

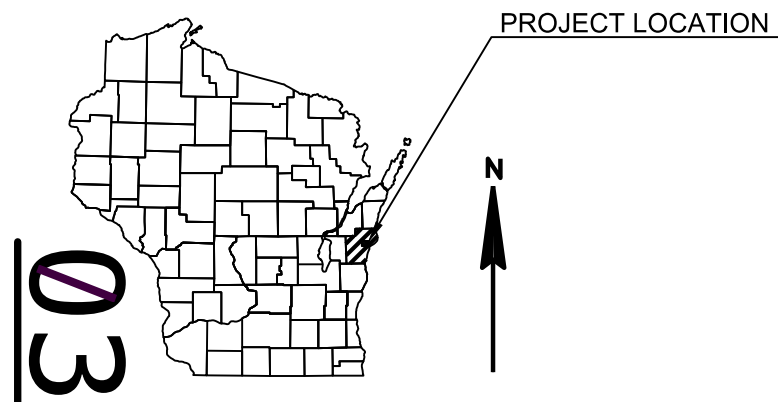
GRE
PROJECT ID: 4304-05-71
WITH: 4304-06-71
COUNTY: MANITOWOC

JULY 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 = 84



DESIGN DESIGNATION

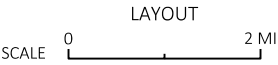
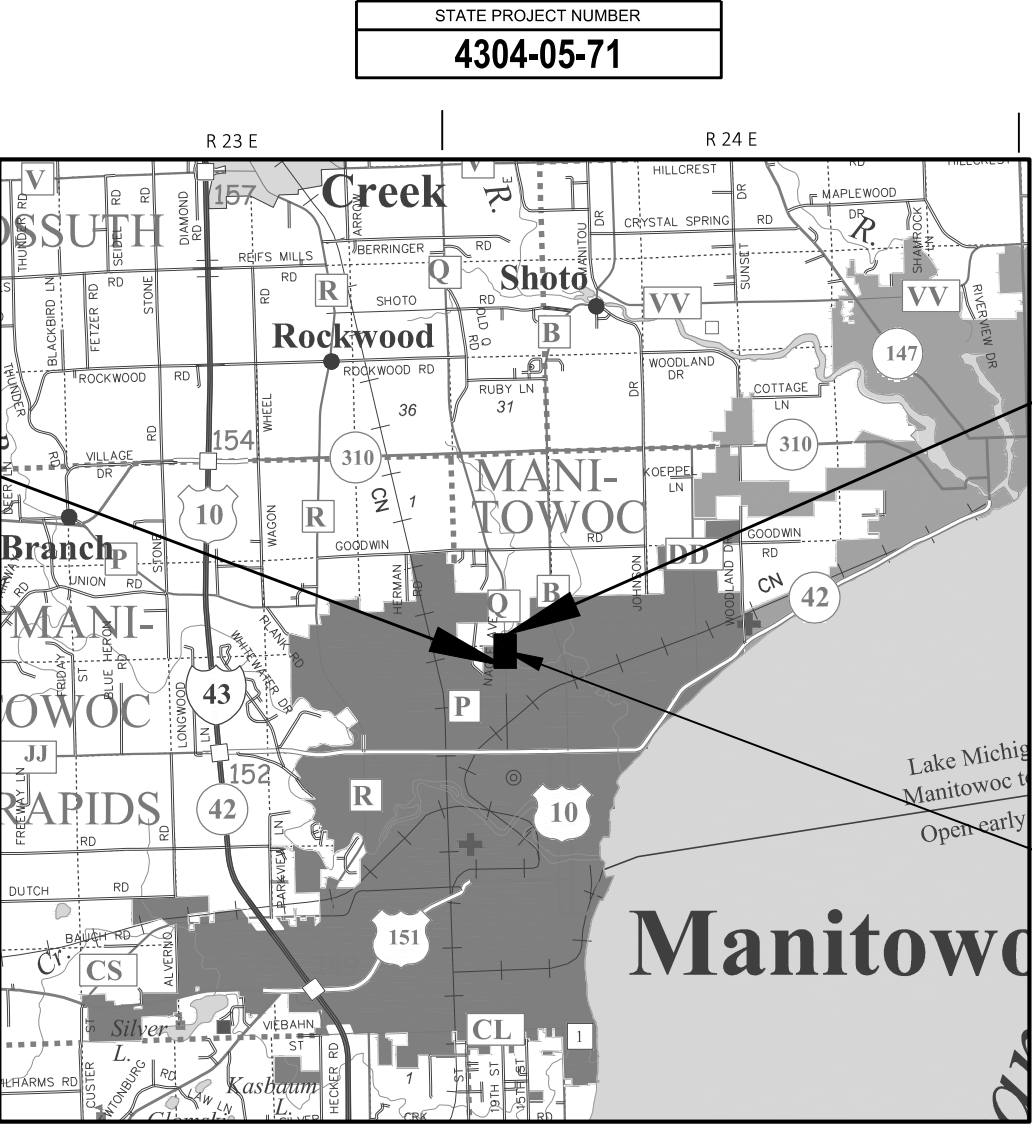
A.A.D.T.	(2021)	=	2,700
A.A.D.T.	(2041)	=	3,530
D.H.V.		=	-
D.D.		=	60/40
T.		=	5.9%
DESIGN SPEED		=	50 MPH
ESALS		=	410,000

CONVENTIONAL SYMBOLS

PLAN	
CORPORATE LIMITS	////
PROPERTY LINE	---
LOT LINE	- - - -
LIMITED HIGHWAY EASEMENT	L---
EXISTING RIGHT OF WAY	=====
PROPOSED OR NEW R/W LINE	=====
SLOPE INTERCEPT	- - - -
REFERENCE LINE	300' E
EXISTING CULVERT	- - - -
PROPOSED CULVERT (Box or Pipe)	=====
COMBUSTIBLE FLUIDS	CAUTION
MARSH AREA	~ ~ ~ ~
WOODED OR SHRUB AREA	~~~~~

PROFILE	
GRADE LINE	=====
ORIGINAL GROUND	-----
MARSH OR ROCK PROFILE (To be noted as such)	-----
SPECIAL DITCH	-----
GRADE ELEVATION	95.36
CULVERT (Profile View)	=====
UTILITIES	
ELECTRIC	E
FIBER OPTIC	FO
GAS	G
SANITARY SEWER	SAN
STORM SEWER	SS
TELEPHONE	T
WATER	W
UTILITY PEDESTAL	=====
POWER POLE	=====
TELEPHONE POLE	=====

BEGIN PROJECT
STA. 9+29
Y=312073.450
X=230349.014



TOTAL NET LENGTH OF CENTERLINE = 0.025 MI.

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), MANITOWOC COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES. ELEVATIONS ARE REFERENCED TO NAVD 88 (2012). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 12A.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

T MANITOWOC, CTH Q
LITTLE MANITOWOC RIVER BRIDGE
CTH Q
MANITOWOC COUNTY

STATE PROJECT NUMBER
4304-05-71

END PROJECT
STA. 10+65

STRUCTURE B-36-0242
STA. 10+00

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
4304-05-71		

ACCEPTED FOR
MANITOWOC COUNTY

1-26-21
DATE

COUNTY HIGHWAY COMMISSIONER

ORIGINAL PLANS PREPARED BY
AYRES

WISCONSIN
RYAN D. SCHATEL
44367
GREEN BAY
PROFESSIONAL ENGINEER

1/14/2021
(Date)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor
Designer
Project Manager
Regional Supervisor

AYRES
AYRES
SCOTT EBEL
JAMES THOMPSON

APPROVED FOR THE DEPARTMENT

DATE: 1/27/21

(Signature)

E

GENERAL NOTES

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

CONSTRUCT ASPHALTIC SURFACE WITH A 2" UPPER LAYER AND A 3" LOWER LAYER.

PROPERTY LINES AS SHOWN ARE APPROXIMATE.

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

BEARINGS SHOWN ON THIS PLAN ARE TRUE BEARINGS TO THE NEAREST SECOND.

ALL TIES ON THIS PLAN ARE HORIZONTAL UNLESS DESCRIBED OTHERWISE.

EROSION CONTROL LOCATIONS AS SHOWN ON THE EROSION CONTROL PLAN ARE APPROXIMATE. THE EXACT LOCATIONS WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.

DISTURBED AREAS WITHIN THE RIGHT OF WAY, EXCEPT THE AREAS WITHIN THE FINISHED SUBGRADE SHOULDER POINTS ARE TO BE SEEDED AND EROSION MAT AS DIRECTED BY THE ENGINEER.

ALL ELEVATIONS ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF NAVD 88 (2012).

WISDOT WILL FURNISH A BENCHMARK MONUMENT TO BE SET BY THE CONTRACTOR.

SAW CUT LOCATIONS SHOWN ON THE PLAN ARE SUBJECT TO ADJUSTMENT BY THE ENGINEER IN THE FIELD. THE LINE OF SUCH SAW CUTS WILL BE NEATLY DELINEATED THROUGH THE ASPHALT WITHOUT ANY DAMAGE TO THE REMAINING PORTION OF THE EXISTING PAVEMENT.

UTILITIES

- * AT&T

221 WEST WASHINGTON ST
APPLETON, WI 54911-4742
ATTENTION SHEA GORZELANCZYK
E-MAIL: shea.b.gorzelanczyk@att.com

TELEPHONE 920-433-4250
- * CITY OF MANITOWOC - SEWER

900 QUAY STREET
MANITOWOC, WISCONSIN 54220-4553
ATTENTION: GREG MINIKEL
gminikel@manitowoc.org

TELEPHONE 920-686-6910
- * COMCAST

1614 WASHINGTON AVENUE
MANITOWOC, WI 54220
ATTENTION: JON BURGETT
E-MAIL: jon_burgett@comcast.com

TELEPHONE 920-629-2365
- * MANITOWOC PUBLIC UTILITIES

1303 S. 8TH STREET
PO BOX 1090
MANITOWOC, WI 54221-1090
ATTENTION: STEVE BACALZO
E-MAIL: sbacalzo@mpu.org

TELEPHONE 920-683-4310
- * WISCONSIN PUBLIC SERVICE CORP - GAS

800 COLUMBUS ST
TWO RIVERS, WI 54241
ATTENTION: JOEL SAWICKI
E-MAIL: joel.sawicki@wisconsinpublicservice.com

TELEPHONE 920-657-1862

*-MEMBER OF DIGGERS HOTLINE



RUNOFF COEFFICIENT TABLE

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

TOTAL PROJECT AREA= 1.10 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.68 ACRES
SOIL GROUP D

STANDARD ABBREVIATIONS

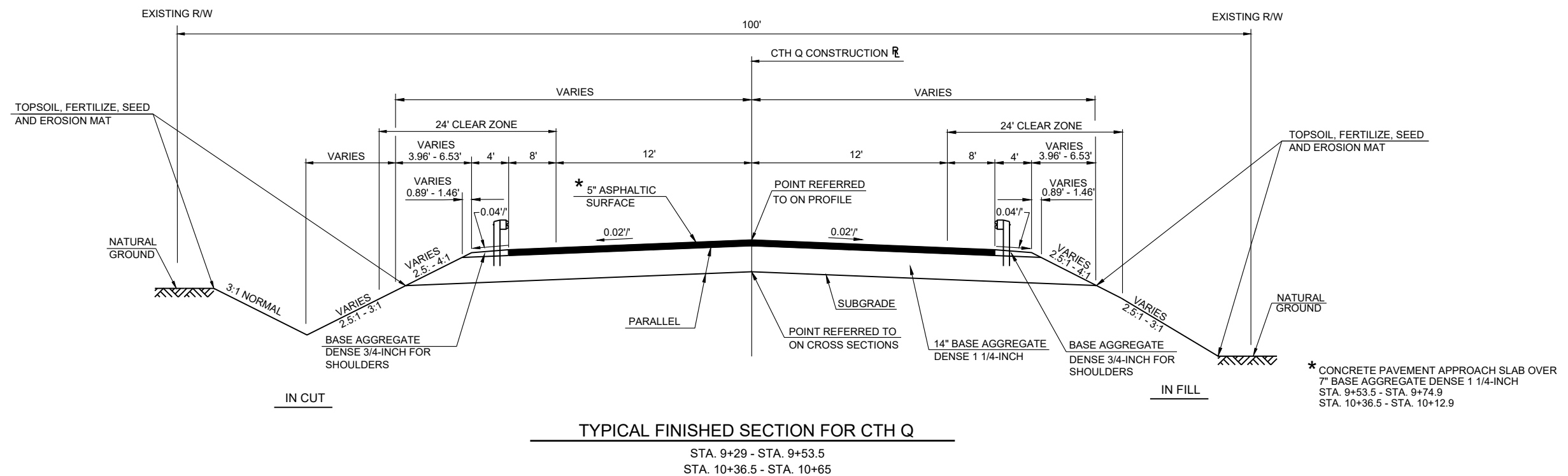
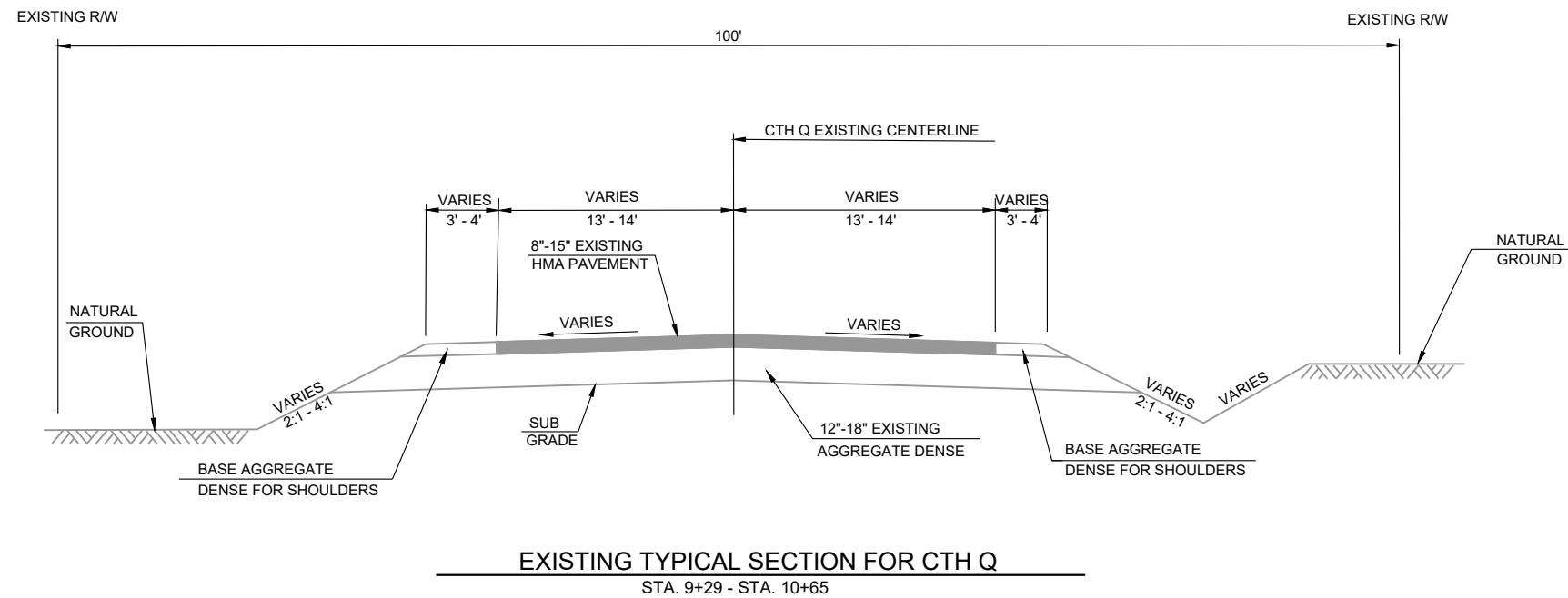
ADT	AVERAGE DAILY TRAFFIC	NC	NORMAL CROWN
AC	ASPHALT CEMENT	PT	POINT OF TANGENCY
AGG	AGGREGATE	PC	POINT OF CURVATURE
ASPH	ASPHALT	PI	POINT OF INTERSECTION
BM	BENCH MARK	PE	PRIVATE ENTRANCE
C/L	CENTERLINE	R	RADIUS
CONC	CONCRETE	REM	REMOVE
CMP	CORRUGATED METAL PIPE	R/L OR RL	REFERENCE LINE
CR.	CREEK	RCCP	REINFORCED CONCRETE CULVERT PIPE
D	DEGREE OF CURVE	RCPSS	REINFORCED CONCRETE PIPE STORM SEWER
DHV	DESIGN HOUR VOLUME	R.O.	RUNOUT
ESALS	EQUIVALENT SINGLE AXIS LOADS	R/W	RIGHT-OF-WAY
EXIST	EXISTING	STA	STATION
FE	FIELD ENTRANCE	SE	SUPER ELEVATION
HYD	HYDRANT	SS	STORM SEWER
IP	IRON PIPE OR PIN	T	TANGENT
L	LENGTH OF CURVE	TEL	TELEPHONE
LC	LONG CHORD OF CURVE	TLE	TEMPORARY LIMITED EASEMENT
LR	LENGTH OF RUNOFF	T	TRUCKS
MH	MANHOLE	VC	VERTICAL CURVE
		W	WELL

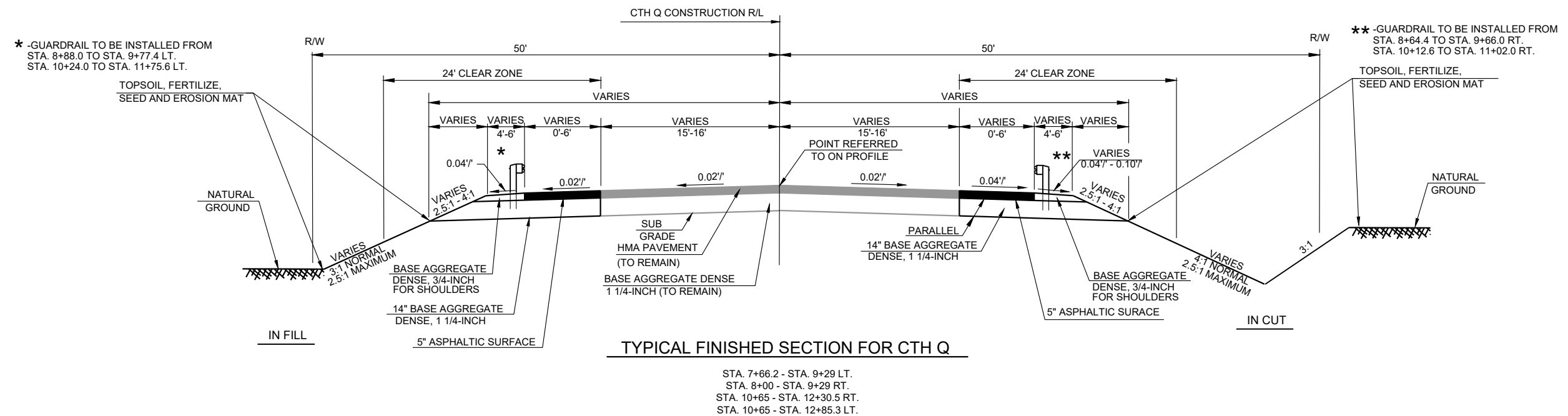
DEPARTMENT OF NATURAL RESOURCES

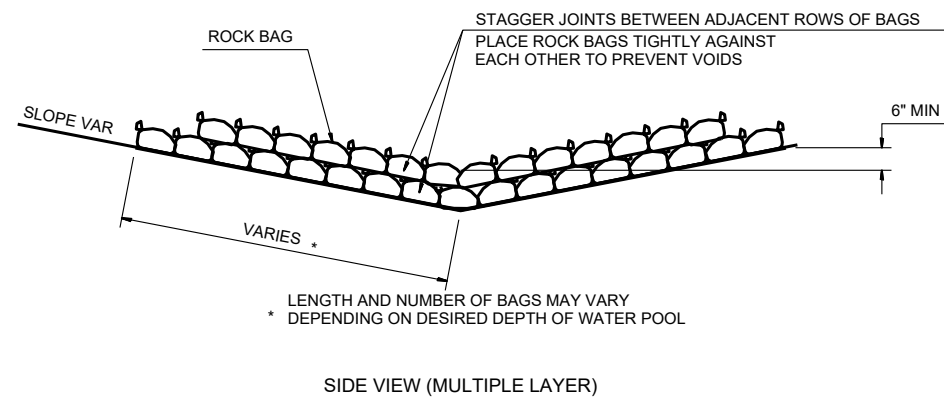
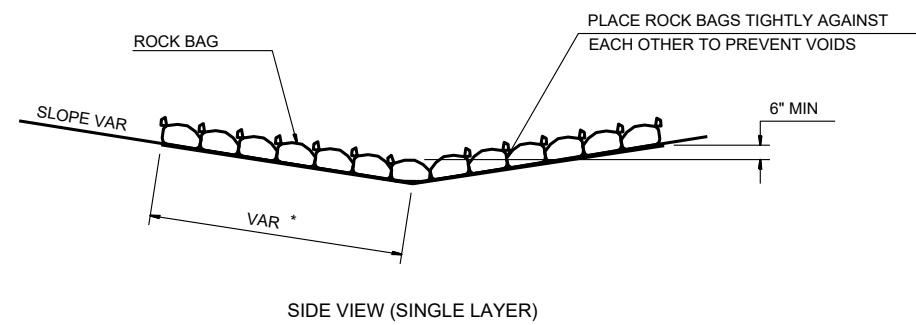
WDNR

2984 SHAWANO AVE.
GREEN BAY, WISCONSIN 54313
ATTENTION: MATT SCHAEVE
E-MAIL: MATTHEW.SCHAEVE@WISCONSIN.GOV

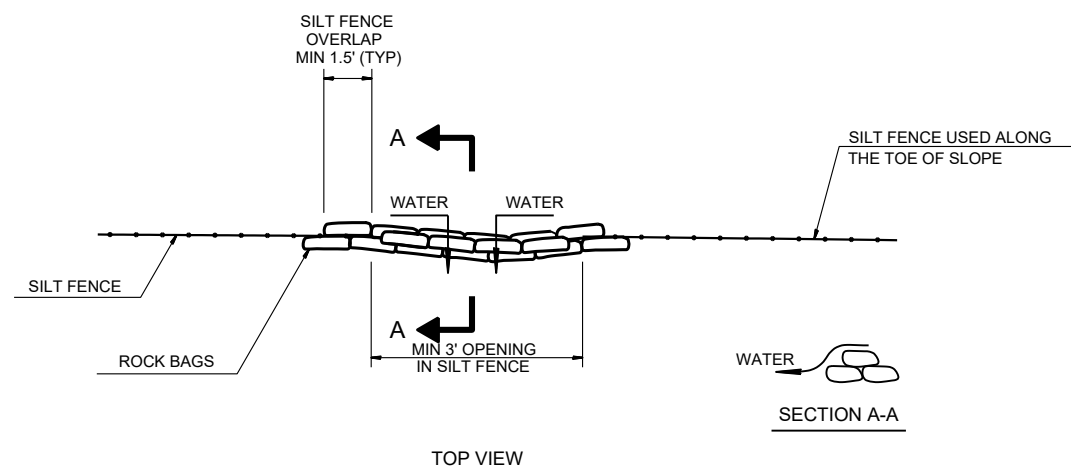
TELEPHONE 920-366-1544



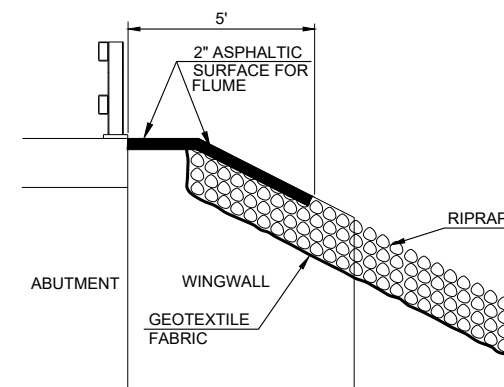




ROCK BAGS DITCH CHECK
PAID AS ROCK BAGS
(SEE MISCELLANEOUS QUANTITIES FOR LOCATIONS)

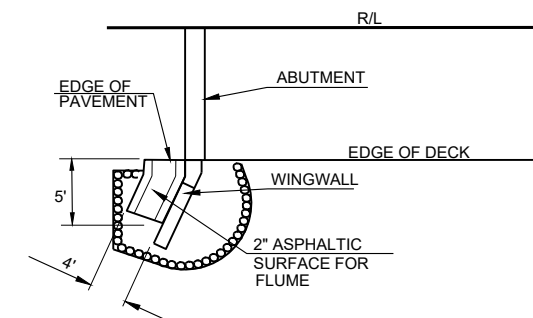


ROCK BAGS USED FOR SILT FENCE RELIEF DETAIL
PAID AS ROCK BAGS
(SEE MISCELLANEOUS QUANTITIES FOR LOCATIONS)



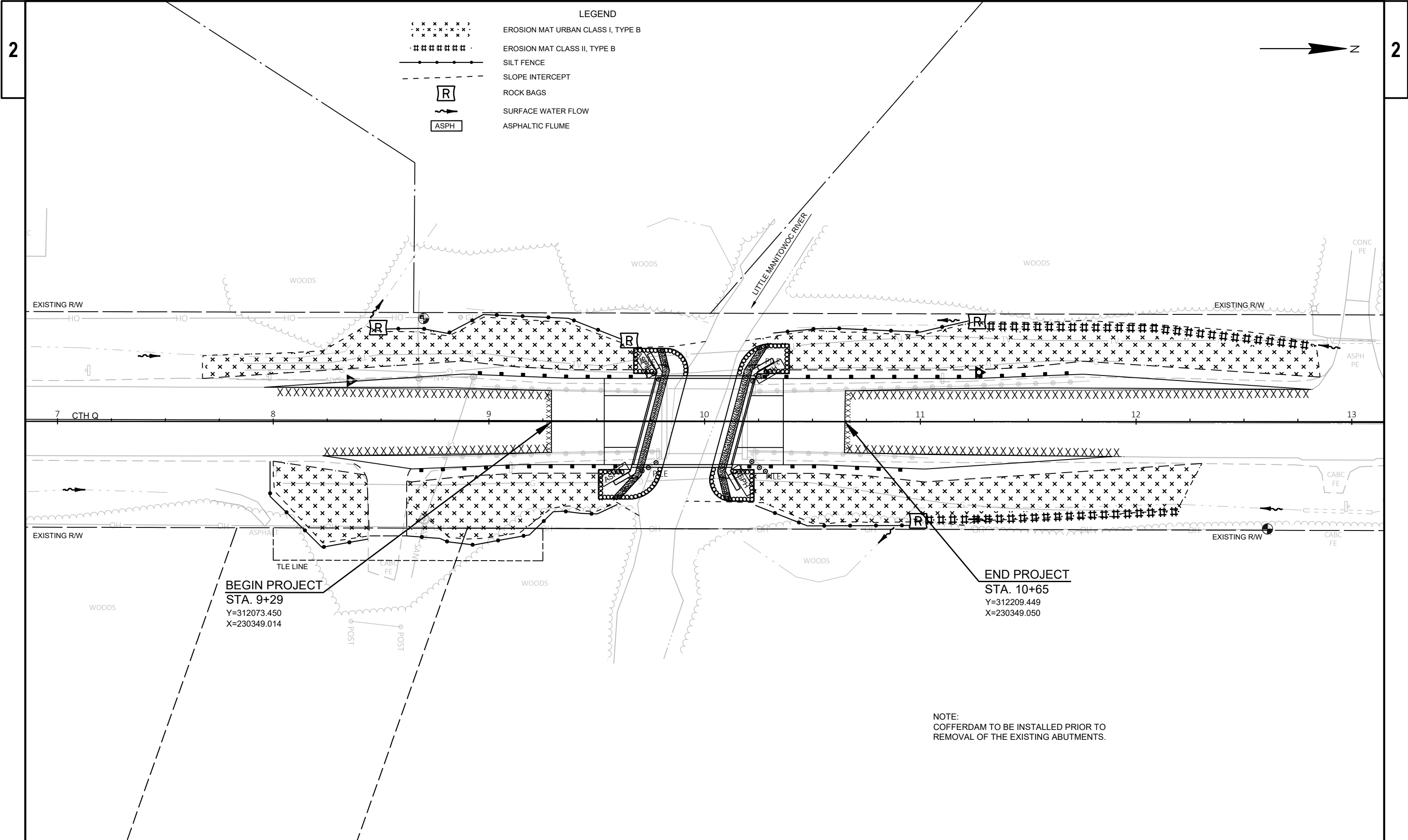
NOTE:
"KNIT" ASPHALTIC SURFACE INTO RIPRAP FROM EDGE OF DECK AND BEHIND WING WALL.

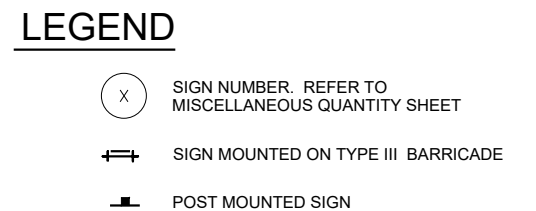
PROFILE



PLAN

DETAIL FOR ASPHALTIC FLUME AT STRUCTURE





Estimate Of Quantities By Plan Sets

4304-05-71					
Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	2.000	2.000
0004	201.0205	Grubbing	STA	2.000	2.000
0006	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. Station 10+00	LS	1.000	1.000
0010	204.0165	Removing Guardrail	LF	432.000	432.000
0012	205.0100	Excavation Common	CY	483.000	483.000
0016	206.1000	Excavation for Structures Bridges (structure) 01. B-36-242	LS	1.000	1.000
0020	206.5000	Cofferdams (structure) 01. B-36-242	LS	1.000	1.000
0022	208.0100	Borrow	CY	491.000	491.000
0028	210.1500	Backfill Structure Type A	TON	480.000	480.000
0030	213.0100	Finishing Roadway (project) 01. 4304-05-71	EACH	1.000	1.000
0034	305.0110	Base Aggregate Dense 3/4-Inch	TON	180.000	180.000
0036	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,340.000	1,340.000
0038	415.0080	Concrete Pavement 8-Inch	SY	64.000	64.000
0040	415.0410	Concrete Pavement Approach Slab	SY	98.000	98.000
0042	450.4000	HMA Cold Weather Paving	TON	147.000	147.000
0044	455.0605	Tack Coat	GAL	8.800	8.800
0046	465.0105	Asphaltic Surface	TON	147.000	147.000
0048	465.0315	Asphaltic Flumes	SY	8.000	8.000
0050	502.0100	Concrete Masonry Bridges	CY	220.000	220.000
0052	502.3200	Protective Surface Treatment	SY	245.000	245.000
0054	505.0400	Bar Steel Reinforcement HS Structures	LB	6,280.000	6,280.000
0056	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	27,480.000	27,480.000
0058	513.4061	Railing Tubular Type M	LF	96.000	96.000
0060	516.0500	Rubberized Membrane Waterproofing	SY	18.000	18.000
0062	550.0500	Pile Points	EACH	20.000	20.000
0064	550.2104	Piling CIP Concrete 10 3/4 X 0.25-Inch	LF	1,100.000	1,100.000
0068	606.0300	Riprap Heavy	CY	190.000	190.000
0070	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	180.000	180.000
0072	614.2300	MGS Guardrail 3	LF	75.000	75.000
0076	614.2500	MGS Thrie Beam Transition	LF	157.600	157.600
0078	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0080	619.1000	Mobilization	EACH	0.500	0.500
0082	624.0100	Water	MGAL	16.000	16.000
0084	625.0100	Topsoil	SY	1,400.000	1,400.000
0086	627.0200	Mulching	SY	250.000	250.000
0088	628.1504	Silt Fence	LF	530.000	530.000
0090	628.1520	Silt Fence Maintenance	LF	1,060.000	1,060.000
0092	628.1905	Mobilizations Erosion Control	EACH	5.000	5.000

Estimate Of Quantities By Plan Sets

4304-05-71

Line	Item	Item Description	Unit	Total	Qty
0094	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0096	628.2008	Erosion Mat Urban Class I Type B	SY	1,110.000	1,110.000
0098	628.2023	Erosion Mat Class II Type B	SY	300.000	300.000
0102	628.7570	Rock Bags	EACH	90.000	90.000
0104	629.0210	Fertilizer Type B	CWT	1.000	1.000
0106	630.0171	Seeding Mixture No. 70A	LB	7.000	7.000
0108	630.0200	Seeding Temporary	LB	45.000	45.000
0110	630.0300	Seeding Borrow Pit	LB	7.000	7.000
0112	630.0500	Seed Water	MGAL	39.000	39.000
0114	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0116	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0118	638.2102	Moving Signs Type II	EACH	2.000	2.000
0120	638.2602	Removing Signs Type II	EACH	11.000	11.000
0122	638.3000	Removing Small Sign Supports	EACH	9.000	9.000
0124	638.4000	Moving Small Sign Supports	EACH	1.000	1.000
0126	642.5001	Field Office Type B	EACH	0.500	0.500
0128	643.0420	Traffic Control Barricades Type III	DAY	1,650.000	1,650.000
0130	643.0705	Traffic Control Warning Lights Type A	DAY	2,400.000	2,400.000
0132	643.0900	Traffic Control Signs	DAY	9,300.000	9,300.000
0134	643.0920	Traffic Control Covering Signs Type II	EACH	5.000	5.000
0136	643.5000	Traffic Control	EACH	0.500	0.500
0138	645.0111	Geotextile Type DF Schedule A	SY	130.000	130.000
0140	645.0120	Geotextile Type HR	SY	350.000	350.000
0142	646.1020	Marking Line Epoxy 4-Inch	LF	1,940.000	1,940.000
0144	650.4500	Construction Staking Subgrade	LF	482.000	482.000
0146	650.5000	Construction Staking Base	LF	482.000	482.000
0148	650.6500	Construction Staking Structure Layout (structure) 01. B-36-242	LS	1.000	1.000
0152	650.9910	Construction Staking Supplemental Control (project) 01. 4304-05-71	LS	1.000	1.000
0156	650.9920	Construction Staking Slope Stakes	LF	482.000	482.000
0158	690.0150	Sawing Asphalt	LF	637.000	637.000
0160	715.0415	Incentive Strength Concrete Pavement	DOL	500.000	500.000
0162	715.0502	Incentive Strength Concrete Structures	DOL	1,320.000	1,320.000
0168	SPV.0060	Special 03. Adjusting Sanitary Manhole	EACH	2.000	2.000
0170	SPV.0090	Special 01. Flashing Stainless Steel	LF	83.000	83.000
0172	SPV.0195	Special 01. Select Crushed Material for Travel Corridor	TON	20.000	20.000

Estimate Of Quantities By Plan Sets

4304-05-71

CLEARING AND GRUBBING					
STATION	TO	STATION	LOCATION	201.0105 CLEARING STA	201.0205 GRUBBING STA
9+00	-	11+00	CTH Q	2	2
TOTALS				2	2

REMOVING GUARDRAIL				
STATION	TO	STATION	LOCATION	204.0165 LF
8+72	-	9+80	CTH Q, RT	108
8+97	-	9+79	CTH Q, LT	83
10+20	-	11+04	CTH Q, RT	83
10+20	-	11+79	CTH Q, LT	158
TOTAL				432

EARTHWORK SUMMARY

Division	From/To Station	Location	Common Excavation (item #205.0100)	Unusable Pavement Material (4)	Available Material (5)	Unexpanded Fill	Expanded Fill (13)	Mass Ordinate +/- (14)	Borrow (item #208.0100)	Comment:
			Cut (2)				Factor 1.30			
1	8+00 - 9+29	CTH Q (SE SHOULDER)	66	0	66	55	72	-6	6	
	7+66.19 - 9+29	CTH Q (SW SHOULDER)	96	0	96	32	42	54	-54	
	9+29 - 10+65	CTH Q	217	78	139	179	233	-94	94	
	10+65 - 12+30.53	CTH Q (NE SHOULDER)	42	0	42	237	308	-266	266	
	10+65 - 12+85.29	CTH Q (NW SHOULDER)	62	0	62	186	242	-180	180	
Division 1 Totals			483	78	405	689	896	-491	491	

- 2) Unsuable Pavement Material is included in Cut
4) Unusable Pavement Material = Existing Asphaltic Pavement. Backfill any areas below subgrade with borrow .
5) Available Material = Cut - Unusuable Pavement Material
6) Marsh Excavation. To be backfilled with Select Borrow Material as show n in cross sections.
10) Expanded Marsh Backfill - This is to be filled w ith Select Borrow material. Marsh Backfill Factor = 1.5. Item Number 208.1100
13) Expanded Fill. Factor = 1.3 Expanded Fill = Unexpanded Fill * Fill Factor
14) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material w ithin the Division. Minus indicates a shortage of material within the Division.

BASE AGGREGATE DENSE & WATER						
STATION	TO	STATION	LOCATION	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON	624.0100 WATER MGAL
7+67	-	9+72	CTH Q	-	595	7
7+67	-	9+29	CTH Q, LT	42	-	-
8+00	-	9+29	CTH Q, RT	30	-	-
10+18	-	12+85	CTH Q	-	745	9
10+65	-	12+31	CTH Q, RT	43	-	-
10+65	-	12+85	CTH Q, LT	50	-	-
8+50	-		CTH Q, RT	15	-	-
TOTALS				180	1,340	16

CONCRETE PAVEMENT						
STATION	TO	STATION	LOCATION	415.0080 8-INCH SY	415.0410 APPROACH SLAB SY	REMARKS
9+54	-	9+77	CTH Q, LT	20	-	CONCRETE SHOULDER
9+54	-	9+72	CTH Q	-	49	
9+54	-	9+68	CTH Q, RT	12	-	CONCRETE SHOULDER
10+13	-	10+37	CTH Q, RT	20	-	CONCRETE SHOULDER
10+18	-	10+37	CTH Q	-	49	
10+22	-	10+37	CTH Q, LT	12	-	CONCRETE SHOULDER
TOTAL				64	98	

ALL ITEMS ARE GROUP CODE 0010 UNLESS OTHERWISE STATED

ASPHALTIC SURFACE

STATION	TO	STATION	LOCATION	450.4000 HMA COLD WEATHER PAVING TON	455.0605 TACK COAT GAL	465.0105 ASPHALTIC SURFACE TON
7+96	-	9+54	CTH Q	64	3.8	64
10+37	-	12+82	CTH Q	83	5.0	83
TOTALS				147	8.8	147

GUARDRAIL

STATION	TO	STATION	LOCATION	614.2300 MGS GUARDRAIL 3 LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH
8+64.4	-	9+66.4	CTH Q, RT	12.5	39.4	1
8+88.0	-	9+77.1	CTH Q, LT	-	39.4	1
10+12.9	-	11+02.0	CTH Q, RT	-	39.4	1
10+23.7	-	11+75.6	CTH Q, LT	62.5	39.4	1
TOTALS				75	157.6	4

SILT FENCE

STATION	TO	STATION	LOCATION	628.1504 SILT FENCE LF	628.1520 MAINTENANCE LF
7+99	-	8+44	CTH Q, RT	72	144
8+52	-	9+63	CTH Q, LT	100	200
8+62	-	9+60	CTH Q, RT	104	208
10+28	-	10+95	CTH Q, RT	69	138
10+40	-	11+22	CTH Q, LT	83	166
UNDISTRIBUTED			CTH Q	102	204
TOTALS				530	1,060

ASPHALTIC FLUMES

STATION	LOCATION	465.0315 ASPHALTIC FLUMES SY
9+65	CTH Q, RT	2
9+75	CTH Q, LT	2
10+15	CTH Q, RT	2
10+25	CTH Q, LT	2
TOTAL		8

TOPSOIL, FERTILIZER, AND SEED

STATION	TO	STATION	LOCATION	625.0100 TOPSOIL SY	627.0200 MULCH SY	629.0210 FERTILIZER TYPE B CWT	630.0171 SEEDING MIXTURE NO. 70A LB	630.0200 SEEDING TEMPORARY LB	630.0300 SEEDING BORROW PIT LB	630.0500 SEED WATER MGAL
7+67	-	10+00	CTH Q, LT	201	-	0.1	0.7	5	-	6
8+00	-	9+70	CTH Q, RT	265	-	0.2	1.0	7	-	7
9+91	-	12+27	CTH Q, RT	323	-	0.2	1.2	9	-	9
10+12	-	12+85	CTH Q, LT	344	-	0.2	1.2	9	-	10
UNDISTRIBUTED				-	250	0.1	-	7	7	-
UNDISTRIBUTED				267	-	0.2	2.9	8	-	7
TOTALS				1,400	250	1.0	7.0	45	7	39

MOBILIZATIONS EROSION CONTROL

LOCATION	628.1905 MOBILIZATIONS EROSION CONROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH
CTH Q	5	3
TOTALS	5	3

EROSION MAT

STATION	TO	STATION	LOCATION	EROSION MAT URBAN CLASS I TYPE B 628.2008 SY	EROSION MAT CLASS II TYPE B 628.2023 SY
7+67	-	10+00	CTH Q, LT	201	-
8+00	-	9+70	CTH Q, RT	265	-
9+91	-	12+27	CTH Q, RT	217	106
10+12	-	12+85	CTH Q, LT	208	136
UNDISTRIBUTED				219	58
TOTALS				1,110	300

ALL ITEMS ARE GROUP CODE 0010 UNLESS OTHERWISE STATED

ROCK BAGS		
STATION	LOCATION	628.7570 EACH
7+50	CTH Q, RT	15
8+50	CTH Q, LT	15
9+50	CTH Q, LT	15
11+00	CTH Q, RT	15
11+25	CTH Q, LT	15
UNDISTRIBUTED	CTH Q	15
TOTAL		90

REMOVING SIGNS & SUPPORTS

STATION	LOCATION	638.2602 SIGNS TYPE II EACH	638.3000 SMALL SIGN SUPPORTS EACH	REMARKS
9+11	CTH Q, LT & RT	2	2	CTH Q/MAGNOLIA AVE INTERSECTION
	CTH Q, RT	1	1	WEIGHT LIMIT SIGN
9+79	CTH Q, LT & RT	2	2	BRIDGE SIGN
10+22	CTH Q, LT & RT	2	2	BRIDGE SIGN
11+09	CTH Q, LT	1	1	WEIGHT LIMIT SIGN
	CTH Q	3	1	CTH Q/STH 310 INTERSECTION
TOTALS		11	9	

MOVING SIGNS TYPE II				
STATION	LOCATION	MOVING SIGNS TYPE II 638.2102	MOVING SMALL SIGN SUPPORTS 638.4000	REMARKS
7+97	CTH Q, LT	2	1	45 MPH/NO PARKING SIGN
TOTALS		2	1	

SIGNS REFLECTIVE TYPE II AND WOOD POSTS

STATION	LOCATION	634.0612 WOOD POSTS 4"x6"x12" EACH	637.2230 SIGNS W5-52L SF	W5-52R SF
SE QUADRANT	CTH Q	1	-	3
	CTH Q	1	3	-
	CTH Q	1	3	-
	CTH Q	1	-	3
SUBTOTALS		4	6	6
TOTALS		4	12	

TRAFFIC CONTROL SUMMARY

LOCATION	APPROXIMATE SERVICE DAYS	643.0420 BARRICADES TYPE III		643.0705 WARNING LIGHTS TYPE A		643.0900 * SIGNS		REMARKS
		NO. IN SERVICE	DAYS	NO. IN SERVICE	DAYS	NO. IN SERVICE	DAYS	
CTH Q / USH 10	75	2	150	2	150	2	150	BRIDGE OUT 1 MILE AHEAD - SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL A SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL C SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL D SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL D SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL C
SOUTH OF WORK ZONE LIMITS	75	4	300	8	600	6	450	
SOUTH WORK ZONE LIMITS	75	5	375	6	450	1	75	
NORTH WORK ZONE LIMITS	75	5	375	6	450	1	75	
NORTH OF WORK ZONE LIMITS	75	4	300	8	600	6	450	
CTH Q / STH 310	75	2	150	2	150	2	150	BRIDGE OUT 2 MILES AHEAD, LOCAL TRAFFIC ONLY
TOTALS			1,650		2,400		1,350	

* ADDITIONAL QUANTITIES SHOWN ELSEWHERE

ALL ITEMS ARE GROUP CODE 0010 UNLESS OTHERWISE STATED

TRAFFIC CONTROL DETOUR SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 5 DAYS	643.0900	643.0920 COVERING SIGNS		REMARKS
						SIGNS * DAYS	NUMBER OF CYCLES	TYPE II EACH	
1	500' N. OF D1-2	M 1-5A	24"x24"	1	75	75			Q
	"	WO 20-2-A	48"x48"	1	75	75			
2	D1-2 (AH-MANITOWOC; TWO RIVERS-LT)						1	1	LEFT-TWO RIVERS
3	500' N. OF RAB	M4-8	24"x12"	1	75	75			
	"	M3-3	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			
	"	M05-1R	24"x21"	1	75	75			Q
4	RAB NORTHWEST QUADRANT	M4-8	24"x12"	1	75	75			
	"	M 3-3	24"x12"	1	75	75			
	"	M 1-5A	24"x24"	1	75	75			Q
	"	MO 6-1	21"x21"	1	75	75			
5	J12-1 (TILT LT.-Q)						1	1	
6	1500' W. OF RAB	M1-5A	24"x24"	1	75	75			Q
	"	WO 20-2-A	48"x48"	1	75	75			
7	500' W. OF RAB	M4-8	24"x12"	1	75	75			
	"	M3-3	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M06-1	21"x21"	1	75	75			
8	D1-62 (Q-MANITOWOC, W.-310, Q-LARABEE)						1	1	WEST-310, Q-LARABEE
9	RT. OF J4-1	M4-8	24"x12"	1	75	75			
	"	M3-3	24"x12"	1	75	75			Q
	"	M1-5A	24"x24"	1	75	75			
10	RT OF. D1-62	M4-8	24"x12"	1	75	75			
	"	M3-3	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M05-2R	21"x21"	1	75	75			
11	LT. OF R1-2	M4-8	24"x12"	1	75	75			
	"	M3-3	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M06-2	21"x21"	1	75	75			
12	LT. OF D1-1	M4-8	24"x12"	1	75	75			
	"	M3-3	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M06-1	21"x21"	1	75	75			
13	RT. OF J4-1	M4-8	24"x12"	1	75	75			
	"	M3-3	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
14	100' N. OF COUNTY P	M4-8	24"x12"	1	75	75			
	"	M3-3	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	PAGE SUBTOTALS					2,775		3	

* ADDITIONAL QUANTITIES SHOWN ELSEWHERE

ALL ITEMS ARE GROUP CODE 0010 UNLESS OTHERWISE STATED

TRAFFIC CONTROL DETOUR SIGN SUMMARY (CONTINUED)

SIGN NO.	LOCATION	SIGN CODE	SIZE	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 5 DAYS	643.0900	643.0920 COVERING SIGNS		REMARKS
						SIGNS * DAYS	NUMBER OF CYCLES	TYPE II EACH	
15	500' N. OF USH 10/STH 42	M4-8	24"x12"	1	75	75			
	"	M3-3	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M05-1L	21"x21"	1	75	75			
16	LT. OF J4-3	M4-8	24"x12"	1	75	75			
	"	M3-3	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M06-1	21"x21"	1	75	75			
17	100' E. OF CTH R	M4-8	24"x12"	1	75	75			
	"	M3-3	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
18	RT. OF NO PARKING SIGN	M4-8A	24"x18"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
19	1000' E. OF CTH Q	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	WO 20-2-A	48"x48"	1	75	75			
20	500' E. OF CTH Q	M4-8	24"x12"	1	75	75			
	"	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M06-1	21"x21"	1	75	75			
21	1500' S. OF USH 10/STH 42	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	WO 20-2-A	48"x48"	1	75	75			
22	1000' S. OF USH 10/STH 42	M4-8	24"x12"	1	75	75			
	"	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M05-1L	21"x21"	1	75	75			
23	500' S. OF USH 10/STH 42	M4-8	24"x12"	1	75	75			
	"	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M06-1	21"x21"	1	75	75			
24	USH 10/STH 42 / CTH Q NORTHEAST QUADRANT	M4-8	24"x12"	1	75	75			
	"	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M06-1	21"x21"	1	75	75			
25	USH 10/STH 42, CTH Q NORTHEAST QUADRANT	R11-3B	60"x30"	1	75	75			1 MILE
	"	M4-9L	30"x24"	1	75	75			
26	RT. OF NO PARKING SIGN	M4-8	24"x12"	1	75	75			
	"	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
27	500' E. OF CTH R	M4-8	24"x12"	1	75	75			
	"	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M05-1R	21"x21"	1	75	75			
	PAGE SUBTOTALS					3,300		0	

* ADDITIONAL QUANTITIES SHOWN ELSEWHERE

ALL ITEMS ARE GROUP CODE 0010 UNLESS OTHERWISE STATED

TRAFFIC CONTROL DETOUR SIGN SUMMARY (CONTINUED)

SIGN NO.	LOCATION	SIGN CODE	SIZE	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 5 DAYS	643.0900	643.0920 COVERING SIGNS		REMARKS
						SIGNS * DAYS	NUMBER OF CYCLES	TYPE II EACH	
28	RT. OF J13-1	M4-8	24"x12"	1	75	75			
	"	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M06-1	21"x21"	1	75	75			
29	100' N. OF USH 10/STH 42	M4-8	24"x12"	1	75	75			
	"	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
30	100' S. OF COUNTY P	M4-8	24"x12"	1	75	75			
	"	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
31	RT OF. D1-62	M4-8	24"x12"	1	75	75			
	"	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M05-1R	21"x21"	1	75	75			
32	RT. OF R1-2	M4-8	24"x12"	1	75	75			
	"	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
	"	M06-1	21"x21"	1	75	75			
33	RT. OF J4-1	M4-8	24"x12"	1	75	75			
	"	M3-1	24"x12"	1	75	75			
	"	M1-5A	24"x24"	1	75	75			Q
34	LT. OF J13-1	M4-8A	24"x18"	1	75	75			
		M1-5A	24"x24"	1	75	75			Q
35	D1-62 (Q-LARABEE, E.-310, Q-MANITOWOC)						1	1	EAST-310, Q-LARABEE
36	D1-1 (Q)						1	1	
37	RAB SOUTHWEST QUADRANT	R11-3B	60"x30"	1	75	75			2 MILES
		M4-9R	30"x24"	1	75	75			
	PAGE SUBTOTALS					1,875		2	

PROJECT TOTALS

7,950

5

* ADDITIONAL QUANTIES SHOWN ELSEWHERE

ALL ITEMS ARE GROUP CODE 0010 UNLESS OTHERWISE STATED

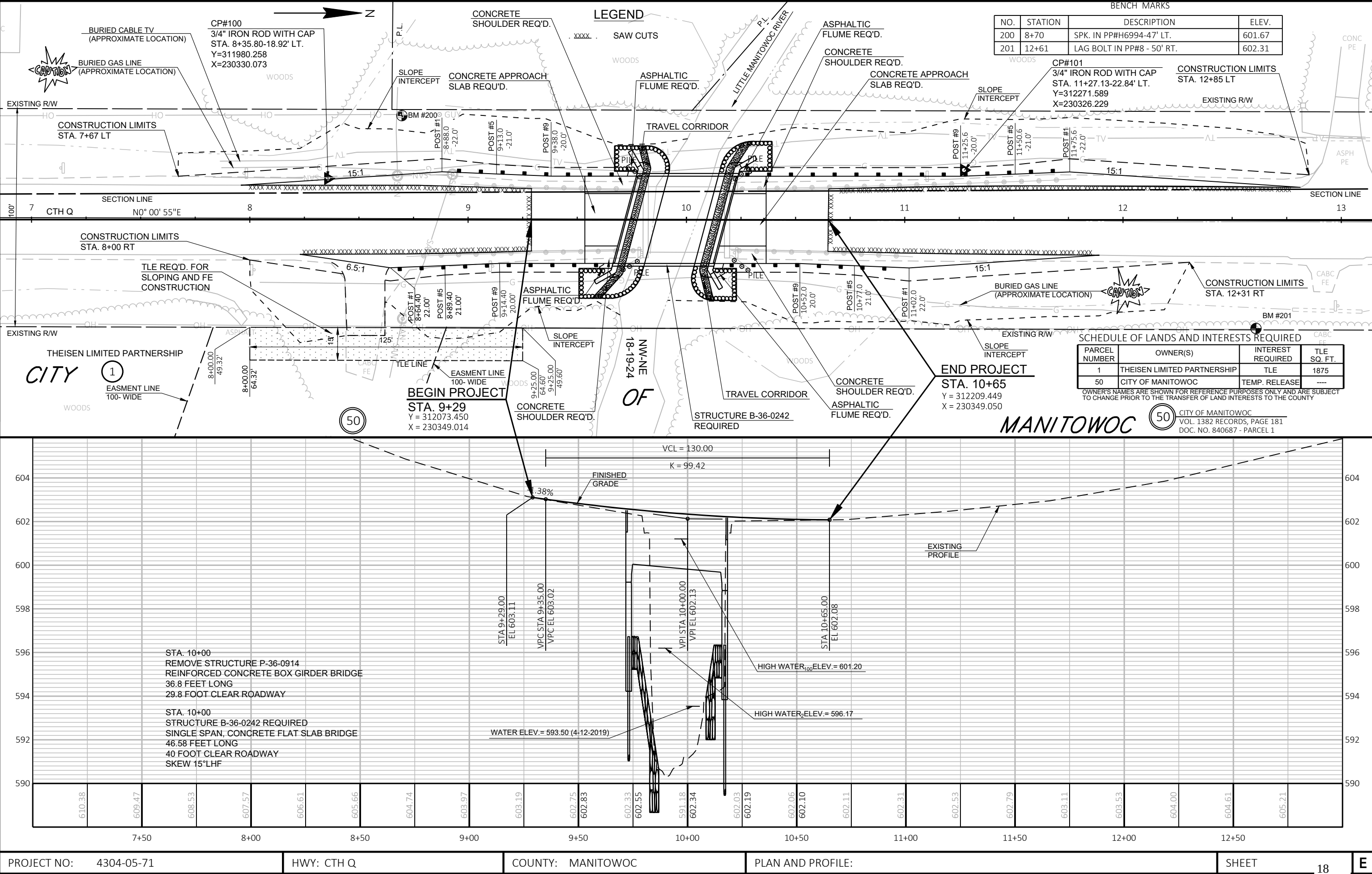
MARKING						
646.1020						
STATION	TO	STATION	LOCATION	LINE EPOXY 4-INCH YELLOW LF	LINE EPOXY 4-INCH WHITE LF	REMARKS
7+96	-	12+81	CTH Q, LT & RT	-	970	EDGE LINE LT & RT
7+96	-	12+81	CTH Q	970	-	CENTERLINE, DOUBLE YELLOW
SUBTOTALS				970	970	
TOTAL				1,940		

SAWING ASPHALT				
STATION		STATION	LOCATION	690.0150 LF
7+96	-	9+29	CTH Q	268
10+65	-	12+81	CTH Q	369
TOTAL				637

CONSTRUCTION STAKING									
CATEGORY	STATION	TO	STATION	LOCATION	650.4500	650.5000	650.6500	650.9910	650.9920
					SUBGRADE	BASE	STRUCTURE	SUPPLEMENTAL	SLOPE
					LF	LF	LAYOUT	CONTROL	STAKES
								4304-05-71	
					LF	LF	LS	LS	LF
0010	7+67	-	9+77	CTH Q	210	210	-	1	210
0010	10+13	-	12+85	CTH Q	272	272	-	-	272
0010	SUBTOTALS				482	482	-	1	482
0020	10+00			B-36-0242	-	-	1	-	-
0020	SUBTOTALS				-	-	1	-	-
TOTALS					482	482	1	1	482

ADJUSTING SANITARY MANHOLE			
CATEGORY	STATION	LOCATION	SPV.0060.03 EACH
0030	8+68	CTH Q, LT	1
	8+93	CTH Q, LT	1
TOTAL			2

ALL ITEMS ARE GROUP CODE 0010 UNLESS OTHERWISE STATED



Standard Detail Drawing List

08D04-05	CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES
08D21-01	DRIVEWAYS WITHOUT CURB & GUTTER
08E09-06	SILT FENCE
12A03-10	NAME PLATE (STRUCTURES)
13A03-06	CONCRETE PAVEMENT SHOULDERS
13B02-09A	CONCRETE PAVEMENT APPROACH SLAB
14B42-06A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-08A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-08B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C02-08C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C06-09	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-20A	LONGITUDINAL MARKING (MAINLINE)
15C11-08B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS

6



PLAN VIEW
FLUME AT CURB END



6

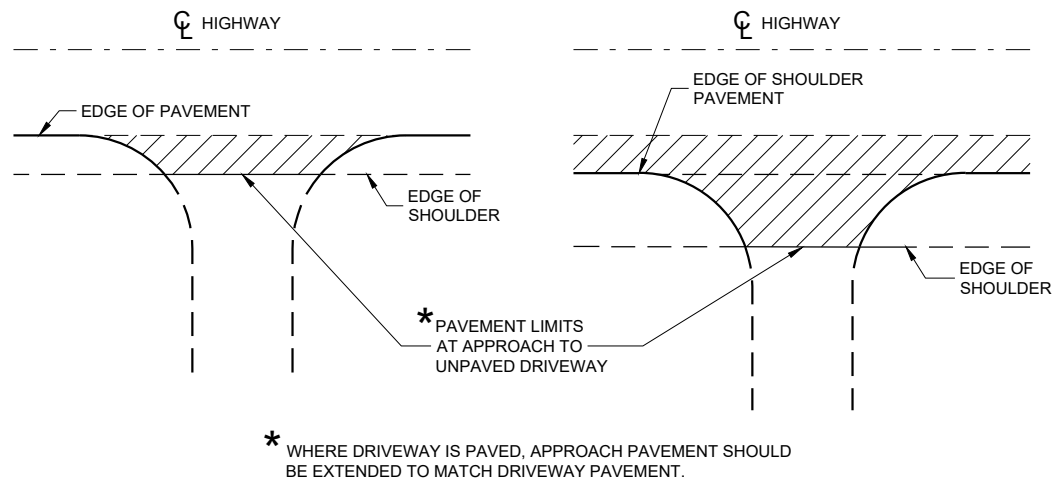
S.D.D. 8 D 4-5

③ CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED

PLAN VIEW



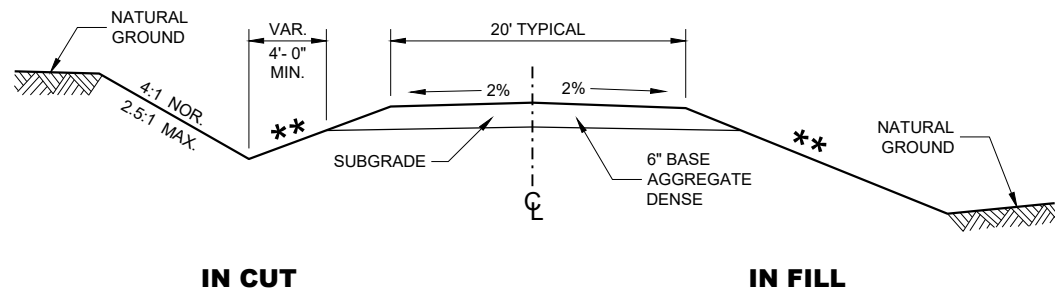
APPROVED
9-4-08 /S/ Jerry H. Zocco
DATE ROADWAY STANDARDS 20
ENGINEER



PLAN VIEW
(UNPAVED SHOULDER ON HIGHWAY)

PLAN VIEW
(PAVED SHOULDER ON HIGHWAY)

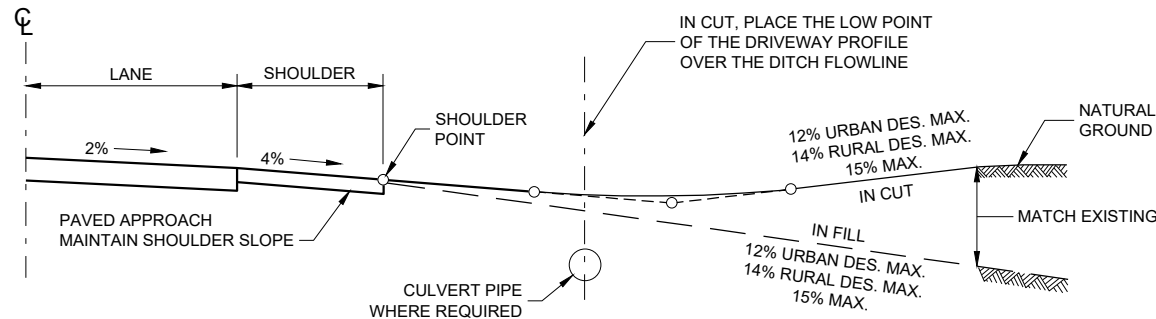
**RURAL DRIVEWAY INTERSECTION DETAIL
(NO CURB AND GUTTER OR SIDEWALK)**



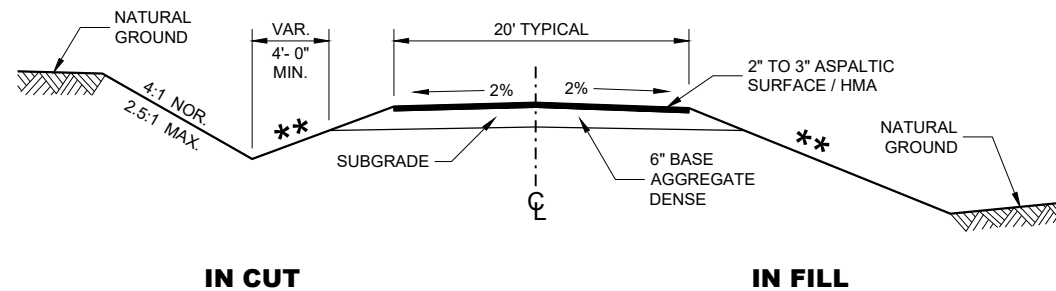
**TYPICAL CROSS SECTION FOR
PRIVATE DRIVE OR FIELD ENTRANCE
AGGREGATE SURFACE**

****** SLOPE CAN VARY WITH
SPEED. SEE 11-45-30.6.2

POSTED SPEED MPH	MAX. SLOPE
<35	4:1
≥ 35 TO < 60	6:1
≥60	10:1



TYPICAL DRIVEWAY PROFILES



**TYPICAL CROSS SECTION FOR
PRIVATE DRIVE OR FIELD ENTRANCE
ASPHALTIC SURFACE**

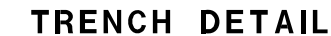
**DRIVEWAYS WITHOUT
CURB AND GUTTER**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



- 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.

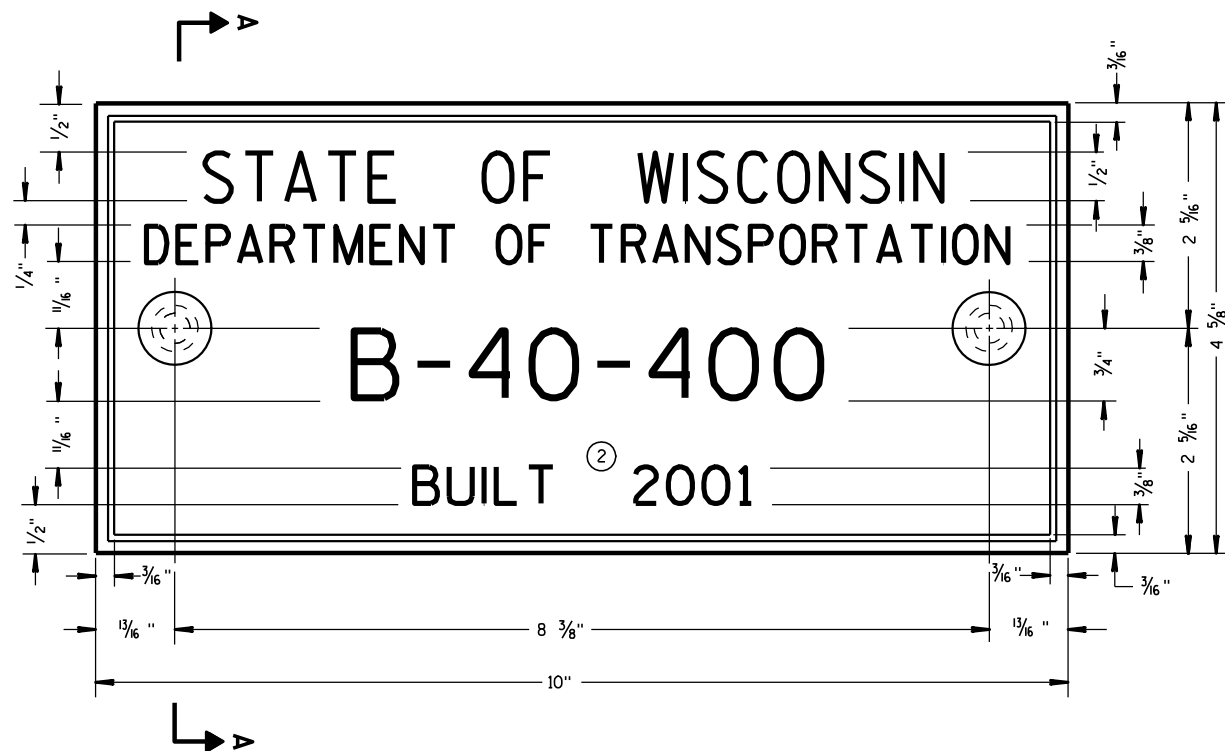


SILT FENCE

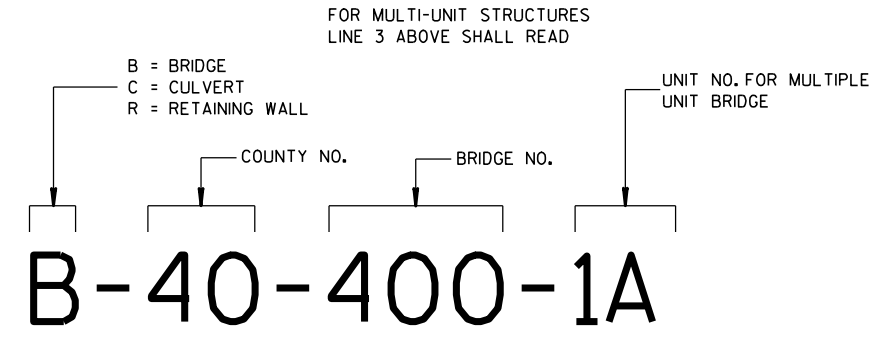
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-29-05 /S/ Beth Connolly
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA



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



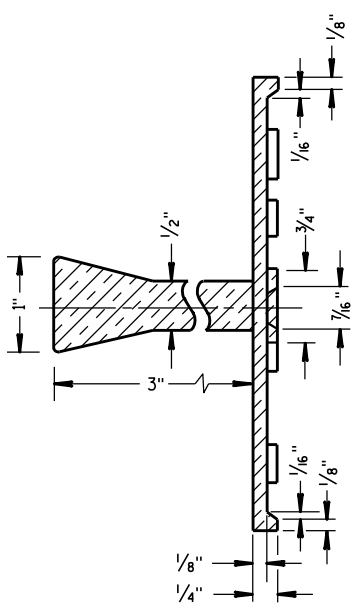
**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

GENERAL NOTES

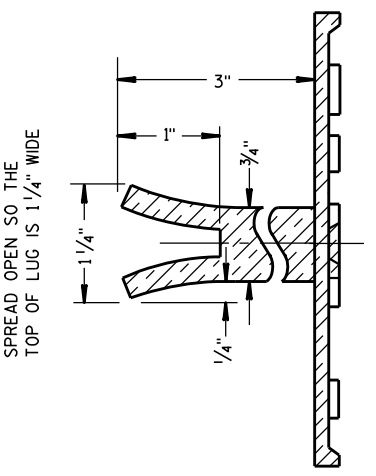
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

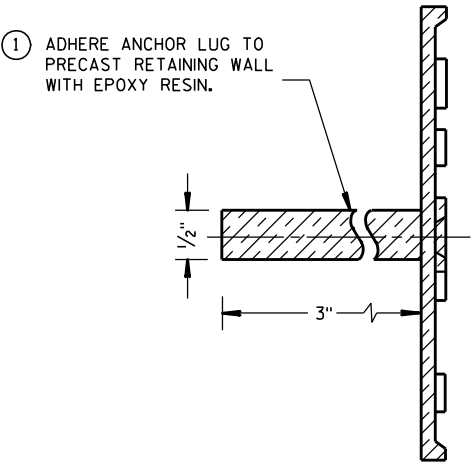
- ① EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ② REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A

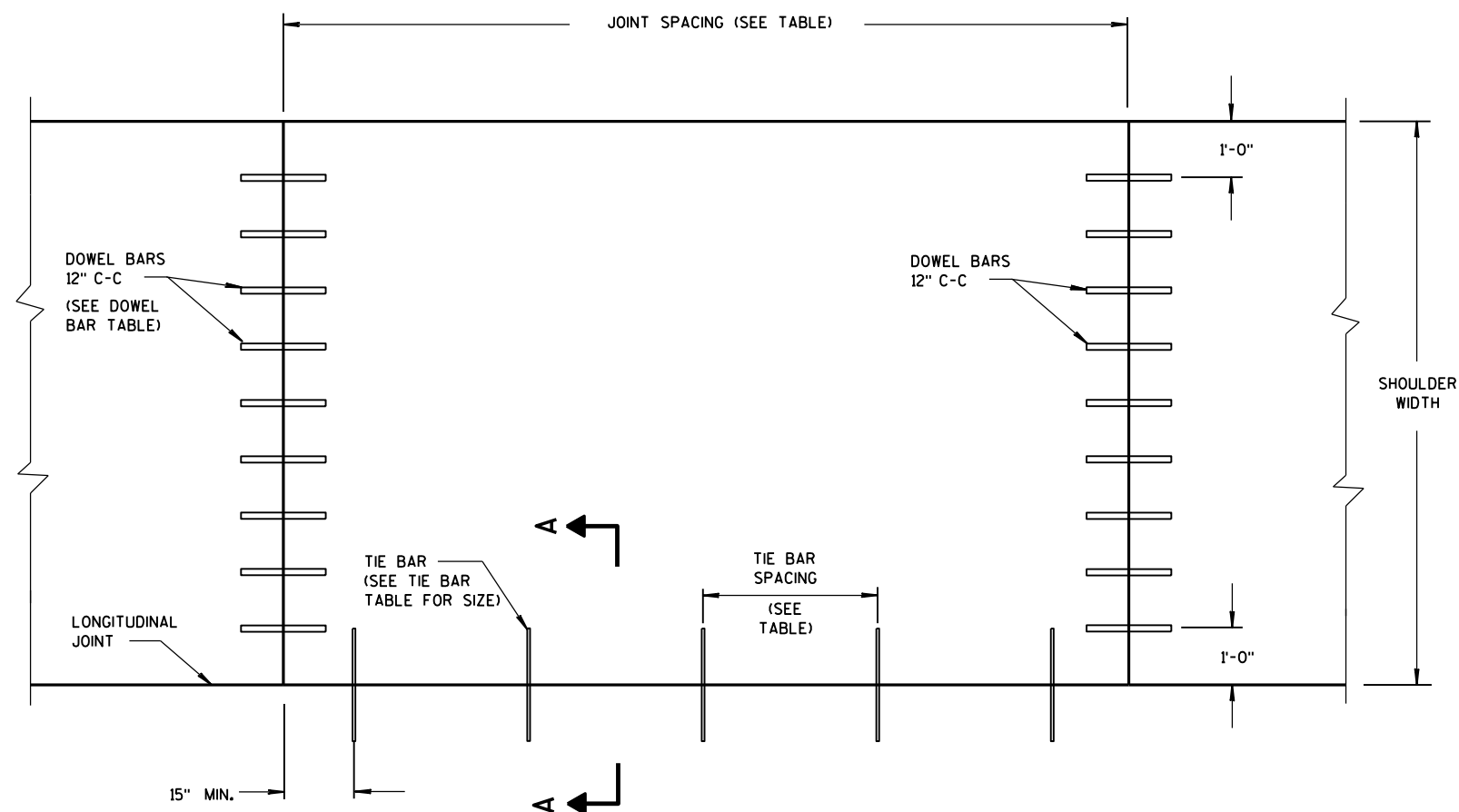


ALTERNATE LUG



ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE (STRUCTURES)		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
APPROVED DATE 3/26/10	CHIEF STRUCTURAL DEVELOPER /S/ Scot Beck 23	JEER



PLAN VIEW
CONCRETE PAVEMENT SHOULDER

TIE BAR TABLE

PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4 *	30"	24" **

* SUBSTITUTE BENT BARS AT LONGITUDINAL JOINTS WHEN EQUIPMENT LIMITATIONS DURING CONSTRUCTION WARRANT (e.g., AUXILIARY LANES OR TURN LANES)

** CONFORM TO 15" MINIMUM SPACING FROM TRANSVERSE JOINTS; SPACING BETWEEN TIE BARS WILL BE 30" AT TRANSVERSE JOINTS.

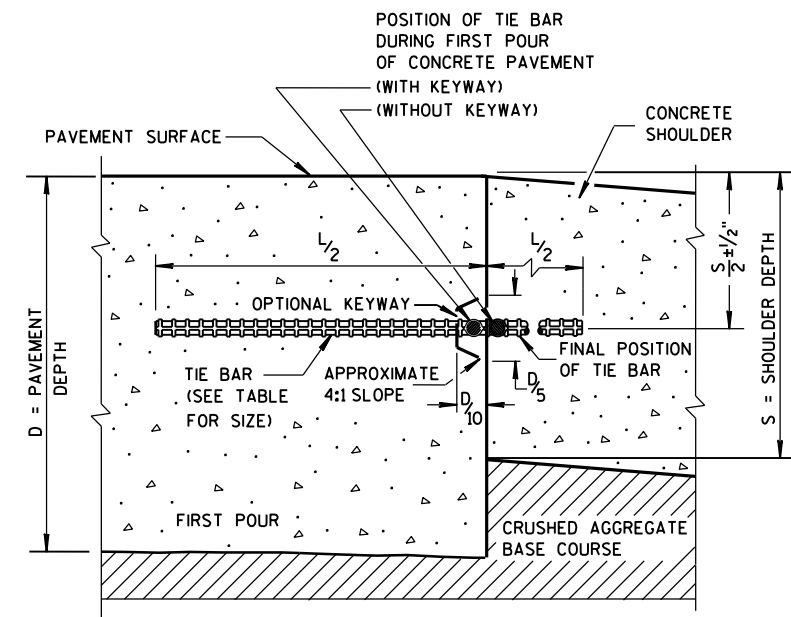
GENERAL NOTES

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.

TRANSVERSE JOINT DETAILS ARE SHOWN ELSEWHERE IN THE PLAN.

FINISH THE SHOULDER PAVEMENT CONFORMING TO SUBSECTION 415.3.8 OF THE STANDARD SPECIFICATIONS.

TIE BARS SHALL CONFORM TO SUBSECTION 505.2.4 OF THE STANDARD SPECIFICATIONS.



SECTION A-A
LONGITUDINAL CONSTRUCTION JOINT

PAVEMENT DEPTH, DOWEL BAR SIZE
AND JOINT SPACING TABLE

PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER***	CONTRACTION JOINT SPACING
5 1/2", 6", 6 1/2"	NONE	12'
7", 7 1/2"	1"	14'
8", 8 1/2"	1 1/4"	15'
9", 9 1/2"	1 1/4"	15'
10" & ABOVE	1 1/2"	15'

*** FOR DOWELED CONCRETE SHOULDERS WITH TRAPEZOIDAL CROSS SECTIONS, CHOSE THE APPROPRIATE DOWEL BAR DIAMETER BASED ON THE SMALLER PAVEMENT DEPTH (LIKELY THE OUTSIDE EDGE OF THE SHOULDER). IF USING BASKETS, USE BASKETS FOR THE AVERAGE THICKNESS OF THE CROSS SECTION.

CONCRETE PAVEMENT SHOULDERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

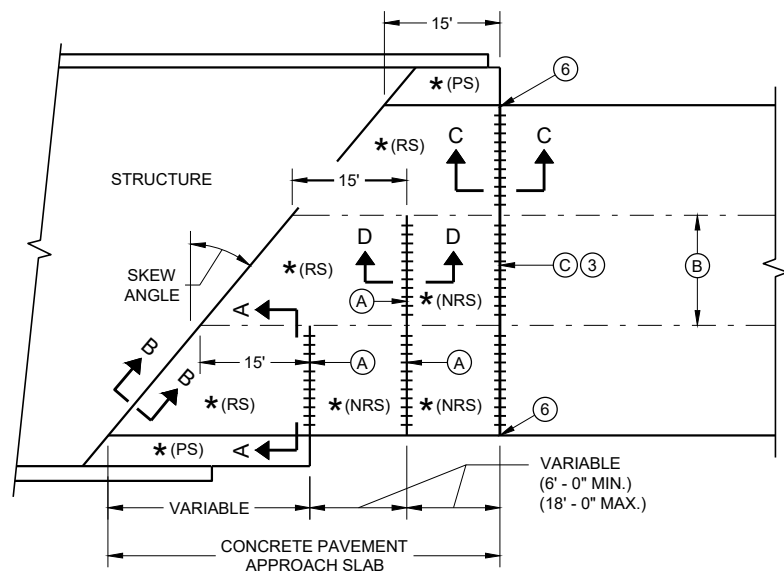
June, 2015

DATE

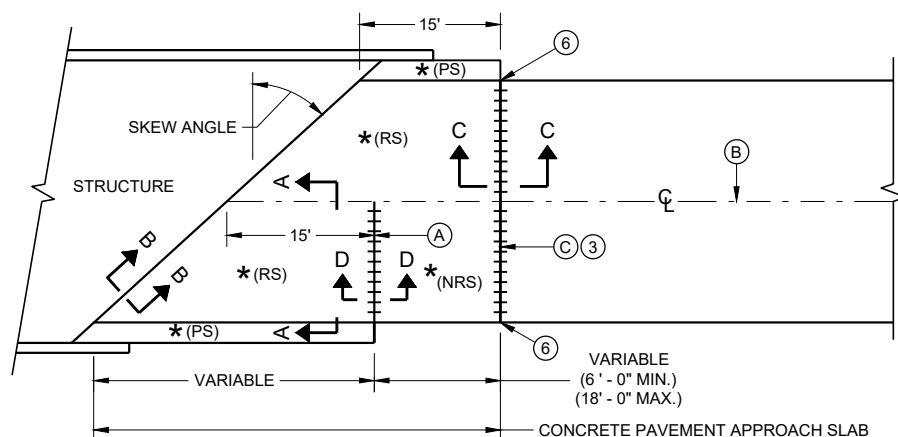
FHWA

/S/ Peter Kemp, P.E.

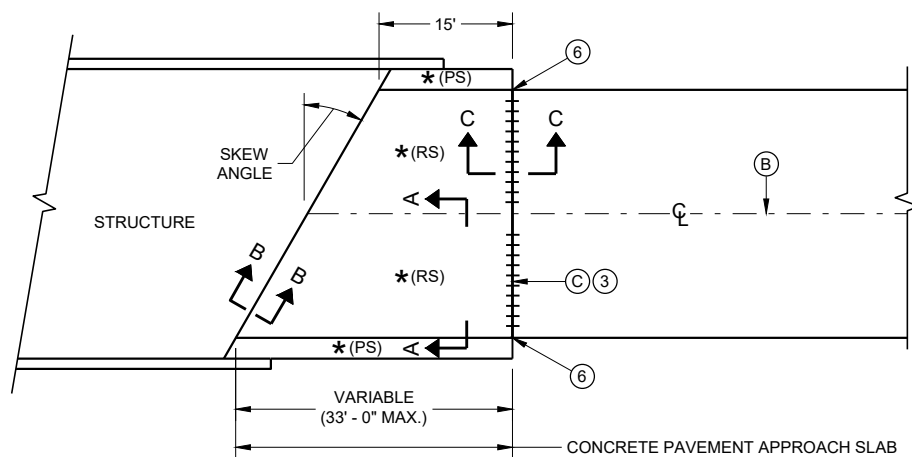
PAVEMENT SUPER 24



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



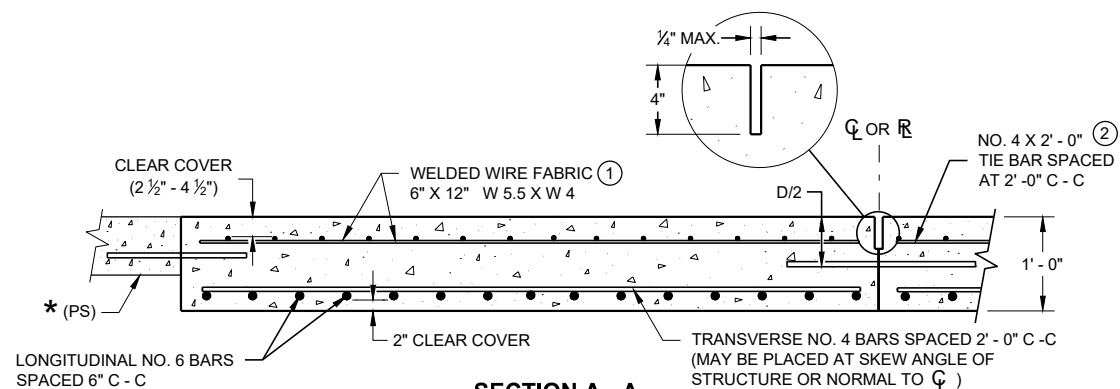
**SKews > 20°
(PAVEMENT WIDTH ≤ 30')**



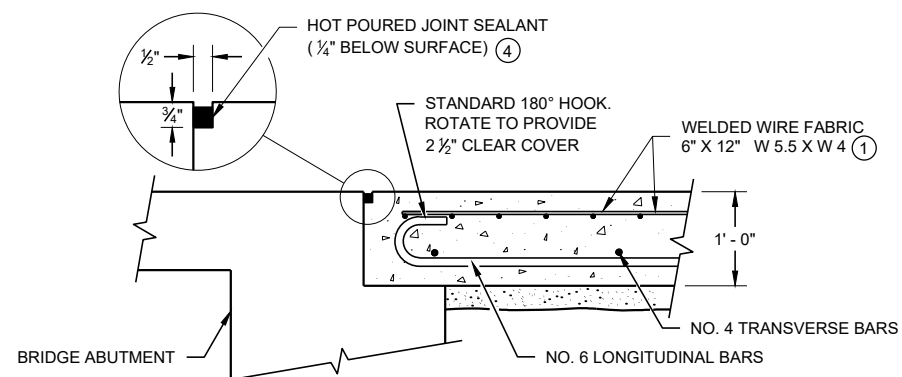
**SKews ≤ 20°
(PAVEMENT WIDTH ≤ 30')**

APPROACH SLAB AND ADJACENT PAVEMENT

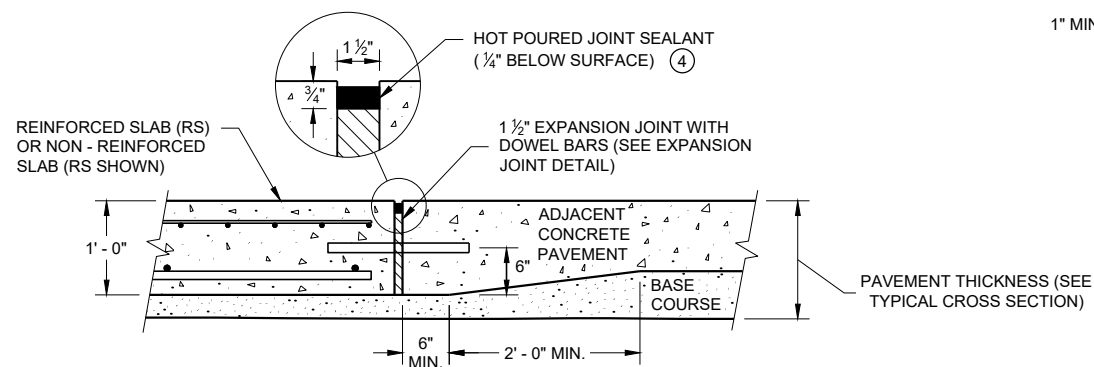
- * (RS) = REINFORCED CONCRETE SLAB
- * (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
- * (NRS) = NON - REINFORCED CONCRETE SLAB
- *** STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11 AND SDD 13C13)



**SECTION A - A
REINFORCEMENT POSITIONING DETAIL**



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



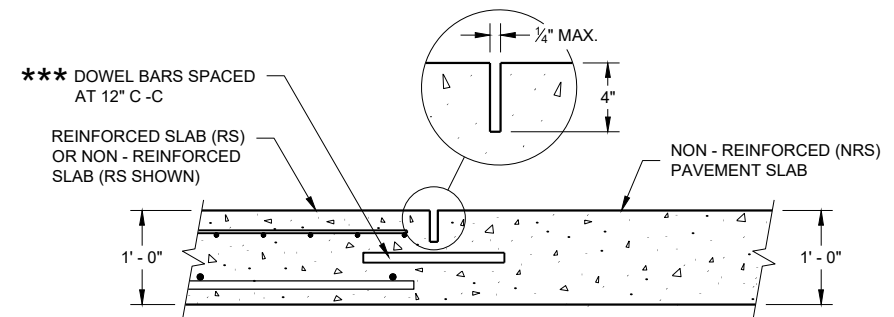
**SECTION C - C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT**

GENERAL NOTES

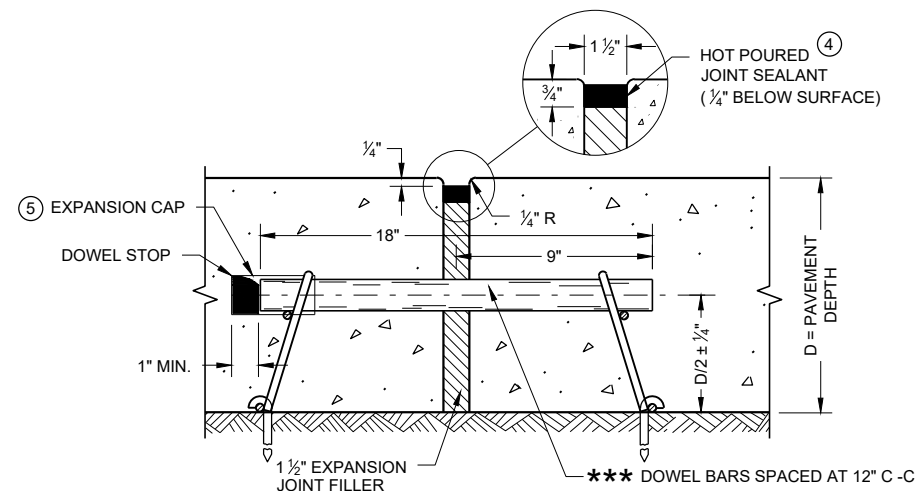
THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

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



**SECTION D - D
CONTRACTION JOINT**



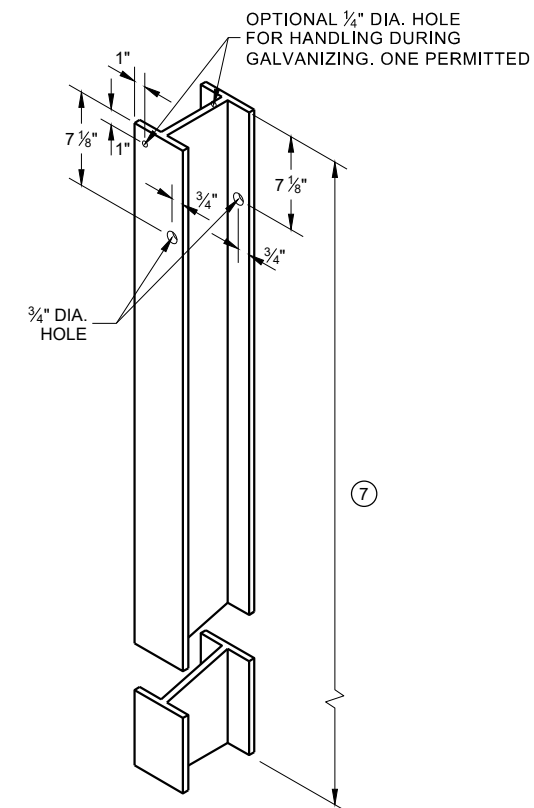
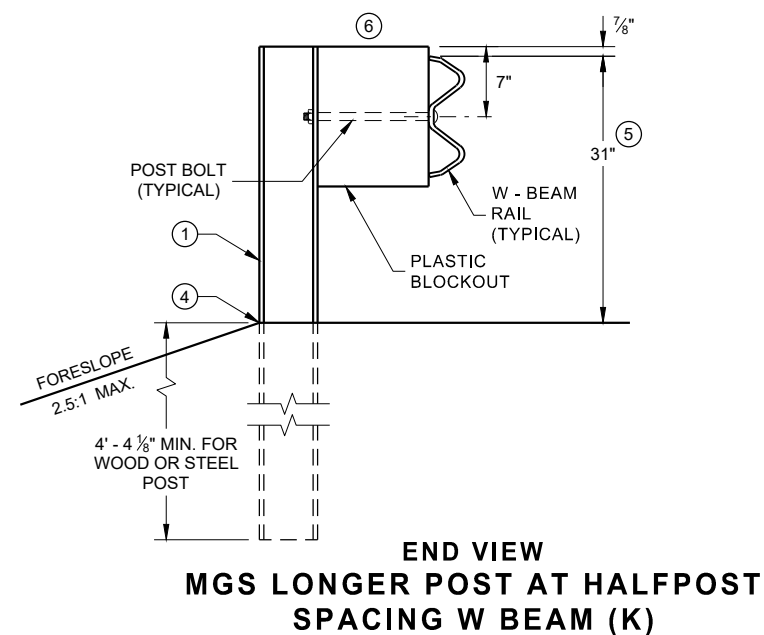
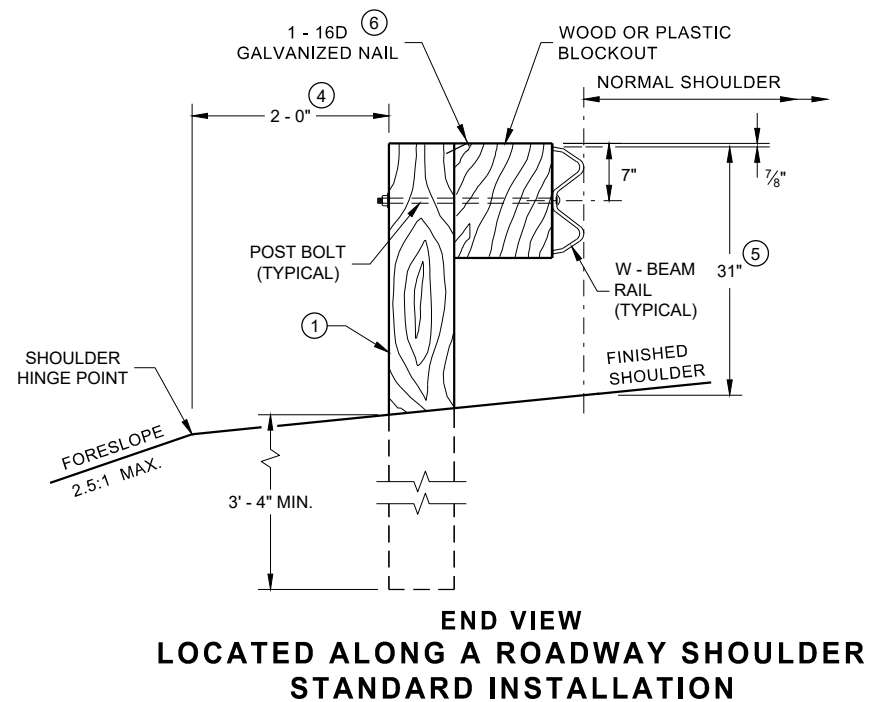
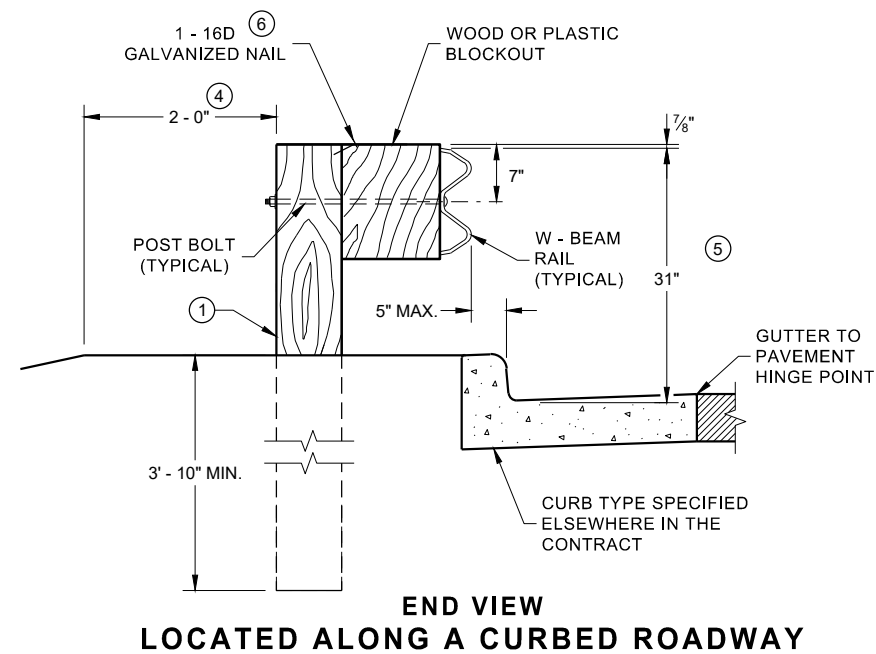
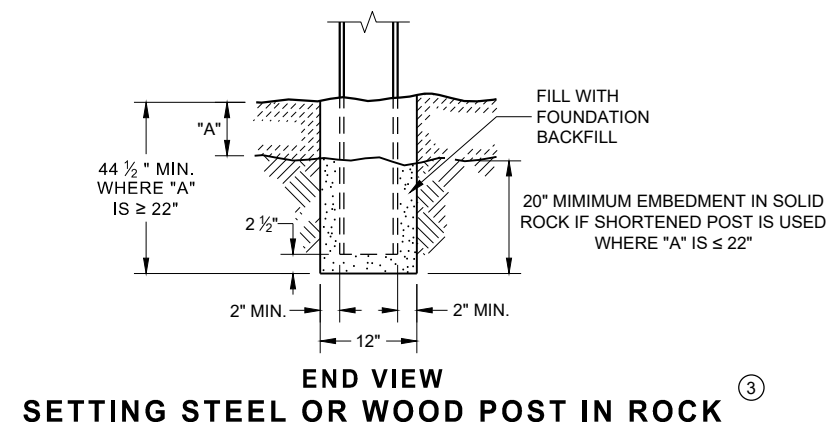
EXPANSION JOINT DETAIL

CONCRETE PAVEMENT APPROACH SLAB

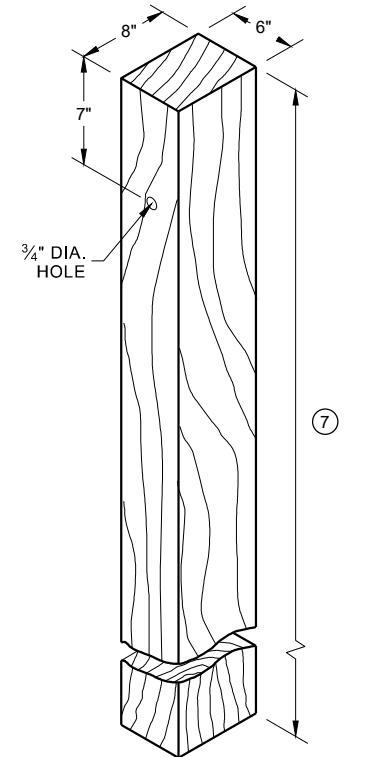
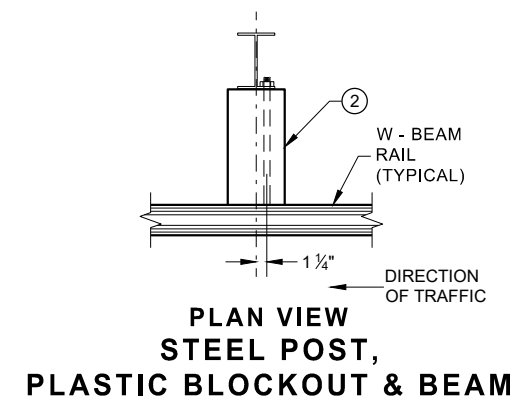
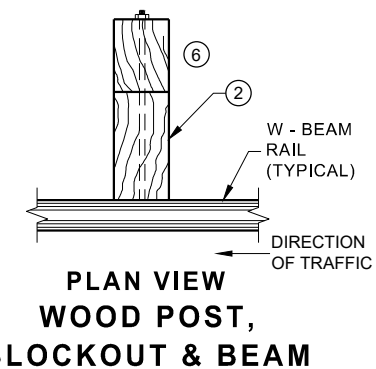
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018 /S/ Peter Kemp, P.E.
DATE PAVEMENT SUPERVISOR 25
FHWA

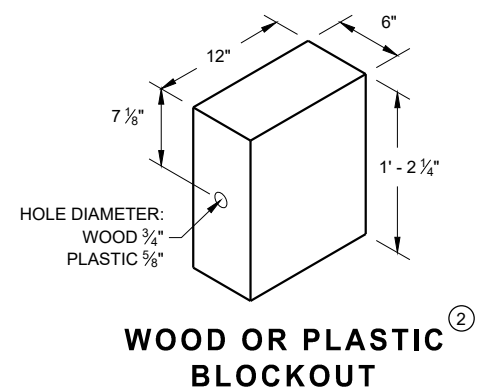
- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.
- ③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 30 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS TO LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- ④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- ⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS +1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 3/4" TO 32".
- ⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ⑦ TOTAL POST LENGTH FOR TYPE K IS 7' - 0".
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".

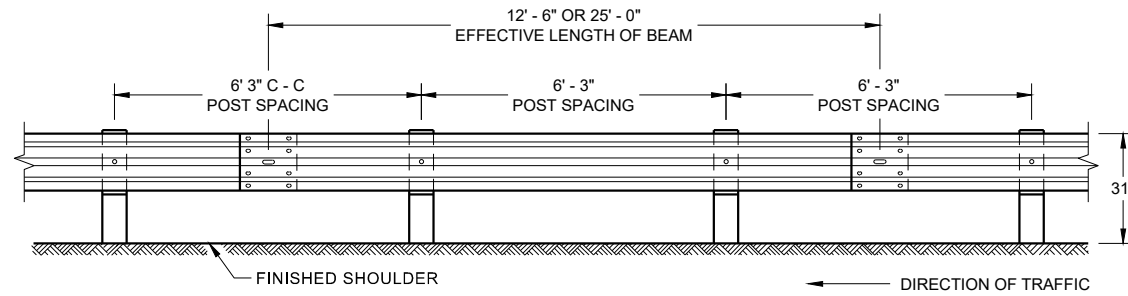


**STEEL POST & HOLE
PUNCHING DETAIL
(W 6 X 9) ①**

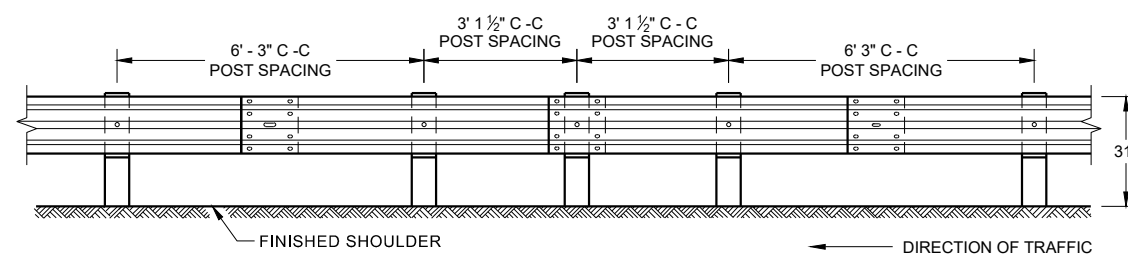


WOOD POST (6" X 8") NOMINAL ⁽¹⁾

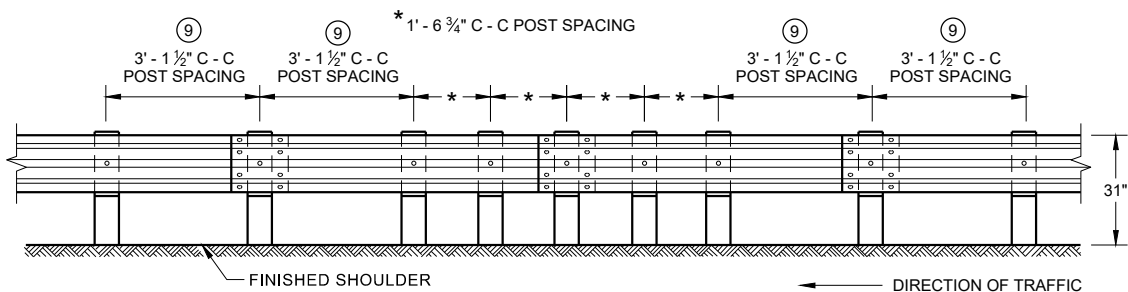




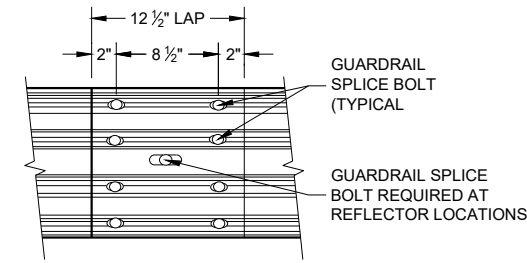
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



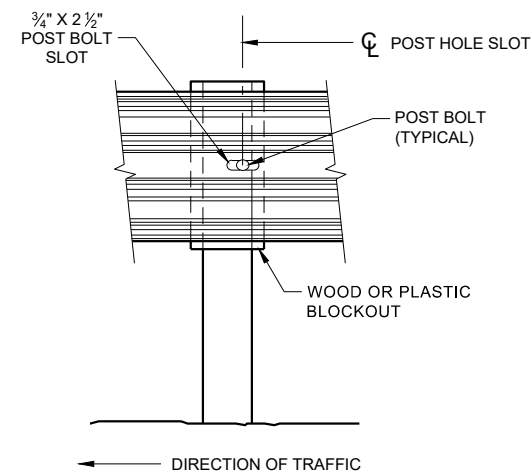
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



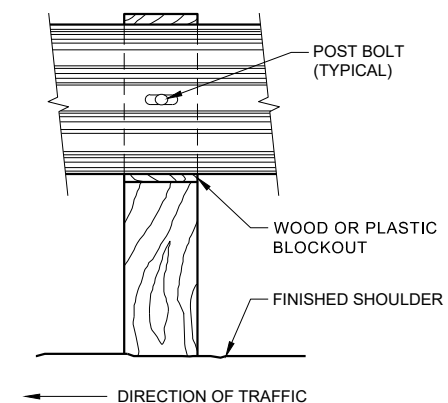
**FRONT VIEW
QUARTER POST SPACING (QS)**



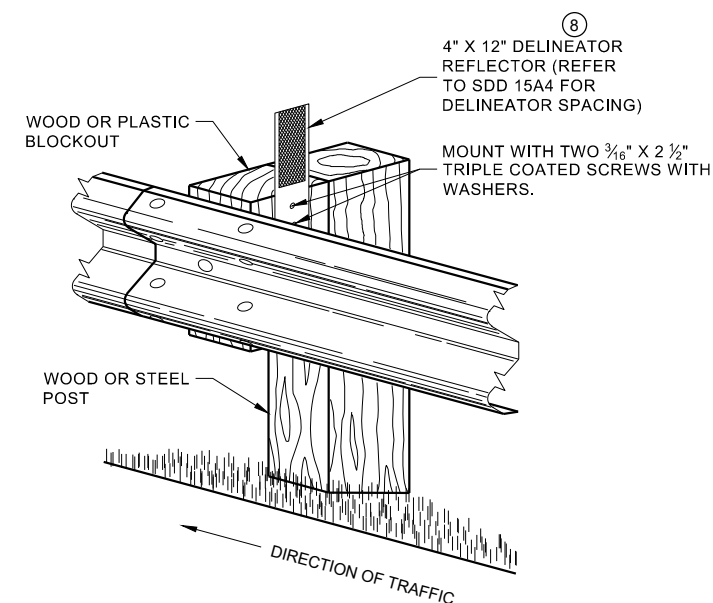
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



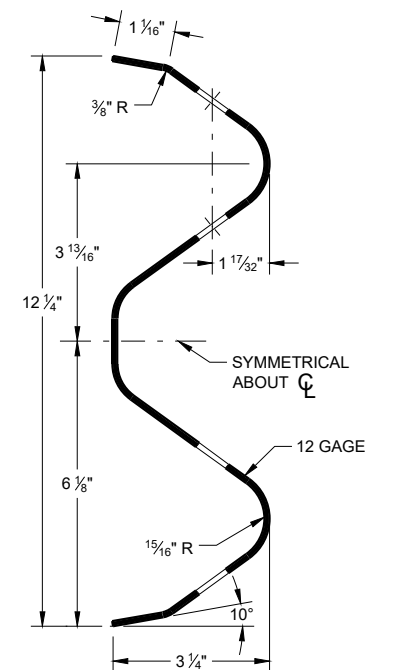
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

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

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

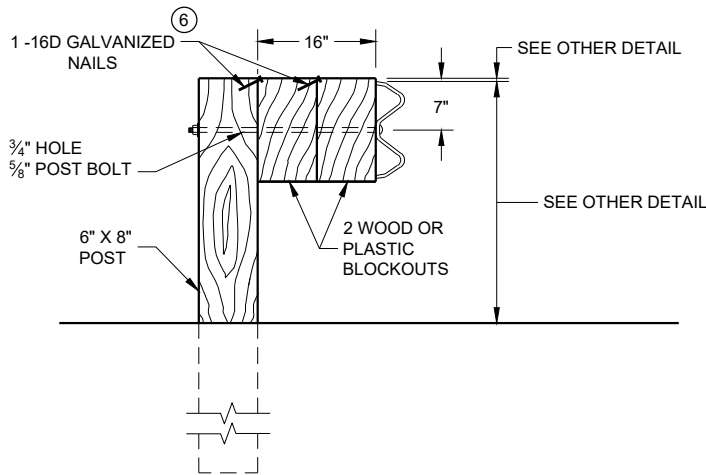
GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

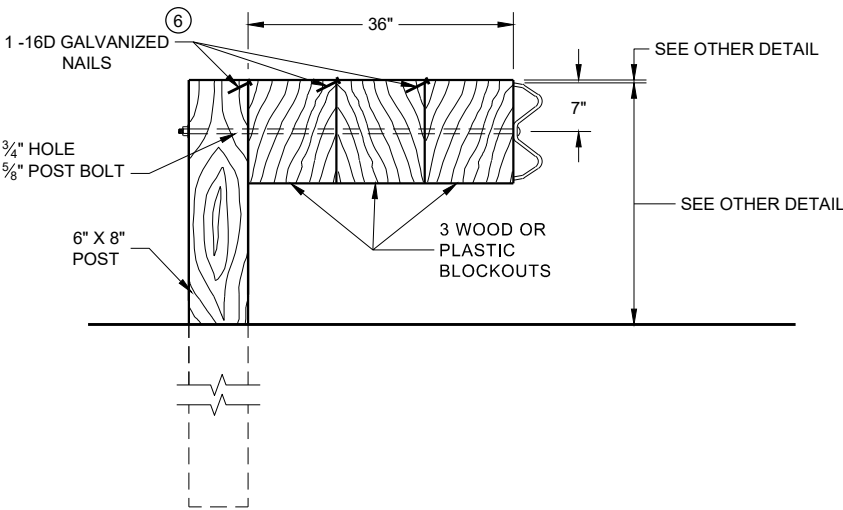
**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

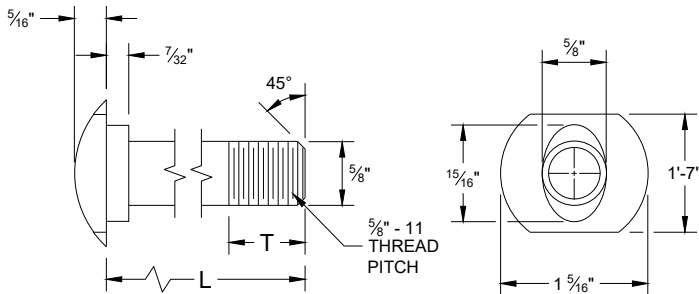
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



DETAIL FOR 36" BLOCKOUT DEPTH

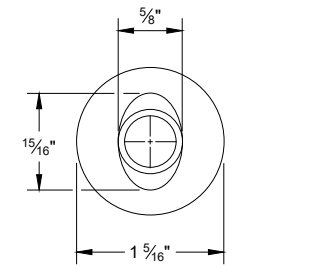
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT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

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

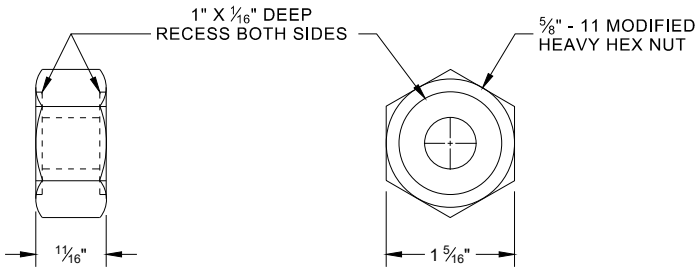


POST BOLT TABLE

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

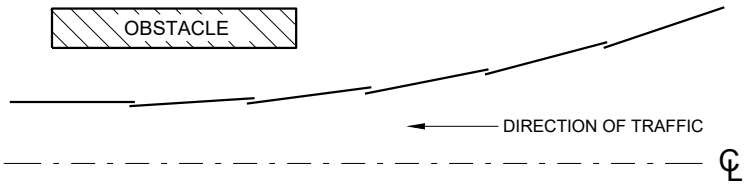


ALTERNATE BOLT HEAD

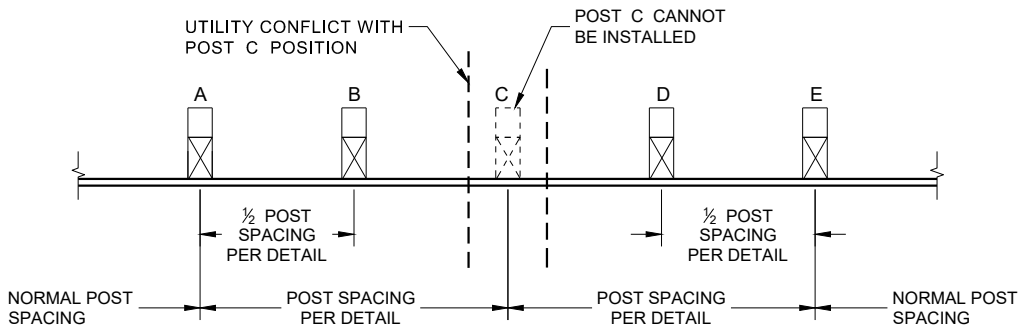


POST BOLT, SPLICE BOLT
AND RECESS NUT

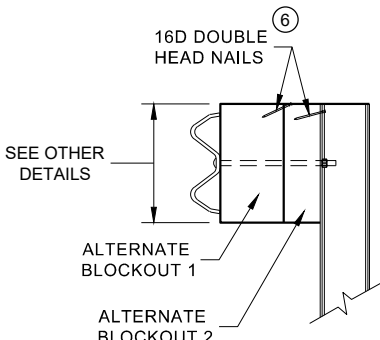
- 6 WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



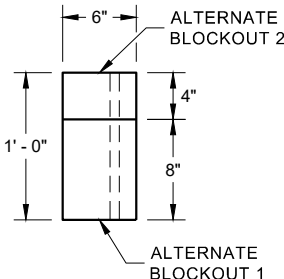
PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



SIDE VIEW

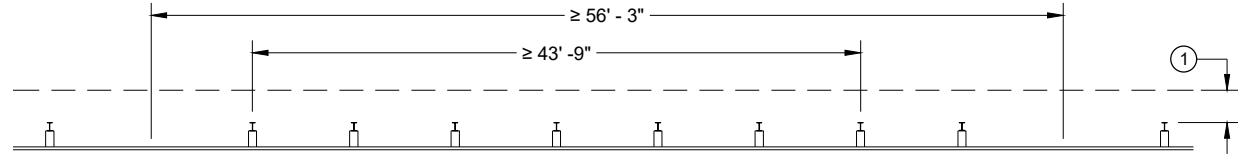


PLAN VIEW

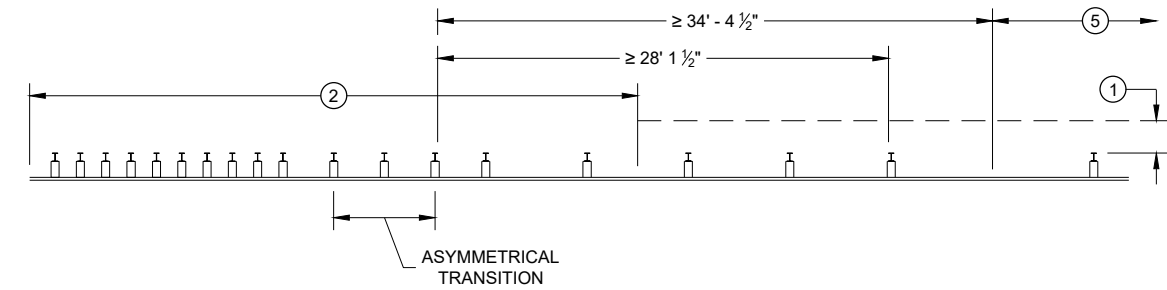
ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

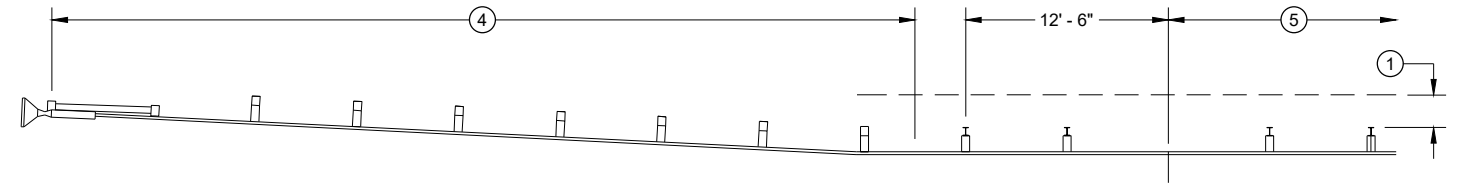
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



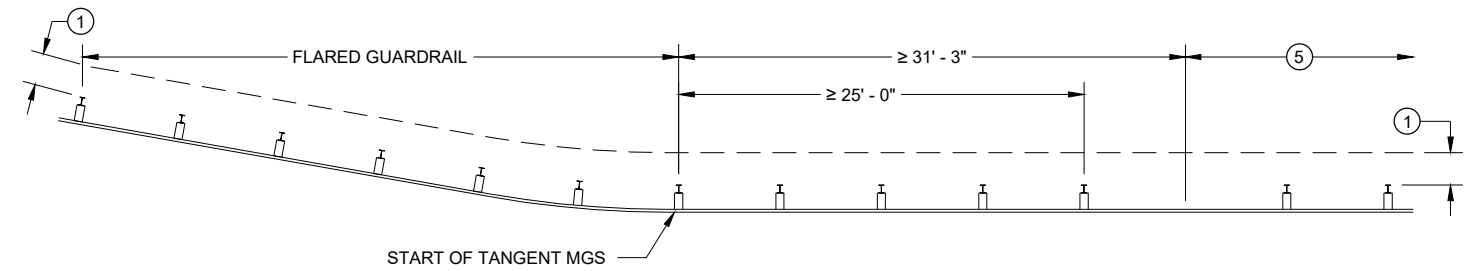
MISSING POST IN NORMAL BEAM GUARD RUN



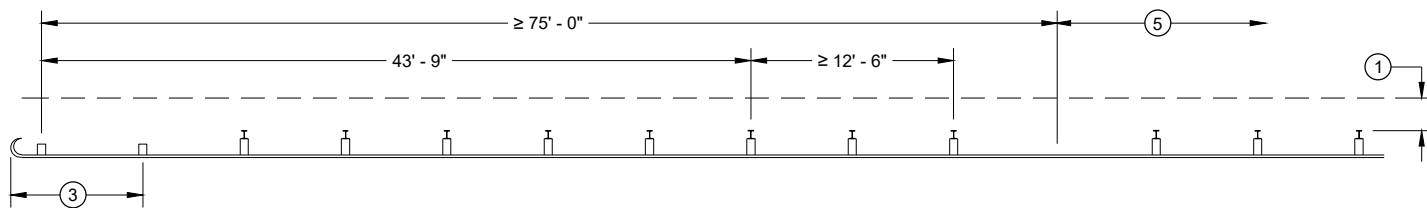
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



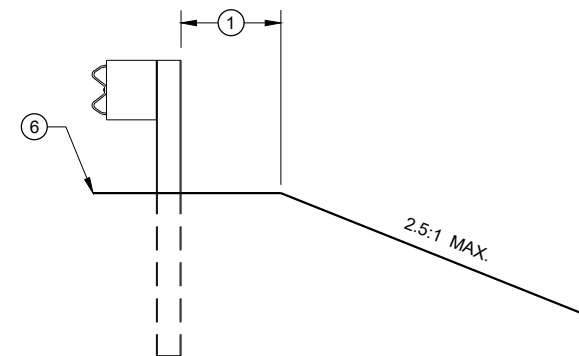
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR FLARED BEAM GUARD



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR TYPE 2 TERMINAL



CROSS SECTION VIEW

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

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR 29
FHWA

GENERAL NOTES

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

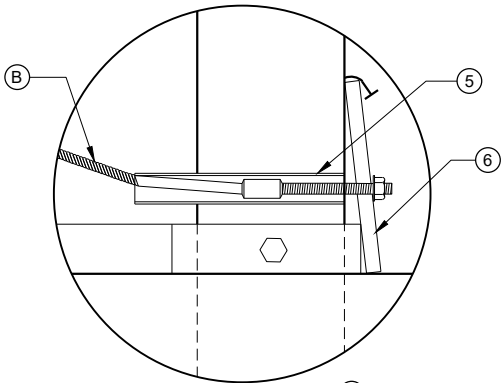
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

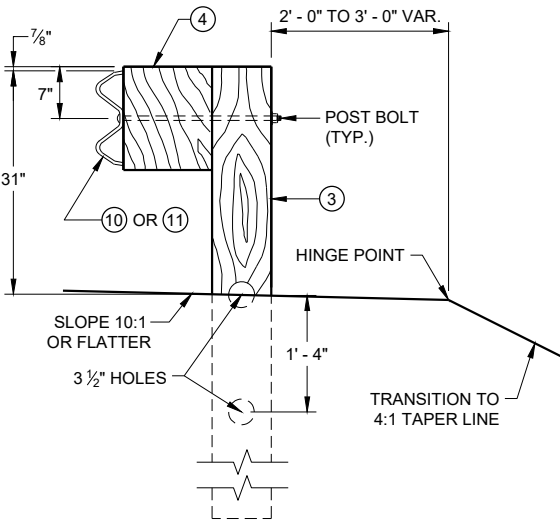
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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

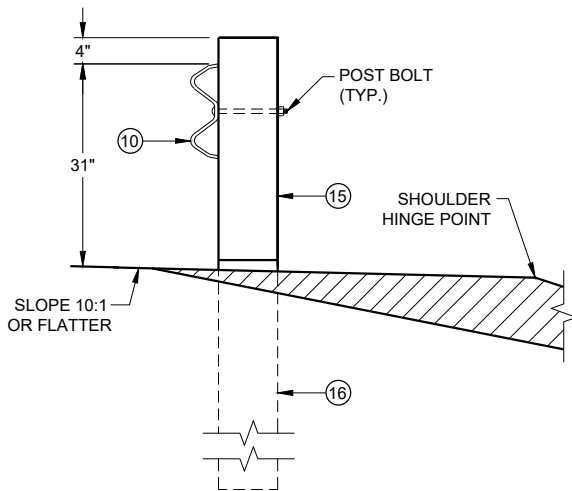
THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



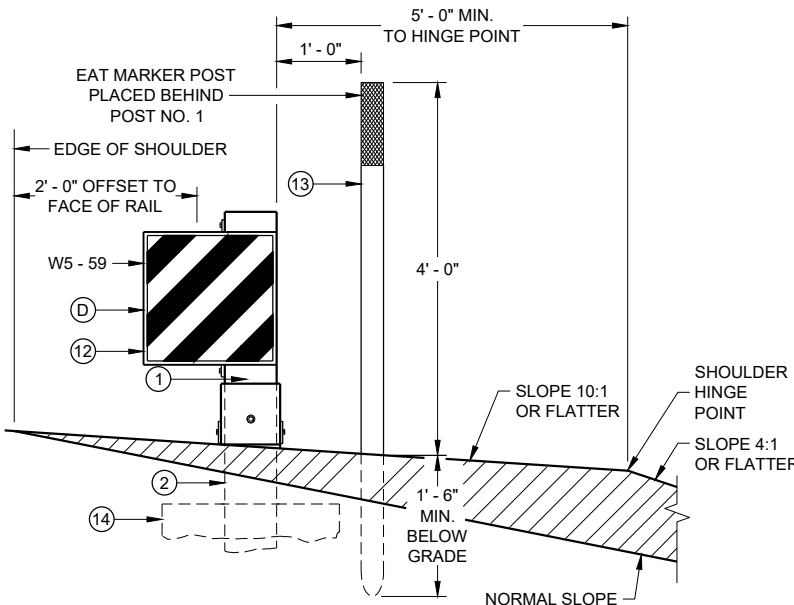
DETAIL "A"



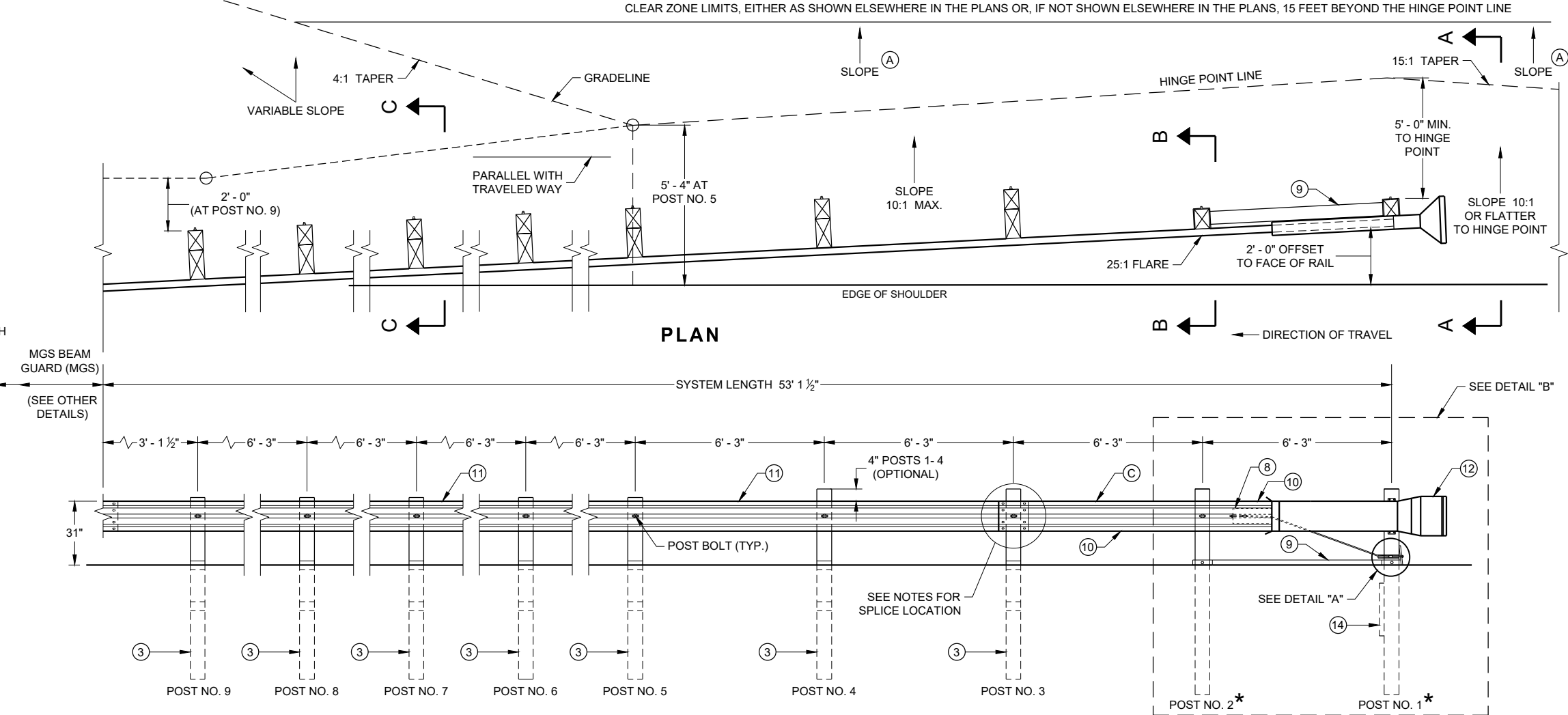
SECTION C - C
TYPICAL AT POST NOS. 3 - 9



SECTION B - B
TYPICAL AT POST NO. 2*

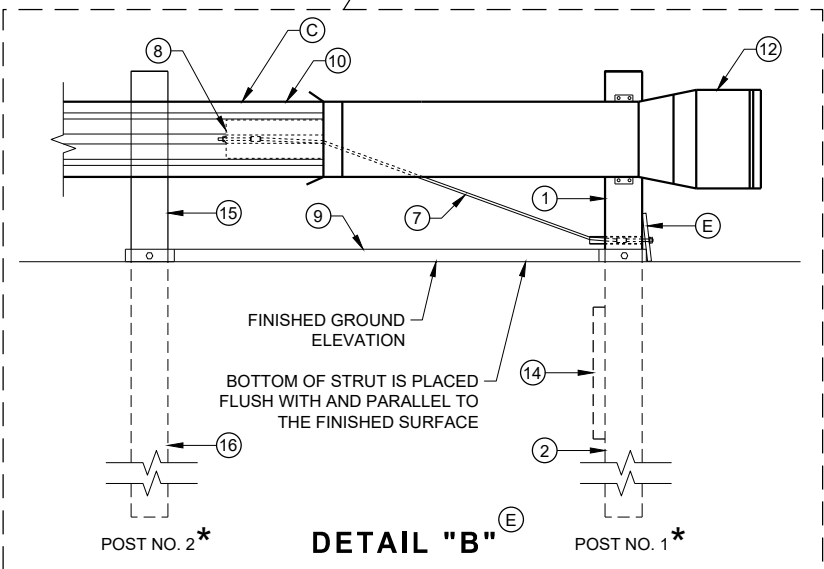


SECTION A - A
TYPICAL AT POST NO. 1*



PLAN

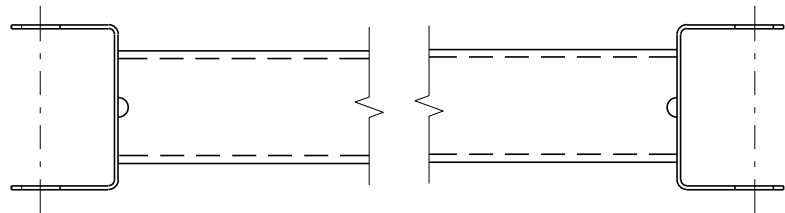
ELEVATION



DETAIL "B"

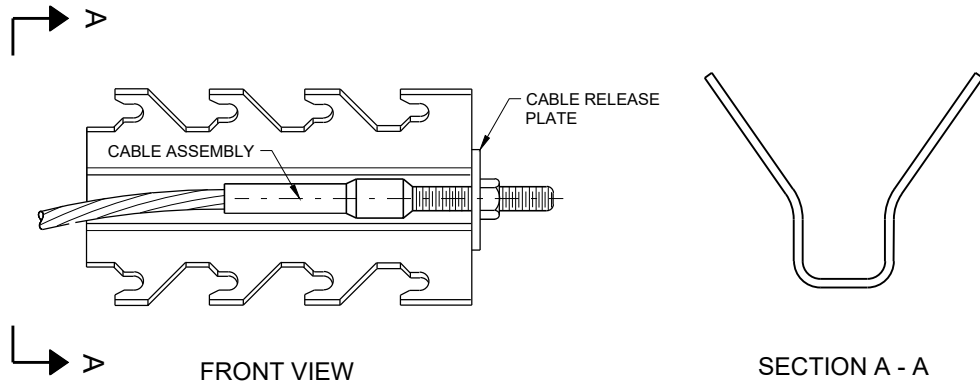
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

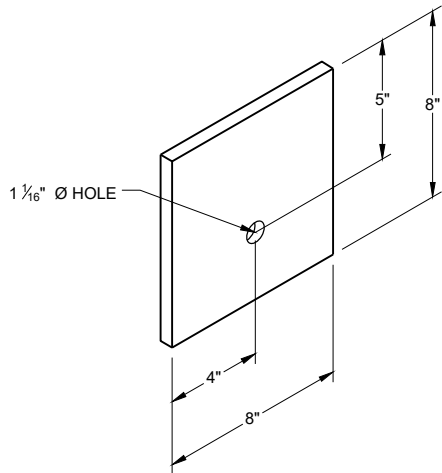


GENERIC GROUND STRUT⁹ E

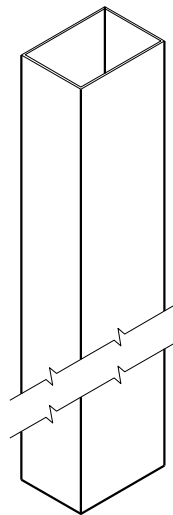
BILL OF MATERIALS	
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED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



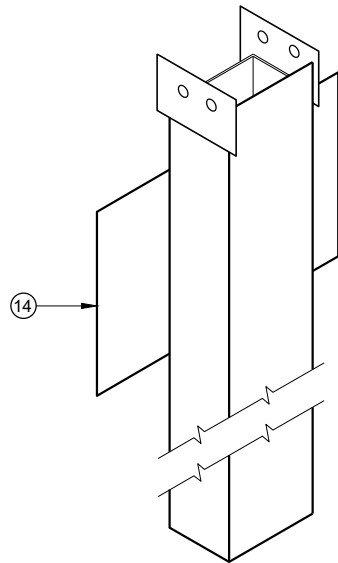
GENERIC ANCHOR CABLE BOX⁹ E



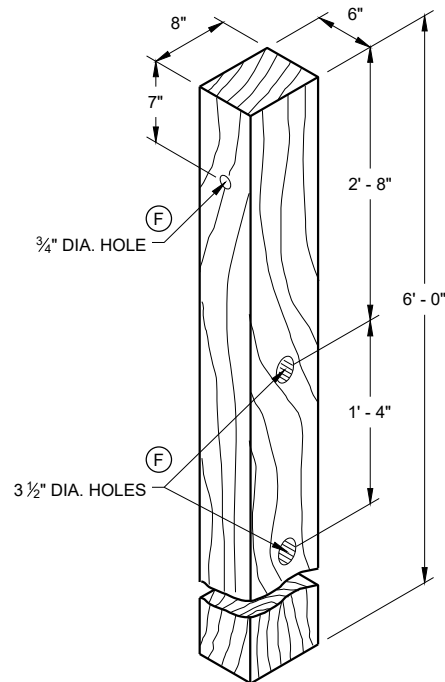
BEARING PLATE⁶ E



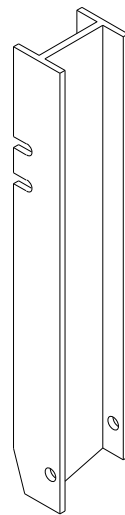
UPPER POST NO. 1 ⁽¹⁾ (E)



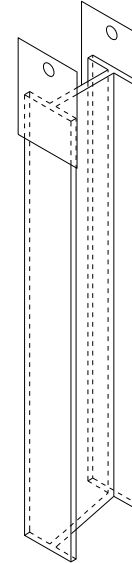
LOWER POST NO. 1 ⁽²⁾ (E)



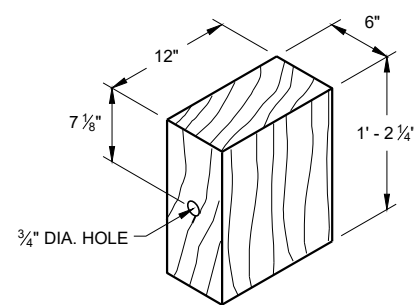
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



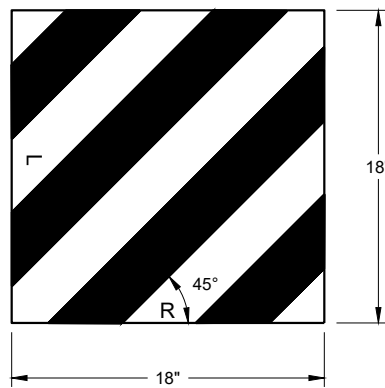
UPPER POST NO. 2 ⁽¹⁵⁾ (E)



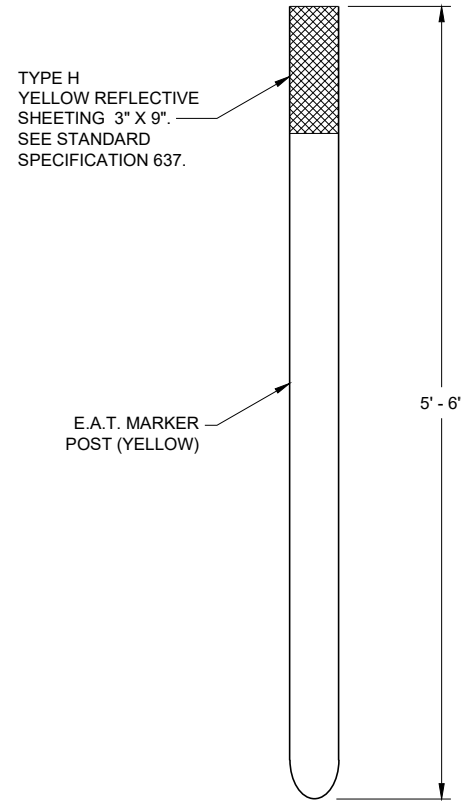
LOWER POST NO. 2 ⁽¹⁶⁾ (E)



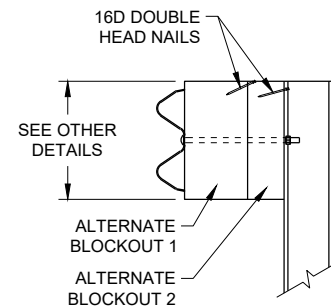
WOOD BLOCKOUT ⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



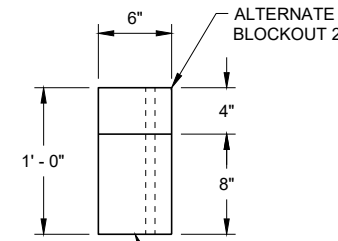
W5 - 59
REFLECTIVE SHEETING DETAIL ^(E)



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



SIDE VIEW



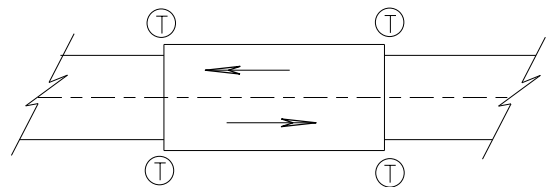
TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

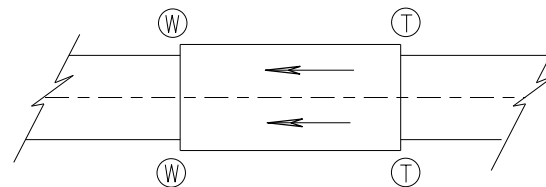
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

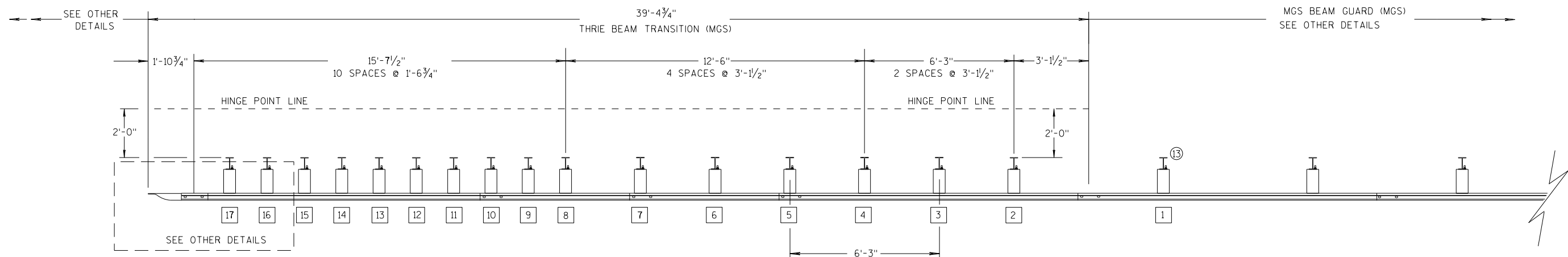
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

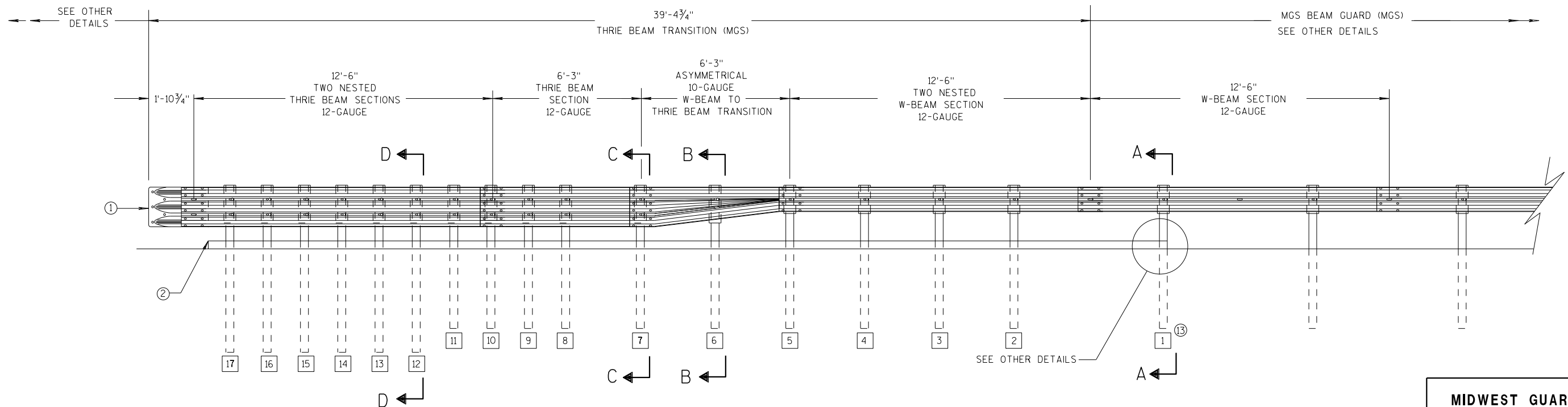
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

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



PLAN VIEW



ELEVATION VIEW

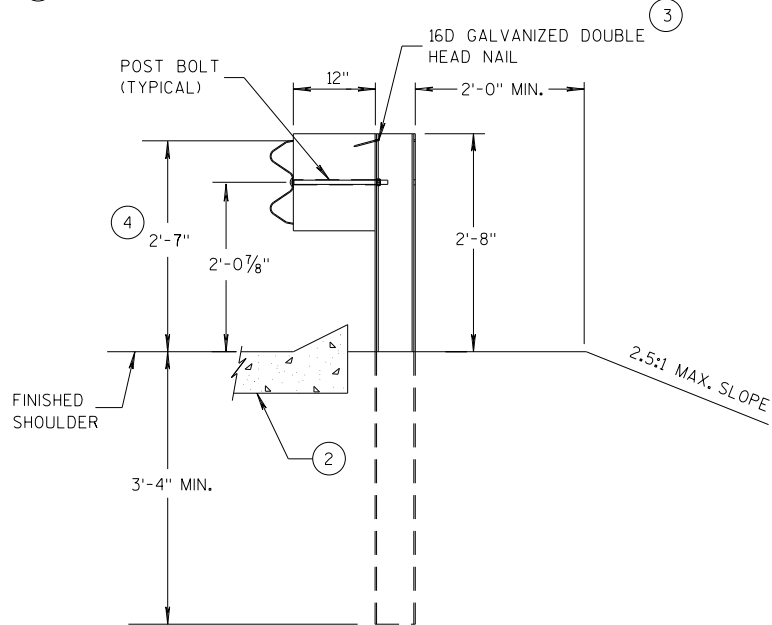
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

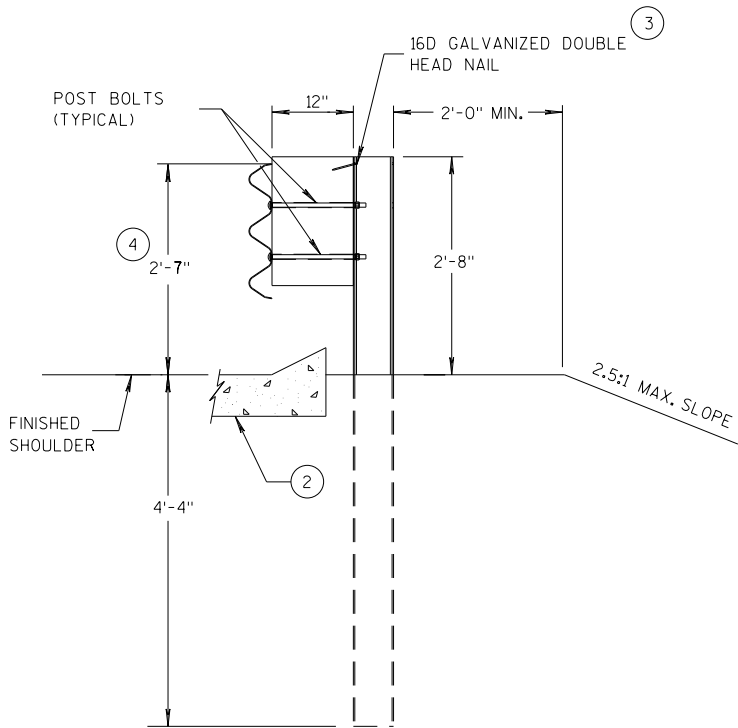
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

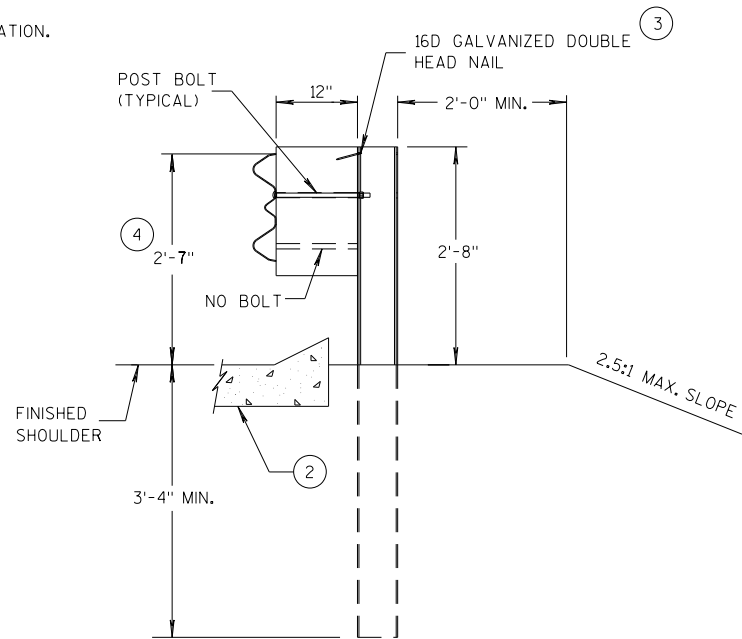
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm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



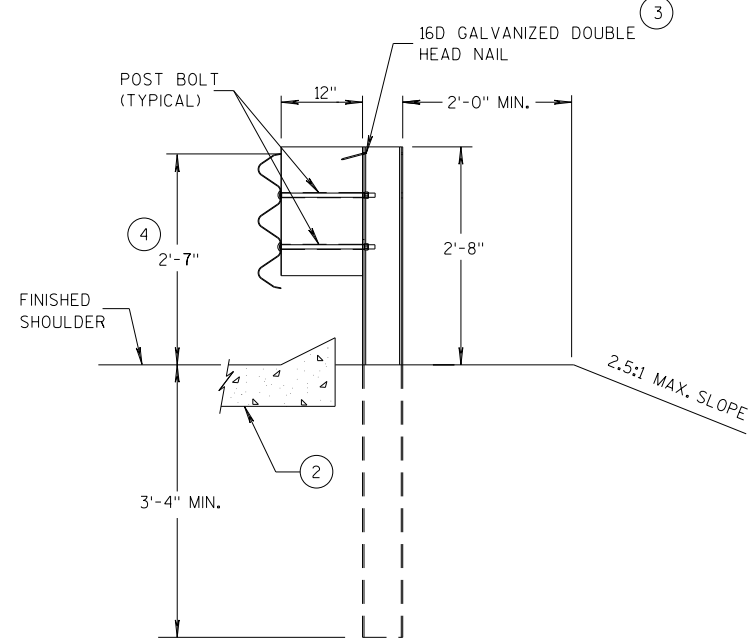
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

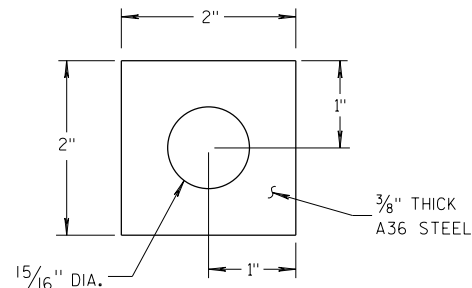
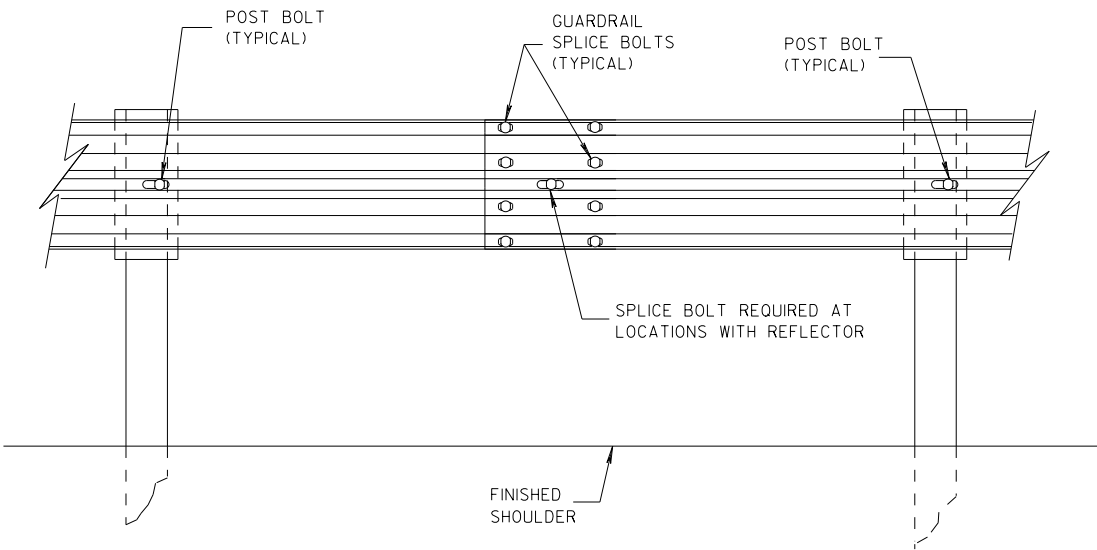
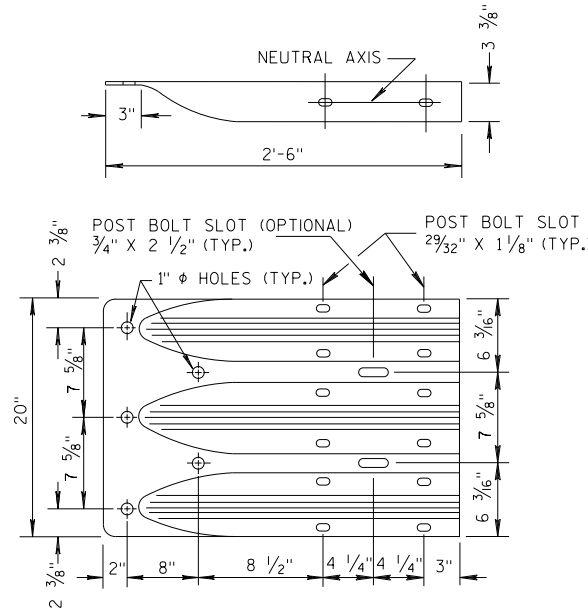


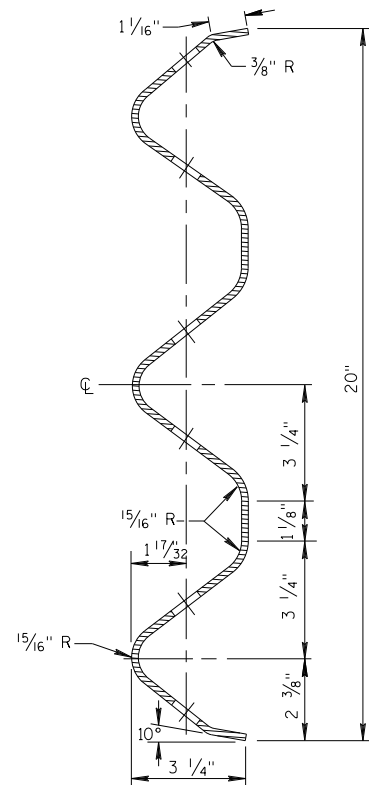
PLATE WASHER DETAIL



SPLICE DETAIL



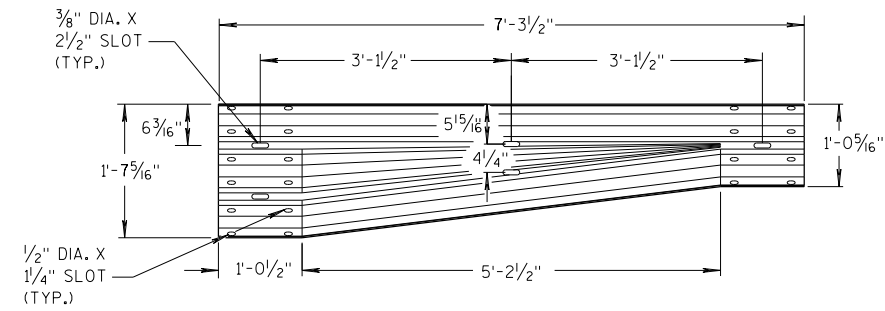
THRIE BEAM
TERMINAL CONNECTOR



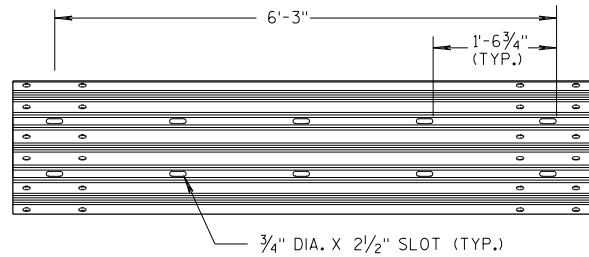
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

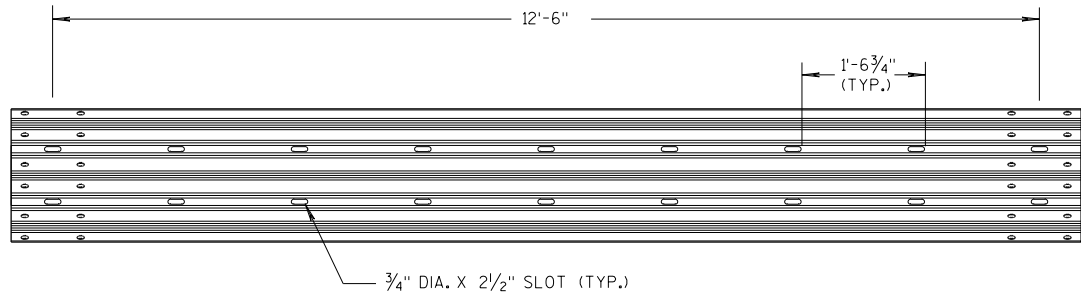
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



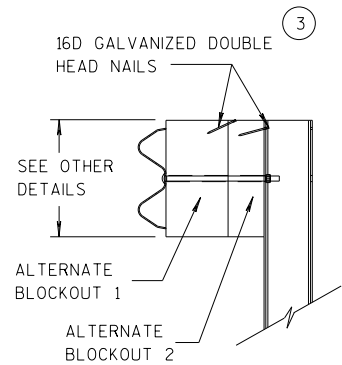
W-BEAM TO THRIE BEAM TRANSITION SECTION



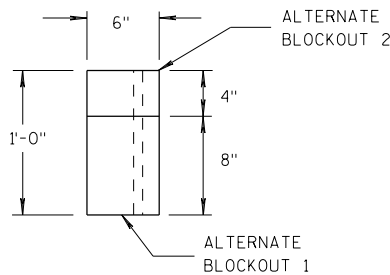
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

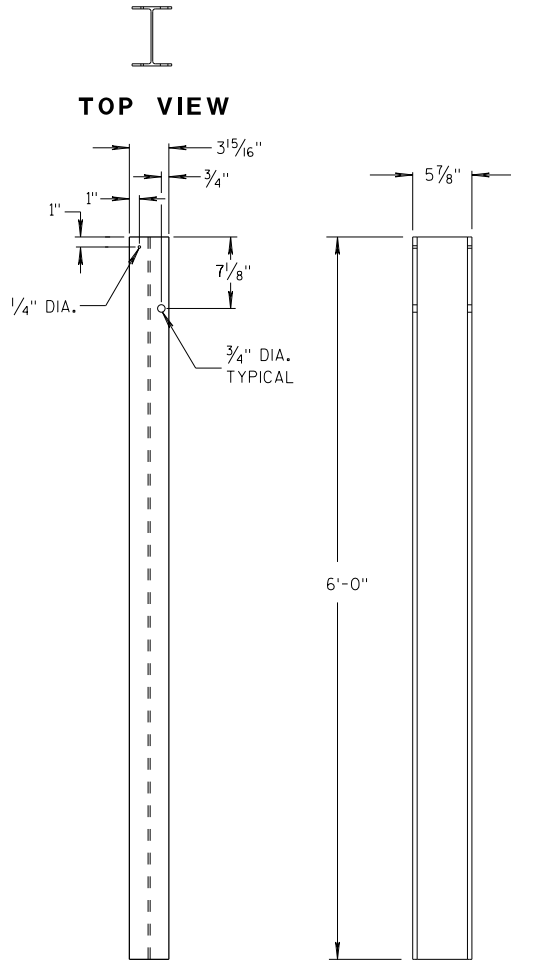


SIDE VIEW



TOP VIEW

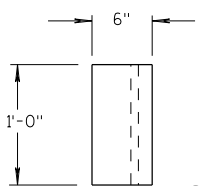
ALTERNATE WOOD BLOCKOUT DETAIL



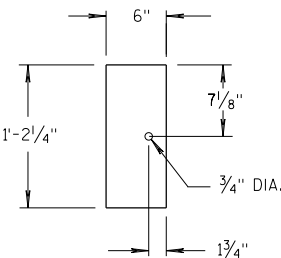
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

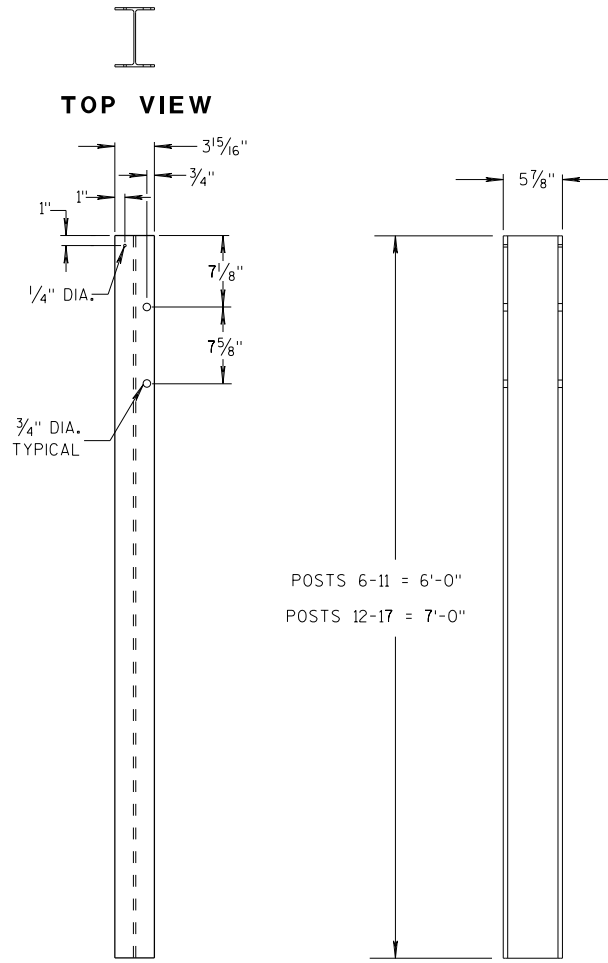


TOP VIEW



FRONT VIEW

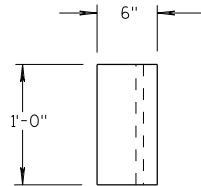
BLOCKOUT POSTS 1-5



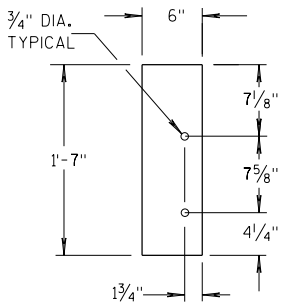
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

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

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

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

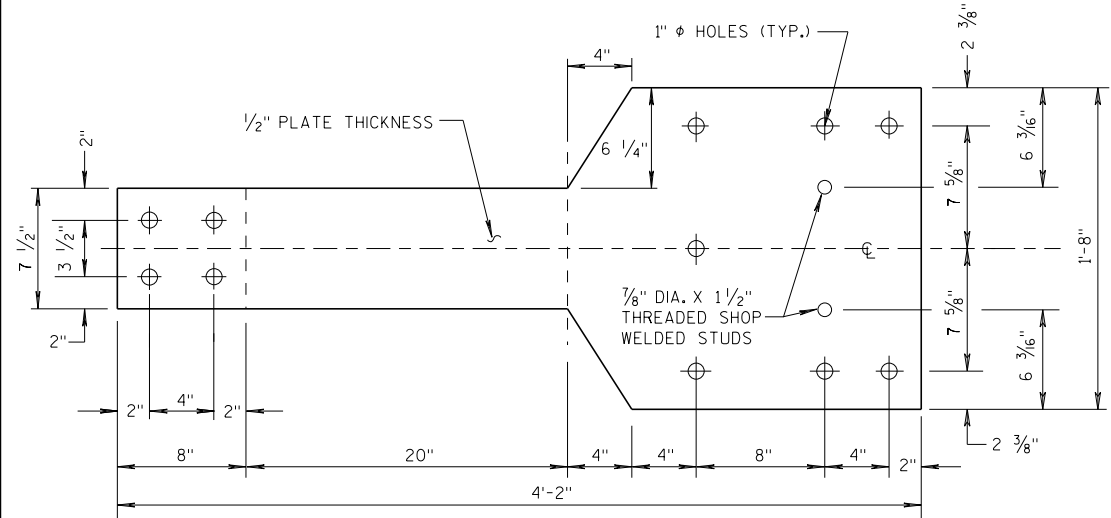
⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

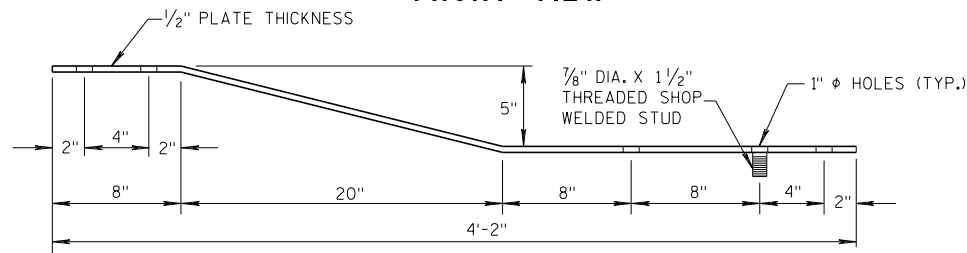
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

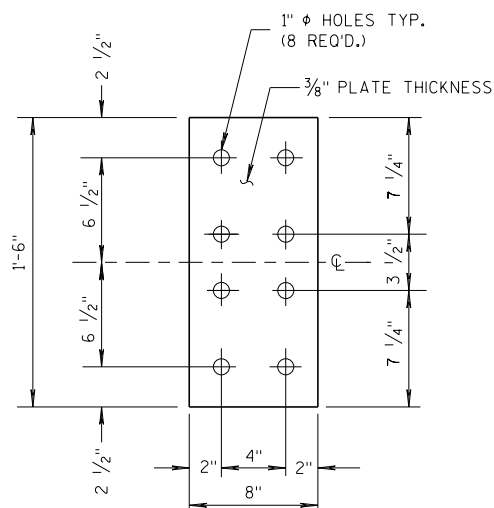
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.



FRONT VIEW

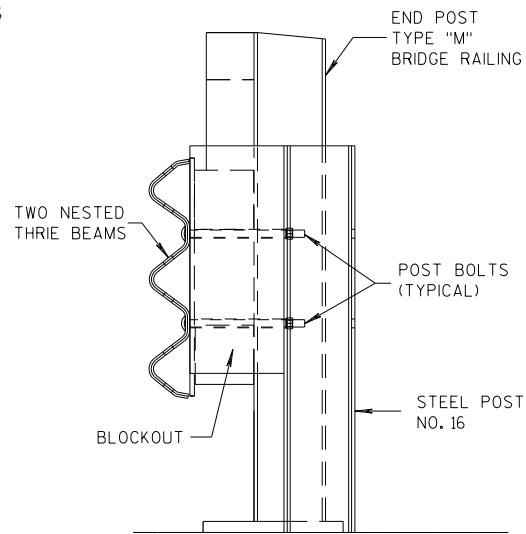


PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"

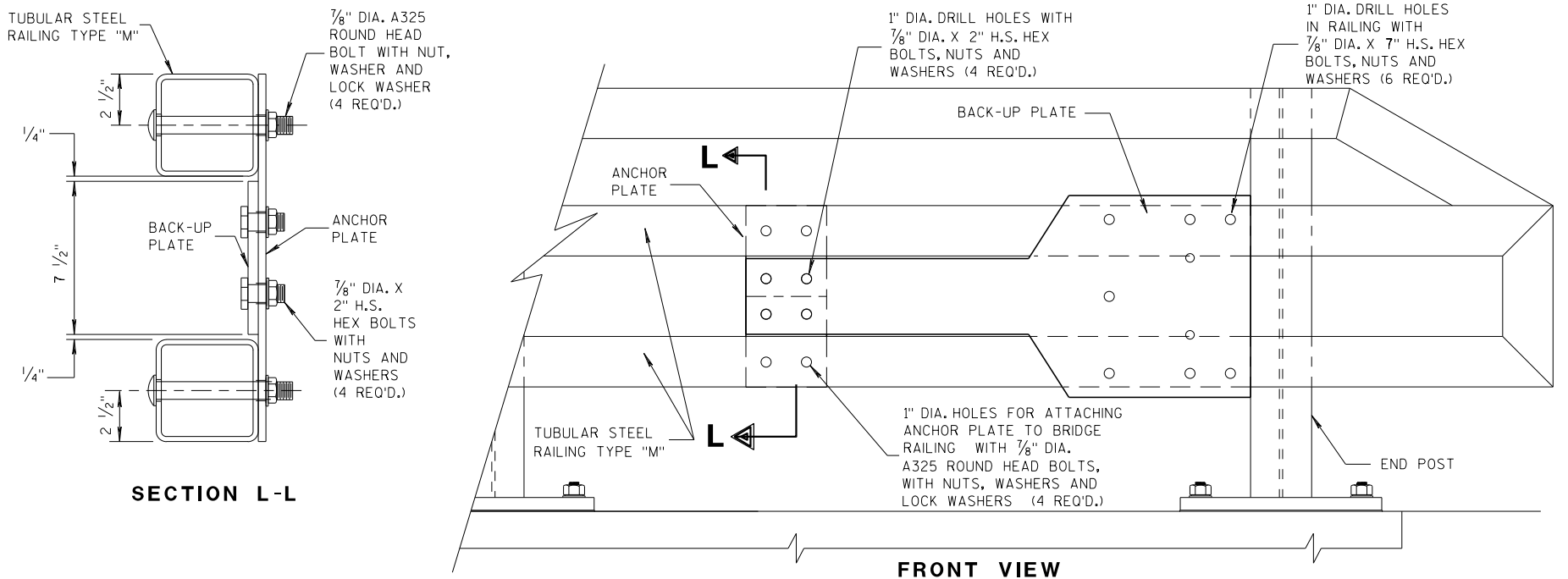


FRONT VIEW

ANCHOR
PLATE DETAIL,
TYPE "M"



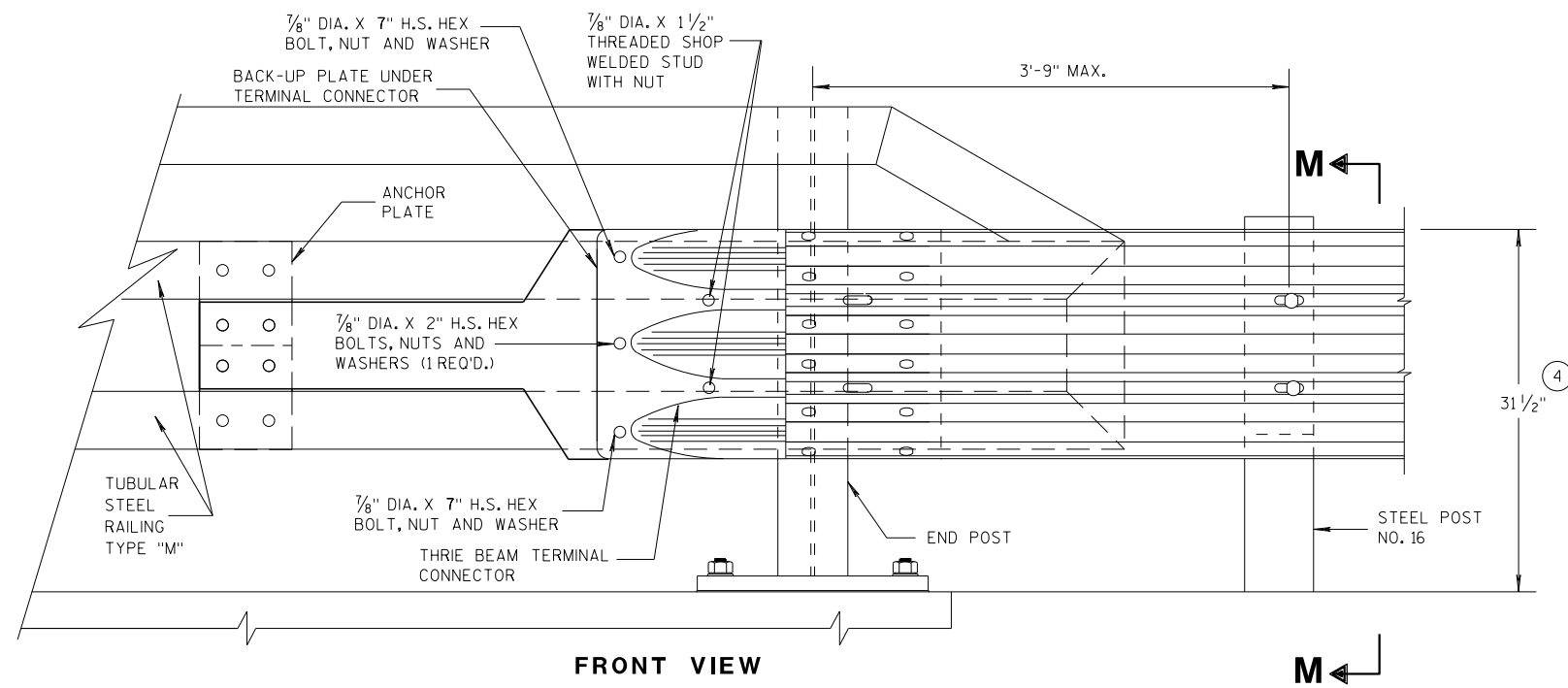
SECTION M-M



SECTION L-L

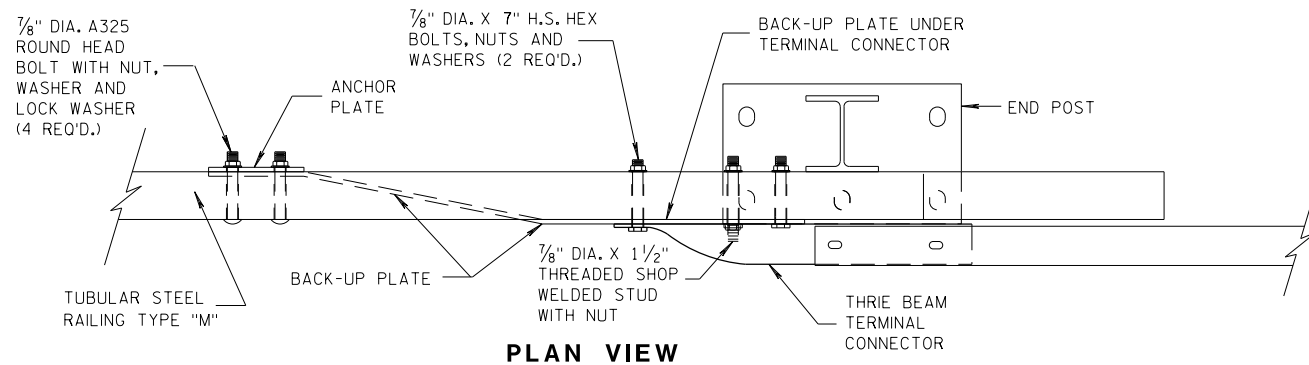
FRONT VIEW

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



FRONT VIEW

M



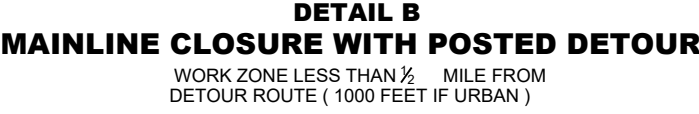
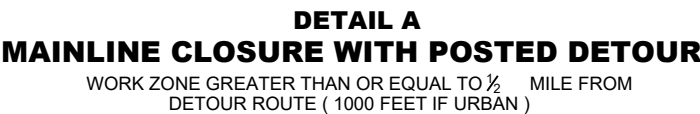
PLAN VIEW

THREE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THREE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

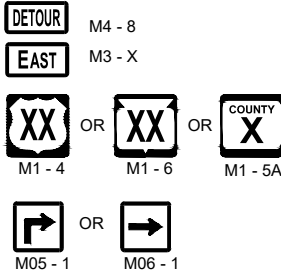
APPROVED
07/2018 /S/ Rodney Taylor
DATE ROADWAY STANDARDS UNIT SUPERVISOR
FHWA 36 ENT



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



	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)



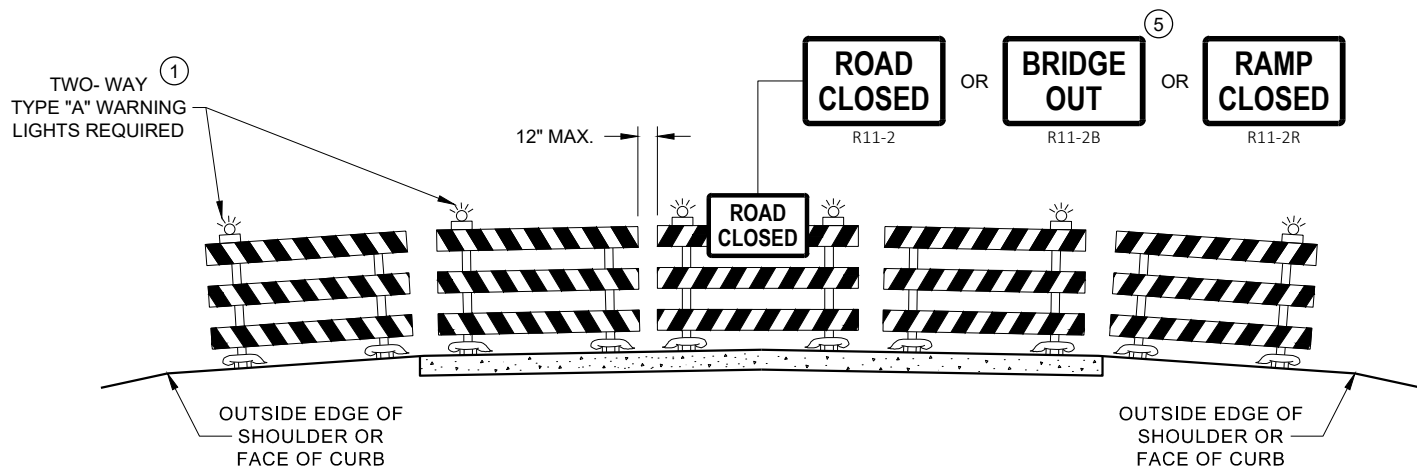
SEE SDD 15C2-SHEET "b"
FOR GENERAL NOTES
AND FOOTNOTES ① THROUGH ⑦

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

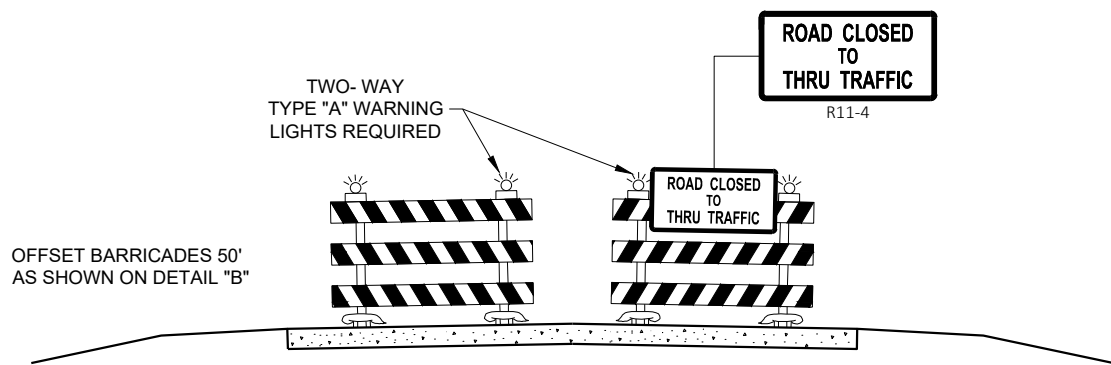
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEER 37



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:

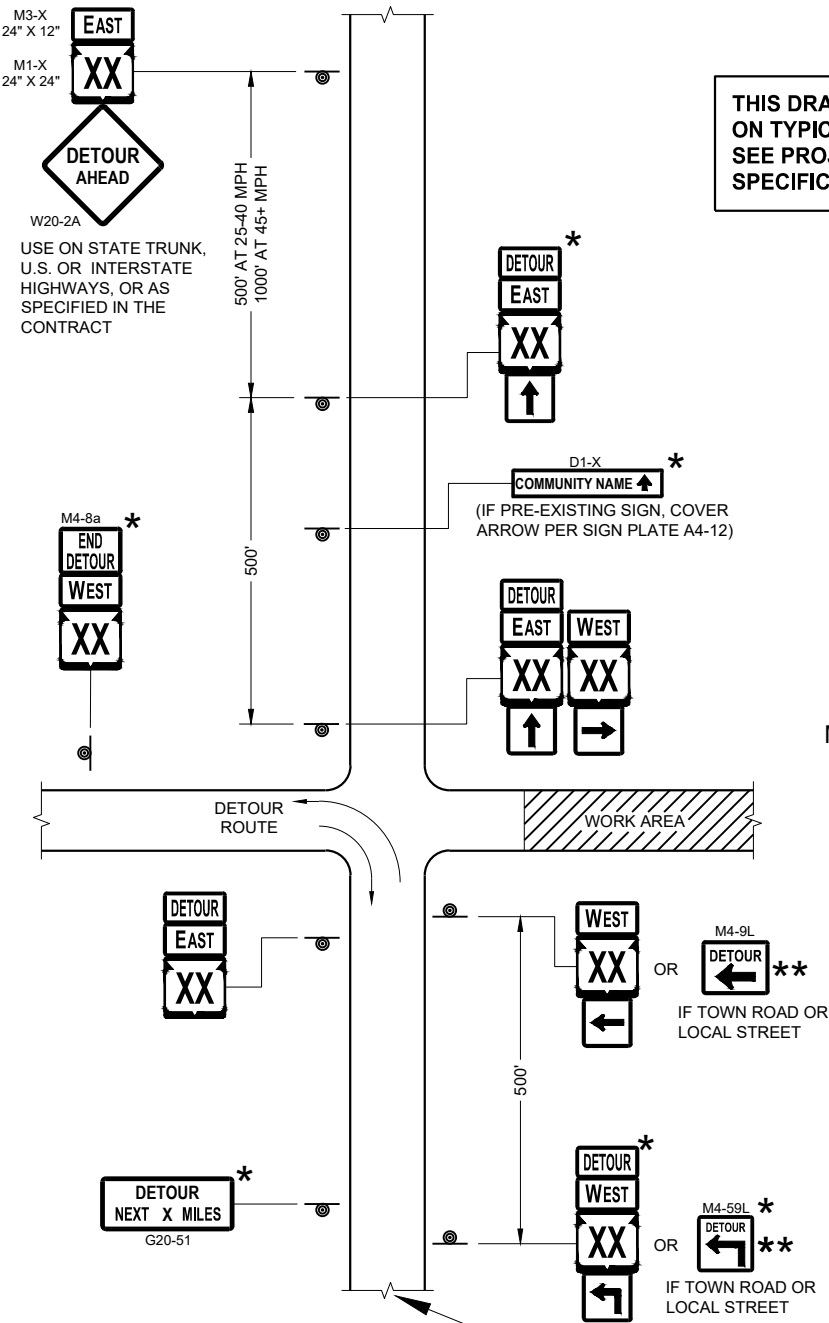
- R11 - 2 SHALL BE 48" X 30"
- R11 - 3 SHALL, R11 - 4 AND R10 - 61 SHALL BE 60 " X 30"
- M4 - 9 SHALL BE 30" X 24"
- M3 - X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4 - 8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1 - 4, M1 - 5A AND M1 - 6 SHALL BE 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

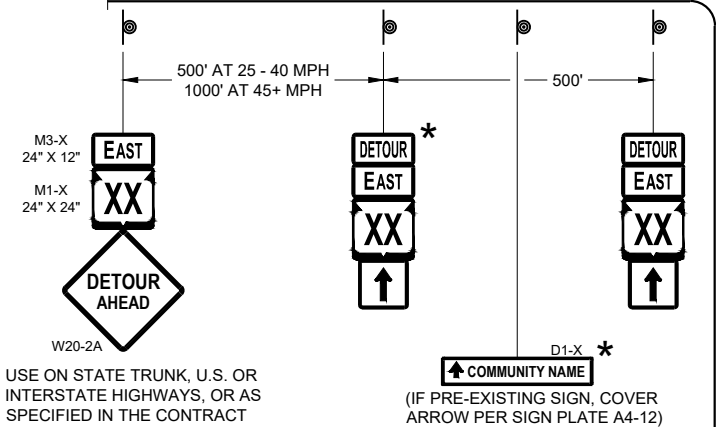
APPROVED
February 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 38
FHWA



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

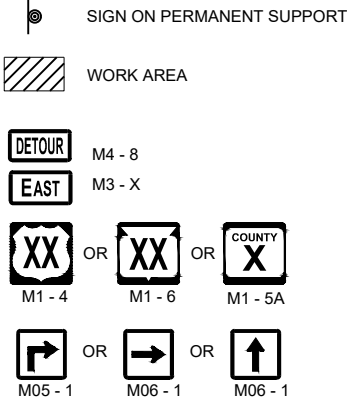
THIS DRAWING PROVIDES GENERAL GUIDANCE
ON TYPICAL DETOUR SIGN LAYOUT AND SPACING.
SEE PROJECT DETOUR SIGNING SHEETS FOR
SPECIFIC DETAILS FOR EACH PROJECT.

MATCH POINT



DETAIL F
DETOUR SIGNING

LEGEND



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.

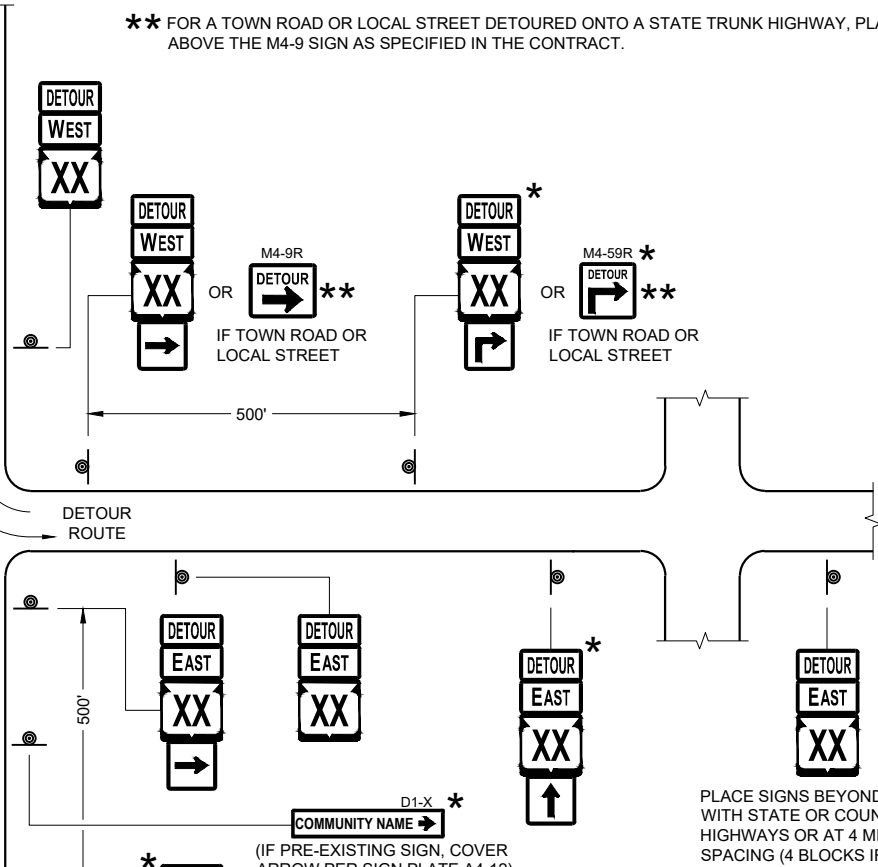
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

"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" (30" X 30" 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.

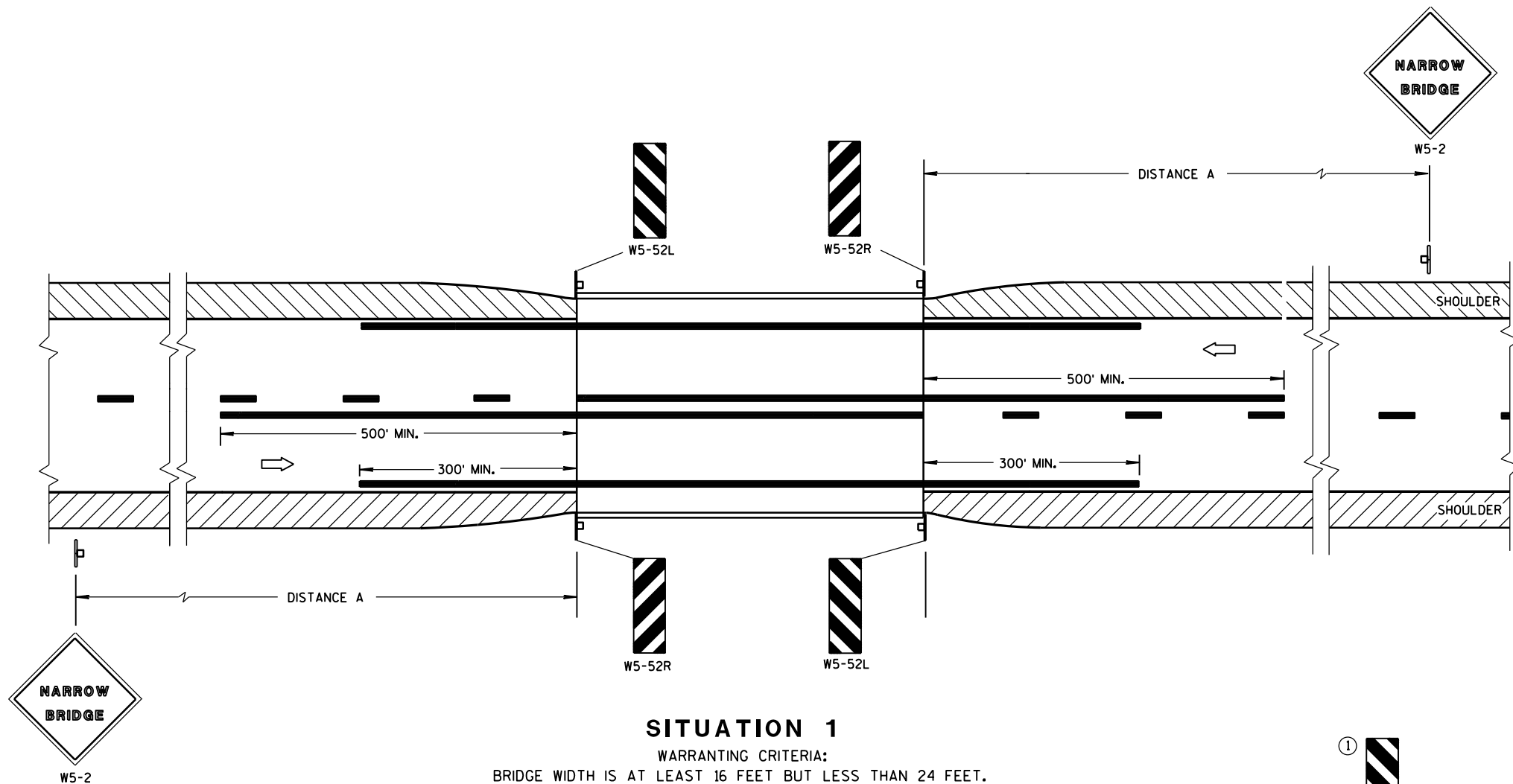


PLACE SIGNS BEYOND INTERSECTIONS
WITH STATE OR COUNTY TRUNK
HIGHWAYS OR AT 4 MILE MAXIMUM
SPACING (4 BLOCKS IF URBAN AREA)

DETOUR SIGNING
FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 39
FHWA



SITUATION 1

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

DISTANCE TABLE

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

GENERAL NOTES

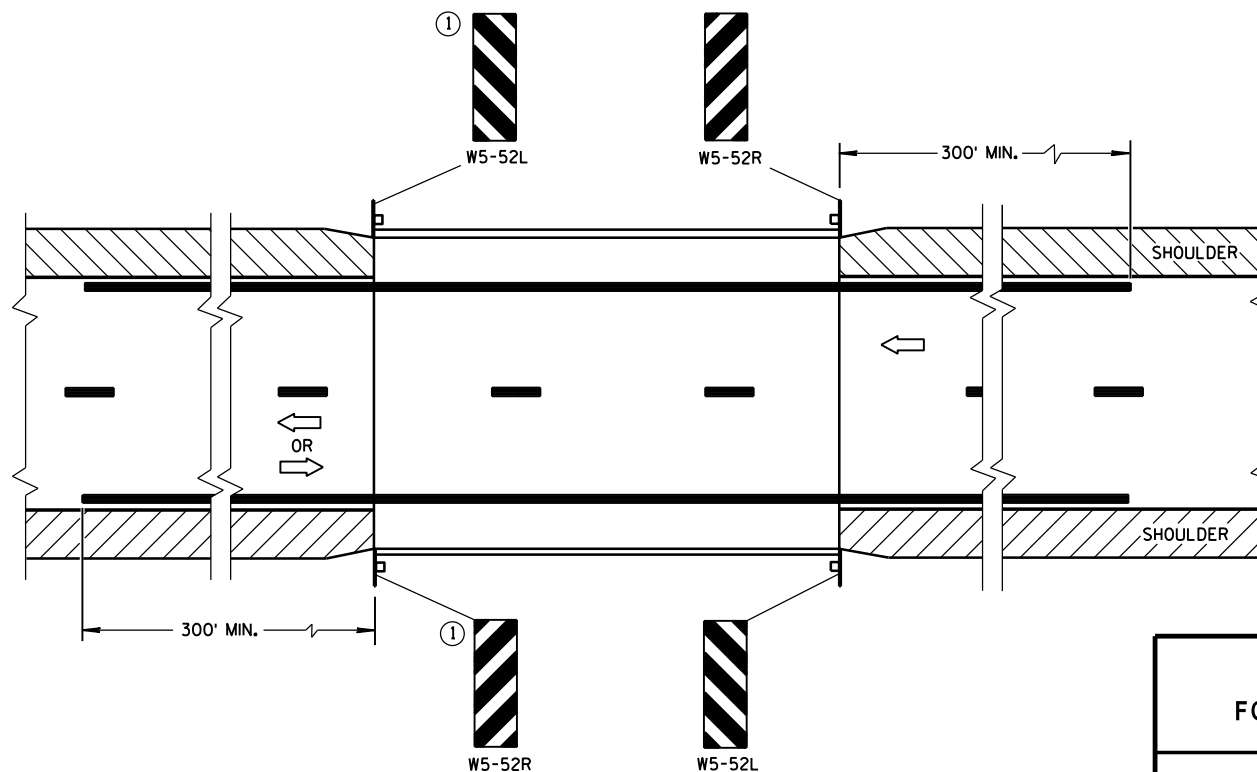
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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

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

① OMIT ON ONE-WAY TRAVELLED WAYS.

➡ DIRECTION OF TRAFFIC



SITUATION 2

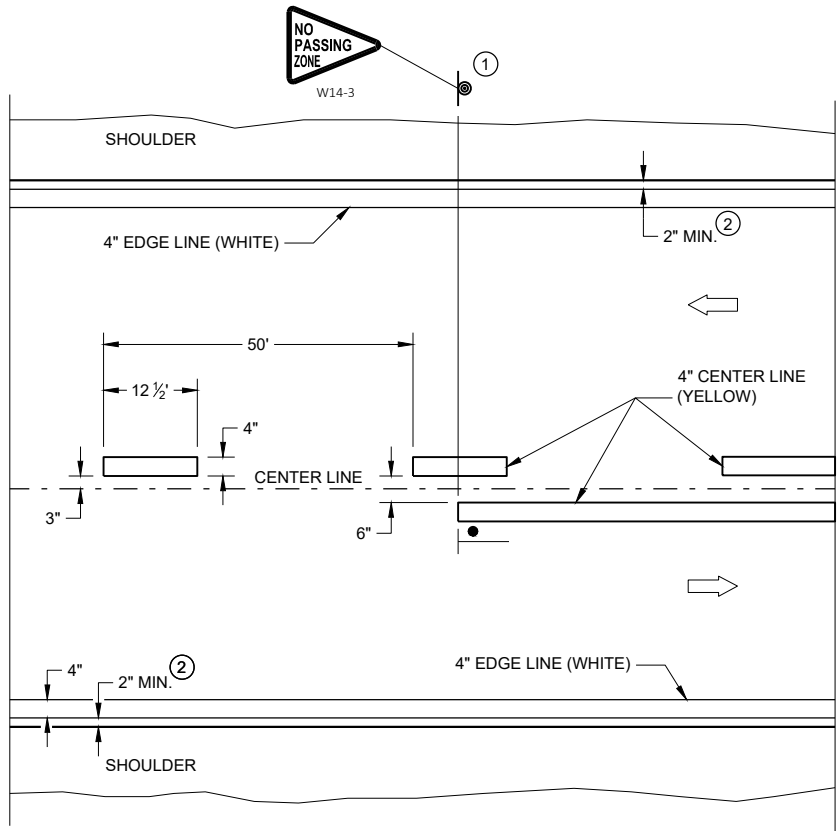
WARRANTING CRITERIA:
1. BRIDGE WIDTH IS AT LEAST 24 FEET AND
2. BRIDGE SHOULDER WIDTH IS LESS THAN 6 FEET.

SIGNING & MARKING FOR TWO LANE BRIDGES

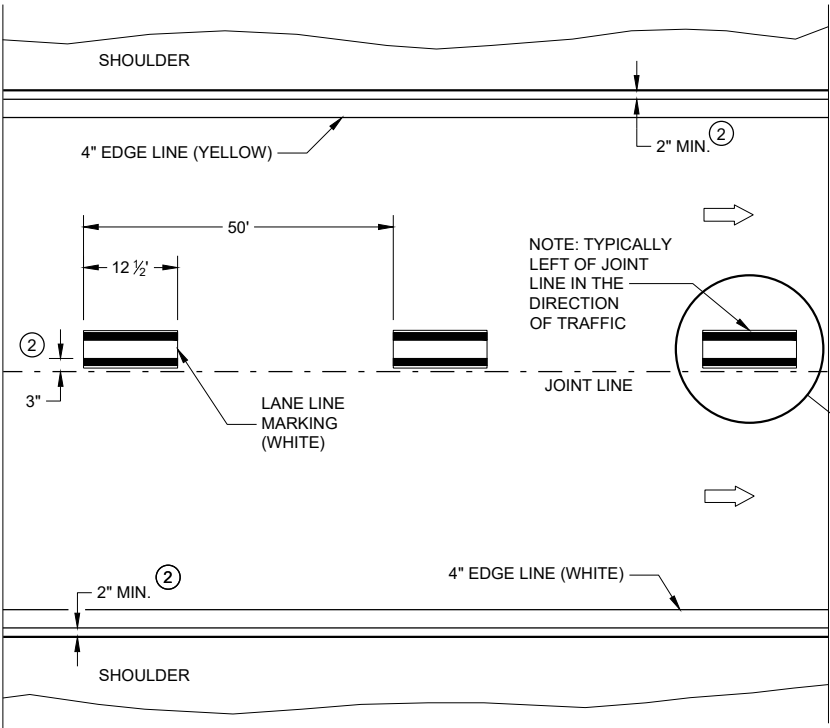
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June 2017 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MAR 40 JEEER
FHWA

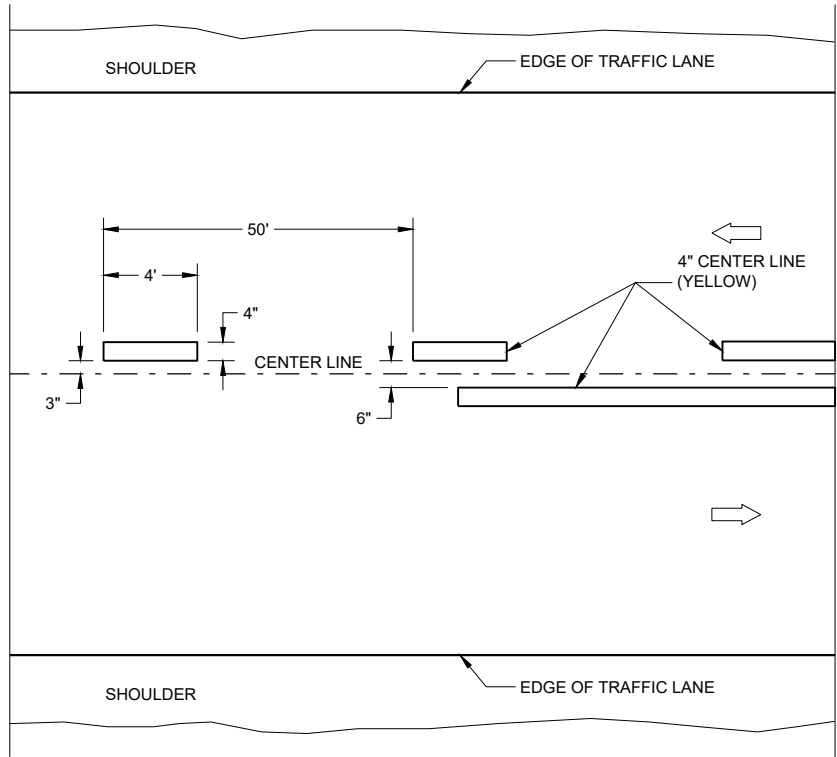


TWO WAY TRAFFIC

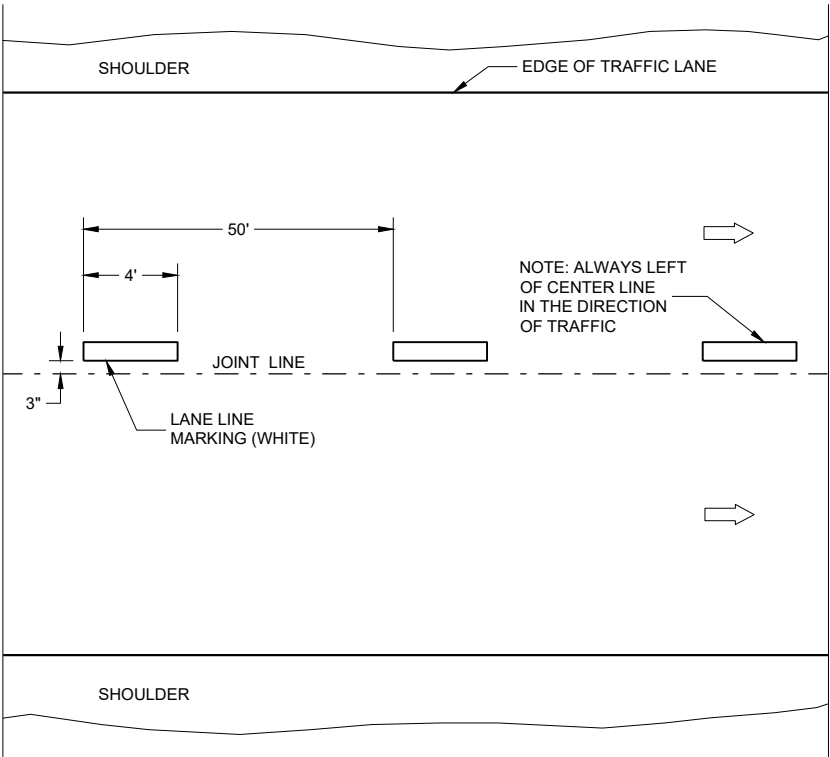


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

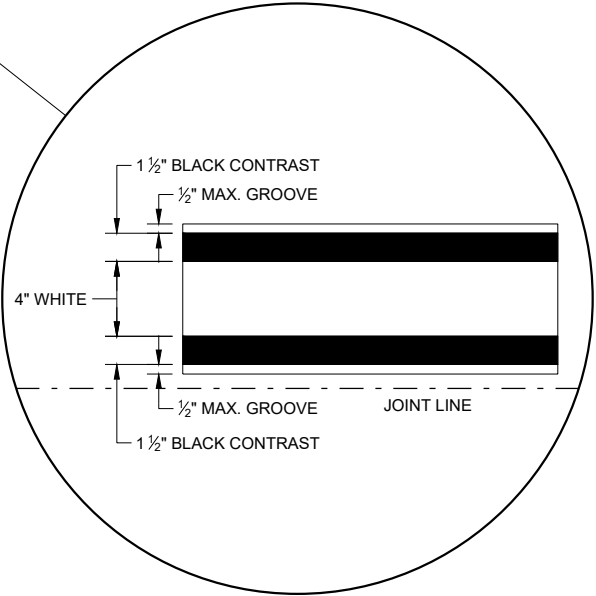
GENERAL NOTES

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

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

LEGEND

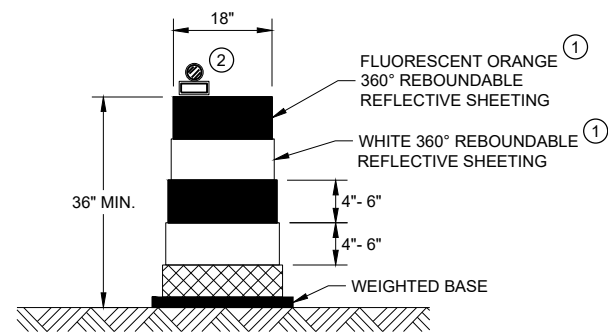
- "T" MARKING
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC



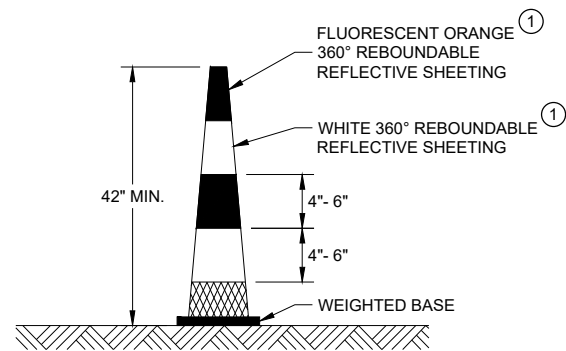
LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Matthew Rauch
DATE STATEWIDE SIGNING AND MARKING ENGINEER 41
FHWA

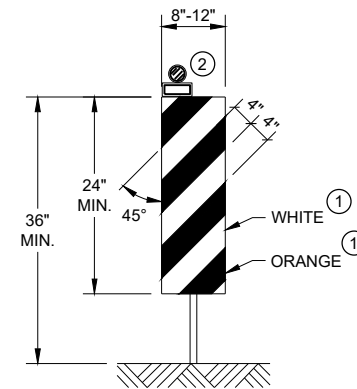


DRUM



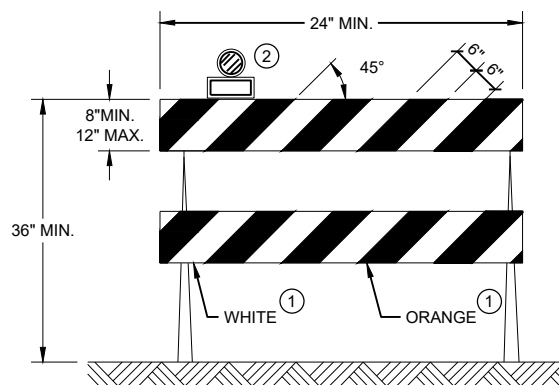
42" CONE

DO NOT USE IN TAPERS
½ SPACING OF DRUMS



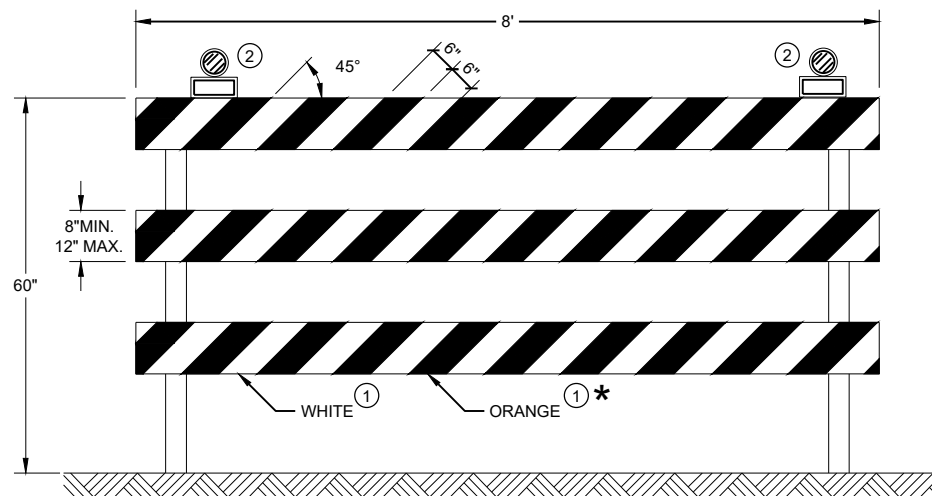
VERTICAL PANEL

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



TYPE II BARRICADE

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



TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

GENERAL NOTES

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

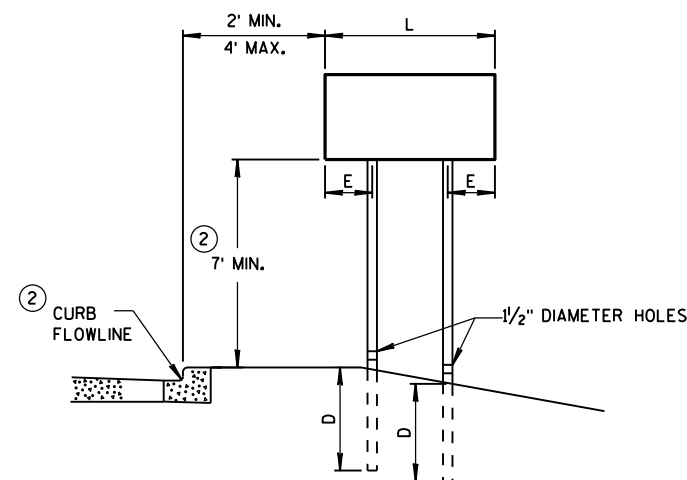
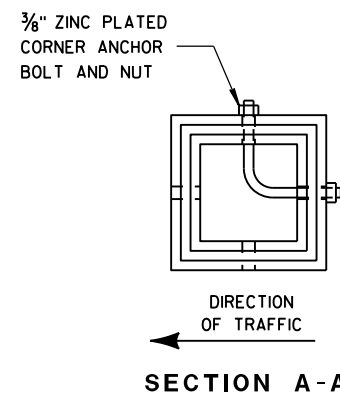
CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED November 2020 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER 42
FHWA	



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

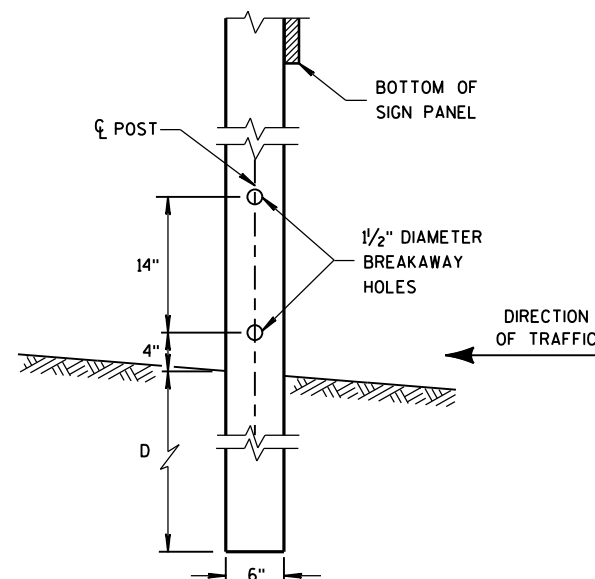


URBAN AREA

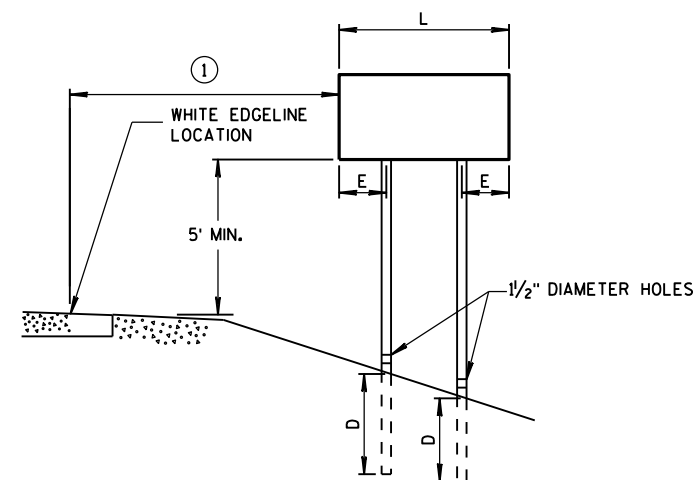
POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST
EMBEDMENT DEPTH

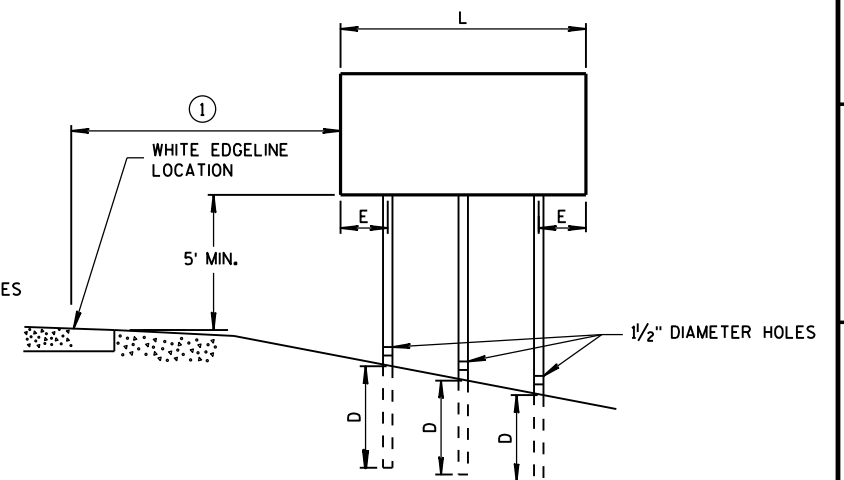
AREA OF SIGN INSTALLATION (SQ. FT.)	D (MIN)
20 OR LESS	4'
GREATER THAN 20	5'



4" x 6" WOOD POST MODIFICATION



RURAL AREA



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.

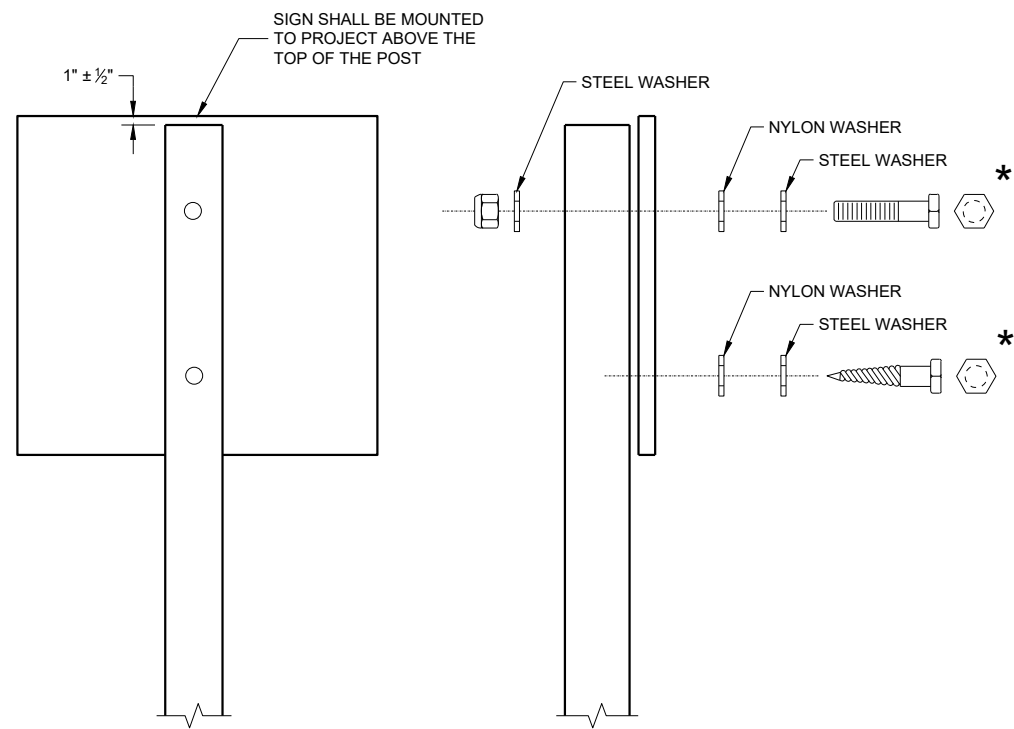
4" X 6" WOOD POST

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)

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION⁴³



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

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

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

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

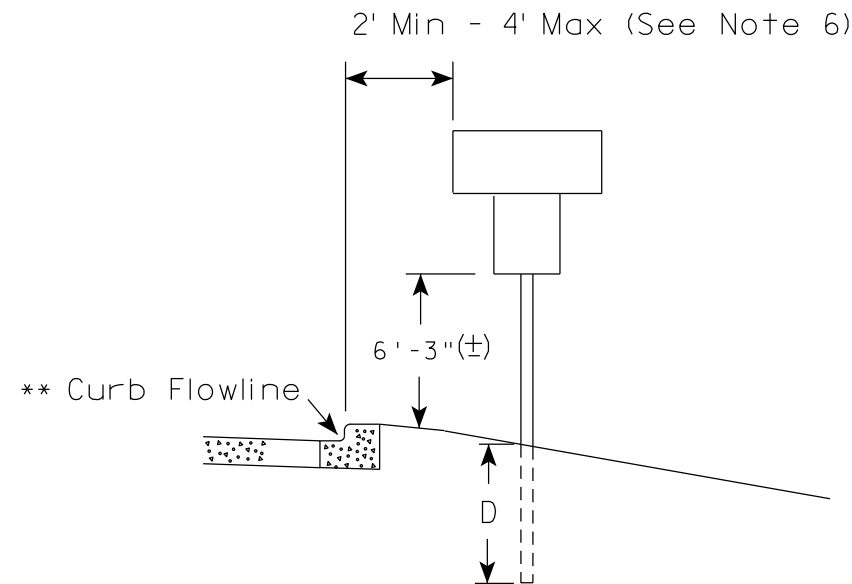
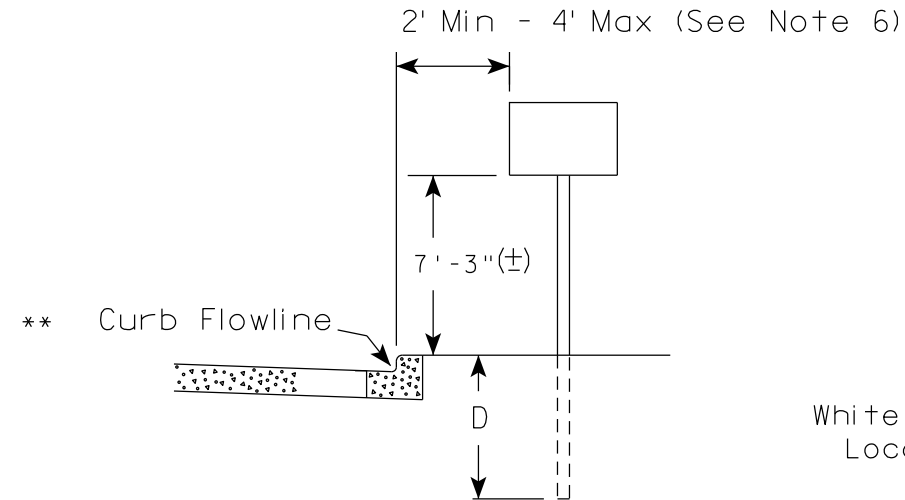
SQUARE STEEL POST (2" x 2")
MACHINE BOLTS - ¾" x 3 ¼" LENGTH W/NUTS
RIVETS - ⅝" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM
BODY/MANDREL O.D. FLANGE 0.720 - 0.765 INCH,
GRIP RANGE 0.042 - 0.375 INCH

WASHERS (ALL POSTS) -
1 ¼" O.D. x ⅜" I.D. x ⅛" STEEL
1 ¼" O.D. x ⅜" I.D. x 0.080 NYLON

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

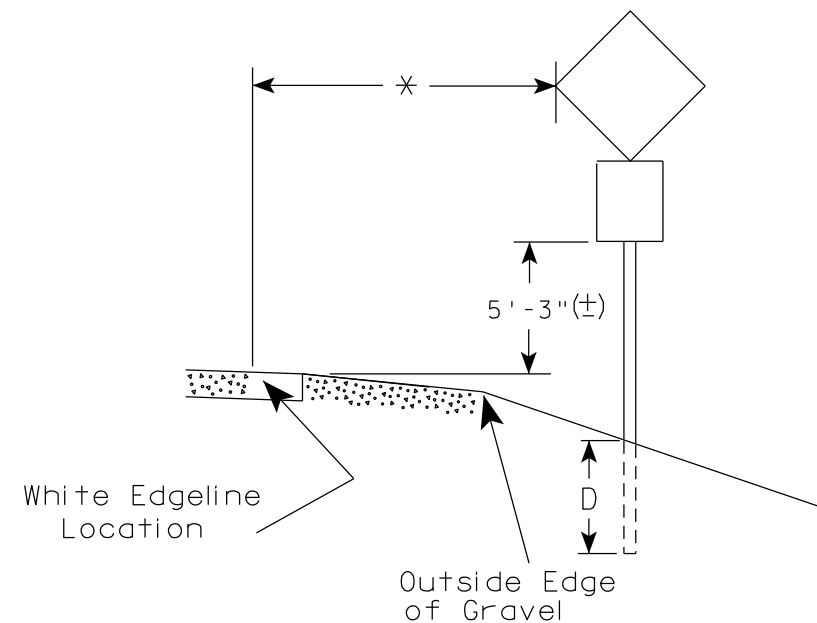
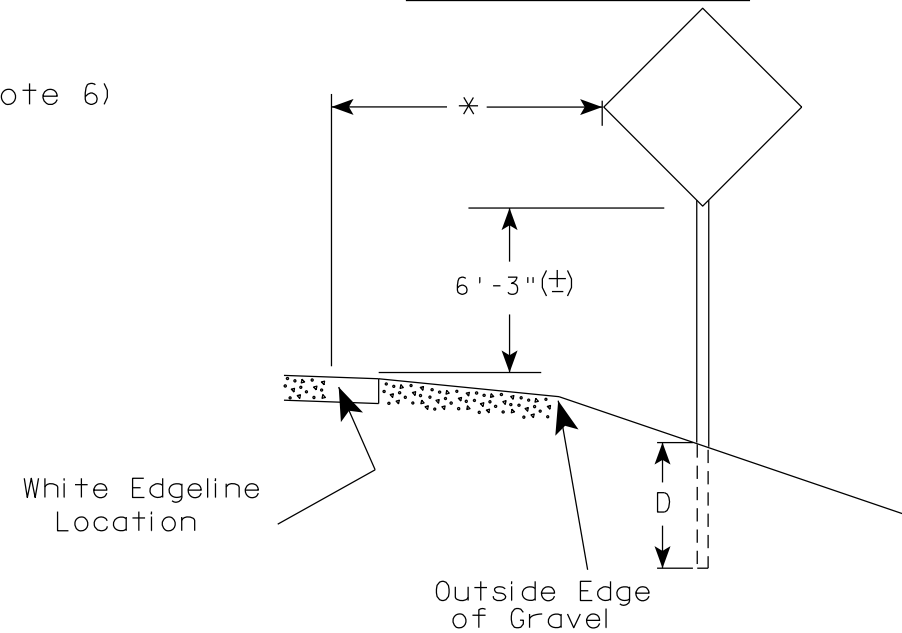
ATTACHMENT OF SIGNS TO POSTS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER 44
FHWA	

URBAN AREA



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

RURAL AREA (See Note 2)



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

POST EMBEDMENT DEPTH

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

GENERAL NOTES

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

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

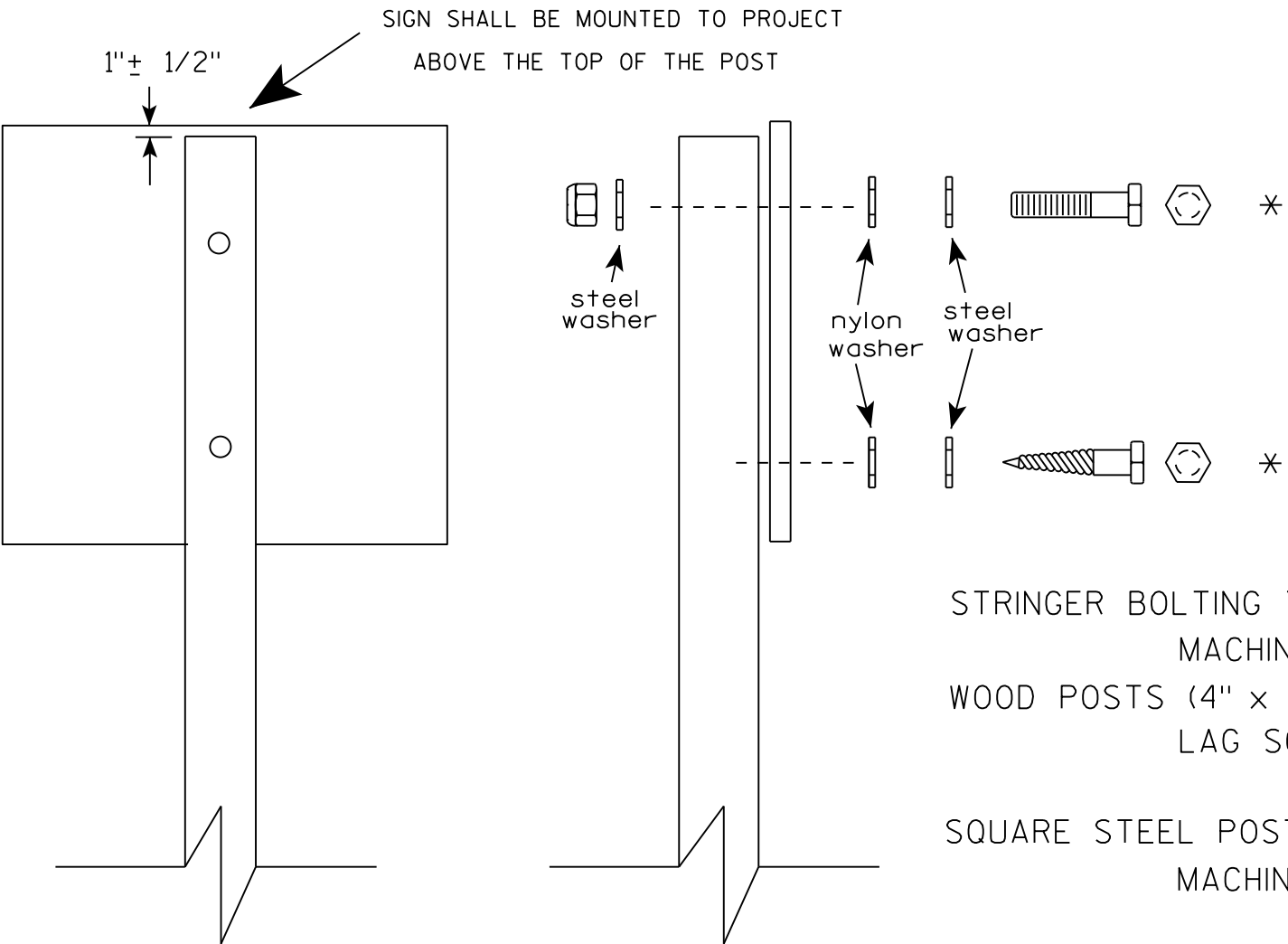
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 45

E



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

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

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

- STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)
- MACHINE BOLTS - 5/16" X 1-3/4" Length w/ lock nuts
- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - 3/8" X 3" (NO STRINGERS ON BACK OF SIGN)
 - 3/8" X 4" (STRINGERS ON BACK OF SIGN)
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
 - 3/8" X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)
- RIVETS - 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 3/8" I.D. X 1/16" STEEL
 - 1-1/4" O.D. X 3/8" I.D. X .080 NYLON

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

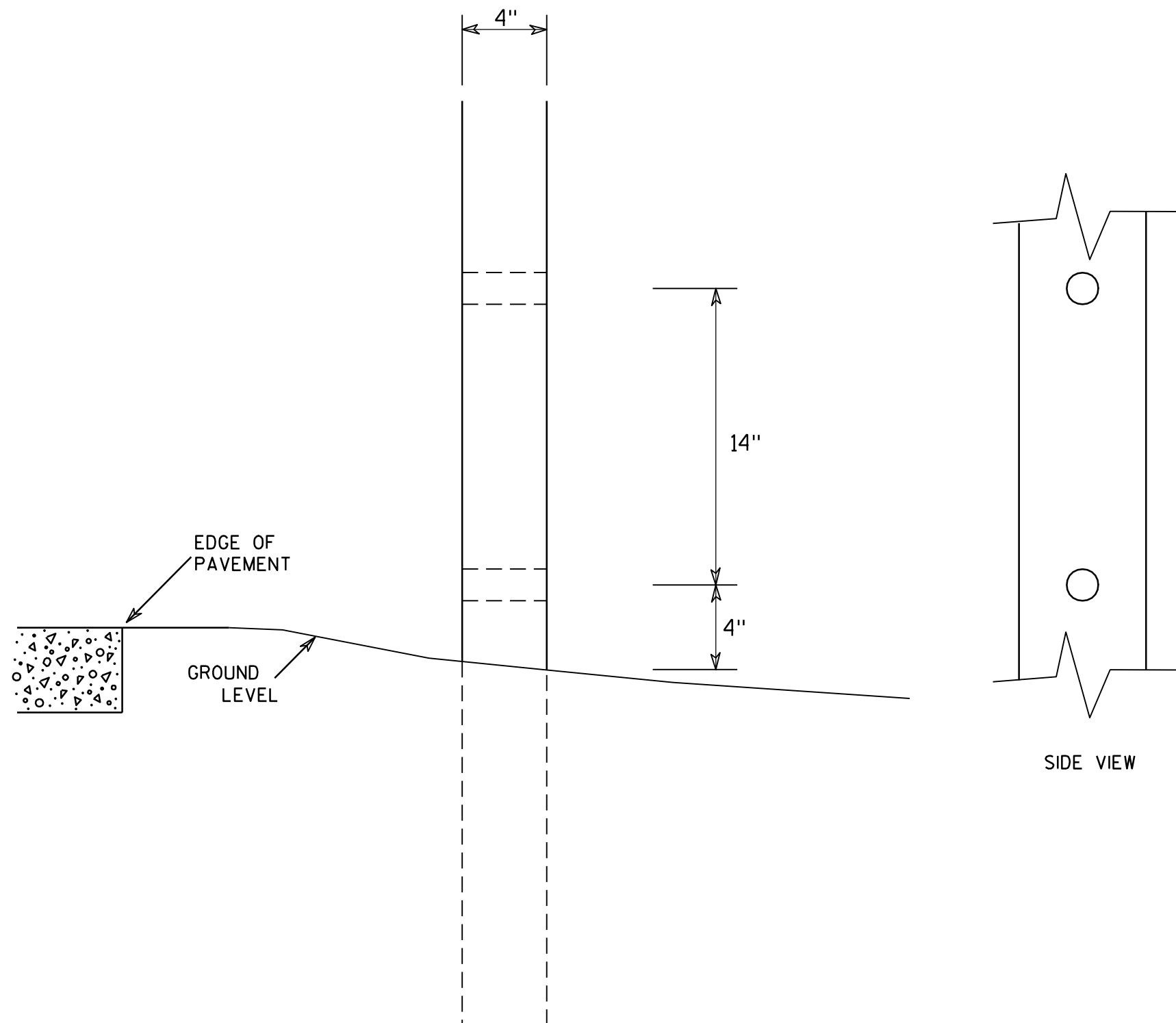
ATTACHMENT OF SIGNS
TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 8/11/16 PLATE NO. A4-8.8
46

7



GENERAL NOTES

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

7

4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Chester J. Spang
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

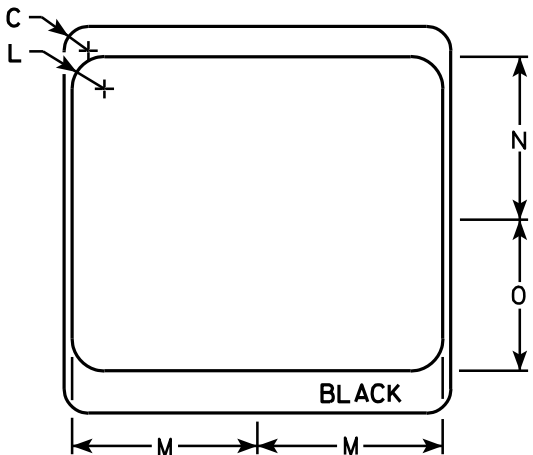
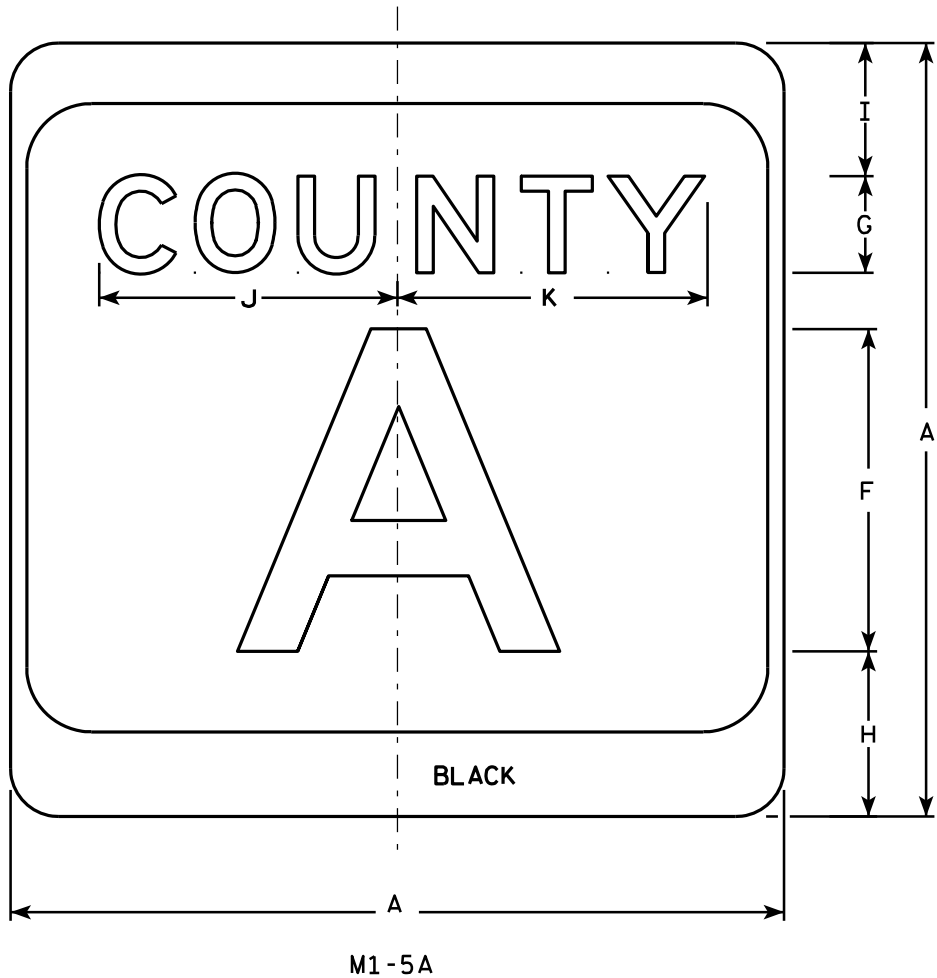
HWY:

COUNTY:

SHEET NO: 47

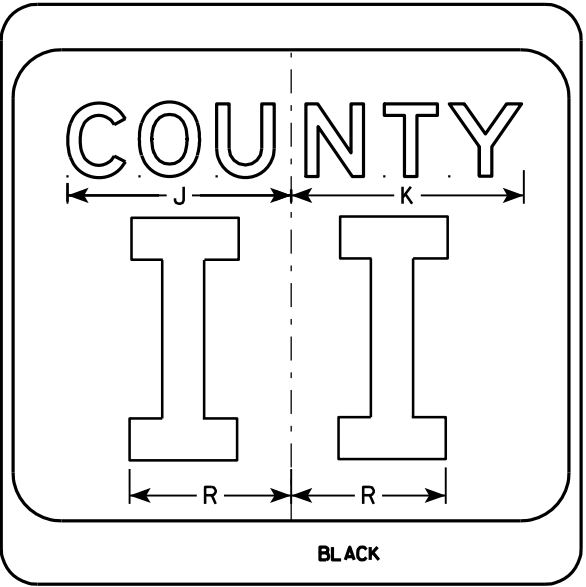
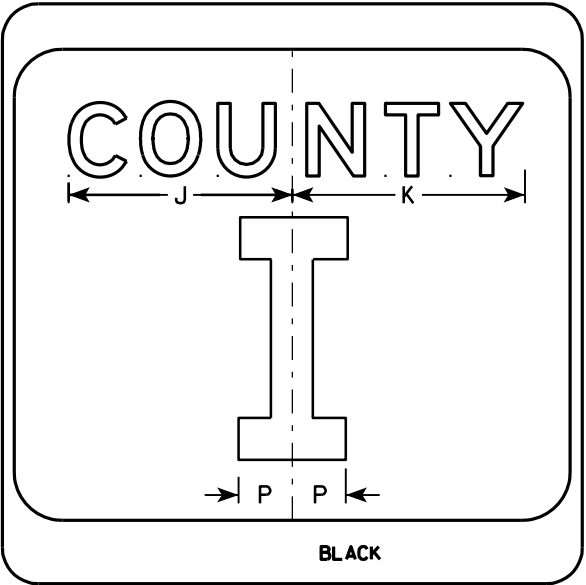
E

7



NOTES

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



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

CTH MARKER

M1-5A FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

PROJECT NO:

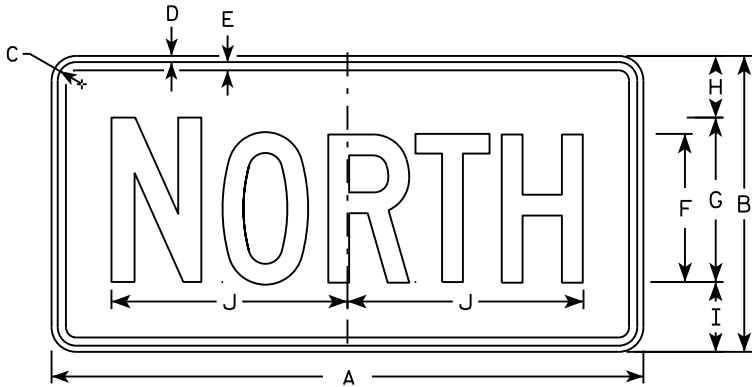
HWY:

COUNTY:

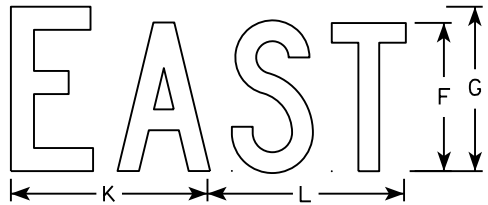
SHEET NO: 48

E

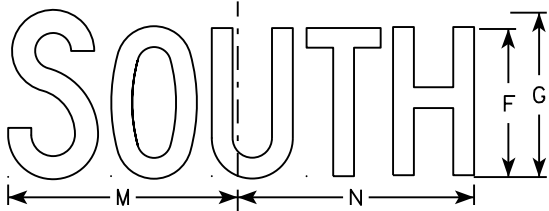
7



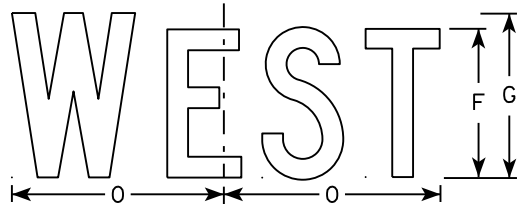
M3-1
MM3-1
MP3-1



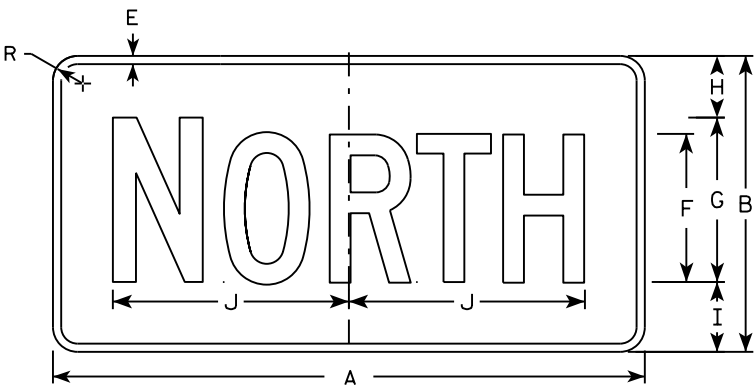
M3-2
MM3-2
MP3-2



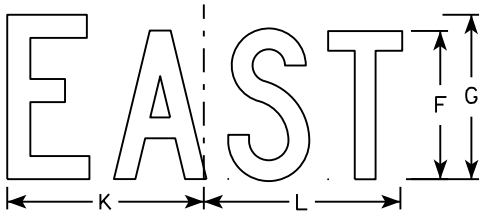
M3-3
MM3-3
MP3-3



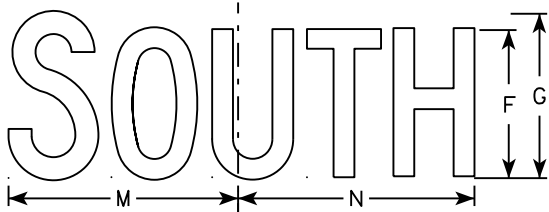
M3-4
MM3-4
MP3-4



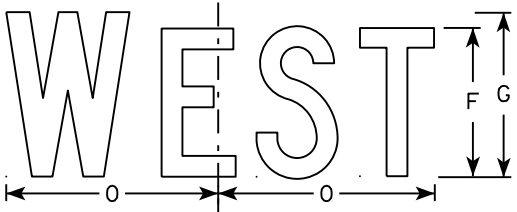
MB3-1
MK3-1
MN3-1



MB3-2
MK3-2
MN3-2



MB3-3
MK3-3
MN3-3



MB3-4
MK3-4
MN3-4

NOTES

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

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

STANDARD SIGNS
M3-1 thru M3-4
SERIES

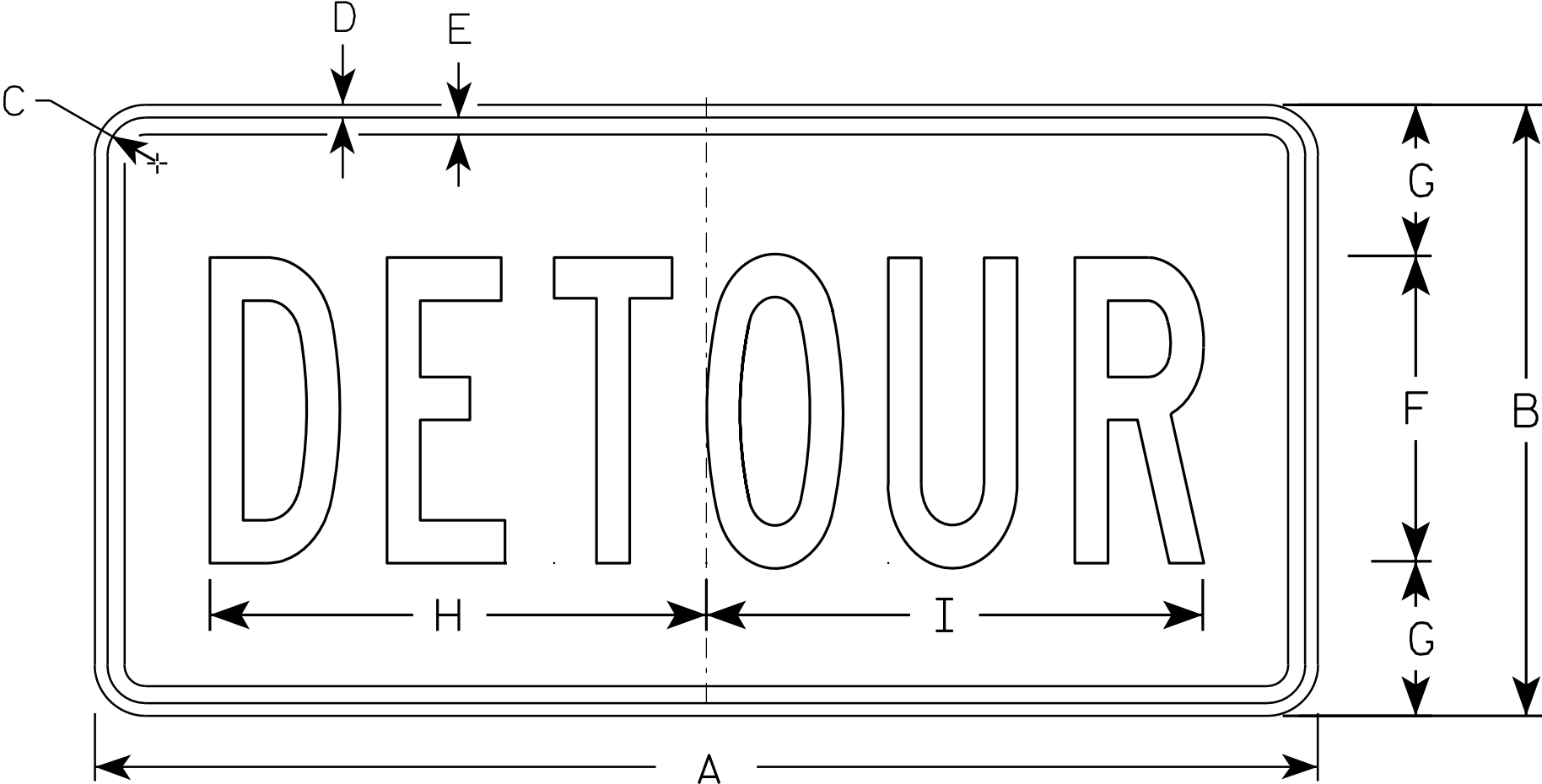
WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 10/15/15 PLATE NO. 49 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

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																											

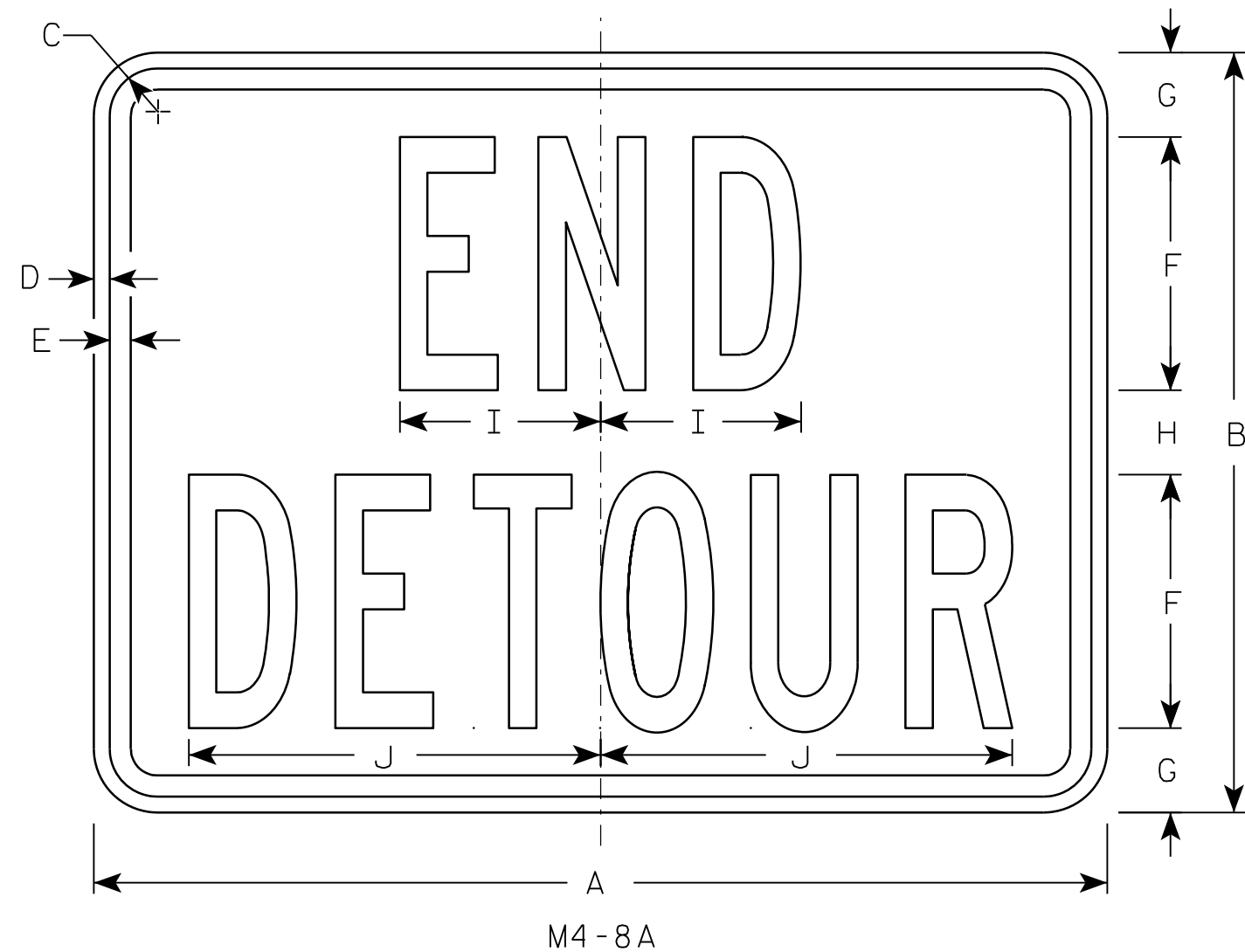
STANDARD SIGN
M4 - 8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

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

7



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.

7

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

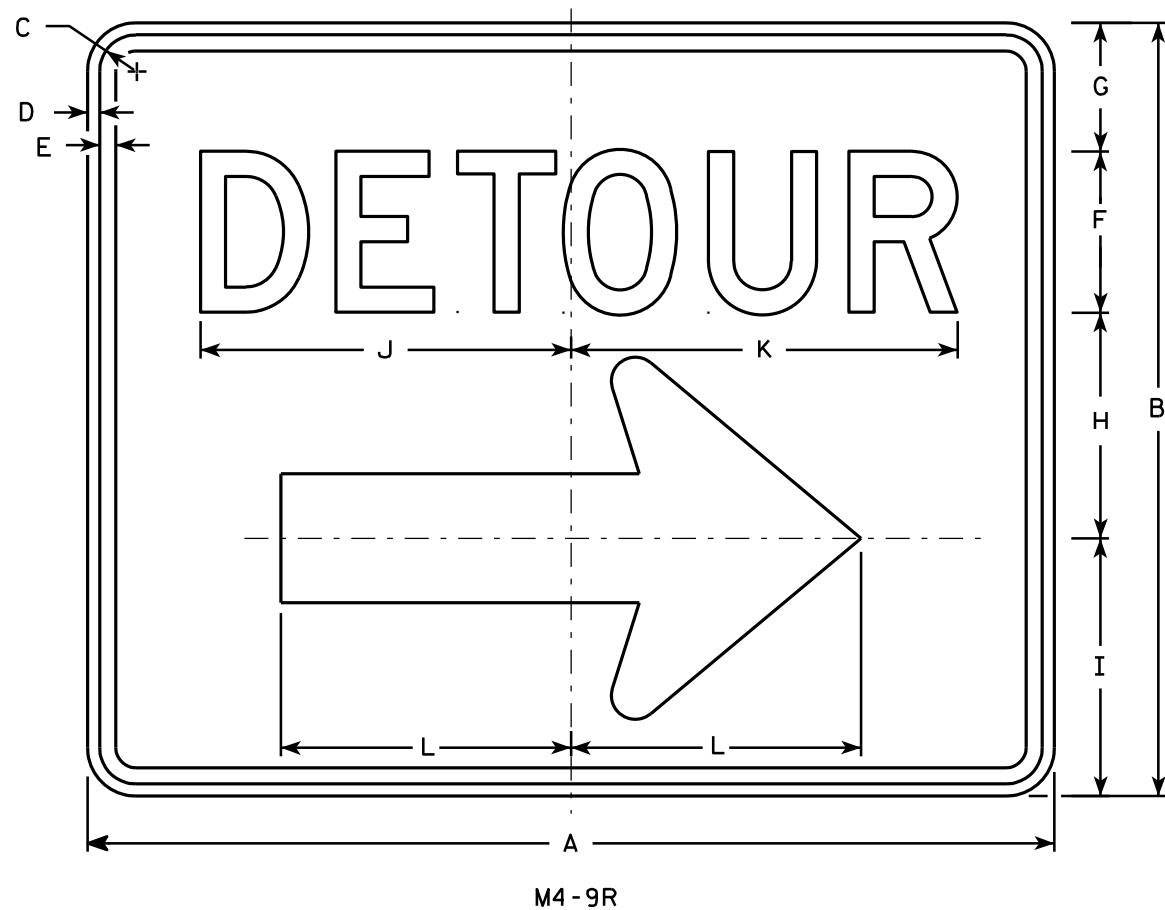
PROJECT NO:	HWY:	COUNTY:	SHEET NO: 51	E
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STANDARD SIGN
M4-8A

WISCONSIN DEPT OF TRANSPORTATION

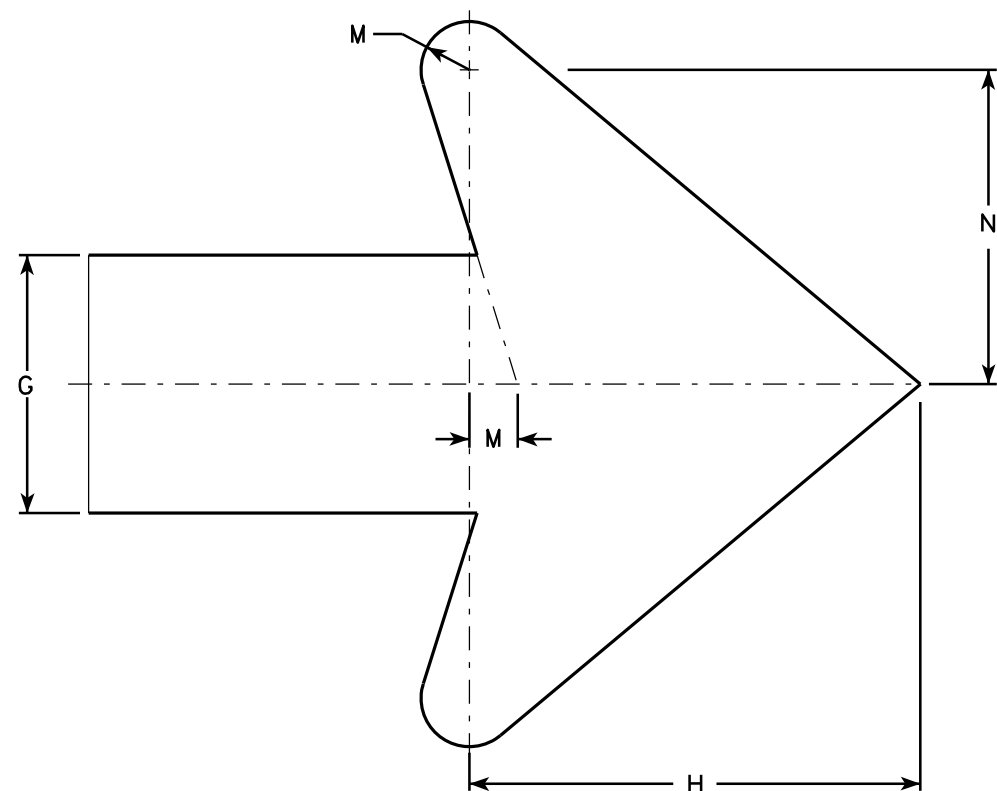
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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



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 - D
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. M4-9L is the same as M4-9R except the arrow is reversed.



Arrow Detail

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

STANDARD SIGN
M4-9 R & L

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 3/9/11 PLATE NO. M4-9R.4

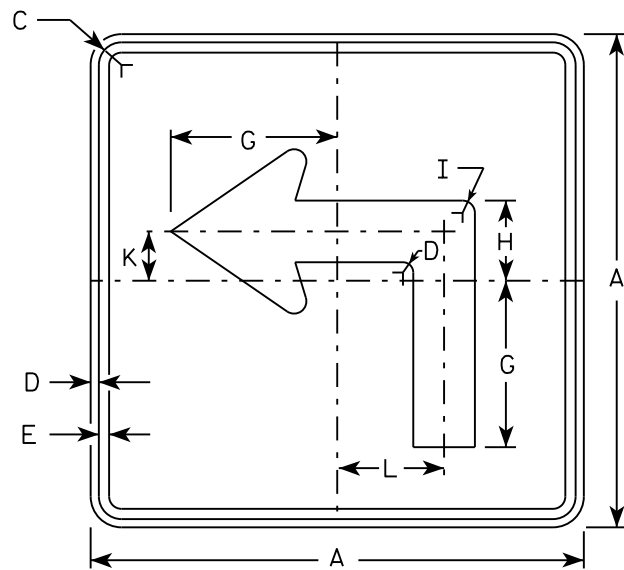
PROJECT NO:

HWY:

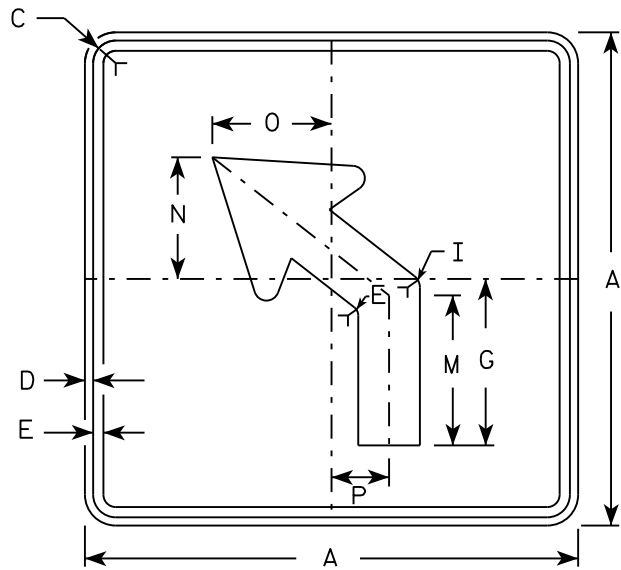
COUNTY:

SHEET NO: 52

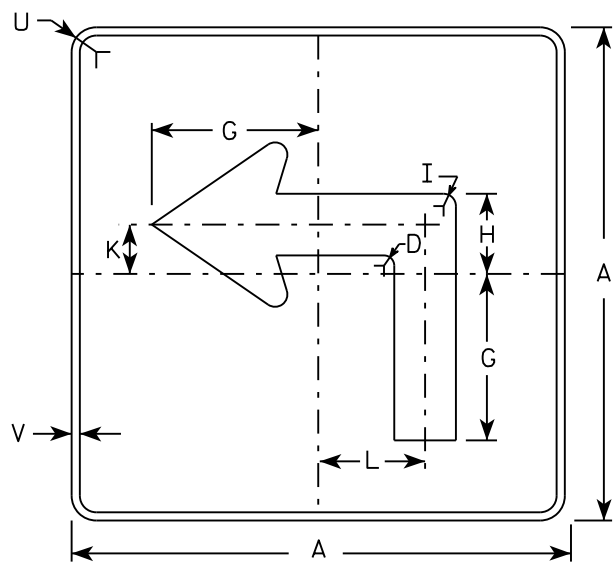
E



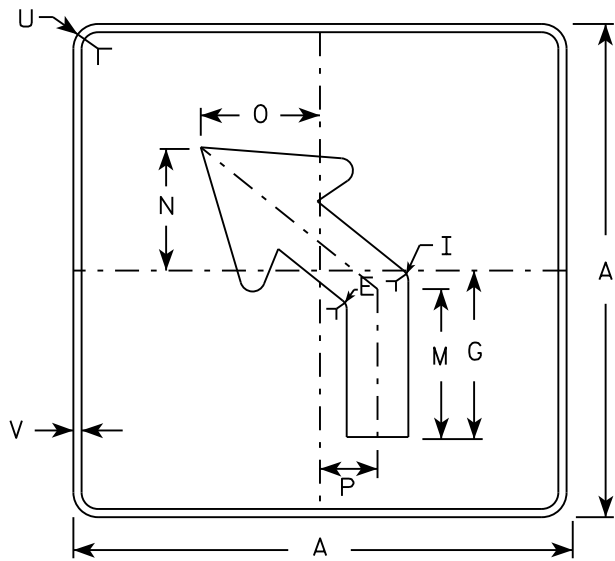
M5-1L
MM5-1L
M05-1L
MP5-1L



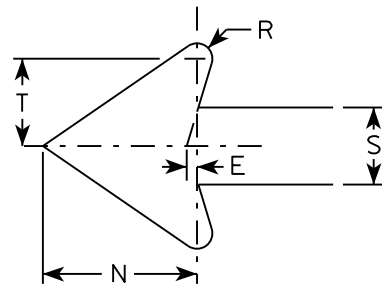
M5-2L
MM5-2L
M05-2L
MP5-2L



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

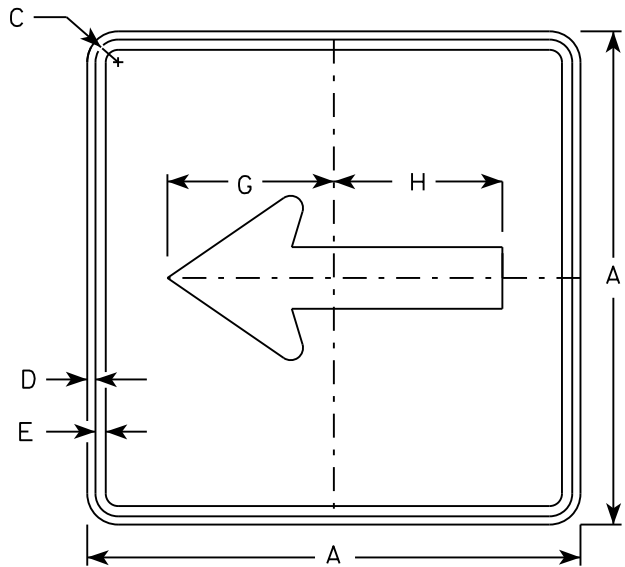
PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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STANDARD SIGN
M5-1 & M5-2

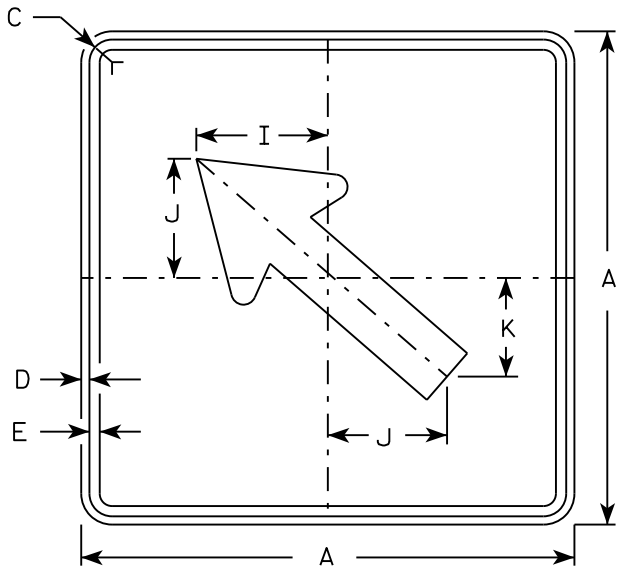
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

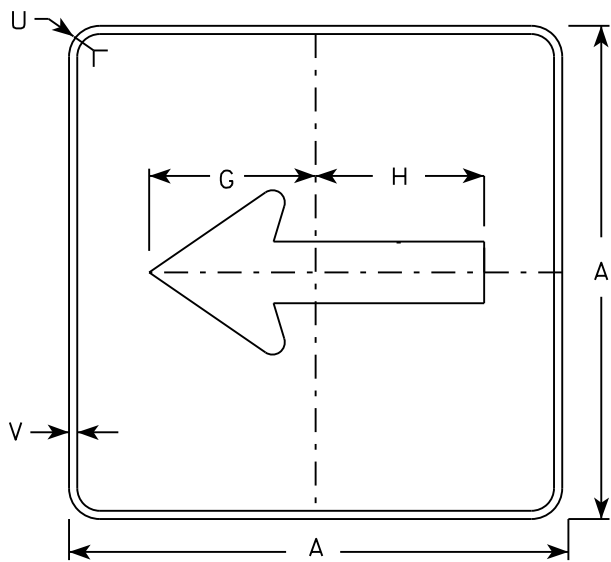
DATE 10/15/15 PLATE 53 M5-1.13



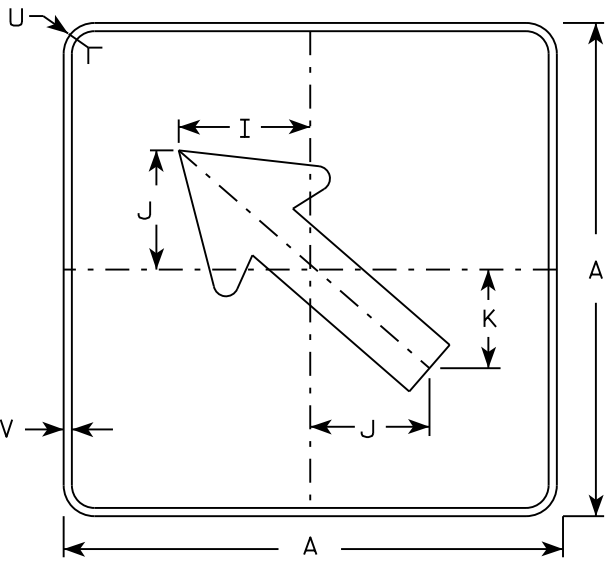
M6 - 1
MM6 - 1
M06 - 1
MP6 - 1



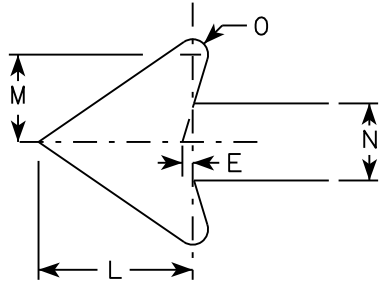
M6 - 2
MM6 - 2
M06 - 2
MP6 - 2



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



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



NOTES

- 1. Signs are Type II - Type H except as Shown
- 2. Color:
Background - See note 4
Message - See note 4
- 3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 4. M6-1 and M6-2 Background - White
Message - Black
MB6-1 and MB6-2 Background - Blue
Message - White
MK6-1 and MK6-2 Background - Green
Message - White
MM6-1 and MM6-2 Background - White
Message - Green
MN6-1 and MN6-2 Background - Brown
Message - White
M06-1 and M06-2 Background - Orange - Type F Reflective
Message - Black
MP6-1 and MP6-2 Background - White
Message - Blue
MR6-1 and MR6-2 Background - Brown
Message - Yellow

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

PROJECT NO:

HWY:

COUNTY:

DATE 10/15/15

PLAT 54

SHEET NO:

E

STANDARD SIGN
M6 - 1 & M6 - 2
SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

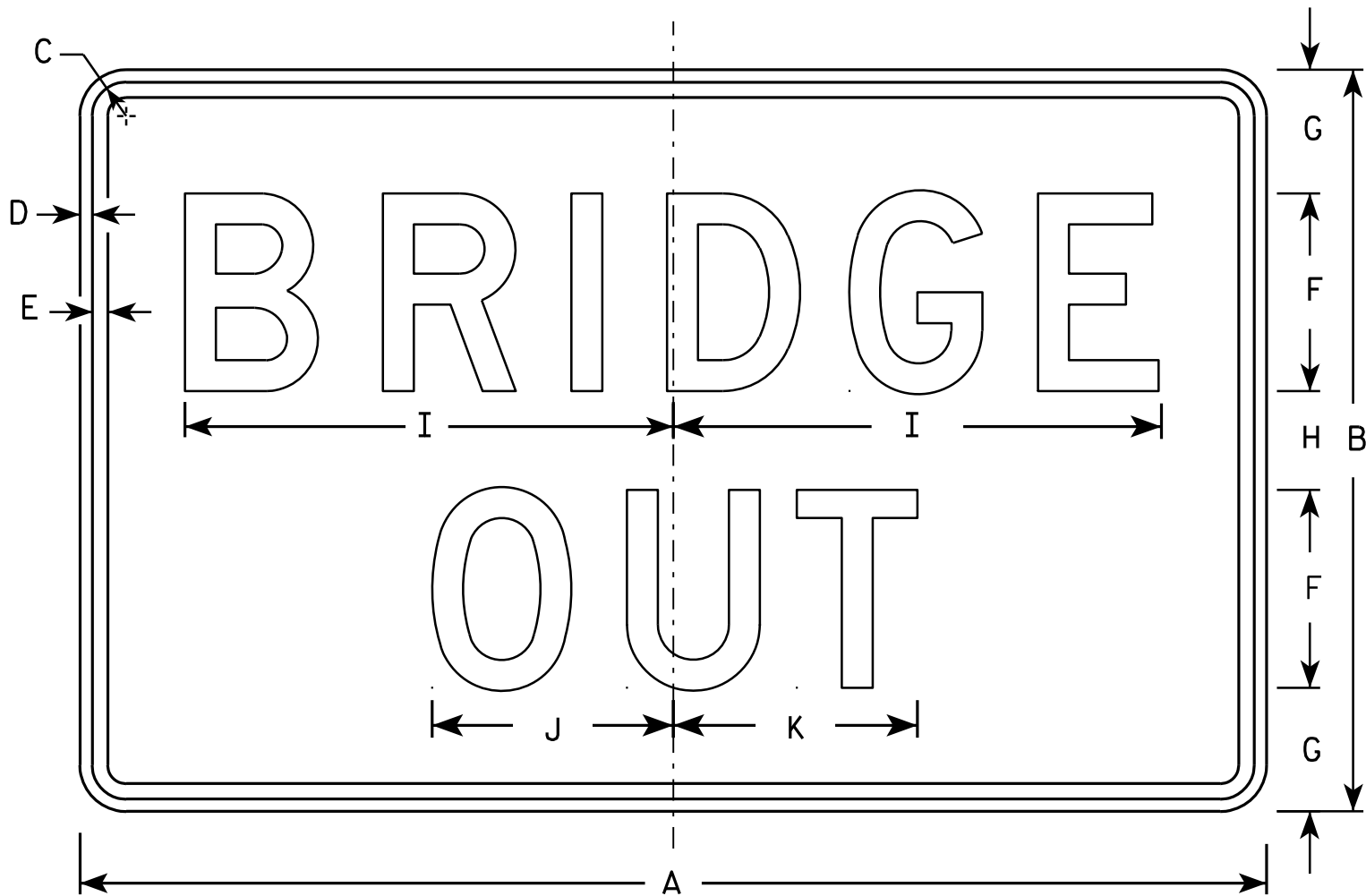
DATE 10/15/15

PLAT 54

M6-1.15

NOTES

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



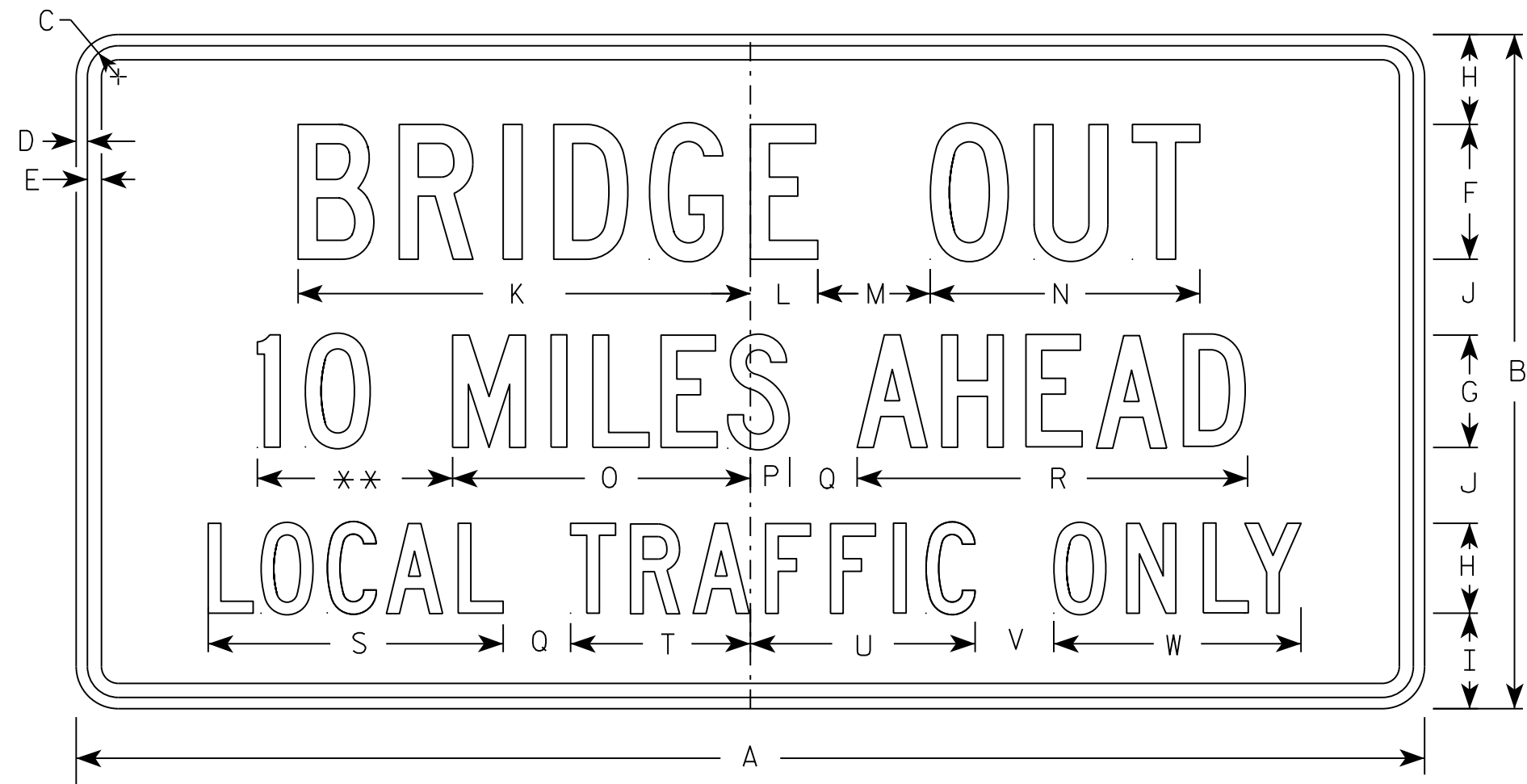
R11-2B

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

STANDARD SIGN	
R11-2B	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 4/1/11	PLATE NO. R11-2B.2

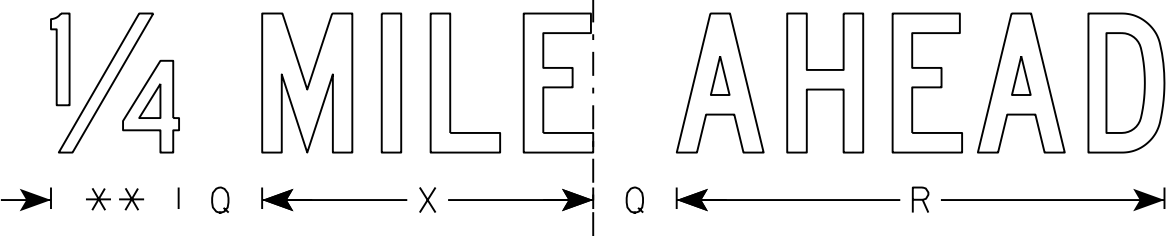
NOTES

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



** See Note 5

R11-3B



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

PROJECT NO:

HWY:

COUNTY:

SHEET NO: 56

E

STANDARD SIGN
R11-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

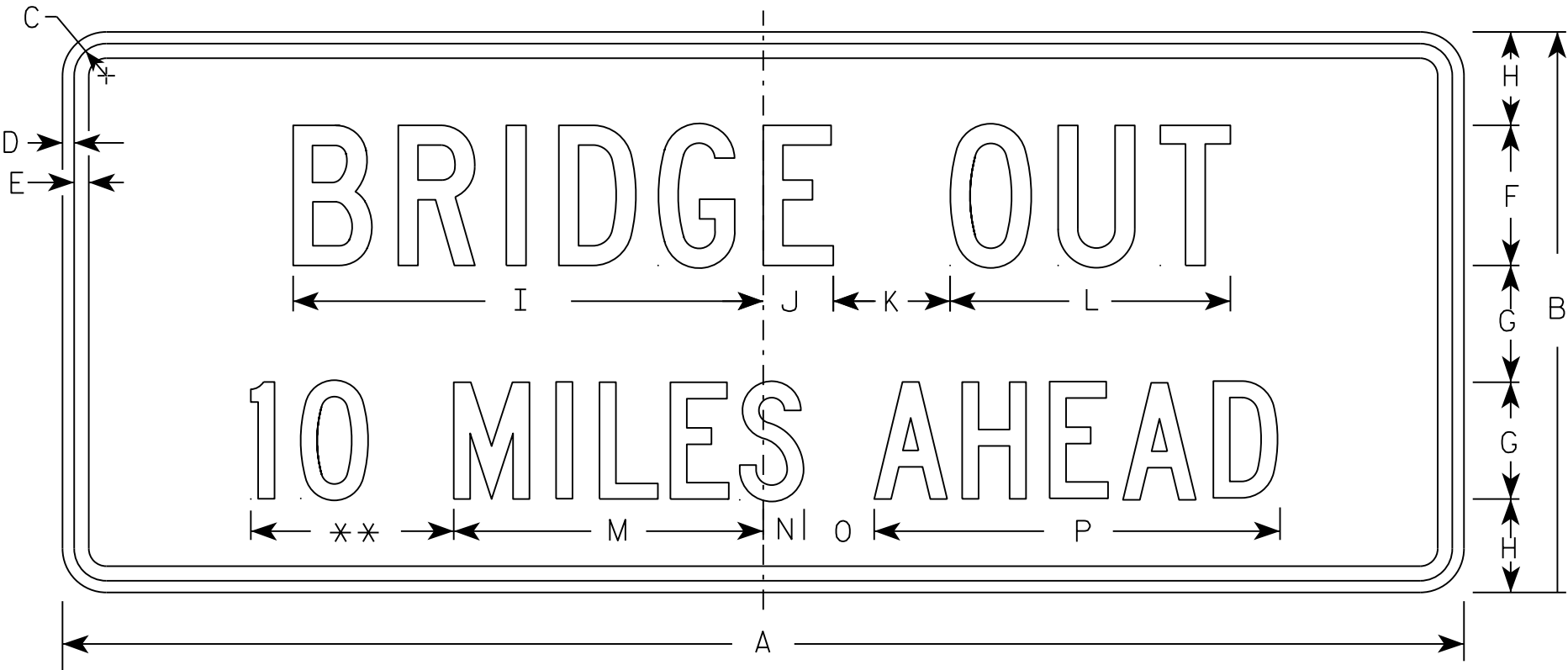
DATE 3/21/17 PLATE NO. R11-3B.3

NOTES

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

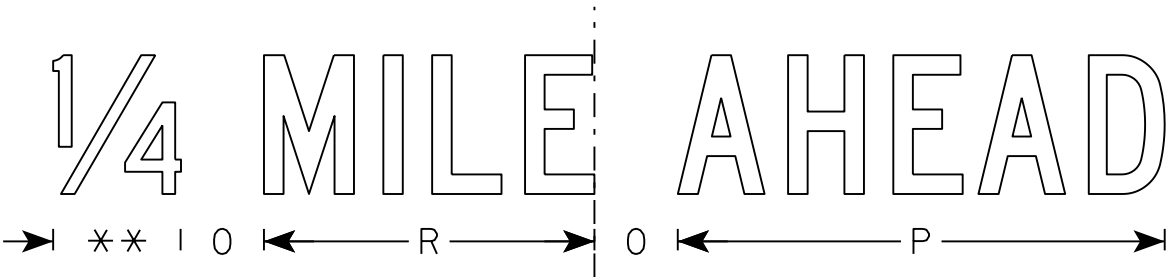
Background - White

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

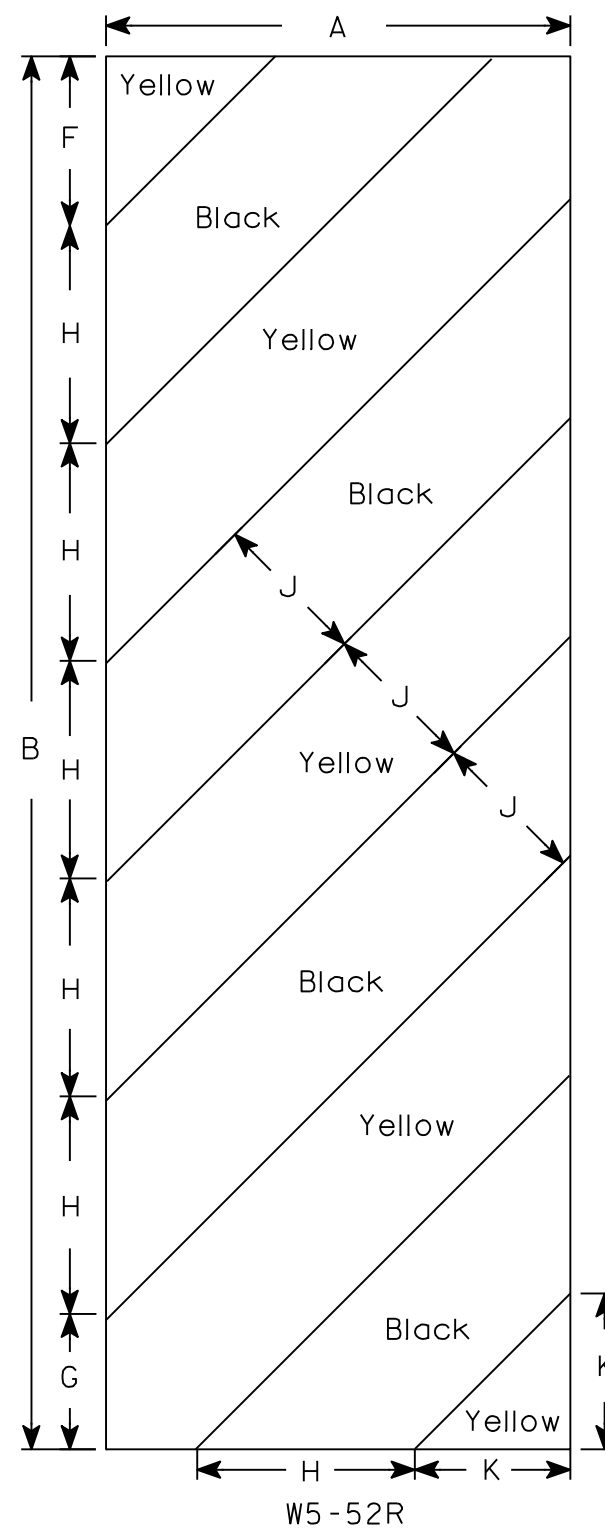
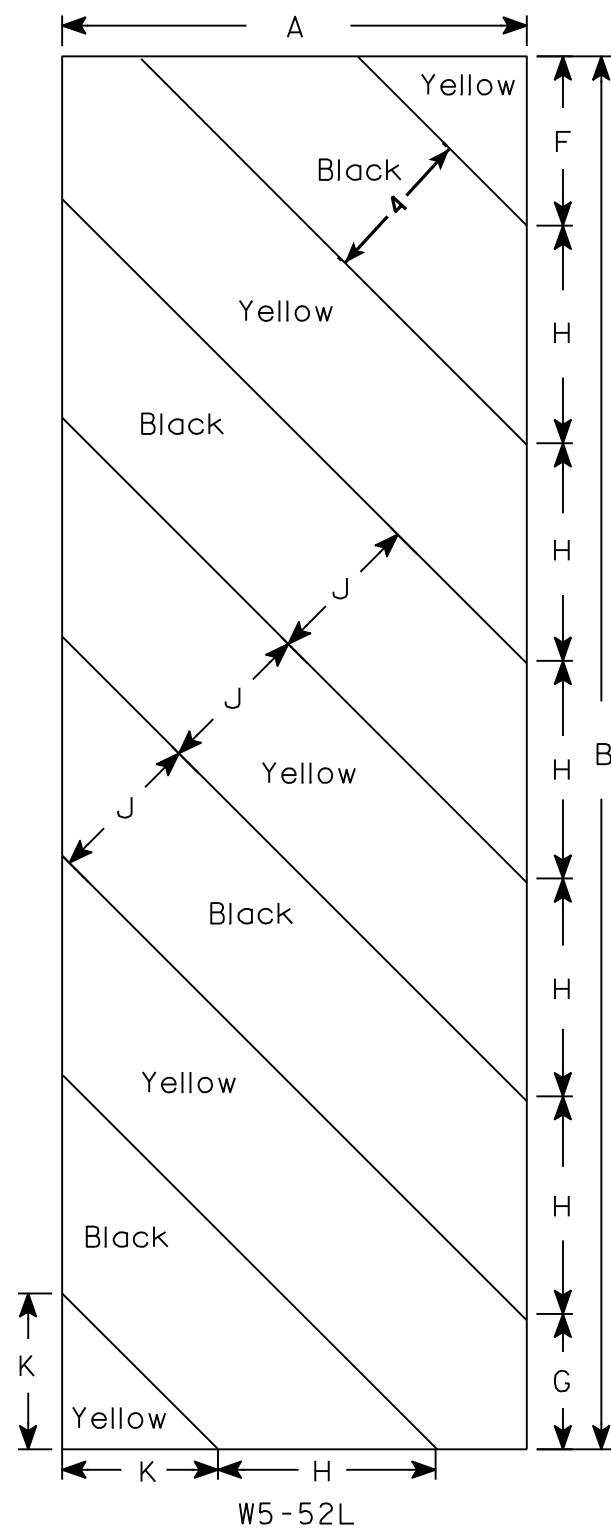


R11-3C

** See Note 5



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



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.

[illegible]

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

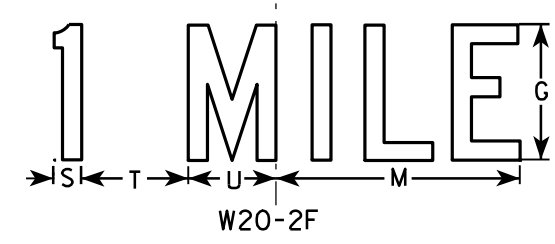
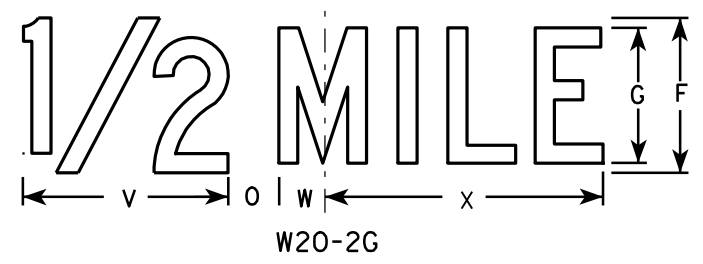
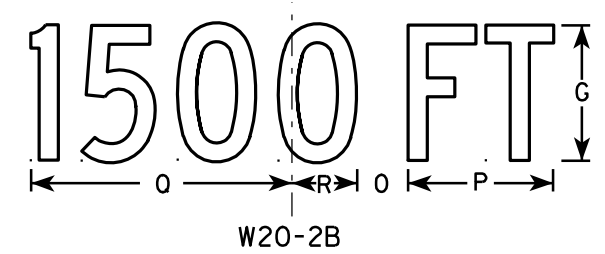
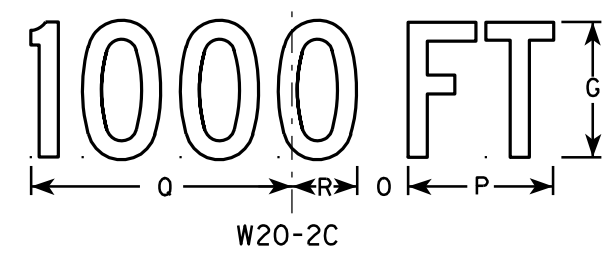
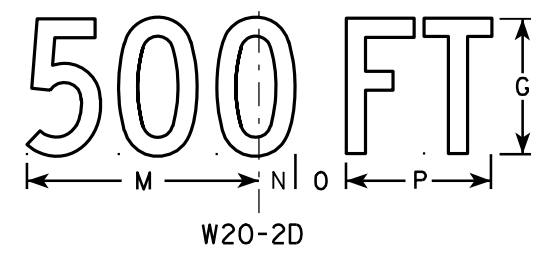
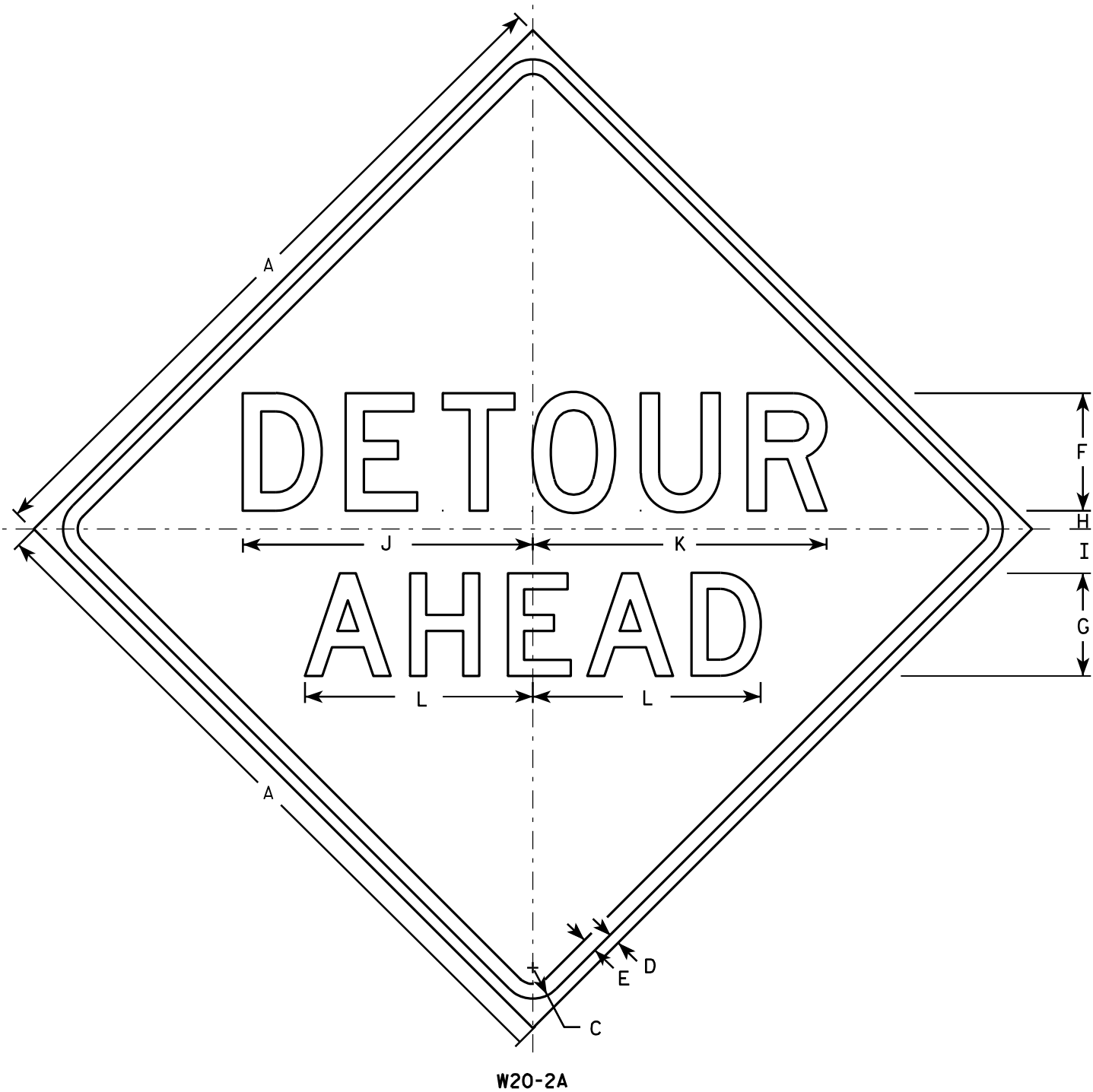
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 58

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.

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

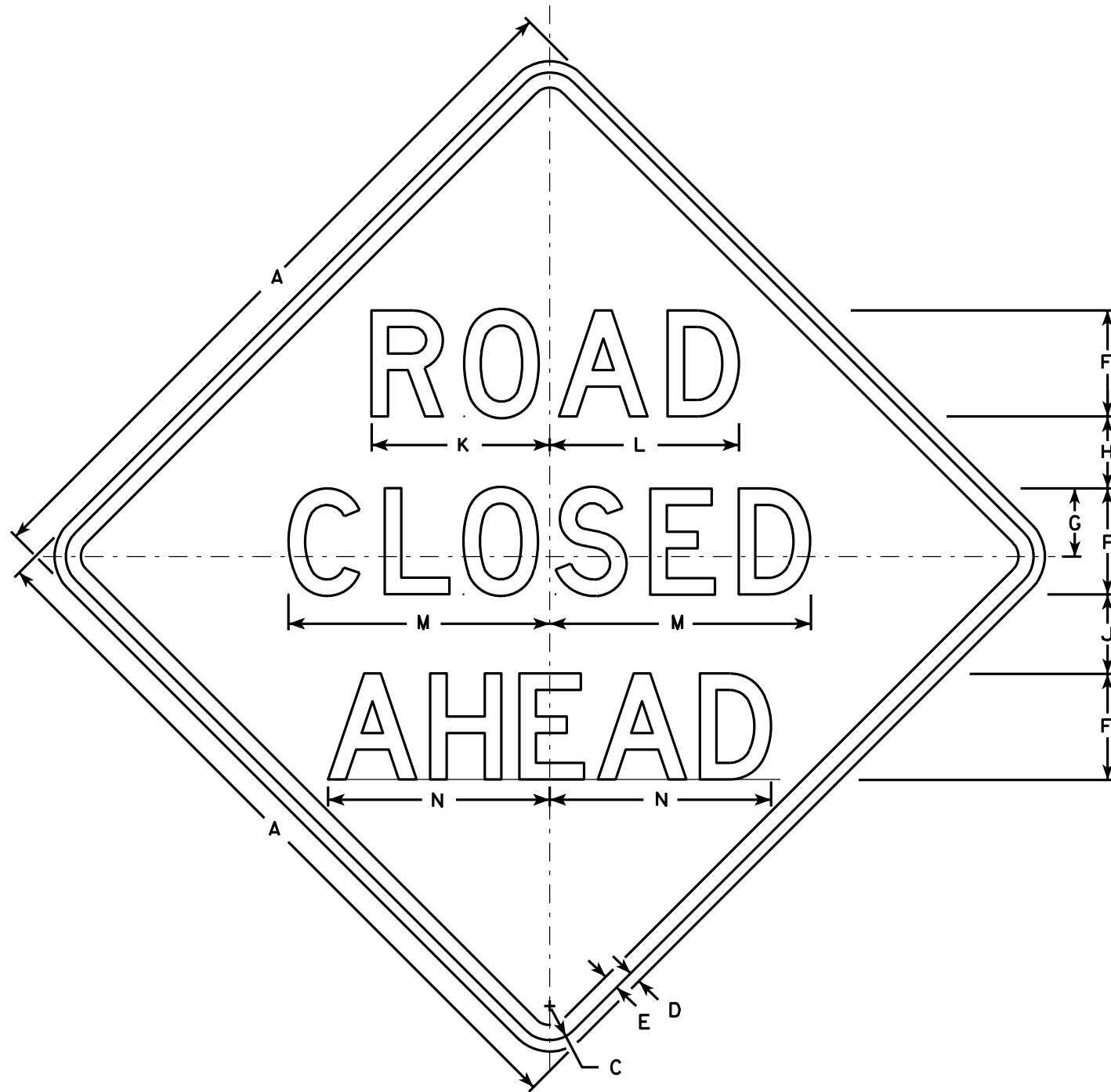
STANDARD SIGN
W20-2A,B,C,D,F & G

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: 59 **E**



W20-3A

500 FT

W20-3D

1000 FT

W20-3C

1500 FT

W20-3B

1/2 MILE

W20-3G

1 MILE

W20-3F

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. Lines 1 and 2 are Series D.
Line 3 is Series D for AHEAD and Series C for all other distances.

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

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

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 3/18/11 PLATE NO. W20-3.7

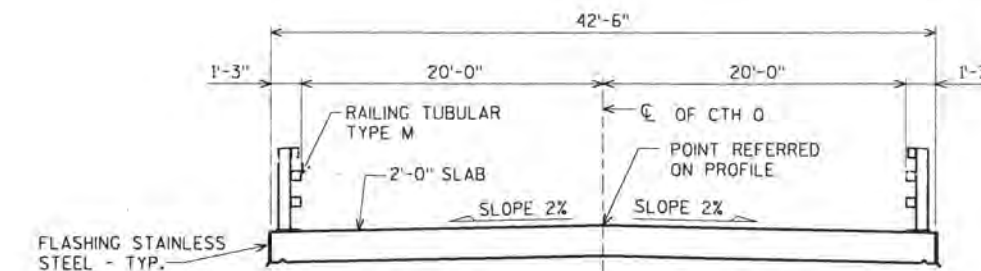
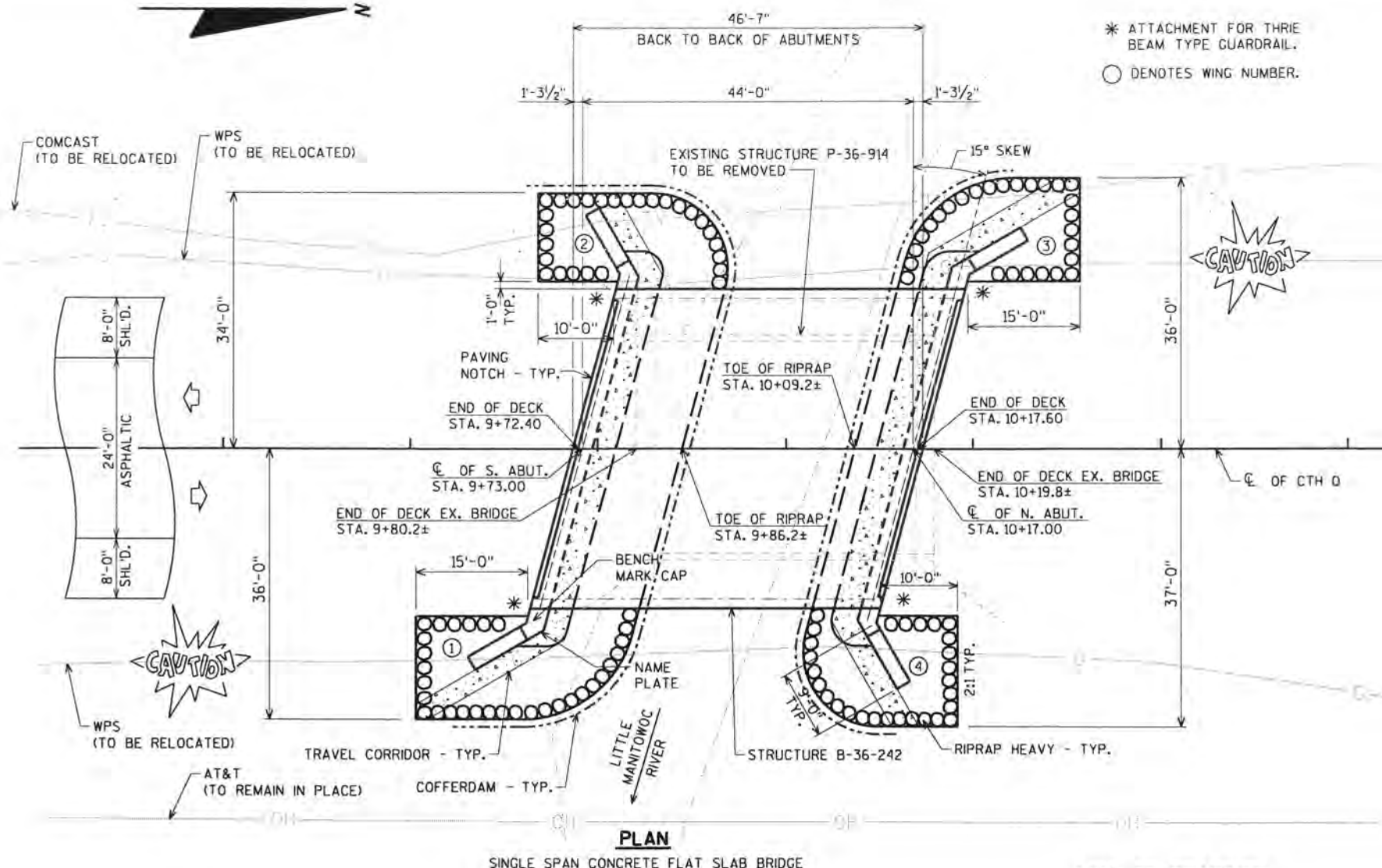
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 60

E



DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
 INVENTORY RATING FACTOR: 1.09
 OPERATING RATING FACTOR: 1.42
 WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20" #5/F.

MATERIAL PROPERTIES:

CONCRETE MASONRY SUPERSTRUCTURE $f'_c = 4,000$ p.s.i.
 ALL OTHER $f'_c = 3,500$ p.s.i.
 HIGH STRENGTH BAR STEEL REINFORCEMENT (GRADE 60) $f_y = 60,000$ p.s.i.

HYDRAULIC DATA:

100 YEAR FREQUENCY

$Q_{100} = 1,900$ c.f.s.
 VEL. = 7.0 f.p.s.
 HW₁₀₀ = EL. 601.20
 WATERWAY AREA = 271 sq. ft.
 DRAINAGE AREA = 8.9 sq. mi.
 ROADWAY OVERTOPPING = N/A
 SCOUR CRITICAL CODE = 5
 DATUM = NAVD88 (2012)

2 YEAR FREQUENCY

$Q_2 = 680$ c.f.s.
 VEL. = 7.4 f.p.s.
 HW₂ = EL. 596.17

FOUNDATION DATA:

ABUTMENTS TO BE SUPPORTED ON 10 3/4" DIA. x 0.25" CIP CONCRETE PILING (WITH PILE POINTS) DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 130 TONS ± PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED LENGTH 55'-0" FOR BOTH SOUTH AND NORTH ABUTMENTS.

±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.

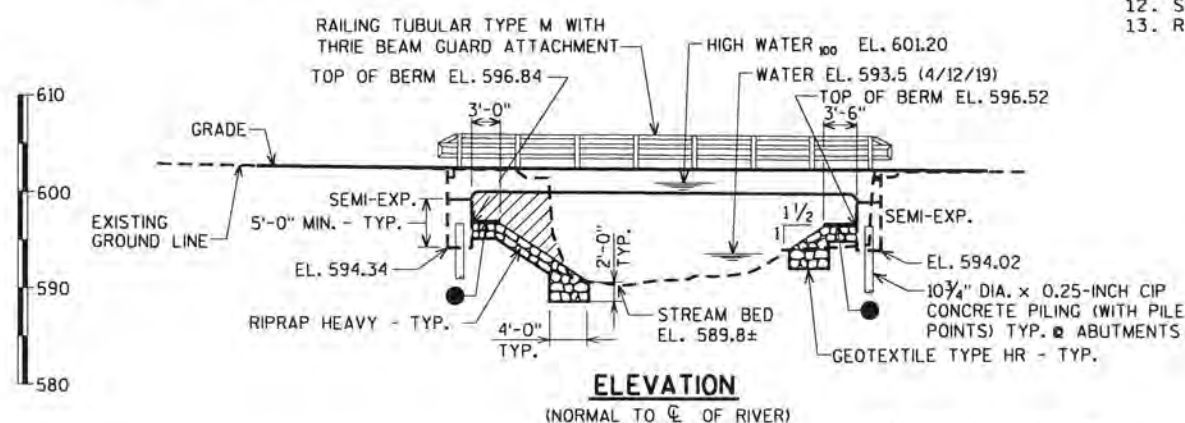
TRAFFIC DATA:

A.A.D.T. = 2,700 (2014)
 A.A.D.T. = 3,530 (2041)
 R.D.S. = 50 M.P.H.

LIST OF DRAWINGS

1. GENERAL PLAN
2. QUANTITIES AND NOTES
3. STRUCTURE DETAILS
4. SUBSURFACE EXPLORATION
5. SOUTH ABUTMENT
6. SOUTH ABUTMENT WING DETAILS
7. SOUTH ABUTMENT DETAILS AND BILL OF BARS
8. NORTH ABUTMENT
9. NORTH ABUTMENT WING DETAILS
10. NORTH ABUTMENT DETAILS AND BILL OF BARS
11. SUPERSTRUCTURE
12. SUPERSTRUCTURE PLAN
13. RAILING TUBULAR TYPE M

COST OF EXCAVATION IN THE HATCHED AREA SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "EXCAVATION FOR STRUCTURES BRIDGES B-36-242".



BRIDGE OFFICE CONTACT:
 AARON BOK
 (608)-261-0261

CONSULTANT CONTACT:
 ARLEN BEAUDETTE
 (715)-834-3161

NO.	DATE	REVISION	BY
ORIGINAL PLANS PREPARED BY			
AYRES 3433 Oakwood Hills Parkway Eau Claire, WI 54701 www.AyresAssociates.com			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
ACCEPTED	SDR 02/10/21		DATE
CHIEF STRUCTURES DESIGN ENGINEER			
STRUCTURE B-36-242			
CTH 0 (SOUTH) OVER LITTLE MANITOWOC RIVER			
COUNTY	MANITOWOC	TOWN/VILLAGE	MANITOWOC
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS			
DESIGNED BY	JLB	DESIGN CK'D.	AEB
DRAWN BY	CLP	PLANS CK'D.	AEB
GENERAL PLAN			SHE 61 F 13

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

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

THE FIRST DIGIT OF A THREE DIGIT BAR NO. AND THE FIRST TWO DIGITS OF A FOUR DIGIT BAR NO. 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 THE GENERAL PLAN SHEET AND IN THE ABUTMENT DETAILS.

SLAB FALSEWORK SHALL BE SUPPORTED ON PILES OR THE SUBSTRUCTURE UNLESS AN ALTERNATIVE METHOD IS APPROVED BY THE ENGINEER.

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-36-242" SHALL BE THE EXISTING GROUNDLINE.

THE EXISTING STRUCTURE, P-36-914, TO BE REMOVED, IS A SINGLE SPAN PRESTRESSED CONCRETE BOX BEAM BRIDGE ON CONCRETE ABUTMENTS, 39.7 FT. LONG WITH A 28.25 FT. CLEAR ROADWAY WIDTH.

AT THE BACK FACE OF ABUTMENTS, ALL VOLUME WHICH CANNOT BE PLACED BEFORE ABUTMENT CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH BACKFILL STRUCTURE TYPE A.

PROTECTIVE SURFACE TREATMENT IS TO BE APPLIED AS SHOWN IN DETAIL ON THIS SHEET.

BEVEL EXPOSED EDGES OF CONCRETE $\frac{3}{4}$ " UNLESS NOTED OTHERWISE.

EXCAVATION BELOW THE ABUTMENT AND ABUTMENT BEDDING MATERIALS REQUIRES ENGINEER APPROVAL. GEOTEXTILE SHALL BE SET AT THE BOTTOM OF EXCAVATION AND EXTEND 2'-0" ABOVE BOTTOM OF ABUTMENT.

THE BACKFILL QUANTITIES ARE BASED ON THE PAY LIMITS SHOWN THE PLANS AND MAY NOT REFLECT ACTUAL PLACED QUANTITIES. "BACKFILL STRUCTURE TYPE A" REQUIRED DIRECTLY BEHIND ABUTMENT AND ABUTMENT WINGS FOR 3 FEET. BACKFILL PLACED BEYOND PAY LIMITS OR EXCEEDING PLAN QUANTITIES SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES.

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

EXTENT OF BELOW GRADE SUBSTRUCTURES ARE NOT KNOWN. REMOVE EXISTING SUBSTRUCTURES AS NEEDED TO BUILD NEW SUBSTRUCTURES. COST OF SUBSTRUCTURE REMOVAL IS CONSIDERED INCIDENTAL TO "REMOVING OLD STRUCTURE" BID ITEM.



-
- Diagram illustrating the Profile Grade Line (PG Line) for a vertical curve. The curve is defined by a 130' V.C. (Vertical Curve) and grades of -1.38% and -0.08%.
- Key points and stationing:
- P.C. STA. 9+35.00 (Elevation: 603.02)
 - Q. OF S. ABUT. STA. 9+73.00 (Elevation: 602.57)
 - Q. OF N. ABUT. STA. 10+17.00 (Elevation: 602.23)
 - P.I. STA. 10+00.00 (Elevation: 602.13)
 - P.T. STA. 10+65.00 (Elevation: 602.08)
- The diagram also shows the centerline of the road (C.T.H. Q.) and the centerline of the bridge (C.T.H. Q.).
- PROFILE GRADE LINE**
(C.T.H. Q.)
- BENCH MARK:**
SPK. IN PP# H6994
STA. 8+70, 47' LT.
EL. 601.67

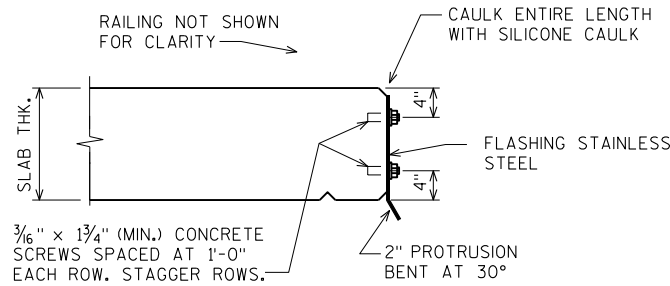


NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-242			
		DRAWN BY	CLP PLANS CK'D. AEB
QUANTITIES AND NOTES		SHEET 2 OF 13 62	

1/18/2021
PENTABLE:BRoadu_shd_util.tbl

STATE PROJECT NUMBER

4304-05-71



FLASHING DETAIL FOR NEW BRIDGES WITH OPEN RAILING

THE BID ITEM "FLASHING STAINLESS STEEL" SHALL INCLUDE PROVIDING AND INSTALLING THE STAINLESS STEEL FLASHING, SILICONE CAULK, 3/16" CONCRETE SCREWS AND CLEANING THE EDGE OF THE DECK PRIOR TO ATTACHMENT OF THE FLASHING.

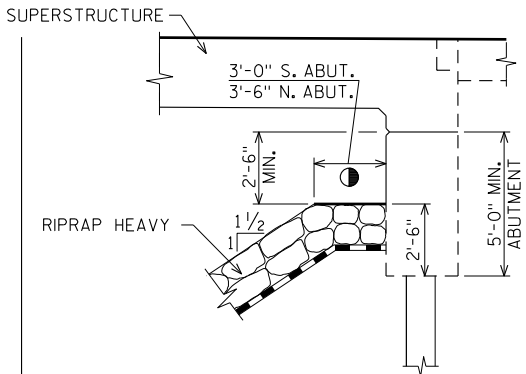
FLASHING TO BE NSTALLED AFTER PROTECTIVE SURFACE TREATMENT APPLICATION.

CONCRETE SCREWS SHALL BE 410 STAINLESS STEEL.

EXTEND FLASHING TO B.F. OF ABUTMENT.

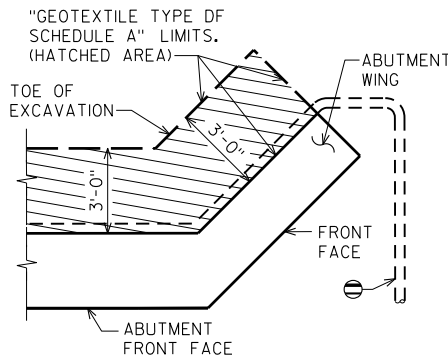
TOP OF FLASHING TO BEGIN APPROX. 1-INCH BELOW TOP OF SLAB SURFACE.

THE FLASHING IS TO BE A CONSTANT HEIGHT BASED ON THE THINNEST SLAB DEPTH OVER THE BRIDGE LENGTH.

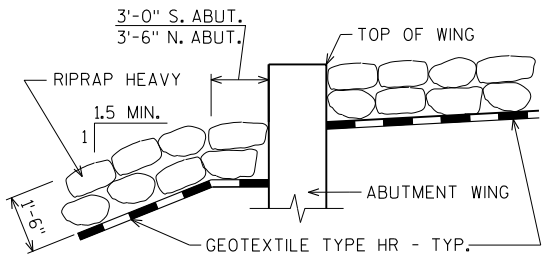


TRAVEL CORRIDOR DETAIL

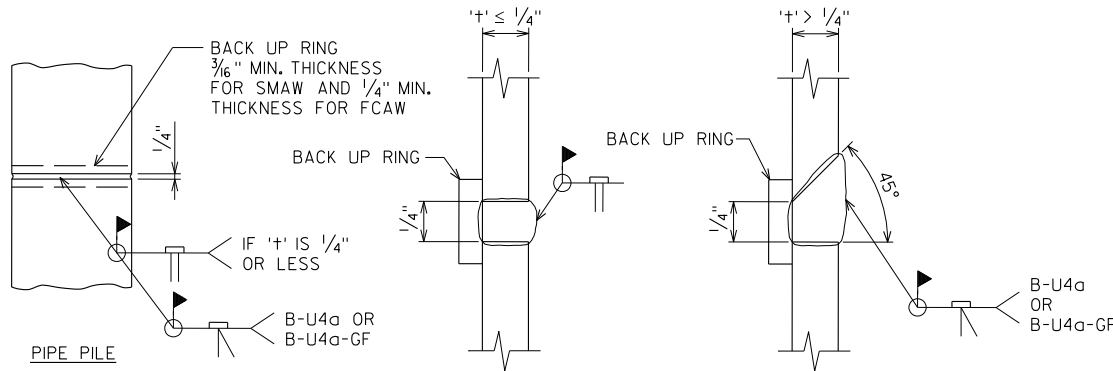
- FILL VOIDS WITH SELECT CRUSHED MATERIAL FOR TRAVEL CORRIDOR AFTER RIPRAP IS PLACED.



BACKFILL STRUCTURE LIMITS ABUTMENT PLAN WITH WING



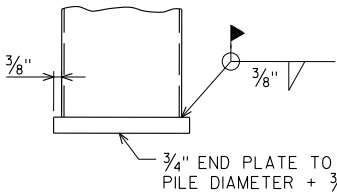
TYPICAL FILL SECTION AT WING TIPS



PILE SPlice DETAIL

CAST-IN-PLACE PILE SHELL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

CIP PILE WELD DETAIL



END PLATE DETAIL FOR CIP PILING

ORIGINAL PLANS PREPARED BY
AYRES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-242			
DRAWN BY		CLP	PLANS CK'D. AEB
STRUCTURE DETAILS		SHEET 3 OF 13 63	

8/21/2020
PENTABLE:BRedu_shd_util.tbl

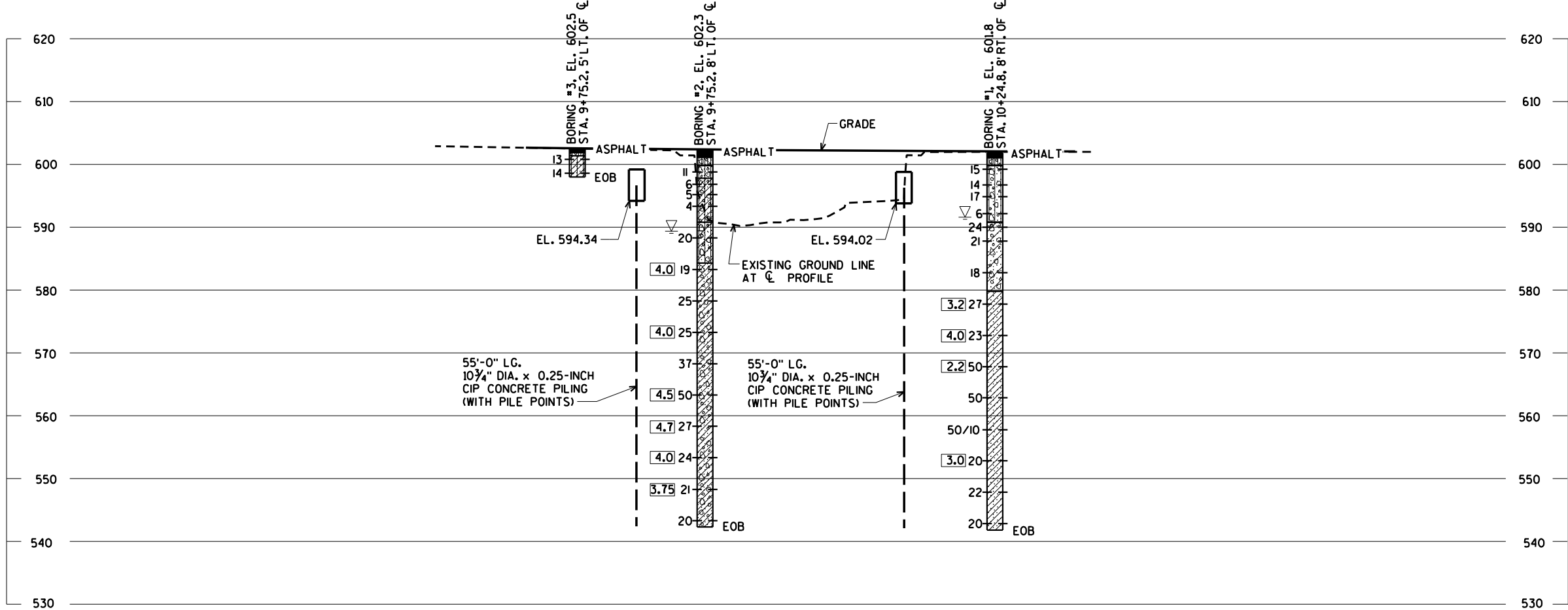
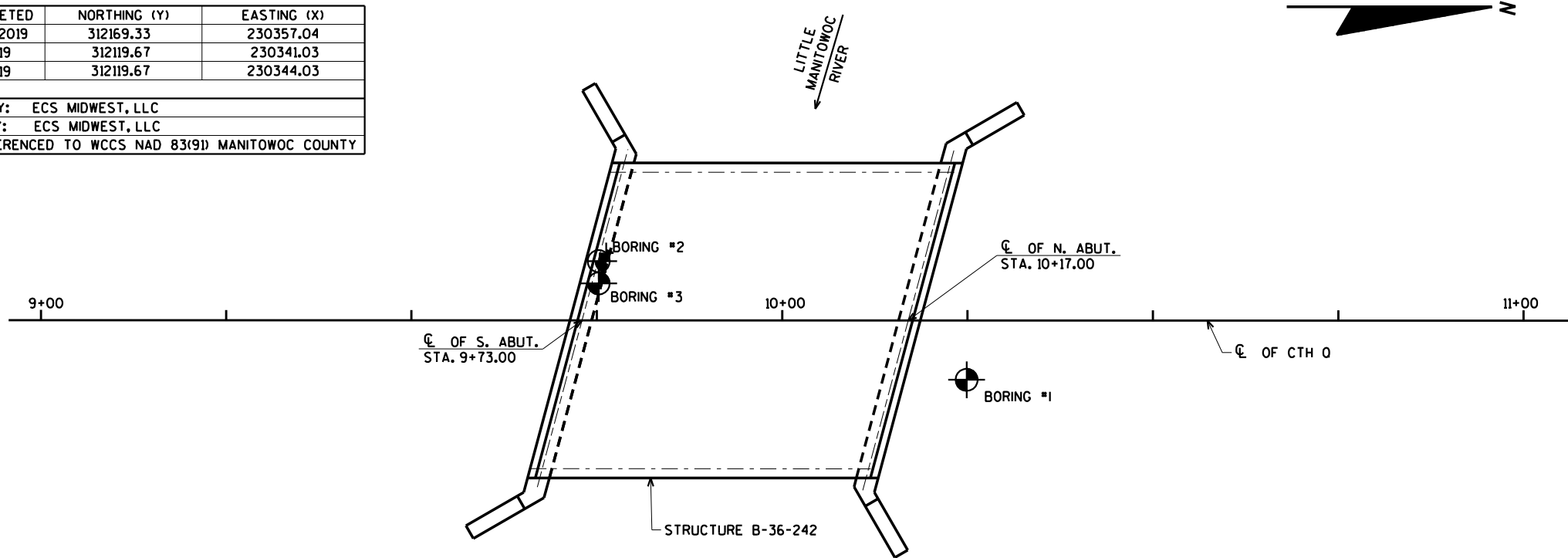
8

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
1	SEPT. 30, 2019	312169.33	230357.04
2	OCT. 2, 2019	312119.67	230341.03
3	OCT. 2, 2019	312119.67	230344.03

BORINGS COMPLETED BY: ECS MIDWEST, LLC

REPORT COMPLETED BY: ECS MIDWEST, LLC

ALL COORDINATES REFERENCED TO WCCS NAD 83(91) MANITOWOC COUNTY



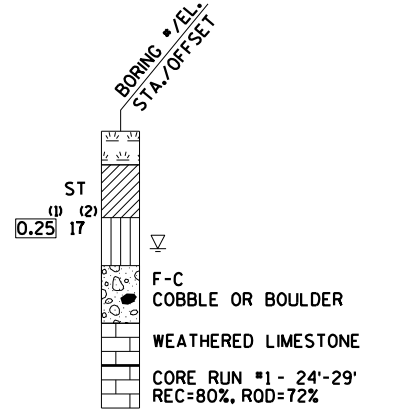
STATE PROJECT NUMBER

4304-05-71

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

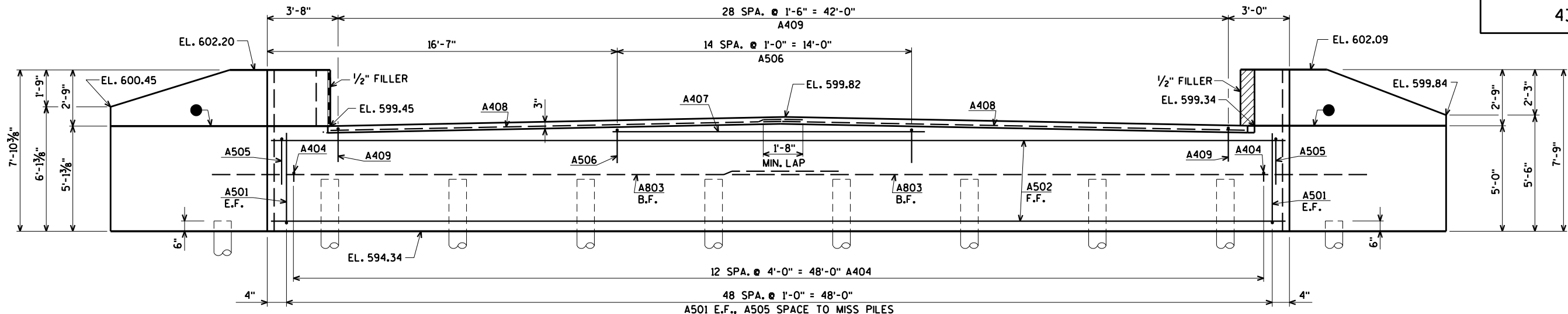
F-FINE M-MEDIUM C-COARSE ST-SHELBY TUBE

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

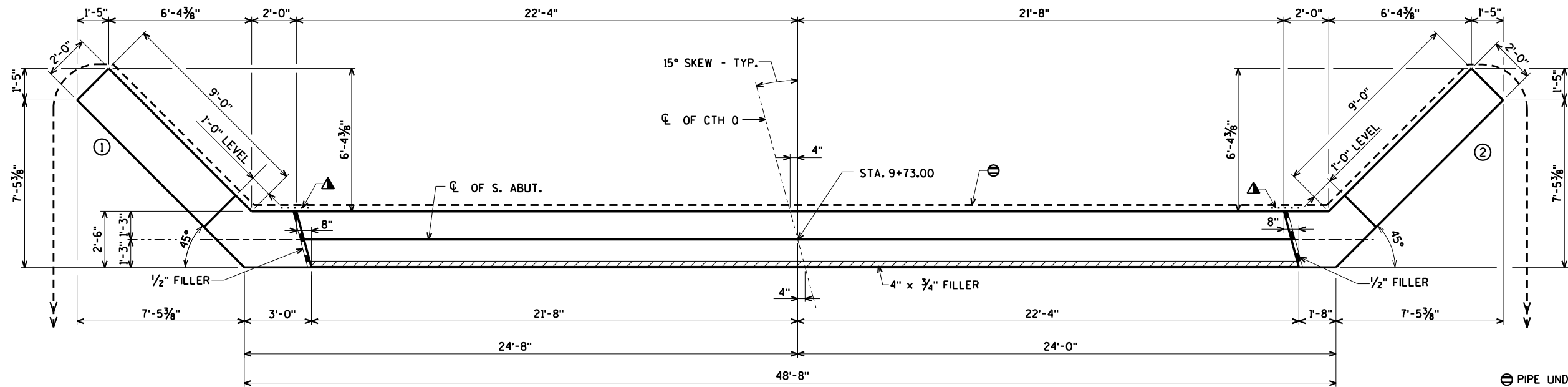
BORINGS WERE COMPLETED AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING TO OBTAIN INFORMATION CONCERNING THE CHARACTER OF SUBSURFACE MATERIALS FOUND AT THE SITE. BECAUSE THE INVESTIGATED DEPTHS ARE LIMITED AND THE AREA OF THE BORINGS IS VERY SMALL IN RELATION TO THE ENTIRE SITE, THE WISCONSIN DEPARTMENT 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.

8

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-242			
DRAWN BY		CLP	PLANS CK'D. AEB
SUBSURFACE EXPLORATION		SHEET 4 OF 13 64	



ELEVATION
(LOOKING SOUTH)



PLAN

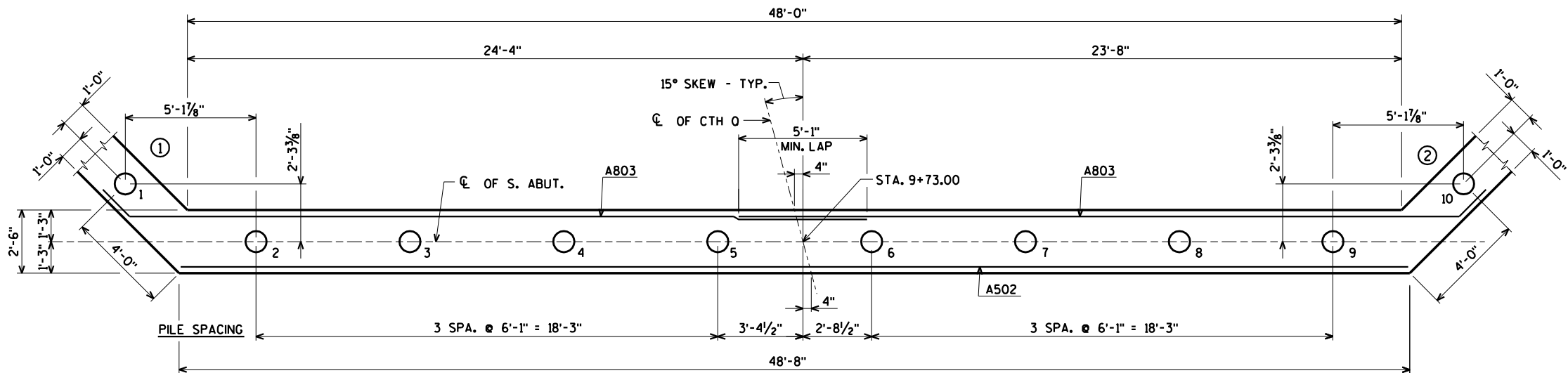
B.F. DENOTES BACK FACE.
F.F. DENOTES FRONT FACE.
E.F. DENOTES EACH FACE.

PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON SHEET 7. RODENT SHIELD TO BE INCIDENTAL TO BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".

18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING.

OPT. KEYED CONST. JOINT - FORMED BY A SURFACED BEVELED 2" x 6" WITH RUBBERIZED MEMBRANE WATERPROOFING ON B.F. (RUBBERIZED MEMBRANE WATERPROOFING INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES" IF CONST. JOINT IS USED).

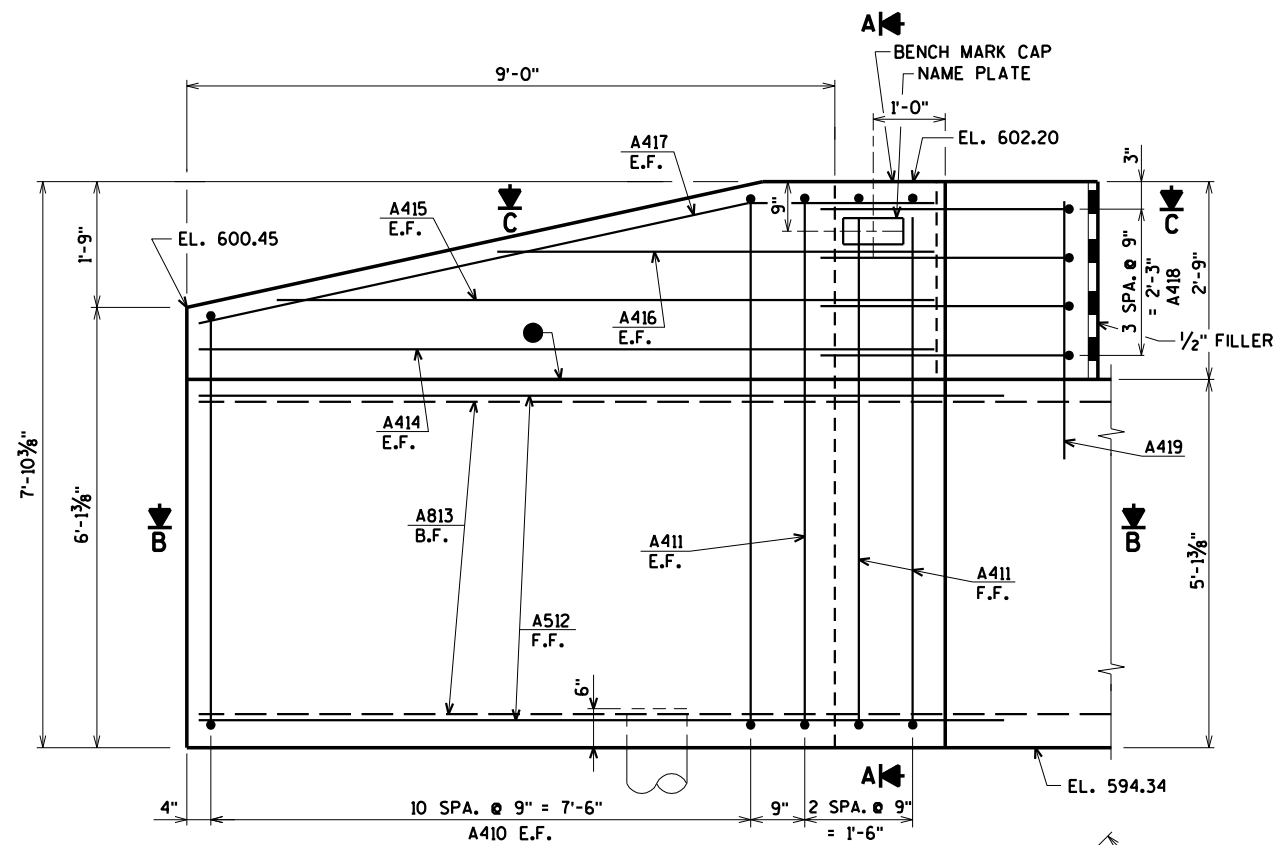
FOR PILE SPICE DETAIL SEE SHEET 3.



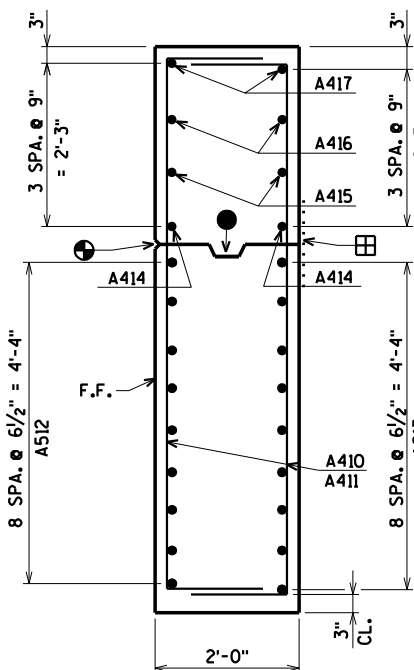
PILE LAYOUT

ORIGINAL PLANS PREPARED BY
AYRES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

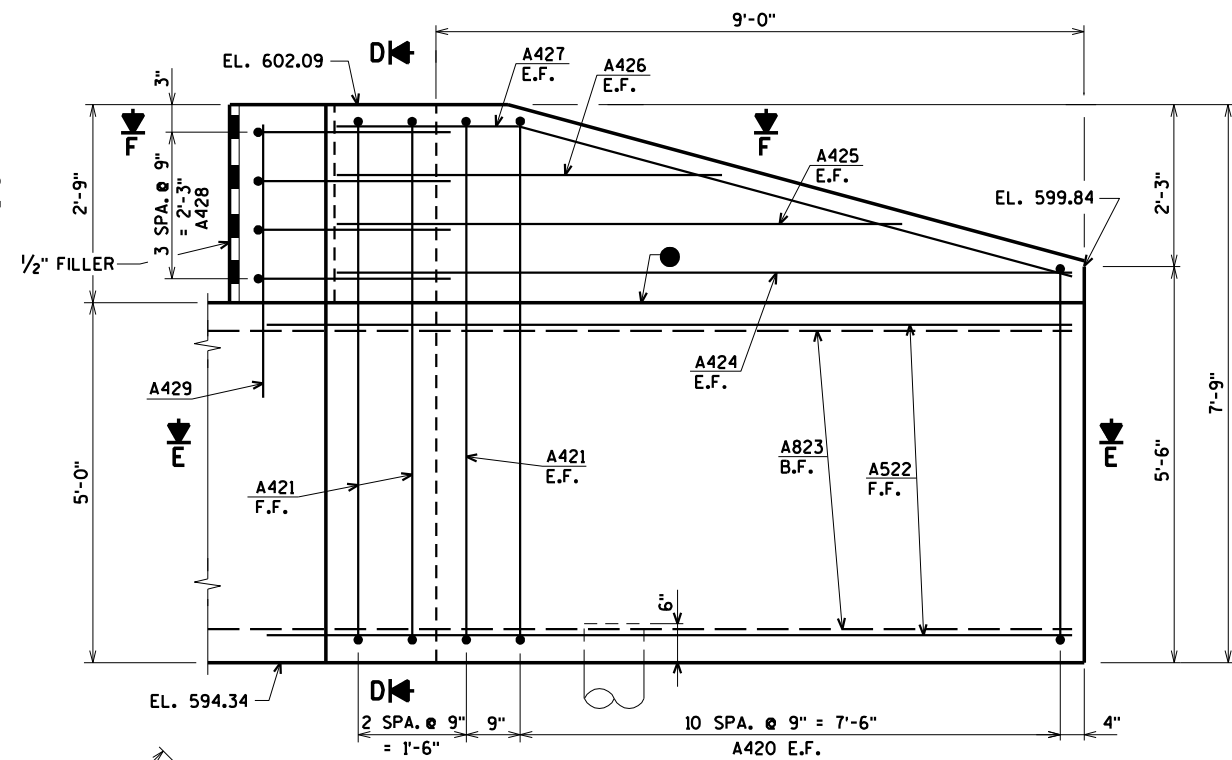
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-242			
DRAWN BY		CLP	PLANS CK'D. AEB
SOUTH ABUTMENT		SHEET 5 OF 13 65	



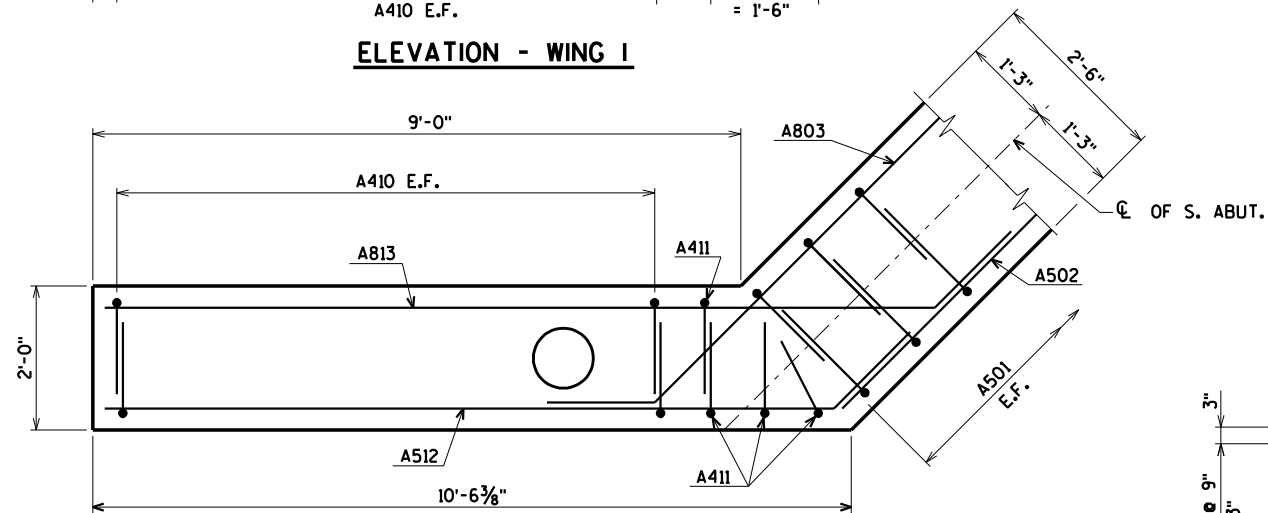
ELEVATION - WING 1



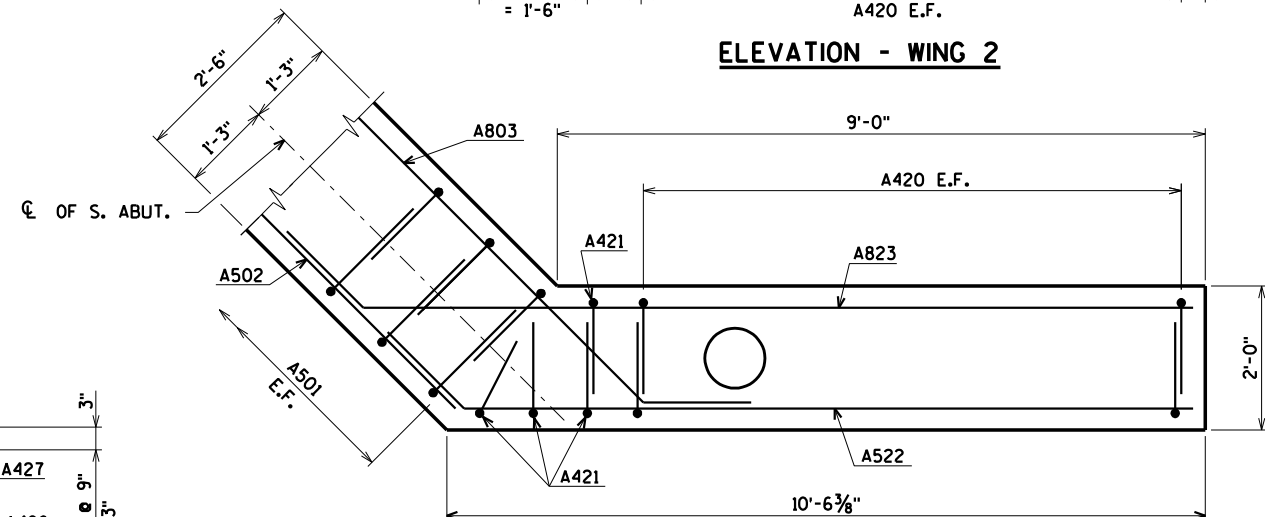
SECTION A



ELEVATION - WING 2



SECTION B



SECTION E

▣ RUBBERIZED MEMBRANE WATERPROOFING IF CONST. JOINT IS USED (COST INCIDENTAL TO BID ITEM "CONCRETE MANSIONRY BRIDGES")

● OPT. KEYED CONST. JOINT - FORMED BY A SURFACED BEVELED 2" x 6" WITH RUBBERIZED MEMBRANE WATERPROOFING ON B.F. (RUBBERIZED MEMBRANE WATERPROOFING INCIDENTAL TO BID ITEM "CONCRETE MANSIONRY BRIDGES" IF CONST. JOINT IS USED).

⊕ 3/4" 'V' GROOVE ON F.F. OF WING WALL NOT REQUIRED IF CONST. JT. IS NOT USED.

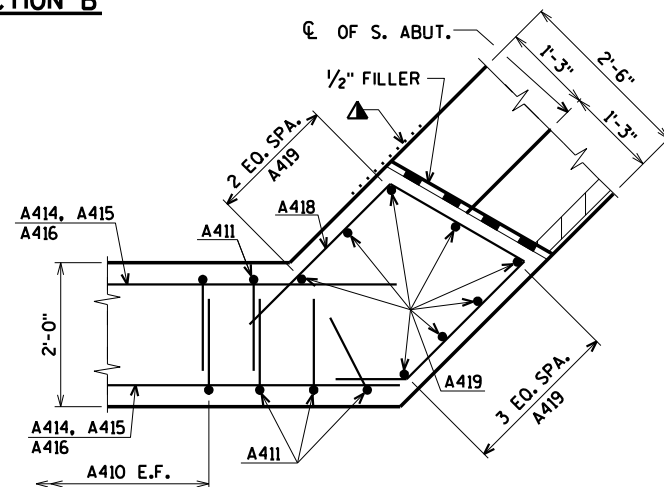
▲ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING.

FOR PILE SPlice DETAIL SEE SHEET 3.

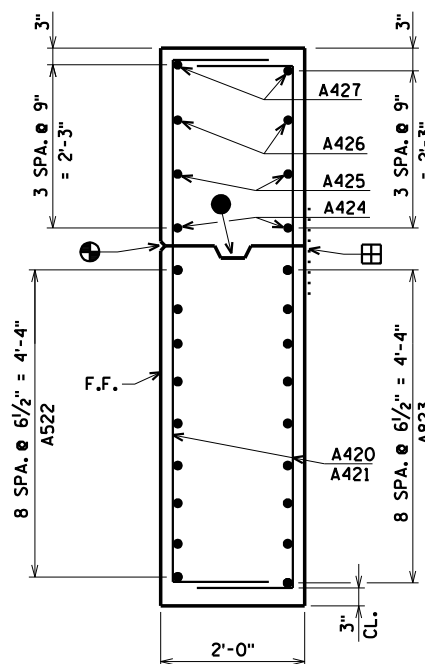
B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

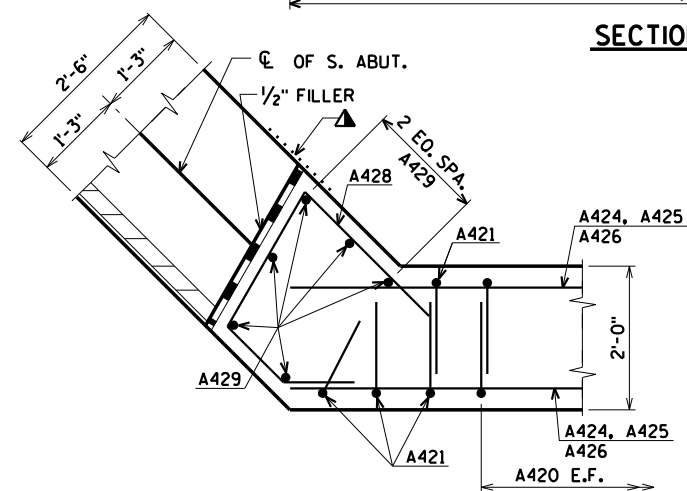
F.F. DENOTES FRONT FACE



SECTION C



SECTION D



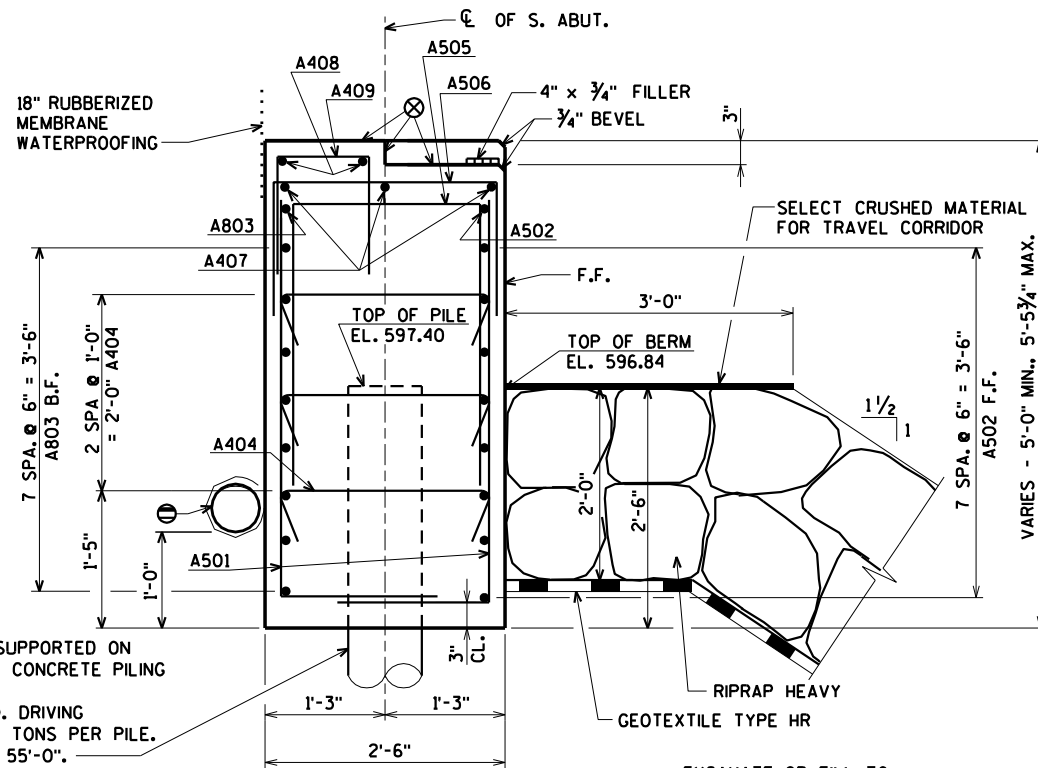
SECTION F

ORIGINAL PLANS PREPARED BY

AYRES

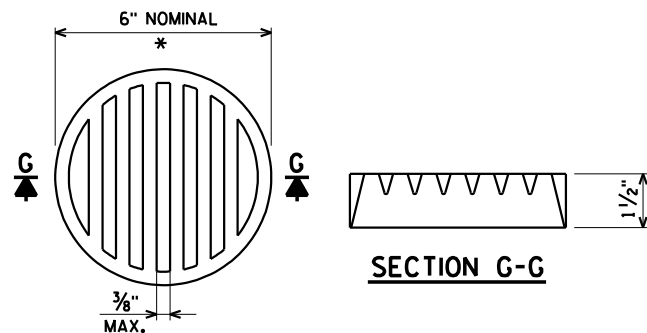
3433 Oakwood Hills Parkway
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-242			
DRAWN BY		CLP	PLANS CK'D. AEB
SOUTH ABUTMENT WING DETAILS			SHEET 6 OF 13 66



TYPICAL SECTION THRU BODY

NOTE: DO NOT PLACE FILL ABOVE THREE FEET FROM BOTTOM OF ABUTMENT UNTIL SUPERSTRUCTURE IS IN PLACE.

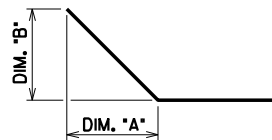
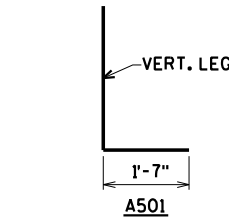


* DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

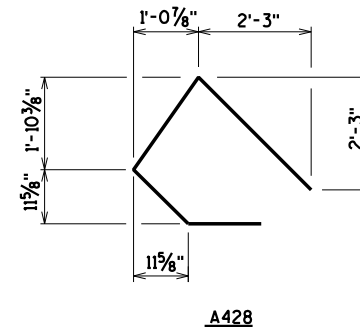
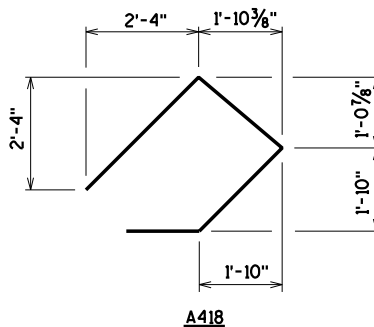
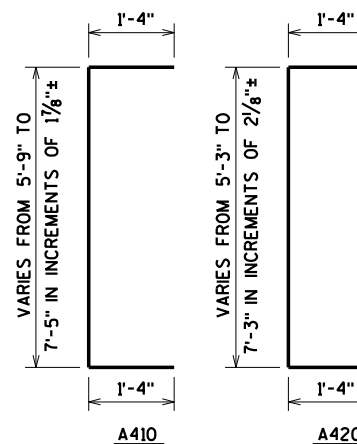
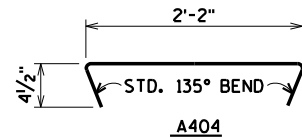
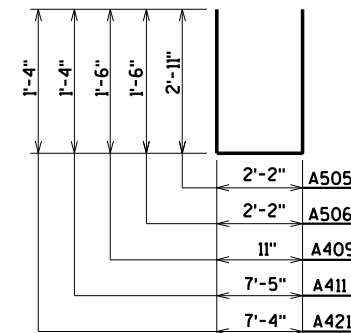
THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

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

RODENT SHIELD DETAIL



BAR NO.	DIM. "A"	DIM. "B"
A803	1'-0 3/4"	1'-0 3/4"
A512	1'-0 3/4"	1'-0 3/4"
A813	1'-0 3/4"	1'-0 3/4"
A417	8'-0"	1'-9"
A522	1'-0 3/4"	1'-0 3/4"
A823	1'-0 3/4"	1'-0 3/4"
A427	8'-0"	2'-3"



⊗ 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".

⊖ PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. FOR RODENT SHIELD SEE DETAIL ON THIS SHEET.

FOR PILE SPLICE DETAIL SEE SHEET 3.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

E.F. DENOTES EACH FACE.

BILL OF BARS

BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLE SERIES	1,340# COATED 3,140# UNCOATED
						LOCATION
A501		98	5-1	X		BODY VERT. E.F.
A502		9	48-6			BODY HORIZ. F.F.
A803		18	30-3	X		BODY HORIZ. B.F.
A404		39	2-9	X		BODY TIES
A505		49	7-9	X		BODY VERT. TOP
A506		15	4-11	X		BODY VERT. TOP
A407		3	14-11			BODY HORIZ. TOP
A408		4	22-7			BODY HORIZ. ⊗ TOP NOTCH
A409		29	3-9	X		BODY VERT. ⊗ TOP NOTCH
A410	X	22	9-1	X	⊗	WING 1 VERT. E.F.
A411	X	4	9-11	X		WING 1 VERT. E.F.
A512	X	9	11-9	X		WING 1 HORIZ. F.F.
A813	X	9	13-1	X		WING 1 HORIZ. B.F.
A414	X	2	10-3			WING 1 HORIZ. E.F.
A415	X	2	9-8			WING 1 HORIZ. E.F.
A416	X	2	6-3			WING 1 HORIZ. E.F.
A417	X	2	10-3	X		WING 1 DIAG. E.F.
A418	X	4	9-1	X		WING 1 HORIZ.
A419	X	8	3-10			WING 1 VERT.
A420	X	22	8-9	X	⊗	WING 2 VERT. E.F.
A421	X	4	9-10	X		WING 2 VERT. E.F.
A522	X	9	11-9	X		WING 2 HORIZ. F.F.
A823	X	9	13-1	X		WING 2 HORIZ. B.F.
A424	X	2	10-3			WING 2 HORIZ. E.F.
A425	X	2	8-3			WING 2 HORIZ. E.F.
A426	X	2	5-6			WING 2 HORIZ. E.F.
A427	X	2	10-4	X		WING 2 DIAG. E.F.
A428	X	4	7-9	X		WING 2 HORIZ.
A429	X	6	3-10			WING 2 VERT.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

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

BAR SERIES TABLE

BAR MARK	NO REQ'D.	LENGTH
A410	2 SERIES OF 11	8'-3" TO 9'-11"
A420	2 SERIES OF 11	7'-9" TO 9'-9"

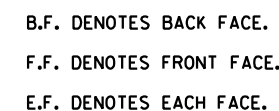
BUNDLE AND TAG EACH SERIES SEPARATELY.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-242			
DRAWN BY		CLP	PLANS CK'D. AEB
SOUTH ABUTMENT DETAILS AND BILL OF BARS			SHEET 7 OF 13 67

ORIGINAL PLANS PREPARED BY

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Eau Claire, WI 54701
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▲ 18" RUBBERIZED MEMBRANE WATERPROOFING
TO EXTEND FROM BRIDGE SEAT TO TOP OF
WING.

● OPT. KEYED CONST. JOINT - FORMED BY A SURFACED BEVELED 2" x 6" WITH RUBBERIZED MEMBRANE WATERPROOFING ON B.F. (RUBBERIZED MEMBRANE WATERPROOFING INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES" IF CONST. JOINT IS USED).

NO.	DATE	REVISION	B

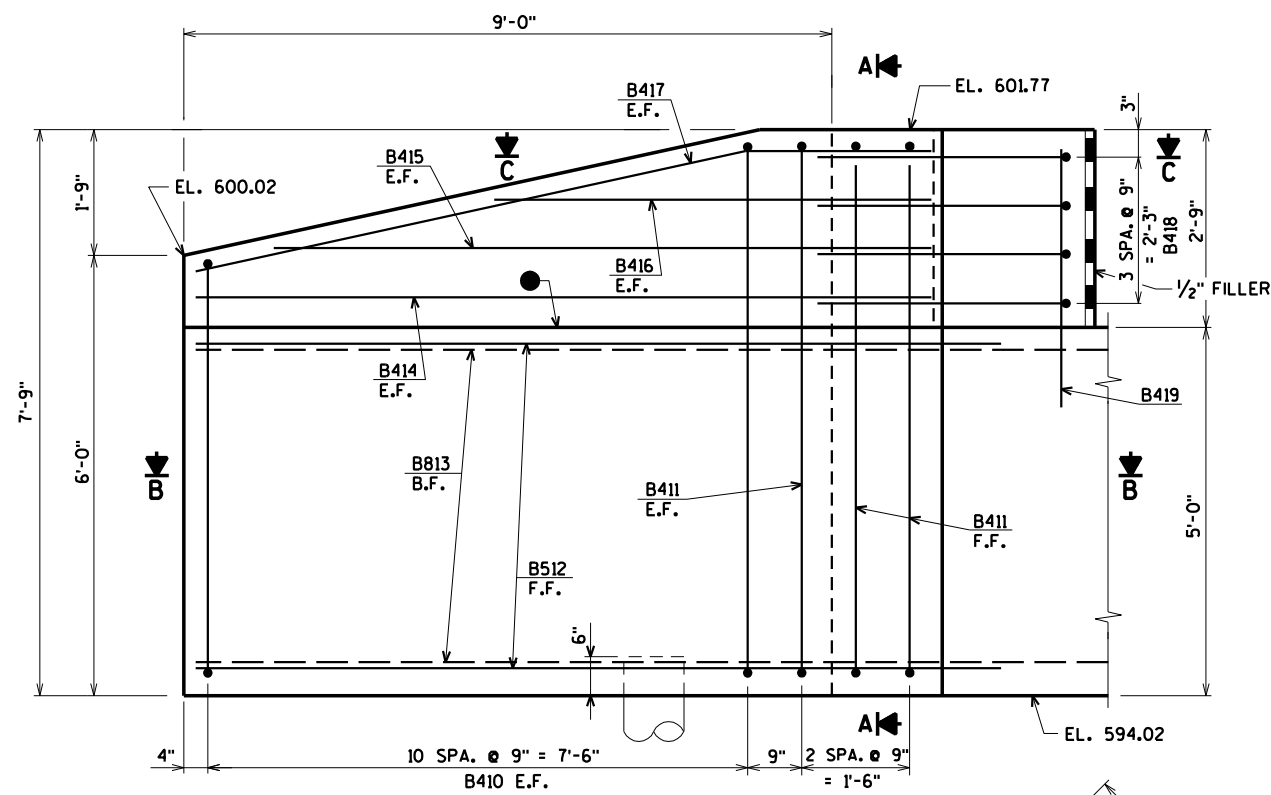
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-36-242

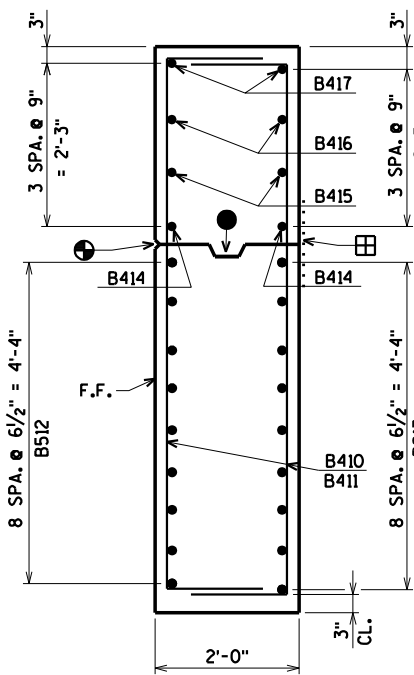
DRAWN BY	CLP	PLANS CK'D	AF
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NORTH
ABUTMENT

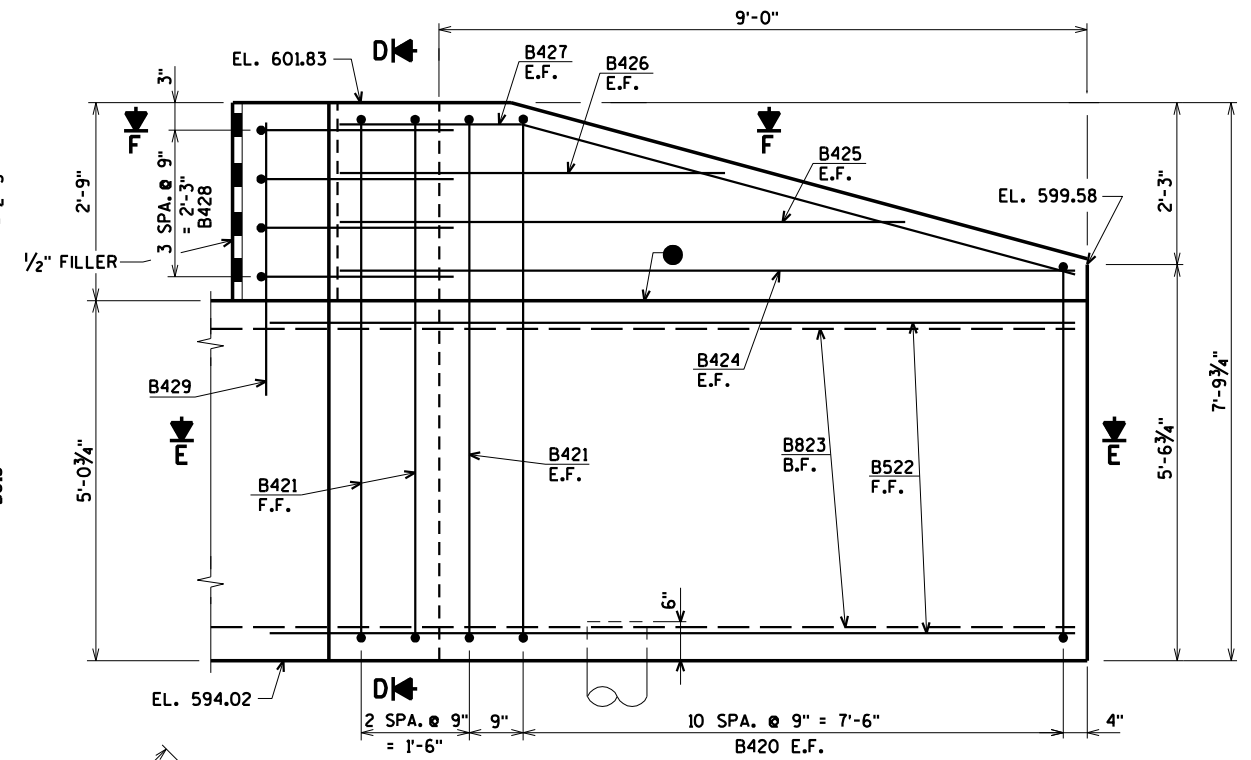
SHEET 8 OF 13
68



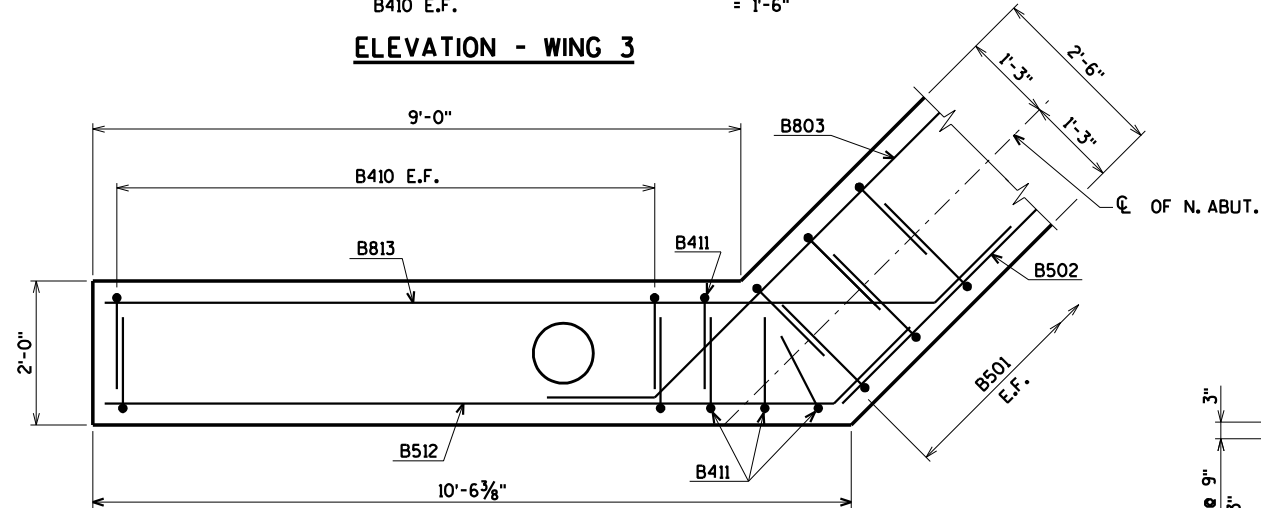
ELEVATION - WING 3



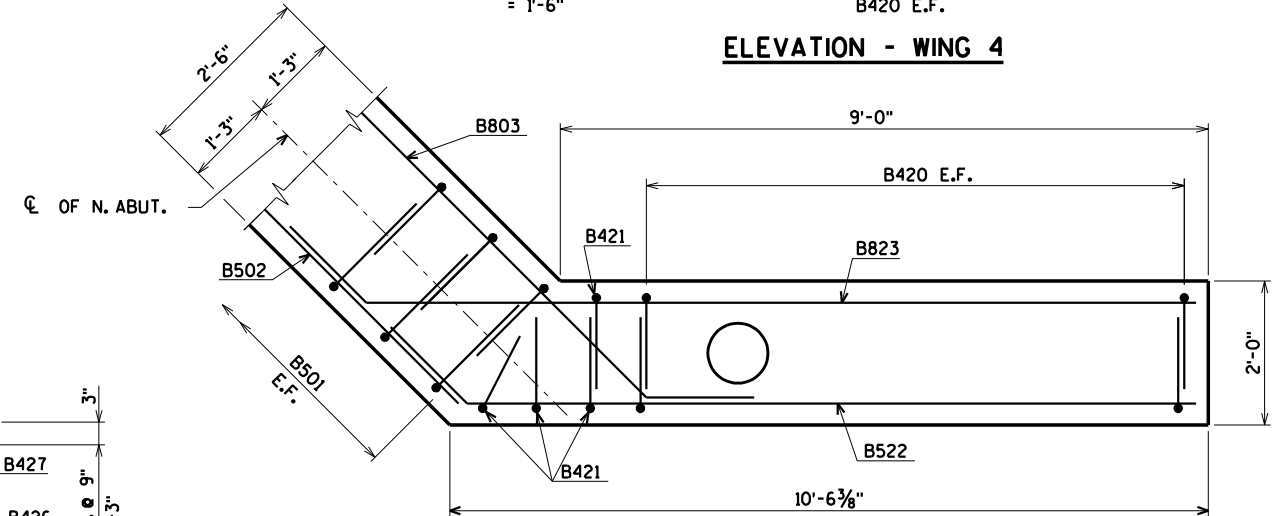
SECTION A



ELEVATION - WING 4



SECTION B



SECTION E

▣ RUBBERIZED MEMBRANE WATERPROOFING IF CONST. JOINT IS USED (COST INCIDENTAL TO BID ITEM "CONCRETE MANSIONRY BRIDGES")

● OPT. KEYED CONST. JOINT - FORMED BY A SURFACED BEVELED 2" x 6" WITH RUBBERIZED MEMBRANE WATERPROOFING ON B.F. (RUBBERIZED MEMBRANE WATERPROOFING INCIDENTAL TO BID ITEM "CONCRETE MANSIONRY BRIDGES" IF CONST. JOINT IS USED).

⊕ 3/4" 'V' GROOVE ON F.F. OF WING WALL NOT REQUIRED IF CONST. JT. IS NOT USED.

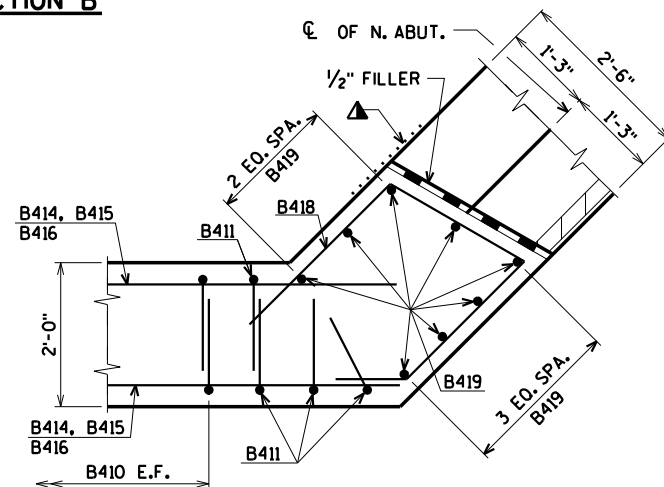
▲ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING.

FOR PILE SPLICE DETAIL SEE SHEET 3.

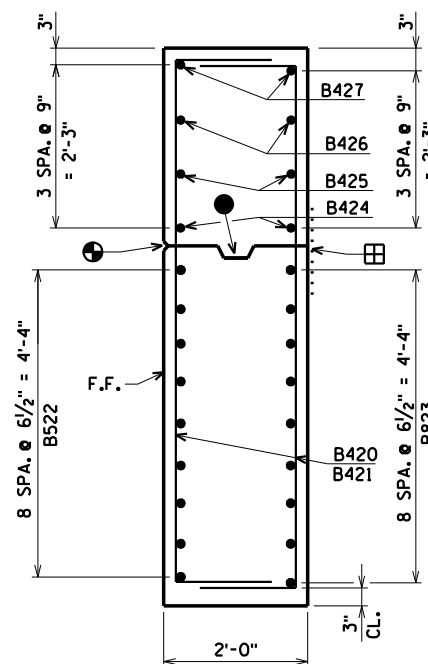
B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

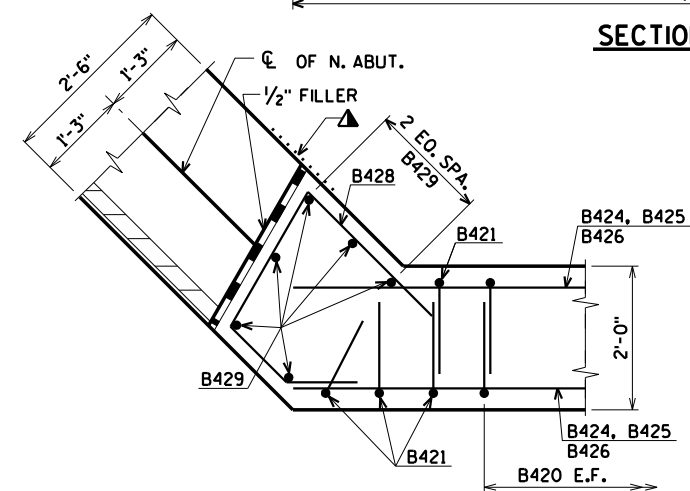
F.F. DENOTES FRONT FACE



SECTION C



SECTION D



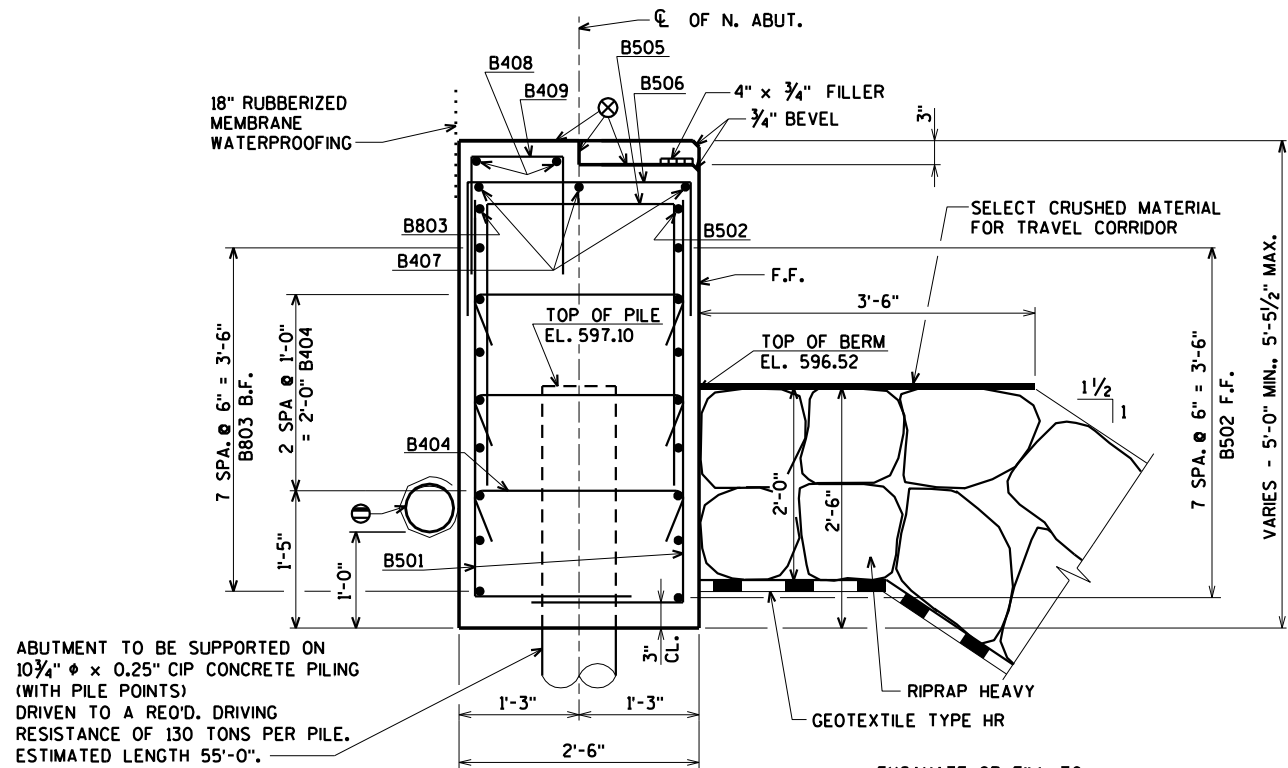
SECTION F

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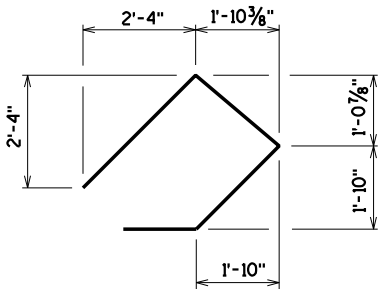
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-242			
DRAWN BY		CLP	PLANS CK'D. AEB
NORTH ABUTMENT WING DETAILS			SHEET 9 OF 13 69



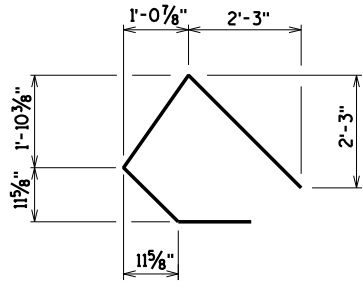
TYPICAL SECTION THRU BODY

NOTE: DO NOT PLACE FILL ABOVE THREE FEET FROM BOTTOM OF ABUTMENT UNTIL SUPERSTRUCTURE IS IN PLACE.

BAR NO.	DIM. "A"	DIM. "B"
B803	1'-0 3/4"	1'-0 3/4"
B512	1'-0 3/4"	1'-0 3/4"
B813	1'-0 3/4"	1'-0 3/4"
B417	8'-0"	1'-9"
B522	1'-0 3/4"	1'-0 3/4"
B823	1'-0 3/4"	1'-0 3/4"
B427	8'-0"	2'-3"



B418



B428

⊗ 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".

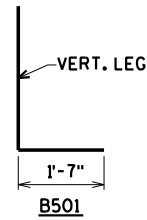
⊖ PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. FOR RODENT SHIELD SEE DETAIL ON SHEET 7.

FOR PILE SPLICE DETAIL SEE SHEET 3.

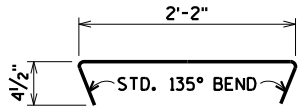
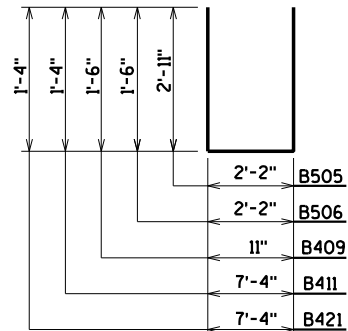
B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

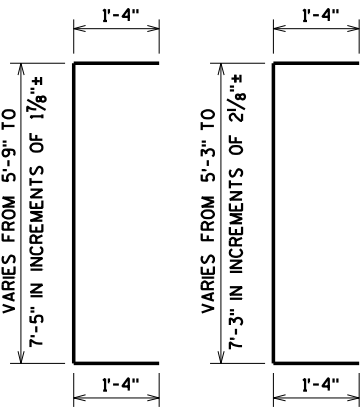
E.F. DENOTES EACH FACE.



B501



B404



B410

B420

BILL OF BARS

BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLE SERIES	1,340# COATED 3,140# UNCOATED
						LOCATION
B501		98	5-1	X		BODY VERT. E.F.
B502		9	48-6			BODY HORIZ. F.F.
B803		18	30-3	X		BODY HORIZ. B.F.
B404		39	2-9	X		BODY TIES
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B506		15	4-11	X		BODY VERT. TOP
B407		3	14-11			BODY HORIZ. TOP
B408		4	22-7			BODY HORIZ. ⊗ TOP NOTCH
B409		29	3-9	X		BODY VERT. ⊗ TOP NOTCH
B410	X	22	9-1	X	⊗	WING 3 VERT. E.F.
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B512	X	9	11-9	X		WING 3 HORIZ. F.F.
B813	X	9	13-1	X		WING 3 HORIZ. B.F.
B414	X	2	10-3			WING 3 HORIZ. E.F.
B415	X	2	9-8			WING 3 HORIZ. E.F.
B416	X	2	6-3			WING 3 HORIZ. E.F.
B417	X	2	10-3	X		WING 3 DIAG. E.F.
B418	X	4	9-1	X		WING 3 HORIZ.
B419	X	8	3-10			WING 3 VERT.
B420	X	22	8-9	X	⊗	WING 4 VERT. E.F.
B421	X	4	9-10	X		WING 4 VERT. E.F.
B522	X	9	11-9	X		WING 4 HORIZ. F.F.
B823	X	9	13-1	X		WING 4 HORIZ. B.F.
B424	X	2	10-3			WING 4 HORIZ. E.F.
B425	X	2	8-3			WING 4 HORIZ. E.F.
B426	X	2	5-6			WING 4 HORIZ. E.F.
B427	X	2	10-4	X		WING 4 DIAG. E.F.
B428	X	4	7-9	X		WING 4 HORIZ.
B429	X	6	3-10			WING 4 VERT.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

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

BAR SERIES TABLE

BAR MARK	NO REQ'D.	LENGTH
B410	2 SERIES OF 11	8'-3" TO 9'-11"
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BUNDLE AND TAG EACH SERIES SEPARATELY.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-242			
DRAWN BY		CLP	PLANS CK'D. AEB
NORTH ABUTMENT DETAILS AND BILL OF BARS			SHEET 10 OF 13 70

ORIGINAL PLANS PREPARED BY
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Eau Claire, WI 54701
www.AyresAssociates.com

1/27/2021
PENTABLE:BReau_shd_util.tbl

STATE PROJECT NUMBER

4304-05-71

BILL OF BARS

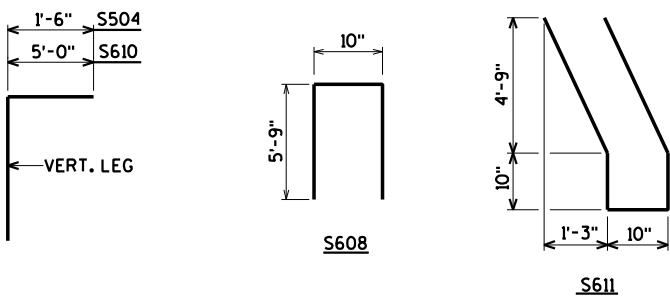
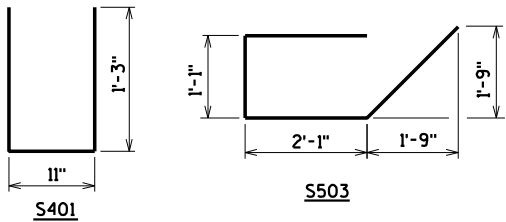
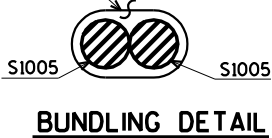
BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED	BAR SERIES	24,800# COATED
							LOCATION
S401	X	86	3-3	X			SLAB VERT. @ ABUT. NOTCH
S402	X	4	43-7				SLAB TRANS. @ ABUT. NOTCH
S503	X	86	6-11	X			SLAB VERT. @ ABUT.
S504	X	86	4-1	X			SLAB VERT. @ ABUT.
S1005	X	87	40-9		X		SLAB LONG. BOT.
S506	X	112	43-7				SLAB TRANS. BOT. & TOP
S507	X	43	44-10				SLAB LONG. TOP
S608	X	28	12-0	X			SLAB @ RAIL POSTS
S609	X	48	6-0				SLAB @ INT. RAIL POSTS
S610	X	16	6-0	X			SLAB @ END RAIL POSTS
S611	X	4	12-0	X			SLAB @ END RAIL POSTS

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

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

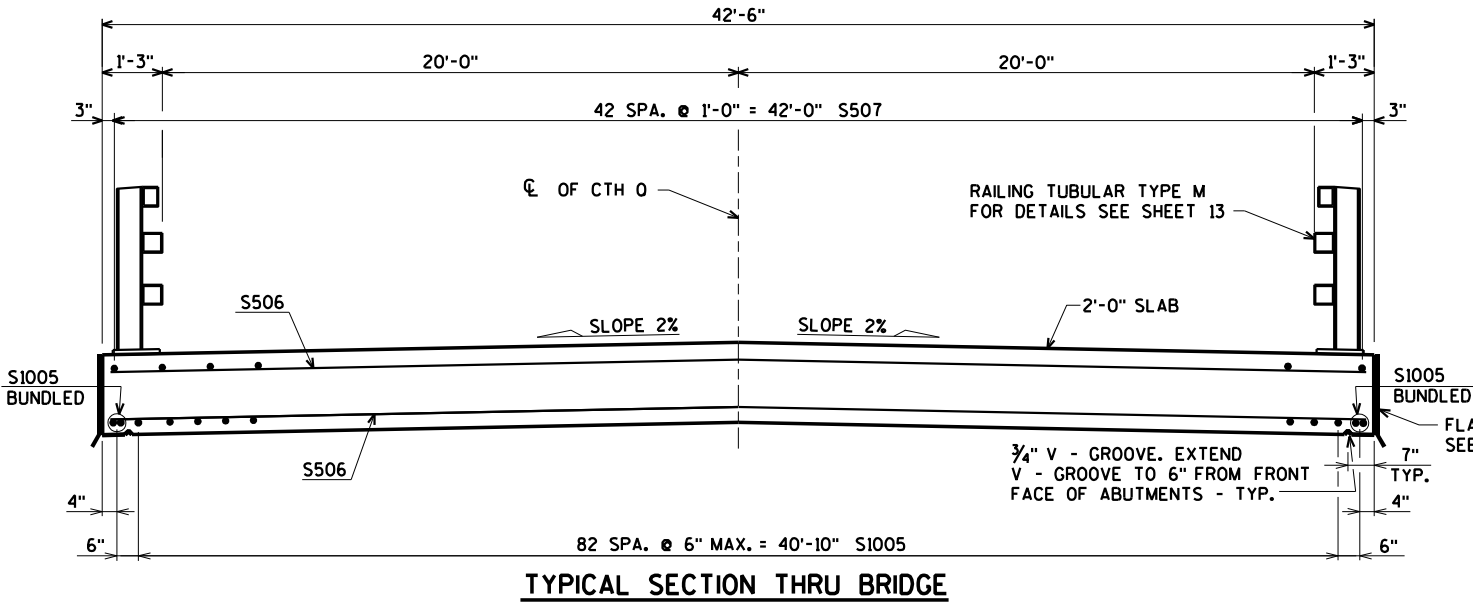
ALL SLAB THICKNESS DIMENSIONS ARE MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

WIRE BARS TOGETHER
@ 2'-0" CENTERS

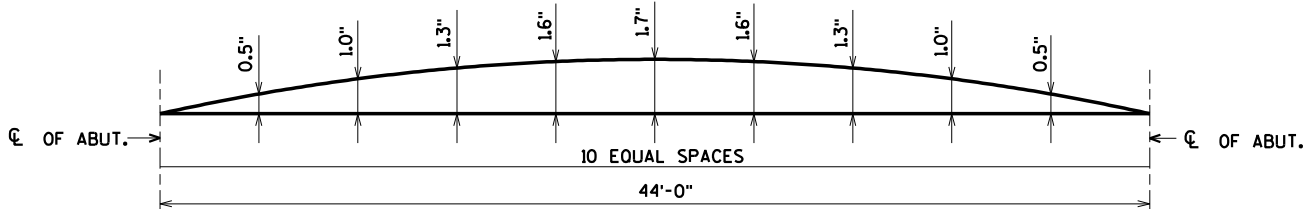


- 18" RUBBERIZED MEMBRANE WATERPROOFING
- DIMENSIONS MEASURED NORMAL TO CL OF SUBSTRUCTURE.
- DIMENSIONS MEASURED ALONG CL OF CTH Q.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-242			
DRAWN BY		CLP	PLANS CK'D. AEB
SUPERSTRUCTURE			SHEET 11 OF 13 71

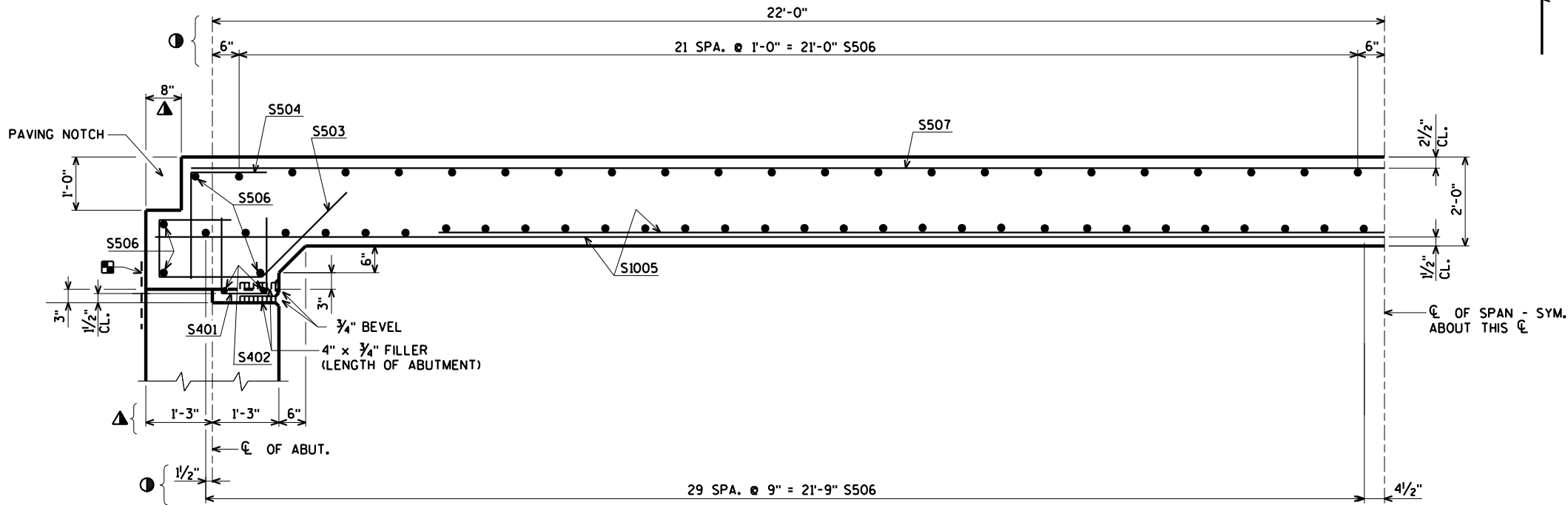


TYPICAL SECTION THRU BRIDGE



CAMBER DIAGRAM

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



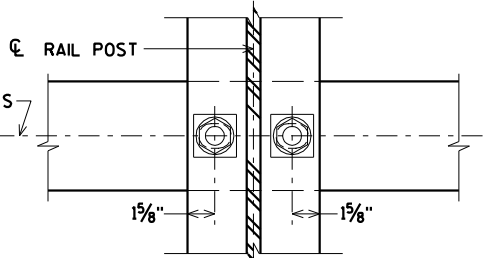
PART LONGITUDINAL SECTION

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www.AyresAssociates.com

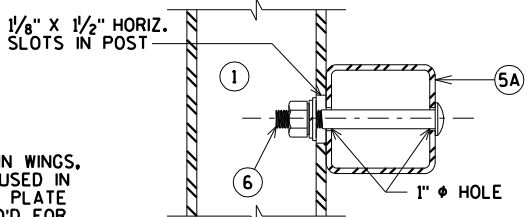


LEGEND

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



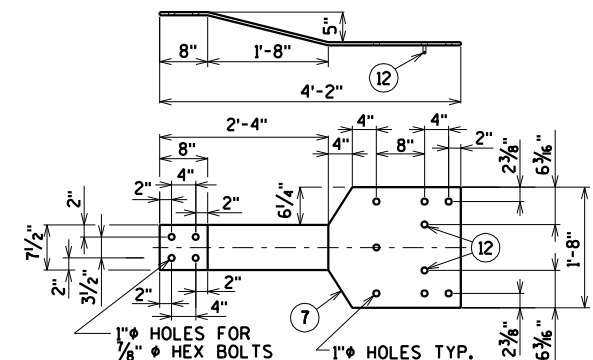
SECTION THRU POST WEB



SECTION THRU RAIL

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

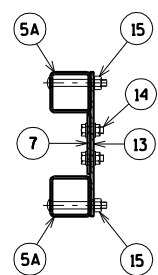
TYPICAL RAIL TO POST CONNECTIONS



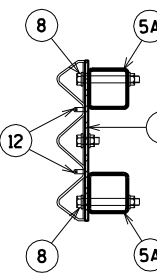
BACK-UP PLATE DETAIL
(AT BEAM GUARD ATTACHMENT)

GENERAL NOTES

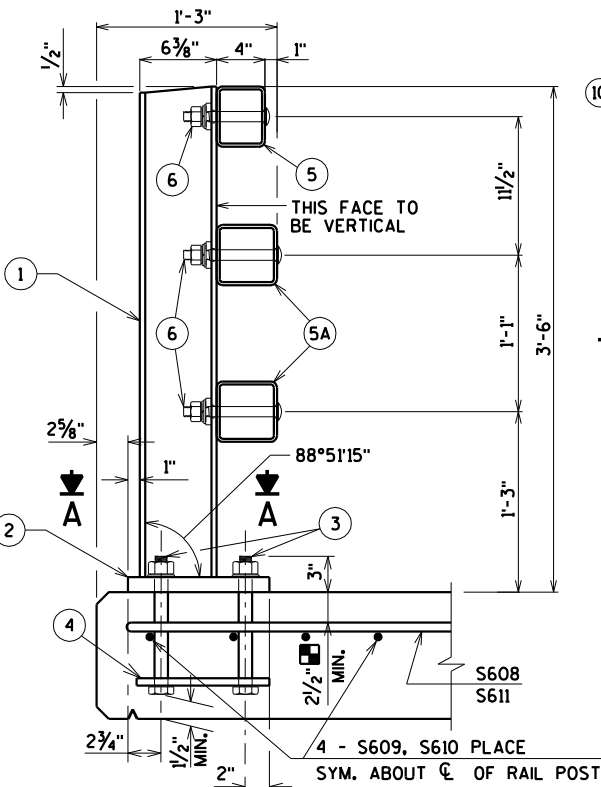
1. BID ITEM SHALL BE "RAILING TUBULAR TYPE M" WHICH INCLUDES ALL ITEMS SHOWN.
2. RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 KSI. ANCHOR PLATES,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



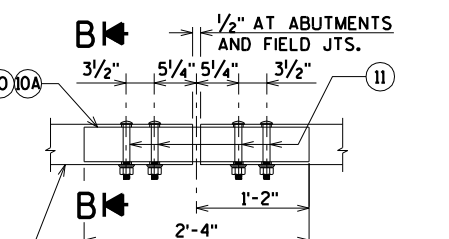
SECTION C



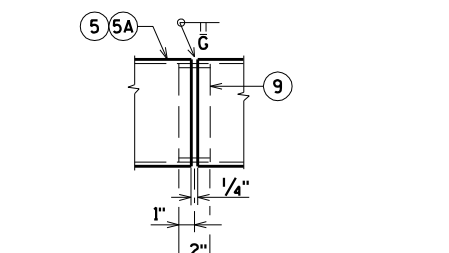
SECTION D



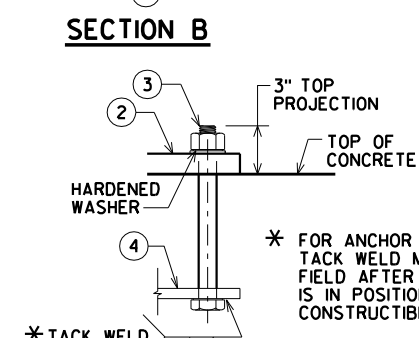
SECTION THRU RAILING ON DECK



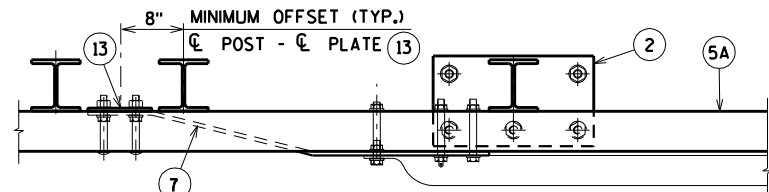
FIELD ERECTION JOINT DETAIL



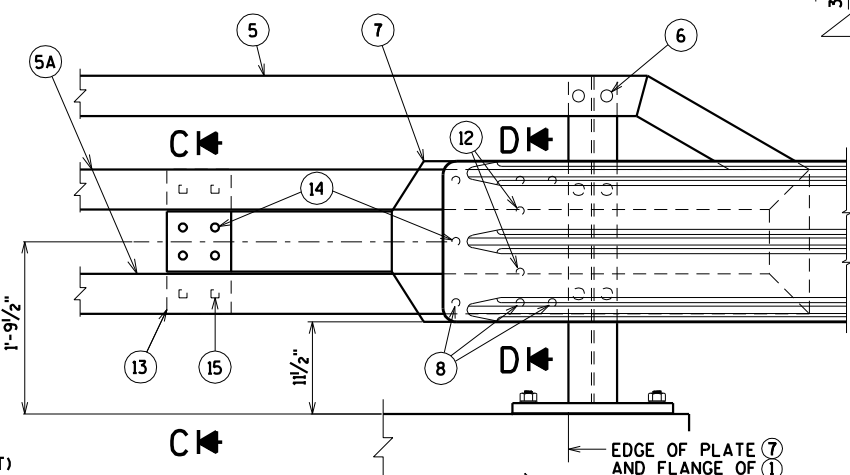
SHOP RAIL SPLICE DETAIL
(LOCATION MUST BE SHOWN ON THE SHOP DRAWINGS)



ANCHOR BOLTS

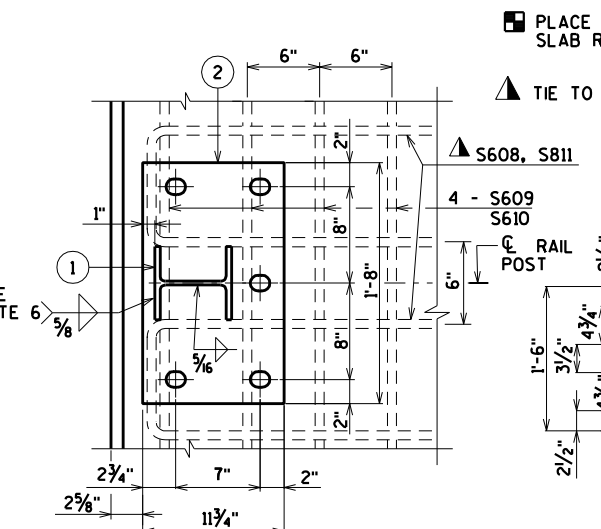


TOP VIEW AT END POST
(THRIE BEAM RAIL ATTACHMENT)

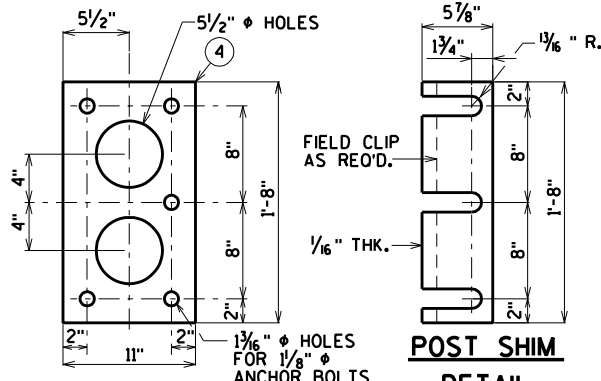


DETAIL AT END POST
(THRIE BEAM RAIL ATTACHMENT)

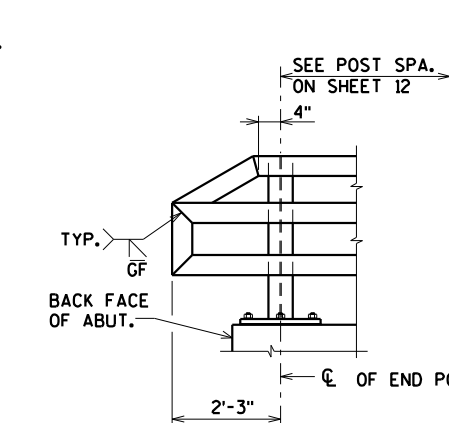
ANCHOR PLATE
(AT BEAM GUARD ATTACHMENT)



SECTION A



ANCHOR PLATE
(AT RAIL TO DECK CONNECTION)



POST SHIM
DETAIL

PART ELEVATION OF RAILING

ORIGINAL PLANS PREPARED BY
AYRES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-242			
DRAWN BY		CLP	PLANS CK'D. AEB
RAILING TUBULAR TYPE M			SHEET 13 OF 13 73

EARTHWORK - SW SHOULDER

STATION	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)			Mass Ordinate
	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut 1.00	Expanded Fill 1.30	Expanded Marsh Backfill 1.50	
Note 1	Note 2	Note 3	Note 1	Note 4	Note 8							
7+66.19	9.39	0.00	0.49	0.00	0	0	0	0	0	0	0	0
8+00.00	7.10	0.00	3.07	0.00	10	0	2	0	10	3	0	7
8+50	10.31	0.00	14.80	0.00	16	0	17	0	26	24	0	2
8+64.4	11.23	0.00	13.82	0.00	6	0	8	0	32	34	0	-2
8+88	22.32	0.00	0.00	0.00	15	0	6	0	47	42	0	5
8+89.4	24.87	0.00	0.00	0.00	1	0	0	0	48	42	0	6
9+00	34.96	0.00	0.00	0.00	12	0	0	0	60	42	0	18
9+13	33.81	0.00	0.00	0.00	17	0	0	0	76	42	0	34
9+14.4	33.84	0.00	0.00	0.00	2	0	0	0	78	42	0	36
9+29	33.35	0.00	0.00	0.00	18	0	0	0	96	42	0	54

960320

EARTHWORK - SE SHOULDER

STATION	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)			Mass Ordinate
	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut 1.00	Expanded Fill 1.30	Expanded Marsh Backfill 1.50	
Note 1	Note 2	Note 3	Note 1	Note 4	Note 8							
8+00.00	5.86	0.00	1.89	0.00	0	0	0	0	0	0	0	0
8+50	12.25	0.00	1.81	0.00	17	0	3	0	17	4	0	12
8+64.4	14.85	0.00	1.42	0.00	7	0	1	0	24	6	0	18
8+88	12.80	0.00	19.50	0.00	12	0	9	0	36	17	0	19
8+89.4	12.82	0.00	20.00	0.00	1	0	1	0	37	19	0	18
9+00	12.07	0.00	24.78	0.00	5	0	9	0	42	30	0	11
9+13	10.55	0.00	40.91	0.00	5	0	16	0	47	51	0	-4
9+14.4	10.26	0.00	42.77	0.00	1	0	2	0	48	54	0	-6
9+29	57.53	0.00	9.41	0.00	18	0	14	0	66	72	0	-6

660550

Notes:	
1 - Cut	Cut includes Unusable Pavement material
2 - Unusable Pavement Material	This does not show up in cross sections
3 - Fill	Does not include Unusable Pavement Exc volume
4 - Expanded Marsh Backfill	Will be backfilled with Granular Backfill
8 - Mass Ordinate	Cut - Unusable Pavt - (Fill * Fill Factor)
8 - Mass Ordinate	Mass Ordinate does not include Marsh Excavation

EARTHWORK - CTH Q

STATION	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)			Mass Ordinate
	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut 1.00 Note 1	Expanded Fill 1.30	Expanded Marsh Backfill 1.00 Note 4	
Note 1	Note 2	Note 3	Note 8									
9+29	90.88	23.32	9.41	0.00	0	0	0	0	0	0	0	0
9+38	78.91	23.32	13.03	0.00	28	8	4	0	28	5	0	16
9+50	66.15	23.32	30.58	0.00	32	10	10	0	61	17	0	25
9+72.4 B-36-0241	66.15	23.32	30.58	0.00	55	19	25	0	115	50	0	27
10+17.6	57.17	23.32	81.99	0.00	0	0	0	0	115	50	0	27
10+50	57.17	23.32	81.99	0.00	69	28	98	0	184	178	0	-60
10+52	57.60	23.32	79.97	0.00	4	2	6	0	188	186	0	-65
10+65	60.81	23.32	68.99	0.00	29	11	36	0	217	233	0	-94
					217	78	179	0				

EARTHWORK - NW SHOULDER

STATION	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)			Mass Ordinate
	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut 1.00	Expanded Fill 1.30	Expanded Marsh Backfill 1.50	
Note 1	Note 2	Note 3	Note 1	Note 4	Note 8							
10+65	5.74	0.00	18.73	0.00	0	0	0	0	0	0	0	0
10+77	5.89	0.00	17.13	0.00	3	0	8	0	3	10	0	-7
11+00	6.98	0.00	11.67	0.00	5	0	12	0	8	26	0	-18
11+02	7.07	0.00	12.67	0.00	1	0	1	0	9	27	0	-18
11+25.6	6.99	0.00	30.31	0.00	6	0	19	0	15	51	0	-37
11+50	8.03	0.00	31.69	0.00	7	0	28	0	22	88	0	-66
11+50.6	8.18	0.00	31.96	0.00	0	0	1	0	22	89	0	-67
11+75.6	8.86	0.00	36.35	0.00	8	0	32	0	30	130	0	-100
12+00	8.14	0.00	32.03	0.00	8	0	31	0	37	170	0	-133
12+30.53	7.92	0.00	22.53	0.00	9	0	31	0	46	210	0	-164
12+50	7.27	0.00	16.17	0.00	5	0	14	0	52	228	0	-176
12+85.29	7.79	0.00	0.30	0.00	10	0	11	0	62	242	0	-181
					62	0	186	0				

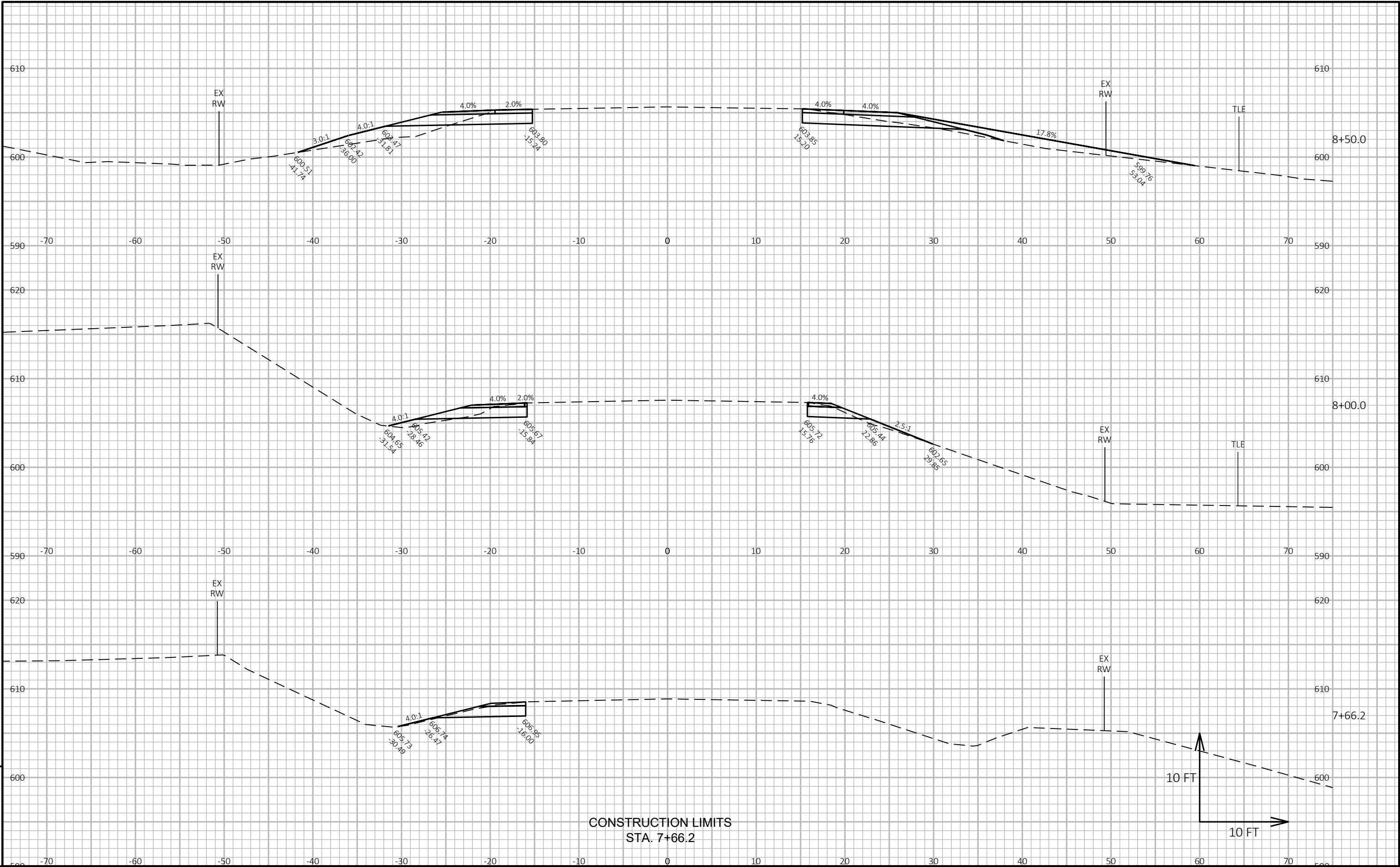
Notes:	
1 - Cut	Cut includes Unusable Pavement material
2 - Unusable Pavement Material	This does not show up in cross sections
3 - Fill	Does not include Unusable Pavement Exc volume
4 - Expanded Marsh Backfill	Will be backfilled with Granular Backfill
8 - Mass Ordinate	Cut - Unusable Pavt - (Fill * Fill Factor)
8 - Mass Ordinate	Mass Ordinate does not include Marsh Excavation

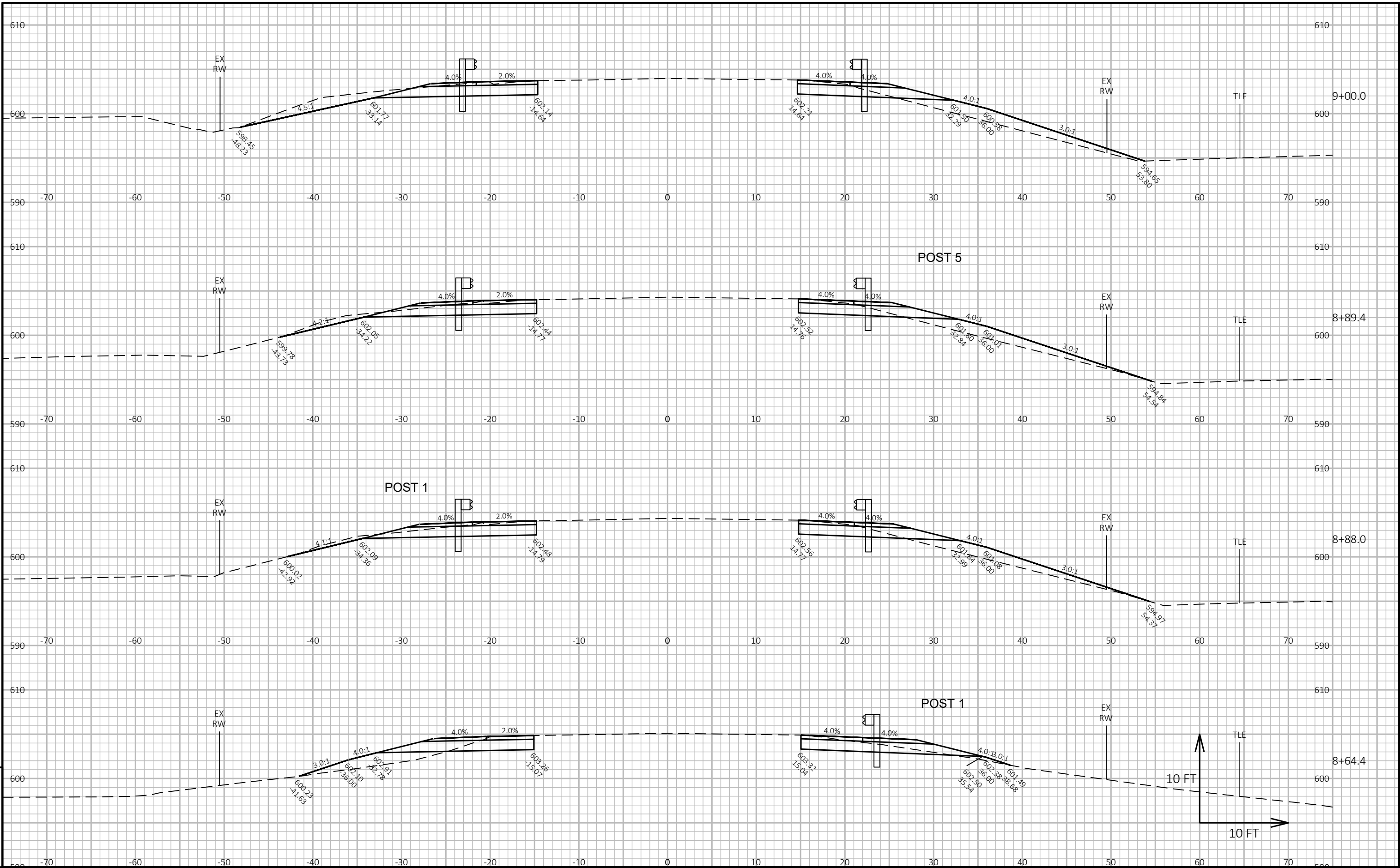
EARTHWORK - NE SHOULDER

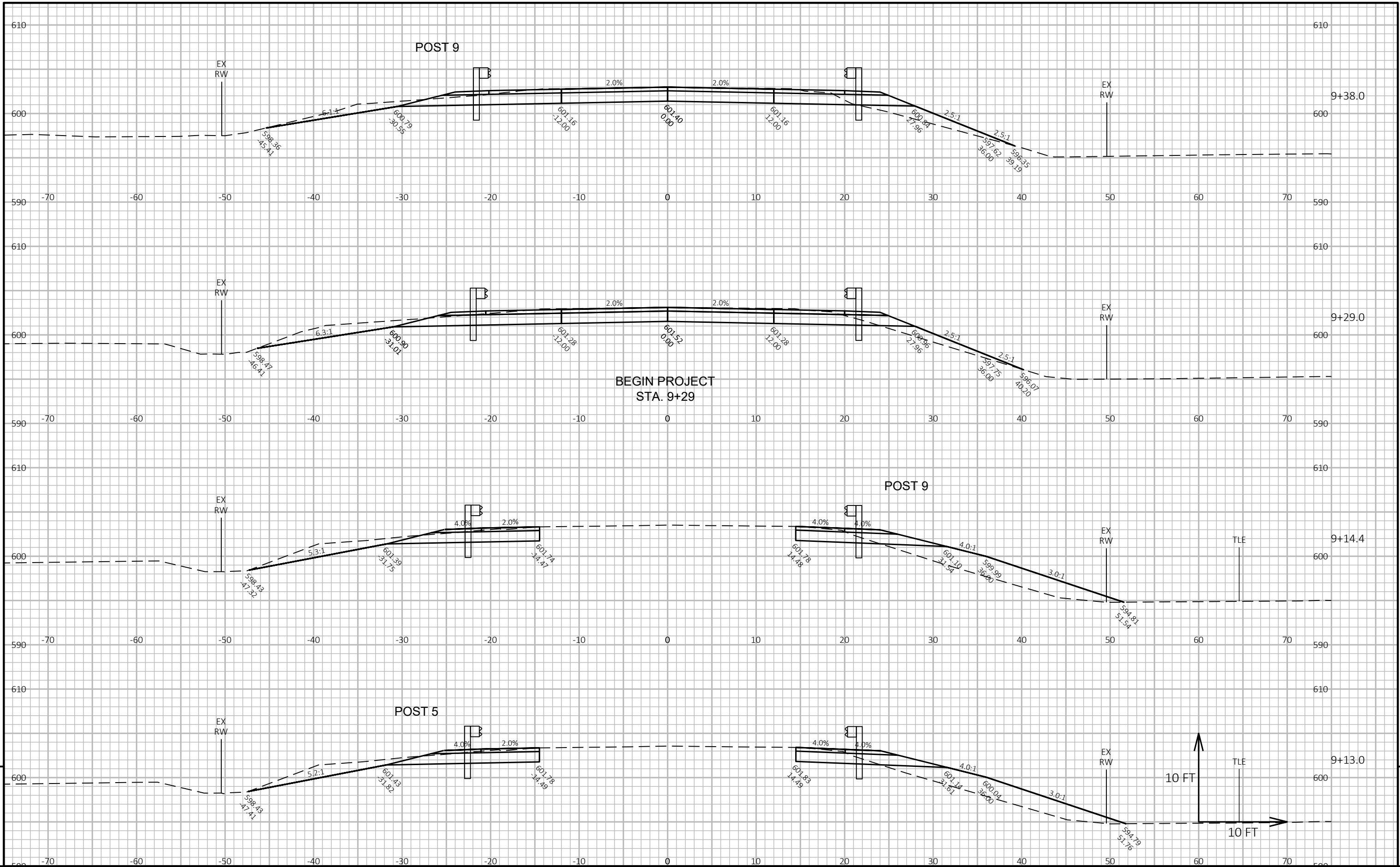
STATION	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)			Mass Ordinate
	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut 1.00	Expanded Fill 1.30	Expanded Marsh Backfill 1.50	
Note 1	Note 2	Note 3	Note 1	Note 4	Note 8							
10+65	7.83	0.00	50.60	0.00	0	0	0	0	0	0	0	0
10+77	6.57	0.00	49.08	0.00	3	0	22	0	3	29	0	-26
11+00	7.09	0.00	54.42	0.00	6	0	44	0	9	86	0	-77
11+02	7.38	0.00	54.19	0.00	1	0	4	0	10	91	0	-82
11+25.6	7.78	0.00	45.83	0.00	7	0	44	0	16	148	0	-132
11+50	7.13	0.00	37.07	0.00	7	0	37	0	23	197	0	-174
11+50.6	6.99	0.00	36.60	0.00	0	0	1	0	23	198	0	-175
11+75.6	6.44	0.00	31.21	0.00	6	0	31	0	29	239	0	-209
12+00	6.22	0.00	27.22	0.00	6	0	26	0	35	273	0	-238
12+30.53	5.94	0.00	20.10	0.00	7	0	27	0	42	308	0	-266

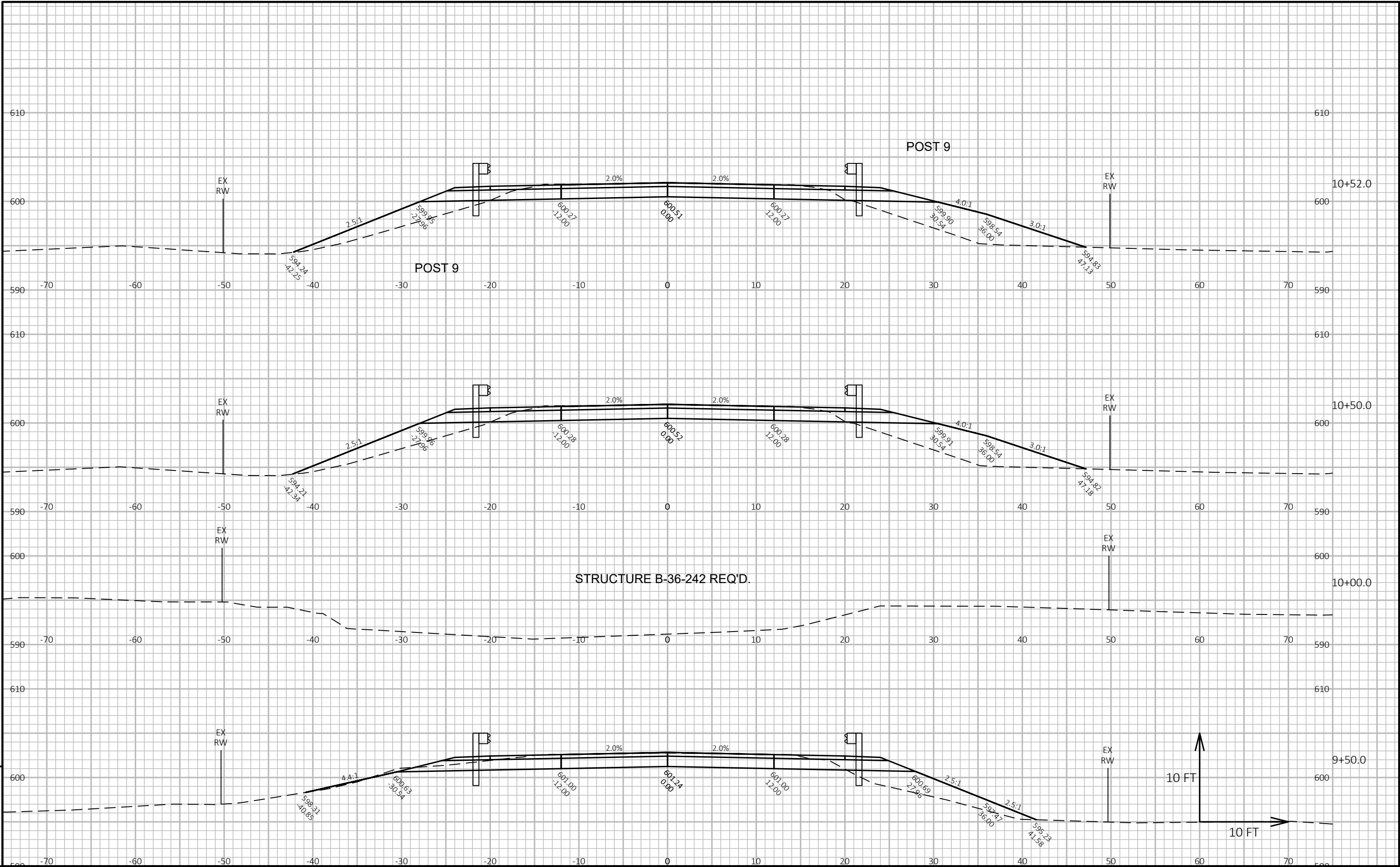
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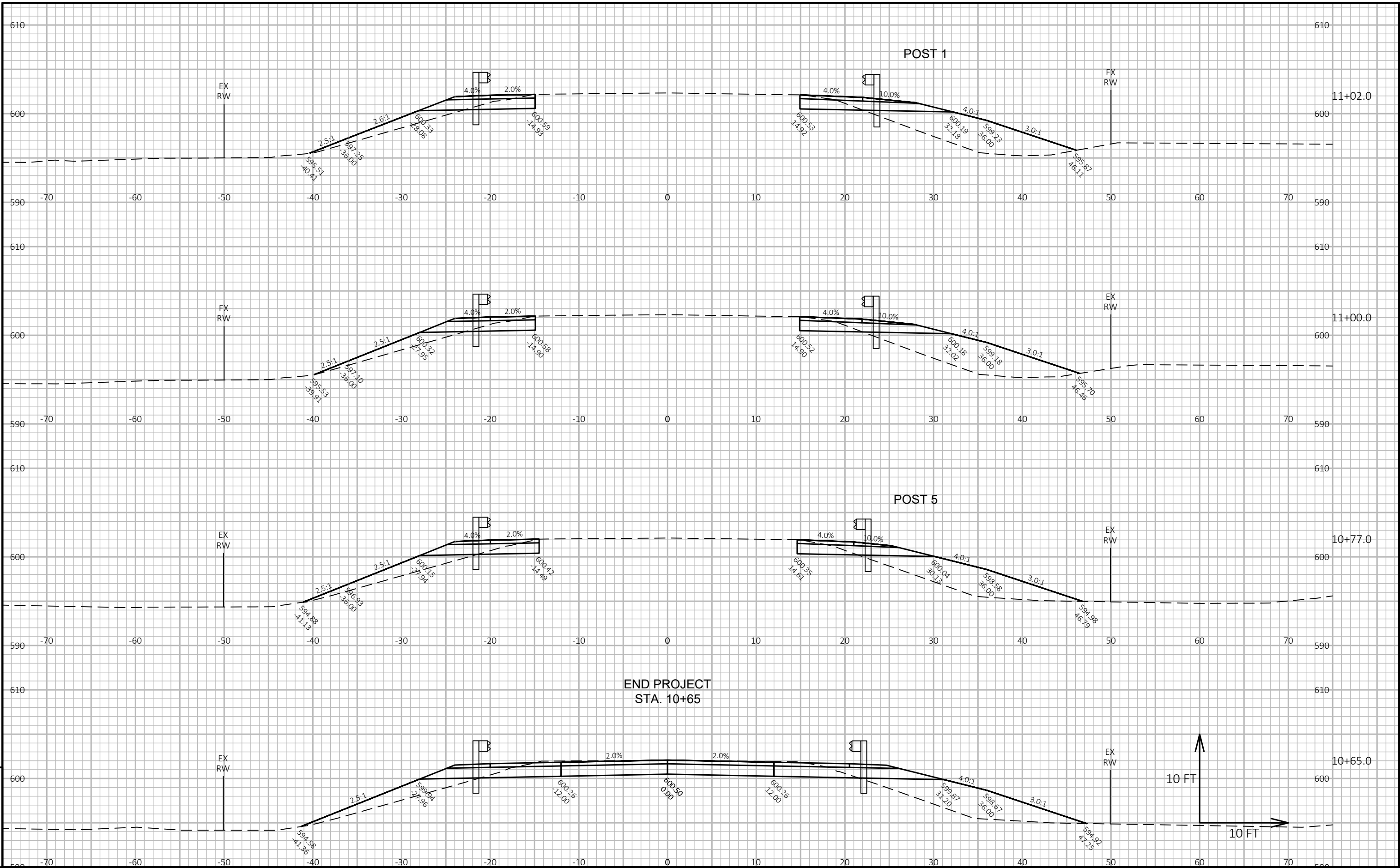
Notes:	
1 - Cut	Cut includes Unusable Pavement material This does not show up in cross sections Does not include Unusable Pavement Exc volume Will be backfilled with Granular Backfill Cut - Unusable Pavt - (Fill * Fill Factor) Mass Ordinate does not include Marsh Excavation
2 - Unusable Pavement Material	
3 - Fill	
4 - Expanded Marsh Backfill	
8 - Mass Ordinate	
8 - Mass Ordinate	



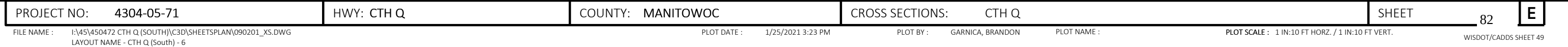
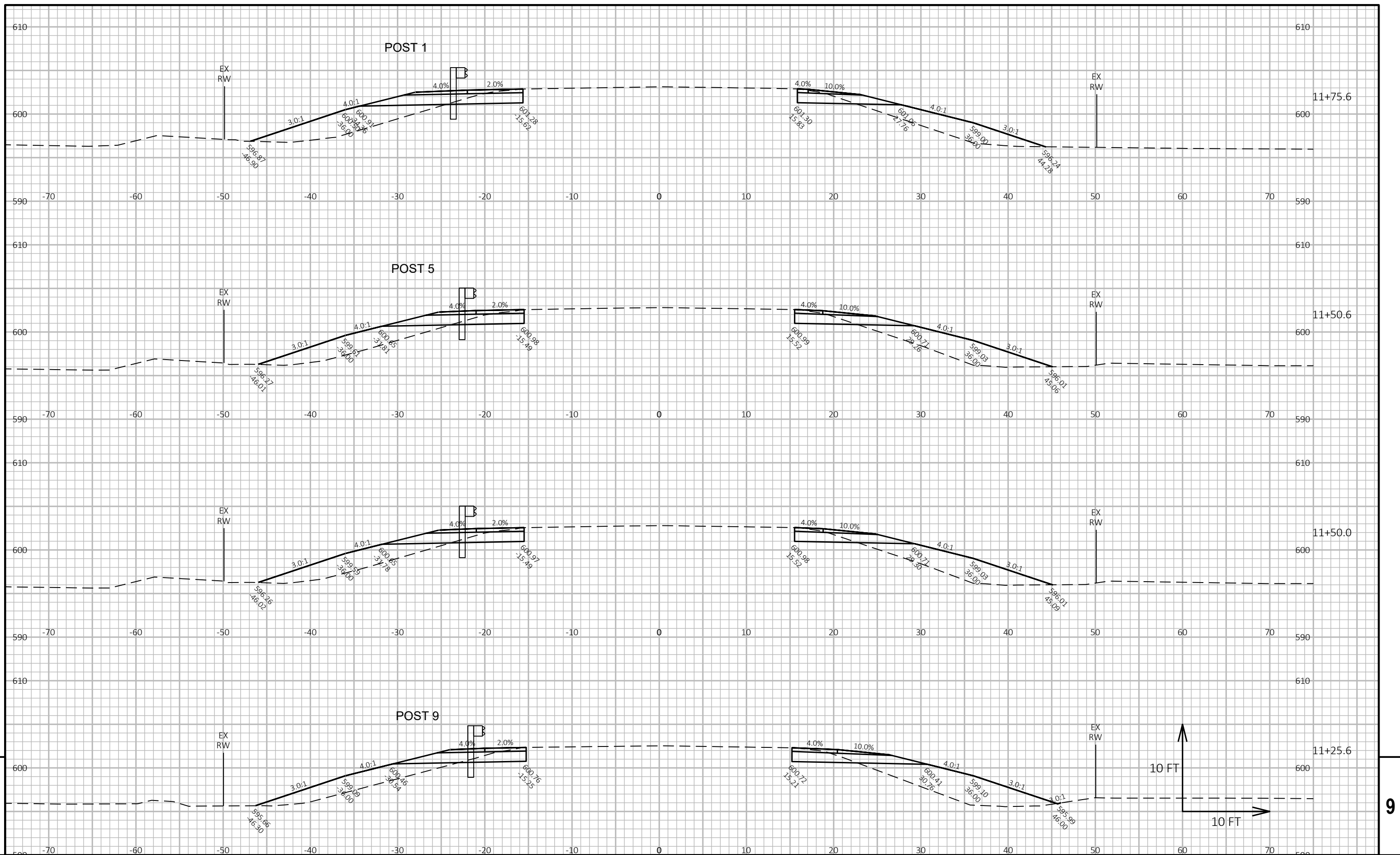


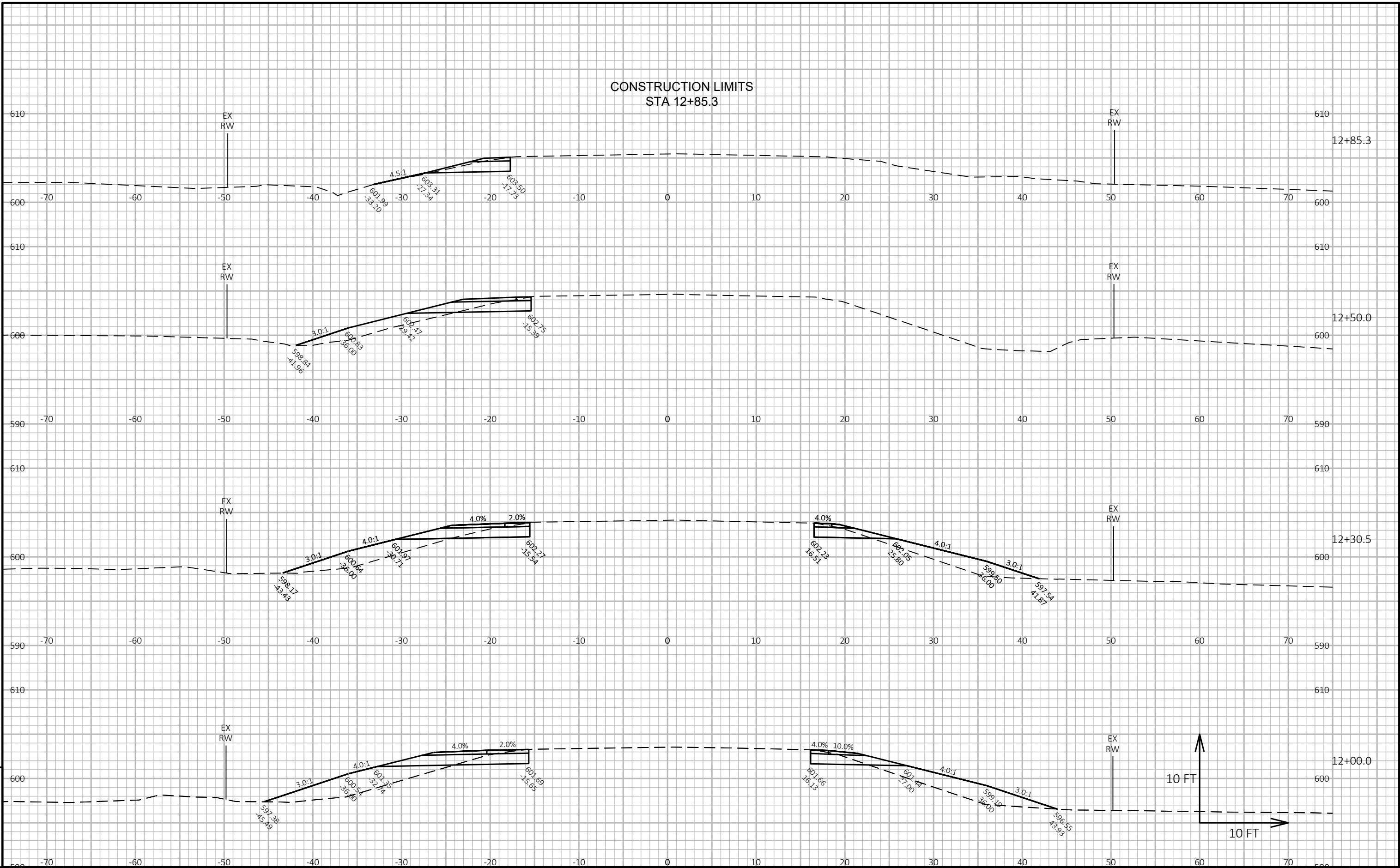


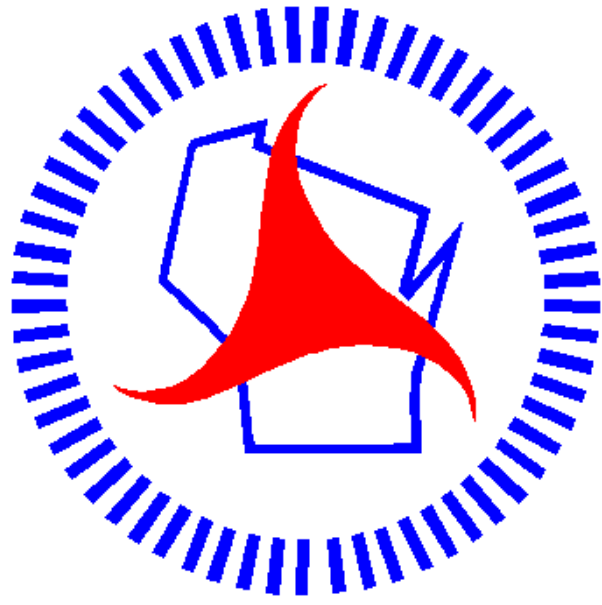




PROJECT NO: 4304-05-71	HWY: CTH Q	COUNTY: MANITOWOC	CROSS SECTIONS: CTH Q	SHEET 81
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Wisconsin Department of Transportation

Dedicated people creating transportation solutions through innovation and exceptional service.

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

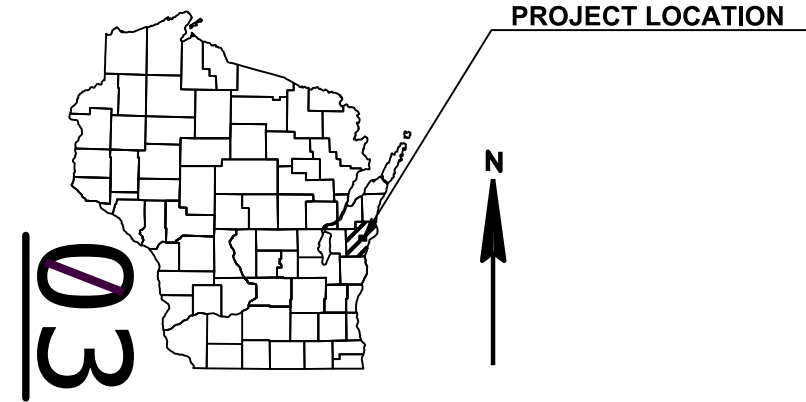
GRE
PROJECT ID: 4304-06-71
WITH: 4304-05-71
COUNTY: MANITOWOC

JULY 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



DESIGN DESIGNATION

A.A.D.T.	(2021)	=	2,700
A.A.D.T.	(2041)	=	3,530
D.H.V.		=	-
D.D.		=	60/40
T.		=	5.9%
DESIGN SPEED		=	55 MPH
ESALS		=	410,000

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 MANITOWOC, CTH Q

LITTLE MANITOWOC RIVER BRIDGE

CTH Q

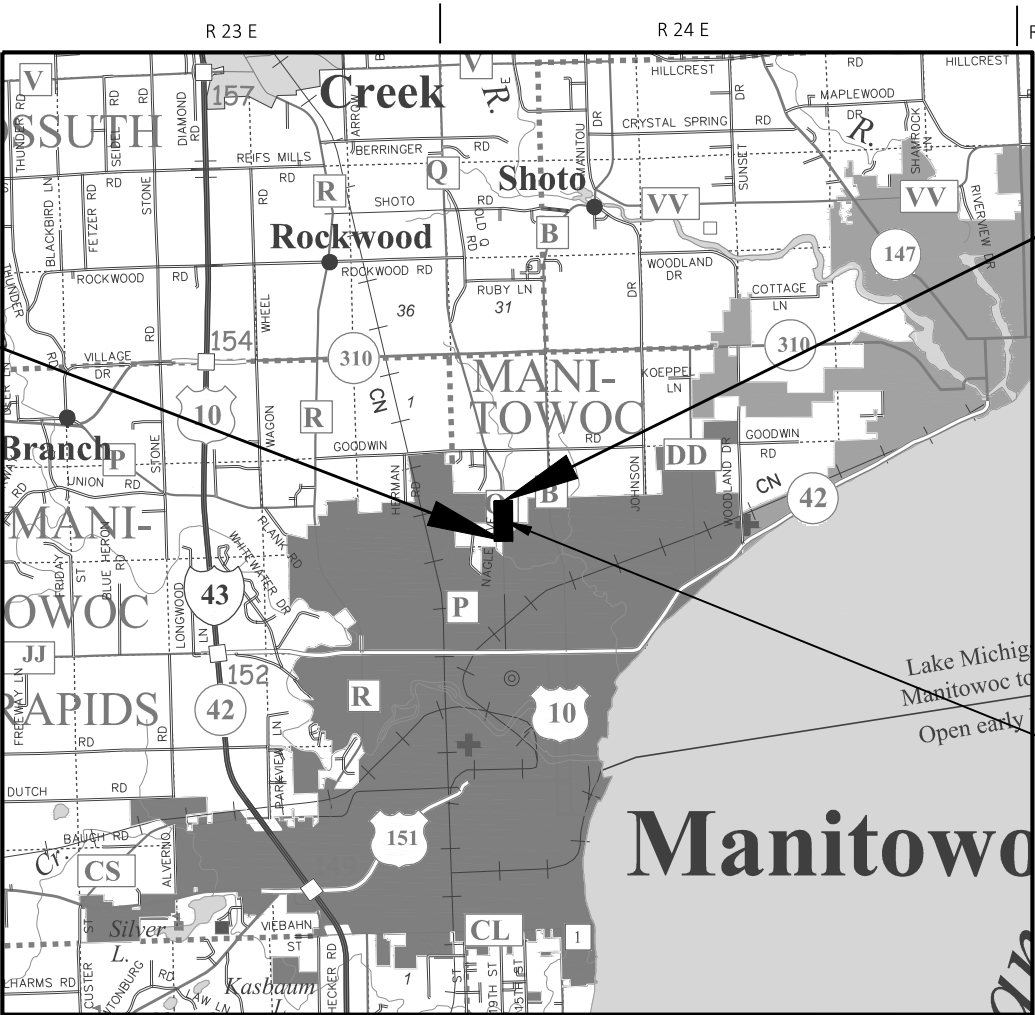
MANITOWOC COUNTY

STATE PROJECT NUMBER
4304-06-71

BEGIN PROJECT
STA 9+28
Y=315881.549
X=230359.290

END PROJECT
STA 10+65

STRUCTURE B-36-241
STA 9+95



LAYOUT
SCALE 0 2 MI

TOTAL NET LENGTH OF CENTERLINE = 0.026 MI.

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), MANITOWOC COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES. ELEVATIONS ARE REFERENCED TO NAVD 88 (2012). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 12A.

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
4304-06-71		

ACCEPTED FOR
MANITOWOC COUNTY

1-26-21
DATE
COUNTY HIGHWAY COMMISSIONER

ORIGINAL PLANS PREPARED BY

AYRES



1/14/2021
(Date)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY	
Surveyor	AYRES
Designer	AYRES
Project Manager	SCOTT EBEL
Regional Supervisor	JAMES THOMPSON

APPROVED FOR THE DEPARTMENT
DATE: 1/27/21
(Signature)

GENERAL NOTES

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

CONSTRUCT ASPHALTIC SURFACE WITH A 2" UPPER LAYER AND A 3" LOWER LAYER.

PROPERTY LINES AS SHOWN ARE APPROXIMATE.

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

BEARINGS SHOWN ON THIS PLAN ARE TRUE BEARINGS TO THE NEAREST SECOND.

ALL TIES ON THIS PLAN ARE HORIZONTAL UNLESS DESCRIBED OTHERWISE.

EROSION CONTROL LOCATIONS AS SHOWN ON THE EROSION CONTROL PLAN ARE APPROXIMATE. THE EXACT LOCATIONS WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.

DISTURBED AREAS WITHIN THE RIGHT OF WAY, EXCEPT THE AREAS WITHIN THE FINISHED SUBGRADE SHOULDER POINTS ARE TO BE SEEDED AND EROSION MAT AS DIRECTED BY THE ENGINEER.

ALL ELEVATIONS ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF NAVD 88 (2012).

WISDOT WILL FURNISH A BENCHMARK MONUMENT TO BE SET BY THE CONTRACTOR.

SAW CUT LOCATIONS SHOWN ON THE PLAN ARE SUBJECT TO ADJUSTMENT BY THE ENGINEER IN THE FIELD. THE LINE OF SUCH SAW CUTS WILL BE NEATLY DELINEATED THROUGH THE ASPHALT WITHOUT ANY DAMAGE TO THE REMAINING PORTION OF THE EXISTING PAVEMENT.

UTILITIES

- ★ ANR PIPELINE CO.
W3925 PIPELINE LANE
EDEN, WI 53019
ATTENTION: MARK BIRSCHBACH
E-MAIL: Mark_Birschbach@transcanada.com

TELEPHONE 920-477-2242
- ★ AT&T
221 WEST WASHINGTON ST
APPLETON, WI 54911-4742
ATTENTION: SHEA GORZELANCZYK
E-MAIL: shea.b.gorzelanczyk@att.com

TELEPHONE 920-433-4250
- ★ WISCONSIN PUBLIC SERVICE CORP - ELEC
700 N ADAMS ST
2850 SOUTH ASHLAND AVENUE
GREEN BAY, WI 54307
ATTENTION: CHUCK WINDUS
E-MAIL: charles.windus@wisconsinpublicservice.com

TELEPHONE 920-617-5281
CELL 920-606-1141
- ★ WISCONSIN PUBLIC SERVICES CORP - GAS
800 COLUMBUS ST
TWO RIVERS, WI 54241
ATTENTION JOEL SAWICKI
E-MAIL: joel.sawicki@wisconsinpublicservice.com

TELEPHONE 920-657-1862



*-MEMBER OF DIGGERS HOTLINE

RUNOFF COEFFICIENT TABLE

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

TOTAL PROJECT AREA= 1.90 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 1.05 ACRES
SOIL GROUP D

STANDARD ABBREVIATIONS

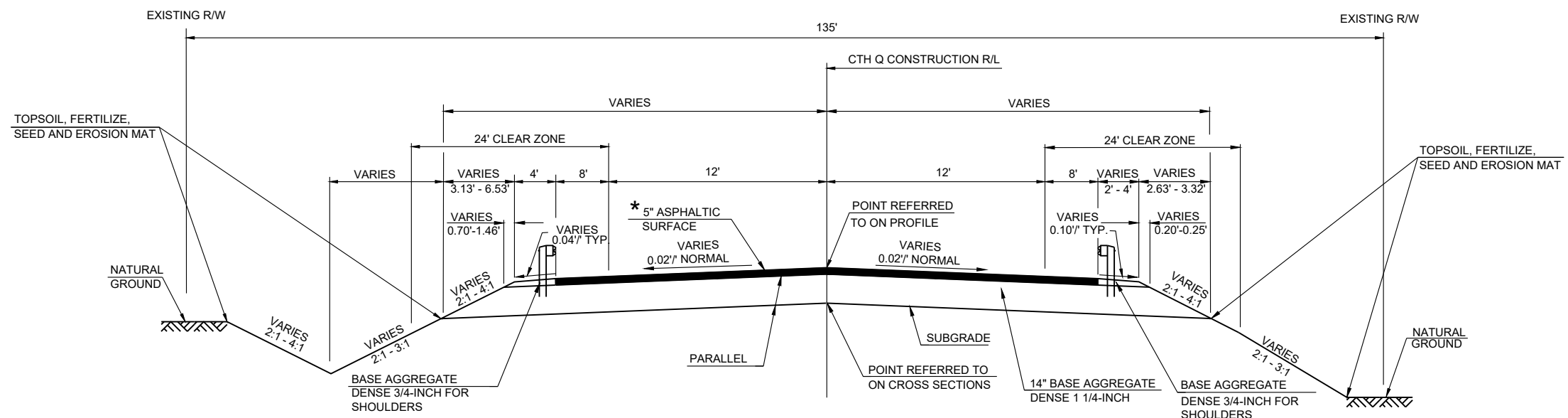
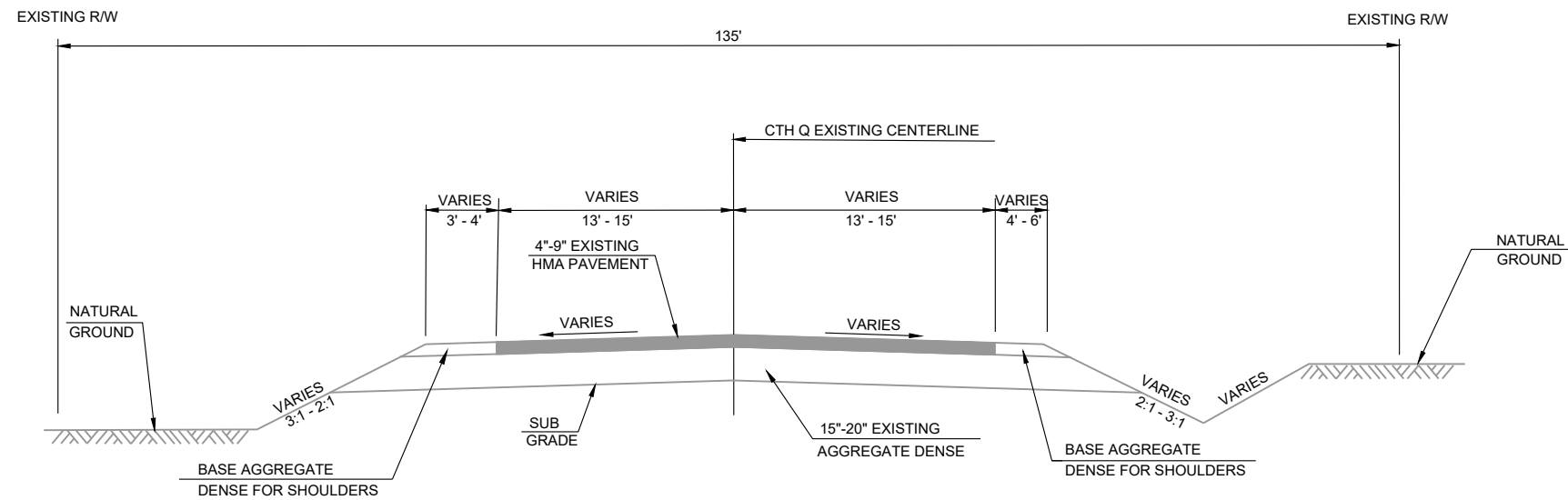
ADT	AVERAGE DAILY TRAFFIC	NC	NORMAL CROWN
AC	ASPHALT CEMENT	PT	POINT OF TANGENCY
AGG	AGGREGATE	PC	POINT OF CURVATURE
ASPH	ASPHALT	PI	POINT OF INTERSECTION
BM	BENCH MARK	PE	PRIVATE ENTRANCE
C/L	CENTERLINE	R	RADIUS
CONC	CONCRETE	REM	REMOVE
CMP	CORRUGATED METAL PIPE	R/L OR RL	REFERENCE LINE
CR.	CREEK	RCCP	REINFORCED CONCRETE CULVERT PIPE
D	DEGREE OF CURVE	RCPSS	REINFORCED CONCRETE PIPE STORM SEWER
DHV	DESIGN HOUR VOLUME	R.O.	RUNOUT
ESALS	EQUIVALENT SINGLE AXIS LOADS	R/W	RIGHT-OF-WAY
EXIST	EXISTING	STA	STATION
FE	FIELD ENTRANCE	SE	SUPER ELEVATION
HYD	HYDRANT	SS	STORM SEWER
IP	IRON PIPE OR PIN	T	TANGENT
L	LENGTH OF CURVE	TEL	TELEPHONE
LC	LONG CHORD OF CURVE	TLE	TEMPORARY LIMITED EASEMENT
LR	LENGTH OF RUNOFF	T	TRUCKS
MH	MANHOLE	VC	VERTICAL CURVE
		W	WELL

DEPARTMENT OF NATURAL RESOURCES

WDNR

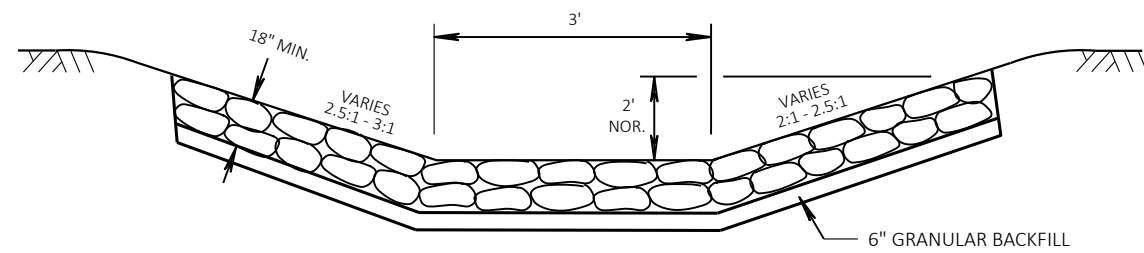
TELEPHONE 920-366-1544

2984 SHAWANO AVE.
GREEN BAY, WISCONSIN 54313
ATTENTION: MATT SCHAEVE
E-MAIL: MATTHEW.SCHAEVE@WISCONSIN.GOV

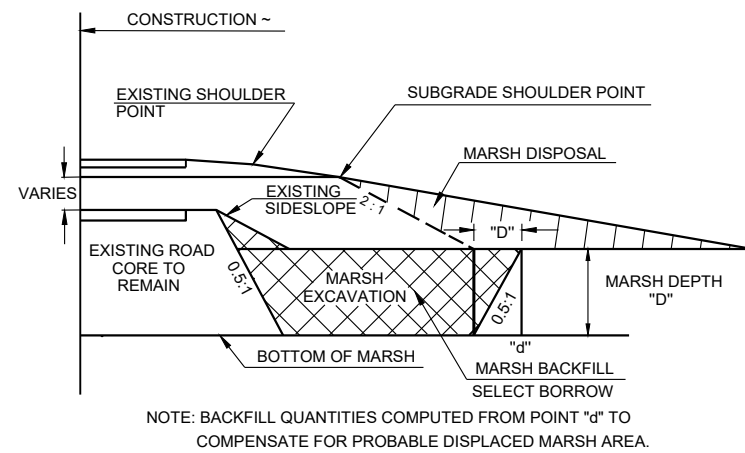


* CONCRETE PAVEMENT APPROACH SLAB OVER
7" BASE AGGREGATE DENSE 1 1/4-INCH
STA. 9+59 - STA. 9+82.5
STA. 10+15.5 - STA. 10+39

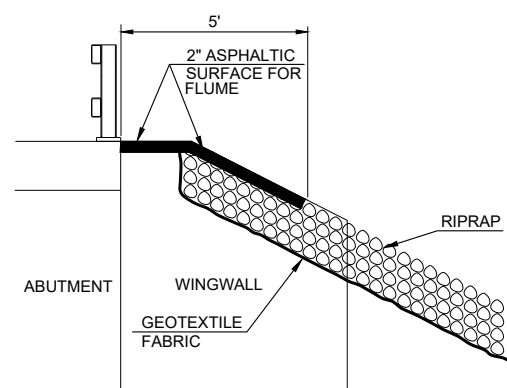




DETAIL FOR SPECIAL DITCH WITH RIPRAP MEDIUM AND GRANULAR BACKFILL

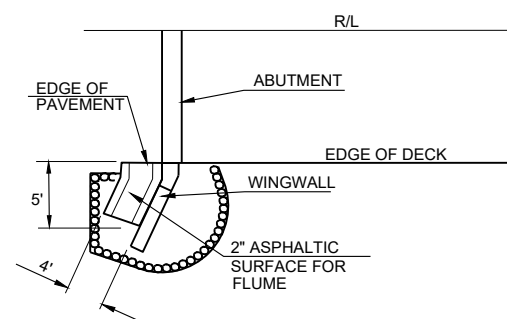


TYPICAL SECTION-MARSH EXCAVATION



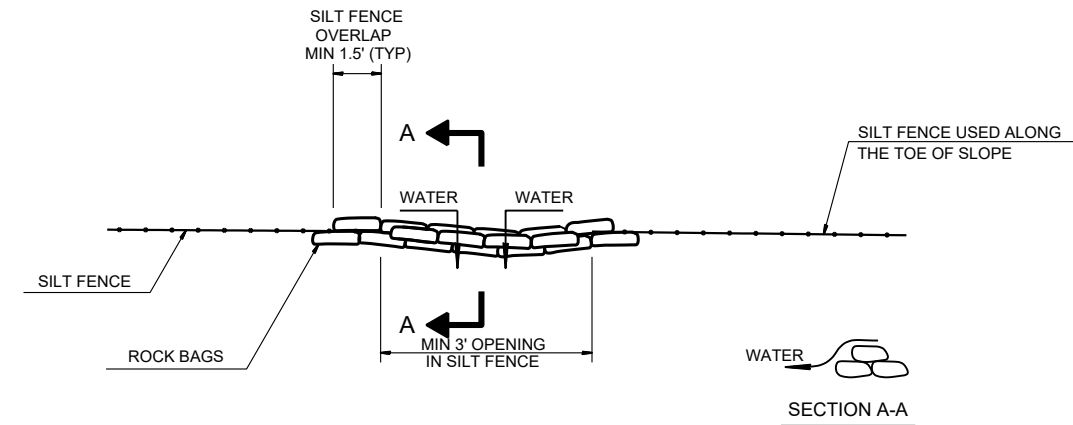
NOTE:
"KNIT" ASPHALTIC SURFACE INTO RIPRAP FROM EDGE
OF DECK AND BEHIND WING WALL.

PROFILE



PLAN

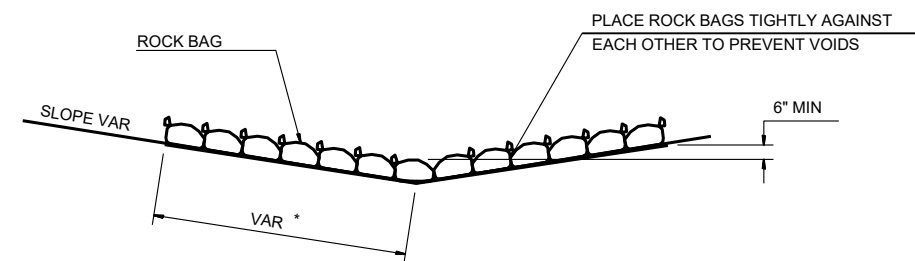
DETAIL FOR ASPHALTIC FLUME AT STRUCTURE



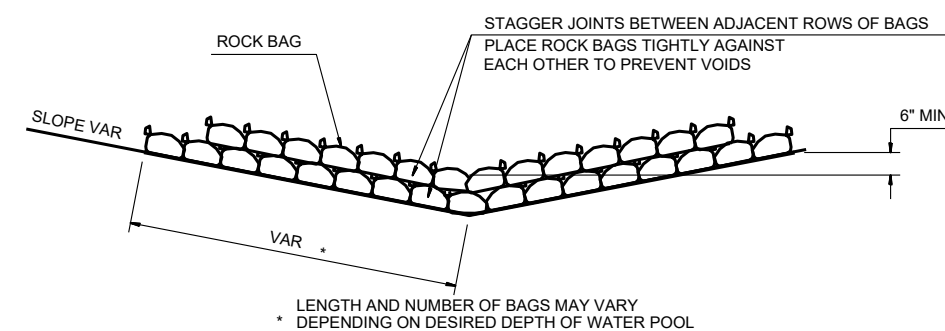
TOP VIEW

ROCK BAGS USED FOR SILT FENCE RELIEF DETAIL

PAID AS ROCK BAGS
(SEE MISCELLANEOUS QUANTITIES FOR LOCATIONS)



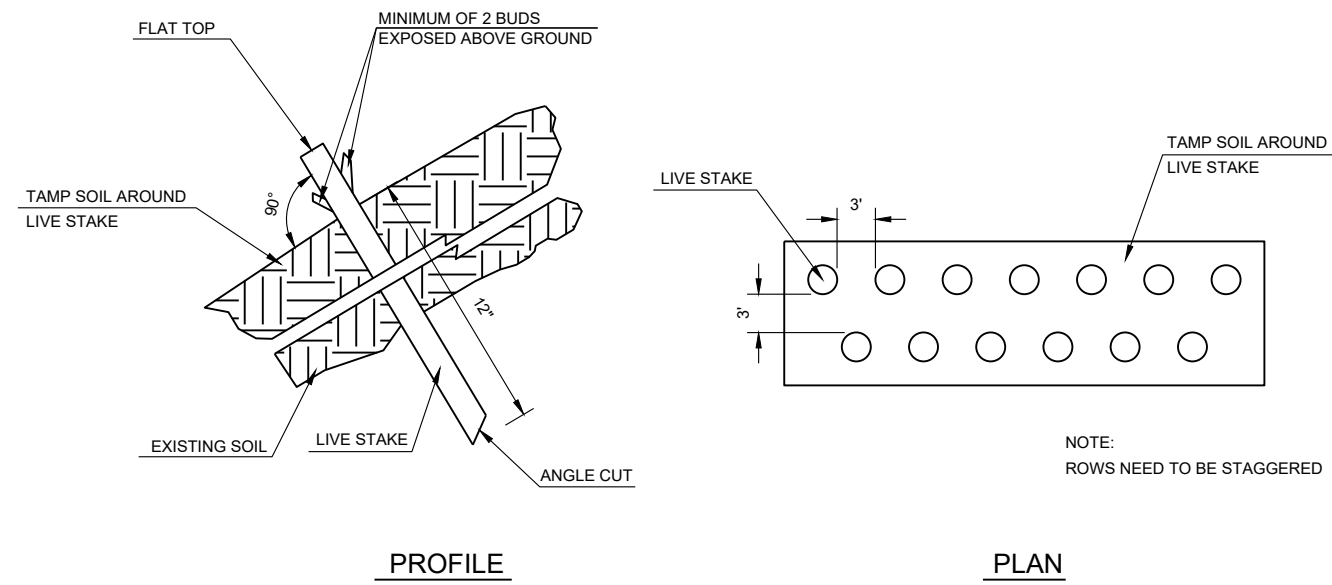
SIDE VIEW (SINGLE LAYER)



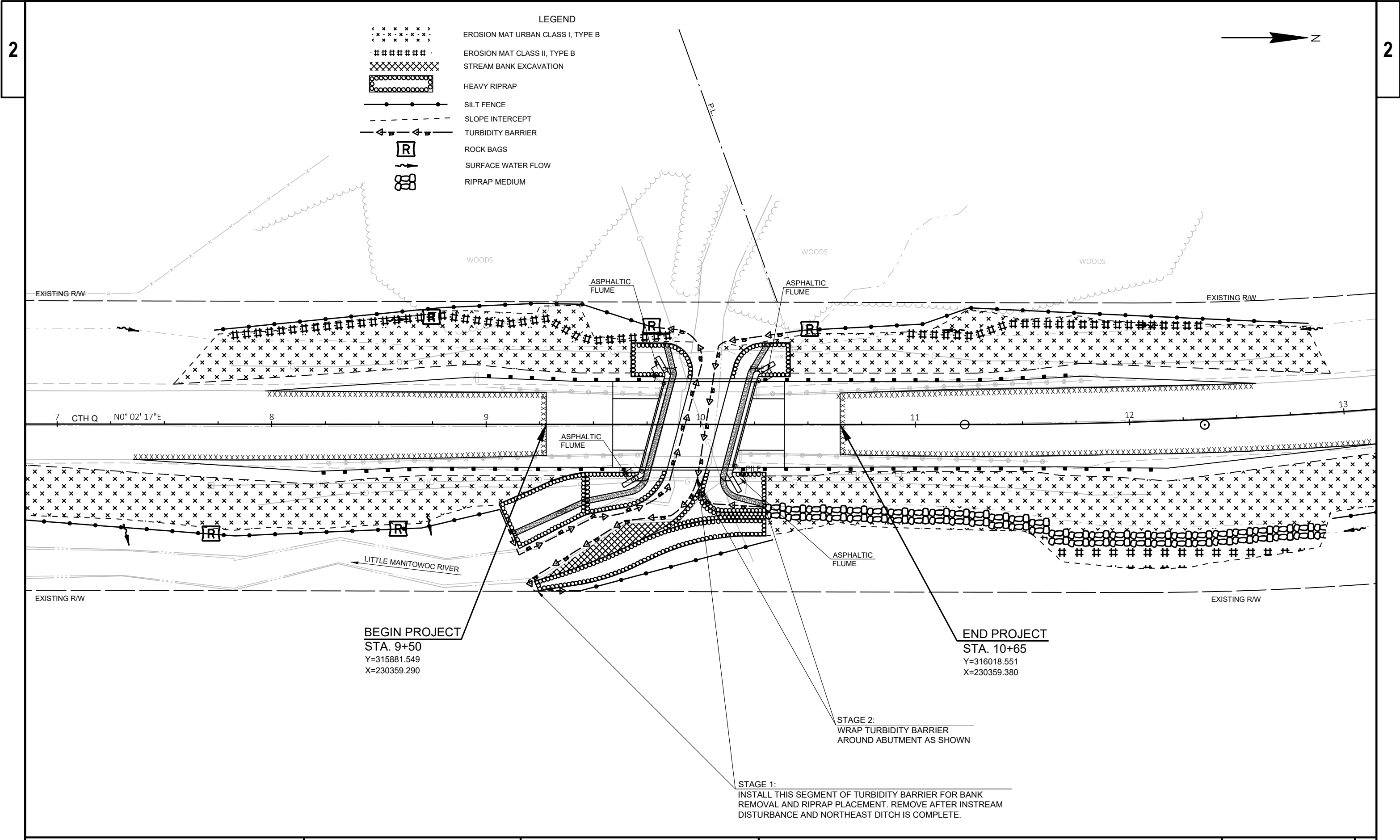
SIDE VIEW (MULTIPLE LAYER)

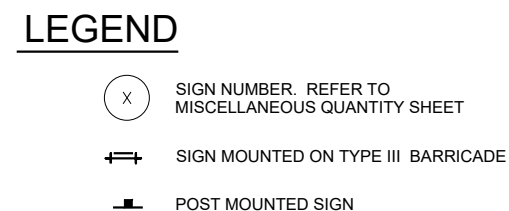
ROCK BAGS DITCH CHECK

PAID AS ROCK BAGS
(SEE MISCELLANEOUS QUANTITIES FOR LOCATIONS)



LIVE STAKE





Estimate Of Quantities By Plan Sets

4304-06-71					
Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	2.000	2.000
0004	201.0205	Grubbing	STA	2.000	2.000
0008	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 02. Station 10+00	LS	1.000	1.000
0010	204.0165	Removing Guardrail	LF	304.000	304.000
0012	205.0100	Excavation Common	CY	611.000	611.000
0014	205.0400	Excavation Marsh	CY	826.000	826.000
0018	206.1000	Excavation for Structures Bridges (structure) 02. B-36-241	LS	1.000	1.000
0022	208.0100	Borrow	CY	1,497.000	1,497.000
0024	208.1100	Select Borrow	CY	1,239.000	1,239.000
0026	209.1500	Backfill Granular Grade 1	TON	134.000	134.000
0028	210.1500	Backfill Structure Type A	TON	470.000	470.000
0032	213.0100	Finishing Roadway (project) 02. 4304-06-71	EACH	1.000	1.000
0034	305.0110	Base Aggregate Dense 3/4-Inch	TON	202.000	202.000
0036	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,630.000	1,630.000
0038	415.0080	Concrete Pavement 8-Inch	SY	64.000	64.000
0040	415.0410	Concrete Pavement Approach Slab	SY	98.000	98.000
0042	450.4000	HMA Cold Weather Paving	TON	173.000	173.000
0044	455.0605	Tack Coat	GAL	10.400	10.400
0046	465.0105	Asphaltic Surface	TON	173.000	173.000
0048	465.0315	Asphaltic Flumes	SY	8.000	8.000
0050	502.0100	Concrete Masonry Bridges	CY	205.000	205.000
0052	502.3200	Protective Surface Treatment	SY	225.000	225.000
0054	505.0400	Bar Steel Reinforcement HS Structures	LB	6,300.000	6,300.000
0056	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	24,400.000	24,400.000
0058	513.4061	Railing Tubular Type M	LF	89.000	89.000
0060	516.0500	Rubberized Membrane Waterproofing	SY	18.000	18.000
0062	550.0500	Pile Points	EACH	20.000	20.000
0064	550.2104	Piling CIP Concrete 10 3/4 X 0.25-Inch	LF	1,600.000	1,600.000
0066	606.0200	Riprap Medium	CY	200.000	200.000
0068	606.0300	Riprap Heavy	CY	450.000	450.000
0070	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	180.000	180.000
0072	614.2300	MGS Guardrail 3	LF	125.000	125.000
0074	614.2330	MGS Guardrail 3 K	LF	112.500	112.500
0076	614.2500	MGS Thrie Beam Transition	LF	157.600	157.600
0078	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0080	619.1000	Mobilization	EACH	0.500	0.500
0082	624.0100	Water	MGAL	19.000	19.000
0084	625.0100	Topsoil	SY	2,600.000	2,600.000

Estimate Of Quantities By Plan Sets

4304-06-71

Line	Item	Item Description	Unit	Total	Qty
0086	627.0200	Mulching	SY	750.000	750.000
0088	628.1504	Silt Fence	LF	1,123.000	1,123.000
0090	628.1520	Silt Fence Maintenance	LF	2,246.000	2,246.000
0092	628.1905	Mobilizations Erosion Control	EACH	8.000	8.000
0094	628.1910	Mobilizations Emergency Erosion Control	EACH	4.000	4.000
0096	628.2008	Erosion Mat Urban Class I Type B	SY	2,100.000	2,100.000
0098	628.2023	Erosion Mat Class II Type B	SY	540.000	540.000
0100	628.6005	Turbidity Barriers	SY	452.000	452.000
0102	628.7570	Rock Bags	EACH	90.000	90.000
0104	629.0210	Fertilizer Type B	CWT	2.100	2.100
0106	630.0171	Seeding Mixture No. 70A	LB	12.000	12.000
0108	630.0200	Seeding Temporary	LB	70.000	70.000
0110	630.0300	Seeding Borrow Pit	LB	20.000	20.000
0112	630.0500	Seed Water	MGAL	73.000	73.000
0114	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0116	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0118	638.2102	Moving Signs Type II	EACH	1.000	1.000
0120	638.2602	Removing Signs Type II	EACH	4.000	4.000
0122	638.3000	Removing Small Sign Supports	EACH	4.000	4.000
0124	638.4000	Moving Small Sign Supports	EACH	1.000	1.000
0126	642.5001	Field Office Type B	EACH	0.500	0.500
0128	643.0420	Traffic Control Barricades Type III	DAY	3,500.000	3,500.000
0130	643.0705	Traffic Control Warning Lights Type A	DAY	4,900.000	4,900.000
0132	643.0900	Traffic Control Signs	DAY	21,525.000	21,525.000
0134	643.0920	Traffic Control Covering Signs Type II	EACH	5.000	5.000
0136	643.5000	Traffic Control	EACH	0.500	0.500
0138	645.0111	Geotextile Type DF Schedule A	SY	130.000	130.000
0140	645.0120	Geotextile Type HR	SY	860.000	860.000
0142	646.1020	Marking Line Epoxy 4-Inch	LF	1,888.000	1,888.000
0144	650.4500	Construction Staking Subgrade	LF	671.000	671.000
0146	650.5000	Construction Staking Base	LF	671.000	671.000
0150	650.6500	Construction Staking Structure Layout (structure) 02. B-36-241	LS	1.000	1.000
0154	650.9910	Construction Staking Supplemental Control (project) 02. 4304-06-71	LS	1.000	1.000
0156	650.9920	Construction Staking Slope Stakes	LF	671.000	671.000
0158	690.0150	Sawing Asphalt	LF	828.000	828.000
0160	715.0415	Incentive Strength Concrete Pavement	DOL	500.000	500.000
0162	715.0502	Incentive Strength Concrete Structures	DOL	1,230.000	1,230.000
0164	SPV.0060	Special 01. Live Stakes	EACH	295.000	295.000

Estimate Of Quantities By Plan Sets

4304-06-71					
Line	Item	Item Description	Unit	Total	Qty
0166	SPV.0060	Special 02. Utility Line Opening	EACH	2.000	2.000
0170	SPV.0090	Special 01. Flashing Stainless Steel	LF	77.000	77.000
0172	SPV.0195	Special 01. Select Crushed Material for Travel Corridor	TON	25.000	25.000

CLEARING AND GRUBBING

STATION	TO	STATION	LOCATION	201.0105 CLEARING STA	201.0205 GRUBBING STA
8+00	-	10+00	CTH Q	2	2
TOTALS				2	2

REMOVING GUARDRAIL

STATION	TO	STATION	LOCATION	204.0165 LF
8+17	-	9+76	CTH Q, RT	159
9+00	-	9+83	CTH Q, LT	83
10+17	-	11+62	CTH Q, RT	145
10+24	-	11+83	CTH Q, LT	159
TOTAL				304

EARTHWORK SUMMARY

Division	From/To Station	Location	Common Excavation (item #205.0100)	Unusable Pavement Material (4)	Available Material (5)	Excavation Marsh (6)	Expanded Marsh Backfill (10) (item #208.1100)	Unexpanded Fill	Expanded Fill (13)	Mass Ordinate +/- (14)	Borrow (item #208.0100)	Comment:
			Cut (2)			(item #205.0400)	Factor 1.50		Factor 1.30			
1	7+54.25 - 9+28	CTH Q (SW SHOULDER)	54	0	54	132	198	255	332	-278	278	
	6+74.28 - 9+28	CTH Q (SE SHOULDER)	57	0	57	212	318	340	442	-385	385	
	9+28 - 10+65	CTH Q	232	53	179	152	228	228	296	-117	117	
	10+65 - 12+94.97	CTH Q (NW SHOULDER)	71	0	71	146	219	284	369	-298	298	
	10+65 - 13+77.3	CTH Q (NE SHOULDER)	197	0	197	184	276	474	616	-419	419	
Division 1 Totals			611	53	558	826	1,239	1,581	2,055	-1,497	1,497	

- 2) Unsuable Pavement Material is included in Cut
- 4) Unusable Pavement Material = Existing Asphaltic Pavement. Backfill any areas below subgrade with borrow .
- 5) Available Material = Cut - Unusuable Pavement Material
- 6) Marsh Excavation. To be backfilled with Select Borrow Material as shown in cross sections.
- 10) Expanded Marsh Backfill - This is to be filled with Select Borrow material. Marsh Backfill Factor = 1.5. Item Number 208.1100
- 13) Expanded Fill. Factor = 1.3 Expanded Fill = Unexpanded Fill * Fill Factor
- 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.

BASE AGGREGATE DENSE & WATER

STATION	TO	STATION	LOCATION	305.0110 BASE AGG. 3/4-INCH TON	305.0120 BASE AGG. 1 1/4-INCH TON	624.0100 WATER MGAL
6+74	-	9+77	CTH Q	-	758	9
6+74	-	9+72	CTH Q, RT	52	-	-
7+54	-	9+83	CTH Q, LT	44	-	-
10+21	-	13+77	CTH Q	-	872	10
10+15	-	13+77	CTH Q, RT	56	-	-
10+26	-	12+60	CTH Q, LT	50	-	-
TOTALS				202	1,630	19

CONCRETE PAVEMENT

STATION	TO	STATION	LOCATION	415.0080 8-INCH SY	415.0410 APPROACH SLAB SY	REMARKS
9+59	-	9+74	CTH Q, RT	12	-	CONCRETE SHOULDER
9+59	-	9+77	CTH Q	-	49	
9+59	-	9+83	CTH Q, LT	20	-	CONCRETE SHOULDER
10+16	-	10+39	CTH Q, RT	20	-	CONCRETE SHOULDER
10+21	-	10+39	CTH Q	-	49	
10+24	-	10+39	CTH Q, LT	12	-	CONCRETE SHOULDER
TOTAL				64	98	

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

ASPHALTIC SURFACE

STATION	TO	STATION	LOCATION	450.4000 HMA COLD WEATHER PAVING TON	455.0605 TACK COAT GAL	465.0105 ASPHALTIC SURFACE TON
7+35	-	9+59	CTH Q	81	4.9	81
10+39	-	13+16	CTH Q	92	5.5	92
TOTALS				173	10.4	173

GUARDRAIL

STATION	TO	STATION	LOCATION	614.2300 MGS GUARDRAIL 3 LF	614.2330 MGS GUARDRAIL 3K LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH
8+19.9	-	9+71.9	CTH Q, RT	62.5	-	39.4	1
8+93.5	-	9+82.6	CTH Q, LT	-	-	39.4	1
10+15.5	-	12+17.0	CTH Q, RT	-	112.5	39.4	1
10+26.1	-	11+78.1	CTH Q, LT	62.5	-	39.4	1
TOTALS				125.0	112.5	157.6	4

RIPRAP & GRANULAR BACKFILL

STATION	TO	STATION	LOCATION	209.1500 GRANULAR BACKFILL GRADE 1 TON	606.0200 RIPRAP MEDIUM CY
10+30	-	12+89	CTH Q, RT	134	200
TOTAL				134	200

SILT FENCE

STATION	TO	STATION	LOCATION	628.1504 SILT FENCE LF	628.1520 MAINTENANCE LF
6+72	-	9+07	CTH Q, RT	254	508
7+73	-	9+77	CTH Q, LT	206	412
9+44	-	10+34	CTH Q, RT	93	186
10+48	-	12+86	CTH Q, LT	237	474
12+91	-	13+79	CTH Q, RT	108	216
UNDISTRIBUTED			CTH Q	225	450
TOTALS				1,123	2,246

ASPHALTIC FLUMES

STATION	LOCATION	465.0315 ASPHALTIC FLUMES SY
9+70	CTH Q, RT	2
9+80	CTH Q, LT	2
10+18	CTH Q, RT	2
10+28	CTH Q, LT	2
TOTAL		8

TOPSOIL, FERTILIZER, AND SEED

STATION	TO	STATION	LOCATION	625.0100 TOPSOIL SY	627.0200 MULCH SY	629.0210 FERTILIZER TYPE B CWT	630.0171 SEEDING MIXTURE NO. 70A LB	630.0200 SEEDING TEMPORARY LB	630.0300 SEEDING BORROW PIT LB	630.0500 SEED WATER MGAL
6+77	-	9+21	CTH Q, RT	381	-	0.2	1.4	10	-	11
7+60	-	9+96	CTH Q, LT	394	-	0.2	1.4	11	-	11
10+09	-	12+92	CTH Q, LT	422	-	0.3	1.5	11	-	12
10+30	-	13+76	CTH Q, RT	954	-	0.6	3.4	26	-	27
UNDISTRIBUTED				-	750	0.5	-	-	20	-
UNDISTRIBUTED				449	-	0.3	4.3	12	-	12
TOTALS				2,600	750	2.1	12.0	70	20	73

MOBILIZATIONS EROSION CONTROL

LOCATION	628.1905	628.1910
	MOBILIZATIONS EROSION CONROL	MOBILIZATIONS EMERGENCY EROSION CONTROL
	EACH	EACH
CTH Q	8	4
	8	4

EROSION MAT

				EROSION MAT URBAN CLASS I TYPE B 628.2008 SY	EROSION MAT CLASS II TYPE B 628.2023 SY
STATION	TO	STATION	LOCATION		
6+74	-	9+37	CTH Q, RT	381	-
7+54	-	9+90	CTH Q, LT	204	190
10+10	-	12+95	CTH Q, LT	293	129
10+30	-	13+77	CTH Q, RT	840	114
UNDISTRIBUTED			CTH Q	382	107
TOTALS				2,100	540

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

TURBIDITY BARRIERS

STATION	LOCATION	628.6005 SY	REMARKS
SOUTH ABUTMENT	CTH Q	191	STAGE 2
NORTH ABUTMENT	CTH Q	223	
NORTH ABUTMENT	CTH Q	38	
TOTAL		452	

ROCK BAGS

STATION	LOCATION	628.7570 EACH
7+70	CTH Q, RT	15
8+59	CTH Q, RT	15
8+75	CTH Q, LT	15
9+75	CTH Q, LT	15
10+50	CTH Q, LT	15
UNDISTRIBUTED	CTH Q	15
TOTAL		90

MOVING SIGNS

STATION	LOCATION	638.2102	638.4000	REMARKS
		MOVING SIGNS TYPE II EACH	MOVING SMALL SIGN SUPPORT EACH	
8+95	CTH Q, LT	1	1	MANITOWOC CITY SIGN
TOTAL		1	1	

REMOVING SIGNS & SUPPORTS

STATION	LOCATION	638.2602 SIGNS TYPE II EACH	638.3000 SMALL SIGN SUPPORTS EACH	REMARKS
9+75	CTH Q, RT	1	1	BRIDGE SIGN
9+82	CTH Q, LT	1	1	BRIDGE SIGN
10+18	CTH Q, RT	1	1	BRIDGE SIGN
10+25	CTH Q, LT	1	1	BRIDGE SIGN
TOTALS		4	4	

SIGNS REFLECTIVE TYPE II AND WOOD POSTS

STATION	LOCATION	634.0612	637.2230	
		WOOD POSTS 4"x6"x12' EACH	W5-52L SF	W5-52R SF
SE QUADRANT	CTH Q	1	-	3
SW QUADRANT	CTH Q	1	3	-
NE QUADRANT	CTH Q	1	3	-
NW QUADRANT	CTH Q	1	-	3
SUBTOTALS		4	6	6
TOTALS		4	12	

TRAFFIC CONTROL SUMMARY

LOCATION	APPROXIMATE SERVICE DAYS	643.0420 BARRICADES TYPE III		643.0705 WARNING LIGHTS TYPE A		643.0900 * SIGNS		REMARKS
		NO. IN SERVICE	DAYS	NO. IN SERVICE	DAYS	NO. IN SERVICE	DAYS	
CTH Q / USH 10	175	2	350	2	350	2	350	BRIDGE OUT 2 MILES AHEAD - SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL A SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL C SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL D SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL D SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL C
CTH Q / GULSETH LN	175	2	350	4	700	5	875	
SOUTH WORK ZONE LIMITS	175	5	875	6	1050	1	175	
NORTH WORK ZONE LIMITS	175	5	875	6	1050	1	175	
CTH Q / GOODWIN ROAD	175	4	700	8	1400	6	1050	
CTH Q / STH 310	175	2	350	2	350	2	350	BRIDGE OUT 1.5 MILES AHEAD, LOCAL TRAFFIC ONLY
TOTALS		3,500		4,900		2,975		

* ADDITIONAL QUANTITIES SHOWN ELSEWHERE

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

TRAFFIC CONTROL DETOUR SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 175 DAYS	643.0900	643.0920 COVERING SIGNS		REMARKS
						SIGNS * DAYS	NUMBER OF CYCLES	TYPE II EACH	
101	500' N. OF D1-2	M 1-5A	24"x24"	1	175	175			Q
	"	WO 20-2-A	48"x48"	1	175	175			
102	D1-2 (AH-MANITOWOC; TWO RIVERS-LT)						1	1	LEFT-TWO RIVERS
103	500' N. OF RAB	M4-8	24"x12"	1	175	175			
	"	M3-3	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			
	"	M05-1R	24"x21"	1	175	175			Q
104	RAB NORTHWEST QUADRANT	M4-8	24"x12"	1	175	175			
	"	M 3-3	24"x12"	1	175	175			
	"	M 1-5A	24"x24"	1	175	175			Q
		MO 6-1	21"x21"	1	175	175			
105	J12-1 (TILT LT.-Q)						1	1	
106	1500' W. OF RAB	M1-5A	24"x24"	1	175	175			Q
	"	WO 20-2-A	48"x48"	1	175	175			
107	500' W. OF RAB	M4-8	24"x12"	1	175	175			
	"	M3-3	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M06-1	21"x21"	1	175	175			
108	D1-62 (Q-MANITOWOC, W.-310, Q-LARABEE)						1	1	WEST-310, Q-LARABEE
109	RT. OF J4-1	M4-8	24"x12"	1	175	175			
		M3-3	24"x12"	1	175	175			Q
	"	M1-5A	24"x24"	1	175	175			
110	RT OF. D1-62	M4-8	24"x12"	1	175	175			
	"	M3-3	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M05-2R	21"x21"	1	175	175			
111	LT. OF R1-2	M4-8	24"x12"	1	175	175			
	"	M3-3	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M06-2	21"x21"	1	175	175			
112	LT. OF D1-1	M4-8	24"x12"	1	175	175			
	"	M3-3	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M06-1	21"x21"	1	175	175			
113	RT. OF J4-1	M4-8	24"x12"	1	175	175			
	"	M3-3	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
114	100' N. OF COUNTY P	M4-8	24"x12"	1	175	175			
	"	M3-3	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	PAGE SUBTOTALS					6,475		3	

* ADDITIONAL QUANTIES SHOWN ELSEWHERE

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

TRAFFIC CONTROL DETOUR SIGN SUMMARY (CONTINUED)

SIGN NO.	LOCATION	SIGN CODE	SIZE	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 175 DAYS	643.0900	643.0920 COVERING SIGNS		REMARKS
						SIGNS * DAYS	NUMBER OF CYCLES	TYPE II EACH	
115	500' N. OF USH 10/STH 42	M4-8	24"x12"	1	175	175			
	"	M3-3	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M05-1L	21"x21"	1	175	175			
116	LT. OF J4-3	M4-8	24"x12"	1	175	175			
	"	M3-3	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M06-1	21"x21"	1	175	175			
117	100' E. OF CTH R	M4-8	24"x12"	1	175	175			
	"	M3-3	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
118	RT. OF NO PARKING SIGN	M4-8A	24"x18"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
119	1000' E. OF CTH Q	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	WO 20-2-A	48"x48"	1	175	175			
120	500' E. OF CTH Q	M4-8	24"x12"	1	175	175			
	"	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M06-1	21"x21"	1	175	175			
121	1500' S. OF USH 10/STH 42	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	WO 20-2-A	48"x48"	1	175	175			
122	1000' S. OF USH 10/STH 42	M4-8	24"x12"	1	175	175			
	"	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M05-1L	21"x21"	1	175	175			
123	500' S. OF USH 10/STH 42	M4-8	24"x12"	1	175	175			
	"	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M06-1	21"x21"	1	175	175			
124	USH 10/STH 42 / CTH Q NORTHEAST QUADRANT	M4-8	24"x12"	1	175	175			
	"	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M06-1	21"x21"	1	175	175			
125	USH 10/STH 42, CTH Q NORTHEAST QUADRANT	R11-3B	60"x30"	1	175	175			1 MILE
	"	M4-9L	30"x24"	1	175	175			
126	RT. OF NO PARKING SIGN	M4-8	24"x12"	1	175	175			
	"	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
127	500' E. OF CTH R	M4-8	24"x12"	1	175	175			
	"	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M05-1R	21"x21"	1	175	175			
	PAGE SUBTOTALS					7,700		0	

* ADDITIONAL QUANTIES SHOWN ELSEWHERE

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

TRAFFIC CONTROL DETOUR SIGN SUMMARY (CONTINUED)

SIGN NO.	LOCATION	SIGN CODE	SIZE	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 175 DAYS	643.0900	643.0920 COVERING SIGNS		REMARKS
						SIGNS * DAYS	NUMBER OF CYCLES	TYPE II EACH	
128	RT. OF J13-1	M4-8	24"x12"	1	175	175			
	"	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M06-1	21"x21"	1	175	175			
129	100' N. OF USH 10/STH 42	M4-8	24"x12"	1	175	175			
	"	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
130	100' S. OF COUNTY P	M4-8	24"x12"	1	175	175			
	"	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
131	RT OF. D1-62	M4-8	24"x12"	1	175	175			
	"	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M05-1R	21"x21"	1	175	175			
132	RT. OF R1-2	M4-8	24"x12"	1	175	175			
	"	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
	"	M06-1	21"x21"	1	175	175			
133	RT. OF J4-1	M4-8	24"x12"	1	175	175			
	"	M3-1	24"x12"	1	175	175			
	"	M1-5A	24"x24"	1	175	175			Q
134	LT. OF J13-1	M4-8A	24"x18"	1	175	175			
		M1-5A	24"x24"	1	175	175			Q
135	D1-62 (Q-LARABEE, E.-310, Q-MANITOWOC)						1	1	EAST-310, Q-LARABEE
136	D1-1 (Q)						1	1	
137	RAB SOUTHWEST QUADRANT	R11-3B	60"x30"	1	175	175			2 MILES
		M4-9R	30"x24"	1	175	175			
	PAGE SUBTOTALS					4,375		2	

PROJECT TOTALS

18,550

5

* ADDITIONAL QUANTITIES SHOWN ELSEWHERE

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

MARKING						
646.1020						
STATION	TO	STATION	LOCATION	LINE EPOXY 4-INCH YELLOW LF	LINE EPOXY 4-INCH WHITE LF	REMARKS
7+35	-	13+16	CTH Q, RT & LT	-	1162	EDGE LINE RT
7+35	-	13+16	CTH Q	726	-	CENTERLINE, SOLID YELLOW AND SKIPS
SUBTOTALS				726	1,162	
TOTAL				1,888		

CONSTRUCTION STAKING									
CATEGORY	STATION	TO	STATION	LOCATION	650.4500	650.5000	650.6500	650.9910	650.9920
					SUBGRADE	BASE	STRUCTURE	SUPPLEMENTAL	SLOPE
							LAYOUT	CONTROL	STAKES
					LF	LF	LS	4304-06-71	
								LS	LF
0010	6+74	-	9+83	CTH Q	309	309	-	1	309
0010	10+15	-	13+77	CTH Q	362	362	-	-	362
0010	SUBTOTALS				671	671	0	1	671
0020	10+00				-	-	1	-	-
0020	SUBTOTALS				-	-	1	-	-
TOTALS					671	671	1	1	671

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

SAWING ASPHALT				
STATION		STATION	LOCATION	690.0150 LF
7+35	-	9+29	CTH Q	353
12+81	-	10+65	CTH Q	475
TOTAL				828

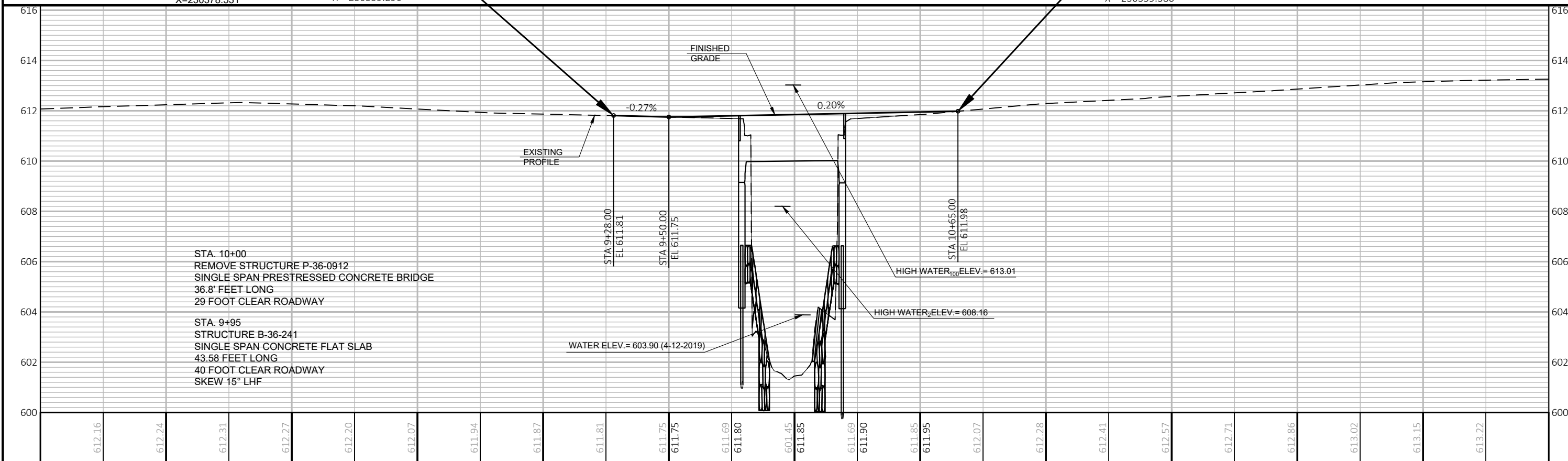
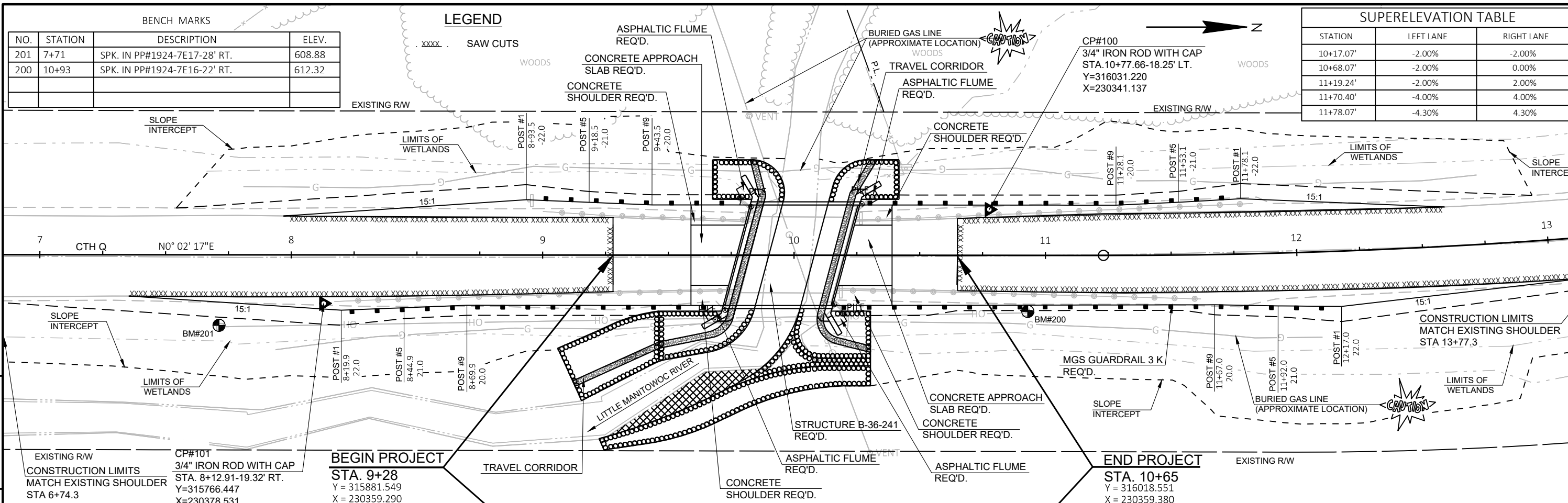
LIVE STAKES					
STATION		STATION	LOCATION	SPV.0060.01 EACH	REMARKS
7+35	-	9+15	CTH Q, RT	120	ALONG TOP OF STREAM BANK
10+30	-	12+90	CTH Q, RT	175	DITCH BACKSLOPE
TOTAL				295	

NOTE: TO BE PLACED IN TWO ROWS

UTILITY LINE OPENING			
STATION	LOCATION	SPV.0060.02 EACH	REMARKS
9+93	CTH Q, LT	1	PIPELINE AT SW ABUTMENT
10+09	CTH Q, RT	1	PIPELINE AT NE ABUTMENT
TOTAL		2	

NO.	STATION	DESCRIPTION	ELEV.
201	7+71	SPK. IN PP#1924-7E17-28' RT.	608.88
200	10+93	SPK. IN PP#1924-7E16-22' RT.	612.32

SUPERELEVATION TABLE		
STATION	LEFT LANE	RIGHT LANE
10+17.07'	-2.00%	-2.00%
10+68.07'	-2.00%	0.00%
11+19.24'	-2.00%	2.00%
11+70.40'	-4.00%	4.00%
11+78.07'	-4.30%	4.30%

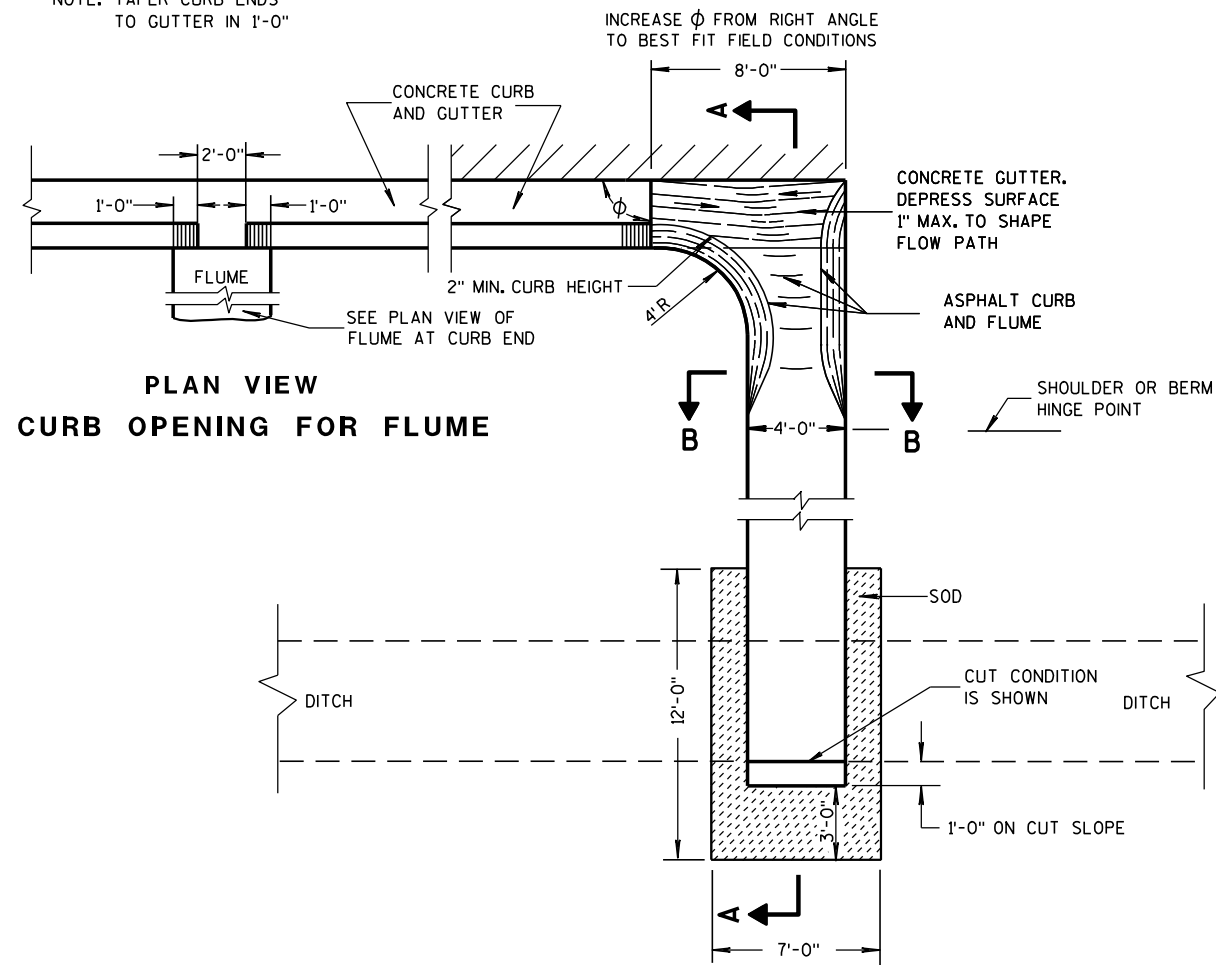


Standard Detail Drawing List

08D04-05	CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
12A03-10	NAME PLATE (STRUCTURES)
13A03-06	CONCRETE PAVEMENT SHOULDERS
13B02-09A	CONCRETE PAVEMENT APPROACH SLAB
14B42-06A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-08A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-08B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C02-08C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C06-09	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-20A	LONGITUDINAL MARKING (MAINLINE)
15C11-08B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS

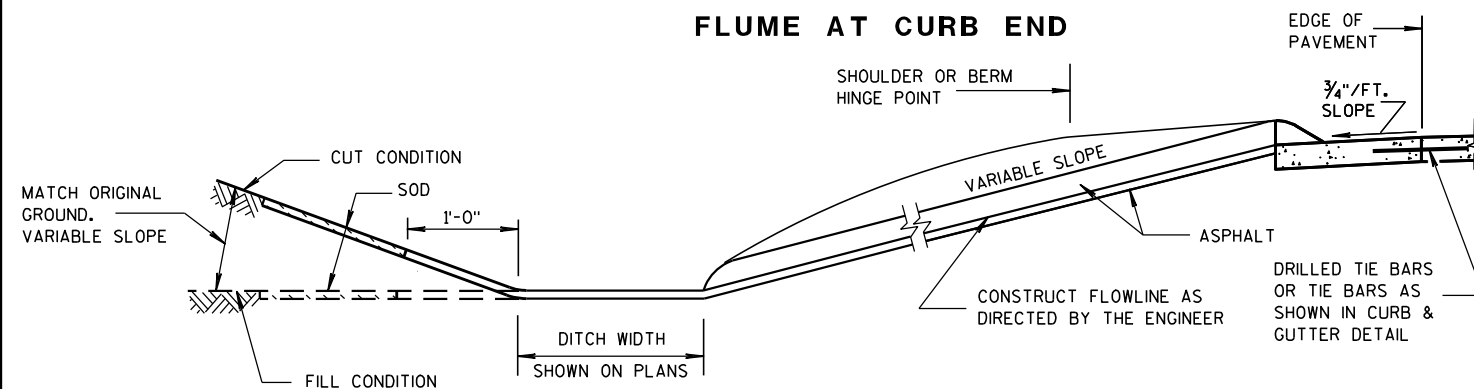
ASPHALTIC FLUME

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

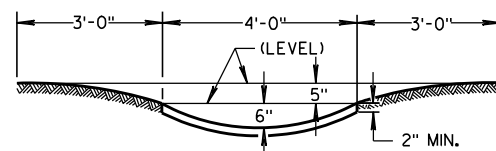


PLAN VIEW
CURB OPENING FOR FLUME

PLAN VIEW
FLUME AT CURB END



SECTION A-A



SECTION B-B

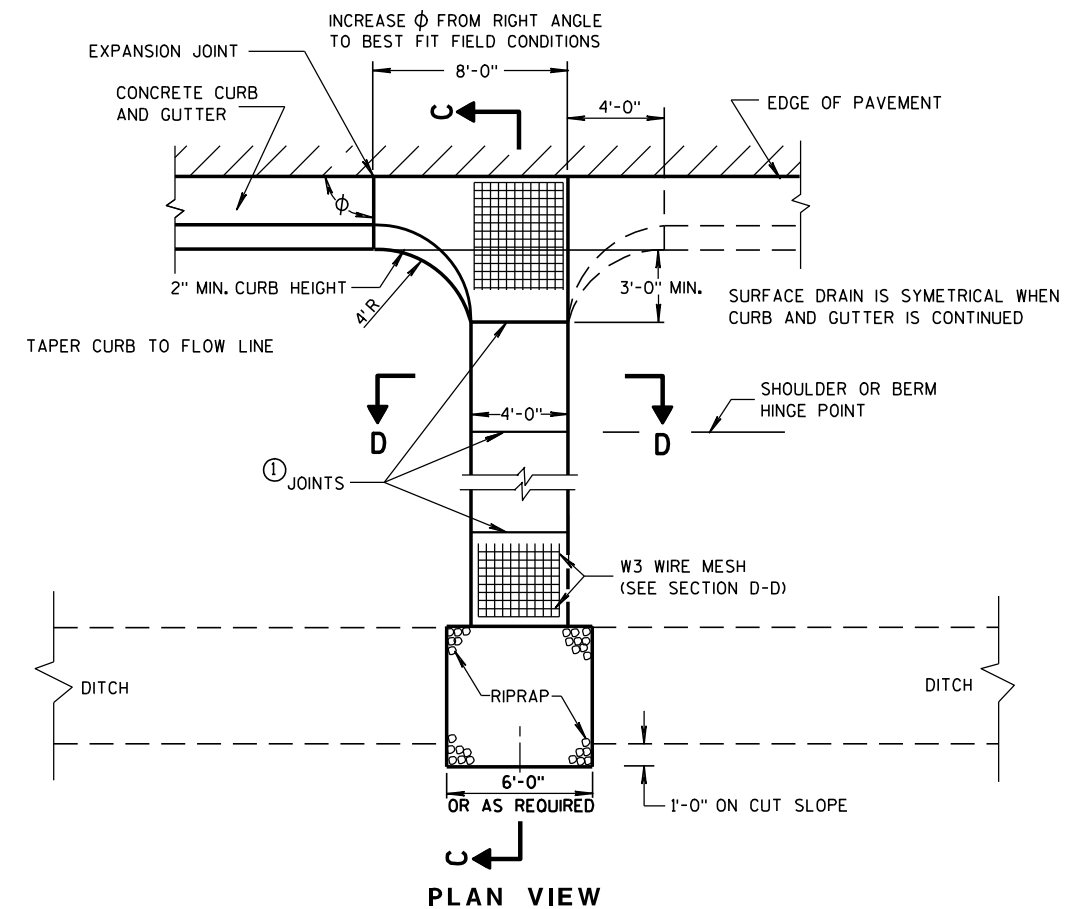
GENERAL NOTES

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

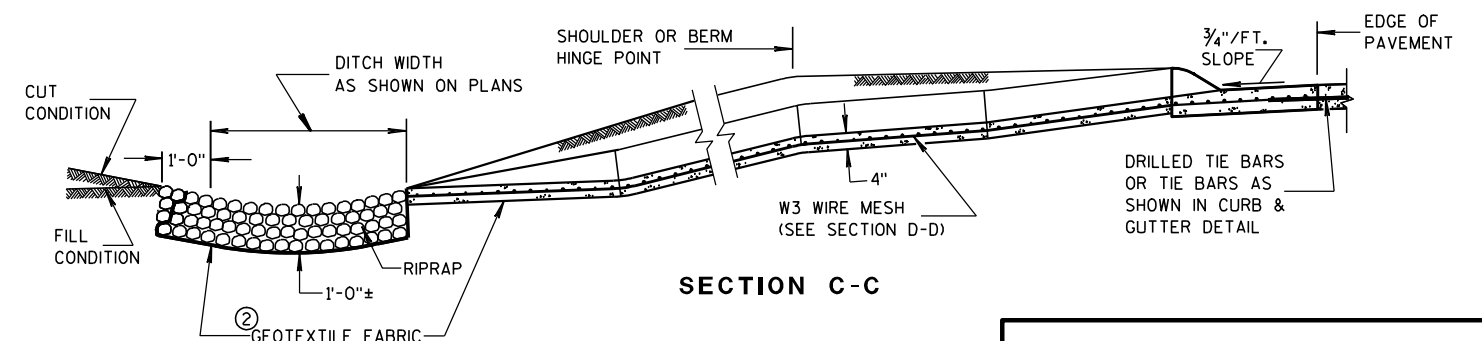
WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

- 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

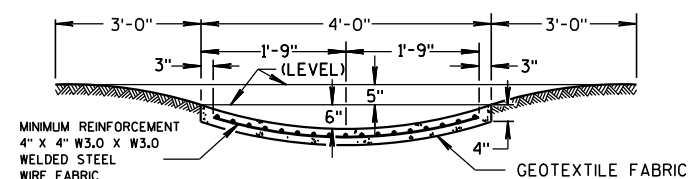
③ CONCRETE SURFACE DRAIN



PLAN VIEW



SECTION C-C



SECTION D-D

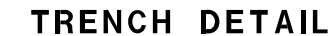
CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9-4-08 /S/ Jerry H. 7000
DATE ROADWAY STANDARDS 21
FWHA ENGINEER



- ① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
- ② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- ③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1½" X 1½" OF OAK OR HICKORY.
- ④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
- ⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.

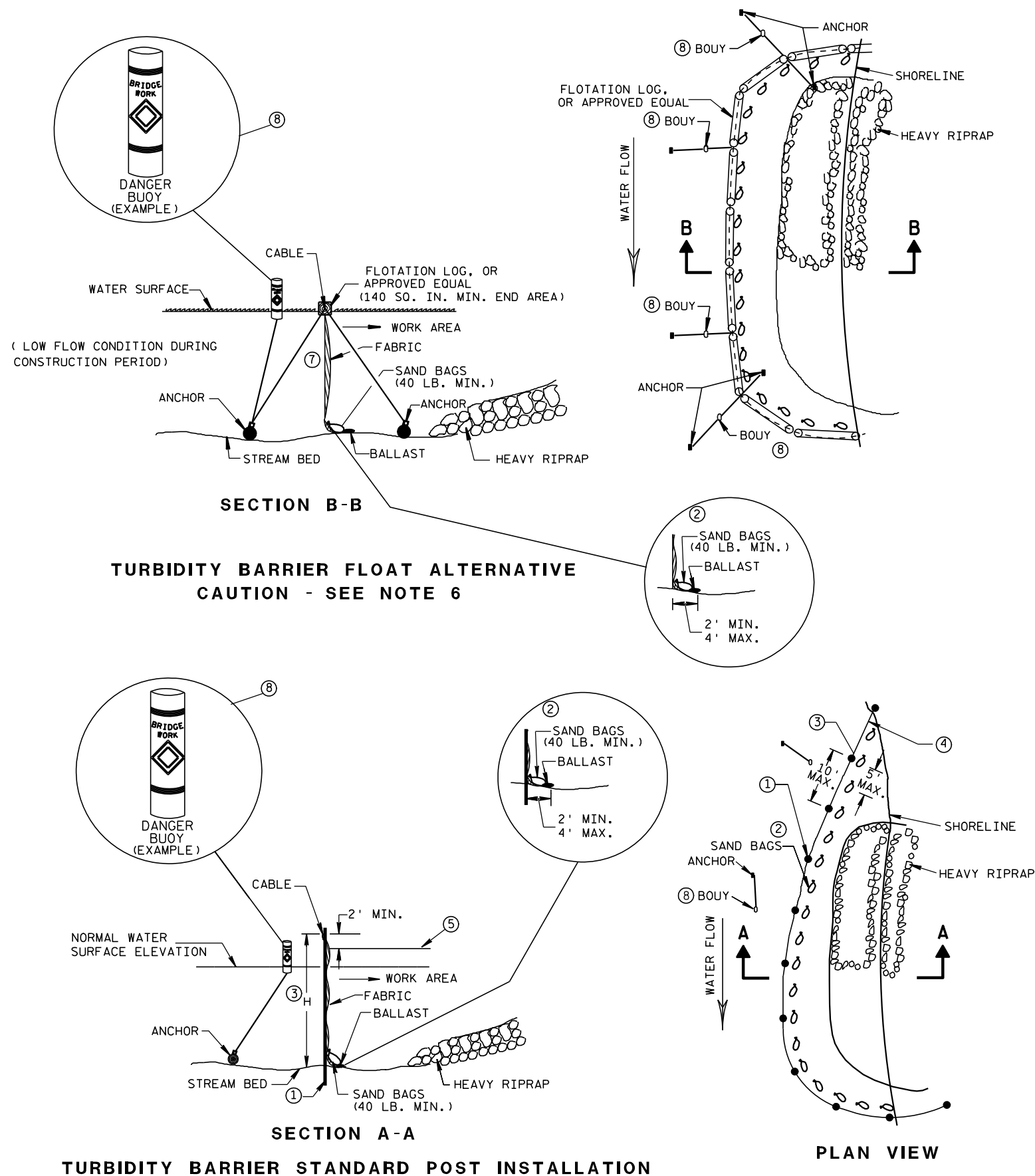


SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-29-05 /S/ Beth Connolly
DATE CHIEF ROADWAY DEVELOP 22 INEER

FHWA

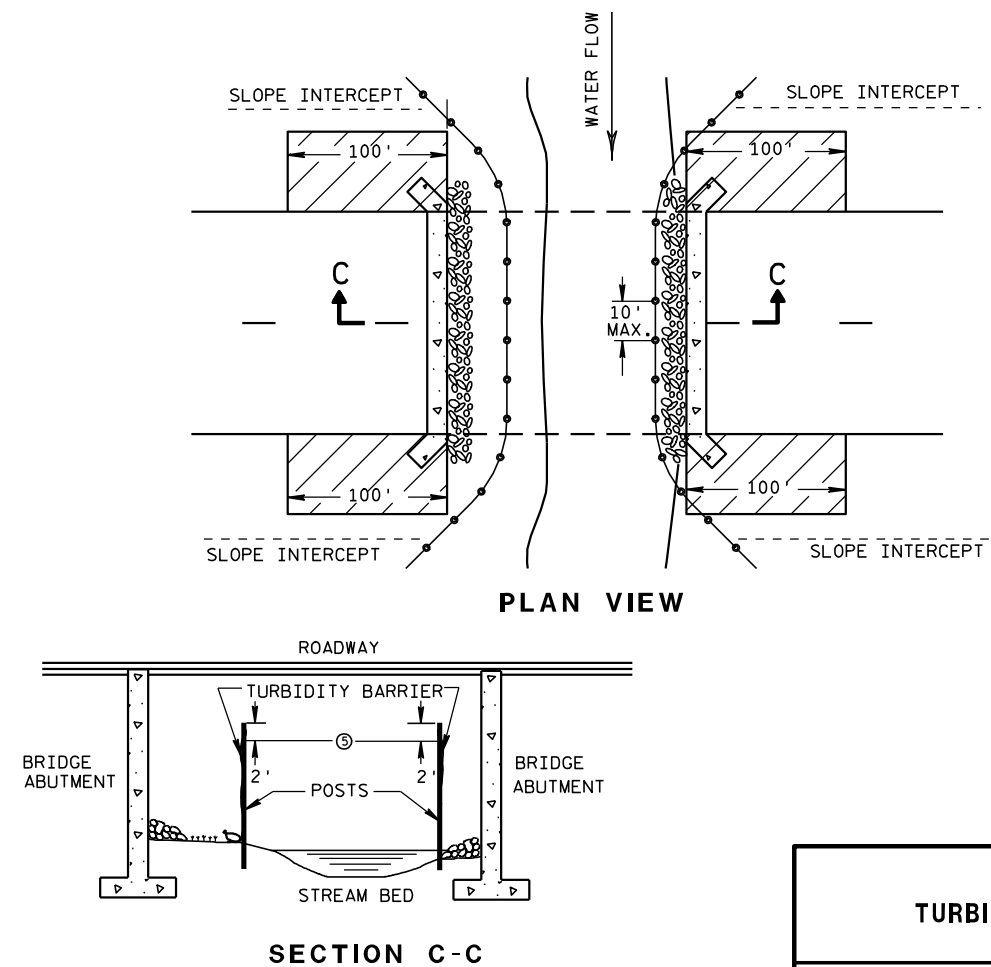


GENERAL NOTES

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.

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

- ① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.
- ② SANDBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.
- ③ WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.
- ④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.
- ⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MINIMUM BARRIER HEIGHT SHALL BE 2' GREATER THAN EITHER THE 02 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WHICHEVER IS GREATER.
- ⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.
- ⑦ ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.
- ⑧ USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

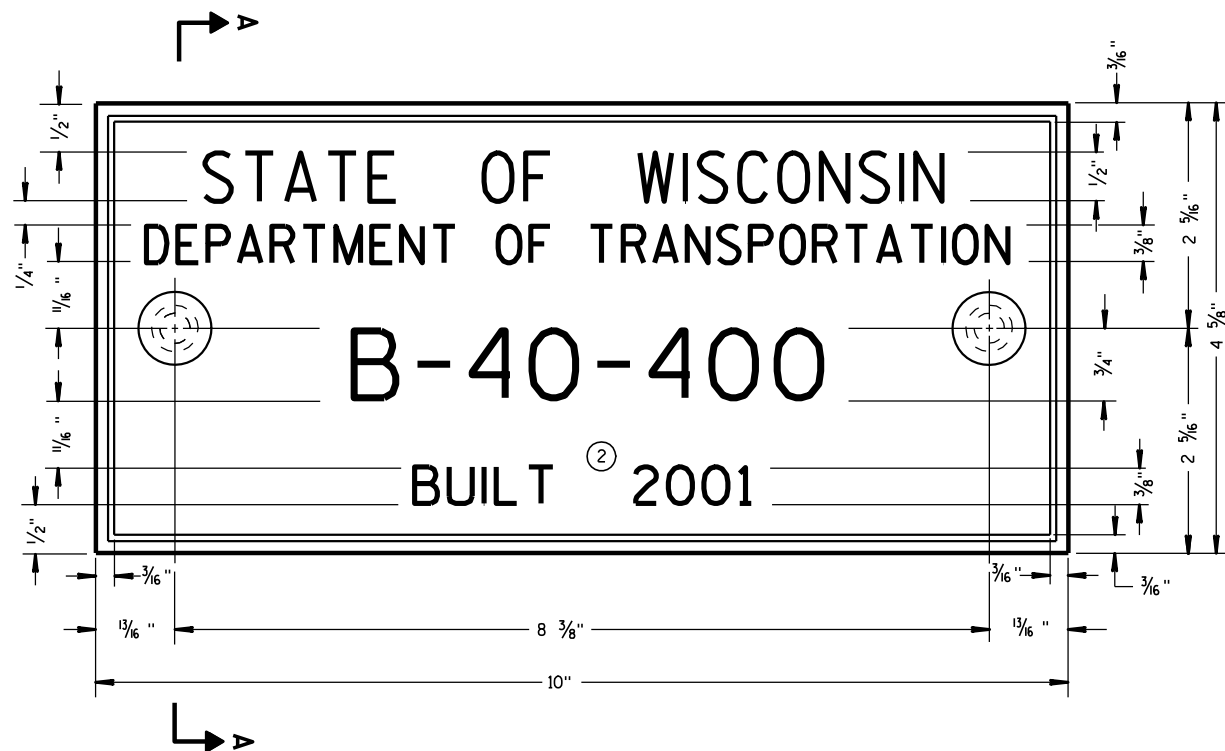
6/04/02

DATE

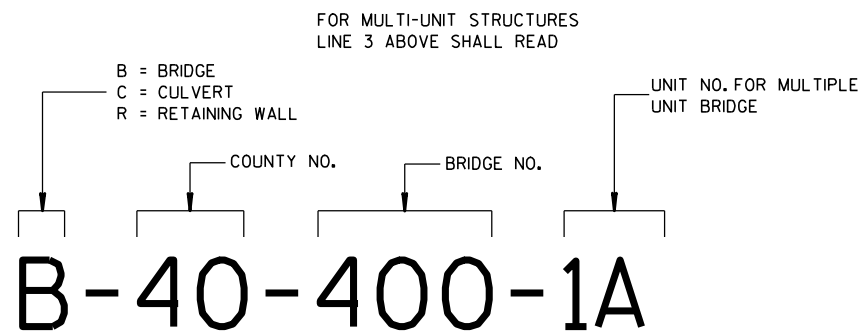
FWHA

/S/ Beth Conn
CHIEF ROADWAY DEVELOPER

23 INEER



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



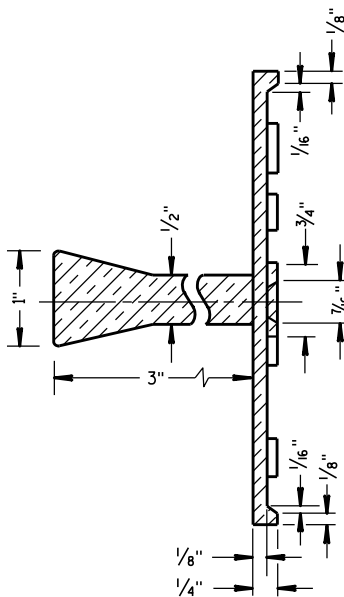
**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

GENERAL NOTES

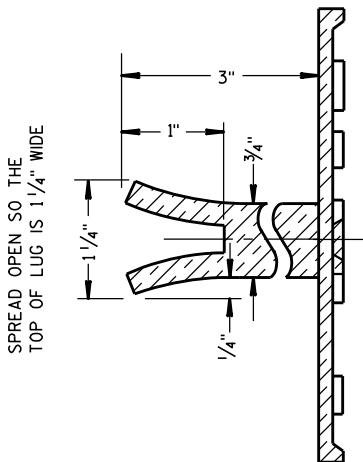
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

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

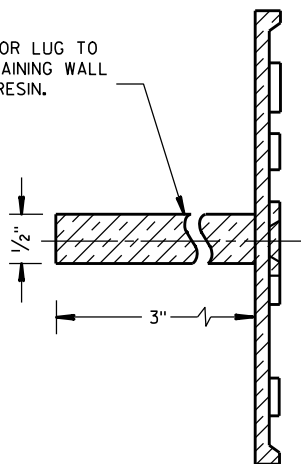


SECTION A-A



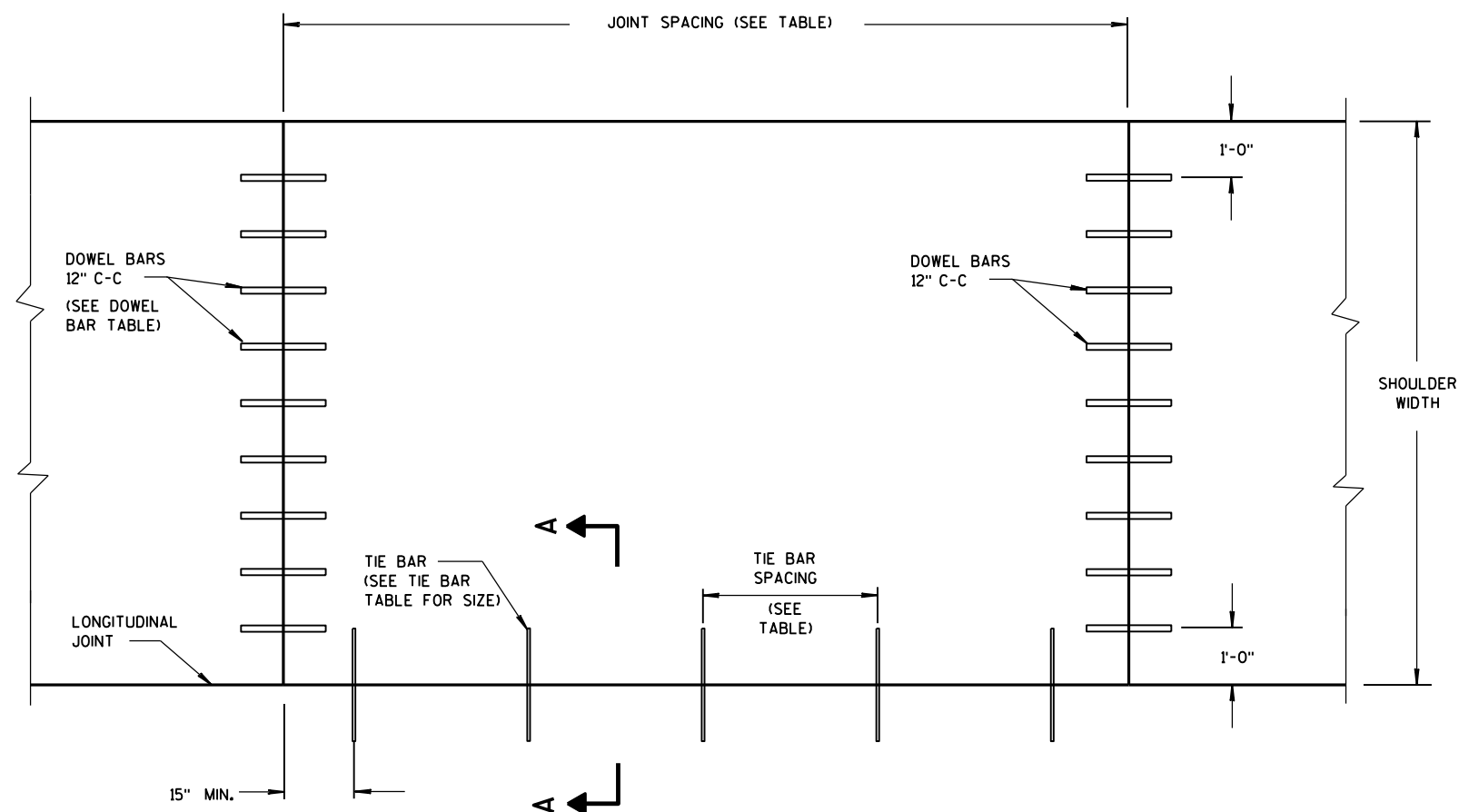
ALTERNATE LUG

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



ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE (STRUCTURES)		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
APPROVED DATE 3/26/10	CHIEF STRUCTURAL DEVELOPER /S/ Scot Beck 24	JEER
FHWA		



PLAN VIEW
CONCRETE PAVEMENT SHOULDER

TIE BAR TABLE

PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4 *	30"	24" **

* SUBSTITUTE BENT BARS AT LONGITUDINAL JOINTS WHEN EQUIPMENT LIMITATIONS DURING CONSTRUCTION WARRANT (e.g. AUXILIARY LANES OR TURN LANES)

** CONFORM TO 15" MINIMUM SPACING FROM TRANSVERSE JOINTS; SPACING BETWEEN TIE BARS WILL BE 30" AT TRANSVERSE JOINTS.

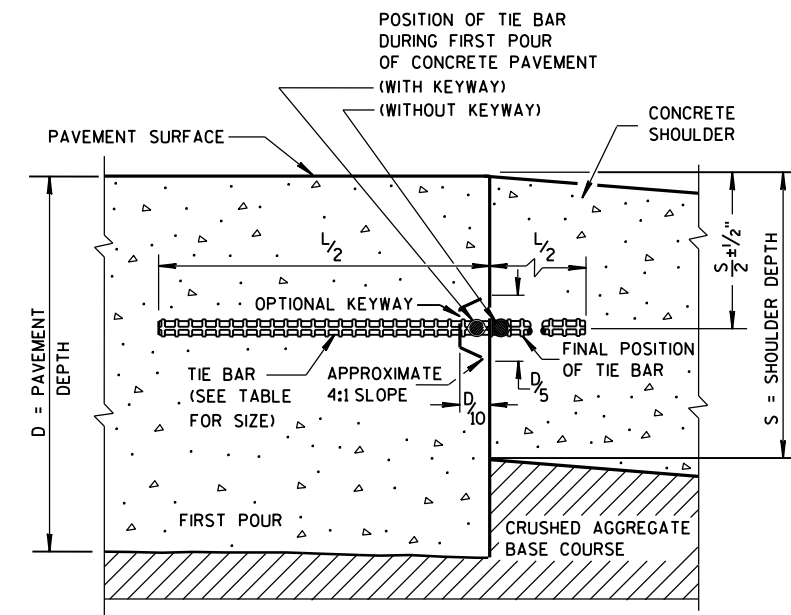
GENERAL NOTES

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.

TRANSVERSE JOINT DETAILS ARE SHOWN ELSEWHERE IN THE PLAN.

FINISH THE SHOULDER PAVEMENT CONFORMING TO SUBSECTION 415.3.8 OF THE STANDARD SPECIFICATIONS.

TIE BARS SHALL CONFORM TO SUBSECTION 505.2.4 OF THE STANDARD SPECIFICATIONS.



SECTION A-A
LONGITUDINAL CONSTRUCTION JOINT

PAVEMENT DEPTH, DOWEL BAR SIZE
AND JOINT SPACING TABLE

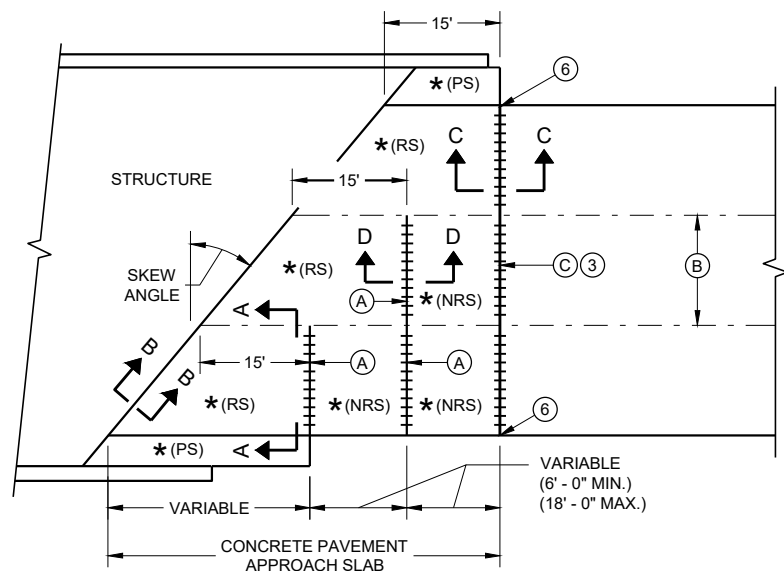
PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER***	CONTRACTION JOINT SPACING
5 1/2", 6", 6 1/2"	NONE	12'
7", 7 1/2"	1"	14'
8", 8 1/2"	1 1/4"	15'
9", 9 1/2"	1 1/4"	15'
10" & ABOVE	1 1/2"	15'

*** FOR DOWELED CONCRETE SHOULDERS WITH TRAPEZOIDAL CROSS SECTIONS, CHOSE THE APPROPRIATE DOWEL BAR DIAMETER BASED ON THE SMALLER PAVEMENT DEPTH (LIKELY THE OUTSIDE EDGE OF THE SHOULDER). IF USING BASKETS, USE BASKETS FOR THE AVERAGE THICKNESS OF THE CROSS SECTION.

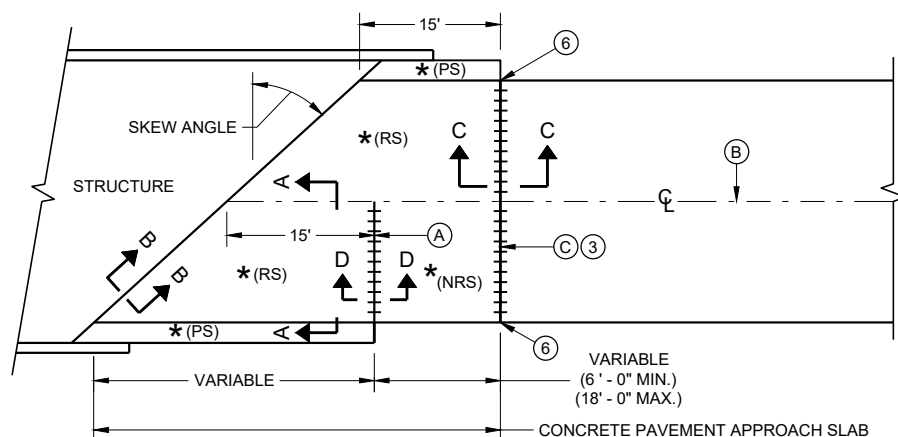
CONCRETE PAVEMENT SHOULDERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

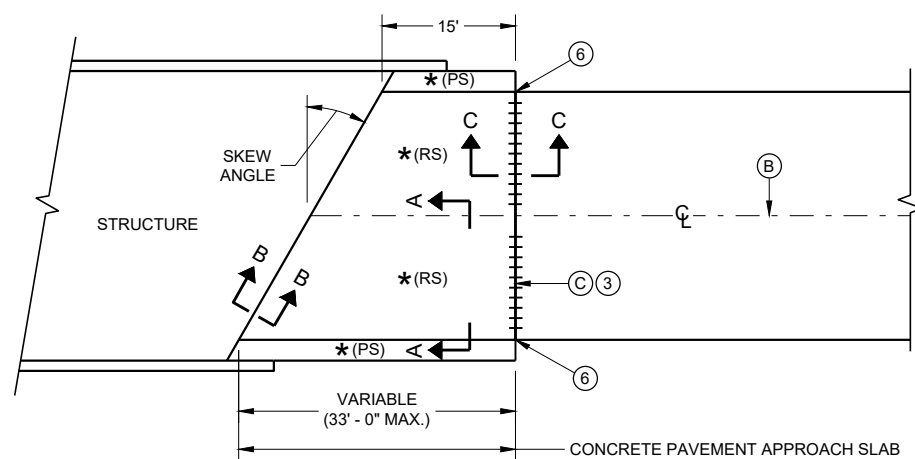
APPROVED
June, 2015 /S/ Peter Kemp, P.E.
DATE PAVEMENT SUPER 25
FHWA



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



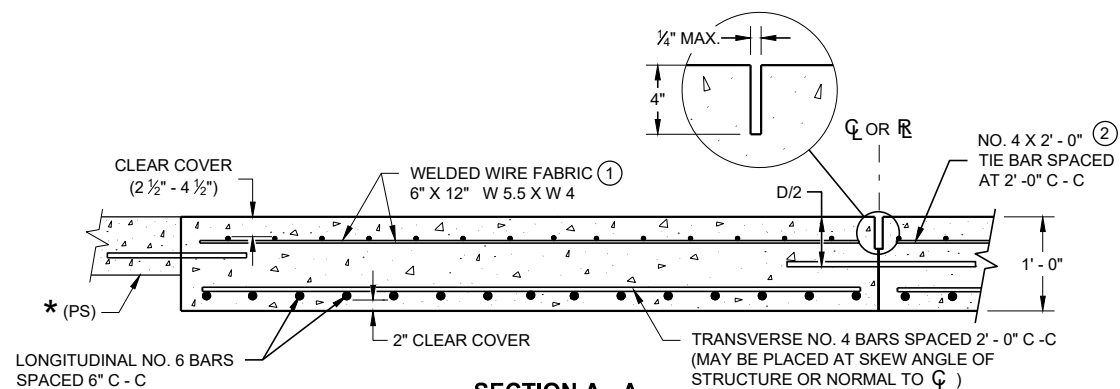
**SKews > 20°
(PAVEMENT WIDTH ≤ 30')**



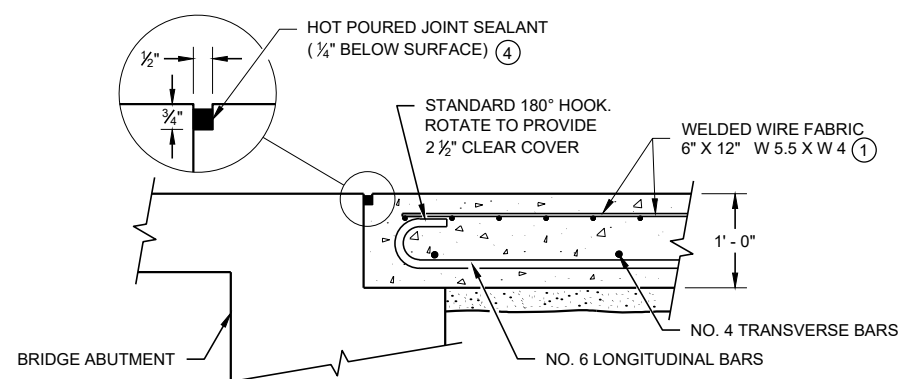
**SKews ≤ 20°
(PAVEMENT WIDTH ≤ 30')**

APPROACH SLAB AND ADJACENT PAVEMENT

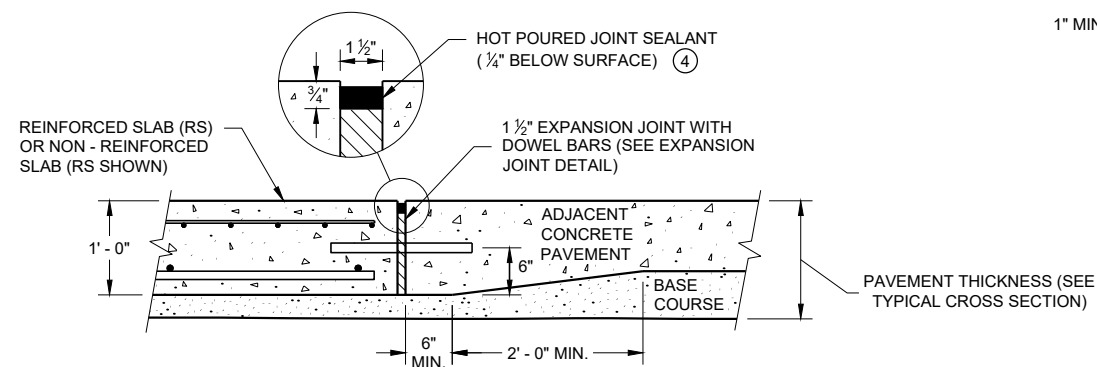
- * (RS) = REINFORCED CONCRETE SLAB
- * (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
- * (NRS) = NON - REINFORCED CONCRETE SLAB
- *** STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11 AND SDD 13C13)



**SECTION A - A
REINFORCEMENT POSITIONING DETAIL**



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



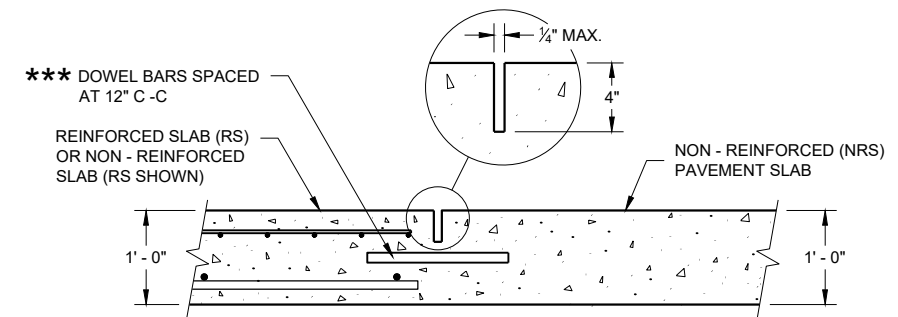
**SECTION C - C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT**

GENERAL NOTES

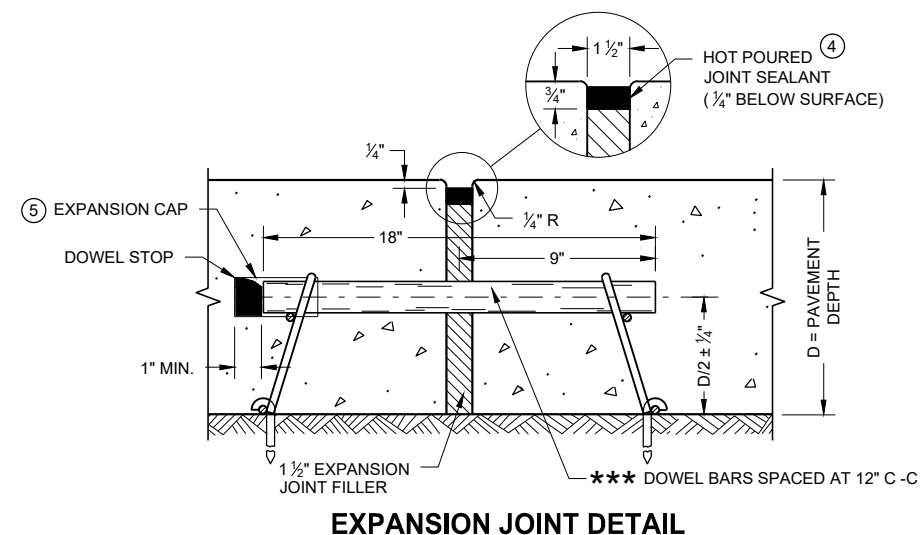
THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

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



**SECTION D - D
CONTRACTION JOINT**



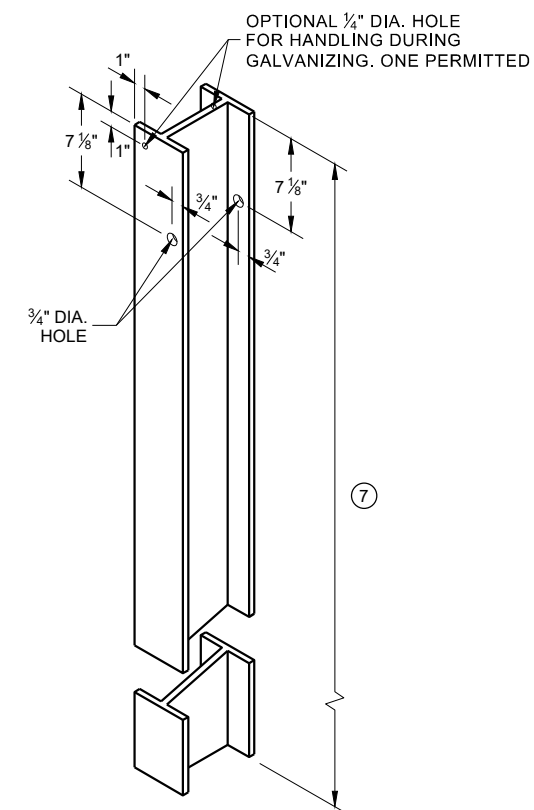
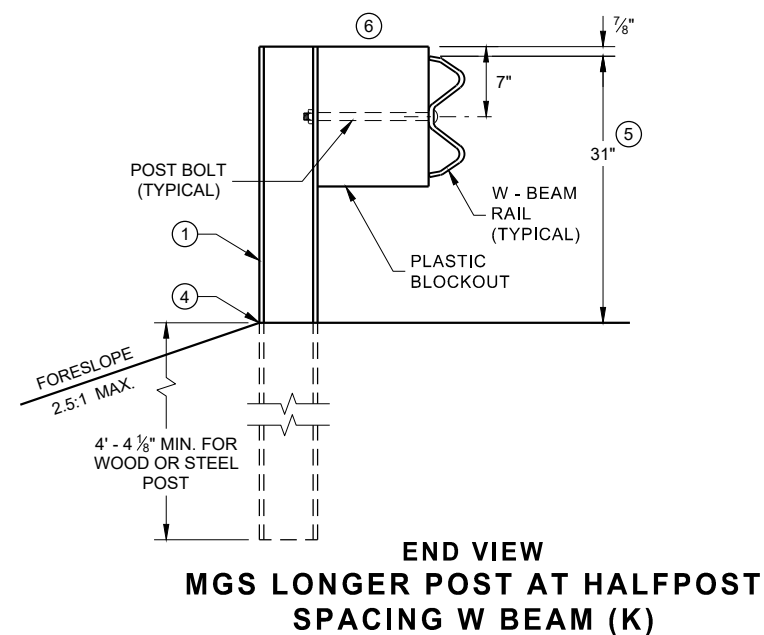
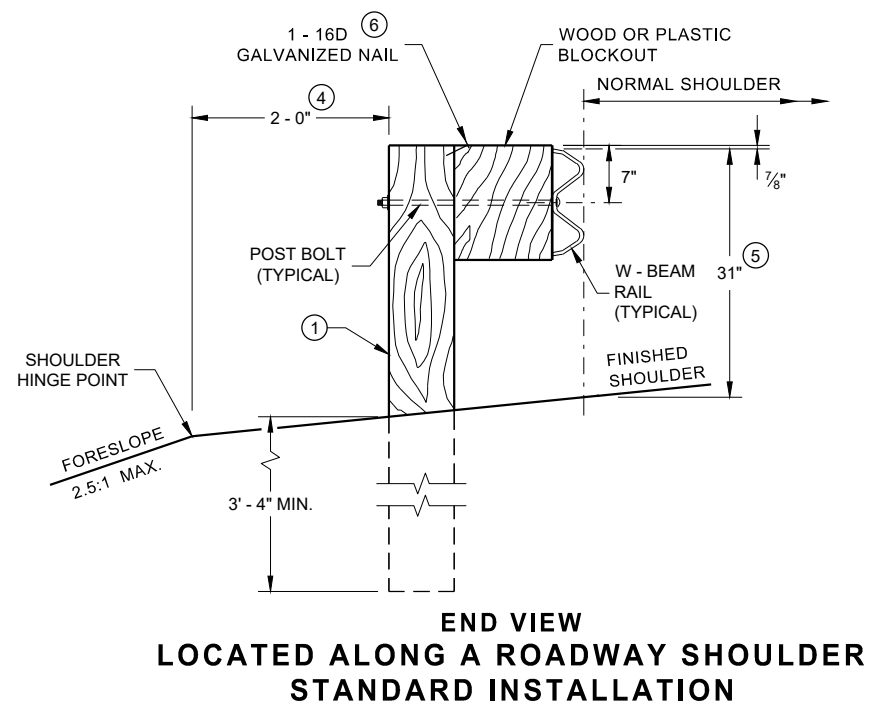
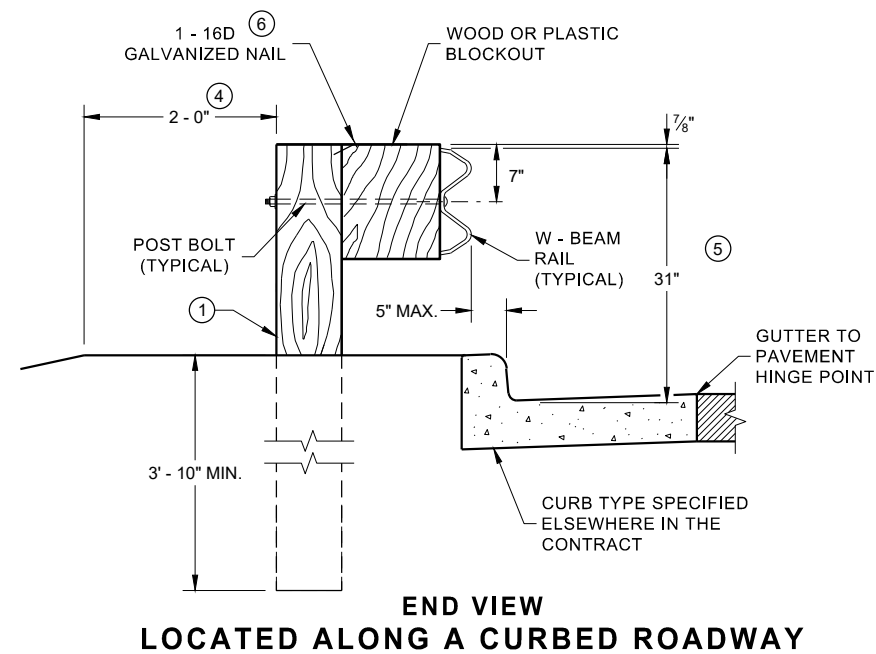
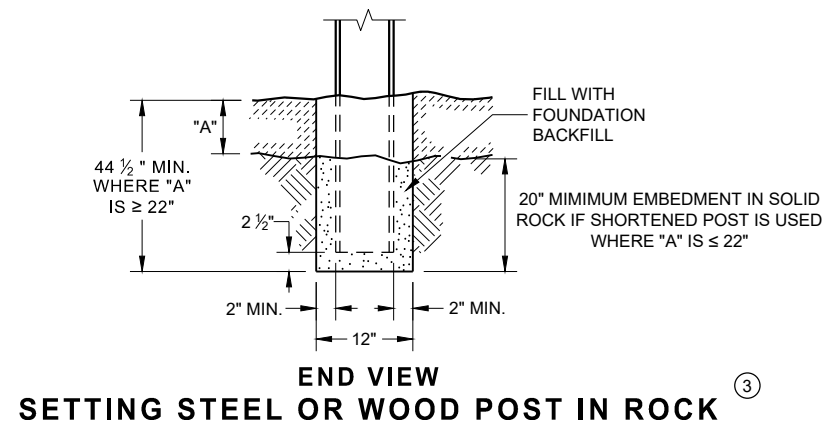
EXPANSION JOINT DETAIL

CONCRETE PAVEMENT APPROACH SLAB

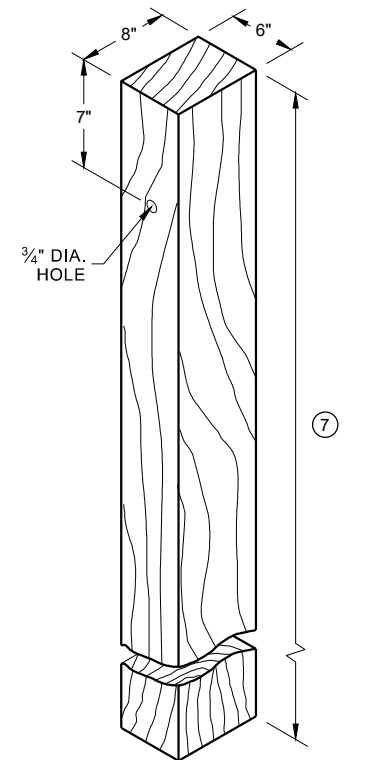
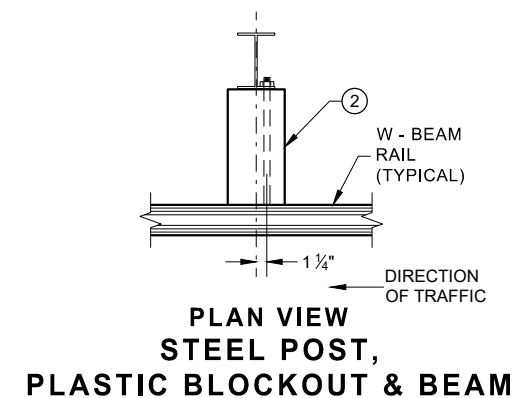
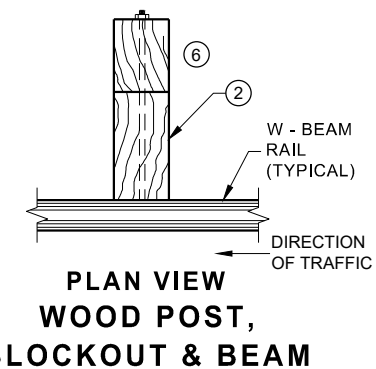
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018 /S/ Peter Kemp, P.E.
DATE PAVEMENT SUPERVISOR 26
FHWA

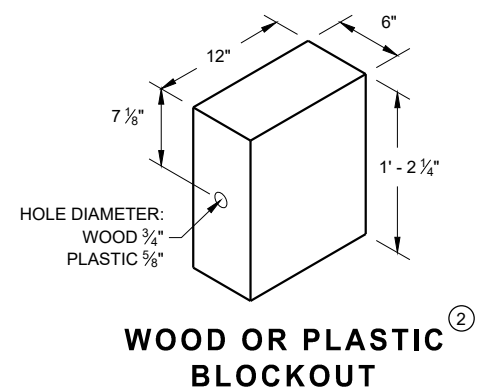
- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL.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



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



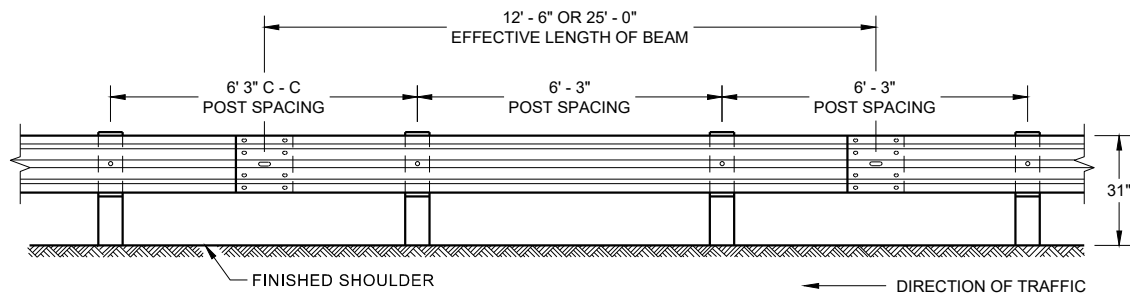
WOOD POST (6" X 8") NOMINAL ^①



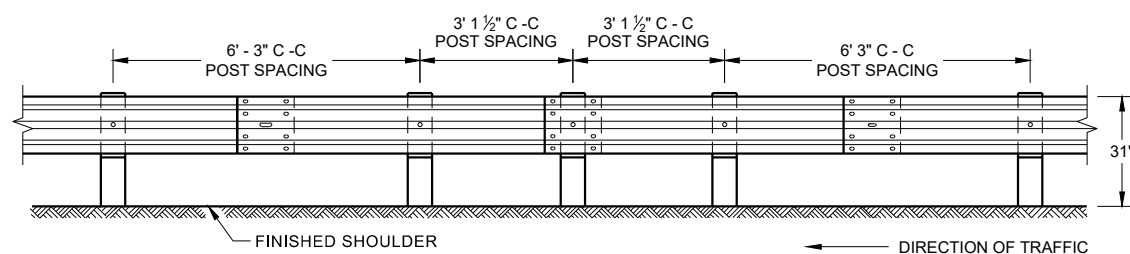
WOOD OR PLASTIC BLOCKOUT ⁽²⁾

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

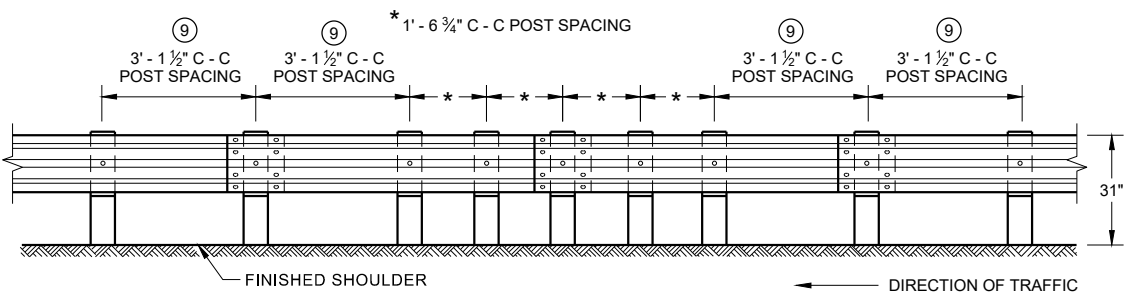
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 27



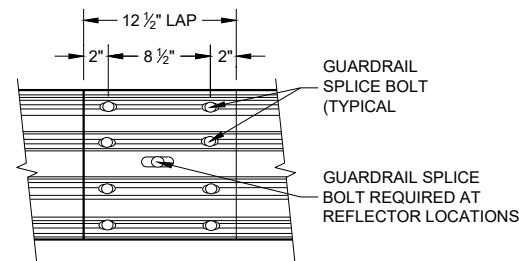
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



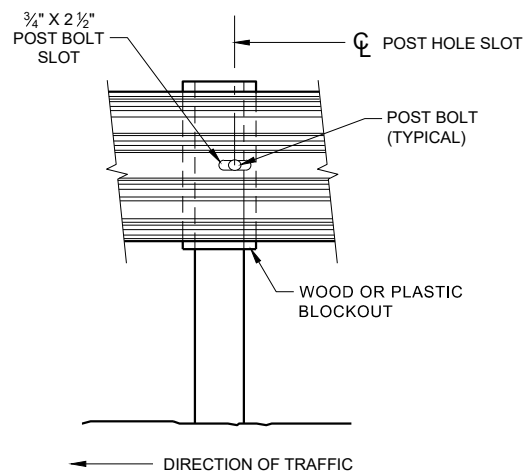
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



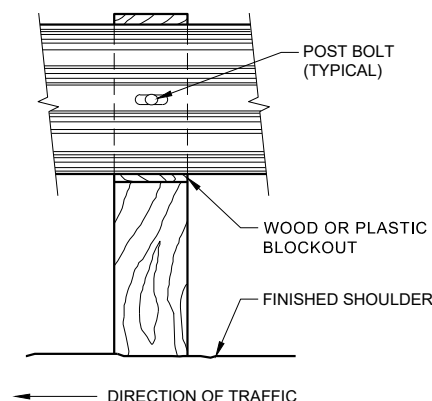
**FRONT VIEW
QUARTER POST SPACING (QS)**



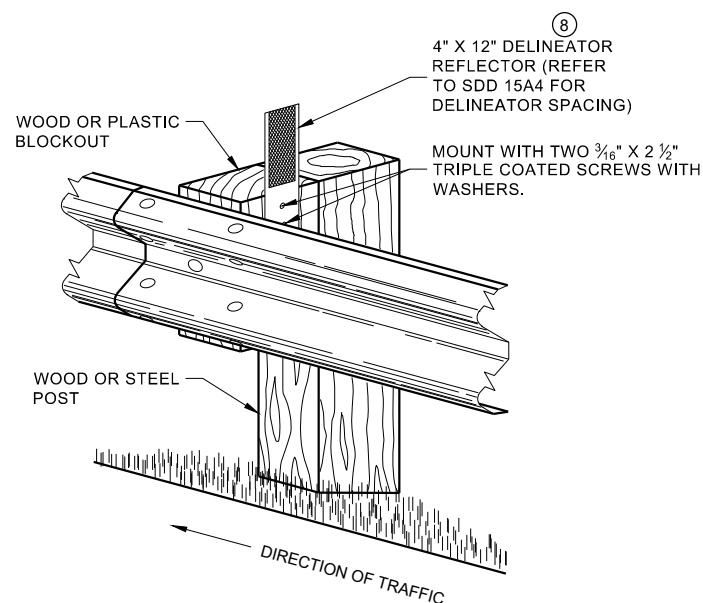
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



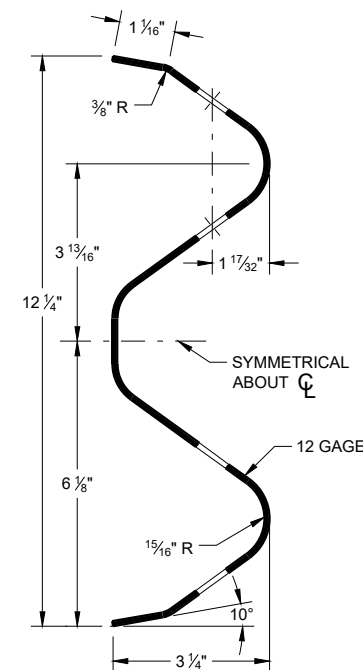
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

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

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

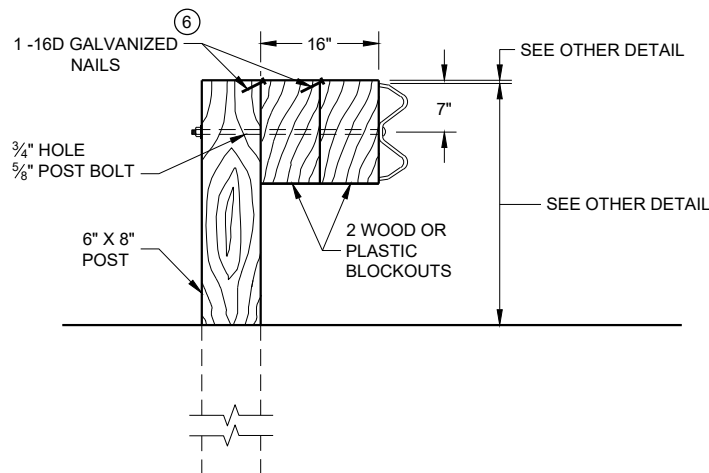
GUARD RAIL SPLICE BOLTS ARE A 3/4" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

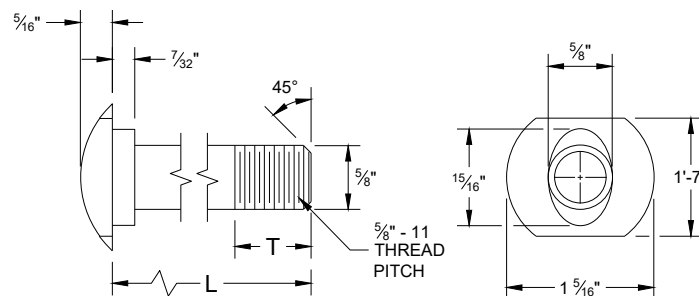
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

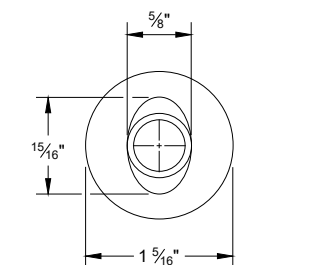
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.

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

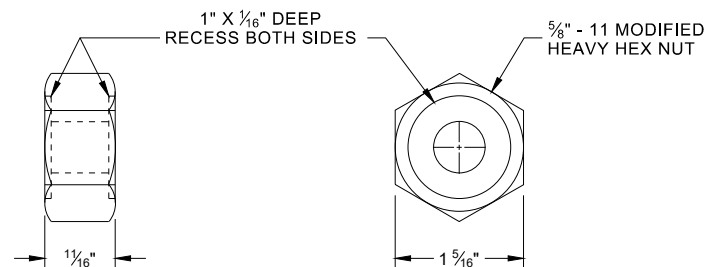


POST BOLT TABLE

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

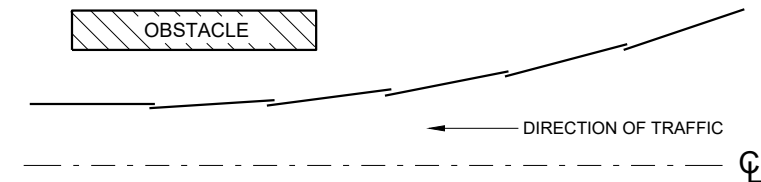


ALTERNATE BOLT HEAD

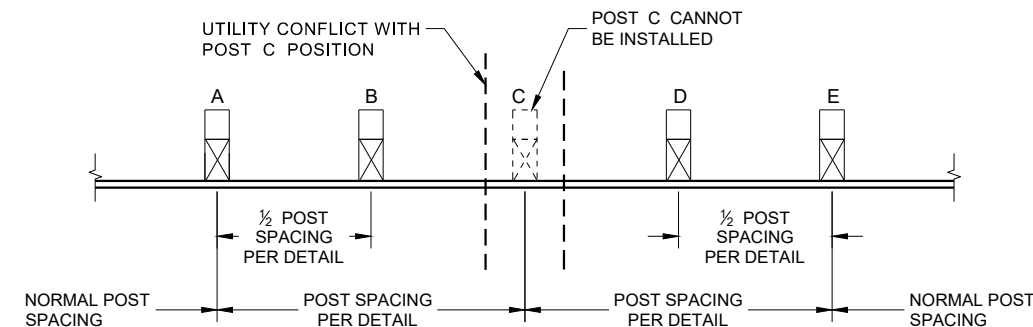


POST BOLT, SPLICE BOLT
AND RECESS NUT

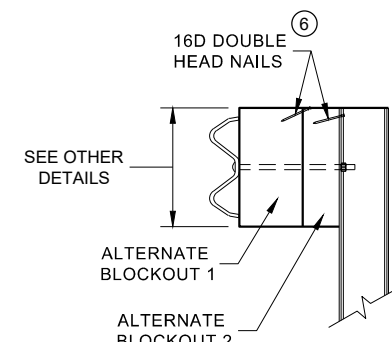
- ⑥ WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



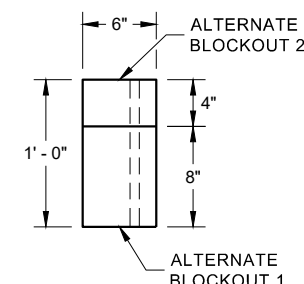
PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



SIDE VIEW



PLAN VIEW

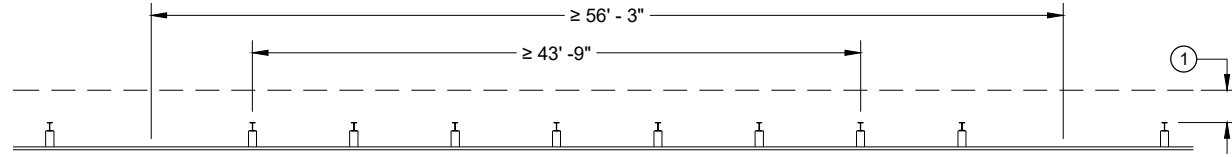
ALTERNATE WOOD
BLOCKOUT DETAIL

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.

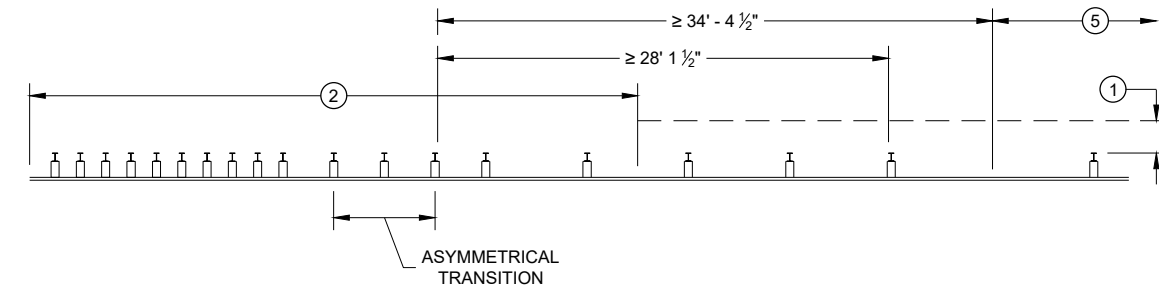
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

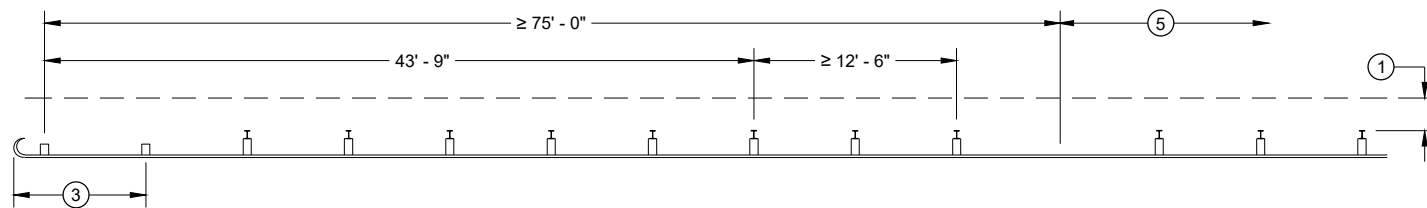
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



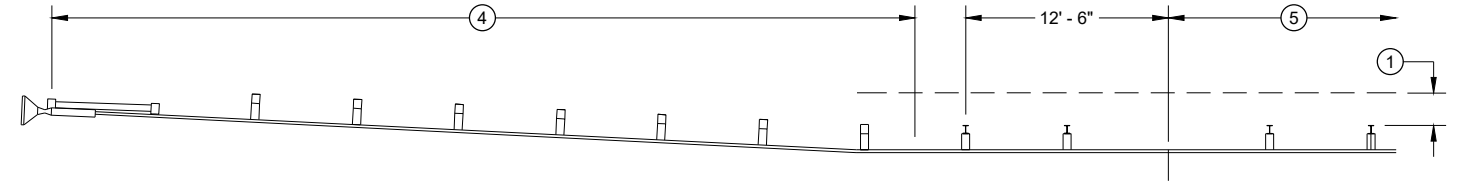
MISSING POST IN NORMAL BEAM GUARD RUN



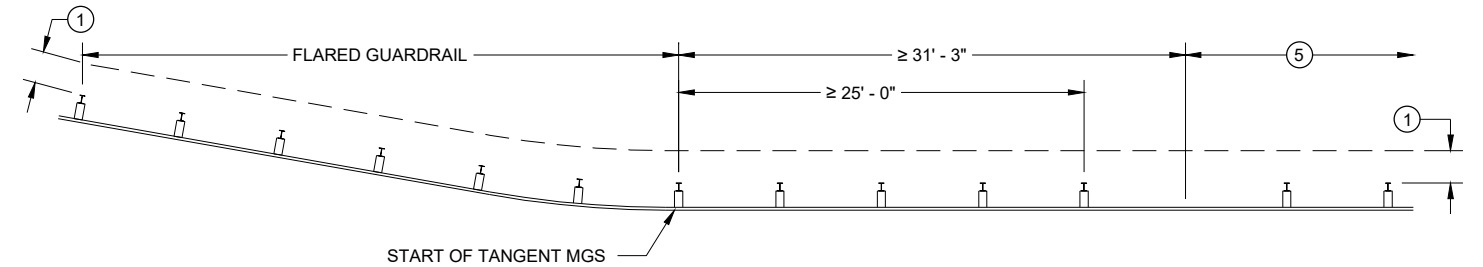
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



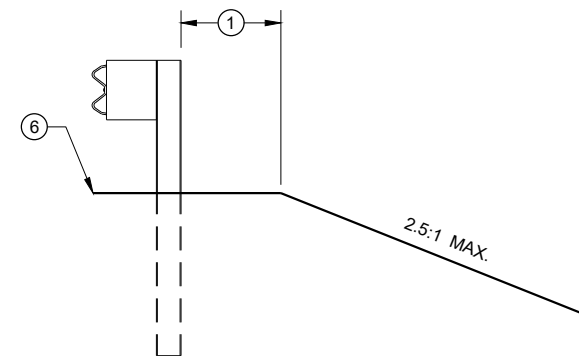
MISSING POST IN NORMAL BEAM GUARD RUN
NEAR TYPE 2 TERMINAL



MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR FLARED BEAM GUARD



CROSS SECTION VIEW

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

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

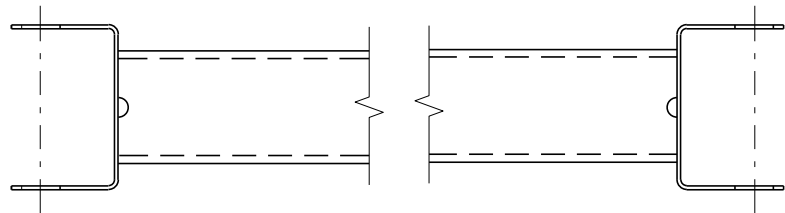
APPROVED
7/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR 30
FHWA

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

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

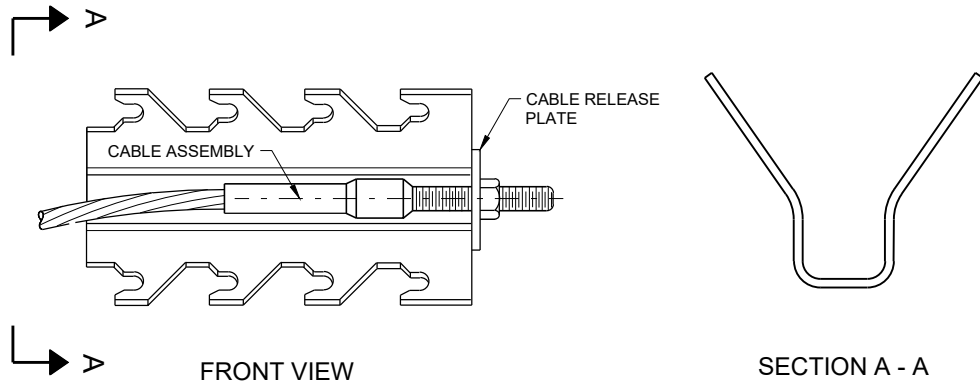
THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 31

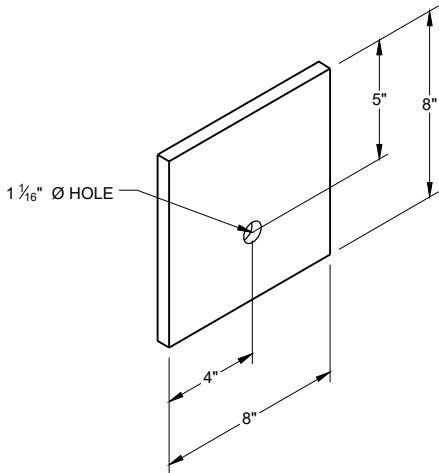


GENERIC GROUND STRUT⁹ ^E

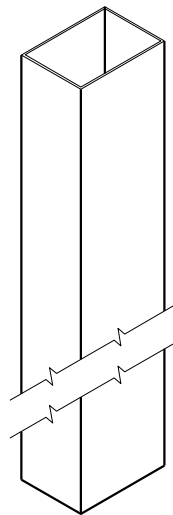
BILL OF MATERIALS	
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED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



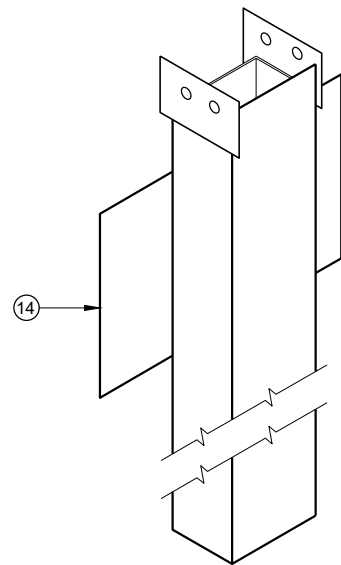
GENERIC ANCHOR CABLE BOX⁹ ^E



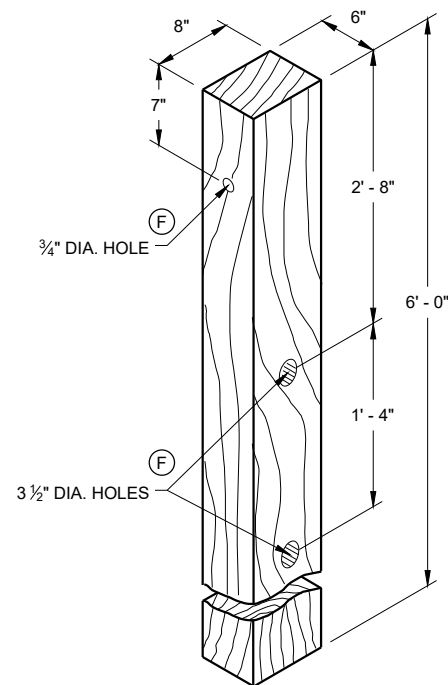
BEARING PLATE⁶ ^E



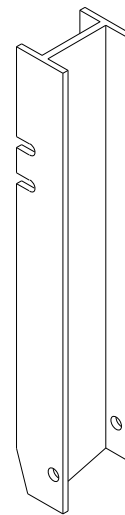
UPPER POST NO. 1 ⁽¹⁾ (E)



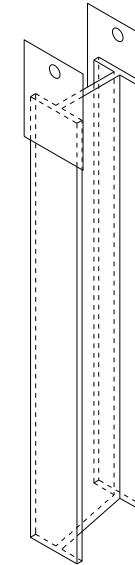
LOWER POST NO. 1 ⁽²⁾ (E)



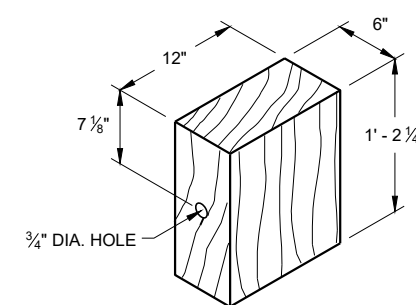
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



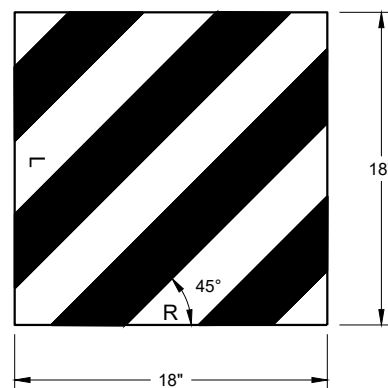
UPPER POST NO. 2 ⁽¹⁵⁾ (E)



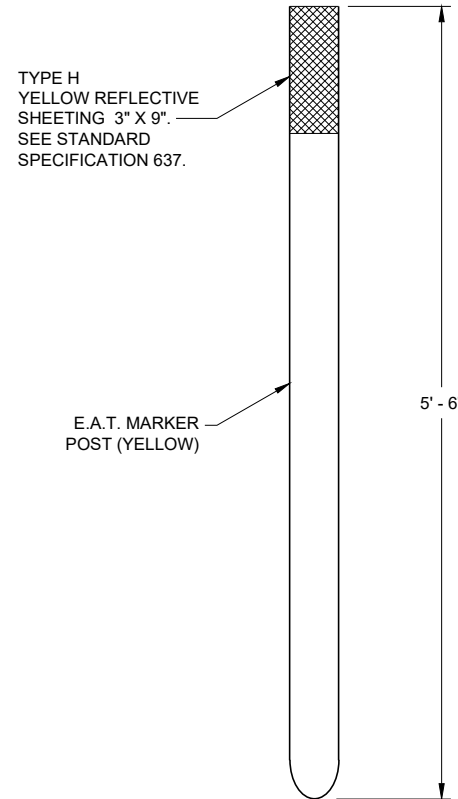
LOWER POST NO. 2 ⁽¹⁶⁾ (E)



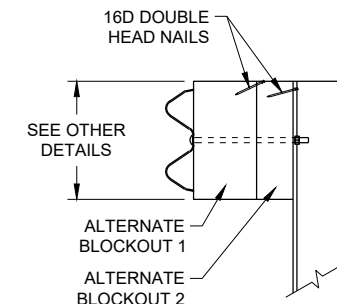
WOOD BLOCKOUT ⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



REFLECTIVE SHEETING DETAIL ^(E)

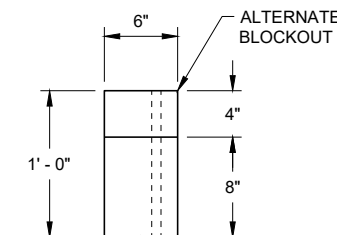


E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

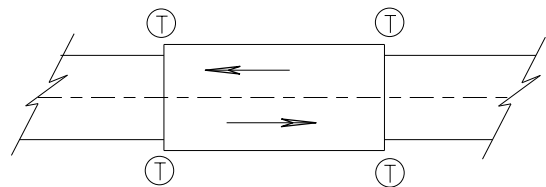


TOP VIEW

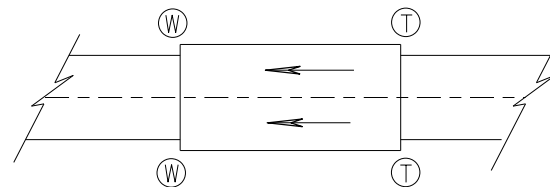
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

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

TRANSITION USES STEEL POSTS ONLY.

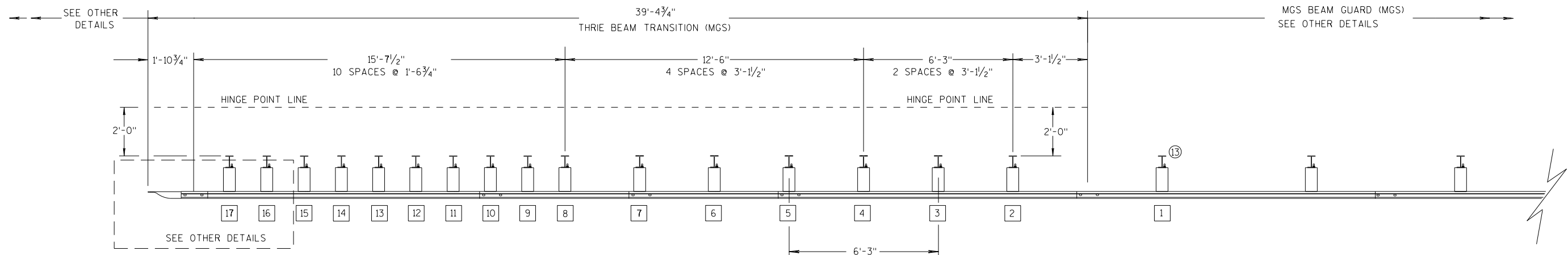
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

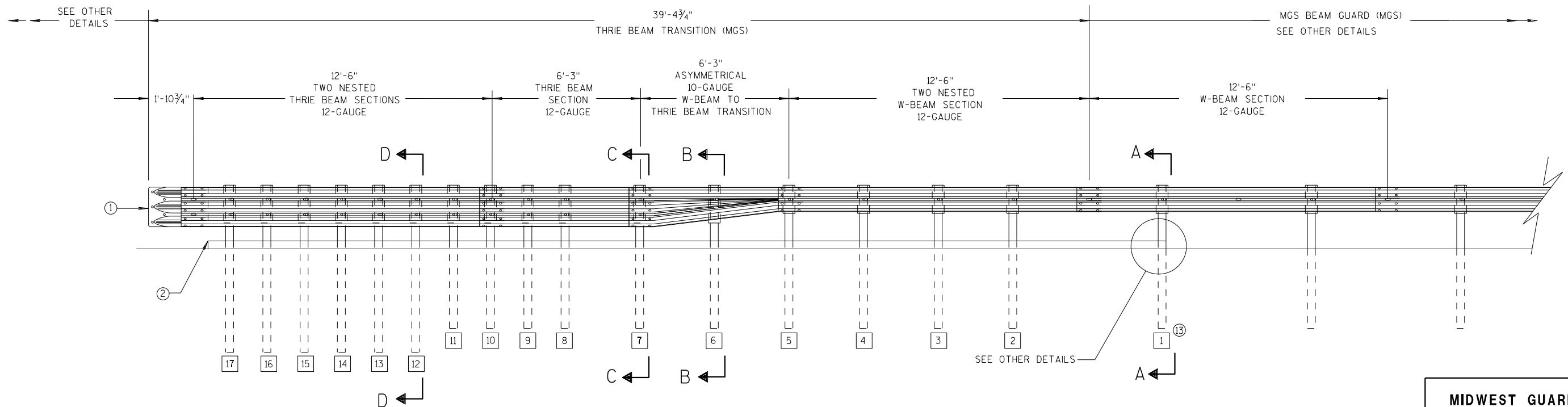
① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42



PLAN VIEW



ELEVATION VIEW

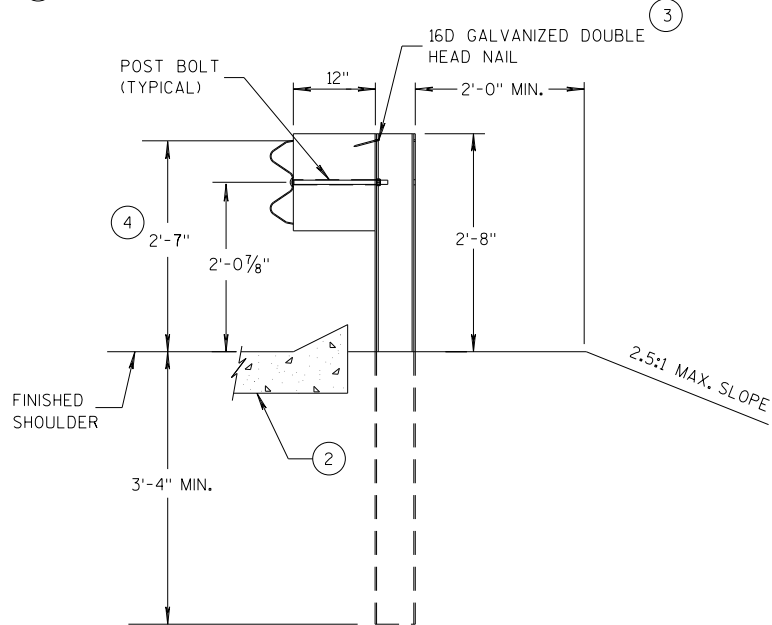
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

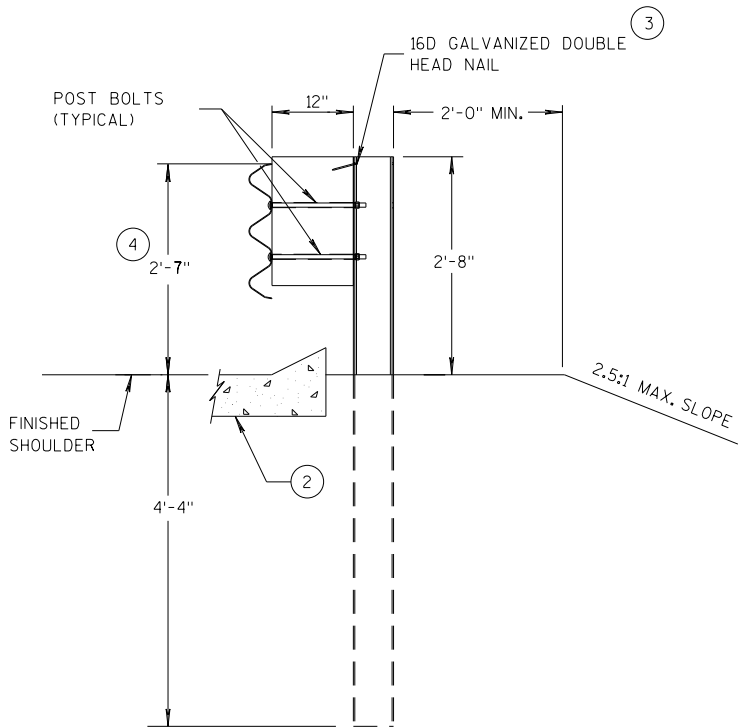
STATE OF WISCONSIN
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GENERAL NOTES

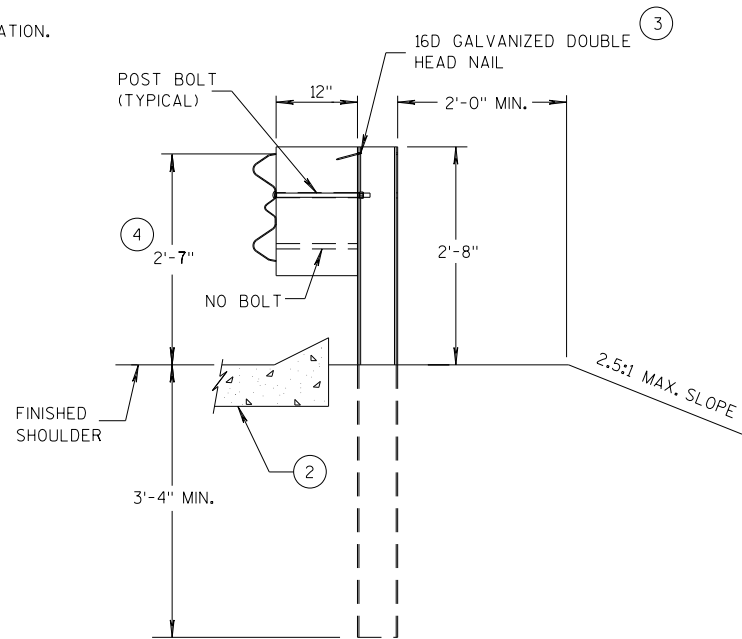
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm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



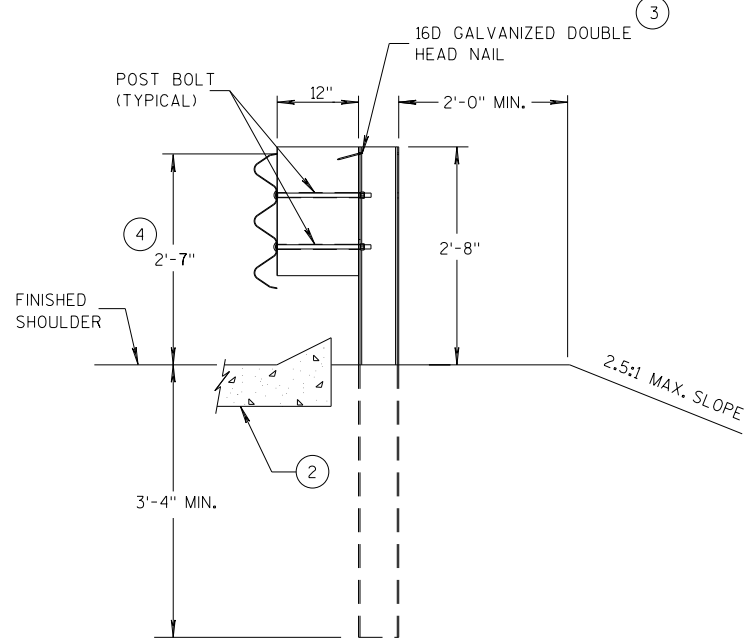
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

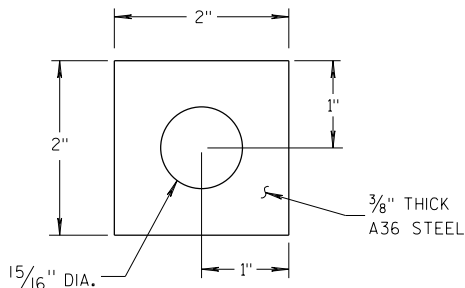
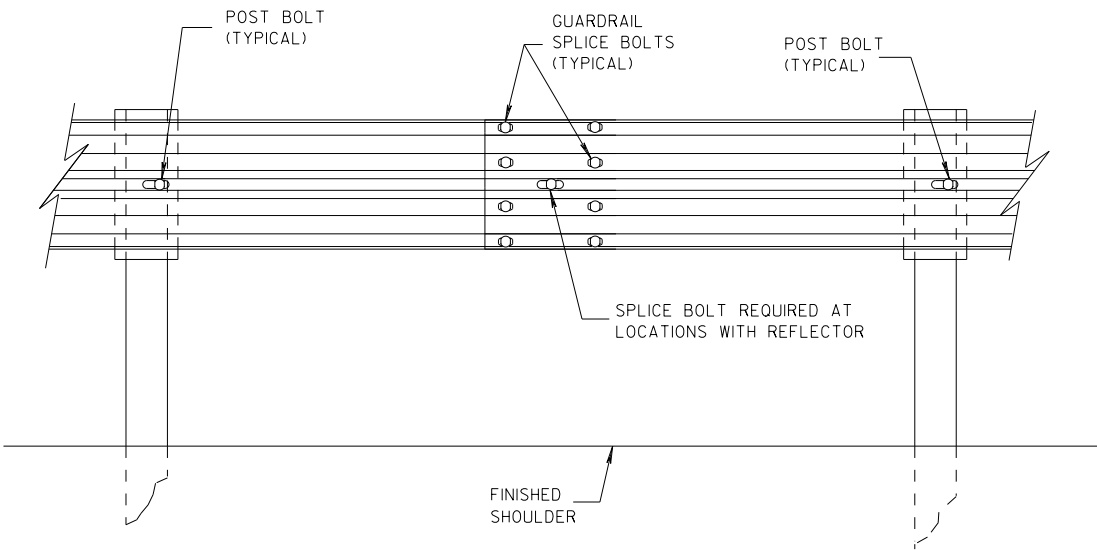
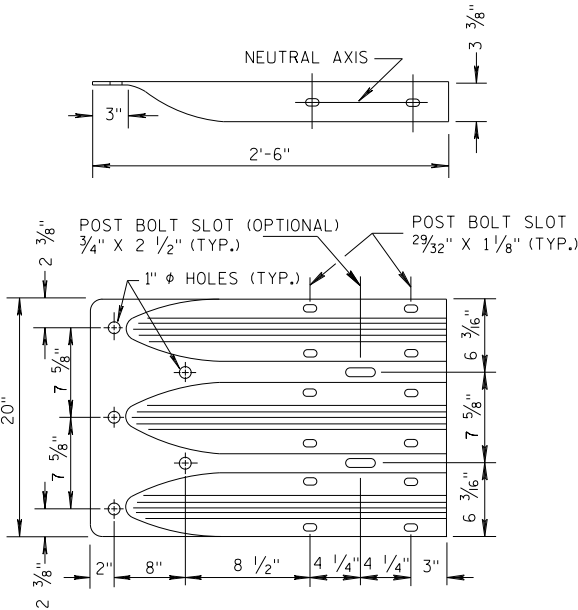


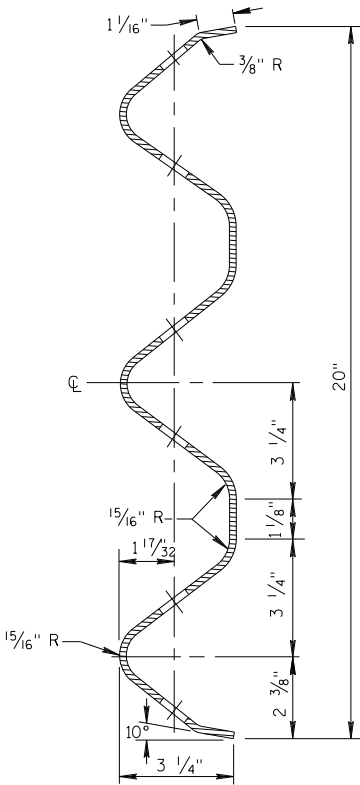
PLATE WASHER DETAIL



SPLICE DETAIL



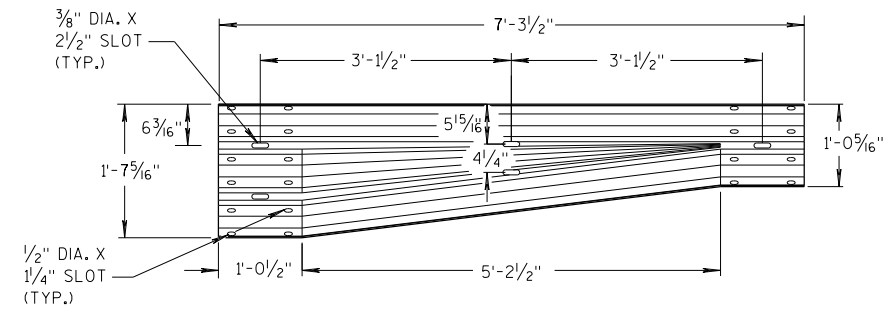
THRIE BEAM
TERMINAL CONNECTOR



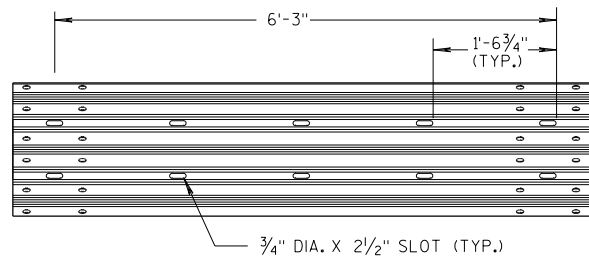
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

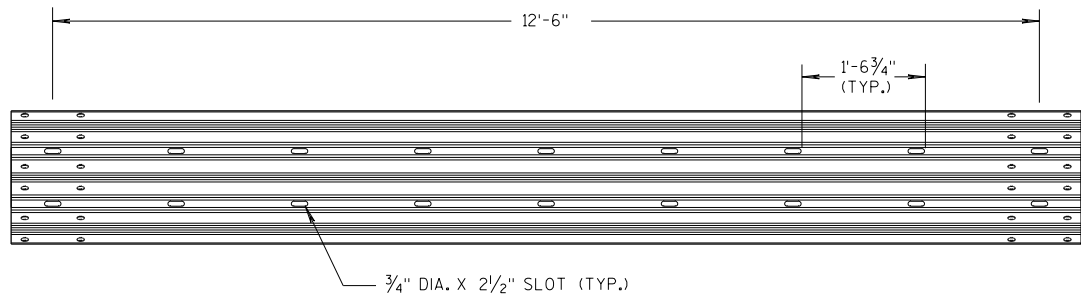
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



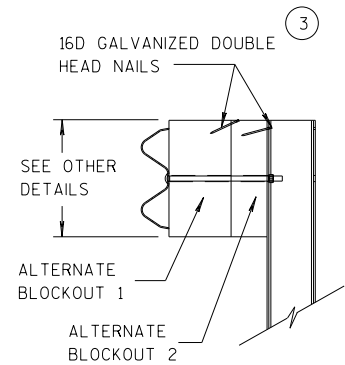
W-BEAM TO THRIE BEAM TRANSITION SECTION



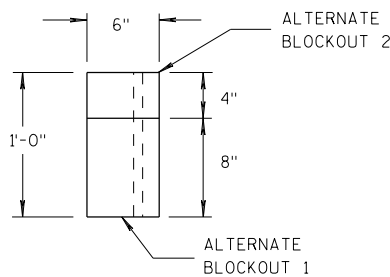
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

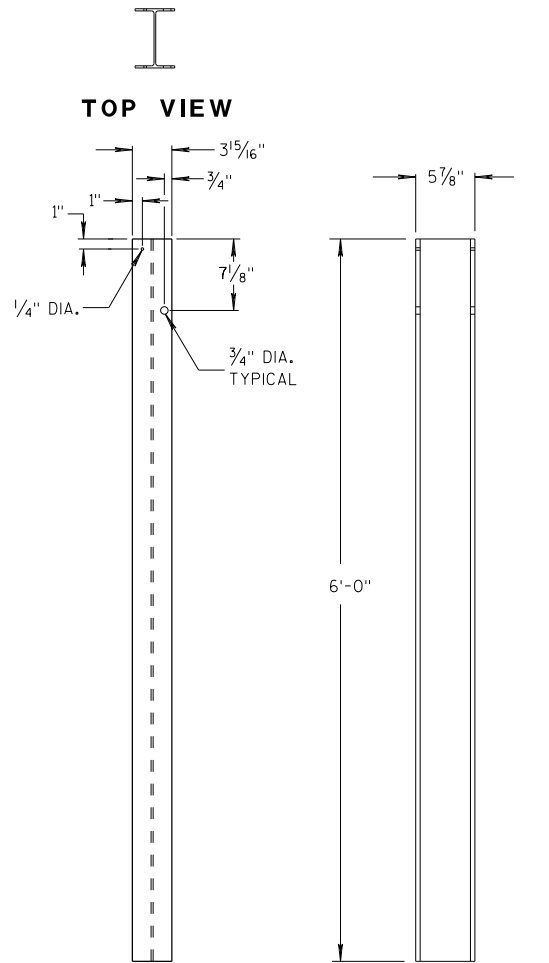


SIDE VIEW



TOP VIEW

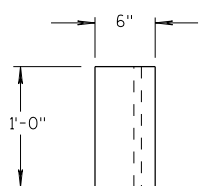
ALTERNATE WOOD BLOCKOUT DETAIL



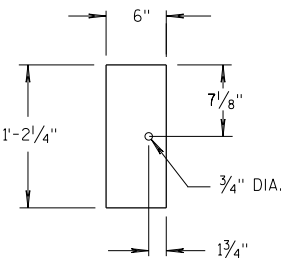
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

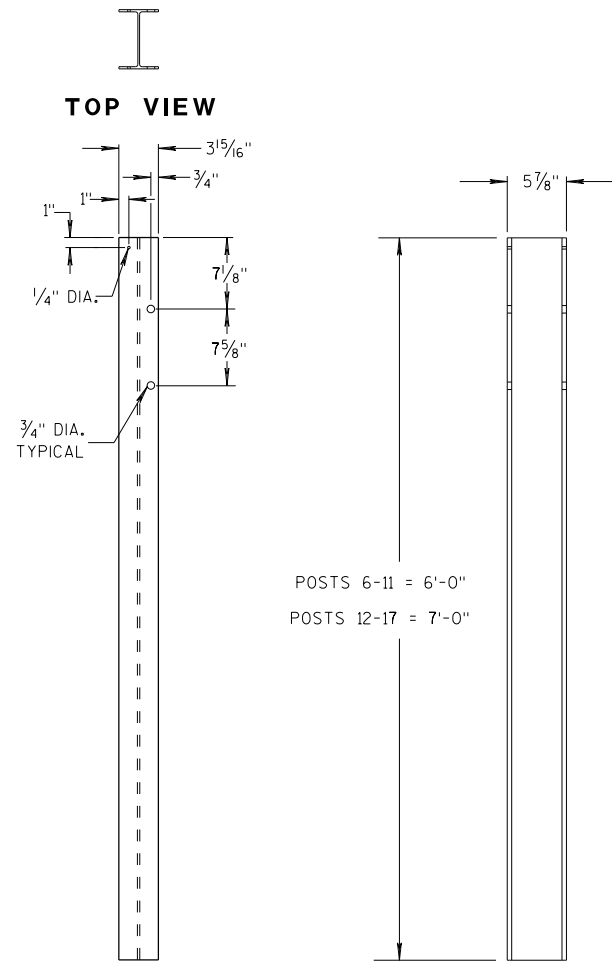


TOP VIEW



FRONT VIEW

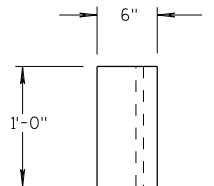
BLOCKOUT POSTS 1-5



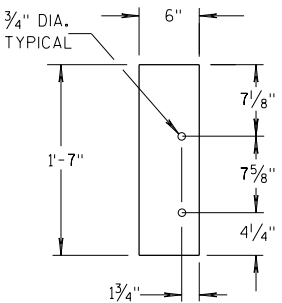
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

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

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

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

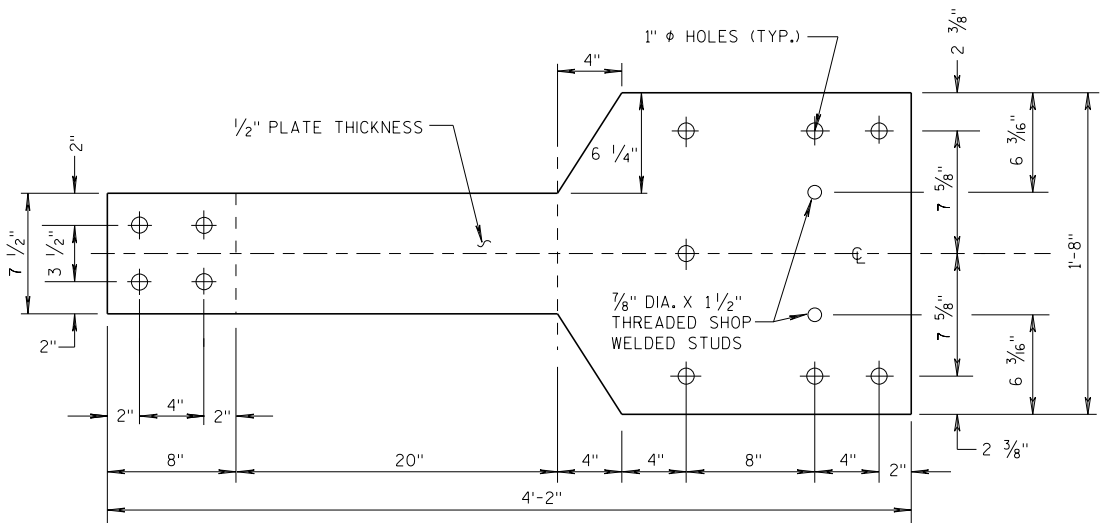
⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

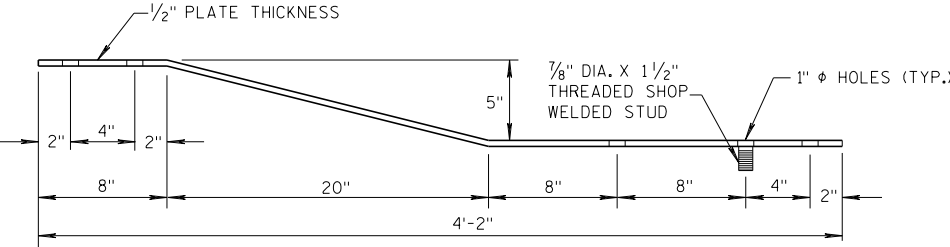
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

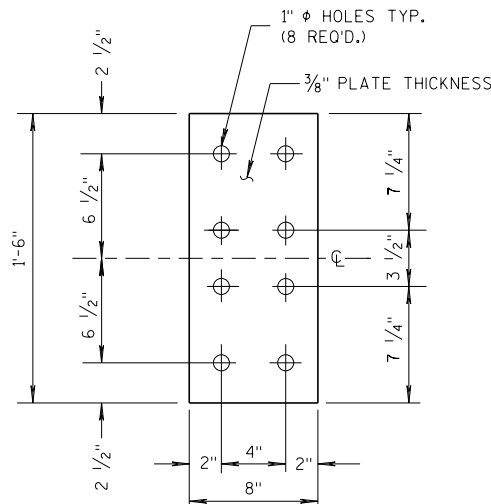
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



FRONT VIEW

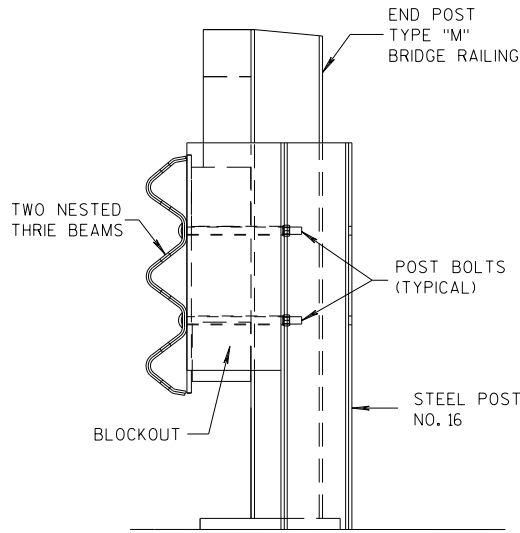


PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"

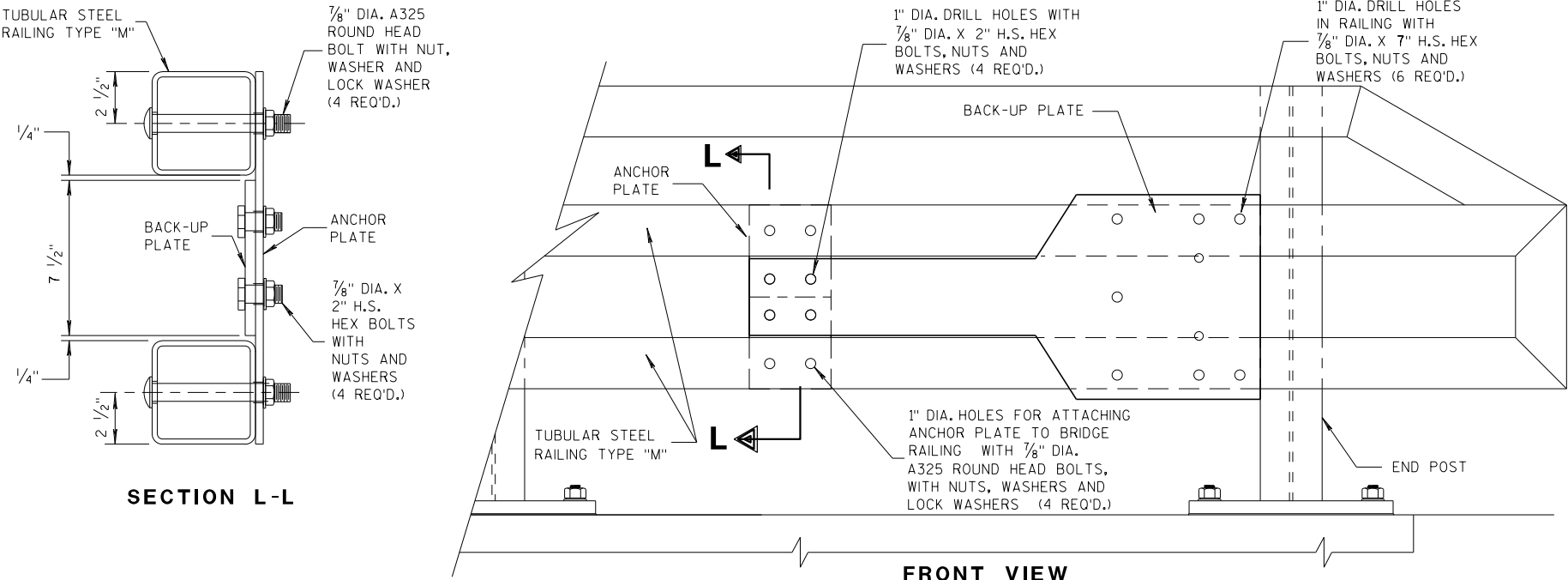


FRONT VIEW

ANCHOR
PLATE DETAIL,
TYPE "M"



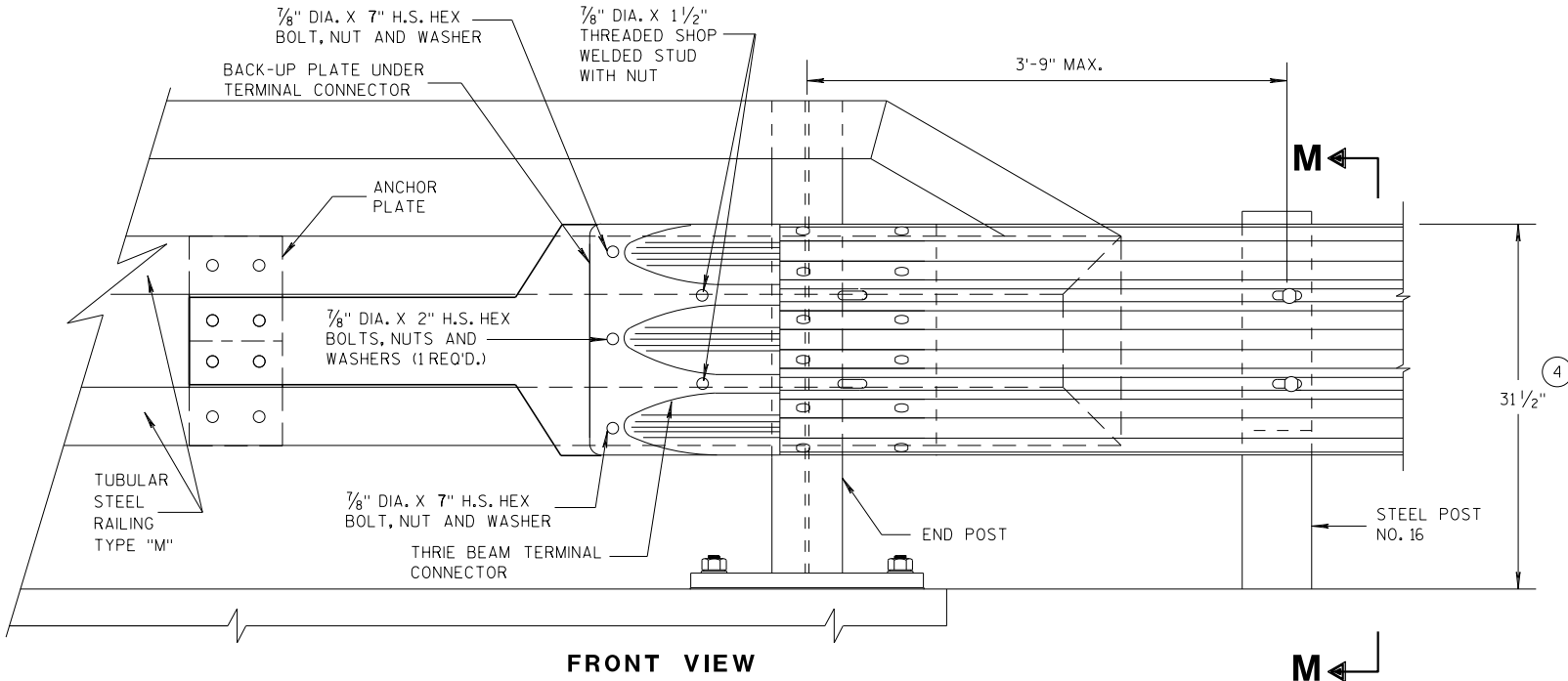
SECTION M-M



SECTION L-L

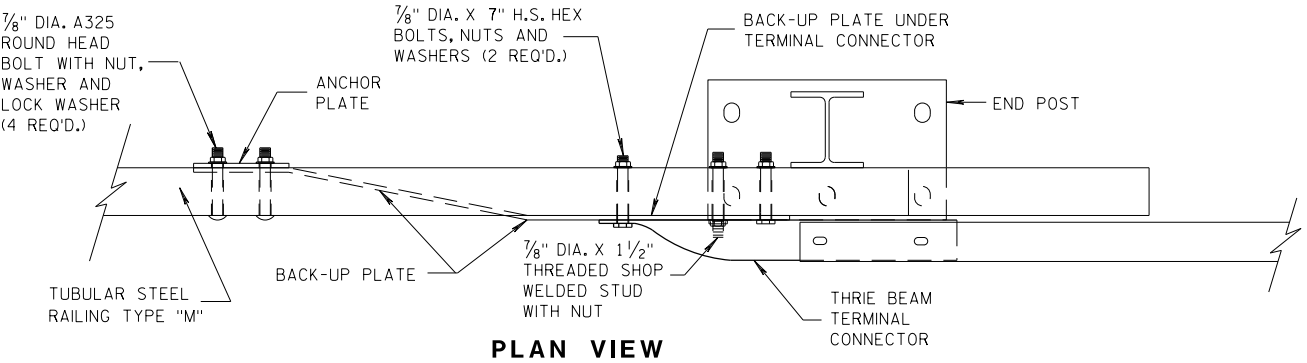
FRONT VIEW

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



FRONT VIEW

SECTION M-M



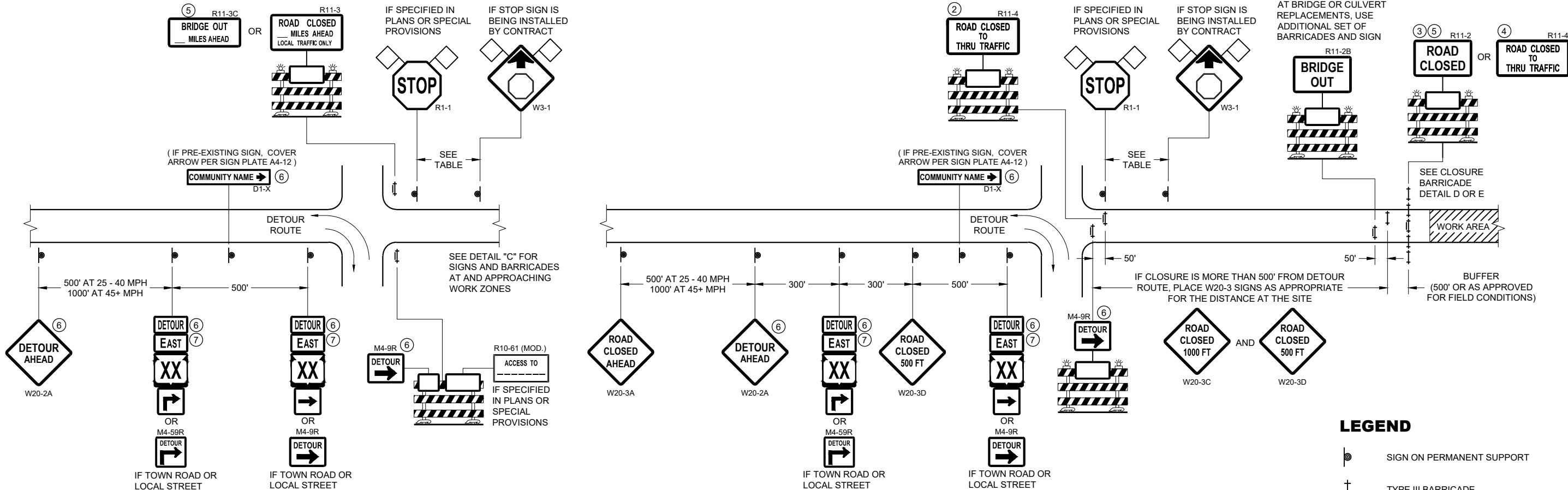
PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

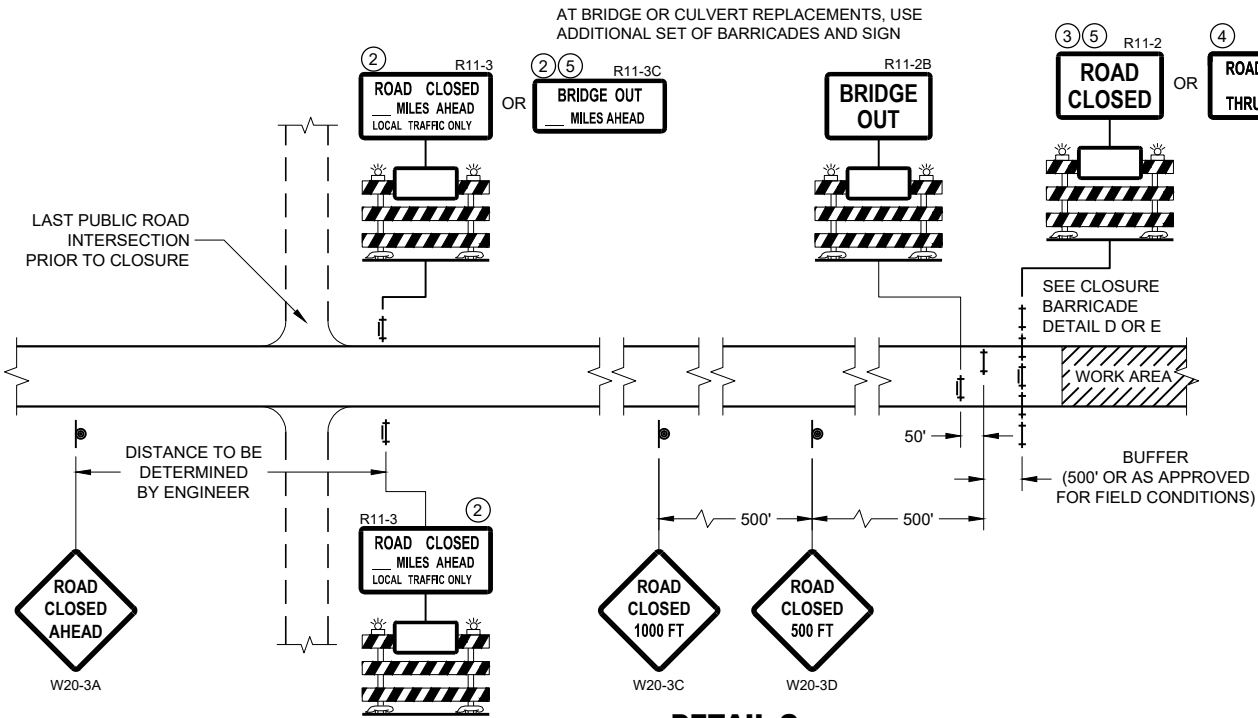


DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

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

DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR

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



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

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

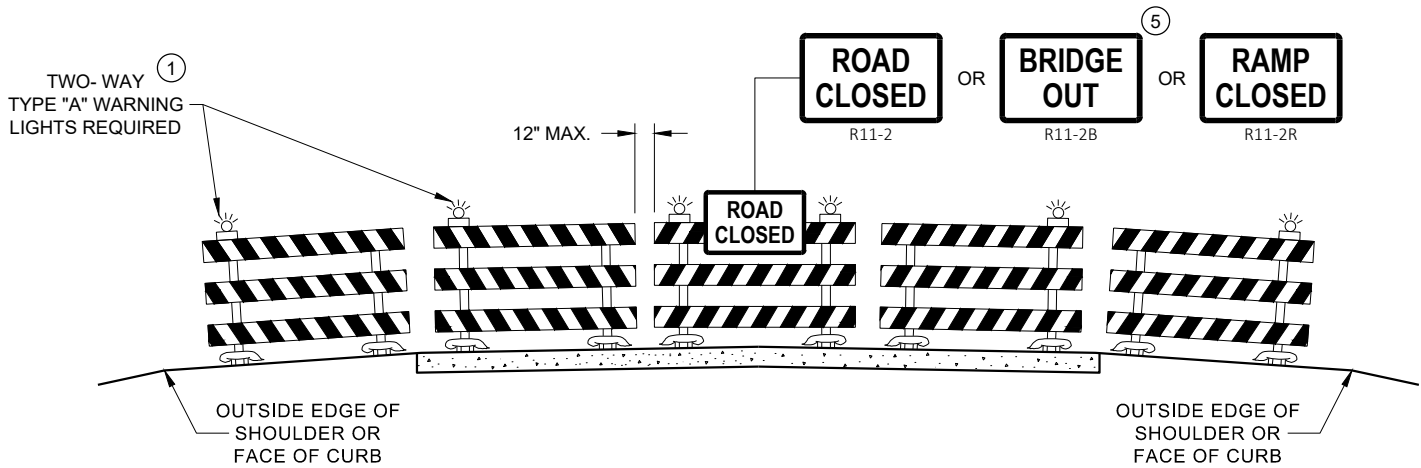
SEE SDD 15C2-SHEET "b"
FOR GENERAL NOTES
AND FOOTNOTES ① THROUGH ⑦

**BARRICADES AND SIGNS
FOR MAINLINE CLOSURES**

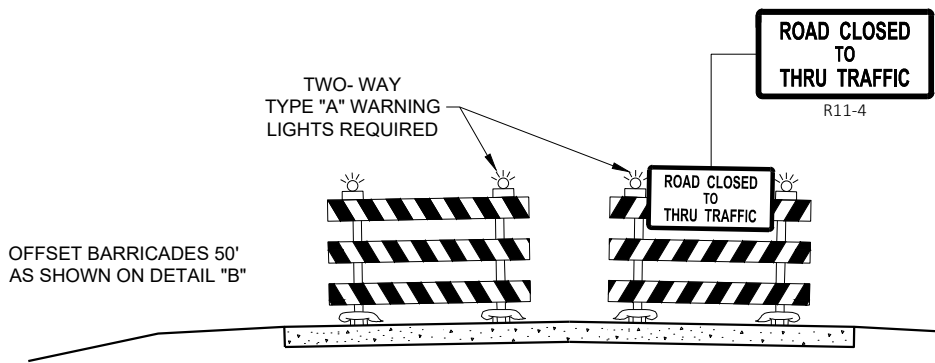
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DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 38

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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"

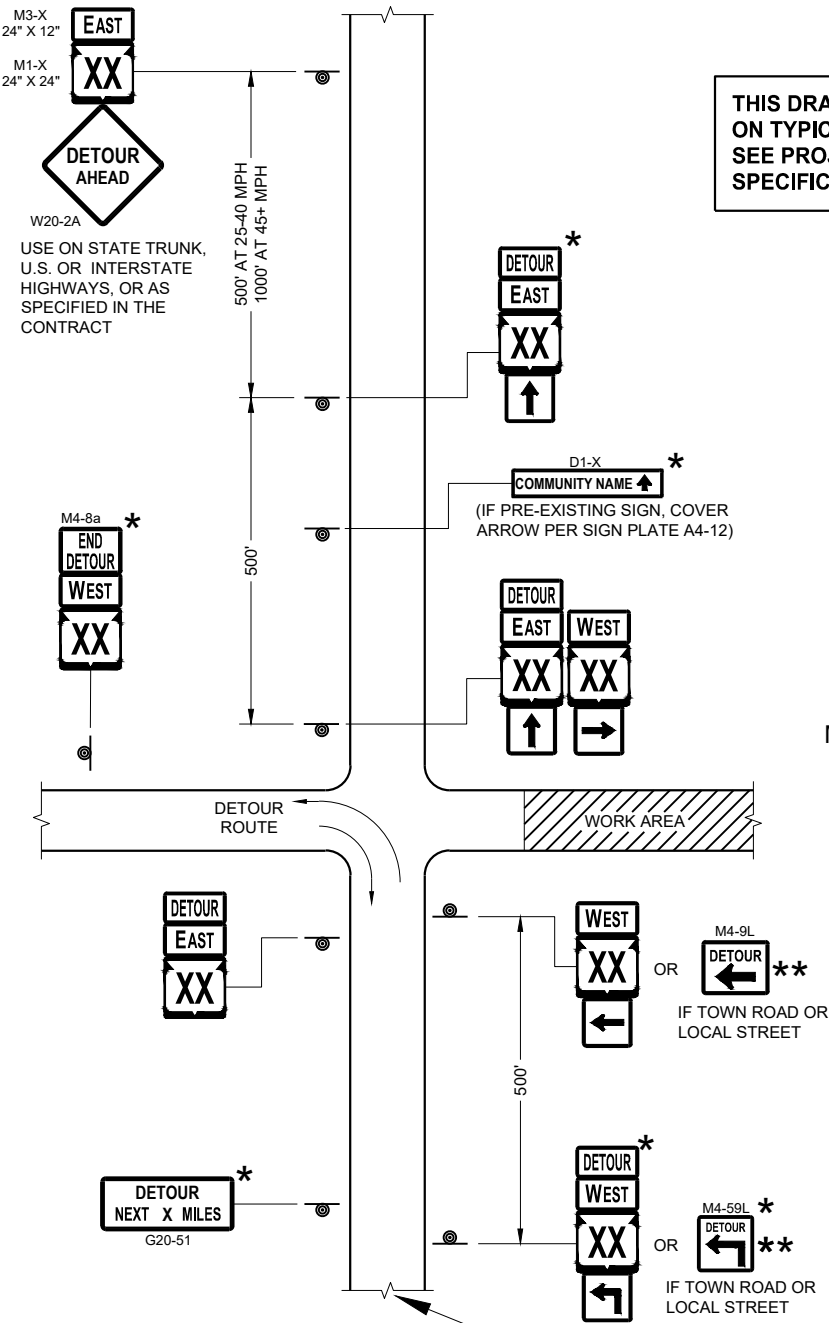
- 1 TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8 FOOT LIGHT SPACING).
- 2 THESE SIGNS 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 39

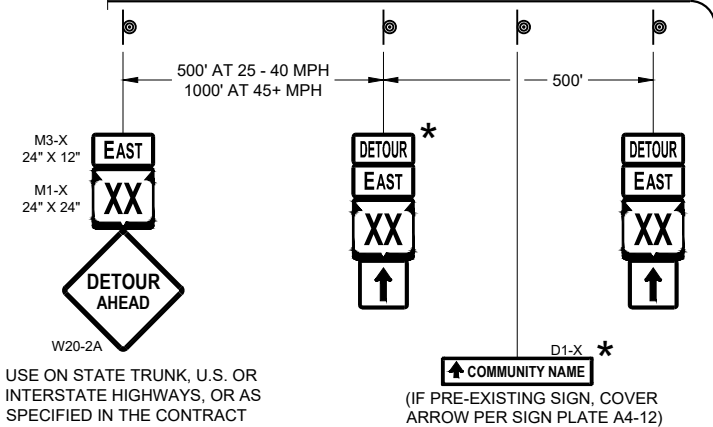
FHWA



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

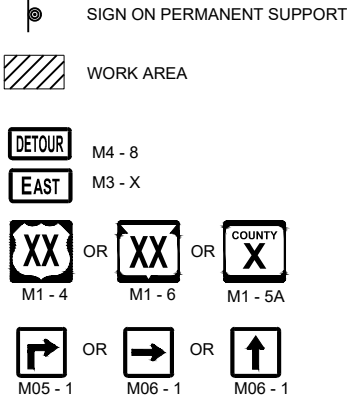
THIS DRAWING PROVIDES GENERAL GUIDANCE
ON TYPICAL DETOUR SIGN LAYOUT AND SPACING.
SEE PROJECT DETOUR SIGNING SHEETS FOR
SPECIFIC DETAILS FOR EACH PROJECT.

MATCH POINT



DETAIL F
DETOUR SIGNING

LEGEND



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.

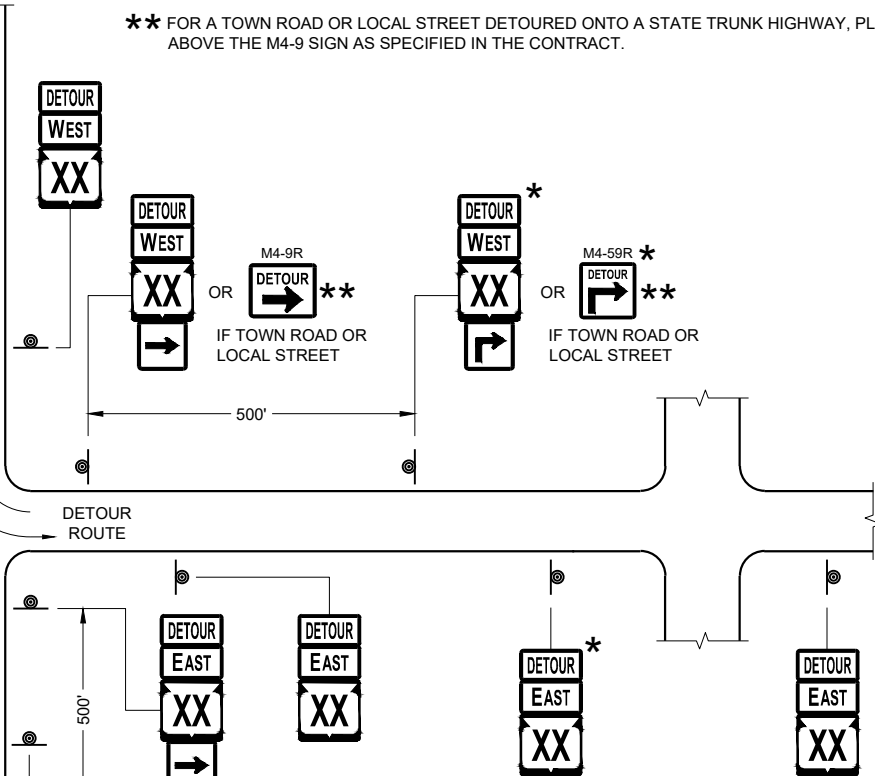
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

"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" (30" X 30" 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.

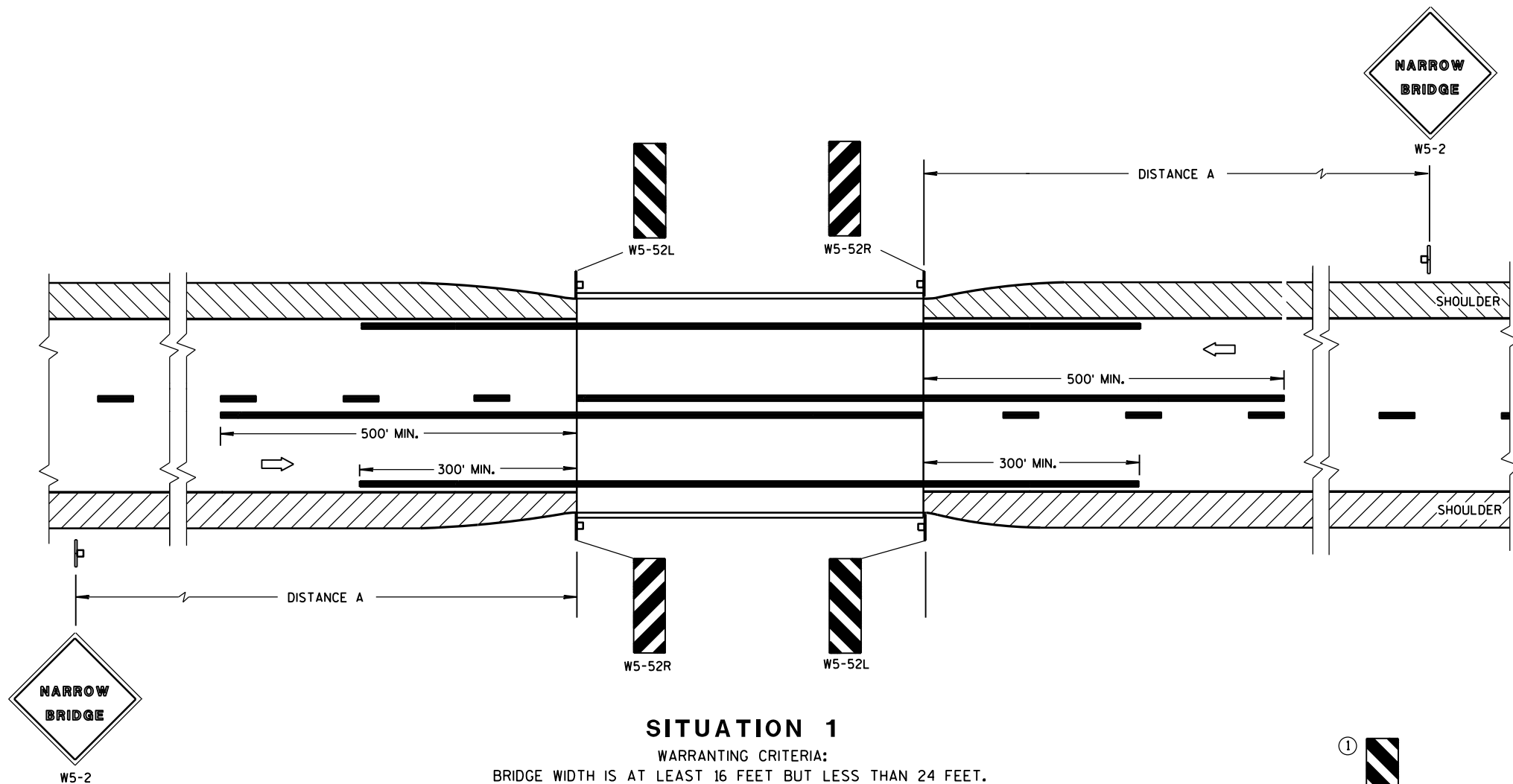


PLACE SIGNS BEYOND INTERSECTIONS
WITH STATE OR COUNTY TRUNK
HIGHWAYS OR AT 4 MILE MAXIMUM
SPACING (4 BLOCKS IF URBAN AREA)

DETOUR SIGNING
FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 40
FHWA



SITUATION 1

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

DISTANCE TABLE

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

GENERAL NOTES

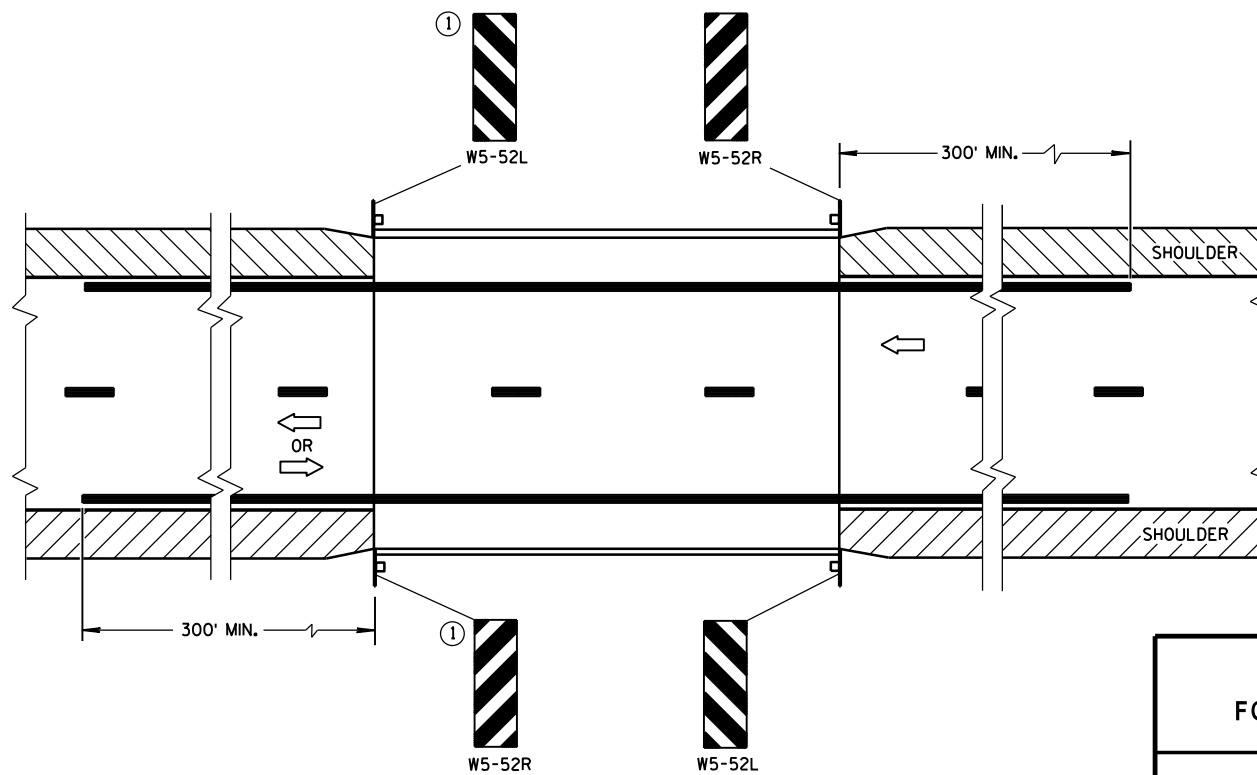
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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

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

① OMIT ON ONE-WAY TRAVELLED WAYS.

➡ DIRECTION OF TRAFFIC



SITUATION 2

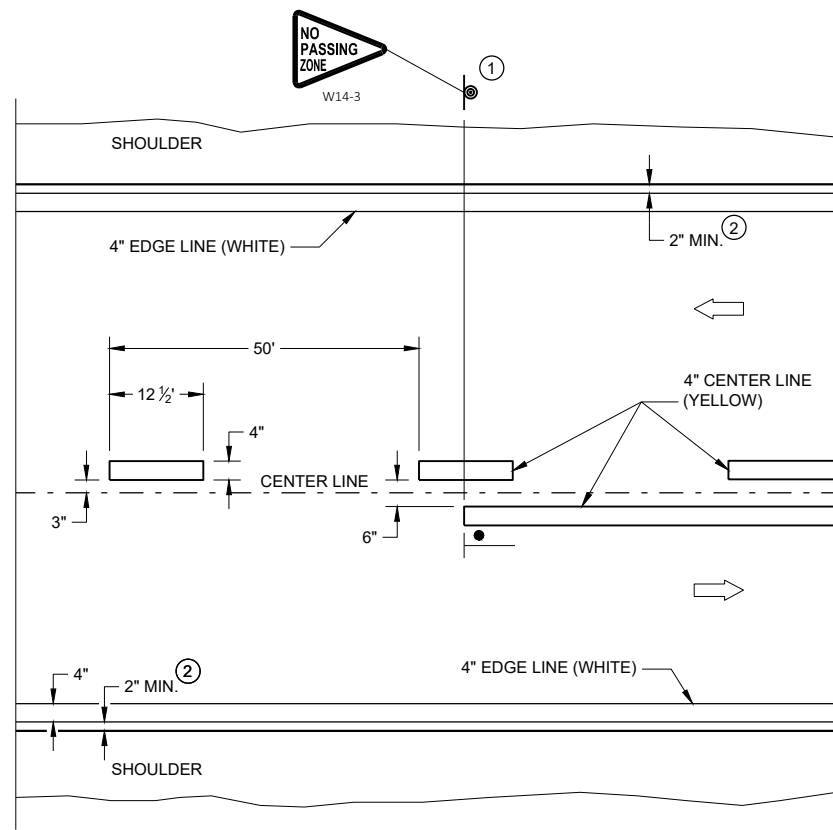
WARRANTING CRITERIA:
1. BRIDGE WIDTH IS AT LEAST 24 FEET AND
2. BRIDGE SHOULDER WIDTH IS LESS THAN 6 FEET.

SIGNING & MARKING FOR TWO LANE BRIDGES

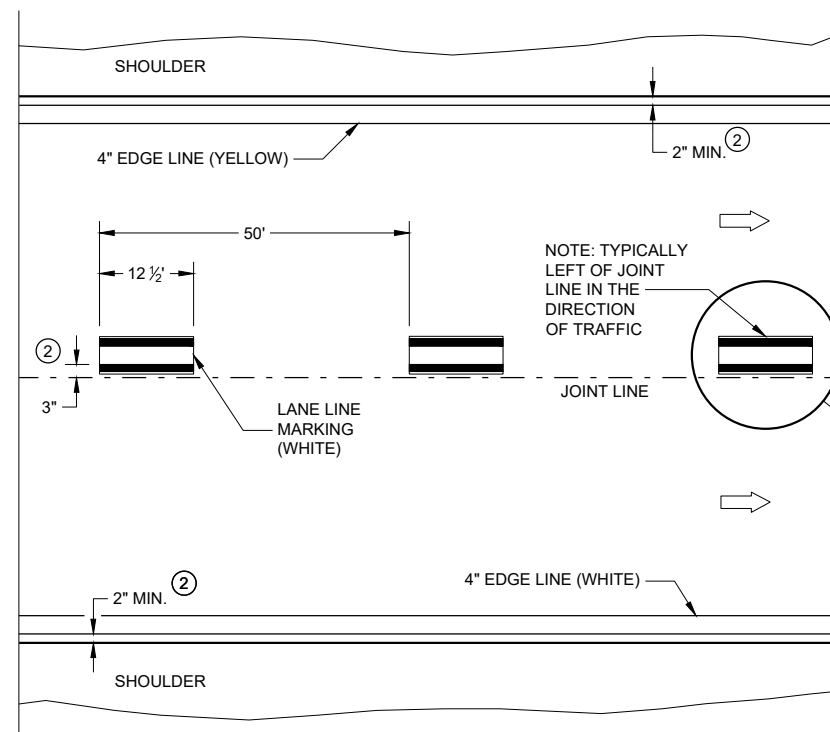
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June 2017 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MAR 41 JEER
FHWA

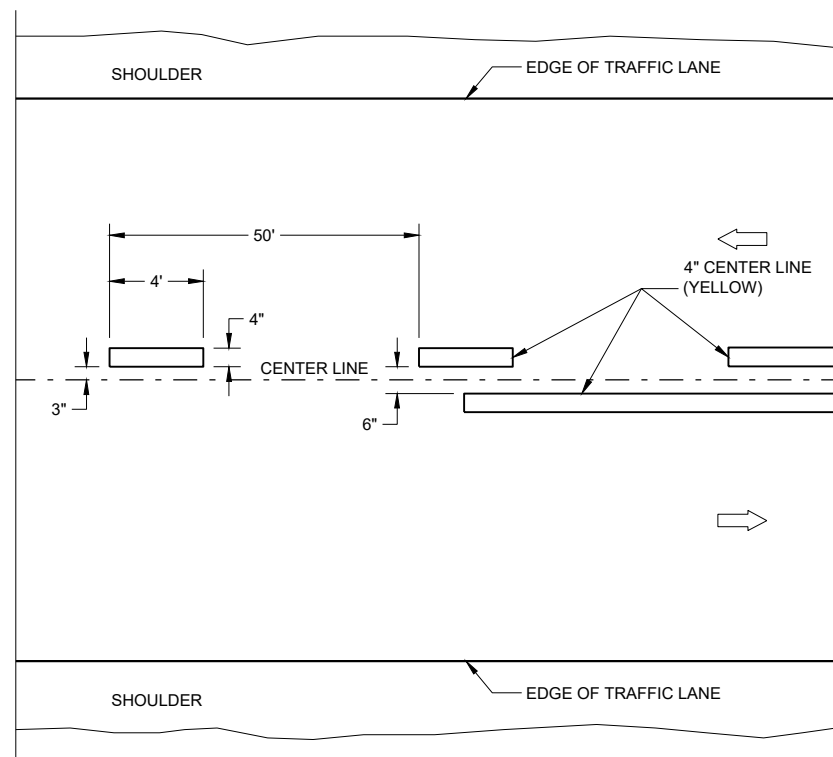


TWO WAY TRAFFIC

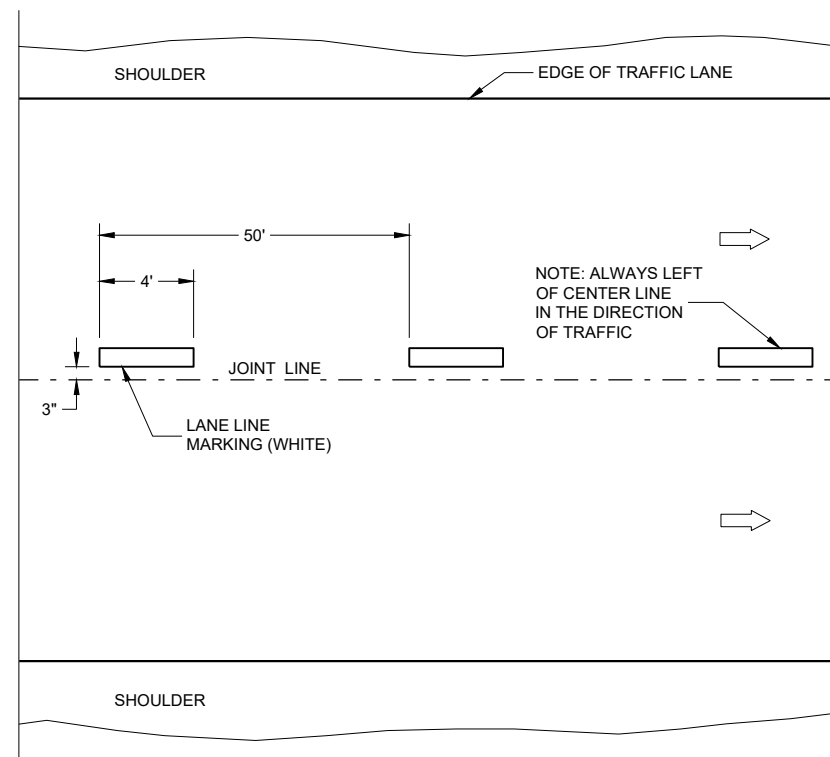


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

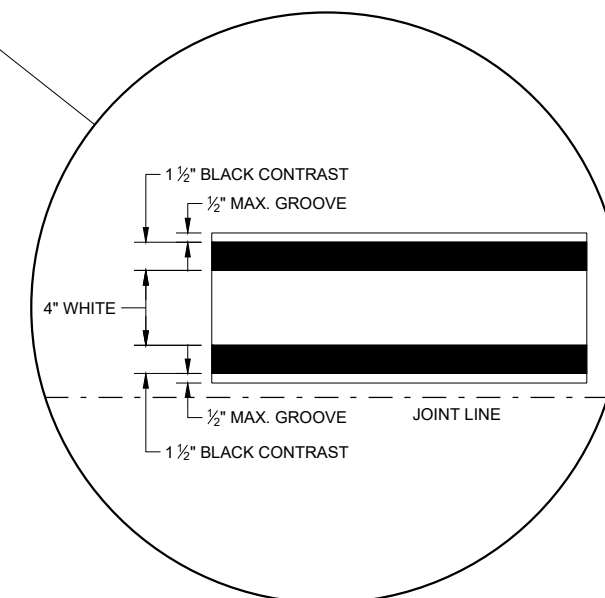
GENERAL NOTES

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

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

LEGEND

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



LONGITUDINAL MARKING (MAINLINE)

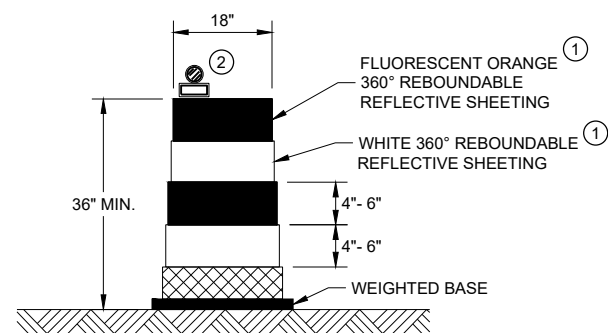
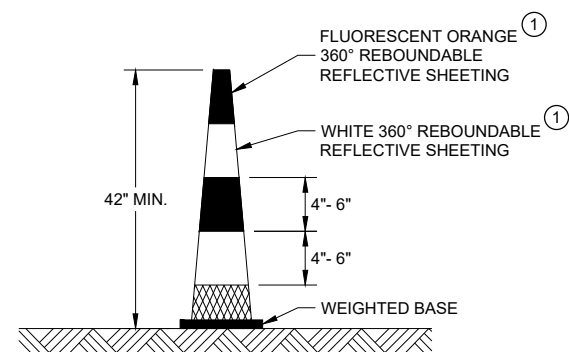
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020
DATE

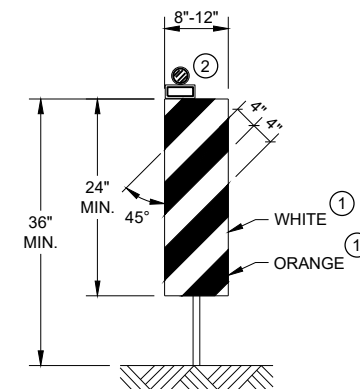
/S/ Matthew Rauch
STATEWIDE SIGNING AND MAPPING ENGINEER

42

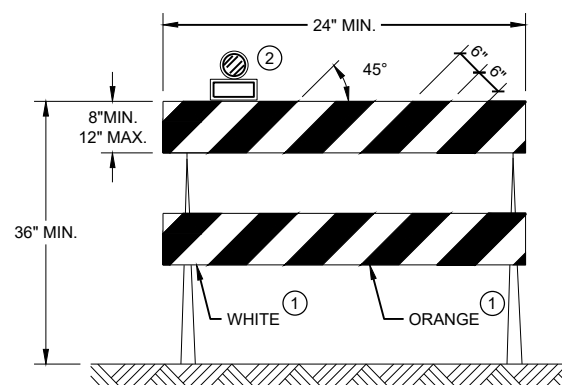
FHWA

**DRUM****42" CONE**

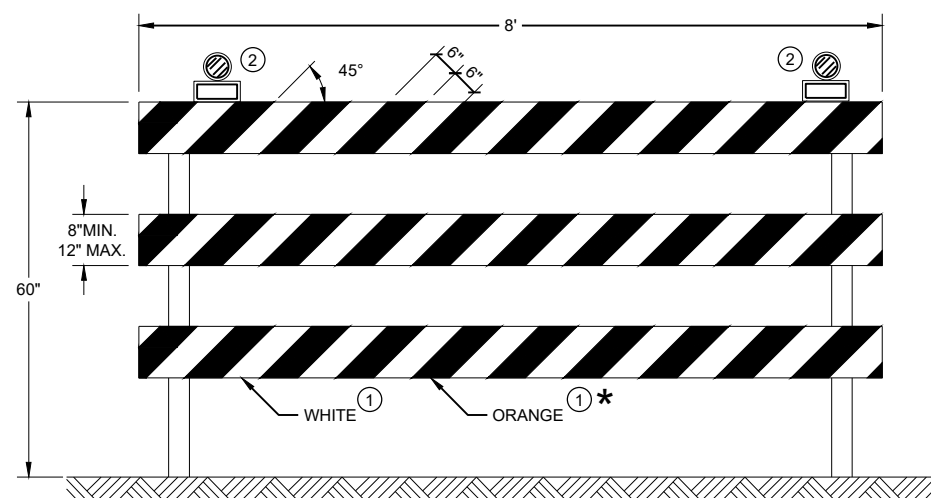
DO NOT USE IN TAPERS
 $\frac{1}{2}$ SPACING OF DRUMS

**VERTICAL PANEL**

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

**TYPE II BARRICADE**

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

**TYPE III BARRICADE**

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

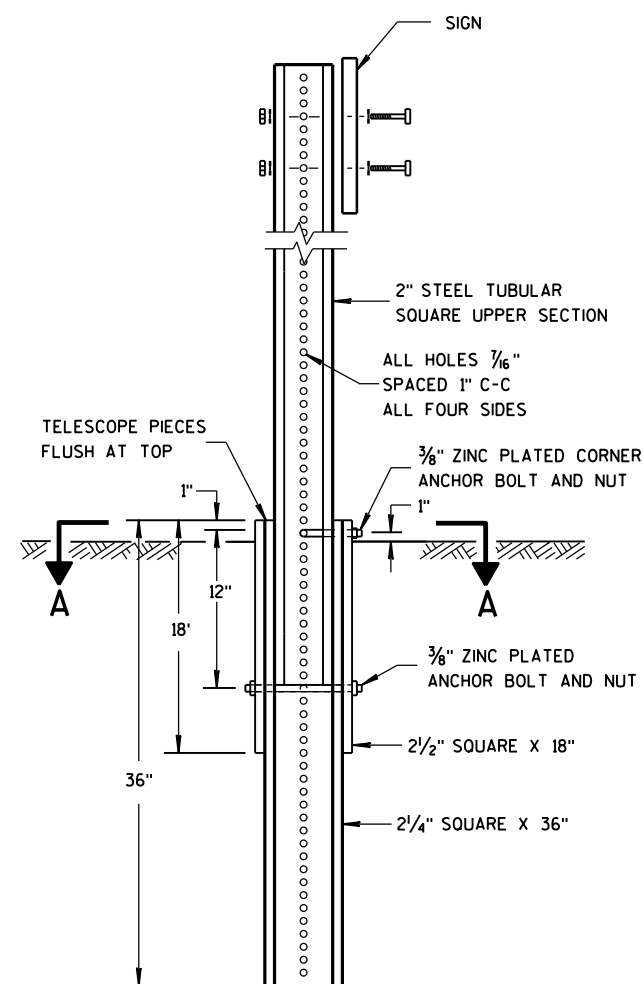
GENERAL NOTES

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

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

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

APPROVED
 November 2020 /S/ Andrew Heidtke
 DATE WORK ZONE ENGINEER 43
 FHWA



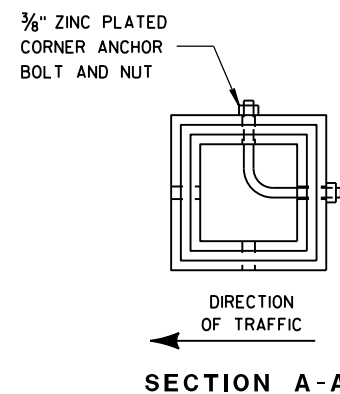
**DETAIL OF TUBULAR
STEEL SIGN POST**

TUBULAR STEEL POSTS

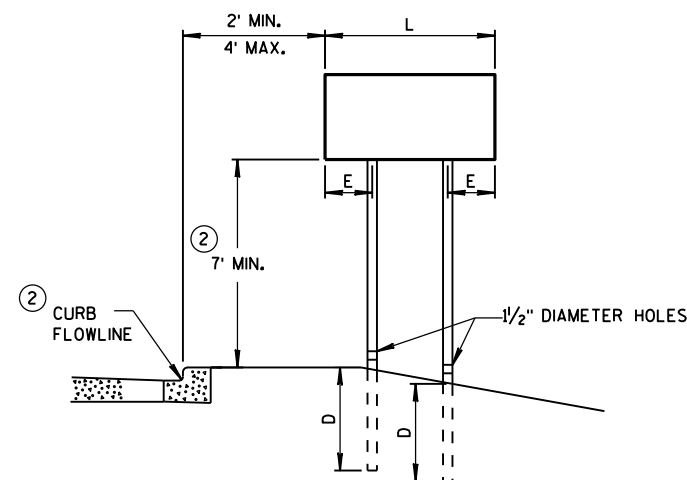
AREA OF SIGN INSTALLATION (SQ. FT.)	NUMBER OF REQUIRED TUBULAR STEEL POSTS
9 OR LESS	1
GREATER THAN 9 LESS THAN OR EQUAL TO 18	2
GREATER THAN 18 LESS THAN OR EQUAL TO 27	3

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

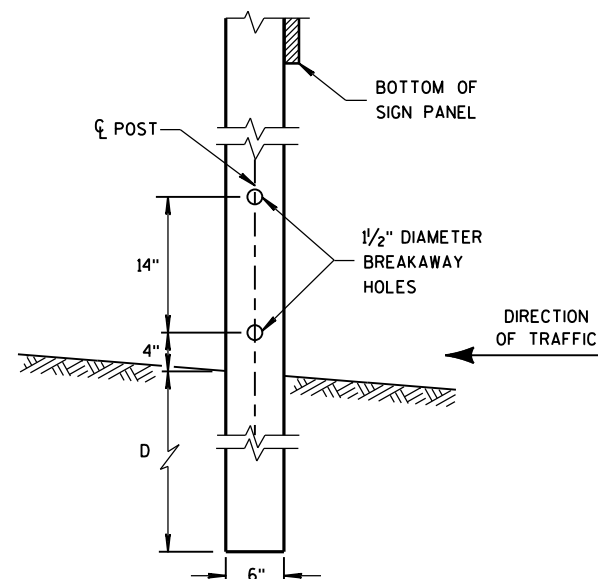


URBAN AREA

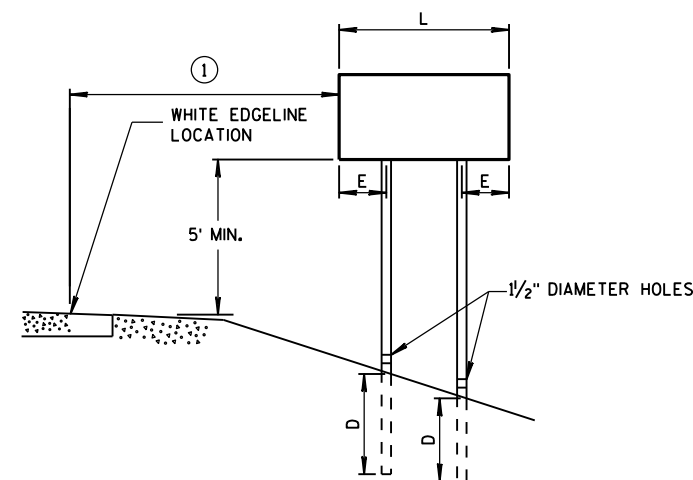
POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

**WOOD POST
EMBEDMENT DEPTH**

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



**4"x6" WOOD POST
MODIFICATION**



RURAL AREA

4" X 6" WOOD POST

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

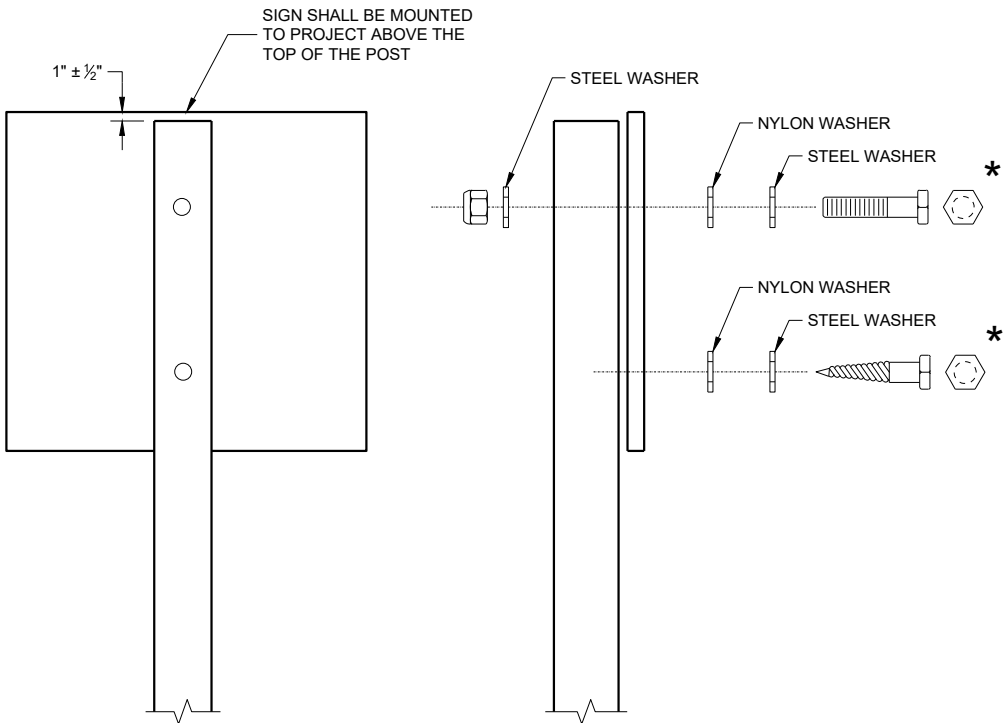
SEE NOTE ③

GENERAL NOTES

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

**TEMPORARY TRAFFIC CONTROL
SIGN MOUNTING**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



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

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

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

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

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

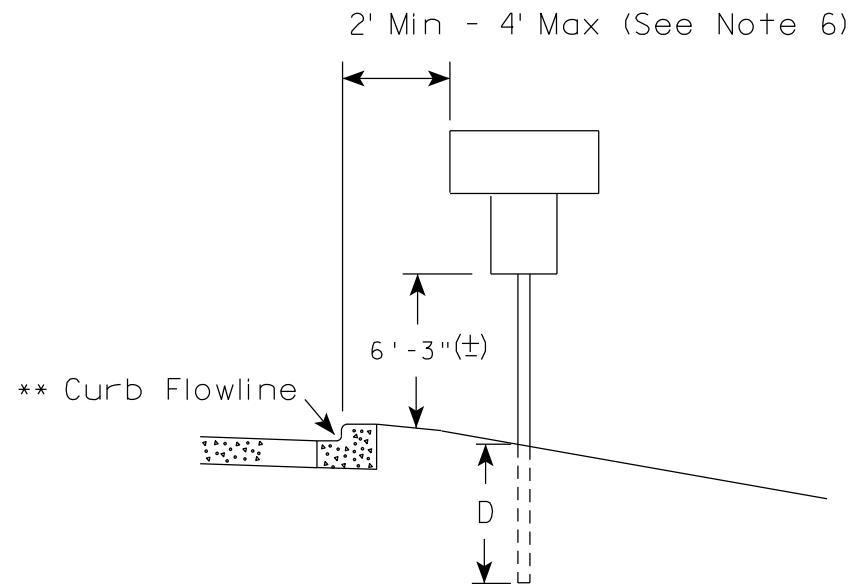
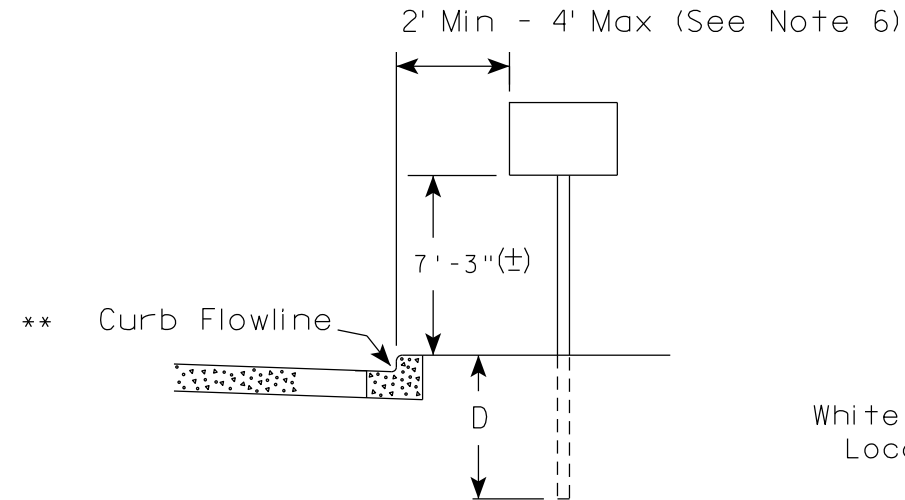
WASHERS (ALL POSTS) -
1 ¼" O.D. x ⅜" I.D. x ⅛" STEEL
1 ¼" O.D. x ⅜" I.D. x 0.080 NYLON

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

ATTACHMENT OF SIGNS TO POSTS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER 45

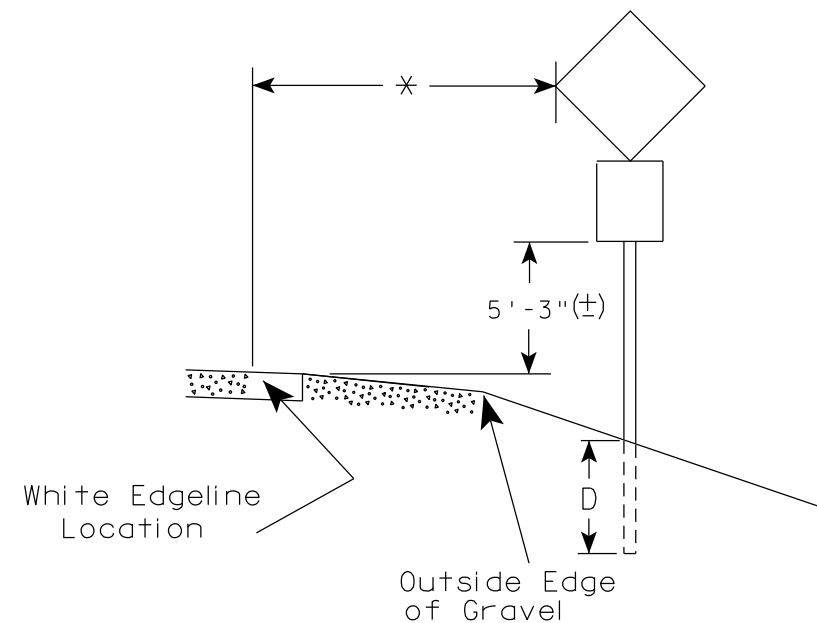
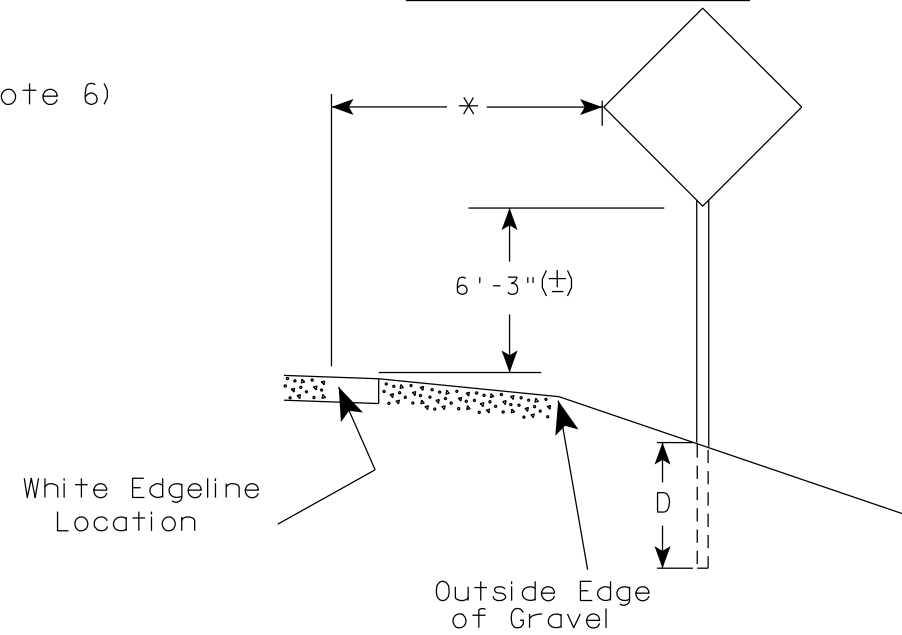
FHWA

URBAN AREA



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

RURAL AREA (See Note 2)



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

POST EMBEDMENT DEPTH

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

GENERAL NOTES

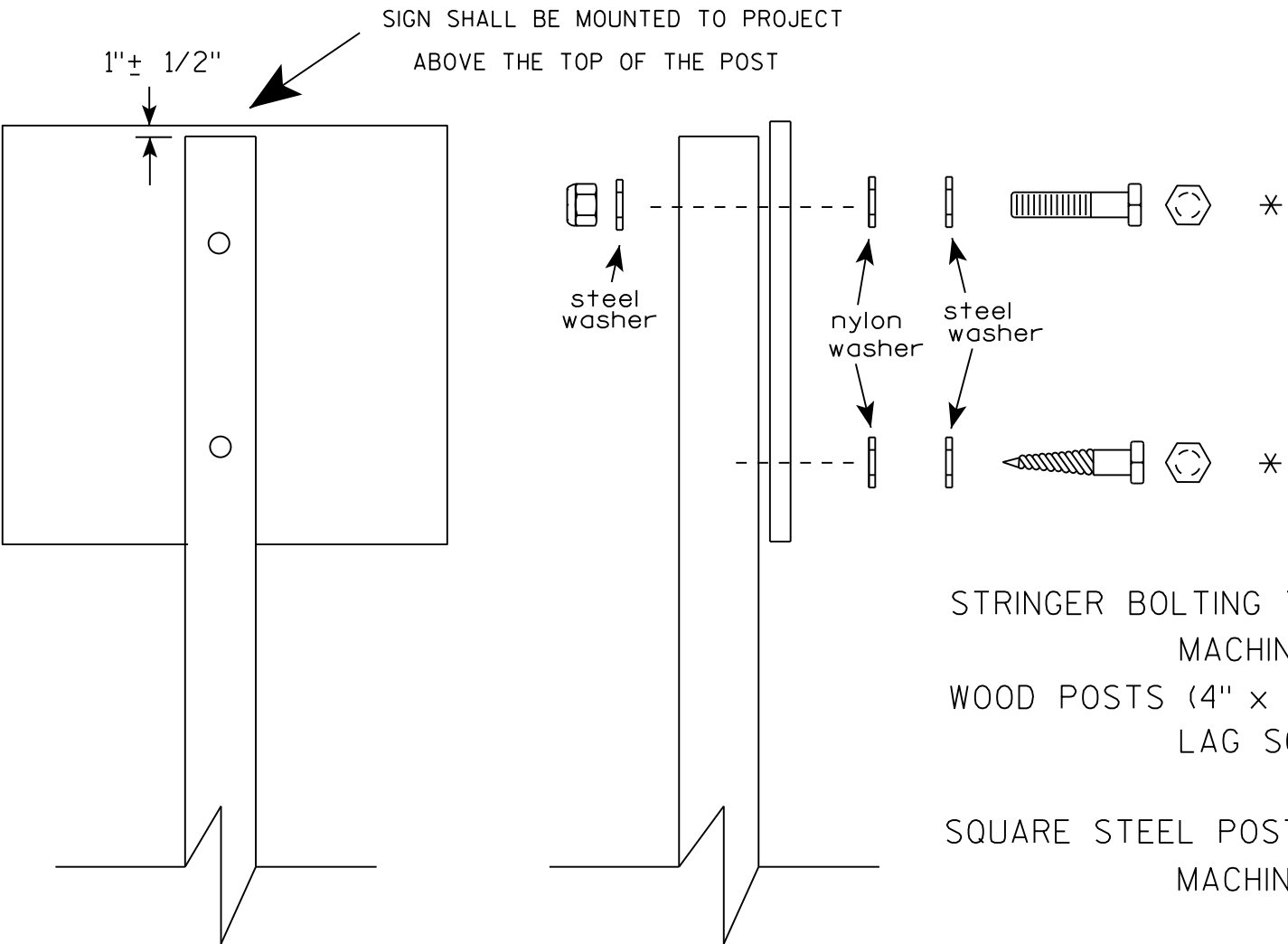
- Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
- If signs are mounted on or behind barrier wall, see A4-10 sign plate.
The Double Arrow sign (W12-1D) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel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

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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



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

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

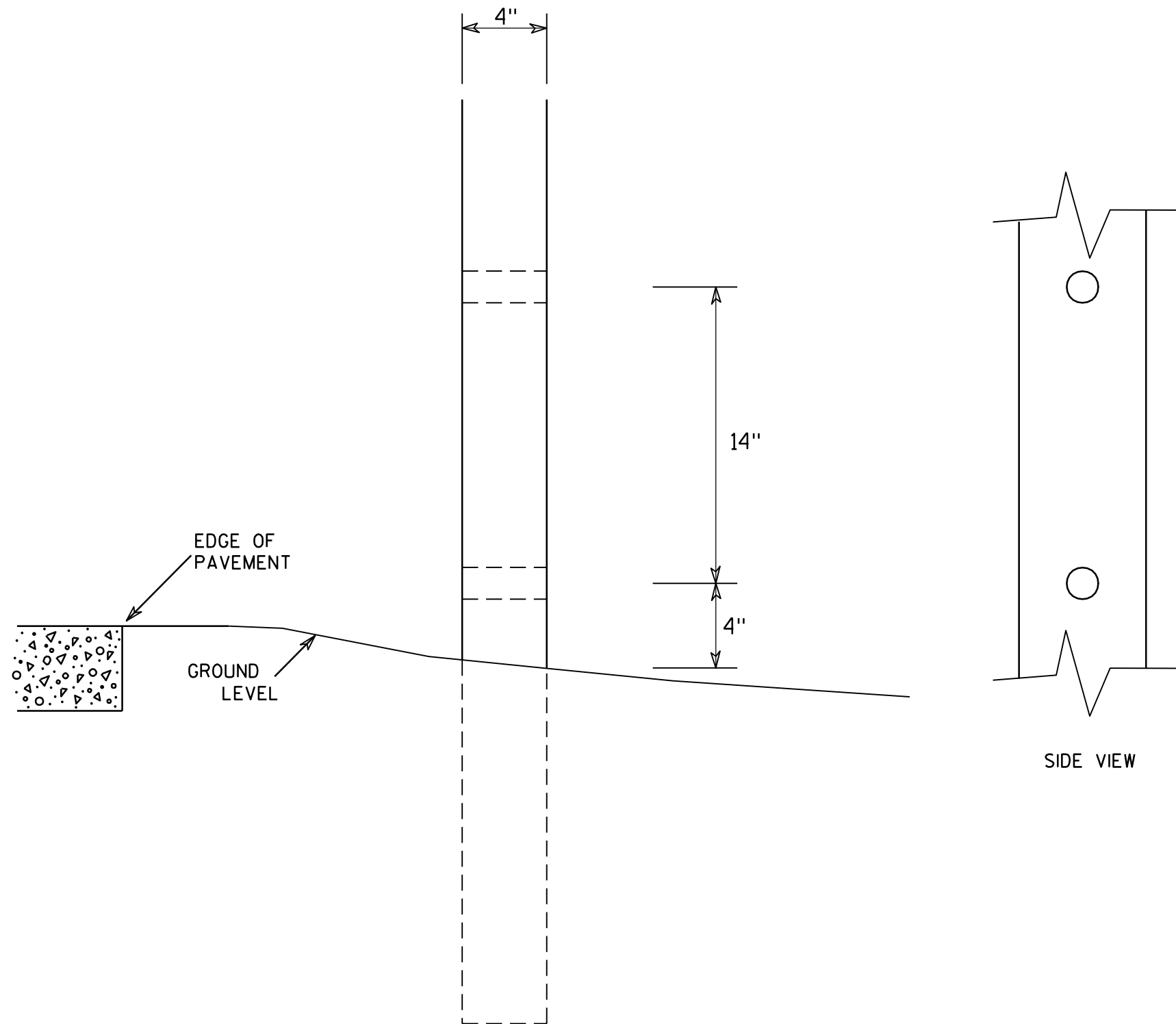
Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

- STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)
- MACHINE BOLTS - 5/16" X 1-3/4" Length w/ lock nuts
- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - 3/8" X 3" (NO STRINGERS ON BACK OF SIGN)
 - 3/8" X 4" (STRINGERS ON BACK OF SIGN)
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
 - 3/8" X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)
- RIVETS - 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 3/8" I.D. X 1/16" STEEL
 - 1-1/4" O.D. X 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 8/11/16	PLATE NO. A4-8.8 47

7



GENERAL NOTES

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

7

4 X 6 WOOD POST
MODIFICATIONS

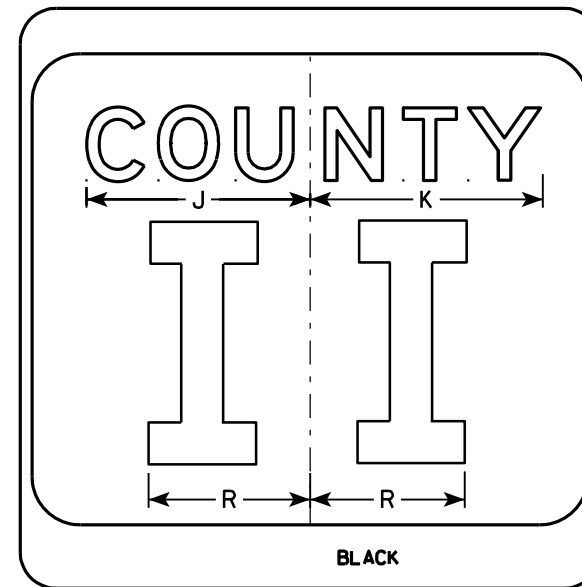
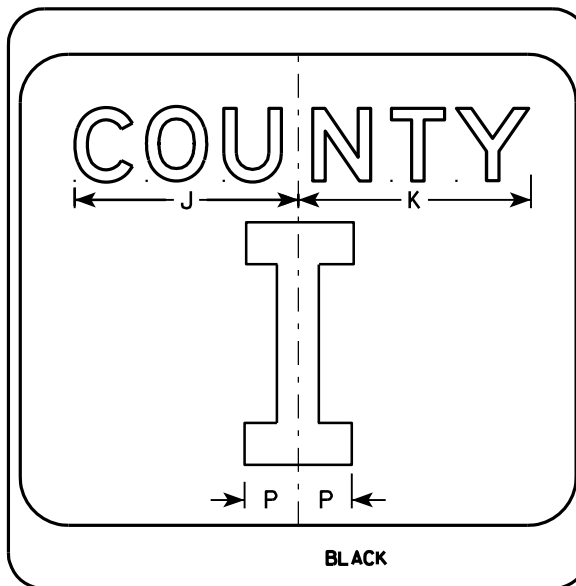
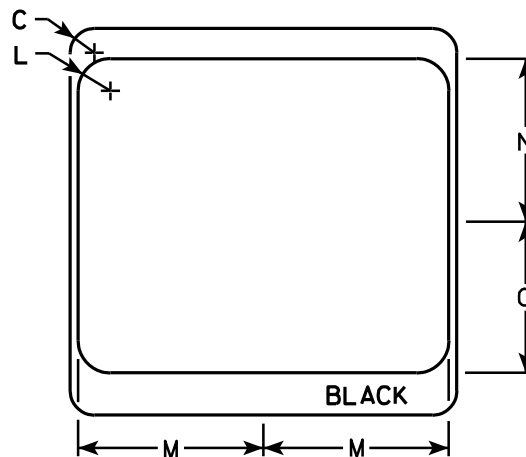
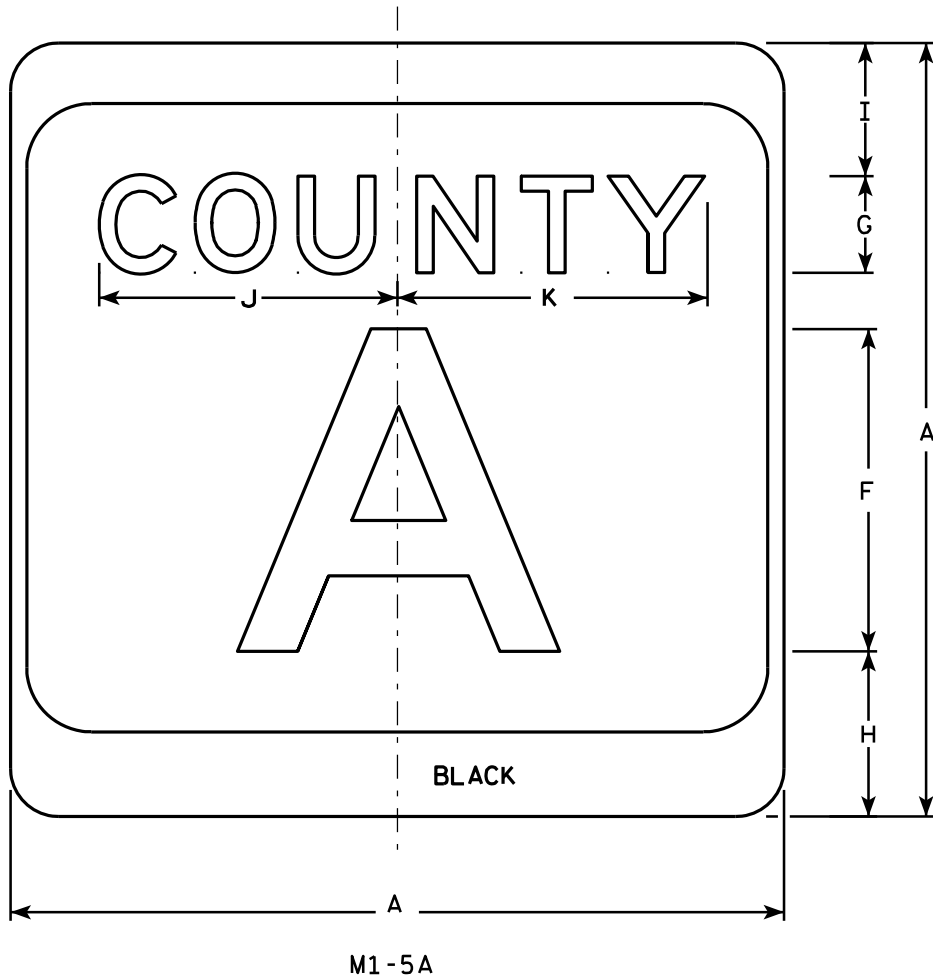
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Chester J. Spang*
for State Traffic Engineer

DATE 3/27/97 PLATE NO. A4-11.2

PROJECT NO:	HWY:	COUNTY:	SHEET NO: 48	E
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7



NOTES

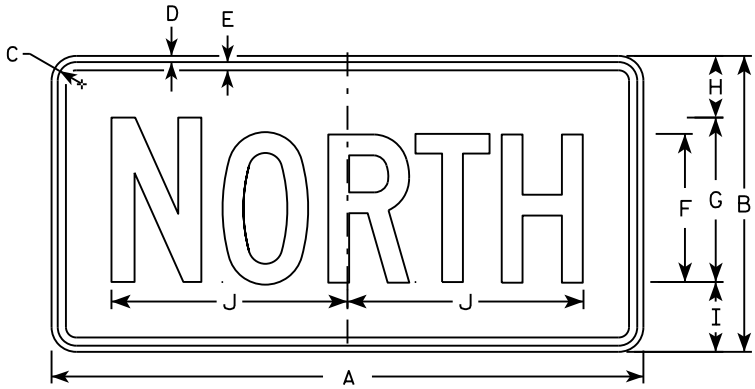
1. Sign is Type II - see Note 7 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White & Black - See Note 7
Message - Black
3. Message Series - see Note 5
4. Corners may be square or rounded when base material is plywood but borders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

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

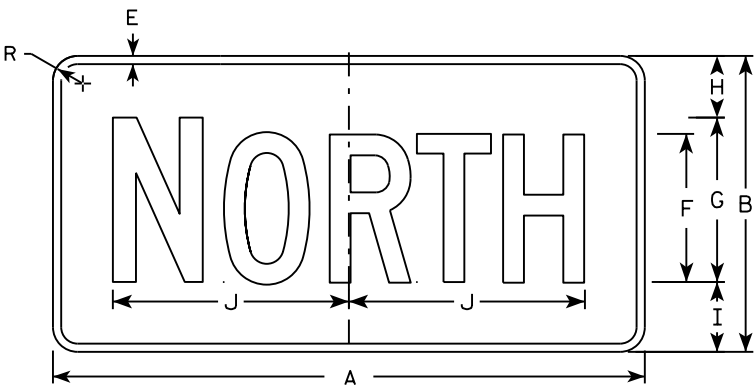
CTH MARKER	
M1-5A FOR ASSEMBLIES	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 9/27/11	PLATE NO. M1-5A.8

PROJECT NO:	HWY:	COUNTY:	SHEET NO: 49	E
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7



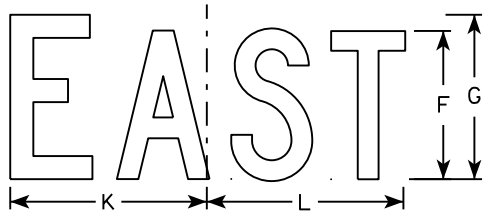
M3-1
MM3-1
MP3-1



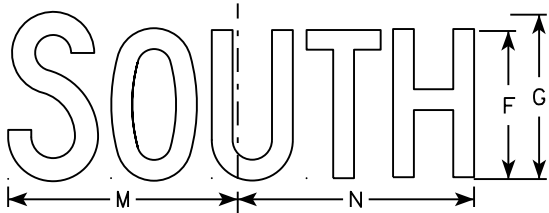
MB3-1
MK3-1
MN3-1



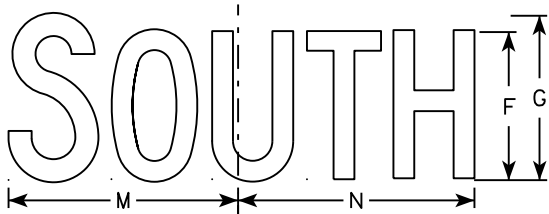
M3-2
MM3-2
MP3-2



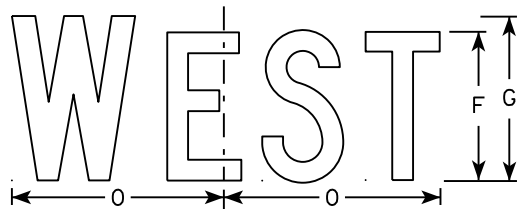
MB3-2
MK3-2
MN3-2



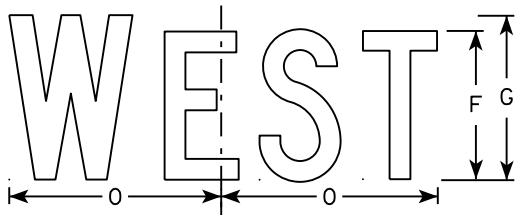
M3-3
MM3-3
MP3-3



MB3-3
MK3-3
MN3-3



M3-4
MM3-4
MP3-4



MB3-4
MK3-4
MN3-4

NOTES

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

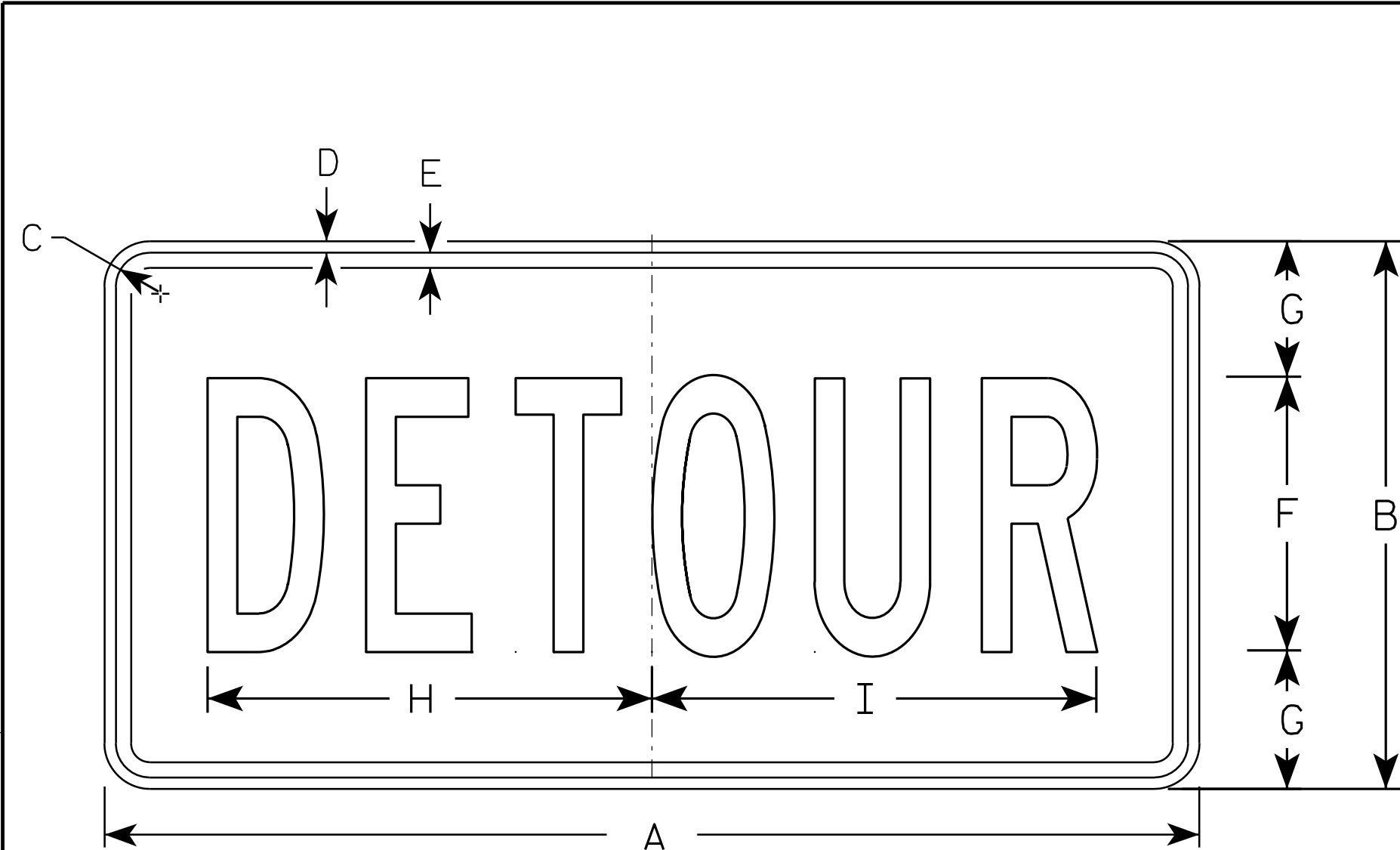
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/8	3/8	3/8	6	7	2 1/4	2 3/4	10 1/4	7 7/8	8 3/8	10 1/4	9 3/4	8 3/4			1 1/2									2.00
3	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
4	36	18	1 1/8	3/8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

STANDARD SIGNS
M3-1 thru M3-4
SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 10/15/15 PLATE NO. 50 M3-1.14



M4 - 8

NOTES

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

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

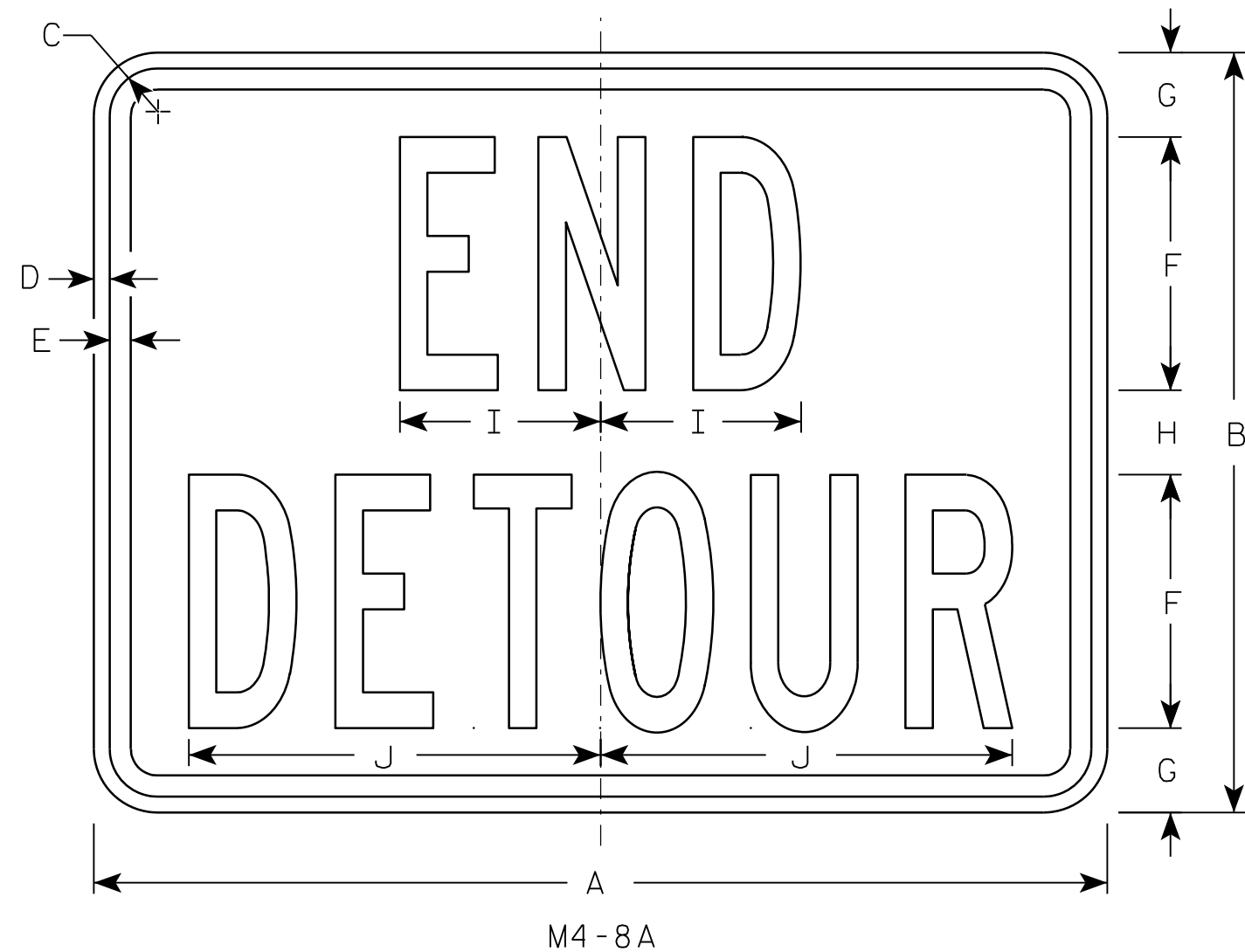
STANDARD SIGN

M4 - 8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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



NOTES

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

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

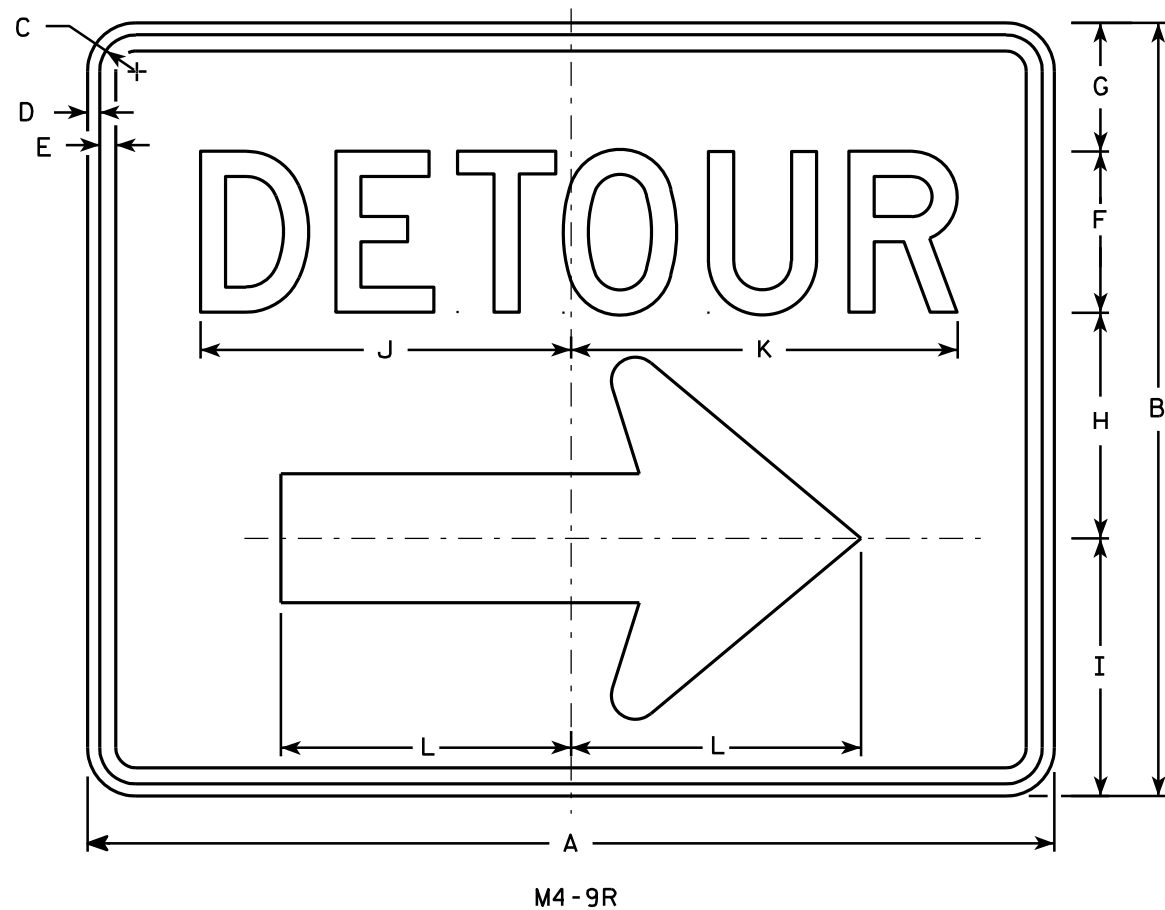
PROJECT NO:	HWY:	COUNTY:	SHEET NO: 52	E
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STANDARD SIGN
M4-8A

WISCONSIN DEPT OF TRANSPORTATION

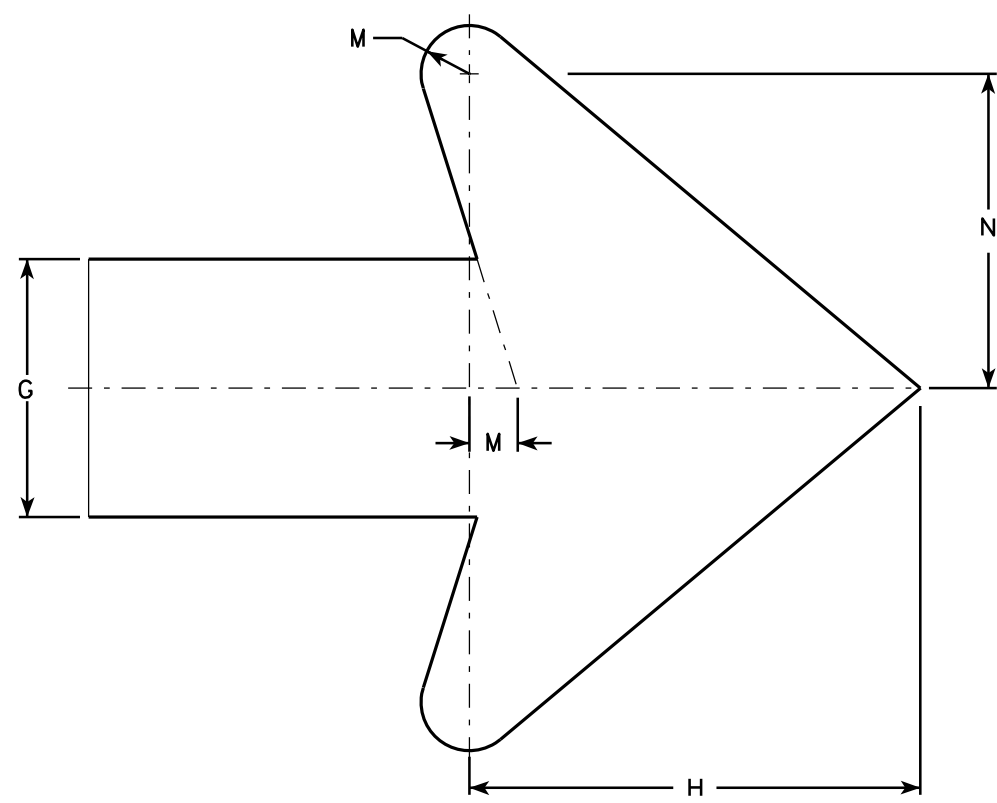
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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



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 - D
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 5. M4-9L is the same as M4-9R except the arrow is reversed.



Arrow Detail

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

STANDARD SIGN
M4-9 R & L

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 3/9/11 PLATE NO. M4-9R.4

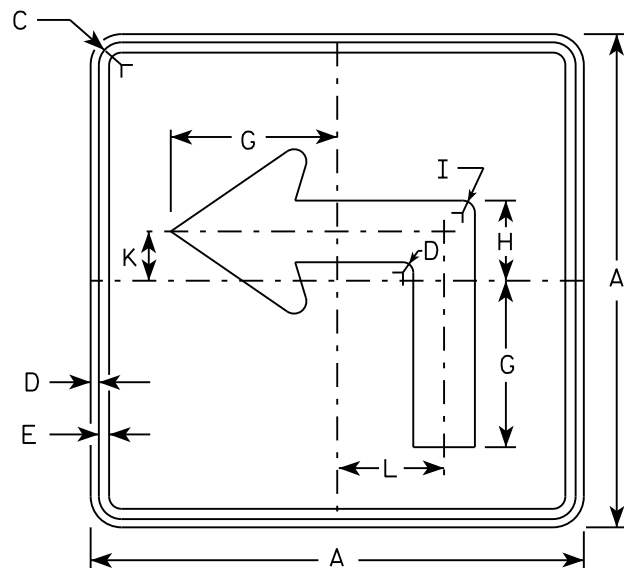
PROJECT NO:

HWY:

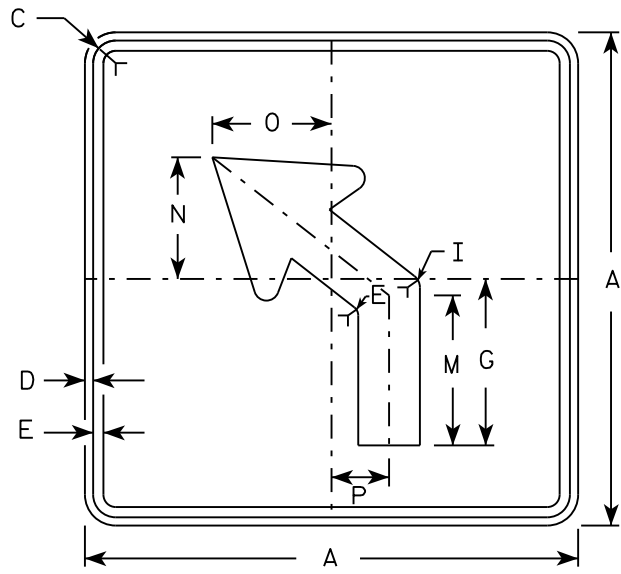
COUNTY:

SHEET NO: 53

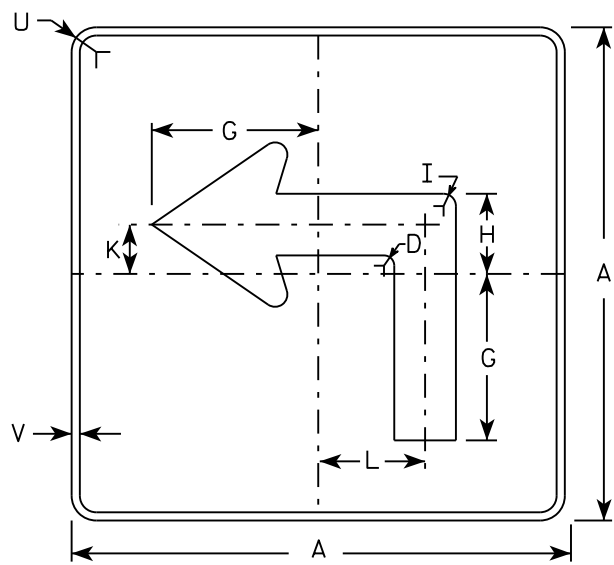
E



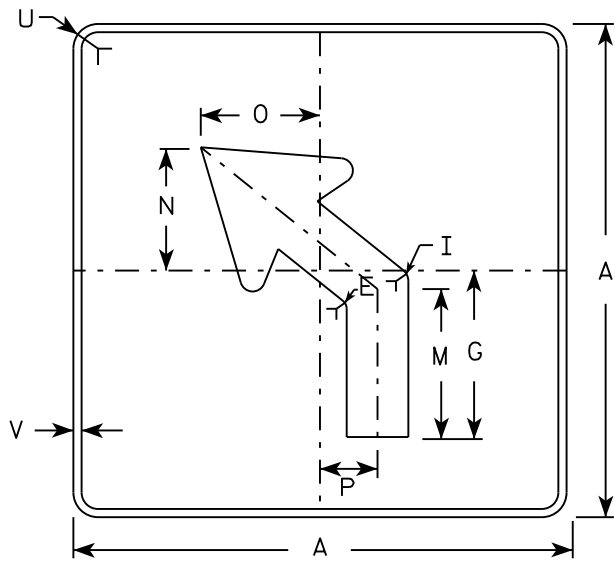
M5-1L
MM5-1L
M05-1L
MP5-1L



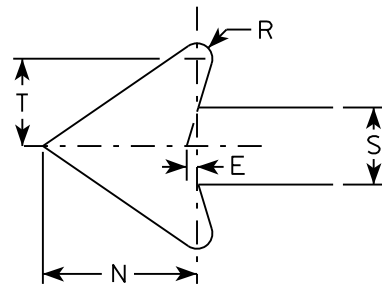
M5-2L
MM5-2L
M05-2L
MP5-2L



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

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

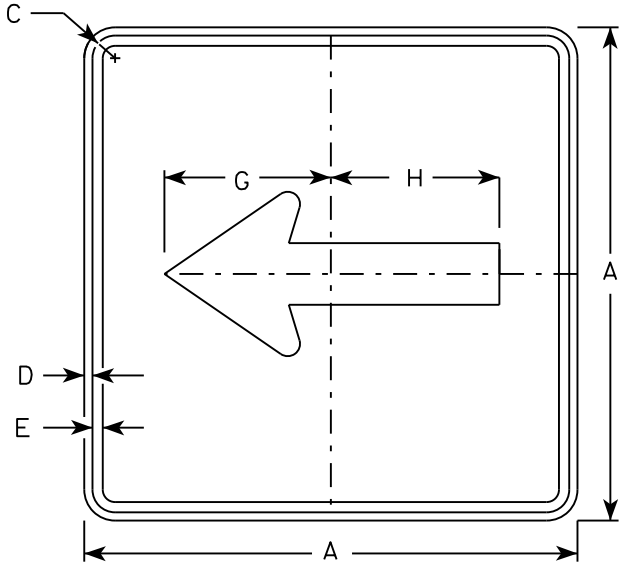
E

STANDARD SIGN
M5-1 & M5-2

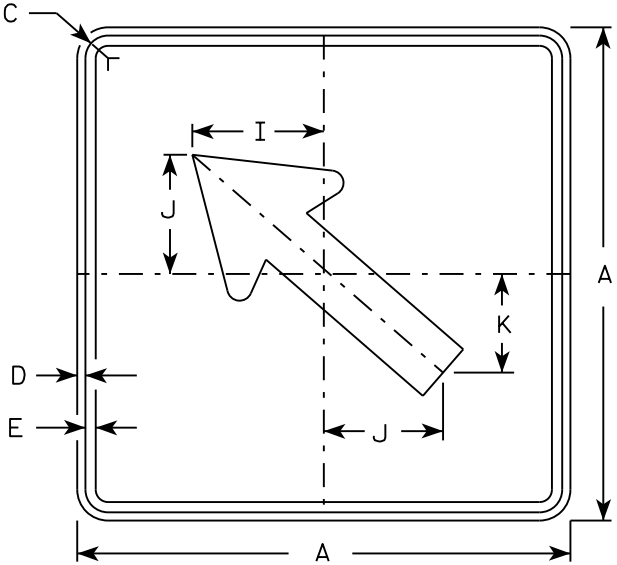
WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

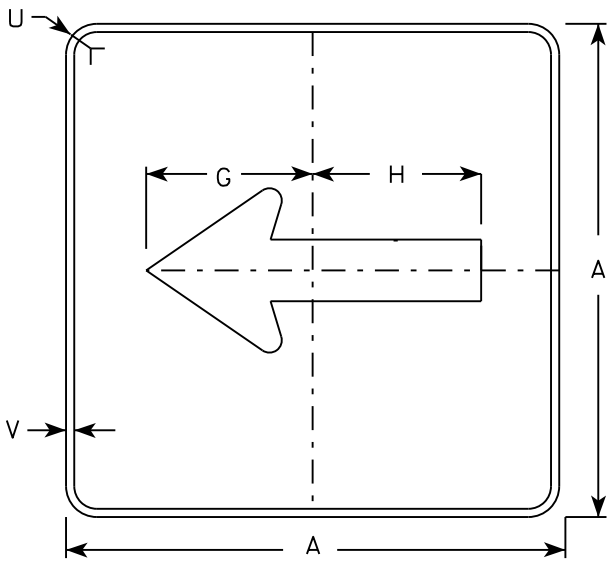
DATE 10/15/15 PLAT 54 M5-1.13



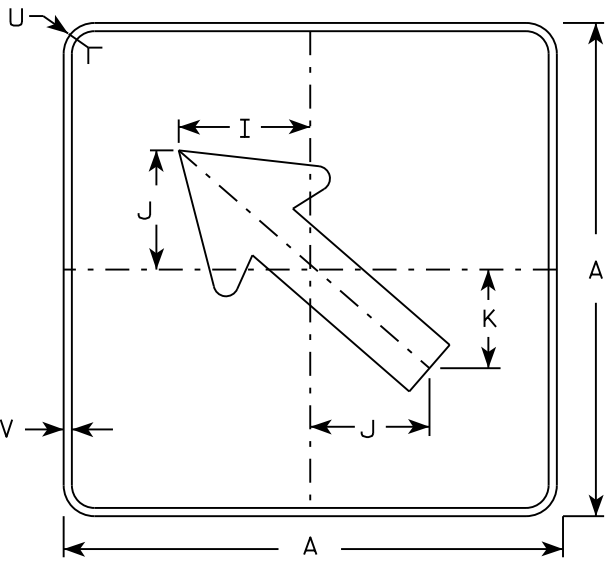
M6 - 1
MM6 - 1
M06 - 1
MP6 - 1



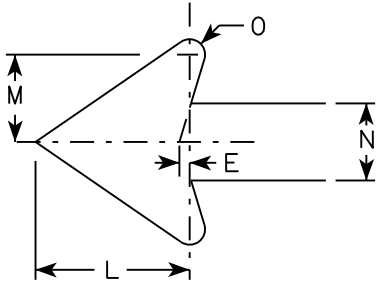
M6 - 2
MM6 - 2
M06 - 2
MP6 - 2



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



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



NOTES

- 1. Signs are Type II - Type H except as Shown
- 2. Color:
Background - See note 4
Message - See note 4
- 3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 4. M6-1 and M6-2 Background - White
Message - Black
MB6-1 and MB6-2 Background - Blue
Message - White
MK6-1 and MK6-2 Background - Green
Message - White
MM6-1 and MM6-2 Background - White
Message - Green
MN6-1 and MN6-2 Background - Brown
Message - White
M06-1 and M06-2 Background - Orange - Type F Reflective
Message - Black
MP6-1 and MP6-2 Background - White
Message - Blue
MR6-1 and MR6-2 Background - Brown
Message - Yellow

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

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E

STANDARD SIGN
M6 - 1 & M6 - 2
SERIES

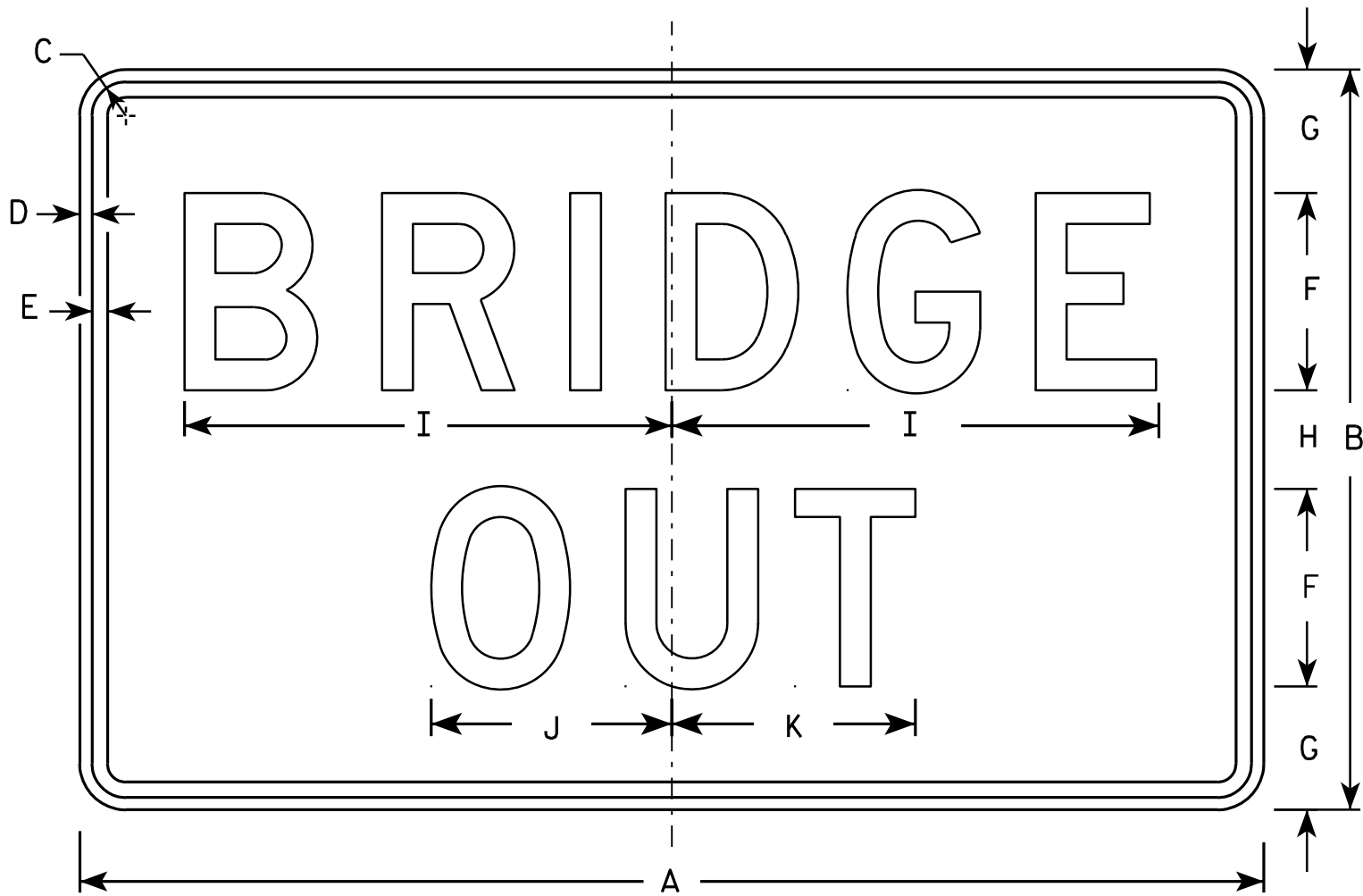
WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 10/15/15 PLAT 55 M6-1.15

NOTES

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



R11-2B

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

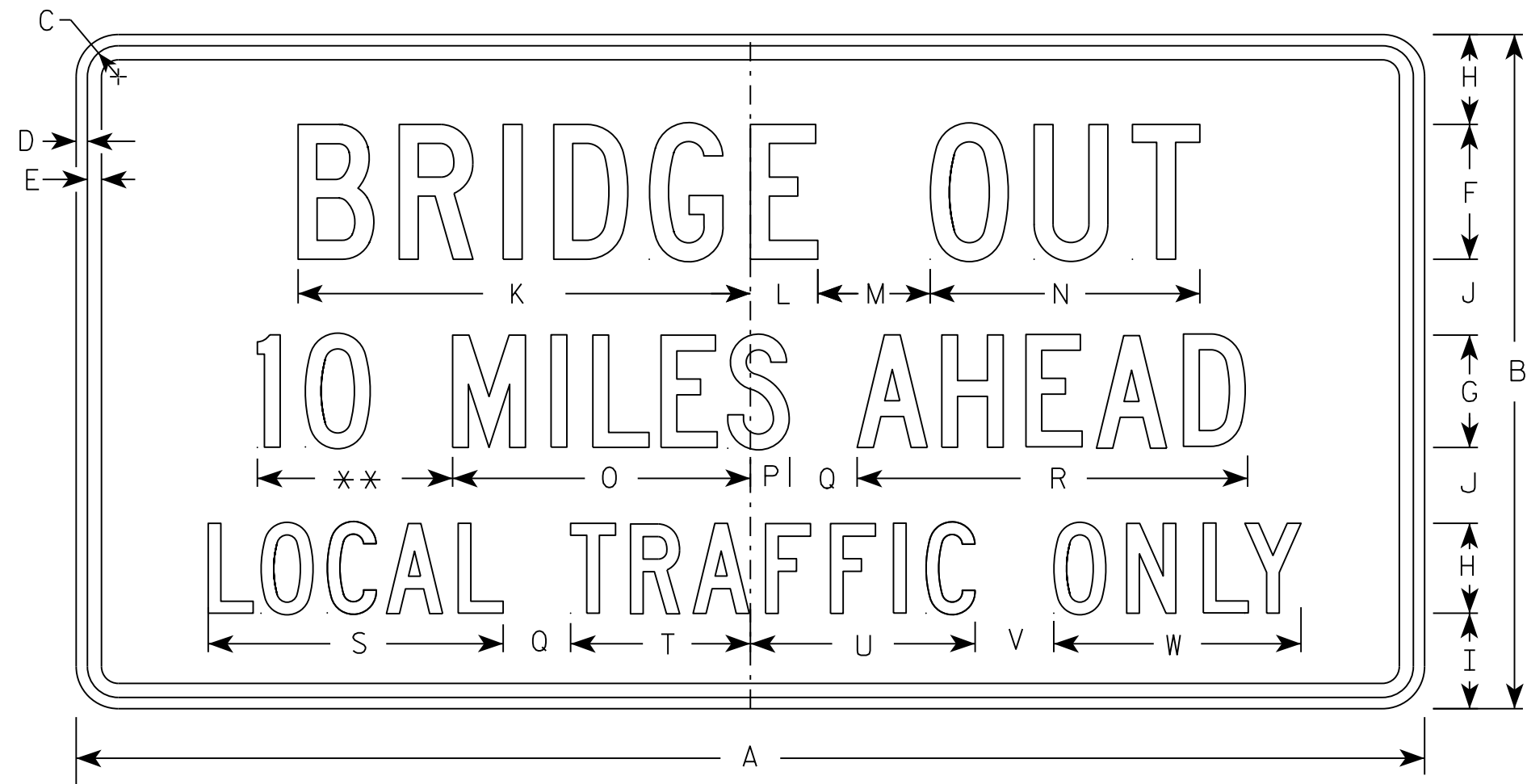
STANDARD SIGN	
R11-2B	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 4/1/11	PLATE NO. R11-2B.2

NOTES

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

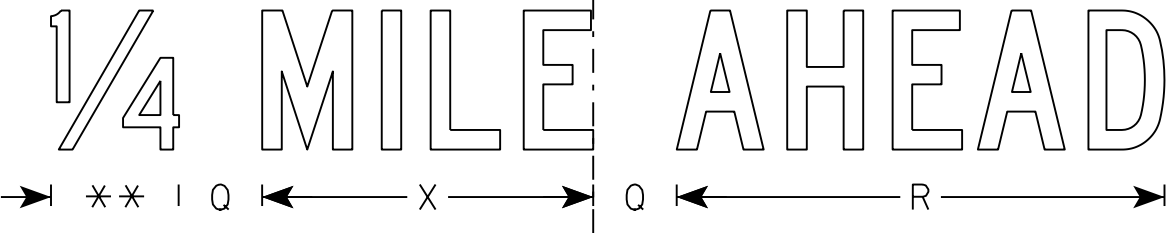
Background - White

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



** See Note 5

R11-3B



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

PROJECT NO:

HWY:

COUNTY:

SHEET NO: 57

E

STANDARD SIGN
R11-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

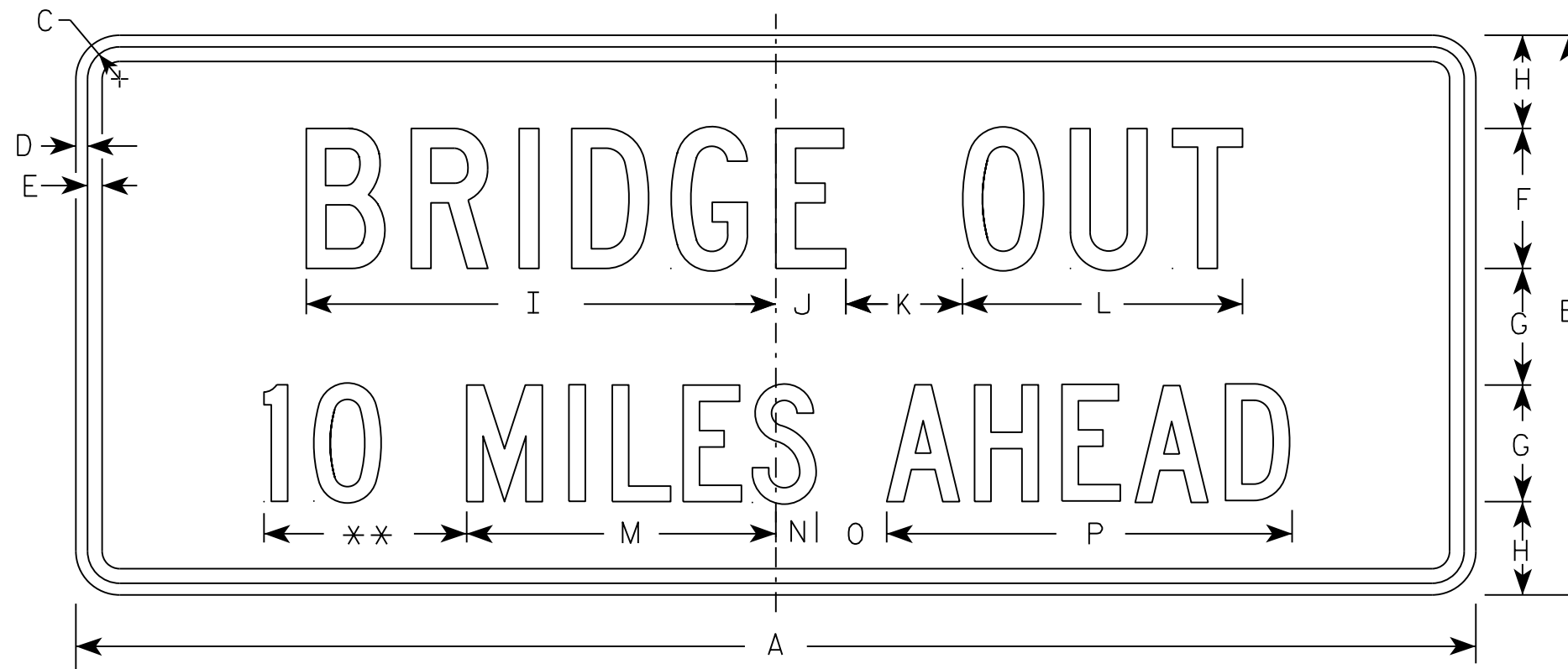
Matthew R. Rauch

for State Traffic Engineer

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

NOTES

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



R11-3C

** See Note 5

Diagram illustrating a 1/4 mile race track layout. The track is divided into two segments by a dashed vertical line. The left segment is labeled "1/4 MILE" and the right segment is labeled "AHEAD". The distance from the start to the dashed line is labeled "R", and the distance from the dashed line to the finish is labeled "P".

[illegible]

STANDARD SIGN
R11-3C

WISCONSIN DEPT OF TRANSPORTATION

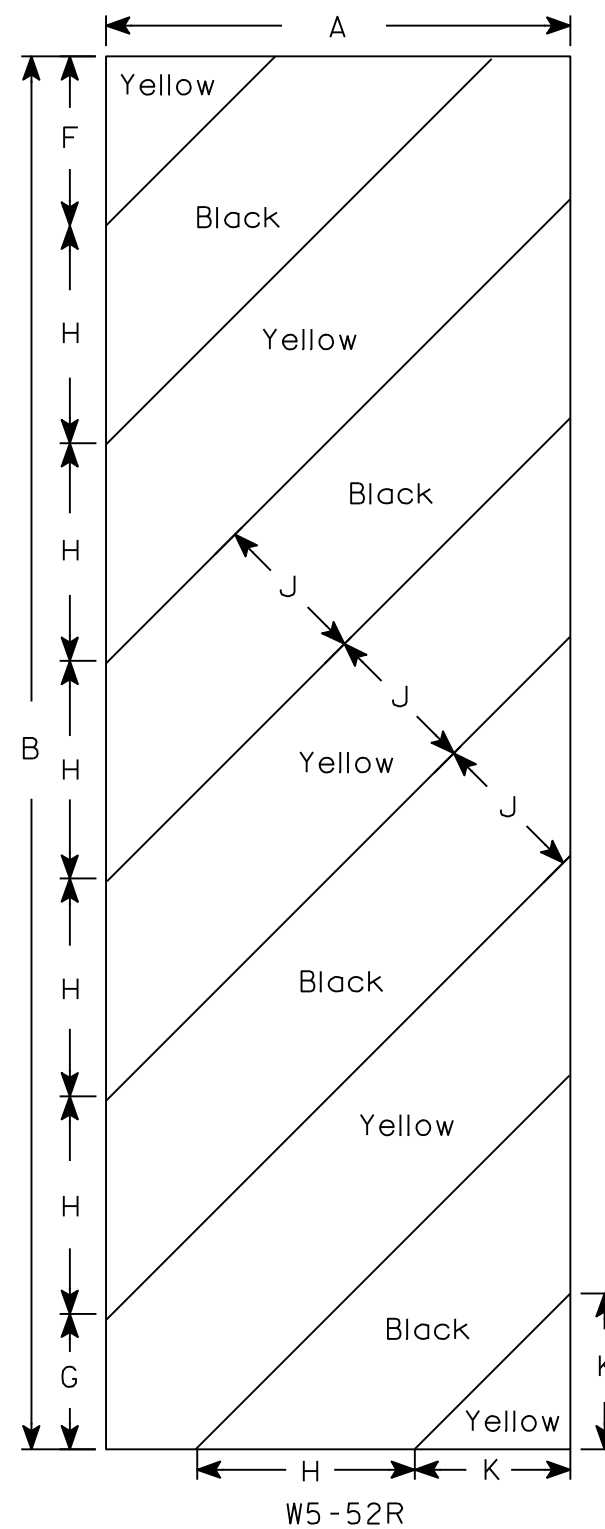
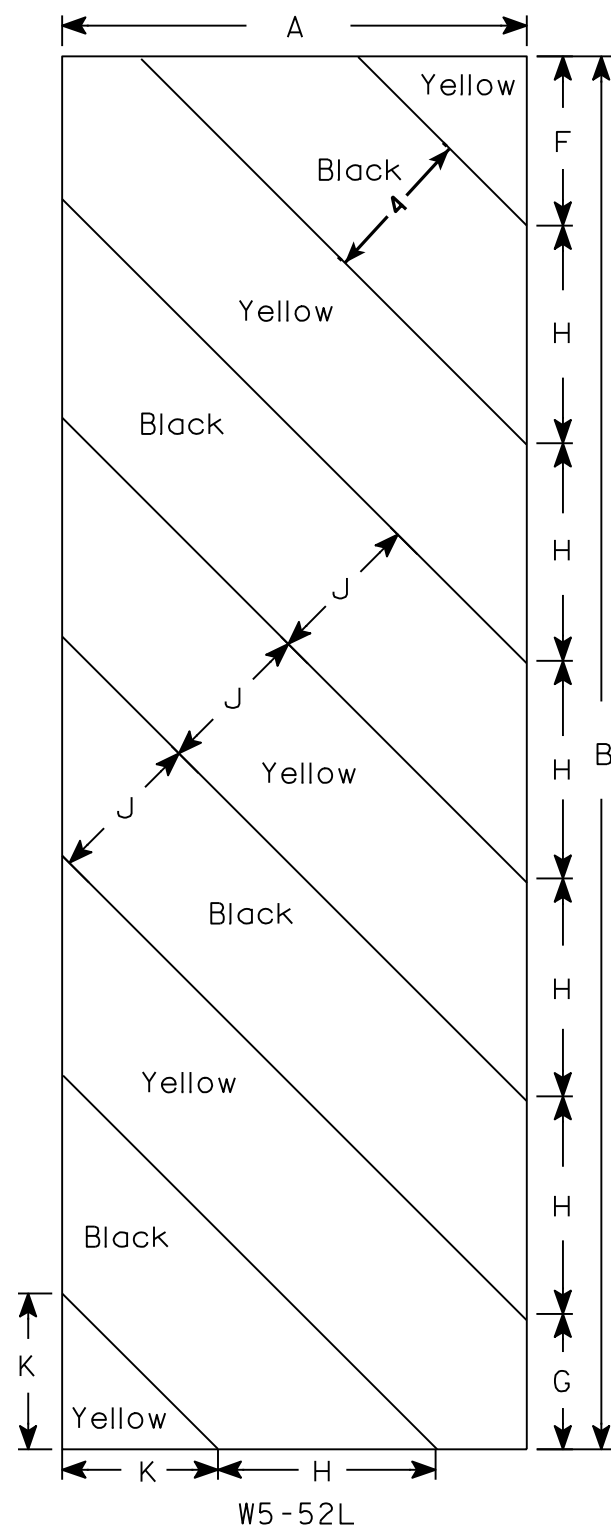
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 7/28/16 PLATE NO. R11-3C.3

PROJECT NO:

SHEET NO: 58

E



NOTES

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

[illegible]

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

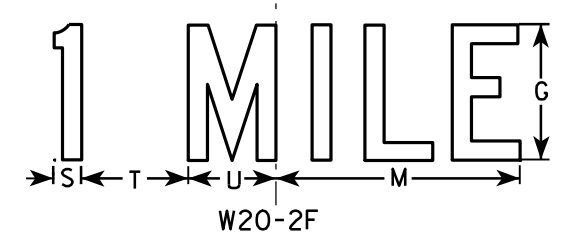
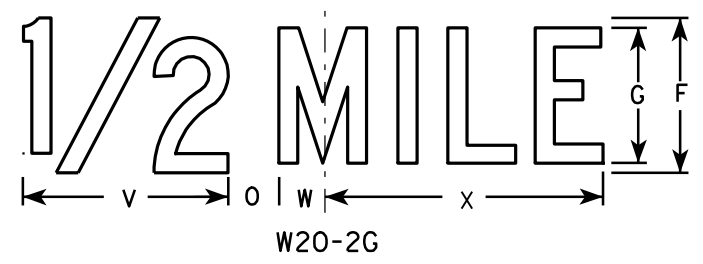
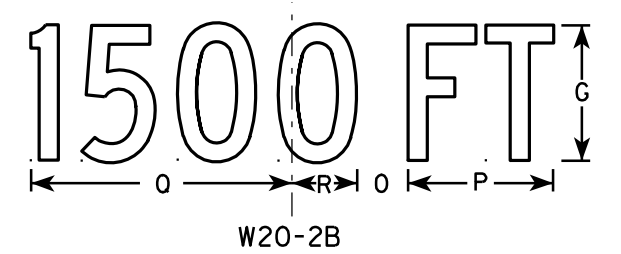
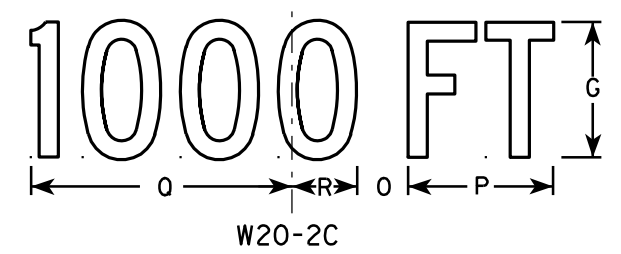
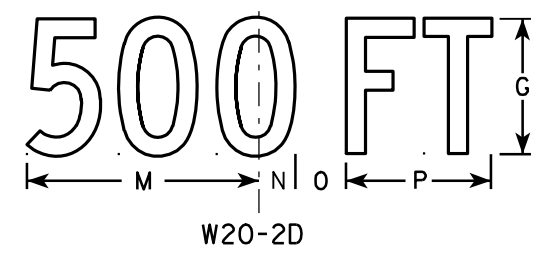
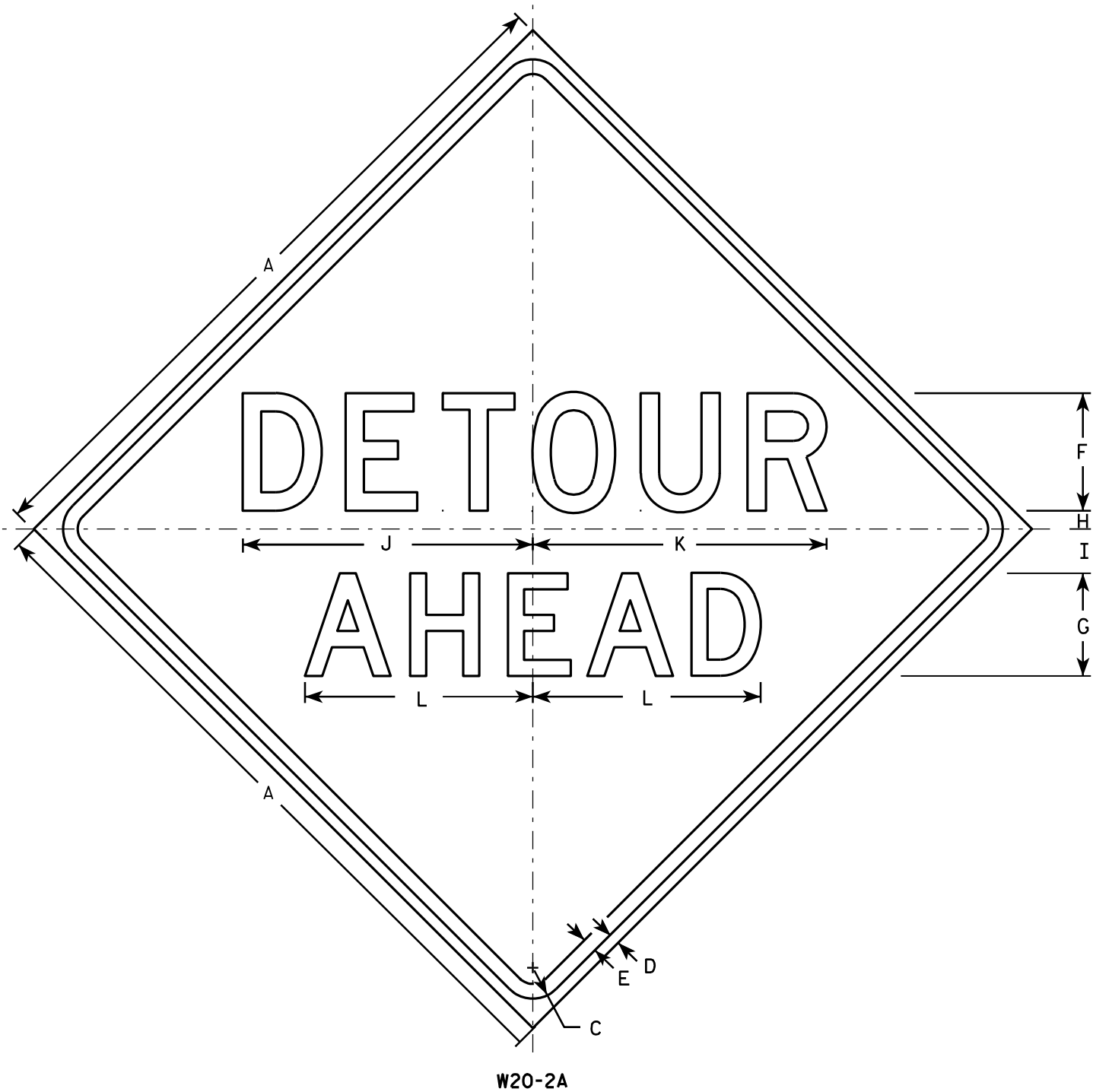
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 59

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.

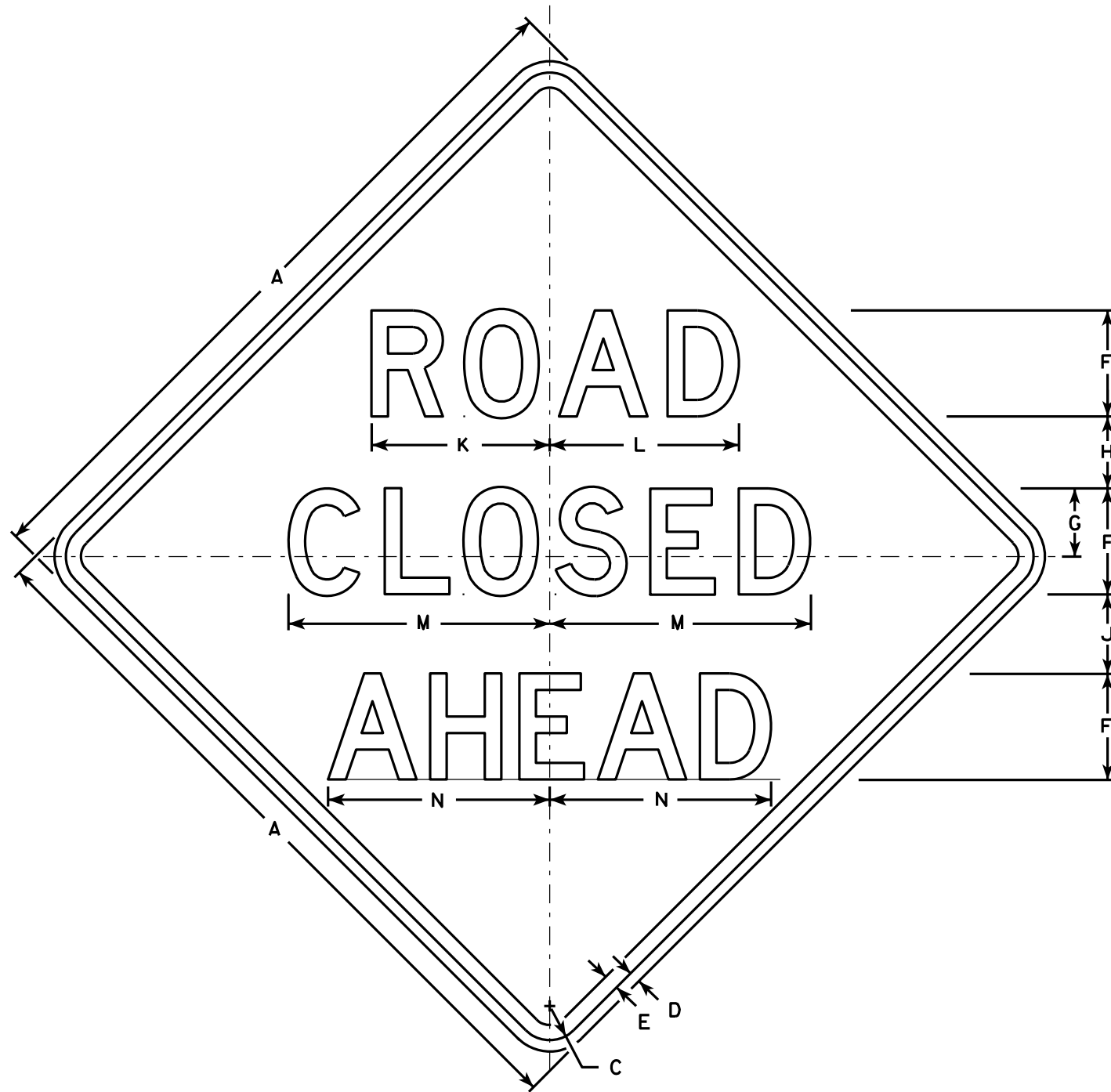
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		1 5/8	5/8	3/4	6	5	1	2 1/4	14 3/4	15	11 5/8	9	1 3/8	1 7/8	5 5/8	10 1/8	2 1/2	1 1/8	4 1/2	3 1/2	8	1 3/4	10 3/4			9.0
2S	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14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

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

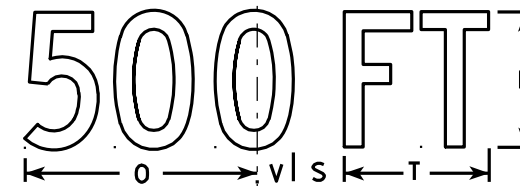
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

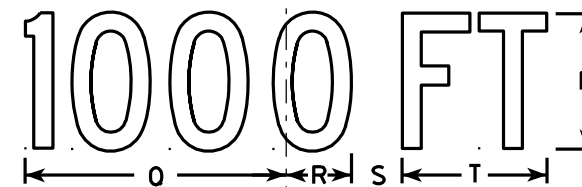
DATE 3/18/11 PLATE NO. W20-2.6



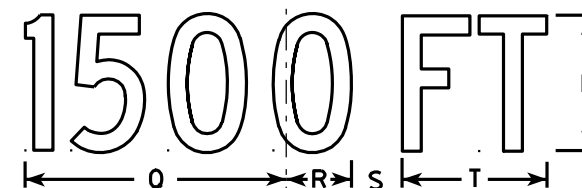
W20-3A



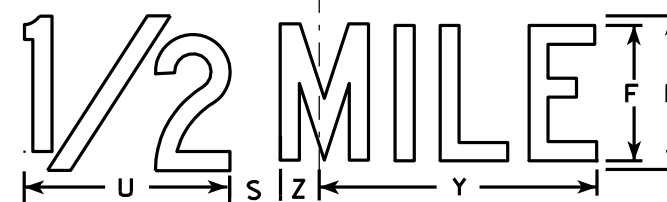
W20-3D



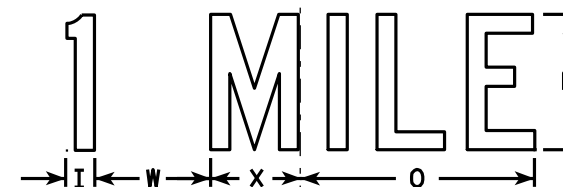
W20-3C



W20-3B



W20-3G



W20-3F

NOTES

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

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

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

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 3/18/11 PLATE NO. W20-3.7

PROJECT NO:

HWY:

COUNTY:

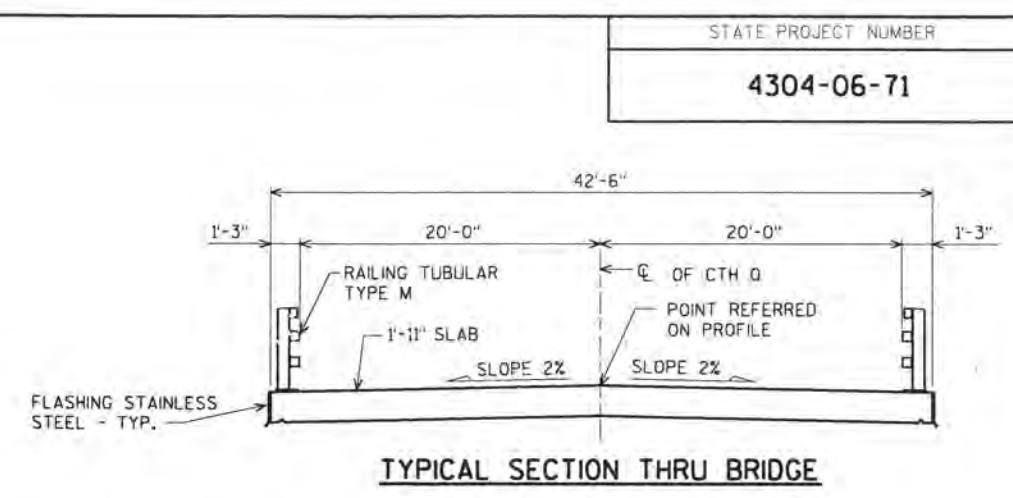
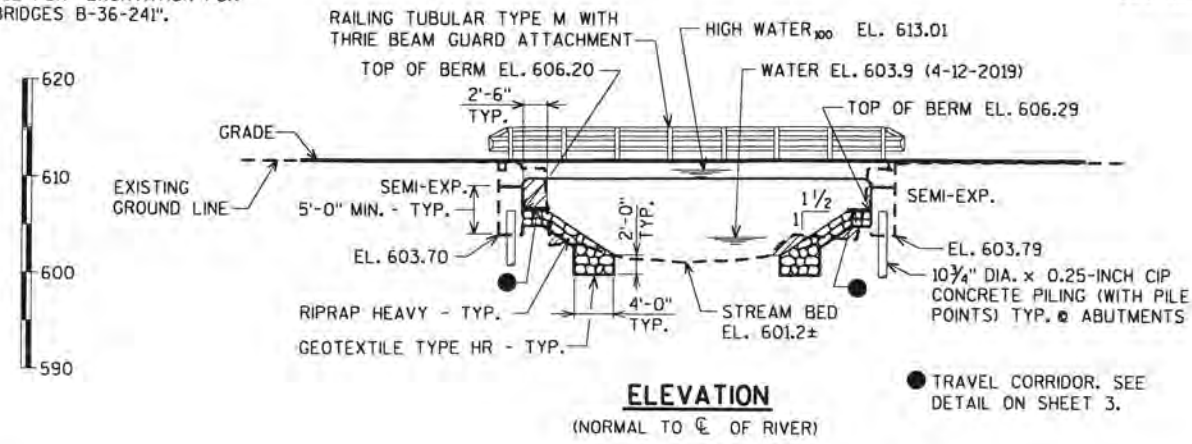
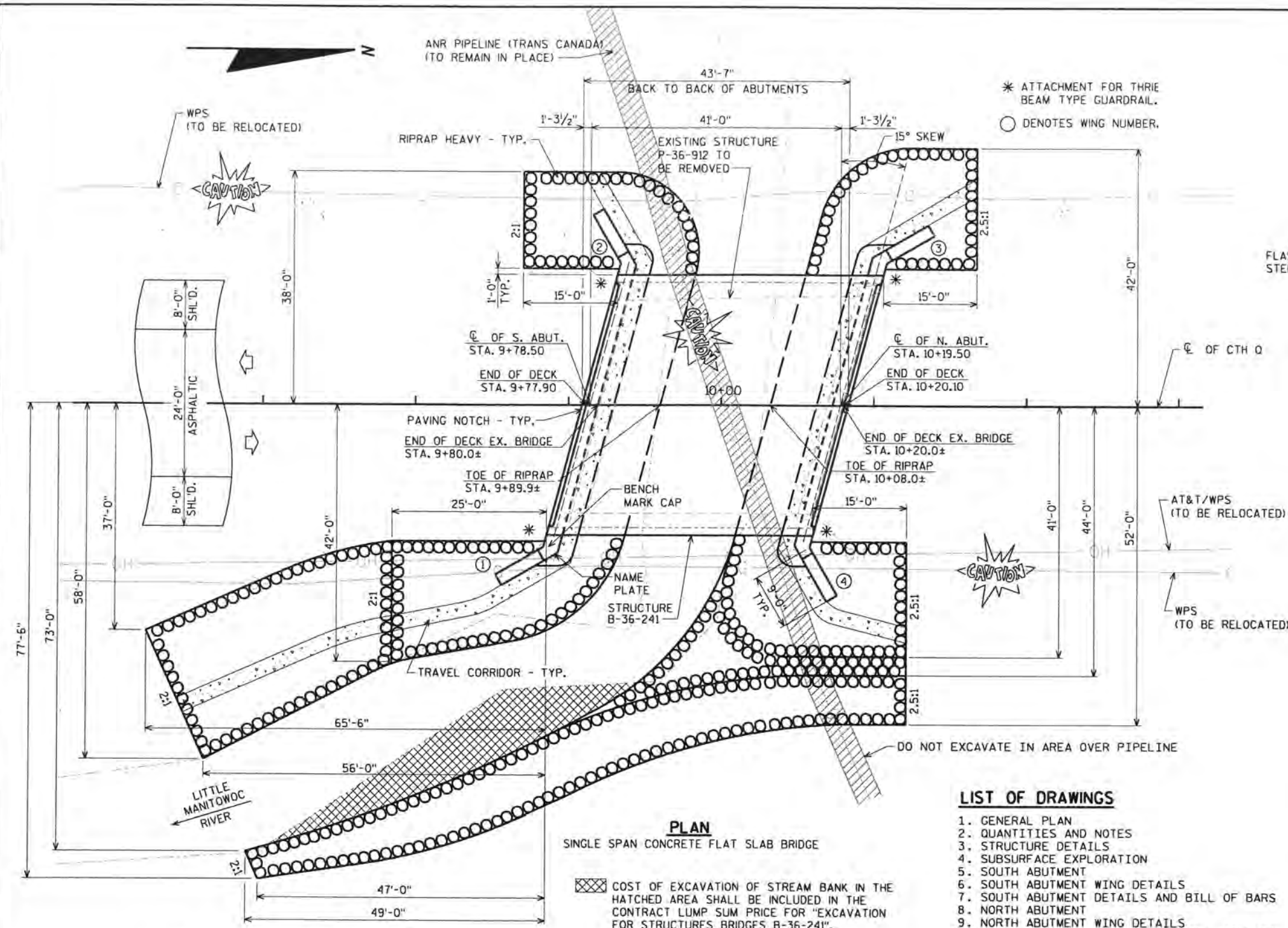
SHEET NO: 61

E

1/28/2021
PENTABLE:BReau_shd_util.tbl

CHECKED BY: DATE:
BACK CHECKED BY: DATE:
CORRECTED BY: DATE:

8



DESIGN DATA

LIVE LOAD:
DESIGN LOADING: HL-93
INVENTORY RATING FACTOR: 1.09
OPERATING RATING FACTOR: 1.41
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 #/S.F.

MATERIAL PROPERTIES:
CONCRETE MASONRY SUPERSTRUCTURE $f'_c = 4,000$ p.s.i.
ALL OTHER $f'_c = 3,500$ p.s.i.
HIGH STRENGTH BAR STEEL REINFORCEMENT (GRADE 60) $f_y = 60,000$ p.s.i.

HYDRAULIC DATA:
100 YEAR FREQUENCY
 $Q_{100} = 1,900$ c.f.s. { BRIDGE = 1,741 c.f.s.
OVERFLOW = 159 c.f.s.
VEL. = 8.1 f.p.s.
HW₁₀₀ = EL. 613.01
WATERWAY AREA = 216 sq. ft.
DRAINAGE AREA = 6.8 sq. mi.
SCOUR CRITICAL CODE = 5
DATUM = NAVD88 (2012)

2 YEAR FREQUENCY
 $Q_2 = 680$ c.f.s.
VEL. = 4.9 f.p.s.
HW₂ = EL. 608.16

FOUNDATION DATA:

ABUTMENTS TO BE SUPPORTED ON 10 3/4" DIA. x 0.25" CIP CONCRETE PILING (WITH PILE POINTS) DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 130 TONS # PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA.
ESTIMATED LENGTH 80'-0" FOR BOTH SOUTH AND NORTH ABUTMENTS.

*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.

TRAFFIC DATA:

A.A.D.T. = 2,700 (2014)
A.A.D.T. = 3,530 (2041)
R.D.S. = 45 M.P.H.

LIST OF DRAWINGS

1. GENERAL PLAN
2. QUANTITIES AND NOTES
3. STRUCTURE DETAILS
4. SUBSURFACE EXPLORATION
5. SOUTH ABUTMENT
6. SOUTH ABUTMENT WING DETAILS
7. SOUTH ABUTMENT DETAILS AND BILL OF BARS
8. NORTH ABUTMENT
9. NORTH ABUTMENT WING DETAILS
10. NORTH ABUTMENT DETAILS AND BILL OF BARS
11. SUPERSTRUCTURE
12. SUPERSTRUCTURE PLAN
13. RAILING TUBULAR TYPE M



1-28-21

BRIDGE OFFICE CONTACT:
AARON BONK
(608)-261-0261
CONSULTANT CONTACT:
ARLEN BEAUDETTE
(715)-834-3161

STATE PROJECT NUMBER 4304-06-71		
ORIGINAL PLANS PREPARED BY AYRES 3433 Oakwood Hills Parkway Eau Claire, WI 54701 www.AyresAssociates.com		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION ACCEPTED <i>[Signature]</i> SDR 02/10/21 CHIEF STRUCTURES DESIGN ENGINEER DATE		
STRUCTURE B-36-241		
CTH Q (NORTH) OVER LITTLE MANITOWOC RIVER		
COUNTY	MANITOWOC	TOWN/CITY/VILLAGE
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS		
DESIGNED BY	JLB	DESIGN CK'D. AEB
DRAWN BY	CLP	PLANS CK'D. AEB
GENERAL PLAN		SHE 62 F 13

8/25/2020
PENTABLE:BRQU-shd_util.tbl

STATE PROJECT NUMBER

4304-06-71

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	S. ABUT.	N. ABUT.	SUPER.	TOTAL
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STATION 10+00	LS	-----	-----	-----	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-36-241	LS	-----	-----	-----	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	235	235	-----	470
502.0100	CONCRETE MASONRY BRIDGES	CY	34	34	137	205
502.3200	PROTECTIVE SURFACE TREATMENT	SY	-----	-----	225	225
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	3,150	3,150	-----	6,300
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1,330	1,330	21,740	24,400
513.4061	RAILING TUBULAR TYPE M	LF	-----	-----	89	89
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	9	9	-----	18
550.0500	PILE POINTS	EACH	10	10	-----	20
550.2104	PILING CIP CONCRETE 10¾ x 0.25-INCH	LF	800	800	-----	1,600
606.0300	RIPRAP HEAVY	CY	215	235	-----	450
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	90	90	-----	180
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	65	65	-----	130
645.0120	GEOTEXTILE TYPE HR	SY	400	460	-----	860
SPV.0090.01	FLASHING STAINLESS STEEL	LF	-----	-----	77	77
SPV.0195.01	SELECT CRUSHED MATERIAL FOR TRAVEL CORRIDOR	TON	15	10	-----	25
	NON-BID ITEMS					
	FILLER	SIZE	-----	-----	-----	½" & ¾"

GENERAL NOTES

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

THE FIRST DIGIT OF A THREE DIGIT BAR NO. AND THE FIRST TWO DIGITS OF A FOUR DIGIT BAR NO. 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 THE GENERAL PLAN SHEET AND IN THE ABUTMENT DETAILS.

SLAB FALSEWORK SHALL BE SUPPORTED ON PILES OR THE SUBSTRUCTURE UNLESS AN ALTERNATIVE METHOD IS APPROVED BY THE ENGINEER.

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-36-241" SHALL BE THE EXISTING GROUNDLINE.

THE EXISTING STRUCTURE, P-36-912, TO BE REMOVED, IS A SINGLE SPAN PRESTRESSED CONCRETE BOX BEAM BRIDGE ON CONCRETE ABUTMENTS, 40 FT. LONG WITH A 28.25 FT. CLEAR ROADWAY WIDTH.

AT THE BACK FACE OF ABUTMENTS, ALL VOLUME WHICH CANNOT BE PLACED BEFORE ABUTMENT CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH BACKFILL STRUCTURE TYPE A.

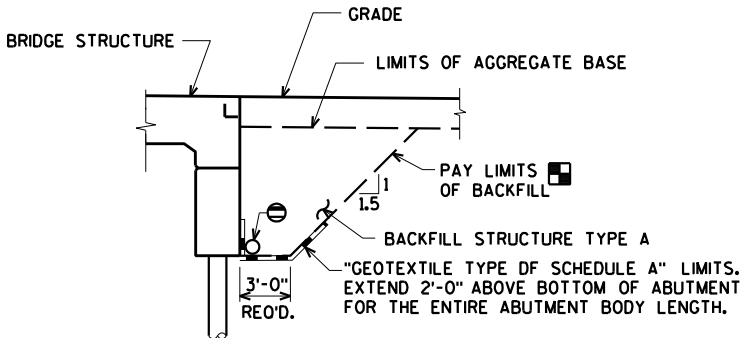
PROTECTIVE SURFACE TREATMENT IS TO BE APPLIED AS SHOWN IN DETAIL ON THIS SHEET.

BEVEL EXPOSED EDGES OF CONCRETE ¾" UNLESS NOTED OTHERWISE.

EXCAVATION BELOW THE ABUTMENT AND ABUTMENT BEDDING MATERIALS REQUIRES ENGINEER APPROVAL. GEOTEXTILE SHALL BE SET AT THE BOTTOM OF EXCAVATION AND EXTEND 2'-0" ABOVE BOTTOM OF ABUTMENT.

THE BACKFILL QUANTITIES ARE BASED ON THE PAY LIMITS SHOWN ON THE PLANS AND MAY NOT REFLECT ACTUAL PLACED QUANTITIES. "BACKFILL STRUCTURE TYPE A" REQUIRED DIRECTLY BEHIND ABUTMENTS AND ABUTMENT WINGS FOR 3 FEET. BACKFILL PLACED BEYOND PAY LIMITS OR EXCEEDING PLAN QUANTITIES SHALL BE INCIDENTAL TO EXCAVATIONS FOR STRUCTURES.

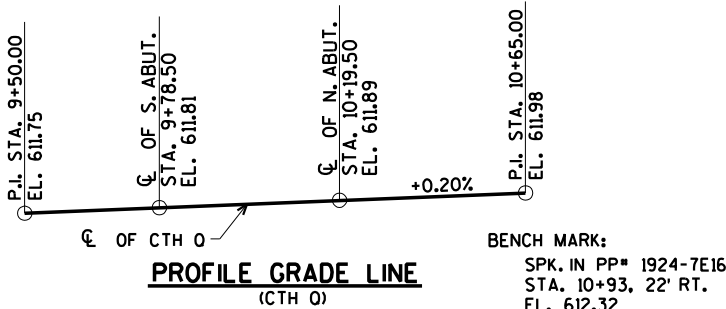
AT ABUTMENTS, CONCRETE POURED UNDERWATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH SECTION 502.3.5.3 OF THE STANDARD SPECIFICATIONS.



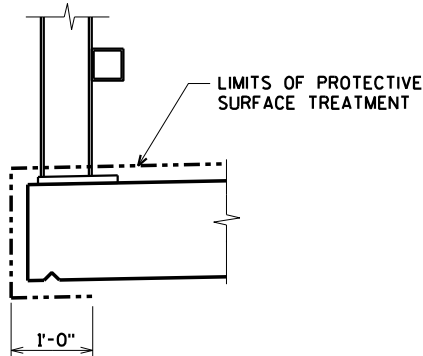
BACKFILL STRUCTURE LIMITS

■ 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 AS DETAILED ON SHEET 7.



PROFILE GRADE LINE
(CTH 0)



PROTECTIVE SURFACE TREATMENT DETAIL

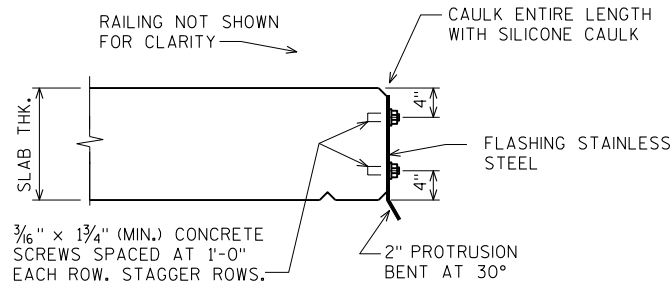
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-241			
DRAWN BY		CLP	PLANS CK'D. AEB
QUANTITIES AND NOTES		SHEET 2 OF 13 63	

ORIGINAL PLANS PREPARED BY
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1/18/2021
PENTABLE:BRoadu_shd_util.tbl

STATE PROJECT NUMBER

4304-06-71



FLASHING DETAIL FOR NEW BRIDGES WITH OPEN RAILING

THE BID ITEM "FLASHING STAINLESS STEEL" SHALL INCLUDE PROVIDING AND INSTALLING THE STAINLESS STEEL FLASHING, SILICONE CAULK, 3/16" CONCRETE SCREWS AND CLEANING THE EDGE OF THE DECK PRIOR TO ATTACHMENT OF THE FLASHING.

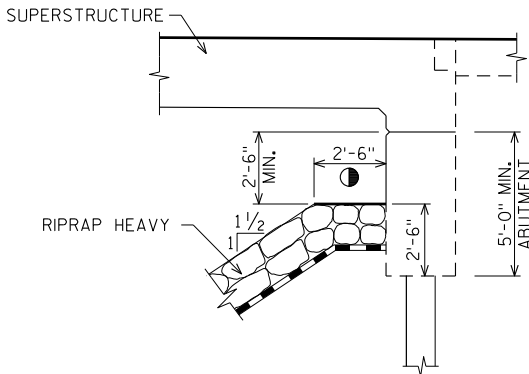
FLASHING TO BE NSTALLED AFTER PROTECTIVE SURFACE TREATMENT APPLICATION.

CONCRETE SCREWS SHALL BE 410 STAINLESS STEEL.

EXTEND FLASHING TO B.F. OF ABUTMENT.

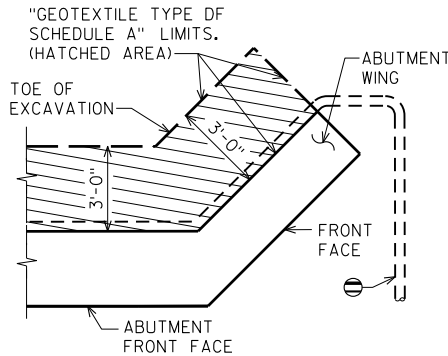
TOP OF FLASHING TO BEGIN APPROX. 1-INCH BELOW TOP OF SLAB SURFACE.

THE FLASHING IS TO BE A CONSTANT HEIGHT BASED ON THE THINNEST SLAB DEPTH OVER THE BRIDGE LENGTH.

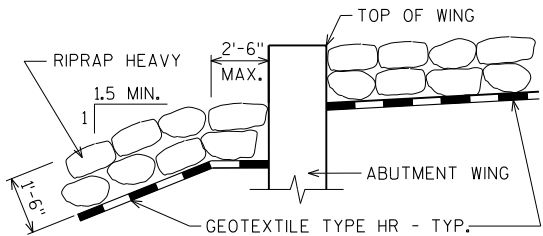


TRAVEL CORRIDOR DETAIL

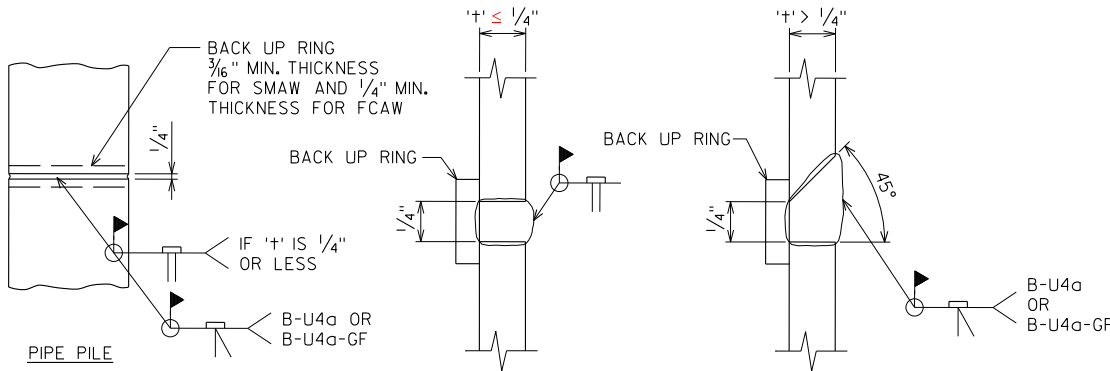
- FILL VOIDS WITH SELECT CRUSHED MATERIAL FOR TRAVEL CORRIDOR AFTER RIPRAP IS PLACED.



BACKFILL STRUCTURE LIMITS ABUTMENT PLAN WITH WING



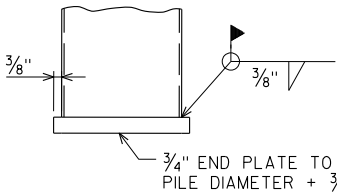
TYPICAL FILL SECTION AT WING TIPS



PILE SPlice DETAIL

CAST-IN-PLACE PILE SHELL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

CIP PILE WELD DETAIL



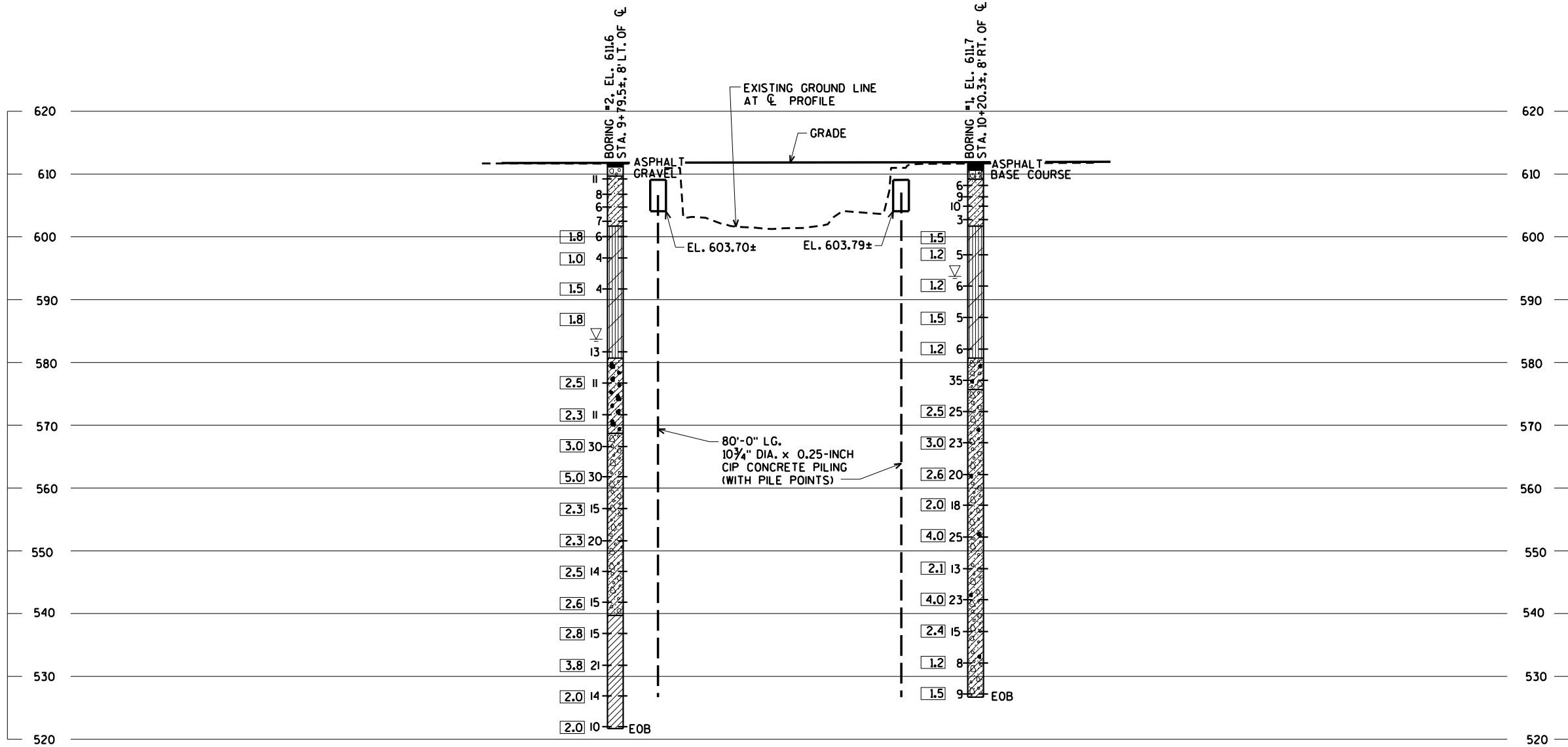
END PLATE DETAIL FOR CIP PILING

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STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-241			
DRAWN BY		CLP	PLANS CK'D. AEB
STRUCTURE DETAILS		SHEET 3 OF 13 64	

8/24/2020
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8



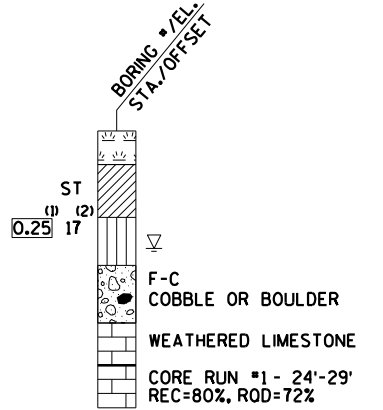
STATE PROJECT NUMBER

4304-06-71

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

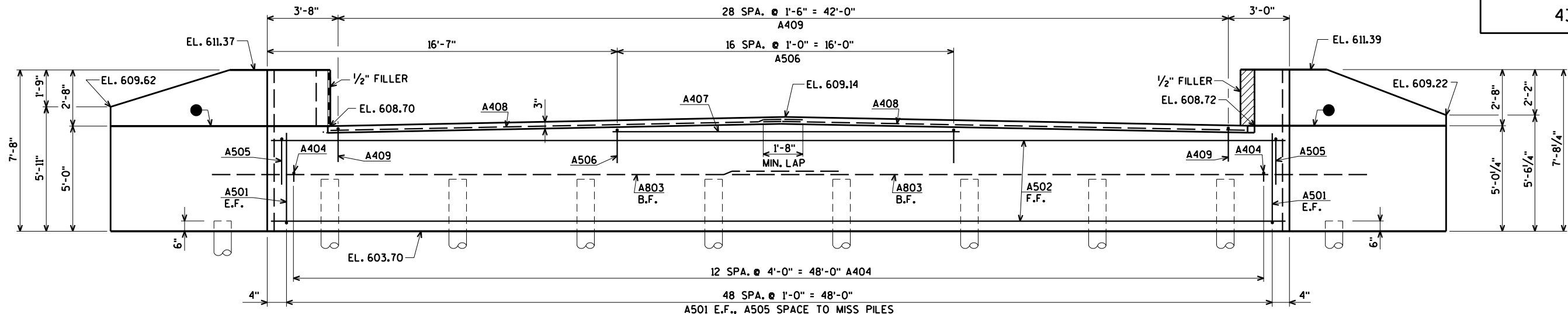
F-FINE M-MEDIUM C-COARSE ST-SHELBY TUBE

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

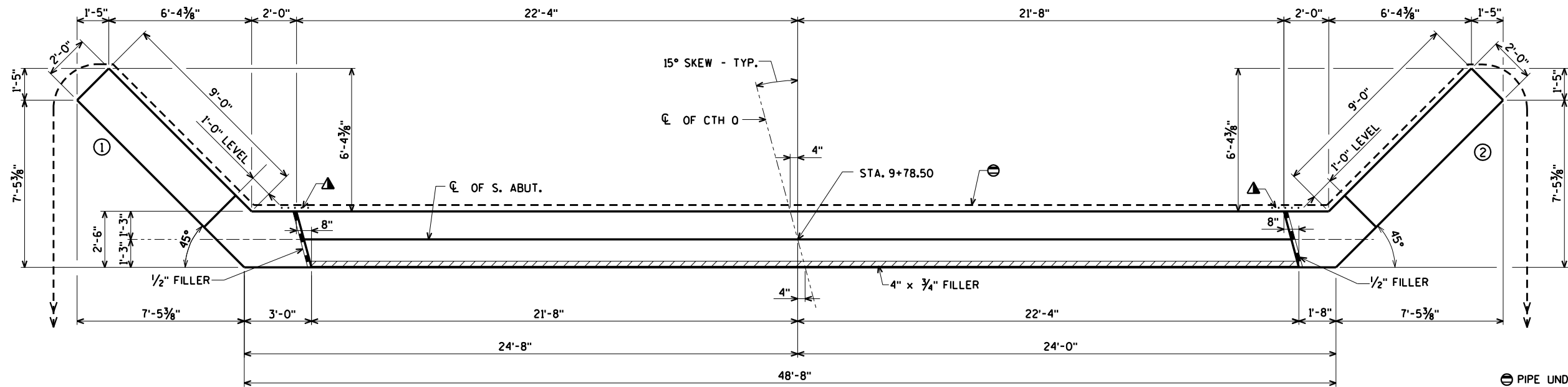
BORINGS WERE COMPLETED AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING TO OBTAIN INFORMATION CONCERNING THE CHARACTER OF SUBSURFACE MATERIALS FOUND AT THE SITE. BECAUSE THE INVESTIGATED DEPTHS ARE LIMITED AND THE AREA OF THE BORINGS IS VERY SMALL IN RELATION TO THE ENTIRE SITE, THE WISCONSIN DEPARTMENT 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.

NO.	DATE	REVISION	BY
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STRUCTURE B-36-241			
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SUBSURFACE EXPLORATION		SHEET 4 OF 13 65	

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ELEVATION
(LOOKING SOUTH)



PLAN

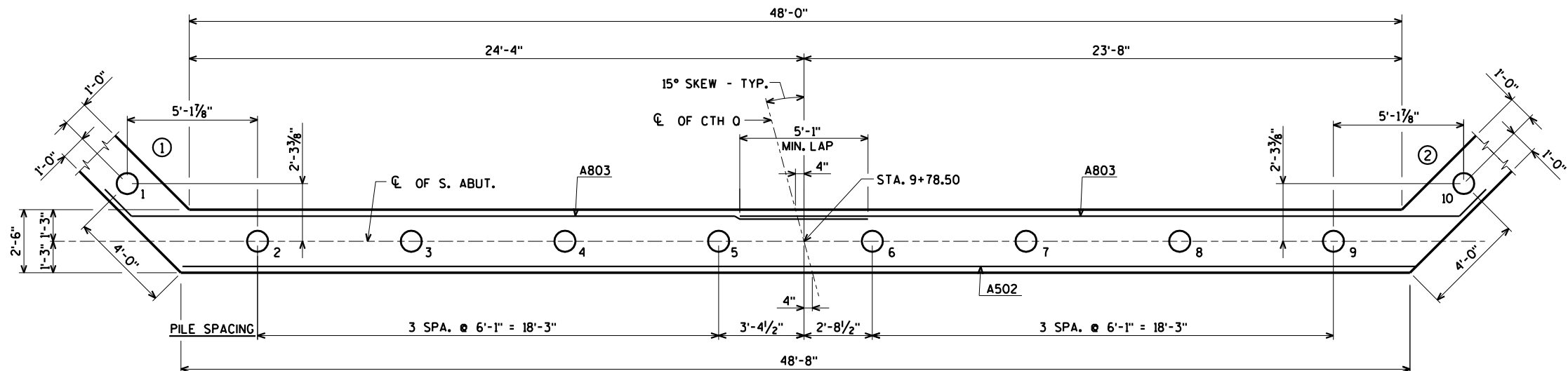
B.F. DENOTES BACK FACE.
F.F. DENOTES FRONT FACE.
E.F. DENOTES EACH FACE.

⊖ PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON SHEET 7. RODENT SHIELD TO BE INCIDENTAL TO BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".

▲ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING.

● OPT. KEYED CONST. JOINT - FORMED BY A SURFACED BEVELED 2" x 6" WITH RUBBERIZED MEMBRANE WATERPROOFING ON B.F. (RUBBERIZED MEMBRANE WATERPROOFING INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES" IF CONST. JOINT IS USED).

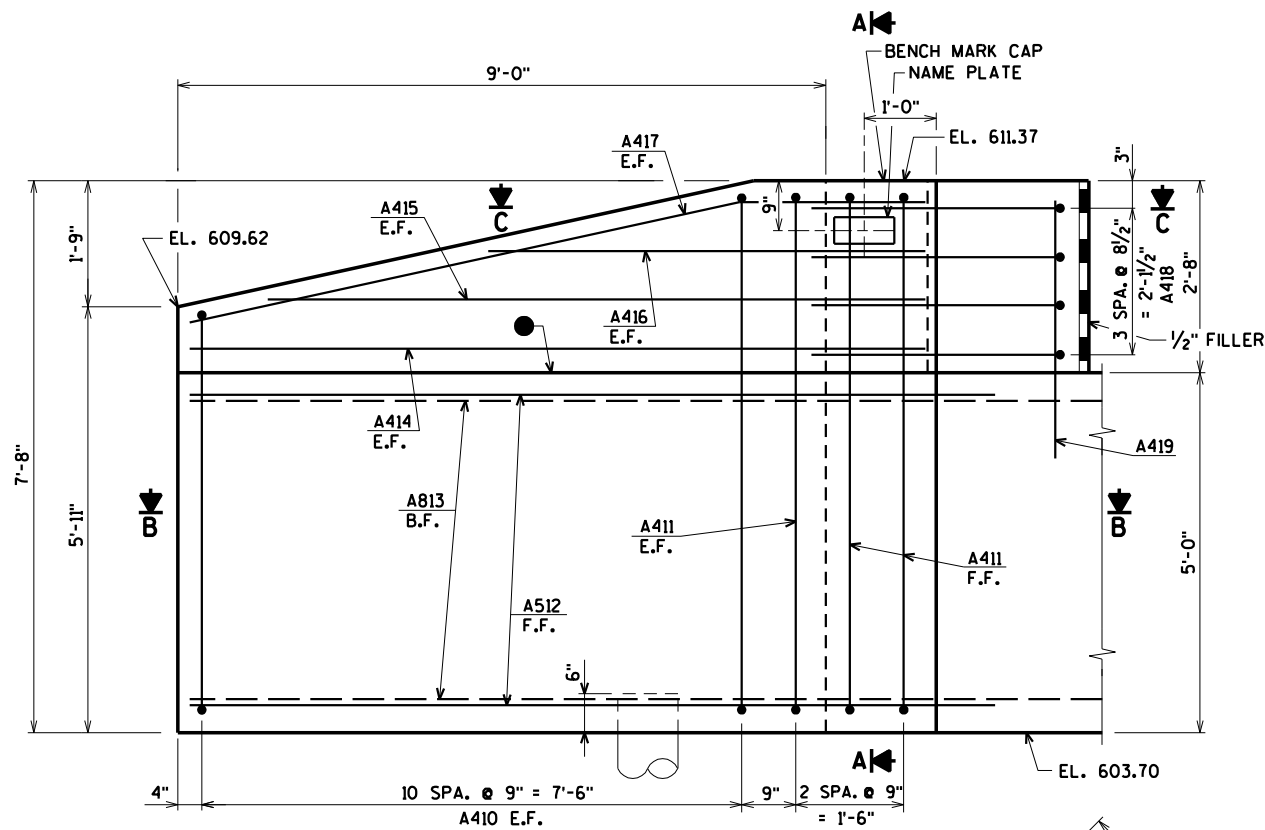
FOR PILE SPICE DETAIL SEE SHEET 3.



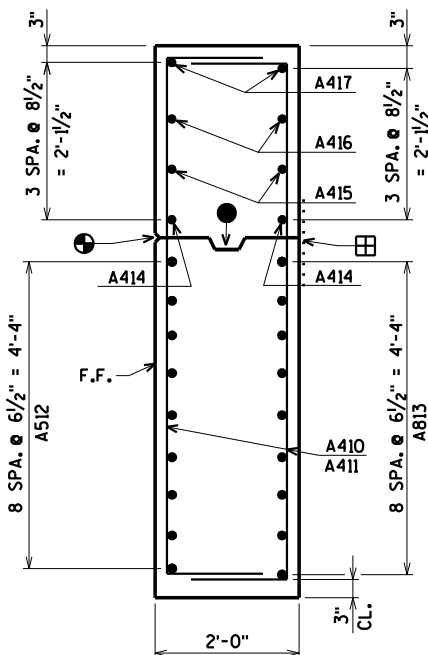
PILE LAYOUT

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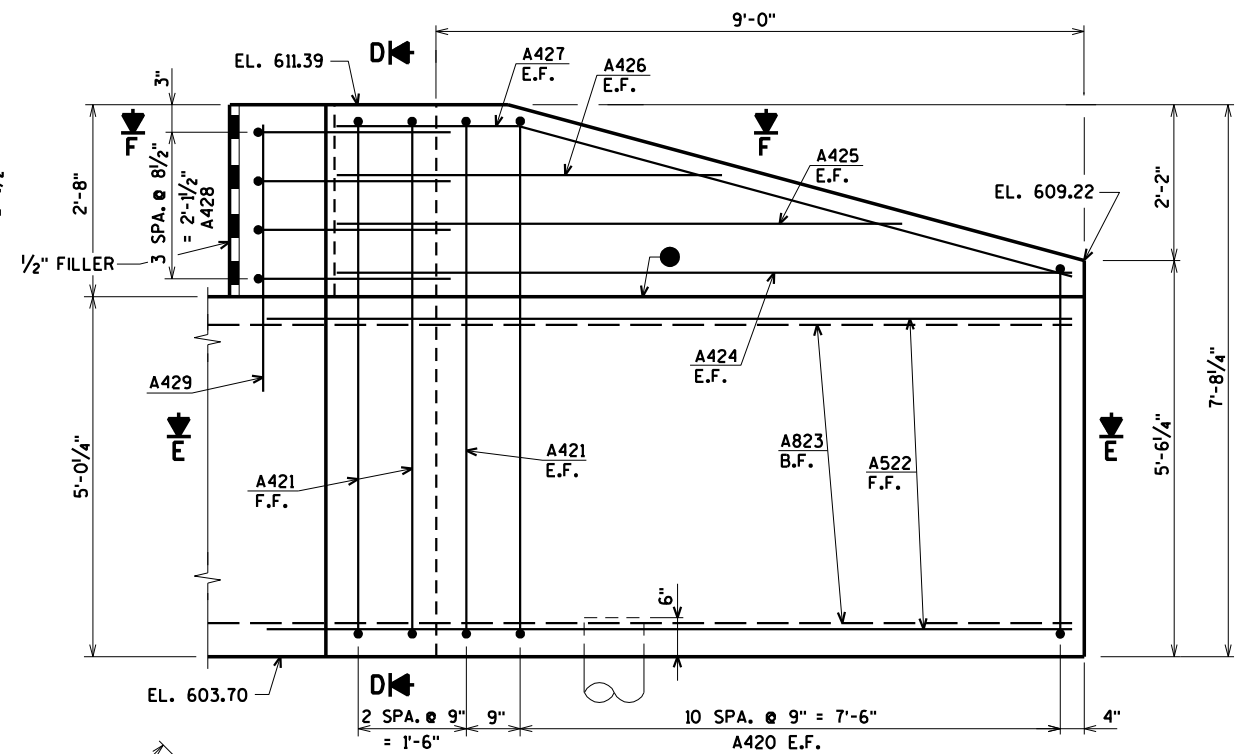
NO.	DATE	REVISION	BY
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STRUCTURE B-36-241			
DRAWN BY		CLP	PLANS CK'D. AEB
SOUTH ABUTMENT		SHEET 5 OF 13	
		66	



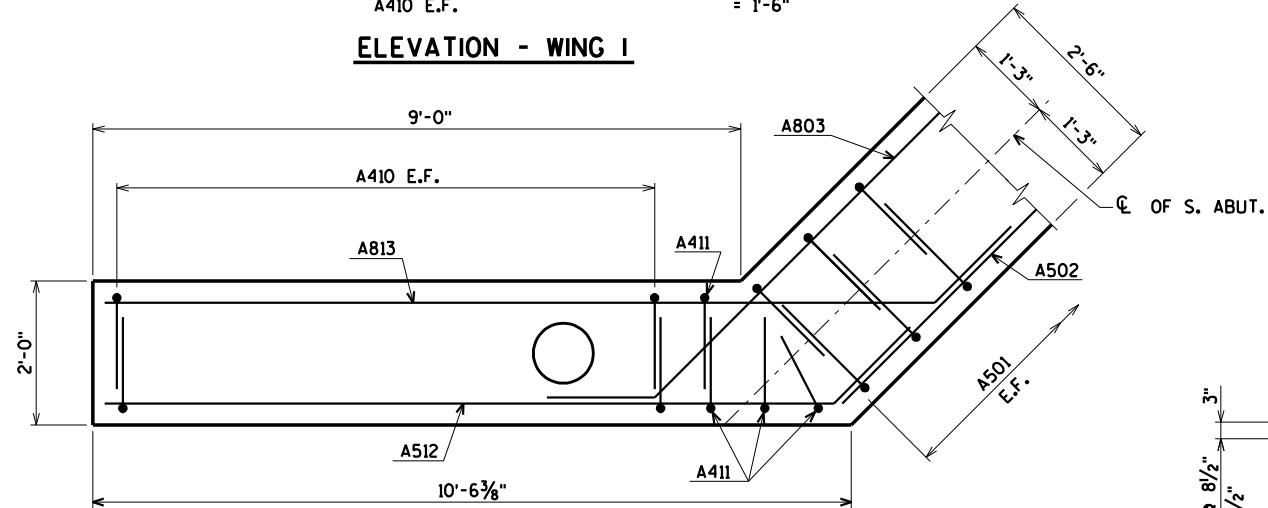
ELEVATION - WING 1



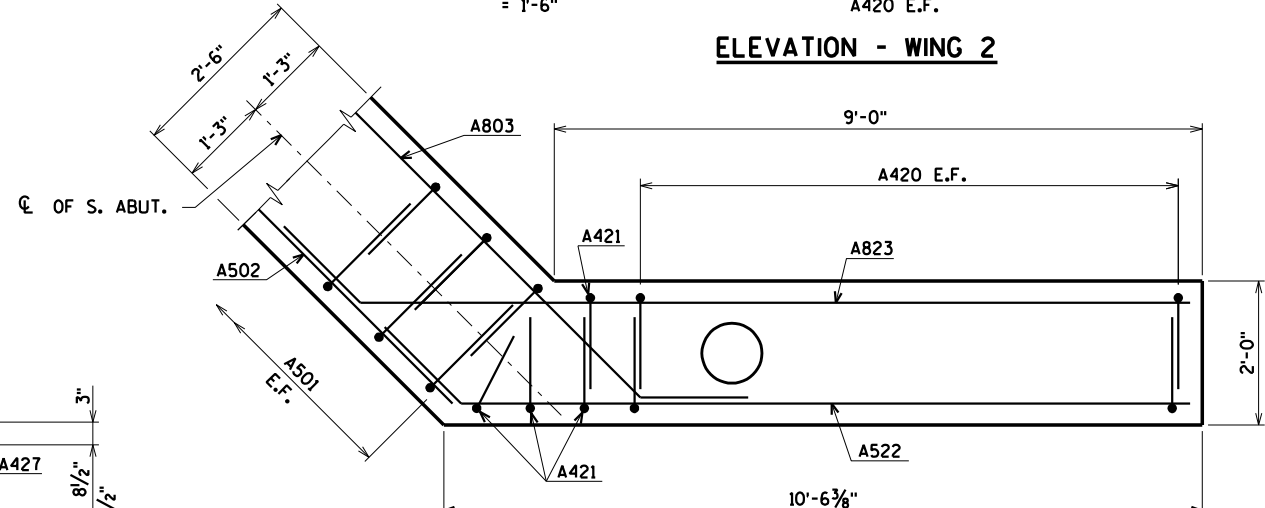
SECTION A



ELEVATION - WING 2



SECTION B



SECTION E

▣ RUBBERIZED MEMBRANE WATERPROOFING IF CONST. JOINT IS USED (COST INCIDENTAL TO BID ITEM "CONCRETE MANSIONRY BRIDGES")

● OPT. KEYED CONST. JOINT - FORMED BY A SURFACED BEVELED 2" x 6" WITH RUBBERIZED MEMBRANE WATERPROOFING ON B.F. (RUBBERIZED MEMBRANE WATERPROOFING INCIDENTAL TO BID ITEM "CONCRETE MANSIONRY BRIDGES" IF CONST. JOINT IS USED).

⊕ 3/4" 'V' GROOVE ON F.F. OF WING WALL NOT REQUIRED IF CONST. JT. IS NOT USED.

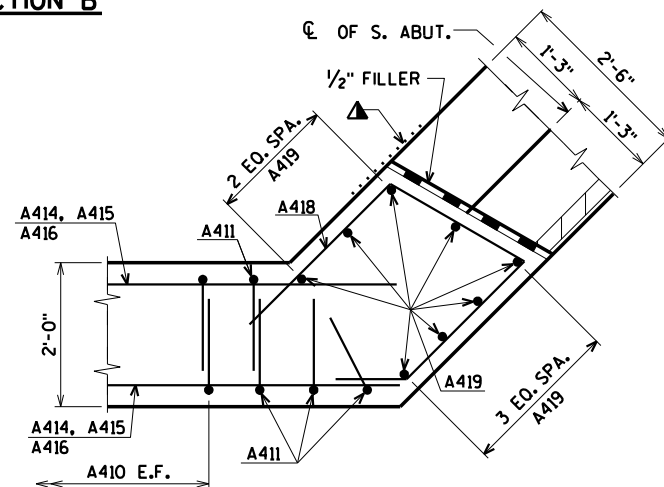
▲ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING.

FOR PILE SPLICE DETAIL SEE SHEET 3.

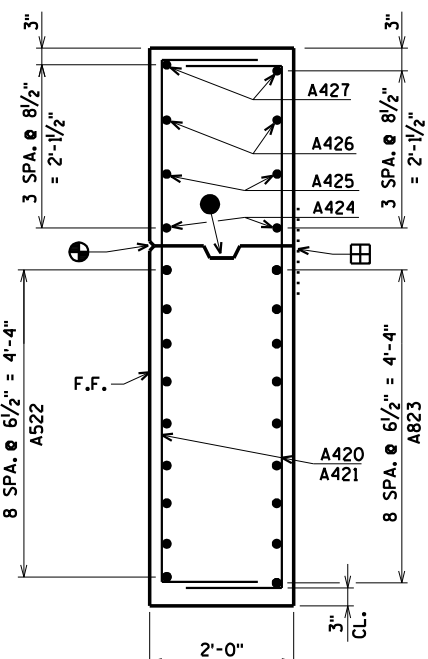
B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

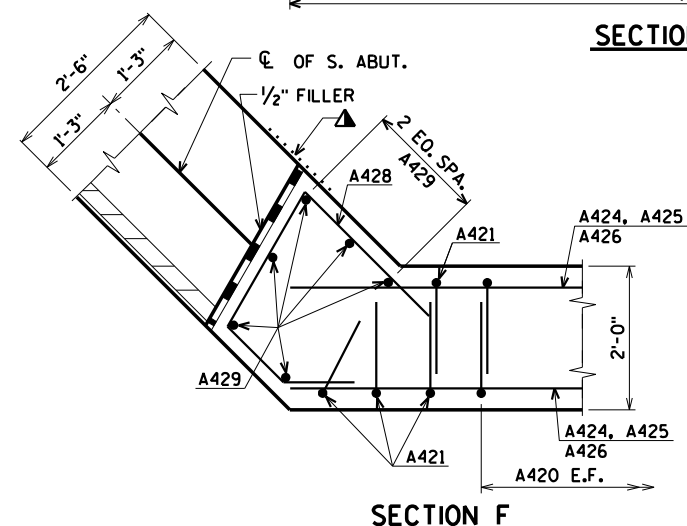
F.F. DENOTES FRONT FACE



SECTION C



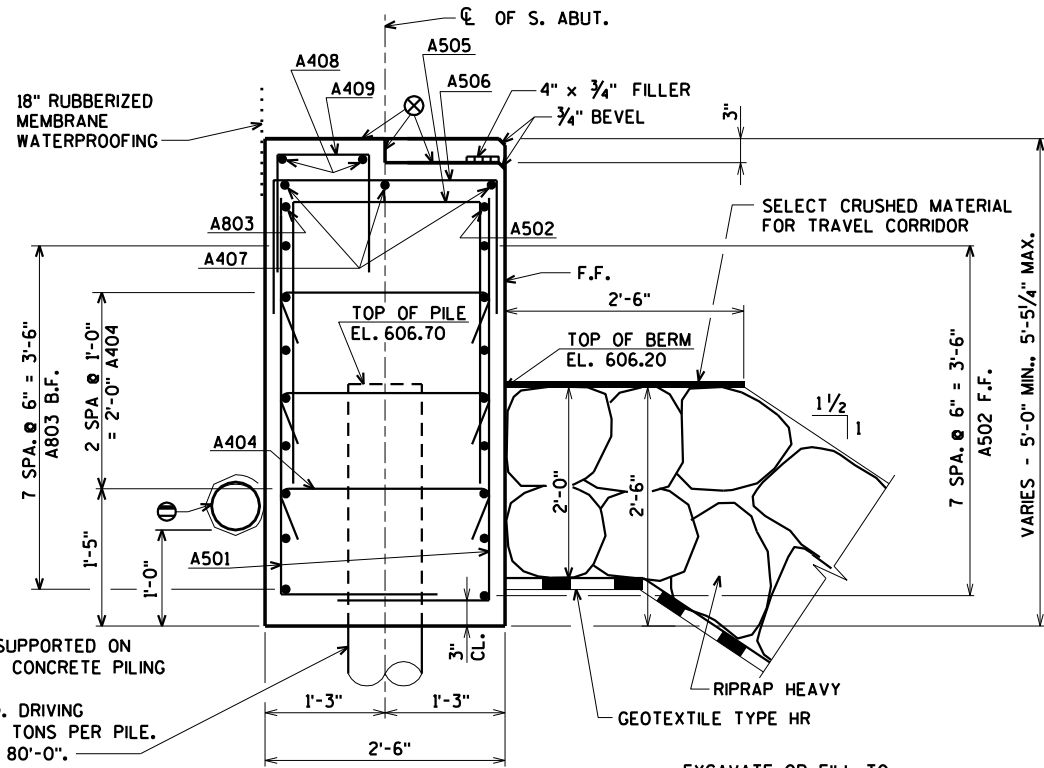
SECTION D



SECTION F

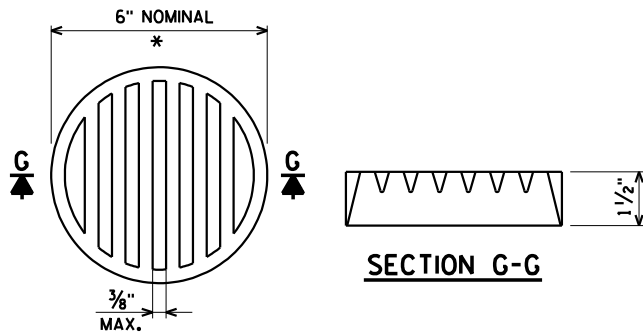
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STRUCTURE B-36-241			
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SOUTH ABUTMENT WING DETAILS			SHEET 6 OF 13 67



TYPICAL SECTION THRU BODY

NOTE: DO NOT PLACE FILL ABOVE THREE FEET FROM BOTTOM OF ABUTMENT UNTIL SUPERSTRUCTURE IS IN PLACE.

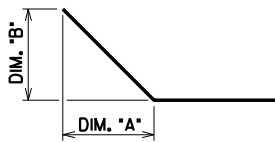
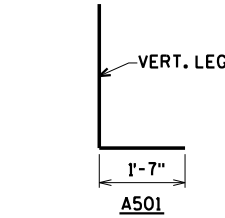


* DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

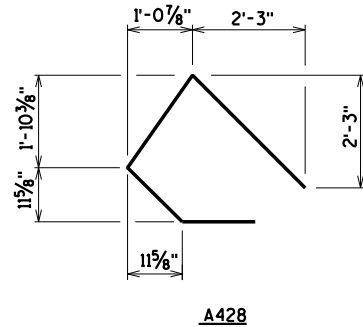
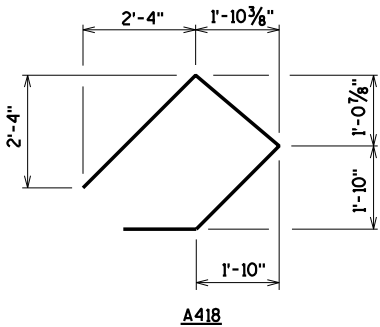
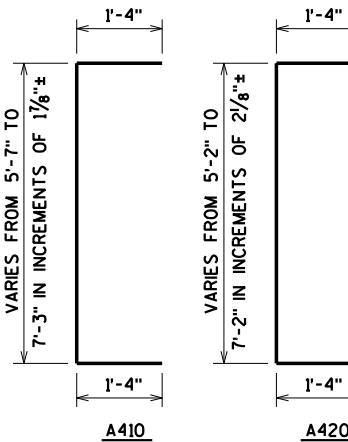
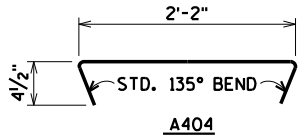
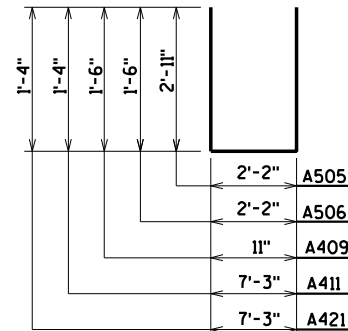
THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

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

RODENT SHIELD DETAIL



BAR NO.	DIM. "A"	DIM. "B"
A803	1'-0 3/4"	1'-0 3/4"
A512	1'-0 3/4"	1'-0 3/4"
A813	1'-0 3/4"	1'-0 3/4"
A417	8'-0"	1'-9"
A522	1'-0 3/4"	1'-0 3/4"
A823	1'-0 3/4"	1'-0 3/4"
A427	8'-0"	2'-2"



⊗ 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".

⊖ PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. FOR RODENT SHIELD SEE DETAIL ON THIS SHEET.

FOR PILE SPLICE DETAIL SEE SHEET 3.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

E.F. DENOTES EACH FACE.

BILL OF BARS

BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLE SERIES	1,330# COATED 3,150# UNCOATED
						LOCATION
A501		98	5-1	X		BODY VERT. E.F.
A502		9	48-6			BODY HORIZ. F.F.
A803		18	30-3	X		BODY HORIZ. B.F.
A404		39	2-9	X		BODY TIES
A505		49	7-9	X		BODY VERT. TOP
A506		17	4-11	X		BODY VERT. TOP
A407		3	16-4			BODY HORIZ. TOP
A408		4	22-7			BODY HORIZ. ⊗ TOP NOTCH
A409		29	3-9	X		BODY VERT. ⊗ TOP NOTCH
A410	X	22	8-11	X	⊗	WING 1 VERT. E.F.
A411	X	4	9-9	X		WING 1 VERT. E.F.
A512	X	9	11-9	X		WING 1 HORIZ. F.F.
A813	X	9	13-1	X		WING 1 HORIZ. B.F.
A414	X	2	10-3			WING 1 HORIZ. E.F.
A415	X	2	9-3			WING 1 HORIZ. E.F.
A416	X	2	6-0			WING 1 HORIZ. E.F.
A417	X	2	10-3	X		WING 1 DIAG. E.F.
A418	X	4	9-1	X		WING 1 HORIZ.
A419	X	8	3-9			WING 1 VERT.
A420	X	22	8-8	X	⊗	WING 2 VERT. E.F.
A421	X	4	9-9	X		WING 2 VERT. E.F.
A522	X	9	11-9	X		WING 2 HORIZ. F.F.
A823	X	9	13-1	X		WING 2 HORIZ. B.F.
A424	X	2	10-3			WING 2 HORIZ. E.F.
A425	X	2	7-10			WING 2 HORIZ. E.F.
A426	X	2	5-3			WING 2 HORIZ. E.F.
A427	X	2	10-3	X		WING 2 DIAG. E.F.
A428	X	4	7-9	X		WING 2 HORIZ.
A429	X	6	3-9			WING 2 VERT.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

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

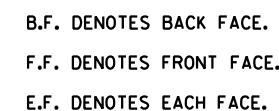
BAR SERIES TABLE

BAR MARK	NO REQ'D.	LENGTH
A410	2 SERIES OF 11	8'-1" TO 9'-9"
A420	2 SERIES OF 11	7'-8" TO 9'-8"

BUNDLE AND TAG EACH SERIES SEPARATELY.

NO.	DATE	REVISION	BY
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STRUCTURE B-36-241			
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SOUTH ABUTMENT DETAILS AND BILL OF BARS			SHEET 7 OF 13 68

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▲ 18" RUBBERIZED MEMBRANE WATERPROOFING
TO EXTEND FROM BRIDGE SEAT TO TOP OF
WING.

● OPT. KEYED CONST. JOINT - FORMED BY A SURFACED BEVELED 2" x 6" WITH RUBBERIZED MEMBRANE WATERPROOFING ON B.F. (RUBBERIZED MEMBRANE WATERPROOFING INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES" IF CONST. JOINT IS USED).

NO.	DATE	REVISION	B

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

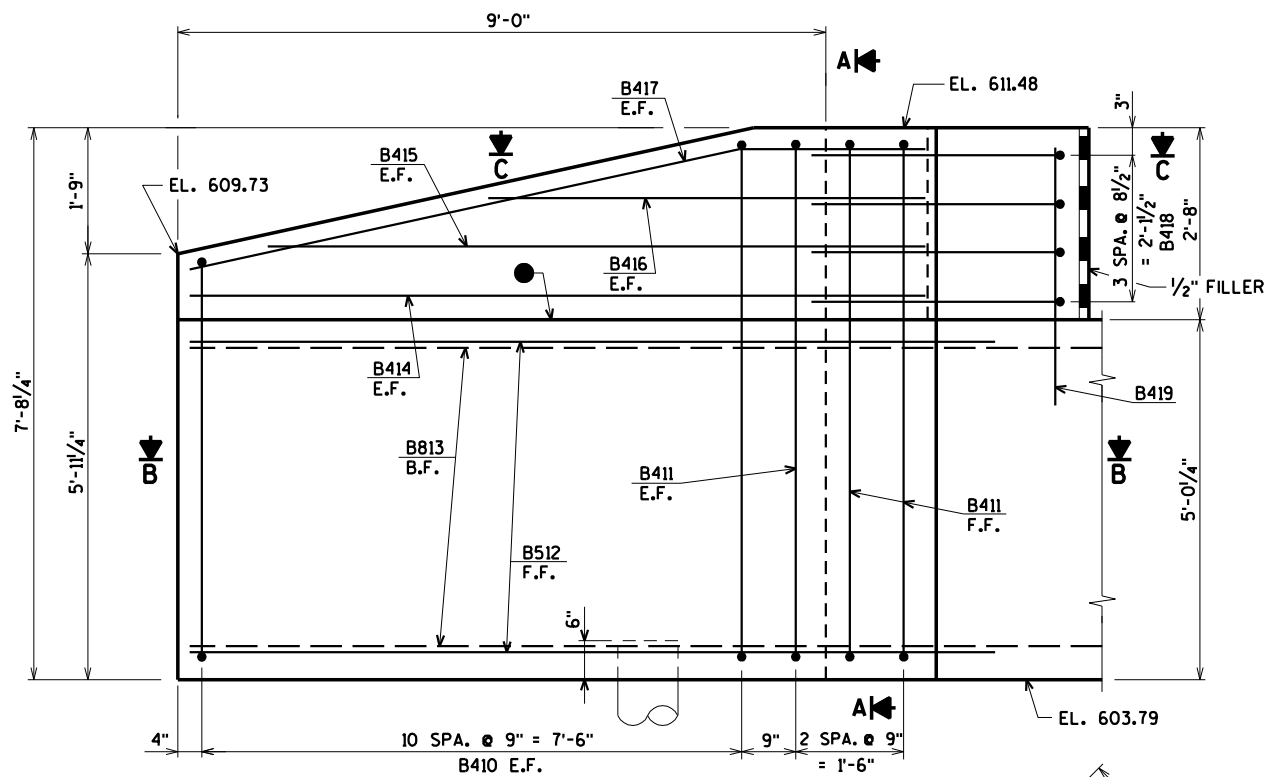
STRUCTURE B-36-241

DRAWN BY	CLP	PLANS CK'D	AF
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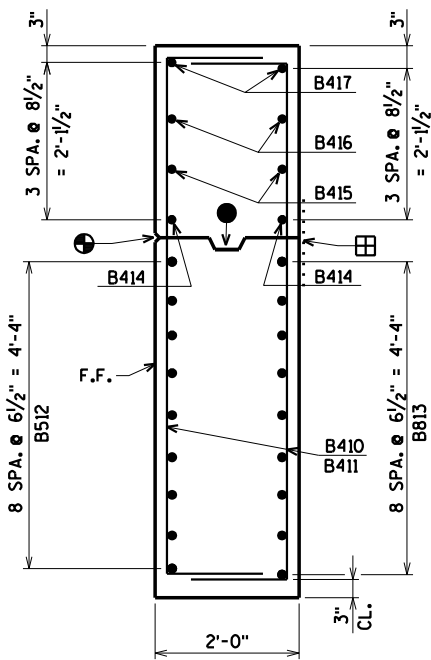
NORTH
ABUTMENT

SHEET 8 OF 13

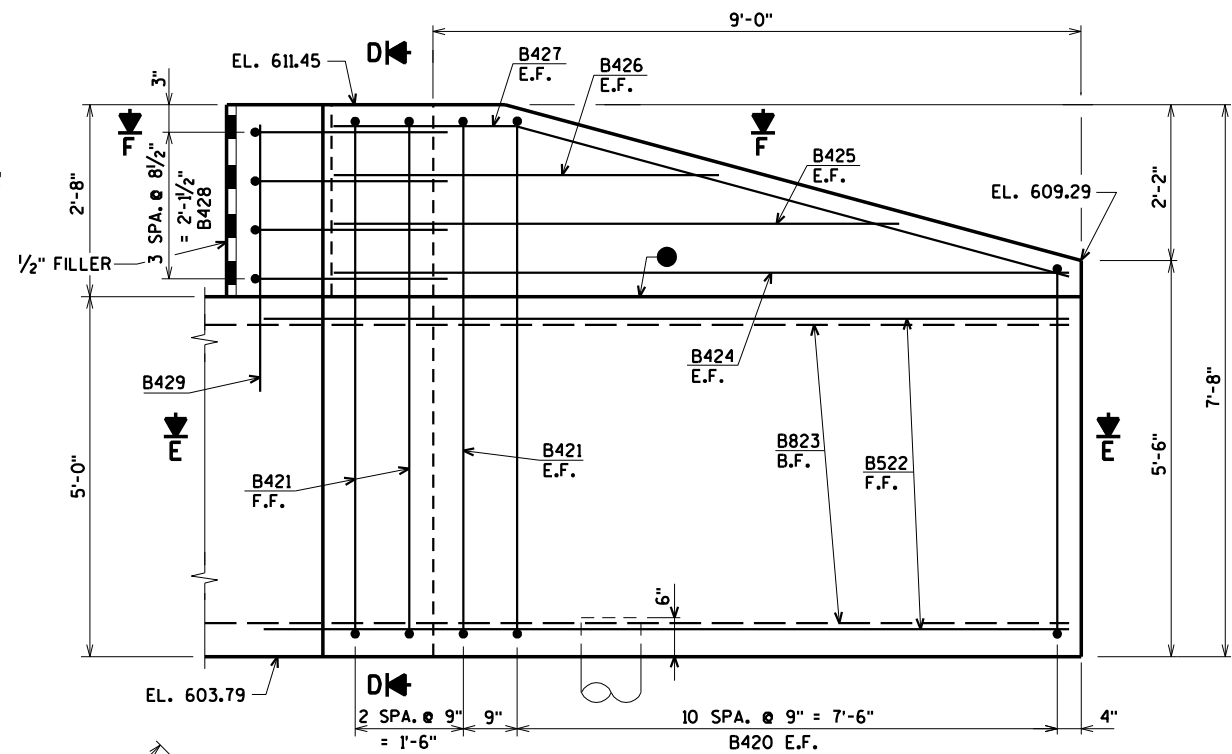
**3433 Oakwood Hills Parkway
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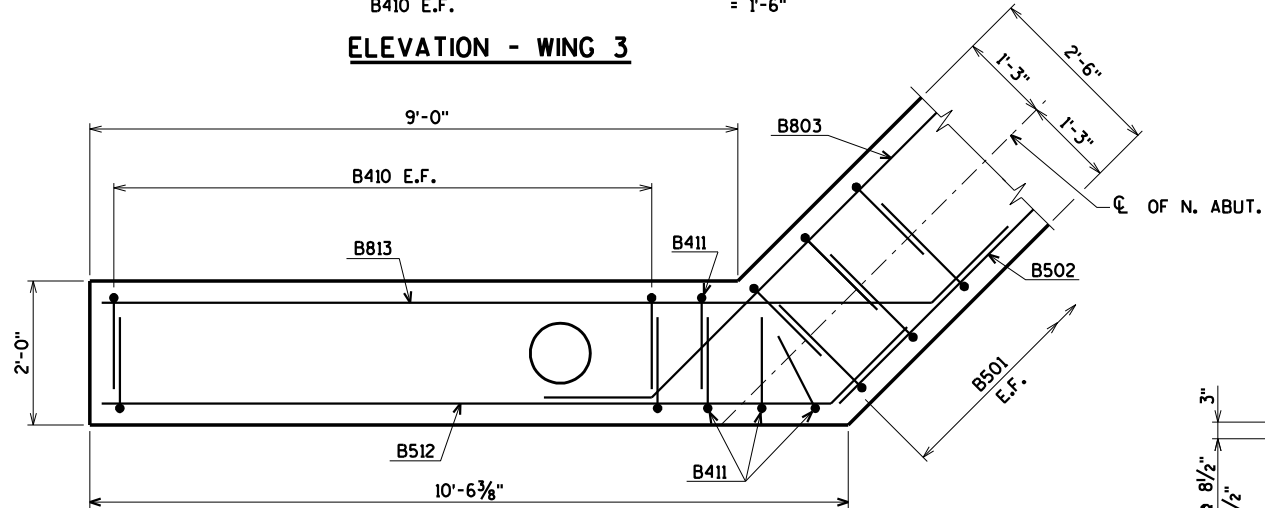
ELEVATION - WING 3



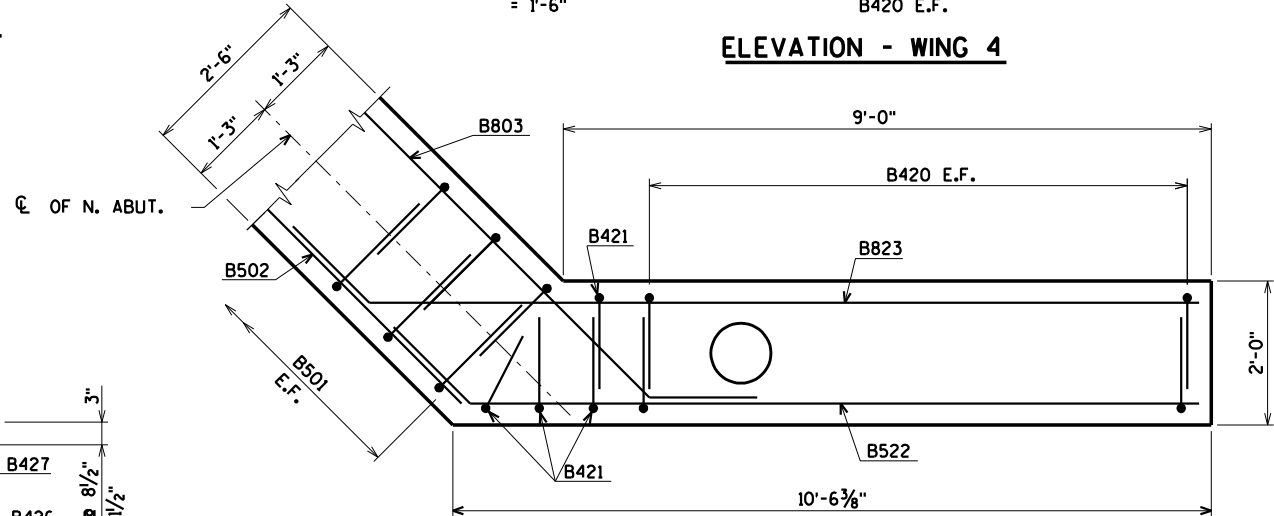
SECTION A



ELEVATION - WING 4



SECTION B



SECTION E

▣ RUBBERIZED MEMBRANE WATERPROOFING IF CONST. JOINT IS USED (COST INCIDENTAL TO BID ITEM "CONCRETE MANSIONRY BRIDGES")

● OPT. KEYED CONST. JOINT - FORMED BY A SURFACED BEVELED 2" x 6" WITH RUBBERIZED MEMBRANE WATERPROOFING ON B.F. (RUBBERIZED MEMBRANE WATERPROOFING INCIDENTAL TO BID ITEM "CONCRETE MANSIONRY BRIDGES" IF CONST. JOINT IS USED).

⊕ 3/4" 'V' GROOVE ON F.F. OF WING WALL NOT REQUIRED IF CONST. JT. IS NOT USED.

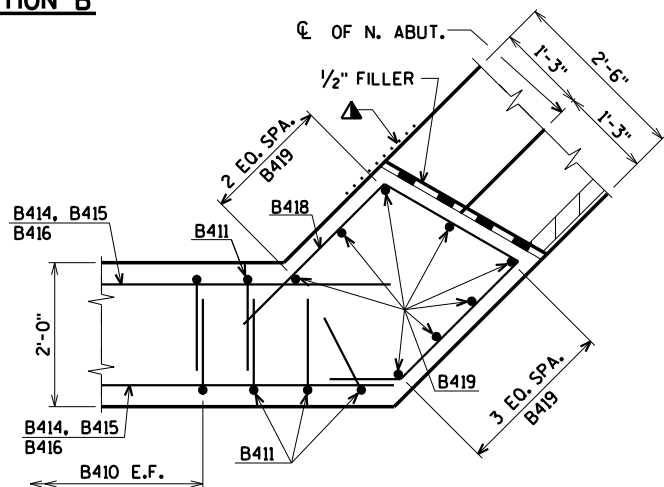
▲ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING.

FOR PILE SPLICE DETAIL SEE SHEET 3.

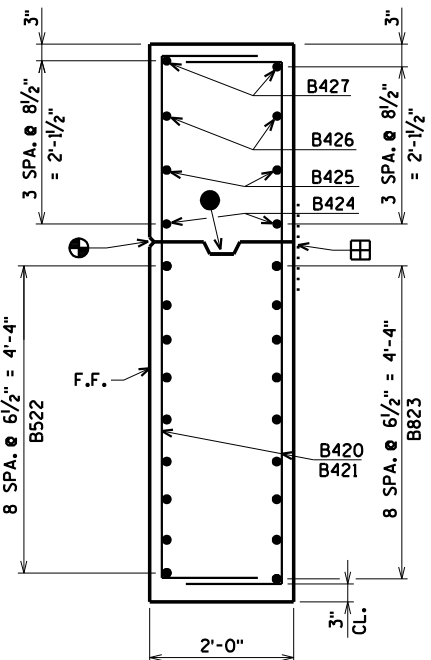
B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

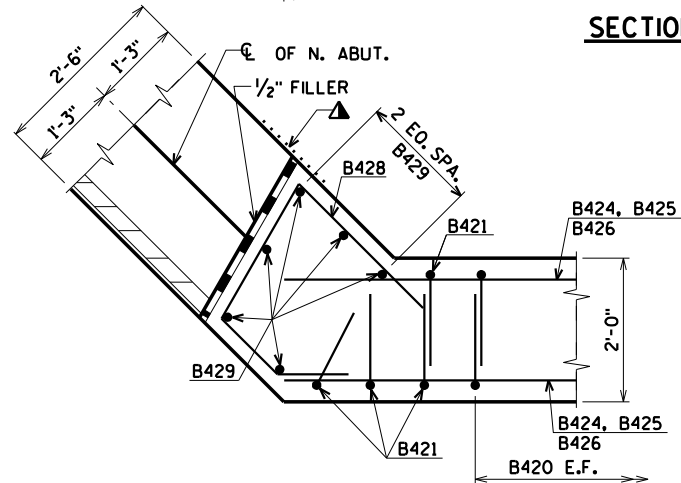
F.F. DENOTES FRONT FACE



SECTION C



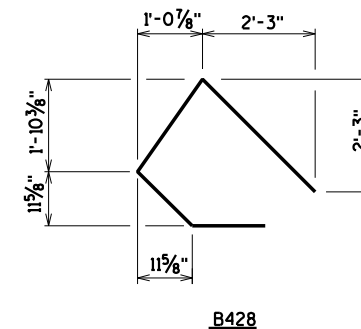
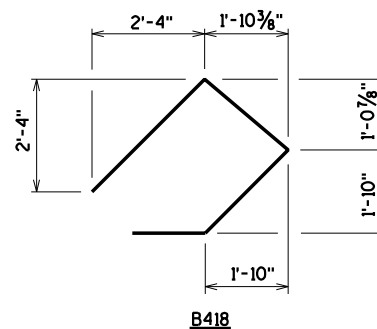
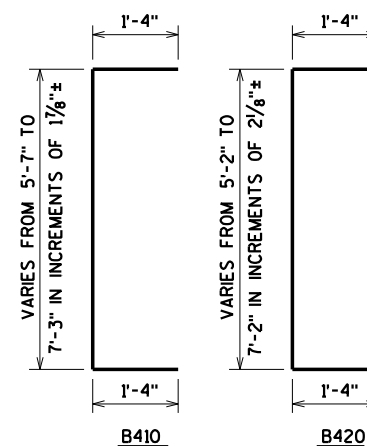
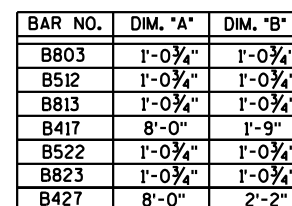
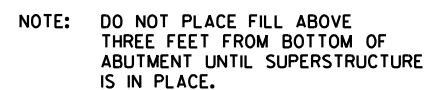
SECTION D



SECTION F

ORIGINAL PLANS PREPARED BY
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-241			
DRAWN BY		CLP	PLANS CK'D. AEB
NORTH ABUTMENT WING DETAILS			SHEET 9 OF 13 70



BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED	BAR SERIES	1,330" COATED 3,150" UNCOATED
							LOCATION
B501		98	5-1	X			BODY VERT. E.F.
B502		9	48-6				BODY HORIZ. F.F.
B803		18	30-3	X			BODY HORIZ. B.F.
B404		39	2-9	X			BODY TIES
B505		49	7-9	X			BODY VERT. TOP
B506		17	4-11	X			BODY VERT. TOP
B407		3	16-4				BODY HORIZ. TOP
B408		4	22-7				BODY HORIZ. TOP NOTCH
B409		29	3-9	X			BODY VERT. TOP NOTCH
B410	X	22	8-11	X		⊗	WING 3 VERT. E.F.
B411	X	4	9-9	X			WING 3 VERT. E.F.
B512	X	9	11-9	X			WING 3 HORIZ. F.F.
B813	X	9	13-1	X			WING 3 HORIZ. B.F.
B414	X	2	10-3				WING 3 HORIZ. E.F.
B415	X	2	9-3				WING 3 HORIZ. E.F.
B416	X	2	6-0				WING 3 HORIZ. E.F.
B417	X	2	10-3	X			WING 3 DIAG. E.F.
B418	X	4	9-1	X			WING 3 HORIZ.
B419	X	8	3-9				WING 3 VERT.
B420	X	22	8-8	X		⊗	WING 4 VERT. E.F.
B421	X	4	9-9	X			WING 4 VERT. E.F.
B522	X	9	11-9	X			WING 4 HORIZ. F.F.
B823	X	9	13-1	X			WING 4 HORIZ. B.F.
B424	X	2	10-3				WING 4 HORIZ. E.F.
B425	X	2	7-10				WING 4 HORIZ. E.F.
B426	X	2	5-3				WING 4 HORIZ. E.F.
B427	X	2	10-3	X			WING 4 DIAG. E.F.
B428	X	4	7-9	X			WING 4 HORIZ.
B429	X	6	3-9				WING 4 VERT.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

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

BAR MARK	NO REQ'D.	LENGTH
B410	2 SERIES OF 11	8'-1" TO 9'-9"
B420	2 SERIES OF 11	7'-8" TO 9'-8"

BUNDLE AND TAG EACH SERIES SEPARATELY.

⊗ 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".

PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. FOR RODENT SHIELD SEE DETAIL ON SHEET 7.

FOR PILE SPLICE DETAIL SEE SHEET 3.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

E.F. DENOTES EACH FACE.

ORIGINAL PLANS PREPARED BY

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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-241			
DRAWN BY		CLP	PLANS CK'D. AEL
NORTH ABUTMENT DETAILS AND BILL OF BARS		SHEET 10 OF 11 71	

1/27/2021
PENTABLE:BReau_shd_util.tbl

STATE PROJECT NUMBER

4304-06-71

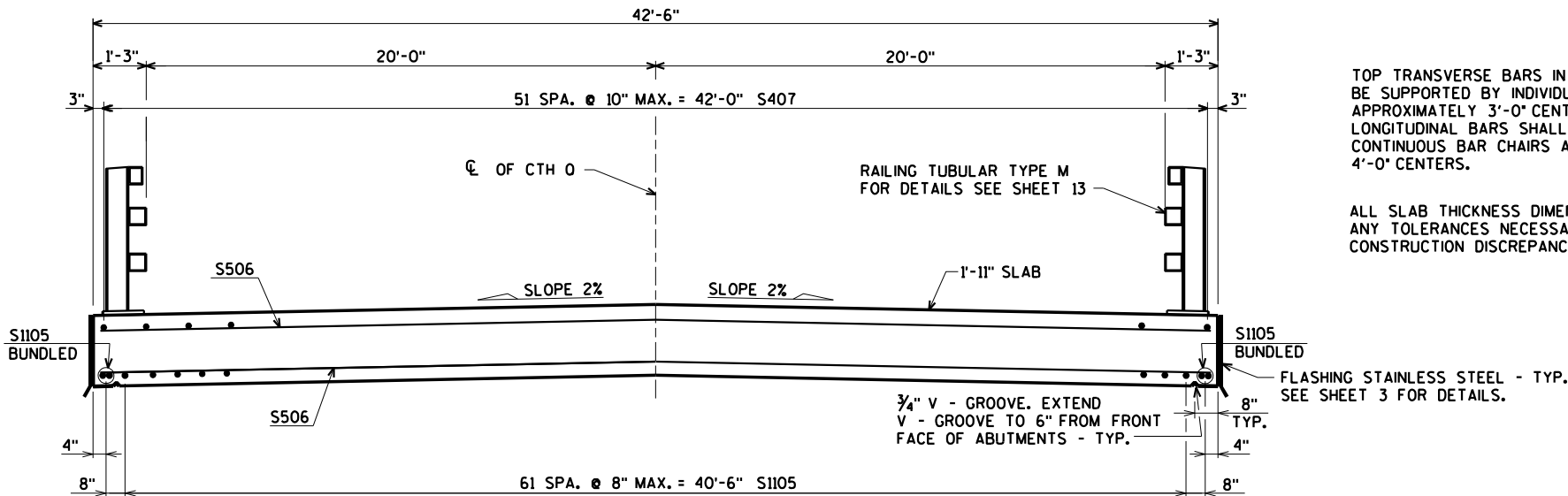
BILL OF BARS

BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED	BAR SERIES	21,740# COATED
							LOCATION
S401	X	86	3-3	X			SLAB VERT. @ ABUT. NOTCH
S402	X	4	43-7				SLAB TRANS. @ ABUT. NOTCH
S503	X	86	6-11	X			SLAB VERT. @ ABUT.
S504	X	86	4-0	X			SLAB VERT. @ ABUT.
S1105	X	66	38-1		X		SLAB LONG. BOT.
S506	X	99	43-7				SLAB TRANS. BOT. & TOP
S407	X	52	41-10				SLAB LONG. TOP
S608	X	28	12-0	X			SLAB @ RAIL POSTS
S609	X	48	6-0				SLAB @ INT. RAIL POSTS
S610	X	16	6-0	X			SLAB @ END RAIL POSTS
S611	X	4	12-0	X			SLAB @ END RAIL POSTS

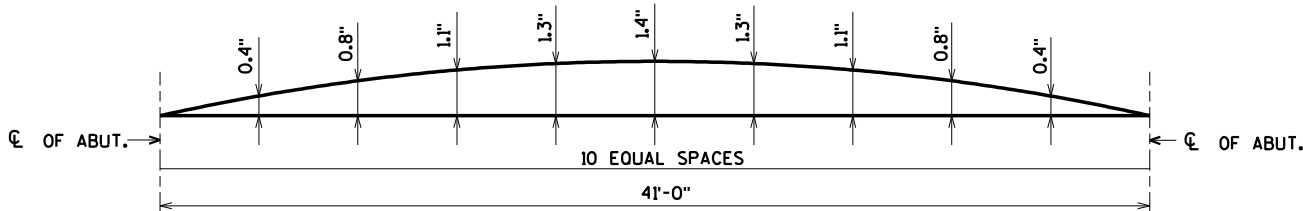
BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

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

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



TYPICAL SECTION THRU BRIDGE



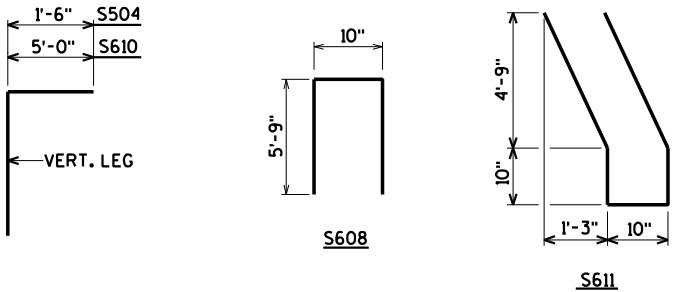
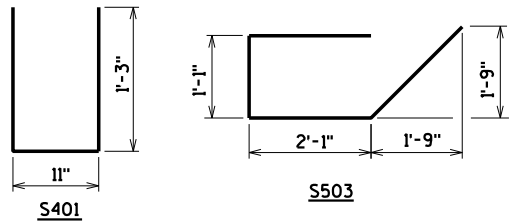
CAMBER DIAGRAM

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

WIRE BARS TOGETHER @ 2'-0" CENTERS



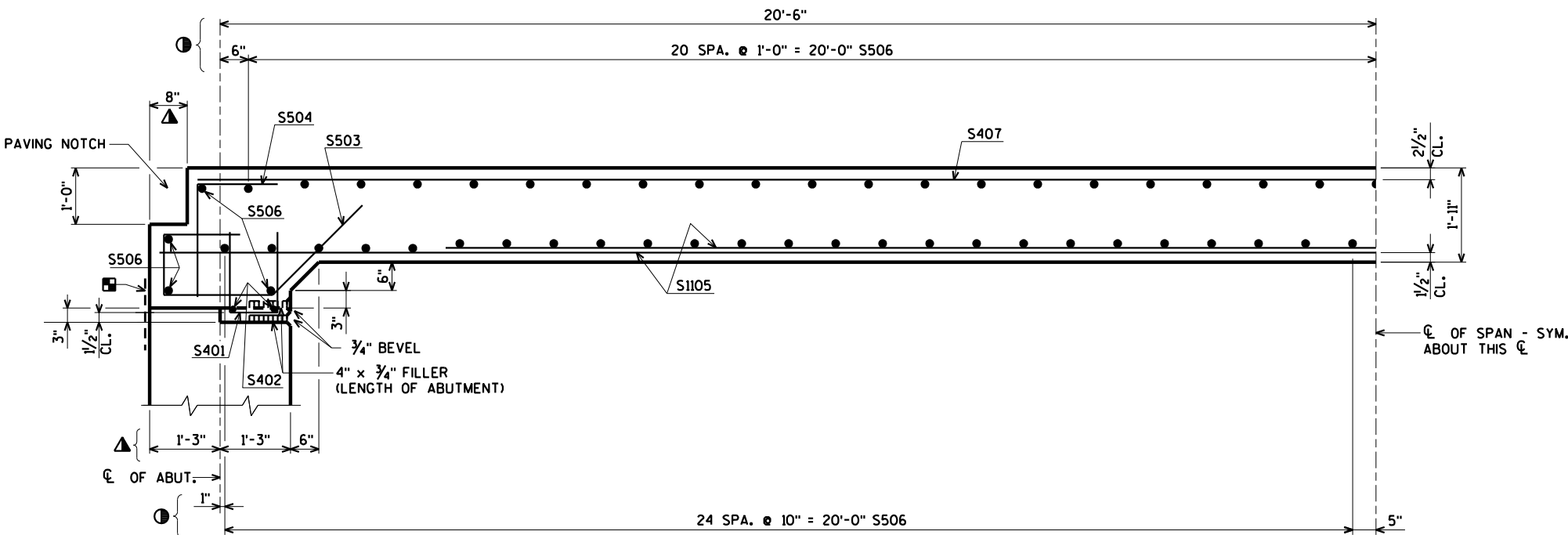
BUNDLING DETAIL



18" RUBBERIZED MEMBRANE WATERPROOFING

DIMENSIONS MEASURED NORMAL TO CL. OF SUBSTRUCTURE.

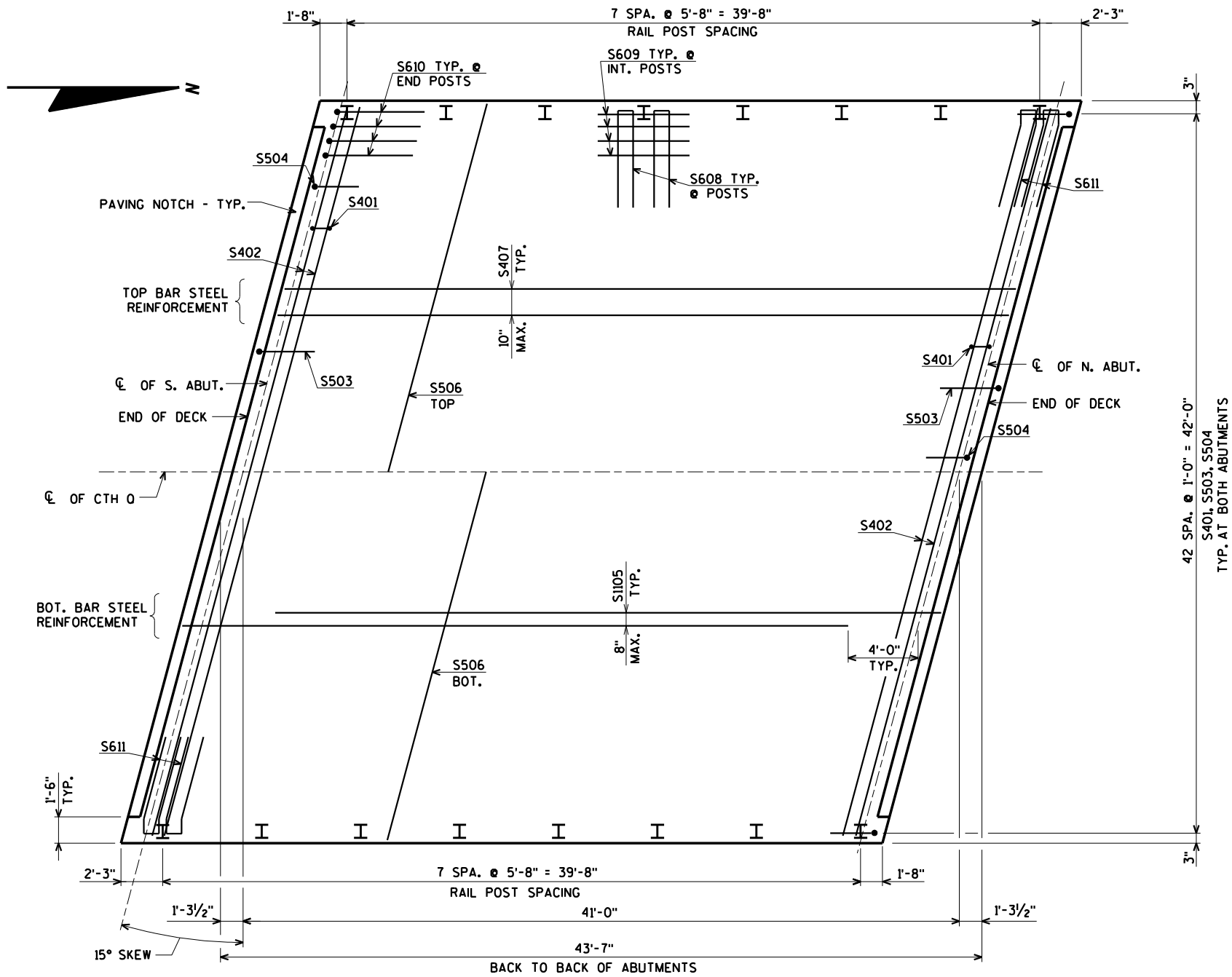
DIMENSIONS MEASURED ALONG CL. OF CTH 0.



PART LONGITUDINAL SECTION

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-241			
DRAWN BY		CLP	PLANS CK'D. AEB
SUPERSTRUCTURE			SHEET 11 OF 13 72

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PLAN

TOP OF DECK ELEVATIONS

LOCATION	CL OF S. ABUT.	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	CL OF N. ABUT.
W. EDGE OF SLAB	611.39	611.40	611.41	611.42	611.43	611.43	611.44	611.45	611.46	611.47	611.48
CL OF CTH 0	611.81	611.82	611.82	611.83	611.84	611.85	611.86	611.86	611.87	611.88	611.89
E. EDGE OF SLAB	611.37	611.38	611.39	611.40	611.40	611.41	611.42	611.43	611.44	611.44	611.45

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

SURVEY TOP OF SLAB ELEVATIONS

LOCATION	CL OF S. ABUT.	5/10 PTS.	CL OF N. ABUT.
W. GUTTER			
CL OF STRUCTURE			
E. GUTTER			

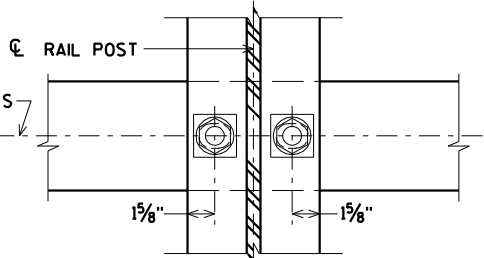
PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF DECK ELEVATIONS AT THE CL OF ABUTMENTS AND AT 5/10 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG GUTTER LINES AND CROWN OR CL. RECORD THE ELEVATIONS IN THE ABOVE TABLE FOR THE "AS BUILT" PLANS.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-241			
DRAWN BY		CLP	PLANS CK'D. AEB
SUPERSTRUCTURE PLAN			SHEET 12 OF 13 73

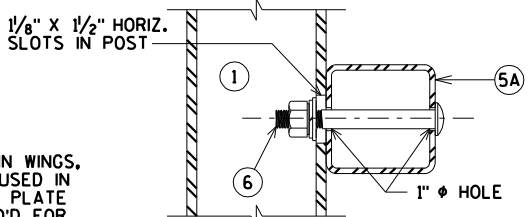
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LEGEND

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



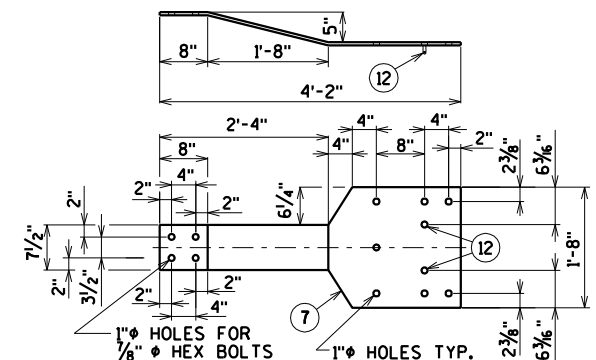
SECTION THRU POST WEB



SECTION THRU RAIL

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

TYPICAL RAIL TO POST CONNECTIONS

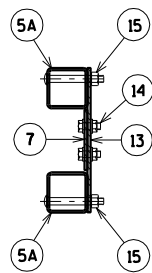


BACK-UP PLATE DETAIL

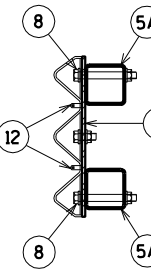
(AT BEAM GUARD ATTACHMENT)

GENERAL NOTES

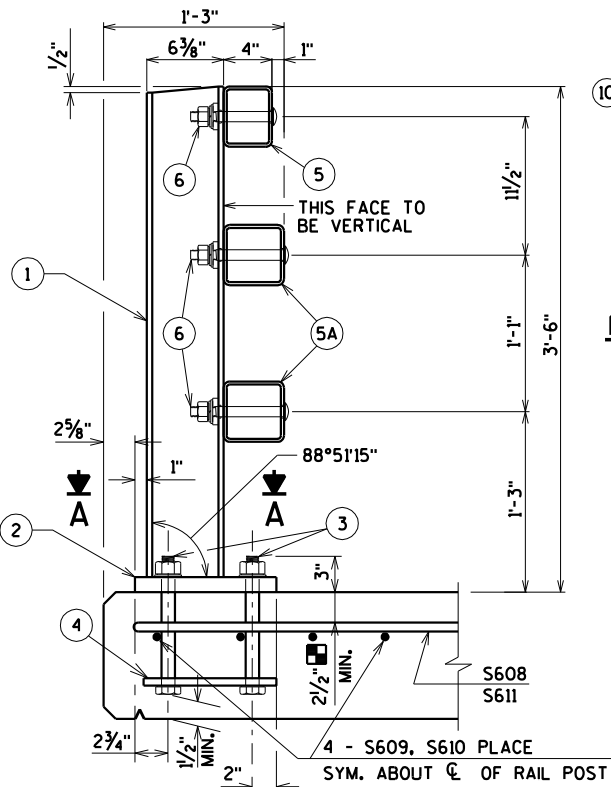
1. BID ITEM SHALL BE "RAILING TUBULAR TYPE M" WHICH INCLUDES ALL ITEMS SHOWN.
2. RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 KSI. ANCHOR PLATES,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



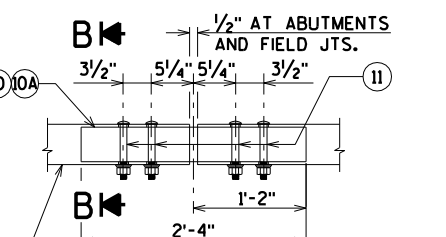
SECTION C



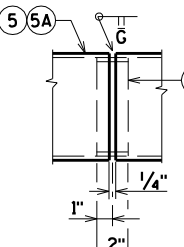
SECTION D



SECTION THRU RAILING ON DECK

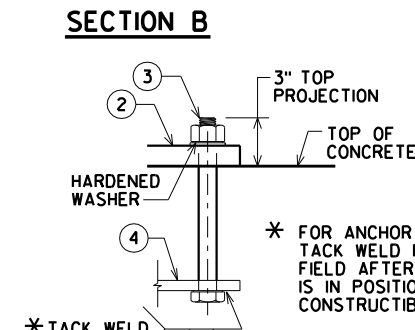


FIELD ERECTION JOINT DETAIL

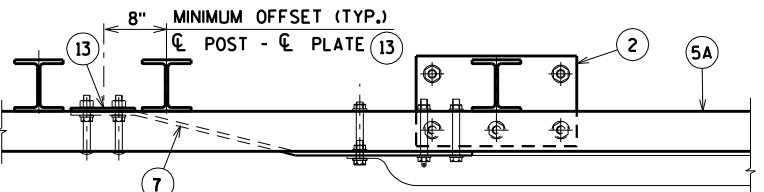


SHOP RAIL SPLICE DETAIL

(LOCATION MUST BE SHOWN ON THE SHOP DRAWINGS)

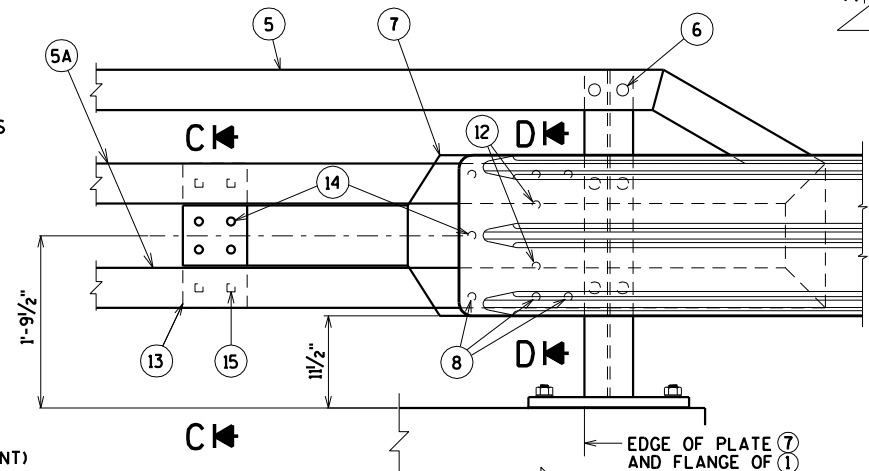


ANCHOR BOLTS



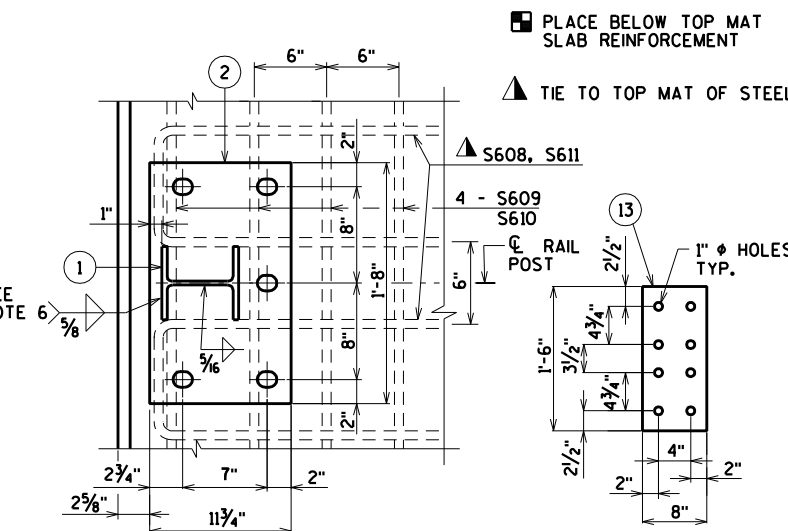
TOP VIEW AT END POST

(THRIE BEAM RAIL ATTACHMENT)



DETAIL AT END POST

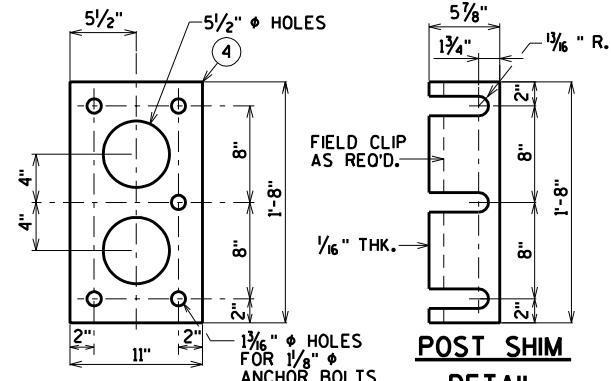
(THRIE BEAM RAIL ATTACHMENT)



SECTION A

ANCHOR PLATE

(AT BEAM GUARD ATTACHMENT)

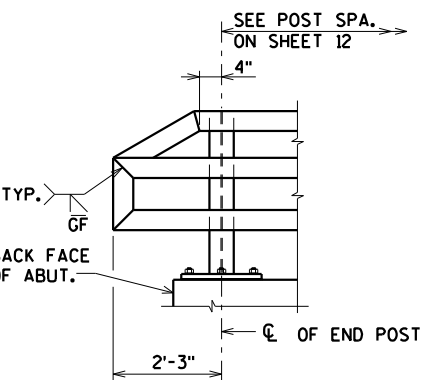


ANCHOR PLATE

(AT RAIL TO DECK CONNECTION)

POST SHIM

DETAIL



PART ELEVATION OF RAILING

ORIGINAL PLANS PREPARED BY
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-241			
DRAWN BY		CLP	PLANS CK'D. AEB
RAILING TUBULAR TYPE M			SHEET 13 OF 13 74

EARTHWORK - SE SHOULDER

STATION	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)			Mass Ordinate
	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut 1.00	Expanded Fill 1.30	Expanded Marsh Backfill 1.50	
Note 1	Note 2	Note 3	Note 1	Note 4	Note 8							
6+74.28	5.29	0.00	20.12	0.00	0	0	0	0	0	0	0	0
7+00	5.00	0.00	26.22	0.00	5	0	22	0	5	29	0	-24
7+50	4.74	0.00	41.30	20.36	9	0	63	19	14	110	28	-96
7+54.25	4.75	0.00	43.29	20.49	1	0	7	3	15	119	33	-104
8+00	5.90	0.00	49.93	31.33	9	0	79	44	24	221	99	-198
8+19.9	6.85	0.00	54.79	43.11	5	0	39	27	28	271	140	-243
8+44.9	6.90	0.00	47.16	39.03	6	0	47	38	35	333	197	-298
8+50	6.87	0.00	46.92	38.67	1	0	9	7	36	344	208	-308
8+69.9	6.75	0.00	43.55	37.05	5	0	33	28	41	388	250	-347
8+93.5	7.59	0.00	16.26	24.52	6	0	26	27	47	422	290	-374
9+00	7.68	0.00	14.14	15.62	2	0	4	5	49	426	298	-377
9+18.5	7.96	0.00	10.38	12.00	5	0	8	9	55	437	312	-383
9+28	7.76	0.00	10.98	12.78	3	0	4	4	57	442	318	-385

570340212

EARTHWORK - SW SHOULDER

STATION	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)			Mass Ordinate
	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut 1.00	Expanded Fill 1.30	Expanded Marsh Backfill 1.50	
Note 1	Note 2	Note 3	Note 1	Note 4	Note 8							
7+54.25	6.62	0.00	0.86	0.00	0	0	0	0	0	0	0	0
8+00	6.36	0.00	32.98	0.00	11	0	29	0	11	37	0	-26
8+19.9	7.37	0.00	37.22	20.89	5	0	26	8	16	71	12	-55
8+44.9	8.38	0.00	44.20	28.18	7	0	38	23	23	120	46	-97
8+50	8.56	0.00	45.05	28.77	2	0	8	5	25	131	54	-106
8+69.9	9.35	0.00	49.70	30.83	7	0	35	22	32	176	87	-145
8+93.5	11.48	0.00	56.62	34.27	9	0	46	28	41	237	129	-196
9+00	11.14	0.00	57.08	32.21	3	0	14	8	43	254	141	-211
9+18.5	10.01	0.00	57.35	38.00	7	0	39	24	51	305	177	-255
9+28	10.70	0.00	59.02	36.00	4	0	20	13	54	332	197	-278

540255131

Notes:	
1 - Cut	Cut includes Unusable Pavement material
2 - Unusable Pavement Material	This does not show up in cross sections
3 - Fill	Does not include Unusable Pavement Exc volume
4 - Expanded Marsh Backfill	Will be backfilled with Granular Backfill
8 - Mass Ordinate	Cut - Unusable Pavt - (Fill * Fill Factor)
8 - Mass Ordinate	Mass Ordinate does not include Marsh Excavation

EARTHWORK - CTH Q

STATION	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)			Mass Ordinate
	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut 1.00	Expanded Fill 1.30	Expanded Marsh Backfill 1.50	
Note 1	Note 2	Note 3	Note 1	Note 4	Note 8							
9+28	68.56	15.00	70.02	49.29	0	0	0	0	0	0	0	0
9+43.5	73.20	15.00	75.32	59.43	41	9	42	31	41	54	47	-22
9+50	64.35	15.00	58.94	30.27	17	4	16	11	57	75	63	-30
9+77.9	64.35	15.00	58.94	30.27	66	16	61	31	124	154	110	-58
B-36-0242												
10+20.1	64.33	15.00	67.25	49.00	0	0	0	0	124	154	110	-58
10+50	64.33	15.00	67.25	49.00	71	17	74	54	195	251	191	-101
10+65	68.05	15.00	57.23	40.00	37	8	35	25	232	296	228	-117

23253228152

EARTHWORK - NW SHOULDER

STATION	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)			Mass Ordinate
	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut 1.00	Expanded Fill 1.30	Expanded Marsh Backfill 1.50	
Note 1	Note 2	Note 3	Note 1	Note 4	Note 8							
10+65	8.04	0.00	37.54	26.76	0	0	0	0	0	0	0	0
11+00	8.32	0.00	31.71	18.19	11	0	45	29	11	58	44	-48
11+28.1	11.02	0.00	45.25	20.65	10	0	40	20	21	110	74	-90
11+50	8.83	0.00	43.42	22.17	8	0	36	17	29	157	100	-128
11+53.1	8.93	0.00	43.86	22.77	1	0	5	3	30	164	104	-134
11+67	9.90	0.00	42.47	27.95	5	0	22	13	35	193	124	-158
11+78.1	10.82	0.00	41.85	32.28	4	0	17	12	39	215	142	-176
11+92	8.76	0.00	41.42	31.87	5	0	21	17	44	243	167	-199
12+00	9.02	0.00	42.17	19.60	3	0	12	8	47	259	178	-213
12+17	7.20	0.00	33.49	22.78	5	0	24	13	52	290	198	-238
12+50	6.82	0.00	21.42	0.00	9	0	34	14	60	334	219	-273
12+94.97	6.29	0.00	11.07	0.00	11	0	27	0	71	369	219	-298

710284146

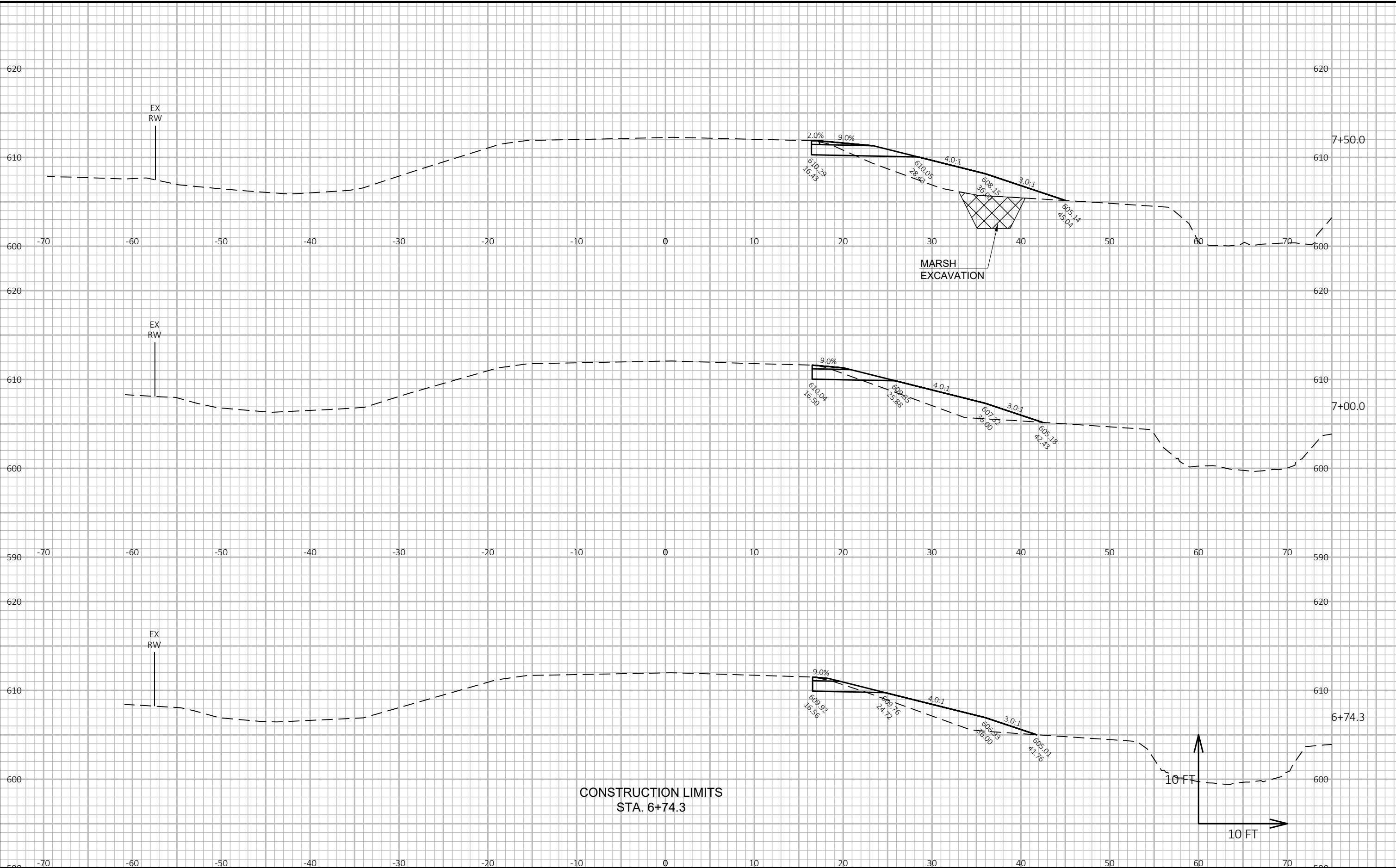
Notes:	
1 - Cut	Cut includes Unusable Pavement material
2 - Unusable Pavement Material	This does not show up in cross sections
3 - Fill	Does not include Unusable Pavement Exc volume
4 - Expanded Marsh Backfill	Will be backfilled with Granular Backfill
8 - Mass Ordinate	Cut - Unusable Pavt - (Fill * Fill Factor)
8 - Mass Ordinate	Mass Ordinate does not include Marsh Excavation

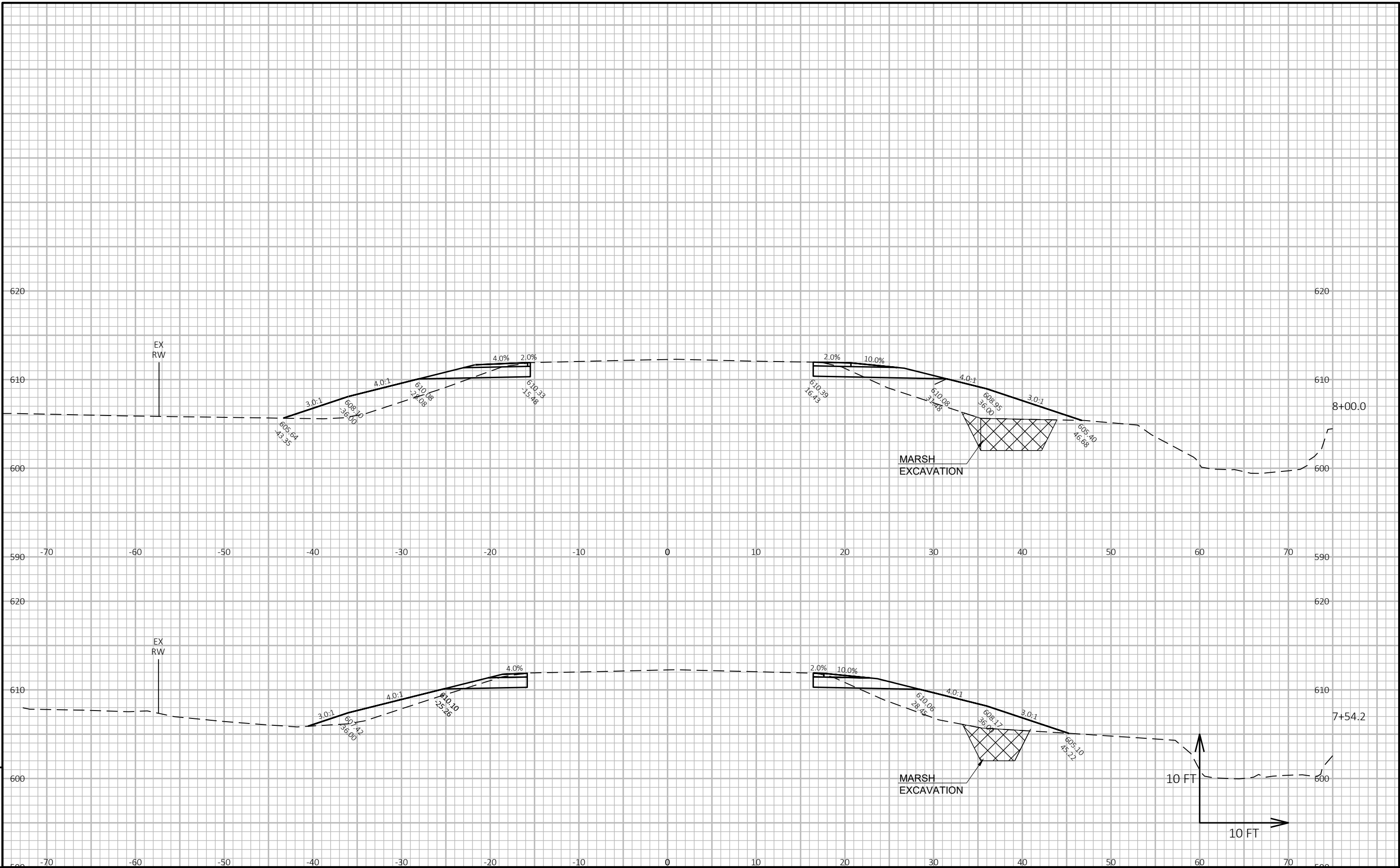
EARTHWORK - NE SHOULDER

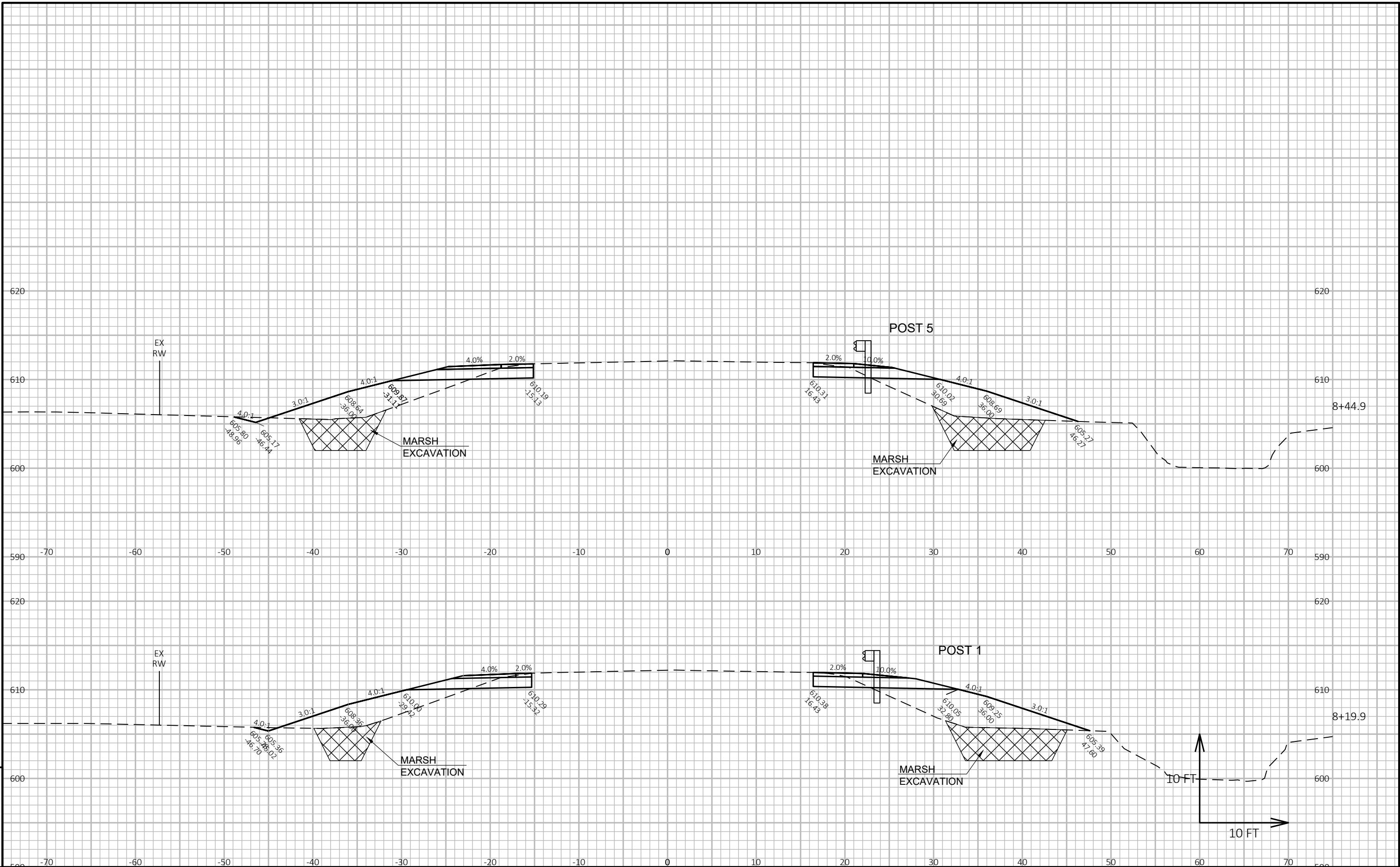
STATION	AREA (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)			Mass Ordinate
	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut	Salvaged/Unusable Pavement Material	Fill	Marsh Exc	Cut 1.00	Expanded Fill 1.30	Expanded Marsh Backfill 1.50	
Note 1	Note 2	Note 3	Note 1	Note 4	Note 8							
10+65	13.34	0.00	19.25	13.58	0	0	0	0	0	0	0	0
11+00	17.22	0.00	27.46	21.52	20	0	30	23	20	39	34	-20
11+28.1	17.11	0.00	27.79	12.01	18	0	29	17	38	77	60	-39
11+50	14.77	0.00	20.87	0.00	13	0	20	5	51	102	68	-52
11+53.1	16.48	0.00	23.20	0.00	2	0	3	0	52	106	68	-53
11+67	31.06	0.00	56.55	9.95	12	0	21	3	65	132	71	-68
11+78.1	32.89	0.00	60.46	11.92	13	0	24	4	78	164	78	-86
11+92	31.57	0.00	72.27	23.18	17	0	34	9	94	208	92	-114
12+00	32.78	0.00	75.24	32.54	10	0	22	8	104	236	104	-133
12+17	33.61	0.00	89.76	54.68	21	0	52	27	125	304	145	-179
12+50	21.72	0.00	66.68	37.42	34	0	96	56	159	428	230	-270
12+94.97	5.84	0.00	28.00	0.00	23	0	79	31	182	531	276	-349
13+00	5.76	0.00	27.62	0.00	1	0	5	0	183	538	276	-355
13+50	4.82	0.00	24.36	0.00	10	0	48	0	192	600	276	-408
13+77.3	4.35	0.00	0.08	0.00	5	0	12	0	197	616	276	-419

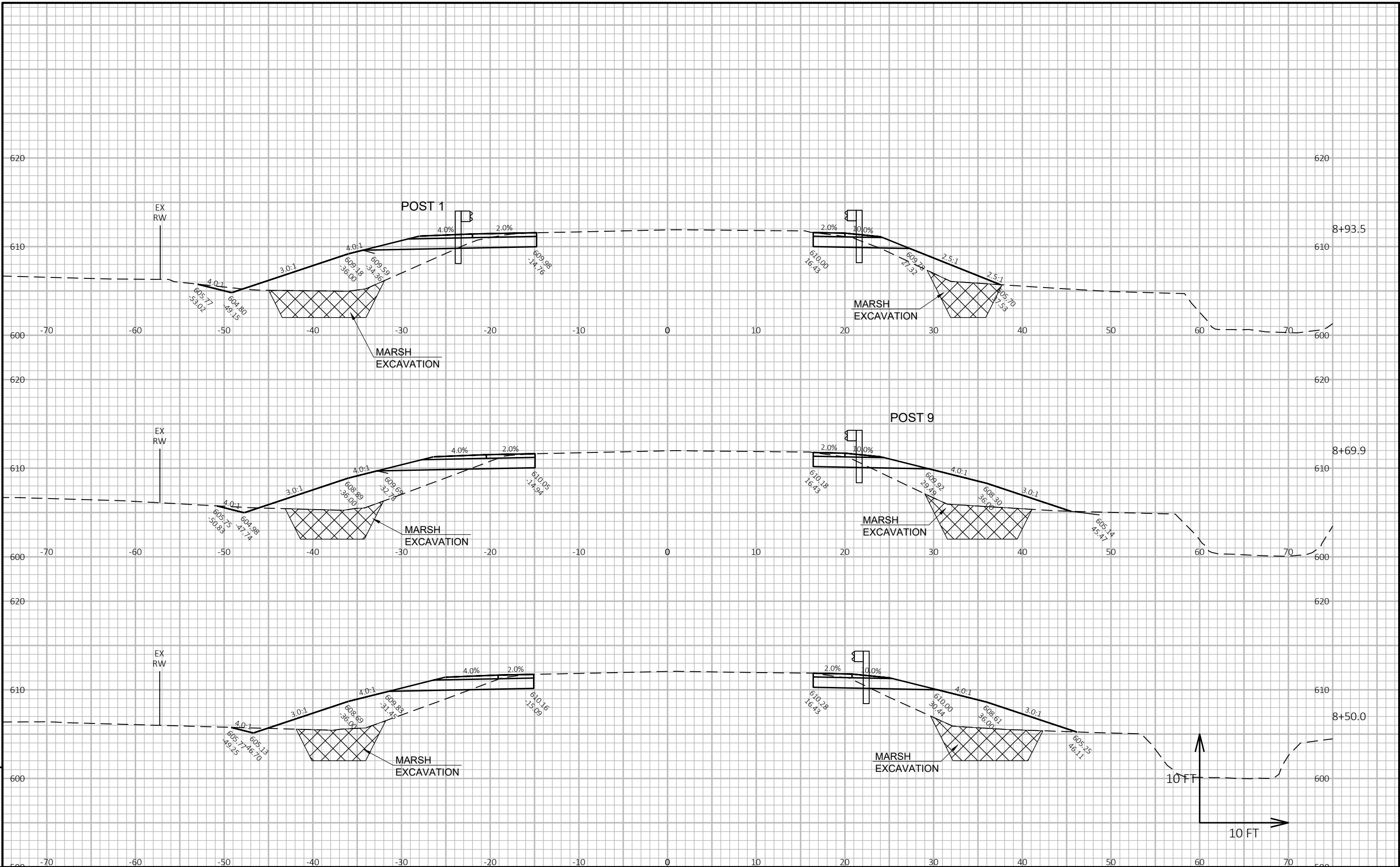
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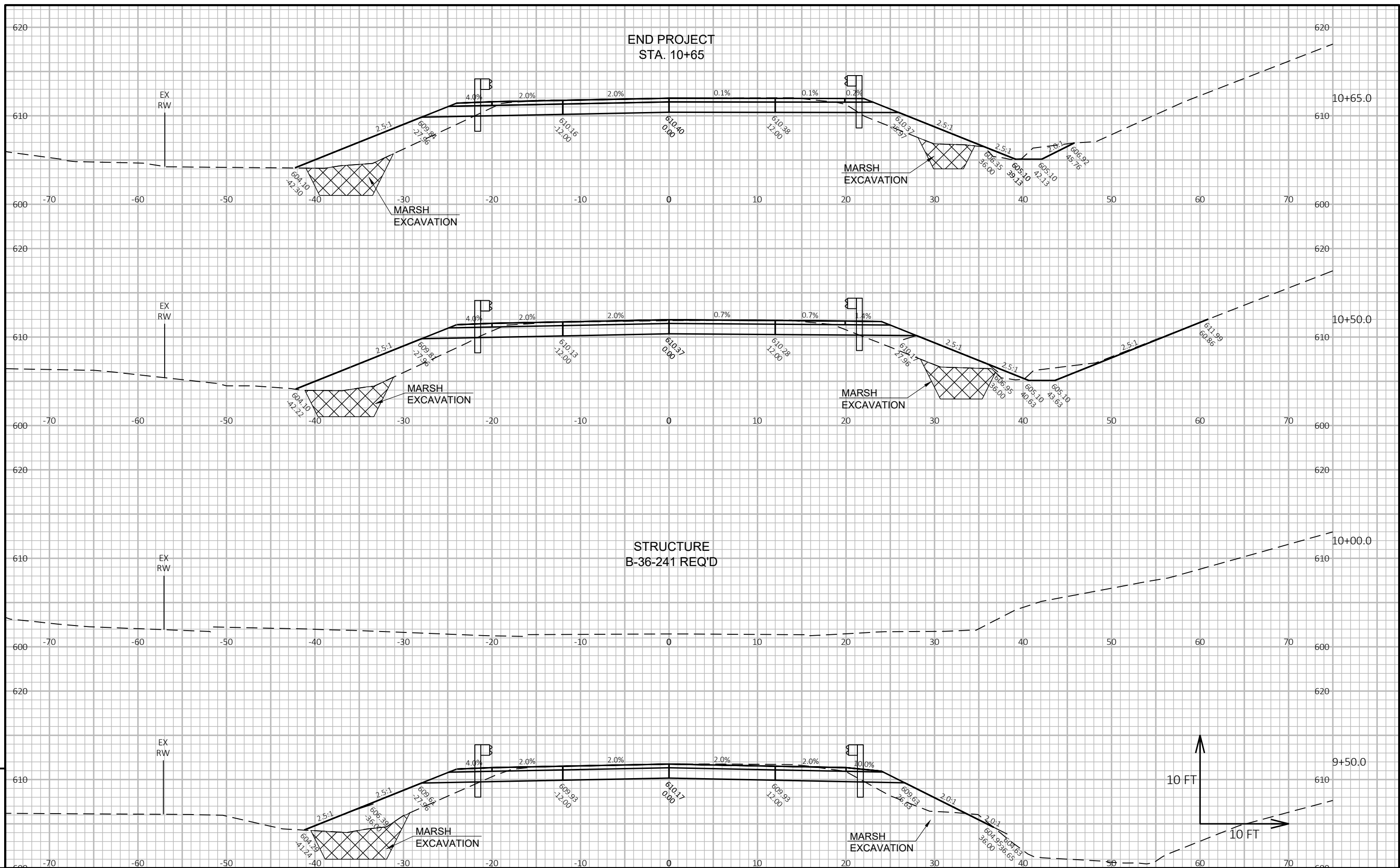
Notes:	
1 - Cut	Cut includes Unusable Pavement material This does not show up in cross sections Does not include Unusable Pavement Exc volume Will be backfilled with Granular Backfill Cut - Unusable Pavt - (Fill * Fill Factor) Mass Ordinate does not include Marsh Excavation
2 - Unusable Pavement Material	
3 - Fill	
4 - Expanded Marsh Backfill	
8 - Mass Ordinate	
8 - Mass Ordinate	











PROJECT NO:	4304-06-71
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HWY: CTH Q

COUNTY: MANITOWOC

CROSS SECTIONS:	CTH Q
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SHEET 83

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LAYOUT NAME - CTH Q (North)6

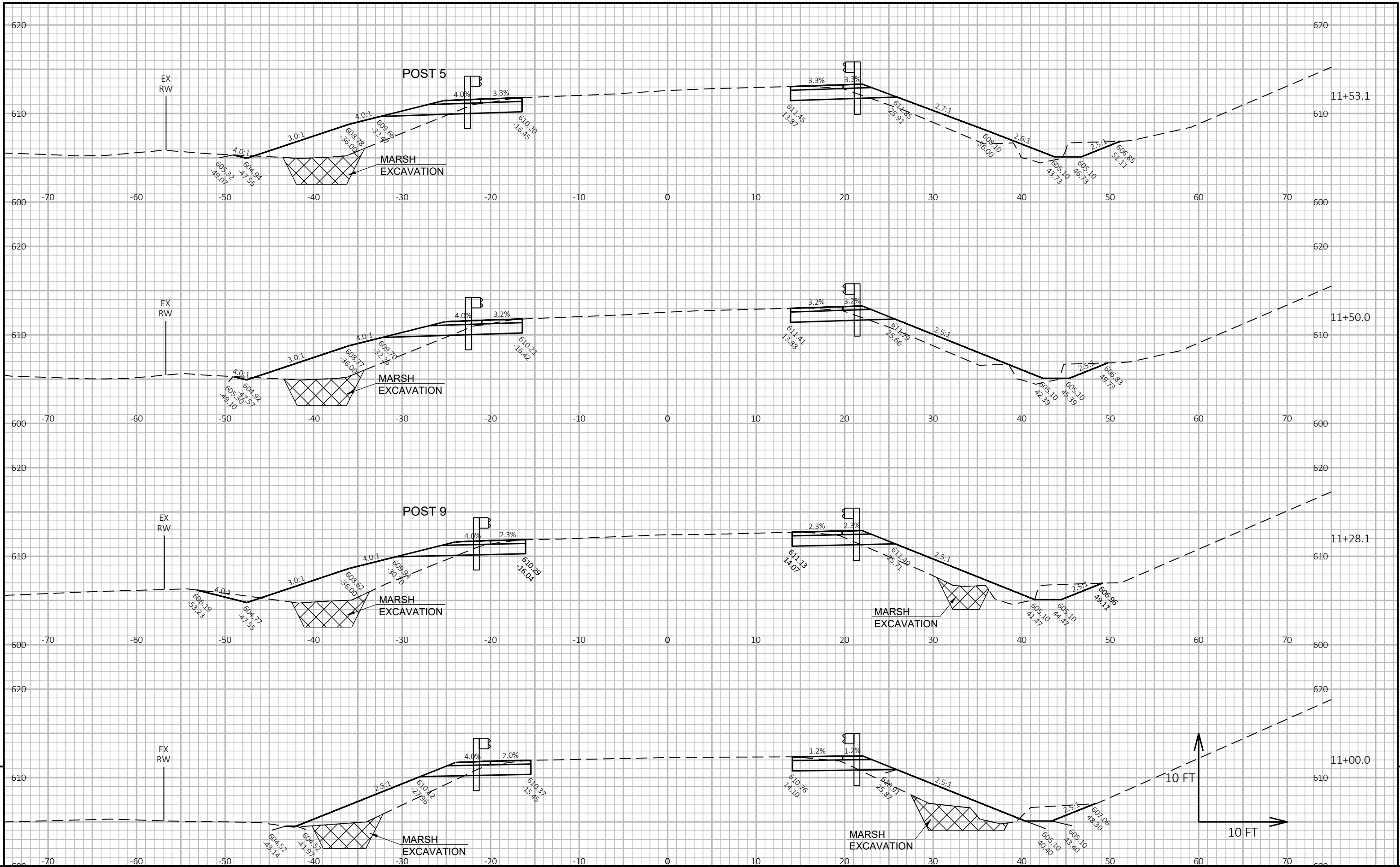
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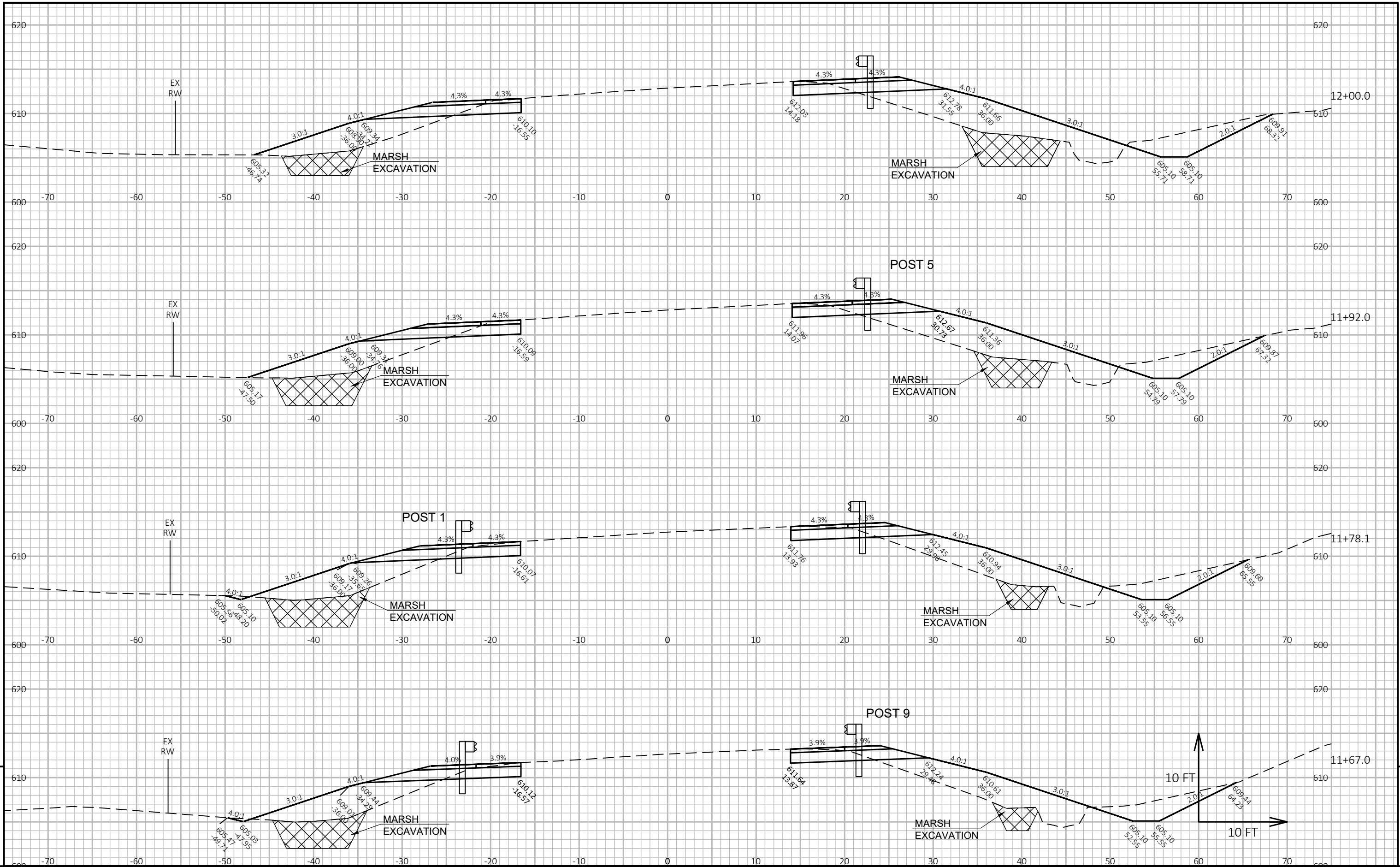
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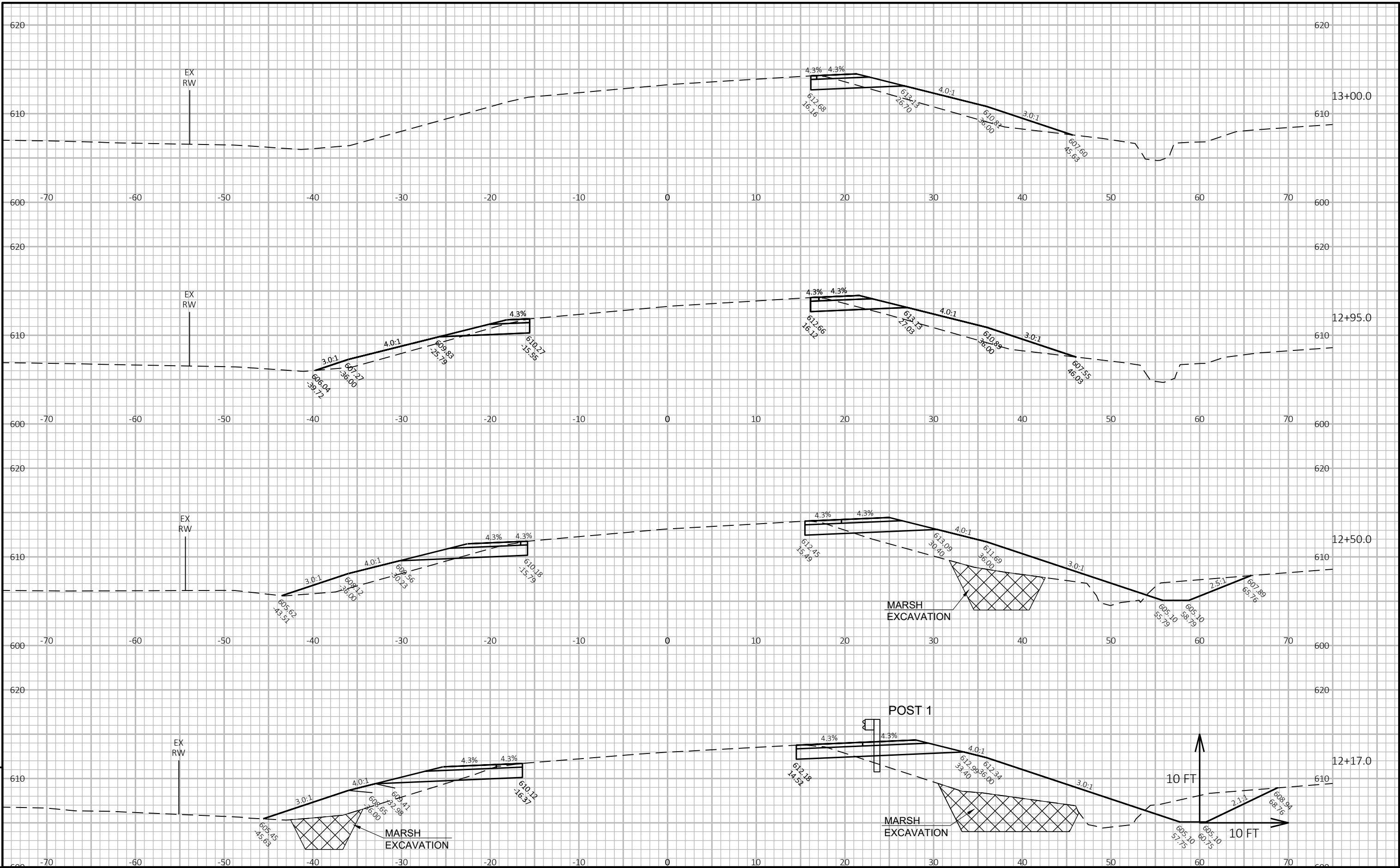
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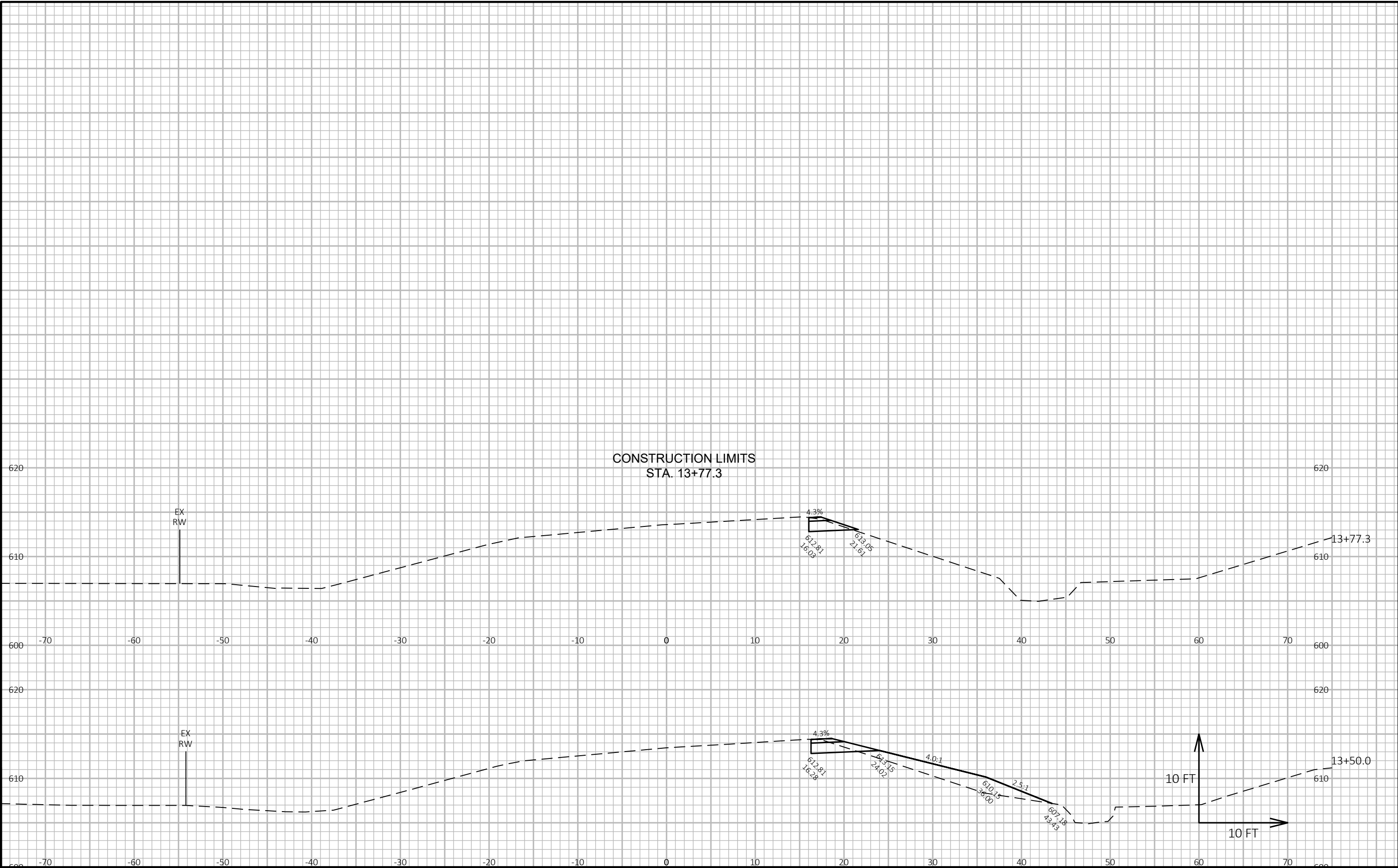
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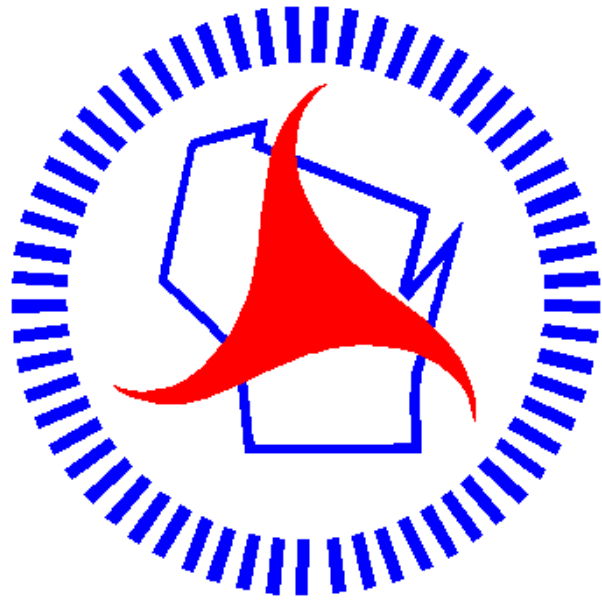
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