NEL

PROJECT ID: 4808-06-71

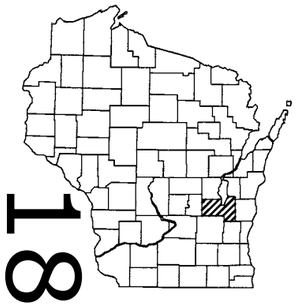
WITH: N/A

COUNTY: FOND DU LAC

MAR 2014

ORDER OF SHEETS

TOTAL SHEETS = 68



N

DESIGN DESIGNATION

A.A.D.T. (2014)	=	620 V.P.D.
A.A.D.T. (2034)	=	690 V.P.D.
D.H.V. (2034)	=	18 V.P.D.
D.D.	=	62/38
T.	=	3.3%
DESIGN SPEED	=	45 M.P.H.
ESALS	=	43,800 (HMA)

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)
- MARSH AREA
- WOODED OR SHRUB AREA

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)
- 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 FRIENDSHIP, MELODY LN

ANDERSON CREEK BRIDGE P-20-0929

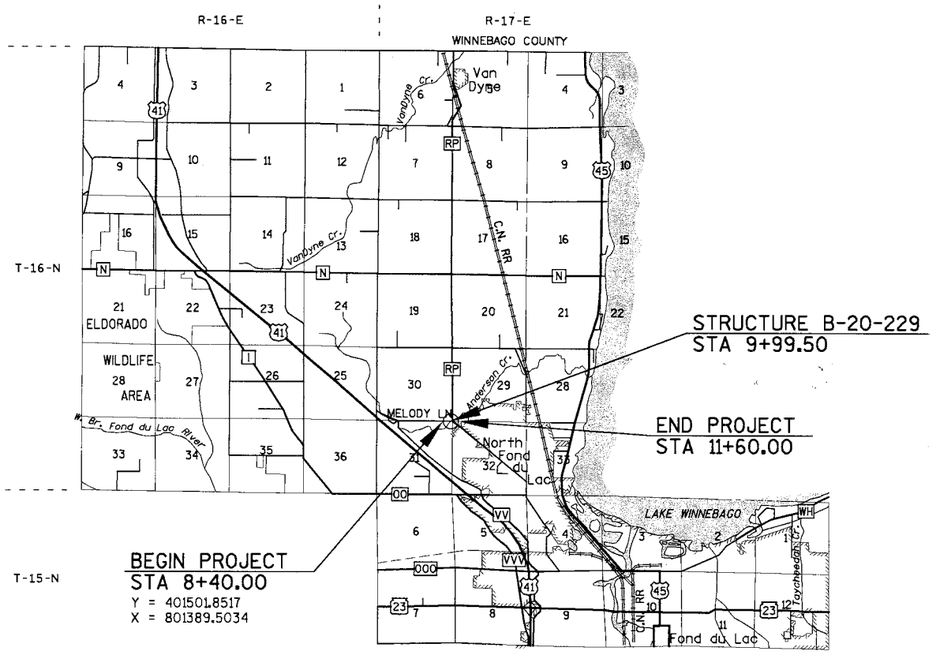
TOWN ROAD

FOND DU LAC COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
4808-06-71	WISC 2014075	1

STATE PROJECT NUMBER

4808-06-71



LAYOUT

SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.061 MI. (RURAL)

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

ELEVATIONS ON THIS PLAN ARE REFERENCED TO NAVD88.

ACCEPTED FOR

TOWN OF FRIENDSHIP

10/21/13 Charles McCourt

(Date) CHARLES McCOURT, TOWN CHAIR

ORIGINAL PLANS PREPARED BY

GREMMER & ASSOCIATES, INC.
CONSULTING ENGINEERS
Stevens Point • Fond du Lac
93 South Pioneer Road, Suite 300 • Fond du Lac, WI 54935
(920) 924-5720 • fax (920) 924-5725

WISCONSIN ANDREW L. KLEMP E-33645 FOND DU LAC, WI PROFESSIONAL ENGINEER

10/21/2013 Andrew L. Klemp

(Date) ANDREW L. KLEMP, PE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	GREMMER & ASSOCIATES, INC.
Designer	GREMMER & ASSOCIATES, INC.
Management Consultant	SEH, INC.
C.O. Examiner	

APPROVED FOR THE DEPARTMENT

DATE: 10/22/2013 (Management Consultant Signature)

E

2

GENERAL NOTES

ALL DISTANCES AND STATIONING SHOWN ON THIS PLAN ARE GROUND VALUES.

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

THE CONTRACTOR SHALL NOTIFY DIGGERS HOTLINE AND AFFECTED UTILITIES PRIOR TO THE START OF WORK. ANY UTILITY WHICH IS NOT A MEMBER OF THE DIGGERS HOTLINE MUST BE CONTACTED SEPARATELY.

A VERTICAL SAW CUT SHALL BE MADE THROUGH EXISTING DRIVEWAYS AND PAVEMENTS AT THE REMOVAL LIMITS. SAWCUT SLURRY SHALL BE ACTIVELY MANAGED TO PREVENT RELEASE OF SLURRY INTO WATERWAY AND WETLANDS.

SAW CUT LOCATIONS SHOWN ON THE PLANS ARE SUBJECT TO ADJUSTMENT BY THE ENGINEER IN THE FIELD.

THE EXACT LOCATION OF PRIVATE ENTRANCES IS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

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

TOPSOIL, FERTILIZER, SEED AND EROSION MAT SHALL BE PLACED ON ALL DISTURBED AREAS, EXCLUSIVE OF THE AREA OCCUPIED BY THE NEW PAVEMENTS, ENTRANCES, AND RELATED STRUCTURES.

SECTIONS AS SHOWN ON THE CROSS-SECTIONS INCLUDE THE THICKNESS OF TOPSOIL WHERE REQUIRED.

EROSION CONTROL ITEMS SHOWN ARE APPROXIMATE, THE EXACT LOCATION SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD. EROSION CONTROL ITEMS TO BE INSTALLED PRIOR TO UPSLOPE WORK.

REMOVAL OF ASPHALTIC CONCRETE PAVEMENT SHALL BE MEASURED AND PAID FOR AS EXCAVATION COMMON.

DRAIN TILE MAY EXIST WITHIN THE PROJECT LIMITS. IF THE CONTRACTOR ENCOUNTERS DRAIN TILE, THE CONTRACTOR SHALL REATTACH AND MAINTAIN DRAINAGE PATTERNS, INCIDENTAL TO GRADING OPERATIONS.

WHEN THE QUANTITY OF THE ITEMS OF BASE AGGREGATE DENSE OR ASPHALTIC SURFACE IS MEASURED FOR PAYMENT BY THE TON, THE ASPHALTIC SURFACE DEPTH OR THICKNESS OF THE MATERIAL SHOWN ON THE PLAN IS APPROXIMATE, AND THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER.

HMA PAVEMENT AND ASPHALTIC SURFACE WEIGHT CALCULATIONS ARE BASED ON 110 LBS/SY-INCH.

PLACE 4.50" ASPHALTIC SURFACE IN LAYERS OF THE FOLLOWING THICKNESSES:
UPPER LAYER THICKNESS = 1.50" GRADATION NOMINAL SIZE = 12.5 MM
LOWER LAYER THICKNESS = 3.00" GRADATION NOMINAL SIZE = 19.0 MM

ABBREVIATIONS

AEW	APRON ENDWALL
ASP OR ASPH	ASPHALT
BAD	BASE AGGREGATE DENSE
BM	BENCH MARK
C/L OR ℄	CENTER OR CONSTRUCTION LINE
CONC	CONCRETE
CPCM	CULVERT PIPE CORRUGATED METAL
CPCS	CULVERT PIPE CORRUGATED STEEL
CSD	CONCRETE SURFACE DRAIN
CY	CUBIC YARD
DISCH	DISCHARGE
ELEV	ELEVATION
FE	FIELD ENTRANCE
HT	HEIGHT
INV	INVERT
MAX	MAXIMUM
MGS	MIDWEST GUARDRAIL SYSTEM
MIN	MINIMUM
NOM	NOMINAL
PAVT	PAVEMENT
PI	POINT OF INTERSECTION
R/L	REFERENCE LINE
R/W	RIGHT OF WAY
REQ'D	REQUIRED
RT	RIGHT
SDD	STANDARD DETAIL DRAWING
SF	SQUARE FOOT
STA	STATION
SY	SQUARE YARD
TYP	TYPICAL

UTILITIES

* CHARTER COMMUNICATIONS
165 KNIGHTS WAY
FOND DU LAC, WI 54935
PHONE: (920) 907-7720 EXT. 1610
MOBILE: (920) 263-0074
ATTN: MR. BRUCE HENRY
EMAIL: bruce.henry@charter.com

* ALLIANT ENERGY CORPORATION
883 WEST SCOTT STREET
FOND DU LAC, WI 54937
PHONE: (920) 322-6689
MOBILE: (920) 948-8786
ATTN: MR. PETER JONES
EMAIL: PeterJones@alliantenergy.com

* ANR PIPELINE COMPANY
W8715 TOWER DRIVE
ADELL, WI 53001
PHONE: (262) 626-3460
MOBILE: (920) 980-7799
ATTN: MR. JIM HUBBLE
EMAIL: James_Hubble@Transcanada.com

* AT&T
70 EAST DIVISION STREET
FOND DU LAC, WI 54935
PHONE: (920) 929-1013
MOBILE: (920) 410-5104
ATTN: MR. CHARLES BARTELT
EMAIL: cb1461@att.com

* DENOTES MEMBER OF DIGGERS HOTLINE

DIGGERS HOTLINE

Call 811
Toll Free (800) 242-8511
Hearing Impaired TDD (800) 542-2289
www.DiggersHotline.com

CALL DIGGERS HOTLINE
TO OBTAIN LOCATION OF
PARTICIPANTS' UNDERGROUND
FACILITIES BEFORE YOU DIG.

WISCONSIN STATUTE 182.0175
REQUIRES MINIMUM OF 3
WORK DAYS NOTICE BEFORE
YOU EXCAVATE.

PLANNED CONSTRUCTION SEQUENCE

1) PREVENT ACTIVE BIRD NESTING ON EXISTING BRIDGE PRIOR TO MAY 1
2) PLACE TURBIDITY BARRIER, SILT FENCE, AND ASSOCIATED ROCK BAGS
3) REMOVE EXISTING BRIDGE AND ACCUMULATED STREAM SEDIMENT AT INLET
4) EXCAVATE AND CONSTRUCT SUBSTRUCTURE
5) CONSTRUCT SUPERSTRUCTURE
6) INSTALL REMAINING SILT FENCE ADJACENT TO APPROACH WORK
7) GRADE ROADWAY APPROACHES
8) INSTALL DITCH CHECKS, RIPRAP, SEED, AND EROSION MAT
9) PAVE ROADWAY
10) INSTALL BEAMGUARD AND SHOULDER GRAVEL
11) FINAL LANDSCAPING AND FINISHING ITEMS
12) REMOVE EROSION CONTROL MEASURES AND RESTORE DAMAGE FROM REMOVALS

ORDER OF SECTION 2 SHEETS

DESIGN CONTACT

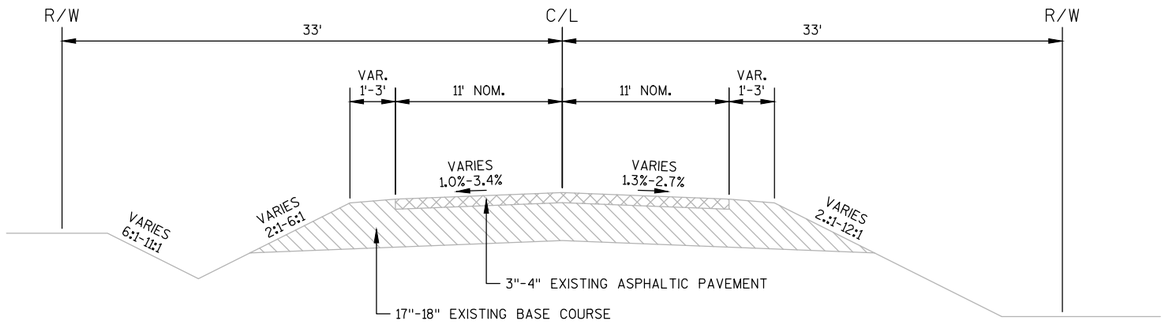
GREMMER & ASSOCIATES, INC.
93 S. PIONEER ROAD, SUITE 300
FOND DU LAC, WI 54935
PHONE: (920) 924-5720
ATTN: ANDREW KLEMP (APPROACH DESIGN)
EMAIL: a.klemp@gremmerassociates.com
ATTN: RYAN ARNDT (BRIDGE DESIGN)
EMAIL: r.arndt@gremmerassociates.com

TOWN OF FRIENDSHIP CONTACT

MR. CHARLES McCOURT
TOWN CHAIR
W6402 SUBWAY ROAD
FOND DU LAC, WI 54937
PHONE: (920) 922-3051
EMAIL: mccourt.charles@gmail.com

DNR AREA LIAISON

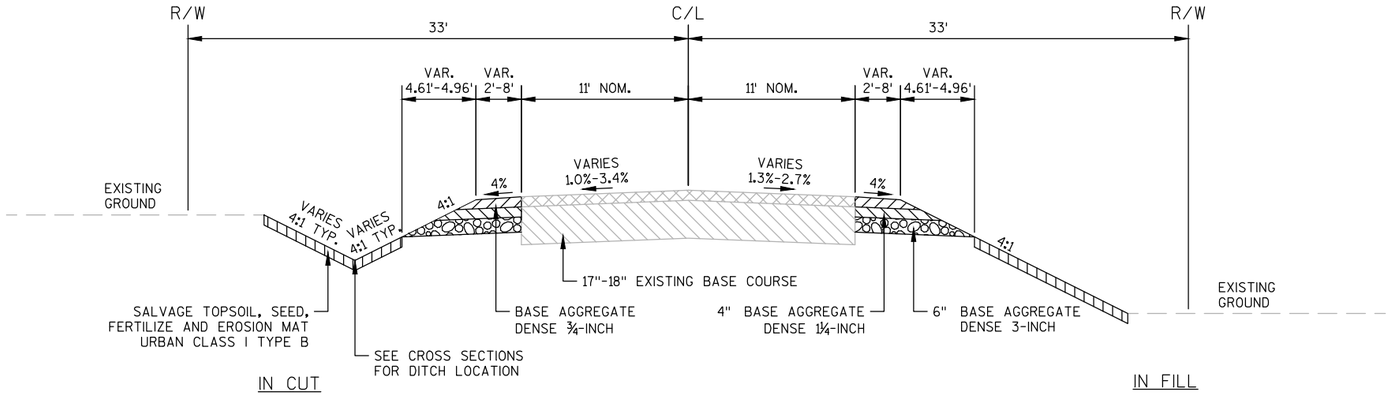
WISCONSIN DEPT. OF NATURAL RESOURCES
2984 SHAWANO AVENUE
GREEN BAY, WI 54313
PHONE: (920) 662-5119
ATTN: MR. JAMES DOPERALSKI
EMAIL: james.doperalski@wisconsin.gov



TYPICAL EXISTING SECTION

MELODY LANE

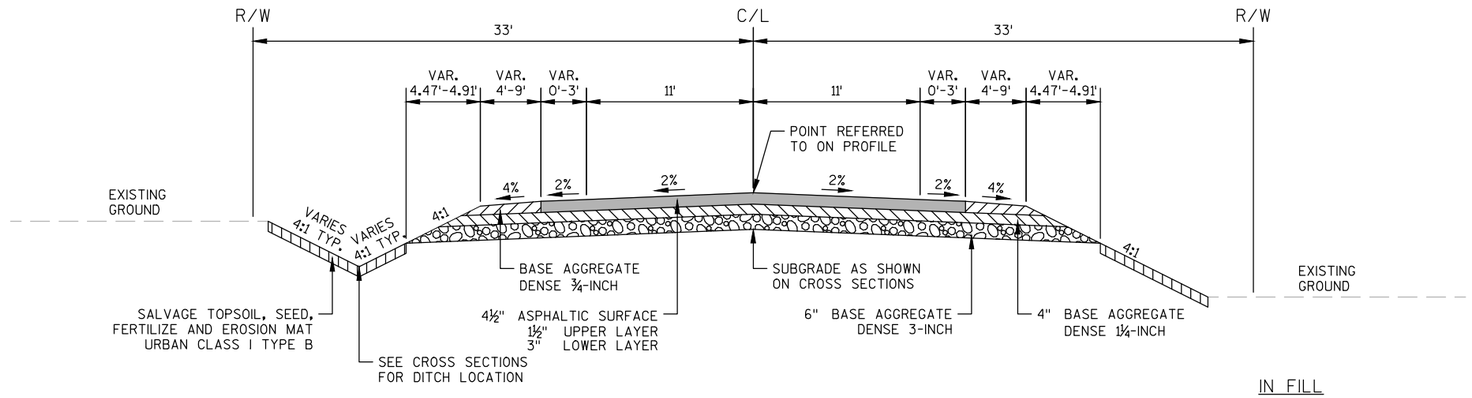
STA 7+50.00 - STA 12+50.00



TYPICAL FINISHED SECTION

MELODY LANE

STA 7+50.00 - STA 8+40.00
STA 11+60.00 - STA 12+50.00



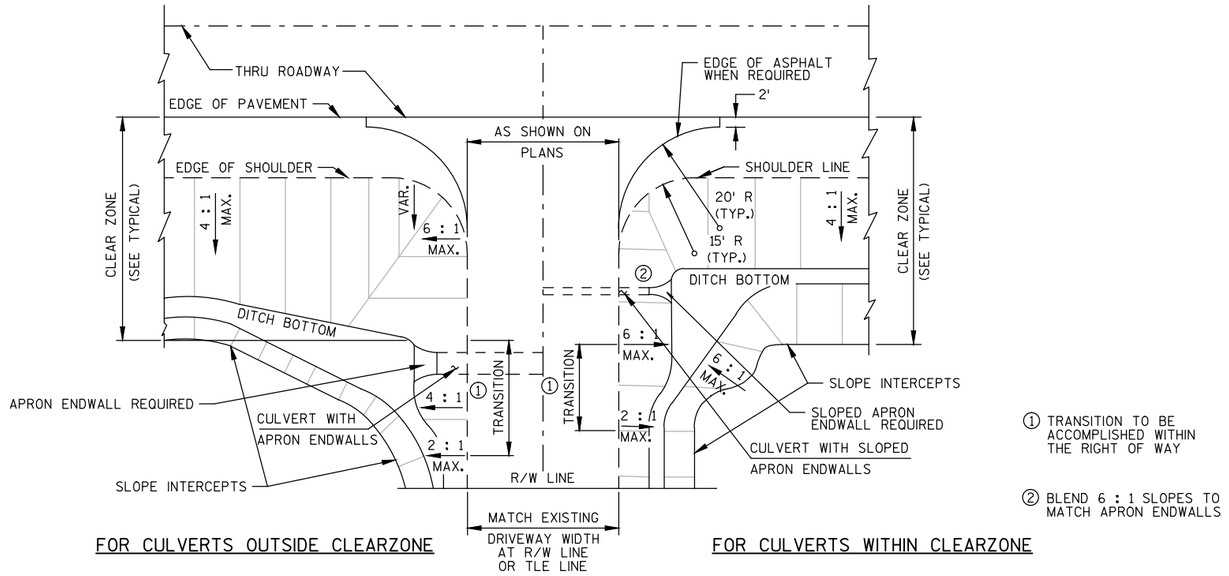
TYPICAL FINISHED SECTION

MELODY LANE

STA 8+40.00 - STA 9+80.75
STA 10+18.25 - STA 11+60.00

PROJECT NO: 4808-06-71	HWY: MELODY LANE	COUNTY: FOND DU LAC	TYPICAL SECTIONS	SHEET 3	E

2

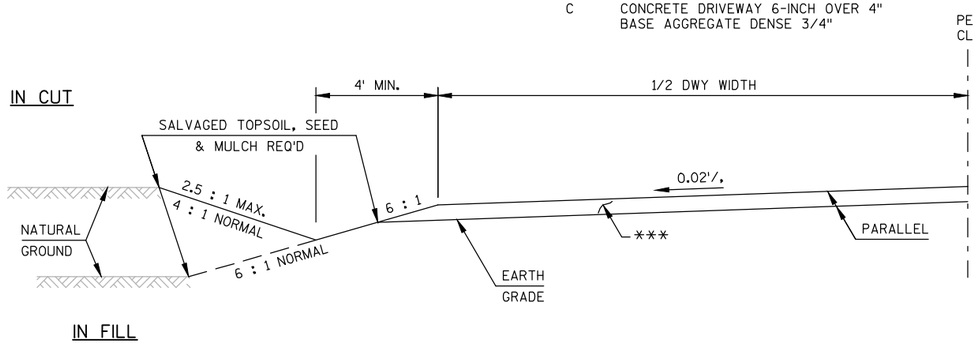


RURAL DRIVEWAY PLAN VIEW

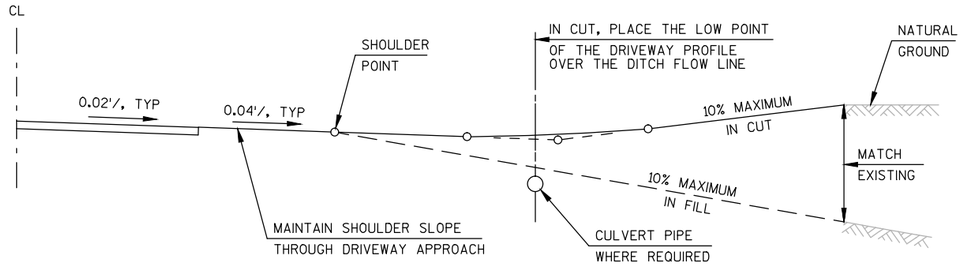
*** A 6" BASE AGGREGATE DENSE 3/4"

B 3" ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES OR SAME THICKNESS AS EXISTING OVER 4" BASE AGGREGATE DENSE 3/4"

C CONCRETE DRIVEWAY 6-INCH OVER 4" BASE AGGREGATE DENSE 3/4"

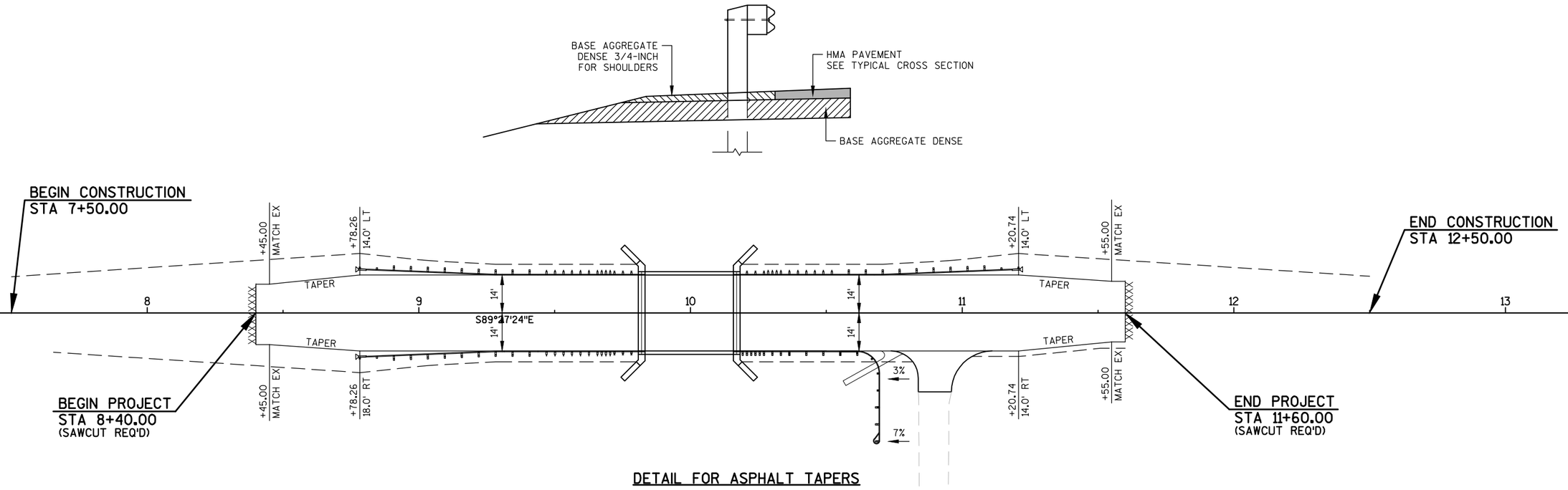


TYPICAL DRIVEWAY CROSS SECTION



TYPICAL DRIVEWAY PROFILE

PROJECT NO: 4808-06-71	HWY: MELODY LANE	COUNTY: FOND DU LAC	CONSTRUCTION DETAILS	SHEET 4	E

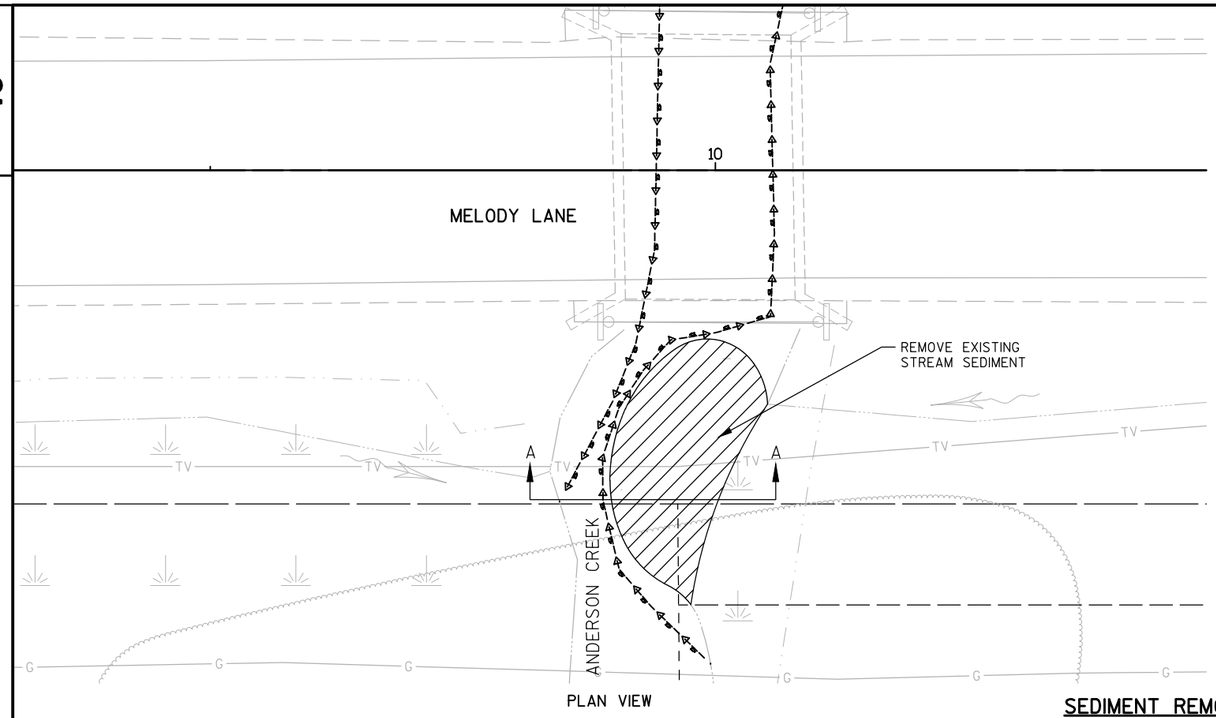


DETAIL FOR ASPHALT TAPERS

RUNOFF COEFFICIENT TABLE

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

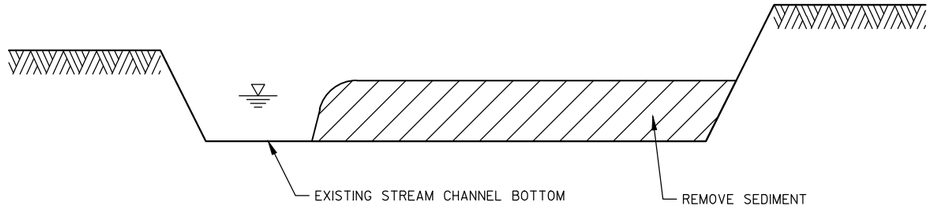
TOTAL PROJECT AREA = 0.68 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.57 ACRES



PLAN VIEW

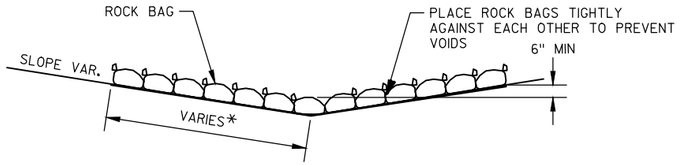
NOTES:

1. REMOVE PRIOR TO NEW ABUTMENT CONSTRUCTION FOR ACCESSIBILITY TO CHANNEL.
2. ISOLATE REMOVAL AREA WITH TURBIDITY BARRIER FROM LIVE CHANNEL.
3. REMOVAL LIMITS SHOWN ARE APPROXIMATE.
4. SEED AND EROSION MAT BANK IMMEDIATELY AFTER REMOVING SEDIMENT.
5. RELOCATE TURBIDITY BARRIER PARALLEL TO EAST BANK AFTER CHANNEL SEDIMENT IS REMOVED. RELOCATING TURBIDITY BARRIER IS INCIDENTAL TO THE INITIAL INSTALLATION OF TURBIDITY BARRIER.
6. ALL WORK, EXCEPT EROSION CONTROL ON THE STREAM BANK AND LANDSCAPING, IS INCIDENTAL TO BID ITEM "SPV.0105.01 REMOVING STREAM SEDIMENT". THE EROSION CONTROL AND FINISHING ITEMS WILL BE MEASURED AND PAID FOR UNDER THE PERTINENT ITEMS PROVIDED IN THE CONTRACT.

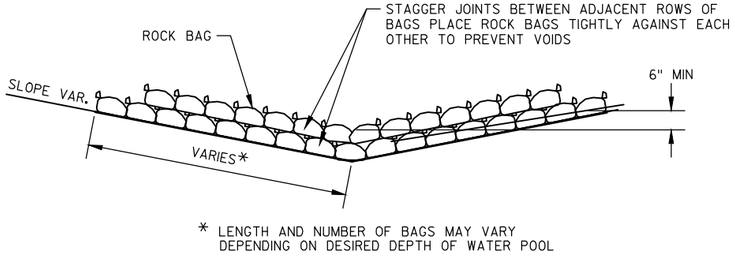


SECTION A-A

SEDIMENT REMOVAL DETAIL



SIDE VIEW (SINGLE LAYER)

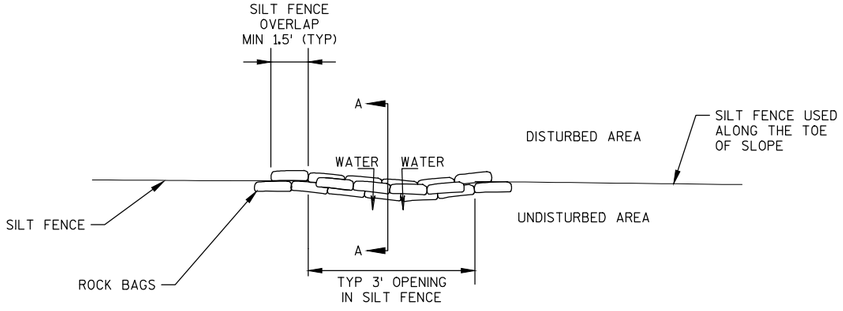


* LENGTH AND NUMBER OF BAGS MAY VARY DEPENDING ON DESIRED DEPTH OF WATER POOL

SIDE VIEW (MULTIPLE LAYER)

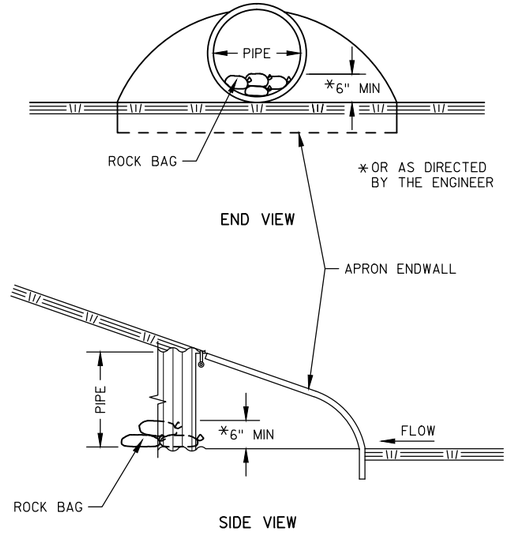
ROCK BAGS USED FOR DITCH CHECKS

SECTION A-A



PLAN VIEW

ROCK BAGS USED FOR SILT FENCE RELIEF POINT



END VIEW

SIDE VIEW

ROCK BAGS USED FOR CULVERT PIPE CHECKS

ROCK BAGS DETAIL

PROJECT NO: 4808-06-71	HWY: MELODY LANE	COUNTY: FOND DU LAC	CONSTRUCTION DETAILS	SHEET 6	E

BENCH MARKS

BM	STATION	DESCRIPTION	ELEVATION
A	10+09; 37' RT	RR SPIKE IN PP #16-17-30 49/0, N. SIDE OF MELODY LANE, 200' E. OF BRIDGE	789.71
B	12+15; 31' LT	RR SPIKE IN 18" TREE, S. SIDE OF MELODY LANE, E. SIDE OF ANDERSON CREEK, 36' S. OF BRIDGE	786.58

**VERTICAL DATUM REFERENCED TO NAVD88.

N

LEGEND

- SLOPE INTERCEPT
- SILT FENCE
- TURBIDITY BARRIER
- ROCK BAGS FOR DITCH CHECK
- ROCK BAGS FOR SILT FENCE RELIEF POINTS
- RIPRAP MEDIUM
- SURFACE WATER FLOW PROPOSED
- SURFACE WATER FLOW EXISTING

FINISHING ITEMS FOR TOPSOIL, SEED, FERTILIZER, AND EROSION MAT ARE SHOWN ON TYPICAL SECTIONS AND MISCELLANEOUS QUANTITIES.

BEGIN CONSTRUCTION
STA 7+50.00

END CONSTRUCTION
STA 12+50.00

MELODY LANE

S89°27'24"E

BP: 7+00.00

BEGIN PROJECT
STA 8+40.00
(SAWCUT REQ'D)

END PROJECT
STA 11+60.00
(SAWCUT REQ'D)

ANDERSON CREEK

AG FIELD

WOODED

SEKAO INC

BONNIE & GARY WATERS

EDGEWATER COMMUNITY LLC

DANIEL & KATHLEEN JACOBS

LOT 1
CSM #3766
V21/P5

WETLAND LIMITS, TYP.

SLOPE INTERCEPT, TYP

EXISTING R/W

BM A

BM B

TLE

PLE

PIPL

TV

G

HO

VENT

PP

ASPH

PROJECT NO: 4808-06-71	HWY: MELODY LANE	COUNTY: FOND DU LAC	EROSION CONTROL PLAN	SHEET 7	E

FILE NAME : 4808071_022001_EC PLOT DATE : 11 JUN 2013 14:48:00 PLOT BY : GAAJS PLOT NAME : PLOT SCALE : 1:1

DATE 09JAN14 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	4808-06-71 QUANTITY
0010	201.0105	CLEARING	STA	2.000	2.000
0020	201.0205	GRUBBING	STA	2.000	2.000
0030	203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS (STATION) 01. STATION 9+99	LS	1.000	1.000
0040	205.0100	EXCAVATION COMMON **P**	CY	602.000	602.000
0050	206.1000	EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 01. B-20-229	LS	1.000	1.000
0060	213.0100	FINISHING ROADWAY (PROJECT) 01. 4808-06-71	EACH	1.000	1.000
0070	305.0110	BASE AGGREGATE DENSE 3/4-INCH	TON	150.000	150.000
0080	305.0120	BASE AGGREGATE DENSE 1 1/4-INCH	TON	380.000	380.000
0090	305.0130	BASE AGGREGATE DENSE 3-INCH	TON	630.000	630.000
0100	455.0605	TACK COAT	GAL	24.000	24.000
0110	465.0105	ASPHALTIC SURFACE	TON	230.000	230.000
0120	465.0120	ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES	TON	5.000	5.000
0130	465.0315	ASPHALTIC FLUMES	SY	6.000	6.000
0140	502.0100	CONCRETE MASONRY BRIDGES **P**	CY	127.000	127.000
0150	502.3200	PROTECTIVE SURFACE TREATMENT	SY	146.000	146.000
0160	505.0405	BAR STEEL REINFORCEMENT HS BRIDGES **P**	LB	4,452.000	4,452.000
0170	505.0605	BAR STEEL REINFORCEMENT HS COATED BRIDGES **P**	LB	18,422.000	18,422.000
0180	513.4060	RAILING TUBULAR TYPE M (STRUCTURE) 01. B-20-229	LS	1.000	1.000
0190	516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	12.000	12.000
0200	550.0500	PILE POINTS	EACH	14.000	14.000
0210	550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	350.000	350.000
0220	606.0300	RIPRAP HEAVY	CY	88.000	88.000
0230	612.0206	PIPE UNDERDRAIN UNPERFORATED 6-INCH	LF	18.000	18.000
0240	612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	101.000	101.000
0250	614.0200	STEEL THRIE BEAM STRUCTURE APPROACH	LF	20.600	20.600
0260	614.0305	STEEL PLATE BEAM GUARD CLASS A	LF	18.800	18.800
0270	614.0345	STEEL PLATE BEAM GUARD SHORT RADIUS	LF	31.300	31.300
0280	614.0390	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL	EACH	1.000	1.000
0290	614.2300	MGS GUARDRAIL 3	LF	37.500	37.500
0300	614.2500	MGS THRIE BEAM TRANSITION	LF	118.200	118.200
0310	614.2610	MGS GUARDRAIL TERMINAL EAT	EACH	3.000	3.000
0320	619.1000	MOBILIZATION	EACH	1.000	1.000
0330	624.0100	WATER	MGAL	16.000	16.000
0340	625.0100	TOPSOIL	SY	1,200.000	1,200.000
0350	628.1504	SILT FENCE	LF	300.000	300.000
0360	628.1520	SILT FENCE MAINTENANCE	LF	150.000	150.000
0370	628.1905	MOBILIZATIONS EROSION CONTROL	EACH	5.000	5.000
0380	628.1910	MOBILIZATIONS EMERGENCY EROSION CONTROL	EACH	3.000	3.000
0390	628.2008	EROSION MAT URBAN CLASS I TYPE B	SY	1,200.000	1,200.000
0400	628.6005	TURBIDITY BARRIERS	SY	170.000	170.000
0410	628.7560	TRACKING PADS	EACH	2.000	2.000
0420	628.7570	ROCK BAGS	EACH	170.000	170.000
0430	629.0210	FERTILIZER TYPE B	CWT	1.000	1.000
0440	630.0110	SEEDING MIXTURE NO. 10	LB	15.000	15.000
0450	630.0140	SEEDING MIXTURE NO. 40	LB	4.000	4.000
0460	630.0200	SEEDING TEMPORARY	LB	15.000	15.000
0470	634.0612	POSTS WOOD 4X6-INCH X 12-FT	EACH	4.000	4.000

3

DATE 09JAN14 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	4808-06-71 QUANTITY
0480	634.0616	POSTS WOOD 4X6-INCH X 16-FT	EACH	1.000	1.000
0490	637.2230	SIGNS TYPE II REFLECTIVE F	SF	18.250	18.250
0500	638.2602	REMOVING SIGNS TYPE II	EACH	9.000	9.000
0510	638.3000	REMOVING SMALL SIGN SUPPORTS	EACH	9.000	9.000
0520	642.5001	FIELD OFFICE TYPE B	EACH	1.000	1.000
0530	643.0100	TRAFFIC CONTROL (PROJECT) 01. 4808-06-71	EACH	1.000	1.000
0540	643.0420	TRAFFIC CONTROL BARRICADES TYPE III	DAY	1,800.000	1,800.000
0550	643.0705	TRAFFIC CONTROL WARNING LIGHTS TYPE A	DAY	2,880.000	2,880.000
0560	643.0900	TRAFFIC CONTROL SIGNS	DAY	1,170.000	1,170.000
0570	645.0120	GEOTEXTILE FABRIC TYPE HR	SY	146.000	146.000
0580	646.0106	PAVEMENT MARKING EPOXY 4-INCH	LF	1,280.000	1,280.000
0590	650.4500	CONSTRUCTION STAKING SUBGRADE	LF	283.000	283.000
0600	650.5000	CONSTRUCTION STAKING BASE	LF	283.000	283.000
0610	650.6500	CONSTRUCTION STAKING STRUCTURE LAYOUT (STRUCTURE) 01. B-20-229	LS	1.000	1.000
0620	650.9910	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) 01. 4808-06-71	LS	1.000	1.000
0630	650.9920	CONSTRUCTION STAKING SLOPE STAKES	LF	463.000	463.000
0640	690.0150	SAWING ASPHALT	LF	57.000	57.000
0650	715.0502	INCENTIVE STRENGTH CONCRETE STRUCTURES	DOL	762.000	762.000
0660	ASP.1T0A	ON-THE-JOB TRAINING APPRENTICE AT $5.00/HR	HRS	150.000	150.000
0670	ASP.1T0G	ON-THE-JOB TRAINING GRADUATE AT $5.00/HR	HRS	300.000	300.000
0680	SPV.0035	SPECIAL 01. BACKFILL SLURRY	CY	171.000	171.000
0690	SPV.0105	SPECIAL 01. REMOVING EXISTING STREAM SEDIMENT	LS	1.000	1.000

3

CLEARING AND GRUBBING ITEMS

STATION - STATION	LOCATION	201.0105 CLEARING STA	201.0205 GRUBBING STA
CATEGORY CODE 0010			
10+00 - 12+00	LT & RT	2	2
	TOTALS	**2**	**2**

BASE AGGREGATE DENSE ITEMS

STATION - STATION	LOCATION	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON	305.0130 BASE AGGREGATE DENSE 3-INCH TON
CATEGORY CODE 0010				
7+50 - 9+81	LT & RT	81	203	338
10+18 - 12+50	LT & RT	69	177	292
	TOTALS	**150**	**380**	**630**

3

EARTHWORK SUMMARY

DIVISION	FROM/TO STATION	LOCATION	EXCAVATION COMMON (ITEM #205.0100) **P**	SALVAGED / UNUSABLE PAVEMENT MATERIAL (NOTE 2)	AVAILABLE MATERIAL (NOTE 3)	UNEXPANDED FILL	EXPANDED FILL (NOTE 4)	MASS ORDINATE +/- (NOTE 5)	WASTE (NOTE 6)	COMMENTS
			CUT (NOTE 1)				FACTOR 1.30			
1	7+50.00 - 9+80.75	MELODY LANE	299	40	259	111	144	115	115	
DIVISION 1 SUBTOTAL			299	40	259	111	144	115	115	
2	10+18.25 - 12+50.00	MELODY LANE	303	40	263	80	104	159	159	
DIVISION 2 SUBTOTAL			303	40	263	80	104	159	159	
GRAND TOTAL			602	80	522	191	248	274	274	
TOTAL EXCAVATION COMMON			602							

1) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
2) SALVAGED/UNUSABLE PAVEMENT MATERIAL = LENGTH * TYPICAL WIDTH (22') * TYPICAL DEPTH (4")
3) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSABLE PAVEMENT MATERIAL
4) EXPANDED FILL. FACTOR = 1.30. EXPANDED FILL = (UNEXPANDED FILL) * FILL FACTOR
5) THE MASS ORDINATE + OR - QTY CALCULATED FOR THE DIVISION. PLUS QUANTITY INDICATES AN EXCESS OF MATERIAL WITHIN THE DIVISION. MINUS INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.

ASPHALTIC ITEMS

STATION - STATION	LOCATION	455.0605 TACK COAT GAL	465.0105 ASPHALTIC SURFACE TON
CATEGORY CODE 0010			
8+40 - 9+81	LT & RT	12	115
10+18 - 11+60	LT & RT	12	115
	TOTALS	**24**	**230**

ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES

STATION	LOCATION	465.0120 TON
CATEGORY CODE 0010		
10+90	RT	5
	TOTAL	**5**

ASPHALTIC FLUMES

STATION	LOCATION	465.0315 SY
CATEGORY CODE 0010		
10+77	RT	6
	TOTAL	**6**

3

STEEL PLATE BEAM GUARD ITEMS

STATION - STATION	LOCATION	614.0200 STEEL THRIE BEAM STRUCTURE APPROACH LF	614.0305 STEEL PLATE BEAM GUARD CLASS A LF	614.0345 STEEL PLATE BEAM GUARD SHORT RADIUS LF	614.0390 STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL EACH	614.2300 MGS GUARDRAIL 3 LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH
CATEGORY CODE 0010								
8+78 - 9+83	RT	--	--	--	--	12.5	39.4	1.0
8+78 - 9+83	LT	--	--	--	--	12.5	39.4	1.0
10+16 - 11+21	LT	--	--	--	--	12.5	39.4	1.0
10+16 - 10+82	RT	20.6	18.8	31.3	1.0	--	--	--
	TOTALS	**20.6**	**18.8**	**31.3**	**1.0**	**37.5**	**118.2**	**3.0**

WATER

STATION - STATION	LOCATION	624.0100 MGAL
CATEGORY CODE 0010		
7+50 - 9+81	LT & RT	9
10+18 - 12+50	LT & RT	7
	TOTAL	**16**

3

LANDSCAPING ITEMS

STATION - STATION	LOCATION	625.0100 TOPSOIL SY	628.2008 EROSION MAT URBAN CLASS I TYPE B SY	629.0210 FERTILIZER TYPE B CWT	630.0110 SEED MIX NO. 10 LB	630.0140 SEED MIX NO. 40 LB	630.0200 SEEDING TEMPORARY LB
CATEGORY CODE 0010							
7+50 - 9+81	LT	253	253	0.2	3	--	3
7+65 - 9+81	RT	247	247	0.2	3	--	3
9+98 - 10+13	LT	20	20	--	--	--	--
10+18 - 12+50	LT	253	253	0.2	3	--	3
10+18 - 11+60	RT	171	171	0.1	--	3	--
UNDISTRIBUTED		256	256	0.3	6	1	6
	TOTALS	**1,200**	**1,200**	**1**	**15**	**4**	**15**

SILT FENCE ITEMS

STATION - STATION	LOCATION	628.1504 SILT FENCE LF	628.1520 MAINTENANCE LF
CATEGORY CODE 0010			
10+15 - 12+50	LT	240	120
UNDISTRIBUTED		60	30
	TOTALS	**300**	**150**

EROSION CONTROL MOBILIZATIONS ITEMS

LOCATION	628.1905 EROSION CONTROL EACH	628.1910 EMERGENCY EROSION CONTROL EACH
CATEGORY CODE 0010		
PROJECT 4808-06-71	5	3
TOTALS	**5**	**3**

TURBIDITY BARRIERS

STATION - STATION	LOCATION	628.6005 SY
CATEGORY CODE 0010		
9+85 - 9+95	LT & RT	56
9+89 - 10+13	LT & RT	79
UNDISTRIBUTED		35
	TOTAL	**170**

TRACKING PADS

STATION	LOCATION	628.7560 EACH
CATEGORY CODE 0010		
8+40	LT & RT	1
11+60	LT & RT	1
	TOTAL	**2**

ROCK BAGS

STATION	LOCATION	628.7570 EACH
CATEGORY CODE 0010		
8+60	RT	20
8+70	LT	20
9+85	RT	20
9+95	LT	20
10+10	RT	20
10+15	LT	20
11+50	LT	15
UNDISTRIBUTED		35
	TOTAL	**170**

3

SIGNING ITEMS

SIGN NUMBER	STATION	LOCATION	SIGN CODE	SIZE	634.0612 POSTS WOOD 4X6X12 EACH	634.0616 POSTS WOOD 4X6X16 EACH	637.2230 SIGNS TYPE II REFLECTIVE F SF
CATEGORY CODE 0010							
201	9+05	22' RT	W2-2	30X30	--	1	6.25
202	9+80	16' LT	W5-52L	12X36	1	--	3.00
203	9+80	16' RT	W5-52R	12X36	1	--	3.00
204	10+19	16' LT	W5-52R	12X36	1	--	3.00
205	10+19	16' RT	W5-52L	12X36	1	--	3.00
				TOTALS	**4**	**1**	**18.25**

REMOVING SIGN ITEMS

SIGN NO.	STATION	LOCATION	638.2602 REMOVING SIGNS TYPE II EACH	638.3000 REMOVING SMALL SIGN SUPPORTS EACH
CATEGORY CODE 0010				
101	9+07	18' RT	1	1
102	9+63	18' RT	1	1
103	9+89	16' LT	1	1
104	9+89	15' RT	1	1
105	10+09	16' LT	1	1
106	10+10	15' RT	1	1
107	10+35	18' LT	1	1
108	MELODY LN/ N PIONEER RD	--	1	1
109	MELODY LN/ CTH RP	--	1	1
		TOTALS	**9**	**9**

TRAFFIC CONTROL ITEMS

LOCATION	643.0420 BARRICADES TYPE III DAY	643.0705 WARNING LIGHTS TYPE A DAY	643.0900 SIGNS DAY
CATEGORY CODE 0010			
MELODY LANE/ N. PIONEER ROAD	180	360	180
MELODY LANE/ VIKING DRIVE	180	360	270
MELODY LANE/ 1000' WEST OF PROJECT	--	--	90
MELODY LANE/ 500' WEST OF PROJECT	--	--	90
MELODY LANE/ WEST PROJECT LIMITS	630	900	180
MELODY LANE/ EAST PROJECT LIMITS	630	900	180
MELODY LANE/ CTH RP	180	360	180
TOTALS	**1,800**	**2,880**	**1,170**

CONSTRUCTION STAKING ITEMS

STATION - STATION	LOCATION	650.4500 SUBGRADE LF	650.5000 BASE LF	650.6500 STRUCTURE LAYOUT LS	650.9910 SUPPLEMENTAL CONTROL LS	650.9920 SLOPE STAKES LF
7+50 - 9+81	LT & RT	141	141	--	1	231
10+18 - 12+50	LT & RT	142	142	--	--	232
CATEGORY CODE 0010 SUBTOTALS		283	283	--	1	463
CATEGORY CODE 0020						
B-20-229		--	--	1	--	--
CATEGORY CODE 0020 SUBTOTALS		--	--	1	--	--
TOTALS		**283**	**283**	**1**	**1**	**463**

PAVEMENT MARKING ITEMS

STATION - STATION	LOCATION	646.0106 EPOXY 4-INCH WHITE LF	646.0106 EPOXY 4-INCH YELLOW LF
CATEGORY CODE 0010			
8+40 - 11+60	LT & RT	640	640
TOTALS		**640**	**640**
		1,280	

SAWING ASPHALT

STATION - STATION	LOCATION	690.0150 LF
CATEGORY CODE 0010		
8+40	LT & RT	22
10+90	RT	12
11+60	LT & RT	23
TOTALS		**57**

REMOVING EXISTING STREAM SEDIMENT

LOCATION	SPV.0105.01 LS
CATEGORY CODE 0010	
ANDERSON CREEK SOUTH OF MELODY LANE	1
TOTAL	**1**

R/W PROJECT NUMBER	SHEET NUMBER	TOTAL SHEETS
4808-06-00	4.01	4
FEDERAL PROJECT NUMBER		

PLAT OF RIGHT OF WAY REQUIRED FOR

T FRIENDSHIP, MELODY LN
ANDERSON CREEK BRIDGE P-20-0929

TOWN ROAD — FOND DU LAC COUNTY

CONSTRUCTION PROJECT NUMBER
4808-06-71

4

CONVENTIONAL SIGNS AND ABBREVIATIONS

SECTION LINE	
QUARTER LINE	
SIXTEENTH LINE	
PROPOSED REFERENCE LINE	
PROPOSED R/W LINE	
EXISTING R/W LINE	
PROPERTY LINE	
CORPORATE LIMITS	
LOT AND TIE LINES	
SLOPE INTERCEPT	
UNDERGROUND FACILITY	T (TYPE)
FENCE	
LIMITED EASEMENT	
BUILDING	
IRON PIN	
R/W MONUMENT	
MANHOLE	
BUSHES	
TREES (DECIDUOUS)	
TREES (CONIFEROUS)	
POWER POLE (COMPENSABLE)	
SIGN	
POWER POLE	
UTILITY PEDESTAL	
GUY ANCHOR	
CATCH BASIN	
VALVE	
HYDRANT	
LIGHT POLE	
POINT NUMBER	
RECORDED AS	SLANTED
SAME OWNERSHIP	N
NO ACCESS (BY ACQUISITION)	
NO ACCESS (PREVIOUS)	
TEMPORARY LIMITED EASEMENT	
SECTION CORNER	T 16 N R 17 E

AC.	ACRES
A.P.	ACCESS POINT
BLDG.	BUILDING
C/L	CENTERLINE
CONC.	CONCRETE
CSM	CERTIFIED SURVEY MAP
D	DEGREE OF CURVE
DOC#	DOCUMENT NUMBER
E	EAST
E	ELECTRIC CABLE
ETAL	AND OTHERS
FM	FORCE MAIN
FO	FIBER OPTIC CABLE
FT.	FEET
GAR.	GARAGE
G	GAS MAIN
H.	HOUSE
I.P.	IRON PIPE
L	LENGTH OF CURVE
LC	LAND CONTRACT
LC	LONG CHORD
LCB	LONG CHORD BEARING
LT.	LEFT
MI.	MILE
MON.	MONUMENT
N	NORTH
OL	OUTLOT
P.C.	POINT OF CURVE
PERM.	PERMANENT
P.I.	POINT OF INTERSECTION
P.L.	PROPERTY LINE
P.L.E.	PERMANENT LIMITED EASEMENT
P.T.	POINT OF TANGENT
R	RADIUS
R	RANGE
R/L	REFERENCE LINE
REM.	REMAINING
RT.	RIGHT
R/W	RIGHT OF WAY
RWGP	RIGHT OF WAY GUARD POST
S	SOUTH
SAN	SANITARY SEWER
SQ.FT.	SQUARE FEET
SS	STORM SEWER
STA.	STATION
T	TELEPHONE
T	TANGENT
T	TOWNSHIP
TEMP.	TEMPORARY
TLE	TEMPORARY LIMITED EASEMENT
V/P	VOLUME/PAGE OF RECORDS
VAR.	VARIES
W	WATER MAIN
W	WEST
X	EAST COORDINATE
Y	NORTH COORDINATE

BEGIN RELOCATION ORDER

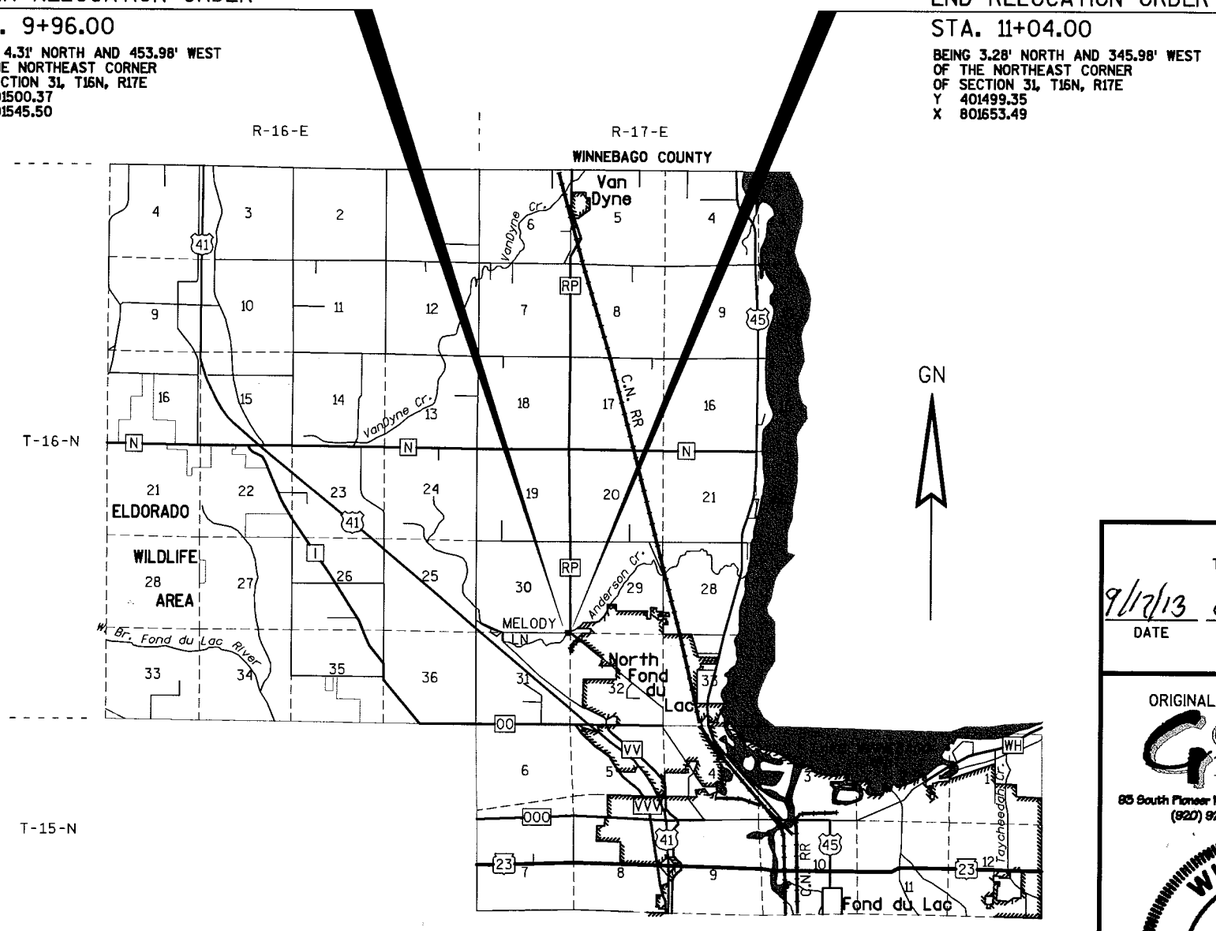
STA. 9+96.00

BEING 4.31' NORTH AND 453.98' WEST
OF THE NORTHEAST CORNER
OF SECTION 31, T16N, R17E
Y 401500.37
X 801545.50

END RELOCATION ORDER

STA. 11+04.00

BEING 3.28' NORTH AND 345.98' WEST
OF THE NORTHEAST CORNER
OF SECTION 31, T16N, R17E
Y 401499.35
X 801553.49



NOTES

COORDINATES AND BEARINGS ON THIS PLAT ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM, (WCCS), FOND DU LAC COUNTY, NAD83 (1991) ADJUSTMENT. THE COORDINATES SHOWN ARE GRID COORDINATES AND ARE TO BE USED AS GRID OR GROUND VALUES ON THIS PLAT.

RIGHT OF WAY BOUNDARIES ARE DEFINED WITH COURSES OF THE PERIMETER OF THE HIGHWAY LANDS REFERENCED TO THE U.S. PUBLIC LAND SURVEY OR OTHER SURVEYS OF PUBLIC RECORD.

LAYOUT

0 1 2 MILES
SCALE

TOTAL NET LENGTH OF CENTERLINE = 0.020 MILES

REVISION	DATE
10/8/13	

ACCEPTED FOR
TOWN OF FRIENDSHIP

9/13/13 — DATE
Charles McCourt — CHARLES MCCOURT, TOWN CHAIRMAN

ORIGINAL PLANS PREPARED BY

GREMMER & ASSOCIATES, INC.
CONSULTING ENGINEERS
Stevens Point • Fond du Lac
85 South Pioneer Road, Suite 300 • Fond du Lac, WI 54935
(920) 924-5720 • fax (920) 924-5725

WISCONSIN
JAY W. PANETTI
S-2747
WAUPUN, WI
LAND SURVEYOR

9/13/13 — DATE
JAY W. PANETTI, RLS

REVISED: 9/13/13

SHEET 1 OF 4 SHEETS

FILE NAME: 040101_RW PATH: S:±CURRPROJ±FONDDUCO±MELODY_LN±RIGHT OF WAY± PLOTTED ON 17 SEP 2013 AT 11:28:49 BY GAJWP PLOTSCALE 1 = 2.0

SCHEDULE OF LANDS & INTERESTS REQUIRED

AREAS SHOWN ON THE TOTAL ACRES COLUMN MAY BE APPROXIMATE AND ARE DERIVED FROM TAX ROLLS OR OTHER AVAILABLE SOURCES AND MAY NOT INCLUDE LANDS OF THE OWNER WHICH ARE NOT CONTIGUOUS TO THE AREA TO BE ACQUIRED. OWNER'S NAMES ARE SHOWN FOR REFERENCE PURPOSES ONLY AND ARE SUBJECT TO CHANGE PRIOR TO THE TRANSFER OF LAND INTERESTS TO THE DEPARTMENT.

PARCEL NUMBER	SHEET NUMBER	OWNER(S)	INTEREST REQUIRED	TOTAL ACRES (EXISTING)	R/W ACRES REQUIRED NEW	EXISTING	TOTAL	TOTAL ACRES REMAINING	P.L.E. ACRES PERM.	T.L.E. ACRES TEMP.	TAX KEY NUMBER
1	4.04	DANIEL R. JACOBS AND KATHLEEN E. JACOBS	FEE, TLE	6.743	0.009	0	0.009	6.734	0	0.025	T11-16-17-31-01-002-00
20	4.04	WISCONSIN POWER AND LIGHT COMPANY	RELEASE OF RIGHTS								

4

4

SHEET 2 OF 4 SHEETS

REVISED: 10/8/13

REVISION DATE	10/8/2013		

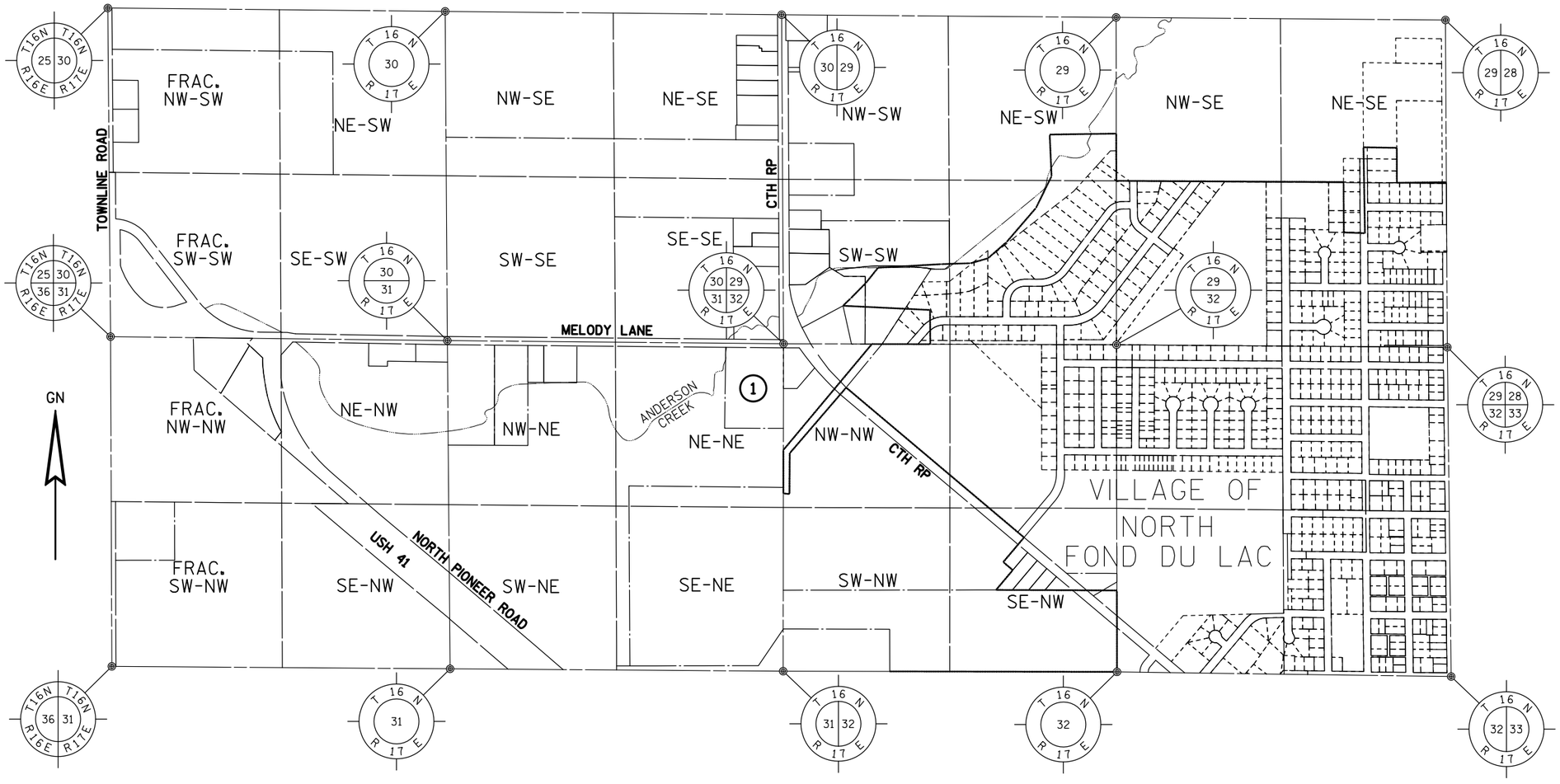
DATE: 9/13/2013

HWY: MELODY LANE | STATE R/W PROJECT NUMBER 4808-06-00 | PLAT SHEET NO: 4.02

COUNTY: FOND DU LAC | CONSTRUCTION PROJECT NUMBER 4808-06-71 | PS&E SHEET: 14 E

TOWN OF FRIENDSHIP

FOND DU LAC COUNTY, WISCONSIN



SHEET 3 OF 4 SHEETS

REVISED: 10/8/13

REVISION DATE 10/8/2013 N.C.	DATE: 9/13/2013	HWY: MELODY LANE	STATE R/W PROJECT NUMBER 4808-06-00
SCALE, FEET 0 250 500 1000		COUNTY: FOND DU LAC	CONSTRUCTION PROJECT NUMBER 4808-06-71

PLAT SHEET NO: 4.03

PS&E SHEET: 15 E

FILE NAME: 040103_RW PATH: S:±CURRPROJ±FONDDUC0±MELODY_LN±RIGHT OF WAY± PLOTTED ON 09 OCT 2013 AT 08:45:30 BY GAJWP PLOTSCALE 1 = 1000.0

4 4

COURSE TABLE - TLE EAST

FROM POINT	TO POINT	BEARING	DISTANCE
133	202	N89°27'24"W	346.00'
202	301	S00°32'36"W	33.00'
301	302	S00°32'36"W	20.00'
302	303	N89°27'24"W	21.00'
303	304	N00°32'36"E	20.00'
304	301	S89°27'24"E	21.00'

COURSE TABLE - TLE WEST

FROM POINT	TO POINT	BEARING	DISTANCE
133	202	N89°27'24"W	346.00'
202	301	S00°32'36"W	33.00'
301	307	N89°27'24"W	41.00'
307	306	S00°32'36"W	10.00'
306	308	N89°27'24"W	66.64'
308	309	N00°03'56"E	10.00'
309	307	S89°27'24"E	66.72'

COORDINATE TABLE

POINT	NORTH	EAST
132	401521.5900	799308.5200
133	401496.0660	801999.4760
201	401500.3720	801545.4964
202	401499.3477	801653.4916
301	401466.3492	801653.1786
302	401446.3501	801652.9889
303	401446.5493	801631.9898
304	401466.5484	801632.1795
305	401446.7390	801611.9907
306	401456.7385	801612.0856
307	401466.7381	801612.1804
308	401457.3706	801545.4471
309	401467.3709	801545.4586

COURSE TABLE - FEE

FROM POINT	TO POINT	BEARING	DISTANCE
133	202	N89°27'24"W	346.00'
202	301	S00°32'36"W	33.00'
301	304	N89°27'24"W	21.00'
304	303	S00°32'36"W	20.00'
303	305	N89°27'24"W	20.00'
305	307	N00°32'36"E	20.00'
307	304	S89°27'24"E	20.00'

TOWN OF FRIENDSHIP
FOND DU LAC COUNTY, WISCONSIN

GN

SE-SE
SEC. 30, T16N, R17E

NE-NE
SEC. 31, T16N, R17E

AG FIELD

WOODED

P.I. +52.8

ANDERSON CREEK

BEGIN RELOCATION ORDER
STA. 9+96.00
Y 401500.37
X 801545.50
BEING 4.31' NORTH AND 453.98' WEST
OF THE NORTHEAST CORNER
OF SECTION 31, T16N, R17E

END RELOCATION ORDER
STA. 11+04.00
Y 401499.35
X 801653.49
BEING 3.28' NORTH AND 345.98' WEST
OF THE NORTHEAST CORNER
OF SECTION 31, T16N, R17E

EXISTING R/W

MELODY LANE

SECTION LINE
S89°27'24"E
2691.08'

R/L = SECTION LINE

N89°27'24"W
346.00'

66'
33'
33'

20' UTILITY EASEMENT
V590/P629

SLOPE INTERCEPT, TYP.

BERNTSEN ALUMINUM MONUMENT FOUND

75' PIPELINE EASEMENT
V672/P633

WISCONSIN POWER AND LIGHT COMPANY
V590/P629

EASEMENT ENCROACHMENT AGREEMENT
DOC. #927915

PARTIAL RELEASE OF EASEMENT
V672/P633

RIGHT OF WAY CONTRACT
V329/P68

9+96.28 33.00' (309)
9+96.36 43.00' (308)
P.I. +96.0
10+63.00 33.00' (307)
10+63.00 43.00' (306)
10+63.00 53.00' (305)
10+83.00 53.00' (303)
10+83.00 33.00' (304)
11+04.00 53.00' (302)
11+04.00 33.00' (301)

TLE
FEE
10'
20'
33'

TLE FOR SLOPES
0.015 ACRES

TLE FOR SLOPES AND DRIVEWAY
0.010 ACRES

PARTIAL RELEASE OF EASEMENT
V672/P633

RIGHT OF WAY CONTRACT
V329/P68

LOT 1
CSM #3766
V21/P5
DOC. NO. 470775

LAWN

1

T11-16-17-31-01-002-00
DANIEL R. JACOBS AND KATHLEEN E. JACOBS
V1005/P376

BERNTSEN SURVEY NAIL FOUND

BASIS FOR EXISTING R/W

ROUTE	BASIS
MELODY LANE	CSM #3766

NOTE – PROPERTY LINES ARE COMPUTED FROM INFORMATION OF RECORD AND ARE APPROXIMATE ONLY.

SHEET 4 OF 4 SHEETS

REVISED: 10/8/13

REVISION DATE	10/8/2013		

DATE: 9/13/2013

SCALE, FEET
0 25 50 100

HWY: MELODY LANE

COUNTY: FOND DU LAC

STATE R/W PROJECT NUMBER 4808-06-00

CONSTRUCTION PROJECT NUMBER 4808-06-71

PLAT SHEET NO: 4.04

PS&E SHEET:

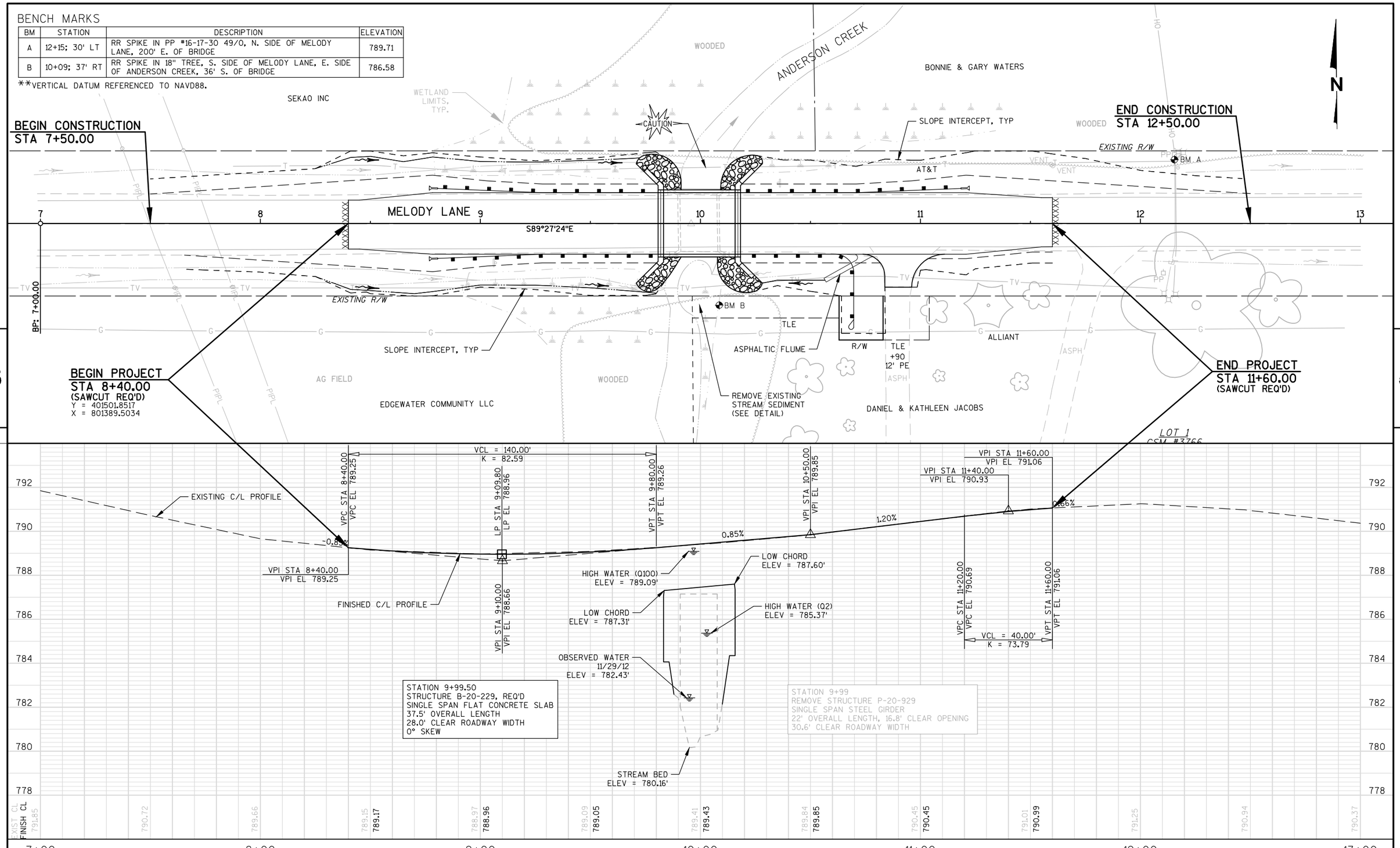
E

FILE NAME: 040104_RW PATH: S:±CURRPROJ±FONDDUC0±MELODY_LN±RIGHT OF WAY± PLOTTED ON 09 OCT 2013 AT 08:42:36 BY GAJWP PLOTSCALE 1 = 40.0

BENCH MARKS

BM	STATION	DESCRIPTION	ELEVATION
A	12+15; 30' LT	RR SPIKE IN PP *16-17-30 49/0, N. SIDE OF MELODY LANE, 200' E. OF BRIDGE	789.71
B	10+09; 37' RT	RR SPIKE IN 18" TREE, S. SIDE OF MELODY LANE, E. SIDE OF ANDERSON CREEK, 36' S. OF BRIDGE	786.58

**VERTICAL DATUM REFERENCED TO NAVD88.

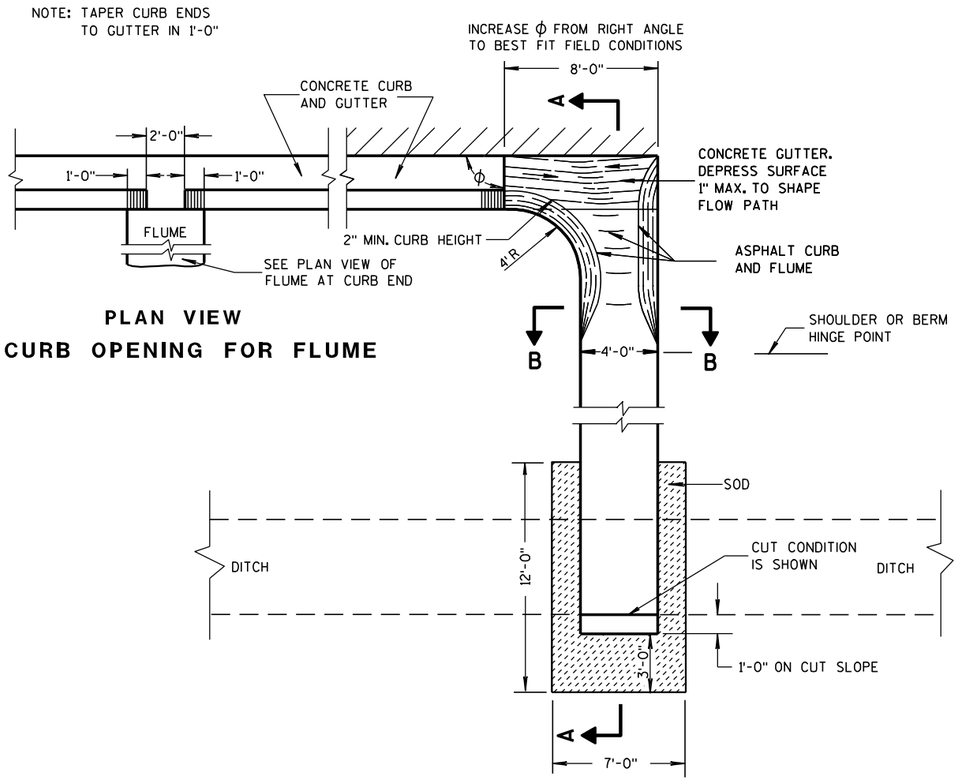


PROJECT NO: 4808-06-71	HWY: MELODY LANE	COUNTY: FOND DU LAC	PLAN & PROFILE	SHEET 17	E

Standard Detail Drawing List

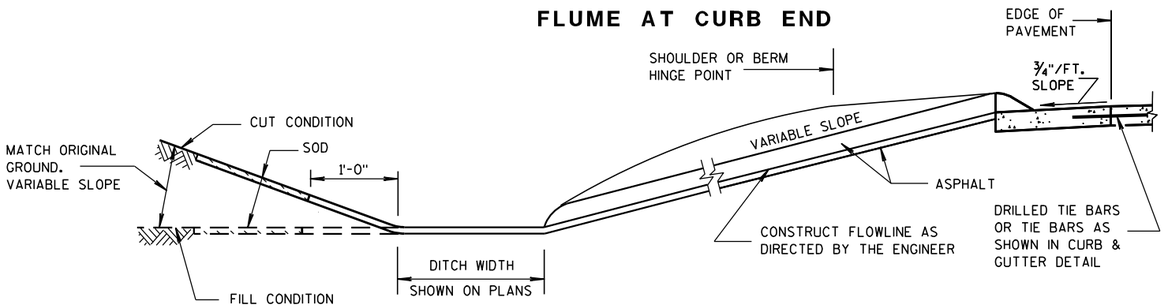
08D04-05	CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
08E14-01	TRACKING PAD
12A03-10	NAME PLATE (STRUCTURES)
14B15-07A	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-07B	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-07C	STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS
14B18-06A	STEEL PLATE BEAM GUARD, CLASS "A" (AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS)
14B20-11A	STEEL THRIE BEAM STRUCTURE APPROACH
14B20-11F	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPE "M"
14B27-01A	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B27-01B	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B27-01C	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B42-02A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-02B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-02C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-01A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-01B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-01C	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
15C06-06	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-16A	PAVEMENT MARKING (MAINLINE)

ASPHALTIC FLUME

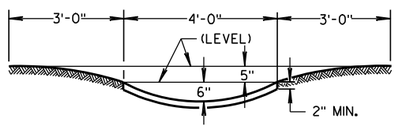


PLAN VIEW
CURB OPENING FOR FLUME

PLAN VIEW
FLUME AT CURB END



SECTION A-A



SECTION B-B

GENERAL NOTES

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

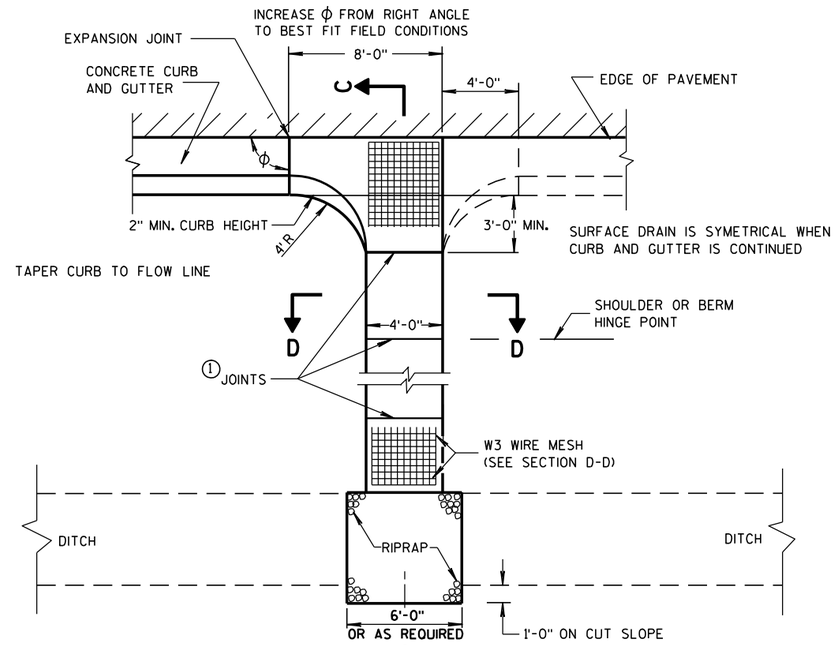
WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

① JOINTS SHALL BE $\frac{1}{8}$ TO $\frac{1}{4}$ INCH WIDE BY $1\frac{1}{2}$ INCHES DEEP AND SPACED AT UNIFORM INTERVALS OF APPROXIMATELY 4 FEET.

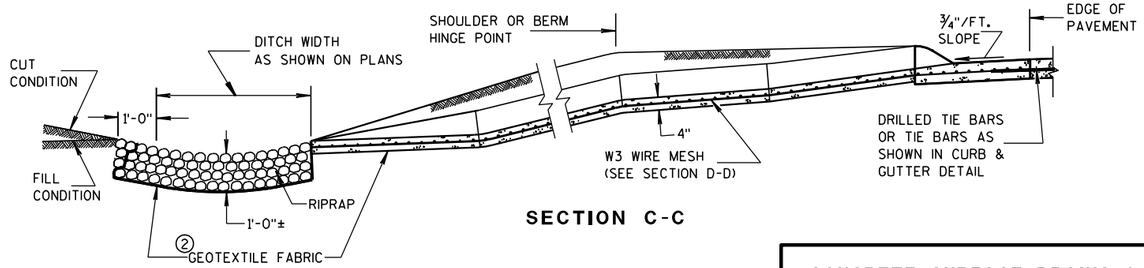
② GEOTEXTILE FABRIC TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.

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

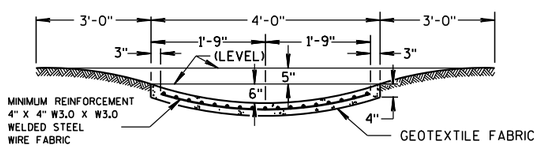
③ CONCRETE SURFACE DRAIN



PLAN VIEW



SECTION C-C



SECTION D-D

CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

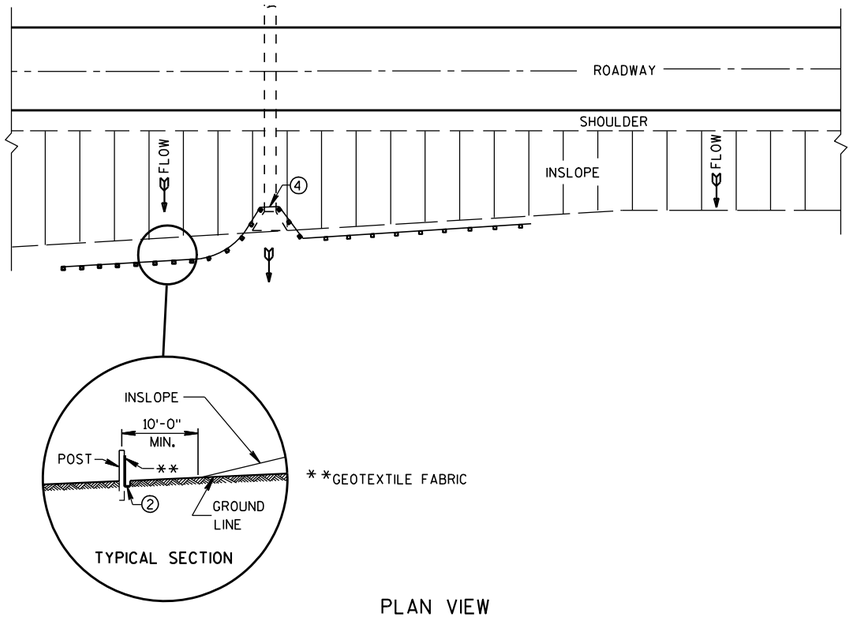
FHWA

6

S.D.D. 8 D 4-5

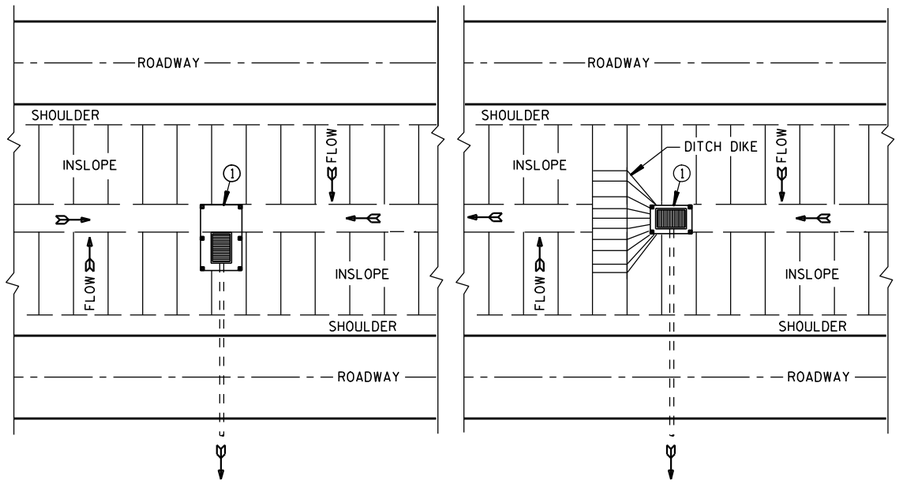
6

S.D.D. 8 D 4-5



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



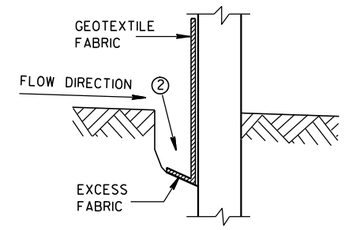
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

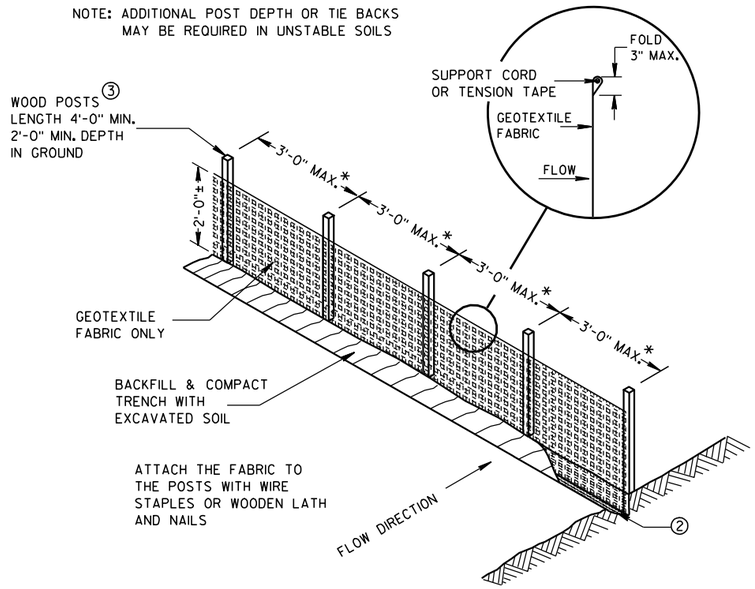
GENERAL NOTES

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

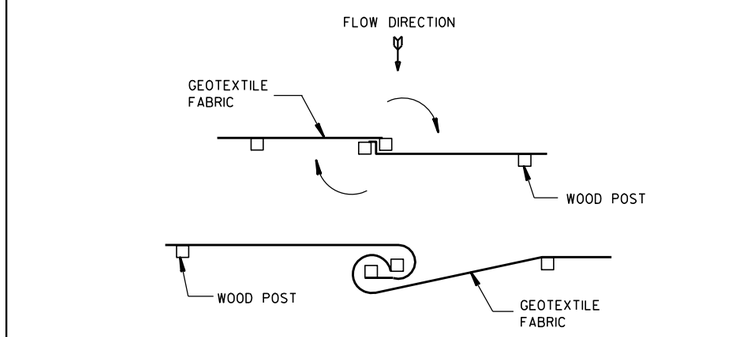
1. HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
2. FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL 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.



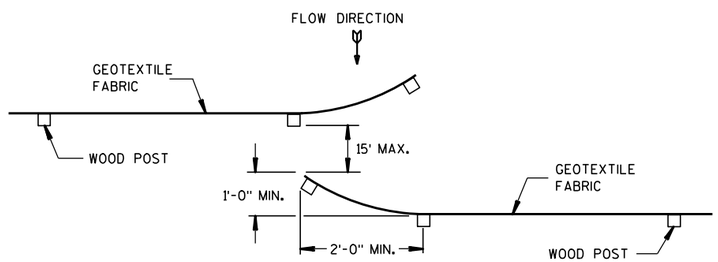
TRENCH DETAIL



SILT FENCE

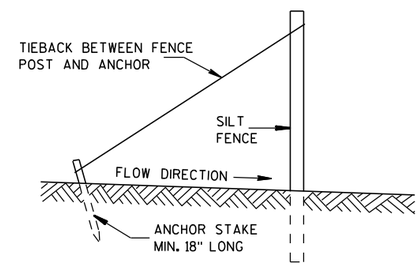


TWIST METHOD



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

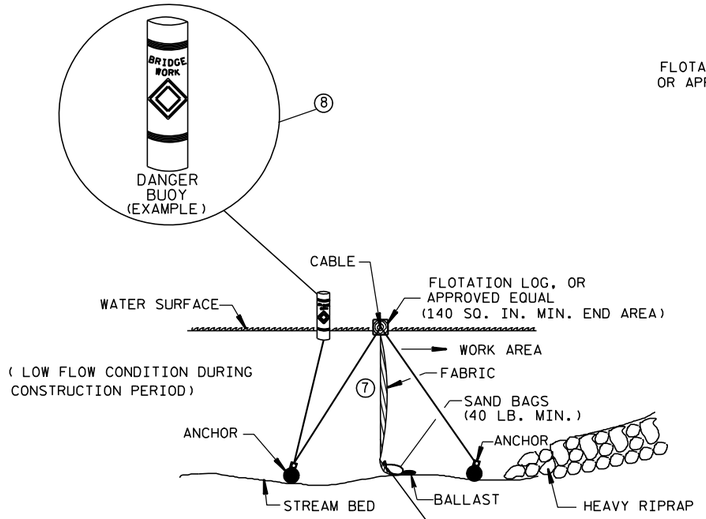
APPROVED
4-29-05 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

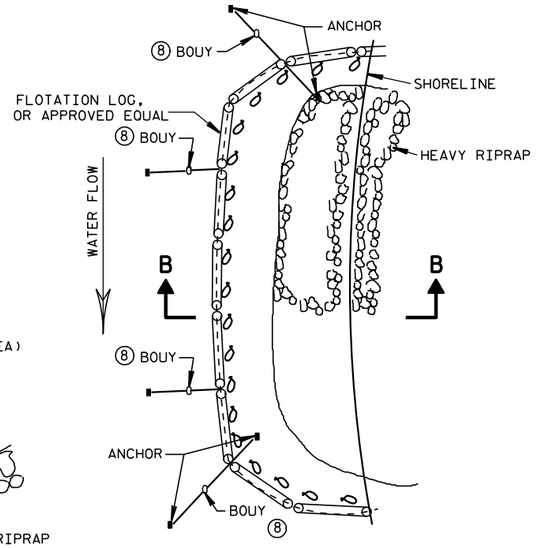
S.D.D. 8 E 9-6

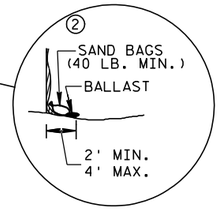
6

S.D.D. 8 E 9-6

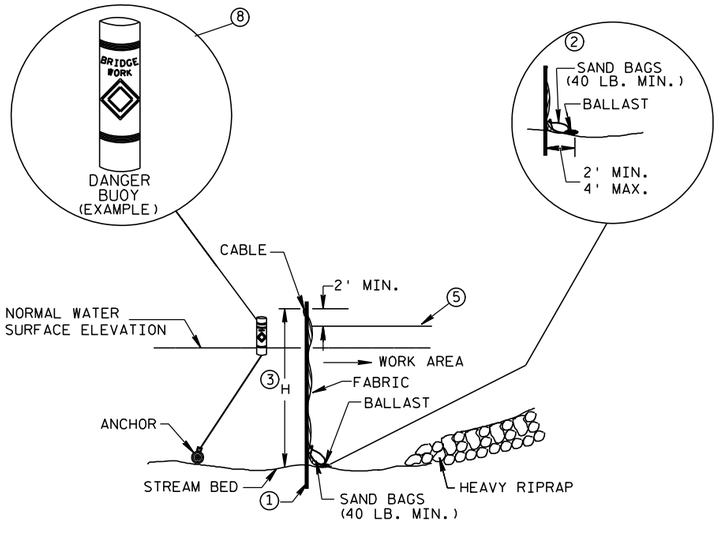


SECTION B-B

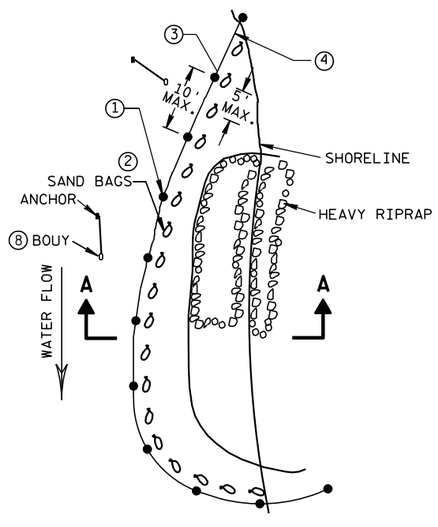




TURBIDITY BARRIER FLOAT ALTERNATIVE
CAUTION - SEE NOTE 6



SECTION A-A



PLAN VIEW

TURBIDITY BARRIER STANDARD POST INSTALLATION

TURBIDITY BARRIER PLACEMENT DETAILS

GENERAL NOTES

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

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

① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.

② SANDBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.

③ WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.

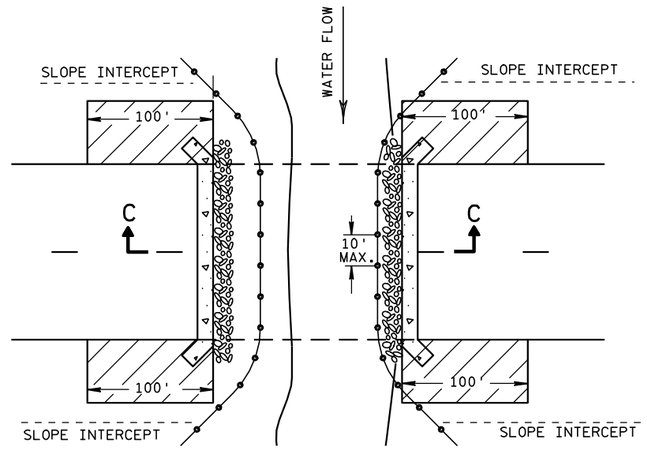
④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.

⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MIMIMUM BARRIER HEIGHT SHALL BE 2'GREATER THAN EITHER THE O2 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WICHEVER IS GREATER.

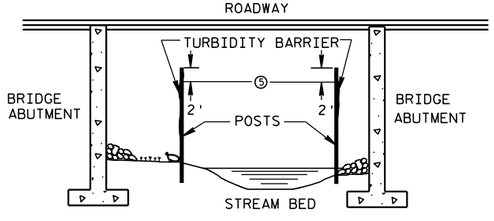
⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.

⑦ ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.

⑧ USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



PLAN VIEW



SECTION C-C

TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

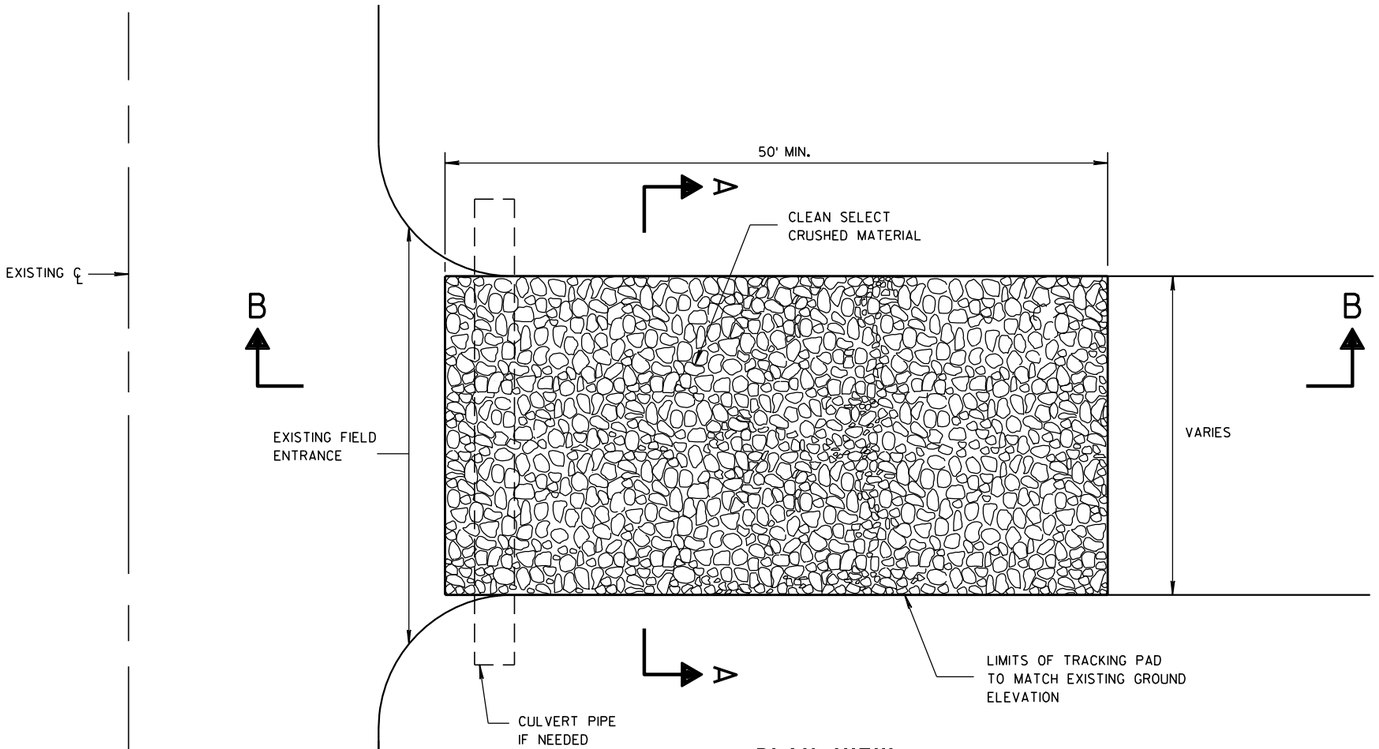
APPROVED
6/04/02 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

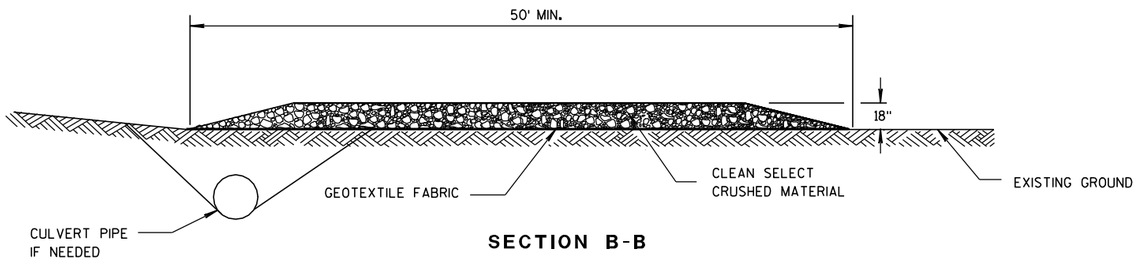
S.D.D. 8 E 11-2

6

S.D.D. 8 E 11-2



PLAN VIEW



SECTION B-B

GENERAL NOTES

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

TRACKING PAD SHALL BE INSPECTED DAILY. DEFICIENT AREAS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

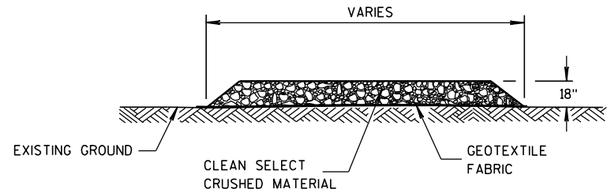
TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT.

SURFACE WATER MUST BE PREVENTED FROM PASSING THROUGH THE TRACKING PAD. FLOWS SHALL BE DIVERTED AWAY, AROUND OR CONVEYED UNDER THE TRACKING PAD.

CULVERT PIPE OR OTHER BMP USED TO DIVERT WATER AWAY, AROUND OR UNDER THE TRACKING PAD SHALL BE DESIGNED TO CONVEY THE 2 YEAR - 24 HOUR EVENT.

THE COST OF ADDITIONAL BMP TO DIVERT WATER ARE INCIDENTAL TO THE TRACKING PAD BID ITEM.



SECTION A-A

TRACKING PAD

TRACKING PAD

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

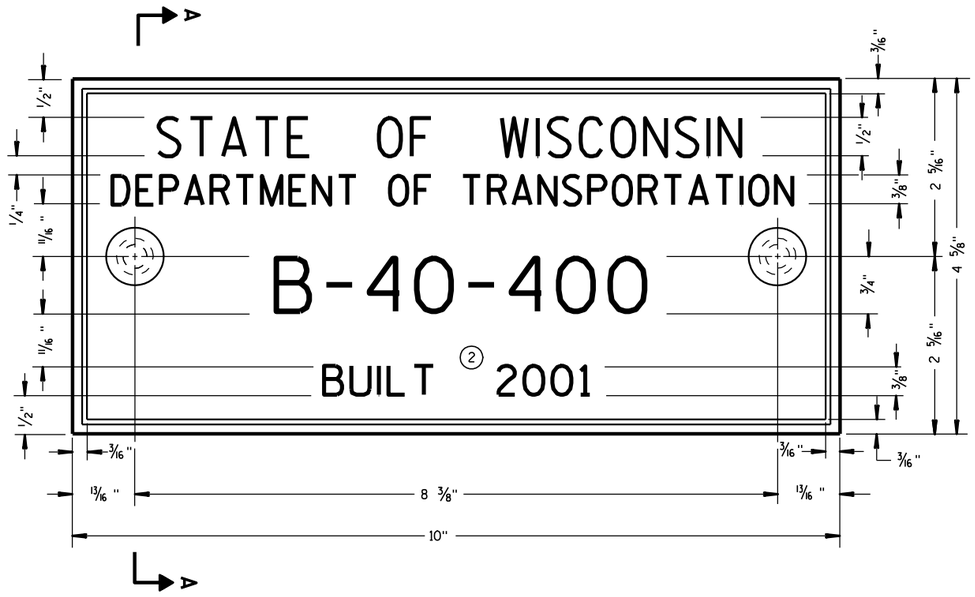
APPROVED

3/24/2011	/S/ Jerry H. Zoda	
DATE	ROADWAY STANDARDS ENGINEER	ENT

FHWA

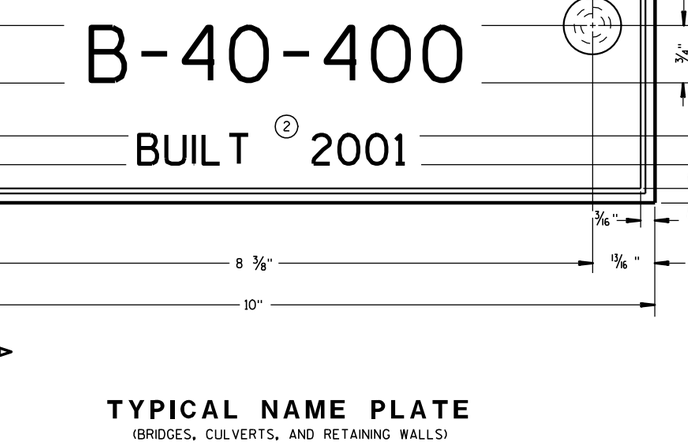
6

S.D.D. 8 E 14-1



TYPICAL NAME PLATE

(BRIDGES, CULVERTS, AND RETAINING WALLS)



NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

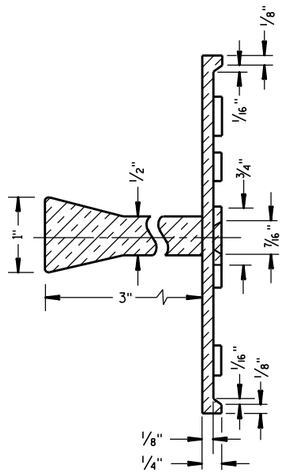
GENERAL NOTES

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.

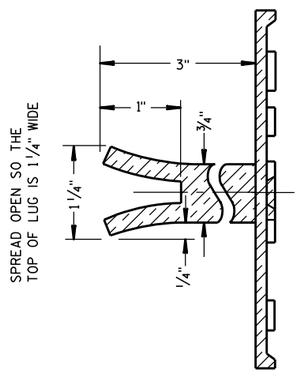
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

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

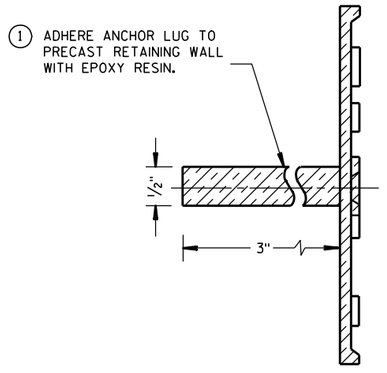
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



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	

6

S.D.D. 12 A 3-10

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) W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. APPROVED PLASTIC BLOCKOUT DESIGNS MAY VARY FROM THIS TYPICAL DETAIL WHEN USED IN CONJUNCTION WITH STEEL POSTS.

DO NOT MIX STEEL POSTS AND WOOD POSTS IN A SINGLE INSTALLATION.

(2) USE STRUCTURAL STEEL POSTS CONFORMING TO ASTM A 36. GALVANIZED POSTS ACCORDING TO AASHTO M 111. EITHER SET THE POSTS IN DRILLED HOLES OR DRIVE TO GRADE. REMOVE MUSHROOMING CAUSED BY DRIVING AND REPAIR DAMAGED SPELTER COATING ON GALVANIZED POSTS.

(3) INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

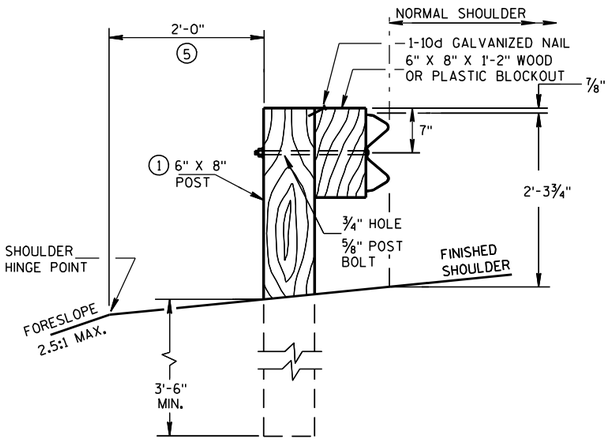
(4) USE EITHER WOOD OR APPROVED PLASTIC BLOCKOUTS ON WOOD POSTS.

(5) IF THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING, W BEAM (LHW).

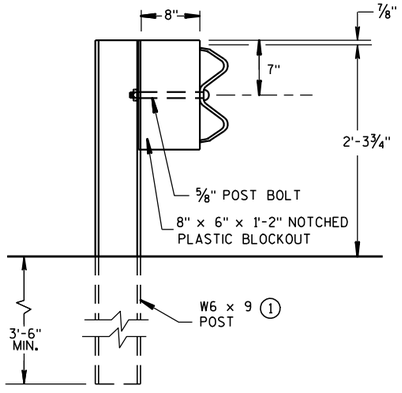
(6) IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE ENGINEER MAY APPROVE USING A 12 INCH DIAMETER POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE APPROXIMATELY 2½ INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN YHE HOLE. BACKFILL WITH MATERIAL EXCAVATED FROM THE HOLE AND COMPACT ADEQUATEY.

INSTALL BEAM GUARD SECTIONS AND ALL NECESSARY HARDWARE ACCORDING TO THE APPLICABLE PLAN AND CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS.

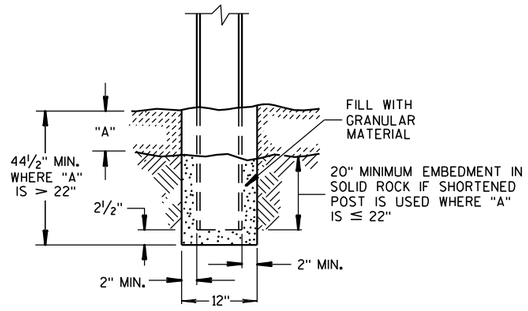
ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



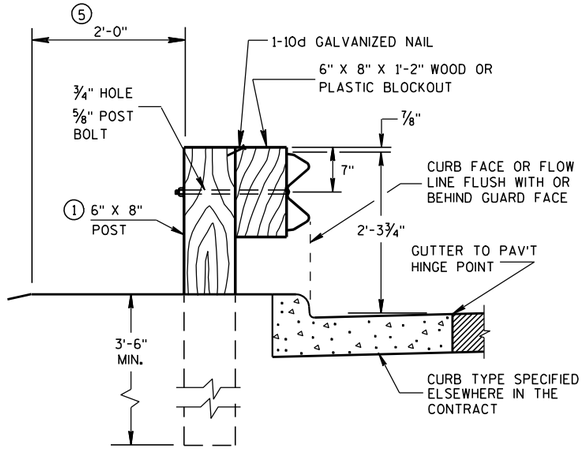
END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



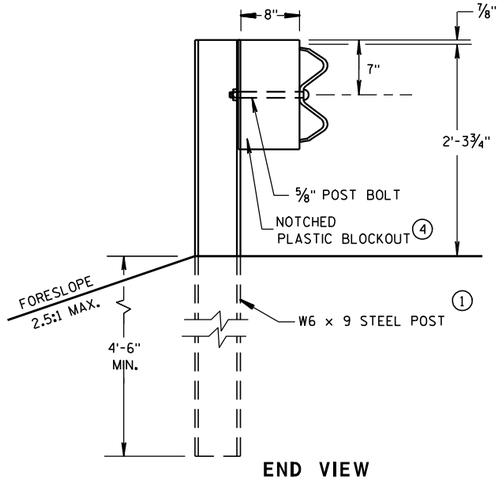
END VIEW
STEEL POST & NOTCHED
PLASTIC BLOCKOUT ALTERNATIVE
STANDARD INSTALLATION



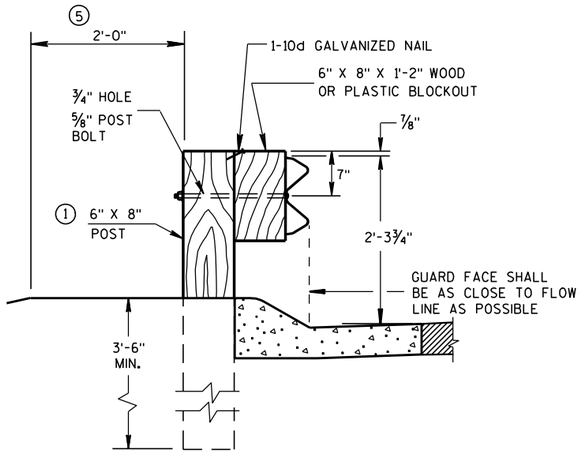
END VIEW
SETTING STEEL OR WOOD POST IN ROCK (6)



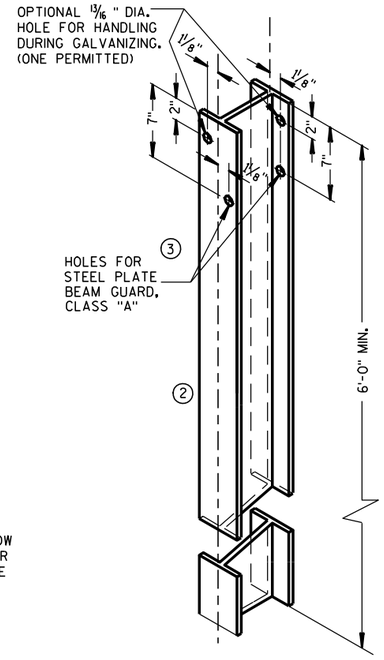
END VIEW
LOCATED ALONG A CURBED ROADWAY



END VIEW
LONGER POST AT HALF
POST SPACING W BEAM
(LHW)

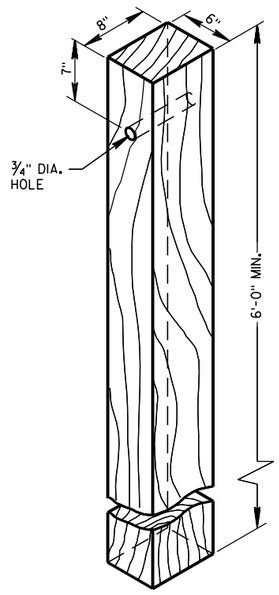


END VIEW
LOCATED ALONG A
MOUNTABLE CURBED ROADWAY

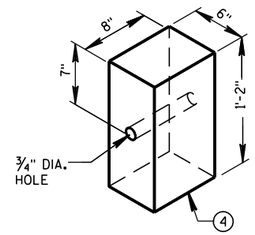


STEEL POST &
HOLE PUNCHING DETAIL
(W6 X 9) (1)

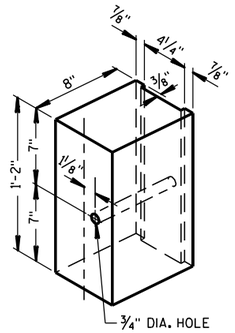
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED



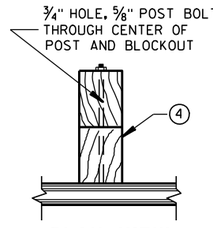
WOOD POST
(6"X8") NOMINAL



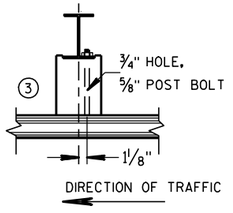
WOOD OR PLASTIC
BLOCKOUT FOR
WOOD POSTS



TYPICAL NOTCHED (1)
PLASTIC BLOCKOUT
FOR STEEL POSTS



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



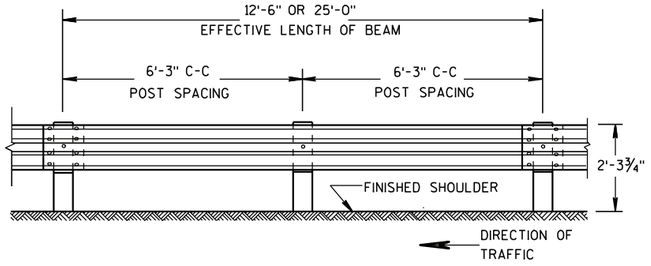
PLAN VIEW
STEEL POST, NOTCHED
PLASTIC BLOCKOUT & BEAM

TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD

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

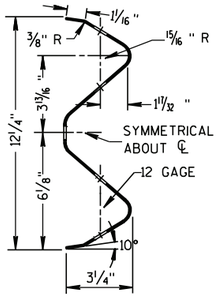
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6
S.D.D. 14 B 15-7a

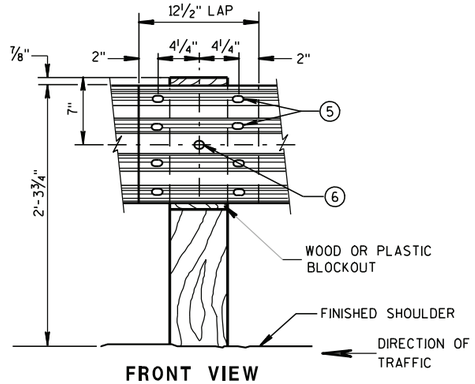


FRONT VIEW

POST SPACING STANDARD INSTALLATION



SECTION THRU W BEAM

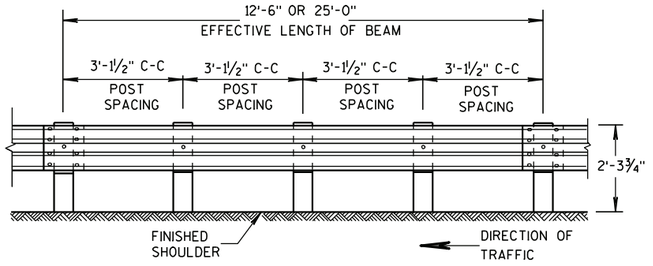


FRONT VIEW

BEAM SPLICE AT WOOD POST AND POST MOUNTING DETAIL

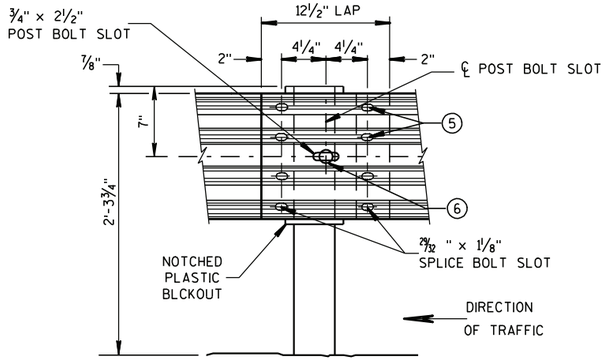
GENERAL NOTES

1. PROVIDE TYPE "H" SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH TYPE "H" YELLOW REFLECTIVE SHEETING.
2. DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
3. REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.
4. PROVIDE AN ANGLE OF BEND OF 90° ± 1° FOR TWO-SIDED REFLECTORS.
5. 8 - 5/8" ϕ X 2 " BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.
6. 5/8" ϕ X 1'-6" BUTTON HEAD BOLT AND AND RECESS NUT WITH ROUND WASHER UNDER NUT.



FRONT VIEW

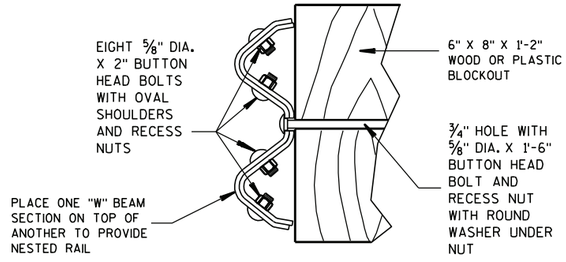
POST SPACING FOR LONGER POST AT HALF POST SPACING W BEAM (LHW)



FRONT VIEW

BEAM SPLICE AT STEEL POST

TYPICAL SPLICING DETAILS OF STEEL PLATE BEAM GUARD

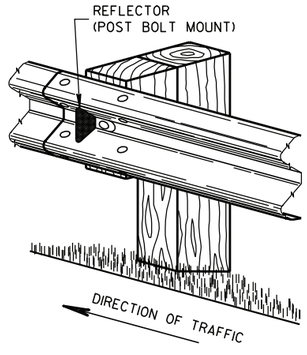


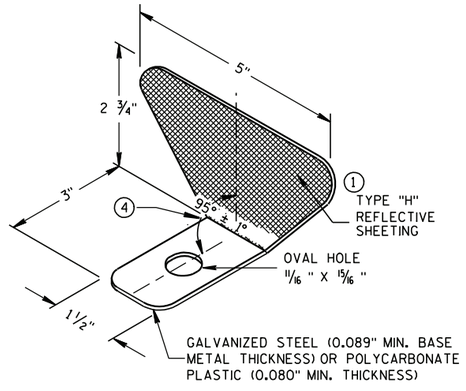
NESTED W BEAM (NW)

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

REFLECTOR SPACING (2)

	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200'	50' C-C	1	3
	> 200'	100' C-C	1	
TWO WAY TRAFFIC	< 200'	25' C-C	1 (3)	6
	> 200'	50' C-C	1	
TWO WAY TRAFFIC	< 200'	50' C-C	2 (4)	3
	> 200'	100' C-C	2	



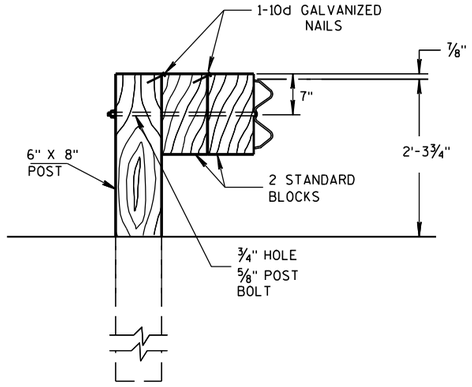


ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION (1)

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

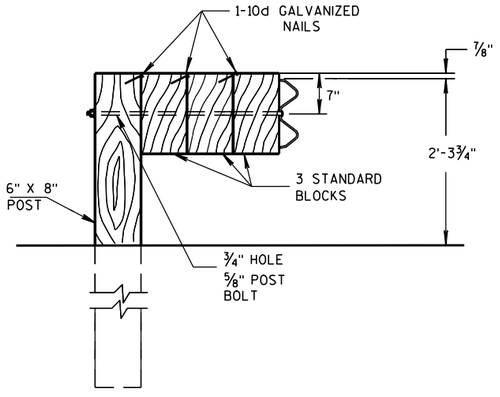
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6
S.D.D. 14 B 15-7b



DETAIL FOR DOUBLE BLOCKS

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

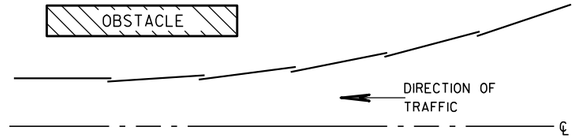


DETAIL FOR TRIPLE BLOCKS

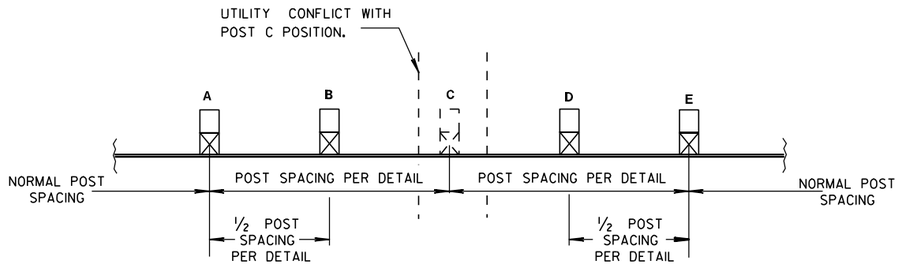
TRIPLE BLOCK DETAIL IS LIMITED TO ONE LOCATION WITHIN A BEAM GUARD RUN.

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

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



PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

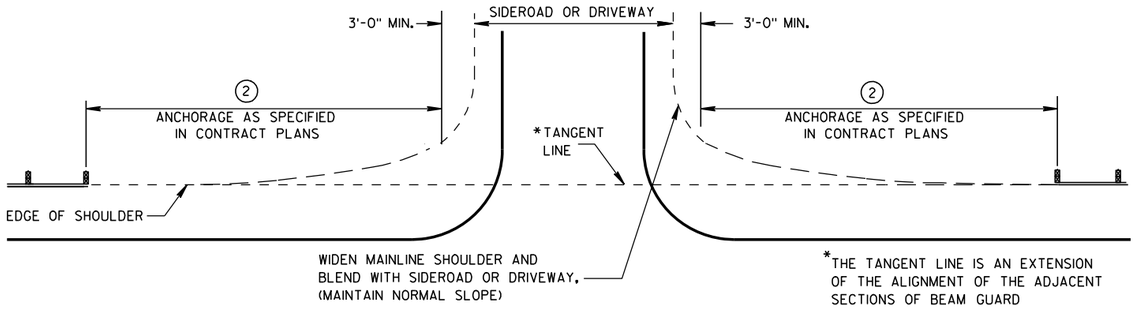
APPROVED

5/23/11	/S/ Jerry H. Zogg	
DATE	ROADWAY STANDARDS ENGINEER	ENT

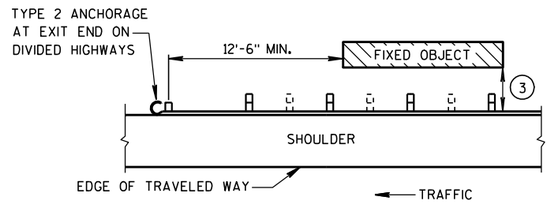
FHWA

6

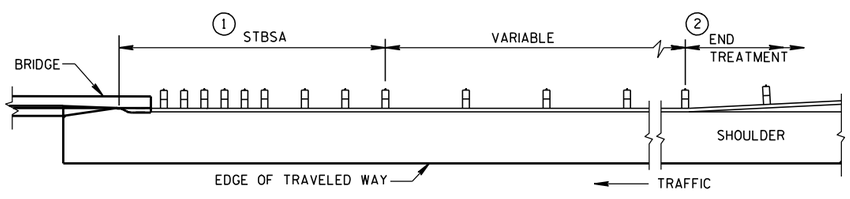
S.D.D. 14 B 15-7c



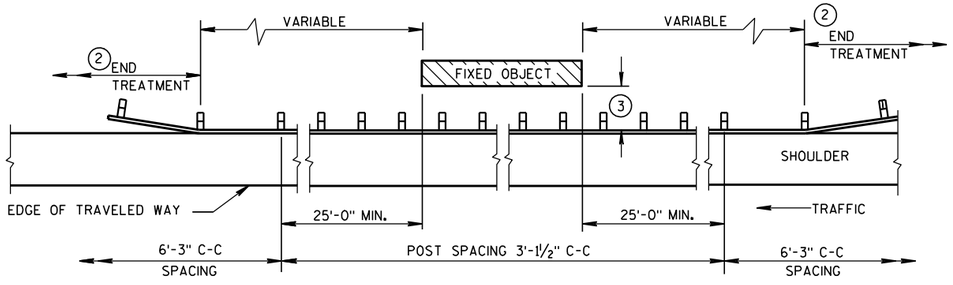
BEAM GUARD AT SIDEROADS OR DRIVEWAYS



BEAM GUARD AT OBSTACLES EXIT END - ONE WAY TRAFFIC

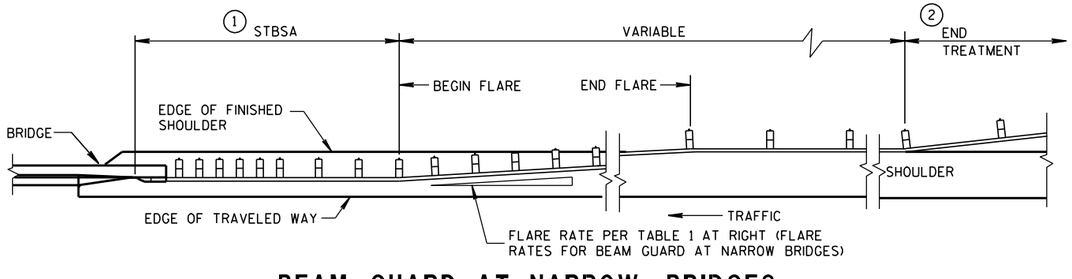


BEAM GUARD AT FULL WIDTH BRIDGES



BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC

(RAIL TO OBSTACLE CLEARANCE 3'-6" TO 4'-6")



BEAM GUARD AT NARROW BRIDGES

(FLARED TO SHOULDER EDGE, THEN PARALLEL TO ROADWAY)

TABLE 1
FLARE RATES FOR BEAM GUARD AT NARROW BRIDGES

POSTED SPEED (MPH)	FLARE RATE
25	13:1
30	15:1
35	16:1
40	18:1
45	21:1
50	24:1
55	26:1
65	30:1

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE PERTINENT STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

W6 X 9 OR W6 X 8.5 STEEL POSTS WITH NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

THE LOCATIONS AND LENGTHS OF BEAM GUARD ARE SHOWN ELSEWHERE IN THE PLAN.

(1) STEEL THRIE BEAM STRUCTURAL APPROACH (STBSA) - SEE CURRENT SDD 14B20.

(2) USE AN APPROVED END TREATMENT FOR THE TRAFFIC APPROACH SIDE OF BRIDGE/OBSTACLES. USE TYPE 2 ANCHORAGE ONLY AT THE DOWNSTREAM ENDS OF BEAM GUARD LOCATED ALONG ROADWAYS WITH ONE WAY TRAFFIC.

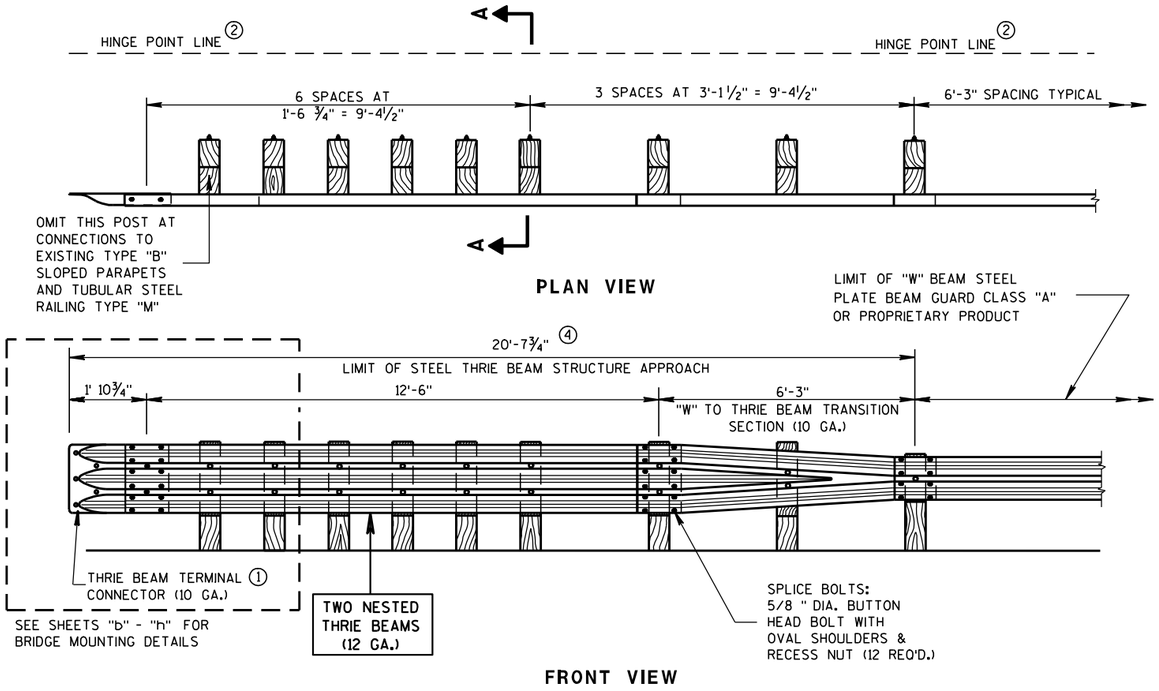
(3)

MINIMUM LATERAL DISTANCE FROM FACE OF BEAM GUARD TO FIXED OBJECT	POST SPACING
3'-6"	3' - 1½"
4'-6"	6' - 3"

STEEL PLATE BEAM GUARD CLASS "A" AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8-21-07 DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA



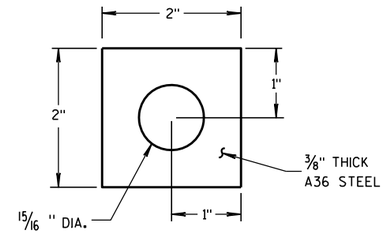


PLATE WASHER DETAIL

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".

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

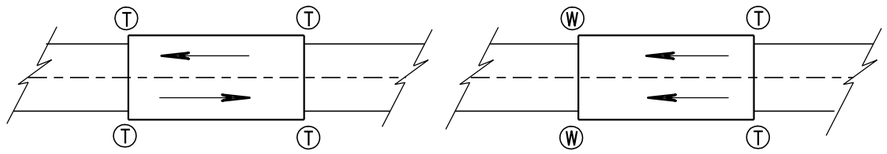
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2" , AND 12" DIAMETER AROUND POST. SEE 14B15 FOR MORE DETAILS.

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

② MINIMUM EMBEDMENT SHALL BE 4'-0". WHERE EXISTING CONDITIONS DO NOT PERMIT THE APPROPRIATE EARTHWORK SHOWN ON THE PLAN TYPICAL SECTIONS OR DETAILS, THE ENGINEER MAY ALLOW THE REDUCTION OR ELIMINATION OF THE 2 FOOT DISTANCE TO THE HINGE POINT. OTHERWISE BUILD AS THE PLAN SHOWS OR AS THE ENGINEER DIRECTS. IF THE 2 FOOT DISTANCE TO THE HINGE POINT IS REDUCED OR ELIMINATED, INCREASE THE POST EMBEDMENT DEPTH TO 4'-6" OR MORE.

③ POST BOLTS ARE 5/8" DIAMETER ASTM A307 BUTTON HEAD BOLT. A POST BOLT REQUIRES A 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX AND A 5/8" DIAMETER F844 FLAT WASHER. LENGTH OF POST BOLT MAY VARY.

④ ALL WOOD POSTS MUST BE 6" X 8" AND AT LEAST 7'-0" LONG.



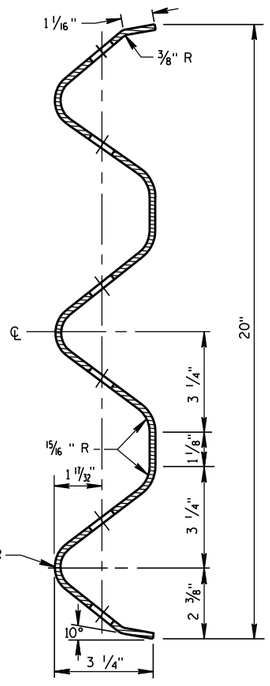
TWO WAY TRAFFIC

ONE WAY TRAFFIC

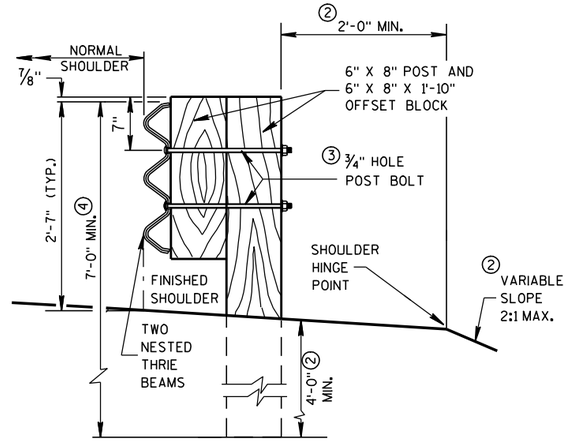
(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

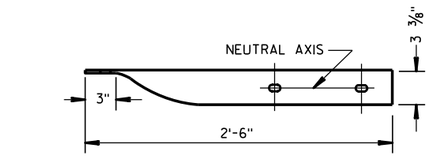
TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

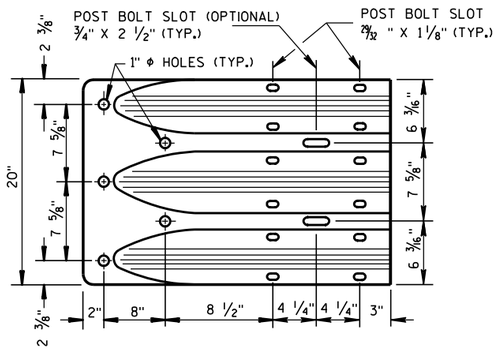


SECTION THRU THRIE BEAM RAIL ELEMENT

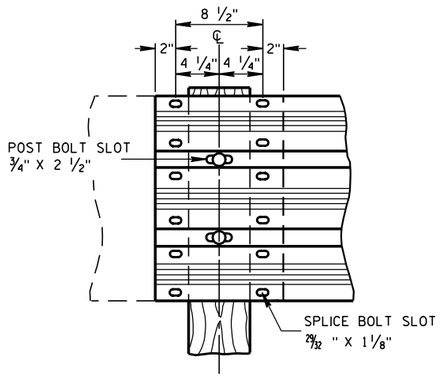


SECTION A-A





THRIE BEAM TERMINAL CONNECTOR



THRIE BEAM SPLICE

STEEL THRIE BEAM STRUCTURE APPROACH

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

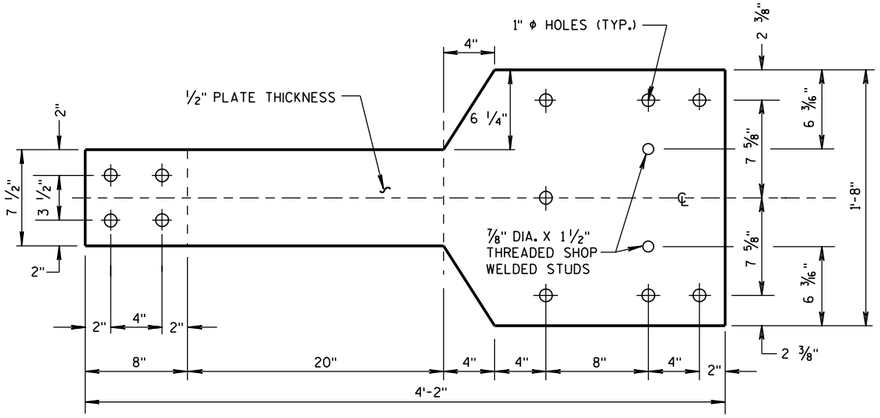
8/31/2012 — DATE

/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER

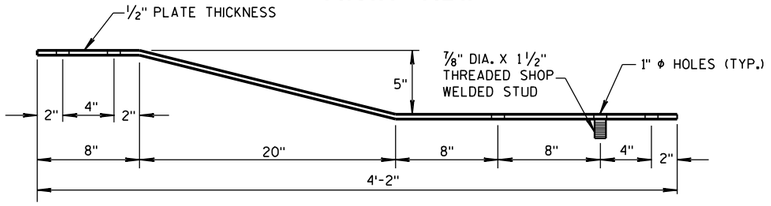
FHWA

GENERAL NOTES

① VARY THIS DIMENSION DEPENDING ON ABUTMENT TYPE, WINGWALL DETAILS, AND ANGLE OF SKEW. PLACE THE FIRST WOOD POST OFF THE BRIDGE SHALL BE AS CLOSE AS FEASIBLE TO THE STEEL END POST.

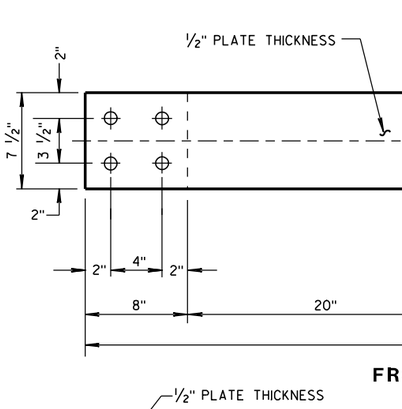


FRONT VIEW



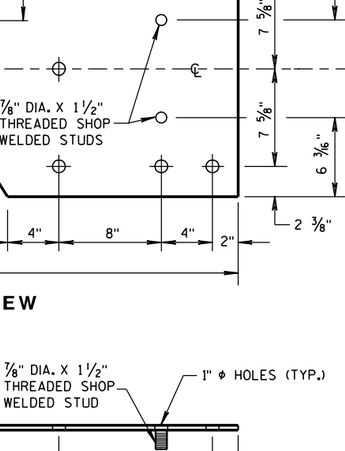
PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

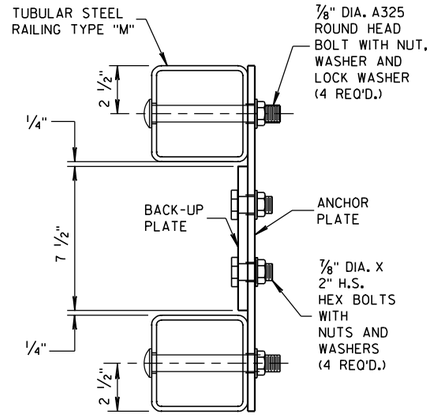


FRONT VIEW

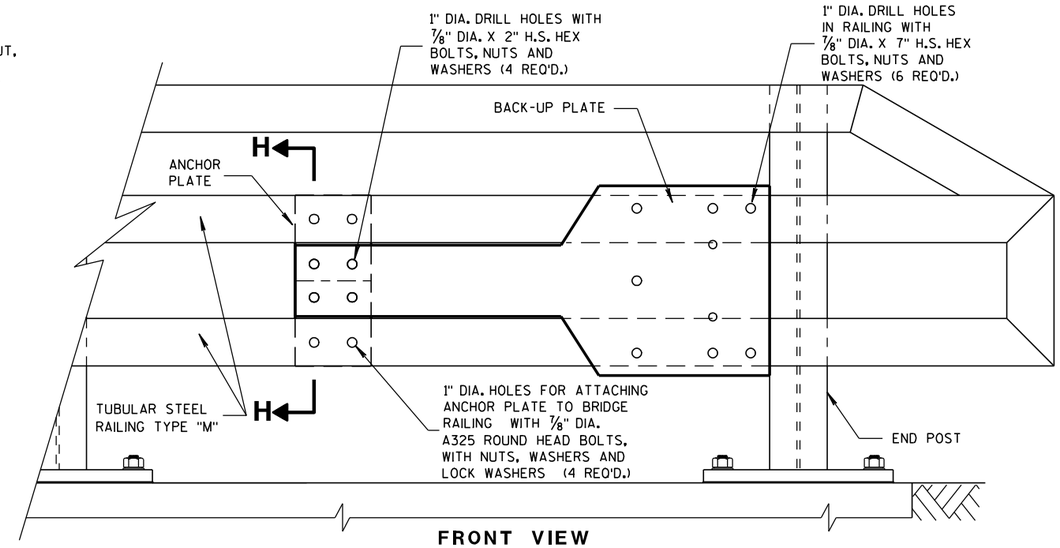
ANCHOR PLATE DETAIL, TYPE "M"



SECTION I-I

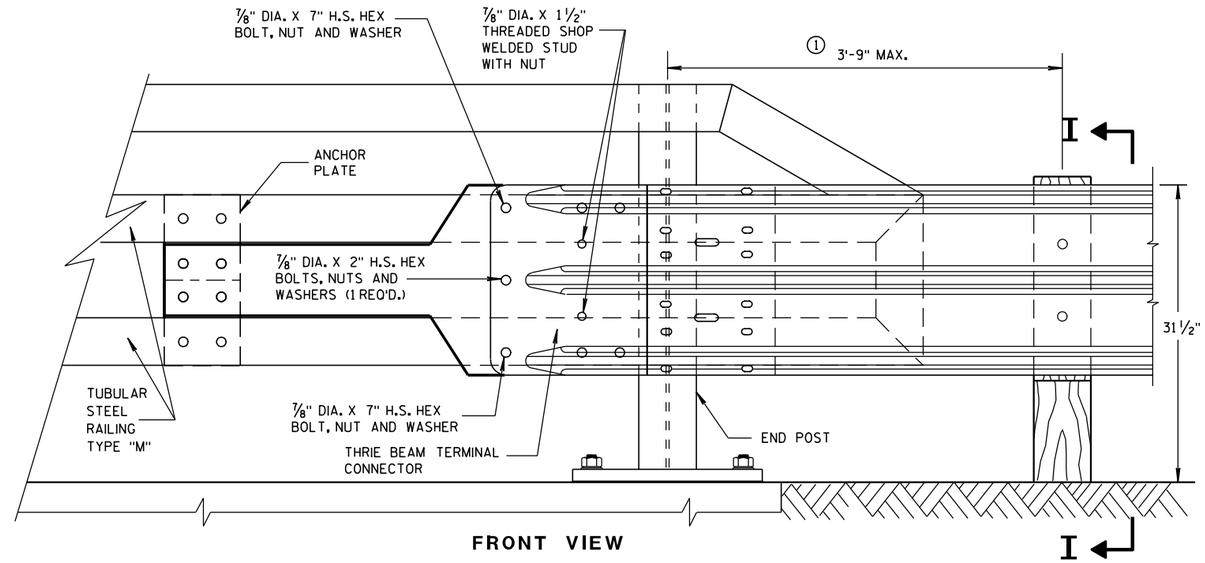


SECTION H-H

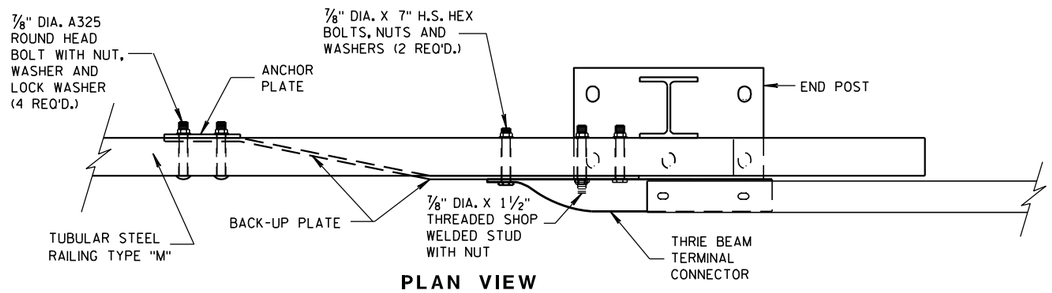


FRONT VIEW

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



FRONT VIEW



PLAN VIEW

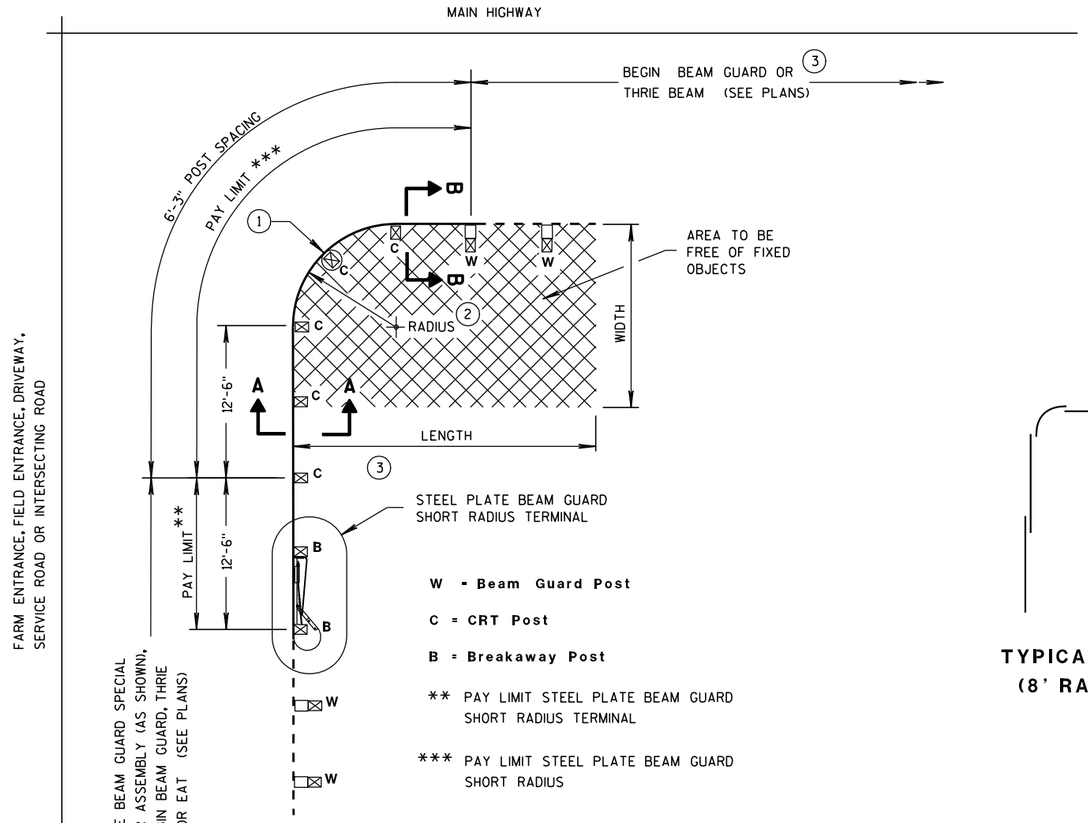
THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPE "M"

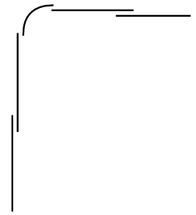
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6
S.D.D. 14 B 20-11f



TYPICAL LAYOUT
(8' RADIUS SHOWN)



TYPICAL LAP SPLICES
(8' RADIUS SHOWN)

GENERAL NOTES

ALL ANGLES, CHANNELS, AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36 AND THE STRUCTURAL TUBING SHALL CONFORM TO ASTM A 500. WELDING SHALL MEET THE CURRENT REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE ANSI/AWS D1.1. ALL STRUCTURAL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A 123. PUNCHING, DRILLING, CUTTING, OR WELDING WILL NOT BE PERMITTED AFTER GALVANIZING. FURNISH AND INSTALL HARDWARE PER STANDARD SPECIFICATION 614.2. UNLESS NOTED OTHERWISE.

SHOP BEND CURVED RAIL SECTIONS.

SEE STANDARD DETAIL DRAWING 14 B 15 FOR OTHER DETAIL.

(1) ON THE 8 FOOT RADIUS INSTALLATION, DO NOT INSTALL BUTTON HEAD BOLT AT CENTER CRT POST.

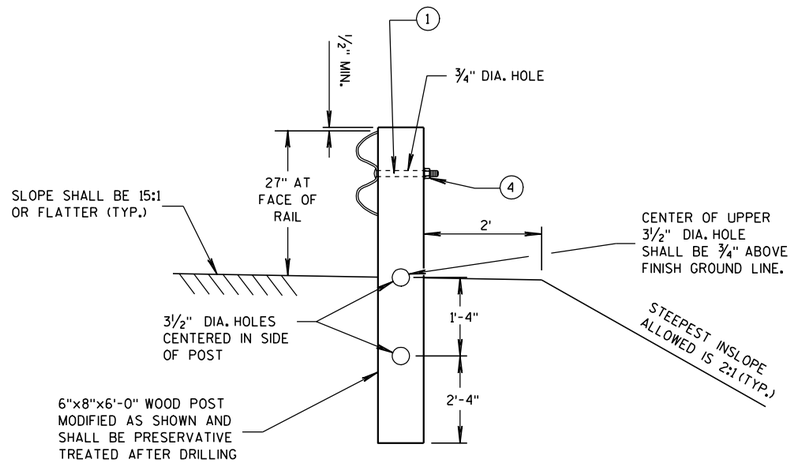
(2) RADIUS FROM 8' - 36'. SEE PLAN.

(3) HEIGHT TRANSITION MAY BE REQUIRED. SEE PLAN OR PROJECT ENGINEER.

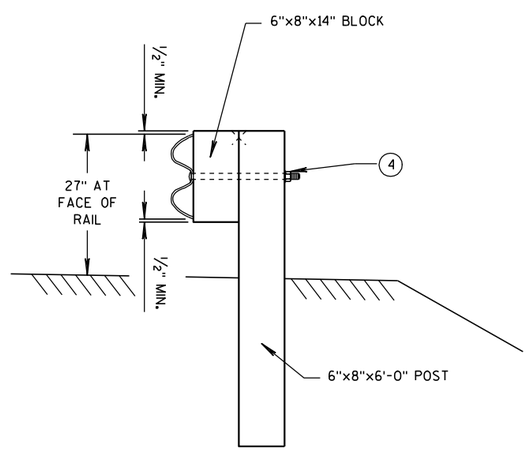
(4) 5/8" ø X 1'-6" BUTTON HEAD BOLT AND RECESS NUT WITH ROUND WASHER UNDER NUT.

RADIUS	NUMBER OF CRT POSTS	*NUMBER AND LENGTH OF CURVED RAILS	REQUIRED AREA FREE OF FIXED OBJECTS (LENGTH x WIDTH)
8'	5	1 at 12.5'	25' x 15'
16'	7	1 at 25'	30' x 15'
24'	9	1 at 25' and 1 at 12.5'	40' x 20'
32'	11	2 at 25'	50' x 20'

* THE NUMBER OF RAILS IS BASED ON A 90° INTERSECTION. SEE PLAN FOR NON 90° INSTALLATIONS.



SECTION A-A
(CRT POST)

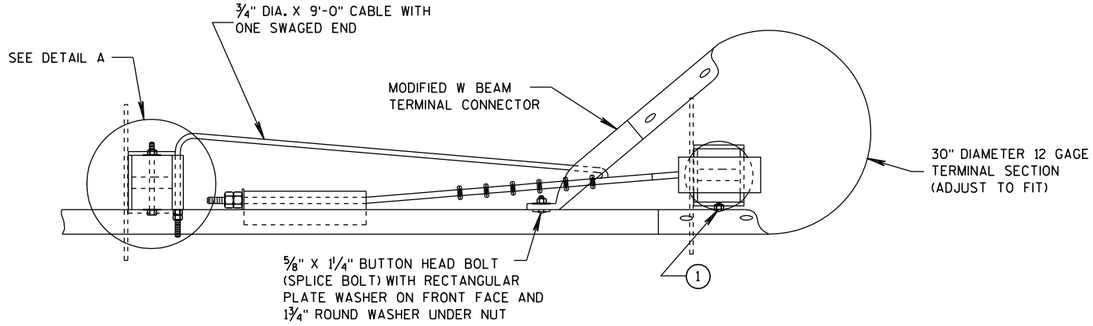


SECTION B-B
(BEAM GUARD POST)

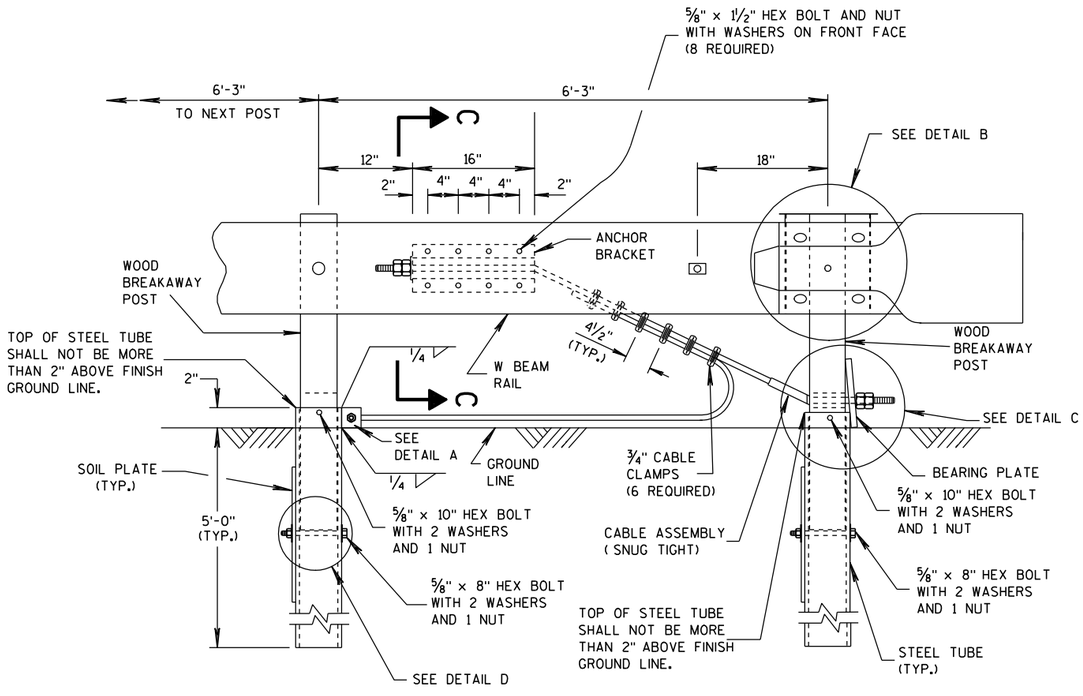
STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

6
S.D.D. 14 B 27-1a



PLAN VIEW



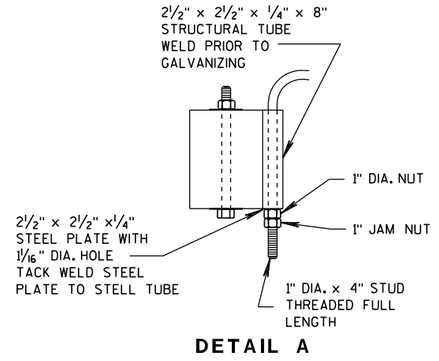
ELEVATION VIEW

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

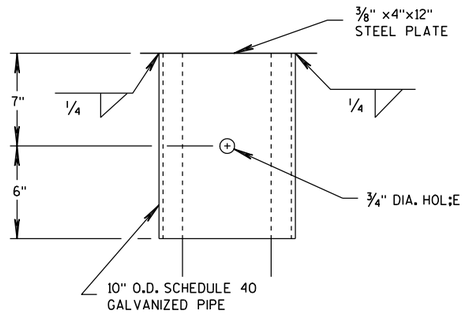
GENERAL NOTES

(1) ATTACH W BEAM RAIL TO THE STEEL PIPE WITH A ⅝" X 2" BUTTON HEAD BOLT WITH NO WASHER. CONNECTION TO THE POST IS NOT REQUIRED.

INSTALL GALVANIZED ¾" (6X19) PREFORMED WIRE OR INDEPENDENT WIRE ROPE CORE CONFORMING TO AASHTO M 30. MANUFACTURE WIRE ROPE OUT OF IMPROVED PLOW STEEL WITH A MINIMUM BREAKING STRENGTH OF 42,800 PSI.



DETAIL A



DETAIL B

(BEAM GUARD AND TERMINAL SECTION NOT SHOWN)

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

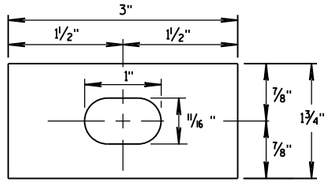
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

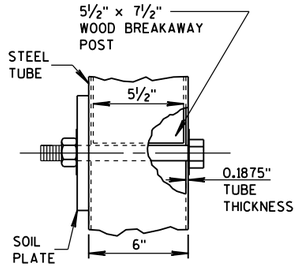
S.D.D. 14 B 27-1b

6

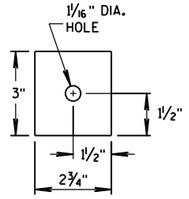
S.D.D. 14 B 27-1b



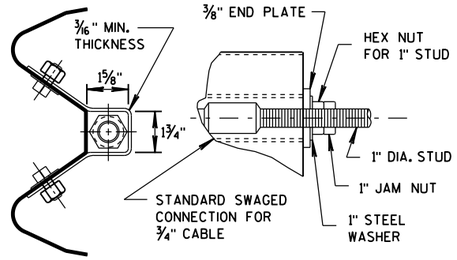
RECTANGULAR PLATE WASHER



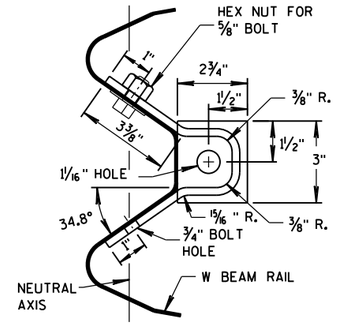
DETAIL D



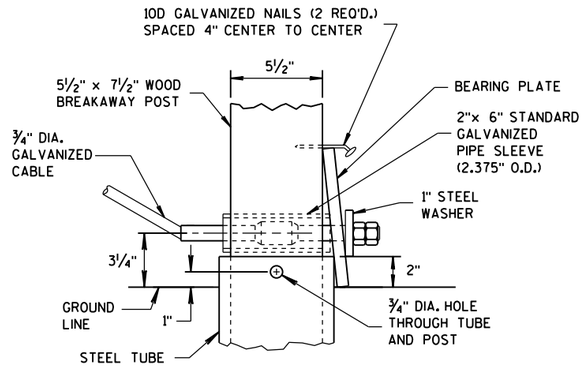
END PLATE



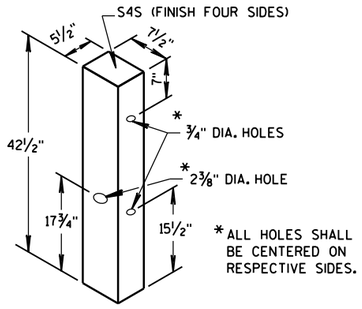
SECTION C-C
(END PLATE REMOVED)



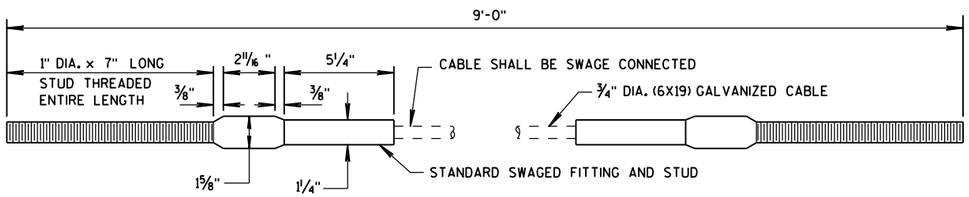
ANCHOR BRACKET



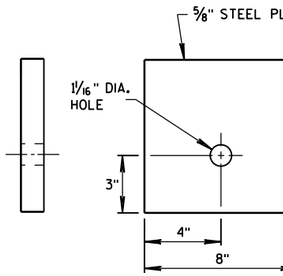
DETAIL C



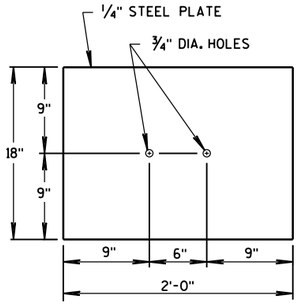
WOOD BREAKAWAY POST



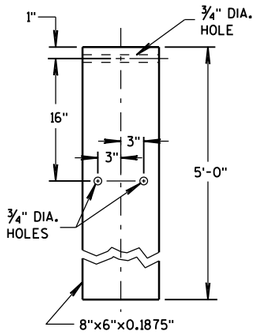
CABLE ASSEMBLY



BEARING PLATE



SOIL PLATE



STEEL TUBE

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
12/18/08 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 14 B 27-1c

6

S.D.D. 14 B 27-1c

GENERAL NOTES

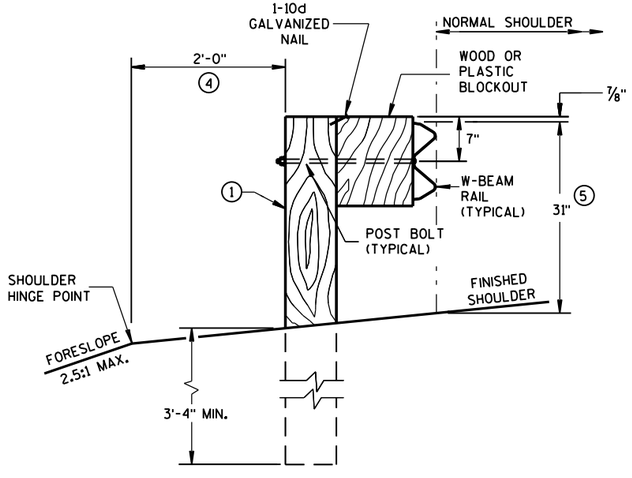
1. WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

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 2½INCHES 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.

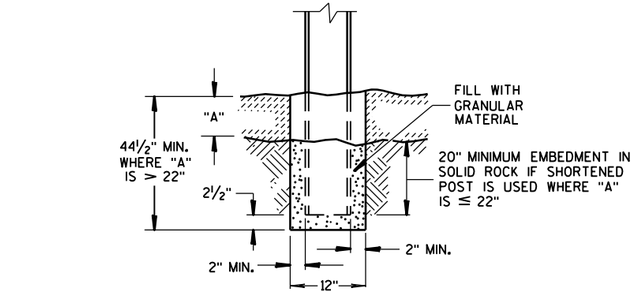
4. WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).

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".



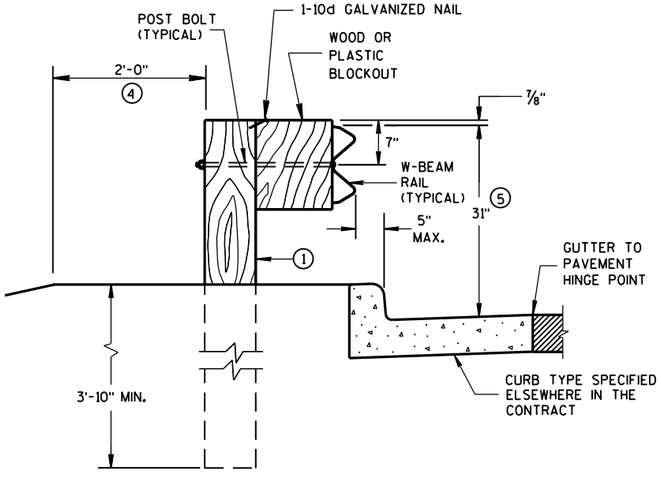
END VIEW

LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



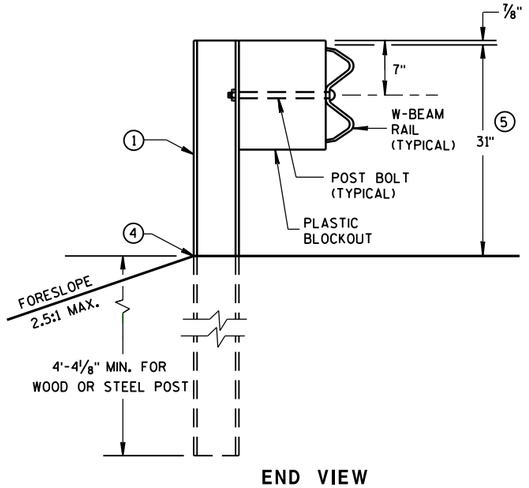
END VIEW

SETTING STEEL OR WOOD POST IN ROCK ③



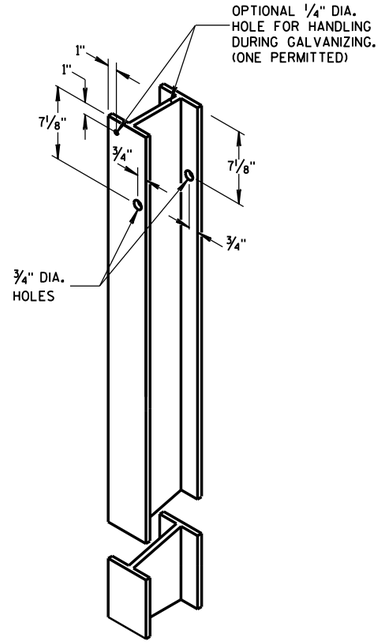
END VIEW

LOCATED ALONG A CURBED ROADWAY

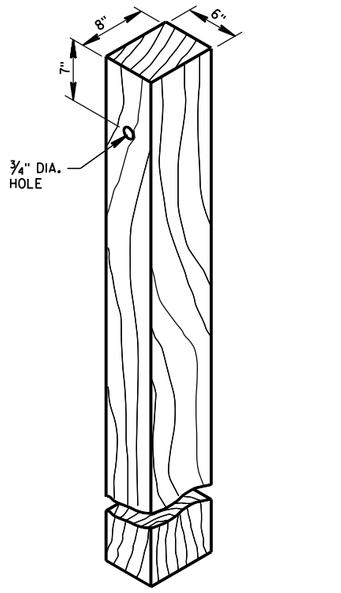


END VIEW

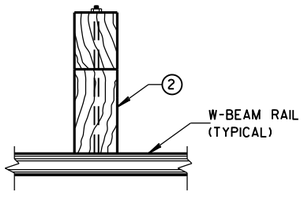
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



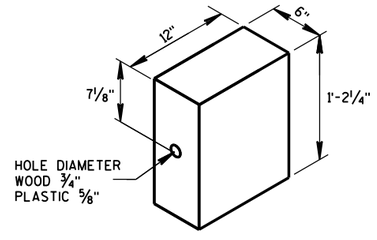
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) ①



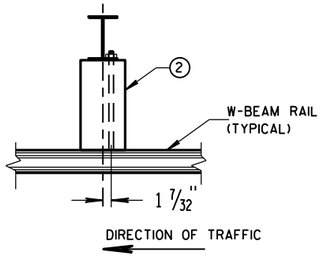
WOOD POST
(6" X 8") NOMINAL ①



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT ②

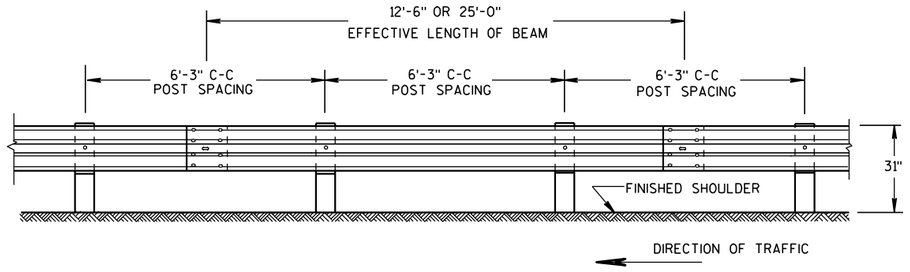


PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

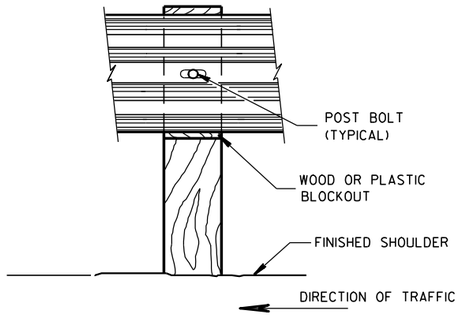
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6
S.D.D. 14 B 42-2a



FRONT VIEW

POST SPACING STANDARD INSTALLATION



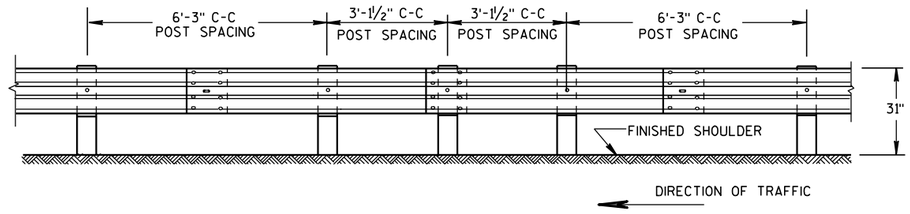
FRONT VIEW AT WOOD POST

GENERAL NOTES

1. PROVIDE TYPE "H" SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH TYPE "H" YELLOW REFLECTIVE SHEETING.
2. 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.
3. REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.
4. PROVIDE AN ANGLE OF BEND OF 90° ± 1° FOR TWO-SIDED REFLECTORS.
5. 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

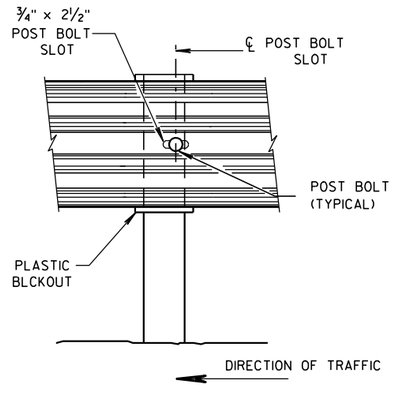
POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

GUARD RAIL SPLICE BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

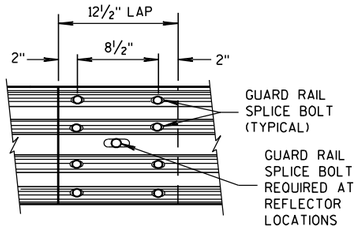


FRONT VIEW

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

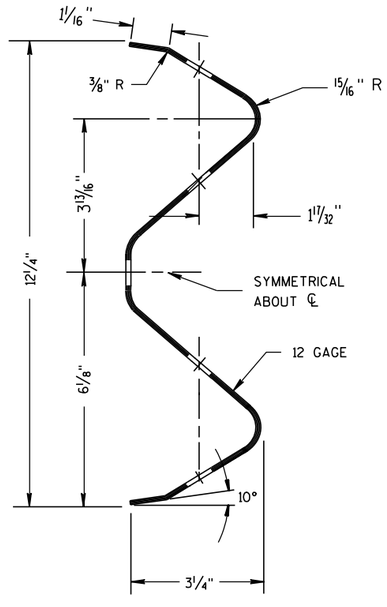


FRONT VIEW AT STEEL POST

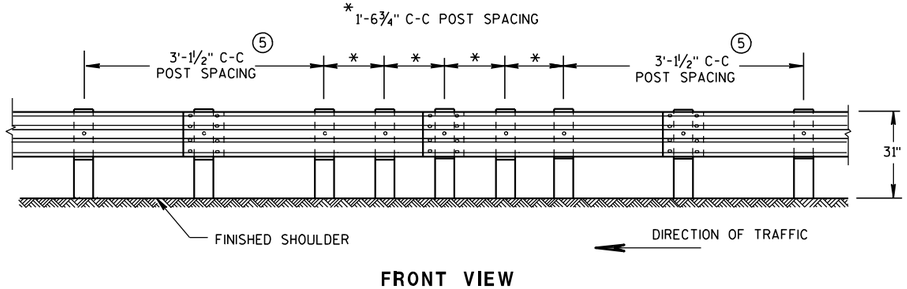


FRONT VIEW

MID-SPAN BEAM SPLICE

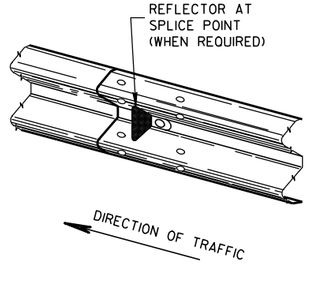


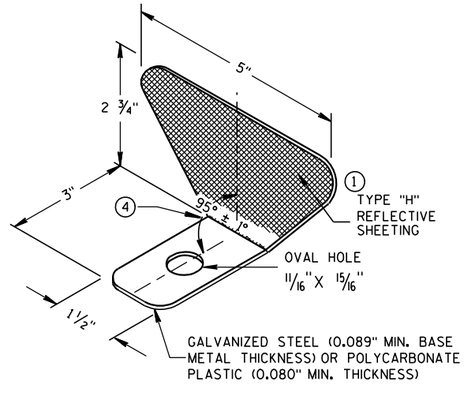
SECTION THRU W-BEAM RAIL



FRONT VIEW

QUARTER POST SPACING (QS)





ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION ①

REFLECTOR SPACING ②

	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 ③ 1	6
TWO WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	2 ④ 2	3

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

S.D.D. 14 B 42-2b

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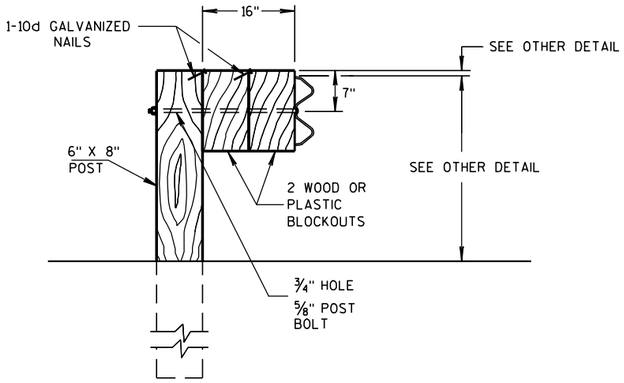
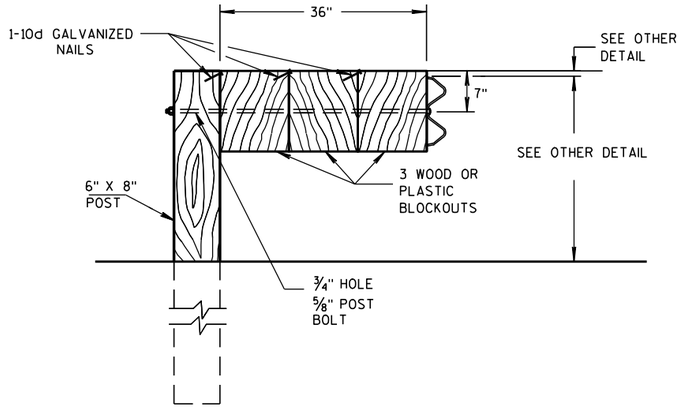


DETAIL FOR 16" BLOCKOUT DEPTH

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.

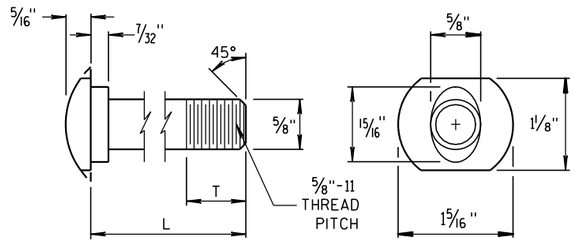


DETAIL FOR 36" BLOCKOUT DEPTH

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.

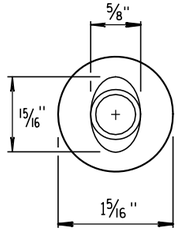
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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.

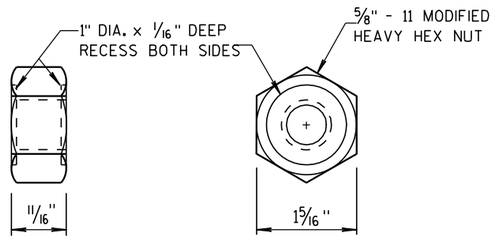


POST BOLT TABLE

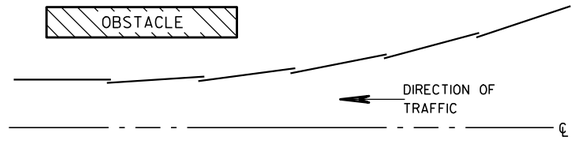
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

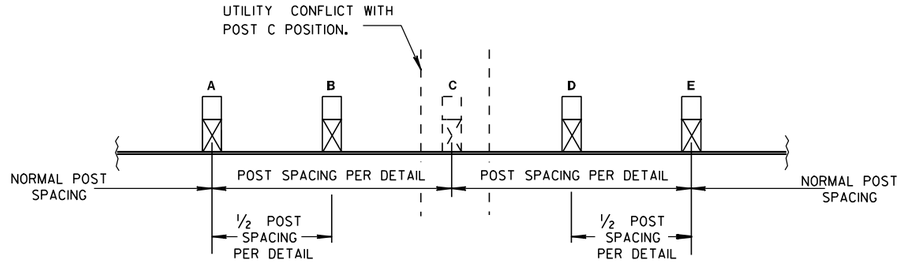


POST BOLT AND RECESS NUT

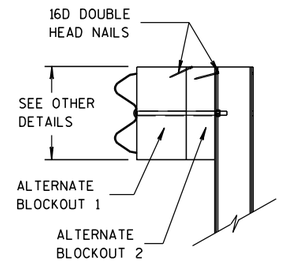


PLAN VIEW

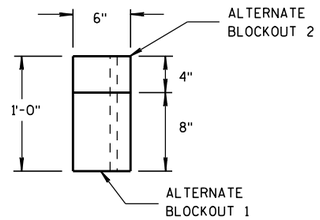
BEAM LAPPING DETAIL



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

11/15/2011
DATE

/S/ Jerry H. [illegible]
ROADWAY STANDARDS ENGINEER

FHWA

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S.D.D. 14 B 42-2c

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S.D.D. 14 B 42-2c

GENERAL NOTES

(A) THE SLOPE IN THE AREA BOUNDED BY THE EXTENDED VEHICLE RUNOUT PATH (EVRP), 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) SHEETING IS ATTACHED TO 0.040 ALUMINUM SHEET AND ATTACHED TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS. ONE SCREW PER CORNER OF E.A.T.

(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.

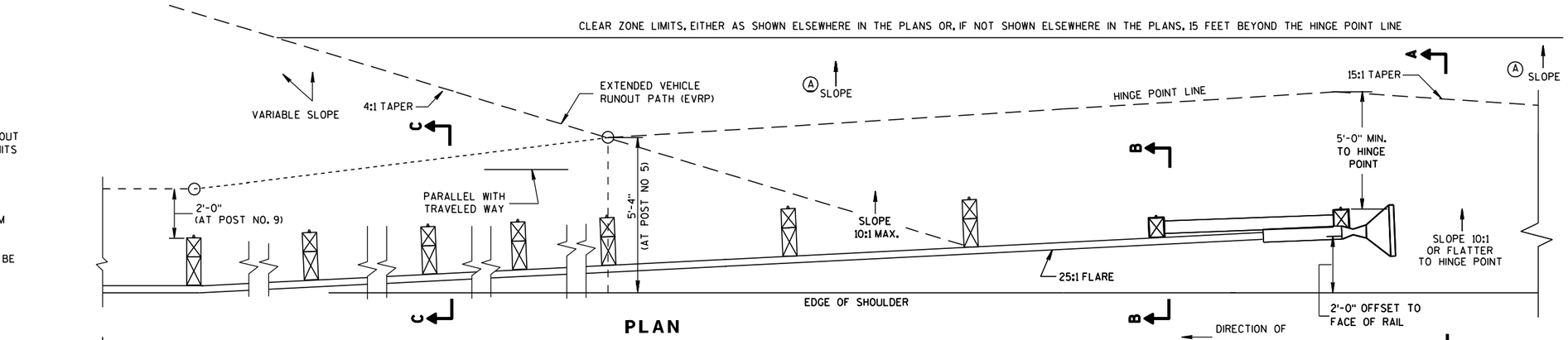
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

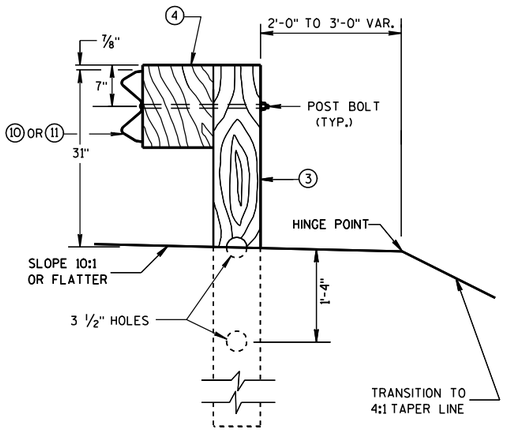
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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.

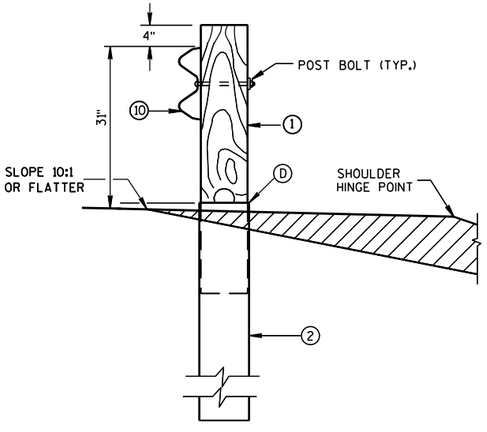
PATTERN AND COLORS ON REFLECTIVE SHEETING TYPE H ARE TO CONFORM TO OM3-L OR OM3-R OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE (± ¾")

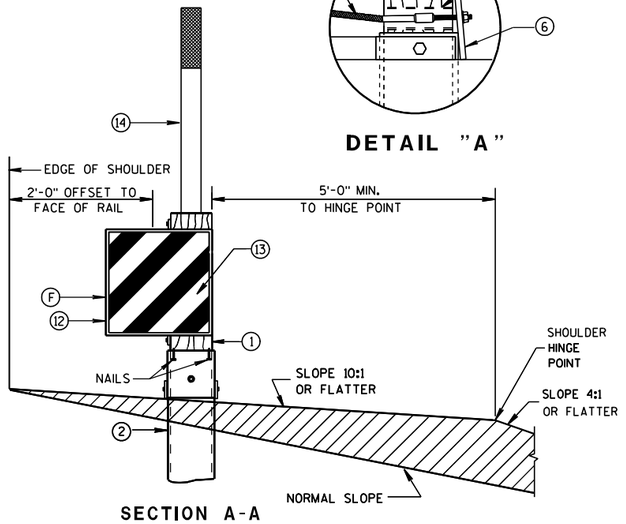




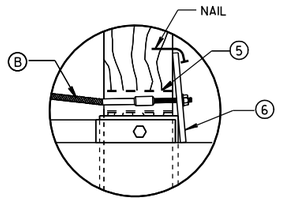
SECTION C-C
TYPICAL AT POST NOS. 3-9



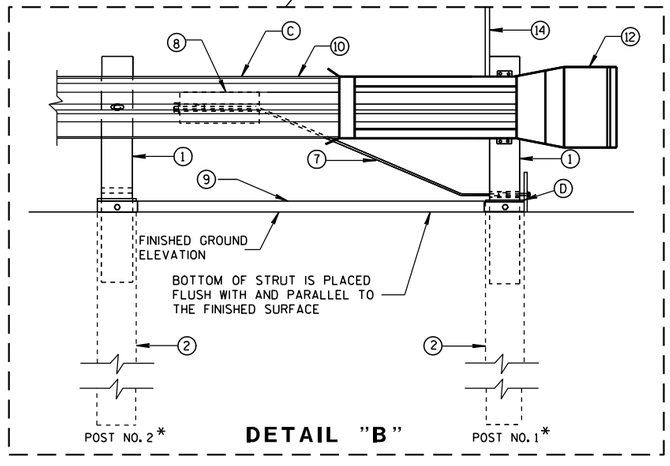
SECTION B-B
TYPICAL AT POST NO. 2*



SECTION A-A
TYPICAL AT POST NO. 1*



DETAIL "A"



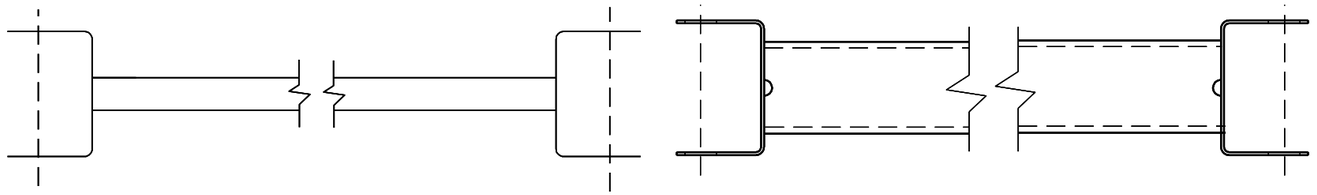
DETAIL "B"

MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

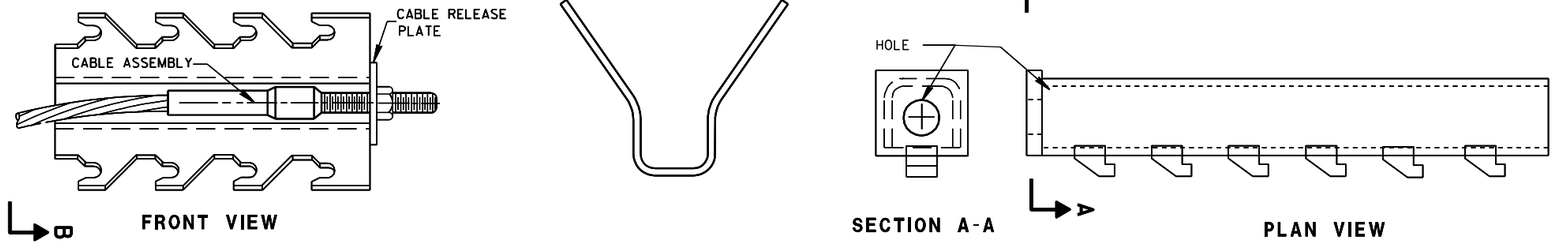
S.D.D. 14 B 44-1a



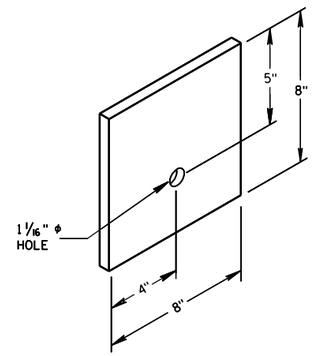
GENERIC GROUND STRUT (9) (H)

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 H (ONLY THE SHEETING IS SUPPLIED BY THE MANUFACTURER)
(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 TRANSPO...

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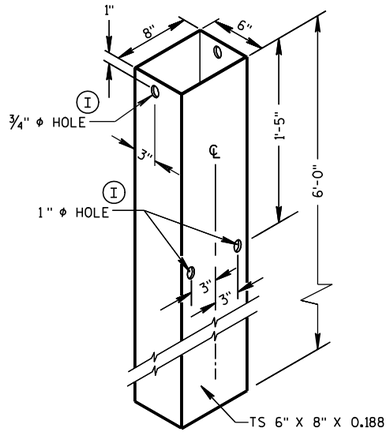
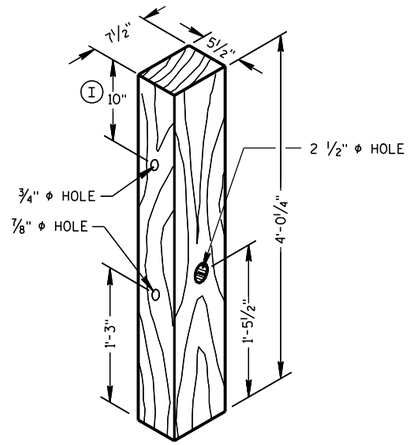
S.D.D. 14 B 44-1b

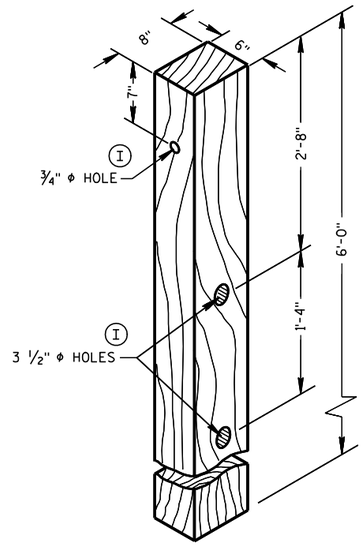


FOUNDATION TUBE (2)



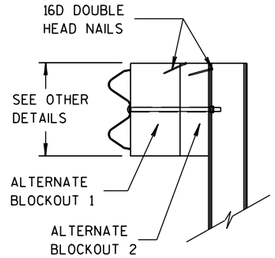
POSTS NUMBER 1 AND 2

WOOD BREAKAWAY POST (1)

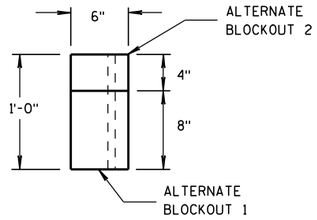


POSTS NUMBER 3-9

WOOD CRT POST (3)

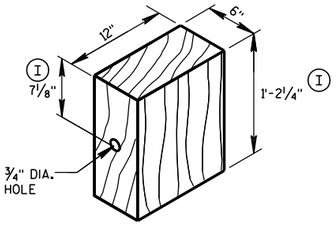


SIDE VIEW



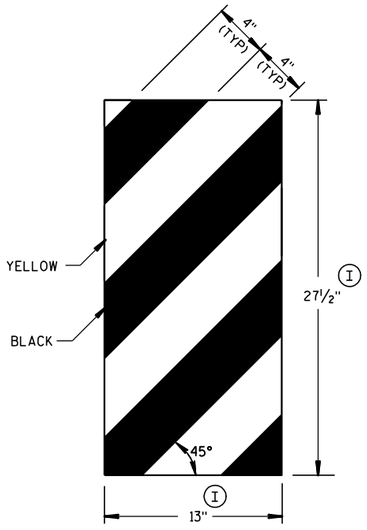
TOP VIEW

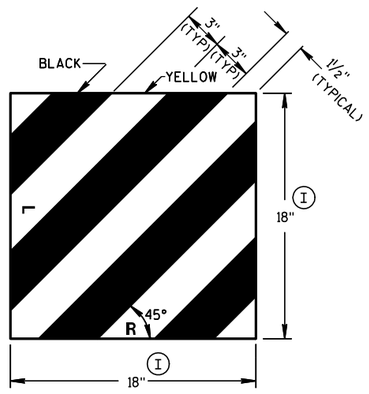
ALTERNATE WOOD BLOCKOUT DETAIL



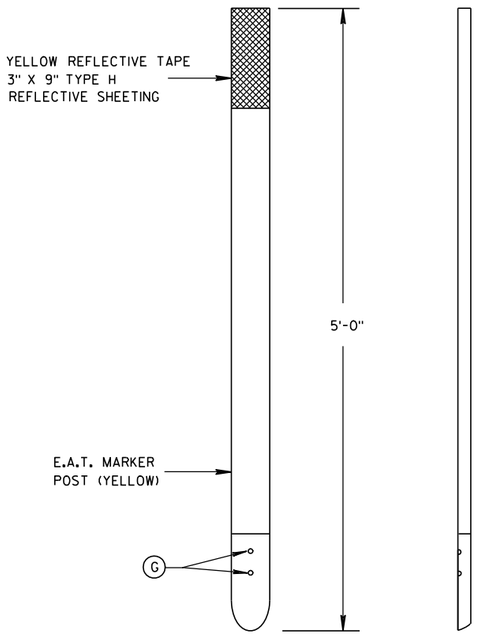
WOOD BLOCKOUT (4)

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





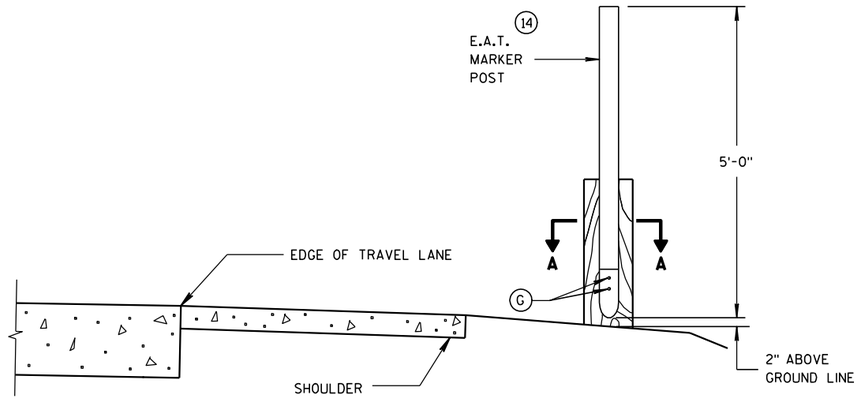
GENERIC REFLECTIVE SHEETING (13) (H)



FRONT VIEW

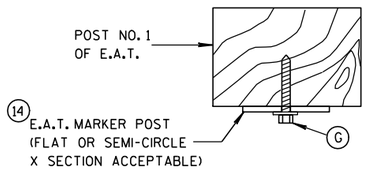
SIDE VIEW

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
5/23/2011 — DATE
/S/ Jerry H. [illegible] — ROADWAY STANDARDS ENGINEER
38
[illegible]ENT
FHWA

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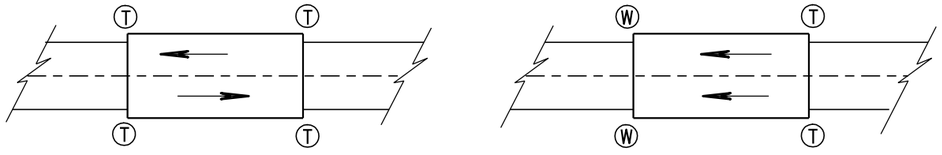
S.D.D. 14 B 44-1c



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

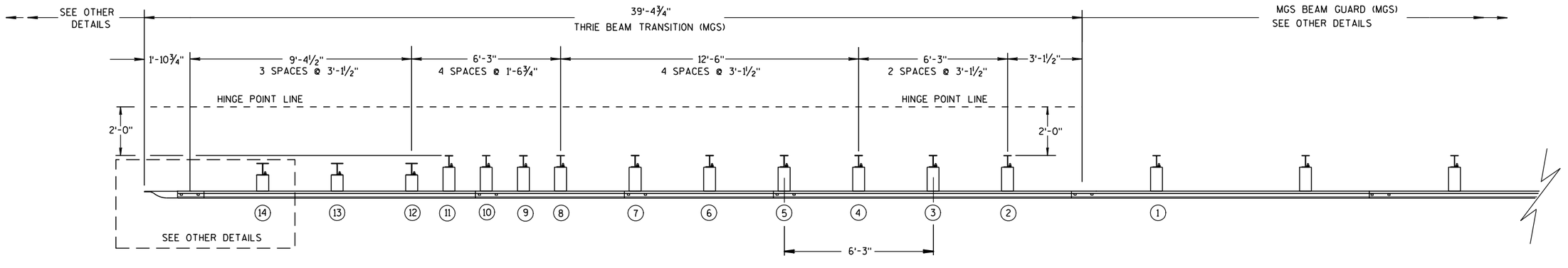
BOLT THE THRIE BEAM TO ALL POSTS AND BLOCKOUTS. DRILL OR PUNCH BOLT HOLES IN THE BEAM IF THE POST SPACING IS LESS THAN 6'-3.

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

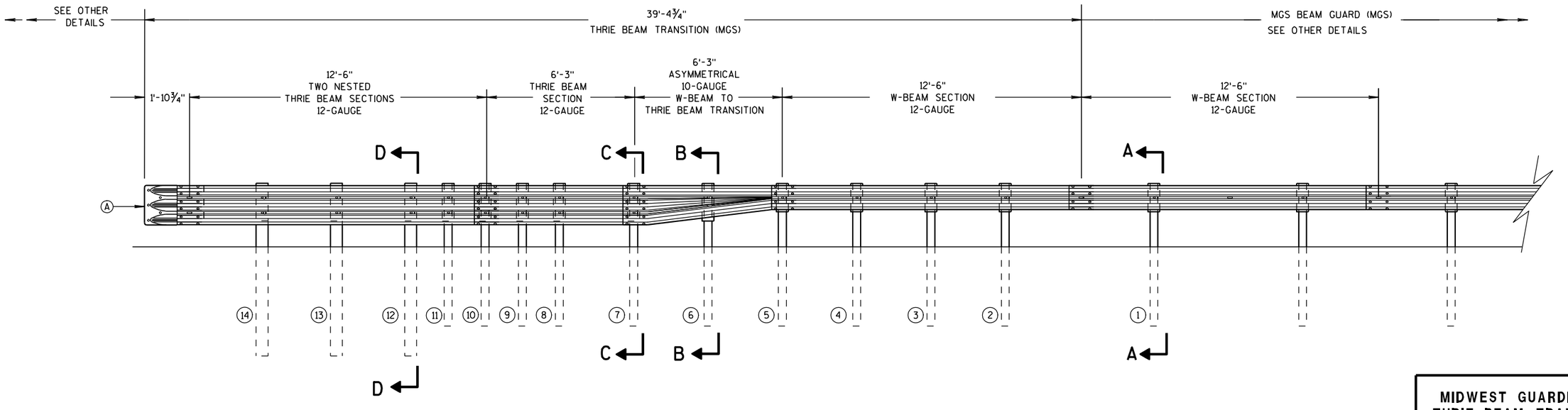
TRANSITION USES STEEL POSTS ONLY.

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

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

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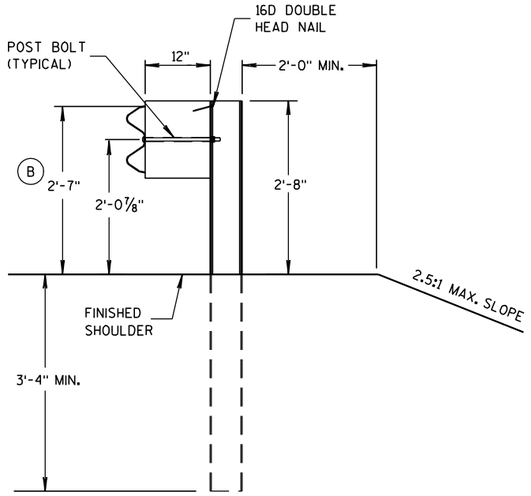
S.D.D. 14 B 45-3a

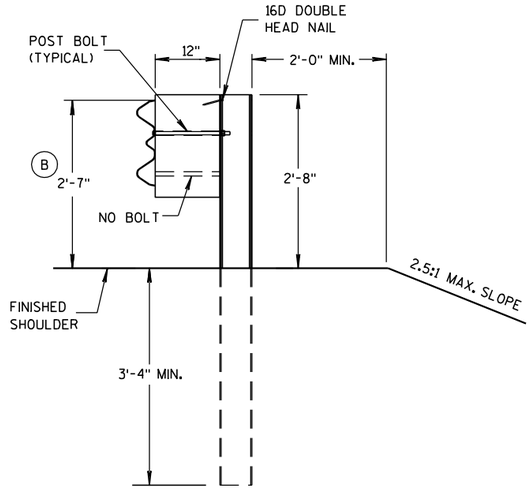
GENERAL NOTES

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



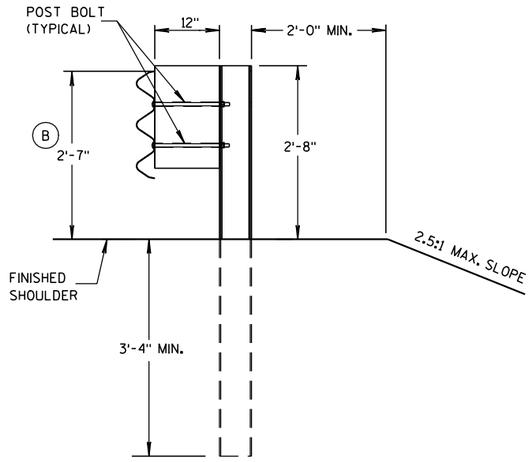
SECTION A-A

POSTS 1-5



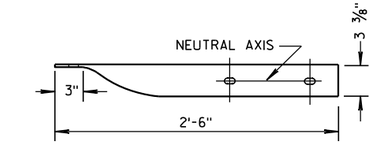
SECTION B-B

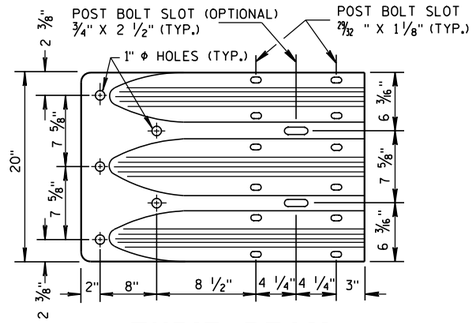
POST 6



SECTION C-C

POSTS 7-11





THRIE BEAM TERMINAL CONNECTOR

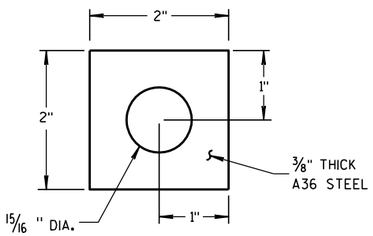
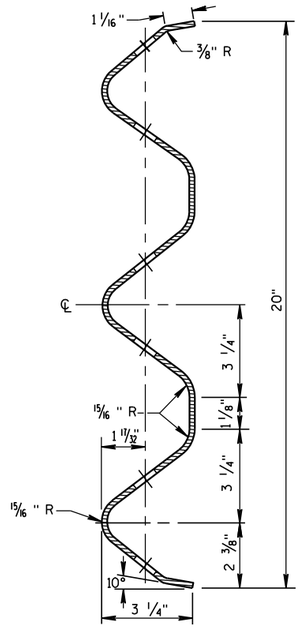
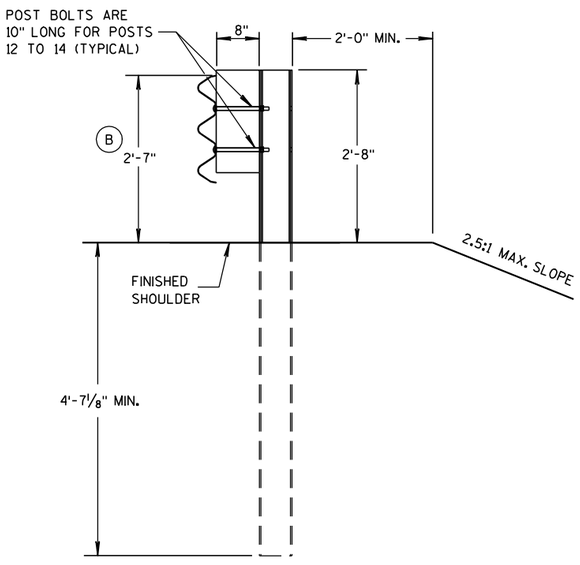


PLATE WASHER DETAIL

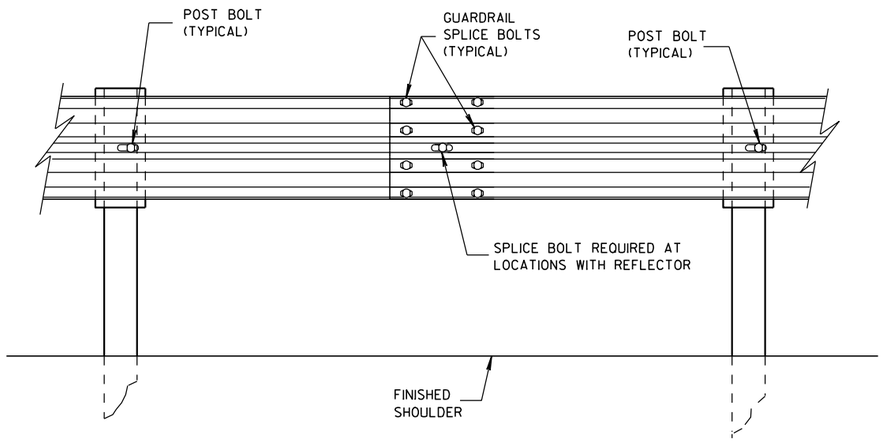


SECTION THRU THRIE BEAM RAIL ELEMENT



SECTION D-D

POSTS 12-14

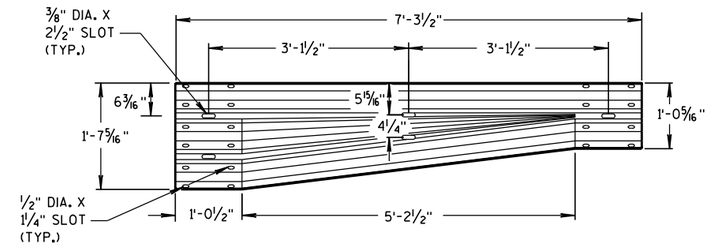


SPLICE DETAIL

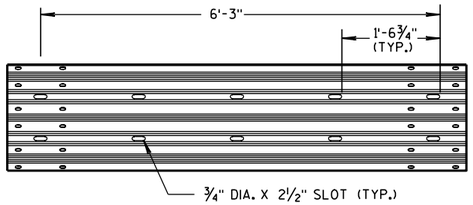
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

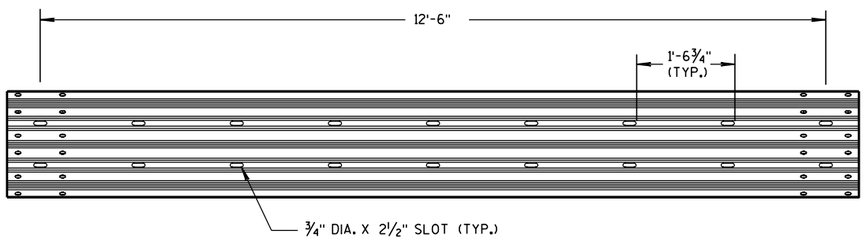
6
S.D.D. 14 B 45-3b



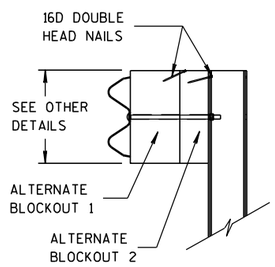
W-BEAM TO THRIE BEAM TRANSITION SECTION



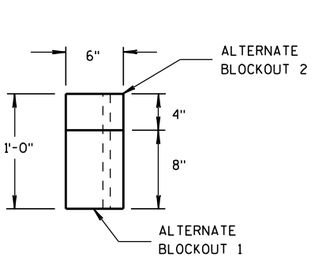
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

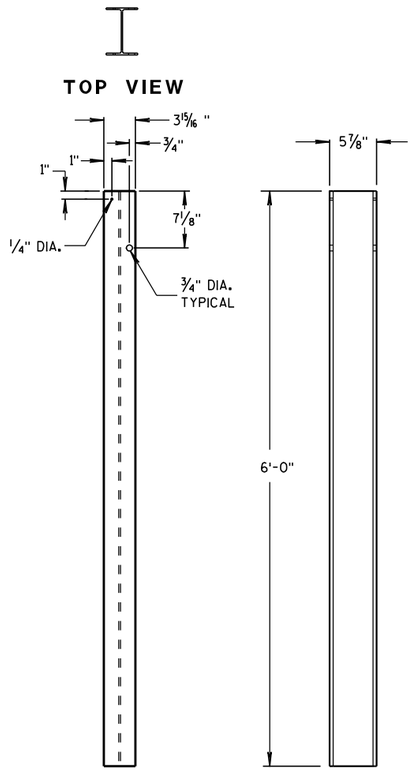


SIDE VIEW



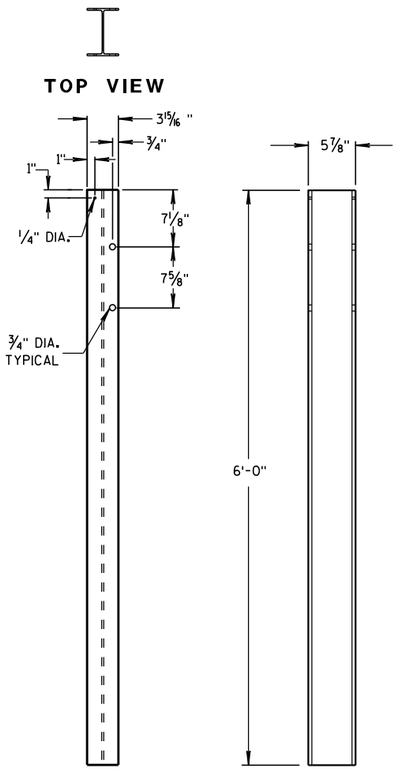
TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL



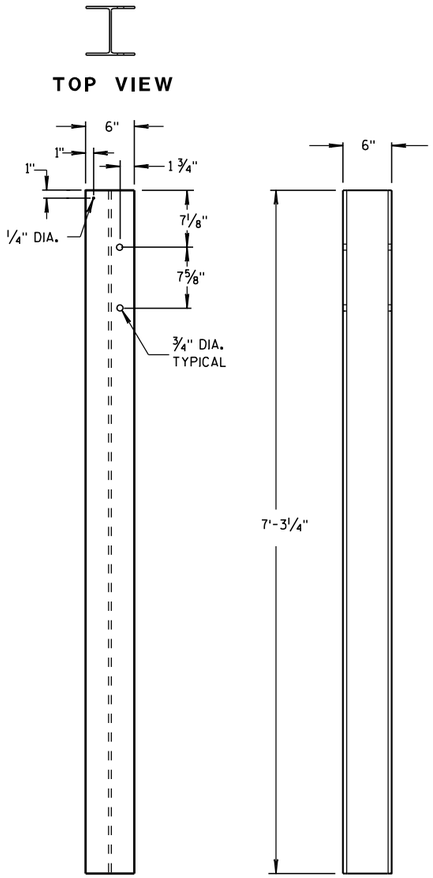
FRONT VIEW SIDE VIEW

STEEL POSTS 1-5



FRONT VIEW SIDE VIEW

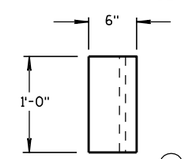
STEEL POSTS 6-11



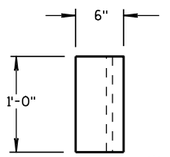
FRONT VIEW SIDE VIEW

STEEL POSTS 12-14

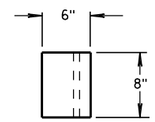
(1) WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.



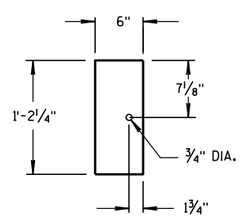
TOP VIEW (1)



TOP VIEW (1)

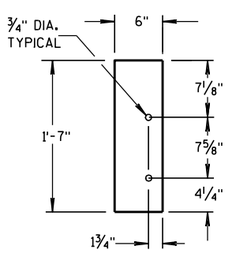


TOP VIEW



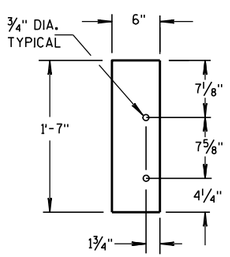
FRONT VIEW

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

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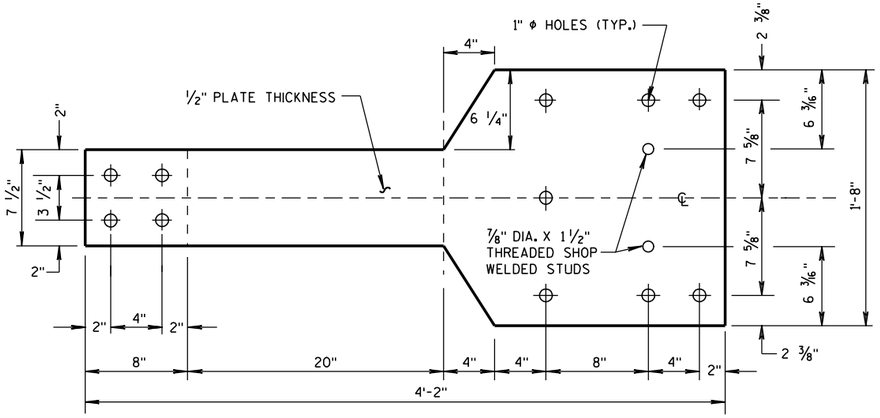
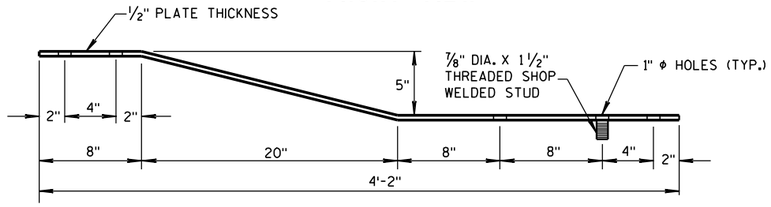
S.D.D. 14 B 45-3c

GENERAL NOTES

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

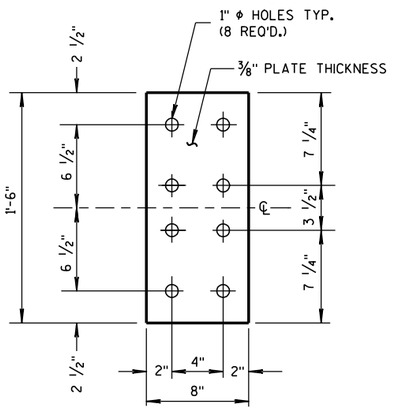


FRONT VIEW



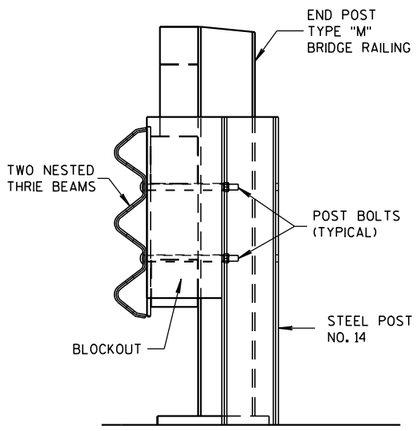
PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

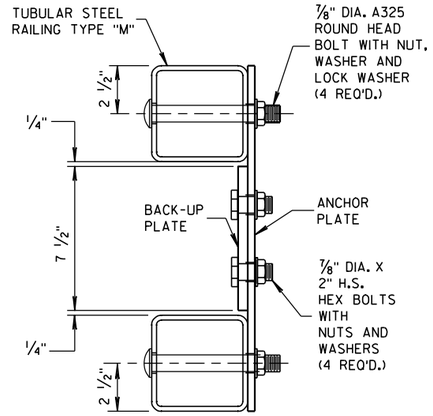


FRONT VIEW

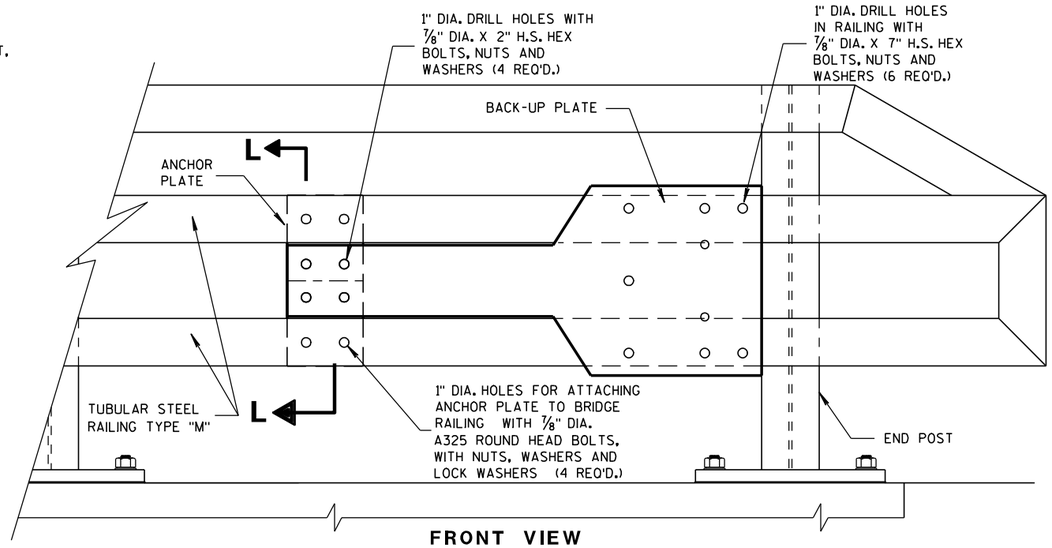
ANCHOR PLATE DETAIL, TYPE "M"



SECTION M-M

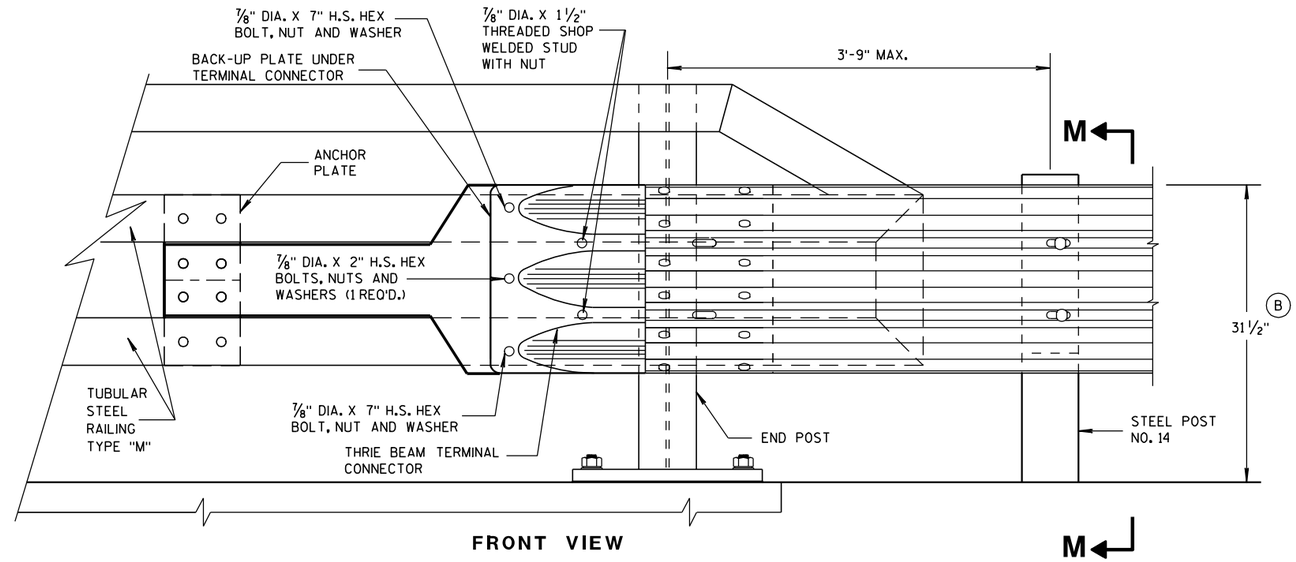


SECTION L-L

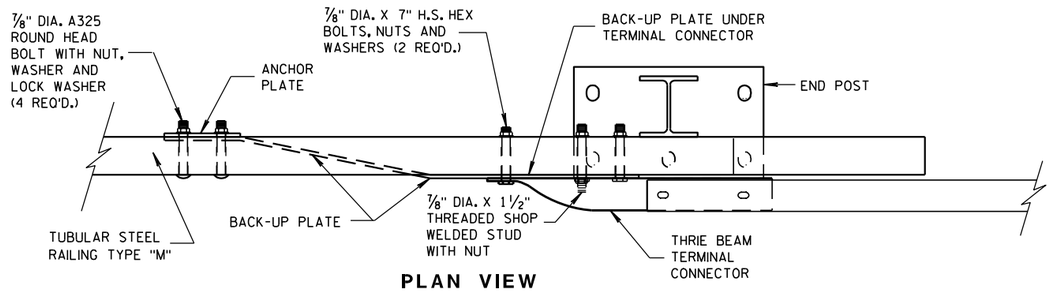


FRONT VIEW

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

42

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FHWA

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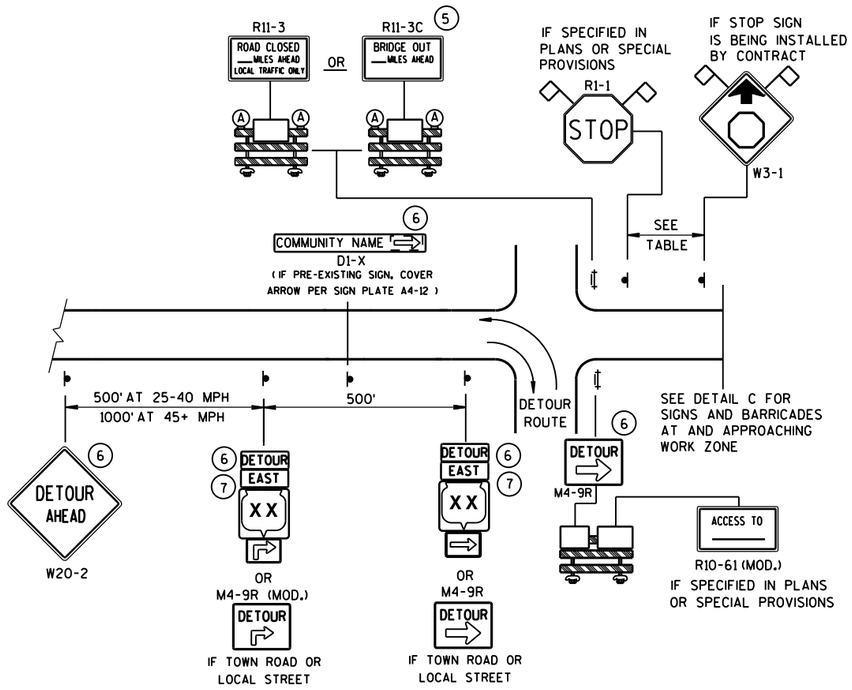
S.D. 14 B 45-3h

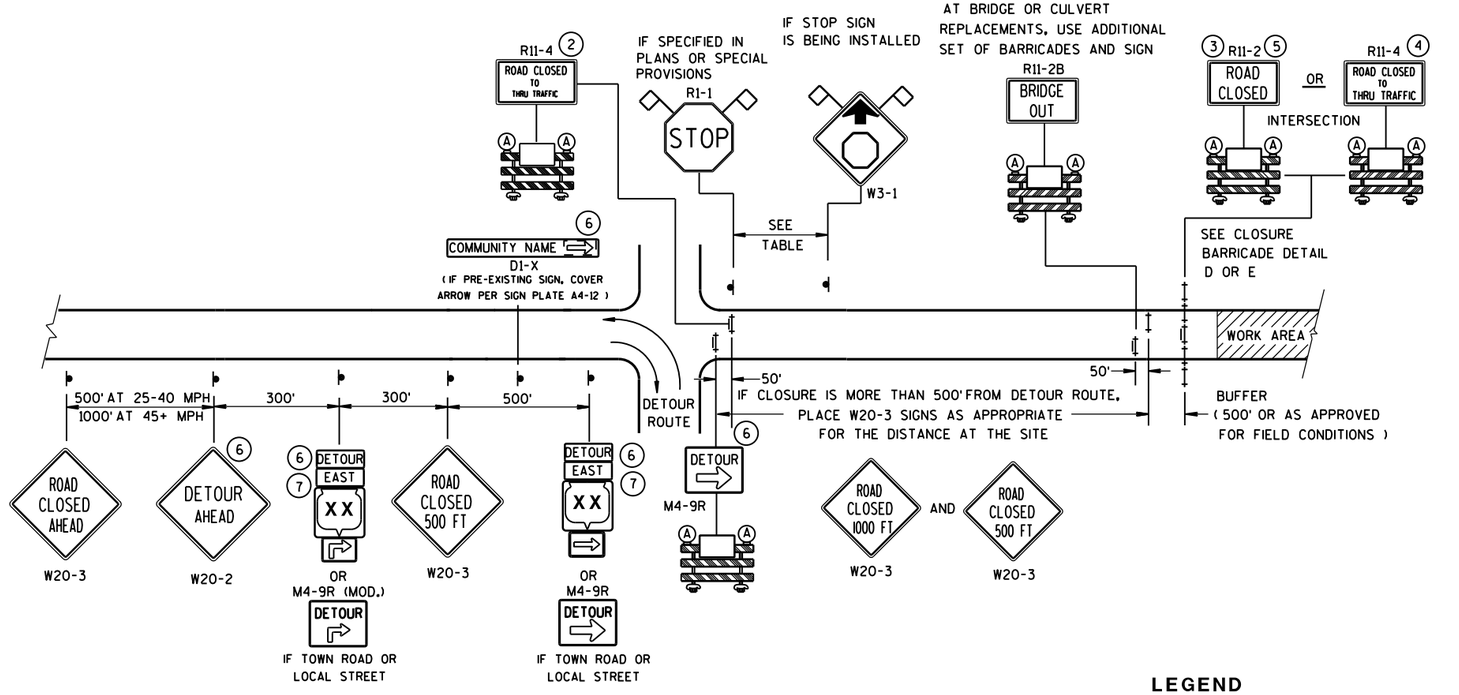
6

S.D. 14 B 45-3h



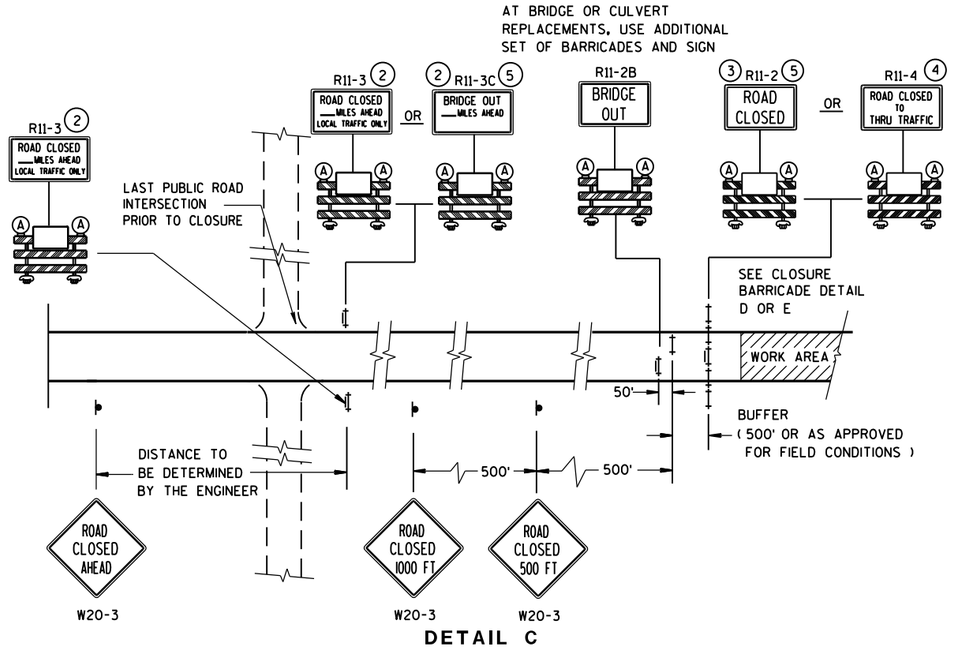
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

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

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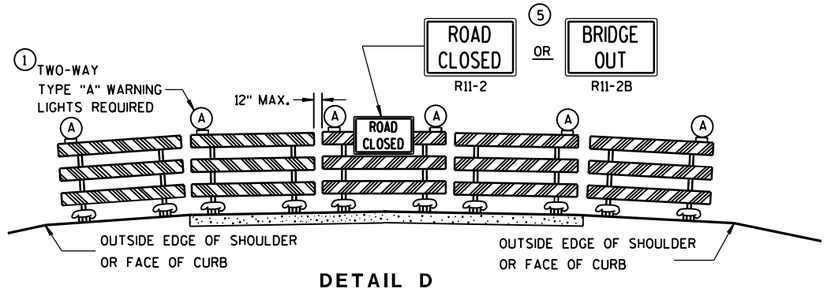
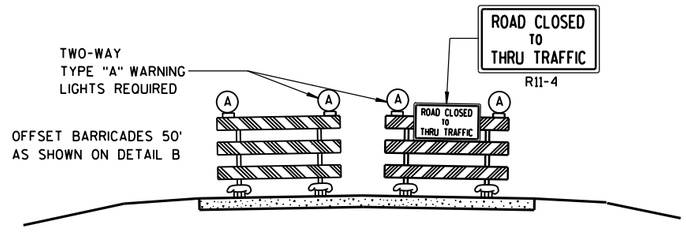
S.D.D. 15 C 2-5a



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.

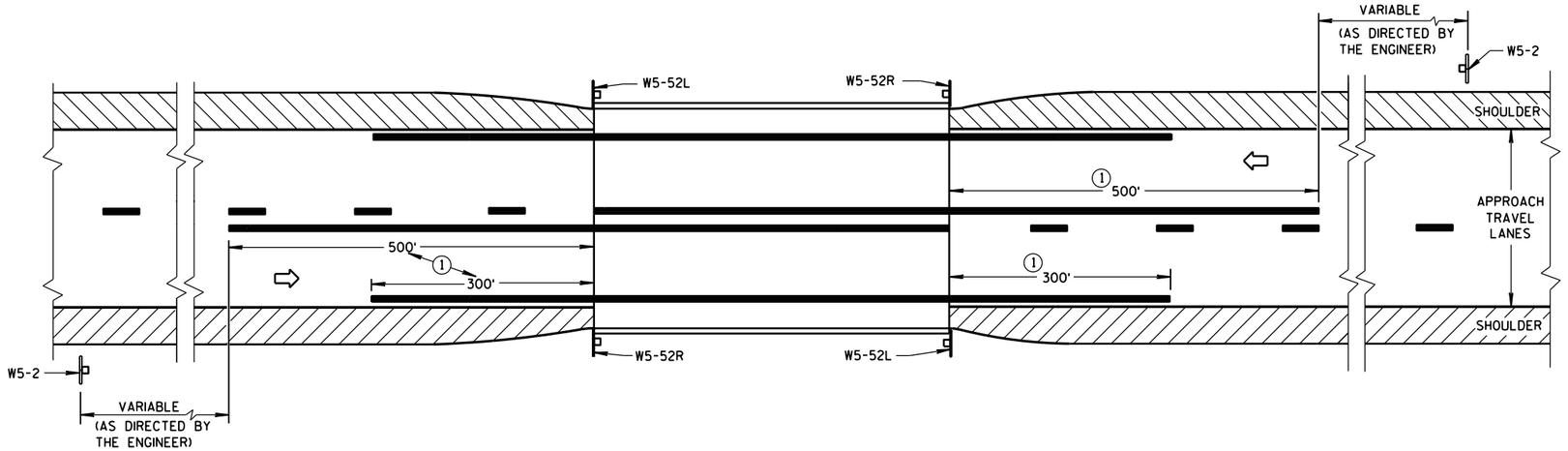
BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

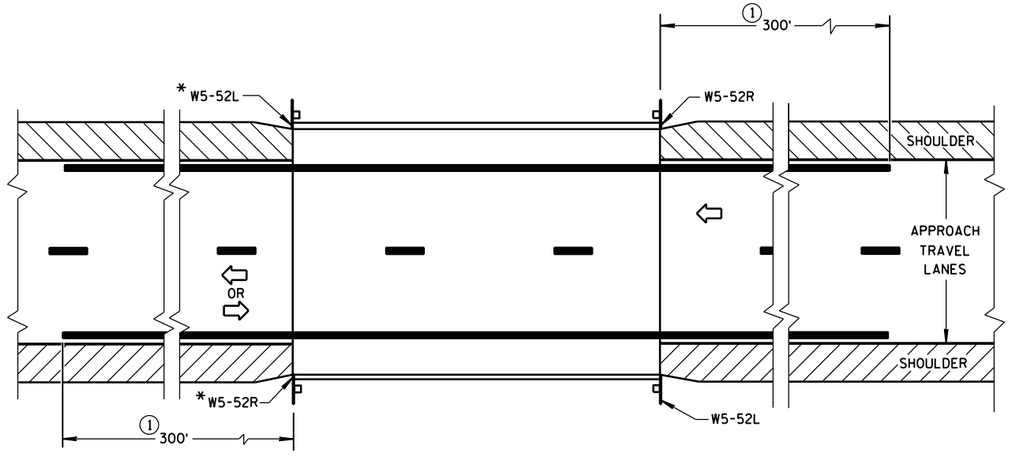
S.D.D. 15 C 2-5b



SITUATION 1

WARRANTING CRITERIA:

BRIDGE WIDTH IS AT LEAST 18 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.

GENERAL NOTES

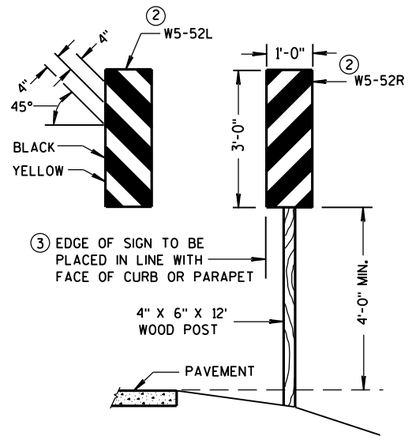
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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.

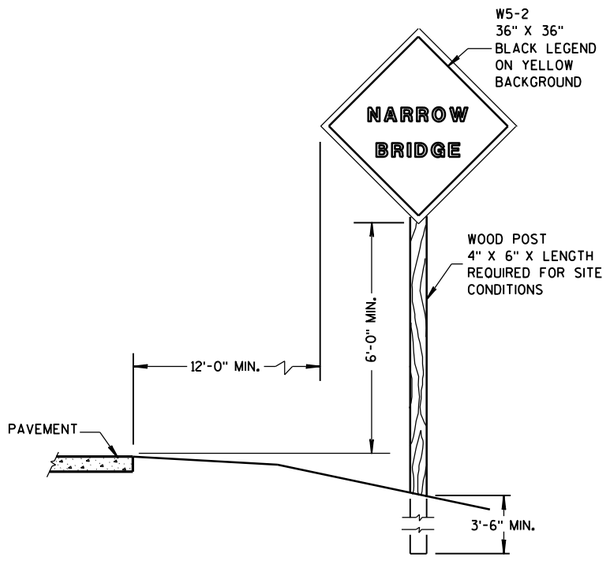
(1) MINIMUM DISTANCE UNLESS OTHERWISE SHOWN ON THE PLAN.

(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.



OBJECT MARKER PLACEMENT



SIGN PLACEMENT

SIGNING & MARKING
FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

3/4/2013 — DATE

/S/ Travis Feltes — STATE TRAFFIC ENGINEER

FHWA

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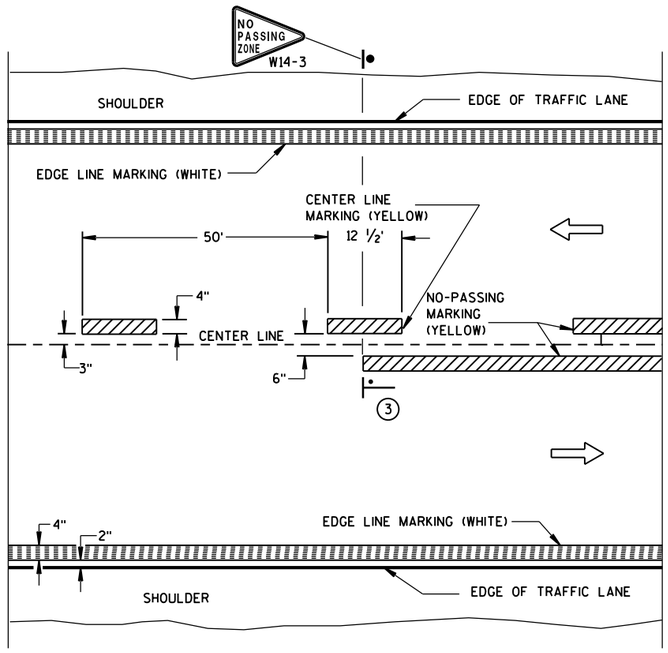
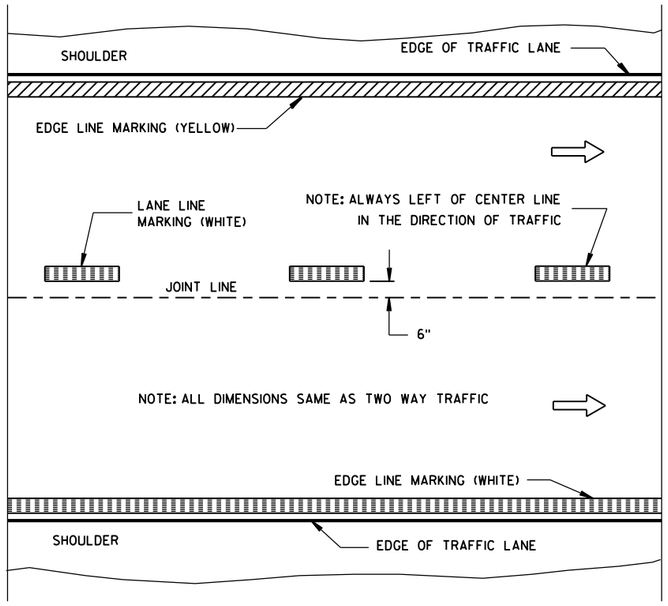
S.D.D. 15 C 6-6

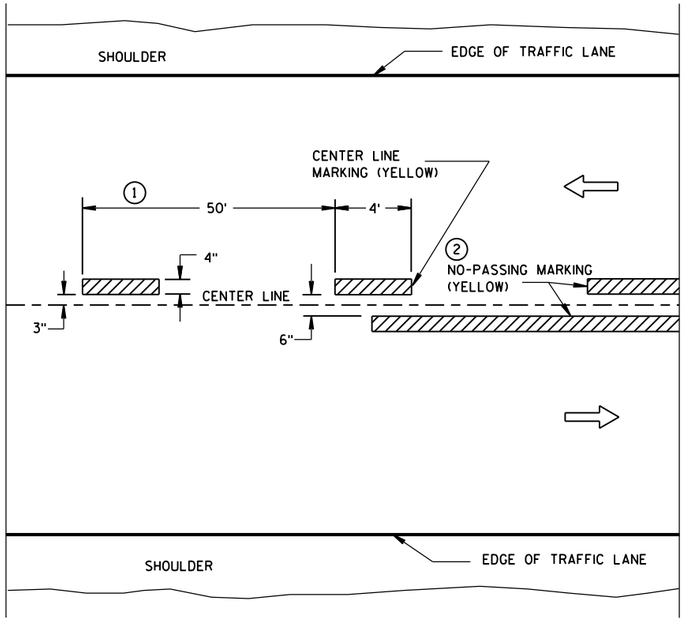


TWO WAY TRAFFIC

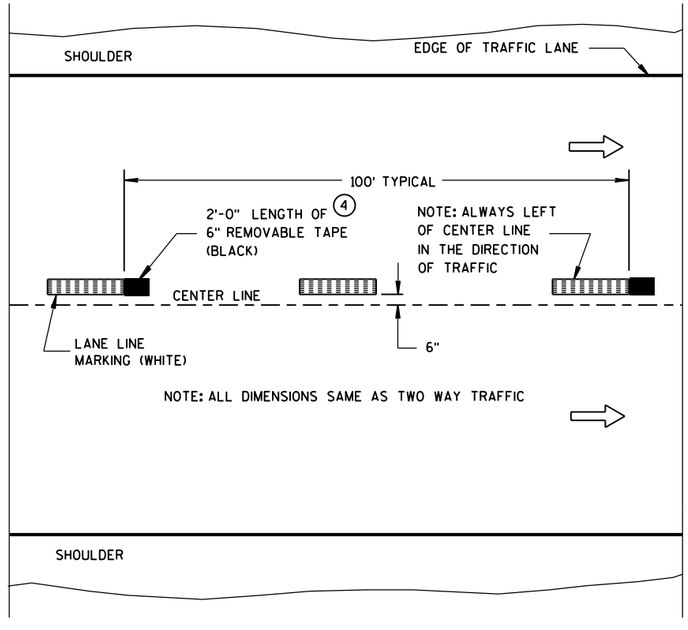


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY (INTERMEDIATE) PAVEMENT MARKING

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

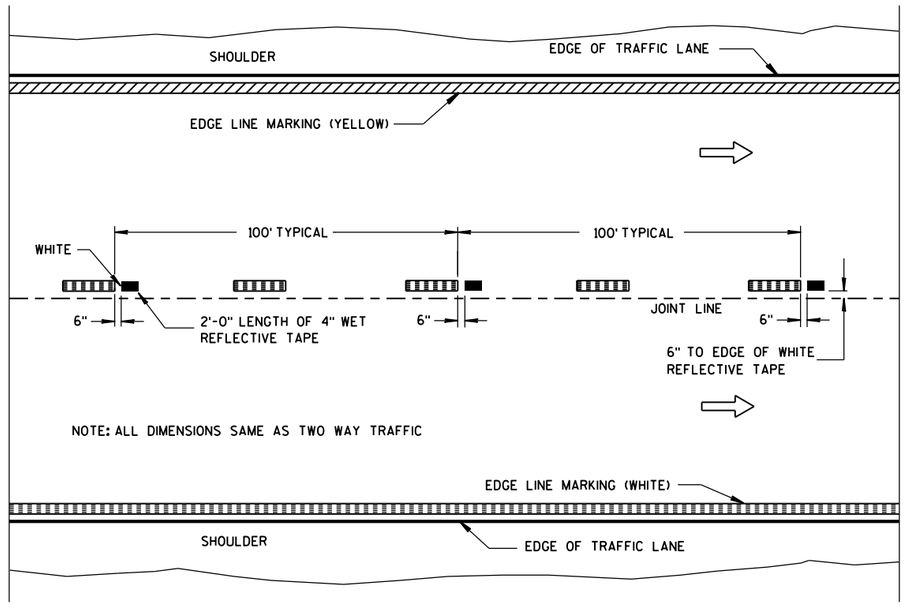
GENERAL NOTES

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

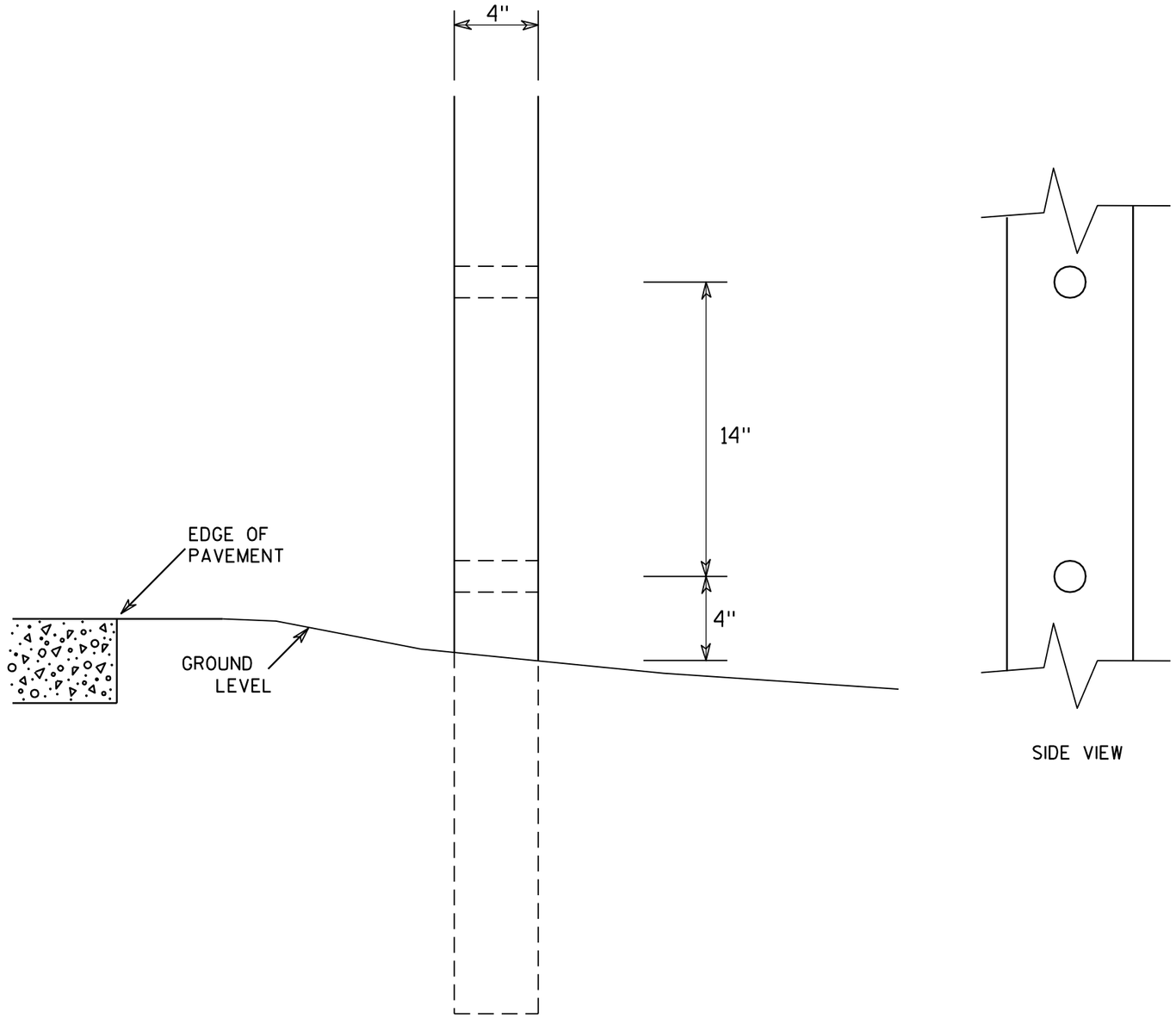
APPROVED
5-13-2013 DATE
/S/ Travis Feltes STATE TRAFFIC E
FHWA

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.

4 X 6 WOOD POST MODIFICATIONS

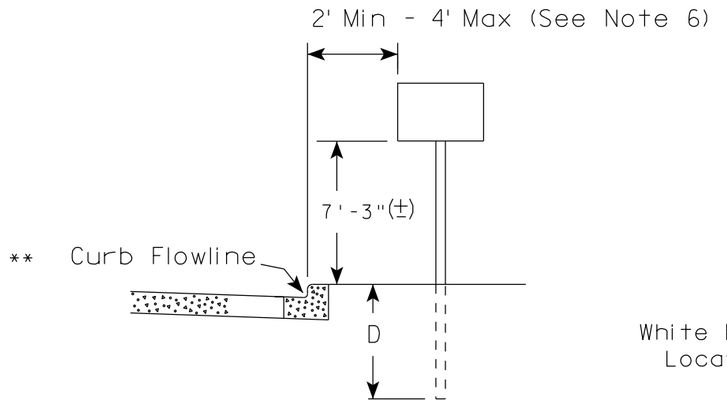
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Chester J Spang for State Traffic Engineer

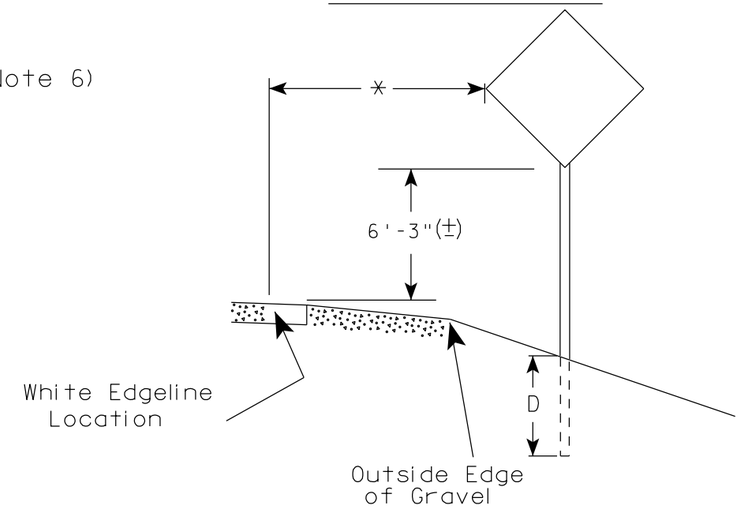
DATE 3/27/97 PLATE NO. A4-11.2

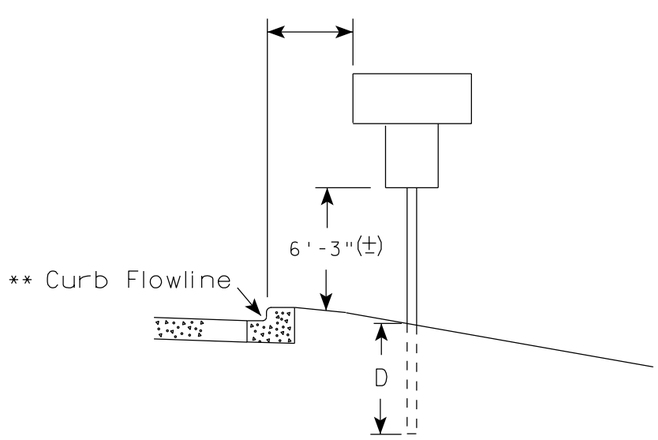
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 47	E

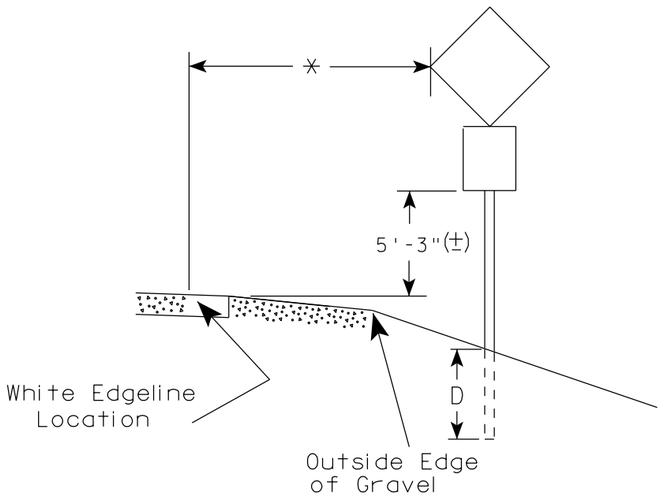
URBAN AREA



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

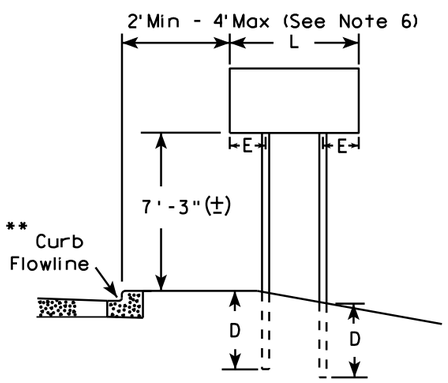
APPROVED Matthew R Rauch
for State Traffic Engineer

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

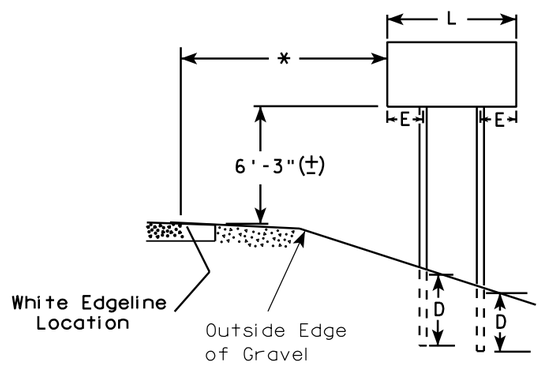
PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E

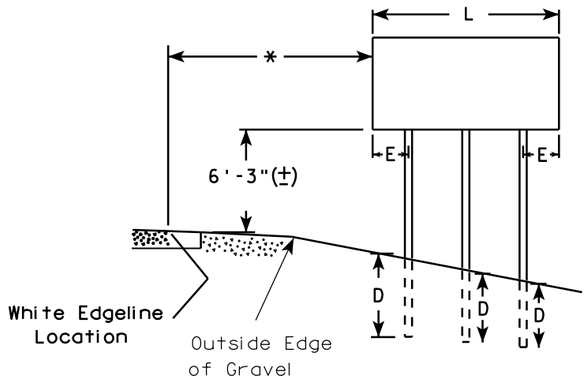
7

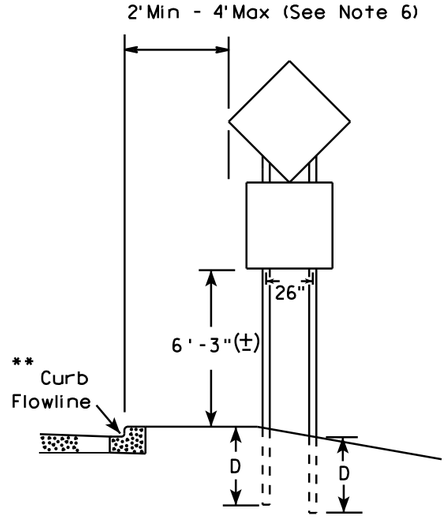
URBAN AREA



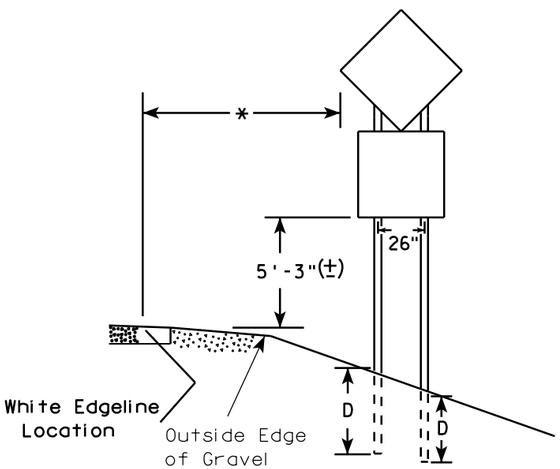
RURAL AREA (See Note 3)







48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

GENERAL NOTES

1. For 3 or 4 post installations, individual post spacing shall be greater than 3'-6".
2. See tables below for required number of posts.
3. For expressways and freeways, mounting height is 7'-3" (±) or 6'-3" (±) depending upon existence of sub-sign.
4. The (±) tolerance for mounting height is 3 inches.
5. Minimum mounting height for J assemblies (A4-5) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. Folding stop signs (R1-1F) shall be mounted at a height of 5'-3" (±) or as directed by the engineer.
8. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Clearance Markers (W5-52), Mile Markers (D10 series) & End of Road Markers (W5-56 & W5-56A) shall be mounted at a height of 4"-3" (±).

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

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

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

SIGN SHAPE OTHER THAN DIAMOND (TWO POSTS REQUIRED)	
L	E
Greater than 48" Less than 60"	12"
60" to 120"	L/5

***

SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED)	
L	E
Greater than 120" less than 168"	12"

SIGN SHAPE OTHER THAN DIAMOND (FOUR POSTS REQUIRED)	
L	E
168" and greater	12"

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 9/30/13 PLATE NO. A4-4 12

49

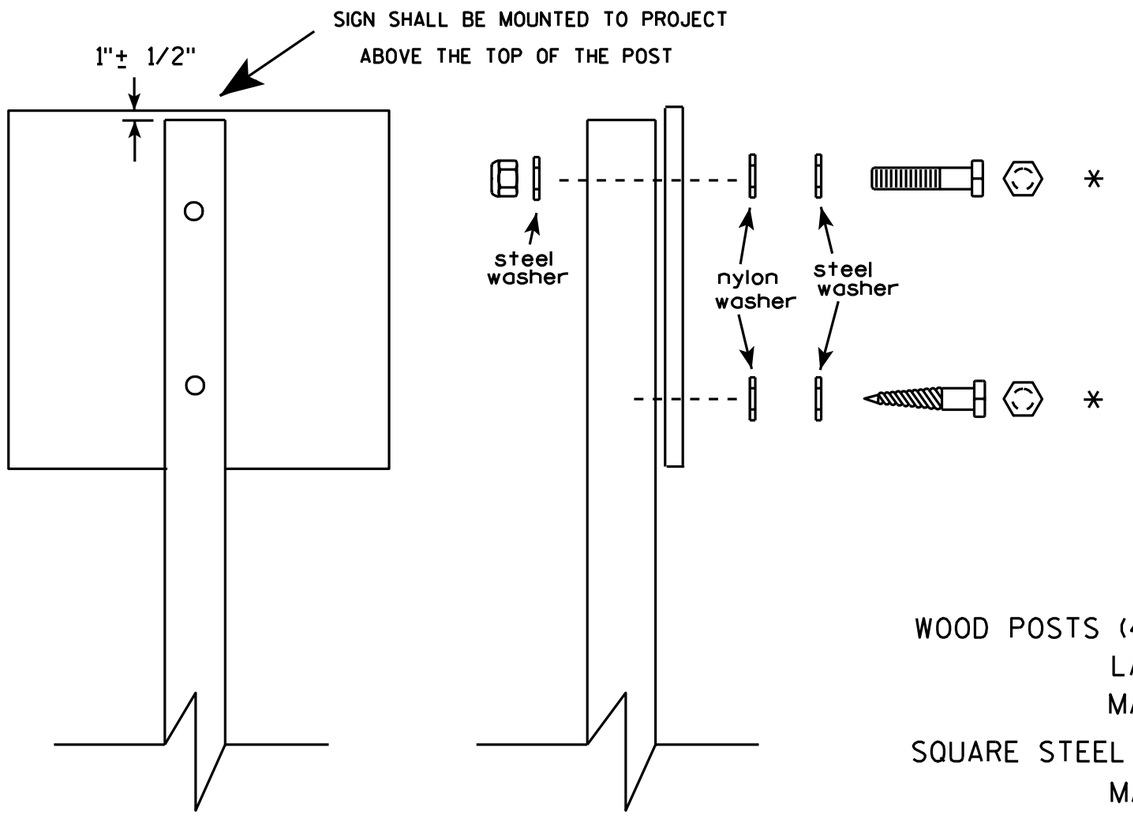
PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E

FILE NAME : C:\CAEfiles\Projects\tr_stdplate\A44.DGN PLOT DATE : 30-SEP-2013 13:27 PLOT BY : mscj9h PLOT NAME : PLOT SCALE : 107.021305:1.000000

WISDOT/CADDS SHEET 42

7

7



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

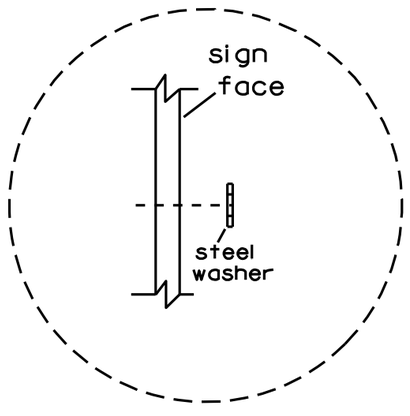
b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

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

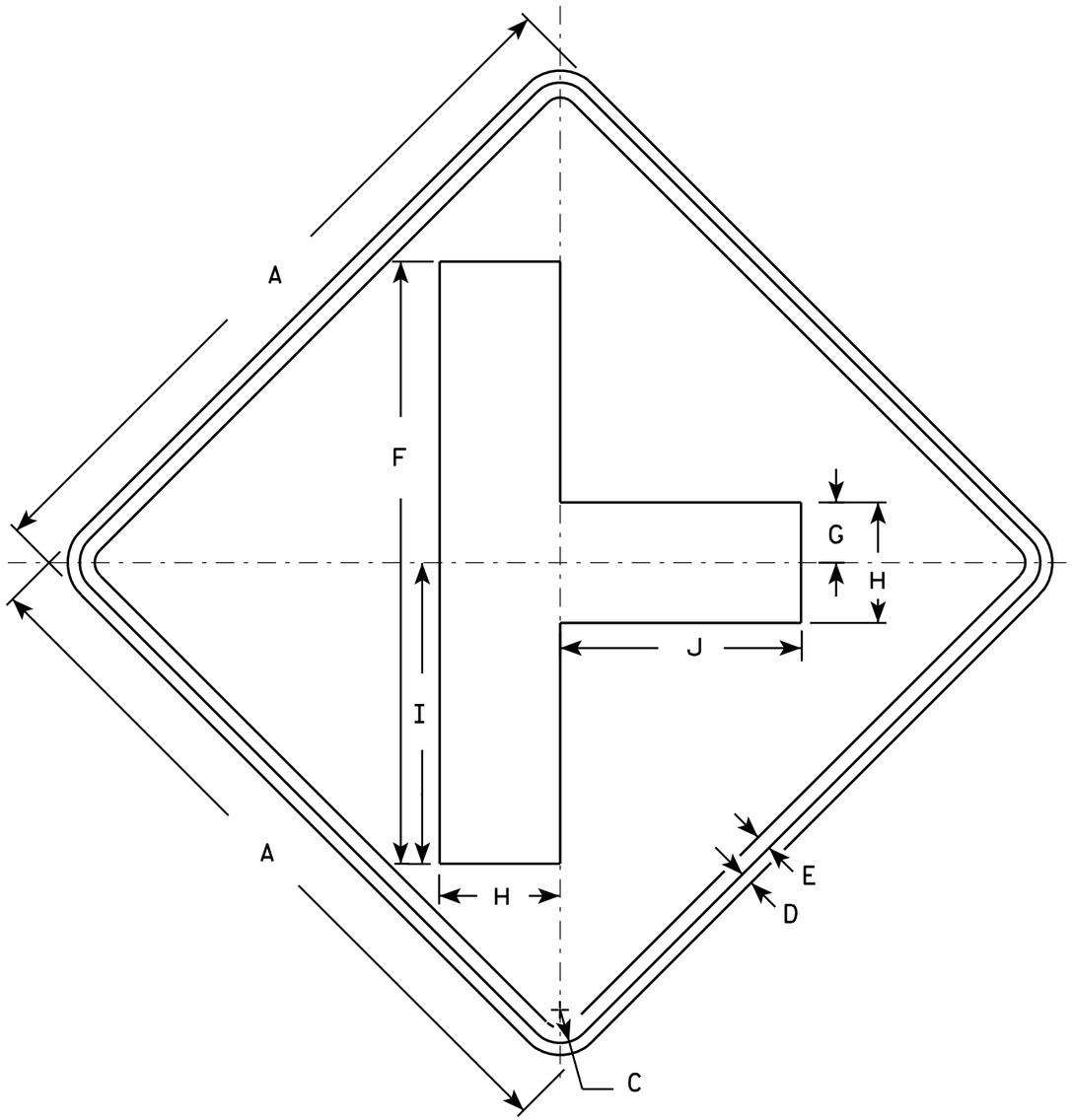
DATE 3/23/10 PLATE NO. A4-8.7

7

7

PROJECT NO:

SHEET NO: 50 E



W2-2

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - 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.

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	24		1 1/8	3/8	1/2	20	2	4	10	8																	4.0
2S	30		1 3/8	1/2	5/8	25	2 1/2	5	12 1/2	10																	6.25
2M	30		1 3/8	1/2	5/8	25	2 1/2	5	12 1/2	10																	6.25
3	36		1 5/8	5/8	3/4	30	3	6	15	12																	9.0
4	48		2 1/4	3/4	1	40	4	8	20	16																	16.0
5																											

STANDARD SIGN
W2-2

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
For State Traffic Engineer

DATE 5/29/12 PLATE NO. W2-2.6

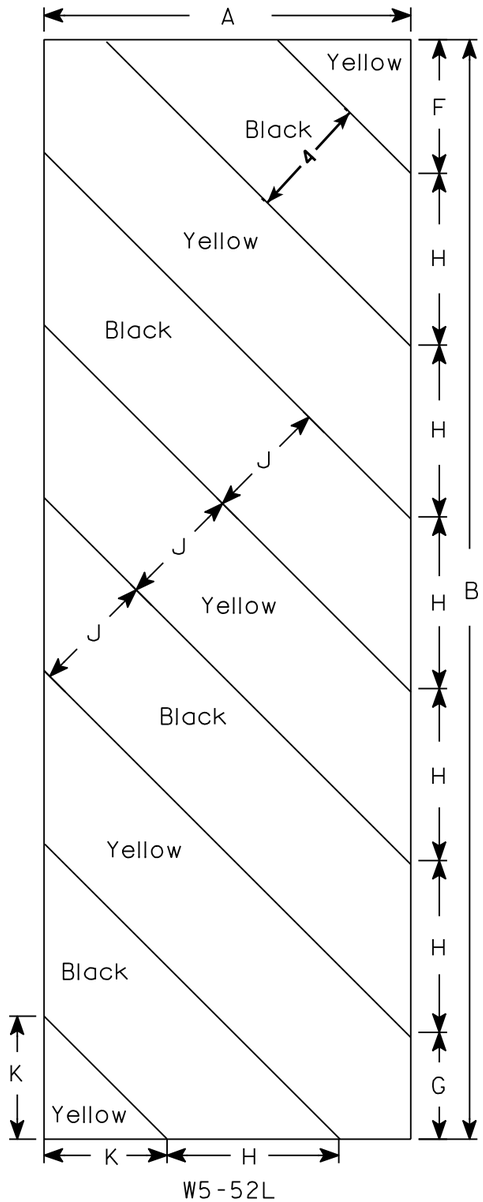
PROJECT NO: | HWY: | COUNTY: | SHEET NO: 51 | E

FILE NAME : C:\CAEFiles\Projects\tr_stdplate\W22.DGN PLOT DATE : 29-MAY-2012 10:18 PLOT BY : mscsja PLOT NAME : PLOT SCALE : 6.202372:1.000000

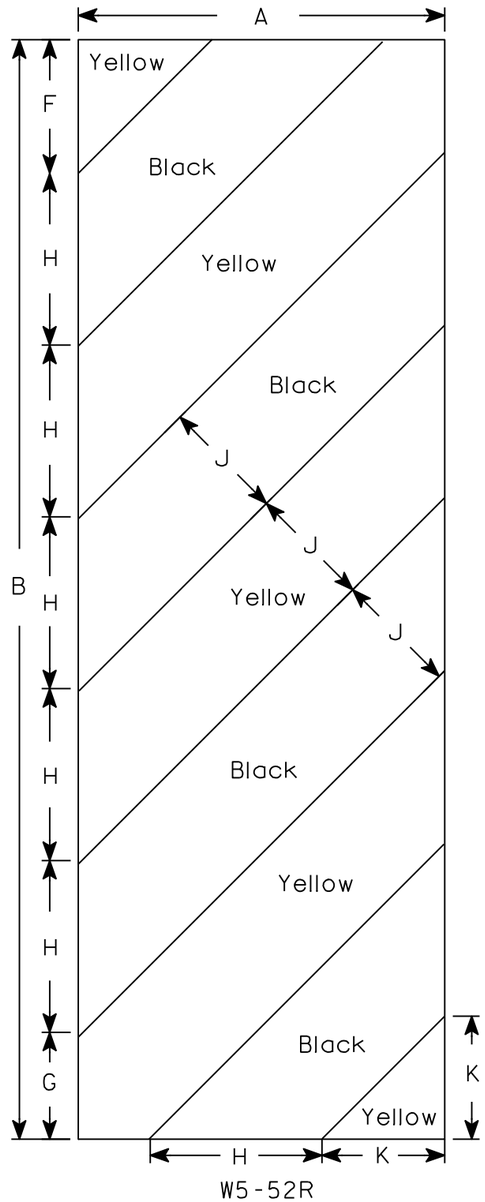
WISDOT/CADDS SHEET 42

7

7



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

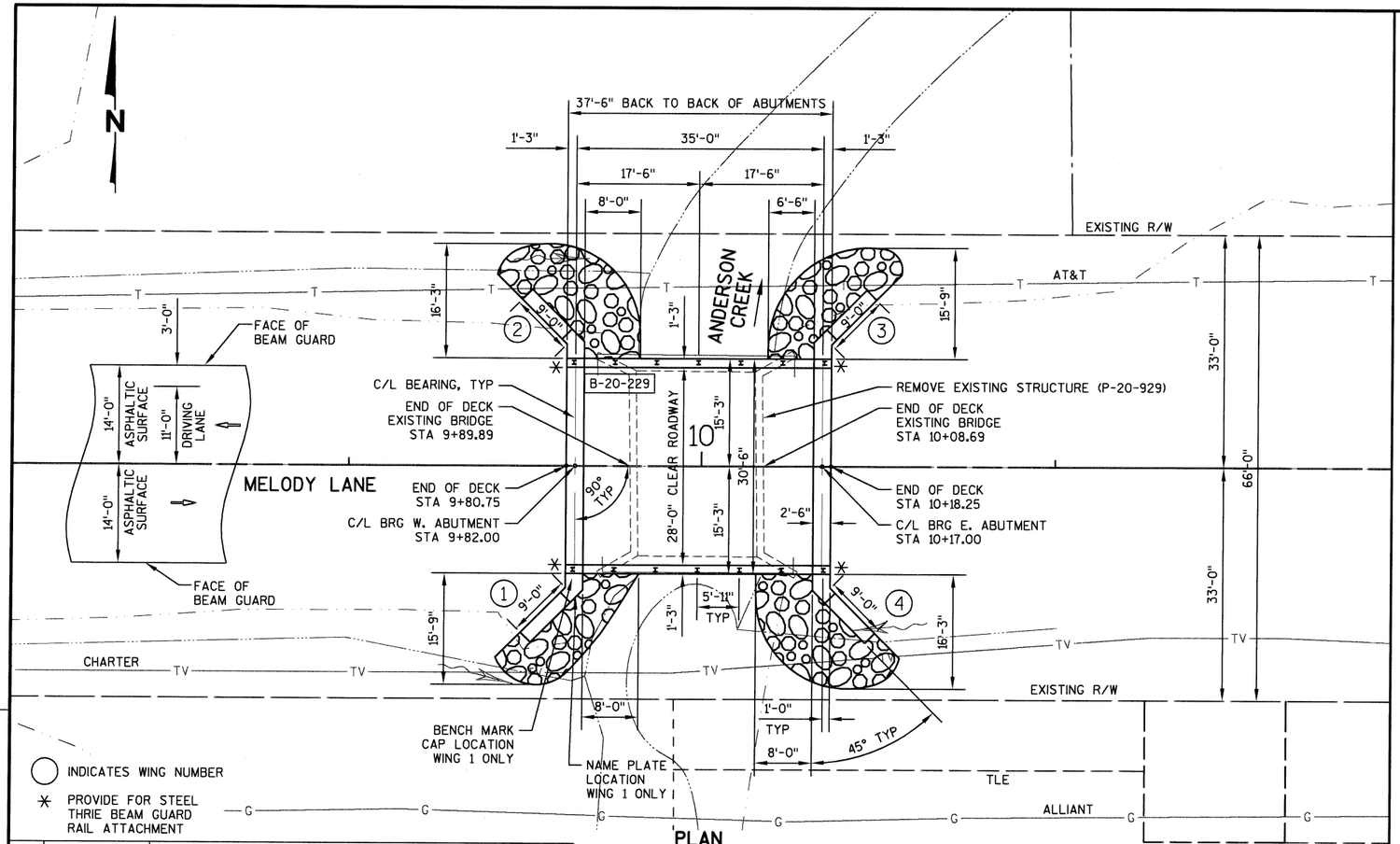
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

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

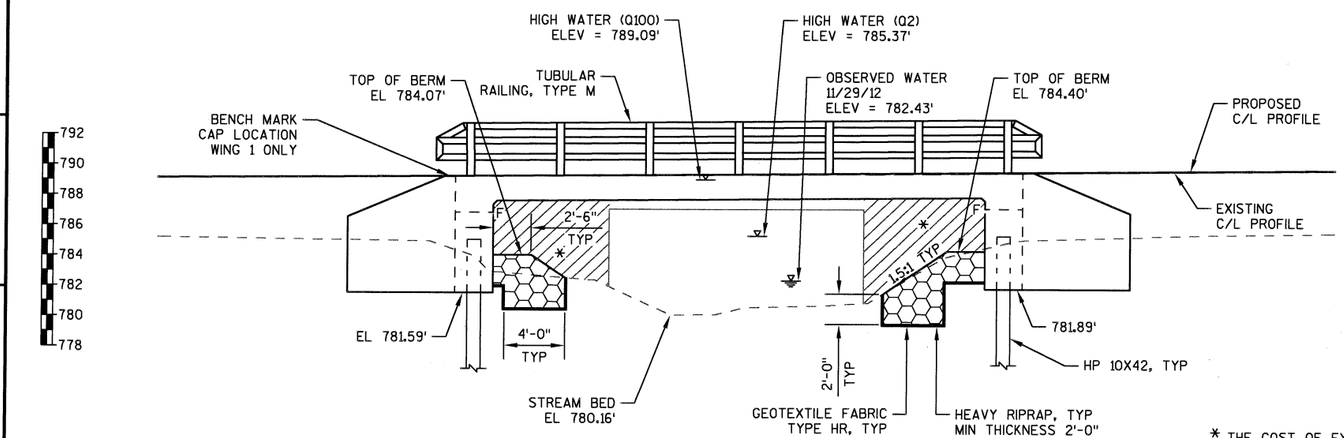
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 52	E



BM	STATION	DESCRIPTION	ELEVATION
A	10+09; 37' RT	RR SPIKE IN PP #16-17-30 49/0, N. SIDE OF MELODY LANE, 200' E. OF BRIDGE	789.71
B	12+15; 31' LT	RR SPIKE IN 18" TREE, S. SIDE OF MELODY LANE, E. SIDE OF ANDERSON CREEK, 36' S. OF BRIDGE	786.58

PLAN

SINGLE SPAN FLAT CONCRETE SLAB



ELEVATION

NORMAL TO SUBSTRUCTURE UNITS

* THE COST OF EXCAVATION SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "EXCAVATION FOR STRUCTURES BRIDGES B-20-229"

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL DIMENSIONS ARE IN INCHES (IN) EXCEPT AS NOTED.

ALL STATIONS AND ALL ELEVATIONS ARE IN FEET (FT).

ELEVATIONS SHOWN ON THE PLAN ARE REFERENCED TO NAVD88.

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

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

THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH HEAVY RIPRAP AND GEOTEXTILE FABRIC TYPE HR TO THE EXTENT SHOWN ON THIS SHEET AND ABUTMENT SHEETS.

JOINT FILLER SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION: M153, TYPE I,II OR III; OR M213.

THE EXISTING GROUND LINE AT THE ABUTMENTS SHALL BE THE UPPER LIMIT OF EXCAVATION FOR STRUCTURE.

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

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.

THIS STRUCTURE WILL REPLACE A SINGLE SPAN STEEL AND CONCRETE GIRDER BRIDGE (P-20-929).

ALL REINFORCING BARS ARE ENGLISH AND THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFY THE BAR SIZE.

DESIGN DATA

DESIGN LIVE LOAD	HL-93
INVENTORY RATING FACTOR	RF=1.26
OPERATING RATING FACTOR	RF=1.63
MAX STD PERMIT VEHICLE (WIS SPV)	250 KIPS

STRUCTURE DESIGNED FOR A FUTURE WEARING SURFACE OF 20 LBS PER SQ FT

ULTIMATE DESIGN STRESSES

CONCRETE:	SLAB	f'c = 4,000 psi
	ALL OTHER	f'c = 3,500 psi
REINFORCING STEEL GRADE 60		fy = 60,000 psi

FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON HP 10-INCH X 42 LB STEEL PILING WITH A REQUIRED DRIVING RESISTANCE OF 110 TONS */PILE. AS DETERMINED BY THE MODIFIED GATES DYNAMIC EQUATION. ESTIMATED PILE LENGTH FOR WEST ABUTMENT IS 25 FT. ESTIMATED PILE LENGTH FOR EAST ABUTMENT IS 25 FT.

HYDRAULIC DATA

FOR PROPOSED CONDITION

Q100 (TOTAL)	= 1130 cfs
Q STRUCTURE	= 1120 cfs
Q ROADWAY	= 10 cfs
VELOCITY-THRU BRIDGE	= 6.9 FT/s
HIGH WATER (Q100)	= 789.09 FT
Q2	= 290 cfs
HIGH WATER (Q2)	= 785.37 FT
WATERWAY AREA-THRU BRIDGE	= 162 ft^2
DRAINAGE AREA	= 4.7 mi^2
CRITICAL SCOUR CODE	= 5
OVERTOPPING FREQUENCY	= 80-YEAR
OVERTOPPING ELEVATION	= 788.96 FT
OVERTOPPING DISCHARGE	= 1100 cfs

TRAFFIC DATA

(MELODY LANE)

ADT (2014)	620	vpd
ADT (2034)	690	vpd
V	45	MPH

* 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.

STATE PROJECT NUMBER

4808-06-71

WISCONSIN PROFESSIONAL ENGINEER
RYAN T. ARNDT
E-41765
FOND DU LAC, WI
10/28/13

LIST OF DRAWINGS

BRIDGE OFFICE CONTACT:

BILL DREHER 608-266-8489

CONSULTANT CONTACT:

THOMAS LANSER 920-924-5720

NO.	DATE	REVISION	BY

GREMMER & ASSOCIATES, INC.
CONSULTING ENGINEERS
Stevens Point • Fond du Lac

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Drehen KAR 11/26/13
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE B-20-229

MELODY LANE BRIDGE OVER ANDERSON CREEK

COUNTY	TOWN/~~CITY/VILLAGE~~
FOND DU LAC	FRIENDSHIP

DESIGN SPEC: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D	DRAWN BY	PLANS CK'D
RTA	ALK	AJS	ALK

GENERAL PLAN

SHEET 1 OF 8

53

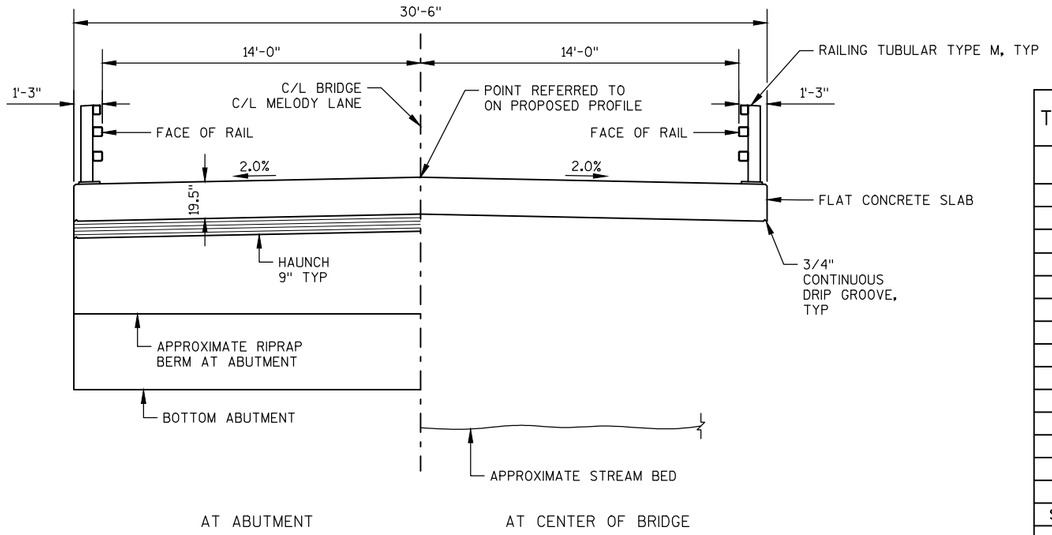
8

8

FILE NAME : 48080671_080101_BR

PLOT DATE : 28 OCT 2013 09:51:20 PLOT BY : GAAJS PLOT NAME : PLOT SCALE : 1:1

STATE PROJECT NUMBER
4808-06-71

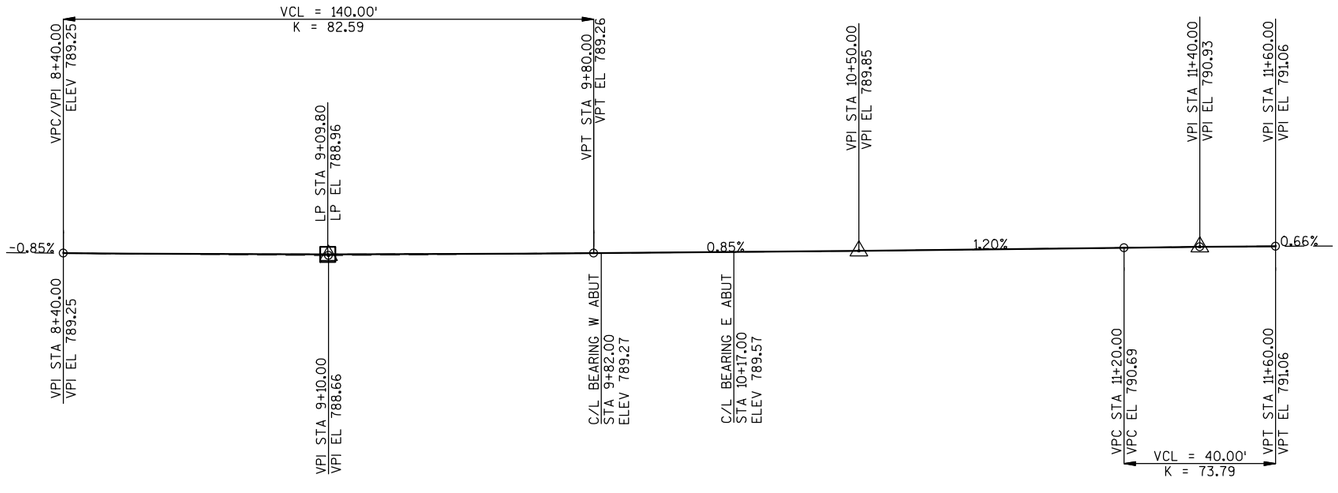


CROSS-SECTION THROUGH STRUCTURE

LOOKING EAST

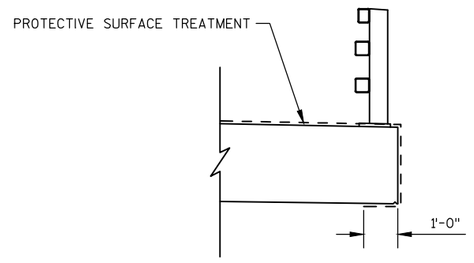
TOTAL ESTIMATED QUANTITIES

ITEM NO.	BID ITEMS	UNIT	W ABUT	E ABUT	SUPER	TOTAL
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STA 9+99	LS	---	---	---	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-20-229	LS	---	---	---	1
502.0100	CONCRETE MASONRY BRIDGES	CY	27	27	73	127
502.3200	PROTECTIVE SURFACE TREATMENT	SY	---	---	146	146
505.0405	BAR STEEL REINFORCEMENT HS BRIDGES	LB	2226	2226	---	4,452
505.0605	BAR STEEL REINFORCEMENT HS COATED BRIDGES	LB	1374	1375	15673	18,422
513.4060	RAILING TUBULAR TYPE M B-20-229	LS	---	---	---	1
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	6	6	---	12
550.0500	PILE POINTS	EACH	7	7	---	14
550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	175	175	---	350
606.0300	RIPRAP HEAVY	CY	40	48	---	88
612.0206	PIPE UNDERDRAIN UNPERFORATED 6-INCH	LF	9	9	---	18
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	50	51	---	101
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	65	81	---	146
SPV.0035.01	BACKFILL SLURRY	CY	85	86	---	171
	NON-BID ITEMS					
-----	JOINT FILLER	SIZE				1/2" & 3/4"



FINISHED REFERENCE LINE PROFILE

MELODY LANE



PROTECTIVE SURFACE TREATMENT DETAIL

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

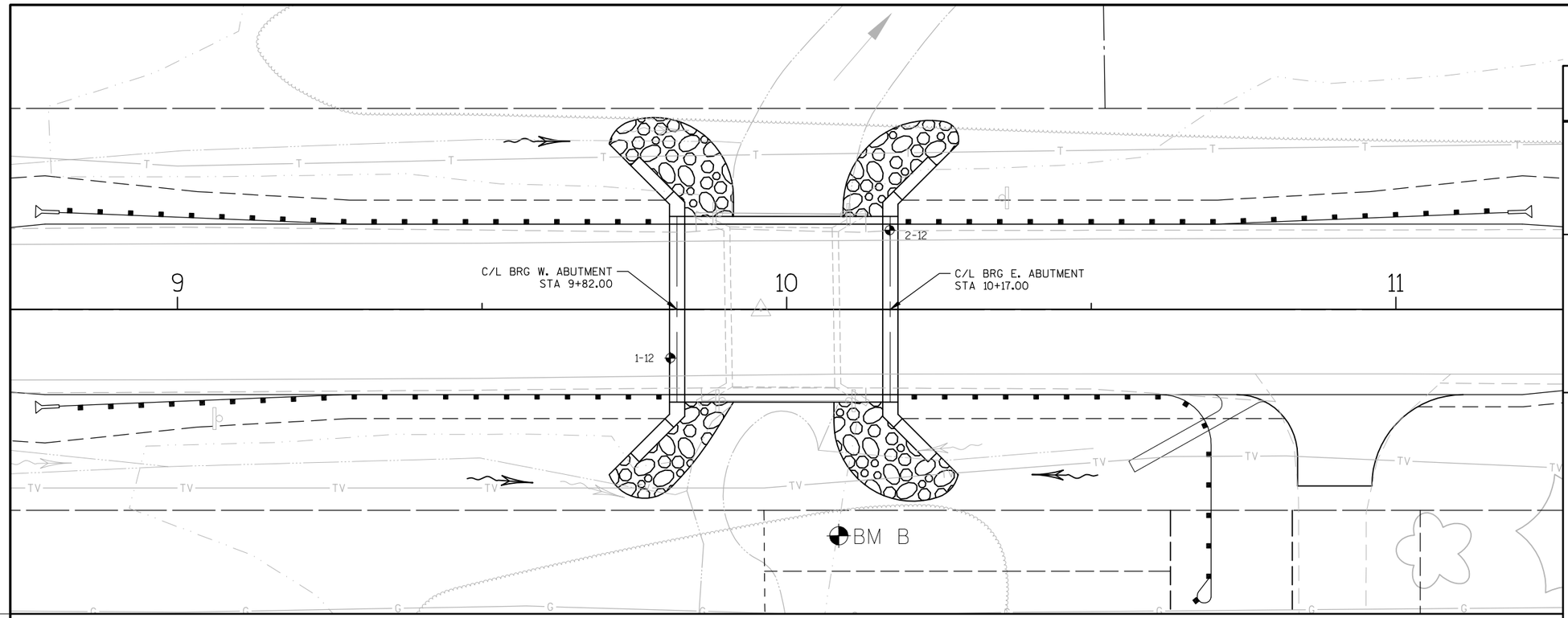
B-20-229

DRAWN BY AJS | PLANS CK'D ALK

QUANTITIES AND CROSS SECTIONS

SHEET 2

FILE NAME : 48080671_080102_BR PLOT DATE : 29 AUG 2013 07:35:05 PLOT BY : GAAJS PLOT NAME : PLOT SCALE : 1:2



STATE PROJECT NUMBER

4808-06-71

ABBREVIATIONS

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

MATERIAL SYMBOLS

ASPHALT, SILT, SANDSTONE
SAND, PEAT, LIMESTONE
GRAVEL, CLAY, IGNEOUS ROCK

LEGEND OF PROBING

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

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

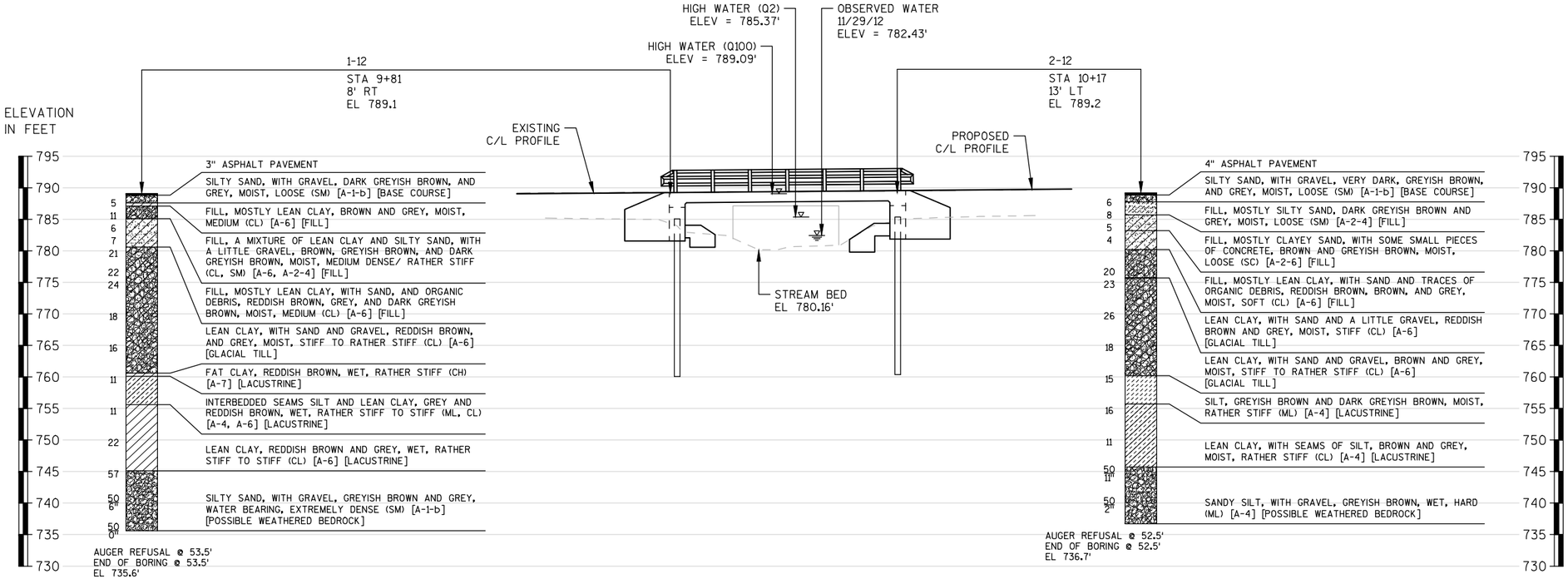
LEGEND OF BORING

BORING NO.
STA
ELEV
UNCONFINED STRENGTH → 7.7 7
BLOWS PER FT. USING 140# WT. FALLING 30"
WASH SAMPLE
SHELBY TUBE --- S.T.
GROUND WATER ELEVATION
NO GROUND WATER OBSERVED ABOVE THIS ELEVATION
SANDY GRAVEL
F.
BOULDER OR COBBLES
SAND
SILTY CLAY
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 APPROXIMATELY 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.



1-12
STA 9+81
8' RT
EL 789.1

5	3" ASPHALT PAVEMENT
11	SILTY SAND, WITH GRAVEL, DARK GREYISH BROWN, AND GREY, MOIST, LOOSE (SM) [A-1-b] [BASE COURSE]
6	FILL, MOSTLY LEAN CLAY, BROWN AND GREY, MOIST, MEDIUM (CL) [A-6] [FILL]
7	FILL, A MIXTURE OF LEAN CLAY AND SILTY SAND, WITH A LITTLE GRAVEL, BROWN, GREYISH BROWN, AND DARK GREYISH BROWN, MOIST, MEDIUM DENSE/ RATHER STIFF (CL, SM) [A-6, A-2-4] [FILL]
21	
22	
24	FILL, MOSTLY LEAN CLAY, WITH SAND, AND ORGANIC DEBRIS, REDDISH BROWN, GREY, AND DARK GREYISH BROWN, MOIST, MEDIUM (CL) [A-6] [FILL]
18	LEAN CLAY, WITH SAND AND GRAVEL, REDDISH BROWN, AND GREY, MOIST, STIFF TO RATHER STIFF (CL) [A-6] [GLACIAL TILL]
16	
11	FAT CLAY, REDDISH BROWN, WET, RATHER STIFF (CH) [A-7] [LACUSTRINE]
11	INTERBEDDED SEAMS SILT AND LEAN CLAY, GREY AND REDDISH BROWN, WET, RATHER STIFF TO STIFF (ML, CL) [A-4, A-6] [LACUSTRINE]
22	LEAN CLAY, REDDISH BROWN AND GREY, WET, RATHER STIFF TO STIFF (CL) [A-6] [LACUSTRINE]
57	
50/4"	SILTY SAND, WITH GRAVEL, GREYISH BROWN AND GREY, WATER BEARING, EXTREMELY DENSE (SM) [A-1-b] [POSSIBLE WEATHERED BEDROCK]
50/0"	

AUGER REFUSAL @ 53.5'
END OF BORING @ 53.5'
EL 735.6'

2-12
STA 10+17
13' LT
EL 789.2

6	4" ASPHALT PAVEMENT
8	SILTY SAND, WITH GRAVEL, VERY DARK, GREYISH BROWN, AND GREY, MOIST, LOOSE (SM) [A-1-b] [BASE COURSE]
5	FILL, MOSTLY SILTY SAND, DARK GREYISH BROWN AND GREY, MOIST, LOOSE (SM) [A-2-4] [FILL]
4	FILL, MOSTLY CLAYEY SAND, WITH SOME SMALL PIECES OF CONCRETE, BROWN AND GREYISH BROWN, MOIST, LOOSE (SC) [A-2-6] [FILL]
20	FILL, MOSTLY LEAN CLAY, WITH SAND AND TRACES OF ORGANIC DEBRIS, REDDISH BROWN, BROWN, AND GREY, MOIST, SOFT (CL) [A-6] [FILL]
23	
26	LEAN CLAY, WITH SAND AND A LITTLE GRAVEL, REDDISH BROWN AND GREY, MOIST, STIFF (CL) [A-6] [GLACIAL TILL]
18	LEAN CLAY, WITH SAND AND GRAVEL, BROWN AND GREY, MOIST, STIFF TO RATHER STIFF (CL) [A-6] [GLACIAL TILL]
15	
16	SILT, GREYISH BROWN AND DARK GREYISH BROWN, MOIST, RATHER STIFF (ML) [A-4] [LACUSTRINE]
11	LEAN CLAY, WITH SEAMS OF SILT, BROWN AND GREY, MOIST, RATHER STIFF (CL) [A-4] [LACUSTRINE]
50/11"	
50/2"	SANDY SILT, WITH GRAVEL, GREYISH BROWN, WET, HARD (ML) [A-4] [POSSIBLE WEATHERED BEDROCK]

AUGER REFUSAL @ 52.5'
END OF BORING @ 52.5'
EL 736.7'

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

B-20-229

DRAWN BY AJS | PLANS CK'D ALK

SUBSURFACE EXPLORATION

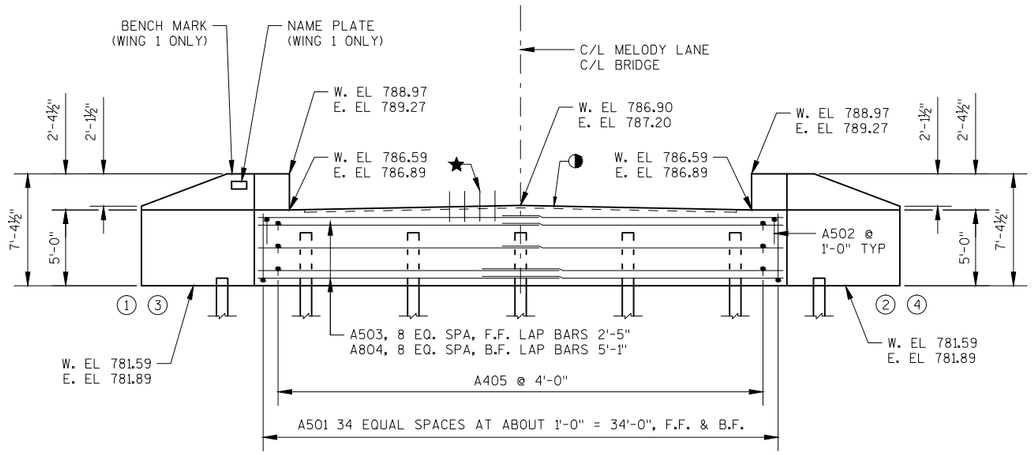
SHEET 3

55

8

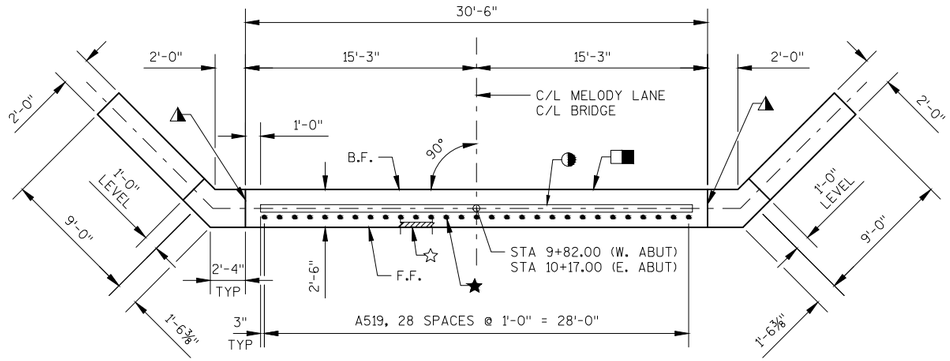
8

FILE NAME : 48080671_080103_BR PLOT DATE : 28 AUG 2013 09:29:22 PLOT BY : GAAJS PLOT NAME : PLOT SCALE : 1:1

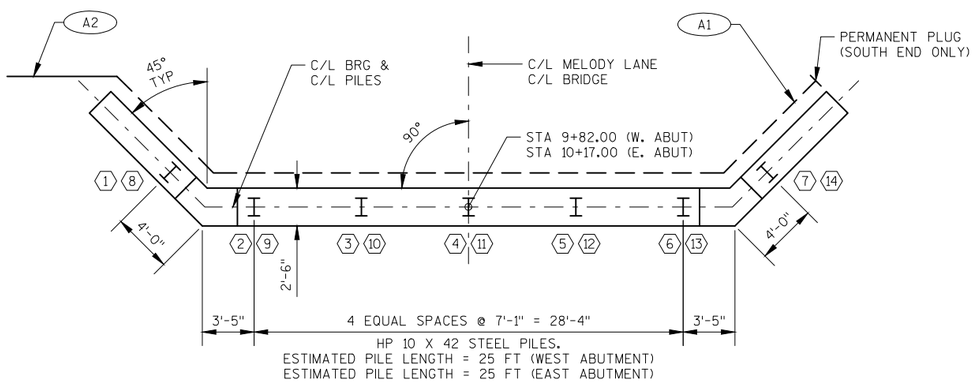


ELEVATION

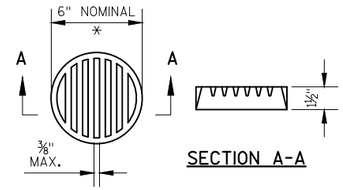
(LOOKING WEST FOR WEST ABUTMENT)
(LOOKING EAST FOR EAST ABUTMENT)



PLAN



PILE PLAN



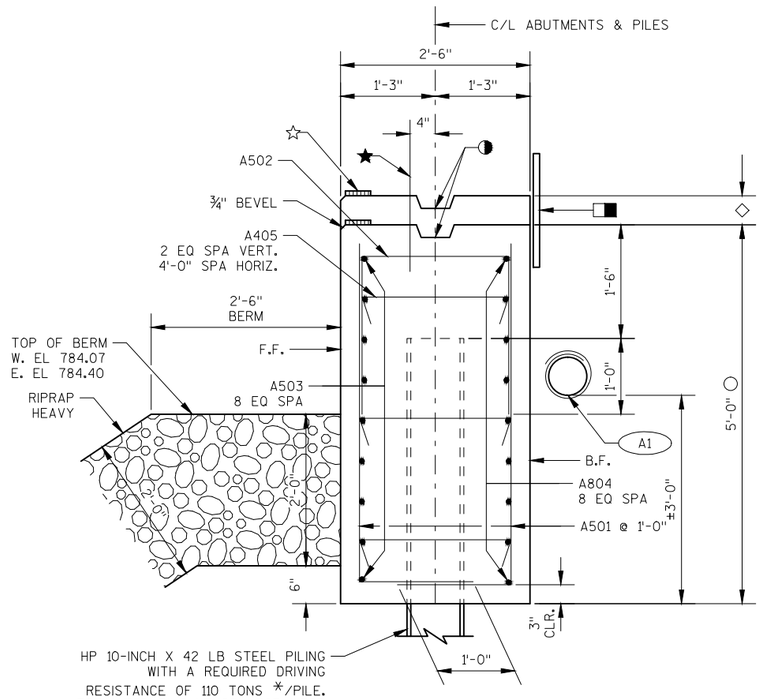
SECTION A-A

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

THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN UNPERFORATED".

THE RODENT SHIELD SHALL BE 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 SCREEN TO THE EXPOSED END OF THE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH SHEET METAL SCREWS.

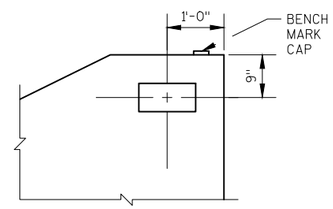
RODENT SHIELD DETAIL



TYPE A5 WITH FIXED SEAT

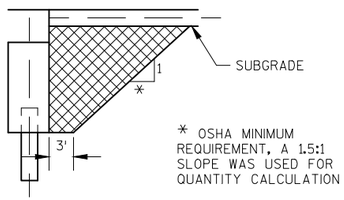
LEGEND

- (1) INDICATES WING NUMBER
- ⟨1⟩ INDICATES PILE NUMBER
- F.F. FRONT FACE
- B.F. BACK FACE
- RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND CONTINUOUS BETWEEN CORNERS AND FROM SEAT TO TOP OF WINGS, TO BE PLACED FLUSH WITH SURFACE OF CONCRETE.
- ½" PREFORMED FILLER TO EXTEND FROM TOP OF ABUTMENT BODY TO TOP OF WINGS, SEAL ALL EXPOSED SURFACES OF FILLER WITH NON-STAINING, GRAY, NON-BITUMINOUS JOINT SEALER (1" DEEP & HOLD ⅛" BELOW SURFACE OF CONC.).
- CONSTRUCTION JOINT KEYWAY FORMED WITH A SURFACED BEVELED 2"X6".
- ★ A519 BARS COATED AT 1'-0" (2'-0" LONG). THESE BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE.
- ☆ 4" X ¾" CORK FILLER.
- ○ DIMENSION IS FROM BOTTOM OF ABUTMENT TO LOW BEAM SEAT OR LOW SIDE OF SLAB TYPE SUPERSTRUCTURE.
- ◇ VARIES 0" - 3¾" ADJUST HEIGHT OF A502 AND TOP A503, A804 BARS TO MATCH ABUTMENT SLOPE.



NAME PLATE DETAIL

(WING 1 ONLY)



* OSHA MINIMUM REQUIREMENT, A 1.5:1 SLOPE WAS USED FOR QUANTITY CALCULATION

BACKFILL SLURRY TO EXTEND BETWEEN WINGWALLS AT BACKFACE OF ABUTMENTS

NOTE: DO NOT PLACE FILL ABOVE 3' FROM BOTTOM OF ABUTMENT UNTIL SUPERSTRUCTURE IS IN PLACE.

BACKFILL SLURRY DETAIL

(TYPICAL AT BOTH ABUTMENTS)

(A1) PIPE UNDERDRAIN WRAPPED, 6 INCH, SLOPED 0.5% MIN. TO SUITABLE DRAINAGE. PERMANENT PLUG ON UPSTREAM END TO BE INCLUDED IN BID PRICE FOR "PIPE UNDERDRAIN WRAPPED 6-INCH".

(A2) PIPE UNDERDRAIN UNPERFORATED, 6 INCH. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT OUTLET END AS DETAILED ON THIS SHEET. RODENT SHIELD TO BE INCLUDED IN BID PRICE FOR "PIPE UNDERDRAIN UNPERFORATED 6-INCH"

STATE PROJECT NUMBER

4808-06-71

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

B-20-229

DRAWN BY AJS | PLANS CK'D ALK

ABUTMENTS

SHEET 4

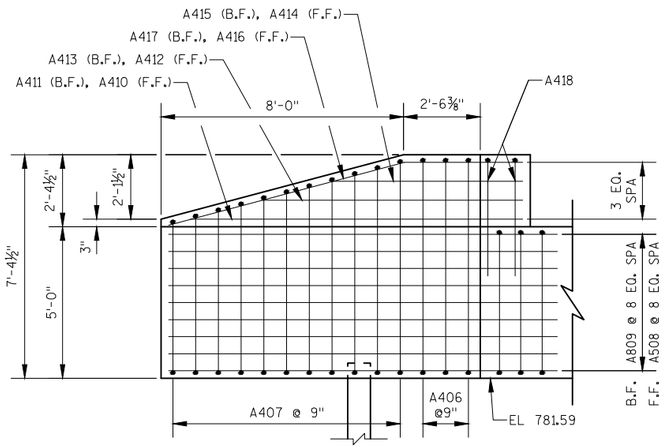
8

8

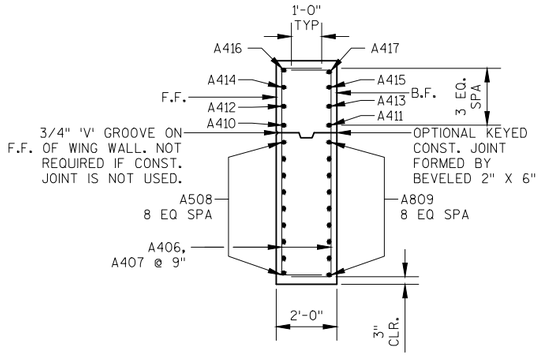
FILE NAME : 48080671_080104_BR PLOT DATE : 28 AUG 2013 10:38:39 PLOT BY : GAAJS PLOT NAME : PLOT SCALE : 1:1

STATE PROJECT NUMBER

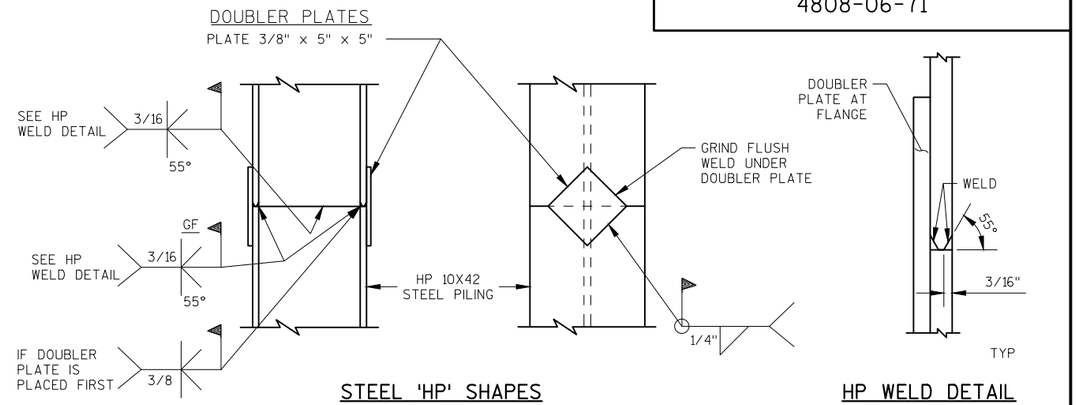
4808-06-71



WINGS 1 & 2 ELEVATION



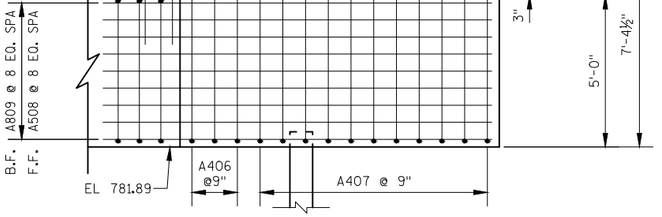
WINGS 1 & 2 SECTION



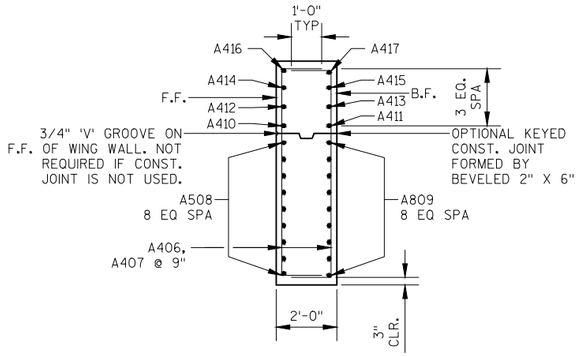
STEEL 'HP' SHAPES

HP WELD DETAIL

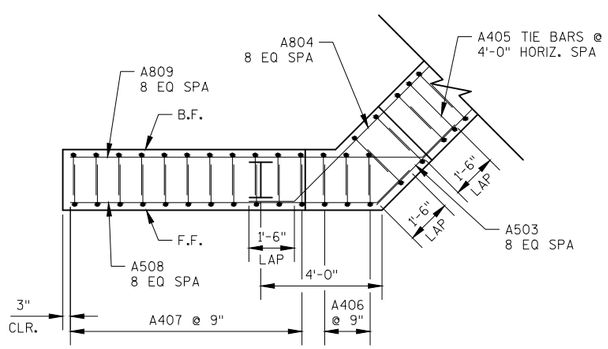
FLANGE SHOWN, WEB SIMILAR



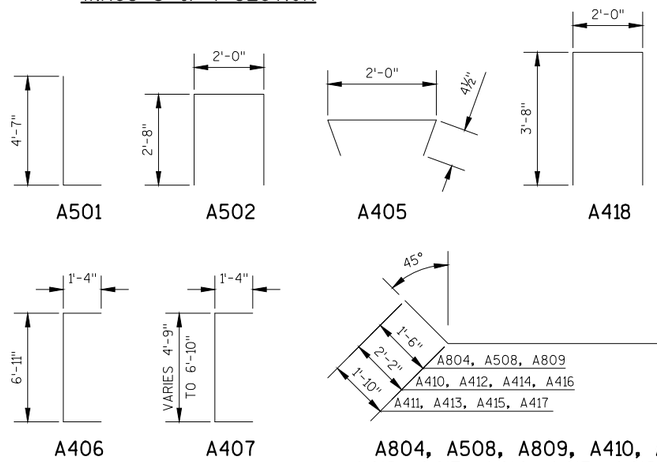
WINGS 3 & 4 ELEVATION



WINGS 3 & 4 SECTION



PLAN - WINGS



A804, A508, A809, A410, A411, A412, A413, A414, A415, A416, A417

BILL OF BARS - BOTH ABUTMENTS

BAR MARK	COAT	NO. REQUIRED	LENGTH	BENT	BAR SERIES	LOCATION
A501		140	6'-0"	X		BODY - VERTICAL - STIRRUPS
A502		70	7'-1"	X		BODY - VERTICAL - STIRRUPS - TOP
A503		36	18'-8"			BODY - HORIZONTAL - F.F.
A804		36	23'-8"	X		BODY - HORIZONTAL - B.F.
A405		48	2'-7"	X		BODY - TIES
A406	X	24	9'-5"	X		WINGS - VERTICAL AT BODY
△ A407	X	88	8'-4"	X	X	WINGS 1 & 2 - VERTICAL - STIRRUPS
A508	X	36	11'-7"	X		LOWER WINGS - HORIZONTAL - F.F.
A809	X	36	13'-4"	X		LOWER WINGS - HORIZONTAL - B.F.
A410	X	4	12'-4"	X		UPPER WINGS - HORIZONTAL - F.F.
A411	X	4	10'-6"	X		UPPER WINGS - HORIZONTAL - B.F.
A412	X	4	11'-7"	X		UPPER WINGS - HORIZONTAL - F.F.
A413	X	4	9'-6"	X		UPPER WINGS - HORIZONTAL - B.F.
A414	X	4	8'-11"	X		UPPER WINGS - HORIZONTAL - F.F.
A415	X	4	6'-10"	X		UPPER WINGS - HORIZONTAL - B.F.
* A416	X	4	12'-6"	X		UPPER WINGS - HORIZONTAL - TOP - F.F.
* A417	X	4	10'-8"	X		UPPER WINGS - HORIZONTAL - TOP - B.F.
A418	X	8	9'-2"	X		UPPER WINGS - VERTICAL - OVER ABUT BODY
A519	X	58	2'-0"			BODY - DOWELS

* AN ADDITIONAL FIELD BEND WILL BE REQUIRED TO FIT THESE BARS IN THE WINGS, OVER THE ABUTMENT BODY

BAR SERIES - ABUTMENTS

BAR MARK	NO. REQUIRED	LENGTH
A407	8 SERIES OF 11	7'-3" TO 9'-4"

NOTES:

1. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE.
2. BAR DIMENSIONS ARE OUT TO OUT OF BAR.
3. FILL/EXCAVATE TO BOTTOM OF FOOTING ELEVATION BEFORE DRIVING PILING.

LEGEND

F.F. FRONT FACE

B.F. BACK FACE

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

B-20-229

DRAWN BY AJS | PLANS CK'D ALK

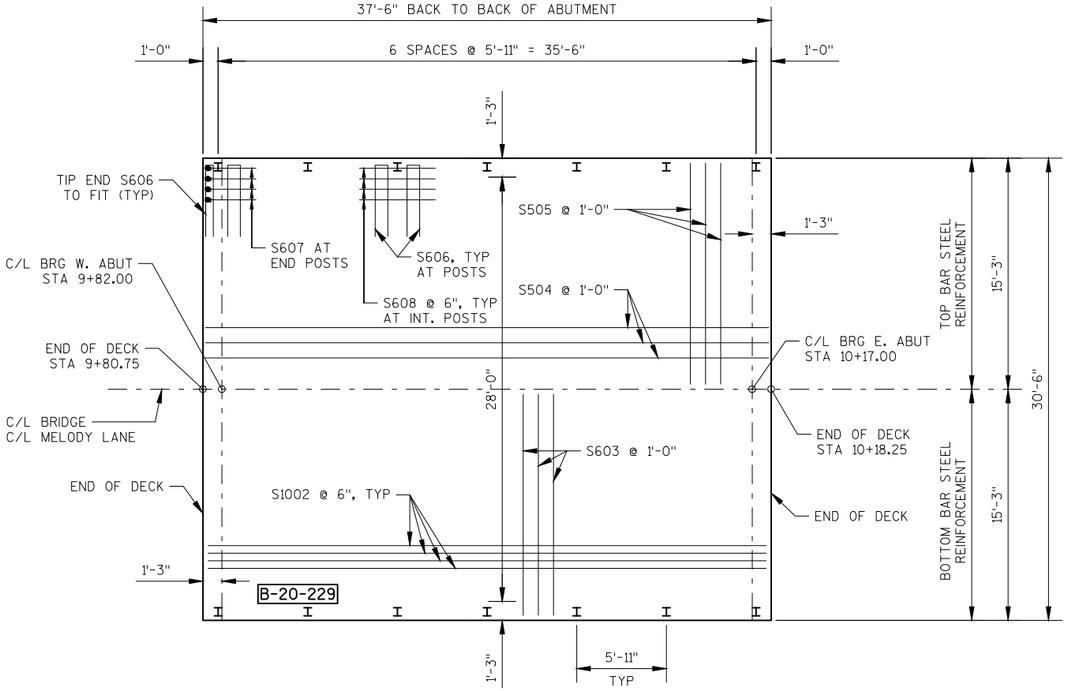
ABUTMENT DETAILS

SHEET 5

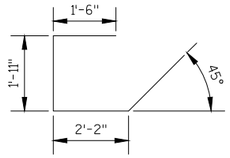
57

FILE NAME : 48080671_080105_BR PLOT DATE : 28 AUG 2013 10:54:00 PLOT BY : GAAJS PLOT NAME : PLOT SCALE : 1:1

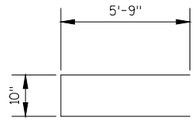
STATE PROJECT NUMBER
4808-06-71



PLAN

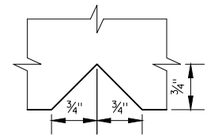


S501

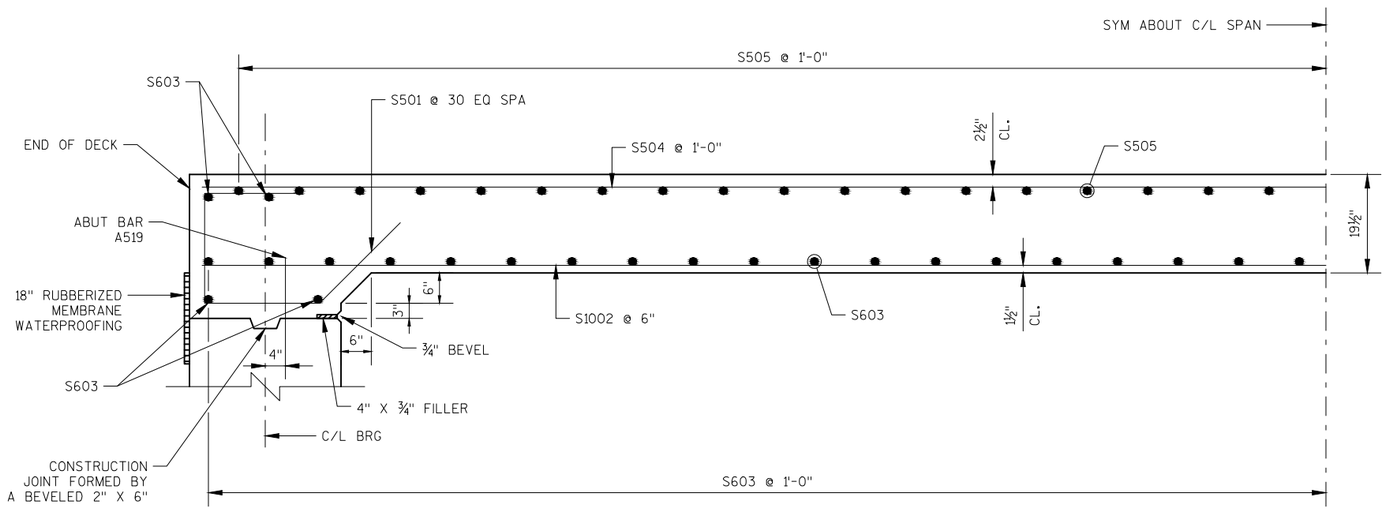


S606

S607



DRIP GROOVE DETAIL



LONGITUDINAL SECTION

GENERAL NOTES

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

TRANSVERSE BARS SHALL BE PLACED PARALLEL TO THE C/L OF THE SUBSTRUCTURE UNITS.

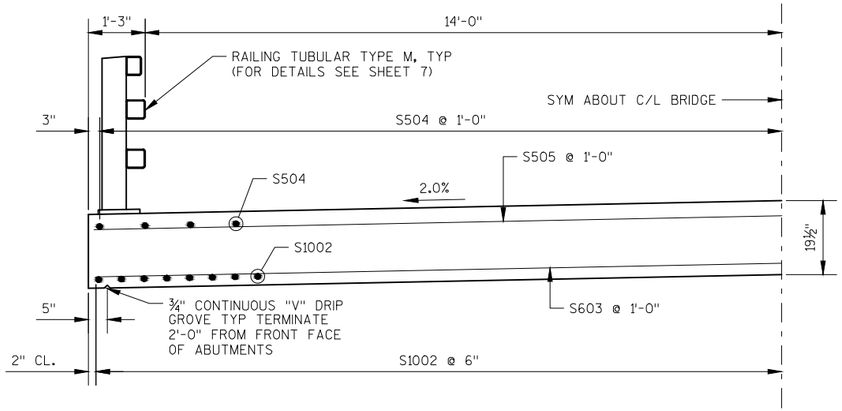
ALL SLAB THICKNESS DIMENSIONS ARE MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

BILL OF BARS - SUPERSTRUCTURE

BAR MARK	COAT	NO. REQUIRED	LENGTH	BENT	BAR SERIES	LOCATION
S501	X	62	7'-1"	X		AT END OF DECK
S1002	X	61	37'-2"			DECK - BOTTOM - LONGITUDINAL
S603	X	46	30'-2"			DECK - BOTTOM - TRANSVERSE
S504	X	31	37'-2"			DECK - TOP - LONGITUDINAL
S505	X	37	30'-2"			DECK - TOP - TRANSVERSE
S606	X	28	12'-0"	X		DECK - AT RAIL POSTS - TRANSVERSE - 2 PER POST
S607	X	16	6'-0"	X		DECK - AT END RAIL POSTS - LONGITUDINAL
S608	X	40	6'-0"			DECK - AT INTERMEDIATE RAIL POSTS - LONGITUDINAL

NOTES:

1. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE.
2. BAR DIMENSIONS ARE OUT TO OUT OF BAR.



CROSS SECTION THROUGH ROADWAY

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

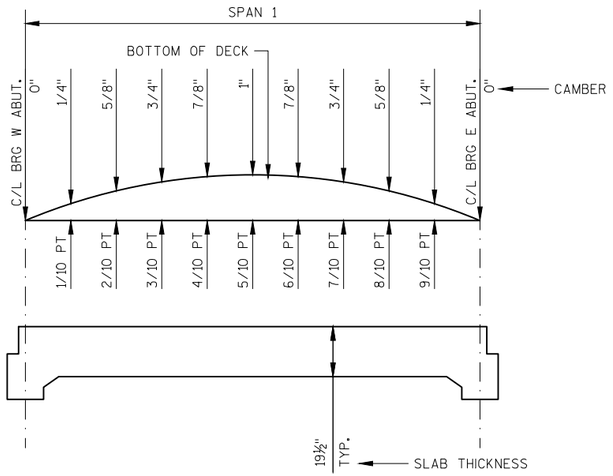
B-20-229

DRAWN BY AJS | PLANS CK'D ALK

SUPERSTRUCTURE

SHEET 6

STATE PROJECT NUMBER
4808-06-71



CAMBER AND SLAB THICKNESS DIAGRAM

CAMBER SHOWN IS BASED ON 3 TIMES DEAD LOAD DEFLECTIONS. CAMBER SPANS AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION AND FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT. PARAPETS, SIDEWALKS AND MEDIANS PLACED ON TOP OF THE SLAB SHALL BE POURED AFTER FALSEWORK HAS BEEN RELEASED.

SURVEY TOP OF SLAB ELEVATIONS			
	ABUTMENT	5/10	ABUTMENT
N. GUTTER			
CROWN OR R/L			
S. GUTTER			

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

TO DETERMINE FALSEWORK ELEVATION AT EDGE OF SLAB, CROWN OR REFERENCE LINE FOLLOW THIS PROCEDURE:

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

TOP OF DECK ELEVATIONS											
	C/L BRG. W. ABUT.	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	C/L BRG. E. ABUT.
N. EDGE OF DECK	788.97	788.99	789.02	789.05	789.08	789.11	789.14	789.17	789.20	789.23	789.27
CROWN OR R/L	789.27	789.30	789.33	789.36	789.39	789.42	789.45	789.48	789.51	789.54	789.57
S. EDGE OF DECK	788.97	788.99	789.02	789.05	789.08	789.11	789.14	789.17	789.20	789.23	789.27

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

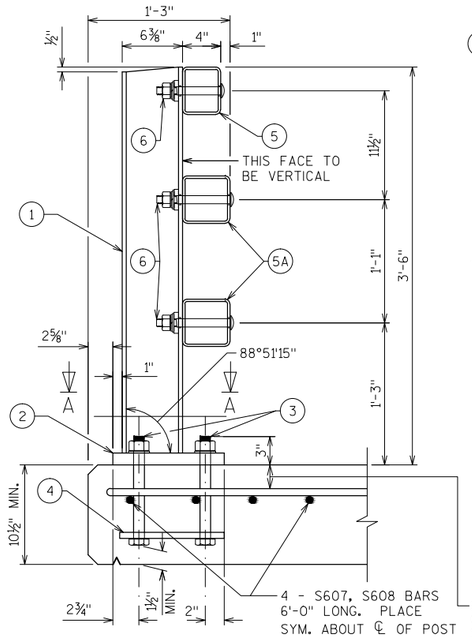
B-20-229

DRAWN BY AJS | PLANS CK'D ALK

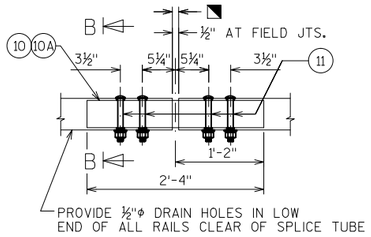
SUPERSTRUCTURE DETAILS

SHEET 7

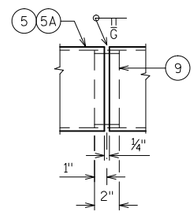
FILE NAME : 48080671_080106_BR PLOT DATE : 29 AUG 2013 08:05:58 PLOT BY : GAAJS PLOT NAME : PLOT SCALE : 1:1



SECTION THRU RAILING ON DECK

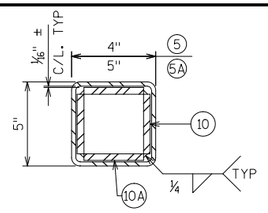


FIELD ERECTION JOINT DETAIL

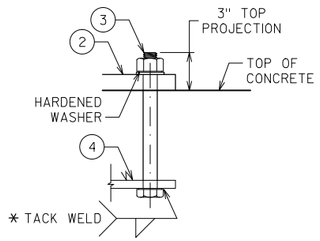


SHOP RAIL SPLICE DETAIL

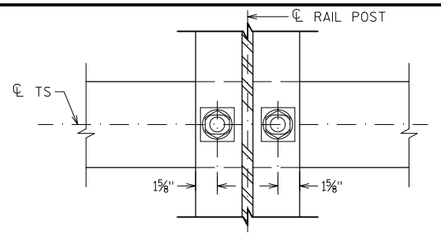
LOCATION MUST BE SHOWN ON SHOP DRAWINGS



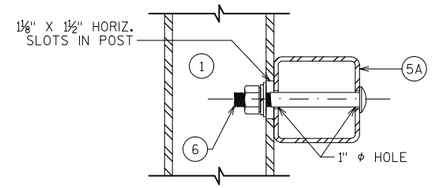
SECTION B-B



ANCHOR BOLTS



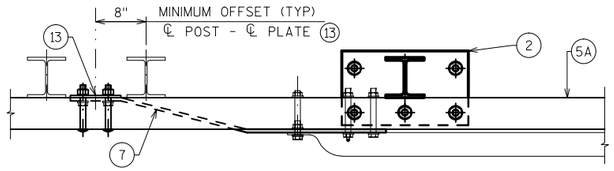
SECTION THRU POST WEB



SECTION THRU RAIL

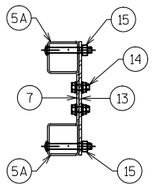
NOTE: CONNECTIONS AT LOWER RAILS SHOWN. CONNECTIONS AT TOP RAIL SIMILAR.

TYPICAL RAIL TO POST CONNECTIONS

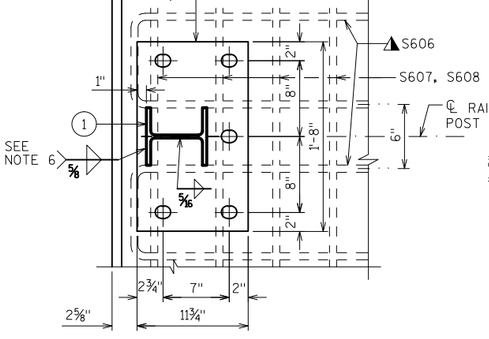


TOP VIEW AT END POST

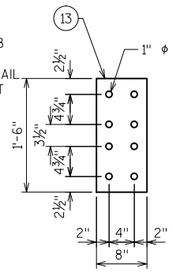
THRIE BEAM RAIL ATTACHMENT



SECTION C-C

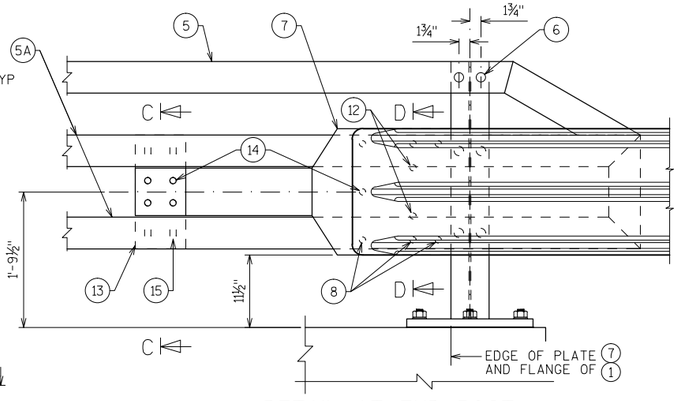


SECTION A-A



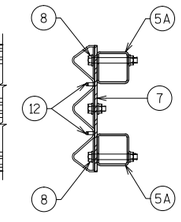
ANCHOR PLATE

AT BEAM GUARD ATTACHMENT

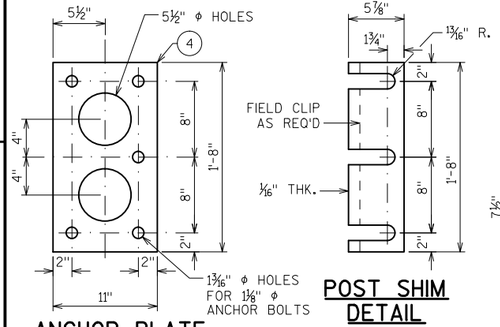


DETAIL AT END POST

THRIE BEAM RAIL ATTACHMENT



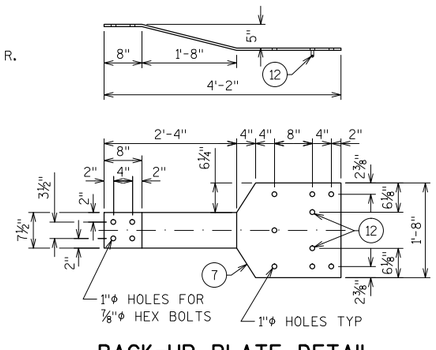
SECTION D-D



ANCHOR PLATE

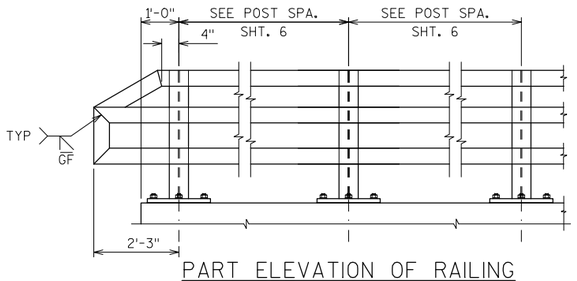
AT RAIL TO DECK CONNECTION

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" X 11¾" X 1'-8" WITH 1⅜6" 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 CONSTRUCTABILITY.)
4. ⅝" X 11" X 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1⅜6" DIA. HOLES FOR ANCHOR BOLTS NO. 3
5. TS 5 X 4 X 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
5A. TS 5 X 5 X 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
6. ⅞" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, ⅜6" X 1⅜" 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-20-229" 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.

STATE PROJECT NUMBER

4808-06-71

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

B-20-229

DRAWN BY AJS | PLANS CK'D ALK

TUBULAR STEEL RAILING TYPE M

SHEET 8

FILE NAME : 48080671_080107_BR
PLOT DATE : 28 AUG 2013 09:38:59
PLOT BY : GAAJS
PLOT NAME :
PLOT SCALE : 1:1

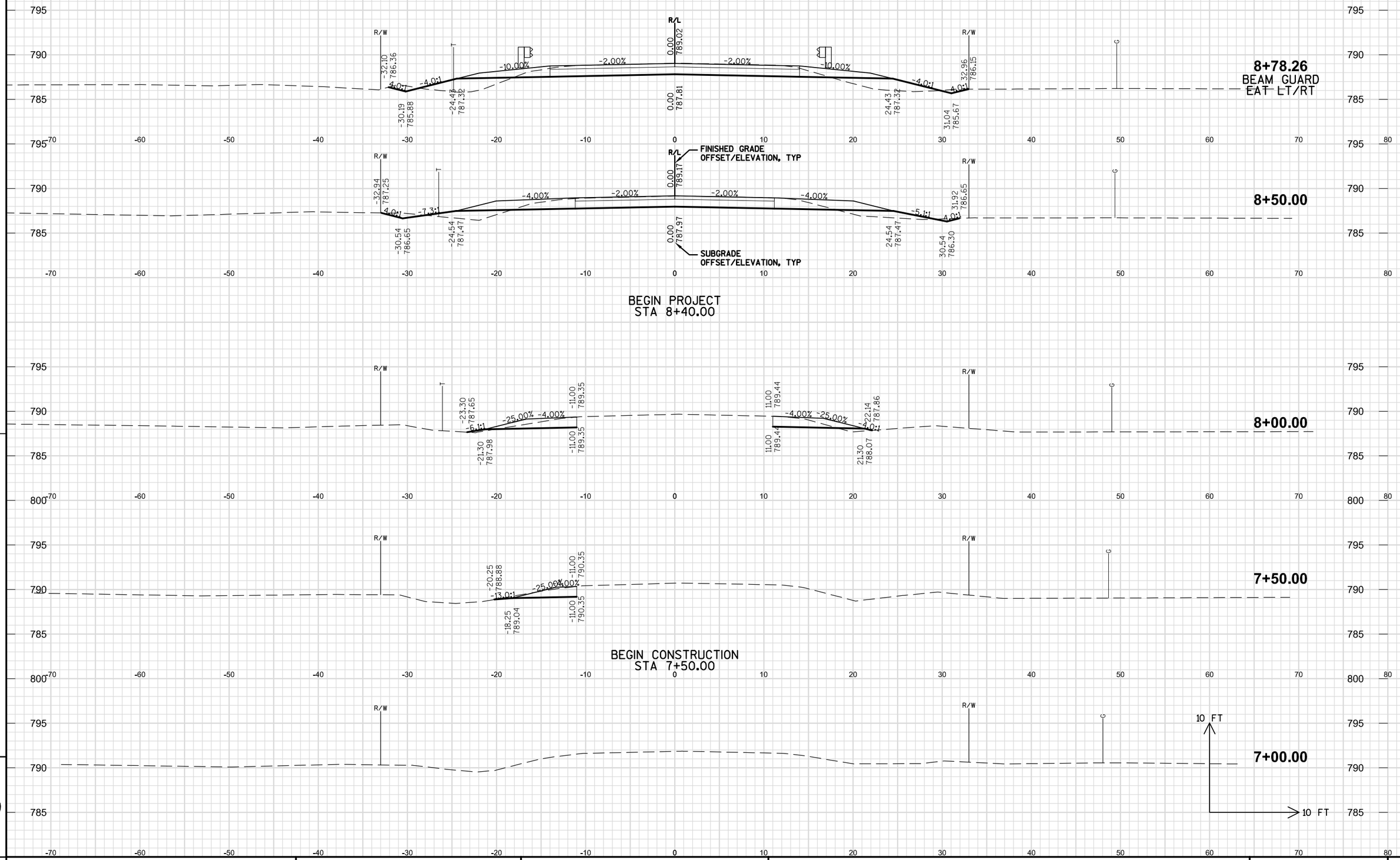
DIVISION 1 - MELODY LANE

STATION	REAL STATION	DISTANCE	AREA (SF) CUT	AREA (SF) FILL	INCREMENTAL VOL (CY) (UNADJUSTED) CUT NOTE 1	INCREMENTAL VOL (CY) (UNADJUSTED) FILL NOTE 2	CUMULATIVE VOL (CY) CUT 1.00 NOTE 1	CUMULATIVE VOL (CY) EXPANDED FILL 1.30	MASS ORDINATE NOTE 3
07+50	750		6	0	0	0	0	0	0
08+00	800	50	40	1	42	1	42	2	41
08+50	850	50	39	11	73	12	115	17	98
08+78	878	28	40	19	41	16	156	38	119
09+00	900	22	38	16	31	14	188	56	132
09+27	927	27	38	15	38	16	226	77	149
09+50	950	23	36	22	31	16	257	97	160
09+81	981	31	36	40	41	36	298	144	155
				COLUMN TOTALS	299	111			

DIVISION 2 - MELODY LANE

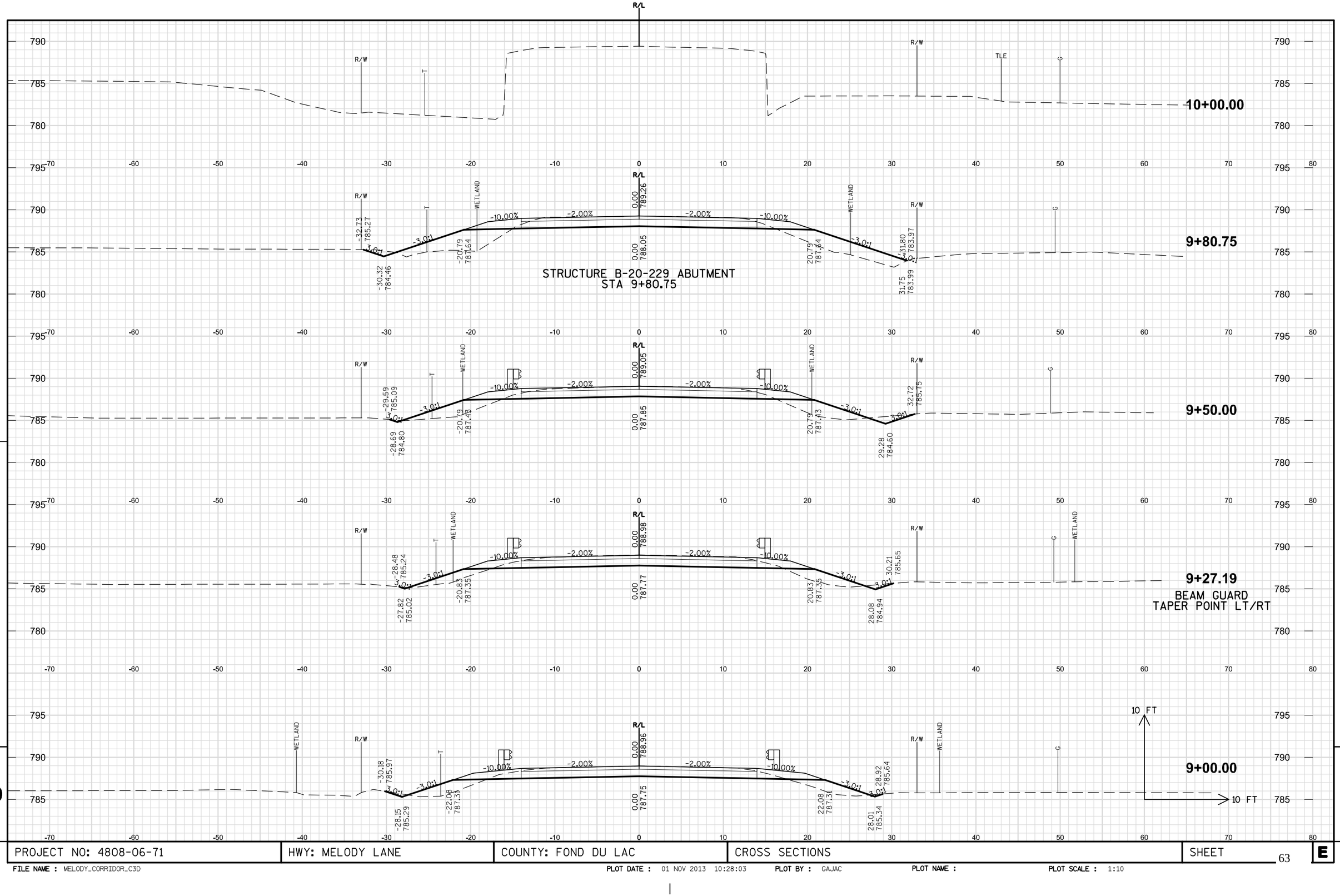
STATION	REAL STATION	DISTANCE	AREA (SF) CUT	AREA (SF) FILL	INCREMENTAL VOL (CY) (UNADJUSTED) CUT NOTE 1	INCREMENTAL VOL (CY) (UNADJUSTED) FILL NOTE 2	CUMULATIVE VOL (CY) CUT 1.00 NOTE 1	CUMULATIVE VOL (CY) EXPANDED FILL 1.30	MASS ORDINATE NOTE 3
10+18	1018		31	34	0	0	0	0	0
10+50	1050	32	47	12	46	27	46	35	11
10+71	1071	21	63	6	42	7	88	44	44
11+00	1100	29	52	7	62	7	150	53	97
11+21	1121	21	51	11	39	7	189	62	128
11+50	1150	29	35	17	47	15	236	81	155
11+75	1175	25	22	8	26	11	262	96	167
12+00	1200	25	22	2	20	4	282	101	181
12+50	1250	50	0	0	20	1	302	103	199
				COLUMN TOTALS	303	80			

NOTES	
1 - CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
2 - FILL	DOES NOT INCLUDE PAVEMENT EXCAVATION VOLUME.
3 - MASS ORDINATE	[(CUT) - ((FILL) * FILL FACTOR)]



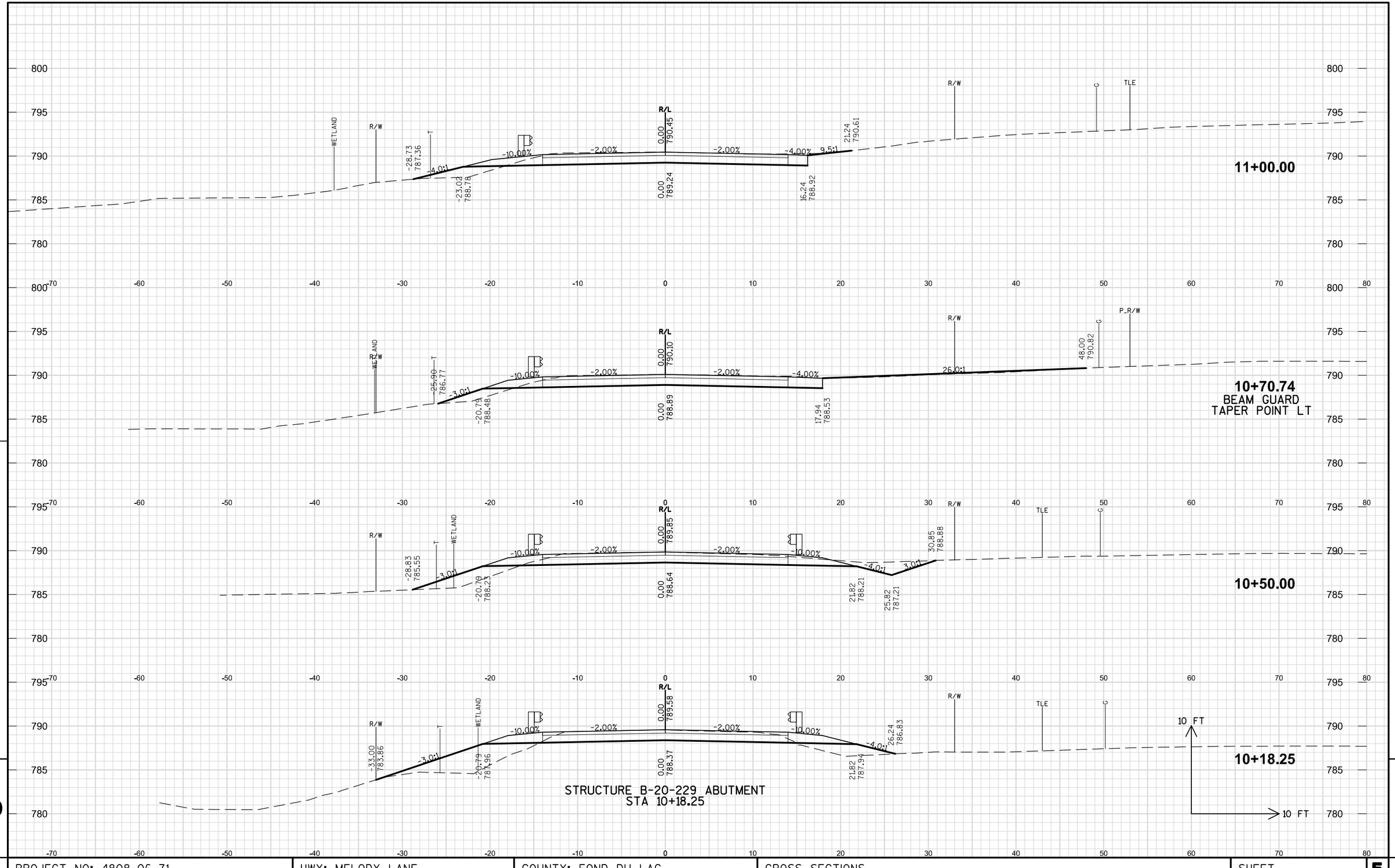
PROJECT NO: 4808-06-71	HWY: MELODY LANE	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET 62 E

FILE NAME : MELODY_CORRIDOR_C3D PLOT DATE : 01 NOV 2013 10:28:03 PLOT BY : GAJAC PLOT NAME : PLOT SCALE : 1:10



PROJECT NO: 4808-06-71	HWY: MELODY LANE	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET 63 E

FILE NAME : MELODY_CORRIDOR_C3D PLOT DATE : 01 NOV 2013 10:28:03 PLOT BY : GAJAC PLOT NAME : PLOT SCALE : 1:10

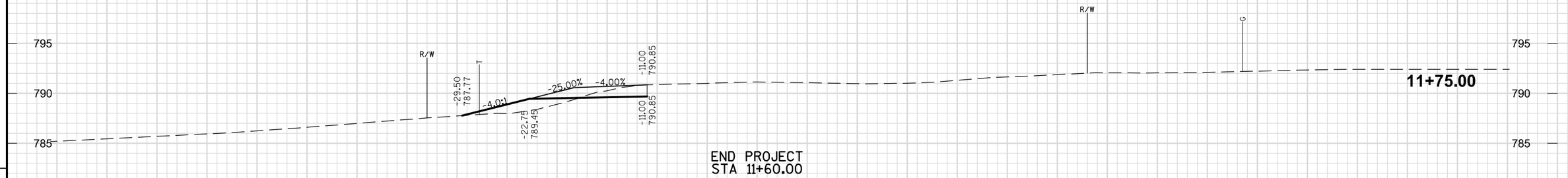


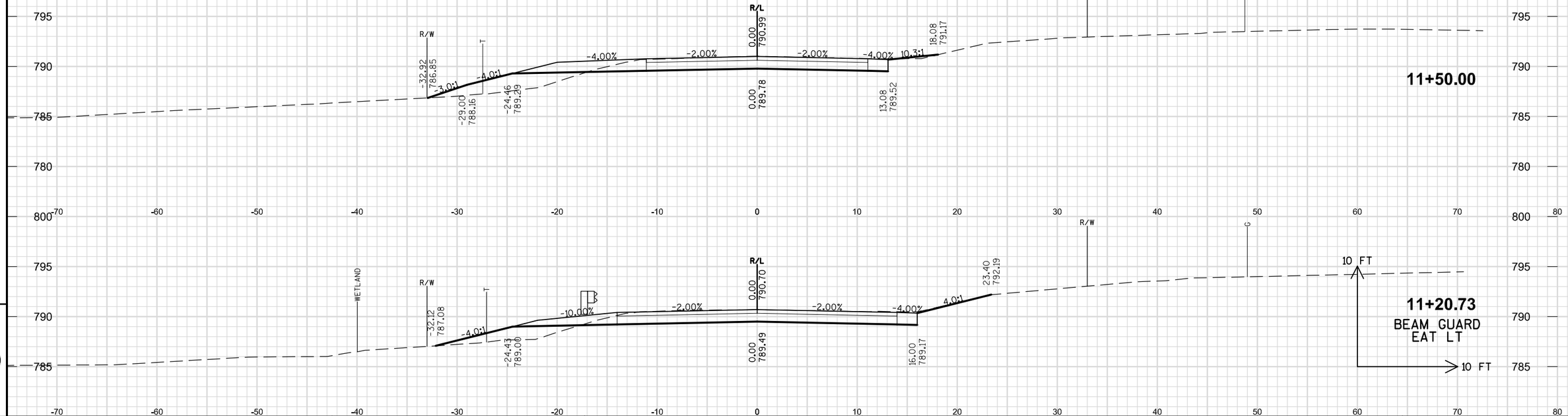
PROJECT NO: 4808-06-71	HWY: MELODY LANE	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET 64 E

FILE NAME : MELODY_CORRIDOR_C3D PLOT DATE : 01 NOV 2013 10:28:03 PLOT BY : GAJAC PLOT NAME : PLOT SCALE : 1:10

END CONSTRUCTION
STA 12+50.00

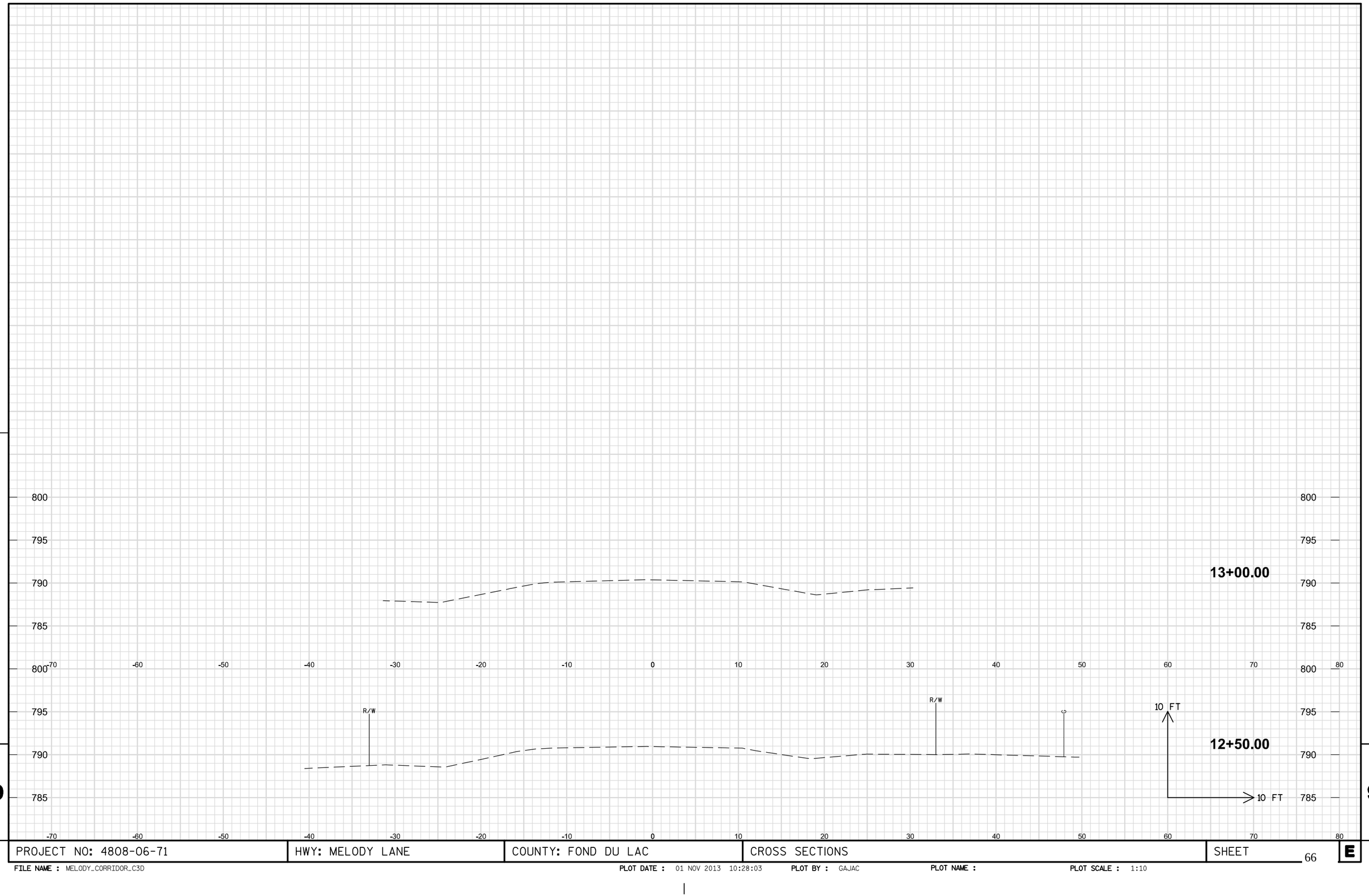
END PROJECT
STA 11+60.00





PROJECT NO: 4808-06-71	HWY: MELODY LANE	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET 65

FILE NAME : MELODY_CORRIDOR_C3D PLOT DATE : 01 NOV 2013 10:28:03 PLOT BY : GAJAC PLOT NAME : PLOT SCALE : 1:10



9

9

PROJECT NO: 4808-06-71	HWY: MELODY LANE	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET 66	E

FILE NAME : MELODY_CORRIDOR_C3D PLOT DATE : 01 NOV 2013 10:28:03 PLOT BY : GAJAC PLOT NAME : PLOT SCALE : 1:10

Notes

Wisconsin Department of Transportation

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