NWL

JAN 2017

PROJECT ID: 8390-00-70

WITH: N/A

COUNTY: DOUGLAS

ORDER OF SHEETS

TOTAL SHEETS = 66

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

T MAPLE, BARDON CREEK ROAD

BARDON CREEK BRIDGE B160138

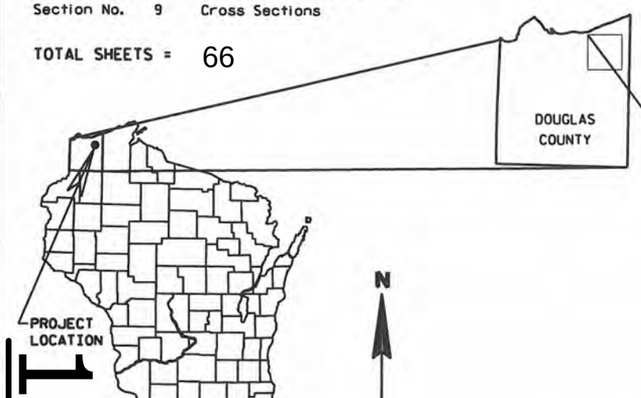
LOC STR

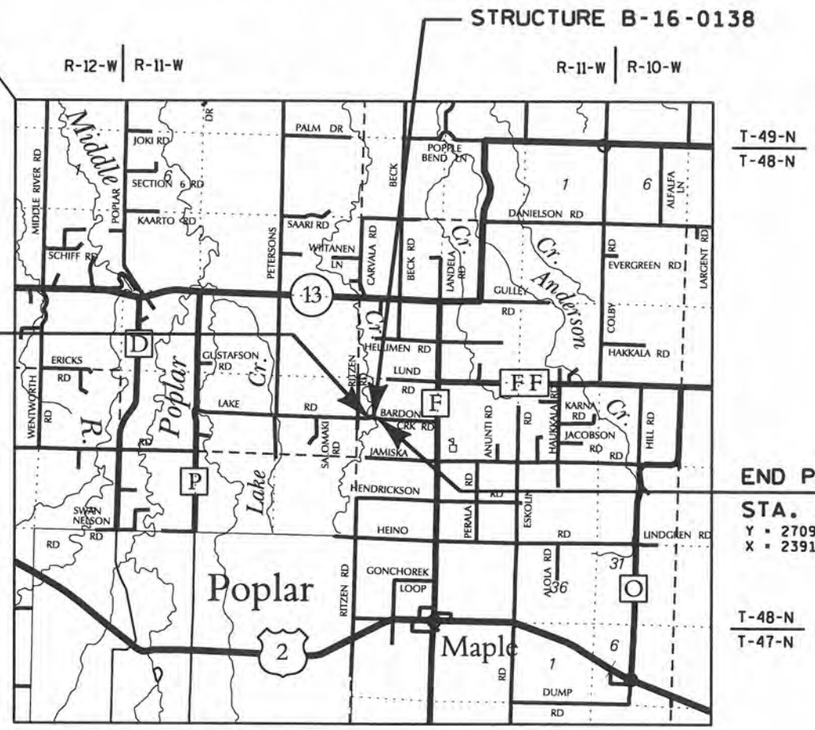
DOUGLAS COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
8390-00-70	WISC 2017015	1

STATE PROJECT NUMBER

8390-00-70





BEGIN PROJECT

STA. 18+00

Y = 270967.82

X = 238750.99

END PROJECT

STA. 22+00

Y = 270945.19

X = 239142.64

LAYOUT SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.076 MI.

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

DESIGN DESIGNATION

A.D.T. (2017)	=	100
A.D.T. (2037)	=	140
D.H.V.	=	10
D.	=	50/50
T.	=	5%
DESIGN SPEED	=	30 MPH
ESALS	=	N/A

CONVENTIONAL SYMBOLS

PLAN

- CORPORATE LIMITS
- PROPERTY LINE (PL + 58.1)
- LOT LINE
- LIMITED HIGHWAY EASEMENT
- EXISTING RIGHT OF WAY
- PROPOSED OR NEW R/W LINE
- SLOPE INTERCEPT
- REFERENCE LINE
- EXISTING CULVERT
- PROPOSED CULVERT (Box or Pipe)
- COMBUSTIBLE FLUIDS (CAUTION)
- HIGH VOLTAGE (CAUTION)
- MARSH AREA
- WOODED OR SHRUB AREA

PROFILE

- GRADE LINE
- ORIGINAL GROUND
- MARSH OR ROCK PROFILE (To be noted as such) (ROCK)
- SPECIAL DITCH (LABEL)
- GRADE ELEVATION (955.36)
- CULVERT (Profile View)

UTILITIES

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

ACCEPTED FOR

Town of Maple

6/28/16 Date — Gary Saari, Town Chairman

ORIGINAL PLANS PREPARED BY

AYRES ASSOCIATES

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

WISCONSIN — DANIEL N. SYDOW E-38363 WI — PROFESSIONAL ENGINEER

DATE 6/27/2016

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

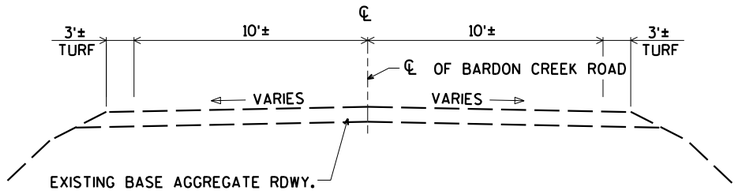
PREPARED BY

Surveyor	AYRES ASSOCIATES INC
Designer	AYRES ASSOCIATES INC
Management Consultant	KNIGHT E/A INC.
C.O. Examiner	

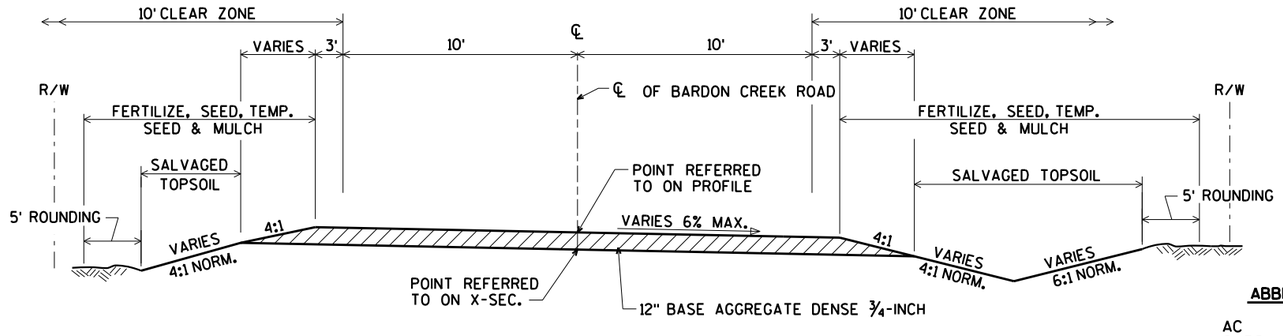
APPROVED FOR THE DEPARTMENT

DATE: 7/25/16 — Ryan B McKeen, Management Consultant Signature

E

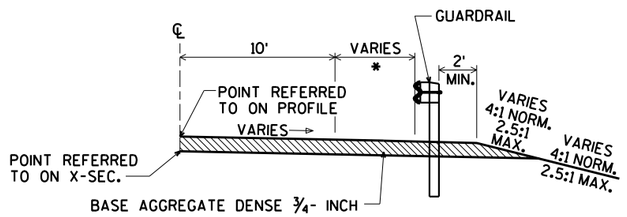


TYPICAL EXISTING SECTION



TYPICAL FINISHED SECTION

(STA. 18+00 TO STA. 22+00)



TYPICAL FINISHED HALF SECTION WITH GUARDRAIL

* 2' MIN. (AT END OF BRIDGE)
4' MAX. (AT END TERMINAL)

GENERAL NOTES

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

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

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

THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING AND FIELD LOCATING ALL UTILITIES.

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

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

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

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

WETLAND EXIST IN THE PROJECT AREA. NO DISTURBANCE ALLOWED IN THE WETLANDS.

ABBREVIATIONS

AC	ACRES
CHIS	CHISELED
℄	CENTERLINE
COR	CORNER
CWT	COUNT
CY	CUBIC YARD
EL	ELEVATION
GAL	GALLON
H	HOUSE
IP	IRON PIPE
LB	POUND
LF	LINEAR FEET
LS	LUMP SUM
LT	LEFT
MAX	MAXIMUM
MIN	MINIMUM
MON	MONUMENT
NORM	NORMAL
OAL	OVERALL LENGTH
PC	POINT OF CURVATURE
PD	PEDESTAL
PI	POINT OF INTERSECTION
PK	PARKER-KALON
PL	PROPERTY LINE
PLE	PERMANENT LIMITED EASEMENT
PP	POWER POLE
PT	POINT OF TANGENCY
R	RADIUS
REQ'D	REQUIRED
RT	RIGHT
R/W	RIGHT-OF-WAY
SF	SQUARE FEET
SHLDR	SHOULDER
STA	STATION
SY	SQUARE YARD
TLE	TEMPORARY LIMITED EASEMENT
VAR	VARIES
WL	WELL

UTILITIES

NORVADO
P.O. BOX 67
CABLE, WI 54821
ATTN: GUY FOLSOM
715-798-7123
gfolsom@norvado.com

** DENOTES UTILITIES THAT ARE NOT DIGGERS HOTLINE MEMBERS

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

WISCONSIN DEPARTMENT OF NATURAL RESOURCES CONTACT:

AMY CRONK
810 WEST MAPLE ST.
SPOONER, WI. 54801
715-635-4229
amy.cronk@wisconsin.gov

DESIGNER

AYRES ASSOCIATES
3433 OAKWOOD HILLS PARKWAY
EAU CLAIRE, WI 54701
ATTN: DANIEL N. SYDOW
715-834-3161
sydowd@AyresAssociates.com

PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	TYPICAL SECTIONS	SHEET 2	E

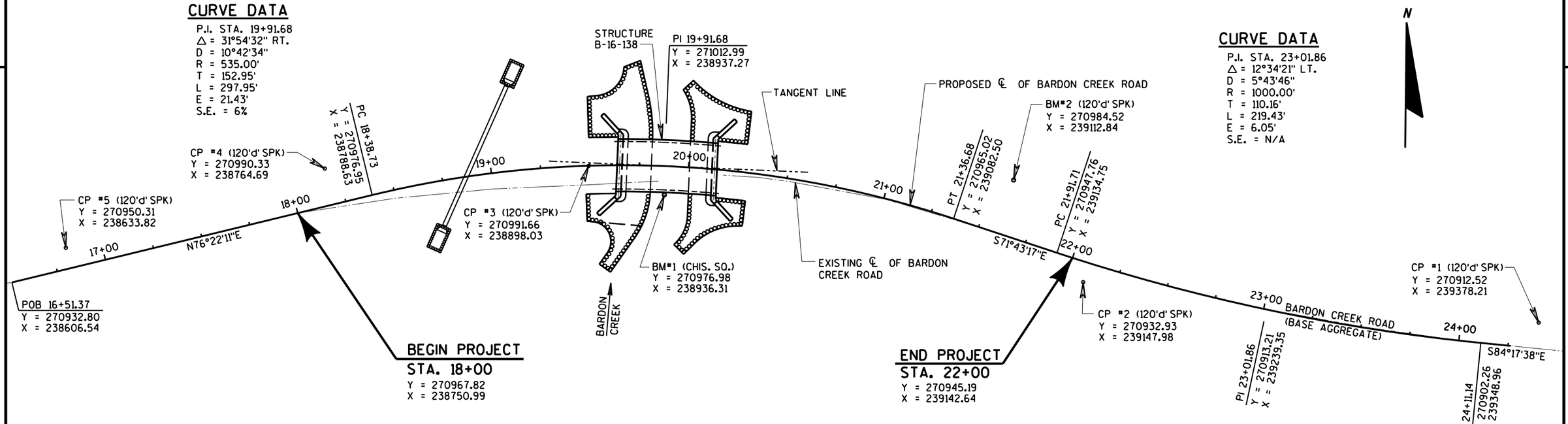
2

CURVE DATA

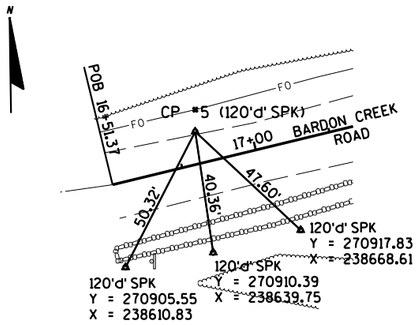
P.I. STA. 19+91.68
△ = 31°54'32" RT.
D = 10°42'34"
R = 535.00'
T = 152.95'
L = 297.95'
E = 21.43'
S.E. = 6%

CURVE DATA

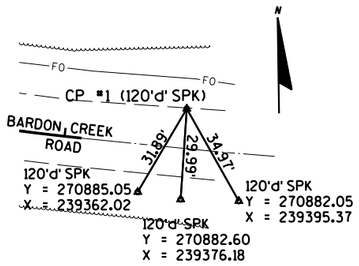
P.I. STA. 23+01.86
△ = 12°34'21" LT.
D = 5°43'46"
R = 1000.00'
T = 110.16'
L = 219.43'
E = 6.05'
S.E. = N/A



ALIGNMENT CONTROLS

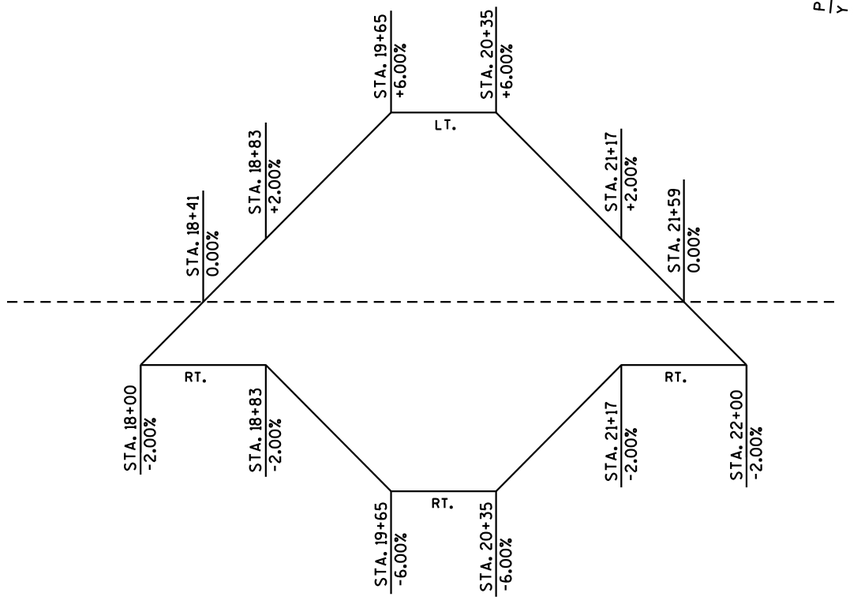


CP #5 STA. 16+82, 10.6' LT.
Y = 270950.31
X = 238633.82



CP #1 STA. 24+39, 13.1' LT.
Y = 270912.52
X = 239378.21

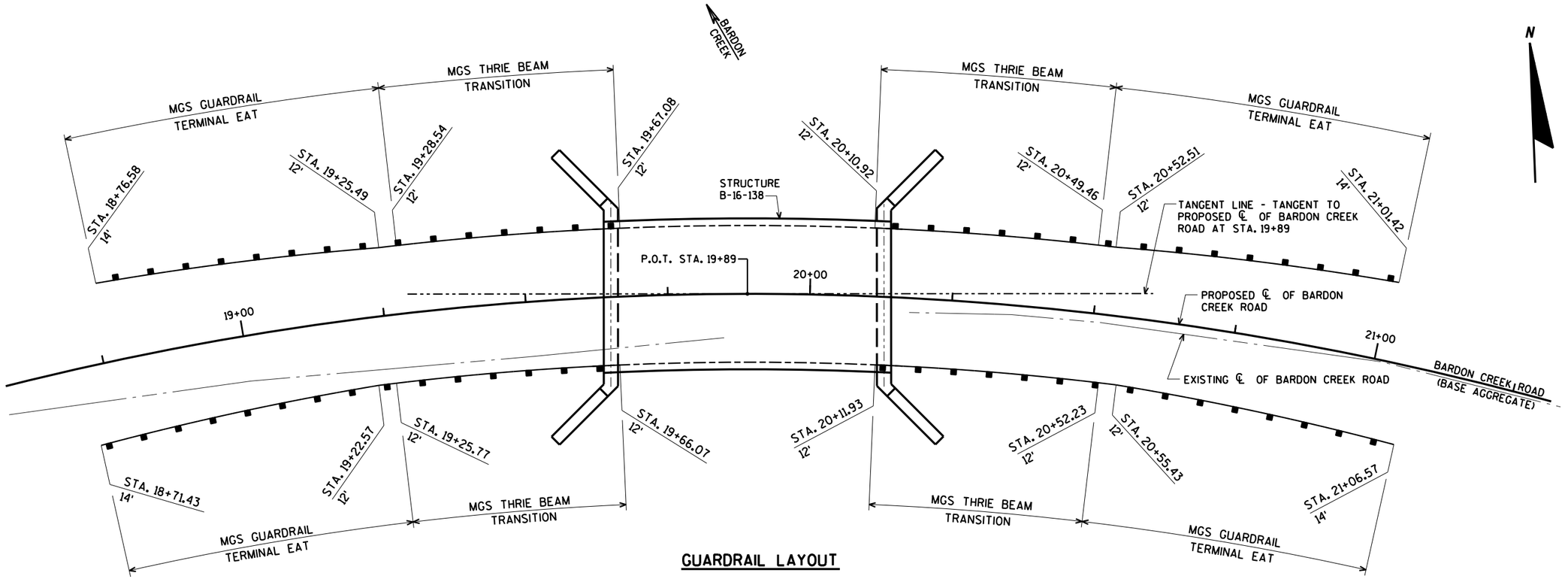
ALIGNMENT TIES



SUPERELEVATION DIAGRAM

PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	ALIGNMENT CONTROLS AND TIES	SCALE, FEET 0 25 50	SHEET 3	E

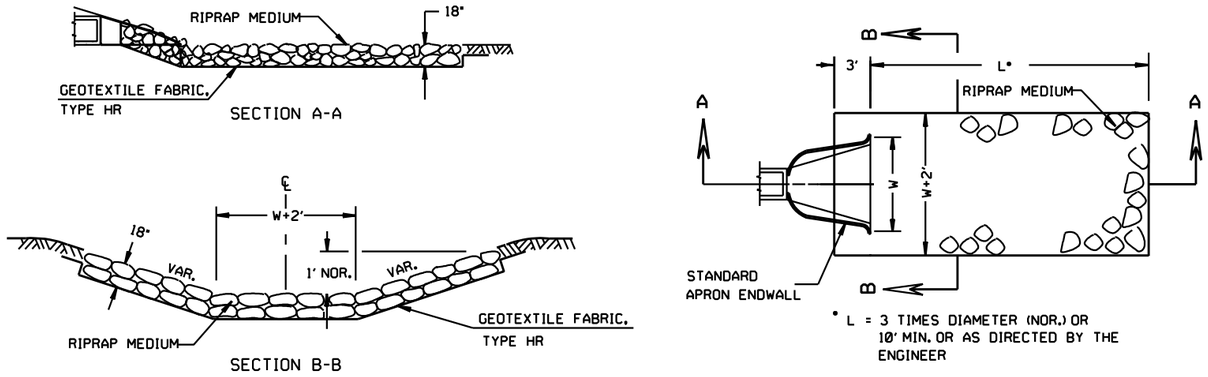
2



GUARDRAIL LAYOUT

PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	GUARDRAIL LAYOUT	SCALE, FEET 0 10 20	SHEET 4	E

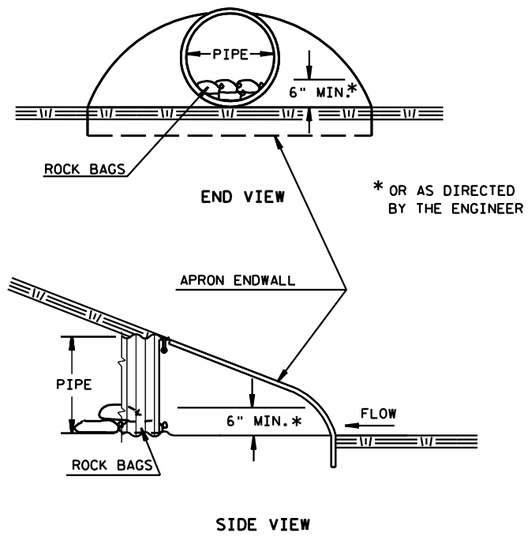
2



RIPRAP AND GEOTEXTILE FABRIC DETAIL

AT APRON ENDWALLS

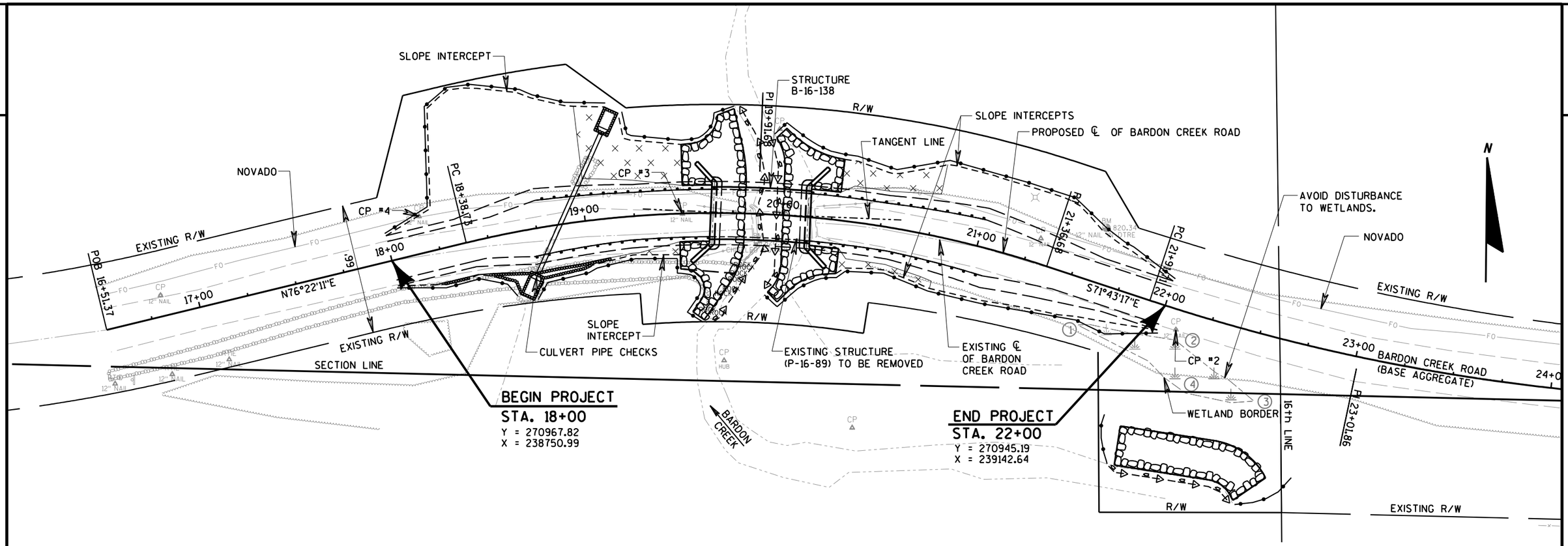
ESTIMATED BAG SIZE = 18" x 12" x 6"	
PIPE SIZE	ESTIMATED NO. OF BAGS
12"	1
15"	2
18"	2
21"	3
14" x 23"	3
24"	3
27"	4
30"	5
19" x 30"	5
36"	7
24" x 38"	8
42"	8
29" x 45"	10
48"	10
34" x 53"	10
38" x 60"	13
60"	13
66"	15
53" x 83"	19



CULVERT PIPE CHECK

SEE EROSION CONTROL SHEETS FOR LOCATIONS

PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY:DOUGLAS	CONSTRUCTION DETAILS	SHEET 5	E



	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 = 0.93 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.58 ACRES

WETLAND BOUNDARIES		
POINT	Y	X
1	270935.2771	239098.2407
2	270927.7251	239147.4595
3	270896.7355	239187.5636
4	270900.9021	239152.6678

HIGH WATER $_2$ EL. 813.8

LEGEND

- EROSION MAT CLASS II TYPE C
- TEMPORARY DITCH CHECKS (UNDISTRIBUTED)
- SILT FENCE
- RIPRAP HEAVY
- TURBIDITY BARRIERS
- RIPRAP MEDIUM

PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	EROSION CONTROL	SCALE, FEET 0 25 50	SHEET 6	E

8390-00-70

Line	Item	Item Description	Unit	Total	Qty
0010	201.0105	Clearing	STA	4.000	4.000
0020	201.0205	Grubbing	STA	4.000	4.000
0030	203.0100	Removing Small Pipe Culverts	EACH	1.000	1.000
0040	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. 20+01	LS	1.000	1.000
0050	204.0165	Removing Guardrail	LF	110.000	110.000
0060	205.0100	Excavation Common	CY	80.000	80.000
0070	206.1000	Excavation for Structures Bridges (structure) 01. B-16-138	LS	1.000	1.000
0080	208.0100	Borrow	CY	938.000	938.000
0090	210.1100	Backfill Structure Type A	CY	520.000	520.000
0100	213.0100	Finishing Roadway (project) 01. 8390-00-70	EACH	1.000	1.000
0110	305.0110	Base Aggregate Dense 3/4-Inch	TON	917.000	917.000
0120	502.0100	Concrete Masonry Bridges	CY	216.000	216.000
0130	502.3200	Protective Surface Treatment	SY	180.000	180.000
0140	505.0400	Bar Steel Reinforcement HS Structures	LB	4,960.000	4,960.000
0150	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	23,860.000	23,860.000
0160	506.0105	Structural Steel Carbon	LB	530.000	530.000
0170	513.4061	Railing Tubular Type M (structure) 01. B-16-138	LF	105.000	105.000
0180	516.0500	Rubberized Membrane Waterproofing	SY	24.000	24.000
0190	520.1024	Apron Endwalls for Culvert Pipe 24-Inch	EACH	2.000	2.000
0200	520.3324	Culvert Pipe Class III-A 24-Inch	LF	78.000	78.000
0210	550.0500	Pile Points	EACH	14.000	14.000
0220	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	490.000	490.000
0230	606.0200	Riprap Medium	CY	25.000	25.000
0240	606.0300	Riprap Heavy	CY	430.000	430.000
0250	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	174.000	174.000
0260	614.2500	MGS Thrie Beam Transition	LF	160.000	160.000
0270	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0280	619.1000	Mobilization	EACH	1.000	1.000
0290	624.0100	Water	MGAL	13.000	13.000
0300	625.0500	Salvaged Topsoil	SY	840.000	840.000
0310	627.0200	Mulching	SY	1,305.000	1,305.000
0320	628.1504	Silt Fence	LF	1,180.000	1,180.000
0330	628.1520	Silt Fence Maintenance	LF	2,360.000	2,360.000
0340	628.1905	Mobilizations Erosion Control	EACH	4.000	4.000
0350	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0360	628.2027	Erosion Mat Class II Type C	SY	360.000	360.000
0370	628.6005	Turbidity Barriers	SY	460.000	460.000
0380	628.7504	Temporary Ditch Checks	LF	50.000	50.000

8390-00-70

Line	Item	Item Description	Unit	Total	Qty
0390	628.7555	Culvert Pipe Checks	EACH	3.000	3.000
0400	629.0210	Fertilizer Type B	CWT	1.200	1.200
0410	630.0120	Seeding Mixture No. 20	LB	38.000	38.000
0420	630.0200	Seeding Temporary	LB	40.000	40.000
0430	633.5200	Markers Culvert End	EACH	2.000	2.000
0440	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0450	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0460	638.2602	Removing Signs Type II	EACH	6.000	6.000
0470	638.3000	Removing Small Sign Supports	EACH	5.000	5.000
0480	642.5001	Field Office Type B	EACH	1.000	1.000
0490	643.0100	Traffic Control (project) 01. 8390-00-70	EACH	1.000	1.000
0500	645.0120	Geotextile Type HR	SY	1,030.000	1,030.000
0510	650.4500	Construction Staking Subgrade	LF	350.000	350.000
0520	650.5000	Construction Staking Base	LF	350.000	350.000
0530	650.6000	Construction Staking Pipe Culverts	EACH	1.000	1.000
0540	650.6500	Construction Staking Structure Layout (structure) 01. B-16-138	LS	1.000	1.000
0550	650.9910	Construction Staking Supplemental Control (project) 01. 8390-00-70	LS	1.000	1.000
0560	650.9920	Construction Staking Slope Stakes	LF	350.000	350.000
0570	715.0502	Incentive Strength Concrete Structures	DOL	1,296.000	1,296.000
0580	ASP.1T0A	On-the-Job Training Apprentice at $5.00/HR 01. 8390-00-70	HRS	1,200.000	1,200.000
0590	ASP.1T0G	On-the-Job Training Graduate at $5.00/HR 01. 8390-00-70	HRS	300.000	300.000

3

EARTHWORK SUMMARY (CATEGORY 0010)

DIVISION	STATION TO STATION	LOCATION	205.0100 EXCAVATION COMMON CUT (1) CY	SALVAGED/ UNUSABLE PAVEMENT MATERIAL (2) CY	AVAILABLE MATERIAL (4) CY	UNEXPANDED FILL (3) CY	EXPANDED FILL (5) CY	MASS ORDINATE ±(6) CY	WASTE CY	208.0100 BORROW CY	COMMENTS:
1	18+00 TO 19+64	BARDON CREEK ROAD	34	0	34	563	732	-698	0	698	
	20+14 TO 22+00	BARDON CREEK ROAD	46	0	46	220	286	-240	0	240	
	GRANDTOTAL		80	0	80	783	1,018	-938	0	938	

TOTAL EXCAVATION COMMON 80 CY **TOTAL BORROW 938 CY**

NOTES:
1) EXCAVATION COMMON IS THE SUM OF THE CUT COLUMN. ITEM NUMBER 205.0100
2) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
3) DOES NOT INCLUDE UNUSABLE PAVEMENT EXCAVATION VOLUME.
4) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSABLE PAVEMENT MATERIAL
5) EXPANDED FILL FACTOR = 1.30
EXPANDED FILL = UNEXPANDED FILL * FILL FACTOR
6) THE MASS ORDINATE ± QTY CALCUTATED FOR THE DIVISION.
PLUS (+) QUANTITY INDICATES AN EXCESS OF MATERIAL WITHIN THE DIVISION.
MINUS (-) QUANTITY INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.

CLEARING AND GRUBBING (CATEGORY 0010)

STATION TO STATION	201.0105 CLEARING STA	201.0205 GRUBBING STA
Sta. 18+00 to Sta. 22+00	4	4
TOTAL	4	4

203.0100 REMOVING SMALL PIPE CULVERTS (CATEGORY 0010)

STATION	EACH
Sta. 18+86.82 (24" DIA. CPCS)	1
TOTAL	1

204.0165 REMOVING GUARDRAIL (CATEGORY 0010)

STATION TO STATION	LOCATION	LF
Sta. 19+56.59 to Sta. 19+84.16	LT	28
Sta. 19+58.00 to Sta. 19+84.60	RT	27
Sta. 20+16.65 to Sta. 20+55.09	LT	40
Sta. 20+20.97 to Sta. 20+35.26	RT	15
TOTAL		110

213.0100 FINISHING ROADWAY (CATEGORY 0010)

LOCATION	EACH
PROJECT 8390-00-70	1

3

BASE AGGREGATE DENSE (CATEGORY 0010)

STATION TO STATION	305.0110 3/4-INCH TON
Sta. 18+00 to Sta. 19+64	424
Sta. 20+14 to Sta. 22+00	493
TOTALS	917

520.1024 APRON ENDWALLS FOR CULVERT PIPE 24-INCH (CATEGORY 0010)

STATION TO STATION	LOCATION	EACH
Sta. 18+72	RT	1
Sta. 19+12	LT	1
TOTAL		2

520.3324 CULVERT PIPE CLASS III-A 24-INCH (CATEGORY 0010)

STATION TO STATION	LF
Sta. 18+87	78
TOTAL	78

606.0200 RIPRAP MEDIUM (CATEGORY 0010)

STATION TO STATION	LOCATION	CY
Sta. 18+68	RT	6
Sta. 18+19 to Sta. 19+11	RT	13
Sta. 19+15	LT	6
TOTAL		25

606.0300 RIPRAP HEAVY (CATEGORY 0010)

STATION TO STATION	LOCATION	CY
Sta. 21+97 to Sta. 22+69	RT	110
TOTAL		110

BEAM GUARD (CATEGORY 0010)

STATION TO STATION	LOCATION	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH
Sta. 19+28.54 to Sta. 19+67.08	LT	40	---
Sta. 19+25.77 to Sta. 19+66.07	RT	40	---
Sta. 20+10.92 to Sta. 20+49.46	LT	40	---
Sta. 20+11.93 to Sta. 20+52.23	RT	40	---
Sta. 18+71.43 to Sta. 19+25.77	RT	---	1
Sta. 18+76.58 to Sta. 19+28.54	LT	---	1
Sta. 20+49.46 to Sta. 21+01.42	LT	---	1
Sta. 20+52.23 to Sta. 21+06.57	RT	---	1
TOTALS		160	4

619.1000 MOBILIZATION

LOCATION	EACH
PROJECT 8390-00-70(CATEGORY 0010)	0.3
PROJECT 8390-00-70 (CATEGORY 0020)	0.7
TOTAL	1

3

624.0100 WATER (CATEGORY 0010)

PURPOSE	MGAL
COMPACTION	10
DUST CONTROL	3
TOTAL	13

SALVAGED TOPSOIL, MULCHING, FERTILIZER, SEED & TEMPORARY SEED (CATEGORY 0010)

STATION TO STATION	LOCATION	625.0500 SALVAGED TOPSOIL SY	627.0200 MULCHING SY	629.0210 FERTILIZER TYPE B CWT	630.0120 SEEDING NO. 20 LB	630.0200 SEEDING TEMPORARY LB
Sta. 18+00 to Sta. 22+00	BARDON CREEK ROAD	840	1,045	0.9	38	35
UNDISTRIBUTED		---	260	0.3	---	5
TOTALS		840	1,305	1.2	38	40

SILT FENCE & SILT FENCE MAINTENANCE (CATEGORY 0010)

STATION TO STATION	LOCATION	628.1504 LF	628.1520 MAINTENANCE LF
Sta. 18+00 to Sta. 19+75	LT	245	490
Sta. 18+00 to Sta. 19+59	RT	190	380
Sta. 19+93 to Sta. 22+00	RT	215	430
Sta. 19+94 to Sta. 22+00	LT	230	460
Sta. 21+88 to Sta. 21+97	RT	30	60
Sta. 22+59 to Sta. 22+82	RT	35	70
UNDISTRIBUTED		235	470
TOTALS		1,180	2,360

MOBILIZATIONS EROSION CONTROL & EMERGENCY EROSION CONTROL (CATEGORY 0010)

LOCATION	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH
PROJECT 8390-00-70	4	2

628.2027 EROSION MAT CLASS II TYPE C (CATEGORY 0010)

STATION TO STATION	LOCATION	SY
Sta. 19+01 to Sta. 19+50	LT	170
Sta. 19+11 to Sta. 19+48	RT	15
Sta. 20+28 to Sta. 20+77	LT	75
Sta. 20+30 to Sta. 20+81	RT	25
UNDISTRIBUTED		75
TOTALS		360

628.6005 TURBIDITY BARRIER (CATEGORY 0010)

LOCATION	SY
STA. 19+89	164
STA. 19+97	108
STA. 22+31	97
UNDISTRIBUTED	91
TOTAL	460

628.7504 TEMPORARY DITCH CHECKS (CATEGORY 0010)

LOCATION	LF
UNDISTRIBUTED	50
TOTAL	50

628.7555 CULVERT PIPE CHECKS (CATEGORY 0010)

LOCATION	EACH
STA. 18+70, 22' RT	3
TOTAL	3

633.5200 MARKERS CULVERT END (CATEGORY 0010)

STATION	LOCATION	EACH
Sta. 19+14	LT	1
Sta. 18+71	RT	1
TOTAL		2

3

634.0612 WOOD POSTS 4X6 INCH X 12 FT (CATEGORY 0010)

STATION	LOCATION	EACH
Sta. 19+63	RT (Object Marker)	1
Sta. 19+64	LT (Object Marker)	1
Sta. 20+14	LT (Object Marker)	1
Sta. 20+16	RT (Object Marker)	1
TOTAL		4

637.2230 SIGNS TYPE II REFLECTIVE F (CATEGORY 0010)

STATION			SF
Sta. 19+63	RT (Object Marker)	W5-52R	3
Sta. 19+64	LT (Object Marker)	W5-52L	3
Sta. 20+14	LT (Object Marker)	W5-52R	3
Sta. 20+16	RT (Object Marker)	W5-52L	3
TOTAL			12

638.2602 REMOVING SIGNS TYPE II (CATEGORY 0010)

STATION			EACH
Sta. 16+58	LT	"WEIGHT LIMIT 10 TONS" R12-1	1
		"ONE LANE BRIDGE AHEAD" W5-3	1
Sta. 19+84	LT	BRIDGE HASH MARKER W5-52L	1
Sta. 19+86	RT	BRIDGE HASH MARKER W5-52R	1
Sta. 20+16	LT	BRIDGE HASH MARKER W5-52R	1
Sta. 20+19	RT	BRIDGE HASH MARKER W5-52L	1
TOTAL			6

638.3000 REMOVING SMALL SIGN SUPPORTS (CATEGORY 0010)

STATION			EACH
Sta. 16+58	LT	"WEIGHT LIMIT 10 TONS" R12-1	1
		"ONE LANE BRIDGE AHEAD" W5-3	
Sta. 19+84	LT	BRIDGE HASH MARKER W5-52L	1
Sta. 19+86	RT	BRIDGE HASH MARKER W5-52R	1
Sta. 20+16	LT	BRIDGE HASH MARKER W5-52R	1
Sta. 20+19	RT	BRIDGE HASH MARKER W5-52L	1
TOTAL			5

642.5001 FIELD OFFICE TYPE B (CATEGORY 0010)

LOCATION	EACH
PROJECT 8390-00-70	1

643.0100 TRAFFIC CONTROL (CATEGORY 0010)

LOCATION	EACH
PROJECT 8390-00-70	1

645.0120 GEOTEXTILE TYPE HR (CATEGORY 0010)

STATION TO STATION	LOCATION	SY
Sta. 18+68 - RCP END	RT	21
Sta. 18+19 to Sta. 19+11	RT	73
Sta. 19+15 - RCP END	LT	21
Sta. 21+97 to Sta. 22+69	RT	205
TOTAL		320

CONSTRUCTION STAKING

CATEGORY	LOCATION	650.4500 SUBGRADE LF	650.5000 BASE LF	650.6500 STRUCTURE LAYOUT LS	650.9910 SUPPLEMENTARY CONTROL LS	650.9920 SLOPE STAKES LF
0010	Sta. 18+00 to Sta. 22+00	350	350	---	1	350
0020	B-16-0138	---	---	1	---	---
TOTALS		350	350	1	1	350

650.6000 CONSTRUCTION STAKING PIPE CULVERTS (CATEGORY 0010)

STATION	EACH
Sta. 18+87	1
TOTAL	1

881439

DOCUMENT# 881439
Recorded or Filed on
June 01, 2016 11:15 AM
GAYLE I. WARNER
DOUGLAS COUNTY RECORDER
SUPERIOR, WI 54880-2769
Fee Amount: 425.00
Total Pages 1

TRANSPORTATION PROJECT PLAT NO: 8390-00-00 4.01

PART OF THE NORTHWEST ¼ OF THE SOUTHWEST ¼ AND PART OF THE SOUTHWEST ¼ OF THE NORTHWEST ¼ OF SECTION 22, TOWNSHIP 48 NORTH, RANGE 11 WEST, TOWN OF MAPLE, DOUGLAS COUNTY, WISCONSIN.

RELOCATION ORDER T MAPLE, BARDON CREEK ROAD LOC STR (BARDON CREEK BRIDGE B-16-013B)

TO PROPERLY ESTABLISH, LAY OUT, WIDEN, ENLARGE, EXTEND, CONSTRUCT, RECONSTRUCT, IMPROVE, OR MAINTAIN A PORTION OF THE HIGHWAY DESIGNATED ABOVE, THE TOWN OF MAPLE DEEMS IT NECESSARY TO RELOCATE OR CHANGE SAID HIGHWAY AND ACQUIRE CERTAIN LANDS AND INTERESTS OR RIGHTS IN LANDS FOR THE ABOVE PROJECT.

TO EFFECT THIS CHANGE, PURSUANT TO AUTHORITY GRANTED UNDER SECTION 60.50 AND 82.12, WISCONSIN STATUTES, THE TOWN OF MAPLE HEREBY ORDERS THAT:

1. THAT PORTION OF SAID HIGHWAY AS SHOWN ON THIS PLAT IS LAID OUT AND ESTABLISHED TO THE LINES AND WIDTHS AS SO SHOWN FOR THE ABOVE PROJECT.
2. THE LANDS OR INTERESTS OR RIGHTS IN LANDS AS SHOWN ON THIS PLAT ARE REQUIRED BY THE TOWN FOR THE ABOVE PROJECT AND SHALL BE ACQUIRED IN THE NAME OF THE TOWN OF MAPLE, PURSUANT TO THE PROVISIONS OF SECTION 60.50 OR 82.12, WISCONSIN STATUTES.

R/L CURVE DATA
PI STA = 19+91.68
Y = 271012.991
X = 238937.268
DELTA = 31°54'32"
D = 10°42'34"
T = 152.95'
L = 297.95'
R = 535.00'
PC STA = 18+38.73
PT STA = 21+36.68

R/L CURVE DATA
PI STA = 23+01.87
Y = 270913.212
X = 239239.351
DELTA = 12°34'21"
D = 5°43'46"
T = 110.16'
L = 219.43'
R = 1000.00'
PC STA = 21+91.71
PT STA = 24+11.14
TANGENT AHEAD = S84°17'38"E

COURSE TABLE		
COURSE	BEARING	DISTANCE
101-102	S00°30'24"E	60.03'
102-103	N89°52'44"W	92.45'
103-104	N00°19'37"W	81.22'
104-105	SEE CURVE DATA	
105-106	S08°59'44"W	15.75'
106-107	SEE CURVE DATA	
107-108	N04°23'28"W	15.70'
108-109	SEE CURVE DATA	
109-110	N13°37'49"W	33.17'
110-111	N13°37'49"W	32.84'

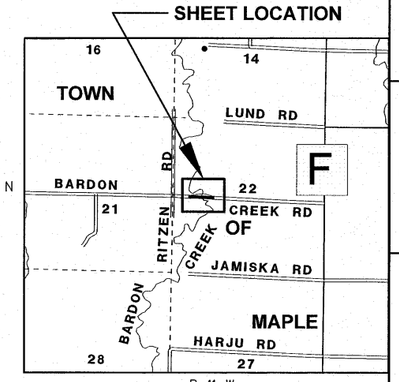
COURSE TABLE		
COURSE	BEARING	DISTANCE
111-112	N14°17'52"E	53.38'
112-113	N76°22'11"E	13.73'
113-114	SEE CURVE DATA	
114-115	S54°07'51"E	37.65'
115-116	SEE CURVE DATA	
116-117	S30°34'57"E	33.93'
117-118	SEE CURVE DATA	
118-119	S72°45'59"E	24.93'
119-120	SEE CURVE DATA	
120-121	S00°43'18"E	35.00'
121-101	S00°43'18"E	28.21'

GN
0 30 60
SCALE, FEET

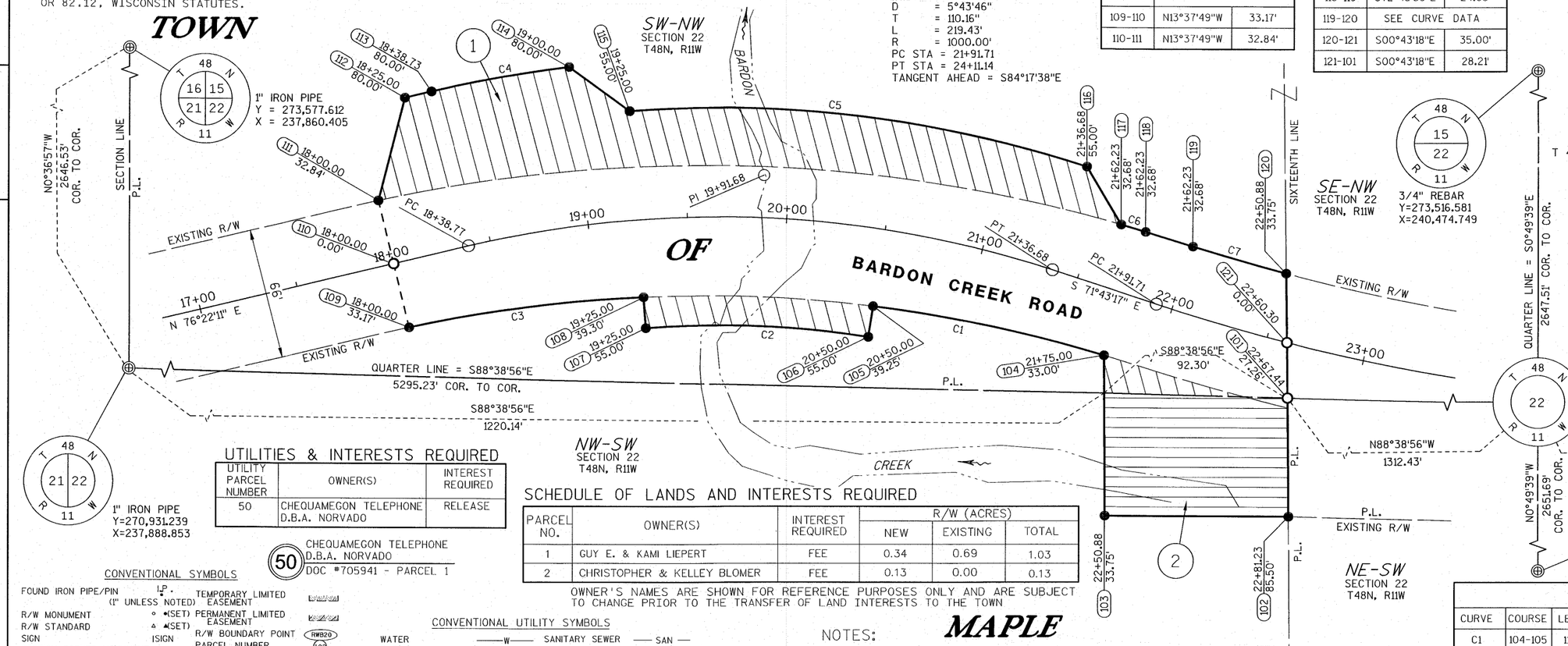
Filed in Vol 2 pg 18

RESERVED FOR REGISTER OF DEEDS
PROJECT NUMBER 8390-00-00 - 4.01

SHEET LOCATION



LAYOUT
SCALE 0 0.5 MI



UTILITIES & INTERESTS REQUIRED

UTILITY PARCEL NUMBER	OWNER(S)	INTEREST REQUIRED
50	CHEQUAMEGON TELEPHONE D.B.A. NORVADO	RELEASE

(50) CHEQUAMEGON TELEPHONE D.B.A. NORVADO DOC #705941 - PARCEL 1

SCHEDULE OF LANDS AND INTERESTS REQUIRED

PARCEL NO.	OWNER(S)	INTEREST REQUIRED	R/W (ACRES) NEW	EXISTING	TOTAL
1	GUY E. & KAMI LIEPERT	FEE	0.34	0.69	1.03
2	CHRISTOPHER & KELLEY BLOMER	FEE	0.13	0.00	0.13

OWNER'S NAMES ARE SHOWN FOR REFERENCE PURPOSES ONLY AND ARE SUBJECT TO CHANGE PRIOR TO THE TRANSFER OF LAND INTERESTS TO THE TOWN

CONVENTIONAL SYMBOLS

FOUND IRON PIPE/PIN (1" UNLESS NOTED)
R/W MONUMENT
R/W STANDARD
SIGN
SECTION CORNER MONUMENT
SECTION CORNER SYMBOL
FEE (HATCH VARIES)
TEMPORARY LIMITED EASEMENT
PERMANENT LIMITED EASEMENT
R/W BOUNDARY POINT
PARCEL NUMBER
UTILITY PARCEL NUMBER
SIGN NUMBER (OFF PREMISE)
BUILDING
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
NEW REFERENCE LINE
NEW R/W LINE
EXISTING R/W LINE
PROPERTY LINE
LOT & TIE
CORPORATE LIMITS
TEMPORARY LIMITED EASEMENT
FENCE
SLOPE INTERCEPTS
PERMANENT LIMITED EASEMENT
NO ACCESS (BY STATUTORY AUTHORITY)
NO ACCESS (BY PREVIOUS ACQUISITION/CONTROL)
ACCESS CONTROL BY ACQUISITION

CONVENTIONAL UTILITY SYMBOLS

WATER	W	SANITARY SEWER	SAN
GAS	G	STORM SEWER	SS
TELEPHONE	T		NON COMPENSABLE
OVERHEAD TRANSMISSION LINES	OH	POWER POLE	
ELECTRIC	E	TELEPHONE POLE	
CABLE TELEVISION	TV	TELEPHONE PEDESTAL	
FIBER OPTIC	FO	ELECTRIC TOWER	

CONVENTIONAL ABBREVIATIONS

ACCESS POINT/ DRIVEWAY CONNECTION	AP	BUILDING	BLDG
ACCESS RIGHTS	AR	REFERENCE LINE	R/L
ACRES	AC.	RELEASE OF RIGHTS	ROR
AND OTHERS	ET.AL.	REMAINING	REM.
CENTERLINE	C/L	RIGHT-OF-WAY	R/W
CERTIFIED SURVEY MAP	CSM	SECTION	SEC.
CORNER	COR.	STATION	STA.
DOCUMENT	DOC.	TEMPORARY LIMITED EASEMENT	TLE
EASEMENT	EASE.	VOLUME	V.
FIELD ENTRANCE	F.E.	CURVE DATA	
LAND CONTRACT	LC	LONG CHORD	LCH
MONUMENT	MON.	LONG CHORD BEARING	LCB
PAGE	P.	RADIUS	R
PERMANENT LIMITED EASEMENT	PLE	DEGREE OF CURVE	D
PROPERTY LINE	PL	CENTRAL ANGLE OR DELTA	DELTA
RECORDED AS	(100')	LENGTH OF CURVE	L
		TANGENT	TAN

CURVE TABLE					
CURVE	COURSE	LENGTH	RADIUS	LONG CHORD	LONG CHORD BEARING
C1	104-105	119.13'	683.20'	118.98'	N77°52'33"W
C2	106-107	112.18'	456.19'	111.90'	N87°41'52"W
C3	108-109	119.13'	683.20'	118.98'	S82°25'50"W
C4	113-114	70.43'	615.00'	70.40'	N79°39'02"E
C5	115-116	233.44'	590.00'	231.92'	S83°03'22"E
C6	117-118	12.93'	749.20'	12.93'	S73°15'39"E
C7	119-120	48.81'	1112.92'	48.81'	S74°01'23"E

NOTES:

POSITIONS SHOWN ON THIS PLAT ARE WISCONSIN COUNTY COORDINATES, DOUGLAS COUNTY ZONE, NAD83 (2011), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

ALL NEW RIGHT-OF-WAY MONUMENTS WILL BE TYPE 2 (TYPICALLY 3/4" X 24" CAPPED IRON REBARS), UNLESS OTHERWISE NOTED, AND WILL BE PLACED PRIOR TO THE COMPLETION OF THE PROJECT.

ALL RIGHT-OF-WAY LINES DEPICTED IN THE NON-ACQUISITION AREAS ARE INTENDED TO RE-ESTABLISH EXISTING RIGHT-OF-WAY LINES AS DETERMINED FROM PREVIOUS PROJECTS, OTHER RECORDED DOCUMENTS, OR FROM CENTERLINE OF EXISTING PAVEMENTS.

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

DIMENSIONING FOR THE NEW RIGHT-OF-WAY IS MEASURED ALONG AND PERPENDICULAR TO THE NEW REFERENCE LINES.

PARCEL IDENTIFICATION NUMBERS MAY NOT POINT TO ALL AREAS OF ACQUISITION, AS NOTED ON THE SCHEDULE OF LANDS & INTERESTS REQUIRED.

PROPERTY LINES SHOWN ON THIS PLAT ARE DRAWN FROM DATA DERIVED FROM MAPS AND DOCUMENTS OF PUBLIC RECORD AND/OR EXISTING OCCUPATIONAL LINES. THIS PLAT MAY NOT BE A TRUE REPRESENTATION OF EXISTING PROPERTY LINES, EXCLUDING RIGHT-OF-WAY, AND SHOULD NOT BE USED AS A SUBSTITUTE FOR AN ACCURATE FIELD SURVEY.

EXISTING HIGHWAY RIGHT-OF-WAY FOR BARDON CREEK ROAD SHOWN HEREIN IS BASED ON A PRESUMED 66' WIDTH CENTERED ON THE CENTER LINE OF THE TRAVELED ROADWAY PER STATE STATUTE 82.31 (2);

WISCONSIN James R. Cappeart S-3044 Green Bay Wis. LAND SURVEYOR

AYRES ASSOCIATES

I, JAMES R. CAPPEART, PROFESSIONAL LAND SURVEYOR, HEREBY CERTIFY THAT IN FULL COMPLIANCE WITH THE PROVISIONS OF SECTION 84.095 OF THE WISCONSIN STATUTES AND UNDER THE DIRECTION OF THE TOWN OF MAPLE, I HAVE MAPPED THIS TRANSPORTATION PROJECT PLAT 8390-00-00 4.01 AND THAT SUCH PLAT CORRECTLY REPRESENTS ALL EXTERIOR BOUNDARIES OF THE SURVEYED LAND.

JAMES R. CAPPEART
REGISTRATION NUMBER: S-3044
03/25/2016
DATE

THIS PLAT AND RELOCATION ORDER IS APPROVED FOR THE TOWN OF MAPLE.

CHAIRMAN
5/2/13
DATE

FILE NAME : V:\SURVEY\EC\0SURVEY\0DGN\421002_TN OF MAPLE\CADD\83900000_4.01.DWG
APPRAISAL PLAT DATE: FEBRUARY 19, 2016
PLOT DATE : 3/25/2016 PLOT BY : AYRES ASSOCIATES PLOT NAME : PLOT SCALE : 1"=60'

NOTES:
FOR ALIGNMENT CONTROLS, TIES, AND SUPERELEVATION DIAGRAM SEE ALIGNMENT CONTROLS AND TIES SHEET

FOR GUARDRAIL LAYOUT, SEE GUARDRAIL LAYOUT AND DETAILS SHEET

SLOPE INTERCEPT

REMOVE CP
STA. 19+87
24"ϕ PCP

STRUCTURE
B-16-138

R/W

SLOPE INTERCEPTS

PROPOSED ℄ OF BARDON CREEK ROAD

TANGENT LINE

NOVADO

PC 18+38.78

CP #4

CP #3

PI 19+91.68

BM#2

PT 21+36.68

PC 21+91.11

AVOID DISTURBANCE
TO WETLANDS.

N

EXISTING R/W

CP #5

POB 16+51.37

17+00

18+00

19+00

20+00

21+00

22+00

N76°22'11"E

S71°43'17"E

99'

SLOPE
INTERCEPT

BM#1

EXISTING STRUCTURE
(P-16-89) TO BE REMOVED

EXISTING ℄
OF BARDON
CREEK ROAD

CP #2

SECTION LINE

23+00 BARDON CREEK ROAD
(BASE AGGREGATE)

24+0

BEGIN PROJECT
STA. 18+00
Y = 270967.82
X = 238750.99

BARDON
CREEK

END PROJECT
STA. 22+00
Y = 270945.19
X = 239142.64

85'

RIPRAP HEAVY

16+h LINE

PI 23+01.86

STA. 22+81.23
85.50'

BENCH MARKS ⊕

NO.	STA.	DESCRIPTION	ELEV.
1	19+88	CHIS. SQ. ON CURB ℄ SW COR. OF BRIDGE DECK, 15' LT.	820.55
2	21+59	SET 120'd' SPK IN 16" POPLAR TREE, 28' LT.	820.34

EARTHWORK SUMMARY
STA. 18+00 TO STA. 19+63.74
EXC. COMMON 34 C.Y.
FILL 732 C.Y.
SHR. = 30%
BORROW 698 C.Y.

-8.42%

PC STA 18+00.00
PC EL 834.45

FINISHED ℄
PROFILE

380' VC
K = 36.99

HIGH WATER$_{100}$ EL. 819.4

LO STA 21+11.31
LO EL 821.35

+1.86%

EARTHWORK SUMMARY
STA. 20+14.26 TO STA. 22+00
EXC. COMMON 46 C.Y.
FILL 286 C.Y.
SHR. = 30%
BORROW 240 C.Y.

EXISTING ℄ PROFILE

1 - 24" ϕ CP REQ'D.
L = 78'
2 - ENDWALLS REQ'D.
STA. 18+87.20
INLET EL. 826.55
OUTLET EL. 818.66

PI STA 19+90.00
PI EL 818.46

PT STA 21+80.00
PT EL 821.99

PI STA 22+00.00
PI EL 822.36

WATER EL. 809.6
(9-10-15)

STREAM BED
EL. 806.1

REMOVING OLD STRUCTURE OVER WATERWAY
WITH MINIMAL DEBRIS
STATION 20+01, STRUCTURE P-16-89
SINGLE SPAN STEEL DECK GIRDER BRIDGE
15.8' CLEAR ROADWAY x 32.0' O.A.L.

STA. 19+89
STRUCTURE B-16-138 REQ'D.
SINGLE SPAN CONCRETE FLAT SLAB BRIDGE
24'-0" CLEAR ROADWAY x 50'-6" O.A.L.
0° SKEW

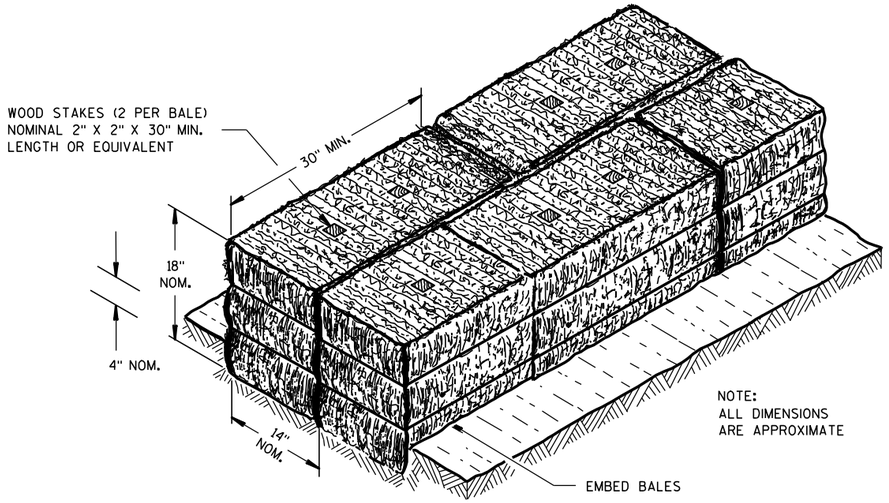
	17+00	17+50	18+00	18+50	19+00	19+50	20+00	20+50	21+00	21+50	22+00	22+50	23+00	23+50
	843.41	839.13	834.45 MATCH	829.59 830.58	825.89 827.39	822.25 824.87	807.15 823.03	820.62 821.86	820.36 821.37	821.04 821.55	822.36 MATCH	823.69	825.81	828.53

840 840 830 830 820 820 810 810 800 800

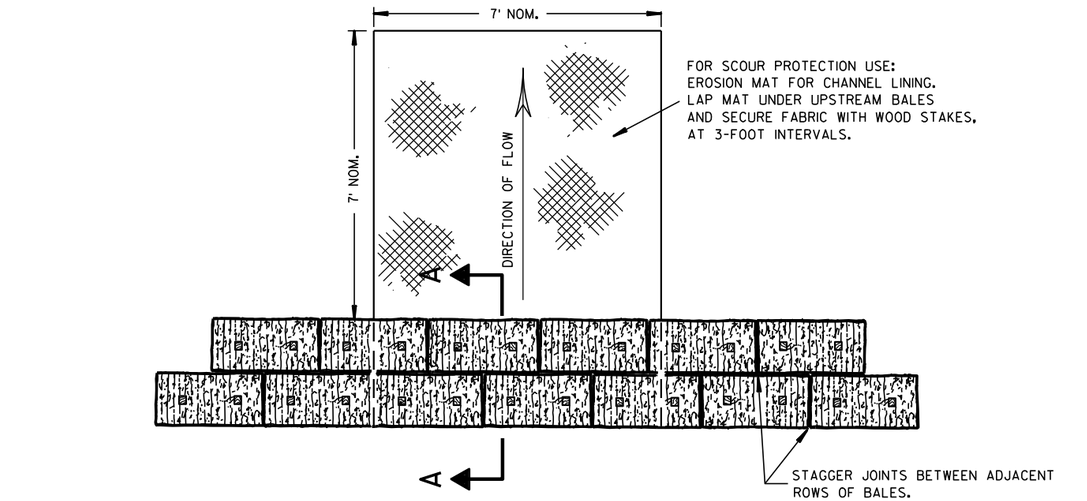
PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	PLAN AND PROFILE	SCALE, FEET 0 25 50	SHEET 14	E

Standard Detail Drawing List

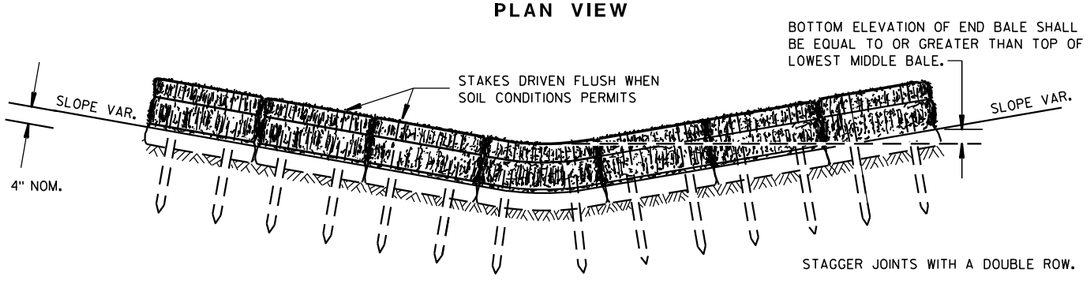
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
12A03-10	NAME PLATE (STRUCTURES)
14B42-03A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-03B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-03C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-02A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-04A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-06A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C06-07	SIGNING & MARKING FOR TWO LANE BRIDGES



SECTION A-A



PLAN VIEW



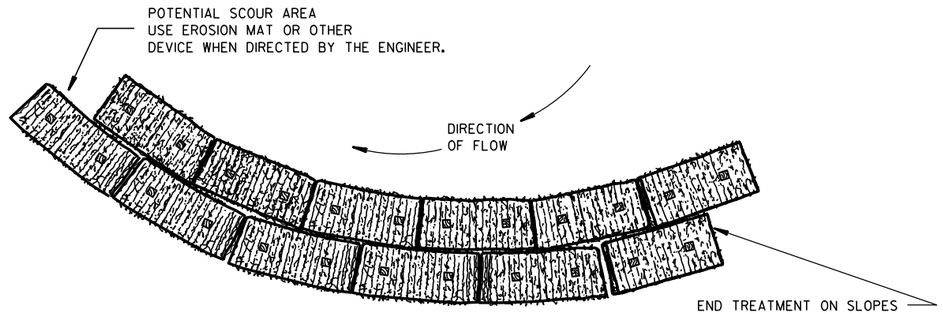
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

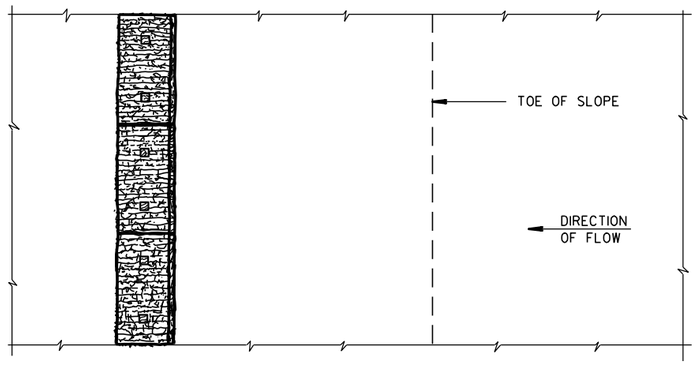
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

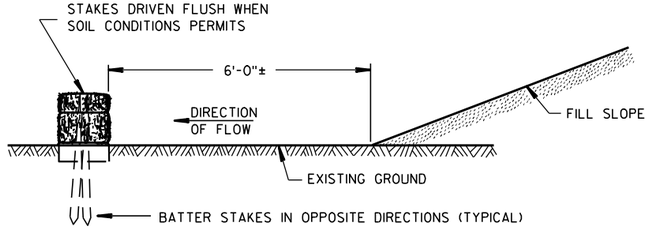


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02 — DATE

/S/ Beth Cannestra — CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

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S.D.D. 8 E 8-3

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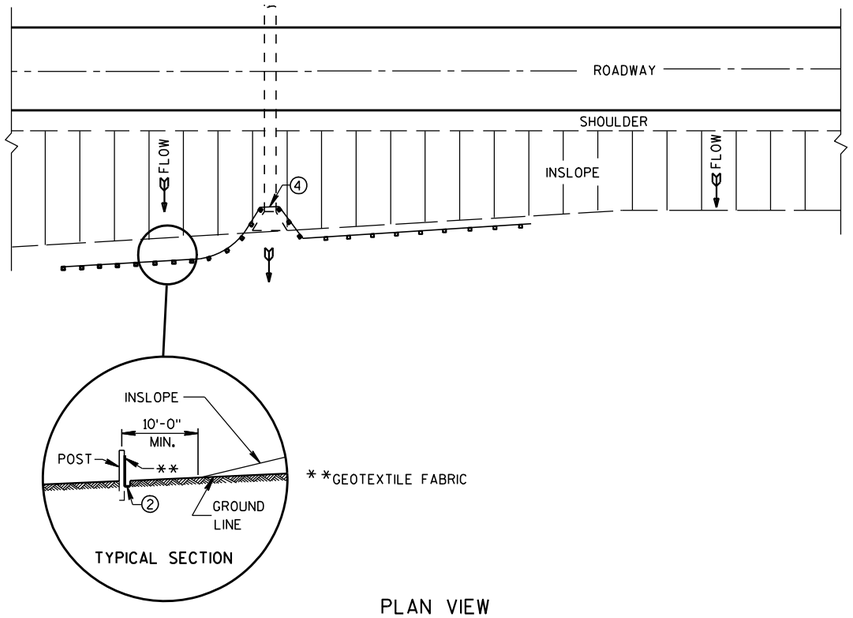
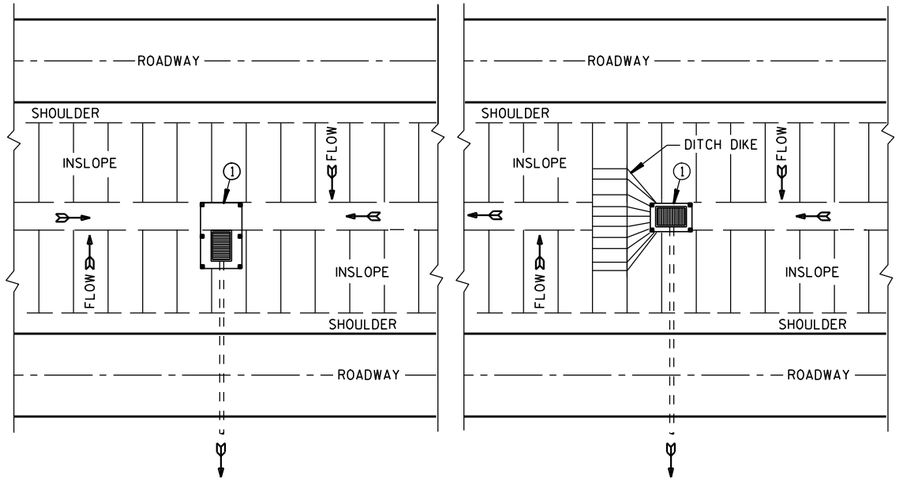


PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



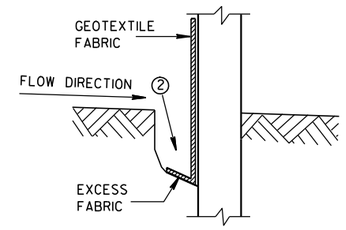
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

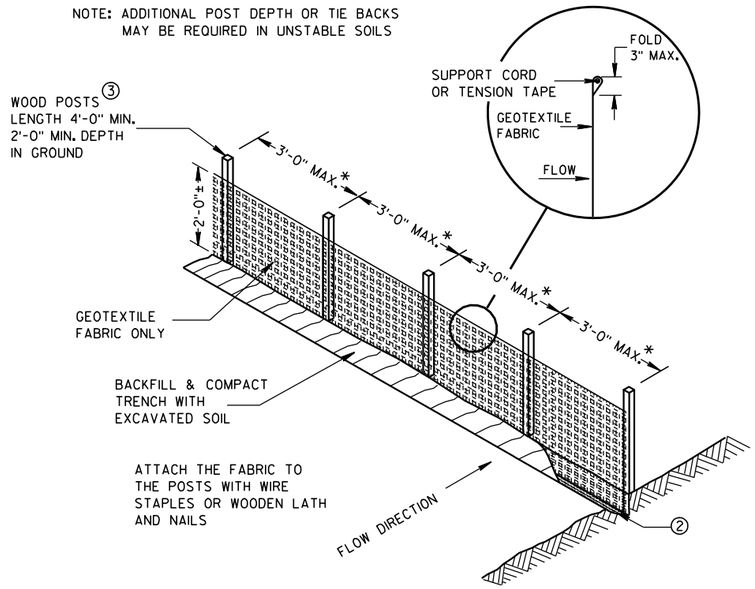
GENERAL NOTES

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

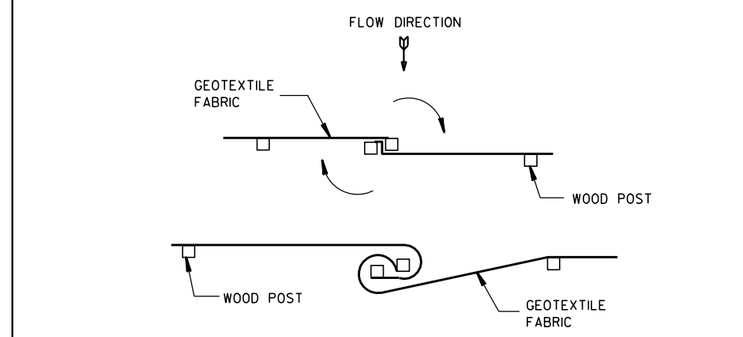
1. HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
2. FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL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



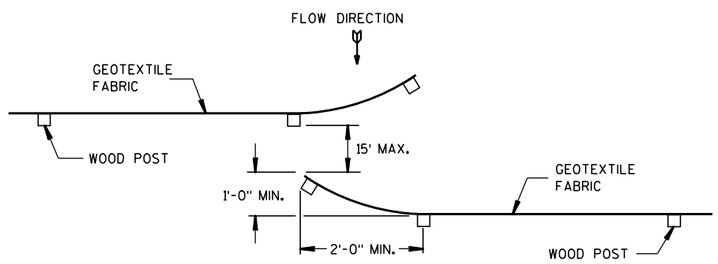
TRENCH DETAIL



SILT FENCE

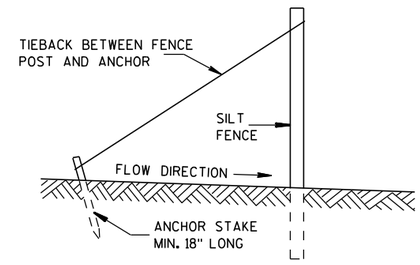


TWIST METHOD



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

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S.D.D. 8 E 9-6

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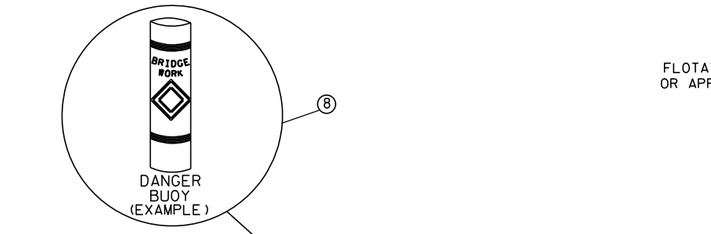
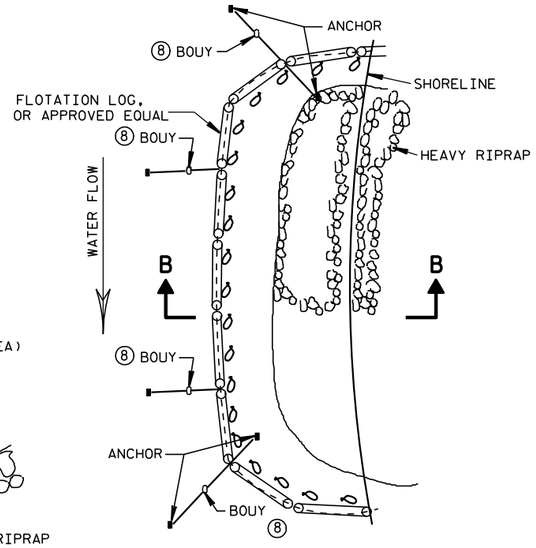
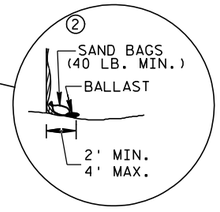
S.D.D. 8 E 9-6

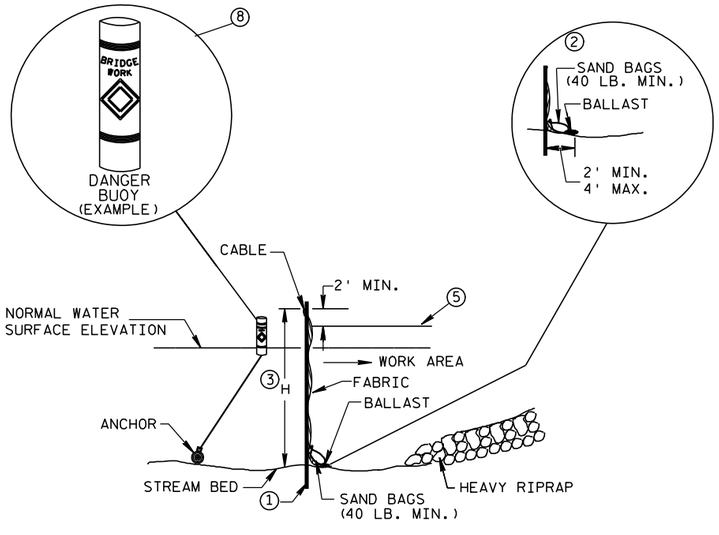


SECTION B-B

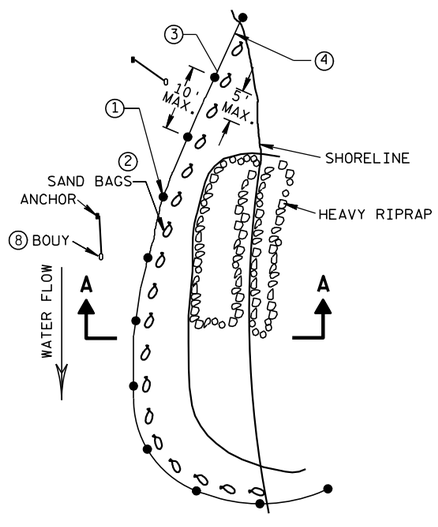




TURBIDITY BARRIER FLOAT ALTERNATIVE
CAUTION - SEE NOTE 6



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.

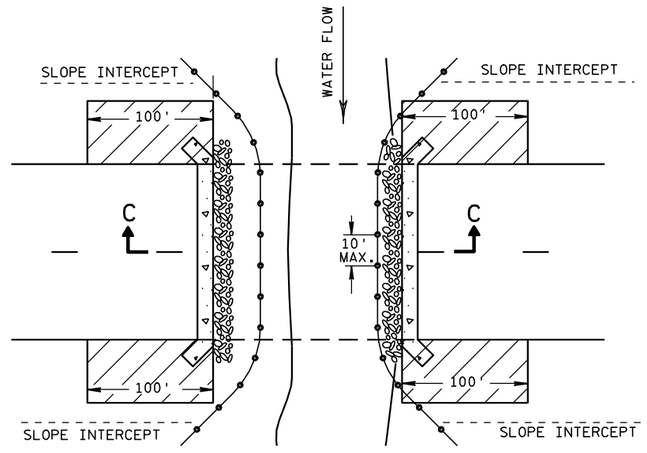
④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.

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.

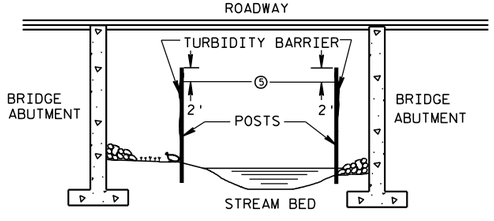
⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.

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

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METAL APRON ENDWALLS

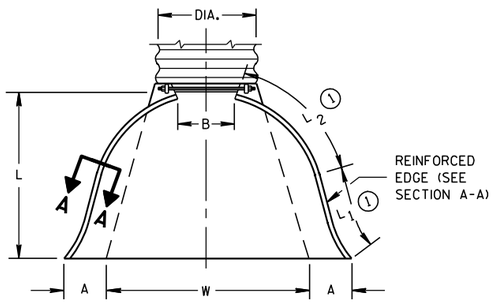
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")		
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to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

× EXCEPT CENTER PANEL SEE GENERAL NOTES

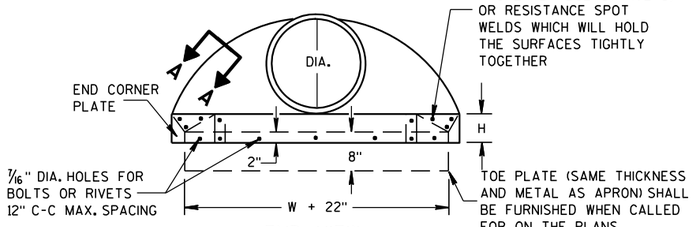
REINFORCED CONCRETE APRON ENDWALLS

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

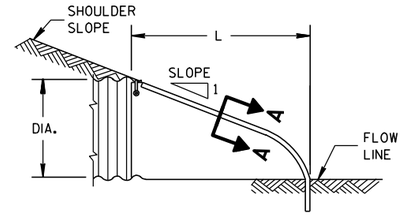
* MINIMUM
** MAXIMUM



PLAN VIEW

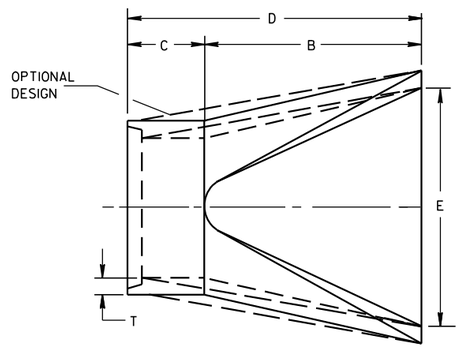


END VIEW

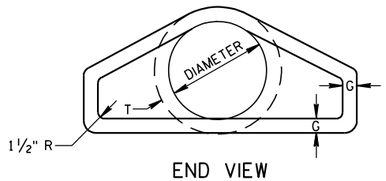


SIDE ELEVATION

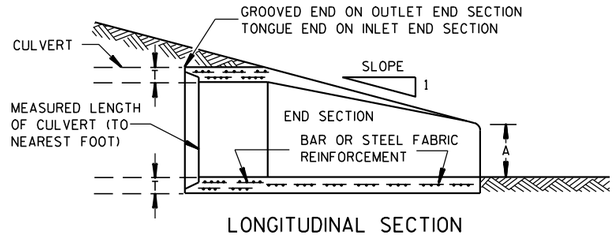
METAL ENDWALLS



PLAN

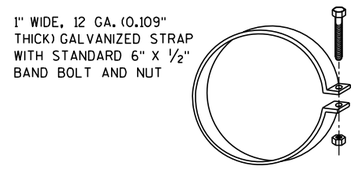


END VIEW



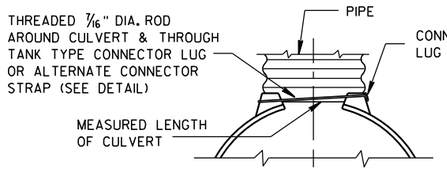
LONGITUDINAL SECTION

CONCRETE ENDWALLS

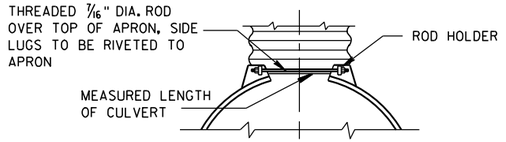


ALTERNATE FOR TYPE 1 CONNECTION

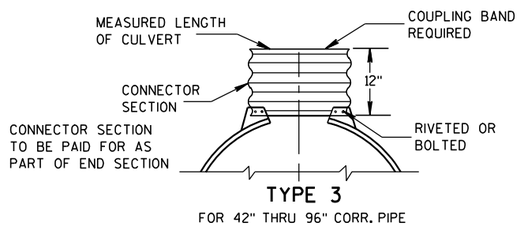
END SECTION CONNECTOR STRAP



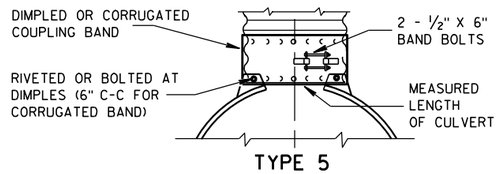
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

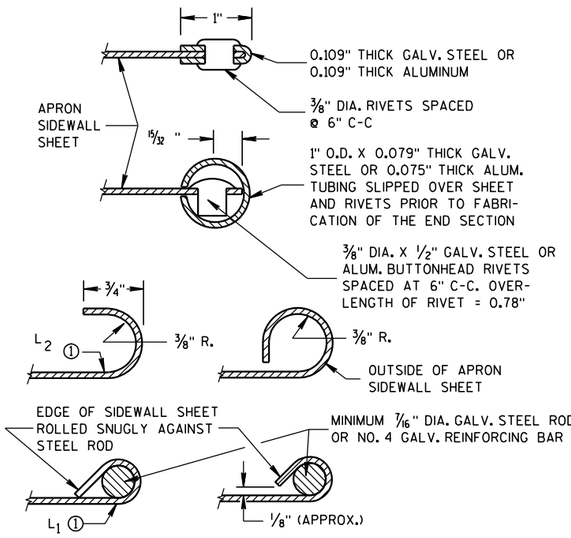
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

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

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

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

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

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

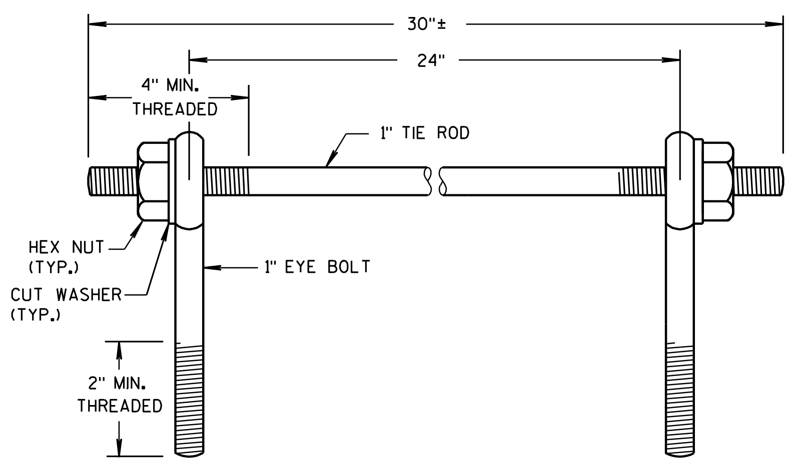
APRON ENDWALLS FOR CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

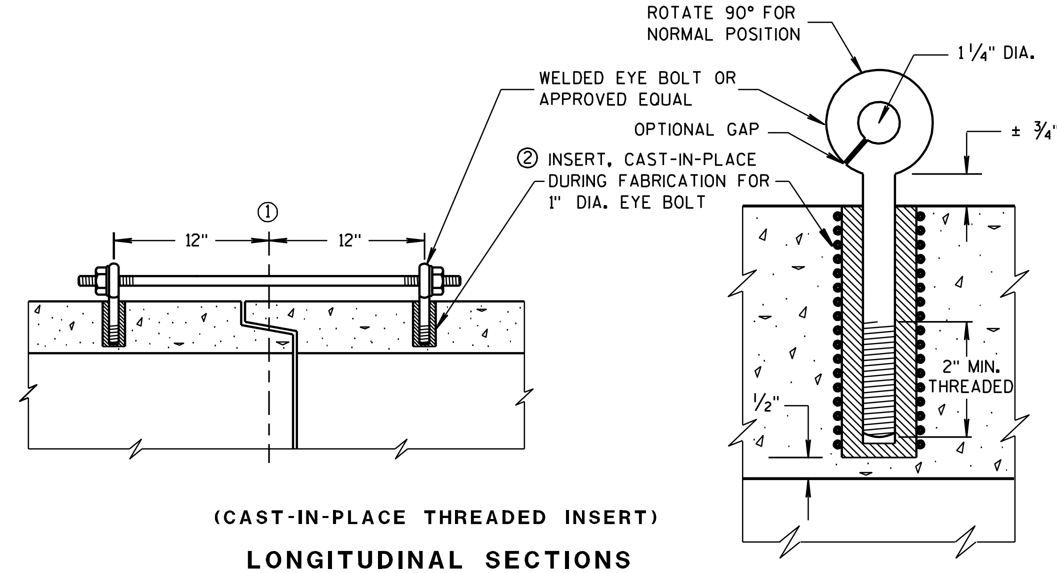
APPROVED
11/30/94 — DATE
/S/ Rory L. Rhinesmith — CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6
S.D.D. 8 F 1-11

EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 1)



EYE BOLTS AND TIE ROD



(CAST-IN-PLACE THREADED INSERT)

LONGITUDINAL SECTIONS

GENERAL NOTES

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

CONCRETE CULVERT AND STORM SEWER PIPE SHALL BE TIED TOGETHER IN THE MANNER ILLUSTRATED BY THIS DETAIL AT LOCATIONS DESIGNATED IN THE STANDARD SPECIFICATIONS AND THE PLAN. THE CONTRACTOR MAY USE EITHER ALTERNATE 1, 2 OR 3 FOR DRAINAGE STRUCTURES. ONLY ALTERNATE 1 AND 3 MAY BE USED FOR CATTLE PASSES, UNLESS OTHERWISE STATED IN THE CONTRACT. THE MATERIALS, FABRICATION AND WORK NECESSARY TO TIE THE PIPE BY THIS DETAIL WILL BE CONSIDERED INCIDENTAL TO THE PIPE AND APRON ENDWALLS IF REQUIRED.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR JOINT TIES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

JOINT TIES TO BE HOT-DIP GALVANIZED PER ASTM A 153.

① ℄ OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.

② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.

③ HOLES SHALL BE CAST-IN-PLACE OR DRILLED 12 INCHES FROM ℄ OF TONGUE AND GROOVE.

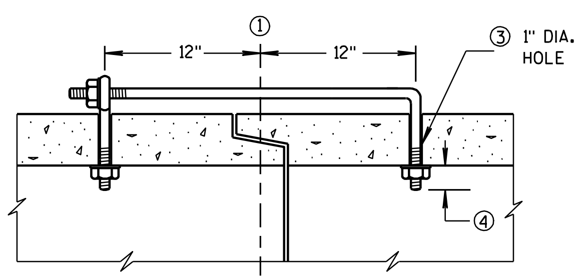
④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.

⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.

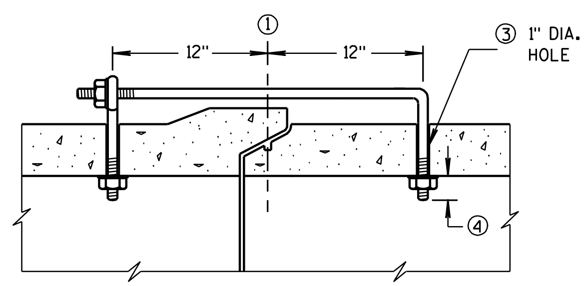
⑥ LENGTH ADEQUATE TO EXTEND TO WITHIN 1/2 INCH OF THE INNER SURFACE OF THE PIPE.

EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 2)

(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)



(TONGUE & GROOVE PIPE)

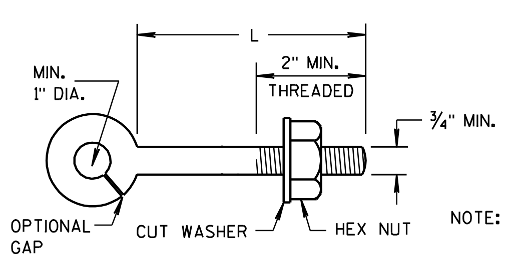


(MODIFIED BELL PIPE)

LONGITUDINAL SECTION

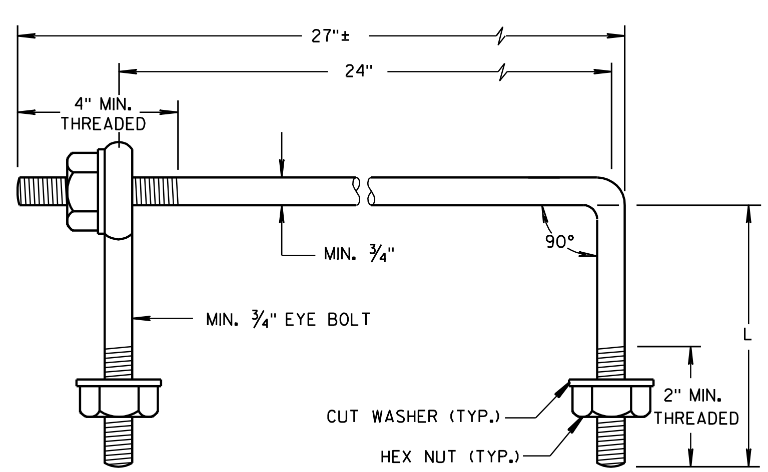
EYE BOLT DIMENSION TABLE

PIPE SIZE	L = LENGTH	
	TONGUE & GROOVE PIPE	MODIFIED BELL PIPE
18" TO 24"	4 1/2"	6 1/4"
30"	5"	7"
36"	5 1/2"	7"
42"	6"	
48"	6 1/2"	
60"	7 1/2"	
66"	8"	



EYE BOLT

NOTE: TWO EYE BOLTS MAY BE USED WITH A 30" LONG THREADED ROD IN LIEU OF THE 90° BENT TIE ROD.



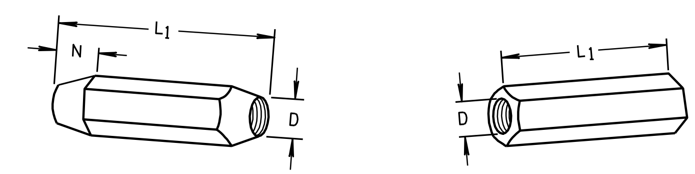
EYE BOLT AND TIE ROD

ADJUSTABLE TIE ROD (ALTERNATE NO. 3)

ADJUSTABLE TIE ROD TABLE

PIPE DIAMETER	TIE ROD DIAMETER	D	L_1	N
12-60	5/8	5/8	5	1/2
66-84	3/4	3/4	5	1/2
90-108	1	1	7	1 7/16

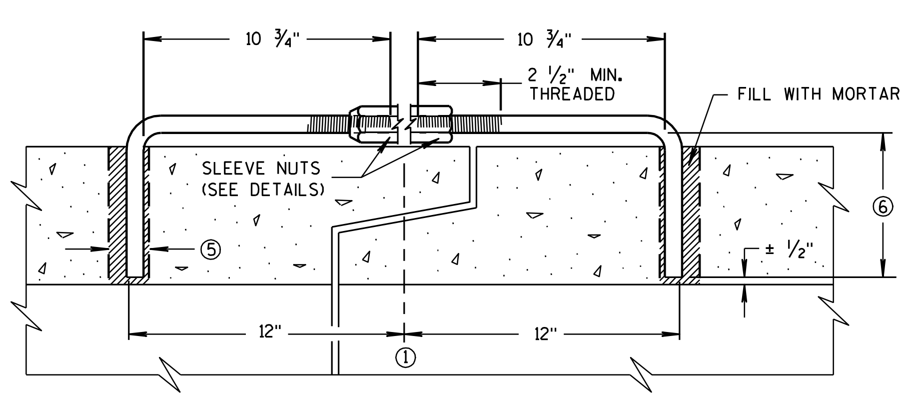
DIMENSIONS SHOWN ARE IN INCHES



TAPERED PLAIN

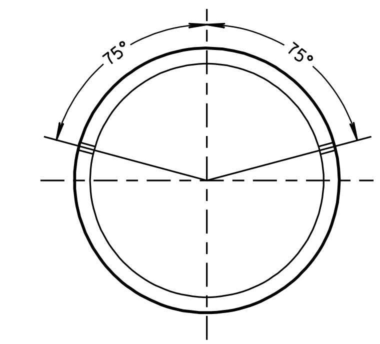
RIGHT AND LEFT THREADS

SLEEVE NUTS



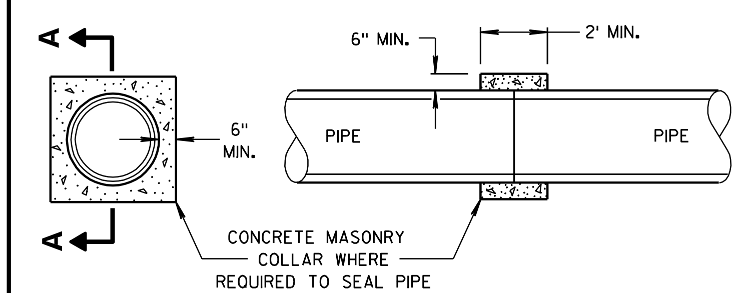
LONGITUDINAL SECTION

(JOINT TIES FOR 12" TO 108" DIA. CONCRETE PIPE)



PLACEMENT OF (2) CAST-IN-PLACE INSERTS OR HOLES DURING FABRICATION FOR PIPE SECTIONS REQUIRING TIE RODS

TRANSVERSE SECTION



SECTION A-A

CONCRETE COLLAR DETAIL

JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/5/2012 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

S.D.D. 8 F 4-7

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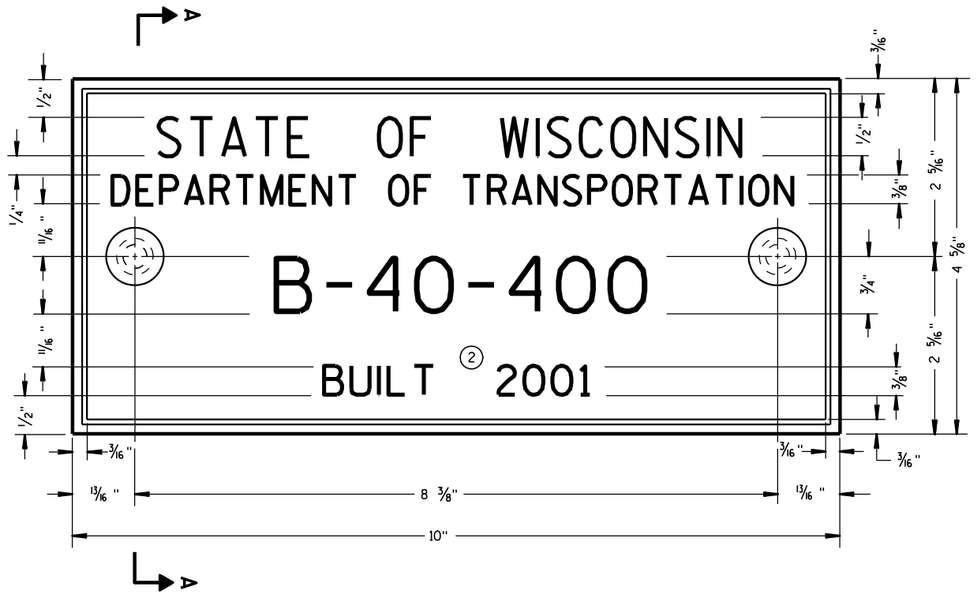
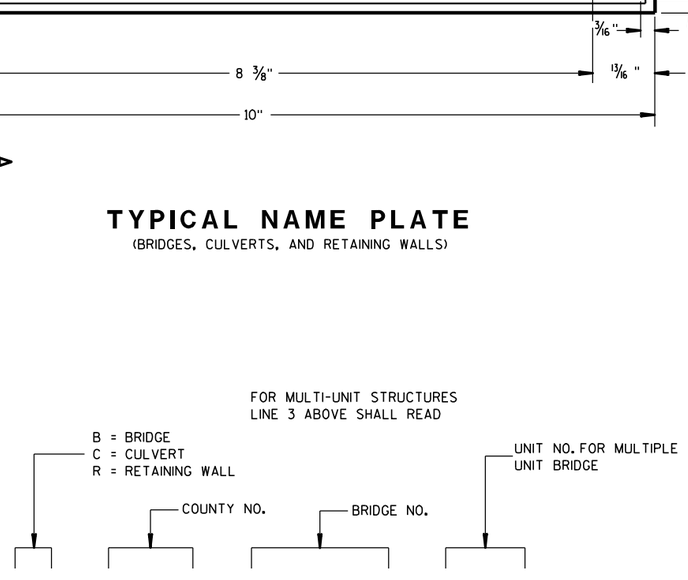


TYPICAL NAME PLATE
(BRIDGES, CULVERTS, AND RETAINING WALLS)



NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

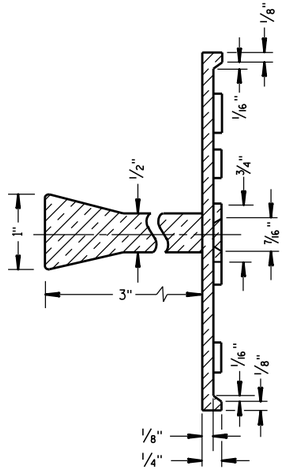
GENERAL NOTES

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.

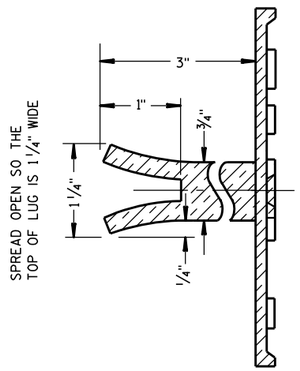
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

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

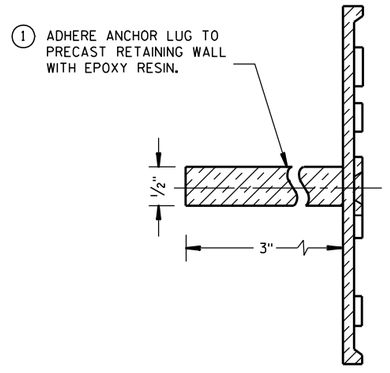
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



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 DEVELOPMENT ENGINEER

FHWA

6

S.D.D. 12 A 3-10

GENERAL NOTES

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

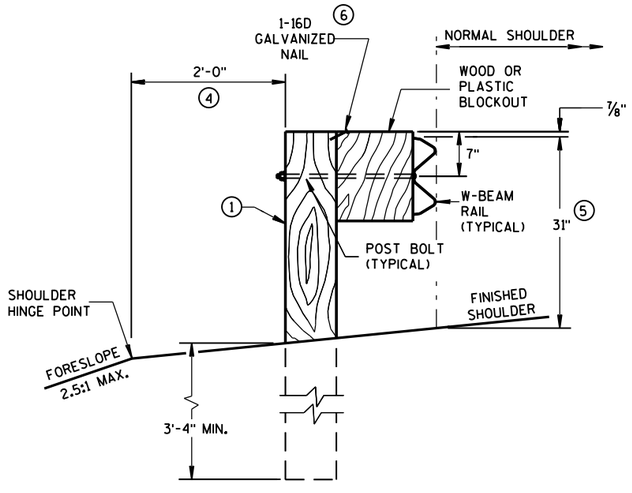
(2) USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

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

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

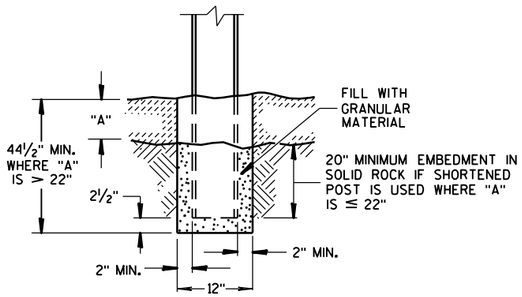
(5) FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".

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



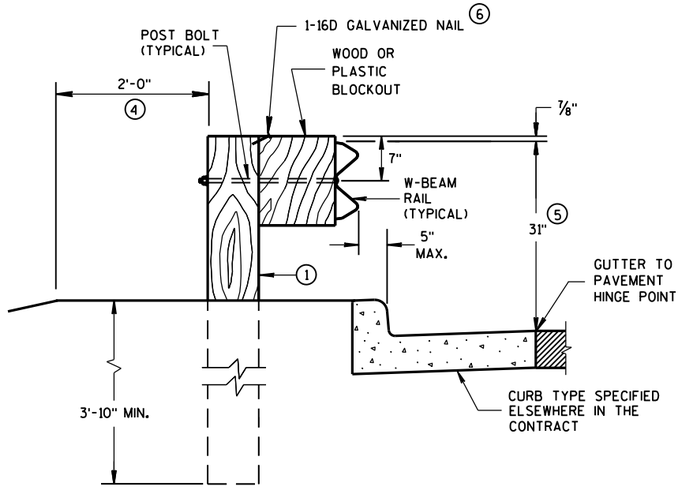
END VIEW

LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



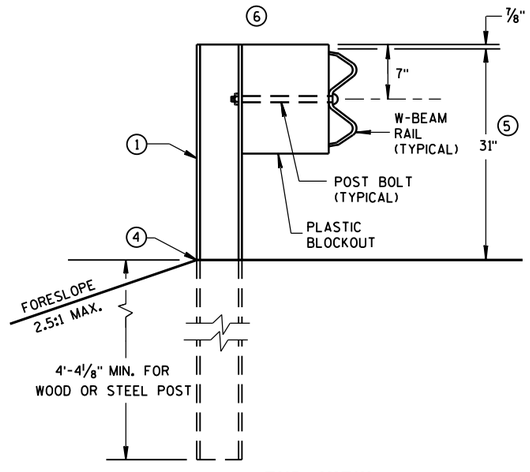
END VIEW

SETTING STEEL OR WOOD POST IN ROCK (3)



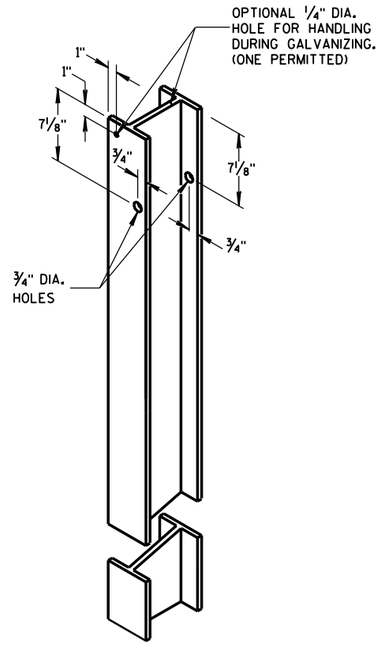
END VIEW

LOCATED ALONG A CURBED ROADWAY

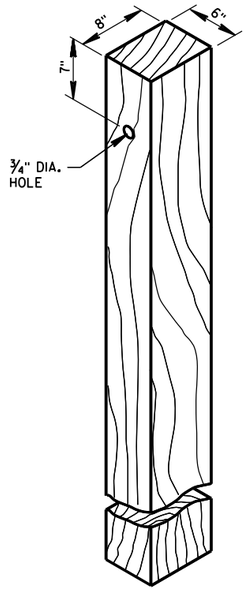


END VIEW

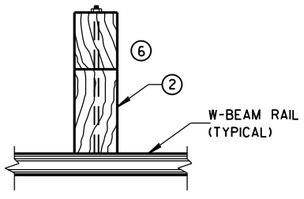
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



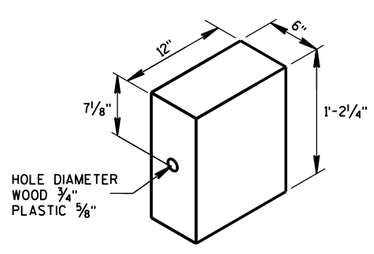
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) (1)



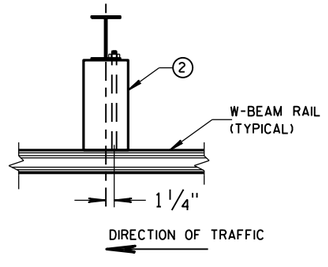
WOOD POST
(6" X 8") NOMINAL (1)



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT (2)



PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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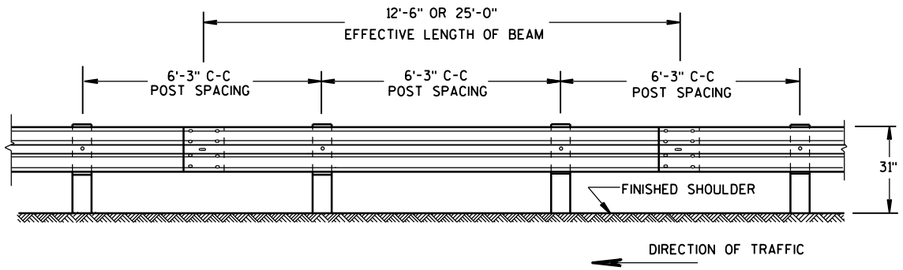
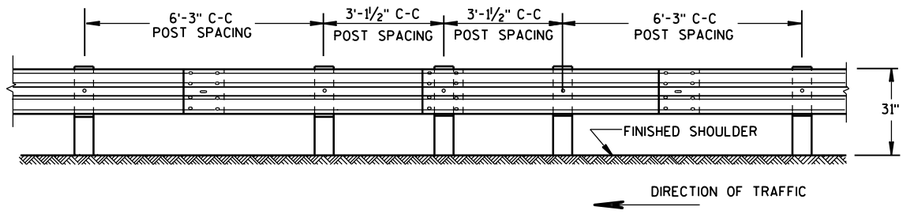
S.D.D. 14 B 42-3a



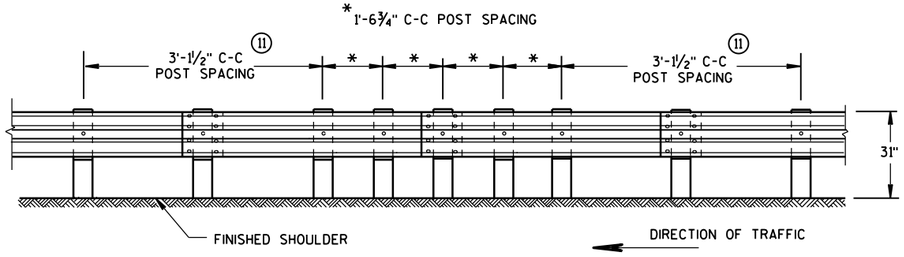
FRONT VIEW

POST SPACING STANDARD INSTALLATION



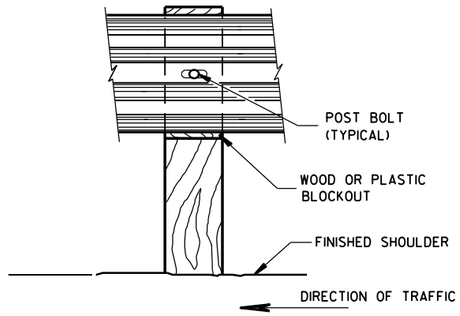
FRONT VIEW

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

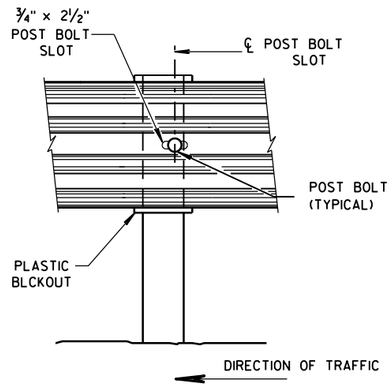


FRONT VIEW

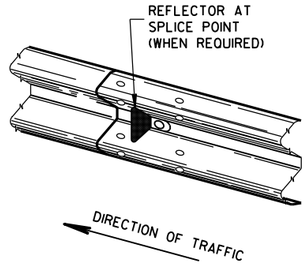
QUARTER POST SPACING (QS)

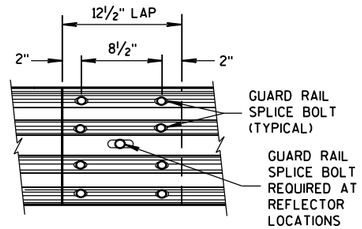


FRONT VIEW AT WOOD POST

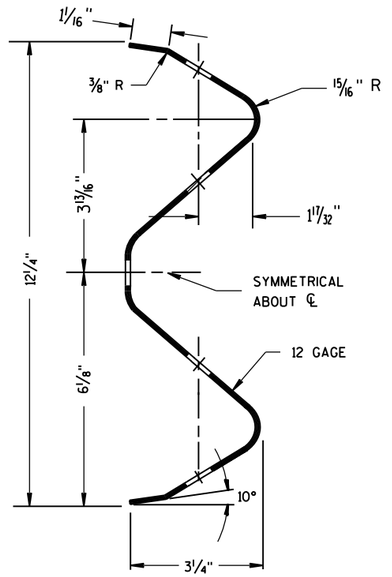


FRONT VIEW AT STEEL POST

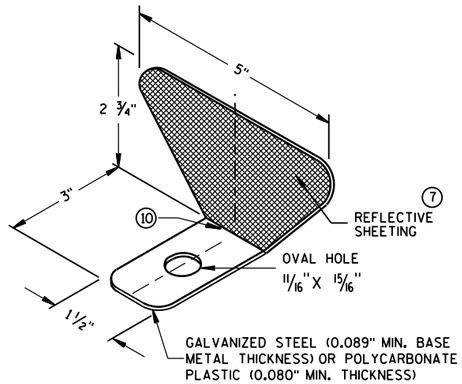




FRONT VIEW
MID-SPAN BEAM SPLICE



SECTION THRU W-BEAM RAIL



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION ⑦

GENERAL NOTES

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

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

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

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

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

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

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

REFLECTOR SPACING ⑧

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

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

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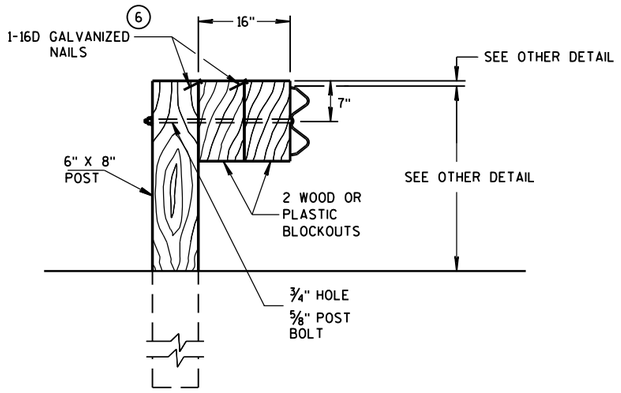
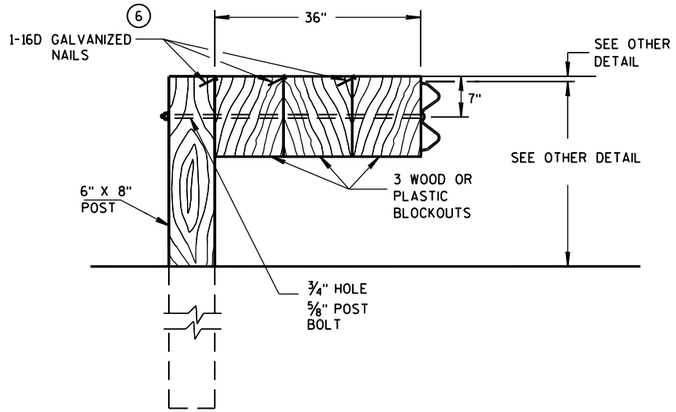
S.D.D. 14 B 42-3b



DETAIL FOR 16" BLOCKOUT DEPTH

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

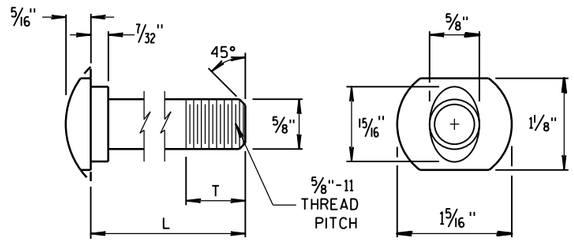


DETAIL FOR 36" BLOCKOUT DEPTH

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

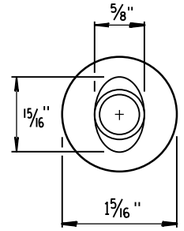
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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

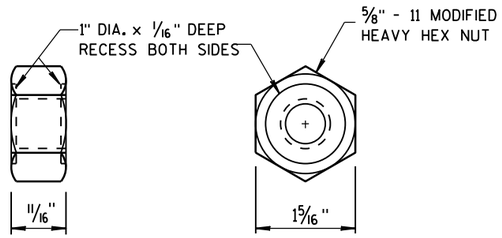


POST BOLT TABLE

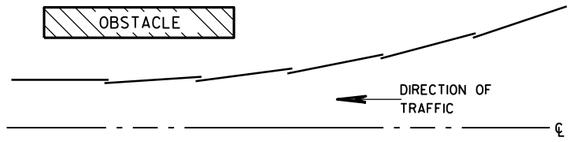
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

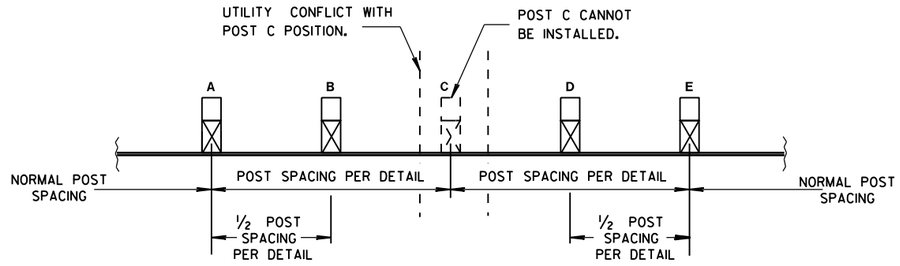


POST BOLT AND RECESS NUT

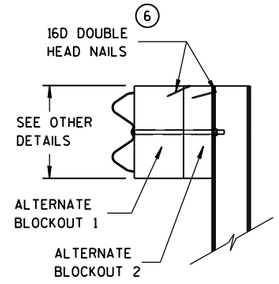


PLAN VIEW

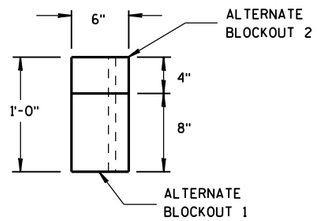
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

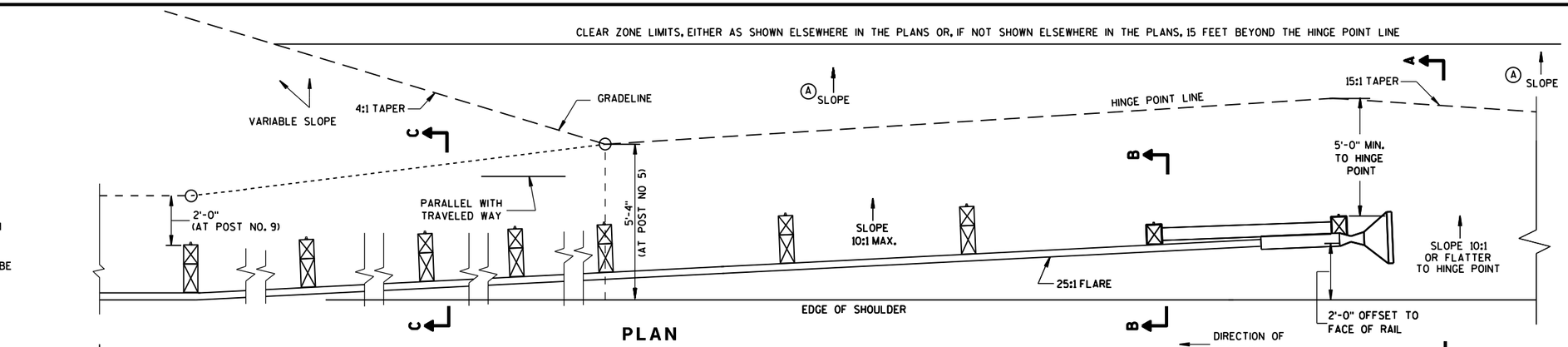
SEE SDD 14B42 FOR MORE INFORMATION.

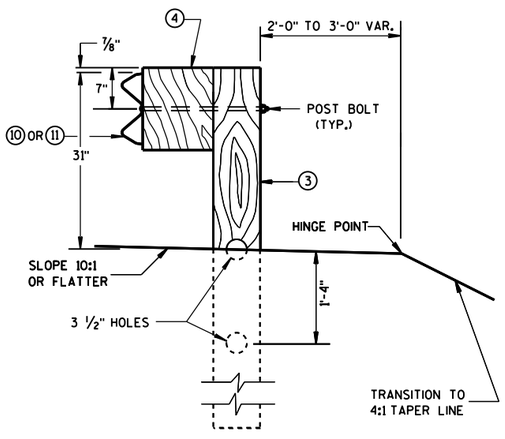
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

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

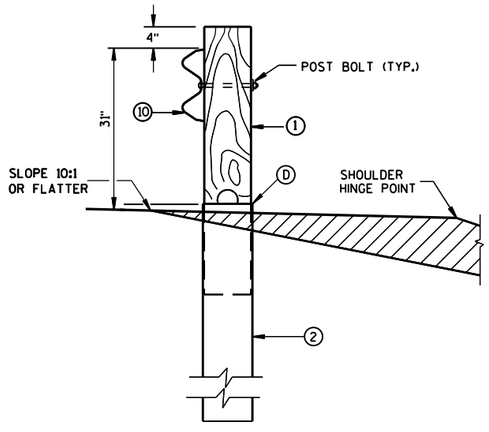
W-BEAM RAIL SPLICES ARE LOCATED AT POST NUMBER 3, AND BETWEEN POST 5 AND 6, BETWEEN POSTS 7 AND 8, AND MIDDLE OF THE SPAN AFTER POST 9.

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

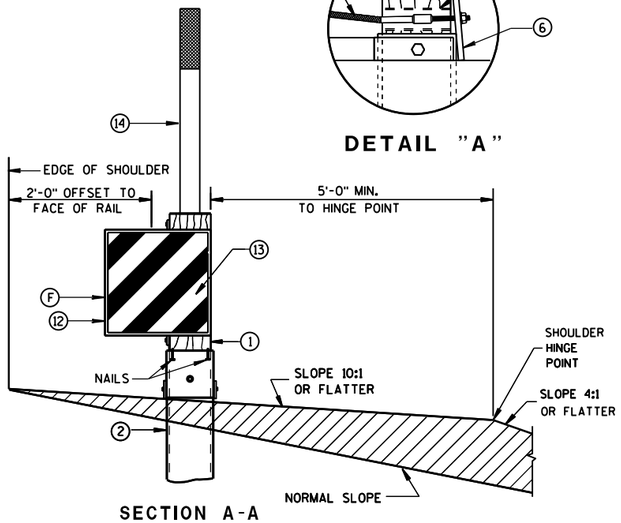




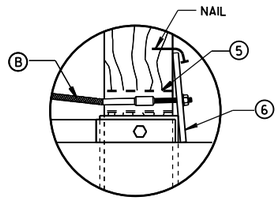
SECTION C-C
TYPICAL AT POST NOS. 3-9



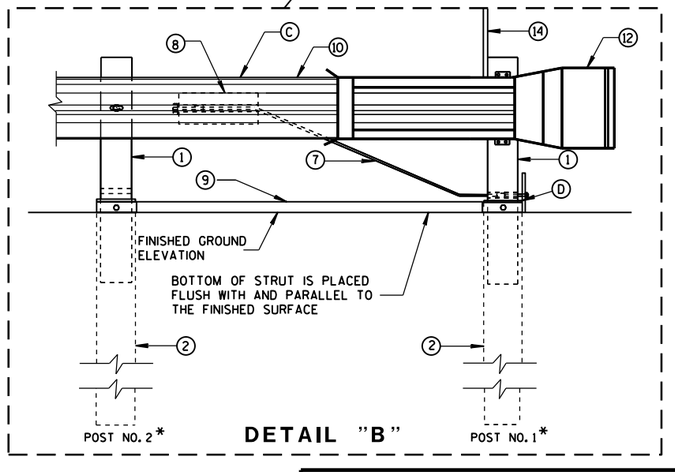
SECTION B-B
TYPICAL AT POST NO. 2*



SECTION A-A
TYPICAL AT POST NO. 1*



DETAIL "A"



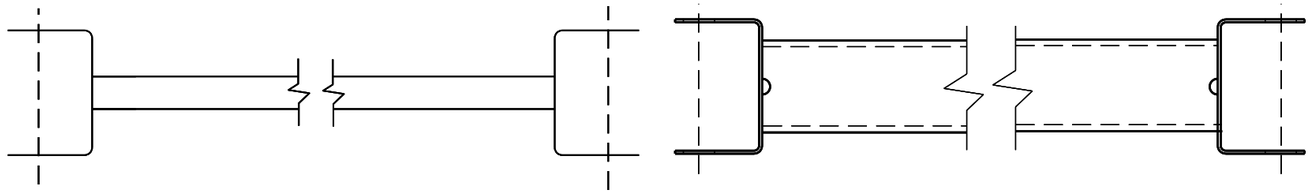
DETAIL "B"

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

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

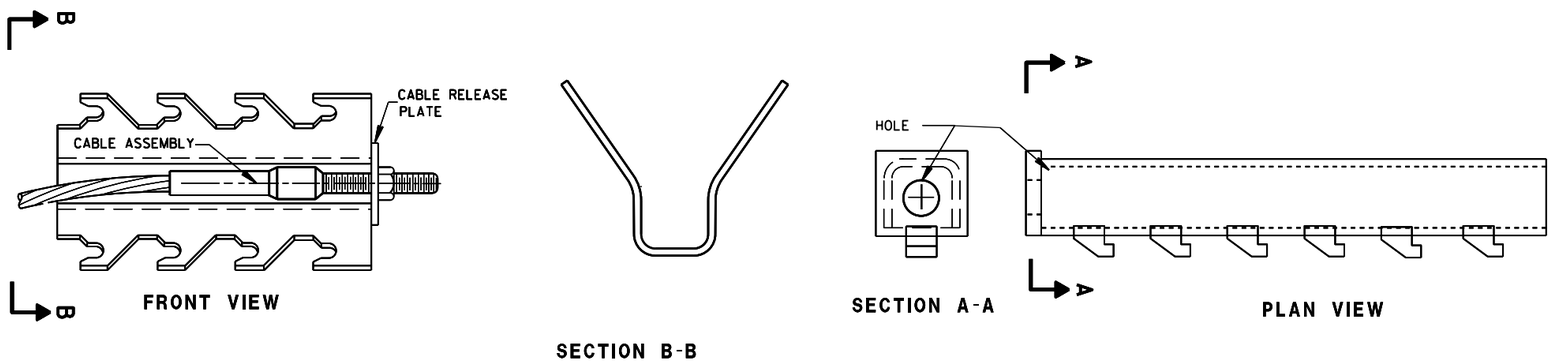
S.D.D. 14 B 44-2a



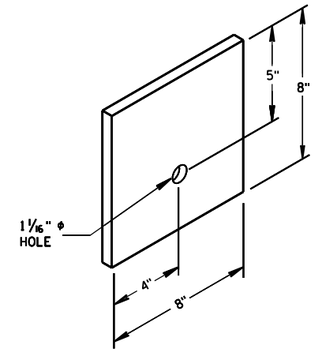
GENERIC GROUND STRUT (9) (H)

BILL OF MATERIALS

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



GENERIC ANCHOR CABLE BOX (8) (H)



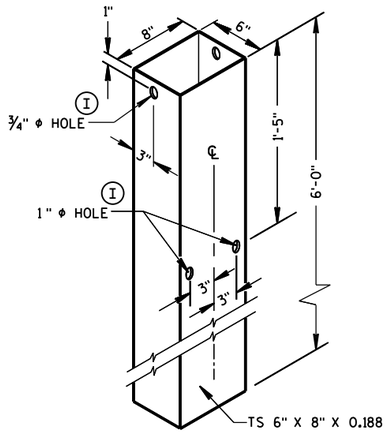
BEARING PLATE (6)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

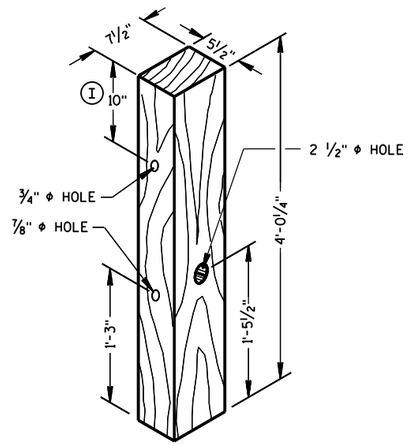
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6

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

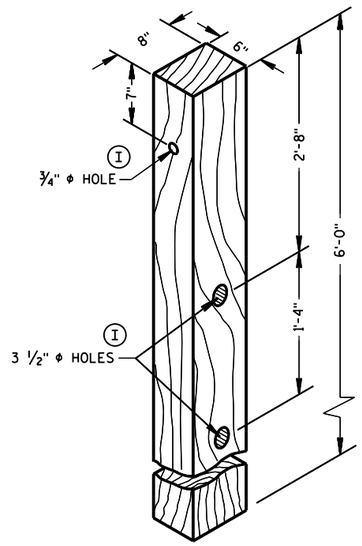


FOUNDATION TUBE (2)



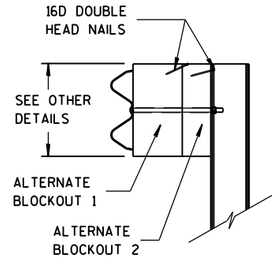
POSTS NUMBER 1 AND 2

WOOD BREAKAWAY POST (1)

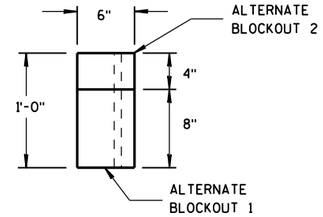


POSTS NUMBER 3-9

WOOD CRT POST (3)

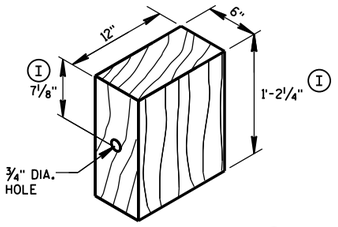


SIDE VIEW



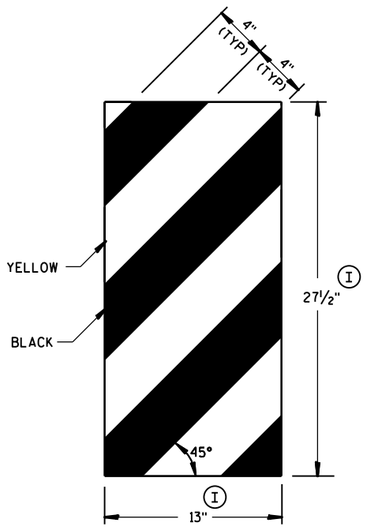
TOP VIEW

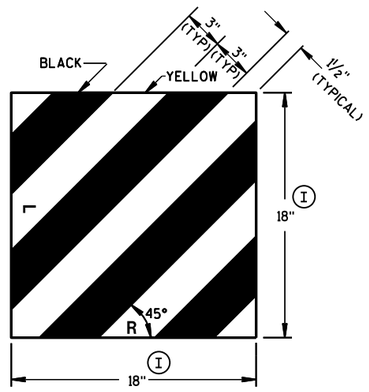
ALTERNATE WOOD BLOCKOUT DETAIL



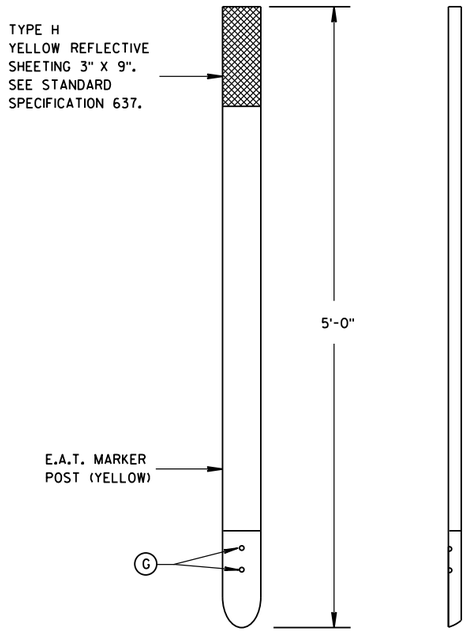
WOOD BLOCKOUT (4)

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





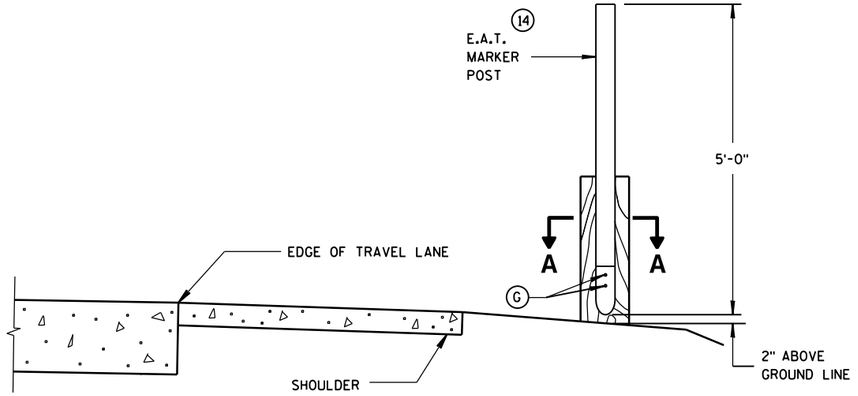
GENERIC REFLECTIVE SHEETING (13) (H)



FRONT VIEW

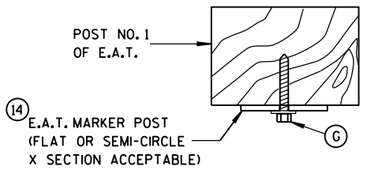
SIDE VIEW

E.A.T. MARKER POST (14)



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

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



SECTION A-A

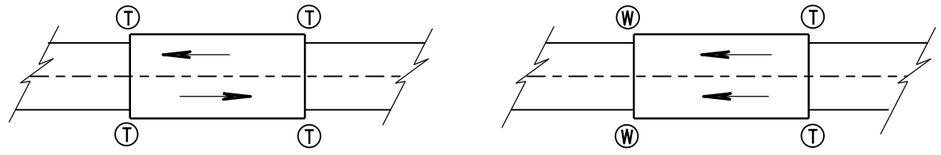
MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

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



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

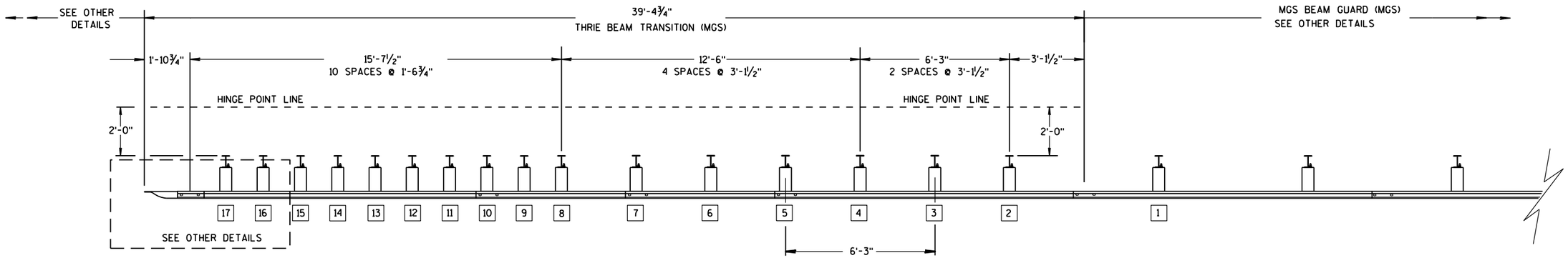
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

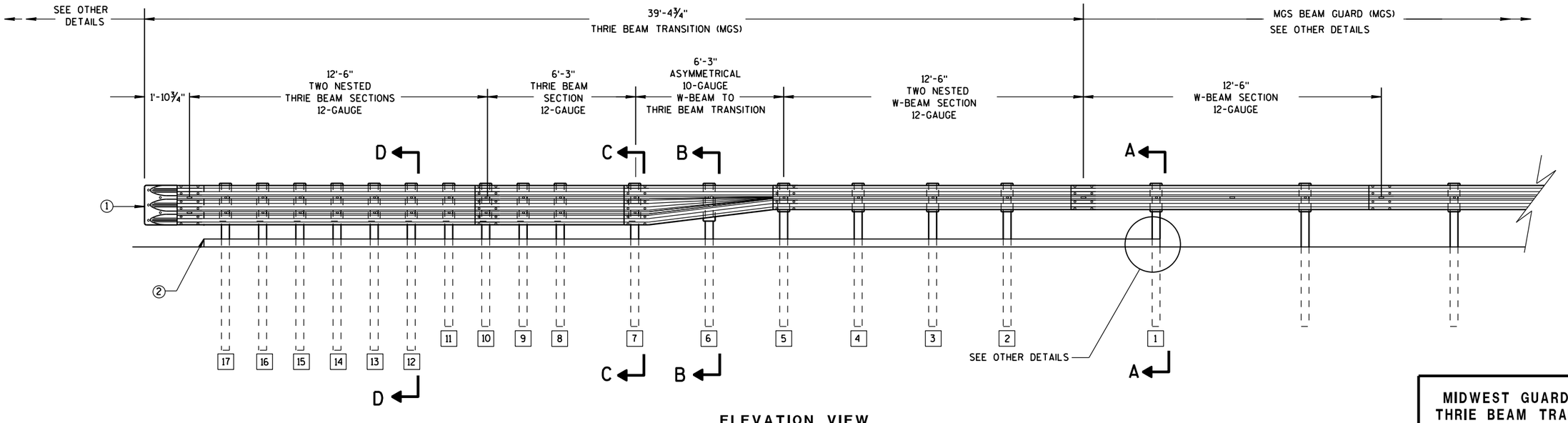
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

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



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

S.D.D. 14 B 45-4a

6

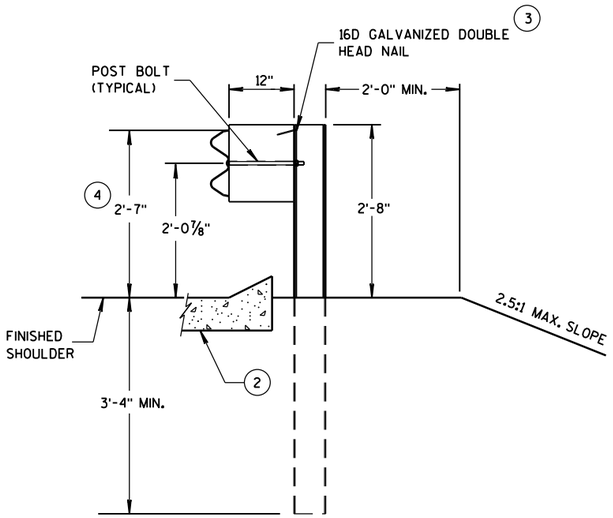
S.D.D. 14 B 45-4a

GENERAL NOTES

(2) OPTIONAL CURB AND GUTTER OR DRAINAGE_FEATURE SEE PLAN FOR INFORMATION.

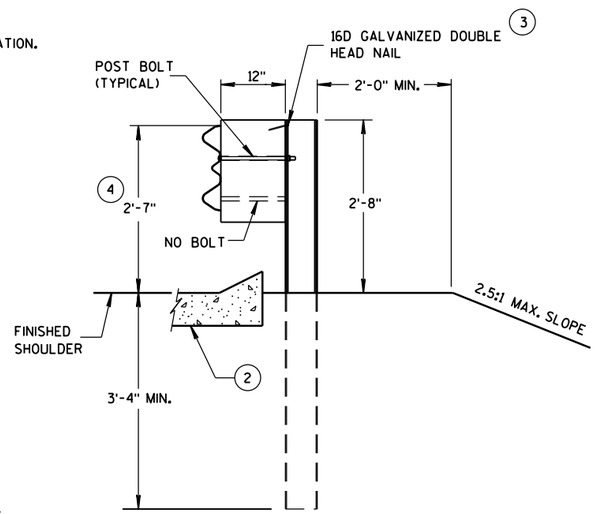
(3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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



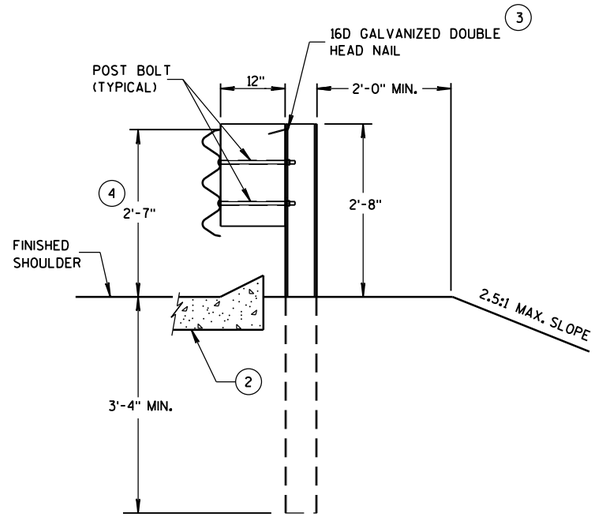
SECTION A-A

POSTS 1-5



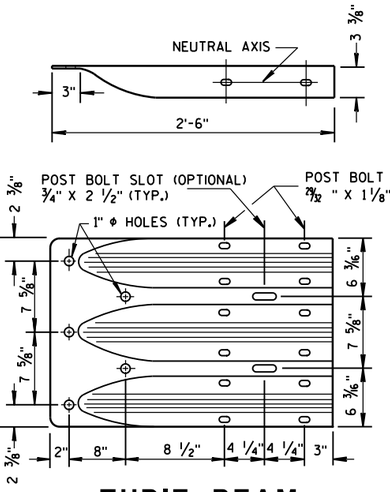
SECTION B-B

POST 6



SECTION C-C

POSTS 7-11



THRIE BEAM TERMINAL CONNECTOR

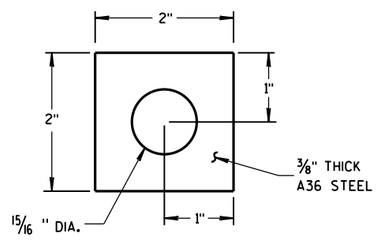
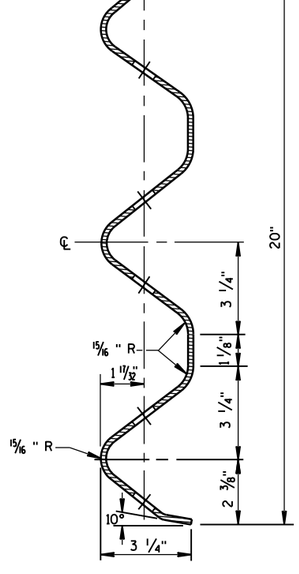
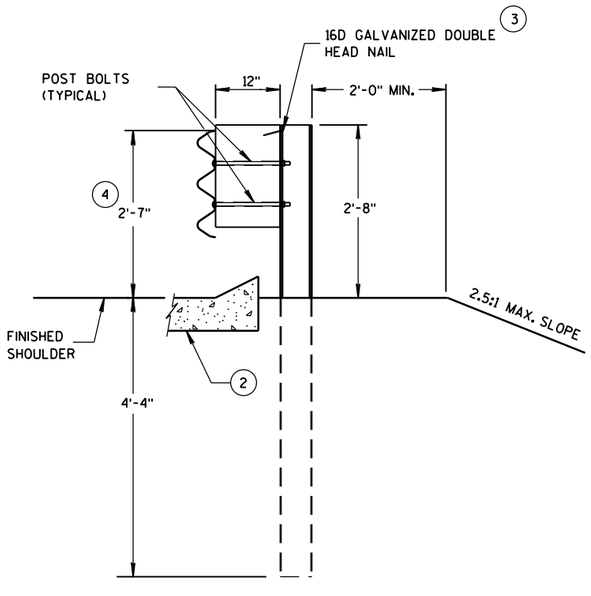


PLATE WASHER DETAIL

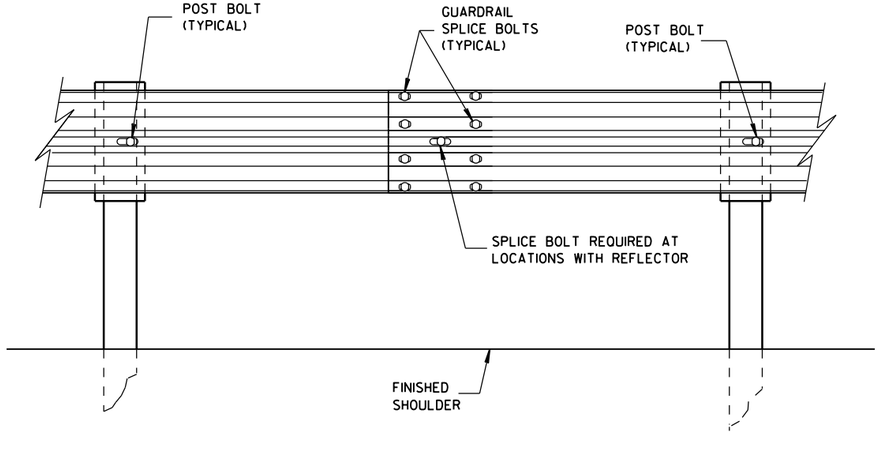


SECTION THRU THRIE BEAM RAIL ELEMENT



SECTION D-D

POSTS 12-17



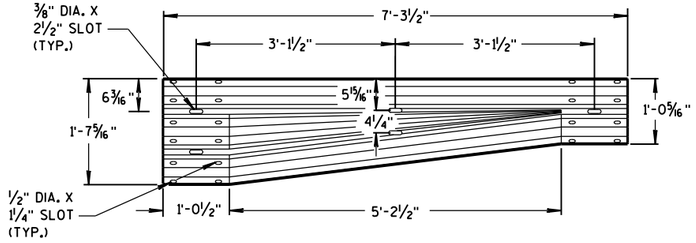
SPLICE DETAIL

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

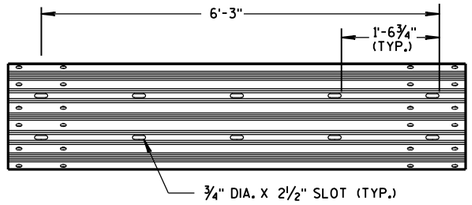
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6

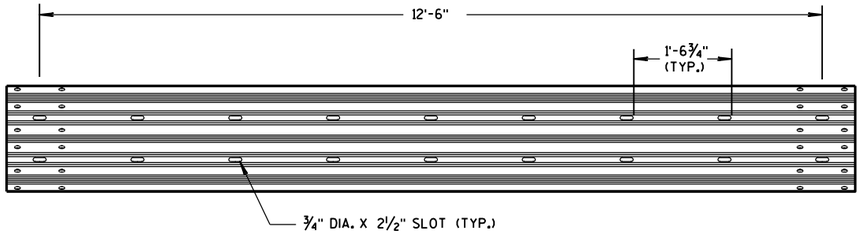
S.D.D. 14 B 45-4b



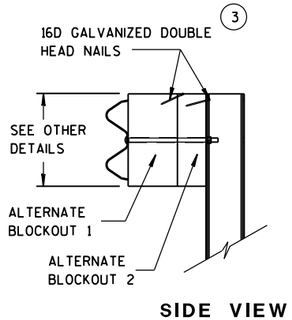
W-BEAM TO THRIE BEAM TRANSITION SECTION



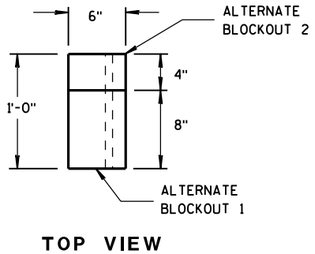
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

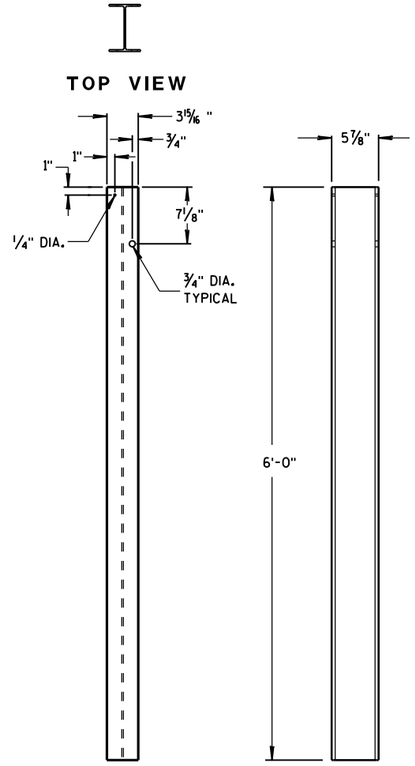


SIDE VIEW



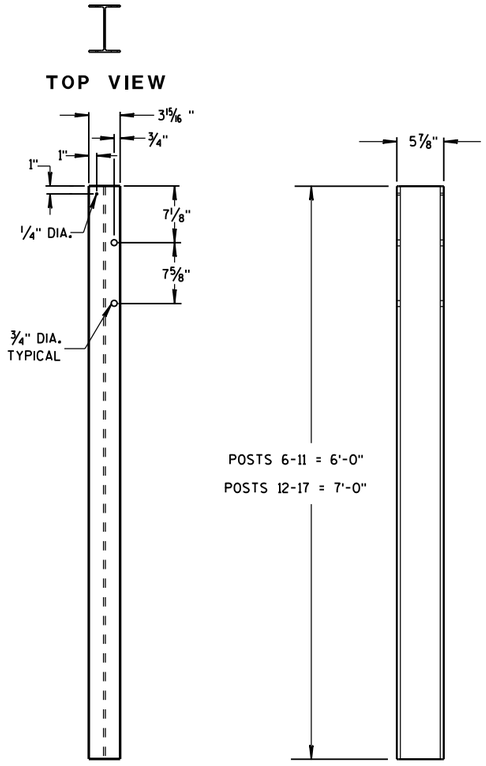
TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL



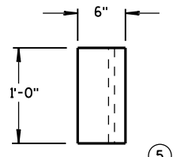
FRONT VIEW SIDE VIEW

STEEL POSTS 1-5

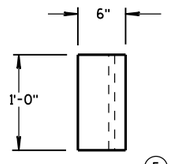


FRONT VIEW SIDE VIEW

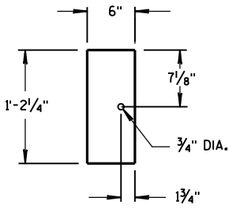
STEEL POSTS 6-17



TOP VIEW (5)

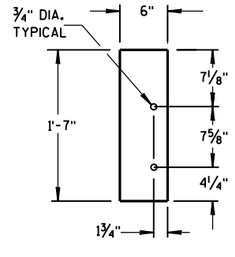


TOP VIEW (5)



FRONT VIEW

BLOCKOUT POSTS 1-5



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

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

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

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

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

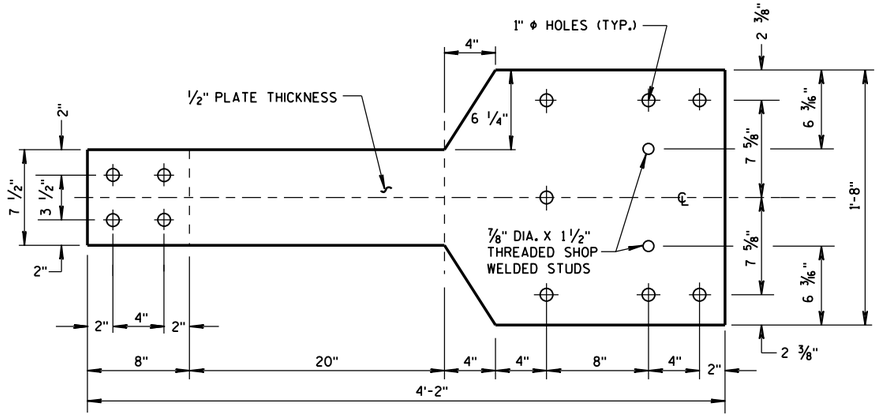
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

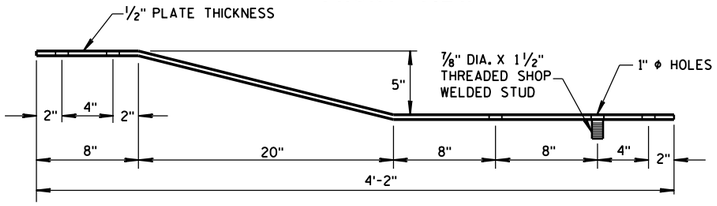
S.D.D. 14 B 45-4c

GENERAL NOTES

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

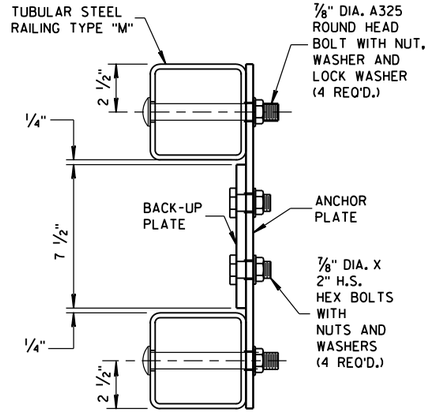


FRONT VIEW

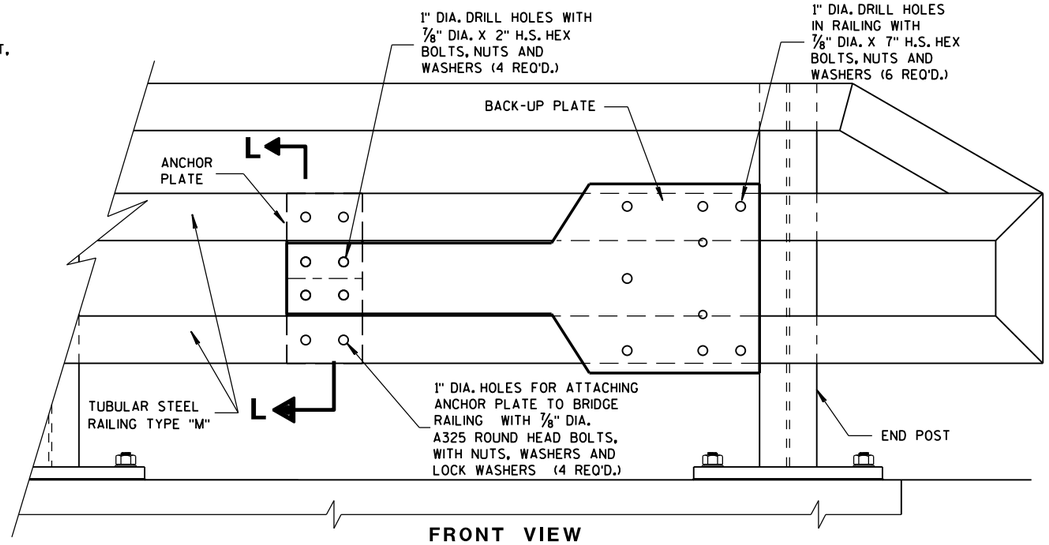


PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"



SECTION L-L

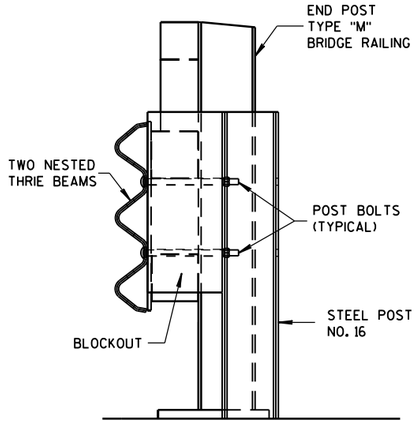


FRONT VIEW

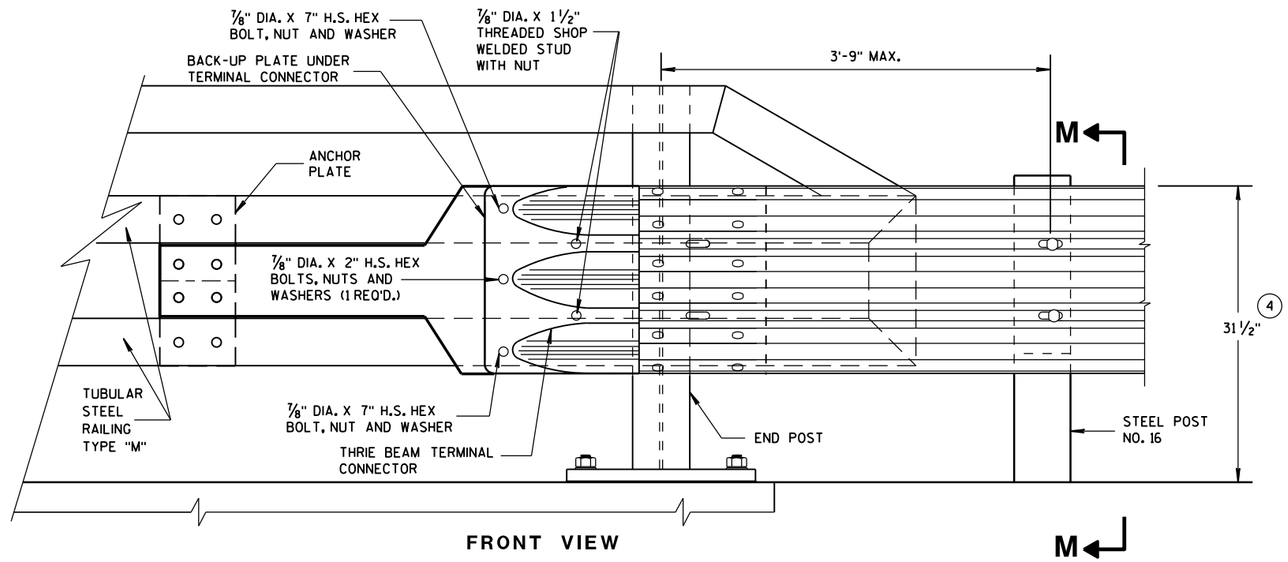
ANCHOR AND BACK-UP PLATE MOUNTING TO BRIDGE RAILING, TYPE "M"

FRONT VIEW

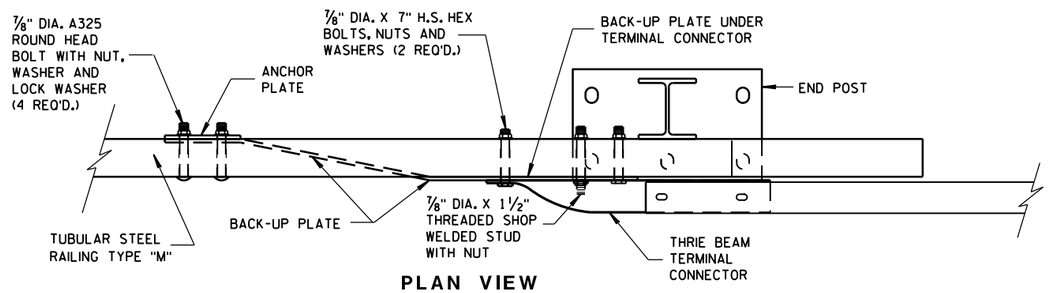
ANCHOR PLATE DETAIL, TYPE "M"



SECTION M-M



FRONT VIEW



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

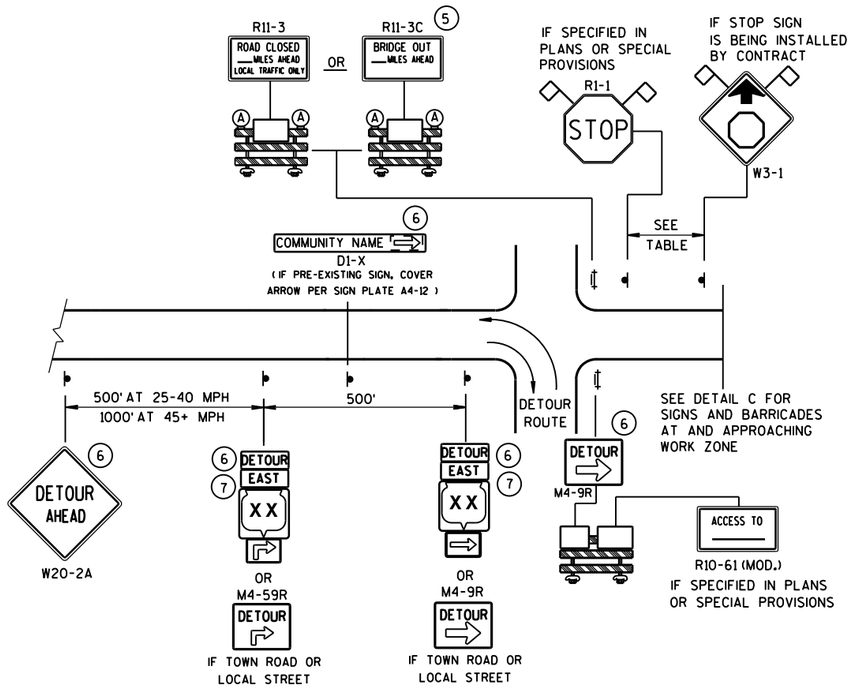
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	
June, 2015	/S/ Jerry H. Zogg
DATE	ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	

6

S.D.D. 14 B 45-4h

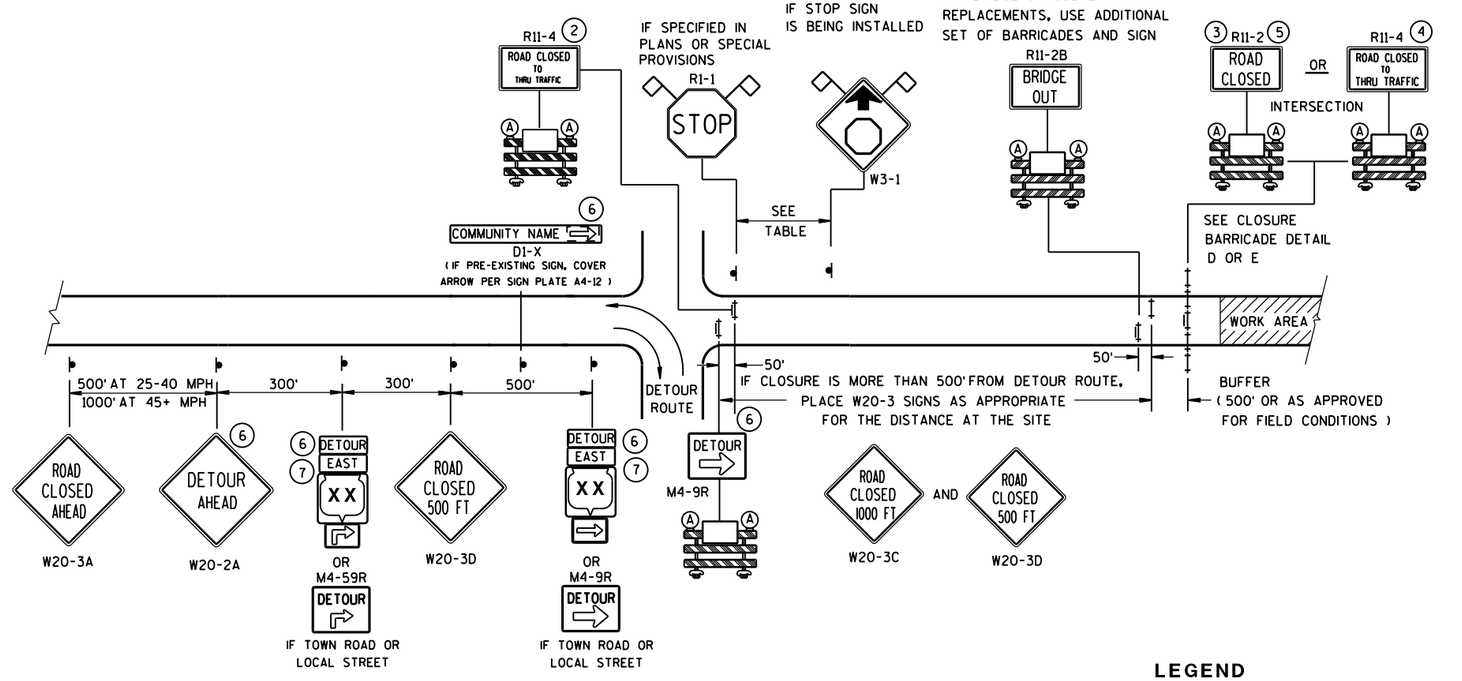
6

S.D.D. 14 B 45-4h



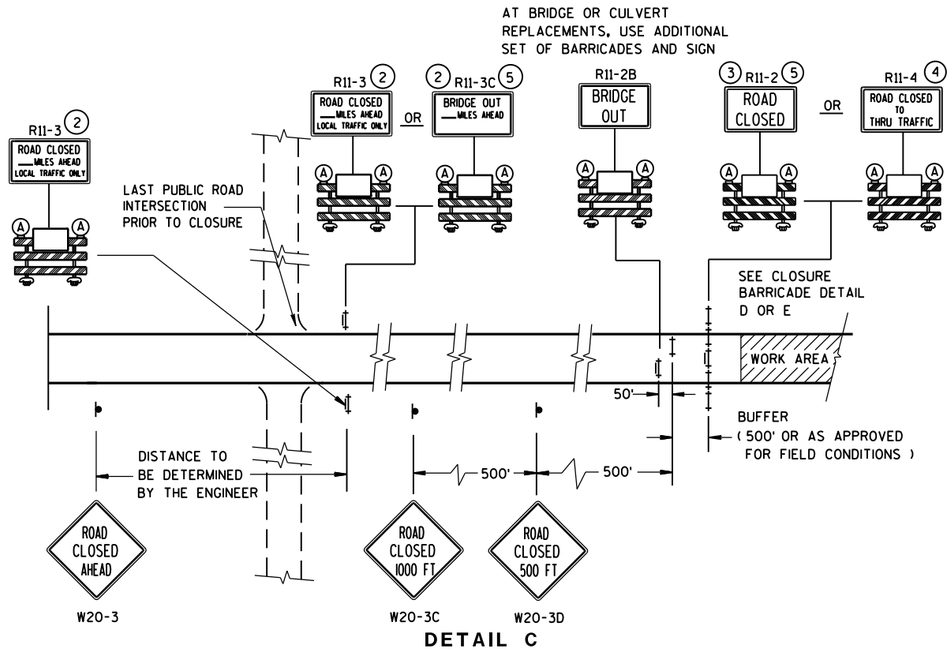
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

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

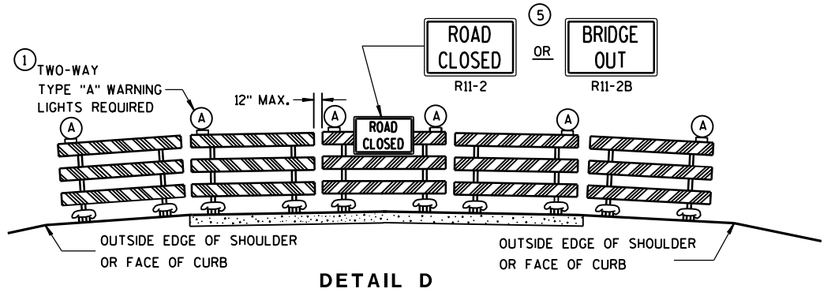
Sept. 2015 — DATE
/S/ Peter Amakobe Atepe
STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA

6

S.D.D. 15 C 2-6a

6

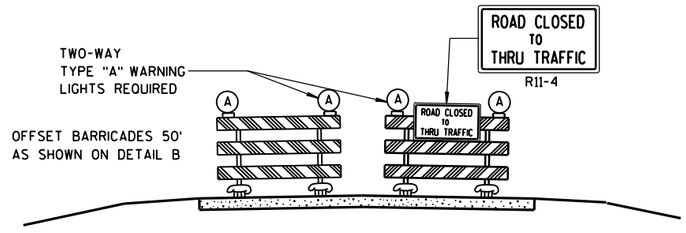
S.D.D. 15 C 2-6a



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

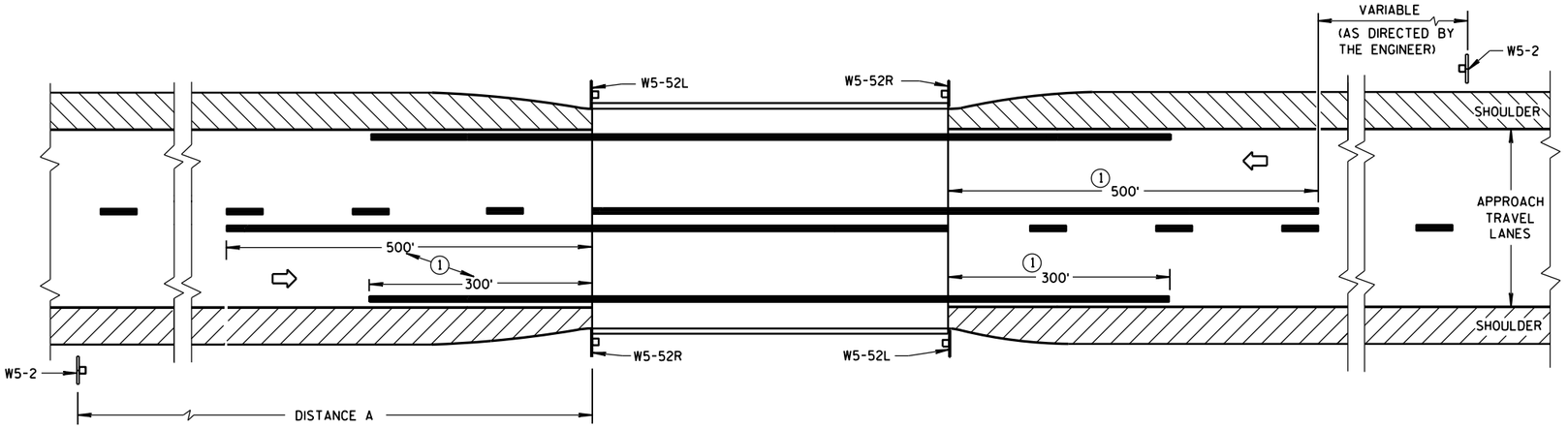
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

Sept. 2015 — DATE

/S/ Peter Amakobe Atepe
STATEWIDE WORK ZO SAFETY ENGI — FIC
FHWA

6

S.D.D. 15 C 2-6b



GENERAL NOTES

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

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

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

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

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

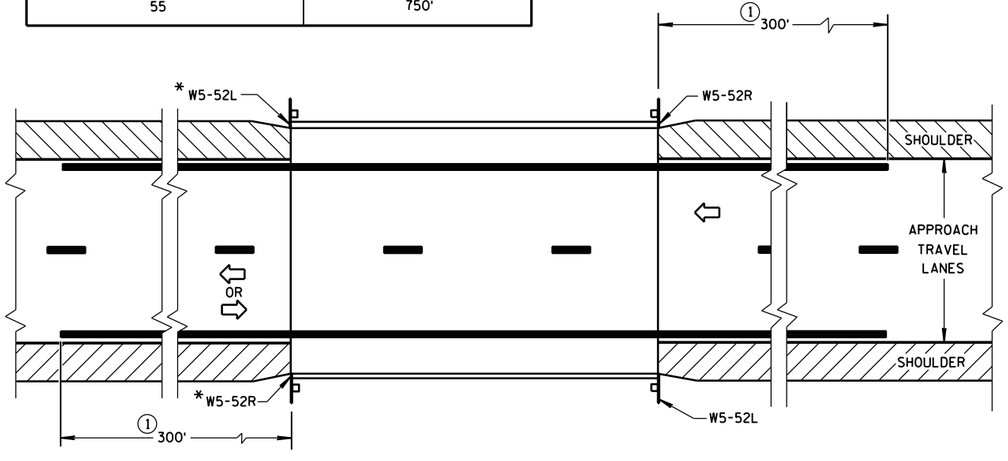
DISTANCE TABLE

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

SITUATION 1

WARRANTING CRITERIA:

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

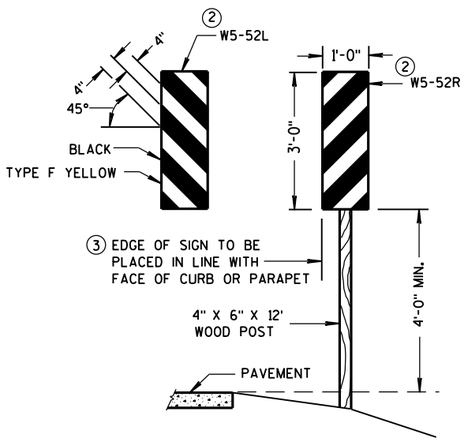


*OMIT ON ONE-WAY TRAVELLED WAYS

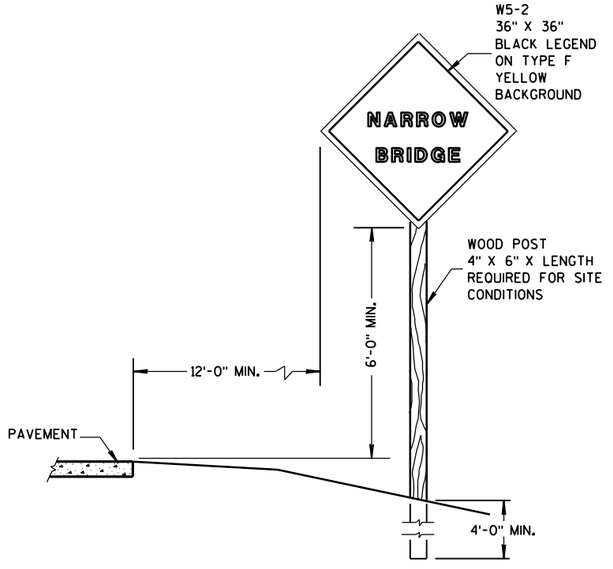
SITUATION 2

WARRANTING CRITERIA:

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



OBJECT MARKER PLACEMENT



SIGN PLACEMENT

SIGNING & MARKING
FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

3-2014 DATE

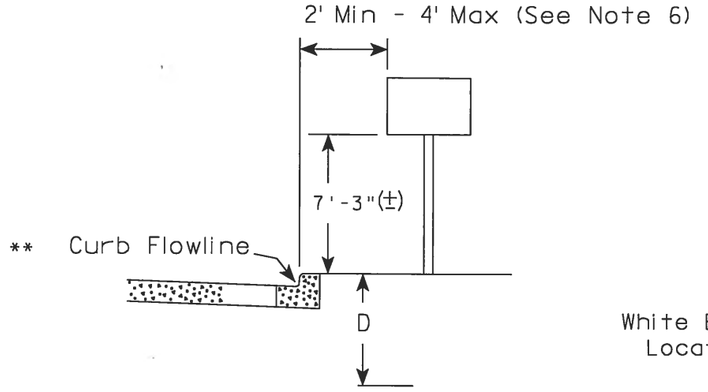
/S/ Travis Feltes STATE TRAFFIC ENGINEER

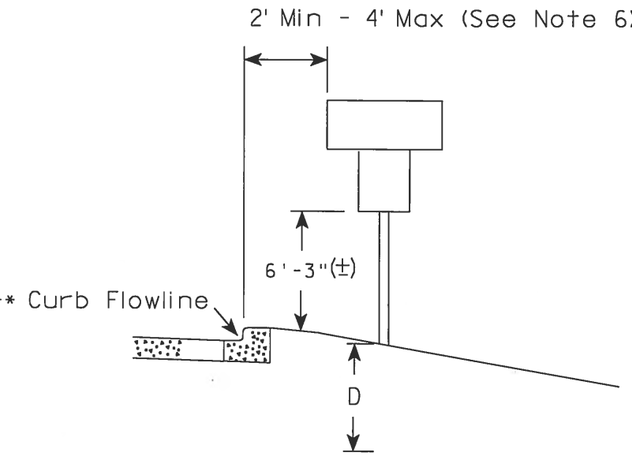
FHWA

6

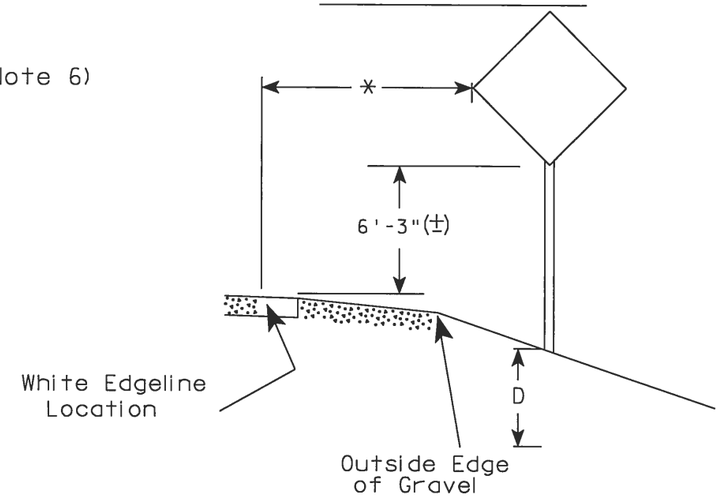
S.D.D. 15 C 6-7

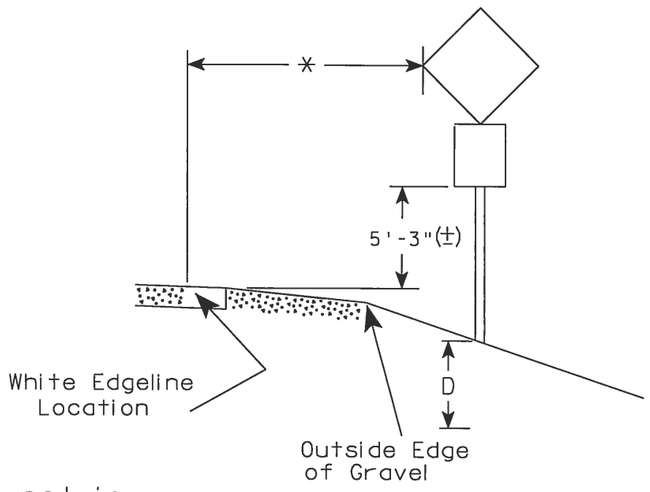
URBAN AREA





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 or 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 (A2-1S) 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 signs shall be mounted at a height of 5'-3" (±) or as directd 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), In Road Object Markers (W5-54) & End of Road Markers (W5-56) shall be mounted at a height of 4'-3" (±).

POST EMBEDMENT DEPTH

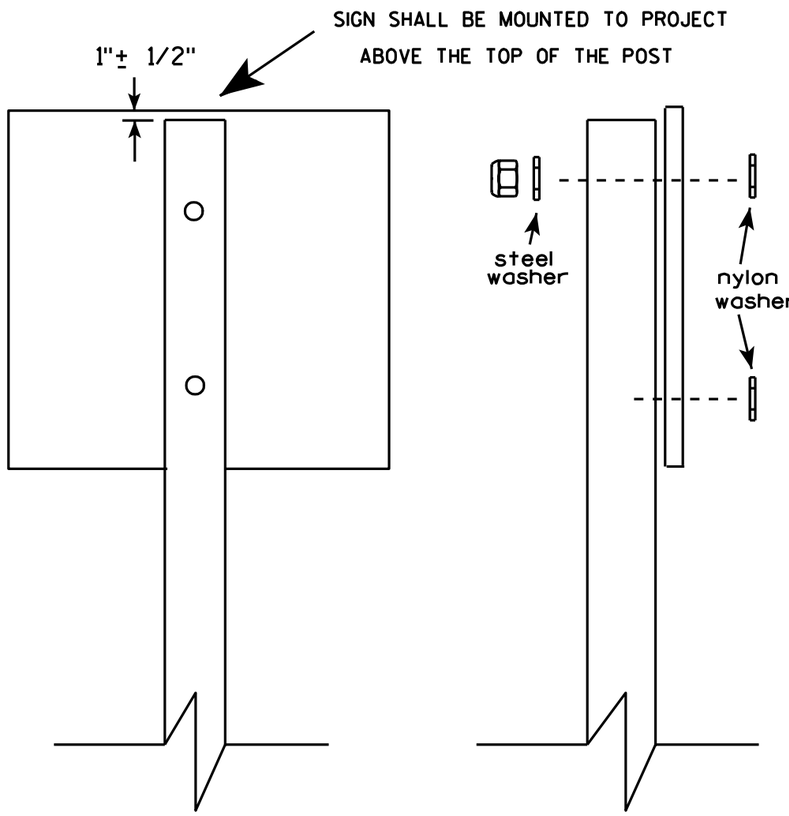
Area of Sign Installation (Sq. Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

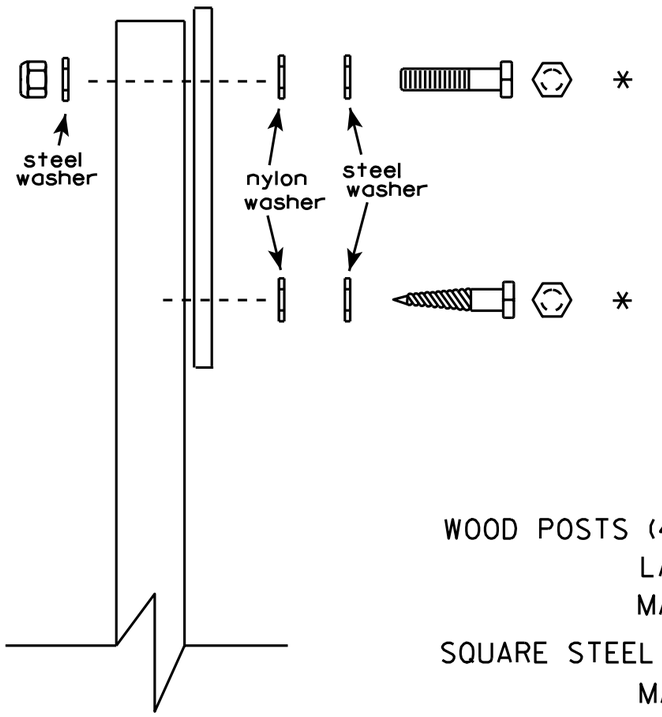
TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch for State Traffic Engineer

DATE 7/23/15 PLATE NO. A4-3.20





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

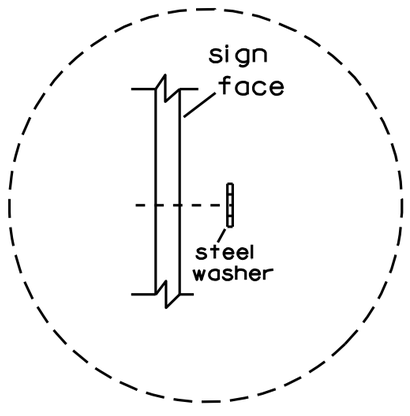
a. Hot dip galvanized in accordance with ASTM Designation: A 153, Class D, or SC 3
b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

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

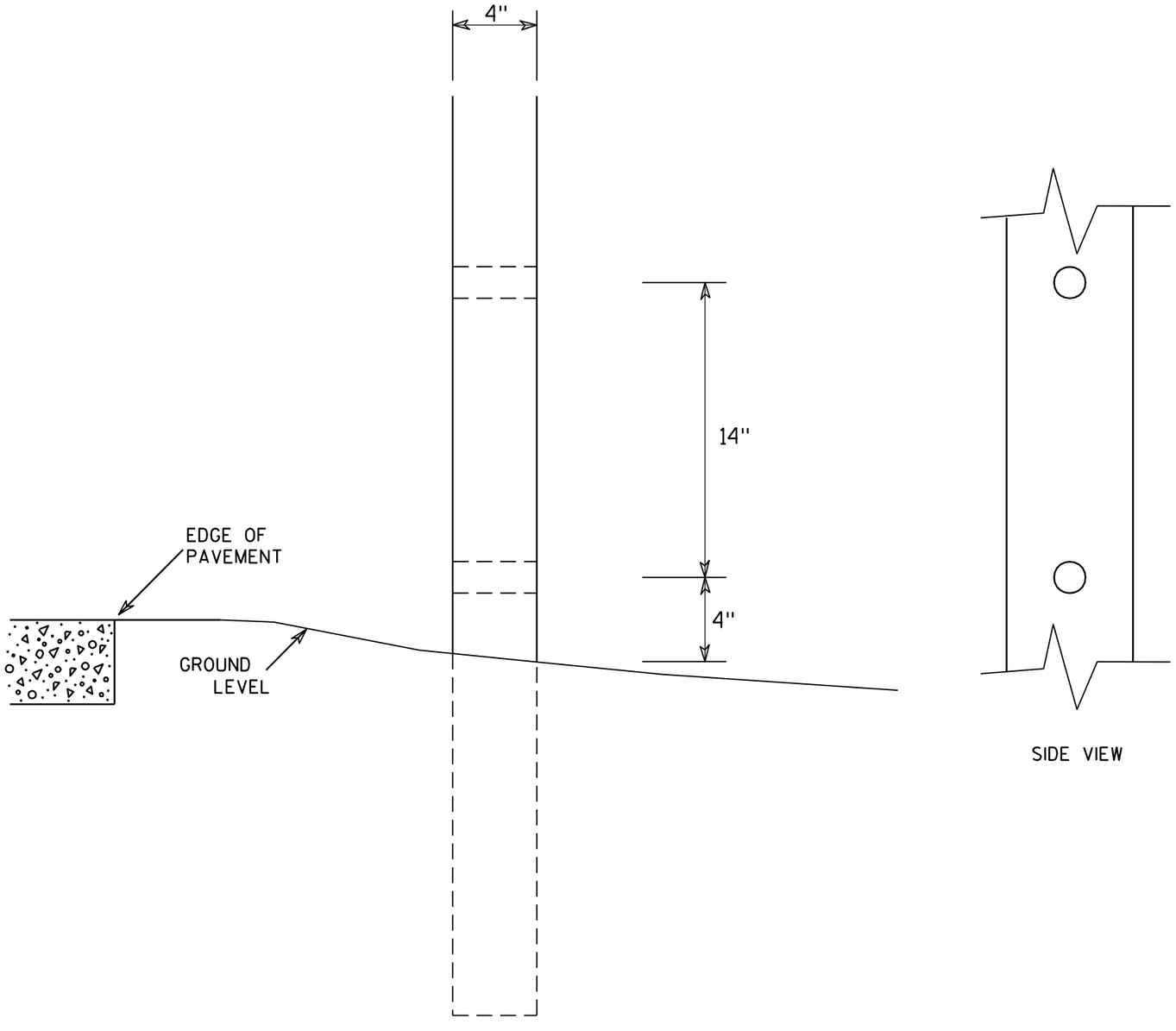
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

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

PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS		SHEET NO: 36	E

FILE NAME : C:\Users\PROJECTS\tr_stdplate\A48.DGN PLOT DATE : 23-MAR-2010 10:15 PLOT BY : ditjph
WISDOT/CADDS SHEET 42



SIDE VIEW

GENERAL NOTES

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

7

7

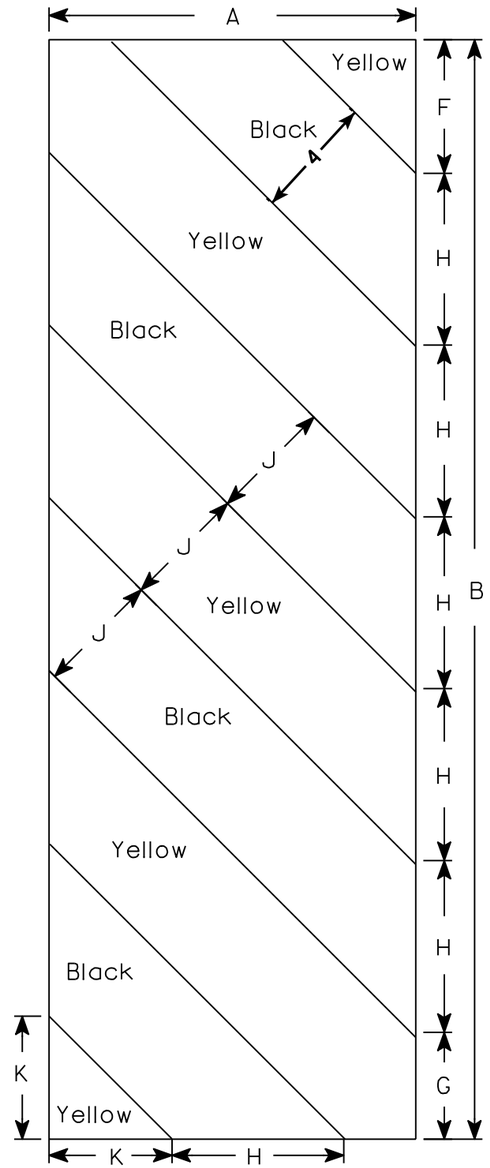
4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

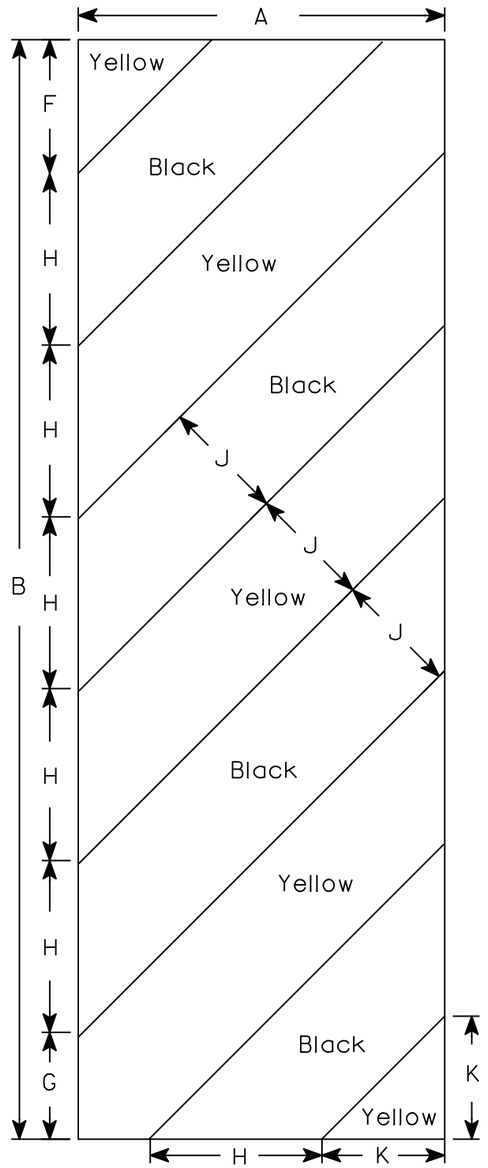
APPROVED Chester J Spang for State Traffic Engineer

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

PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS		SHEET NO: 37	E



W5-52L



W5-52R

NOTES

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

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

STANDARD SIGN

W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

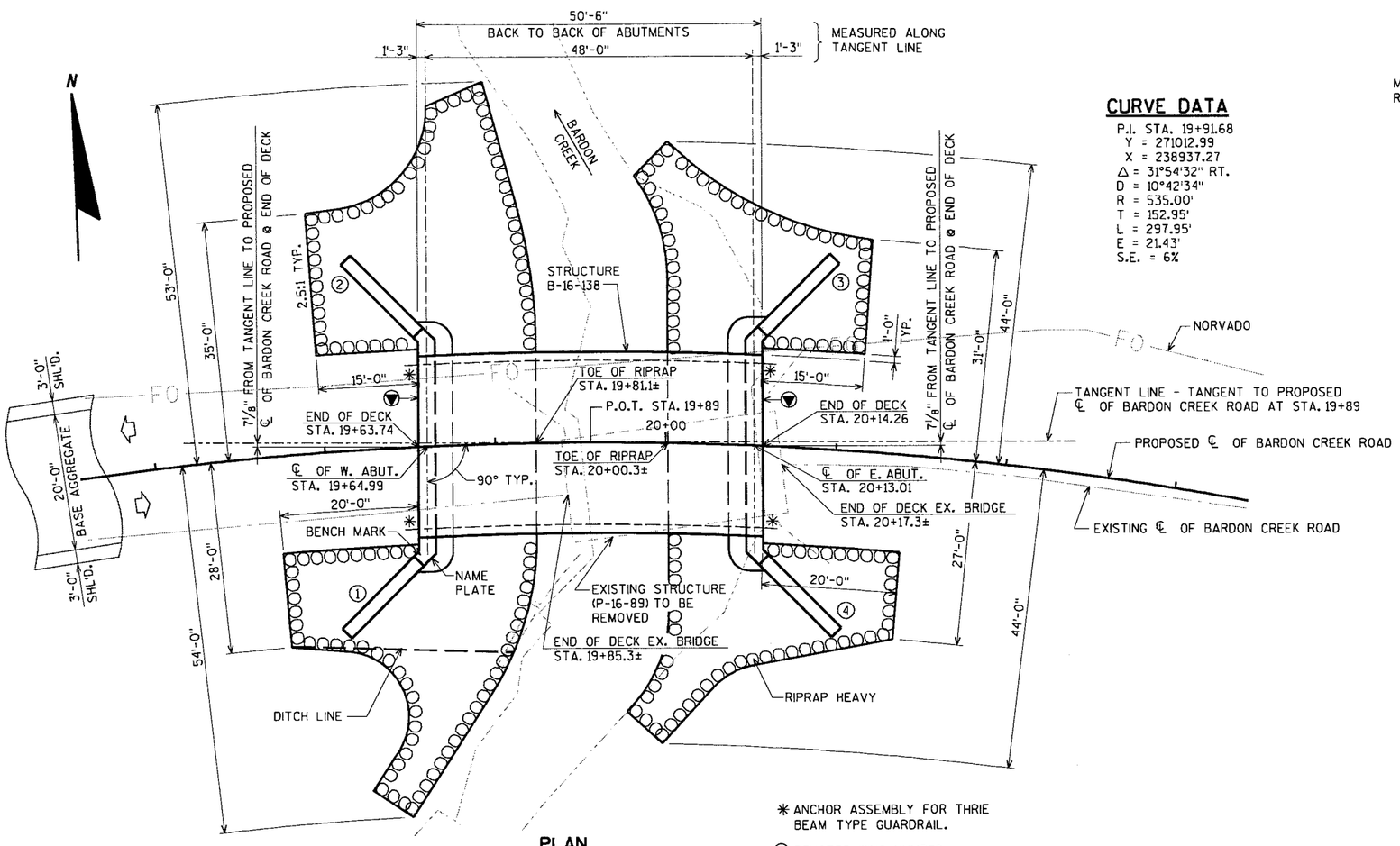
APPROVED Matthew R Rauch
for State Traffic Engineer

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

PROJECT NO: 8390-00-70 | HWY: BARDON CREEK ROAD | COUNTY: DOUGLAS | SHEET NO: 38 | E

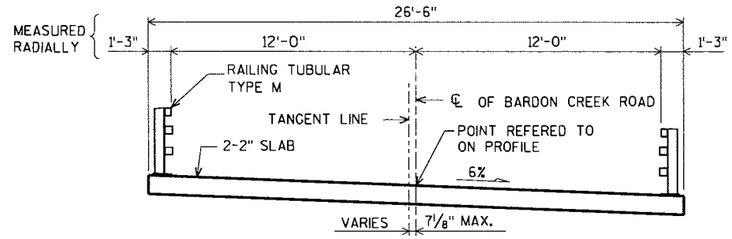
STATE PROJECT NUMBER

8390-00-70



CURVE DATA

P.I. STA. 19+91.68
Y = 271012.99
X = 238937.27
Δ = 31°54'32" RT.
D = 10°42'34"
R = 535.00'
T = 152.95'
L = 297.95'
E = 21.43'
S.E. = 6%



TYPICAL SECTION THRU BRIDGE

(LOOKING EAST)

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
INVENTORY RATING FACTOR: 1.18
OPERATING RATING FACTOR: 1.53
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS

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

MATERIAL PROPERTIES:

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

HYDRAULIC DATA:

100 YEAR FLOOD

DRAINAGE AREA = 5.2 sq. mi.
WATERWAY AREA = 440 sq. ft.
V = 4.8 f.p.s.
Q_{100} = 2,100 c.f.s.
Q_2 = 450 c.f.s.
HIGH WATER$_{100}$ EL. 819.4
HIGH WATER$_2$ EL. 813.8
RDWY. OVERFLOW = N/A
SCOUR CRITICAL CODE = 8
NAVD 88 DATUM

FOUNDATION DATA:

ABUTMENTS TO BE SUPPORTED ON HP 10 x 42 STEEL PILING (WITH PILE POINTS) DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 160 TONS ǂ PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA.
ESTIMATED LENGTH 35'-0" WEST ABUT. AND 35'-0" EAST ABUT.

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

TRAFFIC DATA:

A.D.T. = 100 (2017)
A.D.T. = 140 (2037)
R.D.S. = 30 M.P.H.

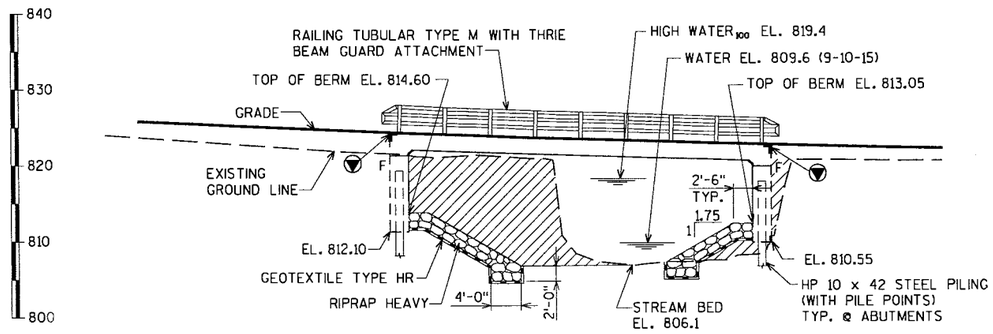
✳ ANCHOR ASSEMBLY FOR THRIE BEAM TYPE GUARDRAIL.

◯ DENOTES WING NUMBER.

▼ PROTECTION ANGLE AT END OF DECK - TYP.

PLAN

SINGLE SPAN CONCRETE FLAT SLAB



ELEVATION

(NORMAL TO ℄ OF CREEK)

▨ COST OF EXCAVATION OR FILL IN THE HATCHED AREAS SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "EXCAVATION FOR STRUCTURES BRIDGES B-16-138".

LIST OF DRAWINGS

WISCONSIN
DANIEL N. SYDOW
E-38363
WI
PROFESSIONAL ENGINEER

5/31/2016

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

CONSULTANT CONTACT:
DAN SYDOW
(715)-834-3161

NO.	DATE	REVISION	BY

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher SDR 08/29/16
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE B-16-138

BARDON CREEK ROAD OVER BARDON CREEK

COUNTY	TOWN/~~CITY/VILLAGE~~
DOUGLAS	MAPLE

DESIGN SPEC.
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
CJM	JWZ	CJM/CLS	DWS

GENERAL PLAN

SHEET 1 OF 12
39

8

8

DATE:
DATE:
DATE:

CHECKED BY:
BACK CHECKED BY:
CORRECTED BY:

$PRFNAME$
U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\BRIDGE\421002 GP.dgn

5/27/2016

PENTABLE:BReau_shd_util.tbl

I.D.

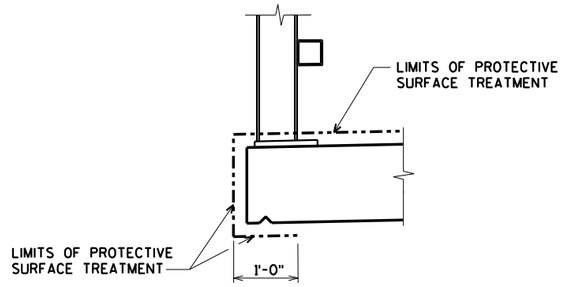
DATE:

STATE PROJECT NUMBER

8390-00-70

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	W. ABUT.	E. ABUT.	SUPER.	TOTAL
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STATION 20+01	LS	-----	-----	-----	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-16-138	LS	-----	-----	-----	1
210.1100	BACKFILL STRUCTURE TYPE A	CY	260	260	-----	520
502.0100	CONCRETE MASONRY BRIDGES	CY	52	52	112	216
502.3200	PROTECTIVE SURFACE TREATMENT	SY	-----	-----	180	180
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	2,480	2,480	-----	4,960
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	2,130	2,130	19,600	23,860
506.0105	STRUCTURAL STEEL CARBON	LB	-----	-----	530	530
513.4061	RAILING TUBULAR TYPE M B-16-138	LF	-----	-----	105	105
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	12	12	-----	24
550.0500	PILE POINTS	EACH	7	7	-----	14
550.1100	PILING STEEL HP 10-INCH x 42 LB	LF	245	245	-----	490
606.0300	RIPRAP HEAVY	CY	190	130	-----	320
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	87	87	-----	174
645.0120	GEOTEXTILE TYPE HR	SY	400	310	-----	710
	NON-BID ITEMS					
	FILLER	SIZE	-----	-----	-----	1/2" & 3/4"



PROTECTIVE SURFACE TREATMENT DETAIL

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

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

THE FIRST DIGIT OF A THREE DIGIT BAR NO. AND THE FIRST TWO DIGITS OF A FOUR DIGIT BAR NO. SIGNIFIES THE BAR SIZE.

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

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

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

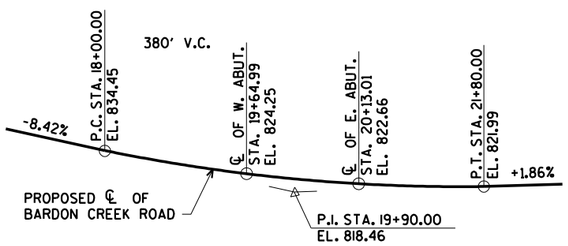
THE EXISTING GROUND LINE SHALL BE THE UPPER LIMIT FOR EXCAVATION FOR STRUCTURES.

THE EXISTING STRUCTURE, P-16-89, TO BE REMOVED, IS A SINGLE SPAN STEEL DECK GIRDER BRIDGE, 32 FT. LONG WITH A 15.8 FT. CLEAR ROADWAY WIDTH.

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

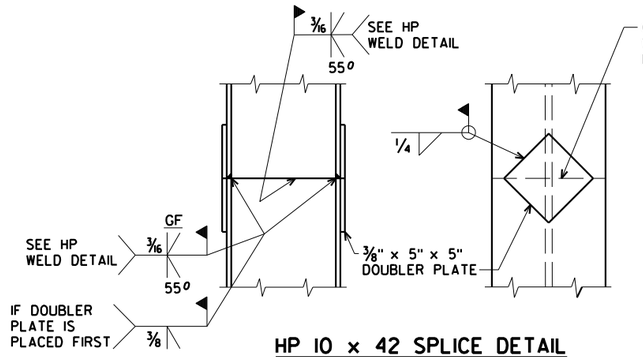
PROTECTIVE SURFACE TREATMENT IS TO BE APPLIED AS SHOWN IN DETAIL ON THIS SHEET.

THE QUANTITY OF BACKFILL STRUCTURE TYPE A, BID ITEM 210.1100 IS CALCULATED BASED ON APPLICABLE FIGURES 12.6-1 AND 12.6-2 IN THE WISCONSIN DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL.

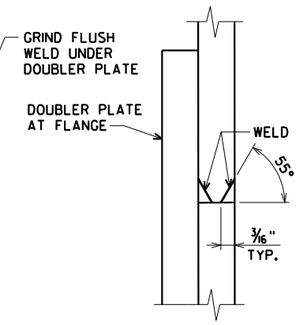


PROFILE GRADE LINE
(BARDON CREEK ROAD)

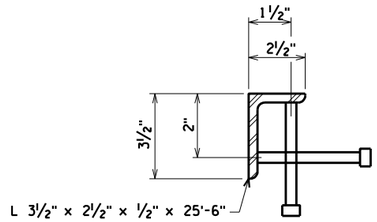
BENCH MARK:
CHIS. SQ. ON CURB @ SW COR. OF BRIDGE
STA. 19+88, 15'LT.
EL. 820.55

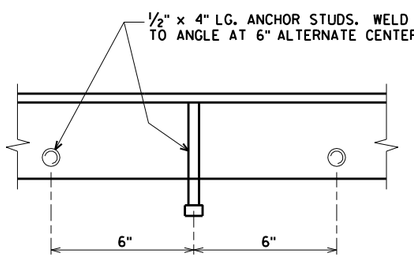


HP 10 x 42 SPLICE DETAIL



HP WELD DETAIL
FLANGE SHOWN, WEB SIMILAR





PROTECTION ANGLE DETAIL

(ANGLE AND STUDS TO BE PAID FOR AT THE UNIT PRICE BID FOR "STRUCTURAL STEEL CARBON". (NO PAINT REQ'D.)

SANDBLAST PROTECTION ANGLE AFTER FABRICATION. AFTER BLAST CLEANING, THE PROTECTION ANGLE SHALL BE HOT DIPPED GALVANIZED.

NO FIELD SPLICE SHALL BE PERMITTED IN ANGLES.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-16-138

DRAWN BY CJM | PLANS CK'D. CJM

QUANTITIES AND NOTES

SHEET 2 OF 12
40

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

$PRFNAME$

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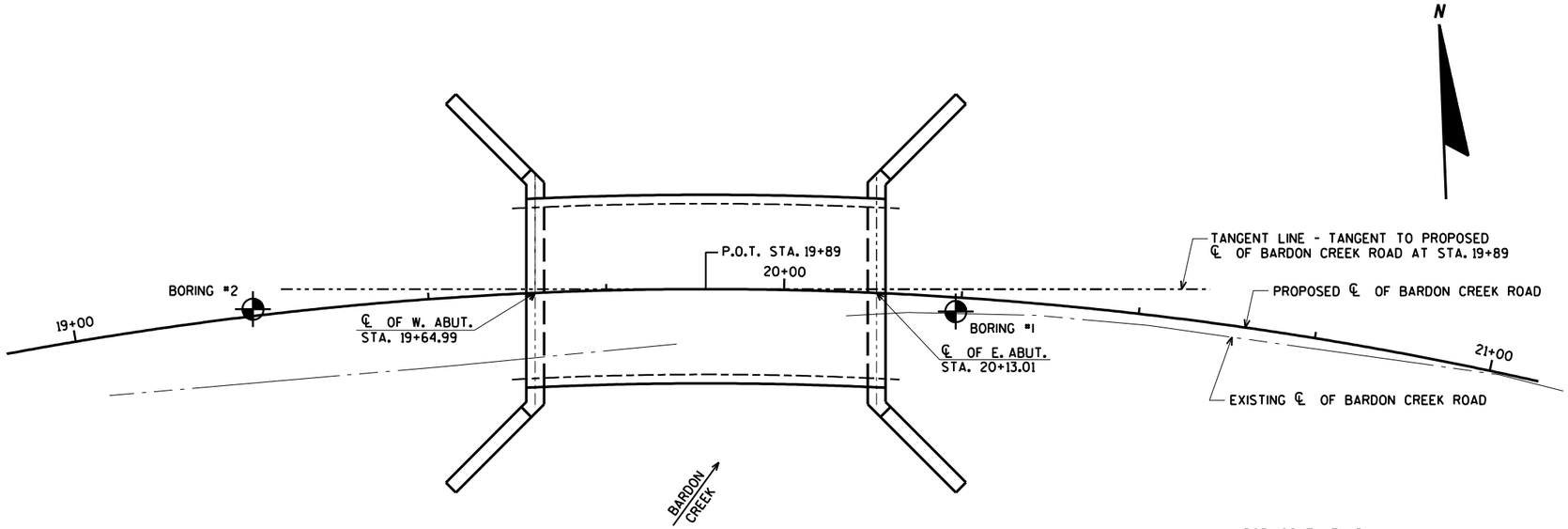
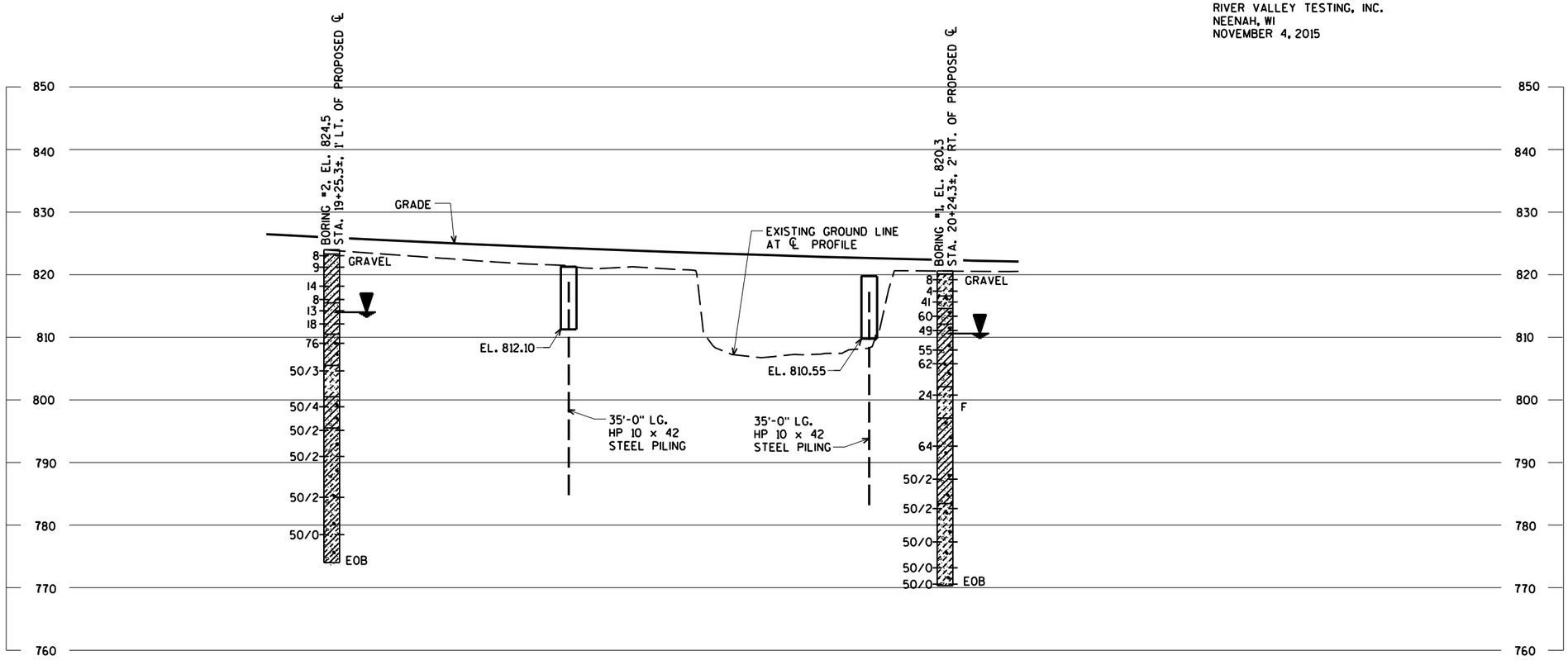
5/31/2016

PENTABLE:BReau_shd_util.tbl



BORINGS TAKEN BY:
GEOTECHNICAL DRILLING CONTRACTORS LLC.
WAUSAU, WI
OCTOBER 6, 2015

GEOTECHNICAL REPORT BY:
RIVER VALLEY TESTING, INC.
NEENAH, WI
NOVEMBER 4, 2015



STATE PROJECT NUMBER

8390-00-70

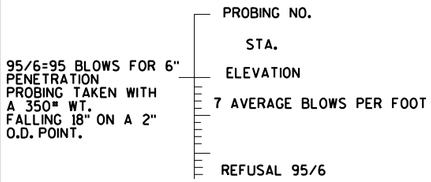
ABBREVIATIONS

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

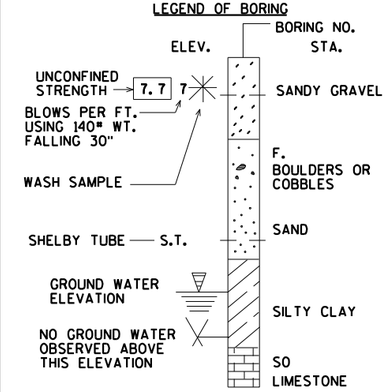
MATERIAL SYMBOLS

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

LEGEND OF PROBING



LEGEND OF BORING



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.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-16-138

DRAWN BY CJM | PLANS CK'D. CJM

SUBSURFACE EXPLORATION

SHEET 3 OF 12
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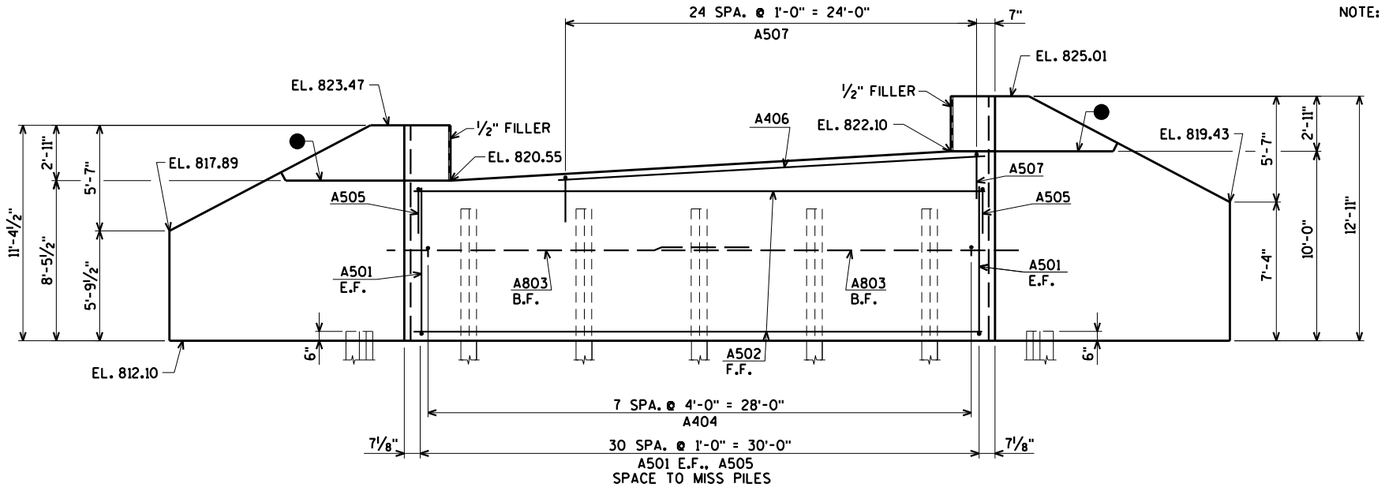
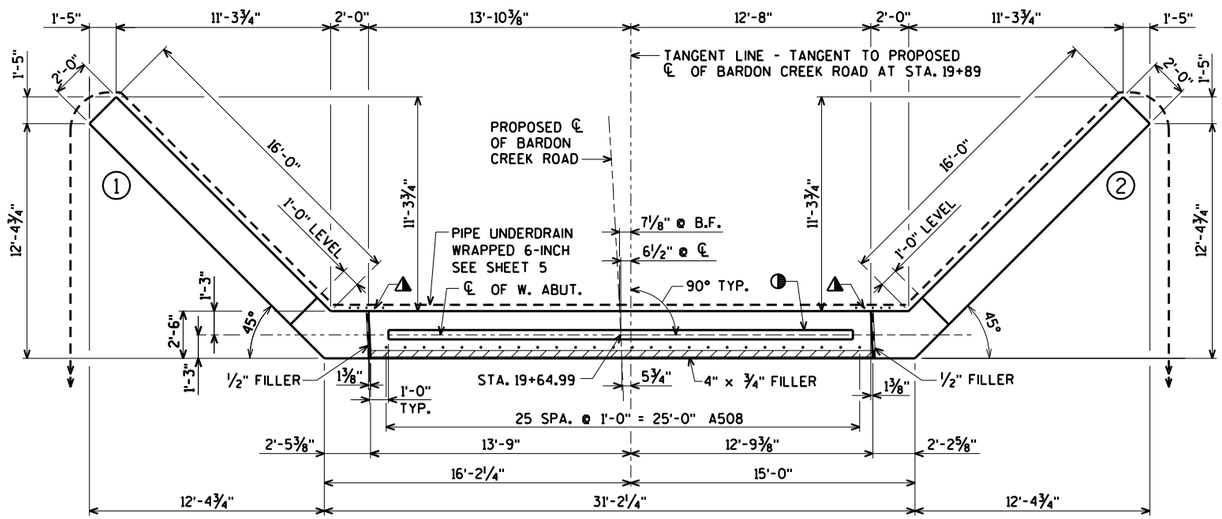
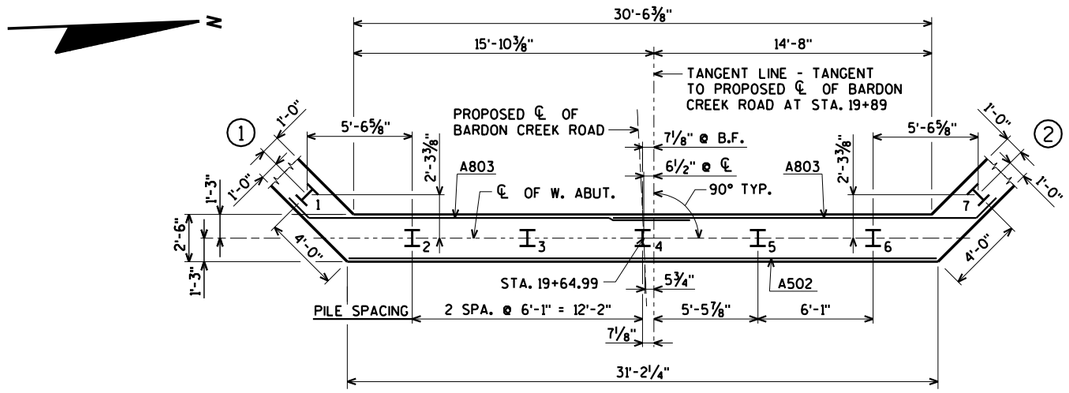
NOTE: SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE.)



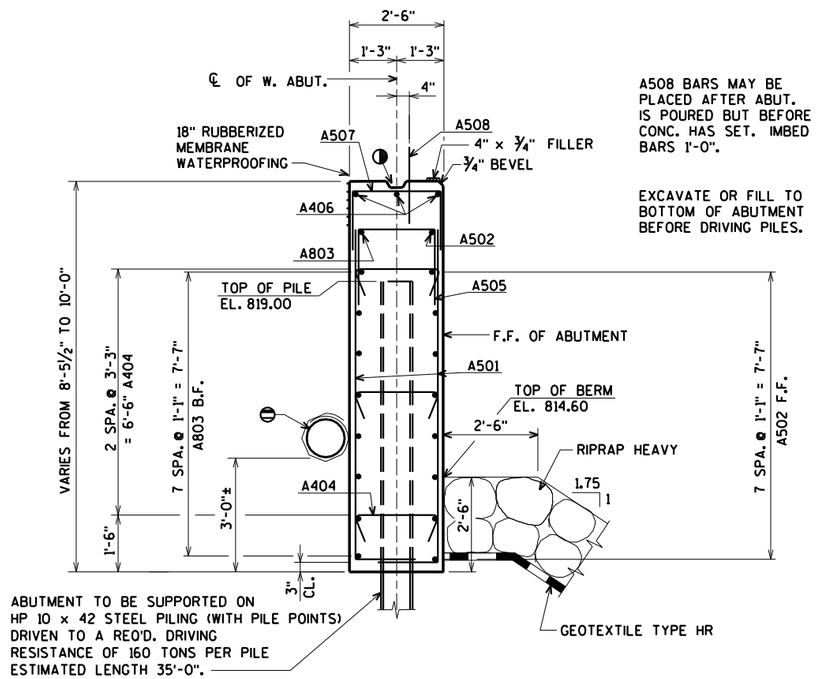
ELEVATION
(LOOKING WEST)



PLAN



PILE LAYOUT



A508 BARS MAY BE PLACED AFTER ABUT. IS POURED BUT BEFORE CONC. HAS SET. IMBED BARS 1'-0".

EXCAVATE OR FILL TO BOTTOM OF ABUTMENT BEFORE DRIVING PILES.

TYPICAL SECTION THRU BODY

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

- PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. FOR RODENT SHIELD DETAIL SEE SHEET 5.
- ● OPT. KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".
- ◑ KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".
- ⚠ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING.

FOR PILE SPLICE DETAIL SEE SHEET 2.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

E.F. DENOTES EACH FACE.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-16-138

DRAWN BY CLS | PLANS CK'D. CJM

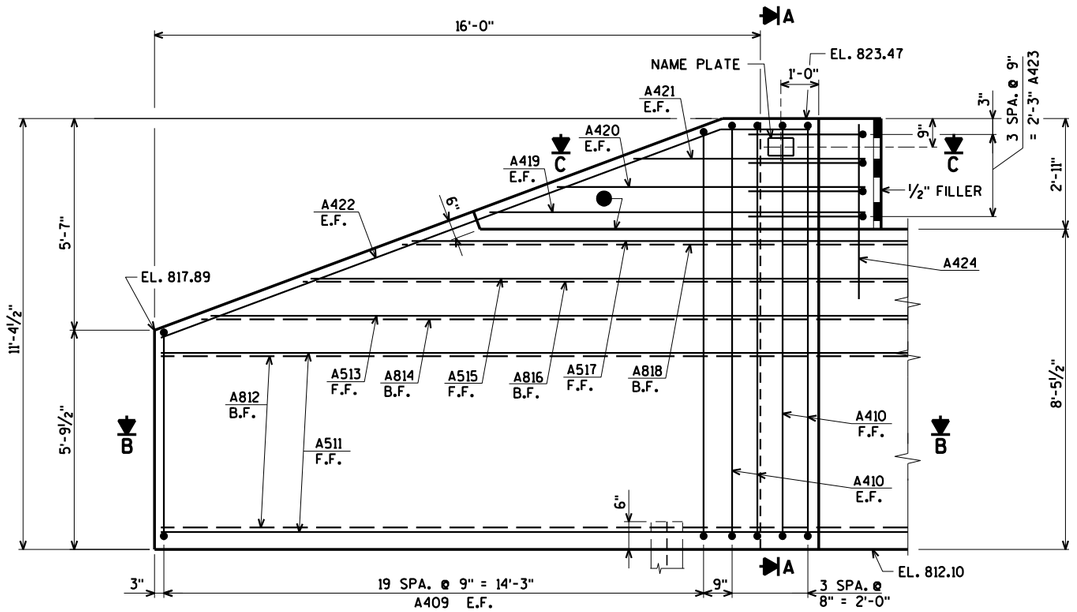
WEST ABUTMENT

SHEET 4 OF 12
42

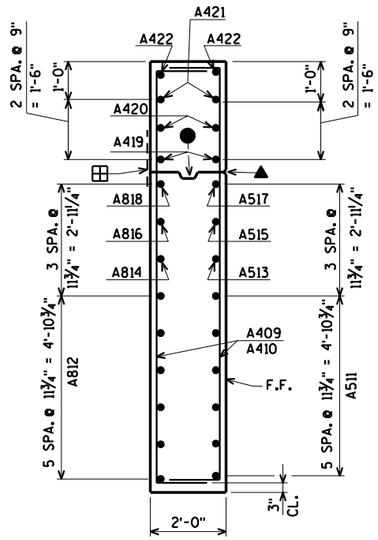
ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

STATE PROJECT NUMBER

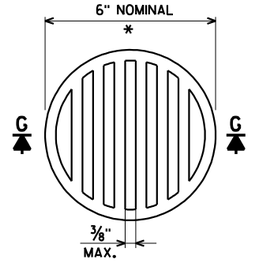
8390-00-70

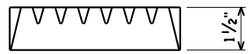


ELEVATION - WING 1



SECTION A





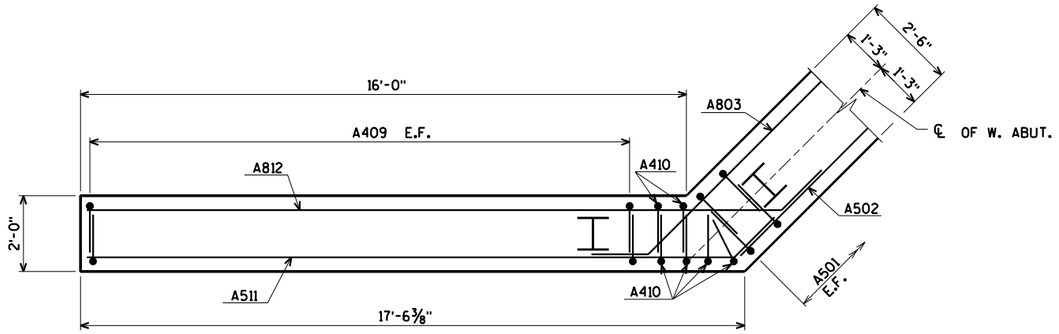
SECTION G-G

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

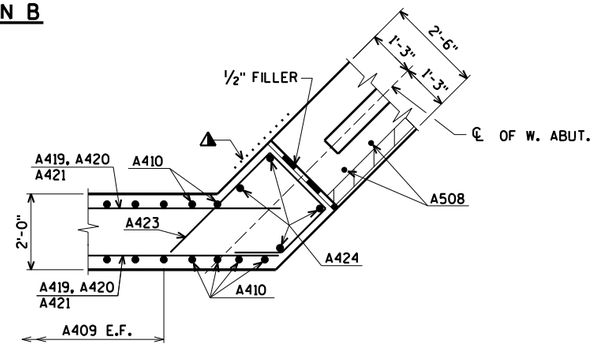
THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

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

RODENT SHIELD DETAIL



SECTION B



SECTION C

▲ ¾" 'V' GROOVE ON F.F. OF WING WALL - NOT REQUIRED IF CONST. JT. IS NOT USED.

● OPT. KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".

◭ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BEAM SEAT TO TOP OF WINGWALL.

⊞ 18" RUBBERIZED MEMBRANE WATERPROOFING ON BACK FACE. NOT REQUIRED IF CONST. JT. IS NOT USED.

FOR PILE SPLICE DETAIL SEE SHEET 2.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

E.F. DENOTES EACH FACE.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-16-138

DRAWN BY CLS | PLANS CK'D. CJM

WEST ABUTMENT WING 1 DETAILS

SHEET 5 OF 12
43

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

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8

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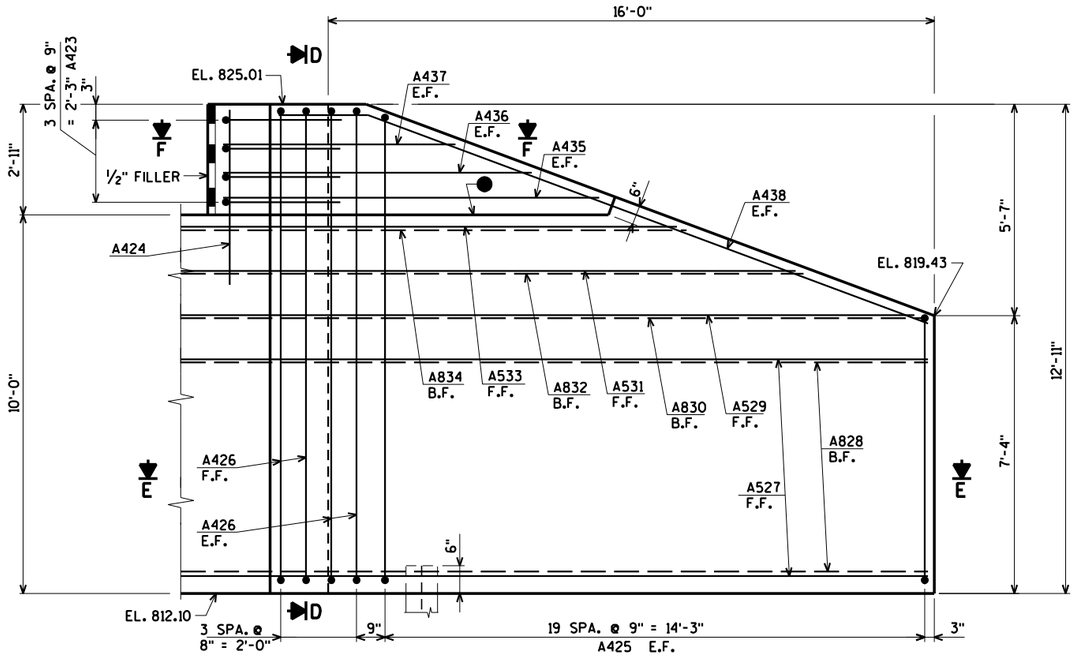
U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\BRIDGE\421002 wo.dgn

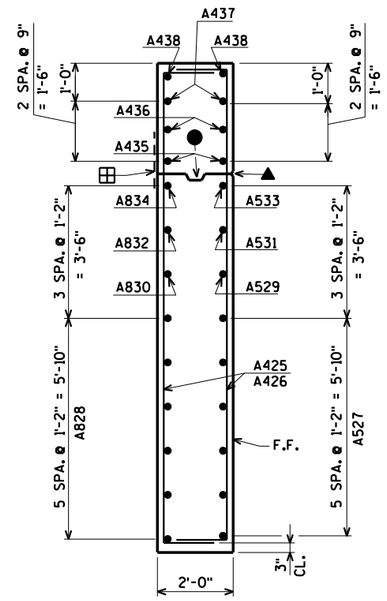
5/24/2016

PENTABLE:BReau_shd_util.tbl

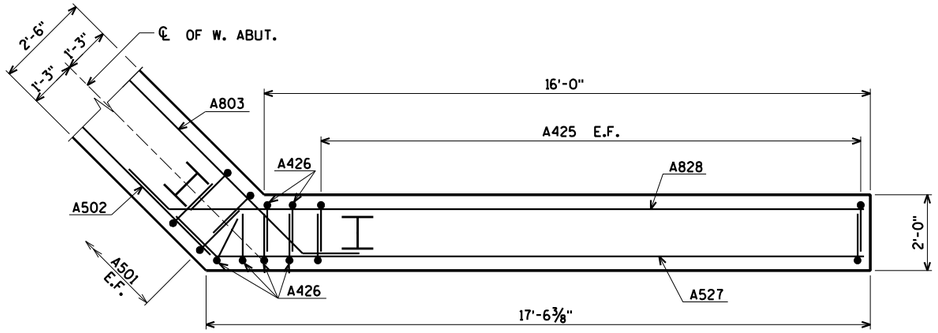
STATE PROJECT NUMBER
8390-00-70



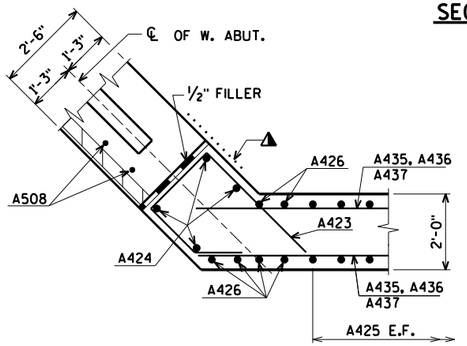
ELEVATION - WING 2



SECTION D



SECTION E



SECTION F

▲ ¾" 'V' GROOVE ON F.F. OF WING WALL - NOT REQUIRED IF CONST. JT. IS NOT USED.

● OPT. KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".

⚠ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BEAM SEAT TO TOP OF WINGWALL.

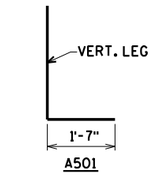
⊞ 18" RUBBERIZED MEMBRANE WATERPROOFING ON BACK FACE. NOT REQUIRED IF CONST. JT. IS NOT USED.

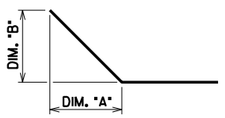
FOR PILE SPLICE DETAIL SEE SHEET 2.

B.F. DENOTES BACK FACE.

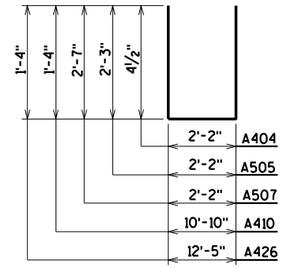
F.F. DENOTES FRONT FACE.

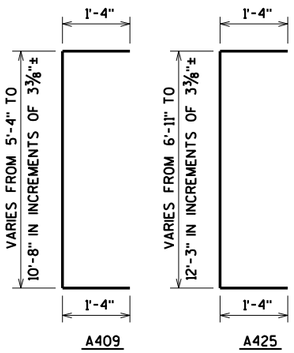
E.F. DENOTES EACH FACE.

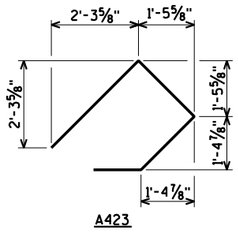




BAR NO.	DIM. "A"	DIM. "B"
A803	1'-0¾"	1'-0¾"
A511	1'-0¾"	1'-0¾"
A812	1'-0¾"	1'-0¾"
A513	1'-0¾"	1'-0¾"
A814	1'-0¾"	1'-0¾"
A515	1'-0¾"	1'-0¾"
A816	1'-0¾"	1'-0¾"
A517	1'-0¾"	1'-0¾"
A818	1'-0¾"	1'-0¾"
A422	14'-10"	5'-6"
A527	1'-0¾"	1'-0¾"
A828	1'-0¾"	1'-0¾"
A529	1'-0¾"	1'-0¾"
A830	1'-0¾"	1'-0¾"
A531	1'-0¾"	1'-0¾"
A832	1'-0¾"	1'-0¾"
A533	1'-0¾"	1'-0¾"
A834	1'-0¾"	1'-0¾"
A438	14'-10"	5'-6"







BILL OF BARS

BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR SERIES	2,480# UNCOATED 2,130# COATED LOCATION
A501		62	9-6	X		BODY VERT. E.F.
A502		9	31-1			BODY HORIZ. F.F.
A803		18	21-7	X		BODY HORIZ. B.F.
A404		24	2-9	X		BODY TIES
A505		31	6-5	X		BODY VERT. TOP
A406		3	24-6			BODY HORIZ. TOP
A507		25	7-1	X		BODY VERT. TOP
A508		26	2-0			BODY DOWELS
A409	X	40	10-6	X	⊗	WING 1 VERT. E.F.
A410	X	6	13-4	X		WING 1 VERT. E.F.
A511	X	6	18-9	X		WING 1 HORIZ. F.F.
A812	X	6	20-4	X		WING 1 HORIZ. B.F.
A513	X	1	17-5	X		WING 1 HORIZ. F.F.
A814	X	1	19-0	X		WING 1 HORIZ. B.F.
A515	X	1	14-10	X		WING 1 HORIZ. F.F.
A816	X	1	16-5	X		WING 1 HORIZ. B.F.
A517	X	1	12-3	X		WING 1 HORIZ. F.F.
A818	X	1	13-10	X		WING 1 HORIZ. B.F.
A419	X	2	8-10			WING 1 HORIZ. E.F.
A420	X	2	6-8			WING 1 HORIZ. E.F.
A421	X	2	4-8			WING 1 HORIZ. E.F.
A422	X	2	18-4	X		WING 1 DIAG. E.F.
A423	X	8	8-5	X		WING 1 & 2 HORIZ.
A424	X	8	3-9			WING 1 & 2 VERT.
A425	X	40	12-1	X	⊗	WING 2 VERT. E.F.
A426	X	6	14-11	X		WING 2 VERT. E.F.
A527	X	6	18-9	X		WING 2 HORIZ. F.F.
A828	X	6	20-4	X		WING 2 HORIZ. B.F.
A529	X	1	18-7	X		WING 2 HORIZ. F.F.
A830	X	1	20-2	X		WING 2 HORIZ. B.F.
A531	X	1	15-6	X		WING 2 HORIZ. F.F.
A832	X	1	17-1	X		WING 2 HORIZ. B.F.
A533	X	1	12-5	X		WING 2 HORIZ. F.F.
A834	X	1	14-0	X		WING 2 HORIZ. B.F.
A435	X	2	8-9			WING 2 HORIZ. E.F.
A436	X	2	6-8			WING 2 HORIZ. E.F.
A437	X	2	4-8			WING 2 HORIZ. E.F.
A438	X	2	18-4	X		WING 2 DIAG. E.F.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

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

BAR SERIES TABLE

BAR MARK	NO REQ'D.	LENGTH
A409	2 SERIES OF 20	7'-10" TO 13'-2"
A425	2 SERIES OF 20	9'-5" TO 14'-9"

BUNDLE AND TAG EACH SERIES SEPARATELY.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-16-138

DRAWN BY CLS | PLANS CK'D. CJM

WEST ABUTMENT WING 2 DETAILS & BILL OF BARS

SHEET 6 OF 12
44

ORIGINAL PLANS PREPARED BY
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3433 Oakwood Hills Parkway
Eau Claire, WI 54701
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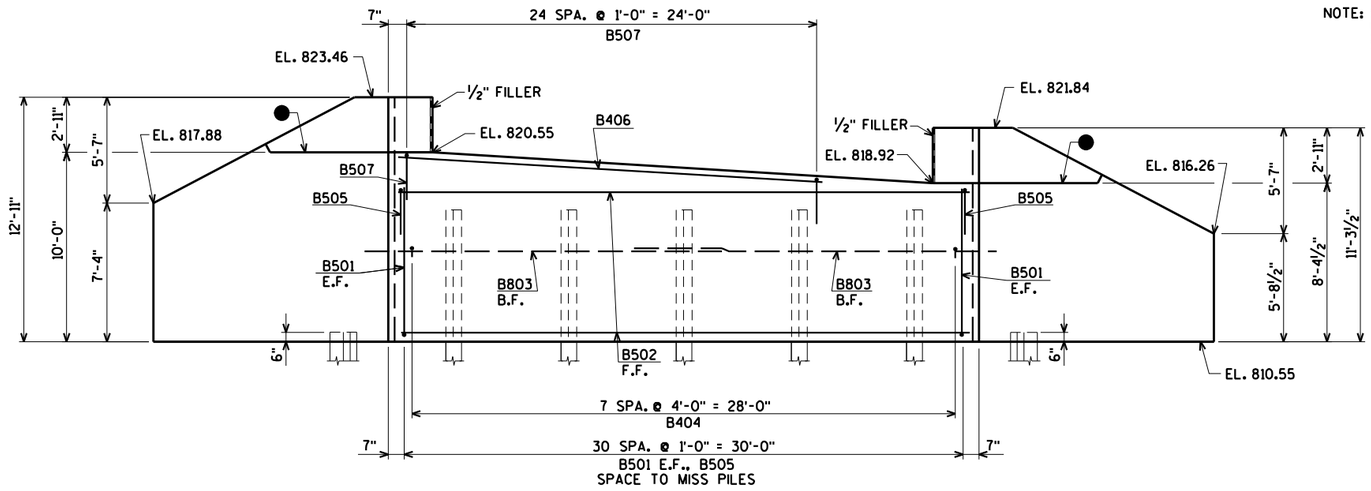
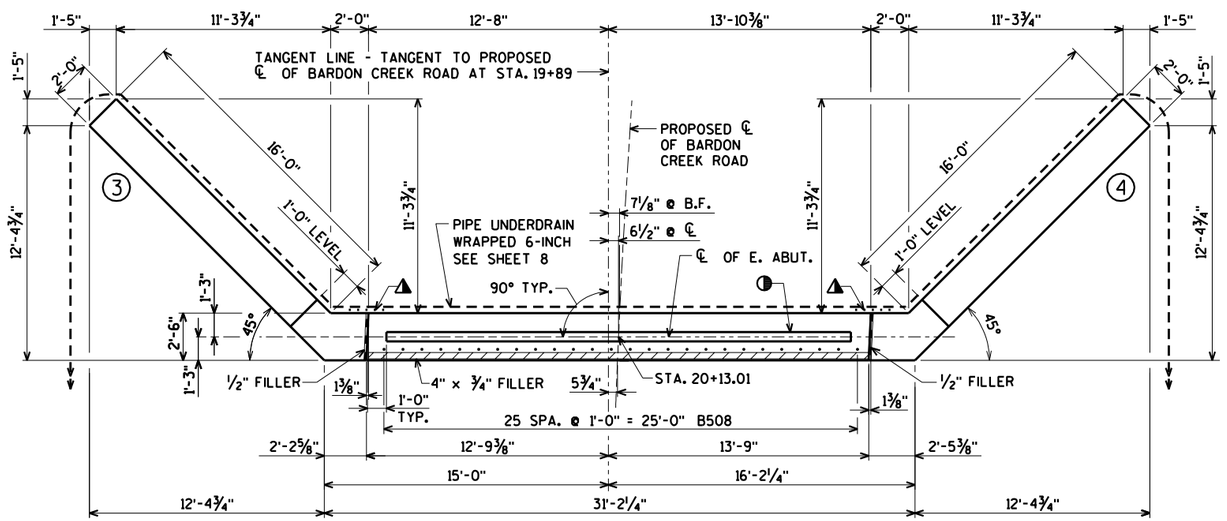
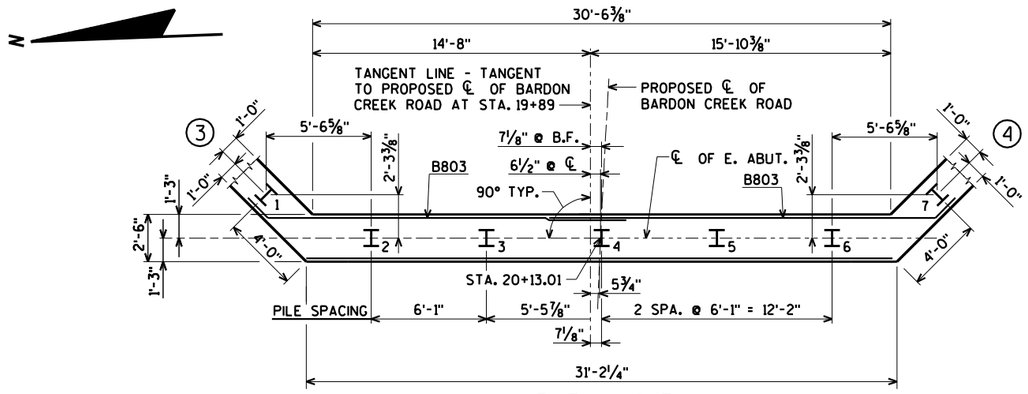
NOTE: SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE.)



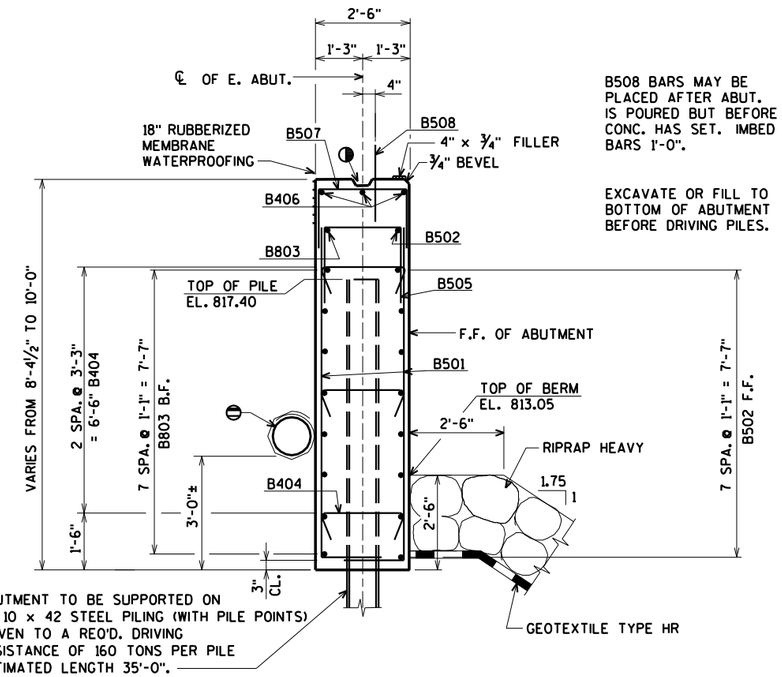
ELEVATION
(LOOKING EAST)



PLAN



PILE LAYOUT



B508 BARS MAY BE PLACED AFTER ABUT. IS POURED BUT BEFORE CONC. HAS SET. IMBED BARS 1'-0".

EXCAVATE OR FILL TO BOTTOM OF ABUTMENT BEFORE DRIVING PILES.

TYPICAL SECTION THRU BODY

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

- PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. FOR RODENT SHIELD DETAIL SEE SHEET 8.
- OPT. KEYED CONST. JOINT - FORMED BY A BEVELED 2" × 6".
- KEYED CONST. JOINT - FORMED BY A BEVELED 2" × 6".
- 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING.

FOR PILE SPLICE DETAIL SEE SHEET 2.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

E.F. DENOTES EACH FACE.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-16-138

DRAWN BY CLS | PLANS CK'D. CJM

EAST ABUTMENT

SHEET 7 OF 12
45

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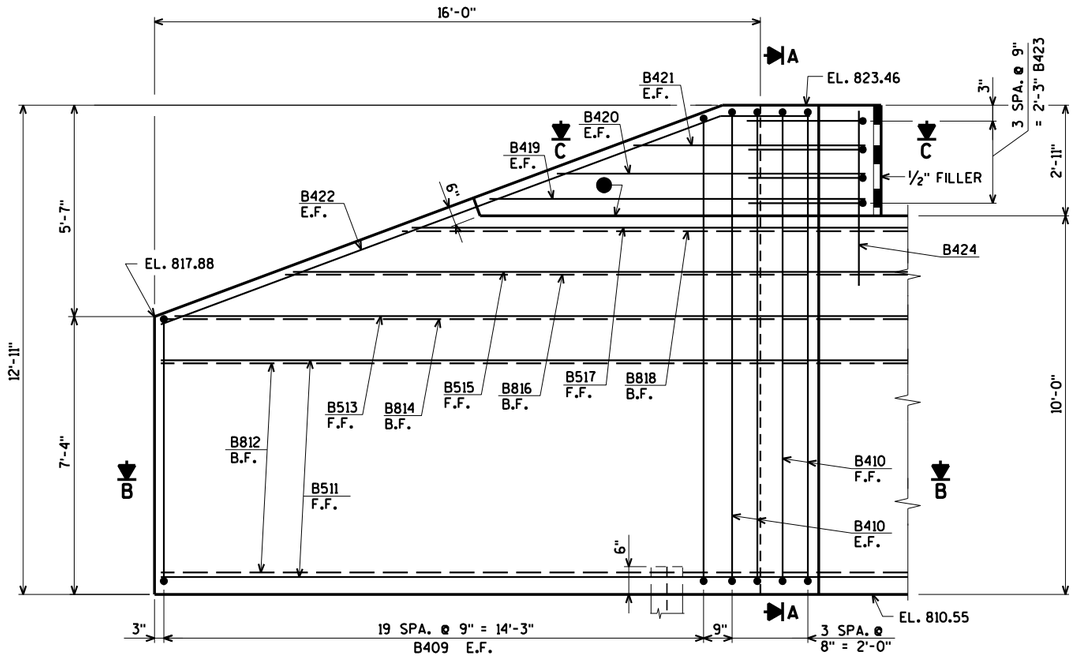
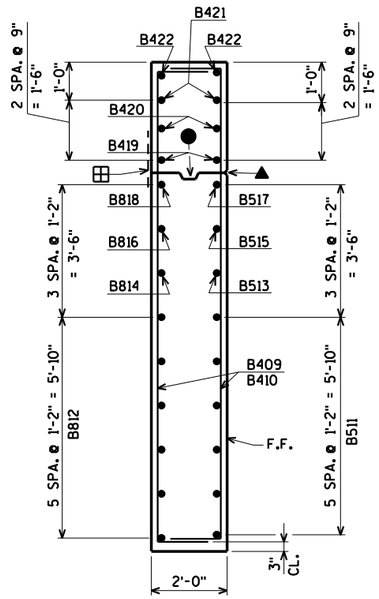
STATE PROJECT NUMBER

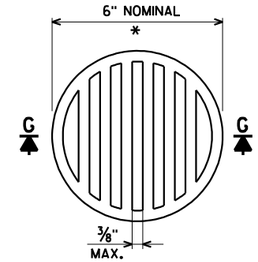
8390-00-70

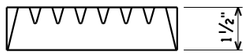


ELEVATION - WING 3



SECTION A





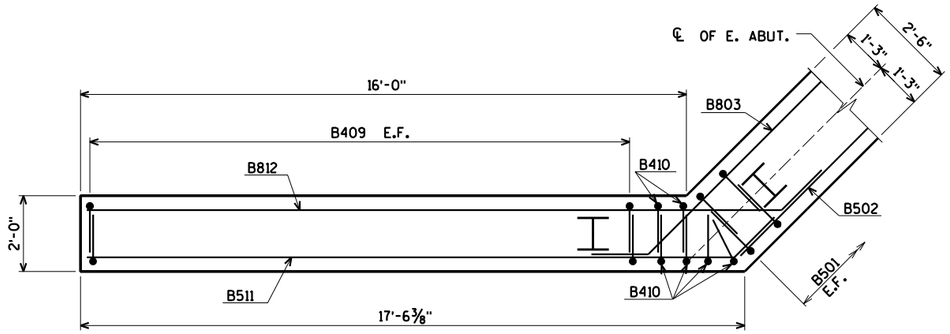
SECTION G-G

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

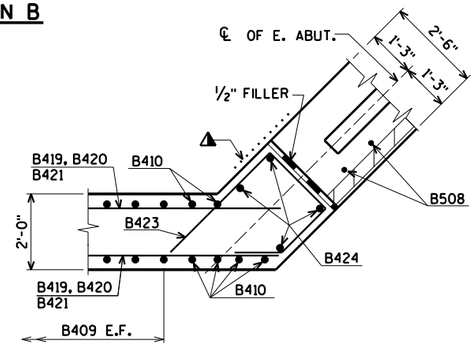
THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

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

RODENT SHIELD DETAIL



SECTION B



SECTION C

▲ ¾" 'V' GROOVE ON F.F. OF WING WALL - NOT REQUIRED IF CONST. JT. IS NOT USED.

● OPT. KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".

◭ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BEAM SEAT TO TOP OF WINGWALL.

⊞ 18" RUBBERIZED MEMBRANE WATERPROOFING ON BACK FACE. NOT REQUIRED IF CONST. JT. IS NOT USED.

FOR PILE SPLICE DETAIL SEE SHEET 2.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

E.F. DENOTES EACH FACE.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-16-138

DRAWN BY CLS | PLANS CK'D. CJM

EAST ABUTMENT WING 3 DETAILS

SHEET 8 OF 12
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8

8

5/24/2016

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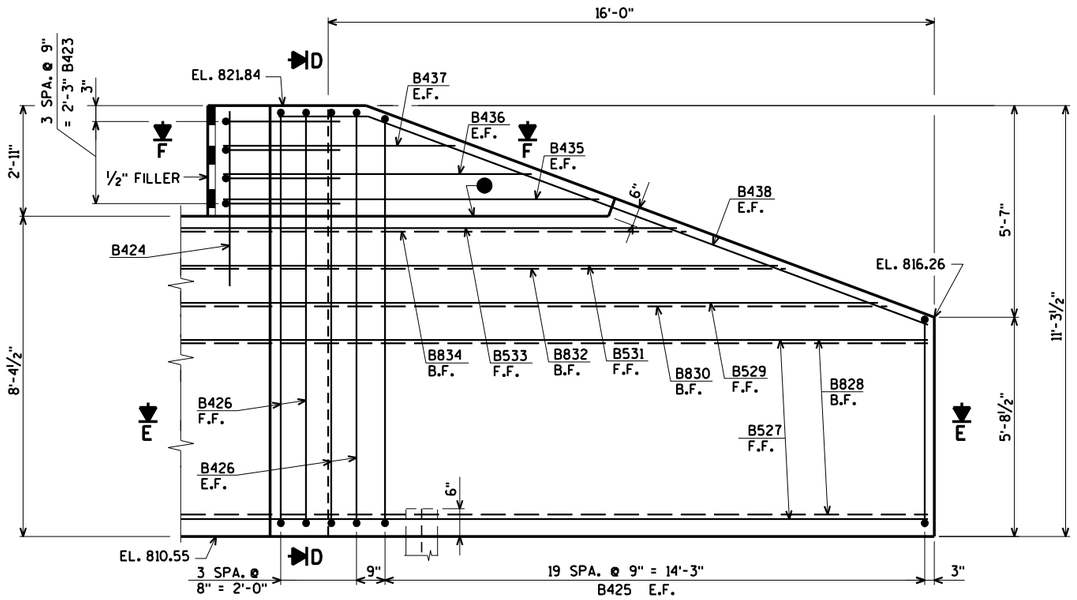
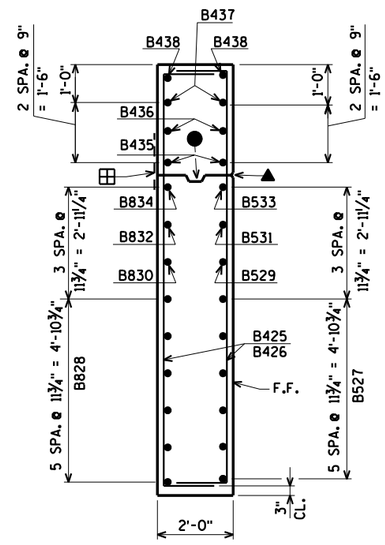


ELEVATION - WING 4



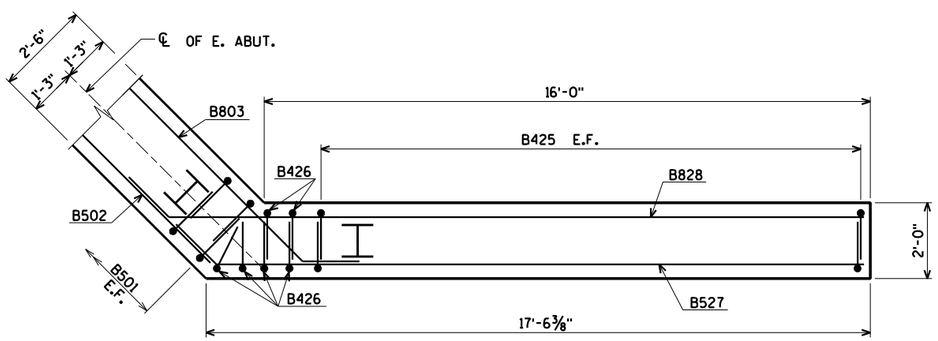
SECTION D

BILL OF BARS

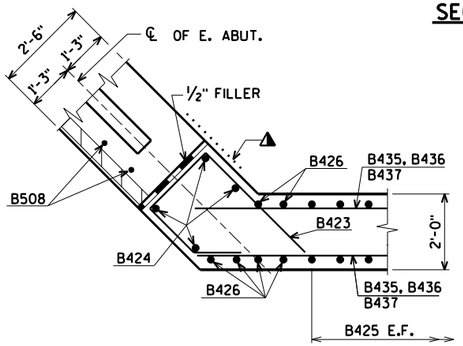
BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR SERIES	2,480# UNCOATED 2,130# COATED LOCATION
B501		62	9-6	X		BODY VERT. E.F.
B502		9	31-1			BODY HORIZ. F.F.
B803		18	21-7	X		BODY HORIZ. B.F.
B404		24	2-9	X		BODY TIES
B505		31	6-3	X		BODY VERT. TOP
B406		3	24-6			BODY HORIZ. TOP
B507		25	7-1	X		BODY VERT. TOP
B508		26	2-0			BODY DOWELS
B409	X	40	12-1	X	⊗	WING 3 VERT. E.F.
B410	X	6	14-11	X		WING 3 VERT. E.F.
B511	X	6	18-9	X		WING 3 HORIZ. F.F.
B812	X	6	20-4	X		WING 3 HORIZ. B.F.
B513	X	1	18-7	X		WING 3 HORIZ. F.F.
B814	X	1	20-2	X		WING 3 HORIZ. B.F.
B515	X	1	15-6	X		WING 3 HORIZ. F.F.
B816	X	1	17-1	X		WING 3 HORIZ. B.F.
B517	X	1	12-5	X		WING 3 HORIZ. F.F.
B818	X	1	14-0	X		WING 3 HORIZ. B.F.
B419	X	2	8-9			WING 3 HORIZ. E.F.
B420	X	2	6-8			WING 3 HORIZ. E.F.
B421	X	2	4-8			WING 3 HORIZ. E.F.
B422	X	2	18-4	X		WING 3 DIAG. E.F.
B423	X	8	8-5	X		WING 3 & 4 HORIZ.
B424	X	8	3-9			WING 3 & 4 VERT.
B425	X	40	10-5	X	⊗	WING 4 VERT. E.F.
B426	X	6	13-3	X		WING 4 VERT. E.F.
B527	X	6	18-9	X		WING 4 HORIZ. F.F.
B828	X	6	20-4	X		WING 4 HORIZ. B.F.
B529	X	1	16-10	X		WING 4 HORIZ. F.F.
B830	X	1	18-5	X		WING 4 HORIZ. B.F.
B531	X	1	14-6	X		WING 4 HORIZ. F.F.
B832	X	1	16-1	X		WING 4 HORIZ. B.F.
B533	X	1	12-2	X		WING 4 HORIZ. F.F.
B834	X	1	13-9	X		WING 4 HORIZ. B.F.
B435	X	2	8-10			WING 4 HORIZ. E.F.
B436	X	2	6-8			WING 4 HORIZ. E.F.
B437	X	2	4-8			WING 4 HORIZ. E.F.
B438	X	2	18-4	X		WING 4 DIAG. E.F.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

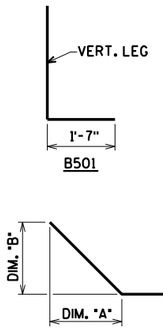
⊗ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.



SECTION E



SECTION F



BAR NO.	DIM. "A"	DIM. "B"
B803	1'-0¾"	1'-0¾"
B511	1'-0¾"	1'-0¾"
B812	1'-0¾"	1'-0¾"
B513	1'-0¾"	1'-0¾"
B814	1'-0¾"	1'-0¾"
B515	1'-0¾"	1'-0¾"
B816	1'-0¾"	1'-0¾"
B517	1'-0¾"	1'-0¾"
B818	1'-0¾"	1'-0¾"
B422	14'-10"	5'-6"
B527	1'-0¾"	1'-0¾"
B828	1'-0¾"	1'-0¾"
B529	1'-0¾"	1'-0¾"
B830	1'-0¾"	1'-0¾"
B531	1'-0¾"	1'-0¾"
B832	1'-0¾"	1'-0¾"
B533	1'-0¾"	1'-0¾"
B834	1'-0¾"	1'-0¾"
B438	14'-10"	5'-6"

▲ ¾" 'V' GROOVE ON F.F. OF WING WALL - NOT REQUIRED IF CONST. JT. IS NOT USED.

● OPT. KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".

▲ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BEAM SEAT TO TOP OF WINGWALL.

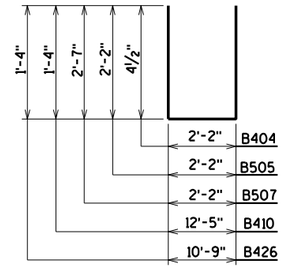
⊞ 18" RUBBERIZED MEMBRANE WATERPROOFING ON BACK FACE. NOT REQUIRED IF CONST. JT. IS NOT USED.

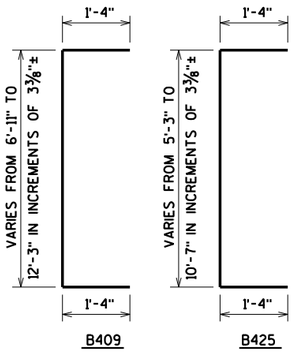
FOR PILE SPLICE DETAIL SEE SHEET 2.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

E.F. DENOTES EACH FACE.

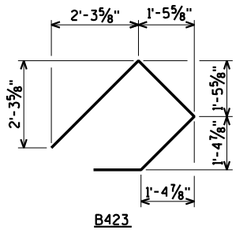




BAR SERIES TABLE

BAR MARK	NO REQ'D.	LENGTH
B409	2 SERIES OF 20	9'-5" TO 14'-9"
B425	2 SERIES OF 20	7'-9" TO 13'-1"

BUNDLE AND TAG EACH SERIES SEPARATELY.



NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-16-138

DRAWN BY CLS | PLANS CK'D. CJM

EAST ABUTMENT WING 4 DETAILS & BILL OF BARS

SHEET 9 OF 12
47

ORIGINAL PLANS PREPARED BY
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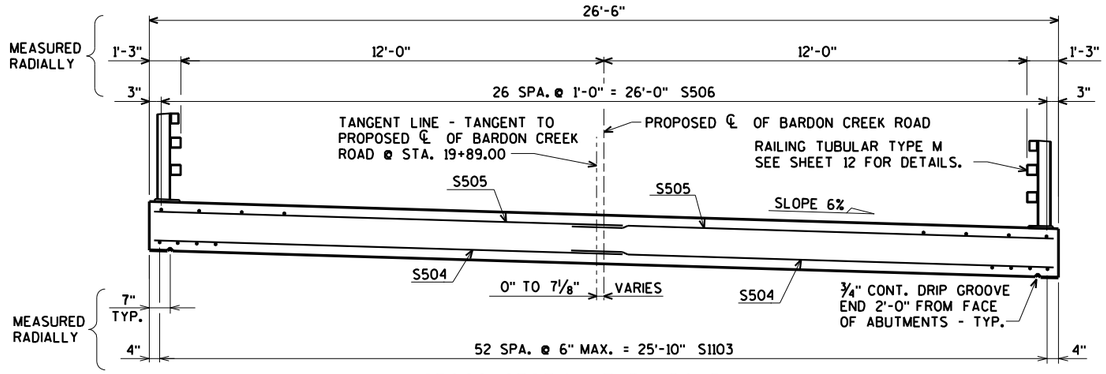
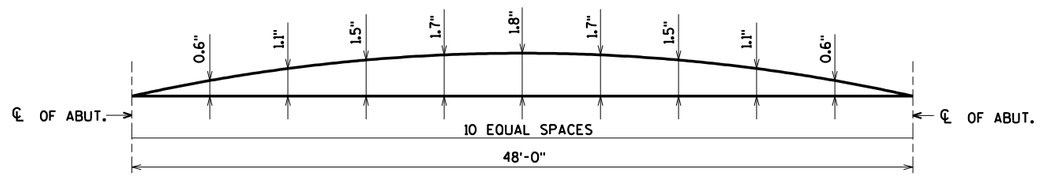
STATE PROJECT NUMBER

8390-00-70



CROSS SECTION THRU ROADWAY

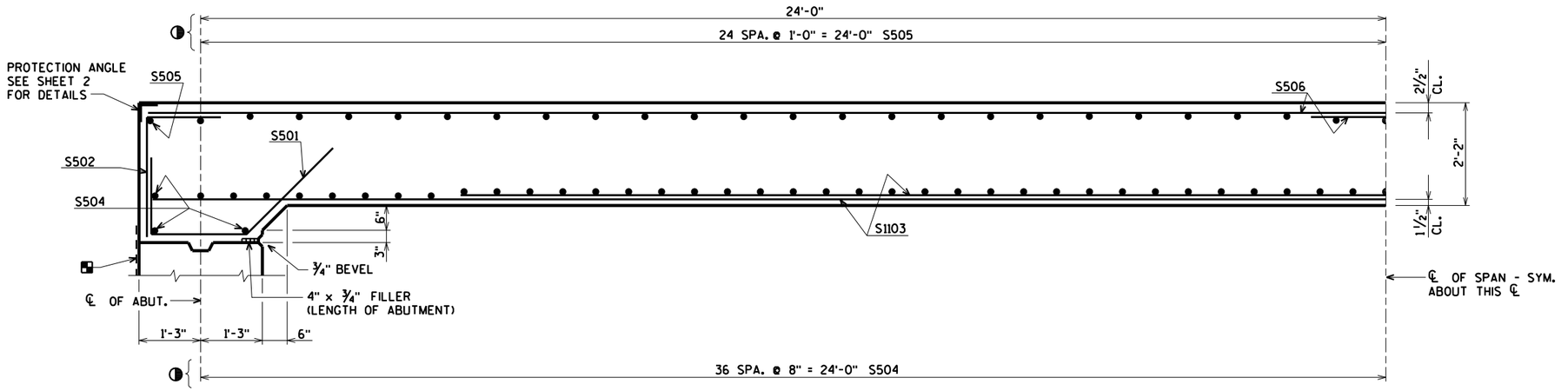
(LOOKING EAST)



CAMBER DIAGRAM

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

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATIONS AT THE ℄ OF ABUTMENTS, AND AT 5/10 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG EDGE OF DECK AND CROWN OR ℄.



PART LONGITUDINAL SECTION

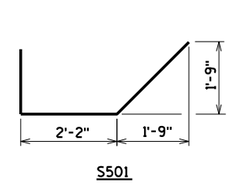
TOP TRANSVERSE BARS IN SLAB SHALL BE SUPPORTED BY INDIVIDUAL BAR CHAIRS AT APPROXIMATELY 3'-0" CENTERS EACH WAY. BOTTOM LONGITUDINAL BARS SHALL BE SUPPORTED BY CONTINUOUS BAR CHAIRS AT APPROXIMATELY 4'-0" CENTERS.

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

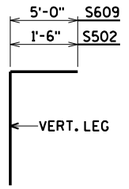
BILL OF BARS

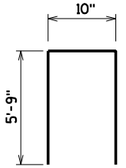
BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR SERIES	19,600# COATED LOCATION
S501	X	54	5-11	X		SLAB @ ABUT.
S502	X	54	3-11	X		SLAB @ ABUT.
S1103	X	53	43-9			SLAB LONG. BOT.
S504	X	158	14-5			SLAB TRANS. BOT.
S505	X	102	14-7			SLAB TRANS. TOP
S506	X	54	26-7			SLAB LONG. TOP
S607	X	36	12-0	X		SLAB @ RAIL POSTS
S608	X	56	6-0			SLAB @ INT. RAIL POSTS
S609	X	16	6-0	X		SLAB @ END RAIL POSTS

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.



S501





S607

◑ DIMENSIONS MEASURED ALONG TANGENT LINE.

◘ 18" RUBBERIZED MEMBRANE WATERPROOFING

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-16-138

DRAWN BY CLS | PLANS CK'D. CJM

SUPERSTRUCTURE

SHEET 10 OF 12
48

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

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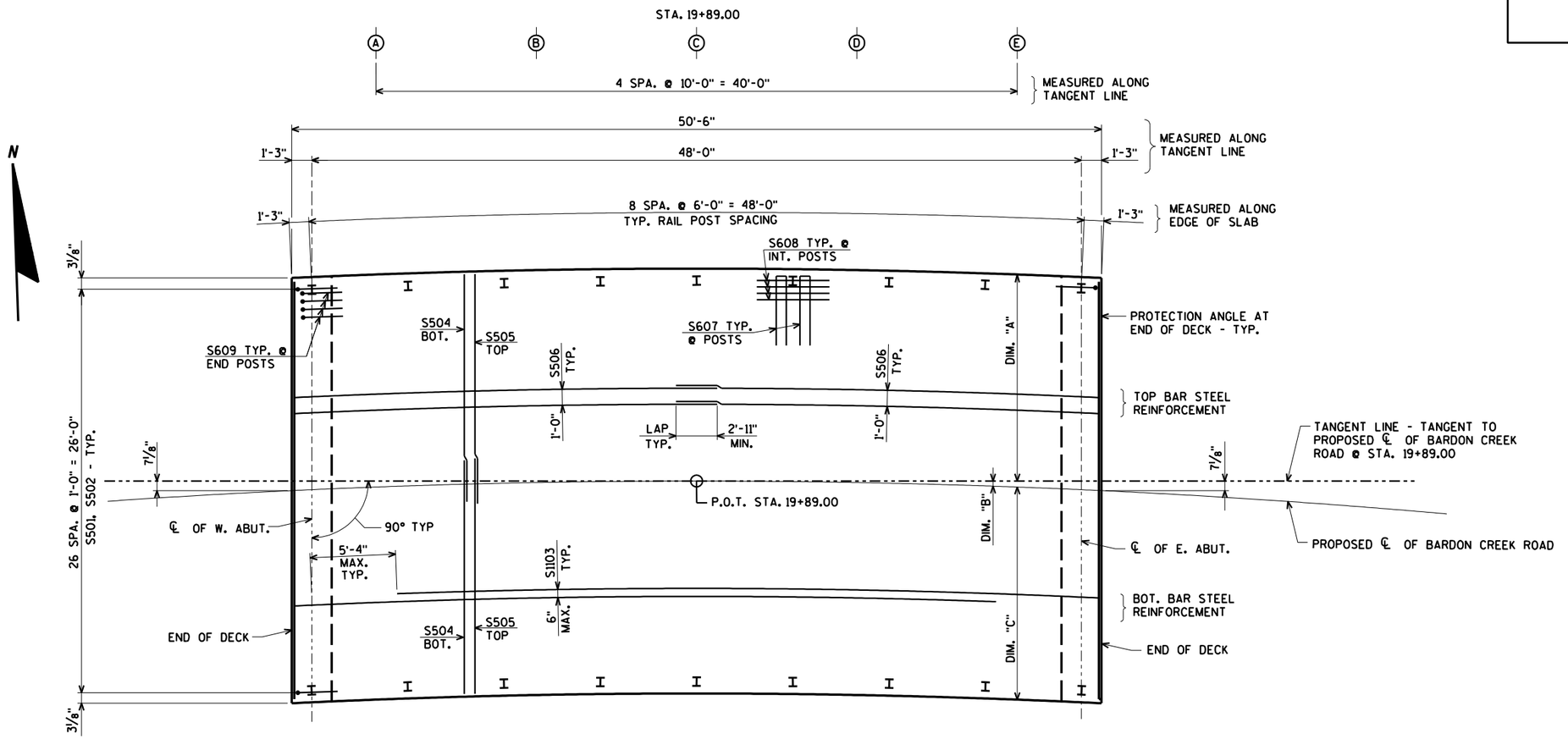
8

$PRFNAME$
U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\BRIDGE\421002 sup.dgn

5/24/2016

PENTABLE:BReau_shd_util.tbl



PLAN

TABLE OF DIMENSIONS

	'A'	'B'	'C'	'D'	'E'
DIM. "A"	12'-10⅝"	13'-1⅞"	13'-3"	13'-1⅞"	12'-10⅝"
DIM. "B"	4½"	1⅛"	0"	1⅛"	4½"
DIM. "C"	13'-3⅛"	13'-3"	13'-3"	13'-3"	13'-3⅛"

TOP OF DECK ELEVATIONS

LOCATION	℄ OF W. ABUT.	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	℄ OF E. ABUT.
N. EDGE OF SLAB	825.01	824.83	824.65	824.48	824.32	824.16	824.01	823.86	823.72	823.59	823.46
TANGENT LINE	824.27	824.07	823.88	823.70	823.53	823.37	823.21	823.07	822.93	822.80	822.69
PROPOSED ℄ OF BARDON CREEK ROAD	824.25	824.05	823.87	823.70	823.53	823.37	823.21	823.06	822.92	822.78	822.66
S. EDGE OF SLAB	823.47	823.28	823.09	822.91	822.74	822.57	822.41	822.26	822.11	821.97	821.84

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-16-138

DRAWN BY CLS | PLANS CK'D. CJM

SUPERSTRUCTURE PLAN

SHEET 11 OF 12
49

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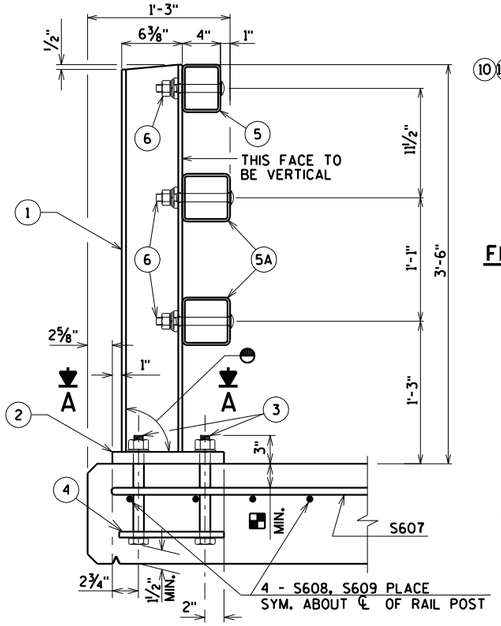
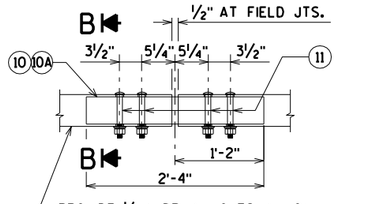
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

STATE PROJECT NUMBER

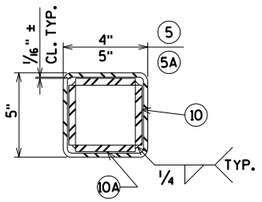
8390-00-70



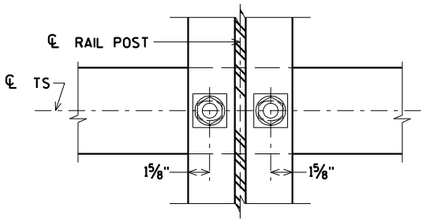
SECTION THRU RAILING ON DECK



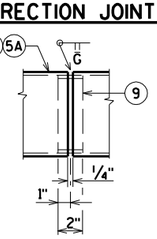
FIELD ERECTION JOINT DETAIL



SECTION B

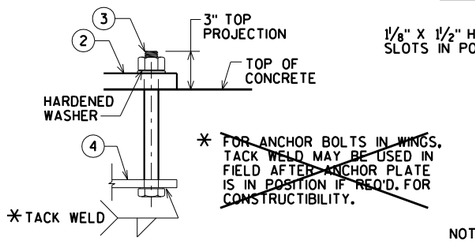


SECTION THRU POST WEB

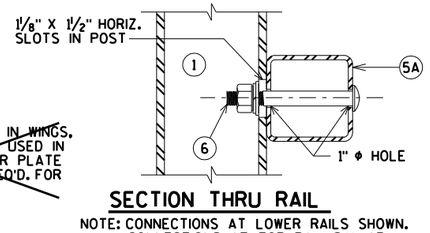


SHOP RAIL SPLICE DETAIL

(LOCATION MUST BE SHOWN ON THE SHOP DRAWINGS)



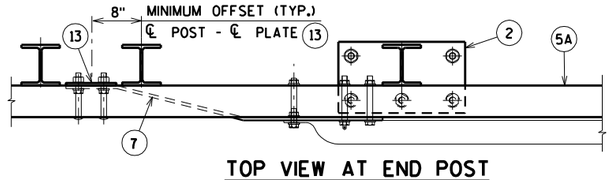
ANCHOR BOLTS



SECTION THRU RAIL

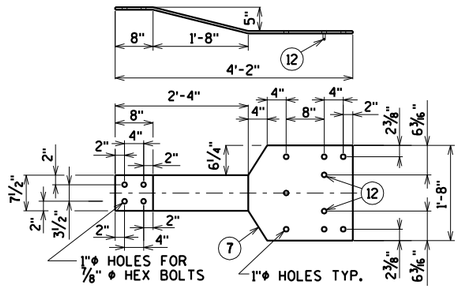
NOTE: CONNECTIONS AT LOWER RAILS SHOWN. CONNECTIONS AT TOP RAIL SIMILAR.

TYPICAL RAIL TO POST CONNECTIONS



TOP VIEW AT END POST

(THRIE BEAM RAIL ATTACHMENT)

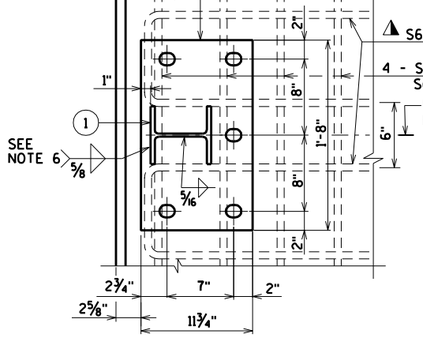


BACK-UP PLATE DETAIL

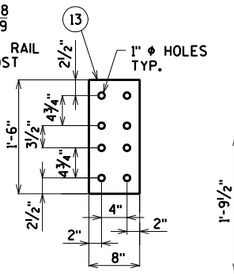
(AT BEAM GUARD ATTACHMENT)

PLACE BELOW TOP MAT SLAB REINFORCEMENT.

TIE TO TOP MAT OF STEEL.

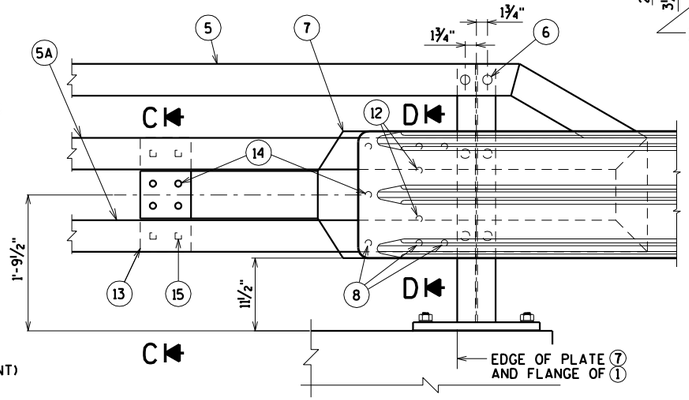


SECTION A



ANCHOR PLATE

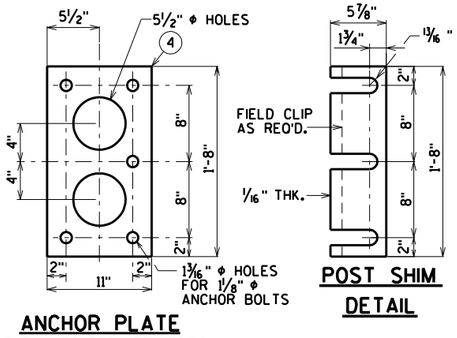
(AT BEAM GUARD ATTACHMENT)



DETAIL AT END POST

(THRIE BEAM RAIL ATTACHMENT)

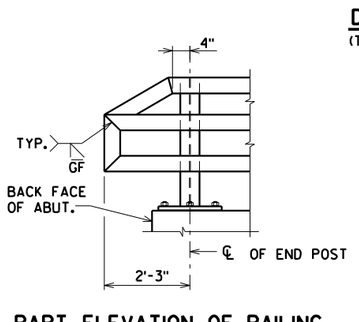
ANGLE VARIES
SOUTH SIDE: 86°33'59"
NORTH SIDE: 93°26'01"



ANCHOR PLATE

(AT RAIL TO DECK CONNECTION)

POST SHIM DETAIL



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 1⅝" X 1⅝" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.

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

④ ⅝" 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 1⅝" X 1⅝" WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)

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

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

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

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

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

⑪ ⅞" Φ A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 1⅝6" X 1¼" LONGIT. SLOTTED HOLES AT FIELD JOINTS ~~AND 1⅝6" 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).

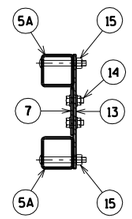
⑬ ⅜" X 8" X 1'-6" PLATE. BOLT TO RAIL AS SHOWN IN DETAIL. REQ'D. AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYM. ABOUT TUBES NO. 5A.

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

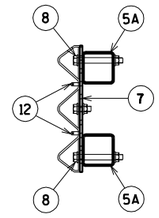
⑮ 1" Φ HOLES IN TUBES NO. 5A FOR ⅞" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.

GENERAL NOTES

1. BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-16-138" 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 S.S.P.C. SPECIFICATIONS.
10. ~~WHEN PAINTING IS REQUIRED, ALL MATERIAL EXCEPT ANCHORAGE DETAIL (NO. 3 & 4) SHALL BE PAINTED OVER GALVANIZING WITH APPROVED TIE COAT AND TOP COAT.~~
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.



SECTION C



SECTION D

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-16-138

DRAWN BY CLS | PLANS CK'D. CJM

RAILING TUBULAR TYPE M

SHEET 12 OF 12
50

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

EARTHWORK SUMMARY (CATEGORY 0010)

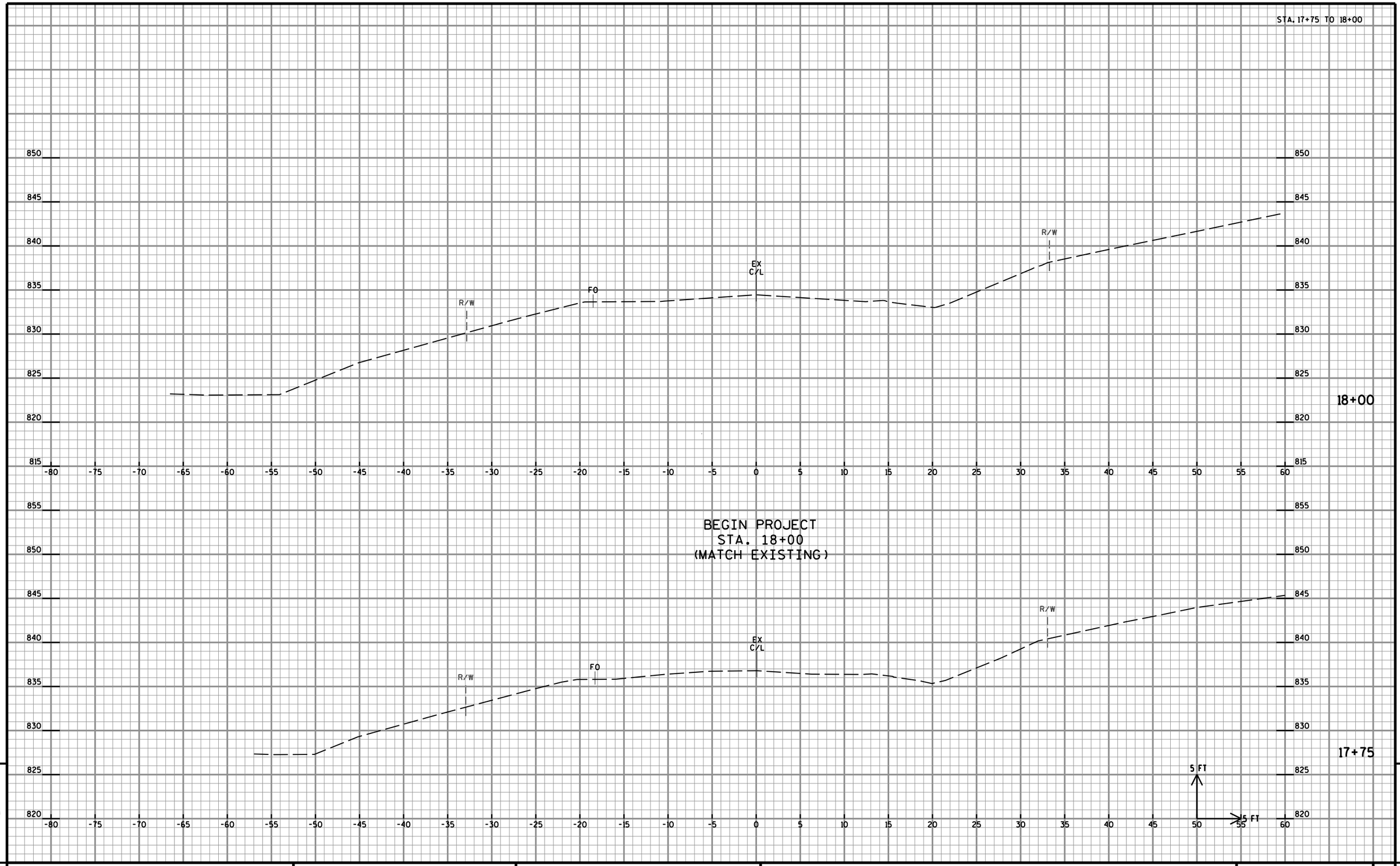
		AREA			INCREMENTAL VOLUME			CUMULATIVE VOLUME		
DIVISION	STATION	CUT SF	SALVAGED/ UNUSEABLE PAVEMENT MATERIAL SF	FILL SF	CUT (1) CY	SALVAGED/ UNUSEABLE PAVEMENT MATERIAL (2) CY	FILL (3) CY	CUT (1) 1.00 CY	EXPANDED FILL (4) 1.30 CY	MASS ORDINATE ±(5) CY
1 BARDON CREEK ROAD	18+00	34	0	0						
	18+25	14	0	0	23	0	0	23	0	23
	18+50	2	0	149	8	0	69	31	90	-59
	18+70	2	0	177	2	0	121	33	247	-214
	18+71	1	0	178	0	0	7	33	256	-223
	18+75	2	0	179	0	0	26	33	290	-257
	18+77	1	0	179	0	0	13	33	307	-274
	18+97	0	0	142	1	0	119	34	462	-428
	19+00	0	0	147	0	0	16	34	482	-448
	19+01	0	0	146	0	0	5	34	489	-455
	19+14	0	0	64	0	0	51	34	555	-521
	19+23	0	0	88	0	0	25	34	588	-554
	19+25	0	0	86	0	0	6	34	595	-561
	19+50	0	0	67	0	0	71	34	688	-654
	19+64	0	0	67	0	0	34	34	732	-698
	STRUCTURE B-16-138									
	20+14	0	0	64	0	0	25	0	33	-33
	20+25	0	0	64	0	0	52	0	100	-100
	20+50	0	0	48	0	0	5	0	107	-107
	20+53	0	0	45	0	0	3	0	111	-111
	20+55	0	0	44	0	0	36	0	157	-157
	20+75	0	0	54	0	0	4	0	163	-163
	20+77	0	0	55	0	0	8	0	173	-173
	20+81	0	0	54	0	0	33	0	216	-216
	21+00	1	0	40	0	0	1	0	217	-217
	21+01	1	0	39	0	0	8	0	228	-228
	21+07	2	0	35	2	0	20	2	254	-252
	21+25	6	0	27	7	0	18	9	277	-268
	21+50	10	0	11	13	0	6	22	285	-263
	21+75	18	0	1	24	0	1	46	286	-240
	22+00	34	0	0						
TOTALS					80	0	783			-938

205.0100 EXCAVATION COMMON = SAY 80 **208.0100 BORROW = SAY 938**

NOTES:
1) EXCAVATION COMMON IS THE SUM OF THE CUT COLUMN. ITEM NUMBER 205.0100
2) SALVAGED/UNUSEABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
3) DOES NOT INCLUDE UNUSABLE PAVEMENT EXCAVATION VOLUME.
4) EXPANDED FILL FACTOR = 1.30 EXPANDED FILL = UNEXPANDED FILL * FILL FACTOR
5) THE MASS ORDINATE ± QTY CALCULATED FOR THE DIVISION.

PLUS (+) QUANTITY INDICATES AN EXCESS OF MATERIAL WITHIN THE DIVISION.
MINUS (-) QUANTITY INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.

STA. 17+75 TO 18+00



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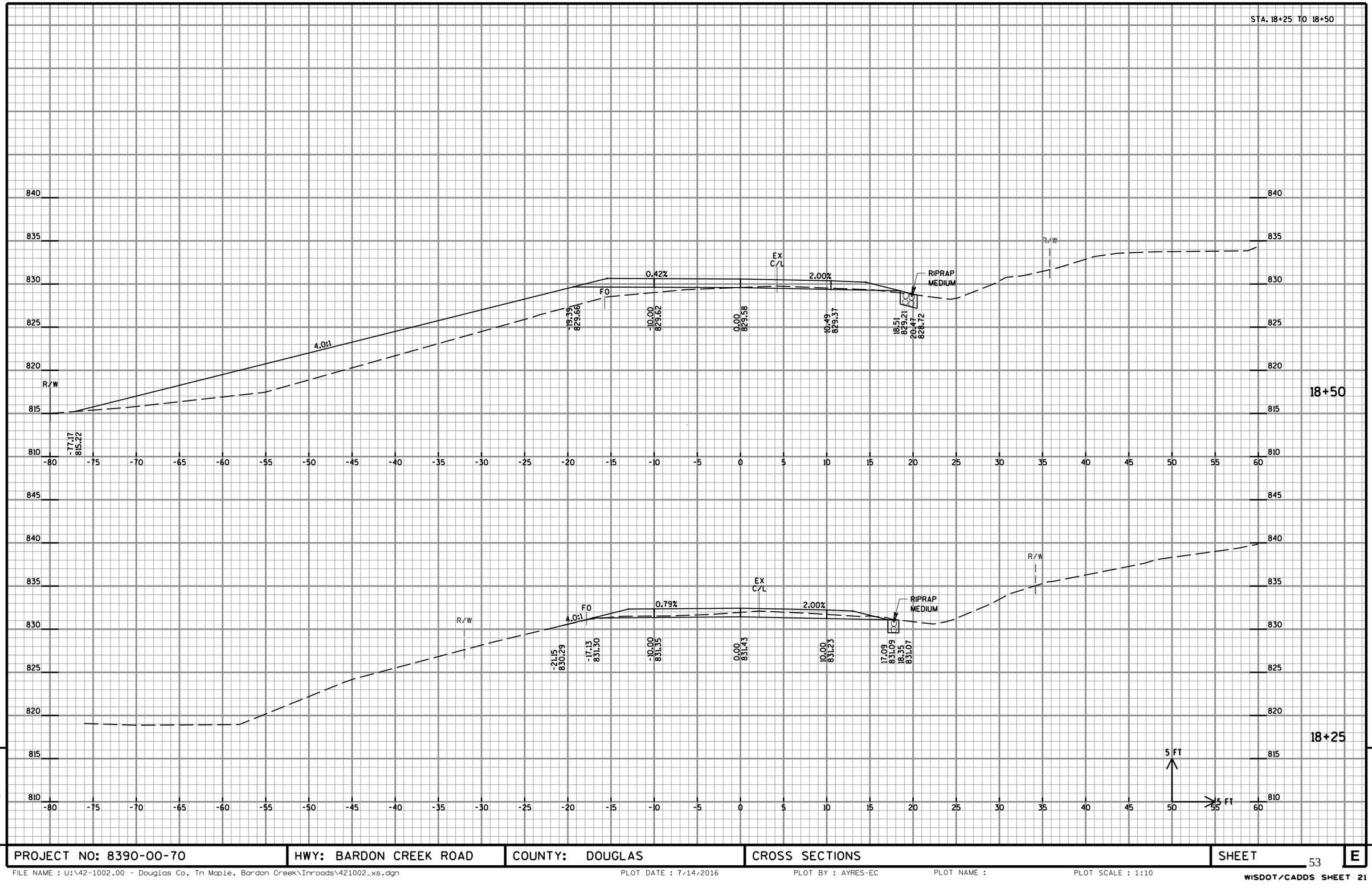
9

PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET	E

FILE NAME : U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\Inroads\421002_xs.dgn PLOT DATE : 7/14/2016 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 18+25 TO 18+50



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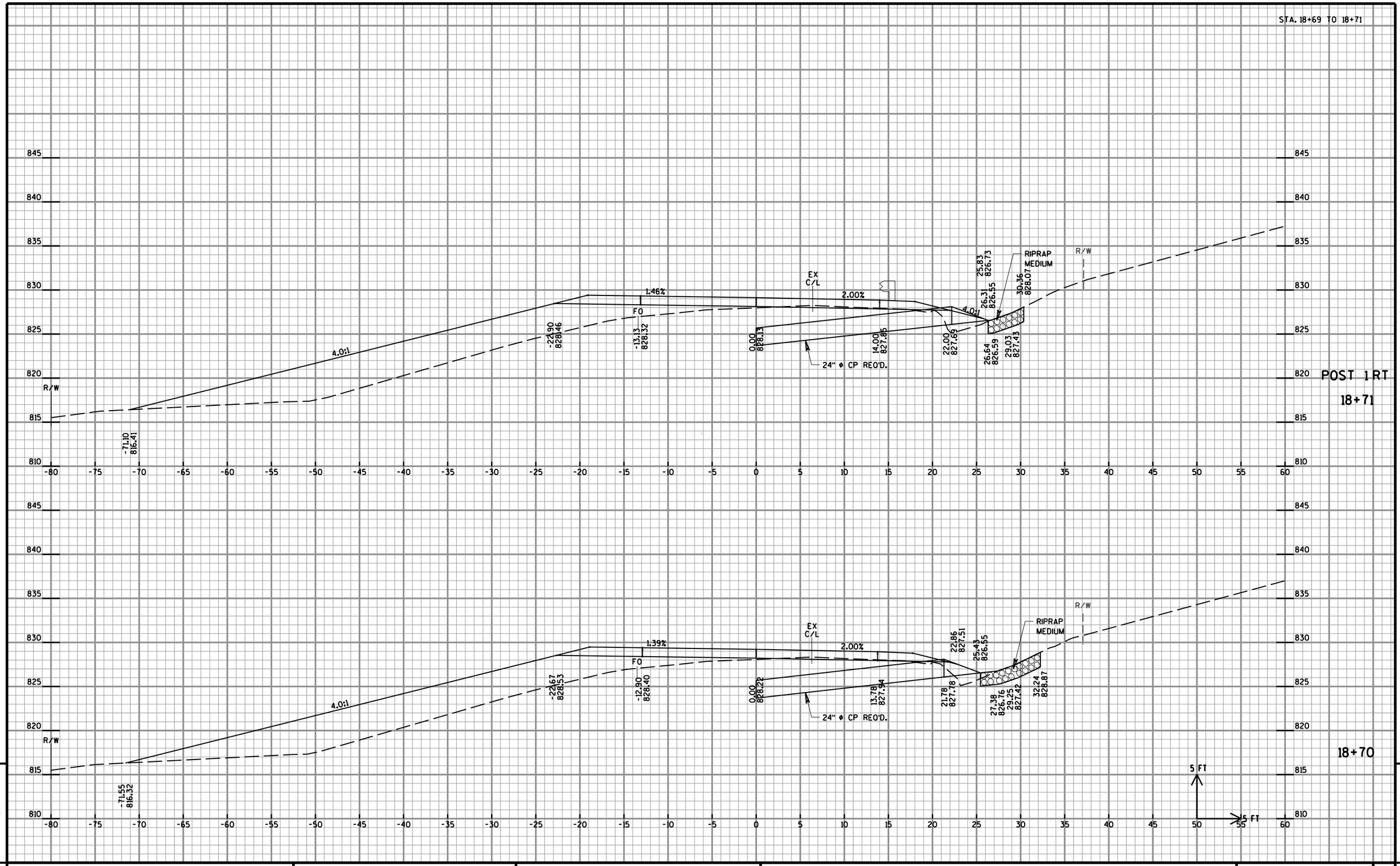
PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET	E

FILE NAME : U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\Inroads\421002_xs.dgn PLOT DATE : 7/14/2016 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 18+69 TO 18+71



9

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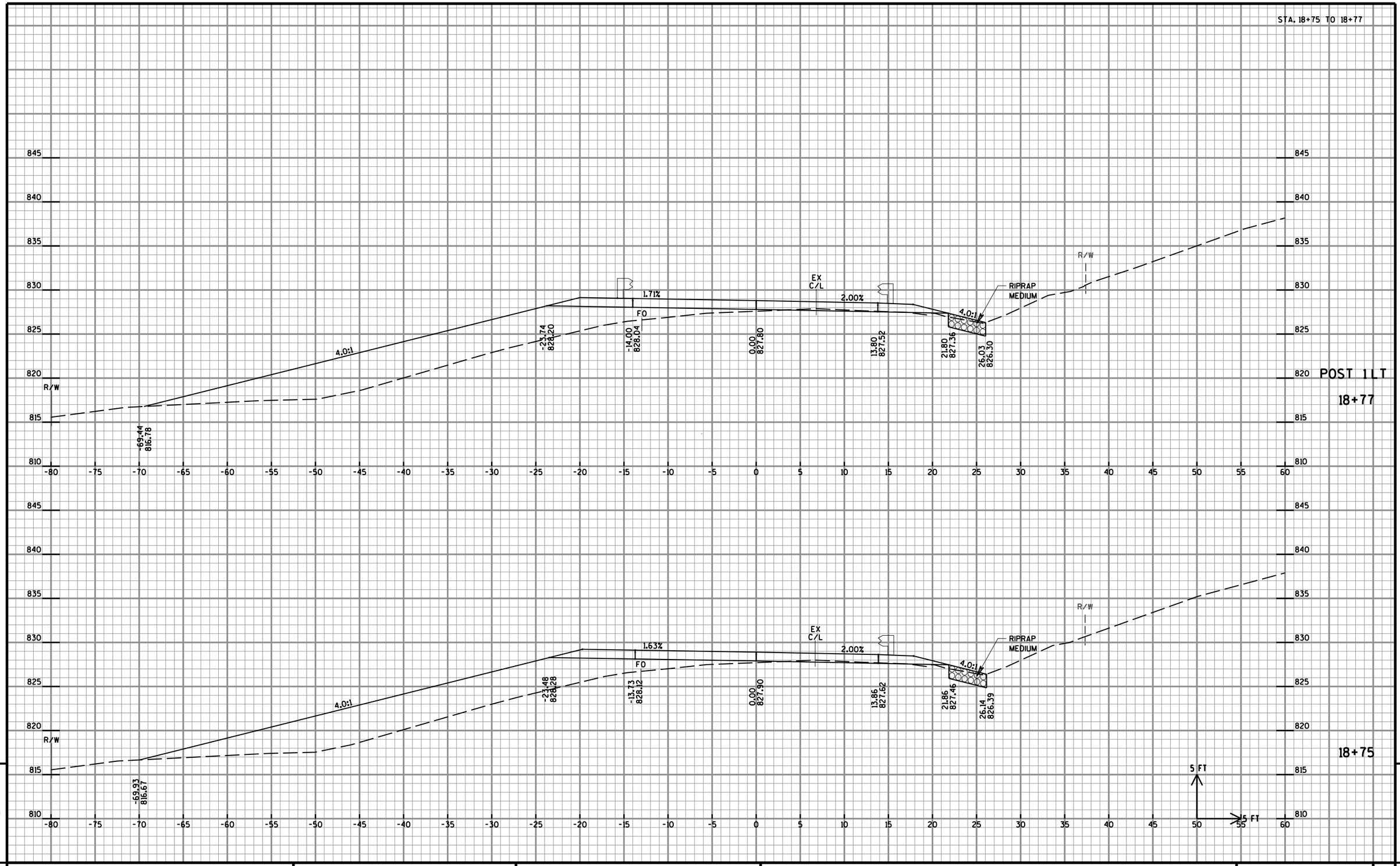
PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET 54	E

FILE NAME : U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\Inroads\421002_xs.dgn PLOT DATE : 7/14/2016 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 18+75 TO 18+77



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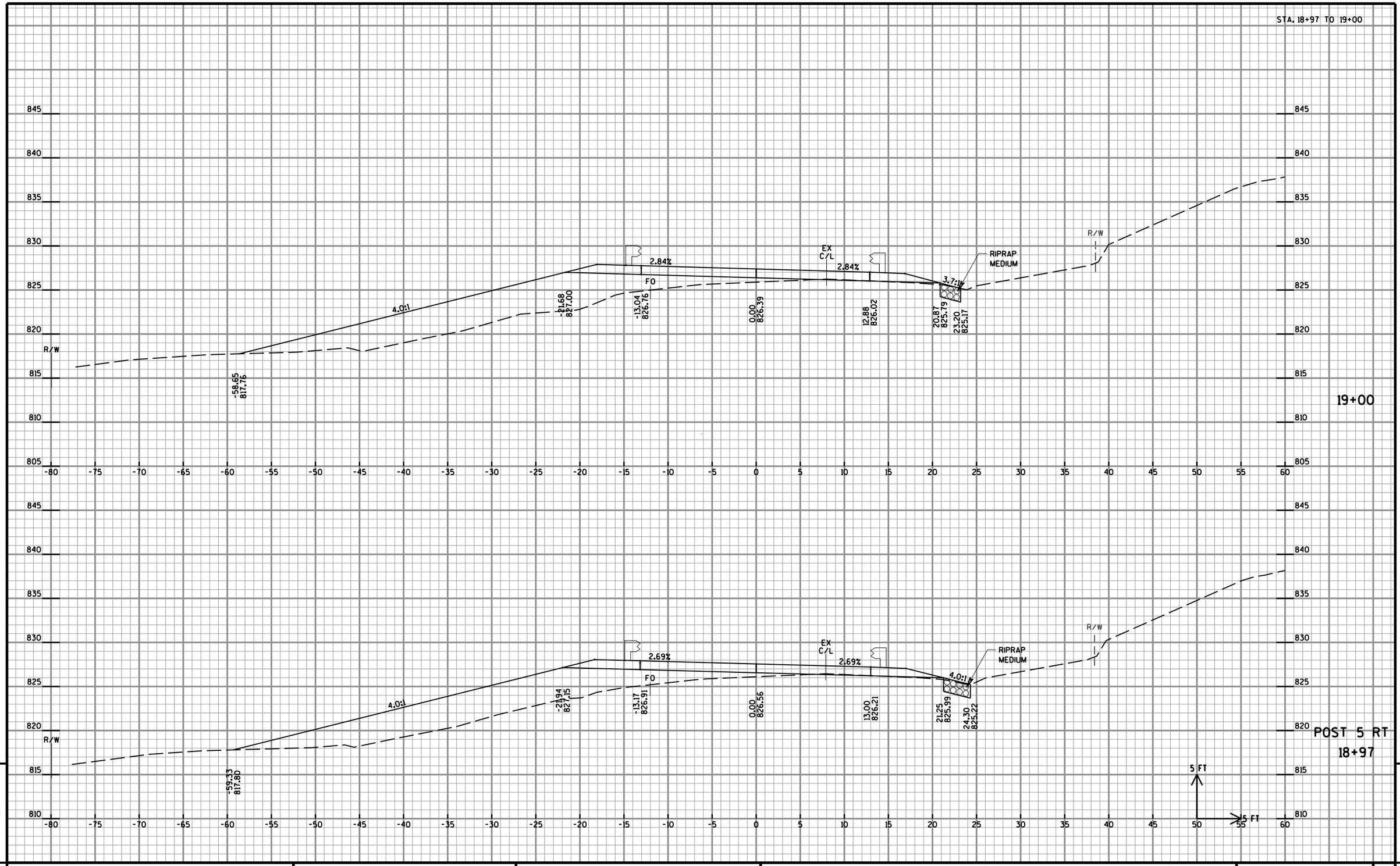
PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET	E

FILE NAME : U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\Inroads\421002_xs.dgn PLOT DATE : 7/14/2016 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 18+97 TO 19+00



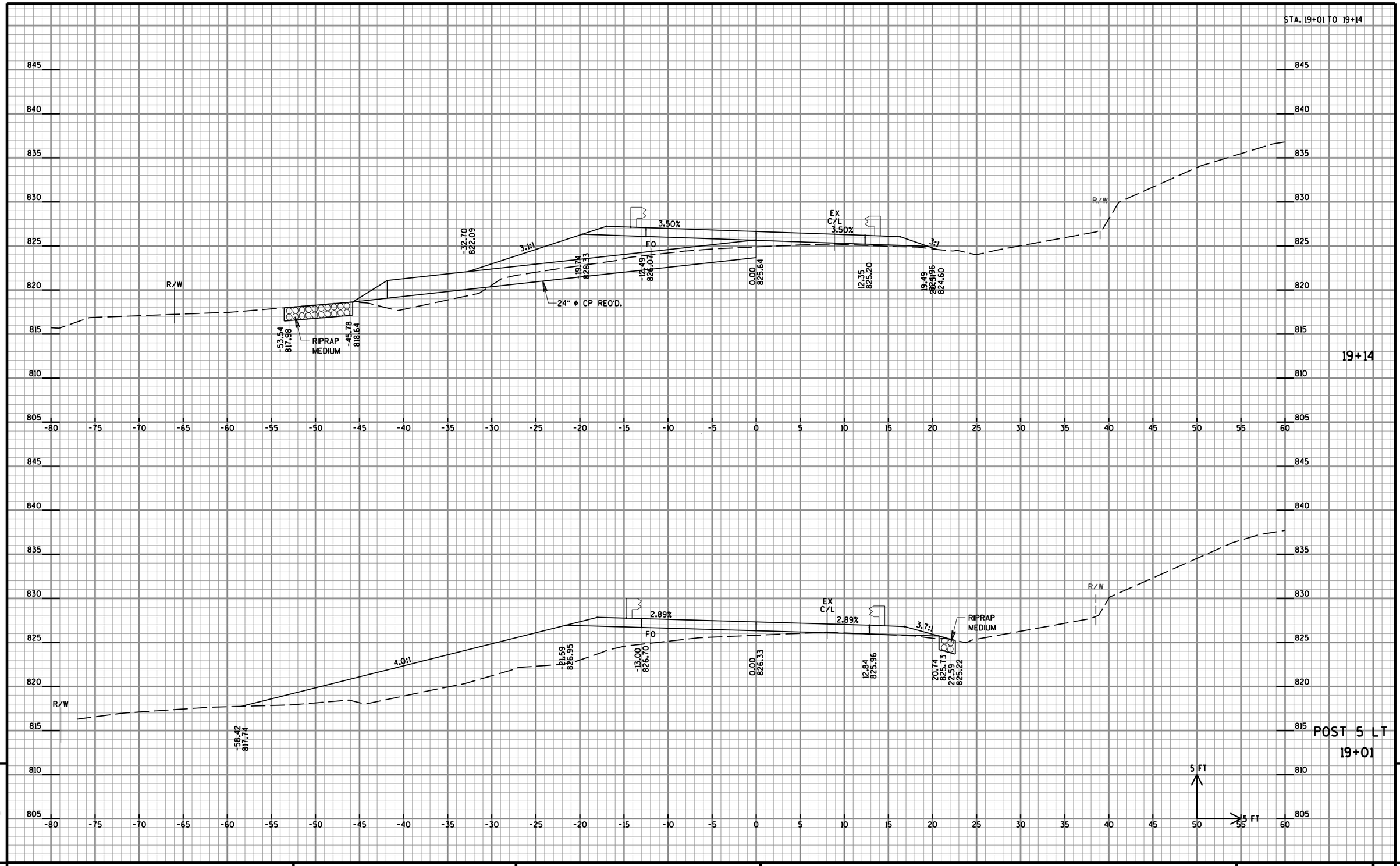
9 9

PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET	E

FILE NAME : U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\Inroads\421002_xs.dgn PLOT DATE : 7/14/2016 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 19+01 TO 19+14

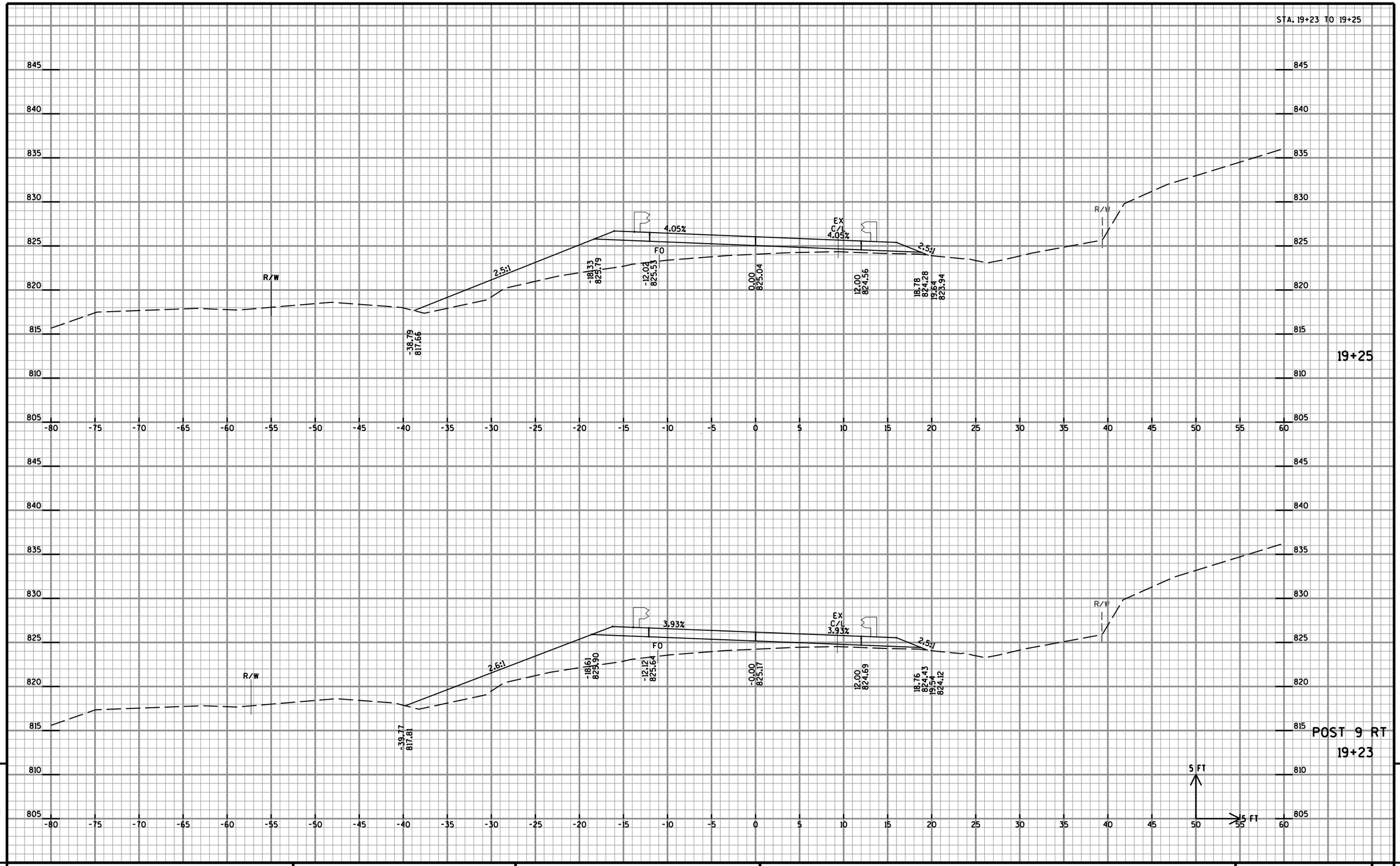


PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET	E

FILE NAME : U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\Inroads\421002_xs.dgn PLOT DATE : 7/14/2016 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 19+23 TO 19+25



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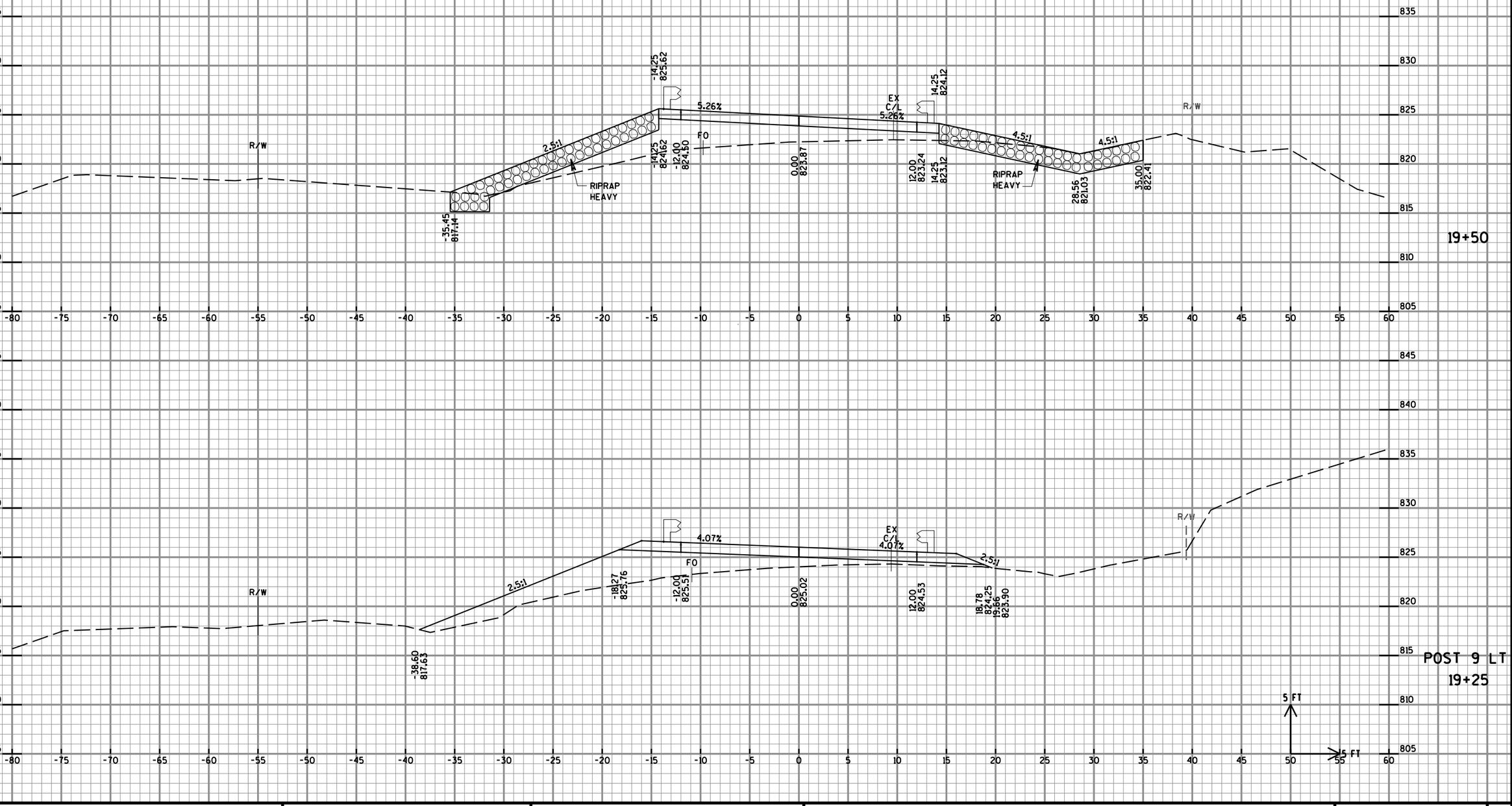
PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET	E

FILE NAME : U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\Inroads\421002_xs.dgn PLOT DATE : 7/14/2016 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 19+25 TO 19+50

STRUCTURE B-16-138



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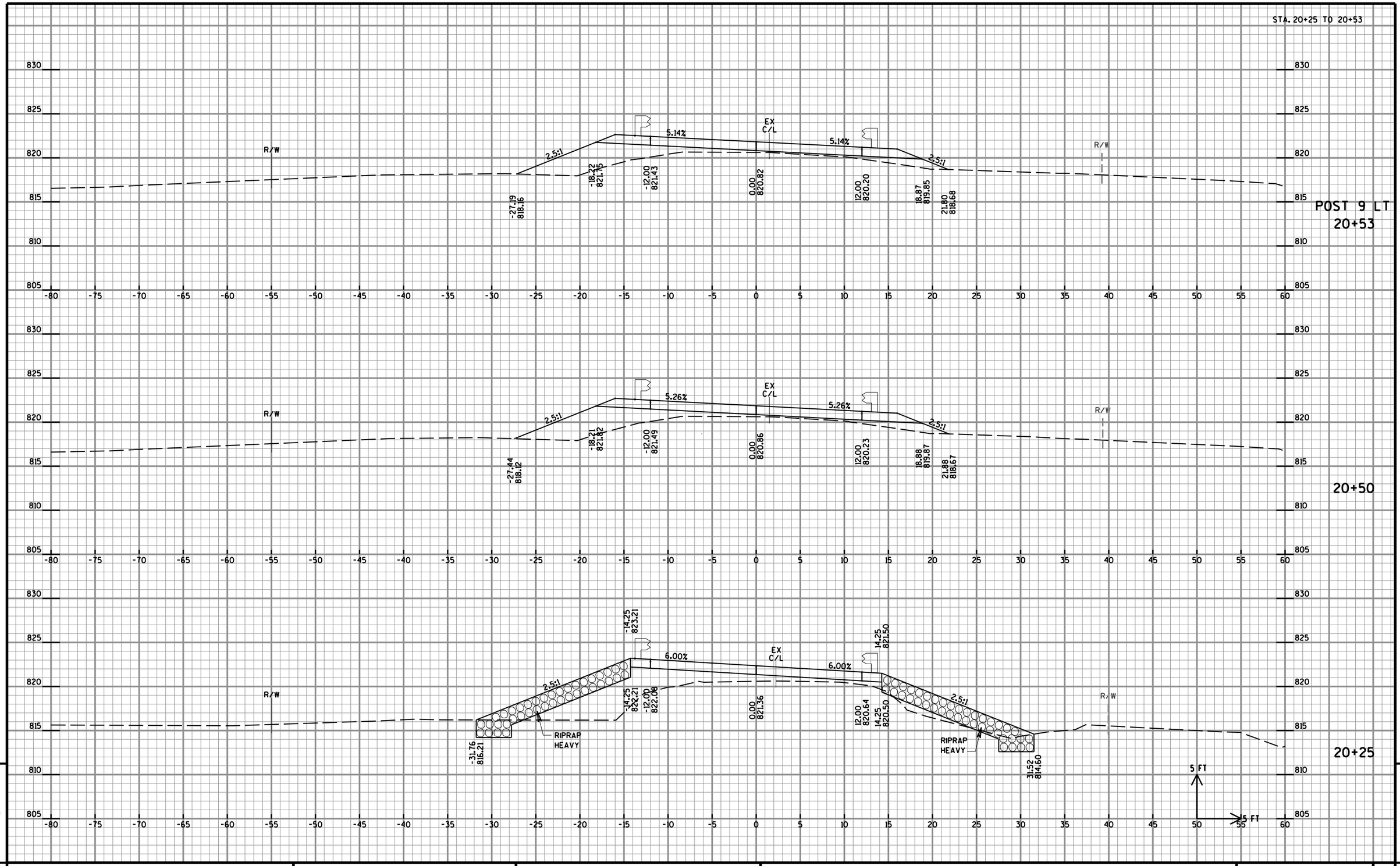
PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET	E

FILE NAME : U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\Inroads\421002_xs.dgn PLOT DATE : 7/14/2016 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 20+25 TO 20+53



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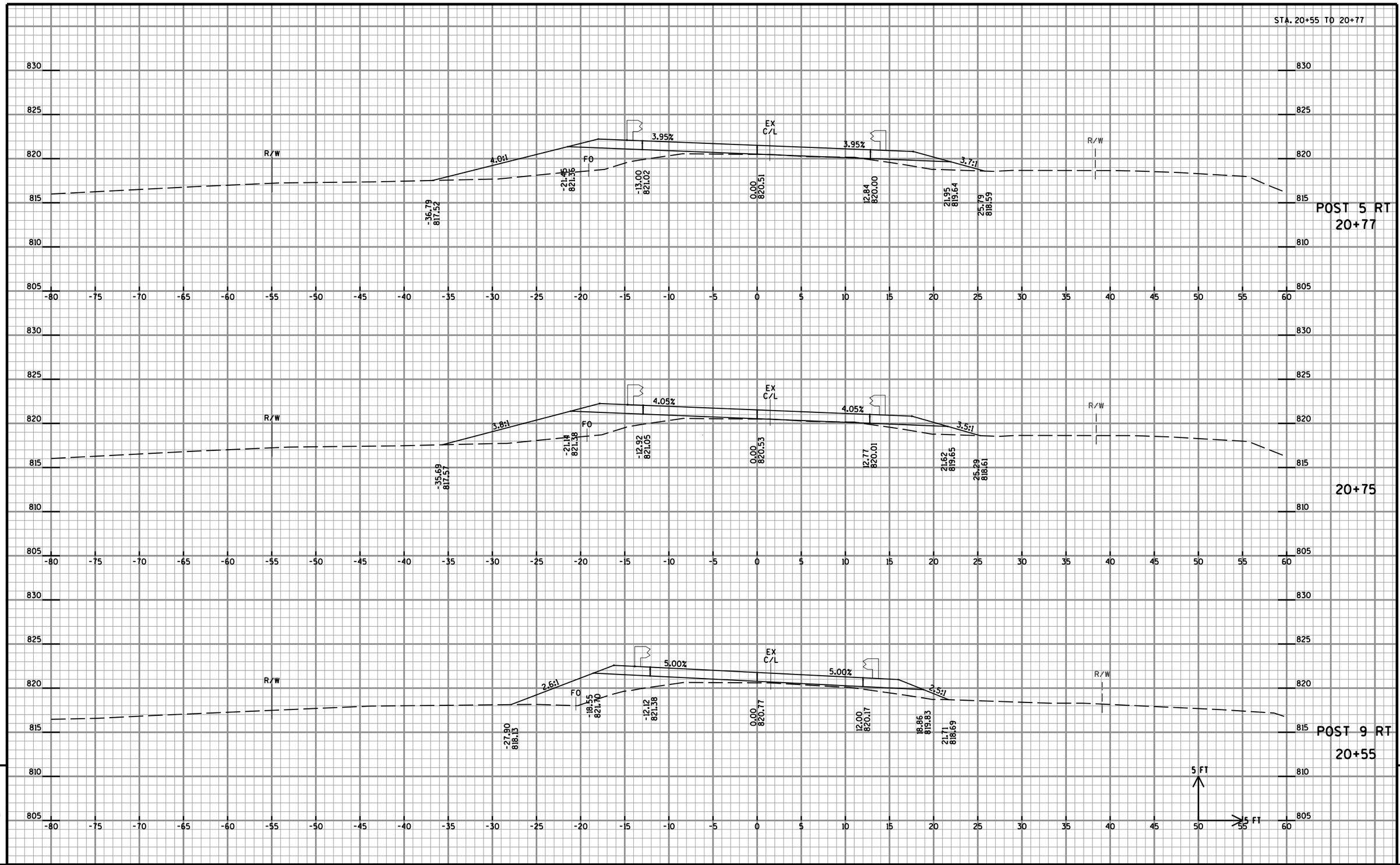
PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET 60	E

STA. 20+55 TO 20+77



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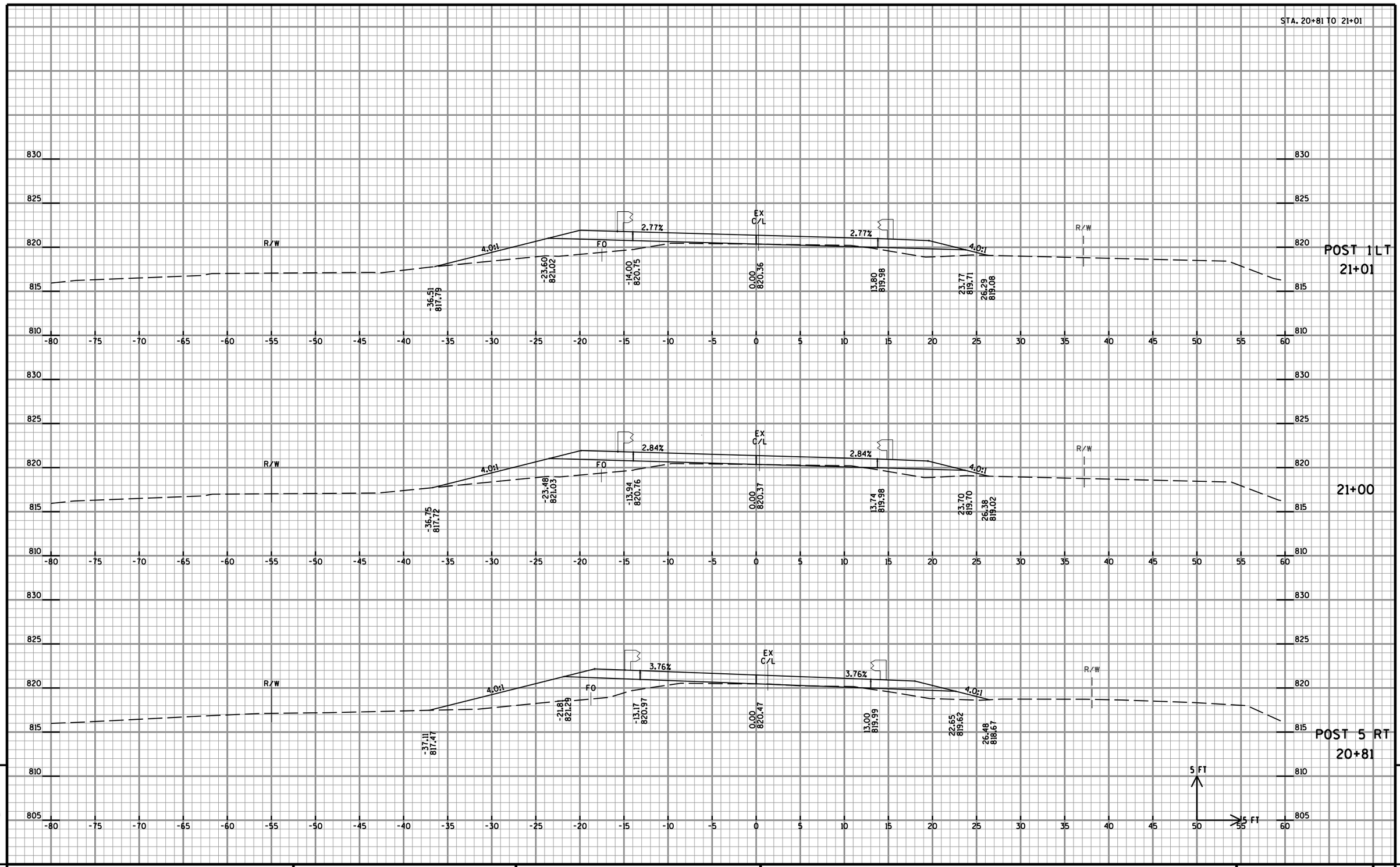
PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET	E

FILE NAME : U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\Inroads\421002_xs.dgn PLOT DATE : 7/14/2016 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 20+81 TO 21+01

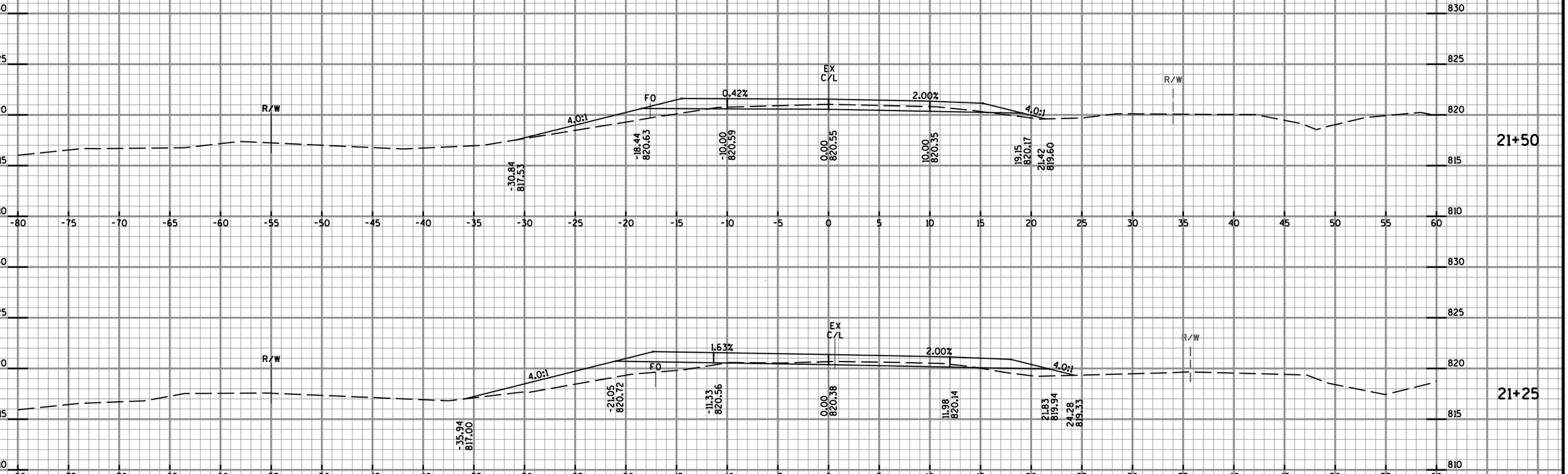


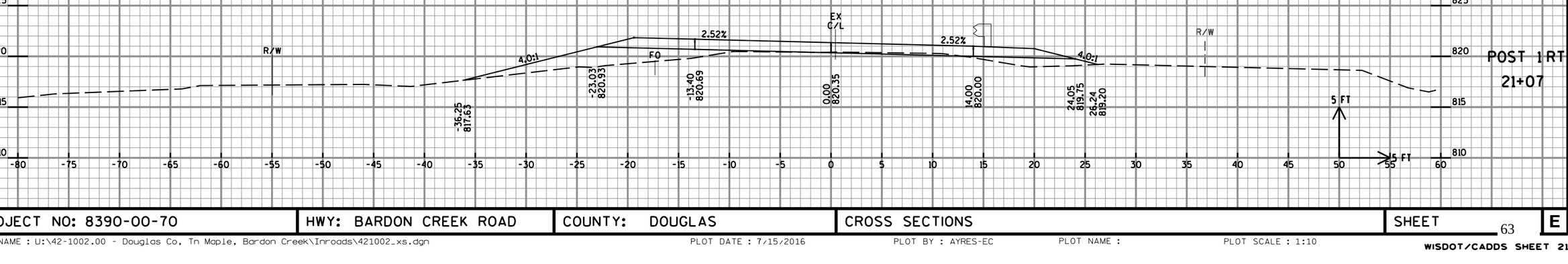
PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET	E

FILE NAME : U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\Inroads\421002_xs.dgn PLOT DATE : 7/15/2016 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 21+07 TO 21+50





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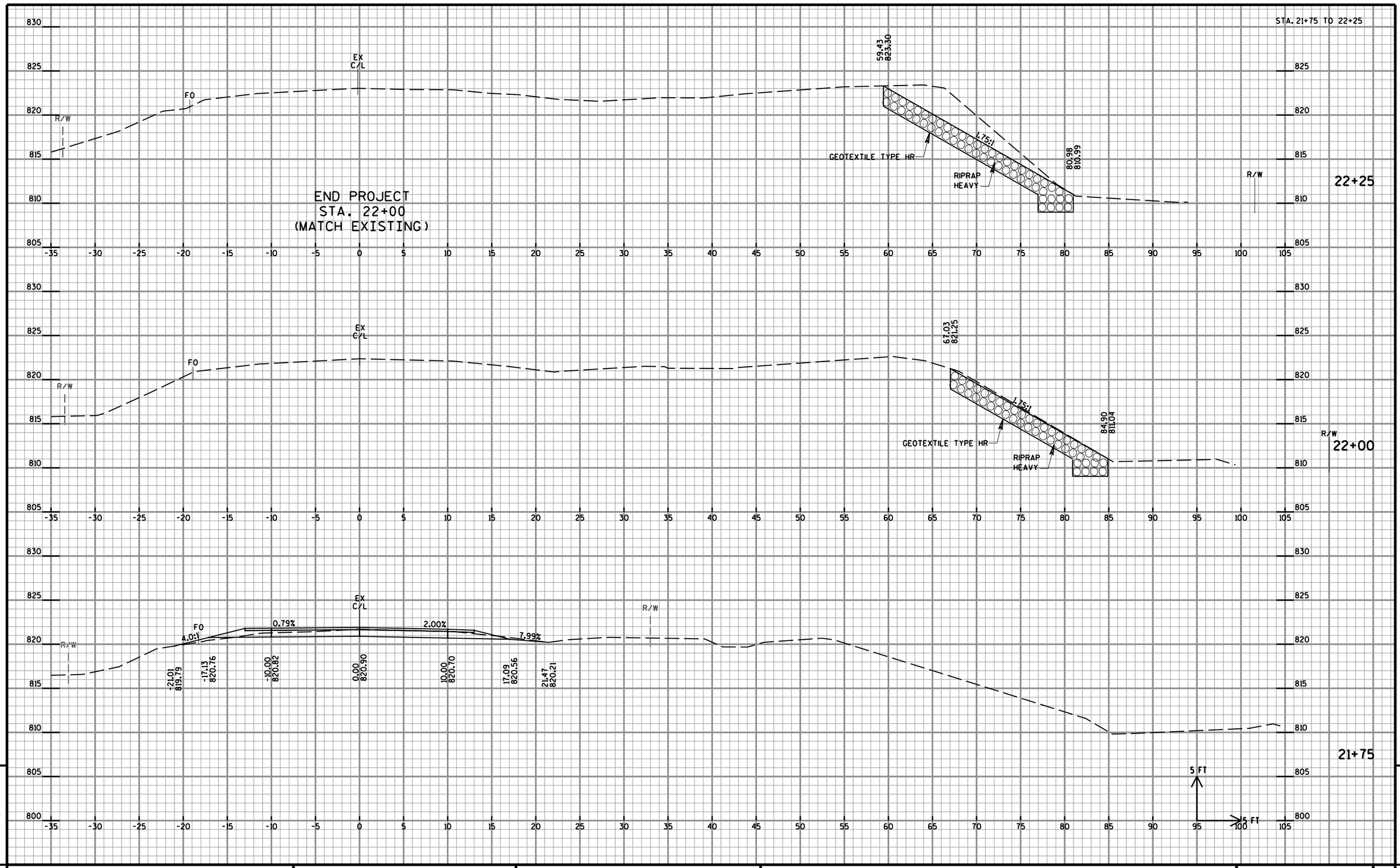
PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET	E

FILE NAME : U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\Inroads\421002_xs.dgn PLOT DATE : 7/15/2016 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 21+75 TO 22+25



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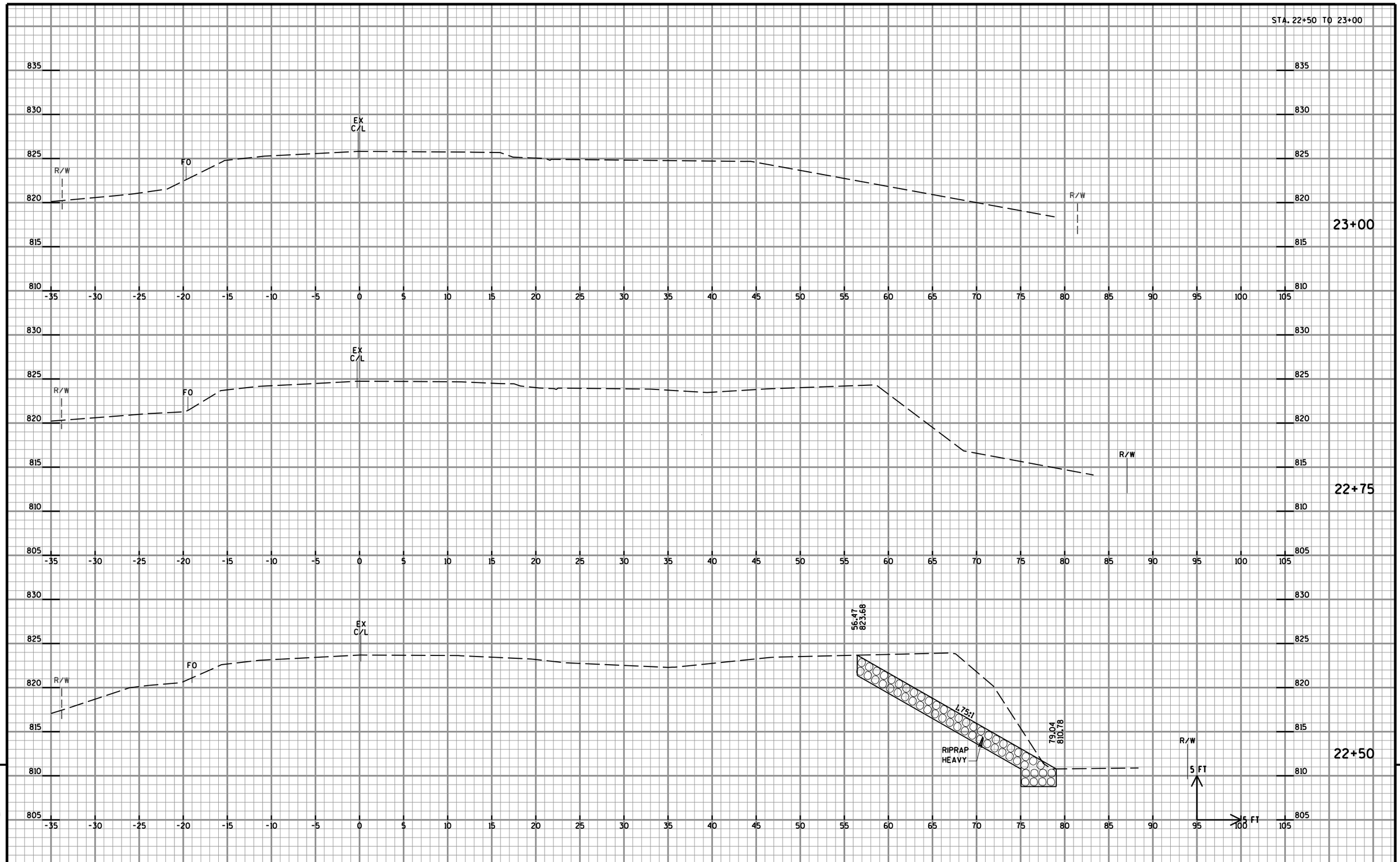
PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET	E

FILE NAME : U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\Inroads\421002_xs.dgn PLOT DATE : 7/14/2016 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

STA. 22+50 TO 23+00



PROJECT NO: 8390-00-70	HWY: BARDON CREEK ROAD	COUNTY: DOUGLAS	CROSS SECTIONS	SHEET	E

FILE NAME : U:\42-1002.00 - Douglas Co, Tn Maple, Bardon Creek\Inroads\421002_xs.dgn PLOT DATE : 7/14/2016 PLOT BY : AYRES-EC PLOT NAME : PLOT SCALE : 1:10

WISDOT/CADDS SHEET 21

Wisconsin Department of Transportation

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