EAU

PROJECT ID: 7590-01-85

WITH: N/A

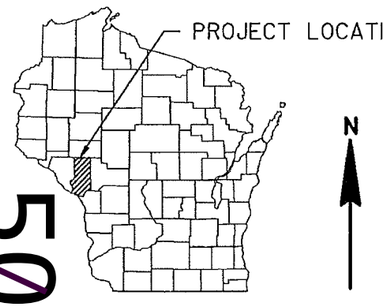
COUNTY: TREMPEALEAU

MAY 2016

ORDER OF SHEETS

Section No.	1	Title
Section No.	2	Typical Sections and Details
Section No.	3	Estimate of Quantities
Section No.	3	Miscellaneous Quantities
~~Section No.~~	~~4~~	~~Right of Way Plat~~
Section No.	5	Plan and Profile (Includes Erosion Control Plans)
Section No.	6	Standard Detail Drawings
~~Section No.~~	~~7~~	~~Sign Plates~~
Section No.	8	Structure Plans
Section No.	9	Computer Earthwork Data
Section No.	9	Cross Sections

TOTAL SHEETS = 72



50

DESIGN DESIGNATION 7590-01-85

A.A.D.T.	2016	= 5,400
A.A.D.T.	2036	= 7,300
D.H.V.		= 8.3
D.D.		= 60/40
T.		= 9.9%
DESIGN SPEED		= 60
ESALS		= 1,270,200

CONVENTIONAL SYMBOLS

PLAN		PROFILE	
CORPORATE LIMITS		GRADE LINE	
PROPERTY LINE		ORIGINAL GROUND	
LOT LINE		MARSH OR ROCK PROFILE (To be noted as such)	ROCK
LIMITED HIGHWAY EASEMENT		SPECIAL DITCH	LABEL
EXISTING RIGHT OF WAY		GRADE ELEVATION	95.36
PROPOSED OR NEW R/W LINE		CULVERT (Profile View)	
SLOPE INTERCEPT		UTILITIES	
REFERENCE LINE	300'EBF	ELECTRIC	E
EXISTING CULVERT		FIBER OPTIC	FO
PROPOSED CULVERT (Box or Pipe)		GAS	G
COMBUSTIBLE FLUIDS	CAUTION	SANITARY SEWER	SAN
		STORM SEWER	SS
		TELEPHONE	T
MARSH AREA		WATER	W
		UTILITY PEDESTAL	
		POWER POLE	
WOODED OR SHRUB AREA		TELEPHONE POLE	

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

ELEVA - EAU CLAIRE

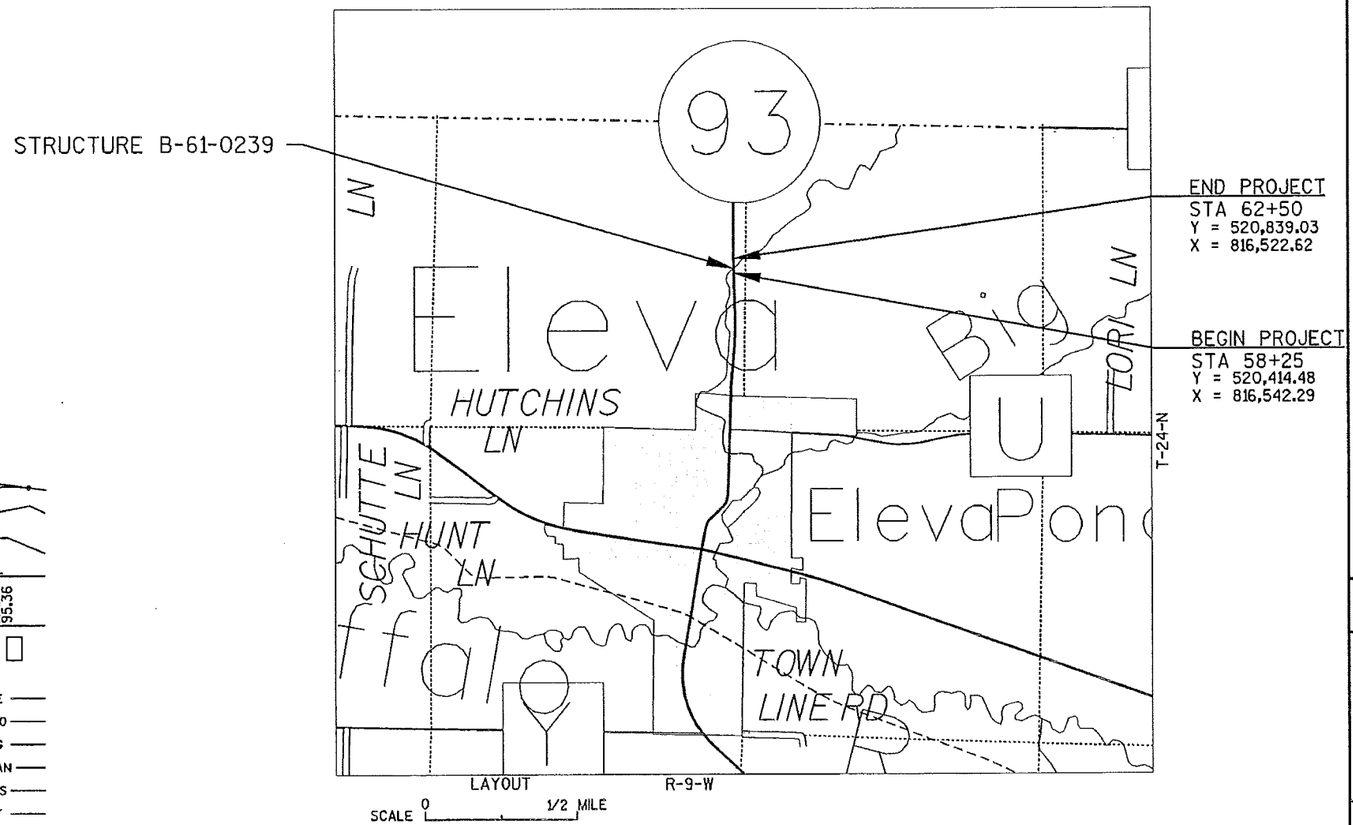
ADAMS CREEK BRIDGE B-61-0035

STH 93

TREMPEALEAU COUNTY

STATE PROJECT NUMBER
7590-01-85

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
7590-01-85		



TOTAL NET LENGTH OF CENTERLINE = 0.080

"COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCC), TREMPEALEAU COUNTY."

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL
1230 South Boulevard Baraboo, WI 53913
608-356-2771 1-800-362-4505 Fax: 608-356-2770
Web Address: www.msa-ps.com

WISCONSIN JOSHUA R. SWENO E-44384 WAUNAKEE WI PROFESSIONAL ENGINEER

1/27/16 Date

Joshua R Sweno Signature

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	MSA PROFESSIONAL SERVICES
Designer	MSA PROFESSIONAL SERVICES
Project Manager	DAVID KOEPP
Regional Examiner	CHRISTINE KOSKI
Regional Supervisor	TIMOTHY MASON

APPROVED FOR THE DEPARTMENT

DATE: 1/27/2016 (Signature)

E

2

MSA DESIGN CONTACT

MSA PROFESSIONAL SERVICES, INC.
ATTN: JOSH SWENO, PE
1230 SOUTH BOULEVARD
BARABOO, WI 53919
608-355-8852
JSWENO@MSA-PS.COM

DNR LIAISON

WISCONSIN DEPARTMENT OF
NATURAL RESOURCES
ATTN: KAREN KALVELAGE
DNR SERVICE CENTER
3550 MORMON COULEE ROAD
LA CROSSE, WI 54601
608-785-9115
KAREN.KALVELAGE@WISCONSIN.GOV

UTILITIES

ELECTRIC:
RIVERLAND ENERGY COOPERATIVE
ATTN: TIM HOLTON
P.O. BOX 277
ARCADIA, WI 54612
608-323-3381
THOLTAN@RIVERLANDENERGY.COM

COMMUNICATION:
TRI-COUNTY COMMUNICATIONS
ATTN: BRIAN MELSNESS
417 FIFTH AVENUE NORTH
P.O. BOX 578
STRUM, WI 54700
715-530-0081
BMELSNESS@TCCPRO.NET

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

RUNOFF COEFFICIENT TABLE

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

TOTAL PROJECT AREA = 0.89 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.89 ACRES

GENERAL NOTES

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, SHALL BE FERTILIZED, SEEDED AND MULCHED AS DIRECTED BY THE ENGINEER. OVERSOW PERMANENT SEEDING AREAS WITH TEMPORARY SEED AT 1.5 LBS. PER 1000 SQUARE FEET.

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

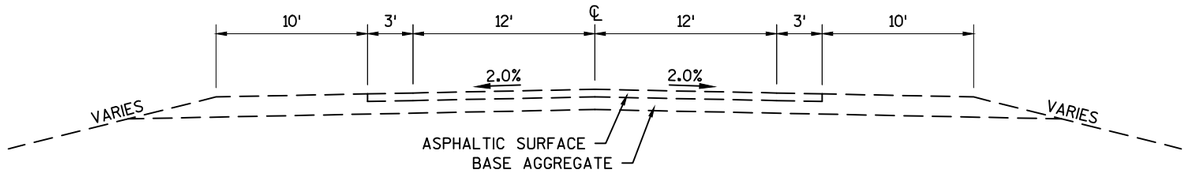
NO TREES OR SHRUBS ARE TO BE REMOVED WITHOUT APPROVAL OF THE ENGINEER.

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO USGS NAVD 88. BENCHMARKS WERE LOCATED IN THE FIELD USING GPS TECHNOLOGY.

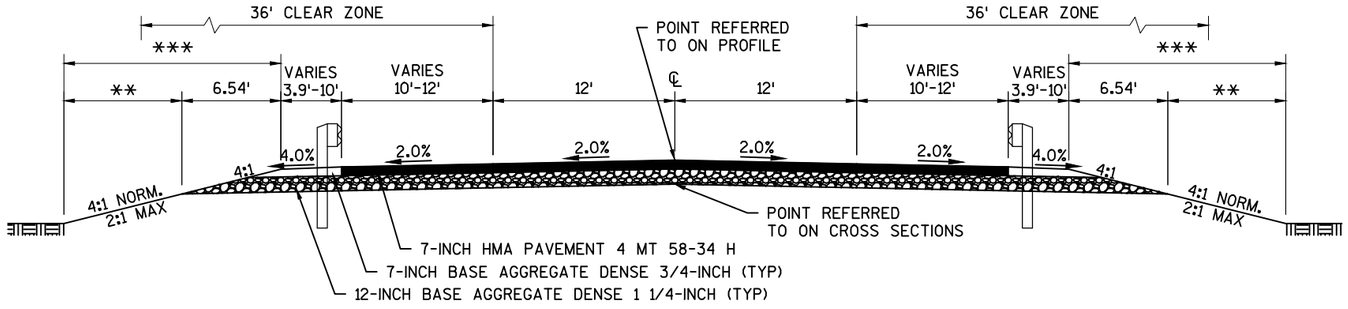
THE 7" HMA PAVEMENT 4 MT 58-34 H SHALL CONSIST OF A 2" UPPER LAYER, A 2" MIDDLE LAYER, AND A 3" LOWER LAYER. USE 12.5MM NOMINAL AGGREGATE.

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

2



EXISTING TYPICAL SECTION



FINISHED TYPICAL SECTION

STA 58+25 - STA 62+50

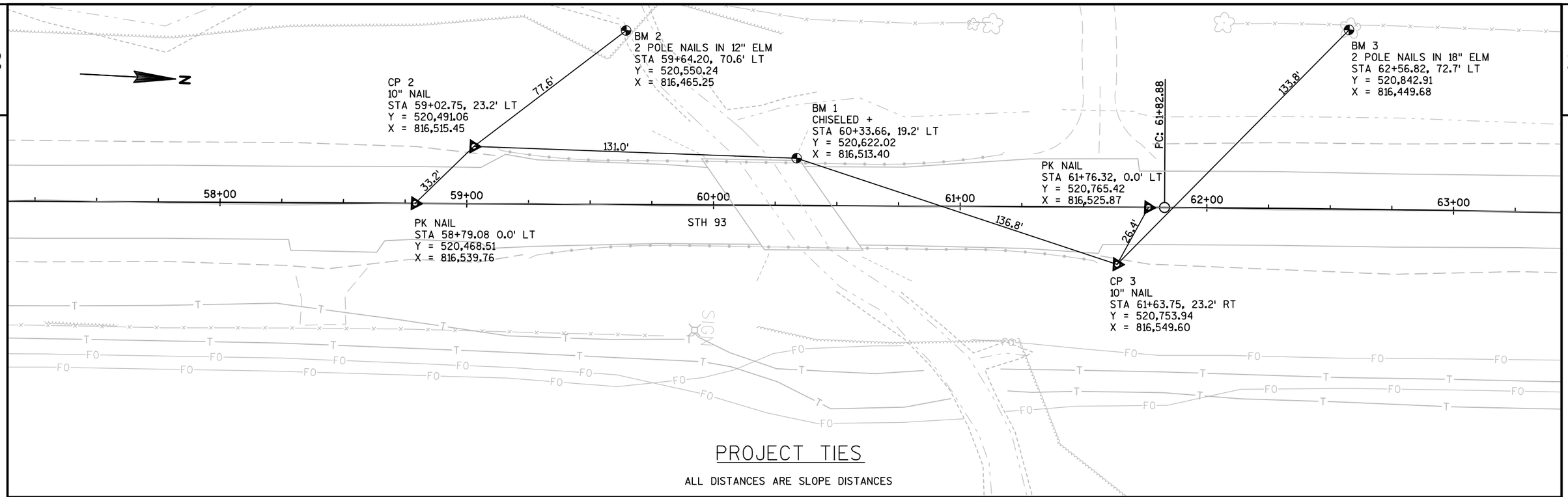
NOTES:

** SALVAGED TOPSOIL AND MULCHING LIMITS

*** SEEDING MIXTURE *20, SEEDING TEMPORARY, & FERTILIZER TYPE B LIMITS

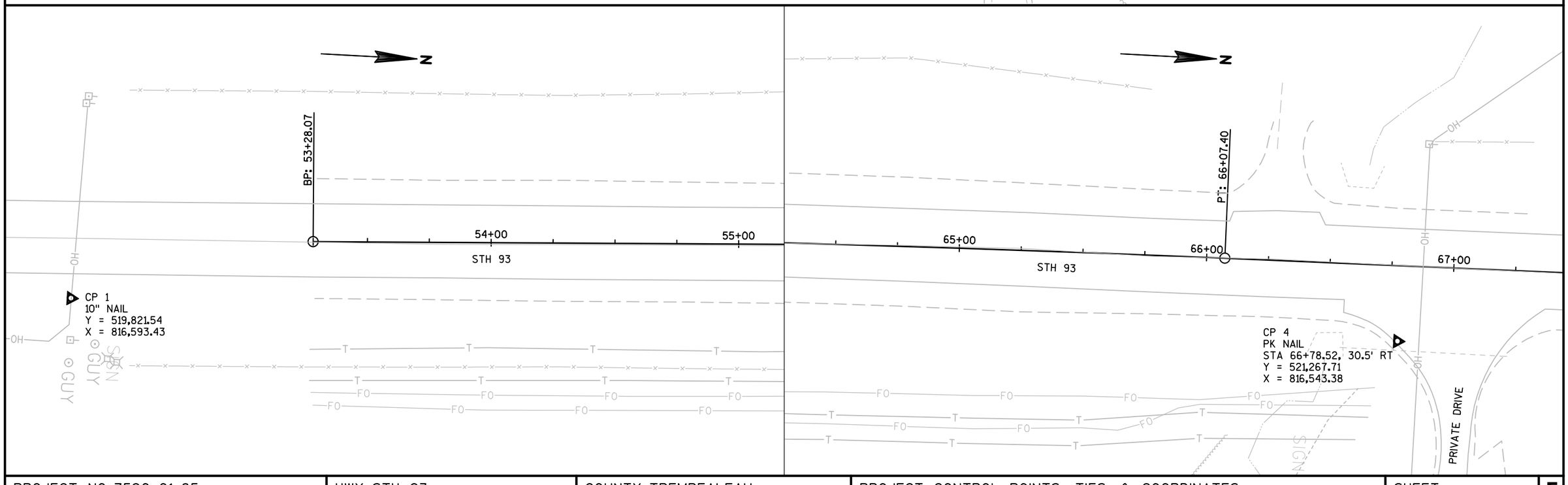
PROJECT NO: 7590-01-85	HWY: STH 93	COUNTY: TREMPEALEAU	TYPICAL SECTIONS	SHEET 3	E

2



PROJECT TIES

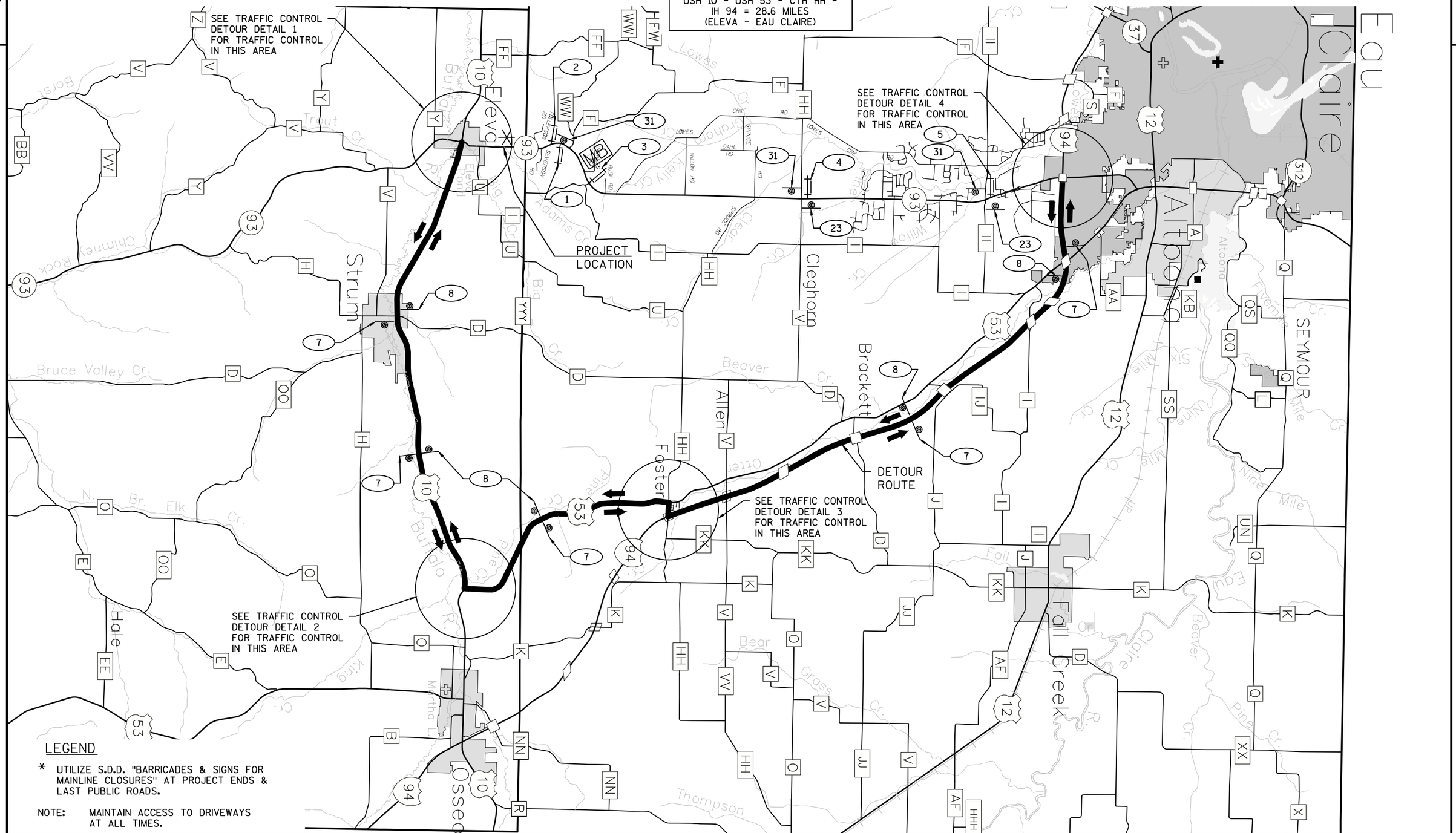
ALL DISTANCES ARE SLOPE DISTANCES



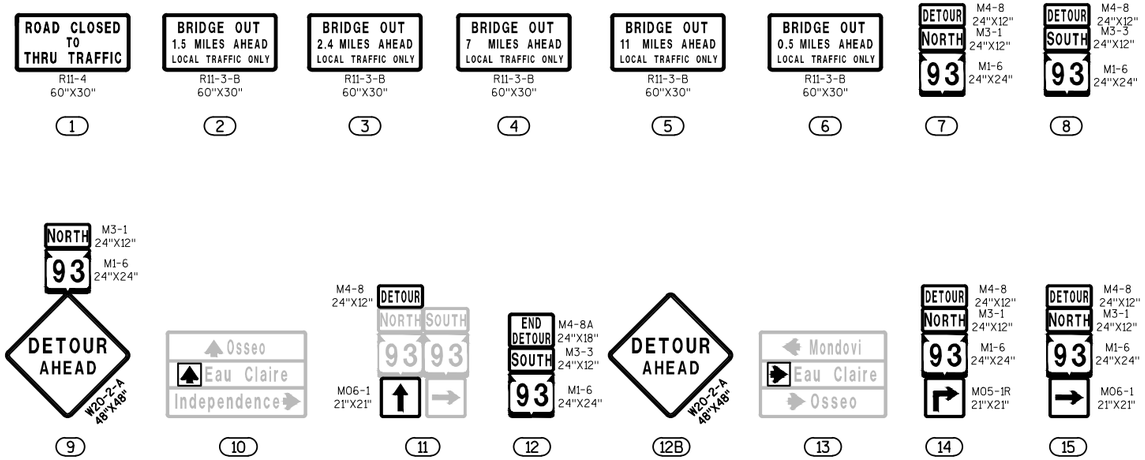
PROJECT NO: 7590-01-85	HWY: STH 93	COUNTY: TREMPEALEAU	PROJECT CONTROL POINTS, TIES, & COORDINATES	SHEET 4	E

DETOUR ROUTE

DETOUR ROUTE
USH 10 - USH 53 - CTH HH - IH 94 = 28.6 MILES (ELEVA - EAU CLAIRE)



PROJECT NO: 7590-01-85	HWY: STH 93	COUNTY: TREMPEALEAU	TRAFFIC CONTROL DETOUR ROUTE	SHEET 5	E



LEGEND

- TYPE III BARRICADE
- TYPE III BARRICADE WTH ATTACHED SIGN
- SIGN ON PERMANENT SUPPORT
- (A) TYPE A WARNING LIGHT (FLASHING)
- WORK AREA
- DIRECTION OF TRAFFIC
- MB PORTABLE CHANGEABLE MESSAGE BOARD (TWO WEEKS PRIOR TO CLOSURE)
- 93 EXISTING SIGN
- 93 EXISTING SIGN TO BE COVERED

TRAFFIC CONTROL SIGNING GENERAL NOTES

1. DRAWINGS SHOW TRAFFIC CONTROL DETOUR FOR A TYPICAL SITUATION. ADDITIONAL TRAFFIC CONTROL DEVICES MAY BE REQUIRED AND/OR LAYOUT DETAILS MODIFIED DEPENDING ON SITE CONDITIONS AS DIRECTED BY THE ENGINEER. ALL CHANGES TO THE TRAFFIC CONTROL DETOUR PLAN SHALL BE REVIEWED WITH THE PROJECT ENGINEER.

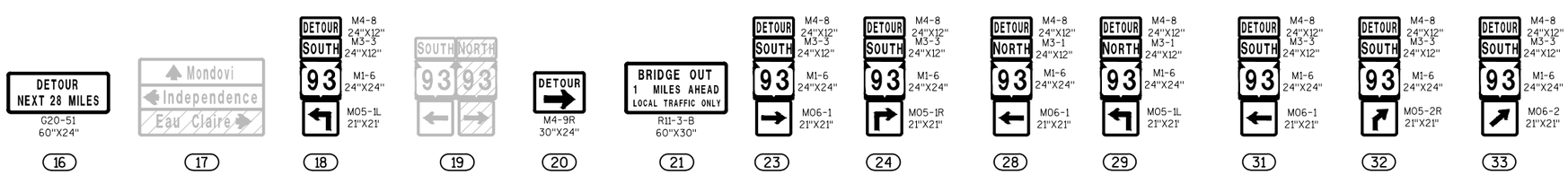
2. SIGN FACE LAYOUTS SHALL BE IN ACCORDANCE WITH THE FEDERAL HIGHWAY ADMINISTRATION MANUAL OF STANDARD HIGHWAY SIGNS, UNLESS OTHERWISE NOTED.

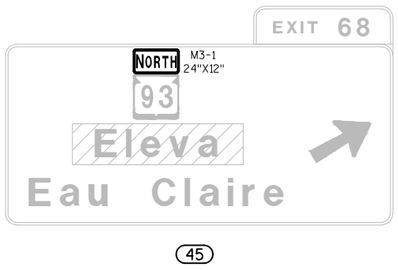
3. TRAFFIC CONTROL PLANS ARE NOT TO SCALE.

4. "WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THAT THE BACKGROUND IS ORANGE.

5. COVER, REMOVE, OR ALTER ANY EXISTING SIGNS THAT DISPLAY A CONFLICTING MESSAGE WITH THE PROPOSED DETOUR ROUTE.

2



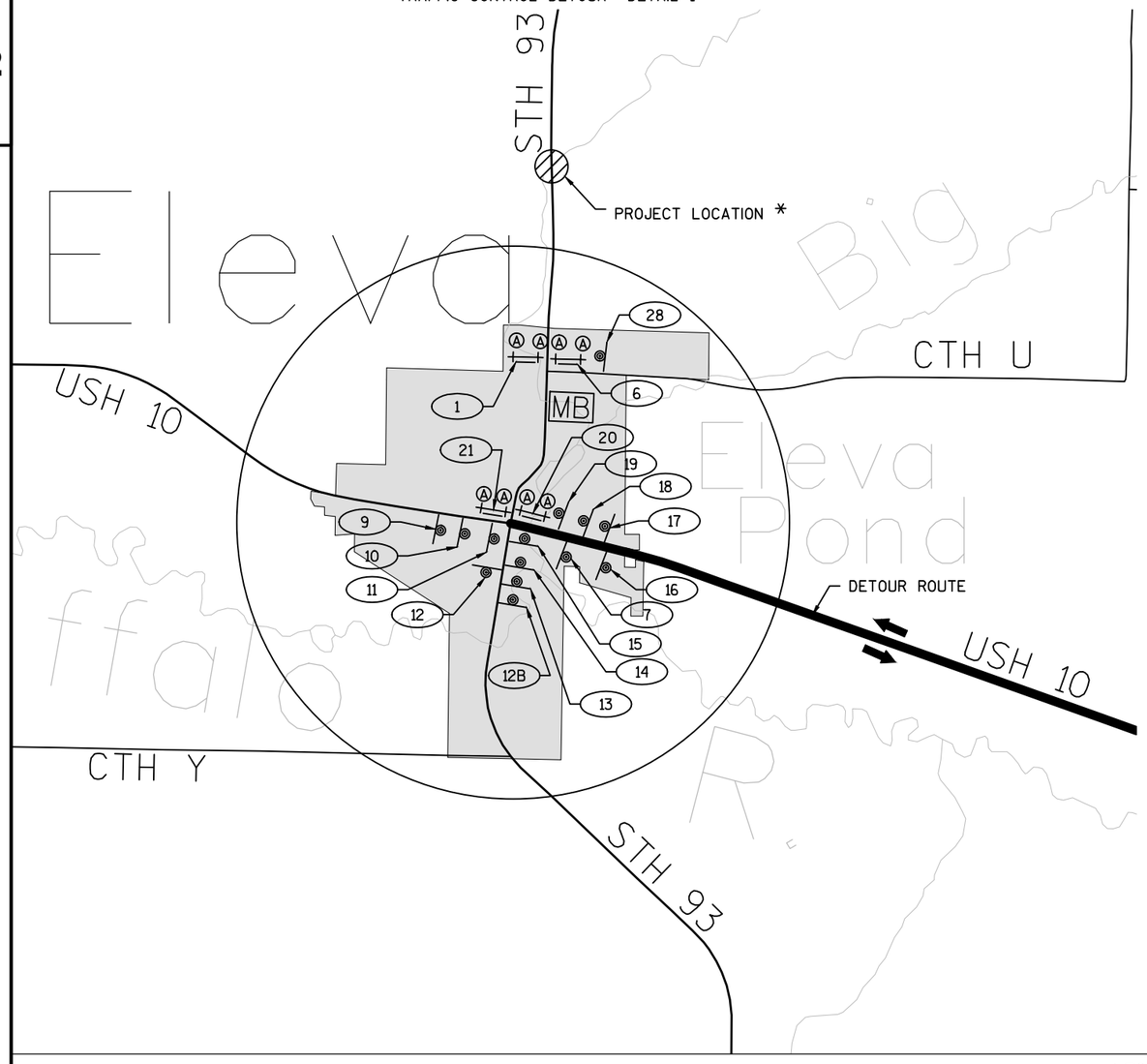


PROJECT NO: 7590-01-85	HWY: STH 93	COUNTY: TREMPEALEAU	TRAFFIC CONTROL DETOUR PLAN LEGEND & NOTES	SHEET 6	E

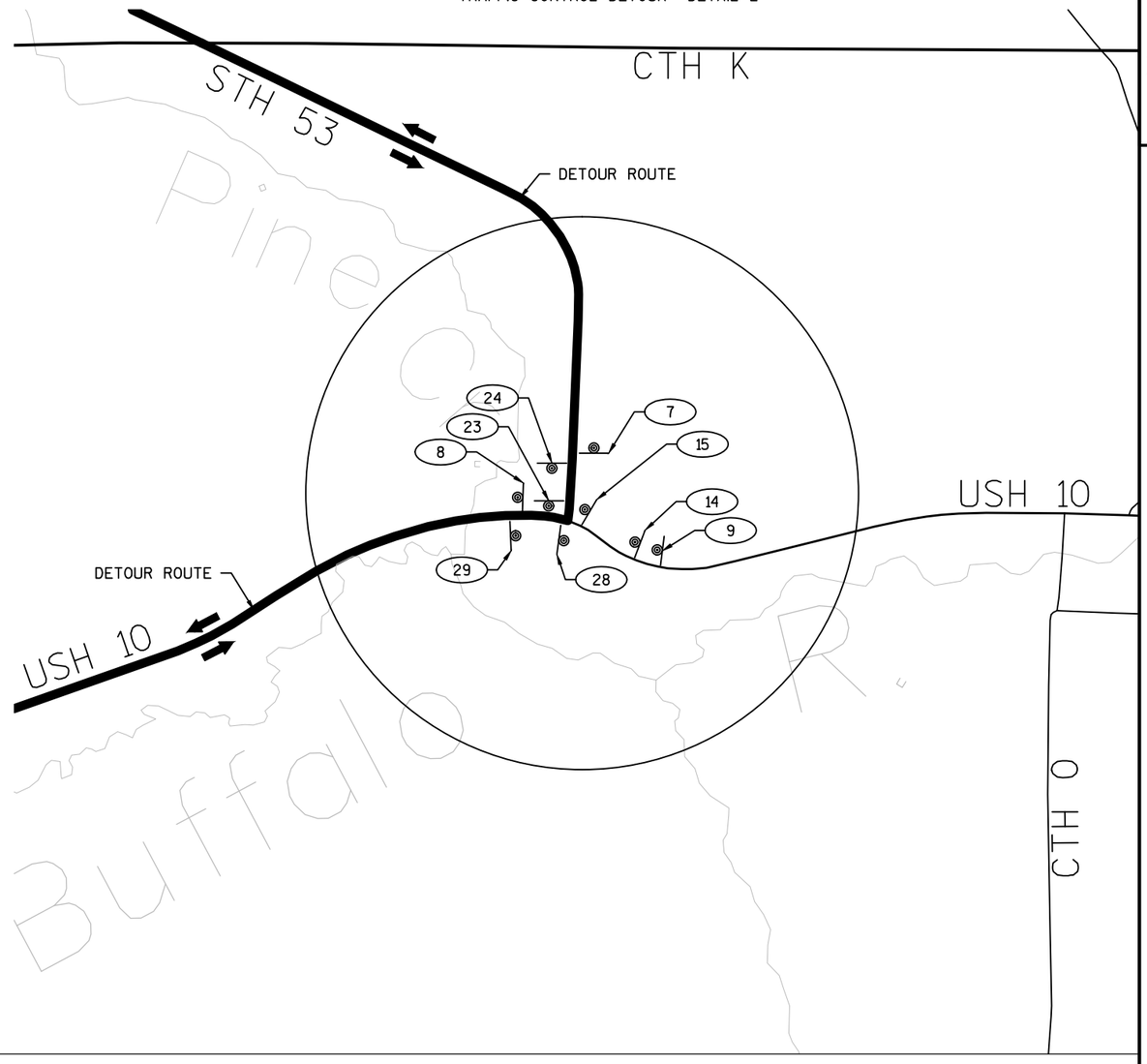
FILE NAME : P:\90S\93\00093283\CADD\SHEETSPLAN\025001_TC.DWG
LAYOUT NAME - 025001_TC - 025002_TC
PLOT DATE : 1/19/2016 2:38 PM PLOT BY : BRAD LEE PLOT NAME : PLOT SCALE : 1 IN:100 FT
WISDOT/CADDS SHEET 42

2

TRAFFIC CONTROL DETOUR DETAIL 1



TRAFFIC CONTROL DETOUR DETAIL 2



2

LEGEND

- TYPE III BARRICADE
- TYPE III BARRICADE WTH ATTACHED SIGN
- SIGN ON PERMANENT SUPPORT
- Ⓐ TYPE A WARNING LIGHT (FLASHING)
- WORK AREA
- DIRECTION OF TRAFFIC
- MB PORTABLE CHANGEABLE MESSAGE BOARD (TWO WEEKS PRIOR TO CLOSURE)

NOTES:

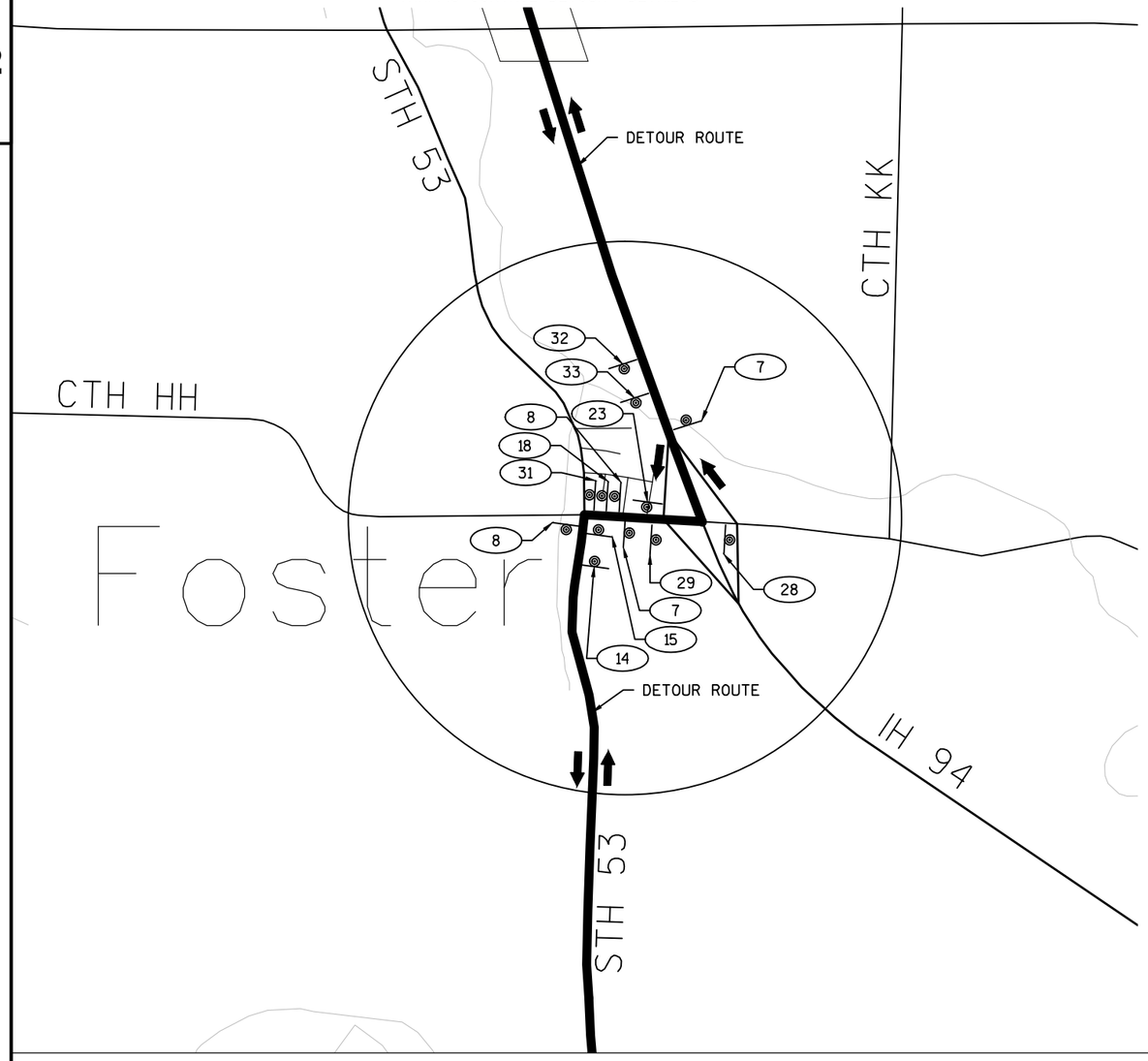
* SEE SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES"

SEE SDD "DETOUR SIGNING FOR MAINLINE CLOSURES"

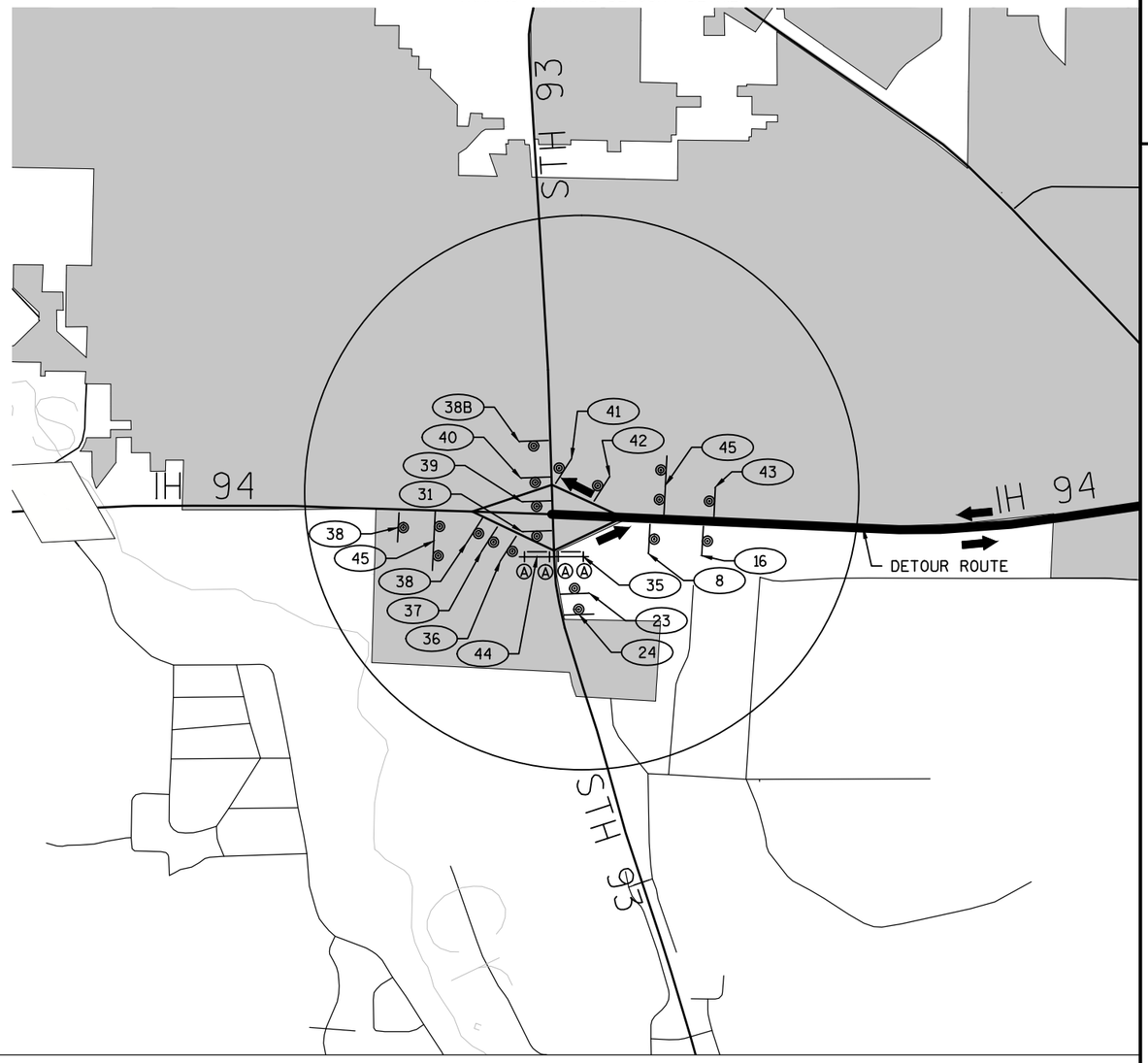
PROJECT NO: 7590-01-85	HWY: STH 93	COUNTY: TREMPEALEAU	TRAFFIC CONTROL DETOUR DETAILS 1 & 2	SHEET 7	E

2

TRAFFIC CONTROL DETOUR DETAIL 3



TRAFFIC CONTROL DETOUR DETAIL 4



2

LEGEND

- TYPE III BARRICADE
- TYPE III BARRICADE WTH ATTACHED SIGN
- SIGN ON PERMANENT SUPPORT
- Ⓐ TYPE A WARNING LIGHT (FLASHING)
- WORK AREA
- DIRECTION OF TRAFFIC
- MB PORTABLE CHANGEABLE MESSAGE BOARD (TWO WEEKS PRIOR TO CLOSURE)

NOTES:

SEE SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES"

SEE SDD "DETOUR SIGNING FOR MAINLINE CLOSURES"

PROJECT NO: 7590-01-85	HWY: STH 93	COUNTY: TREMPEALEAU	TRAFFIC CONTROL DETOUR DETAILS 3 & 4	SHEET 8	E

DATE 09MAR16 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	7590-01-85 QUANTITY
0010	201.0105	Clearing	STA	1.000	1.000
0020	201.0205	Grubbing	STA	1.000	1.000
0030	203.0100	Removing Small Pipe Culverts	EACH	1.000	1.000
0040	203.0700.S	Removing Old Structure Over Waterway With Debris Capture System (station) 01. 60+28	LS	1.000	1.000
0050	204.0165	Removing Guardrail	LF	358.000	358.000
0060	205.0100	Excavation Common	CY	987.000	987.000
0070	206.1000	Excavation for Structures Bridges (structure) 01. B-61-239	LS	1.000	1.000
0080	210.0100	Backfill Structure	CY	240.000	240.000
0090	213.0100	Finishing Roadway (project) 01. 7590-01-85	EACH	1.000	1.000
0100	305.0110	Base Aggregate Dense 3/4-Inch	TON	238.000	238.000
0110	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,799.000	1,799.000
0120	415.0080	Concrete Pavement 8-Inch	SY	128.000	128.000
0130	415.0410	Concrete Pavement Approach Slab	SY	104.000	104.000
0140	455.0605	Tack Coat	GAL	182.000	182.000
0150	460.2000	Incentive Density HMA Pavement	DOL	320.000	320.000
0160	460.6444	HMA Pavement 4 MT 58-34 H	TON	495.000	495.000
0170	465.0315	Asphaltic Flumes	SY	20.000	20.000
0180	502.0100	Concrete Masonry Bridges	CY	398.000	398.000
0190	502.3200	Protective Surface Treatment	SY	510.000	510.000
0200	502.3210	Pigmented Surface Sealer	SY	98.000	98.000
0210	503.0128	Prestressed Girder Type I 28-Inch	LF	440.000	440.000
0220	505.0400	Bar Steel Reinforcement HS Structures	LB	12,255.000	12,255.000
0230	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	46,165.000	46,165.000
0240	505.0800.S	Bar Steel Reinforcement HS Stainless Structures	LB	1,600.000	1,600.000
0250	506.2605	Bearing Pads Elastomeric Non-Laminated	EACH	16.000	16.000
0260	506.4000	Steel Diaphragms (structure) 01. B-61-239	EACH	7.000	7.000
0270	516.0500	Rubberized Membrane Waterproofing	SY	32.000	32.000
0280	520.1018	Apron Endwalls for Culvert Pipe 18-Inch	EACH	2.000	2.000
0290	520.3318	Culvert Pipe Class III-A 18-Inch	LF	42.000	42.000
0300	550.2102	Piling CIP Concrete 10 3/4 X 0.219-Inch	LF	1,120.000	1,120.000
0310	606.0300	Riprap Heavy	CY	447.000	447.000
0320	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	265.000	265.000
0330	614.0150	Anchor Assemblies for Steel Plate Beam Guard	EACH	4.000	4.000
0340	614.2300	MGS Guardrail 3	LF	50.000	50.000
0350	614.2500	MGS Thrie Beam Transition	LF	157.600	157.600
0360	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0370	618.0100	Maintenance And Repair of Haul Roads (project) 01. 7590-01-85	EACH	1.000	1.000
0380	619.1000	Mobilization	EACH	1.000	1.000
0390	624.0100	Water	MGAL	54.500	54.500
0400	625.0500	Salvaged Topsoil	SY	791.000	791.000
0410	627.0200	Mulching	SY	791.000	791.000
0420	628.1504	Silt Fence	LF	684.000	684.000
0430	628.1520	Silt Fence Maintenance	LF	684.000	684.000
0440	628.1905	Mobilizations Erosion Control	EACH	3.000	3.000
0450	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0460	628.2008	Erosion Mat Urban Class I Type B	SY	98.000	98.000

3

DATE 09MAR16 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	7590-01-85 QUANTITY
0470	628.6005	Turbidity Barriers	SY	288.000	288.000
0480	628.7504	Temporary Ditch Checks	LF	8.000	8.000
0490	628.7555	Culvert Pipe Checks	EACH	1.000	1.000
0500	629.0210	Fertilizer Type B	CWT	0.800	0.800
0510	630.0120	Seeding Mixture No. 20	LB	35.000	35.000
0520	630.0200	Seeding Temporary	LB	19.000	19.000
0530	638.2602	Removing Signs Type II	EACH	6.000	6.000
0540	638.3000	Removing Small Sign Supports	EACH	6.000	6.000
0550	642.5001	Field Office Type B	EACH	1.000	1.000
0560	643.0100	Traffic Control (project) 01. 7590-01-85	EACH	1.000	1.000
0570	643.0420	Traffic Control Barricades Type III	DAY	539.000	539.000
0580	643.0705	Traffic Control Warning Lights Type A	DAY	1,078.000	1,078.000
0590	643.0900	Traffic Control Signs	DAY	441.000	441.000
0600	643.0910	Traffic Control Covering Signs Type I	EACH	2.000	2.000
0610	643.0920	Traffic Control Covering Signs Type II	EACH	7.000	7.000
0620	643.1050	Traffic Control Signs PCMS	DAY	28.000	28.000
0630	643.2000	Traffic Control Detour (project) 01. 7590-01-85	EACH	1.000	1.000
0640	643.3000	Traffic Control Detour Signs	DAY	3,038.000	3,038.000
0650	645.0120	Geotextile Fabric Type HR	SY	798.000	798.000
0660	646.0106	Pavement Marking Epoxy 4-Inch	LF	950.000	950.000
0670	650.4500	Construction Staking Subgrade	LF	327.000	327.000
0680	650.5000	Construction Staking Base	LF	327.000	327.000
0690	650.6000	Construction Staking Pipe Culverts	EACH	1.000	1.000
0700	650.6500	Construction Staking Structure Layout (structure) 01. B-61-239	LS	1.000	1.000
0710	650.7000	Construction Staking Concrete Pavement	LF	46.000	46.000
0720	650.9910	Construction Staking Supplemental Control (project) 01. 7590-01-85	LS	1.000	1.000
0730	650.9920	Construction Staking Slope Stakes	LF	327.000	327.000
0740	690.0150	Sawing Asphalt	LF	60.000	60.000
0750	715.0415	Incentive Strength Concrete Pavement	DOL	500.000	500.000
0760	715.0502	Incentive Strength Concrete Structures	DOL	2,388.000	2,388.000

3

3

3

CLEARING AND GRUBBING

CATEGORY	STATION	LOCATION	201.0105 CLEARING STA	201.0205 GRUBBING STA
0010	60+00	RT & LT	1	1
		TOTAL	1	1

REMOVING GUARDRAIL

CATEGORY	STATION	LOCATION	204.0165 REMOVING GUARDRAIL LF
0010	59+13 - 59+96	LT	84
	59+25 - 60+20	RT	95
	60+36 - 61+18	LT	83
	60+60 - 61+56	RT	96
		TOTAL	358

REMOVING SMALL PIPE CULVERTS

CATEGORY	STATION	LOCATION	203.0100 REMOVING SMALL PIPE CULVERTS EACH	LF	REMARKS
0010	61+55	LT	1	30	18" RCCP
		TOTAL	1		

EXCAVATION & BORROW

Division	From / To Station	Location	Common Excavation (1) (ITEM # 205.0100) Cut (2)	EBS Excavation (3)	Salvaged / Unusable Pavement Material (4)	Available Material (5)	Unexpanded Fill	Expanded Fill (6) Factor 1.30	Mass Ordinate + / - (7)	Waste	Borrow (ITEM # 208.0100)	Comment:
1	58+25.00 - 59+64.07	STH 93	425	---		425	77	101	324	324	0	
	60+91.93 - 62+50.00	STH 93	562	---		562	165	214	348	348	0	
Division 1 Subtotal			987	0	0	987	242	315	672	672	0	
Grand Total Project 7590-01-85			987	0	0	987	242	315	672	672	0	
		PROJECT 7590-01-85 Total Common Exc	987									

1) Common Excavation is the sum of the Cut and EBS Excavation columns. Item number 205.0100
2) Salvaged/Unsuable Pavement Material is included in Cut.
3) EBS Excavation to be backfilled with Select Crushed material.
4) Salvaged/Unsuable Pavement Material
5) Available Material = Cut - Salvaged/Unusuable Pavement Material
6) Expanded Fill. Factor = 1.30
7) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material within the Division. Minus indicates a shortage of material within the Division.

BASE AGGREGATE ITEMS

CATEGORY	STATION	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON	** 624.0100 WATER MGAL
0010	58+25 - 59+79	89	721	12.2
	60+77 - 62+50	117	808	13.9
	58+40 RT (FIELD ENTRANCE)	4	---	0.1
	61+75 LT (FIELD ENTRANCE)	28	---	0.5
	TOTAL	238	1,529	26.7

NOTE: BASE AGGREGATE DENSE (3/4-INCH & 1 1/4-INCH) WERE CALCULATED USING 2.0 TONS/CY.
**ADDITIONAL QUANTITIES LISTED ELSEWHERE

CONCRETE PAVEMENT

CATEGORY	STATION	415.0080 CONCRETE PAVEMENT 8-INCH SY	415.0410 CONCRETE PAVEMENT APPROACH SLAB SY
0010	59+56.07 - 59+79.47	64	52
	60+76.53 - 60+99.93	64	52
	TOTAL	128	104

ASPHALT FLUMES

CATEGORY	STATION	LOCATIONS	465.0315 ASPHALT FLUMES SY
0010	59+62	LT	5
	59+92	RT	5
	60+66	LT	5
	60+96	RT	5
	TOTAL		20

ASPHALT PAVEMENT ITEMS

CATEGORY	STATION	THICKNESS	455.0605 TACK COAT GAL	460.6444 HMA PAVEMENT 4 MT 58-34 H TON	460.2000 INCENTIVE DENSITY HMA PAVEMENT DOL
0010	58+25 - 59+56	7	88	238	---
	61+00 - 62+50	7	94	257	---
	TOTAL		182	495	320

NOTE: TACK COAT CALCULATED AT 0.07 GALLONS PER SQUARE YARD

CULVERT PIPES

CATEGORY	STATION		520.1018 APRON ENDWALLS FOR CULVERT PIPE 18-INCH EACH	* 520.3318 CULVERT PIPE CLASS III-A 18-INCH LF
0010	61+75	FIELD ENTRANCE LT	2	42
		TOTAL	2	42

* JOINT TIES REQUIRED IF REINFORCED CONCRETE CULVERT PIPE IS USED

3

RIPRAP ITEMS

CATEGORY	STATION	LOCATION	606.0300 RIPRAP HEAVY CY	645.0120 GEOTEXTILE FABRIC TYPE HR SY
0010	59+55	LT	6	9
	59+90	RT	6	9
	TOTAL		12	18

ROADWAY BARRIER ITEMS

CATEGORY	STATION	LOCATION	614.2300 MGS GUARDRAIL 3 LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH
0010	58+62 - 59+67	LT	12.5	39.40	1
	58+92 - 59+97	RT	12.5	39.40	1
	60+59 - 61+64	LT	12.5	39.40	1
	60+89 - 61+94	RT	12.5	39.40	1
	TOTAL		50.0	157.60	4

RESTORATION ITEMS

CATEGORY	STATION	LOCATION	** 624.0100 WATER MGAL	625.0500 SALVAGED TOPSOIL SY	627.0200 MULCHING SY	629.0210 FERTILIZER TYPE B CWT	630.0120 SEEDING MIXTURE #20 LB	630.0200 SEEDING TEMPORARY LB
0010	58+25 - 59+64	LT	6.3	179	179	0.2	8	4
	58+25 - 60+16	RT	5.5	124	124	0.2	7	4
	60+50 - 62+50	LT	8.9	282	282	0.3	11	6
	60+94 - 62+50	RT	7.1	206	206	0.2	9	5
	TOTAL		27.8	791	791	0.8	35	19

**ADDITIONAL QUANTITIES LISTED ELSEWHERE

EROSION CONTROL ITEMS

CATEGORY	STATION	LOCATION	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.2008 EROSION MAT URBAN CLASS I TYPE B SY	628.6005 TURBIDITY BARRIERS SY	628.7504 TEMPORARY DITCH CHECKS LF	628.7555 CULVERT PIPE CHECKS EACH
0010	58+22 - 59+73	LT	160	160	---	---	---	---
	58+51 - 60+71	RT	225	225	---	---	---	---
	59+73 - 60+71	RT & LT	---	---	---	129	---	---
	60+07 - 60+94	RT & LT	---	---	---	111	---	---
	60+07 - 60+22	LT	20	20	---	---	---	---
	60+94 - 62+53	RT	165	165	---	---	---	---
	60+75 - 61+44	LT	---	---	81	---	---	---
	61+40	LT	---	---	---	---	8	---
	61+90	LT	---	---	---	---	---	1
	UNDISTRIBUTED		114	114	16	48	---	---
	TOTAL		684	684	98	288	8	1

REMOVING SIGNS

CATEGORY	STATION	LOCATION	638.2602 REMOVING SIGNS TYPE II EACH	638.3000 REMOVING SMALL SIGN SUPPORTS EACH	REMARKS
0010	59+95	LT	1	1	CLEARANCE
	60+15	RT	1	1	WEIGHT LIMIT
	60+20	RT	1	1	CLEARANCE
	60+35	LT	1	1	CLEARANCE
	60+40	LT	1	1	WEIGHT LIMIT
	60+60	RT	1	1	CLEARANCE
	TOTALS		6	6	

MOBILIZATION EROSION CONTROL

CATEGORY	LOCATION	628.1905 MOBILIZATION EROSION CONTROL EACH	628.1910 MOBILIZATION EMERGENCY EROSION CONTROL EACH
0010	7590-01-85	3	2
	TOTAL	3	2

TRAFFIC CONTROL SIGNS

CATEGORY	PROJECT	DAYS	TRAFFIC CONTROL SIGNS EACH	643.0900 TRAFFIC CONTROL SIGNS DAYS	643.0910 TRAFFIC* CONTROL COVERING SIGNS TYPE I EACH	643.0920 TRAFFIC* CONTROL COVERING SIGNS TYPE II EACH	TRAFFIC CONTROL SIGNS PCMS EACH	643.1050 TRAFFIC CONTROL SIGNS PCMS DAYS	TRAFFIC CONTROL DETOUR SIGNS EACH	643.3000 TRAFFIC CONTROL DETOUR SIGNS DAYS
0010	7590-01-85	49	9	441	2	7	---	---	62	3038
	7590-01-85	14	---	---	---	---	2	28	---	---
	TOTALS			441	2	7		28		3,038

NOTE: TRAFFIC CONTROL COVERING SIGNS TYPE I AND TRAFFIC CONTROL COVERING SIGNS TYPE II INCLUDE 1 CYCLE FOR ALL NECESSARY SIGNS.

TRAFFIC CONTROL ITEMS

CATEGORY	PROJECT	DAYS	TRAFFIC CONTROL BARRICADES TYPE III EACH	643.0420 TRAFFIC CONTROL BARRICADES TYPE III DAYS	TRAFFIC CONTROL WARNING LIGHTS TYPE A EACH	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A DAYS
0010	7590-01-85	49	11	539	22	1078
	TOTALS			539		1,078

CONSTRUCTION STAKING

CATEGORY	STATION	LOCATION	650.4500 CONSTRUCTION STAKING SUBGRADE LF	650.5000 CONSTRUCTION STAKING BASE LF	650.6000 CONSTRUCTION STAKING PIPE CULVERTS EACH	650.7000 CONSTRUCTION STAKING CONCRETE PAVEMENT LF	650.9910 CONSTRUCTION STAKING SUPPLEMENTAL CONTROL LS	650.9920 CONSTRUCTION STAKING SLOPE STAKES LF
0010	58+25 - 59+79	LT & RT	154	154	---	---	1	154
	60+77 - 62+50	LT & RT	173	173	---	---	---	173
	59+56 - 59+79	LT & RT	---	---	---	23	---	---
	60+77 - 61+00	LT & RT	---	---	---	23	---	---
	59+46.49 - 59+65.70	LT	---	---	---	---	---	---
	59+77.30 - 59+93.24	RT	---	---	---	---	---	---
	61+75	LT	---	---	1	---	---	---
	TOTAL		327	327	1	46	1	327

PAVEMENT MARKING

CATEGORY	STATION	LOCATION	646.0106 PAVEMENT MARKING EPOXY 4-INCH YELLOW LF	WHITE LF
0010	58+25 - 62+50	LT	---	425
	58+25 - 62+50	CENTERLINE	100	---
	58+25 - 62+50	RT	---	425
	TOTALS		100	850

SAWING PAVEMENT ITEMS

CATEGORY	STATION	LOCATION	690.0150 SAWING ASPHALT LF
0010	58+25	RT & LT	30
	62+50	RT & LT	30
	TOTAL		60

BENCH MARKS			
NO.	STATION	DESCRIPTION	ELEV.
1	60+33.66, 19.2' LT	CHIS + ON NW CORNER BRIDGE ABUT	889.30
2	59+64.20, 70.6' LT	2 POLE NAILS IN 12" ELM TREE	879.55
3	62+56.82, 72.7' LT	2 POLE NAILS IN 18" ELM TREE	893.76

LEGEND

- EROSION MAT URBAN CLASS I, TYPE B
- SILT FENCE
- RIPRAP
- TURBIDITY BARRIER
- TEMPORARY DITCH CHECK
- CULVERT PIPE DITCH CHECK
- SURFACE WATER FLOW
- CONCRETE PAVEMENT 8-INCH
- CONCRETE PAVEMENT APPROACH SLAB

N

STANLEY BECKER

PAUL R. & JOANN VANDYK ADAMS

EXISTING R/W

STA 61+75
B.A.D. FE LT

1 - 42" CLASS III-A 18-INCH CP
2 - APRON ENDWALLS
I.E. = 886.16
O.E. = 885.15
REMOVE EXISTING 30' X 18" CP

BM-3

DO NOT DISTURB SECTION CORNER DURING CONSTRUCTION

PI = 53+28.07
Y = 519,918.10
X = 816,565.51

BM-2

GEOTEXTILE FABRIC TYPE HR & RIPRAP HEAVY

LEFT DITCH

STRUCTURE B-61-0239

PC: 61+82.88

ASPHALT FLUME

ASPHALT FLUME

SAWCUT

+62

+52

+12

REMOVING GUARDRAIL

BM-1

+14

+64

REMOVING GUARDRAIL

+95

SAWCUT

58+00

59+00

60+00

61+00

62+00

63+00

STH 93
(ASPHALT)

+44

+94

+04

+92

REMOVING GUARDRAIL

ASPHALT FLUME

+42

REMOVING GUARDRAIL

ASPHALT FLUME

BEGIN PROJECT
STA 58+25
Y = 520,414.48
X = 816,542.29

STA 58+40
B.A.D. FE RT

GEOTEXTILE FABRIC TYPE HR & RIPRAP HEAVY

EXISTING R/W

EXISTING STRUCTURE B-61-0035 (TO BE REMOVED)

SLOPE INTERCEPT (TYP)

END PROJECT
STA 62+50
Y = 520,839.03
X = 816,522.62

PI = 63+95.16
Y = 520,984.02
X = 816,515.64
Δ = 02°07'21" R
D = 00°30'00"
T = 212.29'
L = 424.52'
R = 11,460.00'
PC = 61+82.88
PT = 66+07.40

PAUL R. & JOANN ADAMS

BURIED FIBER OPTIC (TRI-COUNTY COMMUNICATIONS)

REMOVE EXISTING BRIDGE B-61-0035
STA 60+28
SINGLE SPAN CONCRETE "T" GIRDER
34.0 FT CLEAR ROADWAY WIDTH
39.7 FT OVERALL LENGTH
35° SKEW

ADAMS CREEK

BURIED TELEPHONE (TRI-COUNTY COMMUNICATIONS)

PAUL R. & JOANN ADAMS

FINISHED PROFILE

EXISTING PROFILE

0.48%

2.00%

2.50%

4.83%

STA 58+25.00
EL 887.89

STA 62+50.00
EL 889.92

STA 60+28, STRUCTURE B-61-0239
SINGLE SPAN CONCRETE PRESTRESSED GIRDER BRIDGE
44.0 FT CLEAR ROADWAY WIDTH
59.5 FT OVERALL LENGTH
35° SKEW

HIGH WATER 100
ELEV. 882.22

LEFT DITCH

890
880
875

EARTHWORK SUMMARY
STA 58+25 - STA 62+50

EXC. COMMON	987 CY
FILL	242 CY
FILL EXPANSION	30%
WASTE	672 CY

58+00 59+00 60+00 61+00 62+00 63+00 63+50

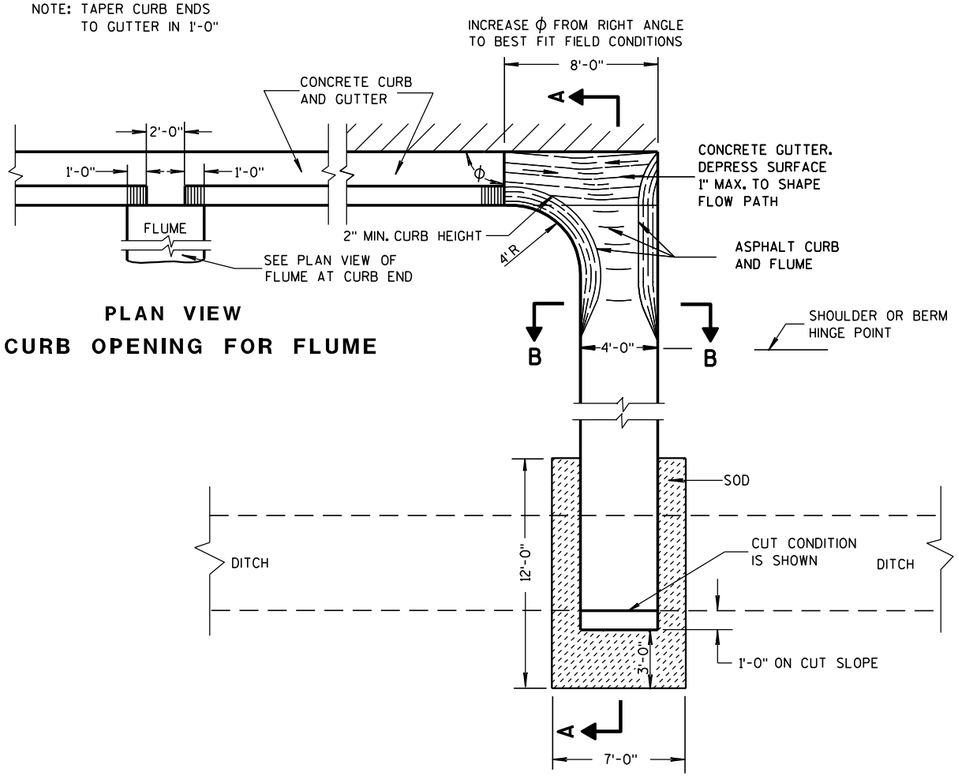
887.79 887.99 888.01 888.21 888.25 888.48 888.49 888.78 888.73 889.00 888.97 889.17 889.21 889.35 889.44 889.61 889.68 889.92 889.92 890.17 890.26

PROJECT NO: 7590-01-85	HWY: STH 93	COUNTY: TREMPEALEAU	PLAN AND PROFILE: STH 93	SHEET 13	E

Standard Detail Drawing List

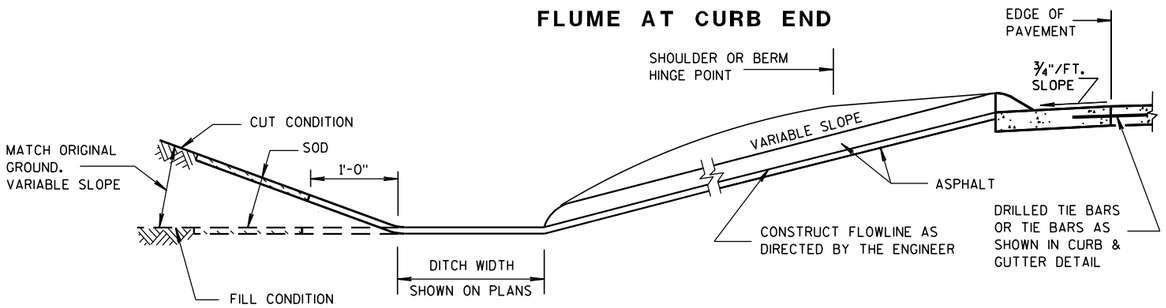
08D04-05	CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
12A03-10	NAME PLATE (STRUCTURES)
13B02-08A	CONCRETE PAVEMENT APPROACH SLAB
13B02-08B	STRUCTURAL APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB
13C01-18	CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES
13C11-11A	RURAL DOWELED CONCRETE PAVEMENT
13C11-11B	RURAL DOWELED CONCRETE PAVEMENT
13C18-03A	CONCRETE PAVEMENT JOINTING
13C18-03B	CONCRETE PAVEMENT STEEL REINFORCEMENT
13C18-03C	CONCRETE PAVEMENT JOINT TIES
13C18-03D	CONCRETE PAVEMENT JOINTING AT UTILITY FIXTURES
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)
14B45-04D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-06A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C04-03	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C06-07	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-16A	PAVEMENT MARKING (MAINLINE)

ASPHALTIC FLUME

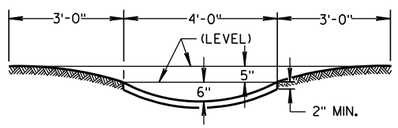


PLAN VIEW
CURB OPENING FOR FLUME

PLAN VIEW
FLUME AT CURB END



SECTION A-A



SECTION B-B

GENERAL NOTES

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

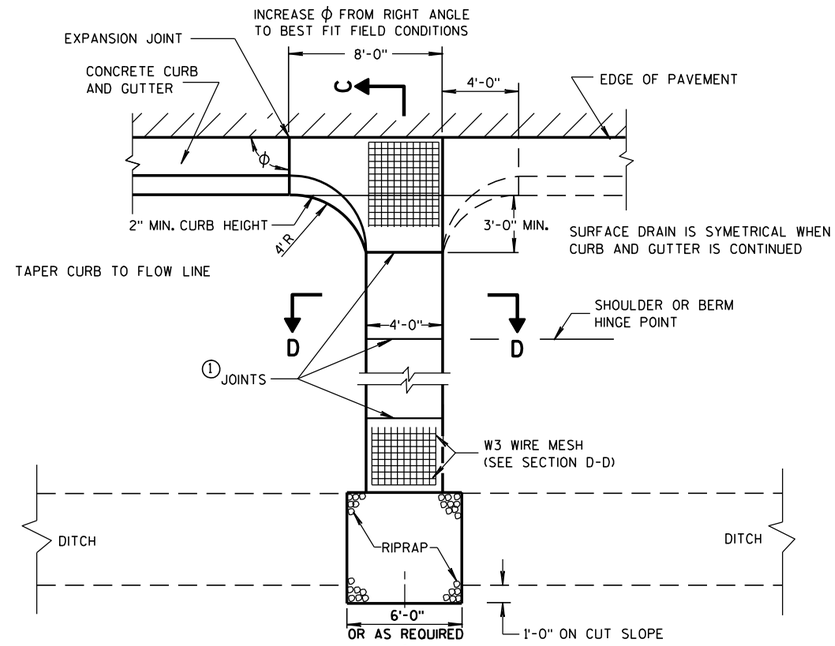
WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

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

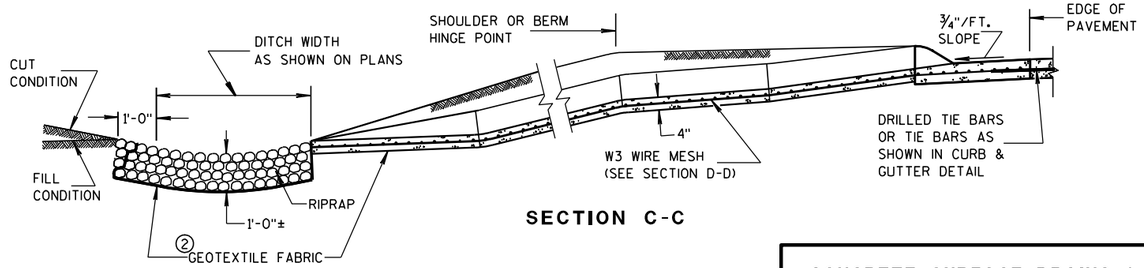
② GEOTEXTILE FABRIC TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.

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

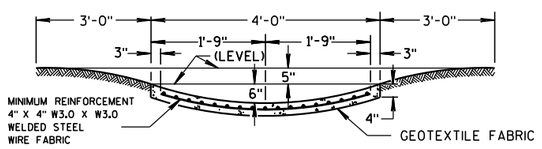
③ CONCRETE SURFACE DRAIN



PLAN VIEW



SECTION C-C



SECTION D-D

CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

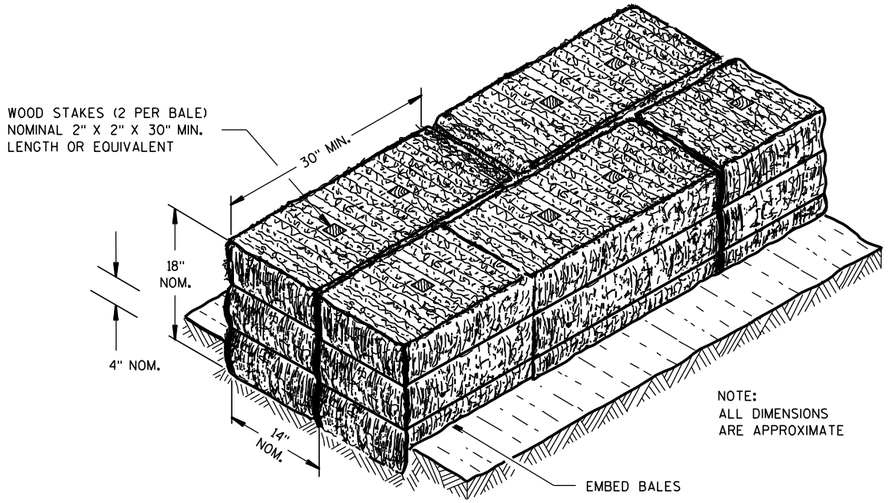
APPROVED
9-4-08 DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER
15
MENT
FHWA

6

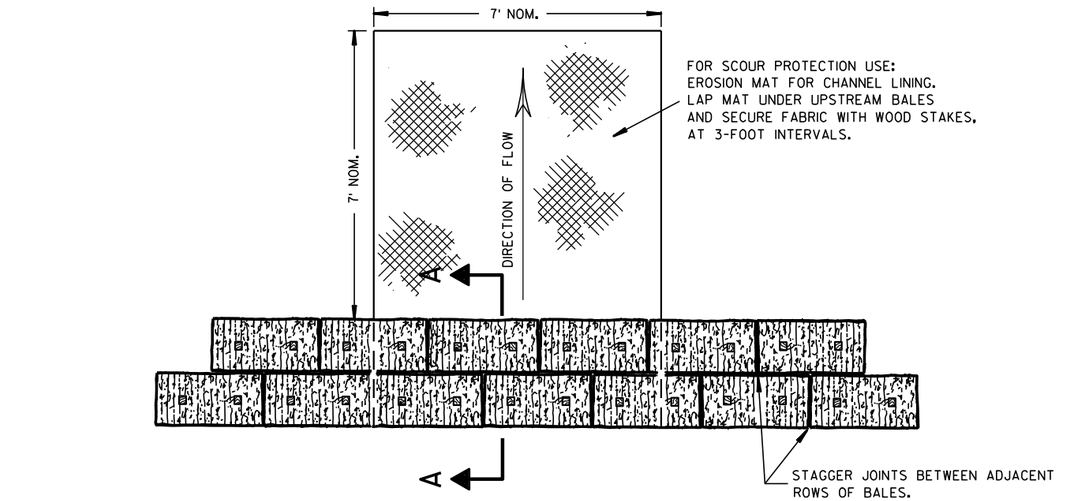
S.D.D. 8 D 4-5

6

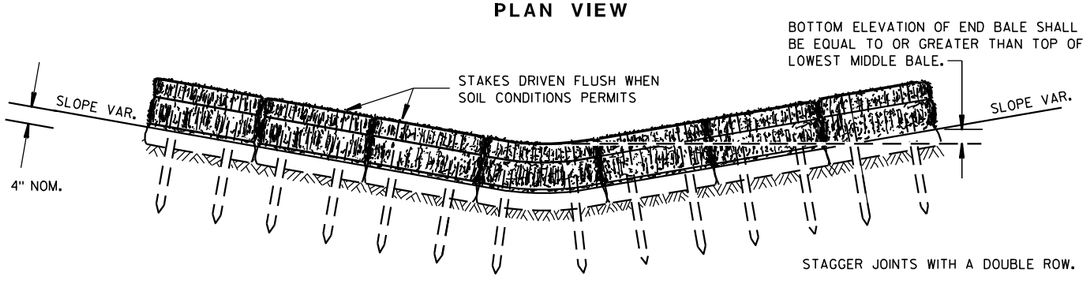
S.D.D. 8 D 4-5



SECTION A-A



PLAN VIEW



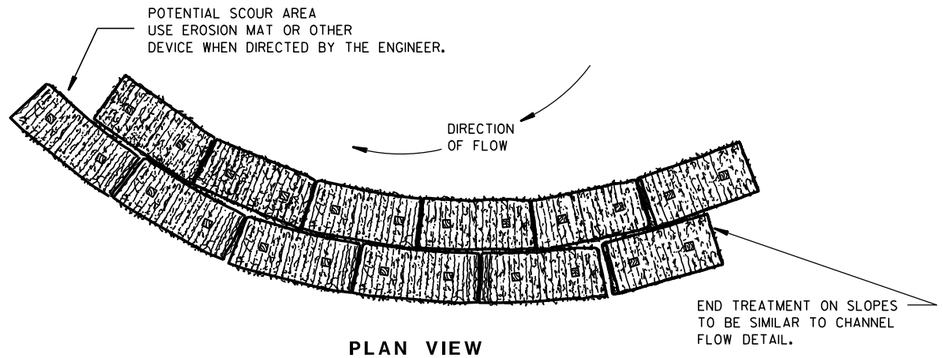
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES (1)

GENERAL NOTES

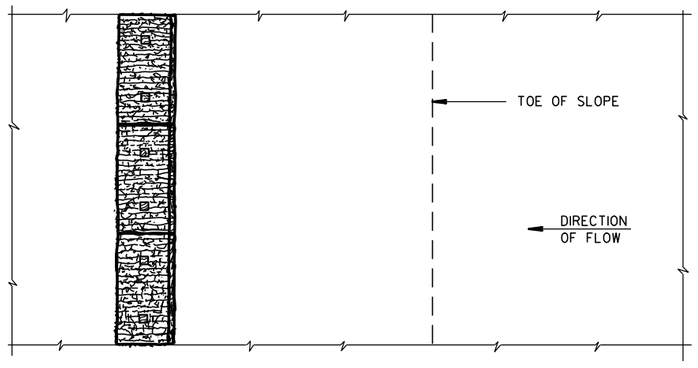
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

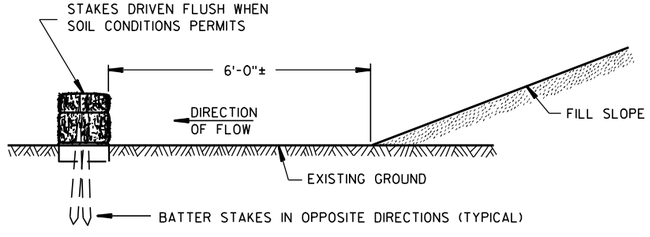


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02 — DATE

/S/ Beth Cannestra — CHIEF ROADWAY DEVELOPMENT ENGINEER

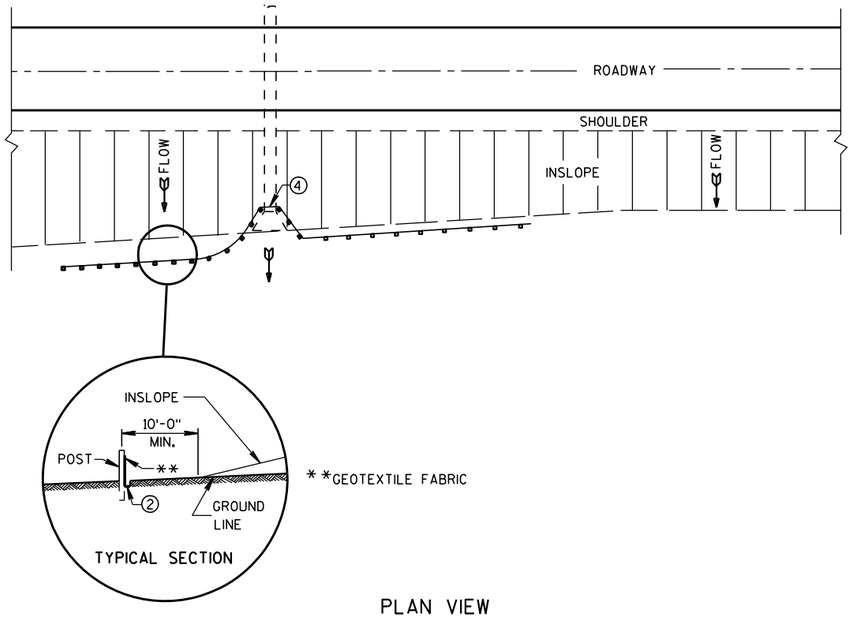
FHWA

6

S.D.D. 8 E 8-3

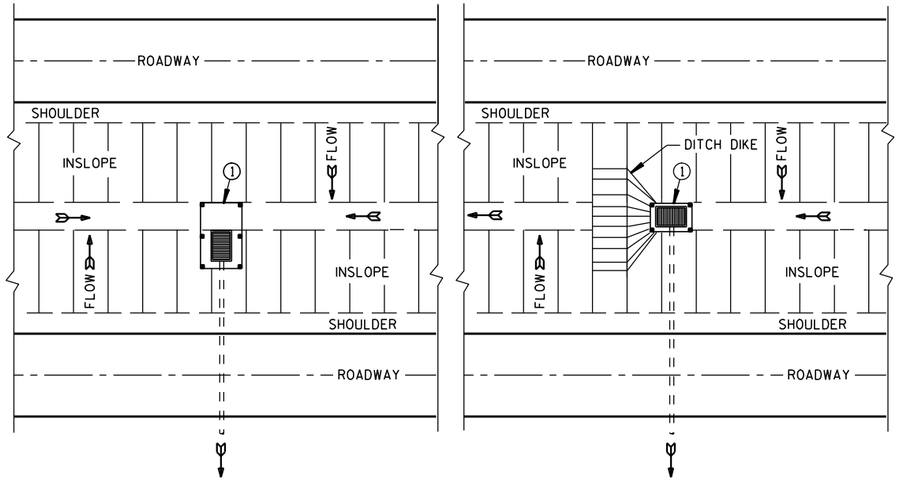
6

S.D.D. 8 E 8-3



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



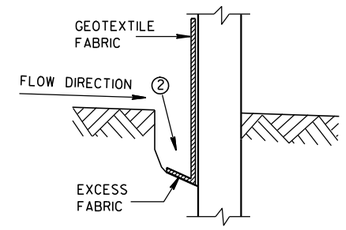
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

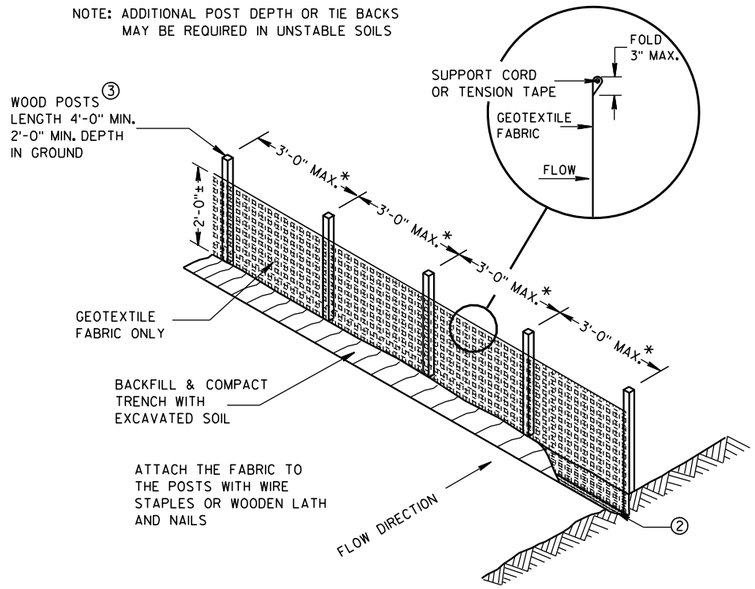
GENERAL NOTES

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

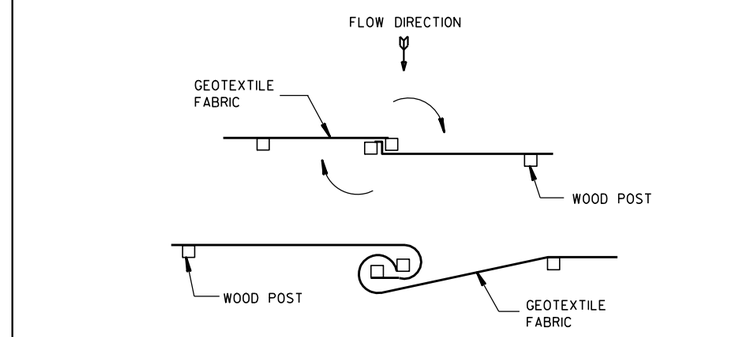
1. HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
2. FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL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



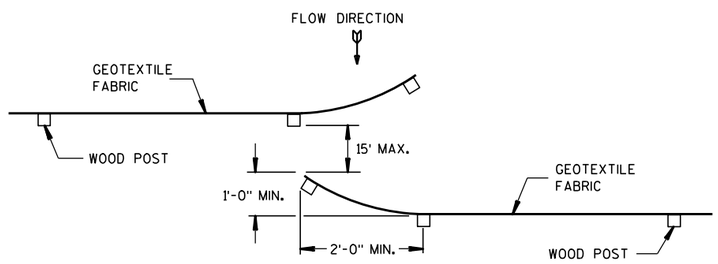
TRENCH DETAIL



SILT FENCE

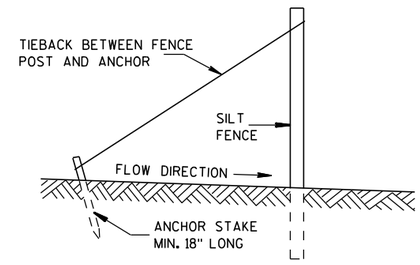


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE 5



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

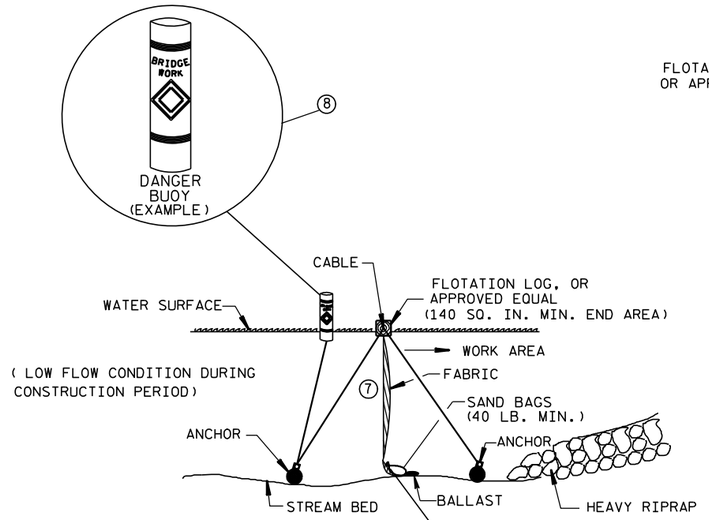
APPROVED
4-29-05 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

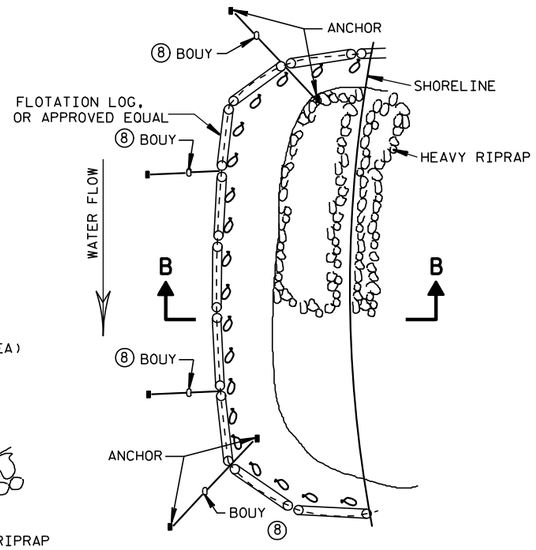
S.D.D. 8 E 9-6

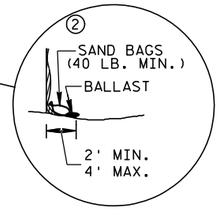
6

S.D.D. 8 E 9-6

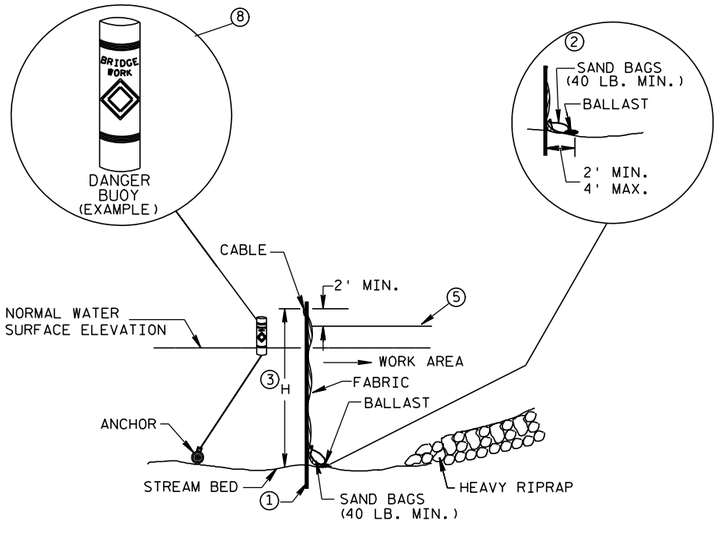


SECTION B-B

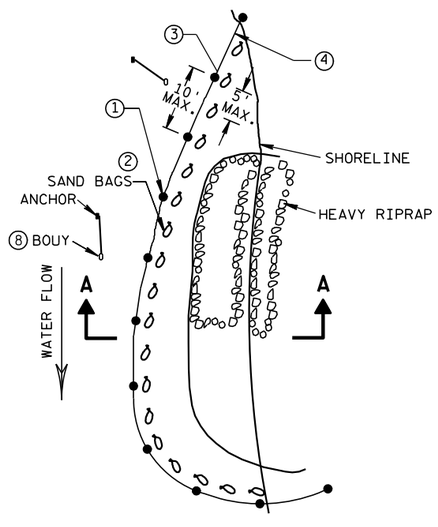




TURBIDITY BARRIER FLOAT ALTERNATIVE
CAUTION - SEE NOTE 6



SECTION A-A



PLAN VIEW

TURBIDITY BARRIER STANDARD POST INSTALLATION

TURBIDITY BARRIER PLACEMENT DETAILS

GENERAL NOTES

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

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

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

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

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

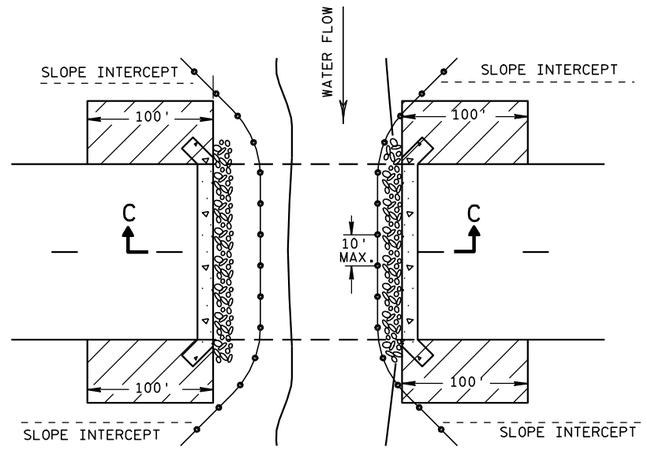
④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.

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

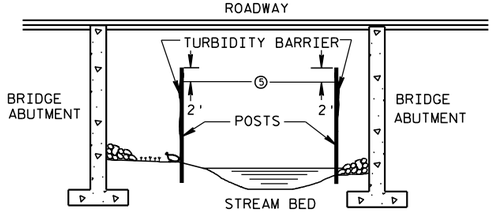
⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.

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

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



PLAN VIEW



SECTION C-C

TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

S.D.D. 8 E 11-2

METAL APRON ENDWALLS

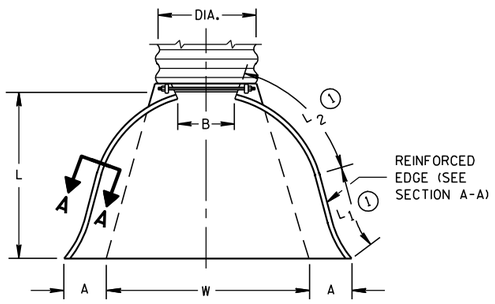
PIPE DIA. (IN.)	MIN. THICK. (Inches) STEEL	MIN. THICK. (Inches) ALUM.	DIMENSIONS (Inches) A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")	APPROX. SLOPE	BODY
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4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

× EXCEPT CENTER PANEL SEE GENERAL NOTES

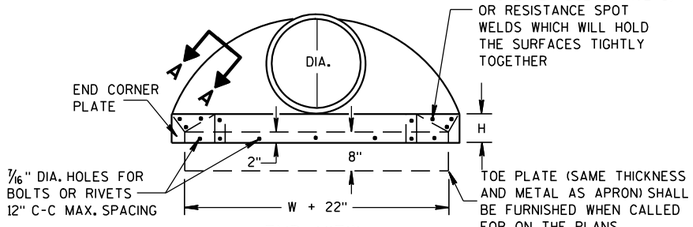
REINFORCED CONCRETE APRON ENDWALLS

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

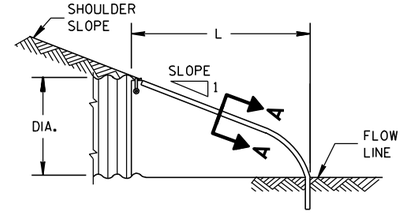
*MINIMUM
**MAXIMUM



PLAN VIEW

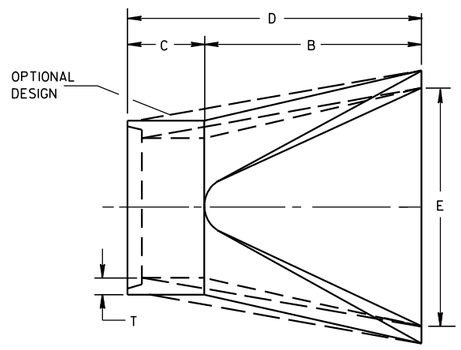


END VIEW

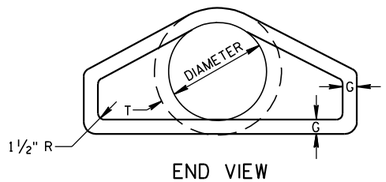


SIDE ELEVATION

METAL ENDWALLS



PLAN



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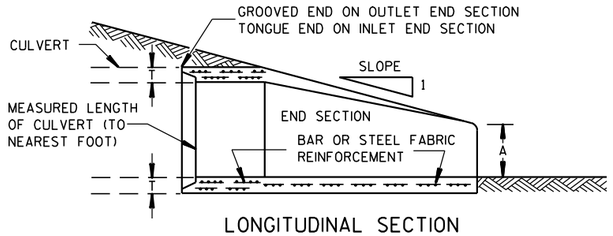
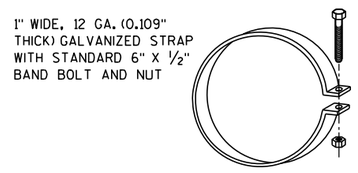


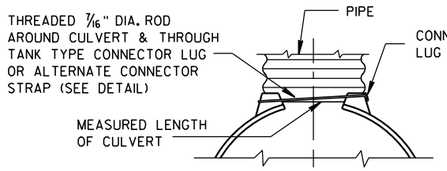
LONGITUDINAL SECTION

CONCRETE ENDWALLS

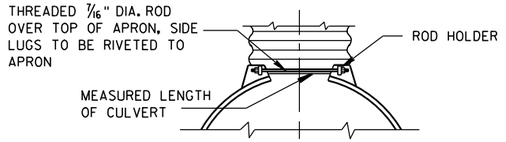


ALTERNATE FOR TYPE 1 CONNECTION

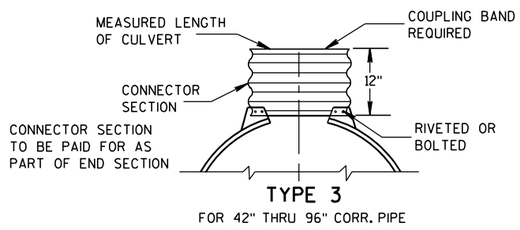
END SECTION CONNECTOR STRAP



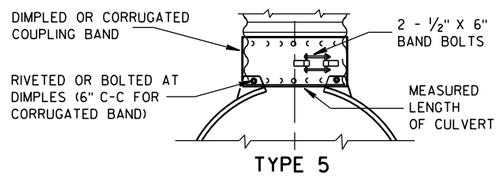
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

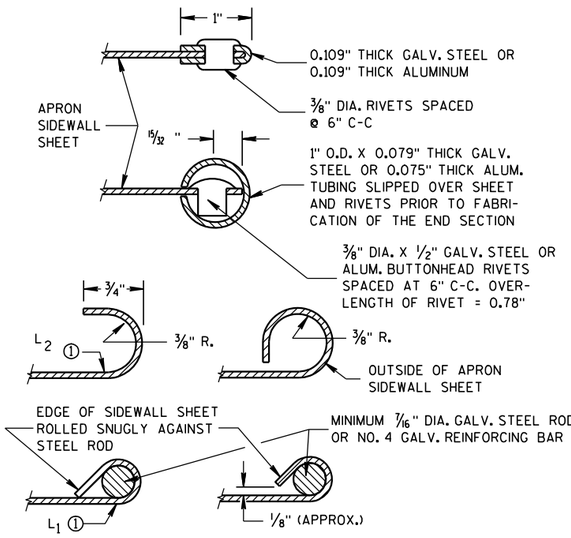
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

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

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

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

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

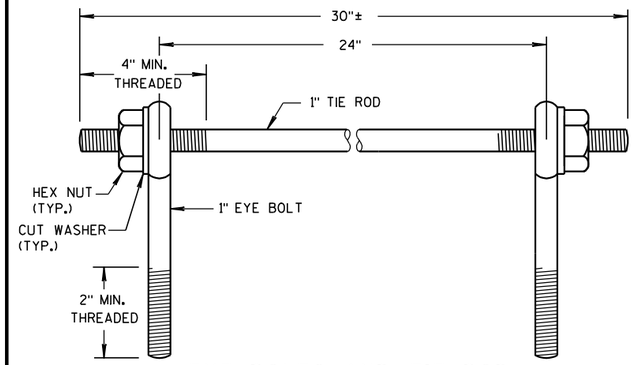
① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR CULVERT PIPE

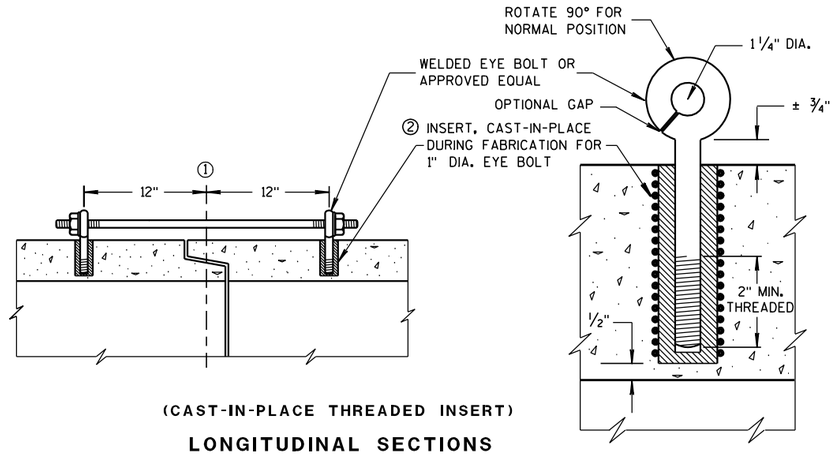
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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



EYE BOLTS AND TIE ROD



(CAST-IN-PLACE THREADED INSERT)

LONGITUDINAL SECTIONS

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

GENERAL NOTES

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

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

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

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

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

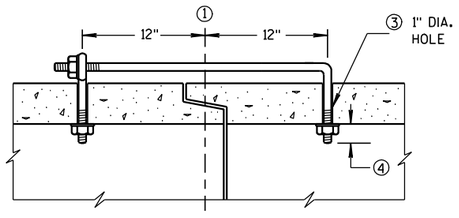
② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.

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

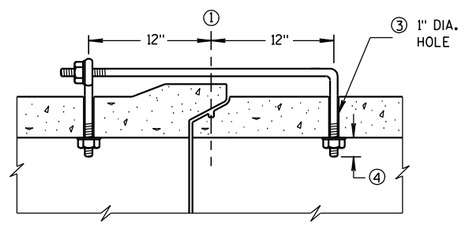
④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.

⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.

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



(TONGUE & GROOVE PIPE)

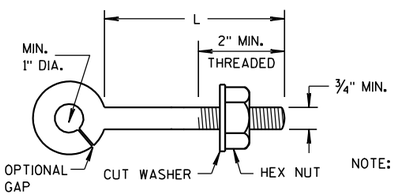


(MODIFIED BELL PIPE)

LONGITUDINAL SECTION

EYE BOLT DIMENSION TABLE

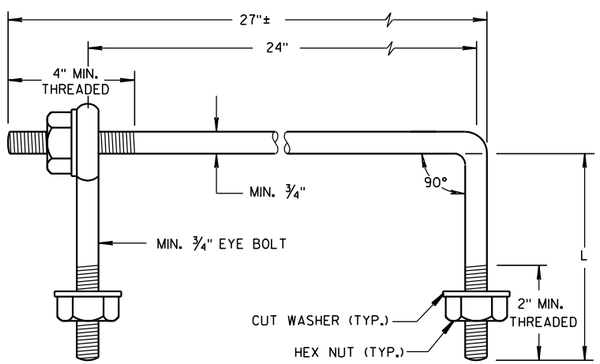
PIPE SIZE	L = LENGTH	
	TONGUE & GROOVE PIPE	MODIFIED BELL PIPE
18" TO 24"	4 1/2"	6 1/4"
30"	5"	7"
36"	5 1/2"	7"
42"	6"	
48"	6 1/2"	
60"	7 1/2"	
66"	8"	



NOTE:

EYE BOLT

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



EYE BOLT AND TIE ROD

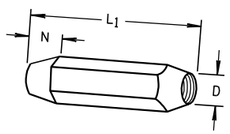
(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)

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

ADJUSTABLE TIE ROD TABLE

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

DIMENSIONS SHOWN ARE IN INCHES



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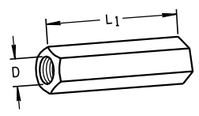
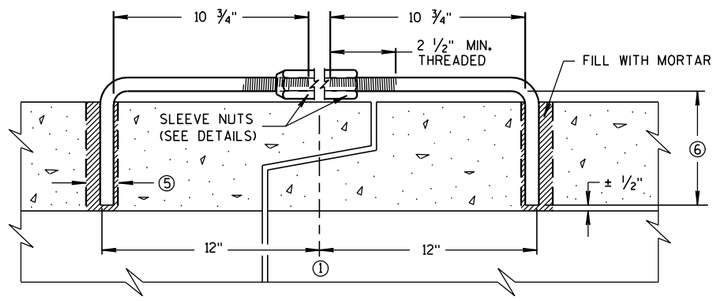


PLAIN

RIGHT AND LEFT THREADS

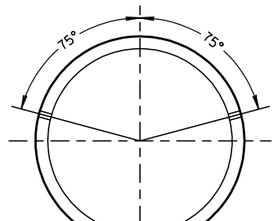
SLEEVE NUTS



LONGITUDINAL SECTION

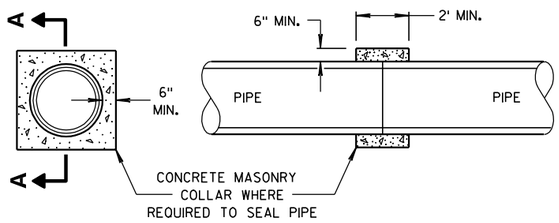
(JOINT TIES FOR 12" TO 108" DIA. CONCRETE PIPE)

ADJUSTABLE TIE ROD (ALTERNATE NO. 3)



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

TRANSVERSE SECTION



SECTION A-A

CONCRETE COLLAR DETAIL

JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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S.D.D. 8 F 4-7

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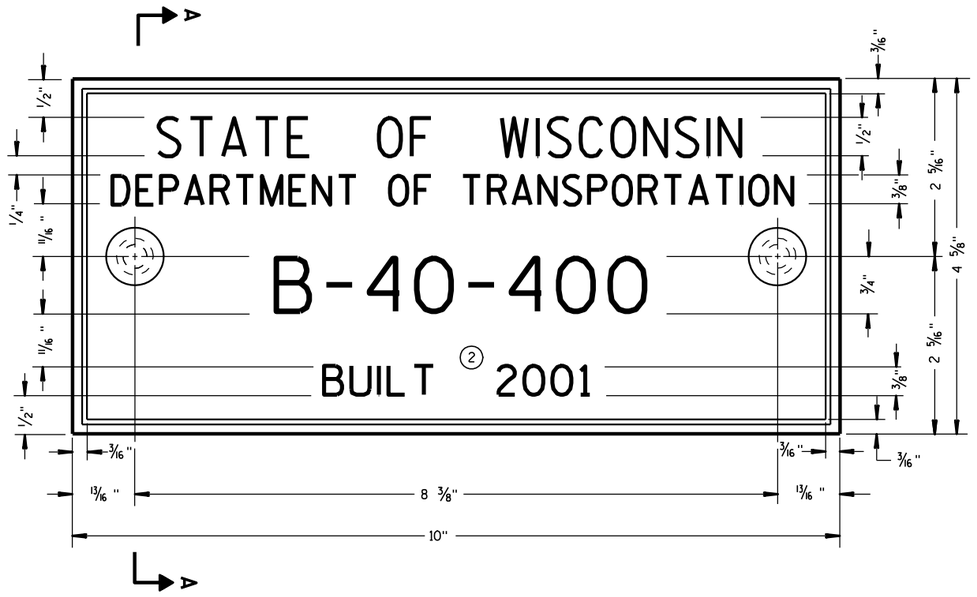
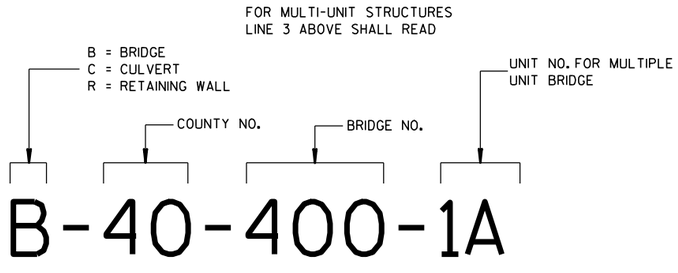
S.D.D. 8 F 4-7



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



NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

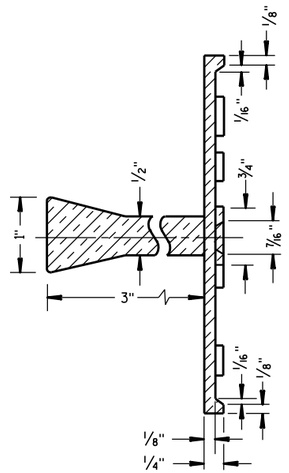
GENERAL NOTES

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

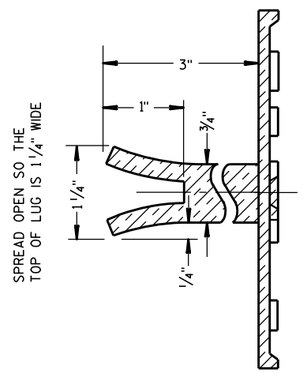
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

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

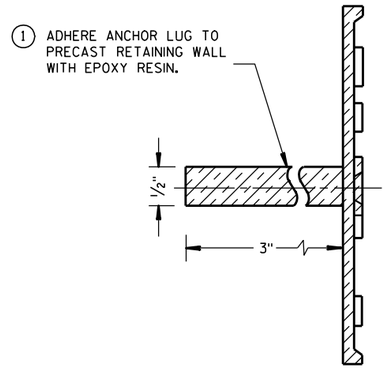
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A



ALTERNATE LUG



ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE (STRUCTURES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

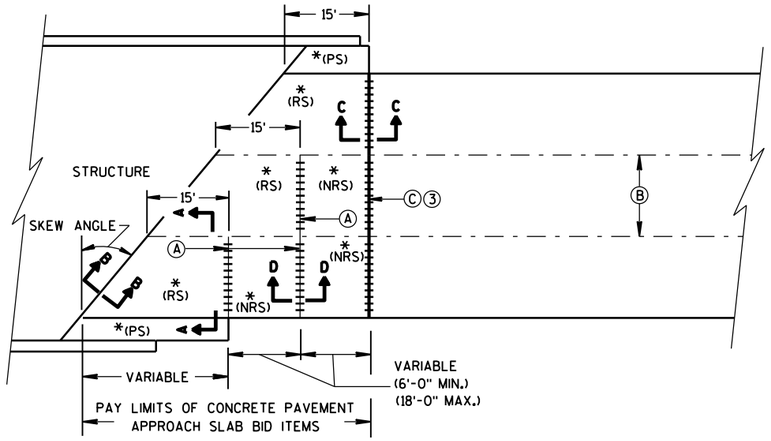
3/26/10 DATE

/S/ Scot Beck CHIEF STRUCTURAL DEVELOPMENT ENGINEER

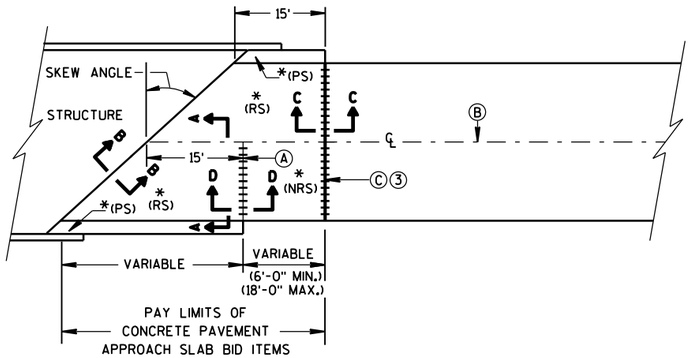
FHWA

6

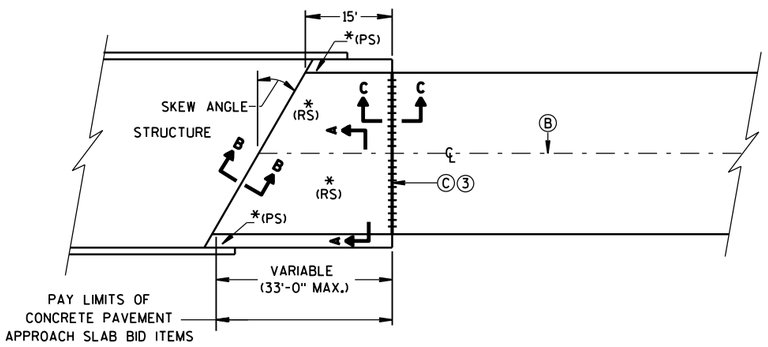
S.D.D. 12 A 3-10



SKEWED APPROACH
(PAVEMENT MORE THAN 2 LANES)



SKEWS >20°
(PAVEMENT WIDTH ≤30')



SKEWS ≤20°
(PAVEMENT WIDTH ≤30')

APPROACH SLAB AND ADJACENT PAVEMENT

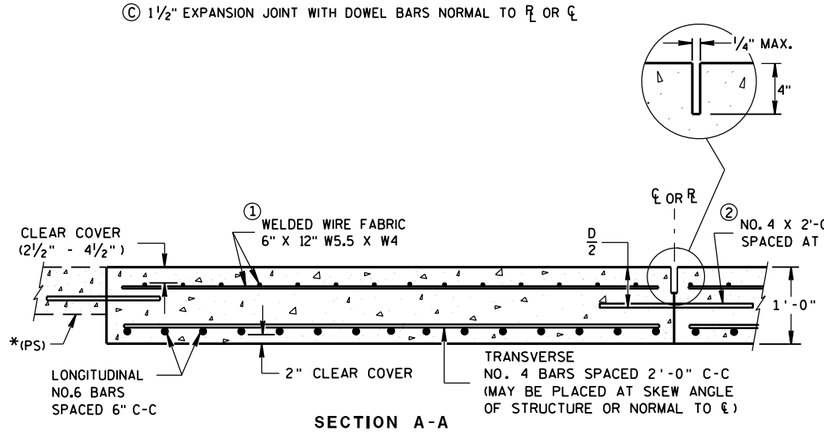
*(RS) = REINFORCED CONCRETE SLAB
*(PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
(SEE DETAILS ELSEWHERE IN THE PLAN)
*(NRS) = NON-REINFORCED CONCRETE SLAB

***STANDARD DOWEL BAR DIAMETER
(SEE SDD 13C11, & SDD 13C13)

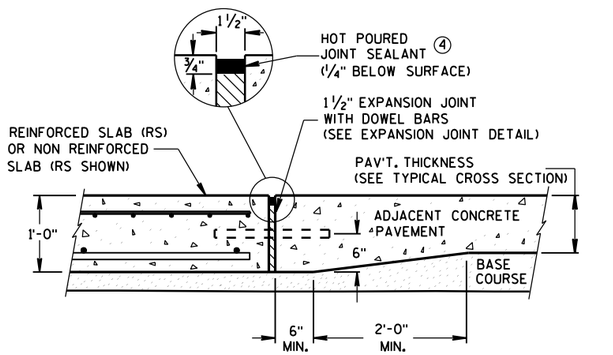
Ⓐ STANDARD CONTRACTION JOINT NORMAL TO ℄ OR ℄

Ⓑ STANDARD LONGITUDINAL JOINT WITH TIE BARS.

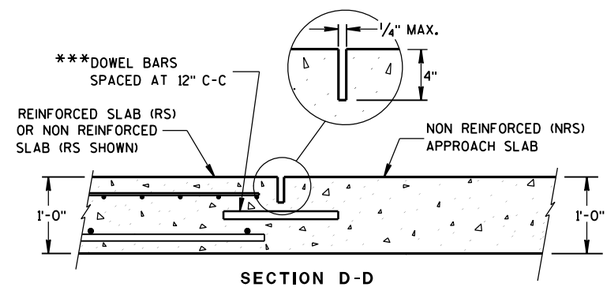
Ⓒ 1½" EXPANSION JOINT WITH DOWEL BARS NORMAL TO ℄ OR ℄



SECTION A-A
REINFORCEMENT POSITIONING DETAIL



SECTION C-C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT



SECTION D-D
CONTRACTION JOINT

GENERAL NOTES

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

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

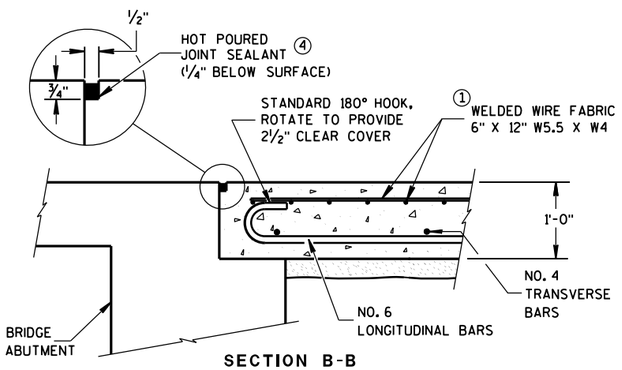
① THE CONTRACTOR MAY USE NO. 4 BARS SPACED AT 2'-0" C-C IN BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTIONS FOR TOP REINFORCEMENT AS AN ALTERNATIVE TO THE WELDED WIRE FABRIC.

② THE CONTRACTOR MAY OMIT TIE BARS BETWEEN REINFORCED SLABS WHERE SLAB REINFORCEMENT BARS EXTEND ACROSS THE CENTERLINE OR REFERENCE LINE.

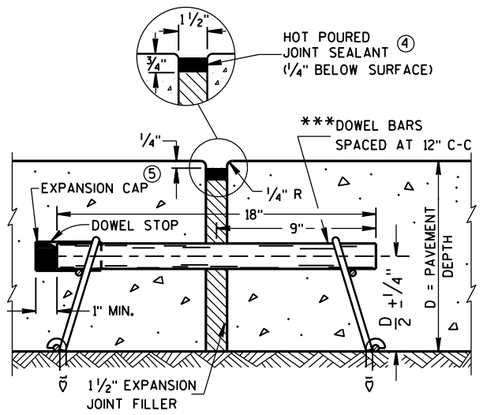
③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.

④ USE A JOINT SEALANT MEETING THE REQUIREMENTS OF ASTM D6690.

⑤ PLACE EXPANSION CAP ON THE END OF THE DOWEL THAT IS NOT TACK WELDED TO THE BASKET. DO NOT FORCE DOWEL BAR PAST THE DOWEL STOP.



SECTION B-B
BEND DETAIL
BOTTOM REINFORCEMENT



EXPANSION JOINT DETAIL

CONCRETE PAVEMENT APPROACH SLAB

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015
DATE
/S/ Peter Kemp, P.E.
PAVEMENT SUPER
FHWA

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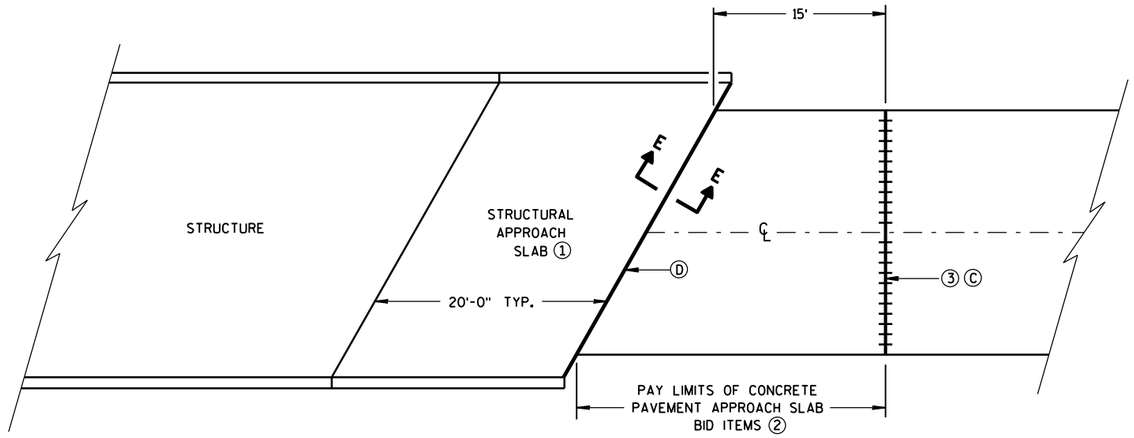
S.D.D. 13 B 2-8a



GENERAL NOTES

ALL PROJECTS THAT INVOLVE A STRUCTURAL APPROACH SLAB WILL ALSO HAVE A CONCRETE PAVEMENT APPROACH SLAB.

① SEE BRIDGE PLAN.

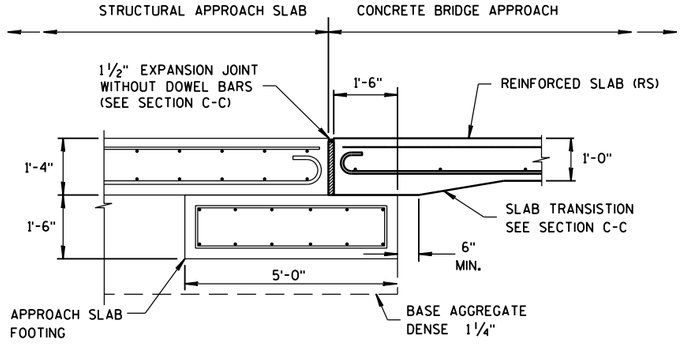
② CONFORM TO SHEET 13 B 2(A) FOR CONCRETE PAVEMENT APPROACH SLAB DETAILS.

③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.

Ⓒ 1½" EXPANSION JOINT WITH DOWEL BARS NORMAL TO ℄ OR ℄

Ⓓ 1½" EXPANSION JOINT (NO DOWELS)

BRIDGE APPROACHES



SECTION E-E

FOOTING DETAIL

STRUCTURAL APPROACH SLAB TO CONCRETE BRIDGE APPROACH

STRUCTURAL APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Peter Kemp, P.E. — PAVEMENT SUPERVISOR
FHWA

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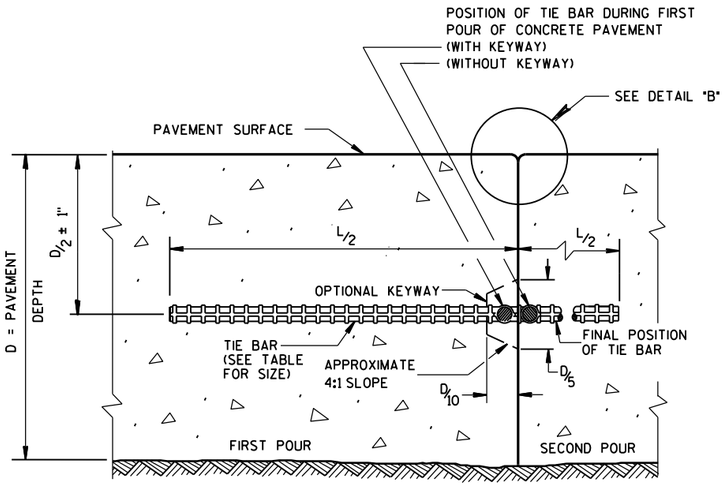
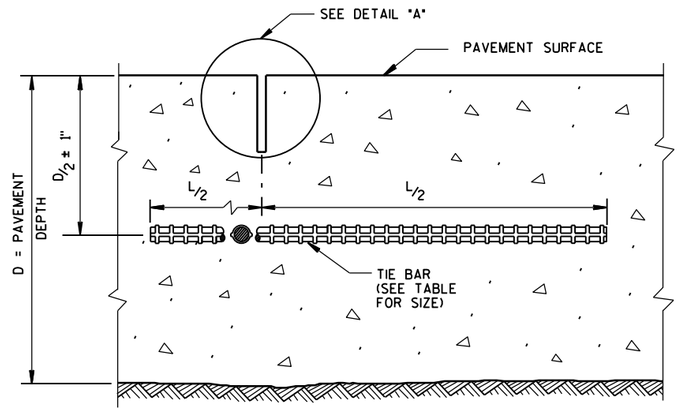
S.D.D. 13 B 2-8b



CONSTRUCTION JOINT



SAWED JOINT

GENERAL NOTES

DO NOT SEAL OR FILL LONGITUDINAL JOINTS.

CREATE A LONGITUDINAL JOINT FOR PAVEMENT WIDTHS GREATER THAN 15 FEET.

CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

(1) ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.

(2) PAVEMENT THAT WAS IN PLACE PRIOR TO THE CONTRACT.

PLAN VIEW

SECTION A-A

LONGITUDINAL CONSTRUCTION JOINT TIE BARS ANCHORED INTO EXISTING PAVEMENT

DETAIL "A"

DETAIL "B"

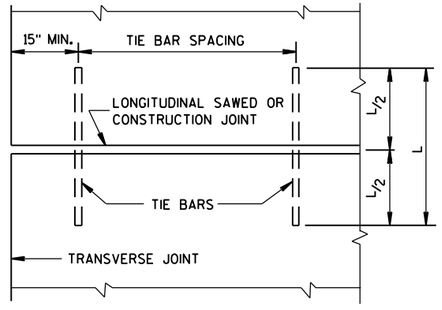
DETAIL "C"

TIE BAR TABLE

PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4 *	30"	24"**

* SUBSTITUTE BENT BARS AT LONGITUDINAL JOINTS WHEN EQUIPMENT LIMITATIONS DURING CONSTRUCTION WARRANT (e.g. AUXILIARY LANES OR TURN LANES)

** CONFORM TO 15" MINUMUM SPACING FROM TRANSVERSE JOINTS; SPACING BETWEEN TIE BARS WILL BE 30" AT TRANSVERSE JOINTS.



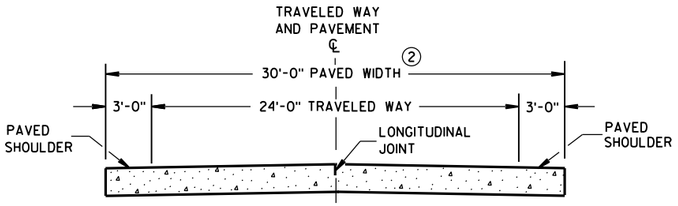
PLAN VIEW
SHOWING LOCATION OF TIE BARS

CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

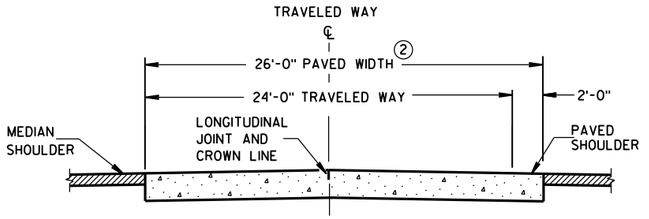
APPROVED
June, 2015 — DATE
/S/ Peter Kemp, P.E. — PAVEMENT SUPER
FHWA

6
S.D.D. 13 C 1-18

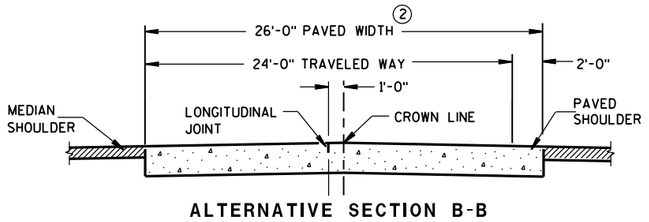


SECTION A-A ①

TWO-LANE TWO-WAY HIGHWAY



SECTION B-B



ALTERNATIVE SECTION B-B ①

DIVIDED HIGHWAY

GENERAL NOTES

CONTRACTION JOINTS

CONSTRUCT TRANSVERSE CONTRACTION JOINTS NORMAL TO THE CENTERLINE. SHOW THE LOCATION OF CONTRACTION JOINTS THROUGH INTERSECTIONS ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT SEAL OR FILL CONTRACTION JOINTS.

INSTALL DOWEL BARS PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.

FOR PAVEMENT SLABS OF VARYING WIDTHS, LOCATE THE OUTER MOST DOWEL BAR SO THAT THE CENTER OF THE BAR IS A MINIMUM OF 6 INCHES AND A MAXIMUM OF 18 INCHES FROM THE FREE EDGE OF PAVEMENT.

CONSTRUCTION JOINTS

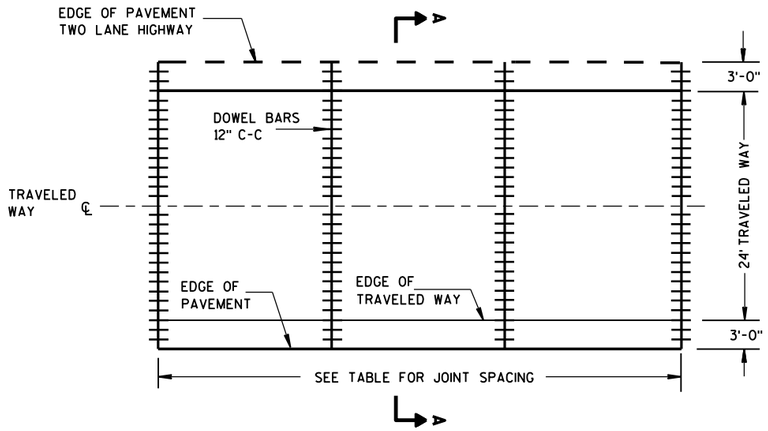
LOCATE CONSTRUCTION JOINTS A MINIMUM OF 6 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGN PARALLEL TO CONTRACTION JOINTS.

① REFER TO TYPICAL CROSS SECTIONS FOR ADDITIONAL DETAILS.

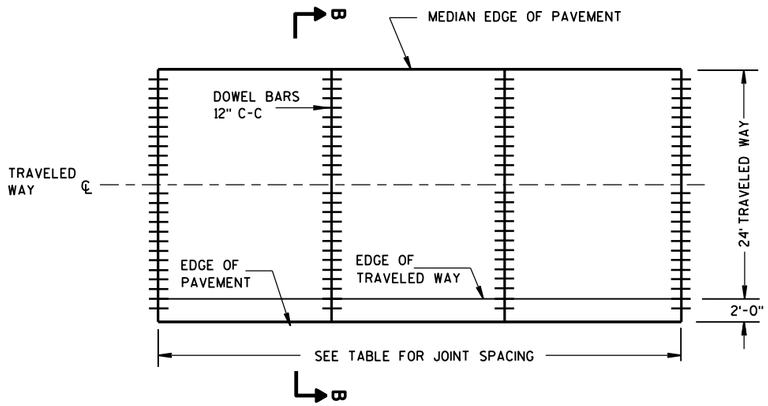
② MEASURE THE ENTIRE PAVED WIDTH INCLUDING THE PORTION(S) LABELED PAVED SHOULDER AS CONCRETE PAVEMENT.

PAVEMENT DEPTH, DOWEL BAR SIZE AND JOINT SPACING TABLE

PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER	CONTRACTION JOINT SPACING
5 ½", 6", 6 ½"	NONE	12'
7", 7 ½"	1"	14'
8", 8 ½"	1 ¼"	15'
9", 9 ½"	1 ¼"	15'
10" & ABOVE	1 ½"	15'



CONTRACTION JOINT LAYOUT
FOR TWO-LANE TWO-WAY HIGHWAY



CONTRACTION JOINT LAYOUT
FOR DIVIDED HIGHWAY

RURAL DOWELED
CONCRETE PAVEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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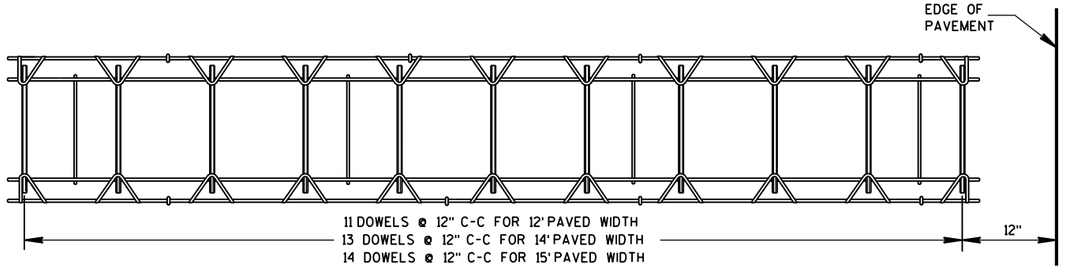
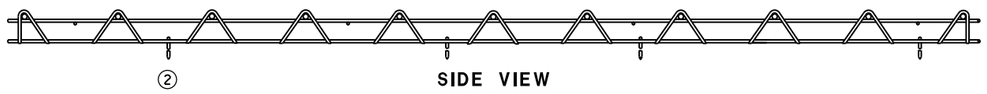
S.D.D. 13 C 11-11a



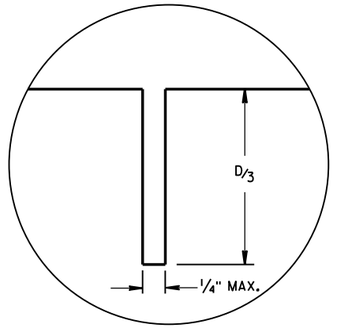
PLAN VIEW



SIDE VIEW

(NORMAL TO CENTERLINE)

CONTRACTION JOINT DOWEL ASSEMBLY ①



JOINT DETAIL

GENERAL NOTES

① OBTAIN THE ENGINEER'S APPROVAL FOR THE USE OF ALTERNATIVE DESIGNS OF THE DOWEL ASSEMBLY. USE MECHANICAL DOWEL BAR INSERTERS OR DOWEL ASSEMBLIES WHEN CONSTRUCTING CONTRACTION JOINTS.

② SECURE BASKETS WITH ANCHORS TO HOLD DOWEL BARS IN THE CORRECT POSITION AND ALIGNMENT. TYPE, LOCATION, NUMBER AND LENGTH OF ANCHORS ARE DEPENDENT UPON FIELD CONDITIONS.

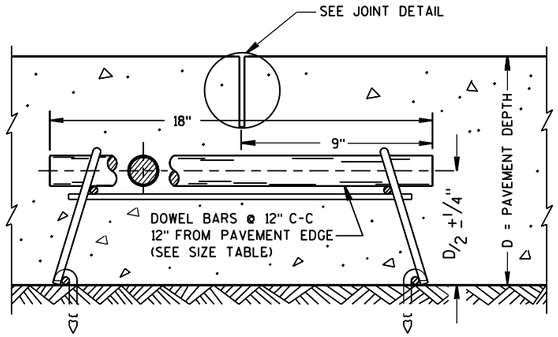
③ FORM OR SAW CONSTRUCTION JOINTS. PROVIDE A 1/4-INCH RADIUS AT FORMED JOINTS.

④ PROVIDE A SMOOTH VERTICAL FACE FOR THE ENTIRE DEPTH OF THE PAVEMENT WHEN FORMING CONSTRUCTION JOINTS.

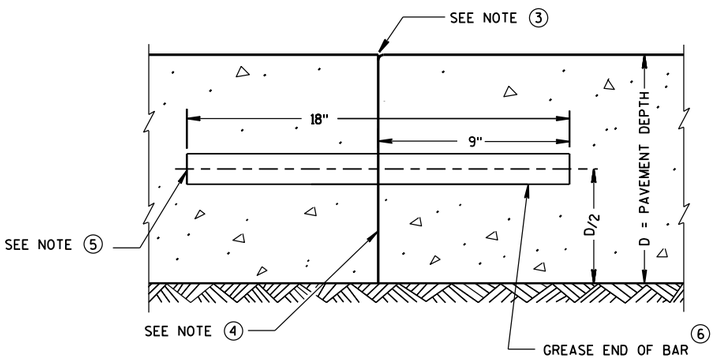
⑤ INSTALL DOWEL BARS AT CONSTRUCTION JOINTS BY FORMING OR DRILLING. INSTALL FORMED DOWEL BARS 12 INCHES C-C AND 12 INCHES FROM PAVEMENT EDGE. REMOVE EXCESS CONCRETE FROM THE FREE END OF THE DOWEL BAR IF DOWEL BARS ARE FORMED THROUGH A HEADER BOARD. INSTALL DRILLED DOWEL BARS ACCORDING TO *DRILLED DOWEL BAR CONSTRUCTION JOINT* DETAIL.

⑥ APPLY A THIN UNIFORM COATING OF SURFACE TREATMENT TO THE FREE END OF DOWEL BARS TO PREVENT BONDING.

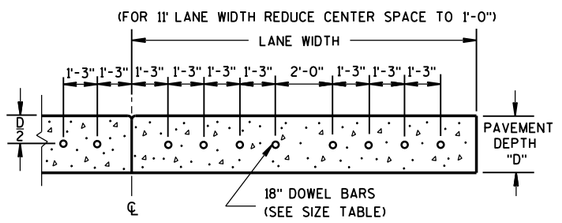
⑦ ANCHOR DOWEL BARS INTO DRILLED HOLES WITH AN EPOXY. MAXIMUM DRILLED HOLE SIZE IS 1/8-INCH GREATER THAN DOWEL BAR DIAMETER, 9 INCHES IN LENGTH.



DOWELED CONTRACTION JOINT



TRANSVERSE CONSTRUCTION JOINT



DRILLED DOWEL BAR CONSTRUCTION JOINT ⑦

RURAL DOWELED CONCRETE PAVEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

5/3/2013 — DATE

/S/ Deb Bischoff — PAVEMENT POLICY & DE ENGINEER

FHWA

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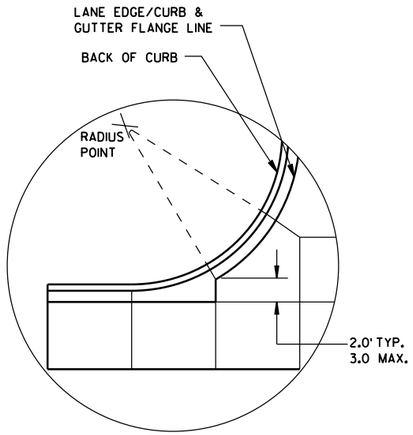
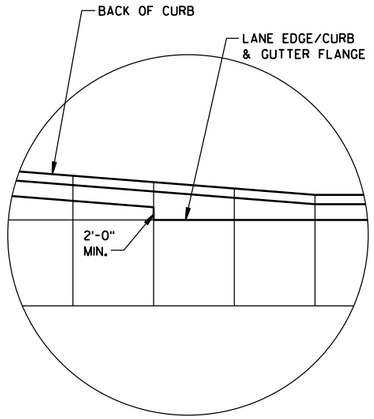
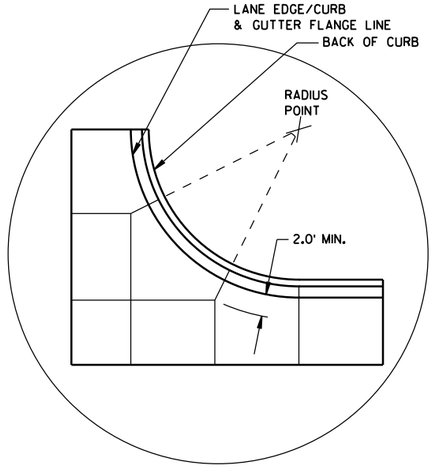
S.D.D. 13 C 11-11b



DETAIL "A"



DETAIL "B"



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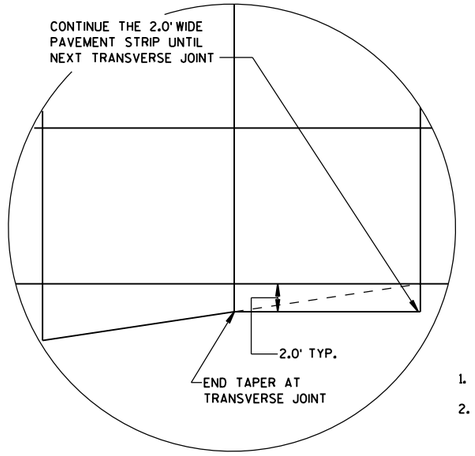


DETAIL "D"

GENERAL NOTES

THE PRIMARY ROADWAY CONTROLS THE TRANSVERSE JOINT PATTERN.

ALIGN NEW JOINTS WITH EXISTING JOINTS OR CRACKS.

CONSTRUCT TRANSVERSE JOINTS PERPENDICULAR TO THE ROADWAY.

ADJUST TRANSVERSE JOINTS TO ALIGN WITH UTILITY FIXTURES (E.G. MANHOLES AND INLETS) IN THE PAVEMENT STRUCTURE WHEN POSSIBLE. WATER VALVES DO NOT REQUIRE JOINT ADJUSTMENT.

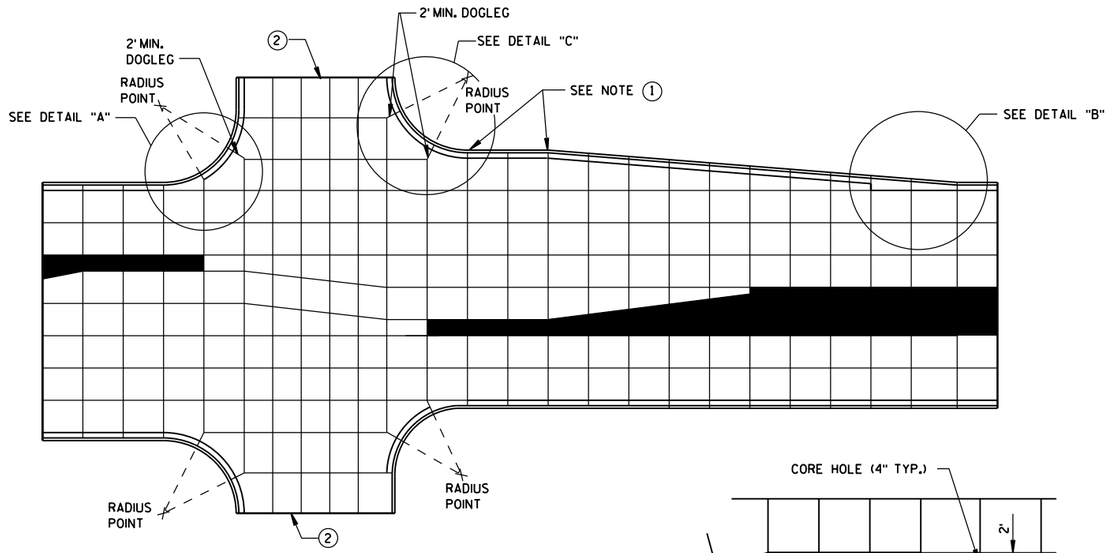
AVOID SLABS LESS THAN 2 FEET WIDE OR GREATER THAN 15 FEET WIDE.

SEE TABLE FOR TRANSVERSE JOINT SPACING. JOINT SPACING SPECIFIED IS MAXIMUM AND ACTUAL SPACING CAN BE ADJUSTED TO ACCOMMODATE INTERSECTIONS.

AVOID ANGLES LESS THAN 60° BY DOGLEGGING JOINTS THROUGH CURVE RADIUS POINTS. USE 90° ANGLES WHEN POSSIBLE.

CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

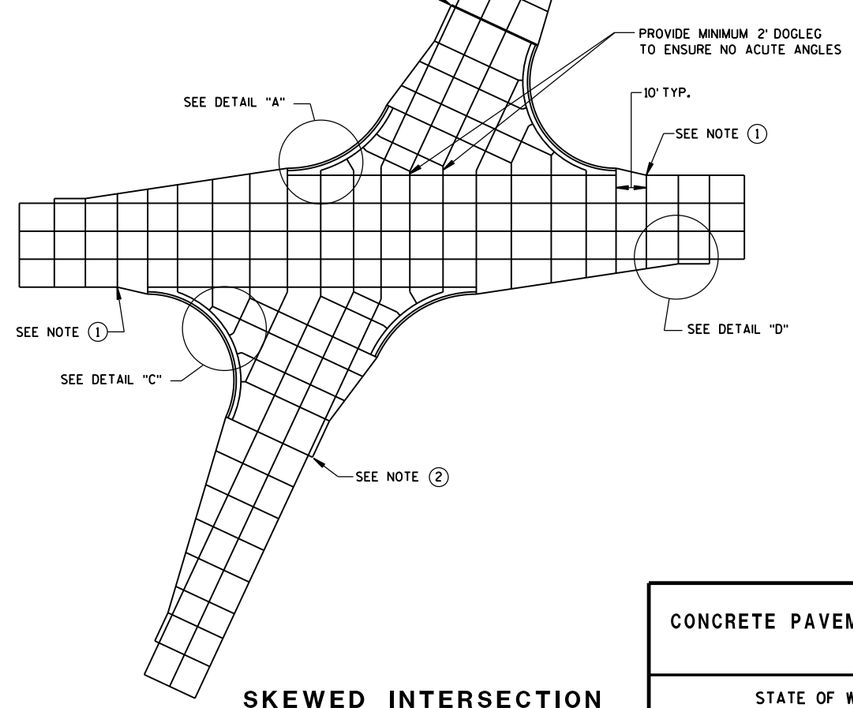
1. PROVIDE TRANSVERSE JOINTS AT ALL PAVEMENT WIDTH CHANGES.
2. CONSTRUCT DOWELED EXPANSION JOINT ON THE SIDE ROAD OF AN INTERSECTION IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH. ALIGN EXPANSION JOINT WITH EDGE OF RADIUS.
3. THE ENGINEER MAY APPROVE SLIGHT VARIATIONS FROM THESE JOINTING DETAILS.



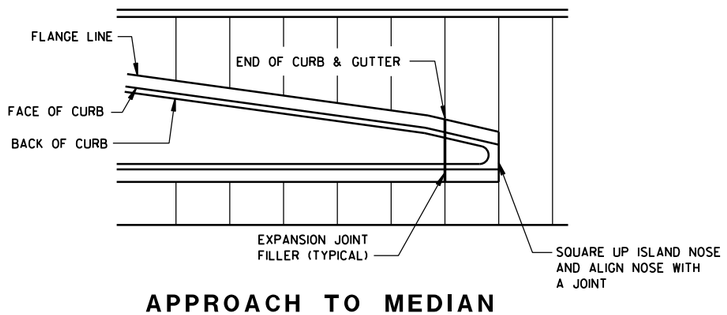
STANDARD INTERSECTION

PAVEMENT DEPTH AND JOINT SPACING TABLE

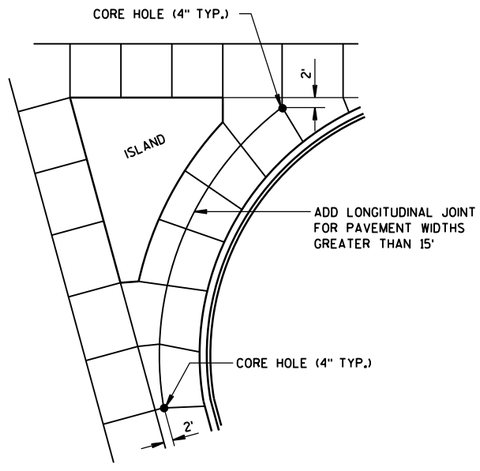
PAVEMENT DEPTH (D)	CONTRACTION JOINT SPACING
6", 6½"	12'
7", 7½"	14'
8" & ABOVE	15'



SKEWED INTERSECTION



APPROACH TO MEDIAN



LARGE RIGHT TURN

CONCRETE PAVEMENT JOINTING

STATE OF WISCONSIN
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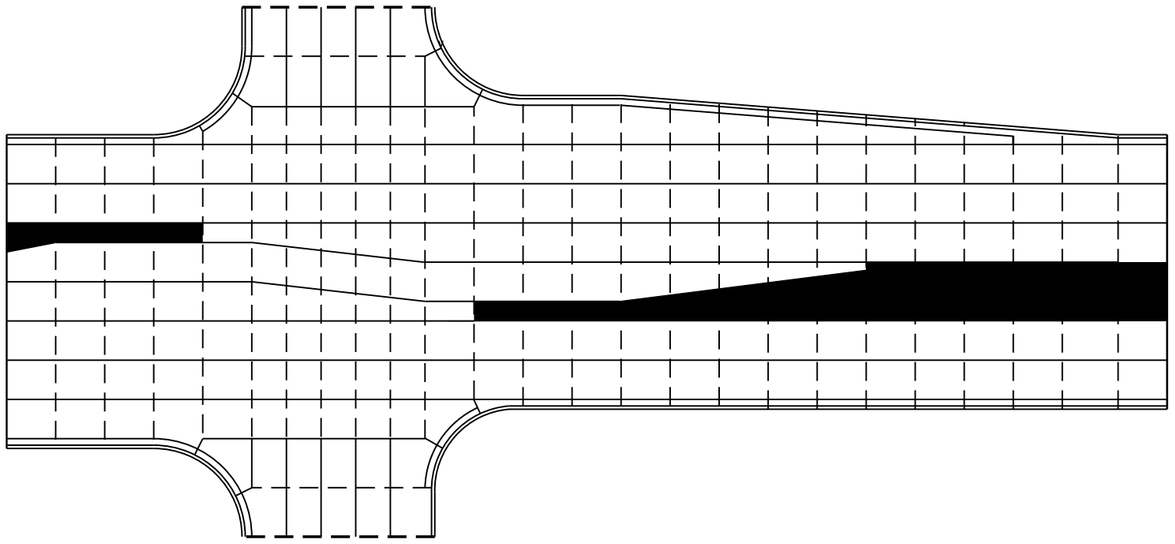
LEGEND

POTENTIAL DOWELED EXPANSION JOINT

DOWELED JOINT

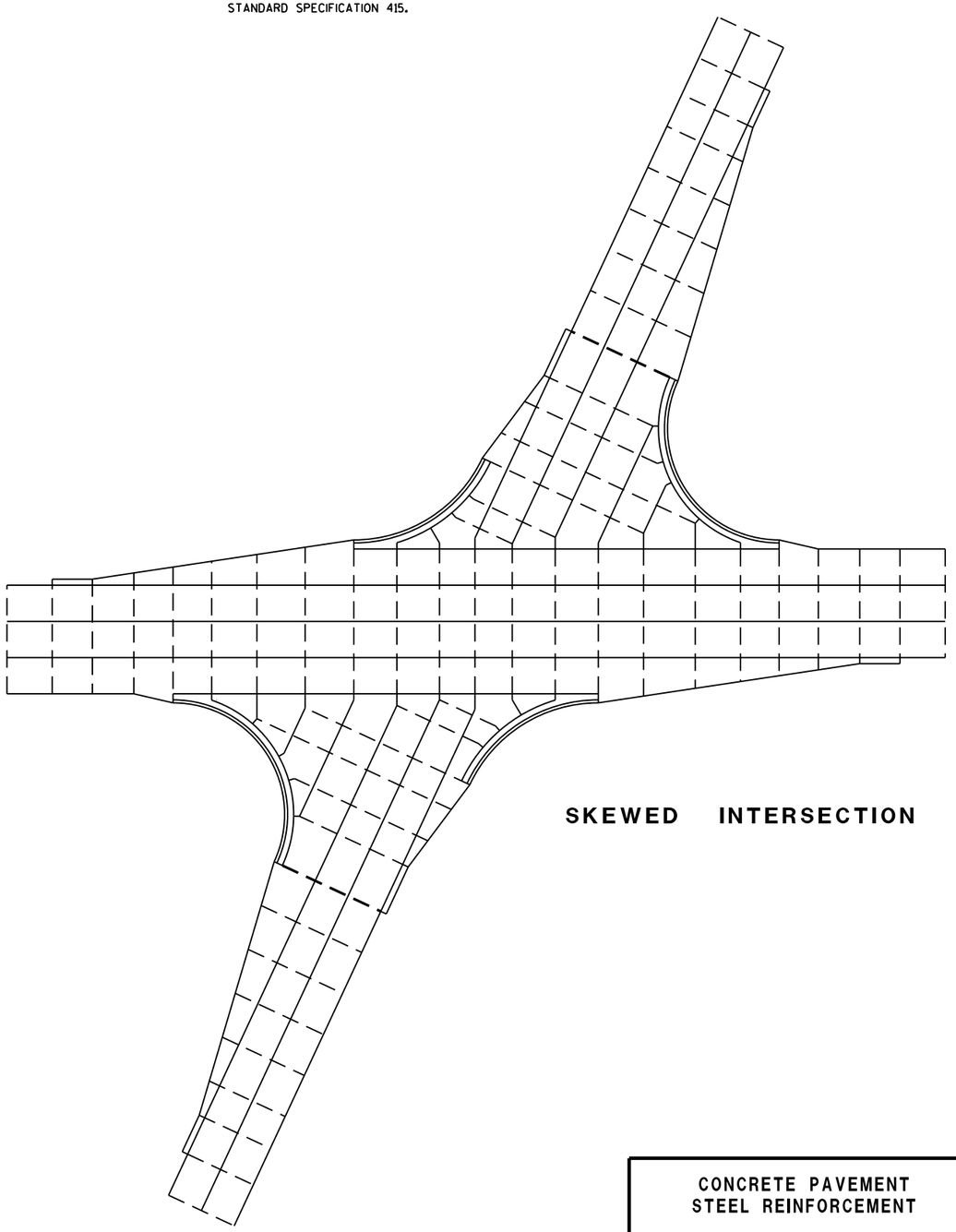
TIED JOINT



STANDARD INTERSECTION

GENERAL NOTES

USE AN EXPANSION JOINT FILLER MEETING THE REQUIREMENTS OF STANDARD SPECIFICATION 415.



SKEWED INTERSECTION

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S.D.D. 13 C 18-3b

CONCRETE PAVEMENT
STEEL REINFORCEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

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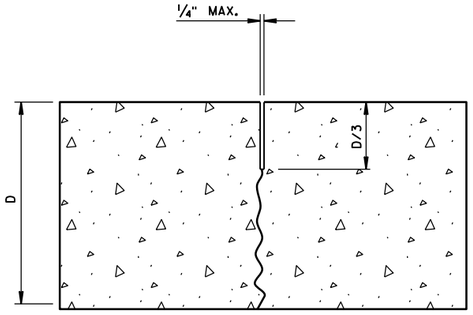
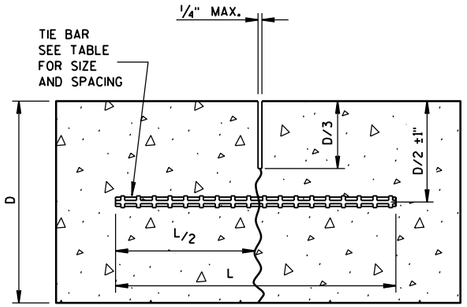
S.D.D. 13 C 18-3b



UNDOWELED-TRANSVERSE



TIED LONGITUDINAL

TIE BAR TABLE

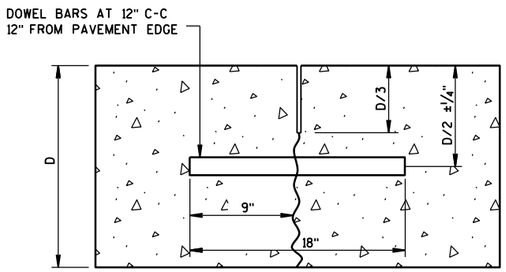
PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4*	30"	24"**

* SUBSTITUTE BENT BARS AT LONGITUDINAL JOINTS WHEN EQUIPMENT LIMITATIONS DURING CONSTRUCTION WARRANT (e.g. AUXILIARY LANES OR TURN LANES)

** CONFORM TO 15" MINUMUM SPACING FROM TRANSVERSE JOINTS; SPACING BETWEEN TIE BARS WILL BE 30" AT TRANSVERSE JOINTS.

GENERAL NOTES

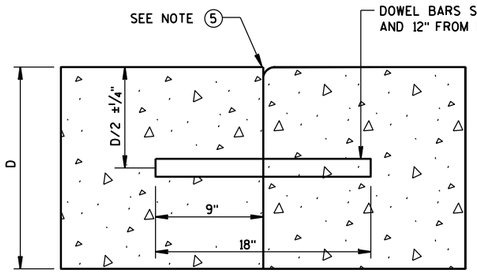
1. USE DOWELED EXPANSION JOINTS ON SIDE ROADS AT INTERSECTIONS (TO ISOLATE THE SIDE ROAD FROM THE THROUGH STREET) IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH.
2. SPACE CONTRACTION JOINTS IN ACCORDANCE WITH 13C4, 13C11 OR 13C13.
3. LOCATE CONSTRUCTION JOINTS A MINIMUM OF 6 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGN PARALLEL TO CONTRACTION JOINTS.
4. CONSTRUCTION JOINTS CAN BE FORMED OR SAWED.
5. IF JOINT IS FORMED, PROVIDE A 1/4-INCH RADIUS.
6. ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.



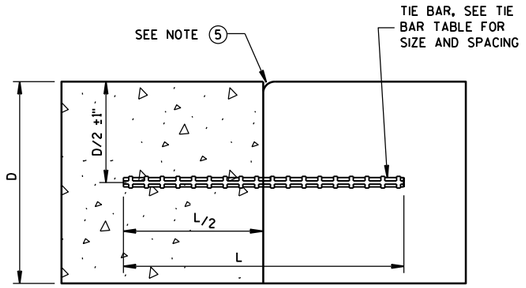
DOWELED-TRANSVERSE

CONTRACTION JOINTS

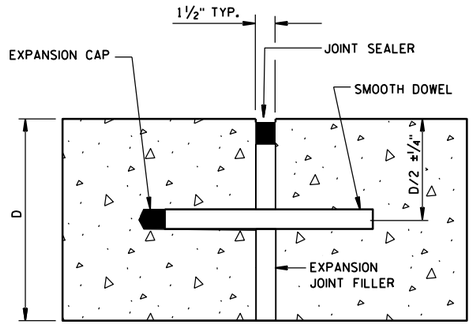
SEE NOTE (2)



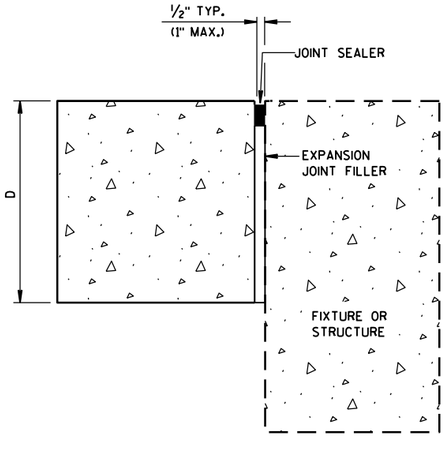
DOWELED TRANSVERSE (3)



TIED LONGITUDINAL

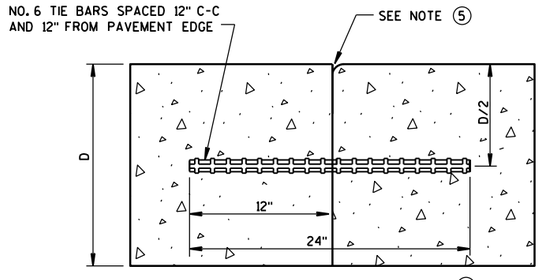


DOWELED-TRANSVERSE
SEE NOTE (1)

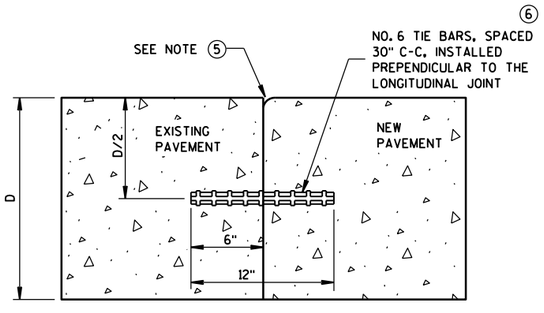


UNTIED-LONGITUDINAL

EXPANSION JOINTS



TIED TRANSVERSE (3)
(FOR USE ON NON-DOWELED PAVEMENTS ONLY)



TIED LONGITUDINAL TO EXISTING

CONSTRUCTION JOINTS

SEE NOTE (4)

CONCRETE PAVEMENT
JOINT TYPES

STATE OF WISCONSIN
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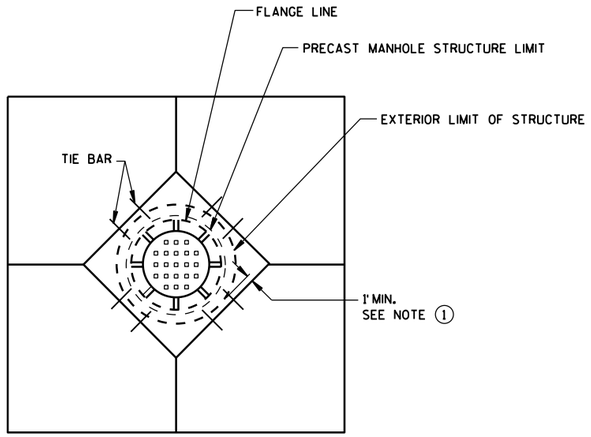
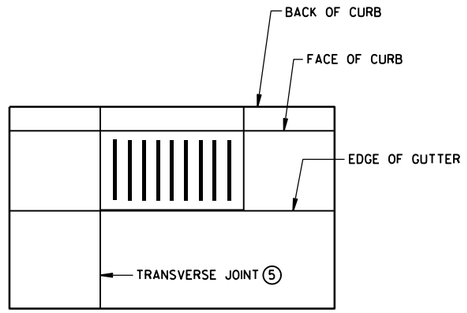
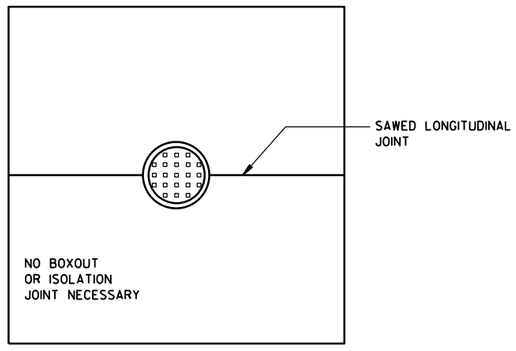
S.D.D. 13 C 18-3c



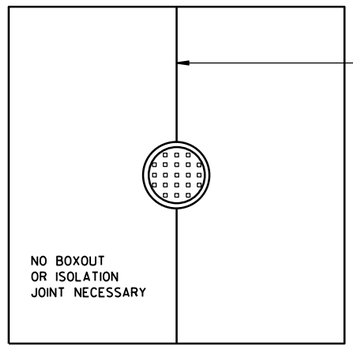
DIAGONAL MANHOLE BOXOUT FOR CONSTRUCTION JOINTS



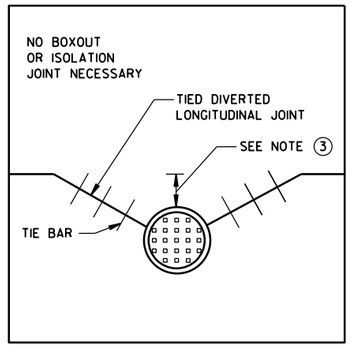
INLET WITH TRANSVERSE JOINT



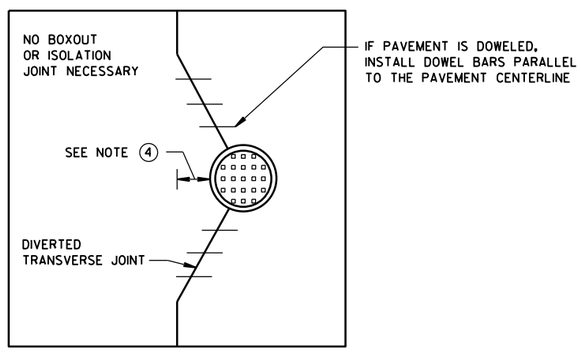
MANHOLE WITH LONGITUDINAL JOINT



MANHOLE WITH TRANSVERSE JOINT



MANHOLE WITH DIVERTED LONGITUDINAL CONTRACTION JOINT



MANHOLE WITH DIVERTED TRANSVERSE CONTRACTION JOINT

GENERAL NOTES

(1) USE BOXOUTS WHEN UTILITY STRUCTURE IS IN THE PATH OF CONSTRUCTION JOINTS. PROVIDE A 1-FOOT MINIMUM CLEARANCE BETWEEN THE EXTERIOR LIMIT OF THE STRUCTURE TO THE DIAMOND BOXOUT.

(2) ADJUST TRANSVERSE JOINT TO INTERSECT MANHOLE IF POSSIBLE.

(3) IF DISTANCE BETWEEN THE LONGITUDINAL JOINT AND THE EDGE OF MANHOLE IS 2 FEET OR LESS, DIVERT THE LONGITUDIAL JOINT AT A 2:1 TAPER RATE TO THE CENTER OF THE MANHOLE. IF THE DISTANCE IS GREATER THAN 2 FEET, DO NOT DIVERT THE JOINT AND SAW AS NORMAL. PLACE REBAR REINFORCEMENT AROUND THE MANHOLE.

(4) IF DISTANCE FROM THE EDGE OF THE MANHOLE TO THE NEAREST TRANSVERSE JOINT IS 4 FEET OR LESS, REDIRECT JOINT TO INTERSECT THE CENTER OF THE MANHOLE. IF DISTANCE IS GREATER THAN 4 FEET, DO NOT DIVERT THE JOINT AND SAW AS NORMAL. PLACE REBAR REINFORCEMENT AROUND THE MANHOLE.

(5) ALIGN TRANSVERSE JOINT WITH ONE EDGE OF INLET WHEN PRACTICAL.

CONCRETE PAVEMENT JOINTING AT UTILITY FIXTURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015
DATE
/S/ Peter Kemp, P.E.
PAVEMENT SUPER
FHWA

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S.D.D. 13 C 18-3d

GENERAL NOTES

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

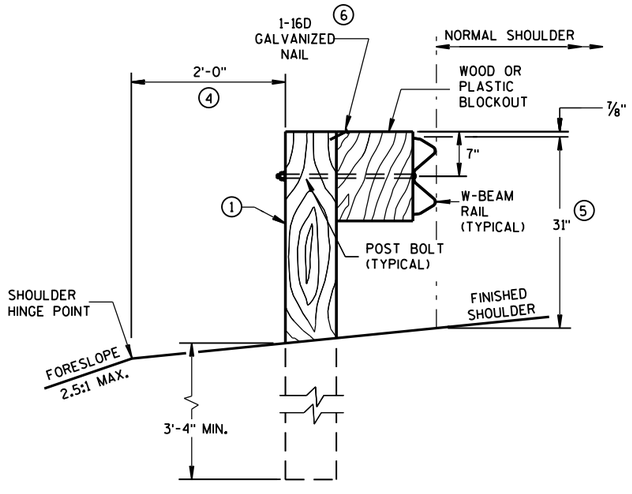
(2) USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

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

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

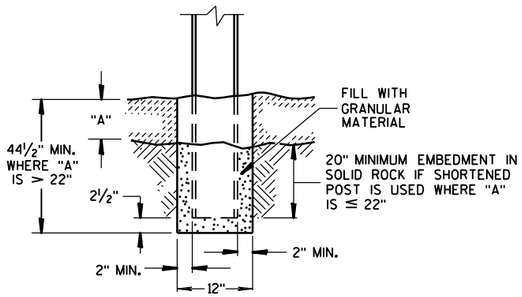
(5) FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".

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



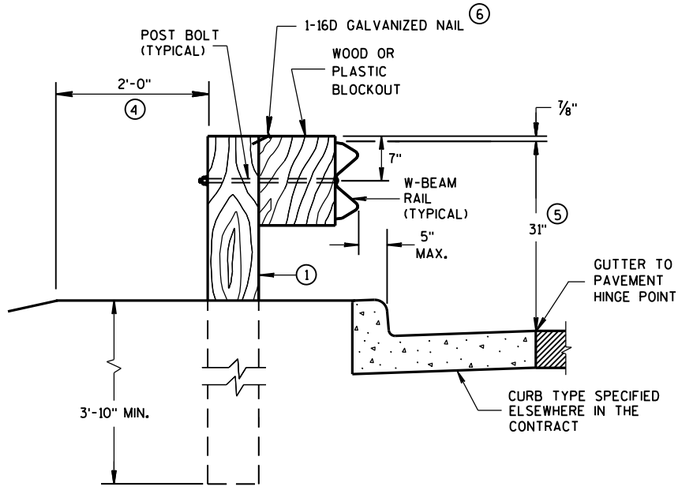
END VIEW

LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



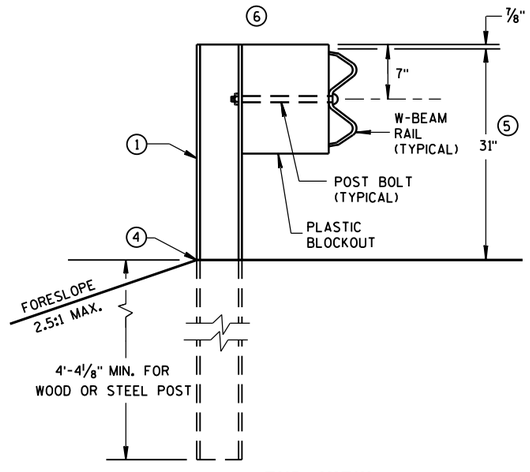
END VIEW

SETTING STEEL OR WOOD POST IN ROCK (3)



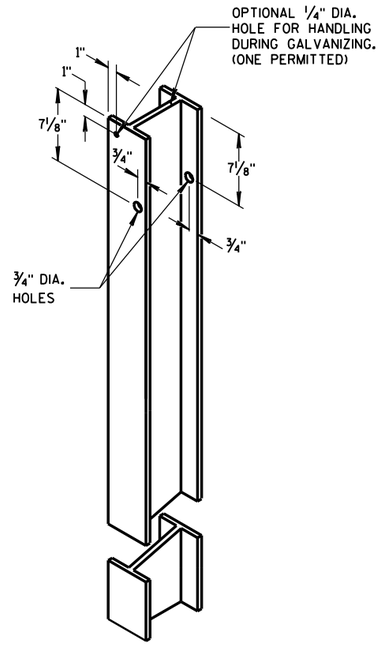
END VIEW

LOCATED ALONG A CURBED ROADWAY

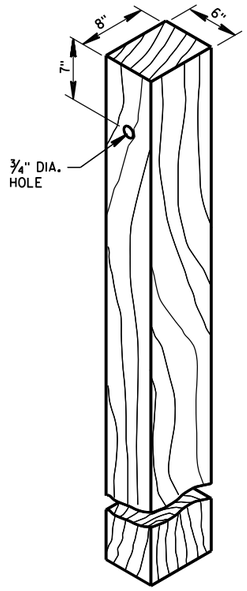


END VIEW

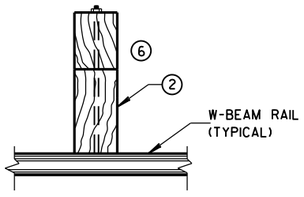
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



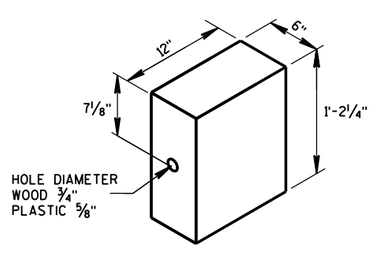
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) (1)



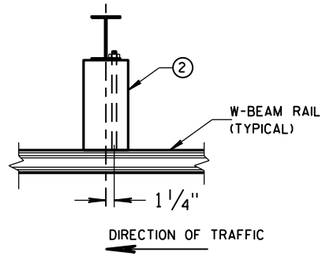
WOOD POST
(6" X 8") NOMINAL (1)



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT (2)



PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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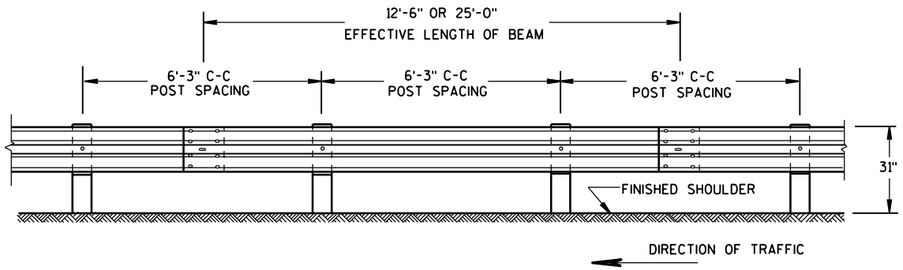
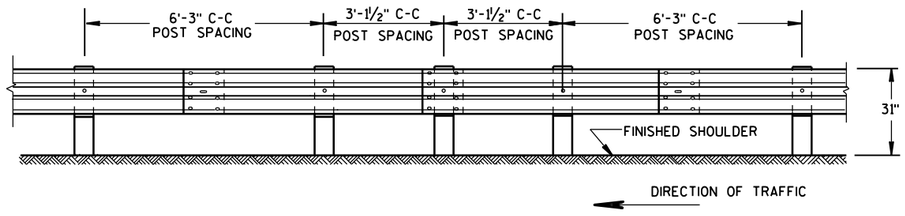
S.D.D. 14 B 42-3a



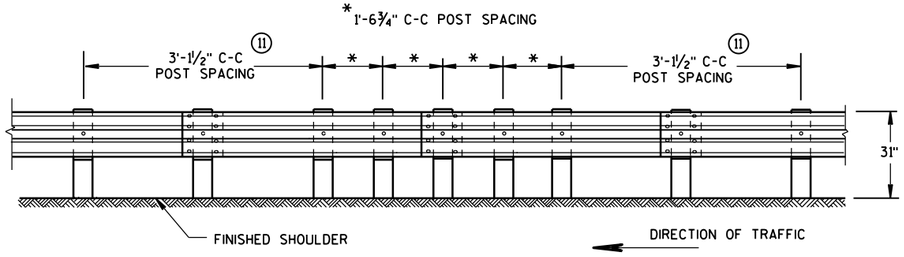
FRONT VIEW

POST SPACING STANDARD INSTALLATION



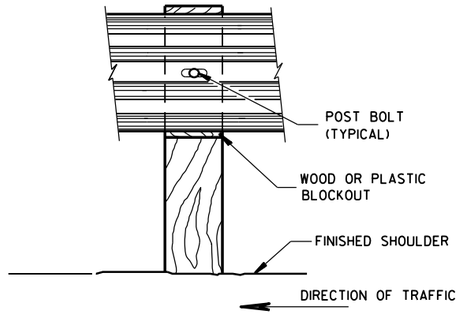
FRONT VIEW

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

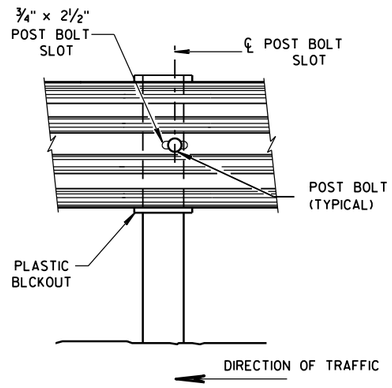


FRONT VIEW

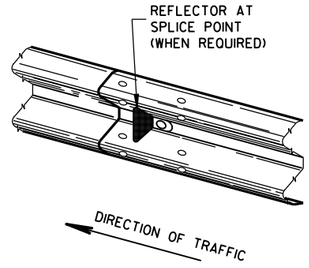
QUARTER POST SPACING (QS)

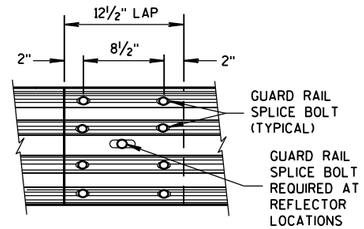


FRONT VIEW AT WOOD POST



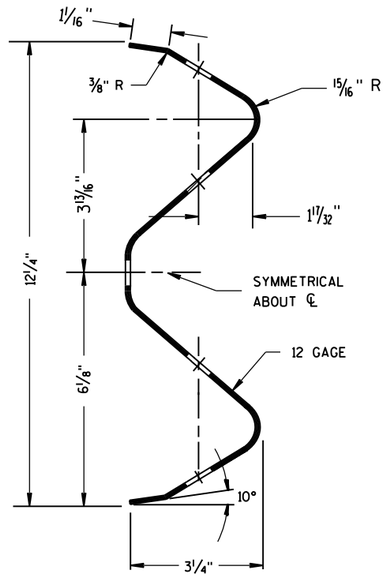
FRONT VIEW AT STEEL POST



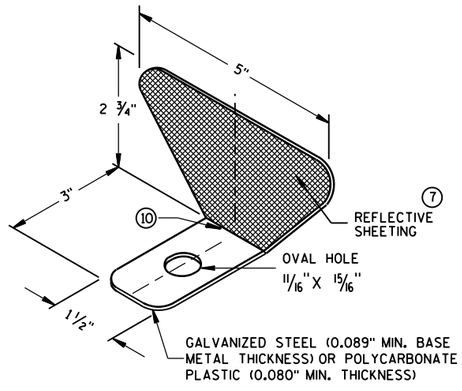


FRONT VIEW

MID-SPAN BEAM SPLICE



SECTION THRU W-BEAM RAIL



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION ⑦

GENERAL NOTES

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

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

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

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

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

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

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

REFLECTOR SPACING ⑧

	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200'	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

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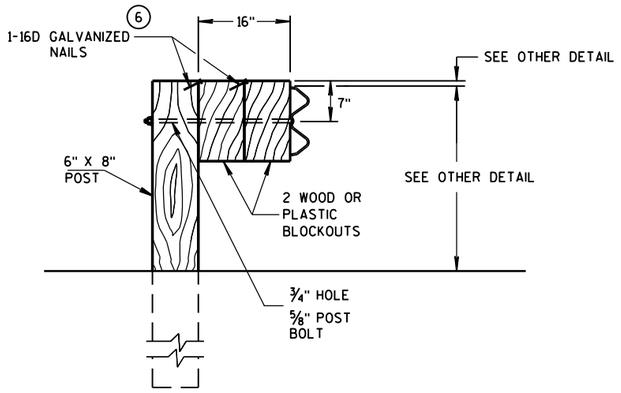
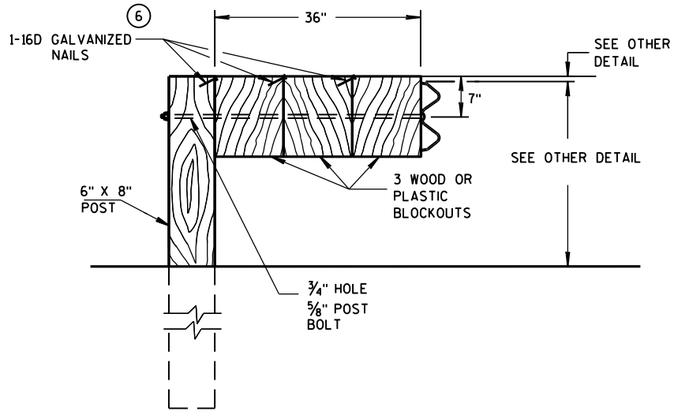
S.D.D. 14 B 42-3b



DETAIL FOR 16" BLOCKOUT DEPTH

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

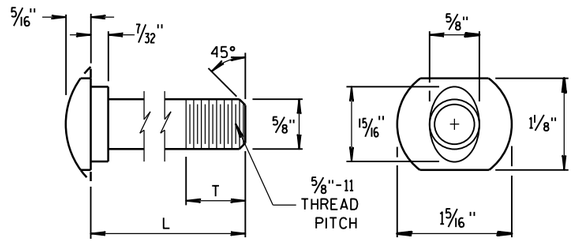


DETAIL FOR 36" BLOCKOUT DEPTH

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

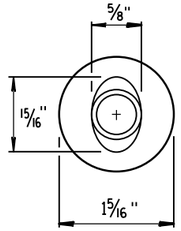
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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

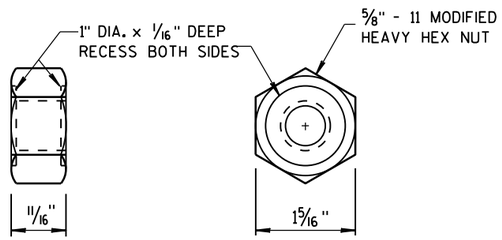


POST BOLT TABLE

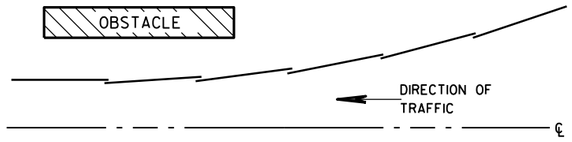
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

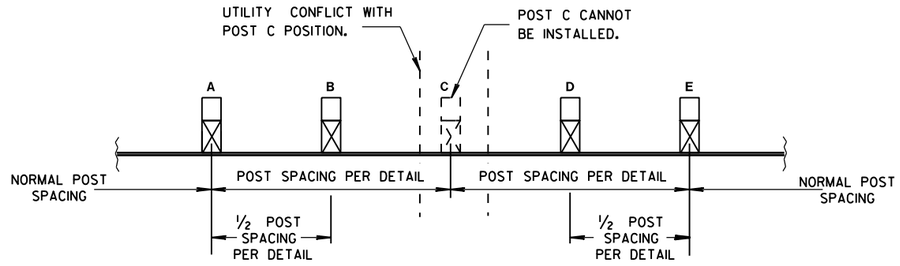


POST BOLT AND RECESS NUT

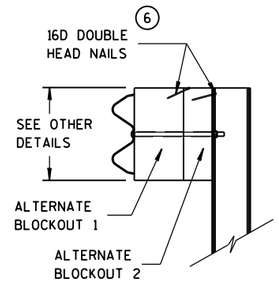


PLAN VIEW

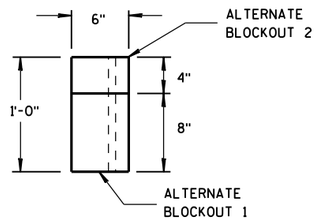
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

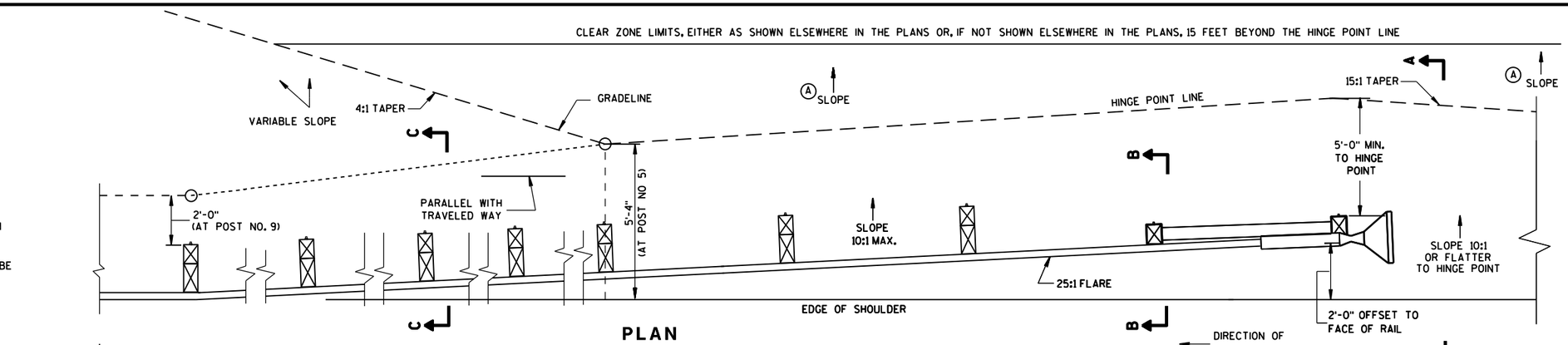
SEE SDD 14B42 FOR MORE INFORMATION.

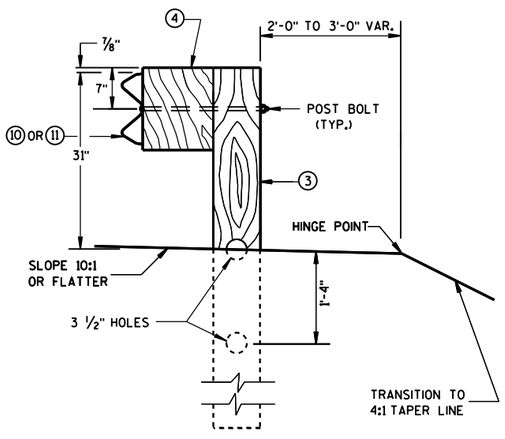
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

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

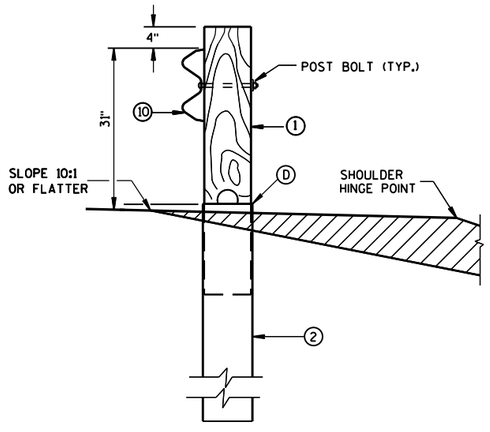
W-BEAM RAIL SPLICES ARE LOCATED AT POST NUMBER 3, AND BETWEEN POST 5 AND 6, BETWEEN POSTS 7 AND 8, AND MIDDLE OF THE SPAN AFTER POST 9.

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

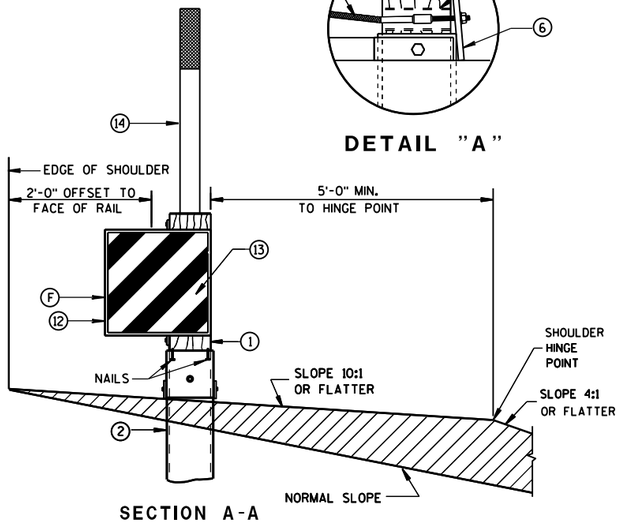




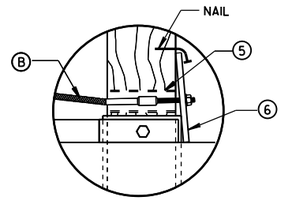
SECTION C-C
TYPICAL AT POST NOS. 3-9



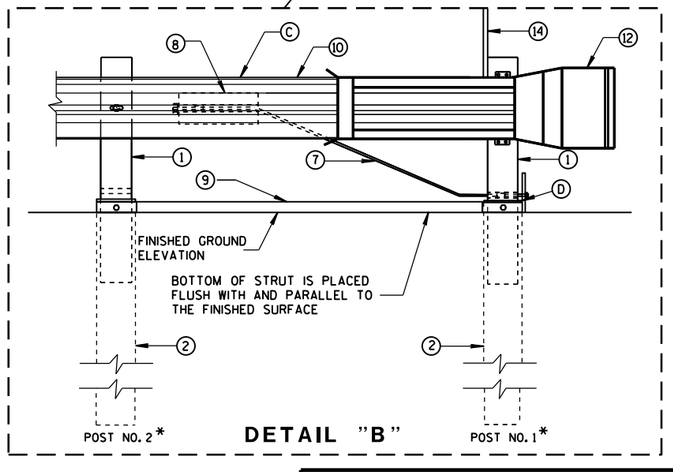
SECTION B-B
TYPICAL AT POST NO. 2*



SECTION A-A
TYPICAL AT POST NO. 1*



DETAIL "A"



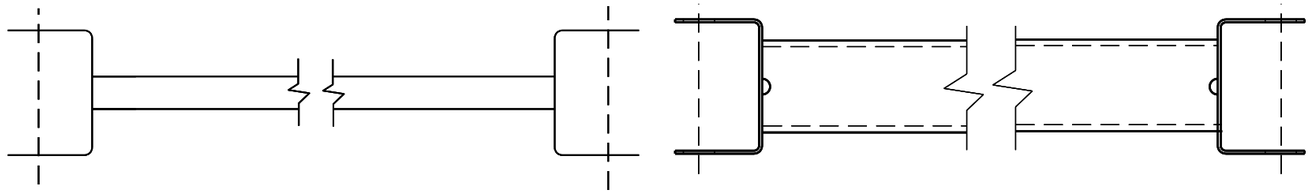
DETAIL "B"

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

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

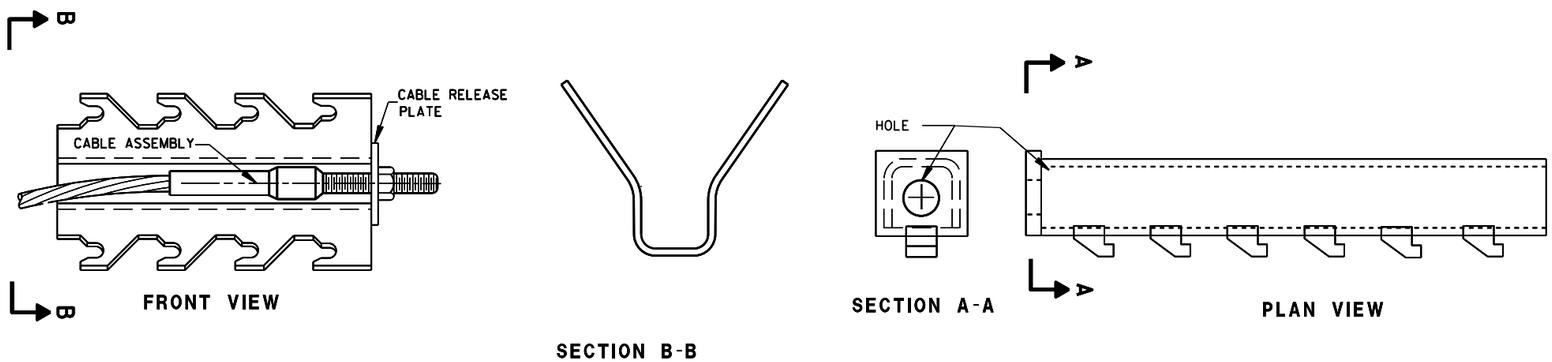
S.D.D. 14 B 44-2a



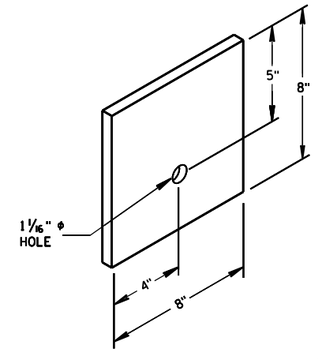
GENERIC GROUND STRUT (9) (H)

BILL OF MATERIALS

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



GENERIC ANCHOR CABLE BOX (8) (H)



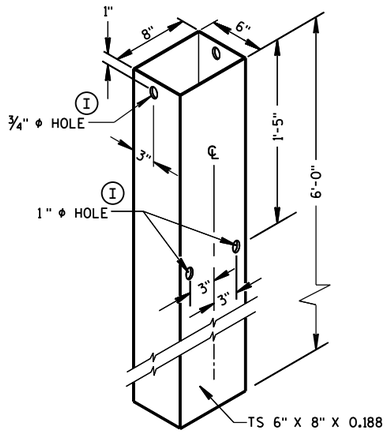
BEARING PLATE (6)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

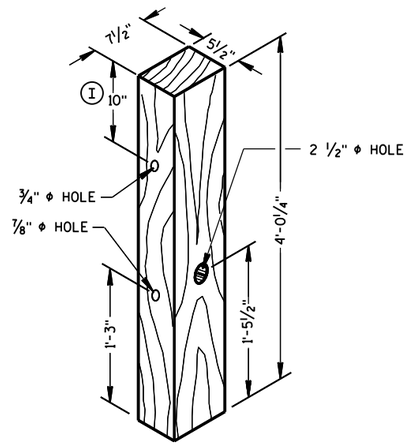
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

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

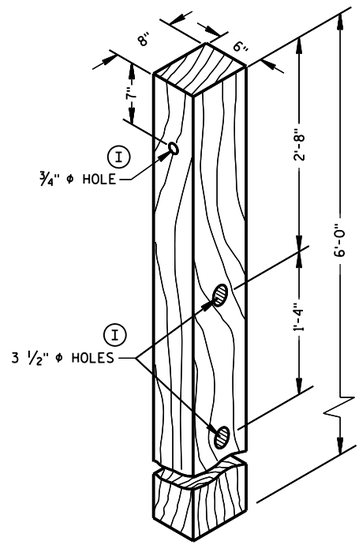


FOUNDATION TUBE (2)



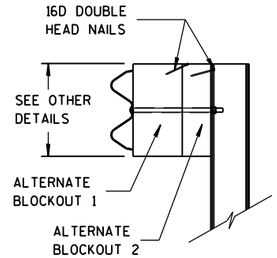
POSTS NUMBER 1 AND 2

WOOD BREAKAWAY POST (1)

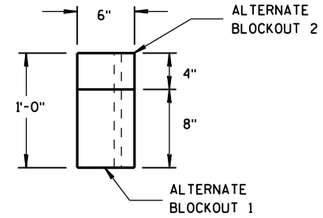


POSTS NUMBER 3-9

WOOD CRT POST (3)

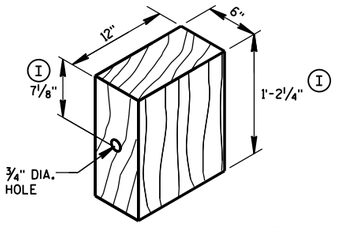


SIDE VIEW



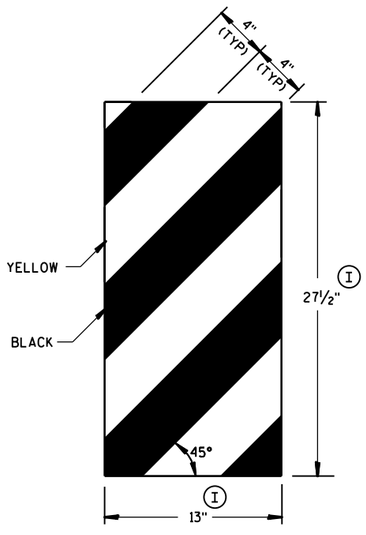
TOP VIEW

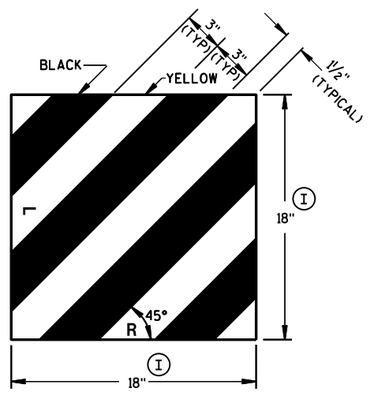
ALTERNATE WOOD BLOCKOUT DETAIL



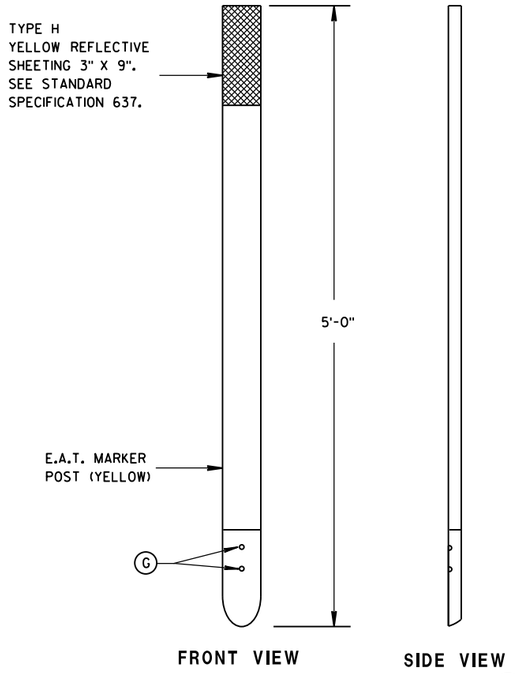
WOOD BLOCKOUT (4)

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





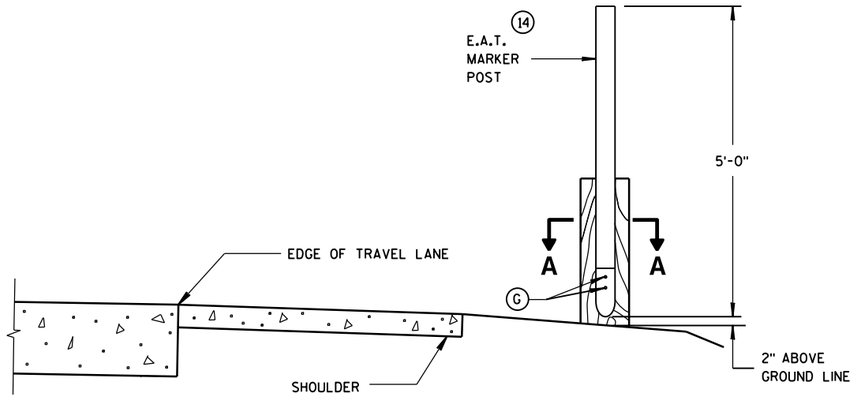
GENERIC REFLECTIVE SHEETING (13) (H)



FRONT VIEW

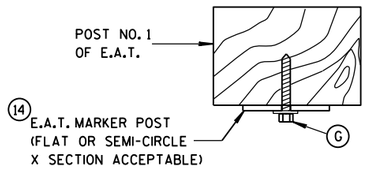
SIDE VIEW

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

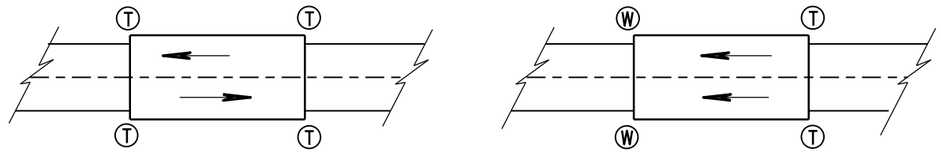
MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

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

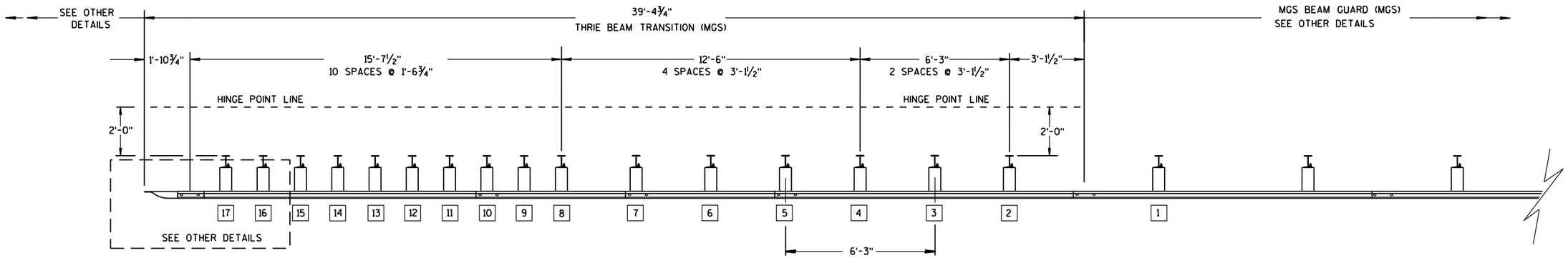
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

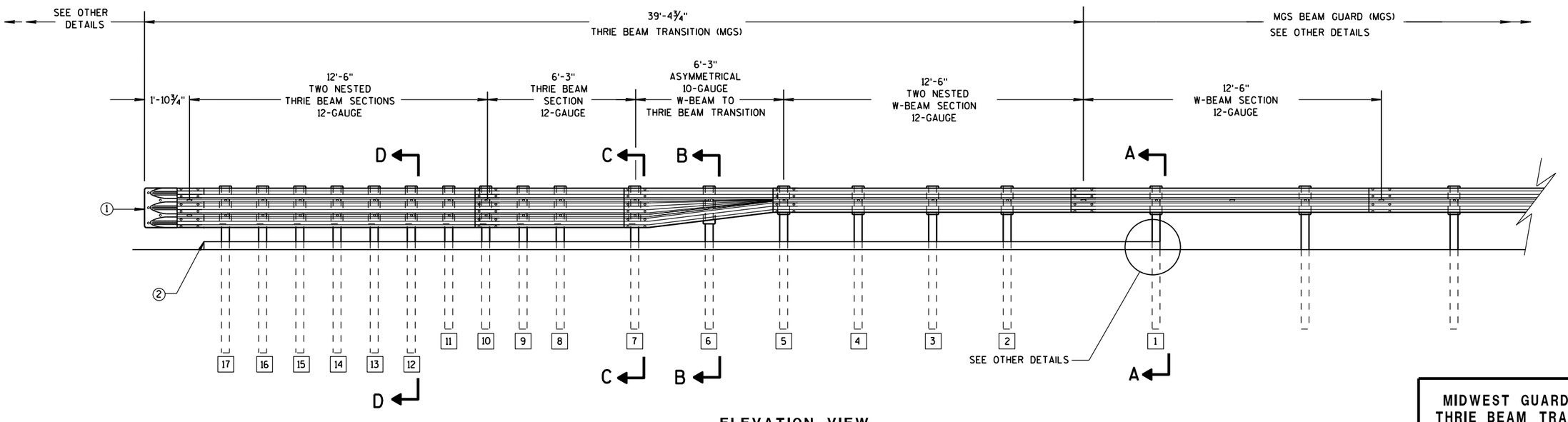
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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 TRANSPOR

6

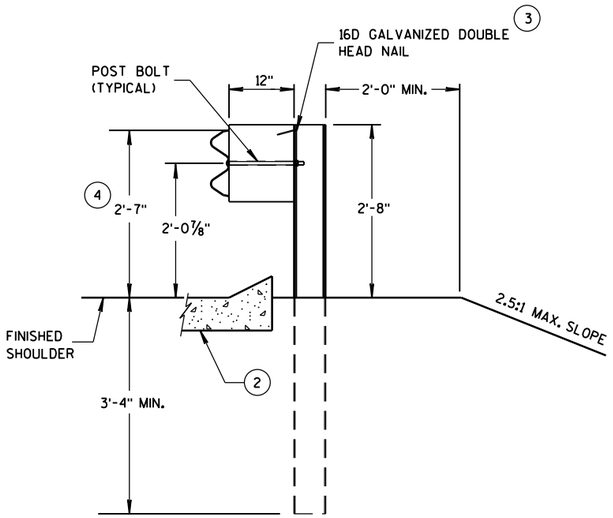
S.D.D. 14 B 45-4a

GENERAL NOTES

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

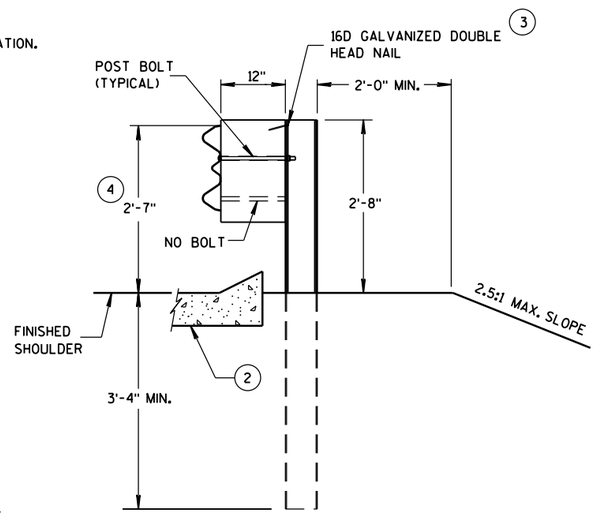
(3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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



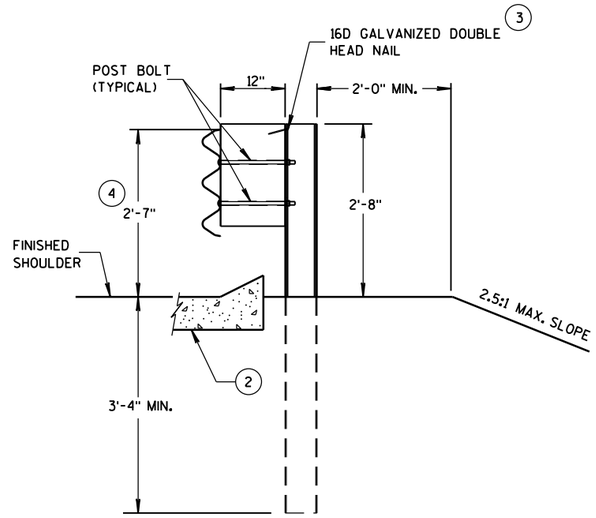
SECTION A-A

POSTS 1-5



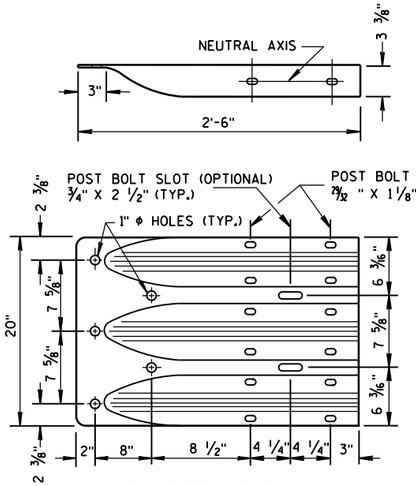
SECTION B-B

POST 6



SECTION C-C

POSTS 7-11



THRIE BEAM TERMINAL CONNECTOR

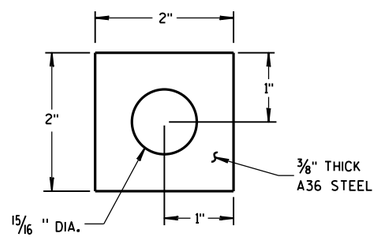
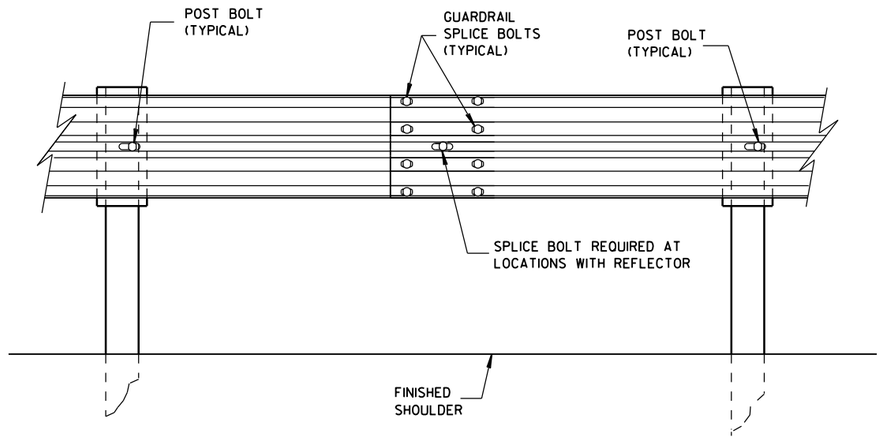
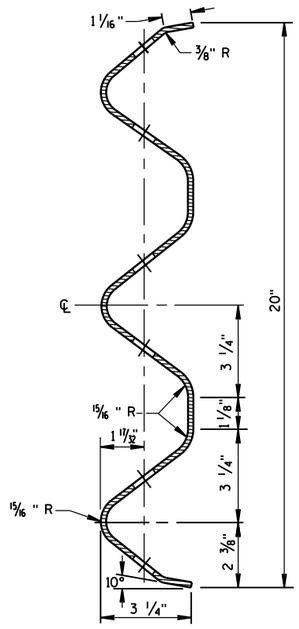


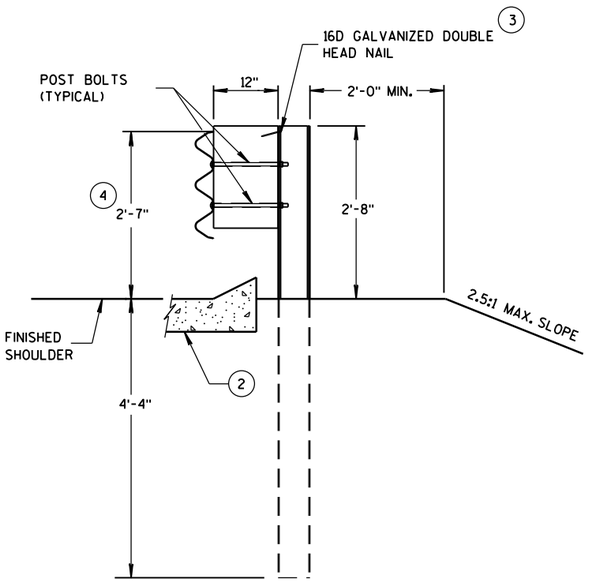
PLATE WASHER DETAIL



SPLICE DETAIL



SECTION THRU THRIE BEAM RAIL ELEMENT



SECTION D-D

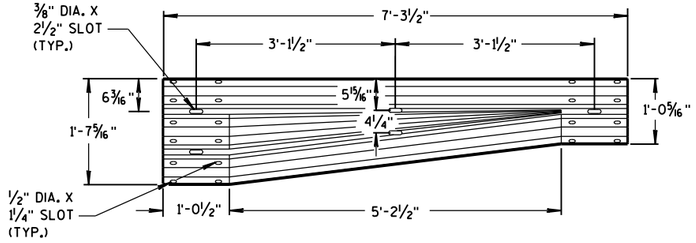
POSTS 12-17

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

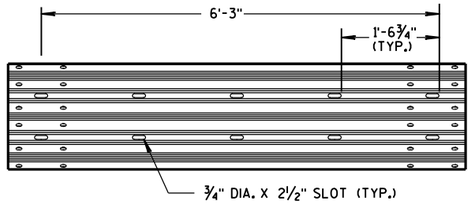
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6

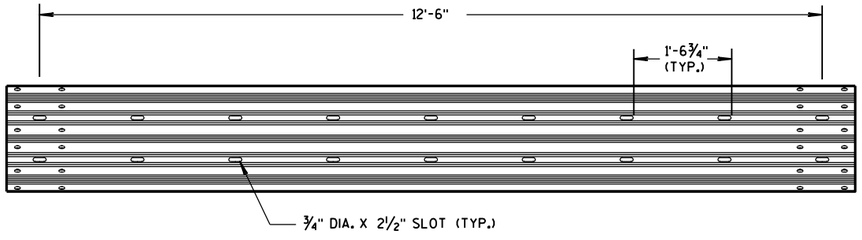
S.D.D. 14 B 45-4b



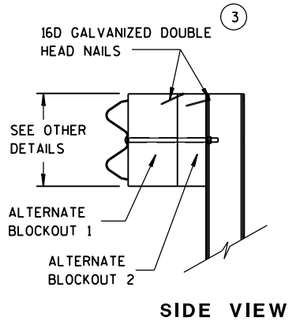
W-BEAM TO THRIE BEAM TRANSITION SECTION



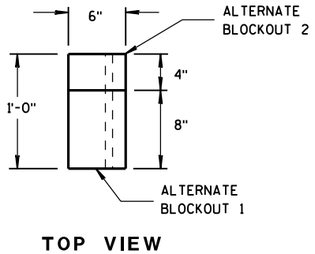
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

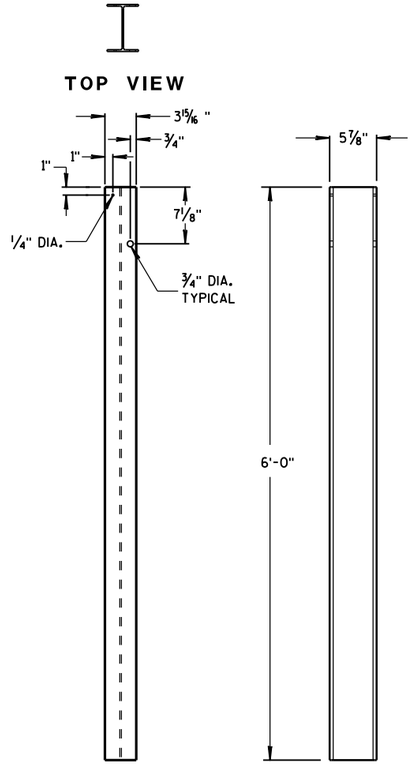


SIDE VIEW



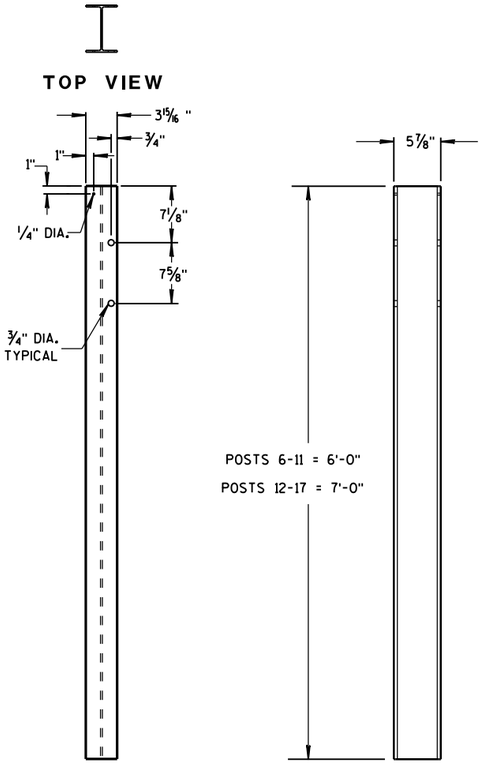
TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL



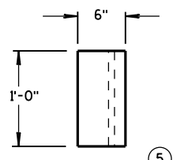
FRONT VIEW SIDE VIEW

STEEL POSTS 1-5

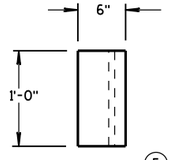


FRONT VIEW SIDE VIEW

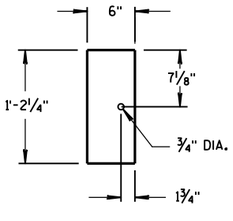
STEEL POSTS 6-17



TOP VIEW (5)

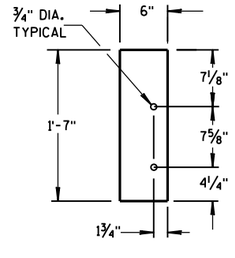


TOP VIEW (5)



FRONT VIEW

BLOCKOUT POSTS 1-5



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

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

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

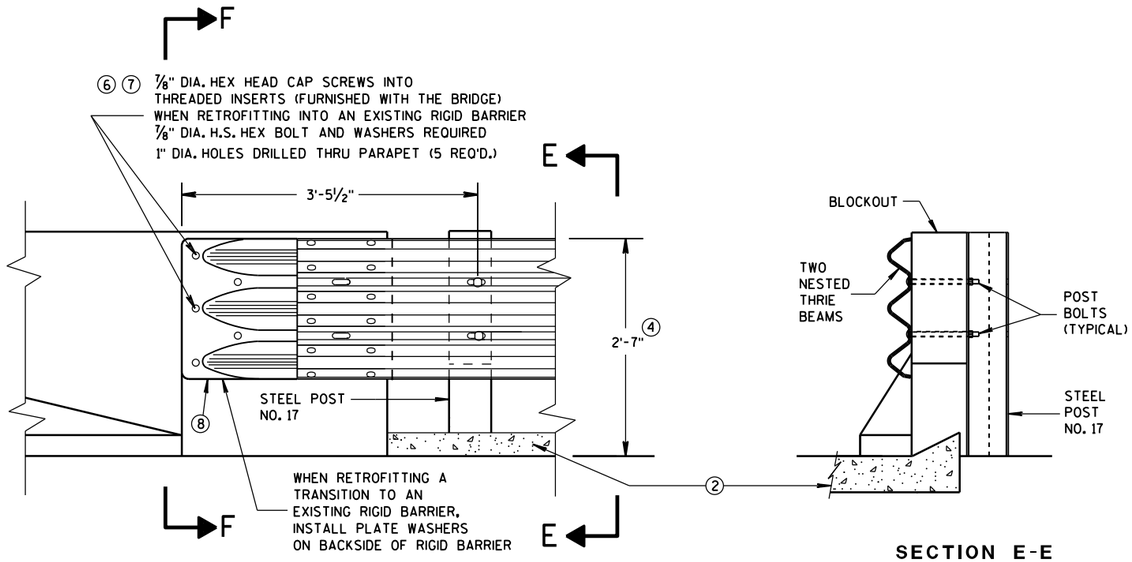
(5) WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

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



FRONT VIEW

SECTION E-E

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

GENERAL NOTES

THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

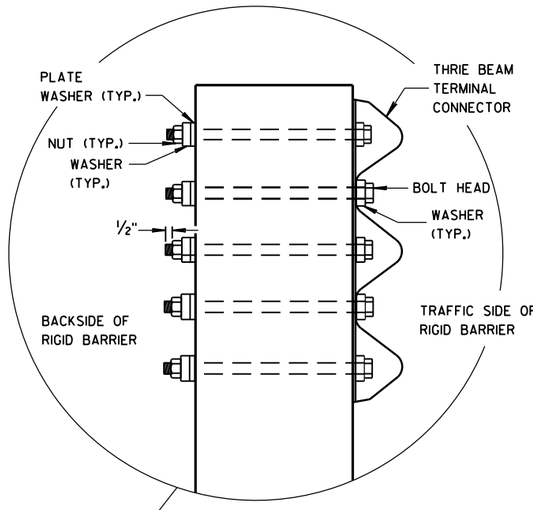
② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

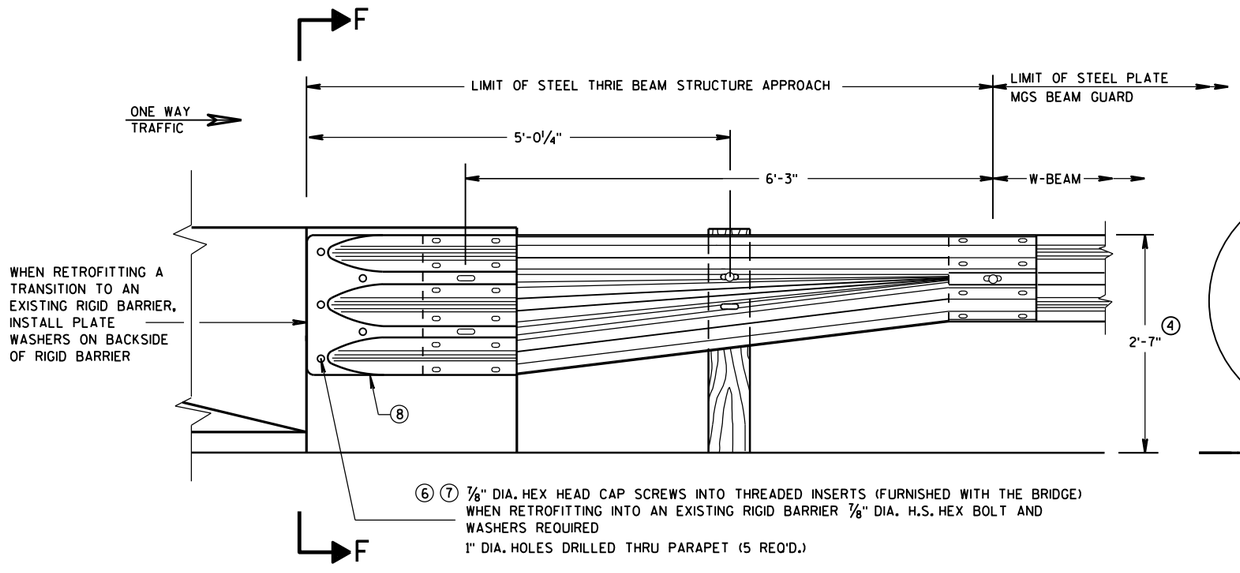
④ TOLERANCE FOR TOP OF BEAM IS ± 1".

⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

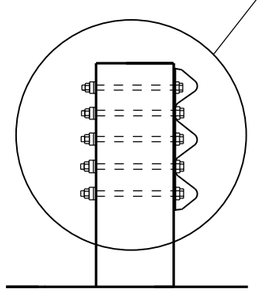
⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".

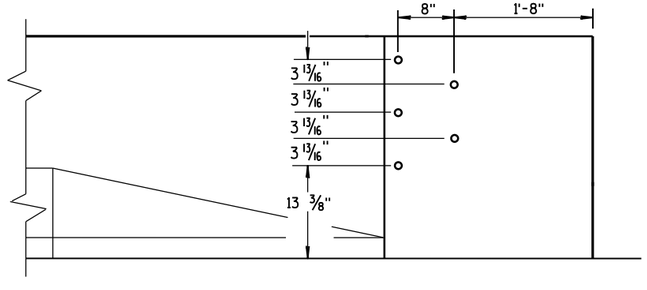




FRONT VIEW



SECTION F-F



DRILL HOLE LOCATION

W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

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

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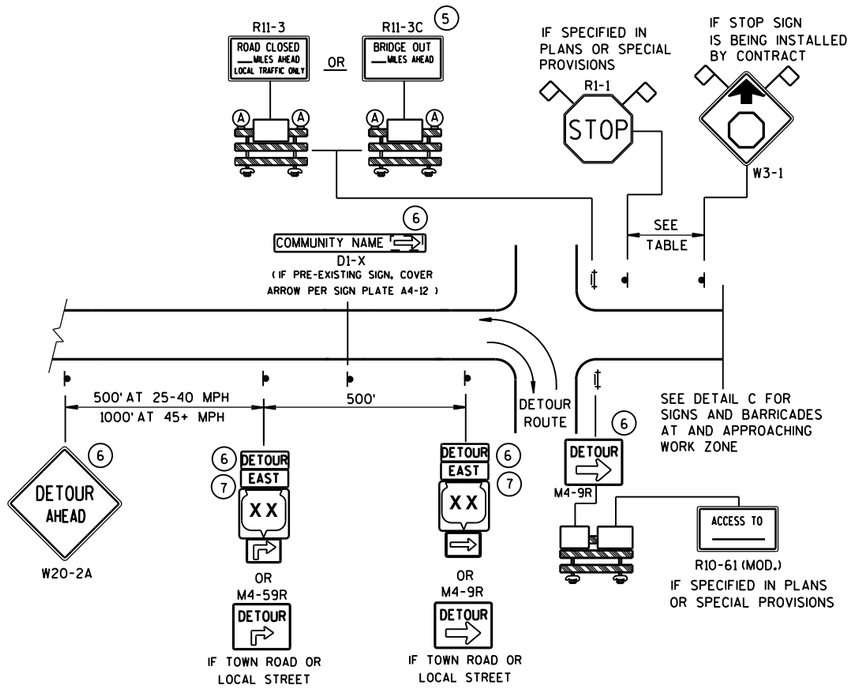
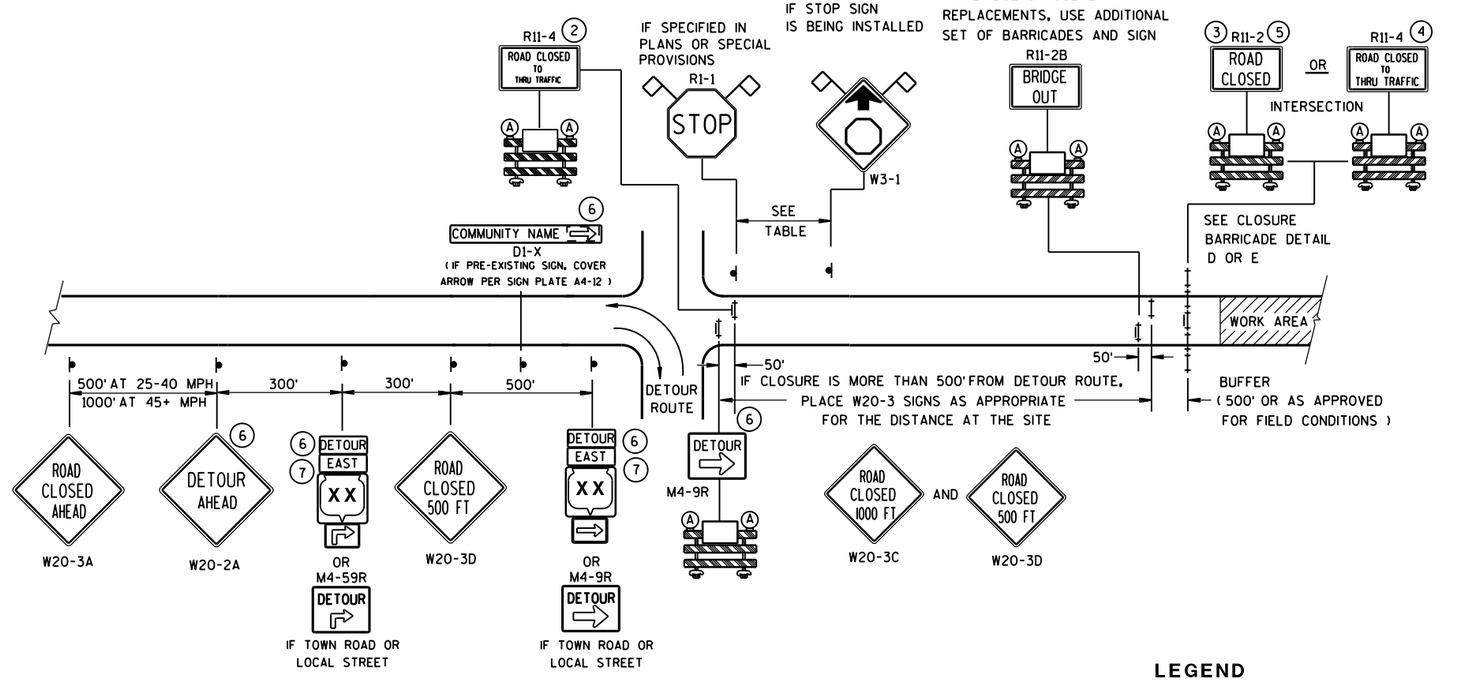
S.D.D. 14 B 45-4d



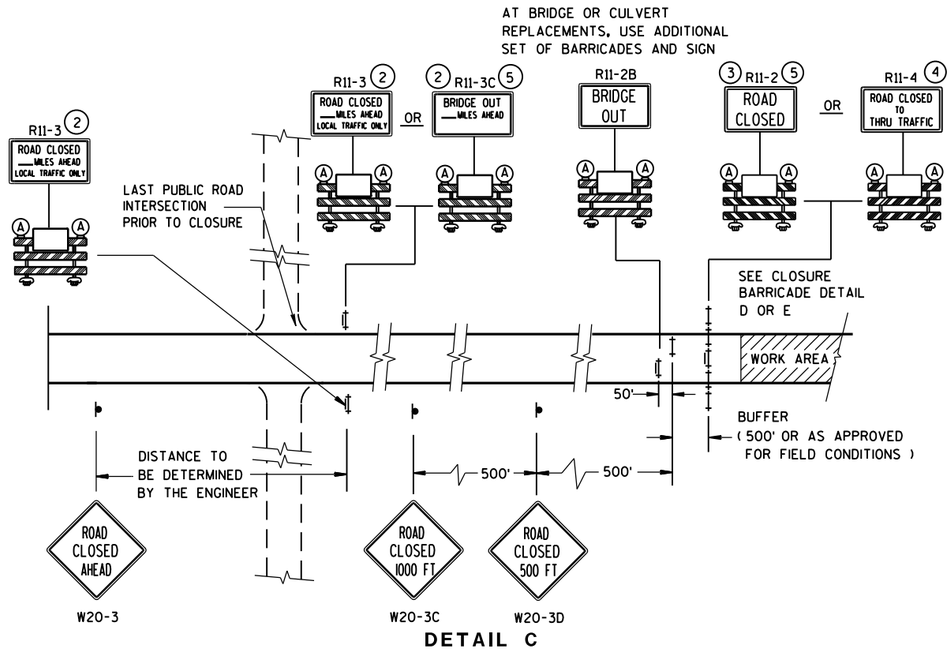
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

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



DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR

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



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

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

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

LEGEND

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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

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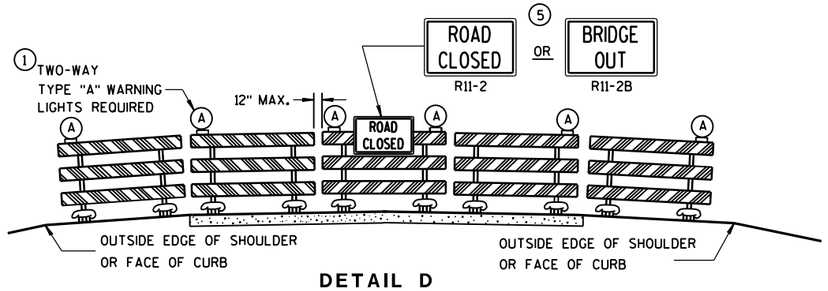
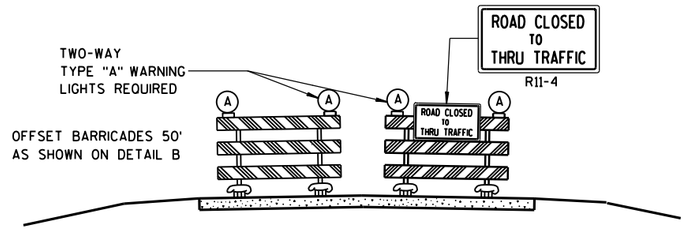
S.D.D. 15 C 2-6a



DETAIL D

ROAD CLOSURE BARRICADE DETAIL

APPROACH VIEW



DETAIL E

LANE CLOSURE BARRICADE DETAIL

APPROACH VIEW

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

Sept. 2015 — DATE

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

6

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

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

GENERAL NOTES

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

IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. MODIFY EXISTING SIGNS WHERE POSSIBLE.

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

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

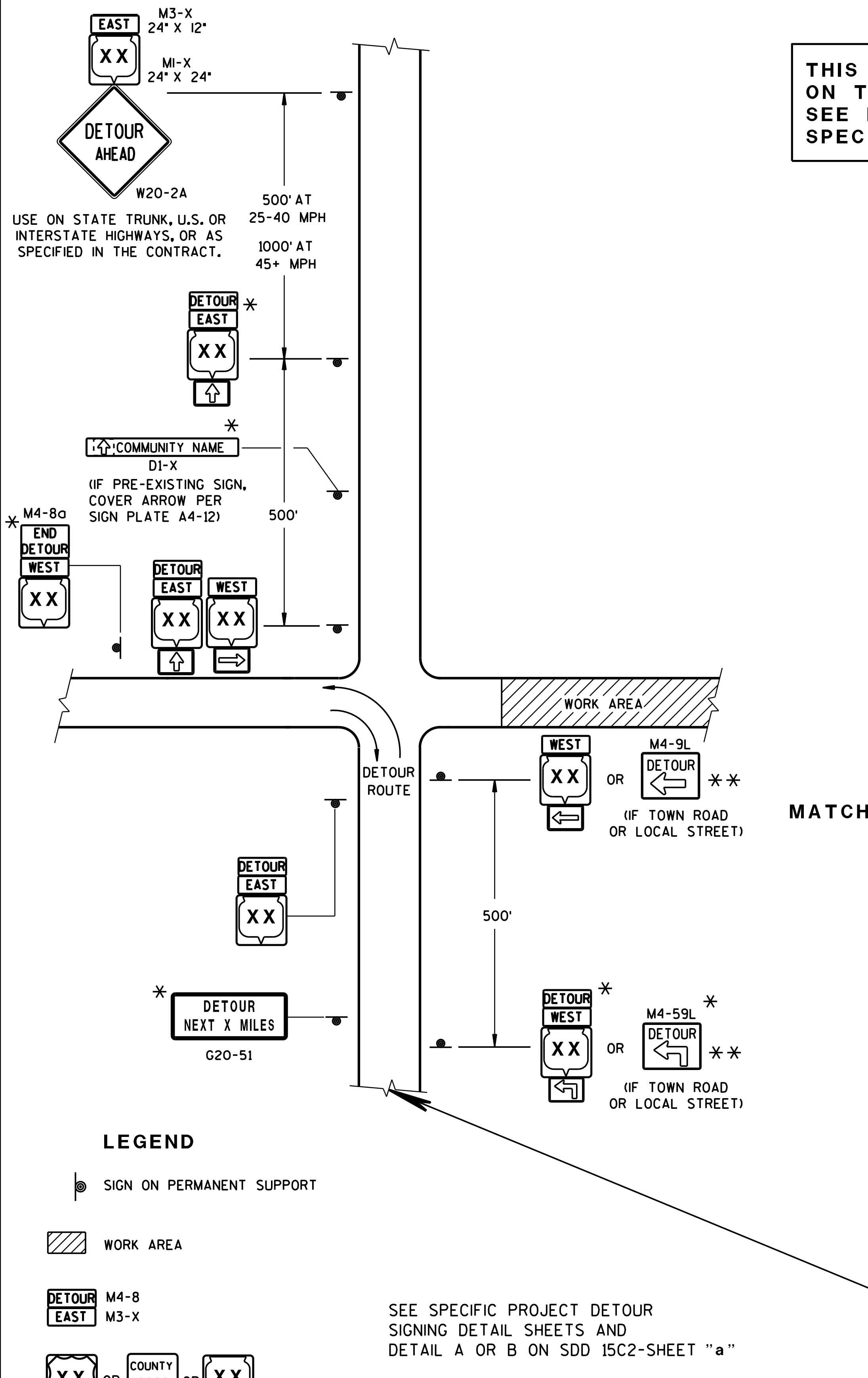
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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

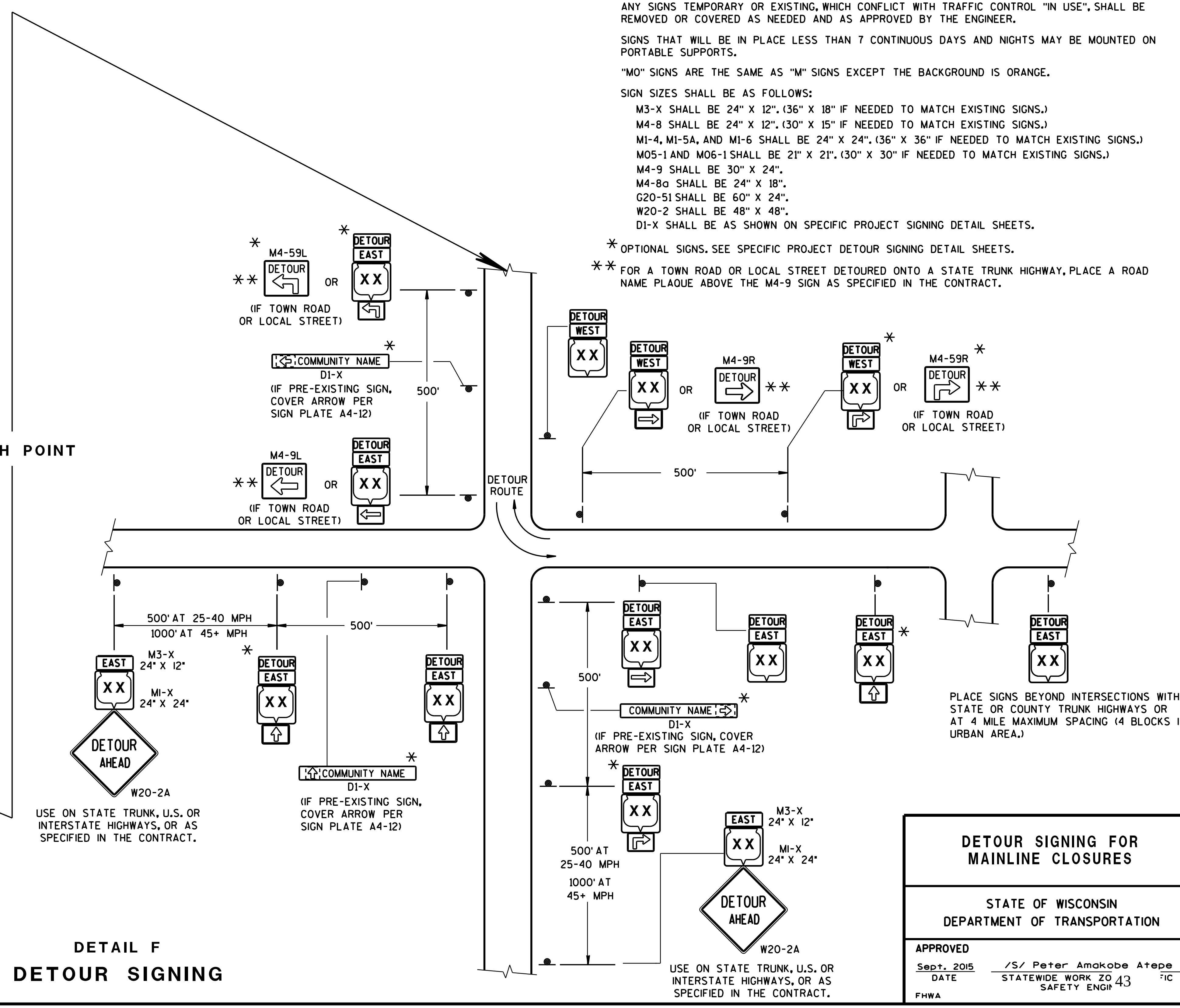
SIGN SIZES SHALL BE AS FOLLOWS:
- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-9 SHALL BE 30" X 24".
- M4-8a SHALL BE 24" X 18".
- G20-51 SHALL BE 60" X 24".
- W20-2 SHALL BE 48" X 48".
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

* OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.

** FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.



MATCH POINT



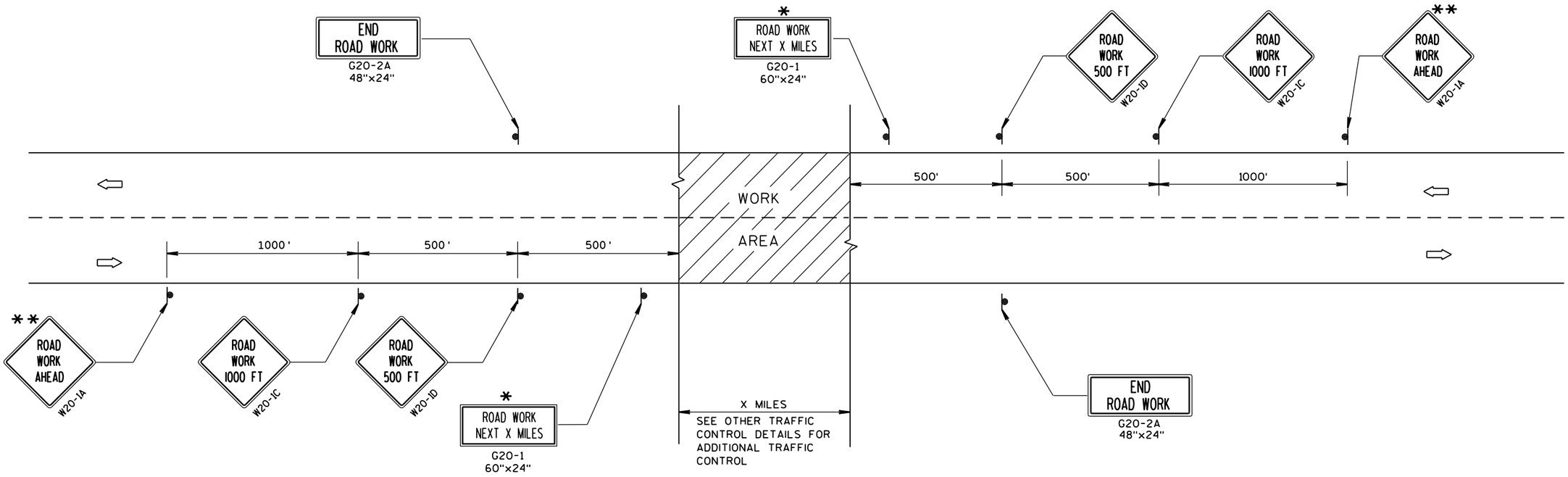
DETAIL F

DETOUR SIGNING

DETOUR SIGNING FOR MAINLINE CLOSURES
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION
APPROVED Sept. 2015 DATE /S/ Peter Amakobe Atepe STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER FHWA

6

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



TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL

GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

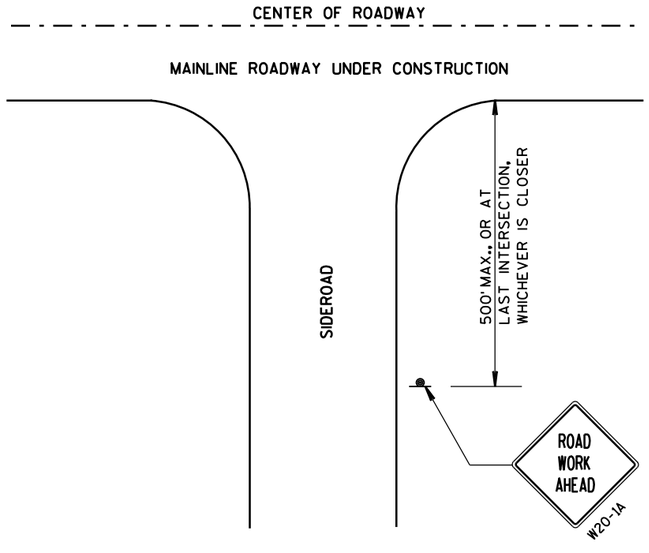
ALL SIGNS ARE 48"×48" UNLESS OTHERWISE NOTED.

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

IF A "STOP" SIGN MUST BE REMOVED FOR A WORK OPERATION, A TEMPORARY "STOP" SIGN SHALL BE PLACED PRIOR TO THE SIGN REMOVAL, OR A FLAGGER SHALL BE PROVIDED UNTIL THE SIGN IS RE-ESTABLISHED.

* OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS.

** PLACE ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.



LEGEND

- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA

TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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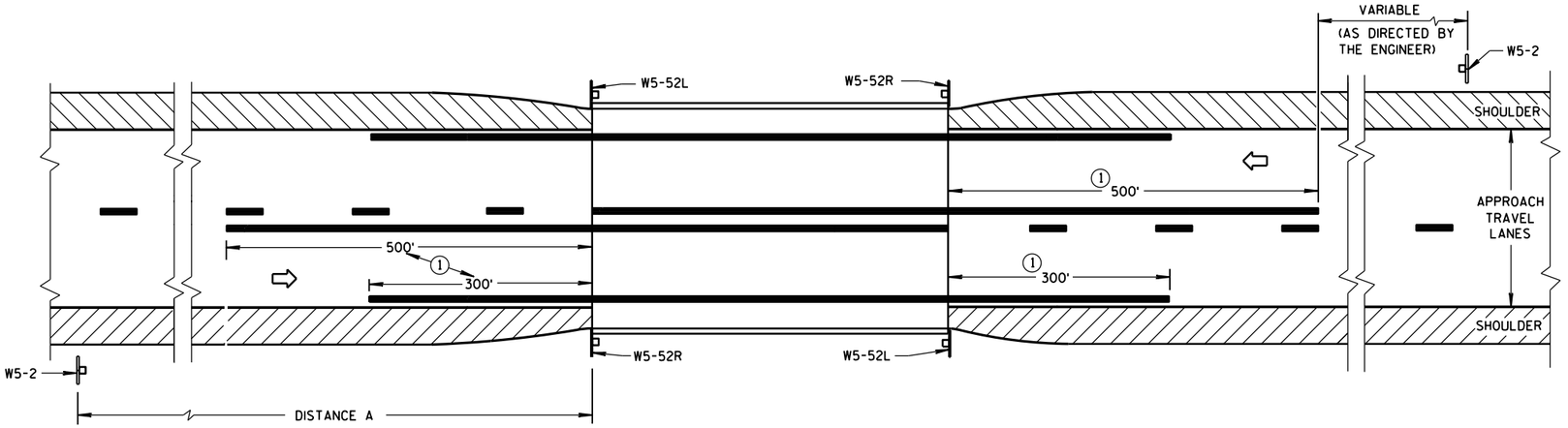
S.D.D. 15 C 4-3

6

S.D.D. 15 C 4-3



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.

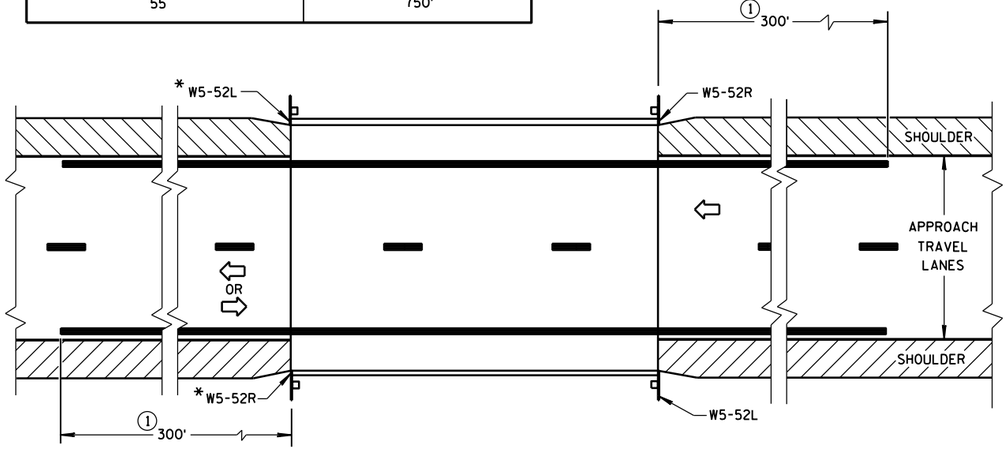
DISTANCE TABLE

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

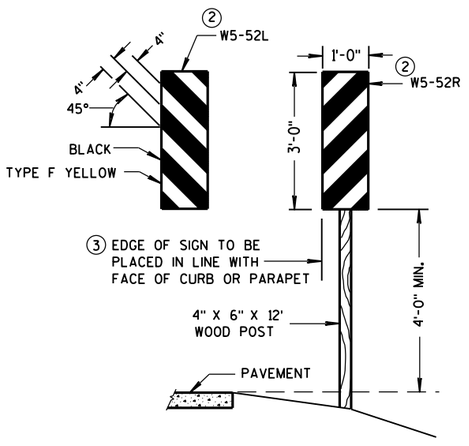


*OMIT ON ONE-WAY TRAVELLED WAYS

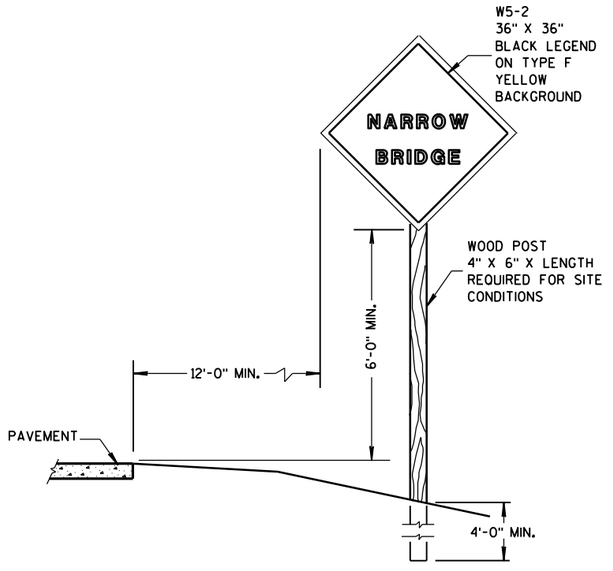
SITUATION 2

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

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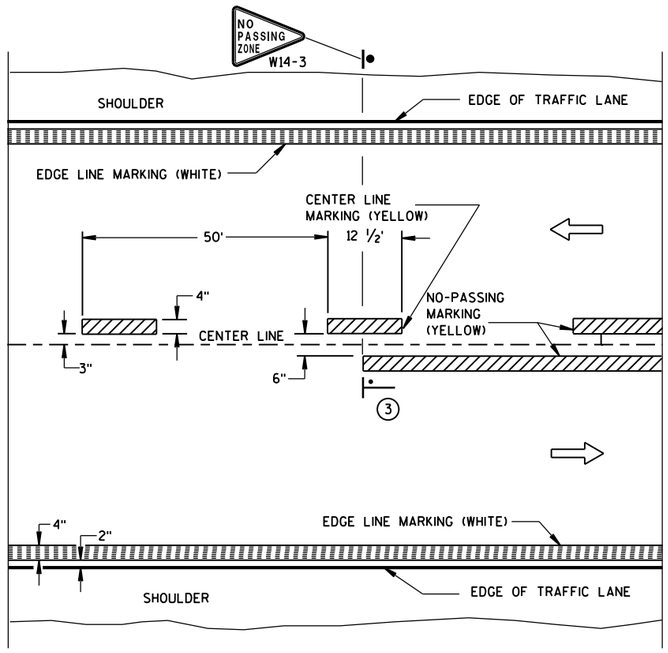
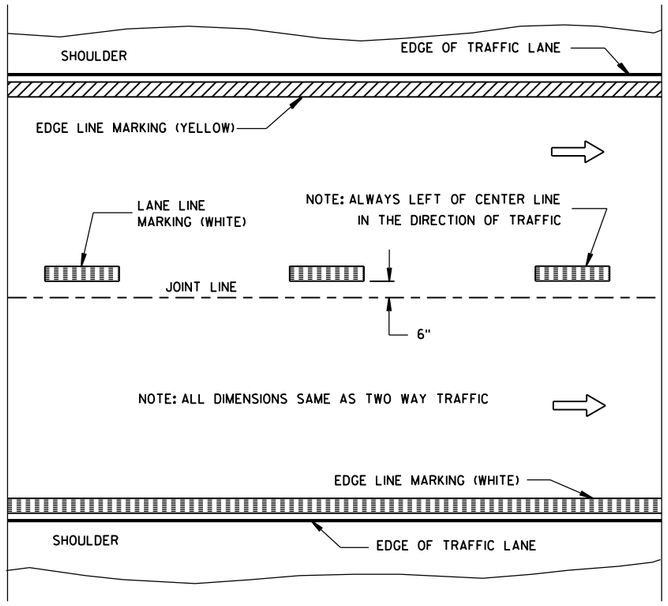
S.D.D. 15 C 6-7

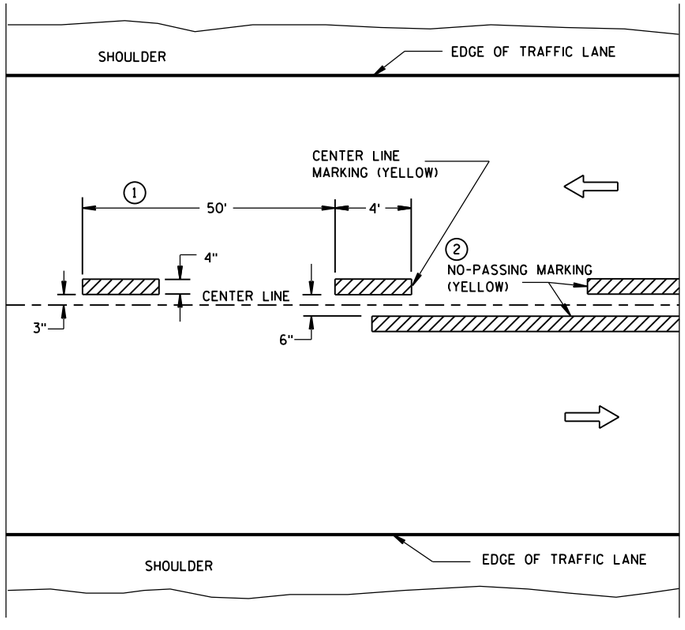


TWO WAY TRAFFIC

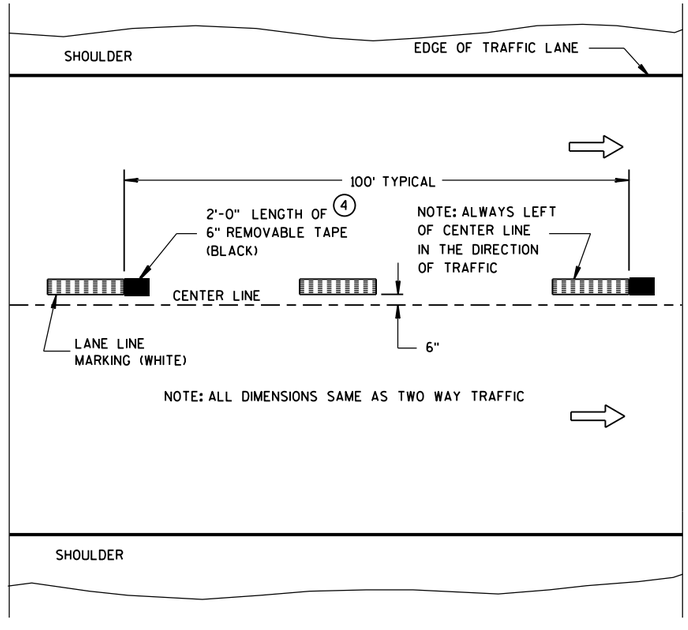


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY (INTERMEDIATE) PAVEMENT MARKING

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

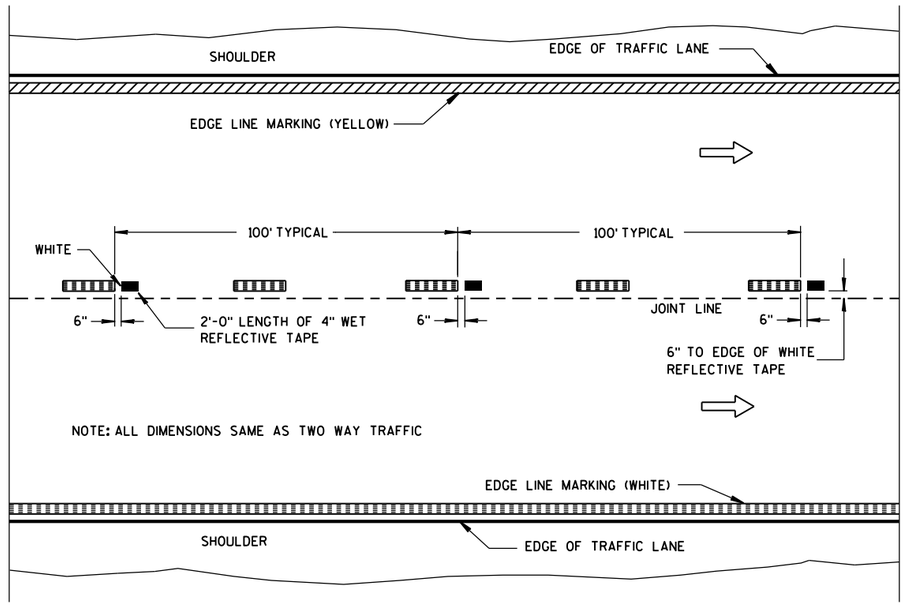
GENERAL NOTES

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

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

NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL



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

LEGEND

"T" MARKING

POST MOUNTED SIGN

PAVEMENT MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

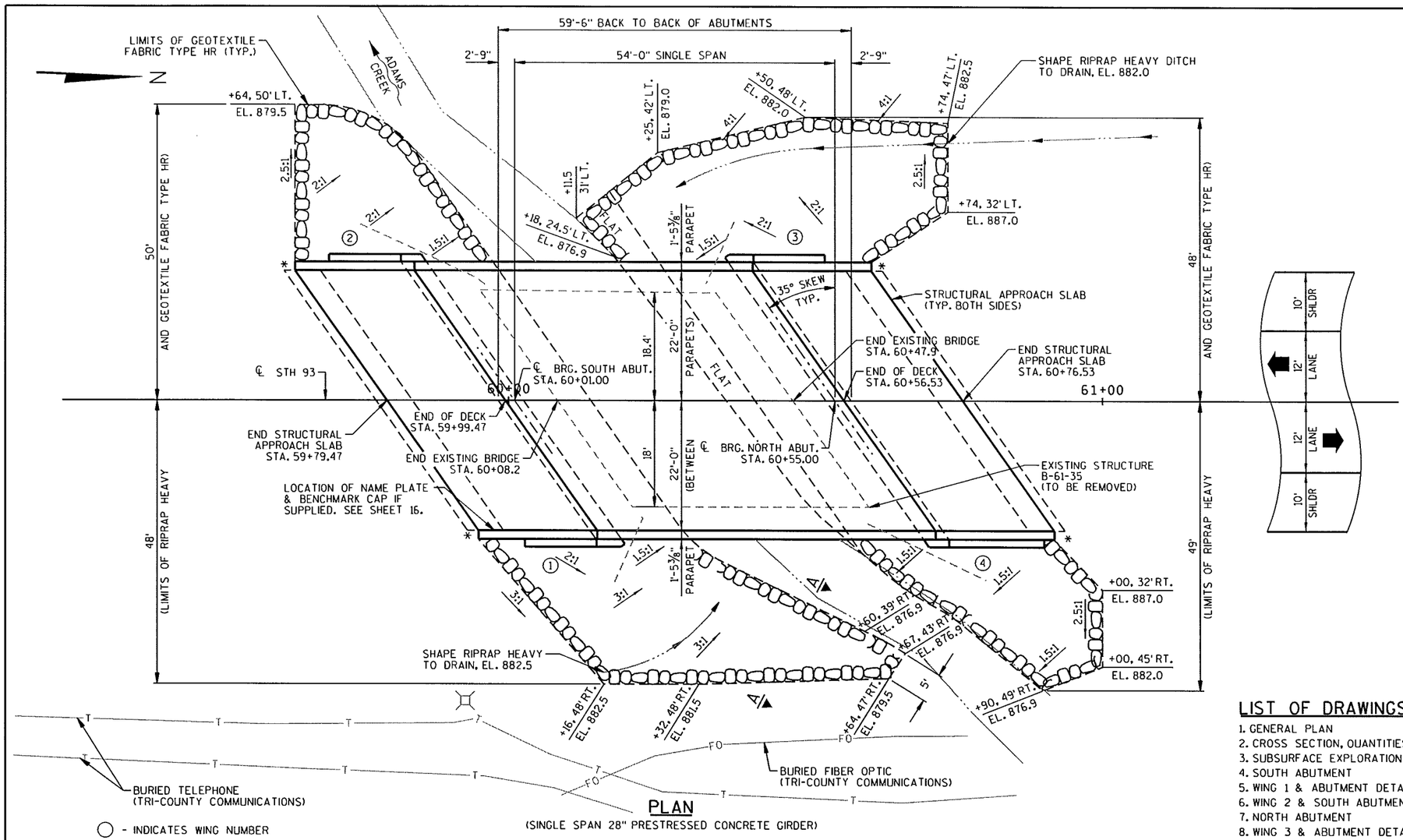
APPROVED
5-13-2013 DATE
/S/ Travis Feltes STATE TRAFFIC E
FHWA

6

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

6

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



PLAN

(SINGLE SPAN 28" PRESTRESSED CONCRETE GIRDER)

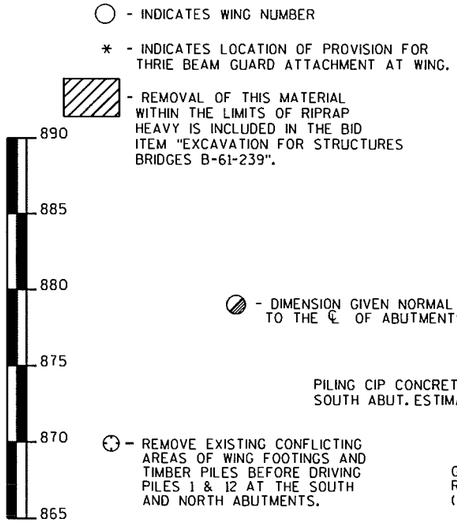
○ - INDICATES WING NUMBER

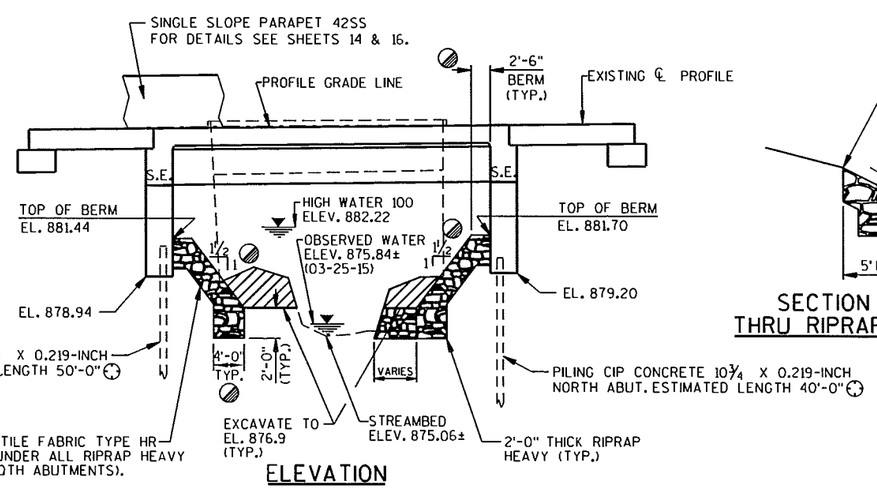
* - INDICATES LOCATION OF PROVISION FOR THRIE BEAM GUARD ATTACHMENT AT WING.

▨ - REMOVAL OF THIS MATERIAL WITHIN THE LIMITS OF RIPRAP HEAVY IS INCLUDED IN THE BID ITEM "EXCAVATION FOR STRUCTURES BRIDGES B-61-239".

⊘ - DIMENSION GIVEN NORMAL TO THE ℄ OF ABUTMENTS.

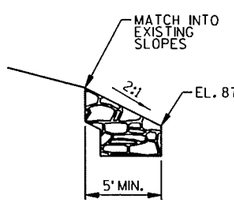
⊖ - REMOVE EXISTING CONFLICTING AREAS OF WING FOOTINGS AND TIMBER PILES BEFORE DRIVING PILES 1 & 12 AT THE SOUTH AND NORTH ABUTMENTS.





ELEVATION

(NORMAL TO ADAMS CREEK)



SECTION A-A THRU RIPRAP HEAVY

STATE PROJECT NUMBER
7590-01-85

BENCHMARKS ⌖ NAVD 88

NO.	STA./OFFSET	DESCRIPTION	ELEV.
1	60+33.66, 19.2' LT.	CHISELED + ON NW CORNER BRIDGE ABUT.	889.30
2	59+64.20, 70.6' LT.	2 POLE NAILS IN 12" ELM TREE	879.55
3	62+56.82, 72.7' LT.	2 POLE NAILS IN 18" ELM TREE	893.76

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
INVENTORY RATING FACTOR: 1.23
OPERATIONAL RATING FACTOR: 1.73

TRAFFIC DATA:

A.A.D.T. (2016) = 5,400
A.A.D.T. (2036) = 7,300
R.D.S. = 60 MPH

WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS.

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

MATERIAL PROPERTIES:

CONCRETE MASONRY, SUPERSTRUCTURE AND STRUCTURAL APPROACH SLAB — f'_c = 4,000 P.S.I.
ALL OTHER — f'_c = 3,500 P.S.I.

BAR STEEL REINFORCEMENT, GRADE 60 — f_y = 60,000 P.S.I.

28" PRESTRESSED GIRDERS CONCRETE MASONRY — f'_c = 8,000 P.S.I.
STRANDS - 0.60" ϕ WITH AN ULTIMATE TENSILE STRENGTH OF — f_y = 270,000 P.S.I.

FOUNDATION DATA:

ABUTMENTS TO BE SUPPORTED ON PILING CIP CONCRETE 10¾ X 0.219-INCH. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 110 TONS ✱ PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED PILE LENGTHS ARE 50'-0" AT THE SOUTH ABUTMENT AND 40'-0" AT THE NORTH ABUTMENT.

✱ THE FACTORED AXIAL RESISTANCE OF PILES IN COMPRESSION USED FOR DESIGN IS THE REQUIRED DRIVING RESISTANCE MULTIPLIED BY A RESISTANCE FACTOR OF 0.5.

HYDRAULIC DATA:

100 YEAR FREQUENCY

DRAINAGE AREA — 4.0 SQ. MI.
Q_{100} — 800 C.F.S.
VELOCITY — 4.42 F.P.S.
WATERWAY AREA — 181 SQ. FT.
HIGH WATER$_{100}$ ELEVATION — 882.22 ±
ROADWAY OVERFLOW DESIGN FREQUENCY — N/A
SCOUR CRITICAL CODE — 8
HIGH WATER$_2$ ELEVATION (170 C.F.S.) — 879.82 ±

LIST OF DRAWINGS

1. GENERAL PLAN
2. CROSS SECTION, QUANTITIES & NOTES
3. SUBSURFACE EXPLORATION
4. SOUTH ABUTMENT
5. WING 1 & ABUTMENT DETAILS
6. WING 2 & SOUTH ABUTMENT DETAILS
7. NORTH ABUTMENT
8. WING 3 & ABUTMENT DETAILS
9. WING 4 & NORTH ABUTMENT DETAILS
10. 28" PRESTRESSED GIRDER DETAILS
11. STEEL DIAPHRAGM
12. SUPERSTRUCTURE
13. SUPERSTRUCTURE SECTIONS & DETAILS
14. SINGLE SLOPE PARAPET 42SS ON SUPERSTRUCTURE
15. STRUCTURAL APPROACH SLAB
16. SINGLE SLOPE PARAPET 42SS ON STRUCTURAL APPROACH SLAB

CONSULTANT DESIGN CONTACT:
JOSHUA SWENO
(608) 355-8852

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

WISCONSIN
JOSHUA R. SWENO
E-44384
WAUNAKEE
WI
PROFESSIONAL ENGINEER
Joshua R. Sweno
11/24/2015

NO.	DATE	REVISION	BY

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL
1230 South Boulevard Baraboo, WI 53913
608-356-2771 1-800-362-4505 Fax: 608-356-2770

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
ACCEPTED William C. Dreher SDR 02/09/16
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE B-61-239

STH 93 OVER ADAMS CREEK

COUNTY	TOWN/~~CITY/VILLAGE~~
TREMPEALEAU	ALBION

DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
JRS	DHW	RLR	JRS

GENERAL PLAN

SHE 47 F 16

8

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DATE= 11/18/2015

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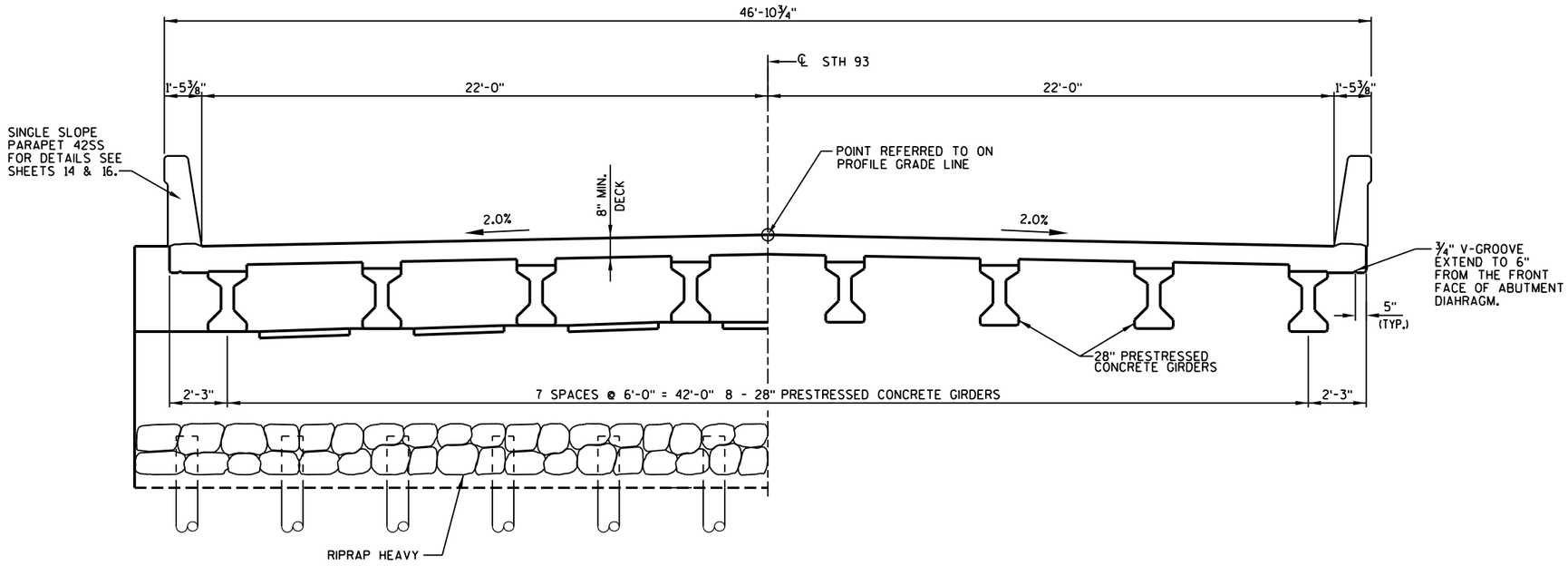
STATE PROJECT NUMBER

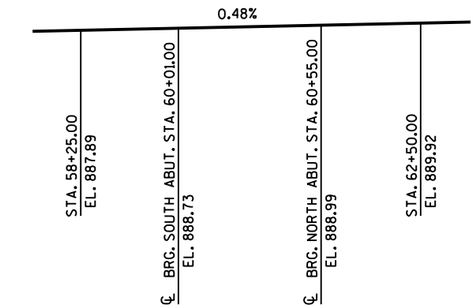
7590-01-85



AT ABUTMENTS IN SPAN

CROSS SECTION THRU BRIDGE

(LOOKING NORTH)



PROFILE GRADE LINE - STH 93

TOTAL ESTIMATED QUANTITIES

ITEM NUMBER	BID ITEM	UNIT	SOUTH ABUT.	NORTH ABUT.	SUPER	SOUTH STR. APP. SLAB	NORTH STR. APP. SLAB	TOTAL
203.0700.S.01	REMOVING OLD STRUCTURE OVER WATERWAY WITH DEBRIS CAPTURE SYSTEM STATION 60+28	LS	-	-	-	-	-	1
206.1000.01	EXCAVATION FOR STRUCTURES BRIDGES B-61-239	LS	-	-	-	-	-	1
210.0100	BACKFILL STRUCTURE	CY	120	120	-	-	-	240
305.0120	BASE AGGREGATE DENSE 1 1/4-INCH	TON	-	-	-	135	135	270
502.0100	CONCRETE MASONRY BRIDGES	CY	70	69	135	62	62	398
502.3200	PROTECTIVE SURFACE TREATMENT	SY	-	-	310	100	100	510
502.3210	PIGMENTED SURFACE SEALER	SY	-	-	98	-	-	98
503.0128	PRESTRESSED GIRDER TYPE I 28-INCH	LF	-	-	440	-	-	440
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	6,305	5,950	-	-	-	12,255
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1,615	1,680	18,840	12,015	12,015	46,165
505.0800.S.01	BAR STEEL REINFORCEMENT HS STAINLESS STRUCTURES	LB	-	-	1,600	-	-	1,600
506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	-	-	16	-	-	16
506.4000.01	STEEL DIAPHRAGMS B-61-239	EACH	-	-	7	-	-	7
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	16	16	-	-	-	32
550.2102	PILING CIP CONCRETE 10 3/4 X 0.219-INCH	LF	600	520	-	-	-	1,120
606.0300	RIPRAP HEAVY	CY	205	230	-	-	-	435
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	135	130	-	-	-	265
614.0150	ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD	EACH	-	-	4	-	-	4
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	370	410	-	-	-	780
	NON-BID ITEMS							
	CORK FILLER	SIZE						¾"
	PREFORMED FILLER	SIZE						½" & ¾"

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

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

THE FIRST DIGIT OF A THREE DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY AND GEOTEXTILE FABRIC TYPE HR TO THE LIMITS SHOWN ON SHEET 1 AND ON THE ABUTMENT SHEETS OR AS DIRECTED BY THE ENGINEER.

THE EXISTING GROUNDLINE SHALL BE THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES" FOR THE ABUTMENTS.

THIS STRUCTURE WILL REPLACE EXISTING BRIDGE, B-61-35, A 36.5 FOOT WIDE X 39.7 FOOT LONG, SINGLE SPAN CONCRETE "T" GIRDER BRIDGE SET ON FULL RETAINING CONCRETE ABUTMENTS. ORIGINAL 1957 PLANS ARE AVAILABLE FROM THE WISCONSIN DEPARTMENT OF TRANSPORTATION.

AT THE ABUTMENTS ALL EXCAVATED VOLUME NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH BACKFILL STRUCTURE. THE QUANTITY FOR "BACKFILL STRUCTURE" AND "BASE AGGREGATE DENSE 1 ¼-INCH" IS CALCULATED BASED ON FIGURE 12.6-2 IN THE WISDOT BRIDGE MANUAL.

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO NAVD 88 DATUM, AND WERE ESTABLISHED AT THE SITE USING GPS TECHNOLOGY.

APPLY PROTECTIVE SURFACE TREATMENT TO THE TOP OF THE DECK, PAVING NOTCH, AND STRUCTURAL APPROACH SLABS.

APPLY PIGMENTED SURFACE SEALER TO THE TOP AND ROADWAY FACES OF THE PARAPETS.

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-239

DRAWN BY RLR | PLANS CK'D. JRS

CROSS SECTION, QUANTITIES & NOTES

SHEET 2 OF 16

48

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DATE= 11/18/2015

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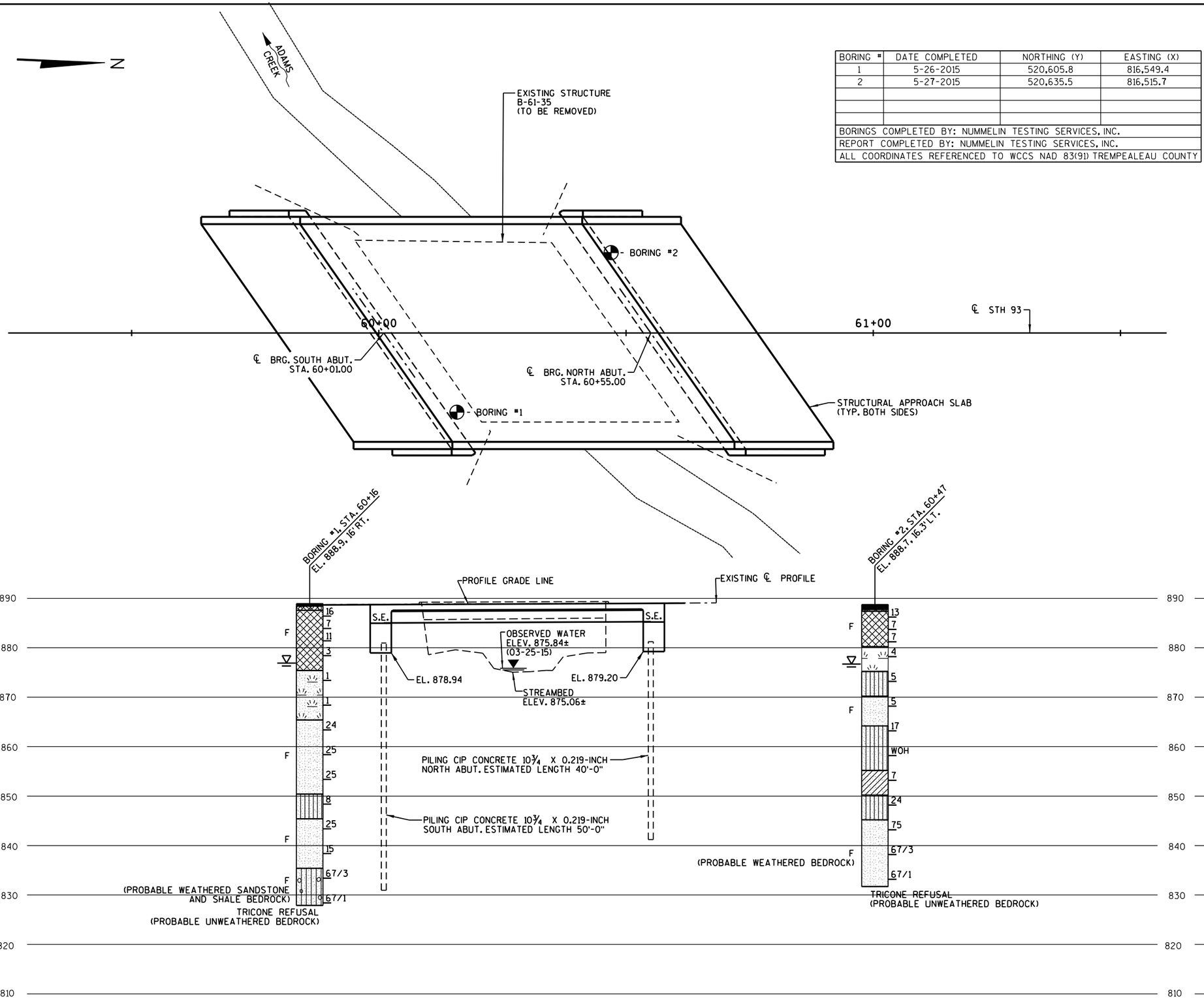


BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
1	5-26-2015	520,605.8	816,549.4
2	5-27-2015	520,635.5	816,515.7
BORINGS COMPLETED BY: NUMMELIN TESTING SERVICES, INC.			
REPORT COMPLETED BY: NUMMELIN TESTING SERVICES, INC.			
ALL COORDINATES REFERENCED TO WCCS NAD 83(91) TREMPEALEAU COUNTY			

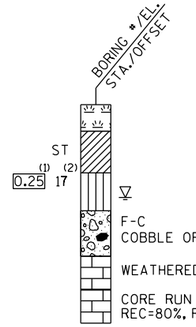
STATE PROJECT NUMBER

7590-01-85

MATERIAL SYMBOLS

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

LEGEND OF BORING



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

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

GROUND WATER ELEVATION

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

ABBREVIATIONS

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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-239

DRAWN BY RLR | PLANS CK'D. JRS

SUBSURFACE EXPLORATION

SHEET 3 OF 16

8

8

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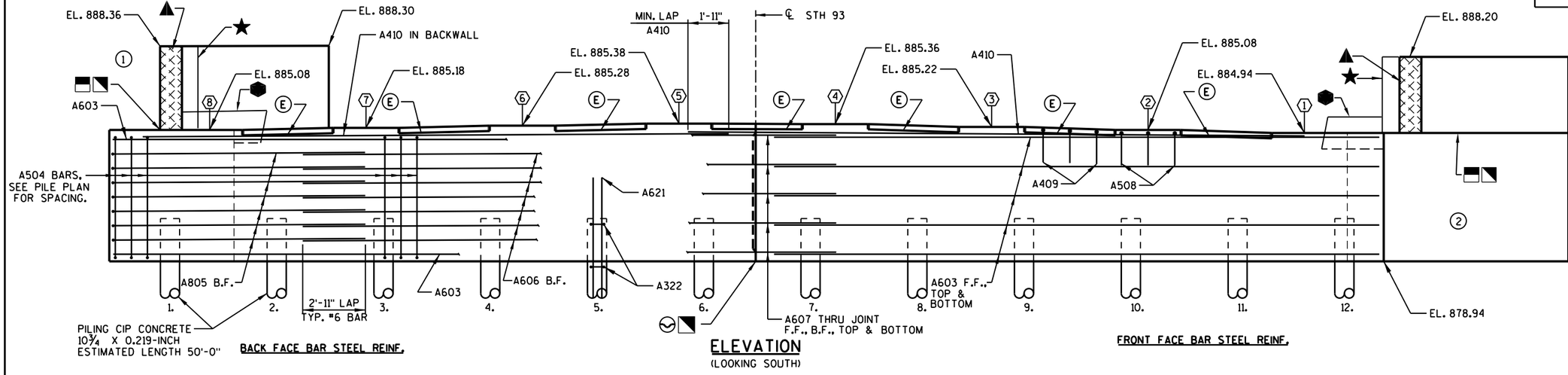
STATE PROJECT NUMBER

7590-01-85



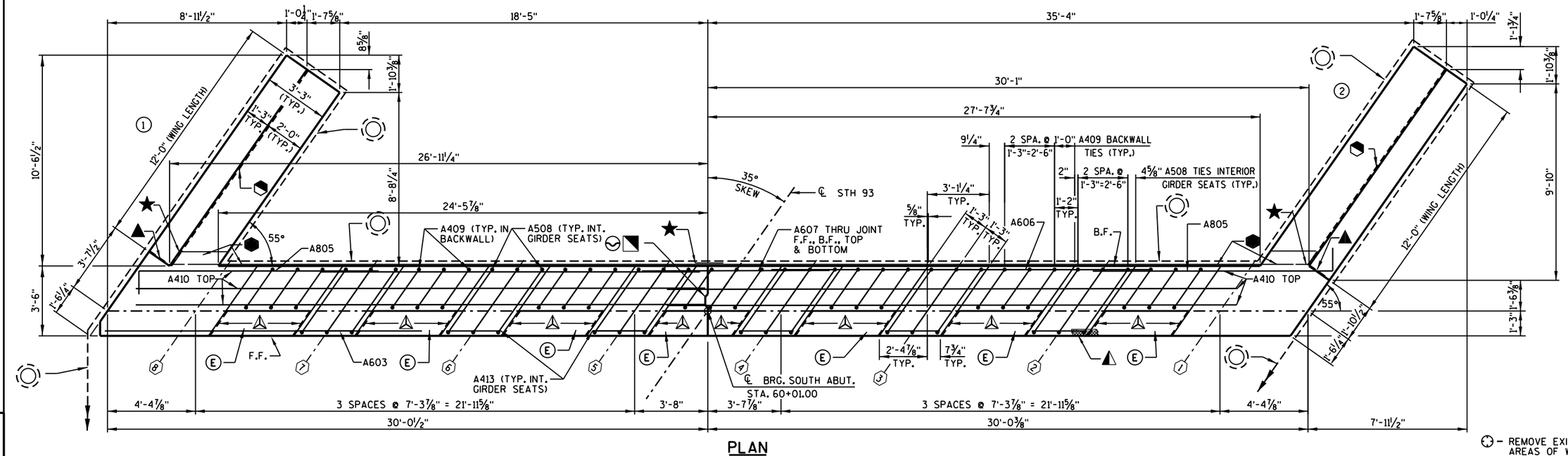
ELEVATION
(LOOKING SOUTH)

NOTES

ELEVATIONS ARE GIVEN AT THE ℄ OF BEARING.

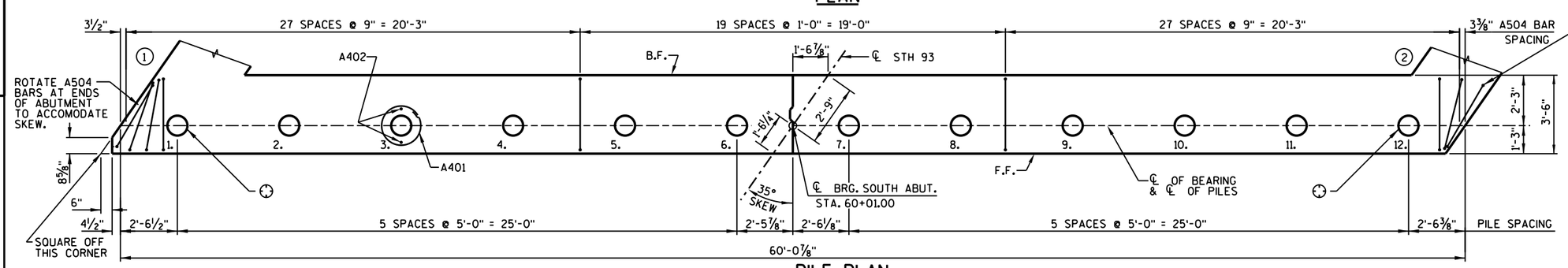
FOR WING DETAILS SEE SHEETS 5 & 6.

SEE SHEET 5 LEGEND FOR DESCRIPTION OF



PLAN

℄ – REMOVE EXISTING CONFLICTING AREAS OF WING FOOTINGS AND TIMBER PILES BEFORE DRIVING PILES 1 & 12.



PILE PLAN

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-239

DRAWN BY RLR | PLANS CK'D. JRS

SOUTH ABUTMENT

SHEET 4 OF 16
50

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DATE= 11/18/2015

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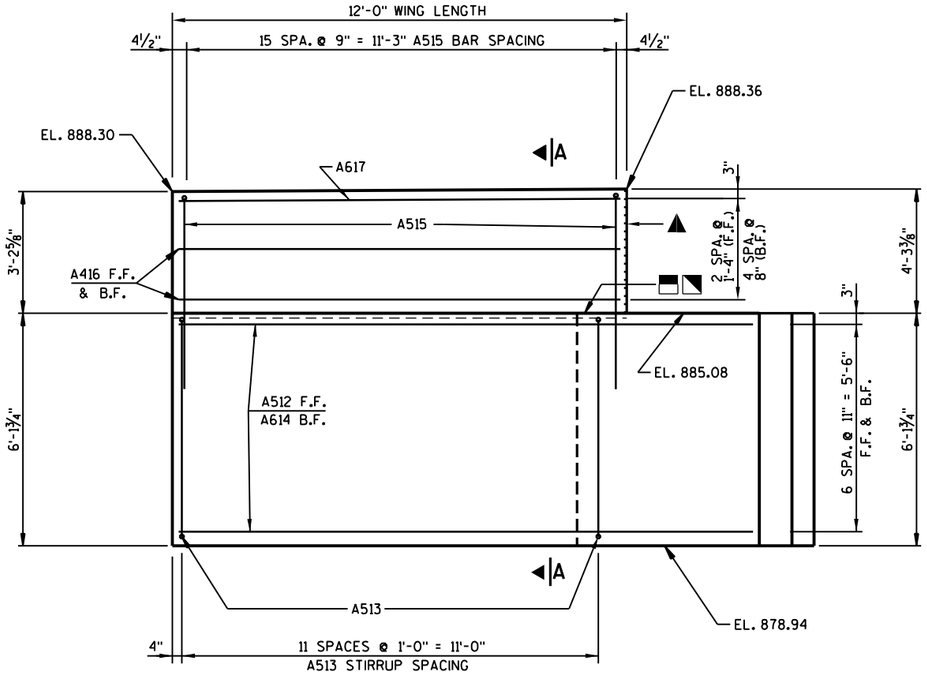
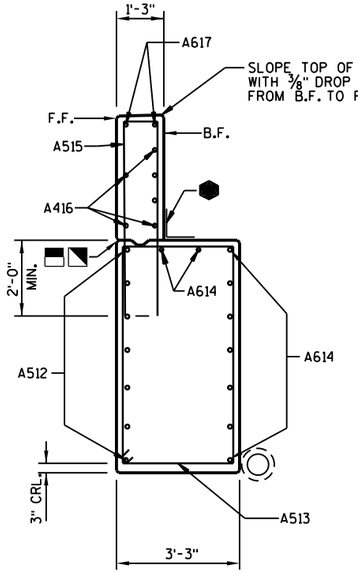
STATE PROJECT NUMBER

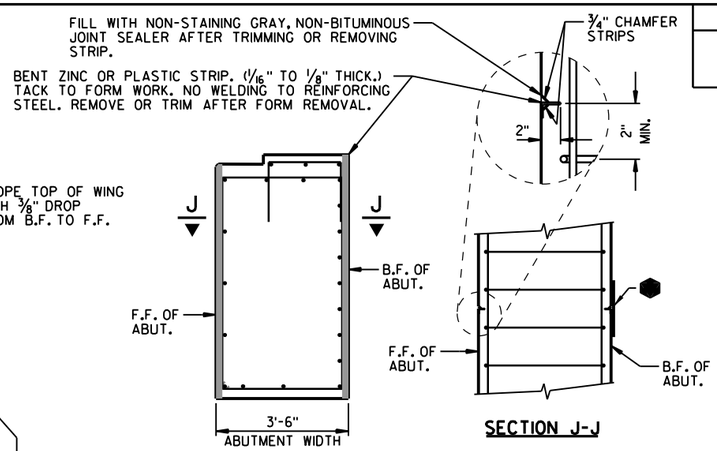
7590-01-85



ELEVATION - WING 1



SECTION A-A THRU WING 1



SECTION J-J

SECTION THRU ABUTMENT BODY

ALTERNATE CONSTRUCTION JOINT AT ABUTMENT

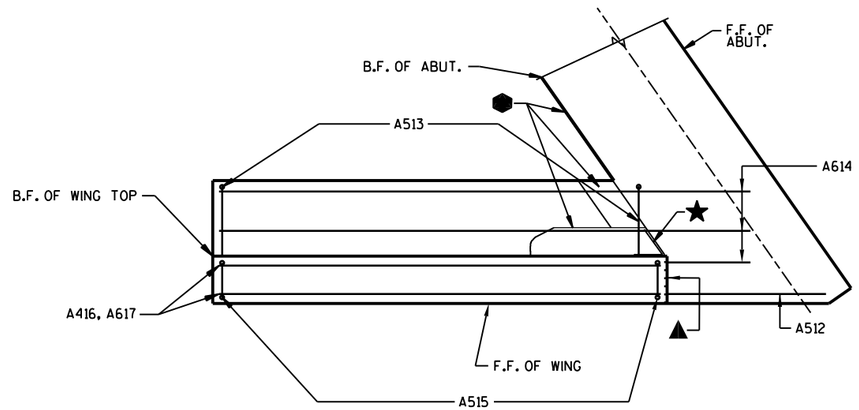
NOTES:

PARTIAL ZINC OR PLASTIC BULKHEAD MAY BE USED AS ALTERNATE CONSTRUCTION JOINT, WITH THE PERMISSION OF THE ENGINEER, AT THE CONTRACTORS EXPENSE.

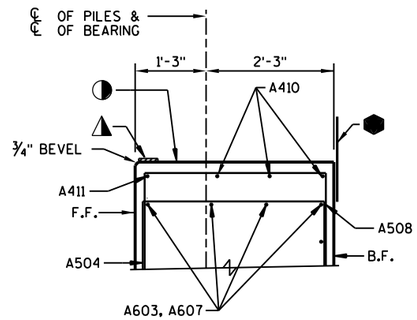
VERTICAL CONSTRUCTION JOINT KEYWAY IS NOT REQUIRED WHEN USING ALTERNATE CONSTRUCTION JOINT.

CARE IS TO BE USED IN CASTING CONCRETE AROUND BULKHEAD TO PREVENT DISLOCATION OR MISALIGNMENT OF THE BULKHEAD.

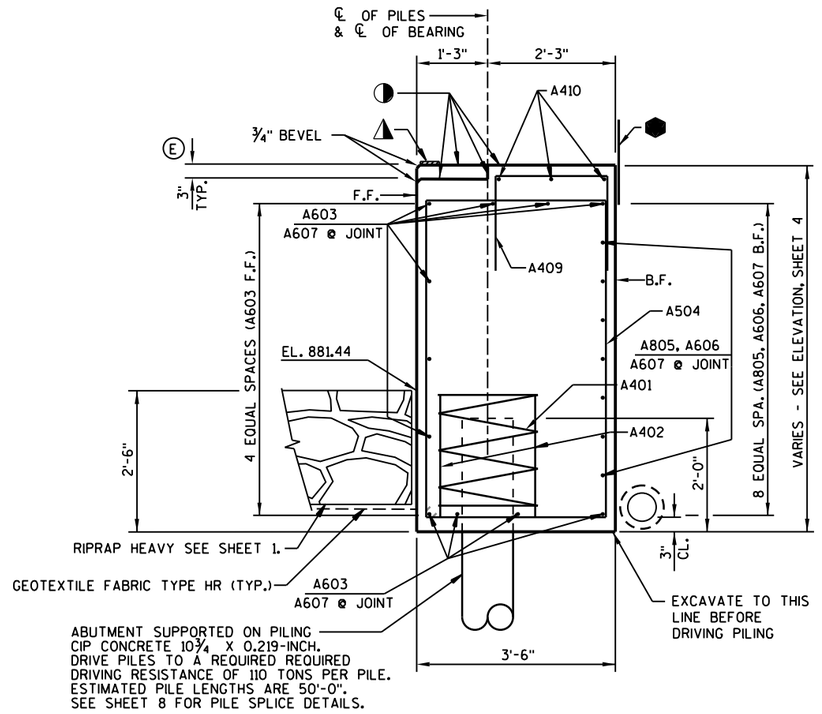
SAW CUTTING JOINT IS NOT ALLOWED.



PLAN - WING 1



TYPICAL SECTION THRU ABUTMENT AT INTERIOR GIRDER SEATS



TYPICAL SECTION THRU ABUTMENT

LEGEND

- ◥ — ¾" "V" GROOVE ON FRONT FACE OF KEYED CONSTRUCTION JOINT.
- ◨ — OPTIONAL KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2×6. IF JOINT IS USED, POUR CONCRETE ABOVE THIS JOINT AFTER DECK IS IN PLACE AND PLACE ⬢ ON B.F. OF WING.
- ◭ — 4"× ¾" FILLER, EXTEND FULL LENGTH ALONG F.F. OF ABUTMENT BETWEEN OUTSIDE EDGES OF DECK.
- ◑ — STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING BEARING PADS AND/OR SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03 INCHES. BEARING SEATS TO BE LEVEL.
- ▲ — ½" FILLER EXTEND AS SHOWN.
- ◹ — ½" FILLER BETWEEN WING TOP AND STRUCTURAL APPROACH SLAB.

  SEAL ALL EXPOSED HORIZONTAL & VERTICAL SURFACES OF FILLER WITH NON-STAINING GRAY, NON-BITUMINOUS JOINT SEALER. (1" DEEP & HOLD ⅛" BELOW SURFACE OF CONCRETE).

F.F.— FRONT FACE B.F.—BACK FACE CL.—CLEAR

- ⬡ — INDICATES GIRDER NUMBER
- ⊖ — KEYED CONSTRUCTION JOINT ON ABUTMENT BODY FORMED BY BEVELED 2 × 8. CLEAR PILES BY 9" MIN. PLACE 1'-6" WIDE RUBBERIZED MEMBRANE WATERPROOFING ON B.F. AT JOINT.
- Ⓔ — SEMI-EXPANSION POCKET, CONSTRUCT 3" DEEPER THAN BEAM SEATS AND ABUTMENT BACKWALL. SLOPE BETWEEN LEVEL BEAM SEATS ALONG ℄ OF BEARING.
- ◯ — INDICATES WING NUMBER
- △ — ¾" CORK FILLER (SIDE VERTICAL FACES ONLY IN S.E. POCKETS).
- ★ — VERTICAL 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. EXTEND FROM BRIDGE SEAT TO PAVING NOTCH.
- ⬢ — HORIZONTAL 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. EXTEND BETWEEN WINGS AND ALONG B.F. OF WINGS.
- ◎ — PIPE UNDERDRAIN WRAPPED 6-INCH. EXTEND THRU GEOTEXTILE FABRIC AND DISCHARGE ON RIPRAP HEAVY. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. PROVIDE RODENT PROTECTION AT ENDS OF PIPE (SEE DETAIL SHEET 8).

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-239

DRAWN BY RLR | PLANS CK'D. JRS

WING 1 & ABUTMENT DETAILS

SHEET 5 OF 16
51

FILE= 93283_05.DGN
DATE= 11/18/2015

8

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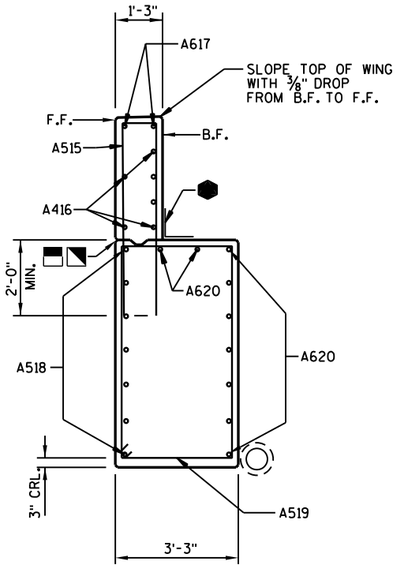
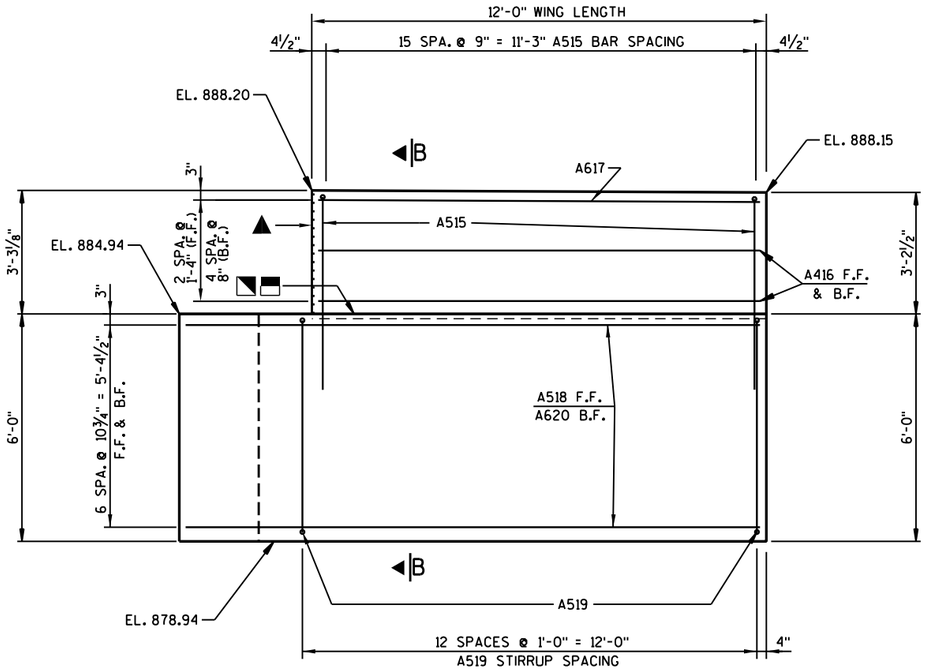
93283_05.dgn 11/18/2015 2:40:24 PM rrabska

STATE PROJECT NUMBER
7590-01-85



SECTION B-B THRU WING 2



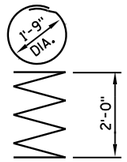
ELEVATION - WING 2

BILL OF BARS (SOUTH ABUTMENT)

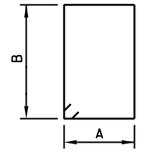
UNCOATED 6305 LBS.
COATED 1615 LBS.

MARK	NUMBER REQUIRED		LENGTH	BENT	LOCATION
	COATED	UNCOATED			
A401	-	12	28'-0"	X	ABUT. BODY - 1 SPIRAL WRAP PER PILE
A402	-	24	2'-3"		ABUT. BODY - 2 PER PILE - VERT.
A603	-	22	28'-0"		ABUT. BODY - F.F., TOP & BOTTOM - HORIZ.
A504	-	74	17'-8"	X	ABUT. BODY - STIRRUPS - VERT.
A805	-	14	13'-2"	X	ABUT. BODY - B.F. @ WINGS - HORIZ.
A606	-	14	19'-0"		ABUT. BODY - B.F. @ CENTER - HORIZ.
A607	-	18	9'-5"		ABUT. BODY - SPLICE BAR @ JOINT - HORIZ.
A508	-	18	6'-11"	X	ABUT. TOP - TIES - INTERIOR GIRDER SEATS - VERT.
A409	-	21	5'-6"	X	ABUT. TOP - TIES - SEMI-EXP. POCKET BACKWALL - VERT.
A410	-	6	28'-6"		ABUT. TOP - BACKWALL - HORIZ.
A411	-	6	2'-9"		ABUT. TOP - F.F. - INTERIOR GIRDER SEATS - HORIZ.
A512	7	-	16'-0"		WING 1 - BASE - F.F. - HORIZ.
A513	12	-	17'-10"	X	WING 1 - BASE - STIRRUP - VERT.
A614	9	-	14'-0"		WING 1 - BASE - B.F. & TOP - HORIZ.
A515	32	-	11'-0"	X	WINGS - TOP - TIES - VERT.
A416	12	-	11'-7"		WINGS - TOP - F.F. & B.F. - HORIZ.
A617	4	-	11'-7"		WINGS - TOP - F.F. & B.F. - HORIZ.
A518	7	-	15'-1"		WING 2 - BASE - F.F. - HORIZ.
A519	13	-	17'-8"	X	WING 2 - BASE - STIRRUP - VERT.
A620	9	-	15'-2"		WING 2 - BASE - B.F. & TOP - HORIZ.
A621	-	72	20'-0"		CONCRETE CIP PILING - 6 @ EACH PILING - VERT.
A322	-	120	2'-6"	X	CONCRETE CIP PILING - 10 @ EACH PILING - TIES

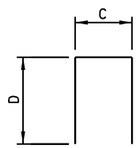
DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.



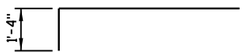
A401



MARK	A	B
A504	3'-2"	5'-4"
A513	2'-11"	5'-8"
A519	2'-11"	5'-7"

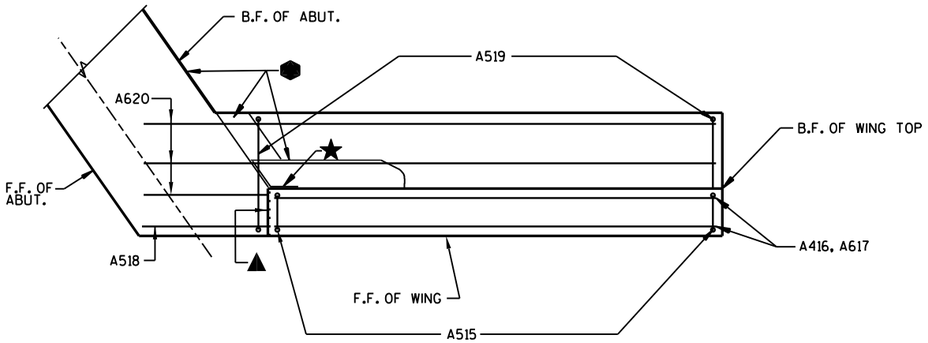


MARK	C	D
A508	3'-10"	1'-8"
A409	2'-4"	1'-8"
A515	11"	5'-2"



A805
STD. 90° HOOK

A322



PLAN - WING 2

SEE SHEET 5 LEGEND FOR DESCRIPTION OF

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-239

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WING 2 & SOUTH ABUTMENT DETAILS

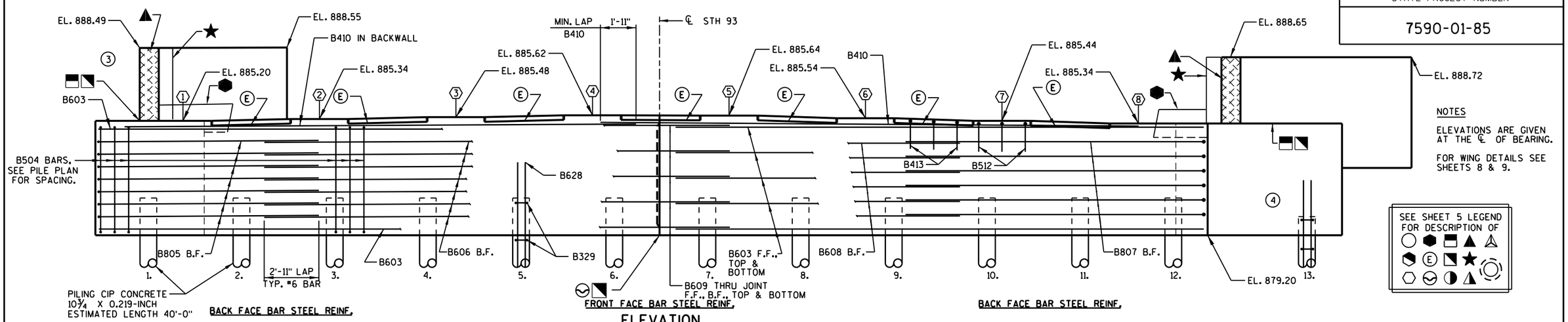
SHEET 6 OF 16
52

FILE= 93283_06.DGN
DATE= 11/3/2015

93283_06.dgn 11/3/2015 1:06:55 PM bhalley

STATE PROJECT NUMBER

7590-01-85



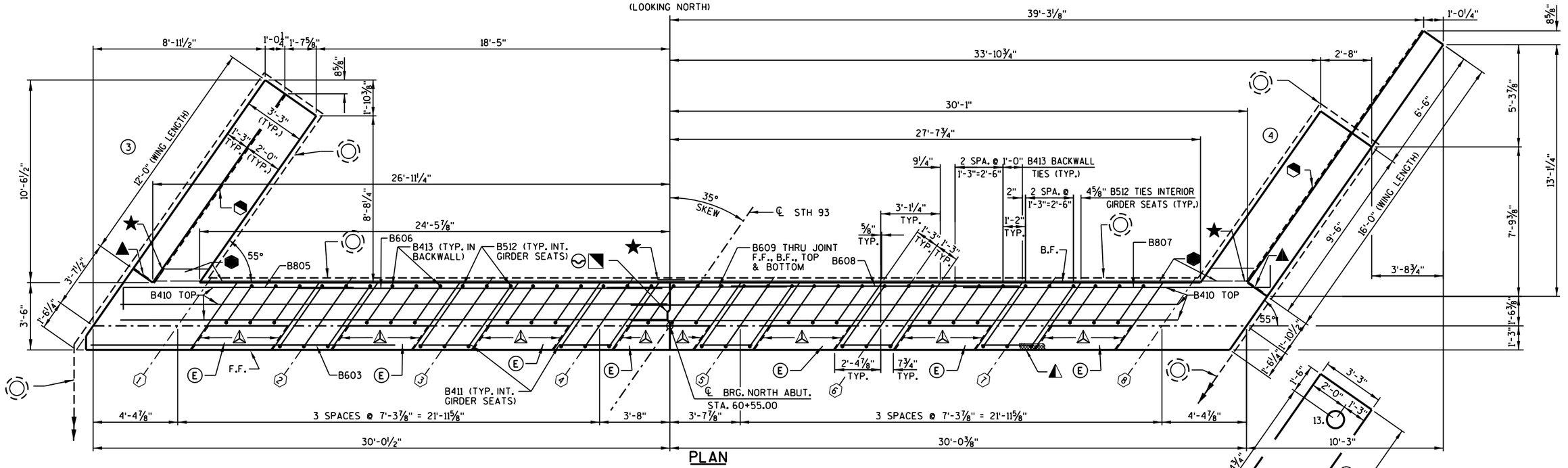
ELEVATION

(LOOKING NORTH)

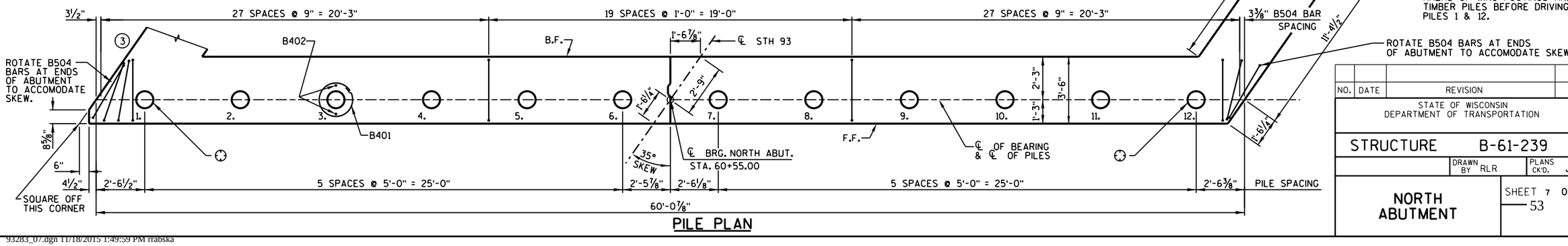
NOTES

ELEVATIONS ARE GIVEN AT THE ℄ OF BEARING.

FOR WING DETAILS SEE SHEETS 8 & 9.



PLAN



PILE PLAN

○ – REMOVE EXISTING CONFLICTING AREAS OF WING FOOTINGS AND TIMBER PILES BEFORE DRIVING PILES 1 & 12.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-239

DRAWN BY RLR | PLANS CK'D. JRS

NORTH ABUTMENT

SHEET 7 OF 16
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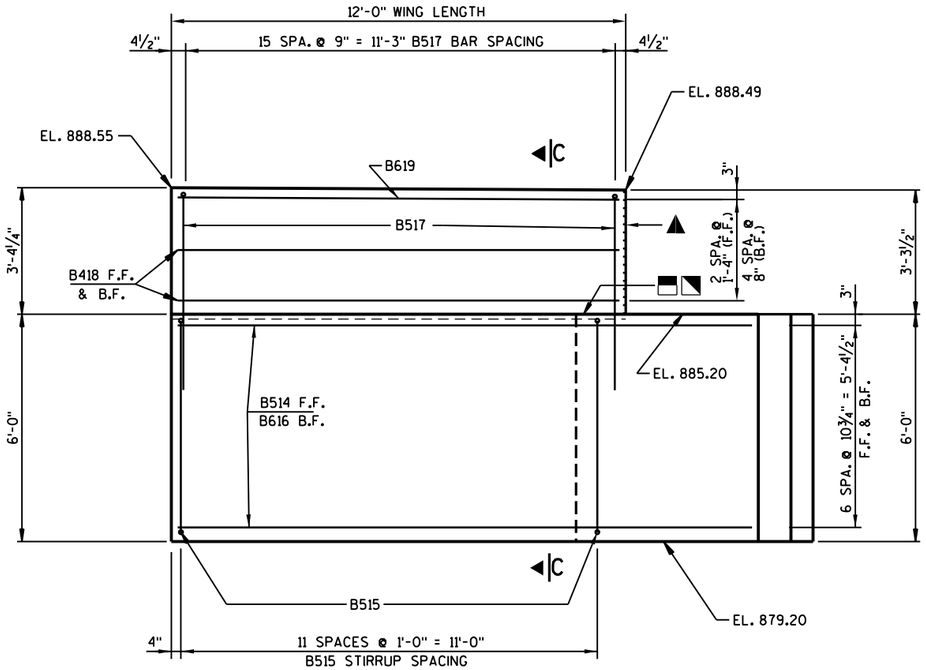
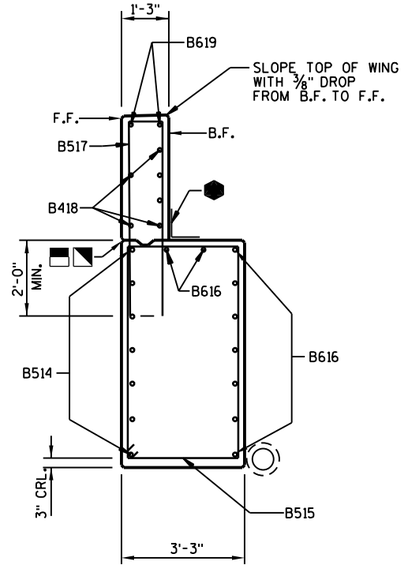
FILE= 93283_07.DGN
DATE= 11/18/2015

STATE PROJECT NUMBER

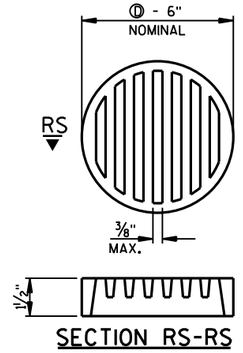
7590-01-85



ELEVATION - WING 3



SECTION C-C THRU WING 3



SECTION RS-RS

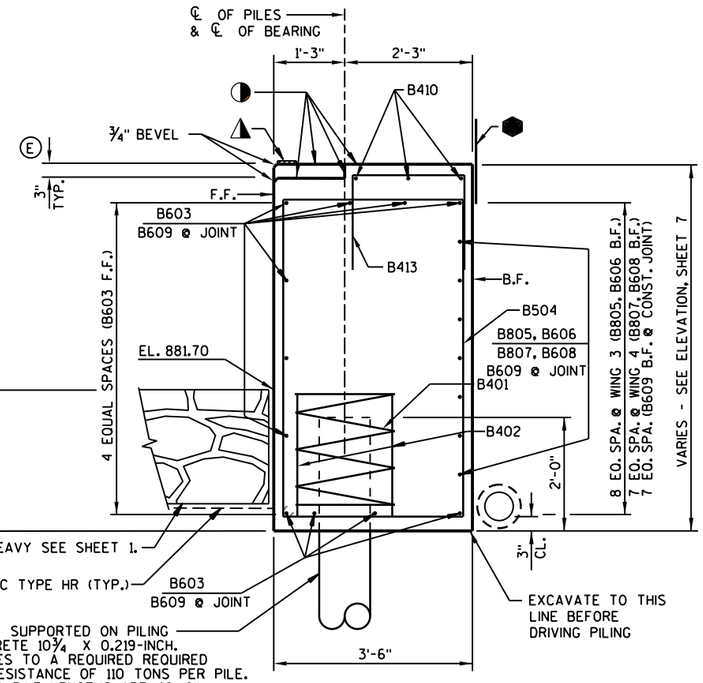
RODENT SHIELD NOTES:

ORIENT SHIELD SO SLOTS ARE VERTICAL.

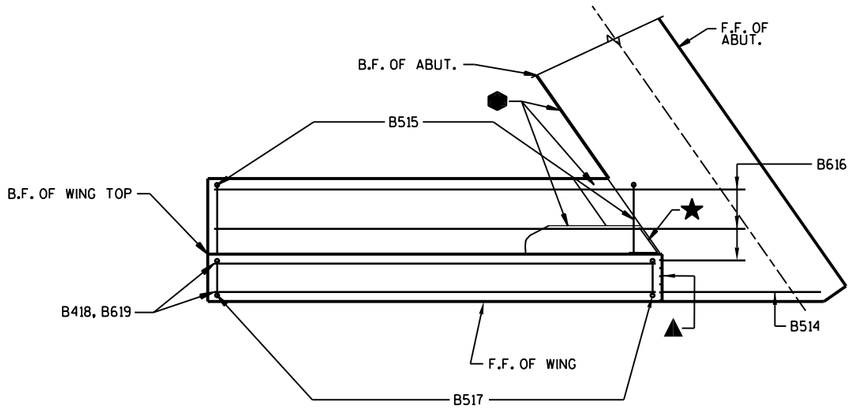
THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALLY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHEMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 x 1-INCH STAINLESS STEEL SHEET METAL SCREWS. THE RODENT SHIELD PIPE COUPLING AND SCREWS SHALL BE INCLUDED IN THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

RODENT SHIELD

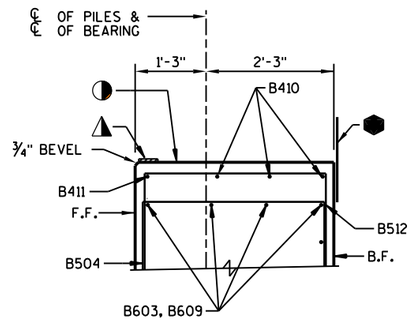
Ⓓ - DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING.



TYPICAL SECTION THRU ABUTMENT

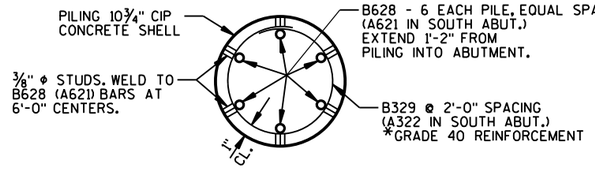


PLAN - WING 3

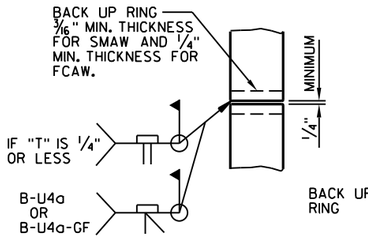


TYPICAL SECTION THRU ABUTMENT AT INTERIOR GIRDER SEATS

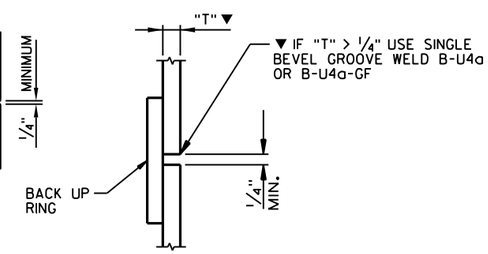
SEE SHEET 5 LEGEND FOR DESCRIPTION OF



SECTION THRU REINFORCED CONCRETE CAST-IN-PLACE PILING



PILE SPLICE DETAILS



WELD DETAIL

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-239

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RLR	JRS

WING 3 & ABUTMENT DETAILS

SHEET 8 OF 16
54

FILE= 93283_08.DGN
DATE= 11/9/2015

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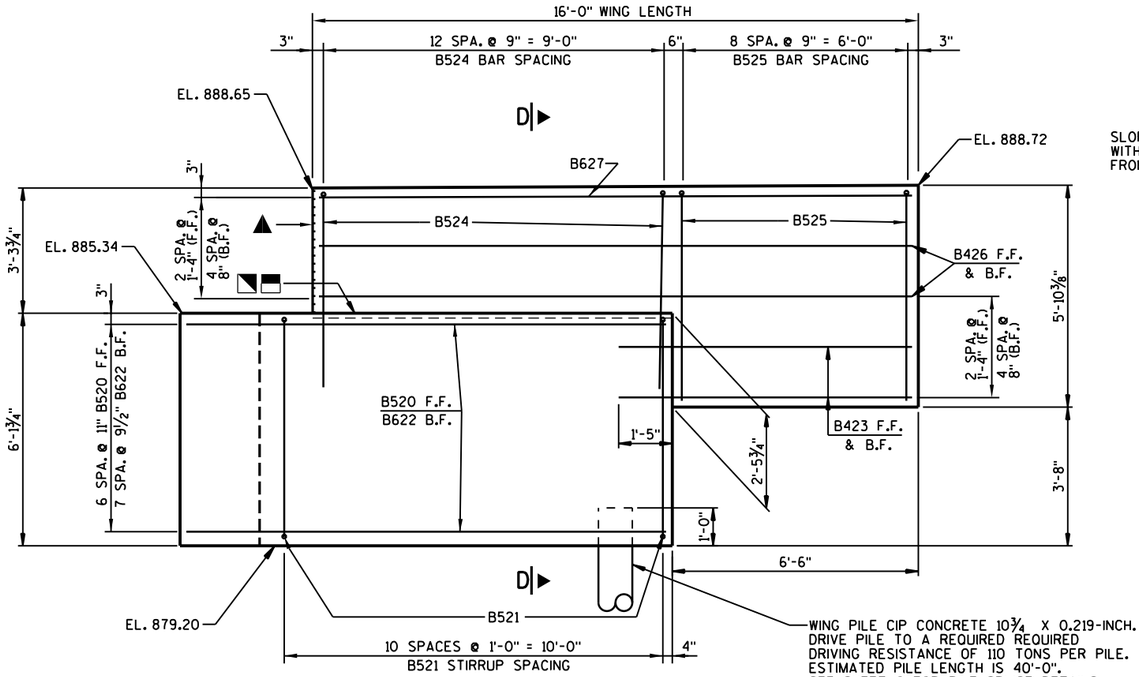
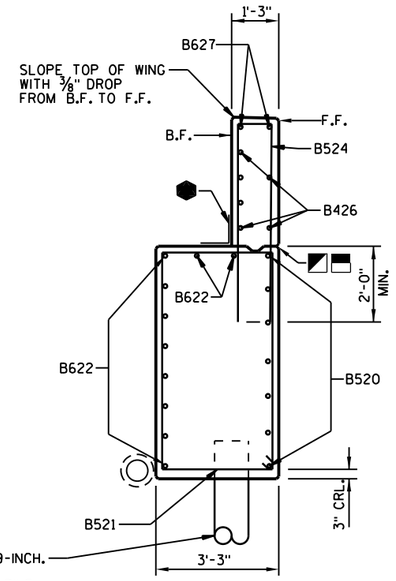


ELEVATION - WING 4



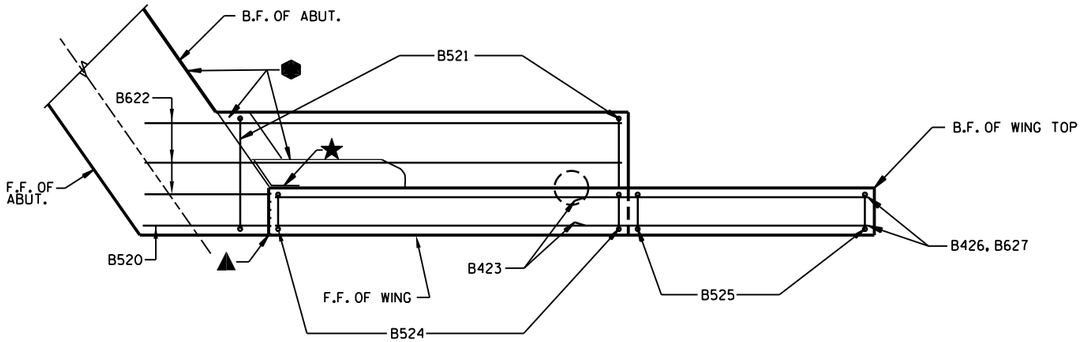
SECTION D-D THRU WING 4

BILL OF BARS (NORTH ABUTMENT)

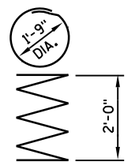
UNCOATED 5950 LBS.
COATED 1680 LBS.

MARK	NUMBER REQUIRED		LENGTH	BENT	LOCATION
	COATED	UNCOATED			
B401	-	12	28'-0"	X	ABUT. BODY - 1 SPIRAL WRAP PER PILE
B402	-	24	2'-3"		ABUT. BODY - 2 PER PILE - VERT.
B603	-	22	28'-0"		ABUT. BODY - F.F., TOP & BOTTOM - HORIZ.
B504	-	74	17'-8"	X	ABUT. BODY - STIRRUPS - VERT.
B805	-	7	13'-2"	X	ABUT. BODY - B.F. @ WING 3 - HORIZ.
B606	-	7	19'-0"		ABUT. BODY - B.F. @ WING 3 & CENTER - HORIZ.
B807	-	6	17'-2"	X	ABUT. BODY - B.F. @ WING 4 - HORIZ.
B608	-	6	15'-0"		ABUT. BODY - B.F. @ WING 4 & CENTER - HORIZ.
B609	-	17	9'-5"		ABUT. BODY - SPLICE BAR @ JOINT - HORIZ.
B410	-	6	28'-6"		ABUT. TOP - BACKWALL - HORIZ.
B411	-	6	2'-9"		ABUT. TOP - F.F. - INTERIOR GIRDER SEATS - HORIZ.
B512	-	18	6'-11"	X	ABUT. TOP - TIES - INTERIOR GIRDER SEATS - VERT.
B413	-	21	5'-6"	X	ABUT. TOP - TIES - SEMI-EXP. POCKET BACKWALL - VERT.
B514	7	-	16'-0"		WING 3 - BASE - F.F. - HORIZ.
B515	12	-	17'-8"	X	WING 3 - BASE - STIRRUP - VERT.
B616	9	-	14'-0"		WING 3 - BASE - B.F. & TOP - HORIZ.
B517	16	-	11'-0"	X	WING 3 - TOP - TIES - VERT.
B418	6	-	11'-7"		WING 3 - TOP - F.F. & B.F. - HORIZ.
B619	2	-	11'-7"		WING 3 - TOP - F.F. & B.F. - HORIZ.
B520	7	-	12'-7"		WING 4 - BASE - F.F. - HORIZ.
B521	11	-	17'-10"	X	WING 4 - BASE - STIRRUP - VERT.
B622	10	-	12'-8"		WING 4 - BASE - B.F. & TOP - HORIZ.
B423	6	-	7'-9"		WING 4 - BASE & TOP - F.F. & B.F. - HORIZ.
B524	13	-	11'-0"	X	WING 4 - TOP - TIES - VERT.
B525	9	-	11'-8"	X	WING 4 - TOP - TIES - VERT.
B426	6	-	15'-7"		WING 4 - TOP - F.F. & B.F. - HORIZ.
B627	2	-	15'-7"		WING 4 - TOP - F.F. & B.F. - HORIZ.
B628	-	78	16'-0"		CONCRETE CIP PILING - 6 @ EACH PILING - VERT.
B329	-	104	2'-6"	X	CONCRETE CIP PILING - 8 @ EACH PILING - TIES

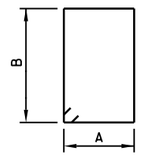
DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.



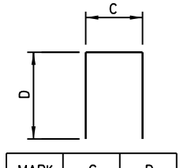
PLAN - WING 4



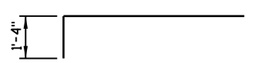
B401



MARK	A	B
B504	3'-2"	5'-4"
B515	2'-11"	5'-7"
B521	2'-11"	5'-8"



MARK	C	D
B512	3'-10"	1'-8"
B413	2'-4"	1'-8"
B517	11"	5'-2"
B524	11"	5'-2"
B525	11"	5'-6"



B805, B807
STD. 90° HOOK

B329

SEE SHEET 5 LEGEND FOR DESCRIPTION OF

NO.	DATE	REVISION	BY

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DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-239

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WING 4 & NORTH ABUTMENT DETAILS

SHEET 9 OF 16
55

FILE= 93283_09.DGN
DATE= 11/12/2015

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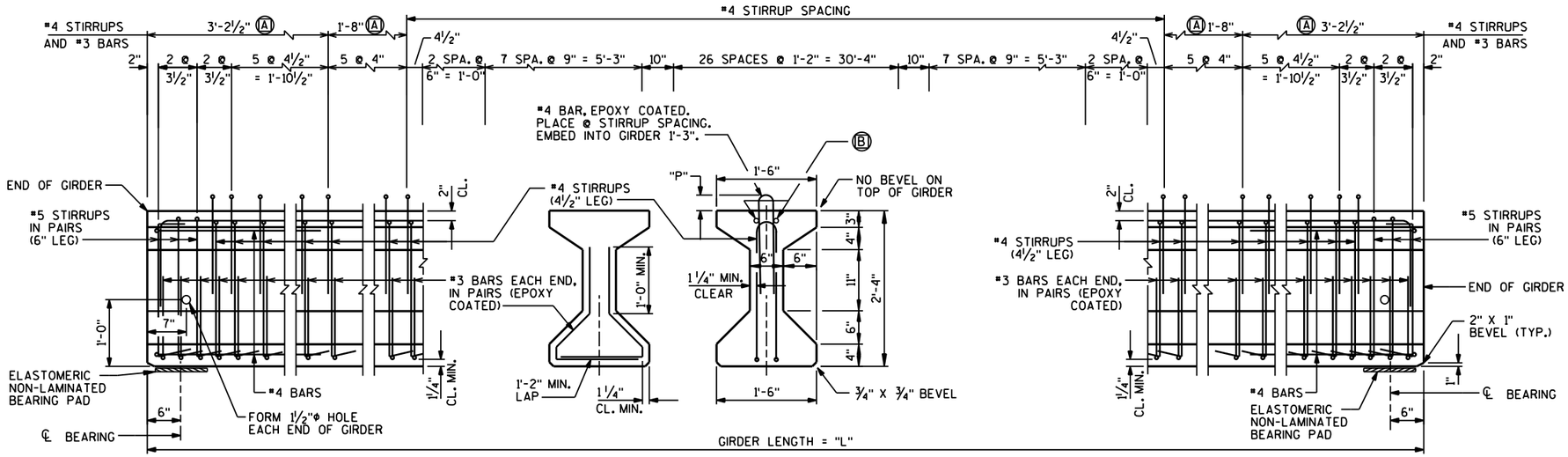
STATE PROJECT NUMBER

7590-01-85



Ⓐ DETAIL TYP. AT EACH END

Ⓑ 2-*4 BARS, FULL LENGTH, MIN. LAP 1'-11" BEND DOWN 16 BAR DIA. AT ENDS

SIDE VIEW & TYP. SECTION

NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 2" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 2" OF THE TOP FLANGE.

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

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

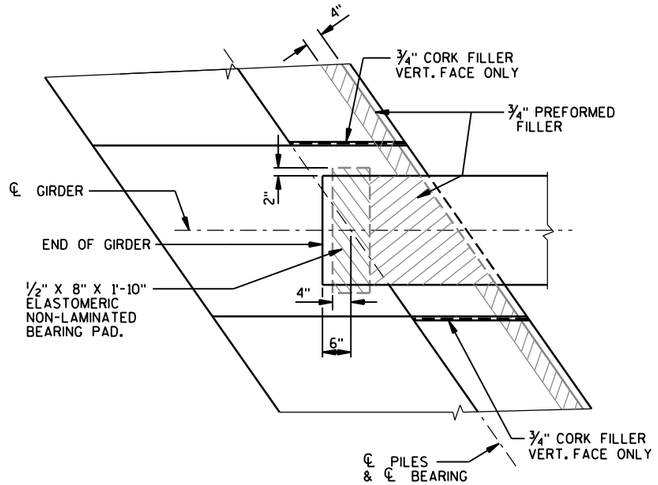
STRANDS SHALL BE FLUSH WITH THE END OF GIRDER. ENDS OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER.

FOR DIAPHRAGM INSERT & CONNECTION DETAILS SEE SHEET 11.

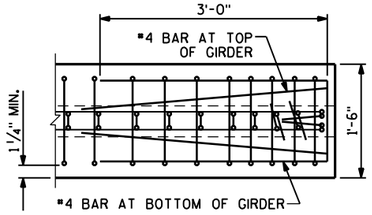
ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

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

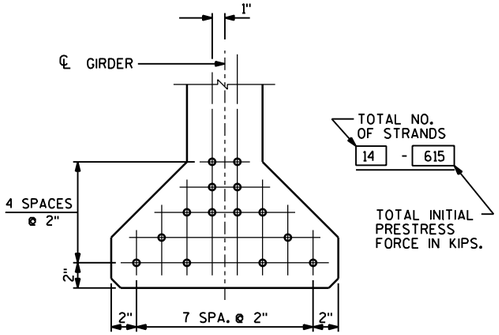
AN ALTERNATE EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A497 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON APPROVAL OF THE STRUCTURES DEVELOPMENT SECTION.



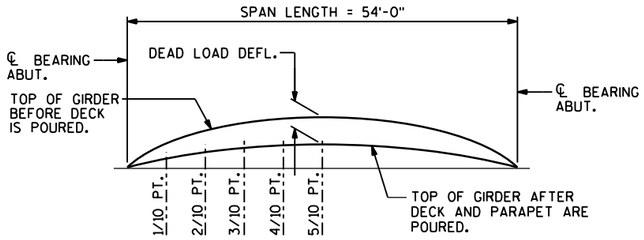
BEARING PAD DETAIL



PLAN VIEW OF GIRDER ENDS



TYP. STRAND PATTERN

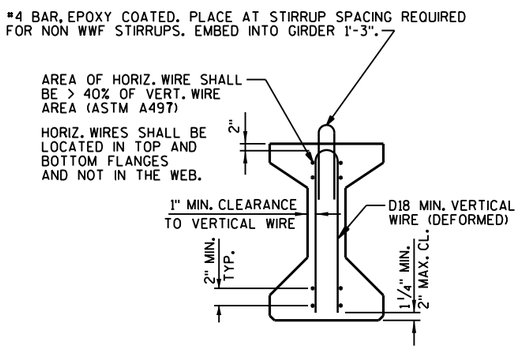


DEAD LOAD DEFLECTION DIAGRAM

THE THEORETICAL INITIAL CAMBER VALUE AT THE TIME OF STRAND RELEASE AT MIDSPAN. VALUES INCLUDE A MAGNIFICATION FACTOR OF 1.4 TO ACCOUNT FOR CREEP BETWEEN RELEASE AND INSTALLATION.

SPAN	CAMBER (IN.)
1	1.8

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



SECTION THRU GIRDER

SHOWING WELDED WIRE FABRIC (WWF) STIRRUPS ASTM A497 (Fy = 70 Ksi)

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

GIRDER DATA

SPAN	GIRDER	GIRDER LENGTH "L"	DEAD LOAD DEFL. (IN.) 1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	CONC. STRGTH. f'c (p.s.i.)	"P" IST 1/3 OF GIRDER	"P" MID 1/3 OF GIRDER	"P" END 1/3 OF GIRDER	DIA. OF STRAND (IN.)	DRAPED PATTERN TOTAL NO. OF STRANDS	f'ci (P.S.I.) *	(IN.) "A"	"B" MIN.	"B" MAX.	"C"	UNDRAPED PATTERN TOTAL NO. OF STRANDS	f'ci (P.S.I.) *
1	1-8	55'-0"	0.2	0.4	0.6	0.7	0.7	0.7	0.6	0.4	0.2	8000	6.88"	6.88"	6.88"	0.6	-	-	-	-	-	-	14	6800

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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-239

DRAWN BY RLR | PLANS CK'D. JRS

28" PRESTRESSED GIRDER DETAILS

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DATE= 11/18/2015

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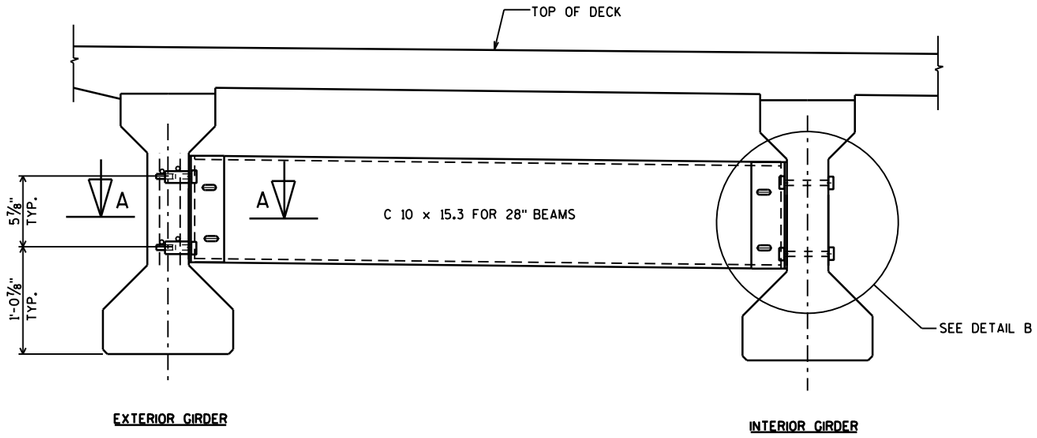
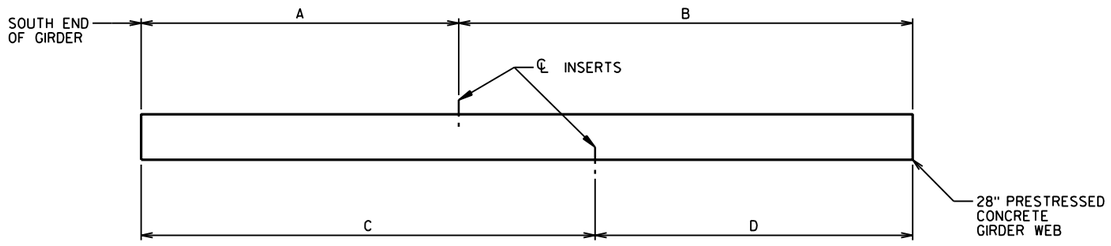
7590-01-85



PART TRANSVERSE SECTION AT DIAPHRAGM

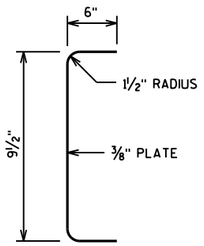


DIAPHRAGM INSERT LOCATION PLAN

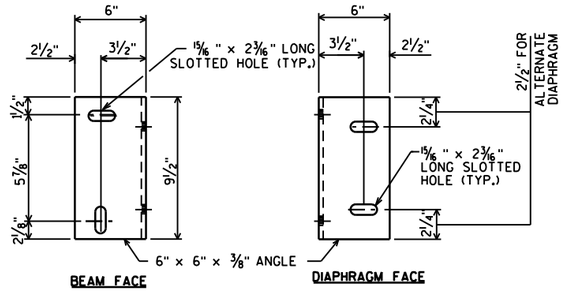
SEE PLAN, SHEET 12

DIAPHRAGM INSERT LOCATION TABLE

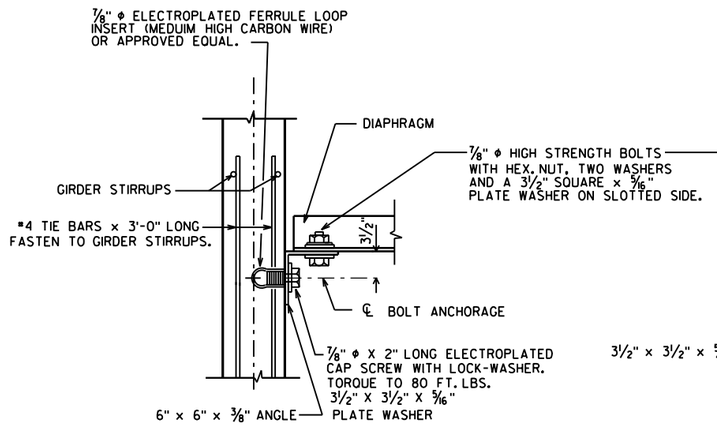
GIRDER NUMBER	A	B	C	D	INSERT TYPE
1	-	-	29'-7¼"	25'-4¾"	FERRULE LOOPS
2	25'-4¾"	29'-7¼"	29'-7¼"	25'-4¾"	PIPE SLEEVES
3	25'-4¾"	29'-7¼"	29'-7¼"	25'-4¾"	PIPE SLEEVES
4	25'-4¾"	29'-7¼"	29'-7¼"	25'-4¾"	PIPE SLEEVES
5	25'-4¾"	29'-7¼"	29'-7¼"	25'-4¾"	PIPE SLEEVES
6	25'-4¾"	29'-7¼"	29'-7¼"	25'-4¾"	PIPE SLEEVES
7	25'-4¾"	29'-7¼"	29'-7¼"	25'-4¾"	PIPE SLEEVES
8	25'-4¾"	29'-7¼"	-	-	FERRULE LOOPS



SECTION THRU ALTERNATE DIAPHRAGM

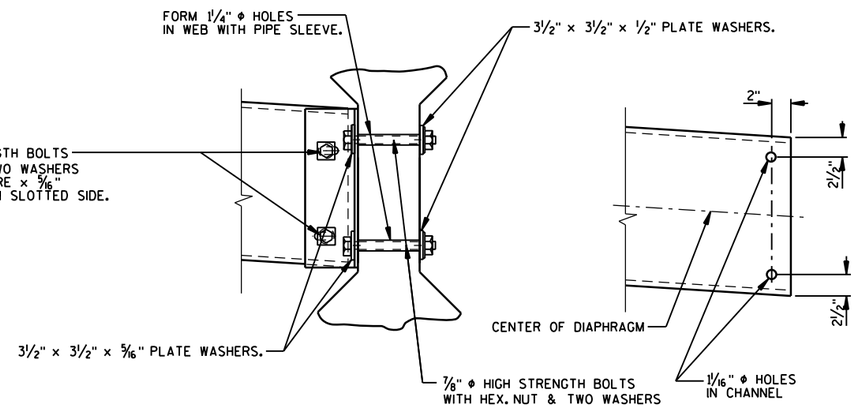


DIAPHRAGM SUPPORT



SECT. A-A

(FOR EXTERIOR ATTACHMENT)



DETAIL B

NOTES

ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-61-239", EACH.

EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

ALL BOLTS, NUTS AND WASHERS SHALL BE ASTM A325 TYPE 1.

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

8

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DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-239

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STEEL DIAPHRAGM

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DATE= 11/9/2015

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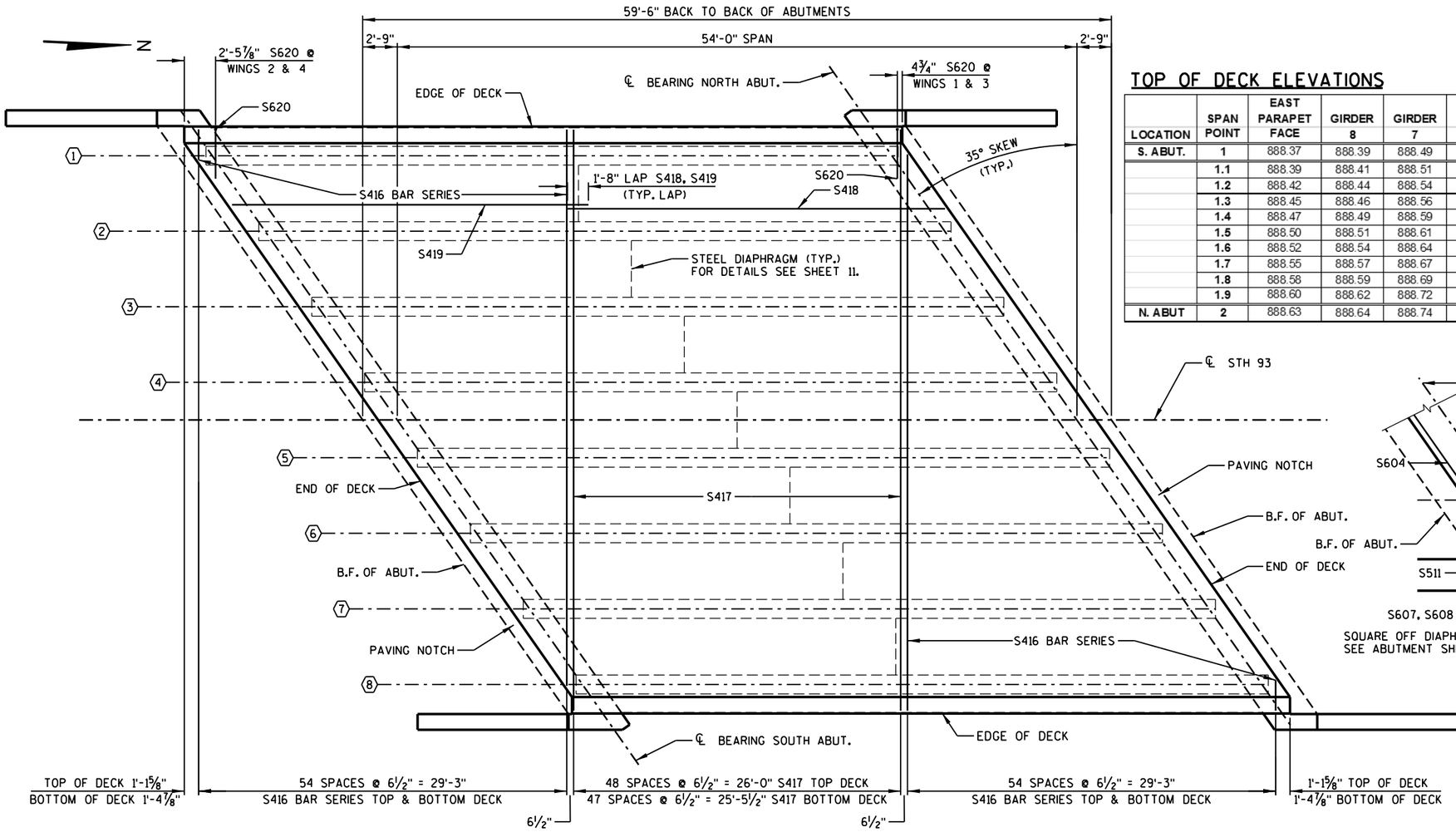
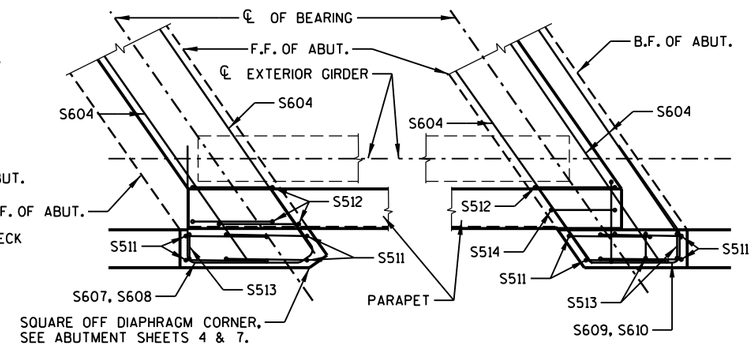
7590-01-85



PLAN

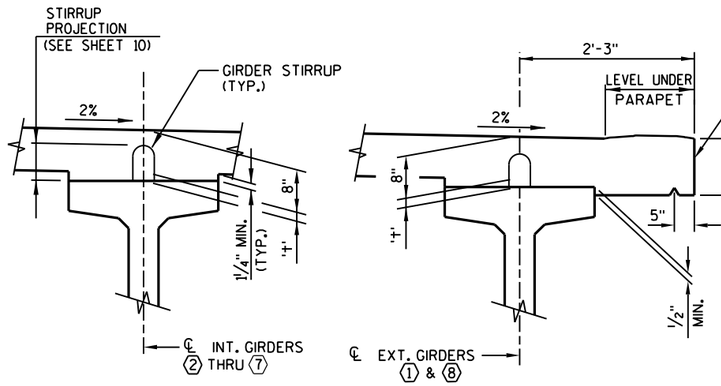
TOP OF DECK ELEVATIONS

LOCATION	SPAN POINT	EAST PARAPET FACE	GIRDER 8	GIRDER 7	GIRDER 6	GIRDER 5	STH 93 C/L	GIRDER 4	GIRDER 3	GIRDER 2	GIRDER 1	WEST PARAPET FACE
S. ABUT.	1	888.37	888.39	888.49	888.59	888.68	888.73	888.66	888.52	888.38	888.24	888.22
	1.1	888.39	888.41	888.51	888.61	888.71	888.76	888.69	888.55	888.41	888.27	888.25
	1.2	888.42	888.44	888.54	888.64	888.74	888.79	888.72	888.58	888.44	888.30	888.27
	1.3	888.45	888.46	888.56	888.66	888.76	888.81	888.74	888.60	888.46	888.32	888.30
	1.4	888.47	888.49	888.59	888.69	888.79	888.84	888.77	888.63	888.49	888.35	888.32
	1.5	888.50	888.51	888.61	888.71	888.81	888.86	888.79	888.65	888.51	888.37	888.35
	1.6	888.52	888.54	888.64	888.74	888.84	888.89	888.82	888.68	888.54	888.40	888.38
	1.7	888.55	888.57	888.67	888.77	888.87	888.92	888.85	888.71	888.57	888.43	888.40
	1.8	888.58	888.59	888.69	888.79	888.89	888.94	888.87	888.73	888.59	888.45	888.43
	1.9	888.60	888.62	888.72	888.82	888.92	888.97	888.90	888.76	888.62	888.48	888.45
N. ABUT	2	888.63	888.64	888.74	888.84	888.94	888.99	888.92	888.78	888.64	888.50	888.48



AT WINGS 1 & 3 AT WINGS 2 & 4

DIAPHRAGM - CORNER DETAIL



DECK HAUNCH DETAIL

TO DETERMINE 't', ELEV. OF TOP OF GIRDERS AT ℄ OF SUBSTRUCTURE UNITS & AT 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. TO DETERMINE THE TOP OF DECK ELEVATION FOR POINT REFERRED, USE TABLE ON THIS SHEET AND ADJUST FOR CROSS SLOPE OVER GIRDER. THEN FOLLOW THIS PROCESS:

TOP OF DECK ELEV. AT FINAL GRADE
- TOP OF GIRDER ELEVATION
+ DEADLOAD DEFLECTION (SEE SHEET 10)
- DECK THICKNESS

= HAUNCH HEIGHT 't'

IF 1¼" MINIMUM HAUNCH HEIGHT 't' CANNOT BE MAINTAINED, THE GRADE LINE MAY BE REVISED BY THE ENGINEER AT THE OPTION OF THE CONTRACTOR. THE PLAN DECK THICKNESS SHALL BE HELD. MAXIMUM HAUNCH HEIGHT EQUALS "STIRRUP PROJECTION" MINUS 3".

NOTE:
AN AVERAGE HAUNCH ("t") OF 2½" WAS USED IN THE QUANTITY "CONCRETE MASONRY STRUCTURES".

GENERAL NOTES

⬡ - INDICATES GIRDER NUMBER

B.F. - BACK FACE

F.F. - FRONT FACE

SEE CROSS SECTION THRU BRIDGE SHEET 13 FOR TYPICAL LONGITUDINAL BAR SPACING.

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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-239

DRAWN BY RLR | PLANS CK'D. JRS

SUPERSTRUCTURE

SHEET 12 OF 16
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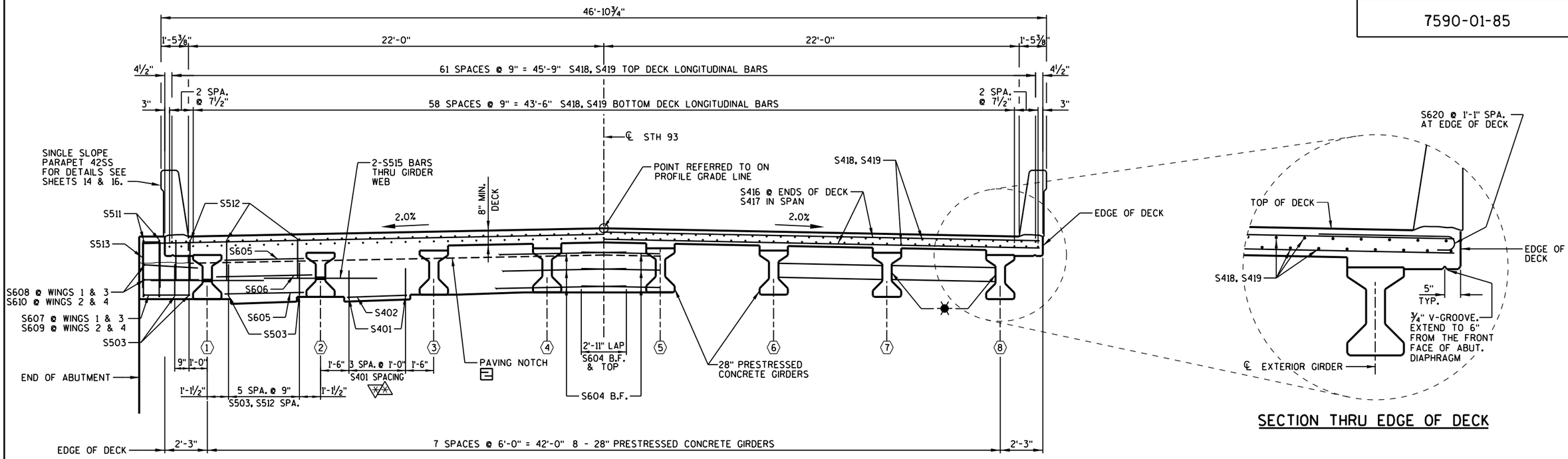


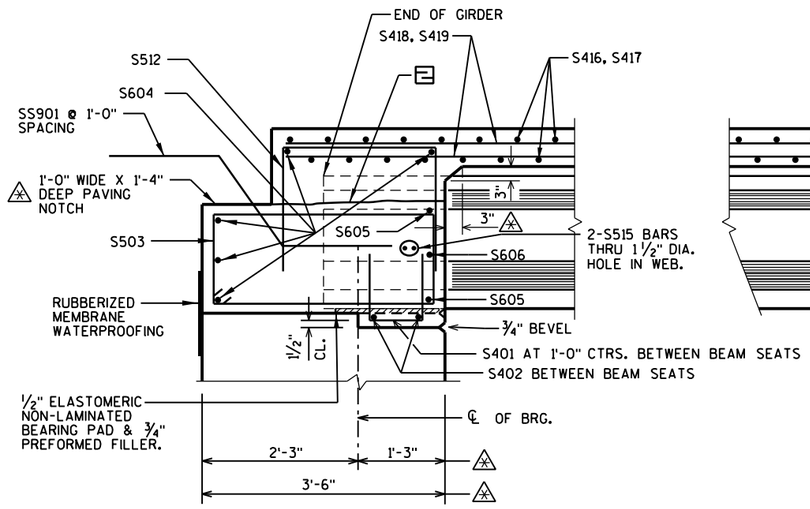
AT ABUTMENT

IN SPAN

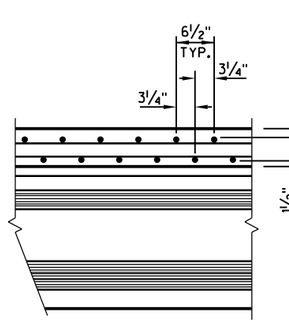
SECTION THRU EDGE OF DECK

CROSS SECTION THRU BRIDGE

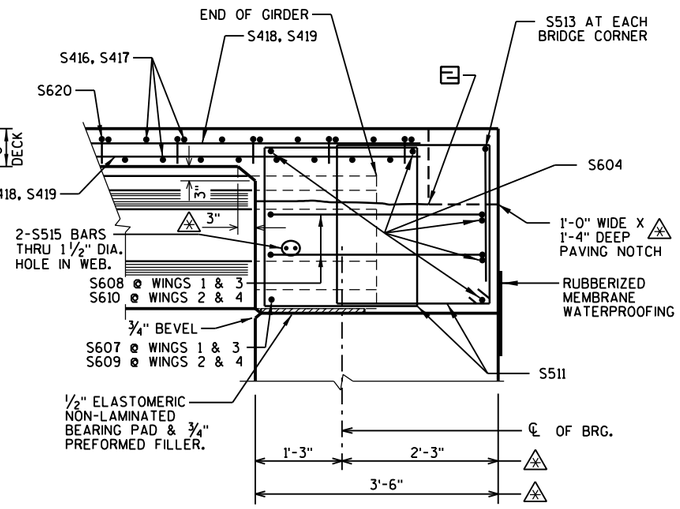
(LOOKING NORTH)



ABUTMENT DIAPHRAGM - INT. BAYS



PART LONGITUDINAL SECTION



ABUTMENT DIAPHRAGM - ENDS

LEGEND

CL. - CLEAR

F.F. - FRONT FACE

B.F. - BACK FACE

⬡ - INDICATES GIRDER NUMBER

✸ - FOR DETAILS OF STEEL DIAPHRAGMS AND DIAPHRAGM INSERTS, SEE SHEET 11. FOR LAYOUT OF STEEL DIAPHRAGMS, SEE PLAN, SHEET 12.

⊟ - OPTIONAL CONSTRUCTION JOINT. IF USED, DECK POUR MUST BE WITHIN 2 WEEKS FROM THE TIME OF THE DIAPHRAGM POUR.

△ - DIMENSION IS TAKEN NORMAL TO ℄ SUBSTRUCTURE UNITS.

▽ - DIMENSION IS TAKEN NORMAL TO ℄ GIRDER.

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STRUCTURE B-61-239

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SUPERSTRUCTURE SECTIONS & DETAILS

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STATE PROJECT NUMBER

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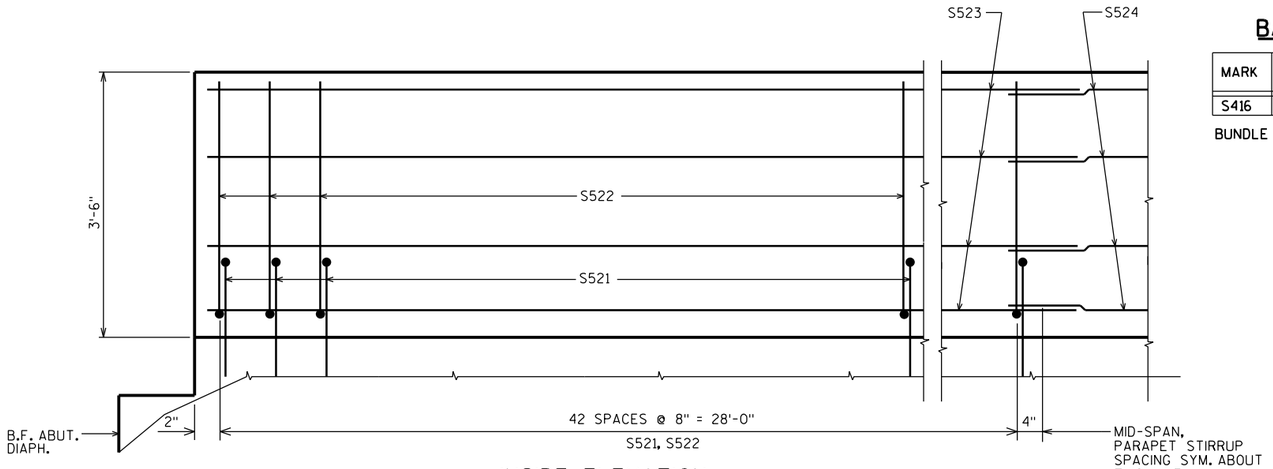
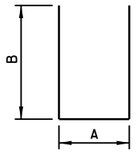


INSIDE ELEVATION

BAR SERIES TABLE

MARK	NO. REQUIRED	LENGTH
S416	4 SERIES OF 55	2'-5" TO 44'-2"

BUNDLE AND TAG EACH SERIES SEPARATELY



MARK	A	B
S401	1'-1"	1'-6"
S512	2'-7"	2'-3"
S513	11"	2'-4"
S514	2'-2"	2'-4"

BILL OF BARS

COATED 18,840 LBS.
STAINLESS 1,600 LBS.

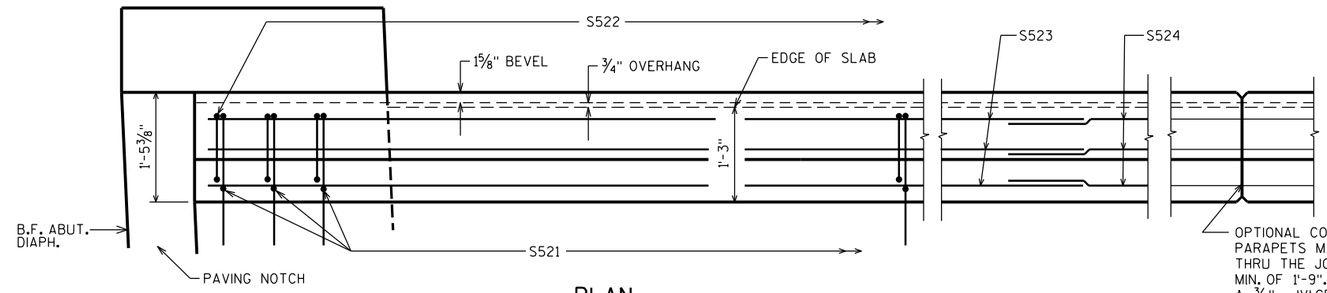
MARK	NUMBER REQUIRED	LENGTH	BENT	BAR SERIES	LOCATION
S401	56	4'-0"	X		ABUT. DIAPH. - S.E. SEAT - STIRRUP - VERT.
S402	28	3'-10"			ABUT. DIAPH. - S.E. SEAT - TRANS.
S503	92	11'-6"	X		ABUT. DIAPH. - STIRRUP - VERT.
S604	20	31'-0"			ABUT. DIAPH. - B.F. & TOP - TRANS.
S605	28	5'-1"			ABUT. DIAPH. - INT. BAY - TRANS.
S606	14	6'-3"			ABUT. DIAPH. - INT. BAY - TRANS.
S607	2	10'-6"	X		ABUT. DIAPH. ENDS @ WINGS 1 & 3 - TRANS.
S608	4	11'-1"	X		ABUT. DIAPH. ENDS @ WINGS 1 & 3 - TRANS.
S609	2	10'-2"	X		ABUT. DIAPH. ENDS @ WINGS 2 & 4 - TRANS.
S610	4	10'-10"	X		ABUT. DIAPH. ENDS @ WINGS 2 & 4 - TRANS.
S511	16	11'-10"	X		ABUT. DIAPH. ENDS - STIRRUP - VERT.
S512	92	6'-10"	X		ABUT. DIAPH. - TOP - STIRRUP - VERT.
S513	6	5'-4"	X		ABUT. DIAPH. - CORNER - STIRRUP - VERT.
S514	2	6'-7"	X		ABUT. DIAPH. - TOP @ WINGS 2 & 4 - STIRRUP - VERT.
S515	32	6'-0"	X		ABUT. DIAPH. - THRU GIRDER WEB - TRANS.
S416	220	23'-3"		Ⓢ	DECK - TOP & BOTTOM @ ABUTS. - TRANS.
S417	97	46'-2"			DECK - TOP & BOTTOM - TRANS.
S418	125	30'-0"			DECK - TOP & BOTTOM - LONGIT.
S419	125	28'-4"			DECK - TOP & BOTTOM - LONGIT.
S620	102	4'-7"	X		DECK - TOP @ EDGES - TRANS.
S521	172	4'-5"	X		PARAPET STIRRUP - INTO DECK - VERT.
S522	172	6'-8"	X		PARAPET STIRRUP - VERT.
S523	16	30'-0"			PARAPET ON BRIDGE - LONGIT.
S524	16	28'-6"			PARAPET ON BRIDGE - LONGIT.
SS901	94	5'-0"	X		ABUT. DIAPH. TO APPROACH SLAB - LONGIT.

STAINLESS STEEL BAR. DO NOT EPOXY COAT.

EPOXY COAT ALL SUPERSTRUCTURE BAR REINFORCEMENT.

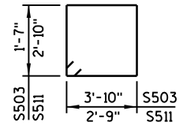
DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.

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

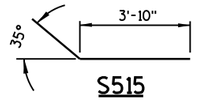


PLAN

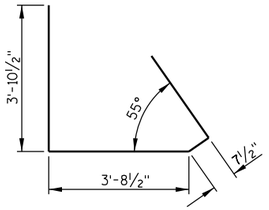
OPTIONAL CONSTRUCTION JOINTS IN THE PARAPETS MAY BE USED. RUN BAR REINF. THRU THE JOINT. LAP LONGIT. BARS A MIN. OF 1'-9". DEFINE CONST. JOINT WITH A ¾" - 'V' GROOVE.



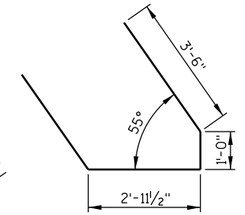
S503, S511



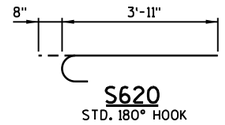
S515



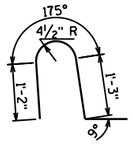
S607, S608



S609, S610



S620
STD. 180° HOOK



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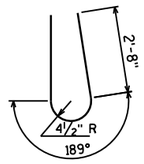
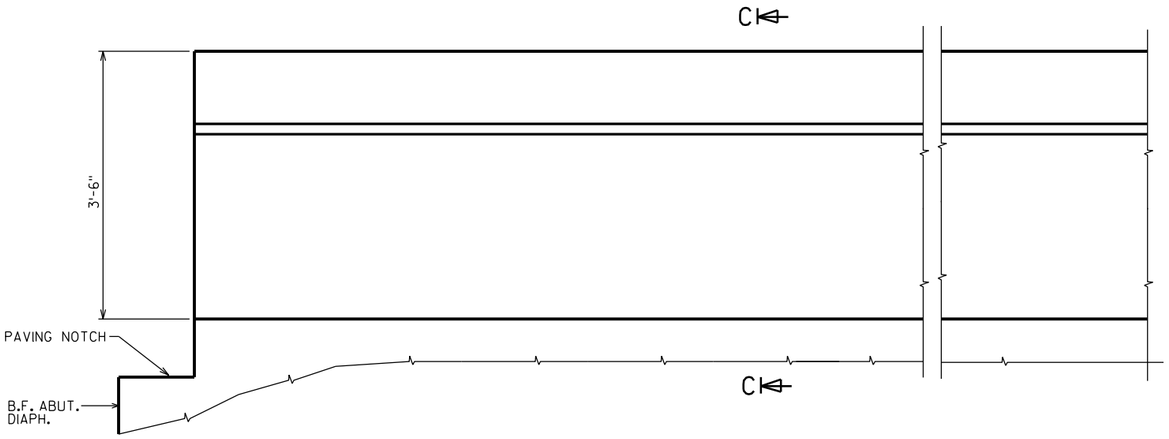
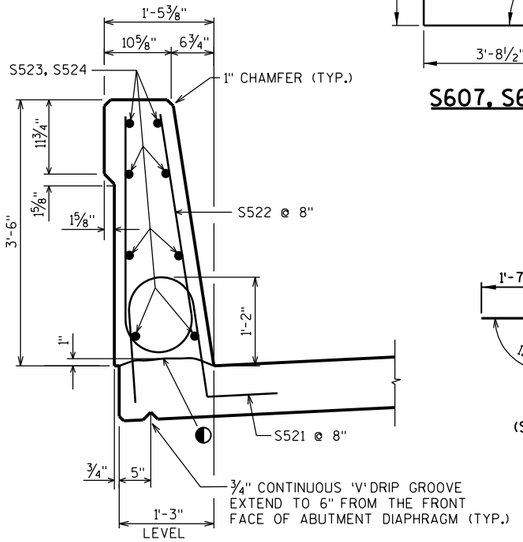


S522

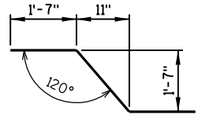


OUTSIDE ELEVATION



SECTION C-C

◐ CONST. JOINT - STRIKE OFF AS SHOWN.



SS901
(STAINLESS STEEL)

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
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STRUCTURE B-61-239

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SINGLE SLOPE PARAPET 42SS ON SUPERSTRUCTURE

SHEET 14 OF 16
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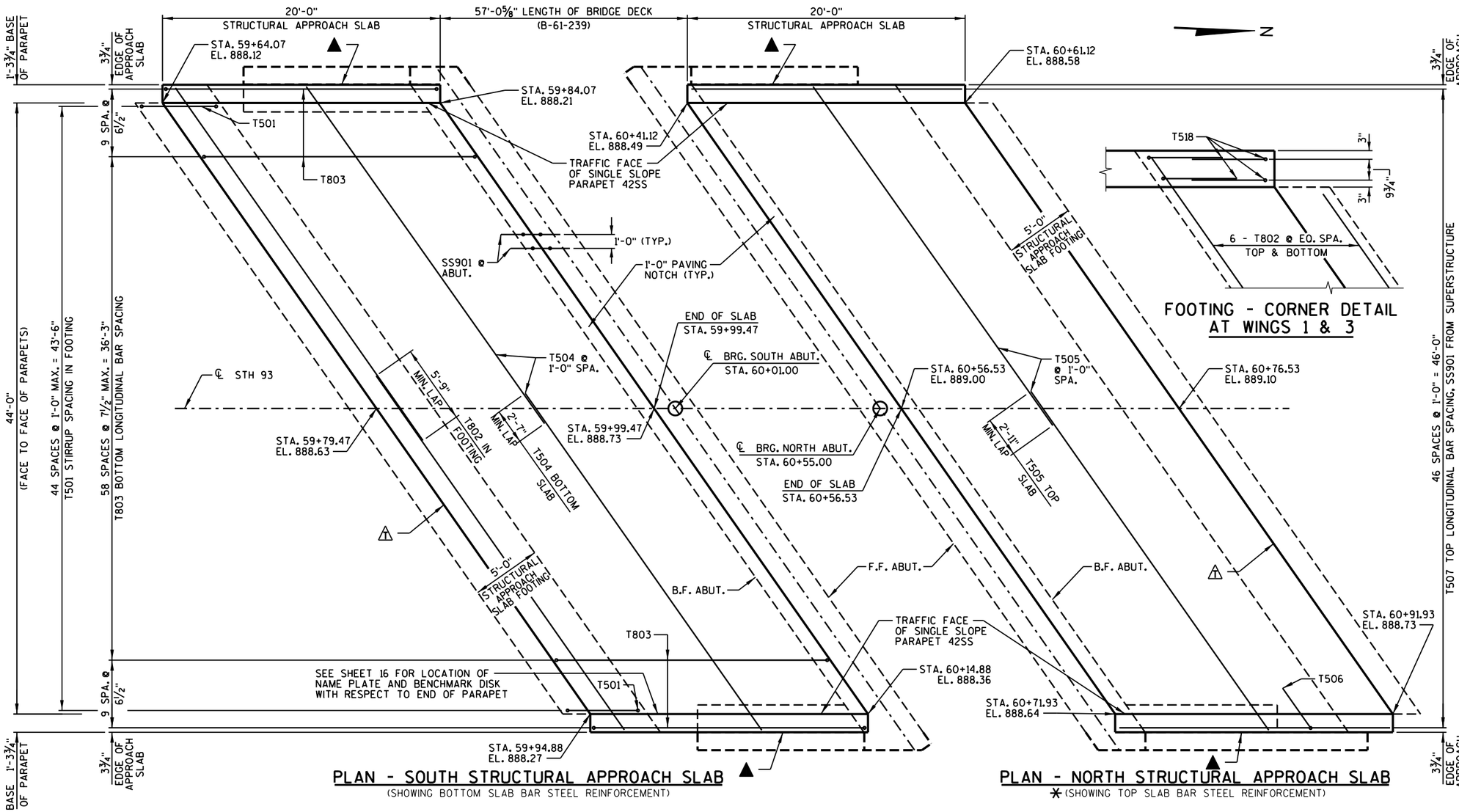


PLAN - SOUTH STRUCTURAL APPROACH SLAB

(SHOWING BOTTOM SLAB BAR STEEL REINFORCEMENT)

PLAN - NORTH STRUCTURAL APPROACH SLAB

✳ (SHOWING TOP SLAB BAR STEEL REINFORCEMENT)

NOTES:

✳ BAR MARKS FOR SOUTH STRUCTURAL APPROACH SLAB AND PARAPET ARE SHOWN. SEE SHEET 16 FOR NORTH STRUCTURAL APPROACH SLAB BAR MARK DETAILS.

TRANSVERSE BARSTEEL REINFORCEMENT IN THE STRUCTURAL APPROACH SLAB SHALL BE PLACED ON THE SKEW.

ELEVATIONS GIVEN ARE AT TOP OF STRUCTURAL APPROACH SLAB.

ELEVATIONS AT EDGE OF STRUCTURAL APPROACH SLAB ARE SAME AS ELEVATIONS GIVEN AT CORRESPONDING TRAFFIC FACE OF PARAPET.

FOR DETAILS OF SINGLE SLOPE PARAPET 42SS OFF THE BRIDGE, SEE SHEET 16.

LEGEND

(T02) STEEL TROWEL TOP SURFACE OF FOOTING AND PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THICKNESS) OF POLYETHYLENE SHEETS OVER ENTIRE TOP OF FOOTING.

(T03) PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THICKNESS) OF POLYETHYLENE SHEETS OVER ENTIRE TOP OF SUBGRADE BENEATH SLAB.

POLYETHYLENE SHEETS SHALL BE INCIDENTAL TO THE BID ITEM "CONCRETE MASONRY BRIDGES".

⚠ 1½" EXPANSION FILLER.

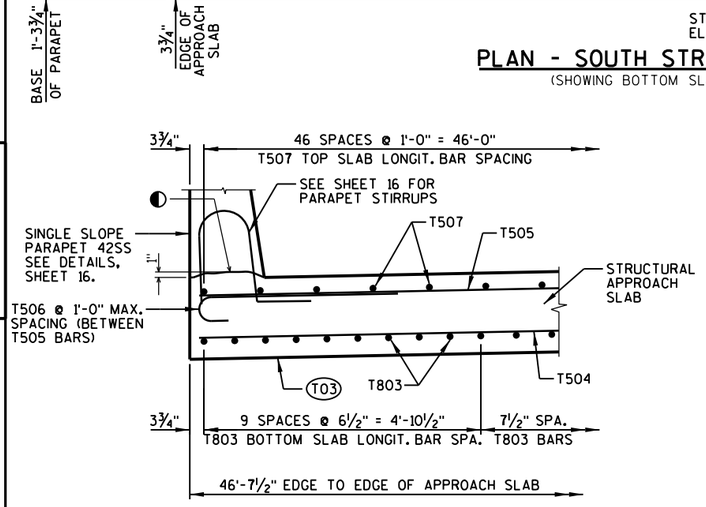
▲ ½" FILLER EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZONTAL & VERTICAL SURFACES OF FILLER WITH NON-STAINING GRAY, NON-BITUMINOUS JOINT SEALER. (1" DEEP & HOLD ⅛" BELOW SURFACE OF CONCRETE).

◭ 4" X ¾" PREFORMED JOINT FILLER, EXTEND FULL LENGTH OF PAVING NOTCH.

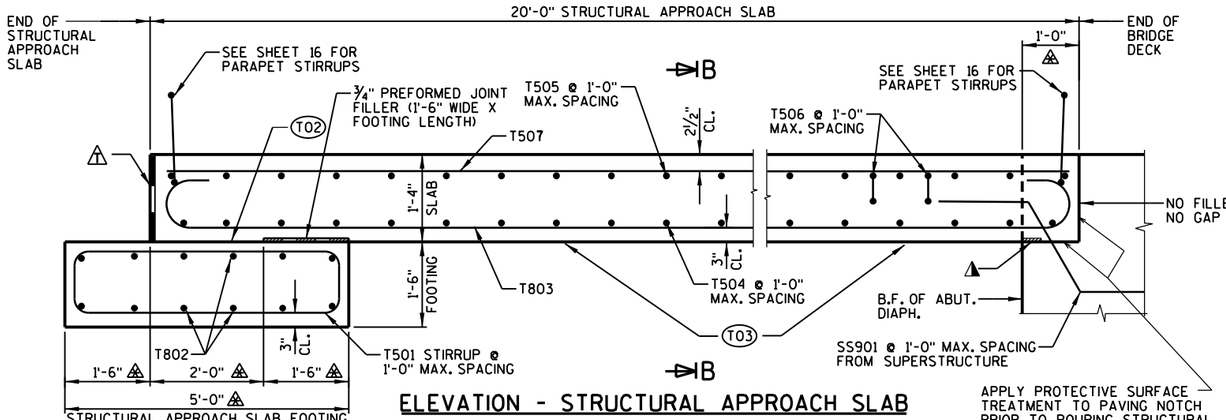
◐ CONST. JOINT - STRIKE OFF AS SHOWN.

⁂ DIMENSION IS TAKEN NORMAL TO ℄ OF SUBSTRUCTURE UNITS.

◆ SLOPE TOP OF WING WITH ⅜" DROP FROM B.F. TO F.F.



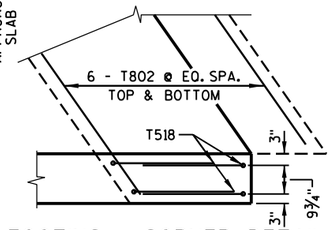
SECTION B-B THRU EDGE OF STRUCTURAL APPROACH SLAB



ELEVATION - STRUCTURAL APPROACH SLAB

BAR MARKS FOR SOUTH STRUCTURAL APPROACH SLAB AND PARAPET ARE SHOWN. SEE SHEET 16 FOR NORTH STRUCTURAL APPROACH SLAB BAR MARK DETAILS.

APPLY PROTECTIVE SURFACE TREATMENT TO PAVING NOTCH PRIOR TO POURING STRUCTURAL APPROACH SLAB.



FOOTING - CORNER DETAIL AT WINGS 2 & 4

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-239

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STRUCTURAL APPROACH SLAB

SHEET 15 OF 16

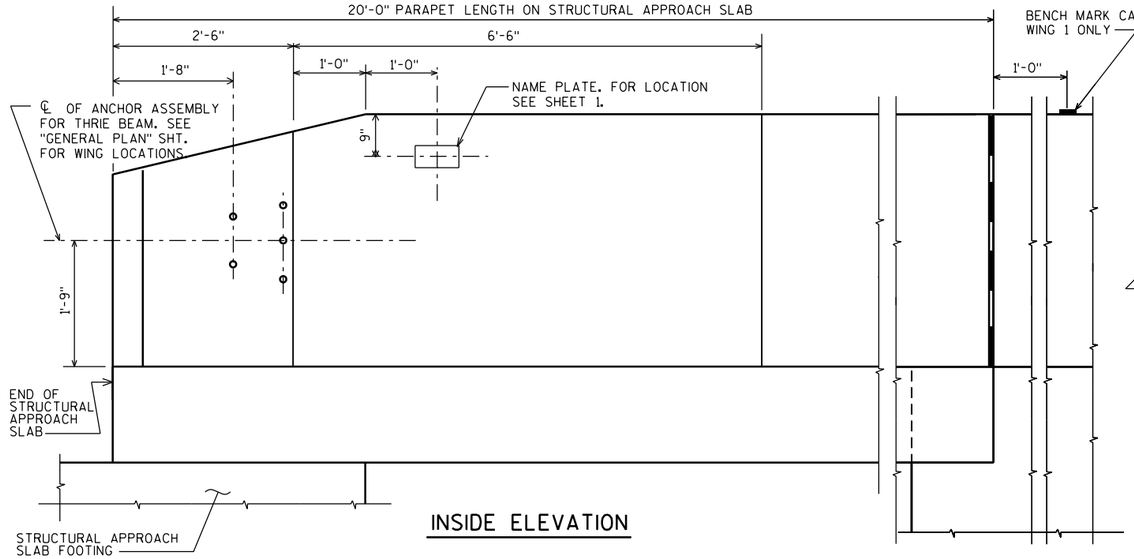
61

FILE= 93283_15.DGN
DATE= 11/12/2015

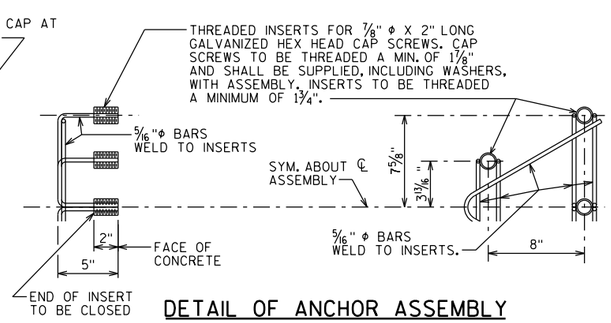
93283_15.dgn 11/12/2015 11:46:30 AM rrabska

STATE PROJECT NUMBER

7590-01-85



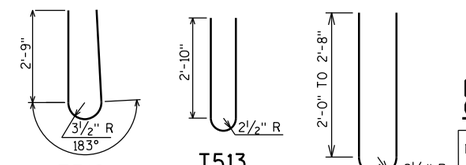
INSIDE ELEVATION

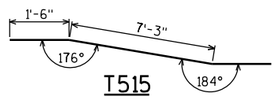


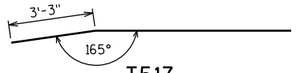
DETAIL OF ANCHOR ASSEMBLY

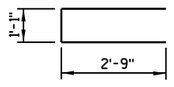
NOTE: HEX HEAD CAP SCREWS & WASHERS TO BE GALVANIZED IN ACCORDANCE WITH AASHTO M232 CLASS C.

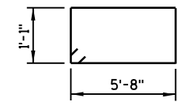
ASSEMBLY SHALL BE BID ITEM "ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD", EACH.

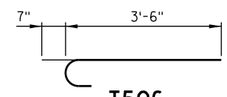


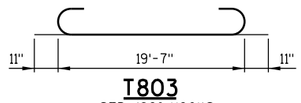


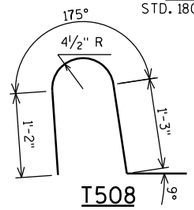


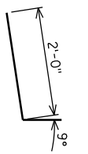


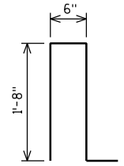


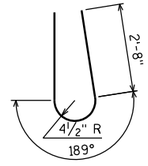












BILL OF BARS (SOUTH STRUCTURAL APPROACH SLAB) COATED 12,015 LBS.

MARK	NUMBER REQUIRED	LENGTH	BENT	BAR SERIES	LOCATION
T501	45	14'-2"	X		STRUCT. APPROACH SLAB - FOOTING - STIRRUP - VERT.
T802	24	31'-2"			STRUCT. APPROACH SLAB - FOOTING - TRANS.
T803	77	21'-5"	X		STRUCT. APPROACH SLAB - BOTTOM - LONGIT.
T504	42	29'-9"			STRUCT. APPROACH SLAB - BOTTOM - TRANS.
T505	42	29'-11"			STRUCT. APPROACH SLAB - TOP - TRANS.
T506	40	4'-1"	X		STRUCT. APPROACH SLAB - TOP ⊗ EDGES - TRANS.
T507	47	19'-7"			STRUCT. APPROACH SLAB - TOP - LONGIT.
T508	34	4'-5"	X		PARAPET STIRRUP - INTO SLAB - VERT.
T509	22	2'-9"	X		PARAPET STIRRUP - ⊗ TRANSITION - VERT.
T510	34	4'-4"	X		PARAPET STIRRUP - END - VERT.
T511	34	6'-8"	X		PARAPET STIRRUP - VERT.
T512	12	6'-6"	X		PARAPET STIRRUP - ⊗ TRANSITION - VERT.
T513	10	6'-5"	X		PARAPET STIRRUP - ⊗ TRANSITION - VERT.
T514	12	5'-5"	X	Ⓢ	PARAPET STIRRUP - END - VERT.
T515	2	19'-8"	X		PARAPET - TRAFFIC FACE - BOTTOM - LONGIT.
T516	10	19'-8"			PARAPET - LONGIT.
T517	4	19'-8"	X		PARAPET - TOP - LONGIT.
T518	8	6'-4"	X		STRUCT. APPROACH SLAB - FOOTING NOTCH - TIE - VERT.

EPOXY COAT ALL STRUCTURAL APPROACH SLAB AND PARAPET BARSTEEL.

DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.

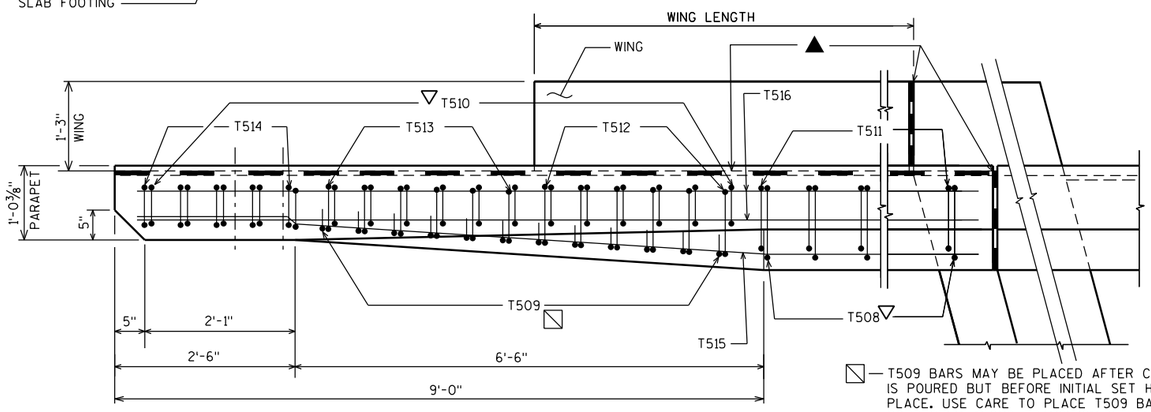
BAR MARKS FOR SOUTH STRUCTURAL APPROACH SLAB ARE SHOWN. LABEL AND BUNDLE NORTH STRUCTURAL APPROACH SLAB BARS WITH N MARK (N501 THRU N518).

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

BAR SERIES TABLE

MARK	NO. REQUIRED	LENGTH
T514	2 SERIES OF 6	4'-9" TO 6'-1"

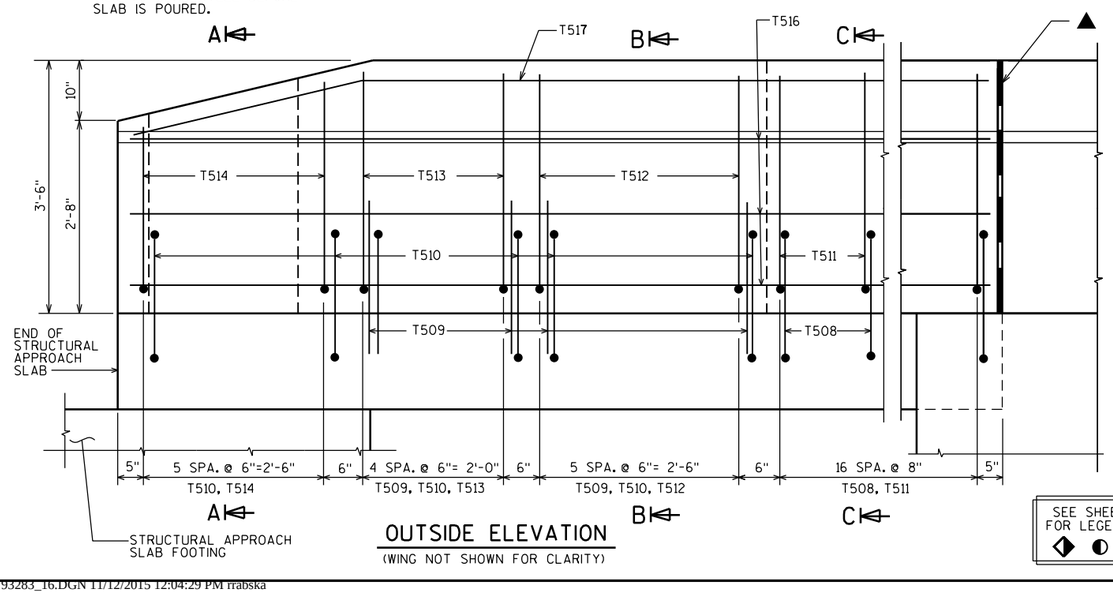
BUNDLE AND TAG EACH SERIES SEPARATELY



▽ — T508 AND T510 BARS TO BE TIED TO SLAB STEEL BEFORE SLAB IS POURED.

PLAN

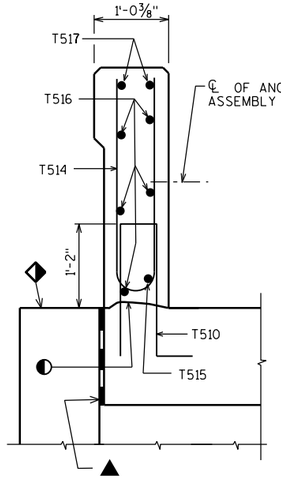
▨ — T509 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE. USE CARE TO PLACE T509 BARS CORRECTLY ALONG TRANSITION OF PARAPET.



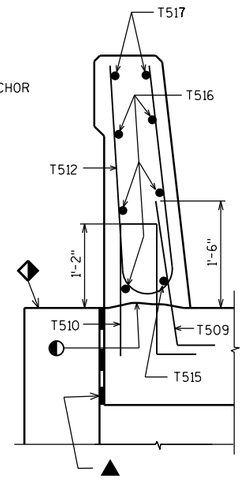
OUTSIDE ELEVATION

(WING NOT SHOWN FOR CLARITY)

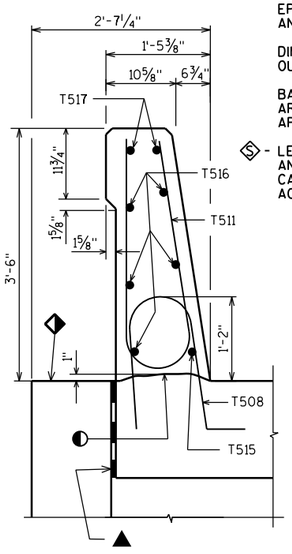
SEE SHEET 15 FOR LEGEND OF ◆ ◐ ▲



SECTION A



SECTION B



SECTION C

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-61-239

DRAWN BY RLR | PLANS CK'D. JRS

SINGLE SLOPE PARAPET 42SS ON STRUCTURAL APPROACH SLAB

SHEET 16 OF 16

62

FILE= 93283_16.DGN
DATE= 11/12/2015

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STH 93

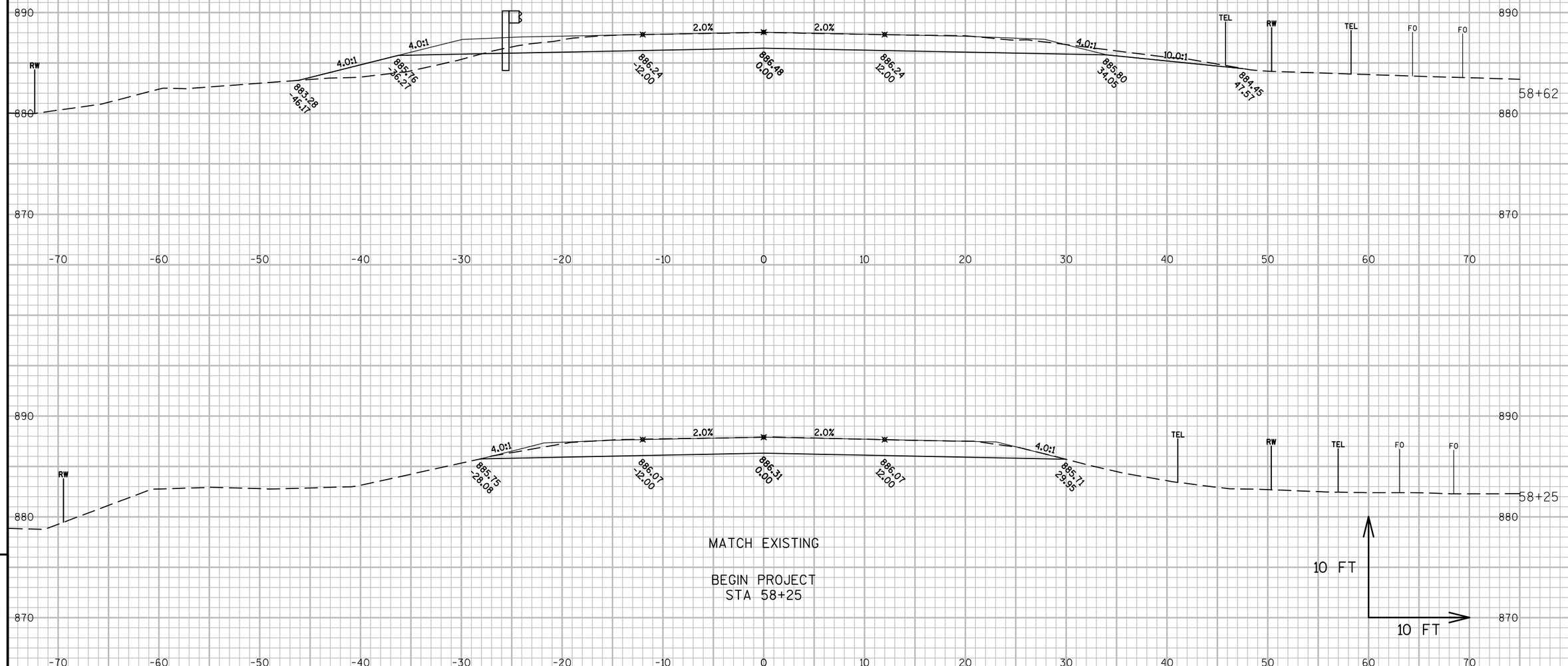
STATION	DISTANCE FEET	AREA (SF)		INCREMENTAL VOL (CY)		CUMULATIVE VOL (CY)		MASS HAUL
		COMMON	FILL	COMMON	FILL *	COMMON	FILL	
58+25.00		78.96	0					
	36.55			113	15	113	15	99
58+61.55		88.59	16.92					
	25.00			78	16	192	31	160
58+86.55		80.38	10.38					
	5.81			17	3	209	34	175
58+92.36		81.69	8.37					
	19.19			60	5	270	39	230
59+11.55		88.46	3.07					
	5.81			19	1	289	40	249
59+17.36		89.72	3.28					
	25.00			77	18	366	58	308
59+42.36		77.67	26.8					
	21.71			58	42	425	100	324
59+64.07		67.82	54.03					
	139			425	101			

* INCLUDES 1.30 EXPANSION FACTOR

STH 93

STATION	DISTANCE FEET	AREA (SF)		INCREMENTAL VOL (CY)		CUMULATIVE VOL (CY)		MASS HAUL
		COMMON	FILL	COMMON	FILL *	COMMON	FILL	
60+91.93		77.01	70.26					
	21.71			66	59	66	59	6
61+13.64		86.92	43.43					
	25.00			92	40	158	100	58
61+38.64		111.72	23.29					
	5.81			26	7	184	107	78
61+44.45		131.58	26.37					
	19.19			94	24	278	131	147
61+63.64		132.45	25.84					
	5.81			26	7	304	138	166
61+69.45		108.97	25.8					
	25.03			90	34	394	172	221
61+94.48		84.75	31.41					
	55.52			169	42	562	214	348
62+50.00		79.36	0					
	158			562	214			

* INCLUDES 1.30 EXPANSION FACTOR



9

9

PROJECT NO: 7590-01-85	HWY: STH 93	COUNTY: TREMPEALEAU	CROSS SECTIONS: STH 93	SHEET 64	E

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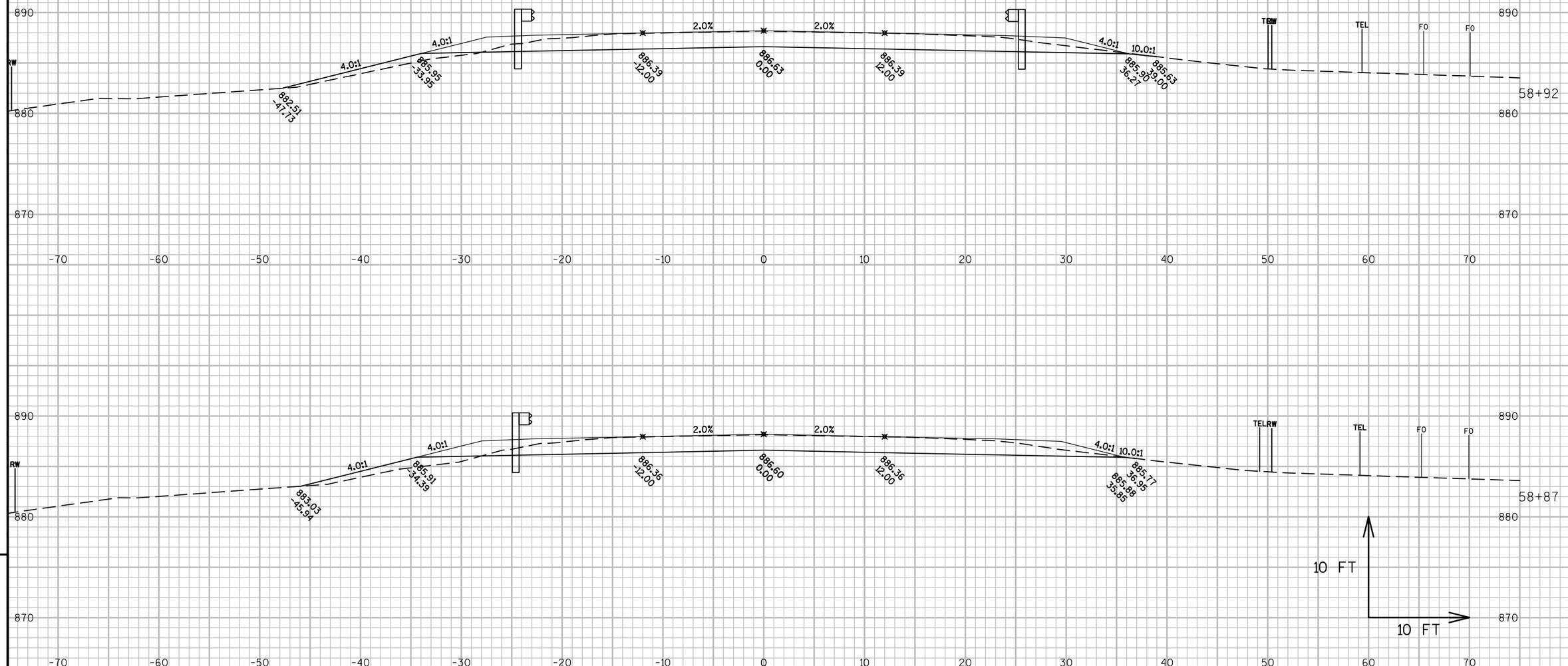
PLOT DATE : 10/5/2015 12:14 PM PLOT BY : BRAD LEE PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49



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9

PROJECT NO: 7590-01-85	HWY: STH 93	COUNTY: TREMPEALEAU	CROSS SECTIONS: STH 93	SHEET 65	E

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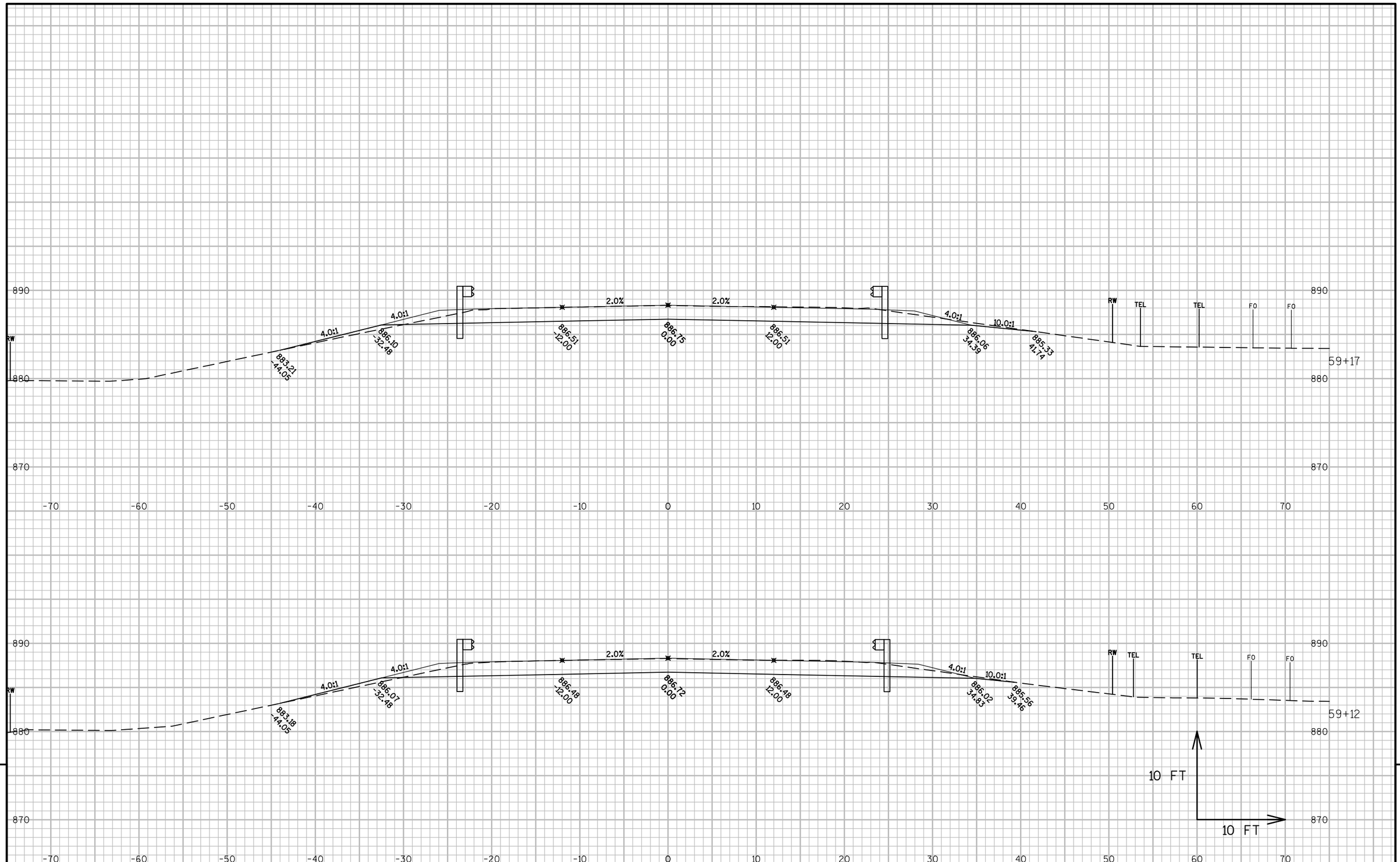

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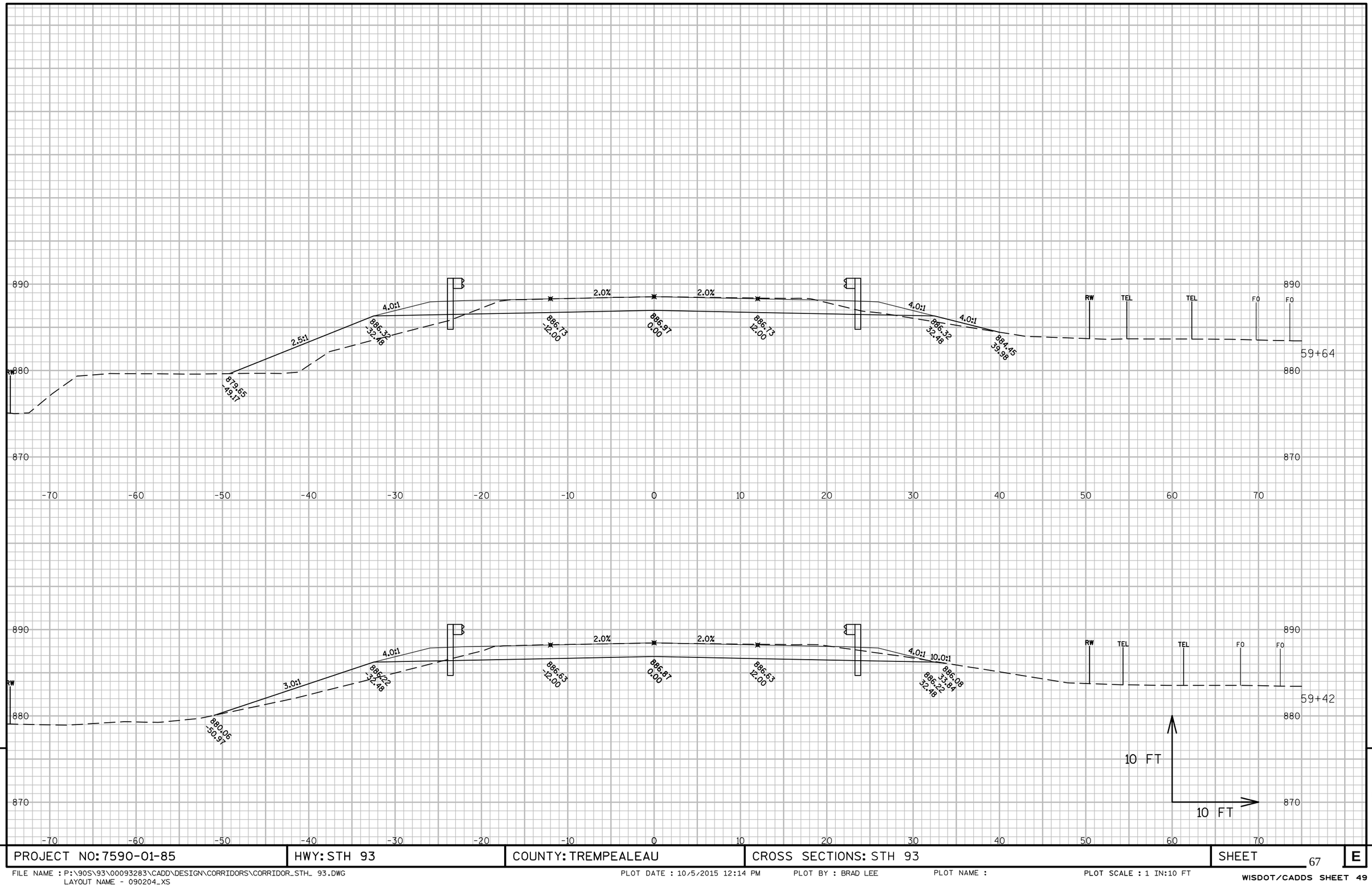

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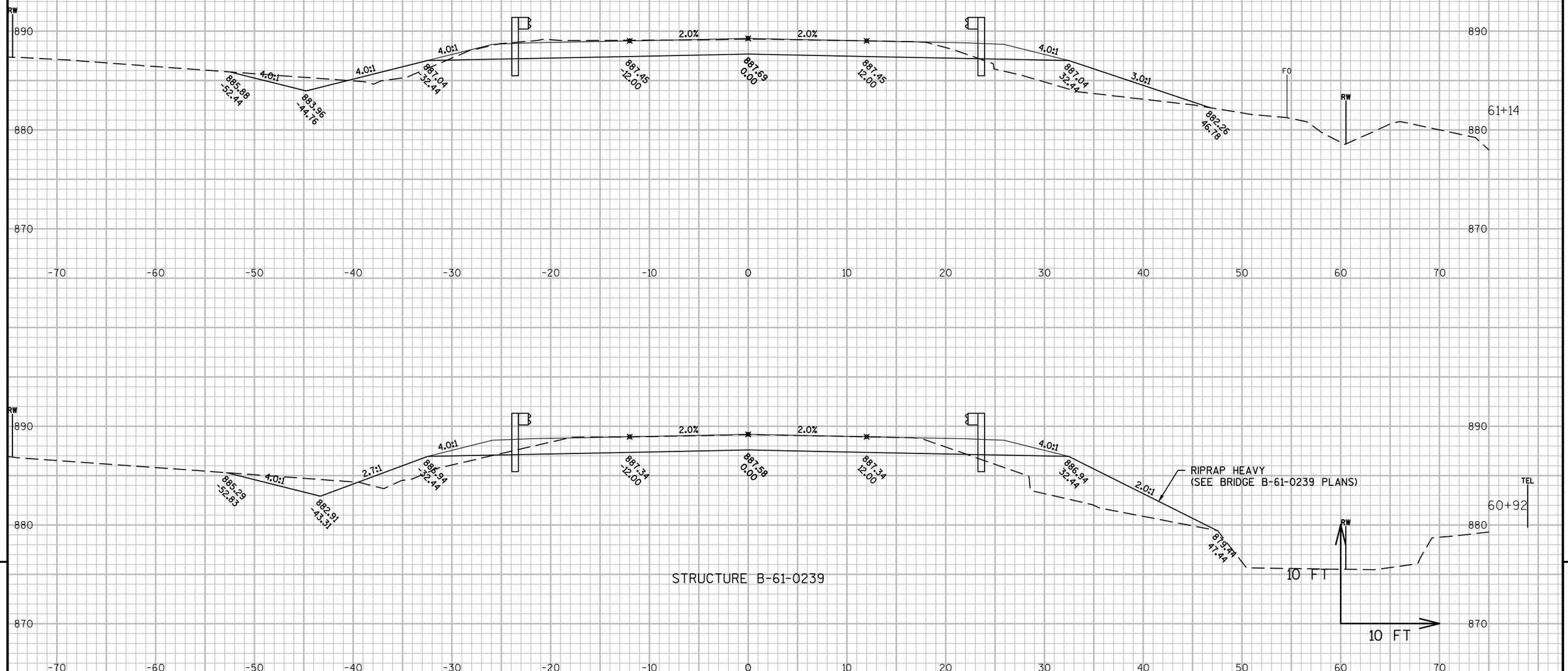
WISDOT/CADDS SHEET 49



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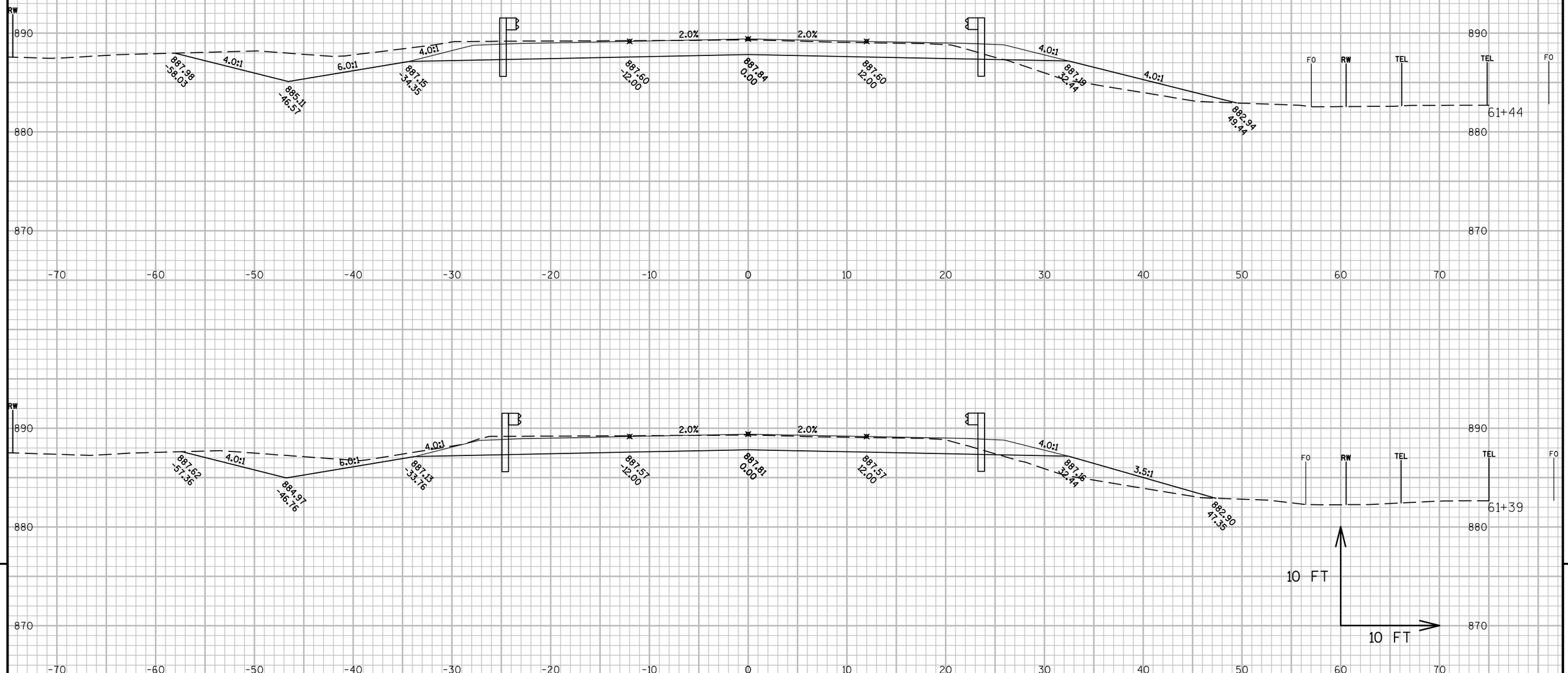
WISDOT/CADDS SHEET 49



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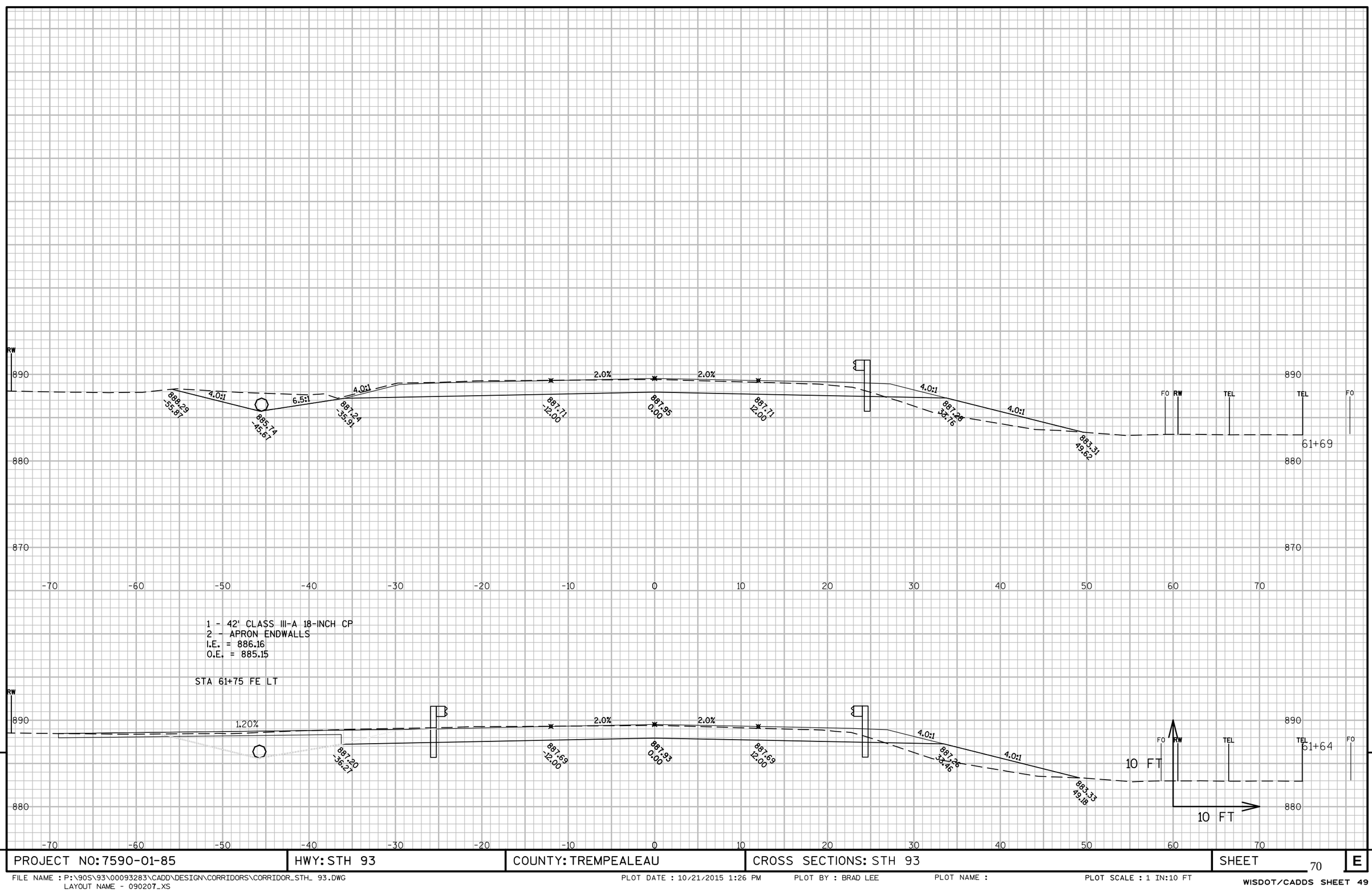

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9

PROJECT NO: 7590-01-85	HWY: STH 93	COUNTY: TREMPEALEAU	CROSS SECTIONS: STH 93	SHEET 70	E

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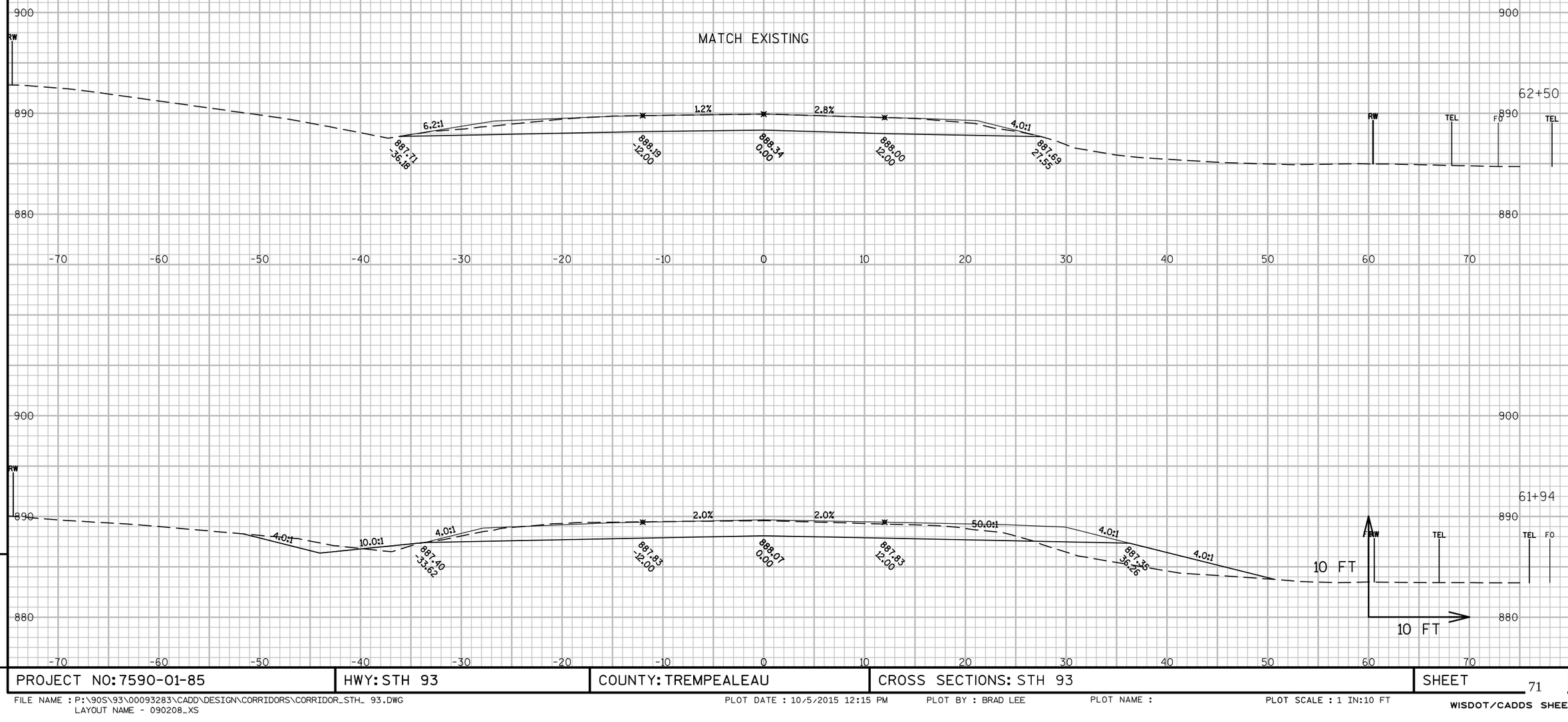
LAYOUT NAME - 090207_XS

PLOT DATE : 10/21/2015 1:26 PM PLOT BY : BRAD LEE PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

END PROJECT
STA 62+50

MATCH EXISTING



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PLOT DATE : 10/5/2015 12:15 PM PLOT BY : BRAD LEE PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

Wisconsin Department of Transportation

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