NEL FEB 2015

PROJECT ID: 4333-04-71
WITH: N/A

COUNTY: MANITOWOC

ORDER OF SHEETS

TOTAL SHEETS = 58

PROJECT LOCATION

DESIGN DESIGNATION

AADT (2014) = 1350
AADT (2034) = 1500
DHV (2034) = 195
D (%) = 62/38
T (% OF ADT) = 6.3%
DESIGN SPEED = 55 MPH
ESALS = 197,100

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 (CAUTION)
- HIGH VOLTAGE (CAUTION)
- MARSH AREA
- WOODED OR SHRUB AREA
- RIGHT-OF-WAY MARKERS

PROFILE

- GRADE LINE
- ORIGINAL GROUND
- MARSH OR ROCK PROFILE (To be noted as such) (ROCK)
- SPECIAL DITCH (LABEL)
- GRADE ELEVATION (95.36)
- CULVERT (Profile View)

UTILITIES

- ELECTRIC (E)
- OVERHEAD LINES (OH)
- FIBER OPTIC (FO)
- GAS (G)
- SANITARY SEWER (SAN)
- STORM SEWER (SS)
- TELEPHONE (T)
- WATER (W)
- UTILITY PEDESTAL
- POWER POLE
- TELEPHONE POLE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

T COOPERSTOWN, CTH BB

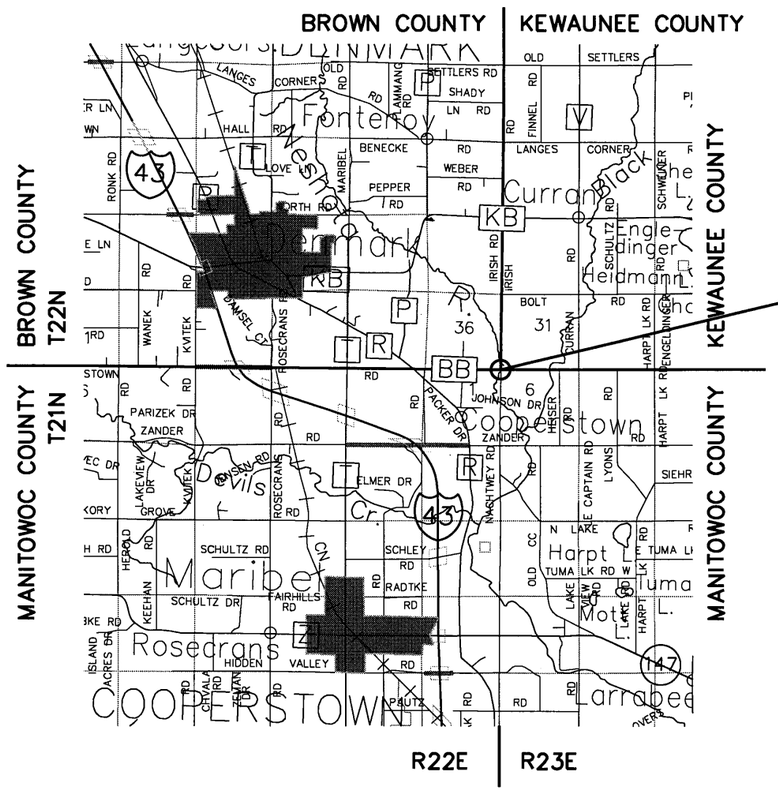
NESHOTA RIVER BRIDGE, B-36-0212

CTH BB

MANITOWOC COUNTY

STATE PROJECT NUMBER
4333-04-71

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
4333-04-71	WISC 2014303	1



LAYOUT

SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.076 MI

END CONSTRUCTION
STA 12+49

END CONSTRUCTION
END PROJECT
STA 12+00
Y - 498963.33
X - 165079.84

STRUCTURE B-36-0212

BEGIN PROJECT
STA 8+00
Y - 498963.51
X - 164679.84

BEGIN CONSTRUCTION
STA 6+05

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), BROWN COUNTY.

ACCEPTED FOR MANITOWOC COUNTY

4-21-14 Gary L. Kraeger
DATE COUNTY COMMISSIONER

ORIGINAL PLANS PREPARED BY

Cedar corporation
MENOMONIE - MADISON - GREEN BAY
www.cedarcorp.com
800-472-7372

WISCONSIN
DENNIS W. MACK
E-35295
EAU CLAIRE
WI
PROFESSIONAL ENGINEER

4/24/14 Dennis W. Mack
DATE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY
Surveyor CEDAR CORPORATION
Designer CEDAR CORPORATION
Management Consultant SEH

APPROVED FOR THE DEPARTMENT
4/25/14 Robert Buffone - SEH
DATE (Management Consultant Signature)

E

I:\Clients-GB\W3911 WDOT NE Region - SEH\001 CTH BB Neshota River Bridge Manitowoc Co\dwg\010101_ti_CTH BB.dwg 10/29/2012 10:12:44 AM CDT

LIST OF STANDARD ABBREVIATIONS

ABUT	ABUTMENT
AGG	AGGREGATE
ET AL	AND OTHERS
AADT	ANNUAL AVERAGE DAILY TRAFFIC
BF	BACK FACE
BM	BENCHMARK
C/L OR ℄	CENTERLINE
△	CENTRAL ANGLE OR DELTA
CLR	CLEAR
CONC	CONCRETE
CONST	CONSTRUCTION
COR	CORNER
CMP	CORRUGATED METAL PIPE
CTH	COUNTY TRUNK HIGHWAY
CR	CREEK
CFS	CUBIC FEET/SECOND
CULV	CULVERT
D	DEGREE OF CURVE
DHV	DESIGN HOUR VOLUME
DIA	DIAMETER
E	EAST
EL	ELEVATION
EST	ESTIMATED
FPS	FEET PER SECOND
FE	FIELD ENTRANCE
FT	FOOT (FEET)
FTG	FOOTING
FDN	FOUNDATION
FF	FRONT FACE
IP	IRON PIN
LT	LEFT
LHF	LEFT-HAND FORWARD
L	LENGTH OF CURVE
LF	LINEAR FOOT
MAX	MAXIMUM
MI	MILE
MIN	MINIMUM
NC	NORMAL CROWN
N	NORTH
NE	NORTHEAST
NW	NORTHWEST
NO	NUMBER
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PT	POINT OF TANGENCY
POL	POINT ON LINE
PE	PRIVATE ENTRANCE
PL	PROPERTY LINE
PSI	POUNDS/SQUARE INCH
PROP	PROPOSED
R	RADIUS
RR	RAILROAD
REBAR	REINFORCEMENT BAR
REQD	REQUIRED
RT	RIGHT
RHF	RIGHT-HAND FORWARD
R/W	RIGHT-OF-WAY
RD	ROAD
SEC	SECTION
S	SOUTH
SE	SOUTHEAST
SW	SOUTHWEST
STH	STATE TRUNK HIGHWAY
STA	STATION
SE	SUPER ELEVATION
T	TANGENT
TEL	TELEPHONE
TEMP	TEMPORARY
TI	TEMPORARY INTEREST
TLE	TEMPORARY LIMITED EASEMENT
TL OR T/L	TRANSIT LINE
T	TRUCKS
TYP	TYPICAL
U/G	UNDERGROUND
USH	UNITED STATES HIGHWAY
VAR	VARIABLE
V	VELOCITY
VPC	VERTICAL POINT OF CURVATURE
VPI	VERTICAL POINT OF INTERSECTION
VPT	VERTICAL POINT OF TANGENCY
W	WEST
YD	YARD

UTILITIES

WISCONSIN PUBLIC SERVICE
800 COLUMBUS STREET
TWO RIVERS, WI 54241
(920) 657-1816
JEFF PELISCHEK
jspelisechek@wisconsinpublicservice.com

CHARTER COMMUNICATIONS
3315 LINCOLN AVENUE
TWO RIVERS, WI 54241
(920) 793-2216 EXT. 30
NICK FRASE
nick.frase@chartercom.com

CENTURYLINK
7235 CTY ROAD W
GREEN LEAF, WI 54126
(920) 361-8425
ROSS HARTWIG
ross.hartwig@centurylink.com

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

** DENOTES UTILITIES THAT ARE NOT DIGGERS HOTLINE MEMBERS

DNR LIAISON

DNR NORTHEAST REGIONAL HEADQUARTERS
2984 SHAWANO AVENUE
GREEN BAY, WI 54313
(920) 662-5472
MATTHEW SCHAEVE
matthew.schaeve@wisconsin.gov

MANITOWOC COUNTY

MANITOWOC COUNTY HIGHWAY DEPARTMENT
3500 WISCONSIN 310
MANITOWOC, WI 54220
(920) 683-4345
GARY KENNEDY
garykennedy@co.manitowoc.wi.us

GENERAL NOTES

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

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.

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

RESTORATION OF EXPOSED SLOPES AND DITCHES SHALL TAKE PLACE IMMEDIATELY AFTER FINISHED GRADING IS COMPLETE.

WisDOT STANDARD SPECS 107.8(6) AND 108.7.1 WILL APPLY FOR CONSTRUCTION NOISE.

SILT FENCE 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 STRUCTURE REMOVAL.

WETLANDS EXIST IN THE PROJECT AREA. NO DISTURBANCE SHALL OCCUR OUTSIDE OF THE SLOPE INTERCEPTS IN WETLAND AREAS.

SHRINKAGE IS ESTIMATED AT 25%.

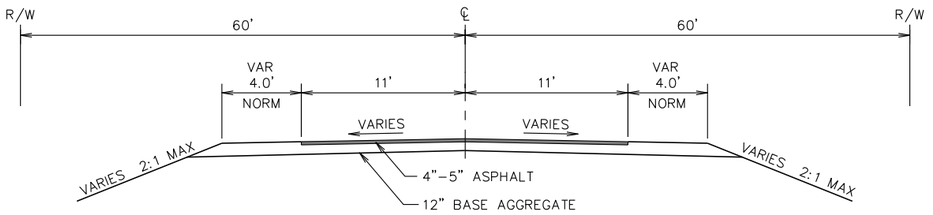
EXCAVATION BELOW SUBGRADE (EBS) IS NOT USED TO BALANCE YARDAGE AND IS SHOWN ON THE CROSS SECTIONS, EBS IS MEASURED AND PAID FOR AS COMMON EXCAVATION. THE LOCATION OF EBS WILL BE DETERMINED BY THE ENGINEER.

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

THE BENCHMARK IS REFERENCED TO MONUMENT IN NE WINGWALL, STATION 10+64.7, 15.2' LT, ELEV 694.46. (NAVD88)

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

TOTAL PROJECT AREA = x.xx ACRE
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.xx ACRE



TYPICAL EXISTING SECTION CTH BB

STA 8+00 – STA 9+34.06
STA 10+59.94 – STA 12+00

PROJECT NO: 4333-04-71	HWY: CTH BB	COUNTY: MANITOWOC	TYPICAL SECTIONS	SHEET 3	E

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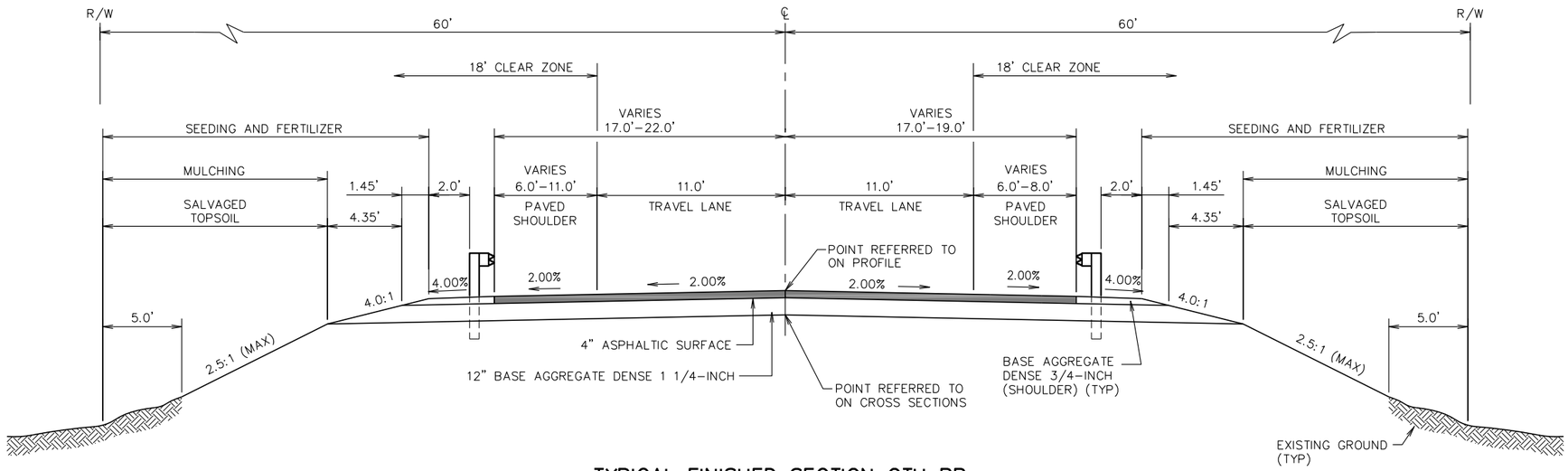
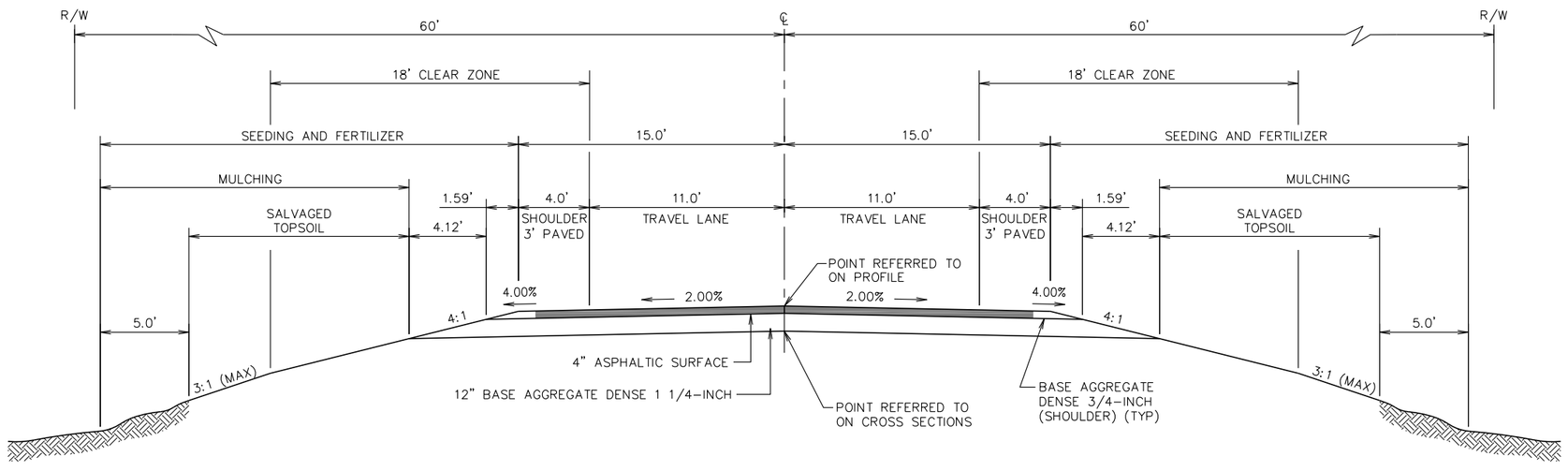


TYPICAL FINISHED SECTION CTH BB

STA 8+00 – STA 9+34.06
STA 10+59.94 – STA 12+00
BEAMGUARD



TYPICAL FINISHED SECTION CTH BB

NO BEAMGUARD

PROJECT NO: 4333–04–71	HWY: CTH BB	COUNTY: MANITOWOC	TYPICAL SECTIONS	SHEET 4	E

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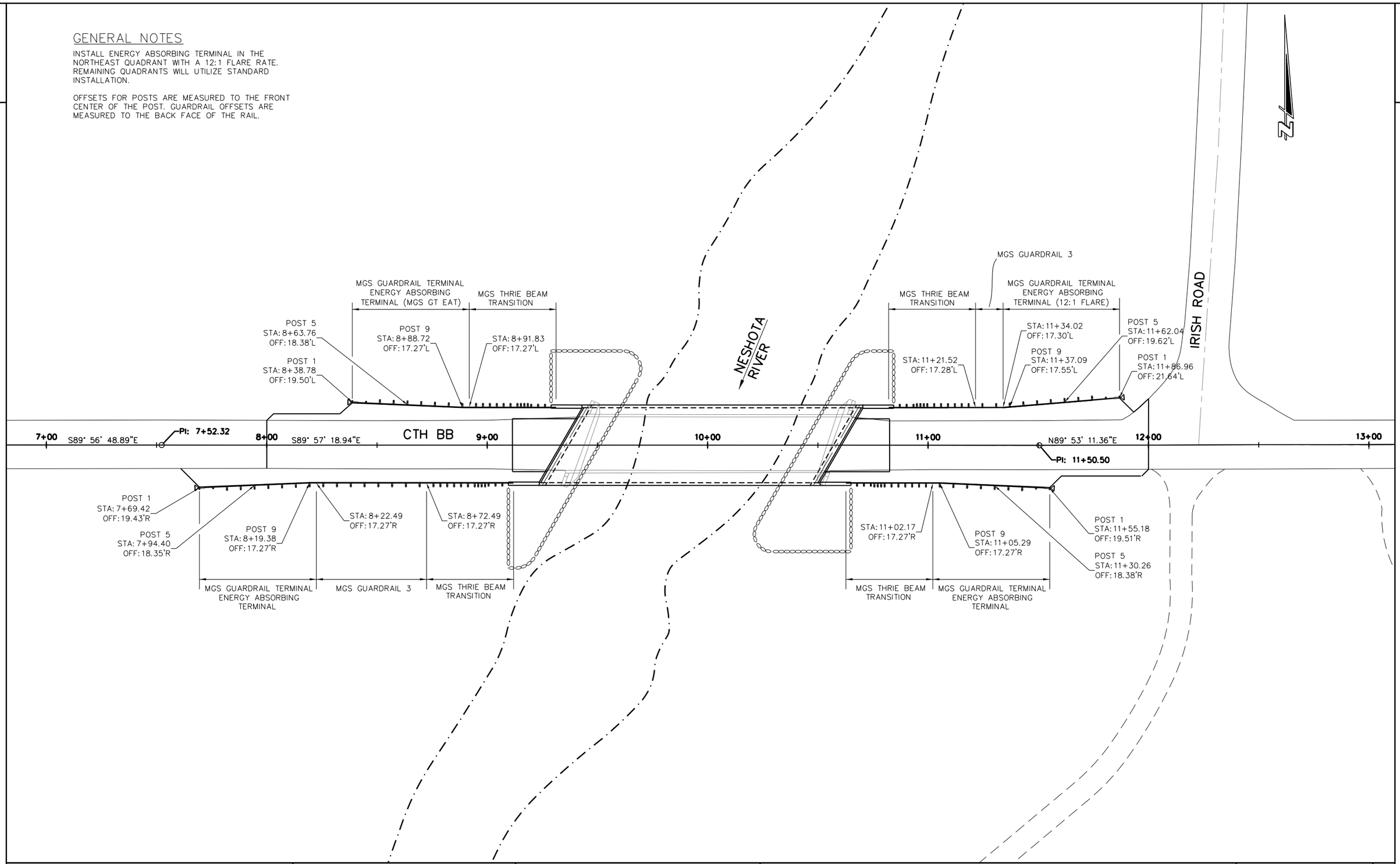
GENERAL NOTES

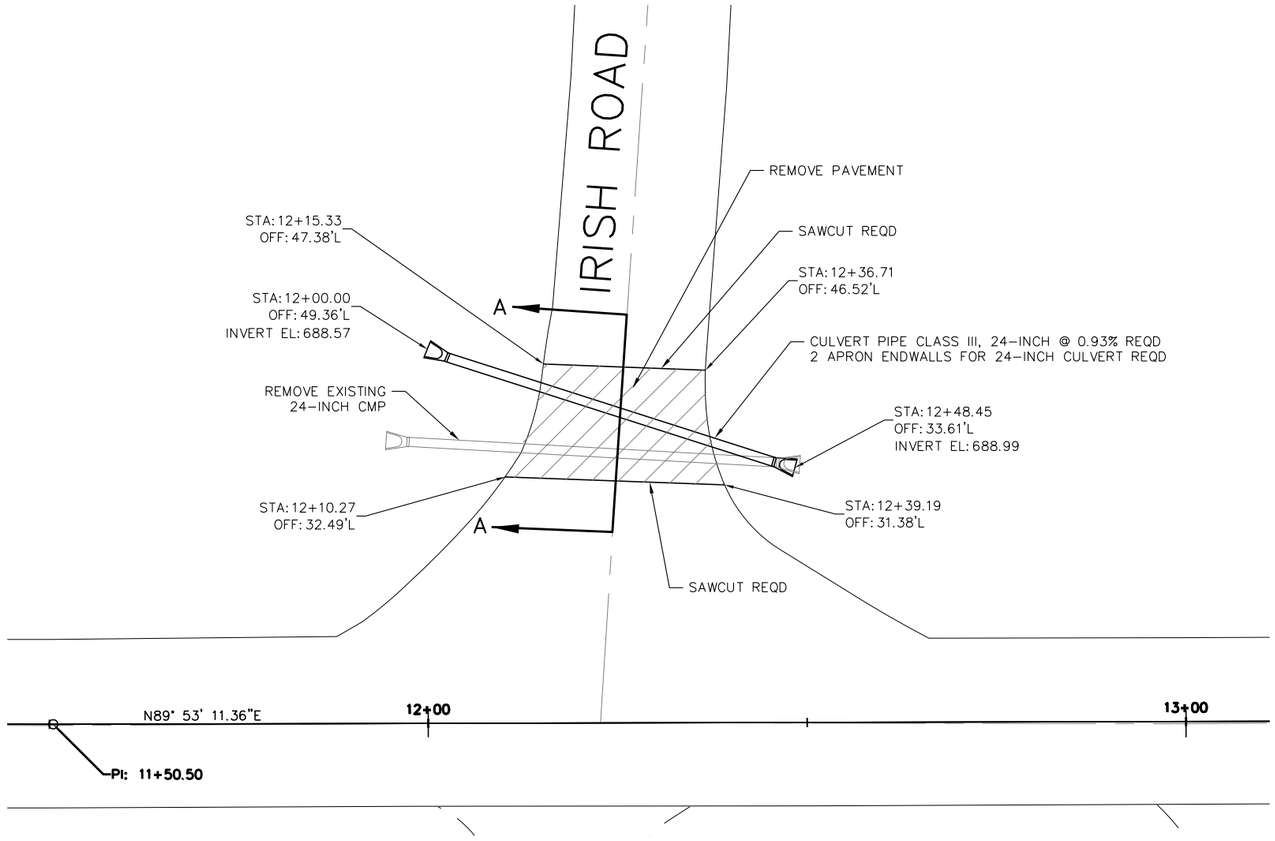
INSTALL ENERGY ABSORBING TERMINAL IN THE NORTHEAST QUADRANT WITH A 12:1 FLARE RATE. REMAINING QUADRANTS WILL UTILIZE STANDARD INSTALLATION.

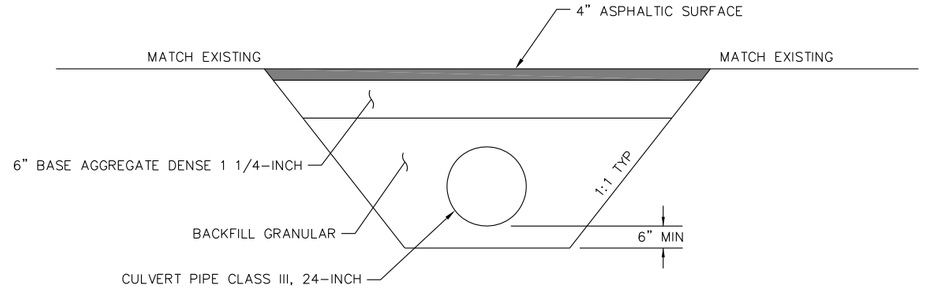
OFFSETS FOR POSTS ARE MEASURED TO THE FRONT CENTER OF THE POST. GUARDRAIL OFFSETS ARE MEASURED TO THE BACK FACE OF THE RAIL.



PROJECT NO: 4333-04-71	HWY: CTH BB	COUNTY: MANITOWOC	CONSTRUCTION DETAILS – GUARDRAIL INSTALLATION	SHEET 5	E

2





SECTION A-A

PROJECT NO: 4333-04-71	HWY: CTH BB	COUNTY: MANITOWOC	CONSTRUCTION DETAILS - CULVERT REPLACEMENT	SHEET 6	E

2

LEGEND

- SILT FENCE
- TEMPORARY SEED, FERTILIZER, AND EROSION MAT CLASS I TYPE B
- TEMPORARY DITCH CHECKS
- WATER FLOW
- RIPRAP MEDIUM

RIPRAP FLUME DETAIL (LT)

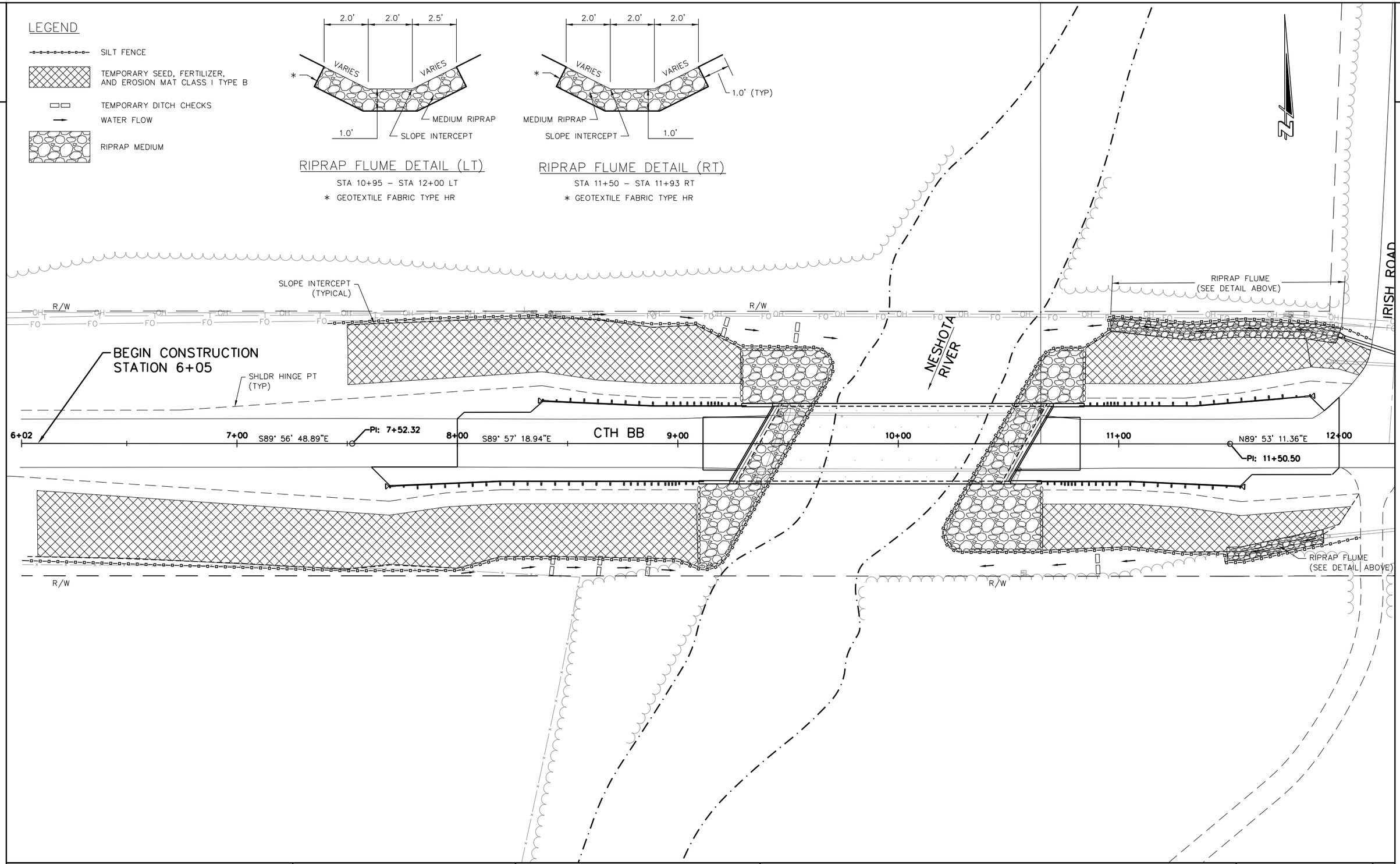
STA 10+95 – STA 12+00 LT

* GEOTEXTILE FABRIC TYPE HR

RIPRAP FLUME DETAIL (RT)

STA 11+50 – STA 11+93 RT

* GEOTEXTILE FABRIC TYPE HR



PROJECT NO: 4333-04-71	HWY: CTH BB	COUNTY: MANITOWOC	EROSION CONTROL	SHEET 7	E

DATE 05DEC14 E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	4333-04-71 QUANTITY
0010	203.0100	REMOVING SMALL PIPE CULVERTS	EACH	1.000	1.000
0020	203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS (STATION) 01. 10+00	LS	1.000	1.000
0030	204.0100	REMOVING PAVEMENT	SY	40.000	40.000
0040	204.0165	REMOVING GUARDRAIL	LF	261.000	261.000
0050	205.0100	EXCAVATION COMMON **P**	CY	660.000	660.000
0060	206.1000	EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 01. B-36-0212	LS	1.000	1.000
0070	208.0100	BORROW	CY	2,371.000	2,371.000
0080	209.0100	BACKFILL GRANULAR	CY	45.000	45.000
0090	210.0100	BACKFILL STRUCTURE	CY	320.000	320.000
0100	213.0100	FINISHING ROADWAY (PROJECT) 01. 4333-04-71	EACH	1.000	1.000
0110	305.0110	BASE AGGREGATE DENSE 3/4-INCH	TON	140.000	140.000
0120	305.0120	BASE AGGREGATE DENSE 1 1/4-INCH	TON	1,215.000	1,215.000
0130	415.1410	CONCRETE PAVEMENT APPROACH SLAB HES	SY	116.000	116.000
0140	465.0105	ASPHALTIC SURFACE	TON	219.000	219.000
0150	502.0100	CONCRETE MASONRY BRIDGES	CY	278.000	278.000
0160	502.3200	PROTECTIVE SURFACE TREATMENT	SY	560.000	560.000
0170	503.0155	PRESTRESSED GIRDER TYPE I 54W-INCH	LF	620.000	620.000
0180	505.0405	BAR STEEL REINFORCEMENT HS BRIDGES	LB	4,980.000	4,980.000
0190	505.0605	BAR STEEL REINFORCEMENT HS COATED BRIDGES	LB	33,640.000	33,640.000
0200	506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	10.000	10.000
0210	506.4000	STEEL DIAPHRAGMS (STRUCTURE) 01. B-36-0212	EACH	8.000	8.000
0220	513.4060	RAILING TUBULAR TYPE M (STRUCTURE) 01. B-36-0212	LS	1.000	1.000
0230	516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	22.000	22.000
0240	520.0124	CULVERT PIPE CLASS III 24-INCH	LF	45.000	45.000
0250	520.1024	APRON ENDWALLS FOR CULVERT PIPE 24-INCH	EACH	2.000	2.000
0260	550.0500	PILE POINTS	EACH	18.000	18.000
0270	550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	450.000	450.000
0280	606.0200	RIPRAP MEDIUM	CY	40.000	40.000
0290	606.0300	RIPRAP HEAVY	CY	390.000	390.000
0300	612.0106	PIPE UNDERDRAIN 6-INCH	LF	40.000	40.000
0310	612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	100.000	100.000
0320	614.2300	MGS GUARDRAIL 3	LF	62.500	62.500
0330	614.2500	MGS THRIE BEAM TRANSITION	LF	158.000	158.000
0340	614.2610	MGS GUARDRAIL TERMINAL EAT	EACH	4.000	4.000
0350	619.1000	MOBILIZATION	EACH	1.000	1.000
0360	624.0100	WATER	MGAL	5.000	5.000
0370	625.0500	SALVAGED TOPSOIL	SY	1,880.000	1,880.000
0380	627.0200	MULCHING	SY	2,320.000	2,320.000
0390	628.1504	SILT FENCE	LF	1,110.000	1,110.000
0400	628.1520	SILT FENCE MAINTENANCE	LF	1,310.000	1,310.000
0410	628.1905	MOBILIZATIONS EROSION CONTROL	EACH	4.000	4.000
0420	628.1910	MOBILIZATIONS EMERGENCY EROSION CONTROL	EACH	2.000	2.000
0430	628.2004	EROSION MAT CLASS I TYPE B	SY	1,880.000	1,880.000
0440	628.7504	TEMPORARY DITCH CHECKS	LF	60.000	60.000
0450	629.0210	FERTILIZER TYPE B	CWT	4.000	4.000
0460	630.0120	SEEDING MIXTURE NO. 20	LB	69.000	69.000
0470	630.0200	SEEDING TEMPORARY	LB	54.000	54.000
0480	634.0612	POSTS WOOD 4X6-INCH X 12-FT	EACH	5.000	5.000
0490	637.2230	SIGNS TYPE II REFLECTIVE F	SF	18.250	18.250

3

DATE 05DEC14 E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	4333-04-71 QUANTITY
0500	638.2602	REMOVING SIGNS TYPE II	EACH	5.000	5.000
0510	638.3000	REMOVING SMALL SIGN SUPPORTS	EACH	5.000	5.000
0520	642.5001	FIELD OFFICE TYPE B	EACH	1.000	1.000
0530	643.0100	TRAFFIC CONTROL (PROJECT) 01. 4333-04-71	EACH	1.000	1.000
0540	643.0300	TRAFFIC CONTROL DRUMS	DAY	2,640.000	2,640.000
0550	643.0420	TRAFFIC CONTROL BARRICADES TYPE III	DAY	1,584.000	1,584.000
0560	643.0705	TRAFFIC CONTROL WARNING LIGHTS TYPE A	DAY	3,168.000	3,168.000
0570	643.0900	TRAFFIC CONTROL SIGNS	DAY	1,584.000	1,584.000
0580	645.0120	GEOTEXTILE FABRIC TYPE HR	SY	830.000	830.000
0590	646.0106	PAVEMENT MARKING EPOXY 4-INCH	LF	1,095.000	1,095.000
0600	650.4500	CONSTRUCTION STAKING SUBGRADE	LF	277.000	277.000
0610	650.5000	CONSTRUCTION STAKING BASE	LF	486.000	486.000
0620	650.6500	CONSTRUCTION STAKING STRUCTURE LAYOUT (STRUCTURE) 01. B-36-0212	LS	1.000	1.000
0630	650.9910	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) 01. 4333-04-71	LS	1.000	1.000
0640	650.9920	CONSTRUCTION STAKING SLOPE STAKES	LF	486.000	486.000
0650	690.0150	SAWING ASPHALT	LF	104.000	104.000
0660	715.0415	INCENTIVE STRENGTH CONCRETE PAVEMENT	DOL	500.000	500.000
0670	715.0502	INCENTIVE STRENGTH CONCRETE STRUCTURES	DOL	1,670.000	1,670.000
0680	ASP.1T0A	ON-THE-JOB TRAINING APPRENTICE AT $5. 00/HR	HRS	300.000	300.000
0690	ASP.1T0G	ON-THE-JOB TRAINING GRADUATE AT $5.00/HR	HRS	600.000	600.000

3

ASPHALTIC SURFACE

STATION - STATION	LOCATION	465.0105 TON
7+60 - 9+42	CTH BB	105
10+51 - 12+00	CTH BB	105
12+10 - 12+39	IRISH ROAD	9
	TOTAL	219

MGS GUARDRAIL 3

STATION - STATION	LOCATION	614.2300 LF
8+22 - 8+72	17.27' R	50
11+21 - 11+34	17.27' L	12.5
TOTAL		62.5

MGS THRIE BEAM TRANSITION

STATION - STATION	LOCATION	614.2500 LF
8+72 - 9+12	17.27' R	39.5
8+92 - 9+31	17.27' L	39.5
10+63 - 11+02	17.27' R	39.5
10+82 - 11+22	17.27' L	39.5
TOTAL		158

MGS GUARDRAIL TERMINAL EAT

STATION - STATION	LOCATION	614.2610 EACH
7+69 - 8+22	SW QUAD	1
8+39 - 8+92	NW QUAD	1
11+02 - 11+55	SE QUAD	1
11+34 - 11+87	NE QUAD	1
TOTAL		4

BASE AGGREGATE DENSE

STATION - STATION	LOCATION	305.0120 1 1/4 - INCH TON	305.0110 3/4 - INCH TON
6+05 - 12+14	CTH BB	1200	140
12+10 - 12+39	IRISH ROAD	15	--
TOTAL		1215	140

REMOVING PAVEMENT

STATION - STATION	LOCATION	204.0100 SY	REMARKS
12+10 - 12+39	IRISH ROAD	40	CULVERT REPLACEMENT
TOTAL		40	

REMOVING GUARDRAIL

STATION - STATION	LOCATION	204.0165 LF
8+69 - 9+35	RT	66
8+79 - 9+45	LT	65
10+56 - 11+21	RT	64
10+66 - 11+31	LT	66
TOTAL		261

REMOVING SMALL PIPE CULVERTS

STATION - STATION	LOCATION	203.0100 EACH	DESCRIPTION
11+97 - 12+46	IRISH ROAD	1	24" CMP
TOTAL		1	

RIPRAP MEDIUM

STATION - STATION	LOCATION	606.0200 CY	645.0120 GEOTEXTILE FABRIC TYPE HR SY
10+95 - 12+00	LT	30	110
11+50 - 11+93	RT	10	40
TOTAL		40	150

CONCRETE PAVEMENT APPROACH SLAB HES

ROADWAY	LOCATION	415.1410 SY
CTH BB	WEST APPROACH	58
CTH BB	EAST APPROACH	58
TOTAL		116

CULVERT PIPE AND ENDWALLS

STATION - STATION	LOCATION	520.0124 CULVERT PIPE CLASS III, 24-INCH LF	MINIMUM THICKNESS STEEL INCHES	520.1024 AEW FOR CULVERT PIPE, 24-INCH EACH
12+02 - 12+46	IRISH ROAD	45	0.064	2
TOTAL		45		2

BACKFILL GRANULAR

STATION - STATION	LOCATION	209.0100 CY	DESCRIPTION
12+10 - 12+39	IRISH ROAD	45	CULVERT REPLACEMENT
TOTAL		45	

ALL ITEMS ARE CATEGORY 0010
UNLESS OTHERWISE NOTED.

ALL ITEMS ARE CATEGORY 0010
UNLESS OTHERWISE NOTED.

3

3

EROSION CONTROL ITEMS

STATION - STATION	LOCATION	630.0200 SEEDING TEMPORARY LB	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.2004 EROSION MAT CLASS I TYPE B SY	628.7504 TEMPORARY DITCH CHECKS LF	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATION EMERGENCY EROSION CONTROL EACH
6+05 - 9+09	RT	25	--	--	870	--	--	--
7+50 - 9+28	LT	15	--	--	510	--	--	--
10+65 - 12+05	RT	7	--	--	250	--	--	--
10+85 - 12+14	LT	7	--	--	250	--	--	--
8+43	55' R	--	--	--	--	12	--	--
8+65	55' R	--	--	--	--	12	--	--
8+86	55' R	--	--	--	--	12	--	--
9+21	53' L	--	--	--	--	12	--	--
9+54	51' L	--	--	--	--	12	--	--
6+05 - 12+14	CTH BB	--	1110	1110	--	--	4	2
UNDISTRIBUTED		--	--	200	--	--	--	--
TOTAL		54	1110	1310	1880	60	4	2

SAWING ASPHALT

STATION	LOCATION	690.0150 LF
8+00	BEGIN PROJECT	22
12+00	END PROJECT	32
--	IRISH ROAD	50
TOTAL		104

SIGNING QUANTITIES

LOCATION	637.2230 SIGNS TYPE II REFLECTIVE F SF	634.0612 POSTS WOOD 4X6-INCH X 12-FT EACH	638.2602 REMOVING SIGNS TYPE II EACH	638.3000 REMOVING SMALL SIGN SUPPORTS EACH	DESCRIPTION
NW BRIDGE CORNER	3.00	1	1	1	W5-52 L
SW BRIDGE CORNER	3.00	1	1	1	W5-52 R
NE BRIDGE CORNER	3.00	1	1	1	W5-52 R
SE BRIDGE CORNER	3.00	1	1	1	W5-52 L
IRISH ROAD	6.25	1	1	1	R1-1 STOP SIGN
TOTAL	18.25	5	5	5	

PAVEMENT MARKING EPOXY, 4-INCH

STATION - STATION	LOCATION	646.0106 EDGELINE WHITE LF	646.0106 CENTERLINE DASHED YELLOW LF
6+05 - 12+00	RT	595	--
8+00 - 12+00	LT	400	--
8+00 - 12+00	CENTER	--	100
SUBTOTAL		995	100
TOTAL		1095	

ALL ITEMS ARE CATEGORY 0010
UNLESS OTHERWISE NOTED.

3

RESTORATION ITEMS

STATION - STATION	LOCATION	625.0100 SALVAGED TOPSOIL SY	627.0200 MULCHING SY	629.0210 FERTILIZER TYPE B CWT	630.0120 SEEDING MIXTURE NO. 20 LB
6+05 - 9+09	RT	870	1050	1	30
7+50 - 9+28	LT	510	580	1	20
10+65 - 12+05	RT	250	330	1	9
10+85 - 12+14	LT	250	360	1	10
8+43	55' R	--	--	--	--
8+65	55' R	--	--	--	--
8+86	55' R	--	--	--	--
9+21	53' L	--	--	--	--
9+54	51' L	--	--	--	--
6+05 - 12+14	CTH BB	--	--	--	--
UNDISTRIBUTED		--	--	--	--
TOTAL		1880	2320	4	69

FIELD OFFICE TYPE B

PROJECT	LOCATION	642.5001 EACH
4333-04-71	CTH BB	1
TOTAL		1

FINISHING ROADWAY

STATION - STATION	LOCATION	213.0100 EACH
7+60 - 12+00	CTH BB	1
TOTAL		1

WATER

PROJECT	LOCATION	624.0100 MGAL
4333-04-71	CTH BB	5
TOTAL		5

MOBILIZATION

PROJECT	LOCATION	619.1000 EACH
4333-04-71	CTH BB	0.22
4333-04-71 (CATEGORY 0020)	CTH BB	0.78
TOTAL		1

TRAFFIC CONTROL

LOCATION	643.0420 TRAFFIC CONTROL BARRICADES TYPE III DAY	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A DAY	643.0900 TRAFFIC CONTROL SIGNS DAY	643.0300 TRAFFIC CONTROL DRUMS DAY	643.0100 TRAFFIC CONTROL 4333-04-71 EACH
PROJECT 4333-04-71	1584	3168	1584	2640	1
TOTAL	1584	3168	1584	2640	1

CONSTRUCTION STAKING

STATION - STATION	LOCATION	650.4500 SUBGRADE LF	650.5000 BASE LF	650.9910 SUPPLEMENTAL CONTROL LS	650.9920 SLOPE STAKES LF	CATEGORY 0020 650.6500 STRUCTURE LAYOUT B-36-0212 LS
6+05 - 12+14	CTH BB	277	486	1	486	1
TOTAL		277	486	1	486	1

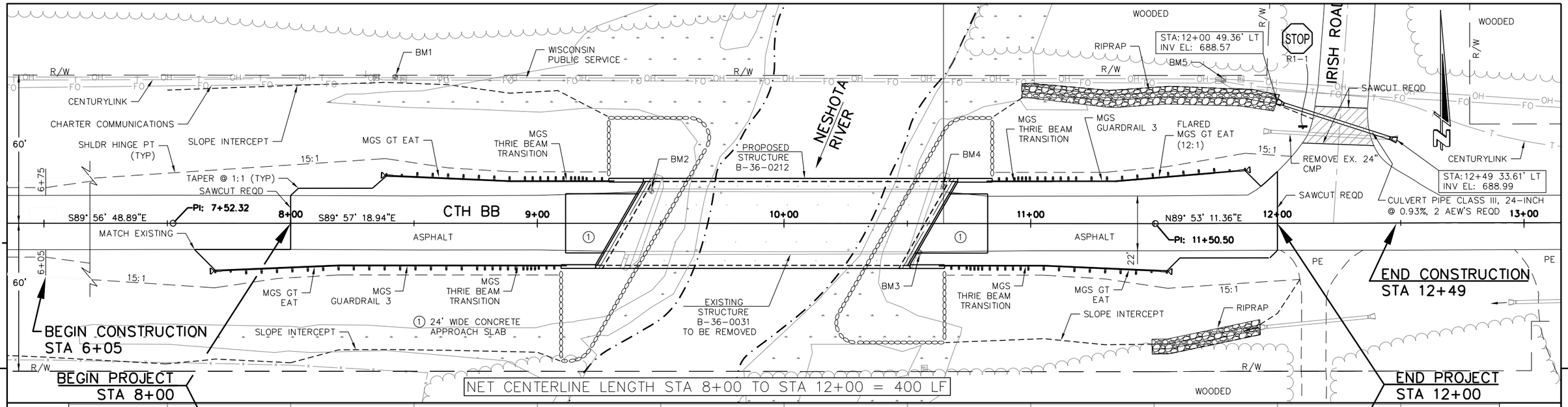
ALL ITEMS ARE CATEGORY 0010
UNLESS OTHERWISE NOTED.

3

3

Division	From / To Station	Location	205.0100 Common Excavation (CY) **P** Cut	Salvaged / Unusable Pavement Material	Available Material (CY) (1)	Unexpanded Fill	Expanded Fill Factor 1.25	Mass Ordinate + / - (2)	208.0100 Borrow (CY)
1	6+05 - 9+29	CTH BB WEST	484	117	367	1662	2078	-1711	1711
Division 1 Subtotal			484	117	367	1662	2078	-1711	1711
2	10+65 - 12+00	CTH BB EAST	177	120	57	573	717	-660	660
Division 2 Subtotal			177	120	57	573	717	-660	660
Grand Total			660	237	423	2235	2794	-2371	2371
		Total Common Ex	660					-2371	2371

1) Available Material = Cut - Salvaged/Unusuable Pavement Material
2) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material. Minus indicates a shortage of material.



BENCHMARKS			
NO	STA	DESCRIPTION	ELEV
1	8+42	59' LT COTTON SPINDLE S. SIDE OF POWER POLE	684.25
2	9+46	13' LT CHIS. SQUARE NW CORNER OF BRIDGE	694.43
3	10+55	12' RT CHIS. SQUARE SE CORNER OF BRIDGE	694.50
4	10+65	15' LT MONUMENT NE CORNER OF BRIDGE	694.46
5	11+78	58' LT COTTON SPINDLE S. SIDE OF POWER POLE	687.70

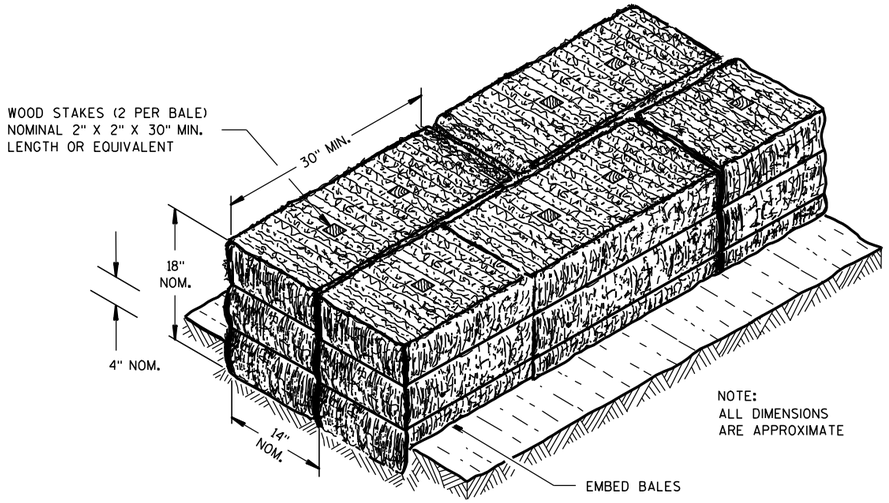
STA 10+00
REMOVE STRUCTURE B-36-0031
TWO SPAN STEEL DECK GIRDER BRIDGE
119.0' OVERALL LENGTH X 24.0' CLEAR WIDTH
20° LHF SKEW

STA 9+97
STRUCTURE B-36-0212 REQ'D
SINGLE SPAN 54W-INCH GIRDER BRIDGE
123.0' OVERALL LENGTH X 34.0' CLEAR WIDTH
30° LHF SKEW

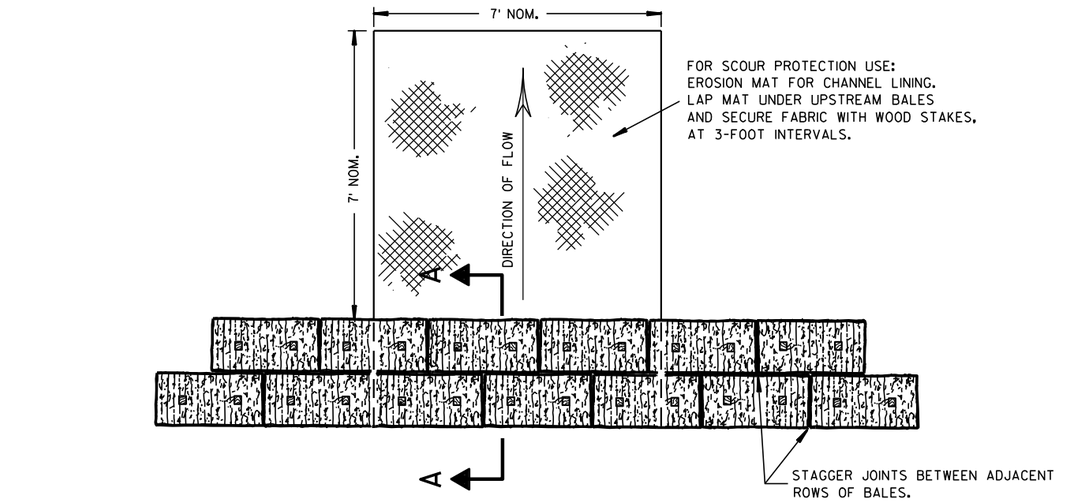
PROJECT NO: 4333-04-71	HWY: CTH BB	COUNTY: MANITOWOC	PLAN AND PROFILE:	SHEET 14	E

Standard Detail Drawing List

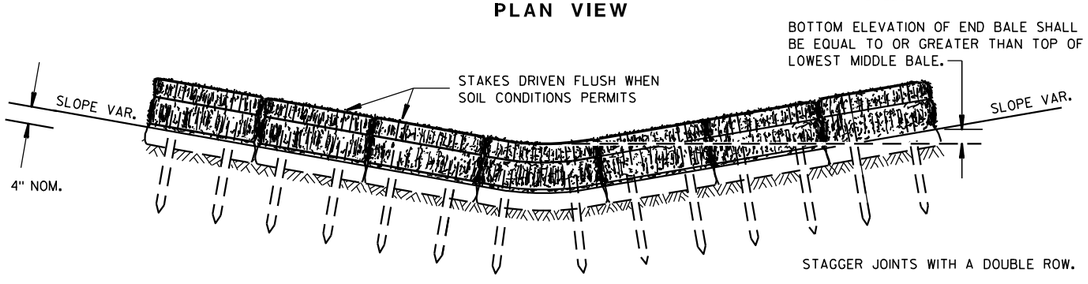
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
12A03-10	NAME PLATE (STRUCTURES)
13B02-07A	CONCRETE BRIDGE APPROACH
14B42-03A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-03B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-03C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-02A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-03A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-05A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-05B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C06-07	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-16A	PAVEMENT MARKING (MAINLINE)



SECTION A-A



PLAN VIEW



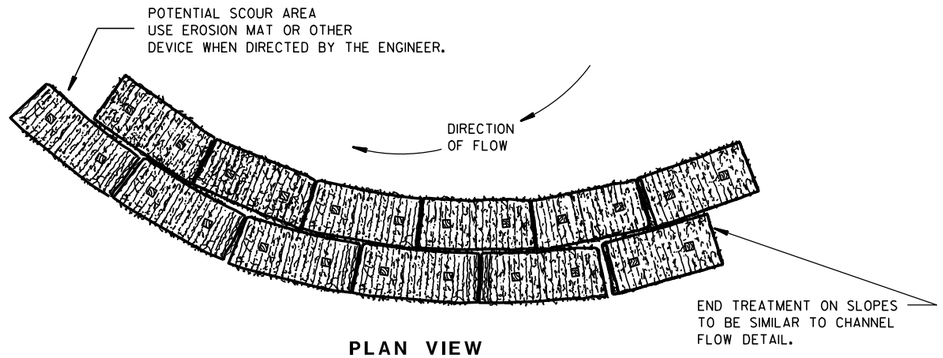
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES (1)

GENERAL NOTES

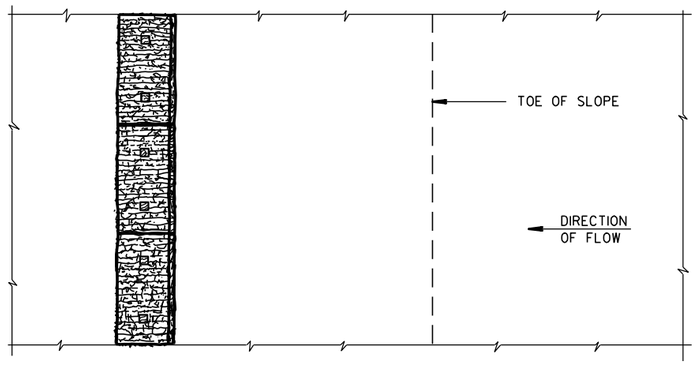
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

(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.

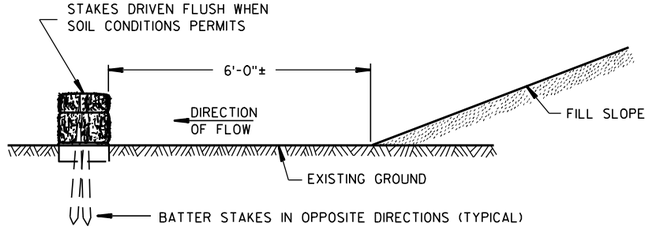


PLAN VIEW

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 Cannestra — CHIEF ROADWAY DEVELOPMENT ENGINEER

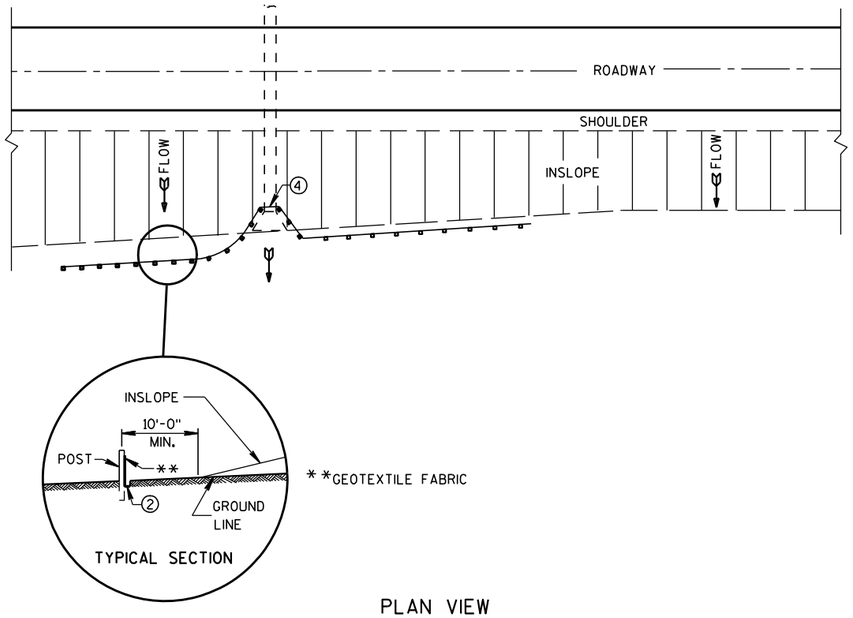
FHWA

6

S.D.D. 8 E 8-3

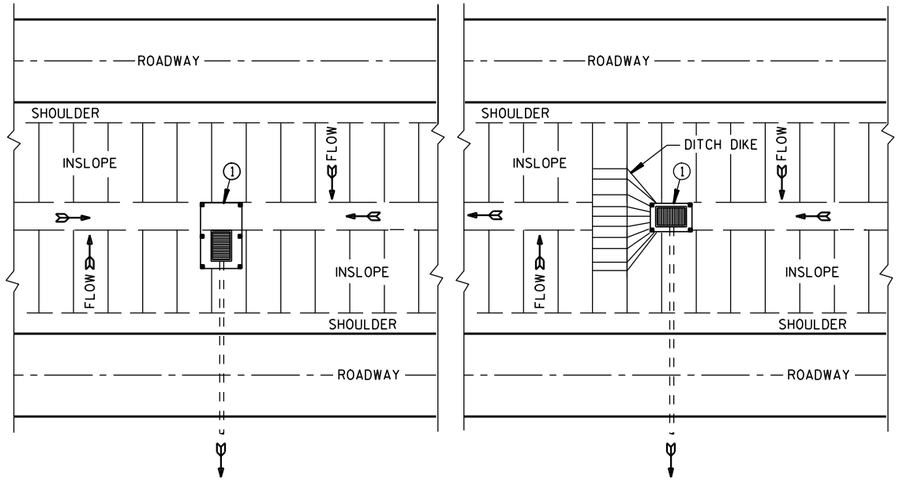
6

S.D.D. 8 E 8-3



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



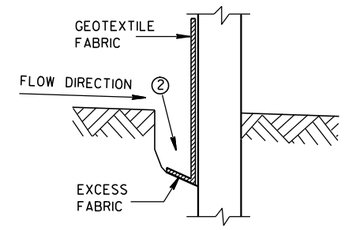
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

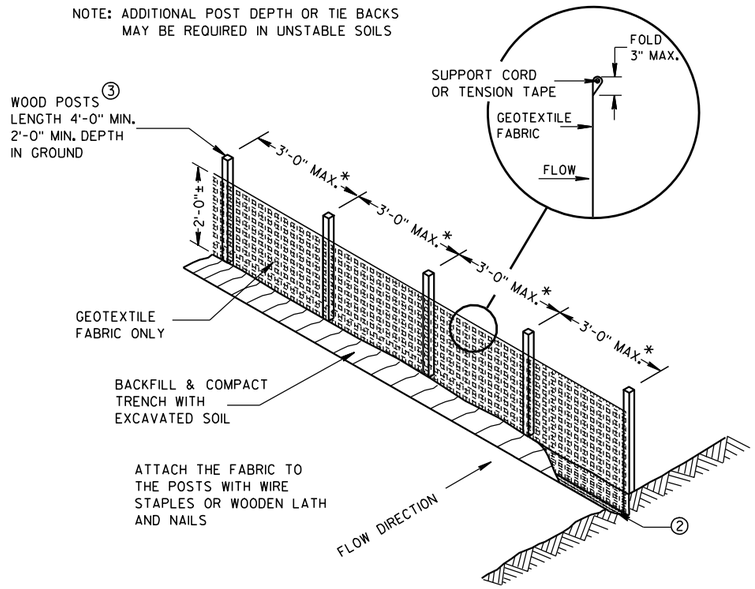
GENERAL NOTES

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

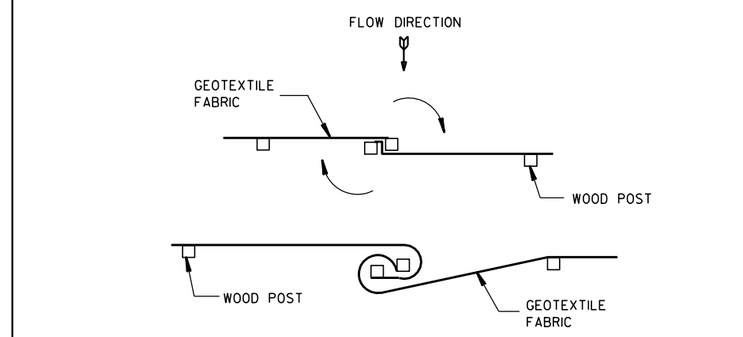
1. HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
2. FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL BE A MINIMUM SIZE OF 1⅛" X 1⅛" OF OAK OR HICKORY.
4. SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
5. CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



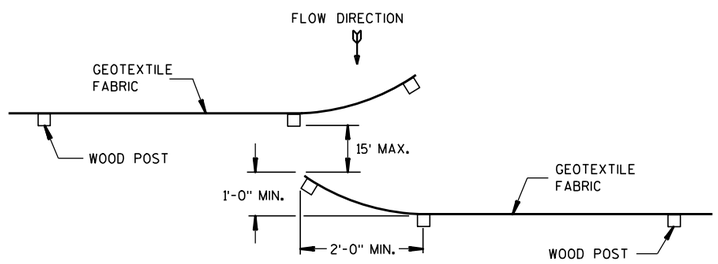
TRENCH DETAIL



SILT FENCE

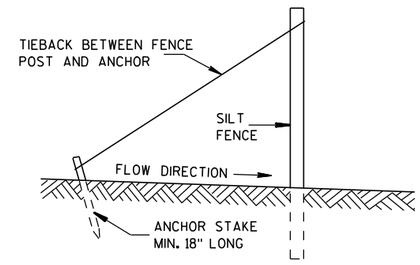


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE 5



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

S.D.D. 8 E 9-6

6

S.D.D. 8 E 9-6

METAL APRON ENDWALLS

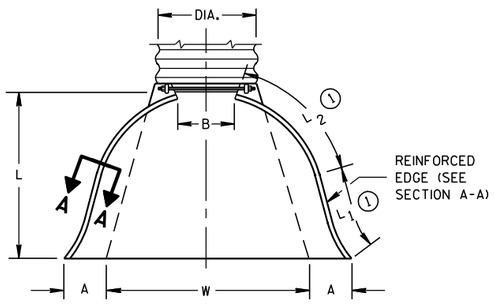
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")		
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to 1	1 Pc.
21	.064	.060	9	12	6	36	18	29 5/8	42	2 1/2 to 1	1 Pc.
24	.064	.075	10	13	6	41	18	37 1/4	48	2 1/2 to 1	1 Pc.
30	.079	.075	12	16	8	51	18	52 1/4	60	2 1/2 to 1	1 Pc.
36	.079	.105	14	19	9	60	24	59 3/4	72	2 1/2 to 1	2 Pc.
42	.109	.105	16	22	11	69	24	75 5/8	84	2 1/2 to 1	2 Pc.
48	.109	.105	18	27	12	78	24	81	90	2 1/4 to 1	3 Pc.
54	.109	.105	18	30	12	84	30	85 1/2	102	2 1/4 to 1	3 Pc.
60	.109×	.105×	18	33	12	87	—	—	114	2 to 1	3 Pc.
66	.109×	.105×	18	36	12	87	—	—	120	2 to 1	3 Pc.
72	.109×	.105×	18	39	12	87	—	—	126	2 to 1	3 Pc.
78	.109×	.105×	18	42	12	87	—	—	132	1 1/2 to 1	3 Pc.
84	.109×	.105×	18	45	12	87	—	—	138	1 1/2 to 1	3 Pc.
90	.109×	.105×	18	37	12	87	—	—	144	1 1/2 to 1	3 Pc.
96	.109×	.105×	18	35	12	87	—	—	150	1 1/2 to 1	3 Pc.

× EXCEPT CENTER PANEL SEE GENERAL NOTES

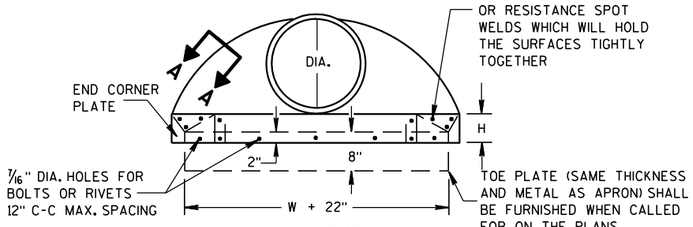
REINFORCED CONCRETE APRON ENDWALLS

PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE
	T	A	B	C	D	E	G	
12	2	4	24	48 7/8	72 1/8	24	2	3 to 1
15	2 1/4	6	27	46	73	30	2 1/4	3 to 1
18	2 1/2	9	27	46	73	36	2 1/2	3 to 1
21	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	3 to 1
24	3	9 1/2	43 1/2	30	73 1/2	48	3	3 to 1
27	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	3 to 1
30	3 1/2	12	54	19 3/4	73 1/2	60	3 1/2	3 to 1
36	4	15	63	34 3/4	97 3/4	72	4	3 to 1
42	4 1/2	21	63	35	98	78	4 1/2	3 to 1
48	5	24	72	26	98	84	5	3 to 1
54	5 1/2	27	65	* 33 1/4 - ** 35	* 98 1/4 - ** 100	90	5 1/2	2 2/5 to 1
60	6	* 30 - ** 35	60	39	99	96	5	2 to 1
66	6 1/2	* 24 - ** 30	* 72 - ** 78	* 21 - ** 27	99	102	5 1/2	2 to 1
72	7	* 24 - ** 36	78	21	99	108	6	2 to 1
78	7 1/2	* 24 - ** 36	78	21	99	114	6 1/2	2 to 1
84	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2 to 1
90	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	1 1/2 to 1

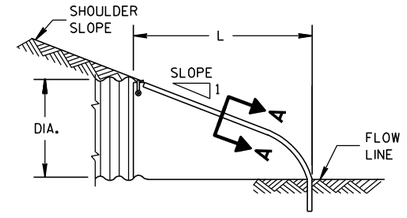
*MINIMUM
**MAXIMUM



PLAN VIEW

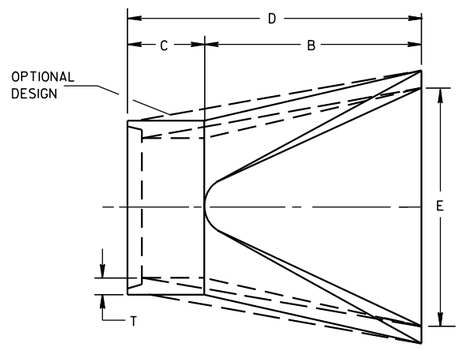


END VIEW

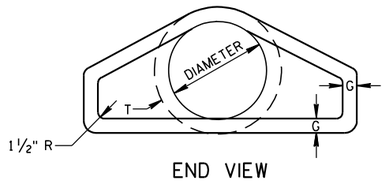


SIDE ELEVATION

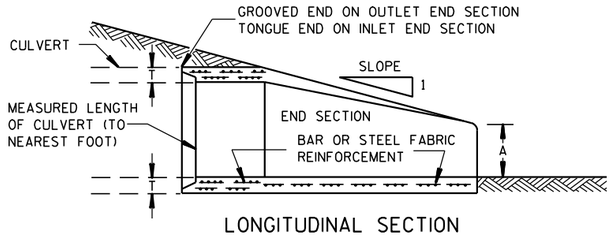
METAL ENDWALLS



PLAN

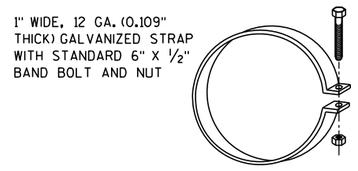


END VIEW



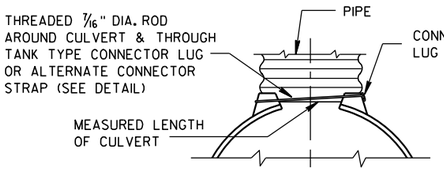
LONGITUDINAL SECTION

CONCRETE ENDWALLS

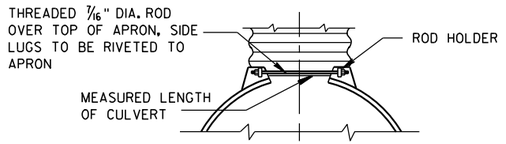


ALTERNATE FOR TYPE 1 CONNECTION

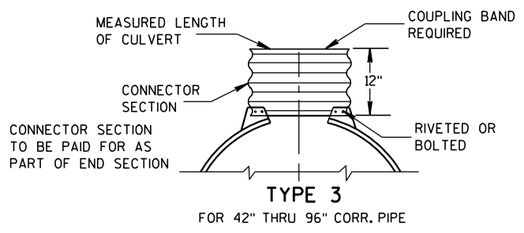
END SECTION CONNECTOR STRAP



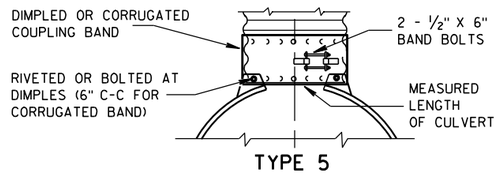
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

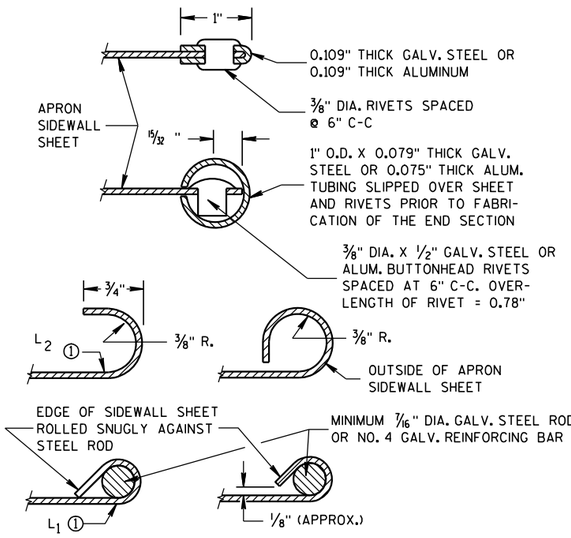
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5 AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO CIRCUMFERENTIAL CORRUGATIONS AT EACH END USE ENDWALL CONNECTION DETAILS 1, 2 OR 3.

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

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

ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.

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

① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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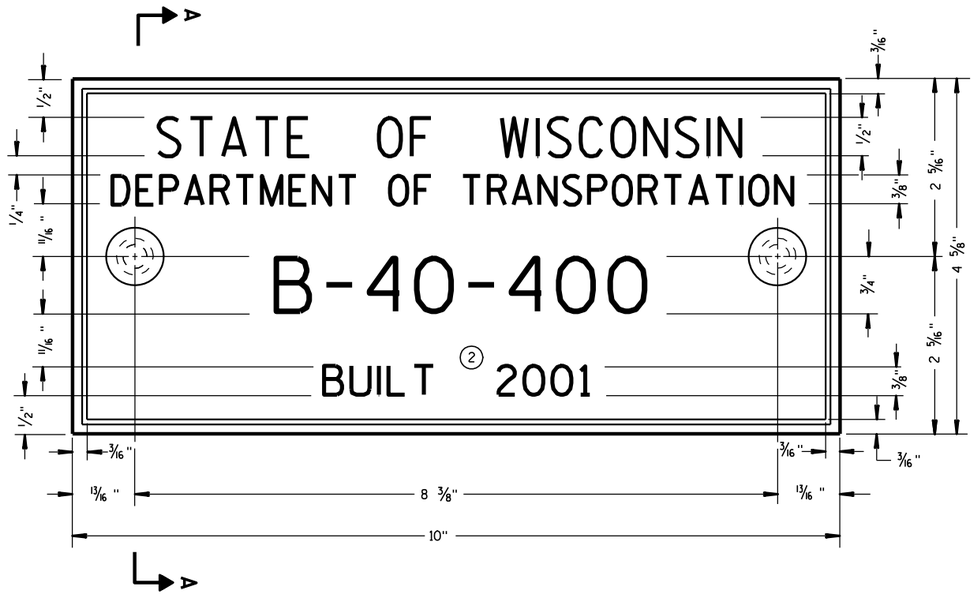
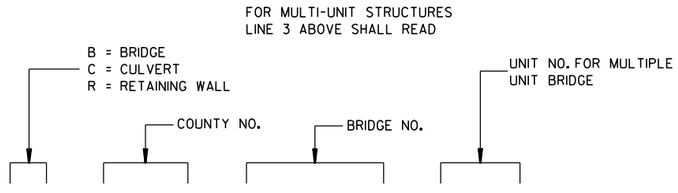
S.D.D. 8 F 1-11



TYPICAL NAME PLATE

(BRIDGES, CULVERTS, AND RETAINING WALLS)



NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

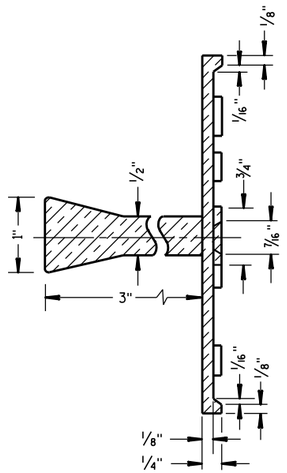
GENERAL NOTES

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

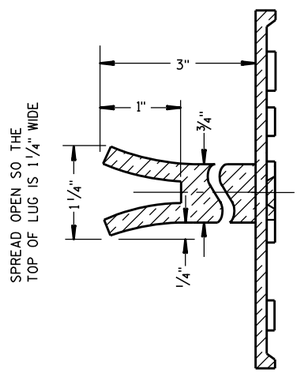
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

(1) EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

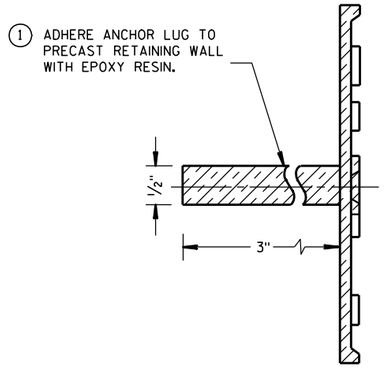
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A



ALTERNATE LUG



ALTERNATE LUG

(FOR ATTACHMENT TO PRECAST STRUCTURES)

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

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S.D.D. 12 A 3-10

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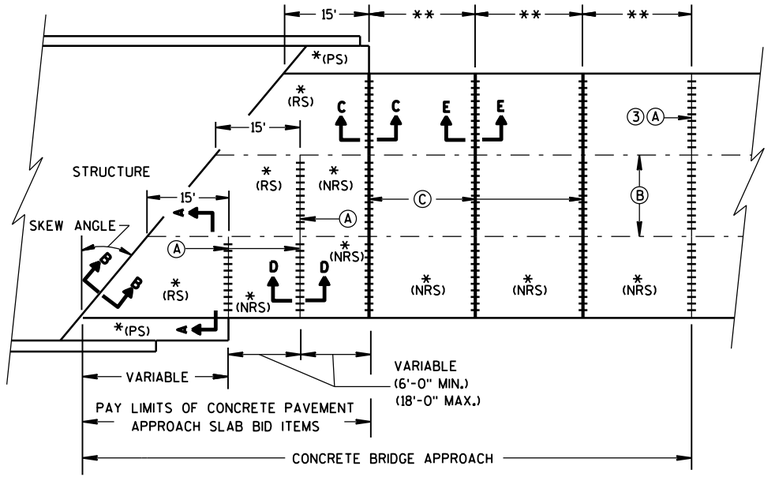
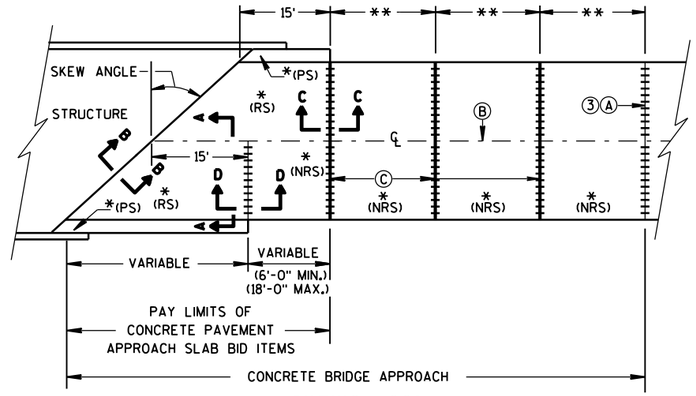
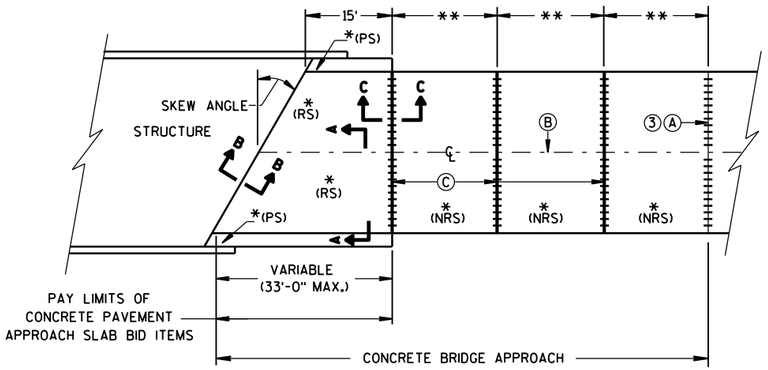
S.D.D. 12 A 3-10



SKEWED APPROACH
(PAVEMENT MORE THAN 2 LANES)



SKEWS >30°
(PAVEMENT WIDTH ≤30')

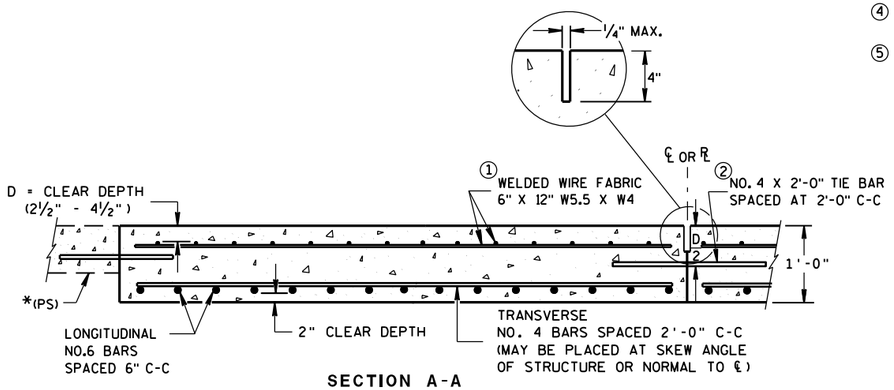


SKEWS ≤30°
(PAVEMENT WIDTH ≤30')
APPROACH SLAB AND ADJACENT PAVEMENT

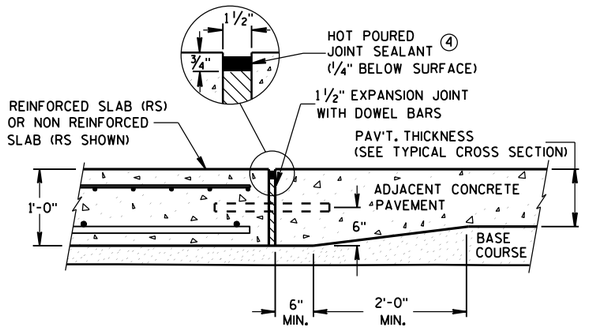
*(RS) = REINFORCED CONCRETE SLAB
*(PS) = PAVED CONCRETE SHOULDER: CONCRETE PAVEMENT, OR CONCRETE SURFACE DRAIN (SEE DETAILS ELSEWHERE IN THE PLAN)
*(NRS) = NON-REINFORCED CONCRETE SLAB

**STANDARD TRANSVERSE JOINT SPACING (SEE SDD 13C4, SDD 13C11, & SDD 13C13)
***STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11, & SDD 13C13)

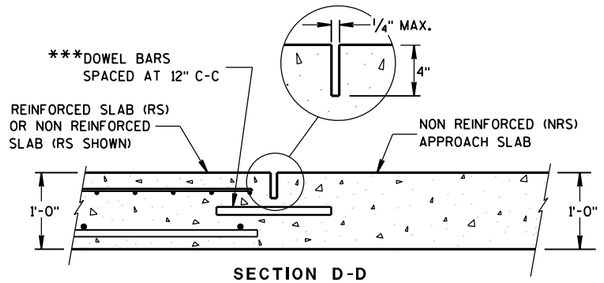
(A) STANDARD CONTRACTION JOINT NORMAL TO ℄ OR ℄
(B) STANDARD LONGITUDINAL JOINT AND TIE BARS.
(C) 1½" EXPANSION JOINT WITH DOWEL BARS NORMAL TO ℄ OR ℄



SECTION A-A
REINFORCEMENT POSITIONING DETAIL



SECTION C-C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT



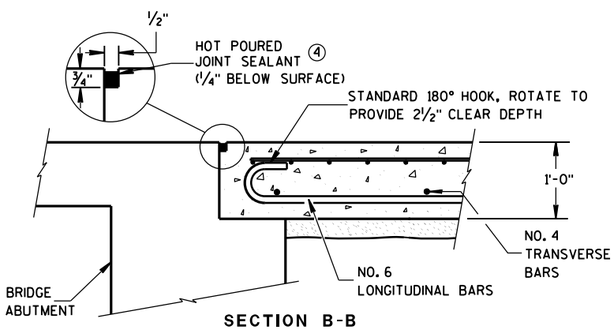
SECTION D-D
CONTRACTION JOINT

GENERAL NOTES

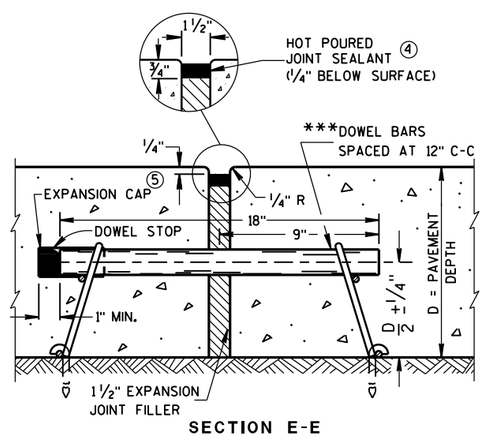
THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

1. THE CONTRACTOR MAY USE NO. 4 BARS SPACED AT 2'-0" C-C IN BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTIONS FOR TOP REINFORCEMENT AS AN ALTERNATIVE TO THE WELDED WIRE FABRIC.
2. THE CONTRACTOR MAY OMIT TIE BARS BETWEEN REINFORCED SLABS WHERE SLAB REINFORCEMENT BARS EXTEND ACROSS THE CENTERLINE OR REFERENCE LINE.
3. DO NOT DOWEL A CONTRACTION JOINT THAT ABUTS AN HMA PAVEMENT.
4. USE A JOINT SEALANT MEETING THE REQUIREMENTS OF ASTM D6690.
5. PLACE EXPANSION CAP ON THE END OF THE DOWEL THAT IS NOT TACK WELDED TO THE BASKET. DO NOT FORCE DOWEL BAR PAST THE DOWEL STOP.



SECTION B-B
BEND DETAIL
BOTTOM REINFORCEMENT



SECTION E-E
EXPANSION JOINT

CONCRETE BRIDGE APPROACH

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2014 — DATE
/S/ Deb Bischoff — PAVEMENT POLICY & DE
EER
FHWA

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S.D.D. 13 B 2-7a

GENERAL NOTES

(1) WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

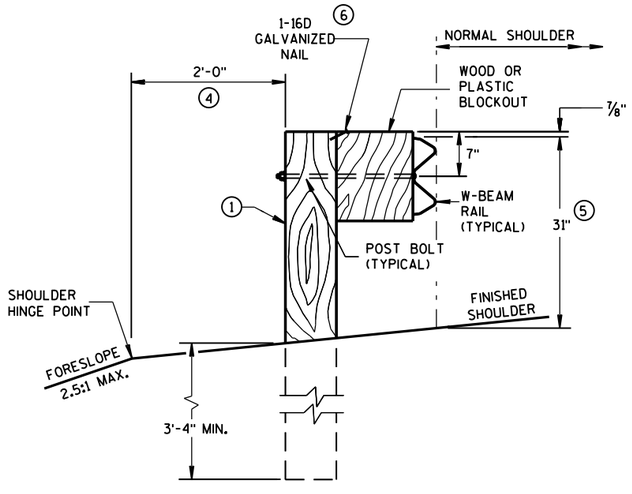
(2) USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

(3) IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2½ INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.

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

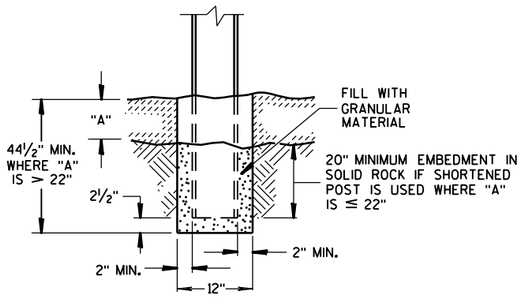
(5) FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".

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



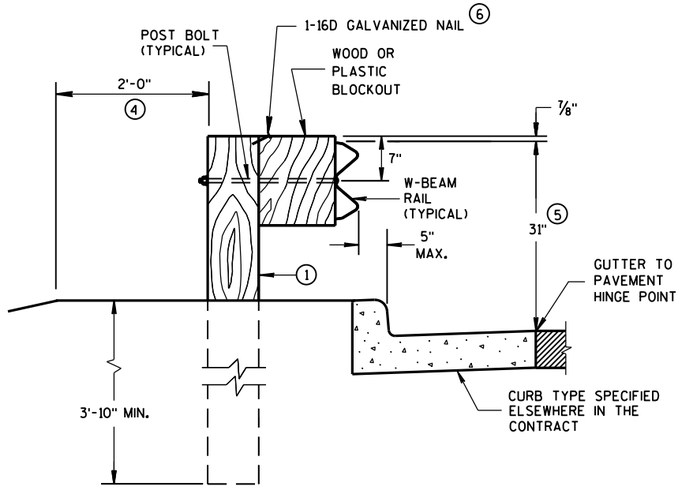
END VIEW

LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



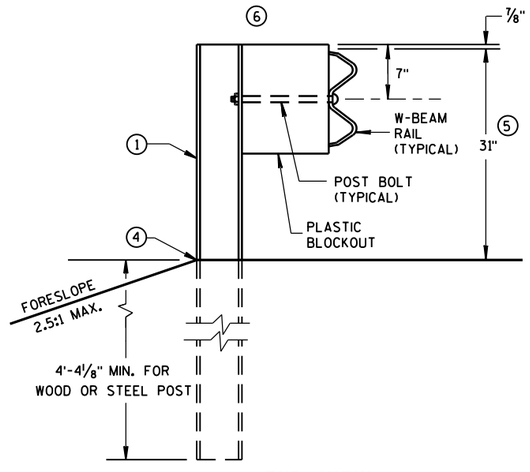
END VIEW

SETTING STEEL OR WOOD POST IN ROCK (3)



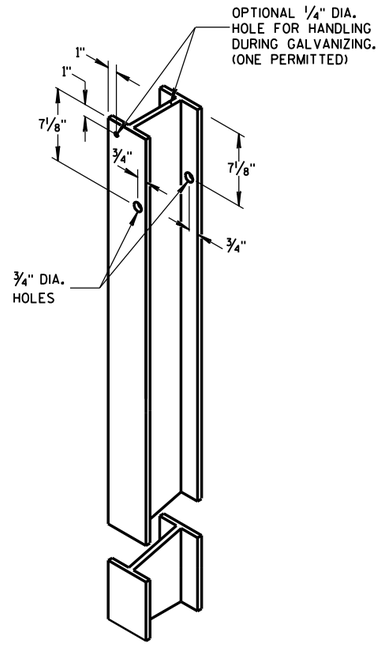
END VIEW

LOCATED ALONG A CURBED ROADWAY

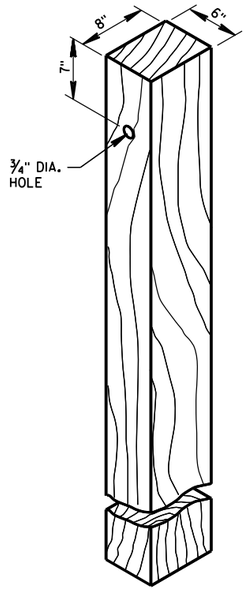


END VIEW

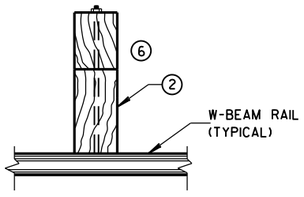
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



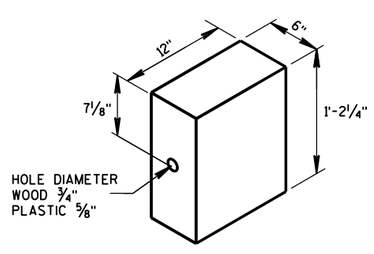
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) (1)



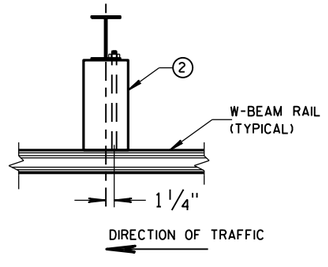
WOOD POST
(6" X 8") NOMINAL (1)



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT (2)



PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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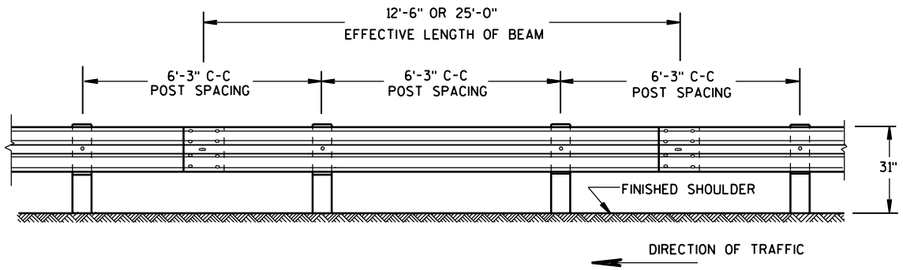
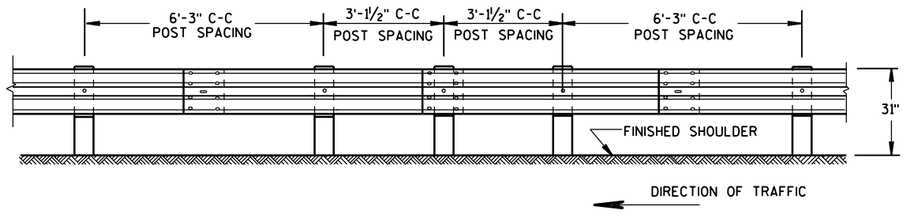
S.D.D. 14 B 42-3a



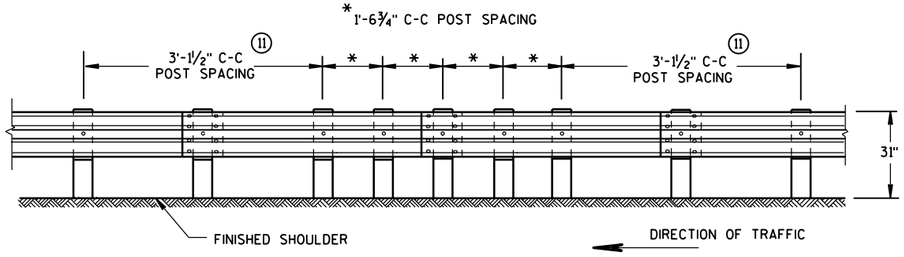
FRONT VIEW

POST SPACING STANDARD INSTALLATION



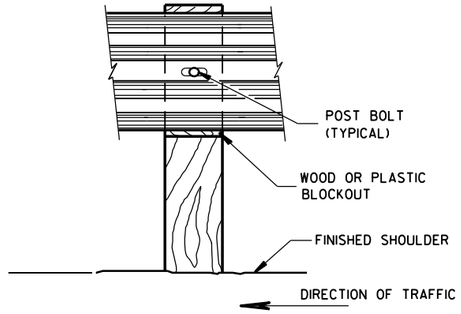
FRONT VIEW

HALF POST SPACING (HS) AND HALF POST SPACING WITH LONGER POSTS (K)

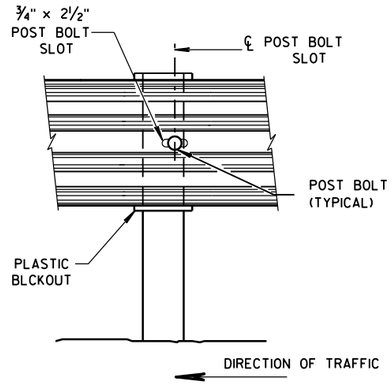


FRONT VIEW

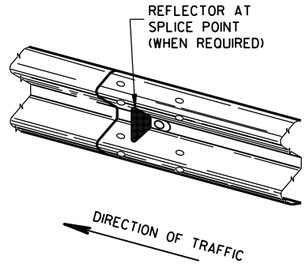
QUARTER POST SPACING (QS)

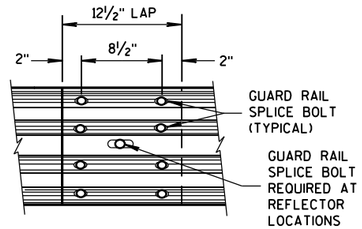


FRONT VIEW AT WOOD POST



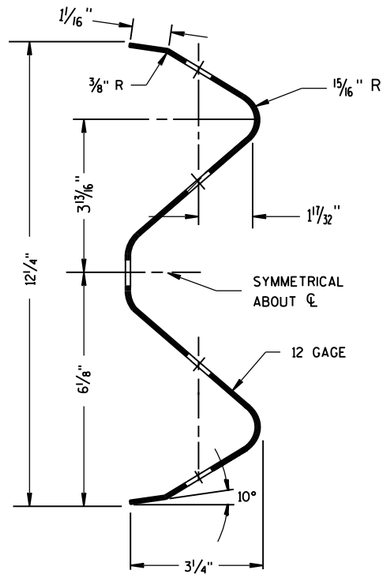
FRONT VIEW AT STEEL POST



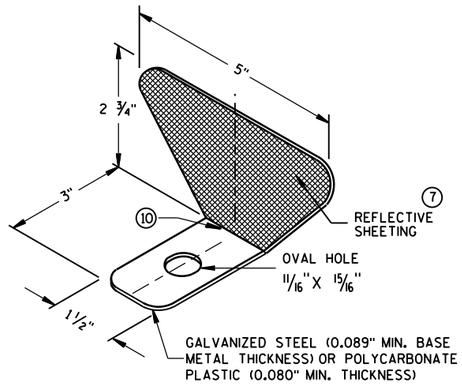


FRONT VIEW

MID-SPAN BEAM SPLICE



SECTION THRU W-BEAM RAIL



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION ⑦

GENERAL NOTES

⑦ PROVIDE SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH YELLOW REFLECTIVE SHEETING. SHEETING IS TYPE H. SEE STANDARD SPECIFICATION 637.

⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.

⑨ REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.

⑩ PROVIDE AN ANGLE OF BEND OF 90° ± 1° FOR TWO-SIDED REFLECTORS.

⑪ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

POST BOLTS ARE A ⅝" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES ⅝" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND ⅝" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

GUARD RAIL SPLICE BOLTS ARE A ⅝" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES ⅝" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

REFLECTOR SPACING ⑧

	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	1 1	3
TWO WAY TRAFFIC	< 200' > 200'	25' C-C 50' C-C	1 ⑨ 1	6
TWO WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	2 2 ⑩	3

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

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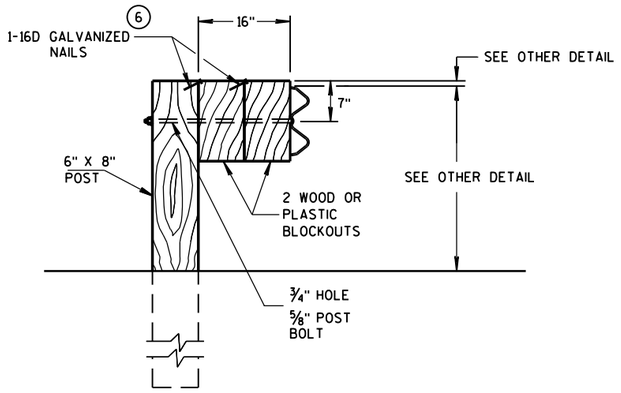
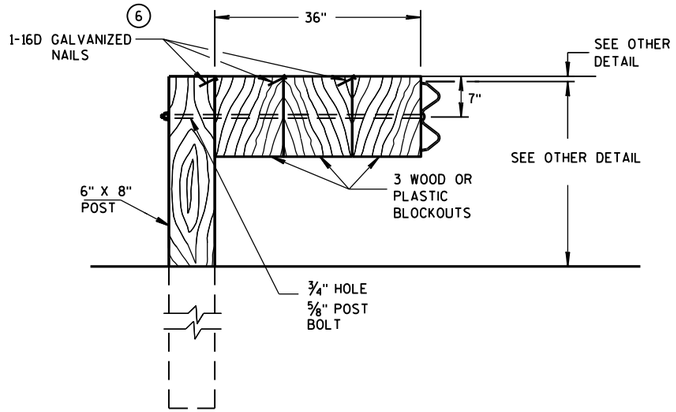
S.D.D. 14 B 42-3b



DETAIL FOR 16" BLOCKOUT DEPTH

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

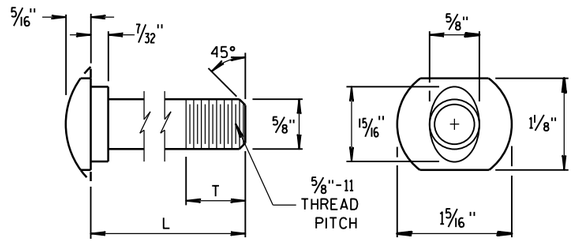


DETAIL FOR 36" BLOCKOUT DEPTH

NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.

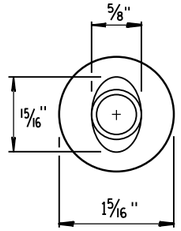
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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

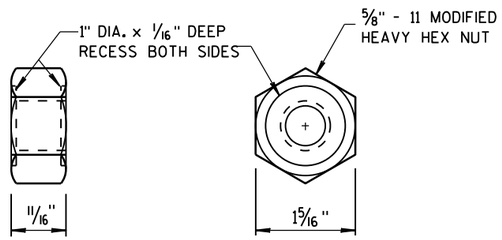


POST BOLT TABLE

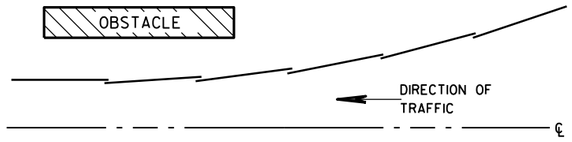
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

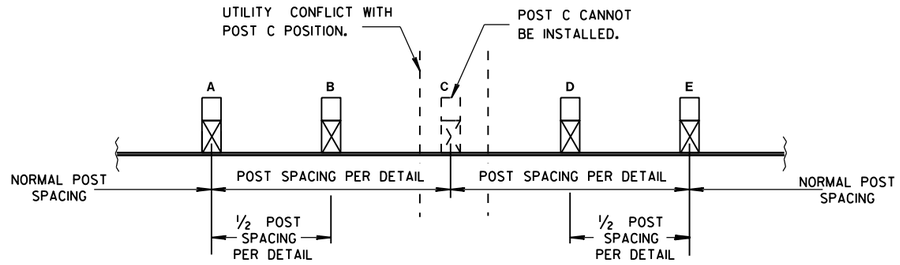


POST BOLT AND RECESS NUT

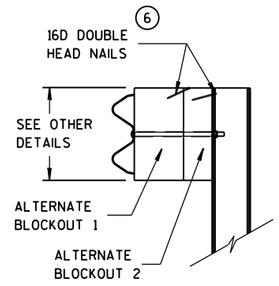


PLAN VIEW

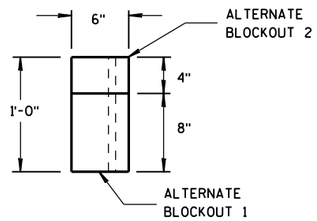
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2014 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA

6
S.D.D. 14 B 42-3c

GENERAL NOTES

(A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL), AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.

(B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.

(C) DIFFERENT MANUFACTURES REQUIRE DIFFERENT PERFORATED W-BEAM RAIL END PANELS. SEE MANUFACTURES INFORMATION.

(D) THE TOP OF THE STEEL TUBE ON POST 1 AND POST 2 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.

(F) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS. ONE SCREW PER CORNER.

(G) ½" DIAMETER X 3" LONG LAG BOLT AND WASHER.

(H) HARDWARE VARIES BETWEEN DIFFERENT MANUFACTURES. SEE MANUFACTURE'S DRAWING FOR INFORMATION.

(I) DIMENSIONS MAY VARY. SEE MANUFACTURE'S INFORMATION.

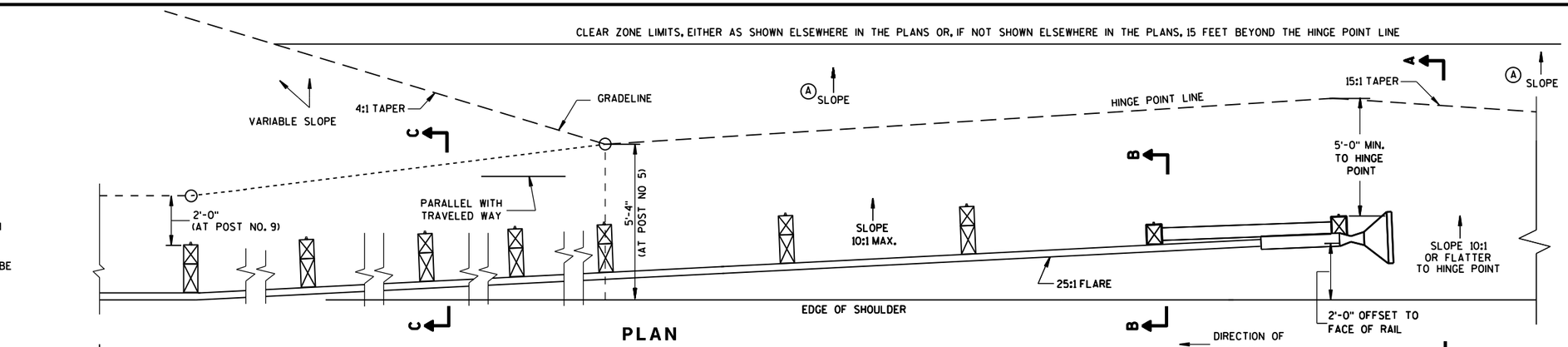
SEE SDD 14B42 FOR MORE INFORMATION.

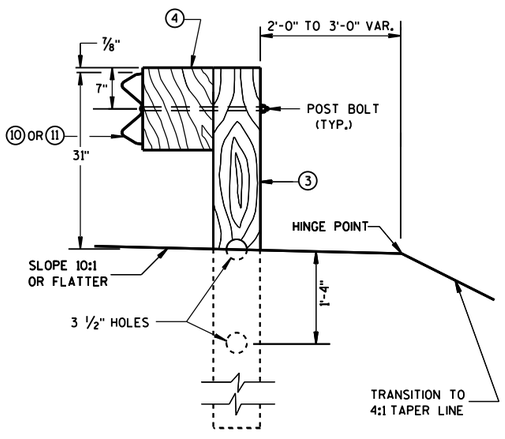
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

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

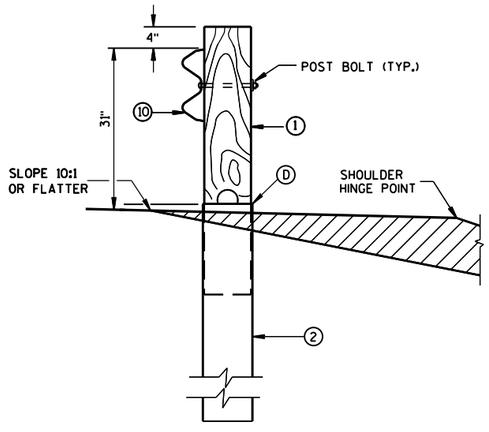
W-BEAM RAIL SPLICES ARE LOCATED AT POST NUMBER 3, AND BETWEEN POST 5 AND 6, BETWEEN POSTS 7 AND 8, AND MIDDLE OF THE SPAN AFTER POST 9.

THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE.

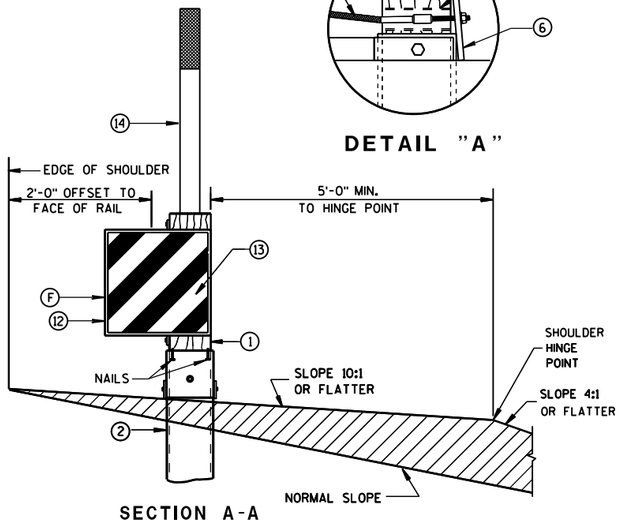




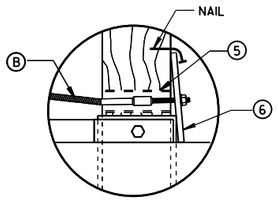
SECTION C-C
TYPICAL AT POST NOS. 3-9



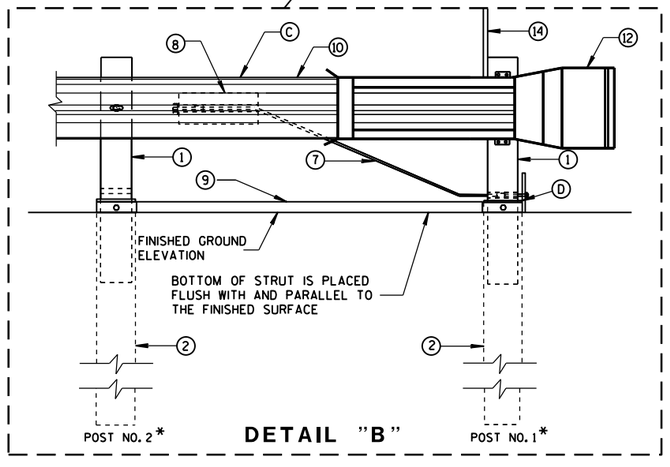
SECTION B-B
TYPICAL AT POST NO. 2*



SECTION A-A
TYPICAL AT POST NO. 1*



DETAIL "A"



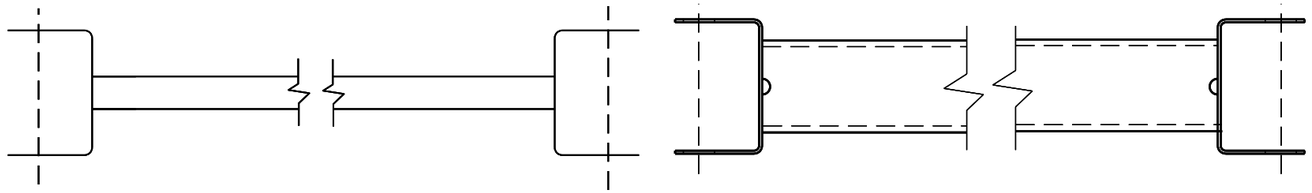
DETAIL "B"

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

S.D.D. 14 B 44-2a

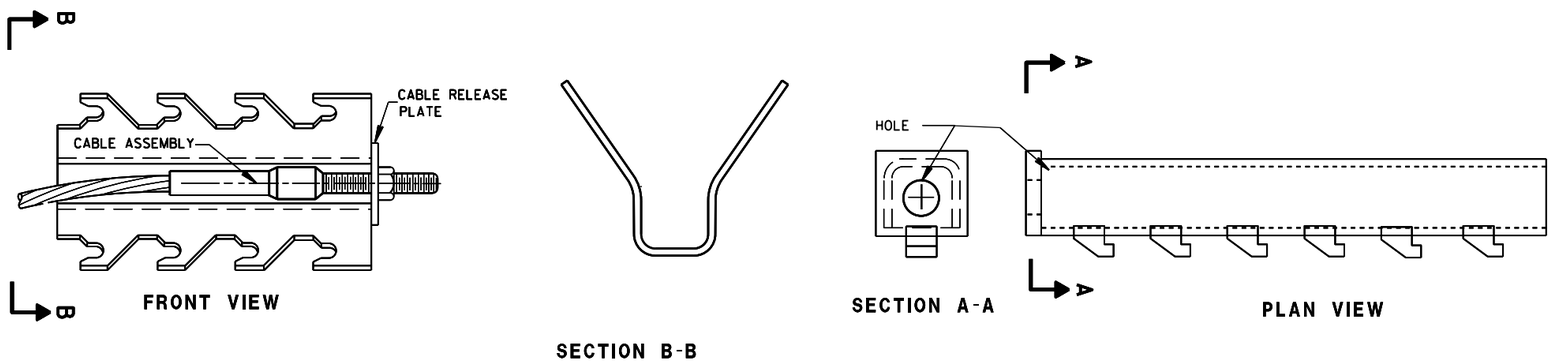
S.D.D. 14 B 44-2a



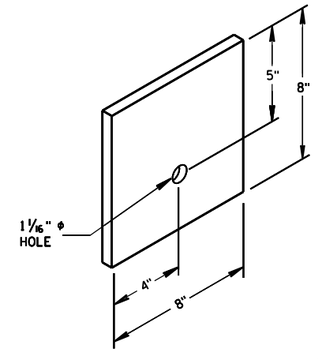
GENERIC GROUND STRUT (9) (H)

BILL OF MATERIALS

PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
(1)	WOOD BREAKAWAY POST
(2)	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
(3)	WOOD CRT
(4)	WOOD BLOCKOUT
(5)	PIPE SLEEVE
(6)	BEARING PLATE
(7)	BCT CABLE ASSEMBLY
(8)	ANCHOR CABLE BOX
(9)	GROUND STRUT
(10)	PERFORATED W-BEAM RAIL END PANEL, 12'-6" LONG.
(11)	STANDARD W-BEAM RAIL. MULTIPLE SECTIONS REQUIRED. SECTIONS VARY IN LENGTH.
(12)	END SECTION EAT
(13)	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE F PER SECTION 637 OF THE STANDARD SPECIFICATIONS
(14)	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)



GENERIC ANCHOR CABLE BOX (8) (H)

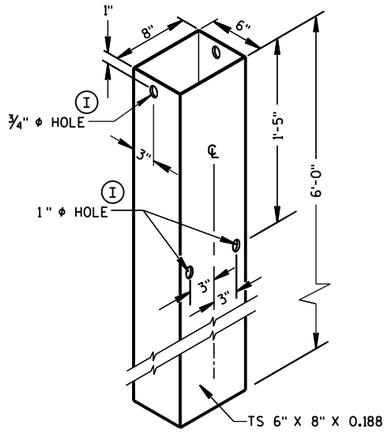


BEARING PLATE (6)

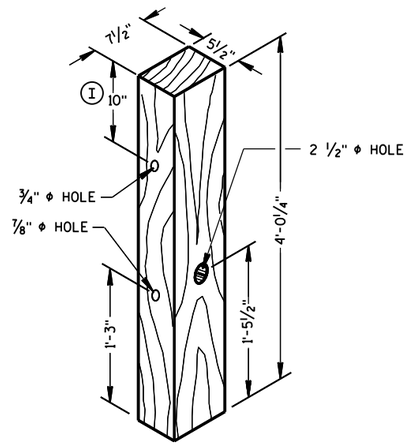
MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6
S.D.D. 14 B 44-2b

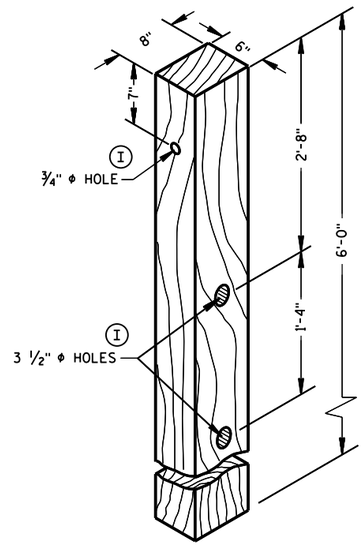


FOUNDATION TUBE (2)



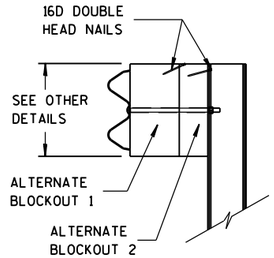
POSTS NUMBER 1 AND 2

WOOD BREAKAWAY POST (1)

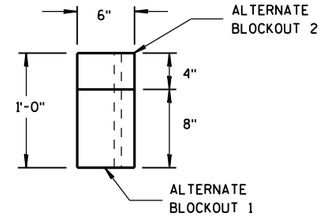


POSTS NUMBER 3-9

WOOD CRT POST (3)

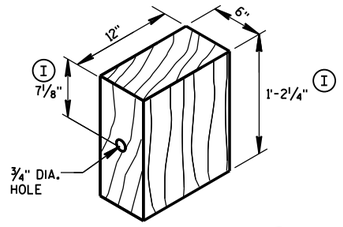


SIDE VIEW



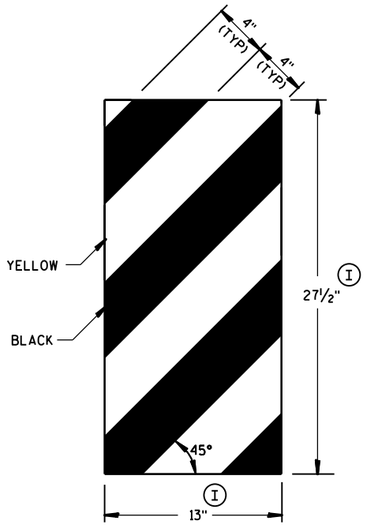
TOP VIEW

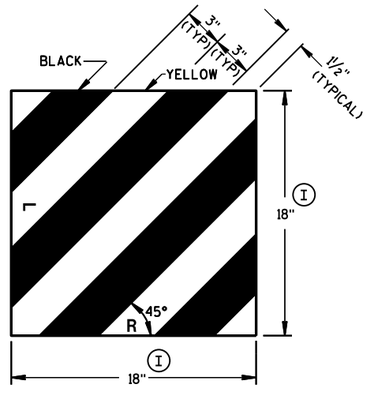
ALTERNATE WOOD BLOCKOUT DETAIL



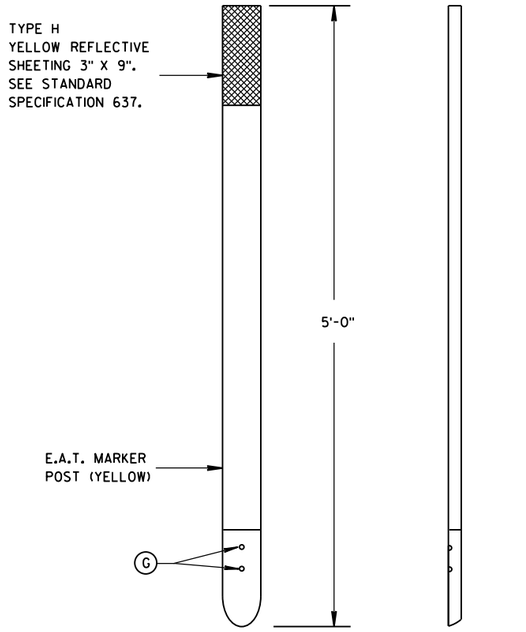
WOOD BLOCKOUT (4)

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





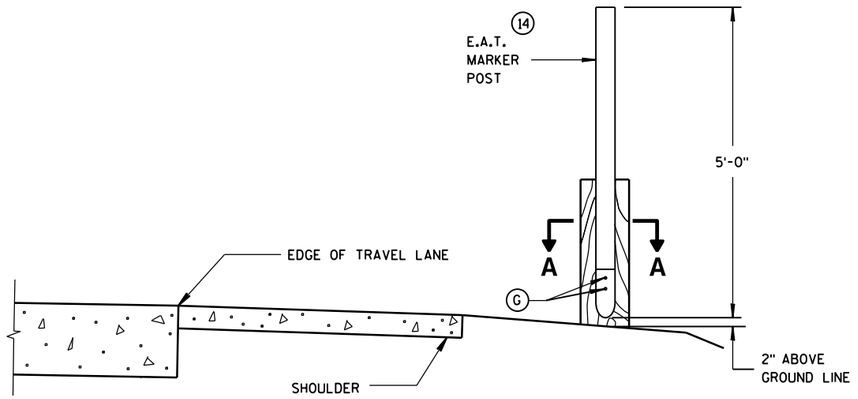
GENERIC REFLECTIVE SHEETING (13) (H)



FRONT VIEW

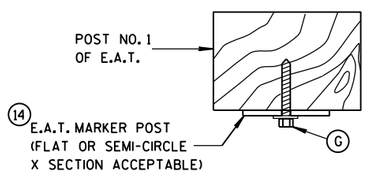
SIDE VIEW

E.A.T. MARKER POST (14)



TYPICAL INSTALLATION OF E.A.T. MARKER POST BACKSIDE OF POST NO. 1

(E.A.T. AND RAIL REMOVED FOR CLARITY)

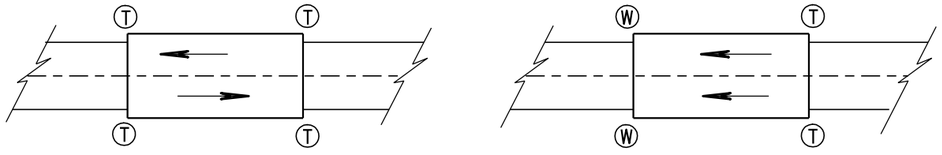


SECTION A-A

MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2014
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER
FHWA



TWO WAY TRAFFIC

ONE WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION

Ⓦ W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

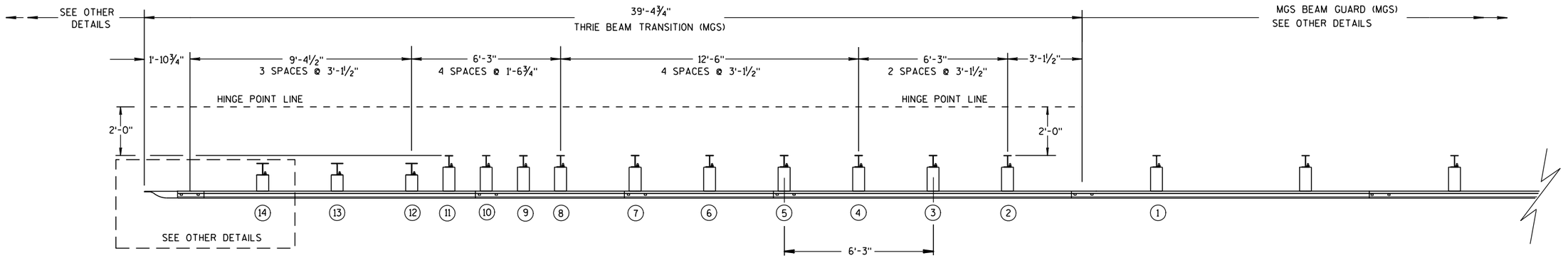
BOLT THE THRIE BEAM TO ALL POSTS AND BLOCKOUTS. DRILL OR PUNCH BOLT HOLES IN THE BEAM IF THE POST SPACING IS LESS THAN 6'-3.

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

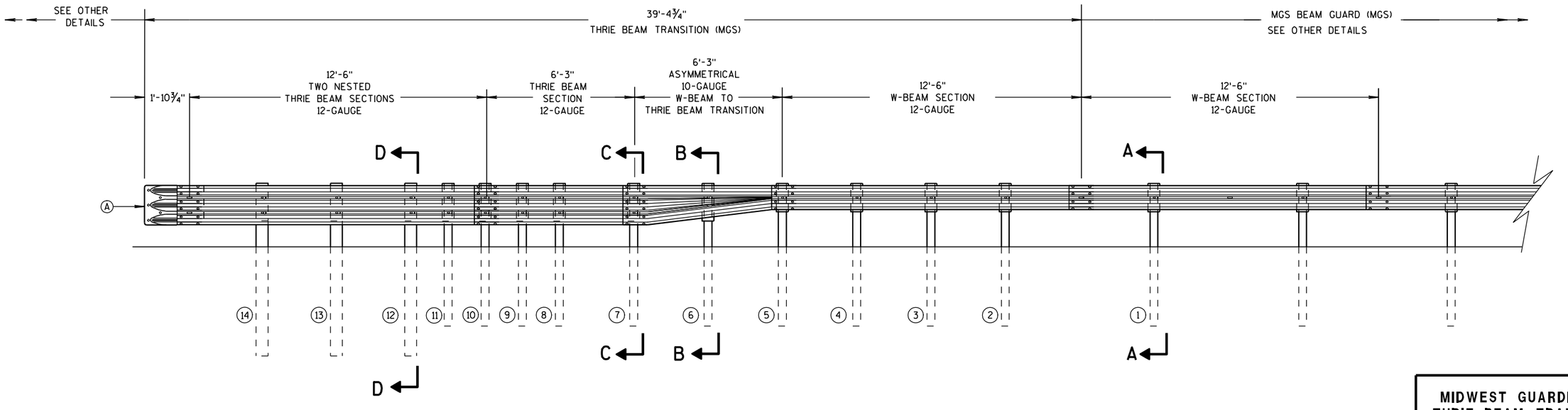
TRANSITION USES STEEL POSTS ONLY.

SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

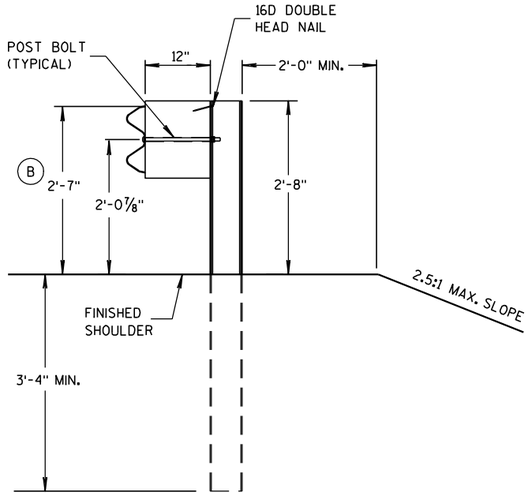
S.D.D. 14 B 45-3a

6

S.D.D. 14 B 45-3a

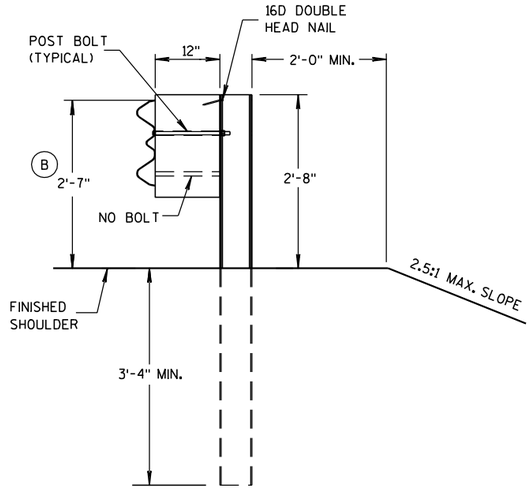
GENERAL NOTES

(B) TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



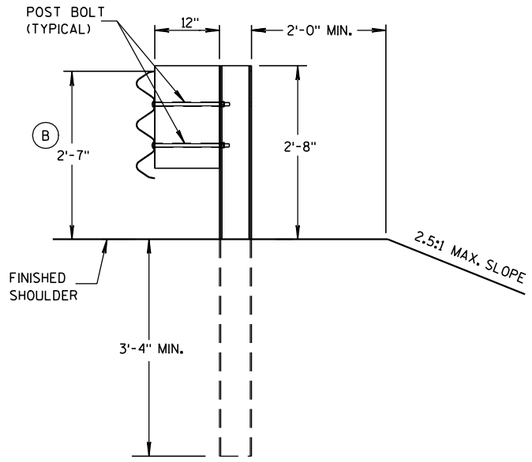
SECTION A-A

POSTS 1-5



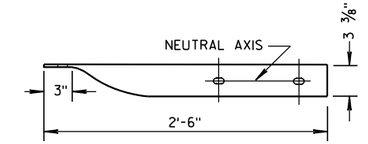
SECTION B-B

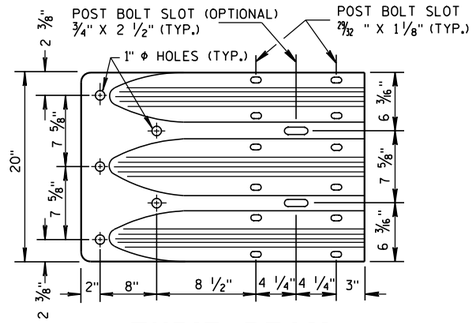
POST 6



SECTION C-C

POSTS 7-11





THRIE BEAM TERMINAL CONNECTOR

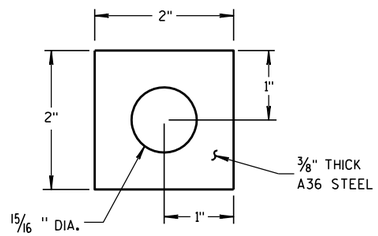
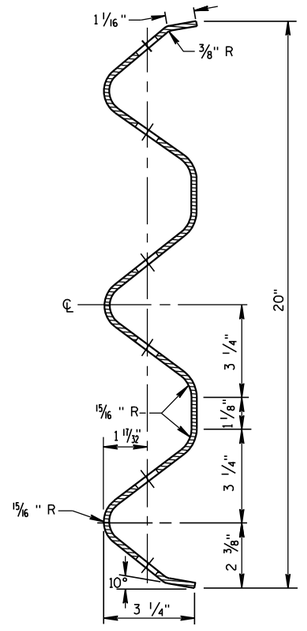
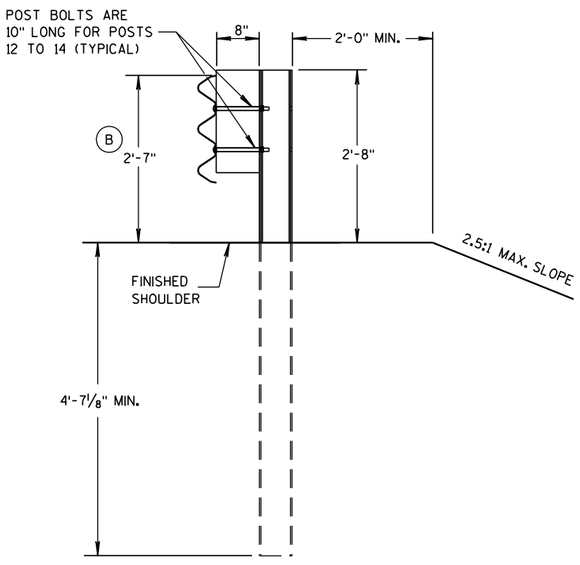


PLATE WASHER DETAIL

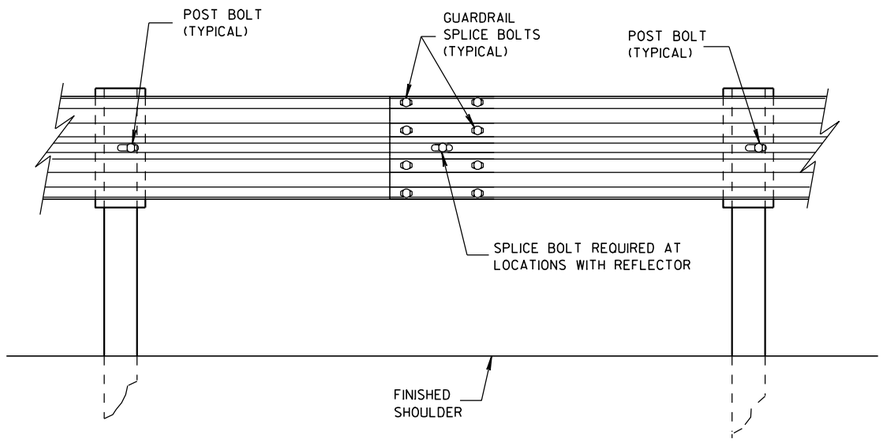


SECTION THRU THRIE BEAM RAIL ELEMENT



SECTION D-D

POSTS 12-14



SPLICE DETAIL

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

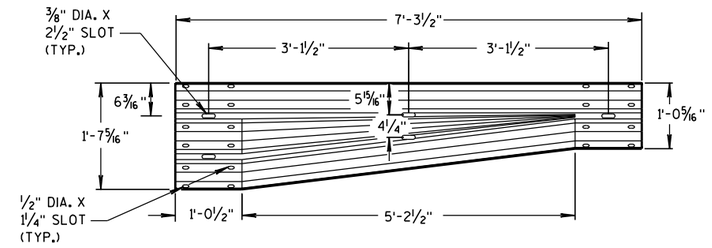
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

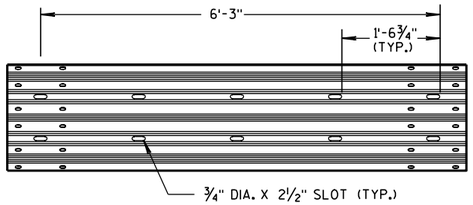
S.D.D. 14 B 45-3b

6

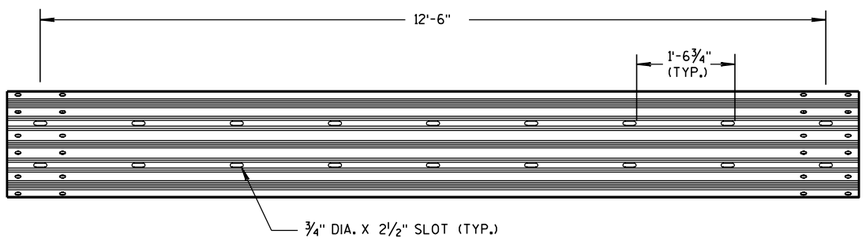
S.D.D. 14 B 45-3b



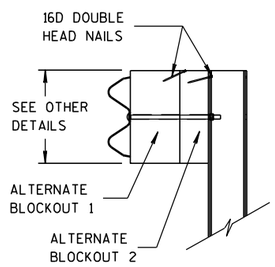
W-BEAM TO THRIE BEAM TRANSITION SECTION



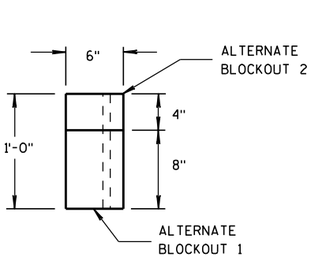
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

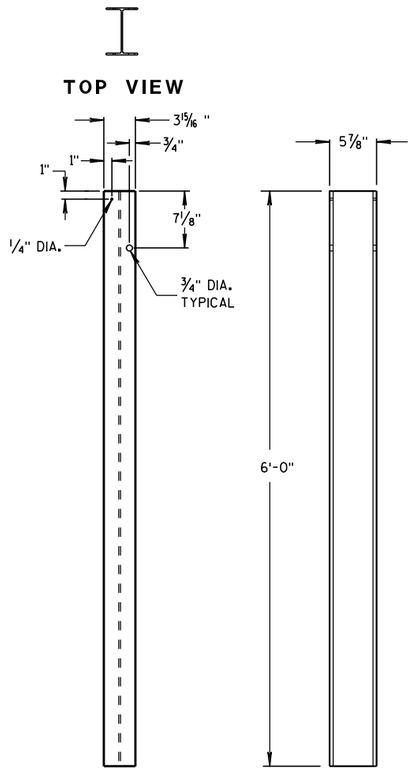


SIDE VIEW



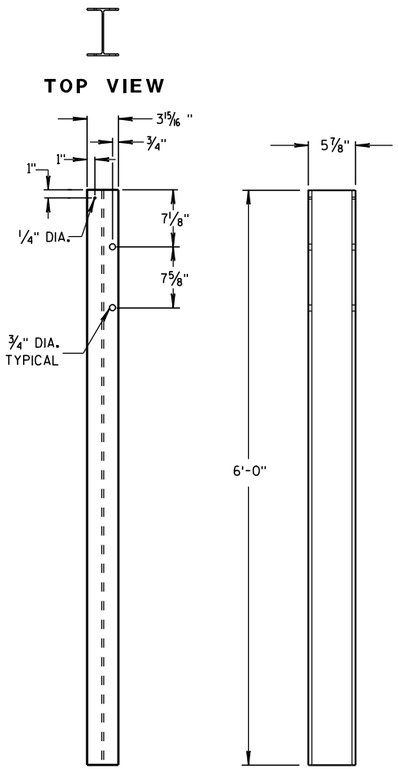
TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL



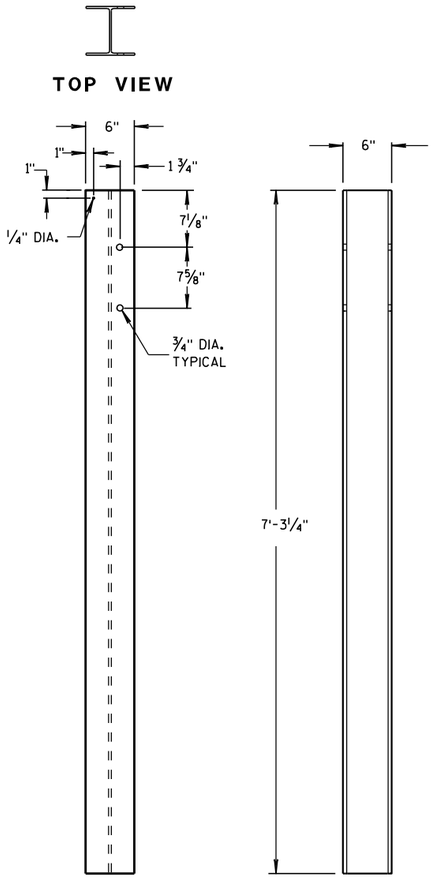
FRONT VIEW SIDE VIEW

STEEL POSTS 1-5



FRONT VIEW SIDE VIEW

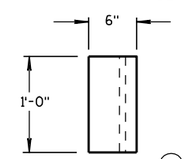
STEEL POSTS 6-11



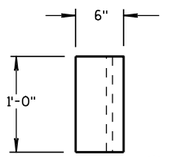
FRONT VIEW SIDE VIEW

STEEL POSTS 12-14

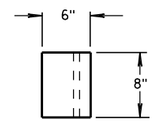
(1) WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.



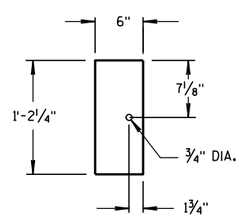
TOP VIEW (1)



TOP VIEW (1)

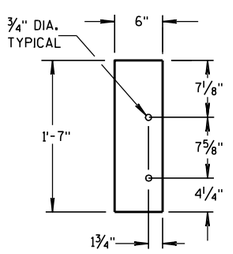


TOP VIEW



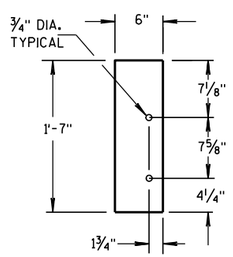
FRONT VIEW

BLOCKOUT POSTS 1-5



FRONT VIEW

BLOCKOUT POSTS 6-11



FRONT VIEW

BLOCKOUT POSTS 12-14

STEEL POST SIZES

POST NUMBER	SECTION TYPE	LENGTH
1	W6x9	72"
2	W6x9	72"
3	W6x9	72"
4	W6x9	72"
5	W6x9	72"
6	W6x9	72"
7	W6x9	72"
8	W6x9	72"
9	W6x9	72"
10	W6x9	72"
11	W6x9	72"
12	W6x15	87 1/8"
13	W6x15	87 1/8"
14	W6x15	87 1/8"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

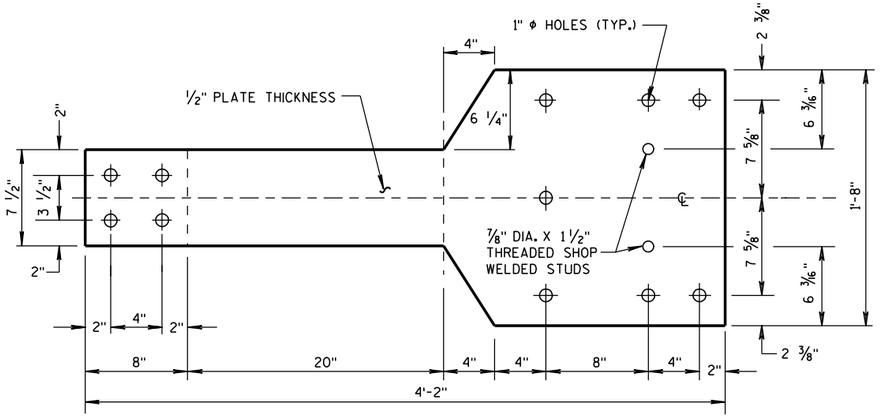
S.D.D. 14 B 45-3c

6

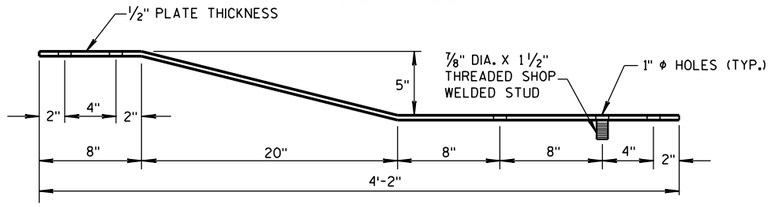
S.D.D. 14 B 45-3c

GENERAL NOTES

(B) TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".

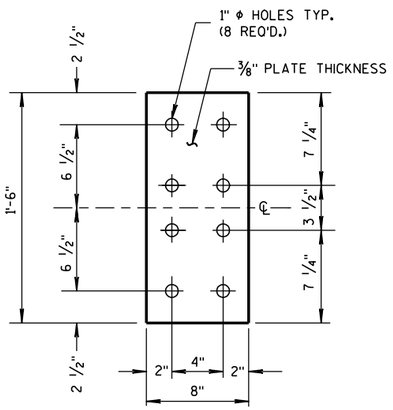


FRONT VIEW



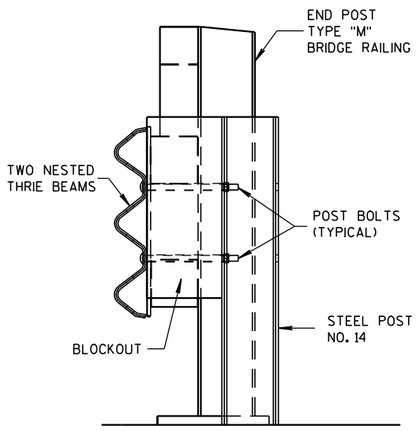
PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

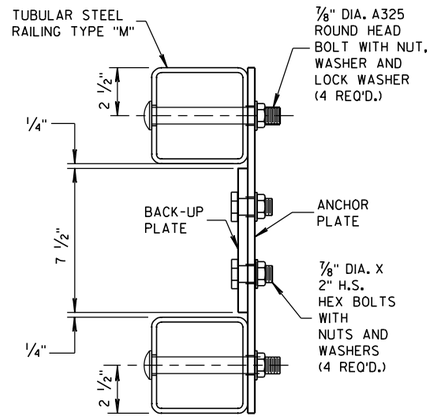


FRONT VIEW

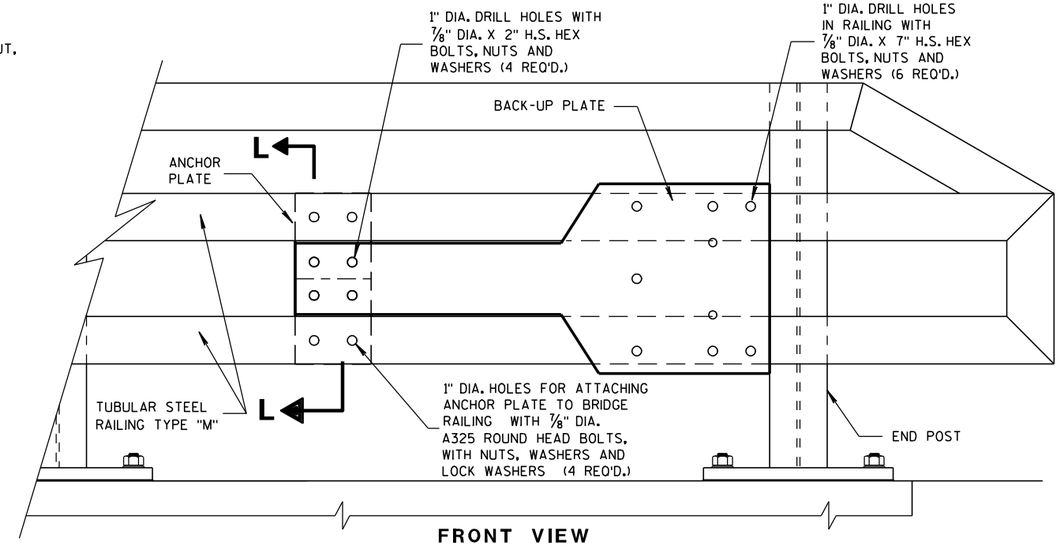
ANCHOR PLATE DETAIL, TYPE "M"



SECTION M-M

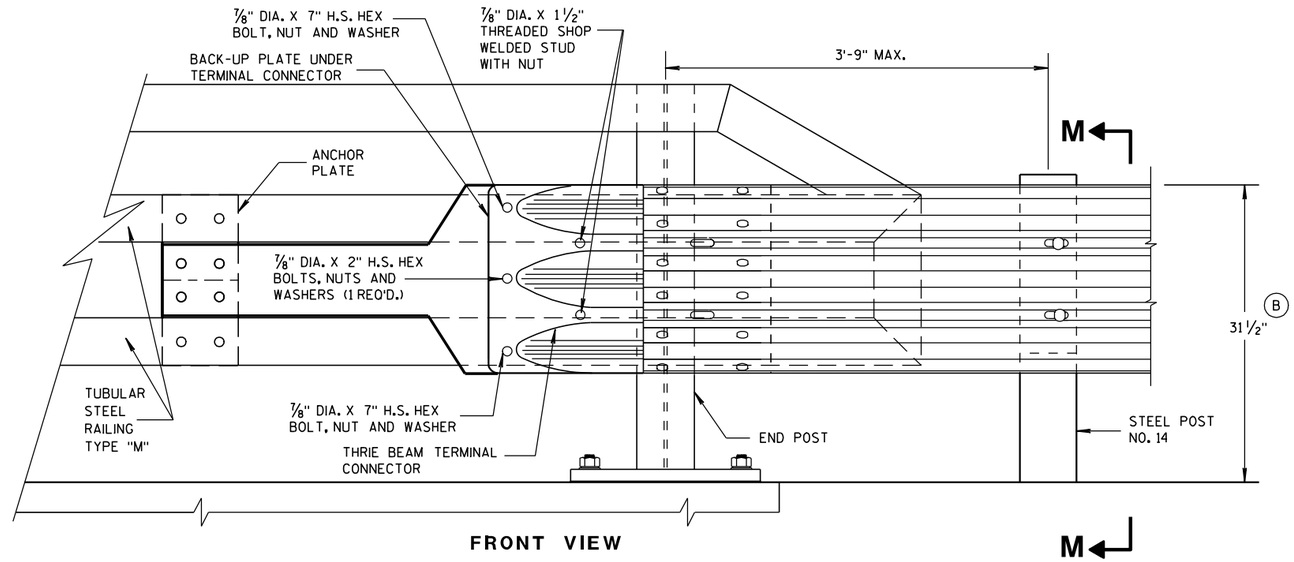


SECTION L-L

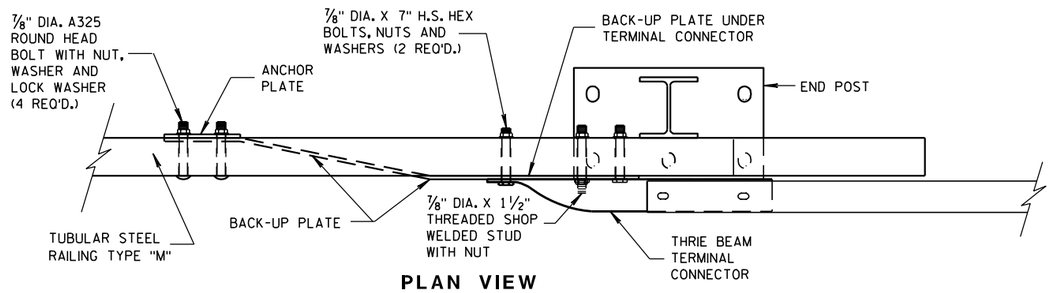


FRONT VIEW

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



FRONT VIEW



PLAN VIEW

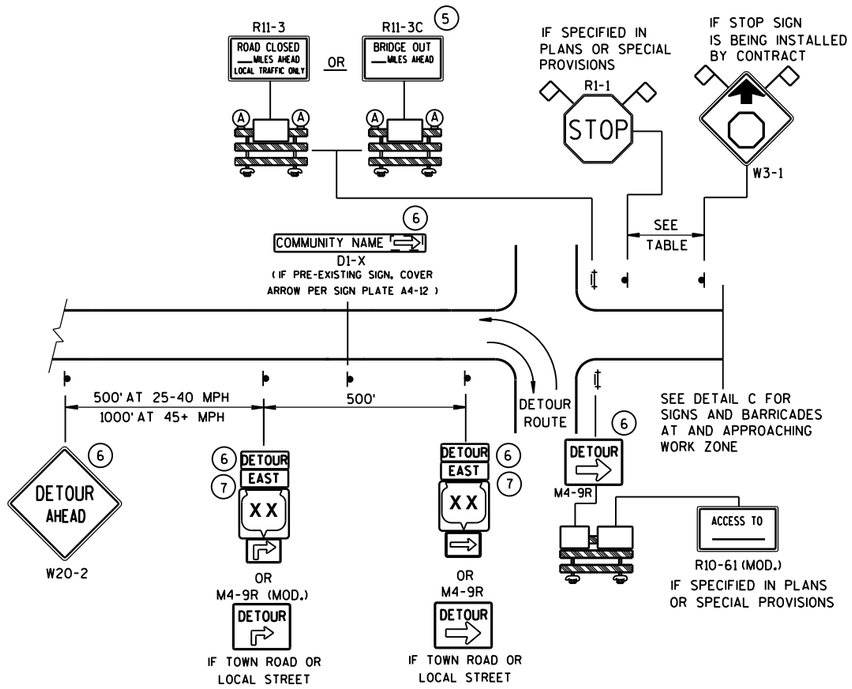
THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

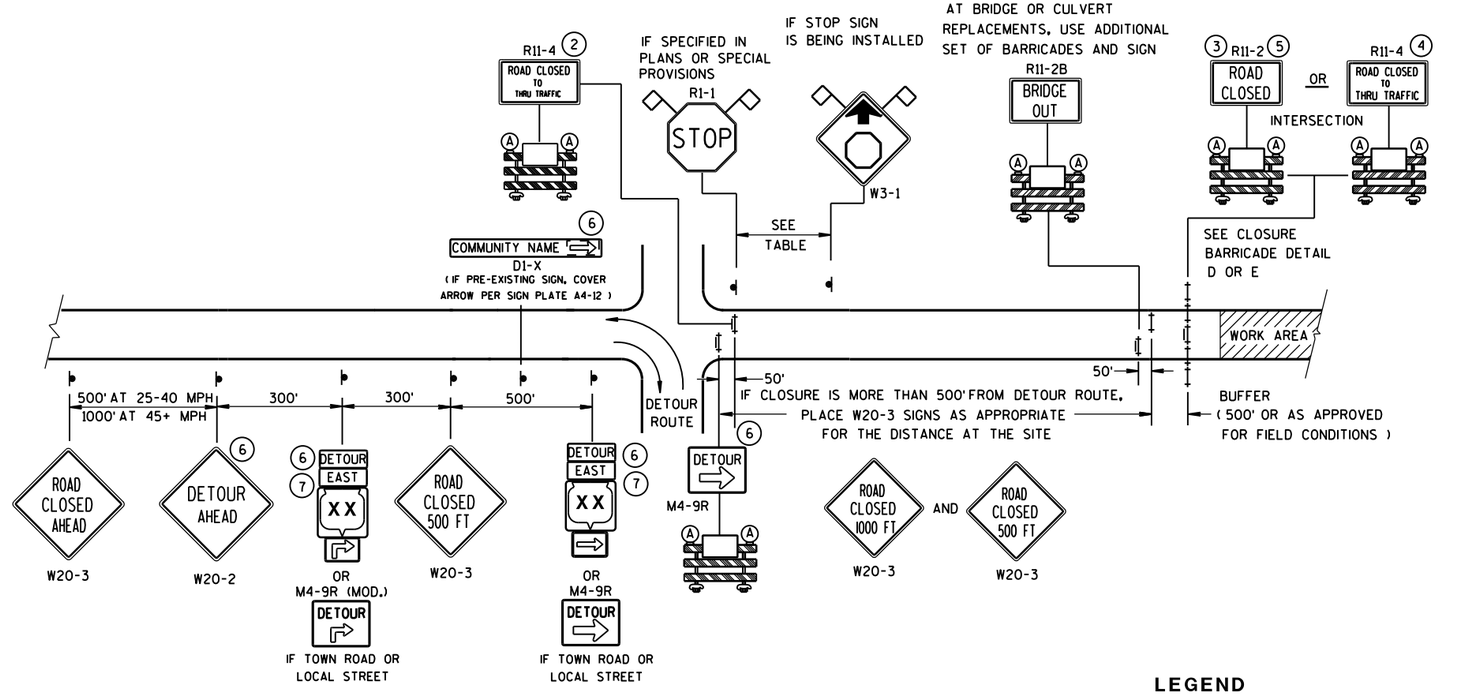
APPROVED
8-31-2012 DATE
/S/ Jerry H. [illegible]
ROADWAY STANDARDS ENGINEER
FHWA

6
S.D. 14 B 45-3h



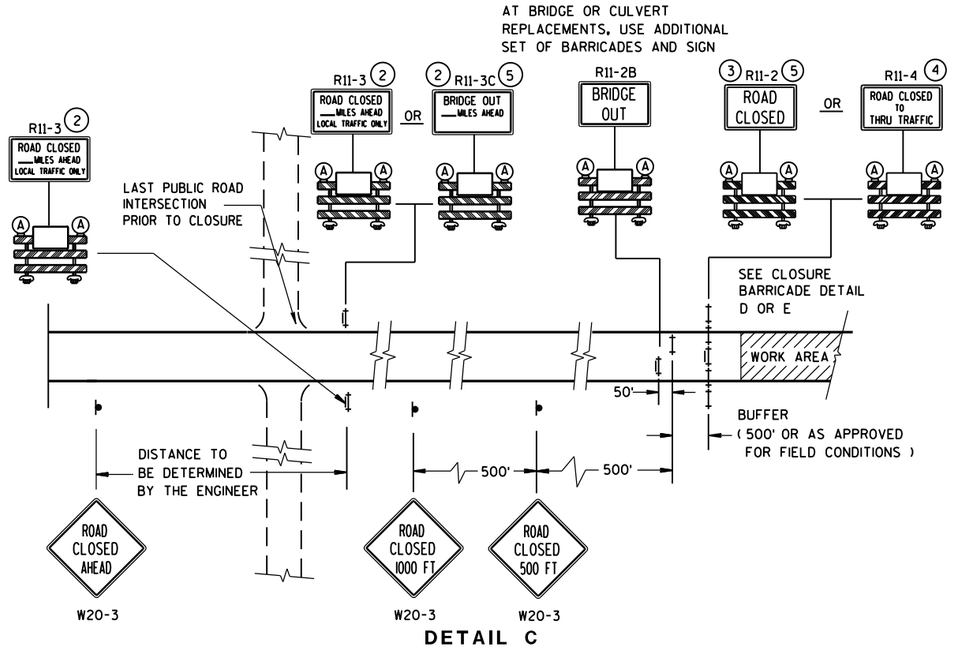
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE GREATER THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE LESS THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

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

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

LEGEND

- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- (A) TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA
- DETOUR / EAST — M4-8 / M3-X
- XX — M1-4; COUNTY XX — M1-5A; XX — M1-6
- M05-1 OR M06-1
- FLAGS, 16" X 16" MIN., (ORANGE)

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

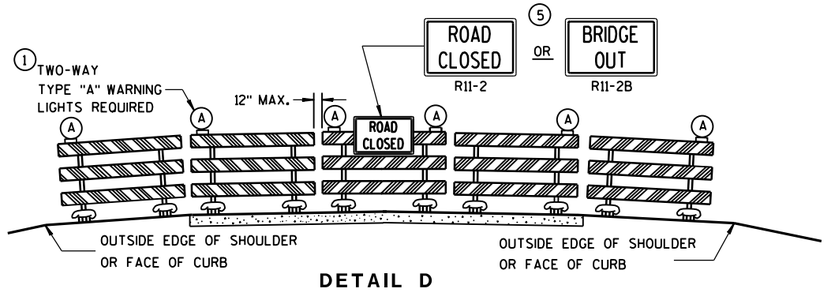
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

8/2013 DATE — /S/ Travis Feltes STATE TRAFFIC ENGINEER — DESIGN

FHWA

6

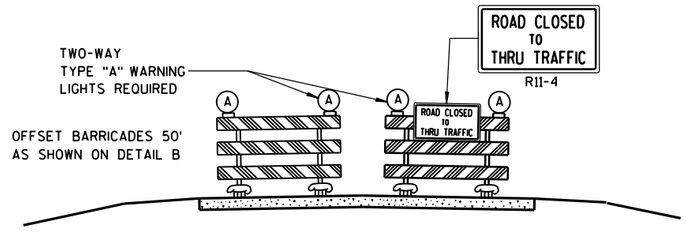
S.D.D. 15 C 2-5a



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 BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE 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, 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". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1-1 SHALL BE 36" X 36".

(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 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 LANE 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.

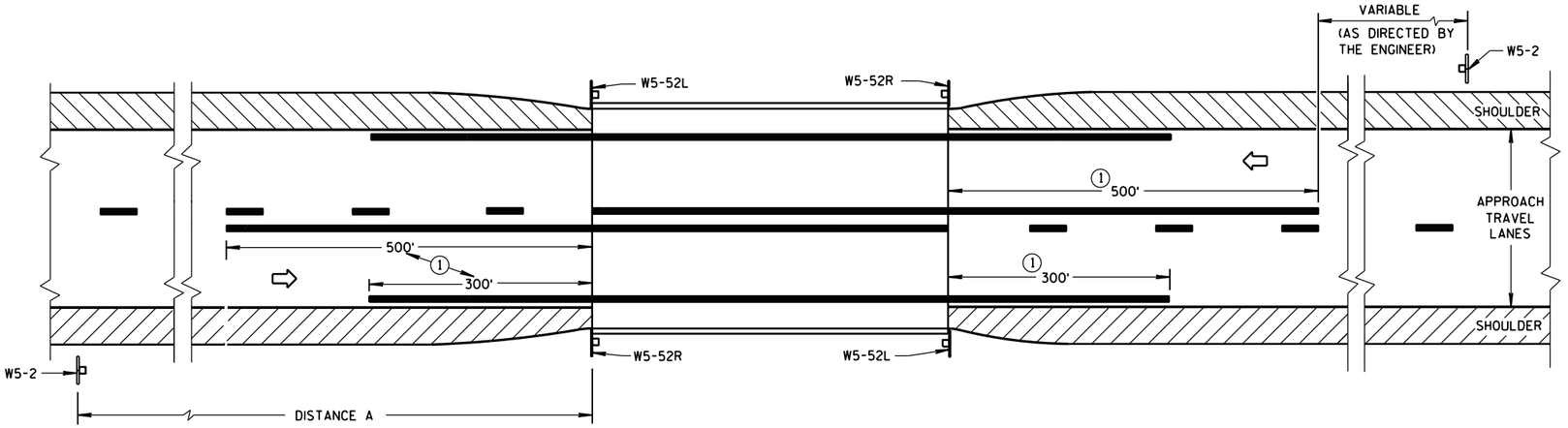
BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

8/2013 — DATE
/S/ Travis Feltes — STATE TRAFFIC ENGINEER
FHWA

6

S.D.D. 15 C 2-5b



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.

PAVEMENT MARKING SHOWN ON THIS DRAWING IS NOT REQUIRED UNLESS OTHERWISE SPECIFIED IN THE CONTRACT. WHEN SPECIFIED, PAVEMENT MARKING SHALL CONFORM TO THIS DRAWING AND OTHER CONTRACT REQUIREMENTS.

(1) MINIMUM DISTANCE UNLESS OTHERWISE SHOWN ON THE PLAN.

(2) FACE OF OBJECT MARKERS W5-52R, AND W5-52L SHALL BE COVERED WITH TYPE F REFLECTIVE SHEETING.

(3) LOCATE OBJECT MARKER POST(S) BEHIND GUARDRAIL WHEN PRESENT.

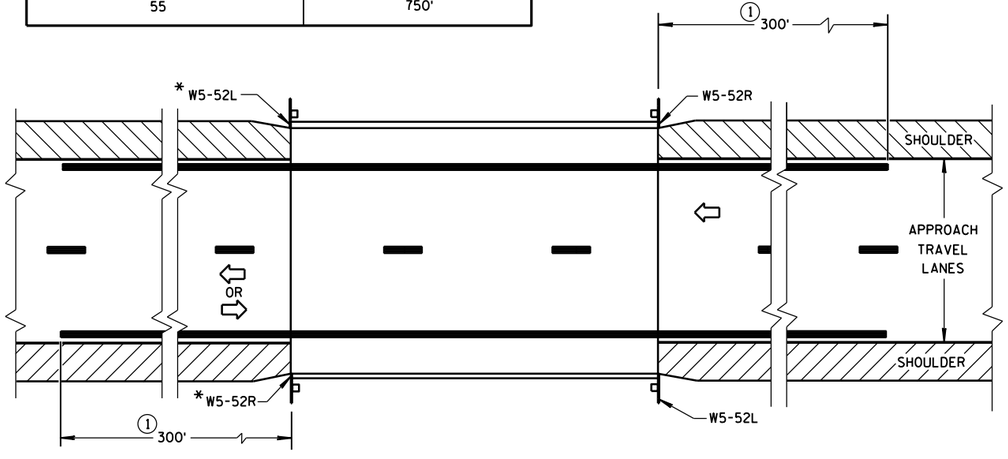
DISTANCE TABLE

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

SITUATION 1

WARRANTING CRITERIA:

BRIDGE WIDTH IS AT LEAST 16 FEET BUT LESS THAN 24 FEET

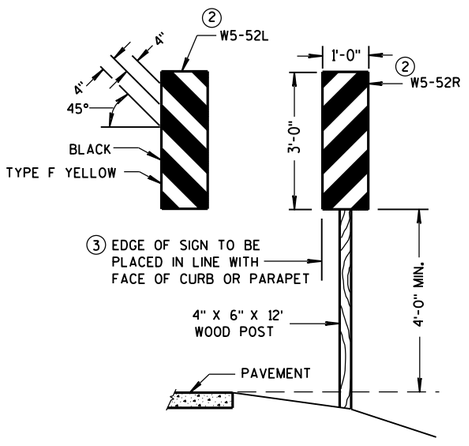


*OMIT ON ONE-WAY TRAVELLED WAYS

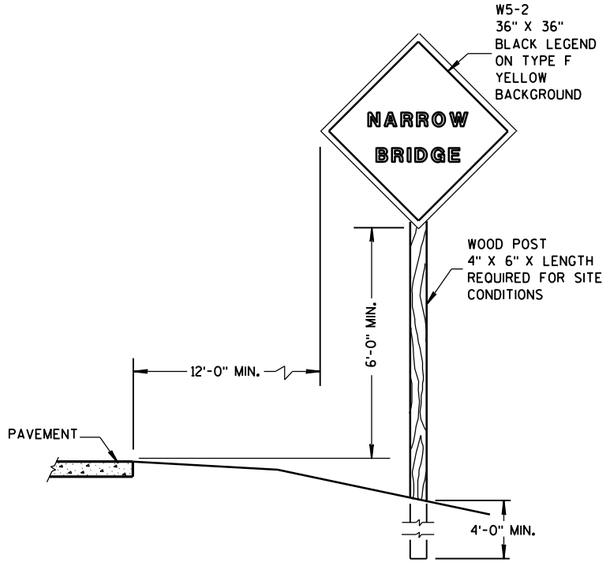
SITUATION 2

WARRANTING CRITERIA:

1. BRIDGE WIDTH IS AT LEAST 24 FEET AND
2. BRIDGE IS LESS THAN 6 FEET WIDER (ON EACH SIDE) THAN APPROACH TRAVEL LANES.



OBJECT MARKER PLACEMENT



SIGN PLACEMENT

SIGNING & MARKING
FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

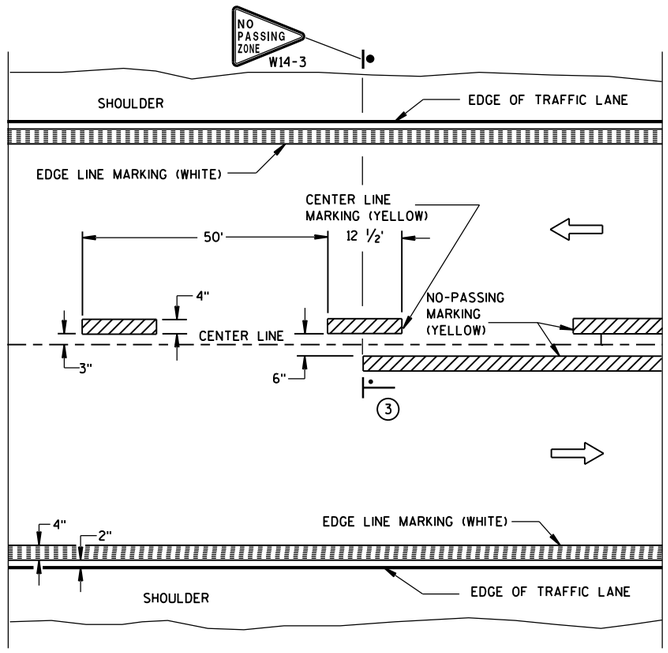
3-2014 DATE

/S/ Travis Feltes STATE TRAFFIC ENGINEER

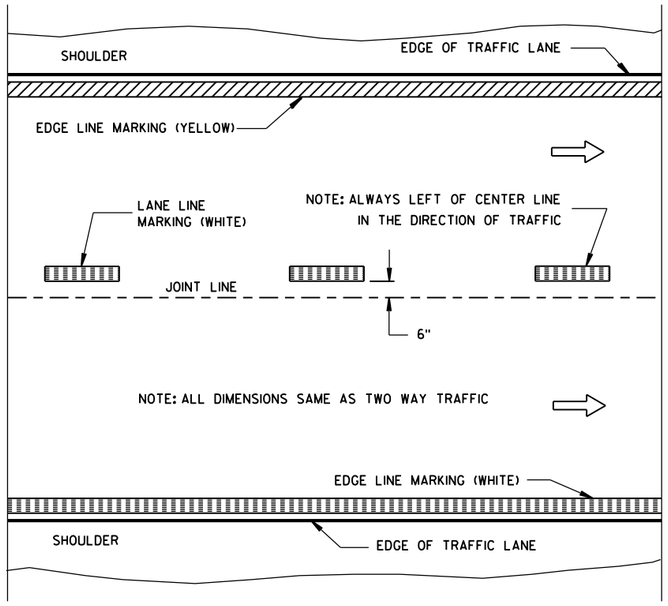
FHWA

6

S.D.D. 15 C 6-7

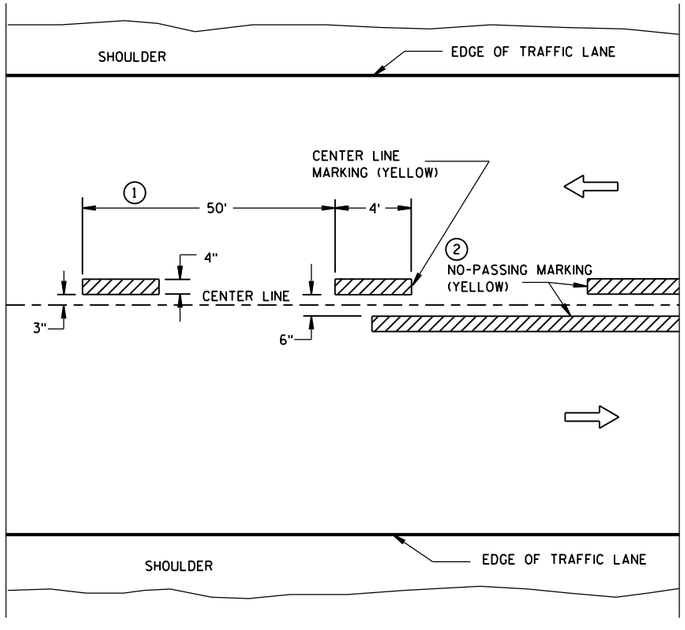


TWO WAY TRAFFIC

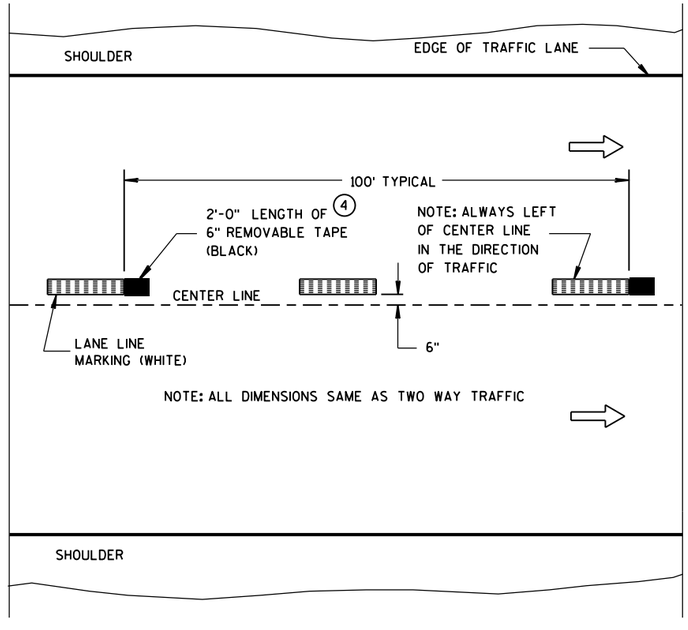


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY (INTERMEDIATE) PAVEMENT MARKING

(SHOWS CYCLE FOR TEMPORARY CENTER LINE OR TEMPORARY LANE LINE MARKING)

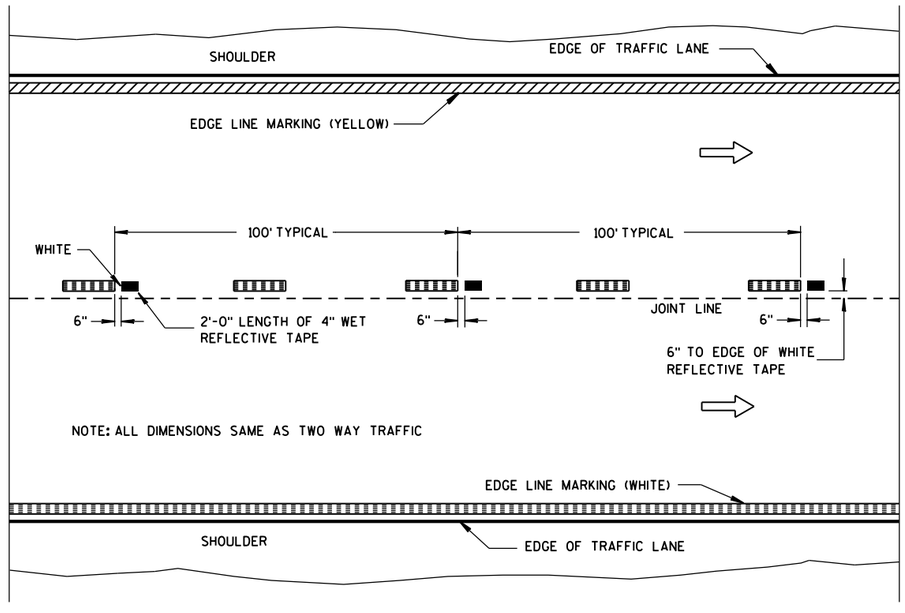
GENERAL NOTES

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

1. HALF CYCLE LENGTHS (25'±) WITH 2' MINIMUM STRIPE LENGTHS SHALL BE PROVIDED ON ROADWAYS (INCLUDING TEMPORARY TRAVELED WAYS) WITH REVERSE CURVATURE, CURVATURE OF OVER 5 DEGREES OR WHEN DIRECTED BY THE ENGINEER TO MARK UNUSUAL ALIGNMENT OF THE TRAVELED WAY.
2. NO PASSING ZONE TEMPORARY PAVEMENT MARKING IS REQUIRED TO BE PLACED, WHERE APPROPRIATE, ALONG WITH CENTERLINE TEMPORARY PAVEMENT MARKING WHEN A SAME DAY PERMANENT PAVEMENT MARKING ITEM IS INCLUDED IN THE CONTRACT.
3. NO PASSING ZONE MARKINGS ARE PLACED ACCORDING TO "T" MARKINGS. IF EXISTING NO PASSING ZONE W14-3 SIGNS ARE BEYOND 50 FEET IN EITHER DIRECTION, THE SIGNS SHALL BE MOVED TO THE "T" MARKINGS.
4. CONCRETE ONLY.

NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL



WET REFLECTIVE TAPE SUPPLEMENT TO
SPRAYED OR NON WET REFLECTIVE TAPE LANE LINE

LEGEND

"T" MARKING

POST MOUNTED SIGN

PAVEMENT MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

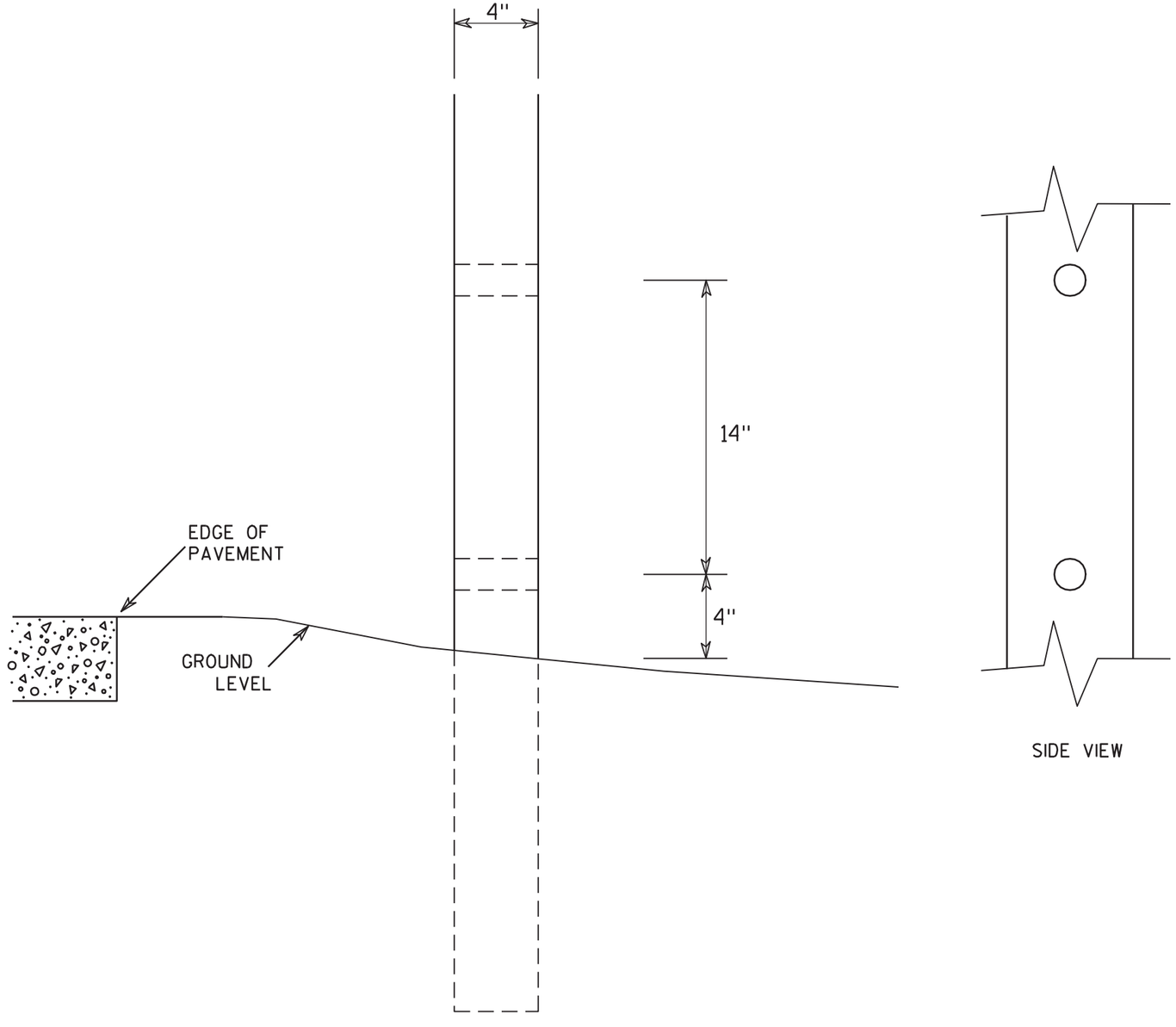
APPROVED
5-13-2013 DATE
/S/ Travis Feltes STATE TRAFFIC E
FHWA

6

S.D.D. 15 C 8-16a

6

S.D.D. 15 C 8-16a



SIDE VIEW

GENERAL NOTES

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

7

7

4 X 6 WOOD POST MODIFICATIONS

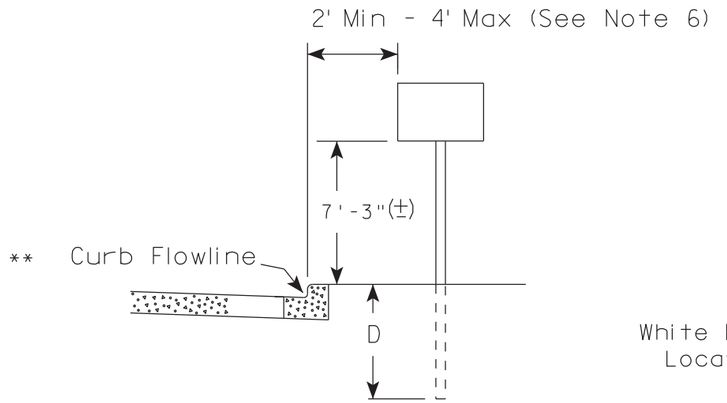
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Chester J Spang for State Traffic Engineer

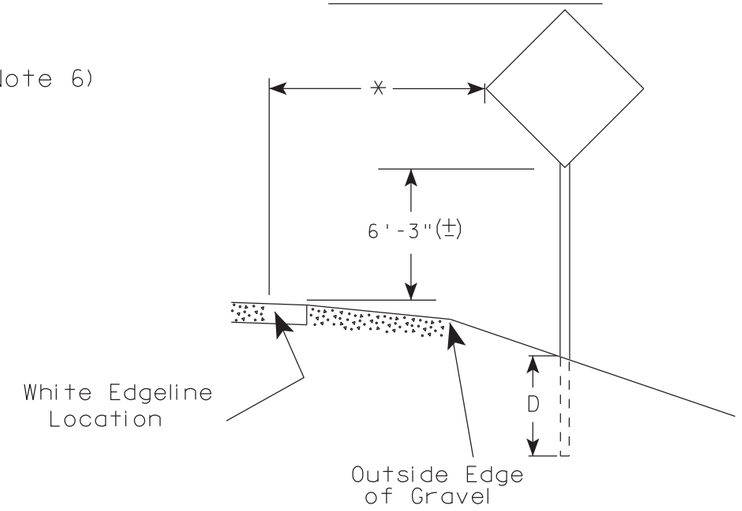
DATE 3/27/97 PLATE NO. A4-11.2

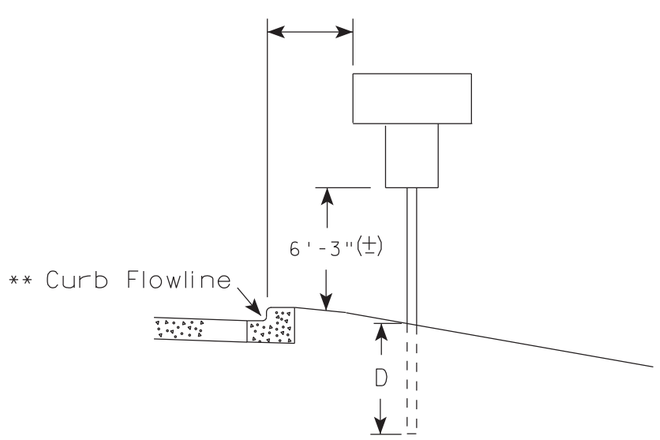
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 35	E

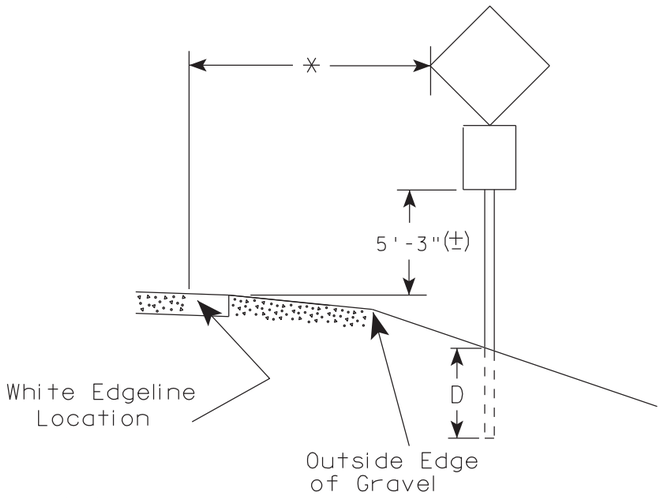
URBAN AREA



RURAL AREA (See Note 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. Offset of signs is measured from the flow line.

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

GENERAL NOTES

1. Signs wider than 4 feet, 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on barrier wall, see A4-10 sign plate.
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 J assemblies (A4-5) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
5. Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±).
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. The (±) tolerance for mounting height is 3 inches.
8. Folding stop signs (R1-1F) shall be mounted at a height of 5'-3" (±) or as directed by the Engineer.
9. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Enhanced Reference Markers, Clearance Markers (W5-52), Mile Markers (D10 series) & End of Rod Markers (W5-56 & W5-56A) shall be mounted at a height of 4'-3" (+).

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

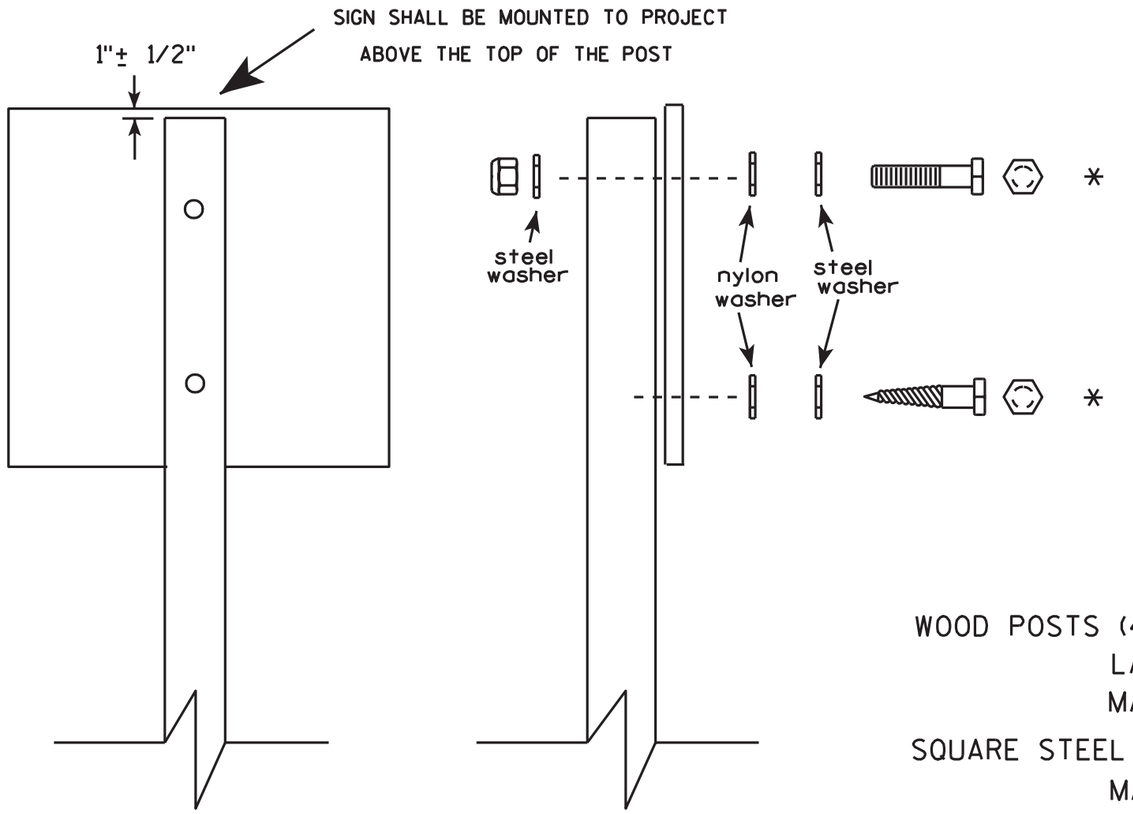
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch for State Traffic Engineer

DATE 9/30/13 PLATE NO. A4-3.18

PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E

FILE NAME : C:\CAEfiles\Projects\tr_stdplate\A43.DGN PLOT DATE : 30-SEP-2013 13:25 PLOT BY : mscj9h PLOT NAME : PLOT SCALE : 99.237937:1.000000 WISDOT/CADDS SHEET 42



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

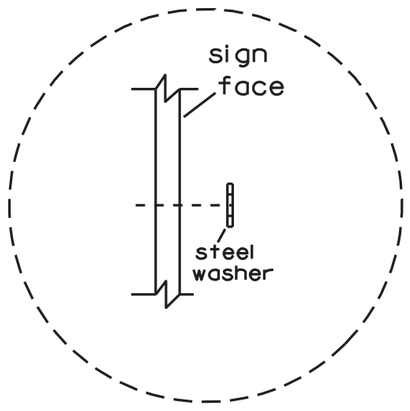
b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

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 POSTS (4" x 4" or 4" x 6")
LAG SCREWS - 3/8" X 3"
MACHINE BOLTS - 5/16" X 6-1/2" or 7" Length w/ nuts

SQUARE STEEL POSTS (2" x 2")
MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts
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 for all Type H signs.



Washer Placement when Sign Has Other Than Type H or Type F Face

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

ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

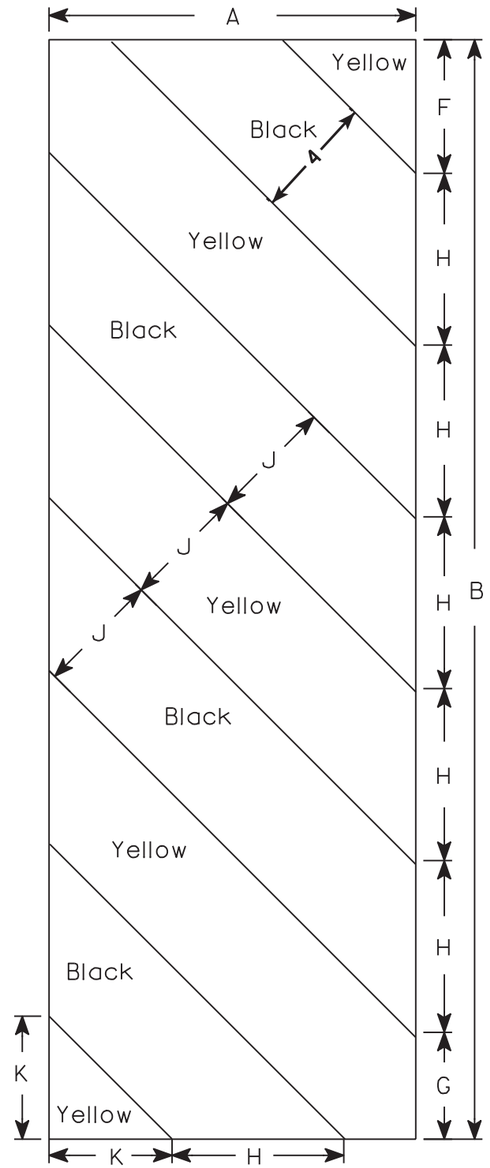
DATE 3/23/10 PLATE NO. A4-8.7

7

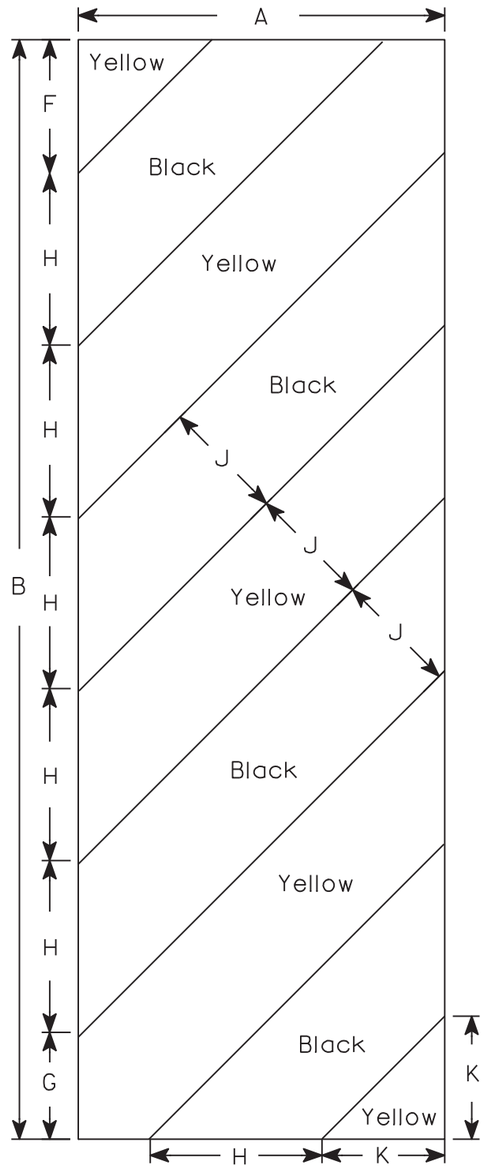
7

PROJECT NO:

SHEET NO: 37 E



W5-52L



W5-52R

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.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	12	36				4 3/8	3 1/2	5 5/8	45°	4	4																3.0
2M	12	36				4 3/8	3 1/2	5 5/8	45°	4	4																3.0
3	18	54				6	5 1/2	8 1/2	45°	6	6 9/16																6.75
4																											
5																											

STANDARD SIGN

W5-52L & W5-52R

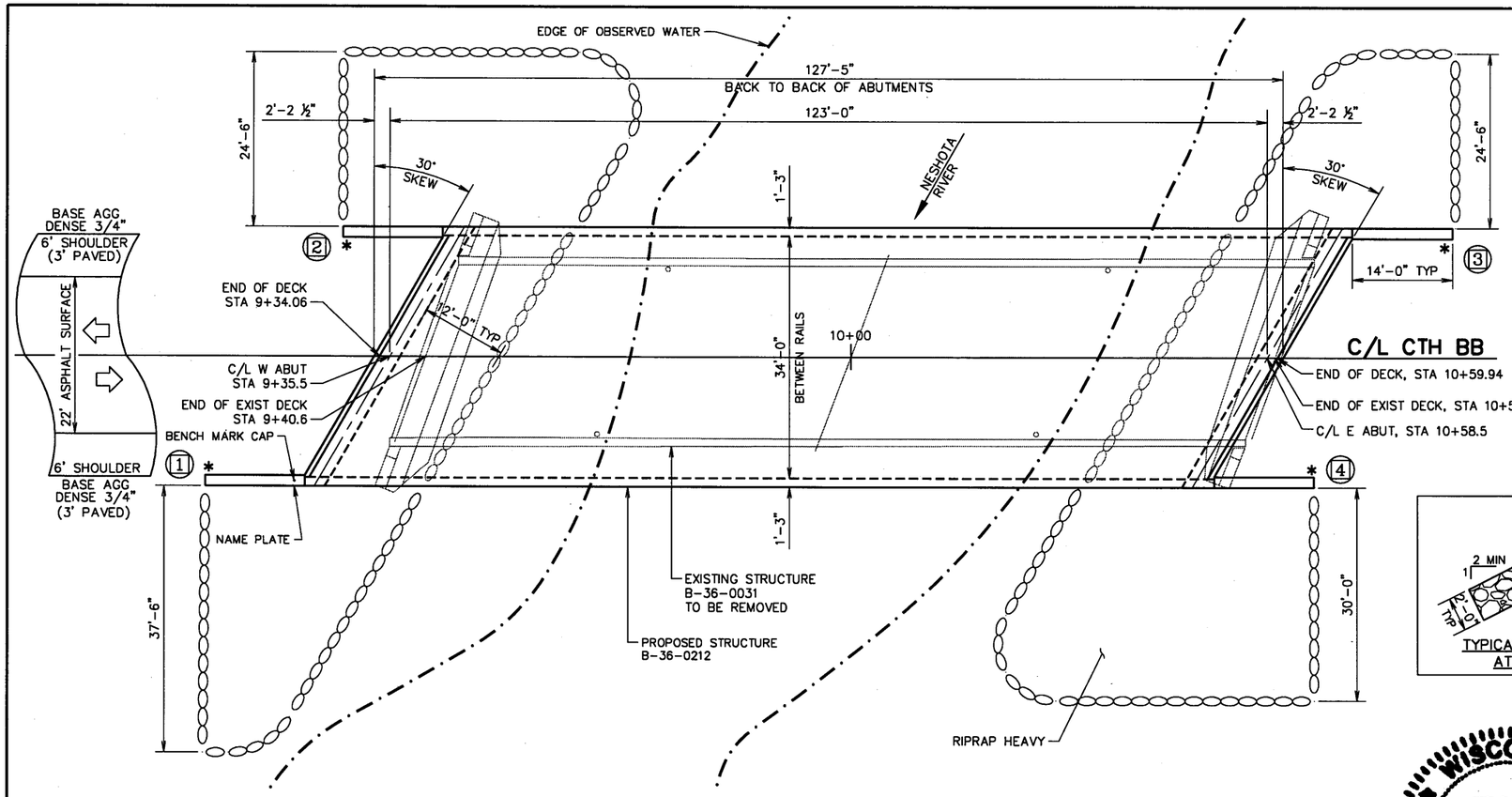
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

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

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 38 | E

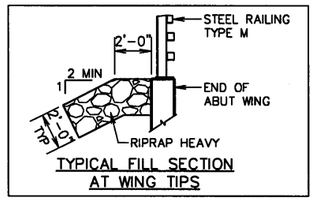
STATE PROJECT NUMBER
4333-04-71



PLAN
SINGLE SPAN 54W" GIRDER BRIDGE

* PROVIDE FOR THRIE BEAM GUARD RAIL ATTACHMENT

(n) INDICATES WING NUMBER



TYPICAL FILL SECTION AT WING TIPS

DESIGN DATA

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

LIVE LOAD:
- DESIGN RATING — HL-93
- INVENTORY RATING FACTOR — RF = 1.32
- OPERATING RATING FACTOR — RF = 1.68
- MAXIMUM STANDARD PERMIT VEHICLE (Wis-SPV) — 250 KIPS

ULTIMATE DESIGN STRESSES:
- CONCRETE MASONRY
  - SLAB — f'c = 4,000 PSI
  - ALL OTHER — f'c = 3,500 PSI
- BAR STEEL REINFORCEMENT, GRADE 60 — fy = 60,000 PSI
- PRESTRESSED GIRDER
- CONCRETE MASONRY — f'c = 8,000 PSI
  - STRANDS - 0.6" DIA WITH
  - ULTIMATE TENSILE STRENGTH OF — f's = 270,000 PSI

HYDRAULIC DATA

100 YEAR FREQUENCY
- DRAINAGE AREA — 43.9 SQ MILES
- Q_{100} TOTAL — 3300 CFS
  - THRU STRUCTURE — 3300 CFS
  - OVERFLOW — 0 CFS
  - VELOCITY - THRU STRUCTURE — 4.1 FPS
  - WATERWAY AREA THRU STRUCTURE — 811 SQ FT
  - HIGH WATER$_{100}$ ELEVATION — 686.6 FT
  - SCOUR CRITICAL CODE = 8

2 YEAR FREQUENCY
- Q_2 TOTAL — 980 CFS
- HIGH WATER$_2$ ELEVATION — 682.2 FT

- REGULATORY Q_{100} — 4400 CFS
- REGULATORY HIGH WATER$_{100}$ ELEVATION — 688.0 FT

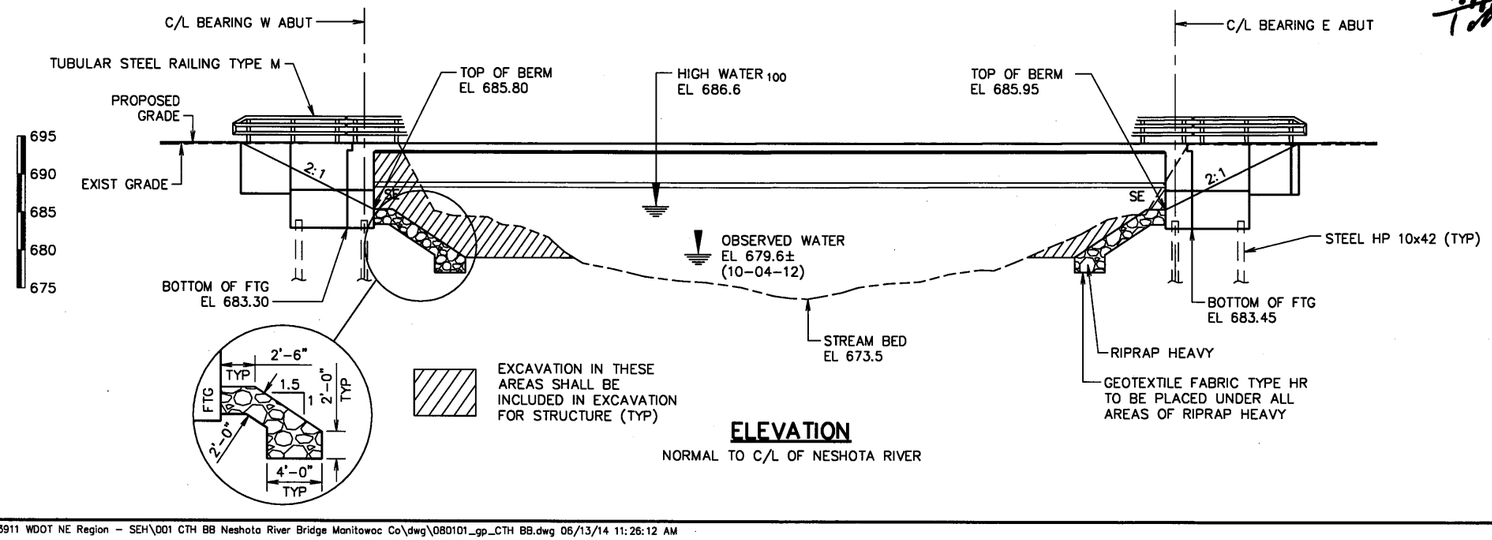
TRAFFIC DATA

- AADT (2014) — 1350
- AADT (2034) — 1500
- DESIGN SPEED — 60 MPH

FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON PILING STEEL HP 10x42, WITH A REQUIRED DRIVING RESISTANCE OF 160 TONS ‡ PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC EQUATION.
ESTIMATED LENGTH 25' W ABUTMENT
ESTIMATED LENGTH 25' E ABUTMENT

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



ELEVATION
NORMAL TO C/L OF NESHOTA RIVER

WISCONSIN
TROY L. PETERSON
E-31102
MENOMONIE
WI
PROFESSIONAL ENGINEER
6-13-14

BENCHMARK
STA 10+65.7, 15.2' LT.
TOP NE WINGWALL
MONUMENT
EL. 694.46

LIST OF DRAWINGS

BRIDGE OFFICE CONTACT:
WILLIAM DREHER
(608) 266-8489

DESIGN CONTACT:
TROY PETERSON
(715) 235-9081

NO.	DATE	REVISION	BY

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
ACCEPTED William C. Dreher 6/13/14
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE B-36-0212

CTH BB OVER NESHOTA RIVER

COUNTY	TOWN
MANITOWOC	COOPERSTOWN

DESIGN SPEC: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
TLP	GMW	PKF	TLP

GENERAL PLAN

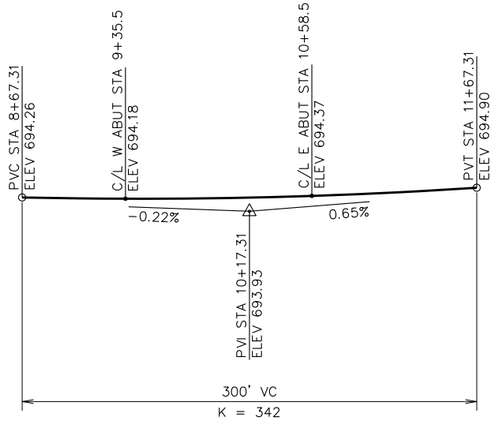
SHEET 1 OF 13

I:\Clients-GB\W3911 WDOT NE Region - SEH\001 CTH BB Neshota River Bridge Manitowoc Co\dwg\080101_gp_CTH BB.dwg 06/13/14 11:26:12 AM

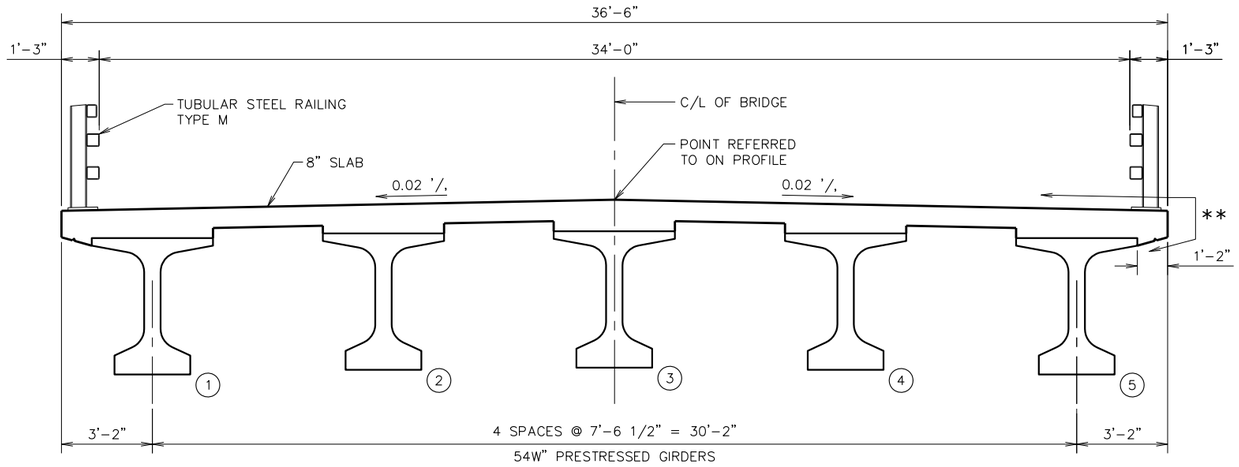
STATE PROJECT NUMBER
4333-04-71

TOTAL ESTIMATED QUANTITIES

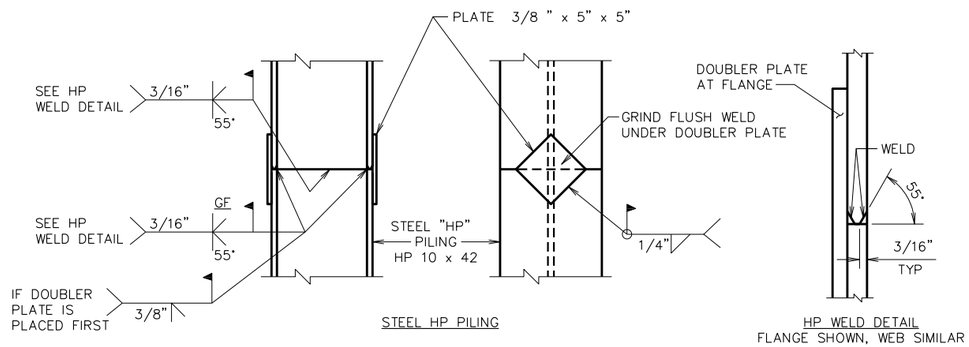
ITEM NUMBER	BID ITEMS	UNIT	W ABUT	E ABUT	SUPER	TOTALS
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STA 10+00	LS	———	———	———	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-36-0212	LS	———	———	———	1
210.0100	BACKFILL STRUCTURE	CY	160	160	———	320
502.0100	CONCRETE MASONRY BRIDGES	CY	47.0	47.0	184.0	278.0
502.3200	PROTECTIVE SURFACE TREATMENT	SY	———	———	560	560.0
503.0155	PRESTRESSED GIRDER TYPE I 54W-INCH	LF	———	———	620	620.0
505.0405	BAR STEEL REINFORCEMENT HS BRIDGES	LB	2490	2490	———	4980
505.0605	BAR STEEL REINFORCEMENT HS COATED BRIDGES	LB	1930	1930	29780	33640
506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	———	———	10	10
506.4000	STEEL DIAPHRAGMS STRUCTURE B-36-0212	EACH	———	———	8	8
550.0500	PILE POINTS	EACH	9	9	———	18
550.1100	PILING STEEL HP 10-INCH x 42 LB	LF	225	225	———	450
513.4060	RAILING TUBULAR TYPE M STRUCTURE B-36-0212	LS	———	———	———	1
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	11	11	———	22
606.0300	RIPRAP HEAVY	CY	195	195	———	390
612.0106	PIPE UNDERDRAIN 6-INCH	LF	20	20	———	40
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	50	50	———	100
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	340	340	———	680
	NON-BID ITEMS					
	FILLER	SIZE	———	———	———	1/2 & 3/4



PROPOSED GRADE LINE



CROSS SECTION THRU ROADWAY
(LOOKING EAST)



STEEL HP PILING

HP WELD DETAIL
FLANGE SHOWN, WEB SIMILAR

PILE SPLICE DETAILS

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL STATIONS AND ALL ELEVATIONS ARE IN FEET.

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

ALL REINFORCING BARS ARE ENGLISH. THE FIRST DIGIT OF A THREE-DIGIT BAR MARK OR THE FIRST TWO DIGITS OF A FOUR-DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

JOINT FILLER SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION M 153, TYPE I, II OR III OR A.A.S.H.T.O. DESIGNATION M 213.

THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY TO THE EXTENT SHOWN ON THE GENERAL PLAN SHEET AND IN THE ABUTMENT DETAILS.

STEEL 'HP' PILE MATERIAL SHALL BE A.S.T.M. DESIGNATION A36.

THE EXISTING STRUCTURE (B-36-00031) IS A 119' LONG BY 24' CLEAR WIDTH TWO SPAN STEEL DECK GIRDER BRIDGE.

** THE PROTECTIVE SURFACE TREATMENT SHALL BE APPLIED TO THE TOP AND EDGES OF THE SLAB AND TO THE OUTSIDE 1'-0" OF THE UNDERSIDE OF THE SLAB.

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

THE GRADATION OF THE BACKFILL STRUCTURE SHALL MEET THE REQUIREMENTS OF SECTION 209.2.2 OF THE STANDARD SPECIFICATIONS FOR GRADE 1 MATERIAL.

THE EXISTING GROUND LINE SHALL BE THE UPPER LIMITS OF EXCAVATION FOR STRUCTURES.

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

THE MINIMUM CONCRETE HAUNCH SHALL BE 2" FOR DESIGN CALCULATIONS AND THE HAUNCH CONCRETE QUANTITY IS BASED ON AN AVERAGE HAUNCH DEPTH OF 3 1/4" WHICH IS THE MAXIMUM HAUNCH QUANTITY FOR WHICH THE CONTRACTOR WILL BE PAID.

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

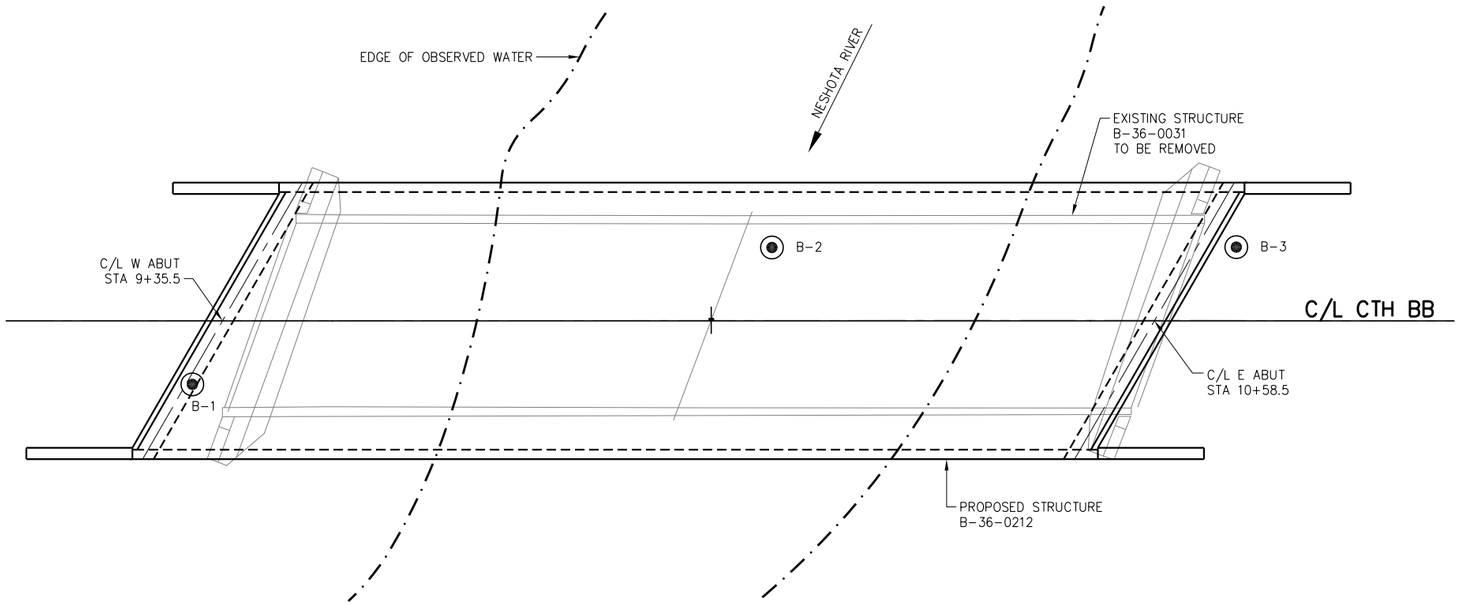
STRUCTURE B-36-0212

DRAWN BY PKF | PLANS CK'D TLP

QUANTITIES & NOTES

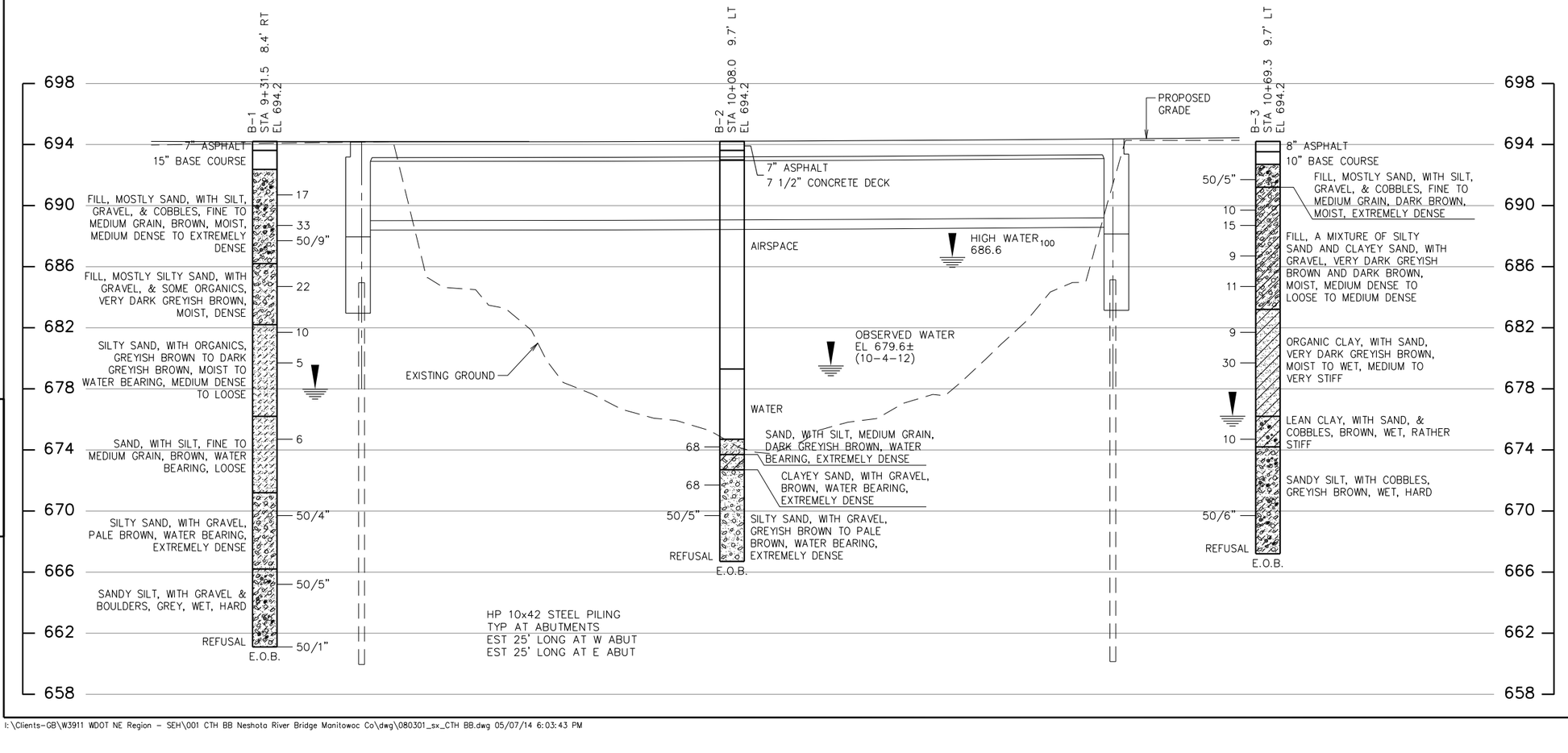
SHEET 2 OF 13

I:\Clients-GB\W3911 WDOT NE Region - SEH\001 CTH BB Neshota River Bridge Manitowoc Co\dwg\080201_bq_CTH BB.dwg 05/21/14 4:31:14 PM



BORINGS TAKEN BY:

RIVER VALLEY TESTING CORP.
1280 PARKVIEW ROAD
GREEN BAY, WI 54304
(920) 347-9040
(3-21-13)



STATE PROJECT NO.

4333-04-71

ABBREVIATIONS

F---FINE	VF---VERY FINE	M---MEDIUM
C---COARSE	WS---WEATHERED	SO---SOUND

MATERIAL SYMBOLS

TOPSOIL	SILT	SANDSTONE
SAND	PEAT	LIMESTONE
GRAVEL	CLAY	IGNEOUS ROCK

LEGEND OF BORING

95/6=95 BLOWS FOR 6" PENETRATION
PROBING TAKEN WITH A 350# WT. FALLING 18" ON A 2" O.D. POINT.

PROBING NO.
STATION
ELEVATION
7 AVERAGE BLOWS PER FOOT
REFUSAL 95/6

LEGEND OF BORING

ELEV.
BORING NO.
STA. & OFFSET
UNCONFINED STRENGTH
7.7
7
*
SANDY GRAVEL
BLOWS PER FT. USING 140# WT. FALLING 30"
WASH SAMPLE
F.
BOULDERS OR COBBLES
SHELBY TUBE
S.T.
SAND
GROUND WATER ELEVATION
SILTY CLAY
NO GROUND WATER OBSERVED ABOVE THIS ELEVATION
SO
LIMESTONE

UNLESS OTHERWISE SPECIFIED, THE BLOWS PER FOOT AT THE LOCATIONS INDICATED ARE BASED ON DRIVING A 2" O.D. X 1.4" I.D. SPLIT SPOON SAMPLER WITH A 140# HAMMER HAVING A FREE FALL OF 30". THE BLOW COUNT IS TAKEN IN UNDISTURBED SOIL IMMEDIATELY BELOW A CASED OR OPEN HOLE ELIMINATING SIDE FRICTION ON THE DRIVE PIPE.

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

TO OBTAIN RELATIVE DATA CONCERNING THE CHARACTER OF MATERIAL IN AND UPON WHICH THE FOUNDATION MIGHT BE BUILT, BORINGS AND/OR SOUNDINGS WERE MADE AT POINTS APPROX. AS INDICATED ON THIS DRAWING. THE DATA PRESENTED HEREIN REPRESENTS THE FINDINGS OF THE SUBSURFACE EXPLORATIONS MADE. HOWEVER, BECAUSE THE DEPTHS INVESTIGATED ARE LIMITED AND THE AREA OF THE BORINGS AND/OR SOUNDINGS IS VERY SMALL IN RELATION TO THE ENTIRE AREA, THE WISCONSIN DEPARTMENT OF TRANSPORTATION DOES NOT WARRANT CONDITIONS BELOW THE DEPTHS INVESTIGATED OR THAT THE CLASSIFICATION OF MATERIAL ENCOUNTERED IN THESE INVESTIGATIONS IS NECESSARILY TYPICAL OF THE ENTIRE SITE.

NO.	DATE	REVISION	BY

ORIGINAL PLANS PREPARED BY

Cedar corporation
MENOMONIE - MADISON - GREEN BAY
www.cedarcorp.com 800-472-7372

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-36-0212

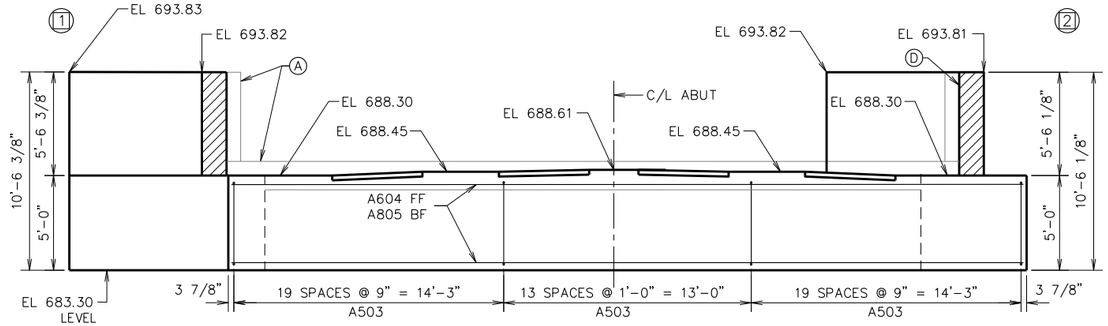
DRAWN BY PKF | PLANS CHECKED TLP

SUBSURFACE EXPLORATION

SHEET 3 OF 13

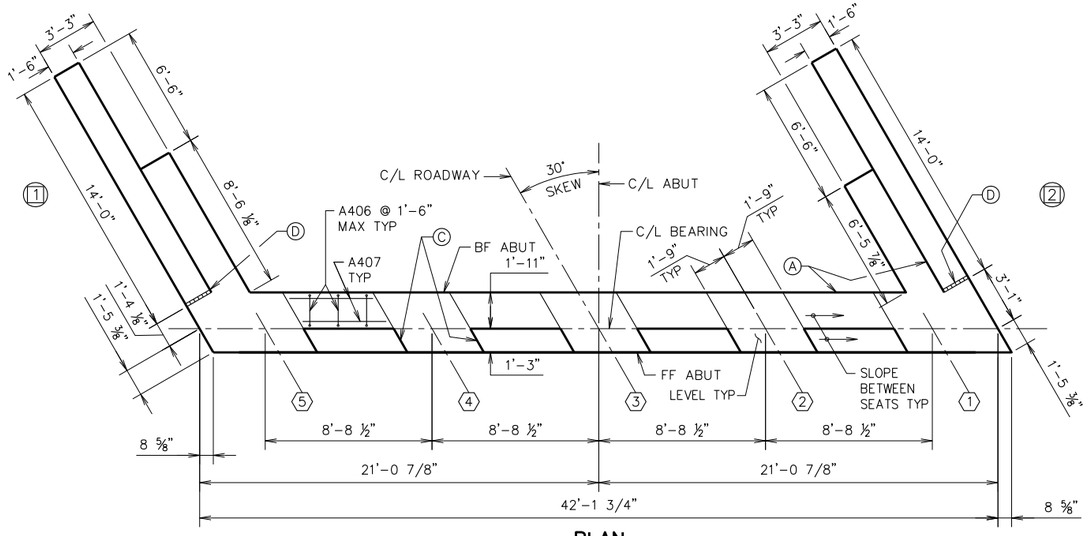
I:\Clients-GB\W3911 WDOT NE Region - SEH\001 CTH BB Neshoto River Bridge Manitowoc Co\dwg\080301_sx_CTH BB.dwg 05/07/14 6:03:43 PM

STATE PROJECT NUMBER
4333-04-71

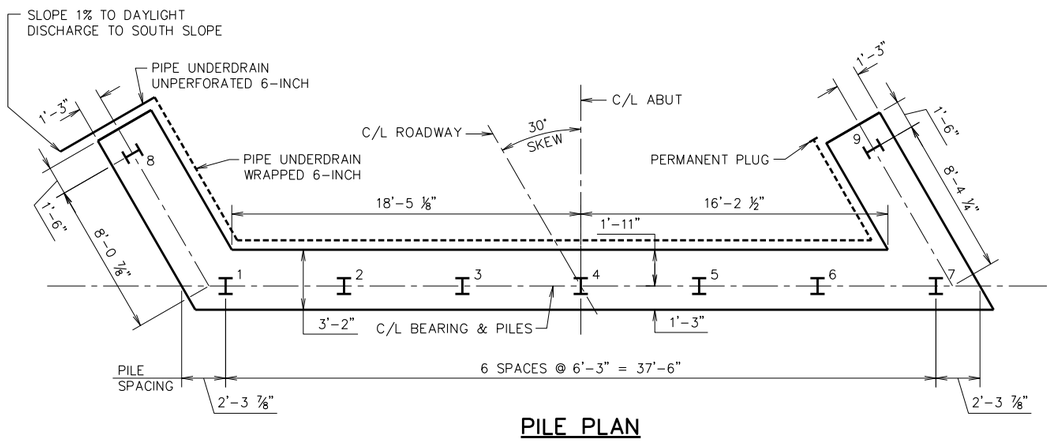


NOTE: DISPLACE A503 BARS INTERFERING WITH PILING

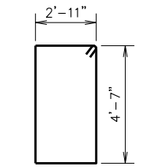
ELEVATION
(LOOKING WEST)



PLAN



PILE PLAN



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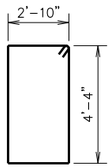
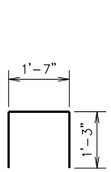
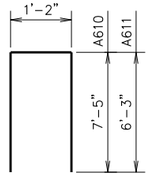


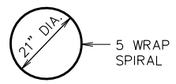
A503



A406



A610, A611



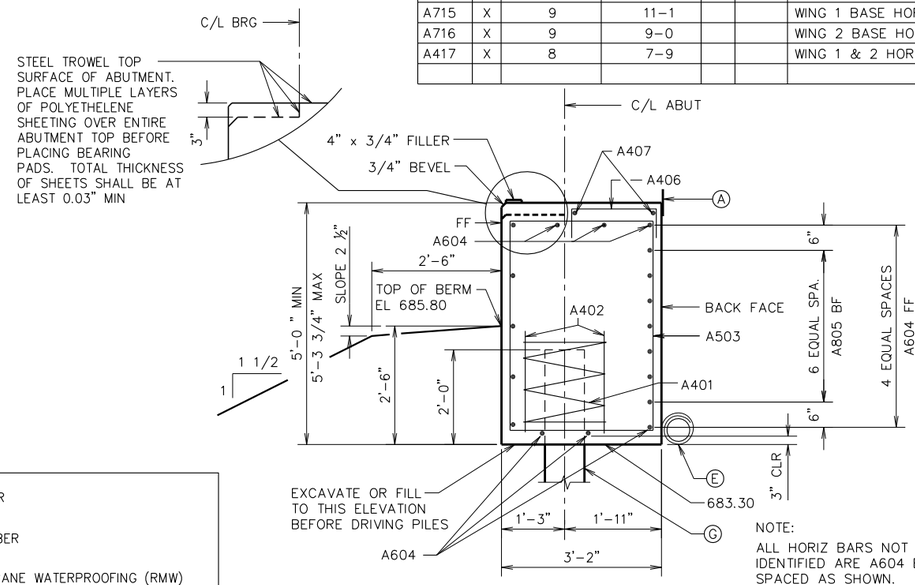
A401

BILL OF BARS

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

2490# UNCOATED 1930# COATED

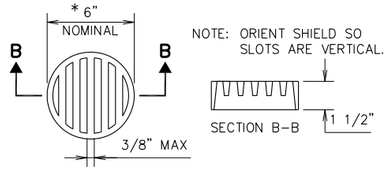
BAR MARK	COAT	NO. REQUIRED	LENGTH	BENT	BAR SERIES	LOCATION
A401		7	28-0	X		BODY - ONE PER PILE
A402		14	2-3			BODY - TWO PER PILE
A503		52	14-11	X		BODY - STIRRUPS
A604		11	41-9			BODY - HORIZ
A805		7	41-9			BODY - HORIZ BF
A406		12	3-11	X		BODY - DOWELS
A407		8	4-4			BODY - HORIZ
A608	X	4	13-8			WING 1 & 2 - HORIZ TOP
A409	X	24	13-8			WING 1 & 2 - HORIZ
A610	X	20	15-8	X		WING 1 & 2 - VERT TOP
A611	X	18	13-5	X		WING 1 & 2 - VERT TOP
A512	X	16	15-6	X		WING 1 & 2 - VERT BASE
A513	X	6	9-11			WING 1 BASE HORIZ FF
A514	X	6	10-9			WING 2 BASE HORIZ FF
A715	X	9	11-1			WING 1 BASE HORIZ BF & TOP
A716	X	9	9-0			WING 2 BASE HORIZ BF & TOP
A417	X	8	7-9			WING 1 & 2 HORIZ



NOTE: ALL HORIZ BARS NOT OTHERWISE IDENTIFIED ARE A604 BARS SPACED AS SHOWED.

SECTION THRU BODY

- (1) INDICATES WING NUMBER
- (2) INDICATES GIRDER NUMBER
- (A) 18" RUBBERIZED MEMBRANE WATERPROOFING (RMW) SEAL ALL HORIZ & VERT JOINTS ON BACKFACE
- (B) OPTIONAL KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2" x 6". (18" RMW @ BF & 3/4 " 'V' GROOVE @ FF OF WING WALL IF JOINT IS USED)
- (C) 3/4" CORK UP VERT FACES OF BEAM SEATS
- (D) 1/2" FILLER (INCLUDED IN WING LENGTH): SEAL EXPOSED HORIZ & VERT SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)
- (E) PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN (SEE DETAIL). RODENT SHIELD TO BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".
- (G) SUPPORT ABUTMENT ON HP 10x42 PILING. ESTIMATED 25' LONG & DRIVEN TO A REQD DRIVING RESISTANCE OF 160 TONS PER PILE. PILE POINTS ARE REQUIRED.



* DIMENSION IS APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING.

RODENT SHIELD

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-36-0212

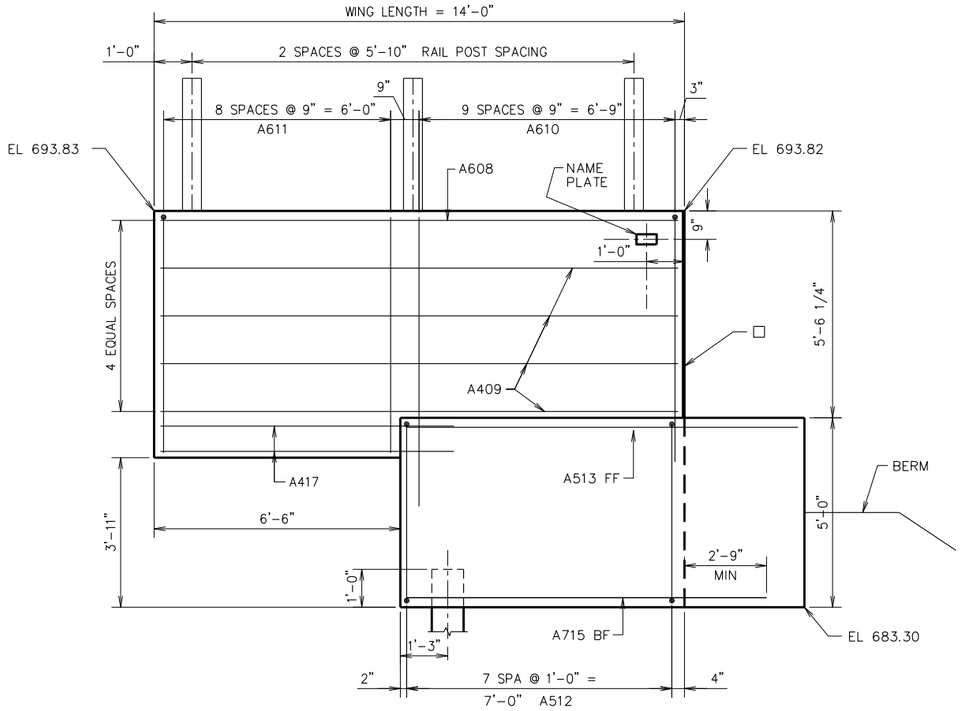
DRAWN BY PKF | PLANS CK'D TLP

WEST ABUTMENT

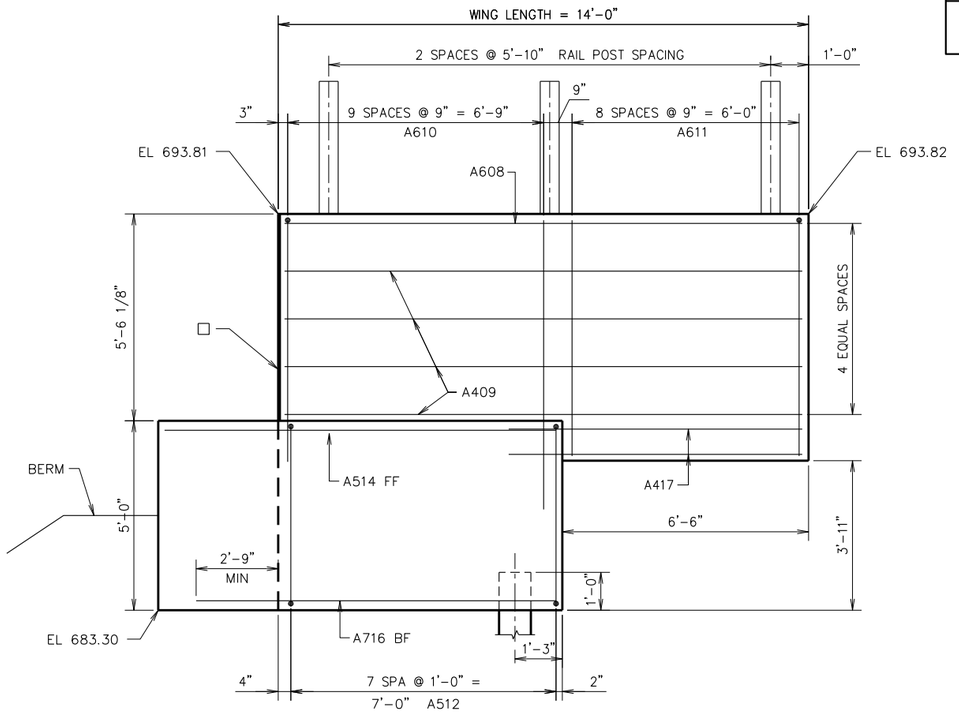
SHEET 4 OF 13

I:\Clients-GB\W3911 WDOT NE Region - SEH\001 CTH BB Neshota River Bridge Manitowoc Co\dwg\080401_wa_CTH BB.dwg 05/21/14 2:29:48 PM

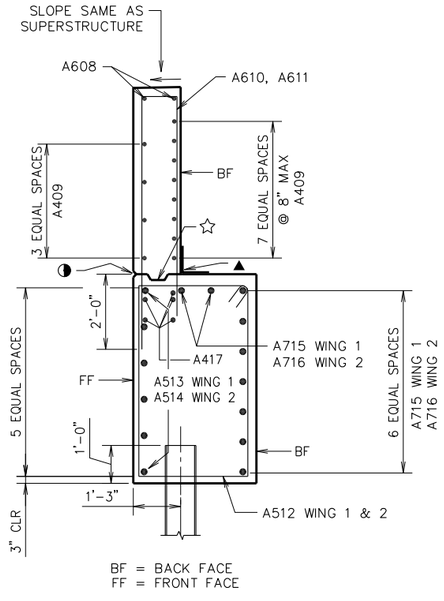
STATE PROJECT NUMBER
4333-04-71



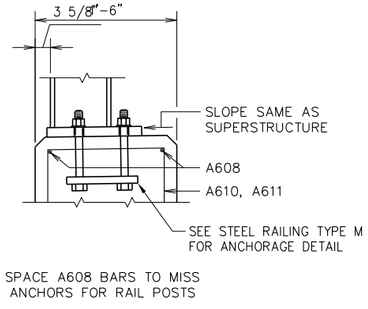
WING 1



WING 2



TYPICAL SECTION THRU WING



SECTION AT TOP OF WING

▲ 18" RUBBERIZED MEMBRANE WATERPROOFING (RMW) SEAL ALL HORIZ & VERT JOINTS ON BACKFACE

◑ OPTIONAL KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2" x 6". (18" RMW @ BF & 3/4" 'V' GROOVE @ FF OF WING WALL IF JOINT IS USED)

□ 1/2" FILLER (INCLUDED IN WING LENGTH): SEAL EXPOSED HORIZ & VERT SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-36-0212

DRAWN BY PKF | PLANS CK'D TLP

WEST ABUTMENT DETAILS

SHEET 5 OF 13

I:\Clients-GB\W3911 WDOT NE Region - SEH\001 CTH BB Neshota River Bridge Manitowoc Co\dwg\080401_waDet_CTH BB.dwg 05/07/14 6:05:07 PM

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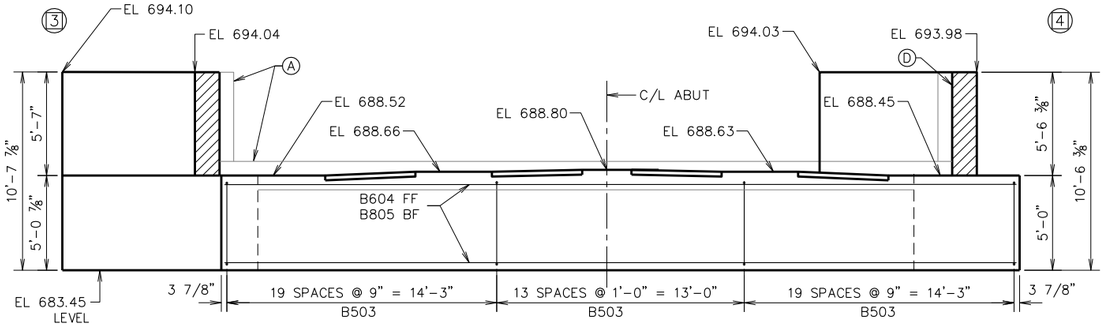
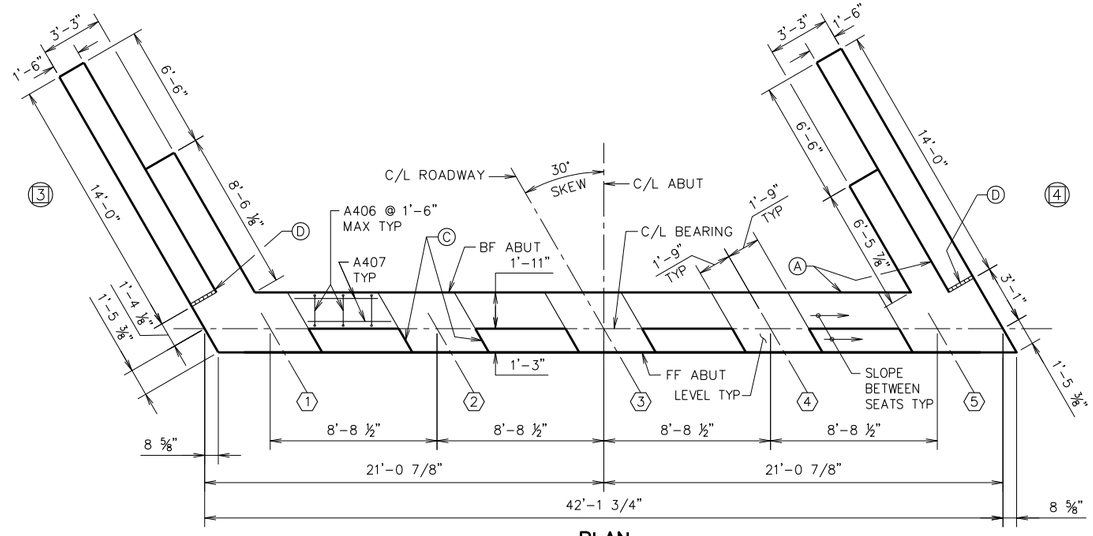
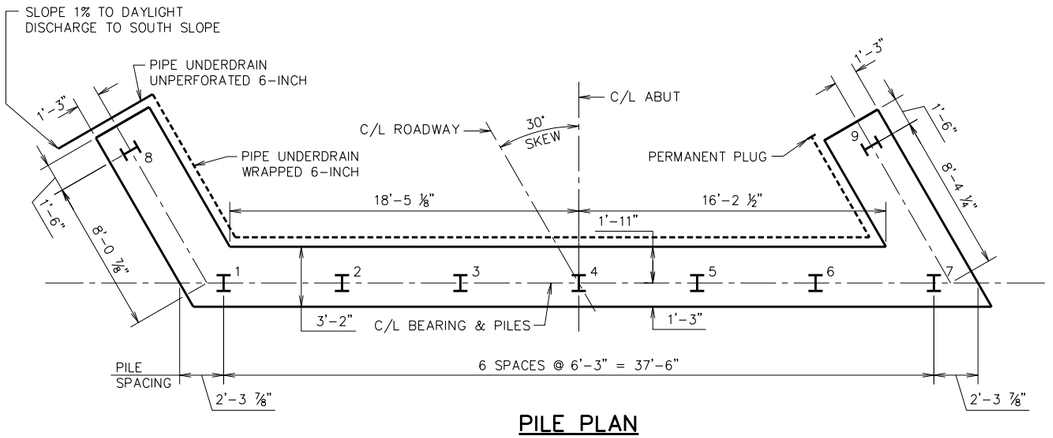


NOTE: DISPLACE B503 BARS INTERFERING WITH PILING

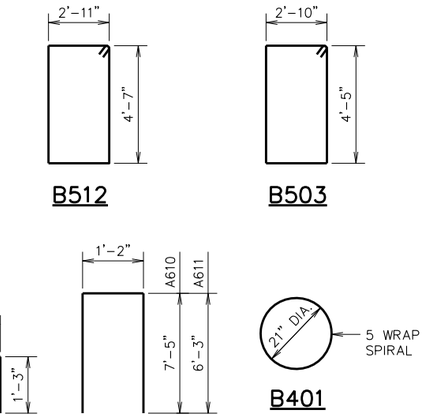
ELEVATION
(LOOKING EAST)



PLAN



PILE PLAN

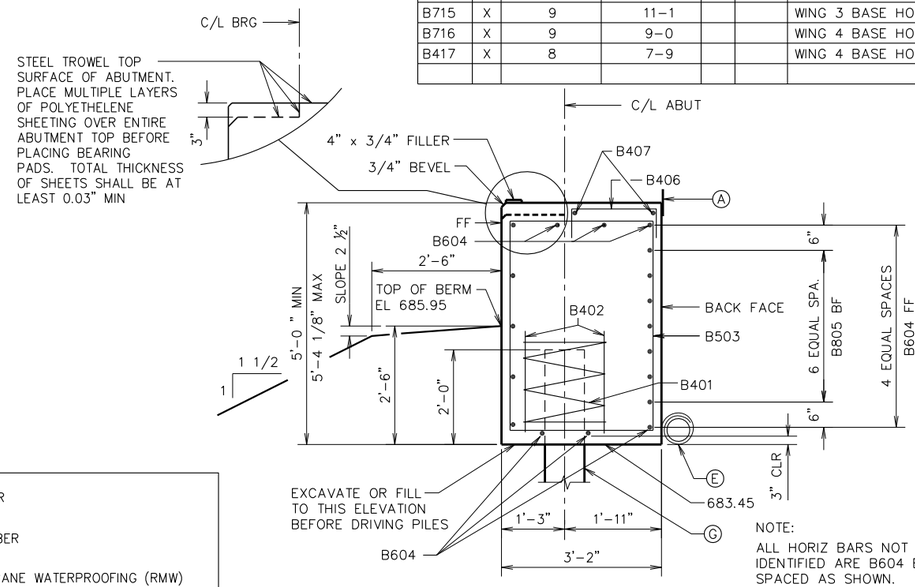


BILL OF BARS

2490# UNCOATED 1930# COATED

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

BAR MARK	COAT	NO. REQUIRED	LENGTH	BENT	BAR SERIES	LOCATION
B401		7	28-0	X		BODY - ONE PER PILE
B402		14	2-3			BODY - TWO PER PILE
B503		52	15-0	X		BODY - STIRRUPS
B604		11	41-9			BODY - HORIZ
B805		7	41-9			BODY - HORIZ BF
B406		12	3-11			BODY - DOWELS
B407		8	4-5			BODY - HORIZ
B608	X	4	13-8			WING 3 & 4 - HORIZ TOP
B609	X	24	13-8			WING 3 & 4 - HORIZ
B610	X	20	15-10	X		WING 3 & 4 - VERT TOP
B611	X	18	13-5			WING 3 & 4 - VERT TOP
B512	X	16	15-6			WING 3 & 4 - VERT BASE
B513		6	9-11			WING 3 BASE HORIZ FF
B514	X	6	10-9			WING 4 BASE HORIZ FF
B715	X	9	11-1			WING 3 BASE HORIZ BF & TOP
B716	X	9	9-0			WING 4 BASE HORIZ BF & TOP
B417	X	8	7-9			WING 4 BASE HORIZ TOP



NOTE:
ALL HORIZ BARS NOT OTHERWISE IDENTIFIED ARE B604 BARS SPACED AS SHOWN.

SECTION THRU BODY

- INDICATES WING NUMBER
- INDICATES GIRDER NUMBER

(A) 18" RUBBERIZED MEMBRANE WATERPROOFING (RMW) SEAL ALL HORIZ & VERT JOINTS ON BACKFACE

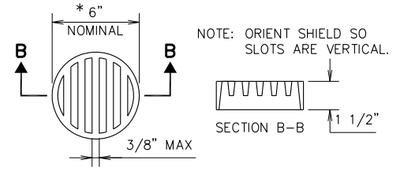
(B) OPTIONAL KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2" x 6". (18" RMW @ BF & 3/4 " 'V' GROOVE @ FF OF WING WALL IF JOINT IS USED)

(C) 3/4" CORK UP VERT FACES OF BEAM SEATS

(D) 1/2" FILLER (INCLUDED IN WING LENGTH): SEAL EXPOSED HORIZ & VERT SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)

(E) PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN (SEE DETAIL). RODENT SHIELD TO BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".

(G) SUPPORT ABUTMENT ON HP 10x42 PILING. ESTIMATED 25' LONG & DRIVEN TO A REQD DRIVING RESISTANCE OF 160 TONS PER PILE. PILE POINTS ARE REQUIRED.



* DIMENSION IS APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING.

RODENT SHIELD

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-36-0212

DRAWN BY PKF | PLANS CK'D TLP

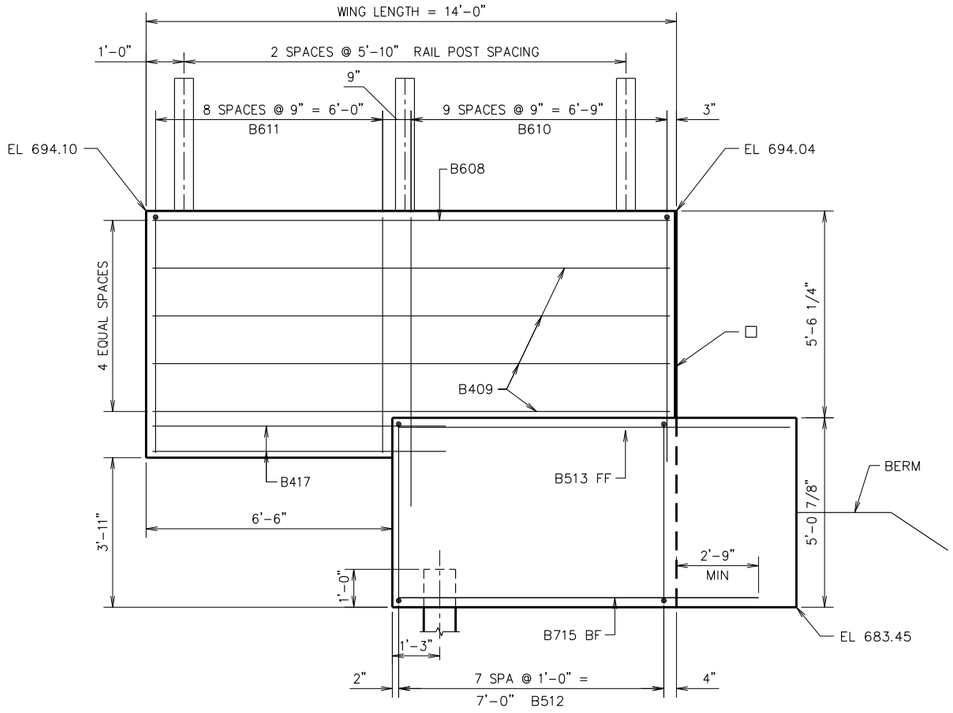
EAST ABUTMENT

SHEET 6 OF 13

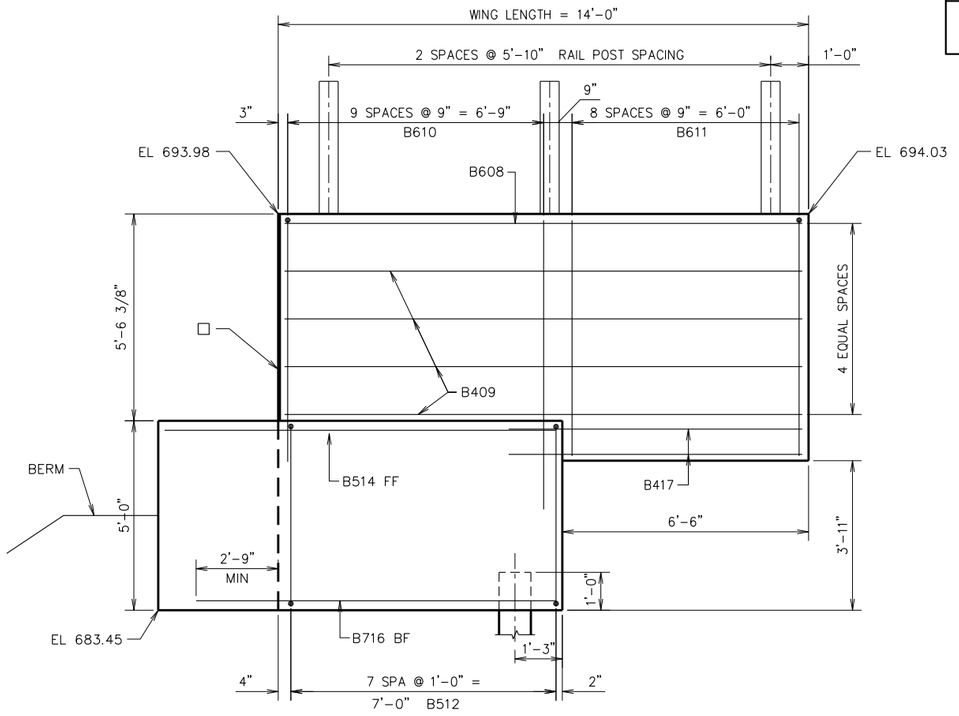
I:\Clients-GB\W3911 WDOT NE Region - SEH\001 CTH BB Neshota River Bridge Manitowoc Co\dwg\080402_ea_CTH BB.dwg 05/21/14 2:32:07 PM

STATE PROJECT NUMBER

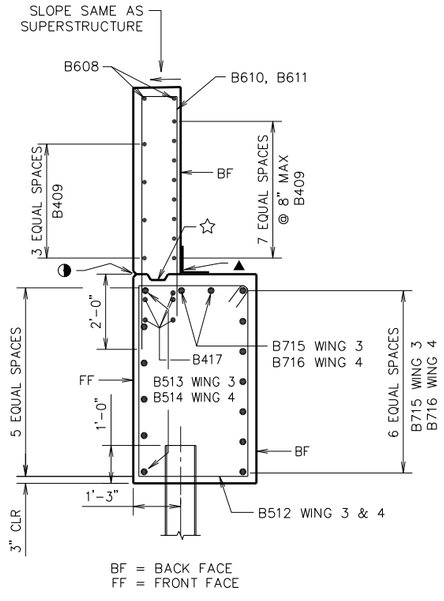
4333-04-71



WING 3

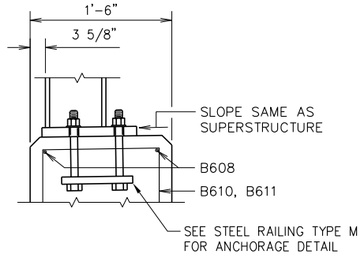


WING 4



BF = BACK FACE
FF = FRONT FACE

TYPICAL SECTION THRU WING



SPACE B608 BARS TO MISS
ANCHORS FOR RAIL POSTS

SECTION AT TOP OF WING

▲ 18" RUBBERIZED MEMBRANE WATERPROOFING (RMW) SEAL ALL HORIZ & VERT JOINTS ON BACKFACE

◑ OPTIONAL KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2" x 6". (18" RMW @ BF & 3/4" 'V' GROOVE @ FF OF WING WALL IF JOINT IS USED)

□ 1/2" FILLER (INCLUDED IN WING LENGTH): SEAL EXPOSED HORIZ & VERT SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-36-0212

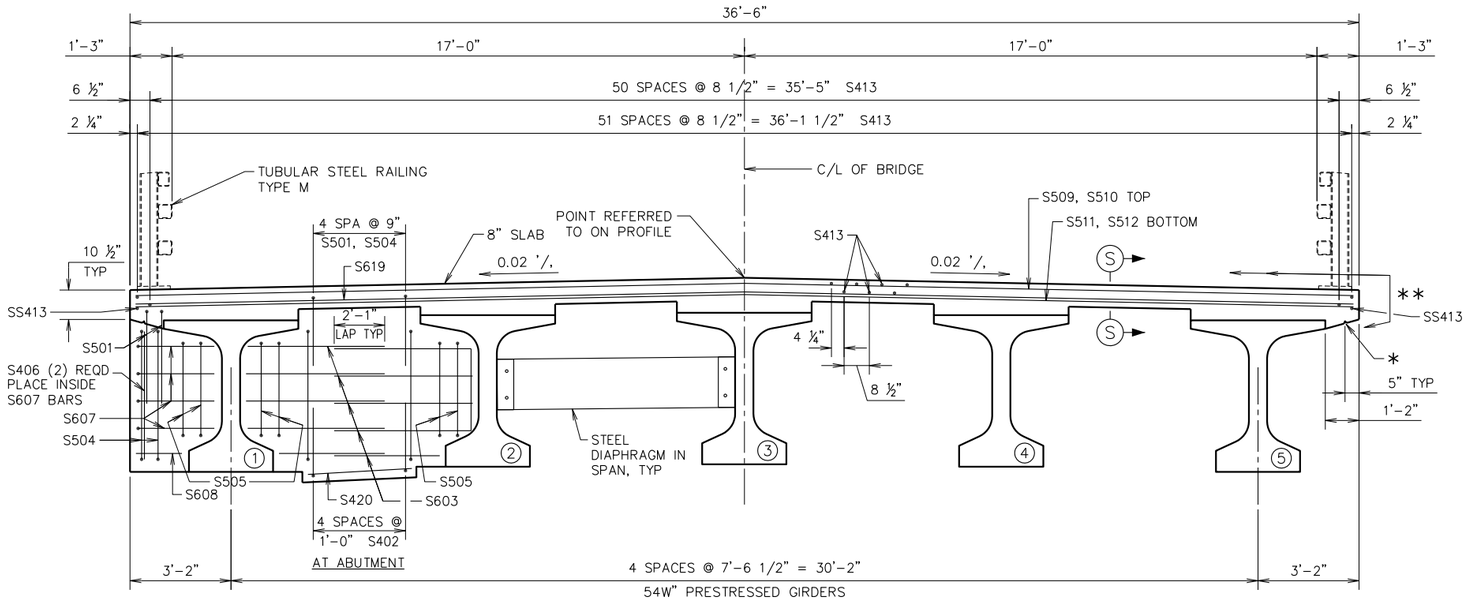
DRAWN BY PKF | PLANS CK'D TLP

EAST ABUTMENT DETAILS

SHEET 7 OF 13

PROJECT NUMBER

4333-04-71

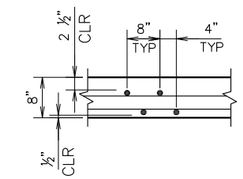


CROSS SECTION THRU ROADWAY

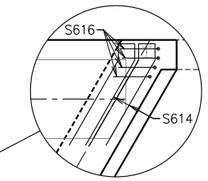
(LOOKING EAST)

** APPLY PROTECTIVE SURFACE TREATMENT

* 3/4" V-GROOVE EXTEND V-GROOVE TO 3" FROM FRONT FACE OF ABUTMENT DIAPHRAGM



SECTION S-S



DISPLACE S616 BARS SUCH THAT BENT LEG DOES NOT INTERFERE WITH GIRDER

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

BILL OF BARS

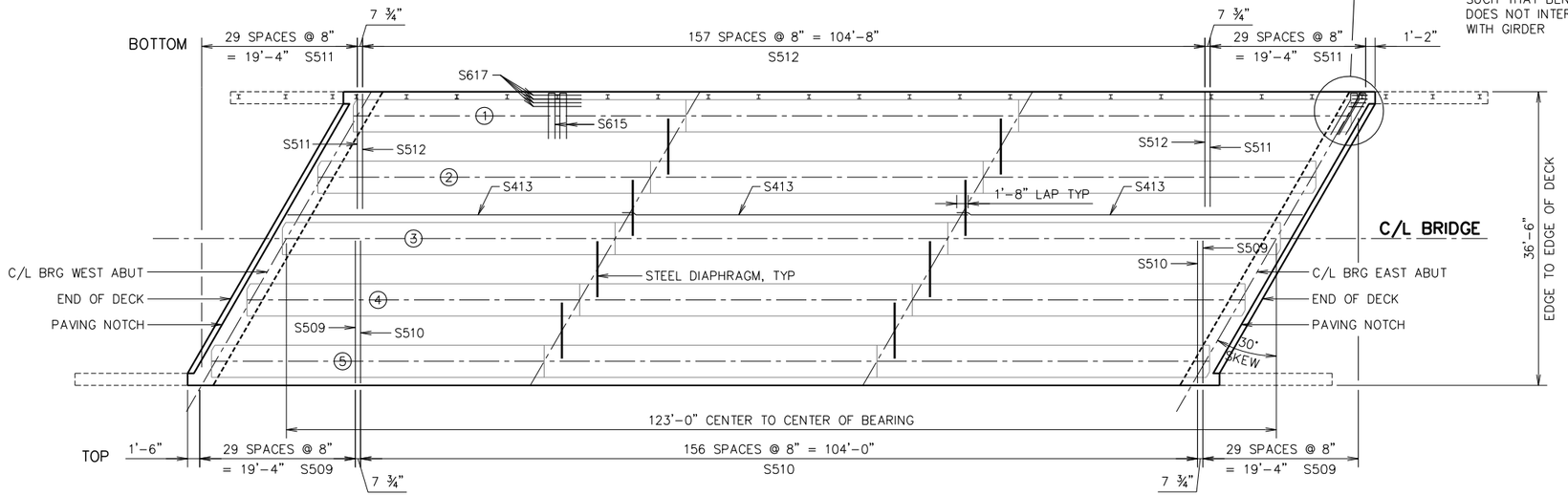
29780# COATED

BAR MARK	COAT	NO. REQD	LENGTH	BENT	SERIES	LOCATION
S501	X	48	5-7	X		DIAPHRAGM VERT
S402	X	40	3-3	X		DIAPHRAGM VERT
S603	X	80	4-11			DIAPHRAGM HORIZ
S504	X	48	15-0	X		DIAPHRAGM VERT
S505	X	40	12-2	X		DIAPHRAGM VERT
S406	X	8	4-2			DIAPHRAGM VERT END
S607	X	16	8-3	X		DIAPHRAGM HORZ END
S608	X	8	1-10			DIAPHRAGM HORIZ END
S509	X	60	18-11		⊠	SLAB TOP TRANS HORIZ
S510	X	157	36-2			SLAB TOP TRANS HORIZ
S511	X	60	18-5		⊠	SLAB BOTTOM TRANS
S512	X	158	36-2			SLAB BOTTOM TRANS
S413	X	315	43-0			SLAB LONG TOP & BOTTOM
S614	X	8	12-0	X		AT END RAIL POSTS
S615	X	76	12-0	X		AT INTERIOR RAIL POSTS
S616	X	16	5-0	X		AT END RAIL POSTS
S617	X	152	6-0			AT INTERIOR RAIL POSTS
S518	X	20	6-0			DIAPHRAGM
S619	X	14	41-9			DIAPHRAGM HORIZ
S420	X	16	4-4			DIAPHRAGM HORIZ

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

BAR SERIES TABLE

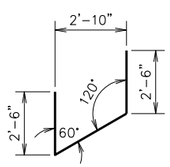
MARK	NO. REQD	LENGTH
S509	2 SERIES OF 30	2'-2" TO 35'-8"
S511	2 SERIES OF 30	1'-8" TO 35'-2"



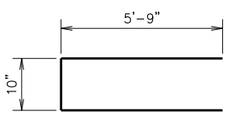
SUPERSTRUCTURE PLAN

TOP OF DECK ELEVATIONS

	C/L BRG WEST ABUT	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	C/L BRG EAST ABUT
NORTH EDGE	693.81	693.81	693.82	693.83	693.85	693.87	693.90	693.93	693.96	694.00	694.04
GIRDER 1	693.87	693.88	693.88	693.90	693.91	693.93	693.96	693.98	694.02	694.05	694.10
GIRDER 2	694.03	694.03	694.03	694.04	694.06	694.07	694.10	694.12	694.16	694.19	694.23
GIRDER 3	694.18	694.18	694.18	694.19	694.20	694.22	694.24	694.26	694.30	694.33	694.37
GIRDER 4	694.03	694.03	694.03	694.03	694.04	694.06	694.08	694.10	694.13	694.16	694.20
GIRDER 5	693.88	693.88	693.88	693.88	693.89	693.90	693.92	693.94	693.97	694.00	694.04
SOUTH EDGE	693.82	693.81	693.81	693.82	693.83	693.84	693.86	693.88	693.90	693.93	693.97



S607



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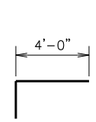

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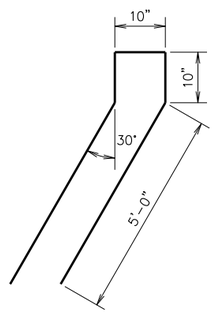

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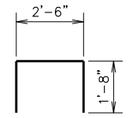
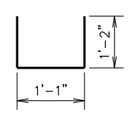


S501



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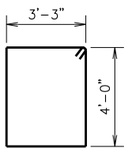
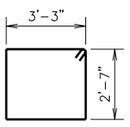


S504



S505

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-36-0212

DRAWN BY PKF | PLANS CK'D TLP

SUPERSTRUCTURE

SHEET 8 OF 13

8

8

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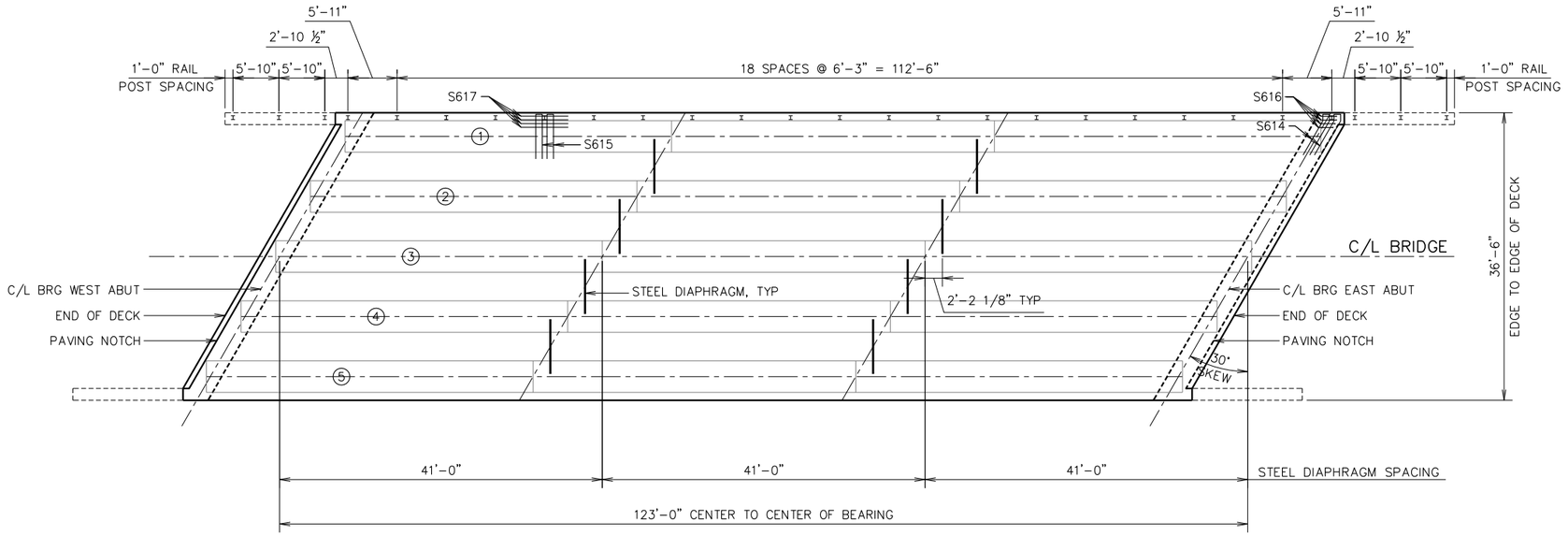
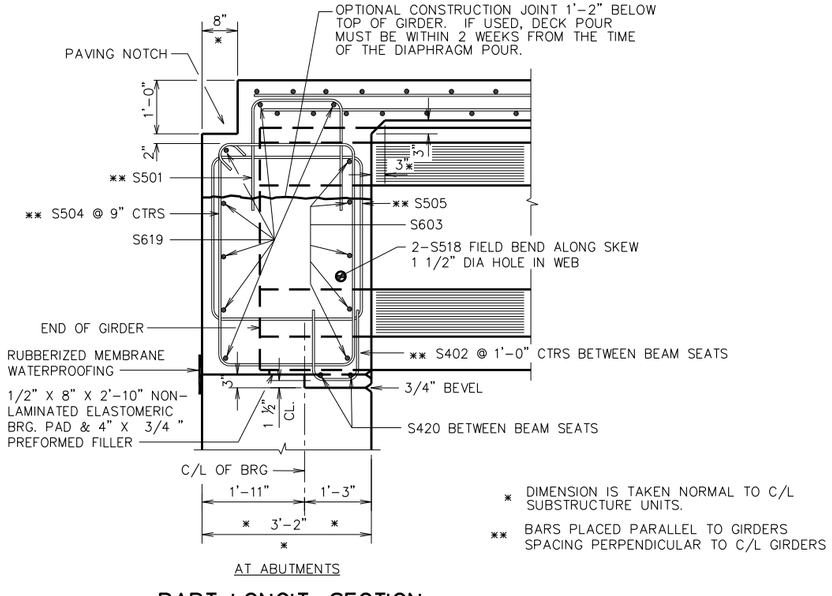
PROJECT NUMBER
4333-04-71



SUPERSTRUCTURE PLAN

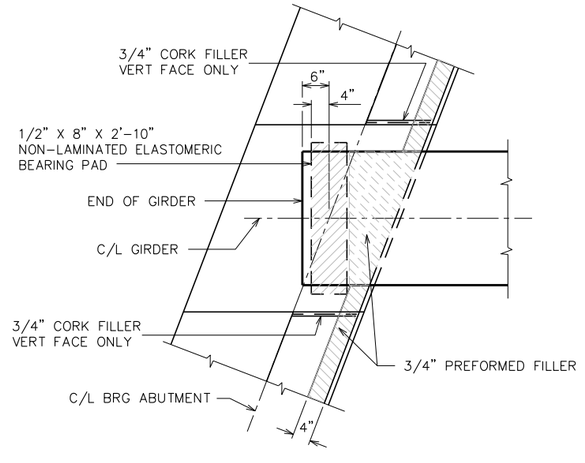


AT ABUTMENTS

* DIMENSION IS TAKEN NORMAL TO C/L SUBSTRUCTURE UNITS.

** BARS PLACED PARALLEL TO GIRDERS SPACING PERPENDICULAR TO C/L GIRDERS

PART LONGIT. SECTION



BEARING PAD DETAIL

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-36-0212

DRAWN BY PKF | PLANS CK'D TLP

SUPERSTRUCTURE DETAILS

SHEET 9 OF 13

I:\Clients-GB\W3911 WDOT NE Region - SEH\001 CTH BB Neshota River Bridge Manitowoc Co\dwg\080602_sup_CTH BB.dwg 05/21/14 2:47:34 PM

STATE PROJECT NUMBER
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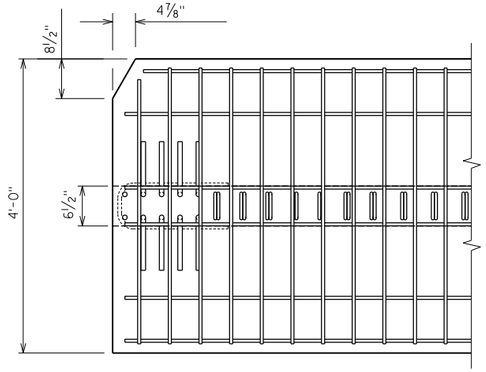


TOP FLANGE

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 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. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE III, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

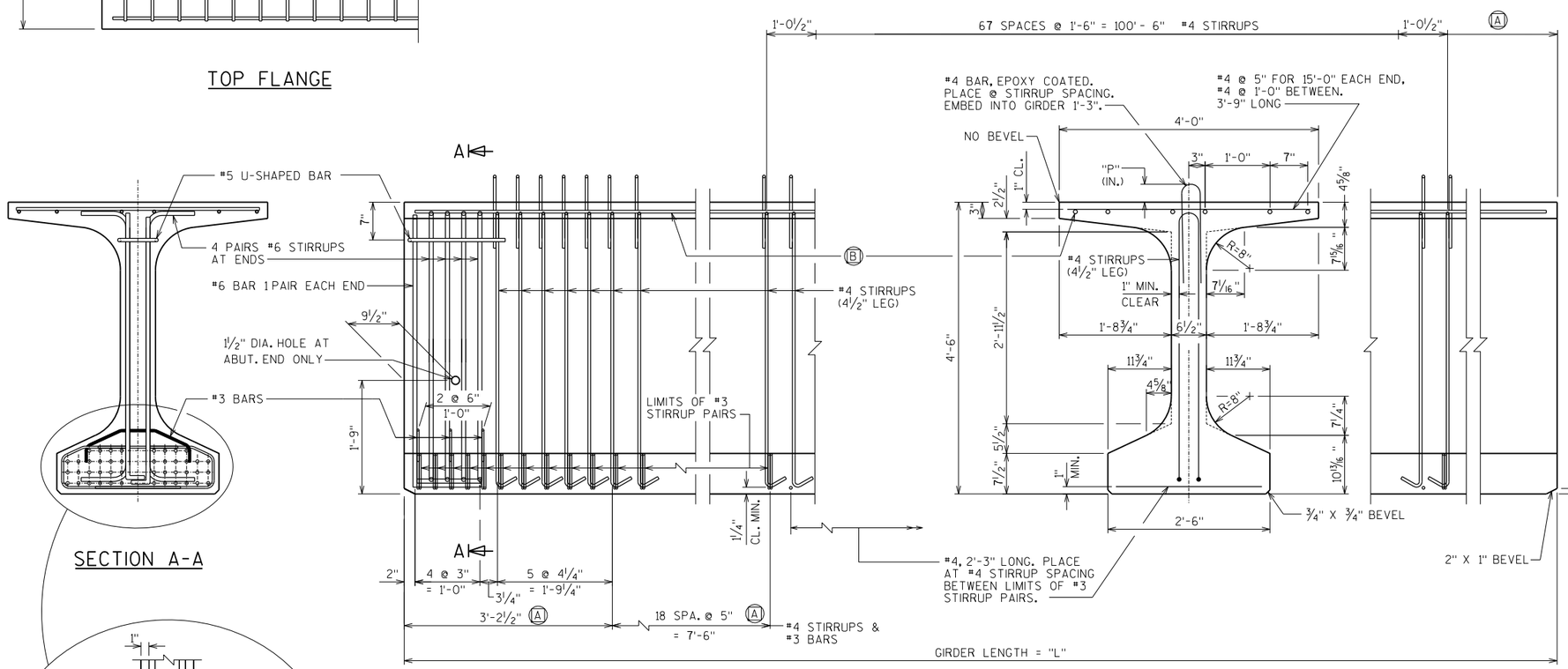
ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

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

AN ALTERNATE EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A497 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON APPROVAL OF THE STRUCTURES DEVELOPMENT SECTION.

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.

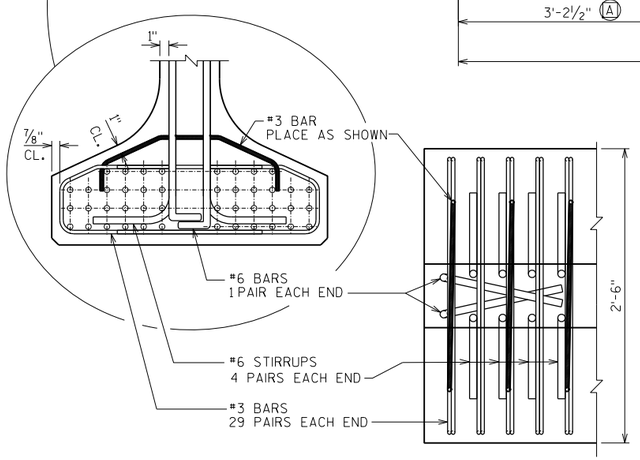


SECTION A-A

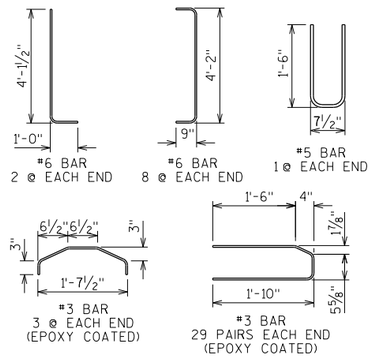
SIDE VIEW & TYP. SECTION IN SPAN

(A) DETAIL TYP. AT EACH END

(B) 6 #4 BARS, FULL LENGTH, MIN. LAP =



BOTTOM FLANGE



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

GIRDER DATA

SPAN	GIRDER	GIRDER LENGTH "L"	DEAD LOAD DEFL. (IN.) 1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	CONC. STRGTH. f'c (p.s.i.)	"P" IST 1/3 OF GIRDER	"P" MID 1/3 OF GIRDER	"P" END 1/3 OF GIRDER	DIA. OF STRAND (IN.)	DRAPED PATTERN TOTAL NO. OF STRANDS	f'ci (P.S.I.) *	(IN.) "A"	"B" MIN.	"B" MAX.	"C"	UNDRAPED PATTERN TOTAL NO. OF STRANDS	f'ci (P.S.I.) *
1	ALL	124	0.68	1.32	1.81	2.13	2.24	2.13	1.81	1.32	0.68	8000	7	6	7	0.6	42	6600	49	16	19	5	———	———

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-36-0212

DRAWN BY PKF | PLANS CK'D. TLP

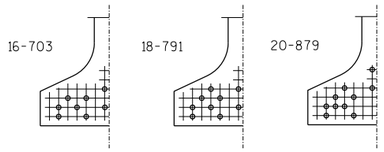
54W" PRESTRESSED GIRDER DETAILS

SHEET 10 OF 13

SCALE =

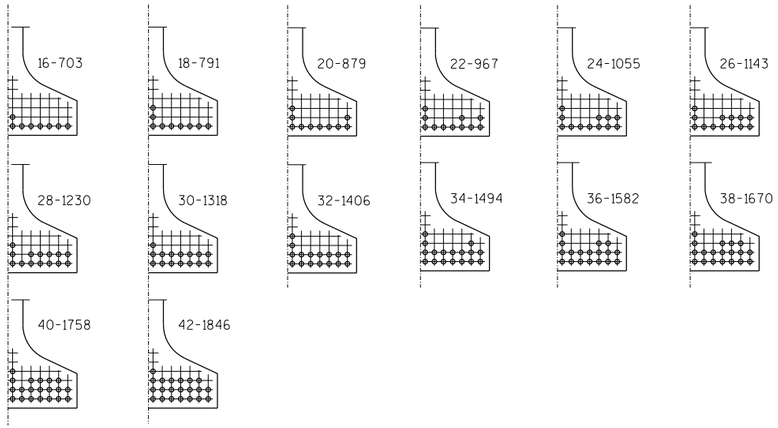
STATE PROJECT NUMBER

4333-04-71



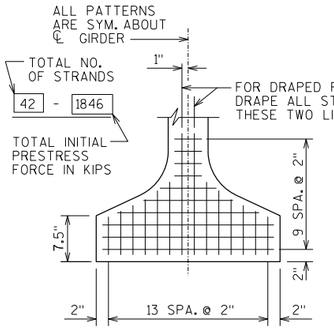
STANDARD ARRANGEMENTS TO RAISE CENTER OF GRAVITY TO AVOID DRAPING OF STRANDS

0.6"ϕ STRANDS

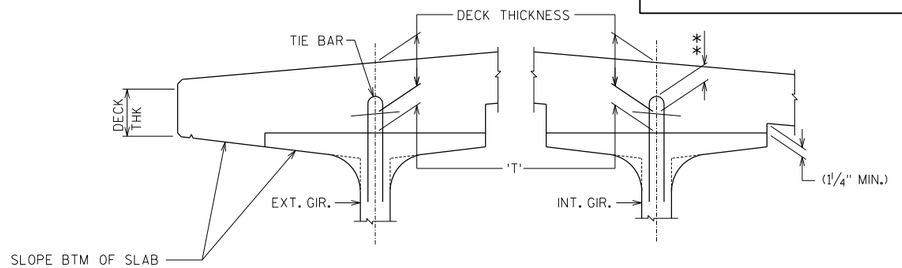


ARRANGEMENT AT ℄ SPAN - FOR GIRDERS WITH DRAPED STRANDS

0.6"ϕ STRANDS



TYP. STRAND PATTERN



DECK HAUNCH DETAIL

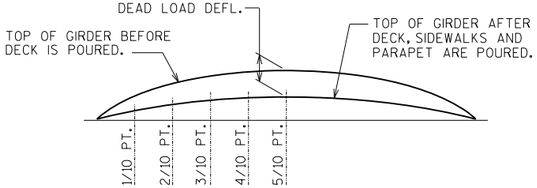
IF 1¼" MINIMUM HAUNCH HEIGHT AT EDGE OF GIRDER CANNOT BE MAINTAINED, THE GRADE LINE MAY BE REVISED BY THE ENGINEER AT THE OPTION OF THE CONTRACTOR, THE PLAN DECK THICKNESS SHALL BE HELD. NOTIFY THE STRUCTURES SECTION IF THE GRADE LINE IS RAISED FROM THE PLAN PROFILE BY MORE THAN ½" OR,

** IF 3" MINIMUM DECK EMBEDMENT OF TIE BAR CANNOT BE OBTAINED.

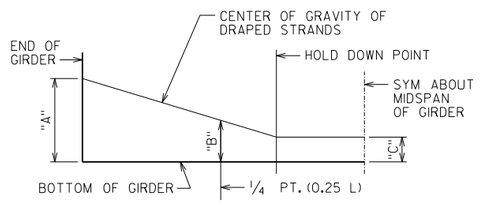
TO DETERMINE 'T', ELEV. OF TOP OF GIR'S. AT ℄ OF SUBSTRUCTURE UNITS & AT 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. THEN FOLLOW THIS PROCESS:

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

NOTE: AN AVERAGE HAUNCH ('T') OF 3" 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 MULTIPLIED BY A FACTOR OF 1.4 TO ACCOUNT FOR CAMBER GROWTH FROM THE TIME OF STRAND RELEASE TO JOBSITE PLACEMENT.

SPAN	CAMBER (IN.) *
1	3.45

THESE VALUES ARE NOT TO BE USED IN DETERMINING 'T', USE ACTUAL GIRDER SHOTS.

THESE VALUES ARE FOR INFORMATIONAL PURPOSES ONLY.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-36-0212

DRAWN BY PKF | PLANS CK'D. TLP

54W" PRESTRESSED GIRDER DETAILS

SHEET 11 OF 13

SCALE =

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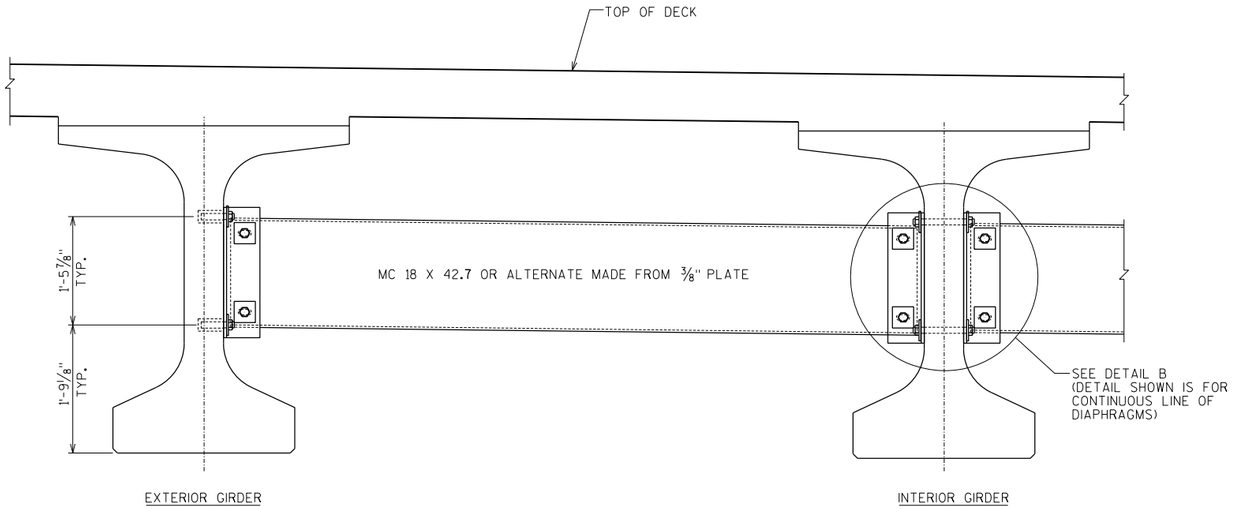
STATE PROJECT NUMBER
4333-04-71



PART TRANSVERSE SECTION AT DIAPHRAGM

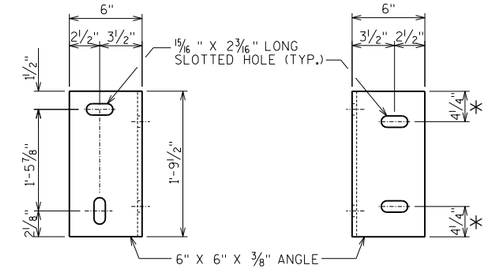
NOTES

ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-36-0212"

EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

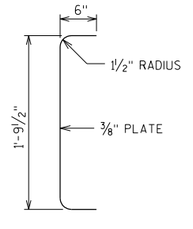
ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36. ALL BOLTS, NUTS AND WASHERS SHALL BE ASTM A325 TYPE 1.

ALL DIAPHRAGM STRUCTURAL STEEL SHOWN SHALL BE HOT-DIPPED GALVANIZED. ALL BOLTS, NUTS AND WASHERS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C. GALVANIZED NUTS SHALL BE TAPPED OVERSIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A563 AND SHALL MEET THE REQUIREMENTS OF SUPPLEMENTARY REQUIREMENT S1 OF ASTM A563, LUBRICANT AND TEST FOR COATED NUTS.

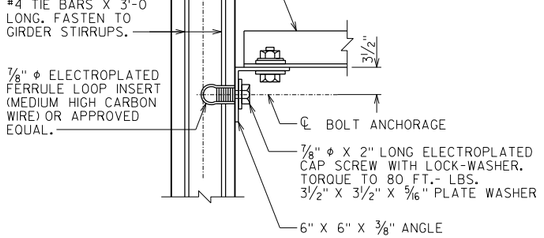


DIAPHRAGM SUPPORT

* 2½" FOR ALTERNATE PLATE DIAPHRAGM

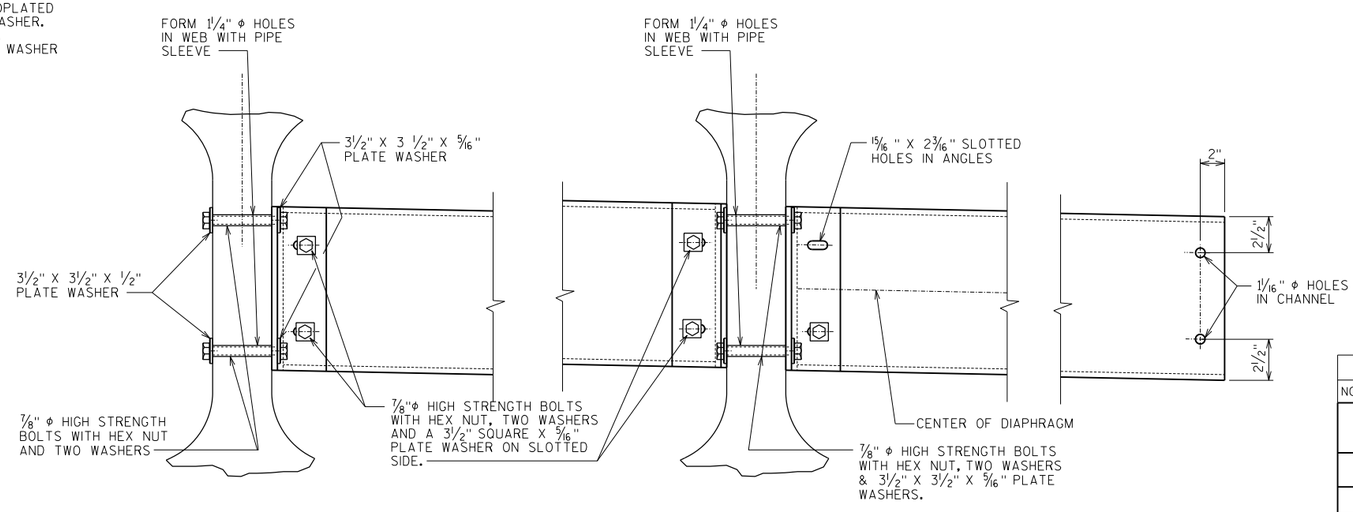


SECTION THRU ALTERNATE DIAPHRAGM



SECTION A-A

(FOR EXTERIOR ATTACHMENT)



DETAIL B

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-36-0212

DRAWN BY PKF | PLANS CK'D. TLP

STEEL DIAPHRAGM

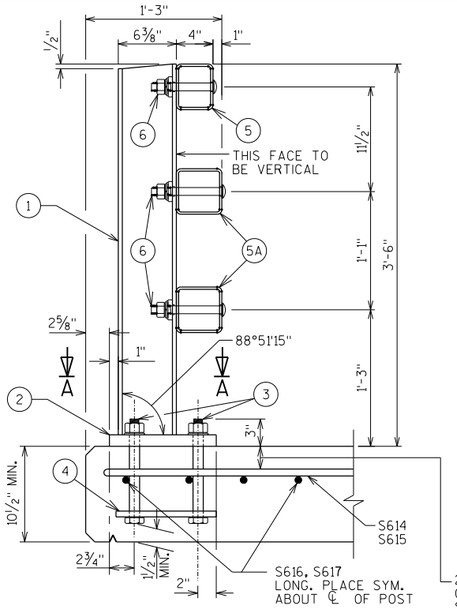
SHEET 12 OF 13

SCALE =

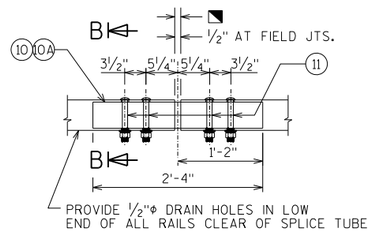
8

8

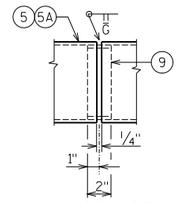
STATE PROJECT NUMBER
4333-04-71



SECTION THRU RAILING ON DECK

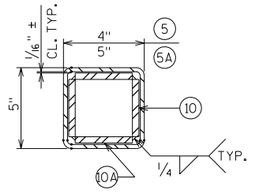


FIELD ERECTION JOINT DETAIL

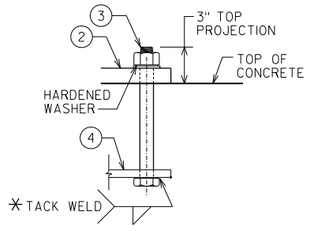


SHOP RAIL SPLICE DETAIL

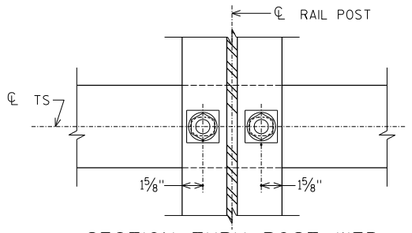
LOCATION MUST BE SHOWN ON SHOP DRAWINGS



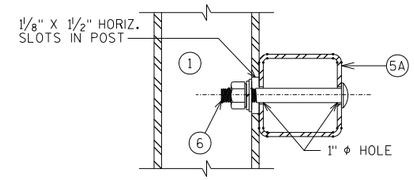
SECTION B-B



ANCHOR BOLTS



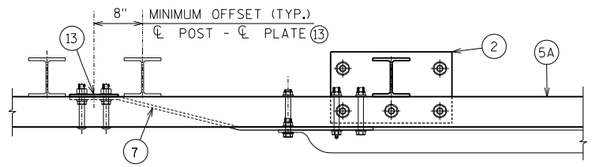
SECTION THRU POST WEB



SECTION THRU RAIL

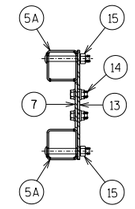
NOTE: CONNECTIONS AT LOWER RAILS SHOWN. CONNECTIONS AT TOP RAIL SIMILAR.

TYPICAL RAIL TO POST CONNECTIONS

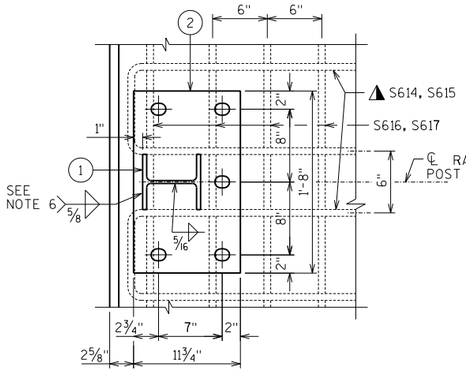


TOP VIEW AT END POST

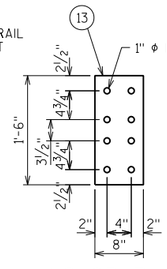
THRIE BEAM RAIL ATTACHMENT



SECTION C-C

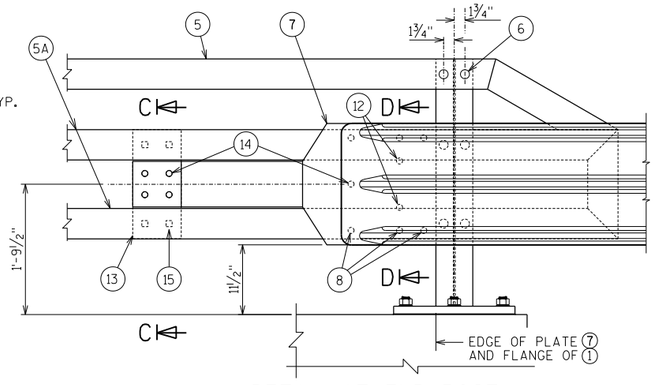


SECTION A-A



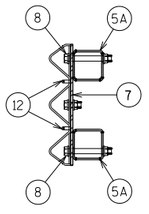
ANCHOR PLATE

AT BEAM GUARD ATTACHMENT

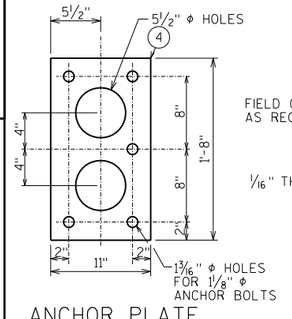


DETAIL AT END POST

THRIE BEAM RAIL ATTACHMENT

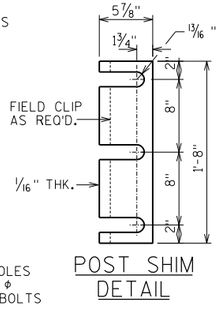


SECTION D-D

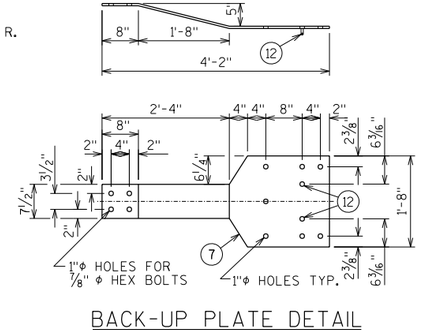


ANCHOR PLATE

AT RAIL TO DECK CONNECTION

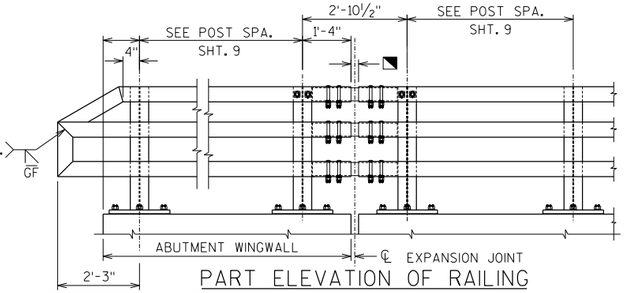


POST SHIM DETAIL



BACK-UP PLATE DETAIL

AT BEAM GUARD ATTACHMENT



PART ELEVATION OF RAILING

LEGEND

① W6 x 25 WITH 1⅛" X 1½" HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.

② PLATE 1¼" × 11¾" × 1'-8" WITH 1⅝" X 1⅝" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.

③ ASTM A449 - 1⅛" DIA. ANCHOR BOLTS WITH NUT AND HARDENED WASHER (ALL GALVANIZED). 5 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. USE 1'-9" LONG IN ABUTMENT WINGS. AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 16" USE 1'-3" LONG. USE 10¾" LONG AT ALL OTHER LOCATIONS. (AN EQUIVALENT THREADED ROD WITH NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQ'D. FOR CONSTRUCTIBILITY.)

④ ⅝" × 11" × 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1⅜" DIA. HOLES FOR ANCHOR BOLTS NO. 3

⑤ TS 5 × 4 × 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.

⑤A TS 5 × 5 × 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.

⑥ ⅞" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, 3/16" X 1⅝" X 1⅝" WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)

⑦ ½" THK. BACK-UP PLATE WITH 2 - ⅞" X 1½" THREADED SHOP WELDED STUDS (NO. 12). BOLT TO RAIL AS SHOWN IN DETAIL. REQUIRED AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYMMETRICALLY ABOUT TUBES NO. 5A.

⑧ 1" DIA. HOLES IN PLATE NO. 7 & TUBES NO. 5A FOR ⅞" DIA. A325 BOLTS WITH HEX NUTS AND WASHERS. 6 HOLES IN TUBES AND PLATE NO. 7.

⑨ SPLICE SLEEVE FABRICATED FROM ¼" PLATE. PROVIDE "SLIDING FIT".

⑩ ⅜" X 3⅝" X 2'-4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.

⑩A ⅜" X 2⅝" X 2'-4" PLATE USED IN NO. 5, ⅜" X 3⅝" X 2'-4" PLATE USED IN NO. 5A. 2 PER RAIL.

⑪ ⅞" φ A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 15/16" X 1¼" LONGIT. SLOTTED HOLES AT FIELD JOINTS AND 15/16" X 2¼" MIN. LONGIT. SLOTTED HOLES AT EXP. JOINTS IN PLATE NO. 10A.

⑫ ⅞" DIA. X 1½" LONG THREADED SHOP WELDED STUDS (2 REQ'D).

⑬ ⅜" X 8" X 1'-6" PLATE. BOLT TO RAIL AS SHOWN IN DETAIL. REQ'D. AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYM. ABOUT TUBES NO. 5A.

⑭ ⅞" DIA. X 2" LONG A325 HEX BOLT WITH NUT AND WASHER (5 REQ'D.).

⑮ 1" φ HOLES IN TUBES NO. 5A FOR ⅞" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.

GENERAL NOTES

1. BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-36-0212" WHICH INCLUDES ALL ITEMS SHOWN.
2. RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 KSI. ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.
3. THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ⅛ TURN.
4. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN A PANEL OVER EXPANSION JOINTS.
5. ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
6. WELD IS THE SAME ON BOTH FLANGES. FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING.
7. FILL BOLT SLOT OPENINGS IN POST SHIMS AND PLATE NO. 2 AND CAULK AROUND PERIMETER OF PLATE NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D. FOR ALIGNMENT.
8. POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
9. ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS & STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY SSPC SPECIFICATIONS.
10. WHEN PAINTING IS REQUIRED, ALL MATERIAL EXCEPT ANCHORAGE DETAIL (NO. 3 & 4) SHALL BE PAINTED OVER GALVANIZING WITH APPROVED TIE COAT AND TOP COAT.
11. THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL-4).
12. PLACE FIRST BOTTOM LONGITUDINAL BAR CLEAR OF DRIP GROOVE.

◭ TIE TO TOP MAT OF STEEL.

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

◥ RDWY. OPENING OR 2½" MIN. FOR STRIP SEAL EXP. JOINT & ½" OPENING FOR A1 ABUTMENT.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-36-0212

DRAWN BY	PKF	PLANS CK'D.

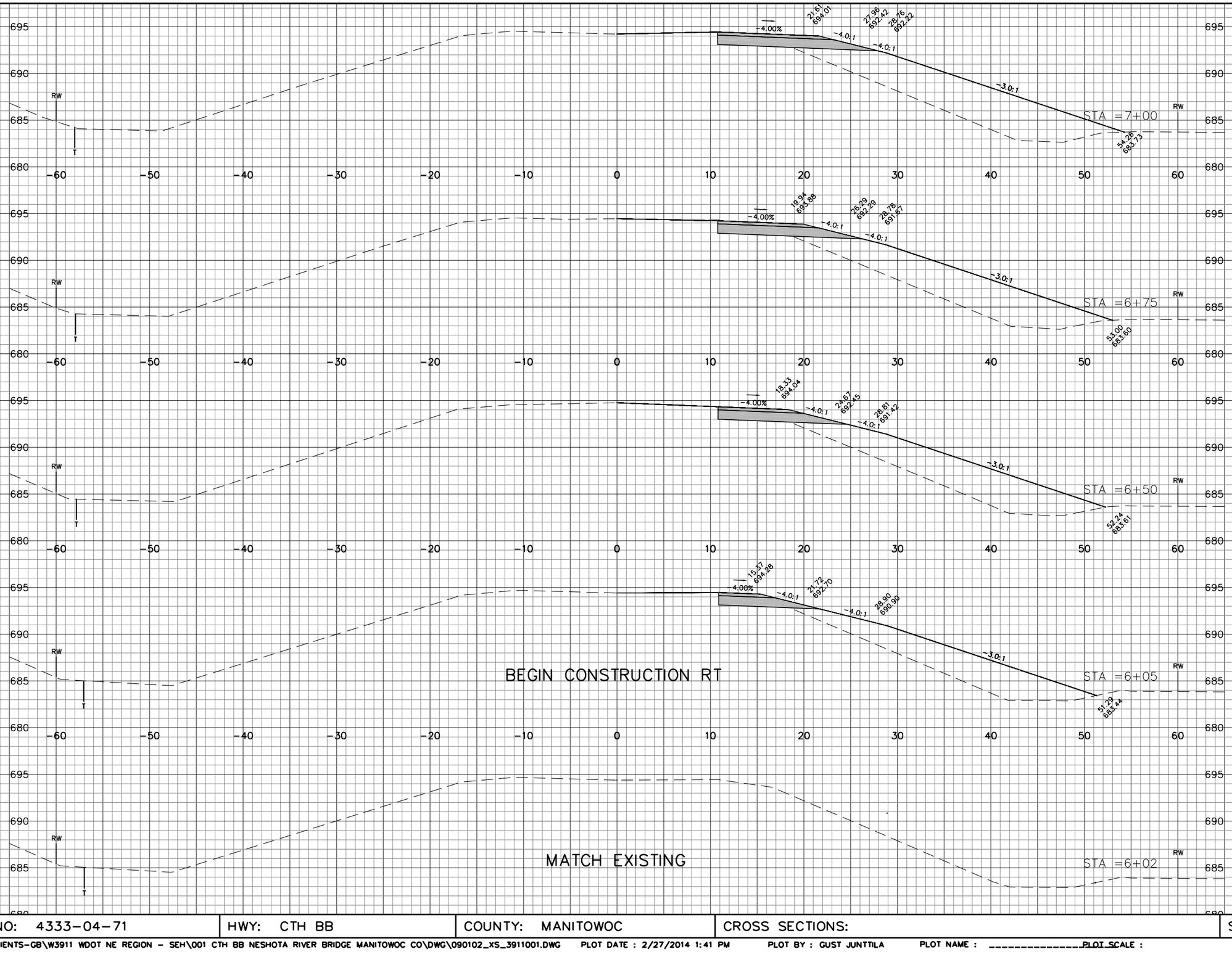
TUBULAR STEEL RAILING TYPE M

SHEET 13 OF 13

SCALE =

STATION	Real Station	Distance	AREA (SF) Cut	Salvaged / Unusable Pavement Material	Fill	Incremental Vol (CY) (Unadjusted) Cut	Salvaged / Unusable Pavement Material	Fill	Cumulative Vol (CY) Cut 1.00	Expanded Fill 1.25	Mass Ordinate Note 2
6+05	605		14	0	75	0	0	0	0	0	0
6+50	650	45	42	0	89	46	0	136	46	171	-124
6+74	674	24	62	0	95	46	0	82	92	272	-180
7+00	700	26	77	0	106	67	0	97	159	393	-234
7+50	750	50	29	0	188	97	0	273	257	734	-477
7+69	769	19	29	0	191	20	0	134	277	901	-624
7+94	794	25	21	0	186	23	0	175	300	1119	-819
8+00	800	6	43	0	182	7	0	41	307	1170	-863
8+19	819	19	40	0	109	29	0	102	337	1298	-961
8+38	838	19	38	0	165	28	0	96	364	1418	-1054
8+50	850	12	37	0	195	17	0	80	381	1518	-1137
8+63	863	13	36	0	183	18	0	91	399	1632	-1233
8+88	888	25	34	0	148	33	0	153	431	1823	-1392
9+00	900	12	34	0	149	15	0	66	447	1906	-1460
9+08	908	8	34	0	166	10	0	47	457	1964	-1508
9+29	929	21	36	0	67	27	117	91	484	2078	-1711
						484	117	1662			

STATION	Real Station	Distance	AREA (SF) Cut	Salvaged / Unusable Pavement Material	Fill	Incremental Vol (CY) (Unadjusted) Cut	Salvaged / Unusable Pavement Material	Fill	Cumulative Vol (CY) Cut 1.00	Expanded Fill 1.25	Mass Ordinate Note 2
10+65	1065		41	0	122	0	0	0	0	0	0
10+84	1084	19	32	0	85	26	0	73	26	91	-66
11+00	1100	16	31	0	127	19	0	63	44	170	-126
11+05	1105	5	32	0	123	6	0	23	50	199	-149
11+30	1130	25	34	0	133	31	0	119	81	347	-266
11+37	1137	7	35	0	138	9	0	35	90	391	-301
11+50	1150	13	37	0	129	17	0	64	107	471	-364
11+55	1155	5	37	0	129	7	0	24	114	501	-387
11+62	1162	7	38	0	140	10	0	35	124	545	-421
11+86	1186	24	43	0	93	36	0	104	160	674	-514
12+00	1200	14	21	0	38	17	120	34	177	717	-660
						177	120	573			



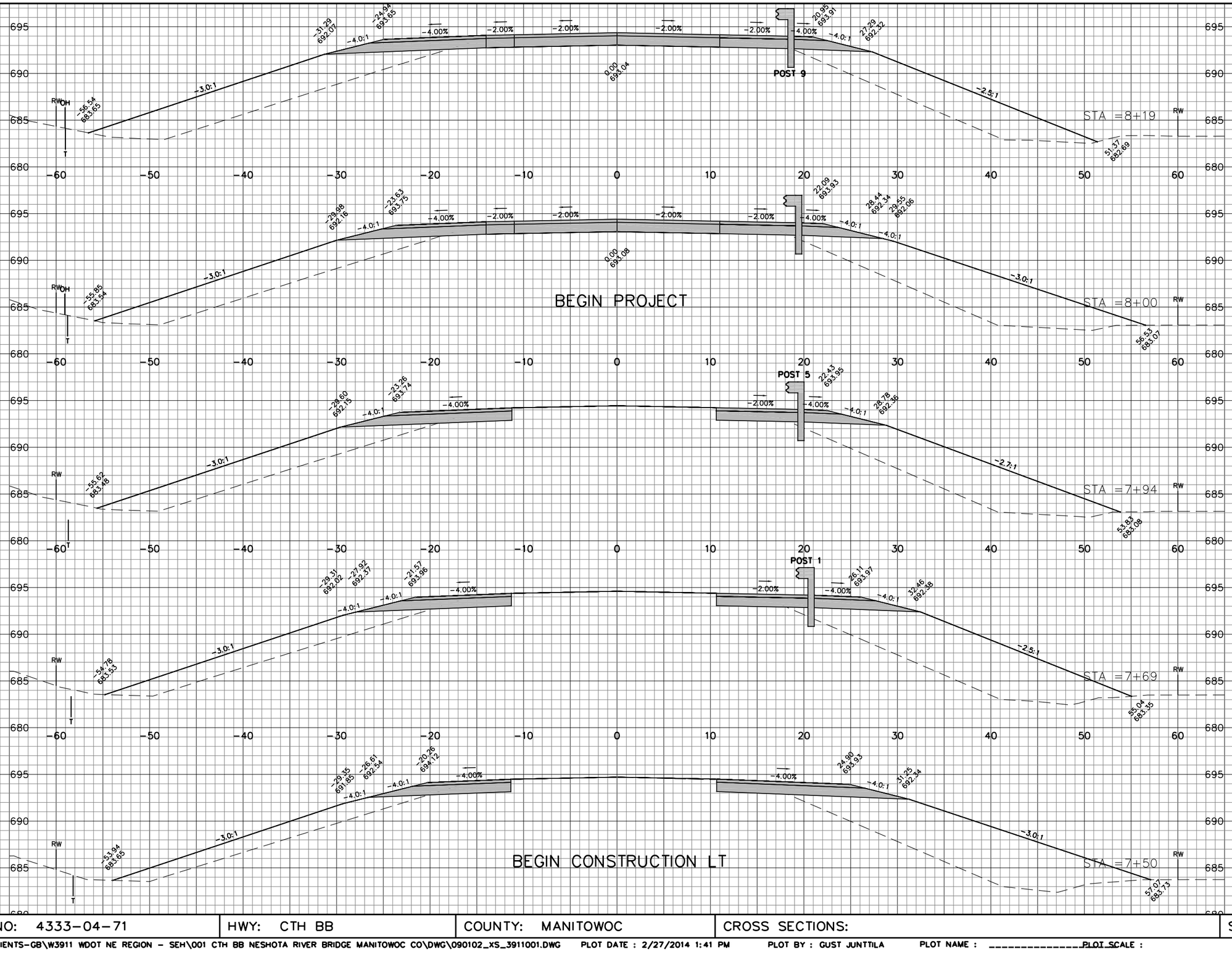
9

9

PROJECT NO: 4333-04-71	HWY: CTH BB	COUNTY: MANITOWOC	CROSS SECTIONS:	SHEET	E

FILE NAME : I:\CLIENTS-GB\W3911 WDOT NE REGION - SEH\001 CTH BB NESHOTA RIVER BRIDGE MANITOWOC CO\DWG\090102_XS_3911001.DWG PLOT DATE : 2/27/2014 1:41 PM PLOT BY : GUST JUNTTILA PLOT NAME : _____ PLOT SCALE :

WISDOT/CADDS SHEET 49



PROJECT NO: 4333-04-71	HWY: CTH BB	COUNTY: MANITOWOC	CROSS SECTIONS:	SHEET 54	E

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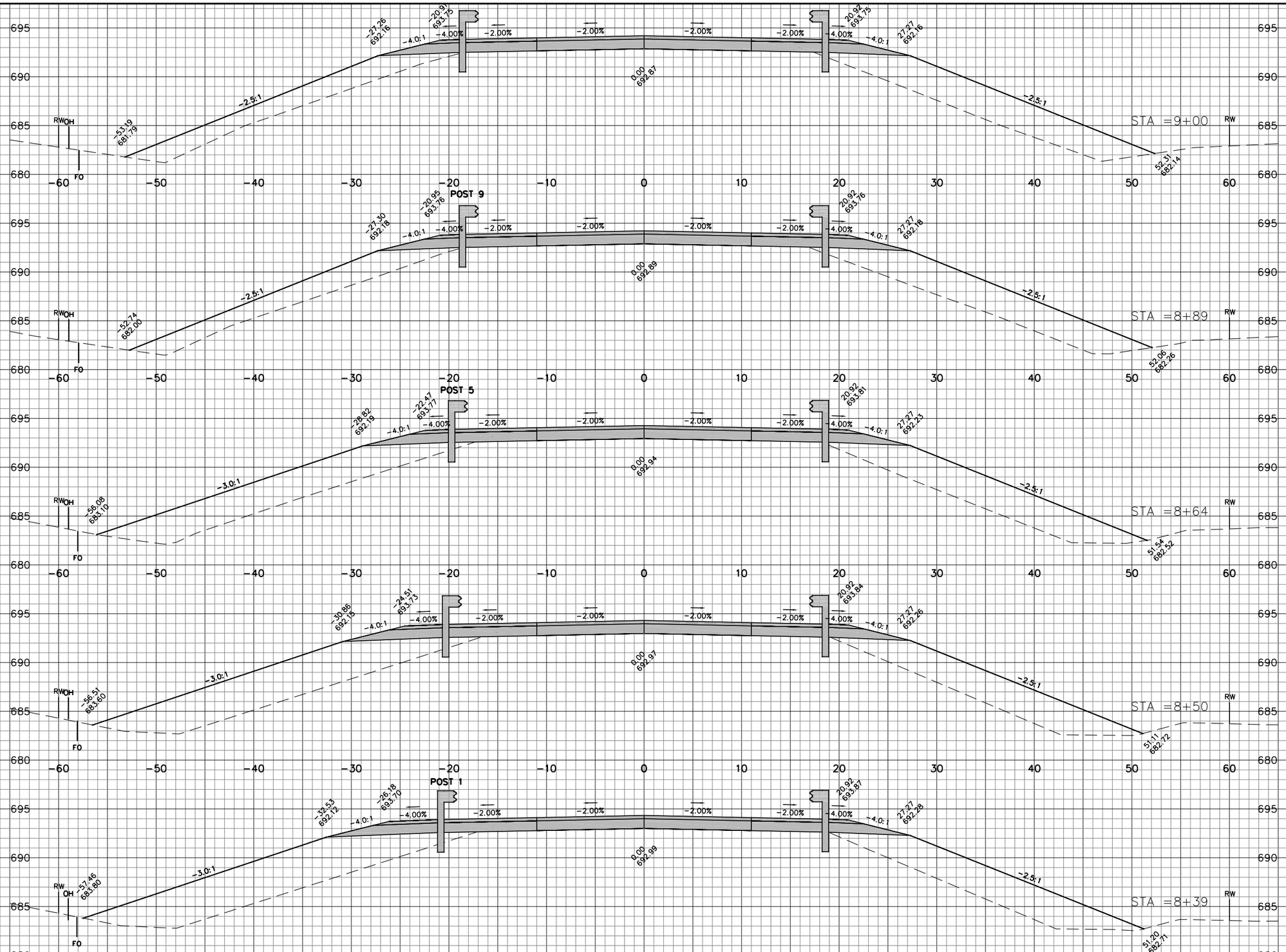
WISDOT/CADDS SHEET 49



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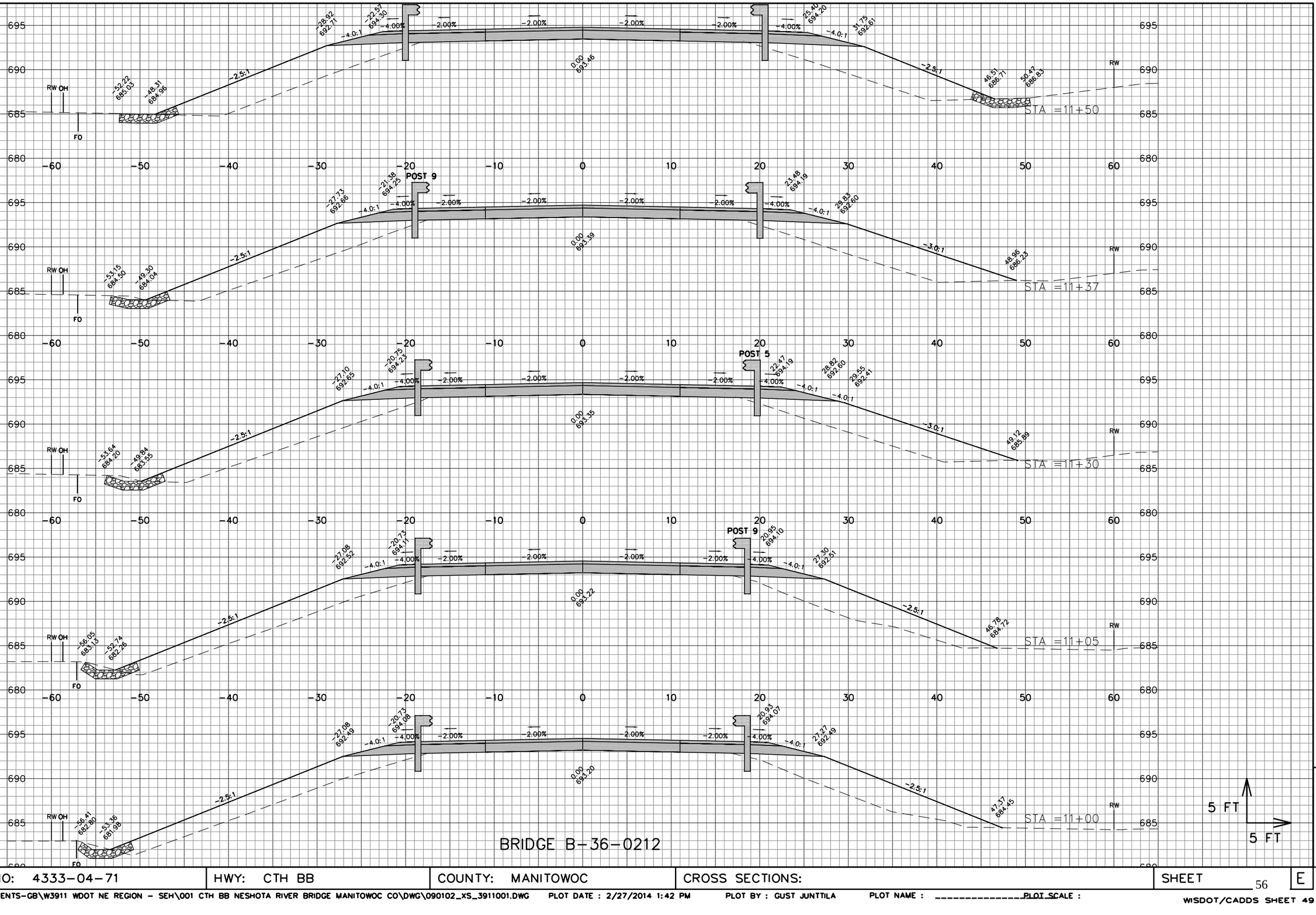
WISDOT/CADDS SHEET 49



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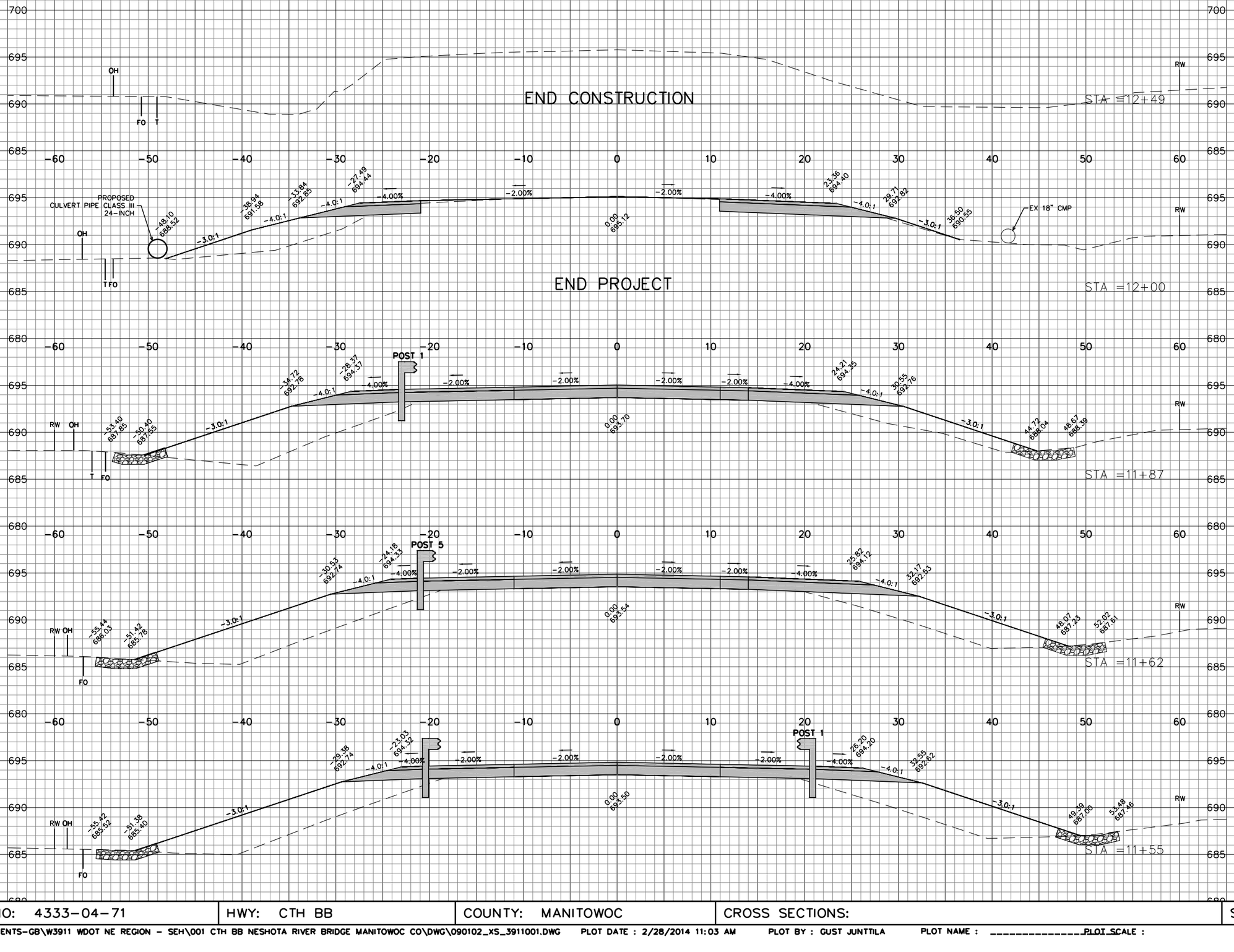
WISDOT/CADDS SHEET 49



PROJECT NO: 4333-04-71	HWY: CTH BB	COUNTY: MANITOWOC	CROSS SECTIONS:	SHEET 57	E

Wisconsin Department of Transportation

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