SWL JAN 2016

PROJECT ID: 5186-00-70

COUNTY: RICHLAND

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

STH 80 - STH 58

(PINE RIVER BRIDGE & APPROACHES)

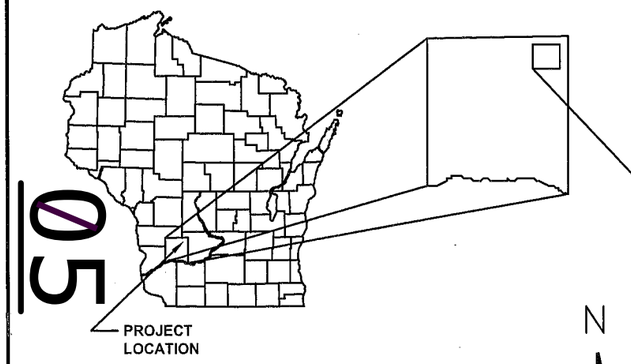
CTH I
RICHLAND COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
5186-00-70	WISC 2016003	1

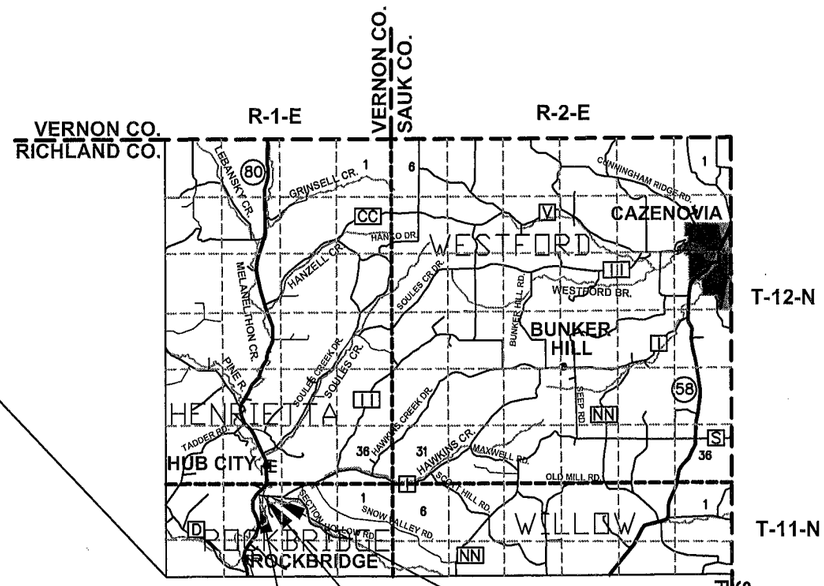
STATE PROJECT NUMBER
5186-00-70

ORDER OF SHEETS

TOTAL SHEETS = 48



PROJECT LOCATION



N

BEGIN PROJECT
STA 9+00
Y = 492070.169
X = 683521.654

END PROJECT
STA 13+00
Y = 491977.124
X = 683910.632

STRUCTURE
B-52-0271

LAYOUT
SCALE 0 1 MI. 2 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.076 MI.

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

DESIGN DESIGNATION

A.D.T. (2015)	=	340
A.D.T. (2035)	=	380
D.H.V.	=	94
D.	=	60/40
T.	=	9.5%
DESIGN SPEED	=	40 MPH
ESALS	=	66,883

CONVENTIONAL SYMBOLS

PLAN		PROFILE	
CORPORATE LIMITS		GRADE LINE	
PROPERTY LINE	P.L. + 58.1	ORIGINAL GROUND	
LOT LINE		MARSH OR ROCK PROFILE (To be noted as such)	ROCK
LIMITED EASEMENT		SPECIAL DITCH	LABEL
EXISTING RIGHT OF WAY		GRADE ELEVATION	BM 336
PROPOSED OR NEW R/W LINE		CULVERT (Profile View)	
SLOPE INTERCEPT		UTILITIES	
REFERENCE LINE		GAS	G
COMBUSTIBLE FLUIDS	CAUTION	ELECTRIC	E
EXISTING CULVERT		TELEPHONE	T
PROPOSED CULVERT (Box or Pipe)		FIBER OPTIC	FO
MARSH AREA		SANITARY SEWER	SAN
		STORM SEWER	SS
WOODED OR SHRUB AREA		WATER	W
		UTILITY PEDESTAL	
		POWER POLE	
		TELEPHONE POLE	

ACCEPTED FOR
COUNTY OF RICHLAND

7/8/15 (Date) HIGHWAY COMMISSIONER

ORIGINAL PLANS PREPARED BY

TEAM ENGINEERING
Transportation | Environmental | Agricultural | Municipal and Land Surveying

WISCONSIN
JAMIE L. BRANDT
E-37727
REEDSBURG
WIS.
PROFESSIONAL ENGINEER

7/13/2015 (Date) (Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	TEAM ENGINEERING
Designer	TEAM ENGINEERING
Management Consultant	KJOHNSON ENGINEERS, INC.

APPROVED FOR THE DEPARTMENT

7/29/15 (Date) (Management Consultant Signature)

E

LIST OF STANDARD ABBREVATIONS

ABUT.	Abutment
AC	Acre
AGG.	Aggregate
AH	Ahead
<	Angle
ASPH	Asphaltic
AVG.	Average
A.D.T.	Average Daily Traffic
BAD	Base Aggregate Dense
BK.	Back
BF	Back Face
B.M	Bench Mark
BR.	Bridge
C/L	Center Line
CC	Center to Center
CTH	County Trunk Highway
CR.	Creek
CY OR CU YD	Crushed
CP	Cubic Yard
C & G	Culvert Pipe
D	Curb and Gutter
DHV	Degree of Curve
DIA	Design Hour Volume
E	Diameter
X	East
ELEC	East Grid Coordinate
EL OR ELEV	Electric
ESALS	Elevation
EBS	Equivalent Single Axle Loads
FF	Excavation Below Subgrade
FE	Face to Face
F	Field Entrance
FG	Fill
FL OR F/L	Finished Grade
FT	Flow Line
FTG	Foot
GN	Footing
HT	Grid North
CWT	Height
HYD	Hundredweight
INL	Hydrant
ID	Inlet
INV	Inside Diameter
IP	Invert
IRS	Iron Pipe or Pin
	Iron Rod Set

JT	Joint
JCT	Junction
LHF	Left–Hand Forward
L	Length of Curve
LIN FT OR LF	Linear Foot
LC	Long Chord of Curve
MH	Manhole
MB	Mailbox
ML OR M/L	Match Line
N	North
Y	North Grid Coordiante
OD	Outside Diameter
PLE	Permanent Limited Easement
PT	Point
PC	Point of Curvature
PI	Point of Intersection
PRC	Point of Reverse Curvature
PT	Point of Tangency
POC	Point on curve
POT	Point on Tangent
PVC	Polyvinyl Chloride
PCC	Portland Cement Concrete
LB	Pound
PSI	Pounds Per Square Inch
PE	Private Entrance
R	Radius
RR	Railroad
RL OR R/L	Reference Line
RP	Reference Point
RCCP	Reinforced Concrete Culvert Pipe
REQD	Required
RES	Residence or Residential
RW	Retaining Wall
RT	Right
RHF	Right–Hand Forward
R/W	Right–of–Way
R	River
RD	Road
RDWY	Roadway
SALV	Salvaged
SAN S	Sanitary Sewer

SEC	Section
SHLDR	Shoulder
SHR	Shrinkage
SW	Sidewalk
S	South
SQ	Square
SF OR SQ FT	Square feet
SY OR SQ YD	Square Yard
STD	Standard
SDD	Standard Detail Drawings
STH	State Trunk Highways
STA	Station
SS	Storm Sewer
SG	Subgrade
SE	Superelevation
SL OR S/L	Survey Line
SV	Septic Vent
T	Tangent
TEL	Telephone
TEMP	Temporary
TI	Temporary Interest
TLE	Temporary Limited Easement
t	Ton
T OR TN	Town
TRANS	Transition
TL OR T/L	Transit Line
T	Trucks (percent of)
TYP	Typical
UNCL	Unclassified
UG	Underground Cable
USH	United States Highway
VAR	Variable
V	Velocity or Design Speed
VERT	Vertical
VC	Vertical Curve
VOL	Volume
WM	Water Main
WV	Water Valve
W	West
WB	Westbound
YD	Yard

DESIGNER

TEAM ENGINEERING, INC.
240 MAIN STREET
LOGANVILLE, WI 53943
ATTN: JAMIE BRANDT, P.E.
PH: (608) 727–2146
jbrandt@teamenginc.com

DNR CONTACT

DEPARTMENT OF NATURAL RESOURCES
3911 FISH HATCHERY ROAD
FITCHBURG, WI 53711
ATTN: ANDREW BARTA
ENVIRONMENTAL ANALYSIS & REVIEW SPECIALIST
PH: (608) 275–3308
andrew.barta@wisconsin.gov

MUNICIPALITY CONTACT

RICHLAND COUNTY HIGHWAY DEPARTMENT
120 BOWEN CIRCLE
RICHLAND CENTER, WI 53581
ATTN: JIM CHITWOOD, COMMISSIONER
PH: (608) 647–4707
jim.chitwood@co.richland.wi.us

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

UTILITIES

FRONTIER COMMUNICATIONS
2222 W. WISCONSIN STREET
PORTAGE, WI 53901
ATTN: JERRY MOORE
PH: 608–742–9507
jerald.r.moore@ftr.com

RICHLAND ELECTRIC COOPERATIVE
P.O. BOX 439
RICHLAND CENTER, WI 53581
ATTN: LARRY HALLETT
PH: (608) 647–3173
lhallett@rec.coop

* – NOT A MEMBER OF DIGGER'S HOTLINE.

GENERAL NOTES

MULCH ALL SLOPES AS DIRECTED BY THE ENGINEER IN THE FIELD.

FINISHING ITEMS SHALL BE PLACED TO THE SLOPE INTERCEPT WITH THE ORIGINAL GROUND AS SHOWN ON THE CROSS SECTIONS AND ON ALL DISTRUBED AREAS.

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

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

FILL EXPANSION IS ESTIMATED AT 25%.

DISTURBED AREAS SHOWN WITHIN THE RIGHT–OF–WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, ARE TO BE FERTILIZED (TYPE B), SEEDED (USE SEEDING MIXTURE #60 AND SEEDING TEMPORARY), AND MULCHED AS DIRECTED BY THE ENGINEER IN THE FIELD.

THE LOCATIONS OF SILT FENCE, SALVAGED TOPSOIL, SEEDING MIX #20, SEEDING TEMPORARY, MULCH AND EROSION MAT ARE APPROXIMATE. LOCATIONS ARE TO BE DETERMINED BY THE ENGINEER IN THE FIELD.

REMOVAL OF ASPHALTIC SURFACES WHERE AN ABUTTING ASPHALTIC SURFACE IS TO REMAIN IN PLACE SHALL REQUIRE A SAWCUT MEETING THE APPROVAL OF THE ENGINEER IN THE FIELD.

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

ELEVATIONS SHOWN ON THE PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

BEARINGS ON THE PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM, RICHLAND COUNTY.

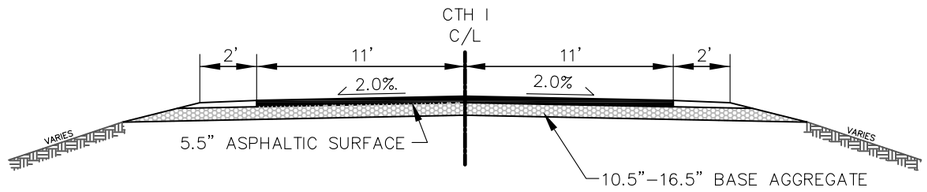
EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO CONSTRUCTION. EROSION CONTROL ITEMS ON THE PLAN ARE AT SUGGESTED LOCATIONS. EXACT LOCATIONS AND DIMENSIONS WILL BE DETERMINED BY THE ENGINEER IN THE FIELD. ALL EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL SUCH TIME AS THE ENGINEER IN THE FIELD DEEMS THE DEVICES NO LONGER NECESSARY.

4–INCH ASPHALTIC SURFACE SHALL BE PLACED WITH A 2 1/4–INCH LOWER LAYER AND A 1 3/4–INCH UPPER LAYER. THE NOMINAL SIZE OF AGGREGATE USED FOR THE LOWER LAYER SHALL BE 19.0 MM AND THE UPPER LAYER SHALL BE 12.5 MM.

EXACT DIMENSIONS OF ANY PART ITEM CONTAINING THE WORK "RIPRAP" SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

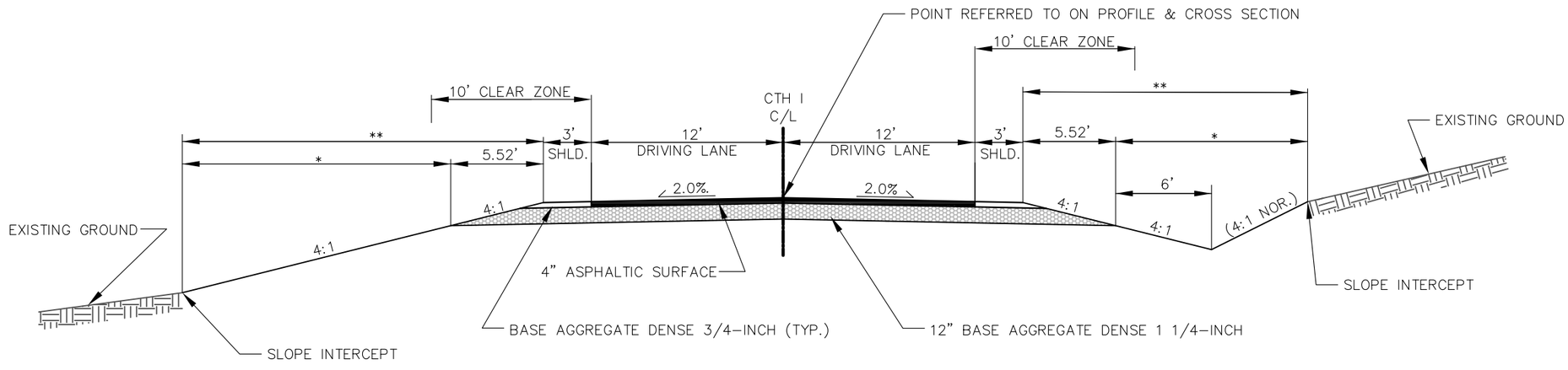
THE PROJECT SITE IS AN ENVIRONMENTALLY SENSITIVE AREA WHICH INCLUDES WETLANDS. CONTAIN ALL CONSTRUCTION ACTIVITY, INCLUDING STAGING, STOCKPILING OF MATERIAL AND EQUIPMENT, AND EARTHWORK WITHIN THE SLOPE INTERCEPTS.

2



TYPICAL EXISTING SECTION

CTH I



FILL

TYPICAL FINISHED SECTION

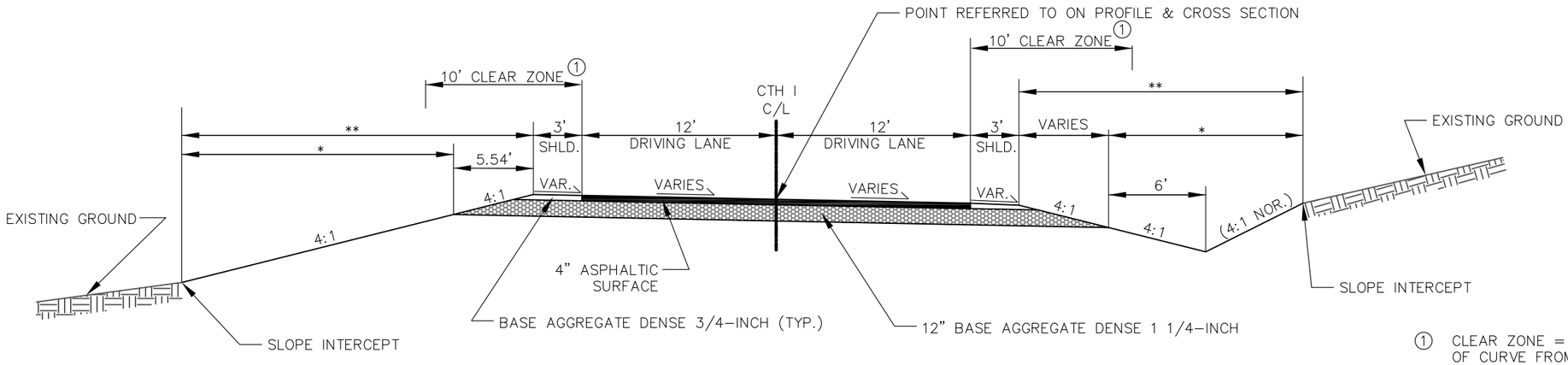
CTH I
STA. 9+00.00 – STA. 10+38.42

CUT

** LIMITS OF SEEDING, TEMPORARY SEEDING & FERTILIZER

* LIMITS OF SALVAGED TOPSOIL, EROSION MAT AND MULCH

PROJECT NO: 5186–00–70	HWY: CTH I	COUNTY: RICHLAND	TYPICAL SECTIONS	SHEET 3	E



FILL

CUT

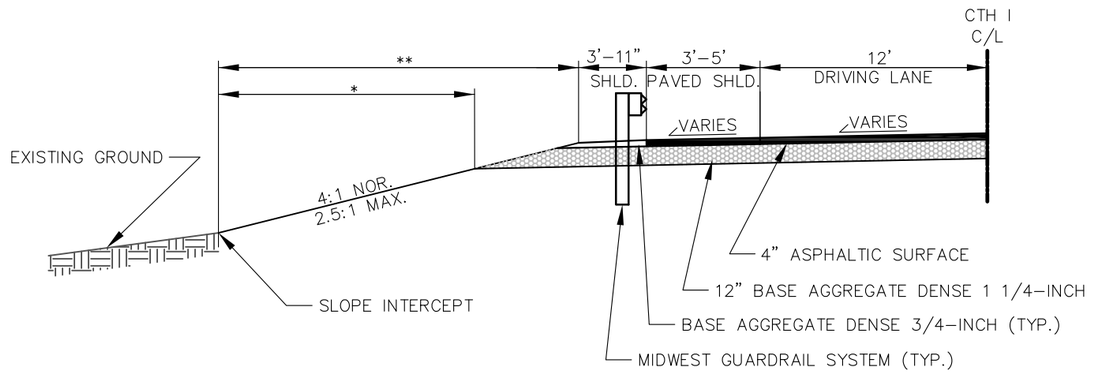
TYPICAL FINSIHED SUPERELEVATED SECTION

CTH I
STA. 11+71.92 – STA. 13+00.00

① CLEAR ZONE = 12' ON OUTSIDE OF CURVE FROM STA. 12+47 TO STA. 13+75

** LIMITS OF SEEDING, TEMPORARY SEEDING & FERTILIZER

* LIMITS OF SALVAGED TOPSOIL, EROSION MAT AND MULCH



TYPICAL FINISHED BEAM GUARD HALF SECTION

CTH I
STA. 9+47.06 – STA. 10+38.42
STA. 11+71.92 – STA. 12+63.79

** LIMITS OF SEEDING, TEMPORARY SEEDING & FERTILIZER

* LIMITS OF SALVAGED TOPSOIL, EROSION MAT AND MULCH

2

STH 80

BP: 5+25.00

PC: 5+93.97

P.I. STA 7+05.97
N=492,118.102
E=683,332.966

PT: 8+17.32

P.I. STA 10+25.00
N=492,039.392
E=683,642.806

PI: 10+25.00

PINE RIVER

FLOW

PC: 12+07.21

END PROJECT
STA. 13+00
N=491,977.124
E=683,910.632

CP #2
FD 3/4" REBAR
STA. 30+05, 16' RT
N=491,873.015
E=685,611.552
ELEV=774.24

P.I. STA 13+31.22
N=491,967.455
E=683,940.461

PT: 14+54.85

5+25 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00

S75°44'47"E

S76°24'48"E

CTH I

IRENE LANE

CP #4/BM #4
SET 3/4" REBAR
STA. 5+35, 23.0' RT
N=492,159.484
E=683,189.444
ELEV.=774.05

BEGIN PROJECT
STA. 9+00
N=492,070.169
E=683,521.654

BM #5
SQUARE ON THE TOP
OF BRIDGE RAILING
ELEV.=777.93

CP #3/BM #3
FD 3/4" REBAR
STA. 13+09, 18' RT
N=491,945.810
E=683,990.713
ELEV=774.00

5+25

57.90' TO
POWER POLE

PC: 5+93.97

6+00 CTH I

CP #4
SET 3/4" REBAR

42.83' TO
POWER POLE

58.53' TO
SIGN POST

TIES TO CP #4

17.51' TO
PK NAIL IN C/L

14+00 CTH I

CP #3
FD 3/4" REBAR

26.52' TO
CULVERT END

72.84' TO
POWER POLE

TIES TO CP #3

CTH I

29.23' TO
PK NAIL IN C/L

50.01' TO
SIGN POST

CP #2
SET 3/4" REBAR

6.73' TO
SIGN POST

SECTION HOLLOW ROAD

TIES TO CP #2

PROJECT NO: 5186-00-70	HWY: CTH I	COUNTY: RICHLAND	ALIGNMENT DETAILS	SHEET 5	E

DATE 16NOV15 — E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	5186-00-70 QUANTITY
0010	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. 11+15	LS	1.000	1.000
0020	205.0100	Excavation Common **P**	CY	440.000	440.000
0030	206.1000	Excavation for Structures Bridges (structure) 01. B-52-0271	LS	1.000	1.000
0040	208.0100	Borrow	CY	100.000	100.000
0050	210.0100	Backfill Structure	CY	250.000	250.000
0060	213.0100	Finishing Roadway (project) 01. 5186-00-70	EACH	1.000	1.000
0070	305.0110	Base Aggregate Dense 3/4-Inch	TON	100.000	100.000
0080	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	930.000	930.000
0090	455.0600	Tack Coat	TON	45.000	45.000
0100	465.0105	Asphaltic Surface	TON	205.000	205.000
0110	502.0100	Concrete Masonry Bridges	CY	425.000	425.000
0120	502.3200	Protective Surface Treatment	SY	560.000	560.000
0130	505.0400	Bar Steel Reinforcement HS Structures	LB	8,310.000	8,310.000
0140	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	68,390.000	68,390.000
0150	513.4061	Railing Tubular Type M (structure) 01. B-52-0271	LF	272.000	272.000
0160	516.0500	Rubberized Membrane Waterproofing	SY	12.000	12.000
0170	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	1,020.000	1,020.000
0180	606.0300	Riprap Heavy	CY	140.000	140.000
0190	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	190.000	190.000
0200	614.0920	Salvaged Rail	LF	310.000	310.000
0210	614.2500	MGS Thrie Beam Transition	LF	160.000	160.000
0220	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0230	619.1000	Mobilization	EACH	1.000	1.000
0240	624.0100	Water	MGAL	10.000	10.000
0250	625.0500	Salvaged Topsoil **P**	SY	440.000	440.000
0260	627.0200	Mulching **P**	SY	600.000	600.000
0270	628.1504	Silt Fence	LF	790.000	790.000
0280	628.1520	Silt Fence Maintenance	LF	790.000	790.000
0290	628.1905	Mobilizations Erosion Control	EACH	2.000	2.000
0300	628.1910	Mobilizations Emergency Erosion Control	EACH	1.000	1.000
0310	628.2008	Erosion Mat Urban Class I Type B	SY	75.000	75.000
0320	628.6005	Turbidity Barriers	SY	125.000	125.000
0330	629.0210	Fertilizer Type B	CWT	0.700	0.700
0340	630.0160	Seeding Mixture No. 60 **P**	LB	10.000	10.000
0350	630.0200	Seeding Temporary **P**	LB	5.000	5.000
0360	630.0300	Seeding Borrow Pit	LB	10.000	10.000
0370	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0380	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0390	638.2602	Removing Signs Type II	EACH	6.000	6.000
0400	638.3000	Removing Small Sign Supports	EACH	6.000	6.000
0410	642.5001	Field Office Type B	EACH	1.000	1.000
0420	643.0100	Traffic Control (project) 01. 5186-00-70	EACH	1.000	1.000
0430	645.0120	Geotextile Fabric Type HR	SY	320.000	320.000
0440	646.0106	Pavement Marking Epoxy 4-Inch	LF	800.000	800.000
0450	650.4500	Construction Staking Subgrade	LF	266.000	266.000
0460	650.5000	Construction Staking Base	LF	266.000	266.000
0470	650.6500	Construction Staking Structure Layout (structure) 01. B-52-0271	LS	1.000	1.000
0480	650.9910	Construction Staking Supplemental Control (project) 01. 5186-00-70	LS	1.000	1.000

3

DATE 16NOV15 E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	5186-00-70 QUANTITY
0490	650.9920	Construction Staking Slope Stakes	LF	266.000	266.000
0500	690.0150	Sawing Asphalt	LF	44.000	44.000
0510	715.0502	Incentive Strength Concrete Structures	DOL	3,400.000	3,400.000

BASE AGGREGATE DENSE

STATION–STATION	LOCATION	(305.0110) 3/4–INCH (TON)	(305.0120) 1 1/4–INCH (TON)
9+00.00–10+38.42	MAINLINE	38	480
11+71.92–13+00.00	MAINLINE	34	450
	P.E. MAINLINE, RT	28	–
	TOTALS	100	930

ASPHALTIC ITEMS

STATION–STATION	LOCATION	(455.0600) TACK COAT (GAL)	(465.0105) ASPHALTIC SURFACE (TON)
9+00.00–10+38.42	MAINLINE	23	105
11+71.92–13+00.00	MAINLINE	22	100
	TOTALS	45	205

MGS THRIE BEAM TRANSITION
MGS GUARDRAIL TERMINAL EAT

STATION–STATION	LOCATION	(614.2500) (LF)	(614.2610) (EACH)
9+98.42–10+38.42	MAINLINE, LT	40	1
9+98.42–10+38.42	MAINLINE, RT	40	1
11+71.92–12+11.92	MAINLINE, LT	40	1
11+71.92–12+11.92	MAINLINE, RT	40	1
	TOTALS	160	4

WATER

STATION–STATION	LOCATION	(624.0100) (MGAL)
9+00.00–13+00.00	MAINLINE	10
	TOTALS	10

NOTE: UNLESS NOTED, ALL ITEMS ARE IN CATEGORY 0010.

EARTHWORK SUMMARY

STATION–STATION	LOCATION	**P** (205.0100) EXCAVATION COMMON (1) (CY)	UNEXPANDED FILL (CY)	EXPANDED FILL (2) (25%) (CY)	MASS ORDINATE +/– (3) (CY)	WASTE (CY)	208.0100 BOROW (4) (15%) (CY)
9+00.00–10+38.42	CTH I	213	128	160	53	53	0
11+71.92–13+00.00	CTH I	227	266	333	–106	0	100
	TOTALS	440	394	493		53	100

NOTES:
1.) EBS IS NOT INCLUDED IN DIVISIONS 1 THROUGH 4
2.) EXPANDED FILL FACTOR 1.25: EXPANDED FILL =(UNEXPANDED FILL)*1.25
3.) THE MASS ORDINATE +OR– QTY CALCULATED FOR THE DIVISION. PLUS QUANTITY INDICATED AN EXCESS OF MATERIAL WITHIN THE CATEGORY. MINUS INDICATES A SHORTAGE OF MATERIAL WITHIN THE CATEGORY.
4.) BORROW *(ABSOLUTE VALUE OF MASS ORDINATE/EXPANDED FILL FACTOR)*BORROW FACTOR

P PAY PLAN QUANTITY

FINISHING ITEMS

STATION–STATION	LOCATION	**P** (625.0500) SALVAGED TOPSOIL (SY)	**P** (627.0200) MULCHING (SY)	(629.0210) FERTILIZER TYPE B (CWT)	**P** (630.0160) SEEDING MIXTURE NO. 60 (LB)	**P** (630.0200) SEEDING TEMPORARY (LB)	(630.0200) BORROW PIT (LB)
9+00.00–10+38.42	MAINLINE	317	317	0.3	6	3	–
11+71.92–13+00.00	MAINLINE	123	53	0.2	4	2	–
–	BORROW PIT	–	230	0.2	–	–	10
	TOTALS	440	600	0.7	10	5	10

P PAY PLAN QUANTITY

SALVAGED RAIL

STATION – STATION	LOCATION	(614.0920) SALVAGED RAIL (LF)
9+71 – 10+50	MAINLINE, RT.	77
9+71 – 10+50	MAINLINE, LT.	77
11+81 – 12+59	MAINLINE, LT.	78
11+81 – 12+59	MAINLINE, RT.	78
	TOTALS	310

SILT FENCE & SILT FENCE MAINTENANCE

STATION–STATION	LOCATION	(628.1504) (LF)	(628.1520) (LF)
9+00.00–10+38.42	MAINLINE	410	410
11+71.92–13+00.00	MAINLINE	380	380
	TOTALS	790	790

TURBIDITY BARRIER

STATION–STATION	LOCATION	(628.6005) TURBIDITY BARRIER (SY)
10+78.67	PIER 1	125
	TOTAL	125

EROSION MAT CLASS II TYPE B

STATION–STATION	LOCATION	(628.2023) (SY)
11+71.92–13+00.00	MAINLINE	75
	TOTALS	75

REMOVING SIGNS TYPE II & REMOVING SMALL SIGN SUPPORTS

STATION	LOCATION	DESCRIPTION	(638.2602) (EACH)	(638.3000) (EACH)
10+30	16' RT	45 TON	1	1
10+49	12' LT	W5–52	1	1
10+49	12' RT	W5–52	1	1
11+81	12' RT	W5–52	1	1
11+82	12' LT	W5–52	1	1
12+08	17' LT	45 TON	1	1
		TOTALS	6	6

PERMANENT SIGNING

STATION	LOCATION	SIGN CODE	(634.0614) POSTS WOOD 4X6–INCH X 14–FT (EACH)	(637.0202) SIGNS TYPE II REFLECTIVE TYPE F (SF)
10+38	LT	W5–52	1	3
10+38	RT	W5–52	1	3
11+72	LT	W5–52	1	3
11+72	RT	W5–52	1	3
TOTALS			4	12.00

CONSTRUCTION STAKING

STATION–STATION	LOCATION	(650.4500) SUBGRADE (LF)	(650.5000) BASE (LF)	(650.6500) STRUCTURE LAYOUT (LS)	(650.9910) SUPPLEMENTAL CONTROL (LS)	(650.9920) SLOPE STAKING (LF)
9+00.00–10+38.42	MAINLINE	138	138	–	0.5	138
11+71.92–12+00.00	MAINLINE	128	128	–	0.5	128
	TOTALS	266	266	1 *	1	266

* CATEGORY 0020

PAVEMENT MARKING

STATION–STATION	LOCATION	(646.0103) PAVEMENT MARKING EPOXY 4–INCH (LF)
9+00.00–13+00.00	CENTERLINE–DOUBLE YELLOW	800
	TOTAL	800

SAWING ASPHALT

STATION	LOCATION	(690.0150) (LF)
9+00	MAINLINE	22
13+00	MAINLINE	22
	TOTALS	44

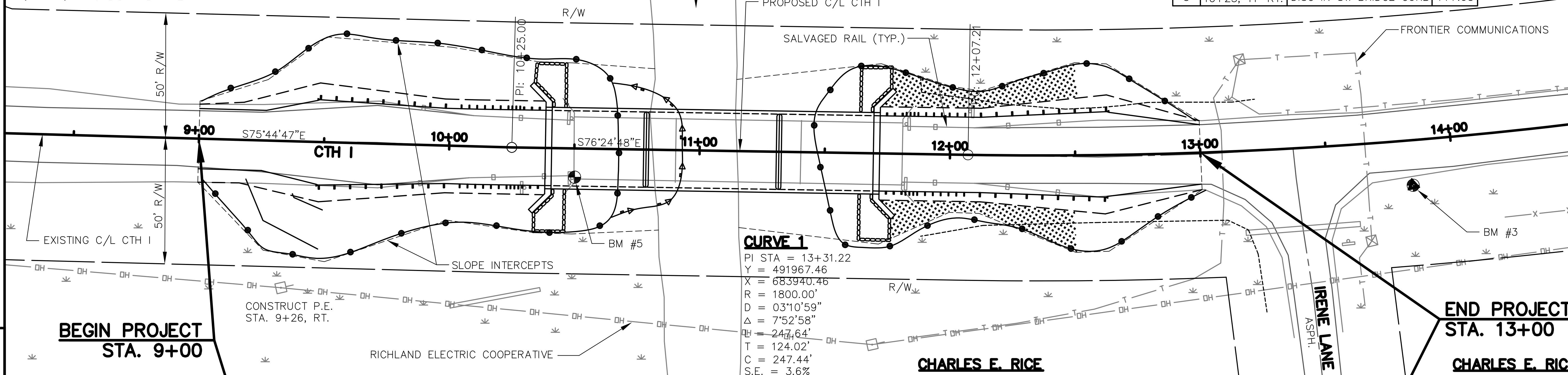
LEGEND

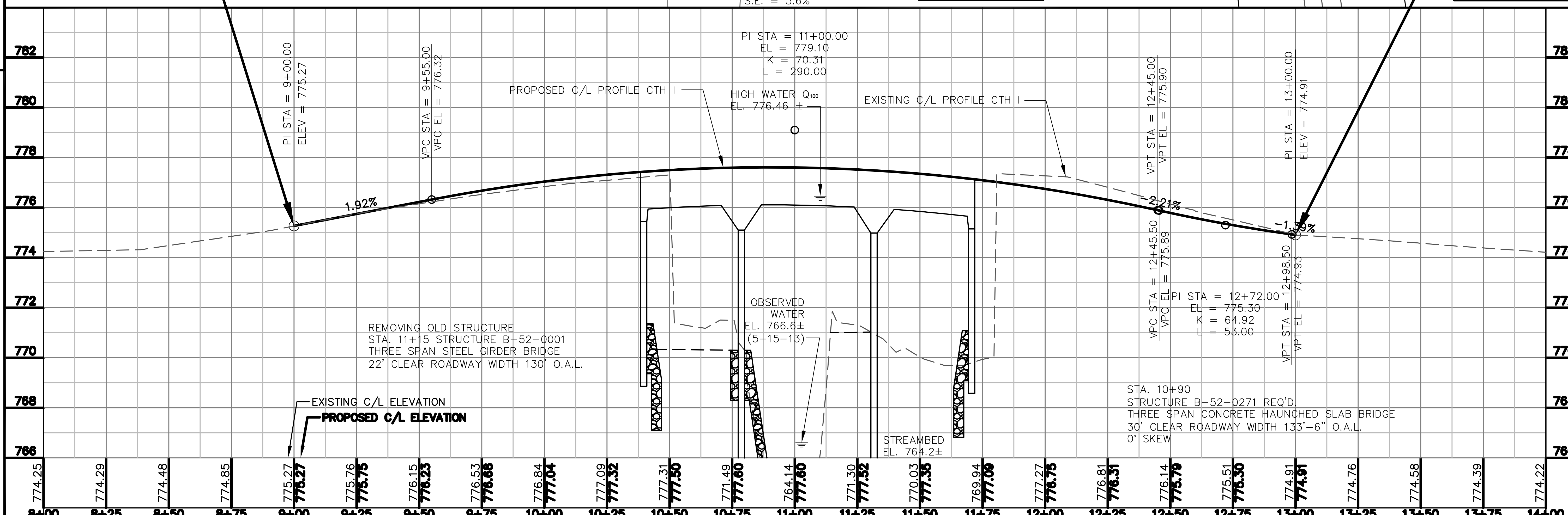
- WETLAND BOUNDARY
- SILT FENCE
- EROSION MAT URBAN CLASS I TYPE B
- TURBIDITY BARRIER

NOTES:
SILT FENCE IN WETLAND AREAS WILL BE INSTALLED AT THE TOE OF THE PROPOSED SLOPE.

STATE OF WISCONSIN

BENCHMARKS NAVD 88			
NO.	STA./OFFSET	DESCRIPTION	ELEV.
3	13+09, 18' RT.	3/4–INCH REBAR	774.00
4	5+35, 23' RT.	3/4–INCH REBAR	774.05
5	10+25, 11' RT.	DISC IN SW BRIDGE CURB	777.93

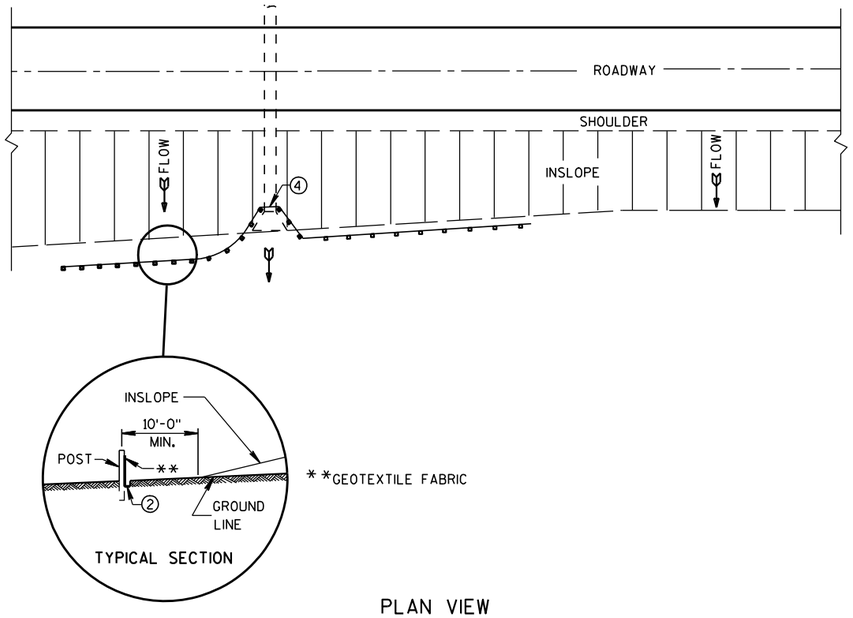




PROJECT NO: 5186–00–70	HWY: CTH I	COUNTY: RICHLAND	PLAN & PROFILE – CTH I	SHEET 10	E

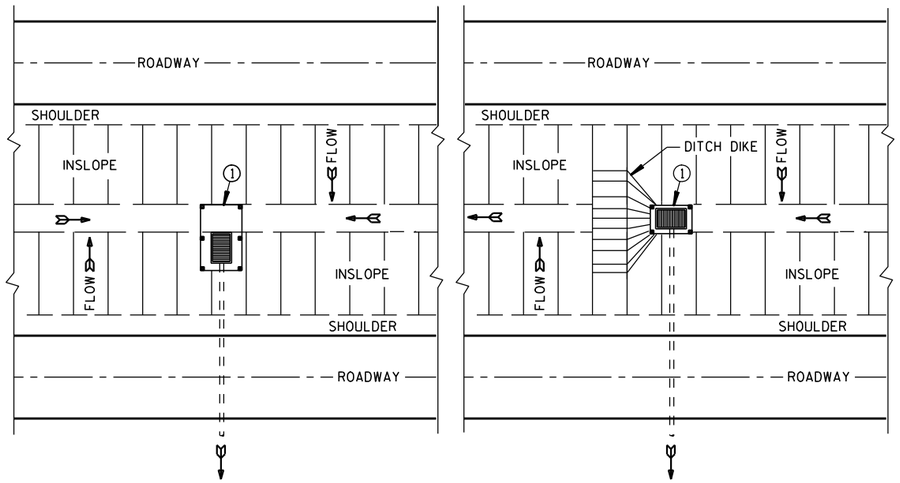
Standard Detail Drawing List

08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
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)
15C02-05A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-05B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C06-07	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-16A	PAVEMENT MARKING (MAINLINE)



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.

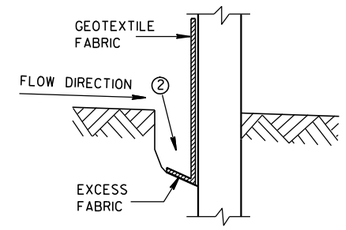
① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.

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.

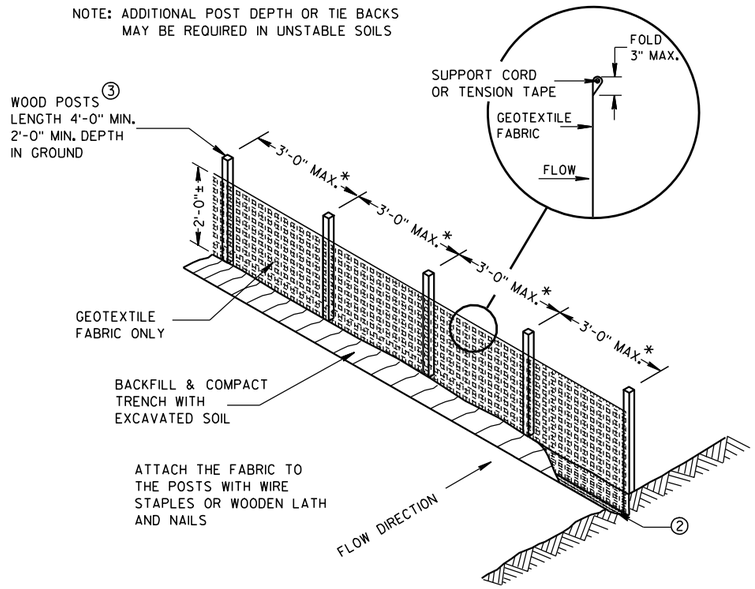
③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1⅛" X 1⅛" OF OAK OR HICKORY.

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.

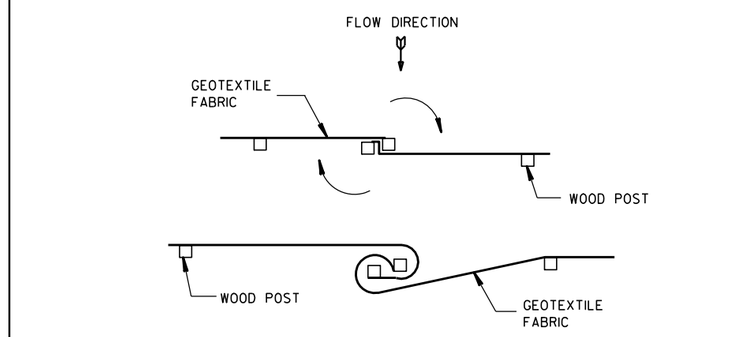


TRENCH DETAIL

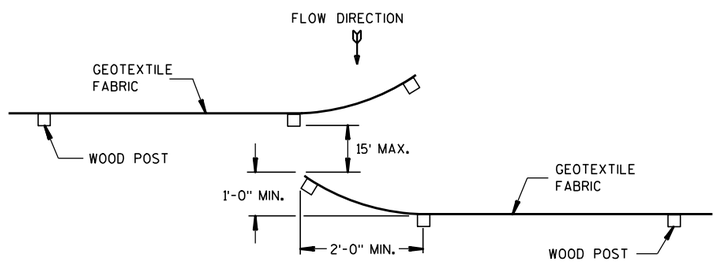


*NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.

SILT FENCE

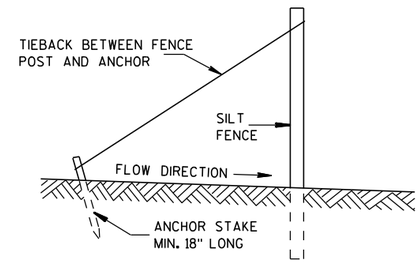


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE ⑤



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

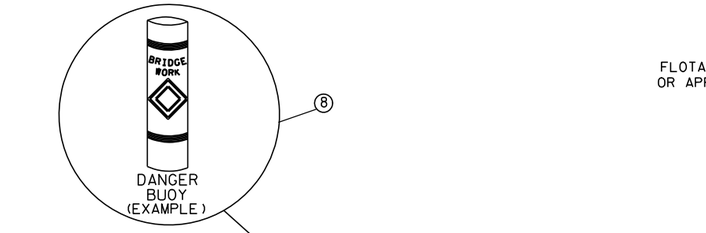
APPROVED
4-29-05 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

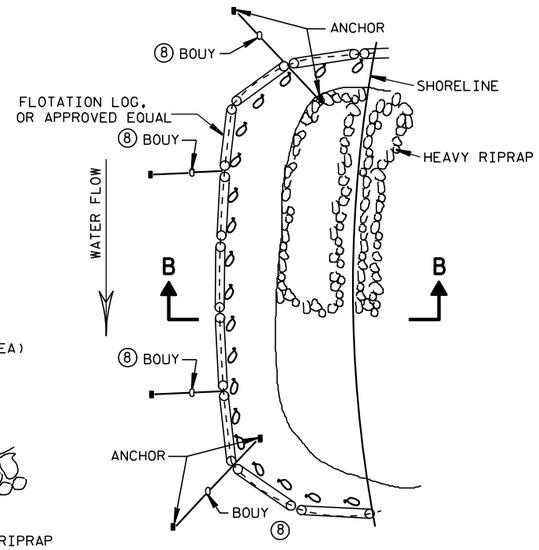
S.D.D. 8 E 9-6

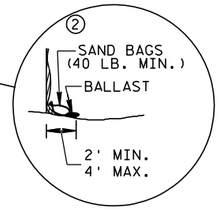
6

S.D.D. 8 E 9-6

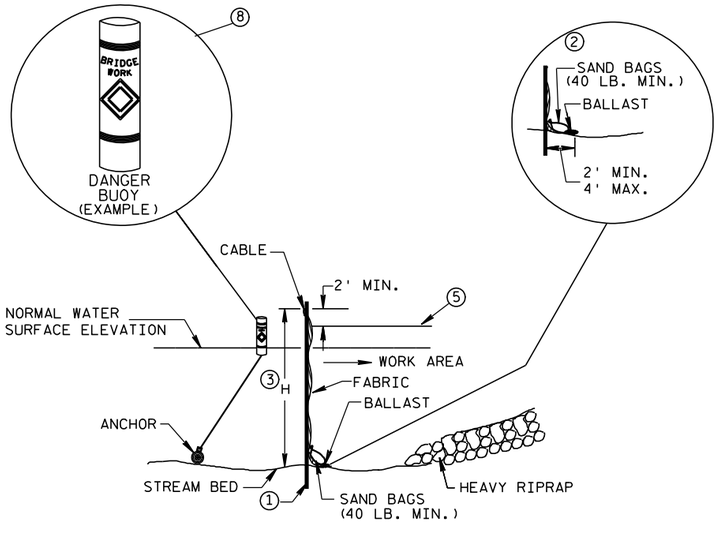


SECTION B-B

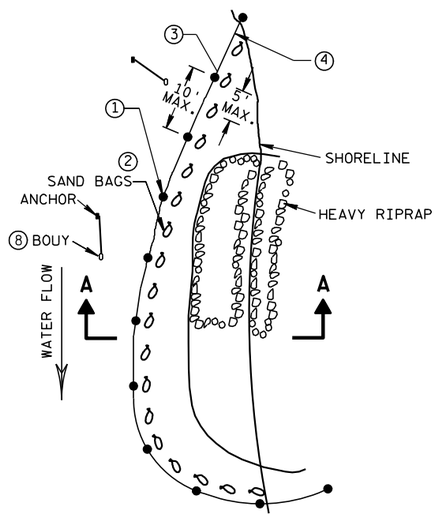




TURBIDITY BARRIER FLOAT ALTERNATIVE
CAUTION - SEE NOTE 6



SECTION A-A



PLAN VIEW

TURBIDITY BARRIER STANDARD POST INSTALLATION

TURBIDITY BARRIER PLACEMENT DETAILS

GENERAL NOTES

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

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

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

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

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

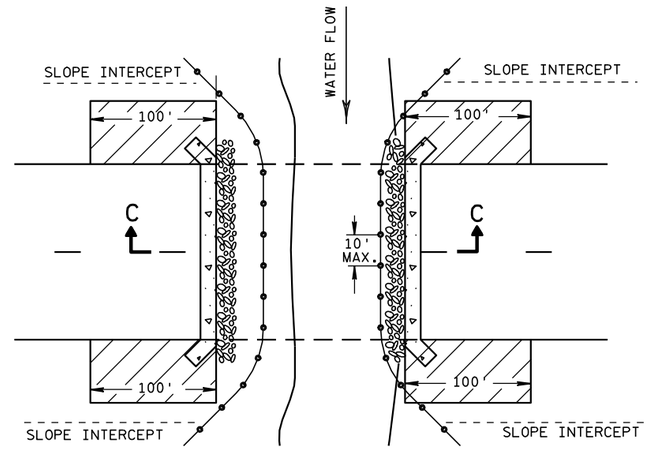
④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.

⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MIMIMUM BARRIER HEIGHT SHALL BE 2'GREATER THAN EITHER THE 02 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WICHEVER IS GREATER.

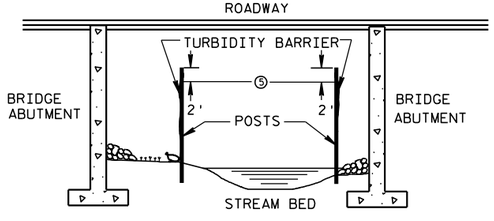
⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.

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

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



PLAN VIEW



SECTION C-C

TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

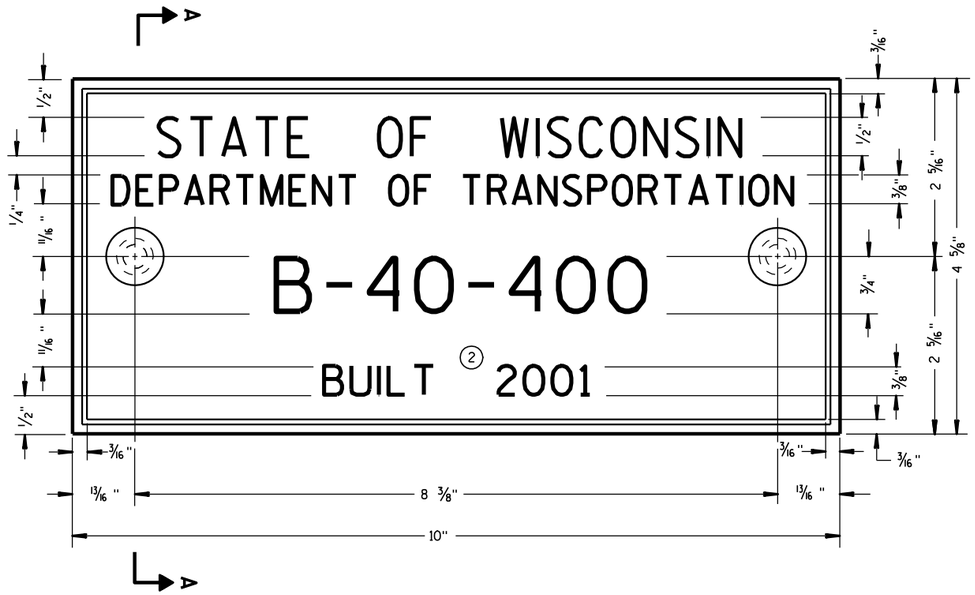
APPROVED
6/04/02 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 8 E 11-2

6

S.D.D. 8 E 11-2



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

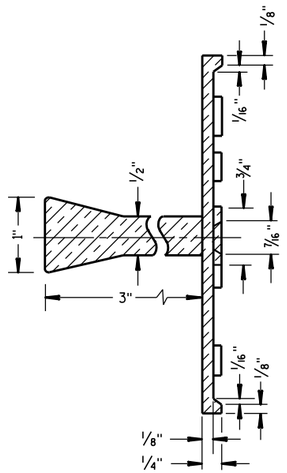
GENERAL NOTES

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.

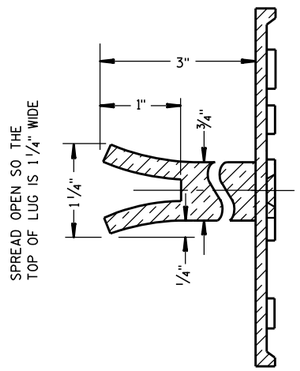
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

(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

FOR MULTI-UNIT STRUCTURES LINE 3 ABOVE SHALL READ

B = BRIDGE
C = CULVERT
R = RETAINING WALL

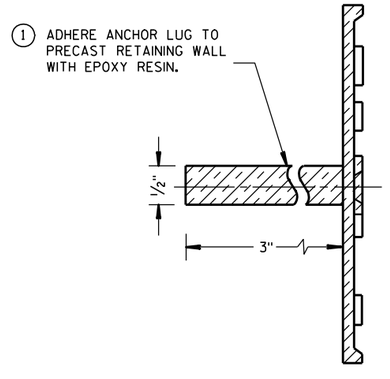
COUNTY NO.

BRIDGE NO.

UNIT NO. FOR MULTIPLE UNIT BRIDGE

B-40-400-1A

NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES



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

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.

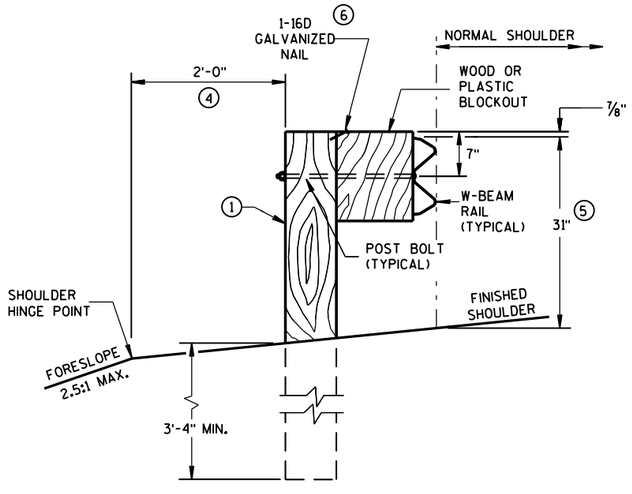
(2) USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

(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).

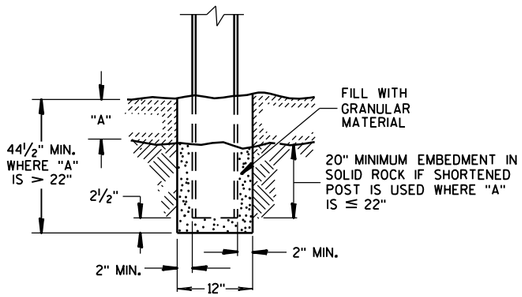
(5) FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".

(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.



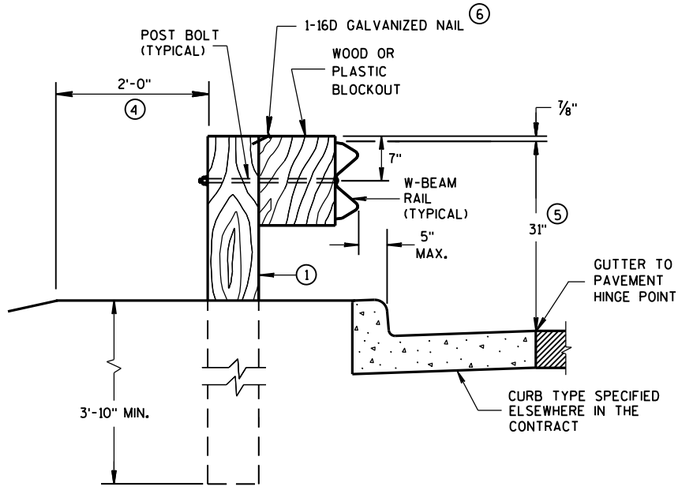
END VIEW

LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



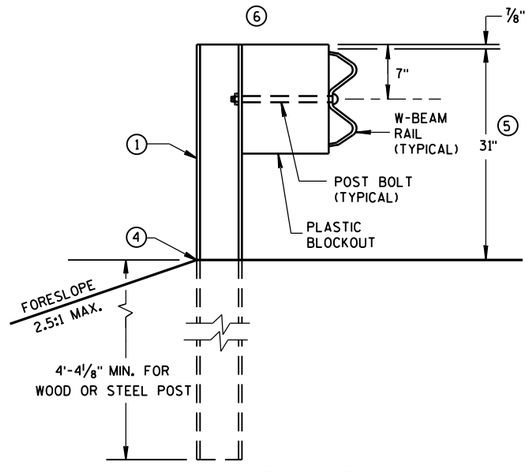
END VIEW

SETTING STEEL OR WOOD POST IN ROCK (3)



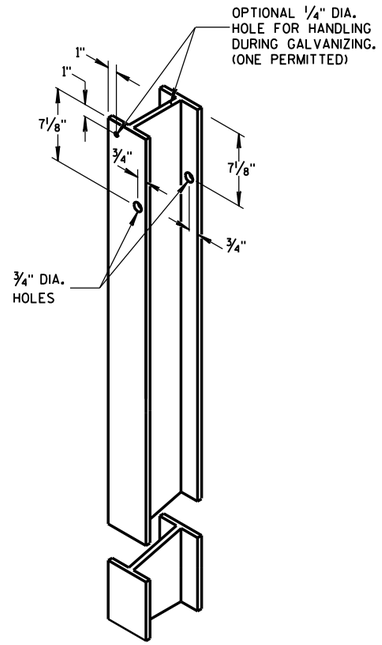
END VIEW

LOCATED ALONG A CURBED ROADWAY

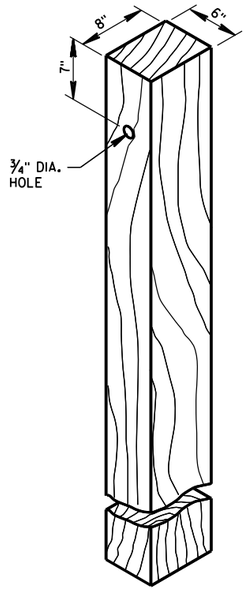


END VIEW

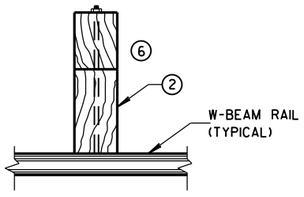
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



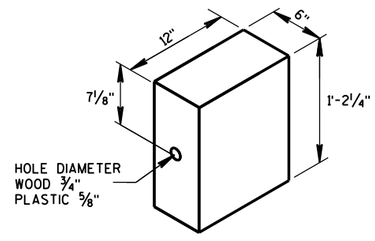
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) (1)



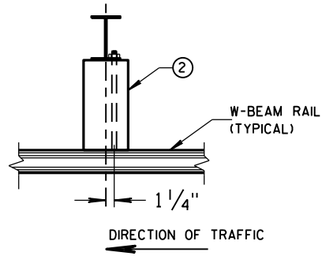
WOOD POST
(6" X 8") NOMINAL (1)



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT (2)



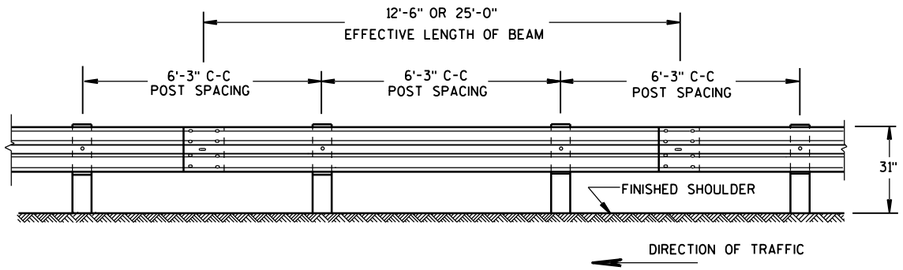
PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

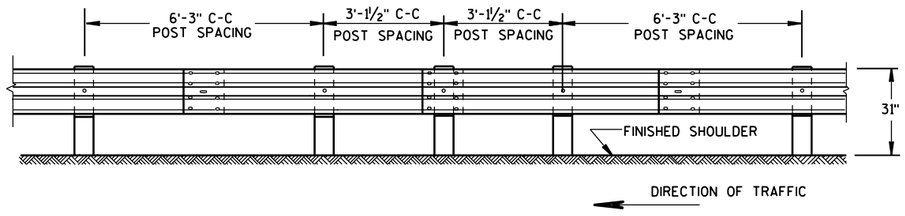
6

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



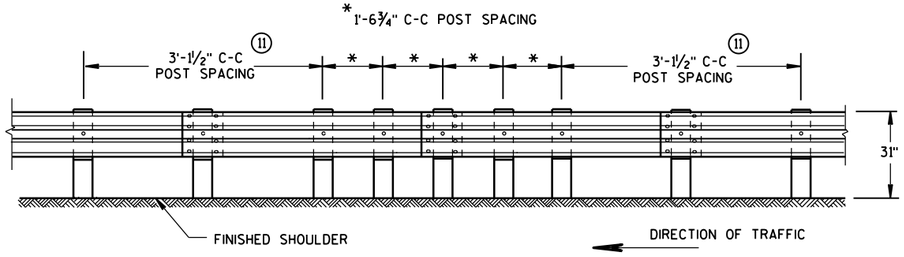
FRONT VIEW

POST SPACING STANDARD INSTALLATION



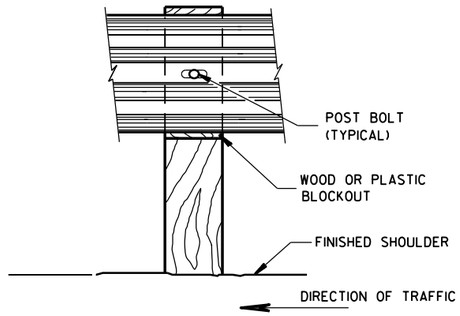
FRONT VIEW

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

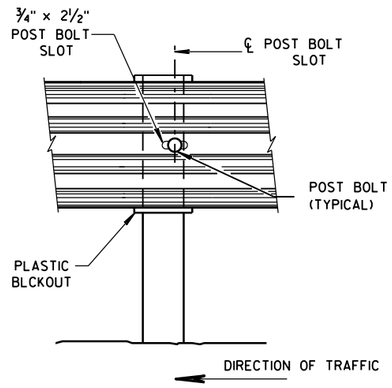


FRONT VIEW

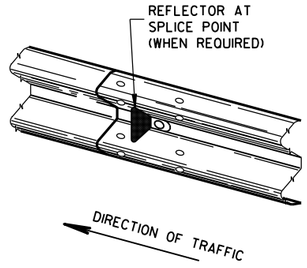
QUARTER POST SPACING (QS)

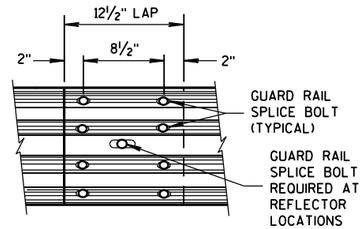


FRONT VIEW AT WOOD POST



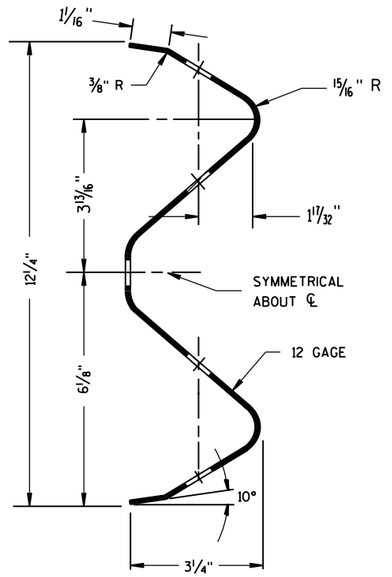
FRONT VIEW AT STEEL POST



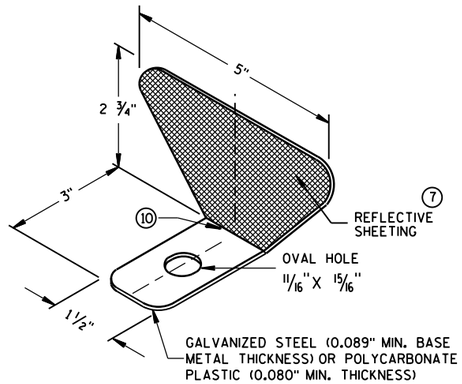


FRONT VIEW

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

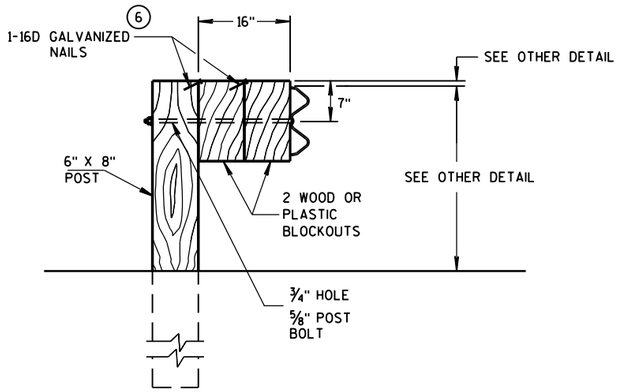
	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200'	50' C-C	1	3
	> 200'	100' C-C	1	
TWO WAY TRAFFIC	< 200'	25' C-C	1 ⑨	6
	> 200'	50' C-C	1	
TWO WAY TRAFFIC	< 200'	50' C-C	2	3
	> 200'	100' C-C	2 ⑩	

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

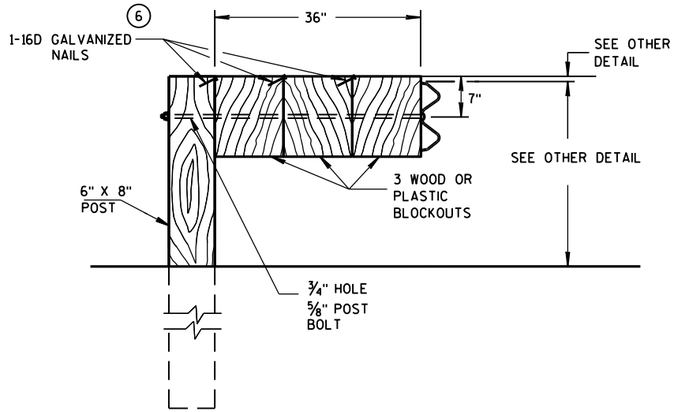
6

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.

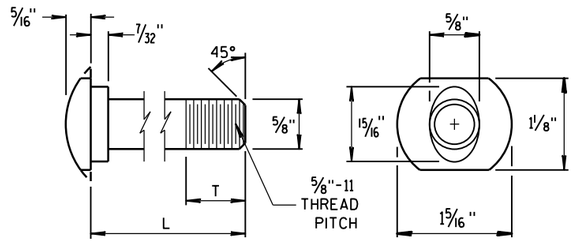


DETAIL FOR 36" BLOCKOUT DEPTH

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.

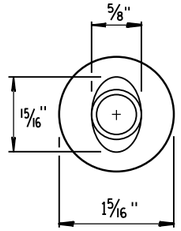
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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.

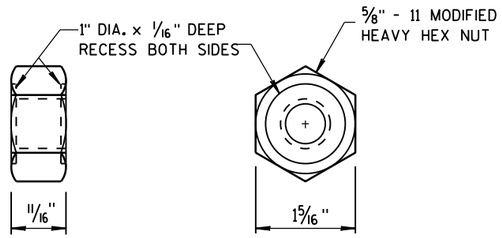


POST BOLT TABLE

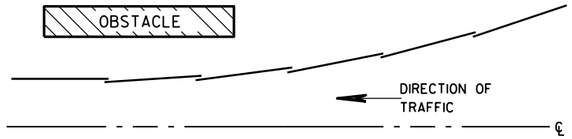
L	T (MIN.)
1¼"	1⅛"
2"	1¾"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

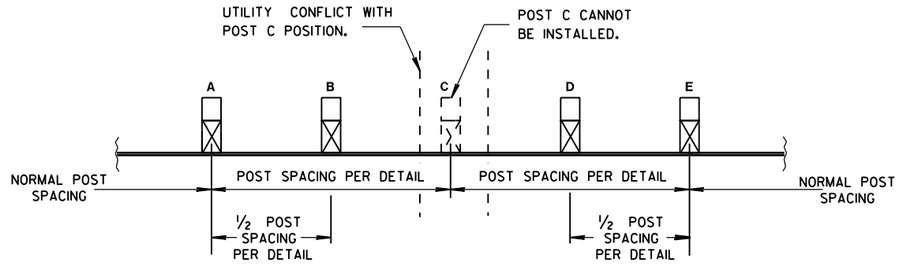


POST BOLT AND RECESS NUT

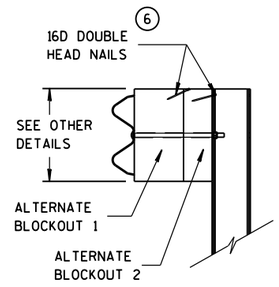


PLAN VIEW

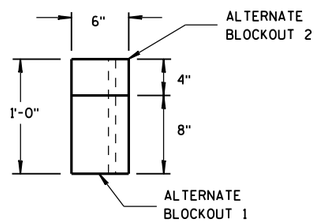
BEAM LAPPING DETAIL



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.

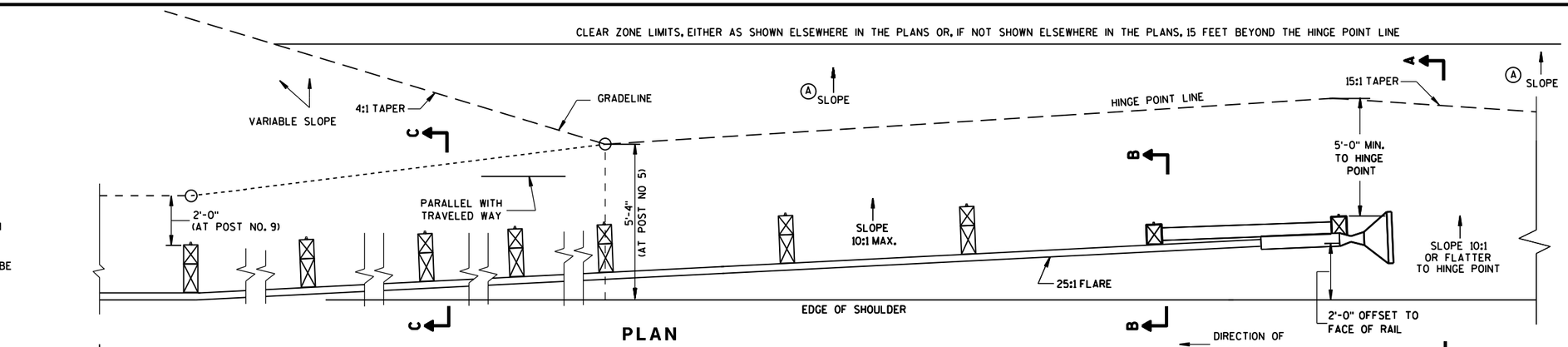
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

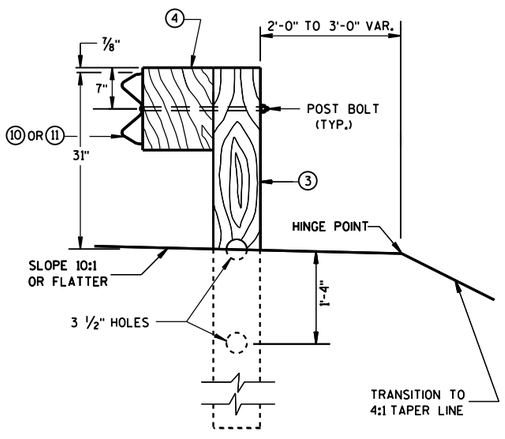
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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.

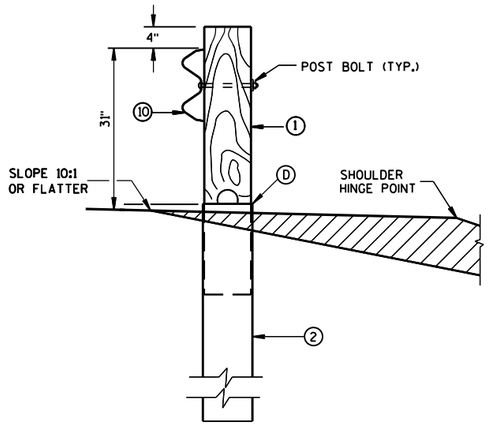
THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE.



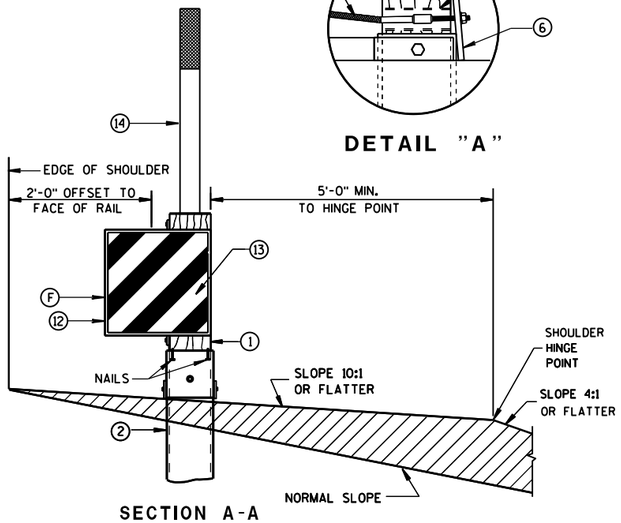
ELEVATION



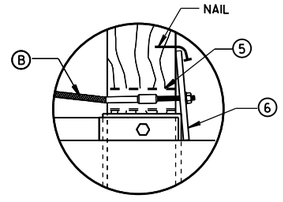
SECTION C-C
TYPICAL AT POST NOS. 3-9



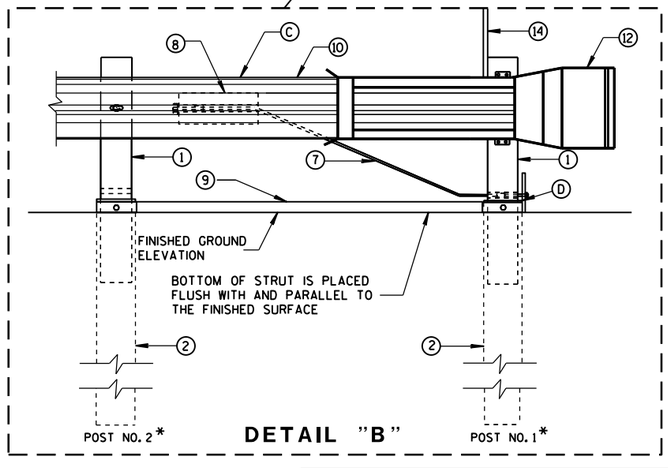
SECTION B-B
TYPICAL AT POST NO. 2*



SECTION A-A
TYPICAL AT POST NO. 1*



DETAIL "A"



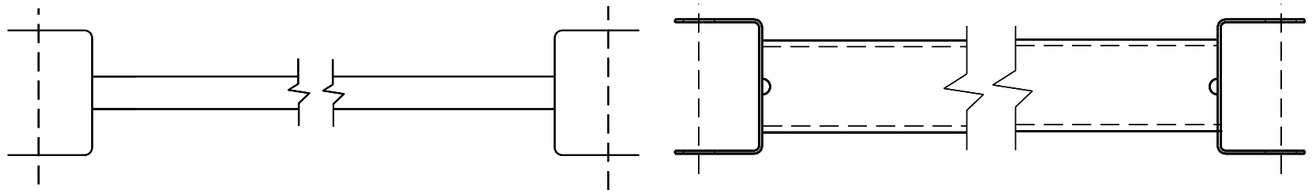
DETAIL "B"

MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

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

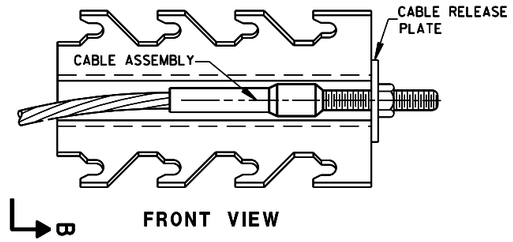
S.D.D. 14 B 44-2a



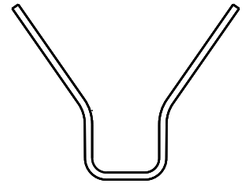
GENERIC GROUND STRUT (9) (H)

BILL OF MATERIALS

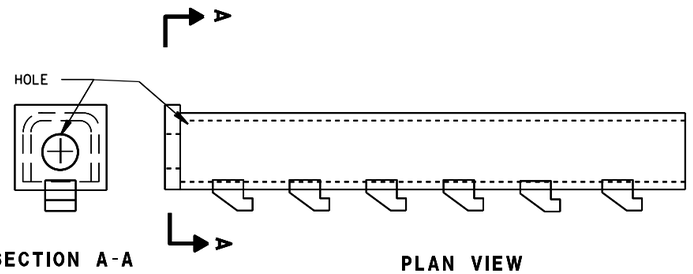
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
(1)	WOOD BREAKAWAY POST
(2)	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
(3)	WOOD CRT
(4)	WOOD BLOCKOUT
(5)	PIPE SLEEVE
(6)	BEARING PLATE
(7)	BCT CABLE ASSEMBLY
(8)	ANCHOR 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)



FRONT VIEW



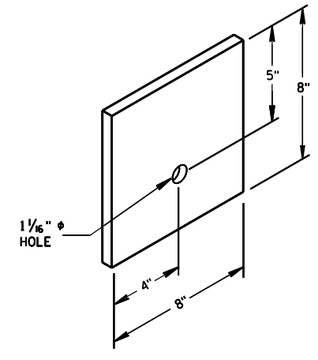
SECTION B-B



SECTION A-A

PLAN VIEW

GENERIC ANCHOR CABLE BOX (8) (H)



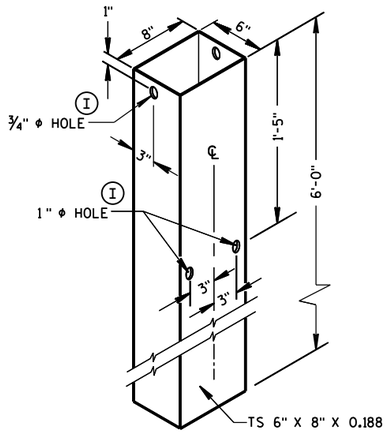
BEARING PLATE (6)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

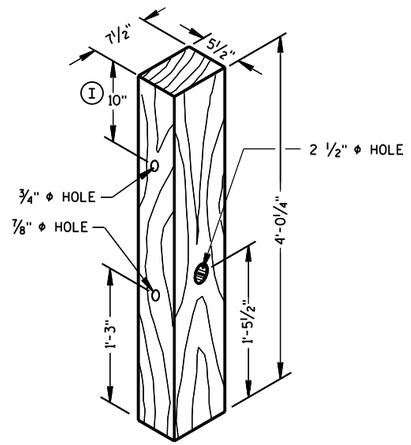
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

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

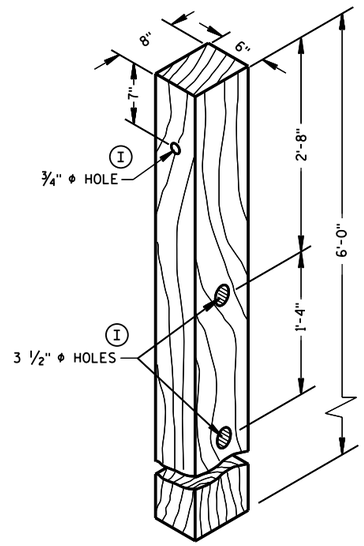


FOUNDATION TUBE (2)



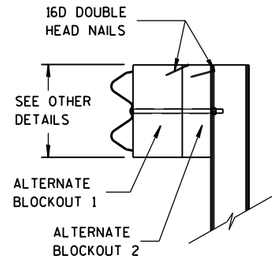
POSTS NUMBER 1 AND 2

WOOD BREAKAWAY POST (1)

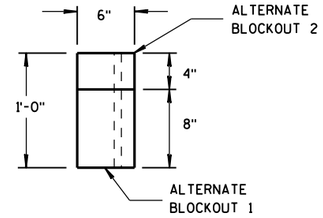


POSTS NUMBER 3-9

WOOD CRT POST (3)

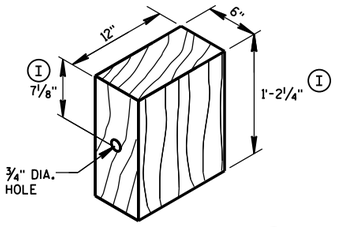


SIDE VIEW



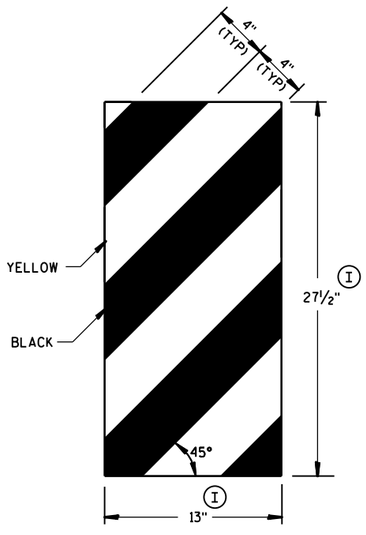
TOP VIEW

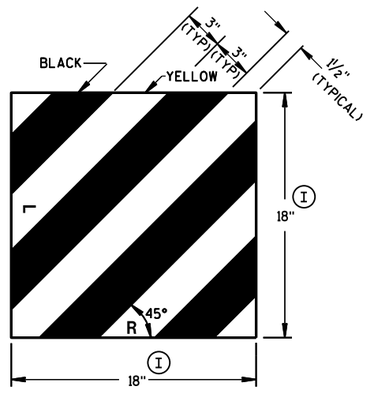
ALTERNATE WOOD BLOCKOUT DETAIL



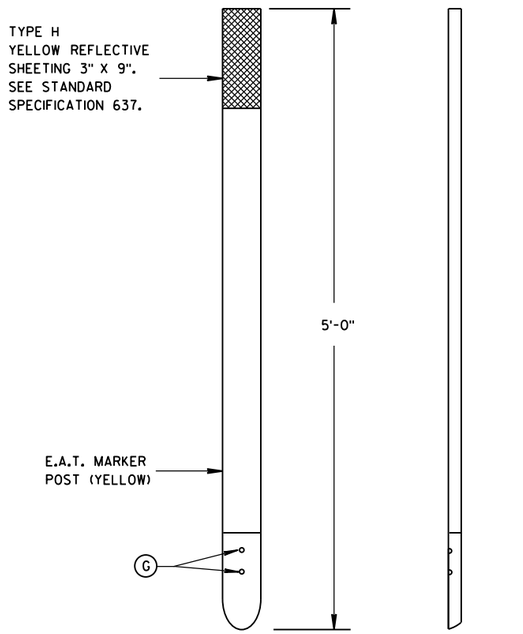
WOOD BLOCKOUT (4)

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





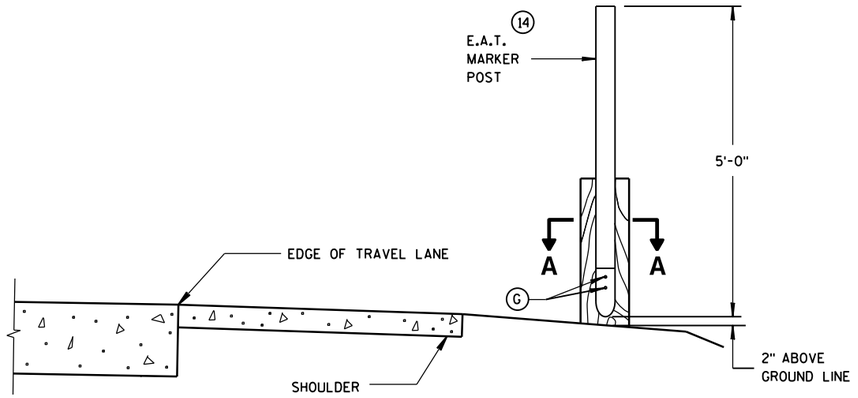
GENERIC REFLECTIVE SHEETING (13) (H)



FRONT VIEW

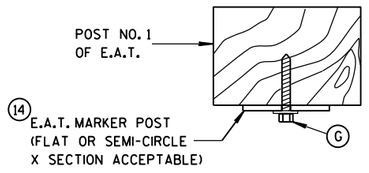
SIDE VIEW

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

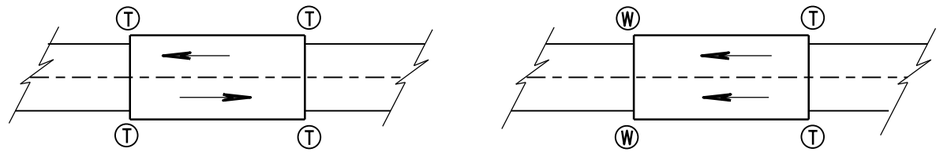
MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

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

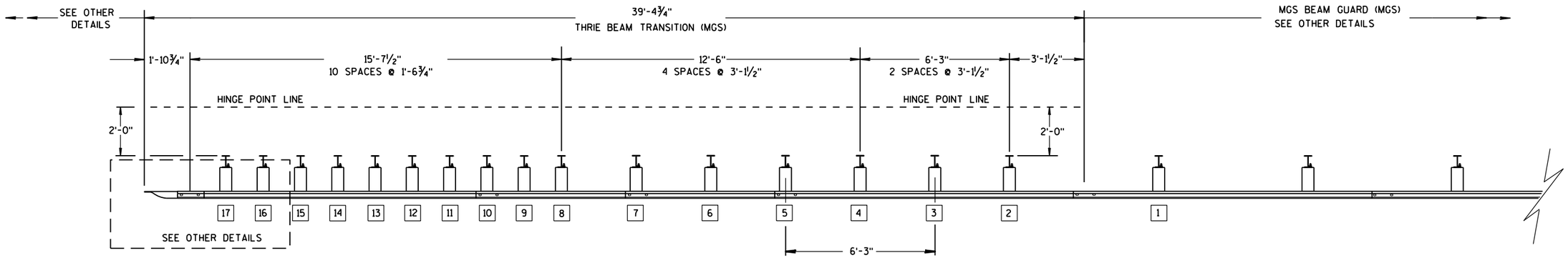
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

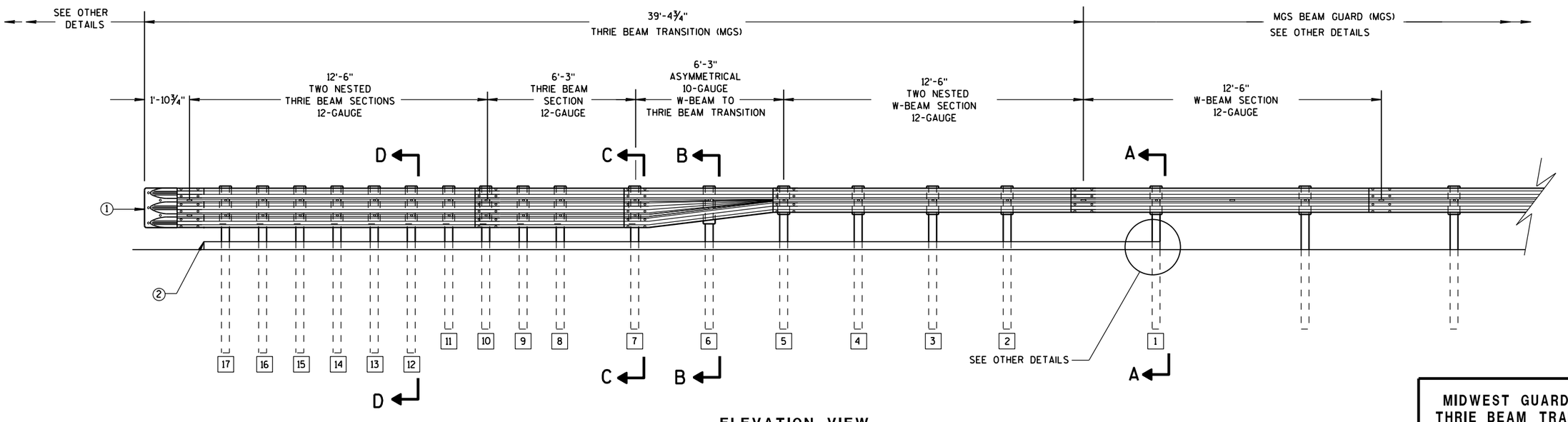
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

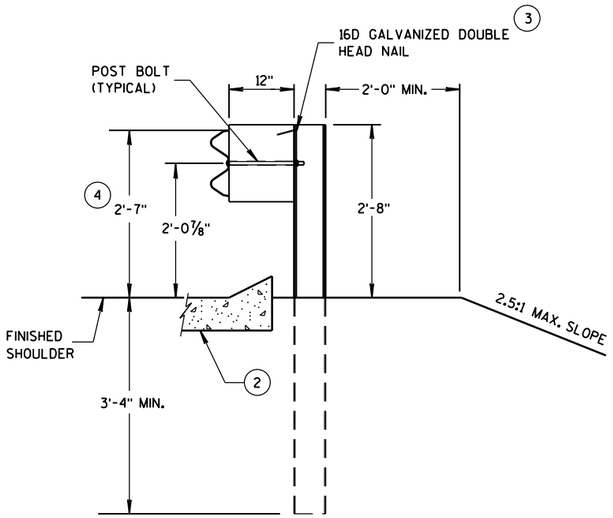
S.D.D. 14 B 45-4a

GENERAL NOTES

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

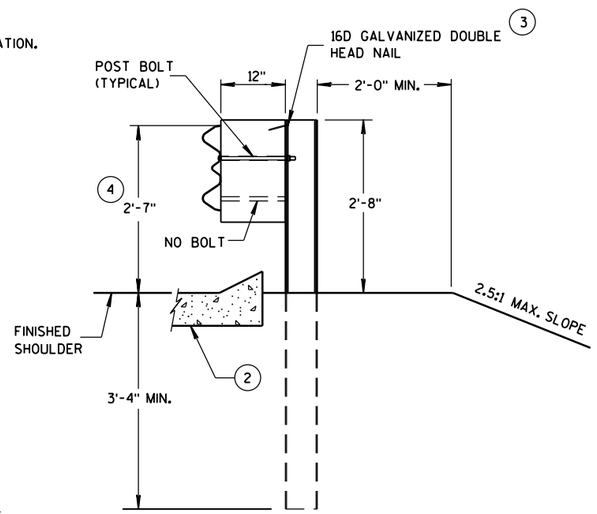
(3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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



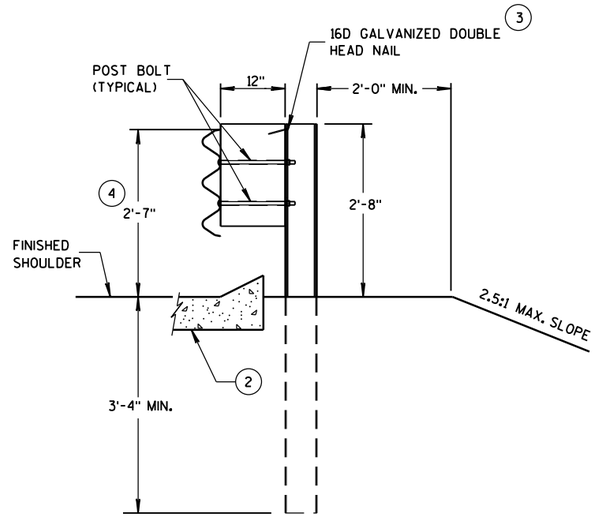
SECTION A-A

POSTS 1-5



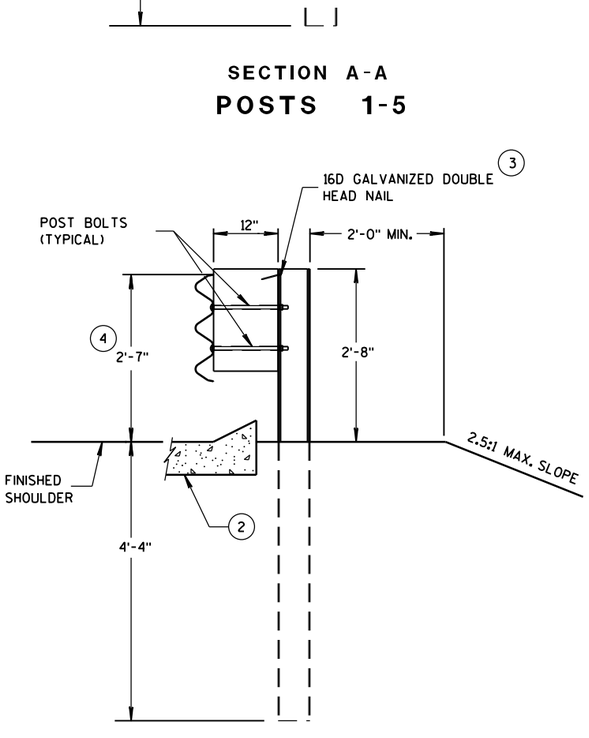
SECTION B-B

POST 6



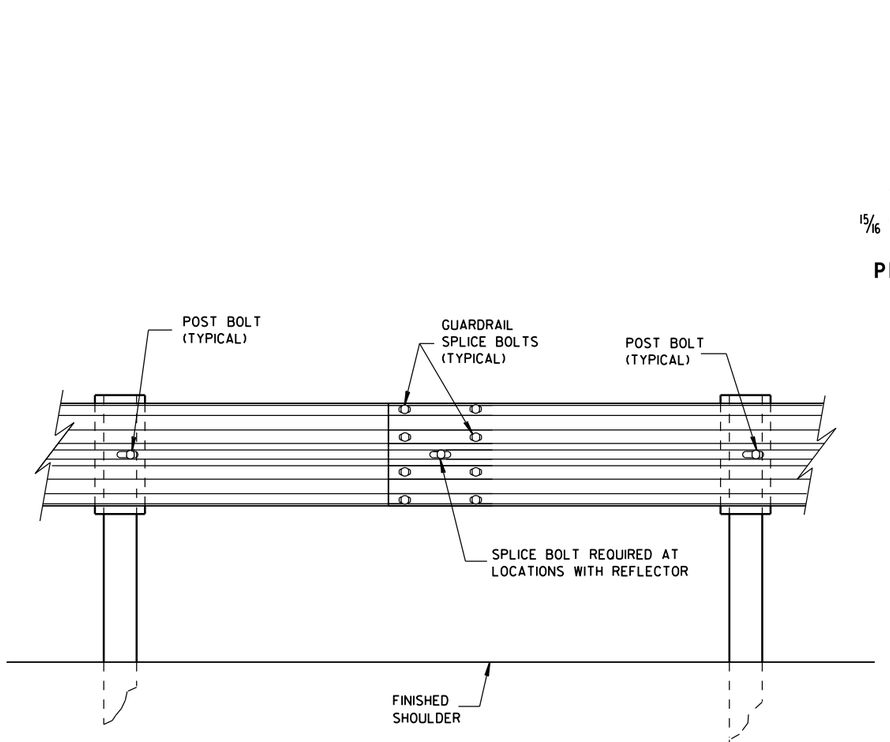
SECTION C-C

POSTS 7-11



SECTION D-D

POSTS 12-17



SPLICE DETAIL

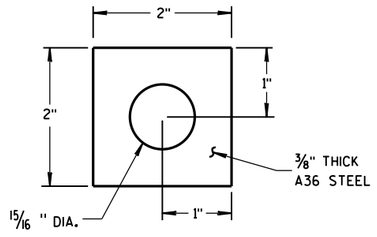
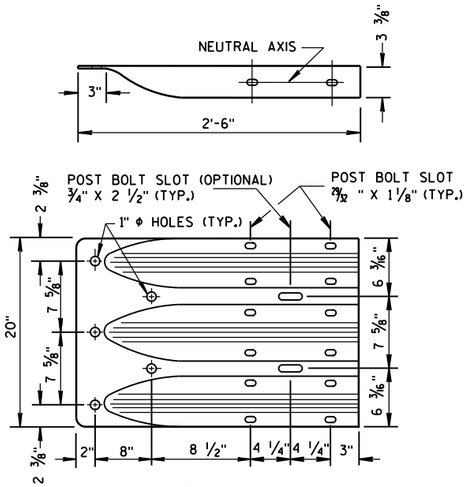
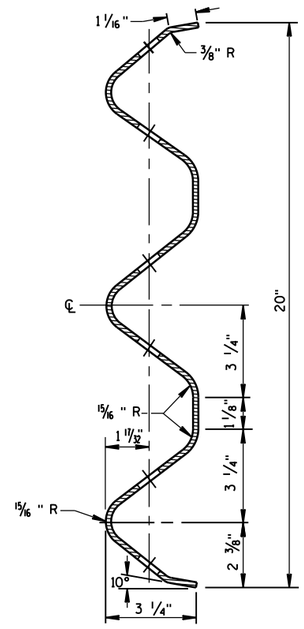


PLATE WASHER DETAIL



THRIE BEAM TERMINAL CONNECTOR



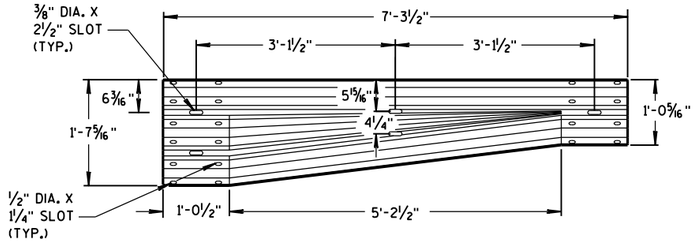
SECTION THRU THRIE BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

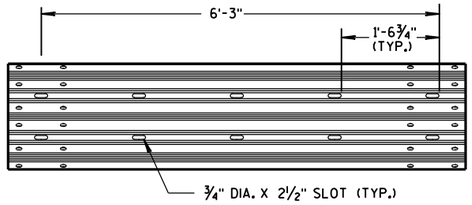
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

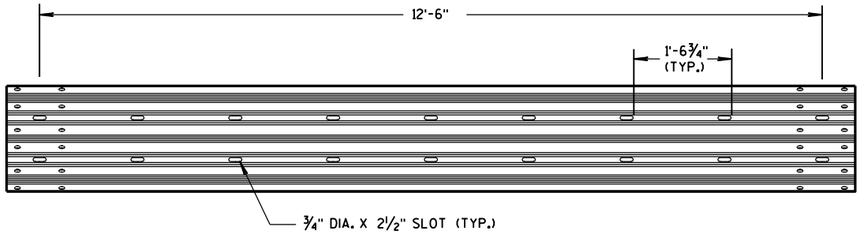
S.D.D. 14 B 45-4b



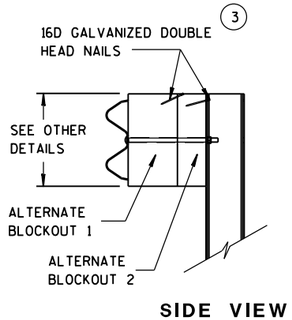
W-BEAM TO THRIE BEAM TRANSITION SECTION



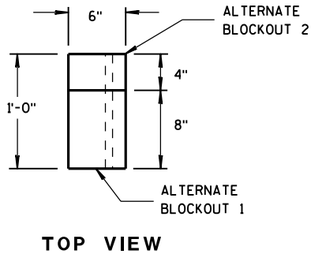
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

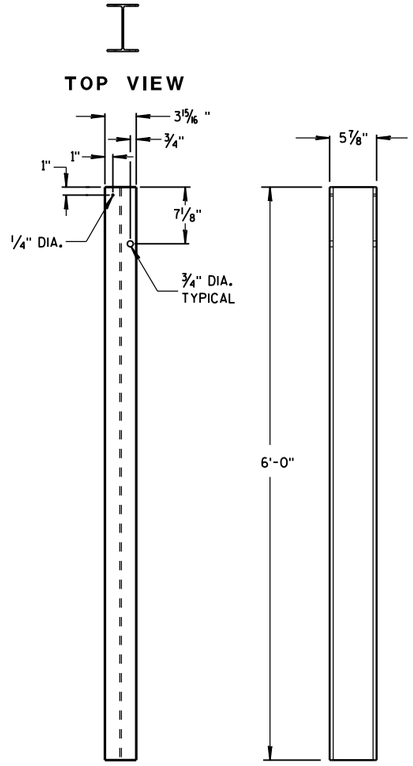


SIDE VIEW

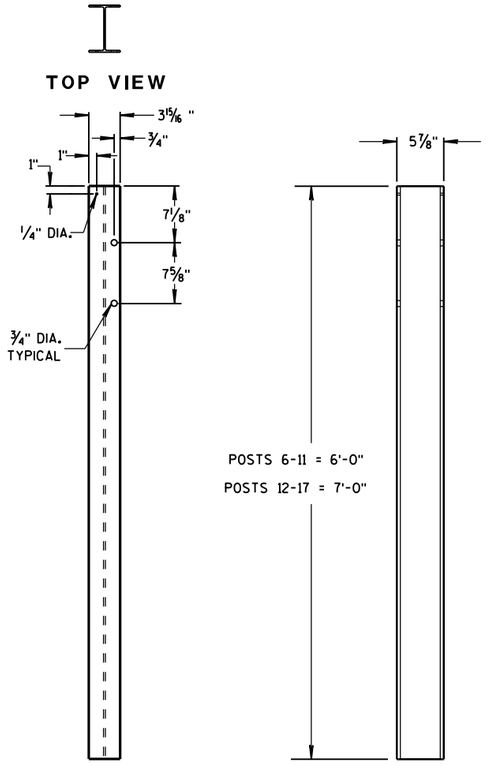


TOP VIEW

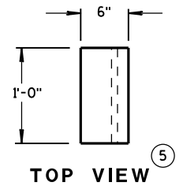
ALTERNATE WOOD BLOCKOUT DETAIL



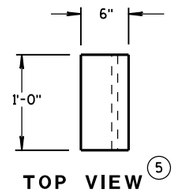
STEEL POSTS 1-5



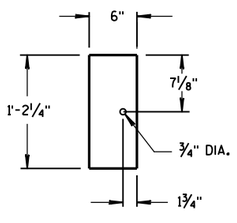
STEEL POSTS 6-17



TOP VIEW

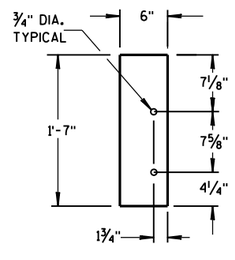


TOP VIEW



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)

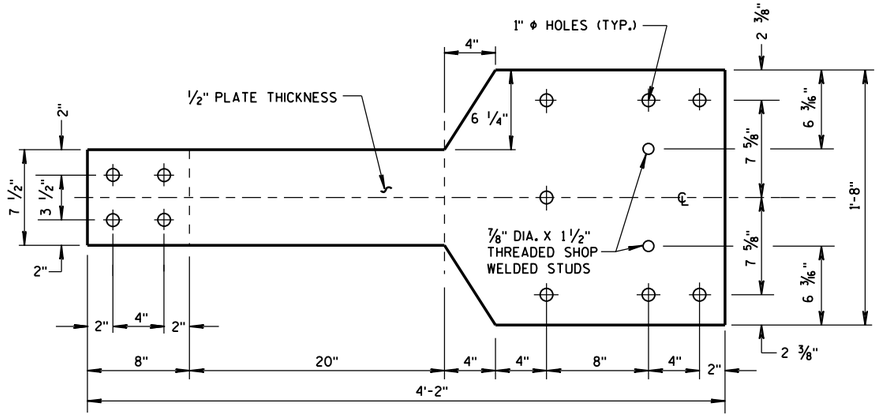
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

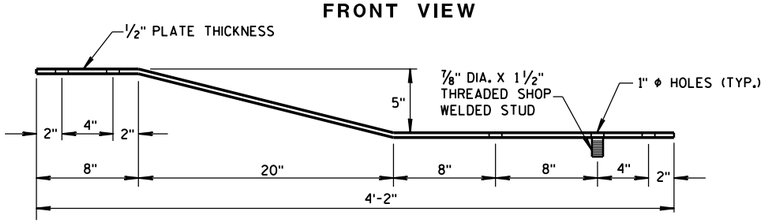
S.D.D. 14 B 45-4c

GENERAL NOTES

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

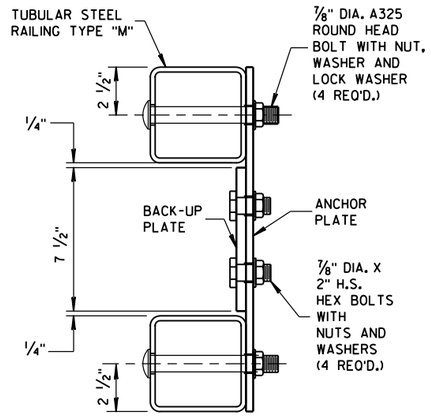


FRONT VIEW

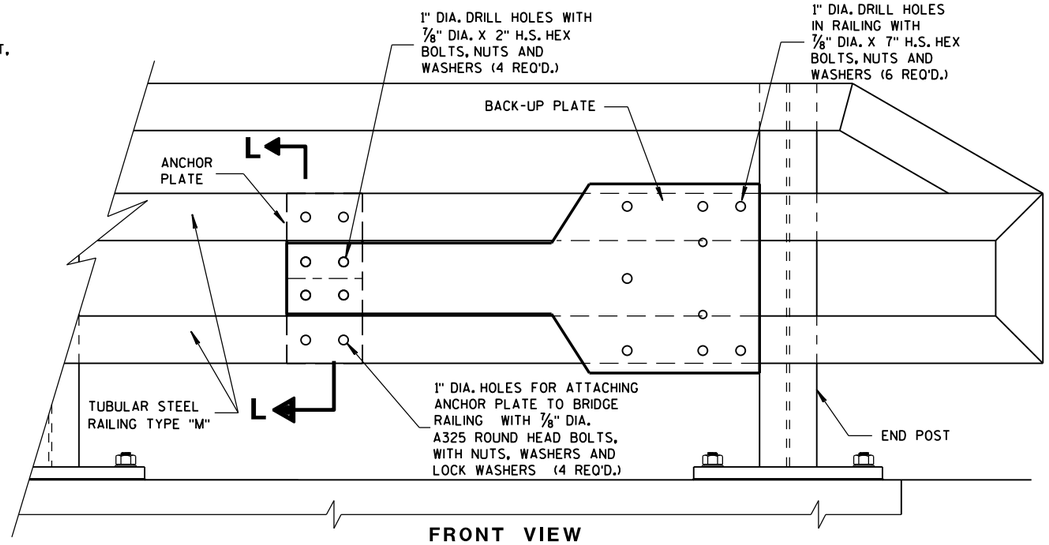


PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

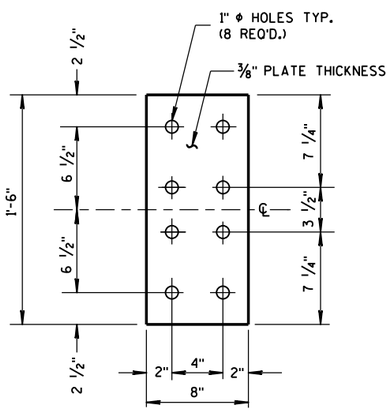


SECTION L-L



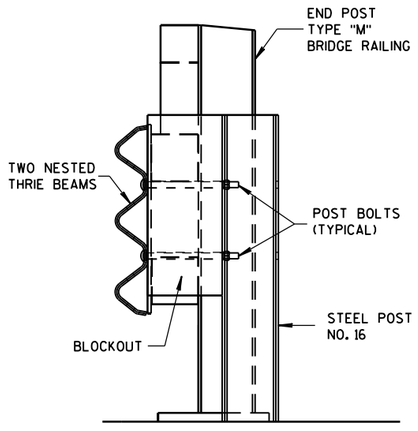
FRONT VIEW

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

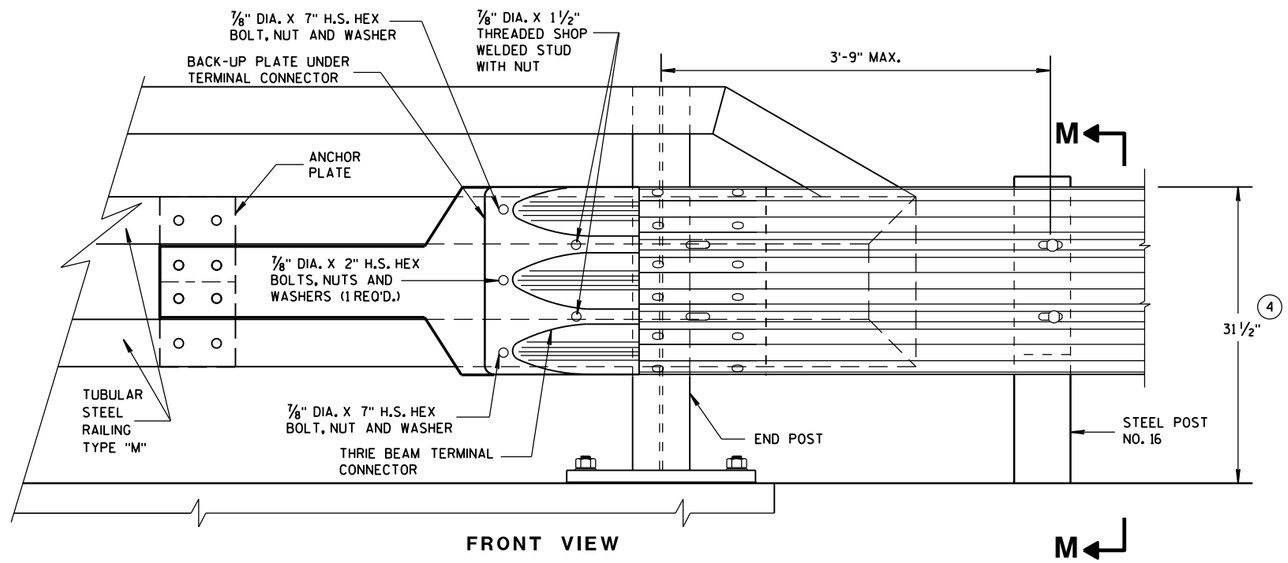


FRONT VIEW

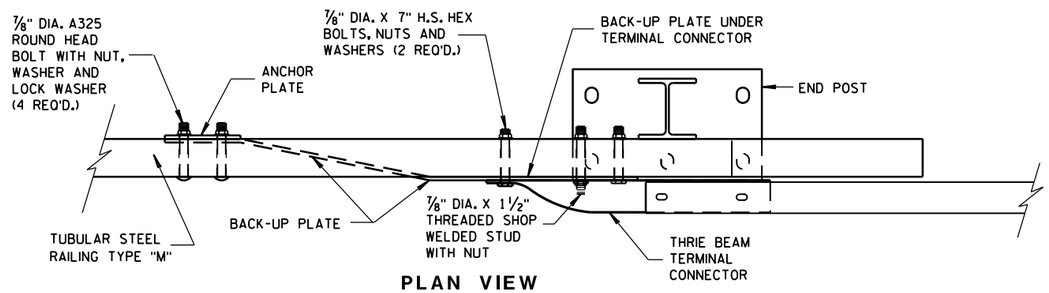
ANCHOR PLATE DETAIL, TYPE "M"



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

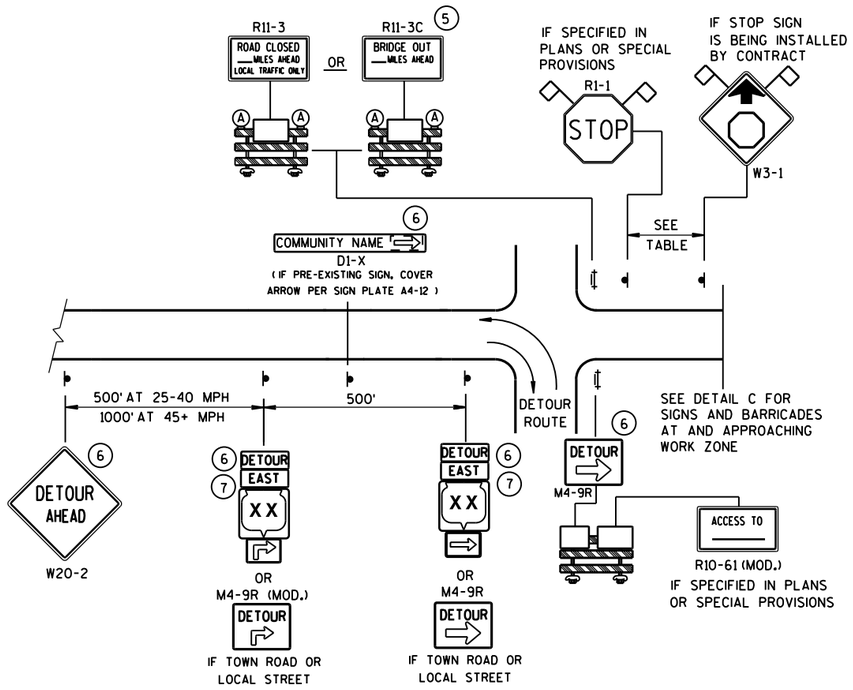
APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

6

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

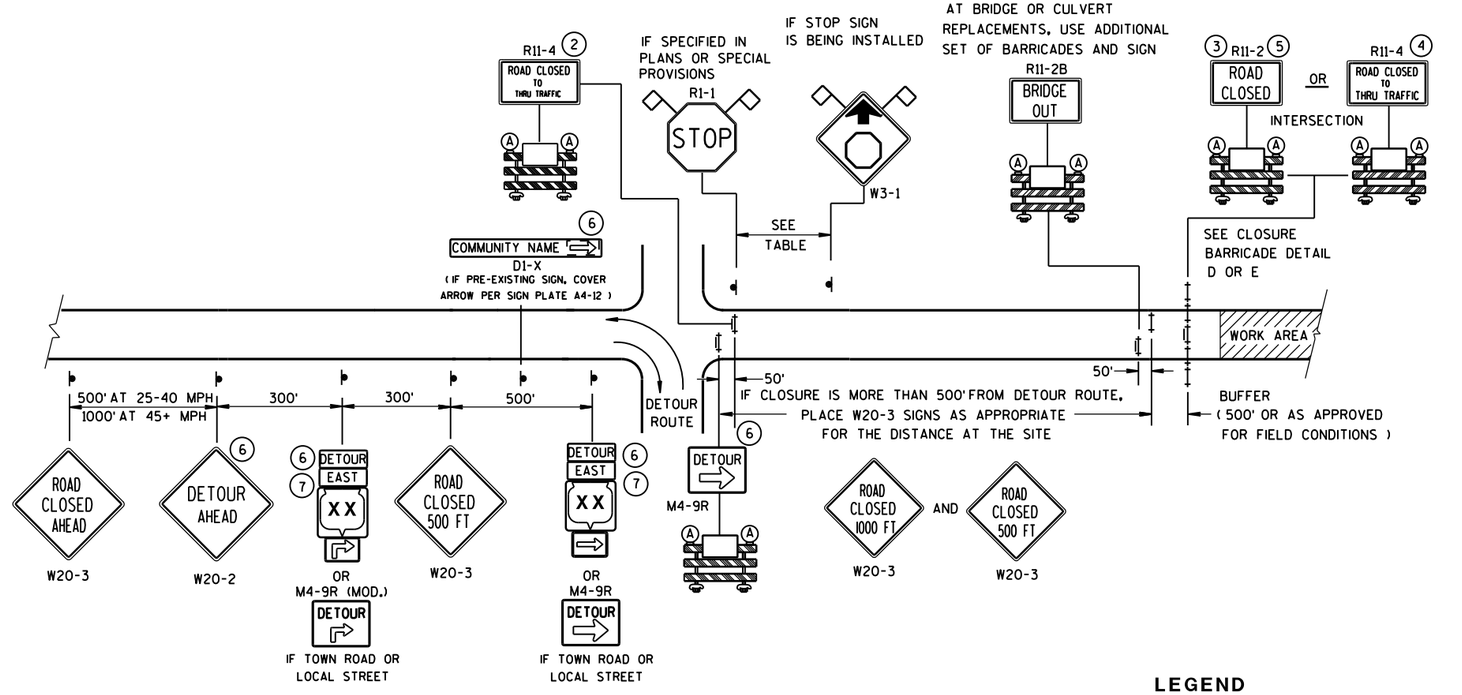
6

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



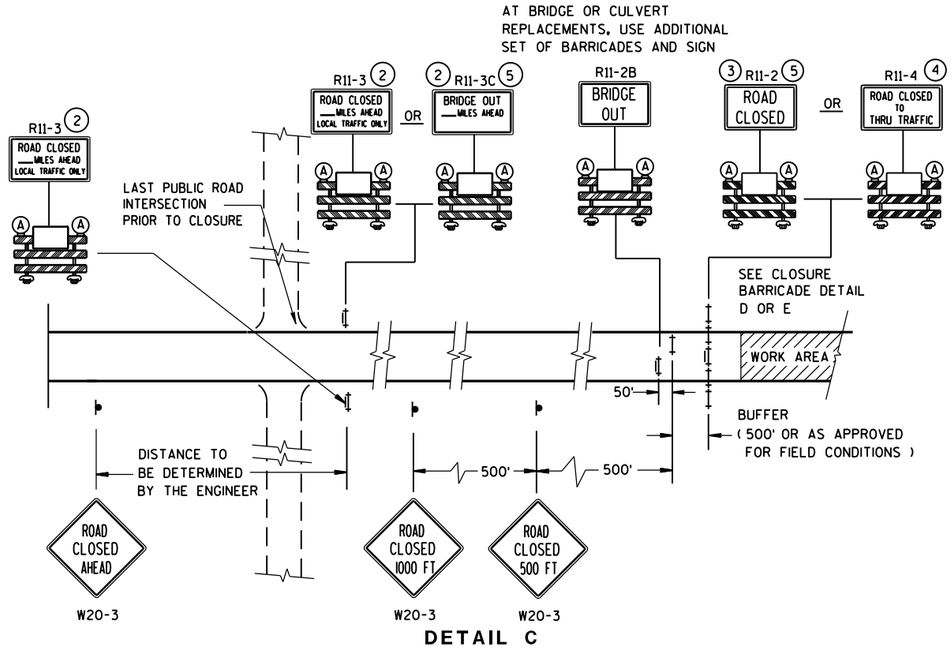
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

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

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)

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

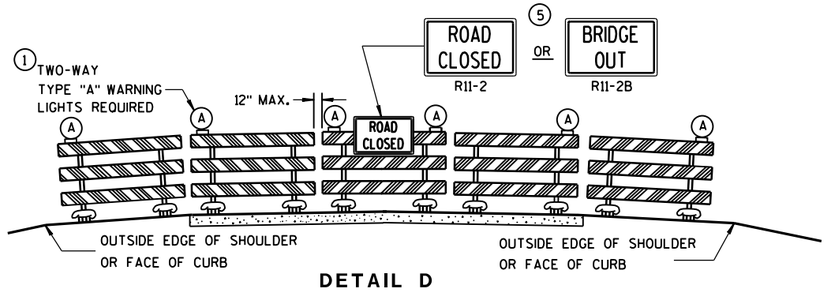
8/2013 DATE

/S/ Travis Feltes
STATE TRAFFIC ENGINEER

FHWA

6

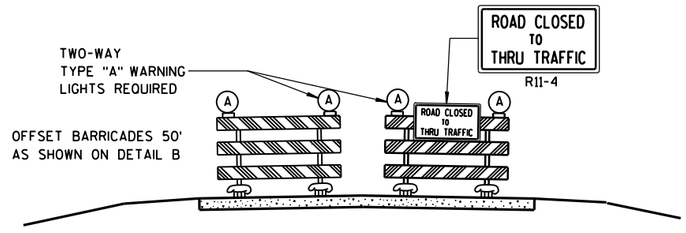
S.D.D. 15 C 2-5a



DETAIL D

ROAD CLOSURE BARRICADE DETAIL

APPROACH VIEW



DETAIL E

LANE CLOSURE BARRICADE DETAIL

APPROACH VIEW

SEE SDD 15C2-SHEET "**a**" FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
- R11-2 SHALL BE 48" X 30".
- R11-3, R11-4 AND R10-61 SHALL BE 60" X 30".
- M4-9 SHALL BE 30" X 24".
- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1-1 SHALL BE 36" X 36".

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

(2) THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT INTERSECTION.

(3) FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL D.

(4) FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE LANE CLOSURE BARRICADE DETAIL E.

(5) FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11-2 AND R11-3 SIGNS.

(6) INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.

(7) "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

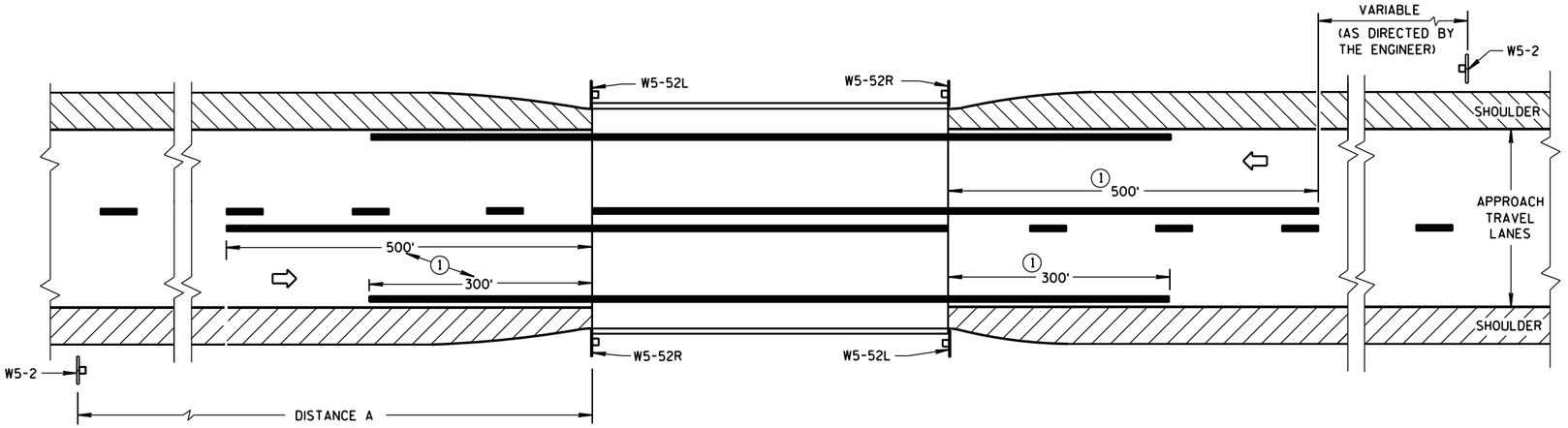
8/2013 — DATE

/S/ Travis Feltes — STATE TRAFFIC ENGINEER

FHWA

6

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



GENERAL NOTES

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

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

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

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

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

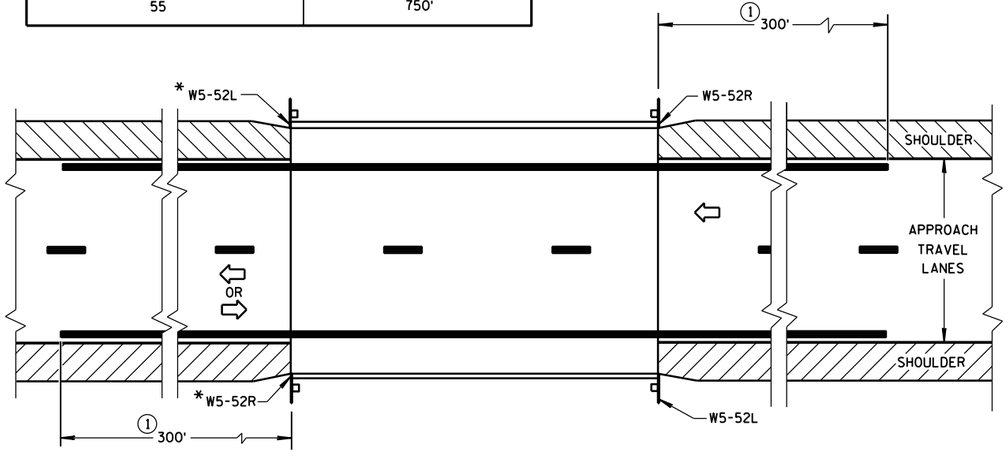
DISTANCE TABLE

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

SITUATION 1

WARRANTING CRITERIA:

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

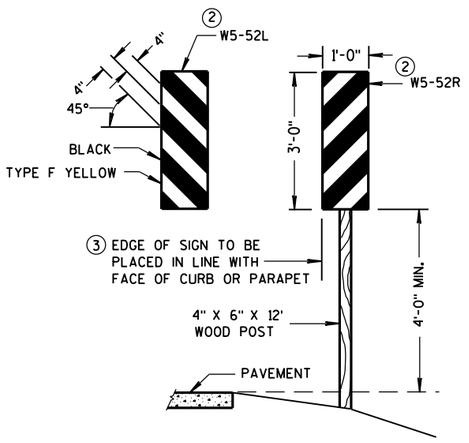


*OMIT ON ONE-WAY TRAVELLED WAYS

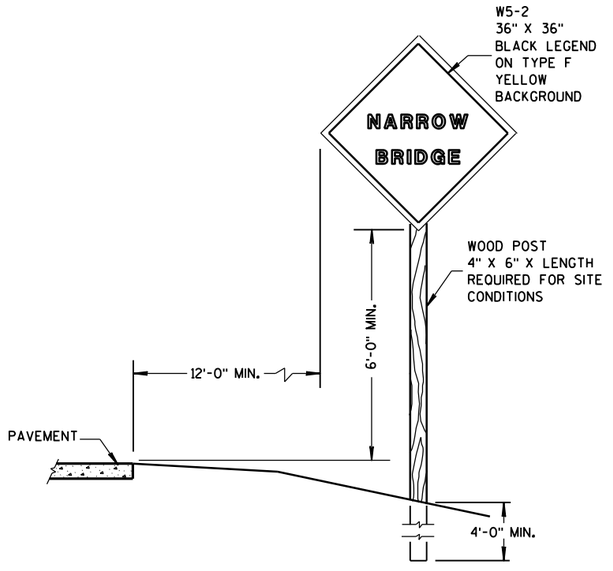
SITUATION 2

WARRANTING CRITERIA:

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



OBJECT MARKER PLACEMENT



SIGN PLACEMENT

SIGNING & MARKING
FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

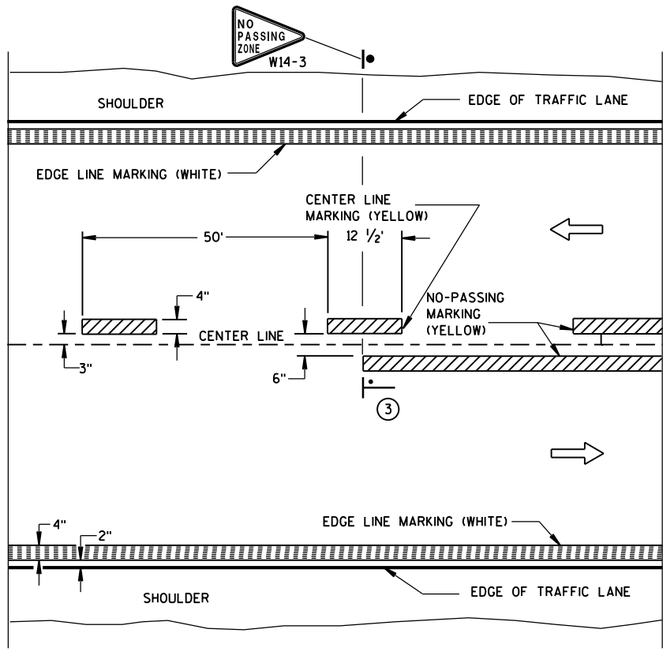
3-2014 DATE

/S/ Travis Feltes
STATE TRAFFIC ENGINEER

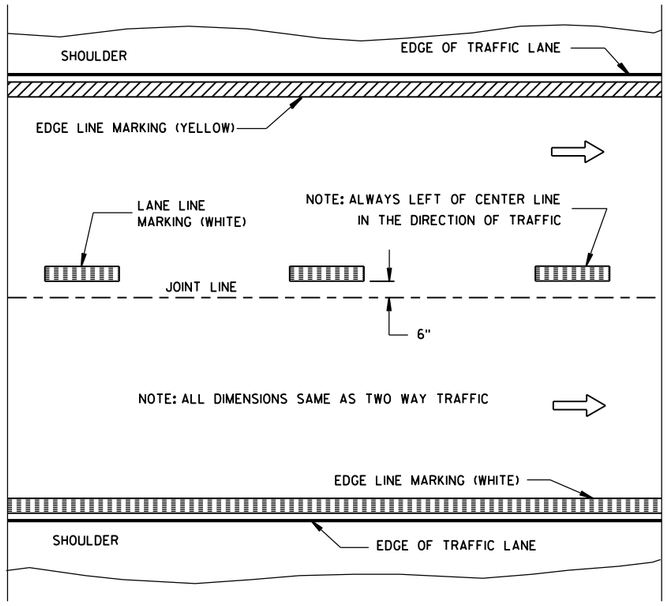
FHWA

6

S.D.D. 15 C 6-7

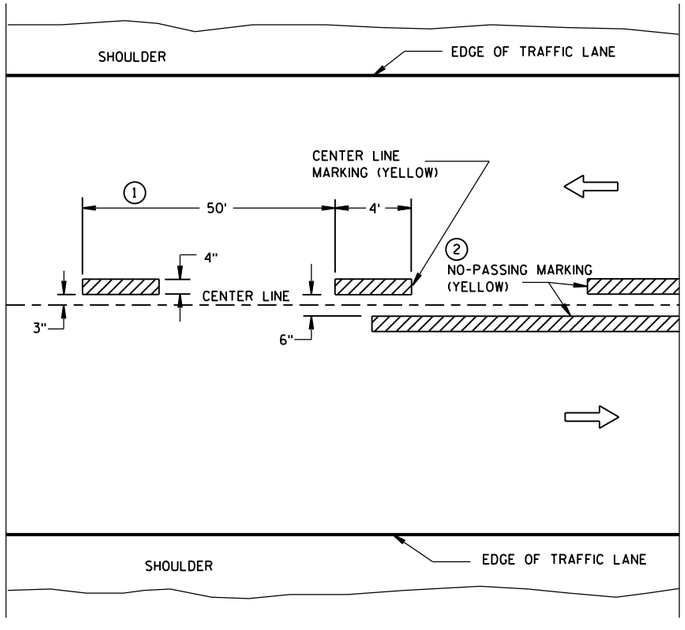


TWO WAY TRAFFIC

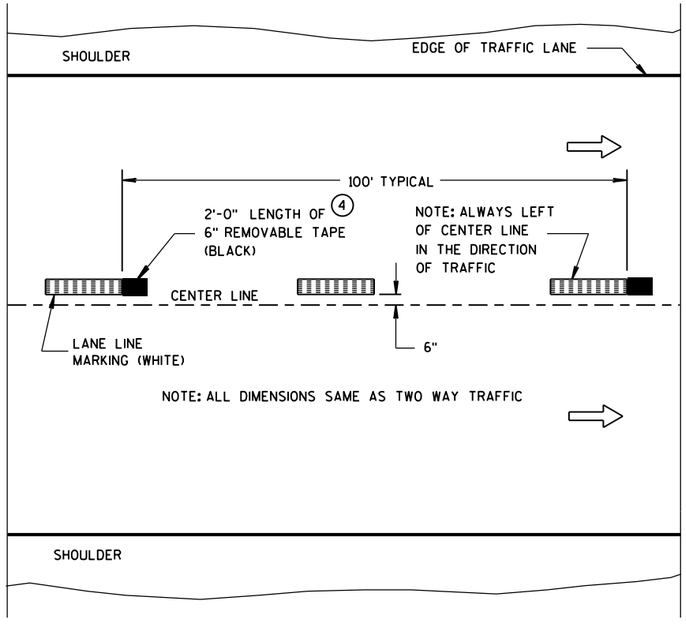


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY (INTERMEDIATE) PAVEMENT MARKING

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

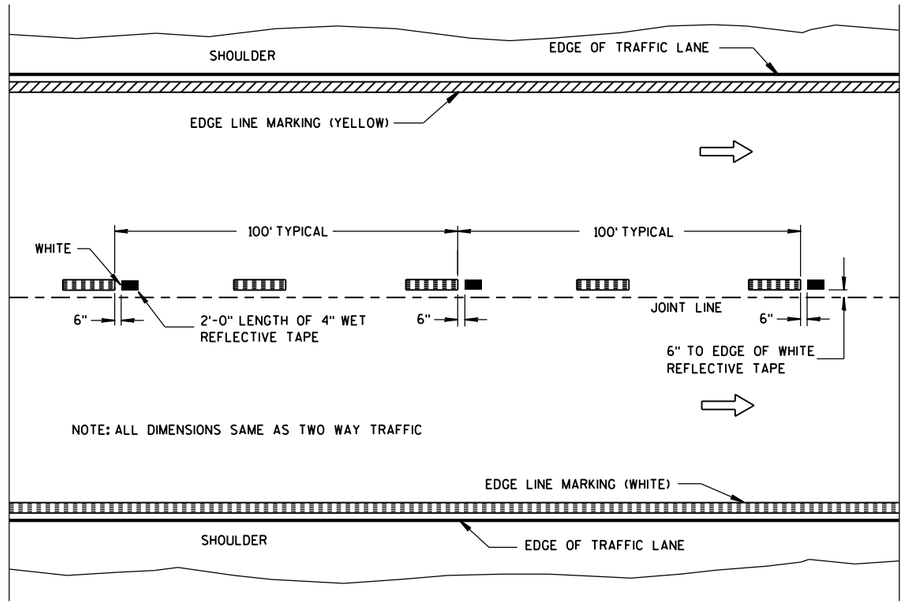
GENERAL NOTES

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

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

NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL



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

LEGEND

"T" MARKING

POST MOUNTED SIGN

PAVEMENT MARKING (MAINLINE)

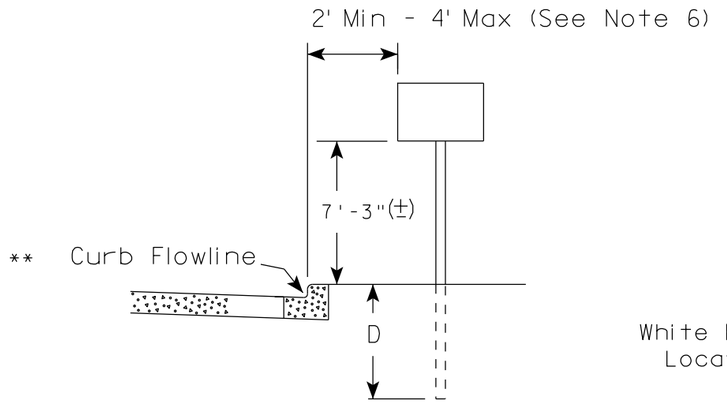
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

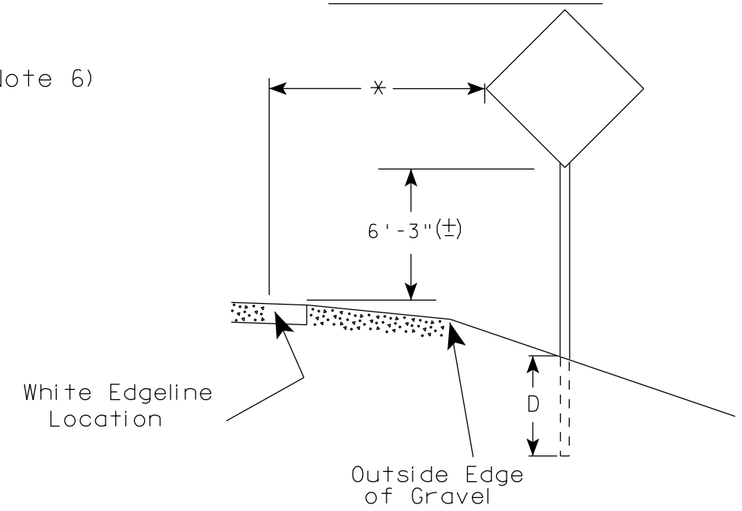
6

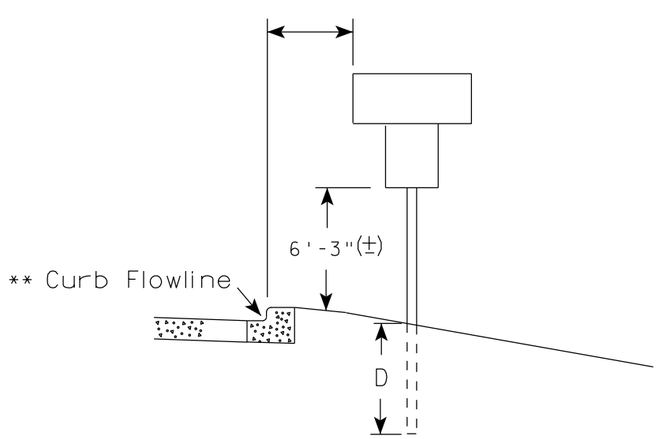
S.D.D. 15 C 8-16a

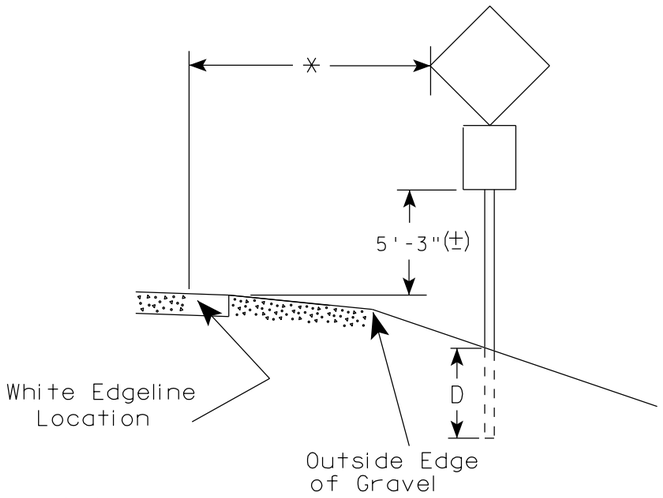
URBAN AREA



RURAL AREA (See Note 2)







GENERAL NOTES

1. Signs wider than 4 feet, 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on barrier wall, see A4-10 sign plate.
3. For expressways and freeways, mounting height is 7'- 3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
4. Minimum mounting height for J assemblies (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'

** 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.

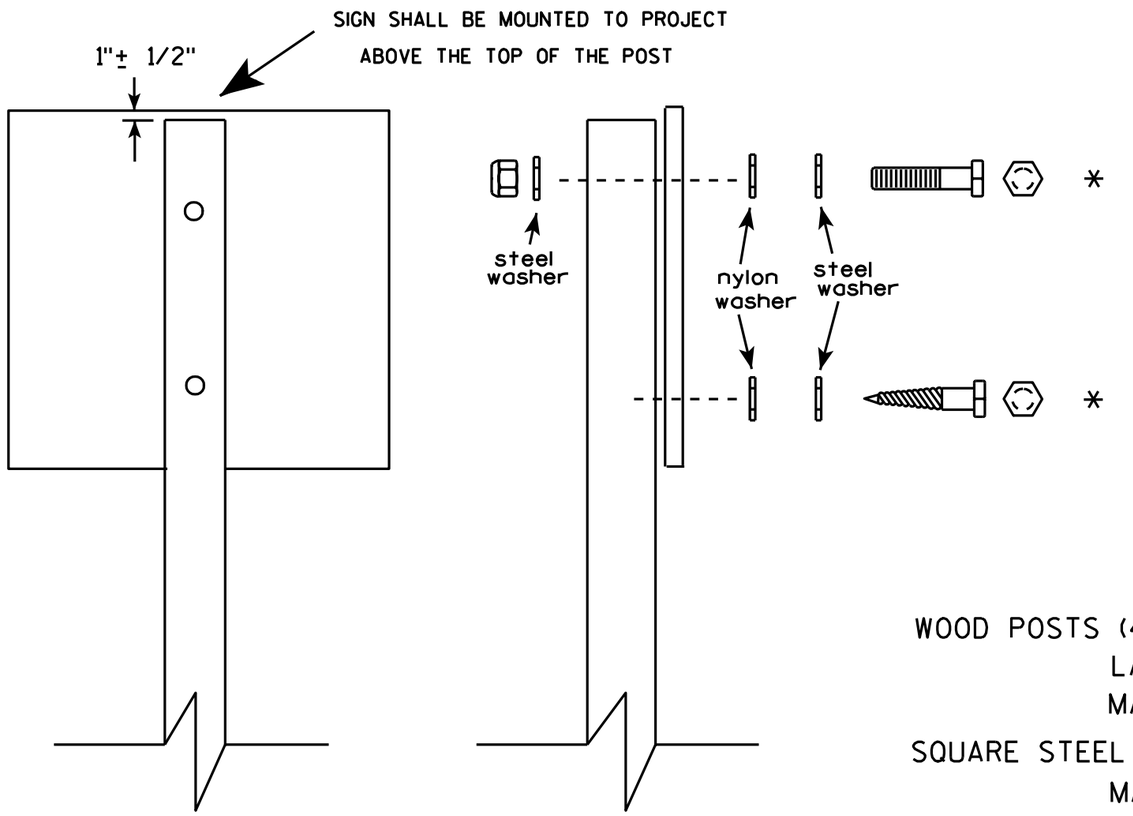
TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 11/12/14 PLATE NO. A4-3.19

PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E



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

a. Hot dip galvanized in accordance with ASTM Designation: A 153, Class D, or SC 3

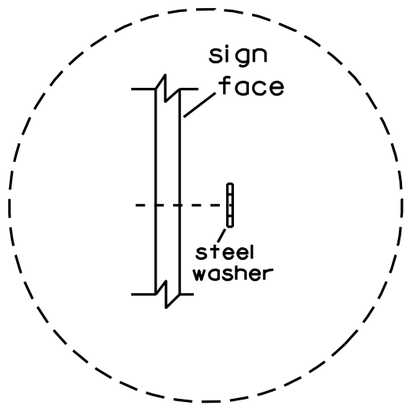
b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

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

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

SQUARE STEEL POSTS (2" x 2")
MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts
RIVETS - 9/32 " (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON for all Type H signs.



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

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

ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

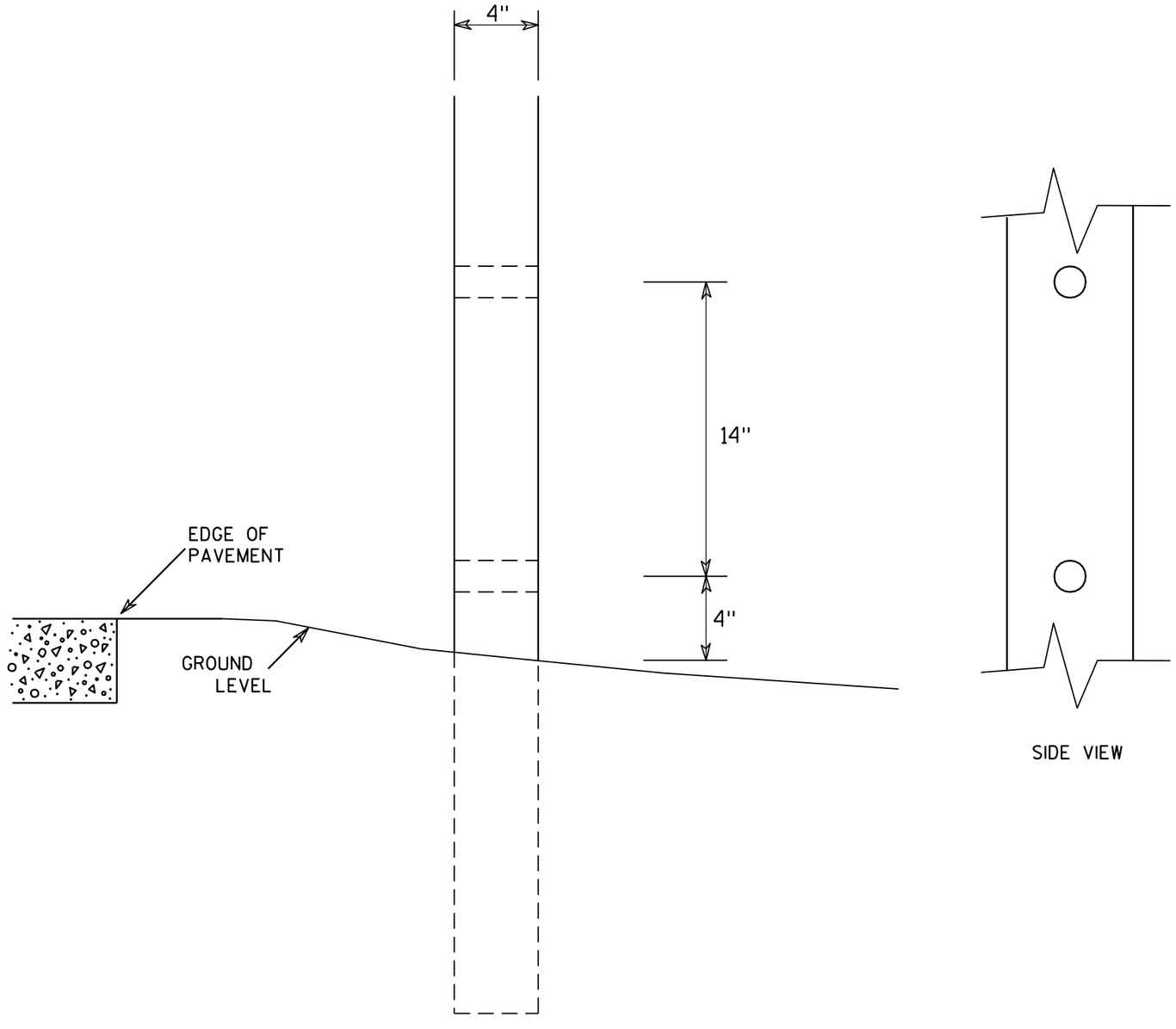
DATE 3/23/10 PLATE NO. A4-8.7

7

7

PROJECT NO:

SHEET NO: 30 E



SIDE VIEW

GENERAL NOTES

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

7

7

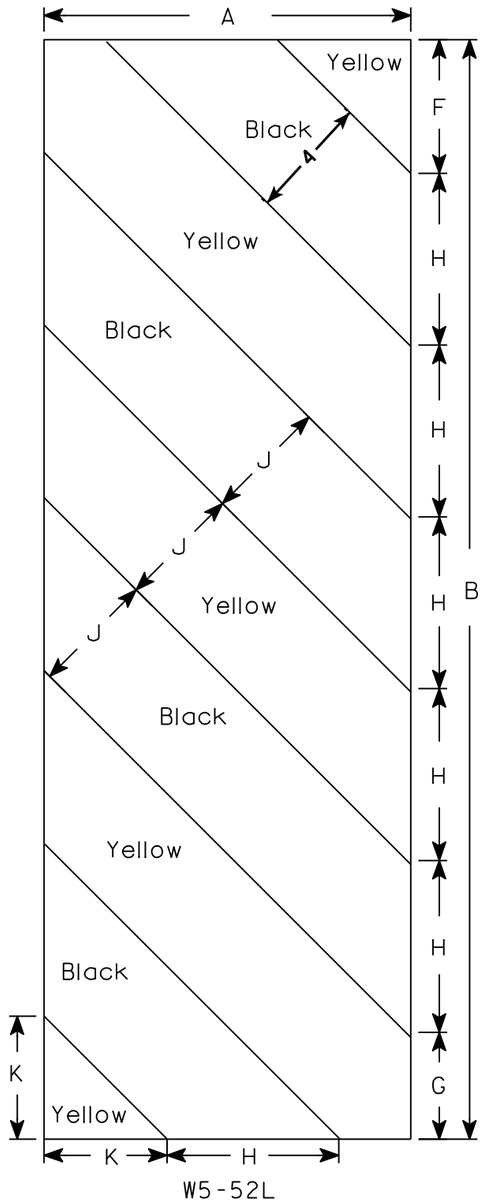
4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

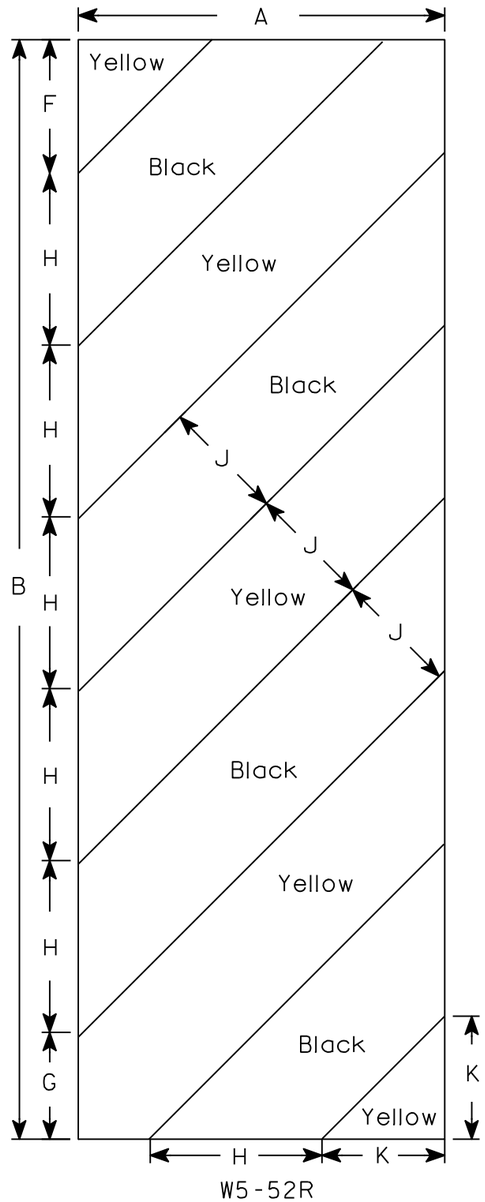
APPROVED Chester J Spang
for State Traffic Engineer

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

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 31	E



W5-52L



W5-52R

NOTES

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

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

STANDARD SIGN

W5-52L & W5-52R

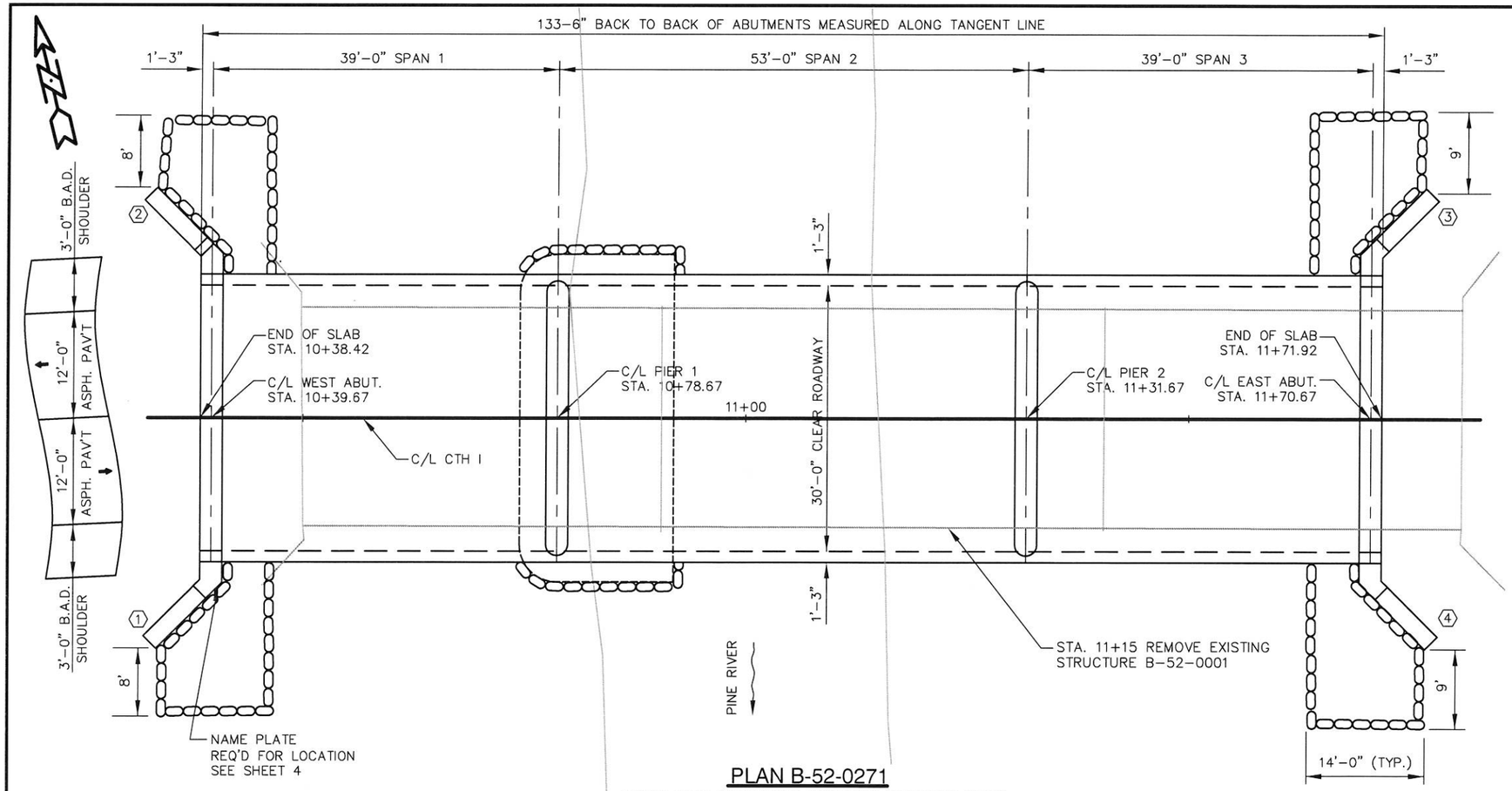
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

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

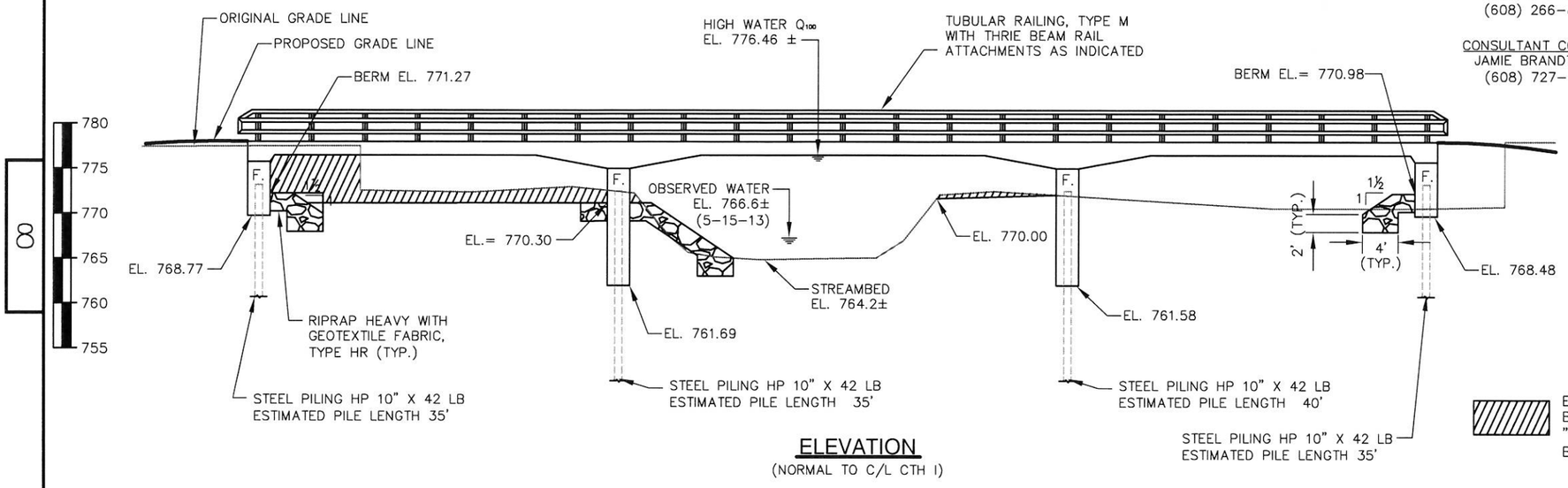
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 32	E

STATE PROJECT NUMBER
5186-00-70



PLAN B-52-0271

(THREE SPAN REINFORCED CONCRETE HAUNCHED SLAB)



ELEVATION

(NORMAL TO C/L CTH I)

EXCAVATE AS INDICATED, TO BE INCLUDED IN THE BID ITEM "EXCAVATION FOR STRUCTURES BRIDGES B–52–0271"

DESIGN DATA

LIVE LOAD:
- DESIGN LOAD — HL–93
- INVENTORY RATING FACTOR — 1.27
- OPERATING RATING FACTOR — 1.64
- WISCONSIN STANDARD PERMIT VEHICLE RATING — 250 KIPS

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

ULTIMATE DESIGN STRESSES:
- CONCRETE MASONRY, SLAB — f'c = 4,000 p.s.i
- ALL OTHER — f'c = 3,500 p.s.i
- HIGH STRENGTH BAR STEEL REINFORCEMENT — fy = 60,000 p.s.i

FOUNDATION DATA:

ABUTMENTS AND PIER SHALL BE SUPPORTED ON PILING STEEL 10–INCH X 42 LB. PILE DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 110 TONS PER PILE FOR ABUTMENTS AND 180 TONS PER PILE FOR PIER AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATE 35 FT PILE LENGTHS AT BOTH ABUTMENT, 35 FT PILE LENGTHS AT THE PIER 1, AND 40 FT PILE LENGTHS AT PIER 2.

*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 THE MODIFIED GATES DYNAMIC FORMULA TO DETERMINE THE DRIVEN PILE CAPACITY.

TRAFFIC DATA:
- A.A.D.T (2015) — 340
- A.A.D.T (2035) — 380
- DESIGN SPEED — 40 M.P.H.

HYDRAULIC DATA:
- Q_{100} — 7,500 c.f.s.
- Q_{100} (THRU BRIDGE) — 3,447 c.f.s.
- Q_{100} (ROAD) — 4,053 c.f.s.
- DRAINAGE AREA — 61.9 SQ. MI.
- WATERWAY AREA @ Q_{100} — 783 SQ. FT.
- VELOCITY — 4.64 f.p.s.
- HIGH WATER $_{100}$ ELEVATION — 776.46 FT.
- SCOUR CRITICAL CODE — 5
- Q_2 — 1,200 c.f.s.
- Q_2 ELEVATION — 772.41 FT.

DESIGN ROADWAY FREQUENCY:
- OVERTOPPING FREQUENCY — 20 YEARS
- Q20 — 4,600 CFS
- HIGH WATER 50 ELEV. — 774.01

LIST OF DRAWINGS

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

CONSULTANT CONTACT:
JAMIE BRANDT, P.E.
(608) 727–2146

WISCONSIN PROFESSIONAL ENGINEER JAMIE L. BRANDT E-37727 REEDSBURG WIS.
9/23/2015

NO	DATE	REVISION	BY

ORIGINAL PLANS PREPARED BY: TEAM ENGINEERING

STATE OF WISCONSIN DEPARTMENT OF TRANSPORATION

ACCEPTED William C. Dreher SDR 09/25/15
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE B-52-0271

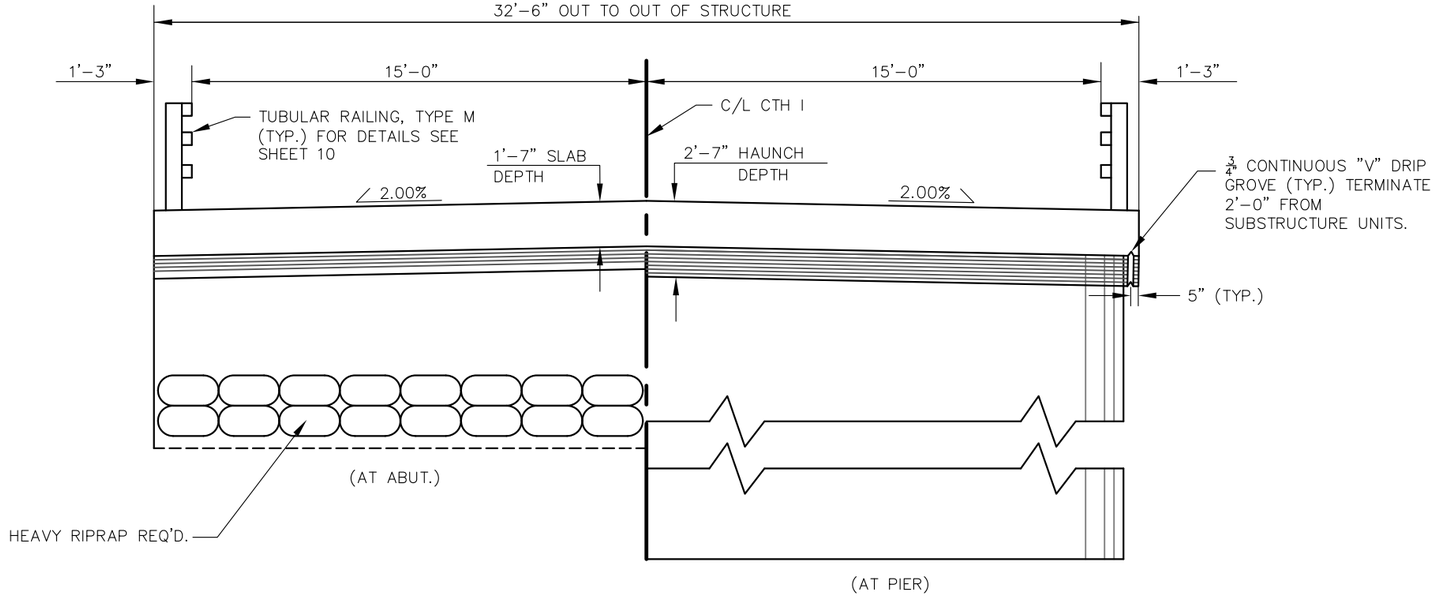
CTH I OVER THE PINE RIVER

COUNTY RICHLAND	TOWN ROCKBRIDGE
DESIGN SPEC. AASHTO LRFD DESIGN SPEC. 5TH EDITION	
DESIGNED BY JLB	DESIGN CHECKED TJK
DRAWN BY BAS	PLANS CHECKED JLB

GENERAL PLAN

SHEET 1 OF 11

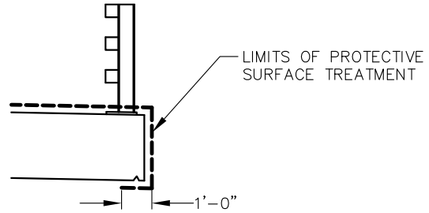
STATE PROJECT NUMBER
5186-00-70



CROSS SECTION THRU ROADWAY

(LOOKING EAST)

BENCHMARKS ⊕ NAVD 88			
NO.	STA./OFFSET	DESCRIPTION	ELEV.
3	13+09, 18' RT.	3/4–INCH REBAR	774.00
4	5+35, 23' RT.	3/4–INCH REBAR	774.05
5	10+25, 11' RT.	DISC IN SW BRIDGE CURB	777.93



PROTECTIVE SURFACE TREATMENT DETAIL

GENERAL NOTES

DRAWING SHALL NOT BE SCALED.

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

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

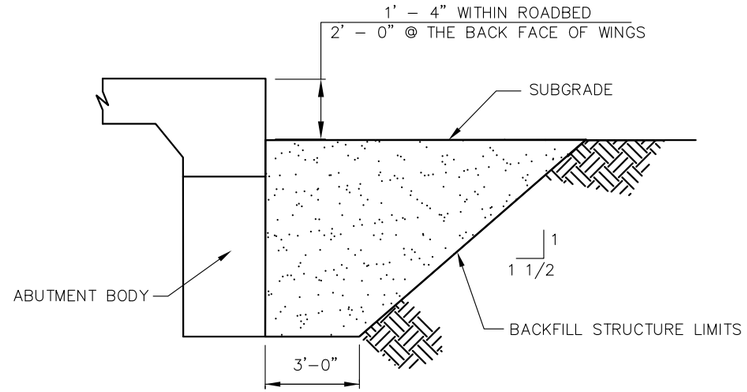
THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH HEAVY RIPRAP AND GEOTEXTILE FABRIC TO THE EXTENT SHOWN ON SHEET 1 AND IN THE ABUTMENT DETAILS.

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

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

THE EXISTING STRUCTURE (B–52–0001) IS A THREE SPAN CONCRETE DECK, STEEL GIRDER STRUCTURE ON TIMBER ABUTMENTS & CONCRETE PIERS. THE OVERALL LENGTH IS 130' AND THE OVERALL WIDTH IS 22'.

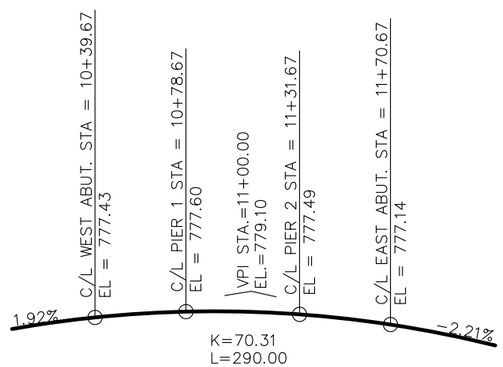


STRUCTURE BACKFILL DETAIL

(TYPICAL AT BOTH ABUTMENTS)

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	W. ABUT.	E. ABUT.	PIER 1	PIER 2	SUPER.	TOTALS
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STATION 11+15	LS	–	–	–	1	–	1
206.1000	EXCAVATION FOR STRUCTURE BRIDGES B–52–0271	LS	–	–	–	1	–	1
210.0100	BACKFILL STRUCTURE	CY	125	125	–	–	–	250
502.0100	CONCRETE MASONRY BRIDGES	CY	34	34	49	49	259	425
502.3200	PROTECTIVE SURFACE TREATMENT	SY	–	–	–	–	560	560
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	2450	2450	1705	1705	–	8310
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1288	1288	63	63	65688	68390
513.4061	RAILING TUBULAR TYPE M (B–52–0271)	LF	–	–	–	–	–	272
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	6	6	–	–	–	12
550.1100	PILING STEEL HP 10–INCH X 42 LB	LF	245	245	250	280	–	1020
606.0300	RIPRAP HEAVY	CY	44	46	50	–	–	140
612.0406	PIPE UNDERDRAIN WRAPPED 6–INCH	LF	95	95	–	–	–	190
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	105	105	110	–	–	320
	NON–BID ITEMS							
	FILLER	SIZE						½" & ¾"



PROFILE GRADE LINE, C/L CTH I

NO	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORATION
STRUCTURES DESIGN SECTION

STRUCTURE B-52-0271

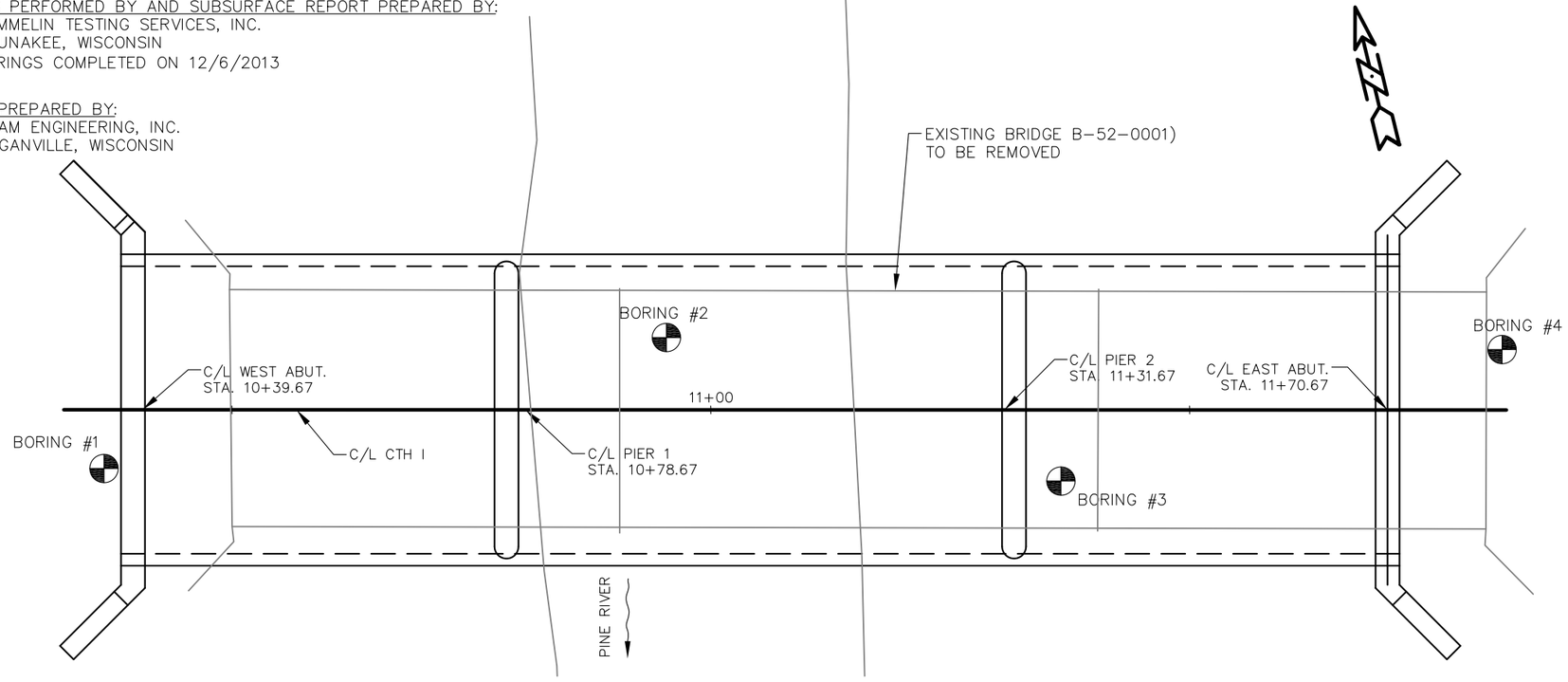
DRAWN BY BAS | PLANS CHECKED JLB

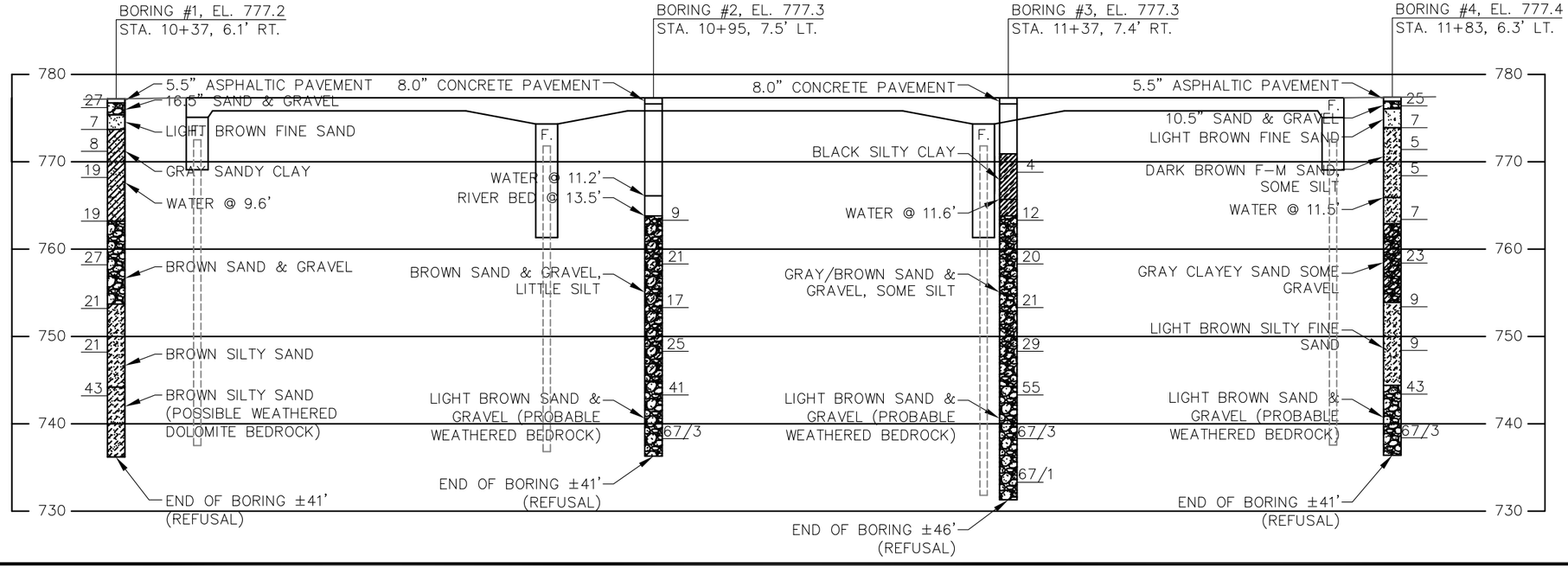
CROSS SECTION & QUANTITIES

SHEET 2 OF 11

BORINGS PERFORMED BY AND SUBSURFACE REPORT PREPARED BY:
NUMMELIN TESTING SERVICES, INC.
WAUNAKEE, WISCONSIN
BORINGS COMPLETED ON 12/6/2013

PLANS PREPARED BY:
TEAM ENGINEERING, INC.
LOGANVILLE, WISCONSIN





STATE PROJECT NUMBER

5186-00-70

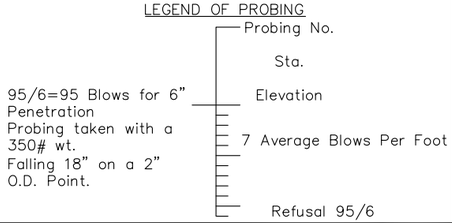
ABBREVIATIONS

VF – Very Fine F – Fine M – Medium C – Coarse
Ws – Weathered So – Sound

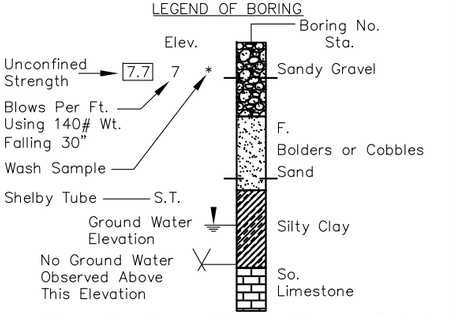
MATERIAL SYMBOLS

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 fraiction 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 Division of Highways 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 TRANSPORATION
STRUCTURES DESIGN SECTION

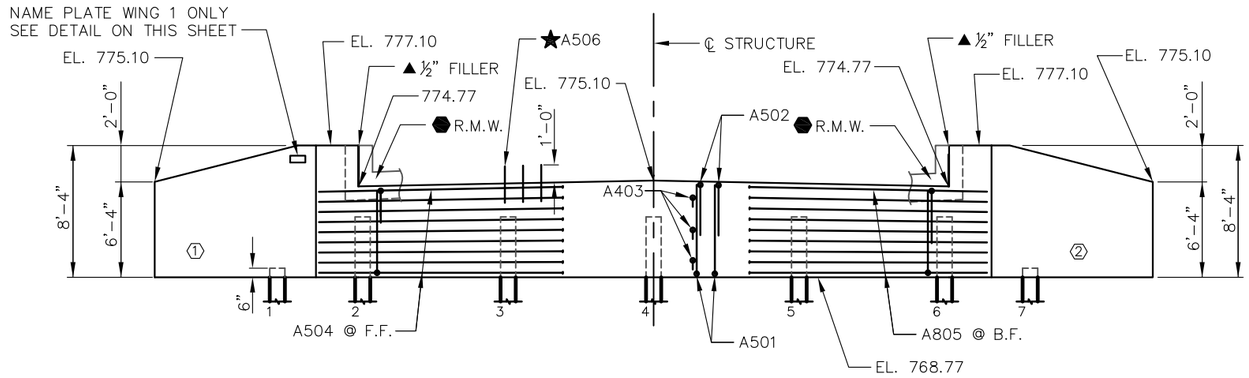
STRUCTURE B-52-0271

DRAWN BY BAS PLANS CHECKED JLB

SUBSURFACE EXPLORATION

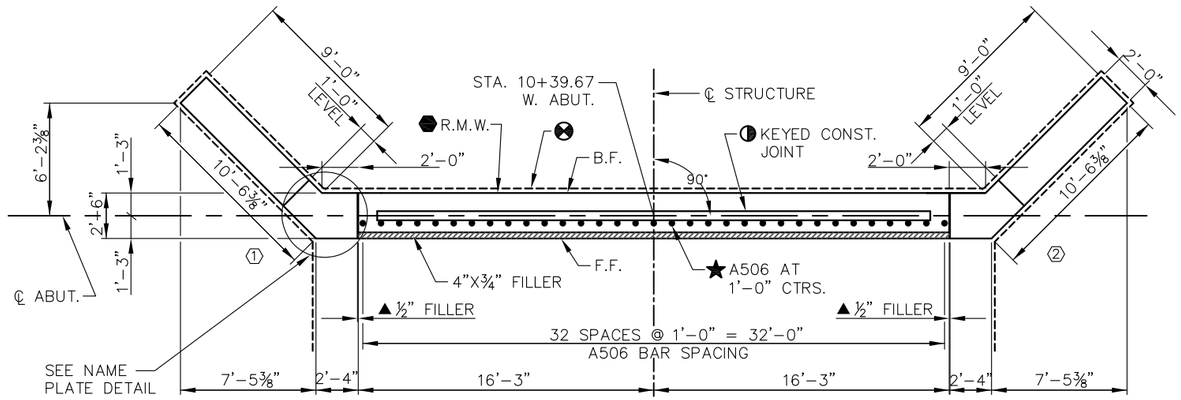
SHEET 3 OF 11

STATE PROJECT NUMBER
5186-00-70

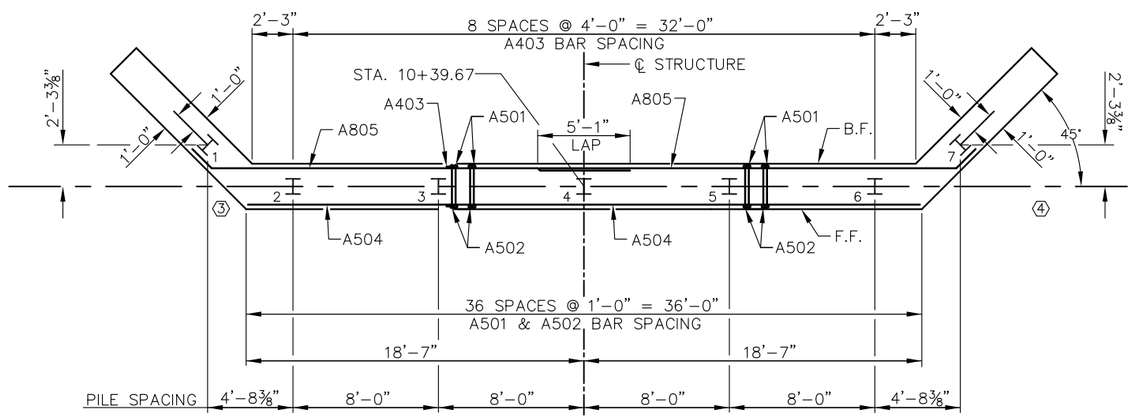


ELEVATION

(W. ABUT. – LOOKING WEST)

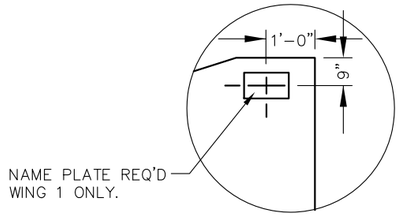


PLAN

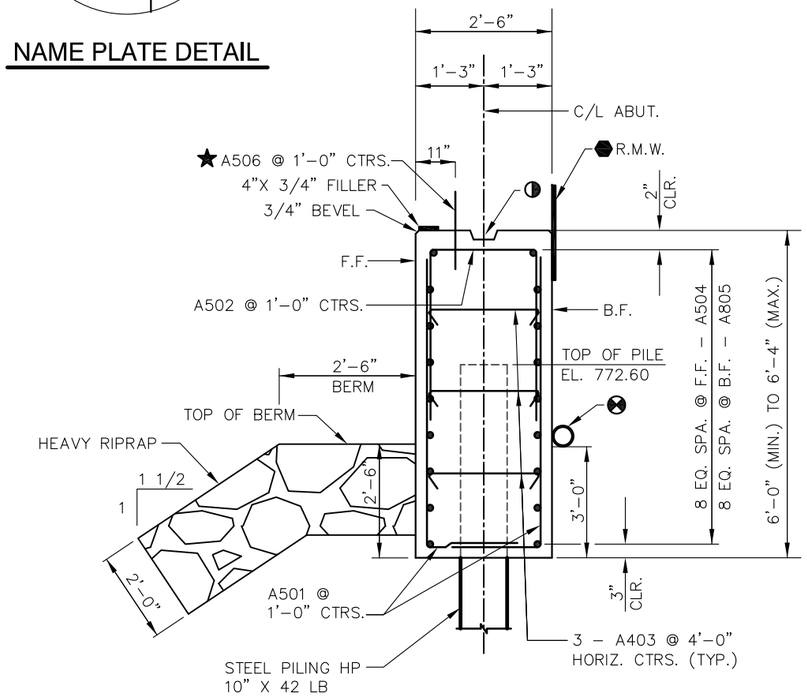


LAYOUT

- KEYED CONSTRUCTION JOINT FORMED BY A SURFACED, BEVELED 2"X6"
- 18" RUBBERIZED MEMBRANE WATERPROOFING (HORIZONTAL)
- ▲ 1/2" FILLER EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER WITH NON–STAINING GRAY, NON–BITUMINUOS JOINT SEALER. (1" DEEP & HOLD 1/8" BELOW SURFACE OF CONCRETE)
- ★ A506 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE IT HAS TAKEN ITS INITIAL SET. EMBED BAR 1'–0".
- ⊗ PIPE UNDERDRAIN WRAPPED (6–INCH). EXTEND THRU GEOTEXTILE FABRIC AT FACE OF RIPRAP HEAVY. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. PROVIDE RODENT PROTECTION AT ENDS OF PIPE.



NAME PLATE DETAIL



TYPICAL SECTION THROUGH ABUTMENT BODY

NO	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORATION
STRUCTURES DESIGN SECTION

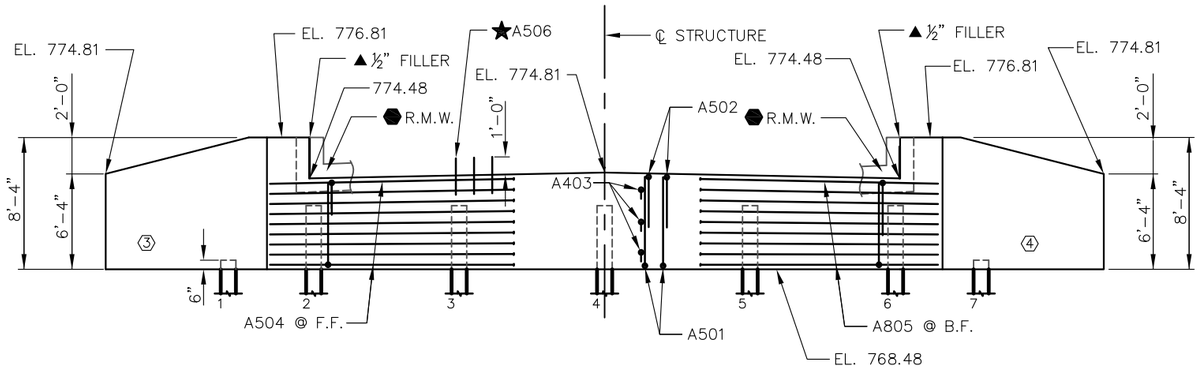
STRUCTURE B-52-0271

DRAWN BY BAS | PLANS CHECKED JLB

WEST ABUTMENT

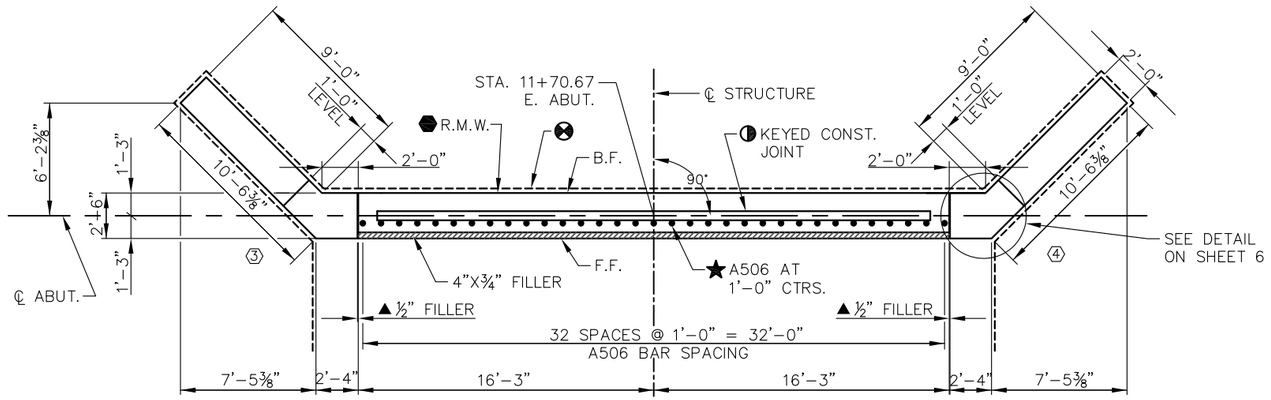
SHEET 4 OF 11

STATE PROJECT NUMBER
5186-00-70

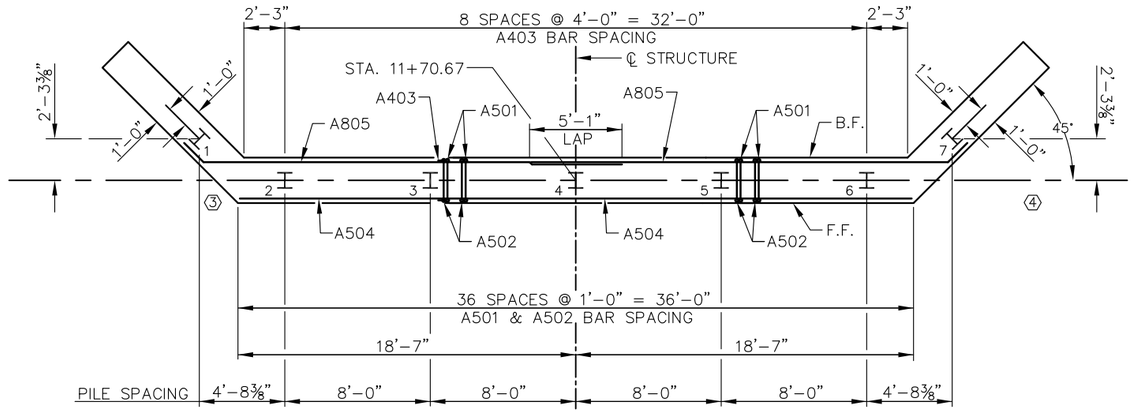


ELEVATION

(E. ABUT. – LOOKING EAST)

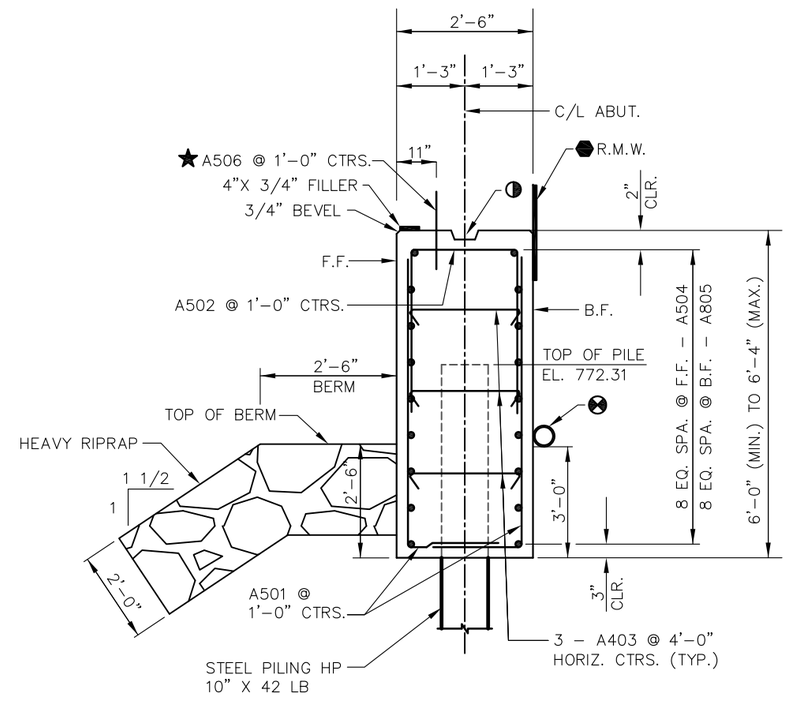


PLAN



LAYOUT

- KEYED CONSTRUCTION JOINT FORMED BY A SURFACED, BEVELED 2"X6"
- 18" RUBBERIZED MEMBRANE WATERPROOFING (HORIZONTAL)
- ▲ 1/2" FILLER EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER WITH NON-STAINING GRAY, NON-BITUMINUOS JOINT SEALER. (1" DEEP & HOLD 1/8" BELOW SURFACE OF CONCRETE)
- ★ A506 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE IT HAS TAKEN ITS INITIAL SET. EMBED BAR 1'-0".
- ⊗ PIPE UNDERDRAIN WRAPPED (6-INCH). EXTEND THRU GEOTEXTILE FABRIC AT FACE OF RIPRAP HEAVY. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. PROVIDE RODENT PROTECTION AT ENDS OF PIPE.



TYPICAL SECTION THROUGH ABUTMENT BODY

NO	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORATION
STRUCTURES DESIGN SECTION

STRUCTURE B-52-0271

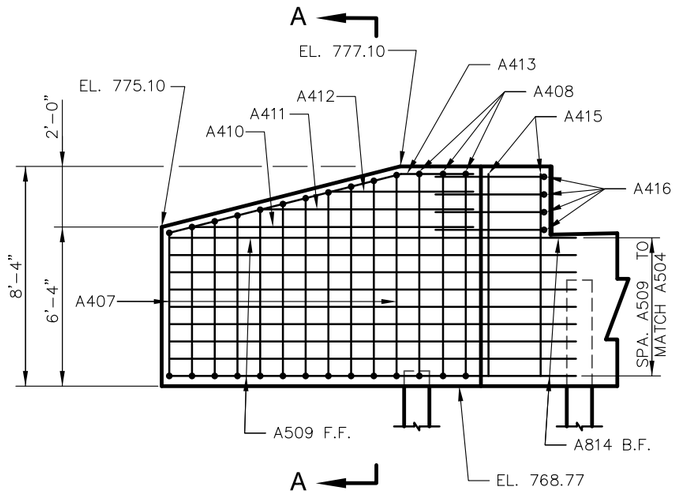
DRAWN BY BAS | PLANS CHECKED JLB

EAST ABUTMENT

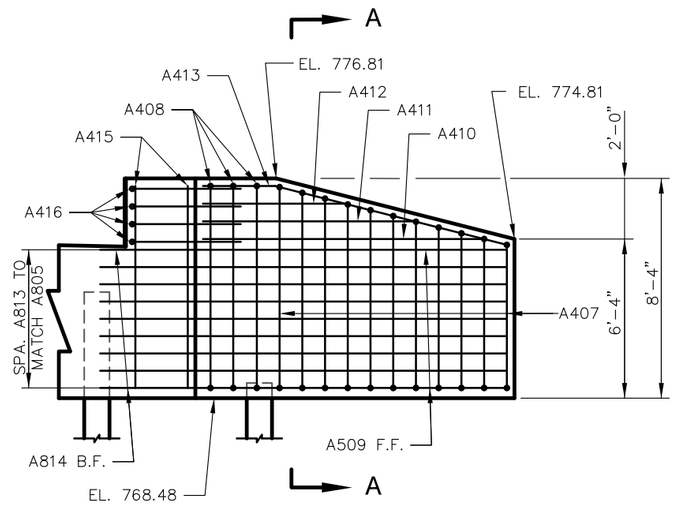
SHEET 5 OF 11

STATE PROJECT NUMBER

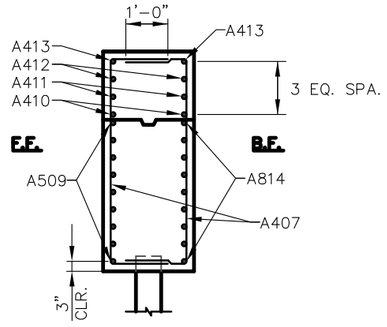
5186-00-70



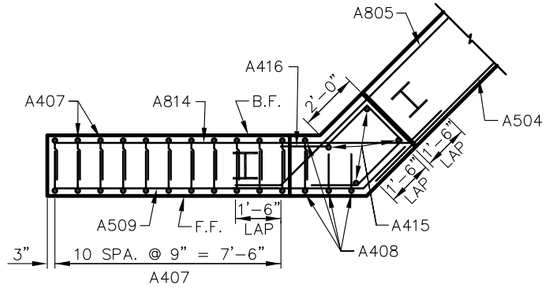
F.F. ELEVATION - WING 1 & 2



F.F. ELEVATION - WING 3 & 4



SECTION A-A
WINGS 1 THRU 4



PLAN - WINGS 1 THRU 4

NO	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORATION
STRUCTURES DESIGN SECTION

STRUCTURE B-52-0271

DRAWN BY BAS | PLANS CHECKED JLB

ABUTMENT DETAILS

SHEET 6 OF 11

STATE PROJECT NUMBER

5186-00-70

THE FIRST DIGIT OF A 3 DIGIT MARK SIGNIFIES THE BAR SIZE

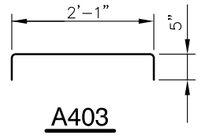
ALL BAR BEND DIMENSIONS ARE OUT TO OUT OF BAR.

BILL OF BARS (ABUTMENTS)

COATED 2,576 LBS.
UNCOATED 4,900 LBS.

MARK	NO. REQ'D	COAT	LENGTH	BENT	LENGTH
A501	148		7'–1"	X	BODY F.F. & B.F. – VERT.
A502	74		8'–7"	X	BODY TIES @ TOP. – VERT.
A403	54		2'–9"	X	BODY TIES – HORIZ.
A504	18		36'–10"		BODY F.F. – HORIZ.
A805	36		24'–5"	X	BODY B.F. – HORIZ.
A506	66	X	2'–0"		BODY – F.F. – DOWELS – VERT.
◨ A407	44	X	9'–5"	X	WINGS 1 THRU 4 – STIRRUPS – VERT.
A408	16	X	10'–6"	X	WINGS 1 THRU 4 – F.F. & B.F. – VERT.
A509	36	X	11'–8"	X	WINGS 1 THRU 4 – F.F. – HORIZ.
A410	8	X	9'–4"		WINGS 1 THRU 4 – F.F. & B.F. – HORIZ.
A411	8	X	7'–0"		WINGS 1 THRU 4 – F.F. & B.F. – HORIZ.
A412	8	X	4'–8"		WINGS 1 THRU 4 – F.F. & B.F. – HORIZ.
A413	8	X	10'–3"	X	WINGS 1 THRU 4 – F.F. & B.F. – HORIZ.
A814	36	X	13'–2"	X	WINGS 1 THRU 4 – B.F. – HORIZ.
A415	16	X	7'–8"		WINGS 1 THRU 4 – VERT.
A416	16	X	9'–1"	X	WINGS 1 THRU 4 – HORIZ.

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



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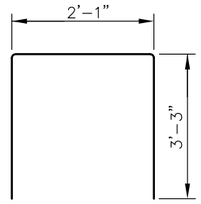
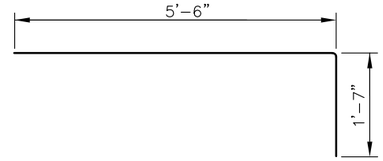


A502



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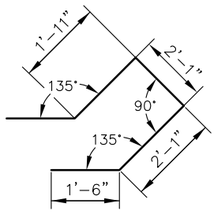
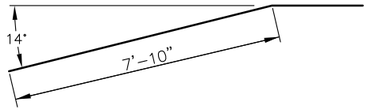
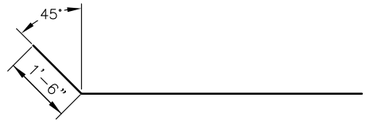


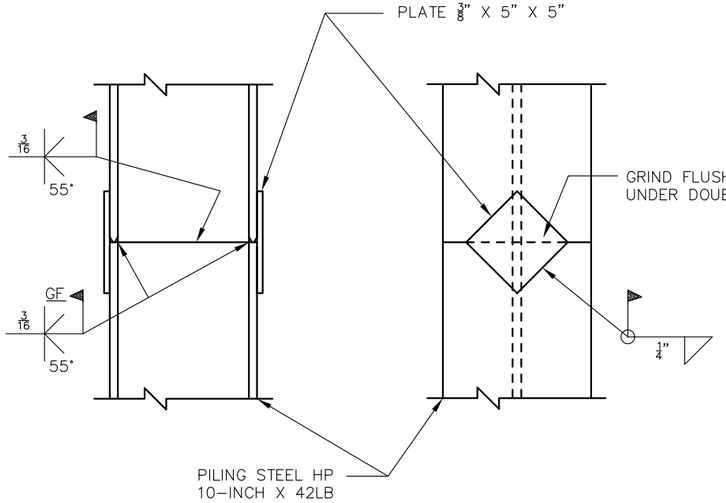
A416



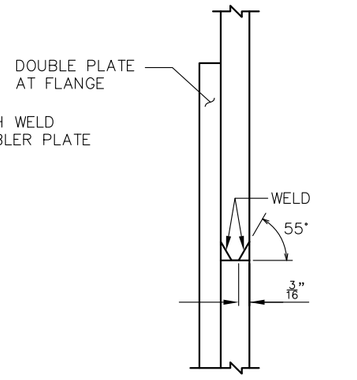
A413



A805, A509, A814

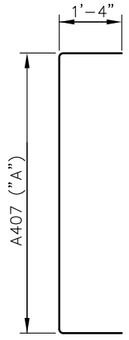


PILE SPLICE DETAIL



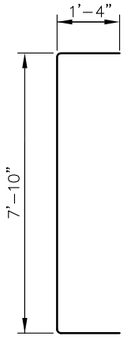
HP WELD DETAIL

FLANGE SHOWN, WEB SIMILAR



A407

MARK	"A"
A407	5'–9"
	5'–11"
	6'–1"
	6'–4"
	6'–6"
	6'–8"
	6'–10"
	7'–1"
	7'–3"
	7'–5"
	7'–8"



A408

BAR SERIES TABLE

MARK	NO. REQ'D	LENGTH
A407	4 SERIES OF 11	8'–5" TO 10'–4"

NO	DATE	REVISION	BY

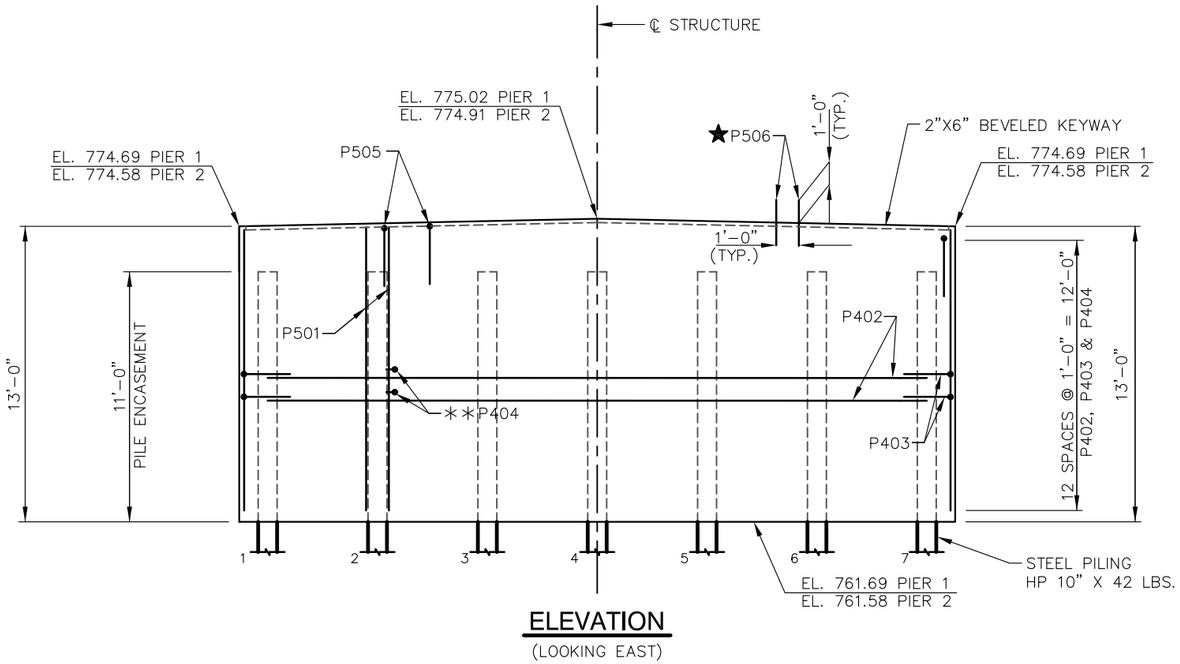
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORATION
STRUCTURES DESIGN SECTION

STRUCTURE B-52-0271

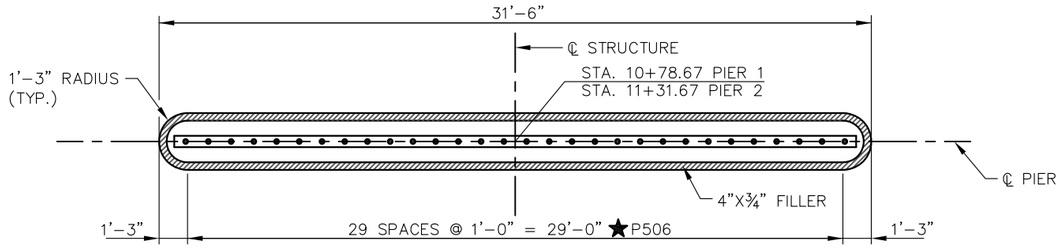
DRAWN BY BAS | PLANS CHECKED JLB

ABUTMENT DETAILS

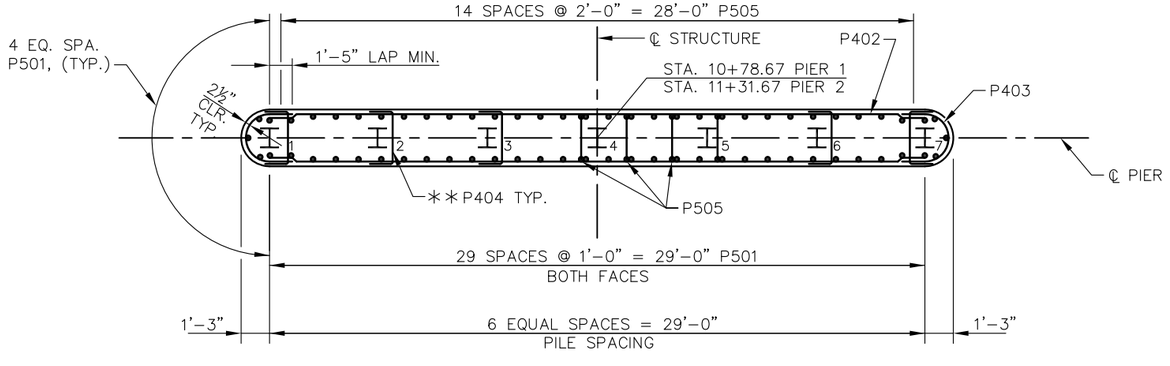
SHEET 7 OF 11



ELEVATION
(LOOKING EAST)



PLAN



LAYOUT

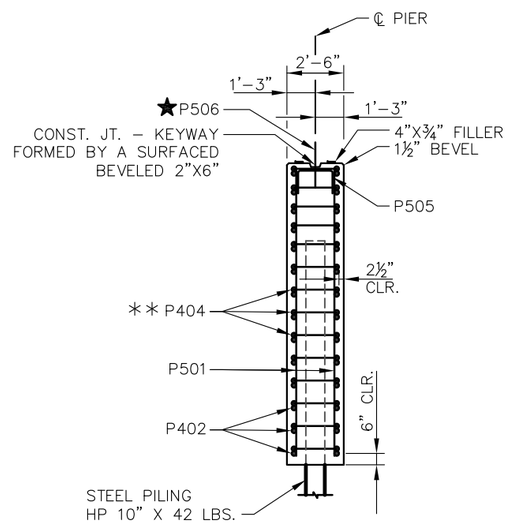
THE FIRST DIGIT OF A 3 DIGIT MARK SIGNIFIES THE BAR SIZE

ALL BAR BEND DIMENSIONS ARE OUT TO OUT OF BAR.

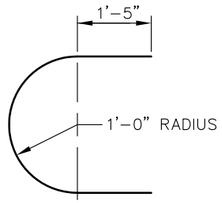
BILL OF BARS (PIERS)

COATED 126 LBS.
UNCOATED 3,410 LBS.

MARK	COATED BAR	NO. REQ'D	LENGTH	BENT	LENGTH
P501		132	12'–6"		PIER SHAFT – VERT.
P402		52	29'–0"		PIER SIDES – HORIZ.
P403		52	6'–0"	X	PIER AT ENDS – HORIZ.
P404		182	2'–8"	X	PIER TIES – HORIZ.
P505		30	4'–8"	X	PIER STIRRUPS TOP – VERT.
P506	X	60	2'–0"		PIER DOWELS @ TOP – VERT.



TYPICAL SECTION THRU SHAFT



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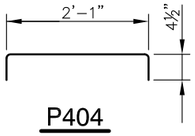

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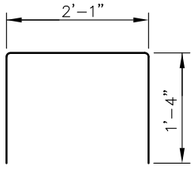


P505

★ P506 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE IT HAS TAKEN ITS INITIAL SET. EMBED BAR 1'–0".

** ADJACENT TO EACH PILE ONE SIDE ONLY. VERTICAL SAP. @ 1'–0"

NO	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORATION
STRUCTURES DESIGN SECTION

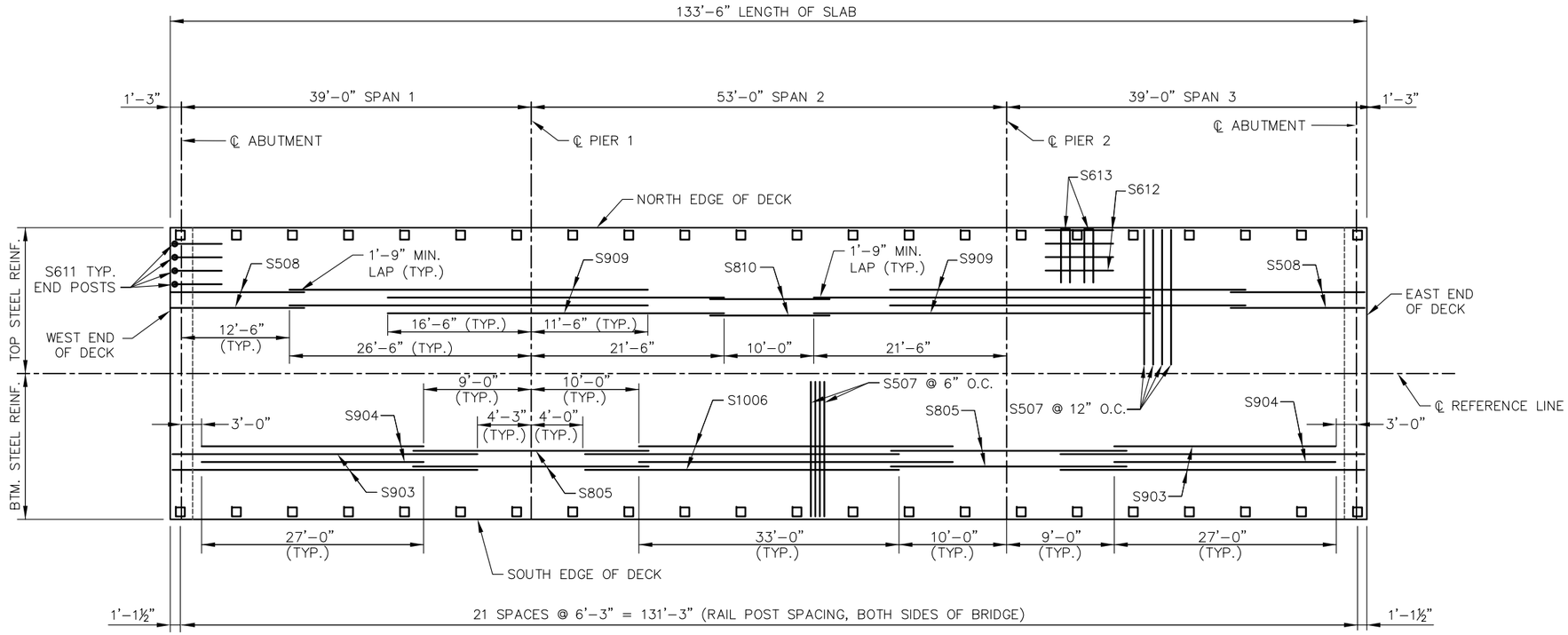
STRUCTURE B-52-0271

DRAWN BY BAS | PLANS CHECKED TLP

PIERS

SHEET 8 OF 11

STATE PROJECT NUMBER
5186-00-70

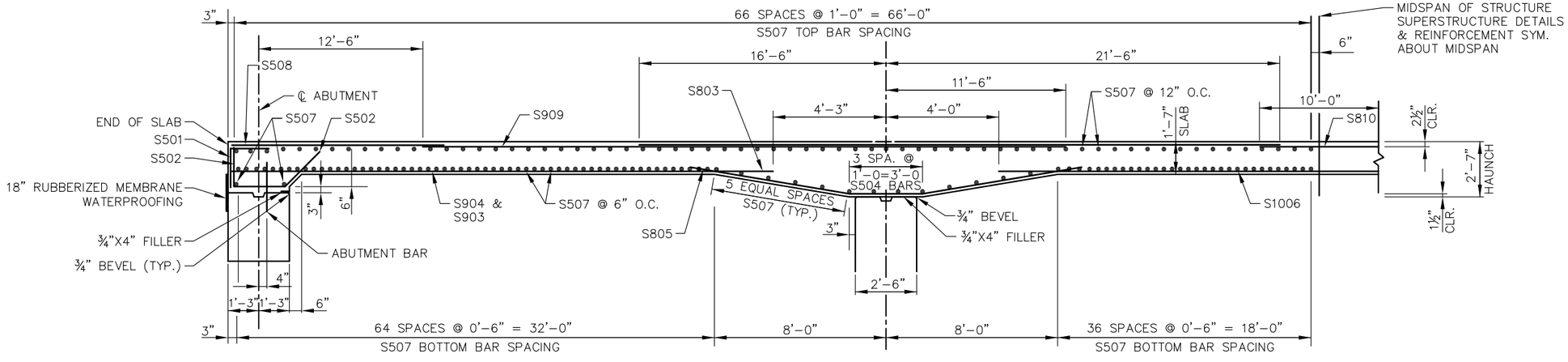


PLAN

TOP TRANSVERSE BARS IN SLAB SHALL BE SUPPORTED BY INDIVIDUAL BAR CHAIRS AT APPROXIMATELY 3'-0" CENTERS.

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 DISCREPENCES ARE TO BE PLUS (+).



PARTIAL LONGITUDINAL SECTION

NO	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORATION
STRUCTURES DESIGN SECTION

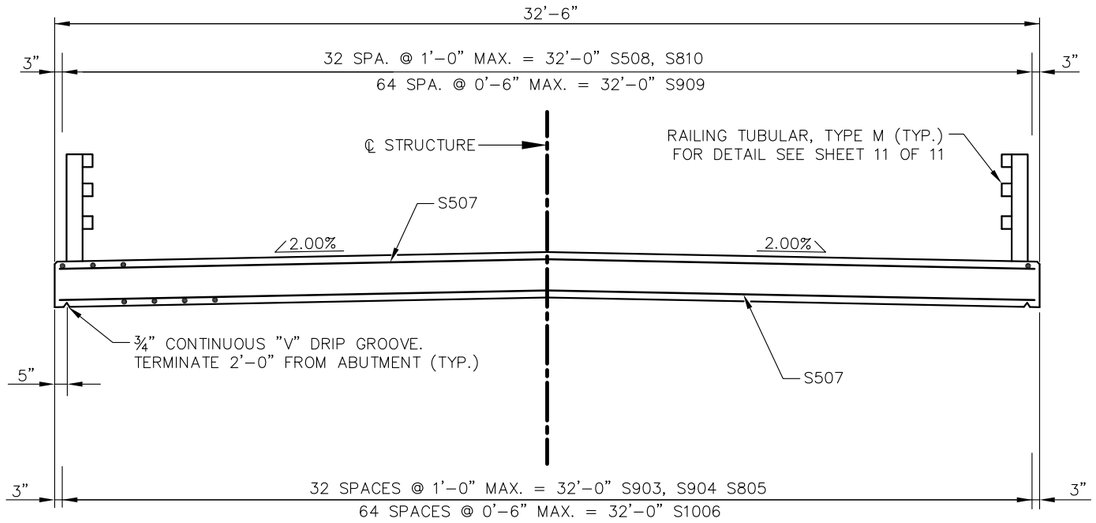
STRUCTURE B-52-0271

DRAWN BY BAS | PLANS CHECKED JLB

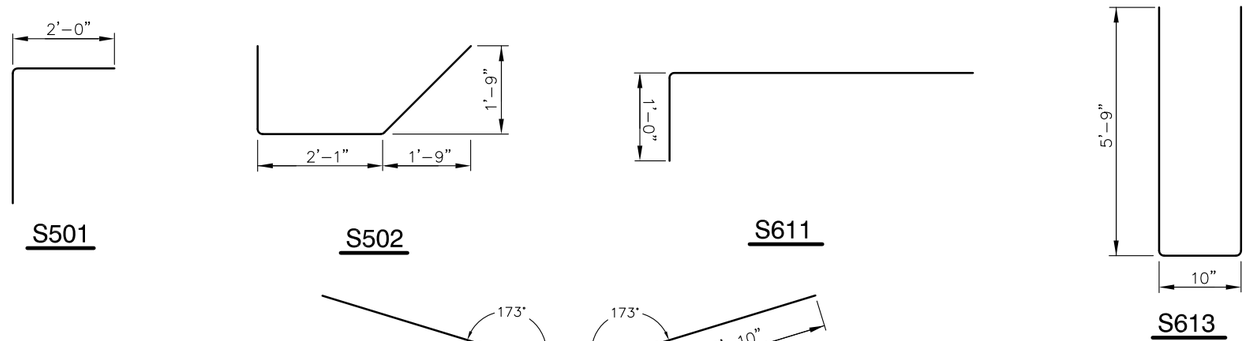
SUPERSTRUCTURE

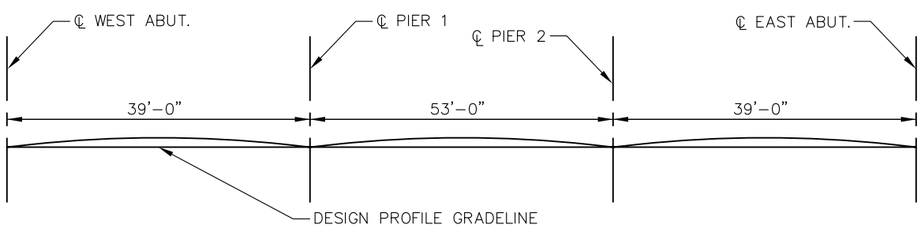
SHEET 9 OF 11

STATE PROJECT NUMBER
5186-00-70



CROSS SECTION THRU ROADWAY





SLAB CAMBER DIAGRAM

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

THE FIRST DIGIT OF A 3 DIGIT MARK OR THE FIRST TWO DIGITS OF A 4 DIGIT MARK SIGNIFIES THE BAR SIZE

ALL BAR BEND DIMENSIONS ARE OUT TO OUT OF BAR.

BILL OF BARS (SUPERSTRUCTURE) COATED 65,688 LBS.

MARK	NO. REQ'D	LENGTH	BENT	DESCRIPTION
S501	66	3'-5"	X	SLAB AT END OF DECK
S502	66	5'-10"	X	SLAB AT END OF DECK
S903	66	35'-10"		SLAB BOTTOM SPANS LONGIT.
S904	66	27'-0"		SLAB BOTTOM SPANS LONGIT.
S805	66	18'-2"	X	HAUNCH OVER PIERS LONGIT
S1006	65	39'-0"		SLAB BOTTOM LONGIT
S507	401	32'-0"		SLAB TOP & BOTTOM TRANSVERSE
S508	66	15'-6"		SLAB TOP LONGIT
S909	130	38'-0"		SLAB TOP LONGIT
S810	66	13'-6"		SLAB TOP LONGIT
S611	16	6'-0"	X	AT END RAIL POSTS
S612	160	6'-0"		AT INTERIOR RAIL POSTS
S613	88	12'-4"	X	AT RAIL POSTS

TOP OF DECK ELEVATIONS

SPAN 1

	℄ BRG. W. ABUT.	0.1 PT.	0.2 PT.	0.3 PT.	0.4 PT.	0.5 PT.	0.6 PT.	0.7 PT.	0.8 PT.	0.9 PT.	℄ BRG. PIER 1
L/E.O.D.	777.10	777.13	777.15	777.18	777.20	777.21	777.23	777.24	777.25	777.26	777.27
C CTH I	777.43	777.46	777.48	777.51	777.53	777.54	777.56	777.57	777.58	777.59	777.60
R/E.O.D.	777.10	777.13	777.15	777.18	777.20	777.21	777.23	777.24	777.25	777.26	777.27
CAMBER(IN.)	0.00	0.13	0.31	0.38	0.44	0.38	0.25	0.13	0.00	0.00	0.00

SPAN 2

	℄ BRG. PIER 1	0.1 PT.	0.2 PT.	0.3 PT.	0.4 PT.	0.5 PT.	0.6 PT.	0.7 PT.	0.8 PT.	0.9 PT.	℄ BRG. PIER 2
L/E.O.D.	777.27	777.28	777.28	777.28	777.27	777.26	777.25	777.23	777.21	777.18	777.15
C CTH I	777.60	777.61	777.61	777.61	777.60	777.59	777.58	777.56	777.54	777.51	777.48
R/E.O.D.	777.27	777.28	777.28	777.28	777.27	777.26	777.25	777.23	777.21	777.18	777.15
CAMBER(IN.)	0.00	0.06	0.25	0.50	0.75	0.75	0.75	0.50	0.25	0.06	0.00

SPAN 3

	℄ BRG. PIER 2	0.1 PT.	0.2 PT.	0.3 PT.	0.4 PT.	0.5 PT.	0.6 PT.	0.7 PT.	0.8 PT.	0.9 PT.	℄ BRG. E. ABUT.
L/E.O.D.	777.15	777.13	777.10	777.07	777.04	777.01	776.98	776.95	776.90	776.86	776.81
C CTH I	777.48	777.46	777.43	777.40	777.37	777.34	777.31	777.27	777.23	777.19	777.14
R/E.O.D.	777.15	777.13	777.10	777.07	777.04	777.01	776.98	776.95	776.90	776.86	776.81
CAMBER(IN.)	0.00	0.00	0.00	0.13	0.25	0.38	0.44	0.38	0.31	0.13	0.00

NO	DATE	REVISION	BY

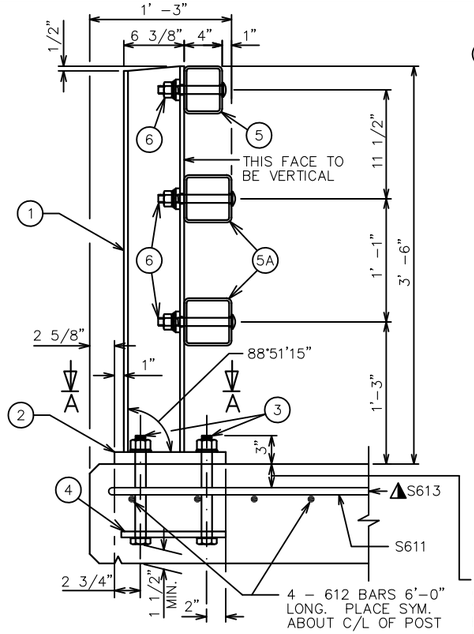
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORATION
STRUCTURES DESIGN SECTION

STRUCTURE B-52-0271

DRAWN BY BAS | PLANS CHECKED JLB

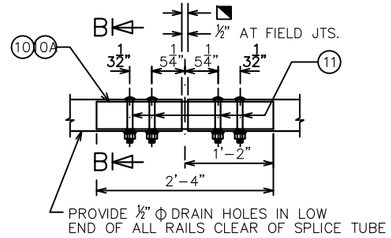
SUPERSTRUCTURE DETAIL

SHEET 10 OF 11

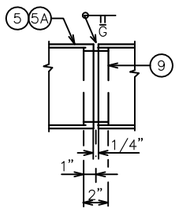


SECTION THRU RAILING ON DECK

2½" FOR SLABS ON GIRDERS; FOR OTHER STRUCTURES, PLACE BELOW TOP MAT SLAB REINFORCEMENT.

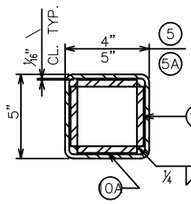


FIELD ERECTION JOINT DETAIL

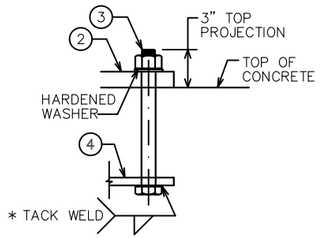


SHOP RAIL SPLICE DETAIL

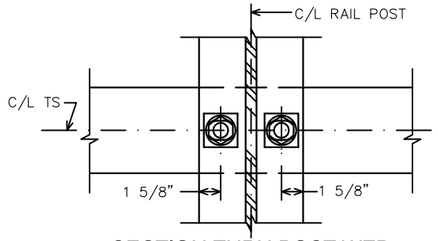
LOCATION MUST BE SHOWN ON SHOP DRAWINGS



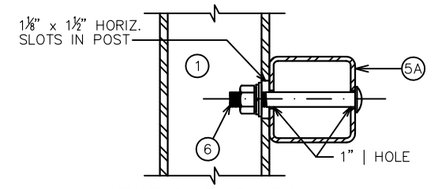
SECTION B-B



ANCHOR BOLTS



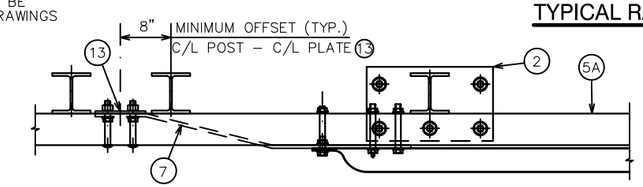
SECTION THRU POST WEB



SECTION THRU RAIL

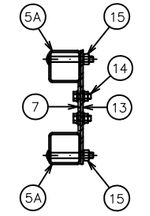
NOTE: CONNECTIONS AT LOWER RAILS SHOWN. CONNECTIONS AT TOP RAIL SIMILAR.

TYPICAL RAIL TO POST CONNECTIONS

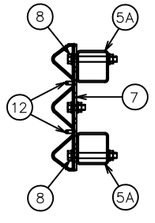


TOP VIEW AT END POST

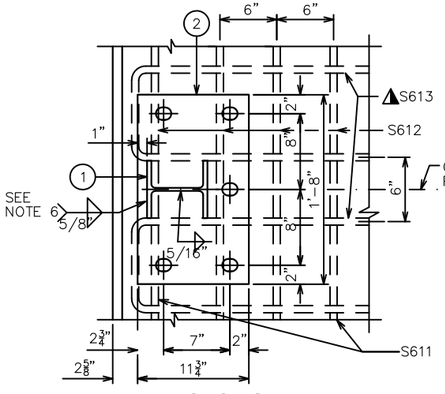
THRIE BEAM RAIL ATTACHMENT



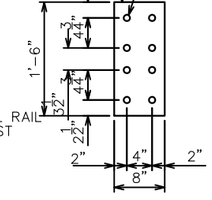
SECTION C-C



SECTION D-D

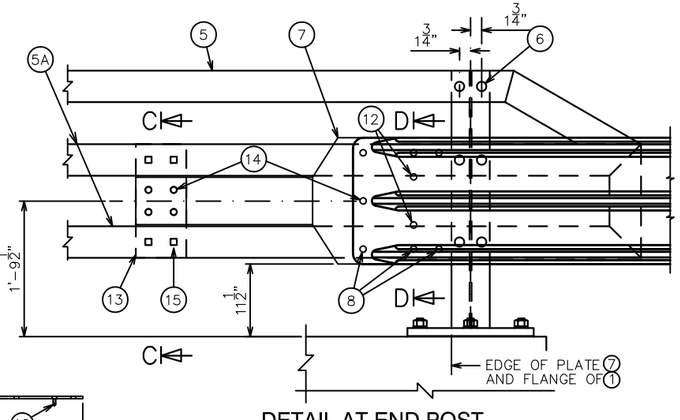


SECTION A-A



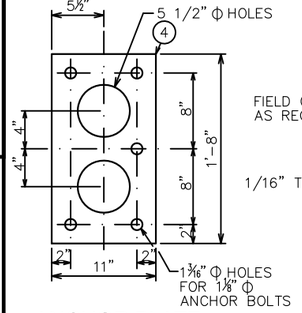
ANCHOR PLATE

AT BEAM GUARD ATTACHMENT



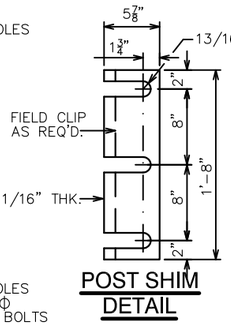
DETAIL AT END POST

THRIE BEAM RAIL ATTACHMENT

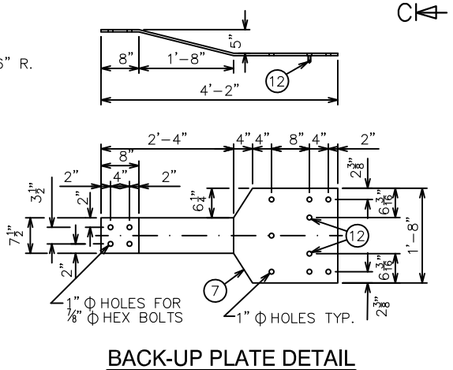


ANCHOR PLATE

AT RAIL TO DECK CONNECTION

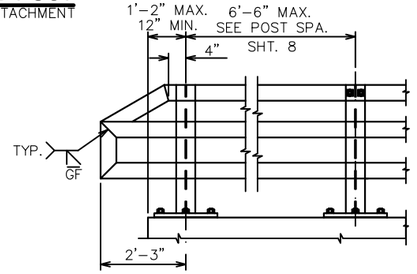


POST SHIM DETAIL



BACK-UP PLATE DETAIL

AT BEAM GUARD ATTACHMENT



PART ELEVATION OF RAILING

LEGEND

1. W6 x 25 WITH 1⅛" X 1½" HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
2. PLATE 1¼" x 11¾" x 1'–8" WITH 1 3/16" 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 1 3/16" 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, 3/16" X 1⅝" X 1⅝" WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)
7. ½" THK. BACK–UP PLATE WITH 2 – ⅞" X 1½" THREADED SHOP WELDED STUDS (NO. 12). BOLT TO RAIL AS SHOWN IN DETAIL. REQUIRED AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYMMETRICALLY ABOUT TUBES NO. 5A.
8. 1" DIA. HOLES IN PLATE NO. 7 & TUBES NO. 5A FOR ⅞" DIA. A325 BOLTS WITH HEX NUTS AND WASHERS. 6 HOLES IN TUBES AND PLATE NO. 7.
9. SPLICE SLEEVE FABRICATED FROM ¼" PLATE. PROVIDE "SLIDING FIT".
10. ⅜" X 3⅝" X 2'–4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.
10A. ⅜" X 2⅝" X 2'–4" PLATE USED IN NO. 5, ⅜" X 3⅝" X 2'–4" PLATE USED IN NO. 5A. 2 PER RAIL.
11. ⅞" | A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 15/16" X 1¼" LONGIT. SLOTTED HOLES AT FIELD JOINTS AND 15/16" X 2¼" MIN. LONGIT. SLOTTED HOLES AT EXP. JOINTS IN PLATE NO. 10A.
12. ⅞" DIA. X 1½" LONG THREADED SHOP WELDED STUDS (2 REQ'D).
13. ⅜" X 8" X 1'–6" PLATE. BOLT TO RAIL AS SHOWN IN DETAIL. REQ'D. AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYM. ABOUT TUBES NO. 5A.
14. ⅞" DIA. X 2" LONG A325 HEX BOLT WITH NUT AND WASHER (5 REQ'D.).
15. 1" | 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–62–0138" WHICH INCLUDES ALL ITEMS SHOWN.
2. RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 ksi. ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.
3. THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ⅛ TURN.
4. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN A PANEL OVER EXPANSION JOINTS.
5. ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
6. WELD IS THE SAME ON BOTH FLANGES. FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING.
7. FILL BOLT SLOT OPENINGS IN POST SHIMS AND PLATE NO. 2 AND CAULK AROUND PERIMETER OF PLATE NO. 2 WITH NON–STAINING GRAY NON–BITUMINOUS JOINT SEALER. STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D. FOR ALIGNMENT.
8. POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
9. ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS & STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY SSPC SPECIFICATIONS.
10. WHEN PAINTING IS REQUIRED, ALL MATERIAL EXCEPT ANCHORAGE DETAIL (NO. 3 & 4) SHALL BE PAINTED OVER GALVANIZING WITH APPROVED TIE COAT AND TOP COAT.
11. THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL–4).
12. PLACE FIRST BOTTOM LONGITUDINAL BAR CLEAR OF DRIP GROOVE.

⚠ TIE TO TOP MAT OF STEEL.

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

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

STATE PROJECT NUMBER

5186-00-70

NO	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORATION
STRUCTURES DESIGN SECTION

STRUCTURE B-52-0271

DRAWN BY BAS | PLANS CHECKED JLB

TUBULAR STEEL RAILING TYPE M

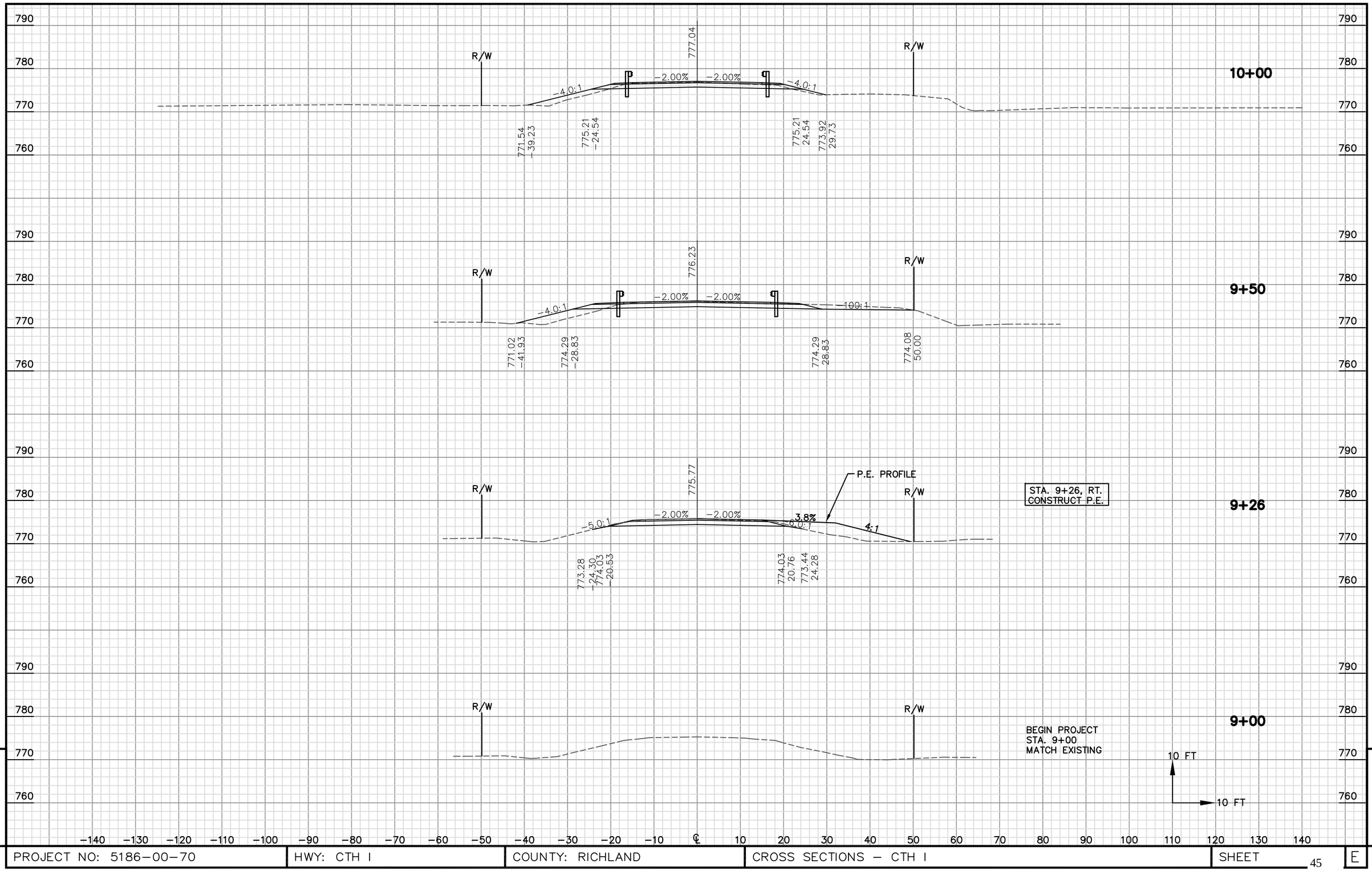
SHEET 11 OF 11

CTH I

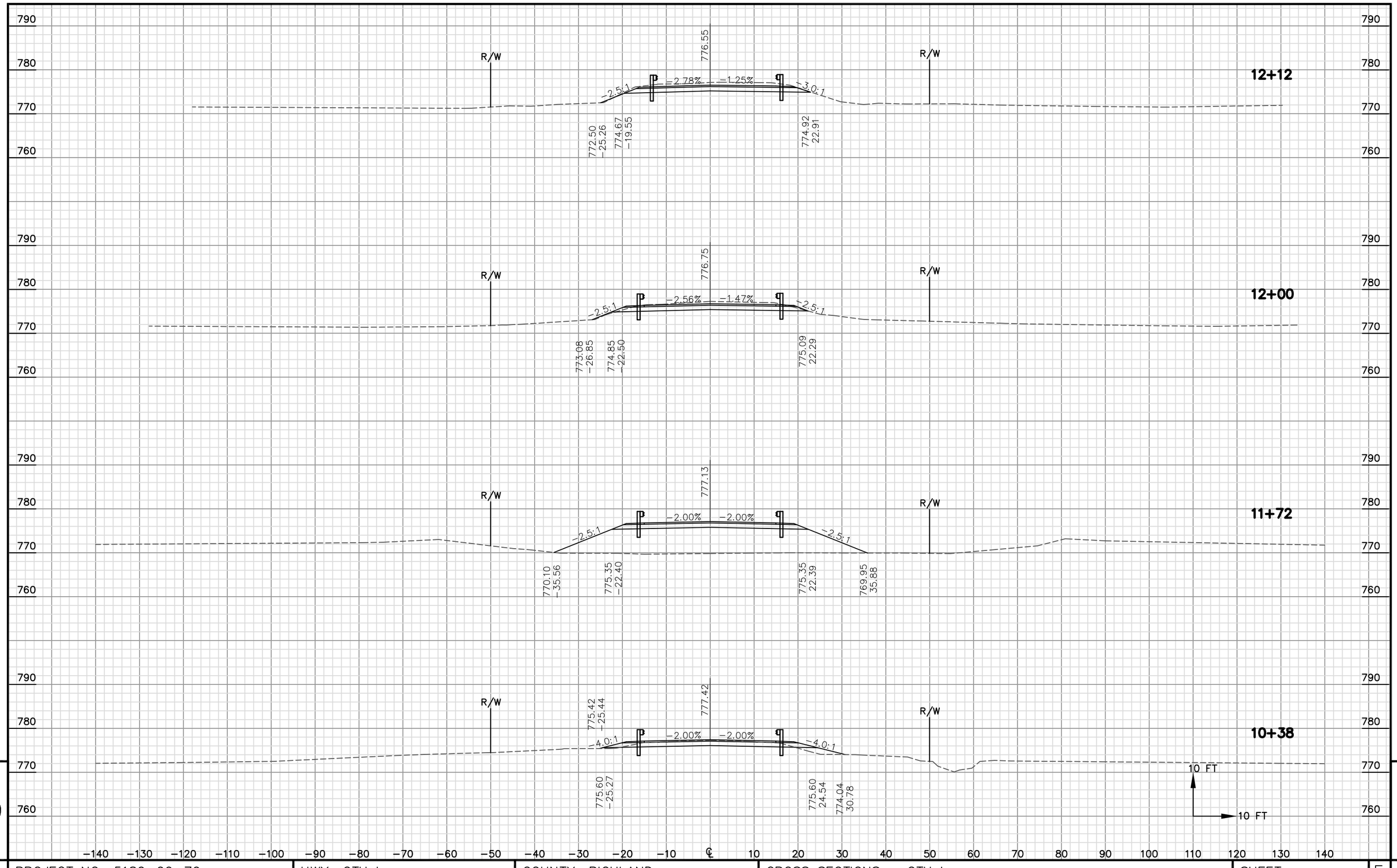
STATION		AREA (SF)		INCREMENTAL VOL (CY)		CUMULATIVE VOL (CY)		MASS HAUL
	FEET	COMMON	FILL	COMMON	FILL	COMMON	FILL*	
9+00		0.0	0.0					
	40.0			35.6	27.9	35.6	34.9	0.7
9+40		48.0	58.0					
	10.0			21.7	37.3	57.2	81.5	-24.3
9+50		69.0	26.0					
	50.0			100.9	42.6	158.1	134.8	23.3
10+00		40.0	20.0					
	38.0			54.9	20.4	213.0	160.3	52.7
10+38		38.0	9.0					
				213.0	128.3			

STATION		AREA (SF)		INCREMENTAL VOL (CY)		CUMULATIVE VOL (CY)		MASS HAUL
	FEET	COMMON	FILL	COMMON	FILL	COMMON	FILL*	
11+72		0.0	330.0					
	28.0			32.7	171.6	32.7	214.5	-181.8
12+00		63.0	1.0					
	12.0			30.0	0.4	62.7	215.0	-152.3
12+12		72.0	1.0					
	38.0			95.7	35.9	158.4	259.9	-101.5
12+50		64.0	50.0					
	13.0			29.1	23.8	187.5	289.7	-102.2
12+63		57.0	49.0					
	37.0			39.1	33.6	226.6	331.7	-105.1
13+00		0.0	0.0					
				226.6	265.3			

* EXPANDED FILL FACTOR = 1.25



PROJECT NO: 5186-00-70	HWY: CTH I	COUNTY: RICHLAND	CROSS SECTIONS – CTH I	SHEET 45	E



PROJECT NO: 5186-00-70	HWY: CTH I	COUNTY: RICHLAND	CROSS SECTIONS – CTH I	SHEET 46	E

9

9

790
780
770
760

R/W
4.50%
0.33%
R/W

13+00

790
780
770
760

790
780
770
760

775.52
R/W
-4.0:1
-3.60%
-0.34%
-4.0:1
R/W

12+63

771.61
-35.79
773.12
-29.68
774.08
28.04
771.58
38.04

790
780
770
760

775.79
R/W
-4.0:1
-3.37%
-0.57%
-4.0:1
R/W

12+50

771.57
-36.39
773.49
-28.72
774.30
27.36
771.55
38.30

10 FT
10 FT

790
780
770
760

−140 −130 −120 −110 −100 −90 −80 −70 −60 −50 −40 −30 −20 −10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140

9

9

PROJECT NO: 5186−00−70	HWY: CTH I	COUNTY: RICHLAND	CROSS SECTIONS − CTH I	SHEET 47	E

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