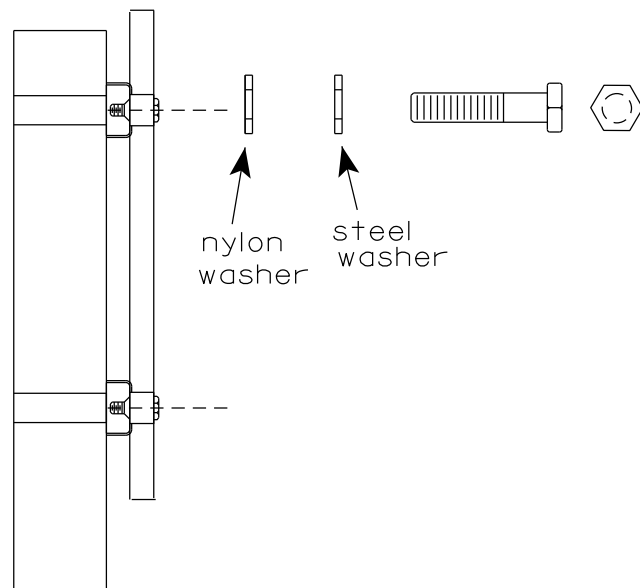
"J" ASSEMBLY



CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET



WASHER PLACEMENT



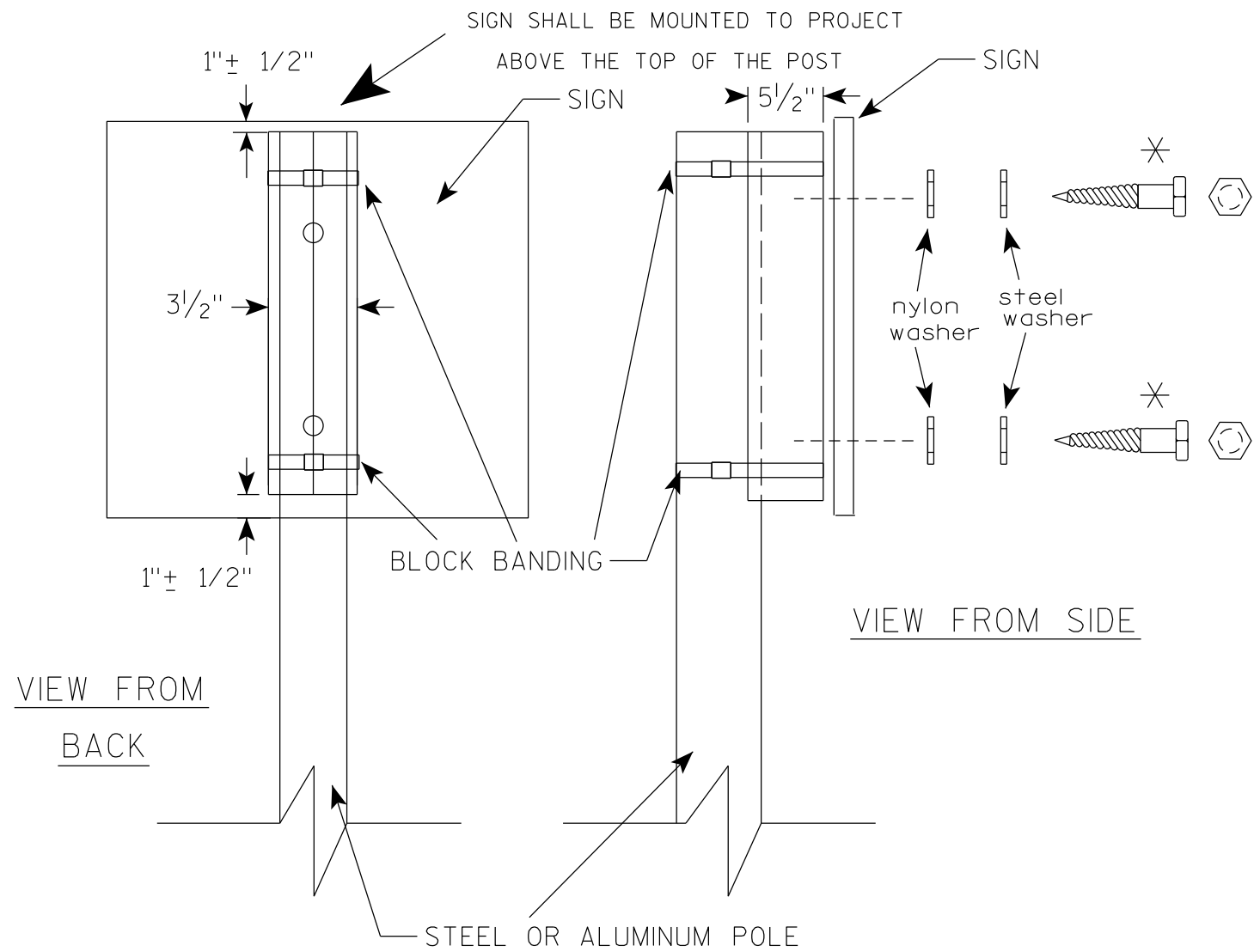
WASHERS (ALL POSTS) -
 1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
 1-1/4" O.D. X 3/8" I.D. X .080 NYLON
 FOR ALL TYPE H SIGNS

STANDARD SIGN
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

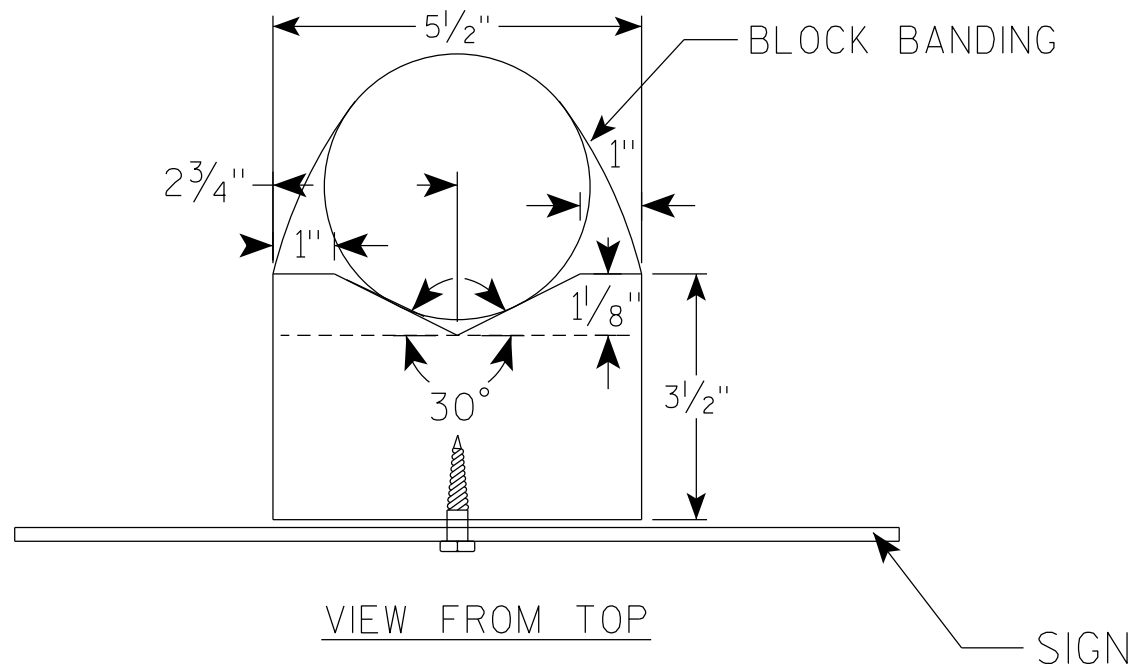
DATE 6/10/19 PLATE NO. A5-9.4



GENERAL NOTES

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

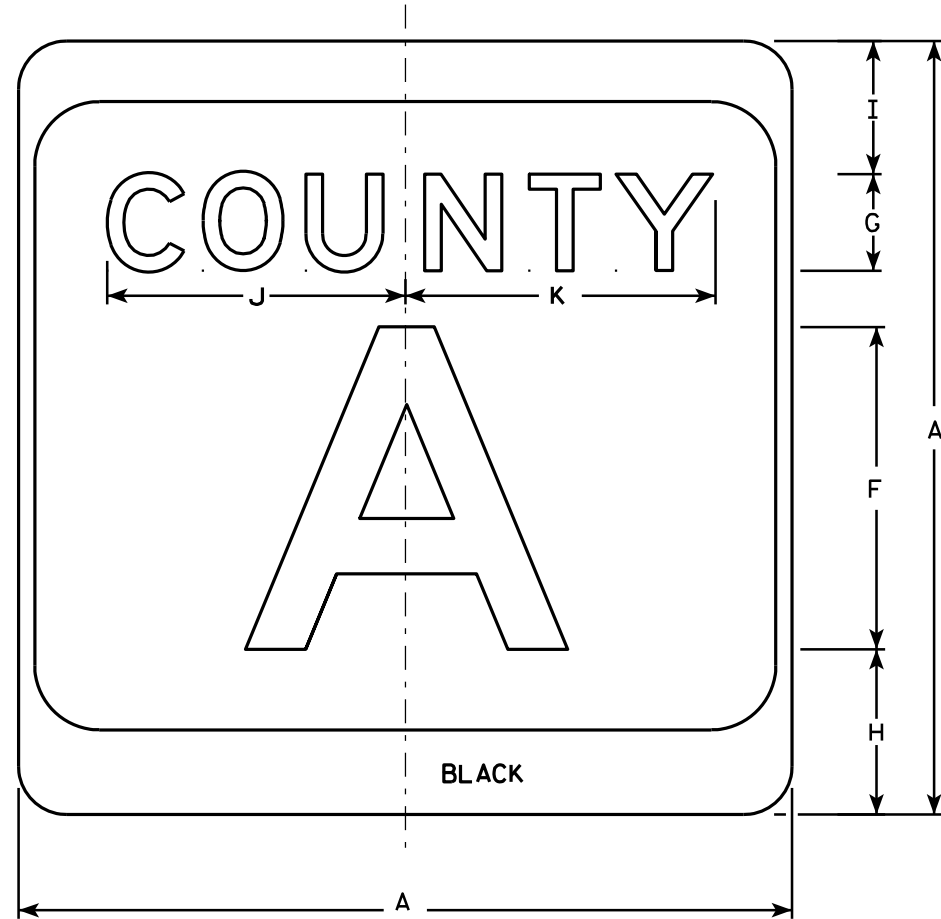
* LAG BOLTS SHALL BE 3/8" X 2 1/2"



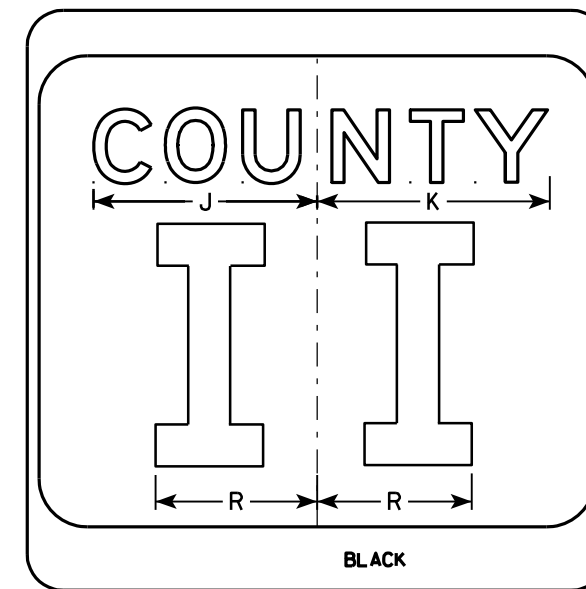
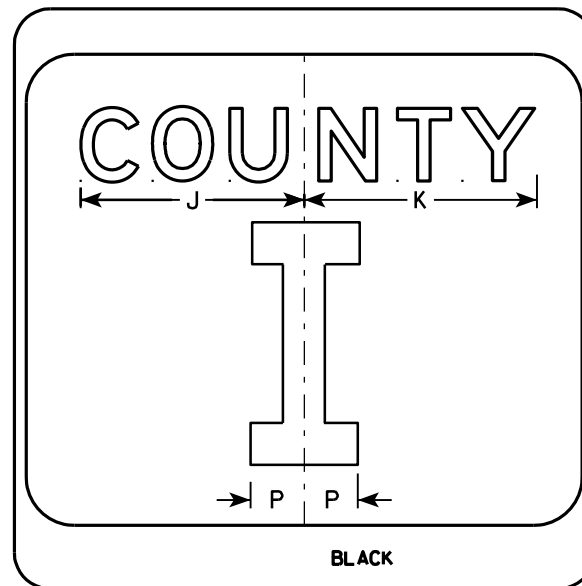
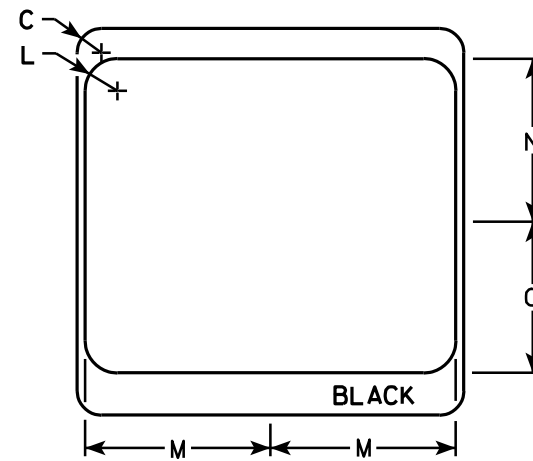
BLOCK BANDING DETAIL (V-BLOCK OPTION)	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R Rauch</i> For State Traffic Engineer
DATE 6/10/19	PLATE NO. A5-10.2

NOTES

1. Sign is Type II - see Note 7 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White & Black - See Note 7
Message - Black
3. Message Series - see Note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Message Series E for 1 letter.
Message Series D for 2 letters unless message is too big then Series C.
Message Series C for 3 letters unless message is too big then Series B.
6. Substitute appropriate letters & optically center to achieve proper balance.
7. Permanent Signs
Background - Type H Reflective
Detour or temporary Signs
Background - Reflective



M1-5A



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																											
2	24		1 1/2			10	3	5 1/8	4 1/8	9 1/4	9 5/8	2	11 1/2	10 1/8	9 3/8	2 1/4		6 5/8									4.0
3	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0
4	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0
5	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0

CTH MARKER
M1-5A FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

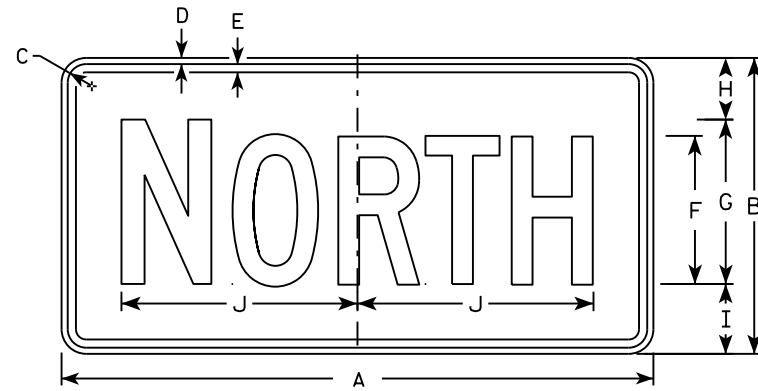
APPROVED *Matthew R. Raub*
For State Traffic Engineer

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

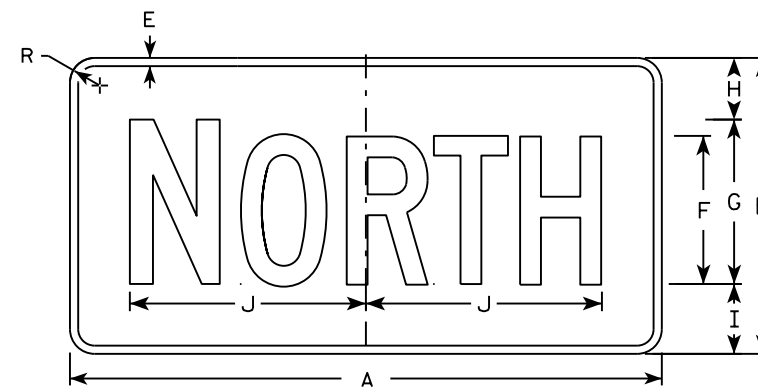
PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: **E**

NOTES

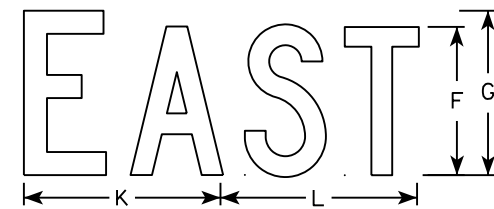
- All Signs Type II - Type H
- Color:
 - Background - See note 5
 - Message - See note 5
- Message Series - C
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- M3-1 thru M3-4 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.



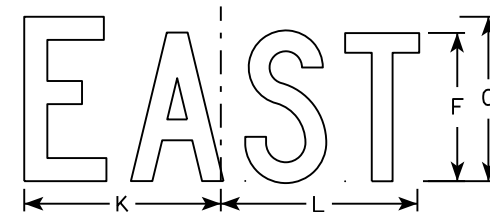
M3-1
MM3-1
MP3-1



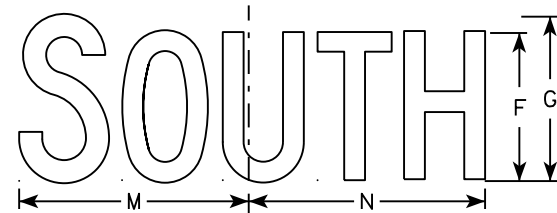
MB3-1
MK3-1
MN3-1



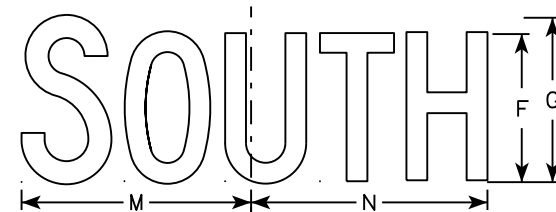
M3-2
MM3-2
MP3-2



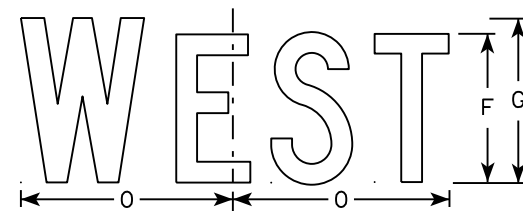
MB3-2
MK3-2
MN3-2



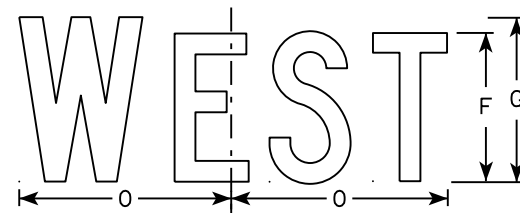
M3-3
MM3-3
MP3-3



MB3-3
MK3-3
MN3-3



M3-4
MM3-4
MP3-4



MB3-4
MK3-4
MN3-4

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	12	1 1/8	3/8	3/8	6	7	2 1/4	2 3/4	10 1/4	7 7/8	8 3/8	10 1/4	9 3/4	8 3/4			1 1/2									2.00
3	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
4	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
5	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5

STANDARD SIGNS
M3-1 thru M3-4
SERIES

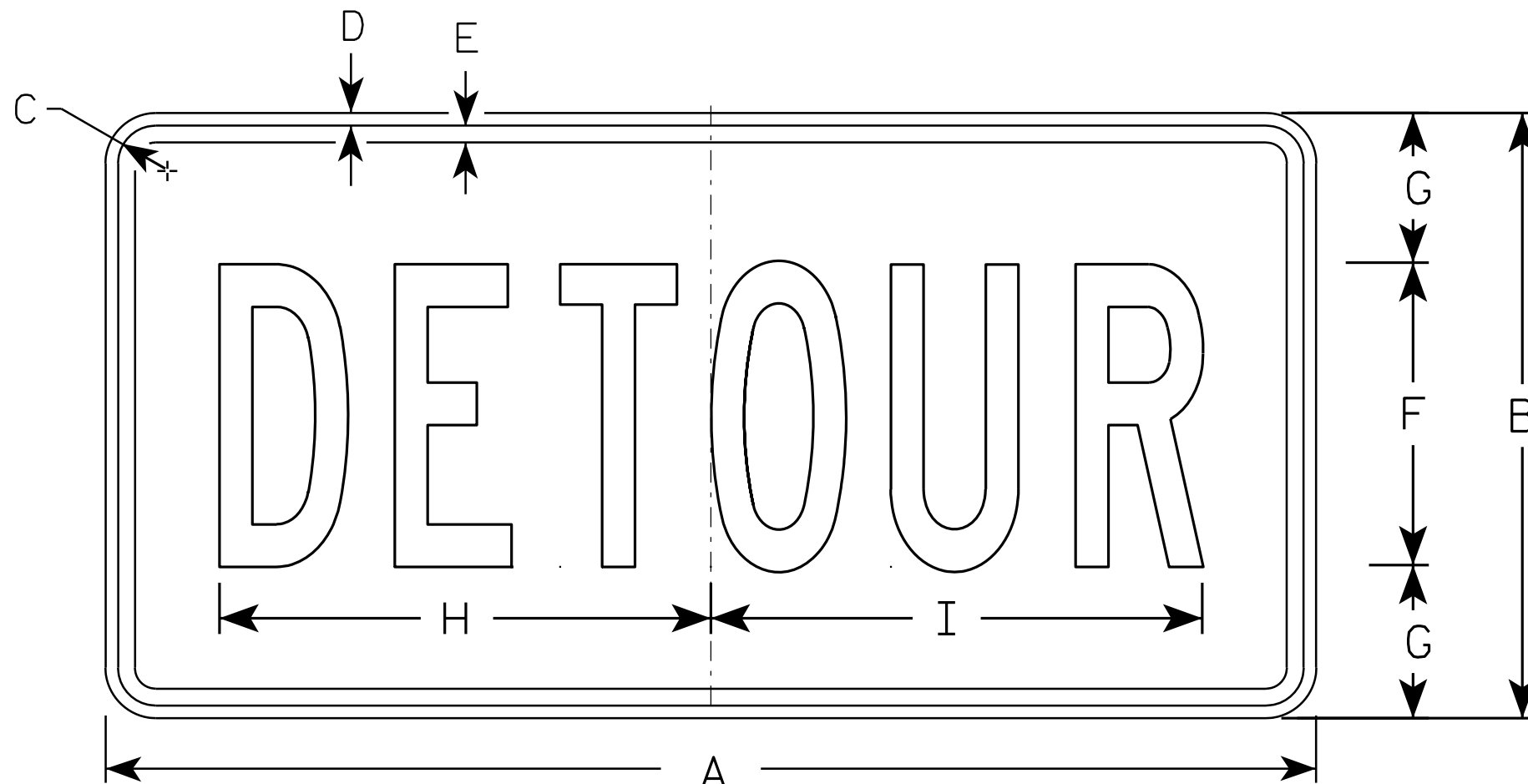
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

NOTES

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



M4-8

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

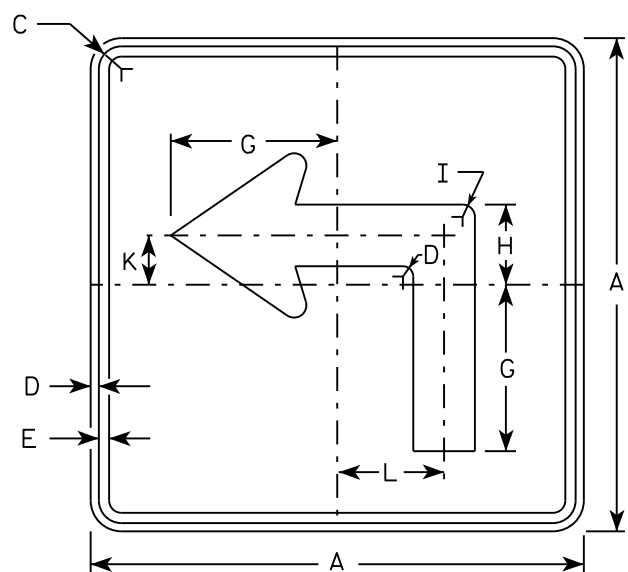
STANDARD SIGN
M4-8

WISCONSIN DEPT OF TRANSPORTATION

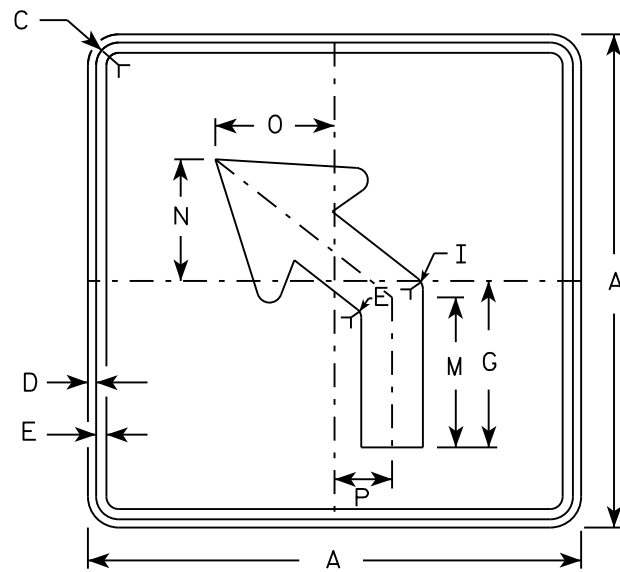
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

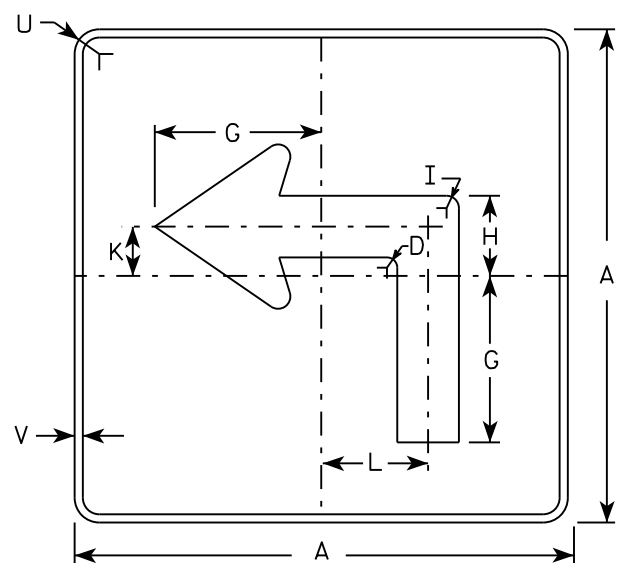
PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: **E**



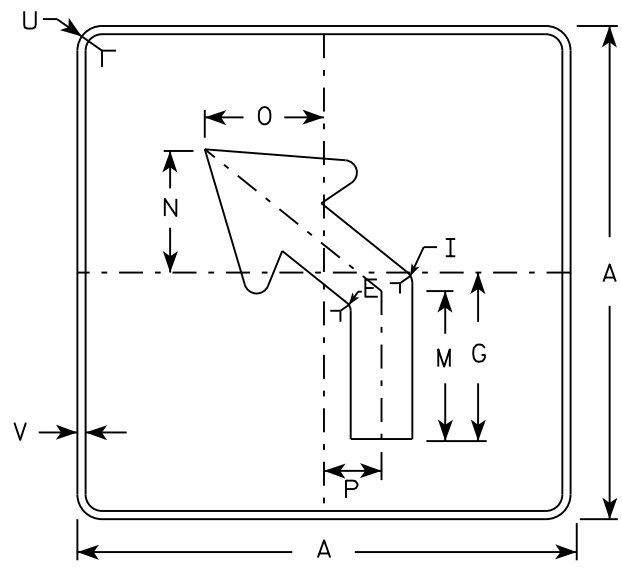
M5-1L
MM5-1L
M05-1L
MP5-1L



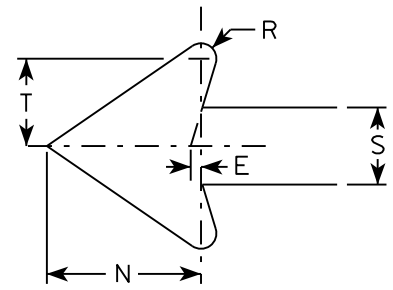
M5-2L
MM5-2L
M05-2L
MP5-2L



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



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



NOTES

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

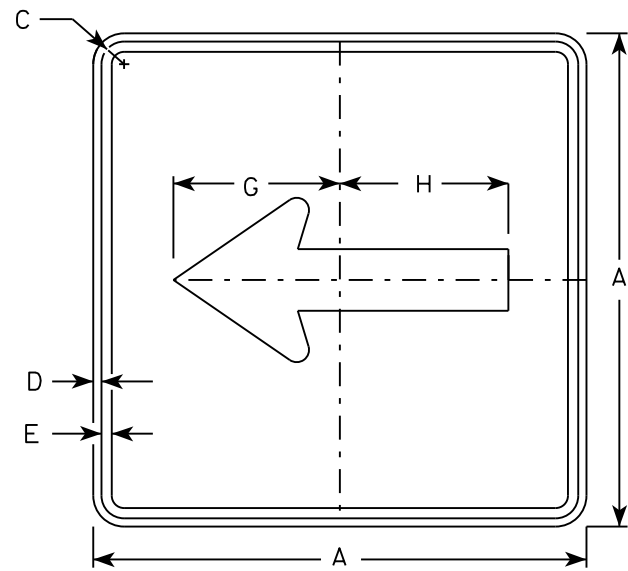
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	21		1 1/8	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3	1 1/2	1/2					3.06
3	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25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

STANDARD SIGN
M5-1 & M5-2

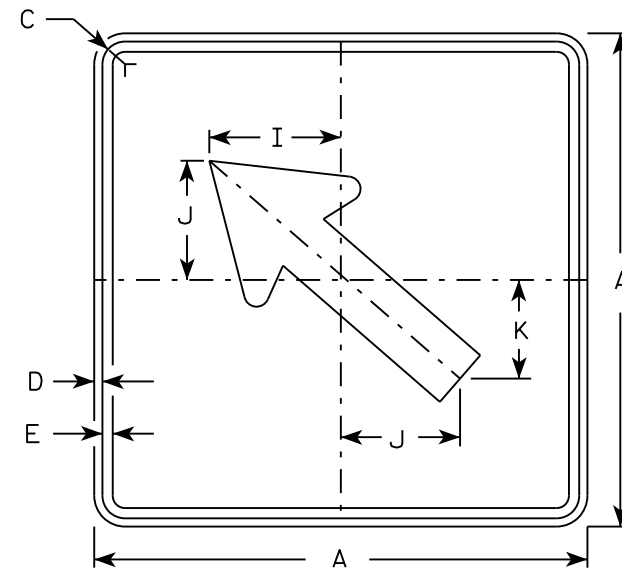
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

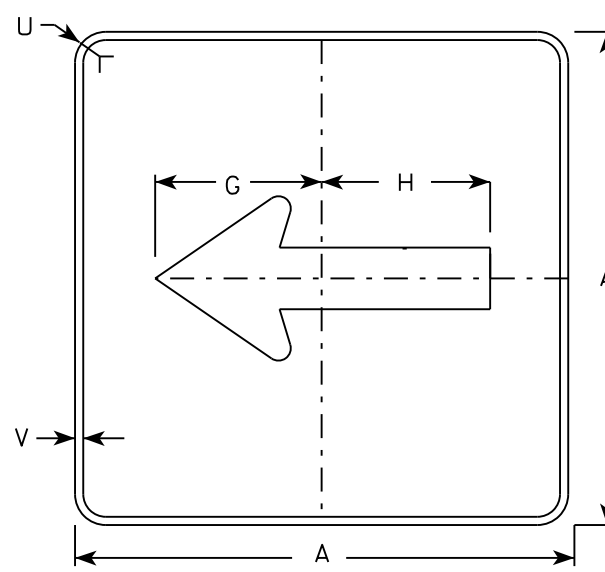
DATE 10/15/15 PLATE NO. M5-1.13



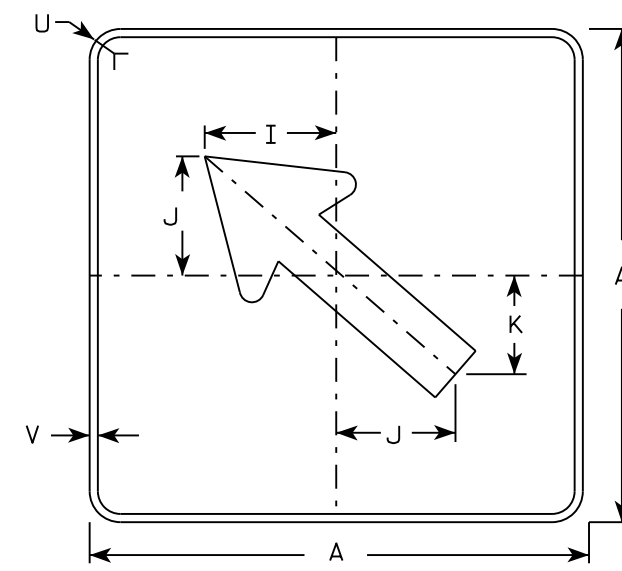
M6-1
MM6-1
M06-1
MP6-1



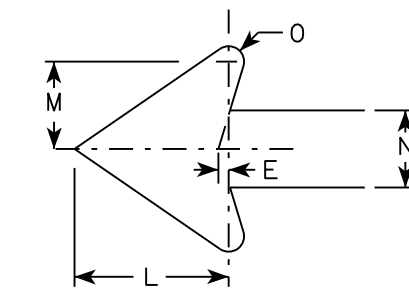
M6-2
MM6-2
M06-2
MP6-2



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



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



NOTES

- Signs are Type II - Type H except as Shown
- Color:
Background - See note 4
Message - See note 4
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- M6-1 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

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

STANDARD SIGN
M6-1 & M6-2
SERIES

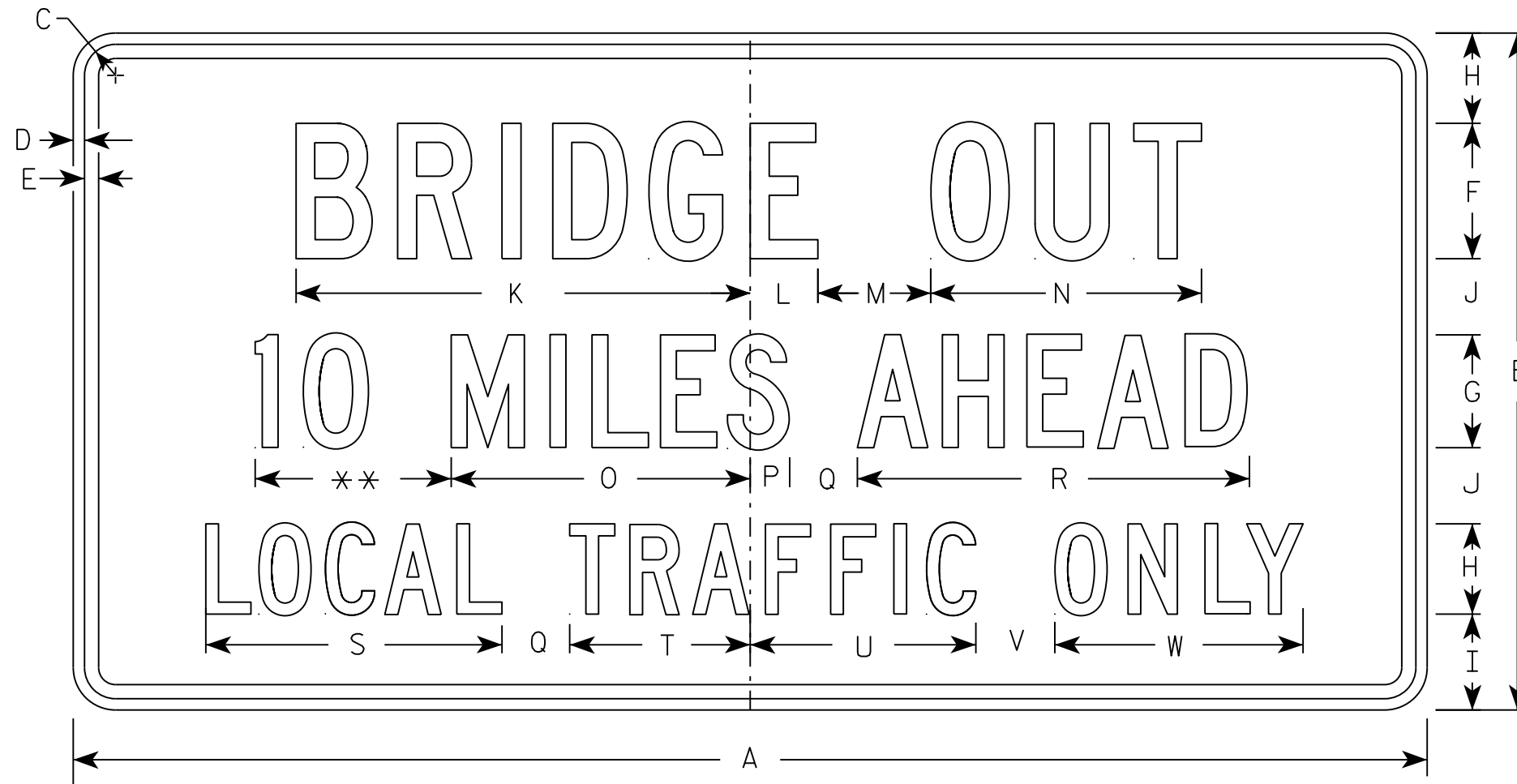
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

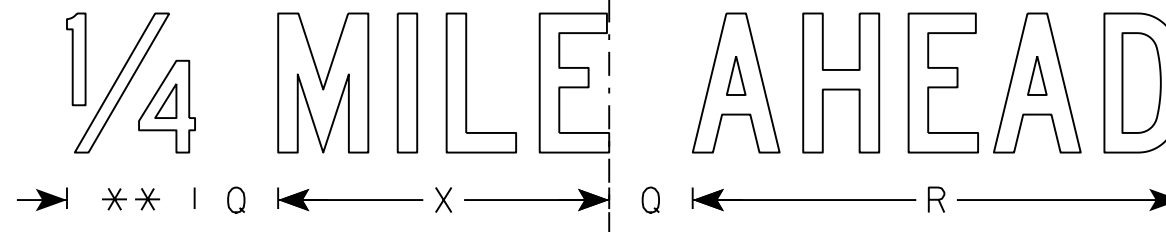
NOTES

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



** See Note 5

R11-3B



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	18	1 3/8	1/2	5/8	4	3	2 1/2	2	2	13 1/4	2 1/4	3	8	8	1 1/2	2	10 3/4	8 3/8	4 3/4	6 1/2	2	6 3/4	7 1/8		4.5	
2S	60	30	1 3/8	1/2	5/8	6	5	4	4 1/4	3 3/8	20 1/8	3	5	12	13 1/4	1 3/4	3	17 3/8	13 1/8	8	10	3 1/2	11	11 7/8		12.5	
2M	60	30	1 3/8	1/2	5/8	6	5	4	4 1/4	3 3/8	20 1/8	3	5	12	13 1/4	1 3/4	3	17 3/8	13 1/8	8	10	3 1/2	11	11 7/8		12.5	
3																											
4																											
5																											

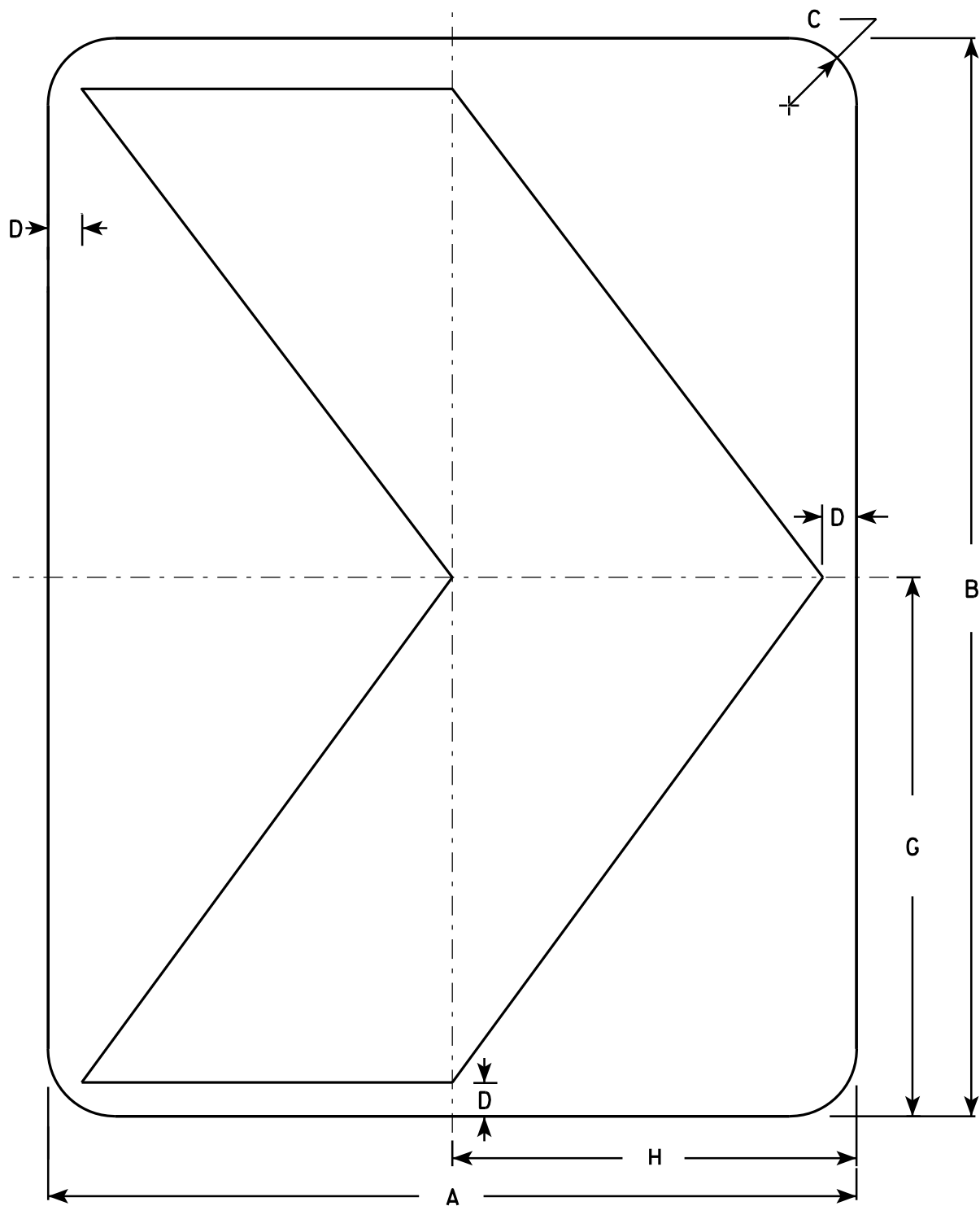
STANDARD SIGN
R11-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: **E**



NOTES

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

7

7

W1-8

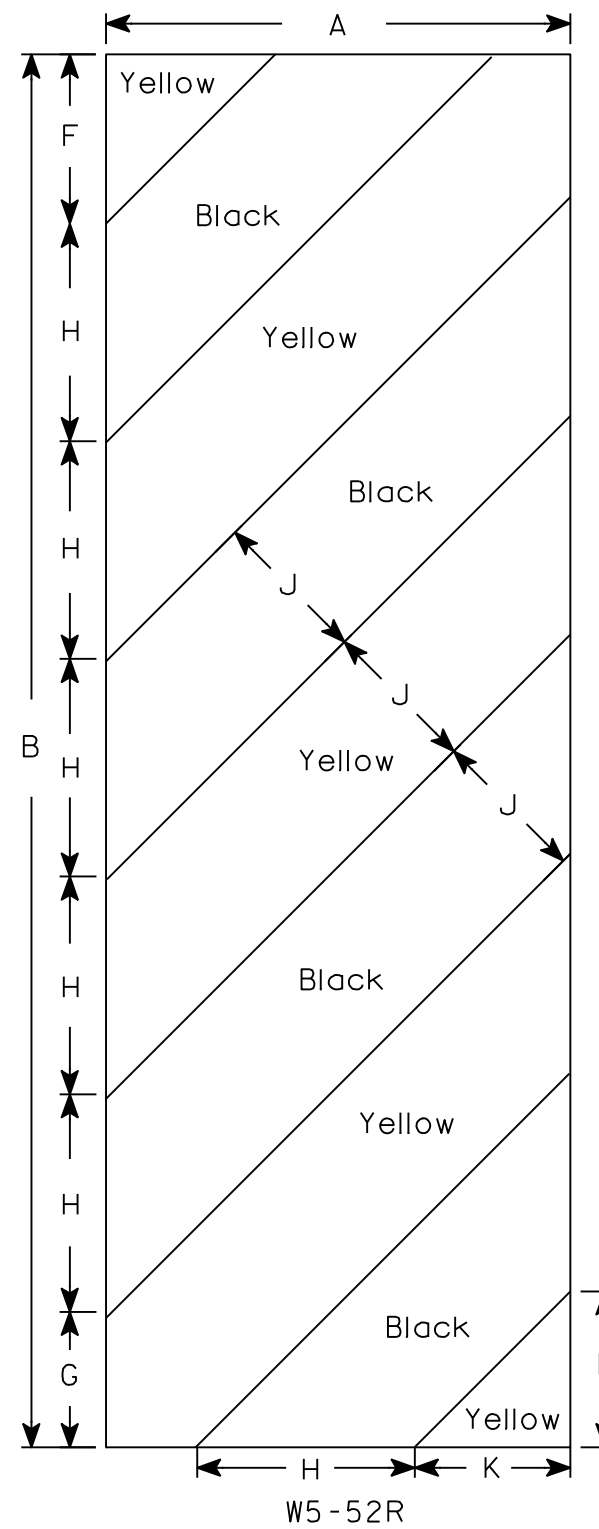
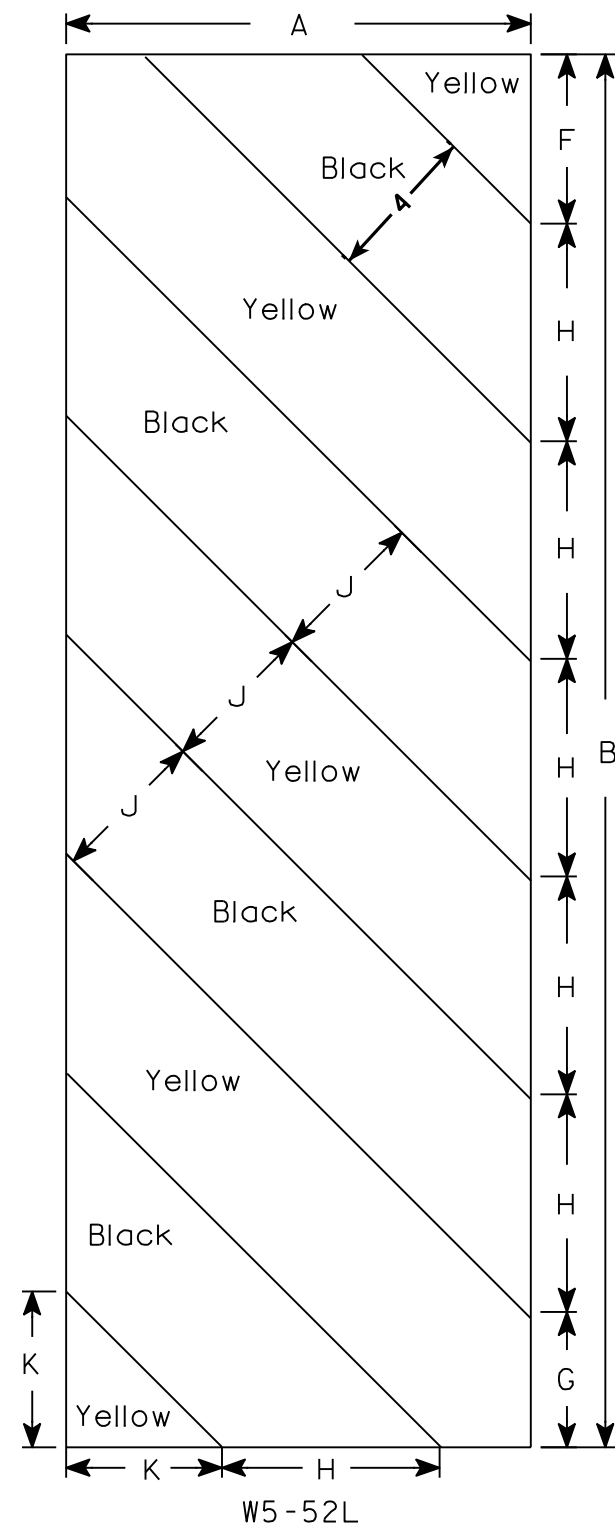
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	12	18	1 1/2	1/2			9	6																			1.5
2S	18	24	1 1/2	3/4			12	9																			3.0
2M	18	24	1 1/2	3/4			12	9																			3.0
3	24	30	1 1/2	1			15	12																			5.0
4	30	36	1 7/8	1 1/4			18	15																			7.5
5	36	48	2 1/4	1 1/2			24	18																			12.0

STANDARD SIGN
W1-8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 6/7/10 PLATE NO. W1-8.6



NOTES

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

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	12	36				4 3/8	3 1/2	5 5/8	45°	4	4																3.0
2M	12	36				4 3/8	3 1/2	5 5/8	45°	4	4																3.0
3	18	54				6	5 1/2	8 1/2	45°	6	6 9/16																6.75
4																											
5																											

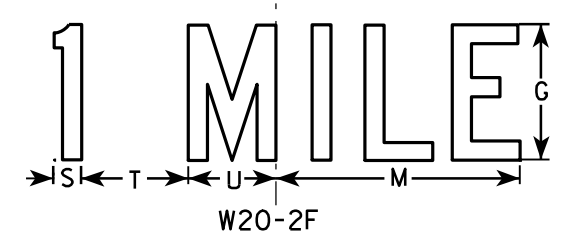
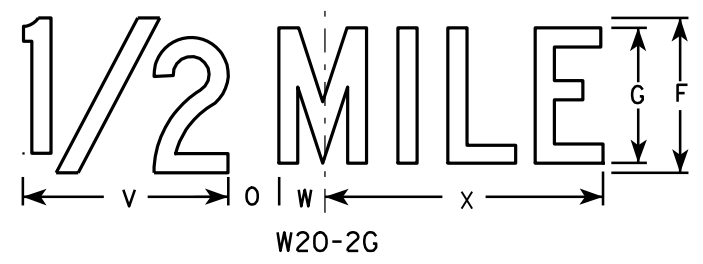
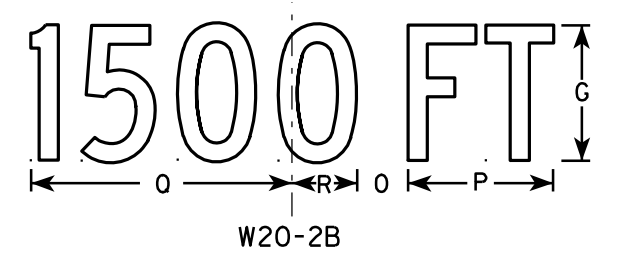
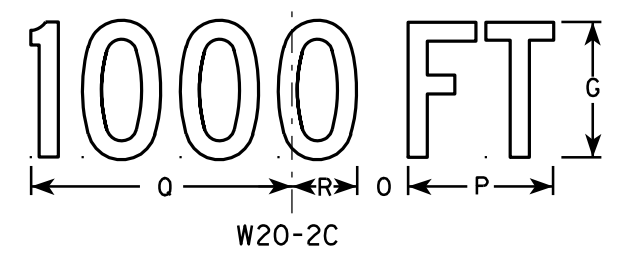
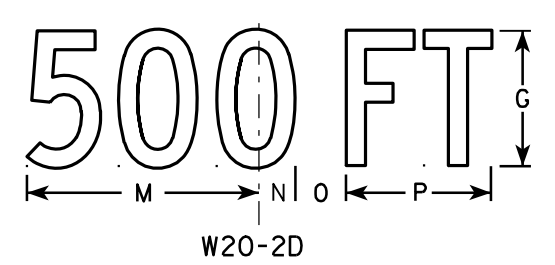
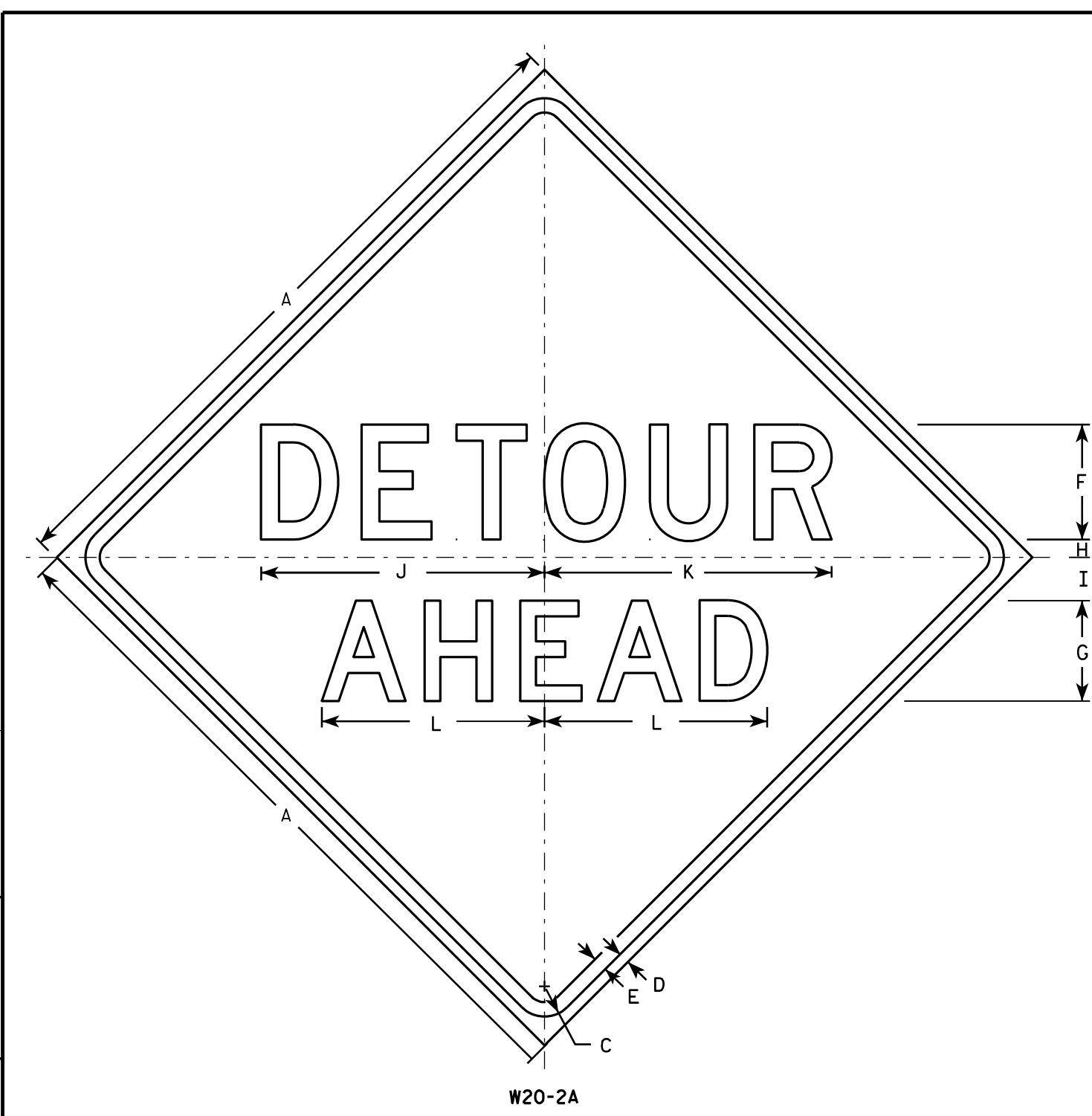
STANDARD SIGN
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: _____ E



NOTES

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

7

7

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

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

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Raub*
for State Traffic Engineer

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

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: _____ E

DESIGN DATA

STRUCTURE IS DESIGNED FOR FUTURE WEARING SURFACE OF 20 POUNDS PER SQUARE FOOT.

LIVE LOAD:

DESIGN LOADING _____ HL - 93
 INVENTORY RATING FACTOR _____ RF = 1.16
 OPERATING RATING FACTOR _____ RF = 1.51
 WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) _____ 250 KIPS

MATERIAL PROPERTIES:

CONCRETE MASONRY _____
 SLAB _____ Fc = 4,000 PSI
 ALL OTHER _____ Fc = 3,500 PSI
 BAR STEEL REINFORCEMENT, GRADE 60 _____ fy = 60,000 PSI
 (INCLUDES STAINLESS STEEL REINFORCEMENT)

HYDRAULIC DATA

100 YEAR FREQUENCY

Q₁₀₀ _____ 275 C.F.S.
 Q_{BRIDGE} _____ 275 C.F.S.
 VEL. _____ 3.36 F.P.S.
 HW₁₀₀ _____ EL. 1634.56
 WATERWAY AREA _____ 82 SQ. FT.
 DRAINAGE AREA _____ 27.9 SQ. MI.
 SCOUR CRITICAL CODE _____ 8

2 YEAR FREQUENCY

Q₂ TOTAL _____ 129 C.F.S.
 VEL. _____ 2.57 F.P.S.
 HW₂ _____ EL. 1633.31

TRAFFIC DATA

AADT (2022) _____ 1624
 AADT (2042) _____ 1794
 DESIGN SPEED _____ 50 MPH

FOUNDATION DATA

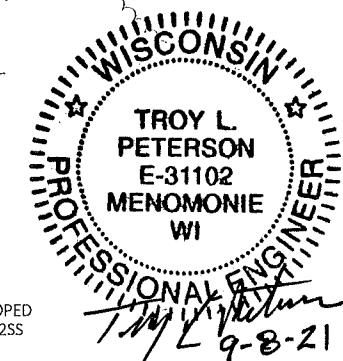
ABUTMENTS TO BE SUPPORTED ON PILING CIP CONCRETE 10 3/4 x 0.219-INCH DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 110 TONS* PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA.

ESTIMATED LENGTH 75'-0" WEST ABUTMENT
 ESTIMATED LENGTH 90'-0" EAST ABUTMENT

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

HORIZONTAL CURVE DATA

PI = 7+51.21
 Y = 132799.402
 X = 424214.842
 Δ = 42°13'14"
 D = 5°30'49"
 T = 401.21'
 L = 765.77'
 R = 1039.19'
 PC = 3+50.00
 Y = 132776.427
 X = 423814.294
 PT = 11+15.77
 Y = 133085.579
 X = 424496.033
 BK = N86°43'01.8"E
 AH = N44°29'47.8"E



BENCHMARKS			
NO	STA	DESCRIPTION	ELEV
1	9+77±	DISK IN SW WING WALL, 15.4' LT. OF C/L	1638.67'
2	10+24±	CHISELED 'X' IN NE WING WALL, 16.1' RT. OF C/L	1638.67'
3	8+61±	3/4-INCH REBAR SET IN GROUND, 35' LT. OF C/L	1637.32'
4	11+83±	COTTON SPINDLE IN POWER POLE, 51' RT. OF C/L	1637.98'

LIST OF DRAWINGS

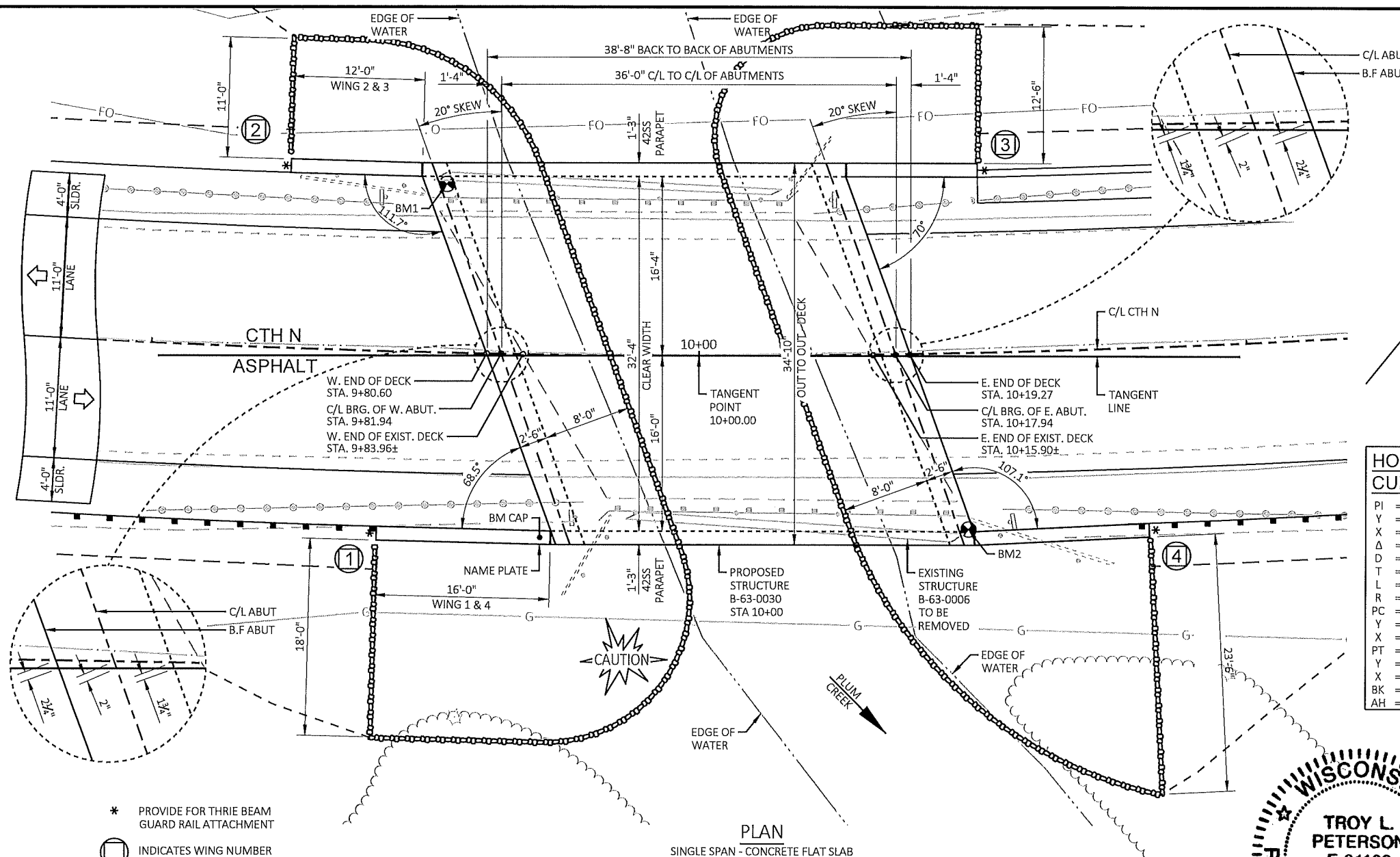
1. GENERAL PLAN
2. CROSS SECTION, QUANTITIES, & NOTES
3. SUBSURFACE EXPLORATION
4. WEST ABUTMENT
5. EAST ABUTMENT
6. ABUTMENT DETAILS
7. SUPERSTRUCTURE
8. SUPERSTRUCTURE DETAILS
9. SINGLE SLOPED PARAPET 42SS

BRIDGE OFFICE CONTACT

AARON M. BONK
 (608) 261-0261

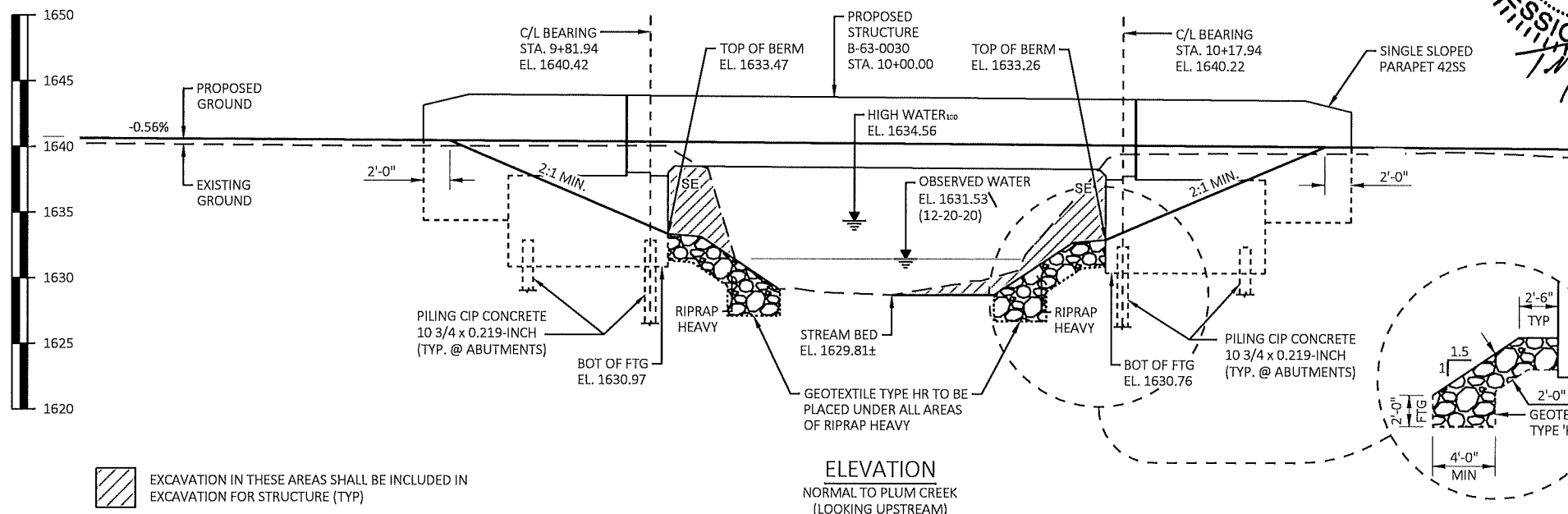
CONSULTANT CONTACT

TROY L. PETERSON
 (715) 235-9081



PLAN
 SINGLE SPAN - CONCRETE FLAT SLAB

- * PROVIDE FOR THREE BEAM GUARD RAIL ATTACHMENT
- INDICATES WING NUMBER



ELEVATION
 NORMAL TO PLUM CREEK
 (LOOKING UPSTREAM)

EXCAVATION IN THESE AREAS SHALL BE INCLUDED IN EXCAVATION FOR STRUCTURE (TYP)

NO.	DATE	REVISION	BY

ORIGINAL PLANS PREPARED BY
Cedar corporation
 www.cedarcorp.com 800-472-7372

ACCEPTED *[Signature]* SDR **09/08/21**
 CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE B-63-0030

CTH N BRIDGE OVER PLUM CREEK

COUNTY VILAS TOWN/CITY/VILLAGE PLUM LAKE

DESIGN SPEC: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY TLP	DESIGN CK'D. DWM	DRAWN BY NJT	PLANS CK'D. TLP
-----------------	------------------	--------------	-----------------

GENERAL PLAN SHEET 1 OF 9

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.
 ALL STATIONS AND ALL ELEVATIONS ARE IN FEET.
 BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS SHOWN OR NOTED OTHERWISE.
 ALL REINFORCING BARS ARE ENGLISH. THE FIRST DIGIT OF A THREE-DIGIT BAR MARK OR THE FIRST TWO DIGITS OF A FOUR-DIGIT BAR MARK SIGNIFIES THE BAR SIZE.
 JOINT FILLER SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION M 153, TYPE I, II OR III OR A.A.S.H.T.O. DESIGNATION M 213.
 THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY AND GEOTEXTILE TYPE 'HR' TO THE EXTENT SHOWN ON SHEETS 1 AND 2 AND IN THE ABUTMENT DETAILS.

THE EXISTING STRUCTURE (B-63-0006) IS A 31.2' LONG BY 28.5' WIDTH SINGLE SPAN STEEL DECK GIRDER BRIDGE.

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-63-030" SHALL BE THE EXISTING GRADE LINE.

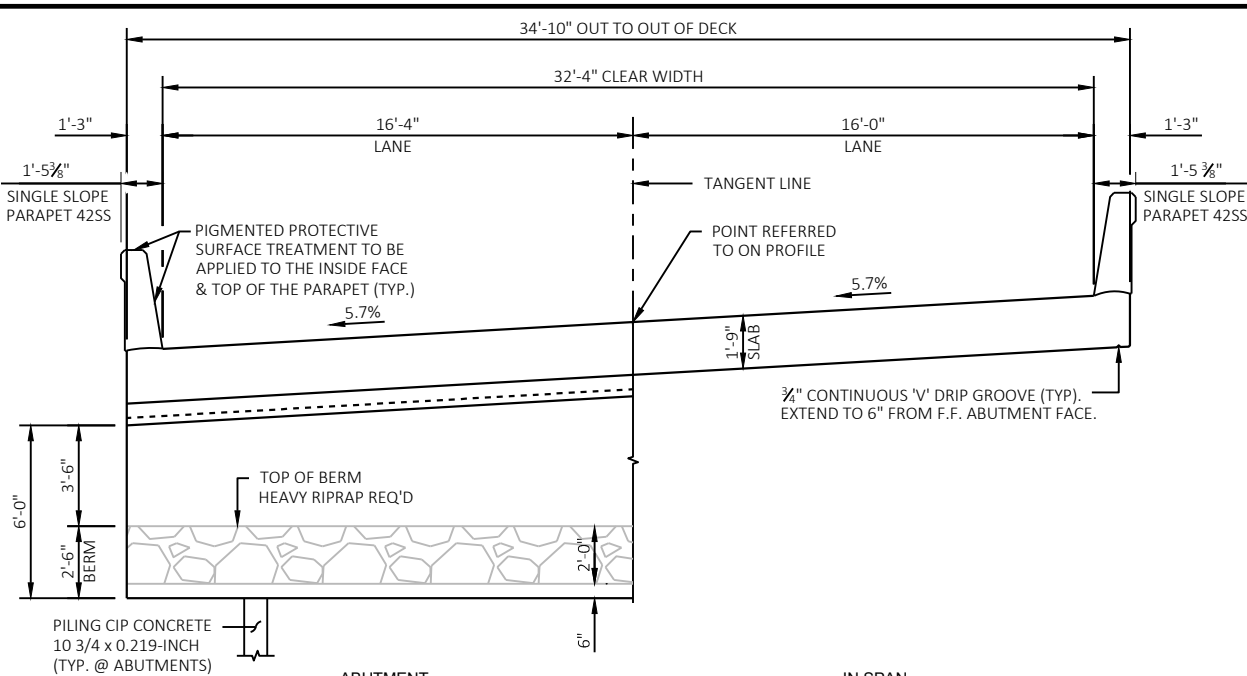
AT THE BACK FACE OF ABUTMENT ALL VOLUME WHICH CANNOT BE IN PLACE BEFORE ABUTMENT CONSTRUCTION AND NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH BACKFILL STRUCTURE.

AT ABUTMENTS, CONCRETE POURED UNDERWATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH SECTION 502.3.5.3 OF THE STANDARD SPECIFICATIONS.

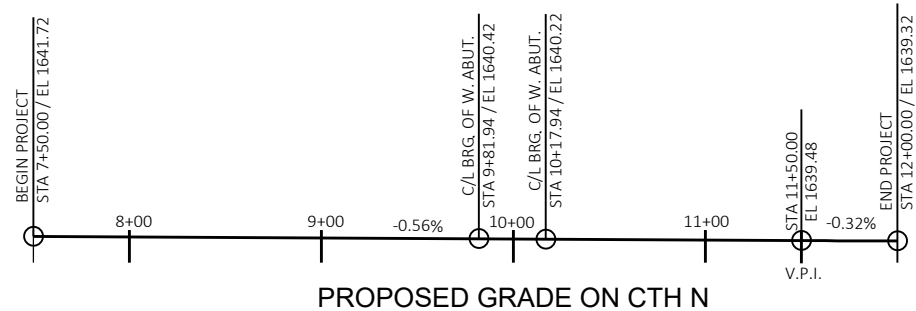
SLAB FALSE WORK SHALL BE SUPPORTED ON PILES OR THE SUBSTRUCTURE UNLESS AN ALTERNATE METHOD IS APPROVED BY THE ENGINEER.

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

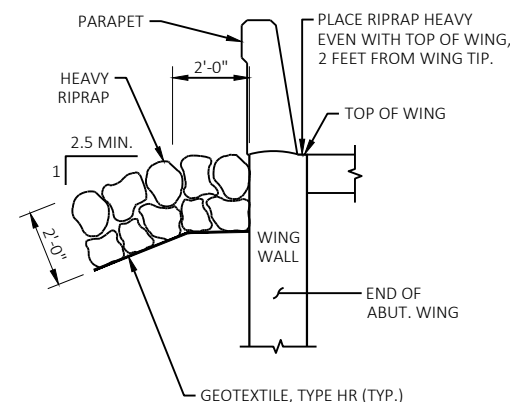
■ PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.



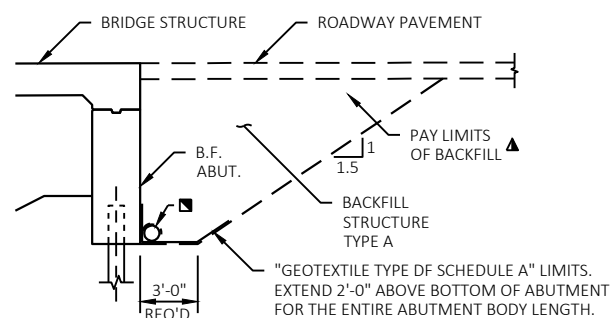
CROSS SECTION THRU STRUCTURE
(LOOKING EAST)



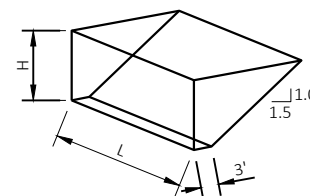
PROPOSED GRADE ON CTH N



TYPICAL FILL SECTION AT WING TIPS

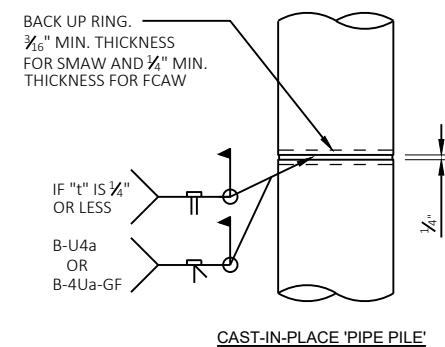


STRUCTURE BACKFILL & LIMITS

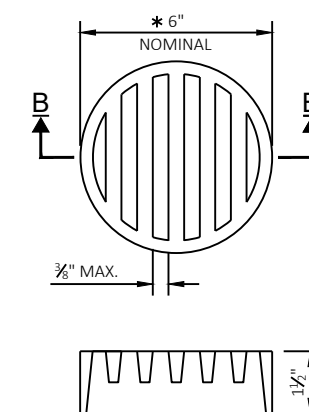


ABUTMENT BACKFILL DIAGRAM FOR WINGS PARALLEL TO ROADWAY

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

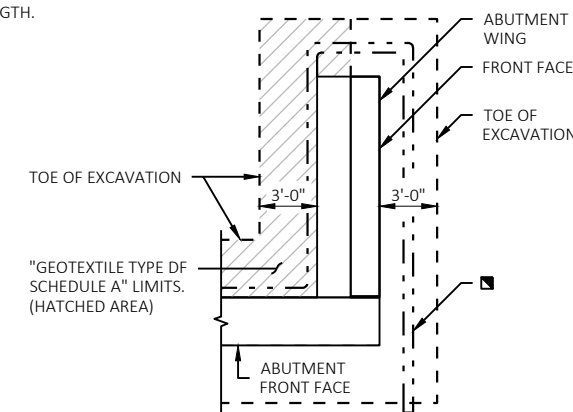


CAST-IN-PLACE 'PIPE PILE'

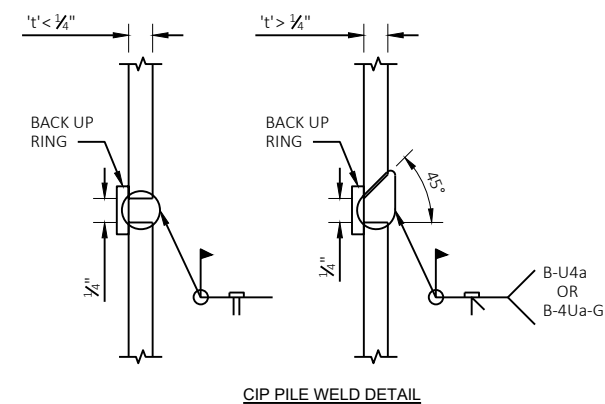


RODENT SHIELD DETAIL

* DIMENSION IS APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.
 THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".
 THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.



ABUTMENT PLAN WITH WING

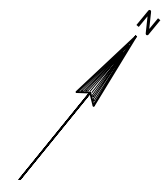
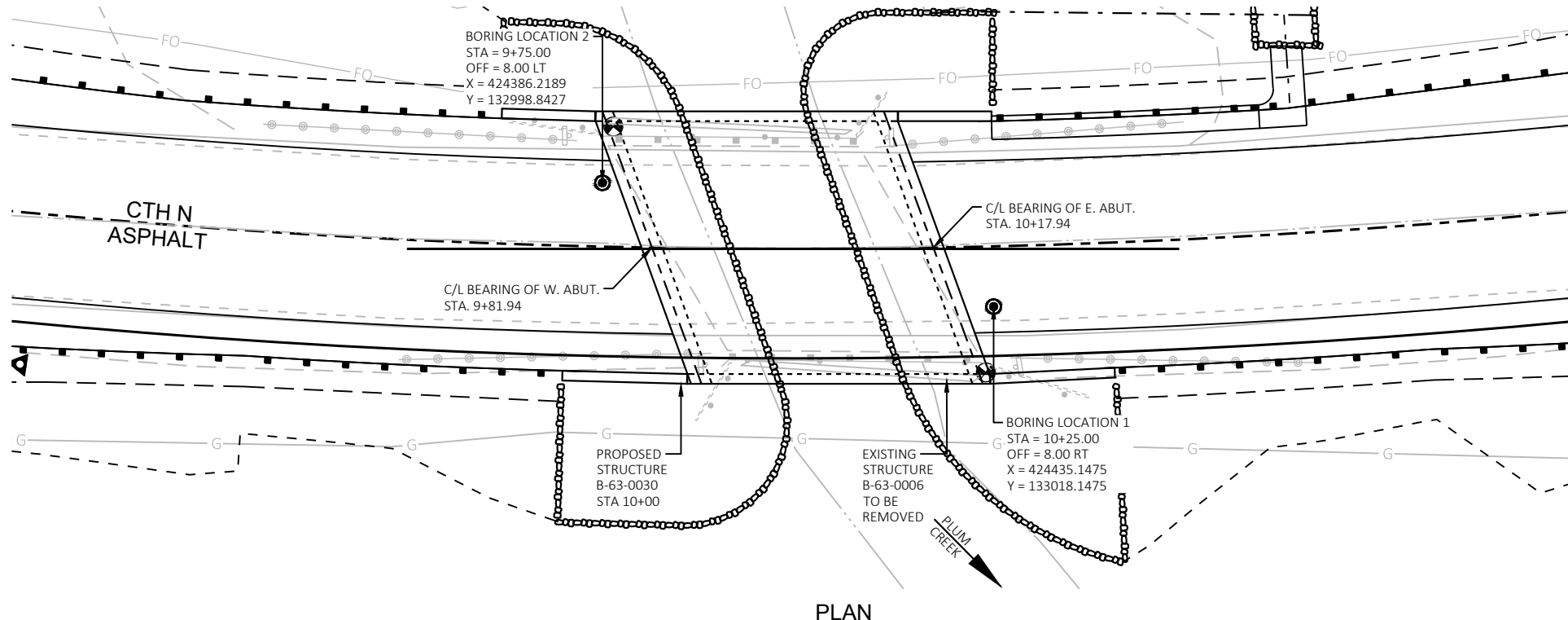


PILE SPLICE DETAIL
CAST-IN-PLACE PILE SHELL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION.

TOTAL ESTIMATED QUANTITIES

ITEM NUMBER	BID ITEMS	UNIT	WEST ABUT.	EAST ABUT.	SUPER.	TOTALS
203.0270.01	REMOVING STRUCTURE OVER WATERWAY DEBRIS CAPTURE (STRUCTURE) (01. B-63-0006)	EACH	-	-	-	1
206.1000.01	EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) (01. B-63-0030)	LS	-	-	-	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	200	200	-	400
502.0100	CONCRETE MASONRY BRIDGES	CY	49.2	49.3	104.5	203.0
502.3200	PROTECTIVE SURFACE TREATMENT	SY	-	-	139.0	139.0
502.3210	PIGMENTED SURFACE SEALER	SY	-	-	66	66
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	2710	2710	-	5420
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1670	1660	20610	23940
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	10	10	-	20
550.0500	PILE POINTS	EACH	7	7	-	14
550.2102	PILING CIP CONCRETE 10 3/4 x 0.219-INCH	LF	675	810	-	1485
606.0300	RIPRAP HEAVY	CY	90	85	-	175
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	90	90	-	180
614.0150	ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD	EACH	-	-	4	4
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	35	35	-	70
645.0120	GEOTEXTILE TYPE HR	SY	162	166	-	328
NON-BID ITEMS						
	FILLER	SIZE	-	-	-	1/2" X 3/4"

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-63-0030			
DRAWN BY NJT		PLANS CK'D. TLP	
CROSS SECTION, QUANTITIES, & NOTES			SHEET 2 OF 9



SUBSURFACE NOTES

THE SUBSURFACE INFORMATION PRESENTED HEREIN IS AN ABBREVIATED VERSION OF THE INFORMATION PRESENTED IN THE GEOTECHNICAL ENGINEERING REPORT. REVIEW THE APPROPRIATE GEOTECHNICAL REPORT AND SOIL BORING LOGS FOR ADDITIONAL SUBSURFACE INFORMATION.

BORINGS & REPORT COMPLETED BY:

NTS NUMMELIN TESTING SERVICES, INC.
 3217 WHITING AVENUE / P.O. BOX 127
 STEVENS POINT, WI 54481
 (715) 341-7974

BORINGS PERFORMED ON:
 3/29/2021 - B1
 3/30/2021 - B2

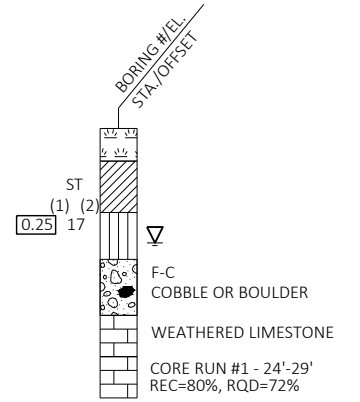
STATE PROJECT NUMBER

9509-00-70

MATERIAL SYMBOLS

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

LEGEND OF BORING



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

GROUND WATER ELEVATION

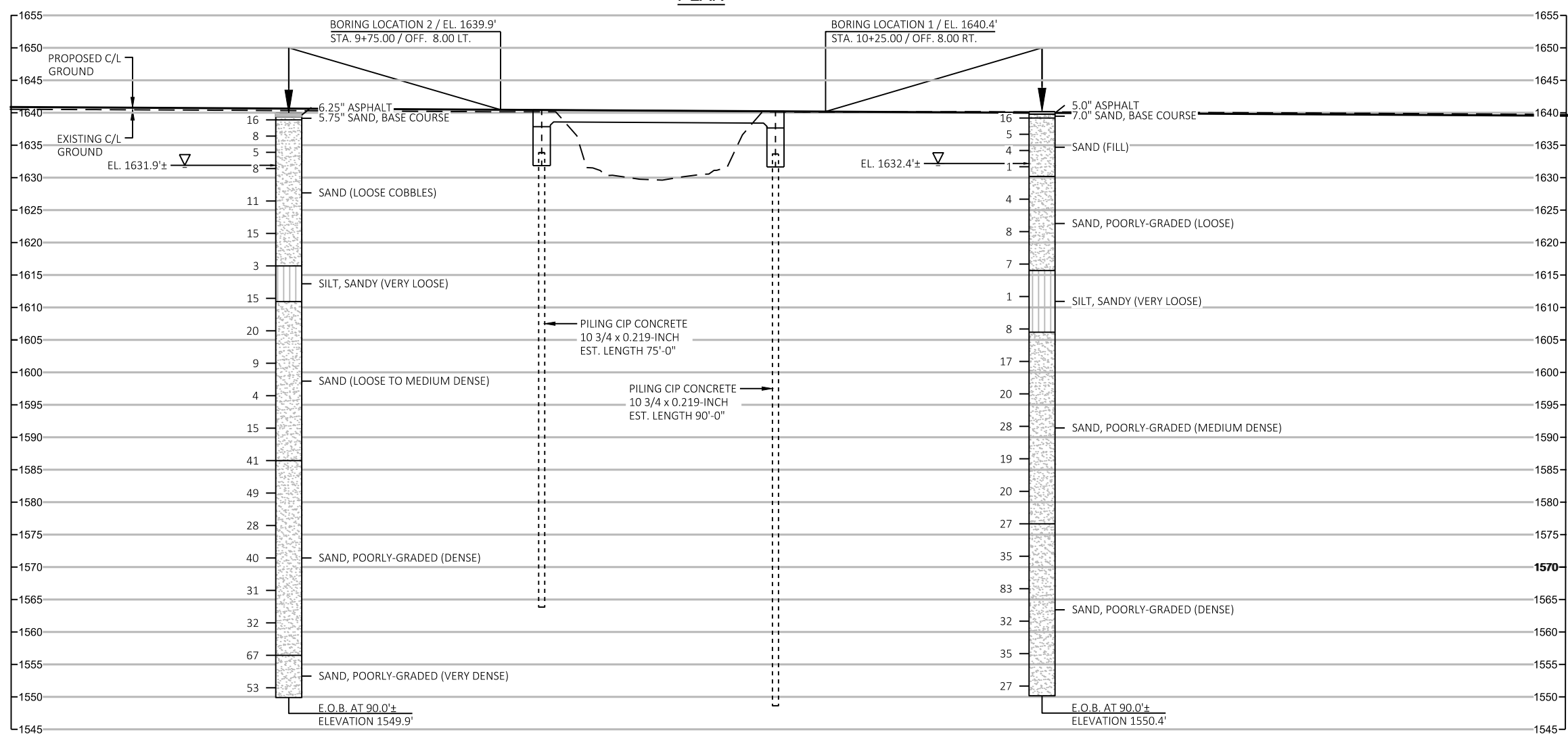
- AT TIME OF DRILLING
- END OF DRILLING
- AFTER DRILLING

ABBREVIATIONS

F-Fine M-Medium C-Coarse st-shelby tube

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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



ELEVATION

8

8

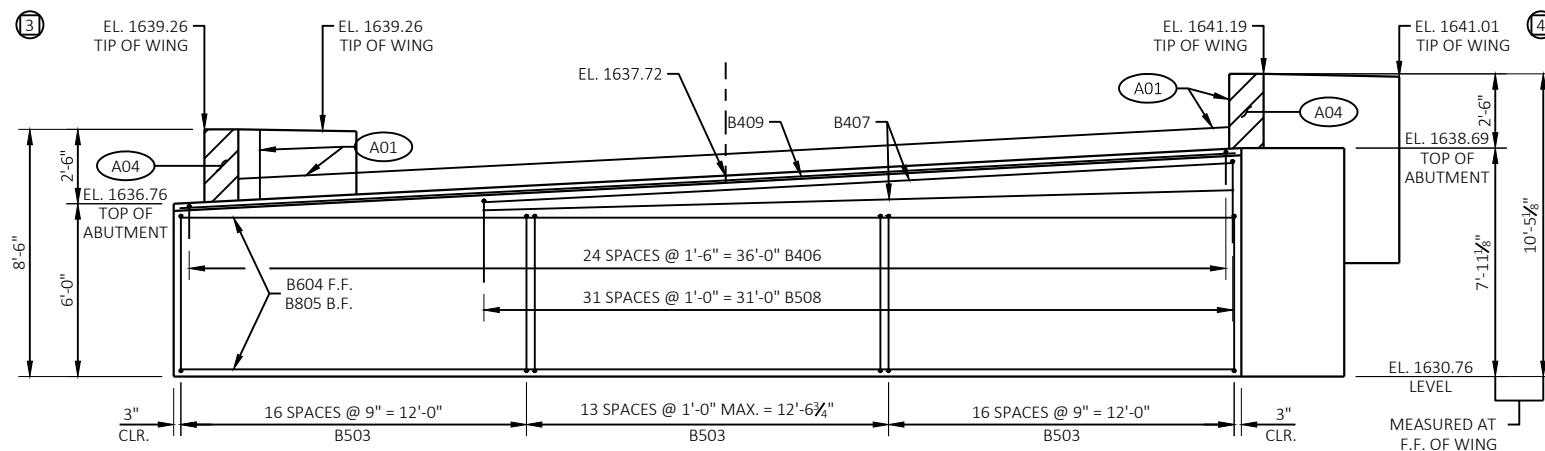
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-63-0030			
DRAWN BY NJT		PLANS CK'D. TLP	
SUBSURFACE EXPLORATION			SHEET 3 OF 9

SCALE = 1:1

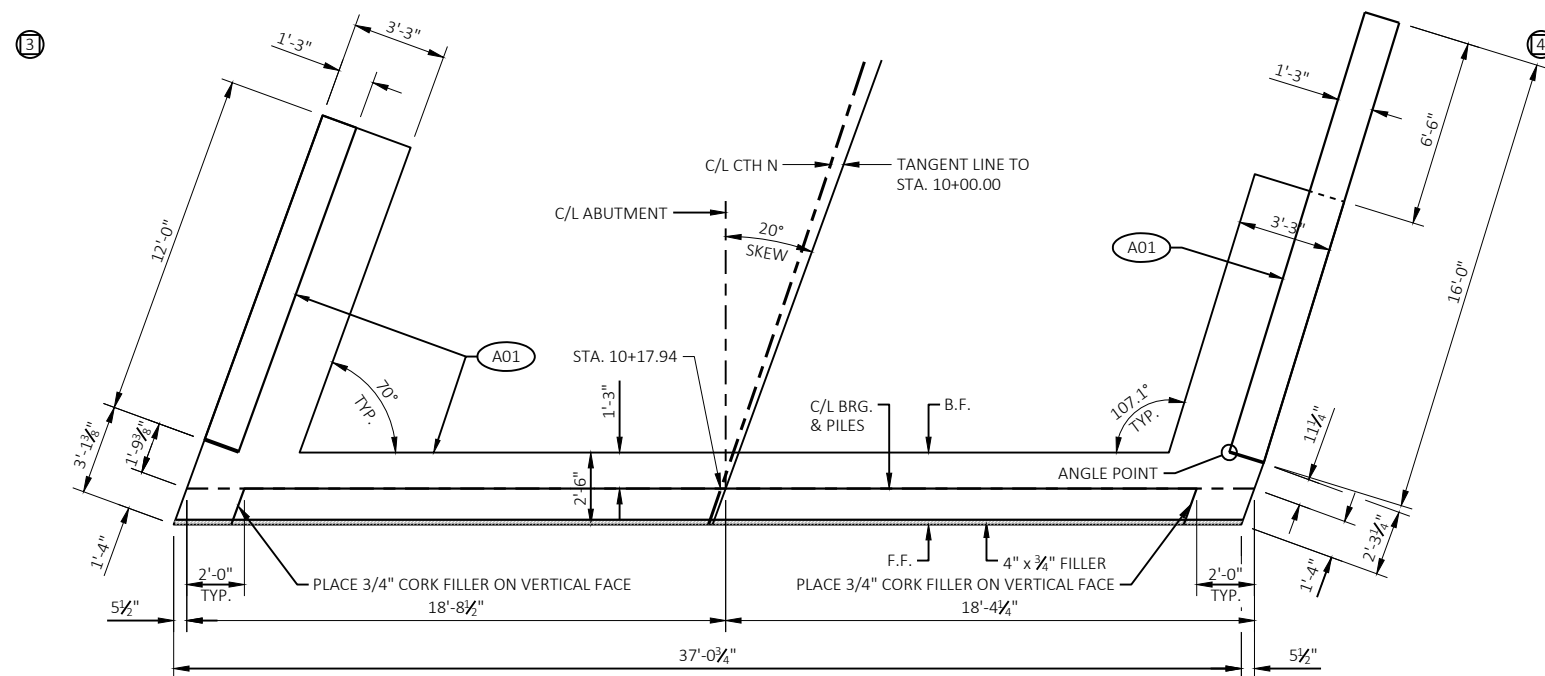
BILL OF BARS

BAR MARK	COAT	NO. REQ'D	LENGTH	BEND	BAR SERIES	LOCATION
B401		9	28-0	X		BODY - ONE PER PILE
B402		18	2-3			BODY - TWO PER PILE
B503		46	15-10	X		BODY - STIRRUPS
B604		11	36-8			BODY - HORIZONTAL
B805		7	36-8			BODY - HORIZONTAL B.F.
B406		25	3-1	X		BODY - VERTICAL
B407		5	31-0			BODY - HORIZONTAL
B508		32	7-9	X		BODY - HORIZONTAL
B409		2	36-8			BODY - HORIZONTAL
B510	X	10	21-6	X		WING 4 - STIRRUPS
B711	X	7	12-1			WING 4 - BASE HORIZONTAL B.F.
B512	X	9	11-1			WING 4 - BASE HORIZONTAL F.F.
B513	X	13	9-6	X		WING 4 - VERTICAL
B514	X	9	9-5	X		WING 4 - VERTICAL
B415	X	5	15-6			WING 4 - HORIZ. F.F. & B.F. TOP
B416	X	7	7-9			WING 4 - HORIZONTAL F.F. & B.F.
B617	X	2	15-6			WING 4 - HORIZONTAL TOP
B718	X	2	12-1			WING 4 - BASE HORIZONTAL TOP
B519	X	13	17-8	X		WING 3 - STIRRUPS
B620	X	7	13-11			WING 3 - BASE HORIZONTAL B.F.
B521	X	6	13-7			WING 3 - BASE HORIZONTAL F.F.
B522	X	17	9-6	X		WING 3 - VERTICAL
B623	X	2	13-11			WING 3 - BASE HORIZONTAL TOP
B424	X	5	11-7			WING 3 - HORIZONTAL F.F. & B.F.
B625	X	2	11-7			WING 3 - HORIZONTAL TOP

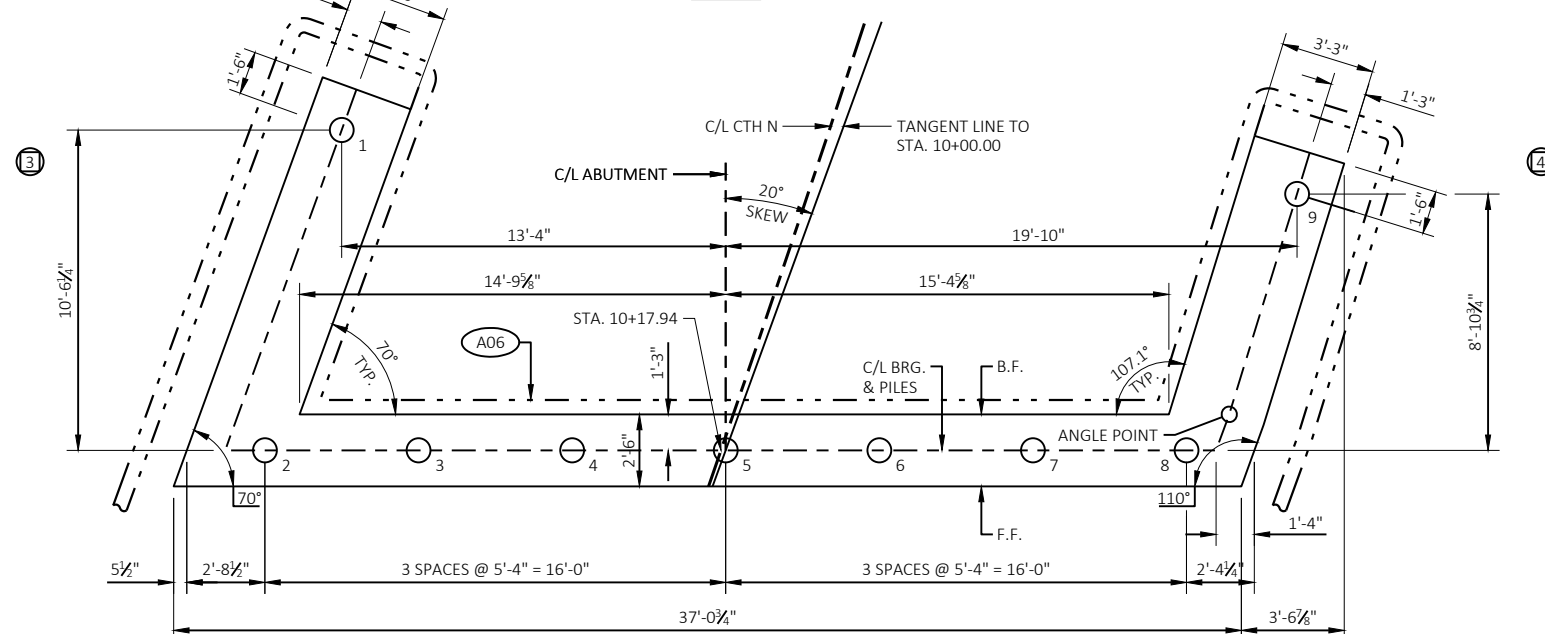
NOTE: BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST DIGIT OF A THREE-DIGIT BAR MARK OR THE FIRST TWO DIGITS OF A FOUR-DIGIT BAR MARK SIGNIFIES THE BAR SIZE.



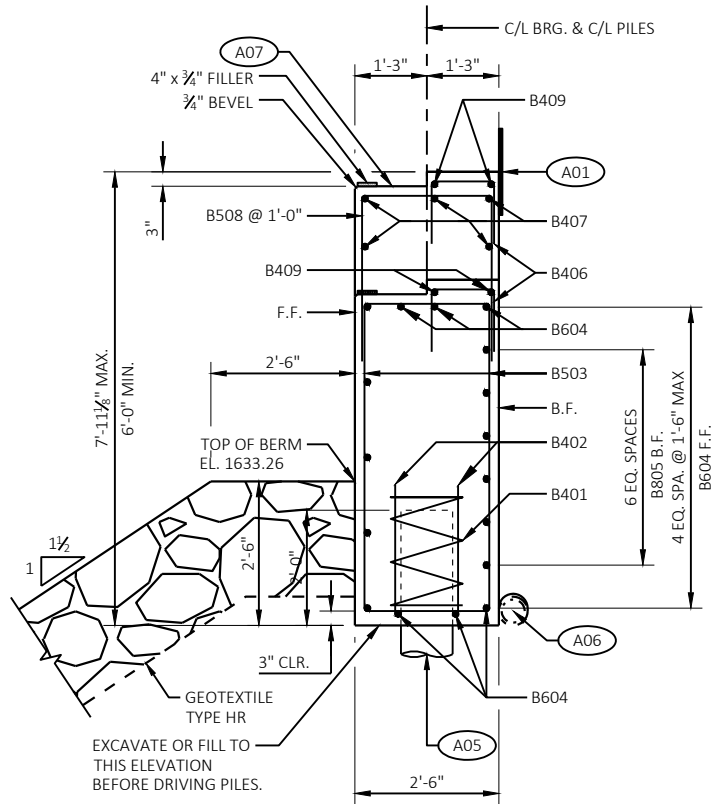
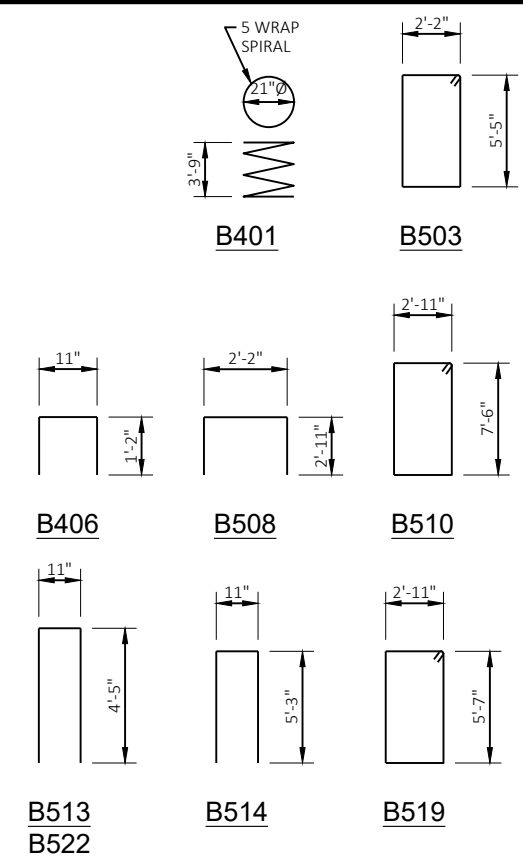
ELEVATION
(LOOKING EAST)



PLAN



PILE PLAN

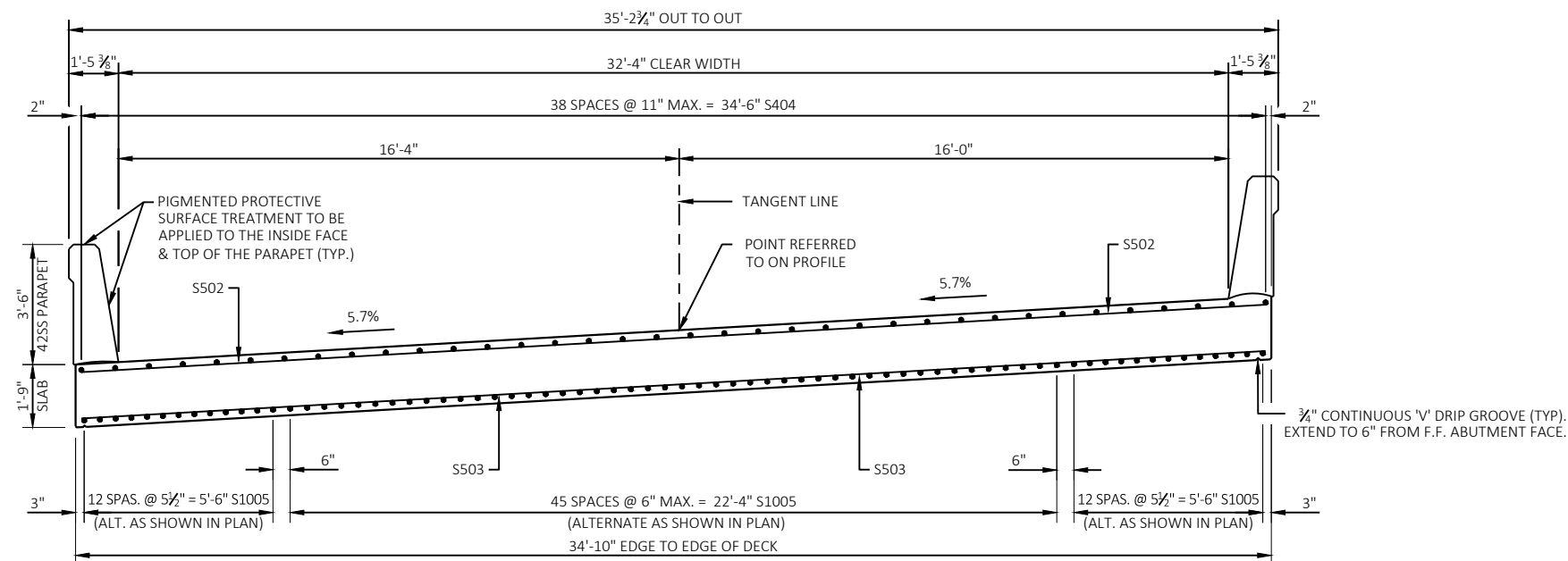


SECTION THRU BODY
ALL HORIZONTAL BARS ARE B604 UNLESS OTHERWISE SPECIFIED

LEGEND

- ⊙ INDICATES WING NUMBER
- ⊙ A01 18" RUBBERIZED MEMBRANE WATERPROOFING (R.M.W). SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACK FACE.
- ⊙ A04 SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- ⊙ A05 PILING CIP CONCRETE 10 3/4 x 0.219-INCH WITH A REQUIRED DRIVING RESISTANCE OF 110 TONS PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. EST. LENGTH 90'-0".
- ⊙ A06 PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. RODENT SHIELD TO BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".
- ⊙ A07 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-INCH.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-63-0030			
DRAWN BY NJT		PLANS CK'D. TLP	
EAST ABUTMENT		SHEET 5 OF 9	



CROSS SECTION THRU ROADWAY
(LOOKING EAST)

BILL OF BARS

20610# COATED

BAR MARK	COMT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
S501	X	76	7-7	X		AT END OF DECK
S502	X	46	36-8			SLAB, TOP, TRANSVERSE
S503	X	55	36-8			SLAB BOTTOM, TRANSVERSE
S404	X	39	38-4			SLAB, TOP, LONGITUDINAL
S1005	X	72	35-0			SLAB, BOTTOM, LONGITUDINAL
S506	X	78	5-0			TRANSVERSE EDGE OF DECK
S507	X	118	4-5	X		PARAPET VERTICAL
S508	X	118	6-8	X		PARAPET VERTICAL
S509	X	16	38-3			PARAPET HORIZONTAL

NOTE: BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST DIGIT OF A THREE-DIGIT BAR MARK OR THE FIRST TWO DIGITS OF A FOUR-DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

GENERAL NOTES

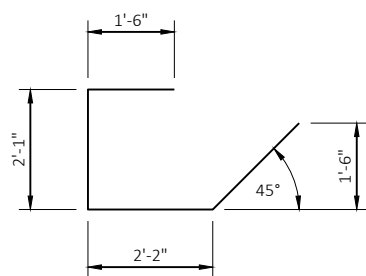
TOP TRANSVERSE BARS IN SLAB SHALL BE SUPPORTED BY INDIVIDUAL BAR CHAIRS AT APPROXIMATELY 3'-0" CENTERS EACH WAY. BOTTOM LONGITUDINAL BARS TO BE SUPPORTED BY CONTINUOUS BAR CHAIRS AT APPROXIMATELY 4'-0" CENTERS.

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

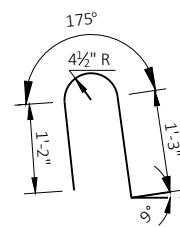
CAMBER SPAN AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION & FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT.

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATION AT THE C/L OF ABUTMENTS, AND AT 5/10 PTS. TO VERIFY CAMBER, TAKE ELEVATIONS ALONG GUTTER LINES, AND CROWN OR C/L. RECORD ELEVATIONS ON AS BUILT PLANS. SEE STD 18.03

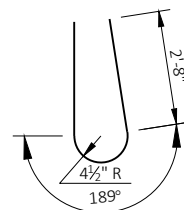
PARAPETS, SIDEWALKS, AND MEDIANS PLACED ON TOP OF THE SLAB SHALL BE POURED AFTER FALSEWORK HAS BEEN RELEASED, EXCEPT FOR STAGED CONSTRUCTION.



S501



S507



S508

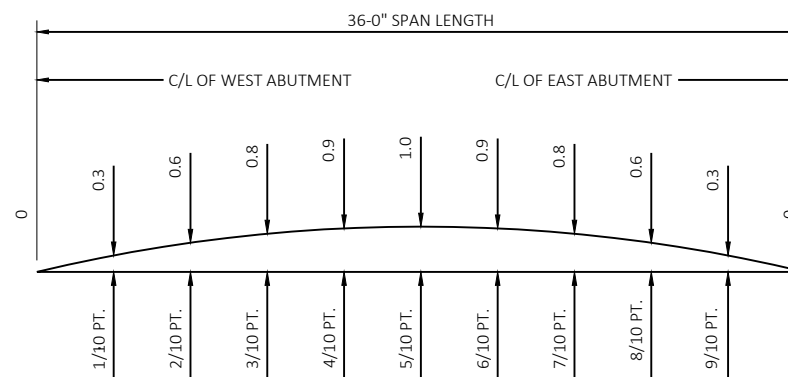
TOP OF DECK ELEVATIONS

LOCATION	WEST ABUT.	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	EAST ABUT.
NORTH EDGE OF DECK	1639.54	1639.52	1639.50	1639.47	1639.45	1639.43	1639.41	1639.38	1639.36	1639.35	1639.33
C/L OF BRIDGE DECK	1640.42	1640.40	1640.38	1640.36	1640.34	1640.32	1640.27	1640.28	1640.26	1640.24	1640.22
SOUTH EDGE OF DECK	1641.30	1641.28	1641.26	1641.24	1641.22	1641.20	1641.18	1641.16	1641.15	1641.13	1641.11

ELEVATIONS SHOWN ARE FINISHED DECK AND DO NOT INCLUDE ALLOWANCES OF DEAD LOAD DEFLECTION AND FUTURE CREEP.

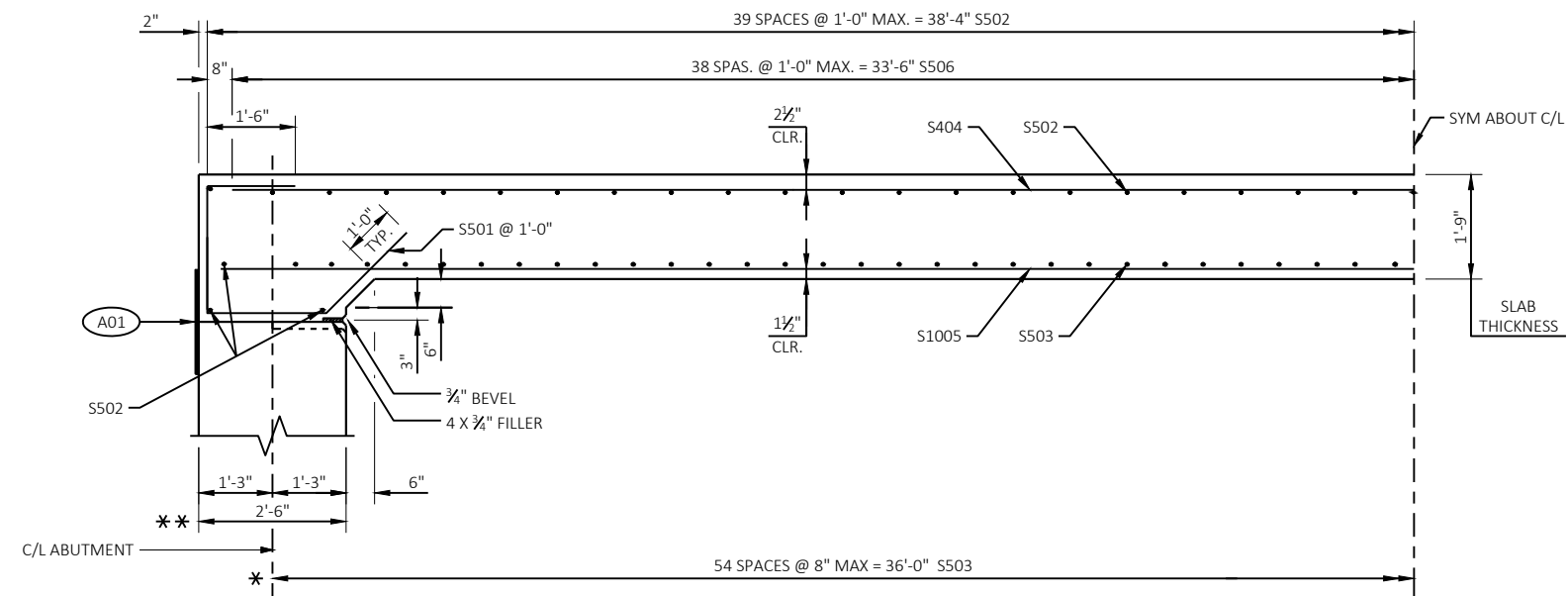
SURVEY TOP OF SLAB ELEVATIONS

LOCATION	C/L BRG. WEST ABUT.	5/10 PT.	C/L BRG. EAST ABUT.
NORTH GUTTER			
TANGENT LINE			
SOUTH GUTTER			

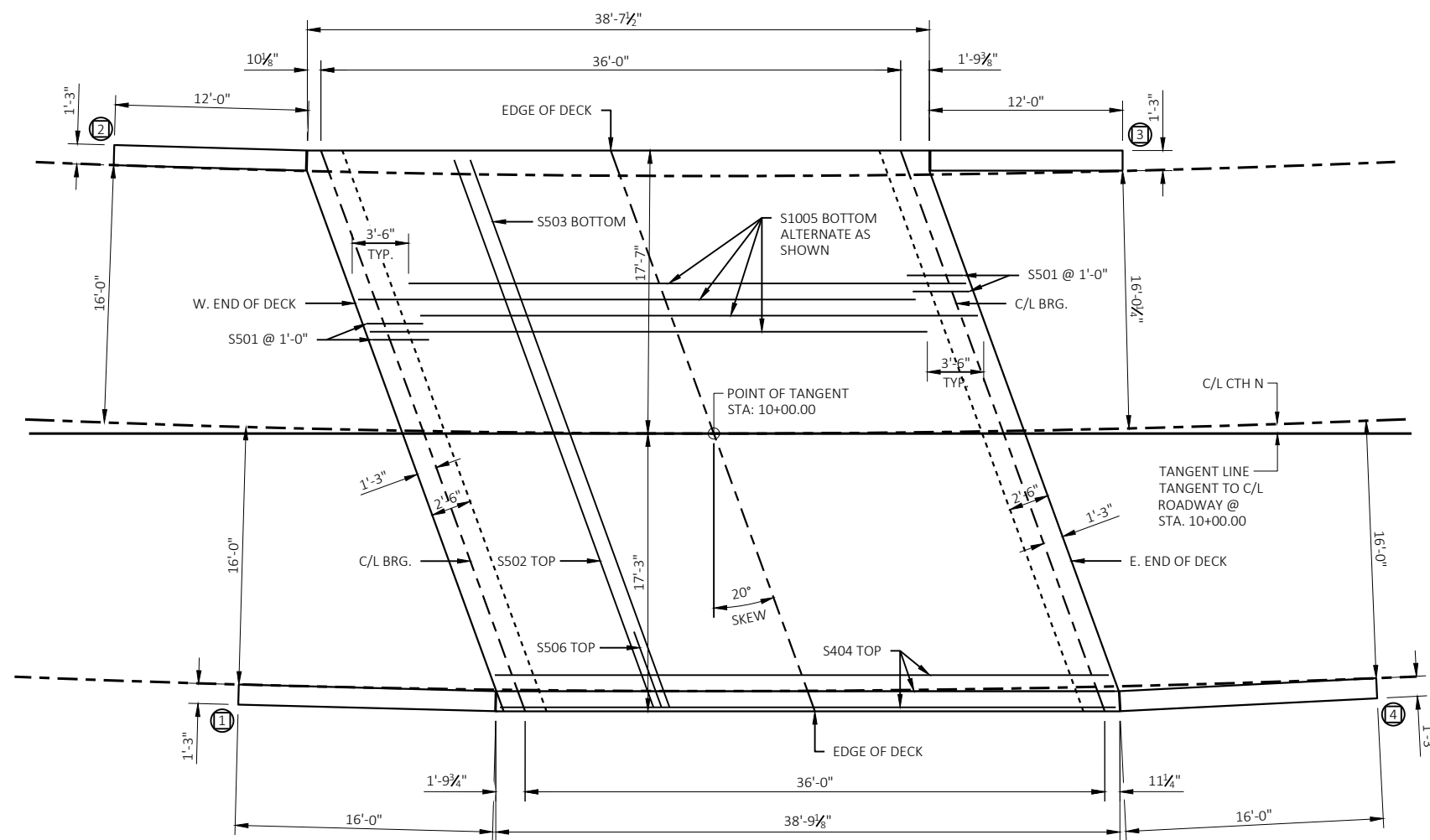


CAMBER DIAGRAM

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-63-0030			
DRAWN BY NJT		PLANS TLP	
BY CK'D.			
SUPERSTRUCTURE			SHEET 7 OF 9



PART LONGITUDINAL SECTION



PLAN

GENERAL NOTES

- * DIMENSIONS MEASURED ALONG C/L OF BRIDGE
- ** DIMENSIONS MEASURED NORMAL TO C/L OF SUBSTRUCTURE

LEGEND

(A01) 18" RUBBERIZED MEMBRANE WATERPROOFING (R.M.W). SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACK FACE.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-63-0030			
DRAWN BY NJT		PLANS CK'D. TLP	
SUPERSTRUCTURE DETAILS			SHEET 8 OF 9

BILL OF BARS

FOR ABUTMENT PAPAPETS, WEIGHT INCLUDED IN SUPERSTRUCTURE TABLE

BAR MARK	COM.	E. ABUT.	W. ABUT.	LENGTH	BENT	BAR SERIES	LOCATION
R501	X	18	18	5-10	X		PARAPET VERTICAL
R502	X	18	18	6-8	X		PARAPET VERTICAL
R503	X	22	22	3-0	X		PARAPET VERTICAL
R504	X	34	34	5-7	X		PARAPET VERTICAL
R505	X	10	10	6-5	X		PARAPET VERTICAL
R506	X	12	12	6-6	X		PARAPET VERTICAL
R507	X	1	1	11-6	X		PARAPET HORIZONTAL
R508	X	5	5	11-8			PARAPET HORIZONTAL
R509	X	12	12	5-5	X	☒	PARAPET HORIZONTAL
R510	X	2	2	11-8	X		PARAPET HORIZONTAL
R511	X	1	1	15-6	X		PARAPET HORIZONTAL
R512	X	5	5	15-8			PARAPET HORIZONTAL
R513	X	2	2	15-8			PARAPET HORIZONTAL

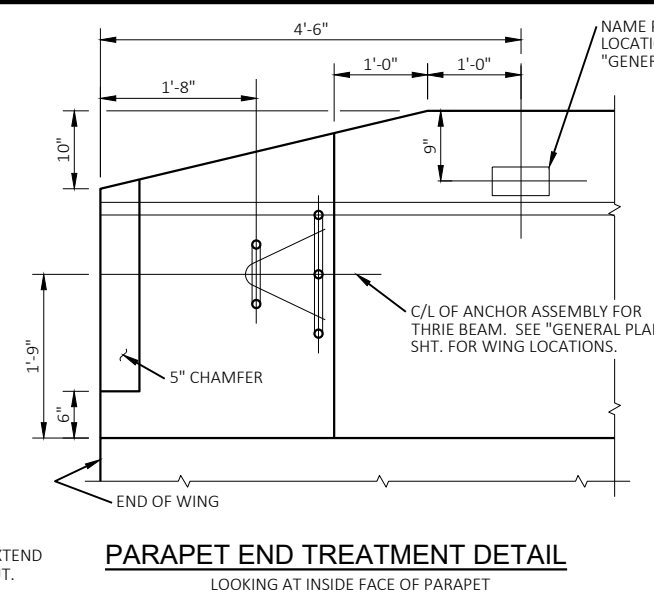
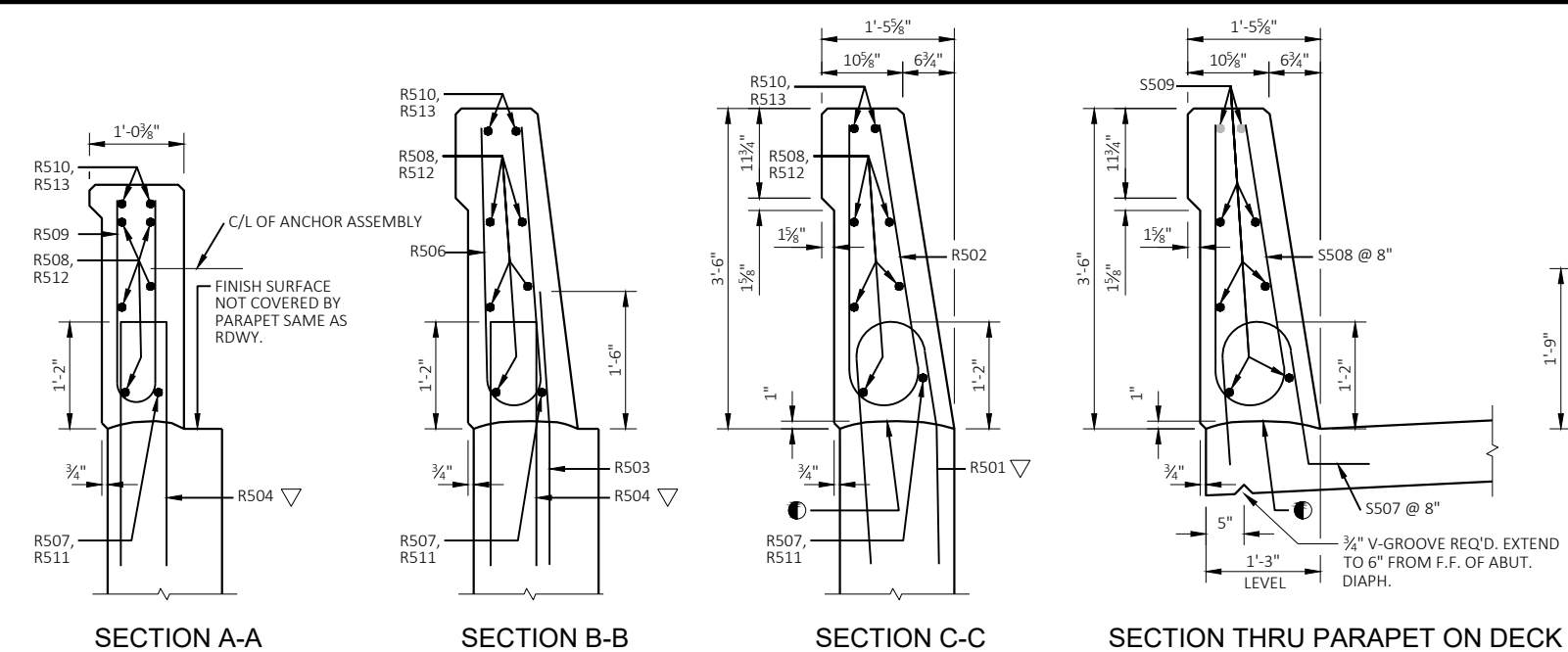
NOTE: BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST DIGIT OF A THREE-DIGIT BAR MARK OR THE FIRST TWO DIGITS OF A FOUR-DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

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

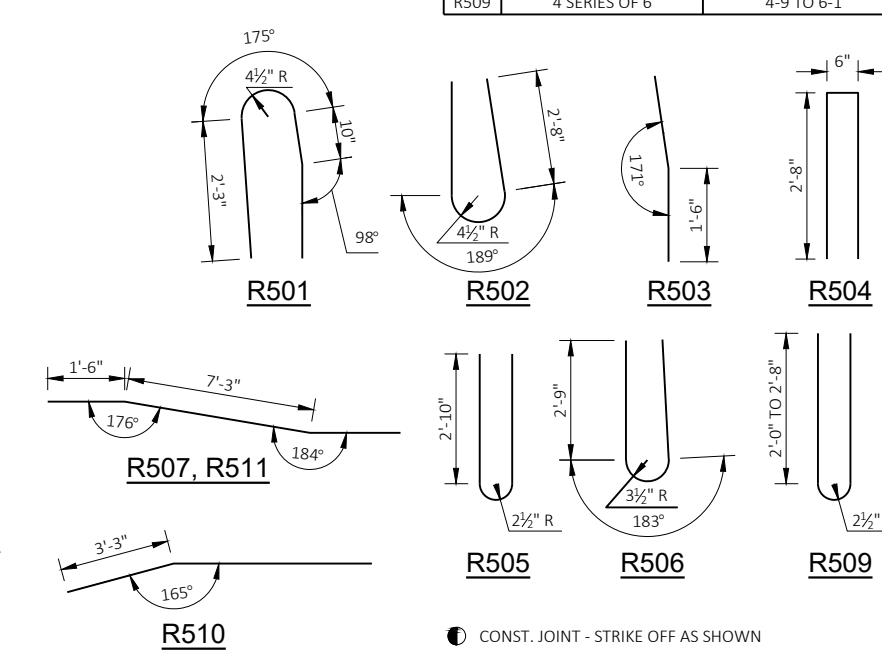
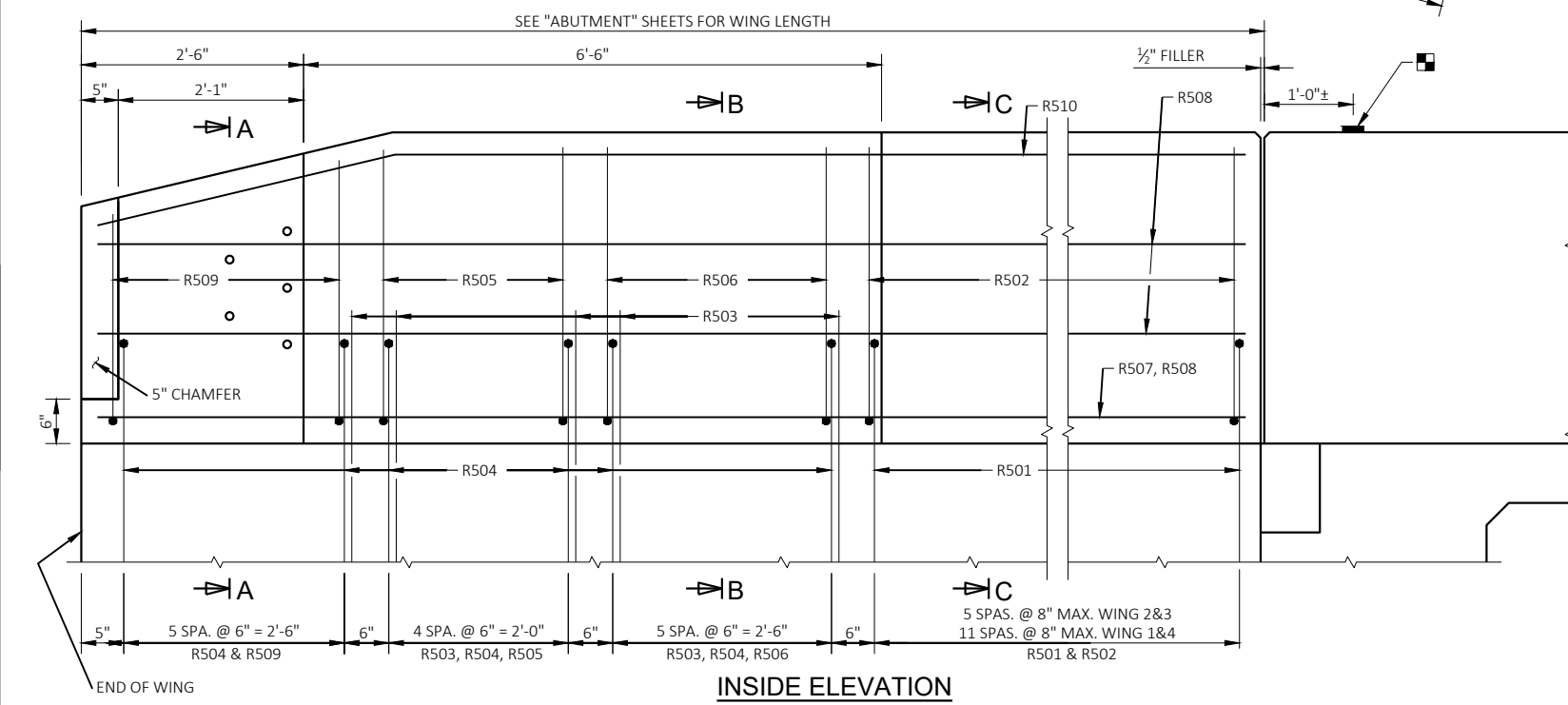
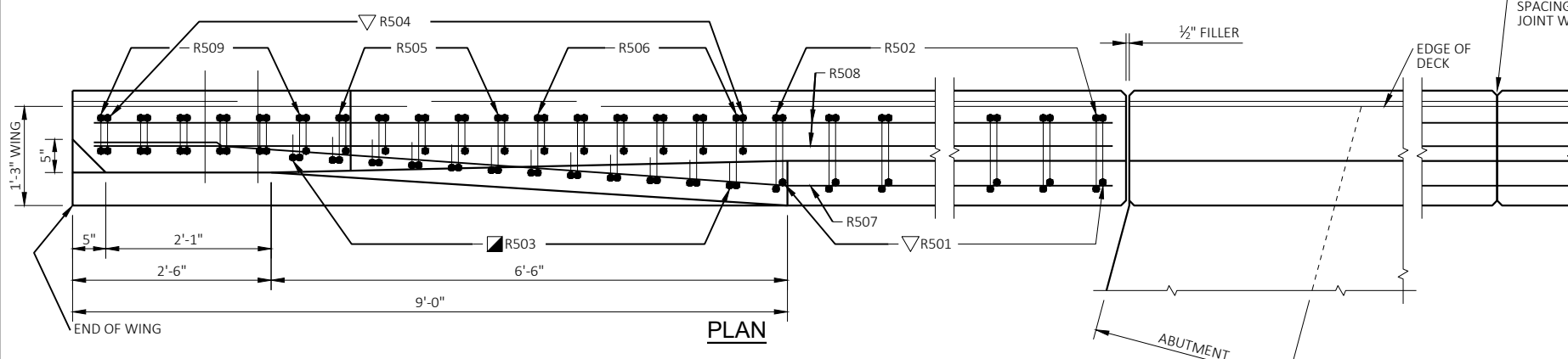
BAR SERIES TABLE

BUNDLE AND TAG EACH SERIES SEPARATELY

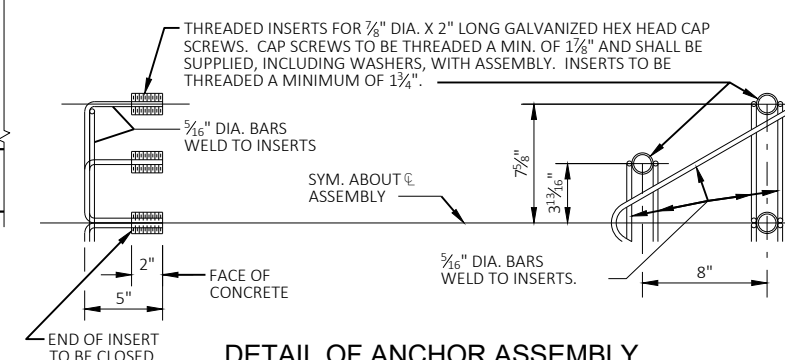
BAR MARK	NO. REQUIRED	LENGTH
R509	4 SERIES OF 6	4-9 TO 6-1



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



☐ BENCH MARK CAP (WHEN SUPPLIED). AVOID PLACING A BENCH MARK CAP BELOW A RAIL OR FENCE SYSTEM THAT IS ATTACHED TO THE TOP OF THE PARAPET.



DETAIL OF ANCHOR ASSEMBLY

NOTE: HEX HEAD CAP SCREWS & WASHERS TO BE GALVANIZED IN ACCORDANCE WITH AASHTO M232 CLASS C.

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-63-0030

DRAWN BY NJT PLANS CK'D. TLP

SINGLE SLOPED PARAPET 42SS

SHEET 9 OF 9

8

8

DIVISION -1- CTH N

STATION	REAL STATION	DISTANCE	AREA (SF)			INCREMENTAL VOL (CY) (UNADJUSTED)			CUMULATIVE VOL (CY)		
			CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	EXPANDED FILL	MASS ORDINATE
			NOTE 1	NOTE 2	NOTE 3	NOTE 1	NOTE 2	NOTE 3	X1.00 NOTE 1	X1.25	NOTE 8
07+50	750.00	0.00	51.45	7.33	0.00	0	0	0	0	0	0
08+00	800.00	50.00	46.81	7.33	4.63	91	14	4	91	5	72
08+50	850.00	50.00	39.18	7.33	7.48	80	14	11	171	19	124
09+00	900.00	50.00	53.44	7.33	3.44	86	14	10	257	31	184
09+50	950.00	50.00	41.05	7.33	3.37	87	14	6	344	39	249
09+62.276	962.28	12.28	34.60	7.33	19.54	17	3	5	361	45	257
09+70.94	970.94	8.66	16.69	7.33	20.41	8	2	6	369	53	256
DIVISION 1 CTH N SUBTOTAL						369	61	42			

DIVISION -2- CTH N

STATION	REAL STATION	DISTANCE	AREA (SF)			INCREMENTAL VOL (CY) (UNADJUSTED)			CUMULATIVE VOL (CY)		
			CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	EXPANDED FILL	MASS ORDINATE
			NOTE 1	NOTE 2	NOTE 3	NOTE 1	NOTE 2	NOTE 3	X1.00 NOTE 1	X1.25	NOTE 8
10+26.075	1026.08	0.00	25.72	7.33	6.46	0	0	0	0	0	0
10+40.563	1040.56	14.49	53.89	7.33	47.99	21	4	15	21	19	-2
10+50	1050.00	9.44	57.15	7.33	13.67	19	3	11	40	33	1
11+00	1100.00	50.00	61.69	7.33	5.01	110	14	17	150	54	75
11+50	1150.00	50.00	54.26	7.33	3.61	107	14	8	257	64	158
12+00	1200.00	50.00	54.34	7.33	2.91	101	14	6	358	71	238
DIVISION 2 CTH N SUBTOTAL						358	49	57			

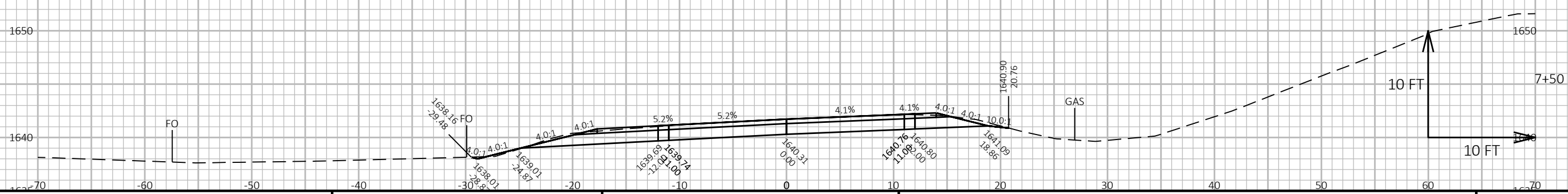
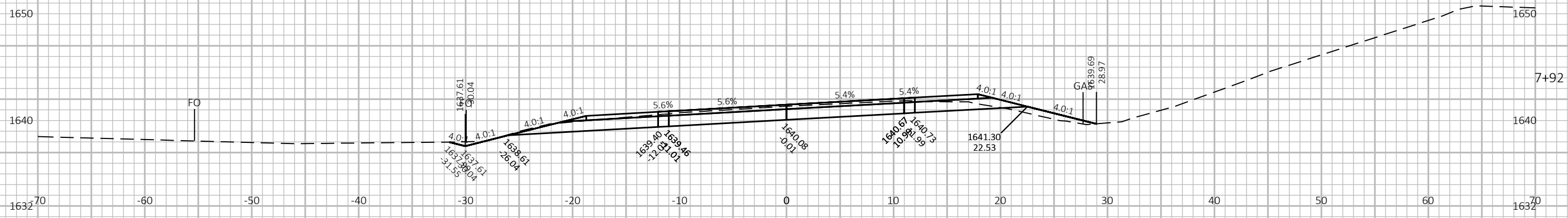
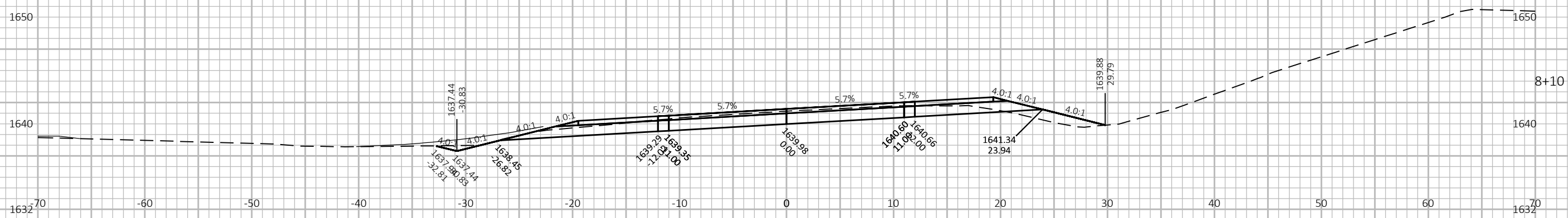
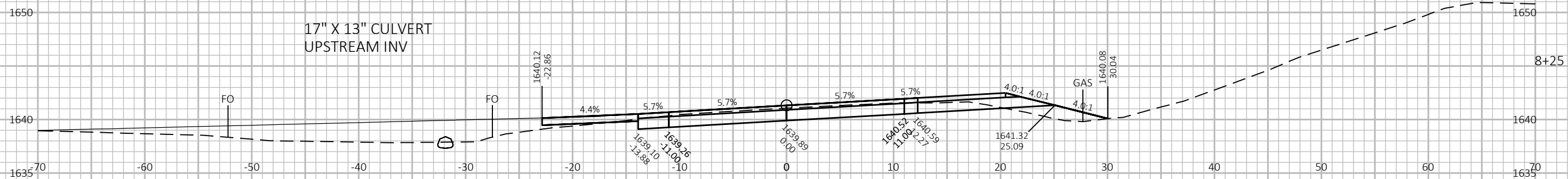
DIVISION -1- CTH N DRIVEWAY

STATION	REAL STATION	DISTANCE	AREA (SF)			INCREMENTAL VOL (CY) (UNADJUSTED)			CUMULATIVE VOL (CY)		
			CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	EXPANDED FILL	MASS ORDINATE
			NOTE 1	NOTE 2	NOTE 3	NOTE 1	NOTE 2	NOTE 3	X1.00 NOTE 1	X1.25	NOTE 8
21+50	2150.00	0.00	7.86	0.00	0.00	0	0	0	0	0	0
22+00	2200.00	50.00	9.29	0.00	0.00	16	0	0	16	0	16
22+50	2250.00	50.00	0.00	0.00	34.35	9	0	32	25	40	-15
22+61	2261.00	11.00	0.01	0.00	1.47	0	0	7	25	49	-24
DIVISION 2 CTH N SUBTOTAL						25	0	39			
COLUMN TOTALS						752	110	138			

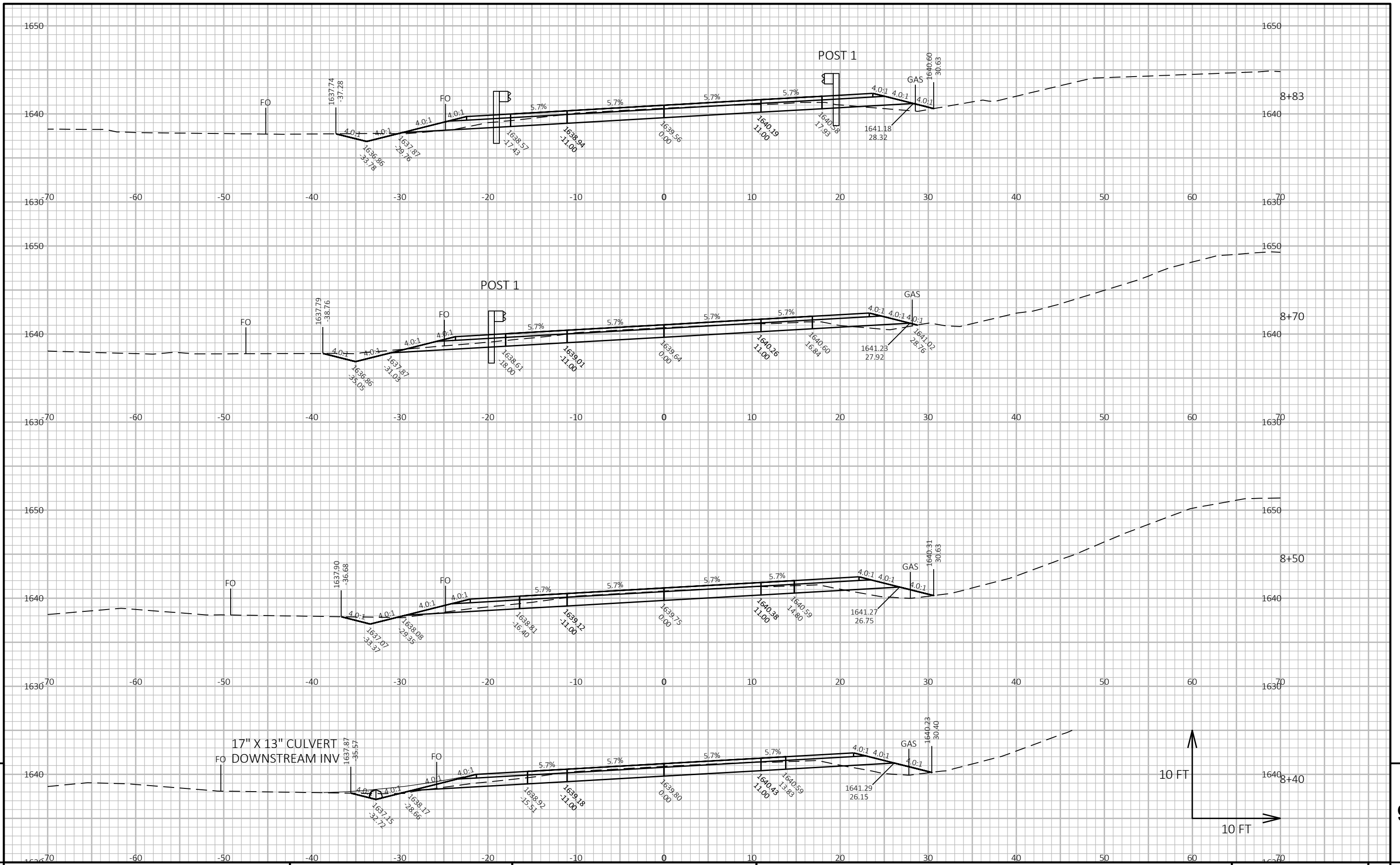
Notes:	
1 - CUT	CUT INCLUDES SALVAGED/UNUSABLE PAVEMENT MATERIAL
2 - SALVAGED/UNUSABLE PAVEMENT MATERIAL	THIS DOES NOT SHOW UP IN CROSS SECTIONS
3 - FILL	DOES NOT INCLUDE UNUSABLE PAVEMENT EXC VOLUME
8 - MASS ORDINATE	IF MARSH AND EBS TO BE BACKFILLED WITH GRANULAR: [CUT - SALVAGED PAVT - ((FILL - REDUCED MARSH IN FILL - REDUCED EBS IN FILL - EXPANDED ROCK) * FILL FACTOR)]

DRIVEWAY

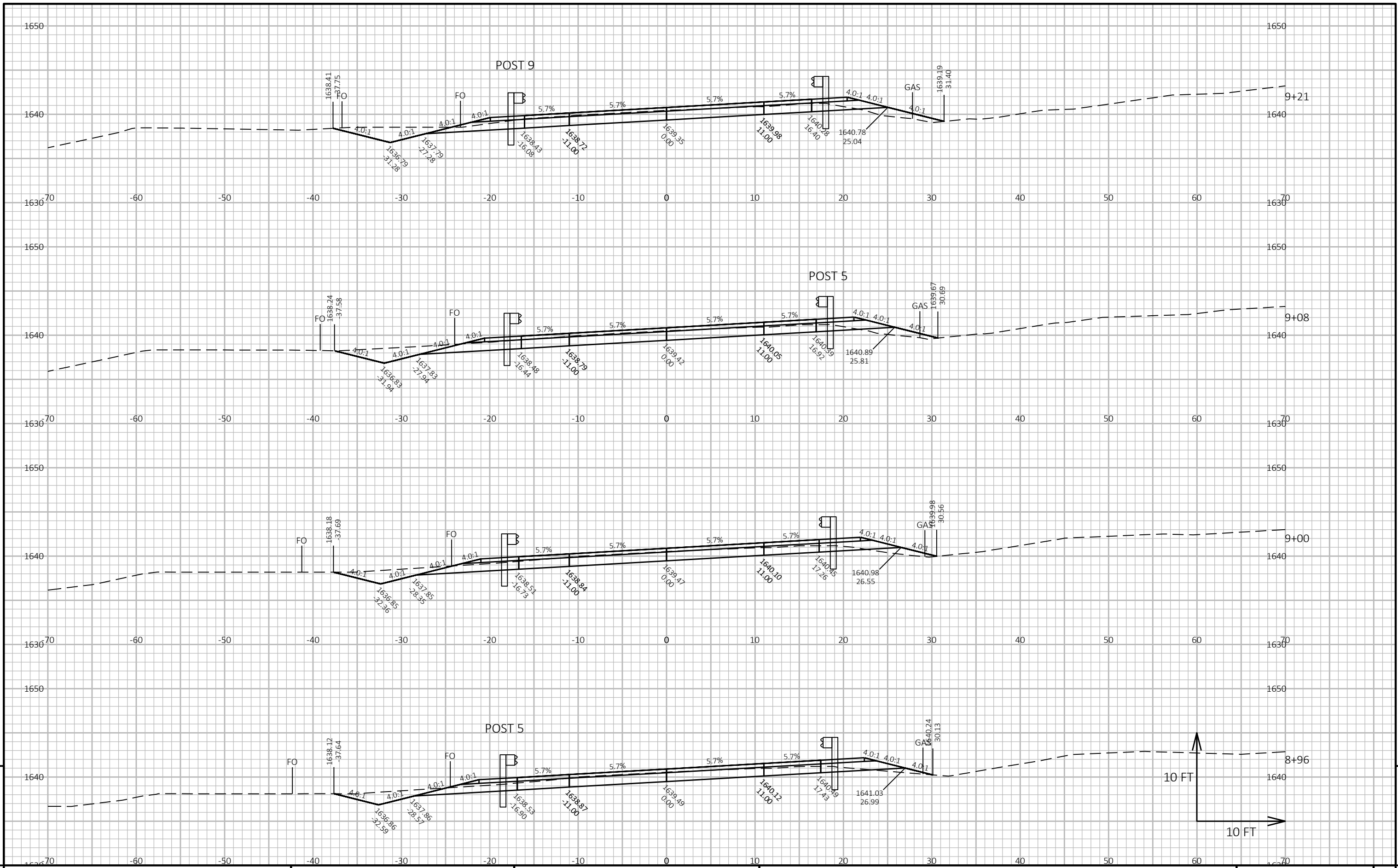
17" X 13" CULVERT
UPSTREAM INV



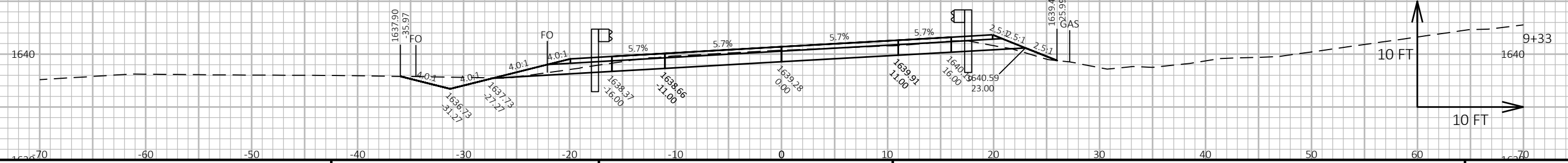
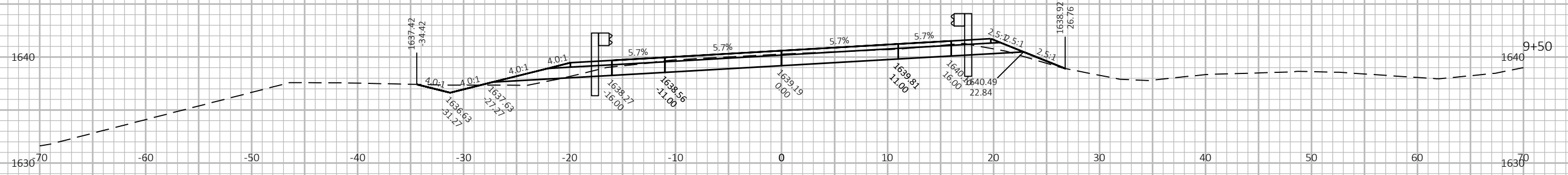
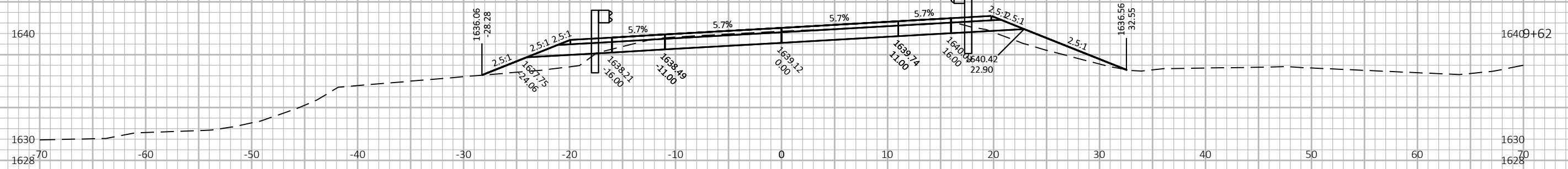
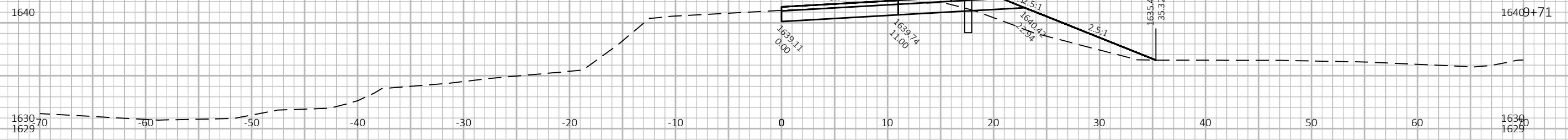
PROJECT NO: 9509-00-70	HWY: CTH N	COUNTY: VILAS	CROSS SECTIONS: CTH N	SHEET	E
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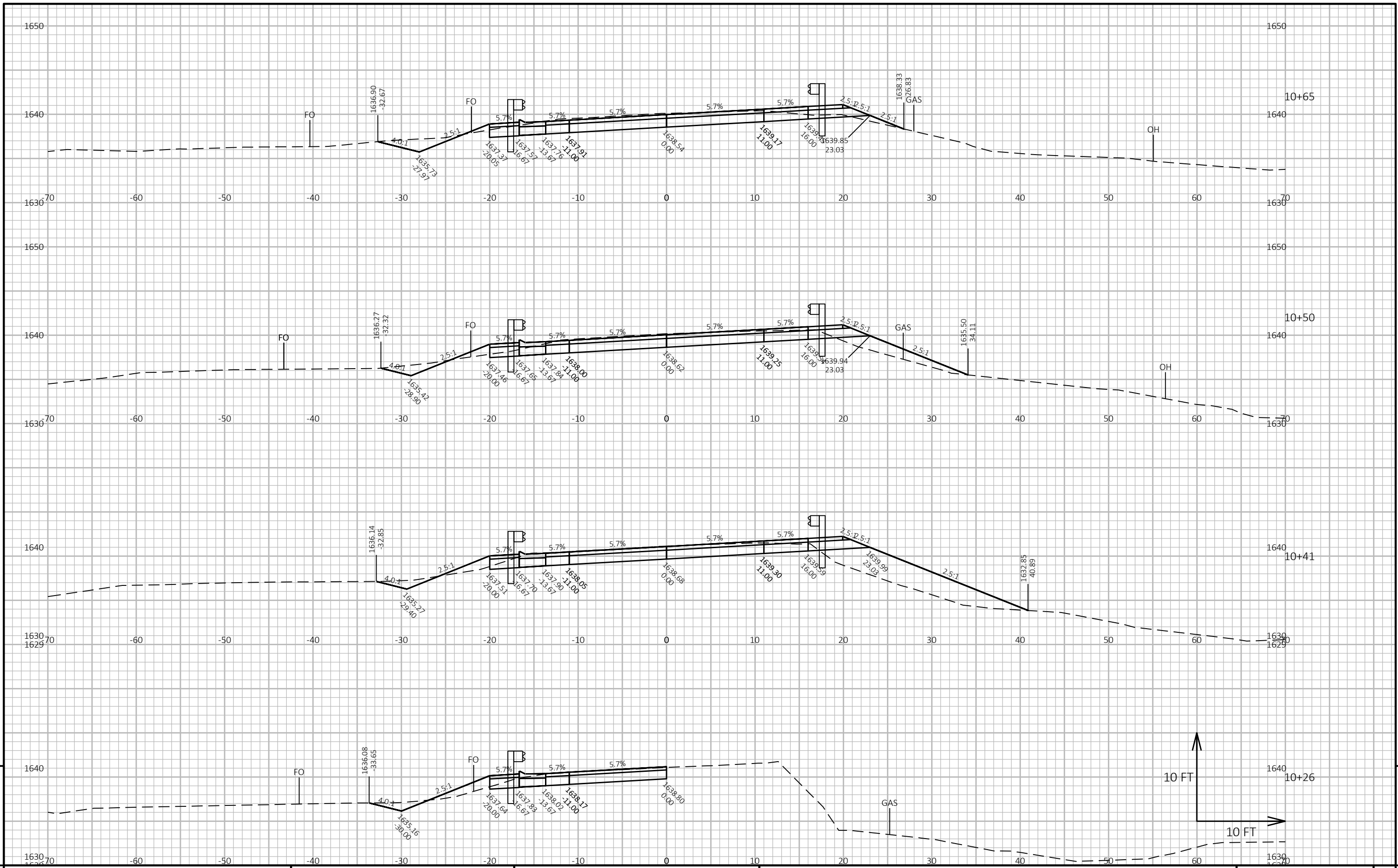
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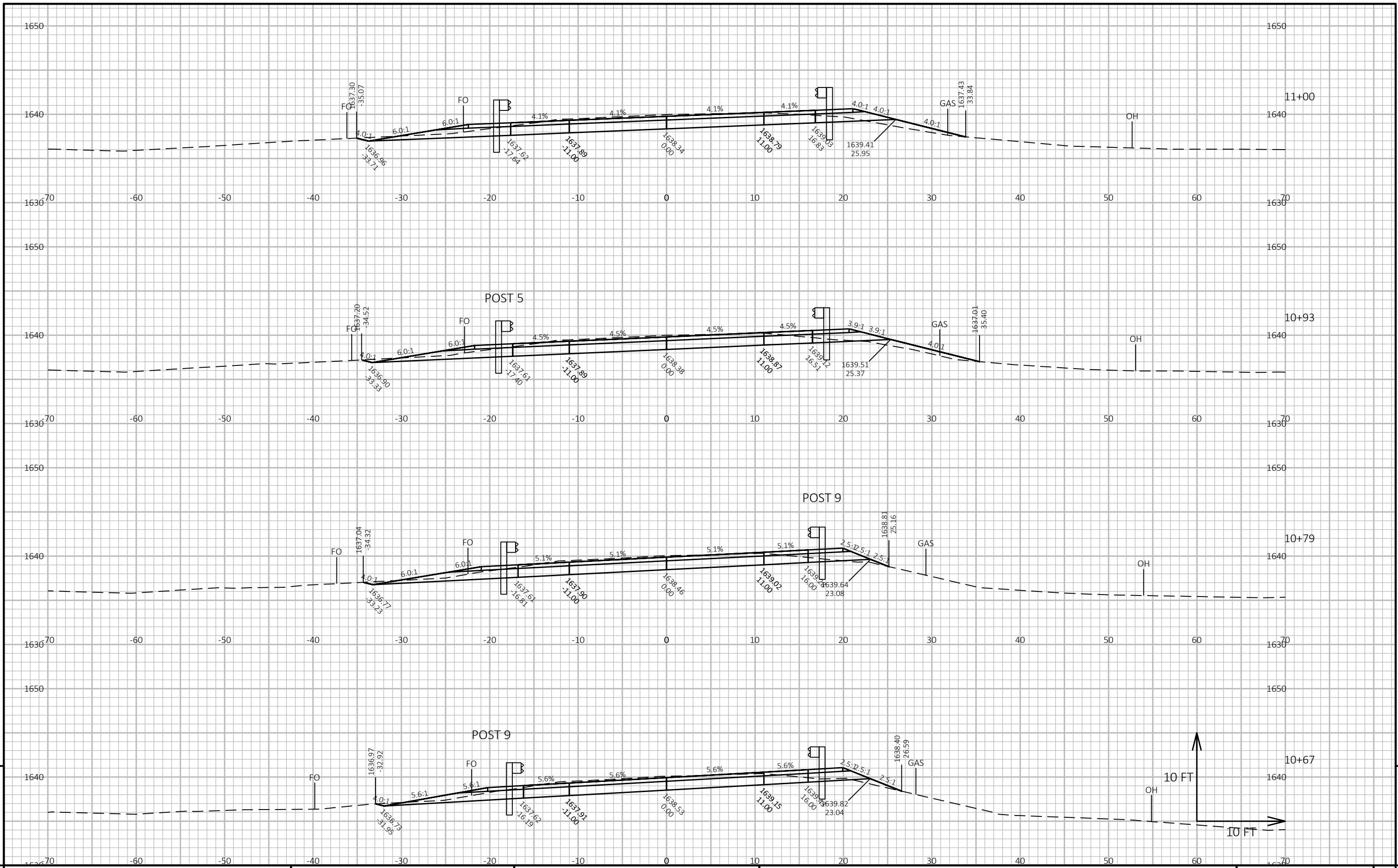
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PROJECT NO: 9509-00-70 HWY: CTH N COUNTY: VILAS CROSS SECTIONS: CTH N SHEET 9



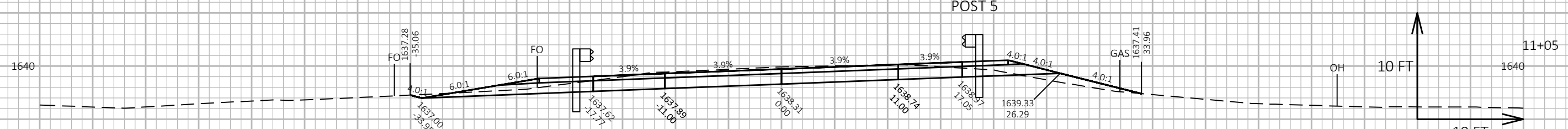
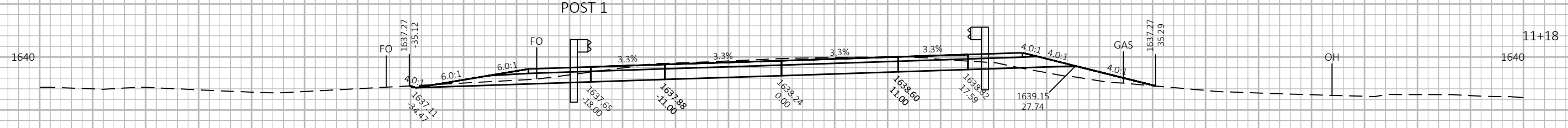
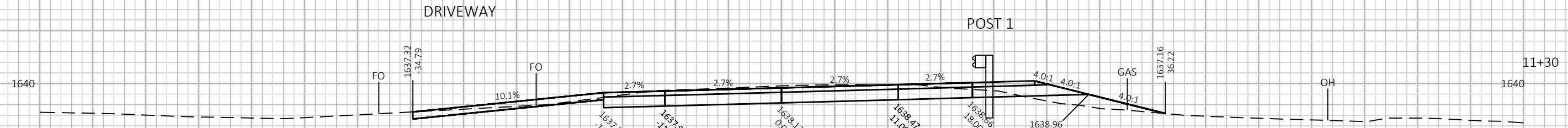
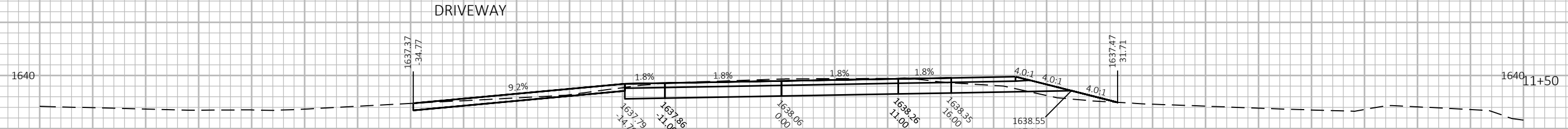
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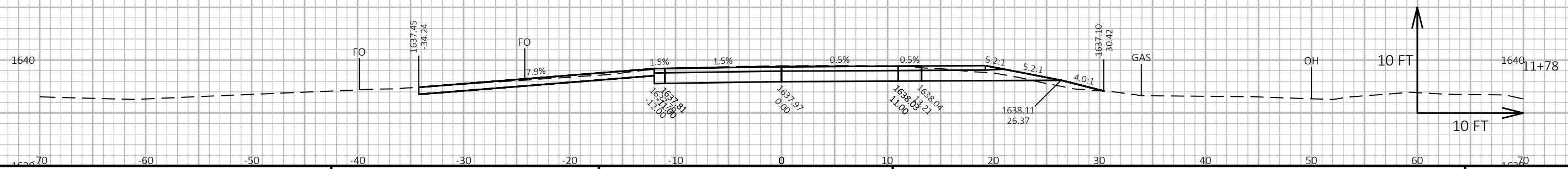
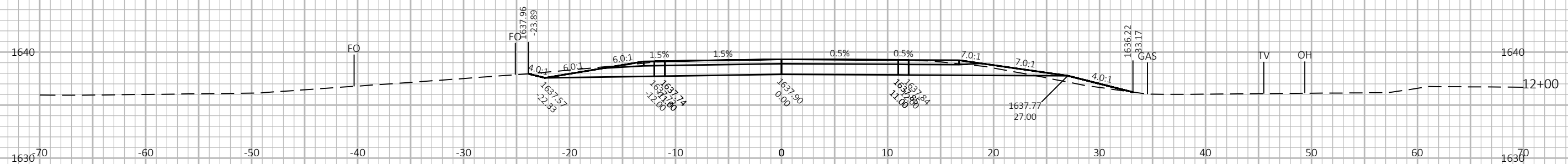
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9

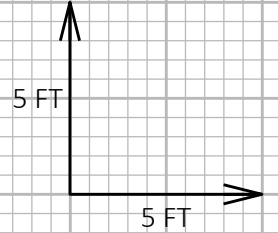
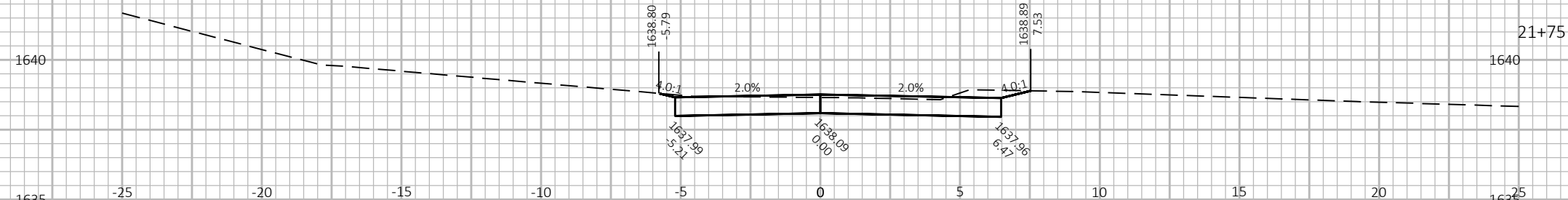
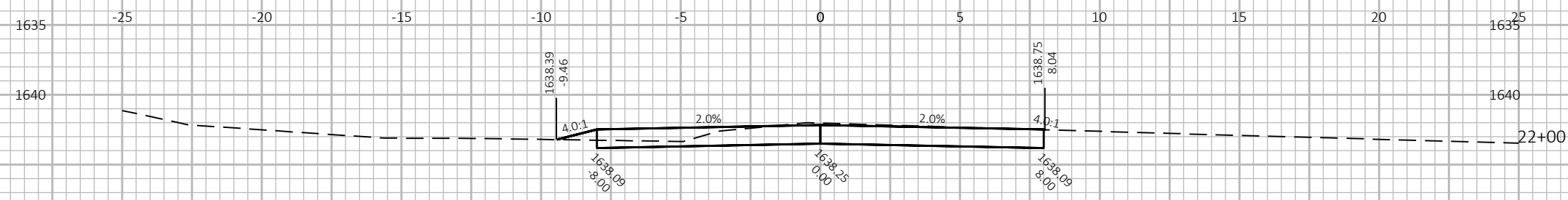
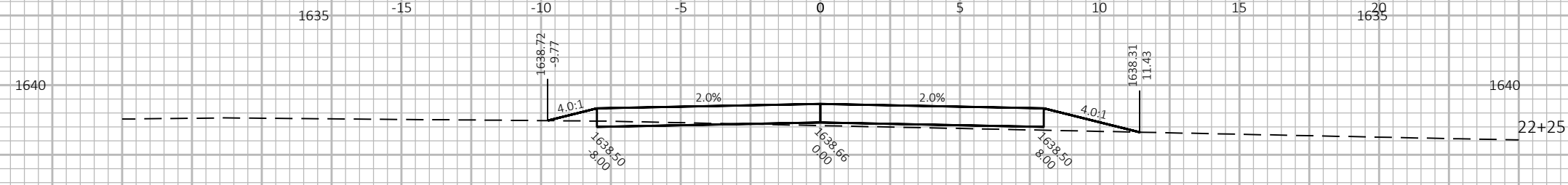
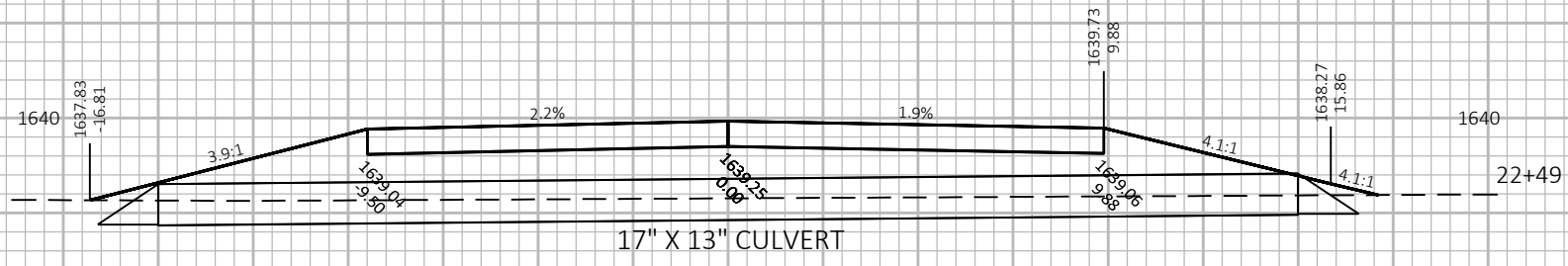
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PROJECT NO: 9509-00-70 HWY: CTH N COUNTY: VILAS CROSS SECTIONS: CTH N SHEET E



PROJECT NO: 9509-00-70 HWY: CTH N COUNTY: VILAS CROSS SECTIONS: CTH N SHEET E



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PROJECT NO: 9509-00-70	HWY: CTH N	COUNTY: VILAS	CROSS SECTIONS: DRIVEWAY	SHEET	E
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FILE NAME : I:\CLIENTS-MENOW\W3906 WDOT NC - RHINELANDER\728 9509-00-00 T PLUM LAKE CTH N PLUM CREEK BRIDGE VILAS CO\95090000\090201-XS.DWG PLOT DATE : 7/27/2021 6:12 PM PLOT BY : MIKE LAPEAN PLOT NAME : PLOT SCALE : 1 IN:5 FT HORZ. / 1 IN:5 FT VERT. WISDOT/CADD SHEET 49

LAYOUT NAME - DW XS-1



Wisconsin Department of Transportation

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