

SWL  
PROJECT ID: 6208-00-75  
WITH:  
COUNTY: DANE

DEC 2015  
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 (Incl. Erosion Control)
- 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

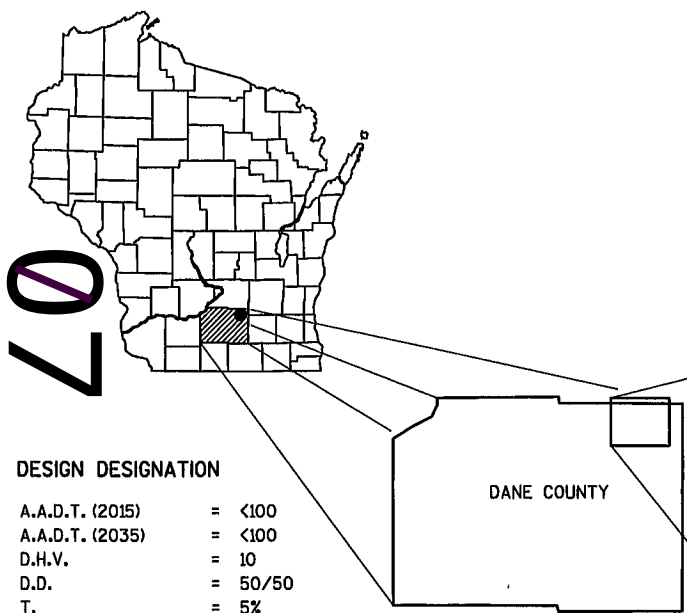
TOTAL SHEETS = 58

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION  
PLAN OF PROPOSED IMPROVEMENT

TOWN OF BRISTOL, ELDER LANE  
(MAUNESHA RIVER BRIDGE B-13-0672)  
TOWN ROAD  
DANE COUNTY

STATE PROJECT NUMBER  
6208-00-75

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
6208-00-75	WISC 2015636	1



- DESIGN DESIGNATION
- A.A.D.T. (2015) = <100
  - A.A.D.T. (2035) = <100
  - D.H.V. = 10
  - D.D. = 50/50
  - T. = 5%
  - DESIGN SPEED = 55 MPH
  - ESALS = N/A

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 & HIGH VOLTAGE
  - MARSH AREA
  - WOODED OR SHRUB AREA
- PROFILE

  - GRADE LINE
  - ORIGINAL GROUND
  - MARSH OR ROCK PROFILE (To be noted as such)
  - SPECIAL DITCH
  - GRADE ELEVATION
  - CULVERT (Profile View)
  - UTILITIES
    - ELECTRIC
    - FIBER OPTIC
    - GAS
    - SANITARY SEWER
    - STORM SEWER
    - TELEPHONE
    - WATER
    - UTILITY PEDESTAL
    - POWER POLE
    - TELEPHONE POLE
- ROCK

LABEL

95.36

95.35

E

FO

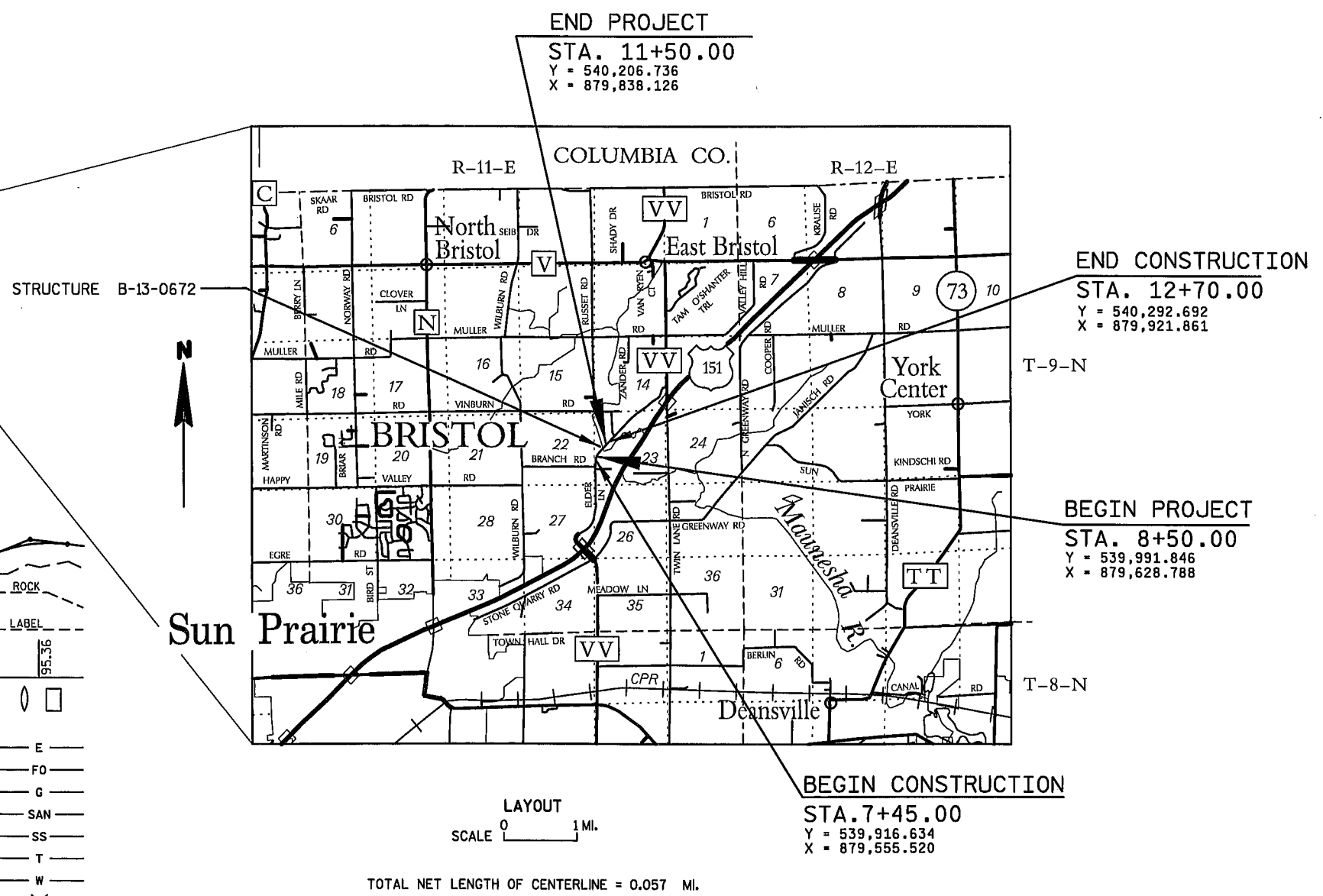
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SAN

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W



TOTAL NET LENGTH OF CENTERLINE = 0.057 MI.

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), DANE COUNTY, HORIZONTAL DATUM NAD83 (2011).

ACCEPTED FOR  
Town  
Bristol  
7-17-15  
(Date)  
Town Chairman

ORIGINAL PLANS PREPARED BY  
AYRES ASSOCIATES

WISCONSIN  
DANIEL N. SYDOW  
E-38363  
WI  
PROFESSIONAL ENGINEER  
7/17/2015  
(Date)  
(Signature)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PREPARED BY  
Surveyor AYRES ASSOCIATES  
Designer AYRES ASSOCIATES  
Management Consultant KJohnson Engineers, Inc.

APPROVED FOR THE DEPARTMENT  
DATE: 7/29/15  
(Management Consultant Signature)

E

## GENERAL NOTES

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

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

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

WETLANDS ARE PRESENT AT THE LOCATIONS SHOWN IN THE PLANS. DO NOT OPERATE MACHINERY OUTSIDE OF THE SLOPE INTERCEPTS IN THESE LOCATIONS.

THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATING ALL UTILITIES.

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), DANE COUNTY, HORIZONTAL DATUM NAD83(2011).

ASPHALTIC SURFACE CALCULATED USING 112 LBS/SY/INCH.

ASPHALTIC SURFACE LAYERS:

- UPPER: 1 3/4" (12.5 mm NOMINAL AGGREGATE SIZE)
- LOWER: 2 1/4" (19.0 mm NOMINAL AGGREGATE SIZE)

## STANDARD ABBREVIATIONS

A.	ANNUAL	P.C.	POINT OF CURVATURE
A.A.D.T.	ANNUAL AVERAGE DAILY TRAFFIC	P.I.	POINT OF INTERSECTION
AC.	ACRES	P.K.	PARKER-KALON
B.M.	BENCH MARK	P.L.	PROPERTY LINE
CL	CENTERLINE	P.P.	POWER POLE
CONC.	CONCRETE	P.T.	POINT OF TANGENCY
COR.	CORNER	R	RADIUS
CULV.	CULVERT	RL	REFERENCE LINE
D.H.V.	DESIGN HOURLY VOLUME	RT.	RIGHT
EL.	ELEVATION	SEC.	SECTION
H.	HOUSE	STA.	STATION
I.P.	IRON PIPE	TYP.	TYPICAL
LT.	LEFT	X	EAST COORDINATE
MON.	MONUMENT	Y	NORTH COORDINATE

## CONTACTS

## DANE COUNTY PUBLIC WORKS

PAM DUNPHY  
2302 FISH HATCHERY ROAD  
MADISON, WI 53713  
(608) 266-4036  
DUNPHY@COUNTYOFDANE.COM

## TOWN OF BRISTOL

GERALD DERR  
TOWN CHAIRMAN  
1595 CTH V  
COLUMBUS, WI 53925  
(608) 575-3407  
GHDERR@FRONTIER.COM

## DESIGNER

DAN SYDOW  
AYRES ASSOCIATES  
3433 OAKWOOD HILLS PARKWAY  
EAU CLAIRE, WI 54701-7698  
(715) 834-3161  
SYDOWD@AYRESASSOCIATES.COM

## WISCONSIN DEPARTMENT OF NATURAL RESOURCES

ERIC HEGGELUND  
DNR SOUTH CENTRAL REGION HQ  
3911 FISH HATCHERY ROAD  
FITCHBURG, WI 53711  
(608) 275-3301  
ERIC.HEGGELUND@WISCONSIN.GOV

## UTILITIES

ALLIANT ENERGY - WIPower & LIGHT  
JIM JOHNSRUD  
6462 BLANCHARD CROSSING  
WINDSOR, WI 53598  
(608) 842-1704  
JIMJOHNSRUD@ALLIANTENERGY.COM

FRONTIER-COMMUNICATION  
DANA GILLET  
100 COMMUNICATION DRIVE  
SUN PRAIRIE, WI 53590  
(608) 837-1605  
DANA.GILLET@FTR.COM

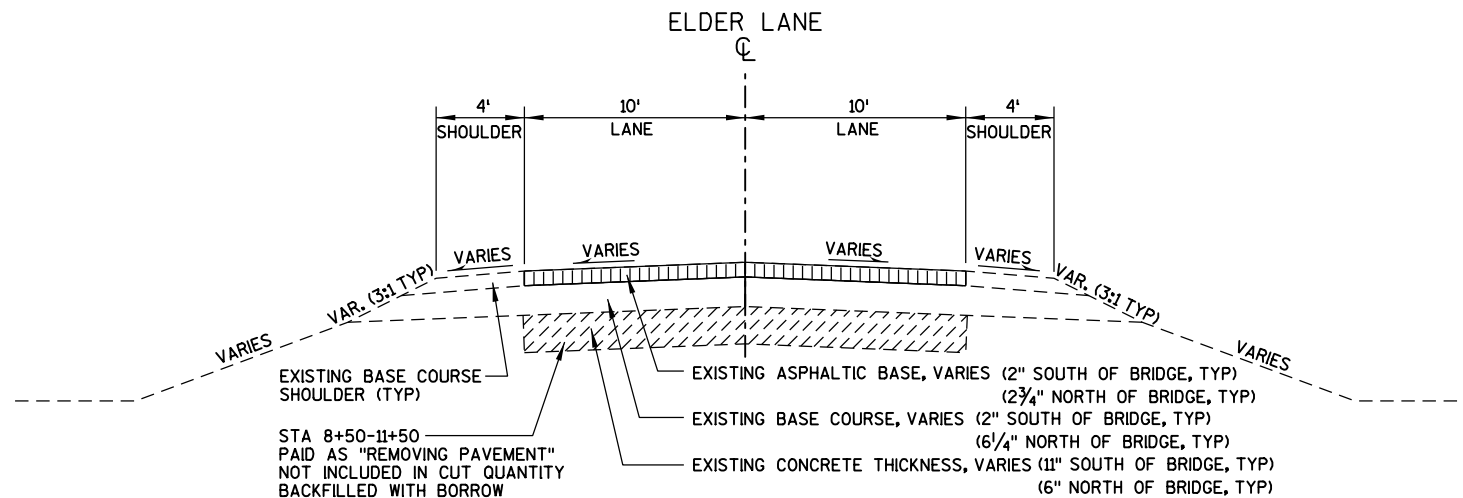
WE-ENERGIES  
RICHARD WROBLEWSKI  
500 S. 116 STREET  
WEST ALLIS, WI 53214  
(414) 944-5767  
RICHARD.WROBLEWSKI@WE-ENERGIES.COM



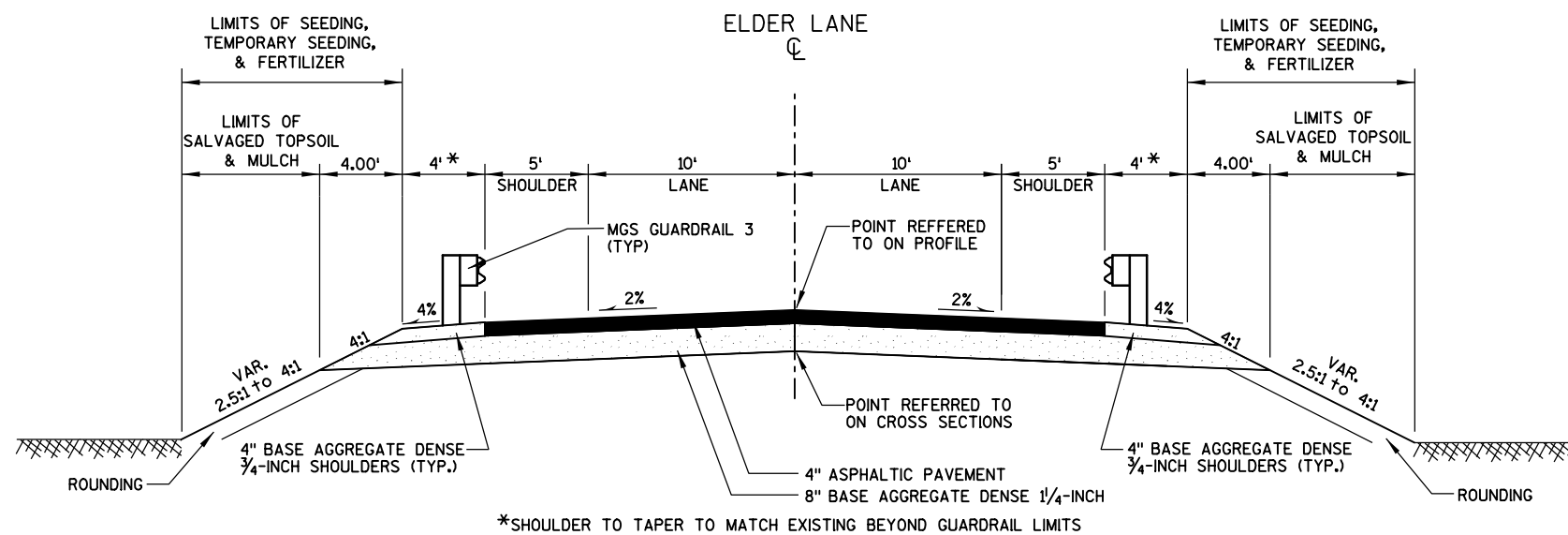
Dial 811 or (800) 242-8511

www.DiggersHotline.com

\*\* DENOTES UTILITIES THAT ARE NOT DIGGERS HOTLINE MEMBERS

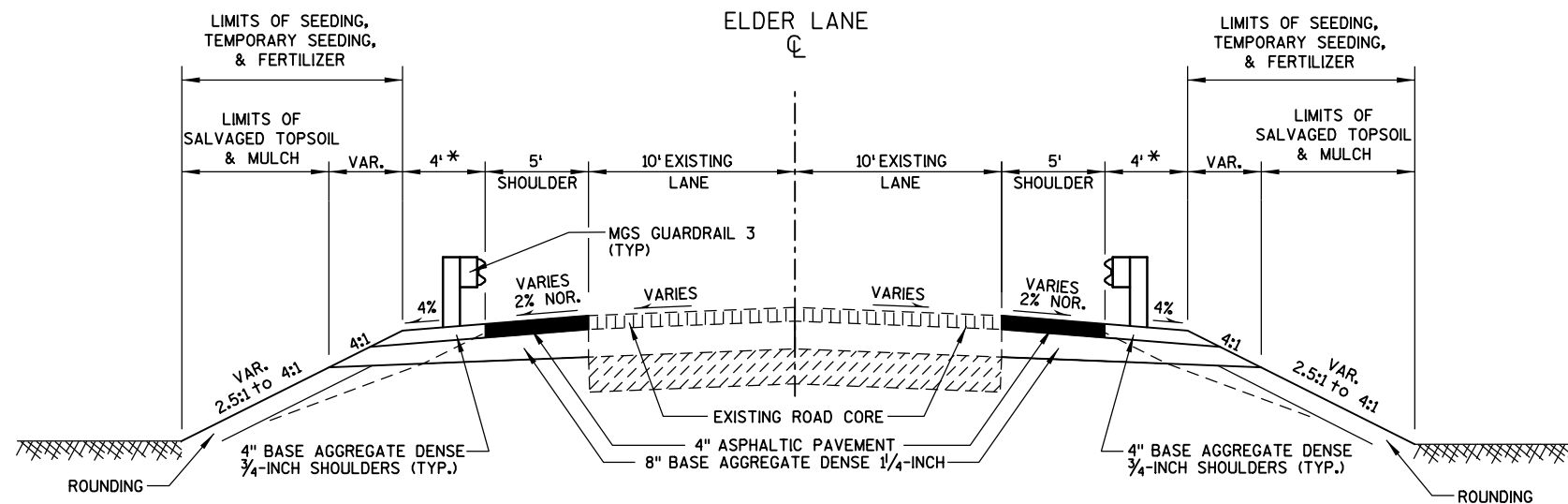


TYPICAL EXISTING SECTION



TYPICAL FINISHED SECTION

STA 8+50 TO 9+79, STA 10+25 TO 11+50



TYPICAL FINISHED SECTION SHOULDER WIDENING

STA 7+45 TO 8+50, STA 11+50 TO 12+70

DATE 07OCT15		E S T I M A T E O F Q U A N T I T I E S			
LINE					6208-00-75
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTITY
0010	203.0500.S	Removing Old Structure Over Waterway (station) 01. 10+00	LS	1.000	1.000
0020	204.0100	Removing Pavement	SY	580.000	580.000
0030	204.0165	Removing Guardrail	LF	140.000	140.000
0040	205.0100	Excavation Common **P**	CY	263.000	263.000
0050	206.1000	Excavation for Structures Bridges (structure) 01. B-13-0672	LS	1.000	1.000
0060	208.0100	Borrow	CY	172.000	172.000
0070	210.0100	Backfill Structure	CY	300.000	300.000
0080	213.0100	Finishing Roadway (project) 01. 6208-00-75	EACH	1.000	1.000
0090	305.0110	Base Aggregate Dense 3/4-Inch	TON	139.000	139.000
0100	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	828.000	828.000
0110	455.0605	Tack Coat	GAL	76.000	76.000
0120	465.0105	Asphaltic Surface	TON	243.000	243.000
0130	502.0100	Concrete Masonry Bridges	CY	203.000	203.000
0140	502.3200	Protective Surface Treatment	SY	220.000	220.000
0150	505.0400	Bar Steel Reinforcement HS Structures	LB	5,080.000	5,080.000
0160	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	24,670.000	24,670.000
0170	513.4061	Railing Tubular Type M (structure) 01. B-13-672	LF	105.000	105.000
0180	516.0500	Rubberized Membrane Waterproofing	SY	20.000	20.000
0190	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	200.000	200.000
0200	606.0300	Riprap Heavy	CY	155.000	155.000
0210	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	160.000	160.000
0220	614.2300	MGS Guardrail 3	LF	225.000	225.000
0230	614.2500	MGS Thrie Beam Transition	LF	157.600	157.600
0240	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0250	619.1000	Mobilization	EACH	1.000	1.000
0260	624.0100	Water	MGAL	14.500	14.500
0270	625.0500	Salvaged Topsoil **P**	SY	660.000	660.000
0280	627.0200	Mulching **P**	SY	660.000	660.000
0290	628.1504	Silt Fence	LF	1,025.000	1,025.000
0300	628.1520	Silt Fence Maintenance	LF	1,025.000	1,025.000
0310	628.1905	Mobilizations Erosion Control	EACH	2.000	2.000
0320	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0330	628.2008	Erosion Mat Urban Class I Type B	SY	1,120.000	1,120.000
0340	628.6005	Turbidity Barriers	SY	200.000	200.000
0350	628.7504	Temporary Ditch Checks	LF	50.000	50.000
0360	629.0210	Fertilizer Type B **P**	CWT	1.400	1.400
0370	630.0120	Seeding Mixture No. 20 **P**	LB	30.000	30.000
0380	630.0200	Seeding Temporary **P**	LB	30.000	30.000
0390	630.0300	Seeding Borrow Pit	LB	10.000	10.000
0400	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0410	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0420	638.2602	Removing Signs Type II	EACH	4.000	4.000
0430	638.3000	Removing Small Sign Supports	EACH	4.000	4.000
0440	642.5001	Field Office Type B	EACH	1.000	1.000
0450	643.0100	Traffic Control (project) 01. 6208-00-75	EACH	1.000	1.000
0460	645.0120	Geotextile Fabric Type HR	SY	310.000	310.000
0470	650.4500	Construction Staking Subgrade	LF	475.000	475.000
0480	650.5000	Construction Staking Base	LF	475.000	475.000
0490	650.6500	Construction Staking Structure Layout (structure) 01. B-13-0672	LS	1.000	1.000

DATE 07OCT15		E S T I M A T E O F Q U A N T I T I E S			
LINE		6208-00-75			
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTITY
0500	650.9910	Construction Staking Supplemental Control (project) 01. 6208-00-75	LS	1.000	1.000
0510	650.9920	Construction Staking Slope Stakes	LF	475.000	475.000
0520	690.0150	Sawing Asphalt	LF	370.000	370.000
0530	690.0250	Sawing Concrete	LF	40.000	40.000
0540	715.0502	Incentive Strength Concrete Structures	DOL	1,218.000	1,218.000
0550	SPV.0195	Special 01. SELECT CRUSHED MATERIAL FOR TRAVEL CORRIDOR / INTERSTITIAL SPACE	TON	155.000	155.000

ELDER LANE EARTHWORK SUMMARY

From/To Station	Location	Common Excavation* (1) (item # 205.0100)	Removing Pavement Above Subgrade (3)	Removing Pavement Below Subgrade (4)	Available Material (5)	Expanded Removing Pavement Backfill (6)	Unexpanded Fill	Expanded Fill (7)	Mass Ordinate +/- (8)	Waste	Borrow (9)  (item #208.0100)	Comment:
		Cut (2)				Factor 1.30		Factor 1.30				
7+45 - 12+70	Elder Lane	263	77	42	263	155	216	280	-172		172	

- 1) Common Excavation is the Cut. Item number 205.0100.
- 2) Cut does not include Removing Pavement Above Subgrade.
- 3) Removing Pavement Above Subgrade includes buried concrete pavement located above proposed subgrade (assumed 20' wide x 8" deep (STA 8+50-9+60), 20' wide x 3" deep (STA 10+40-11+50), centered in roadway core).
- 4) Removing Pavement Below Subgrade includes buried concrete pavement located below proposed subgrade (assumed 20' wide x 3" deep, centered in roadway core).
- 5) Available Material = Cut
- 6) Expanded Removing Pavement Backfill - This is to be filled with Borrow material. Removing Pavement Backfill Factor = 1.3. Item number 208.0100.
- 7) Expanded Fill. Factor = 1.30; Expanded Fill = Unexpanded Fill \* Fill Factor
- 8) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material within the Division. Minus indicates a shortage of material within the Division.
- 9) Borrow = (Expanded Removing Pavement Backfill + Expanded Fill) - Available Material.
- 10) All quantities shown in CY.
- \*PAY PLAN QUANTITY

REMOVING PAVEMENT

STATION	TO	STATION	LOCATION	204.0100 SY
8+50	-	9+81	MAINLINE	290
10+19	-	11+50	MAINLINE	290
TOTAL				580

REMOVING SIGNS & SUPPORTS

LOCATION	REMOVING SIGNS TYPE II 638.2602	REMOVING SMALL SIGN SUPPORTS 638.3000	NOTES
	EACH	EACH	
9+75	2	2	EXISTING TIGER STRIPE MARKERS
10+25	2	2	EXISTING TIGER STRIPE MARKERS
TOTALS	4	4	

FINISHING ROADWAY  
(ID 6208-00-75)

LOCATION	213.0100.01 EACH
MAINLINE	1
TOTAL	1

PAVING AND BASE QUANTITIES

STA	TO	STA	BASE AGGREGATE DENSE 3/4-INCH 305.0110	BASE AGGREGATE DENSE 1 1/4-INCH 305.0120	TACK COAT 455.0605	ASPHALTIC SURFACE 465.0105	WATER 624.0100
			TON	TON	GAL	TON	MGAL
7+45		9+79	65	398	37	118	6.9
10+29		12+70	67	391	35	113	6.9
UNDISTRIBUTED			7	39	4	12	0.7
TOTALS			139	828	76	243	14.5

GUARDRAIL

STA	TO	STA	LOCATION	REMOVING GUARDRAIL 204.0165	MGS GUARDRAIL 3 614.2300	MGS THRIE BEAM TRANSITION 614.2500	MGS GUARDRAIL TERMINAL EAT 614.2610
				LF	LF	LF	EACH
7+45		9+79	LT & RT	70	112.5	78.8	2
10+29		12+70	LT & RT	70	112.5	78.8	2
TOTALS				140	225	157.6	4

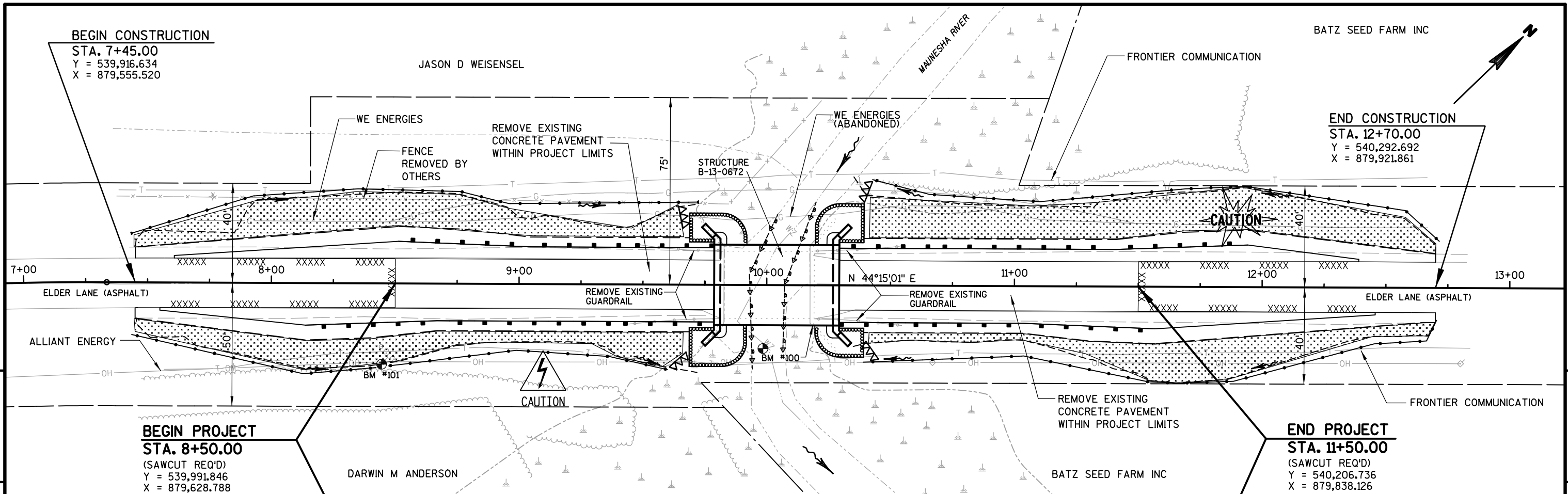
ALL QUANTITIES CATEGORY 0010 UNLESS OTHERWISE NOTED

<u>EROSION CONTROL MOBILIZATION ITEMS</u>				<u>EROSION CONTROL ITEMS</u>											
LOCATION	MOBILIZATIONS	MOBILIZATIONS		SALVAGED**	MULCHING**	SILT FENCE	SILT FENCE	EROSION	FERTILIZER**	SEEDING**	SEEDING**	SEEDING			
	EROSION	EMERGENCY		TOPSOIL			MAINTENANCE	MAT URBAN	TYPE B	MIXTURE	TEMPORARY	BORROW			
	CONTROL	EROSION		625.0500	627.0200	628.1504	628.1520	CLASS I TYPE B		NO. 20		PIT			
	628.1905	628.1910		SY	SY	LF	LF	SY	CWT	LB	LB	LB			
ID 6208-00-75	EACH	EACH	STA TO	STA	LOCATION										
	2	2	7+45	9+79	RT	100	100	220	220	195	0.3	5	5	2	
			7+45	9+79	LT	125	125	235	235	260	0.3	6	6	2	
			10+29	12+70	RT	100	100	240	240	195	0.2	5	5	2	
			10+29	12+70	LT	275	275	235	235	370	0.5	11	11	3	
TOTALS	2	2	UNDISTRIBUTED			60	60	95	95	100	0.1	3	3	1	
				TOTALS			660	660	1,025	1,025	1,120	1.4	30	30	10
** PAY PLAN QUANTITY															

<u>TURBIDITY BARRIERS</u>		<u>TEMPORARY DITCH CHECKS</u>			<u>TRAFFIC CONTROL (ID 6208-00-75)</u>		<u>OBJECT MARKERS</u>				
	628.6005			628.7504		643.0100.01		POSTS WOOD	SIGNS TYPE II		
LOCATION	SY	LOCATION	OFFSET	LF		EACH		4X6-INCH X 12-FT	REFLECTIVE F		
NORTH ABUT	90	NORTH ABUT	LT	12.5	PROJECT 6208-00-75	1		634.0612	637.2230		
SOUTH ABUT	90	NORTH ABUT	RT	12.5							
UNDISTRIBUTED	20	SOUTH ABUT	LT	12.5							
		SOUTH ABUT	RT	12.5							
TOTAL	200				TOTAL	1					
									</		

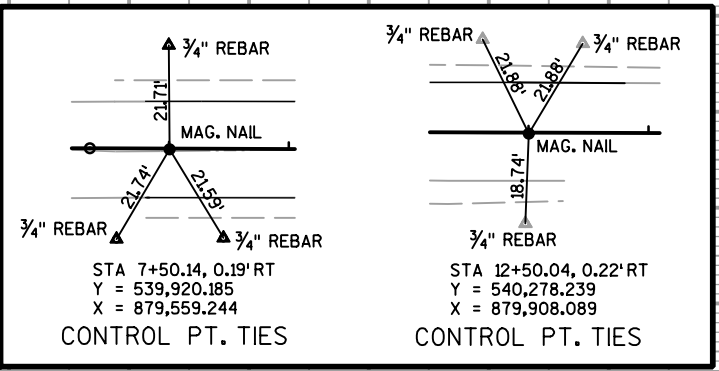
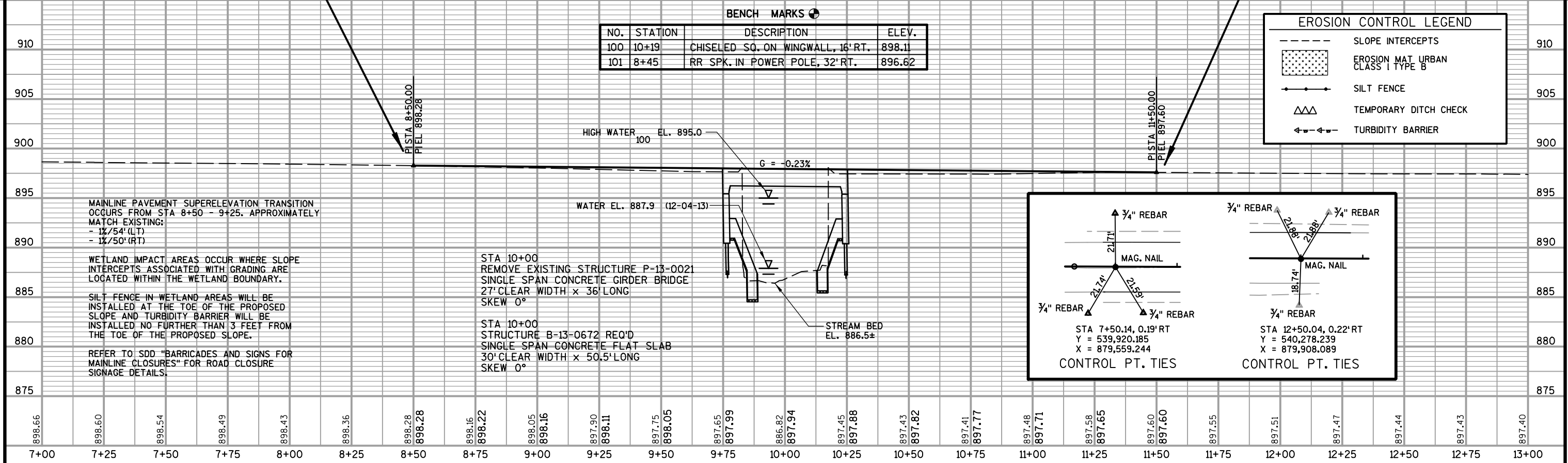
SAWING ASPHALT			SAWING CONCRETE			STAKING ITEMS					
690.0150			690.0250								
STATION	LOCATION	LF	STATION	LOCATION	LF	CONSTRUCTION	CONSTRUCTION	CONSTRUCTION	CONSTRUCTION	CONSTRUCTION	
7+45 - 8+50	LT & RT	185	8+50	ACROSS LANES	20	STAKING	STAKING	STAKING	STAKING	STAKING	
11+50 - 12+70	LT & RT	185	11+50	ACROSS LANES	20	SUBGRADE	BASE	(B-13-0672)	SUPPLEMENTAL	CONTROL	
						650.4500	650.5000	650.6500.01	650.9910	650.9920	
TOTAL		370	TOTAL		40	CATEGORY	LOCATION	LF	LF	LS	
						0010	7+45 - 12+70	475	475	--	
						0020	B-13-0672	--	--	1	
						TOTALS		475	475	1	

ALL QUANTITIES CATEGORY 0010 UNLESS OTHERWISE NOTED



BENCH MARKS			
NO.	STATION	DESCRIPTION	ELEV.
100	10+19	CHISELED SQ. ON WINGWALL, 16' RT.	898.11
101	8+45	RR SPK. IN POWER POLE, 32' RT.	896.62

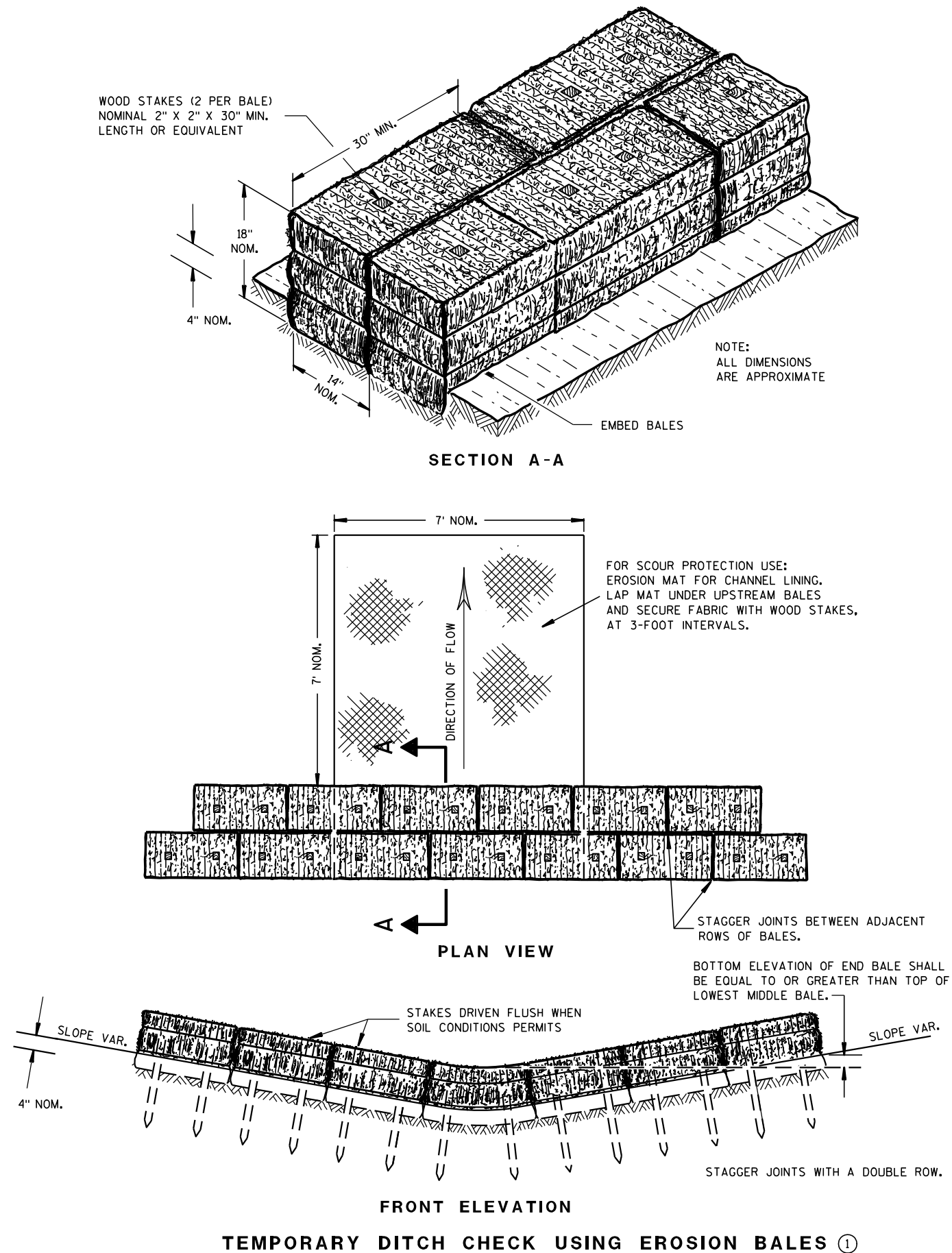
EROSION CONTROL LEGEND	
---	SLOPE INTERCEPTS
XXXXXX	EROSION MAT URBAN CLASS I TYPE B
—●—●—	SILT FENCE
△△	TEMPORARY DITCH CHECK
←-←-←-	TURBIDITY BARRIER



Standard Detail Drawing List

08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
12A03-10	NAME PLATE (STRUCTURES)
14B42-03A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-03B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-03C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-02A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-03A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03E	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03F	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03I	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-03J	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-05A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-05B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES

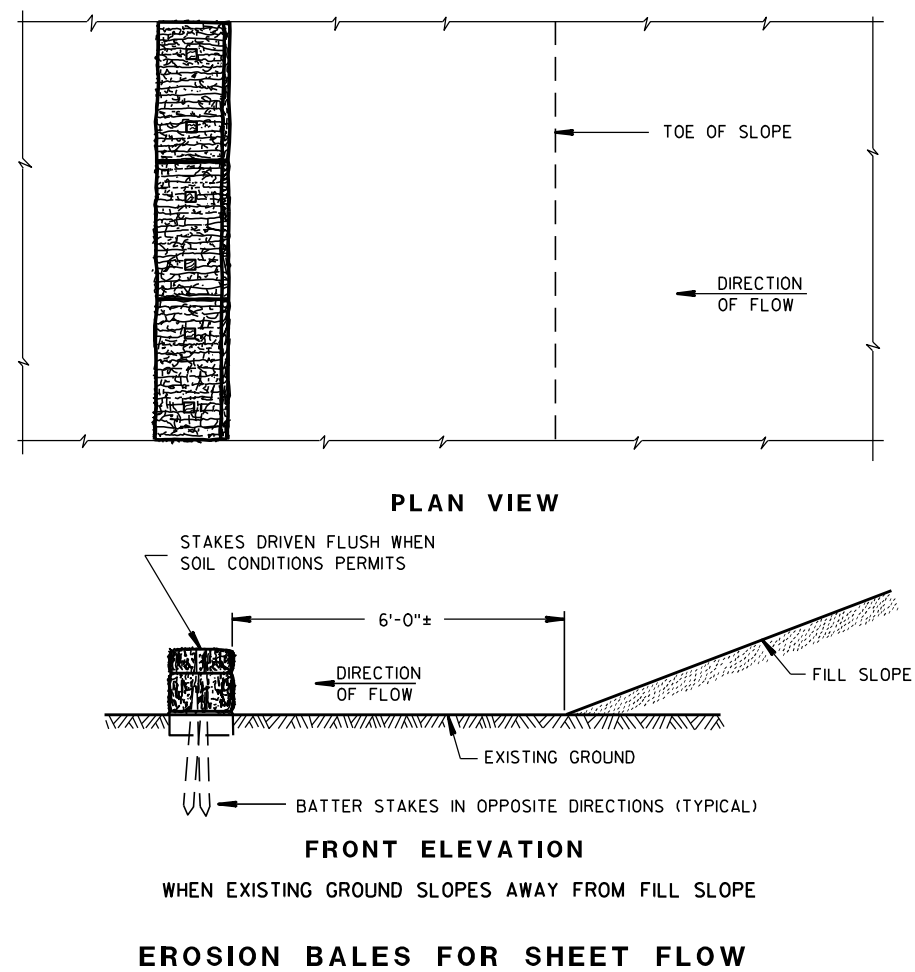
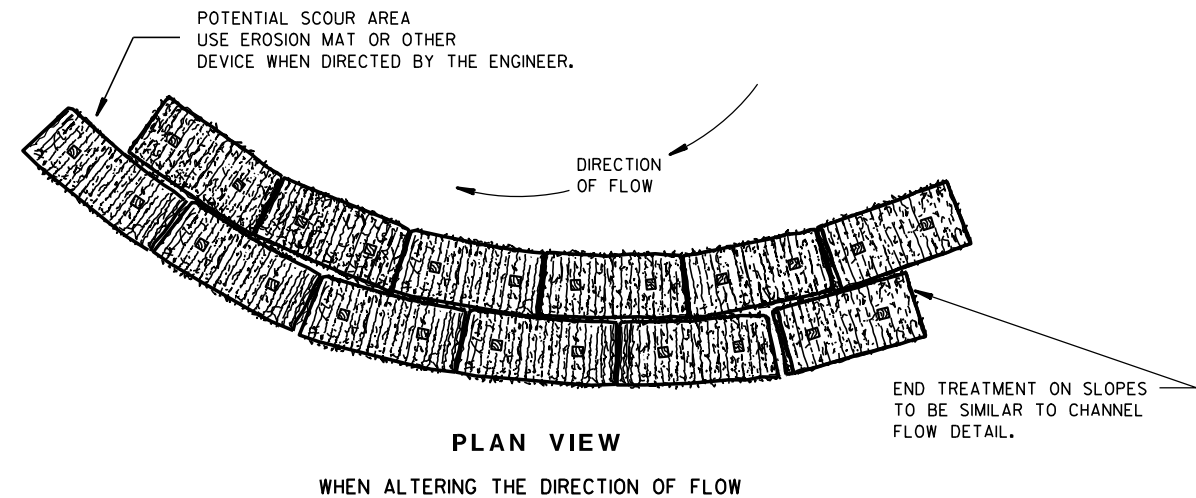




## GENERAL NOTES

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.

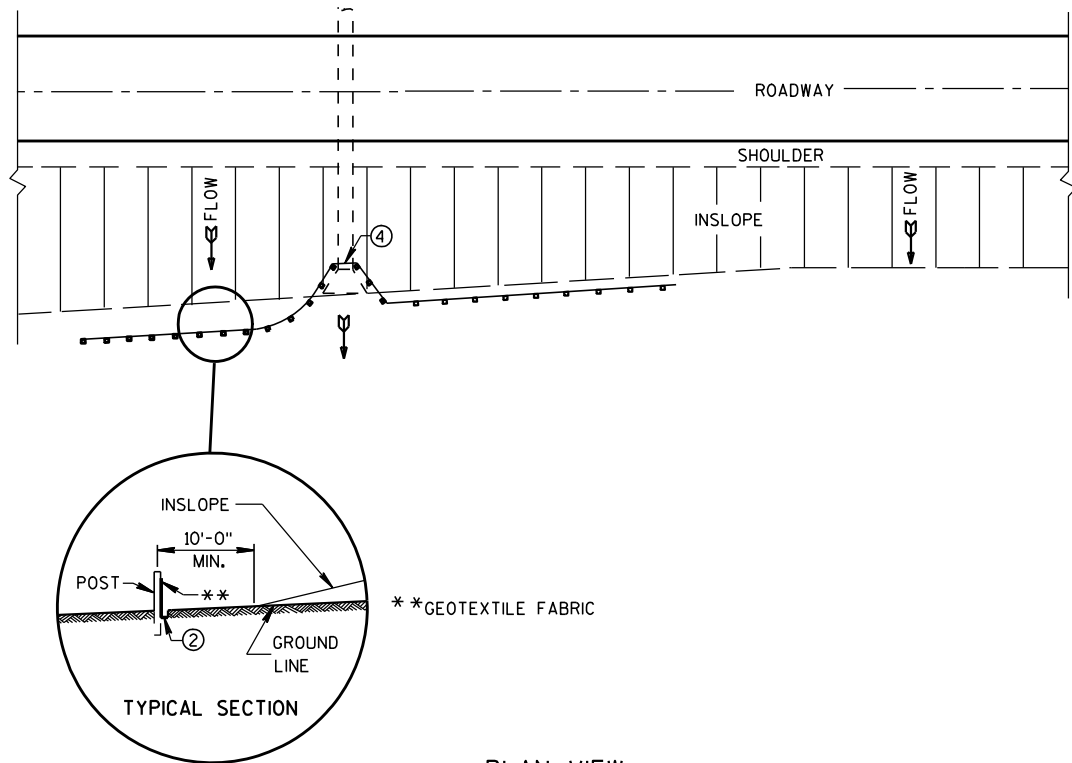
TYPICAL INSTALLATIONS OF  
EROSION BALES / TEMPORARY  
DITCH CHECKS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

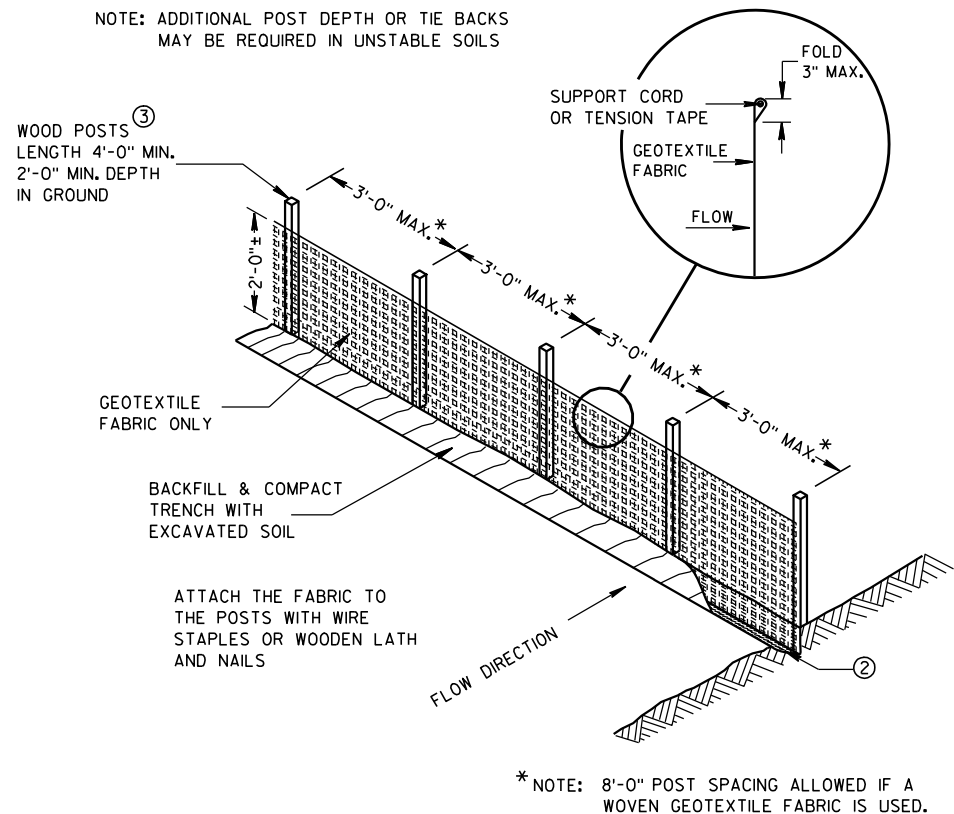
APPROVED

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

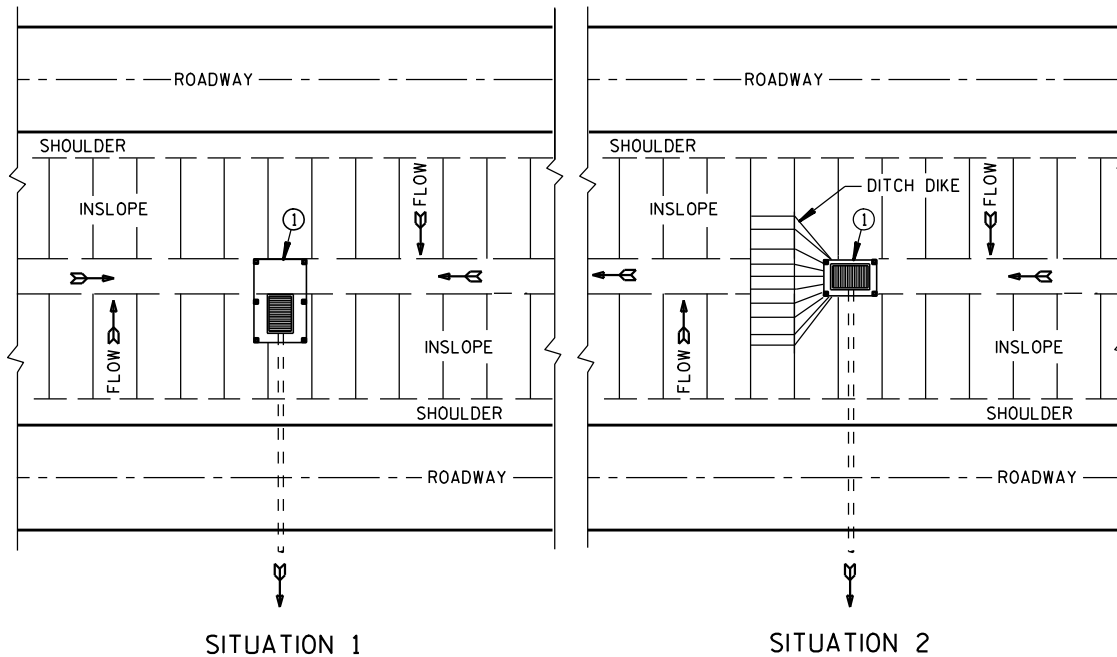
FHWA



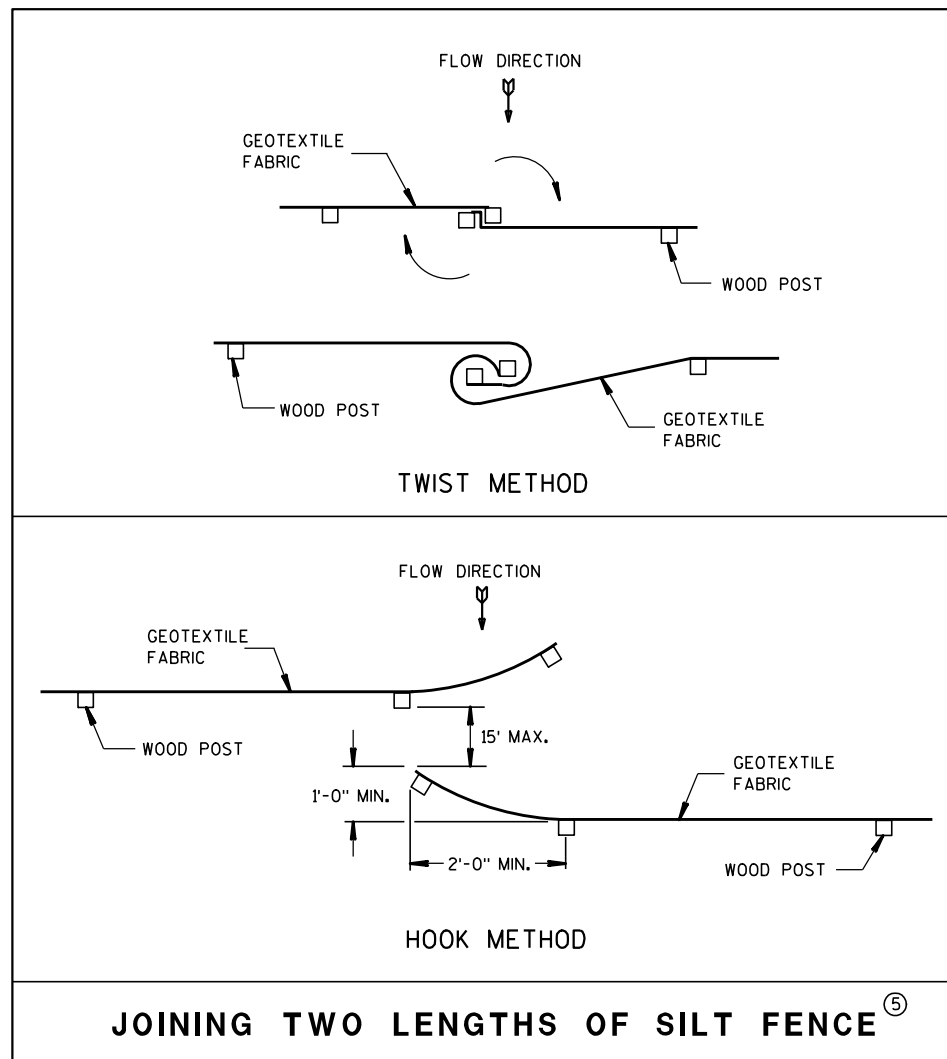
PLAN VIEW  
TYPICAL APPLICATION OF SILT FENCE



SILT FENCE



PLAN VIEW  
SILT FENCE AT MEDIAN SURFACE DRAINS

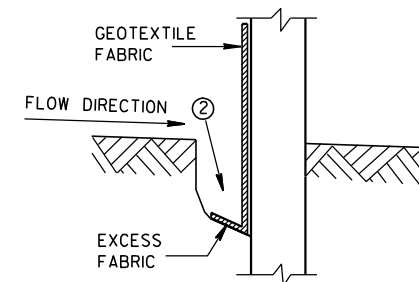


JOINING TWO LENGTHS OF SILT FENCE

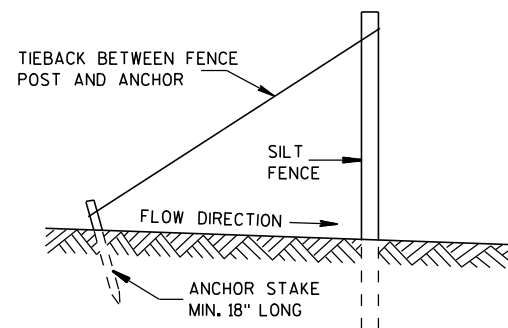
GENERAL NOTES

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.

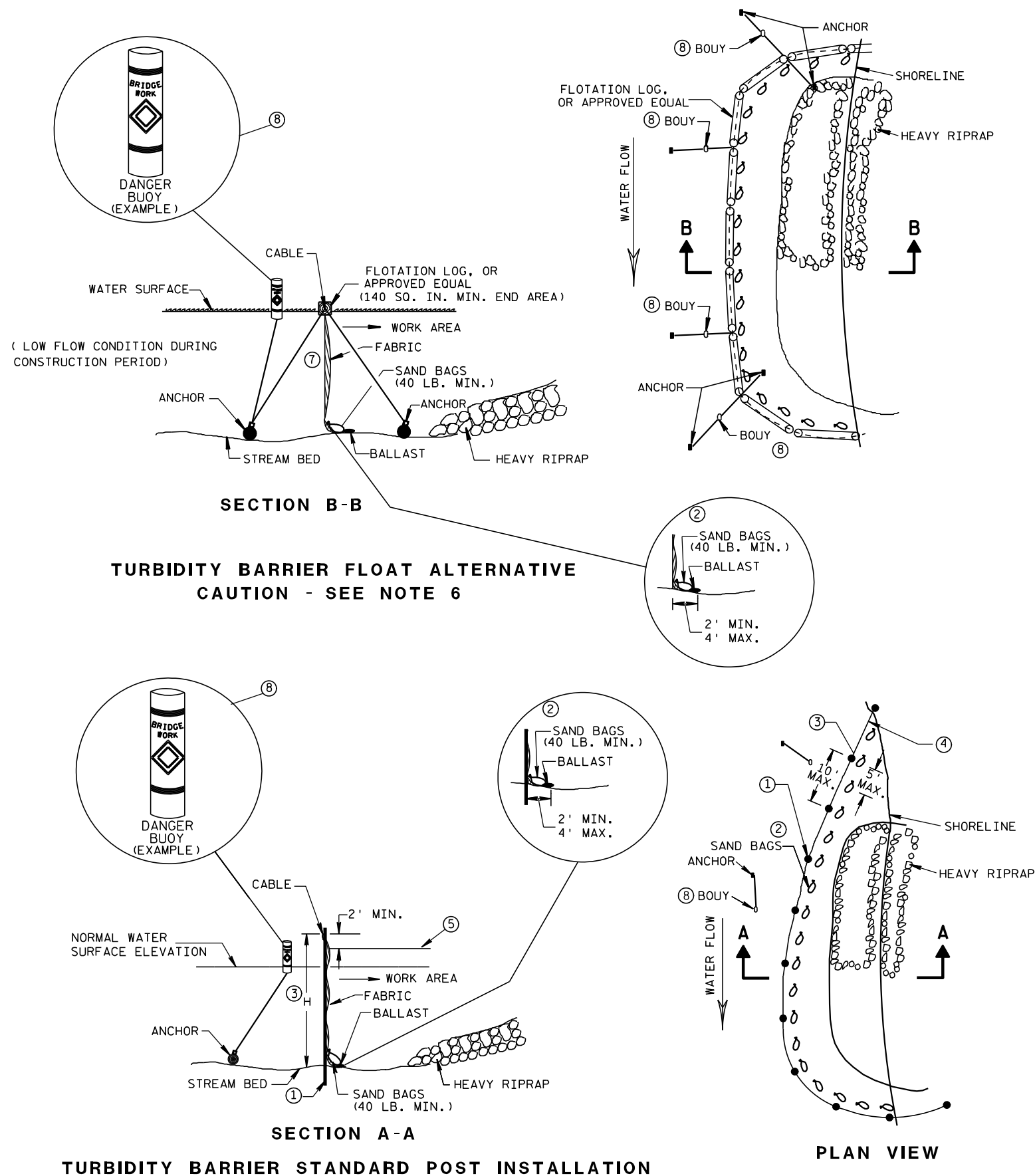


TRENCH DETAIL



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	

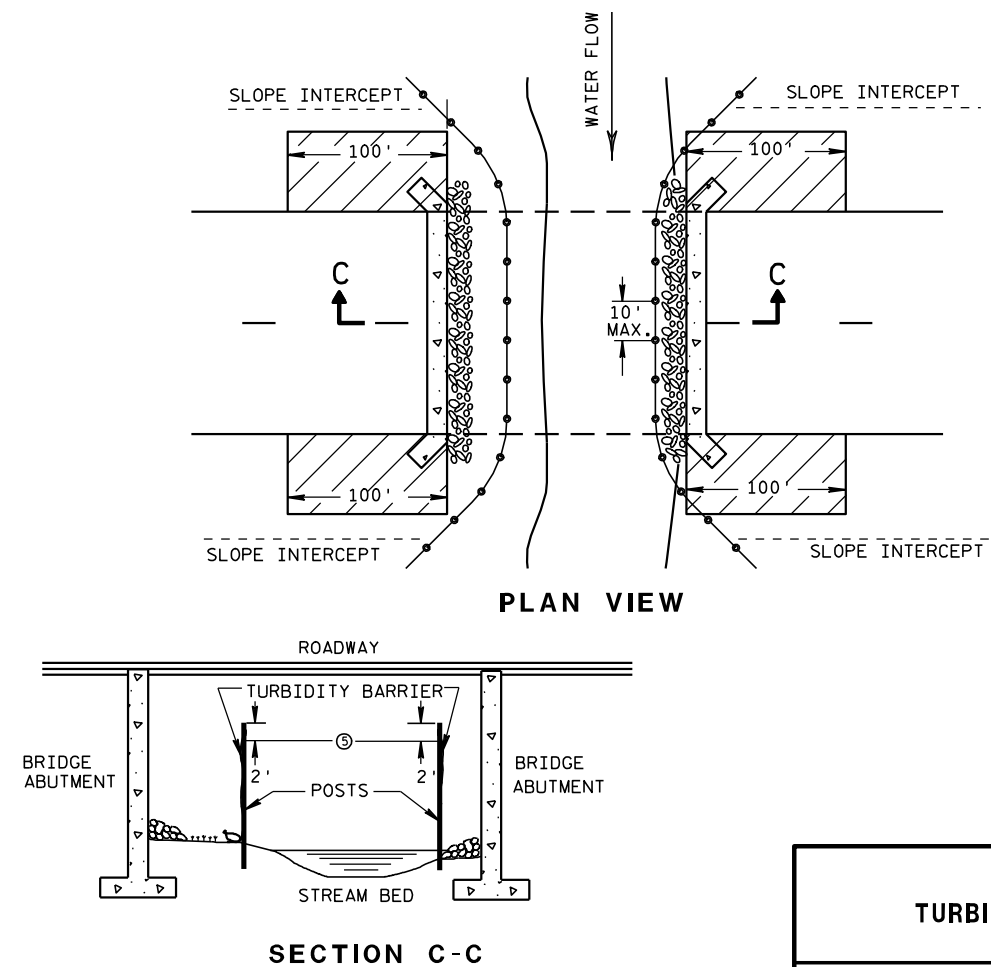


## GENERAL NOTES

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

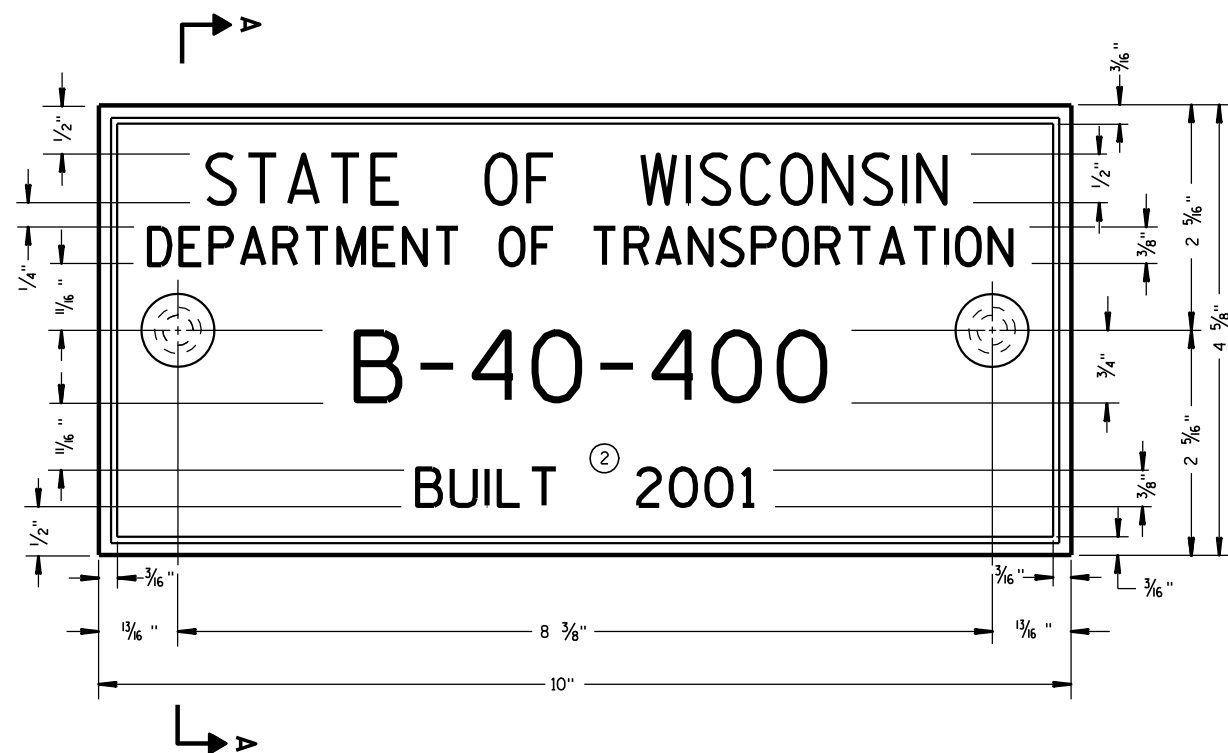
APPROVED

6/04/02

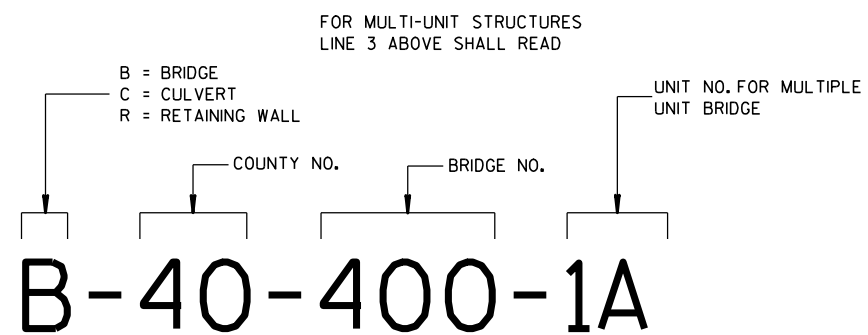
DATE

FHWA

/S/ Beth Canestra  
CHIEF ROADWAY DEVELOPMENT ENGINEER



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



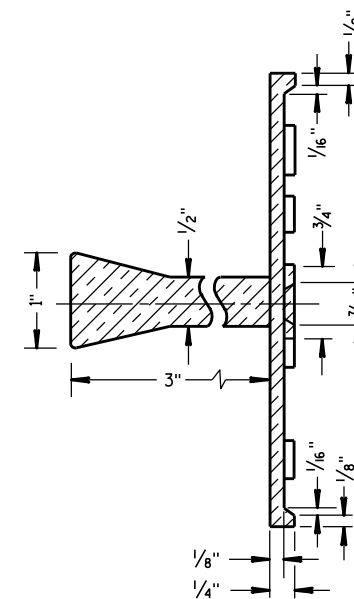
**NUMBERING DESIGNATION  
MULTI-UNIT STRUCTURES**

## GENERAL NOTES

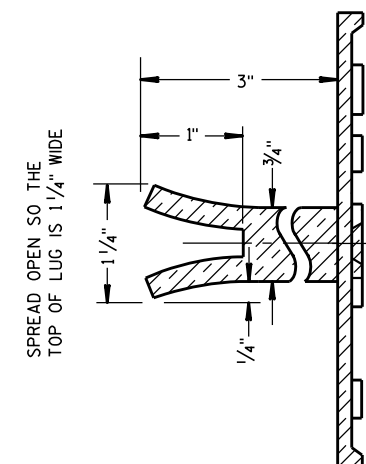
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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.

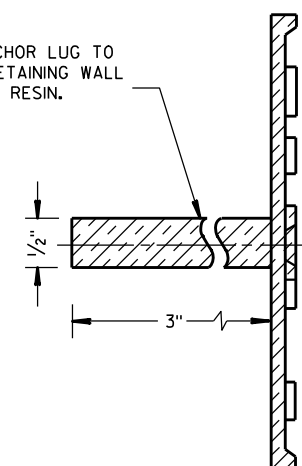


**SECTION A-A**



**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

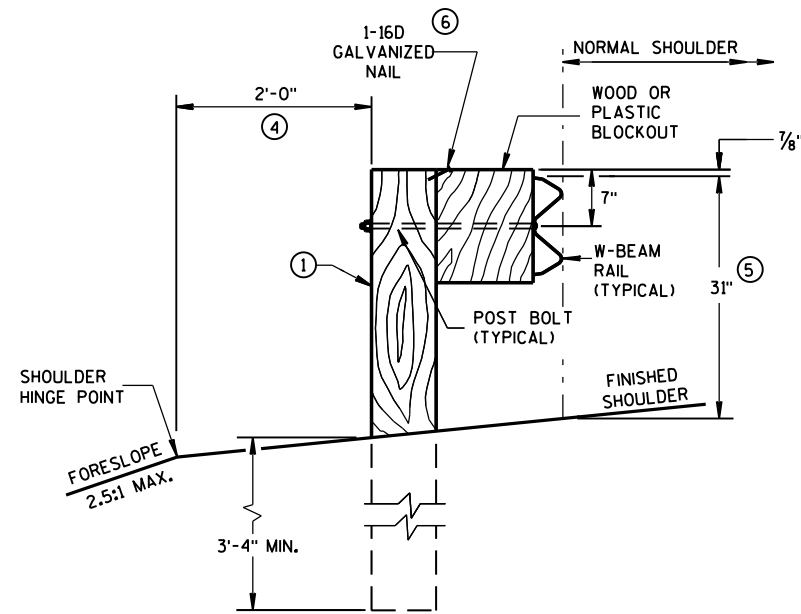
3/26/10  
DATE

FHWA

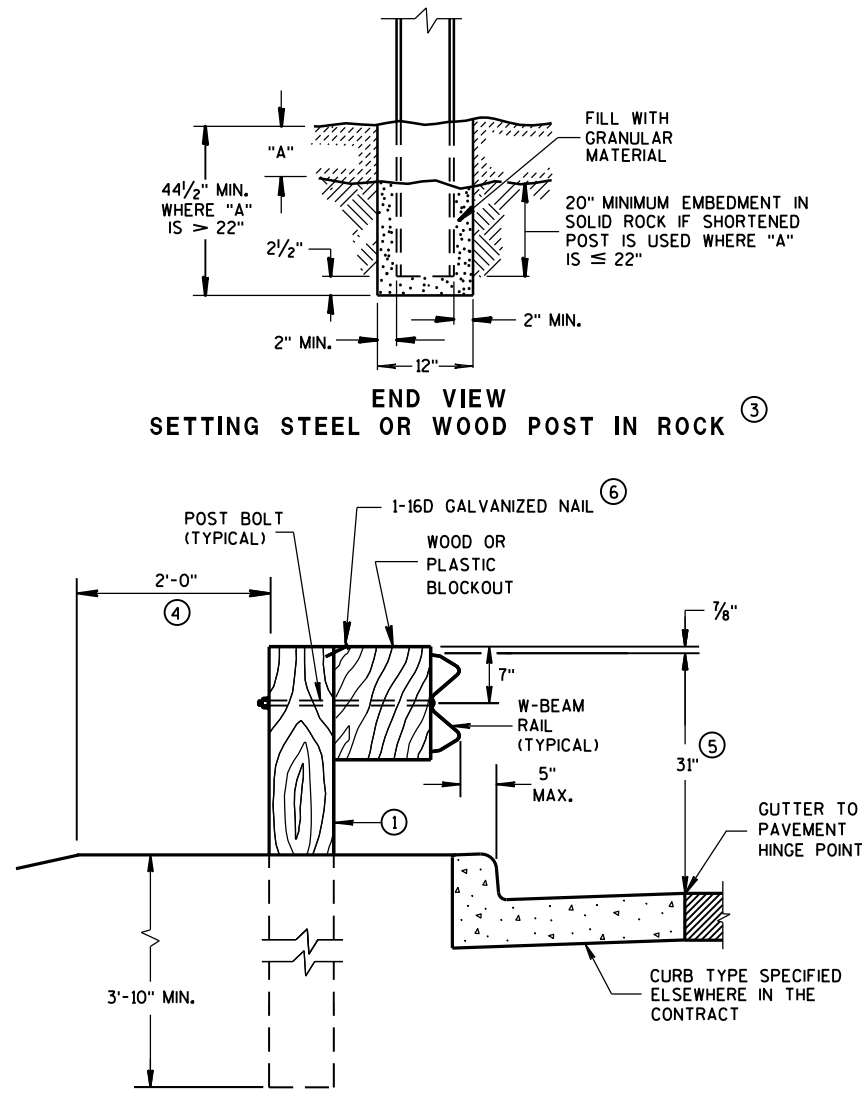
/S/ Scot Becker  
CHIEF STRUCTURAL DEVELOPMENT ENGINEER

GENERAL NOTES

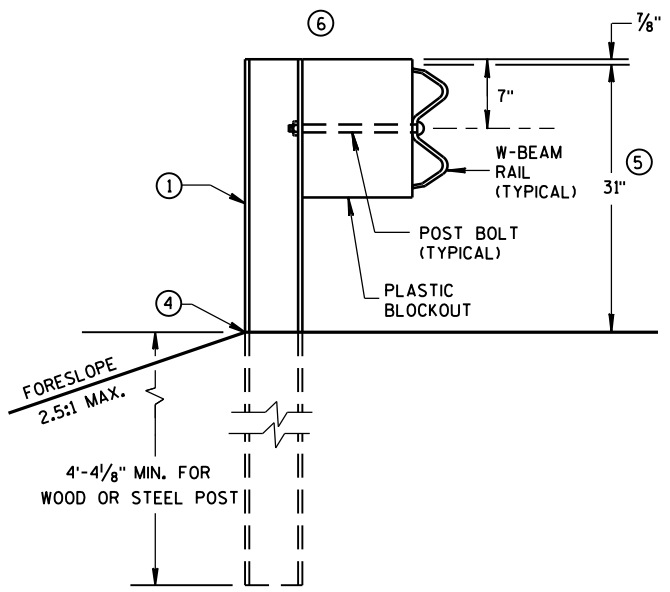
- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.
- ③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 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 ± 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.



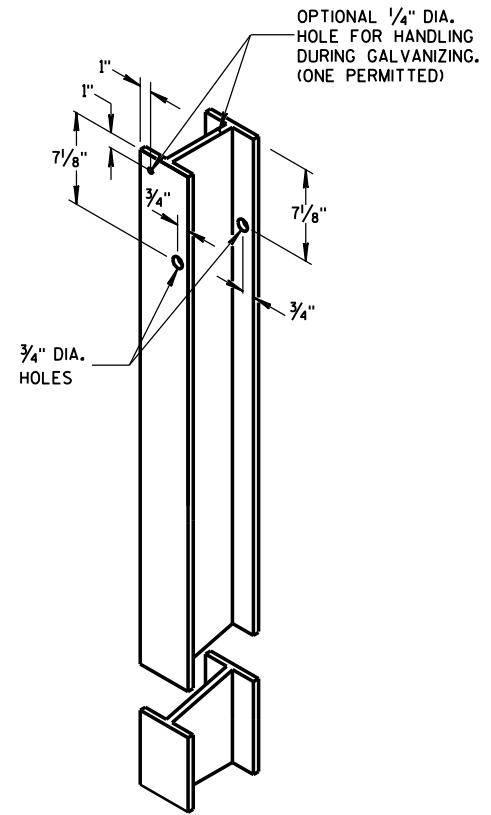
END VIEW  
LOCATED ALONG A ROADWAY SHOULDER  
STANDARD INSTALLATION



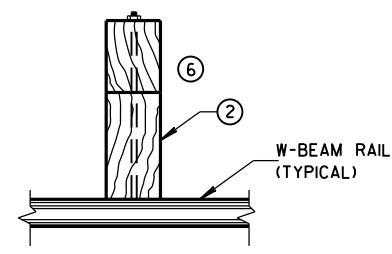
END VIEW  
LOCATED ALONG A CURBED ROADWAY



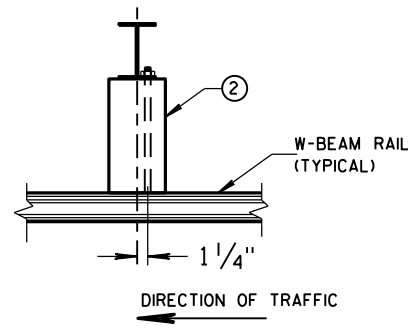
END VIEW  
MGS LONGER POST AT HALFPST SPACING W BEAM (K)



STEEL POST &  
HOLE PUNCHING DETAIL  
(w6X9) ①



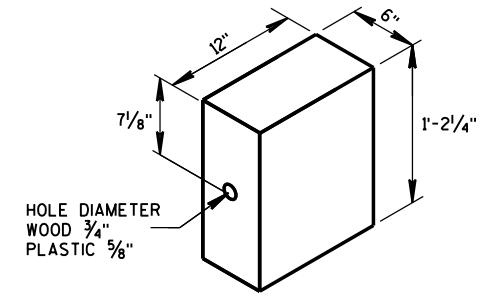
PLAN VIEW  
WOOD POST,  
BLOCKOUT & BEAM



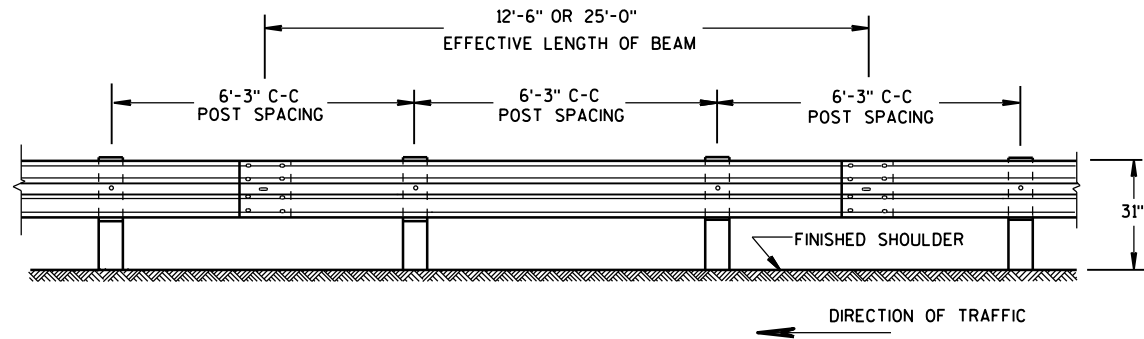
PLAN VIEW  
STEEL POST,  
PLASTIC BLOCKOUT & BEAM



WOOD POST  
(6" X 8") NOMINAL ①

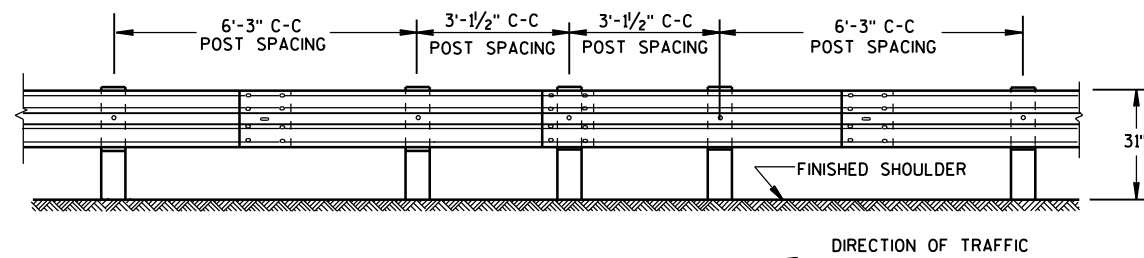


WOOD OR  
PLASTIC BLOCKOUT ②



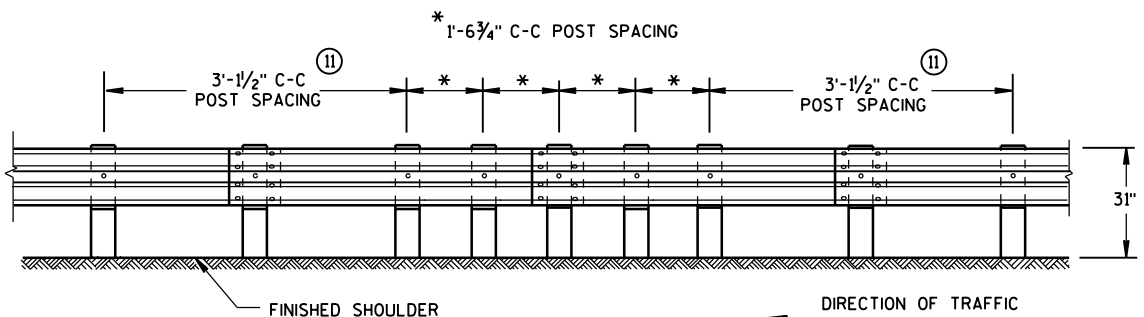
FRONT VIEW

## POST SPACING STANDARD INSTALLATION



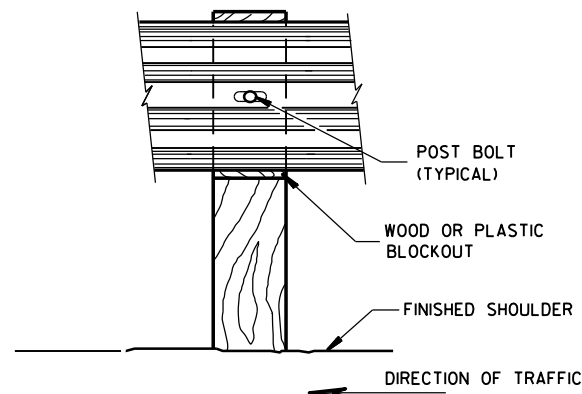
FRONT VIEW

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

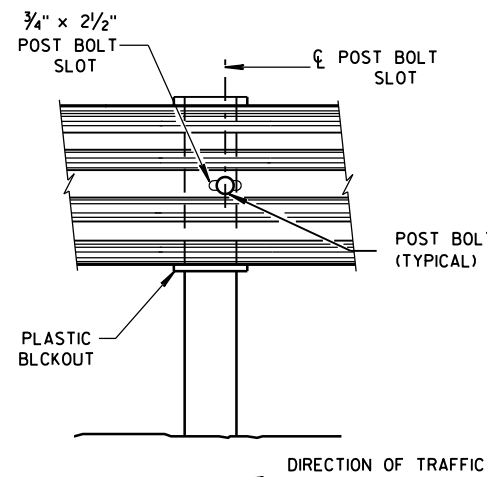


FRONT VIEW

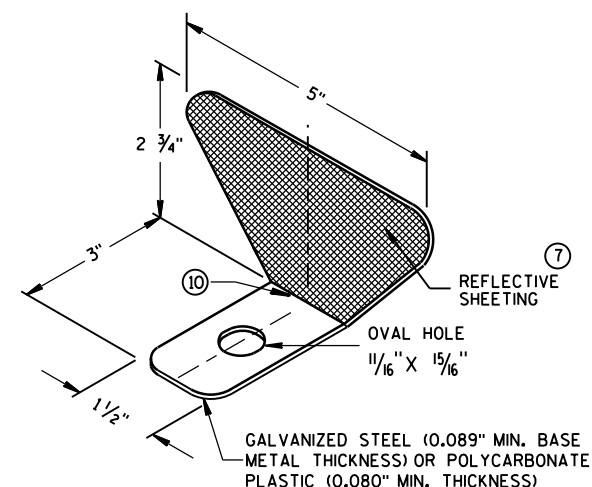
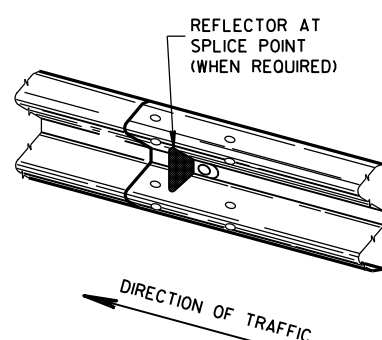
## QUARTER POST SPACING (QS)



FRONT VIEW AT WOOD POST



FRONT VIEW AT STEEL POST



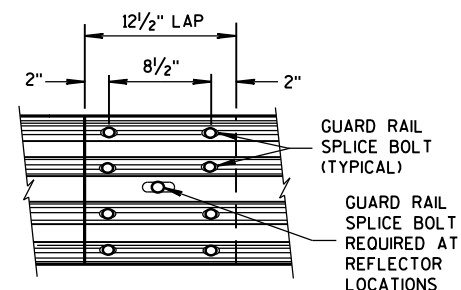
## ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

## GENERAL NOTES

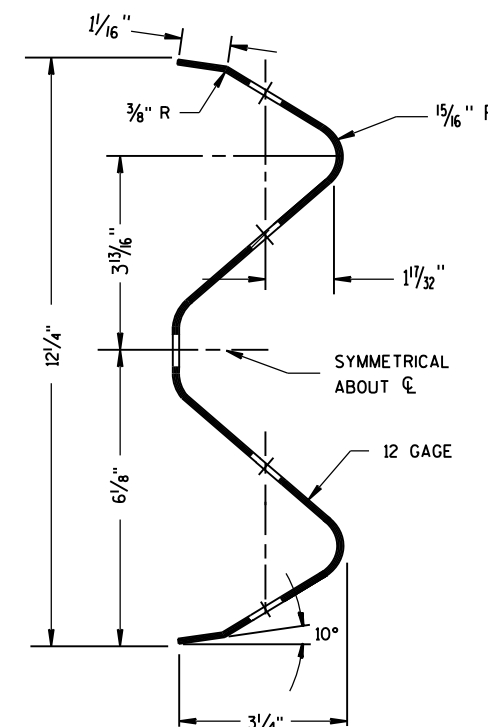
- ⑦ PROVIDE SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH YELLOW REFLECTIVE SHEETING. SHEETING IS TYPE H. SEE STANDARD SPECIFICATION 637.
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
- ⑨ REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.
- ⑩ PROVIDE AN ANGLE OF BEND OF  $90^\circ \pm 1^\circ$  FOR TWO-SIDED REFLECTORS.
- ⑪ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

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

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



FRONT VIEW  
MID-SPAN BEAM SPLICE



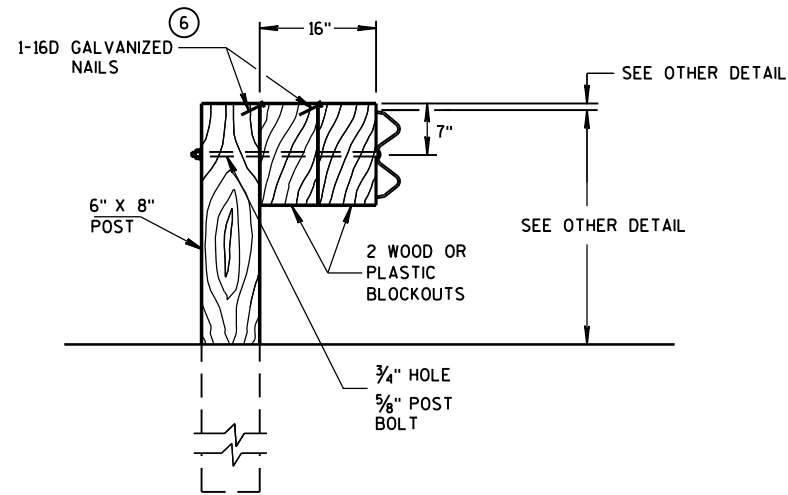
SECTION THRU W-BEAM RAIL

## REFLECTOR SPACING

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

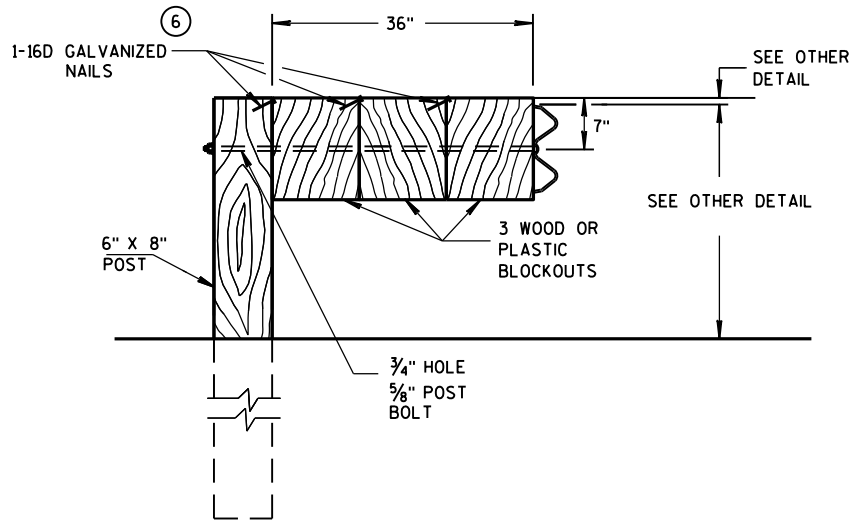
## MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



### DETAIL FOR 16" BLOCKOUT DEPTH

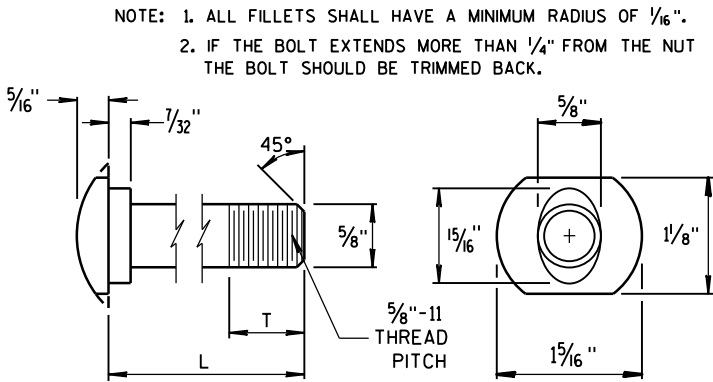
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



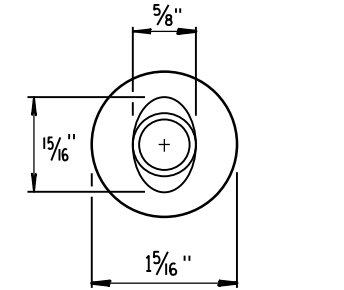
### DETAIL FOR 36" BLOCKOUT DEPTH

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.

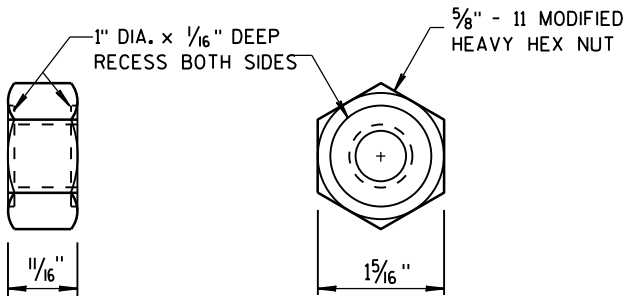
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.



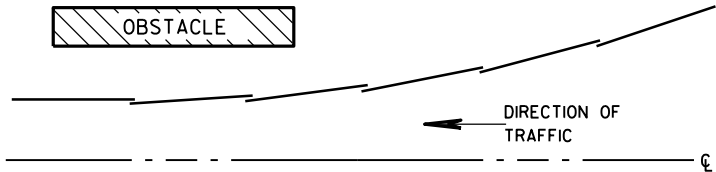
POST BOLT TABLE



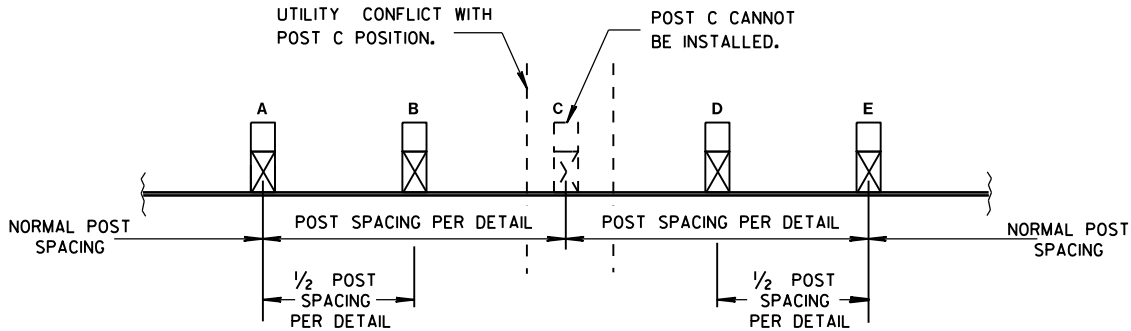
ALTERNATE BOLT HEAD



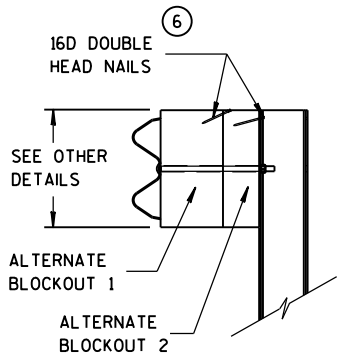
POST BOLT AND RECESS NUT



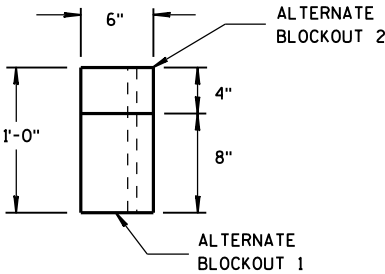
PLAN VIEW  
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS  
UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

ALTERNATE WOOD  
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

GENERAL NOTES

- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL), AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.
- (C) DIFFERENT MANUFACTURES REQUIRE DIFFERENT PERFORATED W-BEAM RAIL END PANELS. SEE MANUFACTURES INFORMATION.
- (D) THE TOP OF THE STEEL TUBE ON POST 1 AND POST 2 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.
- (E) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS, ONE SCREW PER CORNER.
- (G) 1/2" DIAMETER X 3" LONG LAG BOLT AND WASHER.
- (H) HARDWARE VARIES BETWEEN DIFFERENT MANUFACTURES. SEE MANUFACTURE'S DRAWING FOR INFORMATION.
- (I) DIMENSIONS MAY VARY. SEE MANUFACTURE'S INFORMATION.

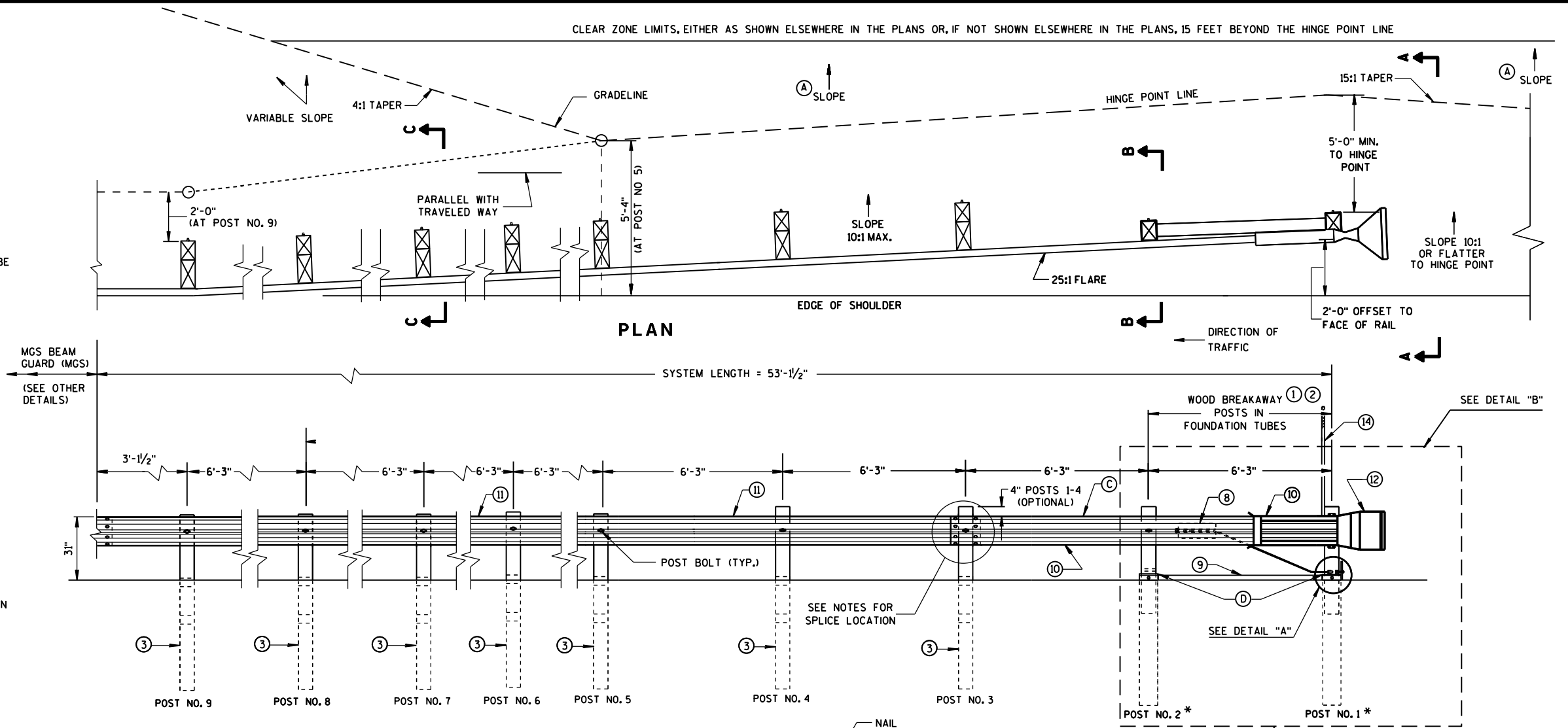
SEE SDD 14B42 FOR MORE INFORMATION.

\* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

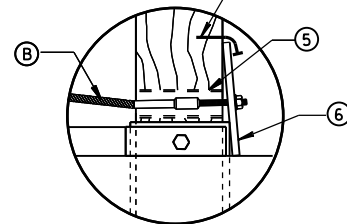
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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

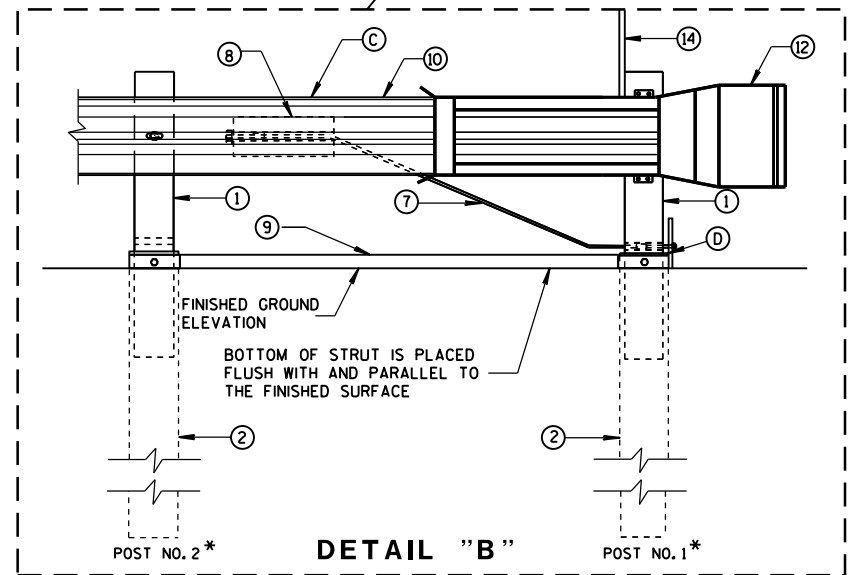
THE CENTER OF THE UPPER 3/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE.



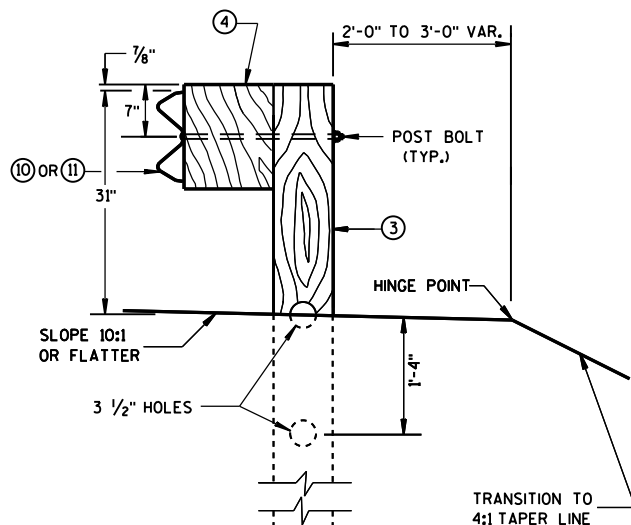
ELEVATION



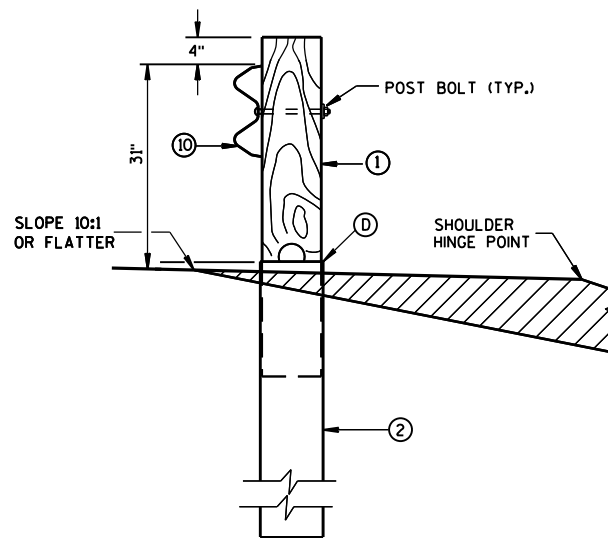
DETAIL "A"



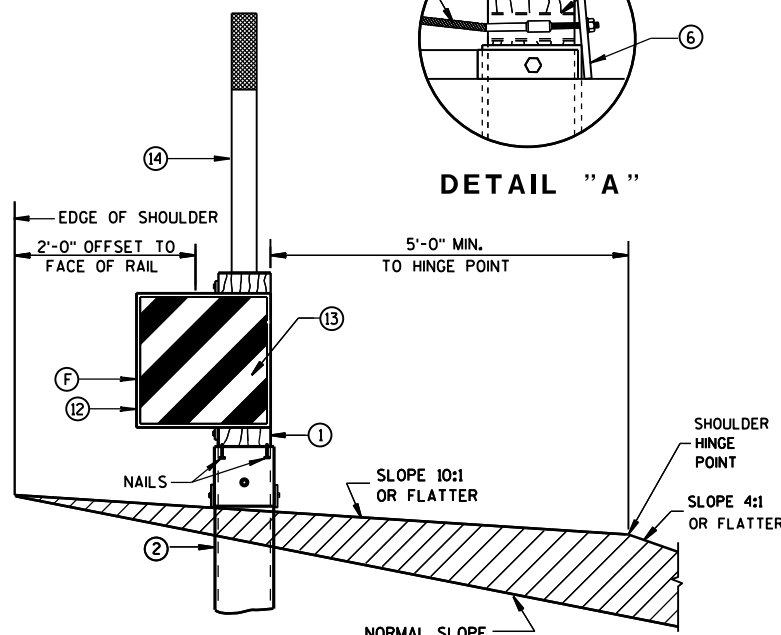
DETAIL "B"



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



SECTION B-B  
TYPICAL AT POST NO. 2\*

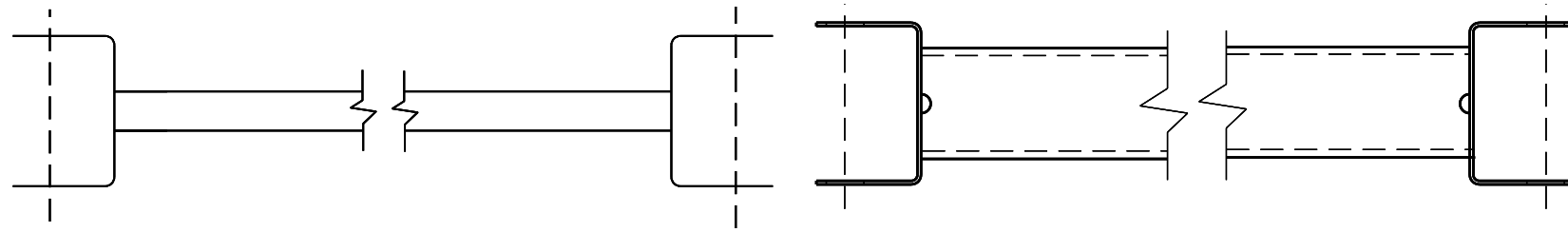


SECTION A-A  
TYPICAL AT POST NO. 1\*

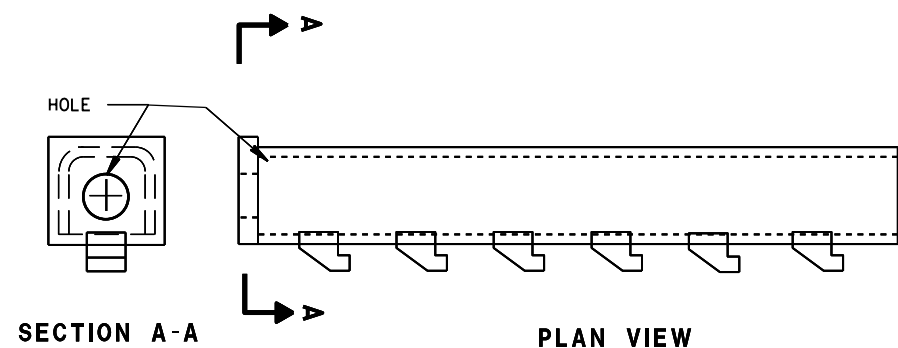
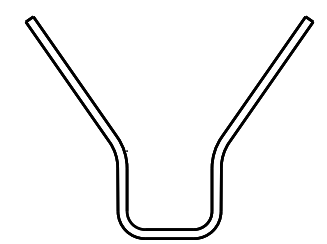
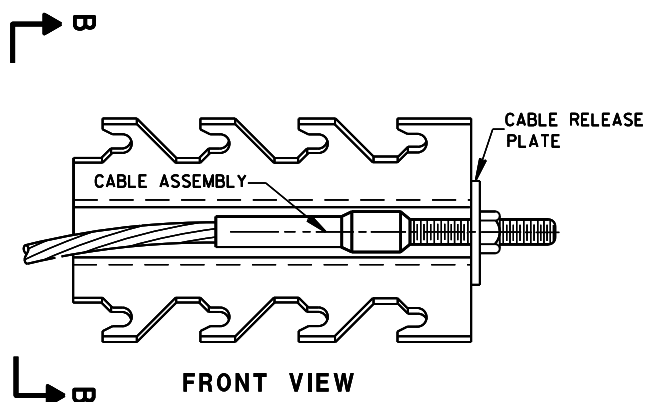
MIDWEST GUARDRAIL SYSTEM  
ENERGY ABSORBING TERMINAL  
(MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION





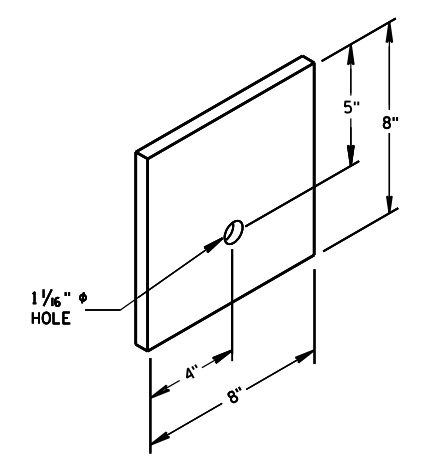
9 H  
GENERIC GROUND STRUT



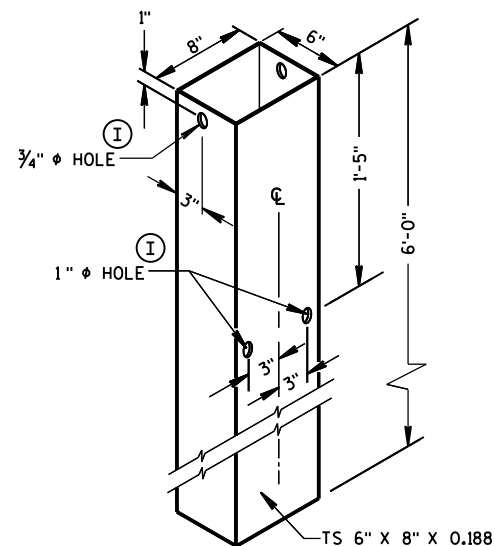
8 H  
GENERIC ANCHOR CABLE BOX

BILL OF MATERIALS

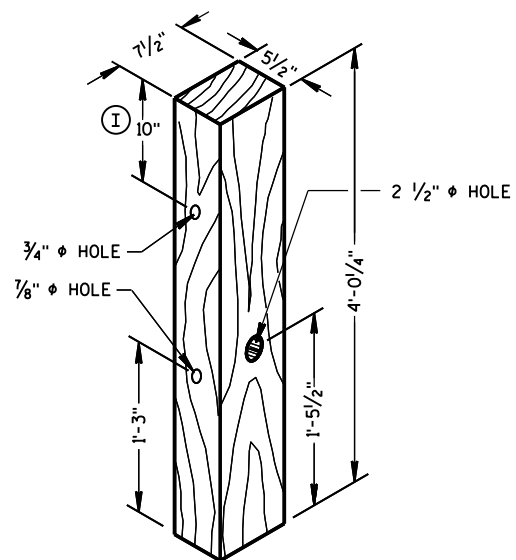
PART NO.	DESCRIPTION
MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.	
①	WOOD BREAKAWAY POST
②	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND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



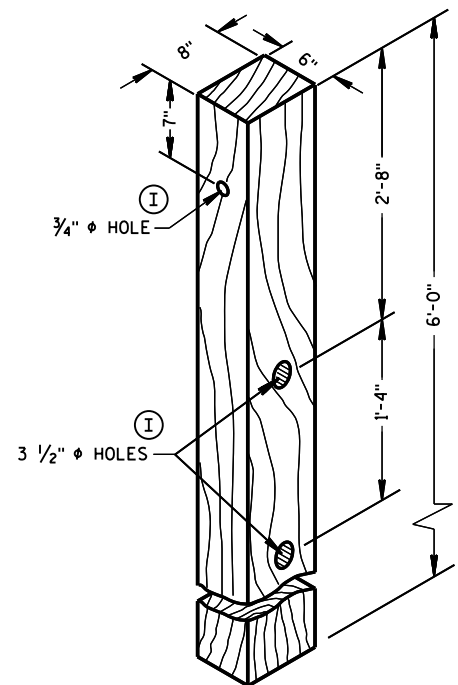
6  
BEARING PLATE



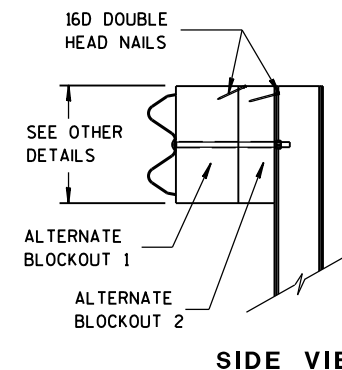
FOUNDATION TUBE ②



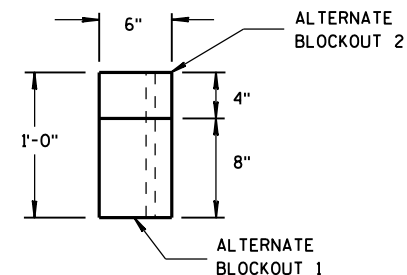
POSTS NUMBER 1 AND 2  
WOOD BREAKAWAY POST ①



POSTS NUMBER 3-9  
WOOD CRT POST ③

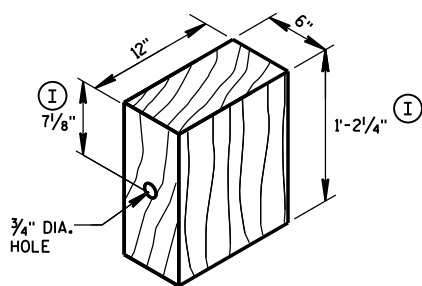


SIDE VIEW



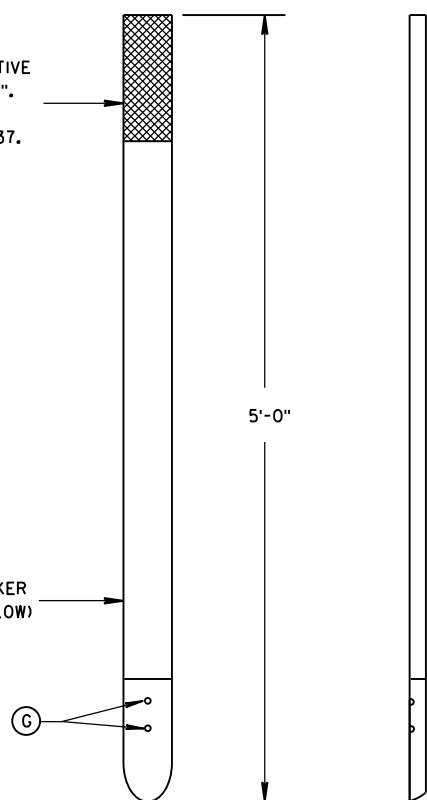
TOP VIEW

ALTERNATE WOOD  
BLOCKOUT DETAIL



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

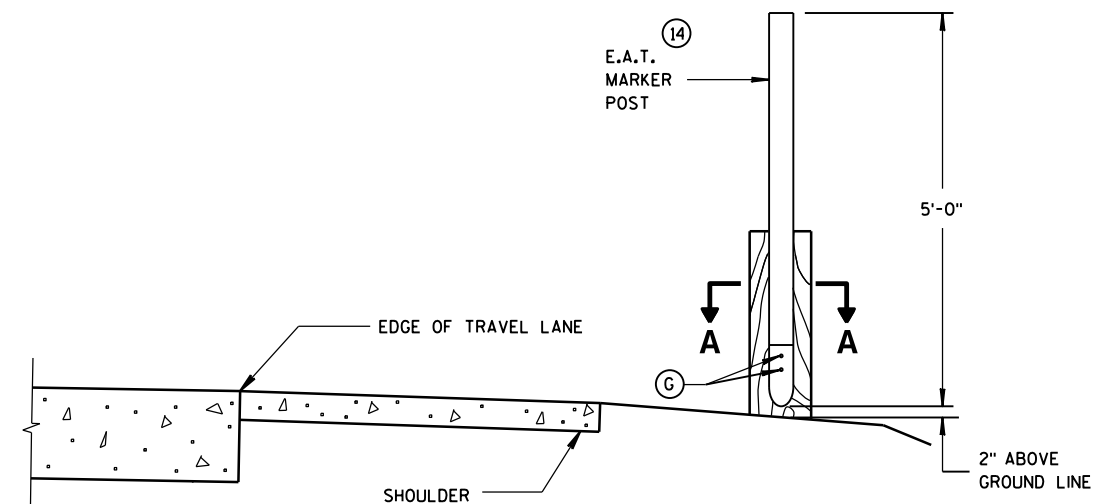
TYPE H  
YELLOW REFLECTIVE  
SHEETING 3" X 9".  
SEE STANDARD  
SPECIFICATION 637.



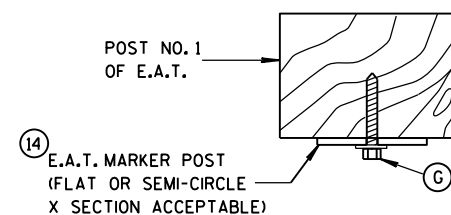
FRONT VIEW

SIDE VIEW

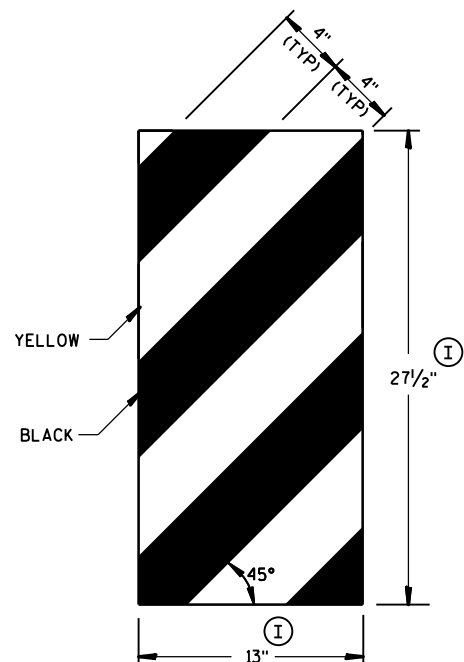
E.A.T. MARKER POST ⑭



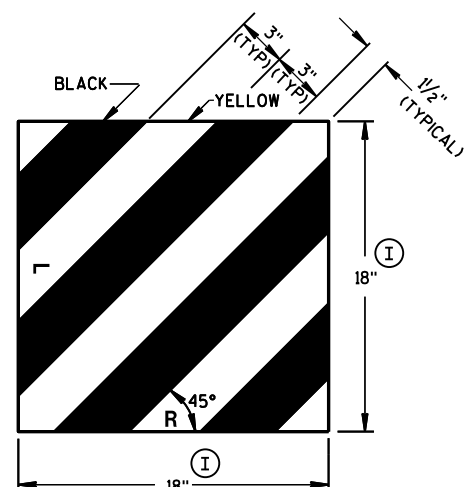
TYPICAL INSTALLATION OF E.A.T.  
MARKER POST BACKSIDE OF POST NO. 1  
(E.A.T. AND RAIL REMOVED FOR CLARITY)



SECTION A-A



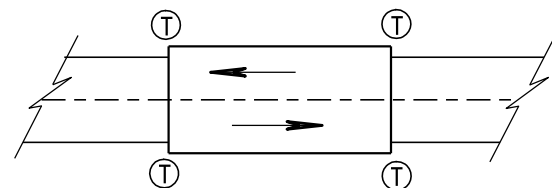
GENERIC REFLECTIVE SHEETING ⑬ ①



MIDWEST GUARDRAIL SYSTEM  
ENERGY ABSORBING TERMINAL  
(MGS)

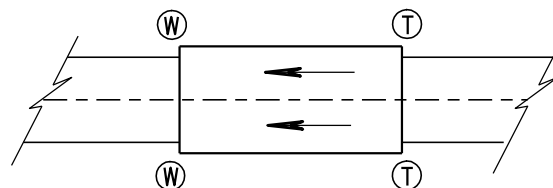
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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



TWO WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION



ONE WAY TRAFFIC

Ⓦ W-BEAM CONNECTION WHEN REQUIRED

## GENERAL NOTES

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

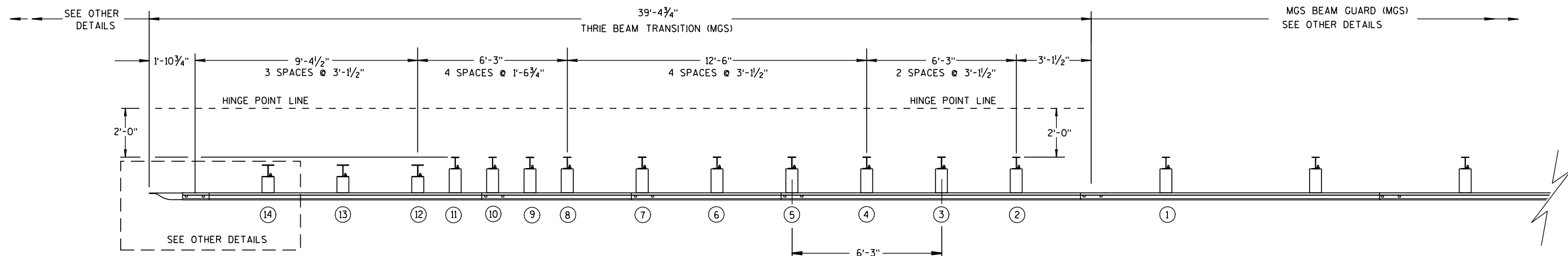
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

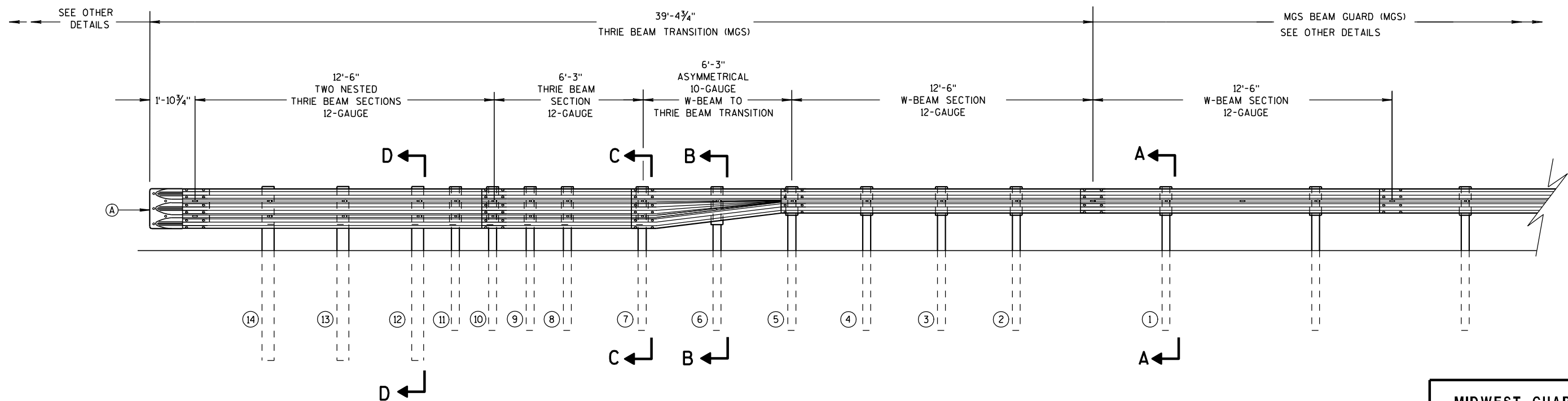
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

## 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)

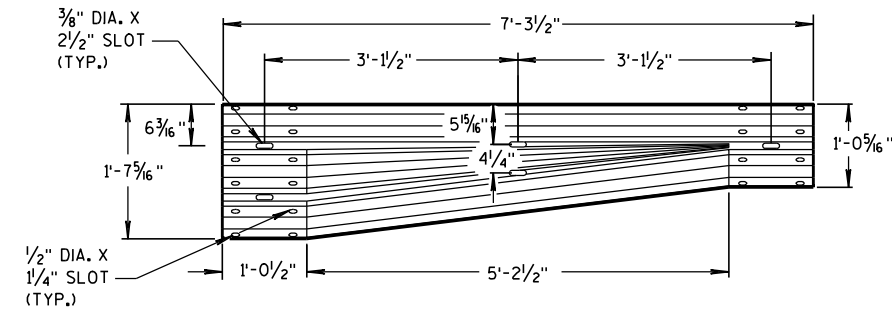
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

## 6

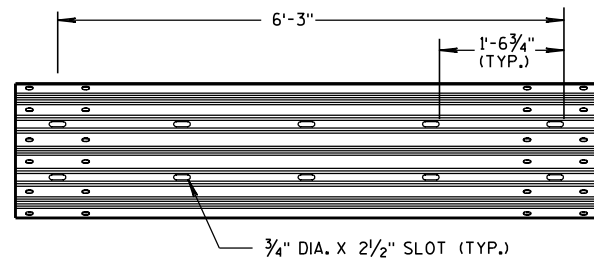
**S.D.D. 14 B 45-3b**



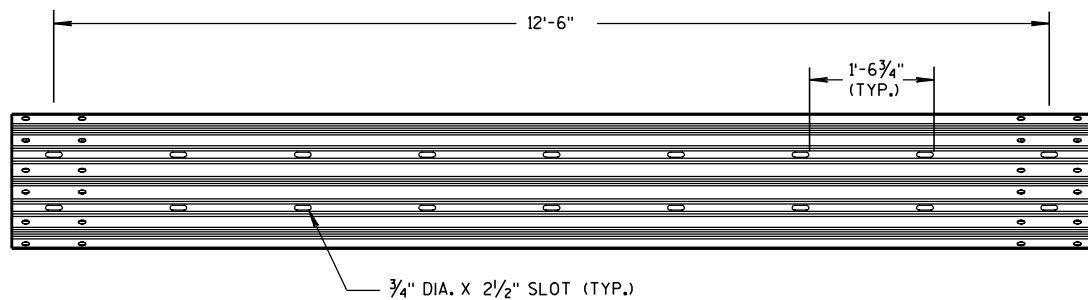
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



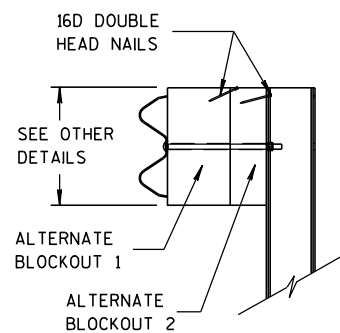
W-BEAM TO THRIE BEAM TRANSITION SECTION



6'-3" THRIE BEAM SECTION

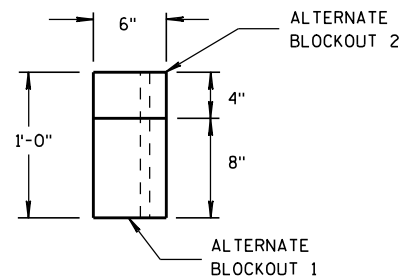


12'-6" THRIE BEAM SECTION

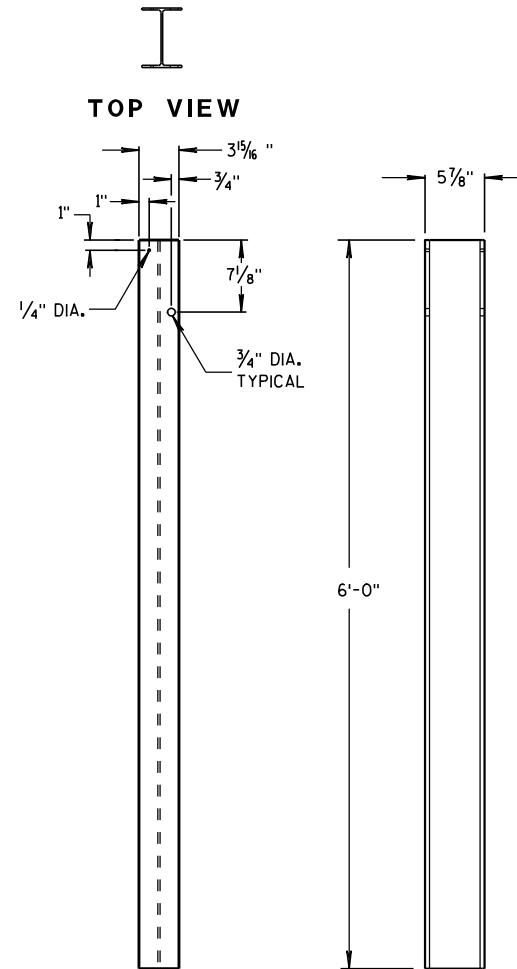


SIDE VIEW

ALTERNATE WOOD  
BLOCKOUT DETAIL



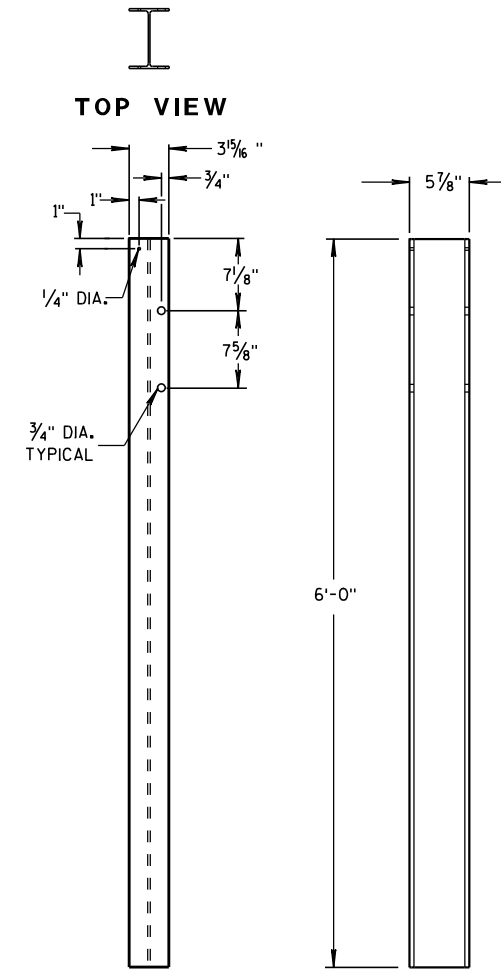
TOP VIEW



FRONT VIEW

SIDE VIEW

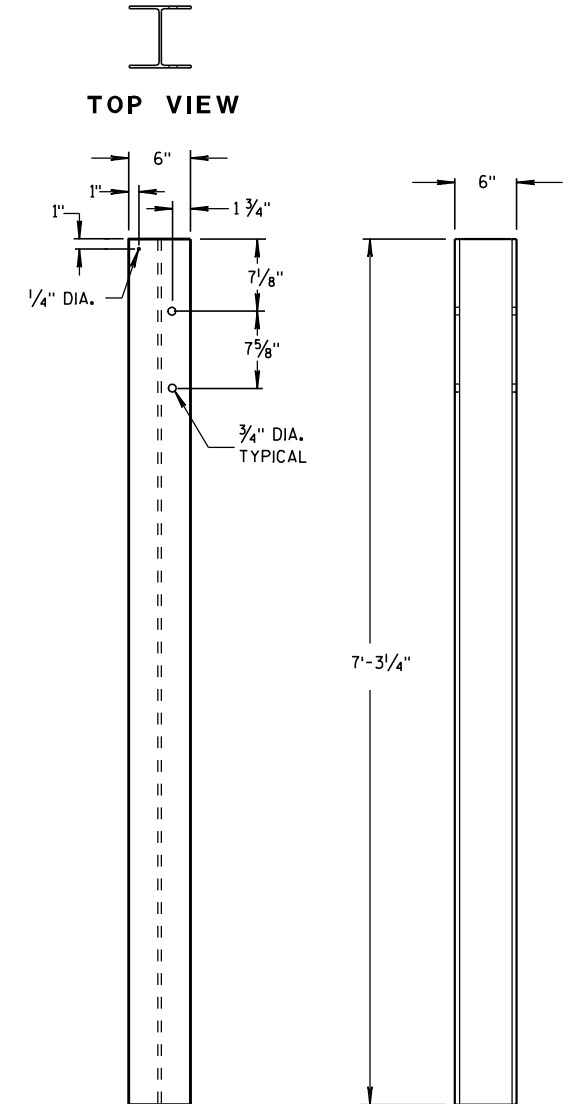
STEEL POSTS 1-5



FRONT VIEW

SIDE VIEW

STEEL POSTS 6-11

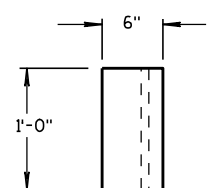


FRONT VIEW

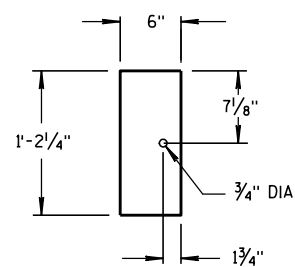
SIDE VIEW

STEEL POSTS 12-14

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

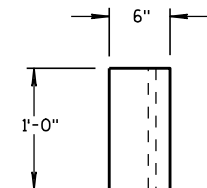


TOP VIEW

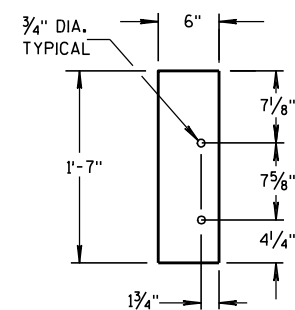


FRONT VIEW

BLOCKOUT  
POSTS 1-5

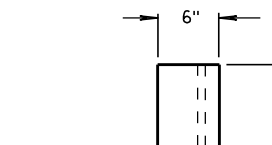


TOP VIEW

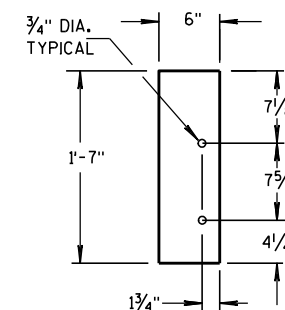


FRONT VIEW

BLOCKOUT  
POSTS 6-11



TOP VIEW



FRONT VIEW

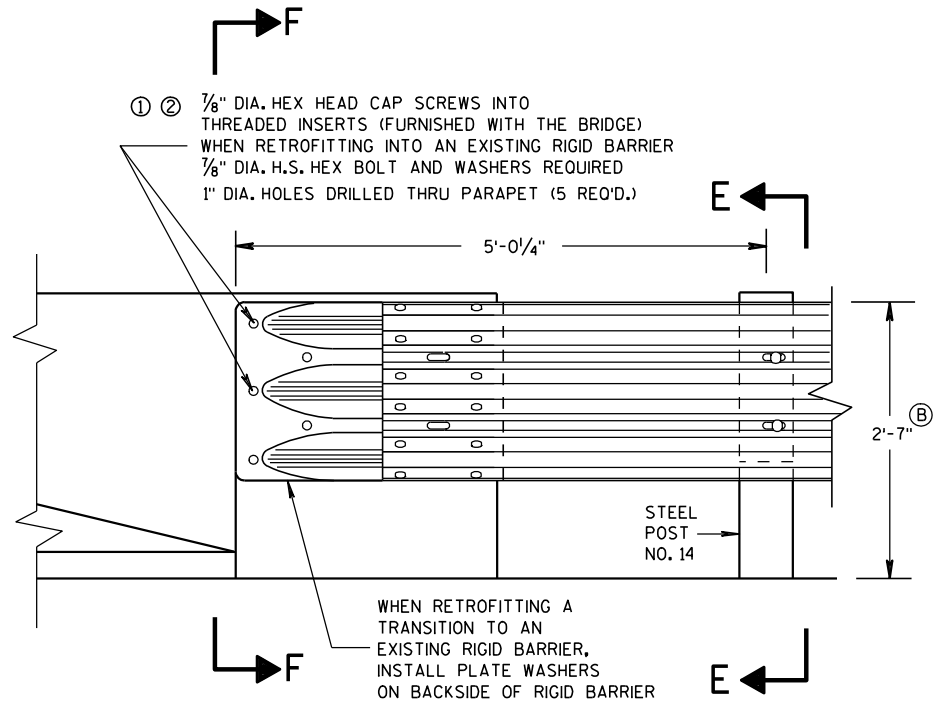
BLOCKOUT  
POSTS 12-14

STEEL POST SIZES

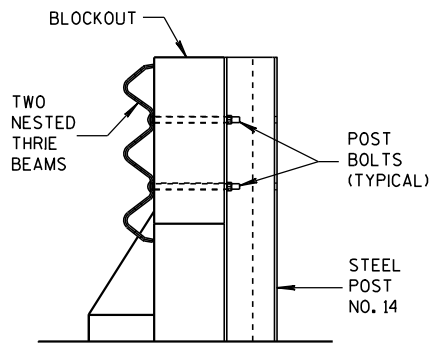
POST NUMBER	SECTION TYPE	LENGTH
①	W6x9	72"
②	W6x9	72"
③	W6x9	72"
④	W6x9	72"
⑤	W6x9	72"
⑥	W6x9	72"
⑦	W6x9	72"
⑧	W6x9	72"
⑨	W6x9	72"
⑩	W6x9	72"
⑪	W6x9	72"
⑫	W6x15	87 7/8"
⑬	W6x15	87 7/8"
⑭	W6x15	87 7/8"

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



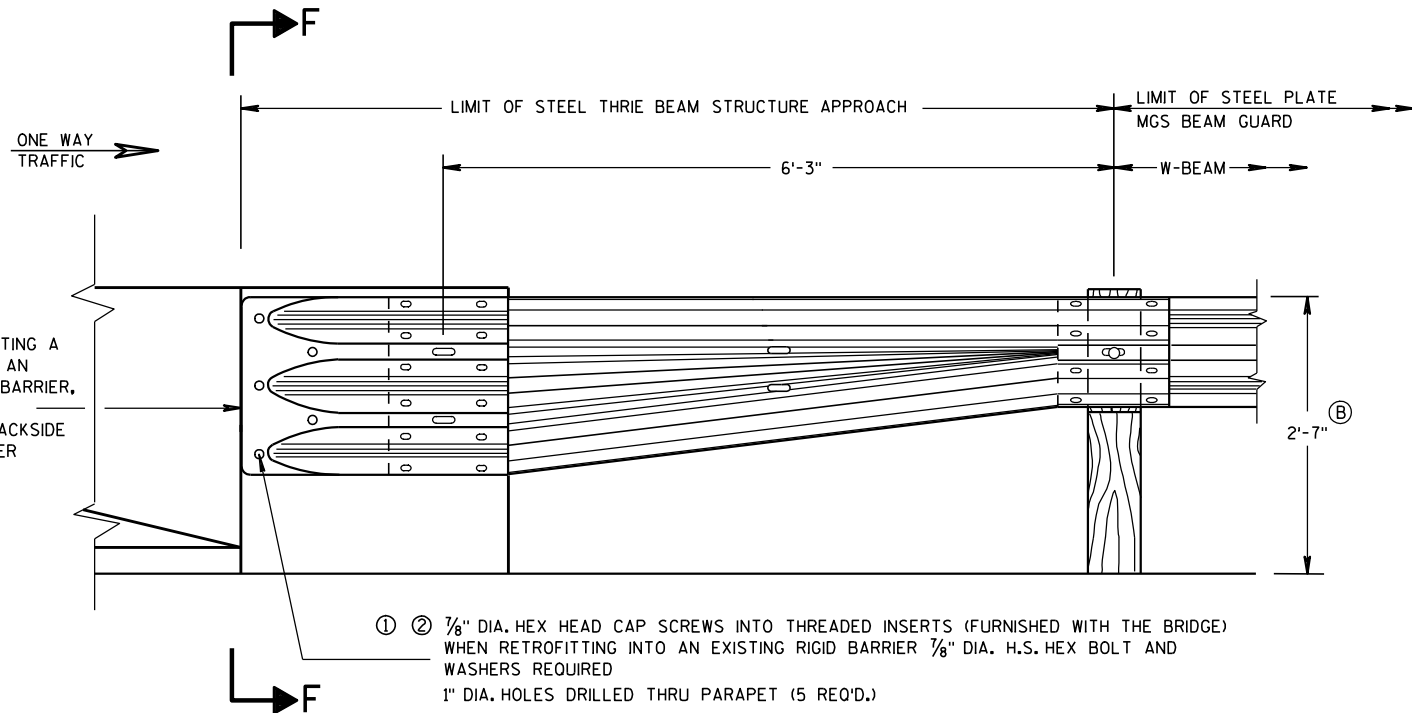
FRONT VIEW  
THRIE BEAM CONNECTION TO BRIDGE  
PARAPET WITH SQUARE ENDS



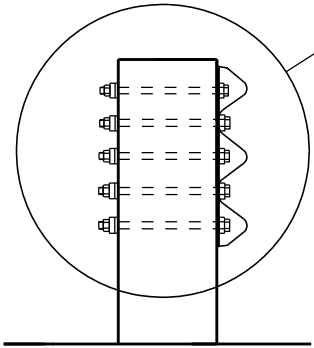
SECTION E-E

GENERAL NOTES

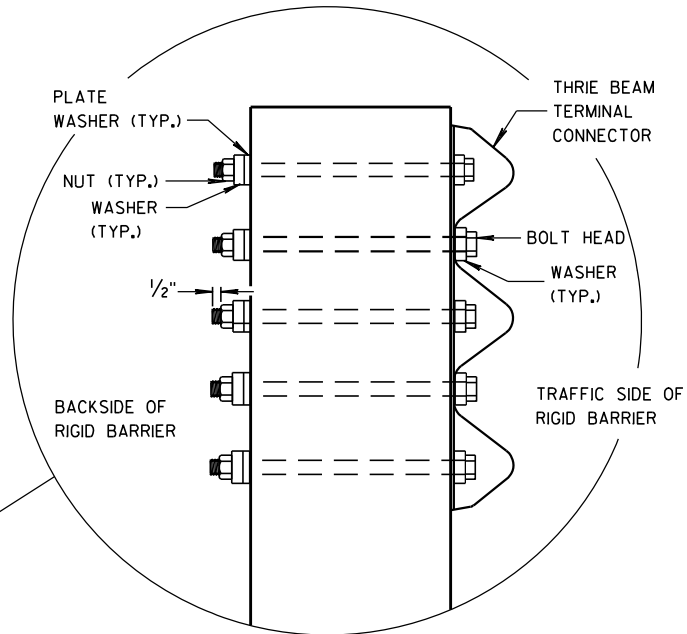
- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.
- ① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
  - ② BOLTS MAY BE A325 BOLTS OR A449 BOLTS, BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
  - ③ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".
  - (B) TOLERANCE FOR TOP OF BEAM IS ± 1".



FRONT VIEW  
W BEAM TRANSITION AND CONNECTION TO  
BRIDGE PARAPETS WITH SQUARE ENDS  
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)



SECTION F-F

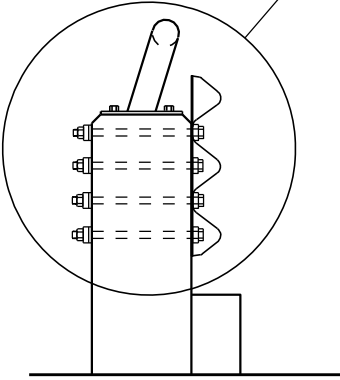
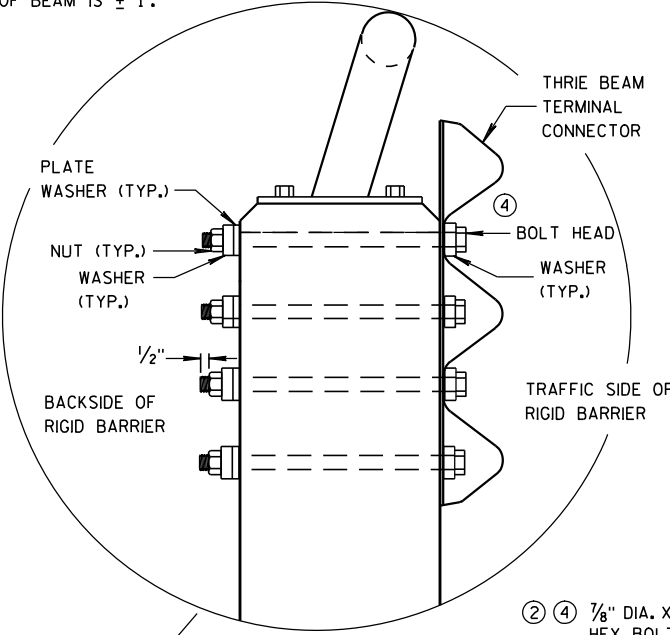


<b>MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 8/31/2012 DATE	/S/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	

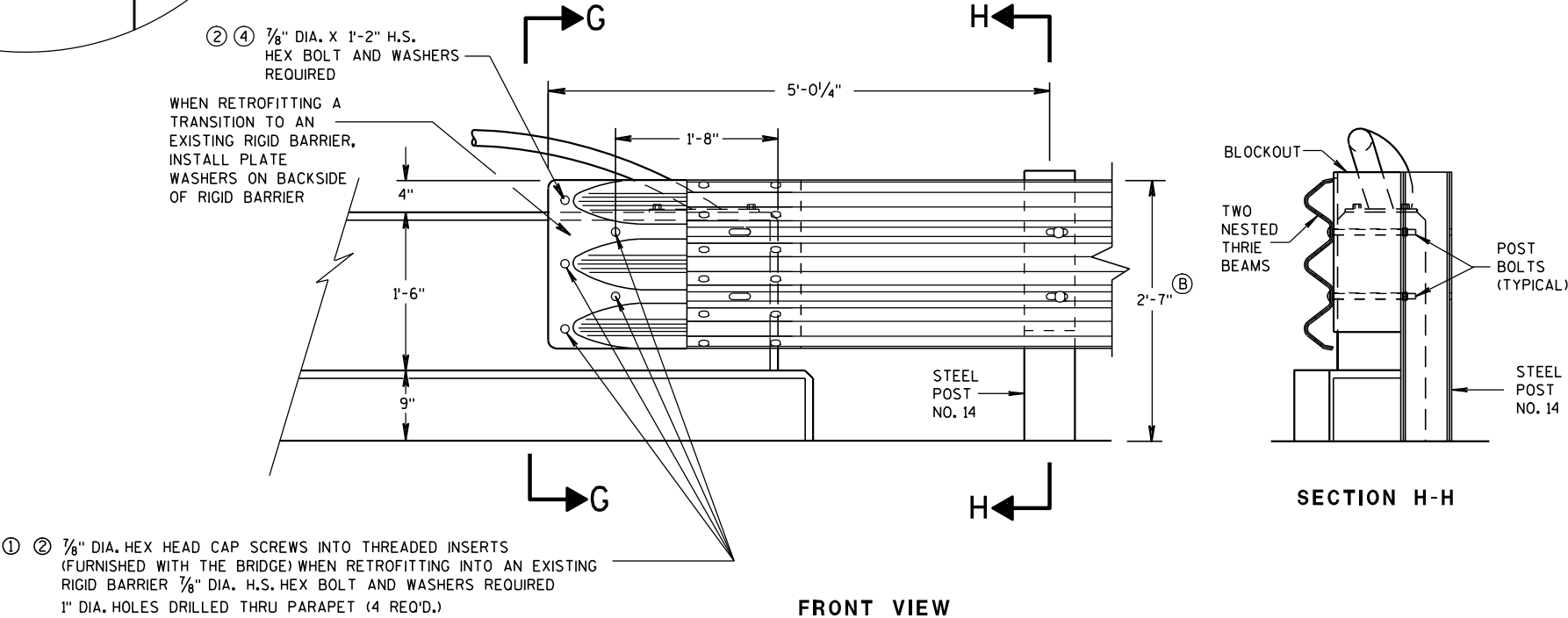
GENERAL NOTES

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

- ① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ② BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X  $\frac{5}{8}$ " THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ③ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3  $\frac{1}{2}$ ". BLOCK IS INCIDENTAL TO THE CONTRACT.
- ④ BOLT, NUT AND WASHERS NOT REQUIRED FOR THIS LOCATION WHEN RETROFITTING AN EXISTING PAPAPET AND THE HOLE IS EITHER ABOVE PARAPET OR WITHIN 4 INCHES OF THE EDGE OF PARAPET.
- ⓑ TOLERANCE FOR TOP OF BEAM IS  $\pm 1"$ .

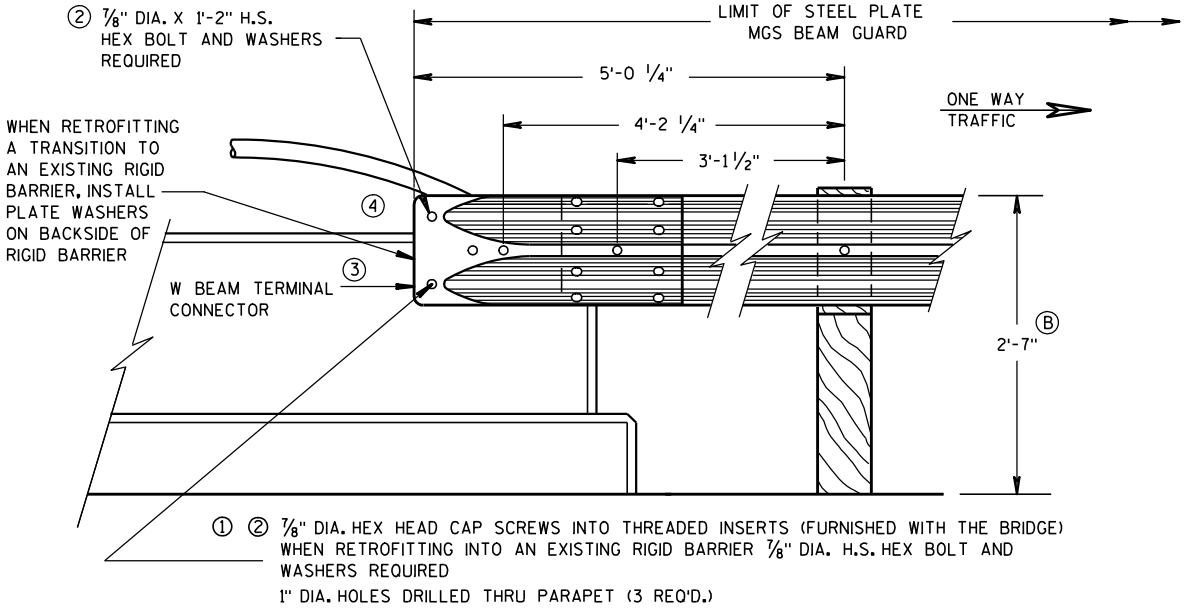


SECTION G-G



FRONT VIEW

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS



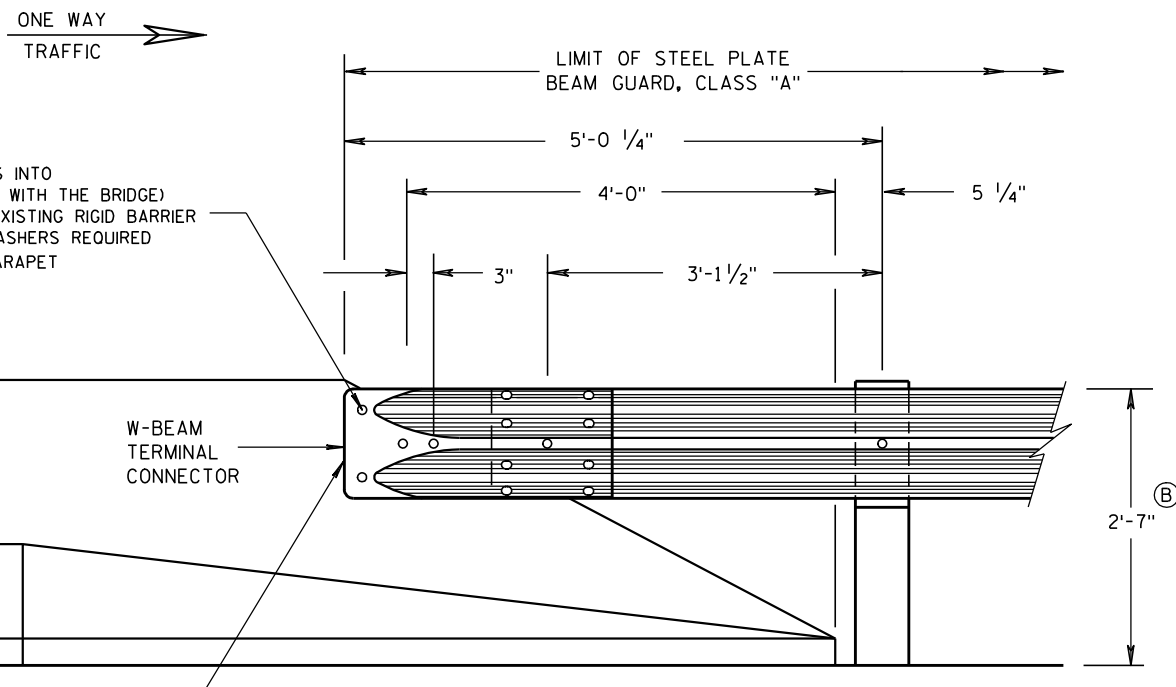
FRONT VIEW

W BEAM CONNECTION TO VERTICAL FACE PARAPET  
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
8-31-2012 DATE /S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER  
FHWA



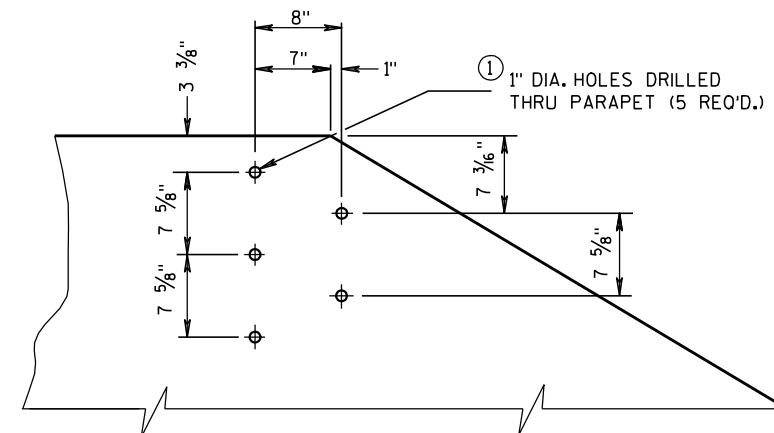
FRONT VIEW

### W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS

(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

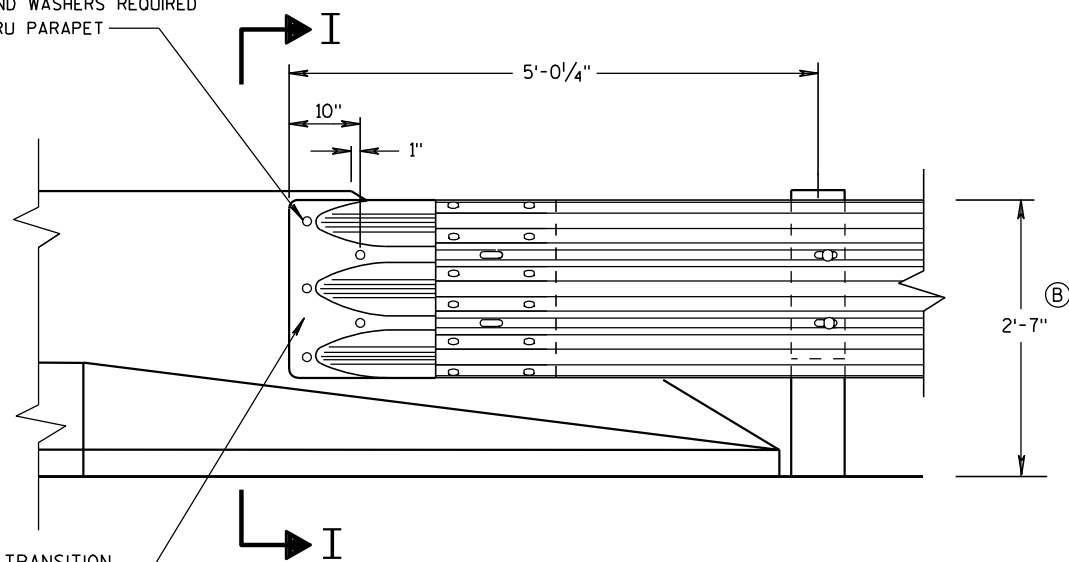
### GENERAL NOTES

- ① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ② BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ③ TOLERANCE FOR TOP OF BEAM IS  $\pm 1"$ .



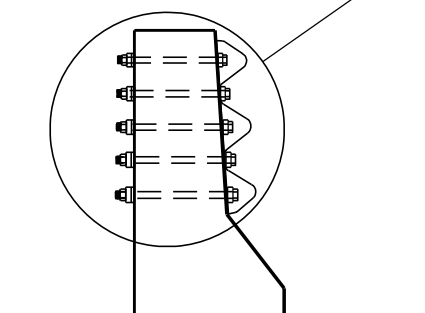
### DRILL HOLE LOCATION AND PATTERN FOR THRIE BEAM CONNECTION

- ① ② 1/8" DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER. 7/8" DIA. H.S. HEX BOLT AND WASHERS REQUIRED. 1" DIA. HOLES DRILLED THRU PARAPET (5 REQ'D.).

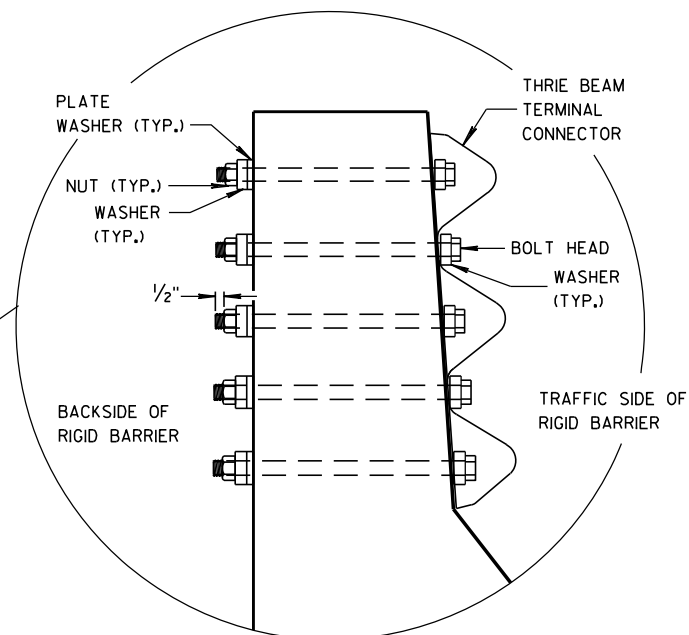


FRONT VIEW

### THRIE BEAM CONNECTION TO BRIDGE PARAPETS WITH SLOPED ENDS



SECTION I-I



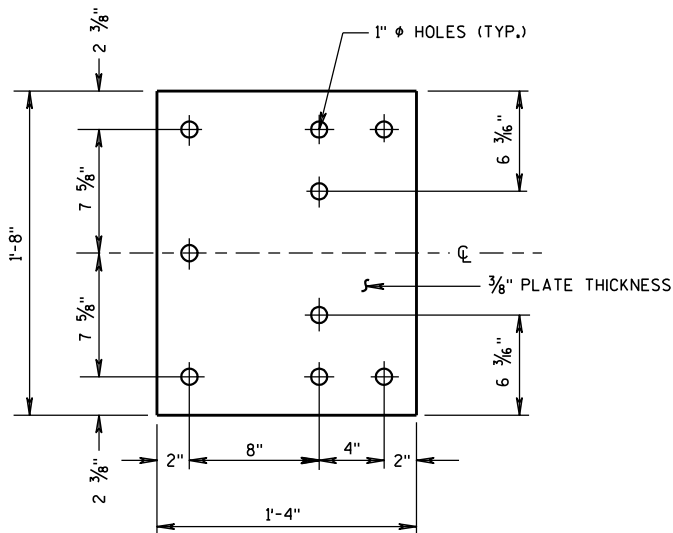
MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

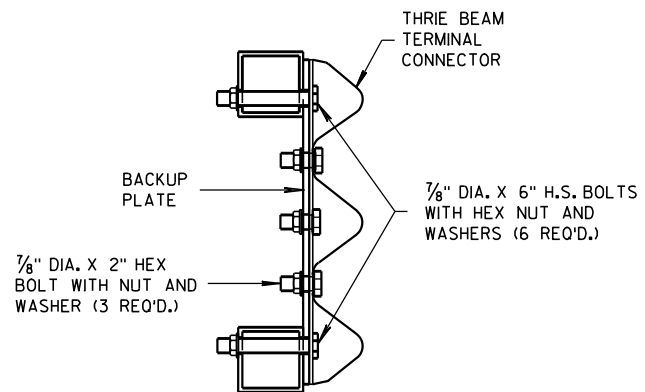
APPROVED  
8/31/2012  
DATE  
FHWA

/S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

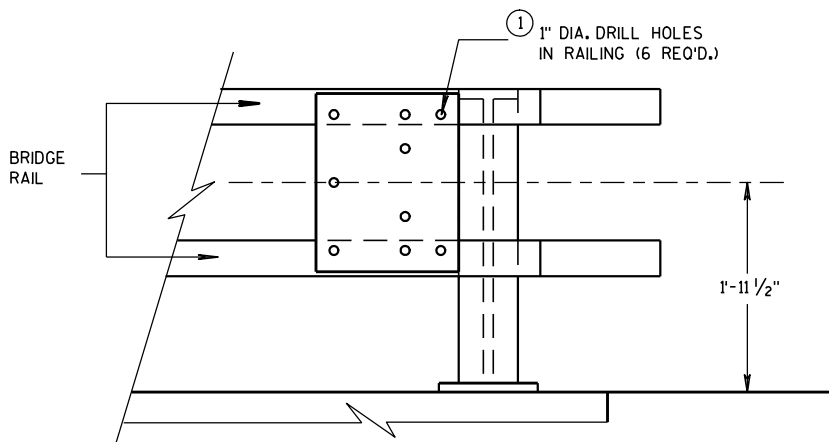




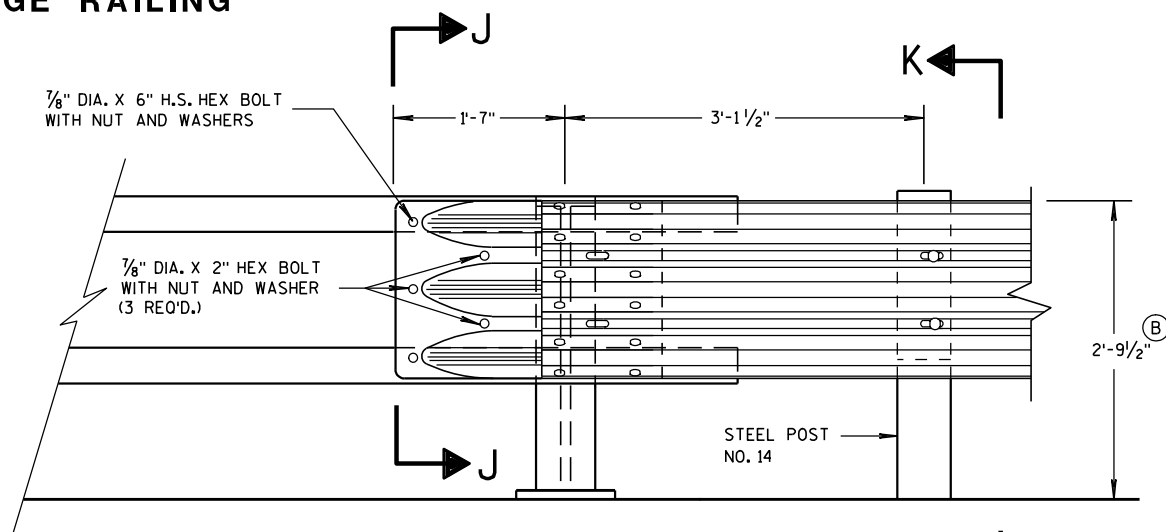
BACK-UP PLATE DETAIL



SECTION J-J

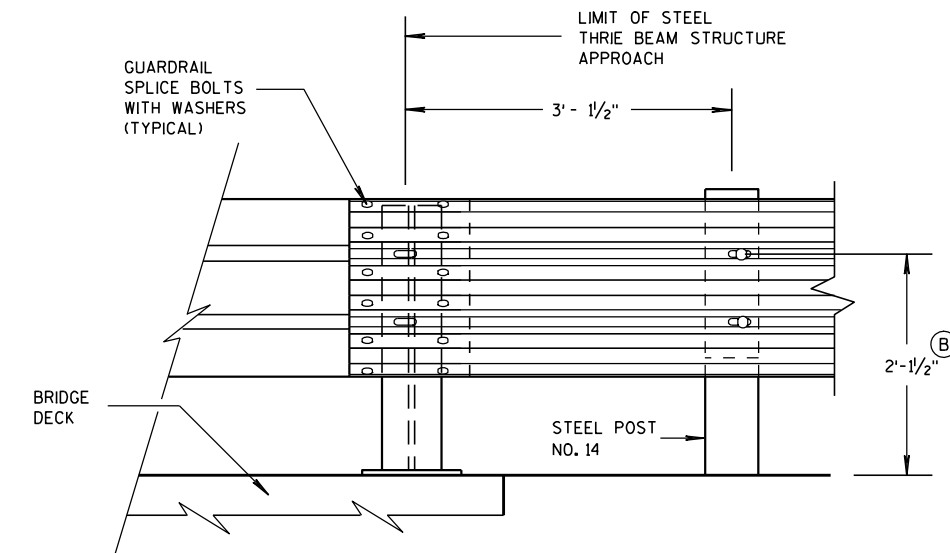


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



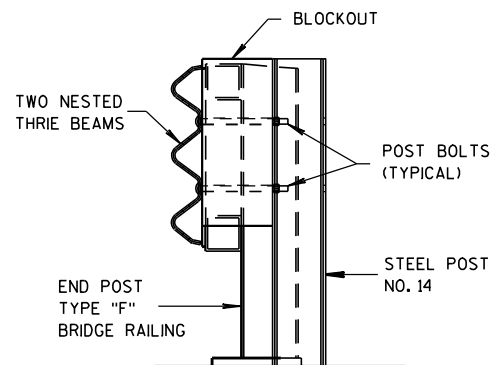
FRONT VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"



SECTION K-K

## GENERAL NOTES

- ① DRILLING HOLES THROUGH THE PAPER, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ② TOLERANCE FOR TOP OF BEAM IS  $\pm 1"$ .

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

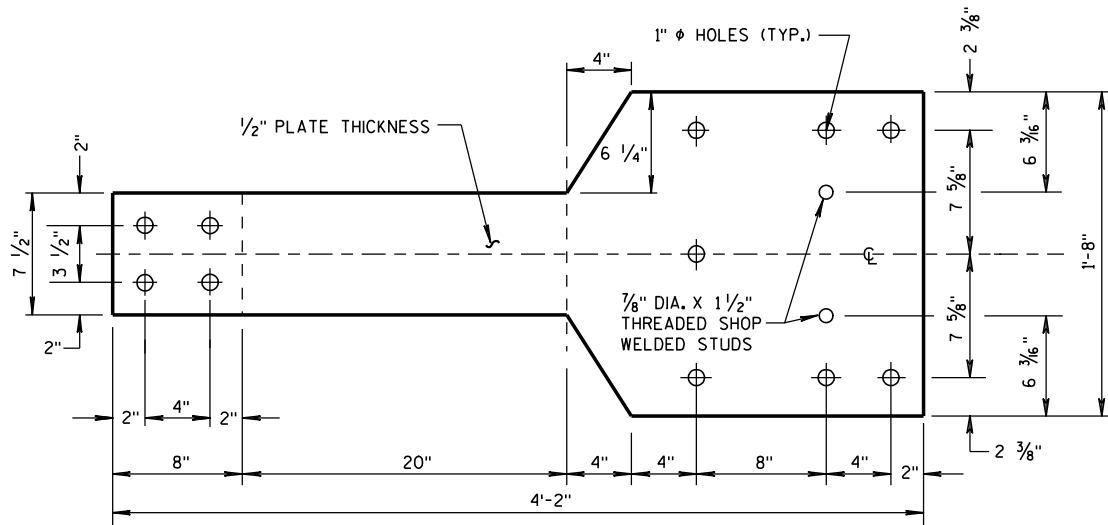
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
8/31/2012  
DATE  
FHWA

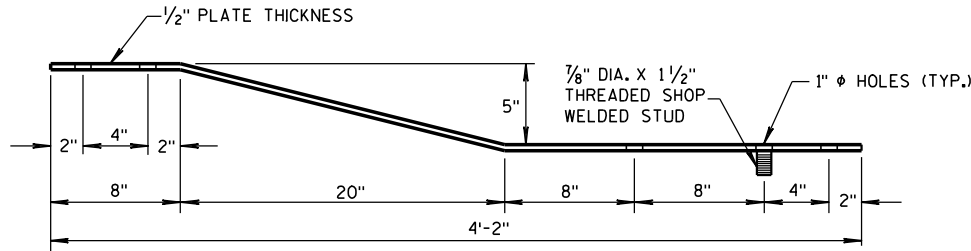
/S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

GENERAL NOTES

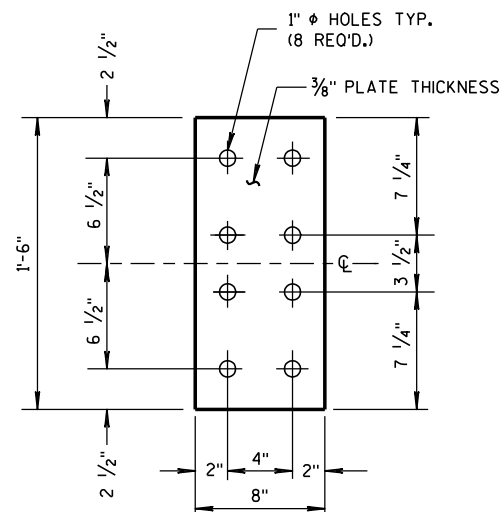
(B) TOLERANCE FOR TOP OF W-BEAM RAIL IS  $\pm 1"$ .



FRONT VIEW

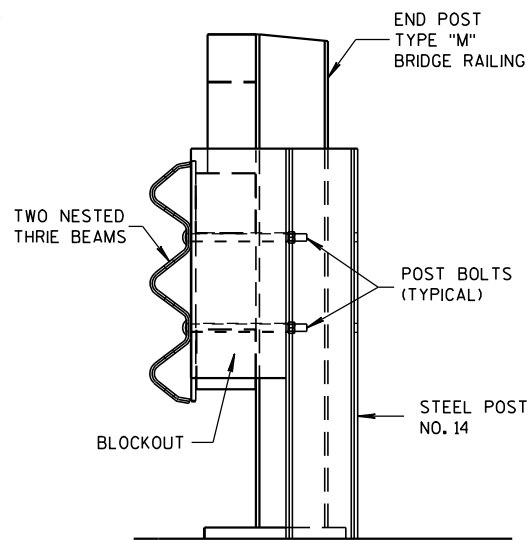


PLAN VIEW  
BACK-UP PLATE DETAIL, TYPE "M"

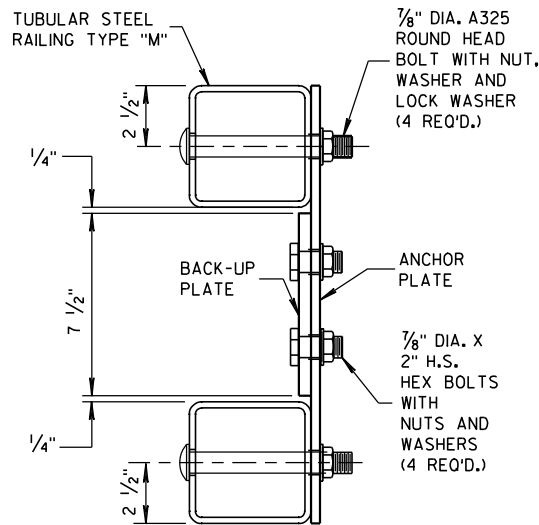


FRONT VIEW

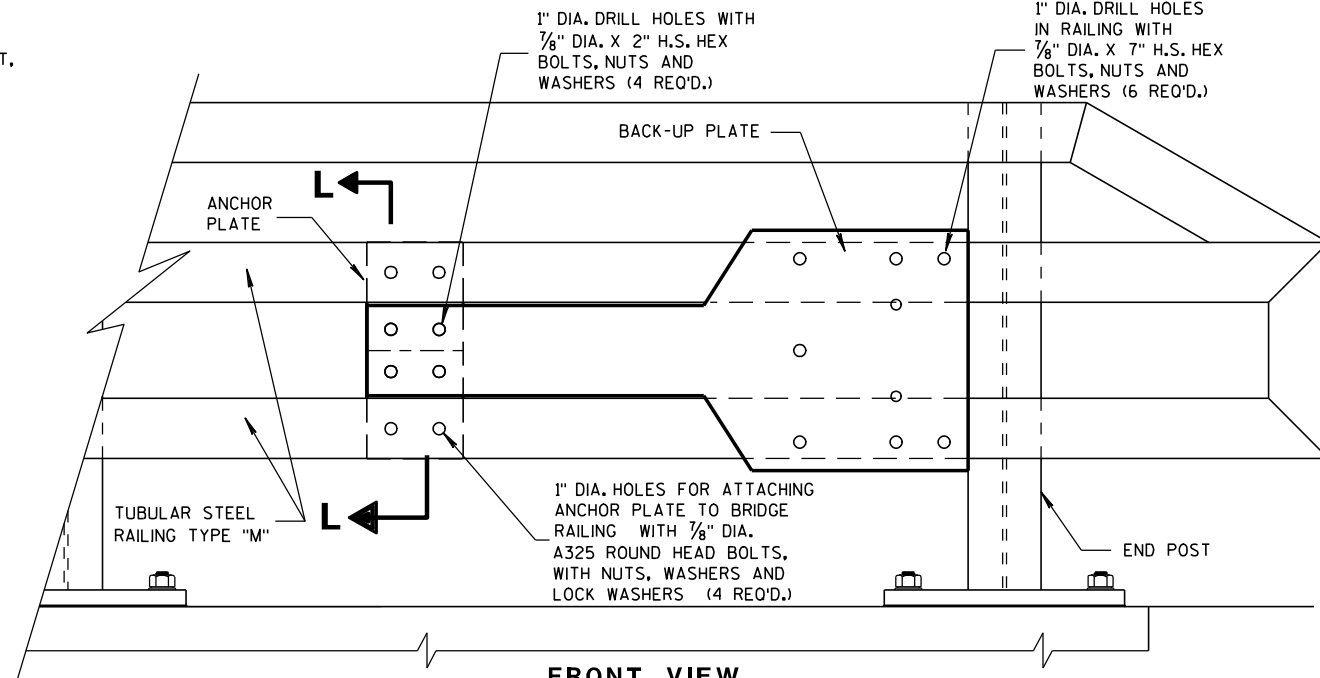
ANCHOR  
PLATE DETAIL,  
TYPE "M"



SECTION M-M

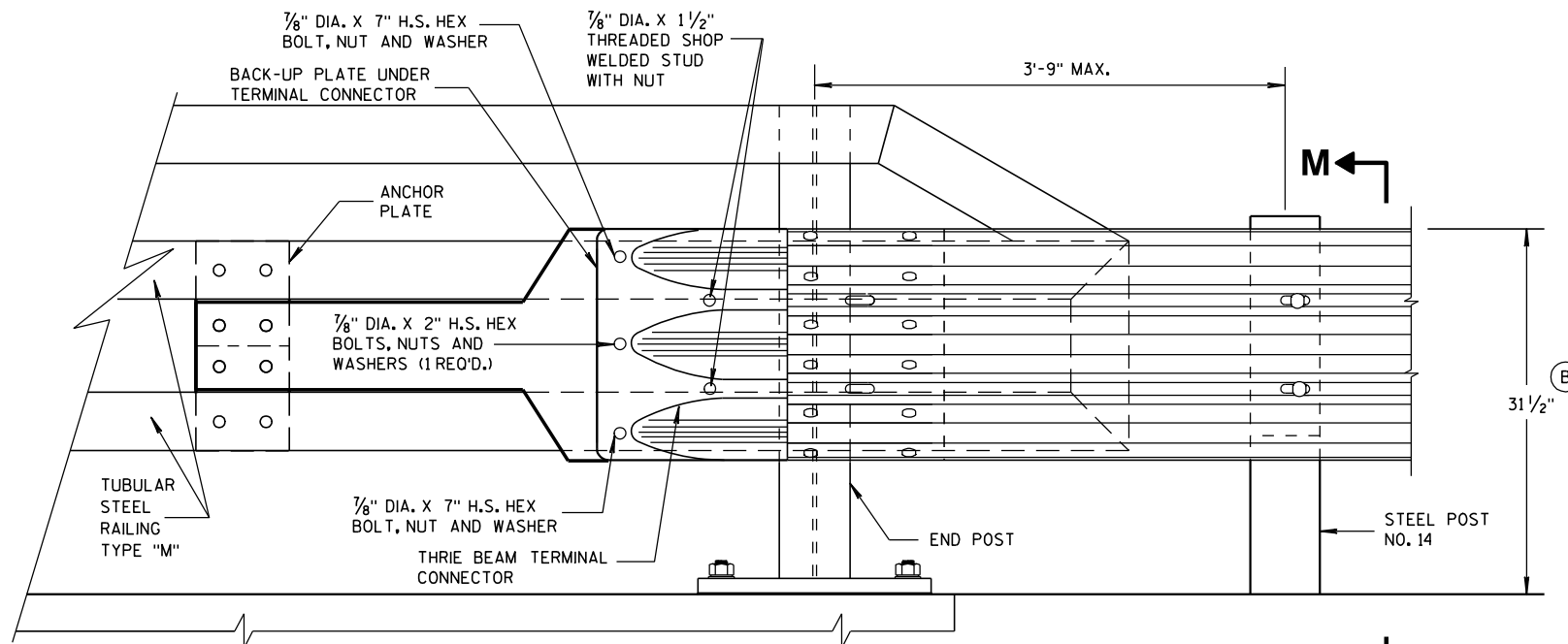


SECTION L-L

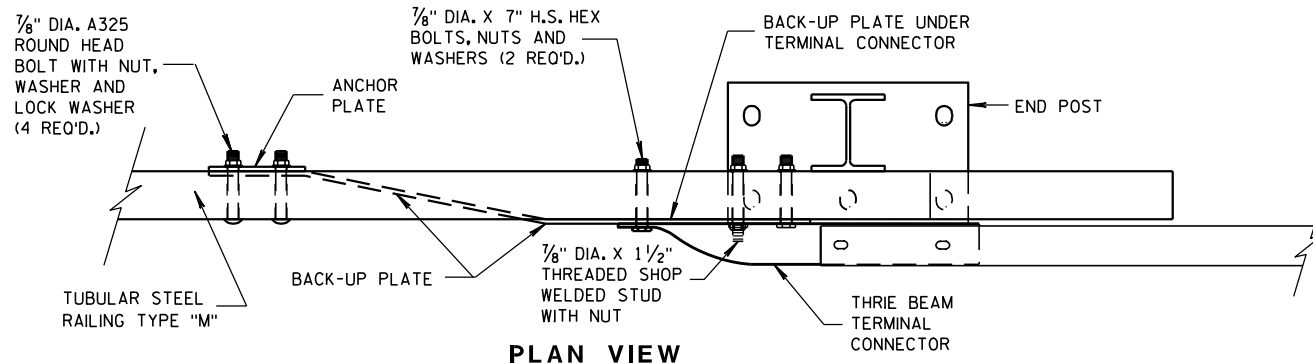


FRONT VIEW

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

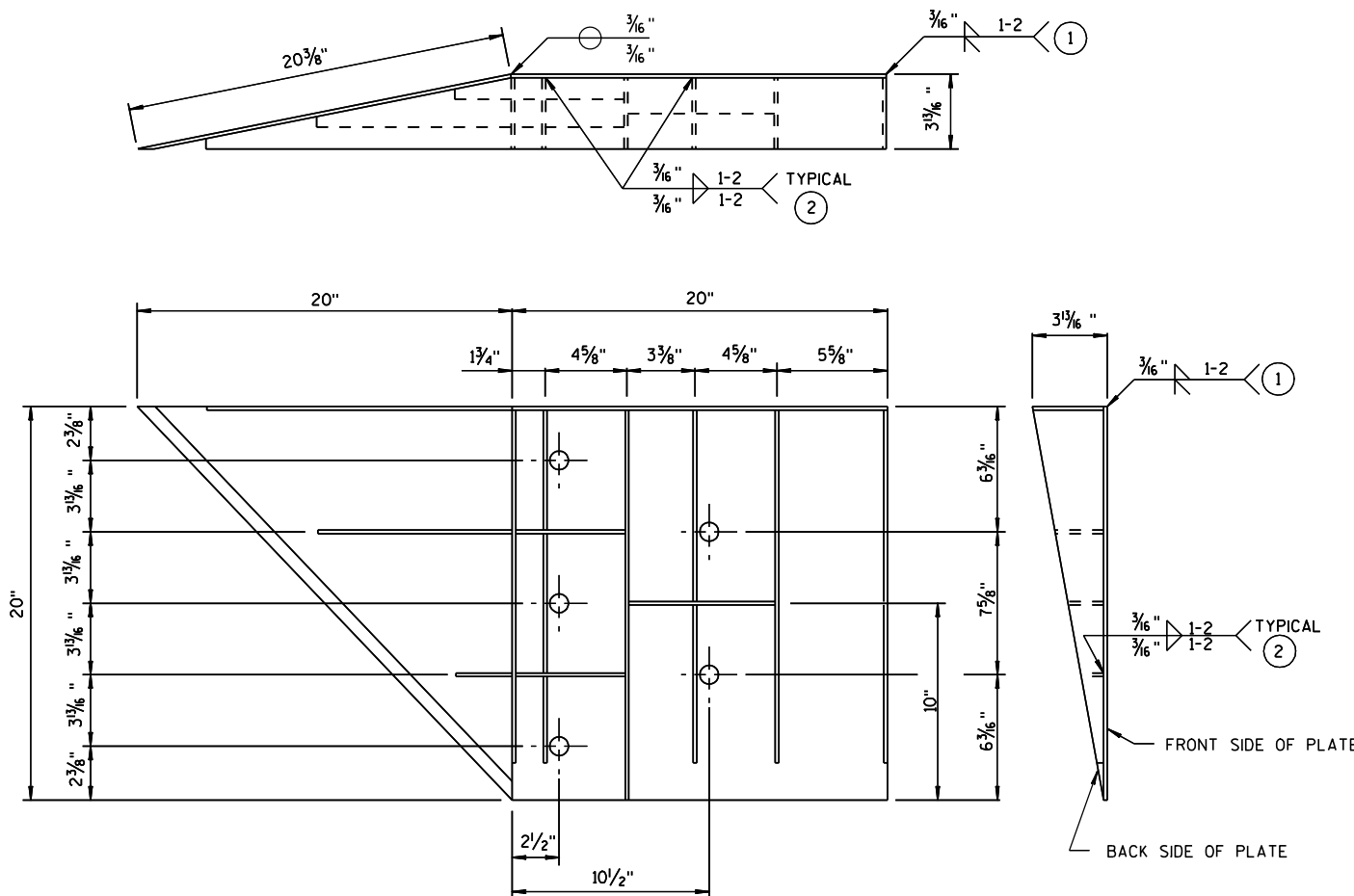
APPROVED

8-31-2012

DATE

FHWA

/S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

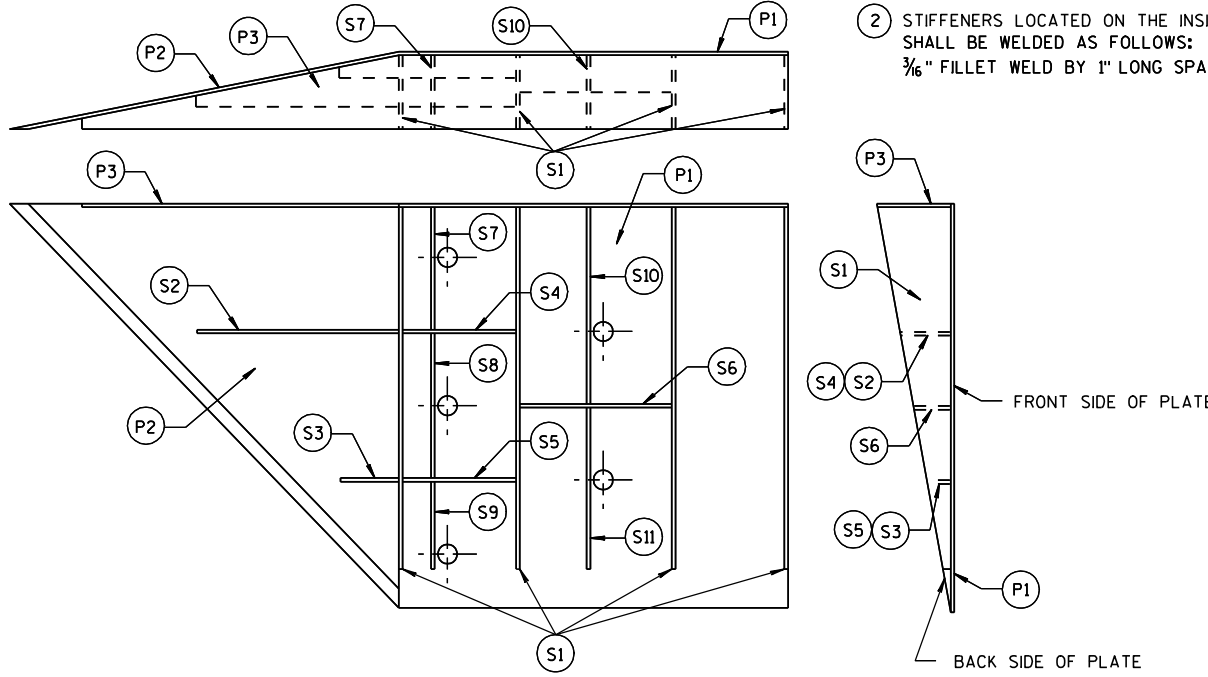


WELDING INSTRUCTION  
(VIEWED FROM BACK SIDE OF PLATE)

SINGLE SLOPE CONNECTION PLATE

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)				
PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 5/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 5/16"	3/16"
S1	4		18 7/16" x 3 5/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 7/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 1/8" x 1/2"	1/4"
S4	1		6 1/8" x 2 1/16"	1/4"
S5	1		6 1/8" x 1 1/16"	1/4"
S6	1		7 3/4" x 1 3/4"	1/4"
S7	1		2 9/16" x 6" x 3 5/8" x 5 7/8"	1/4"
S8	1		1 7/32" x 7 1/2" x 2 1/2" x 7 3/8"	1/4"
S9	1		6 1/16" x 6 3/16" x 1 1/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 5/8" x 9 1/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 1/16"	1/4"

PLATE AND STIFFENER IDENTIFICATION  
(VIEWED FROM BACK SIDE OF PLATE)



GENERAL NOTES

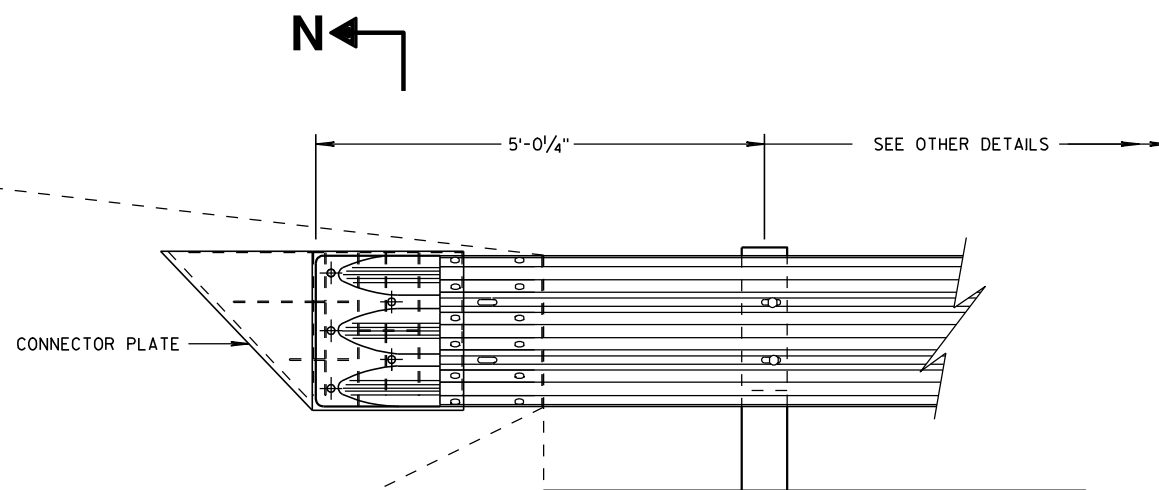
- COVER PLATE PANELS ARE 3/16" THICK.
- ALL STIFFENERS ARE 1/4" THICK.
- CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.
- FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.
- ALL HOLE DIAMETERS SHALL BE 1".
- FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.

- 1 STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS FOLLOWS:  
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 3/16" FILLET WELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.
- 2 STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:  
3/16" FILLET WELD BY 1" LONG SPACED AT 2".

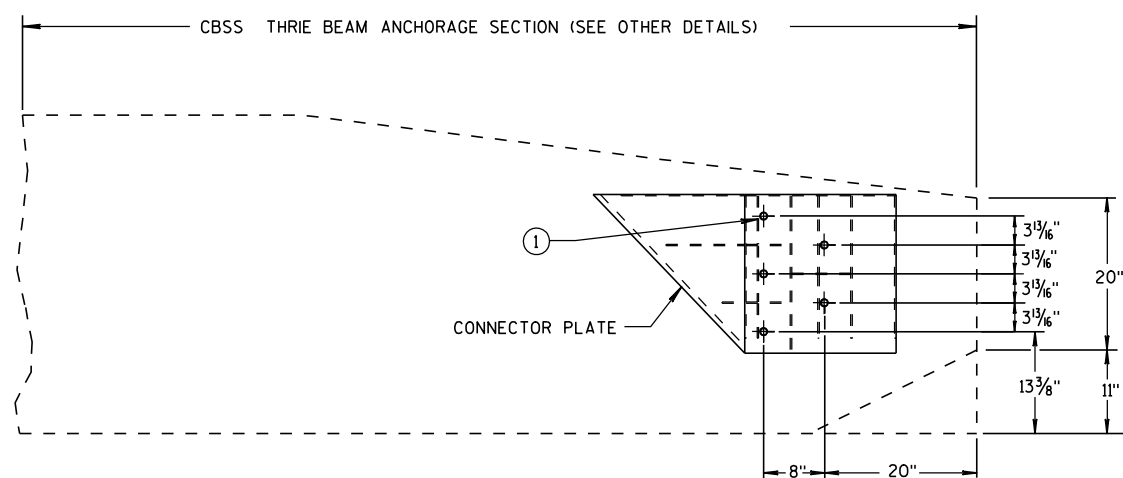
MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
8/31/2012 DATE /S/ Jerry H. Zogg  
FHWA ROADWAY STANDARDS DEVELOPMENT ENGINEER



**THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER**

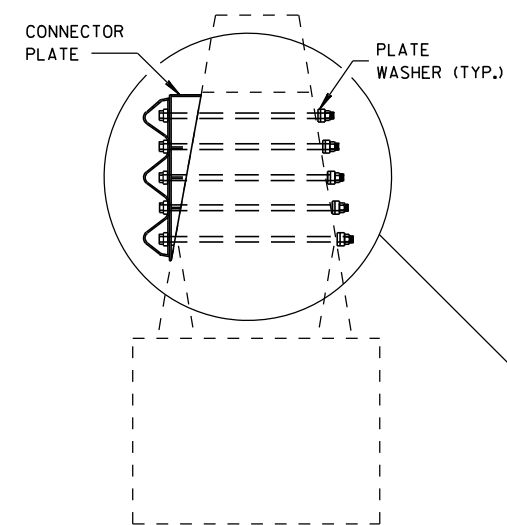


**SINGLE SLOPE CONNECTION PLATE PLACEMENT**

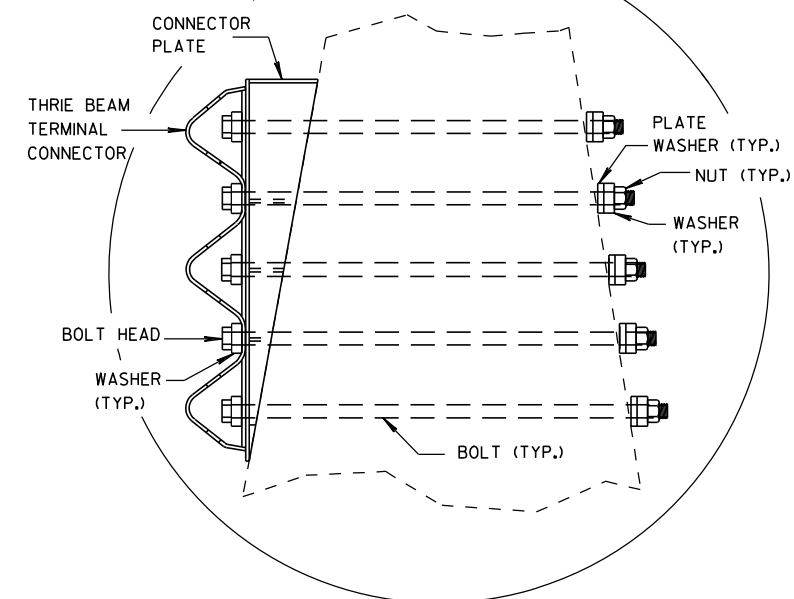
## GENERAL NOTES

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

- ① BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



**SECTION N-N**



**MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

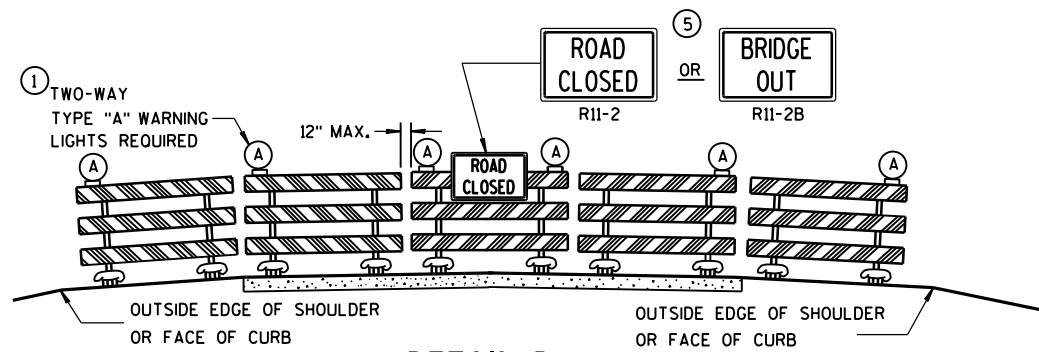
APPROVED

8/31/2012  
DATE

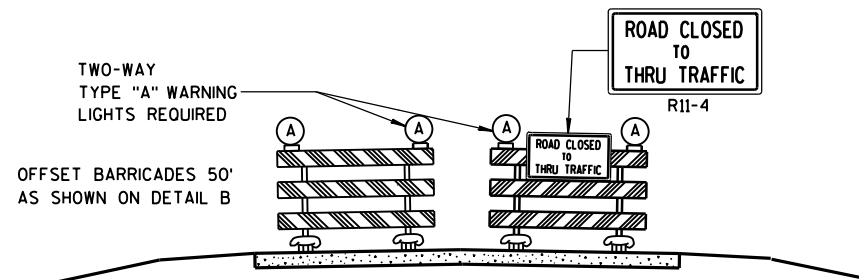
FHWA

/S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER





**DETAIL D**  
**ROAD CLOSURE BARRICADE DETAIL**  
APPROACH VIEW



**DETAIL E**  
**LANE CLOSURE BARRICADE DETAIL**  
APPROACH VIEW

SEE SDD 15C2-SHEET "a" FOR LEGEND

### GENERAL NOTES

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

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

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

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

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

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

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

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

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

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:

R11-2 SHALL BE 48" X 30".

R11-3, R11-4 AND R10-61 SHALL BE 60" X 30".

M4-9 SHALL BE 30" X 24".

M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)

M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)

M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)

M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)

D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

R1-1 SHALL BE 36" X 36".

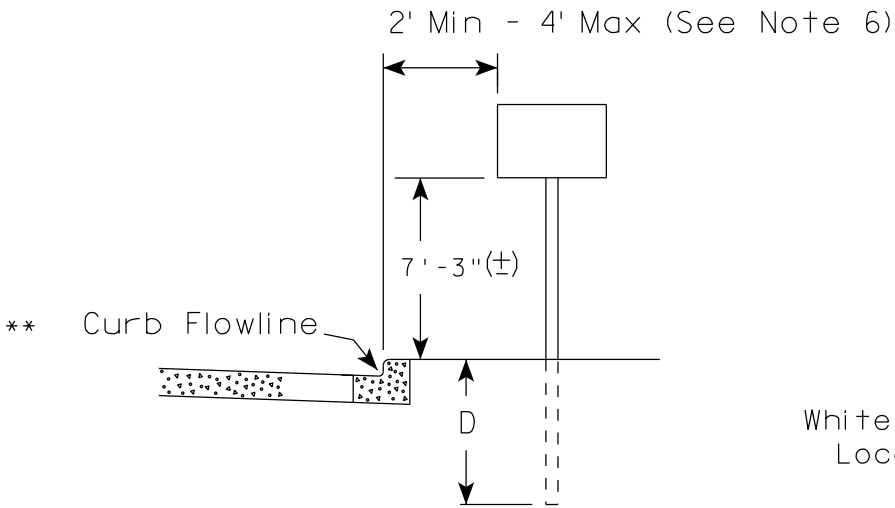
- ① TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8-FOOT LIGHT SPACING).
- ② THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT INTERSECTION.
- ③ FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL D.
- ④ FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE LANE CLOSURE BARRICADE DETAIL E.
- ⑤ FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11-2 AND R11-3 SIGNS.
- ⑥ INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.
- ⑦ "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

**BARRICADES AND SIGNS  
FOR  
MAINLINE CLOSURES**

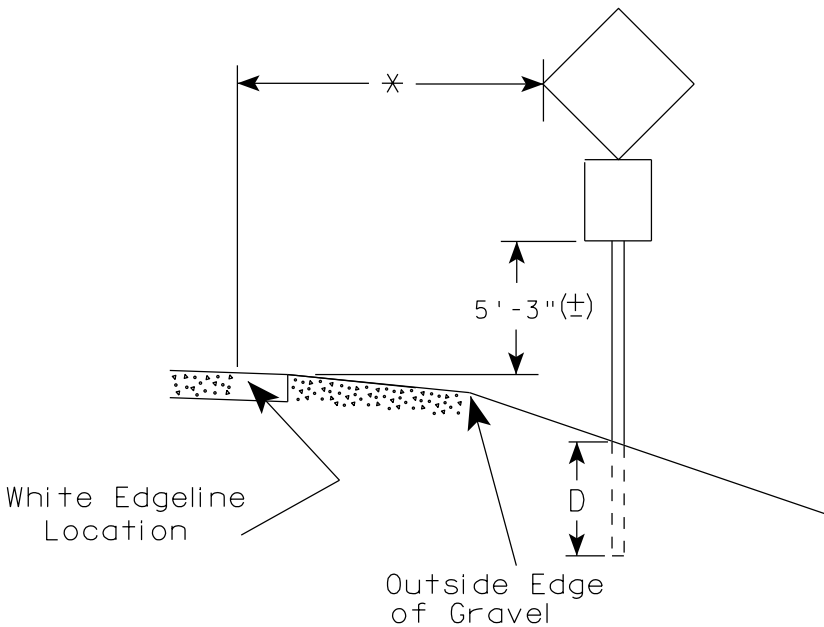
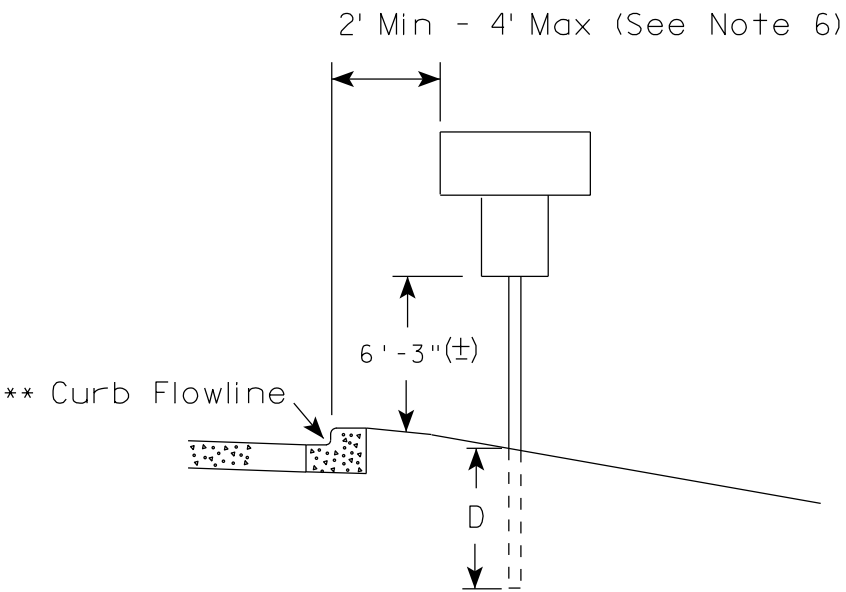
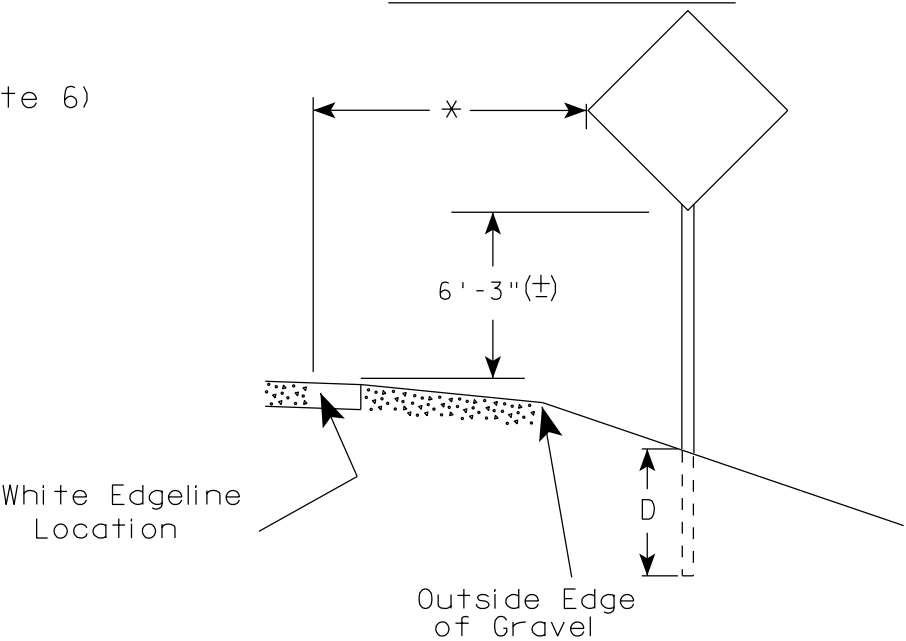
**STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION**

8/2013 /S/ Travis Feltes  
DATE STATE TRAFFIC ENGINEER OF DESIGN  
FHWA

URBAN AREA



RURAL AREA (See Note 2)



GENERAL NOTES

1. Signs wider than 4 feet, 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on barrier wall, see A4-10 sign plate.
3. For expressways and freeways, mounting height is 7'- 3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
4. Minimum mounting height for J assemblies (A2-1S) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
5. Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±).
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. The (±) tolerance for mounting height is 3 inches.
8. Folding signs shall be mounted at a height of 5'-3" (±) or as 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" (±).

POST EMBEDMENT DEPTH

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

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

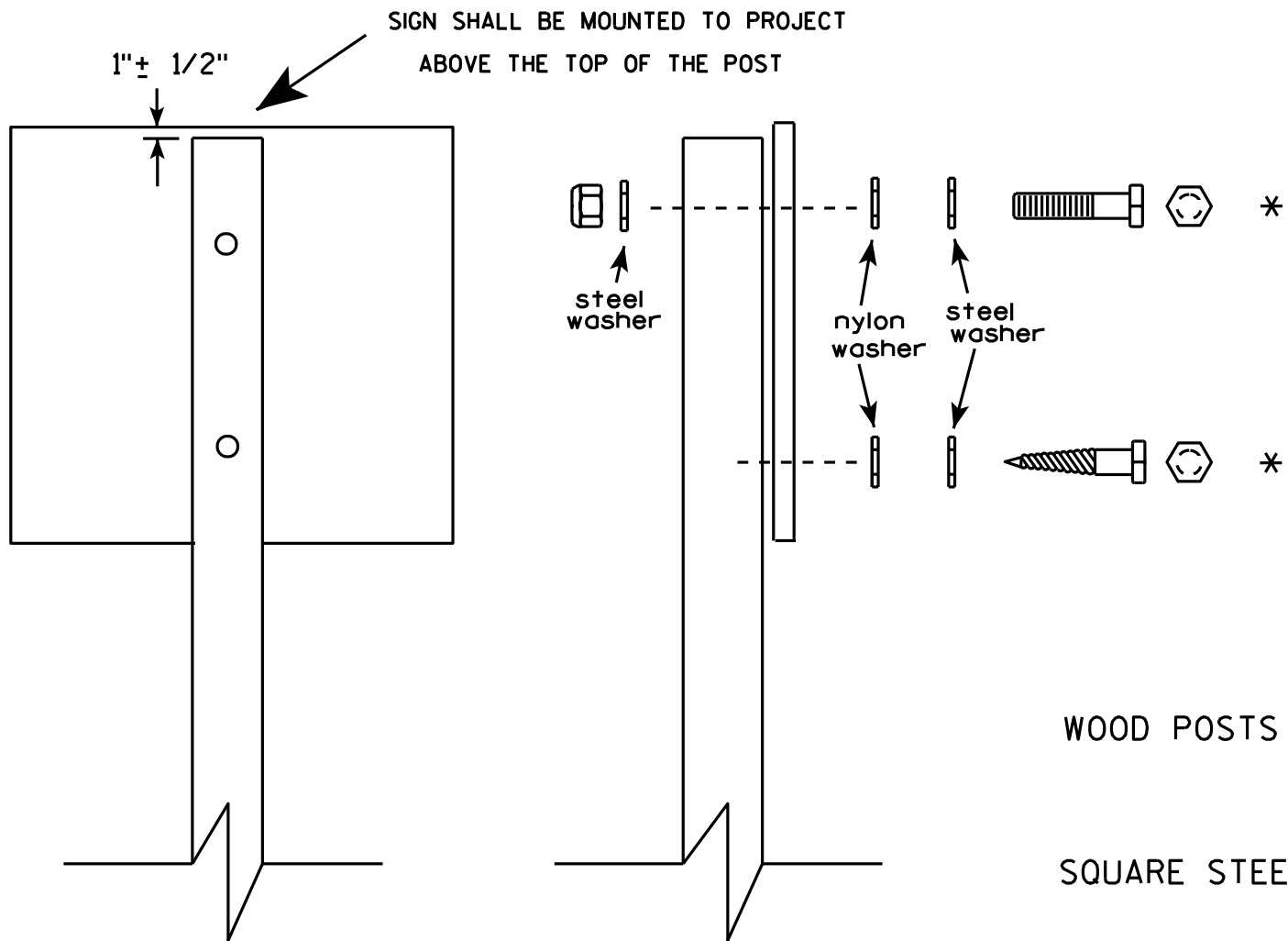
\* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION  
OF PERMANENT TYPE II  
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

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

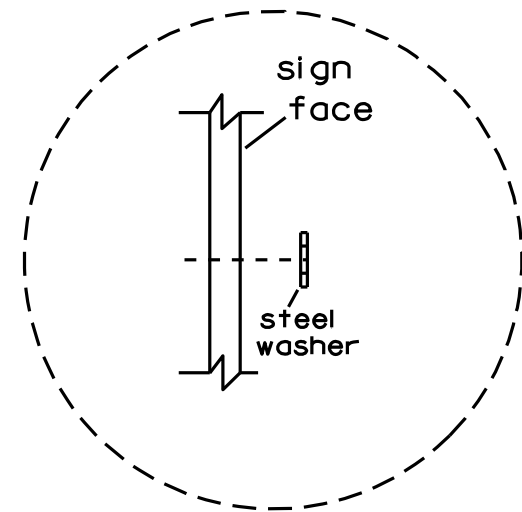


Nuts, bolts and lags used for mounting signs shall have hexagonal heads and shall be either :

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

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

- WOOD POSTS (4" x 4" or 4" x 6")  
LAG SCREWS - 3/8" X 3"  
MACHINE BOLTS - 5/16" X 6-1/2" or 7" Length w/ nuts
- SQUARE STEEL POSTS (2" x 2")  
MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts  
RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL  
O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH
- WASHERS (ALL POSTS) -  
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL  
1-1/4" O.D. X 3/8" I.D. X .080 NYLON for all Type H signs.



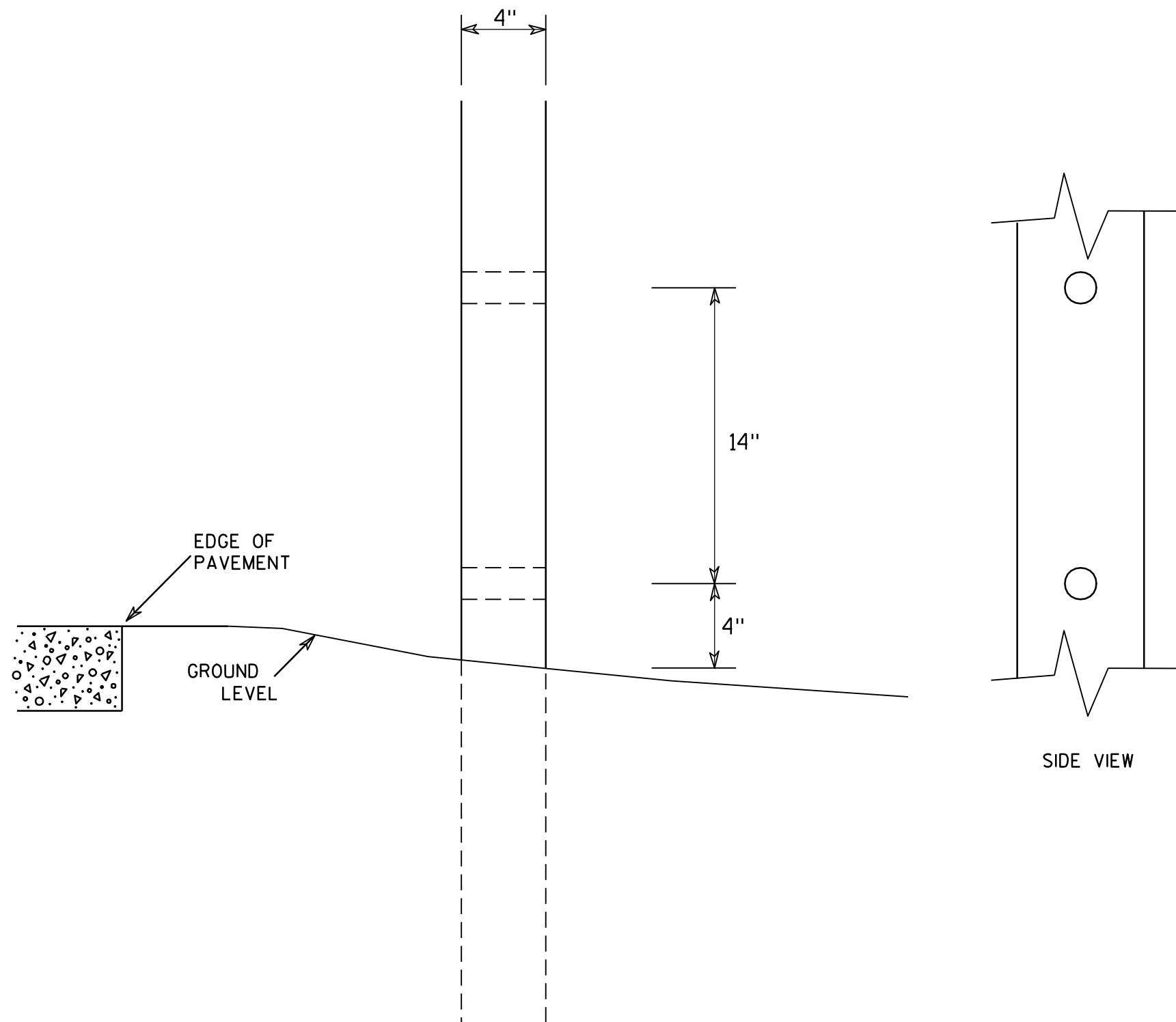
Washer Placement when Sign Has Other Than Type H or Type F Face

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

ATTACHMENT OF SIGNS TO POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 3/23/10	PLATE NO. A4-8.7



7



### GENERAL NOTES

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

7

### 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

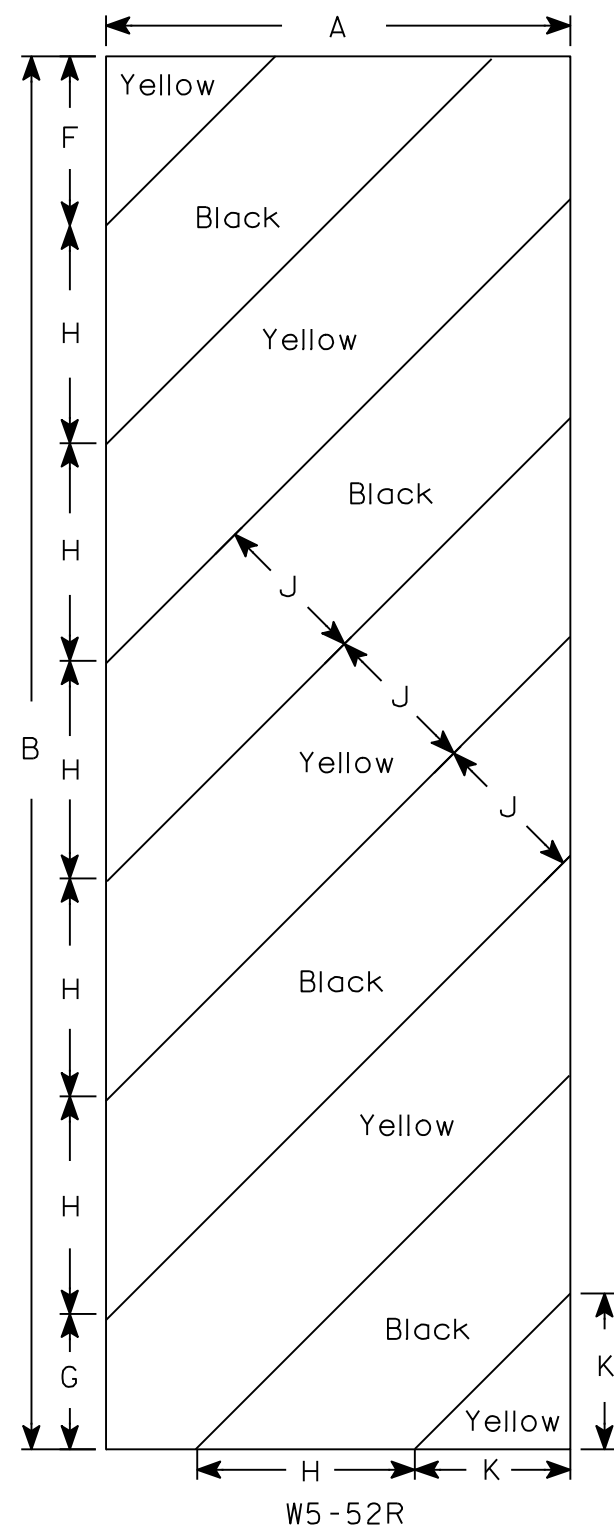
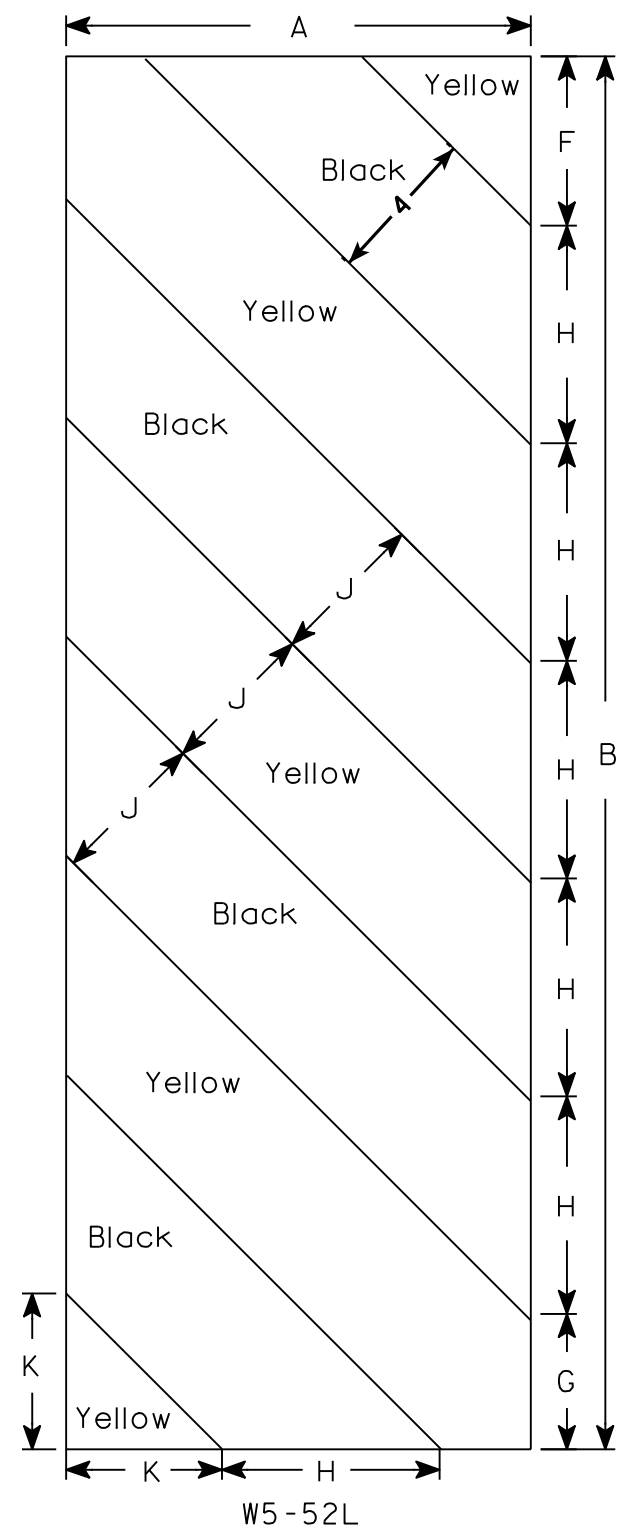
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



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 5⁄6																6.75
4																											
5																											

STANDARD SIGN  
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

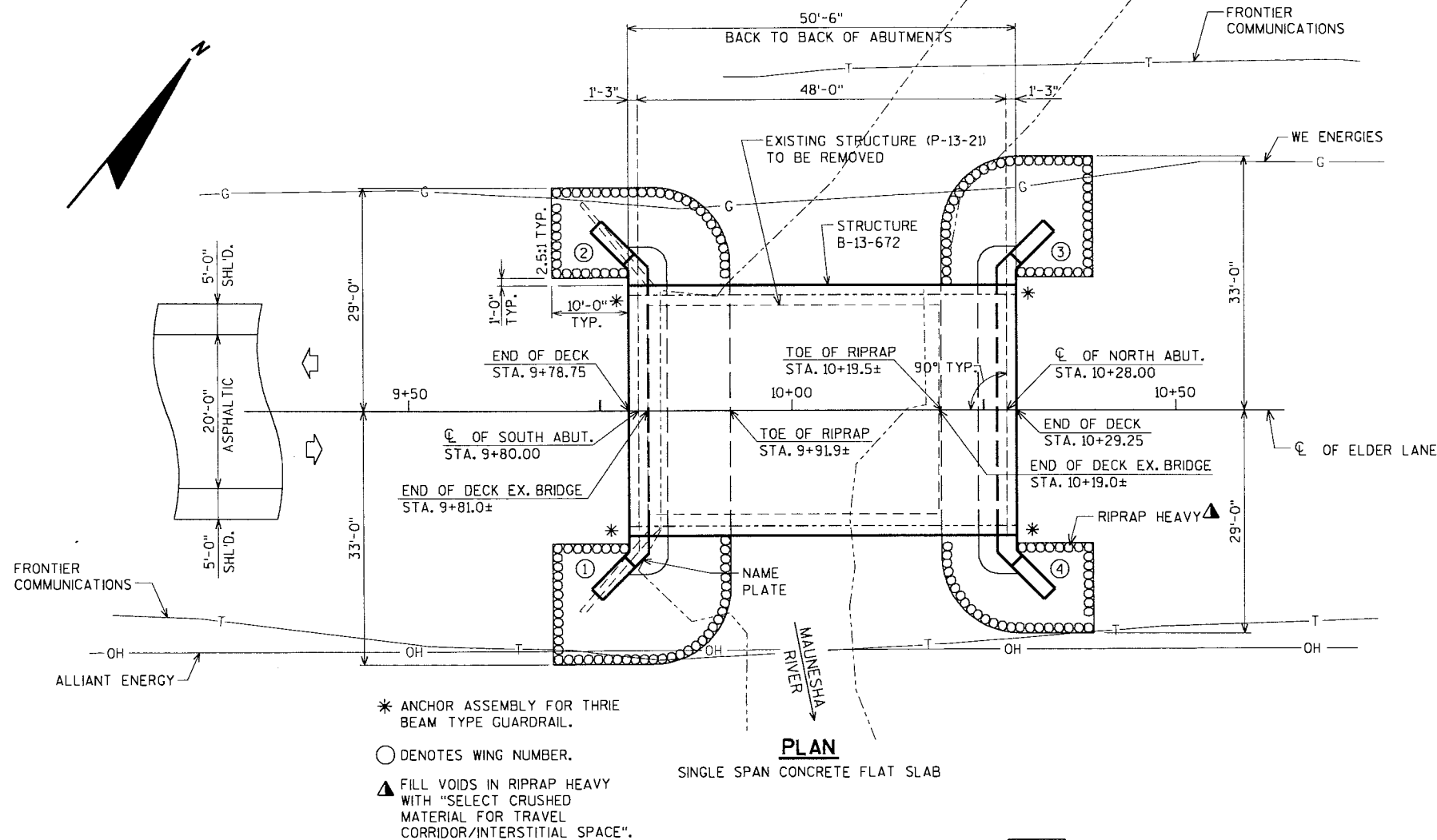
APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

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

\$PRNAME\$  
U:\41-0668.00 - Dane County, Town Bristol, Elder Lane\BRIDGE\410668 gp FINAL.dgn

DATE: DATE: DATE:  
CHECKED BY: BACK CHECKED BY: CORRECTED BY:

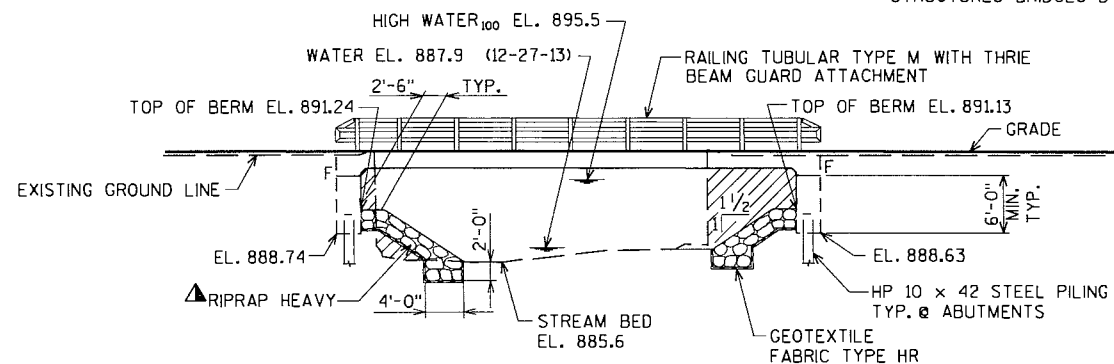
8



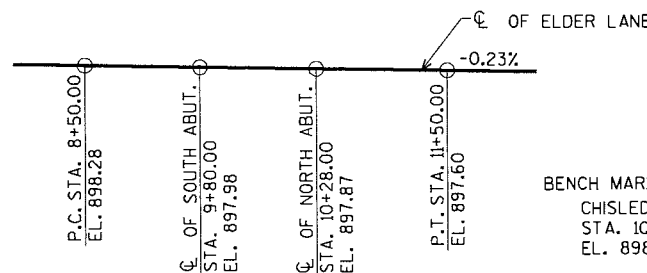
### PLAN

SINGLE SPAN CONCRETE FLAT SLAB

COST OF EXCAVATION OR FILL IN THE HATCHED AREAS SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "EXCAVATION FOR STRUCTURES BRIDGES B-13-672".



### ELEVATION



### PROFILE GRADE LINE (ELDER LANE)

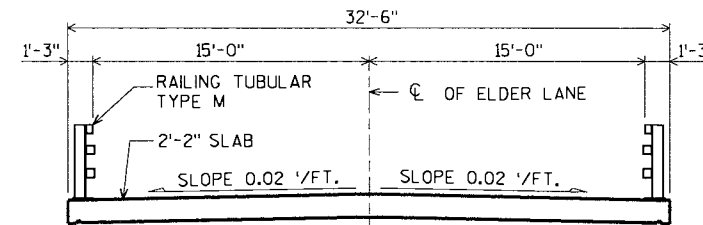
BENCH MARK:  
CHISEL SQUARE AT NE WING WALL OF BRIDGE  
STA. 10+18.8, 15.4' RT.  
EL. 898.11

### LIST OF DRAWINGS

1. GENERAL PLAN
2. QUANTITIES AND NOTES
3. SUBSURFACE EXPLORATION
4. SOUTH ABUTMENT
5. SOUTH ABUTMENT WING DETAILS
6. NORTH ABUTMENT
7. NORTH ABUTMENT WING DETAILS
8. ABUTMENT BILL OF BARS
9. SUPERSTRUCTURE
10. SUPERSTRUCTURE DETAILS
11. RAILING TUBULAR TYPE M

STATE PROJECT NUMBER

6208-00-75



### TYPICAL SECTION THRU BRIDGE

### DESIGN DATA

#### LIVE LOAD:

DESIGN LOADING: HL-93  
INVENTORY RATING FACTOR: 1.23  
OPERATING RATING FACTOR: 1.59  
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS

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

#### ULTIMATE DESIGN STRESSES:

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

#### HYDRAULIC DATA:

##### 100 YEAR FLOOD

DRAINAGE AREA = 24.0 sq. mi.  
WATERWAY AREA = 307 sq. ft.  
 $V = 3.9$  f.p.s.  
 $O_{100} = 1,200$  c.f.s.  
HIGH WATER<sub>100</sub> EL. 895.5  
HIGH WATER<sub>2</sub> EL. 893.2  
RDWY. OVERFLOW = N/A  
SCOUR CRITICAL CODE = 8  
DATUM = NAVD88 (2011)

#### FOUNDATION DATA:

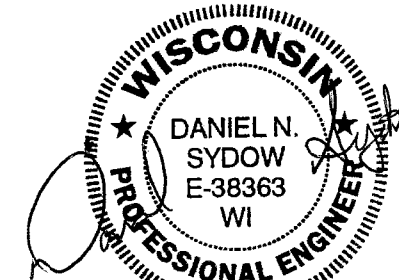
SOUTH ABUTMENT TO BE SUPPORTED ON HP 10 x 42 STEEL PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 160 TONS ± PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED LENGTH OF 25'-0".

NORTH ABUTMENT TO BE SUPPORTED ON HP 10 x 42 STEEL PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 160 TONS ± PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED LENGTH OF 15'-0".

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

#### TRAFFIC DATA:

A.D.T. = <100 (2016)  
A.D.T. = <100 (2036)  
R.D.S. = 55 M.P.H.



9/14/2015

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

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

NO.	DATE	REVISION	BY
ORIGINAL PLANS PREPARED BY <b>AYRES ASSOCIATES</b> 3433 Oakwood Hills Parkway Eau Claire, WI 54701 www.AyresAssociates.com			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION ACCEPTED <i>William C. Dreher</i> SDR <b>09/16/15</b> CHIEF STRUCTURES DESIGN ENGINEER DATE			
<b>STRUCTURE B-13-672</b>			
ELDER LANE OVER MAUNESHA RIVER			
COUNTY	DANE	TOWN/CITY/VILLAGE	BRISTOL
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS			
DESIGNED BY	JWZ	DESIGN CK'D.	CJM
DRAWN BY	CLS	PLANS CK'D.	BNS
GENERAL PLAN			SHEET 1 OF 11

8

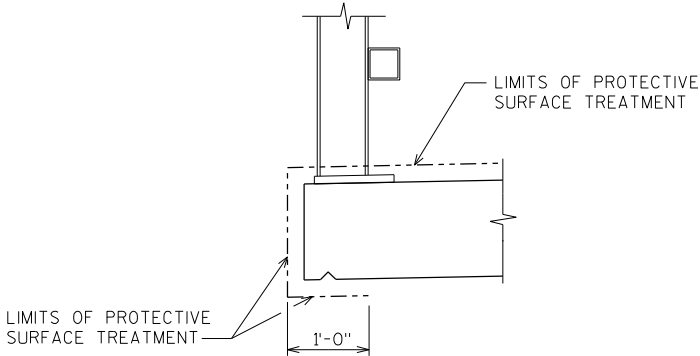
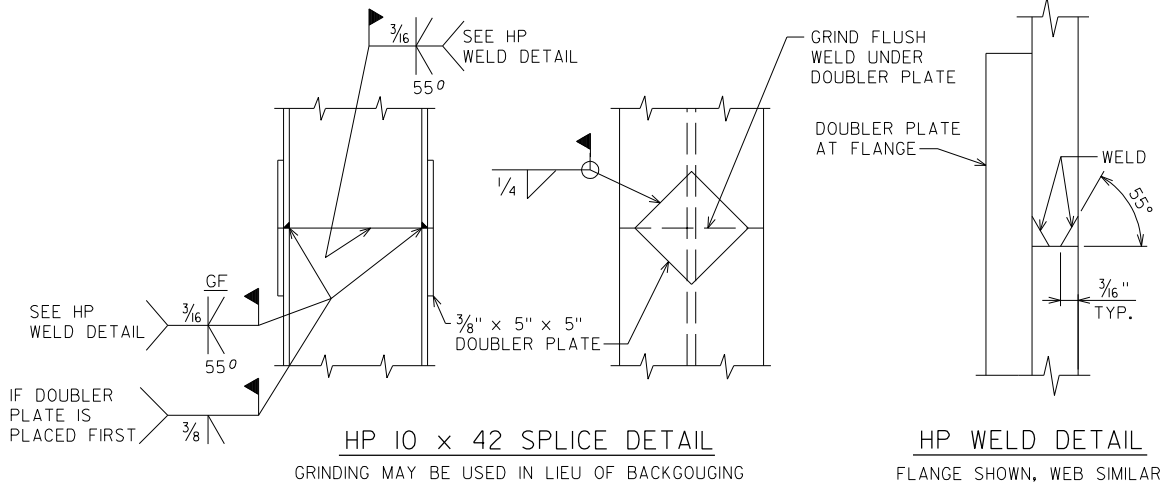
\$PRNAME\$  
U:\41-0668.00 - Dane County, Town Bristol, Elder Lane\BRIDGE\410668 gp FINAL.dgn

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	S. ABUT.	N. ABUT.	SUPER.	TOTAL	CATEGORY 20	CATEGORY 30
203.0500.S	REMOVING OLD STRUCTURE OVER WATERWAY STATION 10+00	LS	-----	-----	-----	1	1	-----
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-13-672	LS	-----	-----	-----	1	1	-----
210.0100	BACKFILL STRUCTURE	CY	150	150	-----	300	300	-----
502.0100	CONCRETE MASONRY BRIDGES	CY	33	33	137	203	187	16
502.3200	PROTECTIVE SURFACE TREATMENT	SY	-----	-----	220	220	220	-----
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	2,540	2,540	-----	5,080	4,610	470
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	870	870	22,930	24,670	22,390	2,280
513.4061	RAILING TUBULAR TYPE M B-13-672	LF	-----	-----	105	105	105	-----
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	10	10	-----	20	20	-----
550.1100	PILING STEEL HP 10-INCH x 42 LB	LF	125	75	-----	200	200	-----
606.0300	RIPRAP HEAVY	CY	85	70	-----	155	155	-----
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	80	80	-----	160	160	-----
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	170	140	-----	310	310	-----
SPV.0195	SELECT CRUSHED MATERIAL FOR TRAVEL CORRIDOR / INTERSTITIAL SPACE	TON	85	70	-----	155	155	-----
NON-BID ITEMS								
	FILLER	SIZE	-----	-----	-----	1/2" & 3/4"	-----	1/2" & 3/4"

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.  
BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS SHOWN OR NOTED OTHERWISE.  
THE FIRST DIGIT OF A THREE DIGIT BAR NO. AND THE FIRST TWO DIGITS OF A FOUR DIGIT BAR NO. SIGNIFIES THE BAR SIZE.  
JOINT FILLER SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION M 153, TYPE I, II OR III OR A.A.S.H.T.O. DESIGNATION M 213.  
THE STREAM BED IN FRONT OF THE ABUTMENT SHALL BE COVERED WITH RIPRAP HEAVY AND GEOTEXTILE FABRIC TYPE HR AS SHOWN ON THE GENERAL PLAN SHEET AND IN THE ABUTMENT DETAILS.  
SLAB FALSEWORK SHALL BE SUPPORTED ON PILES OR THE SUBSTRUCTURE UNLESS OTHERWISE APPROVED BY THE ENGINEER.  
THE EXISTING GROUND LINE SHALL BE THE UPPER LIMIT FOR EXCAVATION FOR STRUCTURES.  
THE EXISTING STRUCTURE, P-13-21, TO BE REMOVED, IS A SINGLE SPAN CONCRETE DECK T-BEAM GIRDER BRIDGE 34.9 FT. OVERALL LENGTH WITH A 26.8 FT. CLEAR ROADWAY WIDTH.  
AT BACKFACE OF ABUTMENTS ALL EXCAVATED VOLUME NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH BACKFILL STRUCTURE.  
PROTECTIVE SURFACE TREATMENT IS TO BE APPLIED AS SHOWN IN DETAIL ON THIS SHEET.

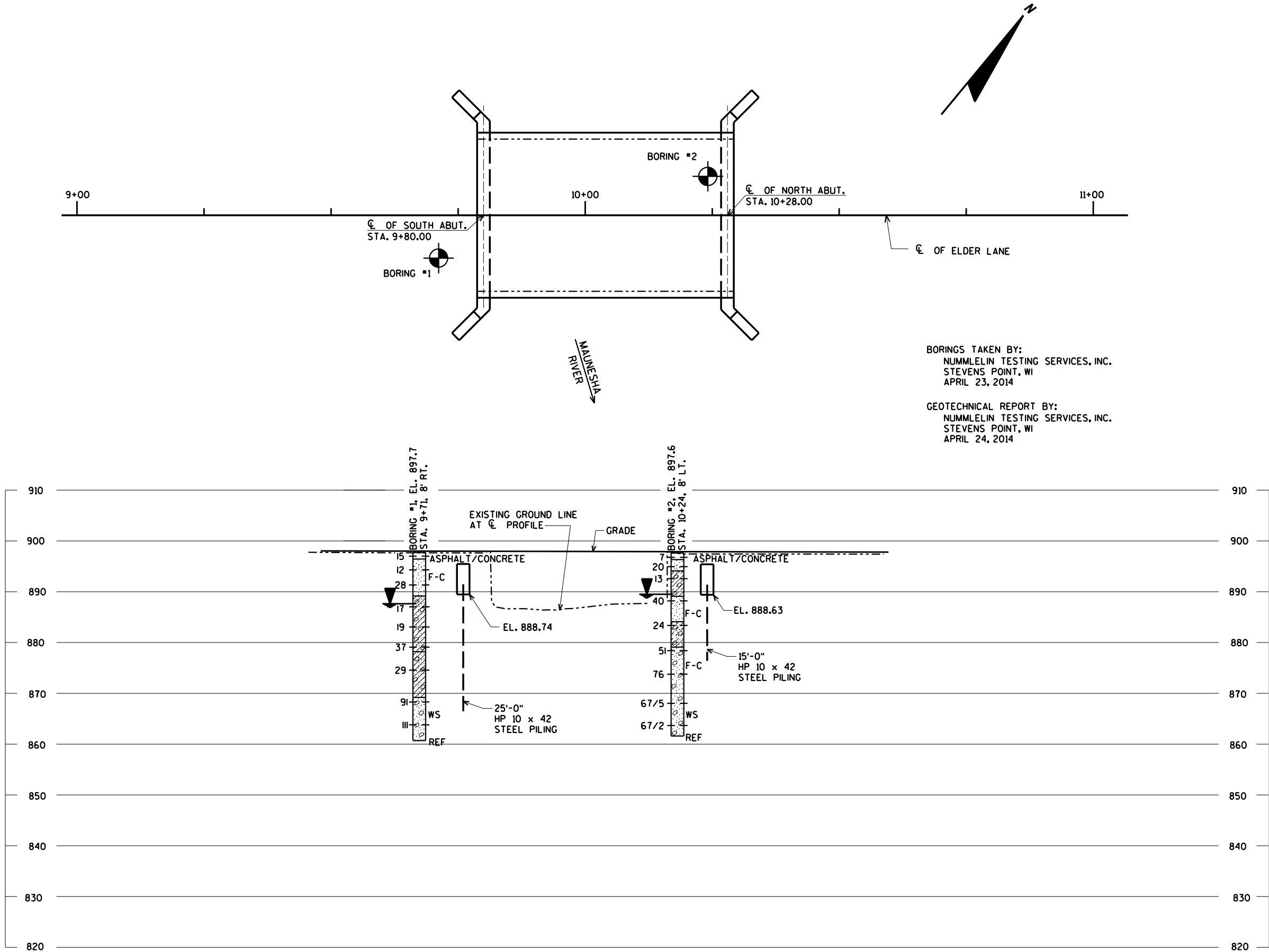


NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-13-672			
DRAWN BY		CLS	PLANS CK'D. CJM
QUANTITIES AND NOTES			SHEET 2 OF 11

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

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STATE PROJECT NUMBER

6208-00-75

ABBREVIATIONS

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

MATERIAL SYMBOLS

TOPSOIL SILT SANDSTONE  
SAND PEAT LIMESTONE  
GRAVEL CLAY IGNEOUS ROCK

LEGEND OF PROBING

PROBING NO.  
STA.  
ELEVATION  
7 AVERAGE BLOWS PER FOOT  
REFUSAL 95/6  
95/6=95 BLOWS FOR 6"  
PENETRATION  
PROBING TAKEN WITH  
A 350# WT.  
FALLING 18" ON A 2"  
O.D. POINT.

LEGEND OF BORING

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

UNLESS OTHERWISE SPECIFIED, THE BLOWS PER FOOT AT THE LOCATIONS INDICATED ARE BASED ON DRIVING A 2" O.D. X 1.4" I.D. SPLIT SPOON SAMPLER WITH A 140# HAMMER HAVING A FREE FALL OF 30". THE BLOW COUNT IS TAKEN IN UNDISTURBED SOIL IMMEDIATELY BELOW A CASED OR OPEN HOLE ELIMINATING SIDE FRICTION ON THE DRIVE PIPE.

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

TO OBTAIN RELATIVE DATA CONCERNING THE CHARACTER OF MATERIAL IN AND UPON WHICH THE FOUNDATION MIGHT BE BUILT, BORINGS AND/OR SOUNDINGS WERE MADE AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING. THE DATA PRESENTED HEREIN REPRESENTS THE FINDINGS OF THE SUBSURFACE EXPLORATIONS MADE. HOWEVER, BECAUSE THE DEPTHS INVESTIGATED ARE LIMITED AND THE AREA OF THE BORINGS AND/OR SOUNDINGS IS VERY SMALL IN RELATION TO THE ENTIRE AREA, THE WISCONSIN DEPARTMENT OF TRANSPORTATION DOES NOT WARRANT CONDITIONS BELOW THE DEPTHS INVESTIGATED OR THAT THE CLASSIFICATION OF MATERIAL ENCOUNTERED IN THESE INVESTIGATIONS IS NECESSARILY TYPICAL OF THE ENTIRE SITE.

8

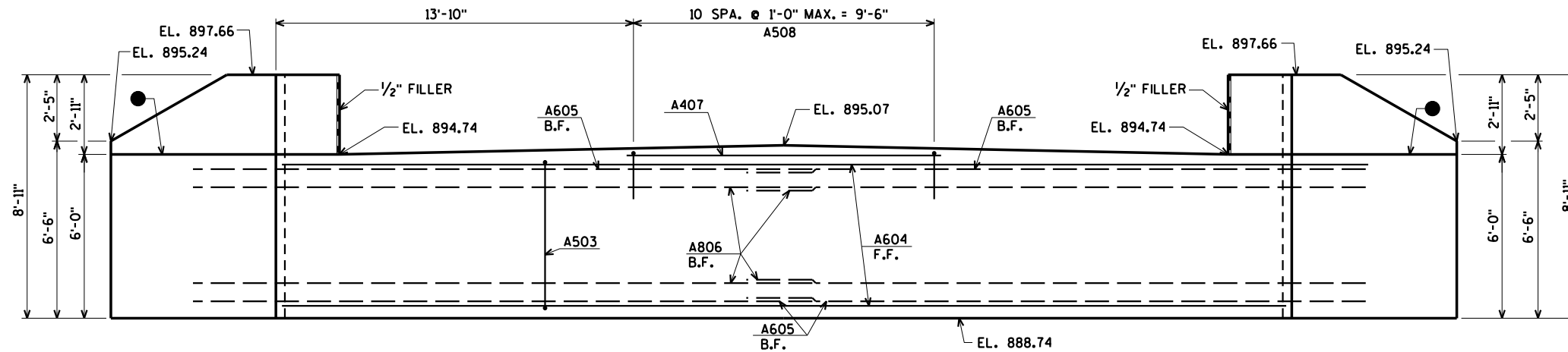
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STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-13-672			
DRAWN BY		CLS	PLANS CK'D. CJM
SUBSURFACE EXPLORATION			SHEET 3 OF 11

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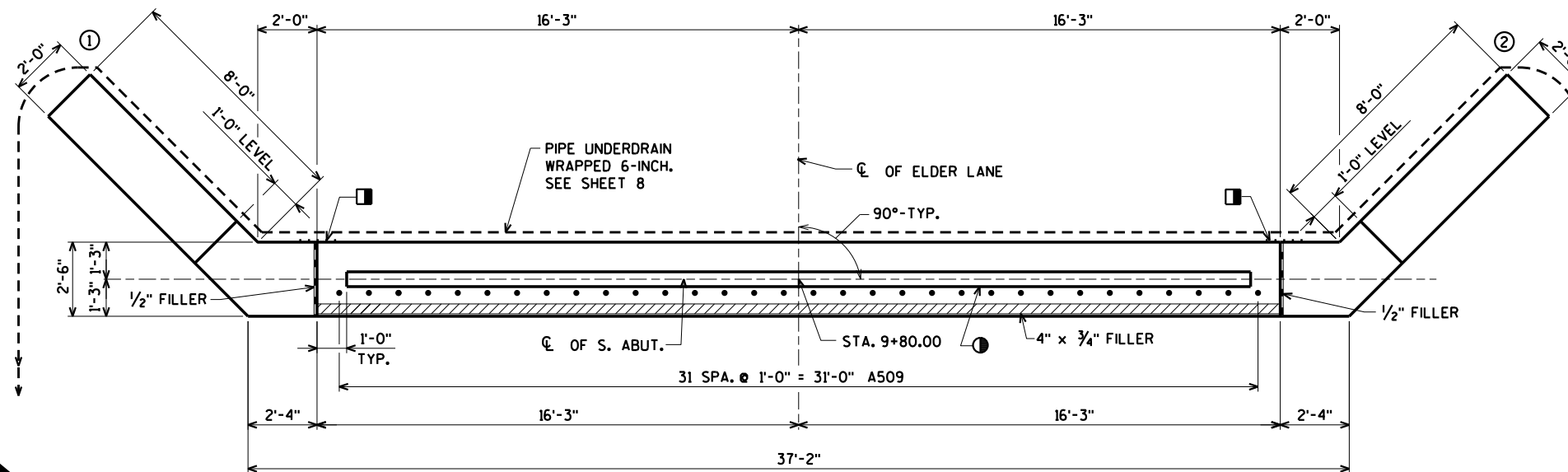
NOTE: SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF  
1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT  
SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)

STATE PROJECT NUMBER

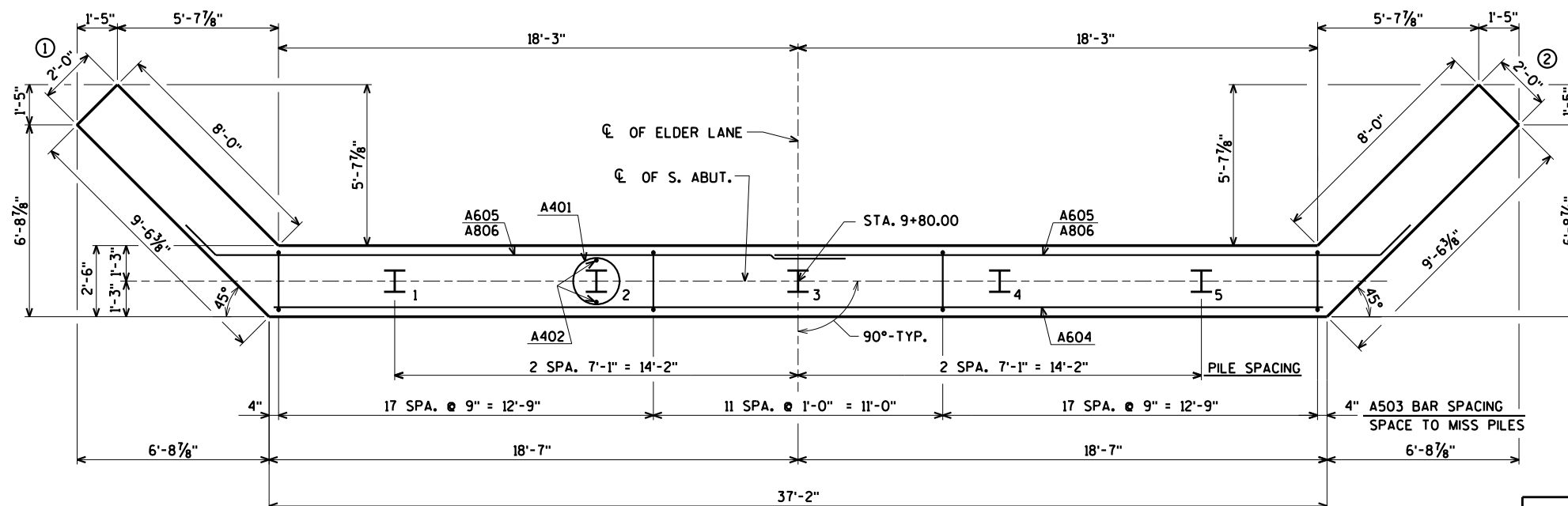
6208-00-75



**ELEVATION**  
(LOOKING SOUTH)



**PLAN**



**PILE LAYOUT**

- OPT. KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6" WITH RUBBERIZED MEMBRANE WATERPROOFING ON B.F.
  - ① KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".
  - VERTICAL 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING WALL.
- FOR PILE SPICE DETAIL SEE SHEET 2.
- B.F. DENOTES BACK FACE  
F.F. DENOTES FRONT FACE

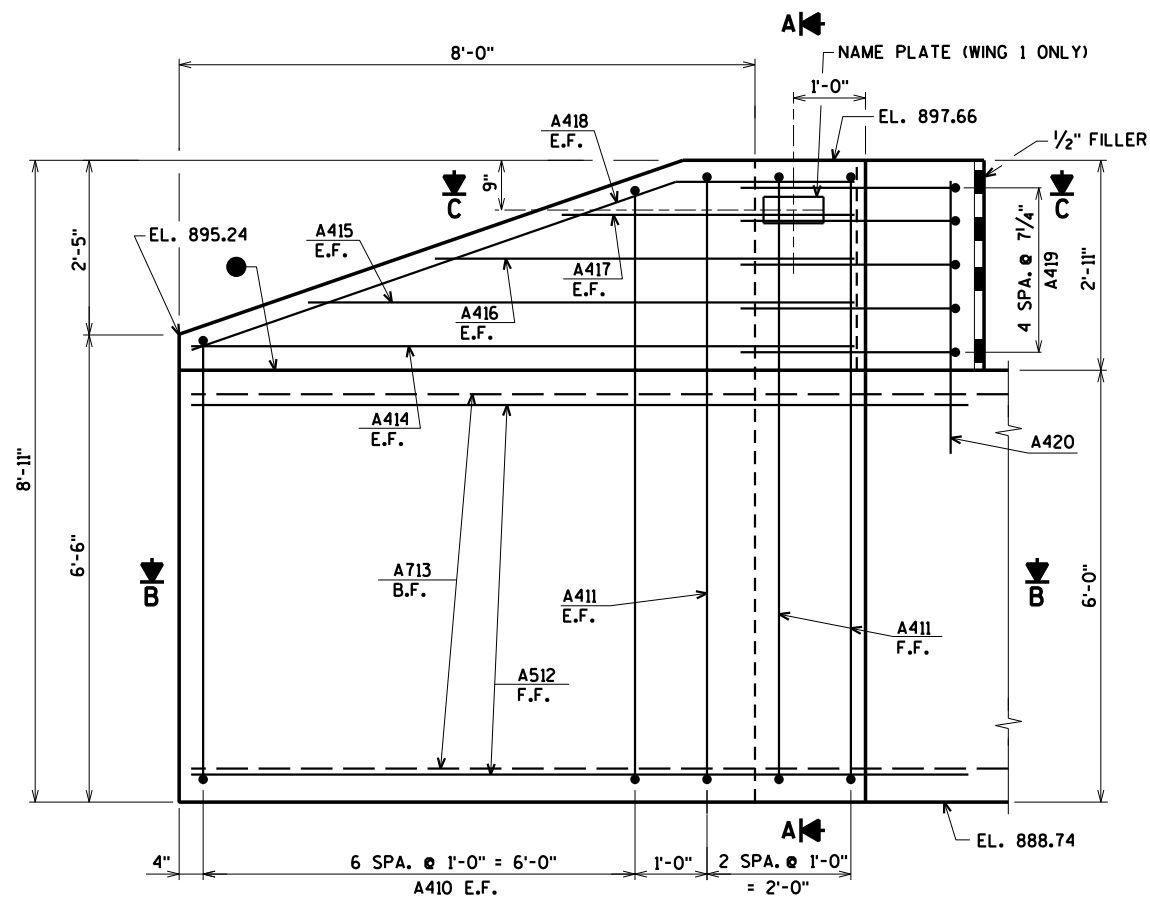
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STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-13-672			
DRAWN BY		CLS	PLANS CK'D. CJM
SOUTH ABUTMENT			SHEET 4 OF 11

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

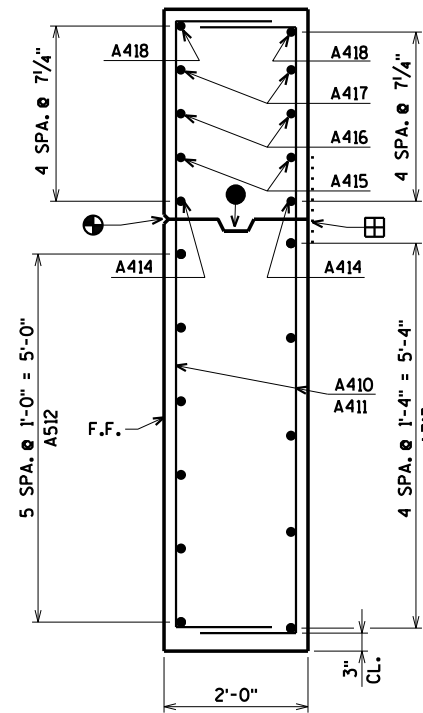
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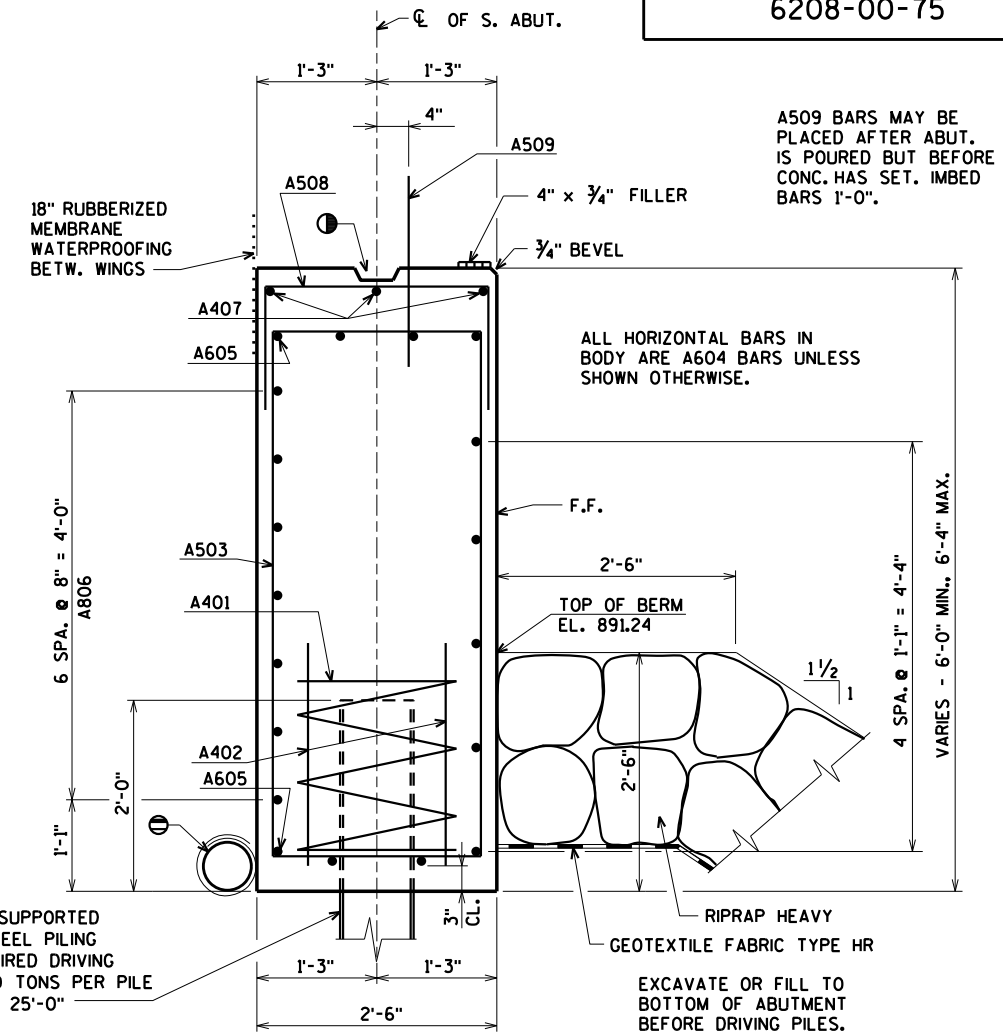


**ELEVATION - WING 1**  
(WING 2 SIMILAR)



**SECTION A**

ABUTMENT TO BE SUPPORTED  
ON HP 10 x 42 STEEL PILING  
DRIVEN TO A REQUIRED DRIVING  
RESISTANCE OF 160 TONS PER PILE  
ESTIMATED LENGTH 25'-0"



**TYPICAL SECTION THRU BODY**

PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5%  
MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD  
AT ENDS OF PIPE UNDERDRAIN. RODENT SHIELD TO  
BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED  
6-INCH". FOR RODENT SHIELD DETAIL SEE SHEET 8.

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

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

OPT. KEYED CONST. JOINT - FORMED  
BY A BEVELED 2" x 6" WITH RUBBERIZED  
MEMBRANE WATERPROOFING ON B.F.

3/4" 'V' GROOVE ON F.F. OF WING WALL  
NOT REQUIRED IF CONST. JT. IS NOT USED.

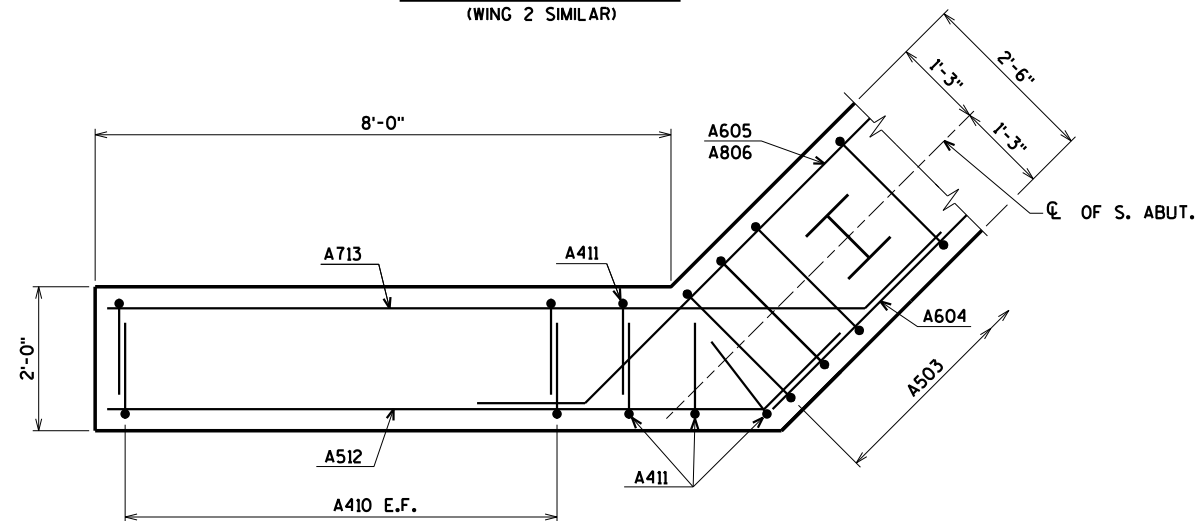
VERTICAL 18" RUBBERIZED MEMBRANE  
WATERPROOFING TO EXTEND FROM  
BRIDGE SEAT TO TOP OF WING WALL.

FOR PILE SPlice DETAIL SEE SHEET 2.

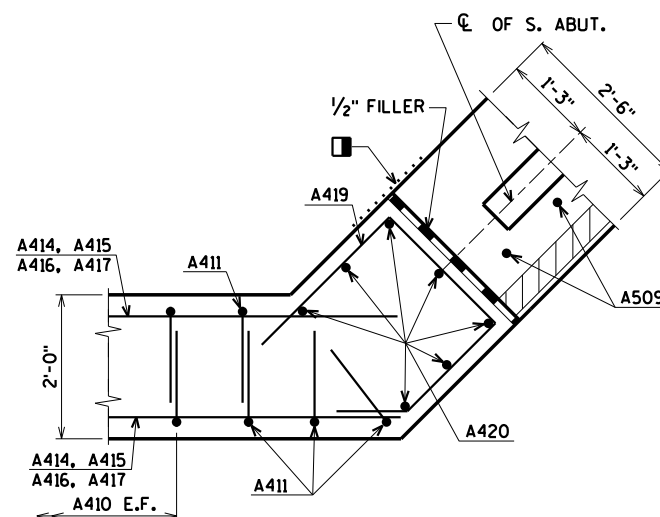
B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

F.F. DENOTES FRONT FACE



**SECTION B**



**SECTION C**

ORIGINAL PLANS PREPARED BY

**AYRES**  
ASSOCIATES

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

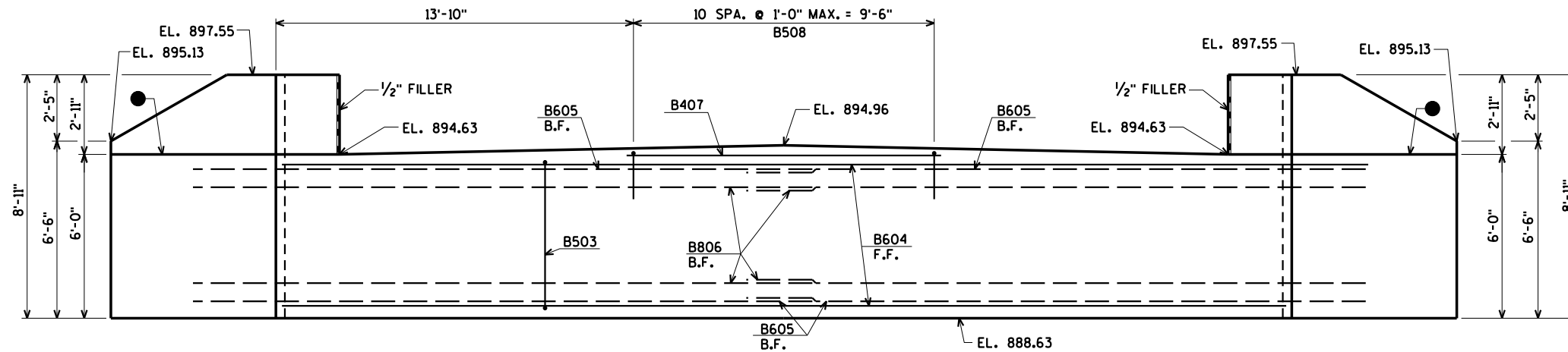
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STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-13-672			
DRAWN BY		CLS	PLANS CK'D. CJM
SOUTH ABUTMENT WING DETAILS			SHEET 5 OF 11

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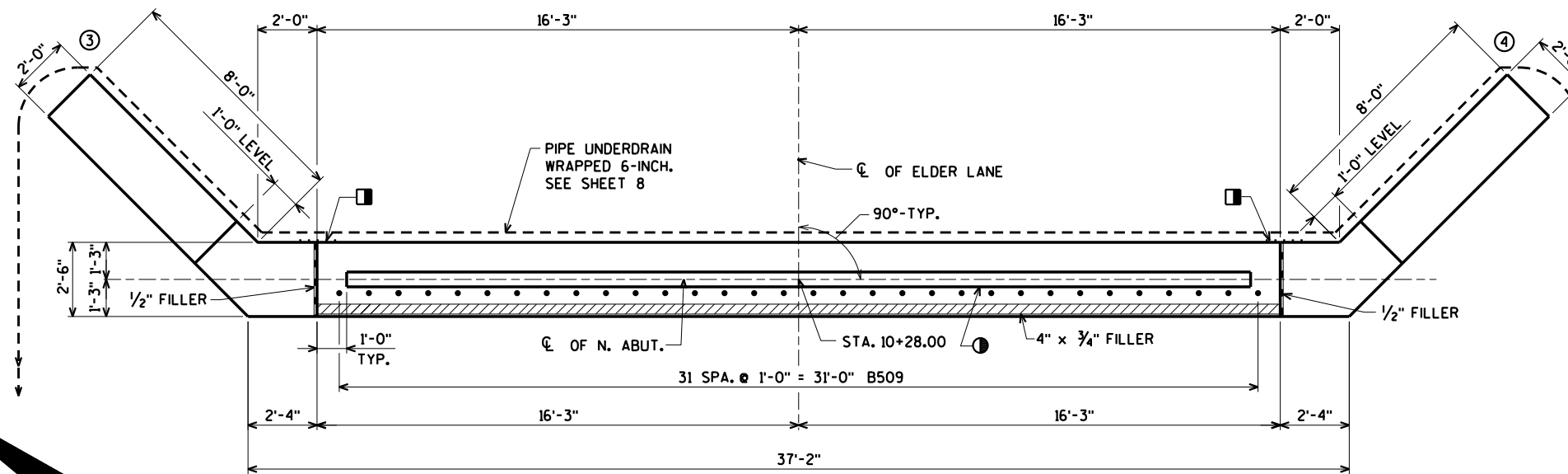
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1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT  
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STATE PROJECT NUMBER

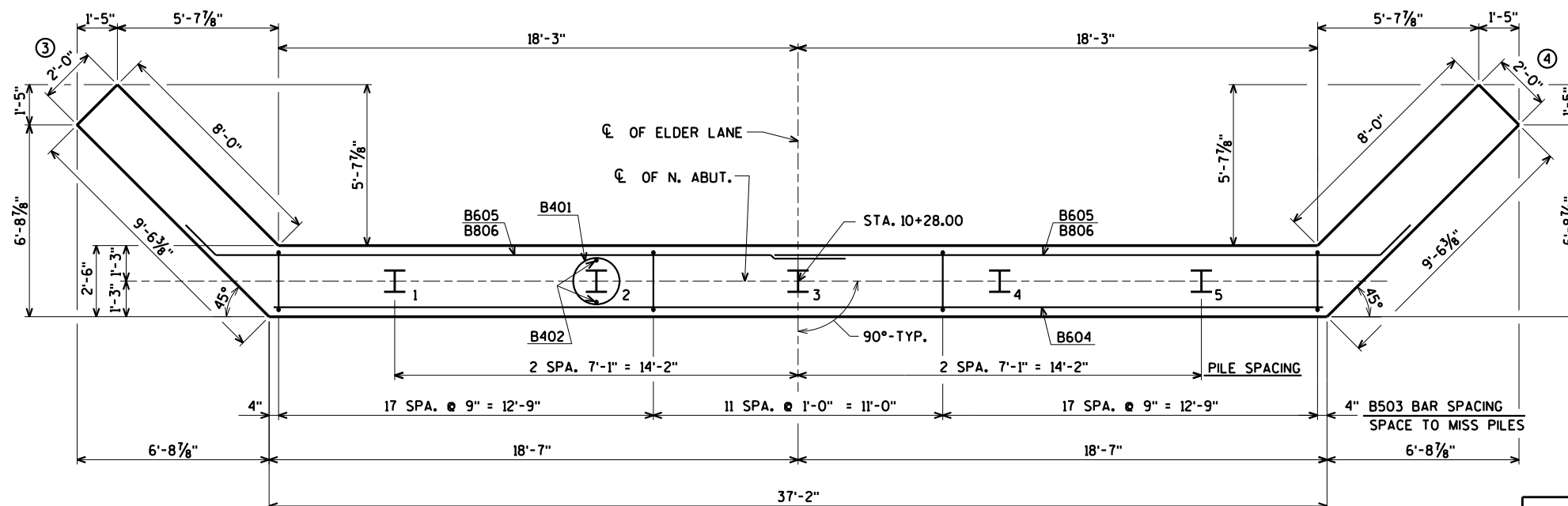
6208-00-75



**ELEVATION**  
(LOOKING NORTH)



**PLAN**



**PILE LAYOUT**

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  - ① KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".
  - VERTICAL 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING WALL.
- FOR PILE SPLICE DETAIL SEE SHEET 2.
- B.F. DENOTES BACK FACE  
F.F. DENOTES FRONT FACE

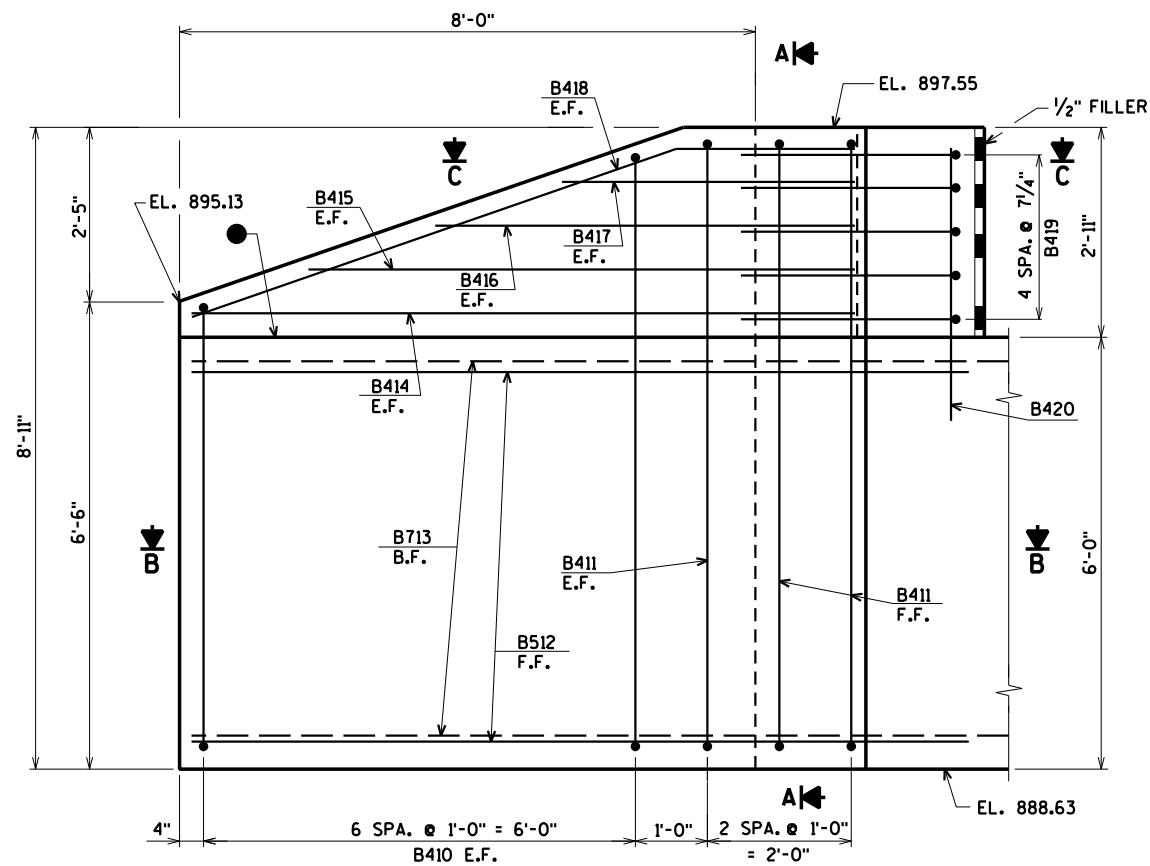
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-13-672			
DRAWN BY		CLS	PLANS CK'D. CJM
NORTH ABUTMENT			SHEET 6 OF 11

ORIGINAL PLANS PREPARED BY  
**AYRES ASSOCIATES**  
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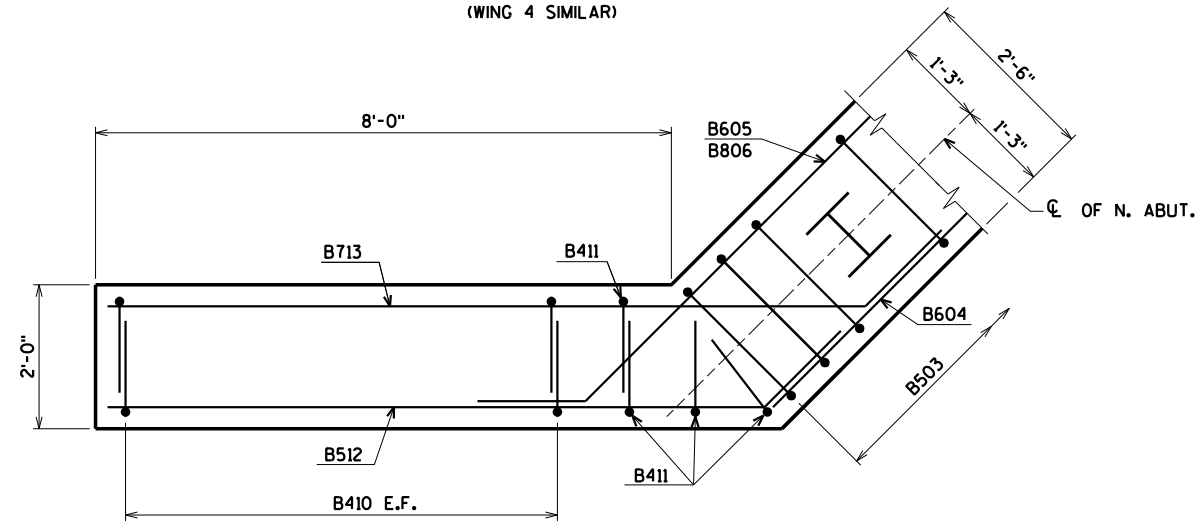


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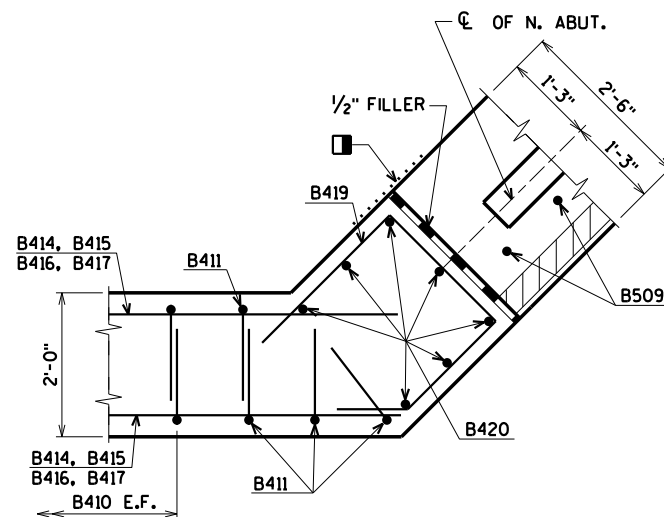
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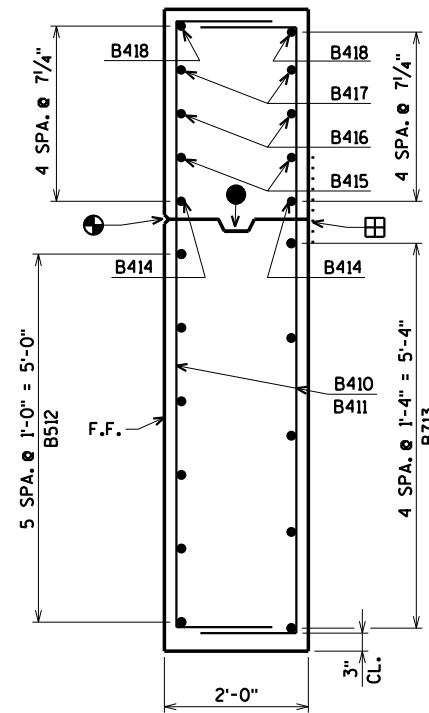
**ELEVATION - WING 3**  
(WING 4 SIMILAR)



**SECTION B**

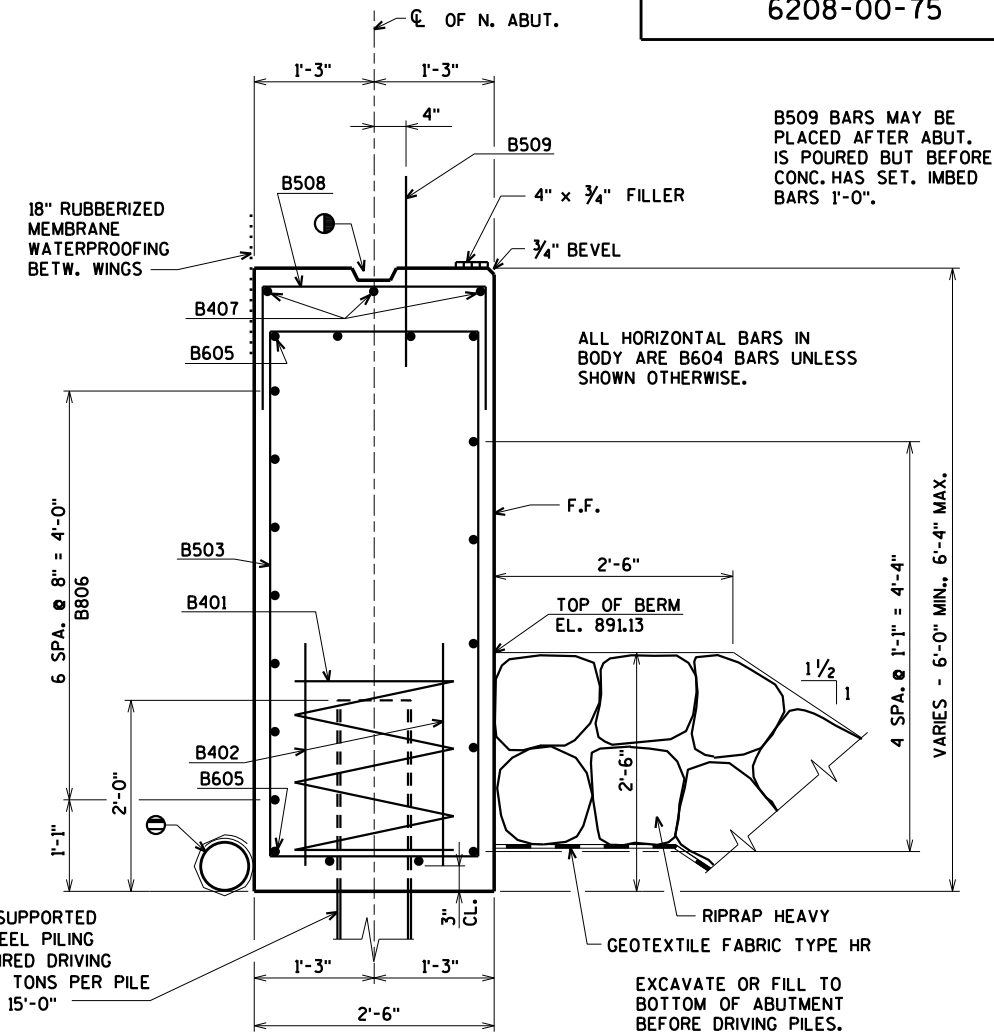


**SECTION C**



**SECTION A**

ABUTMENT TO BE SUPPORTED  
ON HP 10 x 42 STEEL PILING  
DRIVEN TO A REQUIRED DRIVING  
RESISTANCE OF 160 TONS PER PILE  
ESTIMATED LENGTH 15'-0"



**TYPICAL SECTION THRU BODY**

PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5%  
MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD  
AT ENDS OF PIPE UNDERDRAIN. RODENT SHIELD TO  
BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED  
6-INCH". FOR RODENT SHIELD DETAIL SEE SHEET 8.

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

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

OPT. KEYED CONST. JOINT - FORMED  
BY A BEVELED 2" x 6" WITH RUBBERIZED  
MEMBRANE WATERPROOFING ON B.F.

3/4" V-GROOVE ON F.F. OF WING WALL  
NOT REQUIRED IF CONST. JT. IS NOT USED.

VERTICAL 18" RUBBERIZED MEMBRANE  
WATERPROOFING TO EXTEND FROM  
BRIDGE SEAT TO TOP OF WING WALL.

FOR PILE SPLICE DETAIL SEE SHEET 2.

B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

F.F. DENOTES FRONT FACE

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

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-13-672			
DRAWN BY	CLS	PLANS CK'D.	CJM
NORTH ABUTMENT WING DETAILS		SHEET 7 OF 11	

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STATE PROJECT NUMBER

6208-00-75

**BILL OF BARS - SOUTH ABUTMENT**

BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED	BAR SERIES	2,540# UNCOATED 870# COATED
							LOCATION
A401		5	28-0	X			BODY @ PILES
A402		10	2-3				BODY @ PILES
A503		46	15-8	X			BODY VERT.
A604		10	36-11				BODY HORIZ.
A605		4	23-6	X			BODY HORIZ. B.F.
A806		14	24-7	X			BODY HORIZ. B.F.
A407		3	7-6				BODY HORIZ.
A508		11	4-3	X			BODY VERT.
A509	X	26	2-0				BODY DOWELS
A410	X	28	9-8	X		⊗	WINGS 1 & 2 VERT. E.F.
A411	X	8	11-0	X			WINGS 1 & 2 VERT. E.F.
A512	X	12	10-8	X			WINGS 1 & 2 HORIZ. F.F.
A713	X	10	12-3	X			WINGS 1 & 2 HORIZ. B.F.
A414	X	4	9-3				WINGS 1 & 2 HORIZ. E.F.
A415	X	4	7-10				WINGS 1 & 2 HORIZ. E.F.
A416	X	4	6-1				WINGS 1 & 2 HORIZ. E.F.
A417	X	4	4-4				WINGS 1 & 2 HORIZ. E.F.
A418	X	4	8-7	X			WINGS 1 & 2 DIAG. E.F.
A419	X	10	8-5	X			WINGS 1 & 2 HORIZ.
A420	X	14	4-2				WINGS 1 & 2 VERT.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

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

B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

F.F. DENOTES FRONT FACE

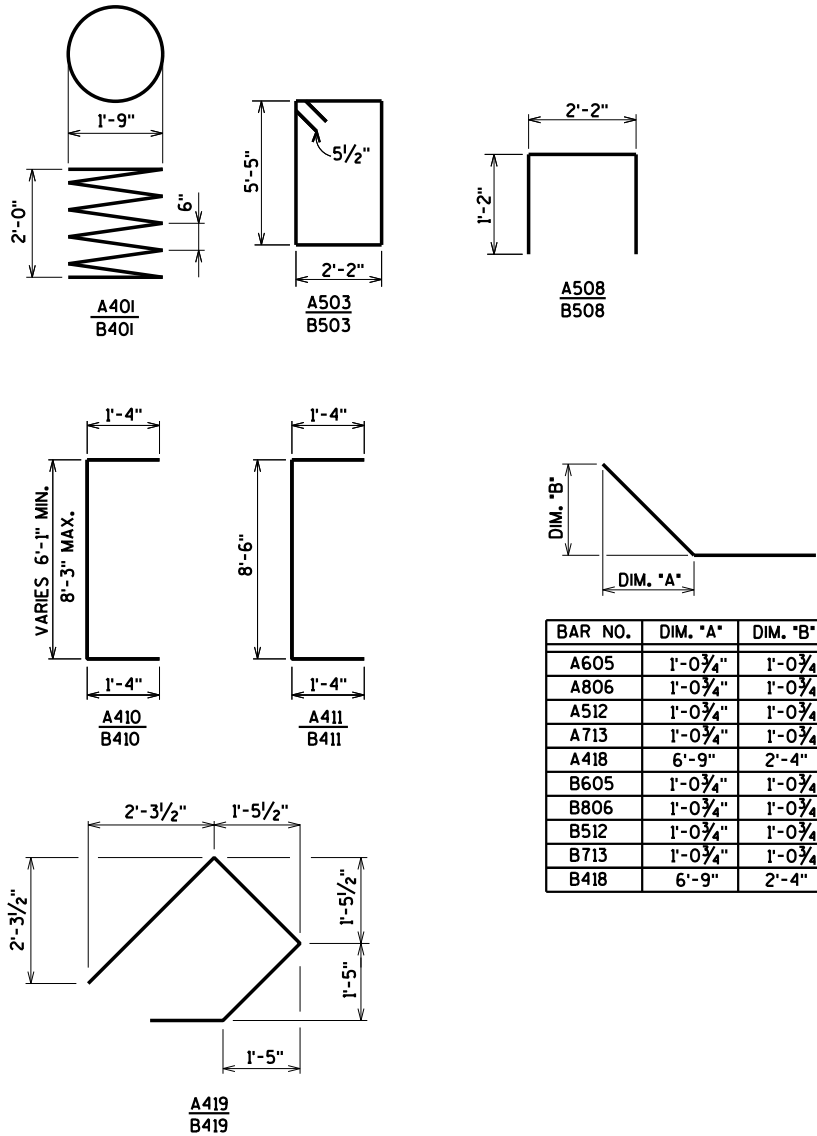
**BAR SERIES TABLE**

BAR MARK	NO REQ'D.	LENGTH
A410	4 SERIES OF 7	8'-7" TO 10'-9"
B410	4 SERIES OF 7	8'-7" TO 10'-9"

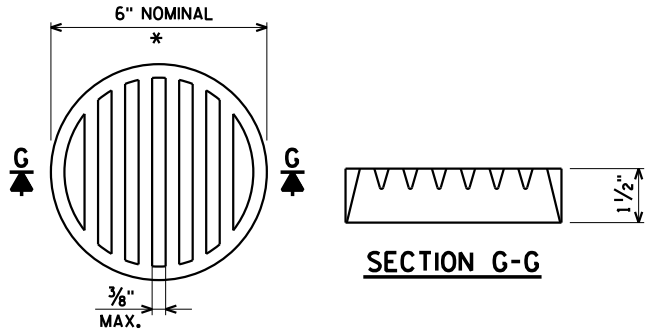
BUNDLE AND TAG EACH SERIES SEPARATELY.

**BILL OF BARS - NORTH ABUTMENT**

BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED	BAR SERIES	2,540# UNCOATED 870# COATED
							LOCATION
B401		5	28-0	X			BODY @ PILES
B402		10	2-3				BODY @ PILES
B503		46	15-8	X			BODY VERT.
B604		10	36-11				BODY HORIZ.
B605		4	23-6	X			BODY HORIZ. B.F.
B806		14	24-7	X			BODY HORIZ. B.F.
B407		3	7-6				BODY HORIZ.
B508		11	4-3	X			BODY VERT.
B509	X	26	2-0				BODY DOWELS
B410	X	28	9-8	X		⊗	WINGS 3 & 4 VERT. E.F.
B411	X	8	11-0	X			WINGS 3 & 4 VERT. E.F.
B512	X	12	10-8	X			WINGS 3 & 4 HORIZ. F.F.
B713	X	10	12-3	X			WINGS 3 & 4 HORIZ. B.F.
B414	X	4	9-3				WINGS 3 & 4 HORIZ. E.F.
B415	X	4	7-10				WINGS 3 & 4 HORIZ. E.F.
B416	X	4	6-1				WINGS 3 & 4 HORIZ. E.F.
B417	X	4	4-4				WINGS 3 & 4 HORIZ. E.F.
B418	X	4	8-7	X			WINGS 3 & 4 DIAG. E.F.
B419	X	10	8-5	X			WINGS 3 & 4 HORIZ.
B420	X	14	4-2				WINGS 3 & 4 VERT.



BAR NO.	DIM. "A"	DIM. "B"
A605	1'-0 3/4"	1'-0 3/4"
A806	1'-0 3/4"	1'-0 3/4"
A512	1'-0 3/4"	1'-0 3/4"
A713	1'-0 3/4"	1'-0 3/4"
A418	6'-9"	2'-4"
B605	1'-0 3/4"	1'-0 3/4"
B806	1'-0 3/4"	1'-0 3/4"
B512	1'-0 3/4"	1'-0 3/4"
B713	1'-0 3/4"	1'-0 3/4"
B418	6'-9"	2'-4"



\* 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 STAINLESS STEEL SHEET METAL SCREWS.

**RODENT SHIELD DETAIL**

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

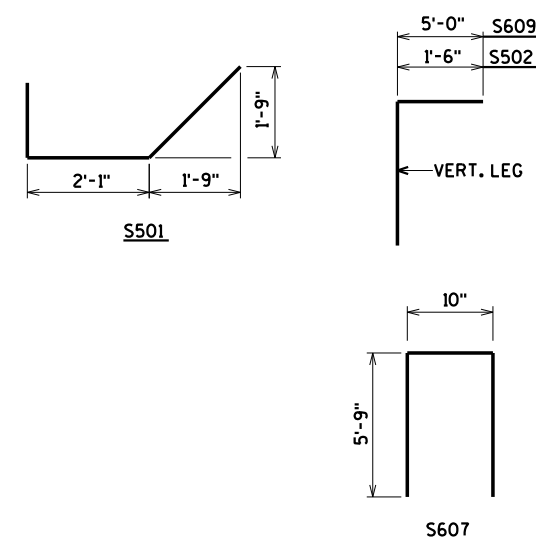
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-13-672			
DRAWN BY	CLS	PLANS CK'D.	CJM
ABUTMENT BILL OF BARS			SHEET 8 OF 11



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

[illegible]

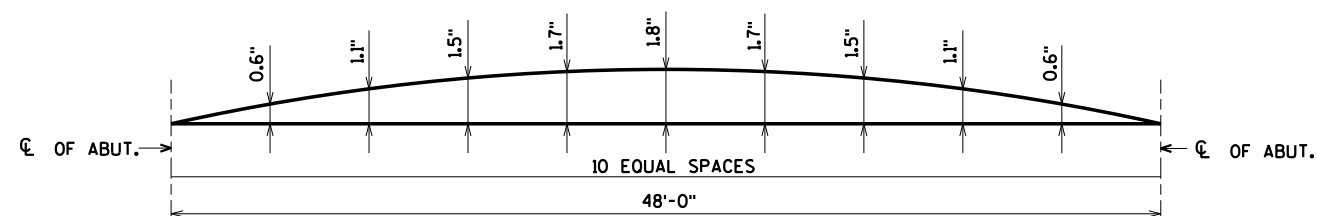
BENDING DIMENSIONS ARE OUT TO OUT OF BARS.



NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-13-672			
DRAWN BY		CLS	PLANS CK'D. CJK
SUPERSTRUCTURE		SHEET 9 OF	



### PART LONGITUDINAL SECTION



### CAMBER DIAGRAM

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

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

### TOP OF DECK ELEVATIONS

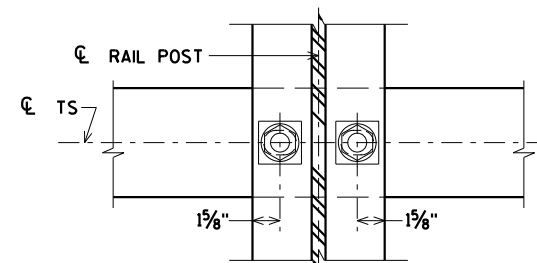
LOCATION	€ OF S. ABUT.	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	€ OF N. ABUT.
W. EDGE OF SLAB	897.66	897.65	897.64	897.63	897.62	897.61	897.60	897.58	897.57	897.56	897.55
€ OF STRUCTURE	897.98	897.97	897.96	897.95	897.94	897.93	897.92	897.91	897.90	897.89	897.87
E. EDGE OF SLAB	897.66	897.65	897.64	897.63	897.62	897.61	897.60	897.58	897.57	897.56	897.55

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

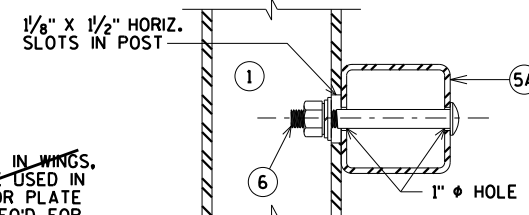
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STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-13-672			
DRAWN BY		CLS	PLANS CK'D. CJM
SUPERSTRUCTURE DETAILS		SHEET 10 OF 11	

**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 - 1/6" DIA. ANCHOR BOLTS WITH NUT AND HARDENED WASHER (ALL GALVANIZED). 5 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. ~~USE 1'-9" LONG IN ABUTMENT WINGS. AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 16" USE 1'-3" LONG. USE 10 3/4" LONG AT ALL OTHER LOCATIONS. (AN EQUIVALENT THREADED ROD WITH NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQ'D. FOR CONSTRUCTIBILITY.)~~
- 5/8" x 11" x 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1 5/8" DIA. HOLES FOR ANCHOR BOLTS NO. 3
- TS 5 x 4 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- 5A TS 5 x 5 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, 3/6" 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 1/2" 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" x 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" x 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.



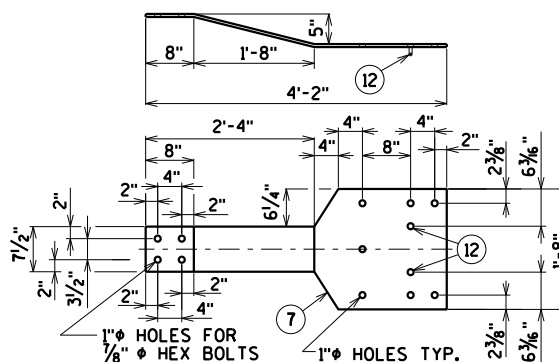
**SECTION THRU POST WEB**



**SECTION THRU RAIL**

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

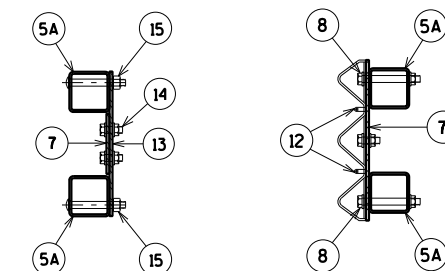
**TYPICAL RAIL TO POST CONNECTIONS**



**BACK-UP PLATE DETAIL**  
(AT BEAM GUARD ATTACHMENT)

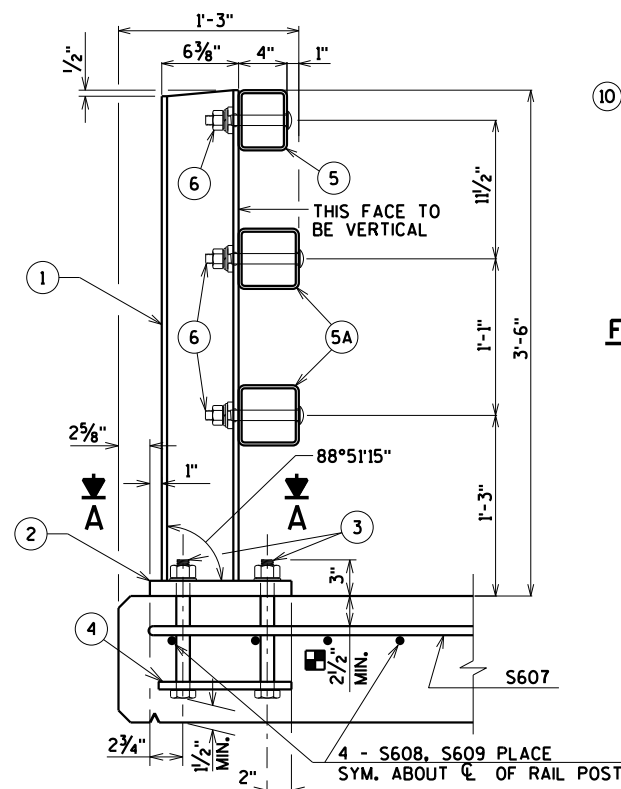
**GENERAL NOTES**

- BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-13-672" 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 S.S.P.C. SPECIFICATIONS.
- ~~WHEN PAINTING IS REQUIRED, ALL MATERIAL EXCEPT ANCHORAGE DETAIL (NO. 3 & 4) SHALL BE PAINTED OVER GALVANIZING WITH APPROVED TIE COAT AND TOP COAT.~~
- THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL-4).
- PLACE FIRST BOTTOM LONGITUDINAL BAR CLEAR OF DRIP GROOVE.



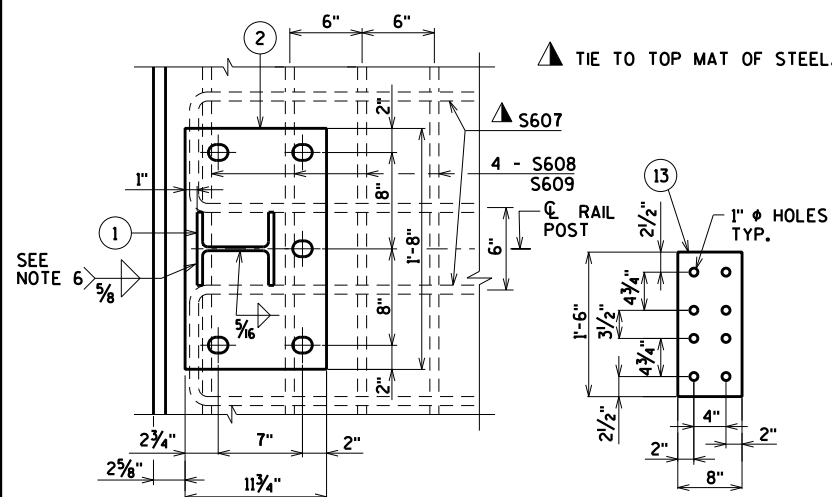
**SECTION C**

**SECTION D**



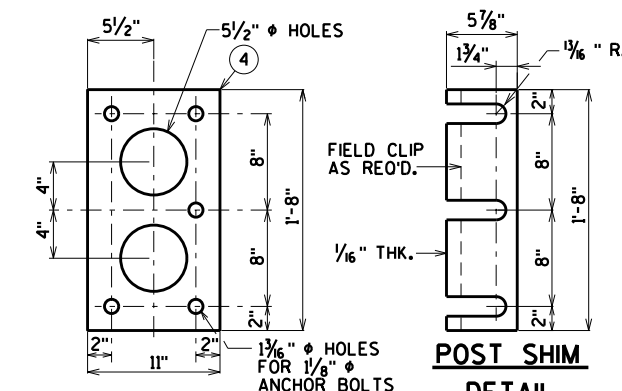
**SECTION THRU RAILING ON DECK**

PLACE BELOW TOP MAT SLAB REINFORCEMENT.



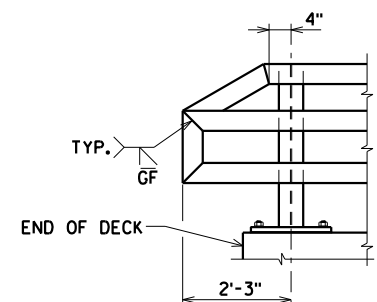
**SECTION A**

**ANCHOR PLATE**  
(AT BEAM GUARD ATTACHMENT)

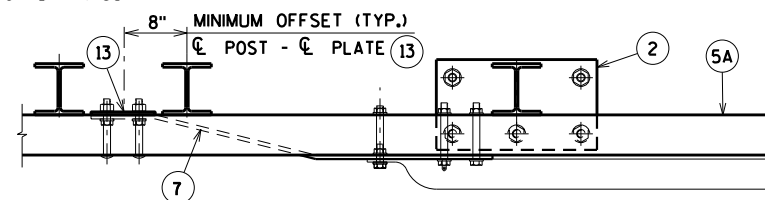


**ANCHOR PLATE**  
(AT RAIL TO DECK CONNECTION)

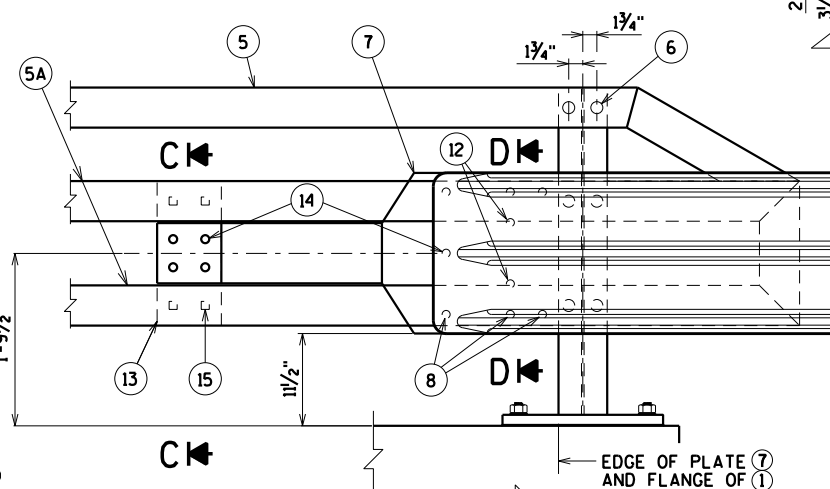
**POST SHIM DETAIL**



**PART VIEW OF RAILING**

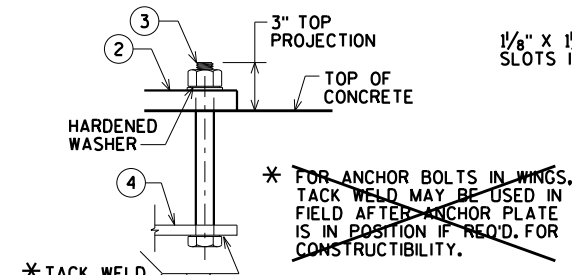


**TOP VIEW AT END POST**  
(THRIE BEAM RAIL ATTACHMENT)



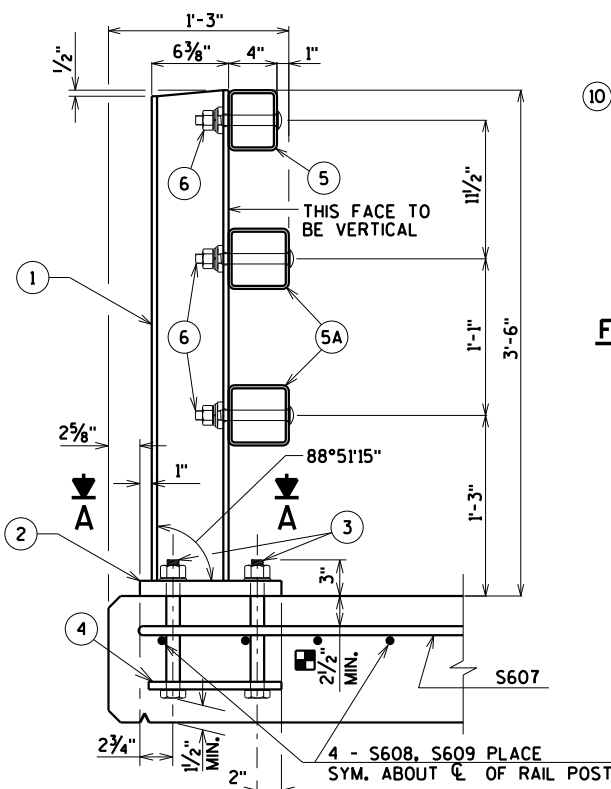
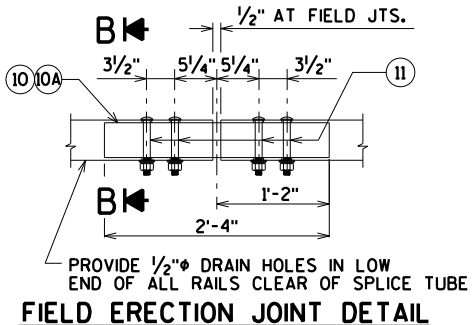
**DETAIL AT END POST**  
(THRIE BEAM RAIL ATTACHMENT)

**SECTION B**



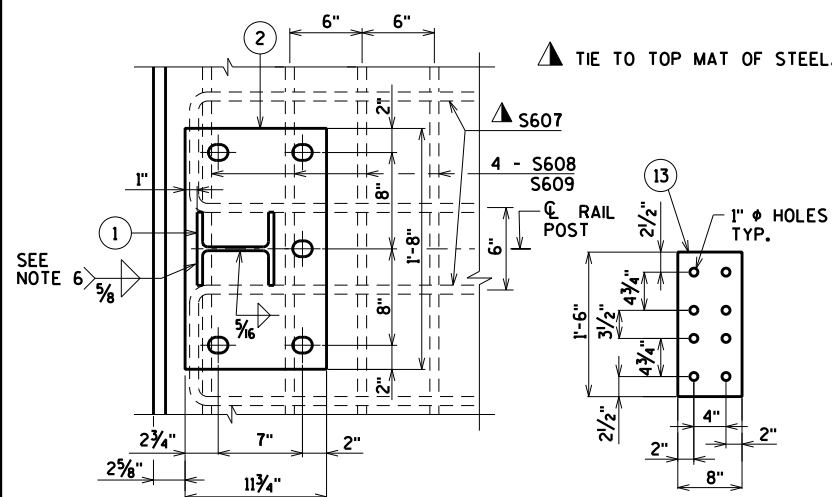
**ANCHOR BOLTS**

**SHOP RAIL SPLICE DETAIL**  
(LOCATION MUST BE SHOWN ON THE SHOP DRAWINGS)



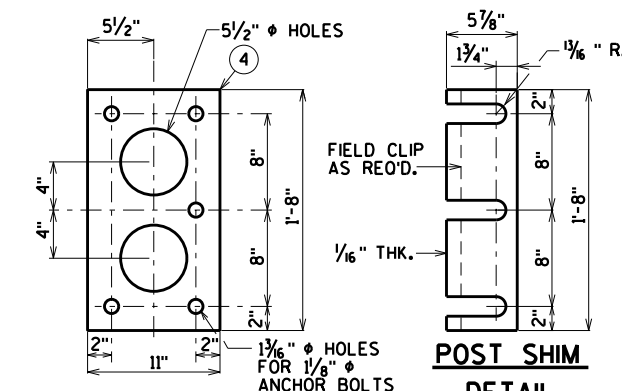
**SECTION THRU RAILING ON DECK**

PLACE BELOW TOP MAT SLAB REINFORCEMENT.



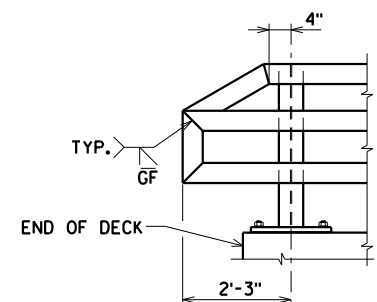
**SECTION A**

**ANCHOR PLATE**  
(AT BEAM GUARD ATTACHMENT)



**ANCHOR PLATE**  
(AT RAIL TO DECK CONNECTION)

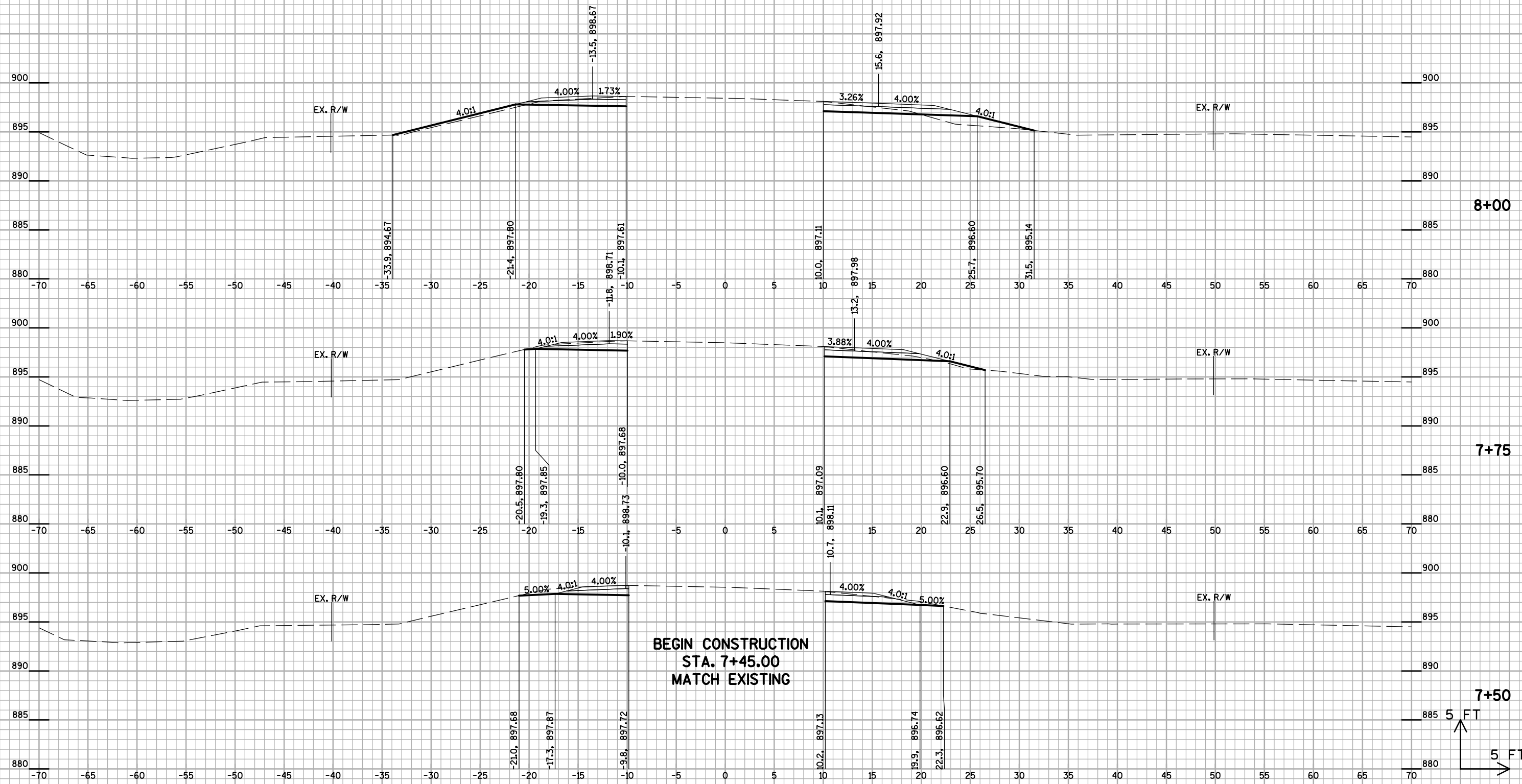
**POST SHIM DETAIL**

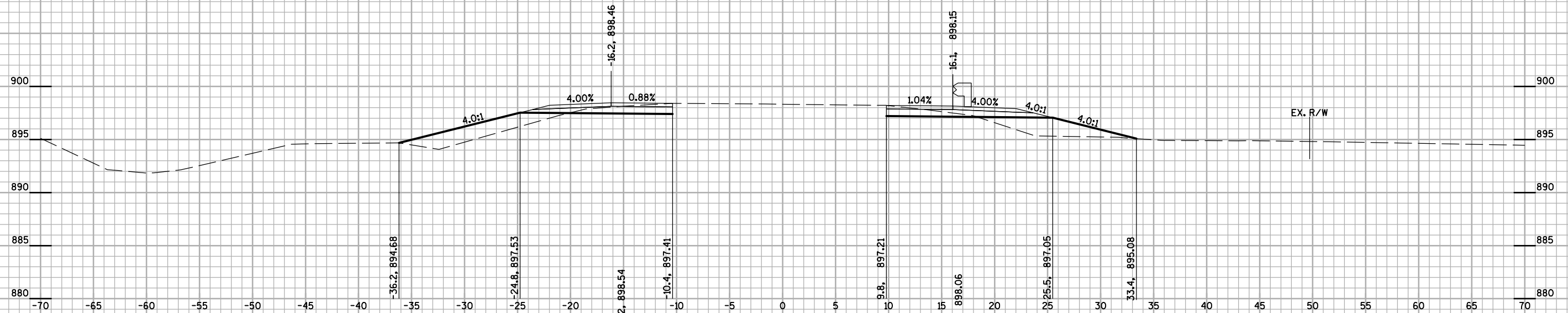


**PART VIEW OF RAILING**

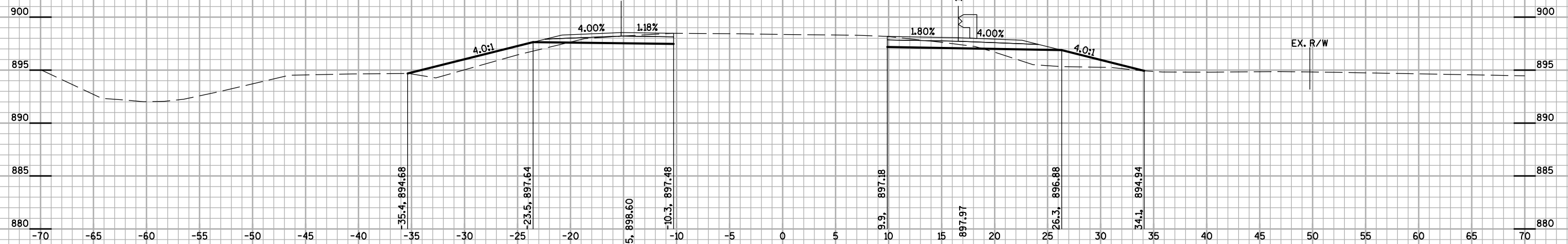
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-13-672			
DRAWN BY CLS		PLANS CK'D. CJM	
RAILING TUBULAR TYPE M			SHEET 11 OF 11

ELDER LANE COMPUTER EARTHWORK															
Station	Distance	Area (SF)				Incremental Vol (CY) (Unadjusted)				Cumulative Vol (CY)			Mass Ordinate		
		Cut	Removing Pavement Above Subgrade	Removing Pavement Below Subgrade	Fill	Cut	Removing Pavement Above Subgrade	Removing Pavement Below Subgrade	Fill	Cut 1.00	Removing Pavement 1.00	Expanded Fill 1.30			
														Note 1	Note 2
7+45		0	0	0	0								0		
7+50	5	14.12	0	0	0	1	0	0	0	1	0	0	1		
7+75	25	13.27	0	0	0.91	13	0	0	0	14	0	1	13		
8+00	25	12.32	0	0	9.41	12	0	0	5	26	0	7	19		
8+15	15	12.19	0	0	18.89	7	0	0	8	33	0	17	16		
8+25	10	11.80	0	0	24.19	4	0	0	8	37	0	27	10		
8+39	14	11.03	0	0	21.51	6	0	0	12	43	0	43	0		
8+50	11	17.60	13.33	5.00	17.61	6	3	1	8	49	4	53	-9		
8+51	1	17.62	13.33	5.00	12.56	1	0	0	1	49	4	54	-10		
8+64	13	17.97	13.33	5.00	12.57	9	6	2	6	58	13	62	-21		
8+75	11	18.32	13.33	5.00	9.64	7	5	2	5	65	21	68	-29		
8+76	1	18.35	13.33	5.00	9.41	1	0	0	0	66	21	68	-30		
9+00	24	19.51	13.33	5.00	1.98	17	12	4	5	83	38	75	-41		
9+01	1	19.53	13.33	5.00	1.94	1	0	0	0	84	38	75	-41		
9+25	24	19.21	13.33	5.00	1.88	17	12	4	2	101	55	77	-47		
9+50	25	14.64	13.33	5.00	6.71	16	12	5	4	117	72	82	-59		
9+60	10	12.19	13.33	5.00	15.08	5	5	2	4	122	78	87	-68		
10+40	0	21.91	5.00	5.00	10.94	0	0	0	0	122	78	87	-68		
10+50	10	23.52	5.00	5.00	6.98	8	2	2	3	130	82	92	-68		
10+75	25	24.16	5.00	5.00	7.83	22	5	5	7	152	91	101	-67		
11+00	25	24.96	5.00	5.00	10.98	23	5	5	9	175	101	112	-68		
11+07	7	25.20	5.00	5.00	11.85	7	1	1	3	181	103	116	-69		
11+25	18	25.76	5.00	5.00	15.32	17	3	3	9	198	110	128	-72		
11+32	7	25.96	5.00	5.00	19.07	7	1	1	4	205	113	133	-75		
11+44	12	25.49	5.00	5.00	27.77	11	2	2	10	216	117	147	-82		
11+50	6	24.96	5.00	5.00	31.82	6	1	1	7	222	119	155	-88		
11+57	0	11.01	0	0	35.15	0	0	0	0	222	119	155	-88		
11+69	12	10.83	0	0	42.53	5	0	0	17	227	119	178	-106		
11+75	6	10.78	0	0	41.74	2	0	0	9	229	119	190	-116		
11+94	19	10.85	0	0	39.51	8	0	0	29	237	119	227	-145		
12+00	6	10.96	0	0	34.20	2	0	0	8	239	119	238	-154		
12+25	25	11.09	0	0	15.21	10	0	0	23	249	119	268	-173		
12+50	25	10.61	0	0	3.26	10	0	0	9	260	119	279	-174		
12+70	20	0	0	0	0	4	0	0	1	263	119	280	-172		
						263	77	42	216						
9	Note 1 - Cut		Cut does not include Unusable Pavement Material Above Subgrade.												
	Note 2 - Removing Pavement Above Subgrade		Does not show up in cross sections. Includes concrete under mainline pavement above proposed subgrade. Volume to be backfilled with Borrow.												
	Note 3 - Removing Pavement Below Subgrade		Does not show up in cross sections. Includes concrete under mainline pavement below proposed subgrade. Volume to be backfilled with Borrow.												
	Note 4 - Fill		Does not include volume occupied by Removing Pavement.												
	Note 5 - Removing Pavement		Volume occupied by buried concrete pavement. Will be backfilled with Borrow.												
	Note 6 - Mass Ordinate		(Cut) - (Removing Pavement * 1.30) - (Fill * 1.30)												
PROJECT NO: 6208-00-75				HWY: ELDER LANE		COUNTY: DANE			COMPUTER EARTHWORK DATA				SHEET NO:		E

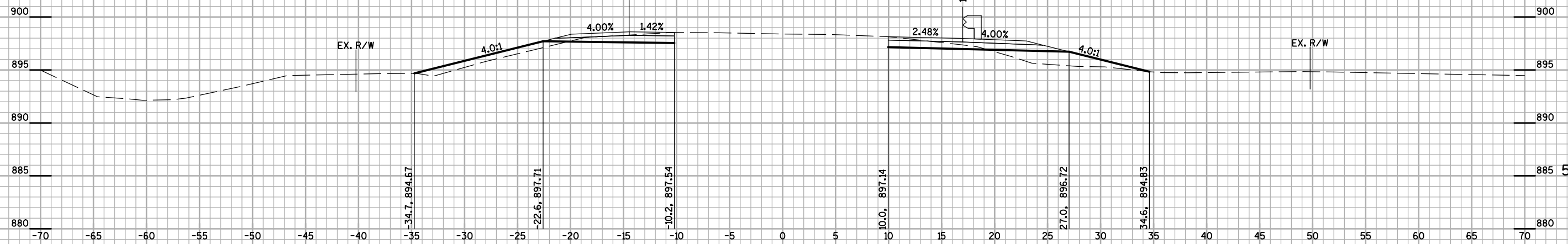




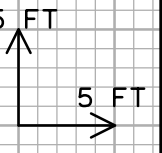
8+39



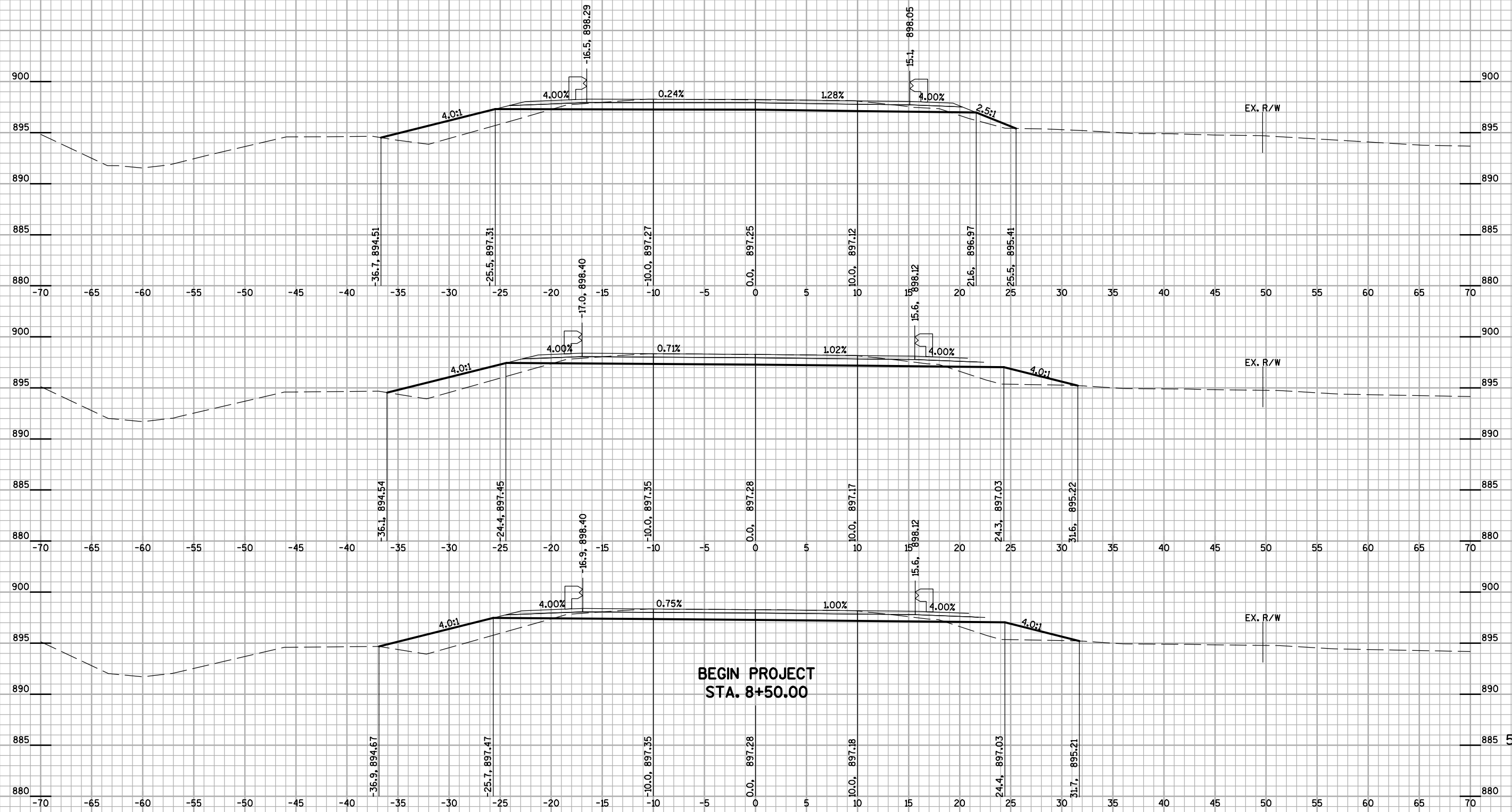
8+25



8+14



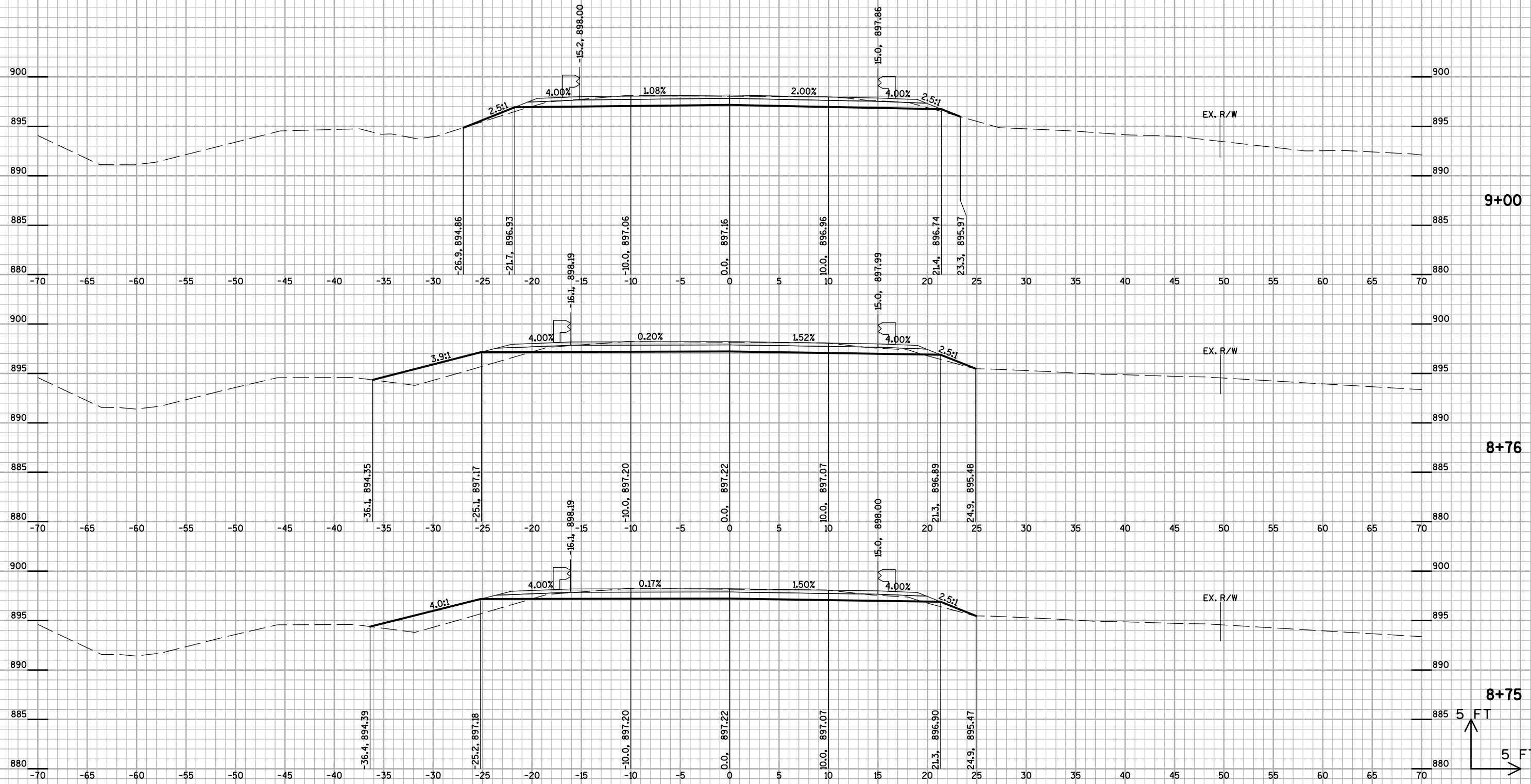




9

9

STA. 8+75 TO 9+00



PROJECT NO: 6208-00-75

HWY: ELDER LANE

COUNTY: DANE

CROSS SECTIONS: MAINLINE

SHEET

E

FILE NAME : N:\410668\DGN\6208-00-7x\_090201\_xs.dgn

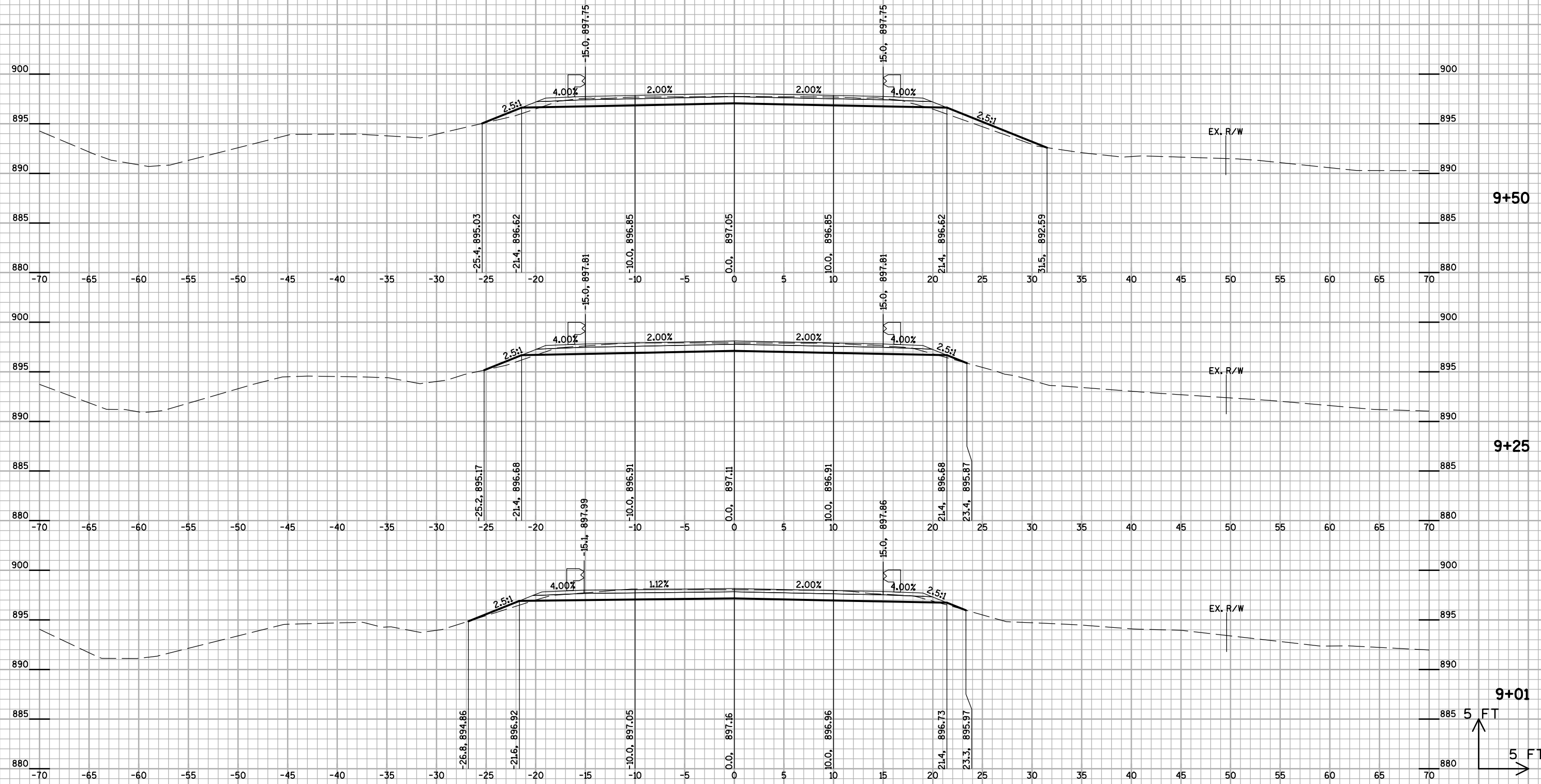
PLOT DATE : 7/10/2015

PLOT BY : wintersa

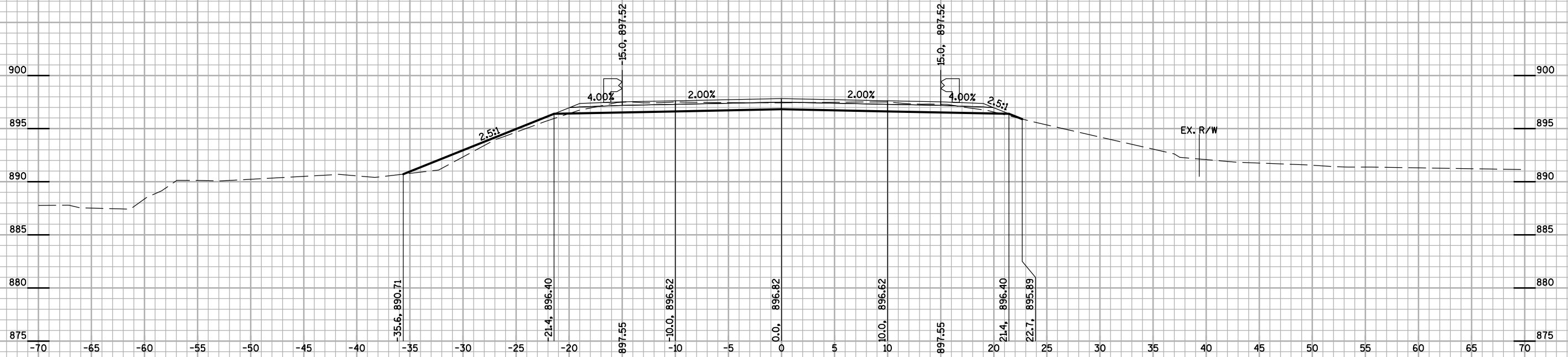
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PLOT SCALE : 1:10

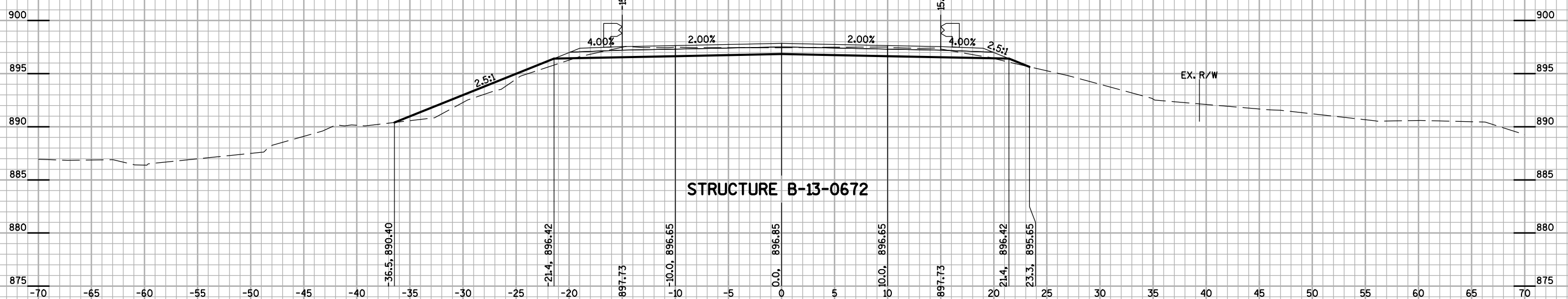
WISDOT/CADDs SHEET 21



STA. 9+60 TO 10+50



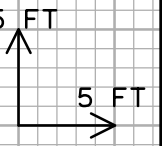
10+50



10+40



9+60



9

9

PROJECT NO: 6208-00-75

HWY: ELDER LANE

COUNTY: DANE

CROSS SECTIONS: MAINLINE

SHEET

E

FILE NAME : N:\410668\DGN\6208-00-7x\_090201\_xs.dgn

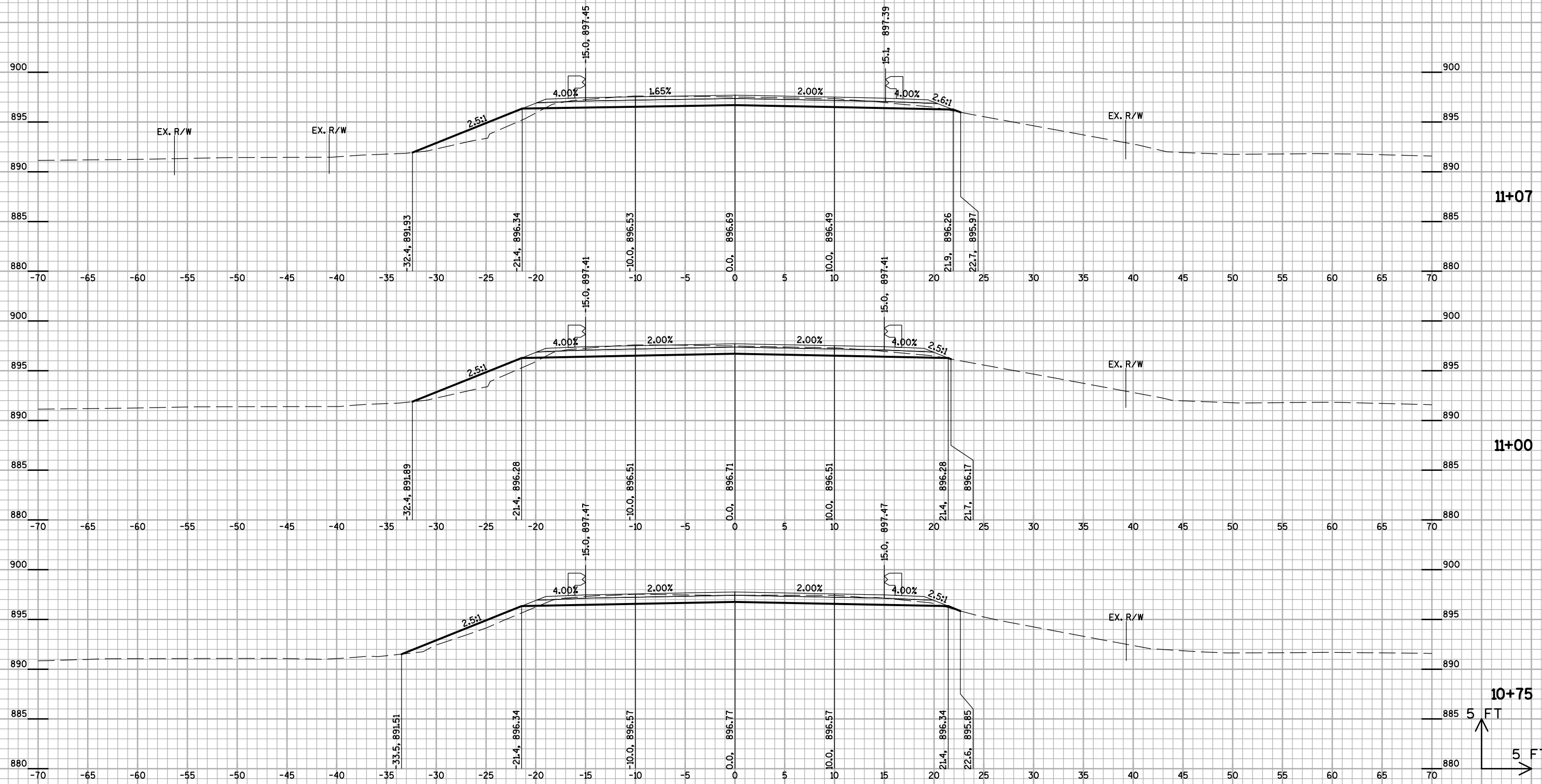
PLOT DATE : 7/10/2015

PLOT BY : wintersa

PLOT NAME :

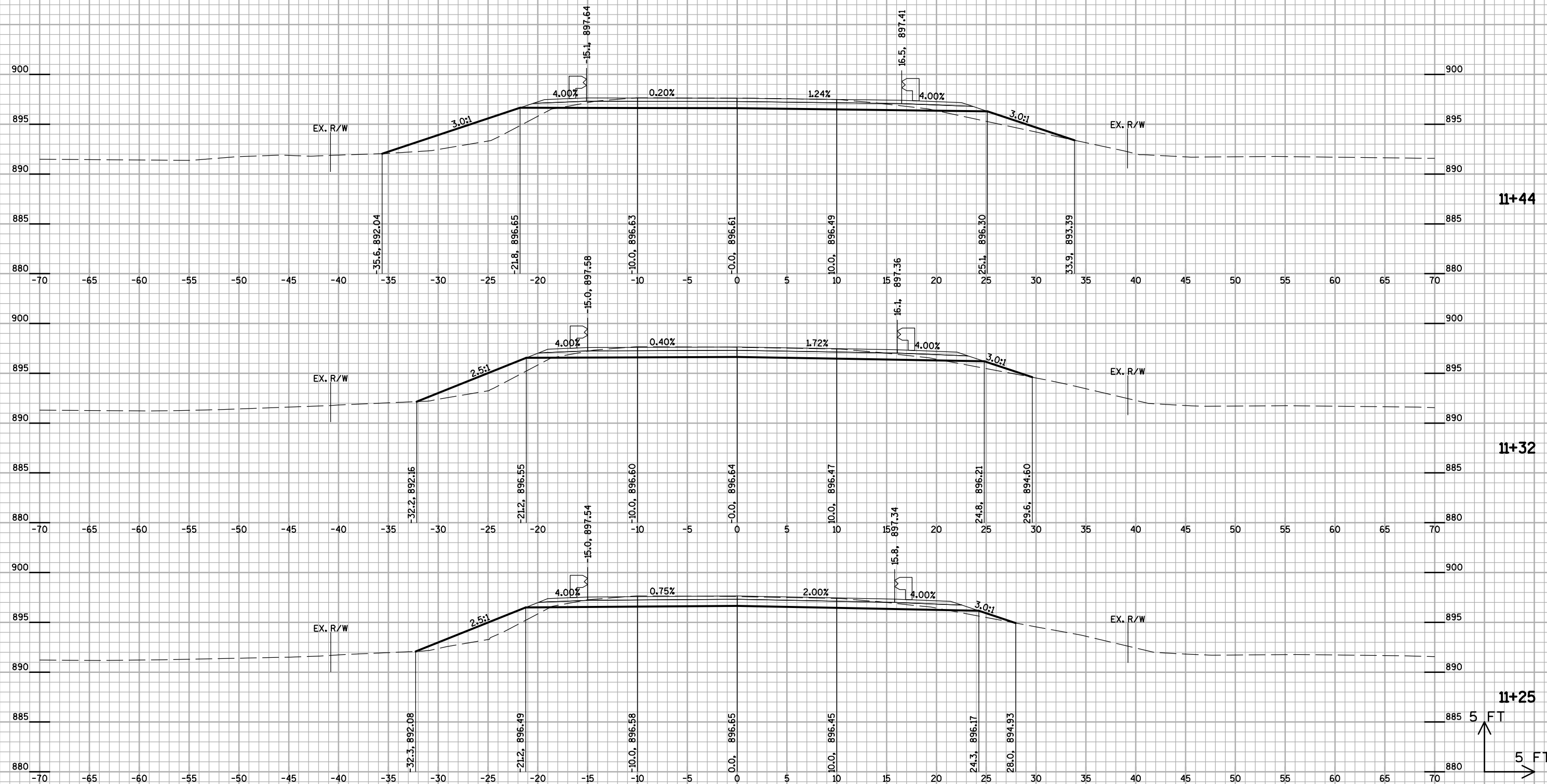
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WISDOT/CADDs SHEET 21



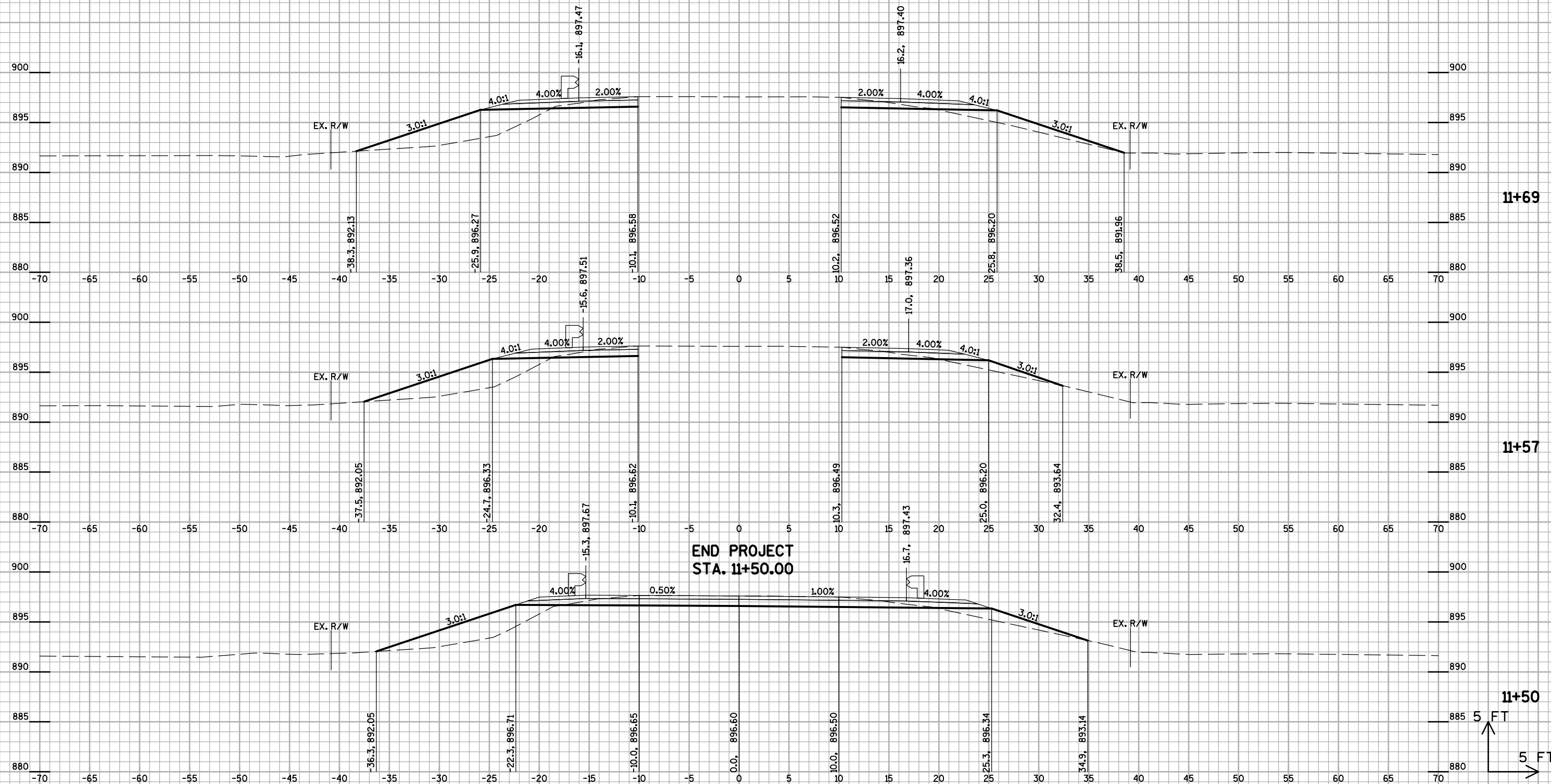
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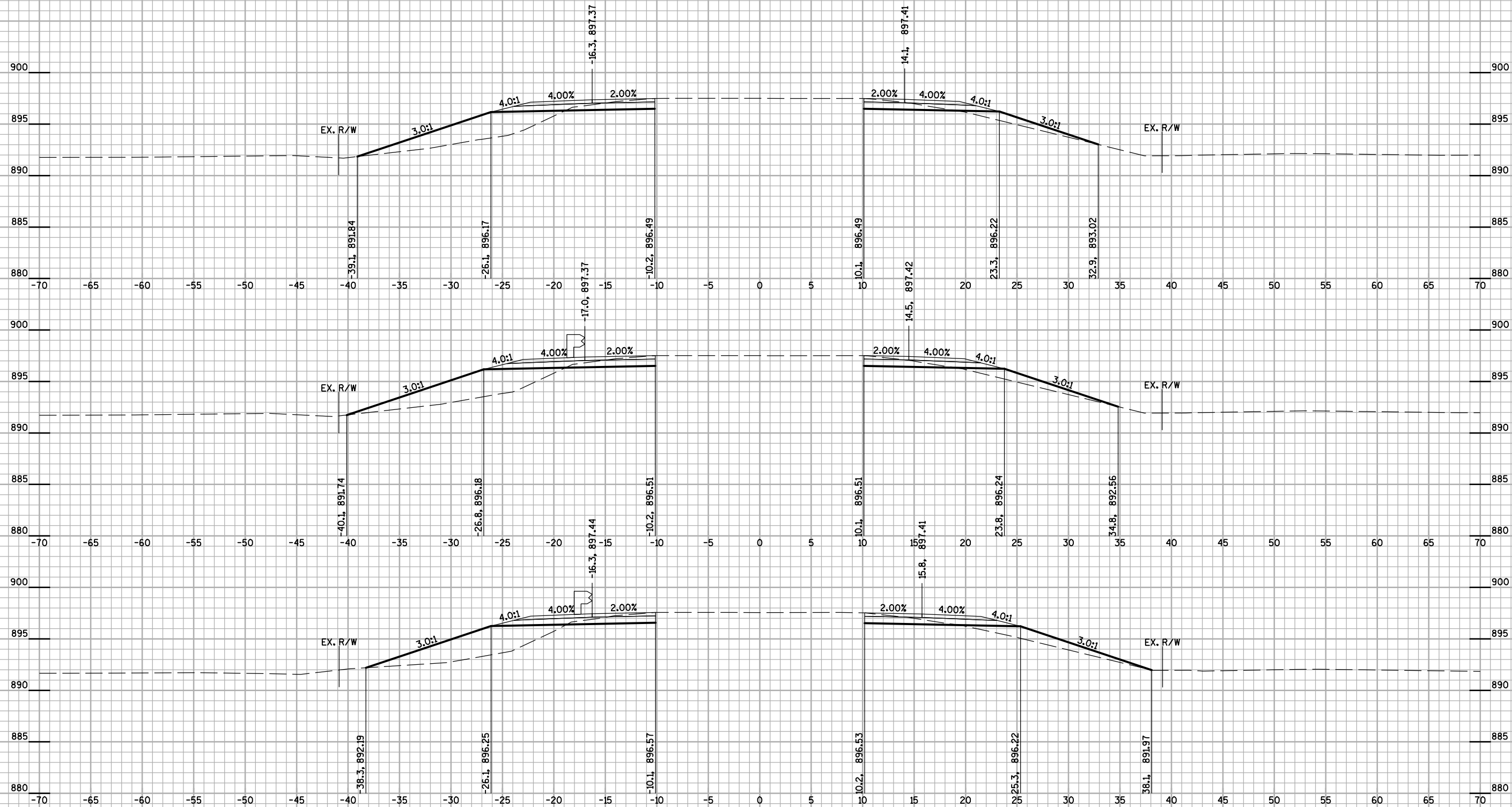
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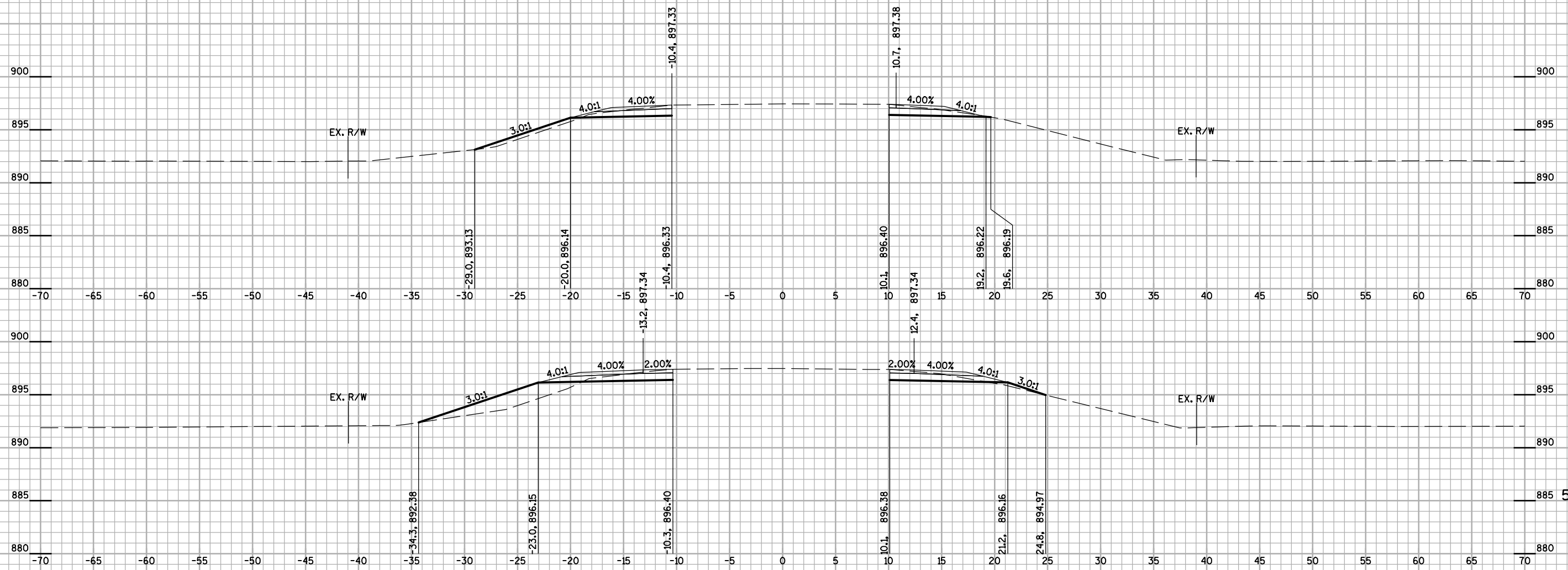


9

9



END CONSTRUCTION  
STA. 12+70.00  
MATCH EXISTING



12+50

12+25

5 FT  
5 FT



## ***Wisconsin Department of Transportation***

Dedicated people creating transportation solutions  
through innovation and exceptional service.

<http://www.dot.wisconsin.gov>