

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

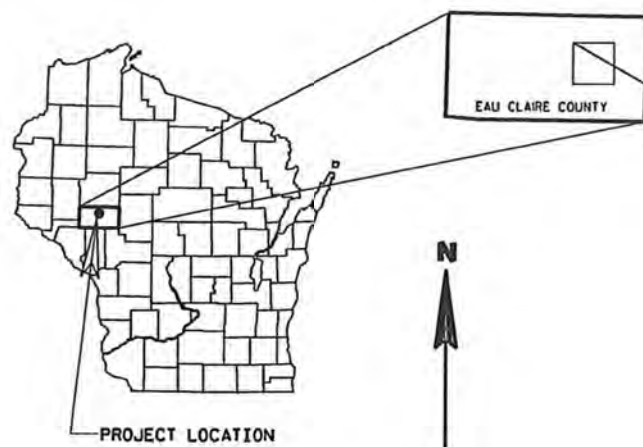
CTH AF - STH 27  
BRIDGE CREEK BRIDGE B-18-0238  
CTH V  
EAU CLAIRE COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
7831-07-70	WISC 2021187	1

ORDER OF SHEETS

Section No.	1	Title
Section No.	2	Typical Sections and Details (Includes Erosion Control Plans)
Section No.	3	Estimate of Quantities
Section No.	3	Miscellaneous Quantities
Section No.	4	Right of Way Plan
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 = 72



STATE PROJECT NUMBER  
7831-07-70

STRUCTURE B-18-238

DESIGN DESIGNATION

A.A.D.T. (2021)	=	640
A.A.D.T. (2041)	=	860
D.H.V.	=	60
D.	=	50/50
T.	=	5.0%
DESIGN SPEED	=	20 MPH
ESALS	=	73,000

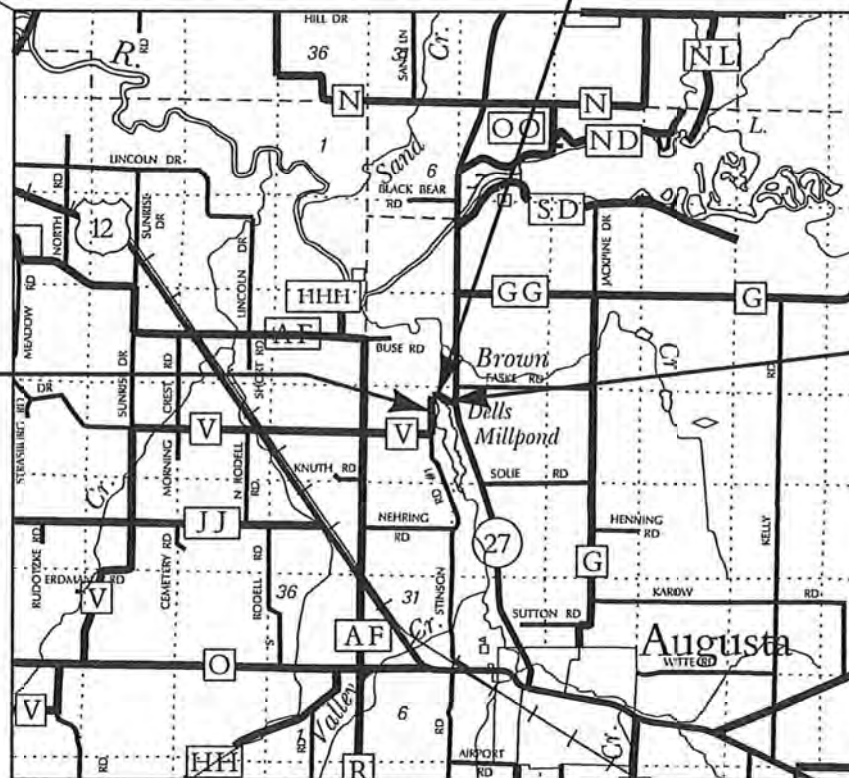
CONVENTIONAL SYMBOLS  
PLAN

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	
HIGH VOLTAGE	
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	
OVERHEAD ELECTRIC	
ELECTRIC	
FIBER OPTIC	
GAS	
SANITARY SEWER	
STORM SEWER	
TELEPHONE	
WATER	
UTILITY PEDESTAL	
POWER POLE	
TELEPHONE POLE	

BEGIN PROJECT  
STA. 8+89.75  
Y = 247454.96  
X = 430259.59

END PROJECT  
STA. 11+12.25  
Y = 247431.41  
X = 430480.70



TOTAL NET LENGTH OF CENTERLINE = 0.042 MI.

SURVEY PERFORMED IN 2019.  
COORDINATES ON THIS PLAN ARE REFERENCED TO  
THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS),  
EAU CLAIRE COUNTY

ACCEPTED FOR

County Eau Claire

10/21/2020 Date  
Signature Highway Commissioner

ORIGINAL PLANS PREPARED BY

**AYRES** 3433 Oakwood Hills Parkway  
Eau Claire, WI 54701  
www.AyresAssociates.com

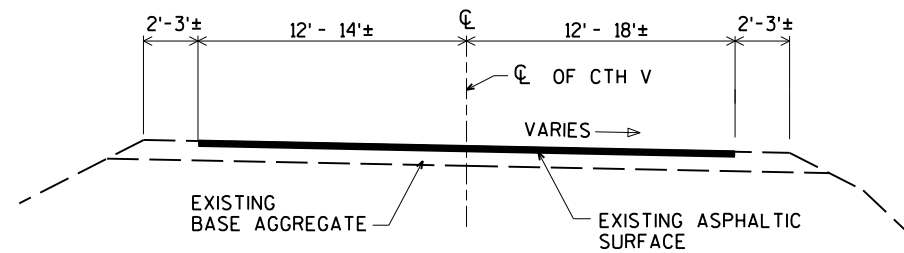
WISCONSIN PROFESSIONAL ENGINEER  
CHRISTOPHER D. MCMAHON  
E-28454  
EAU CLAIRE, WI  
DATE 10/20/2020

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PREPARED BY  
Surveyor AYRES ASSOCIATES INC  
Designer AYRES ASSOCIATES INC  
Project Manager MATTHEW THORSEN, PE  
Regional Examiner TOU YANG, PE  
Regional Supervisor ANDREW STENSLAND, PE

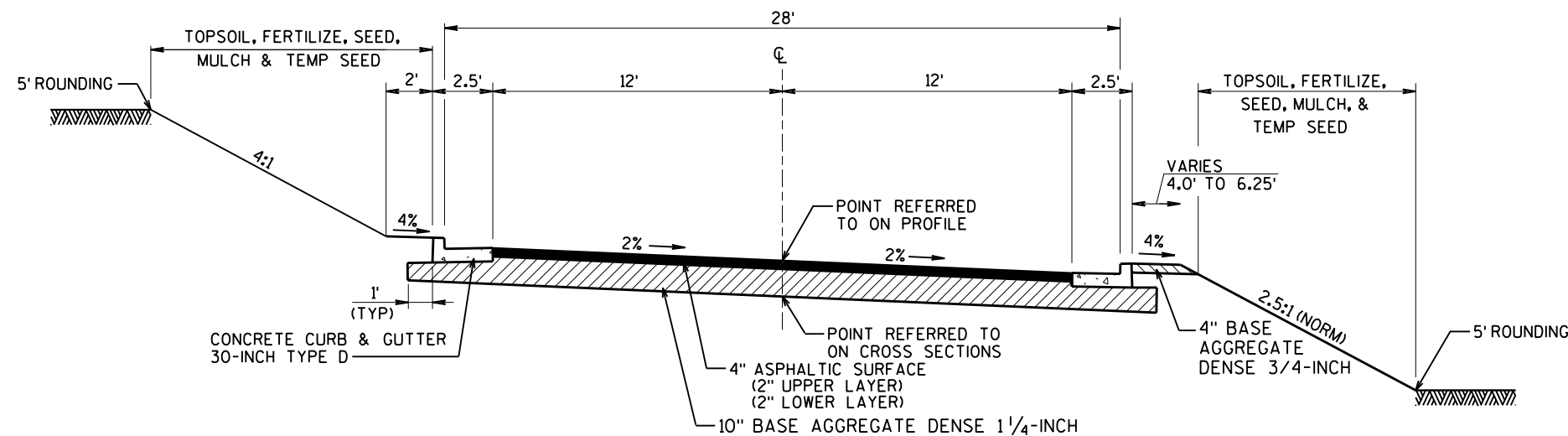
APPROVED FOR THE DEPARTMENT  
DATE: 10/30/2020 Signature

E



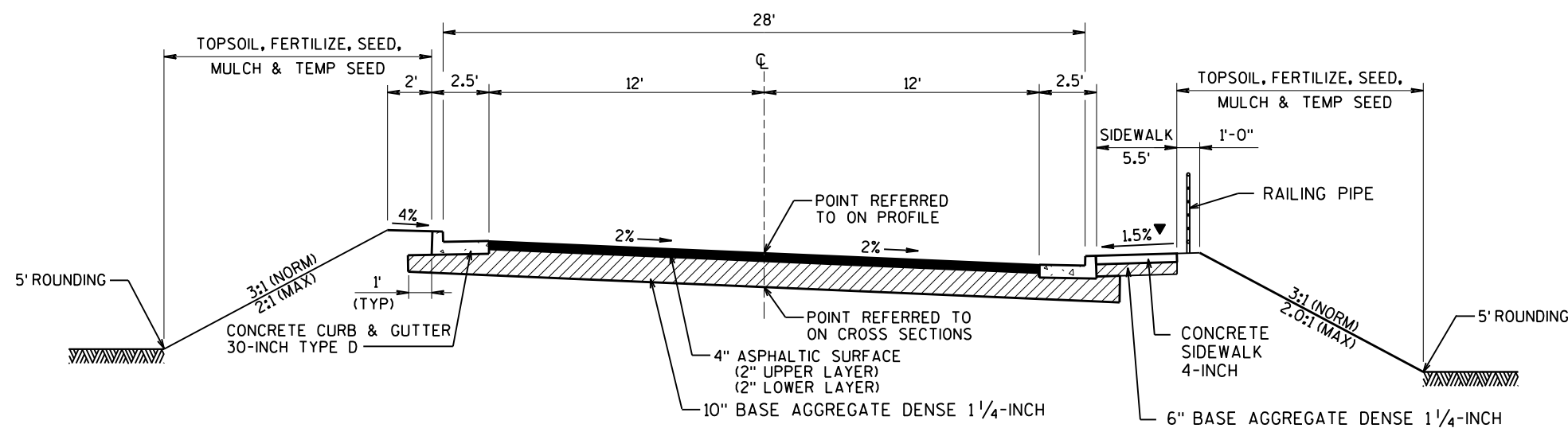
**TYPICAL EXISTING SECTION**

(CTH V)  
STA. 8+89.75 TO STA. 11+12.25



**FINISHED SUPERELEVATED TYPICAL SECTION**

STA. 8+89.75 TO STA. 9+39.75



**FINISHED SUPERELEVATED TYPICAL SECTION**

STA. 10+62.25 TO STA. 11+12.25

▼ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

### GENERAL NOTES

EROSION CONTROL ITEMS TO BE PLACED AS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER.

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

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

THE DEPARTMENT OF TRANSPORTATION WILL FURNISH THE CONTRACTOR WITH A MONUMENT TO BE INSTALLED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCLUSIVE OF THE ROADBED, SHALL BE FERTILIZED, SEEDED, AND MULCHED AS DIRECTED BY THE ENGINEER.

SEED MIXTURE NO. 20 AND SEEDING TEMPORARY SHALL BE USED IN THE PROJECT AND SHALL BE PLACED AS SHOWN IN THE PLANS AND/OR AS DIRECTED BY THE ENGINEER.

SILT FENCE IS TO BE PLACED AS SHOWN ON THE PLAN, OR AS DIRECTED BY THE ENGINEER. SILT FENCE TO BE PLACED PRIOR TO CONSTRUCTION AND IN PLACE PRIOR TO BRIDGE REMOVAL.

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

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) 1988.

SHRINKAGE IS ESTIMATED AT 30%

WETLANDS EXIST IN THE PROJECT AREA AND THE CONTRACTOR SHALL NOT DISTURB OUTSIDE OF THE SLOPE INTERCEPTS IN THESE AREAS

### UTILITIES

CENTURYLINK  
311 SOUTH COURT STREET  
SPARTA, WI 54656  
P.O. BOX 6256  
ATTN: BRET CLARK  
608-269-0819  
bret.clark@centurylink.com

EAU CLAIRE ENERGY COOPERATIVE  
8214 HIGHWAY 12  
P.O. BOX 368  
FALL CREEK, WI 54742-368  
ATTN: JOSH VANINGAN  
715-836-6473  
jvaningan@ecec.com

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

# DIGGERS HOTLINE

Dial **811** or (800) 242-8511  
www.DiggersHotline.com

### COUNTY CONTACT

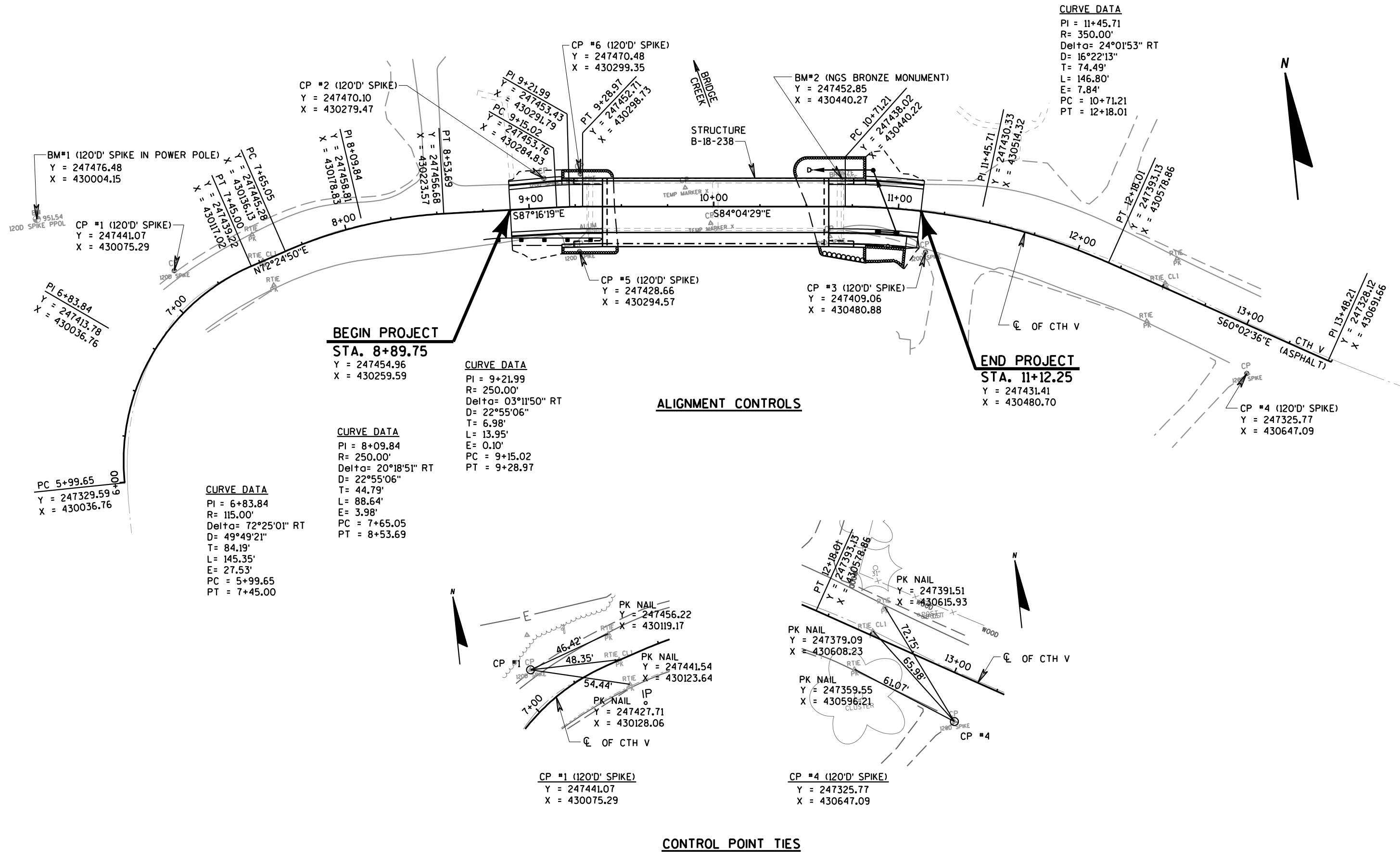
EAU CLAIRE COUNTY, COMMISSIONER  
2000 SPOONER AVENUE  
ALTOONA, WI 54720  
ATTN: JON JOHNSON  
715-839-2952  
Jon.Johnson@co.eau-claire.wi.us

### DESIGNER

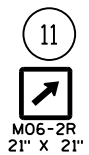
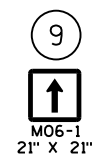
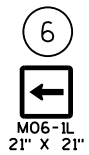
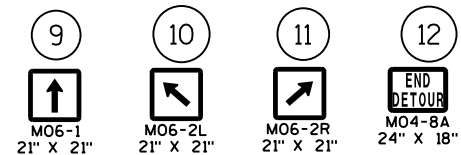
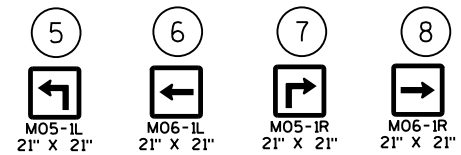
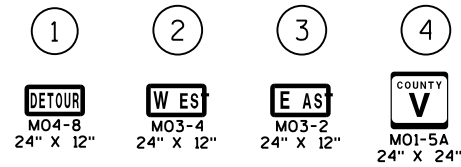
AYRES ASSOCIATES  
3433 OAKWOOD HILLS PARKWAY  
EAU CLAIRE, WI 54701  
ATTN: CHRIS MCMAHON, PE  
715-834-3161  
mcmahonc@ayresassociates.com

### WISCONSIN DEPARTMENT OF NATURAL RESOURCES CONTACT:

LEAH NICOL  
1300 WEST CLAIREMONT AVENUE  
EAU CLAIRE, WI 54701  
715-934-9014  
leah.nicol@wisconsin.gov







— ◆ — DETOUR ROUTE

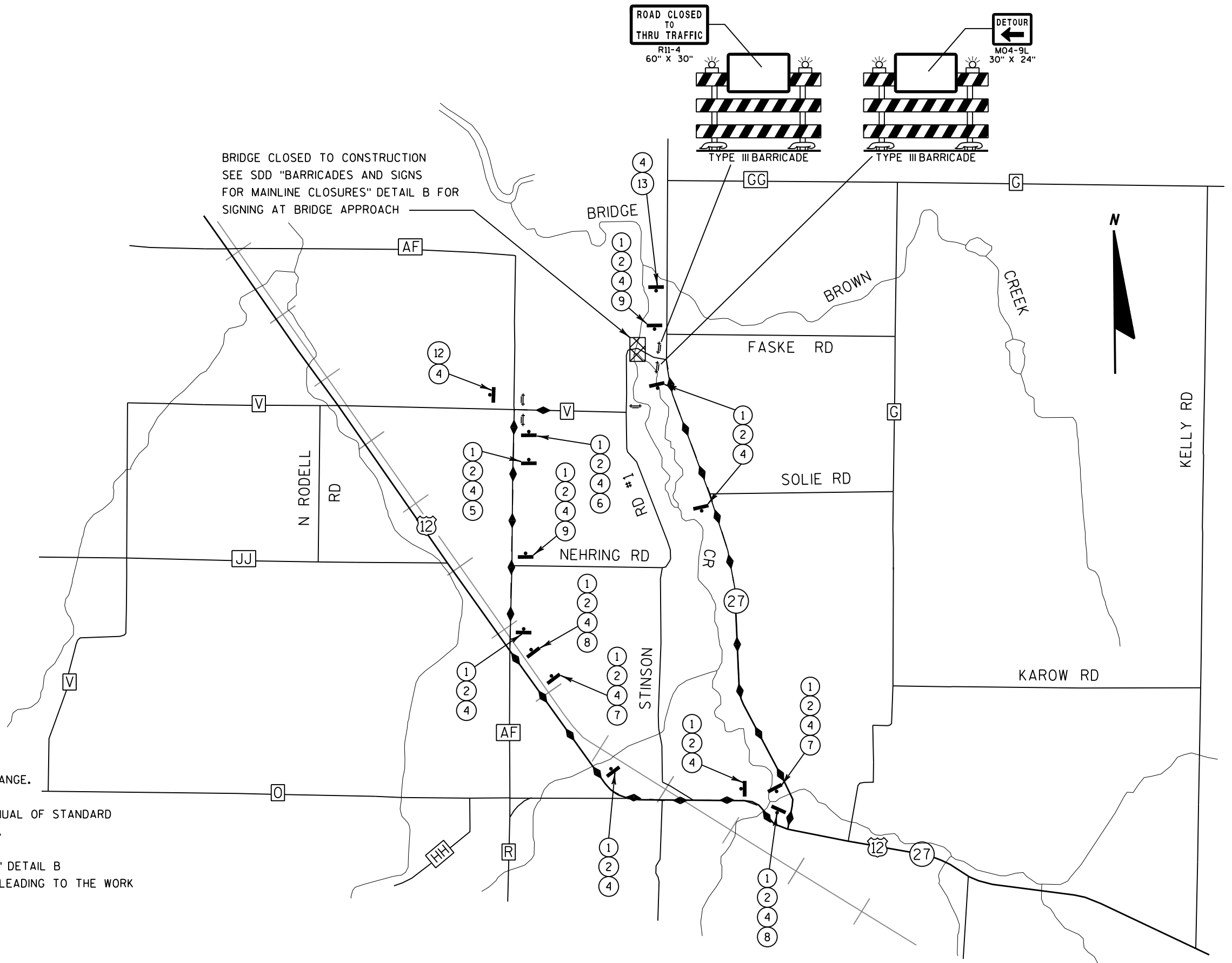
GENERAL NOTES  
ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

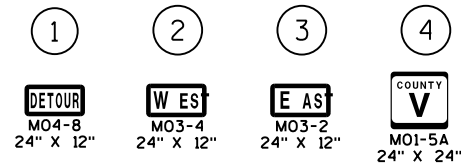
"WO" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH FHWA'S MANUAL OF STANDARD  
HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

SEE SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" DETAIL B  
FOR SIGNING AT BRIDGE APPROACH AND ADVANCED AREAS LEADING TO THE WORK  
ZONE.

BRIDGE CLOSED TO CONSTRUCTION  
SEE SDD "BARRICADES AND SIGNS  
FOR MAINLINE CLOSURES" DETAIL B FOR  
SIGNING AT BRIDGE APPROACH





— ◆ — DETOUR ROUTE

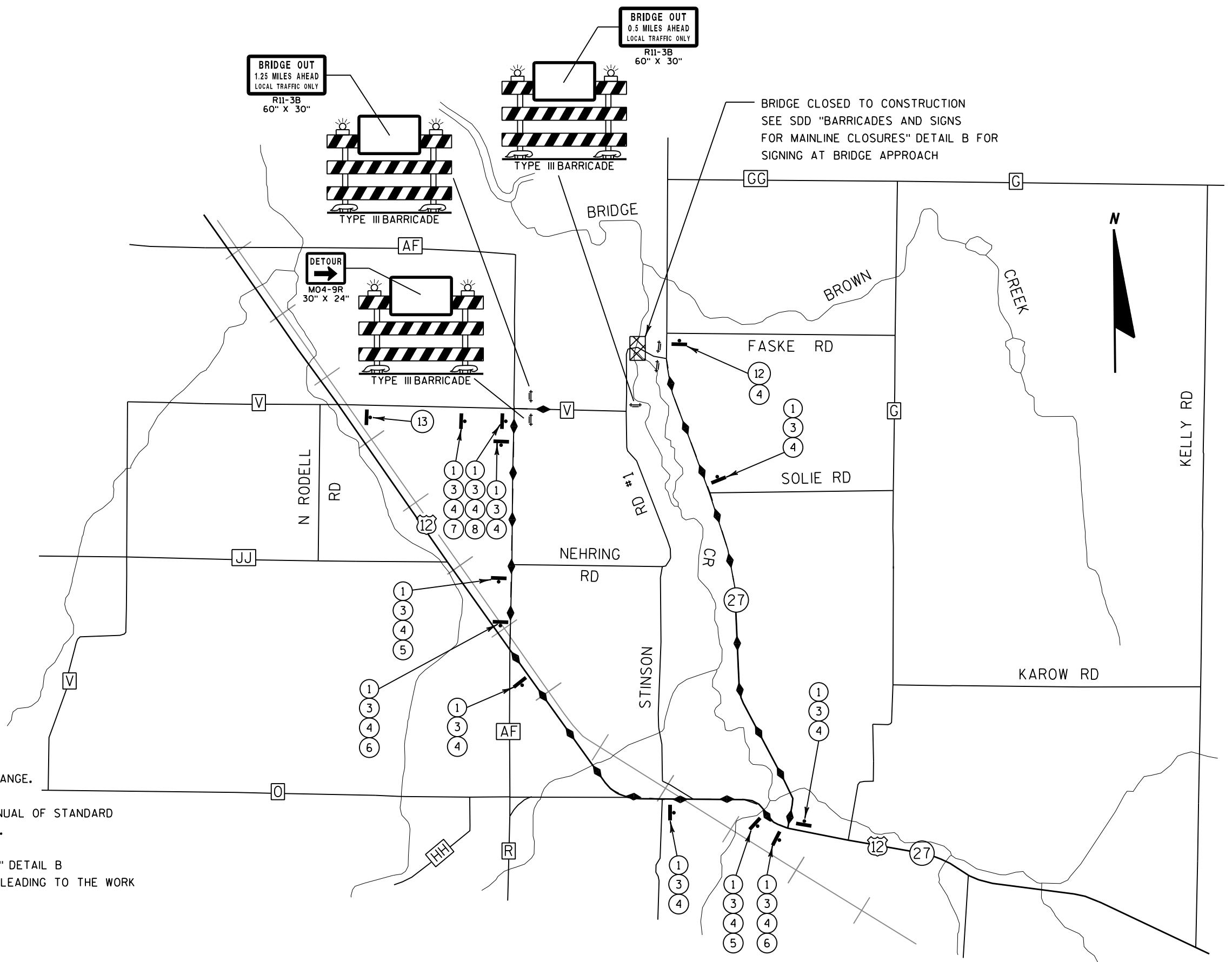
#### GENERAL NOTES

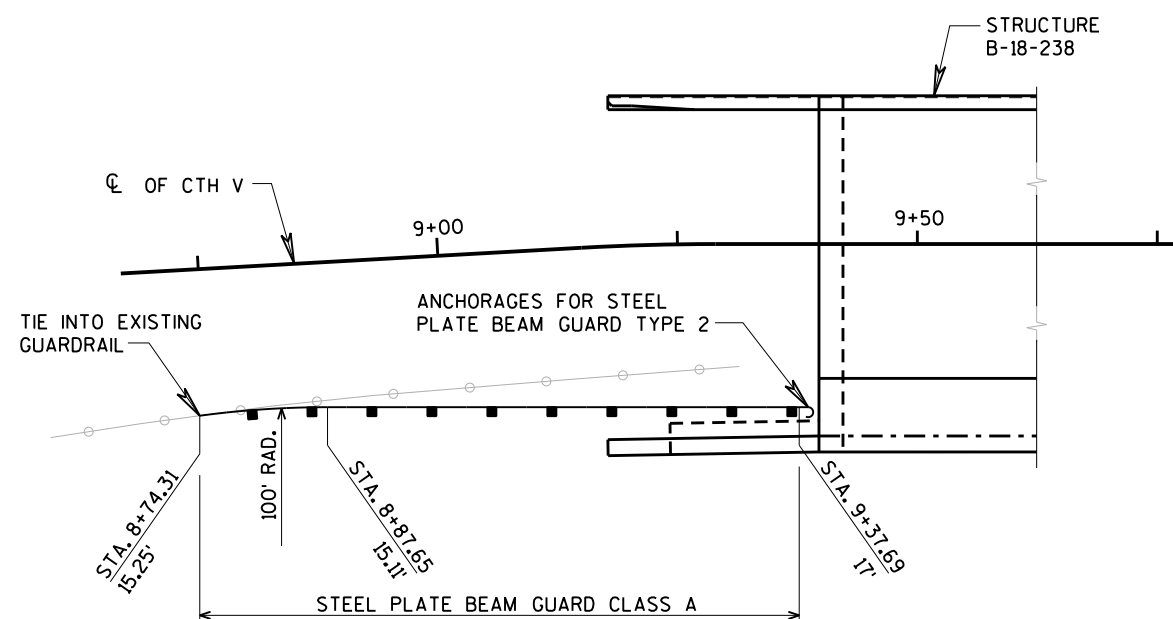
ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

"W0" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH FHWA'S MANUAL OF STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

SEE SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" DETAIL B FOR SIGNING AT BRIDGE APPROACH AND ADVANCED AREAS LEADING TO THE WORK ZONE.

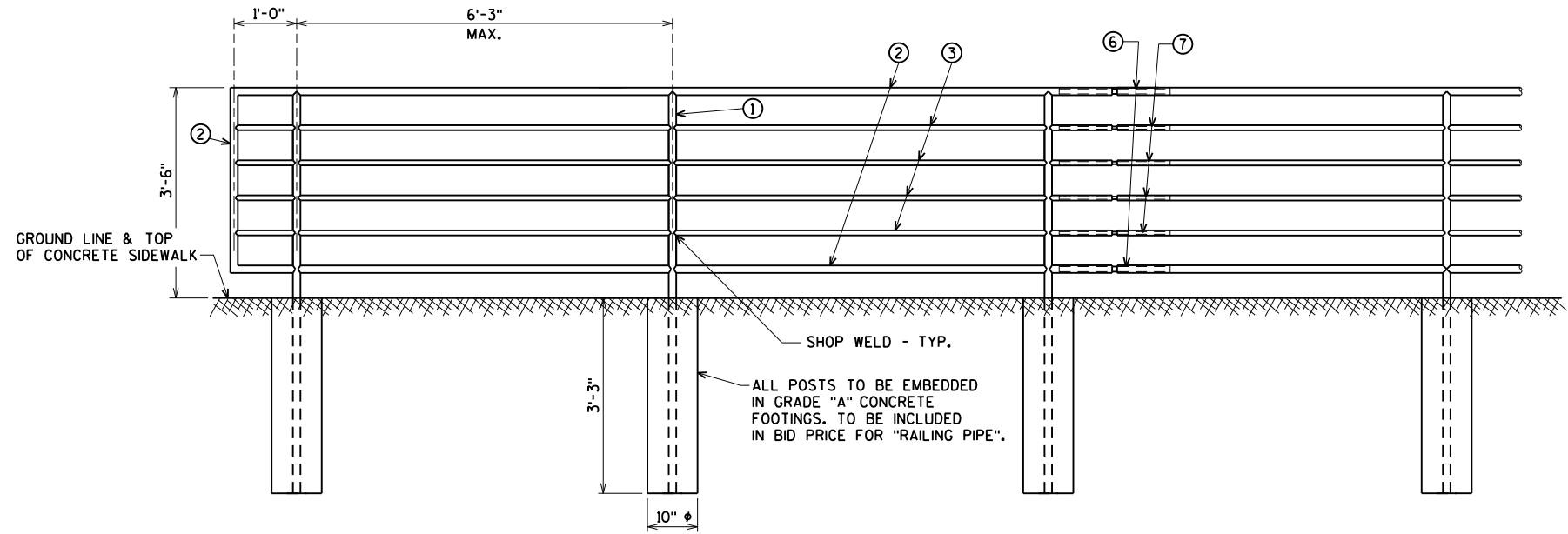




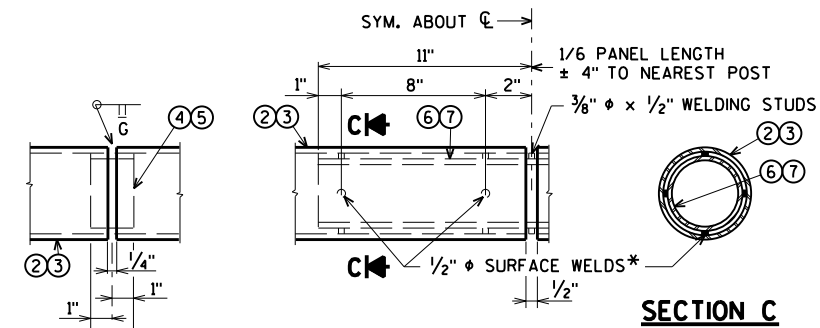
A 3D perspective diagram of a concrete curb. The curb has a flat top surface and a vertical face. A section of the top surface is labeled "TAPER CURB" with a leader line pointing to it. A dimension line above this section indicates a length of "6' MIN.". A vertical line on the side of the curb is labeled "CONSTRUCTION JOINT" with a leader line pointing to it. The curb is shown resting on a base of concrete aggregate, represented by a stippled pattern.

CTH V

STA. 8+89.75 TO STA. 8+95.75, RT.  
STA. 11+04.12 TO STA. 11+10.31, RT.  
STA. 11+06.48 TO STA. 11+12.25, LT.



**SECTION THRU RAILING**



## SECTION C

**SHOP RAIL**  
**SPLICE DETAIL**

(LOCATION MUST BE SHOWN  
ON THE SHOP DRAWINGS)

\*MIN. 5/8" FLAT SURFACE DIA.  
PUNCHINGS OR STUDS MAY  
BE USED AS AN ALTERNATE.

BID ITEM SHALL BE "RAILING PIPE", WHICH INCLUDES ALL ITEMS SHOWN.

STEEL RAILING POSTS AND STEEL TUBING WILL BE PAINTED BLACK (FEDERAL #27038).

ALL MATERIAL SHALL BE PAINTED WITH A THREE-COAT ZINC RICH EPOXY SYSTEM. PRIOR TO PAINTING, ALL STEEL RAILING POSTS AND STEEL TUBING SHALL BE GIVEN A NO. 11 NEAR WHITE BLAST CLEANING BY SSPC SPECIFICATIONS.

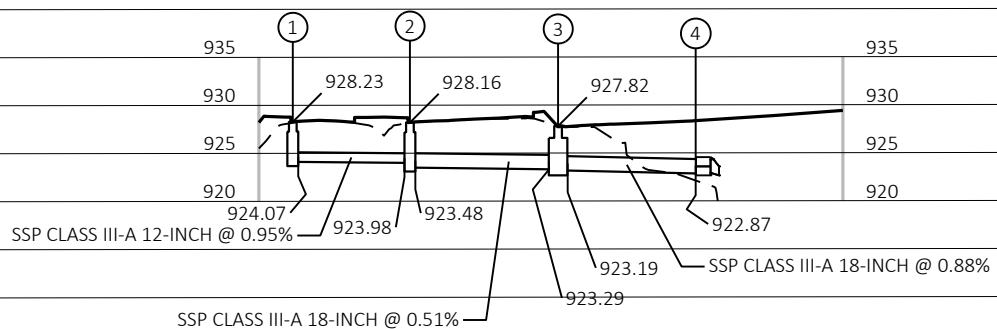
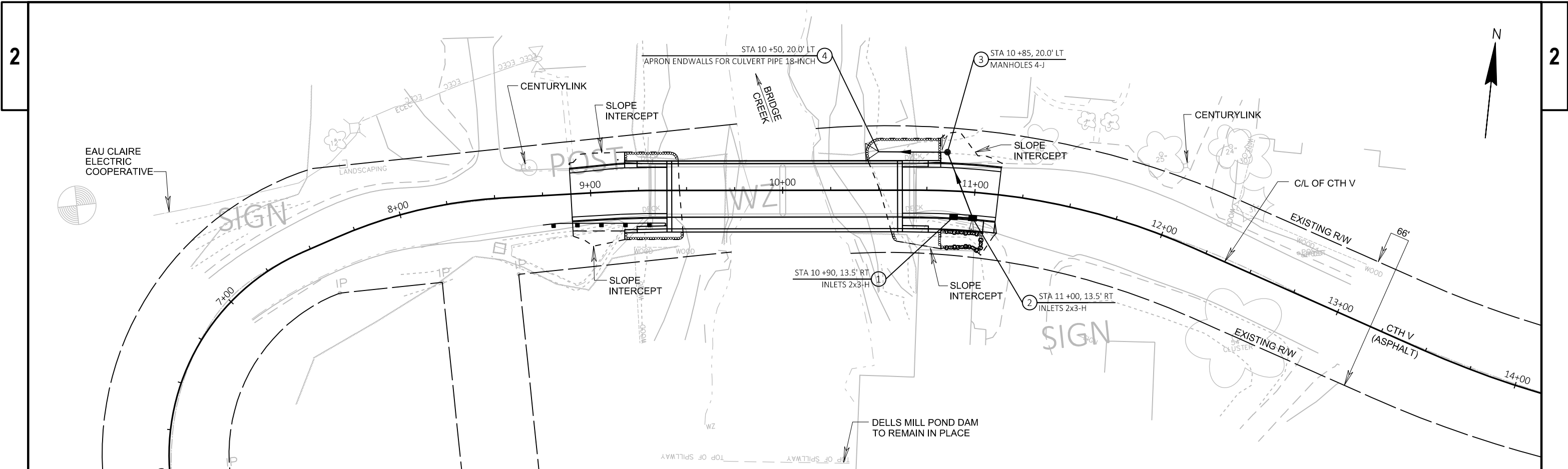
ALL MATERIALS USED IN FABRICATION SHALL BE MADE FROM MATERIALS CONFORMING TO ASTM A709 GRADE 36 UNLESS NOTED OTHERWISE.

ALL RAILS, POSTS AND SLEEVES ARE STANDARD WEIGHT  
PIPE, SCHEDULE 40.

RAILING SHALL BE FABRICATED IN LENGTHS THAT INCLUDE 3 OR 4 POSTS.

THE GAP BETWEEN THE PIPE RAILING AND THE  
END OF THE BRIDGE RAILING WILL BE LESS THAN  
6-INCHES.





- ① 1/2"  $\phi$  STEEL PIPE FOR POST. CUT BOTTOM OF POST TO MATCH TOP OF CONCRETE. PLACE POSTS VERTICAL.
- ② 1/2"  $\phi$  STEEL PIPE FOR TOP & BOT. RAIL. WELD TO NO. 1.
- ③ 1"  $\phi$  STEEL PIPE FOR INTERMEDIATE RAILS. WELD TO NO. 1.
- ④ 1"  $\phi$  PIPE SLEEVE FOR NO. 2. PROVIDE "SLIDING FIT" WITH A MINIMUM OUT TO OUT DIMENSION OF 1 3/8".
- ⑤ 1/2"  $\phi$  ROD SLEEVE FOR NO. 3. PROVIDE "SLIDING FIT" WITH A MINIMUM OUT TO OUT DIMENSION OF 1 5/8".
- ⑥ 1"  $\phi$  PIPE SLEEVE  $\times$  1'-10" LONG FOR NO. 2. PROVIDE 1/2"  $\phi$  SURFACE WELDS ON ALL SIDES AS SHOWN. GRIND WELDS TO FIT FREE INTO I.D. OF NO. 2. PROVIDE 3/8"  $\phi$   $\times$  1/2" WELDING STUDS ON TOP AND BOTTOM SURFACES AT CENTERLINE.
- ⑦ 1/2"  $\phi$  ROD SLEEVE  $\times$  1'-10" LONG FOR NO. 3. PROVIDE 1/2"  $\phi$  SURFACE WELDS ON ALL SIDES AS SHOWN. GRIND WELDS TO FIT FREE INTO I.D. OF NO. 3. PROVIDE 3/8"  $\phi$   $\times$  1/2" WELDING STUDS ON TOP AND BOTTOM SURFACES AT CENTERLINE.







HIGH WATER 2 EL. 901.1

	EROSION MAT CLASS II TYPE C
	SILT FENCE
	RIPRAP HEAVY
	INLET PROTECTION TYPE D

TOTAL PROJECT AREA = 0.337 ACRES  
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.137 ACRES

Estimate Of Quantities

7831-07-70					
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. 10+01	LS	1.000	1.000
0008	204.0165	Removing Guardrail	LF	150.000	150.000
0010	205.0100	Excavation Common	CY	137.000	137.000
0012	206.1000	Excavation for Structures Bridges (structure) 01. B-18-238	LS	1.000	1.000
0014	210.1500	Backfill Structure Type A	TON	770.000	770.000
0016	213.0100	Finishing Roadway (project) 01. 7831-07-70	EACH	1.000	1.000
0018	305.0110	Base Aggregate Dense 3/4-Inch	TON	10.000	10.000
0020	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	190.000	190.000
0022	455.0605	Tack Coat	GAL	21.000	21.000
0024	465.0105	Asphaltic Surface	TON	80.000	80.000
0026	502.0100	Concrete Masonry Bridges	CY	354.000	354.000
0028	502.3200	Protective Surface Treatment	SY	525.000	525.000
0030	502.3210	Pigmented Surface Sealer	SY	85.000	85.000
0032	503.0172	Prestressed Girder Type I 72W-Inch	LF	484.000	484.000
0034	505.0400	Bar Steel Reinforcement HS Structures	LB	6,860.000	6,860.000
0036	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	46,710.000	46,710.000
0038	506.2605	Bearing Pads Elastomeric Non-Laminated	EACH	8.000	8.000
0040	506.4000	Steel Diaphragms (structure) 01. B-18-238	EACH	6.000	6.000
0042	513.2001	Railing Pipe	LF	22.000	22.000
0044	513.7084	Railing Steel Type NY4	LF	168.000	168.000
0046	516.0500	Rubberized Membrane Waterproofing	SY	27.000	27.000
0048	517.1015.S	Concrete Staining Multi-Color (structure) 01. B-18-238	SF	235.000	235.000
0050	517.1050.S	Architectural Surface Treatment (structure) 01. B-18-238	SF	235.000	235.000
0052	520.1018	Apron Endwalls for Culvert Pipe 18-Inch	EACH	1.000	1.000
0054	550.0020	Pre-Boring Rock or Consolidated Materials	LF	240.000	240.000
0056	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	290.000	290.000
0058	601.0411	Concrete Curb & Gutter 30-Inch Type D	LF	159.000	159.000
0060	602.0405	Concrete Sidewalk 4-Inch	SF	264.000	264.000
0062	606.0300	Riprap Heavy	CY	100.000	100.000
0064	608.3012	Storm Sewer Pipe Class III-A 12-Inch	LF	10.000	10.000
0066	608.3018	Storm Sewer Pipe Class III-A 18-Inch	LF	74.000	74.000
0068	611.0530	Manhole Covers Type J	EACH	1.000	1.000
0070	611.0624	Inlet Covers Type H	EACH	2.000	2.000
0072	611.2004	Manholes 4-FT Diameter	EACH	1.000	1.000
0074	611.3230	Inlets 2x3-FT	EACH	2.000	2.000

Estimate Of Quantities

7831-07-70

Line	Item	Item Description	Unit	Total	Qty
0076	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	165.000	165.000
0078	614.0115	Anchorage for Steel Plate Beam Guard Type 2	EACH	1.000	1.000
0080	614.0150	Anchor Assemblies for Steel Plate Beam Guard	EACH	2.000	2.000
0082	614.0305	Steel Plate Beam Guard Class A	LF	62.500	62.500
0084	618.0100	Maintenance And Repair of Haul Roads (project) 01. 7831-07-70	EACH	1.000	1.000
0086	619.1000	Mobilization	EACH	1.000	1.000
0088	624.0100	Water	MGAL	8.000	8.000
0090	625.0100	Topsoil	SY	100.000	100.000
0092	627.0200	Mulching	SY	105.000	105.000
0094	628.1504	Silt Fence	LF	440.000	440.000
0096	628.1520	Silt Fence Maintenance	LF	880.000	880.000
0098	628.1905	Mobilizations Erosion Control	EACH	4.000	4.000
0100	628.1910	Mobilizations Emergency Erosion Control	EACH	4.000	4.000
0102	628.2027	Erosion Mat Class II Type C	SY	65.000	65.000
0104	628.7020	Inlet Protection Type D	EACH	2.000	2.000
0106	628.7504	Temporary Ditch Checks	LF	50.000	50.000
0108	629.0210	Fertilizer Type B	CWT	0.100	0.100
0110	630.0120	Seeding Mixture No. 20	LB	5.000	5.000
0112	630.0200	Seeding Temporary	LB	5.000	5.000
0114	630.0500	Seed Water	MGAL	4.000	4.000
0116	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0118	637.2230	Signs Type II Reflective F	SF	12.000	12.000
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	642.5001	Field Office Type B	EACH	1.000	1.000
0126	643.0420	Traffic Control Barricades Type III	DAY	1,425.000	1,425.000
0128	643.0705	Traffic Control Warning Lights Type A	DAY	2,250.000	2,250.000
0130	643.0900	Traffic Control Signs	DAY	8,475.000	8,475.000
0132	643.5000	Traffic Control	EACH	1.000	1.000
0134	645.0111	Geotextile Type DF Schedule A	SY	60.000	60.000
0136	645.0120	Geotextile Type HR	SY	255.000	255.000
0138	646.1020	Marking Line Epoxy 4-Inch	LF	940.000	940.000
0140	650.4000	Construction Staking Storm Sewer	EACH	4.000	4.000
0142	650.4500	Construction Staking Subgrade	LF	100.000	100.000
0144	650.5000	Construction Staking Base	LF	100.000	100.000
0146	650.5500	Construction Staking Curb Gutter and Curb & Gutter	LF	264.000	264.000
0148	650.6500	Construction Staking Structure Layout (structure) 01. B-18-238	LS	1.000	1.000
0150	650.9910	Construction Staking Supplemental Control (project) 01.	LS	1.000	1.000

Estimate Of Quantities

7831-07-70					
Line	Item	Item Description	Unit	Total	Qty
7831-07-70					
0152	650.9920	Construction Staking Slope Stakes	LF	100.000	100.000
0154	690.0150	Sawing Asphalt	LF	64.000	64.000
0156	715.0502	Incentive Strength Concrete Structures	DOL	2,124.000	2,124.000
0158	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	300.000	300.000
0160	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	300.000	300.000

CTH V EARTHWORK SUMMARY

From/To Station	Location	Excavation Common (1) (item # 205.0100)	Salvaged / Unuseable Pavement Material (5)	Unexpanded Fill	Expanded Fill (2)	Mass Ordinate +/- (3)	Waste	Borrow  (item #208.0100)	Comment:
		Cut			Factor 1.30				
8+89.75 - 11+12.25	CTH V	137	35	27	35	68	68	0	

- 1) Excavation Common is the Cut. Item number 205.0100.
- 2) Expanded Fill. Factor = 1.30; Expanded Fill = Unexpanded Fill \* Fill Factor
- 3) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material on the project.
- 4) All quantities shown in CY.
- 5) Existing existing salvaged/unuseable asphalt pavement.

CLEARING AND GRUBBING

				201.0105 CLEARING	201.0205 GRUBBING
STATION	TO	STATION	OFFSET	STA	STA
8+89.75	-	11+12.25	LT & RT	2	2

TOTALS				2	2
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RAILING PIPE (NEAR B-18-238)

					513.2001
CATEGORY	STATION	TO	STATION	LOCATION	LF
0030	10+83	-	11+06	RT	22

TOTAL					22
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PAVING AND BASE QUANTITIES

			305.0110 BASE AGGREGATE DENSE 3/4-INCH	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH	455.0605 TACK COAT	465.0105 ASPHALTIC SURFACE
STATION	TO	STATION	TON	TON	GAL	TON
8+89.75	--	9+39.75	10	85	10	45
10+62.25	--	11+12.25	0	95	10	30
UNDISTRIBUTED			0	10	1	5
TOTALS			10	190	21	80

ALL QUANTITIES CATEGORY 0010 UNLESS OTHERWISE NOTED



MGS GUARDRAIL

				204.0165	614.0115	614.0305
				REMOVING	ANCHORAGES	STEEL PLATE
				GUARDRAIL	FOR STEEL	BEAM GUARD
					PLATE BEAM	CLASS A
					GUARD TYPE 2	
STATION	TO	STATION	LOCATION	LF	EACH	LF
8+74.31	--	9+37.69	RT	--	--	62.5
8+74.31	--	9+37.69	RT	56	--	--
	9+30		LT	14	--	--
	9+37.69		RT	--	1	--
10+70	--	11+07	LT	40	--	--
10+70	--	11+11	RT	40	--	--
TOTALS				150	1	62.5

CONCRETE

				601.0411	602.0405
				CONCRETE	CONCRETE
				CURB & GUTTER	SIDEWALK
				30-INCH TYPE D	4-INCH
STATION	TO	STATION	LOC	LF	SF
8+89.75	-	9+39.75	RT	49	--
8+89.75	-	9+18.35	LT	29	--
10+62.75	-	11+12.25	RT	49	264
10+81.84	-	11+12.25	LT	32	--
TOTALS				159	264
CATEGORY 0010				159	--
CATEGORY 0030				--	264

WATER

		624.0100
		WATER
PURPOSE		MGAL
COMPACTION		4
DUST CONTROL		4
TOTAL		8

EROSION CONTROL ITEMS

				625.0100	627.0200	628.1504	628.1520	628.2027	629.0210	630.0120	630.0200	630.0500
				TOPSOIL	MULCHING	SILT FENCE	SILT FENCE	EROSION MAT	FERTILIZER	SEEDING	SEEDING	SEED
							MAINTENANCE	CLASS II	TYPE B	MIXTURE	TEMPORARY	WATER
								TYPE C		NO. 20		
STATION	TO	STATION	LOCATION	SY	SY	LF	LF	SY	CWT	LB	LB	MGAL
8+89.75	--	9+39.75	RT	15	20	90	180	15	0.0	1	1	1
8+89.75	--	9+39.75	LT	20	40	90	180	0	0.0	1	1	1
10+62.25	--	11+12.25	RT	10	10	60	120	5	0.0	0	0	0
10+62.25	--	11+12.25	LT	35	35	110	220	30	0.0	2	2	1
UNDISTRIBUTED				20	--	90	180	15	0.0	1	1	1
TOTALS				100	105	440	880	65	0.1	5	5	4

ALL QUANTITIES CATEGORY 0010 UNLESS OTHERWISE NOTED

EROSION CONTROL MOBILIZATION ITEMS

628.1905 MOBILIZATIONS EROSION CONTROL			628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL		
LOCATION	EACH		EACH		
ID 7831-07-70	4		4		
TOTALS	4		4		

INLET PROTECTION

628.7020 INLET PROTECTION TYPE D		
STATION	LOCATION	EACH
10+90	RT	1
11+00	RT	1
TOTAL		2

TEMPORARY DITCH CHECKS

628.7504	
LOCATION	LF
UNDISTRIBUTED	50
TOTAL	50

SIGNAGE

634.0612 POSTS WOOD 4X6-INCH X 12-FT							637.2230 SIGNS TYPE II REFLECTIVE F		638.2602 REMOVING SIGNS TYPE II		638.3000 REMOVING SMALL SIGN SUPPORTS		SIGNAGE TYPE
STATION	LOCATION	EACH	SF	EACH	EACH								
9+15	RT	1	3	--	--								W5-52R
9+17	LT	1	3	--	--								W5-52L
9+29	LT	--	--	1	1								W5-52L
9+29	RT	--	--	1	1								W5-52R
10+71	LT	--	--	1	1								W5-52R
10+71	RT	--	--	1	1								W5-52L
10+83	LT	1	3	--	--								W5-52R
10+84	RT	1	3	--	--								W5-52R
TOTALS		4	12	4	4								

TRAFFIC CONTROL ITEMS

643.0420 BARRICADES TYPE III								643.0705 WARNING LIGHTS TYPE A		643.0900 SIGNS	
LOCATION	DURATION DAYS	NO.	DAY	NO.	DAY	NO.	DAY	NO.	DAY	NO.	DAY
PER SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES"	75	19	1,425	30	2,250	15	1,125				
PER DETOUR PLAN	75	--	--	--	--	98	7,350				
TOTALS			1,425		2,250		8,475				

TRAFFIC CONTROL PLACEMENT SUBJECT TO ENGINEER APPROVAL

ALL QUANTITIES CATEGORY 0010 UNLESS OTHERWISE NOTED

MARKING LINE EPOXY 4-INCH

					646.1020	
					YELLOW	WHITE
STA	TO	STA	LOCATION	DESCRIPTION	LF	
8+89.75	-	11+12.25	LT	EDGE LINE	--	223
8+89.75	-	11+12.25	RT	EDGE LINE	--	223
8+89.75	-	11+12.25		DOUBLE SOLID CENTER LINES	445	--
UNDISTRIBUTED					25	24
SUBTOTALS					470	470
TOTAL					940	

STAKING ITEMS

		650.4500	650.5000	650.5500	650.9920
		CONSTRUCTION	CONSTRUCTION	CONSTRUCTION	CONSTRUCTION
		STAKING	STAKING	STAKING	STAKING
		SUBGRADE	BASE	CURB GUTTER AND	SLOPE
				CURB & GUTTER	STAKES
CATEGORY	LOCATION	LF	LF	LF	LF
0010	8+89.75 - 11+12.25	100	100	264	100
0020	B-18-238	--	--	--	--
TOTALS		100	100	264	100

SAWING ASPHALT

			690.0150
STATION	LOCATION	LF	
8+89.75	LT & RT	30	
11+12.25	LT & RT	34	
TOTAL			64

ALL QUANTITIES CATEGORY 0010 UNLESS OTHERWISE NOTED

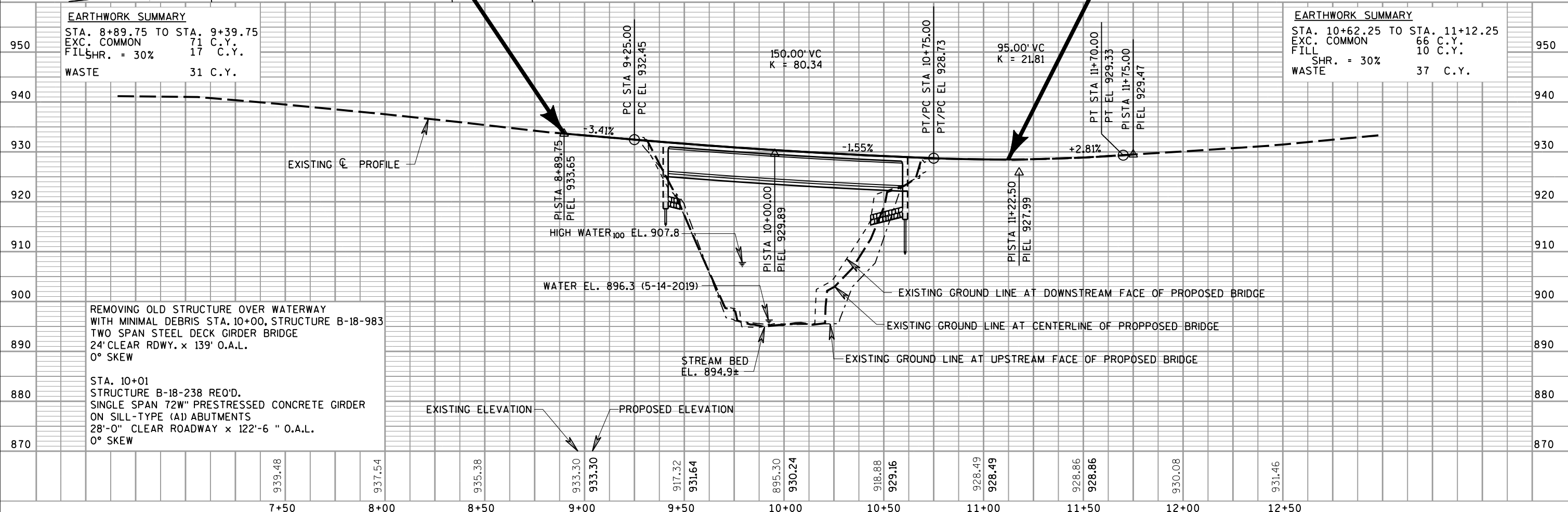
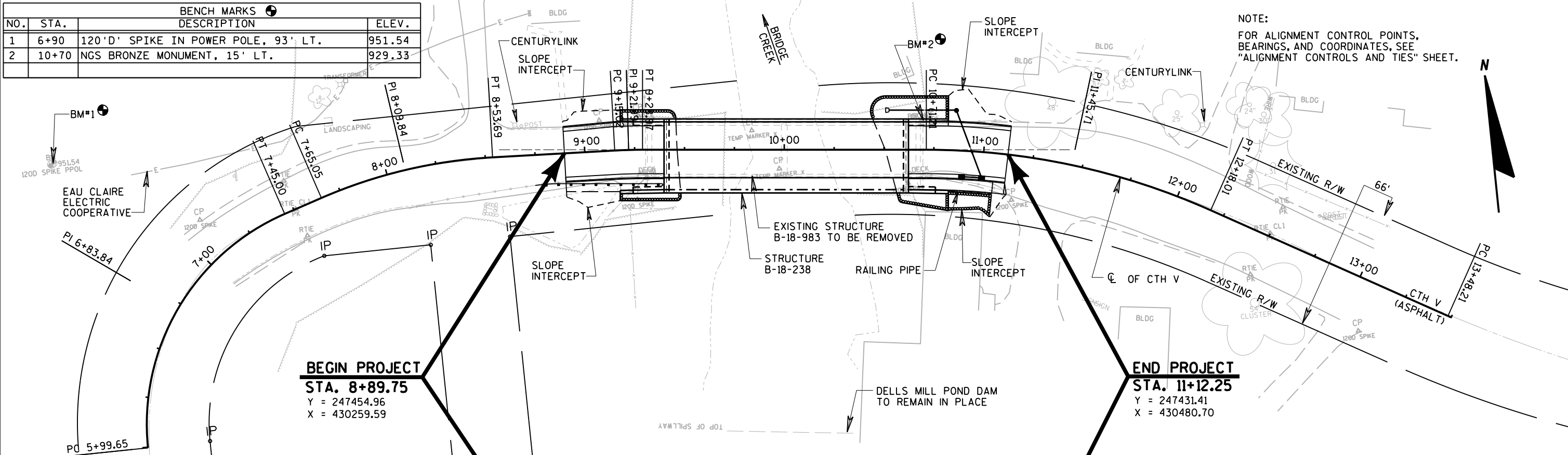
STORM SEWER STRUCTURES											
			APRON ENDWALLS FOR CULVET PIPE 18-INCH	MANHOLE COVERS TYPE J	INLET COVERS TYPE H	MANHOLES 4-FT DIAMETER	INLETS 2X3-FT	CONSTRUCTION STAKING STORM SEWER			
			520.1018	611.0530	611.0624	611.2004	611.3230	650.4000	RIM****	INVERT**	DEPTH
STRUCTURE	STATION	OFFSET*	EACH	EACH	EACH	EACH	EACH	EACH	ELEVATION	ELEVATION	FT***
1	10+90	13.5' RT	---	---	1	---	1	1	928.23	924.07	3.33
2	11+00	13.5' RT	---	---	1	---	1	1	928.16	923.48	3.85
3	10+85	20.0' LT	---	1	---	1	---	1	927.82	923.19	3.46
4	10+50	20.0' LT	1	---	---	---	---	1	---	922.87	---
TOTAL			1	1	2	1	2	4			

REMARKS

- \* STATIONS AND OFFSETS ARE TO CENTER OF STRUCTURE
- \*\* FOR STRUCTURES WITH SUMPS, THE INVERT ELEVATION IS THE ELEVATION OF THE SUMP. FOR STRUCTURES WITHOUT SUMPS, THE INVERT ELEVATION IS THE ELEVATION OF THE LOWEST PIPE FLOW LINE
- \*\*\* DEPTH = RIM ELEV - INVERT - COVER HEIGHT - 6-INCH ADJUSTMENT RING HEIGHT
- \*\*\*\* RIM ELEVATION EQUALS FLOWLINE FOR INLET STRUCTURES

STORM SEWER PIPES REINFORCED CONCRETE							
LOCATION	STATION	CLASS III-A 12-INCH	CLASS III-A 18-INCH	JOINT TIES*	INLET	DISCHARGE	SLOPE
		608.3012	608.3018				
		LF	LF	EACH	ELEVATION	ELEVATION	FT/FT
INLET 1 TO INLET 2	10+90 TO 10+99	10	---	---	924.07	923.98	0.0095
INLET 2 TO MANHOLE 3	10+99 TO 10+82	---	38	---	923.48	923.29	0.0051
MANHOLE 3 TO ENDWALL 4	10+82 TO 10+51	---	36	6	923.19	922.87	0.0088
TOTAL		10	74	6			

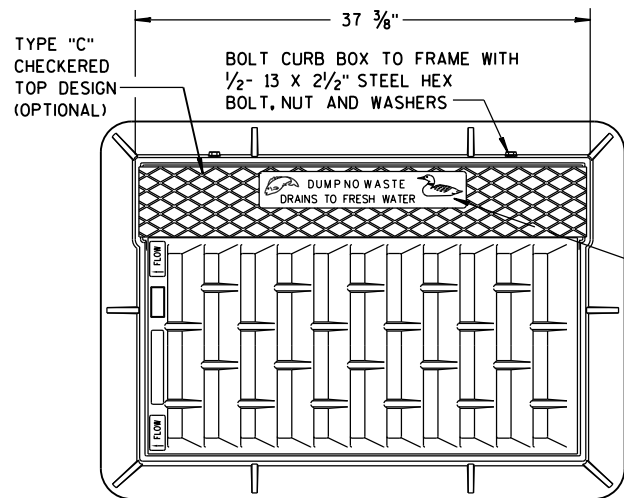
BENCH MARKS			
NO.	STA.	DESCRIPTION	ELEV.
1	6+90	120'D SPIKE IN POWER POLE, 93' LT.	951.54
2	10+70	NGS BRONZE MONUMENT, 15' LT.	929.33



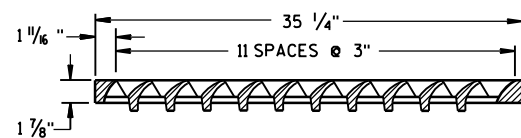
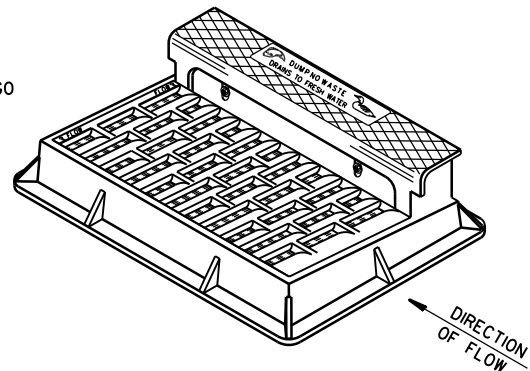


Standard Detail Drawing List

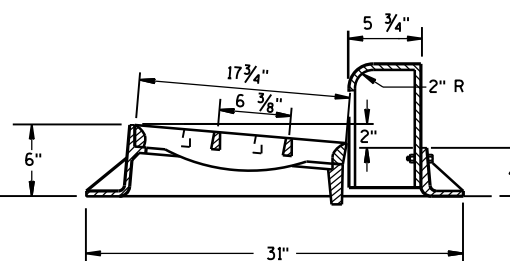
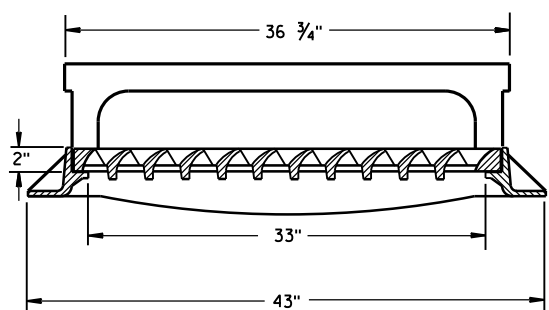
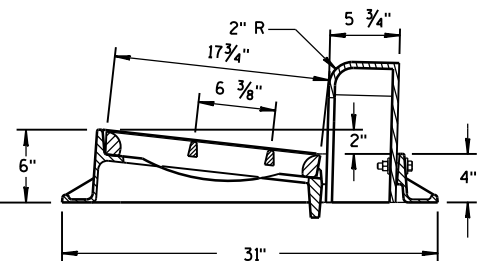
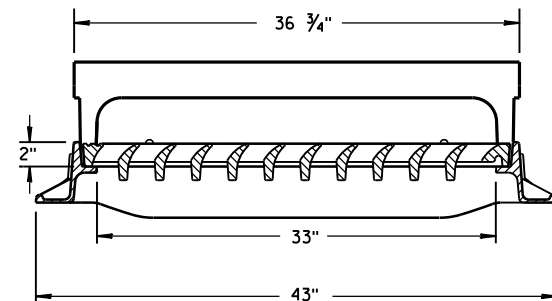
08A05-19A	INLET COVERS TYPE A, H, A-S, H-S & Z
08A05-19D	INLET COVER TYPE BW, MANHOLE COVERS, TYPE K, J, J-S, L & M
08B09-02	MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER
08C07-02	INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT
08D01-21A	CONCRETE CURB & GUTTER
08D01-21B	CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
12A03-10	NAME PLATE (STRUCTURES)
14B15-11A	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-11B	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-11C	STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS
14B16-04A	ANCHORAGE FOR STEEL PLATE BEAM GUARD TYPE 2
14B16-04B	ANCHORAGE FOR STEEL PLATE BEAM GUARD TYPE 2
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)
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS



**NOTE:  
GRATE IS REVERSIBLE.**

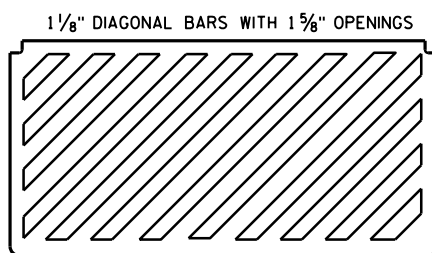


**NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"**

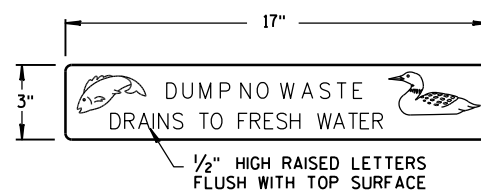


**TYPE "H"**

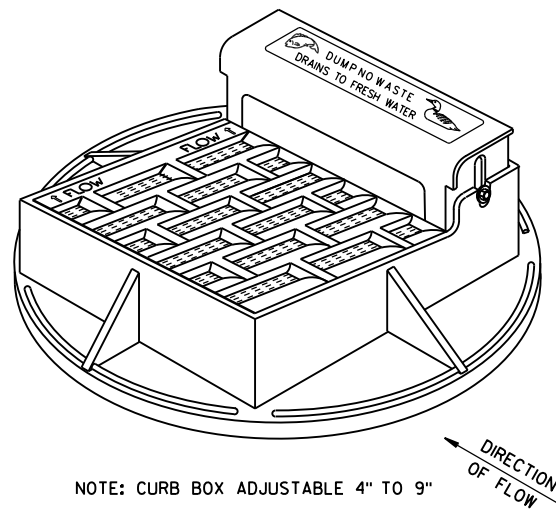
**NOTE: EITHER CASTING IS ACCEPTABLE**



**SPECIAL GRATE FOR  
TYPE "H" COVER**  
(MEASURES 35 1/4" X 17 3/4" X 2")  
(NOTED AS TYPE H-S ON DRAINAGE TABLE)

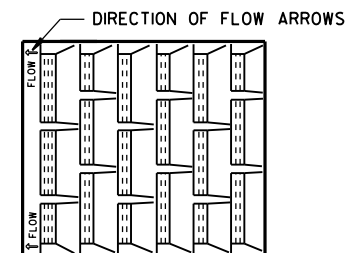


**LOGO DETAIL**

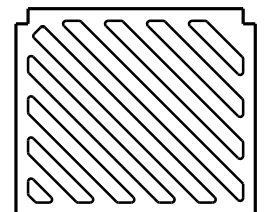


**NOTE: CURB BOX ADJUSTABLE 4" TO 9"**

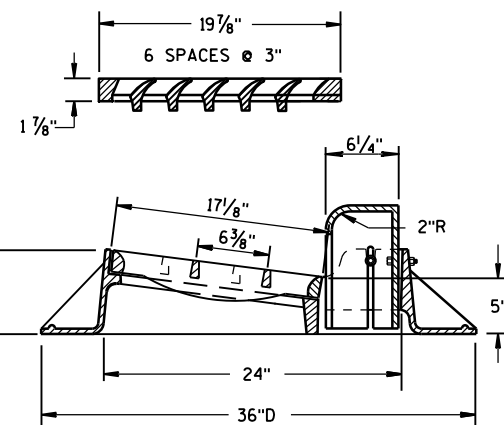
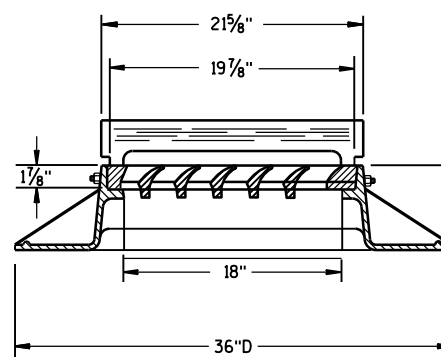
**NOTE:  
GRATE IS REVERSIBLE.**



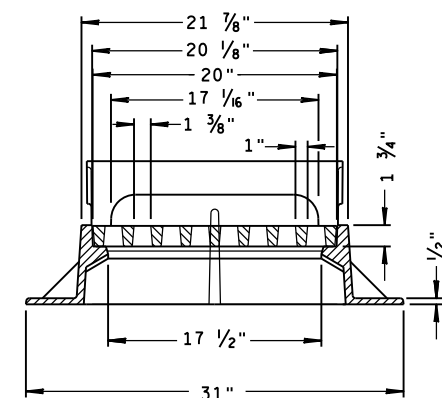
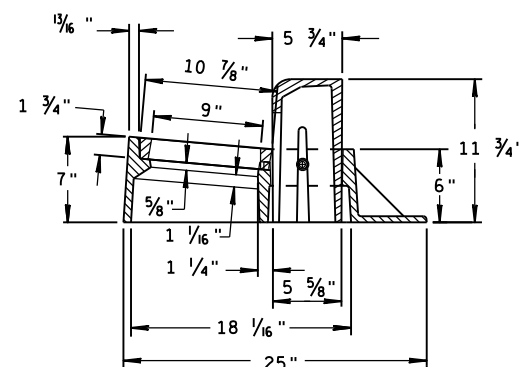
1" DIAGONAL BARS  
WITH 1 1/2" OPENINGS



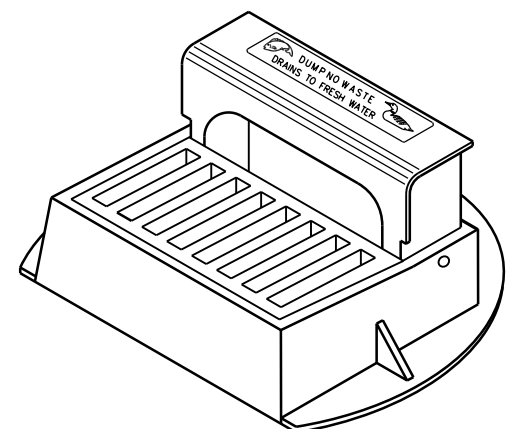
**SPECIAL GRATE FOR  
TYPE "A" COVER**  
(MEASURES 19 3/4" X 17" X 1 1/8")  
(NOTED AS TYPE A-S ON DRAINAGE TABLE)



**TYPE "A"**



**TYPE "Z"**

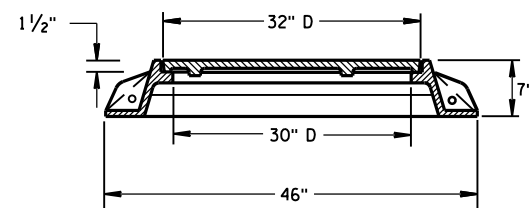
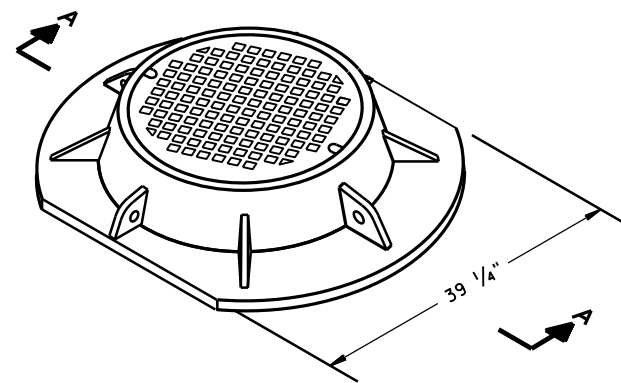


**INLET COVERS  
TYPE A, H, A-S, H-S & Z**

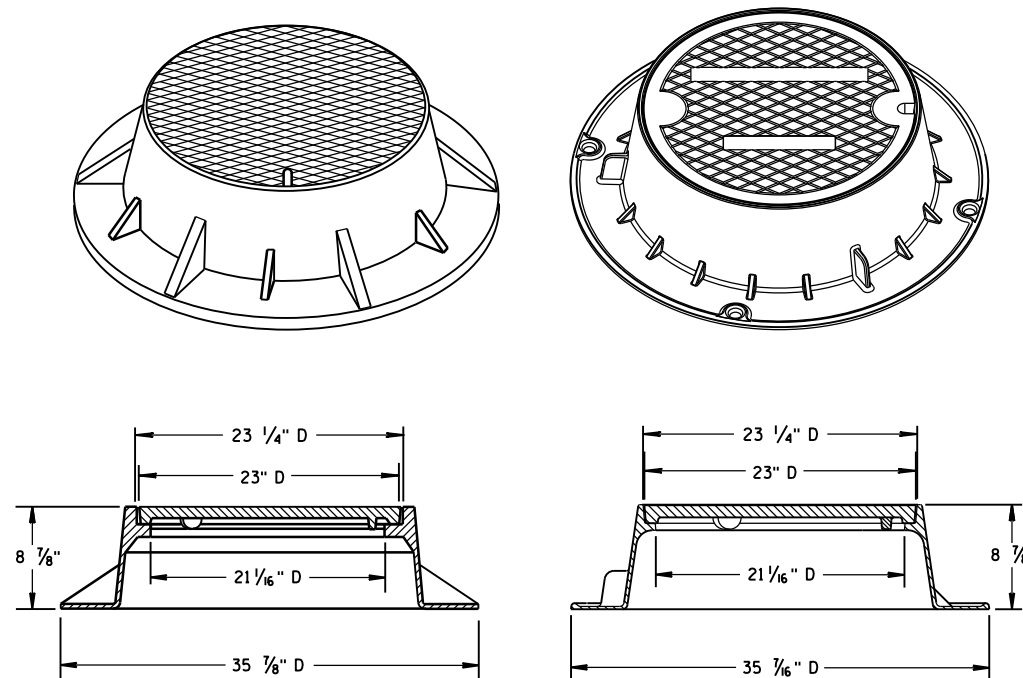
**STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION**

**APPROVED**  
11-27-13  
DATE  
FHWA

/S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

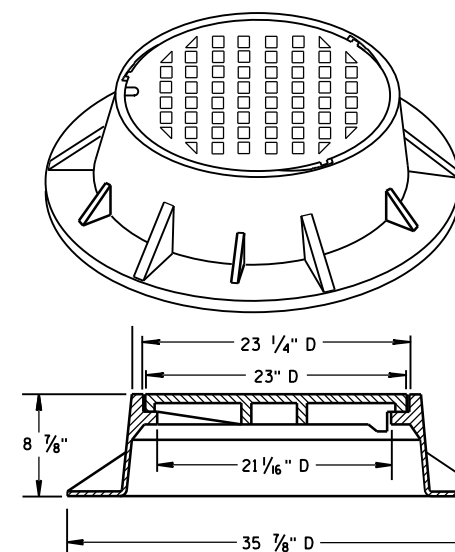
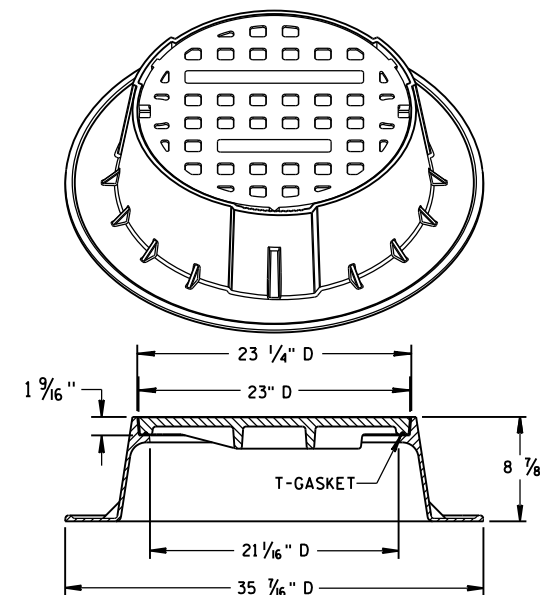


SECTION A-A  
TYPE "K"



TYPE "J"

NOTE: EITHER CASTING IS ACCEPTABLE

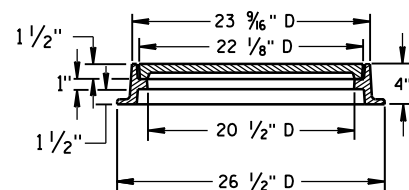
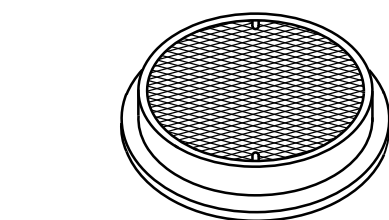


TYPE "J" SPECIAL

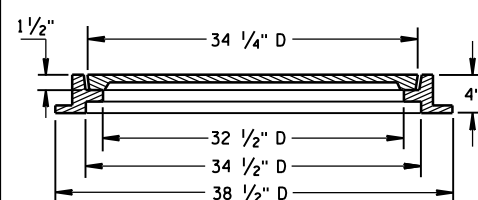
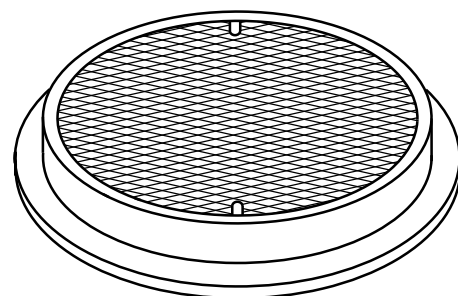
TYPE "B" NON-ROCKING SELF-SEAL LID

(NOTED AS TYPE J-S ON THE DRAINAGE TABLE)

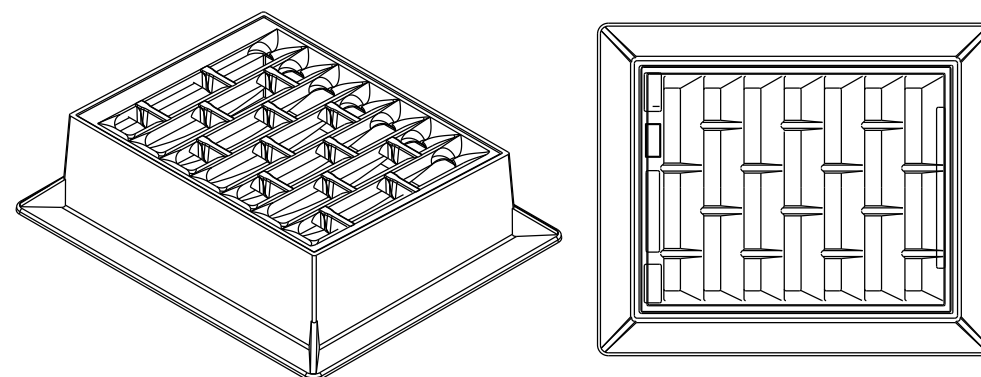
NOTE: EITHER CASTING IS ACCEPTABLE



TYPE "L"



TYPE "M"



INLET COVER TYPE "BW"

## 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.

DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR MANHOLE COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

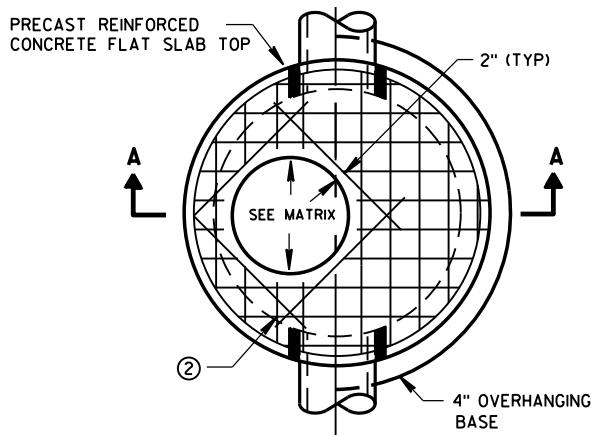
ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

INLET COVER TYPE BW  
MANHOLE COVERS, TYPE K,  
J, J-S, L & M

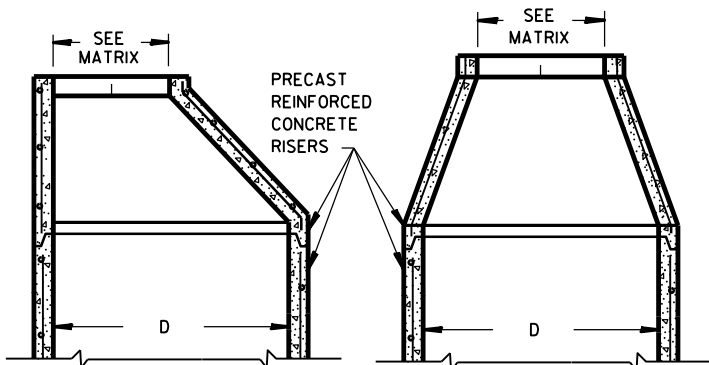
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
11/27/2013  
DATE  
FHWA

/S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

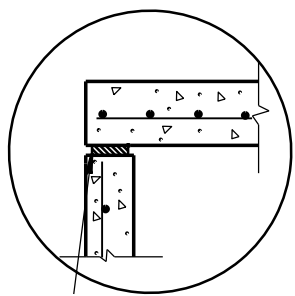


PLAN VIEW CIRCULAR OPENING

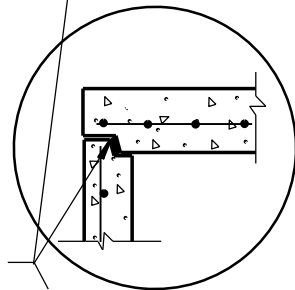


OPTIONAL PRECAST REINFORCED CONCRETE ECCENTRIC TOP

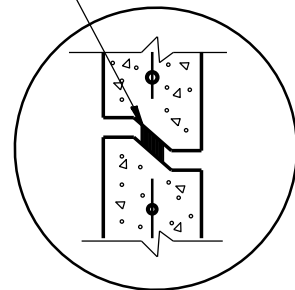
OPTIONAL PRECAST REINFORCED CONCRETE CONCENTRIC TOP



TOP WITH PLAIN END JOINT



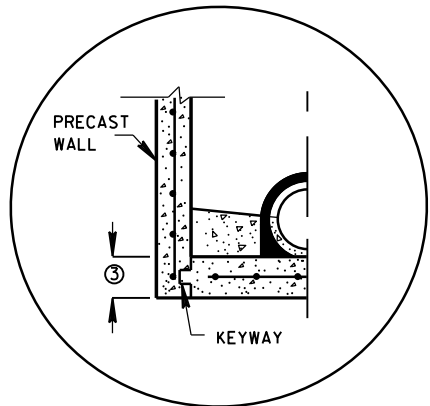
TOP WITH TONGUE AND GROOVE JOINT



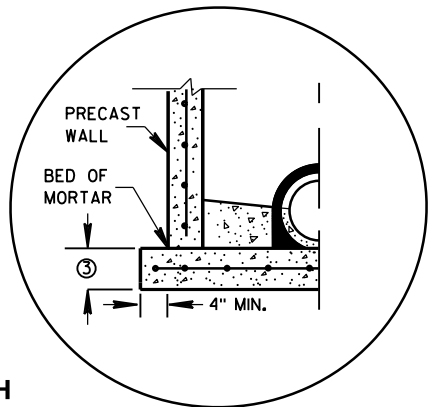
RISER WITH TONGUE AND GROOVE JOINT

DETAIL "B"

JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C990 (TYP)

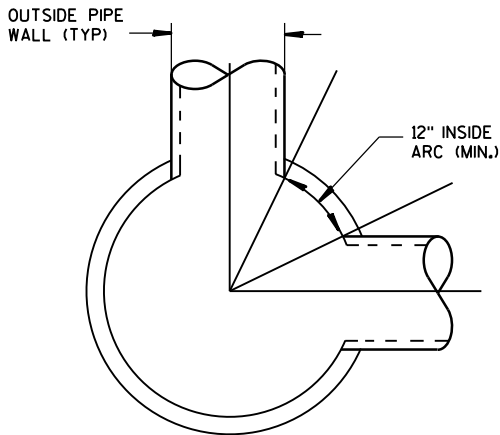


PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION

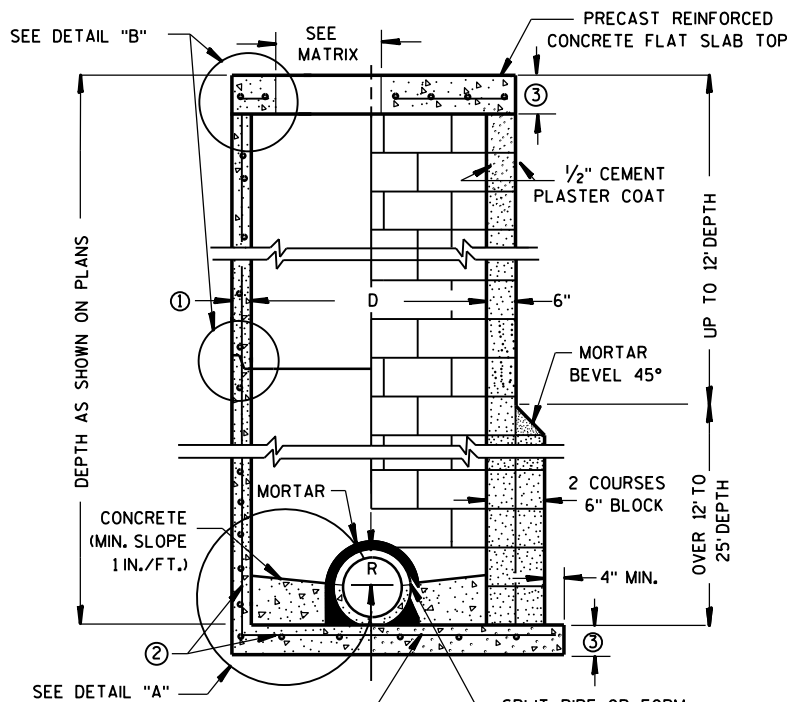


SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

DETAIL "A"



DETAIL "C"



CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES

PRECAST REINFORCED CONCRETE BLOCK WITH CONCRETE WITH MONOLITHIC BASE CAST-IN-PLACE OR PRECAST REINFORCED CONCRETE BASE ②

MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER

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. UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST MANHOLE UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATE THE SIZE OF THE STRUCTURE, AND THE FOLLOWING LETTER DESIGNATES THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF FOUNDATION BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

PRECAST REINFORCED CONE TOPS (ECCENTRIC OR CONCENTRIC) OR PRECAST REINFORCED FLAT SLAB TOPS MAY BE USED ON CONCRETE BLOCK STRUCTURES.

ECCENTRIC CONE TOPS MAY BE USED ON ALL STRUCTURES, AND CONCENTRIC CONE TOPS SHALL BE USED ONLY ON STRUCTURES 5 FEET OR LESS IN DEPTH, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

STEPS MEETING AASHTO M199 AND THE FOLLOWING REQUIREMENTS SHALL BE INSTALLED IN ALL STRUCTURES OVER 5 FEET IN DEPTH: 16 INCH C-C MAXIMUM SPACING; PROJECT A MINIMUM CLEAR DISTANCE OF 4 INCHES FROM THE WALL AT THE POINT OF EMBEDMENT; MINIMUM LENGTH OF 10 INCHES; MINIMUM WALL EMBEDMENT OF 3 INCHES. FERROUS METAL STEPS NOT PAINTED OR TREATED TO RESIST CORROSION SHALL HAVE A MINIMUM CROSS SECTIONAL DIMENSION OF 1 INCH.

STEPS OF APPROVED POLYPROPYLENE PLASTIC COATED REINFORCEMENT BAR ARE ACCEPTABLE. REINFORCING BAR MUST BE A MINIMUM OF 1/2" AND MEET THE REQUIREMENTS OF ASTM A615.

CERTIFICATION SHALL BE PROVIDED THAT INSTALLED STEPS WHEN TESTED IN ACCORDANCE WITH SECTION 10 OF AASHTO T280 CAN WITHSTAND A VERTICAL LOAD OF 800 LBS. AND A HORIZONTAL LOAD OF 400 LBS.

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

CONCRETE BLOCK WILL NOT BE PERMITTED FOR STRUCTURES GREATER THAN 4 FEET IN DIAMETER.

PRECAST REINFORCED RISERS SHALL HAVE A TONGUE AND GROOVE JOINT WITH TONGUE UP OR DOWN.

ALL PRECAST MANHOLE UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M 199.

4" OVERHANGING BASES ARE REQUIRED FOR ALL CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

FOR ADDITIONAL CONFIGURATIONS, MAINTAIN A MINIMUM OF 12 INCHES AS MEASURED FROM THE INSIDE OF THE STRUCTURE WALL BETWEEN THE OUTSIDE PIPE WALLS OF ADJACENT PIPES. SEE DETAIL "C".

- ① MINIMUM WALL THICKNESS SHALL BE 4 INCHES FOR 3-FT, 5 INCHES FOR 4-FT, 6 INCHES FOR 5-FT, 7 INCHES FOR 6-FT, 8 INCHES FOR 7-FT AND 9 INCHES FOR 8-FT DIAMETER PRECAST MANHOLES.
- ② FOR PRECAST MANHOLES PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.
- ③ PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER OF 48" AND LESS SHALL HAVE A MINIMUM THICKNESS OF 6". PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER LARGER THAN 48" SHALL HAVE A MINIMUM THICKNESS OF 8".

MANHOLE COVER OPENING MATRIX

MANHOLE COVER TYPE	C	ALL J'S	K	L	M
OPENING SIZE (FT)					
2 DIA.	X	X		X	
3 DIA.			X		X

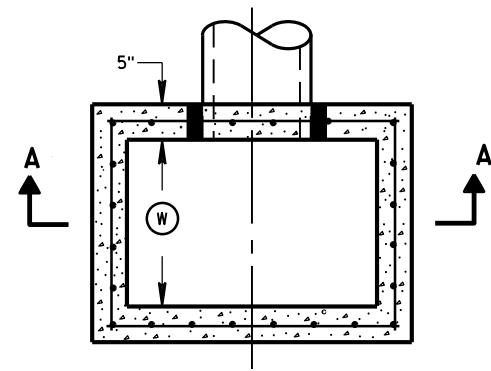
PIPE MATRIX

MANHOLE SIZE	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES	
	180° SEPARATION (IN)	90° SEPARATION (IN)
3-FT	15	12
4-FT	24	18
5-FT	36	24
6-FT	42	36
7-FT	48	36
8-FT	60	42

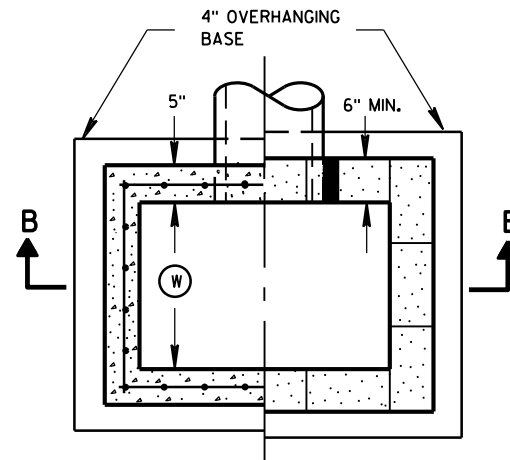
MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

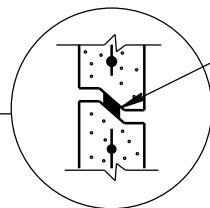
APPROVED  
DATE: Sept., 2016  
FOR: /S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR  
FHWA



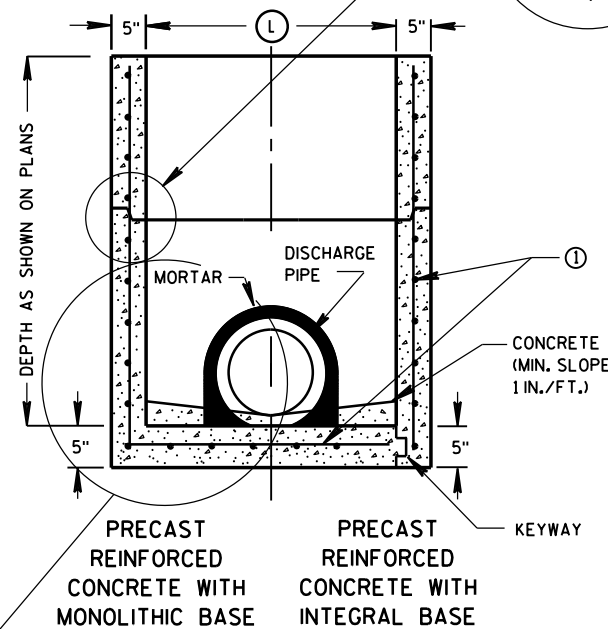
PLAN VIEW



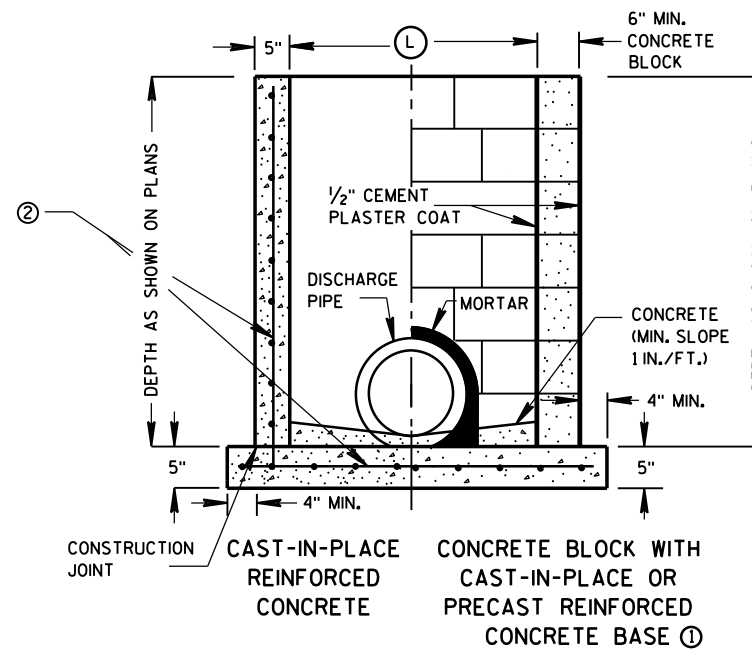
PLAN VIEW



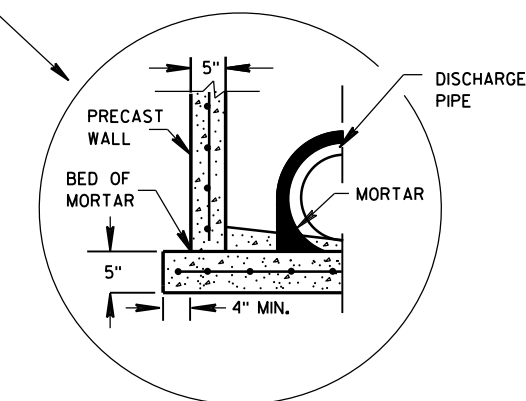
RISER JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C 990 (TYP)



SECTION A-A



SECTION B-B



SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

## 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.

UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST INLET UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATES THE SIZE OF THE STRUCTURE, AND THE FOLLOWING LETTER DESIGNATES THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF FOUNDATION BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

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

PRECAST REINFORCED RISERS SHALL HAVE A TONGUE AND GROOVE JOINT WITH TONGUE UP OR DOWN.

4" OVERHANGING BASES ARE REQUIRED FOR CAST-IN-PLACE REINFORCED CONCRETE AND CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

MAXIMUM INSIDE PIPE DIAMETER DETERMINED BY 3 INCH CLEARANCE ON EACH SIDE OF THE OUTSIDE WALL OF THE PIPE. SEE DETAIL "A". ASSUMES PIPE ENTERS PERPENDICULAR TO THE STRUCTURE.

① FOR PRECAST INLETS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.

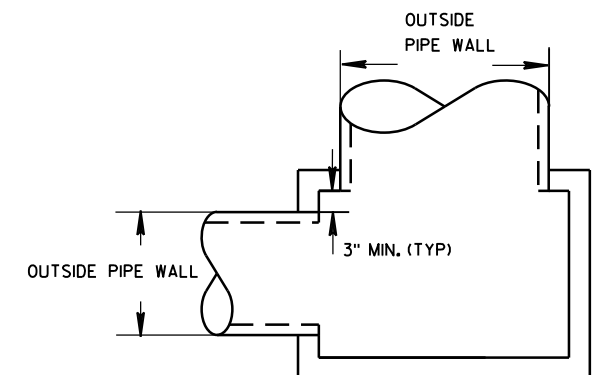
② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

## INLET COVER MATRIX

INLET SIZE	WIDTH ① (FT)	INLET COVER TYPE	ALL A'S	ALL B'S	BW	F	ALL H'S	S	T	V	WM
		LENGTH ② (FT)									
2X2-FT	2	2	X	X				X		X	
2X2.5-FT	2	2.5			X			X	X	X	X
2X3-FT	2	3					X				
2.5X3-FT	2.5	3				X					

## PIPE MATRIX

INLET SIZE	MAXIMUM INSIDE PIPE DIAMETER	
	WIDTH (IN)	LENGTH (IN)
2X2-FT	12	12
2X2.5-FT	12	18
2X3-FT	12	24
2.5X3-FT	18	24



DETAIL "A"

INLETS 2X2-FT, 2X2.5-FT,  
2X3-FT AND 2.5X3-FT

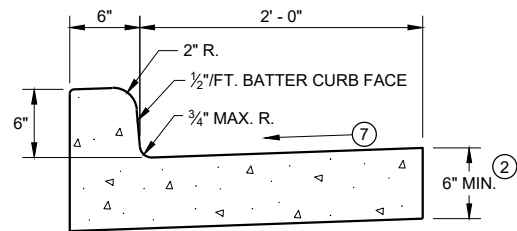
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
Sept., 2016  
DATE  
FHWA

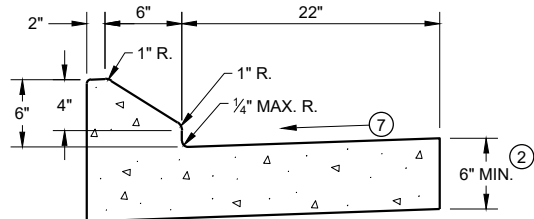
/S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
UNIT SUPERVISOR

INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT

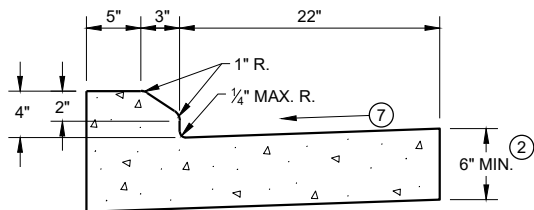




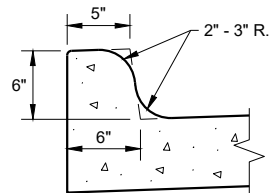
TYPES A<sup>①</sup> & D



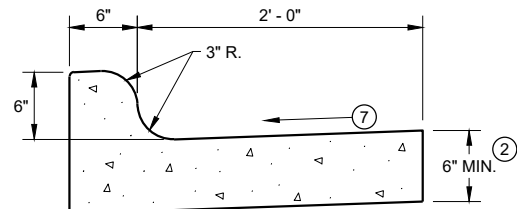
6" SLOPED CURB TYPES G<sup>①</sup> & J



4" SLOPED CURB TYPES G<sup>①</sup> & J

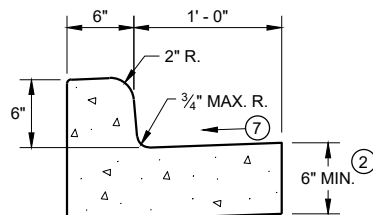


TYPES K<sup>①</sup> & L  
(OPTIONAL CURB SHAPE)



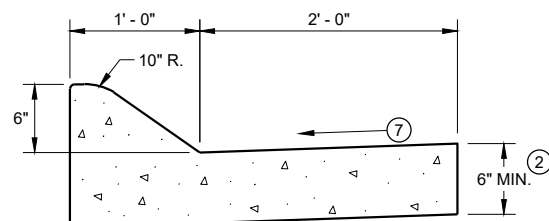
TYPES K<sup>①</sup> & L

CONCRETE CURB AND GUTTER 30"

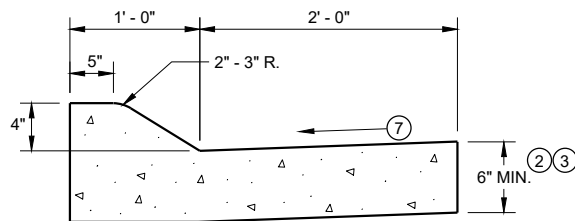


TYPES A<sup>①</sup> & D

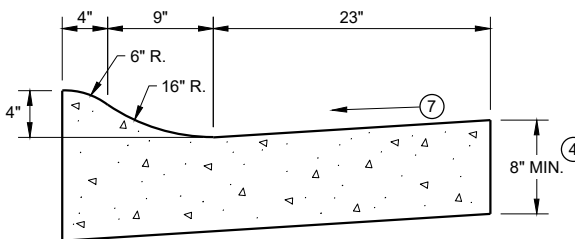
CONCRETE CURB AND GUTTER 18"



6" SLOPED CURB TYPES A<sup>①</sup> & D



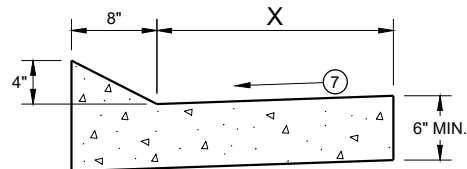
4" SLOPED CURB TYPES A<sup>①</sup> & D



4" SLOPED CURB TYPES R<sup>①</sup> & T<sup>⑤</sup>

CONCRETE CURB AND GUTTER 36"

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

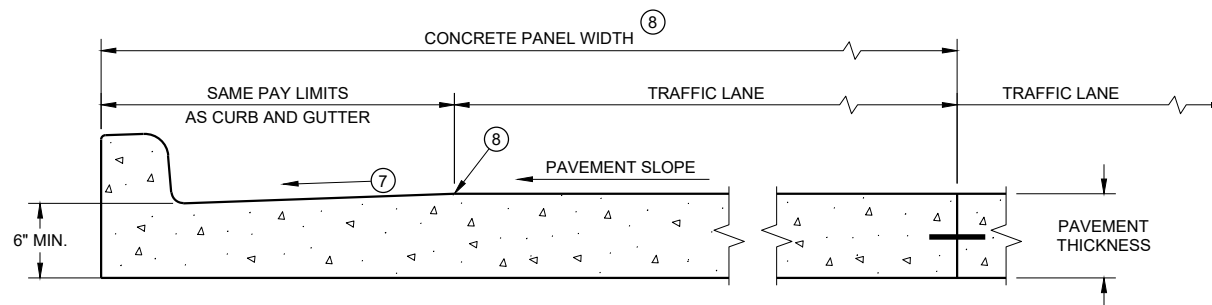


TYPES TBT & TBTT<sup>①</sup>

CONCRETE CURB AND GUTTER

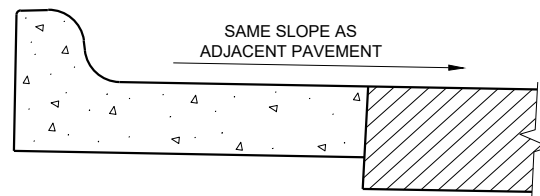
PAVEMENT THICKNESS  
AND MAXIMUM CONCRETE  
PANEL WIDTH TABLE

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



PARTIAL SECTION OF PAVEMENT \*  
WITH INTEGRAL CURB AND GUTTER

\* BIKE LANE IS NOT SHOWN



REVERSE SLOPE GUTTER<sup>⑥</sup>  
(TYPICAL FOR ALL CURB & GUTTER TYPES)

CONCRETE CURB AND GUTTER

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

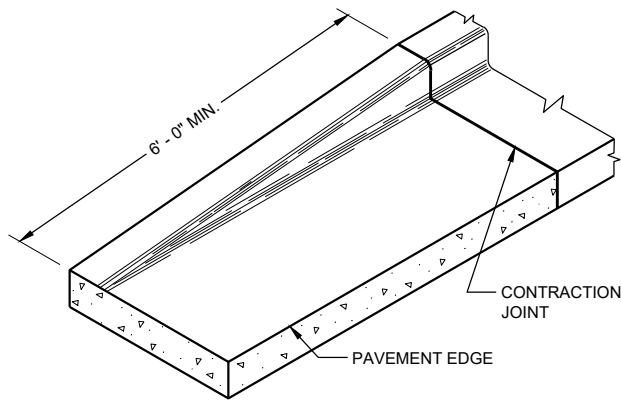
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

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

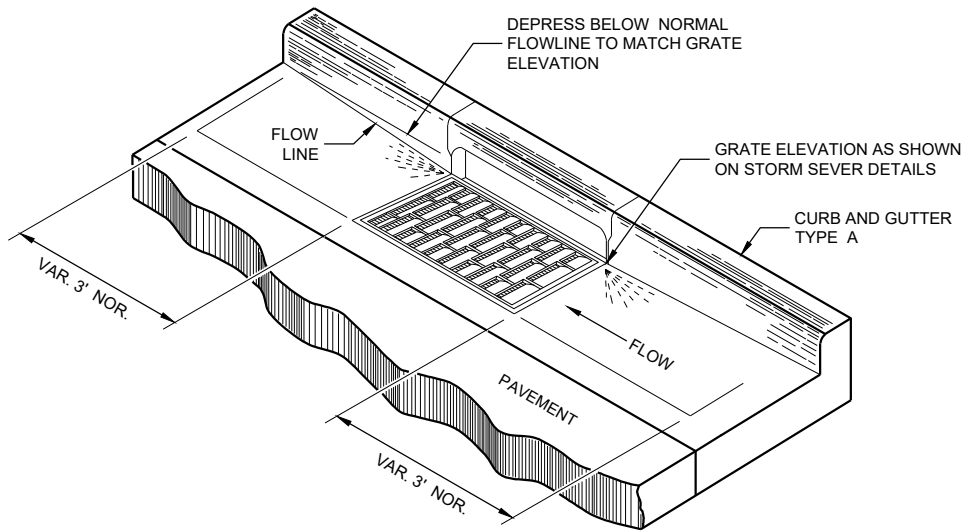
INTEGRAL CURB AND GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB AND GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

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

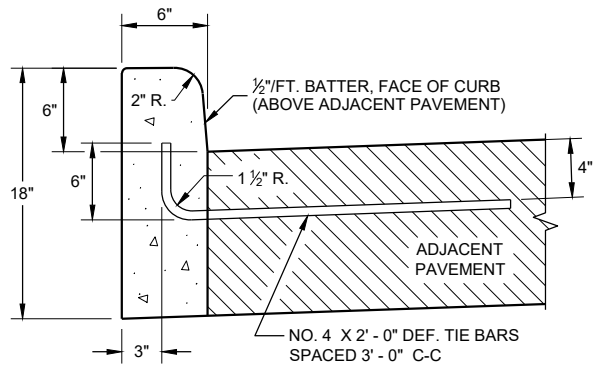
- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH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



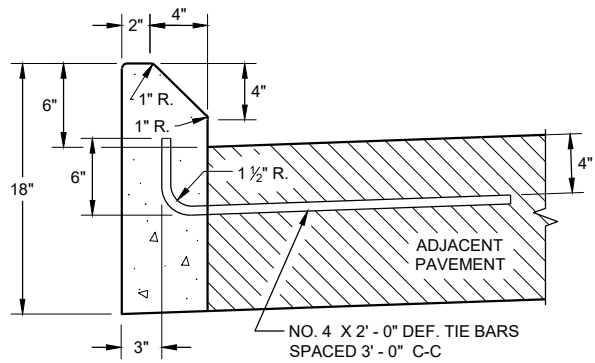
END SECTION CURB AND GUTTER



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

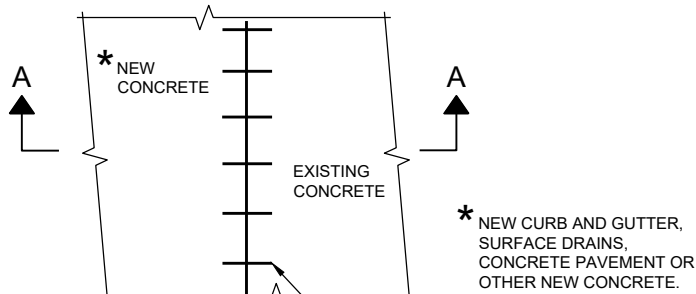


TYPES A<sup>①</sup> & D

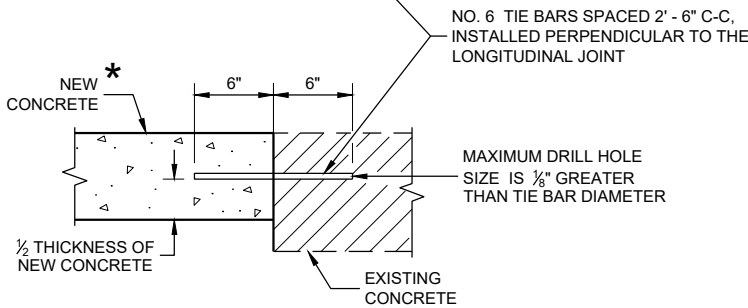


TYPES G<sup>①</sup> & J

CONCRETE CURB



PLAN VIEW



SECTION A - A

TIE BARS DRILLED  
INTO EXISTING PAVEMENT

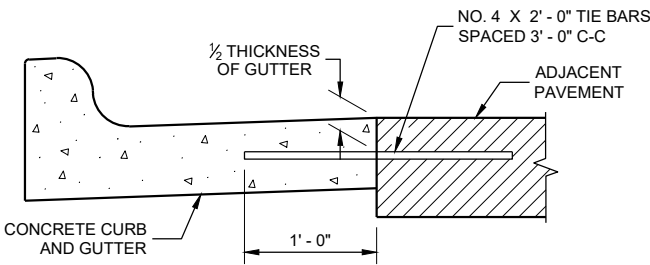
GENERAL NOTES

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

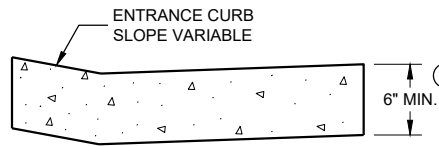
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

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

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ REFER TO SDD 08D18 AND 08D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.



TYPICAL TIE BAR LOCATION<sup>①</sup>



DRIVEWAY ENTRANCE CURB<sup>⑨</sup>  
(WHEN DIRECTED BY THE ENGINEER)

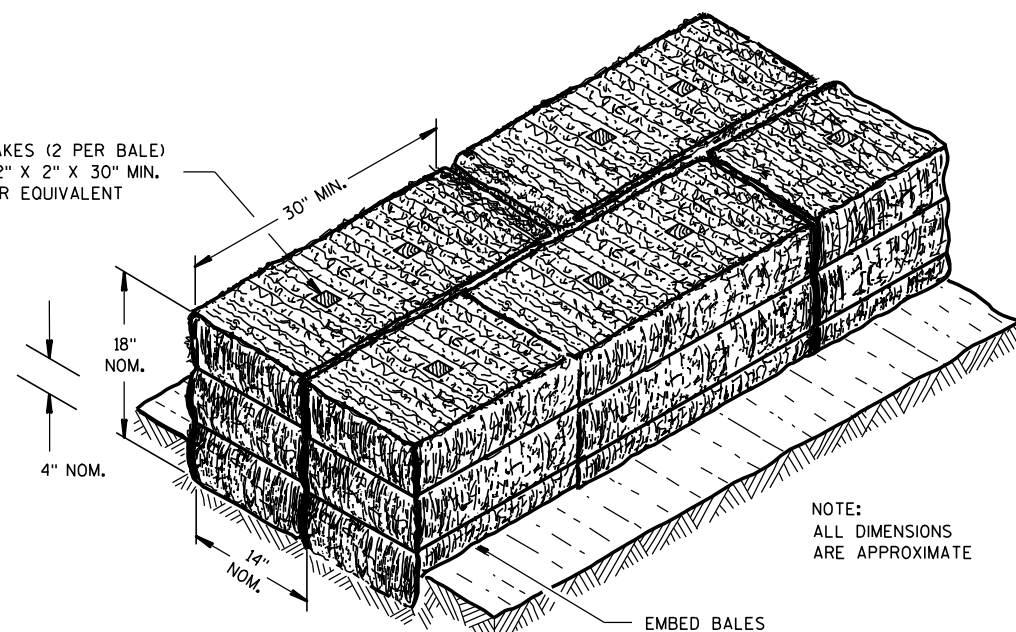
CONCRETE CURB, TIES  
AND CURB AND GUTTER  
APPLICATIONS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2020  
DATE /S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

FHWA

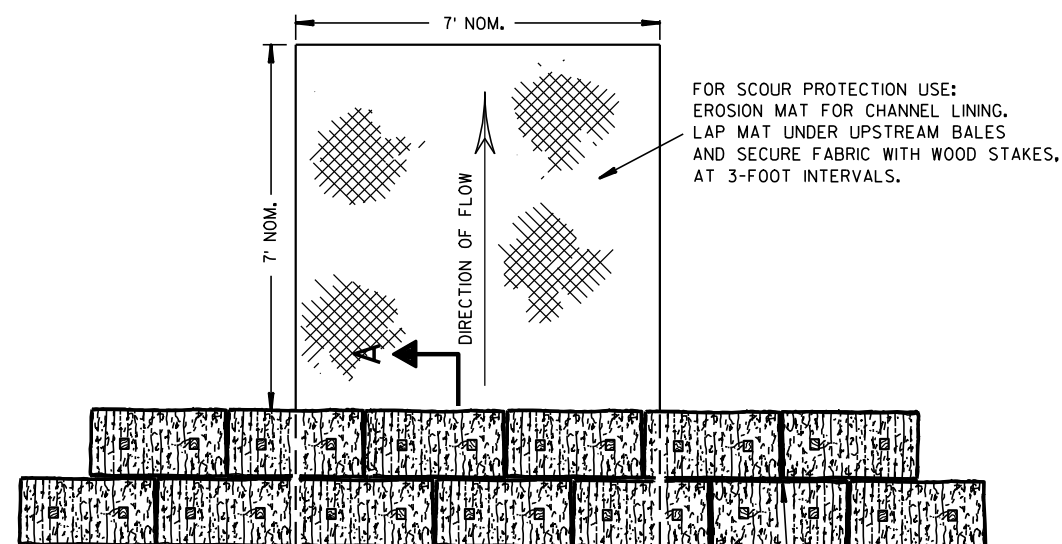
WOOD STAKES (2 PER BALE)  
NOMINAL 2" X 2" X 30" MIN.  
LENGTH OR EQUIVALENT



NOTE:  
ALL DIMENSIONS  
ARE APPROXIMATE

EMBED BALES

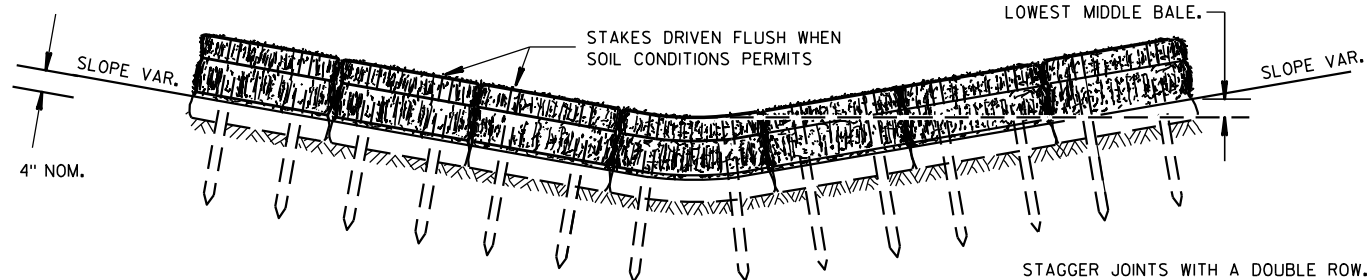
SECTION A-A



PLAN VIEW

STAGGER JOINTS BETWEEN ADJACENT  
ROWS OF BALES.

BOTTOM ELEVATION OF END BALE SHALL  
BE EQUAL TO OR GREATER THAN TOP OF  
LOWEST MIDDLE BALE.



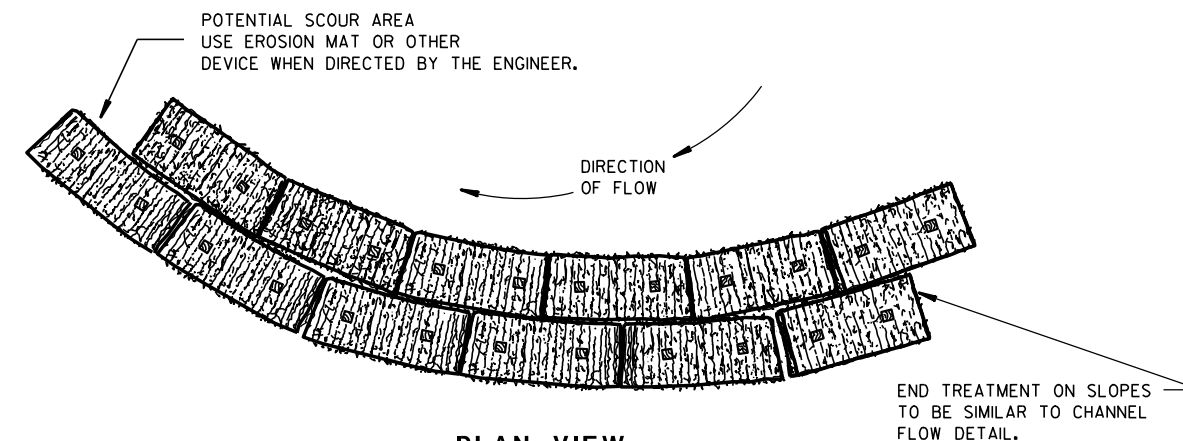
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

## GENERAL NOTES

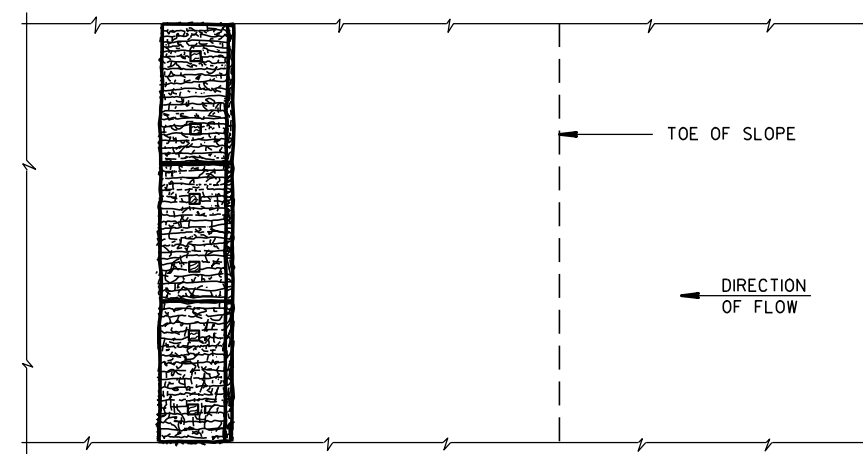
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

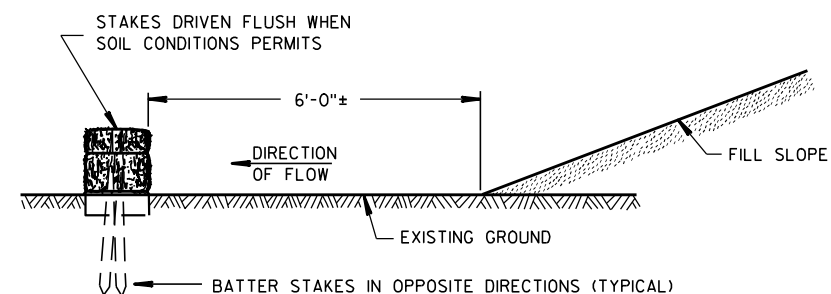


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

## TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02  
DATE

/S/ Beth Canestra  
CHIEF ROADWAY DEVELOPMENT ENGINEER

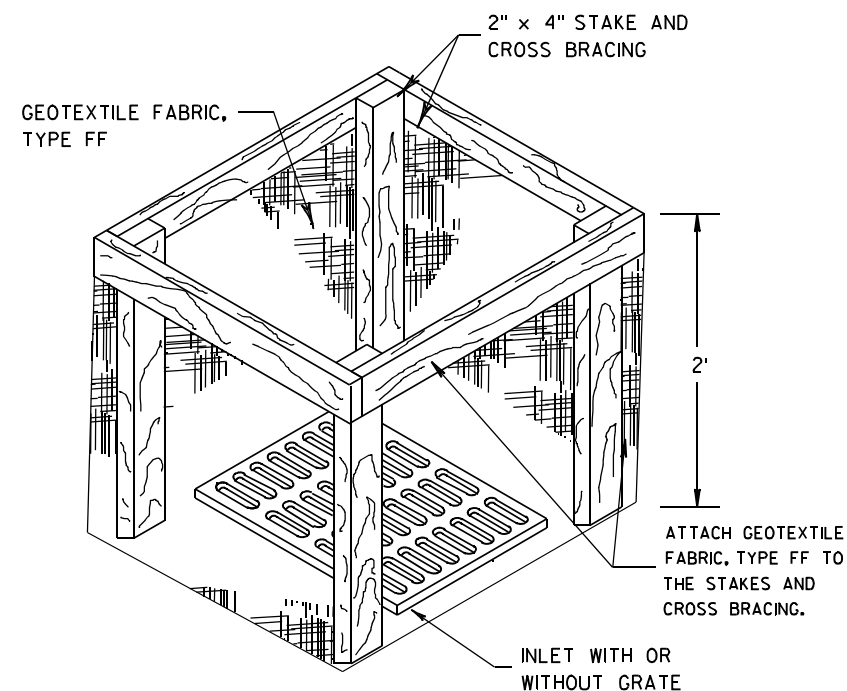
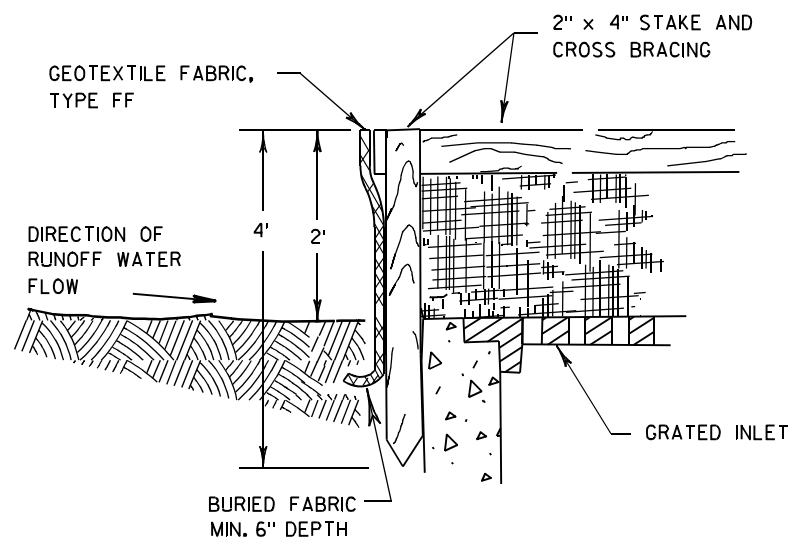
FHWA



- 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 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.



**S.D.D. 8 E 9-6**



**INLET PROTECTION, TYPE A**

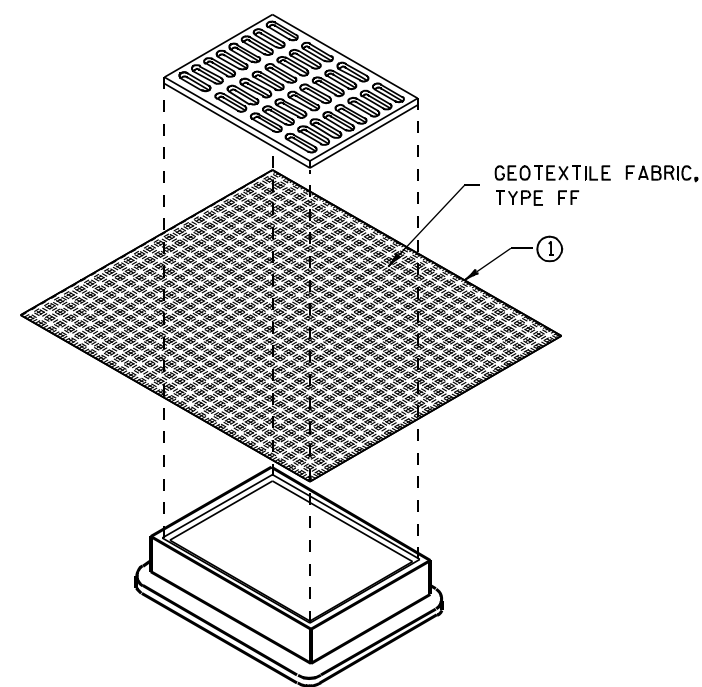
**GENERAL NOTES**

INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.

MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENT'S EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.

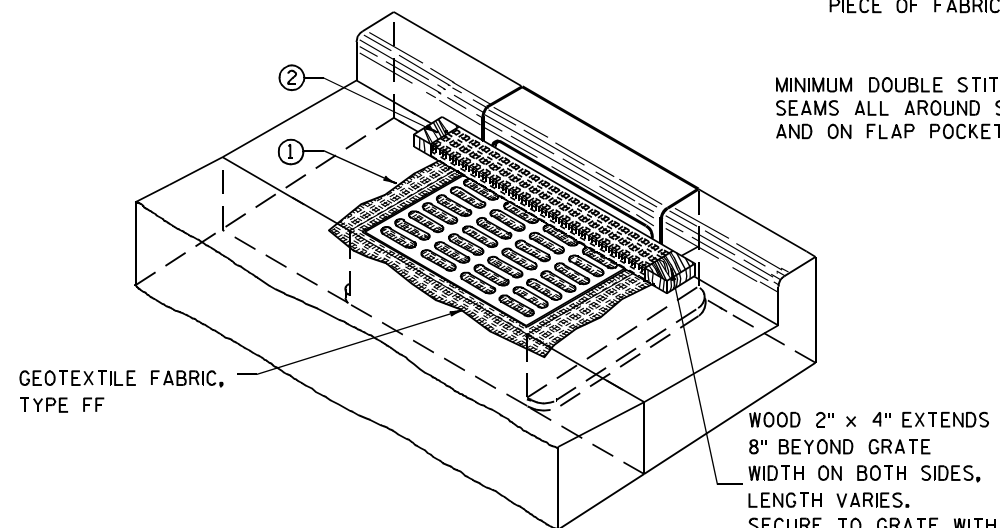
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

- ① FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
- ② FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.
- ③ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.



**INLET PROTECTION, TYPE B  
(WITHOUT CURB BOX)**

(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)



**INLET PROTECTION, TYPE C (WITH CURB BOX)**

**INSTALLATION NOTES**

**TYPE B & C**

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

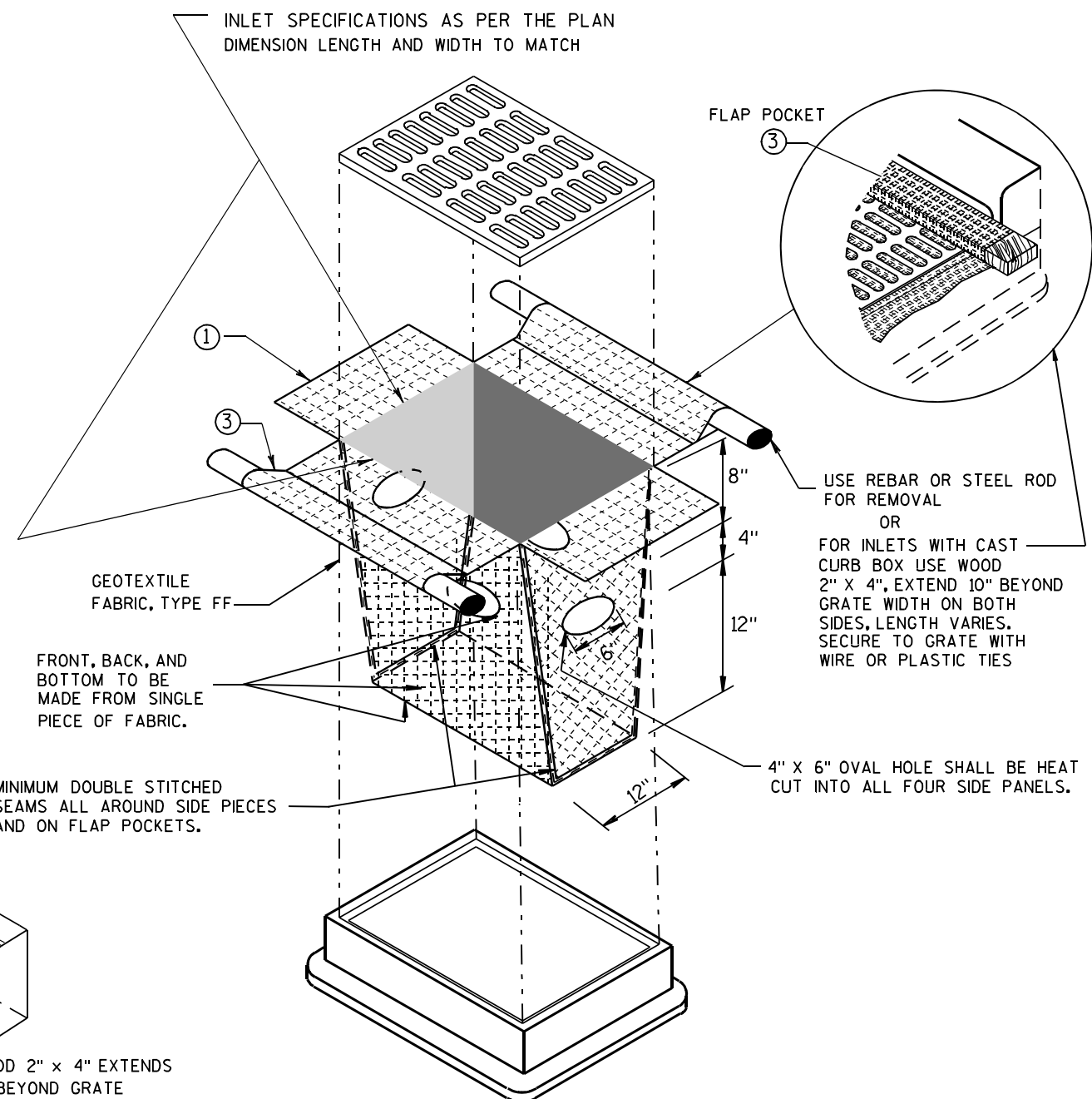
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

**TYPE D**

DO NOT INSTALL INLET PROTECTION TYPE D IN INLETS SHALLower THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.



**INLET PROTECTION, TYPE D**

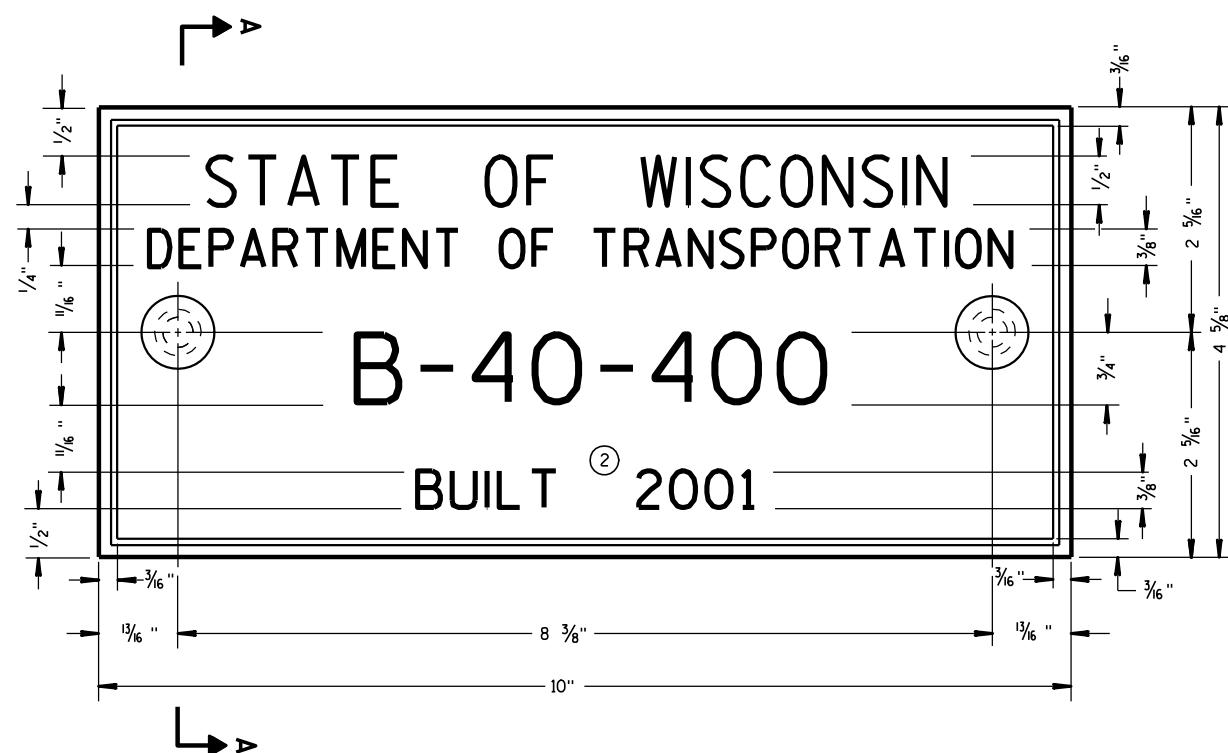
(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX AS PER NOTE ②)

**INLET PROTECTION  
TYPE A, B, C, AND D**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

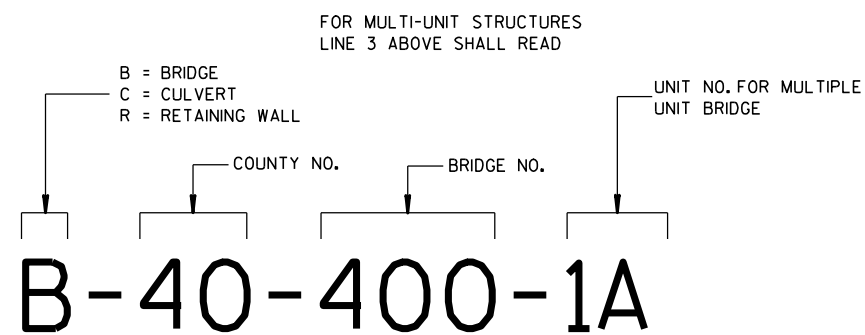
APPROVED  
10/16/02 /S/ Beth Cannestra  
DATE  
FHWA CHIEF ROADWAY DEVELOPMENT ENGINEER





## TYPICAL NAME PLATE

(BRIDGES, CULVERTS, AND RETAINING WALLS)



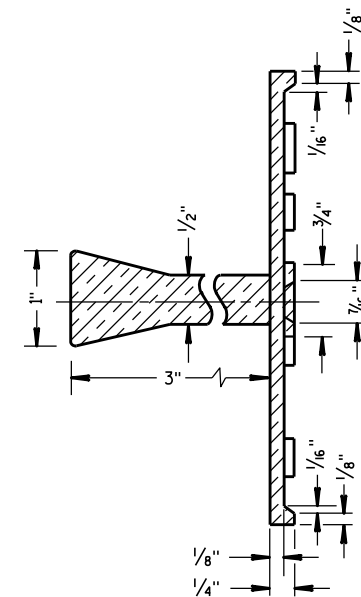
**NUMBERING DESIGNATION**  
**MULTI-UNIT STRUCTURES**

## GENERAL NOTES

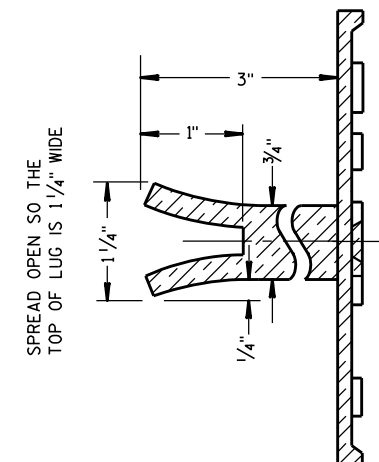
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

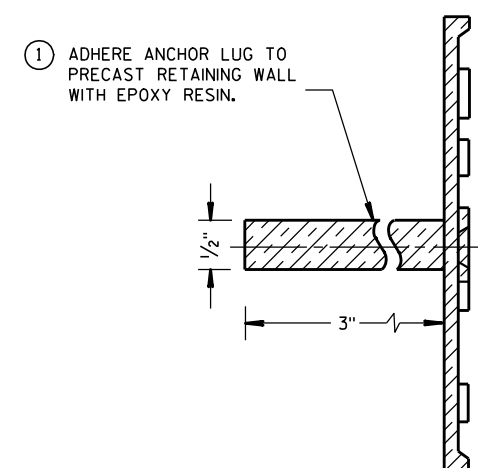
- ① EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ② REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



**SECTION A-A**



### ALTERNATE LUG



### ALTERNATE LUG

(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE  
(STRUCTURES)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

3/26/10  
DATE

FHWA

/S/ Scot Becker  
CHIEF STRUCTURAL DEVELOPMENT ENGINEER

## 6

- S.D.D. 14 B 15-11a**

**S.D.D. 14 B 15-11a**



**S.D.D. 14 B 15-11a**



**S.D.D. 14 B 15-11a**



**S.D.D. 14 B 15-11a**



**S.D.D. 14 B 15-11a**



**S.D.D. 14 B 15-11a**



**S.D.D. 14 B 15-11a**

**S.D.D. 14 B 15-11a**



**S.D.D. 14 B 15-11a**



**S.D.D. 14 B 15-11a**



**S.D.D. 14 B 15-11a**



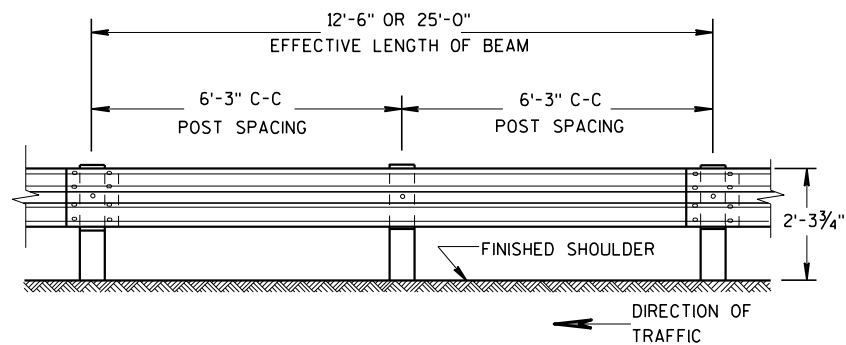
**S.D.D. 14 B 15-11a**



**S.D.D. 14 B 15-11a**

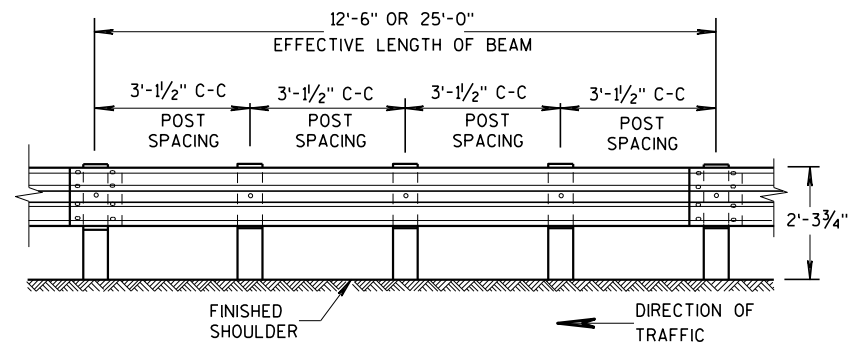
**S.D.D. 14 B 15-11a**

**S.D.D. 14 B 15-11a**



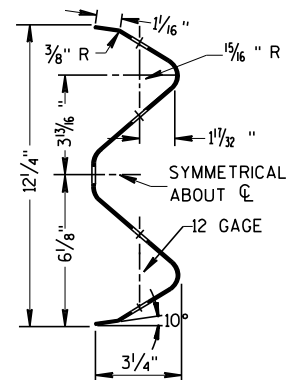
FRONT VIEW

POST SPACING STANDARD INSTALLATION

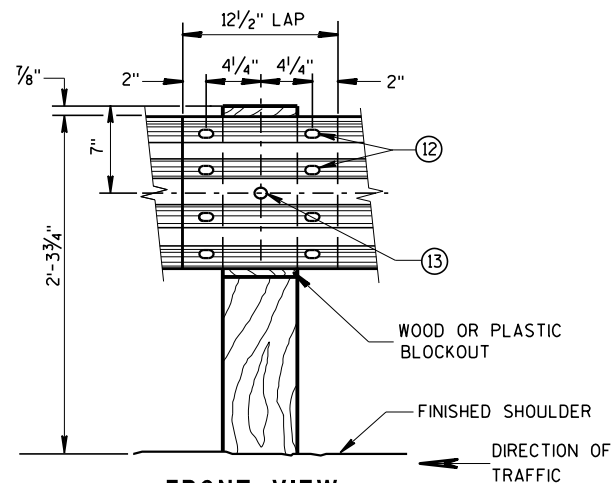


FRONT VIEW

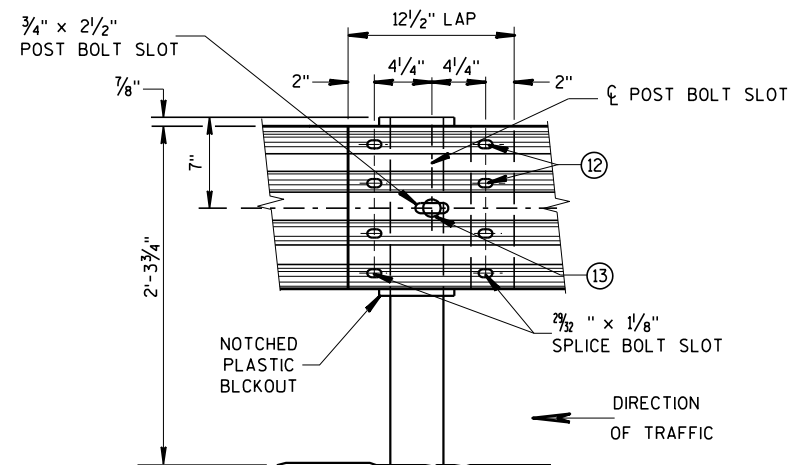
POST SPACING FOR LONGER POST  
AT HALF POST SPACING W BEAM (LHW)



SECTION THRU W BEAM



FRONT VIEW  
BEAM SPLICE AT WOOD POST  
AND POST MOUNTING DETAIL



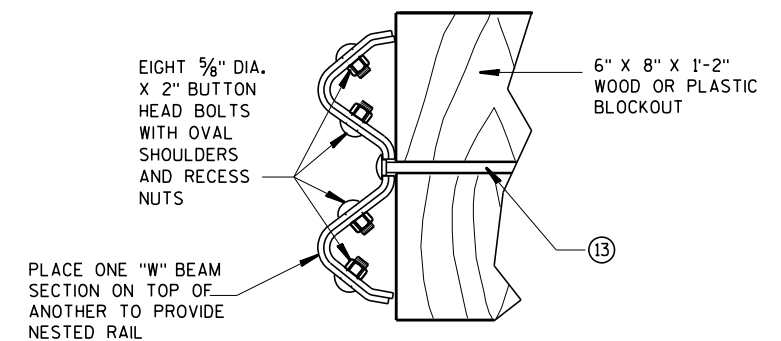
FRONT VIEW  
BEAM SPLICE AT STEEL POST

TYPICAL SPLICING DETAILS  
OF STEEL PLATE BEAM GUARD

GENERAL NOTES

FURNISH GUARDRAIL DEFLECTORS FROM APPROVED PRODUCTS LIST.

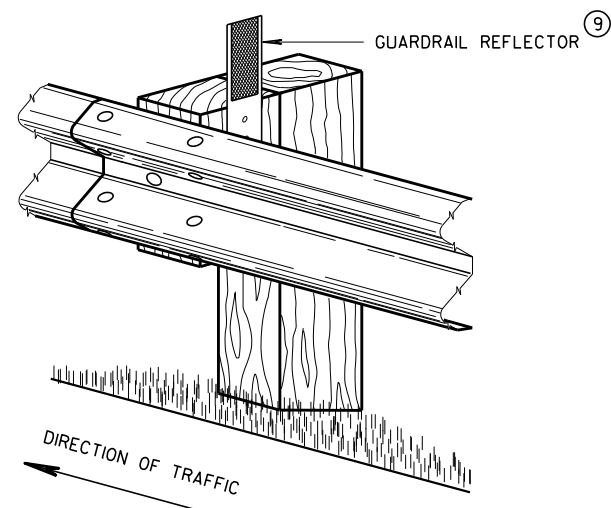
- ⑨ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINA. START REFLECTORS AT POST #9 AND SPACE EVENLY EVERY 100 FEET (MAX.) TO THE END OF GUARDRAIL RUN, USING A MINIMUM OF 3 REFLECTORS.
- ⑫ 8 - 5/8"  $\phi$  X 2" BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.
- ⑬ 5/8" DIA. BUTTON HEAD BOLT AND RECESS NUT WITH 5/8" DIA. F844 FLAT WASHER UNDER NUT.



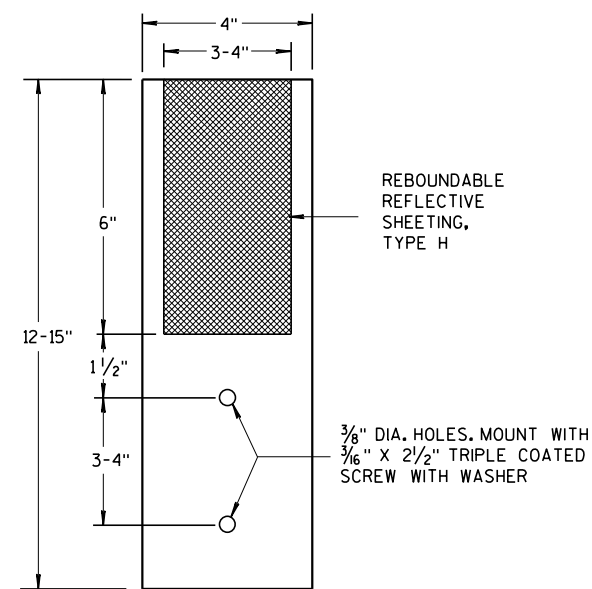
NESTED W BEAM (NW)

USE ALL OTHER STANDARD BEAM GUARD DETAILS FOR  
CONSTRUCTING NESTED W BEAM (NW)

\* USE DOUBLE SIDED WHITE GUADRAIL REFLECTORS ON ROADWAYS WITH BI-DIRECTIONAL TRAFFIC (NO MEDIAN). USE SINGLE SIDED WHITE (RIGHT SIDE) AND SINGLE SIDED YELLOW (LEFT SIDE) ON ROADWAYS WITH MEDIAN SEPARATION.



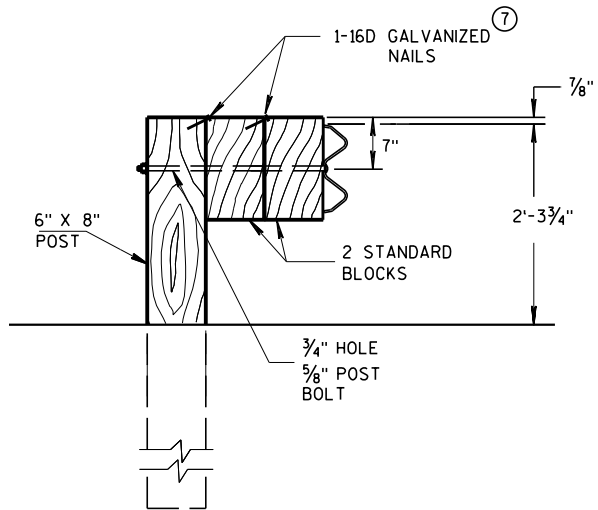
4" X 12" GUARDRAIL REFLECTOR DETAIL  
AND TYPICAL INSTALLATION \*



4"x 12" GUARDRAIL REFLECTOR

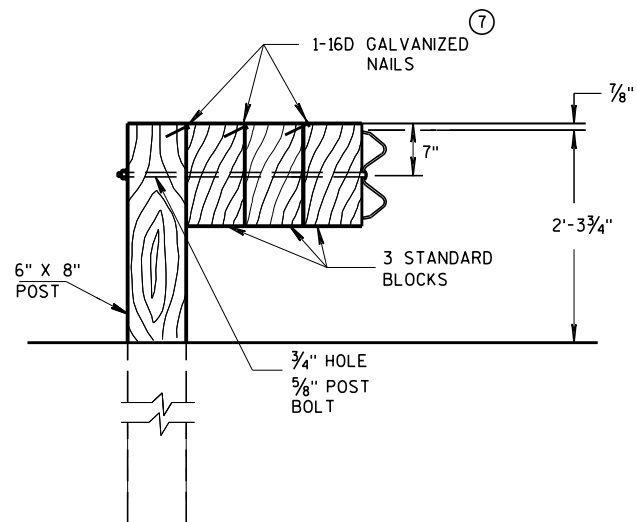
STEEL PLATE BEAM GUARD,  
CLASS "A",  
INSTALLATION & ELEMENTS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



#### DETAIL FOR DOUBLE BLOCKS

THE NUMBER OF DOUBLE BLOCK POSTS  
WITHIN A BARRIER RUN IS UNLIMITED

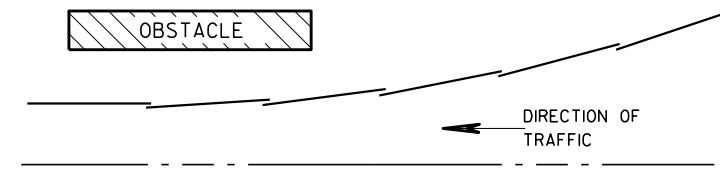


#### DETAIL FOR TRIPLE BLOCKS

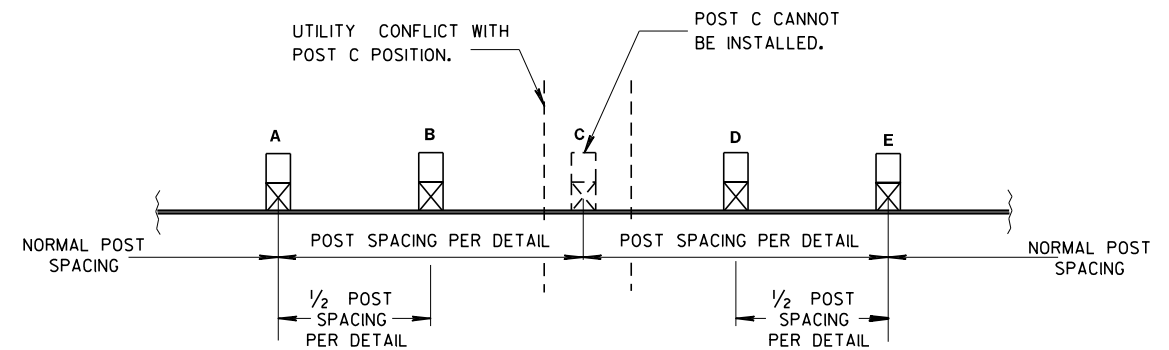
TRIPLE BLOCK DETAIL IS LIMITED TO ONE  
LOCATION WITHIN A BEAM GUARD RUN.

NOTES: USE DOUBLE OR TRIPLE BLOCKS WHEN UNDERGROUND OBSTACLES  
PREVENT THE POST FROM BEING INSTALLED.

DO NOT USE EXTRA 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.



#### PLAN VIEW BEAM LAPPING DETAIL

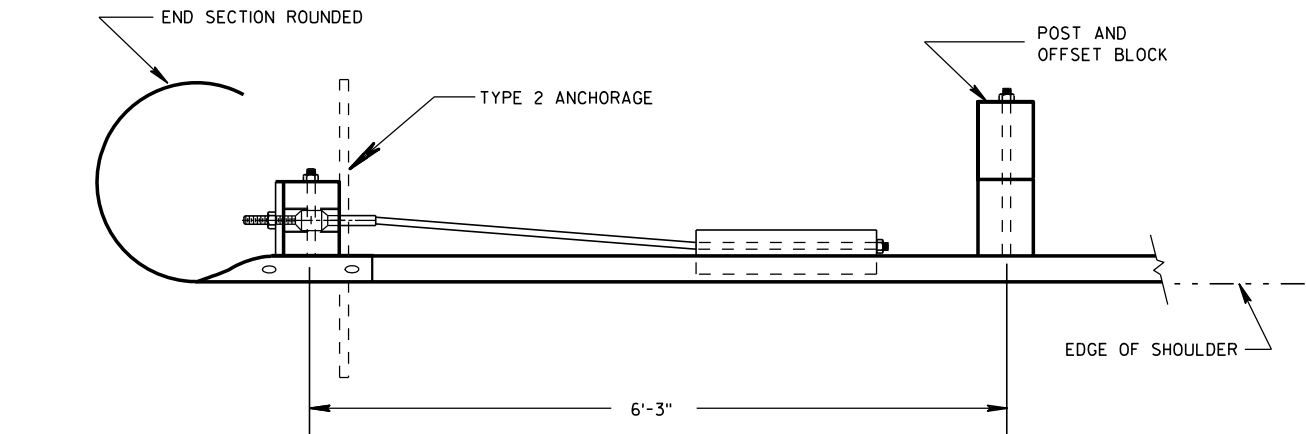


#### POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION

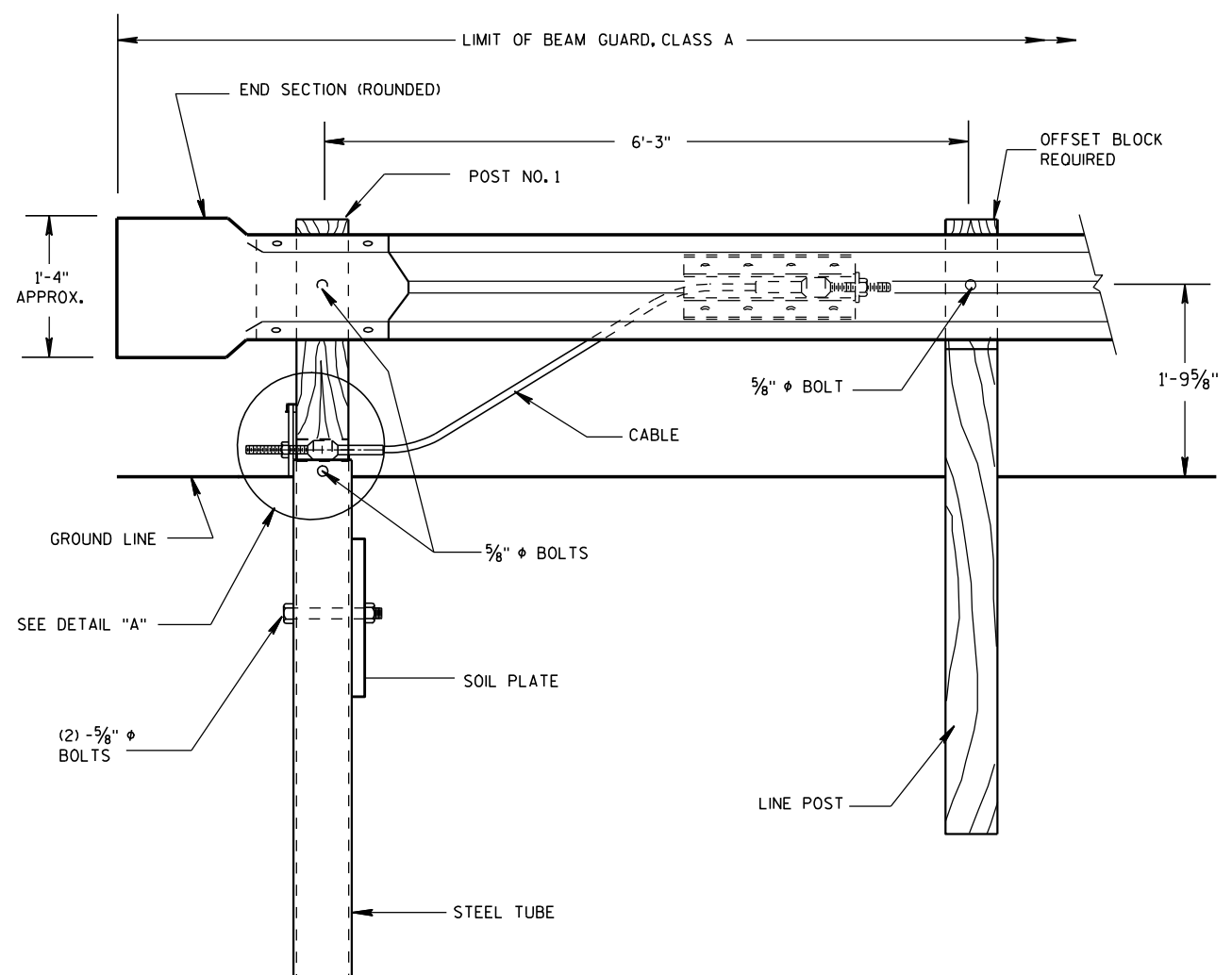
**STEEL PLATE BEAM GUARD,  
CLASS "A",  
INSTALLATION & ELEMENTS**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

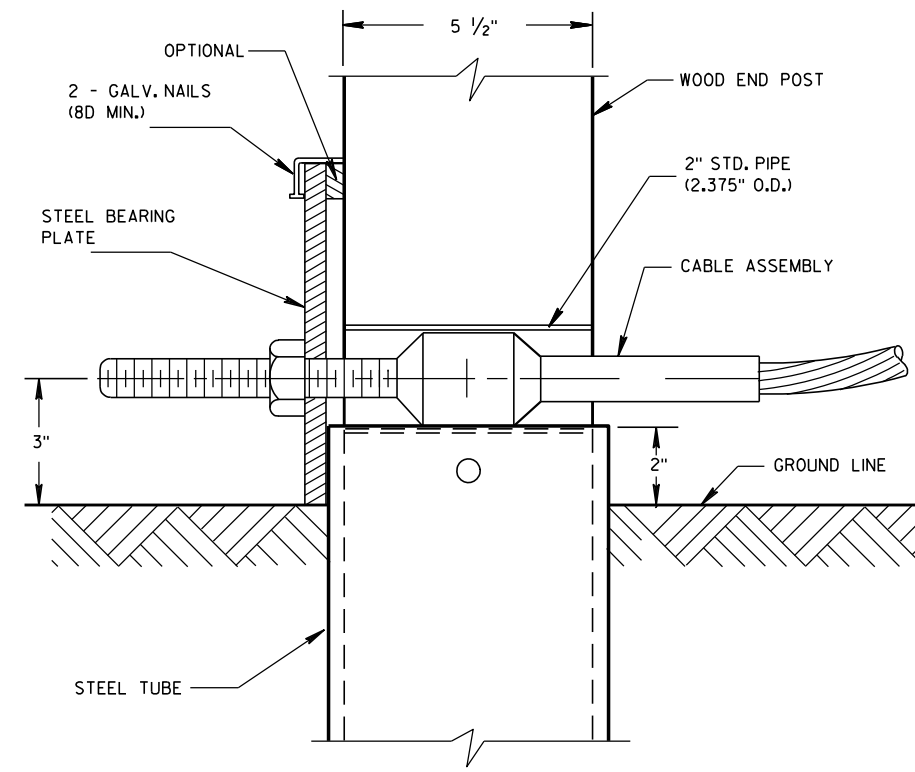


PLAN VIEW

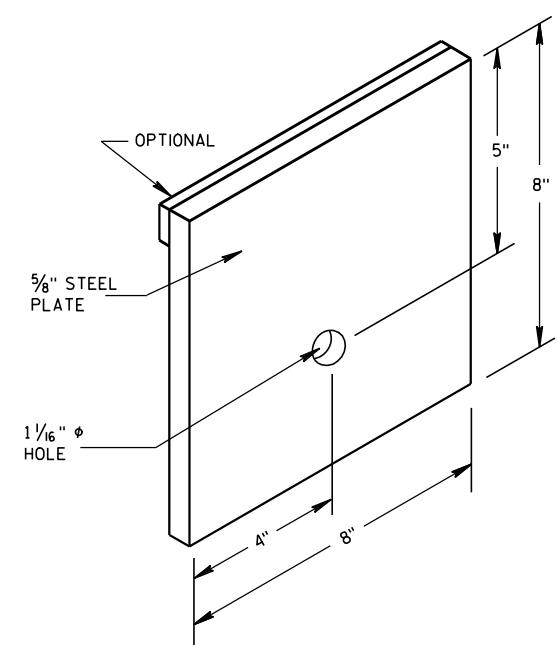


FRONT VIEW

END TREATMENT WITH TYPE 2 ANCHORAGE  
(USE ON ONE-WAY ROADWAYS ONLY - DEPARTING END)

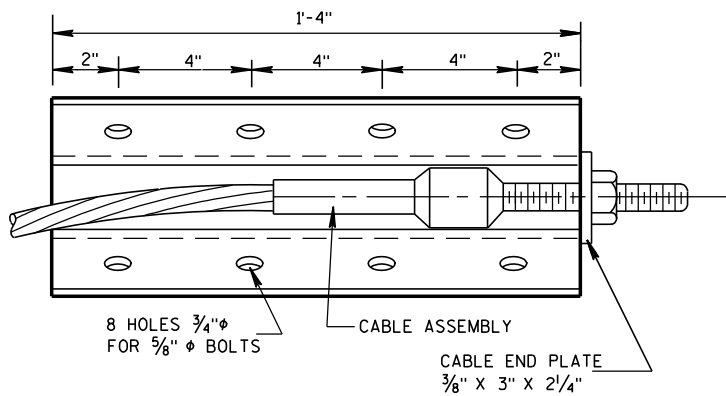


DETAIL "A"  
POST NO. 1

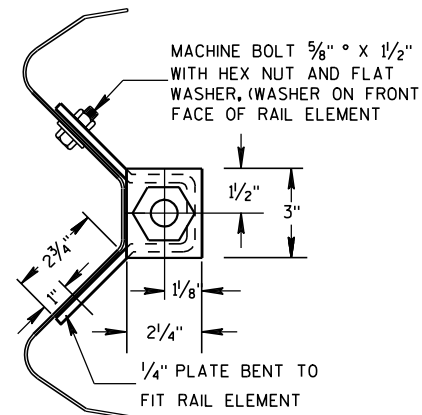


STEEL BEARING PLATE

ANCHORAGE FOR STEEL PLATE BEAM GUARD TYPE 2
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

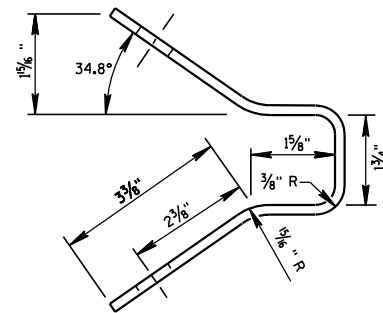


FRONT VIEW

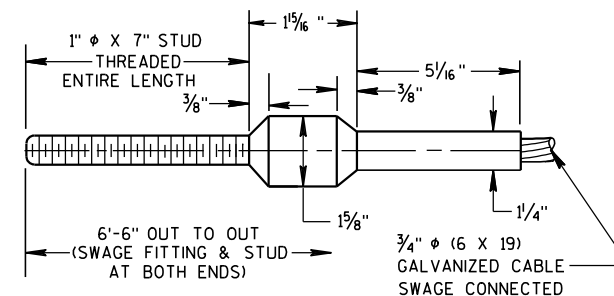


END VIEW

ANCHOR PLATE DETAIL



END VIEW OF BRACKET



CABLE ASSEMBLY

CABLE, SWAGE FITTING, STUD AND NUT SHALL DEVELOP A MINIMUM BREAKING STRENGTH OF 40,000 LB (TIGHTEN UNTIL TAUT)

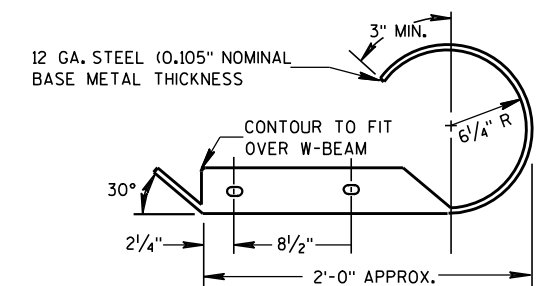
## GENERAL NOTES

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

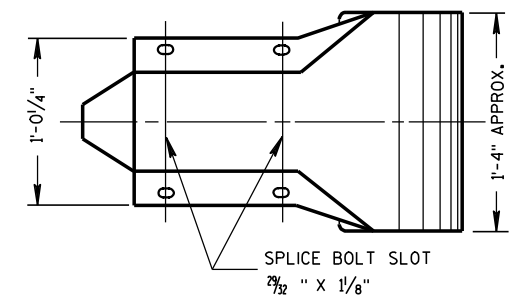
STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-500 GRADE B OR ASTM A-501.

POST NO. 1 SHALL BE WOOD BREAKAWAY POST INSERTED AND BOLTED INTO STEEL TUBE.

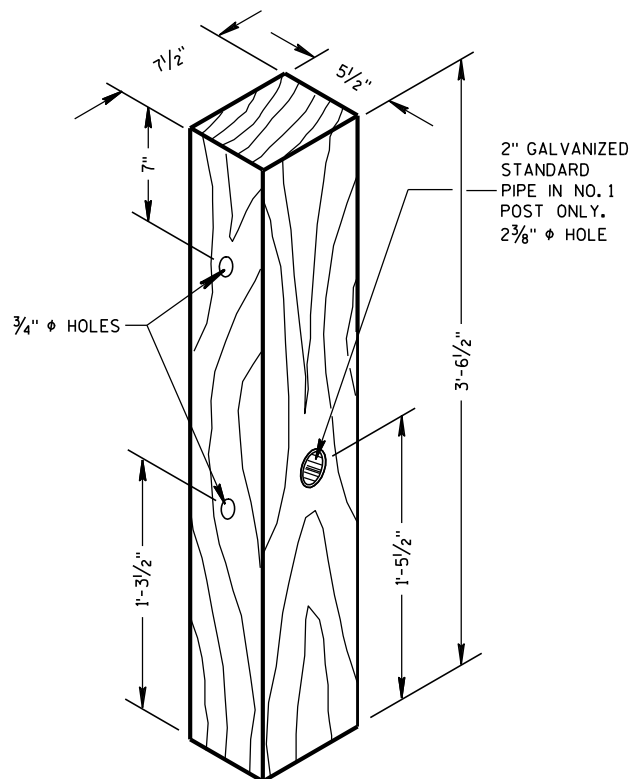
TYPE 2 ANCHORAGE SHALL CONSIST OF A STEEL TUBE, SOIL PLATE, WOOD BREAKAWAY POST, BEARING PLATE, ANCHOR PLATE, CABLE ASSEMBLY AND ALL ASSOCIATED HARDWARE, ALL STEEL PARTS SHALL BE GALVANIZED.



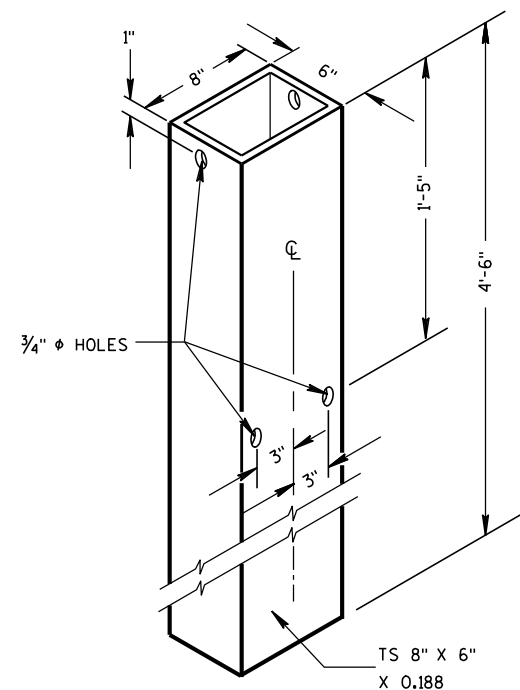
PLAN VIEW



FRONT VIEW  
W BEAM END SECTION ROUNDED

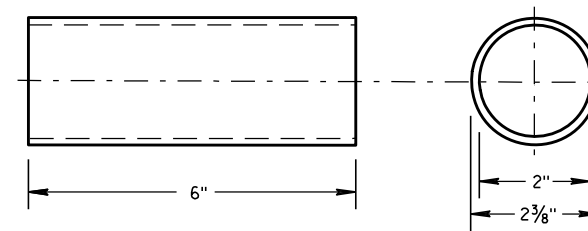


WOOD BREAKAWAY POST



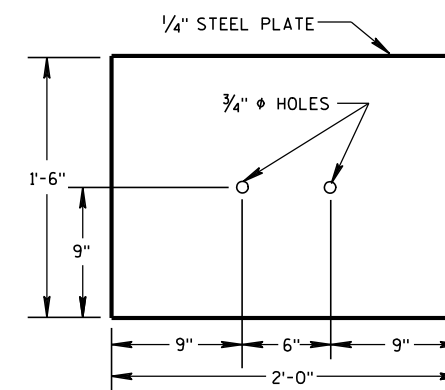
STEEL TUBE

STEEL TUBE SHALL CONFORM TO REQUIREMENTS OF ASTM A500



BREAKAWAY TERMINAL POST SLEEVE

GALVANIZED STANDARD STRENGTH STEEL PIPE, ASTM 53 GRADE "B"



SOIL PLATE

ANCHORAGE FOR STEEL  
PLATE BEAM GUARD  
TYPE 2

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

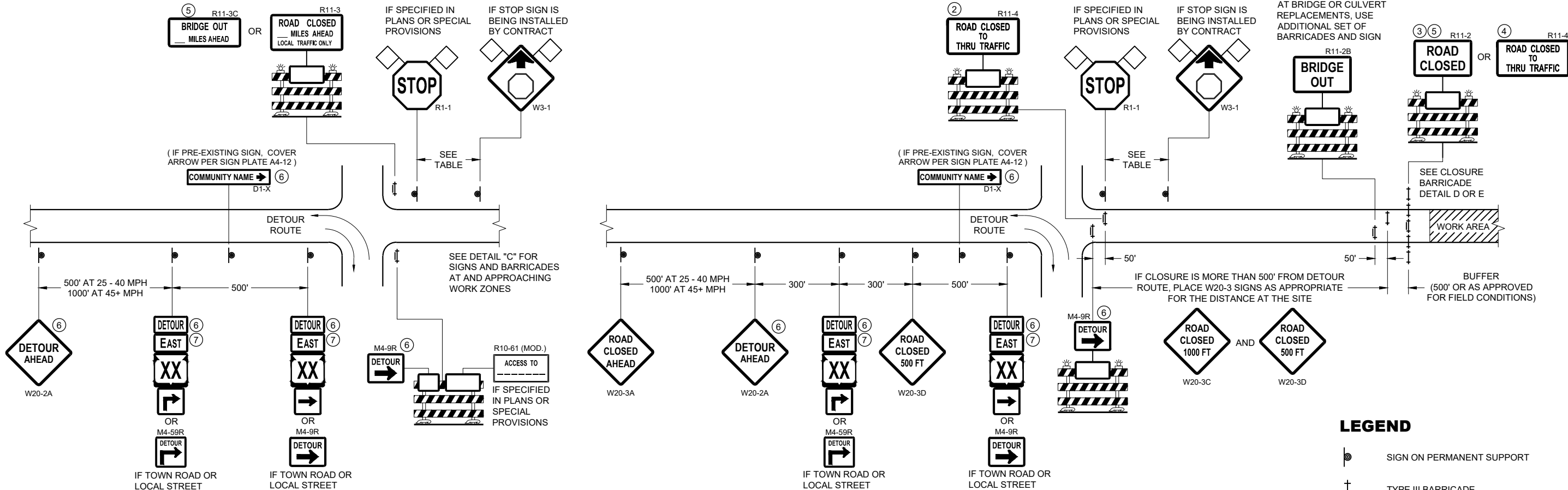
APPROVED

8/21/2007

DATE

FHWA

/S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER



**LEGEND**

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

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

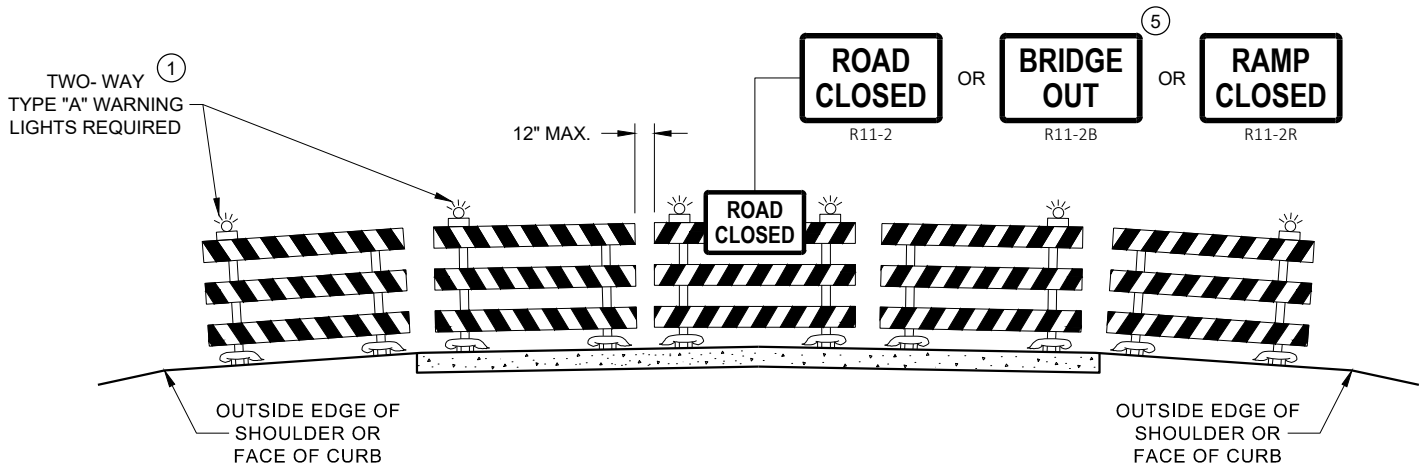
SEE SDD 15C2-SHEET "b" FOR GENERAL NOTES AND FOOTNOTES ① THROUGH ⑦

**BARRICADES AND SIGNS FOR MAINLINE CLOSURES**

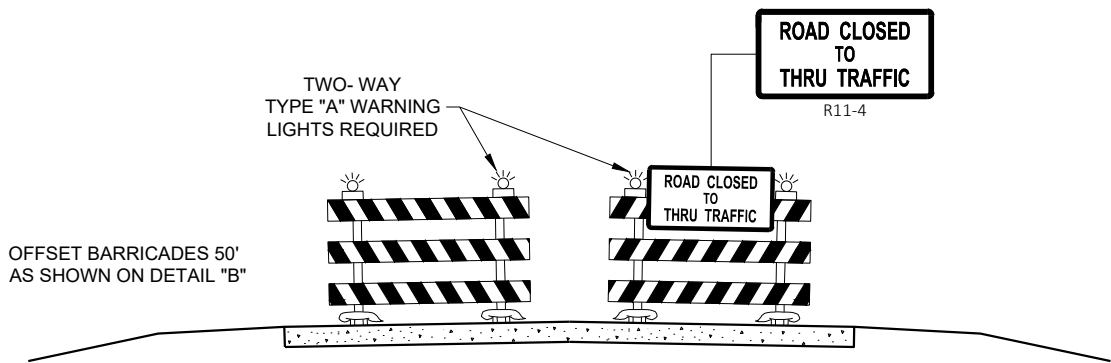
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

FHWA



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



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

SEE SDD 15C2 - SHEET "a" FOR LEGEND

**GENERAL NOTES**

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

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

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

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

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

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

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

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

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

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

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

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

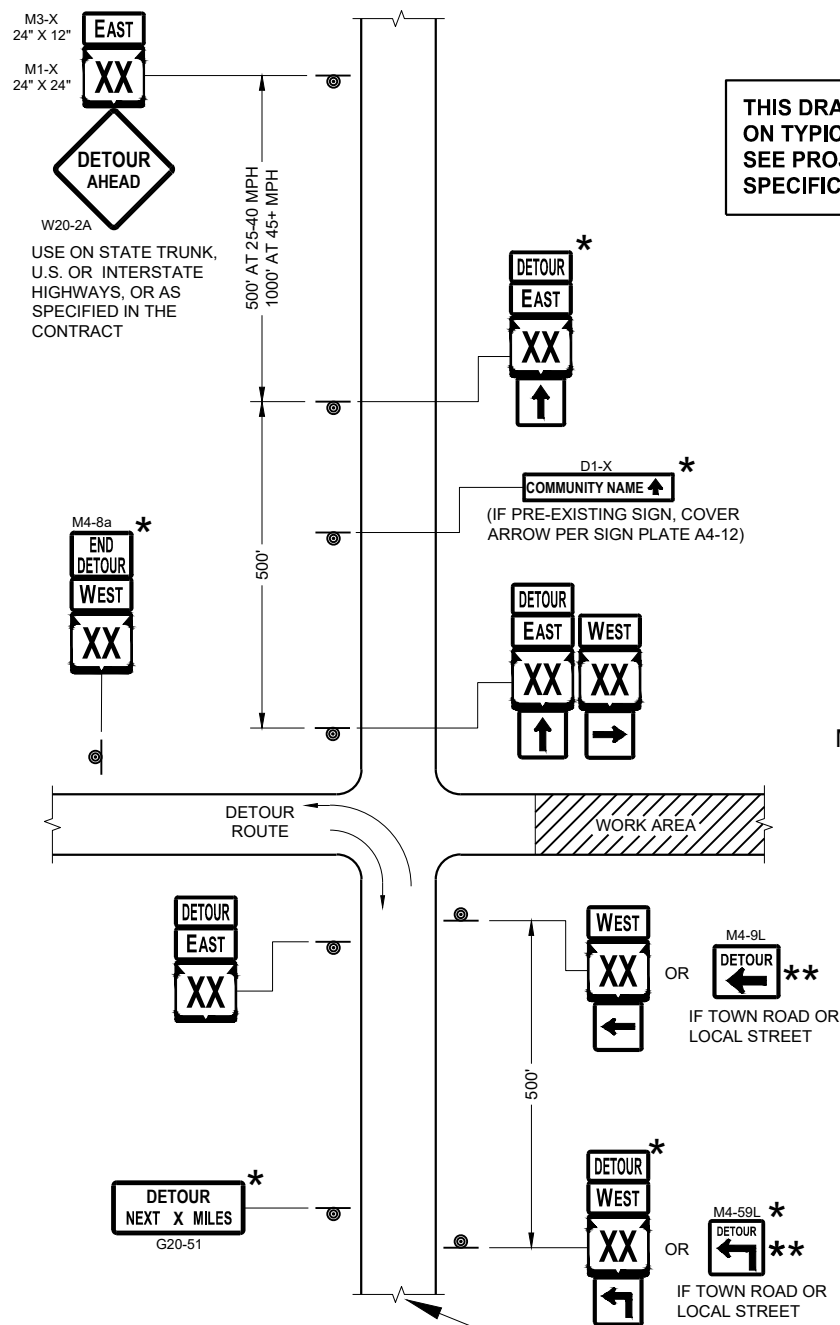
**BARRICADES AND SIGNS**  
**FOR**  
**VARIOUS CLOSURES**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

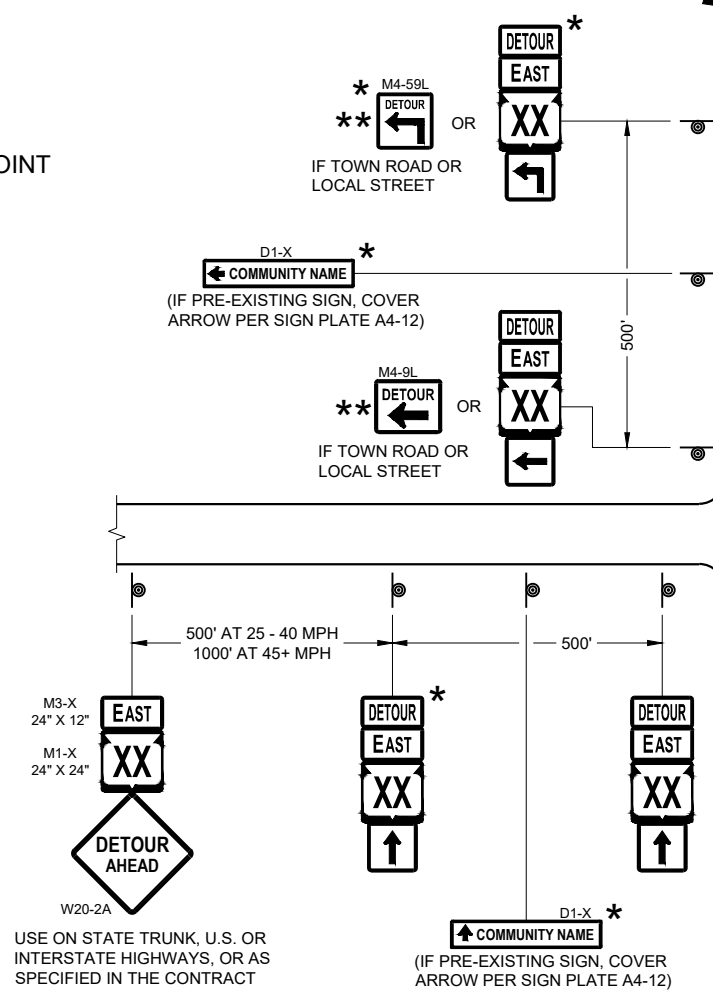
APPROVED  
February 2020 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER

FHWA

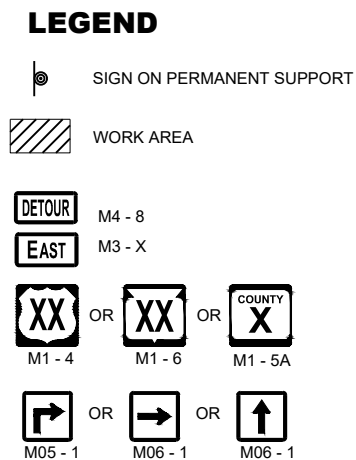




**THIS DRAWING PROVIDES GENERAL GUIDANCE  
ON TYPICAL DETOUR SIGN LAYOUT AND SPACING.  
SEE PROJECT DETOUR SIGNING SHEETS FOR  
SPECIFIC DETAILS FOR EACH PROJECT.**



## DETAIL F DETOUR SIGNING



## 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.

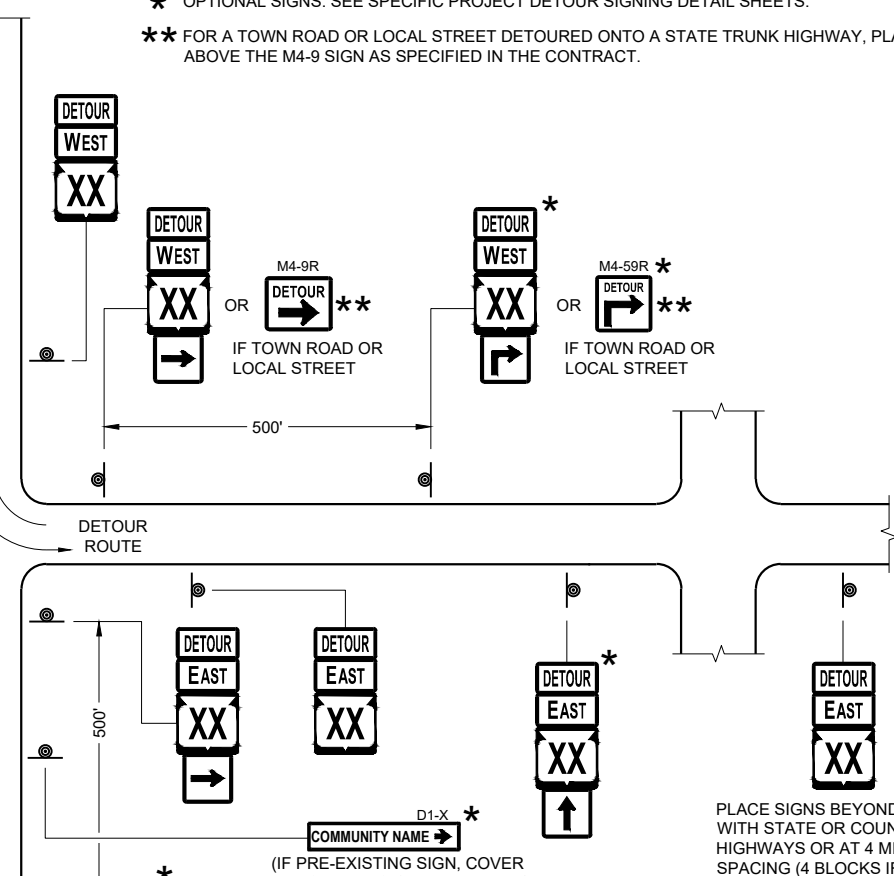
"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

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

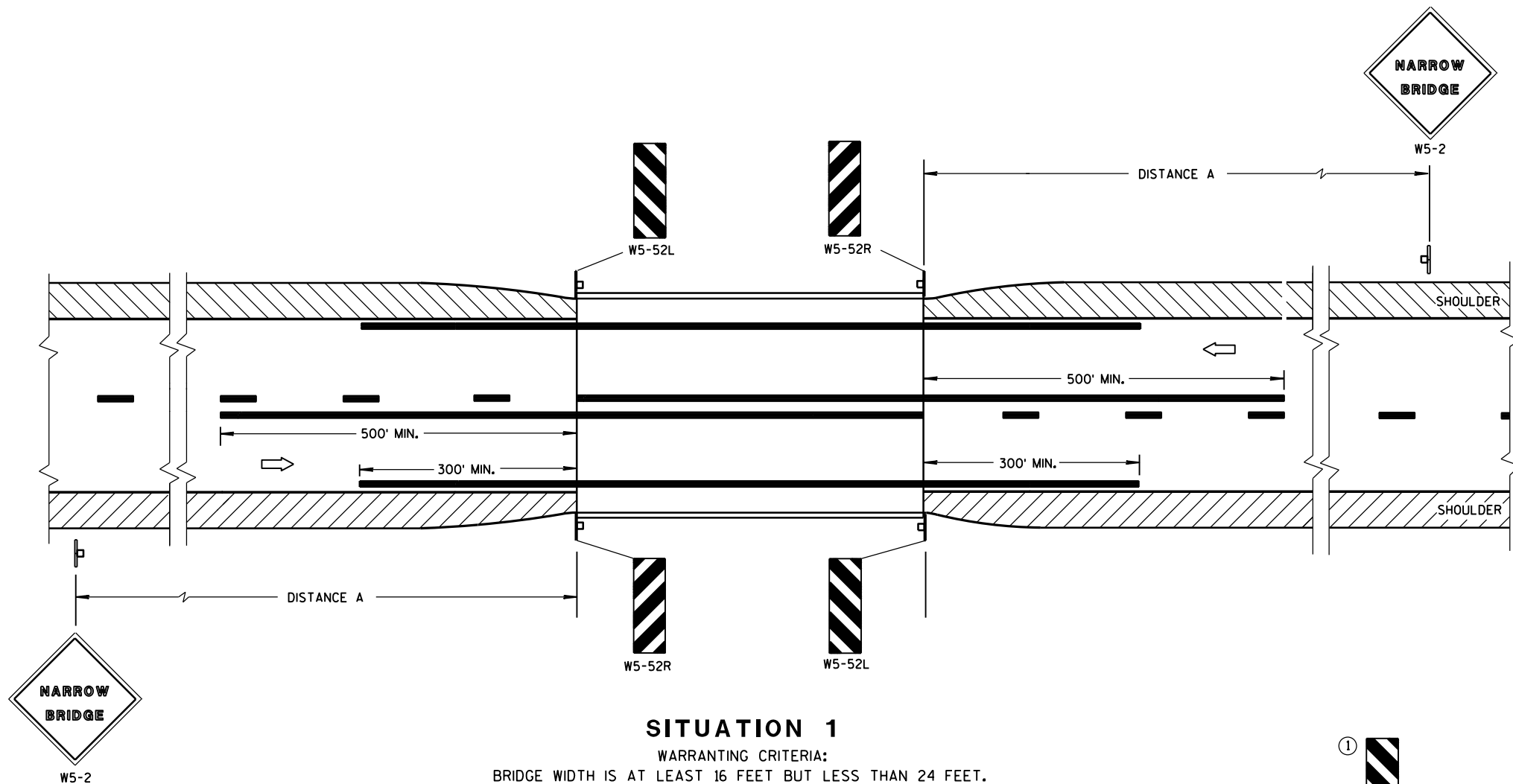
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2020  
DATE

/S/ Andrew Heidtke  
WORK ZONE ENGINEER

FHWA

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



**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

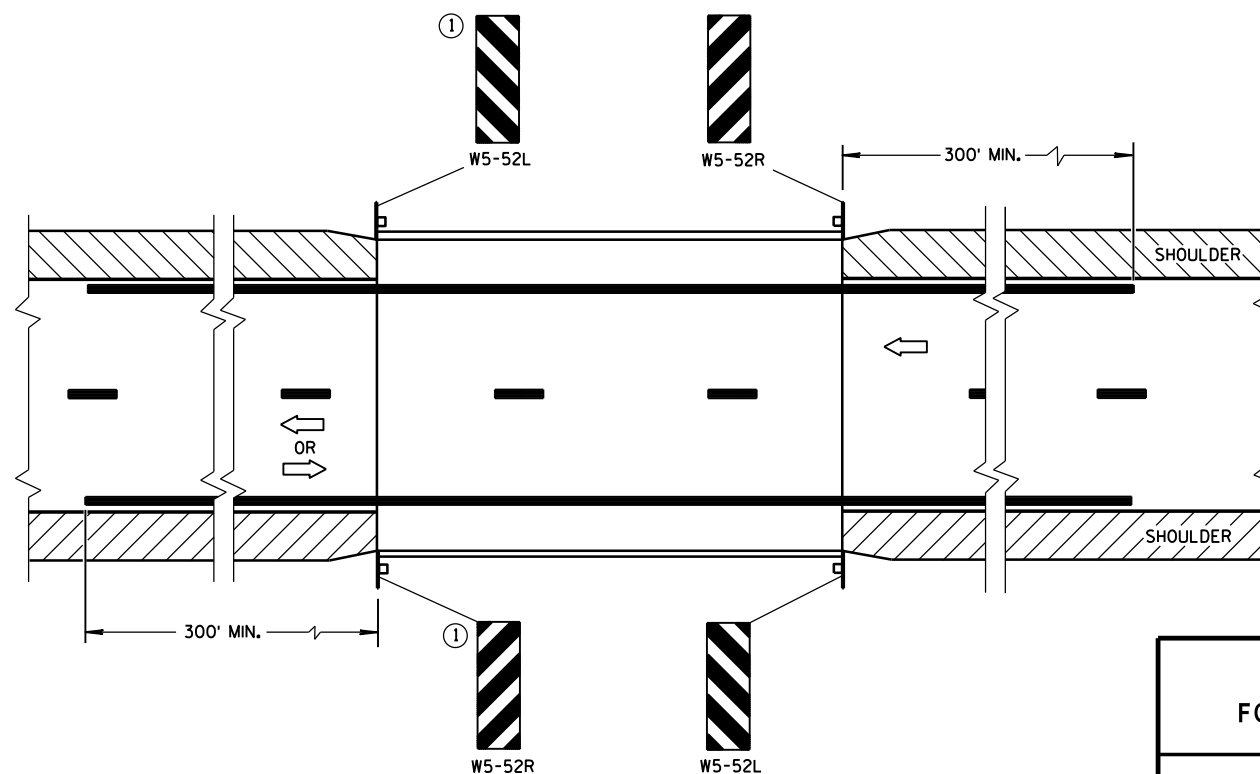
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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

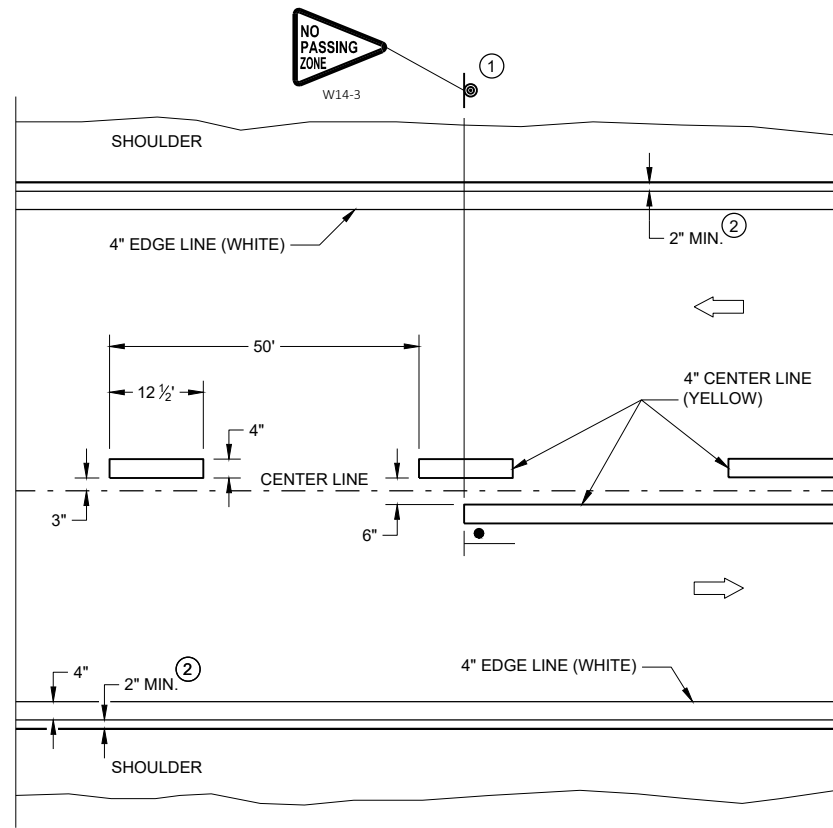


**SITUATION 2**  
WARRANTING CRITERIA:  
1. BRIDGE WIDTH IS AT LEAST 24 FEET AND  
2. BRIDGE SHOULDER WIDTH IS LESS THAN 6 FEET.

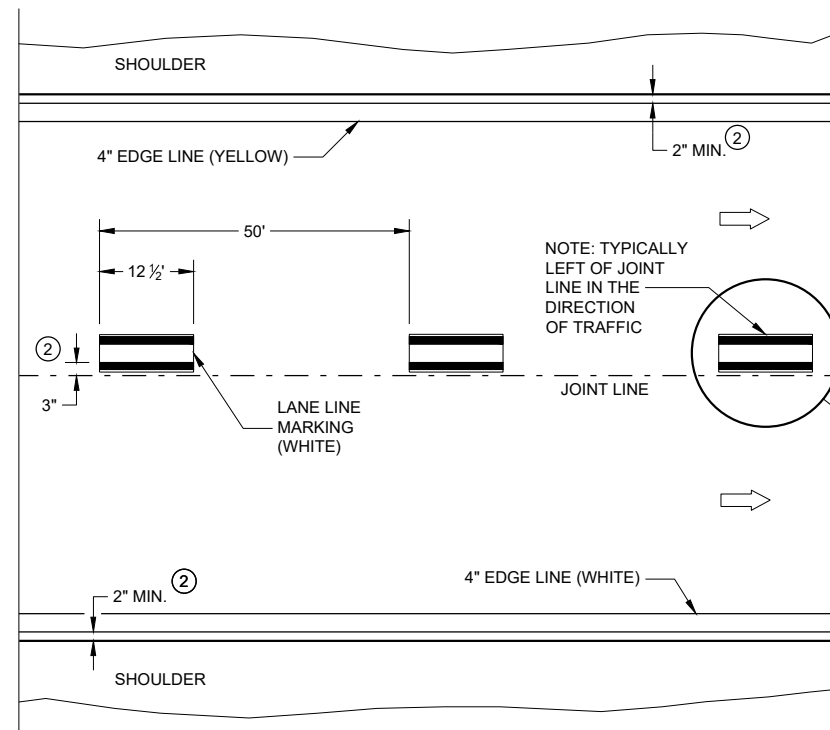
## SIGNING & MARKING FOR TWO LANE BRIDGES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

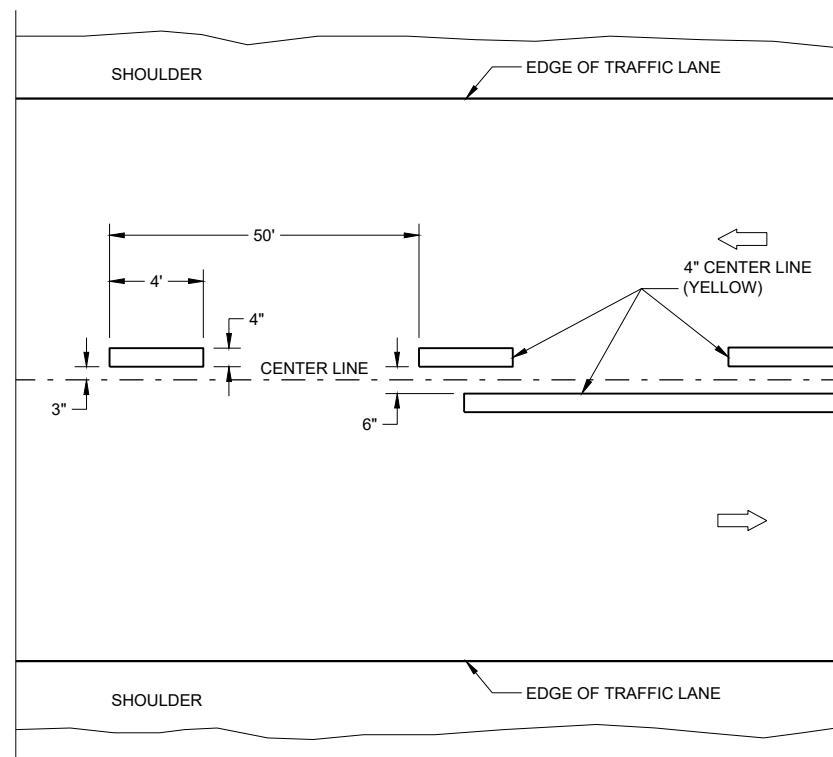


## TWO WAY TRAFFIC

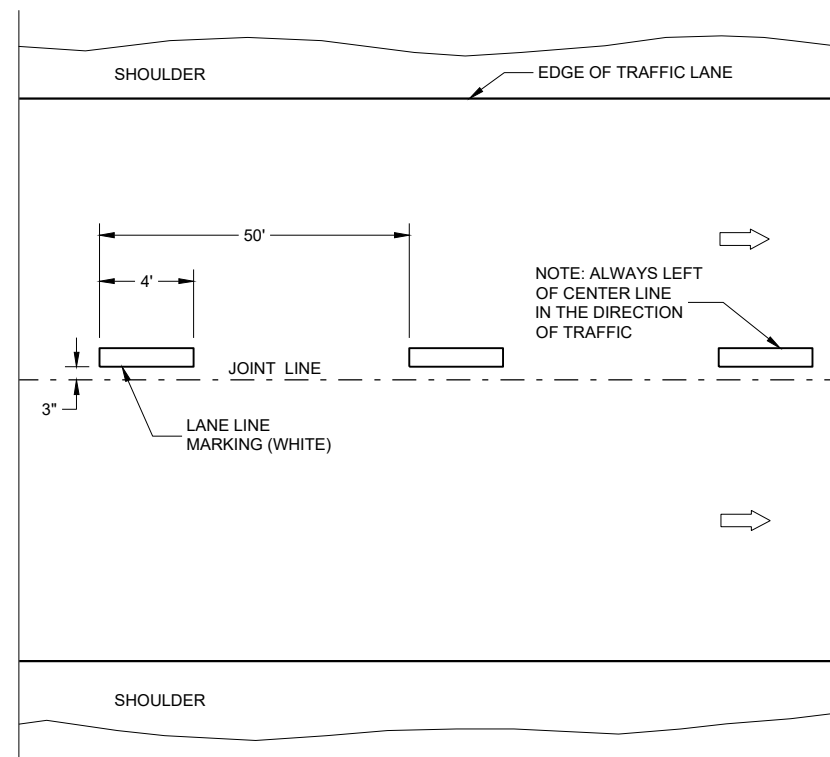


## ONE WAY TRAFFIC

## PERMANENT PAVEMENT MARKING



## TWO WAY TRAFFIC



## ONE WAY TRAFFIC




## TEMPORARY PAVEMENT MARKING

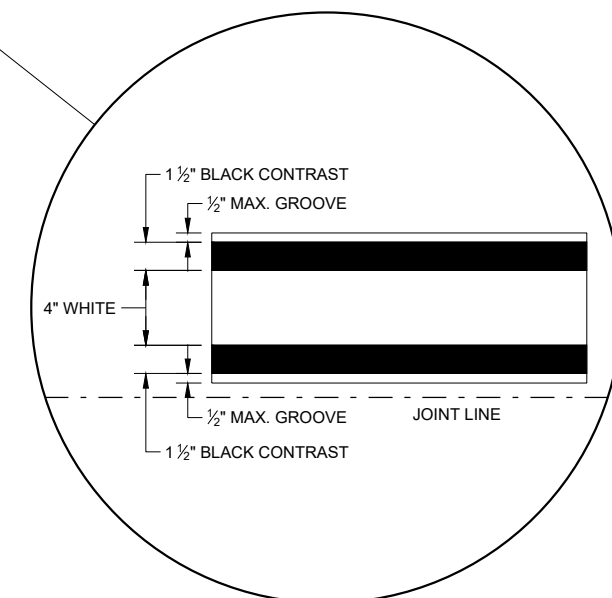
## GENERAL NOTES

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

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

## LEGEND

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



### LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2020  
DATE

/S/ Matthew Rauch  
STATEWIDE SIGNING AND MARKING  
ENGINEER

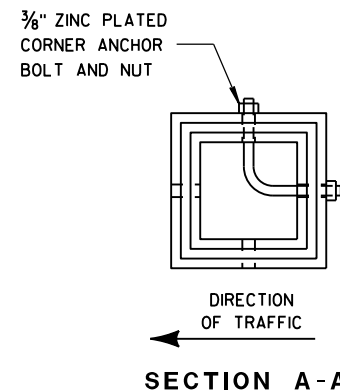


DETAIL OF TUBULAR  
STEEL SIGN POST

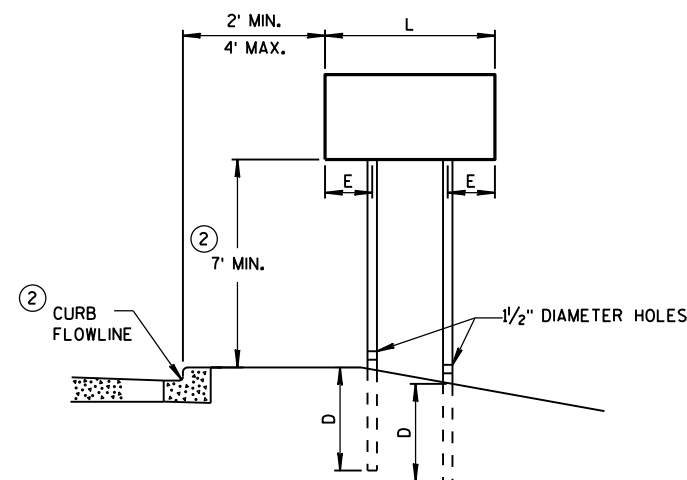
TUBULAR STEEL POSTS

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.



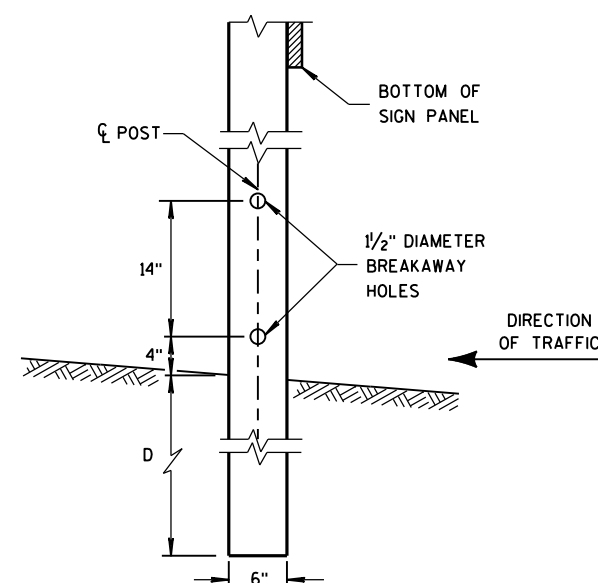
SECTION A-A



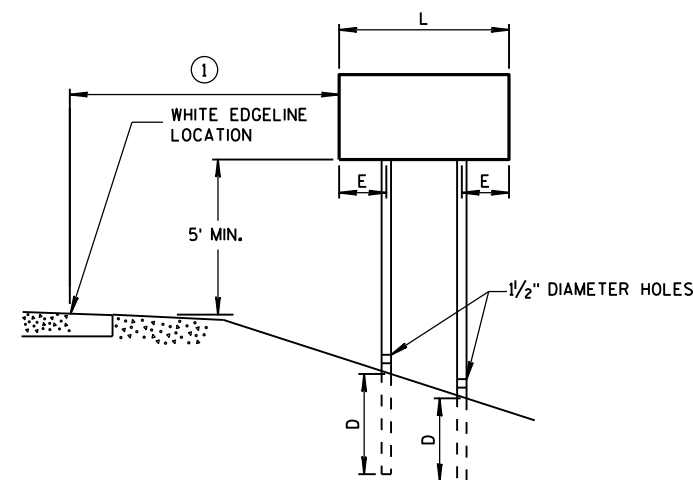
URBAN AREA

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

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

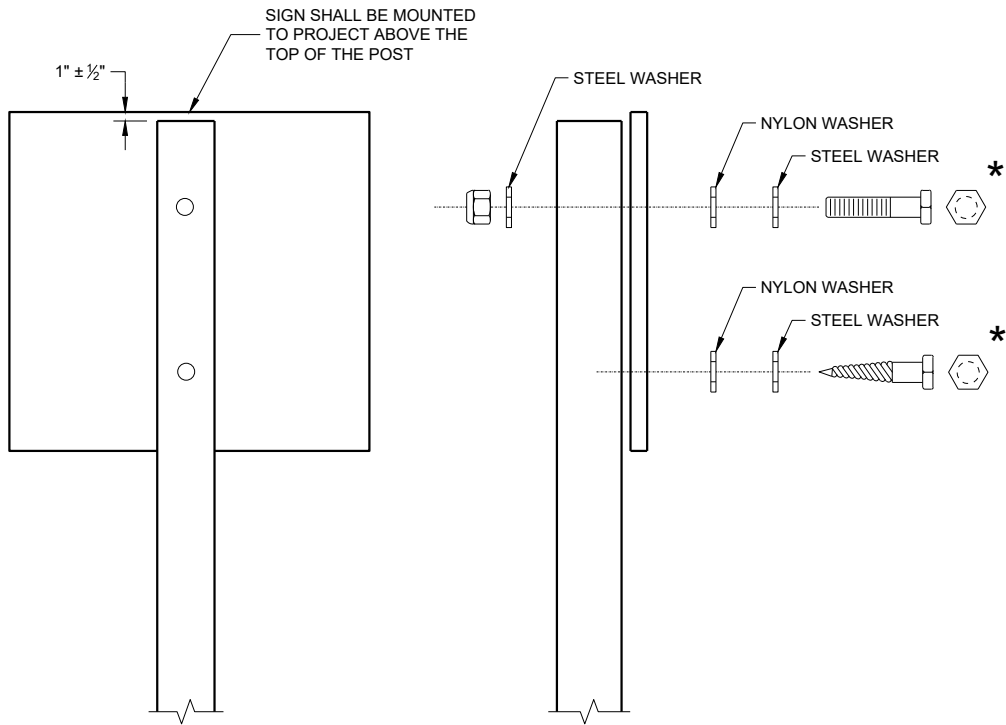
SEE NOTE ③

GENERAL NOTES

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

TEMPORARY TRAFFIC CONTROL  
SIGN MOUNTING

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



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

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

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

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

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

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

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

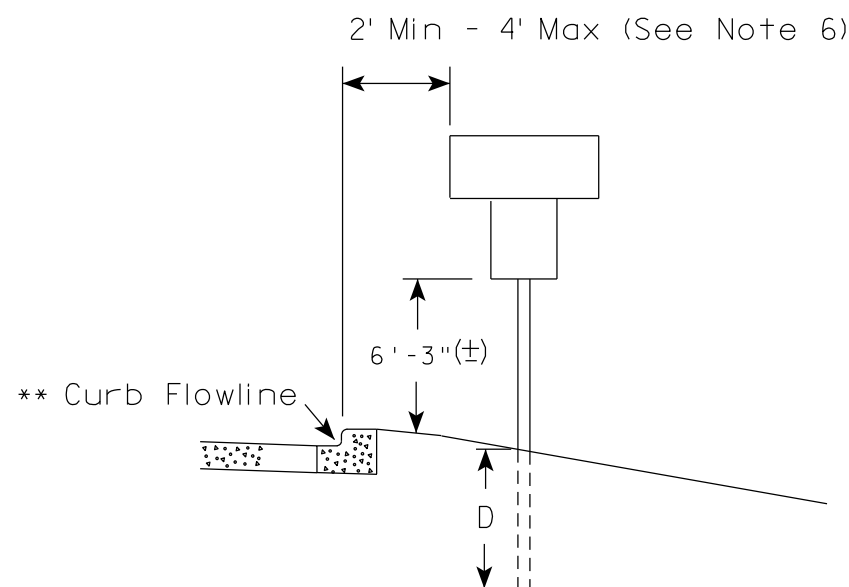
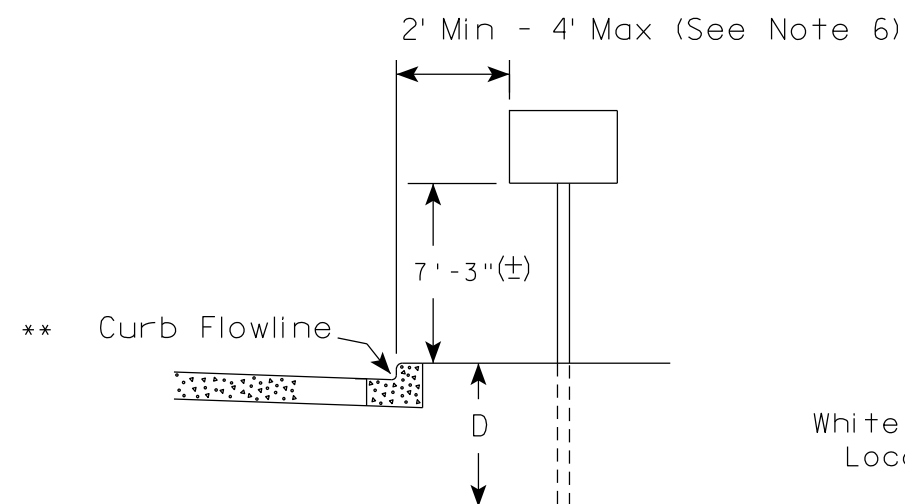
ATTACHMENT OF SIGNS  
TO POSTS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

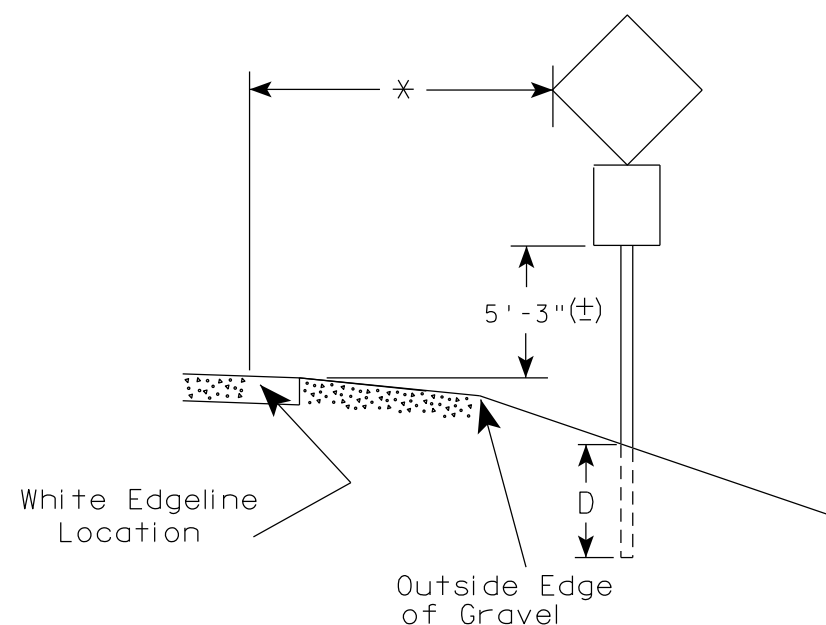
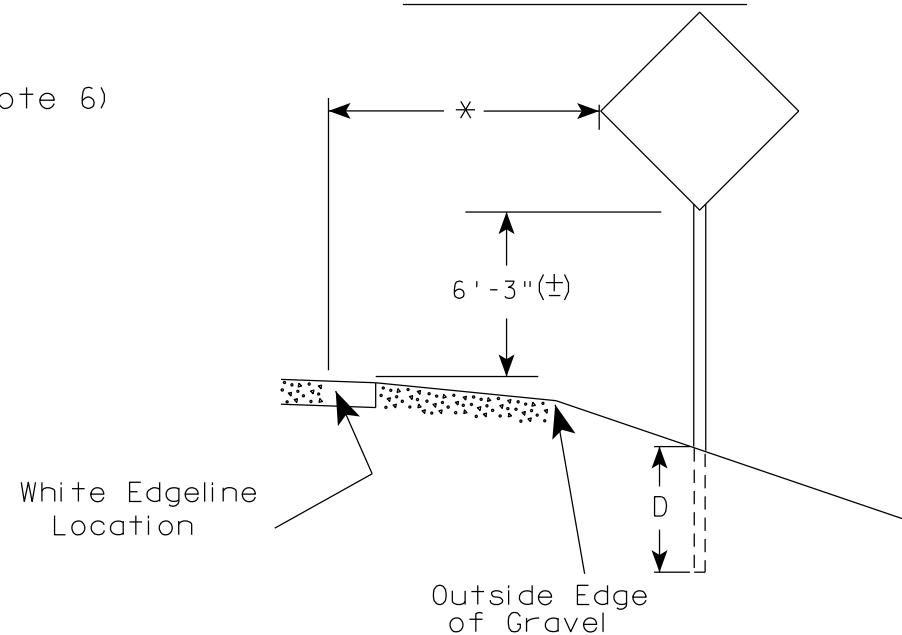
FHWA

# URBAN AREA



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

# RURAL AREA (See Note 2)



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

## POST EMBEDMENT DEPTH

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

## GENERAL NOTES

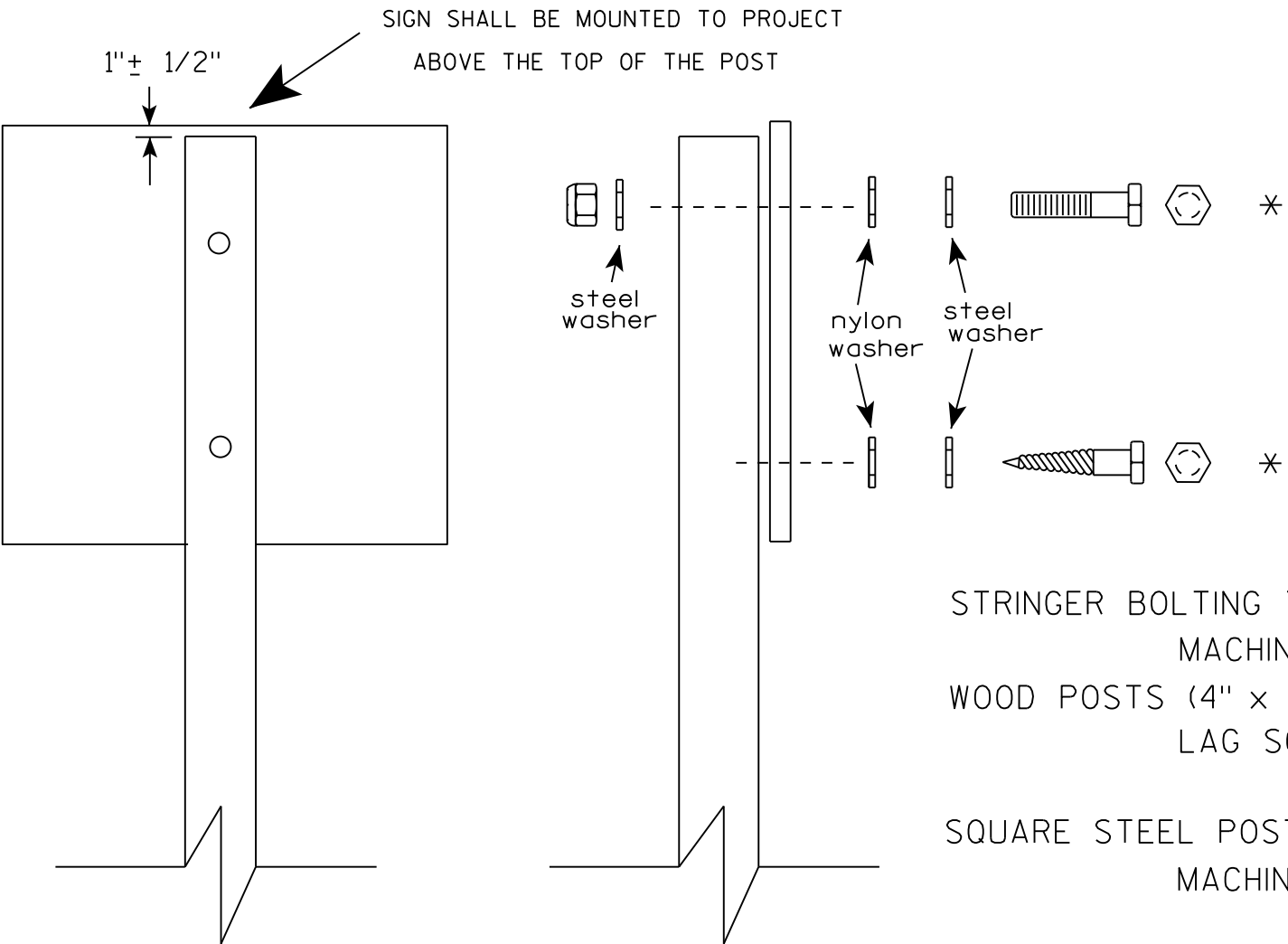
1. Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on or behind barrier wall, see A4-10 sign plate.  
The Double Arrow sign (W12-1D) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel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

## 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 :

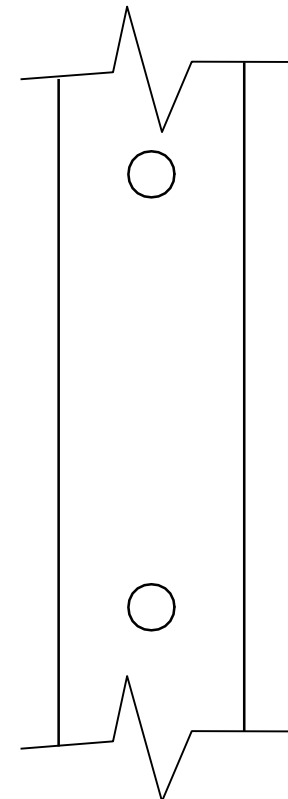
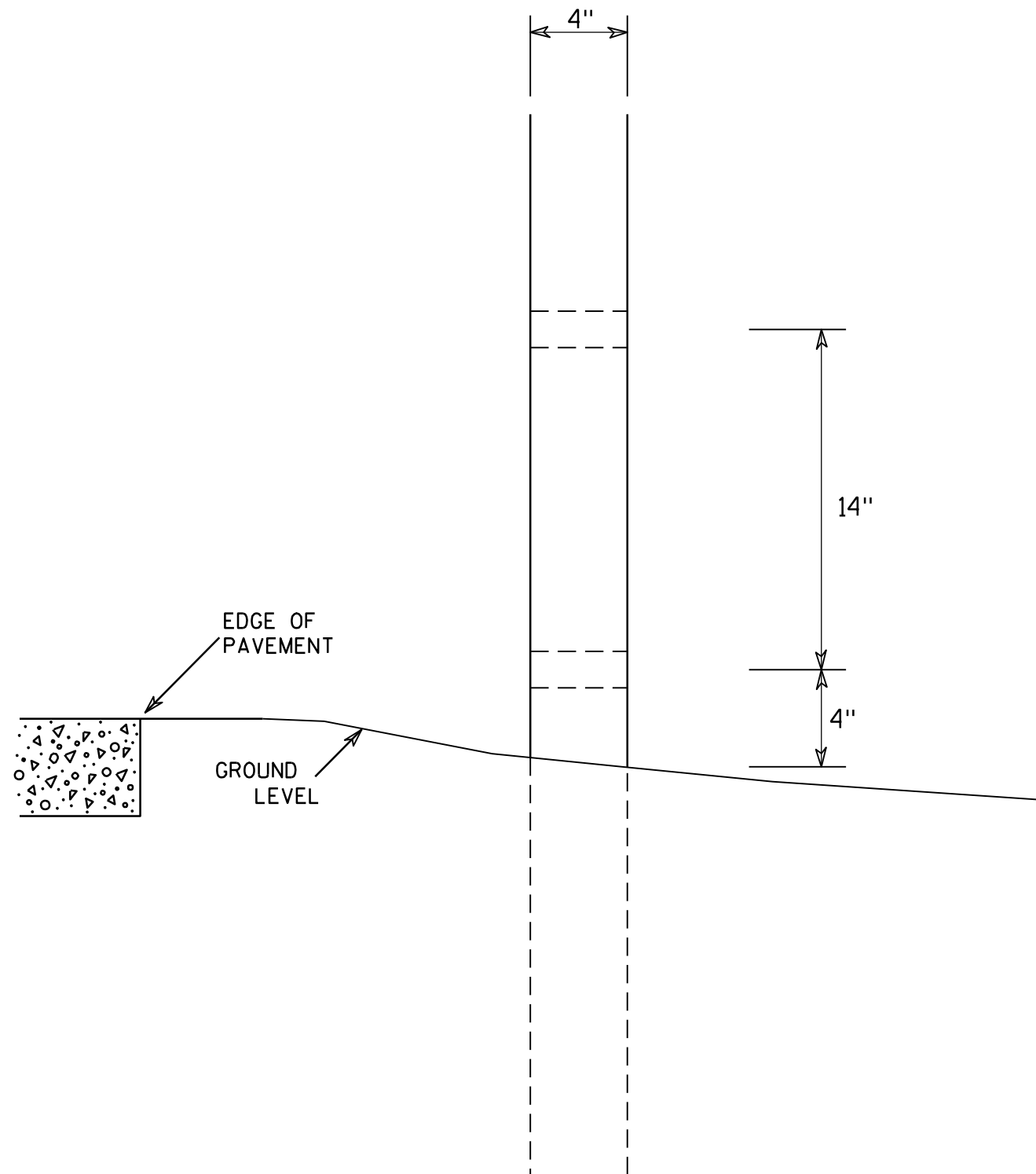
- a. Hot dip galvanized in accordance with ASTM Designation: A 153, Class D, or SC 3
- b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

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



SIDE VIEW

### GENERAL NOTES

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

### 4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

*Chester J. Spang*  
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

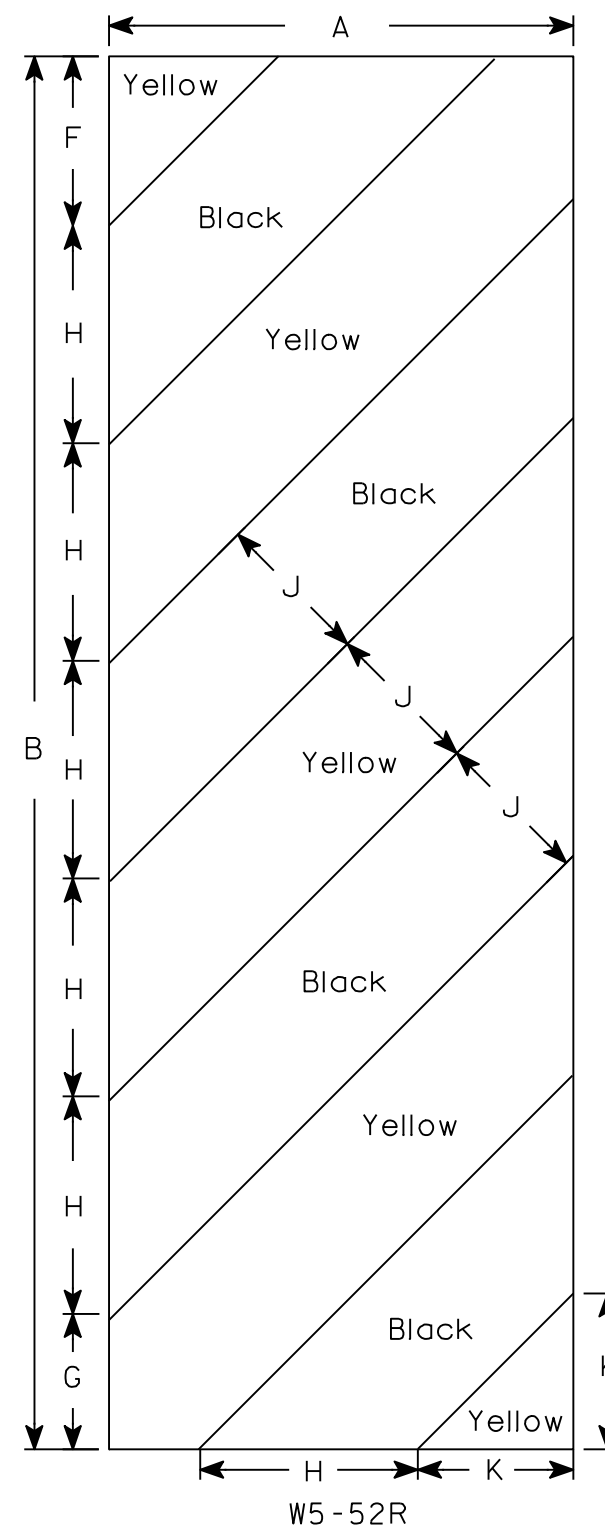
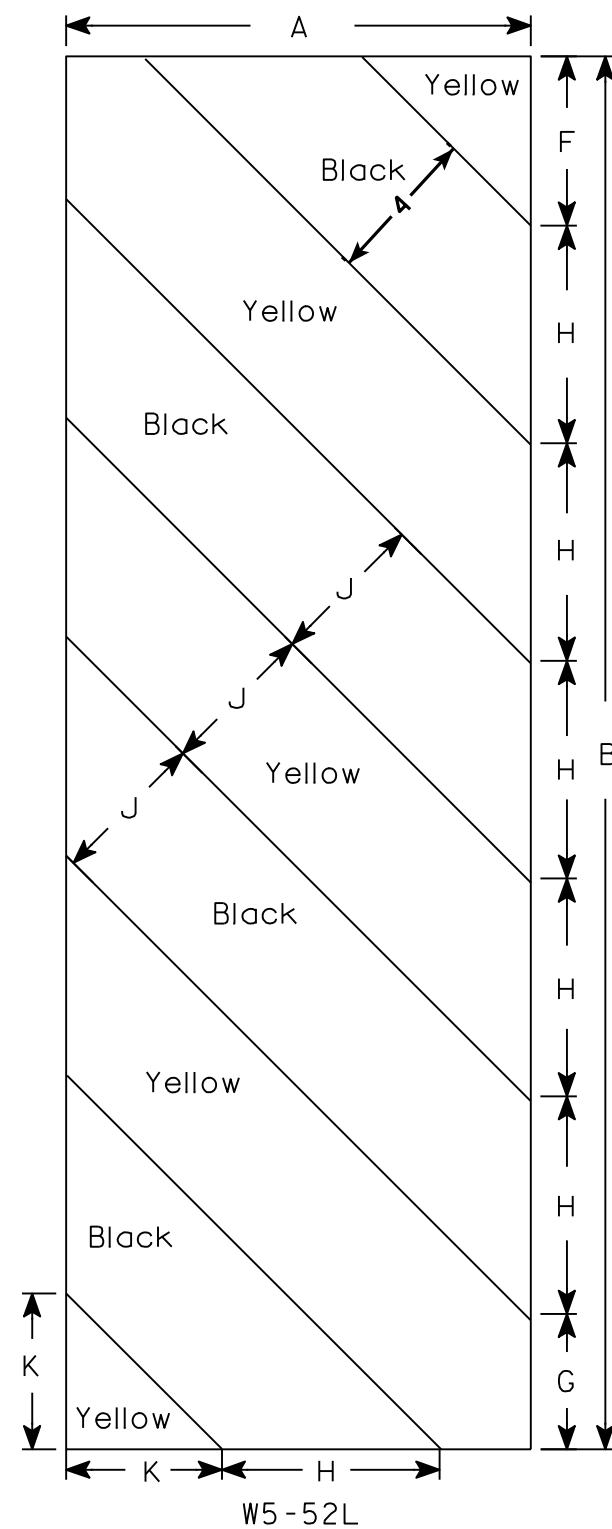
HWY:

COUNTY:

SHEET NO:

E





## 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:

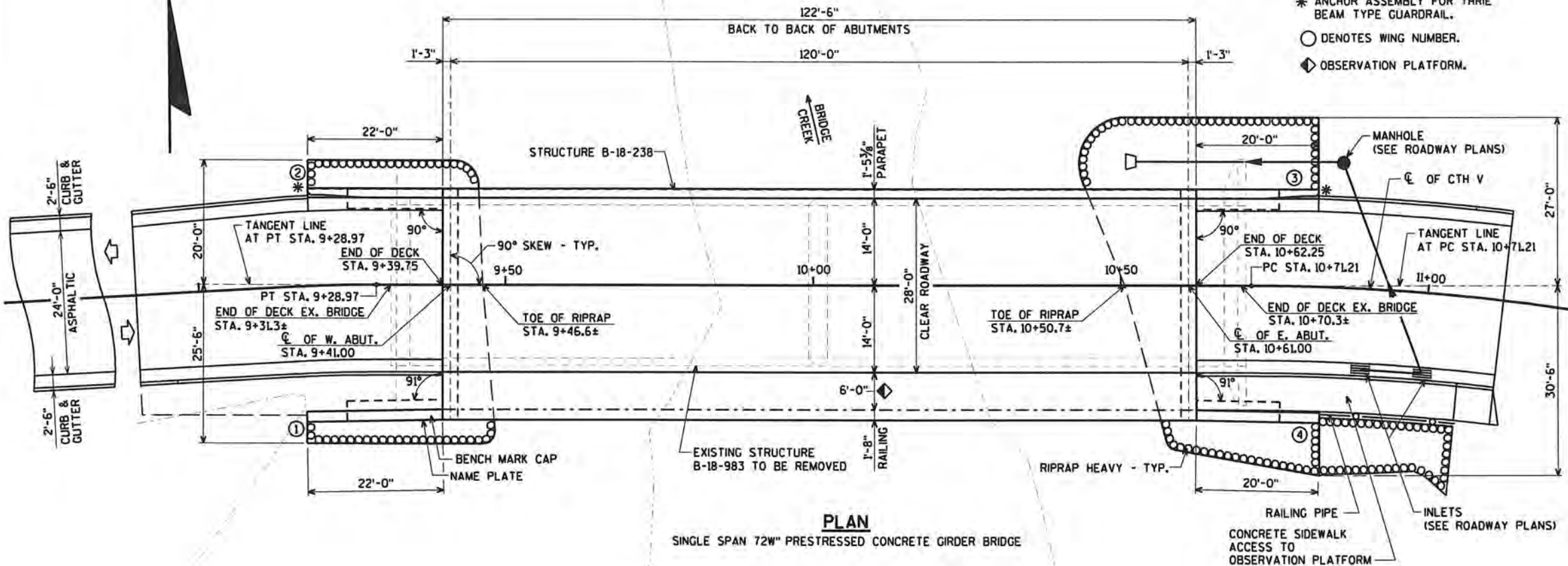
SHEET NO:

E

\* ANCHOR ASSEMBLY FOR THREE  
BEAM TYPE GUARDRAIL.

○ DENOTES WING NUMBER.

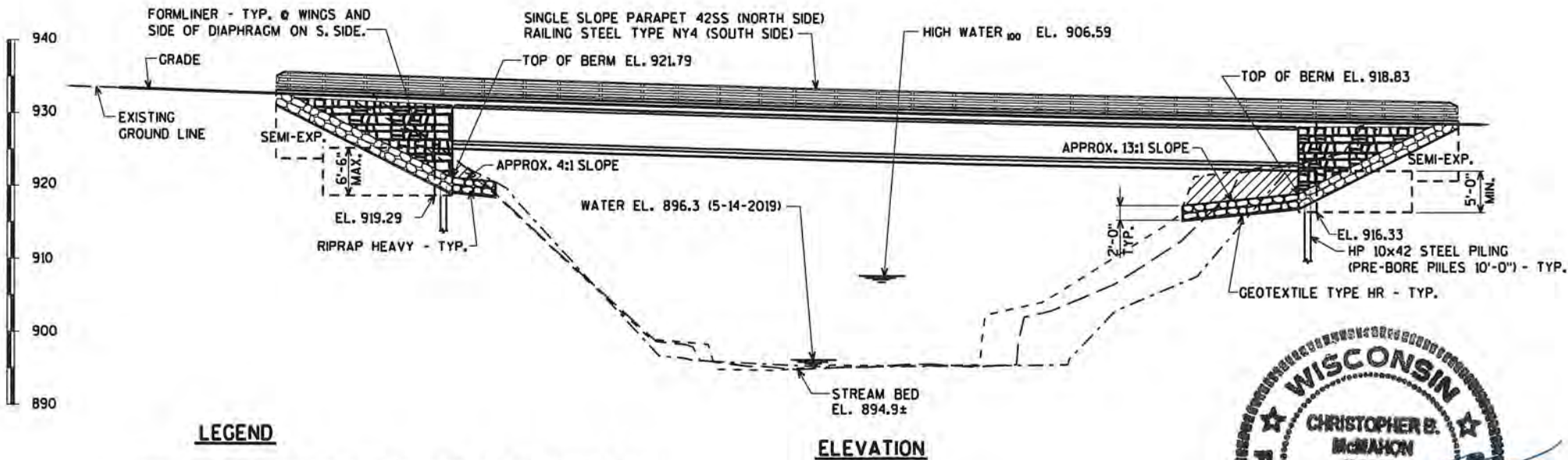
◇ OBSERVATION PLATFORM.

FOR TYPICAL SECTION,  
AND DESIGN DATA  
SEE SHEET 2

## LIST OF DRAWINGS

1. GENERAL PLAN
2. TYPICAL SECTION AND DESIGN DATA
3. QUANTITIES, NOTES AND DETAILS
4. SUBSURFACE EXPLORATION
5. WEST ABUTMENT
6. WEST ABUTMENT PILE LAYOUT
7. WEST ABUTMENT WING 1 DETAILS
8. WEST ABUTMENT WING 2 DETAILS
9. WEST ABUTMENT DETAILS AND BILL OF BARS
10. EAST ABUTMENT
11. EAST ABUTMENT PILE LAYOUT
12. EAST ABUTMENT WING 3 DETAILS
13. EAST ABUTMENT WING 4 DETAILS
14. EAST ABUTMENT DETAILS AND BILL OF BARS
15. 72W" PRESTRESSED GIRDER DETAILS
16. 72W" PRESTRESSED GIRDER DETAILS
17. STEEL DIAPHRAGM
18. SUPERSTRUCTURE
19. SUPERSTRUCTURE PLAN
20. SUPERSTRUCTURE DETAILS & BILL OF BARS
21. SINGLE SLOPE PARAPET 42SS
22. RAILING STEEL TYPE NY4
23. END POST DETAILS FOR RAILING STEEL TYPE NY4

/// COST OF EXCAVATION IN THE HATCHED  
AREA SHALL BE INCLUDED IN THE CONTRACT  
LUMP SUM PRICE FOR "EXCAVATION FOR  
STRUCTURES BRIDGES B-18-238".



## LEGEND

- EXISTING GROUND LINE AT DOWNSTREAM FACE OF PROPOSED BRIDGE.
- EXISTING GROUND LINE AT CENTERLINE OF PROPOSED BRIDGE.
- EXISTING GROUND LINE AT UPSTREAM FACE OF PROPOSED BRIDGE.

## ELEVATION

BRIDGE OFFICE CONTACT:  
AARON BONK  
(608)-261-0261CONSULTANT CONTACT:  
CHRIS MCMAHON  
(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 <i>Chris McMahon</i> SDR 11/24/20 CHIEF STRUCTURES DESIGN ENGINEER DATE			
STRUCTURE B-18-238			
CTH V OVER BRIDGE CREEK			
COUNTY	EAU CLAIRE	TOWN/CITY/VILLAGE	BRIDGE CREEK
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS			
DESIGNED BY	AEB	DRAWN BY	JLB
CHECKED BY	CLB	PLANS CKD.	CLB
GENERAL PLAN			SHEET 1 OF 23

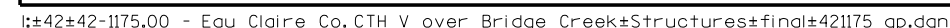
I.D.

DATE:

8/11/2020  
PENTABLE:BRQU\_Sht Util.TblDATE: 8/21/2020  
CHECKED BY: BACK CHECKED BY: CORRECTED BY:

8

8





10/27/2020  
PENTABLE:Breou...shd\_util.tbl

TOTAL ESTIMATED QUANTITIES

STATE PROJECT NUMBER

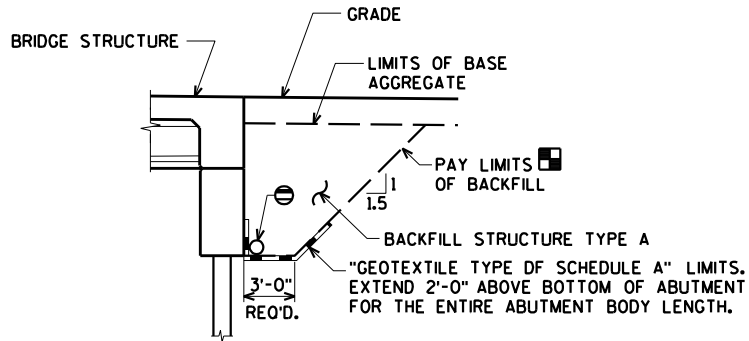
7831-07-70

BID ITEM NUMBER	BID ITEMS	UNIT	W. ABUT.	E. ABUT.	SUPER.	TOTAL	GROUP 0020	GROUP 0030
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STATION 10+01	LS	-----	-----	-----	1	1	-----
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-18-238	LS	-----	-----	-----	1	1	-----
210.1500	BACKFILL STRUCTURE TYPE A	TON	385	385	-----	770	640	130
502.0100	CONCRETE MASONRY BRIDGES	CY	61	55	238	354	298	56
502.3200	PROTECTIVE SURFACE TREATMENT	SY	-----	-----	525	525	435	90
502.3210	PIGMENTED SURFACE SEALER	SY	15	10	60	85	85	-----
503.0172	PRESTRESSED GIRDER TYPE I 72W-INCH	LF	-----	-----	484	484	484	-----
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	3,530	3,330	-----	6,860	5,750	1,110
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	5,530	4,600	36,580	46,710	37,490	9,220
506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	-----	-----	8	8	8	-----
506.4000	STEEL DIAPHRAGMS B-18-238	EACH	-----	-----	6	6	6	-----
513.7084	RAILING STEEL TYPE NY4	LF	23.5	21.5	123	168	168	-----
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	14	13	-----	27	27	-----
517.1015.S	CONCRETE STAINING MULTI COLOR B-18-238	SF	105	95	35	235	-----	235
517.1050.S	ARCHITECTURAL SURFACE TREATMENT B-18-238	SF	105	95	35	235	-----	235
550.0020	PRE-BORING ROCK OR CONSOLIDATED MATERIALS	LF	120	120	-----	240	220	20
550.1100	PILING STEEL HP 10-INCH x 42 LB	LF	145	145	-----	290	266	24
606.0300	RIPRAP HEAVY	CY	30	70	-----	100	95	5
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	85	80	-----	165	155	10
614.0150	ANCHOR ASSEMBLIES FOR PLATE BEAM GUARD	EACH	1	1	-----	2	2	-----
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	30	30	-----	60	50	10
645.0120	GEOTEXTILE TYPE HR	SY	95	160	-----	255	240	15
	NON-BID ITEMS							
	FILLER	SIZE	-----	-----	-----	1/2" & 3/4"	-----	1/2" & 3/4"

⊗ WINGS AND SIDE OF DIAPHRAGM ON SOUTH SIDE ONLY.

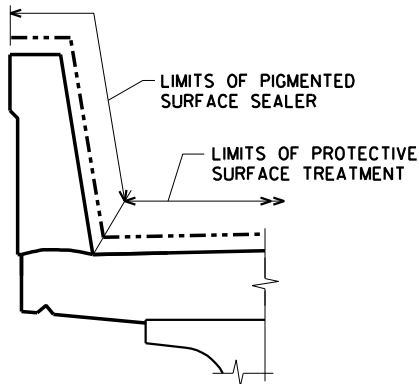
GENERAL NOTES

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.  
ELASTOMERIC BEARING PADS NEED NOT BE INDIVIDUALLY MOLDED PROVIDED THE CUT EDGES ARE SMOOTH AND TRUE.  
THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-18-238" SHALL BE THE EXISTING GROUNDLINE.  
THE EXISTING STRUCTURE, B-18-983, TO BE REMOVED, IS A TWO SPAN STEEL DECK GIRDER BRIDGE, 139 FT. LONG WITH A 24 FT. CLEAR ROADWAY WIDTH.  
AT BACKFACE 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 AND PIGMENTED SURFACE SEALER IS TO BE APPLIED AS SHOWN IN DETAIL ON THIS SHEET.  
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 EXCAVATION FOR STRUCTURES.  
THE HAUNCH CONCRETE QUANTITY IS BASED ON THE AVERAGE HAUNCH SHOWN ON THE PRESTRESSED GIRDER DETAILS SHEET.  
BEVEL EXPOSED EDGES OF CONCRETE 3/4" UNLESS NOTED OTHERWISE.

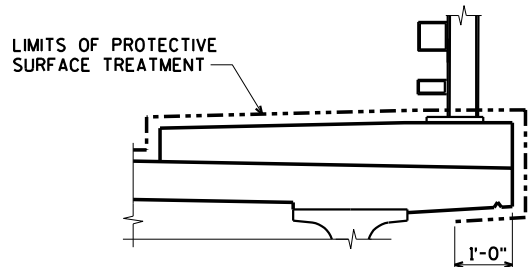


BACKFILL STRUCTURE LIMITS

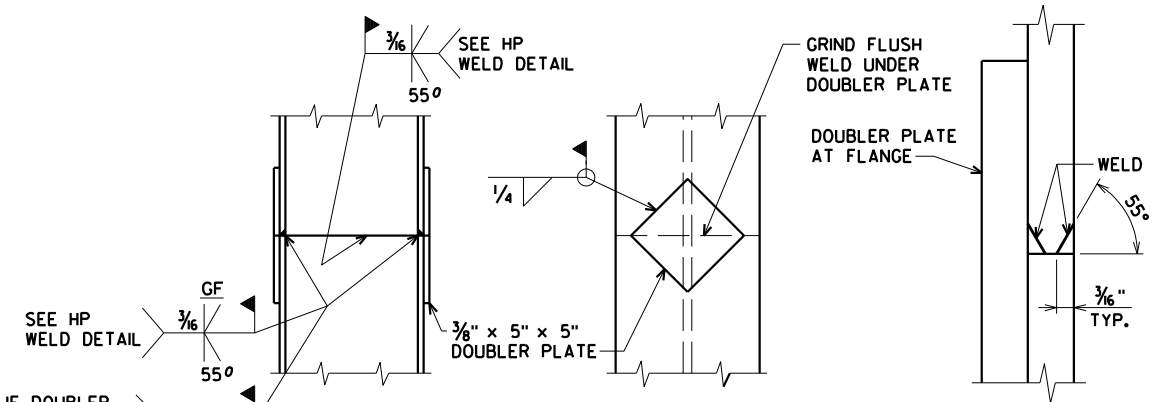
- BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.
- PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON SHEET 9.



PROTECTIVE SURFACE TREATMENT AND PIGMENTED SURFACE SEALER DETAILS



PROTECTIVE SURFACE TREATMENT DETAIL



HP 10 x 42 SPLICE DETAIL

HP WELD DETAIL  
FLANGE SHOWN, WEB SIMILAR

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
DRAWN BY C.JM/CLP		PLANS CK'D.	CBM
QUANTITIES, NOTES AND DETAILS		SHEET 3 OF 23	

ORIGINAL PLANS PREPARED BY  
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Eau Claire, WI 54701  
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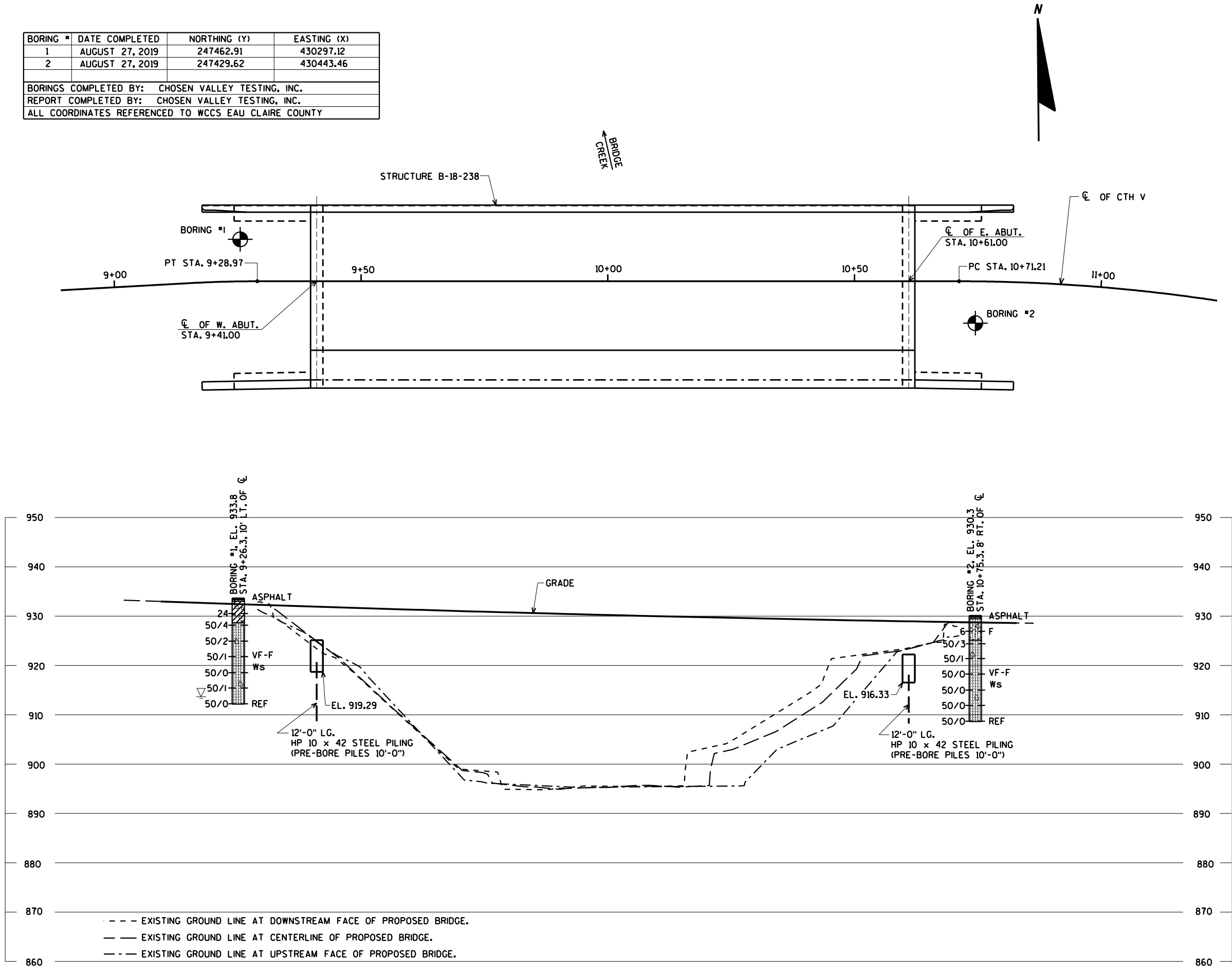
8/21/2020  
PENTABLE:BRedu\_shd\_util.tbl

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
1	AUGUST 27, 2019	247462.91	430297.12
2	AUGUST 27, 2019	247429.62	430443.46

BORINGS COMPLETED BY: CHOSEN VALLEY TESTING, INC.

REPORT COMPLETED BY: CHOSEN VALLEY TESTING, INC.

ALL COORDINATES REFERENCED TO WCCS EAU CLAIRE COUNTY



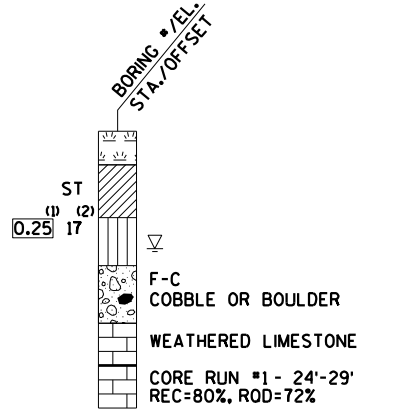
STATE PROJECT NUMBER

7831-07-70

MATERIAL SYMBOLS

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

LEGEND OF BORING



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

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

GROUND WATER ELEVATION

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

ABBREVIATIONS

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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

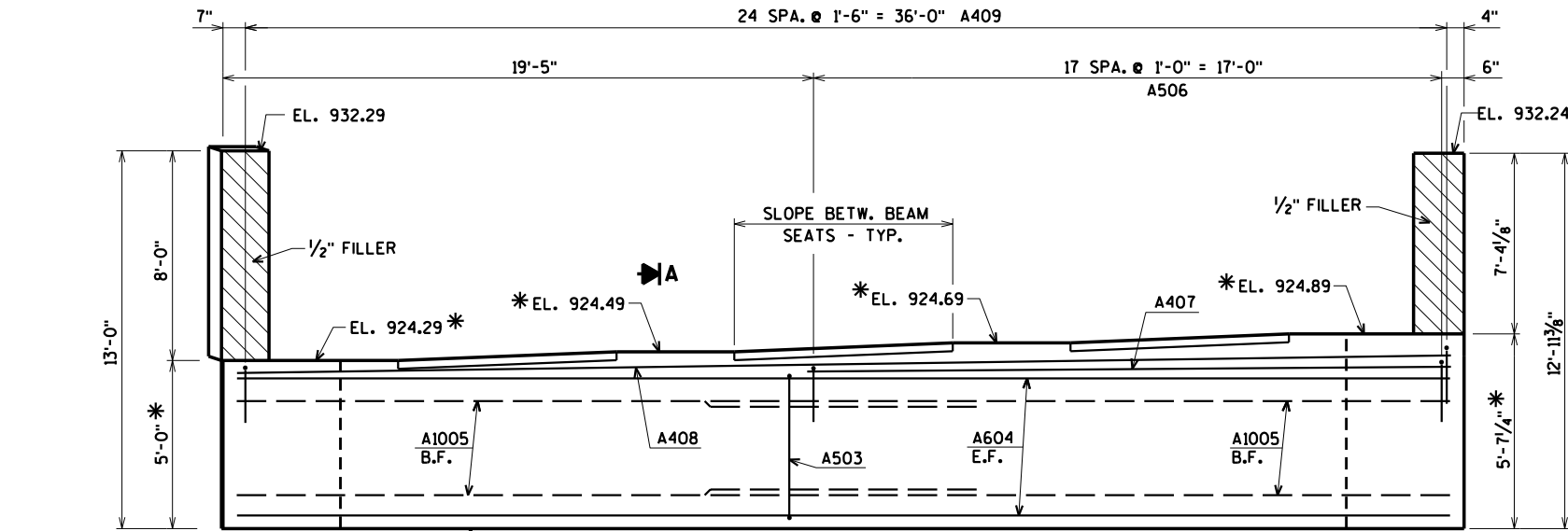
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
DRAWN BY		CLP	PLANS CK'D. CBM
SUBSURFACE EXPLORATION		SHEET 4 OF 23	

NOTE: SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF  
1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT  
SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)

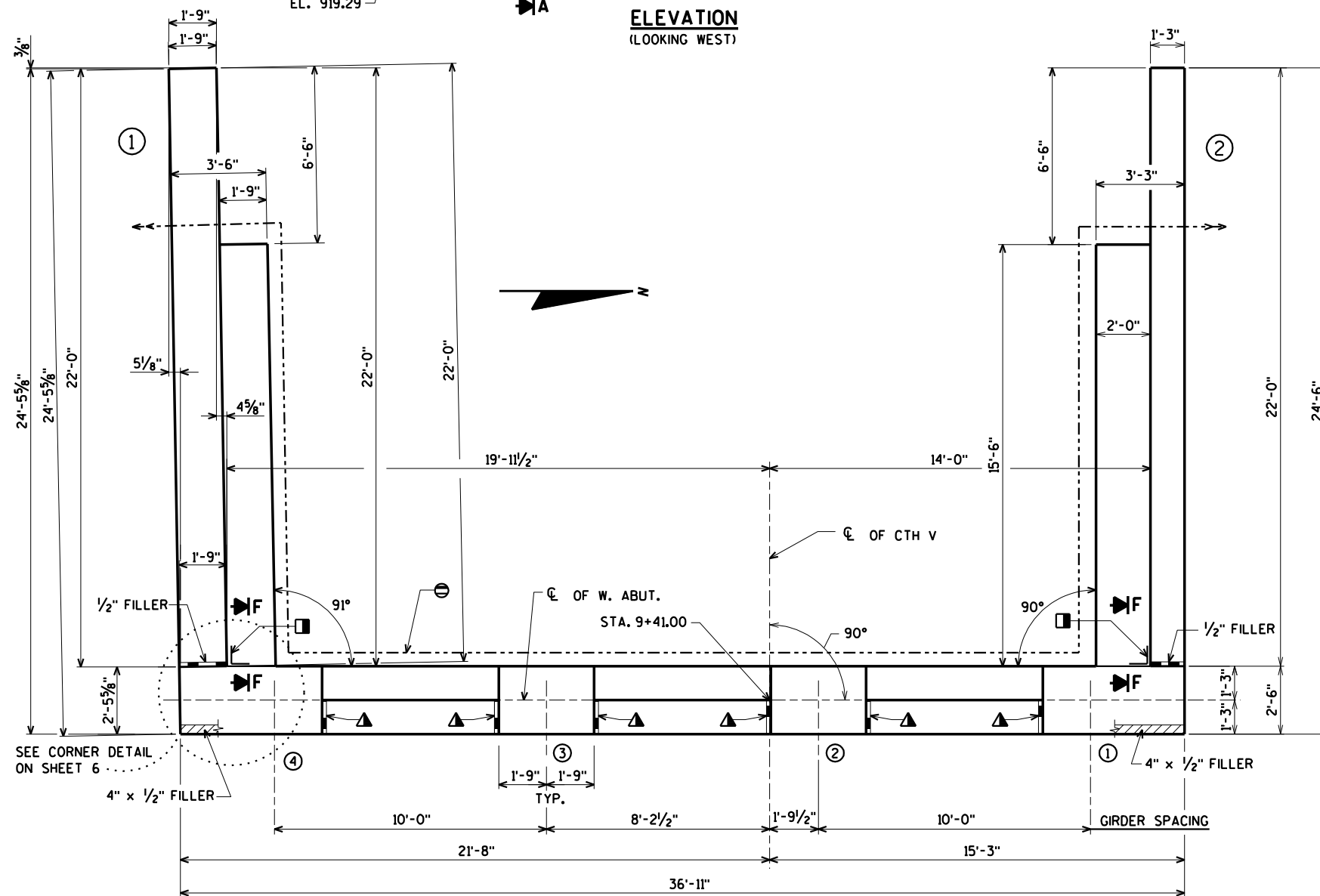
\* ELEVATIONS AND DIMENSIONS  
TAKEN AT C OF ABUT.

STATE PROJECT NUMBER

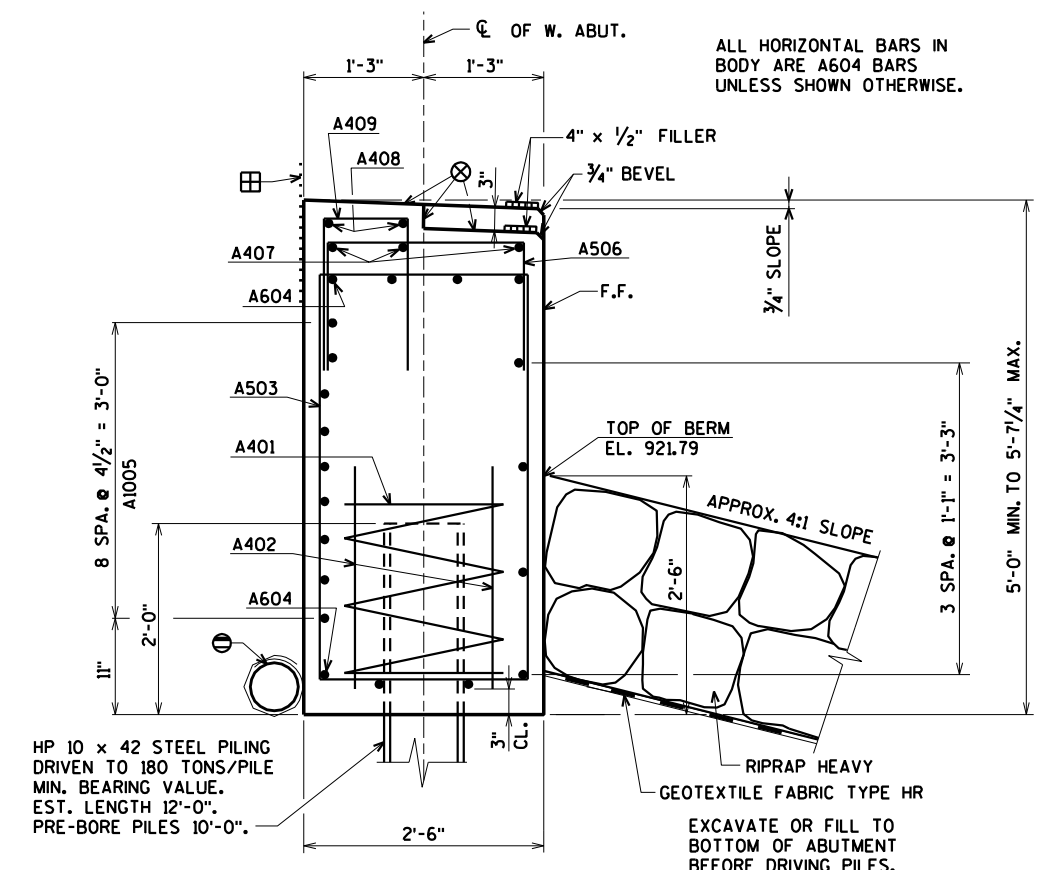
7831-07-70



ELEVATION  
(LOOKING WEST)

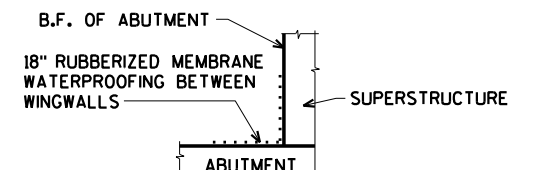


PLAN



SECTION A

HP 10 x 42 STEEL PILING  
DRIVEN TO 180 TONS/PILE  
MIN. BEARING VALUE.  
EST. LENGTH 12'-0".  
PRE-BORE PILES 10'-0".



SECTION F

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

PIPE UNDERDRAIN WRAPPED 6-INCH, SLOPE 0.5%  
MIN. TO SUITABLE DRAINAGE. ATTACH RODENT  
SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED  
ON SHEET 9. RODENT SHIELD TO BE INCIDENTAL TO  
BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".

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

3/4" CORK FILLER ON VERTICAL BEAM SEAT FACES  
THAT RUN PARALLEL WITH GIRDER.

18" RUBBERIZED MEMBRANE WATERPROOFING  
SEAL ALL HORIZONTAL AND VERTICAL JOINTS  
ON BACK FACE OF ABUTMENT.

FOR PILE SPLICE DETAIL SEE SHEET 3.

F.F. DENOTES FRONT FACE

B.F. DENOTES BACK FACE

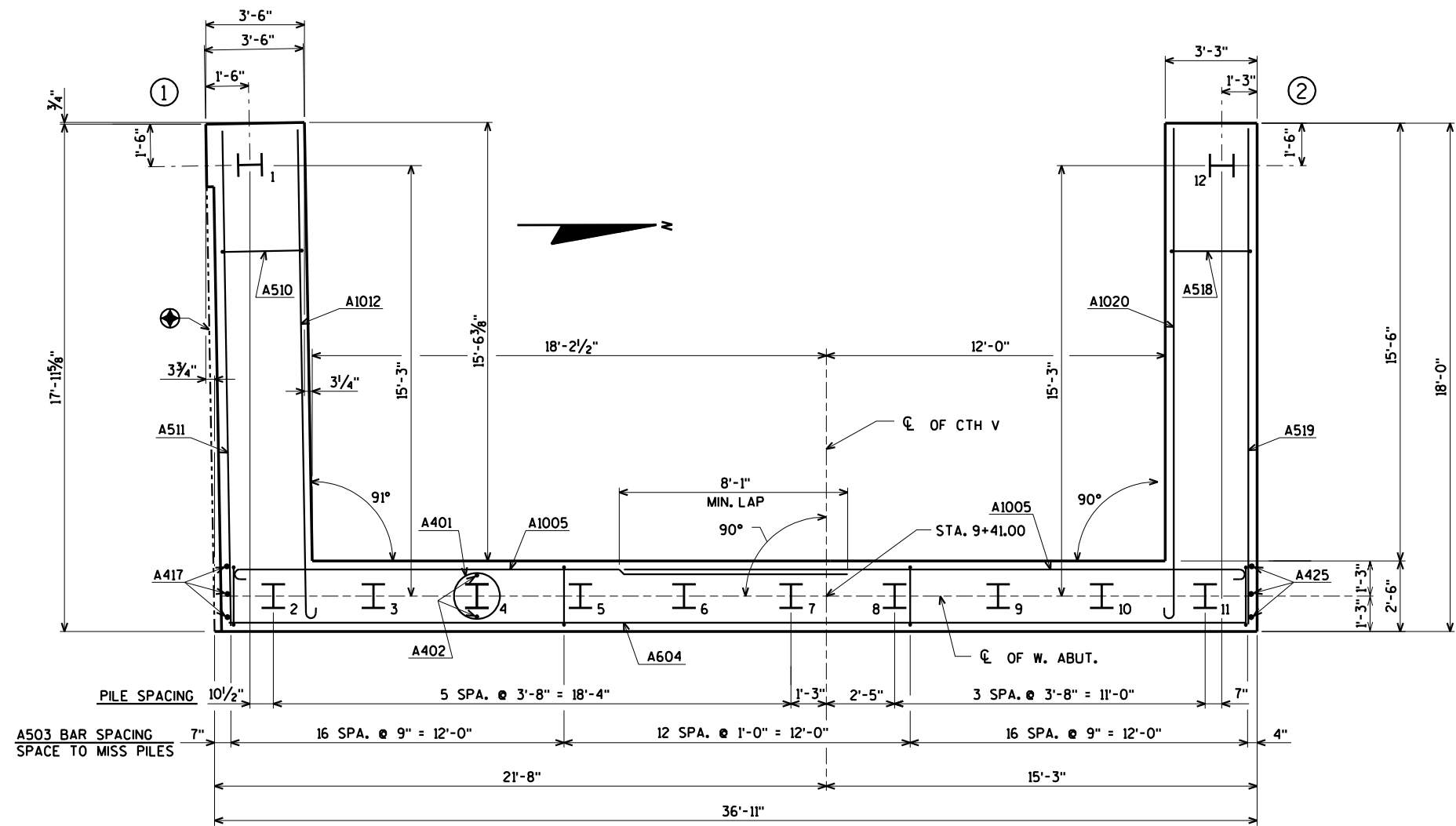
E.F. DENOTES EACH FACE

ORIGINAL PLANS PREPARED BY

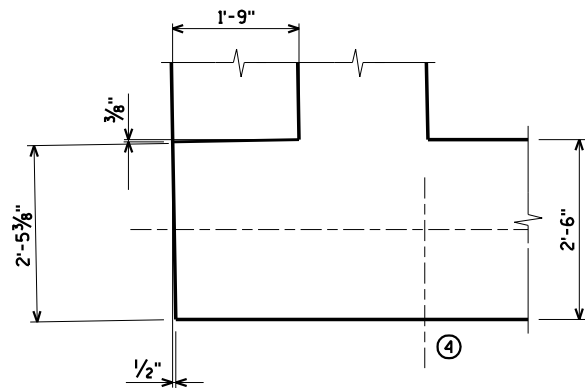
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STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
DRAWN BY		CLP	PLANS CK'D. CBM
WEST ABUTMENT		SHEET 5 OF 23	



PILE LAYOUT



DETAIL AT WING 1 CORNER

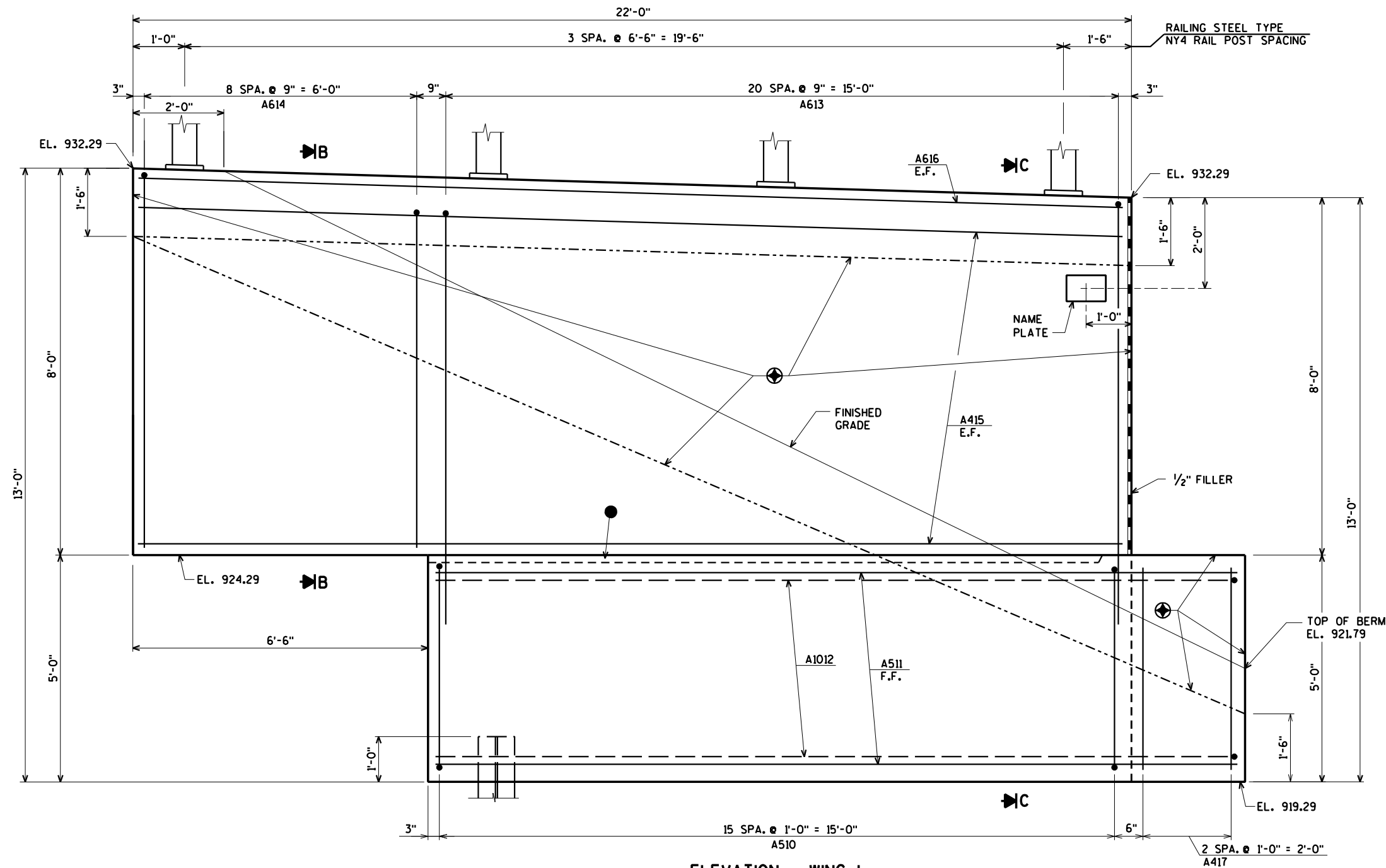
FORMLINER  
SEE SHEET 2 FOR DETAILS

FOR PILE SPLICE DETAIL SEE SHEET 3.

8/12/2020  
PENTABLE:BRRedu\_shd\_util.tbl

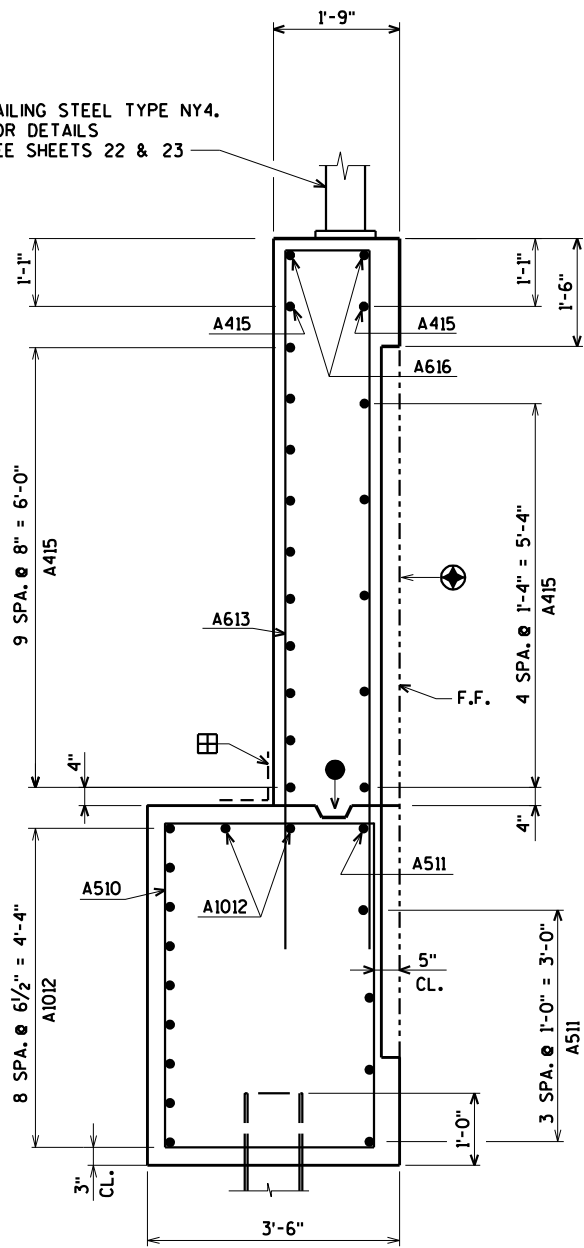
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
DRAWN BY		CLP	PLANS CK'D. CBM
WEST ABUTMENT PILE LAYOUT			SHEET 6 OF 23

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ELEVATION - WING 1

RAILING STEEL TYPE NY4.  
FOR DETAILS  
SEE SHEETS 22 & 23



SECTION C

FOR SECTION B SEE SHEET 9.

- ◉ FORMLINER  
SEE SHEET 2 FOR DETAILS
- OPTIONAL CONST. JOINT FORMED BY  
BEVELED 2" x 6" KEYWAY WITH  
MEMBRANE ON BACKFACE.
- ◻ 18" RUBBERIZED MEMBRANE WATERPROOFING  
SEAL ALL HORIZONTAL AND VERTICAL JOINTS  
ON BACKFACE OF ABUTMENT.

FOR PILE SPLICE DETAIL SEE SHEET 3.

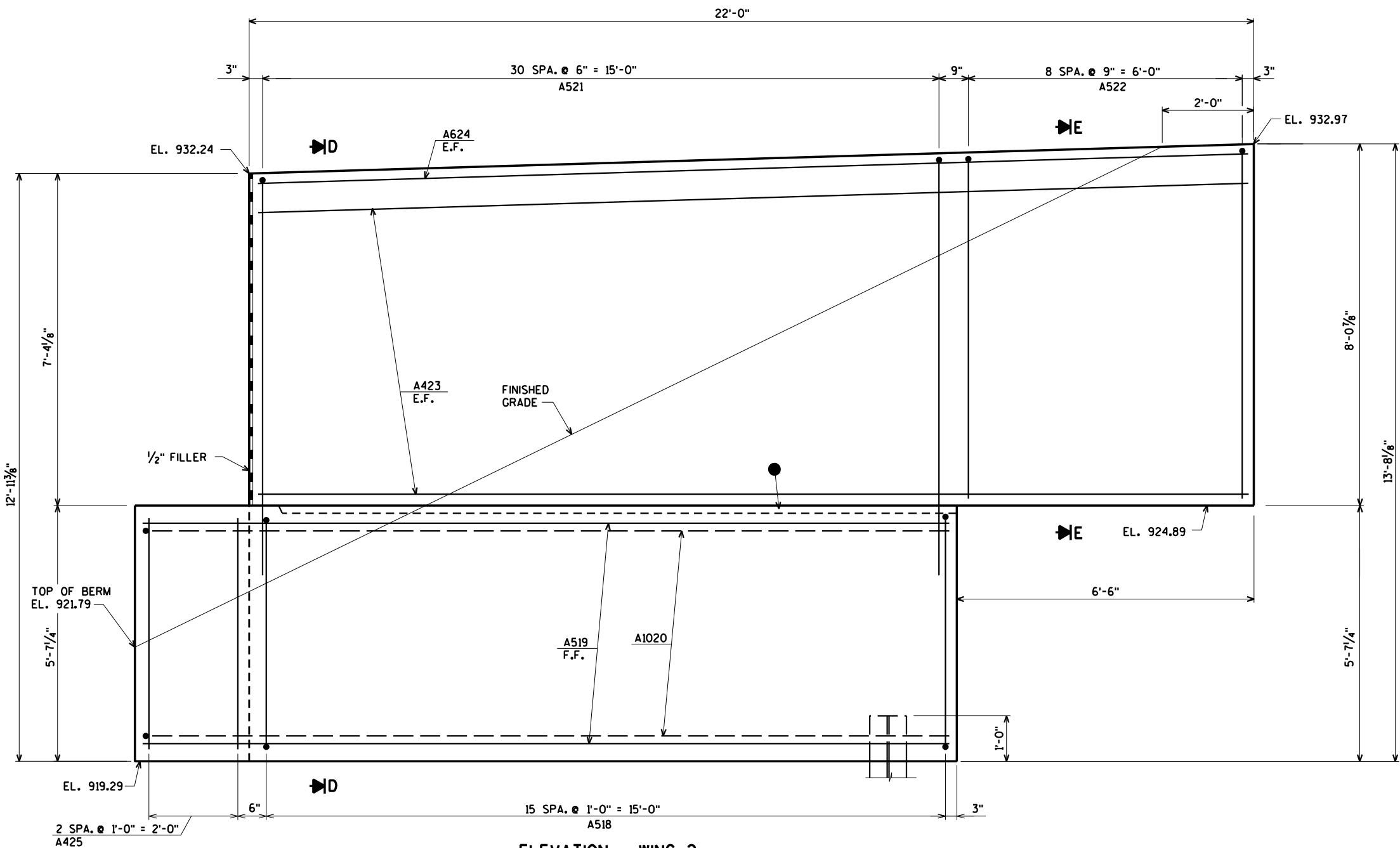
F.F. DENOTES FRONT FACE

E.F. DENOTES EACH FACE

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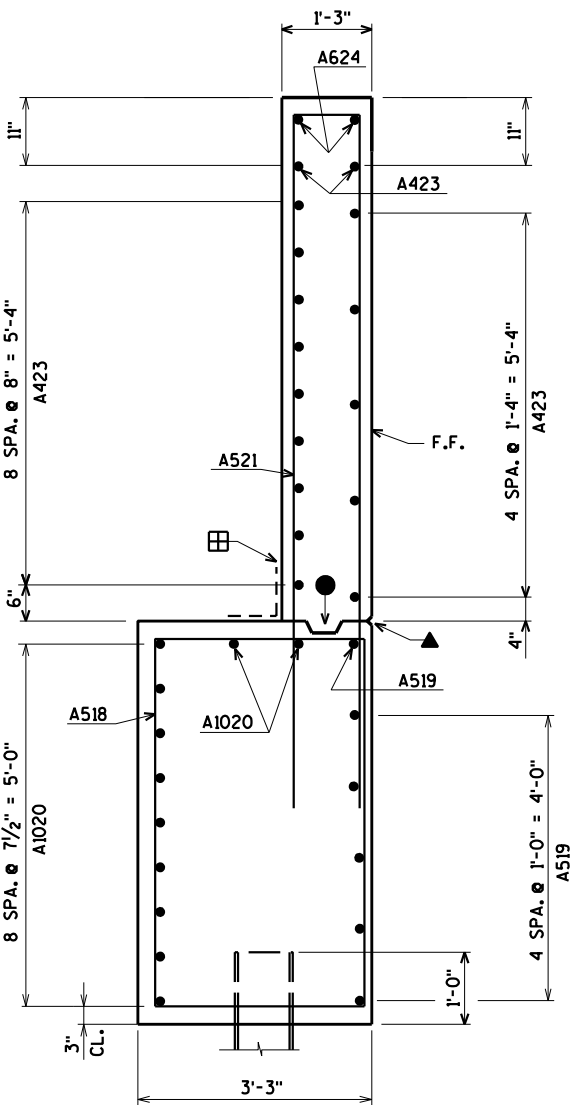
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
DRAWN BY	CLP	PLANS CK'D.	CBM
WEST ABUTMENT WING 1 DETAILS			SHEET 7 OF 23





ELEVATION - WING 2

SINGLE SLOPE 42SS PARAPET  
NOT SHOWN, FOR DETAILS  
SEE SHEET 21



SECTION D

FOR SECTION E SEE SHEET 9.

▲ 3/4" 'V' GROOVE ON FRONT FACE  
OF WINGWALL.

● OPTIONAL CONST. JOINT FORMED BY  
BEVELED 2" x 6" KEYWAY WITH  
MEMBRANE ON BACKFACE.

▣ 18" RUBBERIZED MEMBRANE WATERPROOFING  
SEAL ALL HORIZONTAL AND VERTICAL JOINTS  
ON BACKFACE OF ABUTMENT.

FOR PILE SPLICE DETAIL SEE SHEET 3.

F.F. DENOTES FRONT FACE

E.F. DENOTES EACH FACE

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STRUCTURE B-18-238			
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WEST ABUTMENT WING 2 DETAILS			SHEET 8 OF 23

[illegible][illegible]

## SECTION B

SINGLE SLOPE 42SS PARAPET  
NOT SHOWN. FOR DETAILS  
SEE SHEET 21

1'-3"

A624

11"

A423

A522

8 SPA. @ 8" = 5'-4"

A423

6"

4 SPA. @ 1'-4" = 5'-4"

A423

F.F.

4"

## SECTION E

6" NOMINAL

\*

G

G

3/8" MAX.

SECTION G-G

1 1/2"

**SECTION G-G**

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

### RODENT SHIELD DETAIL

The diagram illustrates a cable tray layout with seven cable runs. The runs are labeled with their lengths and the corresponding equipment they connect. The lengths are 1'-8", 1'-8", 9'-10", 7'-7", 9'-9", and 7'-5". The equipment labels are 2'-2" A506, 11" A409, 1'-2" A613, 1'-2" A614, 11" A521, and 11" A522. A red box highlights the 7'-5" run.

Run Length	Equipment
1'-8"	2'-2" A506
1'-8"	11" A409
9'-10"	1'-2" A613
7'-7"	1'-2" A614
9'-9"	11" A521
7'-5"	11" A522

22'-3"

STD. 180° HOOK

A1005

17'-8"

STD. 180° HOOK

$\frac{A1012}{A1020}$

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
DRAWN BY		CLP	PLANS CK'D. CBM
WEST ABUTMENT DETAILS AND BILL OF BARS		SHEET 9 OF 23	

8

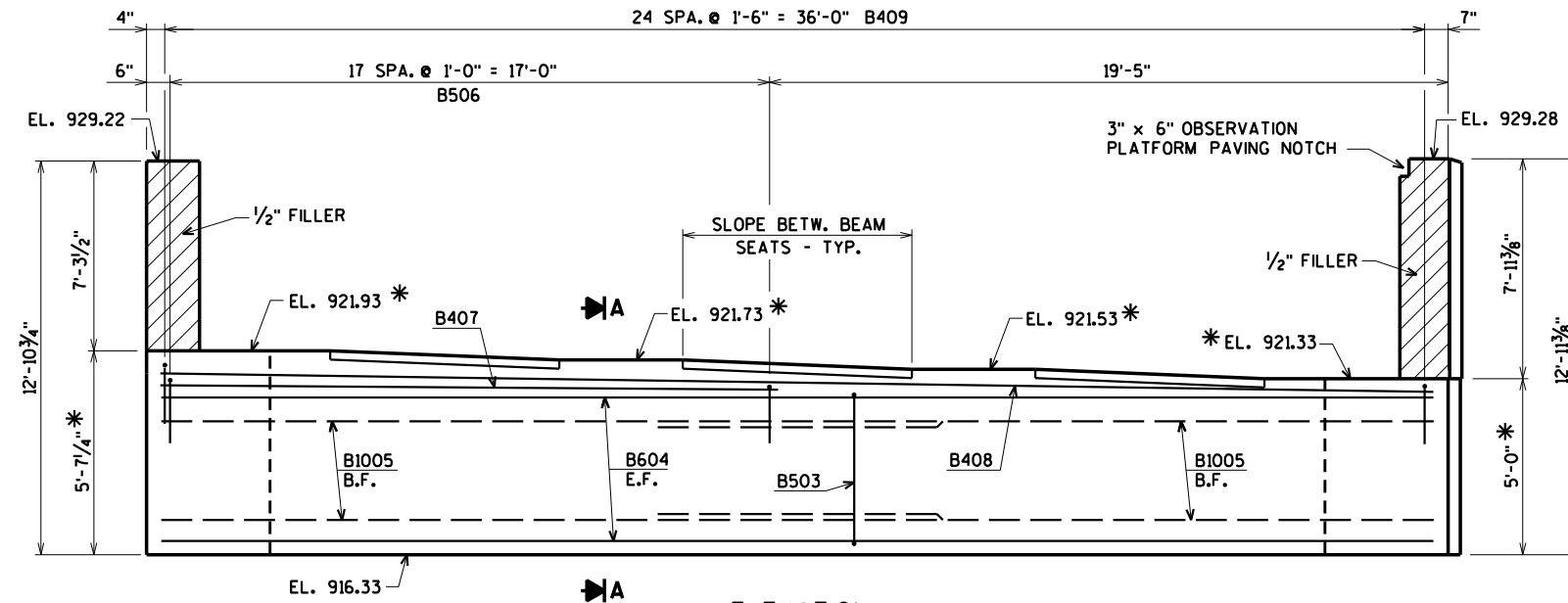
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NOTE: SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)

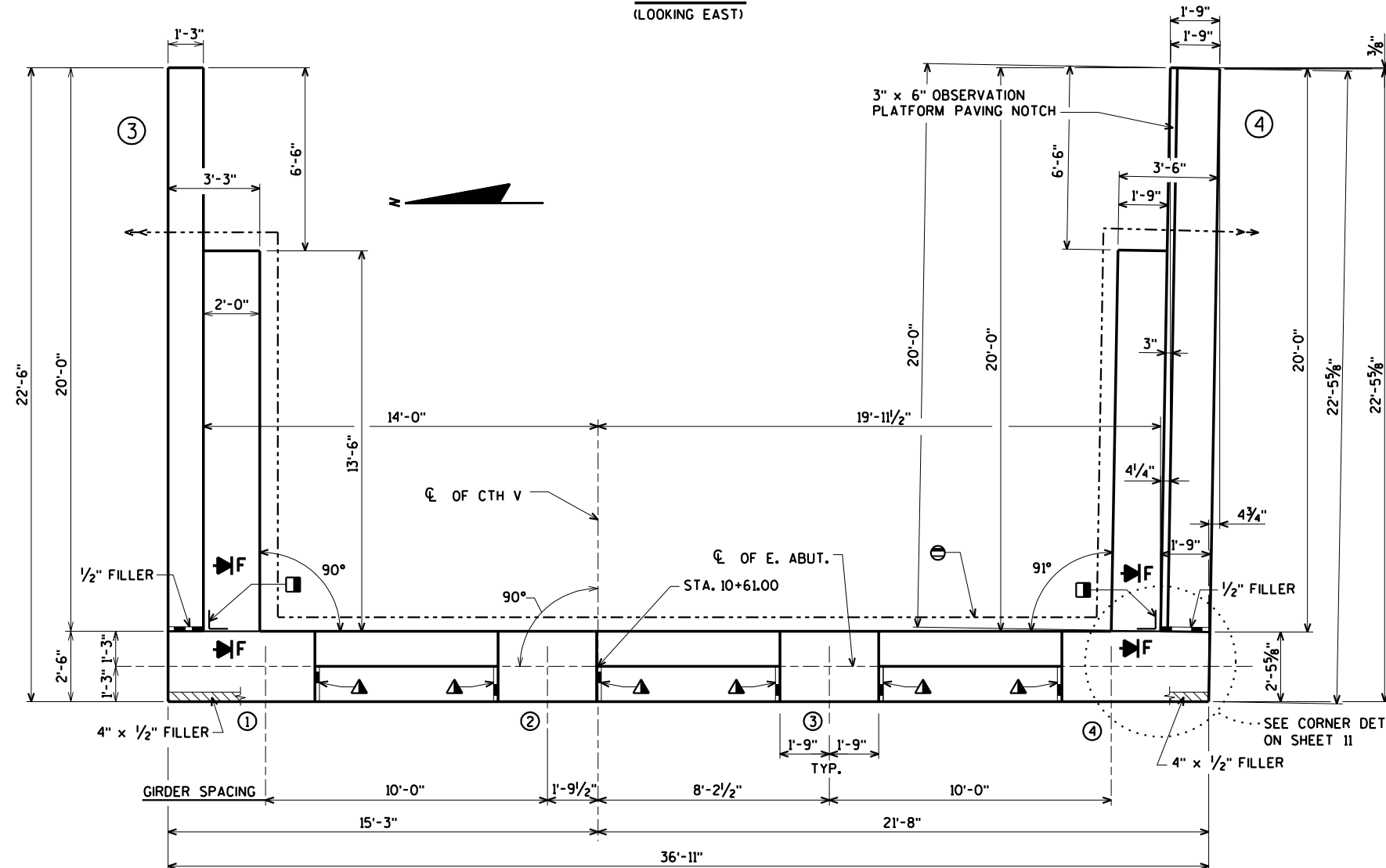
\* ELEVATIONS AND DIMENSIONS TAKEN AT C OF ABUT.

STATE PROJECT NUMBER

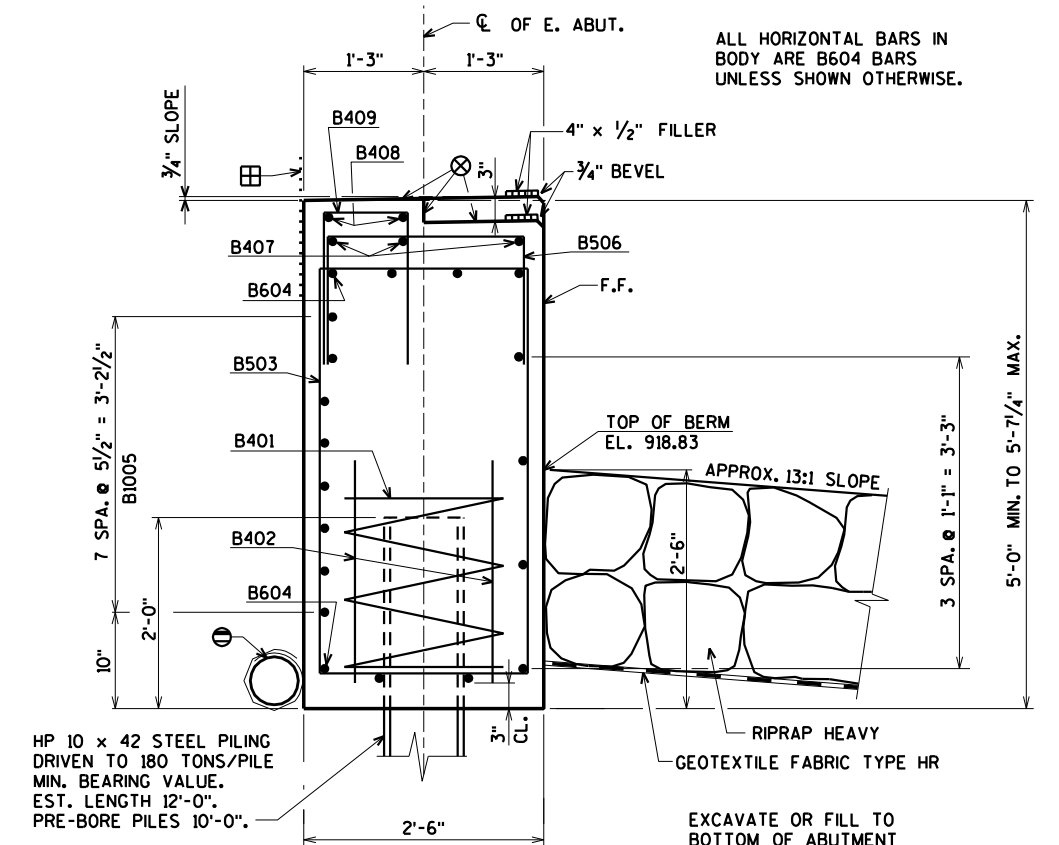
7831-07-70



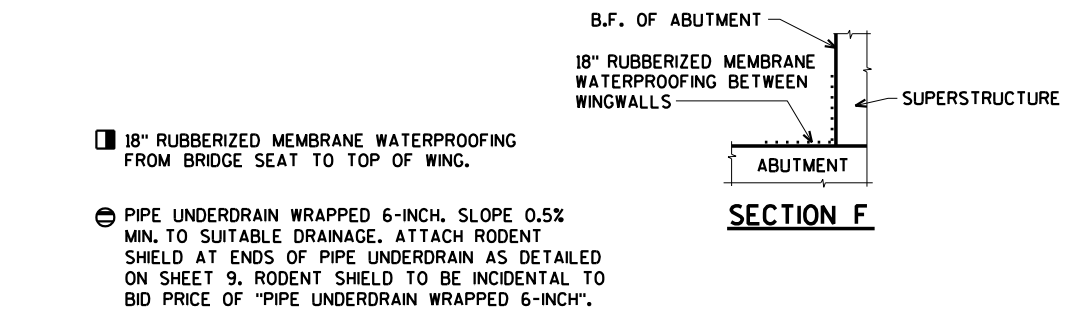
ELEVATION  
(LOOKING EAST)



PLAN



SECTION A



SECTION F

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

PIPE UNDERDRAIN WRAPPED 6-INCH, SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON SHEET 9. RODENT SHIELD TO BE INCIDENTAL TO BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".

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

3/4" CORK FILLER ON VERTICAL BEAM SEAT FACES THAT RUN PARALLEL WITH GIRDER.

18" RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACK FACE OF ABUTMENT.

FOR PILE SPLICE DETAIL SEE SHEET 3.

F.F. DENOTES FRONT FACE

B.F. DENOTES BACK FACE

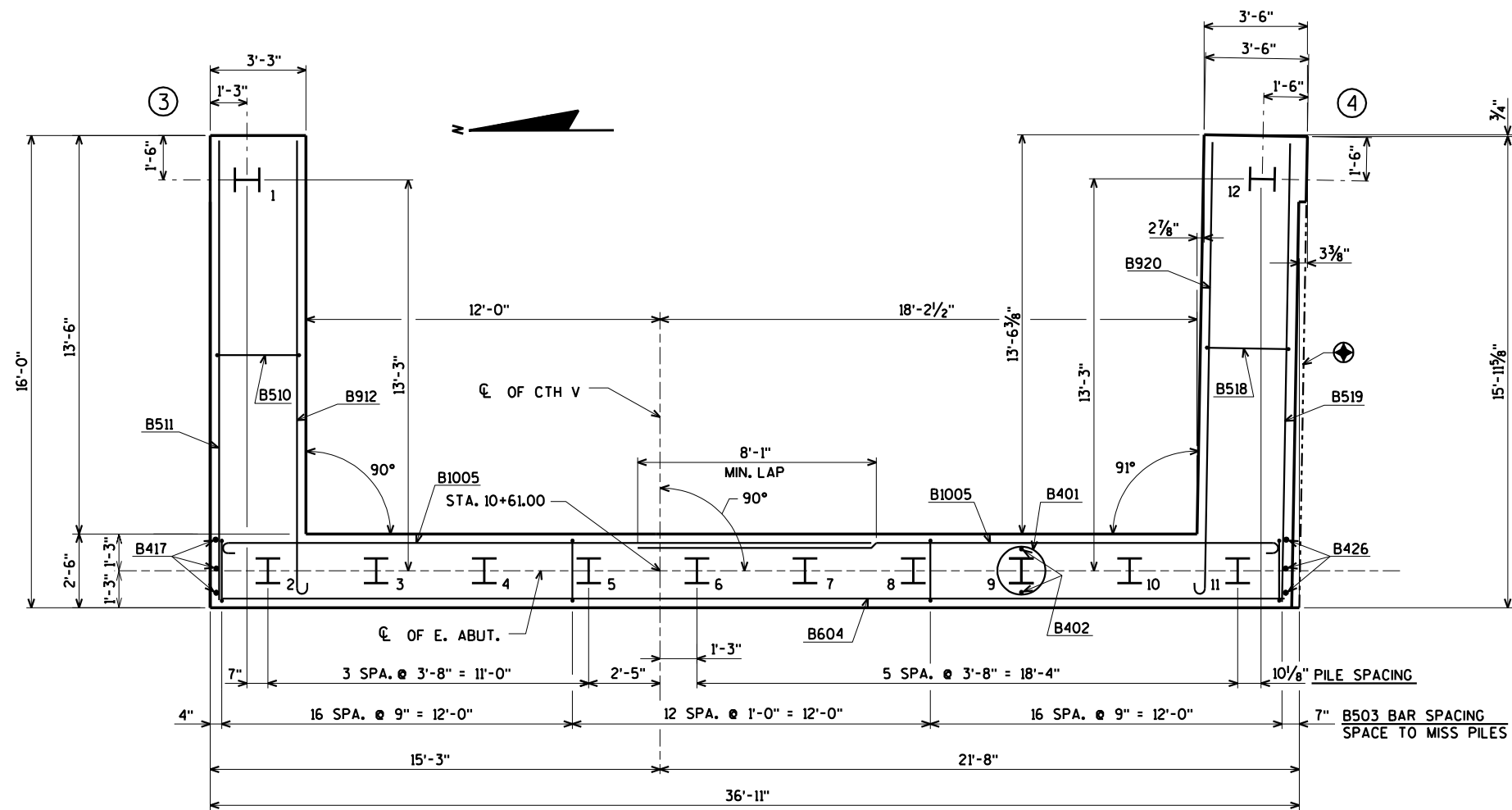
E.F. DENOTES EACH FACE

ORIGINAL PLANS PREPARED BY

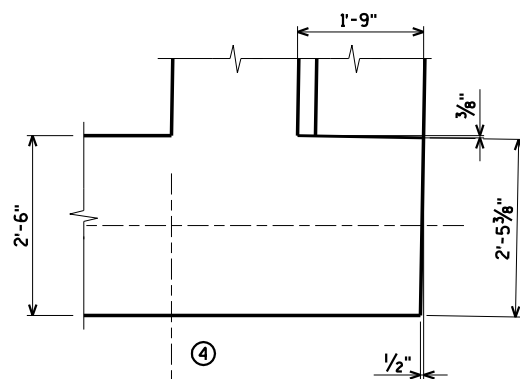
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STRUCTURE B-18-238			
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EAST ABUTMENT			SHEET 10 OF 23



PILE LAYOUT



DETAIL AT WING 4 CORNER

FORMLINER  
SEE SHEET 2 FOR DETAILS

FOR PILE SPLICE DETAIL SEE SHEET 3.

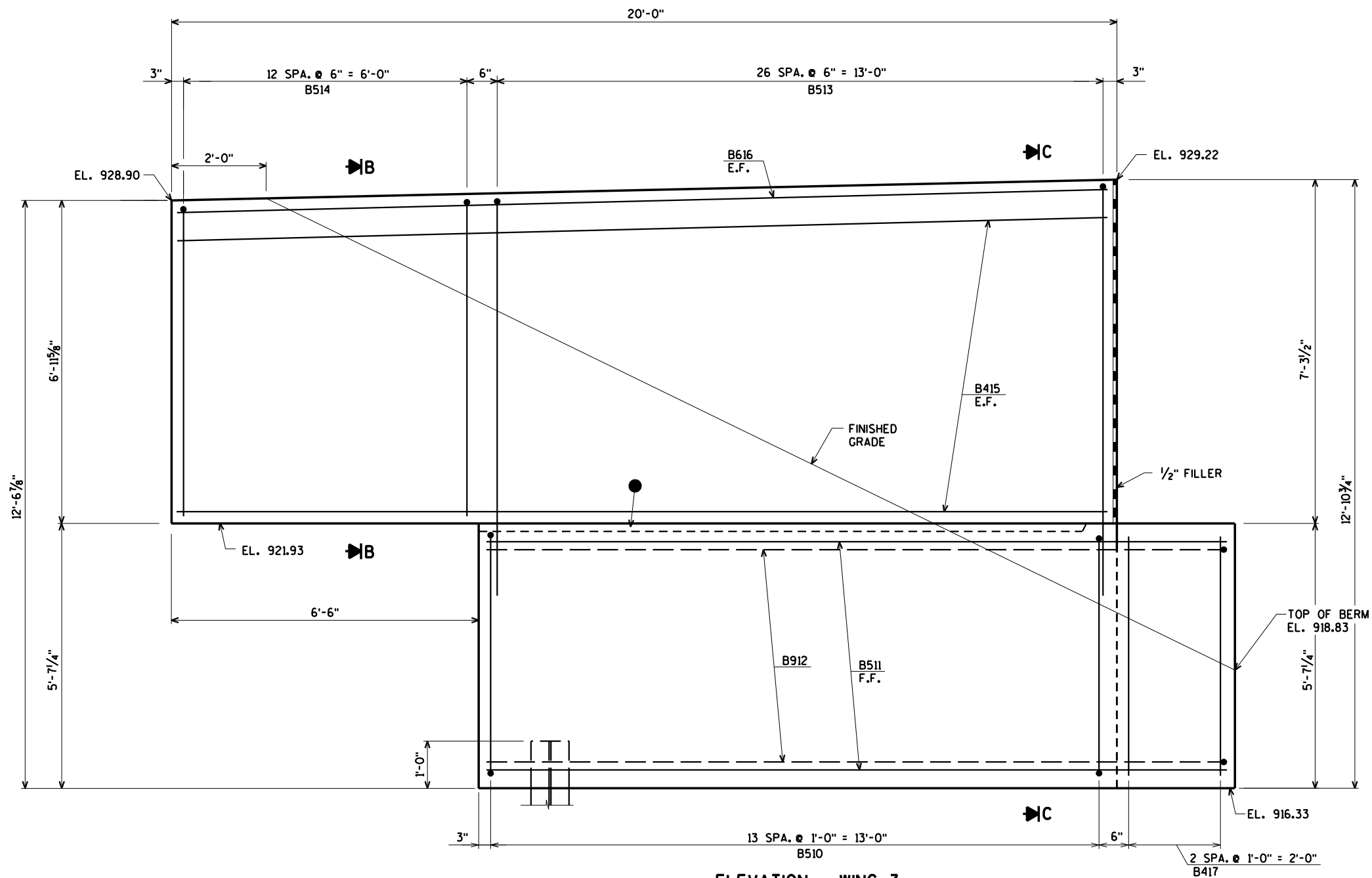
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
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EAST ABUTMENT PILE LAYOUT			SHEET 11 OF 23

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8



ELEVATION - WING 3

FOR SECTION B SEE SHEET 14

▲ 3/4" 'V' GROOVE ON FRONT FACE OF WINGWALL.

● OPTIONAL CONST. JOINT FORMED BY BEVELED 2" x 6" KEYWAY WITH MEMBRANE ON BACKFACE.

▣ 18" RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE OF ABUTMENT.

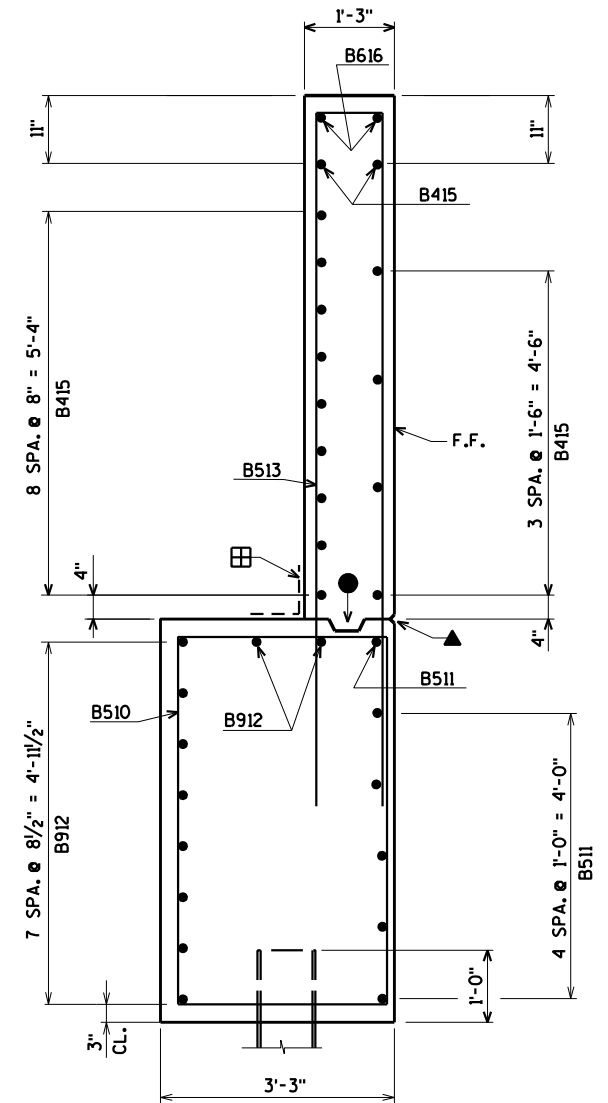
FOR PILE SPLICE DETAIL SEE SHEET 3.

F.F. DENOTES FRONT FACE

E.F. DENOTES EACH FACE

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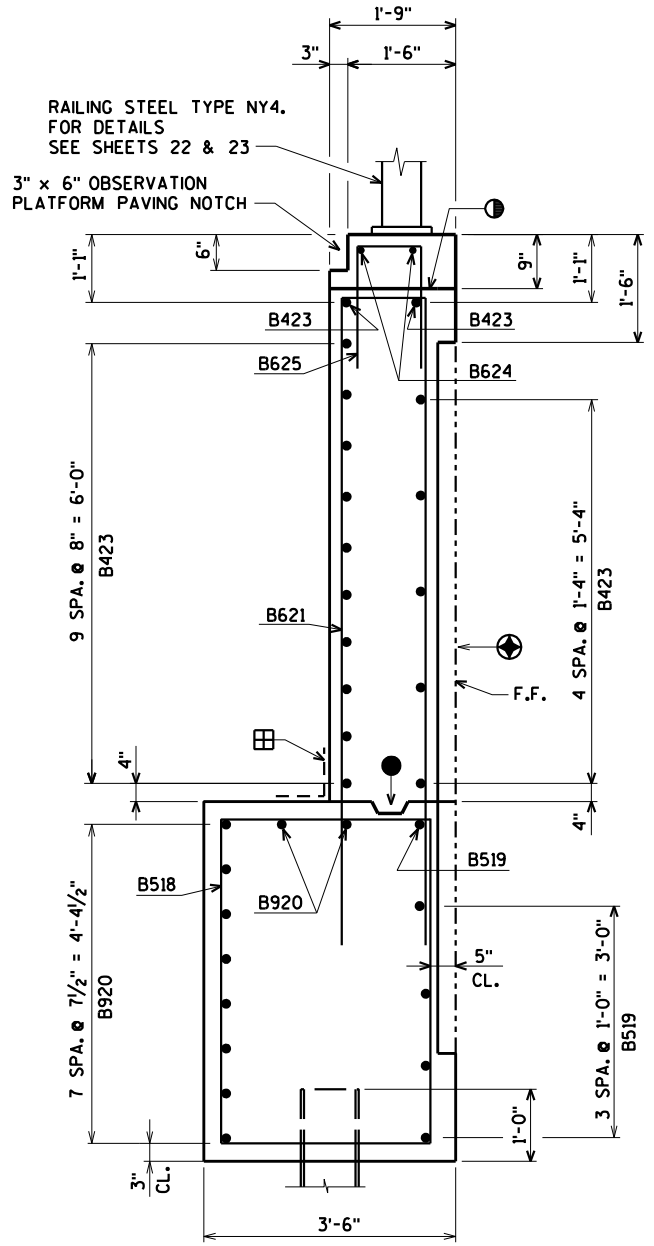
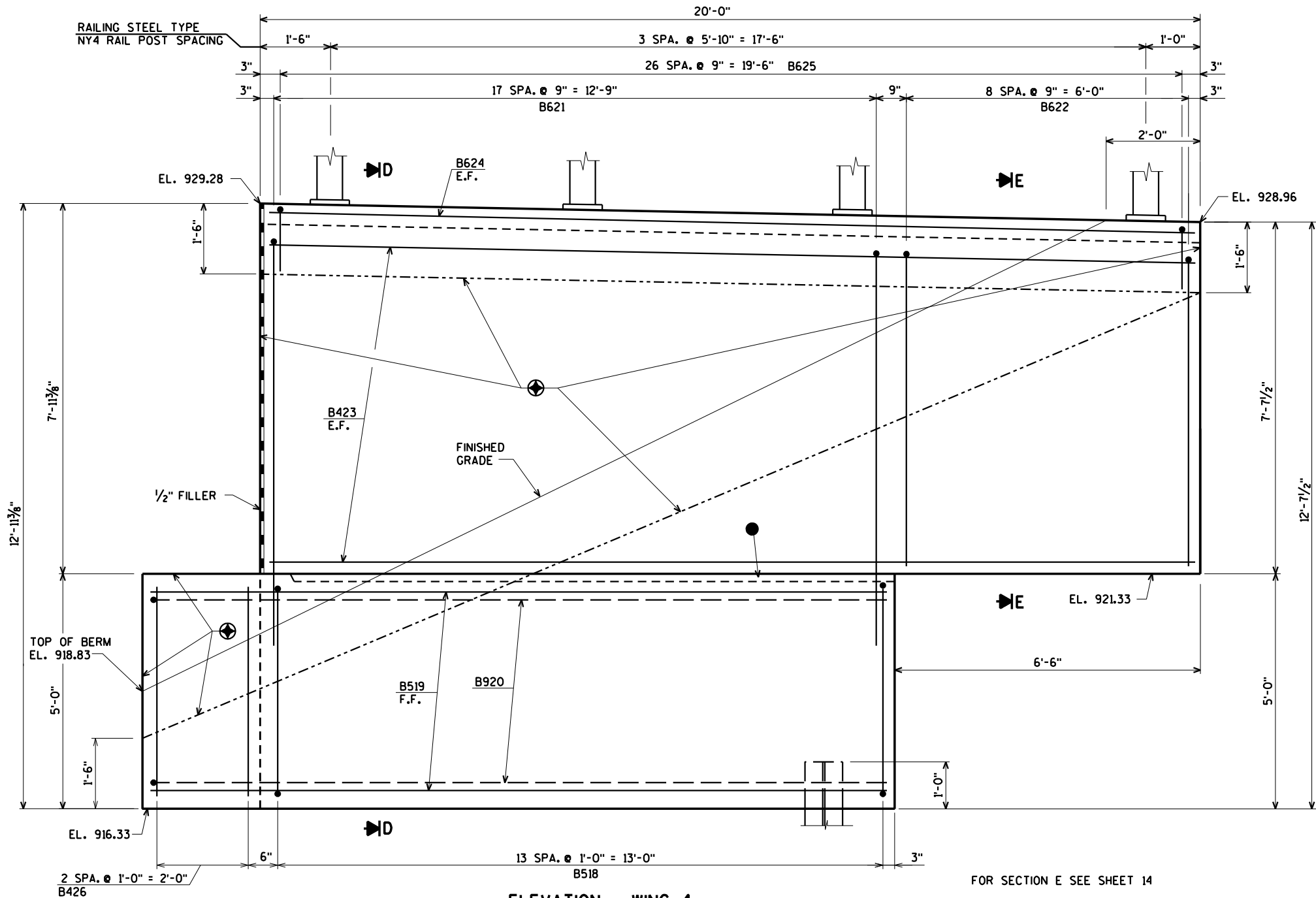
SINGLE SLOPE 42SS PARAPET  
NOT SHOWN. FOR DETAILS  
SEE SHEET 21



SECTION C

8

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
DRAWN BY	CLP	PLANS CK'D.	CBM
EAST ABUTMENT WING 3 DETAILS			SHEET 12 OF 23



FOR SECTION E SEE SHEET 14

- CONST. JOINT. LEAVE ROUGH. POUR CONCRETE ABOVE THIS JOINT AFTER DECK IS IN PLACE. UTILIZE RUBBERIZED MEMBRANE WATERPROOFING ON B.F. (COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES")
- FORMLINER SEE SHEET 2 FOR DETAILS
- OPTIONAL CONST. JOINT FORMED BY BEVELED 2" x 6" KEYWAY WITH MEMBRANE ON BACKFACE.
- 18" RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE OF ABUTMENT.

FOR PILE SPlice DETAIL SEE SHEET 3.

F.F. DENOTES FRONT FACE

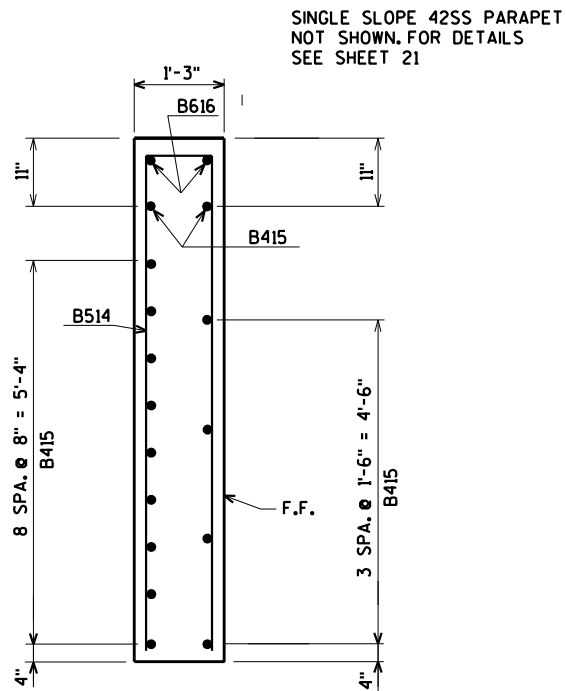
E.F. DENOTES EACH FACE

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STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
DRAWN BY		CLP	PLANS CK'D. CBM
EAST ABUTMENT WING 4 DETAILS			SHEET 13 OF 23

8/21/2020  
PENTABLE:BReau\_shd\_util.tbl

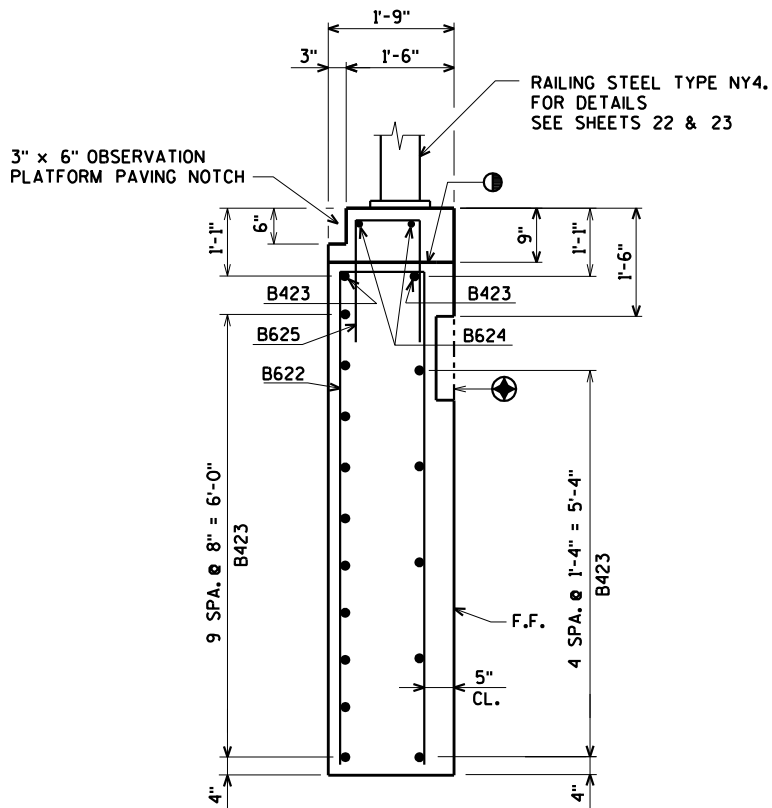
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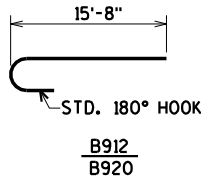
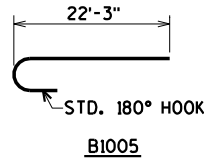
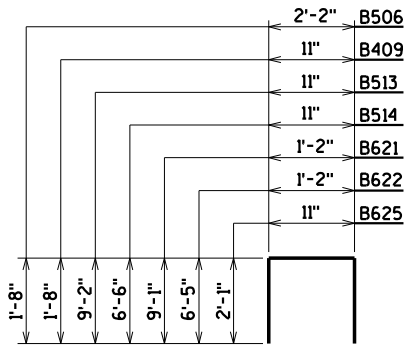
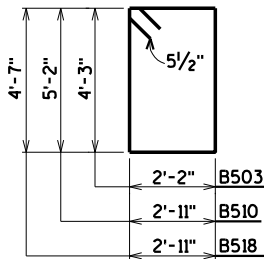
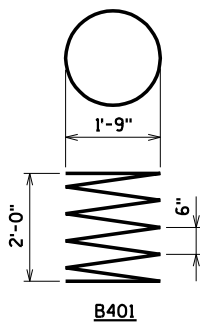
**SECTION B**

FOR LOCATION OF SECTION B SEE SHEET 12

FOR LOCATION OF SECTION E SEE SHEET 13



**SECTION E**



① CONST. JOINT. LEAVE ROUGH. POUR CONCRETE  
ABOVE THIS JOINT AFTER DECK IS IN PLACE.  
UTILIZE RUBBERIZED MEMBRANE WATERPROOFING  
ON B.F. (COST INCIDENTAL TO BID ITEM "CONCRETE  
MASONRY BRIDGES")

② FORMLINER  
SEE SHEET 2 FOR DETAILS

F.F. DENOTES FRONT FACE

B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

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Eau Claire, WI 54701  
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STRUCTURE B-18-238			
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EAST ABUTMENT DETAILS AND BILL OF BARS			SHEET 14 OF 23

STATE PROJECT NUMBER

7831-07-70

**BILL OF BARS**

BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED	BAR SERIES	3,970# COATED 3,330# UNCOATED
							LOCATION
B401		10	28-0	X			BODY @ PILES
B402		20	2-3				BODY @ PILES
B503		45	13-5	X			BODY VERT.
B604		11	36-3				BODY HORIZ.
B1005		16	23-8	X			BODY HORIZ. B.F.
B506		18	5-3	X			BODY VERT.
B407		3	17-6				BODY HORIZ.
B408		2	36-3				BODY HORIZ.
B409		25	4-1	X			BODY VERT.
B510	X	14	16-9	X			WING 3 VERT.
B511	X	6	15-8				WING 3 HORIZ. F.F.
B912	X	10	16-11	X			WING 3 HORIZ.
B513	X	27	19-0	X			WING 3 VERT.
B514	X	13	13-8	X			WING 3 VERT.
B415	X	15	19-8				WING 3 HORIZ. E.F.
B616	X	2	19-8				WING 3 HORIZ. E.F.
B417	X	3	5-2				WING 3 VERT.
B518	X	14	15-7	X			WING 4 VERT.
B519	X	5	15-8				WING 4 HORIZ. F.F.
B920	X	10	16-11	X			WING 4 HORIZ.
B621	X	18	19-0	X			WING 4 VERT.
B622	X	9	13-8	X			WING 4 VERT.
B423	X	17	19-8				WING 4 HORIZ. E.F.
B624	X	2	19-8				WING 4 HORIZ. E.F.
B625	X	27	4-9	X			WING 4 VERT.
B426	X	3	4-7				WING 4 VERT.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

GIRDER NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 15" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH, AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 15" OF THE TOP FLANGE.

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

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS.

STRANDS SHALL BE FLUSH WITH END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER.

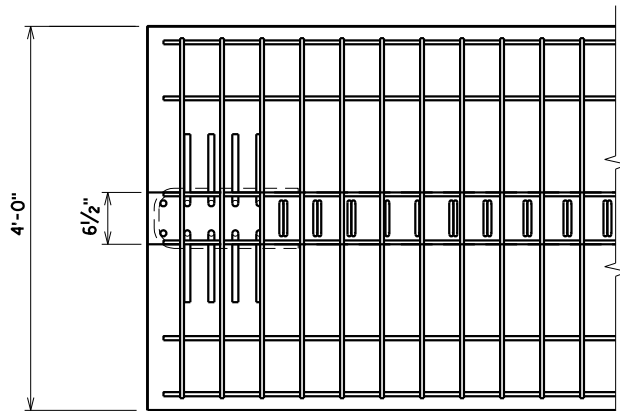
ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

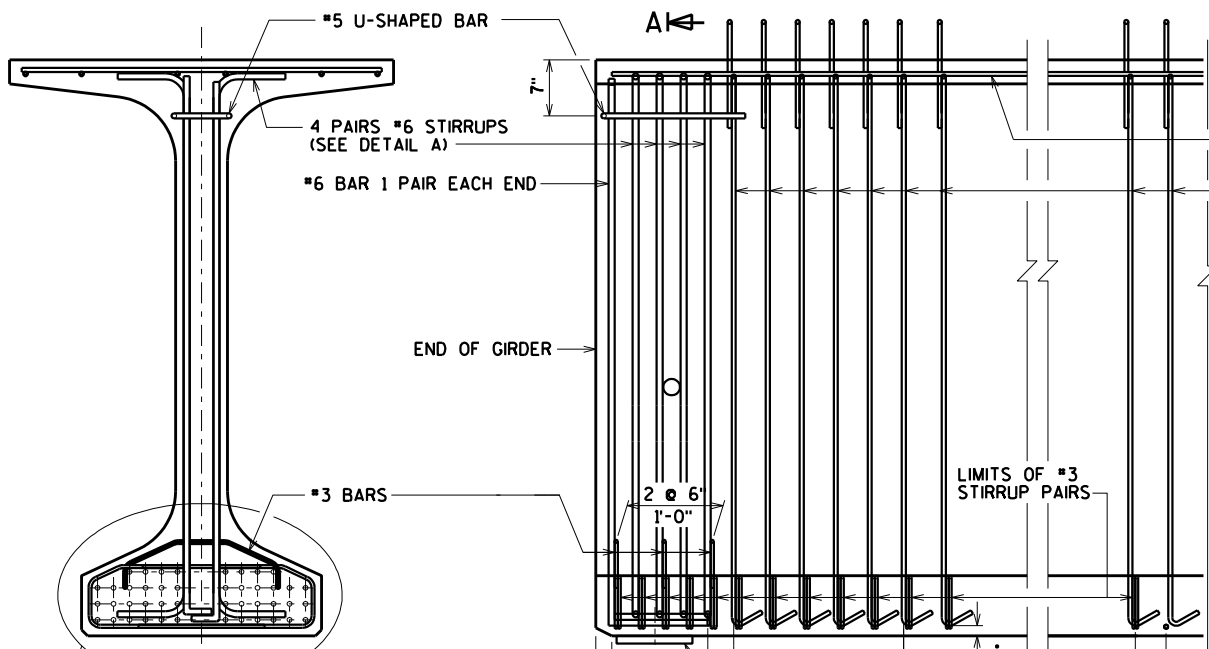
AN EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A1064 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON APPROVAL OF THE STRUCTURES MAINTENANCE SECTION, IF USED, WWF SUBSTITUTION DETAILS SHALL BE SUBMITTED ELECTRONICALLY TO THE WISDOT FABRICATION LIBRARY AND ACCEPTED PRIOR TO THE SHOP DRAWING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

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

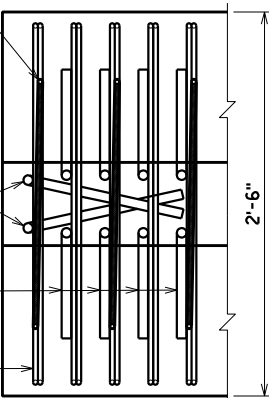
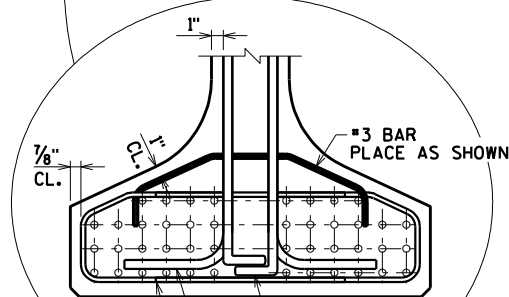
FOR DIAPHRAGM INSERT & CONNECTION DETAILS SEE "STEEL DIAPHRAGM" SHEET.



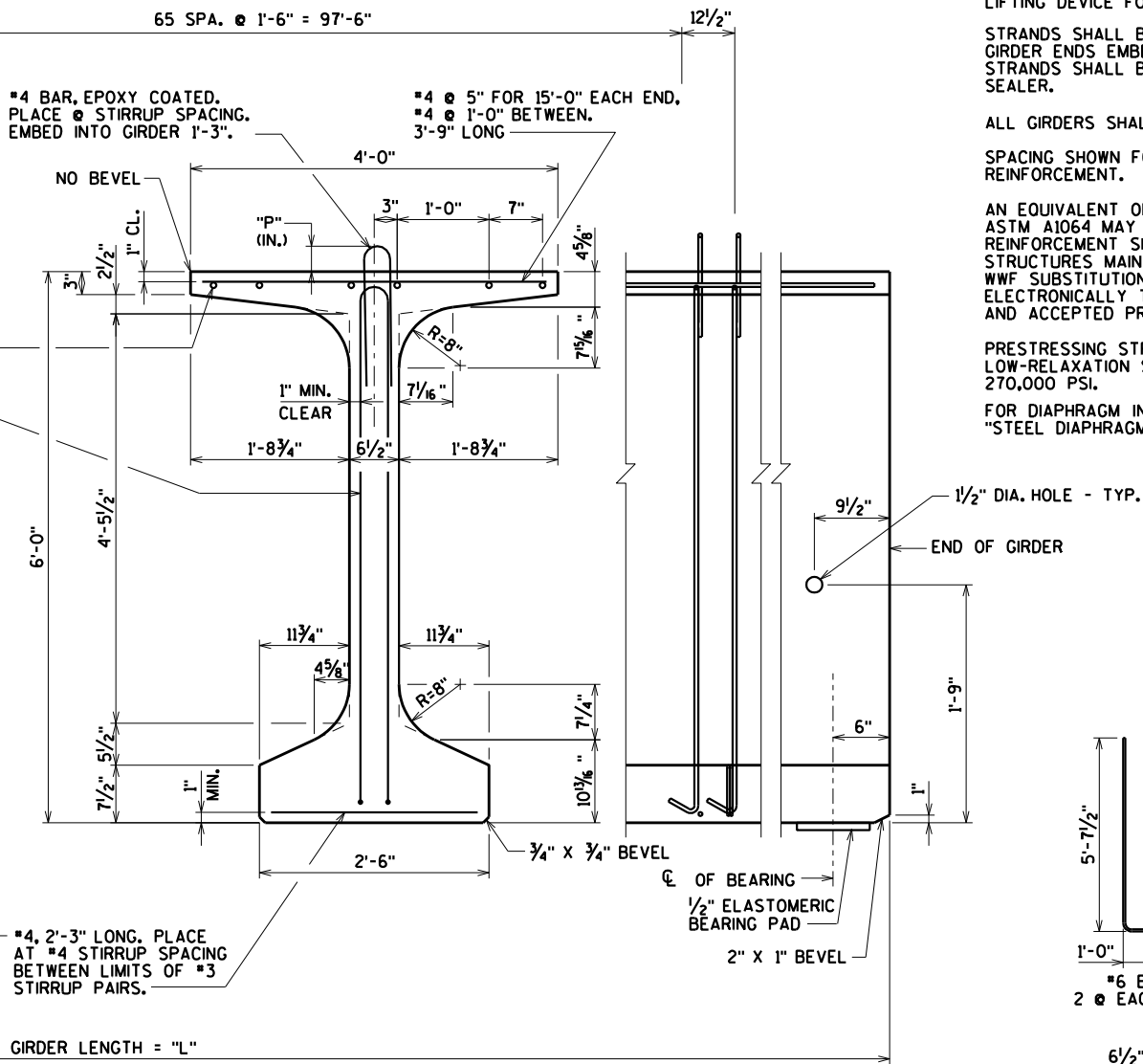
TOP FLANGE



SECTION A-A

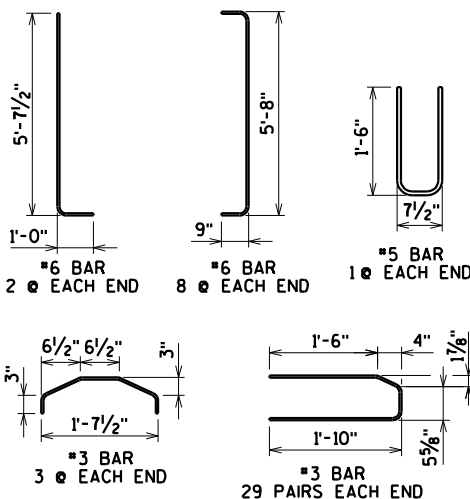


DETAIL A  
BOTTOM FLANGE



SIDE VIEW & TYP. SECTION IN SPAN

- (A) DETAIL TYP. AT EACH END  
(B) 6 #4 BARS, FULL LENGTH. MIN. LAP = 2'-4"



GIRDER DATA																									
SPAN	GIRDER	GIRDER LENGTH "L"	DEAD LOAD DEFL. (IN.)										CONC. STRGTH. f'c (P.S.I.)	"P" 1/3 OF GIRDER	"P" MID 1/3 OF GIRDER	"P" END 1/3 OF GIRDER	DIA. OF STRAND (IN.)	DRAPED PATTERN					<del>UNDRAPED PATTERN</del>		
			1/10	3/10	3/10	1/10	5/10	5/10	1/10	3/10	3/10	1/10						TOTAL NO. OF STRANDS	f'ci (P.S.I.) *	(IN.)				<del>TOTAL NO. OF STRANDS</del>	<del>f'ci (P.S.I.) *</del>
																				"A"	"B" MIN.	"B" MAX.	"C"		
1	1 & 4	121'-0"	0.5	0.9	1.3	1.5	1.6	1.5	1.3	0.9	0.5	8,000	10"	8"	10"	0.6	38	6,400	67	20.5	23.5	5			
1	2 & 3	121'-0"	0.5	1.0	1.3	1.6	1.7	1.6	1.3	1.0	0.5	8,000	10"	8"	10"	0.6	38	6,400	67	20.5	23.5	5			

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

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

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
DRAWN BY		CLP	PLANS CK'D. CBM
72W" PRESTRESSED GIRDER DETAILS		SHEET 15 OF 23	



\$PRNAME\$  
I:\42\42-1175.00 - Eau Claire Co. CTH V over Bridge Creek\Structures\final\421175 gdr 72W.dgn

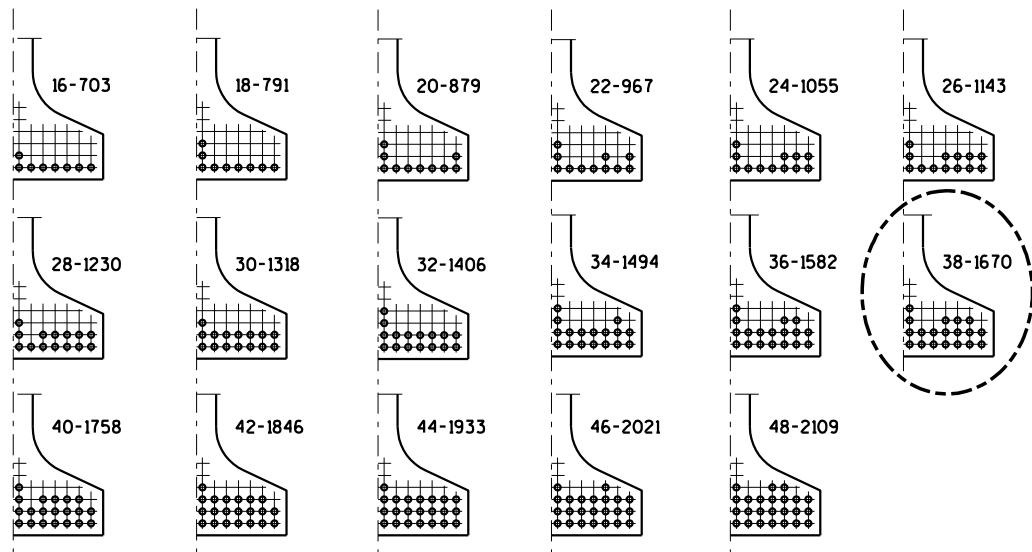
STATE PROJECT NUMBER

7831-07-70

16-703 18-791 20-879

**STANDARD ARRANGEMENTS TO RAISE CENTER OF GRAVITY  
TO AVOID DRAPING OF STRANDS**

0.6"Ø STRANDS



**ARRANGEMENT AT CL SPAN - FOR GIRDERS WITH DRAPED STRANDS**

0.6"Ø STRANDS

#4 BAR, EPOXY COATED. PLACE  
Ø STIRRUP SPACING REQUIRED  
FOR NON WWF STIRRUPS.  
EMBED INTO GIRDER 1'-3'.

HORIZ. WIRES SHALL  
BE LOCATED IN TOP  
AND BOT. FLANGES  
AND NOT IN THE WEB.

AREA OF HORIZ. WIRE  
SHALL BE ≥ 40% OF  
VERT. WIRE AREA  
(ASTM A1064)

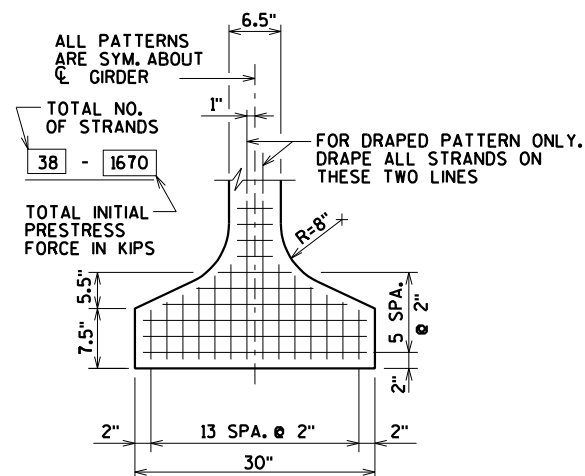
D18 MIN. VERTICAL  
WIRE (DEFORMED)

1" MIN. CLEARANCE  
TO VERTICAL WIRE

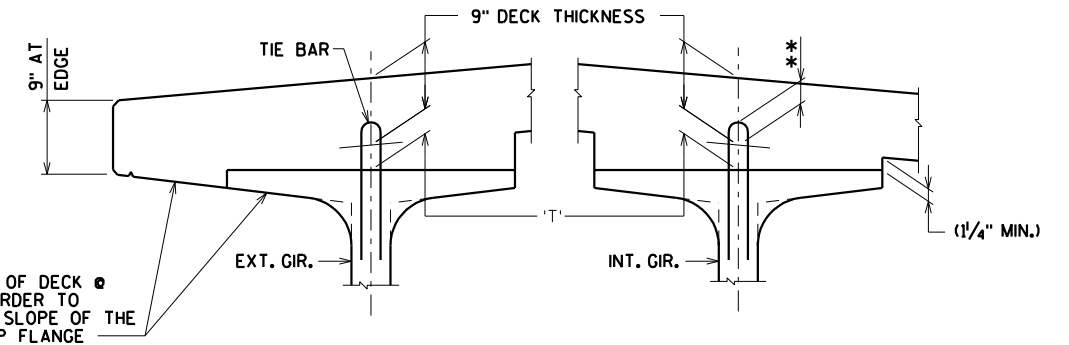
2" MIN.  
TYP.

**SECTION THRU GIRDER**

SHOWING WELDED WIRE FABRIC (WWF) STIRRUPS  
ASTM A1064 (FY = 70 KSI)



**TYP. STRAND PATTERN**



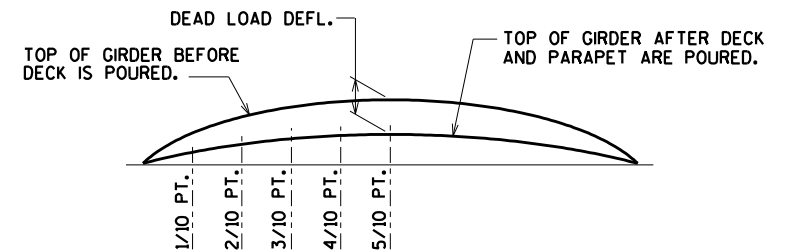
**DECK HAUNCH DETAIL**

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

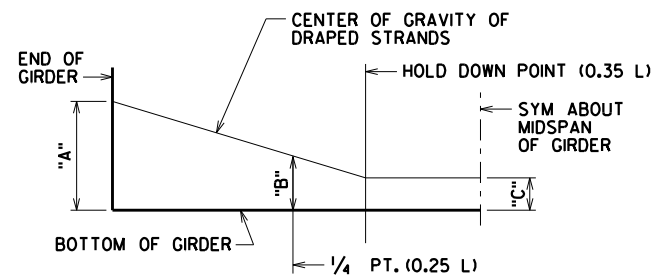
TO DETERMINE 'T', ELEV. OF TOP OF GIR'S. AT CL OF SUBSTRUCTURE UNITS  
& AT 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. THEN FOLLOW THIS  
PROCESS:

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

NOTE: AN AVERAGE HAUNCH ('T') OF 4 5/8" WAS USED IN THE QUANTITY  
CONCRETE MASONRY BRIDGES".



**DEAD LOAD DEFLECTION DIAGRAM**



**DRAPED STRAND PROFILE**

\* THE THEORETICAL INITIAL CAMBER VALUE AT THE  
TIME OF STRAND RELEASE AT MIDSPAN

SPAN	CAMBER (IN.) *
1	3.0

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

8

8

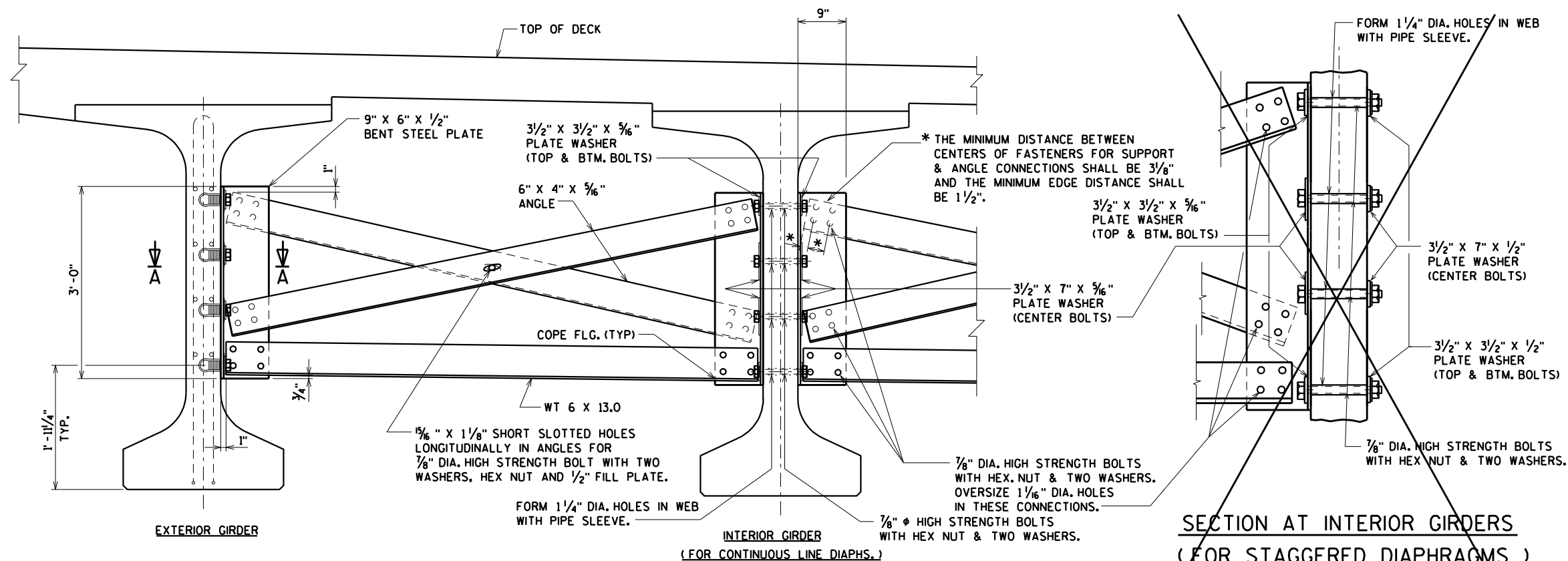
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
	DRAWN BY	CLP	PLANS CK'D. CBM
72W" PRESTRESSED GIRDER DETAILS			SHEET 16 OF 23

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STATE PROJECT NUMBER

7831-07-70



PART TRANSVERSE SECTION AT DIAPHRAGM

SECTION AT INTERIOR GIRDERS  
(FOR STAGGERED DIAPHRAGMS)

### NOTES

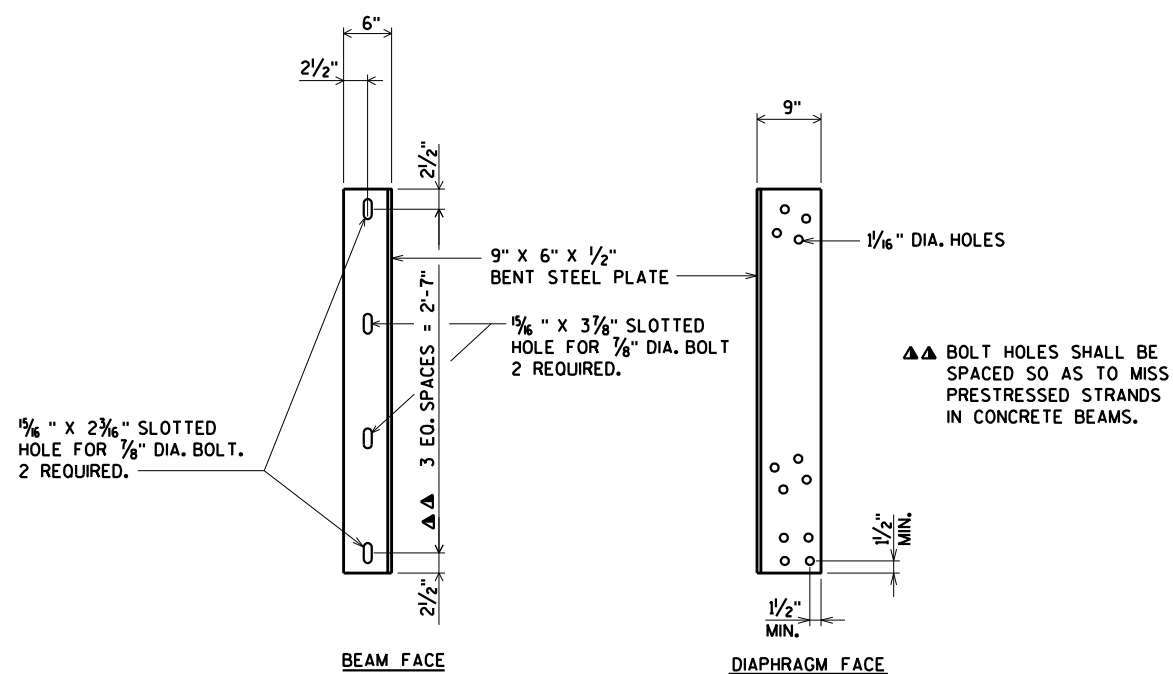
ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-18-238", EACH.

EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

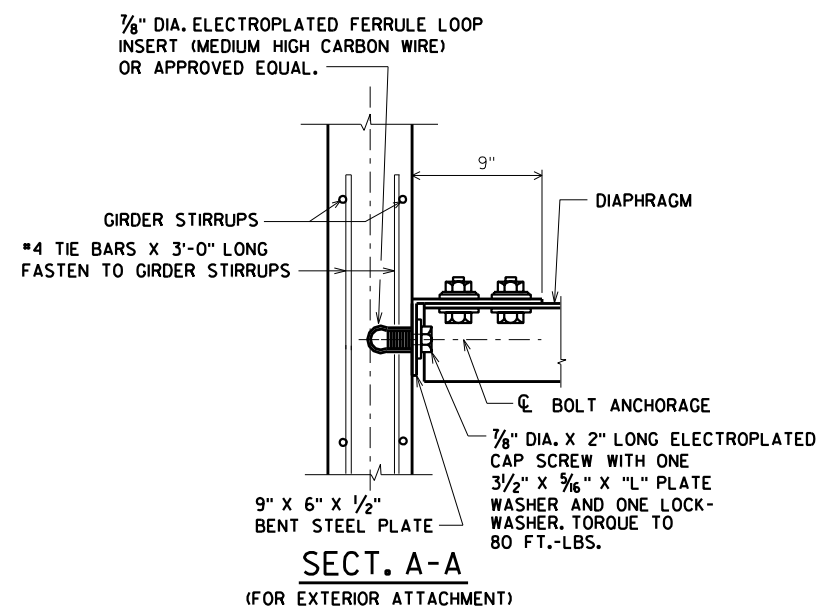
ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

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

STEEL DIAPHRAGM TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS 1/4 TURN, UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.



DIAPHRAGM SUPPORT

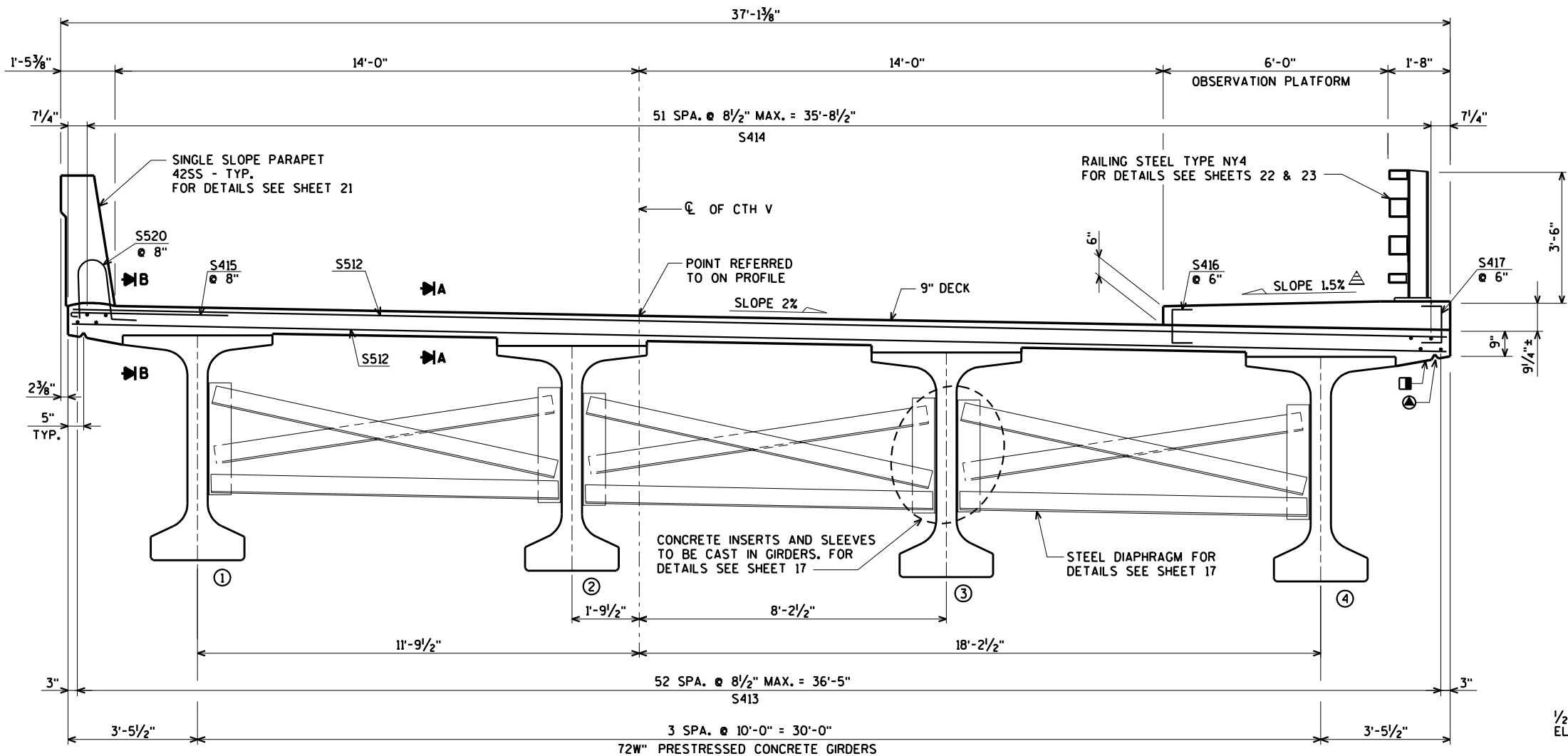


SECT. A-A  
(FOR EXTERIOR ATTACHMENT)

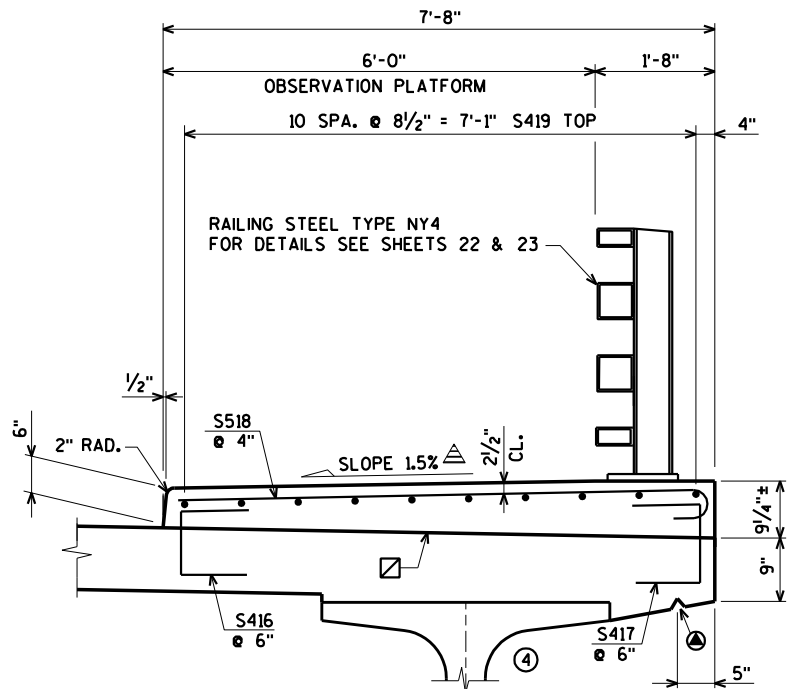
"L" = 3 1/2"; TOP AND BOTTOM BOLTS  
"L" = 7"; CENTER BOLTS

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
DRAWN BY		CLP	PLANS CK'D. CBM
STEEL DIAPHRAGM		SHEET 17 OF 23	

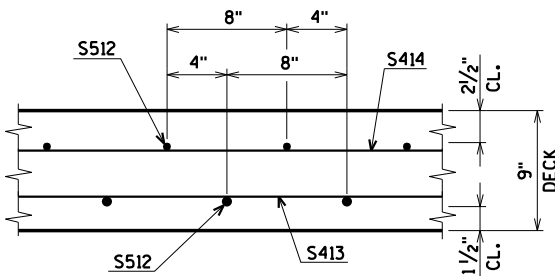
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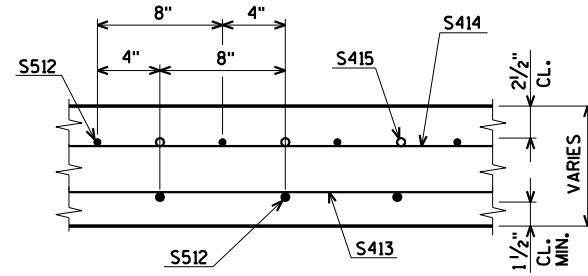
TYPICAL SECTION THRU BRIDGE  
(LOOKING EAST)



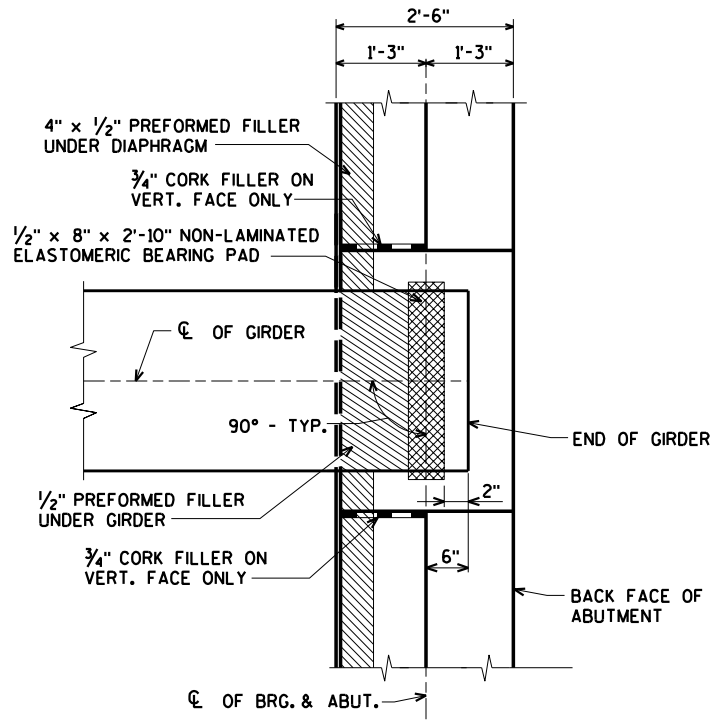
TYPICAL SECTION THRU OBSERVATION PLATFORM



SECTION A



SECTION B



BEARING PAD DETAILS

- ±0.5% CONSTRUCTION TOLERANCE IN OBSERVATION PLATFORM CROSS SLOPE. THE OBSERVATION PLATFORM CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- 3/4" V-GROOVE. EXTEND V-GROOVE TO 6" FROM FRONT FACE OF ABUTMENT DIAPHRAGMS - TYP.
- SLOPE BOTTOM OF DECK AT EXTERIOR GIRDER TO MATCH THE SLOPE OF THE BOTTOM OF TOP FLANGE - TYP.
- CONST. JOINT - STRIKE OFF AS SHOWN AND LEAVE ROUGH, FOR DECK POUR, MATCH BRIDGE X-SLOPE.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
DRAWN BY		CLP	PLANS CK'D. CBM
SUPERSTRUCTURE			SHEET 18 OF 23

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8/12/2020  
PENTABLE:BReau\_shd\_util.tbl



LOCATION	℄ BEARING W. ABUT.	0.1 PT.	0.2 PT.	0.3 PT.	0.4 PT.	0.5 PT.	0.6 PT.	0.7 PT.	0.8 PT.	0.9 PT.	℄ BEARING E. ABUT.
N. EDGE OF DECK	932.20	931.82	931.47	931.12	930.80	930.50	930.21	929.94	929.69	929.45	929.24
FACE OF PARAPET	932.20	931.82	931.47	931.12	930.80	930.50	930.21	929.94	929.69	929.45	929.24
GIRDER 1	932.16	931.78	931.43	931.08	930.76	930.46	930.17	929.90	929.65	929.41	929.20
GIRDER 2	931.96	931.58	931.23	930.88	930.56	930.26	929.97	929.70	929.45	929.21	929.00
℄ OF CTH V	931.92	931.54	931.19	930.84	930.52	930.22	929.93	929.66	929.41	929.17	928.96
GIRDER 3	931.76	931.38	931.03	930.68	930.36	930.06	929.77	929.50	929.25	929.01	928.80
GIRDER 4	931.56	931.18	930.83	930.48	930.16	929.86	929.57	929.30	929.05	928.81	928.60
S. EDGE OF DECK	931.49	931.11	930.76	930.41	930.09	929.79	929.50	929.23	928.98	928.74	928.53

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
DRAWN BY		CLP	PLANS CK'D. CBN
SUPERSTRUCTURE PLAN			SHEET 19 OF 2

BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED	BAR SERIES	36,580# COATED
							LOCATION
S401	X	42	3-3	X			DIAPH. @ ABUT. VERT. @ NOTCH
S402	X	12	5-11				DIAPH. @ ABUT. HORIZ. @ NOTCH
S503	X	62	15-8	X			DIAPH. @ ABUT. VERT.
S504	X	32	13-8	X			DIAPH. @ ABUT. VERT. @ GIRDERS
S505	X	62	6-7	X			DIAPH. @ ABUT. VERT.
S606	X	18	36-4				DIAPH. @ ABUT. HORIZ.
S607	X	72	5-8				DIAPH. @ ABUT. HORIZ. BETW. GDRS.
S608	X	6	7-2				DIAPH. @ ABUT. HORIZ. BETW. GDRS.
S609	X	24	2-7				DIAPH. @ ABUT. HORIZ. @ CORNERS
S610	X	4	1-7				DIAPH. @ ABUT. HORIZ. @ CORNERS
S511	X	16	6-0				DIAPH. @ ABUT. HORIZ. THRU GDR.
S512	X	367	36-7				DECK TRANS. TOP & BOT.
S413	X	159	41-11				DECK LONG. BOT.
S414	X	156	41-11				DECK LONG. TOP
S415	X	183	4-11	X			DECK TRANS. TOP @ EDGES
S416	X	245	2-6	X			DECK @ OBSERVATION PLATFORM @ CURB
S417	X	245	2-9	X			DECK @ OBSERVATION PLATFORM @ EDGE
S518	X	367	7-10	X			OBSERVATION PLATFORM TRANS. TOP
S419	X	33	41-11				OBSERVATION PLATFORM LONG. TOP
S520	X	184	4-5	X			DECK @ PARAPET VERT.
S521	X	184	6-8	X			PARAPET VERT.
S522	X	24	41-11				PARAPET HORIZ.
S623	X	36	12-0	X			DECK @ RAIL POSTS
S624	X	64	6-0				DECK @ INT. RAIL POSTS
S625	X	8	6-0	X			DECK @ END RAIL POSTS

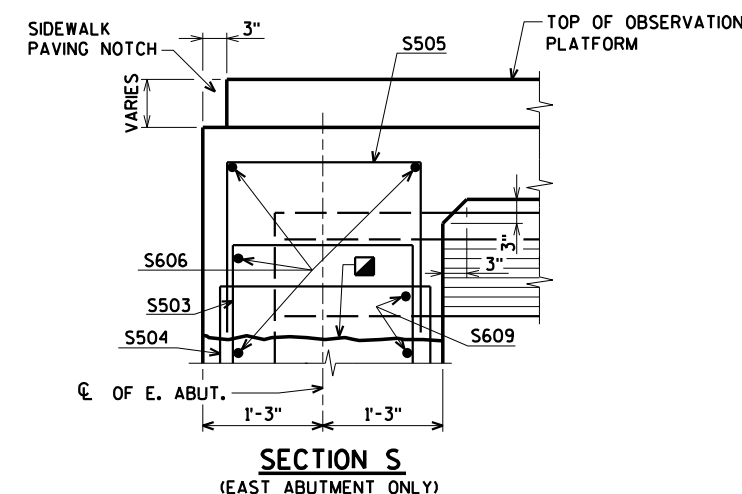
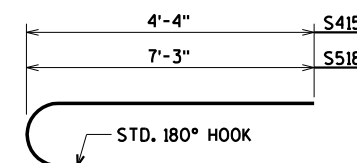
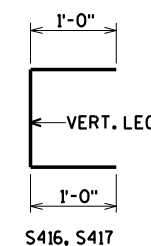
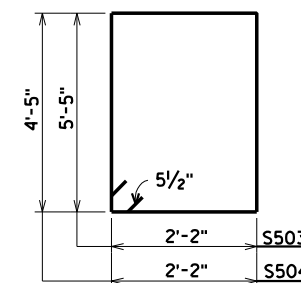
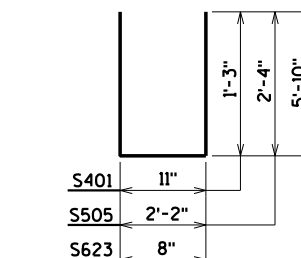
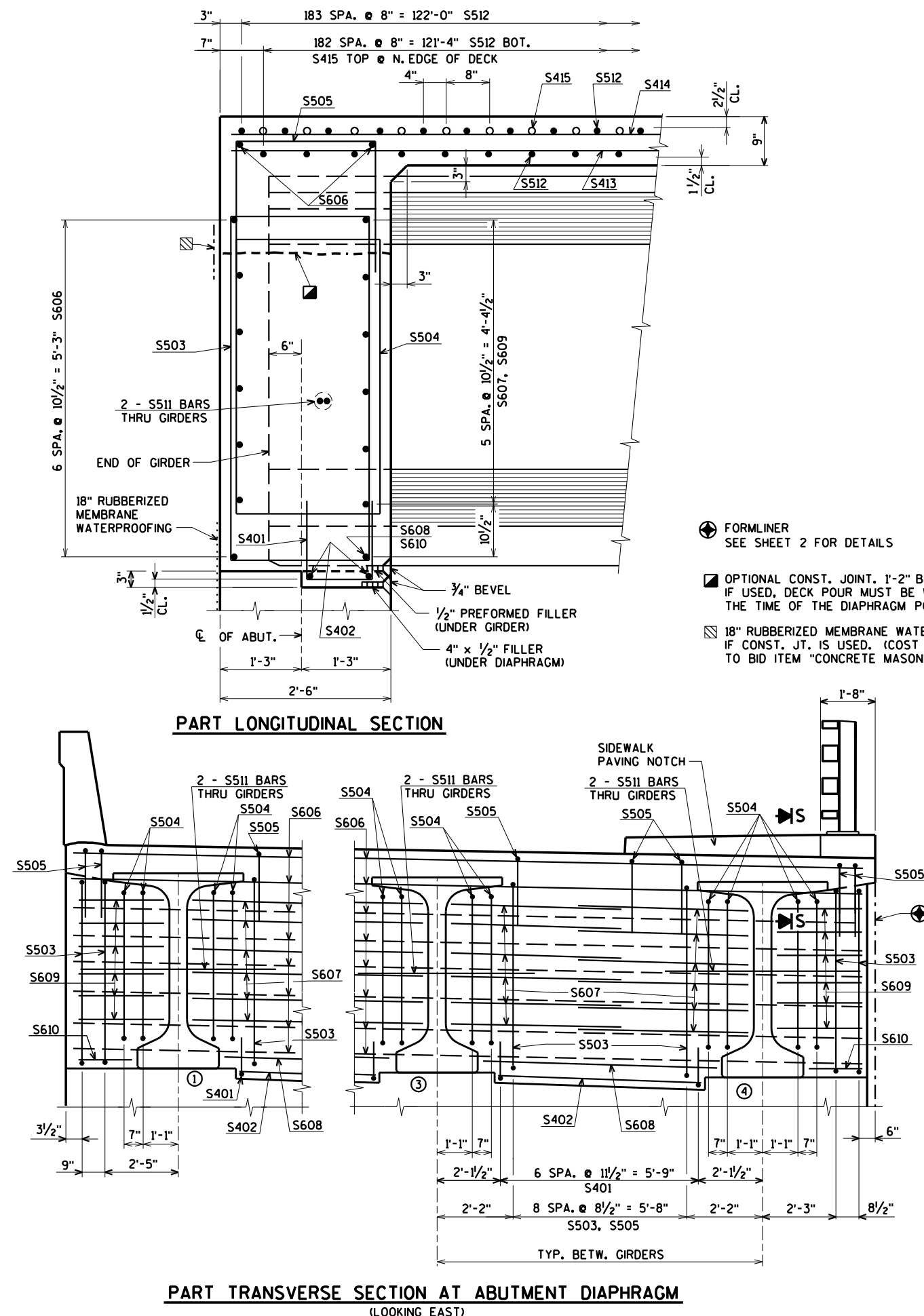
Technical drawings of two pipe fittings, S520 and S521.

**S520:** A 90-degree elbow fitting. The drawing shows a 175-degree arc with a radius of  $4\frac{1}{2}$ " RAD. The dimensions are 2-1/2" and 1-3/4". The fitting is labeled S520.

**S521:** A 180-degree elbow fitting. The drawing shows a 189-degree arc with a radius of  $4\frac{1}{2}$ " RAD. The dimension is 2'-8". The fitting is labeled S521.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
		DRAWN BY	CLP PLANS CK'D. CBI
SUPERSTRUCTURE		SHEET 20 OF	

y	SUPERSTRUCTURE DETAILS & BILL OF BARS	SHEET 20 OF



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STATE PROJECT NUMBER

7831-07-70

### BILL OF BARS

FOR ABUTMENT PARAPETS

690# COATED WEST ABUTMENT  
630# COATED EAST ABUTMENT

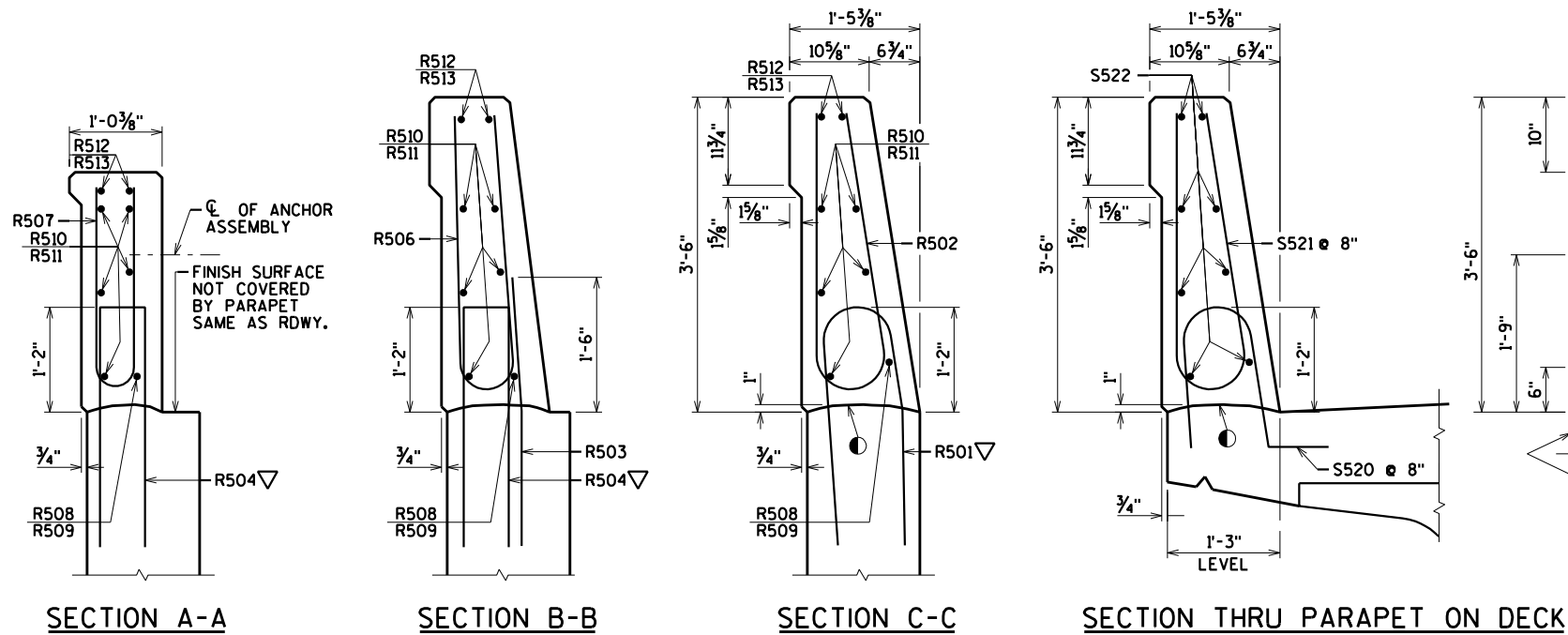
BAR MARK	COAT	WEST ABUT.	EAST ABUT.	LENGTH	BENT	BAR SERIES	LOCATION
R501	X	20	17	5'-10"	X		PARAPET VERT.
R502	X	20	17	6'-8"	X		PARAPET VERT.
R503	X	12	12	3'-0"	X		PARAPET VERT.
R504	X	17	17	5'-7"	X		PARAPET VERT.
R505	X	5	5	6'-5"	X		PARAPET VERT.
R506	X	6	6	6'-6"	X		PARAPET VERT.
R507	X	6	6	5'-5"	X	▲	PARAPET VERT.
R508	X	---	1	19'-8"	X		PARAPET HORIZ. WING 3
R509	X	1	---	21'-8"	X		PARAPET HORIZ. WING 2
R510	X	---	5	19'-7"			PARAPET HORIZ. WING 3
R511	X	5	---	21'-7"			PARAPET HORIZ. WING 2
R512	X	---	2	19'-8"	X		PARAPET HORIZ. WING 3
R513	X	2	---	21'-8"	X		PARAPET HORIZ. WING 2

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

### BAR SERIES TABLE

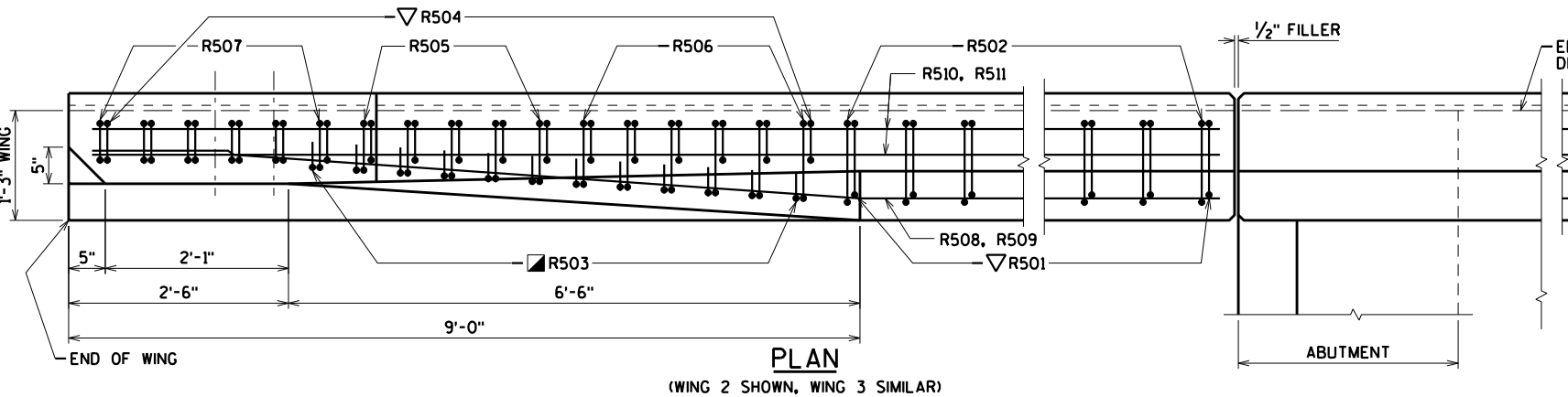
BAR MARK	NO. REQ'D	LENGTH
R507	2 SERIES OF 6	4'-9" TO 6'-1"

BUNDLE AND TAG EACH SERIES SEPARATELY.

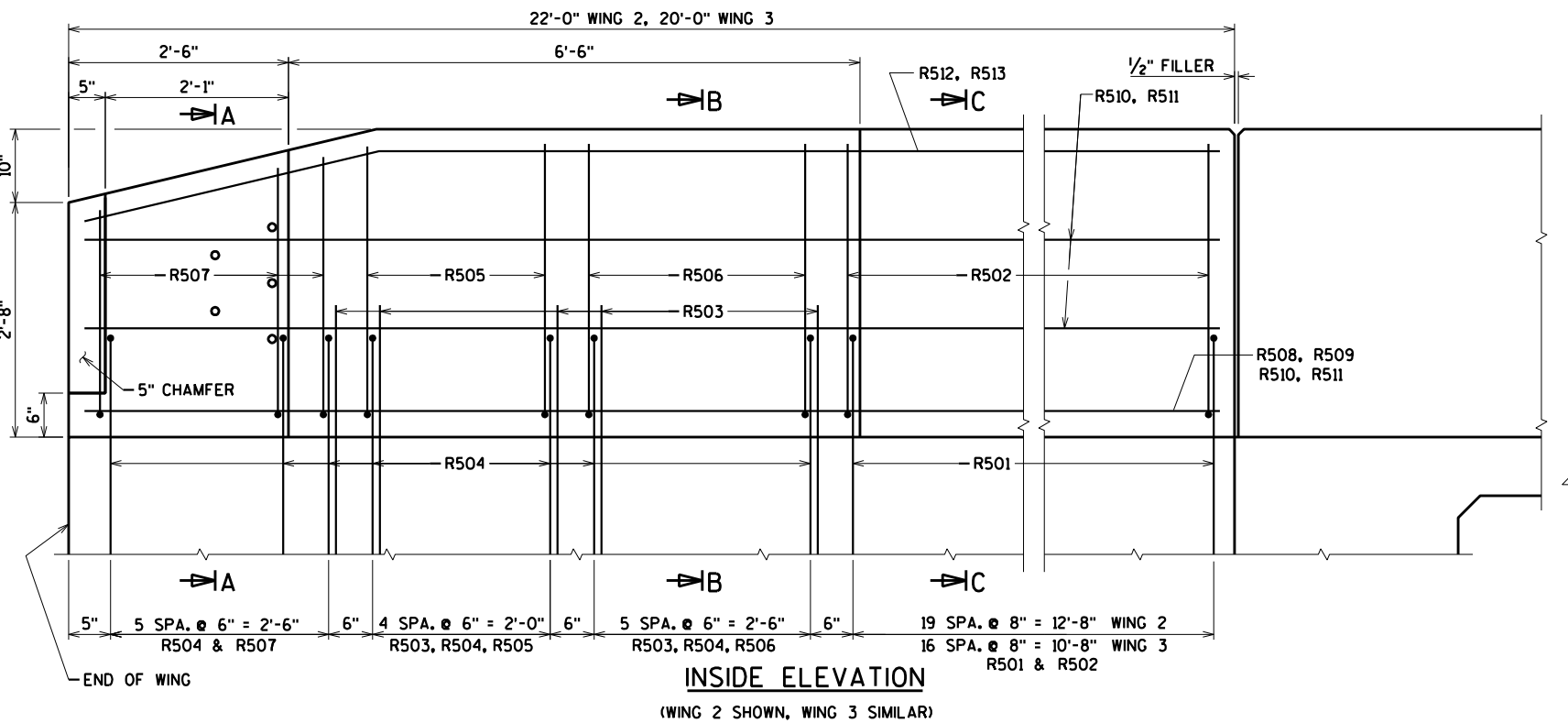


PARAPET END TREATMENT DETAIL  
LOOKING AT INSIDE FACE OF PARAPET  
(WING 2 SHOWN, WING 3 SIMILAR)

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

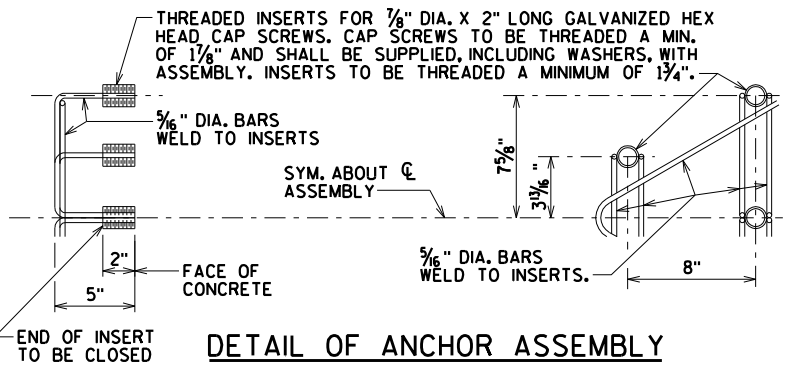


PLAN  
(WING 2 SHOWN, WING 3 SIMILAR)



INSIDE ELEVATION  
(WING 2 SHOWN, WING 3 SIMILAR)

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



### DETAIL OF ANCHOR ASSEMBLY

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

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

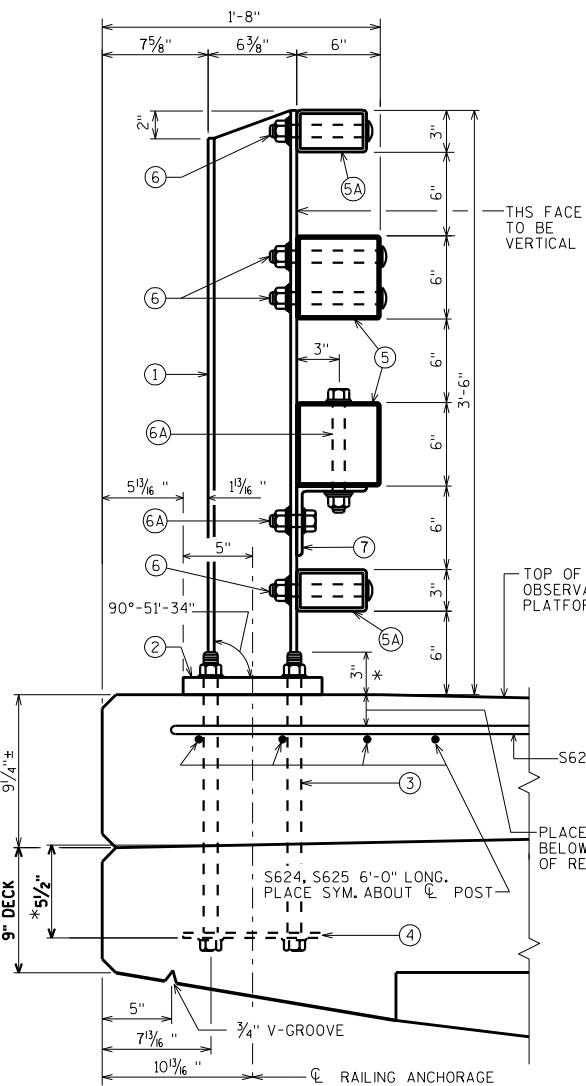
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- CONST. JOINT - STRIKE OFF AS SHOWN
- R503 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE. USE CARE TO PLACE R503 BARS CORRECTLY ALONG TRANSITION OF PARAPET.
- ▽ R501 AND R504 BARS TO BE TIED TO WING STEEL BEFORE WING IS POURED.

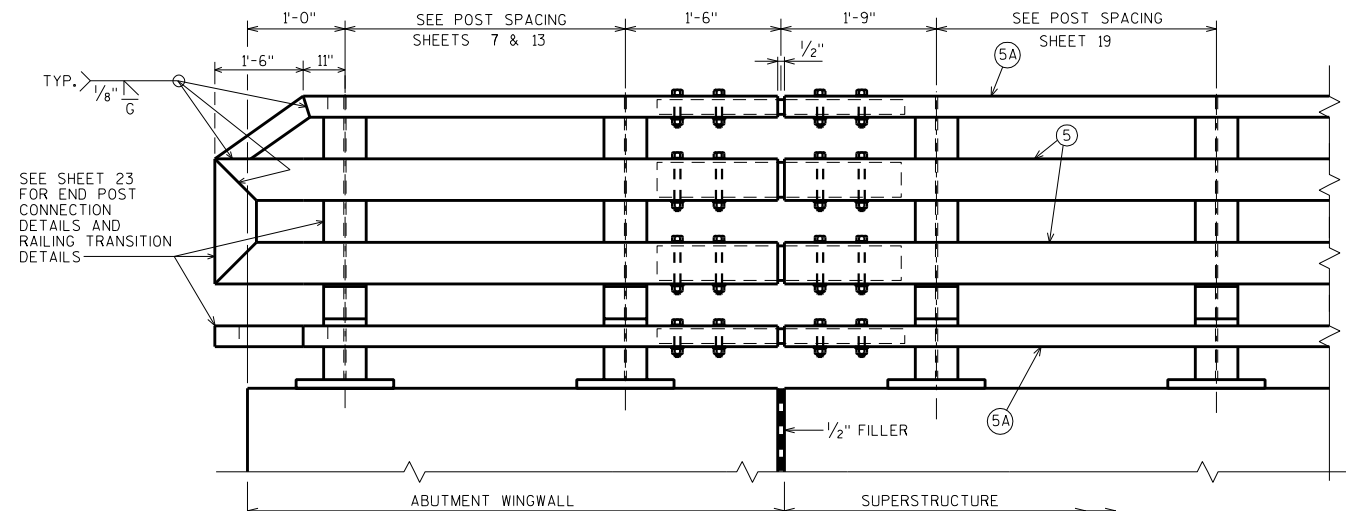
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-18-238			
DRAWN BY		CLP	PLANS CK'D. CBM
SINGLE SLOPE PARAPET 42SS		SHEET 21 OF 23	

\$PRFNAME\$ I:\42\42-1175.00 - Eau Claire Co. CTH V over Bridge Creek\structures\final\421175 NY4 RAIL.DGN

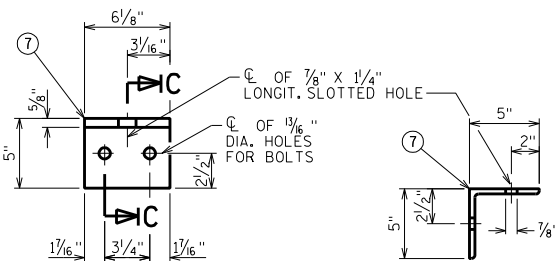
8



SECTION THRU RAILING ON SIDEWALK  
\*NORMAL TO BASE PLATE

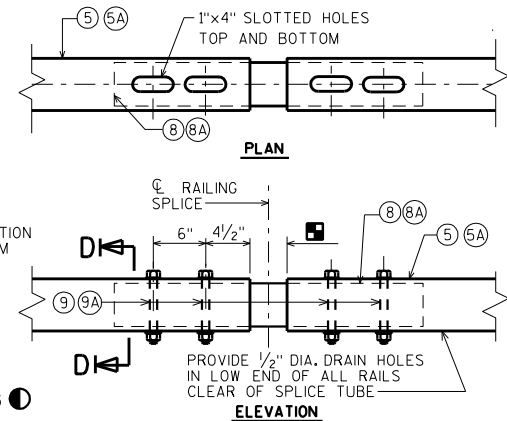


PART ELEVATION OF RAILING  
INTERIOR ELEVATION  
(WING 4 SHOWN, WING 1 SIMILAR)

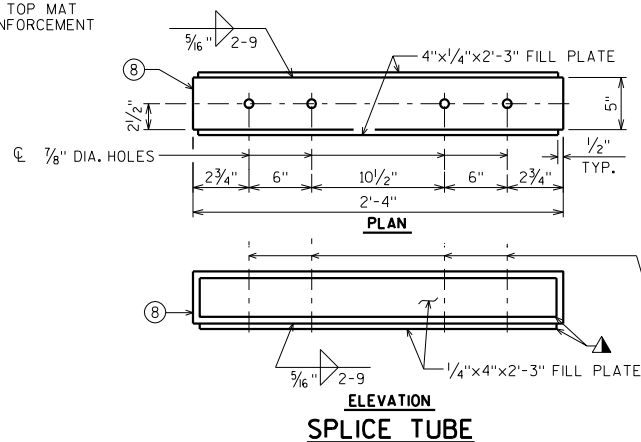


RAILING ANGLE DETAIL  
INTERIOR ELEVATION

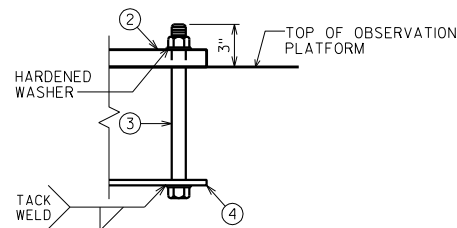
SECTION C-C  
ANGLE SECTION



FIELD ERECTION JOINT DETAIL

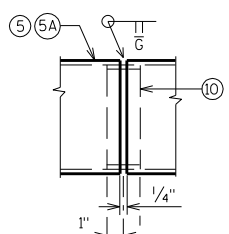


ELEVATION  
SPLICE TUBE



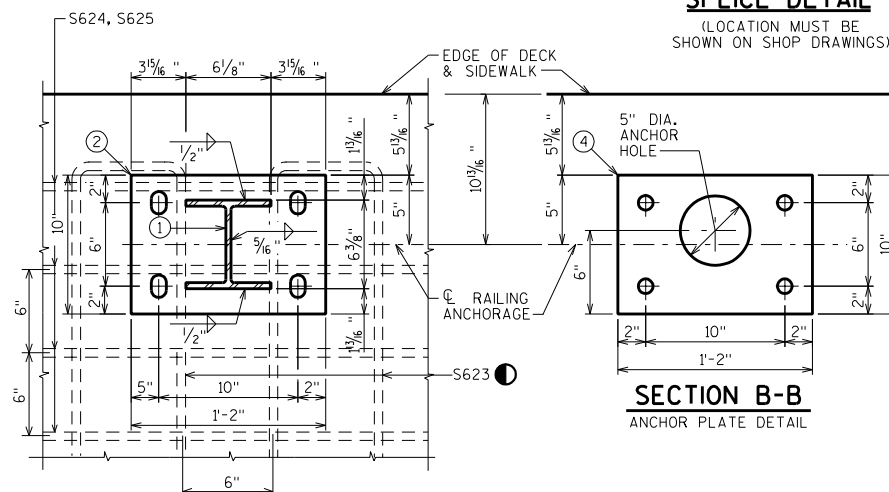
ANCHOR BOLTS

FOR ANCHOR BOLTS IN WINGS,  
TACK WELD MAY BE USED IN FIELD  
AFTER ANCHOR PLATE IS IN POSITION  
IF REQ'D FOR CONSTRUCTIBILITY.

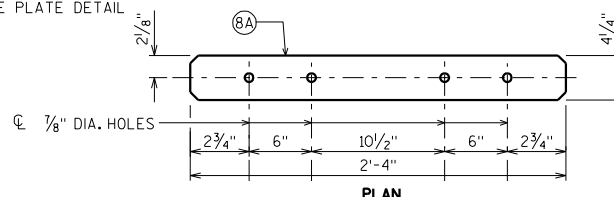


SHOP RAIL  
SPLICE DETAIL

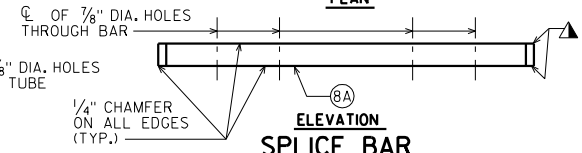
(LOCATION MUST BE  
SHOWN ON SHOP DRAWINGS)



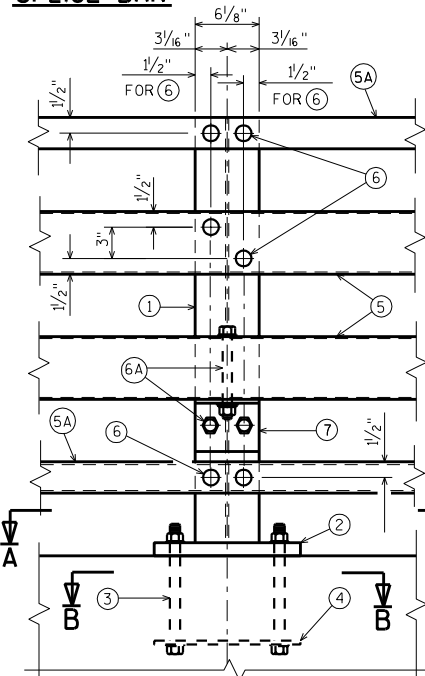
SECTION A-A  
BASE PLATE DETAIL



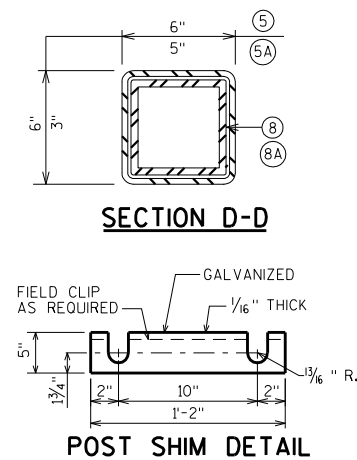
PLAN



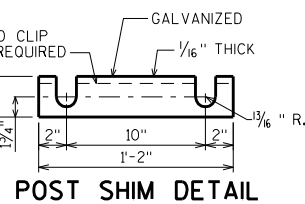
ELEVATION  
SPLICE BAR



PART ELEVATION OF RAILING AT POST  
INTERIOR ELEVATION



SECTION D-D



POST SHIM DETAIL

## LEGEND

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

▲ PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE RAILS, SPLICE TUBES AND FILL PLATES.

● TIE TO TOP MAT OF STEEL.

## NOTES

BID ITEM SHALL BE "RAILING STEEL TYPE NY4, WHICH INCLUDES ALL ITEMS SHOWN.

RAILING SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE.

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.

ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS, ANGLES, SPLICE TUBES, SPLICE BARS AND STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING PER SSPC SPECIFICATIONS.

RAIL POST, BASE PLATES, SPLICE BAR, ANGLES AND SPLICE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED  $f_y=50$  KSI. ANCHOR PLATES & SHIMS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.

THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8" TURN.

FILL BOLT SLOT OPENINGS IN POST SHIMS AND PLATE NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. CAULK AROUND PERIMETER OF NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

STEEL SHIMS SHALL BE PROVIDED & USED UNDER PLATE NO. 2 WHERE REQUIRED FOR ALIGNMENT, AND SHALL BE GALVANIZED.

WORK THIS SHEET WITH "END POST DETAILS FOR RAILING STEEL TYPE NY4" SHEET.

STATE PROJECT NUMBER

7831-07-70

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-18-238

DRAWN BY CLP PLANS CK'D. CBM

RAILING STEEL  
TYPE NY4

SHEET 22 OF 23

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

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

WORK THIS SHEET WITH "RAILING STEEL TYPE NY4" SHEET.

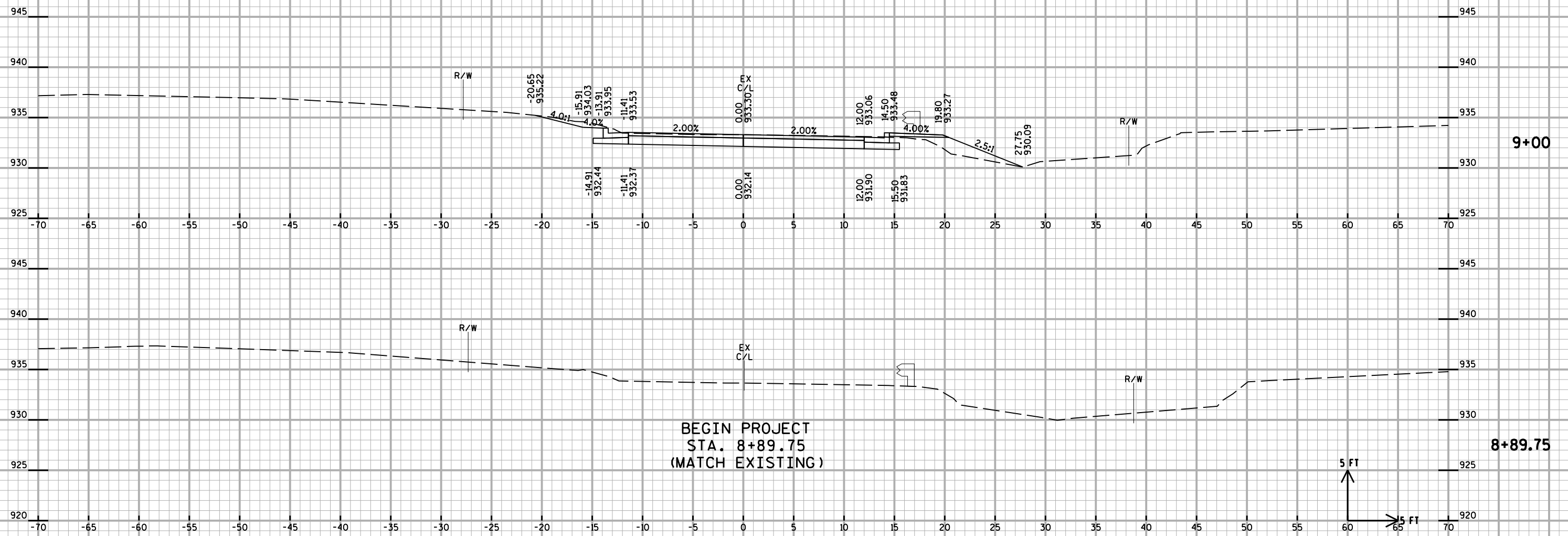


CTH V COMPUTER EARTHWORK										
Station	Distance	Area (SF)			Incremental Vol (CY) (Unadjusted)			Cumulative Vol (CY)		Mass Ordinate
		Cut	Unuseable Pavement Material	Fill	Cut	Salvaged / Unuseable Pavement Material	Fill	Cut 1.00	Expanded Fill 1.30	
8+89.75	--	36.8	10.3	1.5						
9+00	10.25	38.2	9.5	9.9	14	4	2	10	3	8
9+39.75	39.75	38.2	9.5	9.9	56	14	15	53	22	31
B-18-238	--	--	--	--	--	--	--	--	--	--
10+62.25	--	35.4	8.8	6.1	--	--	--	--	--	--
11+00	37.75	35.4	8.8	6.1	49	12	9	90	33	57
11+12.25	12.25	39.6	11.0	0.8	17	4	2	102	35	68
					137	35	27			

Note 1 - Cut	Cut includes existing asphalt pavement.
Note 2 - Fill	Volume needed to be filled.
Note 3 - Mass Ordinate	(Cut) - (Fill * 1.30)
Note 4 - Salvaged / Unuseable Pavement Material	Existing asphalt pavement to be removed from Cut.
Note 5 - Cut	Cut reduced by salvaged/unuseable asphaltic pavement

STA. 8+89.75 TO 9+00

STRUCTURE B-18-238



PROJECT NO: 7831-07-70

HWY: CTH V

COUNTY: EAU CLAIRE

## CROSS SECTIONS

SHEET

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## *Wisconsin Department of Transportation*

Dedicated people creating transportation solutions  
through innovation and exceptional service.

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