

GRE

MAY 2018

PROJECT ID:

4555-02-71

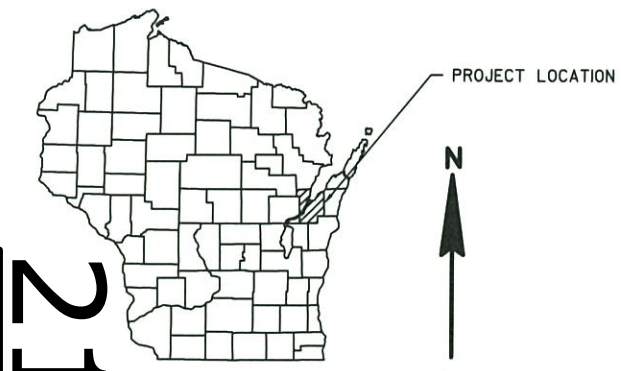
COUNTY:

BROWN

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 Plan)
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 = 80



DESIGN DESIGNATION

A.A.D.T. 2018	=	1,500
A.A.D.T. 2038	=	2,100
D.H.V. 2038	=	244
D.D.	=	60/40
T.	=	4.9%
DESIGN SPEED	=	55 MPH
ESALS	=	280,000

CONVENTIONAL SYMBOLS

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

PROFILE	
GRADE LINE	----
ORIGINAL GROUND	----
MARSH OR ROCK PROFILE (To be noted as such)	----
SPECIAL DITCH	----
GRADE ELEVATION	95.36
CULVERT (Profile View)	----
UTILITIES	
ELECTRIC	— E —
OVERHEAD UTILITY	— OH —
FIBER OPTIC	— FO —
GAS	— G —
SANITARY SEWER	— SAN —
STORM SEWER	— SS —
TELEPHONE	— T —
WATER	— W —
UTILITY PEDESTAL	----
POWER POLE	----
TELEPHONE POLE	----

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

BROWN COUNTY, CTH MM

BOWER CREEK BRIDGE & APPROACHES

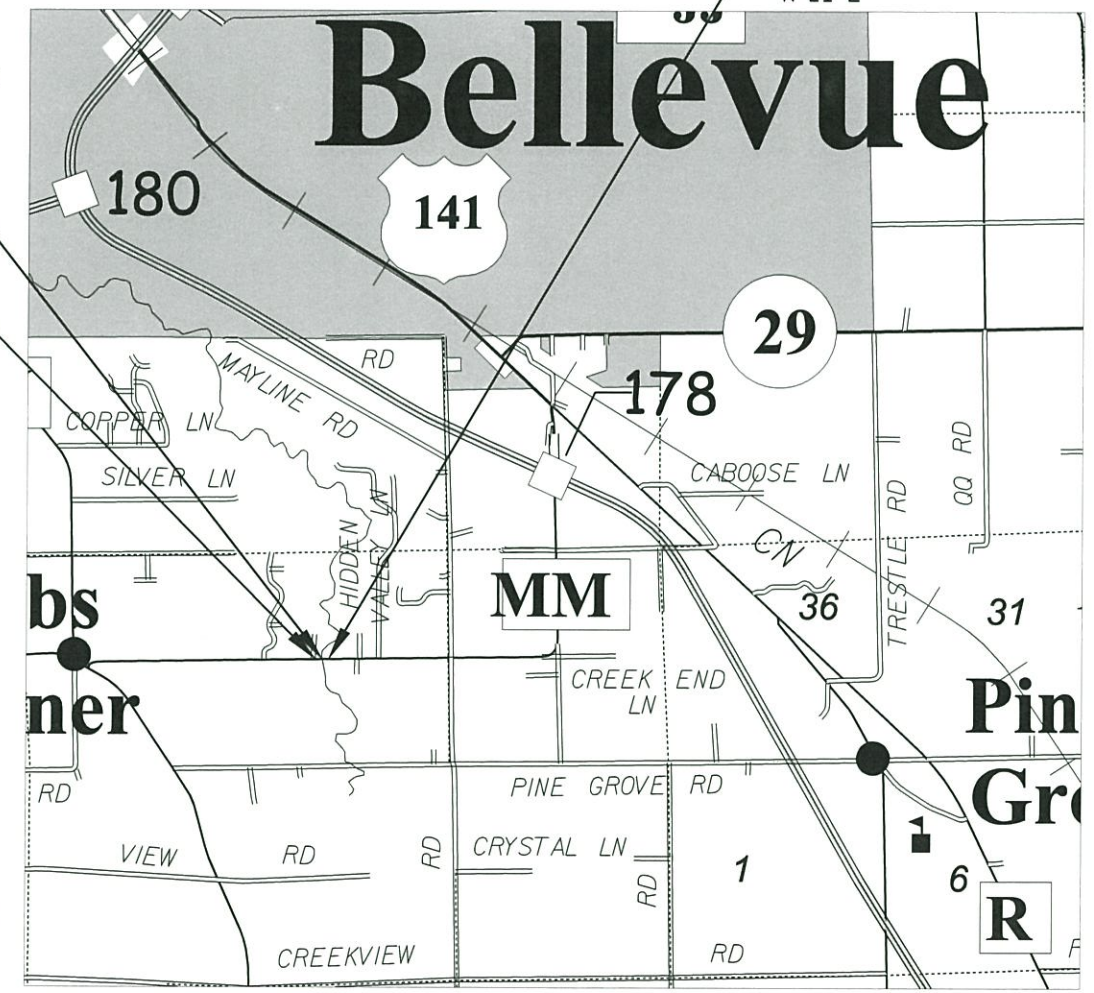
CTH MM
BROWN COUNTY

STATE PROJECT NUMBER
4555-02-71

END PROJECT
STA 12+55.44

STRUCTURE B-5-436

BEGIN PROJECT
STA 8+00
Y=533,644.54
X=119,181.35



LAYOUT
SCALE 0 1 MILE
TOTAL NET LENGTH OF CENTERLINE = 0.086 MI

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS) BROWN COUNTY NAD 83 (2011). ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO NAV 88.

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
4555-02-71		

ACCEPTED FOR	
COUNTY of BROWN	
1-9-18 Date	<i>[Signature]</i> ENGINEERING MANAGER
ORIGINAL PLANS PREPARED BY	
AECOM 2985 S Ridge Road Suite B Green Bay, WI 54304 920.468.1978	
	
1/8/18 Date	<i>[Signature]</i> (Signature)
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
PREPARED BY	AECOM
Surveyor	AECOM
Designer	SEH INC.
Management Consultant	
APPROVED FOR THE DEPARTMENT	
DATE: 1/10/18	<i>[Signature]</i> (Signature)
MANAGEMENT CONSULTANT	
E	

GENERAL NOTES

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

RADI, ELEVATIONS, AND DIMENSIONS ARE GIVEN AT THE PAVEMENT EDGES, UNLESS OTHERWISE NOTED IN THE PLANS.

ADJUST TRAFFIC CONTROL DEVICE LOCATIONS TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

EROSION CONTROL ITEMS SHOWN IN THE MISCELLANEOUS QUANTITIES ARE AT SUGGESTED LOCATIONS. THE ENGINEER MAY MODIFY LOCATIONS TO FIT FIELD CONDITIONS.

WETLANDS, WATERWAYS, AND OTHER ENVIRONMENTALLY SENSITIVE AREAS SHALL BE PROTECTED AT ALL TIMES. DO NOT STORE EQUIPMENT OR MATERIALS NEAR THESE SITES UNLESS APPROVED BY THE ENGINEER.

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

IF EXCAVATION BELOW SUBGRADE (EBS) IS REQUIRED, IT SHALL BE MEASURED AND PAID FOR AS EXCAVATION COMMON. EXACT LOCATIONS FOR REMOVING UNSUITABLE MATERIAL WILL BE DETERMINED BY THE ENGINEER.

DISTURBED AREAS WITHIN THE RIGHT OF WAY, EXCEPT THE AREA WITHIN THE FINISHED SHOULDER POINTS, SHALL BE FERTILIZED, SEEDED AND MULCHED OR EROSION MATTED AS DIRECTED BY THE ENGINEER.

FIELD ADJUST SILT FENCE TO FIT EXISTING CONDITIONS AS SHOWN ON THE PLANS.

DISTANCES SHOWN ON THIS PLAN ARE GROUND DISTANCES.

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS) BROWN COUNTY NAD 83 (2011). ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO NAV 88.

THE 4.5-INCH HMA PAVEMENT SHALL BE CONSTRUCTED IN TWO (2) LAYERS. THE LOWER LAYER SHALL BE 2 ½ INCHES OF HMA PAVEMENT 3 LT 58-28 S. THE UPPER LAYER SHALL BE 2 INCHES OF HMA PAVEMENT 4 LT 58-28 S.

ORDER OF SECTION 2 SHEETS

- GENERAL NOTES
- TYPICAL SECTIONS
- CONSTRUCTION DETAILS
- PAVING DETAILS

UTILITIES

AT&T WISCONSIN (TELEPHONE)
JOSEPH KASSAB
205 SOUTH JEFFERSON STREET
GREEN BAY, WI 54301
PHONE: (920) 433-4200
EMAIL: JK572K@ATT.COM

WISCONSIN PUBLIC SERVICE (ELECTRIC)
RANDY STEIER
2850 SOUTH ASHLAND AVENUE
PO BOX 19001
GREEN BAY, WI 54307-9001
PHONE: (920) 617-5167
EMAIL: RDSTEIER@WISCONSINPUBLICSERVICE.COM

WISCONSIN PUBLIC SERVICE (GAS)
DAVE CZARNECKI
2850 SOUTH ASHLAND AVENUE
PO BOX 19001
GREEN BAY, WI 54307-9001
PHONE: (920) 617-5132
EMAIL: DPCZARNECKI@WISCONSINPUBLICSERVICE.COM

STANDARD ABBREVIATIONS

AVG	AVERAGE	PI	POINT OF INTERSECTION
BK	BACK	PT	POINT OF TANGENCY
BM	BENCH MARK	PE	PRIVATE ENTRANCE
CL OR CL	CENTER LINE	PL	PROPERTY LINE
Δ	CENTRAL ANGLE OR DELTA	PVC	VERTICAL POINT OF CURVE
CE	COMMERCIAL ENTRANCE	PVI	VERTICAL POINT OF INTERSECTION
CTH	COUNTY TRUCK HIGHWAY	PVT	VERTICAL POINT OF TANGENCY
CY OR CUYD	CUBIC YARD	R	RADIUS
CP	CULVERT PIPE	RL OR RL	REFERENCE LINE
D	DEGREE OF CURVE	RT	RIGHT
DHV	DESIGN HOUR VOLUME	R/W	RIGHT OF WAY
DD	DIRECTIONAL DISTRIBUTION	RD	ROAD
E	EAST	S	SOUTH
EL OR ELEV	ELEVATION	STA	STATION
EXC	EXCAVATION	TLE	TEMPORARY LIMITED EASEMENT
EXIST	EXISTING	T	TRUCKS (PERCENT OF)
FE	FIELD ENTRANCE	TYP	TYPICAL
L	LENGTH OF CURVE	USH	UNITED STATES HIGHWAY
N	NORTH	VC	VERTICAL CURVE
PC	POINT OF CURVATURE	W	WEST

OTHER CONTACTS

WISCONSIN DEPARTMENT OF NATURAL
RESOURCES
JAMES DOPERALSKI
WISDOT LIAISON
2984 SHAWANO AVENUE
GREEN BAY, WI 54313
PHONE: (920) 412-0165
EMAIL: JAMES.DOPERALSKI@WISCONSIN.GOV

BROWN COUNTY PARKS DEPARTMENT
MATTHEW KRIESE
PARK DIRECTOR
PO BOX 23600
GREEN BAY, WI 54305
PHONE: (920) 448-4464
EMAIL: KRIESE_MM@CO.BROWN.WI.US

BROWN COUNTY DEPARTMENT OF PUBLIC WORKS
WILLIAM BERG
SENIOR CIVIL ENGINEER
2198 GLENDALE AVENUE
GREEN BAY, WI 54303
PHONE: (920) 662-2171
EMAIL: BERG_WR@CO.BROWN.WI.US

DESIGN CONTACT
KEVIN HAGEN
AECOM PROJECT MANAGER
200 INDIANA AVENUE
STEVENS POINT, WI 54481
PHONE: (715) 342-3053
EMAIL: KEVIN.HAGEN@AECOM.COM

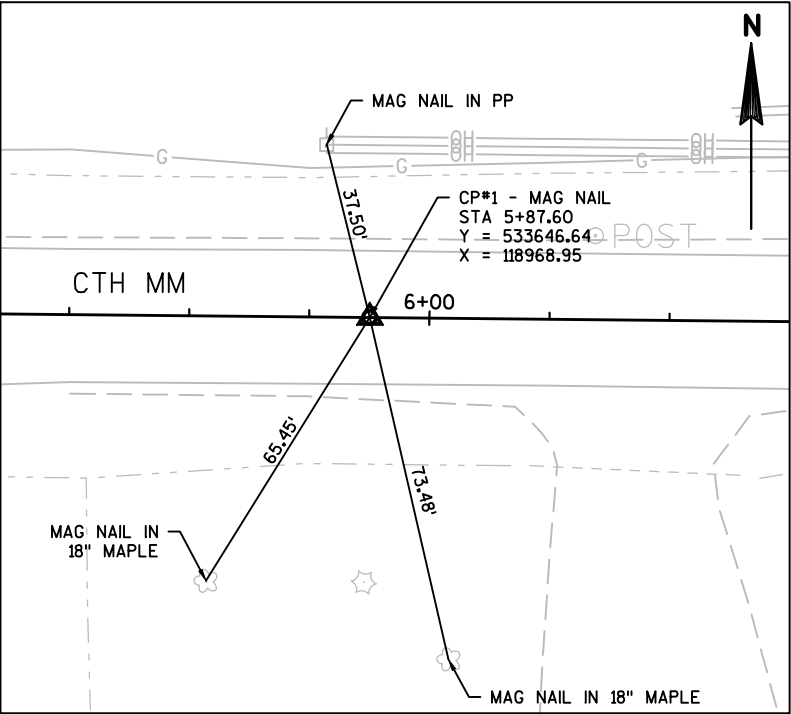


Dial 811 or (800)242-8511

www.DiggersHotline.com

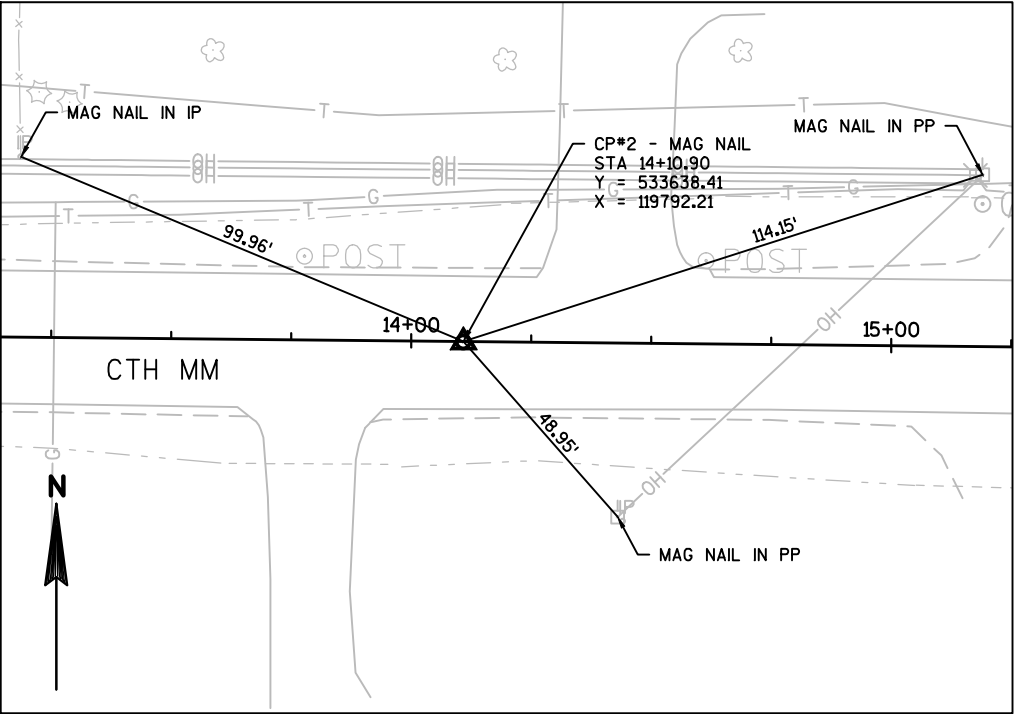
CONTROL POINT 1

MAG NAIL SET 380'± WEST OF BRIDGE



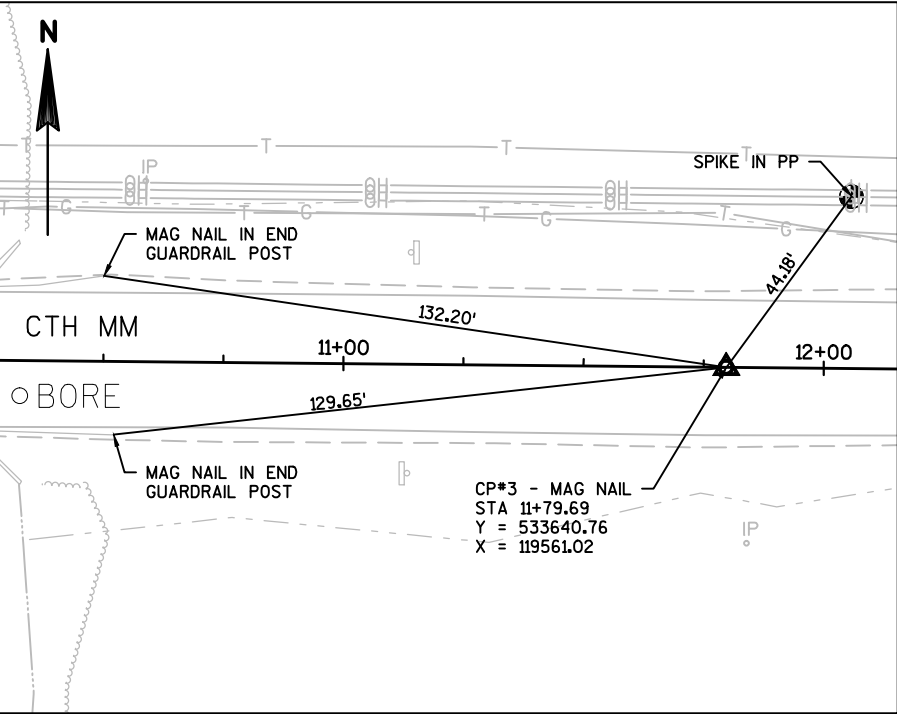
CONTROL POINT 2

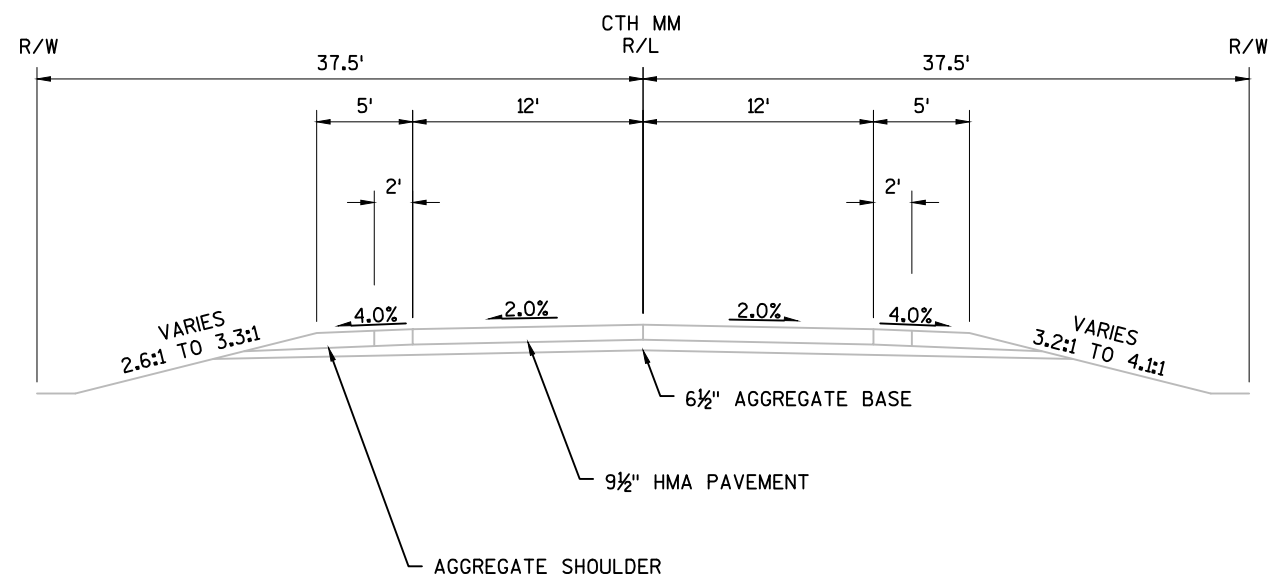
MAG NAIL SET 380'± EAST OF BRIDGE



CONTROL POINT 3

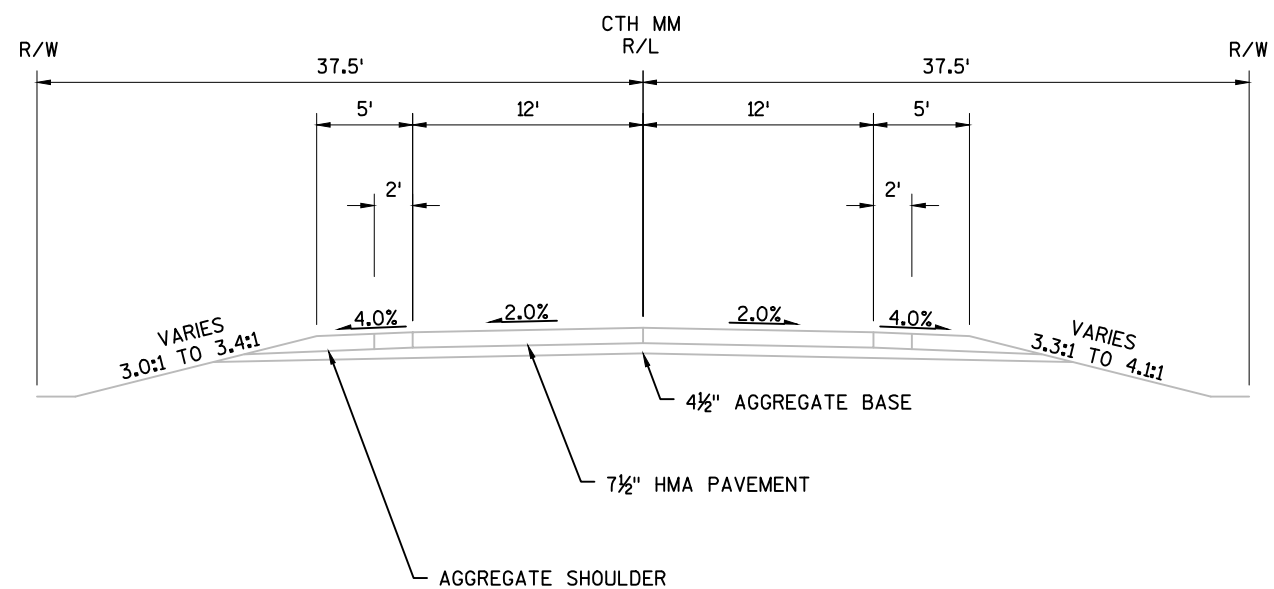
MAG NAIL SET ON C CTH MM - 155' EAST OF BRIDGE





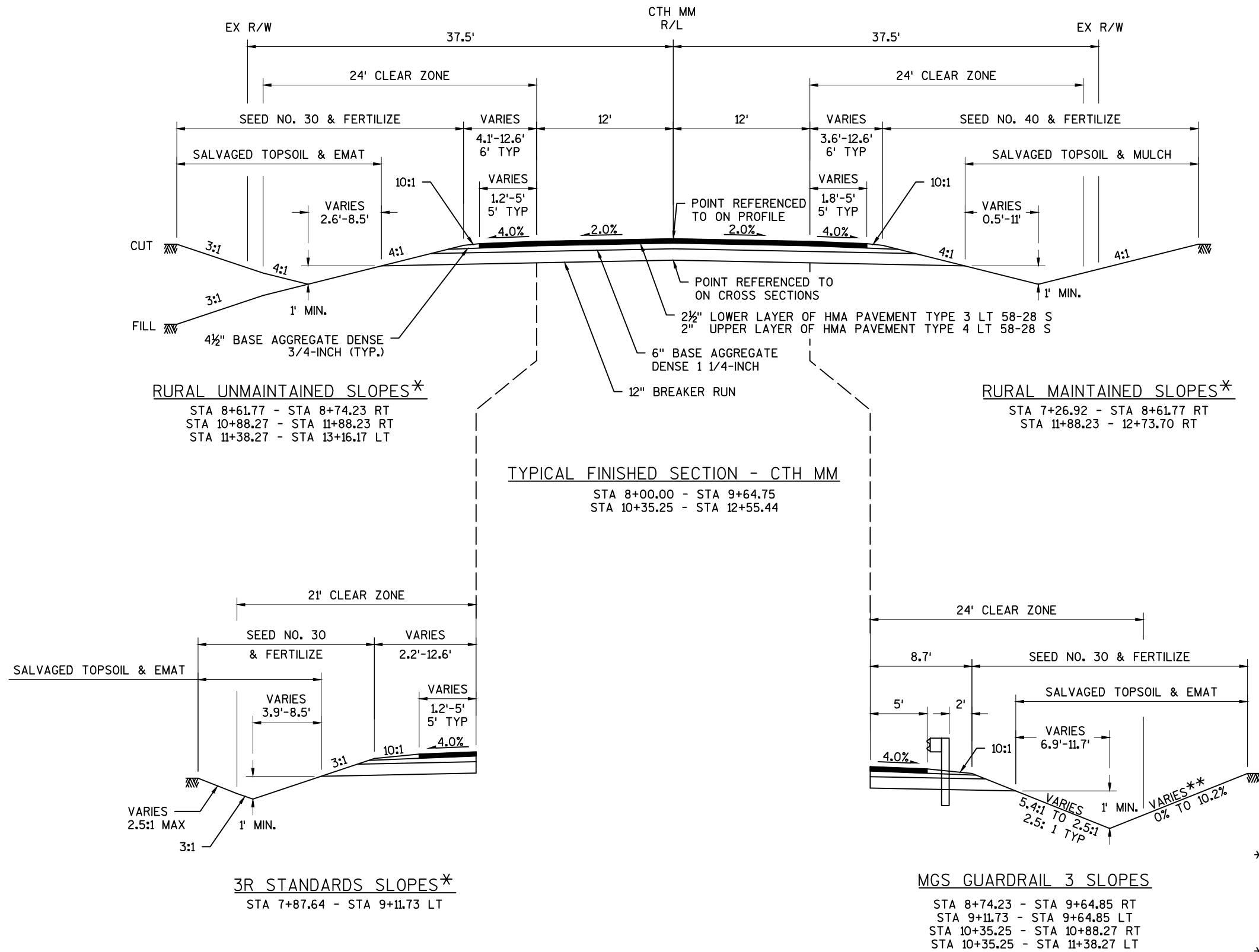
TYPICAL EXISTING SECTION

STA 8+00.00 - STA 9+64.75



TYPICAL EXISTING SECTION

STA 10+35.25 - STA 12+55.44

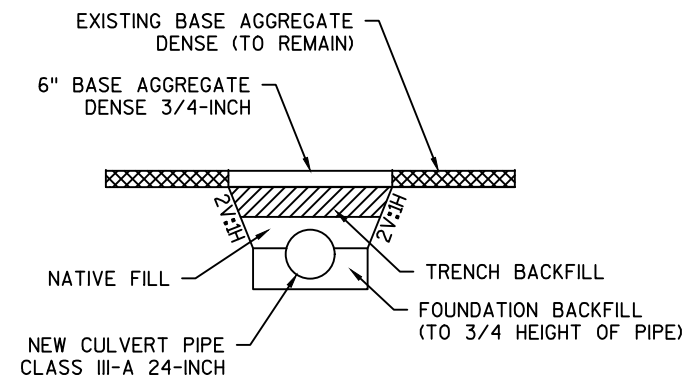


* NOTE:
MGS GUARDRAIL TERMINAL EAT INCLUDED FROM:
STA 8+24.27 - STA 8+74.23 RT
STA 8+61.73 - STA 9+11.73 LT
STA 10+88.27 - STA 11+38.23 RT
STA 11+38.27 - STA 11+88.23 LT

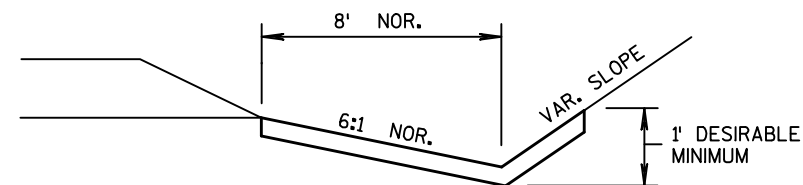
** NOTE:
BACKSLOPE NOT PRESENT FROM:
STA 10+35.25 - STA 10+88.27 RT
STA 10+35.25 - STA 10+38.27 LT

	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						

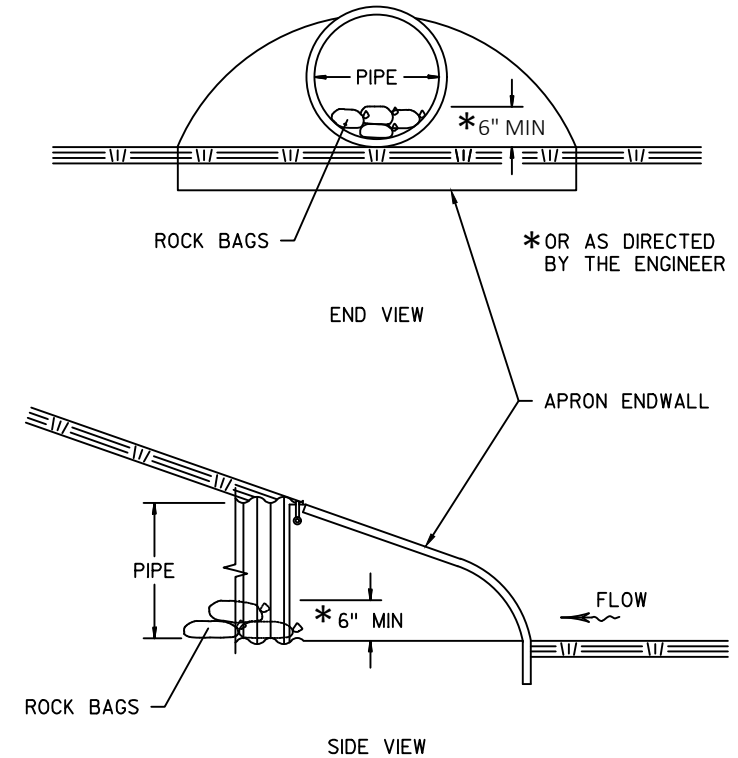
TOTAL PROJECT AREA = 0.805 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.981 ACRES



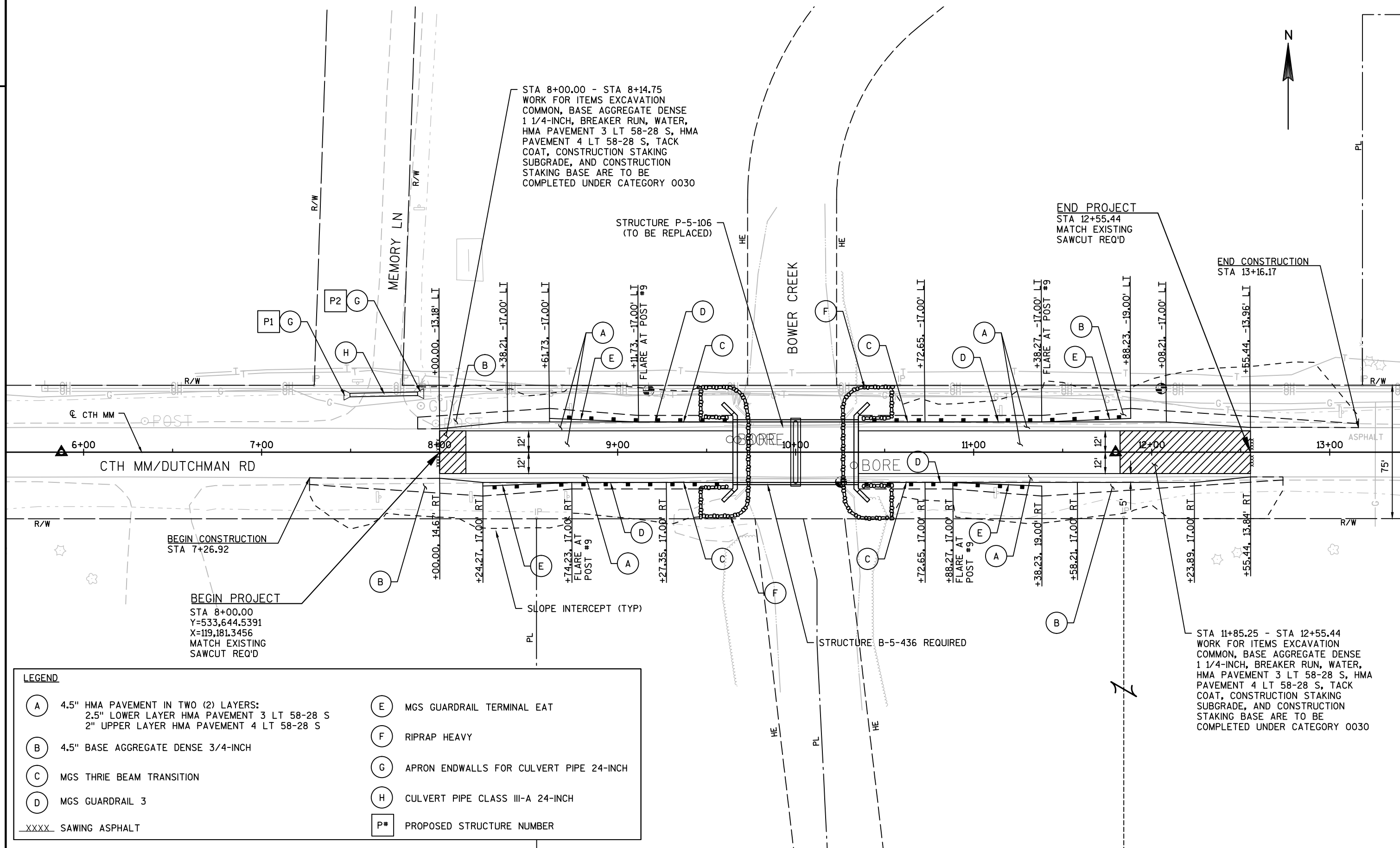
PAVEMENT AT CULVERT REPLACEMENT



EROSION MAT DETAIL FOR DITCHES



CULVERT PIPE CHECKS



Estimate Of Quantities

4555-02-71

Line	Item	Item Description	Unit	Total	Qty
0002	201.0210	Grubbing	SY	160.000	160.000
0004	203.0100	Removing Small Pipe Culverts	EACH	1.000	1.000
0006	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. 10+00	LS	1.000	1.000
0008	205.0100	Excavation Common	CY	1,400.000	1,400.000
0010	206.1000	Excavation for Structures Bridges (structure) 01. B-5-436	LS	1.000	1.000
0012	206.5000	Cofferdams (structure) 01. B-5-436	LS	1.000	1.000
0014	210.1500	Backfill Structure Type A	TON	395.000	395.000
0016	213.0100	Finishing Roadway (project) 01. 4555-02-71	EACH	1.000	1.000
0018	305.0110	Base Aggregate Dense 3/4-Inch	TON	85.000	85.000
0020	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	660.000	660.000
0022	311.0110	Breaker Run	TON	1,370.000	1,370.000
0024	455.0605	Tack Coat	GAL	100.000	100.000
0026	460.2000	Incentive Density HMA Pavement	DOL	230.000	230.000
0028	460.5223	HMA Pavement 3 LT 58-28 S	TON	200.000	200.000
0030	460.5224	HMA Pavement 4 LT 58-28 S	TON	155.000	155.000
0032	502.0100	Concrete Masonry Bridges	CY	268.000	268.000
0034	502.3200	Protective Surface Treatment	SY	364.000	364.000
0036	505.0400	Bar Steel Reinforcement HS Structures	LB	13,750.000	13,750.000
0038	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	37,470.000	37,470.000
0040	513.4061	Railing Tubular Type M (structure) 01. B-5-436	LF	146.000	146.000
0042	516.0500	Rubberized Membrane Waterproofing	SY	16.000	16.000
0044	520.1024	Apron Endwalls for Culvert Pipe 24-Inch	EACH	2.000	2.000
0046	520.3324	Culvert Pipe Class III-A 24-Inch	LF	38.000	38.000
0048	550.0020	Pre-Boring Rock or Consolidated Materials	LF	48.000	48.000
0050	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	240.000	240.000
0052	606.0300	Riprap Heavy	CY	230.000	230.000
0054	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	142.000	142.000
0056	614.2300	MGS Guardrail 3	LF	137.500	137.500
0058	614.2500	MGS Thrie Beam Transition	LF	158.000	158.000
0060	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0062	619.1000	Mobilization	EACH	1.000	1.000
0064	624.0100	Water	MGAL	21.000	21.000
0066	625.0500	Salvaged Topsoil	SY	1,150.000	1,150.000
0068	627.0200	Mulching	SY	290.000	290.000
0070	628.1504	Silt Fence	LF	880.000	880.000
0072	628.1520	Silt Fence Maintenance	LF	880.000	880.000
0074	628.1905	Mobilizations Erosion Control	EACH	5.000	5.000
0076	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000

Estimate Of Quantities

4555-02-71

Line	Item	Item Description	Unit	Total	Qty
0078	628.2008	Erosion Mat Urban Class I Type B	SY	855.000	855.000
0080	628.6005	Turbidity Barriers	SY	295.000	295.000
0082	628.7504	Temporary Ditch Checks	LF	65.000	65.000
0084	628.7555	Culvert Pipe Checks	EACH	8.000	8.000
0086	629.0210	Fertilizer Type B	CWT	1.200	1.200
0088	630.0130	Seeding Mixture No. 30	LB	25.000	25.000
0090	630.0140	Seeding Mixture No. 40	LB	10.000	10.000
0092	633.5200	Markers Culvert End	EACH	2.000	2.000
0094	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	9.000	9.000
0096	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0098	638.2102	Moving Signs Type II	EACH	6.000	6.000
0100	638.2602	Removing Signs Type II	EACH	8.000	8.000
0102	638.3000	Removing Small Sign Supports	EACH	12.000	12.000
0104	642.5001	Field Office Type B	EACH	1.000	1.000
0106	643.0300	Traffic Control Drums	DAY	900.000	900.000
0108	643.0420	Traffic Control Barricades Type III	DAY	1,620.000	1,620.000
0110	643.0705	Traffic Control Warning Lights Type A	DAY	2,340.000	2,340.000
0112	643.0900	Traffic Control Signs	DAY	1,260.000	1,260.000
0114	643.5000	Traffic Control	EACH	1.000	1.000
0116	645.0111	Geotextile Type DF Schedule A	SY	112.000	112.000
0118	645.0120	Geotextile Type HR	SY	470.000	470.000
0120	646.1020	Marking Line Epoxy 4-Inch	LF	1,971.000	1,971.000
0122	648.0100	Locating No-Passing Zones	MI	0.130	0.130
0124	650.4500	Construction Staking Subgrade	LF	385.000	385.000
0126	650.5000	Construction Staking Base	LF	385.000	385.000
0128	650.6000	Construction Staking Pipe Culverts	EACH	1.000	1.000
0130	650.6500	Construction Staking Structure Layout (structure) 01. B-5-436	LS	1.000	1.000
0132	650.9910	Construction Staking Supplemental Control (project) 01. 4555-02-71	LS	1.000	1.000
0134	650.9920	Construction Staking Slope Stakes	LF	520.000	520.000
0136	690.0150	Sawing Asphalt	LF	56.000	56.000
0138	715.0502	Incentive Strength Concrete Structures	DOL	1,608.000	1,608.000
0140	SPV.0090	Special 01. Grading and Shaping Ditch	LF	19.000	19.000

3

3

EARTHWORK SUMMARY

			205.0100 EXCAVATION COMMON	SALVAGED/ UNUSABLE PAVEMENT MATERIAL	AVAILABLE MATERIAL	UNEXPANDED FILL	EXPANDED FILL FACTOR = 1.25	MASS ORDINATE +/-	WASTE	208.0100 BORROW		
			(NOTE 1)		(NOTE 2)		(NOTE 3)	(NOTE 4)				
STATION - STATION	LOCATION	CATEGORY	CY	CY	CY	CY	CY	CY	CY	CY	REMARKS	
7+27 - 9+64	CTH MM - WEST SIDE OF BRIDGE	0010	525	120	405	150	200	205	205	0	SEE EARTHWORK SHEET, "CTH MM - WEST SIDE OF BRIDGE" FOR MORE DETAILS.	
10+36 - 13+16	CTH MM - EAST SIDE OF BRIDGE	0010	735	120	615	200	250	365	365	0	SEE EARTHWORK SHEET, "CTH MM - EAST SIDE OF BRIDGE" FOR MORE DETAILS.	
CAT 0010 SUBTOTALS			1,260	240	1,020	350	450	570	570	0		
8+00 - 8+15	CTH MM - WEST SIDE OF BRIDGE	0030	25	10	15	0	0	15	15	0	SEE EARTHWORK SHEET, "CTH MM - WEST SIDE OF BRIDGE" FOR MORE DETAILS.	
11+85 - 12+54	CTH MM - EAST SIDE OF BRIDGE	0030	115	40	75	0	0	75	75	0	SEE EARTHWORK SHEET, "CTH MM - EAST SIDE OF BRIDGE" FOR MORE DETAILS.	
CAT 0030 SUBTOTALS			140	50	90	0	0	90	90	0		
PROJECT 4555-02-71 TOTALS			1,400	290	1,110	350	450	660	660	0		

NOTES: 1) COMMON EXCAVATION IS THE TOTAL QUANTITY OF CUT, ITEM NUMBER 205.0100.
2) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSABLE PAVEMENT MATERIAL.
3) EXPANDED FILL = UNEXPANDED FILL * FILL FACTOR OF 1.25.
4) THE MASS ORDINATE +/- QUANTITY CALCULATED FOR THE DIVISION. POSITIVE QUANTITY INDICATED AN EXCESS OF MATERIAL WITHIN THE DIVISION. NEGATIVE QUANTITY INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.

GRUBBING

STATION - STATION	LOCATION	201.0210 SY
10+22 - 10+34	LT	20
10+33 - 10+51	RT	40
12+05 - 13+10	LT	100
TOTAL		160

REMOVING SMALL PIPE CULVERTS

STATION - STATION	LOCATION	203.0100 EACH
7+50.42 - 7+89.33	LT	1
TOTAL		1

BASE AGGREGATE DENSE ITEMS

			305.0110 3/4-INCH	305.0120 1 1/4-INCH	311.0110 BREAKER	624.0100 WATER		
				CAT 0010	CAT 0030	CAT 0010	CAT 0030	
STATION - STATION	LOCATION	TON	TON	TON	TON	MGAL	MGAL	REMARKS
7+27 - 9+65	RT	20	15	-	75	1.1	-	
7+88 - 9+65	LT	15	8	-	45	0.5	-	
8+00 - 8+15	LT/RT	-	-	13	-	-	0.3	
8+15 - 9+65	LT/RT	-	257	-	457	7.2	-	
MEMORY LANE	LT	7	-	-	-	0.1	-	DRIVEWAY RESTORATION AFTER REPLACING CULVERT
10+35 - 11+85	LT/RT	-	278	-	498	7.8	-	
10+35 - 12+74	RT	19	12	-	70	1.0	-	
10+35 - 13+16	LT	24	15	-	90	1.3	-	
11+85 - 12+55	LT/RT	-	-	62	-	-	1.7	
SUBTOTALS		85	585	75	1,235	19	2	
PROJECT 4555-02-71 TOTALS		85		660	1,370		21	

UNLESS OTHERWISE NOTED
ALL ITEMS IN CATEGORY 0010

3

HMA PAVEMENT ITEMS									
				460.5223		460.5224		455.0605	
				HMA PAVEMENT		HMA PAVEMENT		TACK	
				3 LT 58-28 S		4 LT 58-28 S		COAT	
				CAT 0010	CAT 0030	CAT 0010	CAT 0030	CAT 0010	CAT 0030
STATION - STATION		LOCATION		TON	TON	TON	TON	GAL	GAL
8+00	-	8+15	WEST SIDE OF BRIDGE	-	6	-	5	-	3
8+00	-	9+65	WEST SIDE OF BRIDGE	79	-	60	-	42	-
10+35	-	11+85	EAST SIDE OF BRIDGE	83	-	64	-	38	-
11+85	-	12+55	EAST SIDE OF BRIDGE	-	32	-	26	-	17
SUBTOTALS				162	38	124	31	80	20
PROJECT 4555-02-71 TOTALS				200		155		100	

CULVERT PIPE ITEMS					
				520.3324	
				CULVERT PIPE	
				CLASS III-A	
				24-INCH	
STRUCTURE NUMBER		INLET	DISCHARGE	SLOPE	(NOTE 1)
FROM	TO	ELEVATION	ELEVATION	%	LF
P1	P2	795.03	794.83	0.5	38
TOTALS					38

NOTES: 1) MINIMUM THICKNESSES FOR STEEL IS 0.064 IN.

LANDSCAPING ITEMS									
				625.0500	627.0200	628.2008	629.0210	630.0130	630.0140
				SALVAGED	MULCHING	EROSION MAT URBAN	FERTILIZER	SEEDING MIXTURE	SEEDING MIXTURE
				TOPSOIL		CLASS I TYPE B	TYPE B	NO. 30	NO. 40
STATION - STATION		LOCATION		SY	SY	SY	CWT	LB	LB
7+27	-	8+62	RT	-	140	-	-	-	5
7+27	-	9+46	RT	260	-	-	0.3	-	-
7+78	-	9+46	LT	160	-	160	0.2	5	-
8+62		9+46	RT	-	-	110	-	3	-
10+54		11+88	RT	-	-	95	-	3	-
10+54	-	12+74	RT	180	-	-	0.2	-	-
10+54	-	13+16	LT	320	-	320	0.3	9	-
11+88	-	12+74	RT	-	90	-	-	-	3
UNDISTRIBUTED				230	60	170	0.2	5	2
TOTALS				1,150	290	855	1.2	25	10

APRON ENDWALL ITEMS					
STRUCTURE				520.1024	633.5200
				APRON ENDWALLS	MARKERS
				FOR CULVERT PIPE	CULVERT
NUMBER	STATION	OFFSET	LOCATION	24-INCH	END
				EACH	EACH
P1	7+50	32.15'	LT	1	1
P2	7+88	32.91'	LT	1	1
TOTALS				2	2

GUARDRAIL ITEMS					
STATION - STATION		LOCATION	614.2300	614.2500	614.2610
			MGS	MGS	MGS
			GUARDRAIL 3	THRIE BEAM	GUARDRAIL
			LF	LF	TERMINAL EAT
					EACH
8+24.27	- 8+77.35	RT	-	-	1
8+61.73	- 9+14.85	LT	-	-	1
8+77.35	- 9+27.35	RT	50.0	-	-
9+14.85	- 9+27.35	LT	12.5	-	-
9+27.35	- 9+66.75	LT/RT	-	79	-
10+35.25	- 10+72.65	LT/RT	-	79	-
10+72.65	- 10+85.15	RT	12.5	-	-
10+72.65	- 11+35.15	LT	62.5	-	-
10+85.15	- 11+38.23	RT	-	-	1
11+35.15	- 11+88.23	LT	-	-	1
TOTALS			137.5	158	4

UNLESS OTHERWISE NOTED
ALL ITEMS IN CATEGORY 0010

3

3

SIGNING ITEMS											
				SIGN SIZE		634.0612	637.2230	638.2102	638.2602	638.3000	
				WIDTH X HEIGHT	POSTS WOOD	SIGNS TYPE II	MOVING SIGNS	REMOVING SIGNS	REMOVING SMALL		
STATION	LOCATION	SIGN CODE	SIGN MESSAGE	IN	4X6-INCH X 12-FT	REFLECTIVE F	TYPE II	TYPE II	SIGN SUPPORTS		REMARKS
7+66	RT	R7-1	-	-	1	-	1	-	1		
7+66	RT	-	EMERGENCY RESPONSE WEST (ARROW)	-	-	-	1	-	-		ON SAME POST AS R7-1
8+19	RT	R7-1	-	-	1	-	1	-	1		
8+72	LT	R7-1	-	-	1	-	1	-	1		
8+72	RT	R12-1	WEIGHT LIMIT 25 TONS	-	-	-	-	1	1		
9+65	RT	W5-52R	-	12 X 36	1	3.00	-	1	1		
9+65	LT	W5-52L	-	12 X 36	1	3.00	-	1	1		
10+35	RT	W5-52R	-	12 X 36	1	3.00	-	1	1		
10+35	LT	W5-52L	-	12 X 36	1	3.00	-	1	1		
11+13	RT	R7-1	-	-	1	-	1	-	1		
11+14	LT	R12-1	WEIGHT LIMIT 25 TONS	-	-	-	-	1	1		
11+14	LT	R7-1	-	-	1	-	1	-	-		ON SAME POST AS R12-1
-	RT	R12-55	25 TON BRIDGE 1.1 MILES AHEAD	-	-	-	-	1	1		ON CTH MM AT THE CTH G INTERSECTION
-	LT	R12-55	25 TON BRIDGE 1.1 MILES AHEAD	-	-	-	-	1	1		ON CTH MM SOUTH OF THE SB IH 43 OFF-RAMP
TOTALS					9	12.00	6	8	12		

EROSION CONTROL ITEMS						
STATION - STATION	LOCATION	628.1504	628.1520	628.6005	628.7504	628.7555
		SILT FENCE	SILT FENCE	TURBIDITY BARRIERS	TEMPORARY DITCH CHECKS	CULVERT PIPE CHECKS
		LF	LF	SY	LF	EACH
7+27 - 9+72	RT	260	260	-	-	-
7+43	LT	-	-	-	-	6
7+78 - 9+69	LT	195	195	-	-	-
8+05	RT	-	-	-	10	-
10+40 - 12+74	RT	250	250	-	-	-
11+50	LT	-	-	-	8	-
11+80	RT	-	-	-	7	-
11+90	LT	-	-	-	8	-
12+25	RT	-	-	-	10	-
12+70	LT	-	-	-	8	-
WEST ABUTMENT		-	-	115	-	-
EAST ABUTMENT		-	-	120	-	-
UNDISTRIBUTED		175	175	60	14	2
TOTALS		880	880	295	65	8

EROSION CONTROL MOBILIZATION ITEMS		
PROJECT	628.1905	628.1910
	MOBILIZATIONS EROSION CONTROL	MOBILIZATIONS EMERGENCY EROSION CONTROL
	EACH	EACH
4555-02-71	5	3
TOTALS	5	3

UNLESS OTHERWISE NOTED
ALL ITEMS IN CATEGORY 0010

3

TRAFFIC CONTROL ITEMS

LOCATION	DAYS IN SERVICE	643.0300 DRUMS (NOTE 1)		643.0420 BARRICADES TYPE III		643.0705 WARNING LIGHTS TYPE A		643.0900 SIGNS	
		EACH	DAYS	EACH	DAYS	EACH	DAYS	EACH	DAYS
WEST SIDE	90	10	900	9	810	13	1,170	7	630
EAST SIDE	90	-	-	9	810	13	1,170	7	630
TOTALS		900		1,620		2,340		1,260	

NOTES: 1) DRUMS TO BE USED AT MEMORY LANE FOR CULVERT REPLACEMENT AND TO KEEP TRAFFIC USING BROWN COUNTY PARK FONFEREK'S GLEN OUT OF WORK ZONE.

CONSTRUCTION STAKING ITEMS

STATION - STATION		LOCATION	650.4500 SUBGRADE		650.5000 BASE		650.6000 PIPE CULVERTS	650.6500 STRUCTURE LAYOUT B-5-436 CAT 0020	650.9910 SUPPLEMENTAL CONTROL 4555-02-71	650.9920 SLOPE STAKES
			CAT 0010 LF	CAT 0030 LF	CAT 0010 LF	CAT 0030 LF				
7+27	- 9+65	LT/RT	-	-	-	-	-	-	-	240
7+50	- 7+88	LT	-	-	-	-	1	-	-	-
8+00	- 8+15	LT/RT	-	15	-	15	-	-	-	-
8+15	- 9+65	LT/RT	150	-	150	-	-	-	-	-
10+35	- 11+85	LT/RT	150	-	150	-	-	-	-	-
10+35	- 13+16	LT/RT	-	-	-	-	-	-	-	280
11+85	12+55	LT/RT	-	70	-	70	-	-	-	-
PROJECT 4555-02-71			-	-	-	-	1	1	-	-
SUBTOTALS			300	85	300	85	1	1	1	520
PROJECT 4555-02-71 TOTALS			385		385		1	1	1	520

MARKING LINE ITEMS

STATION - STATION		LOCATION	646.1020 MARKING LINE EPOXY 4-INCH			648.0100 LOCATING NO-PASSING ZONES
			WHITE	YELLOW	DASHED YELLOW 12.5-FT LINE 37.5-FT SKIP	
6+65	- 13+35	RT EDGELINE	670	-	-	-
6+65	- 13+35	LT EDGELINE	670	-	-	-
6+65	- 13+35	CENTERLINE	-	-	168	0.13
8+72	- 13+35	CENTERLINE	-	463	-	-
SUBTOTALS			1,340	463	168	0.13
TOTALS			1,971			0.13

SAWING

STATION		LOCATION	690.0150 SAWING ASPHALT LF
8+00	-	LT/RT	28
12+55	-	LT/RT	28
TOTAL			56

GRADING AND SHAPING DITCH

STATION - STATION		LOCATION	SPV.0090.01 LF
7+27	- 7+46	LT	19
TOTAL			19

UNLESS OTHERWISE NOTED
ALL ITEMS IN CATEGORY 0010

CONVENTIONAL SYMBOLS

SECTION LINE	---	SECTION CORNER SYMBOL		R/W MONUMENT (TO BE SET)	●
QUARTER LINE	---	NON-MONUMENTED R/W POINT	○		
SIXTEENTH LINE	---	GEODETIC SURVEY MONUMENT		FOUND IRON PIN (1-INCH UNLESS NOTED)	IP
NEW REFERENCE LINE	---	SIXTEENTH CORNER MONUMENT			
NEW R/W LINE	---	SIGN		OFF-PREMISE SIGN	
EXISTING R/W OR HE LINE	---	ACCESS RESTRICTED BY ACQUISITION			
PROPERTY LINE	---	NO ACCESS (BY STATUTORY AUTHORITY)			
LOT, TIE & OTHER MINOR LINES	---	ACCESS RESTRICTED (BY PREVIOUS PROJECT OR CONTROL)			
SLOPE INTERCEPT	---	NO ACCESS (NEW HIGHWAY)			
CORPORATE LIMITS	---	PARCEL NUMBER	1	UTILITY NUMBER	50
NEW R/W (FEE OR HE) (HATCHING VARIES BY OWNER)	---	R/W BOUNDARY POINT			
TEMPORARY LIMITED EASEMENT AREA	---	PLE BOUNDARY POINT			
EASEMENT AREA (PERMANENT LIMITED OR RESTRICTED DEVELOPMENT)	---	TLE BOUNDARY POINT			
PARALLEL OFFSETS	---	BUILDING		TO BE REMOVED	

CONVENTIONAL ABBREVIATIONS

ACCESS POINT/ DRIVEWAY CONNECTION	AP	PERMANENT LIMITED EASEMENT	PLE
ACCESS RIGHTS	AR	PROPERTY LINE	PL
ACRES	AC	RECORDED AS	(100')
AND OTHERS	ET AL	REFERENCE LINE	R/L
CENTERLINE	C/L	RELEASE OF RIGHTS	ROR
CERTIFIED SURVEY MAP	CSM	REMAINING	REM
CORNER	COR	RESTRICTED DEVELOP EASEMENT	RDE
DOCUMENT	DOC	RIGHT-OF-WAY	R/W
EASEMENT	EASE	SECTION	SEC
HIGHWAY EASEMENT	HE	STATION	STA
LAND CONTRACT	LC	TEMPORARY LIMITED EASEMENT	TLE
MONUMENT	MON		
PAGE	P	VOLUME	V

CURVE DATA

LONG CHORD	LCH
LONG CHORD BEARING	LCB
RADIUS	R
DEGREE OF CURVE	D
CENTRAL ANGLE OR DELTA	Δ/DELTA
LENGTH OF CURVE	L
TANGENT	TAN

NOTES:

POSITIONS SHOWN ON THIS PLAT ARE WISCONSIN COORDINATE REFERENCE SYSTEM COORDINATES (WISCRS), BROWN COUNTY, NAD83 (2011) IN US SURVEY FEET. VALUES SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

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

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

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

A TEMPORARY LIMITED EASEMENT (TLE) IS A RIGHT FOR CONSTRUCTION PURPOSES, AS DEFINED HEREIN, INCLUDING THE RIGHT TO OPERATE NECESSARY EQUIPMENT THEREON, THE RIGHT OF INGRESS AND EGRESS, AS LONG AS REQUIRED FOR SUCH PUBLIC PURPOSE, INCLUDING THE RIGHT TO PRESERVE, PROTECT, REMOVE, OR PLANT THEREON ANY VEGETATION THAT THE HIGHWAY AUTHORITIES MAY DEEM DESIRABLE. ALL (TLEs) ON THIS PLAT EXPIRE AT THE COMPLETION OF THE CONSTRUCTION PROJECT FOR WHICH THIS INSTRUMENT IS GIVEN.

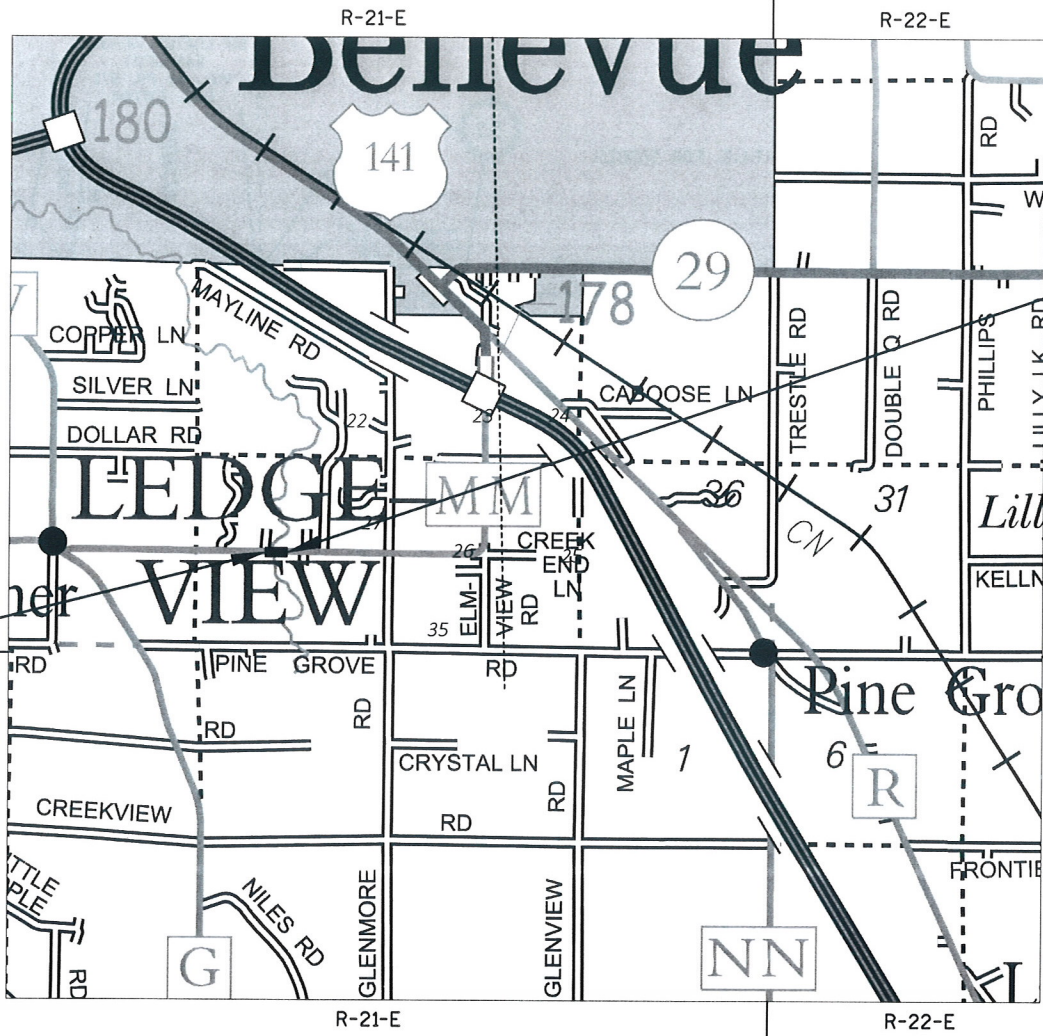
PROPERTY LINES SHOWN ON THIS PLAT ARE DRAWN FROM DATA DERIVED FROM MAPS AND DOCUMENTS OF PUBLIC RECORD AND/OR EXISTING OCCUPATIONAL LINES. THIS PLAT MAY NOT BE A TRUE REPRESENTATION OF EXISTING PROPERTY LINES, EXCLUDING RIGHT-OF-WAY, AND SHOULD NOT BE USED AS A SUBSTITUTE FOR AN ACCURATE FIELD SURVEY.

FOR THE LATEST ACCESS/DRIVEWAY INFORMATION, CONTACT THE BROWN COUNTY HIGHWAY DEPARTMENT.

CONVENTIONAL UTILITY SYMBOLS

WATER	---
GAS	---
TELEPHONE OVERHEAD	---
TRANSMISSION LINES	---
ELECTRIC	---
CABLE TELEVISION	---
FIBER OPTIC	---
SANITARY SEWER	---
STORM SEWER	---
POWER POLE	
TELEPHONE POLE	
TELEPHONE PEDESTAL	
ELECTRIC TOWER	
LIGHTING POLE	
HYDRANT	
INLET/CATCH BASIN	
MANHOLE	
WATER VALVE	
SEPTIC VALVE	
UTILITY POLE TANK	
AIR CONDITIONING UNIT	
ANTENNA	
MONITORING WELL	
CONCRETE MONUMENT	

BEGIN RELOCATION ORDER
PROJECT 4555-02-71
STATION 7+25.00
16.97' SOUTH AND 1875.45' EAST OF
THE WEST QUARTER CORNER OF
SECTION 34, T23N, R21E.



LAYOUT
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.111 MI.

R/W PROJECT NUMBER	4555-02-71	SHEET NUMBER	4.01	TOTAL SHEETS	2
FEDERAL PROJECT NUMBER	CTH MM				
PLAT OF RIGHT-OF-WAY REQUIRED FOR BROWN COUNTY - CTH MM BOWER CREEK BRIDGE P-05-0106					
CTH MM		BROWN COUNTY			
CONSTRUCTION PROJECT NUMBER	4555-02-71				



END RELOCATION ORDER
PROJECT 4555-02-71
STATION 13+10.00
25.27' NORTH AND 2873.57' WEST
OF THE EAST QUARTER CORNER OF
SECTION 34, T23N, R21E.

ORIGINAL PLAT PREPARED BY

AECOM



Lance J. Habeck
LANCE J. HABECK, PLS-1444

DATE: 10/04/2017

REVISION DATE

BROWN COUNTY

APPROVED FOR THE HIGHWAY DEPARTMENT

DATE: 10/16/17
Paul J. ...
Public Works Director /
Highway Commissioner

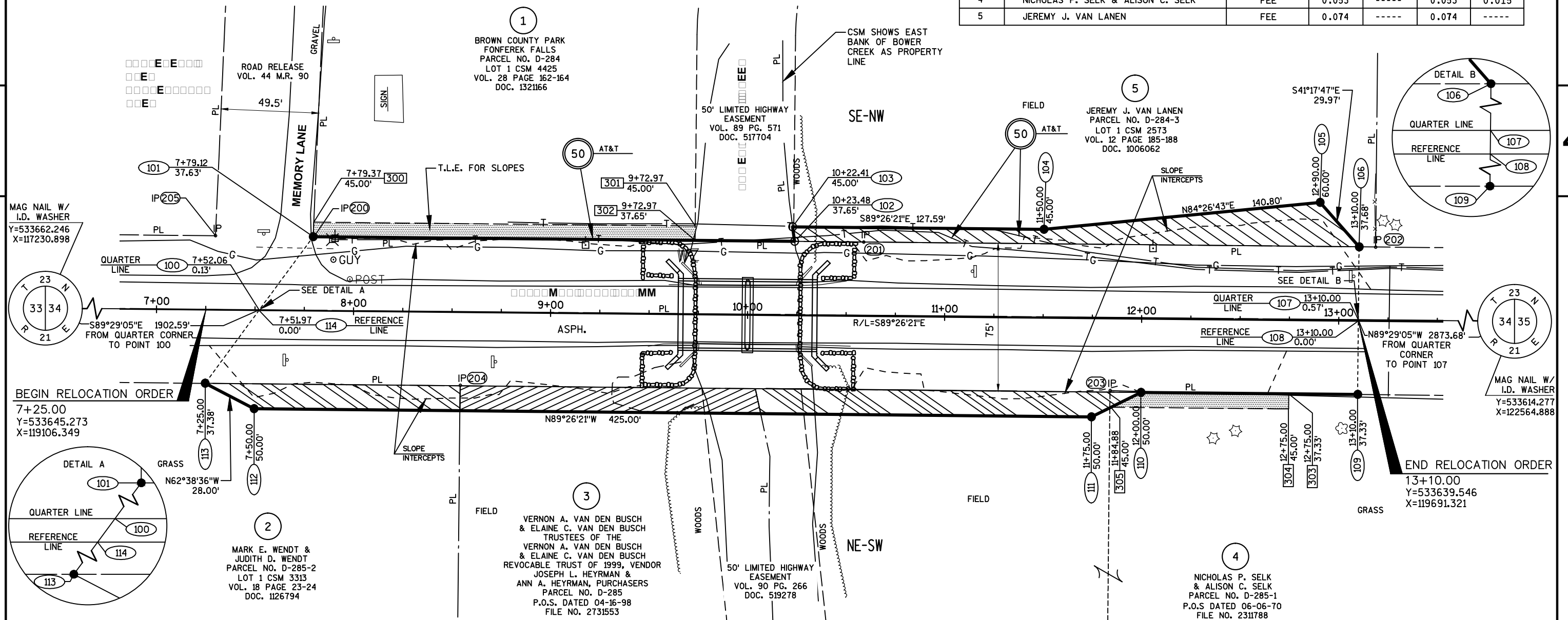
EXISTING RIGHT OF WAY FOR CTH MM WAS
ESTABLISHED BY CERTIFIED SURVEY MAP 4225,
VOLUME 28, PAGE 162-164; CERTIFIED SURVEY MAP
2573, VOLUME 12, PAGE 185-188; CERTIFIED SURVEY
MAP 3313, VOLUME 18, PAGE 23-24; PLAT OF
SURVEY DATE 06-06-70; PLAT OF SURVEY DATED
04-16-98; WISCONSIN DEPARTMENT OF
TRANSPORTATION-RIGHT OF WAY PLAT PROJECT
I.D. 6304-MM-1, DATED 10-20-56

P.I. = 15+25.17
X 119906.479
Y 533637.440

UTILITY NUMBER	OWNER (S)	INTEREST REQUIRED
50	AT&T	RELEASE OF RIGHTS

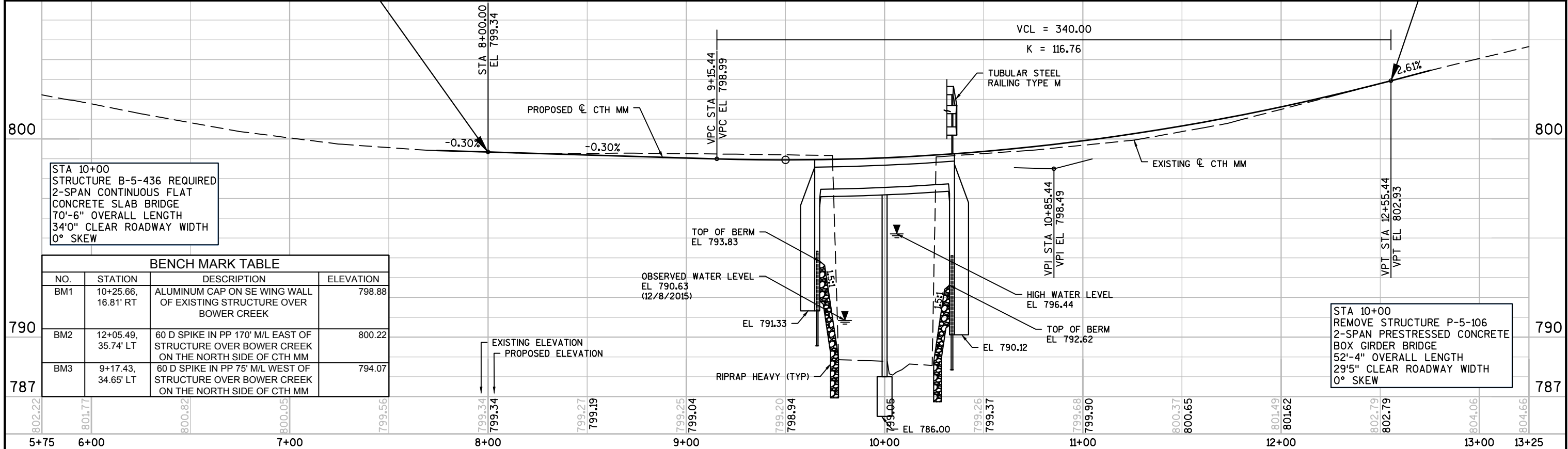
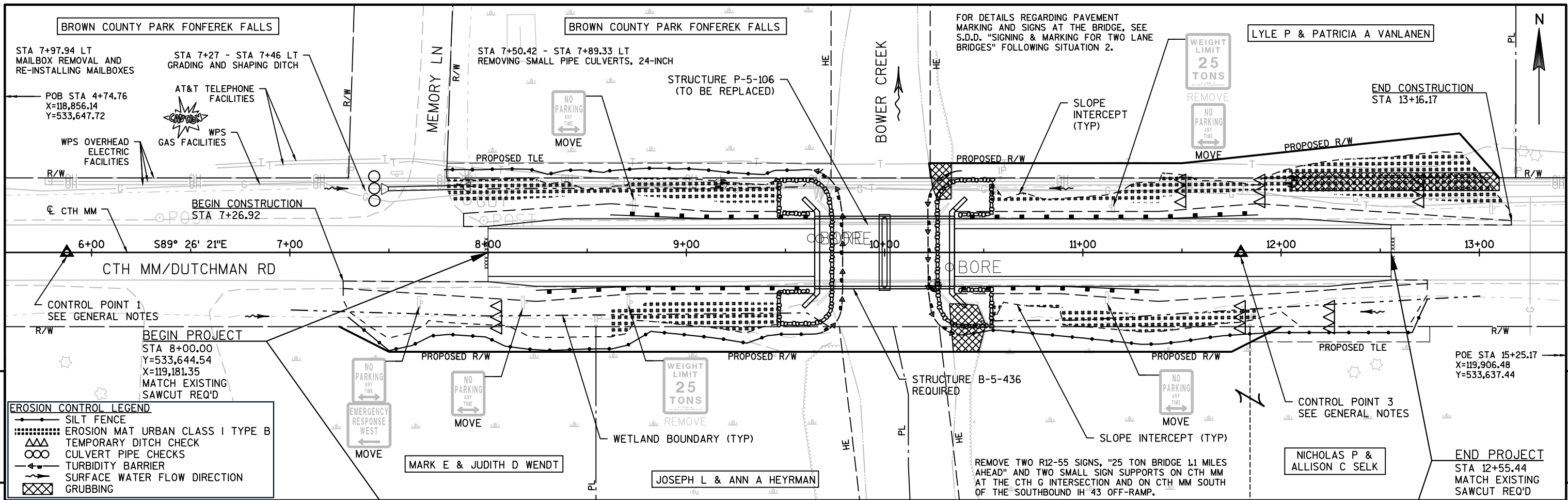
PARCEL NUMBER	OWNER (S)	INTEREST REQUIRED	R/W ACRES REQUIRED				TLE
			NEW	EXISTING	TOTAL	ACRES	
1	BROWN COUNTY PARK	T.L.E.	-----	-----	-----	0.033	
2	MARK E. WENDT & JUDITH D. WENDT	FEE	0.034	-----	0.034	-----	
3	VERNON A. VAN DEN BUSCH & ELAINE C. VAN DEN BUSCH TRUSTEES OF THE VERNON A. VAN DEN BUSCH & ELAINE C. VAN DEN BUSCH REVOCABLE TRUST OF 1999, VENDOR JOSEPH L. HEYRMAN & ANN A. HEYRMAN, PURCHASERS	FEE	0.044	0.494	0.538	-----	
4	NICHOLAS P. SELK & ALISON C. SELK	FEE	0.053	-----	0.053	0.015	
5	JEREMY J. VAN LANEN	FEE	0.074	-----	0.074	-----	

R/W ACRES REQUIRED			TLE
NEW	EXISTING	TOTAL	ACRES
-----	-----	-----	0.033
0.034	-----	0.034	-----
0.044	0.494	0.538	-----
0.053	-----	0.053	0.015
0.074	-----	0.074	-----



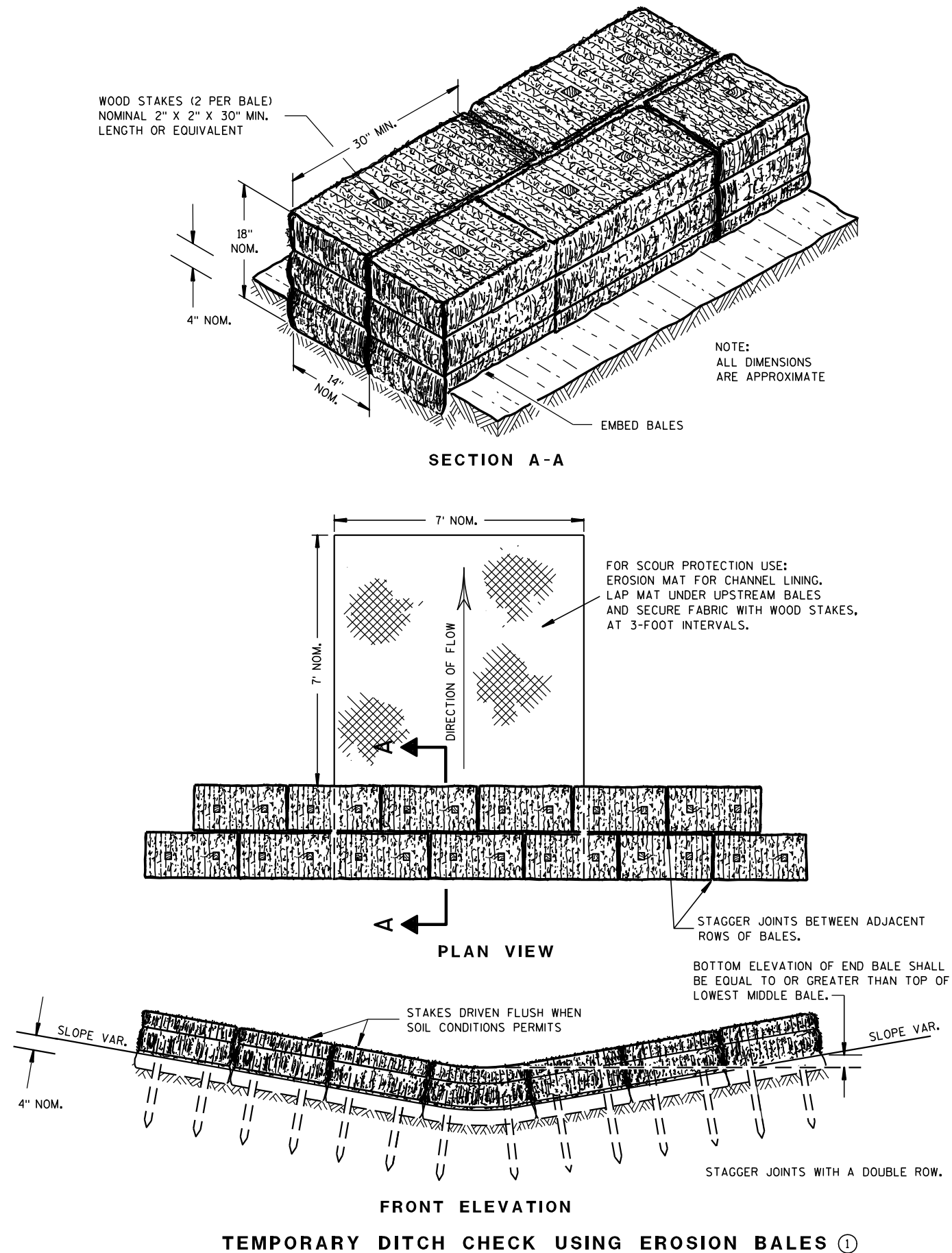
T.L.E. COURSE TABLE		
POINTS	BEARING	DISTANCE
303-304	S00°33'39"W	7.67
304-305	N89°26'21"W	90.13
305-110	N63°41'30"E	16.96

PS&E SHEET



Standard Detail Drawing List

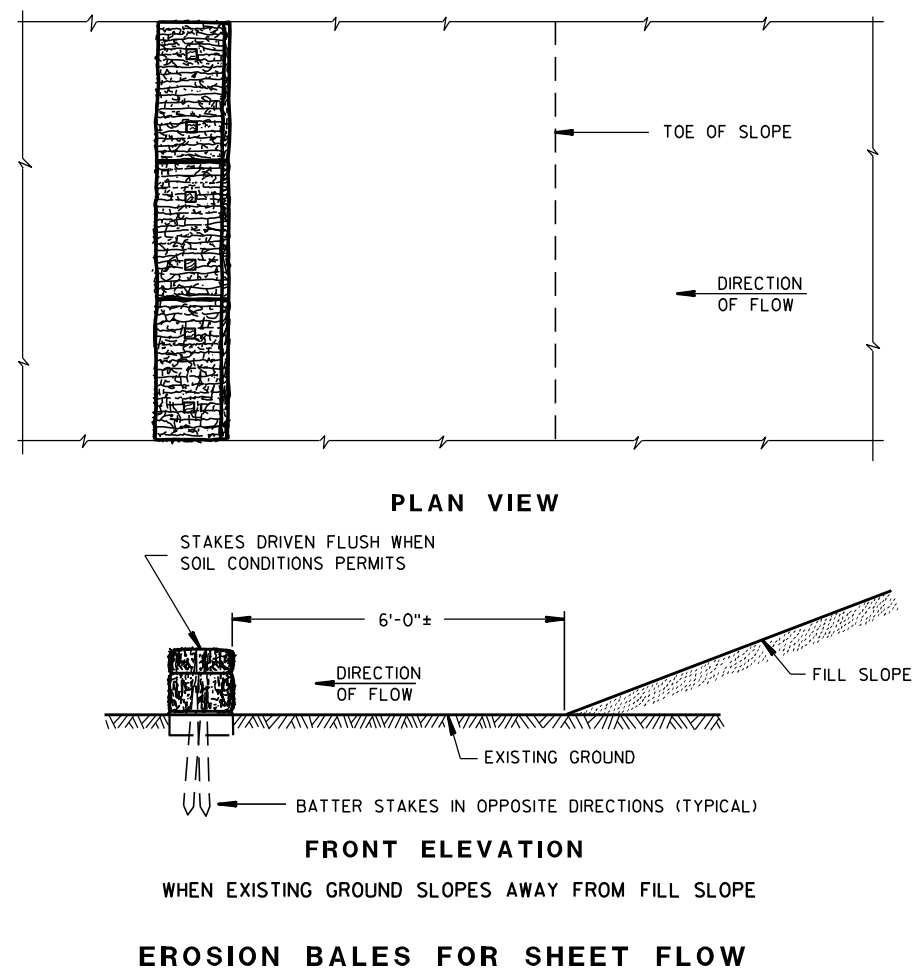
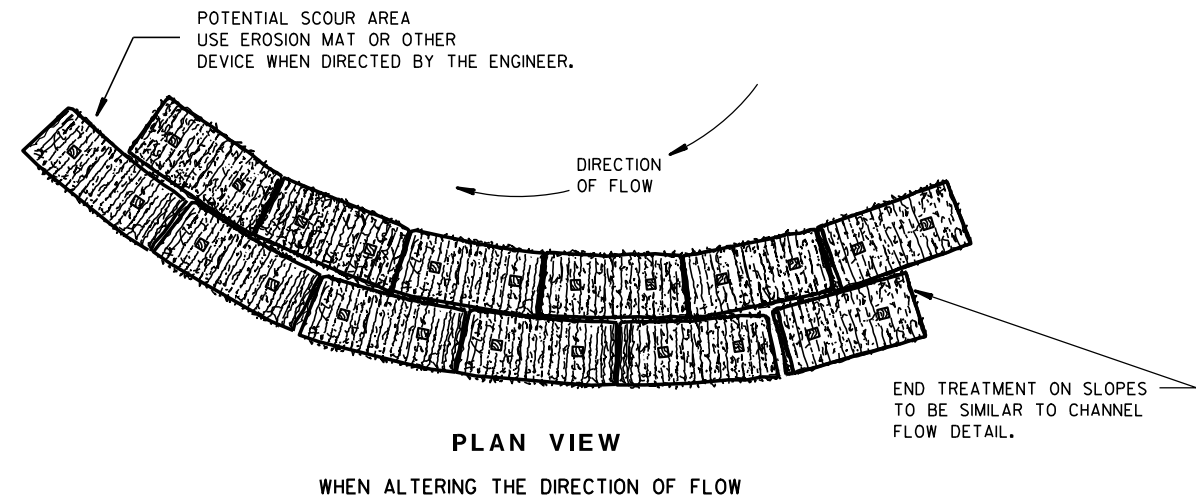
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
12A03-10	NAME PLATE (STRUCTURES)
14B42-05A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-03A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-03B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-03C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-04A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C02-06A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C06-09	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-18A	LONGITUDINAL MARKING (MAINLINE)
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS



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.

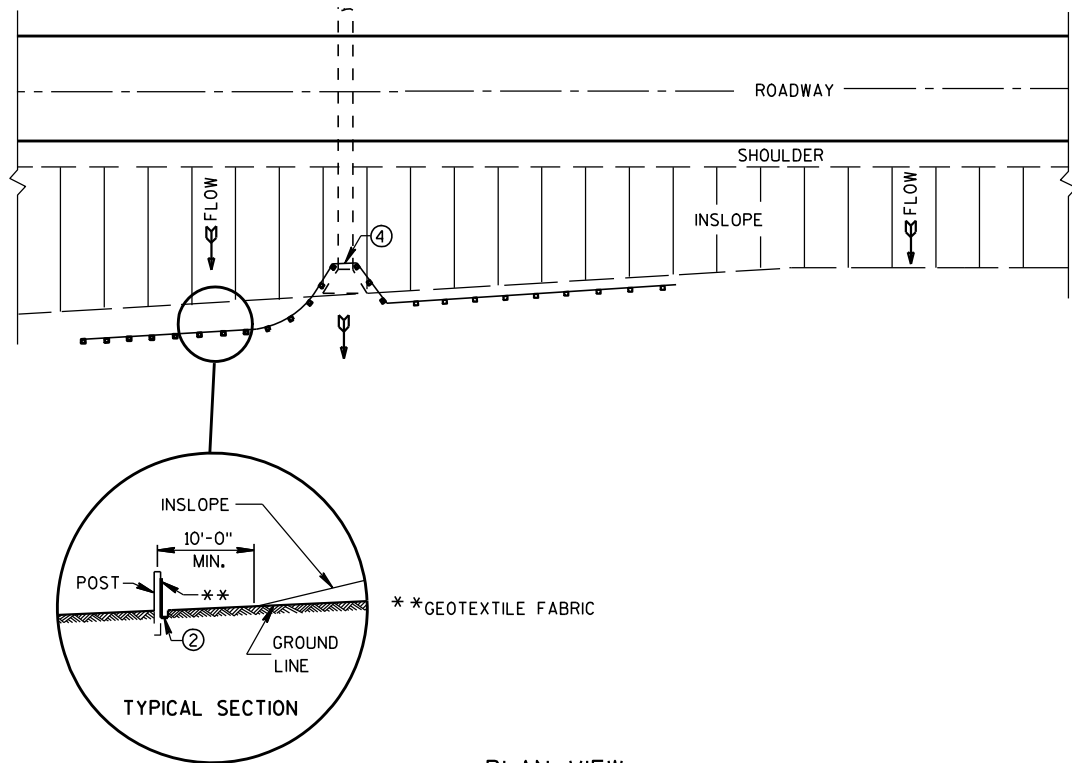
TYPICAL INSTALLATIONS OF
EROSION BALES / TEMPORARY
DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

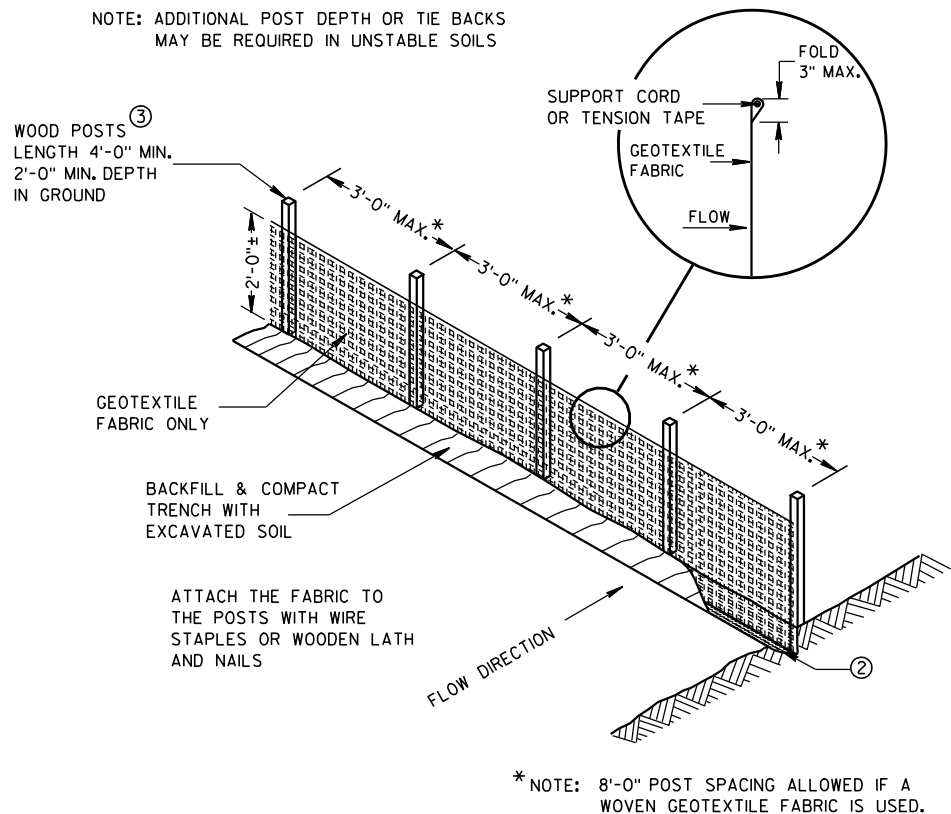
APPROVED

6/04/02
DATE/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER

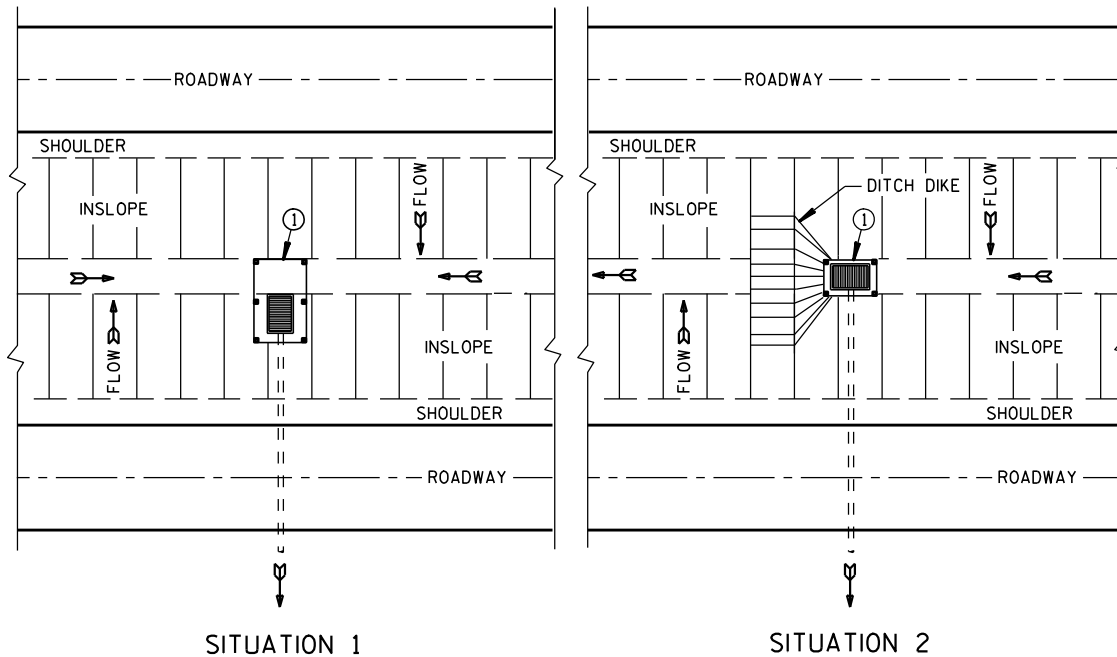
FHWA



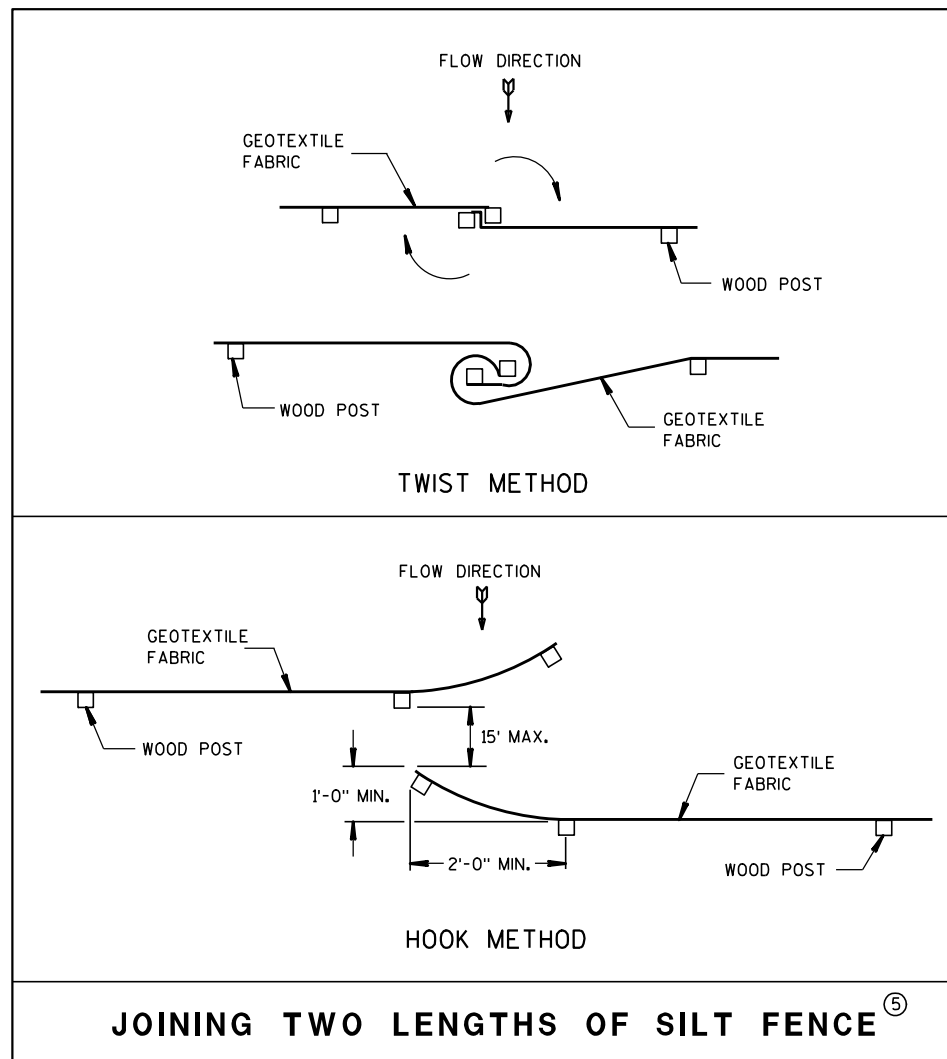
PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE



SILT FENCE



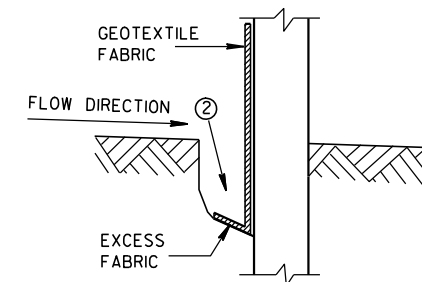
PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS



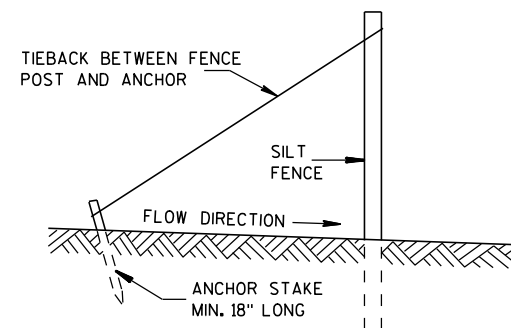
GENERAL NOTES

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 1 1/8" X 1 1/8" 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.

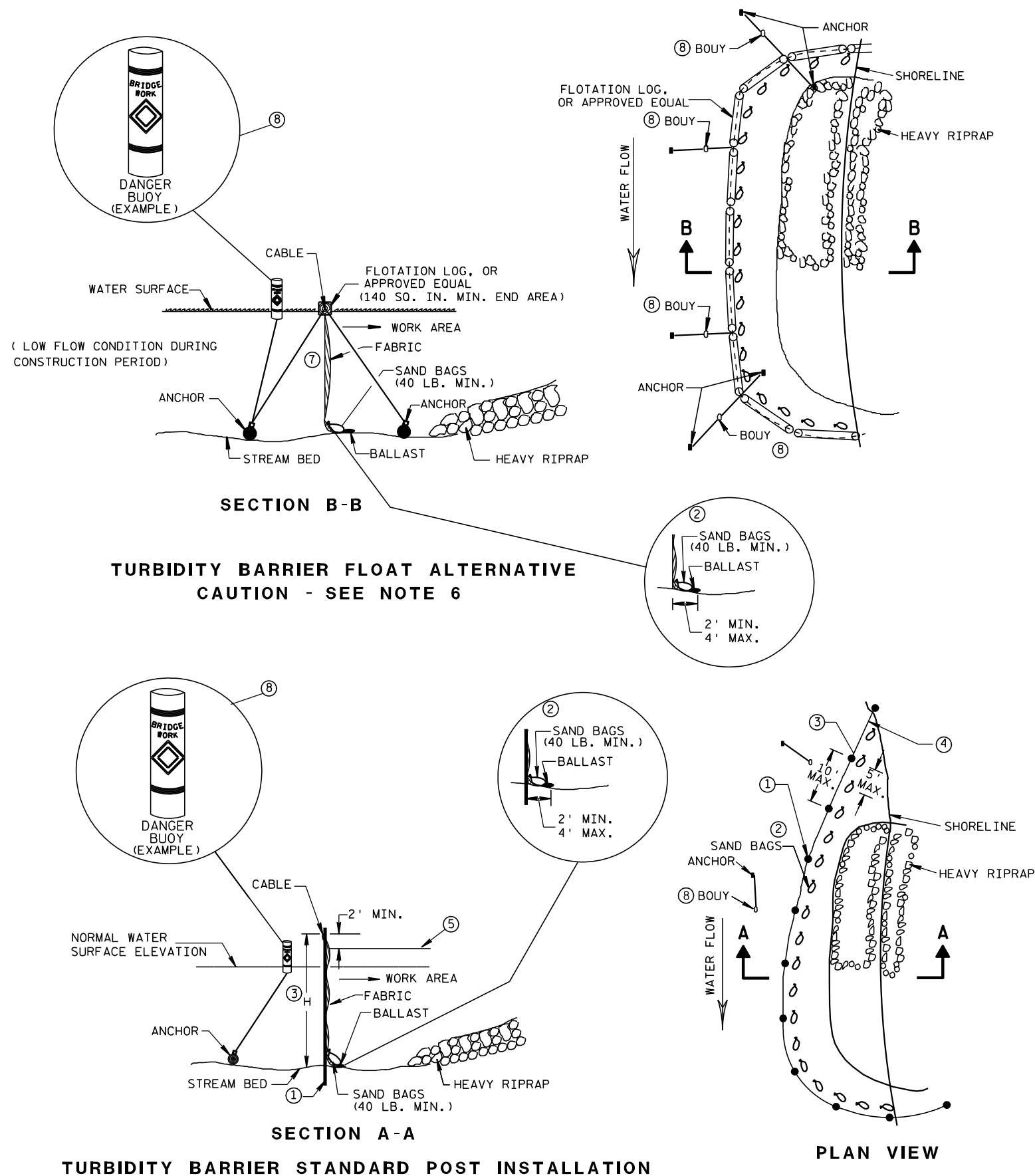


TRENCH DETAIL



SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 4-29-05 DATE	/S/ Beth Canestra CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	

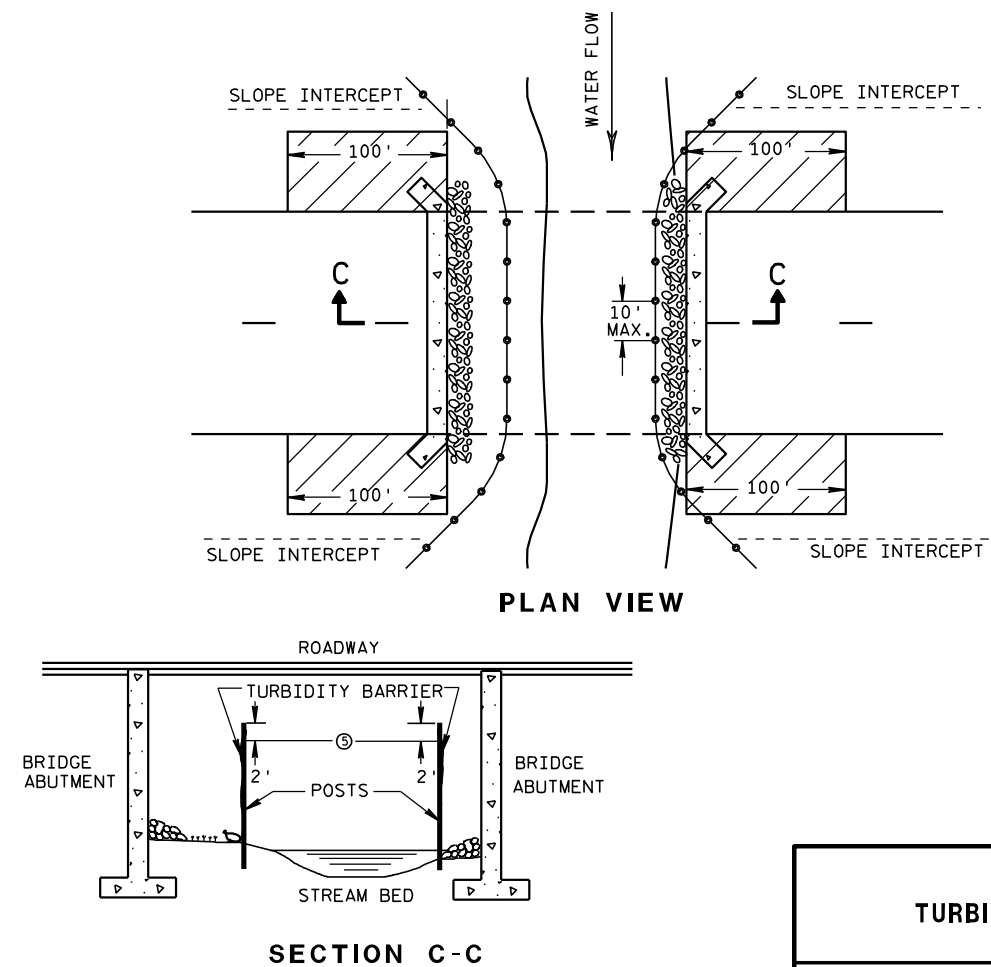


GENERAL NOTES

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. MINIMUM BARRIER HEIGHT SHALL BE 2' GREATER THAN EITHER THE 02 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WHICHEVER 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.



TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

APPROVED

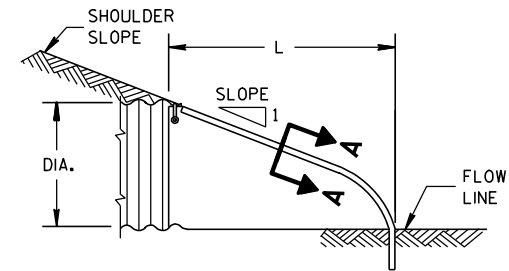
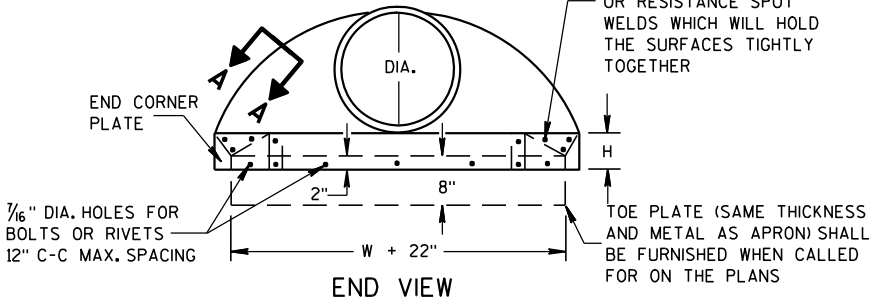
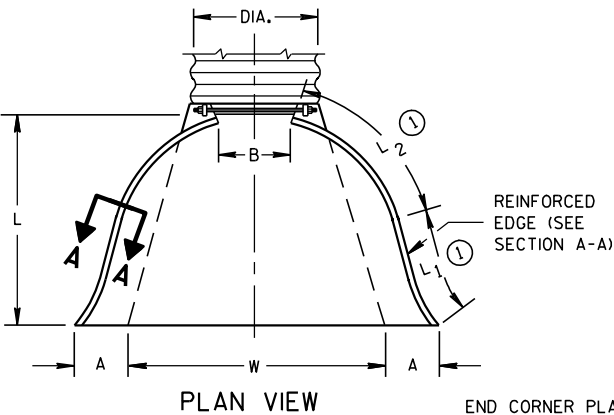
6/04/02
 DATE

FHWA

/S/ Beth Canestra
 CHIEF ROADWAY DEVELOPMENT ENGINEER

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

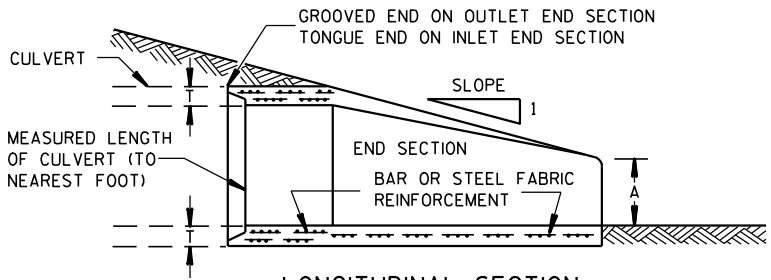
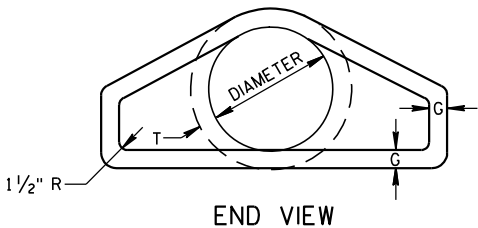
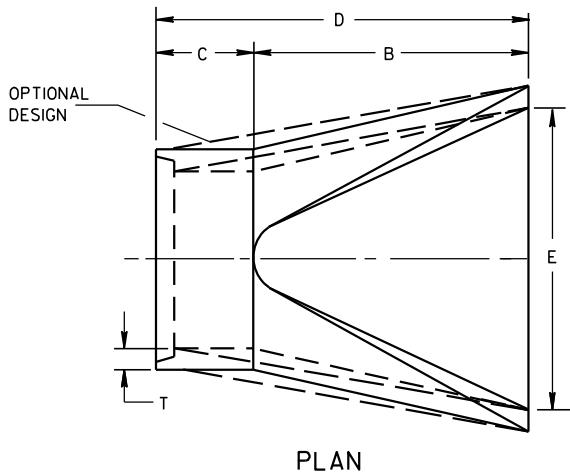
* EXCEPT CENTER PANEL
SEE GENERAL NOTES



METAL ENDWALLS

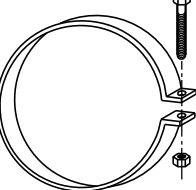
REINFORCED CONCRETE APRON ENDWALLS											
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE			
	T	A	B	C	D	E	G				
12	2	4	24	48 1/8	72 1/8	24	2	3 to 1			
15	2 1/4	6	27	46	73	30	2 1/4	3 to 1			
18	2 1/2	9	27	46	73	36	2 1/2	3 to 1			
21	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	3 to 1			
24	3	9 1/2	43 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 1/2 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

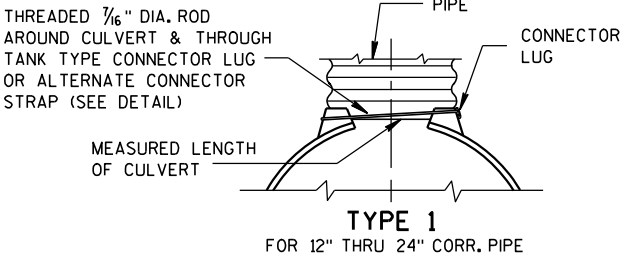


CONCRETE ENDWALLS

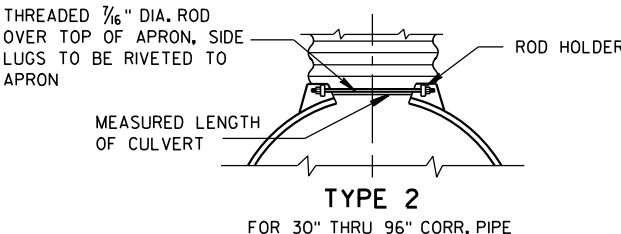
1" WIDE, 12 GA. (0.109" THICK) GALVANIZED STRAP WITH STANDARD 6" X 1/2" BAND BOLT AND NUT



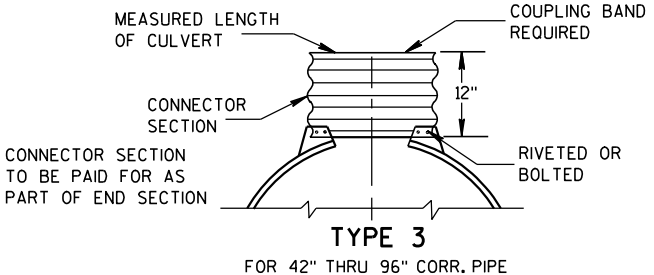
ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



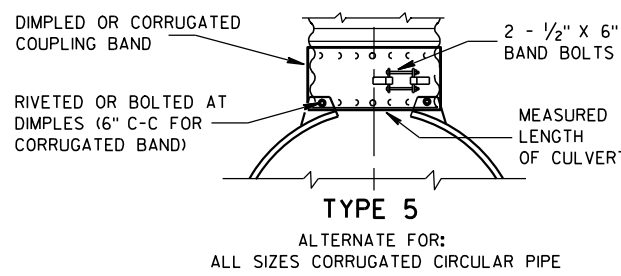
TYPE 1
FOR 12" THRU 24" CORR. PIPE



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

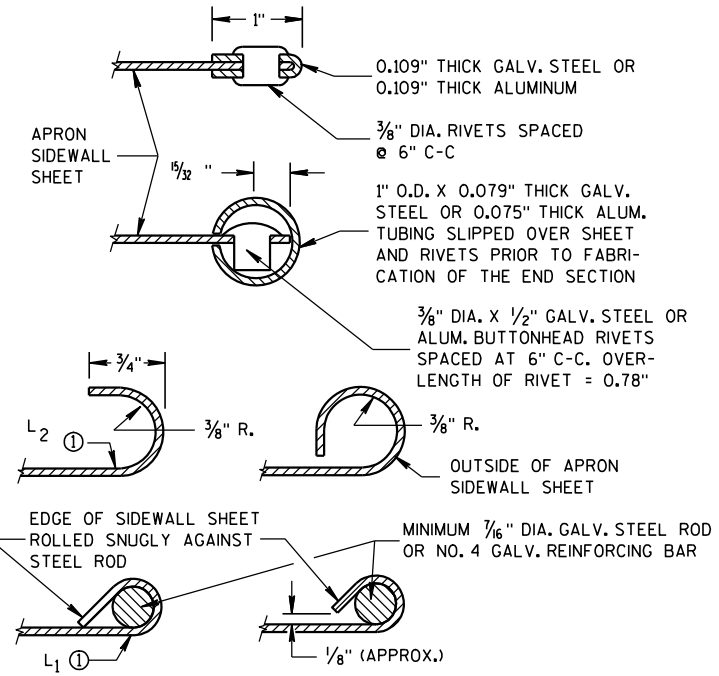
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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.

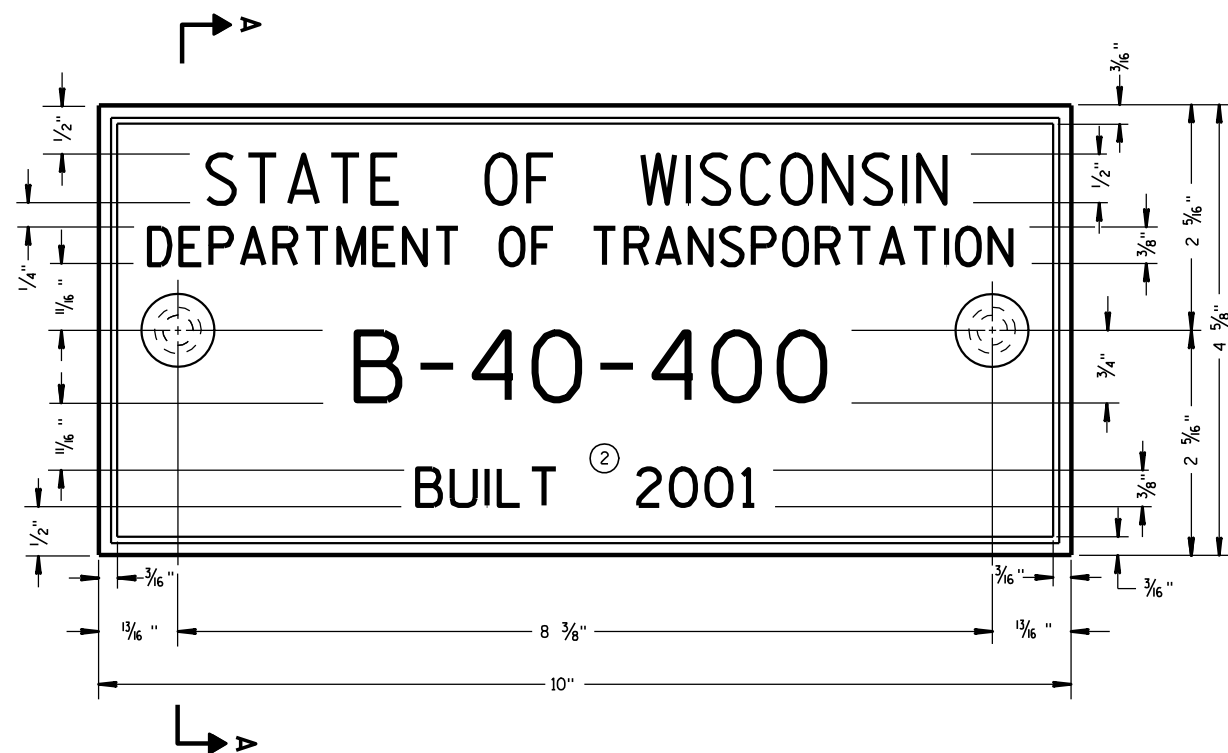
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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

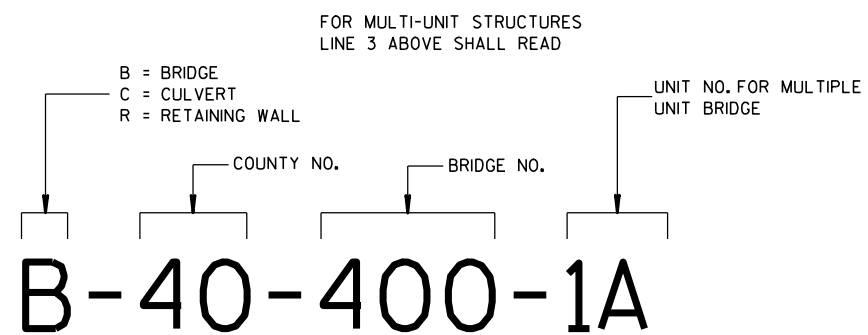
APRON ENDWALLS FOR
CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



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



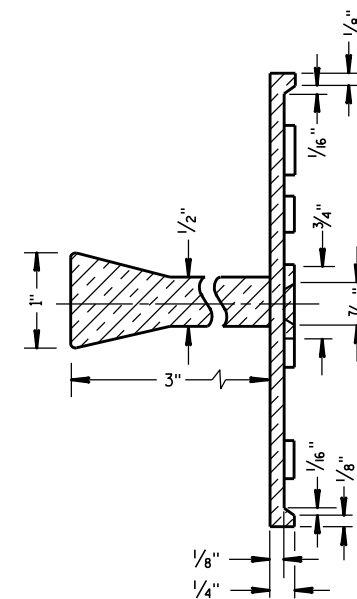
**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

GENERAL NOTES

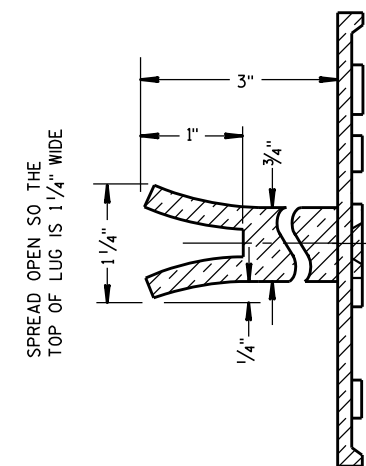
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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.

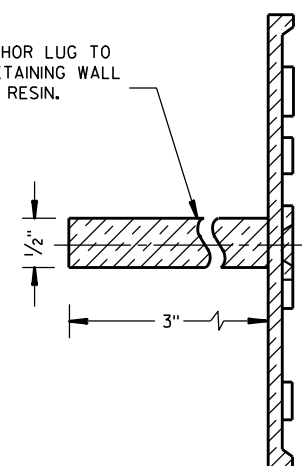


SECTION A-A



ALTERNATE LUG

- ① ADHERE ANCHOR LUG TO PRECAST RETAINING WALL WITH EPOXY RESIN.



ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

**NAME PLATE
(STRUCTURES)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

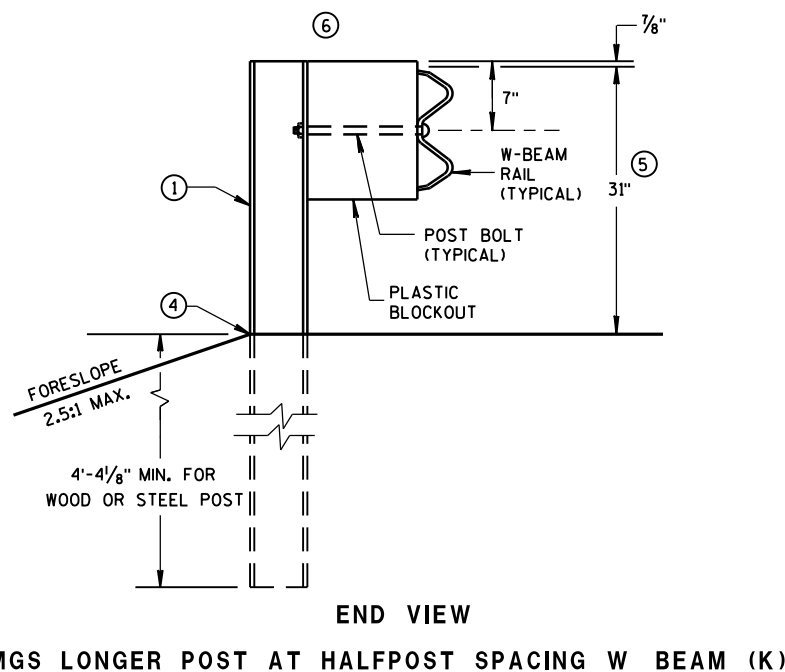
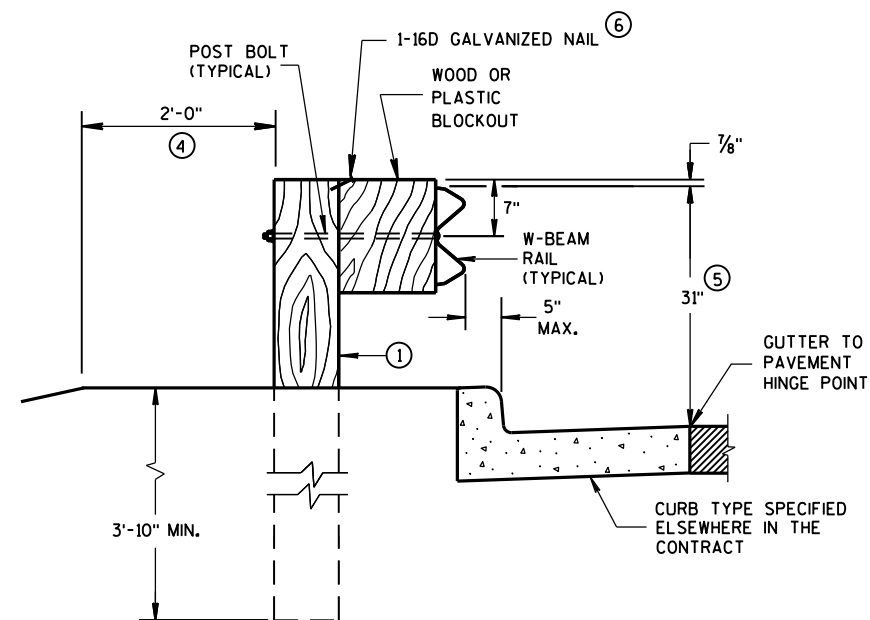
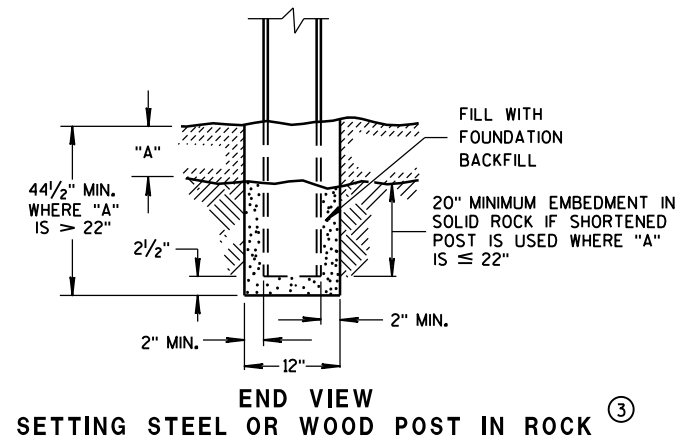
APPROVED

3/26/10
DATE

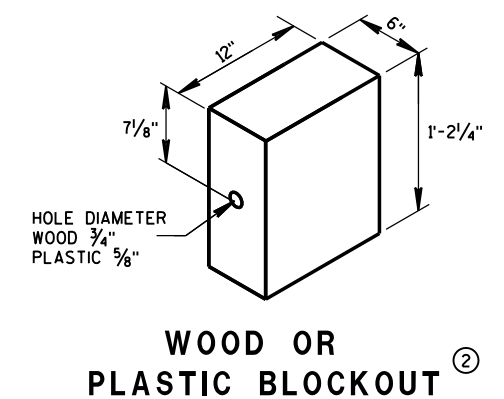
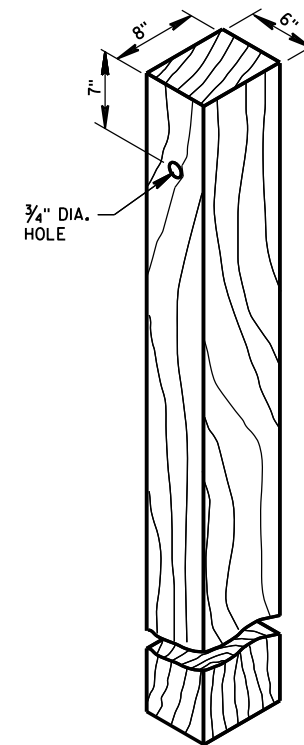
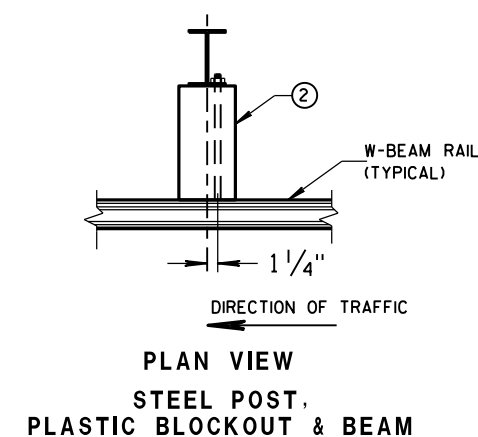
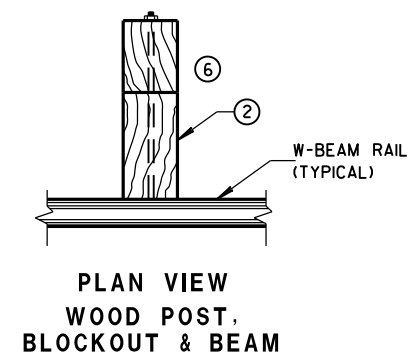
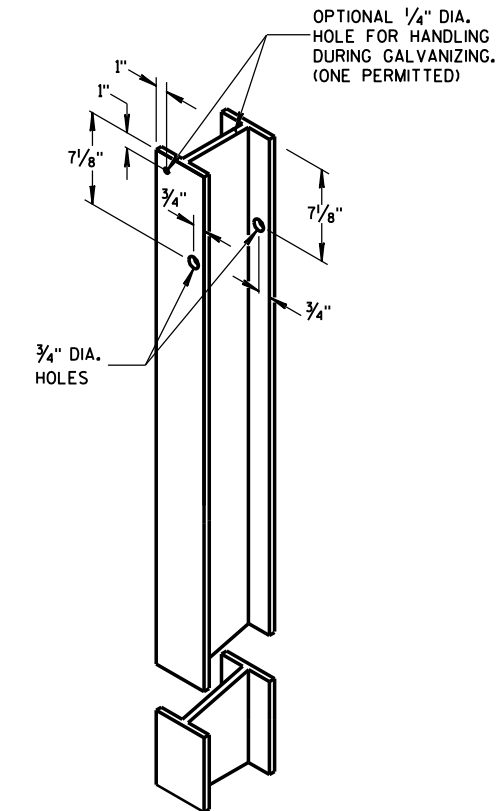
FHWA

/S/ Scot Becker
CHIEF STRUCTURAL DEVELOPMENT ENGINEER

- 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 2 1/2 INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AND 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 $\pm 1"$. FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 3/4" 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.

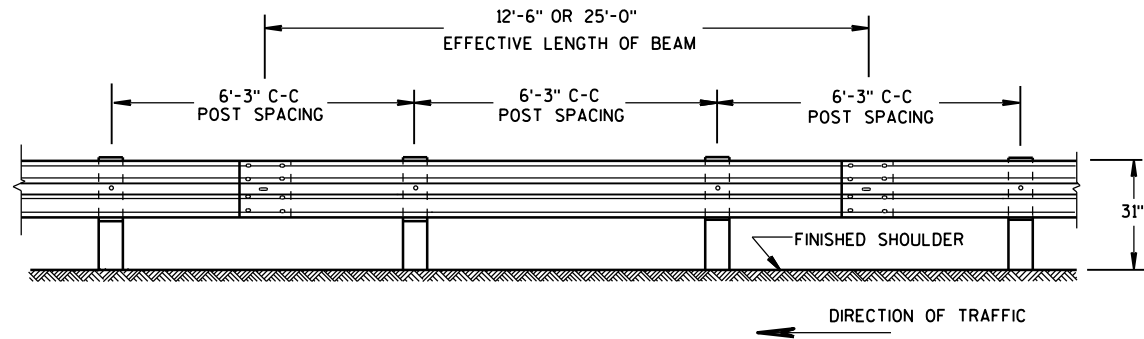


MGS LONGER POST AT HALFPST SPACING W BEAM (K)



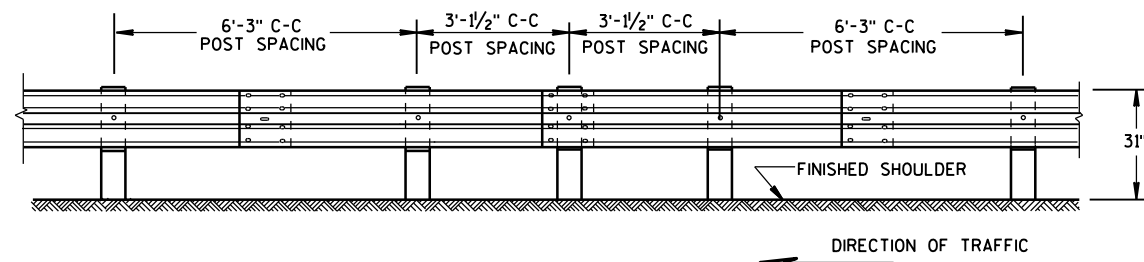
**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

**STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION**



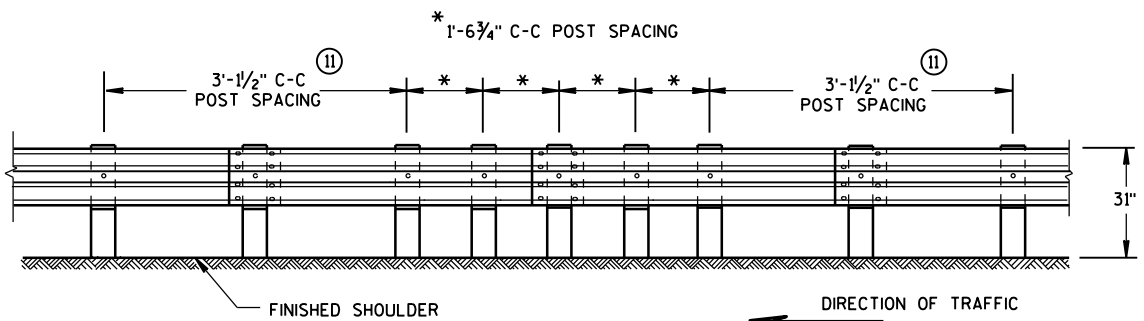
FRONT VIEW

POST SPACING STANDARD INSTALLATION



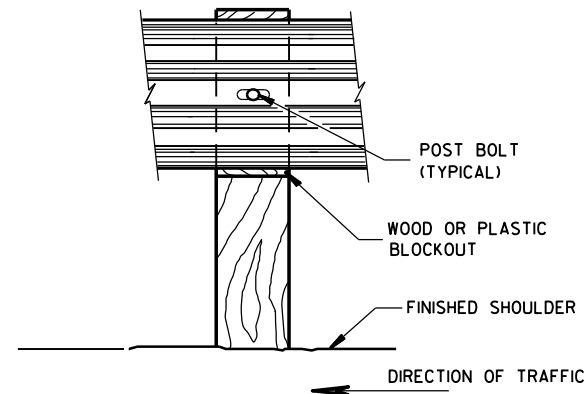
FRONT VIEW

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

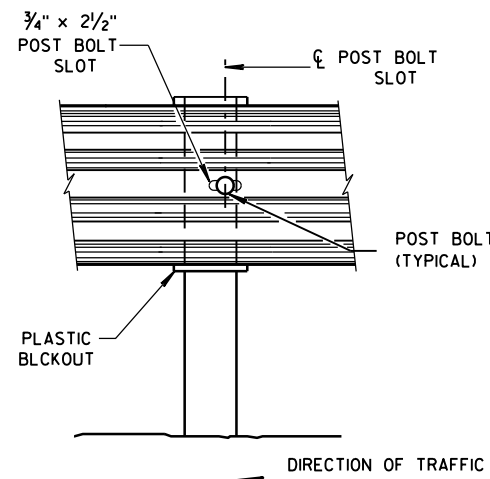


FRONT VIEW

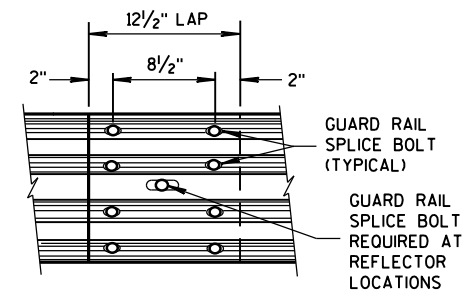
QUARTER POST SPACING (QS)



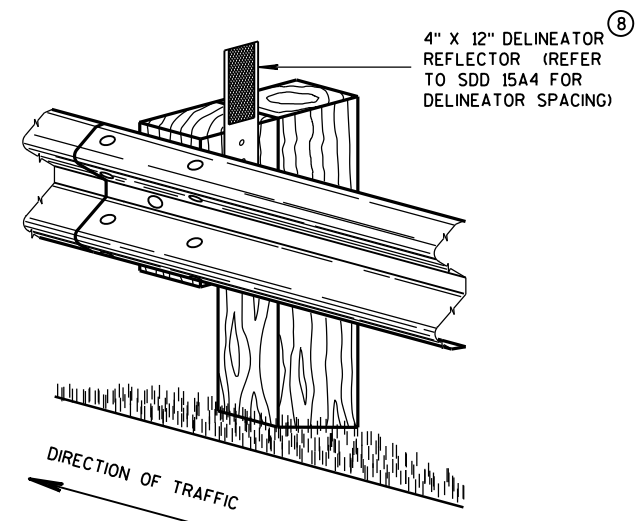
FRONT VIEW AT WOOD POST



FRONT VIEW AT STEEL POST



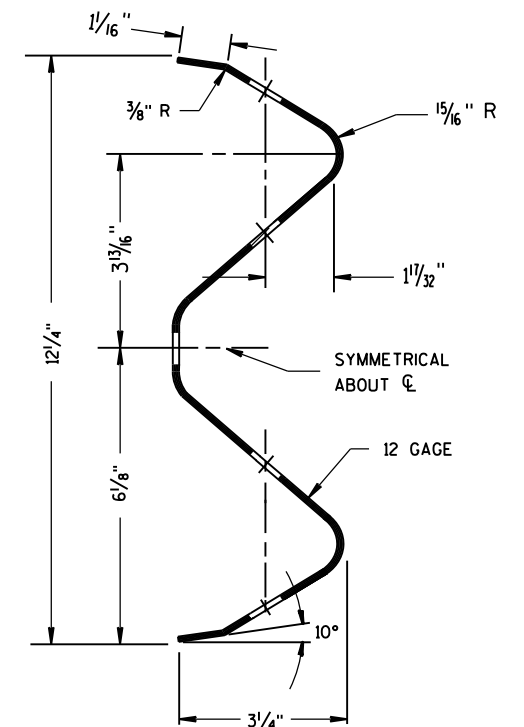
FRONT VIEW
MID-SPAN BEAM SPLICE



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

GENERAL NOTES

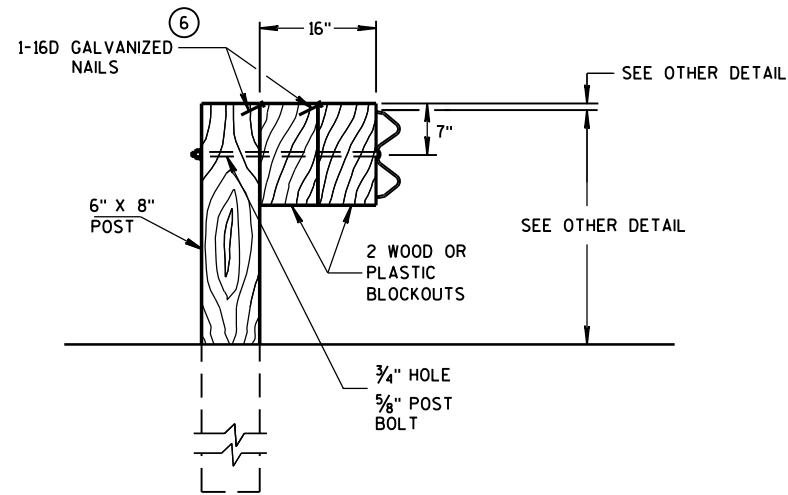
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
 - ⑪ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.
- GUARD RAIL SPLICE BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

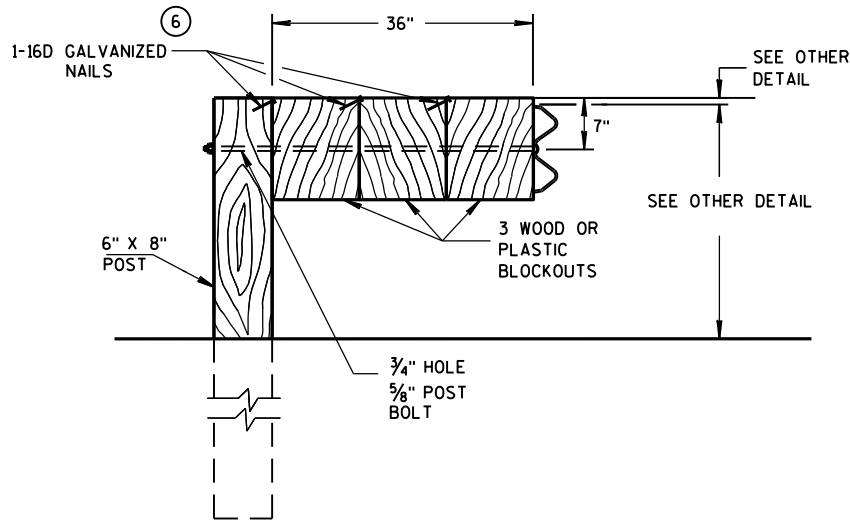
MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

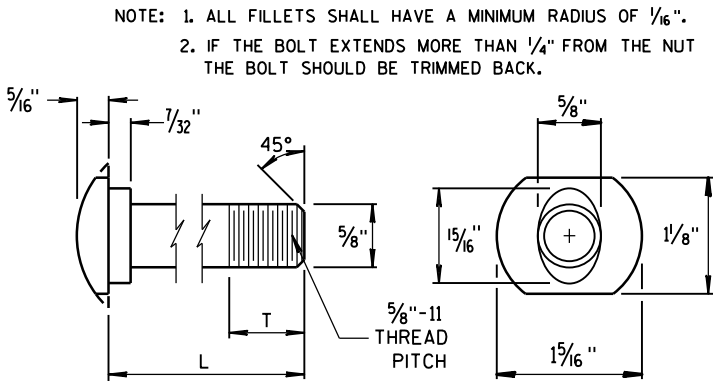
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



DETAIL FOR 36" BLOCKOUT DEPTH

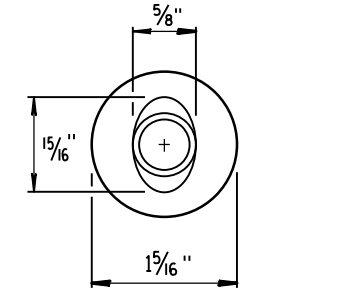
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.

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.

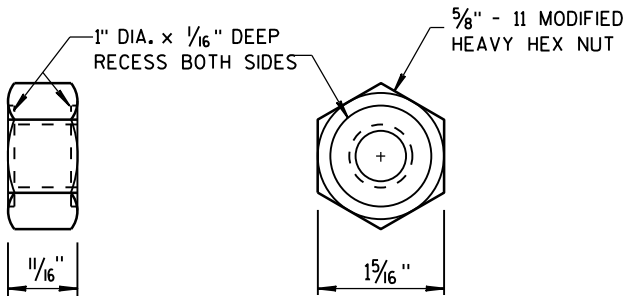


POST BOLT TABLE

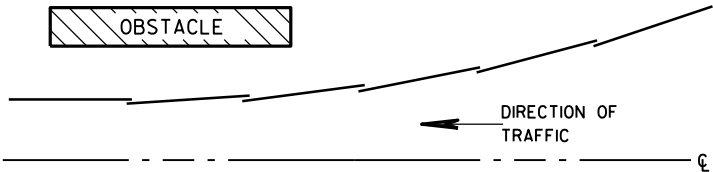
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



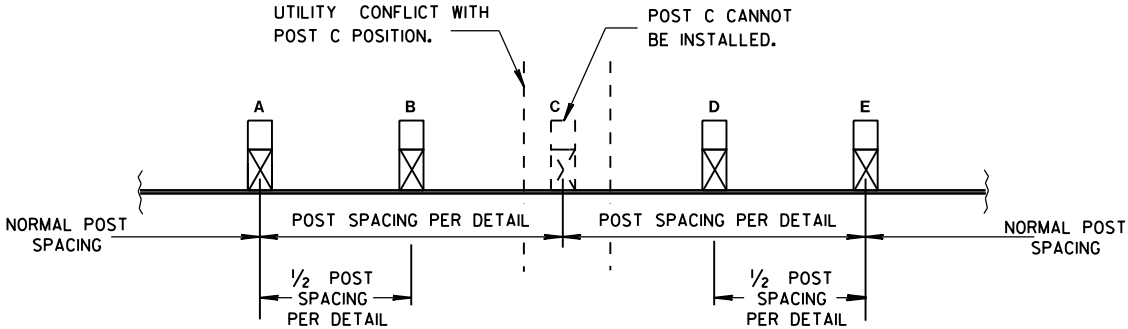
ALTERNATE BOLT HEAD



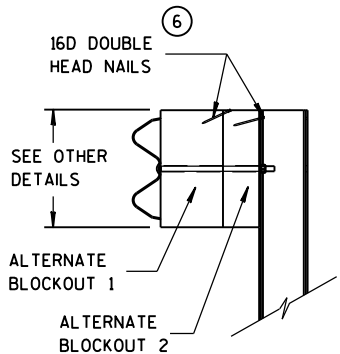
POST BOLT, SPLICE BOLT AND RECESS NUT



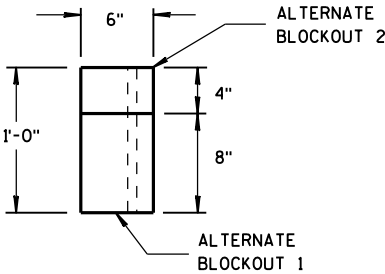
PLAN VIEW BEAM LAPPING DETAIL



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

6

- S.D.D. 14 B 44-3a**

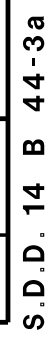
S.D.D. 14 B 44-3a

S.D.D. 14 B 44-3a

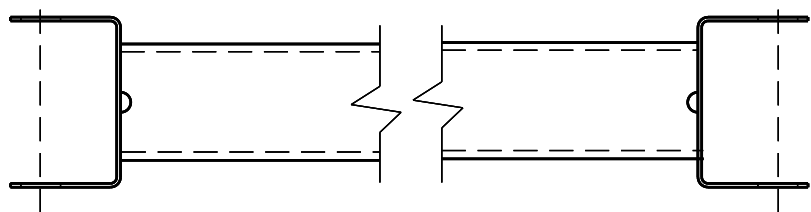
S.D.D. 14 B 44-3a

S.D.D. 14 B 44-3a

S.D.D. 14 B 44-3a

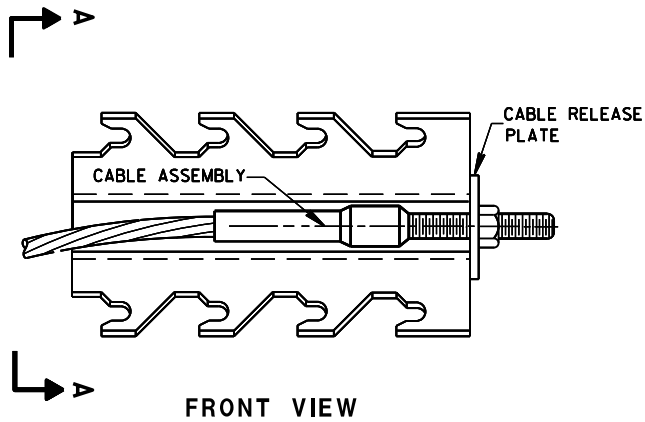


STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



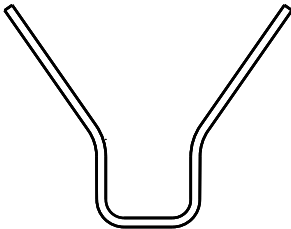
GENERIC GROUND STRUT

9 H

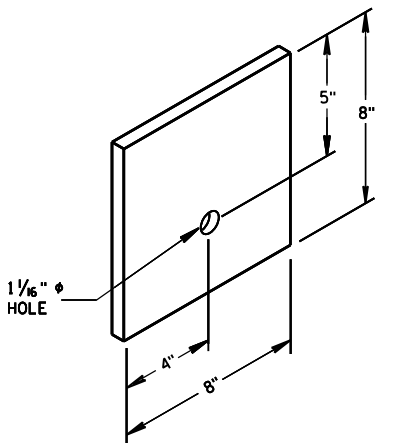


GENERIC ANCHOR CABLE BOX

8 H



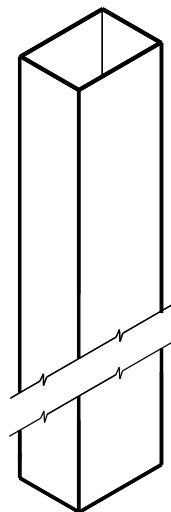
SECTION A-A



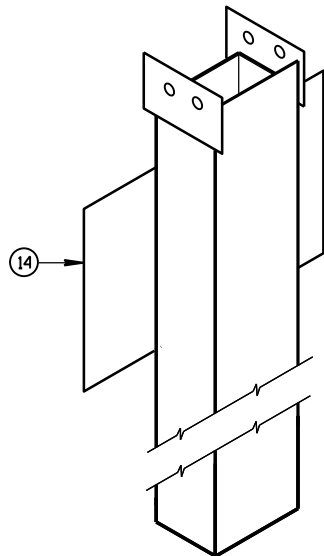
BEARING PLATE

6

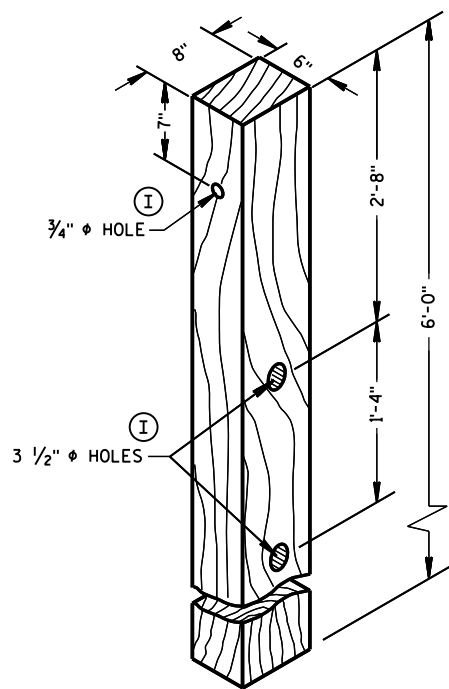
PART NO.	DESCRIPTION
MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.	
①	UPPER POST NO.1 6" X 6" TUBE
②	LOWER POST NO.1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED W-BEAM RAIL END PANEL, 12'-6" LONG.
⑪	STANDARD W-BEAM RAIL. MULTIPLE SECTIONS REQUIRED. SECTIONS VARY IN LENGTH.
⑫	IMPACT HEAD
⑬	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)
⑭	SOIL PLATE
⑮	UPPER POST NO. 2
⑯	LOWER POST NO. 2



UPPER POST NO. 1⁽¹⁾

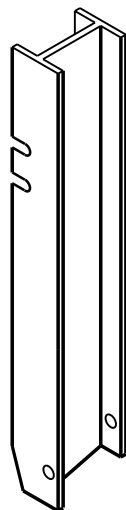


LOWER POST NO. 1⁽²⁾

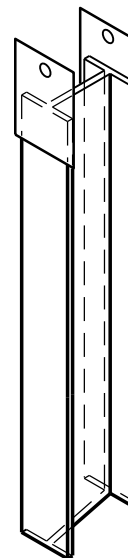


POSTS NUMBER 3-9

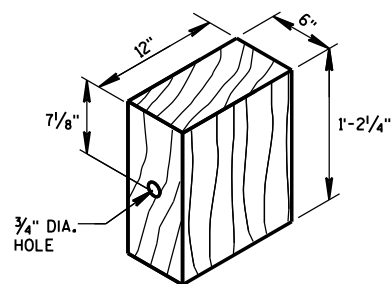
WOOD CRT POST⁽³⁾



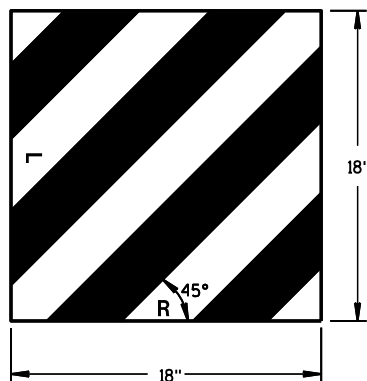
UPPER POST NO. 2⁽¹⁵⁾



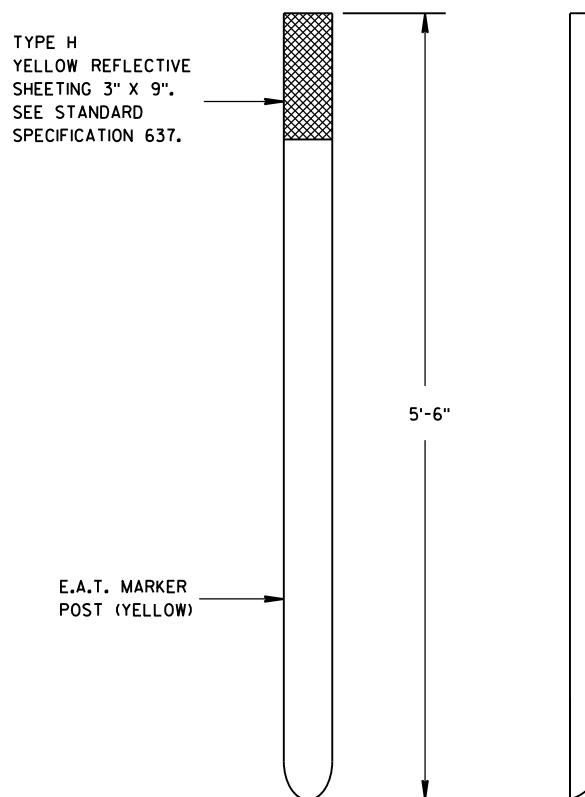
LOWER POST NO. 2⁽¹⁶⁾



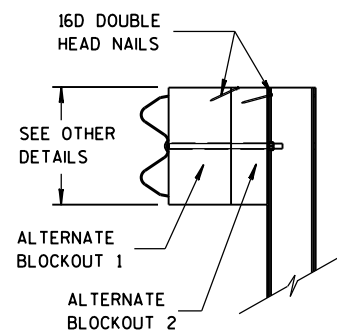
WOOD BLOCKOUT⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



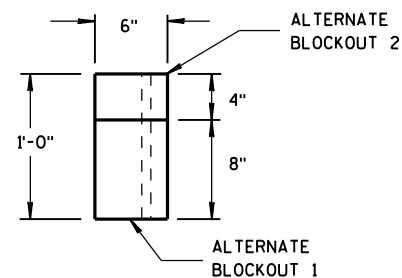
REFLECTIVE SHEETING DETAIL^(H)



FRONT VIEW
SIDE VIEW
E.A.T. MARKER POST⁽¹³⁾



SIDE VIEW



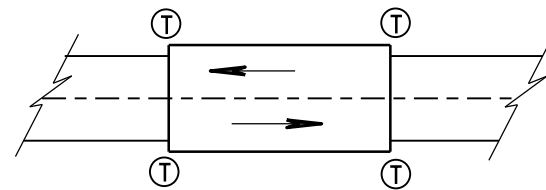
TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

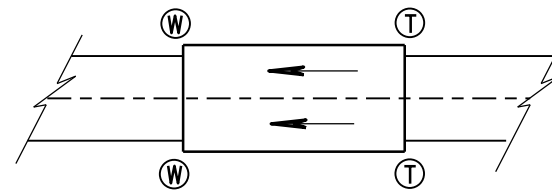
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
FHWA UNIT SUPERVISOR



TWO WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION



ONE WAY TRAFFIC

Ⓦ W-BEAM CONNECTION WHEN REQUIRED

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.

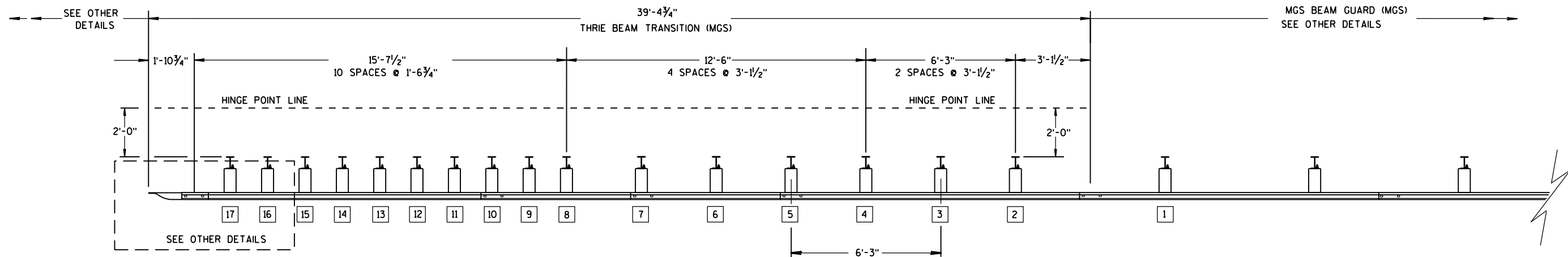
TRANSITION USES STEEL POSTS ONLY.

SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

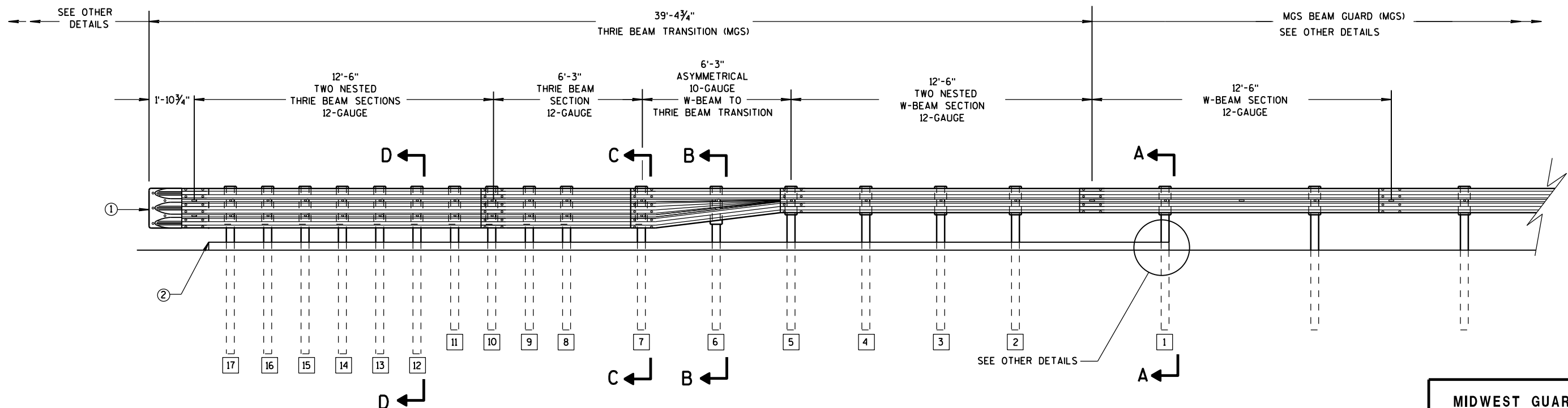
① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

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

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



PLAN VIEW



ELEVATION VIEW

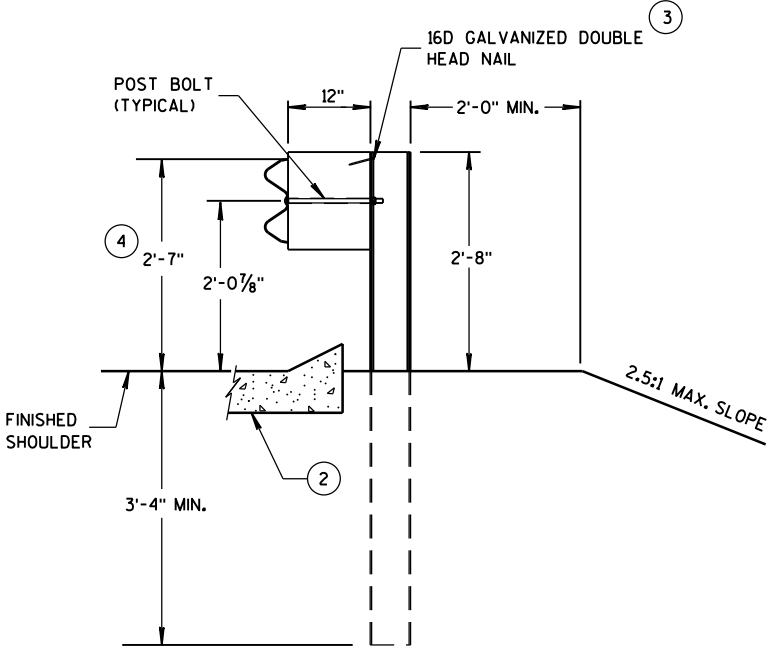
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

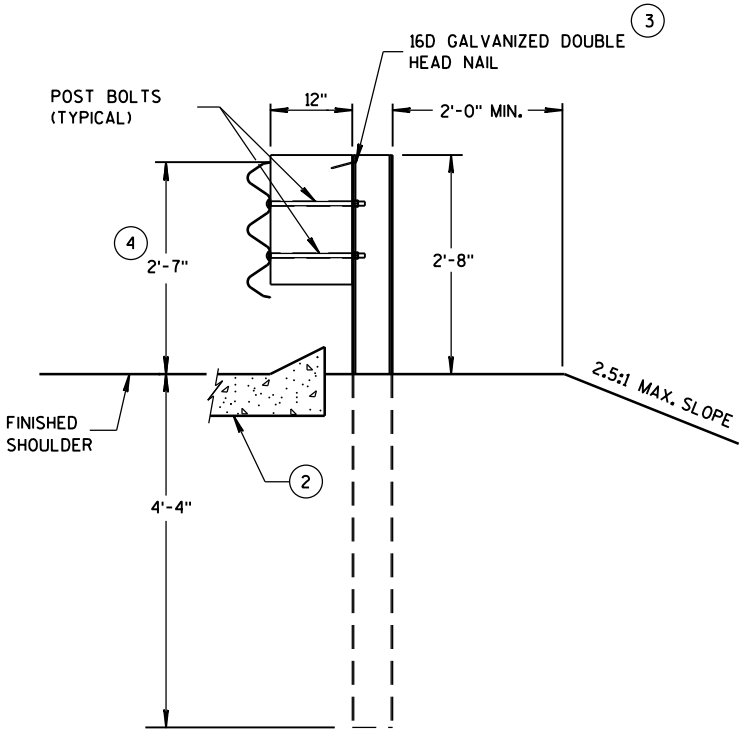
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

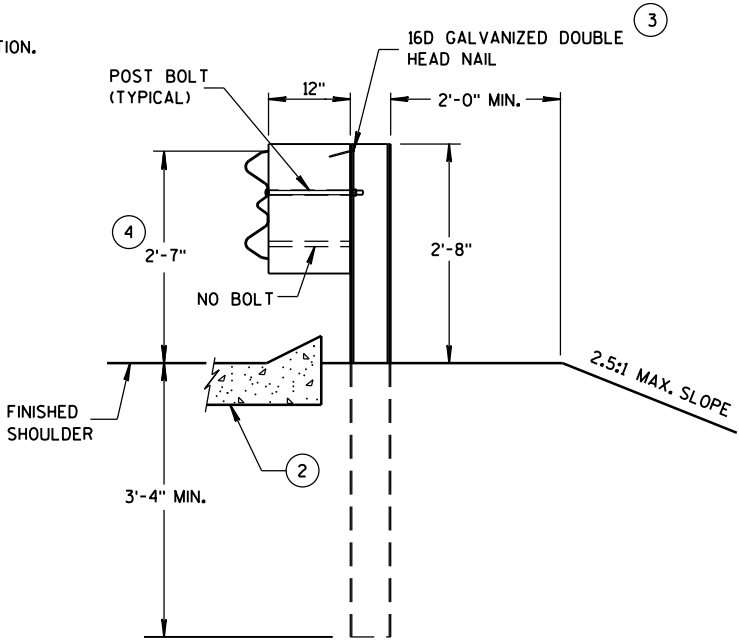
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



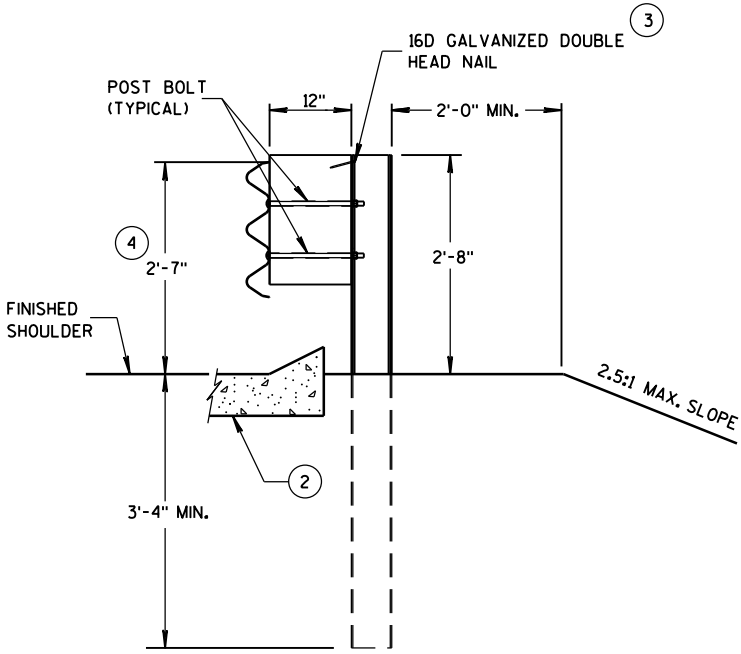
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

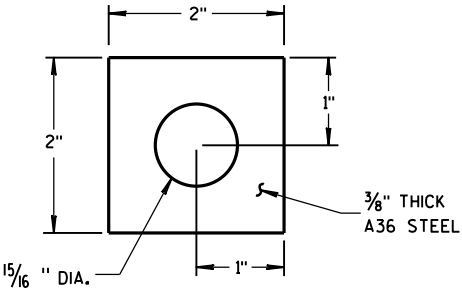
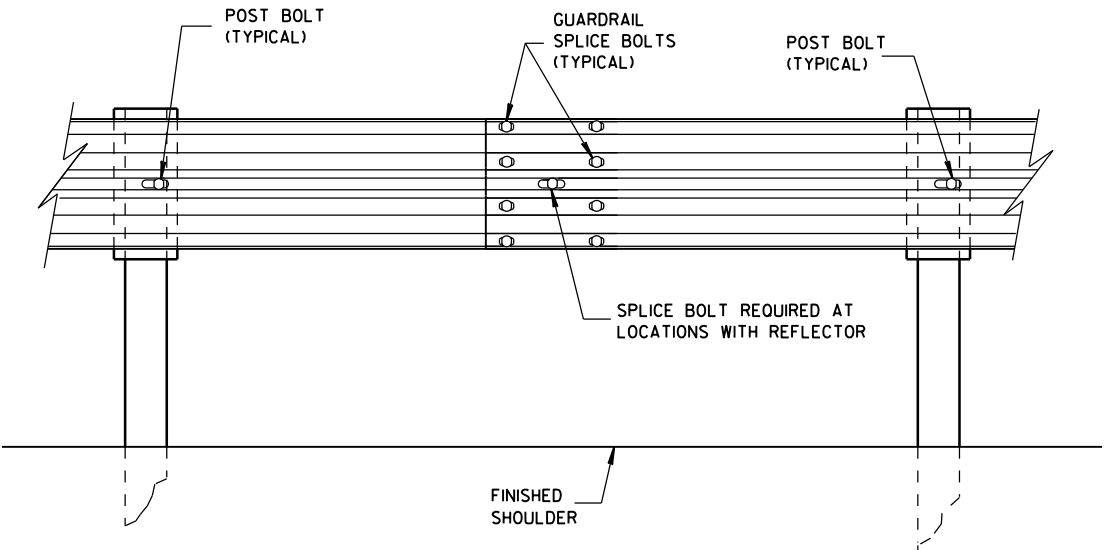
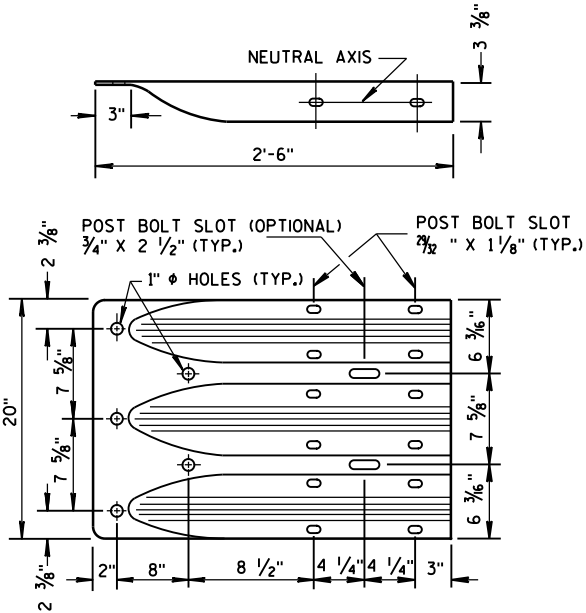


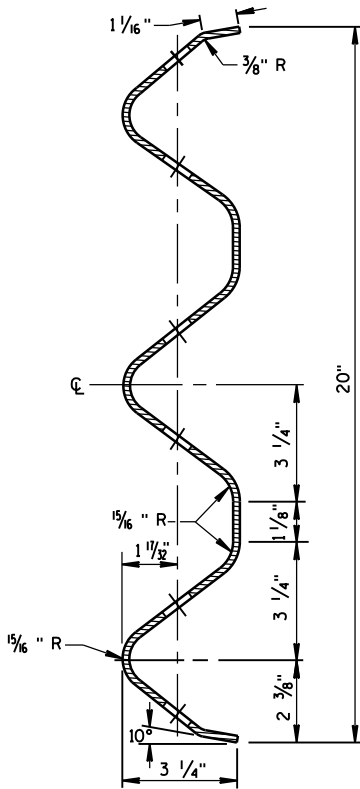
PLATE WASHER DETAIL



SPlice DETAIL



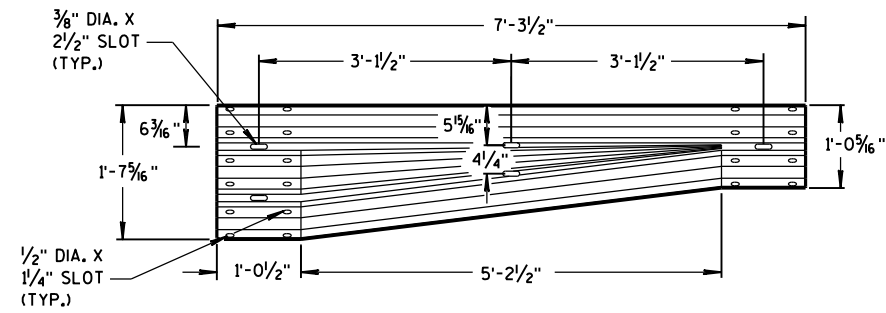
THRIE BEAM
TERMINAL CONNECTOR



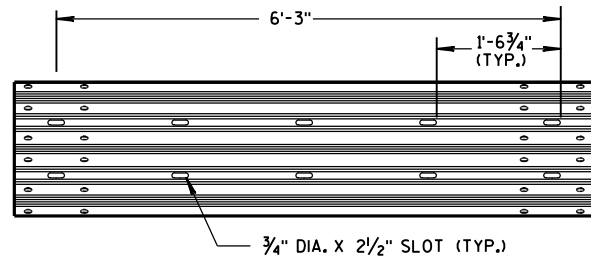
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

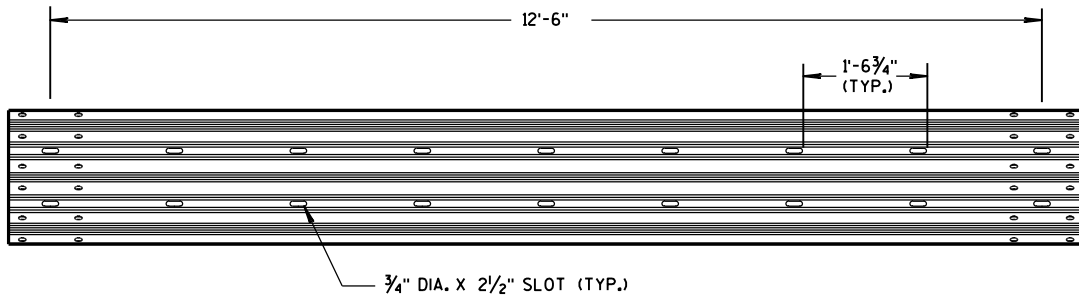
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



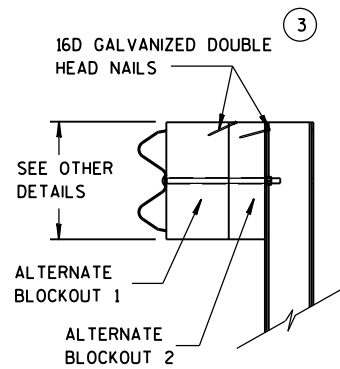
W-BEAM TO THRIE BEAM TRANSITION SECTION



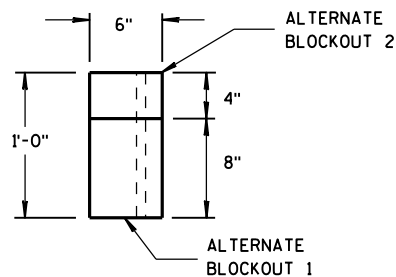
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

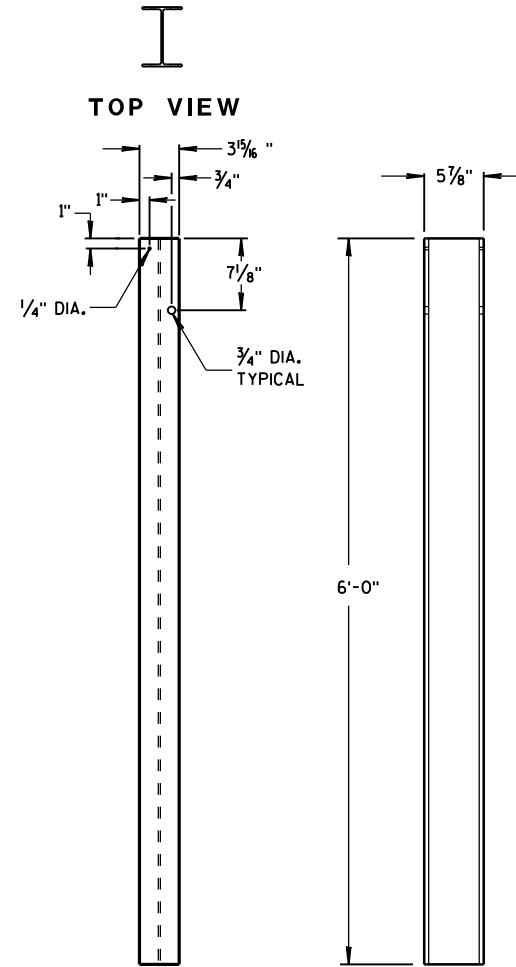


SIDE VIEW



TOP VIEW

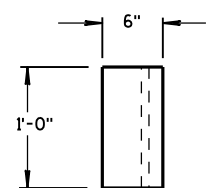
ALTERNATE WOOD BLOCKOUT DETAIL



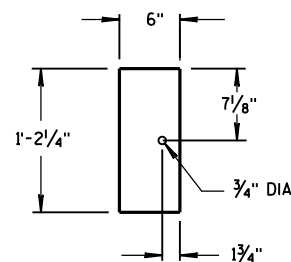
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

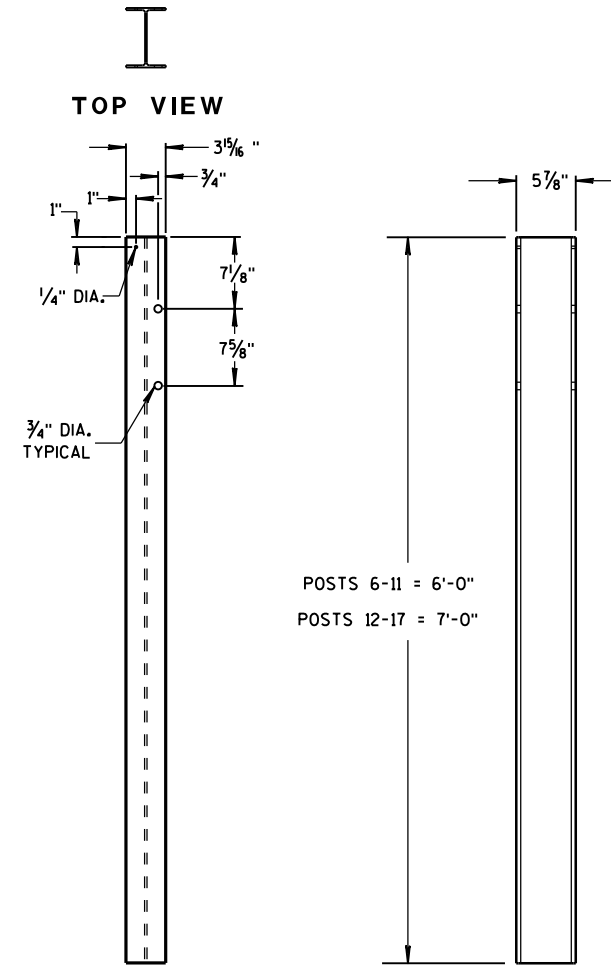


TOP VIEW



FRONT VIEW

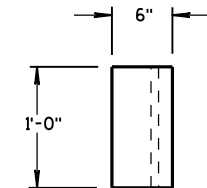
BLOCKOUT
POSTS 1-5



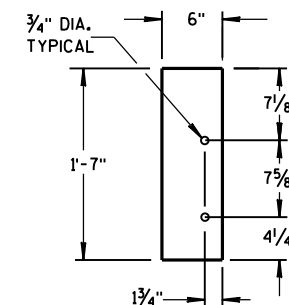
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



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.

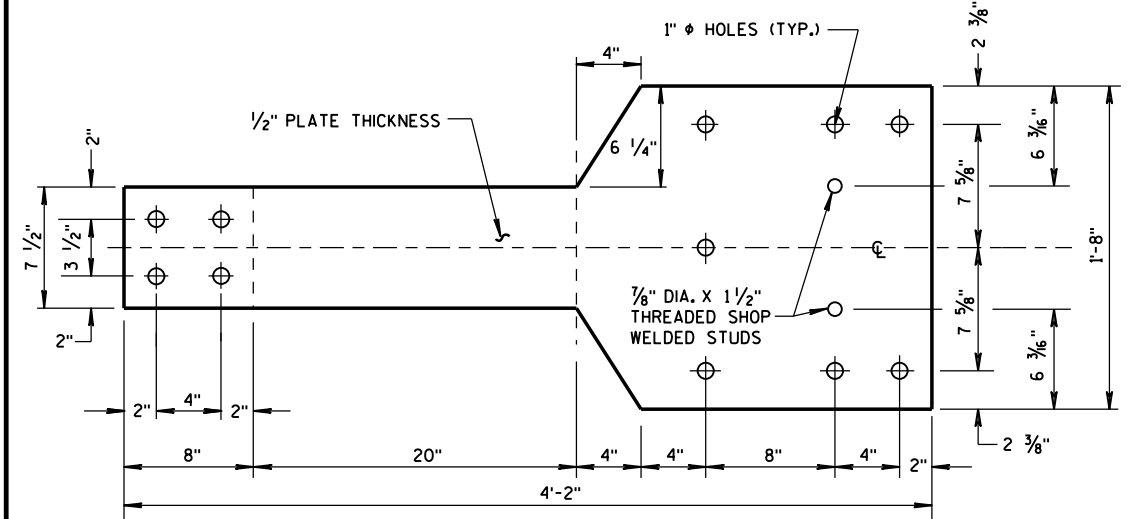
⑤ WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

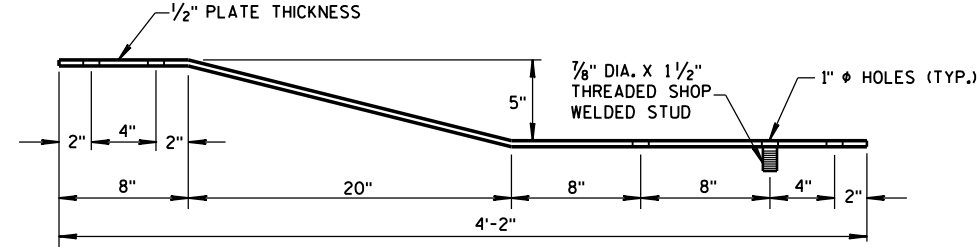
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

④ TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.

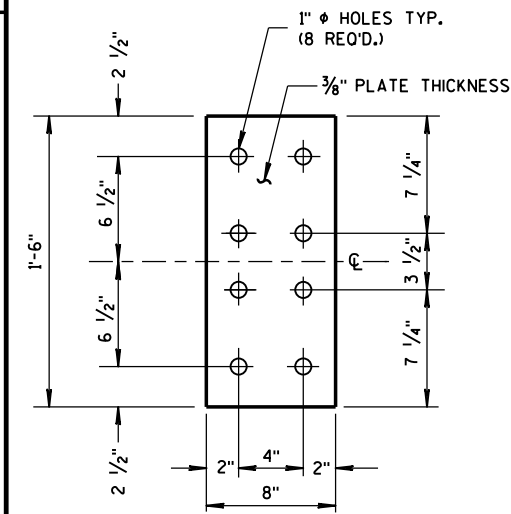


FRONT VIEW



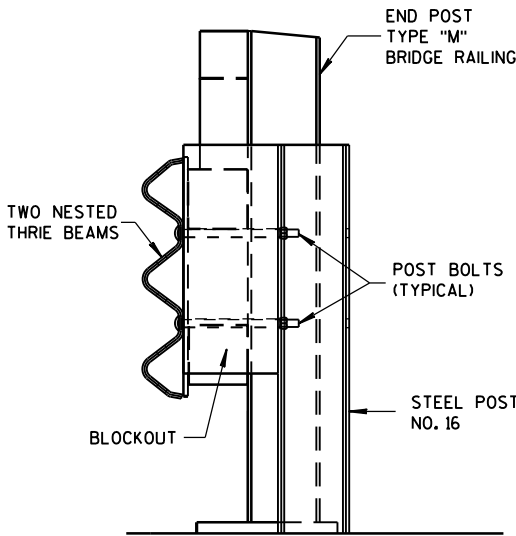
PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

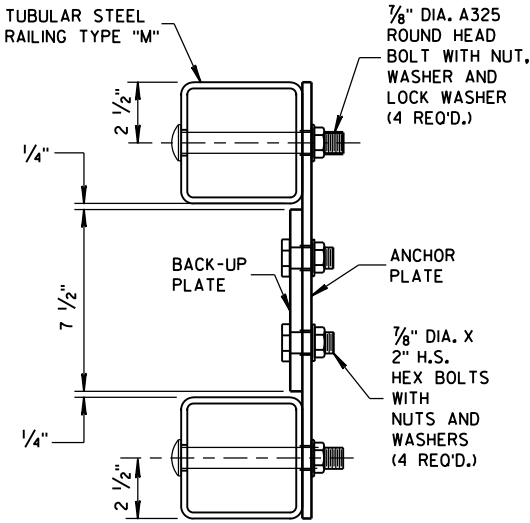


FRONT VIEW

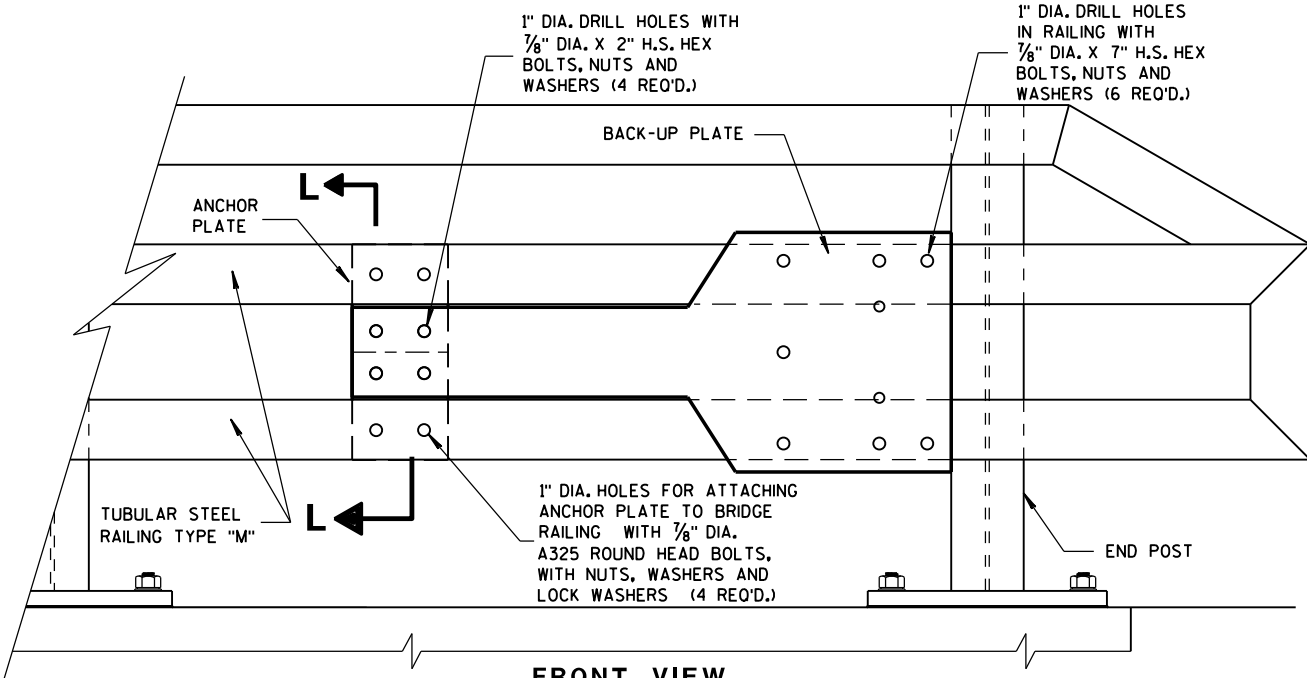
ANCHOR PLATE DETAIL, TYPE "M"



SECTION M-M

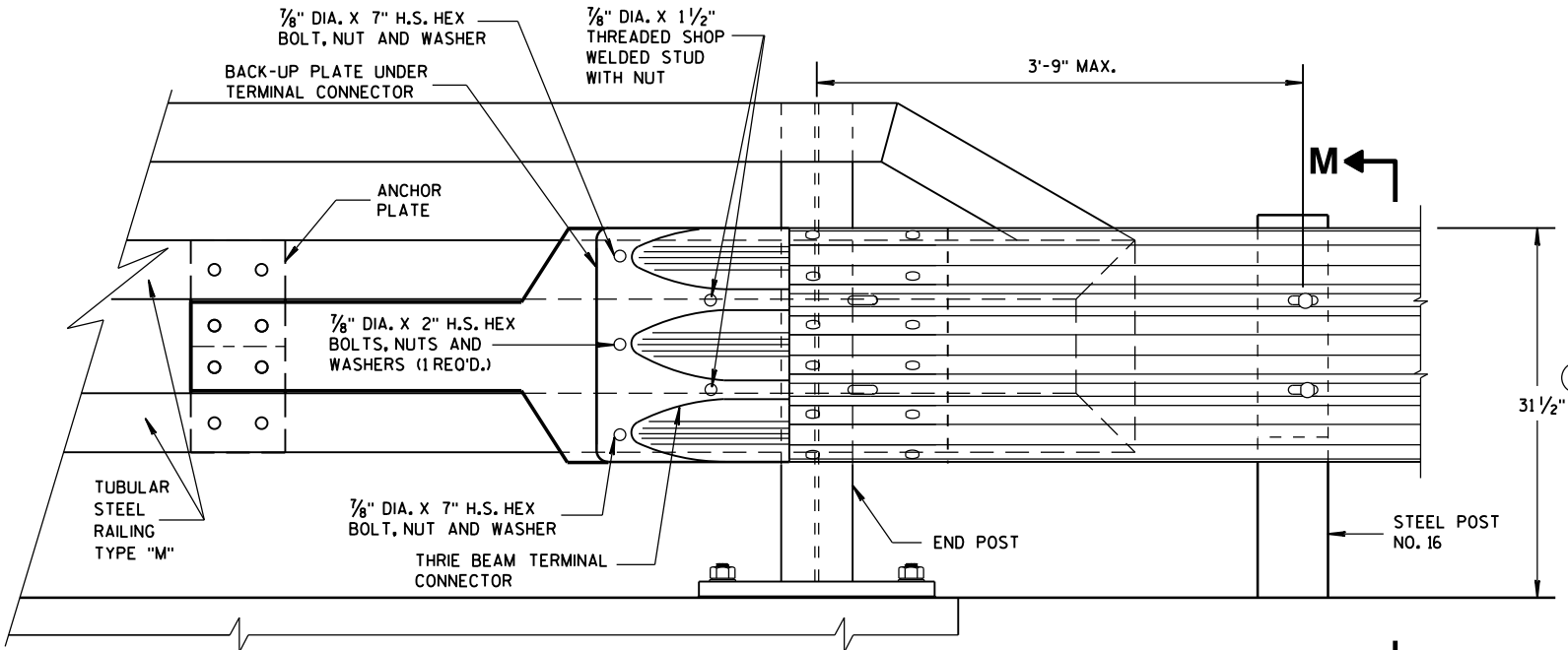


SECTION L-L

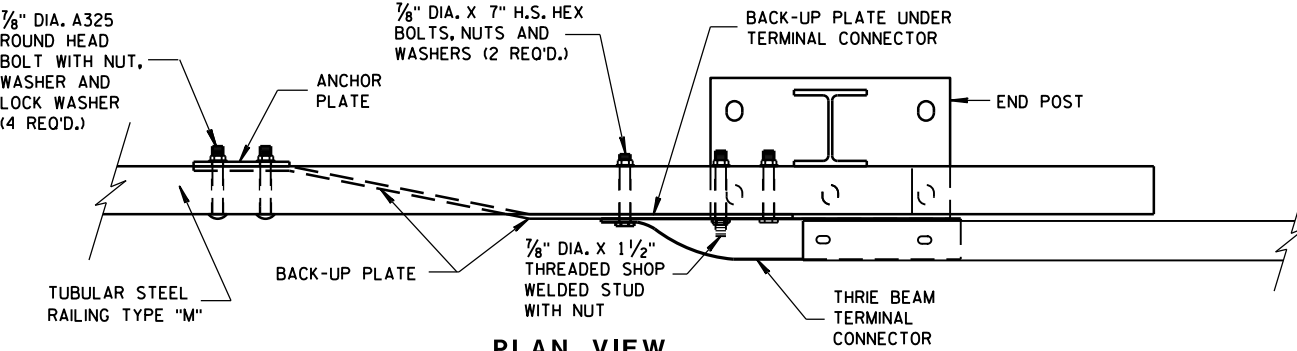


FRONT VIEW

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



FRONT VIEW



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June, 2015

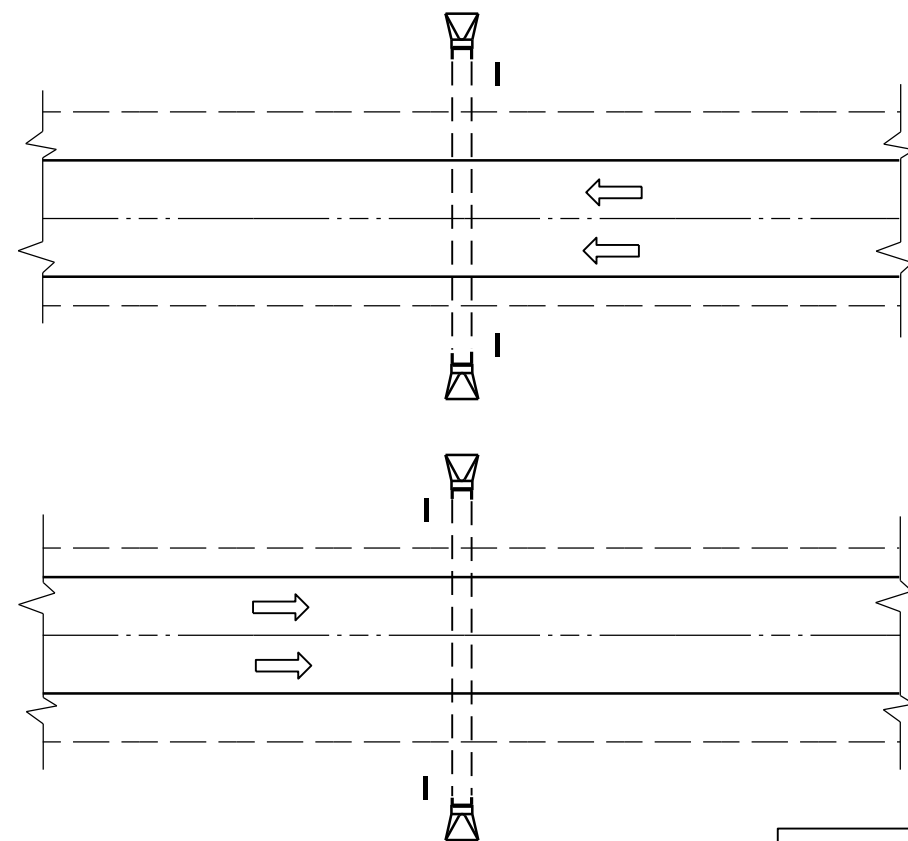
DATE

FHWA

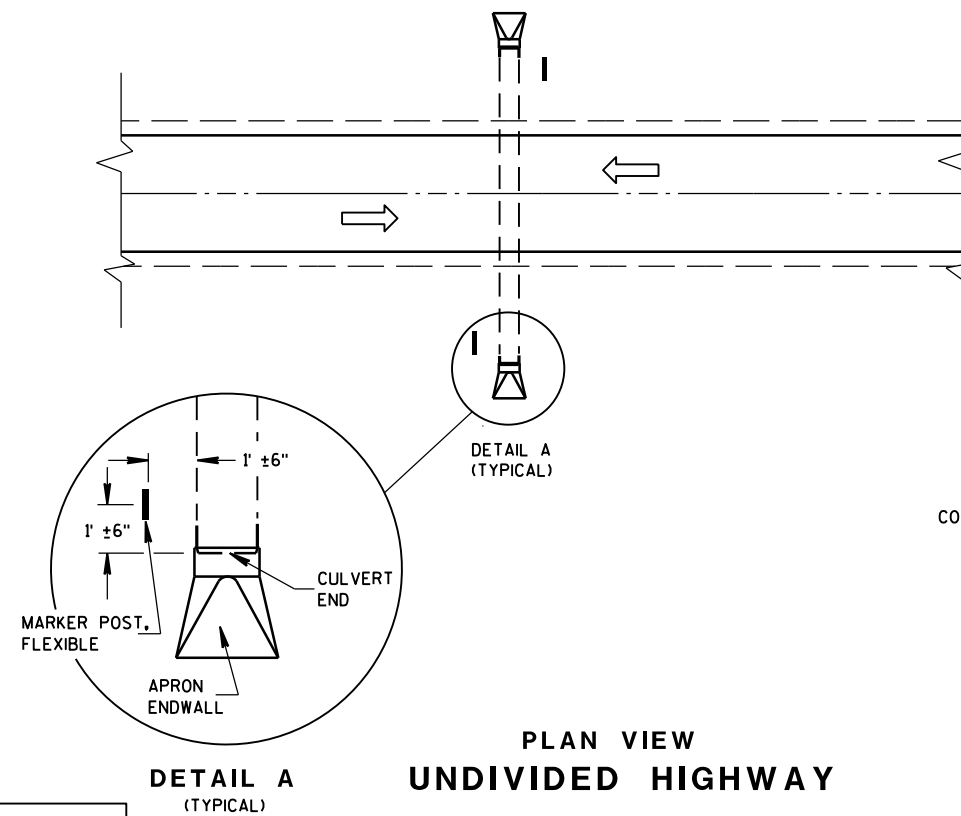
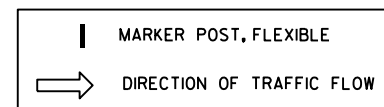
/s/ Jerry H. Zogg

ROADWAY STANDARDS DEVELOPMENT

ENGINEER



PLAN VIEW
DIVIDED HIGHWAY

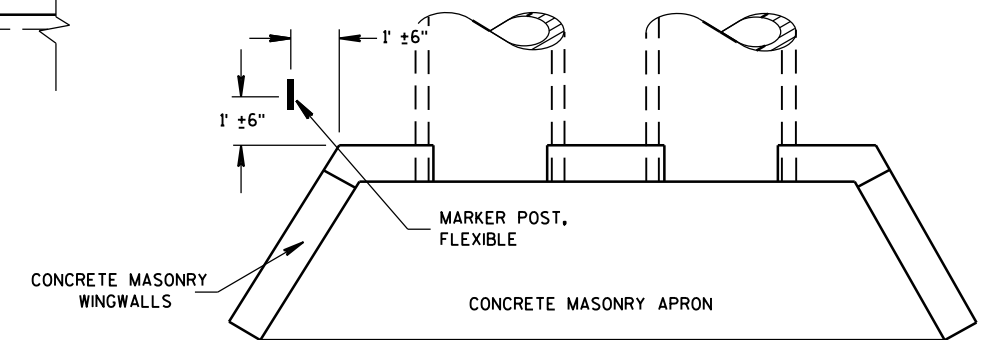


PLAN VIEW
UNDIVIDED HIGHWAY

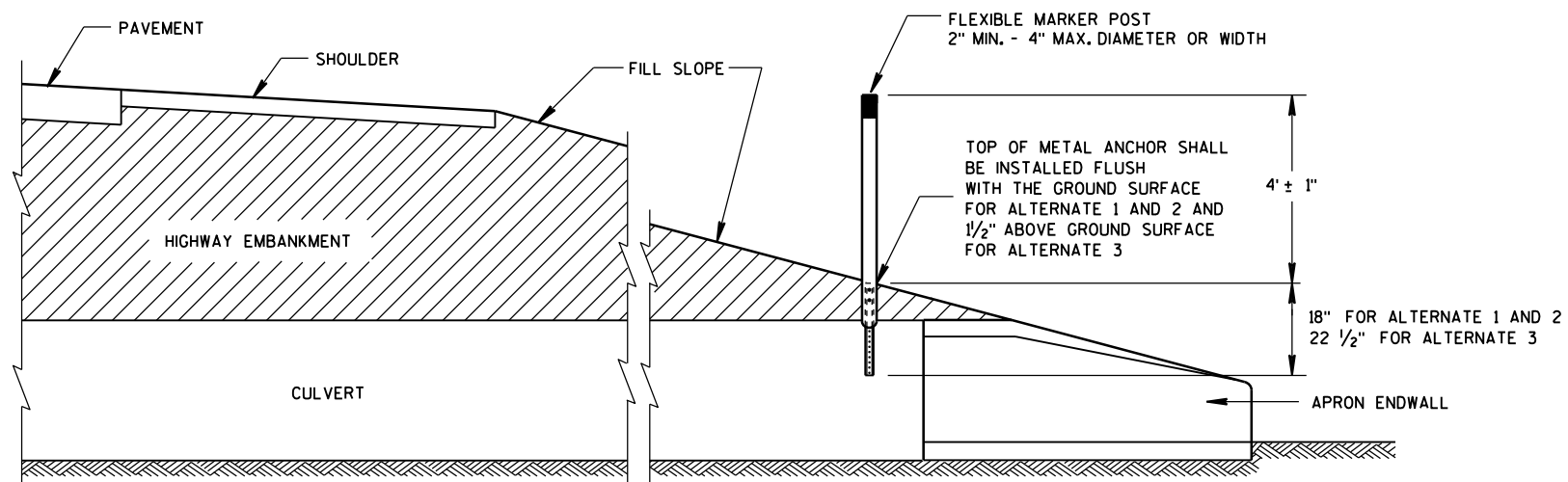
FLEXIBLE MARKER POST LOCATION

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.



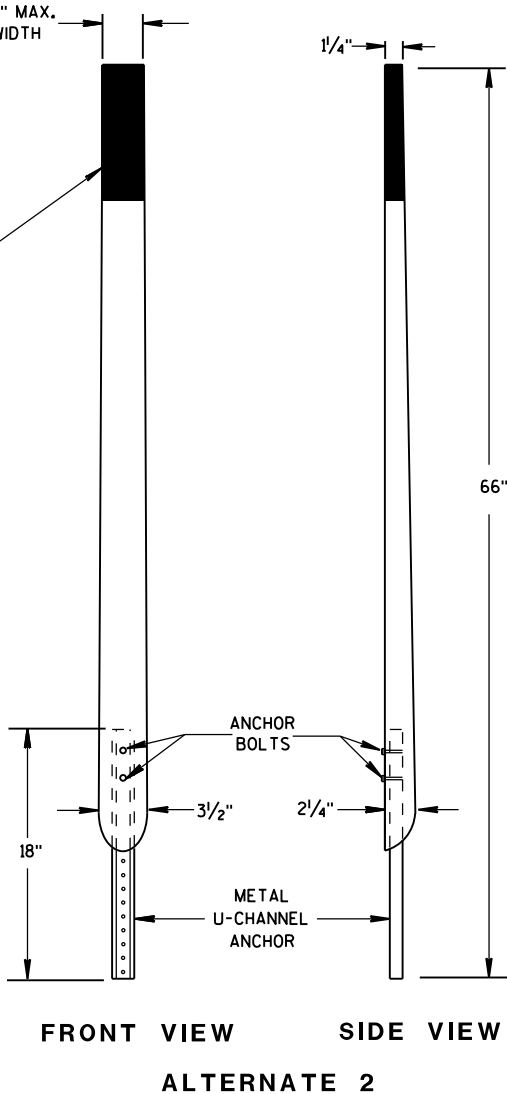
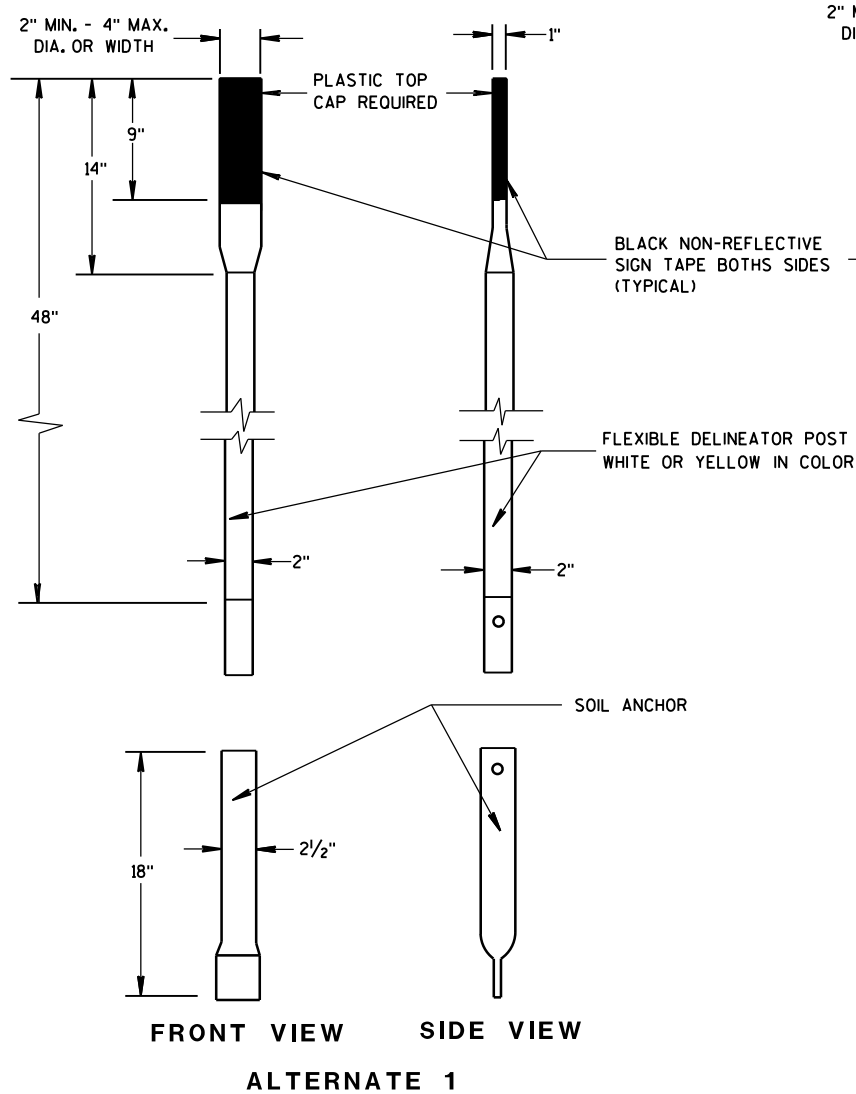
PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH



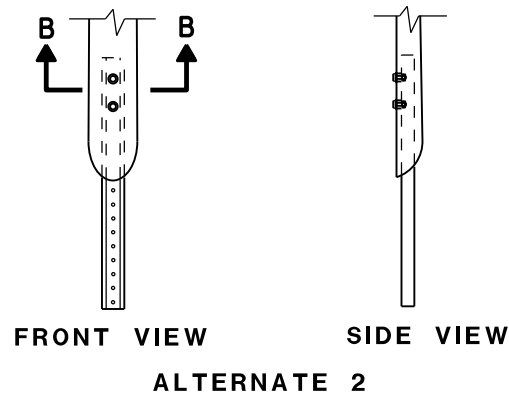
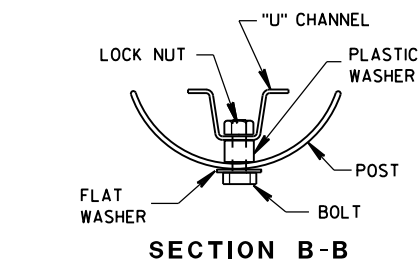
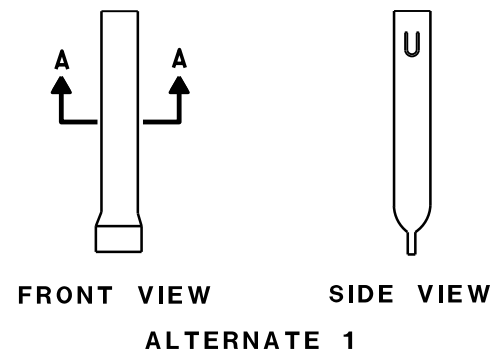
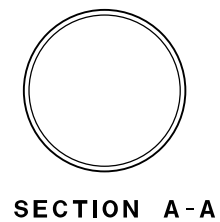
CROSS SECTION
FLEXIBLE MARKER POST

FLEXIBLE MARKER POST
FOR CULVERT END

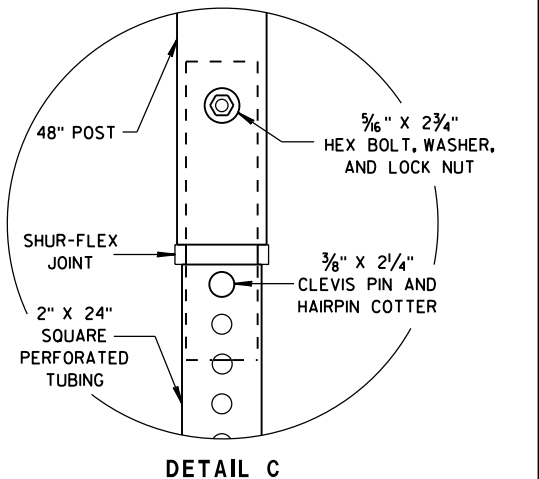
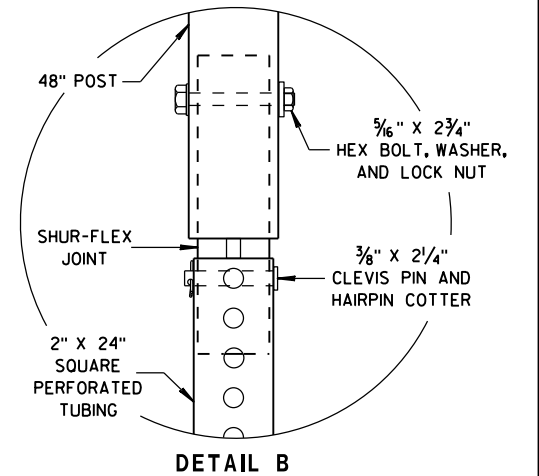
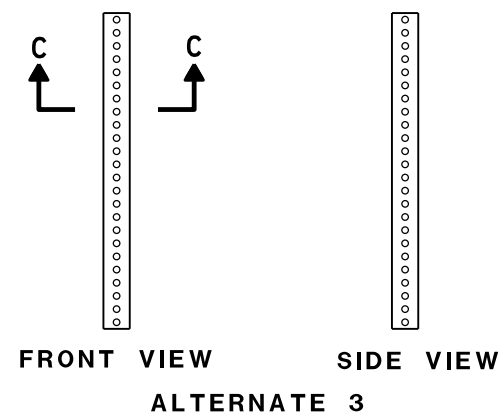
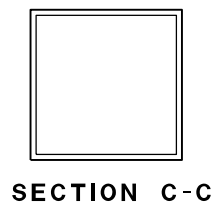
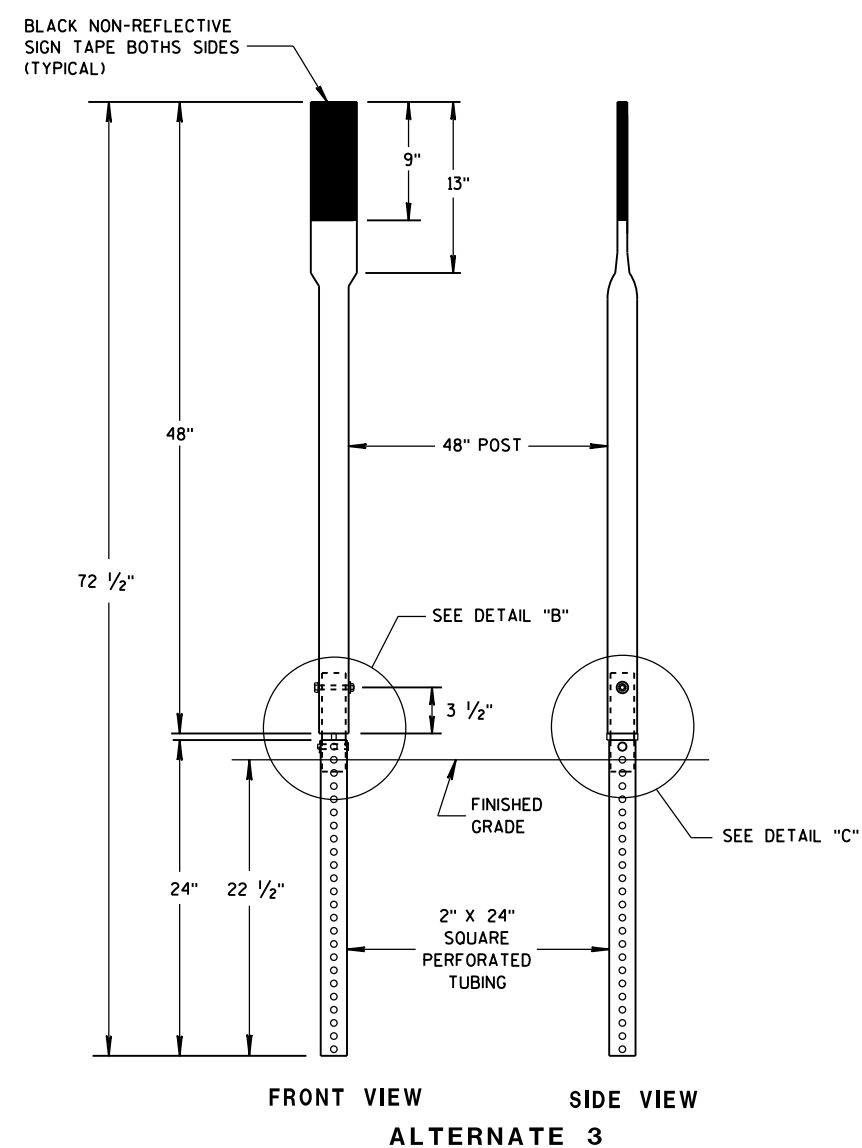
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



FLEXIBLE MARKER POSTS



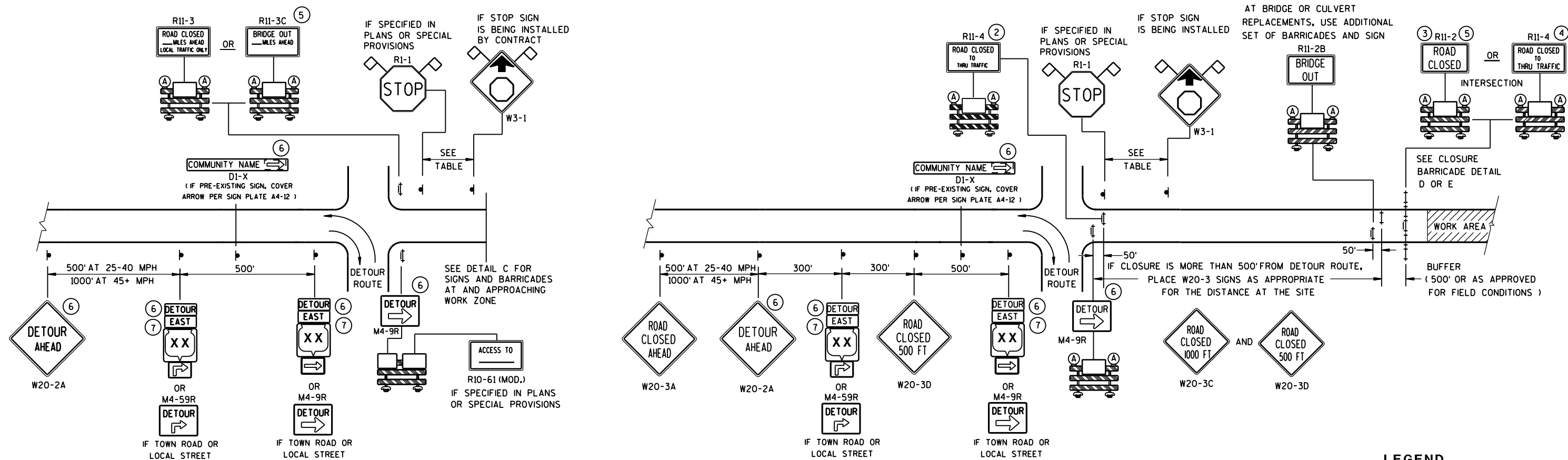
FLEXIBLE MARKER POST ANCHORS



FLEXIBLE MARKER POST FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

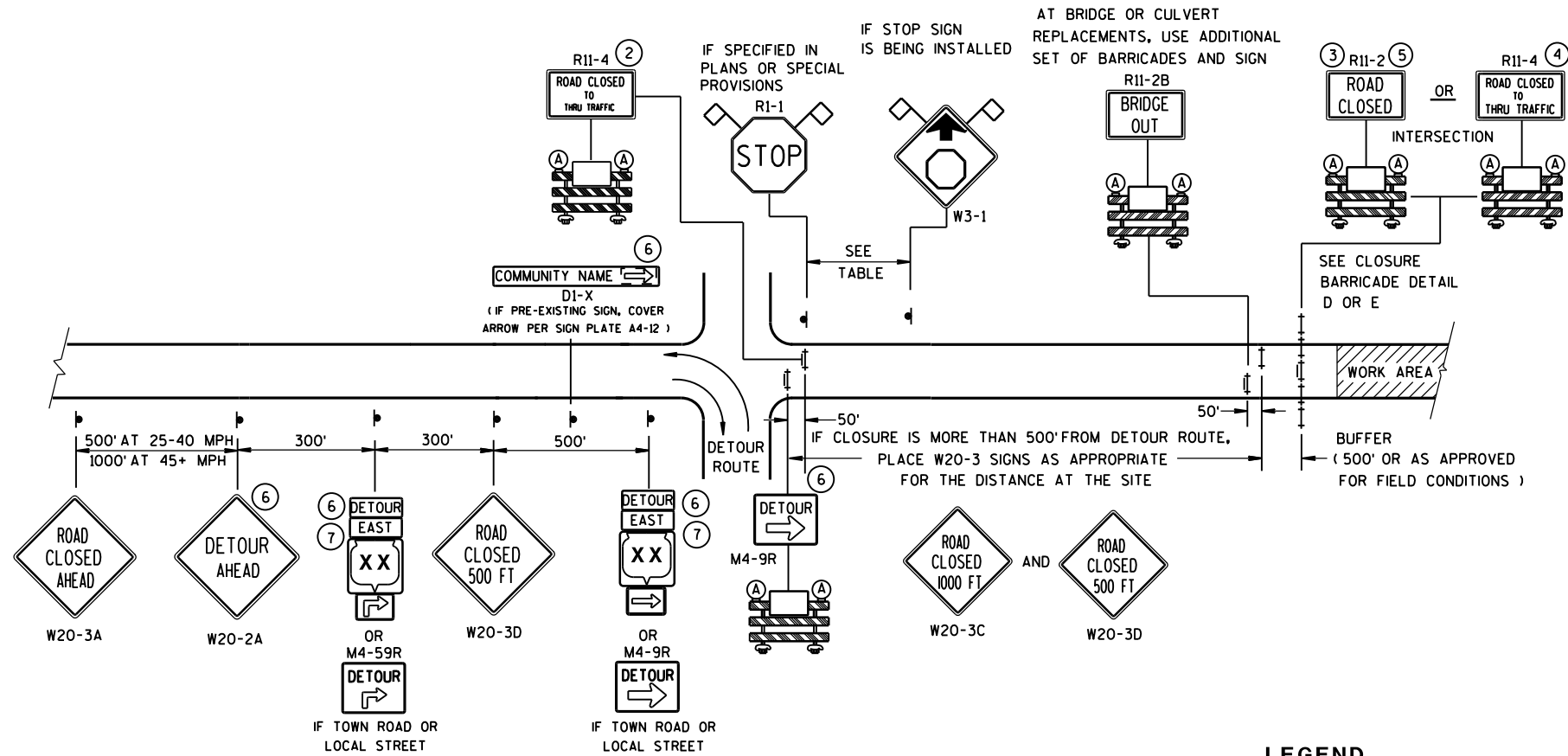
APPROVED
10/1/2012 /S/ Travis Feltes
DATE STATE TRAFFIC ENGINEER OF DESIGN
FHWA



DETAIL A

MAINLINE CLOSURE WITH POSTED DETOUR

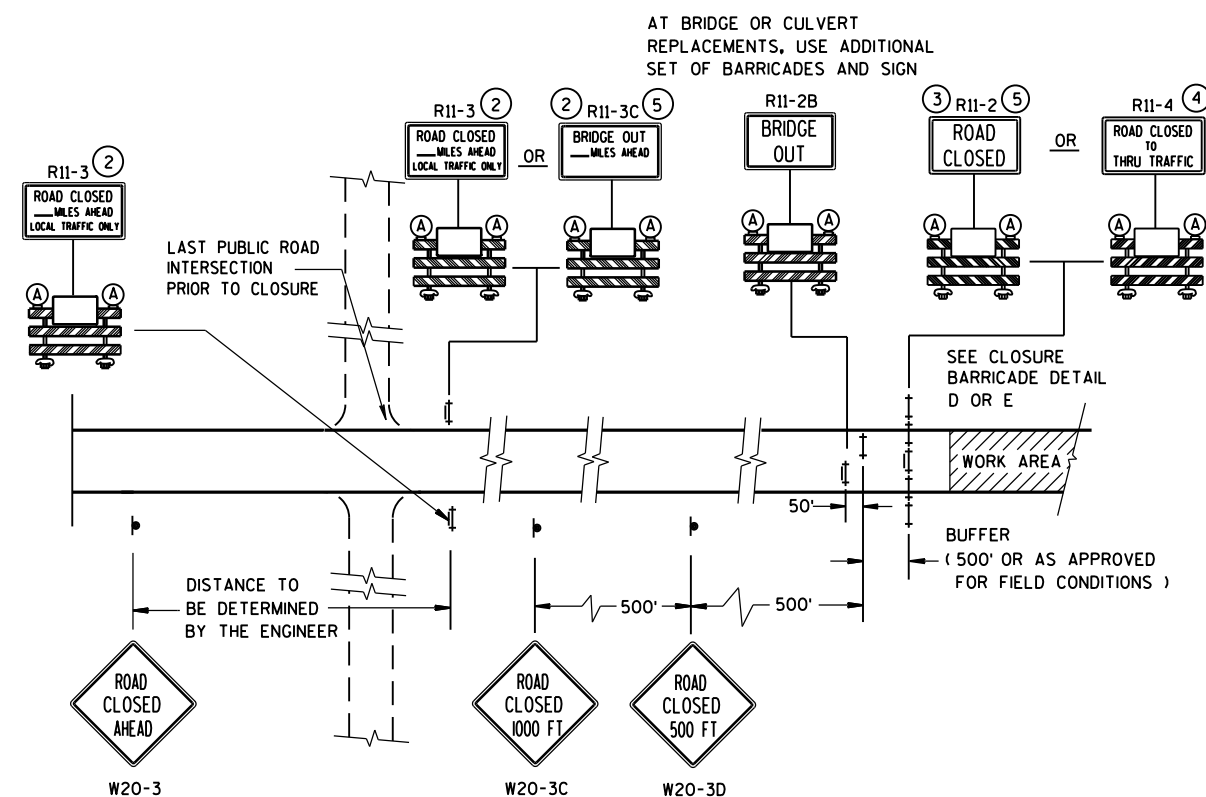
WORK ZONE GREATER THAN 1/2 MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL B

MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE LESS THAN 1/2 MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



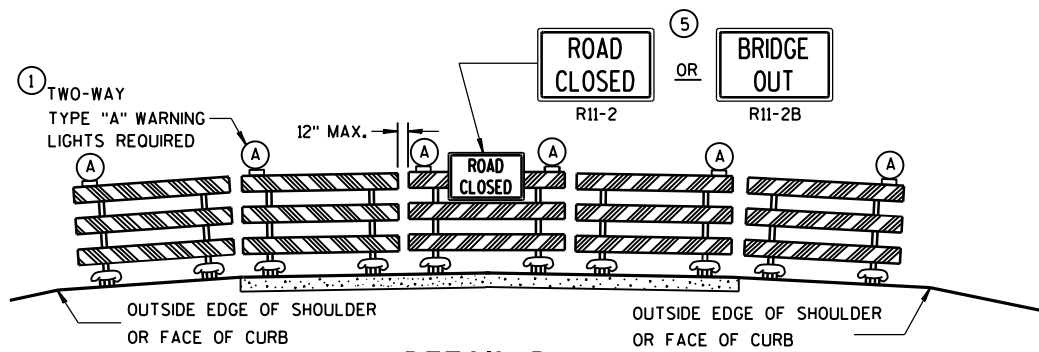
DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

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

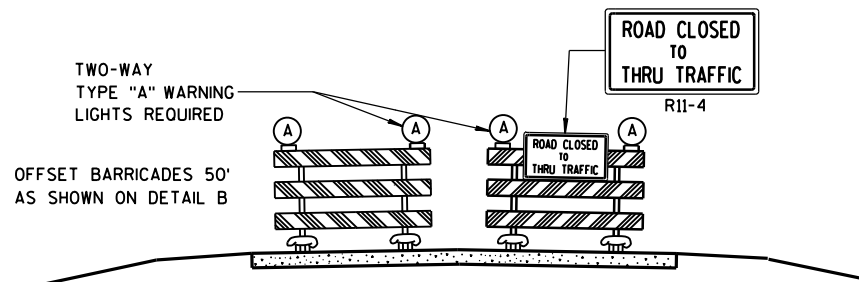
- ## LEGEND
- | | | | | |
|---|---------------------------------------|---|----|---|
|  | SIGN ON PERMANENT SUPPORT | | | |
|  | TYPE III BARRICADE | | | |
|  | TYPE III BARRICADE WITH ATTACHED SIGN | | | |
|  | TYPE "A" WARNING LIGHT (FLASHING) | | | |
|  | WORK AREA | | | |
|  | M4-8
M3-X | | | |
|  | OR |  | OR |  |
| M4-4 | | M1-5A | | M1-6 |
|  | OR |  | | |
| M05-1 | | M06-1 | | |
|  FLAGS, 16" X 16" MIN., (ORANGE) | | | | |

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
<u>Sept. 2015</u> <u>DATE</u>	<u>/S/ Peter Amakobe Atepe</u> STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA	



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:

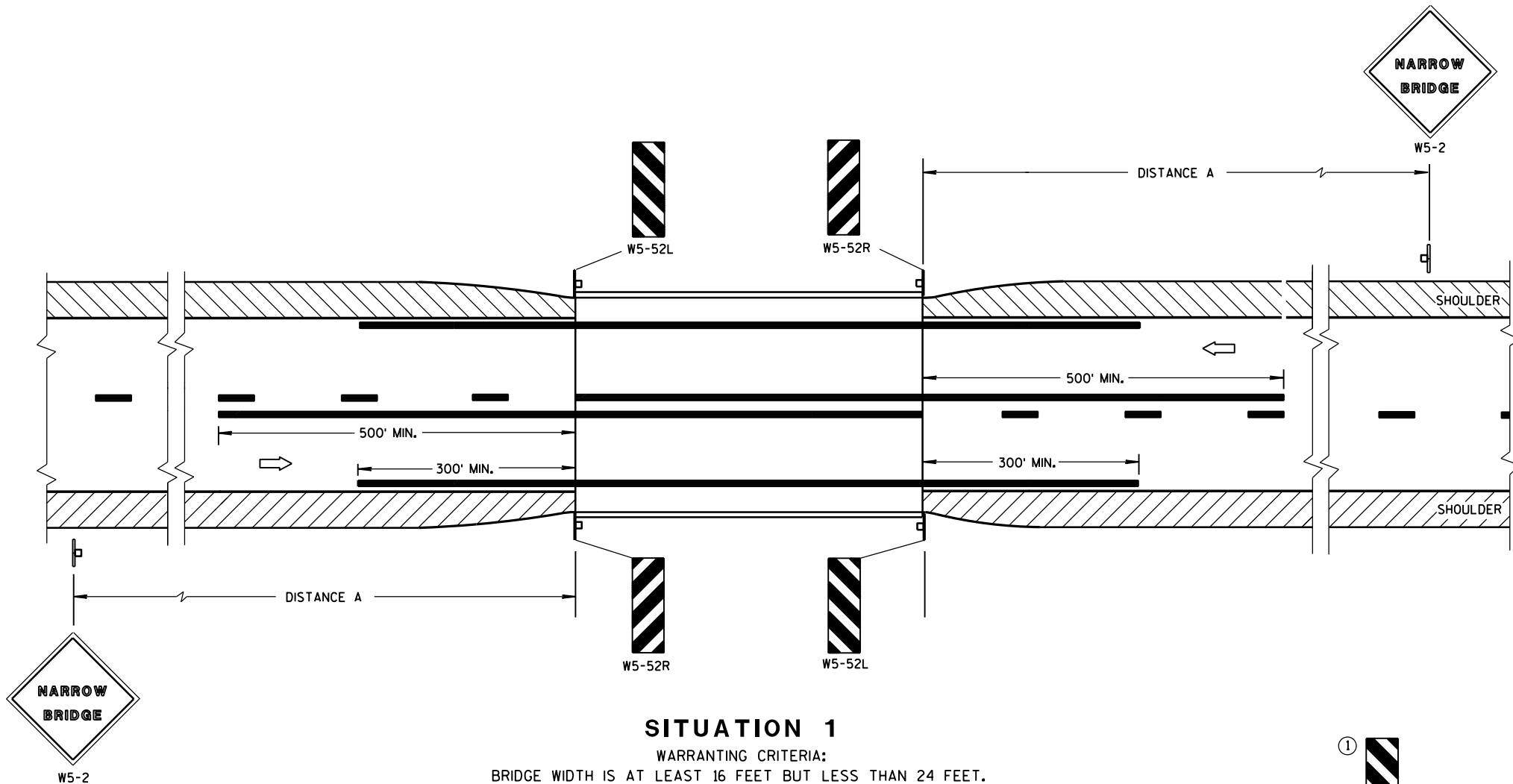
- R11-2 SHALL BE 48" X 30".
- R11-3, R11-4 AND R10-61 SHALL BE 60" X 30".
- M4-9 SHALL BE 30" X 24".
- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" 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 /S/ Peter Amokobe Atepe
DATE STATEWIDE WORK ZONE TRAFFIC
FHWA SAFETY ENGINEER



SITUATION 1

WARRANTING CRITERIA:
BRIDGE WIDTH IS AT LEAST 16 FEET BUT LESS THAN 24 FEET.

DISTANCE TABLE

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

GENERAL NOTES

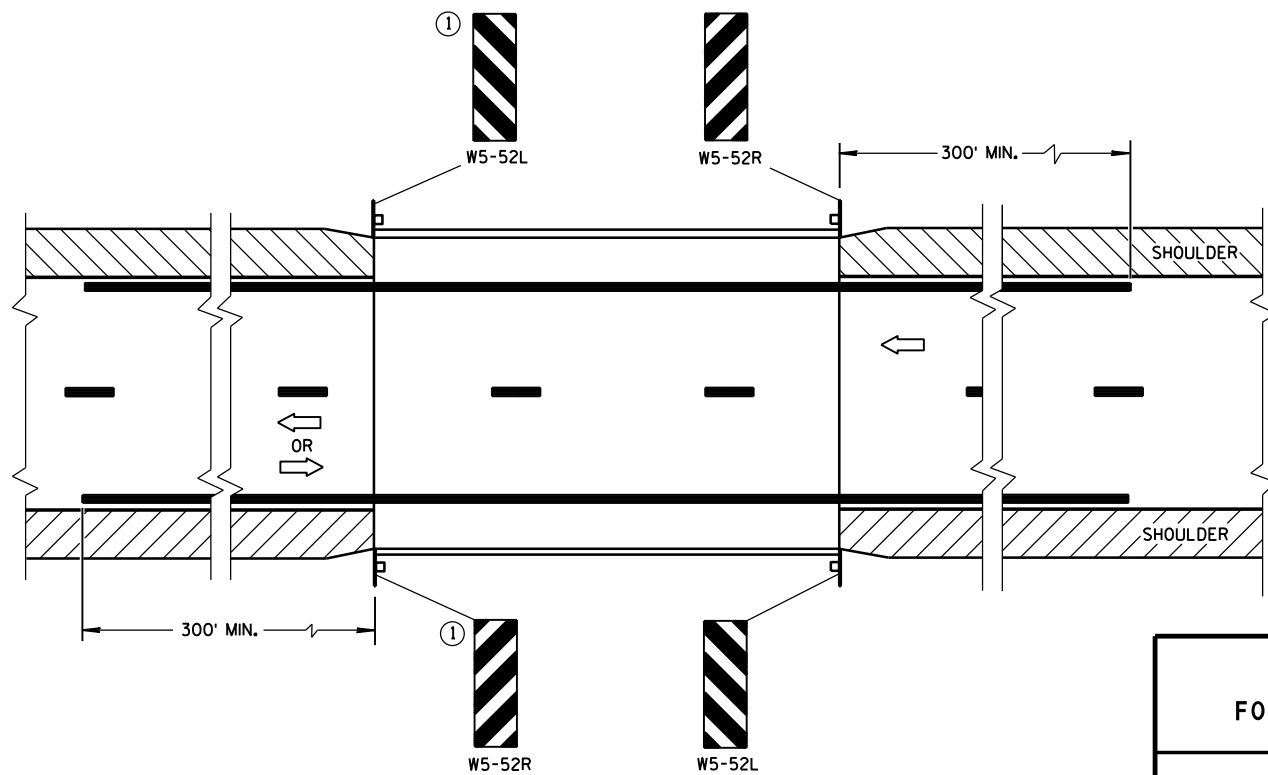
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

LOCATE W5-52 SIGN POST(S) BEHIND GUARDRAIL WHEN PRESENT.

PLACE THE EDGE OF THE W5-52 SIGN IN LINE WITH FACE OF CURB OR PARAPET.

① OMIT ON ONE-WAY TRAVELLED WAYS.

➡ DIRECTION OF TRAFFIC



SITUATION 2

WARRANTING CRITERIA:
1. BRIDGE WIDTH IS AT LEAST 24 FEET AND
2. BRIDGE SHOULDER WIDTH IS LESS THAN 6 FEET.

SIGNING & MARKING FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

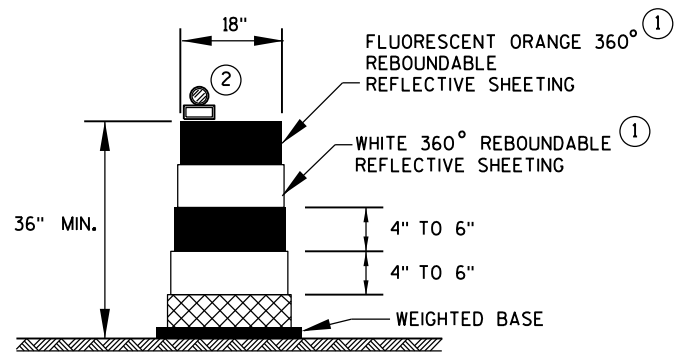
APPROVED

June 2017

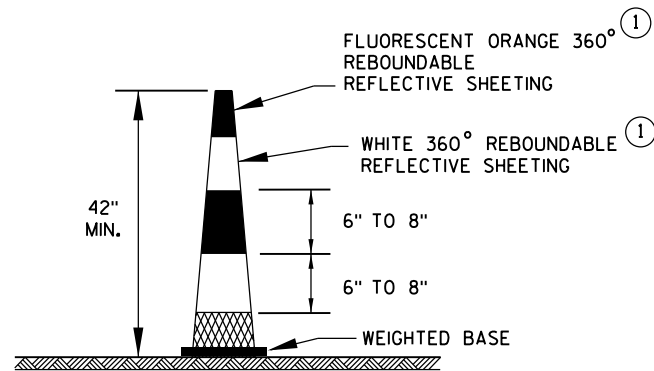
DATE

FHWA

/S/ Matthew R. Rauch
STATE SIGNING AND MARKING ENGINEER



DRUM

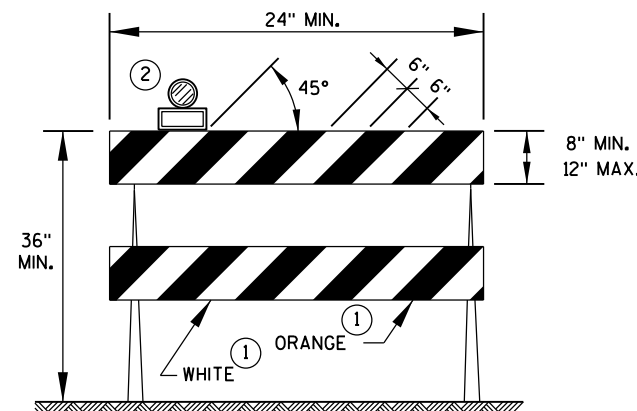


42" CONE

DO NOT USE IN TAPERS
1/2 SPACING OF DRUMS

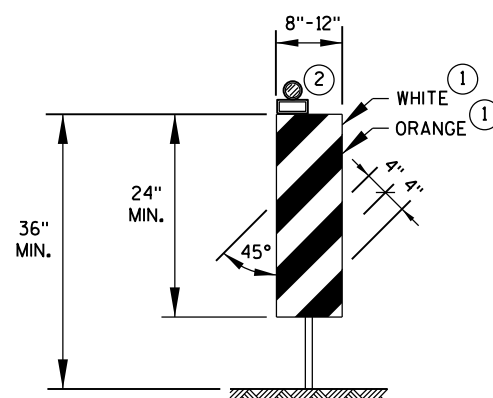
GENERAL NOTES

- ① REFLECTIVE SHEETING SHALL FOLLOW THE REQUIREMENTS IN THE APPROVED PRODUCTS LISTING FOR SIGN SHEETING.
- ② LOCATION OF WARNING LIGHTS WHEN SHOWN ON THE PLAN.



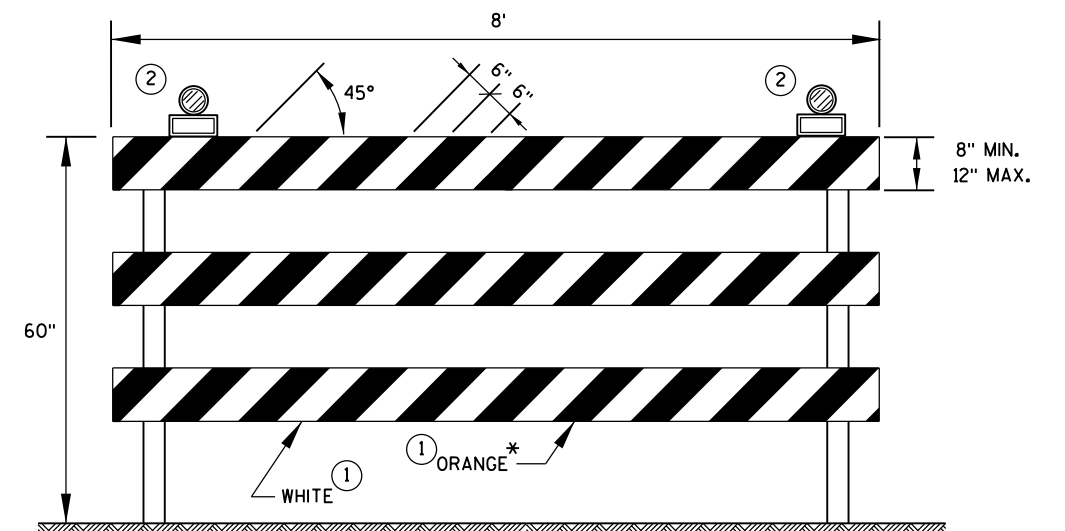
TYPE 2 BARRICADE

FOR RAILS LESS THAN 36" LONG, 4" WIDE STRIPES MAY BE USED.
ALL STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.



VERTICAL PANEL

THE STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.



TYPE 3 BARRICADE

IF SIGN MOUNTED, DO NOT COVER MORE THAN 50% OF THE TOP TWO RAILS OR 33% OF THE TOTAL AREA OF THE THREE RAILS.

* IF USED FOR A PERMANENT APPLICATION, USE RED SHEETING.

CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS

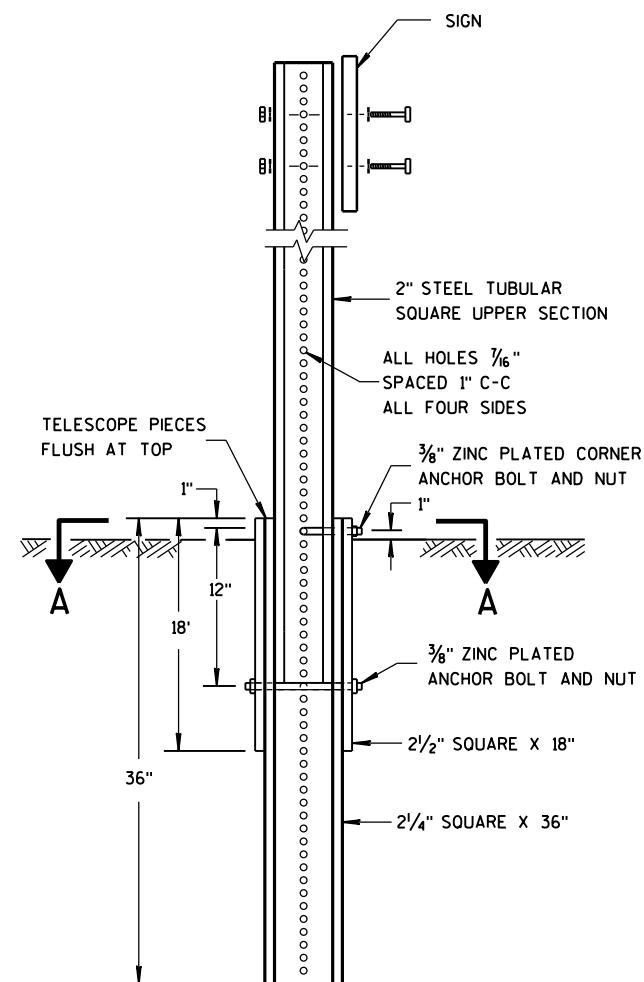
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June 2017
DATE

FHWA

/S/ Andrew Heidtke
WORK ZONE ENGINEER

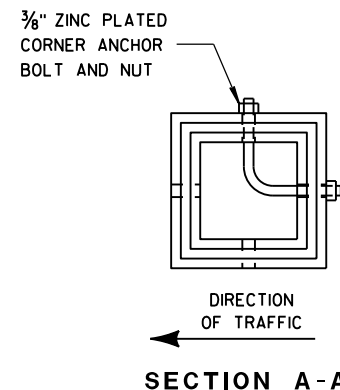


DETAIL OF TUBULAR
STEEL SIGN POST

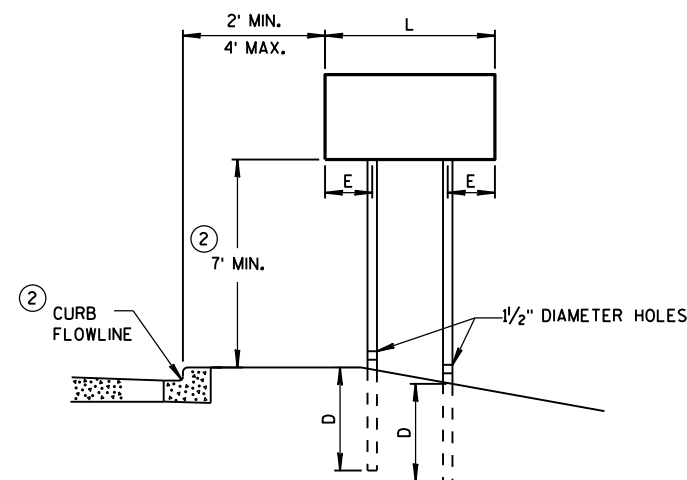
TUBULAR STEEL POSTS

AREA OF SIGN INSTALLATION (SQ. FT.)	NUMBER OF REQUIRED TUBULAR STEEL POSTS
9 OR LESS	1
GREATER THAN 9 LESS THAN OR EQUAL TO 18	2
GREATER THAN 18 LESS THAN OR EQUAL TO 27	3

SIGNS WIDER THAN 3 FEET OR LARGER THAN 9 SQ. FT. SHALL
BE MOUNTED ON MULTIPLE POSTS (SEE ABOVE TABLE).
SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED
ON TUBULAR STEEL POSTS.



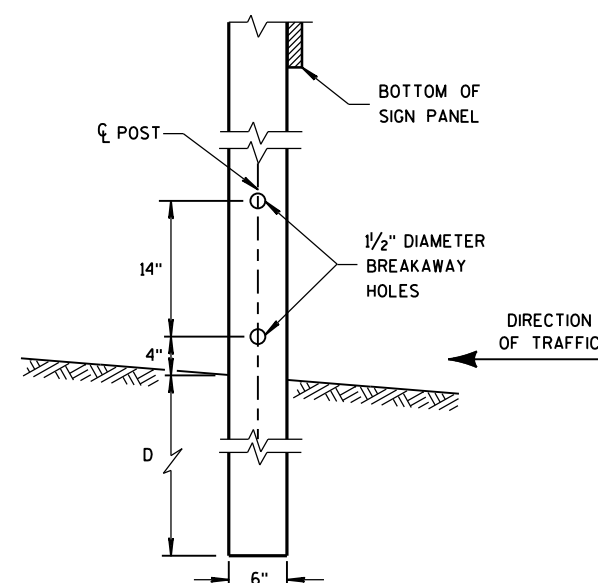
SECTION A-A



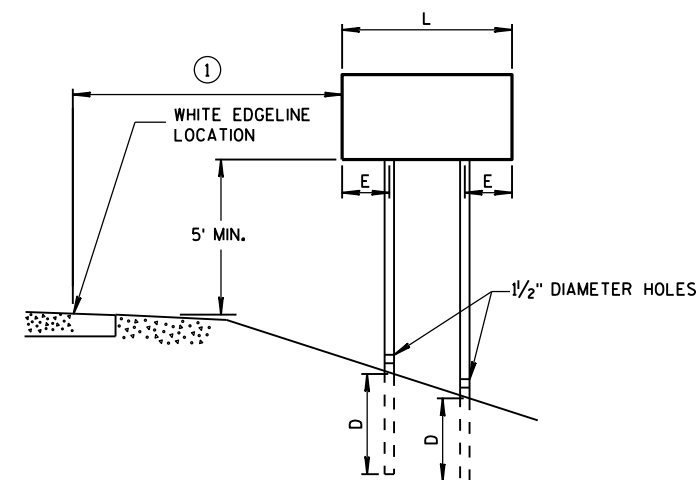
URBAN AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST EMBEDMENT DEPTH	
AREA OF SIGN INSTALLATION (SQ. FT.)	D (MIN)
20 OR LESS	4'
GREATER THAN 20	5'



4 "x6 " WOOD POST
MODIFICATION



RURAL AREA

POST SPACING REQUIREMENTS		NUMBER OF WOOD POSTS REQUIRED
L	E	
48" OR LESS AND LESS THAN 20 SQ. FT.	-	1
LESS THAN 60"	12"	2
60" TO 120"	L/5	2
GREATER THAN 120" LESS THAN 168"	12"	3
168" AND GREATER	12"	4

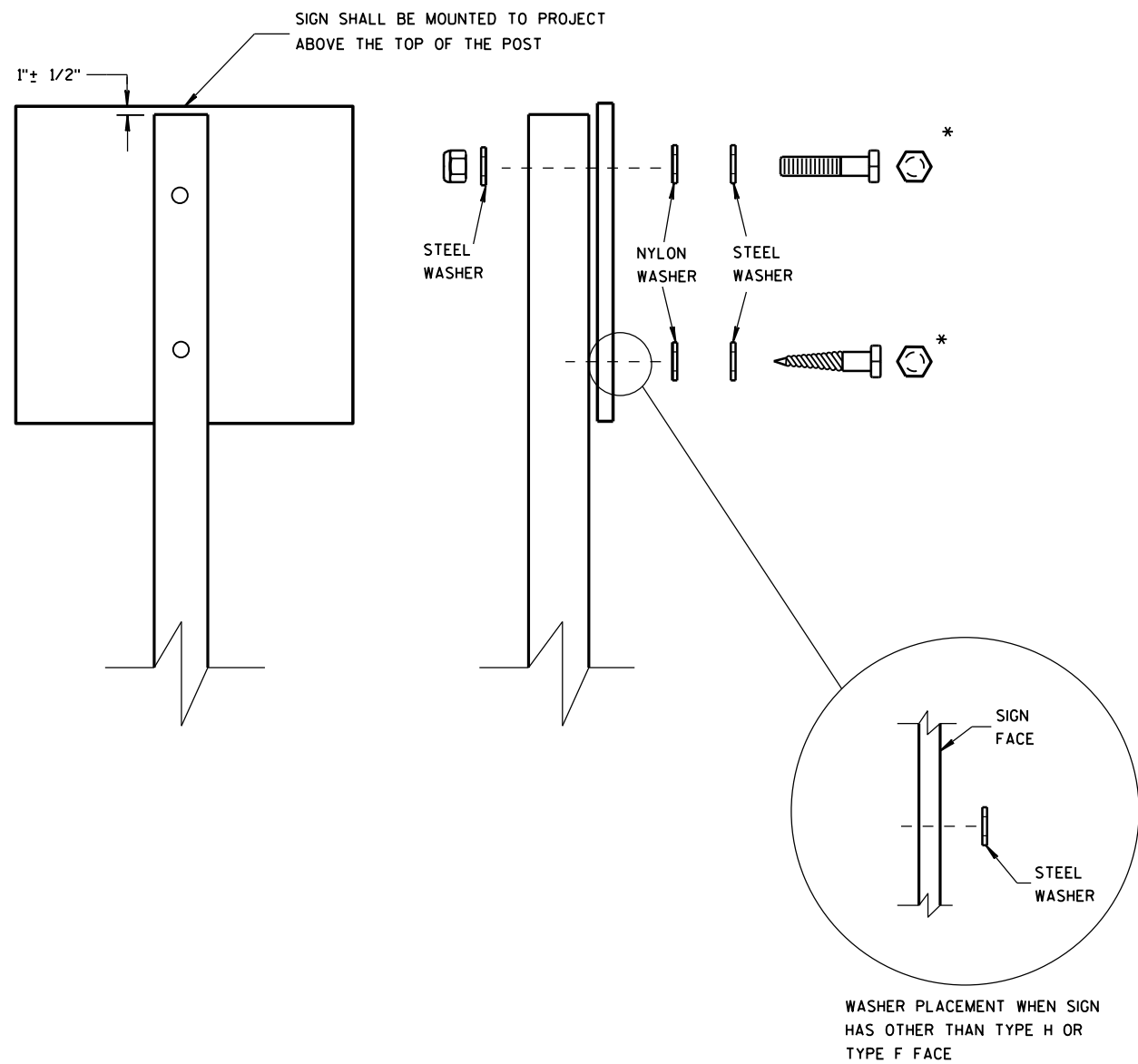
SEE NOTE ③

GENERAL NOTES

- ① 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.
- ② THE EXISTENCE OF CURB AND GUTTER DOES NOT IN ITSELF MANDATE THE VERTICAL CLEARANCE ILLUSTRATED. THAT HEIGHT IS TYPICALLY MEASURED WHERE THERE IS SIDEWALK ADJACENT TO THE ROADWAY OR PARKING IS PERMITTED. IN THE ABSENCE OF SIDEWALK, VERTICAL CLEARANCE IS MEASURED FROM THE TOP OF THE CURB. IF NO SIDEWALK AND NO PARKING, VERTICAL CLEARANCE MAY BE REDUCED TO 5 FOOT MINIMUM. OFFSET OF SIGNS IS MEASURED FROM THE CURB FLOWLINE.
- ③ FOR SIGNS REQUIRING 4 POSTS, SPACE INTERMEDIATE POSTS EVENLY.

TEMPORARY TRAFFIC CONTROL
SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



NUTS, BOLTS AND LAGS USED FOR MOUNTING SIGNS SHALL HAVE HEXAGONAL HEADS AND SHALL BE EITHER:

- A. HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: A 153, CLASS D, OR SC 3
- B. ELECTRO-GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: B 633, TYPE III, SC 3

THREADS ON BOLTS AND NUTS SHALL BE MANUFACTURED WITH SUFFICIENT ALLOWANCE FOR THE CADMIUM PLATE OR GALVANIZED COATING TO PERMIT THE NUTS TO RUN FREELY ON THE BOLTS.

- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - 3/8" x 3"
 - MACHINE BOLTS - 5/16" x 6-1/2" OR 7" LENGTH W/ NUTS

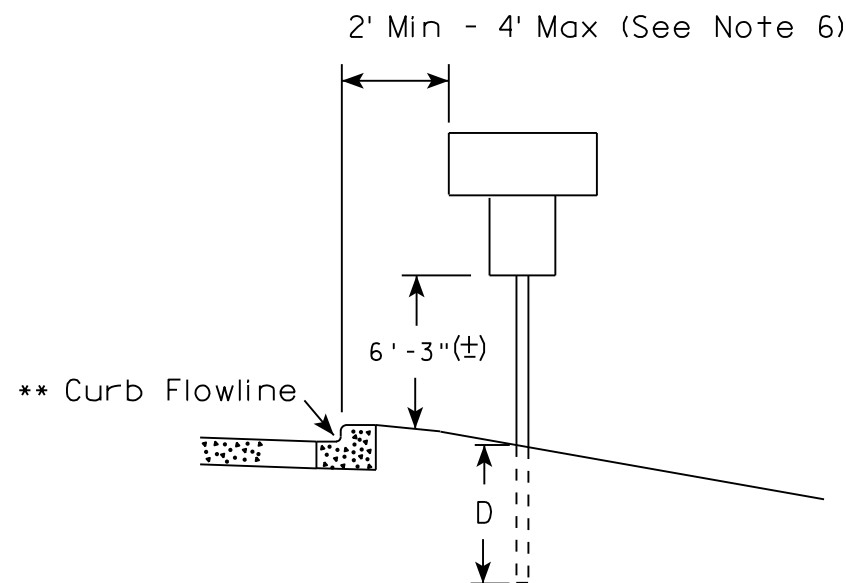
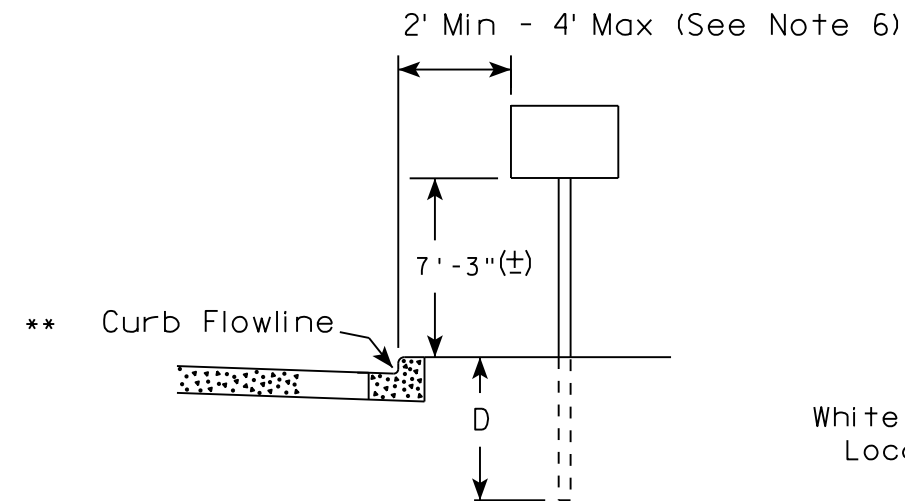
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - 3/8" x 3-1/4" LENGTH W/ NUTS
 - RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

- WASHERS (ALL POSTS) -
- 1-1/4" O.D. x 3/8" I.D. x 1/16" STEEL
 - 1-1/4" O.D. x 3/8" I.D. x .080 NYLON FOR ALL TYPE H SIGNS

* TWO DIFFERENT FASTENING SYSTEMS ARE SHOWN FOR ILLUSTRATION PURPOSES. ON ANY INDIVIDUAL SIGN, EITHER ONE OR THE OTHER SYSTEM SHALL BE USED. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

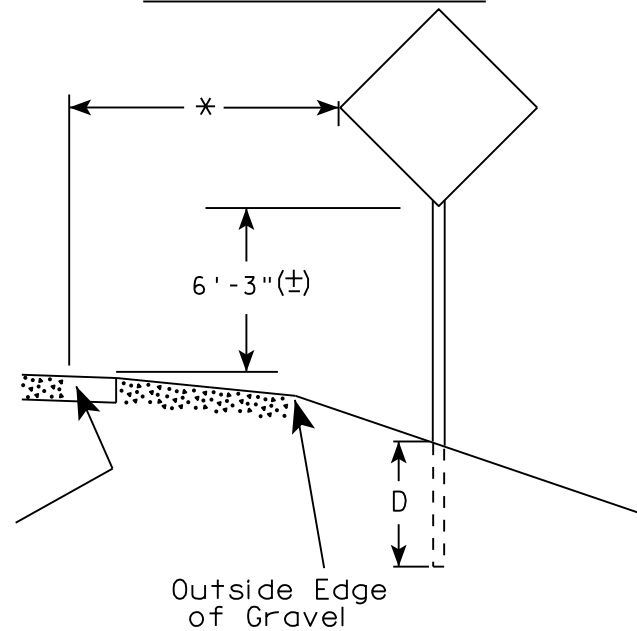
ATTACHMENT OF SIGNS TO POSTS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

URBAN AREA

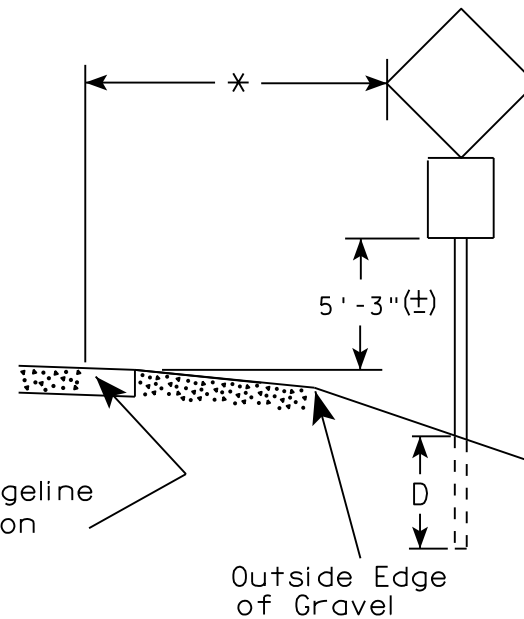


White Edgeline
Location

RURAL AREA (See Note 2)



White Edgeline
Location



Outside Edge
of Gravel

POST EMBEDMENT DEPTH

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

1. Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on barrier wall, see A4-10 sign plate.
3. For expressways and freeways, mounting height is 7'- 3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
4. J-Assemblies are considered to be one sign for mounting height.
5. Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±).
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. The (±) tolerance for mounting height is 3 inches.
8. Folding signs shall be mounted at a height of 5'-3" (±) or as directed by the Engineer.
9. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Enhanced Reference Markers, Clearance Markers (W5-52), Mile Markers (D10 series), In Road Object Markers (W5-54) & End of Road Markers (W5-56) shall be mounted at a height of 4'-3" (±).

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

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

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Matthew R. Rauch
for State Traffic Engineer

DATE 8/21/17

PLATE NO. A4-3.21

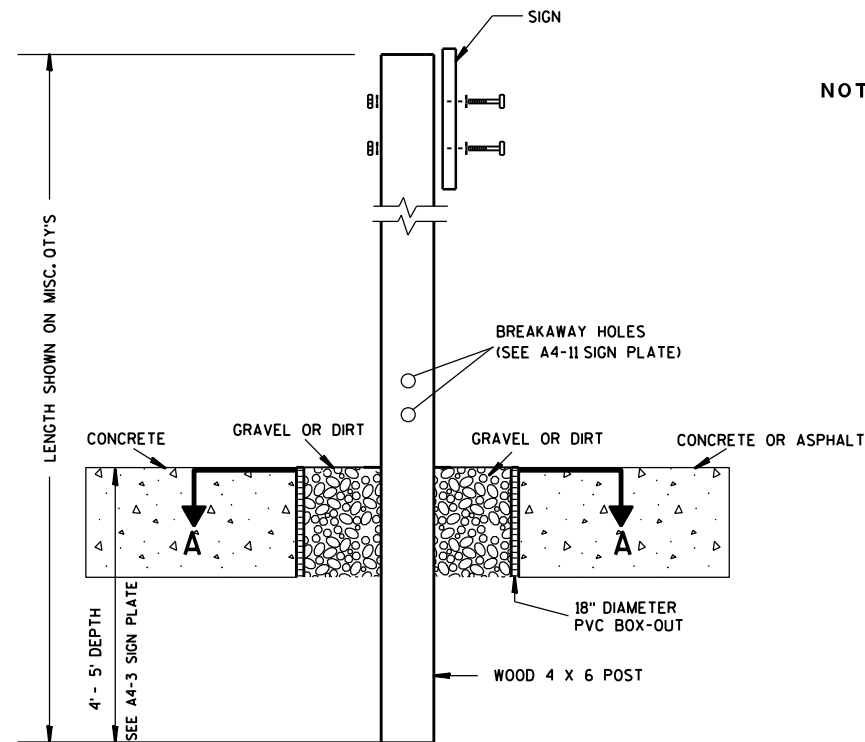
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

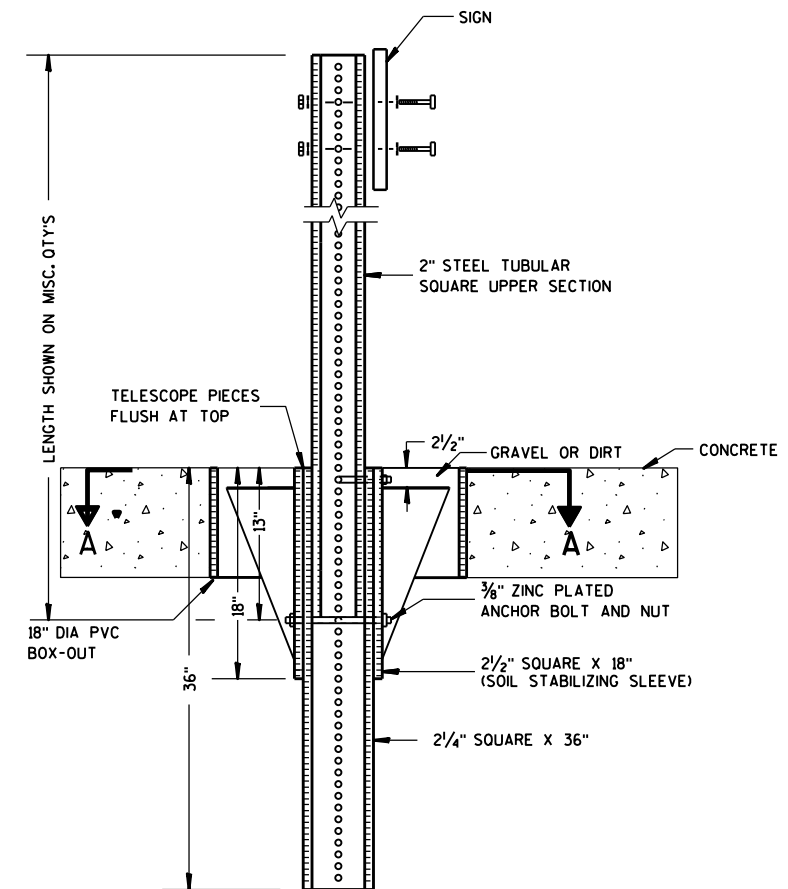
E



ELEVATION VIEW

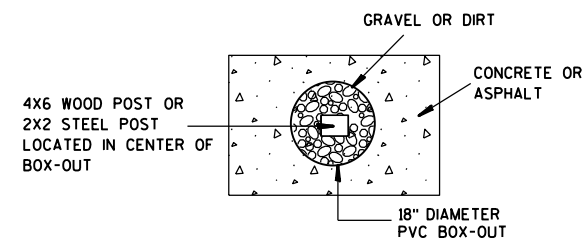
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

- NOTES: 1. ALL MATERIAL TO BE APPROVED BY ENGINEER PRIOR TO INSTALLATION
2. SEE SIGN PLATE A4-8 FOR SIGN HARDWARE REQUIREMENTS
3. 18 INCH X 18 INCH SQUARE BOX-OUTS MAY BE USED FOR INSTALLATIONS IN EXISTING CONCRETE OR ASPHALT LOCATIONS.



ELEVATION VIEW

DETAIL OF STEEL 2 X 2 SIGN POST IN BOX-OUT



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST
BOX-OUTS
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/27/14 PLATE NO. A4-3B.1

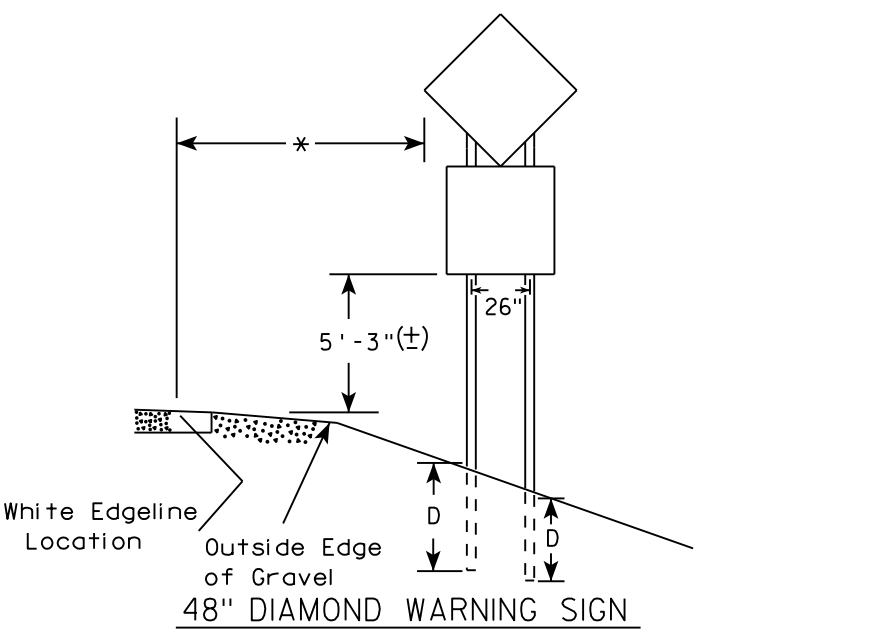
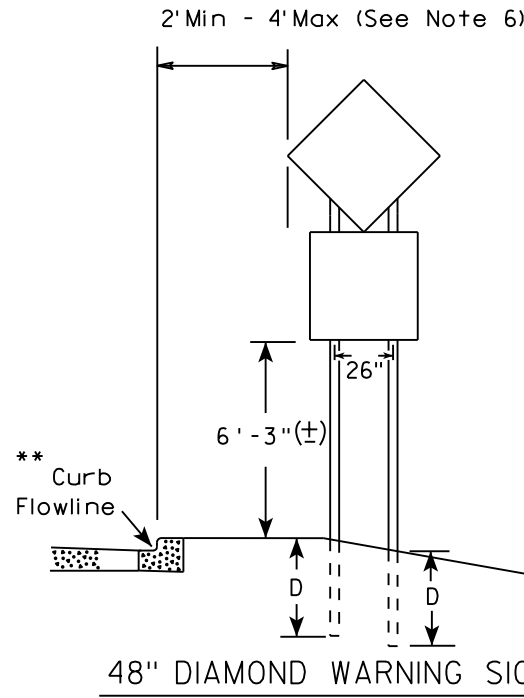
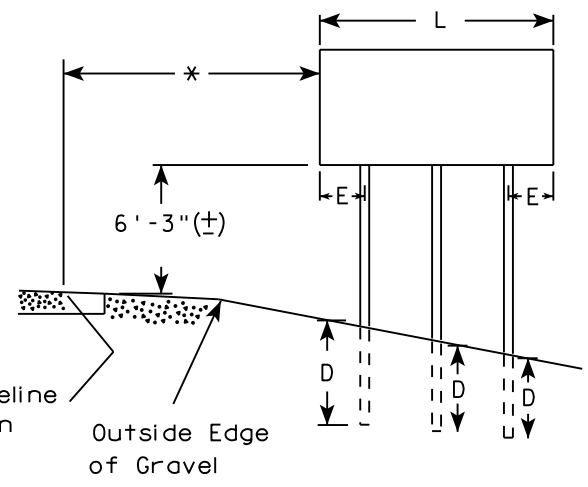
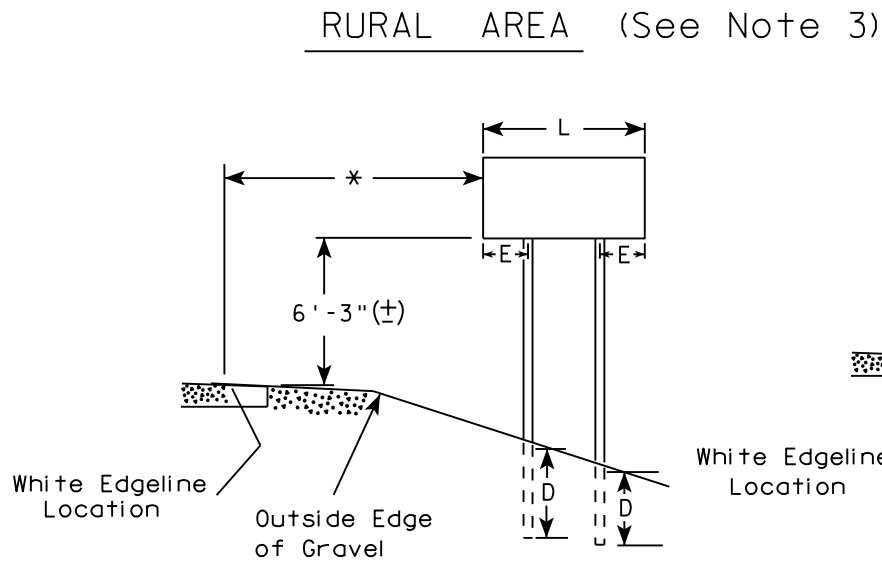
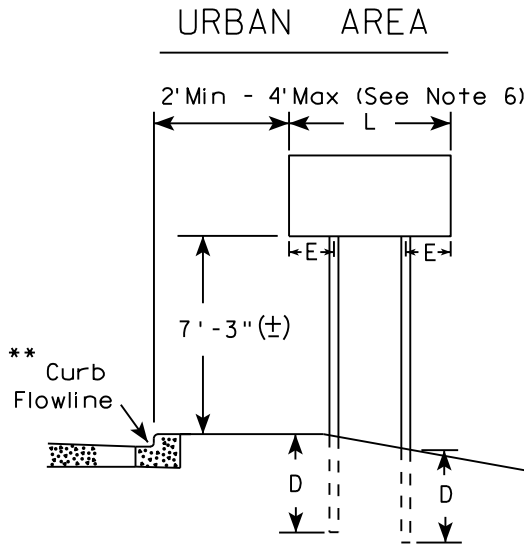
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



- GENERAL NOTES
1. For 3 or 4 post installations, individual post spacing shall be greater than 3'-6".
 2. See tables below for required number of posts.
 3. For expressways and freeways, mounting height is 7'-3" (±) or 6'-3" (±) depending upon existence of sub-sign.
 4. The (±) tolerance for mounting height is 3 inches.
 5. J-Assemblies are considered to be one sign for mounting height.
 6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
 7. Folding signs shall be mounted at a height of 5'-3" (±) or as directed by the engineer.
 8. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Clearance Markers (W5-52), Mile Markers (D10 series), In Road Object Markers (W5-54) & End of Road Markers (W5-56) shall be mounted at a height of 4"-3" (±).

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

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

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

SIGN SHAPE OTHER THAN DIAMOND (TWO POSTS REQUIRED)	
L	E
Greater than 48" Less than 60"	12"
60" to 108"	L/5

SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED)	
L	E
Greater than 108" to 144"	12"

POST EMBEDMENT DEPTH

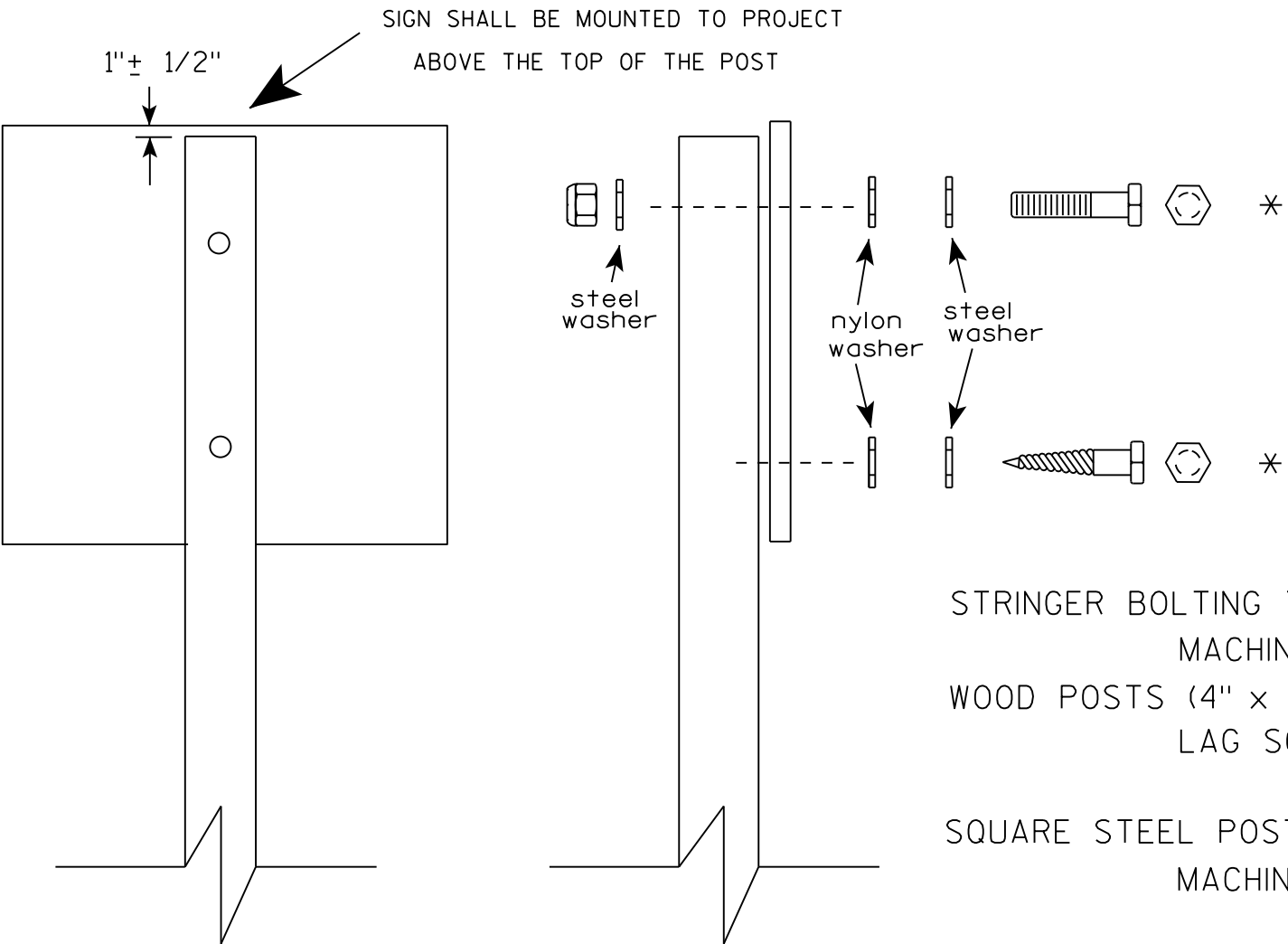
Area of Sign Installation (Sq. Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

TYPICAL INSTALLATION
OF TYPE II SIGNS
ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 8/21/17 PLATE NO. A4-4.15



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

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

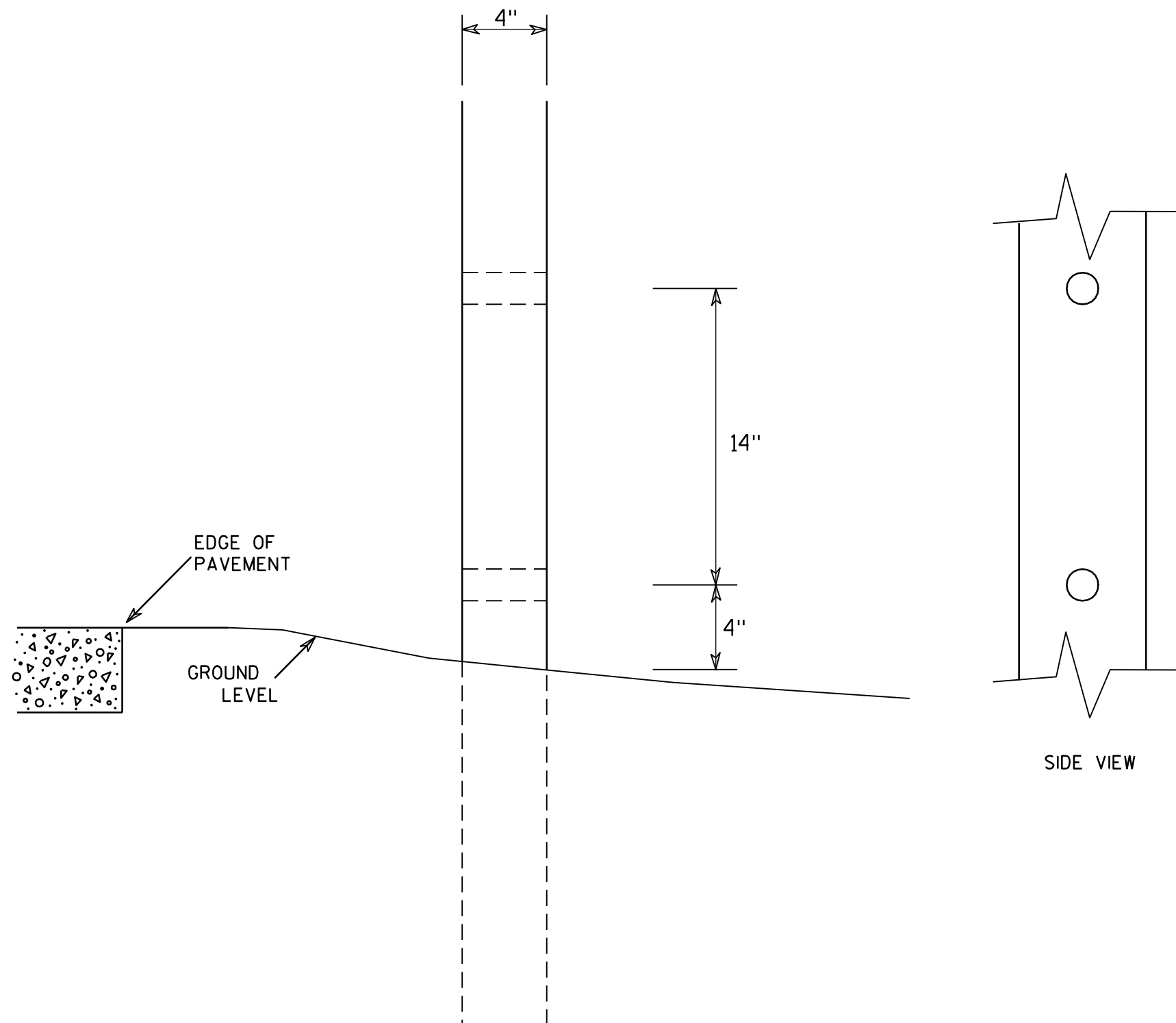
Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

- STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)
- MACHINE BOLTS - 5/16" X 1-3/4" Length w/ lock nuts
- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - 3/8" X 3" (NO STRINGERS ON BACK OF SIGN)
 - 3/8" X 4" (STRINGERS ON BACK OF SIGN)
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
 - 3/8" X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)
- RIVETS - 9/32 " (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
- O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH
- WASHERS (ALL POSTS) -
- 1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
 - 1-1/4" O.D. X 3/8" I.D. X .080 NYLON

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

ATTACHMENT OF SIGNS TO POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 8/11/16	PLATE NO. A4-8.8

7



GENERAL NOTES

1. All 4 x 6 Wood Posts shall be modified by having two 1 1/2" diameter holes drilled perpendicular to the roadway centerline.

7

4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Chester J. Spang
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

HWY:

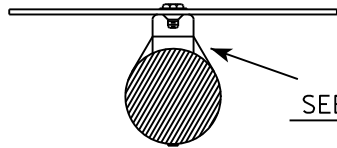
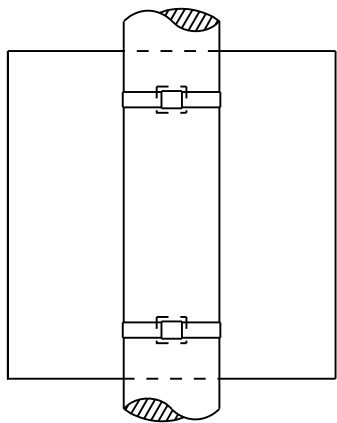
COUNTY:

SHEET NO:

E

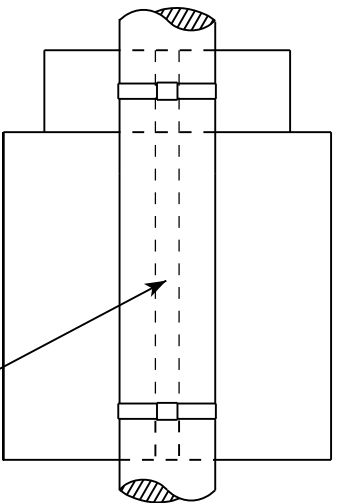
BANDING

SINGLE SIGN

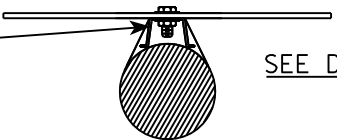


SEE DETAIL A

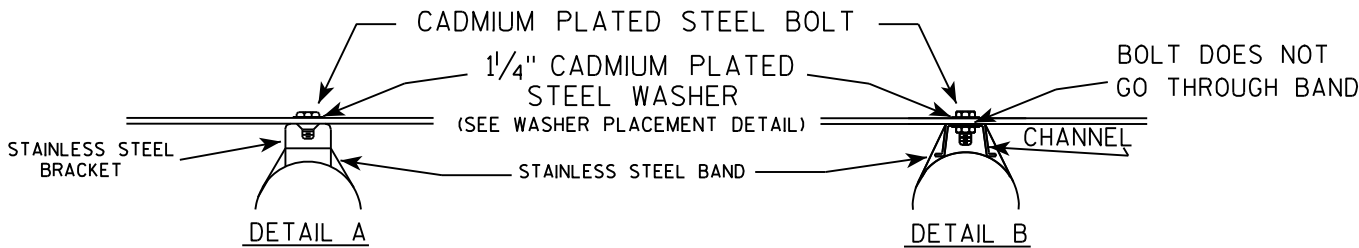
"J" ASSEMBLY



CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET



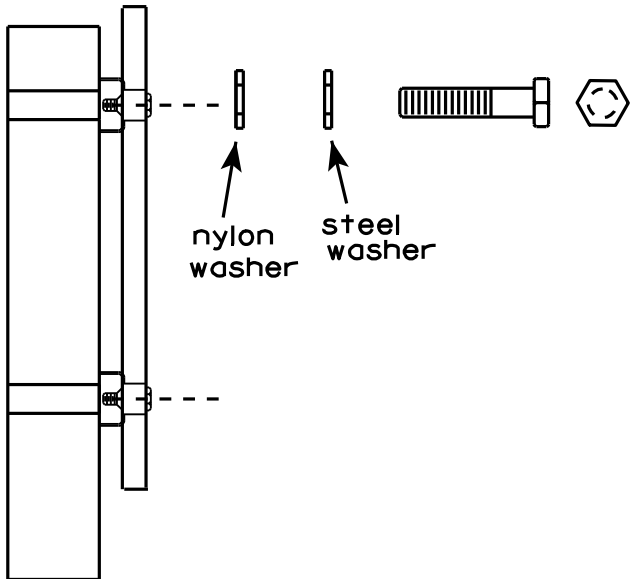
SEE DETAIL B



GENERAL NOTES

1. Any sign over 3 feet in width shall use the V-Block banding method. See A5-10 standard plate.
2. Signs 3 feet or greater in height shall have three bracket bands installed. Signs less than 3 feet in height shall have two bracket bands installed.
3. Banding and assembly bracket shall be stainless steel. All bands shall be $\frac{3}{4}$ " in width and 0.025" thickness.

WASHER PLACEMENT



nylon washer

steel washer

WASHERS (ALL POSTS) -
1-1/4" O.D. X $\frac{3}{8}$ " I.D. X $\frac{1}{16}$ " STEEL
1-1/4" O.D. X $\frac{3}{8}$ " I.D. X .080 NYLON
FOR ALL TYPE H SIGNS

STANDARD SIGN
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Matthew R. Rauch
for State Traffic Engineer

DATE 8/16/13

PLATE NO. A5-9.3

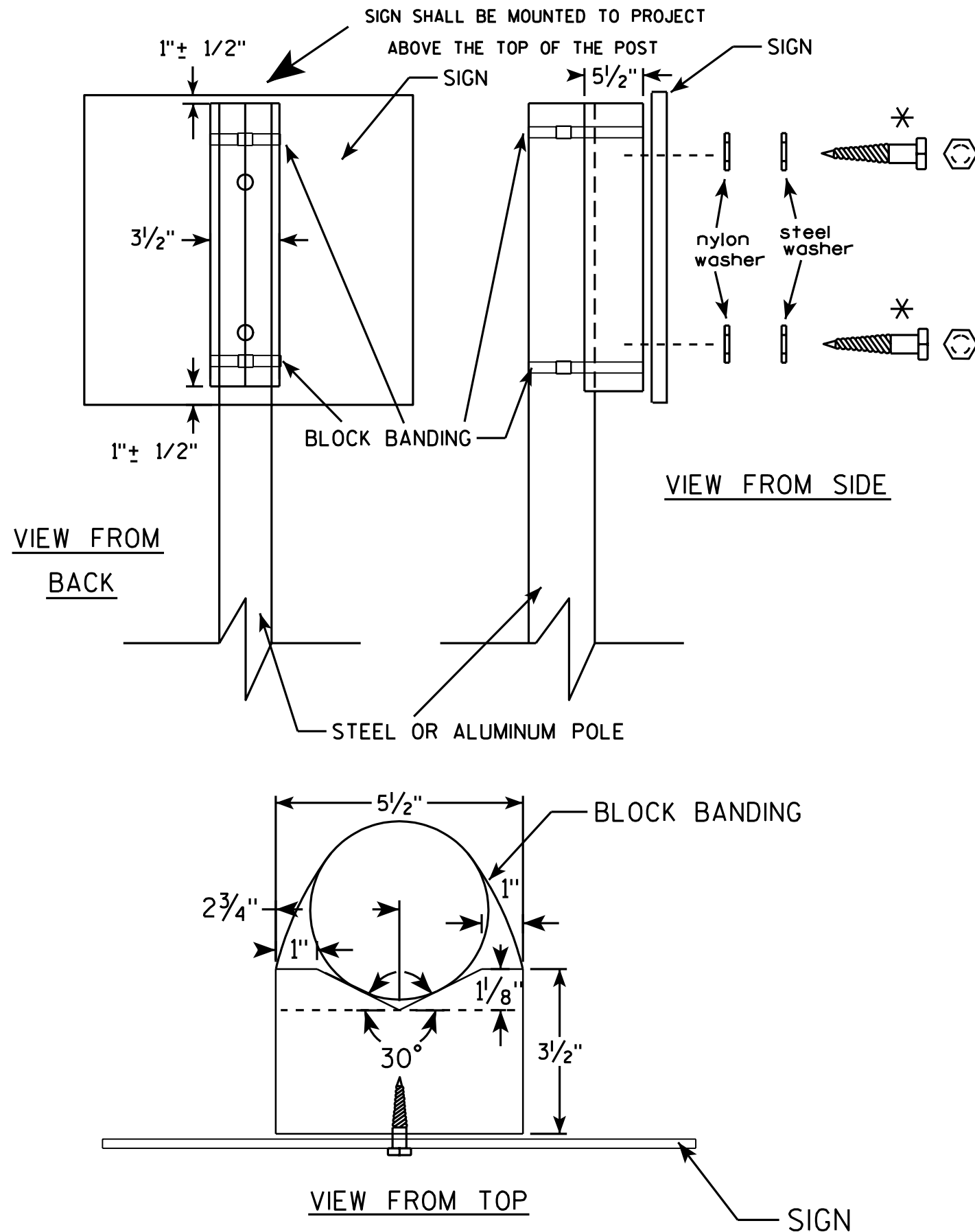
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



GENERAL NOTES

1. WOOD 4"X6" POST MATERIAL SHALL CONFORM TO 507.2.2 OF THE WISDOT STANDARD SPECIFICATIONS
2. BLOCK BANDING AND CLIPS SHALL BE STAINLESS STEEL, 3/4" WIDTH AND 0.025" THICKNESS
3. SIGNS 3' OR GREATER IN HEIGHT SHALL UTILIZE 3 BLOCK BANDS. SIGNS UNDER 3' IN HEIGHT SHALL UTILIZE 2 BLOCK BANDS
4. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA, BUT NORMALLY THERE ARE TWO. FOR SIGNS GREATER THAN 9 S.F. 3 FASTENERS SHALL BE USED.
5. ALL SIGN MOUNTING BOLTS AND WASHERS SHALL BE EITHER:
 - a. Hot dip or mechanically galvanized in accordance with ASTM Designation: A 153, Class D, or
 - b. Cadmium plated in accordance with ASTM Designation : B 766 TYPE 3, Class 12, or
 - c. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.
6. ALL BOLTS SHALL HAVE HEXAGONAL HEADS.
7. STEEL WASHERS SHALL BE 1 1/4" O.D. X 3/8" I.D. X 1/16"
8. NYLON WASHERS SHALL BE 1 1/4" O.D. X 3/8" I.D. X .080 FOR TYPE H OR TYPE F FACE SIGN

* LAG BOLTS SHALL BE 3/8" X 2 1/2"

BLOCK BANDING DETAIL
(V-BLOCK OPTION)

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 7/12/07 PLATE NO. A5-10.1

PROJECT NO:

SHEET NO:

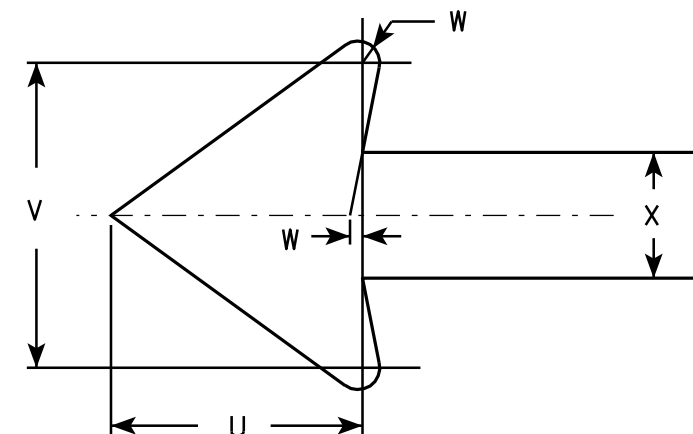
E



R7-1

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White
Message - Red
3. Message Series - See Note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Lines 1, 3 and 4 are series C, line 2 is series B.
6. R7-1D (double arrow)
R7-1L (left arrow)
R7-1R (right arrow)



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	12	18	1 1/8	3/8	3/8	3	1 7/8	2	7/8	5/8	1 1/2	2 1/2	2	2	4 7/8	4 7/8	2 1/4	2 1/8	2 1/2	3 7/8	1 1/2	1 3/4	1/8	3/4			1.5
2S	18	24	1 1/8	3/8	1/2	4	2 1/2	2 1/2	1 1/4	1	2	3 1/4	2 3/4	2 5/8	7 1/8	7	2 3/4	2 5/8	3 1/8	5 7/8	2 1/4	2 5/8	1/4	1 1/8			3.0
2M	24	30	1 1/8	3/8	1/2	5	3	3	2	1 1/4	2 1/2	4	3 1/4	3 3/8	9 1/4	9 1/4	3 1/4	3 1/4	3 3/4	7 3/4	3	3 1/2	1/4	1 1/2			5.0
3	24	30	1 1/8	3/8	1/2	5	3	3	2	1 1/4	2 1/2	4	3 1/4	3 3/8	9 1/4	9 1/4	3 1/4	3 1/4	3 3/4	7 3/4	3	3 1/2	1/4	1 1/2			5.0
4																											
5																											

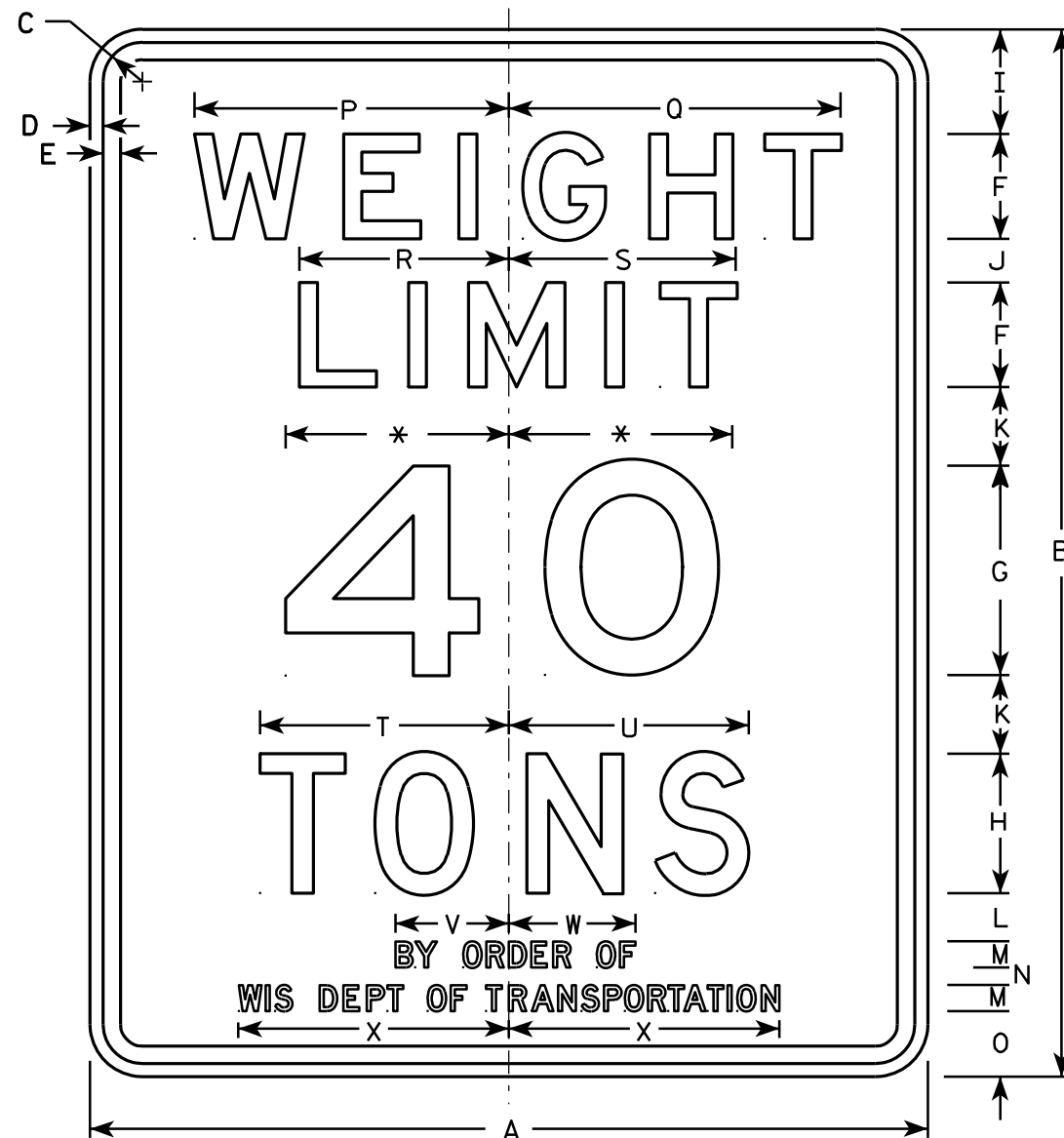
STANDARD SIGN R7-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 3/31/2011 PLATE NO. R7-1.9

PROJECT NO: HWY: COUNTY: SHEET NO: E



R12-1

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White
Message - Black
3. Message Series - See note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Lines 1, 2 & 3 are series E
Lines 4, 5, & 6 are series D.
6. Substitute appropriate numeral and optically adjust spacing to achieve proper balance.
7. Substitute name of county or town on County Trunk and Town Highways respectively. Community name on City or Village Streets including Connecting Highways is optional.

* Varies (see note 6)

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24	30	1 1/8	3/8	1/2	3	6	4	3	1 1/4	2 1/4	1 3/8	3/4	1/2	1 7/8	9	9 1/2	6	6 1/2	7 1/8	6 7/8	3 1/4	3 5/8	7 3/4			5.0
2S	24	30	1 1/8	3/8	1/2	3	6	4	3	1 1/4	2 1/4	1 3/8	3/4	1/2	1 7/8	9	9 1/2	6	6 1/2	7 1/8	6 7/8	3 1/4	3 5/8	7 3/4			5.0
2M	24	30	1 1/8	3/8	1/2	3	6	4	3	1 1/4	2 1/4	1 3/8	3/4	1/2	1 7/8	9	9 1/2	6	6 1/2	7 1/8	6 7/8	3 1/4	3 5/8	7 3/4			5.0
3	36	48	1 3/8	1/2	5/8	6	10	8	4 1/2	2 1/2	2 1/4	1 1/2	3/4	1/2	3	13 1/2	14 1/4	9	9 3/4	10 5/8	10 1/4	3 1/4	3 5/8	7 3/4			12.0
4	48	60	2 1/4	3/4	1	6	12	8	6	2 1/2	4 1/2	2 3/4	1 1/2	1	3 3/4	18	19	12	13	14 1/4	13 3/4	6 1/2	7 1/4	15 1/2			20.0
5																											

PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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STANDARD SIGN
R12-1

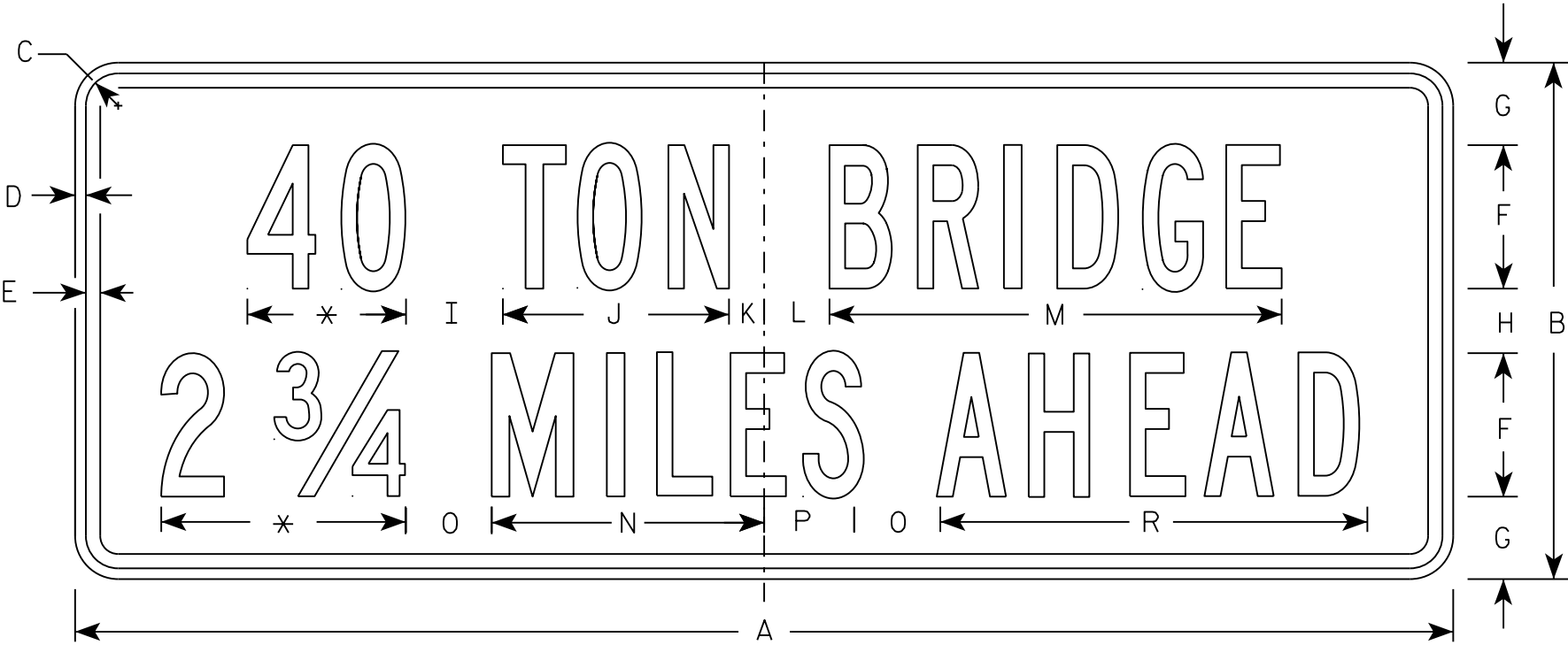
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 4/1/11 PLATE NO. R12-1.8

NOTES

- 1. Sign is Type II - Type H Reflective
- 2. Color:
Background - White
Message - Black
- 3. Message Series - B for Size 2, Series D for Sizes 3 & 4
- 4. Corners and border shall be rounded.
- 5. Substitute appropriate numerals to nearest quarter mile and optically adjust spacing to achieve proper balance.



* Varies

R12-55

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48	18	1 1/8	3/8	1/2	5	2 7/8	2 1/4	3 3/8	7 7/8	1 1/4	2 1/4	15 3/4	9 1/2	3	3 1/8		14 7/8									6.0
2M	48	18	1 1/8	3/8	1/2	5	2 7/8	2 1/4	3 3/8	7 7/8	1 1/4	2 1/4	15 3/4	9 1/2	3	3 1/8		14 7/8									6.0
3	90	24	2 1/4	3/4	1	6	4	4	6	15 1/4	2 1/2	3 1/2	30 5/8	18 3/8	6	6 1/4		28 3/8									15.0
4	120	30	2 1/4	3/4	1	8	5 1/4	3 5/8	8	19 5/8	4	3	39 1/2	24 1/2	7	6 3/4		36 3/8									25.0
5	120	30	2 1/4	3/4	1	8	5 1/4	3 5/8	8	19 5/8	4	3	39 1/2	24 1/2	7	6 3/4		36 3/8									25.0

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

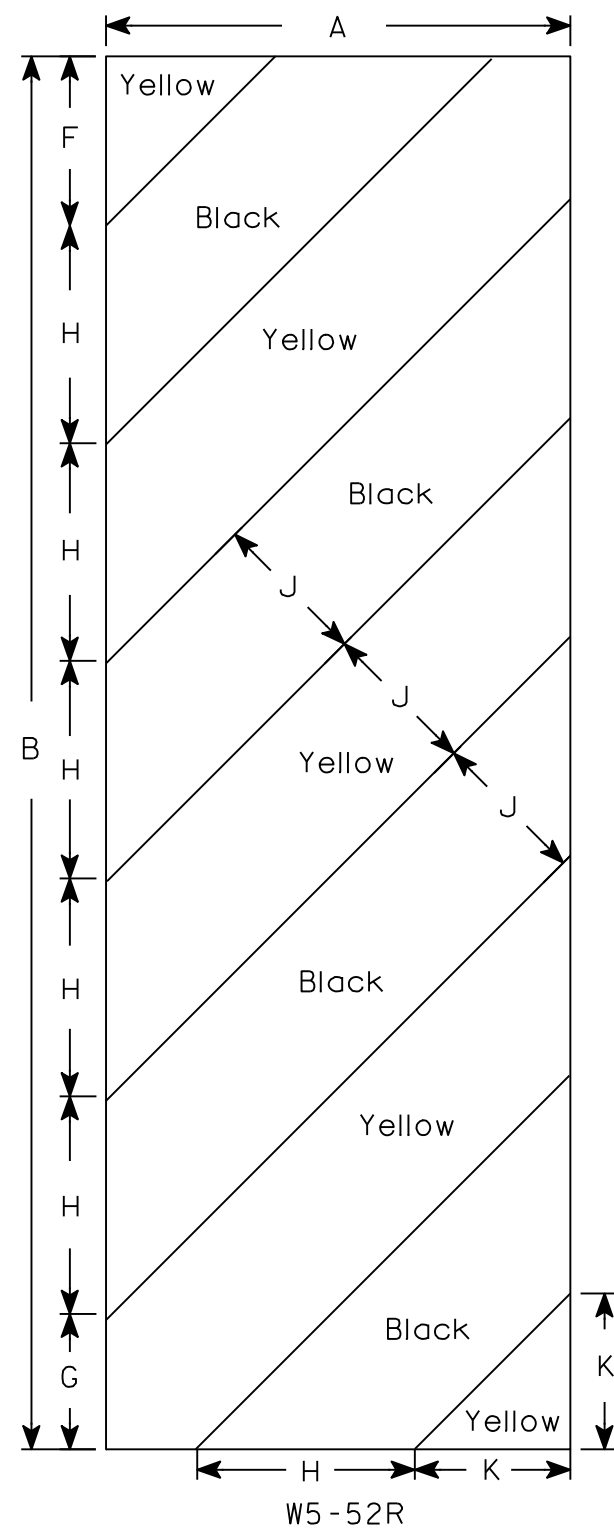
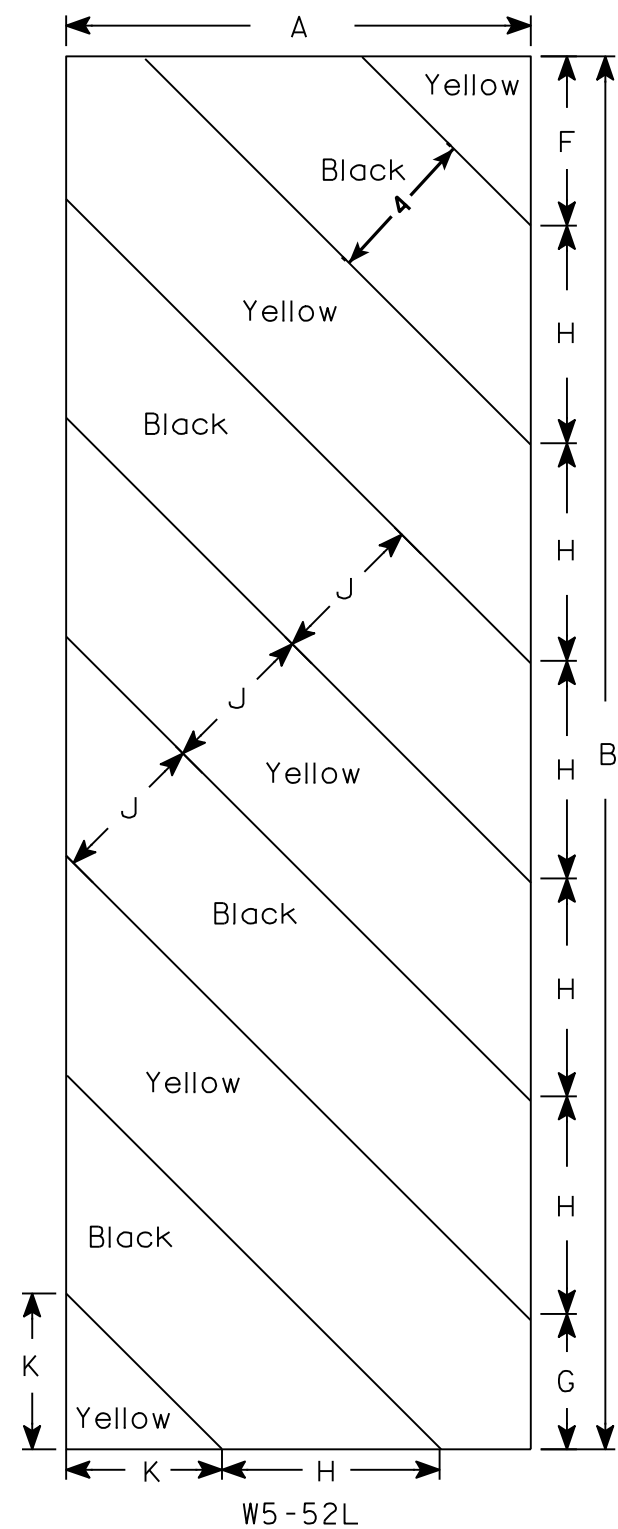
E

STANDARD SIGN
R12-55

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 8/22/17 PLATE NO. R12-55.7



NOTES

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

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

STANDARD SIGN
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

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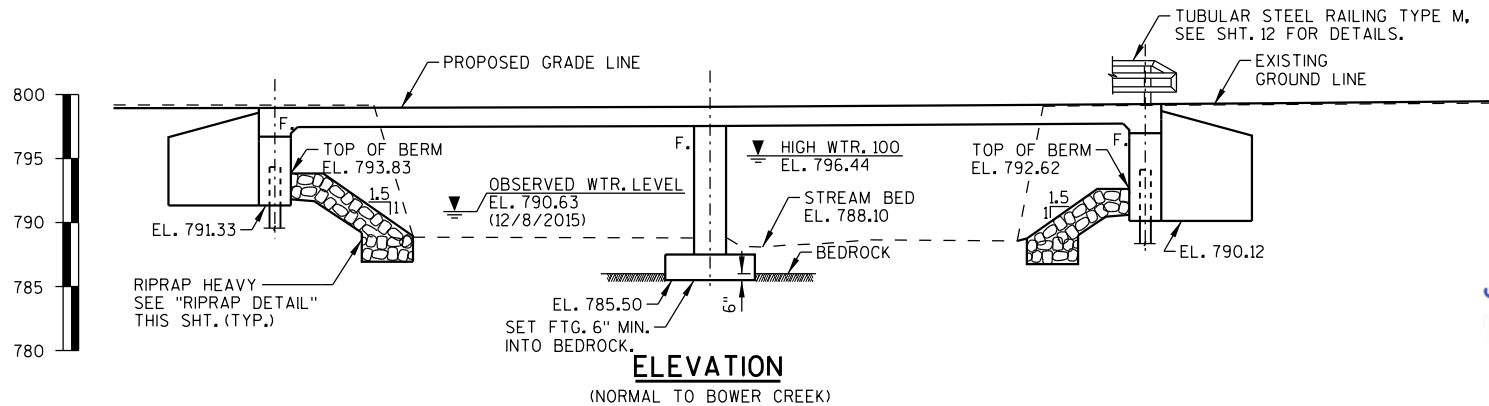
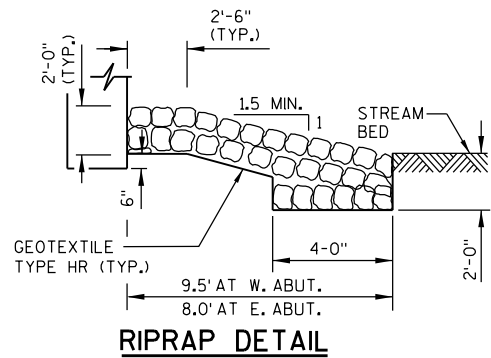
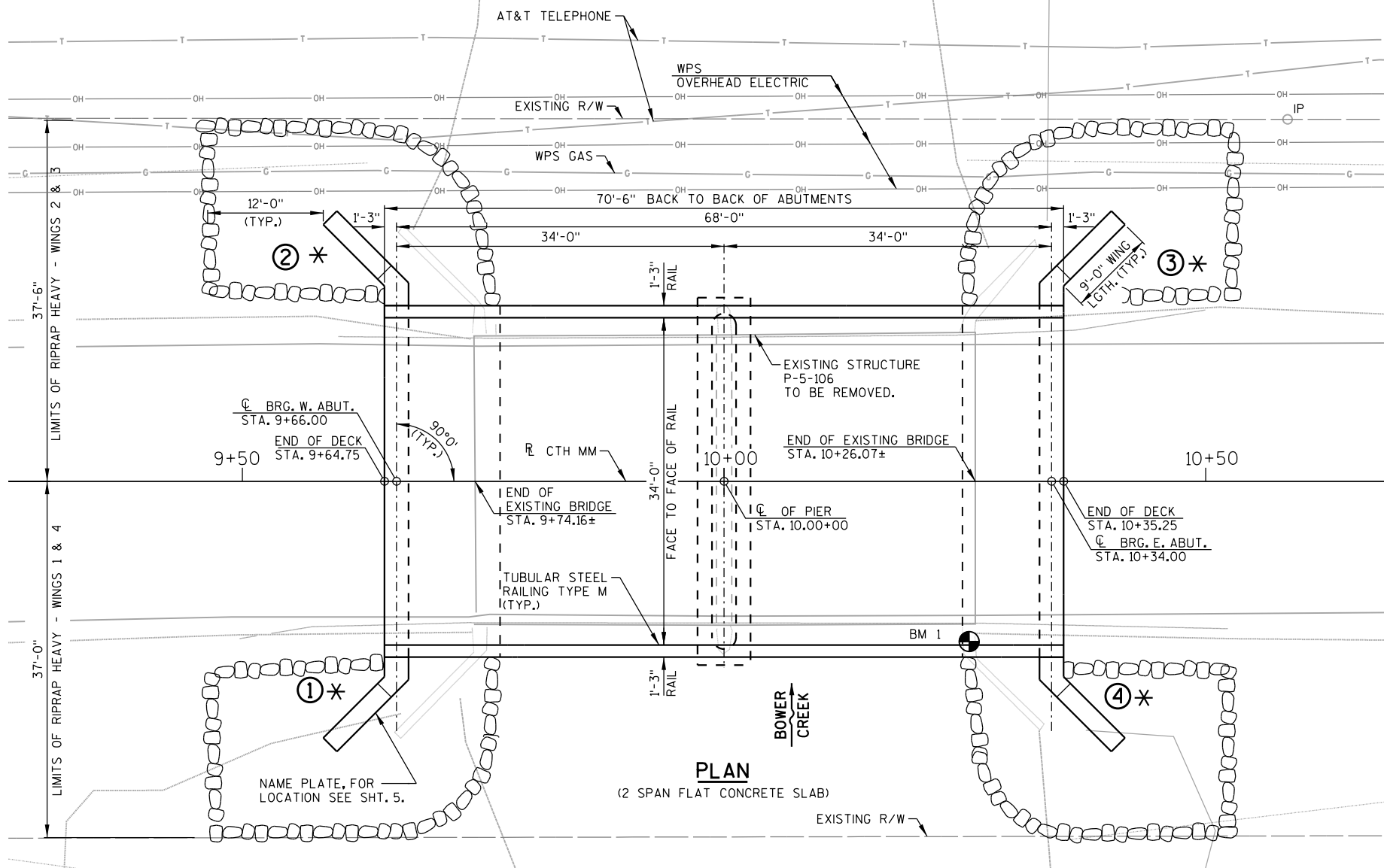
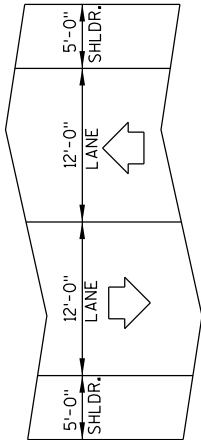
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8

BATCH PRINT SHEET 1 OF 12

* PROVIDE FOR THREE BEAM GUARDRAIL ATTACHMENT.

(X) INDICATES WING NUMBER



FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON PILING STEEL HP 10-INCH x 42 LB. PREBORED A MINIMUM OF 3 FEET INTO BEDROCK, ESTIMATED 15'-0" LONG FOR THE WEST ABUTMENT AND 15'-0" LONG FOR THE EAST ABUTMENT.

PILES PLACED IN HOLES PREBORED INTO ROCK DO NOT REQUIRE DRIVING. PILING SHALL BE FIRMLY SEATED AFTER PLACEMENT.

PIER TO BE SUPPORTED ON SOUND ROCK WITH A REQUIRED FACTORED BEARING RESISTANCE OF 51KSF ***. A GEOTECHNICAL ENGINEER, WITH THREE DAYS NOTICE, WILL DETERMINE THE FACTORED BEARING RESISTANCE BY VISUAL INSPECTION PRIOR TO CONSTRUCTION OF THE PIER FOOTING.

*** THE FACTORED BEARING RESISTANCE IS THE VALUE USED FOR DESIGN.

EMBED PIER FOOTING 6 INCHES MINIMUM INTO BEDROCK.

THE ELEVATION OF THE ROCK SURFACE MAY BE IRREGULAR. THE PROPOSED FOOTING ELEVATIONS MAY REQUIRE ADJUSTMENT BASED ON FINAL EXCAVATION. FINAL ROCK ELEVATIONS WILL BE DETERMINED BY THE ENGINEER.

STATE PROJECT NUMBER

4555-02-71

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
INVENTORY RATING FACTOR = 1.26
OPERATING RATING FACTOR = 1.63
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 PSF.

MATERIAL PROPERTIES:

CONCRETE MASONRY - SUPERSTRUCTURE — 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.

TRAFFIC VOLUME

CTH MM

A.D.T. (2018) = 1,500
A.D.T. (2038) = 2,100
DESIGN SPEED = 55 MPH

HYDRAULIC DATA

100 YEAR FREQUENCY

Q_{100} — 2,400 CFS
VELOCITY — 5.2 FPS
 HW_{100} — EL. 796.44
WATERWAY AREA — 462 SQ. FT.
DRAINAGE AREA — 14.3 SQ. MI.
ROAD OVERTOPPING — NA
SCOUR CRITICAL CODE — 5

2 YEAR FREQUENCY

Q_2 — 660 CFS
VELOCITY — 2.5 FPS
 HW_2 — EL. 793.08

LIST OF DRAWINGS

1. GENERAL PLAN
2. CROSS SECTION & QUANTITIES
3. SUBSURFACE EXPLORATION
4. WEST ABUTMENT
5. WINGS 1 & 2
6. EAST ABUTMENT
7. WINGS 3 & 4
8. ABUTMENT DETAILS
9. PIER
10. SUPERSTRUCTURE
11. SUPERSTRUCTURE DETAILS
12. TUBULAR STEEL RAILING TYPE 'M'



1/29/2018

STRUCTURES DESIGN CONTACTS

BRIDGE OFFICE:
BILL DREHER (608) 266-8489

CONSULTANT:
KEVIN HAGEN (715) 342-3053

AECOM PROJECT No. 60452539

NO.	DATE	REVISION	BY
AECOM			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
ACCEPTED	<i>William C. Dreher</i> ^{SR} CHIEF STRUCTURES DESIGN ENGINEER		02/07/18 DATE
STRUCTURE B-5-436			
CTH MM OVER BOWER CREEK			
COUNTY	BROWN	TOWN/CITY/VILLAGE	LEDGEVIEW
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS			
DESIGNED BY	KB	DESIGN CK'D.	KRH
DRAWN BY	KAM	PLANS CK'D.	KRH
GENERAL PLAN			SHEET 1 OF 12

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BATCH PRINT SHEET 2 OF 12

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

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

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

THE FIRST DIGIT OF A THREE DIGIT BAR MARK AND THE FIRST TWO DIGITS OF A FOUR DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

THE EXISTING STRUCTURE (P-5-106) IS A TWO SPAN PRESTRESSED CONCRETE BOX GIRDER BRIDGE, 52.3' LONG x 30.5' WIDE, TO BE REMOVED.

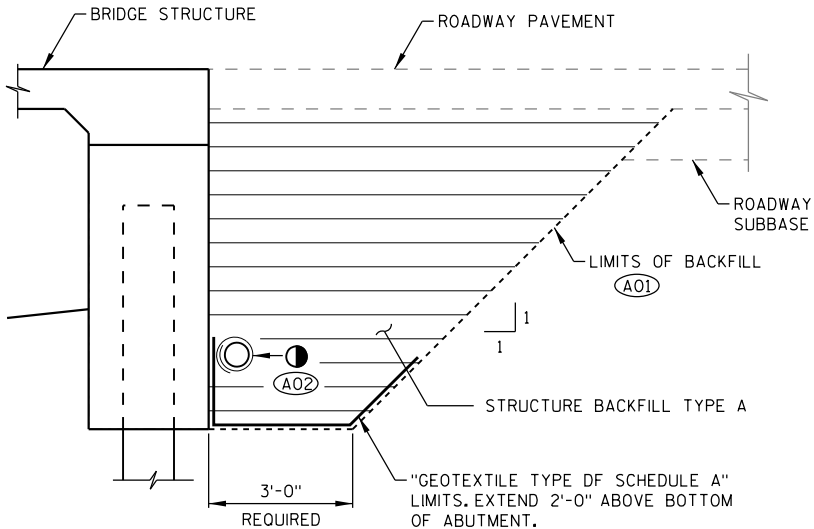
ALL REQUIRED REMOVAL OF THE EXISTING SUBSTRUCTURES IS INCLUDED IN THE BID ITEM "REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS, STATION 10+00."

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

EXCAVATION REQUIRED UNDER THE BID ITEM "EXCAVATION FOR STRUCTURES BRIDGES B-5-436" IS NOT USED TO BALANCE THE EARTHWORK.

THE EXISTING STREAM BED SHALL BE USED AS THE UPPER LIMITS OF EXCAVATION AT THE PIER.

CONCRETE POURED UNDER WATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH SECTION 502.3.5.3 STANDARD SPECIFICATIONS.



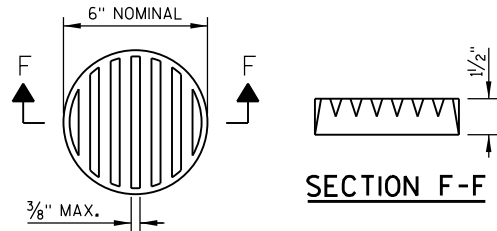
SECTION THRU ABUTMENT
(WINGWALLS SIMILIAR)

BACKFILL STRUCTURE LIMITS

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-5-436" SHALL BE THE EXISTING GROUNDLINE.

A01 BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

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



RODENT SHIELD DETAIL

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

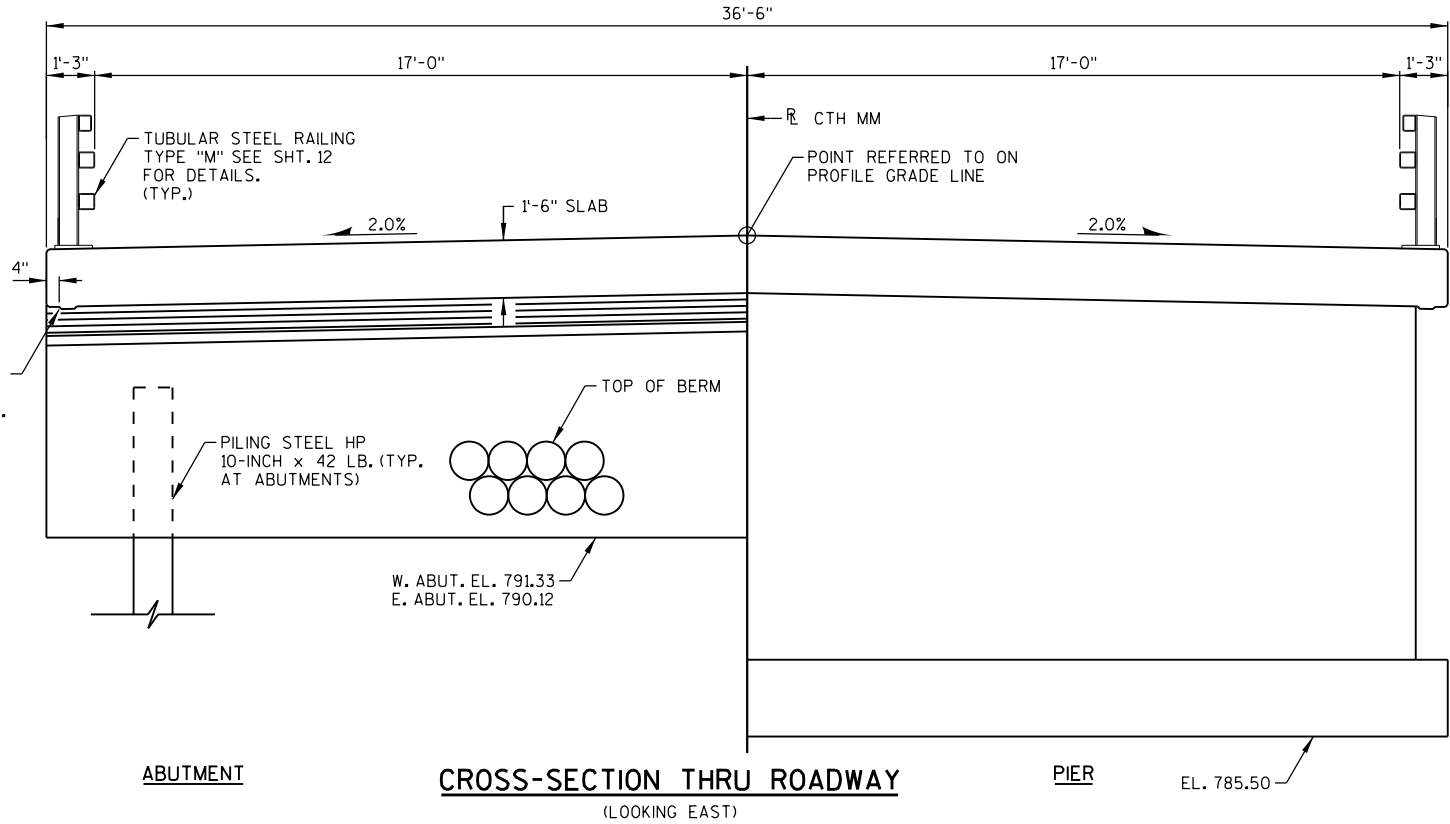
THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

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

EXCAVATION BELOW THE ABUTMENT AND ABUTMENT BEDDING MATERIALS REQUIRES ENGINEER APPROVAL. GEOTEXTILE SHALL BE SET AT THE BOTTOM OF EXCAVATION AND EXTEND 2'-0" ABOVE THE BOTTOM OF THE ABUTMENT.

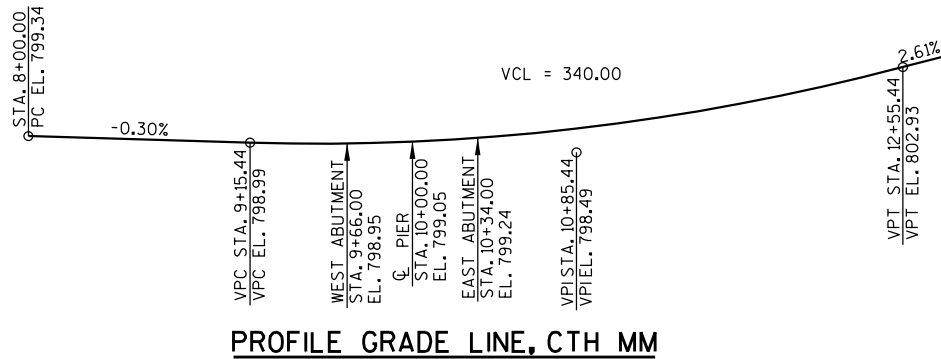
A02 PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. SEE DETAIL THIS SHEET.

A02 PLACE PIPE UNDERDRAIN WRAPPED (6-INCH) ABOVE GROUNDWATER. MIN. INVERT = EL. 791.5±.



TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEM	UNIT	WEST ABUTMENT	PIER	EAST ABUTMENT	SUPER.	TOTALS
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMUM DEBRIS STA. 10+00	LS					1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-5-436	LS					1
206.5000	COFFERDAMS B-5-436	LS					1
210.1500	BACKFILL STRUCTURE TYPE A	TON	167		228		395
502.0100	CONCRETE MASONRY BRIDGES	CY	30	51	38	149	268
502.3200	PROTECTIVE SURFACE TREATMENT	SY	18		23	323	364
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	2,720	8,310	2,720		13,750
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1,435	80	1,435	34,520	37,470
513.4061	RAILING TUBULAR TYPE M B-5-436	LF				146	146
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	8		8		16
550.0020	PRE-BORING ROCK OR CONSOLIDATED MATERIALS	LF	24		24		48
550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	120		120		240
606.0300	RIPRAP HEAVY	CY	120		110		230
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	71		71		142
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	56		56		112
645.0120	GEOTEXTILE TYPE HR	SY	240		230		470
NON-BID ITEMS							
	FILLER	SIZE					1/2" & 3/4"

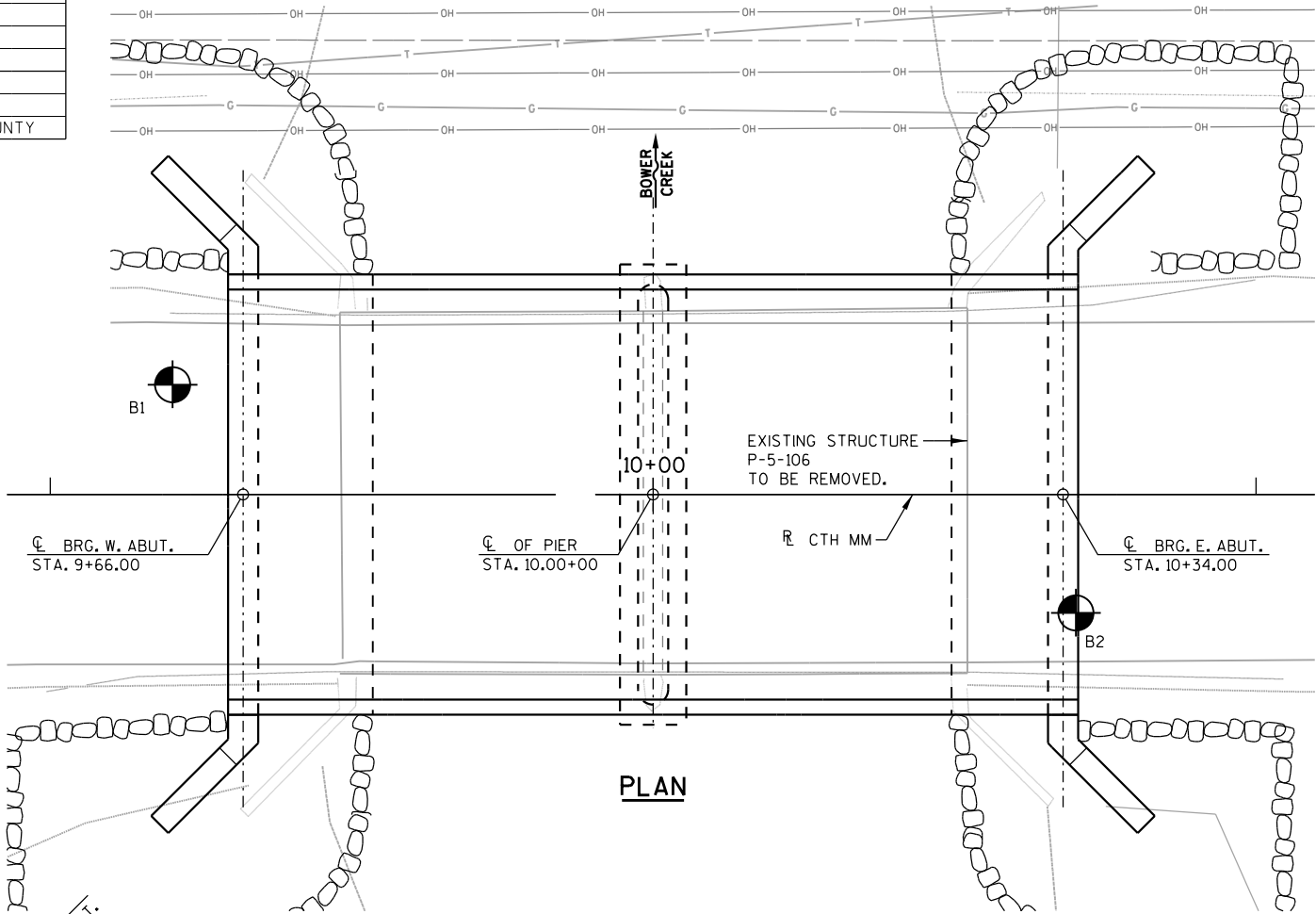


NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-436			
DRAWN BY		KAM	PLANS CKD. KRH
CROSS SECTION & QUANTITIES		SHEET 2 OF 12	

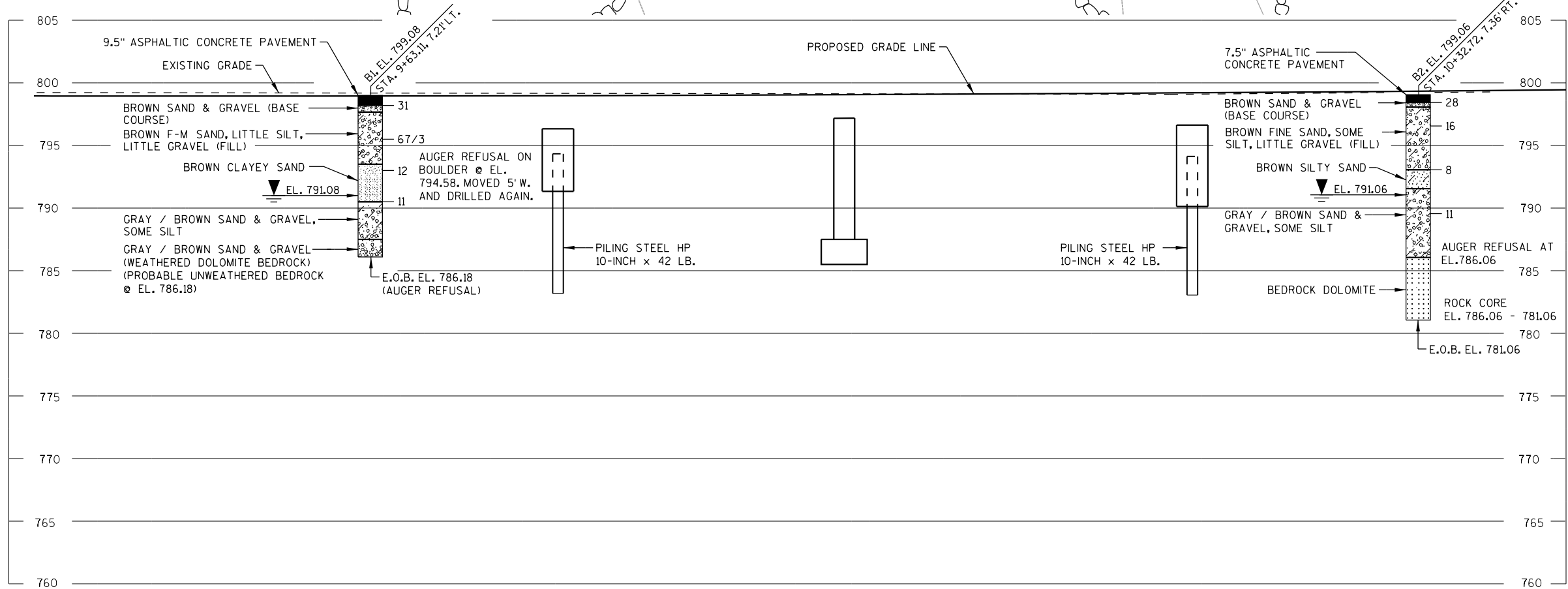
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BATCH PRINT SHEET 3 OF 12

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
B1	11/30/2015	533652.08±	119341.58±
B2	11/30/2015	533632.41±	119416.32±
BORINGS COMPLETED BY: NUMMELIN TESTING SERVICES, INC.			
REPORT COMPLETED BY: NUMMELIN TESTING SERVICES, INC.			
ALL COORDINATES REFERENCED TO WCCS NAD 83(91) BROWN COUNTY			



PLAN



STATE PROJECT NUMBER
4555-02-71

MATERIAL SYMBOLS

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

LEGEND OF BORING

BORING # / EL. STA. / OFF-SET

ST (1) 0.25 (2) 17

F-C COBBLE OR BOULDER

WEATHERED LIMESTONE

CORE RUN #1 - 24'-29' REC=80%, ROD=72%

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.

8

8

NO. DATE REVISION BY

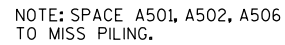
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-5-436

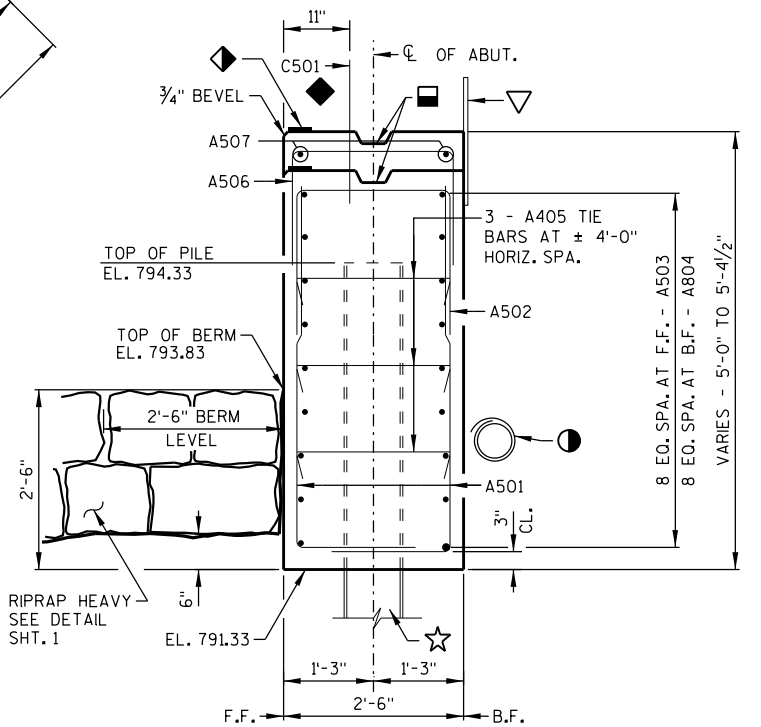
DRAWN BY KAM PLANS CK'D. KRH

SUBSURFACE EXPLORATION

SHEET 3 OF 12

[illegible]

- ☆ SUPPORT ABUTMENTS ON PILING STEEL HP 10-INCH x 42 LB. SEE FOUNDATION DATA ON SHEET 1 AND PILE SPLICE DETAIL ON SHEET 8.
- PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. DRAIN BOTH ABUTMENTS TO DOWNSTREAM SIDE OF BRIDGE. ATTACH RODENT SHIELD AT ENDS OF PIPE. SEE SHT. 2.
- 1/2" FILLER TO EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)
- ◆ C501 OR P511 AT 1'-0". BARS MAY BE PLACED AFTER CONCRETE HAS BEEN POURED BUT PRIOR TO ITS INITIAL SET. EMBED 1'-0".
- ▽ 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACK FACE.
- ◆ 4"x3/4" FILLER - TO EXTEND BETWEEN EDGES OF SLAB AT ABUTMENTS AND AROUND ENTIRE PERIMETER AT TOP OF PIER.
- KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2"x6".
- OPTIONAL CONSTRUCTION JOINT KEYWAY FORMED BY A BEVELED 2"x6", WITH RUBBERIZED MEMBRANE WATERPROOFING ON BACKFACE. (COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES")
- ▲ DRIP EDGE, TERMINATE 6" FROM FRONT FACE OF ABUTMENTS.
- ☑ COAT WITH "PROTECTIVE SURFACE TREATMENT" AS PER THE STANDARD SPECIFICATIONS.



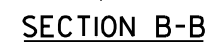
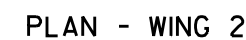
NOTES

FOR WING DETAILS AND ELEVATIONS SEE SHEET 5.

DO NOT PLACE FILL ABOVE 3'-0" FROM BOTTOM OF ABUTMENT UNTIL SUPERSTRUCTURE IS IN PLACE.

PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE TOP AND EXTERIOR EXPOSED FACE OF WINGS, AND TO THE FRONT FACE OF THE ABUTMENT FROM THE WINGS TO 1'-0" PAST THE EDGE OF SLAB.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-436			
DRAWN BY		KAM	PLANS CK'D. KRH
WEST ABUTMENT		SHEET 4 OF 12	



ADJUST C404 BARS TO MISS PILING.

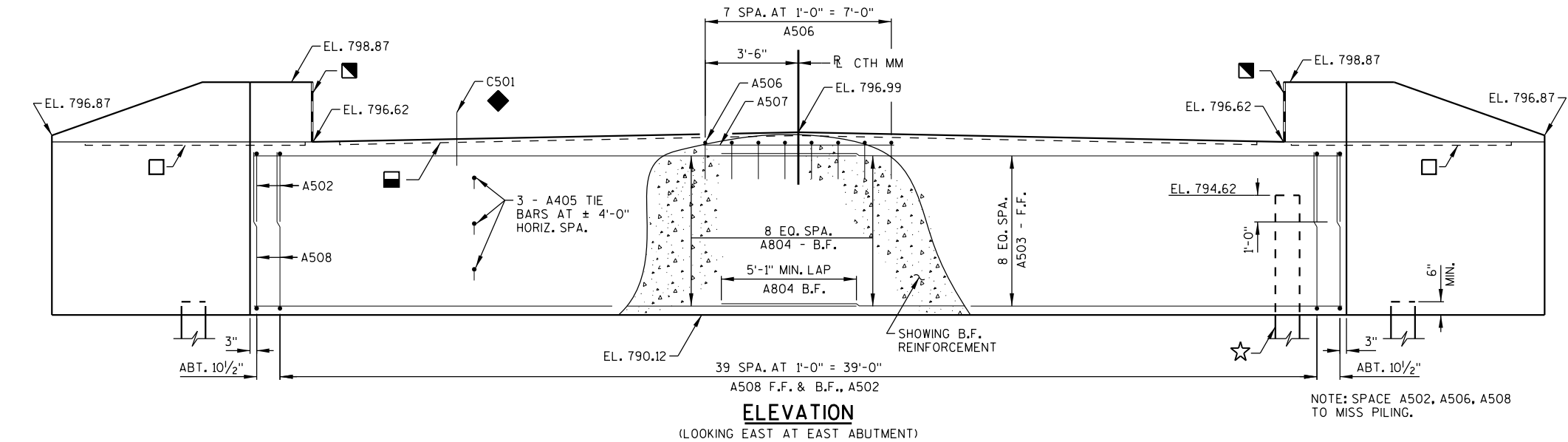
FOR SYMBOL DESCRIPTIONS SEE SHT. 4.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-436			
DRAWN BY		KAM	PLANS CK'D. KRH
WINGS 1 & 2		SHEET 5 OF 12	

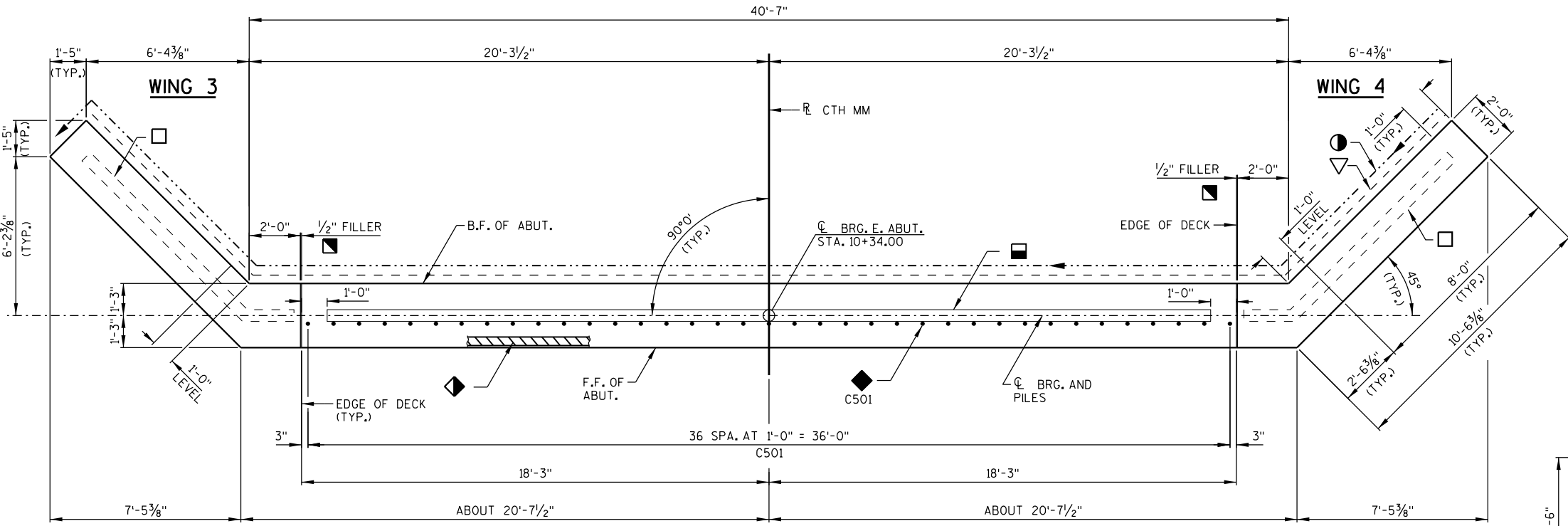
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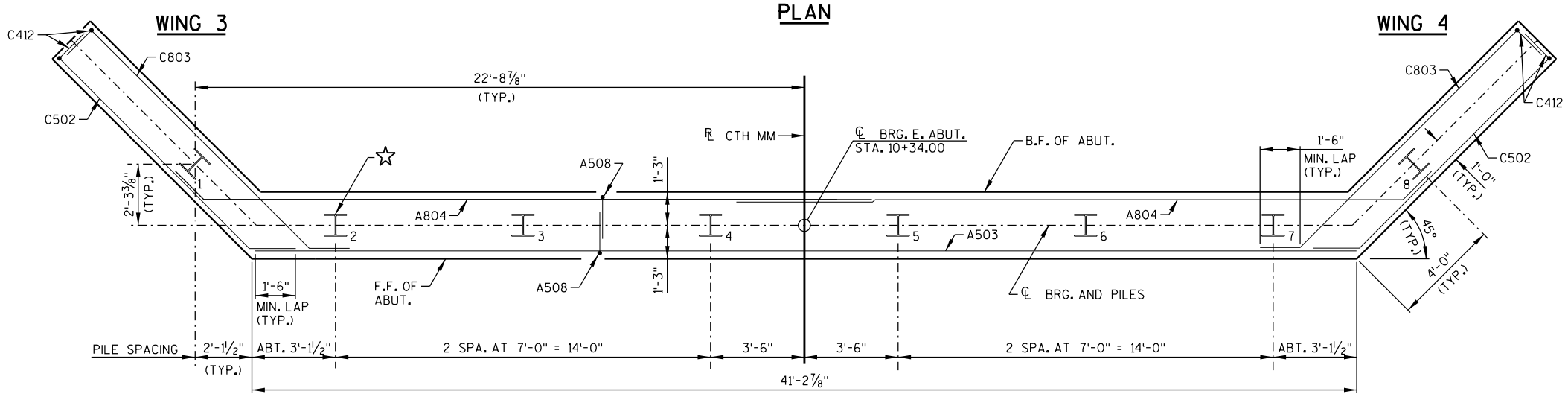
BATCH PRINT SHEET 6 OF 12



ELEVATION
(LOOKING EAST AT EAST ABUTMENT)



PLAN



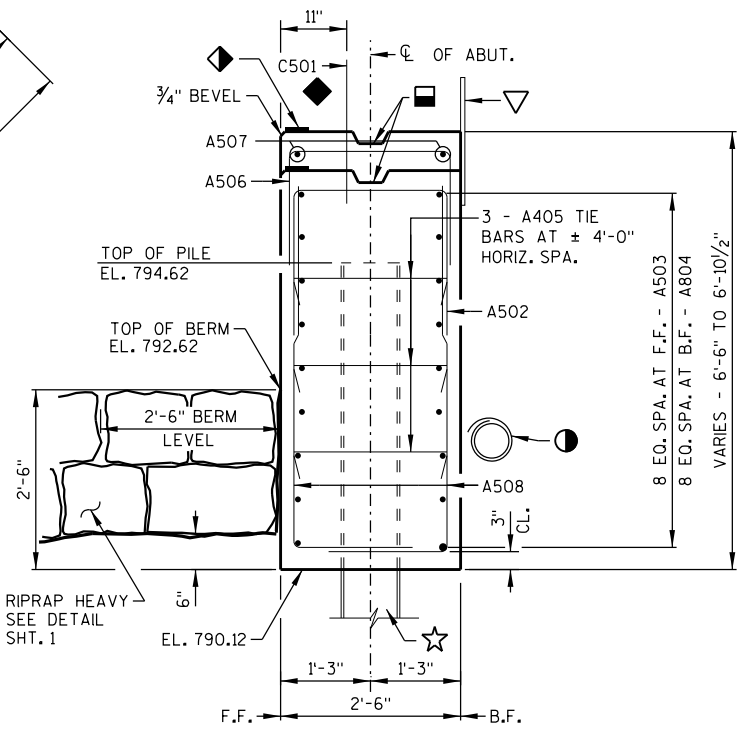
PILE PLAN

NOTES
FOR WING DETAILS AND ELEVATIONS SEE SHEET 7.

DO NOT PLACE FILL ABOVE 3'-0" FROM BOTTOM OF ABUTMENT UNTIL SUPERSTRUCTURE IS IN PLACE.

PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE TOP AND EXTERIOR EXPOSED FACE OF WINGS, AND TO THE FRONT FACE OF THE ABUTMENT FROM THE WINGS TO 1'-0" PAST THE EDGE OF SLAB.

LEGEND
FOR SYMBOL DESCRIPTIONS SEE SHT. 4.

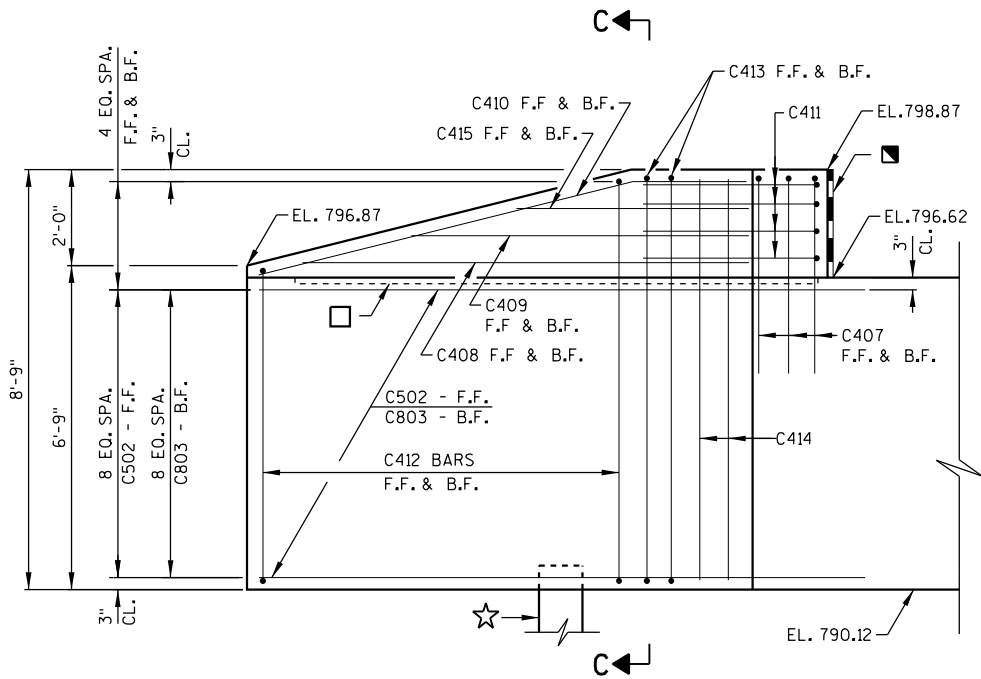


TYPICAL SECTION THRU BODY

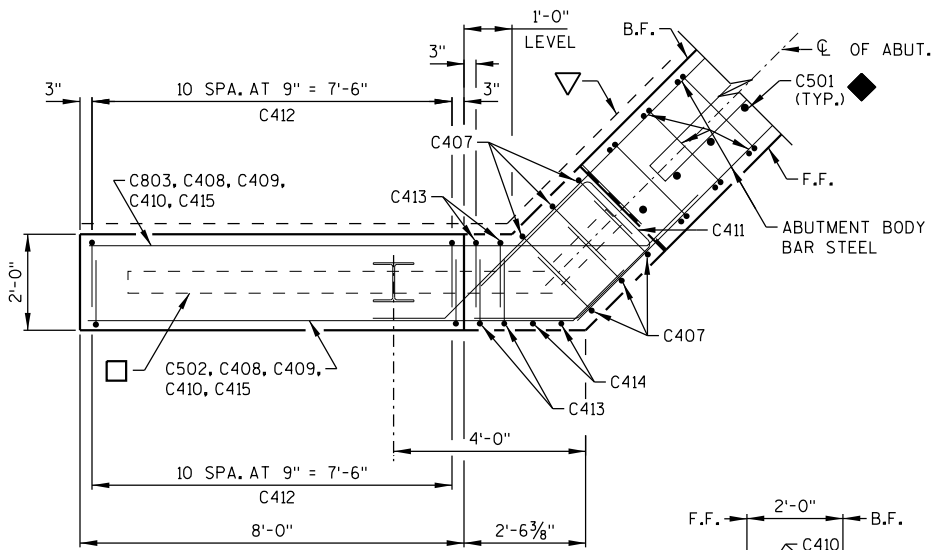
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STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-436			
DRAWN BY		KAM	PLANS CK'D. KRH
EAST ABUTMENT		SHEET 6 OF 12	

8

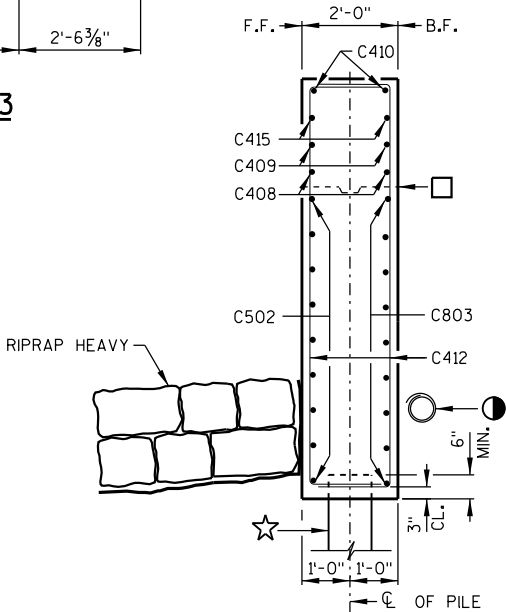
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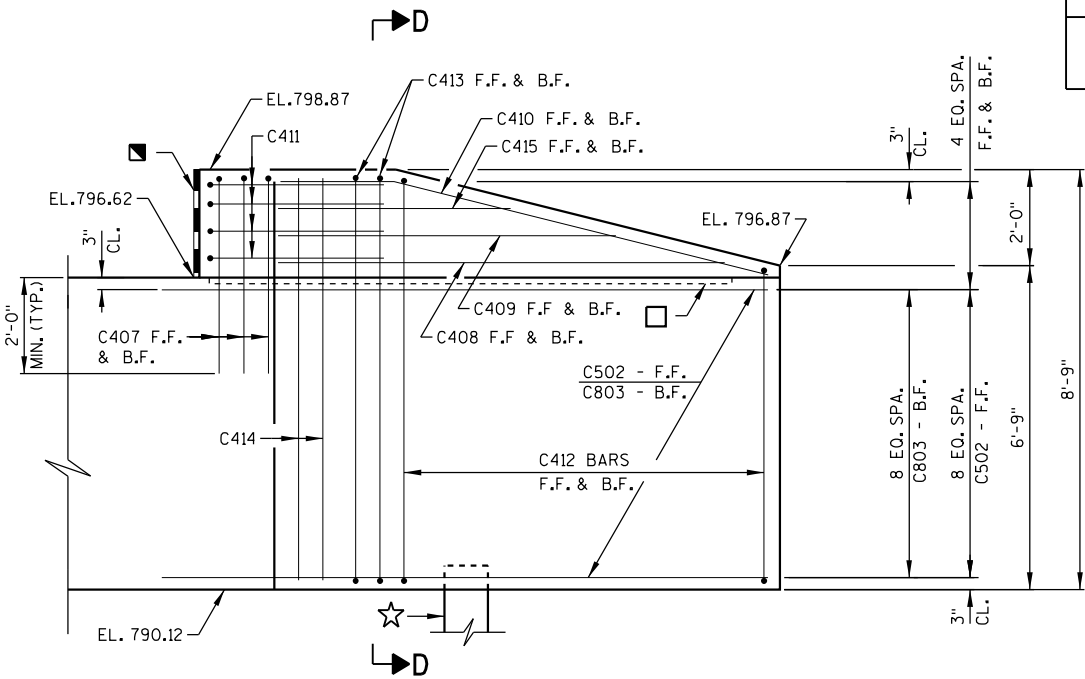
ELEVATION - WING 3



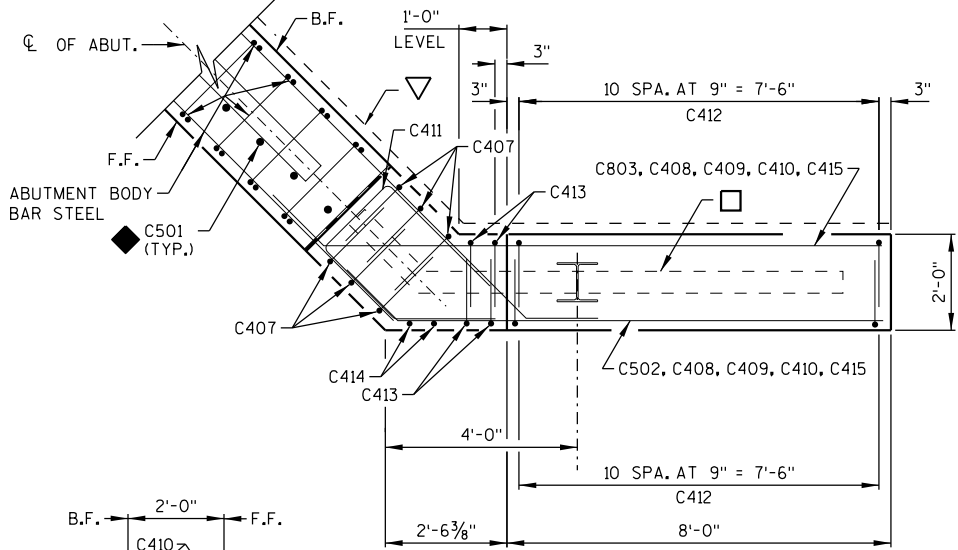
PLAN - WING 3



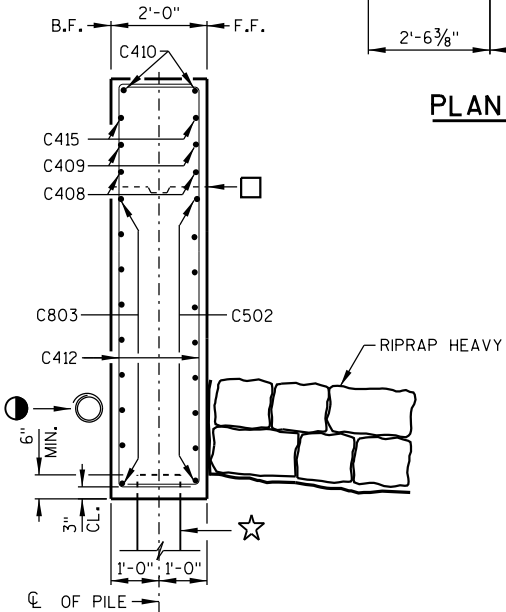
SECTION C-C



ELEVATION - WING 4



PLAN - WING 4



SECTION D-D

STATE PROJECT NUMBER
4555-02-71

NOTE
ADJUST C412 BARS TO MISS PILING.

LEGEND
FOR SYMBOL DESCRIPTIONS SEE SHT. 4.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-436			
DRAWN BY		KAM	PLANS CK'D. KRH
WINGS 3 & 4		SHEET 7 OF 12	

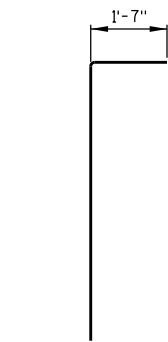
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BATCH PRINT SHEET 8 OF 12

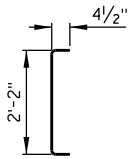
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STATE PROJECT NUMBER

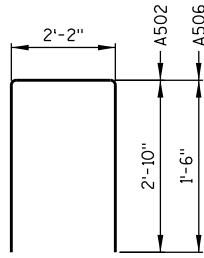
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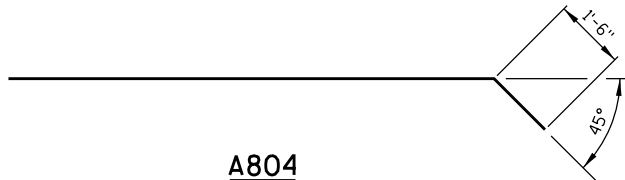
A501, A508



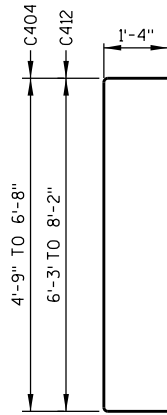
A405



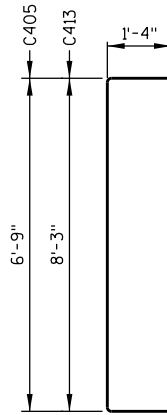
A502, A506



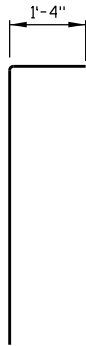
A804



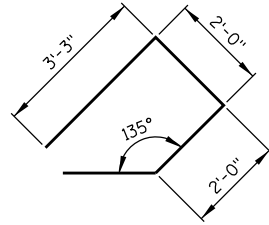
C404, C412



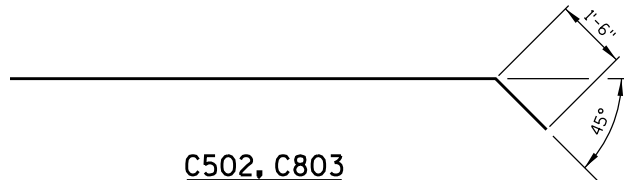
C405, C413



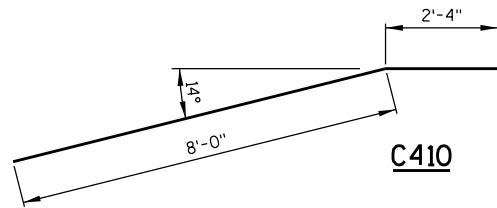
C407



C411



C502, C803



C410

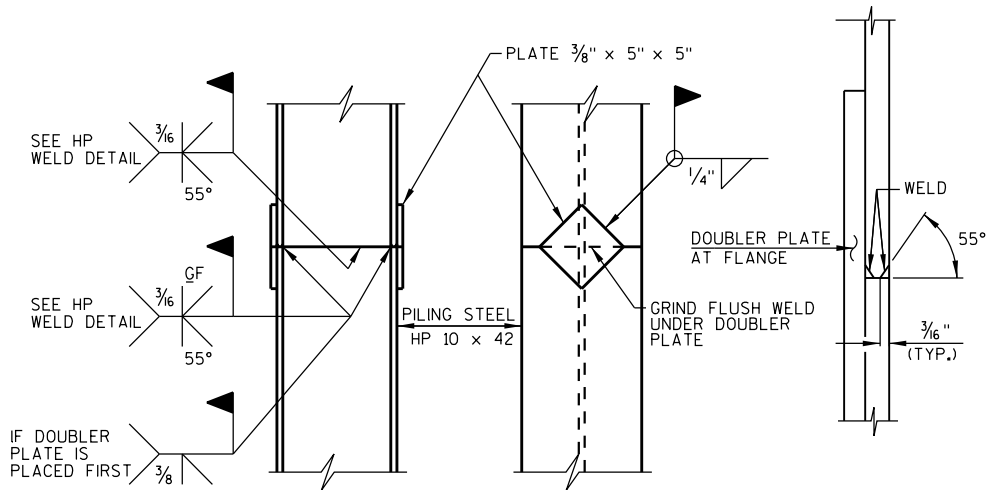
BAR SERIES

MARK	NO. REQ'D	LENGTH
C404	4 SERIES OF 11	7'-3" TO 9'-2"
C412	4 SERIES OF 11	8'-9" TO 10'-8"

BILL OF BARS

DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.
Δ LENGTH SHOWN FOR BAR IS AN AVG. LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.
BOTH ABUTMENTS INCLUDED IN THIS BILL OF BARS.

MARK	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
NON-COATED BARS					
TOTAL WEIGHT = 5,440 LBS					
A501	84	6-0	X		WEST ABUT. F.F. & B.F. VERT.
A502	84	7-7	X		WEST & EAST ABUT. - TOP VERT.
A503	18	40-11			WEST & EAST ABUT. - F.F. HORIZ.
A804	36	26-11	X		WEST & EAST ABUT. - B.F. HORIZ.
A405	66	2-9	X		WEST & EAST ABUT. - TIES HORIZ.
A506	16	4-11	X		WEST & EAST ABUT. - TOP VERT.
A507	4	7-0			WEST & EAST ABUT. - TOP HORIZ.
A508	84	7-6	X		EAST ABUT. F.F. & B.F. VERT.
COATED BARS					
TOTAL WEIGHT = 2,870 LBS					
C501	74	2-0			WEST & EAST ABUT. - DOWEL VERT.
C502	36	11-6	X		WINGS 1, 2, 3, 4 - F.F. HORIZ.
C803	36	13-1	X		WINGS 1, 2, 3, 4 - B.F. HORIZ.
C404	44	8-3	X	Δ	WINGS 1,2 - F.F. & B.F. VERT.
C405	8	9-3	X		WINGS 1,2 - F.F. & B.F. VERT.
C406	4	6-9			WINGS 1,2 - F.F. VERT.
C407	24	5-3	X		WINGS 1,2,3,4 - F.F. & B.F. VERT.
C408	8	9-1			WINGS 1,2,3,4 - F.F. & B.F. HORIZ.
C409	8	6-10			WINGS 1,2,3,4 - F.F. & B.F. HORIZ.
C410	8	10-4	X		WINGS 1,2,3,4 - F.F. & B.F. HORIZ.
C411	16	8-7	X		WINGS 1,2,3,4 - TIE HORIZ.
C412	44	9-9	X	Δ	WINGS 3,4 - F.F. & B.F. VERT.
C413	8	10-9	X		WINGS 3,4 - F.F. & B.F. VERT.
C414	4	8-3			WINGS 3,4 - F.F. VERT.
C415	8	4-7			WINGS 1, 2, 3, 4 - F.F. & B.F. HORIZ.



PILE SPLICE DETAIL

HP WELD DETAIL

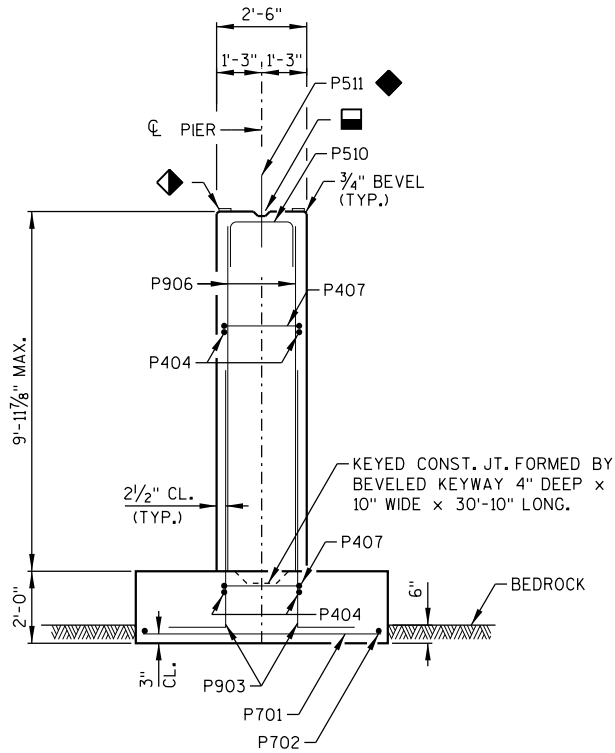
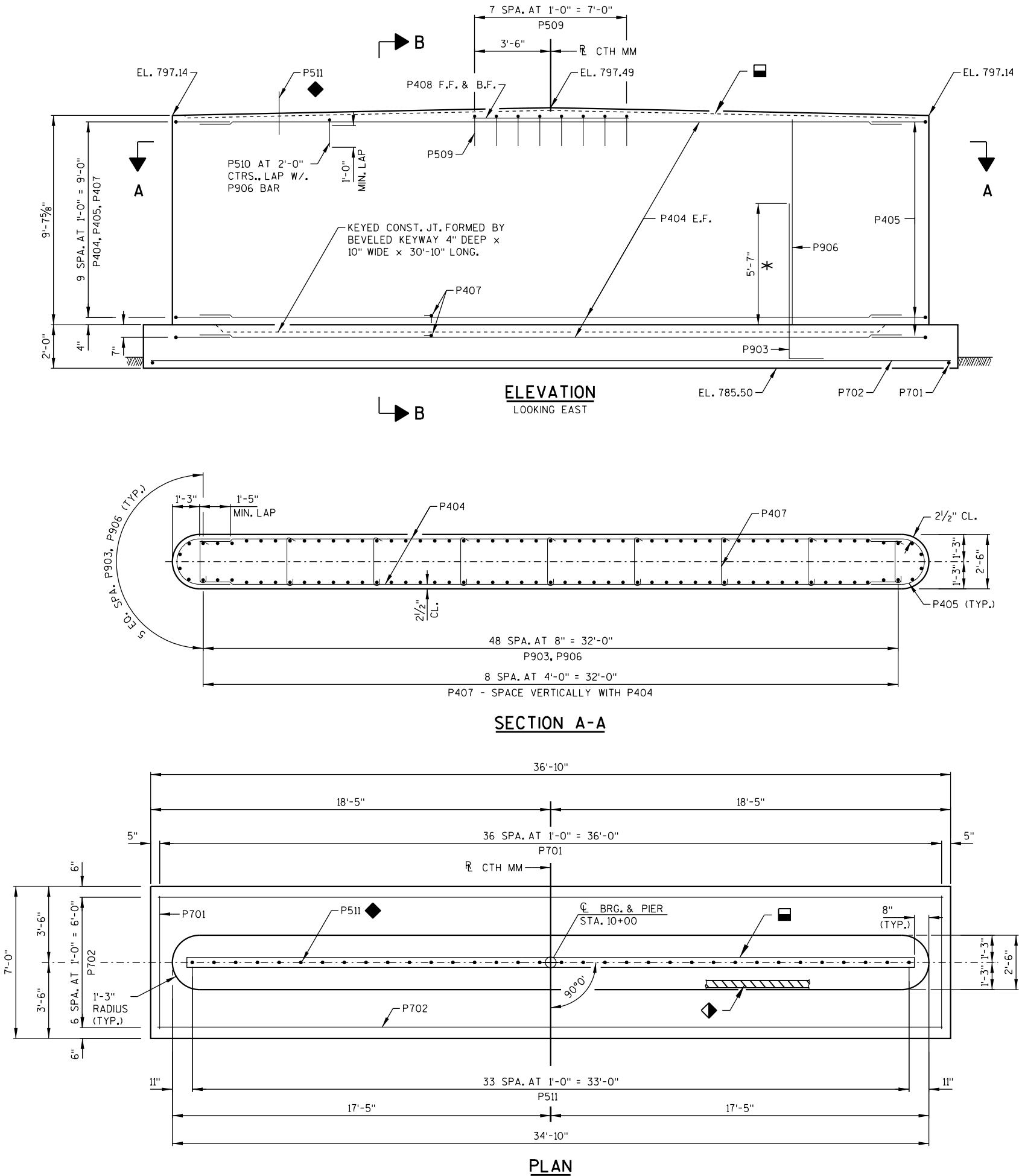
(FLANGE SHOWN, WEB SIMILAR)

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-436			
DRAWN BY		KAM	PLANS CK'D. KRH
ABUTMENT DETAILS		SHEET 8 OF 12	

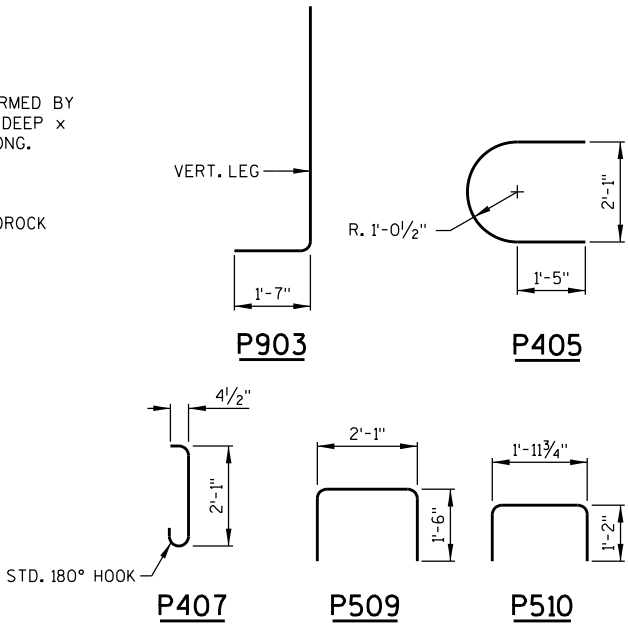
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BATCH PRINT SHEET 9 OF 12



SECTION B-B



BILL OF BARS

DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.

MARK	NO. REQ'D.	LENGTH	BENT	LOCATION
NON-COATED BARS				TOTAL WEIGHT = 8,310 LBS
P701	37	6-0		PIER FOOTING HORIZ.
P702	7	36-0		PIER FOOTING HORIZ.
P903	106	8-6	X	PIER FOOTING - F.F., B.F. & ENDS VERT.
P404	22	32-4		PIER BODY HORIZ.
P405	22	6-2	X	PIER BODY AT ENDS HORIZ.
P906	106	9-5		PIER BODY - F.F., B.F. & ENDS VERT.
P407	99	2-11	X	PIER BODY HORIZ.
P408	2	7-0		PIER BODY AT TOP HORIZ.
P509	8	4-10	X	PIER BODY AT TOP VERT.
P510	17	4-1	X	PIER BODY AT TOP VERT.
COATED BARS				TOTAL WEIGHT = 80 LBS
P511	34	2-0		PIER BODY - DOWELS, TOP VERT.

LEGEND

FOR SYMBOL DESCRIPTIONS SEE SHT. 4

NOTES

PIER TO BE SUPPORTED ON SOUND ROCK. PIER FOOTING TO BE KEYED 6" MIN. INTO BEDROCK. SEE FOUNDATION DATA ON SHT. 1.

ADJUST HORIZONTAL LEG OF DOWEL BAR (P903) AT ENDS OF PIER TO PROVIDE 3" MIN. OF CONCRETE COVER PAST THE END OF THE LEG.

* 4'-7" MIN. LAP LENGTH HAS BEEN OVERSIZED BY 1'-0" TO ALLOW FOR POSSIBLE ADJUSTMENTS TO BE MADE IN THE BOTTOM OF FOOTING ELEVATION.

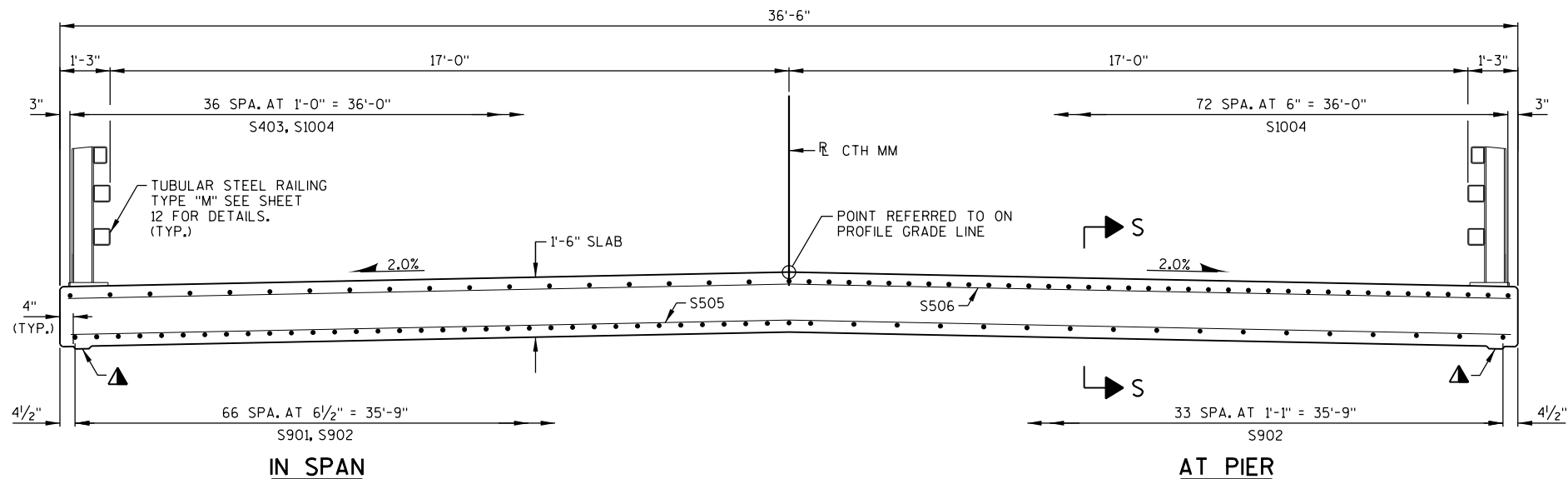
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-436			
DRAWN BY		KAM	PLANS CKD. KRH
PIER		SHEET 9 OF 12	

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BATCH PRINT SHEET 10 OF 12

8



CROSS SECTION THRU BRIDGE
LOOKING UPSTATION

NOTES

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

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

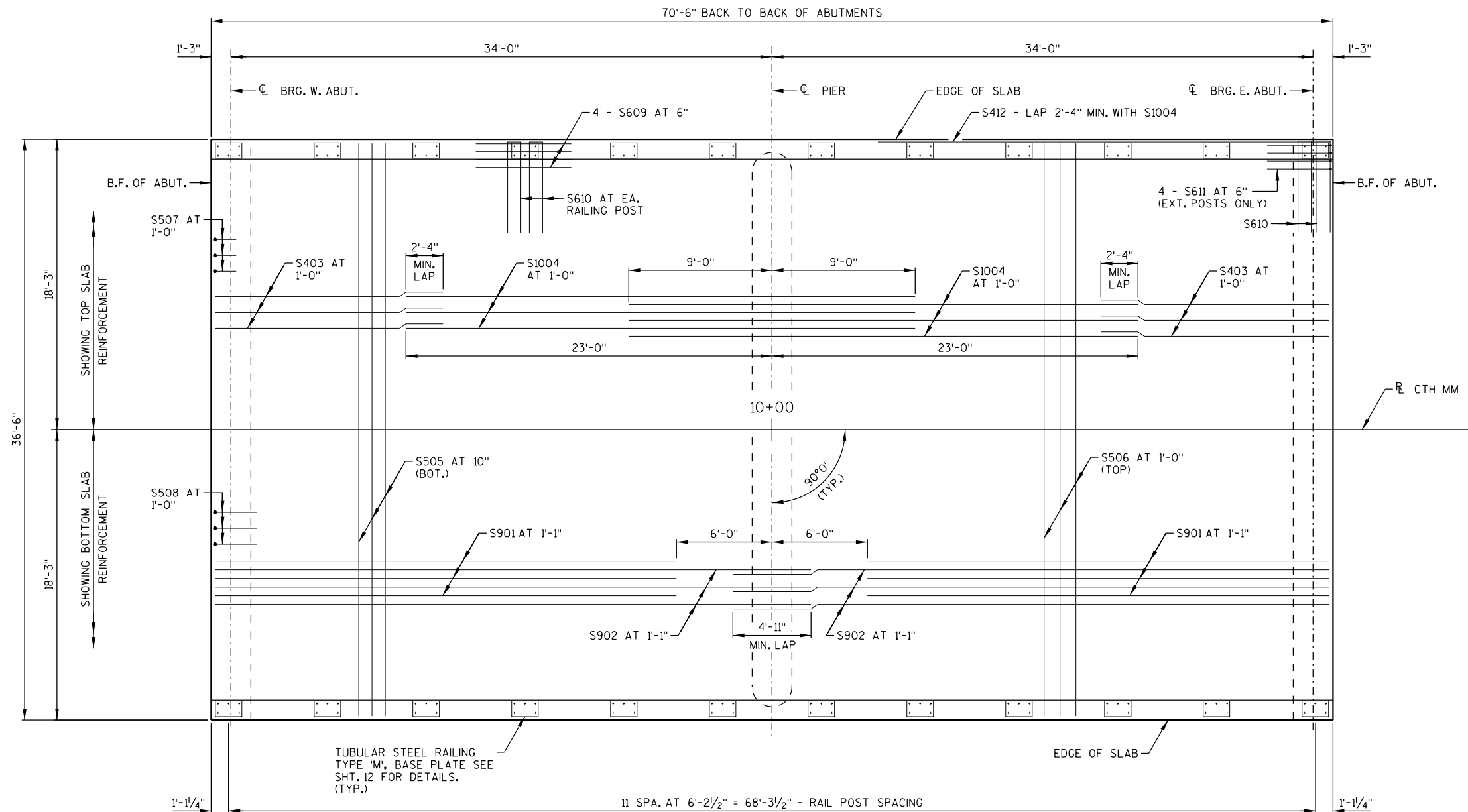
TOP TRANSVERSE BARS IN SLAB SHALL BE SUPPORTED BY INDIVIDUAL BAR CHAIRS AT APPROXIMATELY 3'-0" CENTERS EACH WAY. BOTTOM LONGITUDINAL BARS SHALL BE SUPPORTED BY CONTINUOUS BAR CHAIRS AT APPROXIMATELY 4'-0" CENTERS.

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

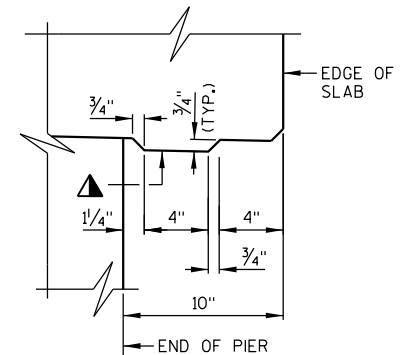
PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE ENTIRE TOP OF SLAB SURFACE, SIDE OF SLAB AND UNDERSIDE OF SLAB TO 1'-0" FROM THE EDGE OF SLAB. SEE PROTECTIVE SURFACE TREATMENT DETAIL SHT. 11.

LEGEND

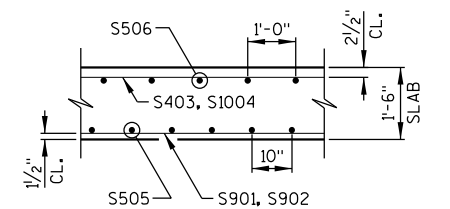
FOR SYMBOL DESCRIPTIONS SEE SHT. 4.



PLAN



DRIP EDGE DETAIL



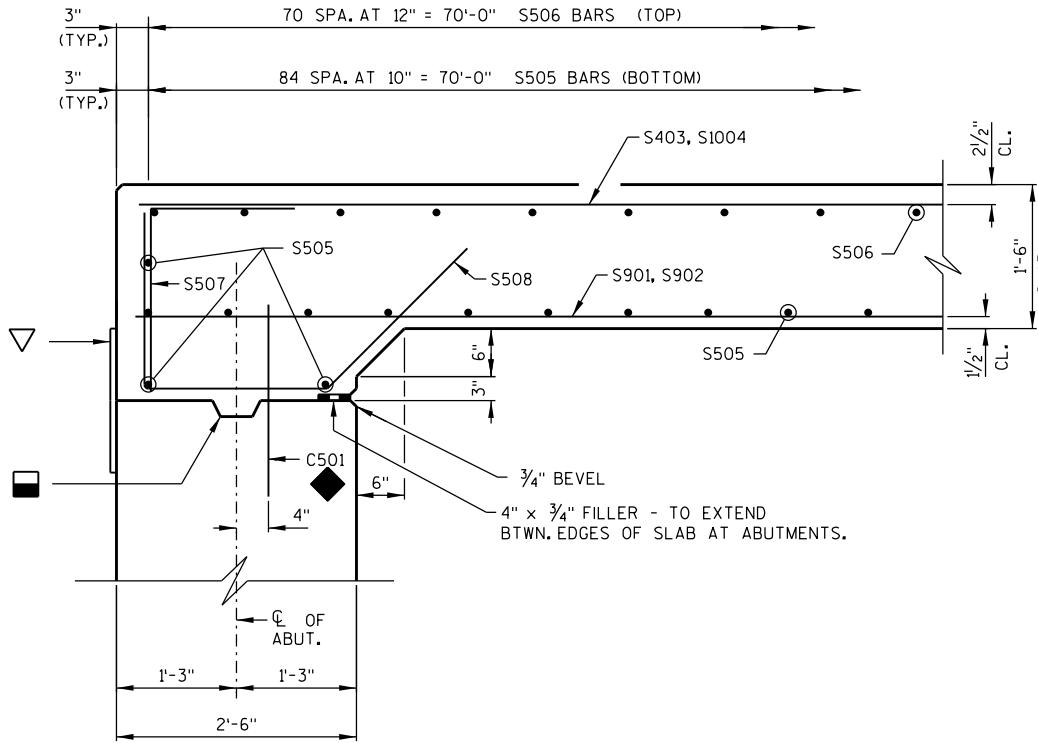
SECTION S - S

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-436			
DRAWN BY		KAM	PLANS CK'D. KRH
SUPERSTRUCTURE		SHEET 10 OF 12	

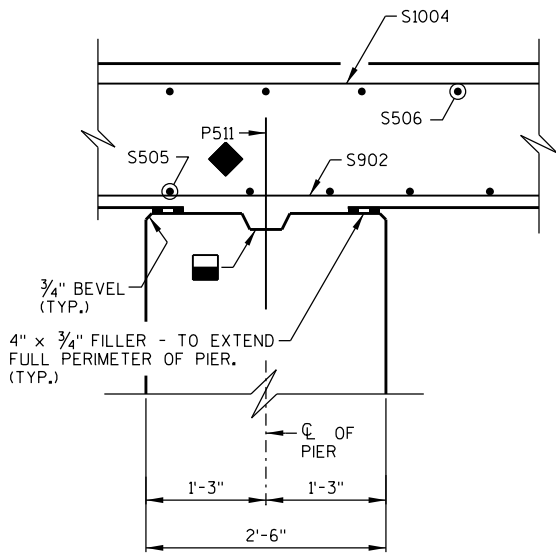
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BATCH PRINT SHEET 11 OF 12

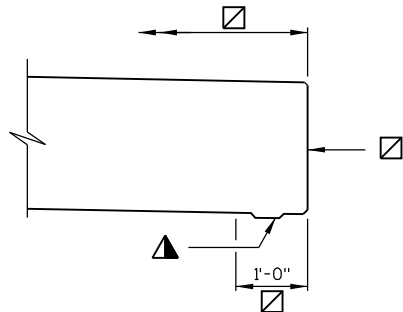


ABUTMENT DETAIL



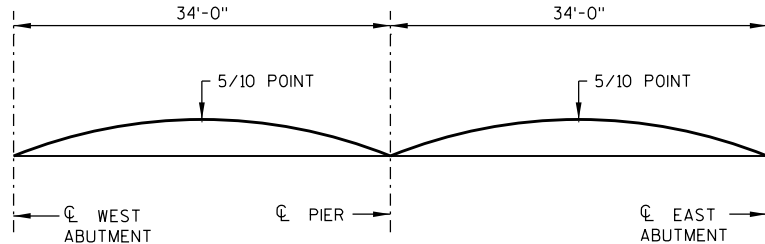
PIER DETAIL

PARTIAL LONGITUDINAL SECTION



PROTECTIVE SURFACE TREATMENT
 DETAIL AT SUPERSTRUCTURE

(RAILING AND REINFORCEMENT
 NOT SHOWN FOR CLARITY)



CAMBER DIAGRAM

SPAN 1	CL BRG. W. ABUT.	1/10 PT.	2/10 PT.	3/10 PT.	4/10 PT.	5/10 PT.	6/10 PT.	7/10 PT.	8/10 PT.	9/10 PT.	CL BRG. PIER
CAMBER (IN.)	0.0	0.2	0.3	0.4	0.5	0.5	0.4	0.3	0.2	0.0	0.0
SPAN 2	CL BRG. PIER	1/10 PT.	2/10 PT.	3/10 PT.	4/10 PT.	5/10 PT.	6/10 PT.	7/10 PT.	8/10 PT.	9/10 PT.	CL BRG. E. ABUT.
CAMBER (IN.)	0.0	0.0	0.2	0.3	0.4	0.5	0.5	0.4	0.3	0.2	0.0

TOP OF DECK ELEVATIONS & OFFSETS

	CL BRG. W. ABUT.	1/10 PT.	2/10 PT.	3/10 PT.	4/10 PT.	5/10 PT.	6/10 PT.	7/10 PT.	8/10 PT.	9/10 PT.	CL BRG. PIER	1/10 PT.	2/10 PT.	3/10 PT.	4/10 PT.	5/10 PT.	6/10 PT.	7/10 PT.	8/10 PT.	9/10 PT.	CL BRG. E. ABUT
NORTH EDGE OF DECK	798.58	798.59	798.59	798.60	798.61	798.62	798.63	798.64	798.65	798.66	798.68	798.69	798.71	798.73	798.74	798.76	798.78	798.80	798.83	798.85	798.87
CL OF DECK	798.95	798.96	798.96	798.97	798.98	798.99	799.00	799.01	799.02	799.03	799.05	799.06	799.08	799.10	799.11	799.13	799.15	799.17	799.20	799.22	799.24
SOUTH EDGE OF DECK	798.58	798.59	798.59	798.60	798.61	798.62	798.63	798.64	798.65	798.66	798.68	798.69	798.71	798.73	798.74	798.76	798.78	798.80	798.83	798.85	798.87

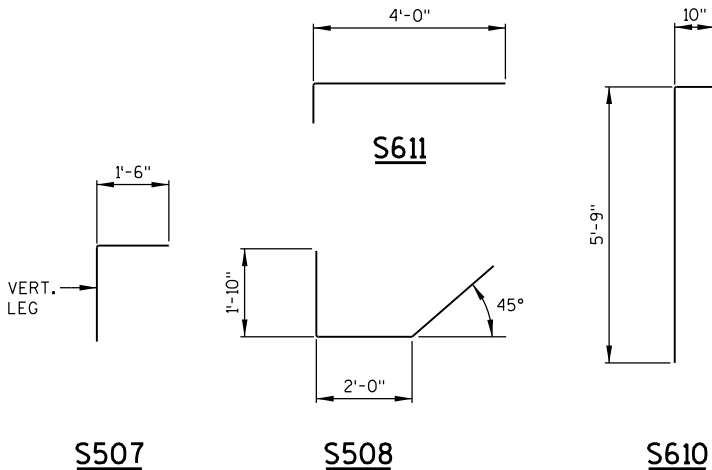
STATE PROJECT NUMBER

4555-02-71

BILL OF BARS

DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.

MARK	NO. REQ'D.	LENGTH	BENT	LOCATION	
COATED BARS					TOTAL WEIGHT = 34,520 LBS
S901	66	29'-1		SLAB - BOTTOM	LONGIT.
S902	68	37'-7		SLAB - BOTTOM	LONGIT.
S403	73	14'-5		SLAB - TOP	LONGIT.
S1004	73	32'-0		SLAB - TOP	LONGIT.
S505	91	36'-2		SLAB - BOTTOM	TRANS.
S506	71	36'-2		SLAB - TOP	TRANS.
S507	74	3'-3	X	SLAB - TIES AT ABUTMENT	LONGIT.
S508	74	5'-9	X	SLAB - TIES AT ABUTMENT	LONGIT.
S609	80	6'-0		SLAB - AT INTERIOR RAILING POSTS	LONGIT.
S610	48	12'-0	X	SLAB - AT RAILING POSTS	TRANS.
S611	16	4'-10	X	SLAB - AT CORNER RAILING POSTS	LONGIT.
S412	2	28'-5		SLAB - TOP AT EDGES OF SPAN 2	LONGIT.



LEGEND

FOR SYMBOL DESCRIPTIONS SEE SHT. 4.

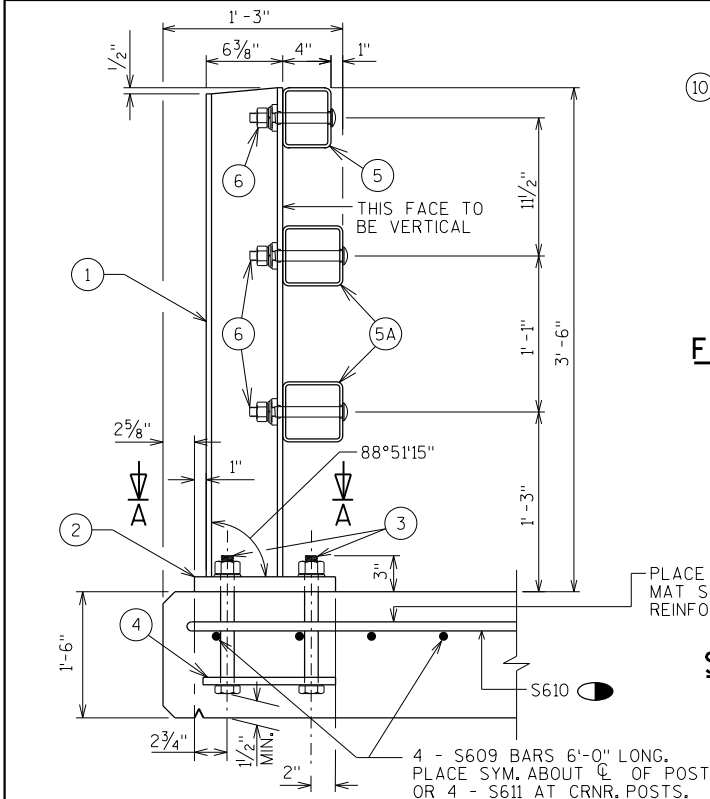
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-436			
DRAWN BY		KAM	PLANS CK'D. KRH
SUPERSTRUCTURE DETAILS			SHEET 11 OF 12

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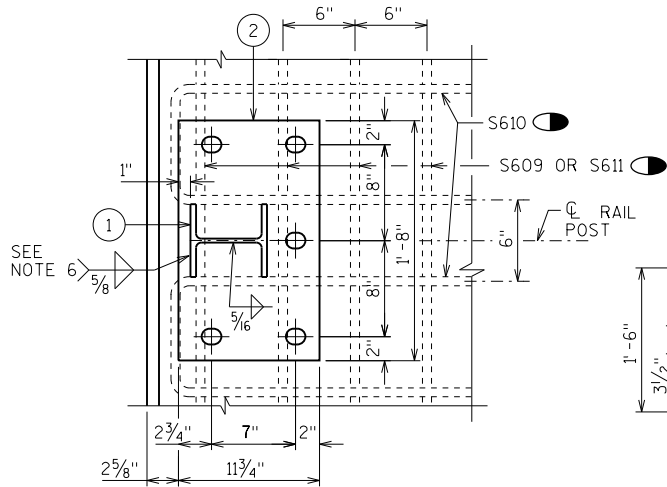
BATCH PRINT SHEET 12 OF 12

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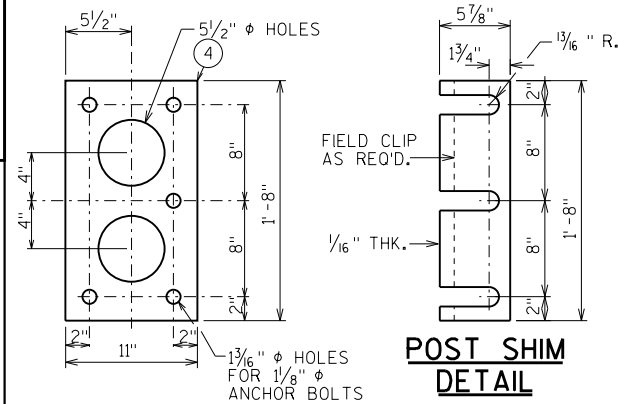


SECTION THRU RAILING ON DECK

TIE TO TOP MAT OF STEEL.

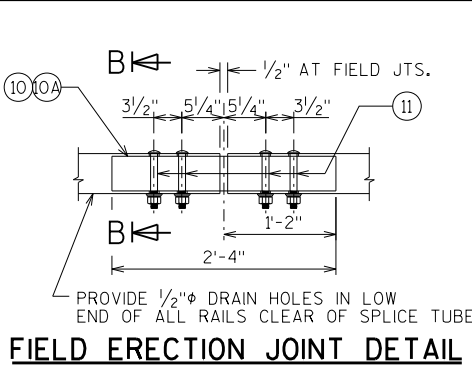


SECTION A-A

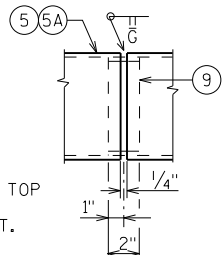


ANCHOR PLATE

AT RAIL TO DECK CONNECTION

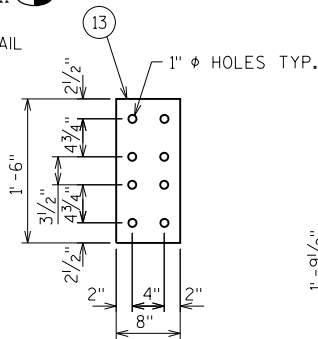


FIELD ERECTION JOINT DETAIL



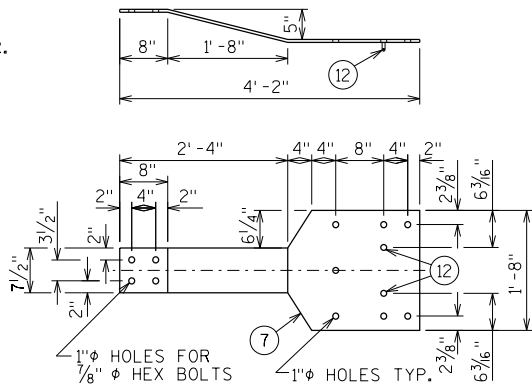
SHOP RAIL SPLICE DETAIL

LOCATION MUST BE SHOWN ON SHOP DRAWINGS



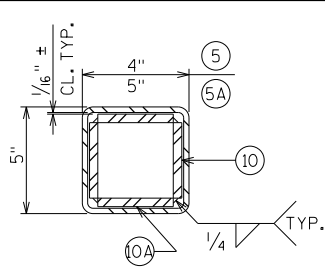
ANCHOR PLATE

AT BEAM GUARD ATTACHMENT

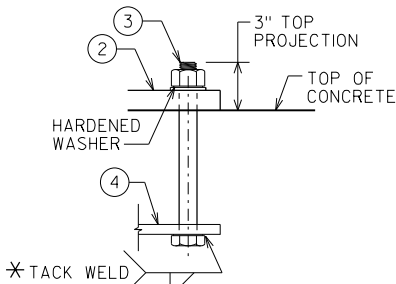


BACK-UP PLATE DETAIL

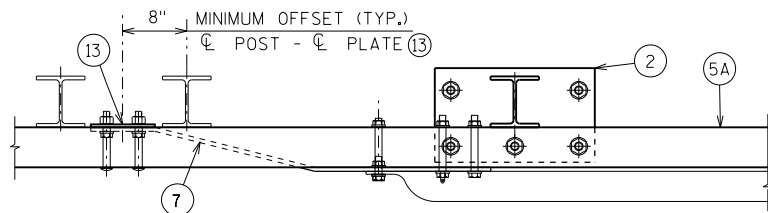
AT BEAM GUARD ATTACHMENT



SECTION B-B

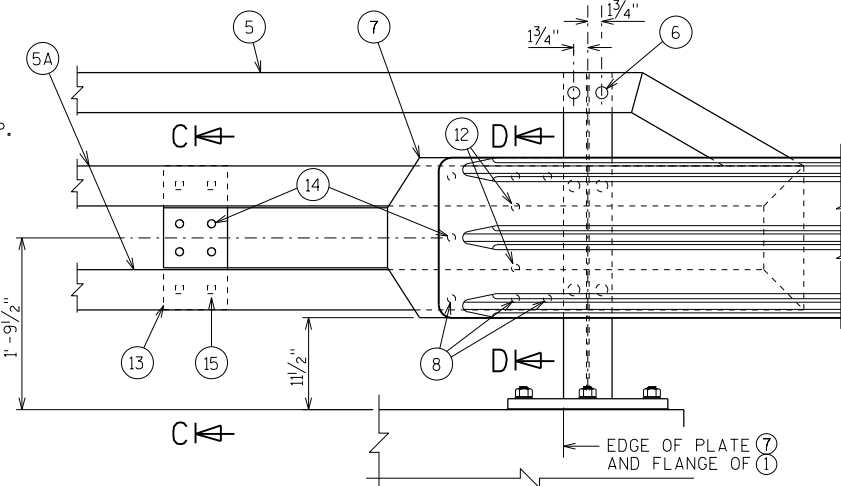


ANCHOR BOLTS



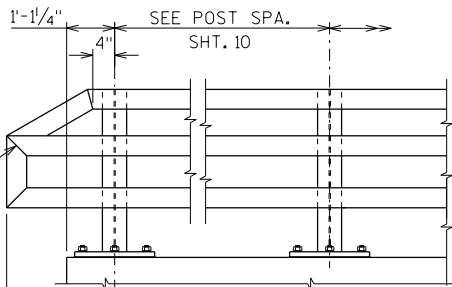
TOP VIEW AT END POST

THRIE BEAM RAIL ATTACHMENT

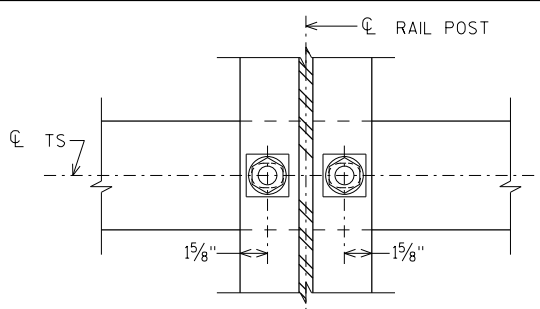


DETAIL AT END POST

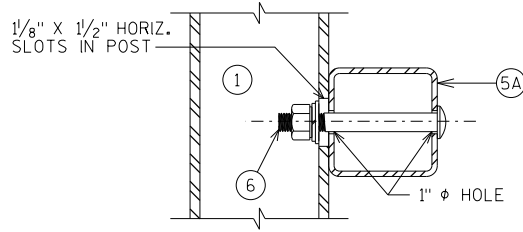
THRIE BEAM RAIL ATTACHMENT



PART ELEVATION OF RAILING



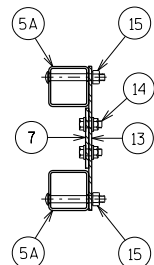
SECTION THRU POST WEB



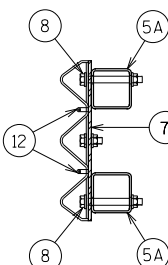
SECTION THRU RAIL

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

TYPICAL RAIL TO POST CONNECTIONS



SECTION C-C



SECTION D-D

LEGEND

- W6 x 25 with 1/8" x 1/2" HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
- PLATE 1/4" x 11 3/4" x 1'-8" WITH 1 5/8" x 1 5/8" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.
- ASTM A449 - 1/8" DIA. ANCHOR BOLTS WITH NUT AND HARDENED WASHER (ALL GALVANIZED). 5 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 16" USE 1'-3" LONG. ~~USE 10 3/4" LONG AT ALL OTHER LOCATIONS.~~
- 5/8" x 11" x 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1 3/8" DIA. HOLES FOR ANCHOR BOLTS NO. 3
- TS 5 x 4 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- TS 5 x 5 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, 3/16" x 1 5/8" x 1 5/8" WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)
- 1/2" THK. BACK-UP PLATE WITH 2 - 7/8" x 1 1/2" THREADED SHOP WELDED STUDS (NO. 12). BOLT TO RAIL AS SHOWN IN DETAIL. REQUIRED AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYMMETRICALLY ABOUT TUBES NO. 5A.
- 1" DIA. HOLES IN PLATE NO. 7 & TUBES NO. 5A FOR 7/8" DIA. A325 BOLTS WITH HEX NUTS AND WASHERS. 6 HOLES IN TUBES AND PLATE NO. 7.
- SPLICE SLEEVE FABRICATED FROM 1/4" PLATE. PROVIDE "SLIDING FIT".
- 3/8" x 3 5/8" x 2'-4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.
- 3/8" x 2 5/8" x 2'-4" PLATE USED IN NO. 5, 3/8" x 3 5/8" x 2'-4" PLATE USED IN NO. 5A. 2 PER RAIL.
- 7/8" phi A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 5/16" x 1 1/4" LONGIT. SLOTTED HOLES AT FIELD JOINTS AND 1 5/8" x 2 1/4" MIN. LONGIT. SLOTTED HOLES AT EXP. JOINTS IN PLATE NO. 10A.
- 7/8" DIA. x 1 1/2" LONG THREADED SHOP WELDED STUDS (2 REQ'D).
- 3/8" x 8" x 1'-6" PLATE. BOLT TO RAIL AS SHOWN IN DETAIL. REQ'D. AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYM. ABOUT TUBES NO. 5A.
- 7/8" DIA. x 2" LONG A325 HEX BOLT WITH NUT AND WASHER (5 REQ'D.).
- 1" phi HOLES IN TUBES NO. 5A FOR 7/8" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.

NOTES

- BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-5-436" WHICH INCLUDES ALL ITEMS SHOWN.
- RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 KSI. ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.
- THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.
- RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN A PANEL OVER EXPANSION JOINTS.
- ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
- WELD IS THE SAME ON BOTH FLANGES. FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING.
- FILL BOLT SLOT OPENINGS IN POST SHIMS AND PLATE NO. 2 AND CAULK AROUND PERIMETER OF PLATE NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D. FOR ALIGNMENT.
- POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
- ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS & STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY SSPC SPECIFICATIONS.
- THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL-4).

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-5-436			
DRAWN BY		KAM	PLANS CKD. KRH
TUBULAR STEEL RAILING TYPE 'M'			SHEET 12 OF 12

8

CTH MM - West Side of Bridge

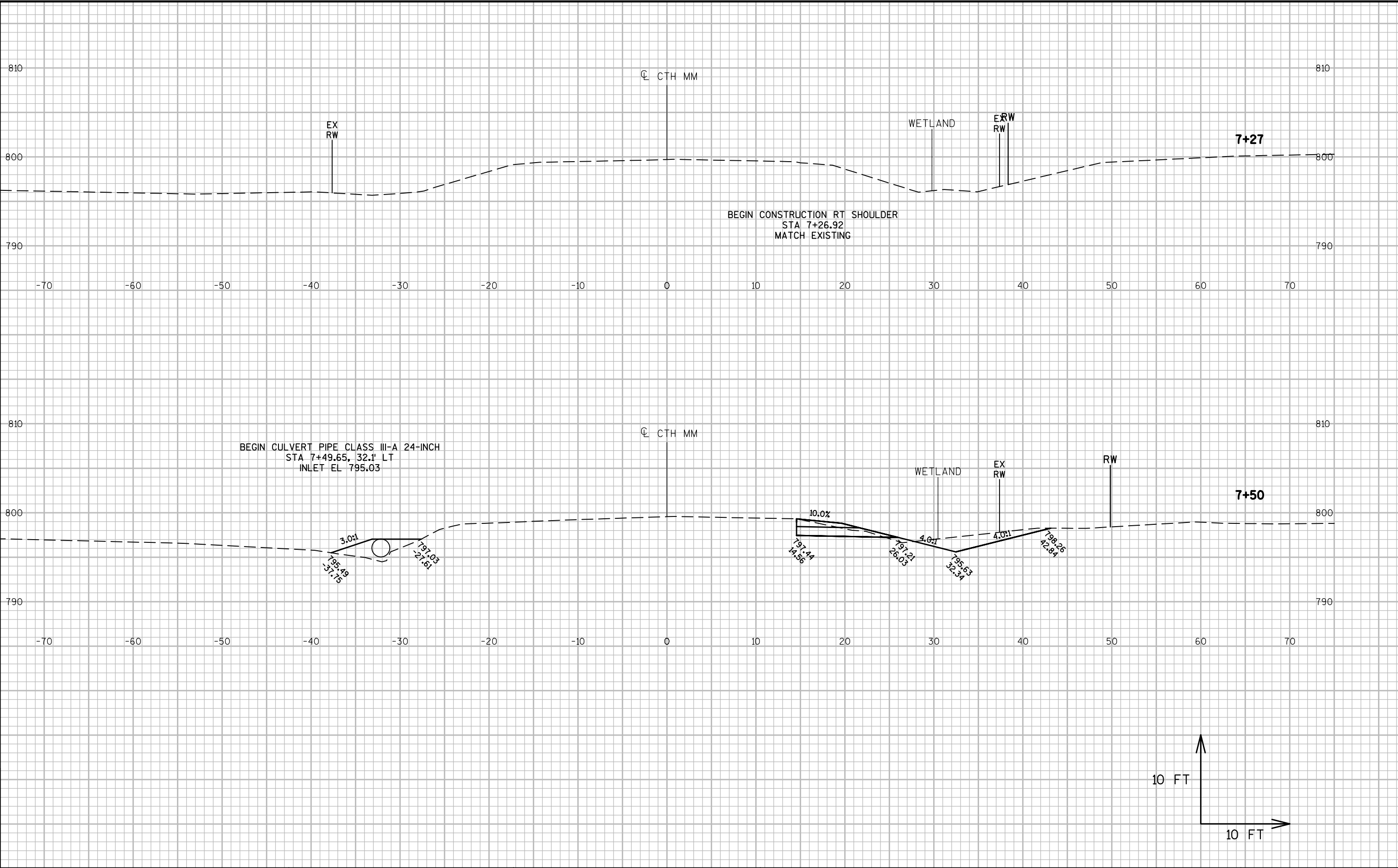
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			Cut	Salvaged/Unusable Pavement Material	Fill	Cut	Salvaged/Unusable Pavement Material	Fill	Expanded		
									Cut 1.00	Fill 1.25	
						Note 1	Note 2	Note 3	Note 1		Note 4
7+27			0	0	0	0	0	0	0	0	0
7+50	23	23	25	0	1	11	0	1	11	1	10
7+50	23	0	25	0	1	0	0	0	11	1	10
7+88	61	38	26	0	15	36	0	11	47	15	32
8+00	73	12	22	0	19	11	0	8	58	25	33
8+24	97	24	74	22	36	43	10	24	101	55	36
8+49	122	25	80	22	14	72	21	23	172	84	58
8+50	123	1	80	22	13	2	1	0	175	84	59
8+62	135	12	81	22	12	35	10	5	210	91	78
8+74	147	12	83	22	20	38	10	7	248	100	97
8+87	160	13	84	22	19	39	10	9	286	111	114
9+00	173	13	85	22	13	41	11	8	328	121	134
9+12	185	12	86	22	6	37	10	4	365	127	156
9+50	223	38	89	22	0	124	31	4	488	132	243
9+65	238	15	83	22	3	47	12	1	535	133	277
Earthwork Totals						550	130	150			

Notes:
1) Cut is material removed. Expanded fill factor = 1.00.
2) Salvaged/Unused pavement material is included in cut.
3) Fill is suitable backfill material. Expanded fill factor = 1.25.
4) The mass ordinate + or - the quantity is calculated. Positive quantity indicates an excess of material and negative indicates a shortage of material.

CTH MM - East Side of Bridge

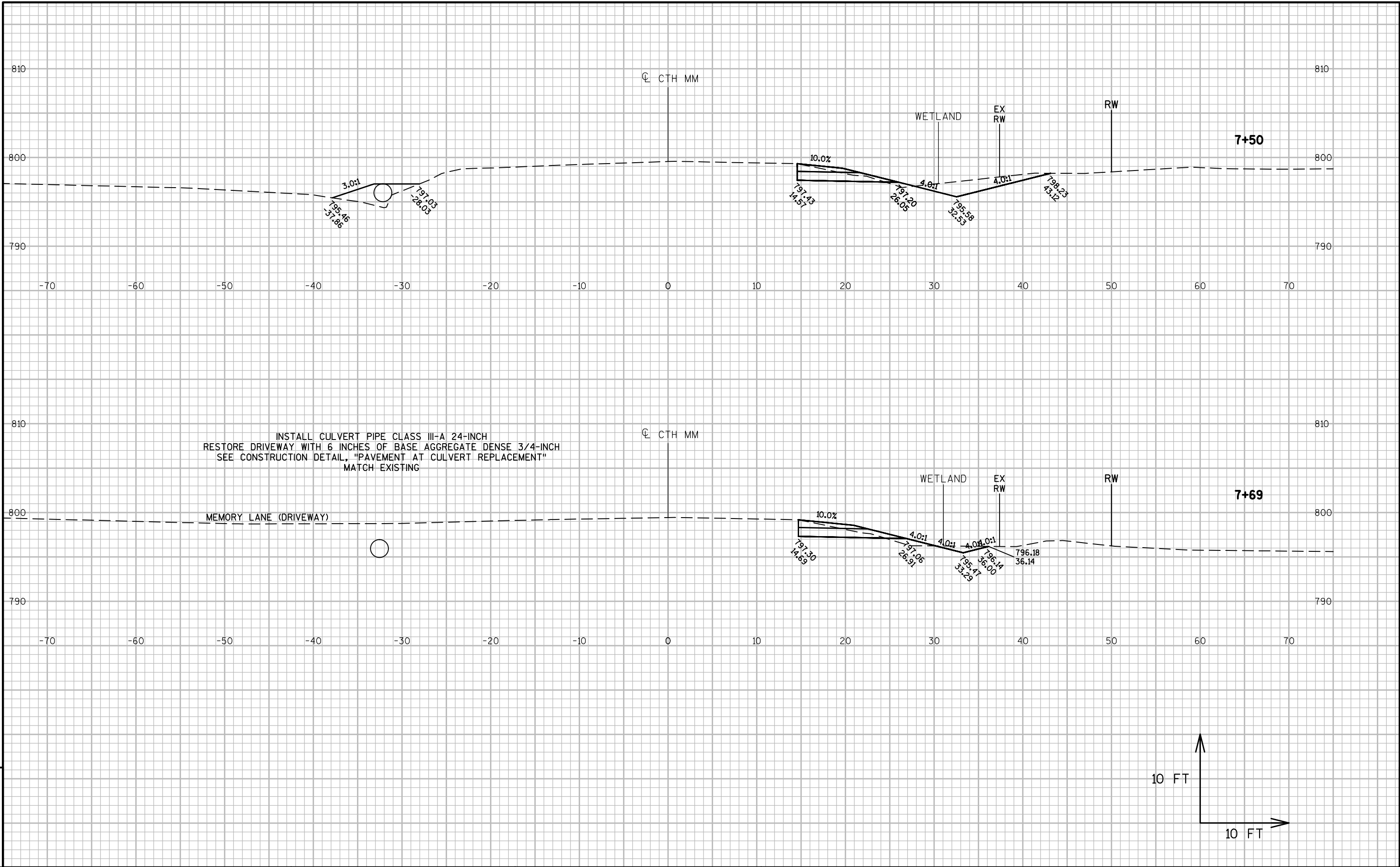
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			Cut	Salvaged/Unusable Pavement Material	Fill	Cut	Salvaged/Unusable Pavement Material	Fill	Expanded		
									Cut 1.00	Fill 1.25	
						Note 1	Note 2	Note 3	Note 1		Note 4
10+35	1035		65	18	24	0	0	0	0	0	0
10+50	1050	15	73	18	0	20	5	0	20	0	15
10+88	1088	38	65	18	9	92	25	24	112	30	53
11+00	1100	12	62	18	18	29	8	4	142	35	70
11+13	1113	13	59	18	22	31	9	8	172	44	82
11+38	1138	25	54	18	45	54	16	29	226	81	83
11+38	1138	0	54	18	45	0	0	0	226	81	83
11+50	1150	12	55	18	43	24	8	19	250	105	75
11+63	1163	13	55	18	41	27	9	21	277	131	67
11+88	1188	25	65	18	26	55	16	32	332	171	66
12+00	1200	12	69	18	16	27	8	12	359	187	70
12+50	1250	50	152	18	2	201	32	26	560	219	207
12+55	1255	5	171	18	2	24	4	2	584	221	225
12+74	1274	18	135	0	1	97	6	1	681	222	315
13+00	1300	26	53	0	2	109	9	2	790	224	413
13+16	1316	16	0	0	0	40	0	0	830	225	453
Earthwork Totals						850	160	200			

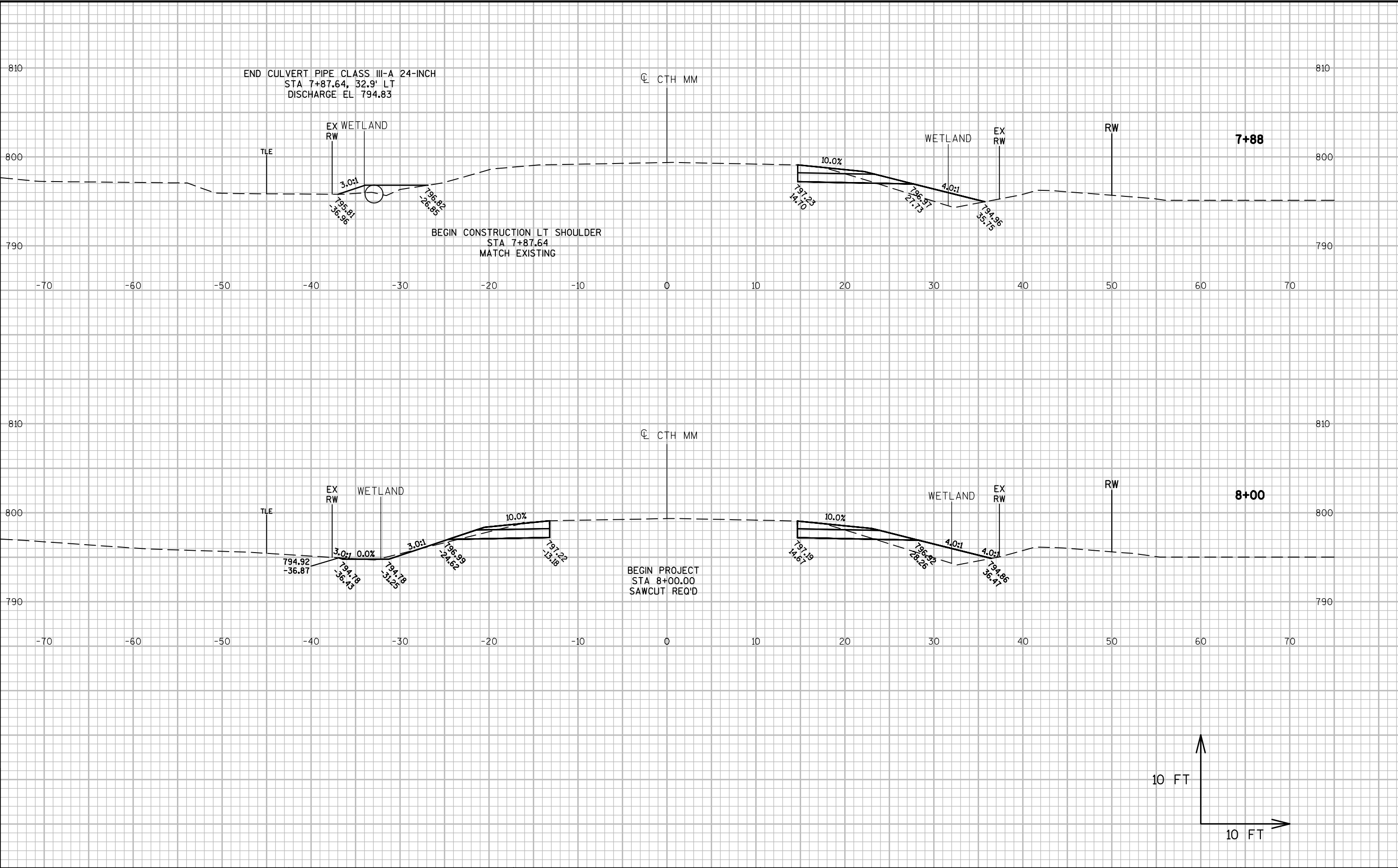
Notes:
1) Cut is material removed. Expanded fill factor = 1.00.
2) Salvaged/Unused pavement material is included in cut.
3) Fill is suitable backfill material. Expanded fill factor = 1.25.
4) The mass ordinate + or - the quantity is calculated. Positive quantity indicates an excess of material and negative indicates a shortage of material.



9

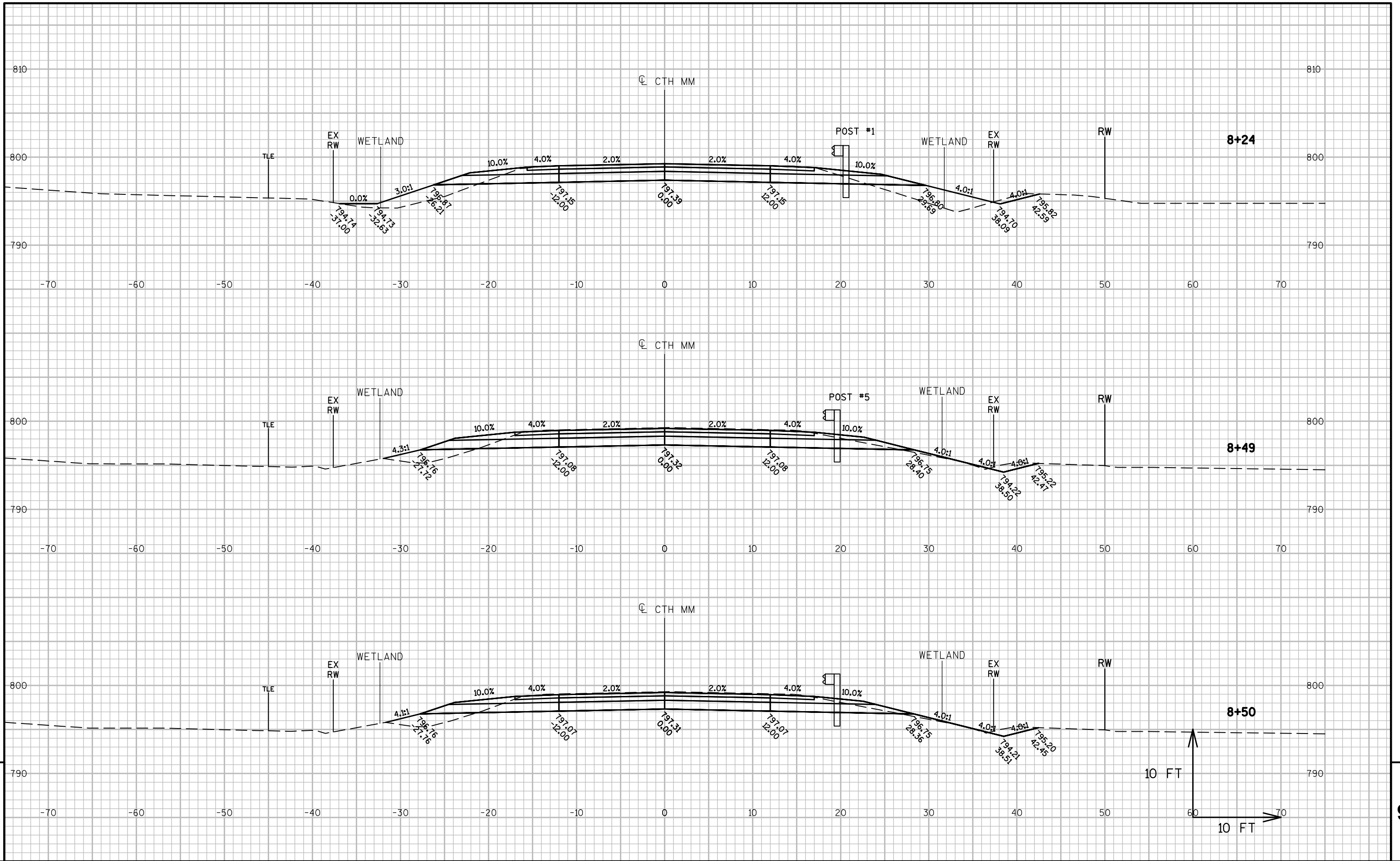
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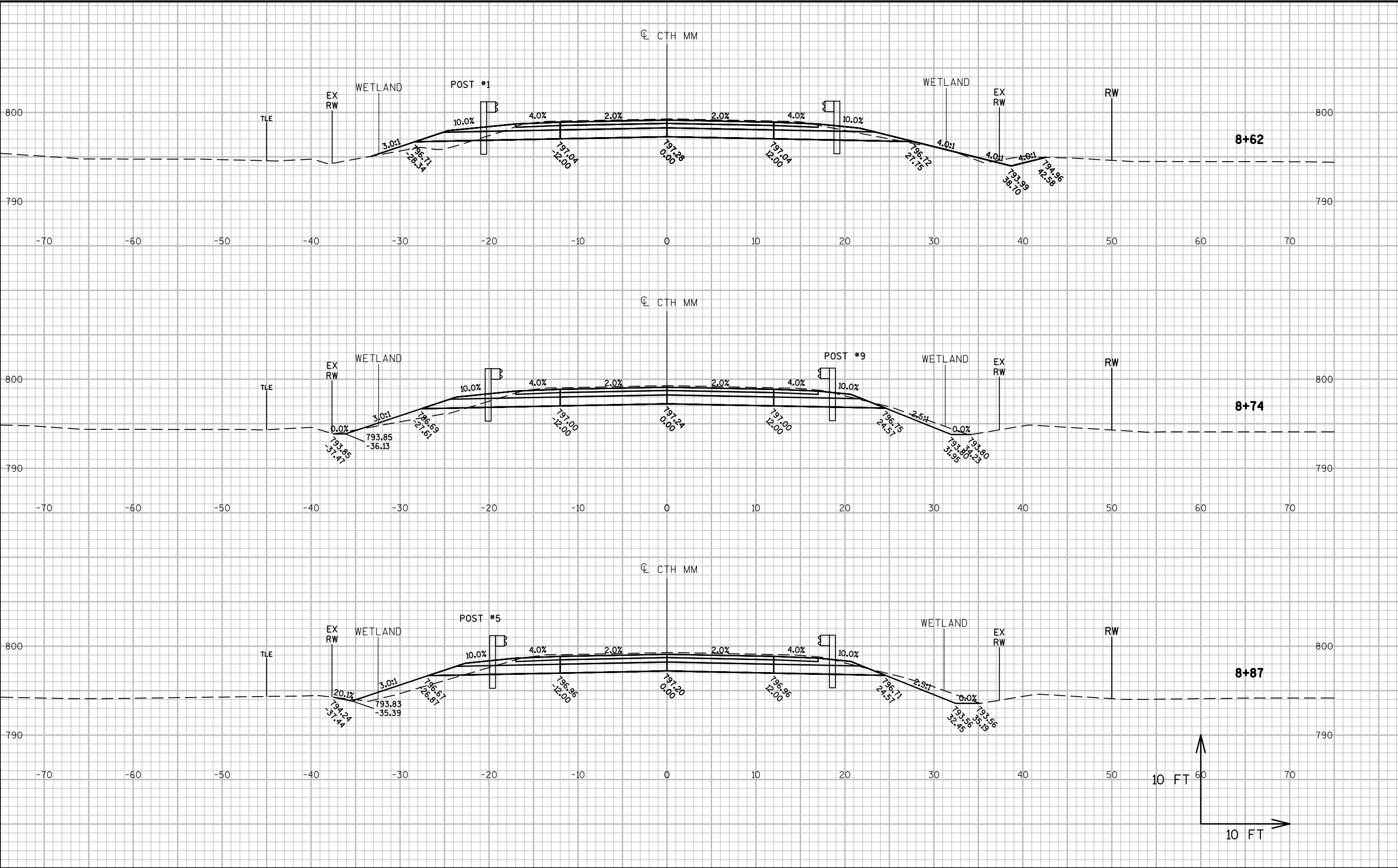


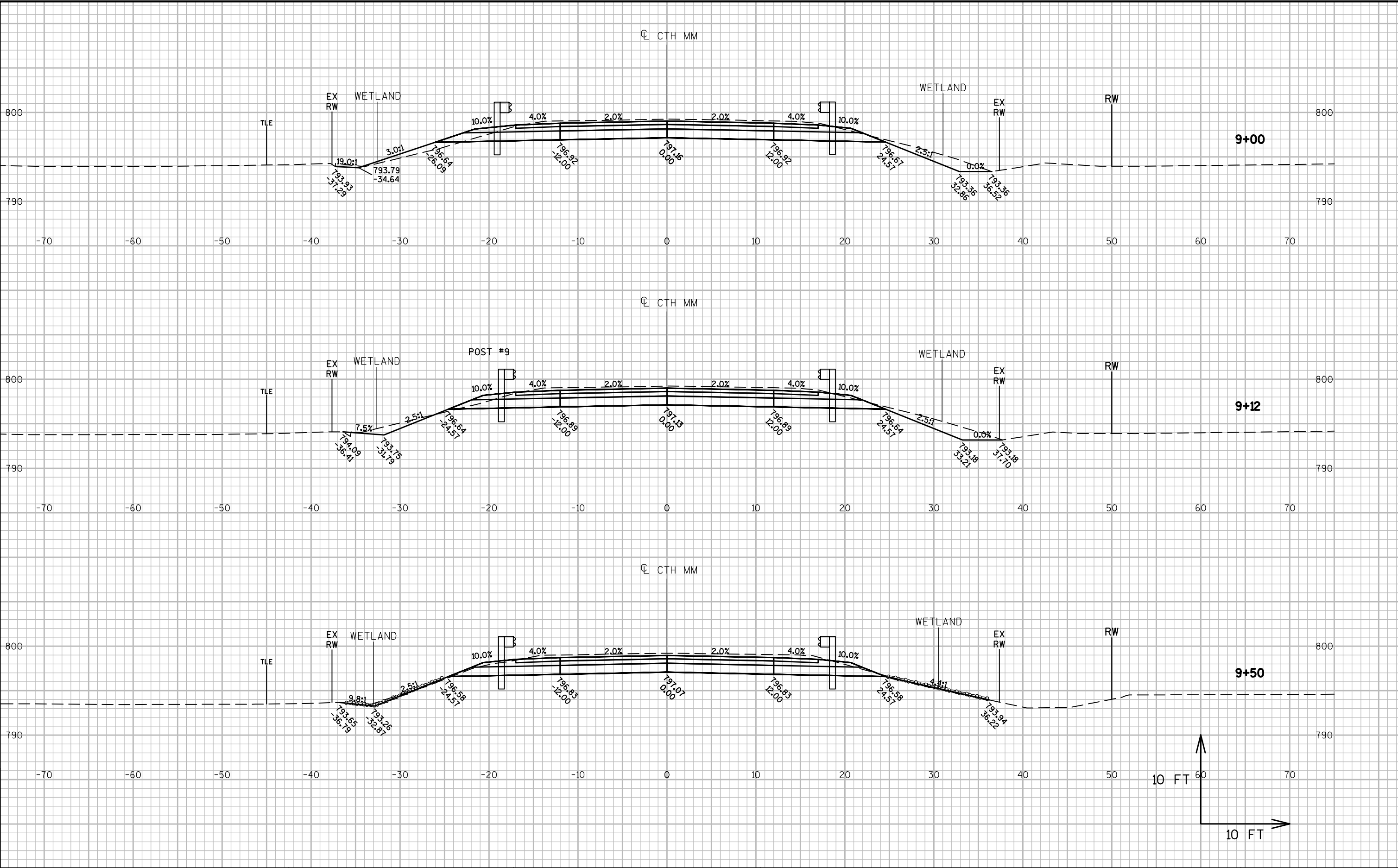


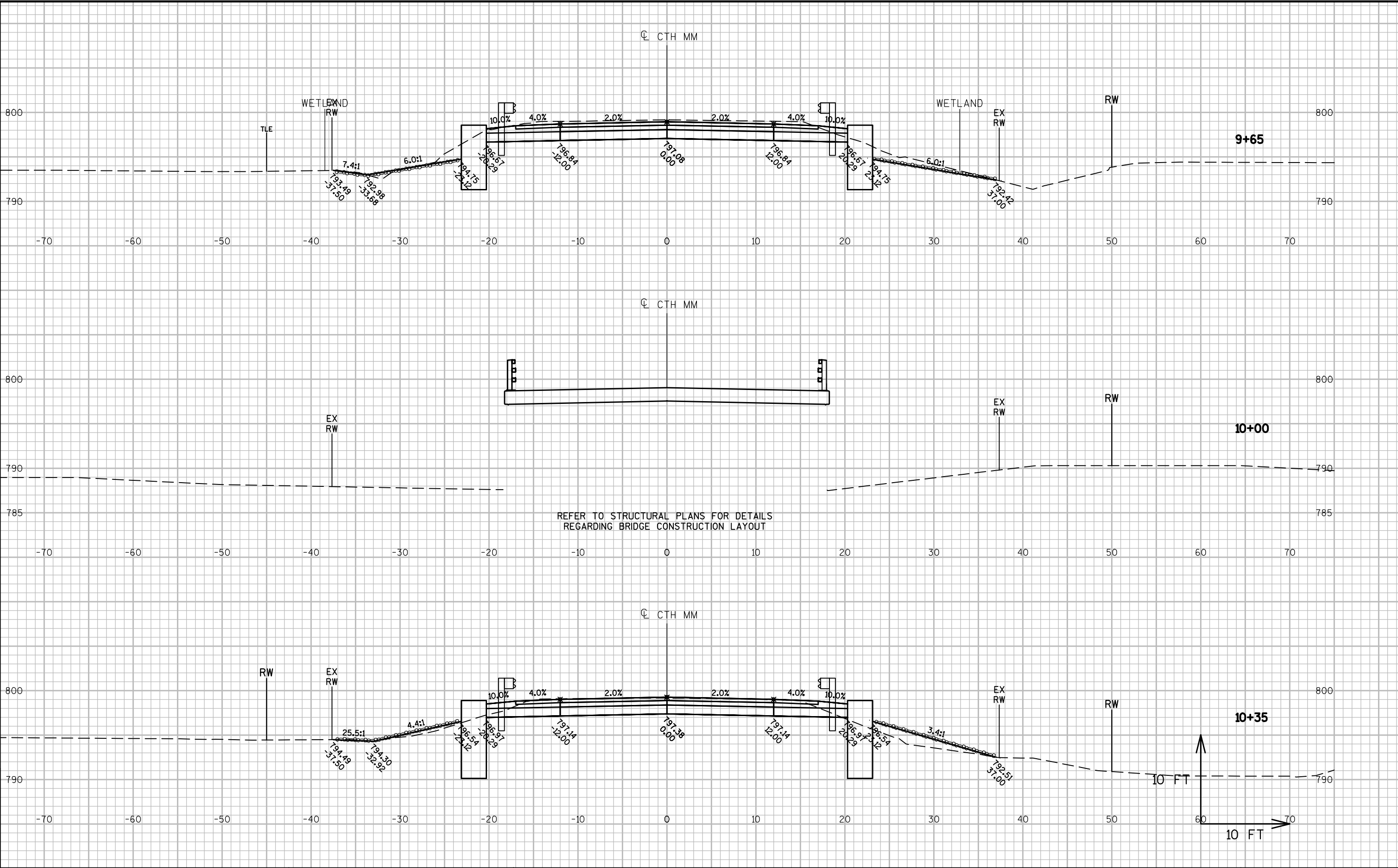
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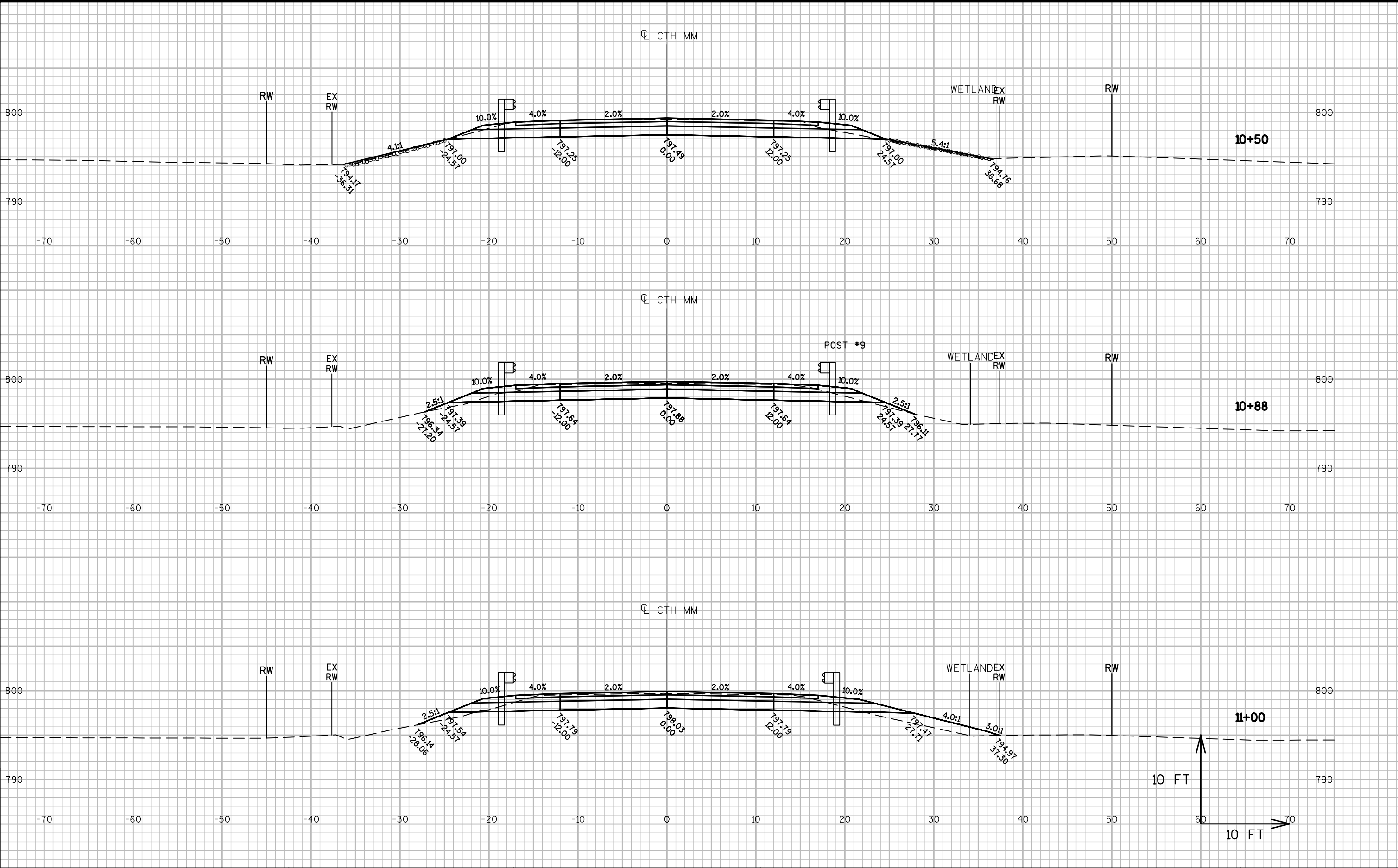
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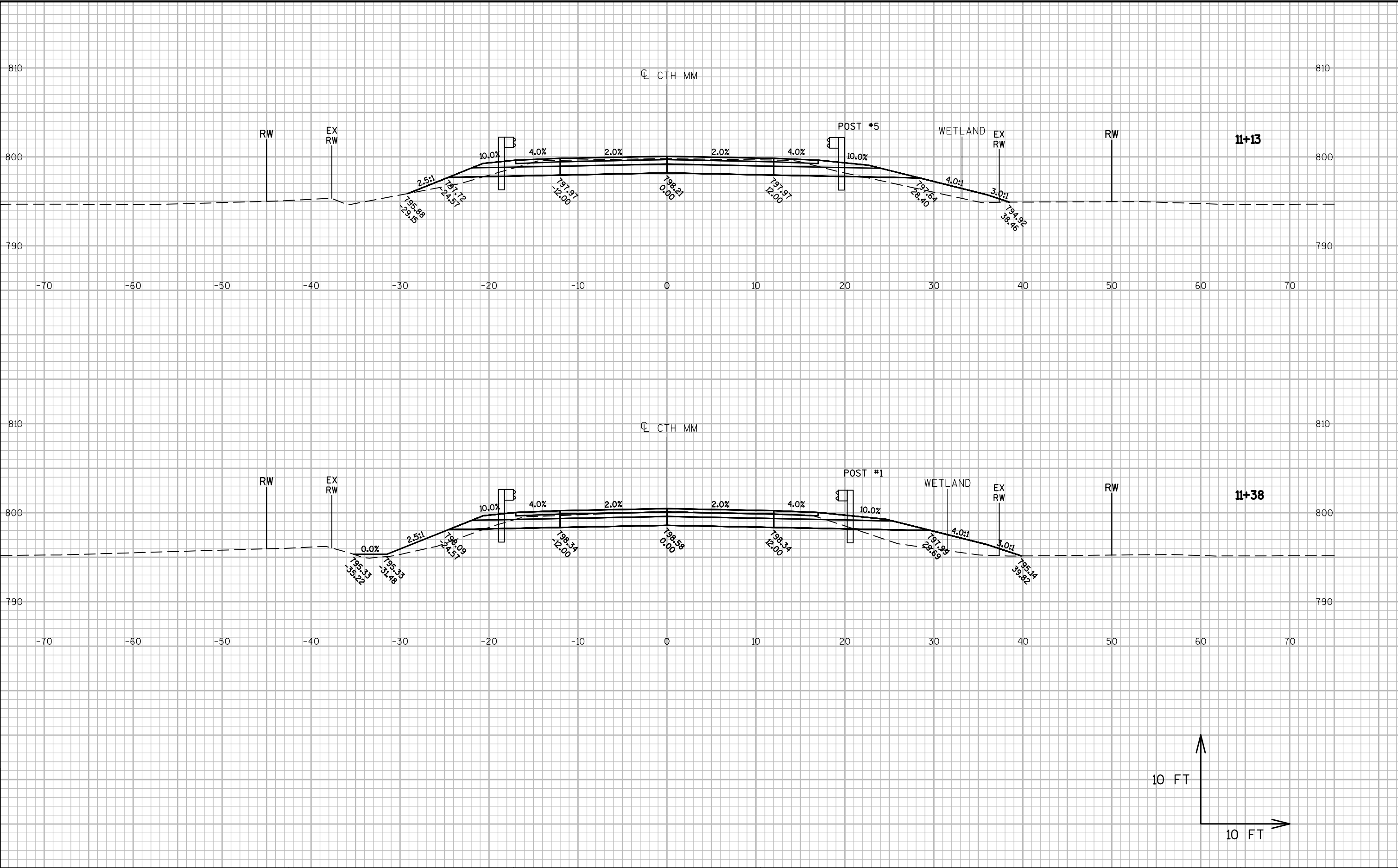








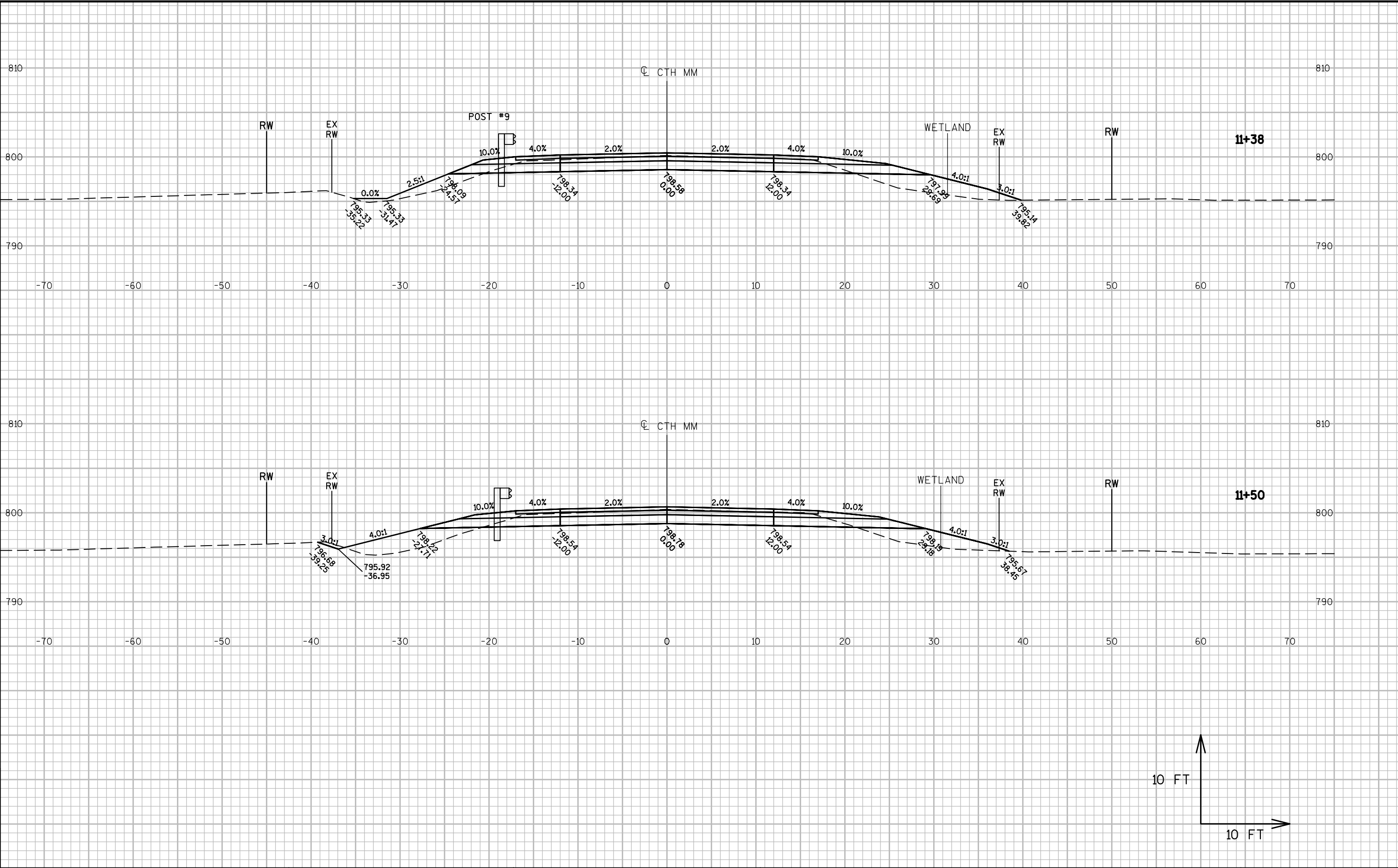


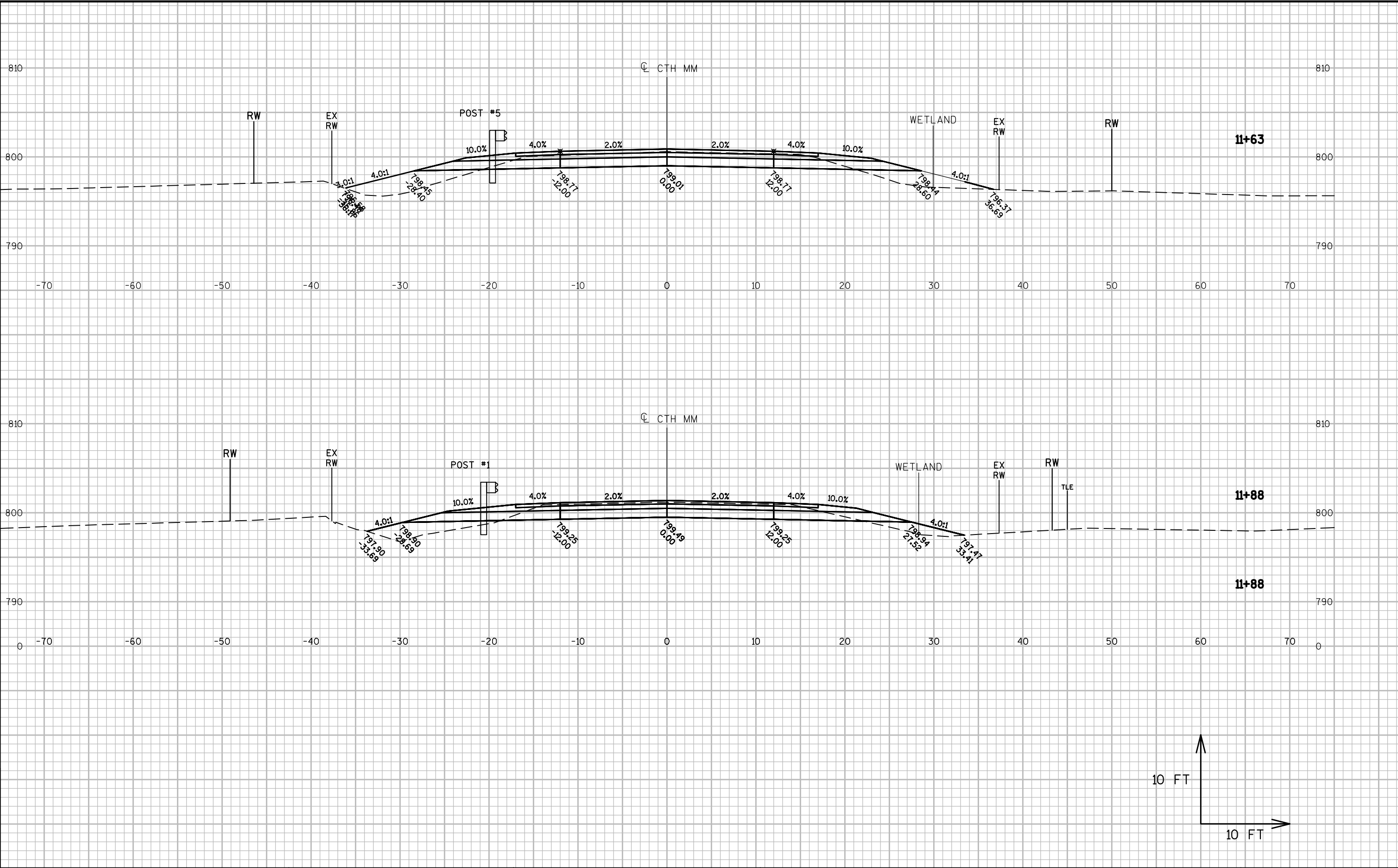


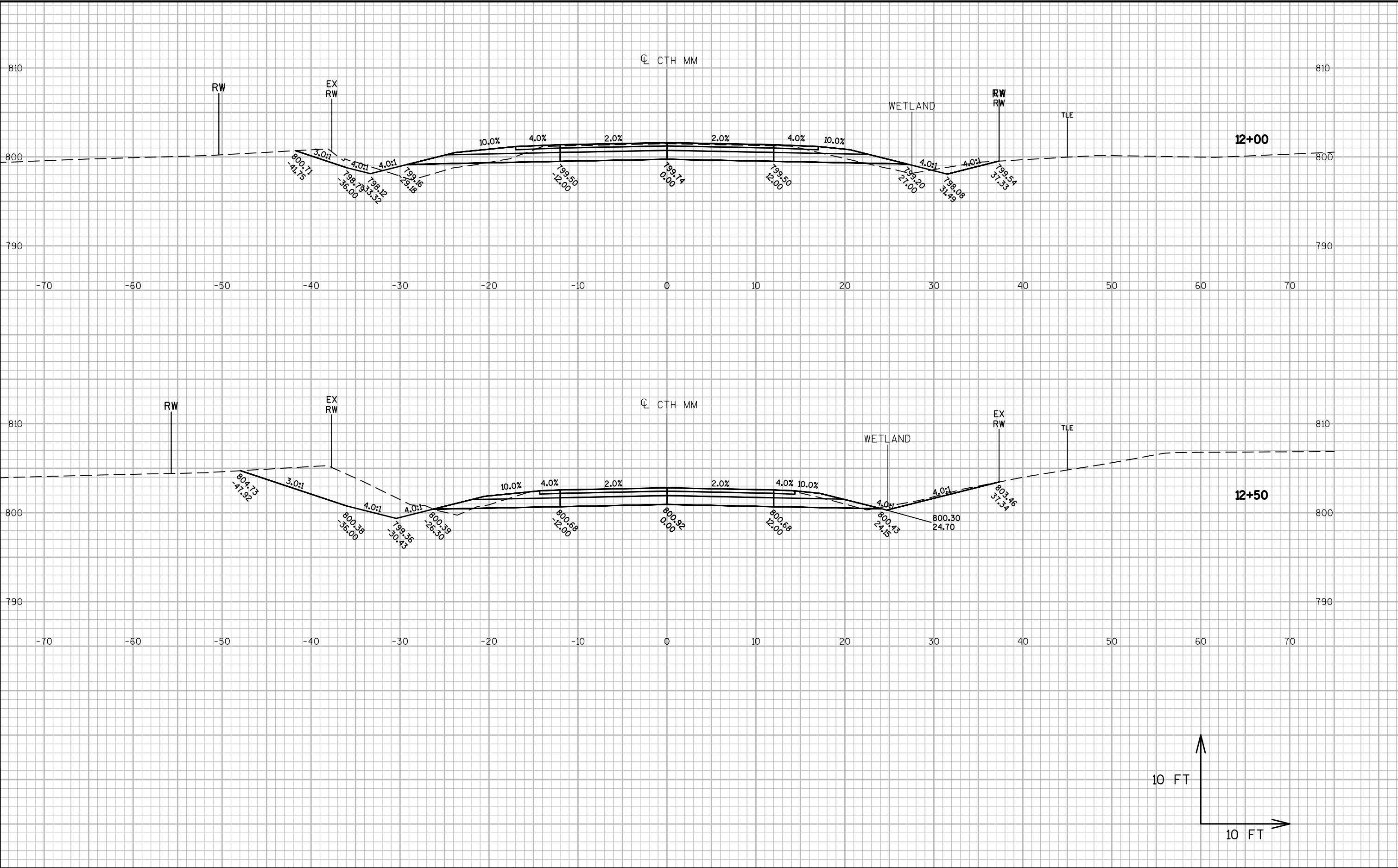
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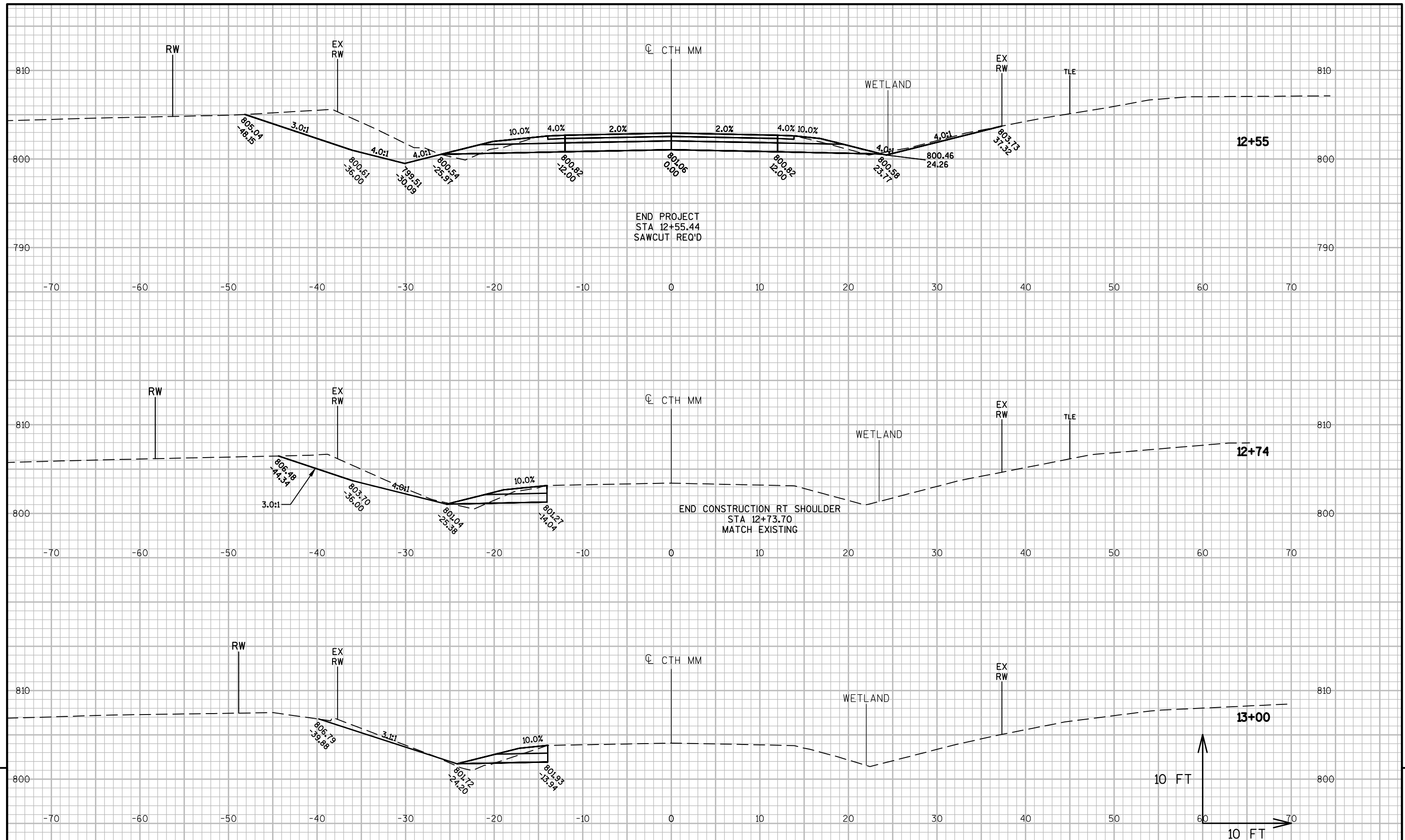
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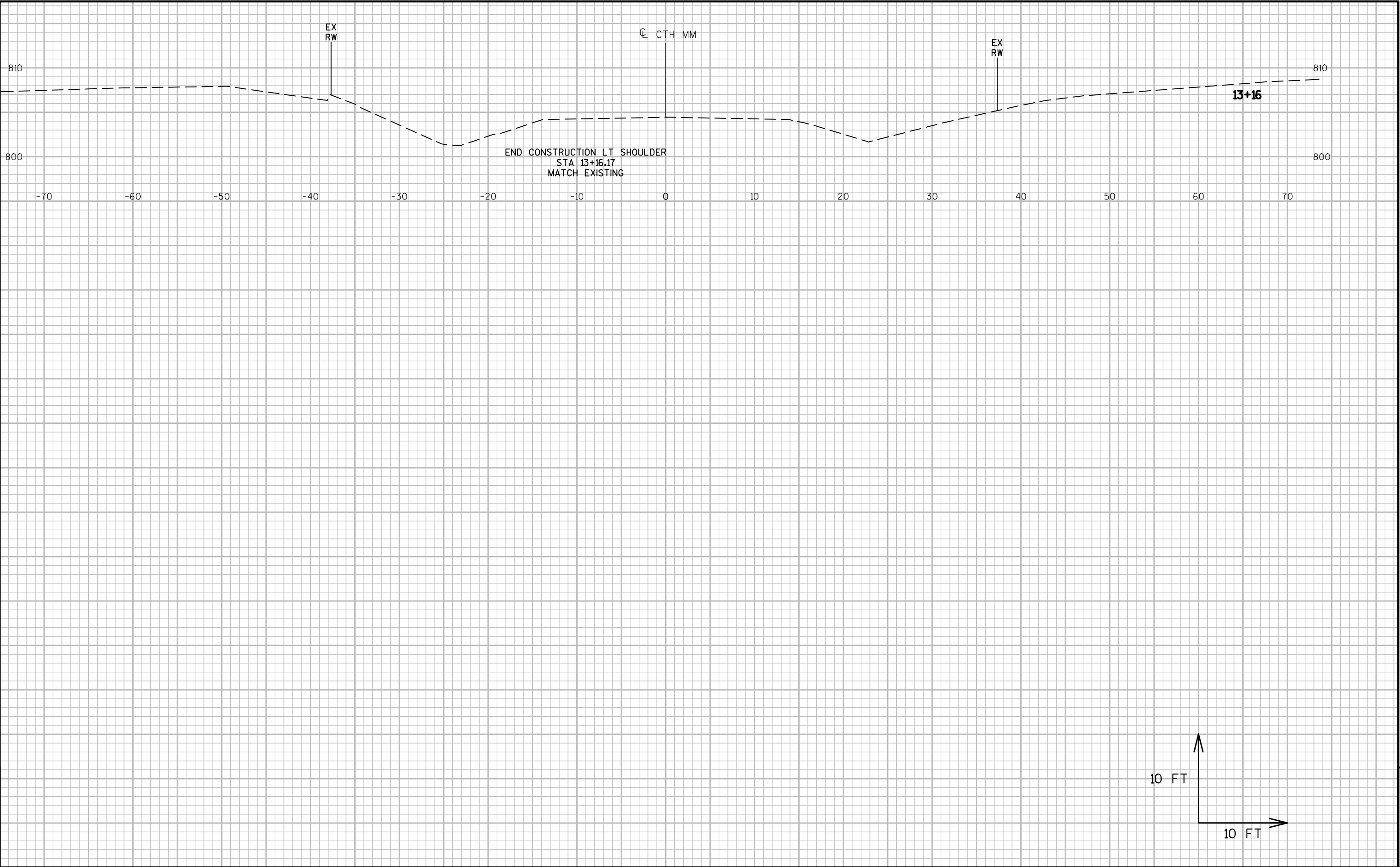
PROJECT NO: 4555-02-71	HWY: CTH MM	COUNTY: BROWN	CROSS SECTIONS: CTH MM	SHEET	E
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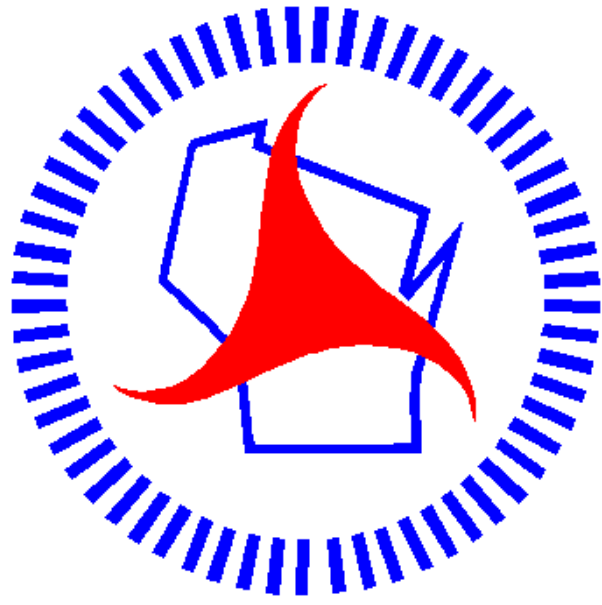




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PROJECT NO: 4555-02-71	HWY: CTH MM	COUNTY: BROWN	CROSS SECTIONS: CTH MM	SHEET	E
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Wisconsin Department of Transportation

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