

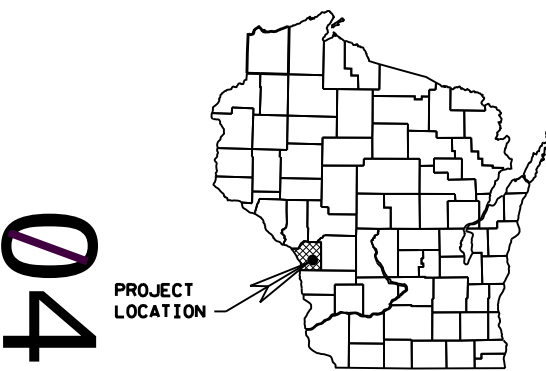
LAX
PROJECT ID: 5436-00-75
WITH: N/A
COUNTY: LA CROSSE

FEBRUARY 2025

ORDER OF SHEETS

Section No.	1	Title
Section No.	2	Typical Sections and Details (Includes Erosion Control Plans)
Section No.	3	Estimate of Quantities
Section No.	3	Miscellaneous Quantities
Section No.	4	Right of Way Plat
Section No.	5	Plan and Profile
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 = 94



DESIGN DESIGNATION 5436-00-05

A.A.D.T. (2025)	=	2,700
A.A.D.T. (2045)	=	3,600
D.H.V.	=	270
D.	=	50/50
T.	=	10%
DESIGN SPEED	=	50 MPH
ESALS	=	650,000

CONVENTIONAL SYMBOLS PLAN

CORPORATE LIMITS	
PROPERTY LINE	
LOT LINE	
LIMITED HIGHWAY EASEMENT	
EXISTING RIGHT OF WAY	
PROPOSED OR NEW R/W LINE	
SLOPE INTERCEPT	
REFERENCE LINE	
EXISTING CULVERT	
PROPOSED CULVERT (Box or Pipe)	
COMBUSTIBLE FLUIDS	
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	
OVERHEAD	
ELECTRIC	
FIBER OPTIC	
GAS	
SANITARY SEWER	
STORM SEWER	
TELEPHONE	
WATER	
UTILITY PEDESTAL	
POWER POLE	
TELEPHONE POLE	

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

TOWN OF BARRE - TOWN OF BANGOR

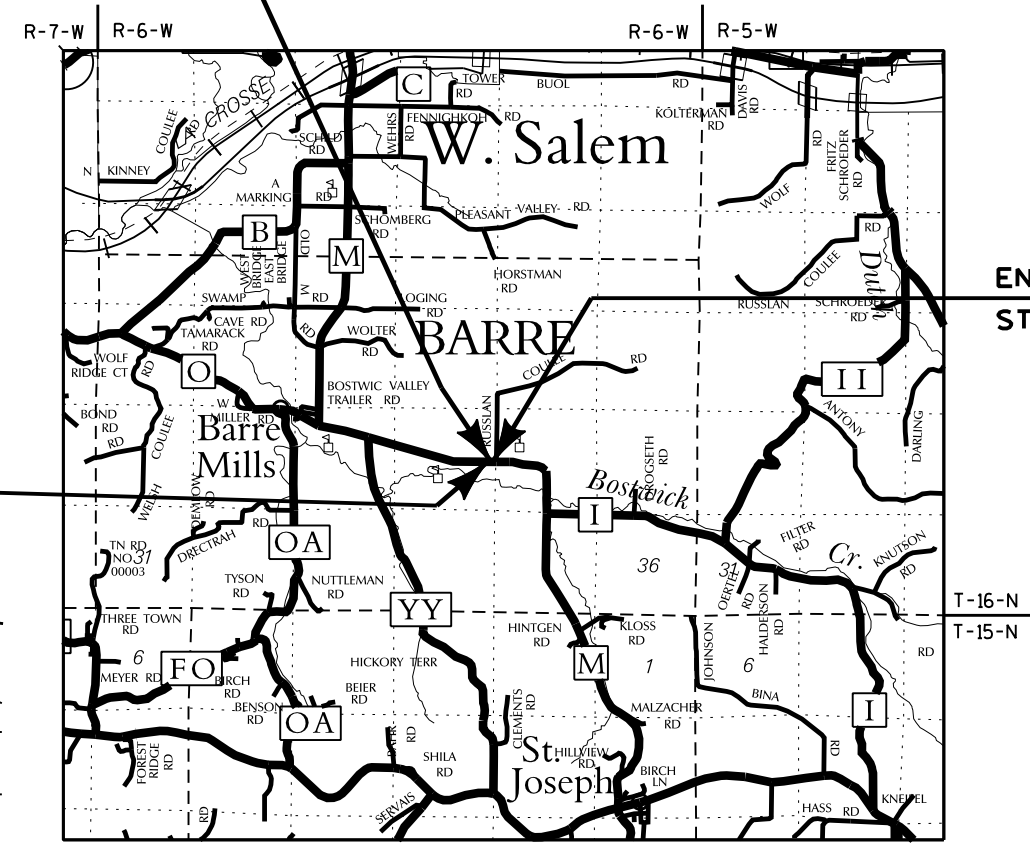
RUSSLAN COULEE CRK BRIDGE B-32-0239

CTH M

LA CROSSE COUNTY

STATE PROJECT NUMBER
5436-00-75

STRUCTURE B-32-239



END PROJECT
STA. 22+75

BEGIN PROJECT
STA. 17+50
Y = 139711.62
X = 491421.57

LAYOUT
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.099 MI.

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), LA CROSSE COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES.

ELEVATIONS ARE REFERENCED TO NAVD 88 (2012). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 12B.

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
5436-00-75	WISC 2025303	1

ACCEPTED FOR

County of La Crosse

10-3-24 Date Highway Commissioner

ORIGINAL PLANS PREPARED BY

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

WISCONSIN PROFESSIONAL ENGINEER
DANIEL N. SYDOW
E-38363
WI

DATE 10/10/2024

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	AYRES ASSOCIATES INC
Designer	AYRES ASSOCIATES INC
Project Manager	JOSH SCHOENMANN, PE
Regional Examiner	SOUTHWEST REGION
Regional Supervisor	KYLE HEMP, PE

APPROVED FOR THE DEPARTMENT

DATE: 10/25/24 (Signature)

E

GENERAL NOTES

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

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

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

WHEN THE QUANTITY OF THE ITEM OF BASE AGGREGATE DENSE IS MEASURED FOR PAYMENT BY THE TON, THE DEPTH OR THICKNESS OF THE LAYER SHOWN ON THE PLANS IS APPROXIMATE AND THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER.

ASPHALTIC REMOVAL IS INCLUDED IN THE ITEM EXCAVATION COMMON.

TOPSOIL SHALL BE PLACED ON THE SLOPES, TO THE POINT OF INTERCEPT WITH THE ORIGINAL GROUND SHOWN ON THE CROSS SECTIONS.

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

ASPHALT SURFACE SHALL USE 1/2" NOMINAL AGGREGATE SIZE.

WETLANDS EXIST IN THE PROJECT AREA. NO DISTURBANCE IS ALLOWED OUTSIDE THE SLOPE INTERCEPTS.

SIGN THE PROJECT AND TEMPORARY BYPASS IN ACCORDANCE WITH SDD "TRAFFIC CONTROL, TEMPORARY BYPASS ROADWAY". THE FOLLOWING SDD CHANGES ARE REQUIRED:
-SINCE THE ADVISORY SPEED OF 15 MPH FOR THE TEMPORARY BYPASS IS LOWER THAN THE 10 MPH BELOW THE NORMAL MAINLINE SPEED THE FOLLOWING SIGN SIZE REQUIREMENTS ARE NEEDED:
W01-6 SIGN= 60"x30"
W013-1 SIGN= 36"x36"
-THE SIGN W8-7 (36"x36") SHALL BE INSTALLED APPROXIMATELY 350' PRIOR TO TEMPORARY BYPASS ON EACH END.

WISCONSIN DEPARTMENT OF
TRANSPORTATION CONTACT:

JOSH SCHOENMANN
2101 WRIGHT STREET
MADISON, WI 53704
608-246-5448
josh.schoenmann@dot.wi.gov

WISCONSIN DEPARTMENT OF
NATURAL RESOURCES CONTACT:

KAREN KALVELAGE
3550 MORMON COULEE RD.
LA CROSSE, WI 54601
608-406-7880
karen.kalvelage@wisconsin.gov

DESIGNER

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

COUNTY CONTACT:

LA CROSSE COUNTY, HIGHWAY DEPARTMENT
301 CARLSON RD.
WEST SALEM, WI 54669
ATTN: JOSEPH LANGEBERG
608-786-3813
JLangeberg@lacrosecounty.org

UTILITIES

BRIGHTSPEED - COMMUNICATIONS
333 NORTH FRONT STREET
LA CROSSE, WI 54601
ATTN: BRIAN STELPLUGH
608-615-4136
608-780-1238 (MOBILE)
brian.stelplugh@brightspeed.com

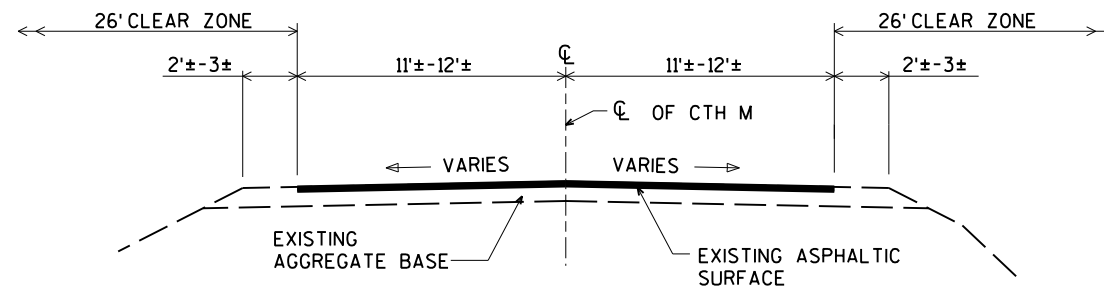
CHARTER COMMUNICATIONS - COMMUNICATIONS
1228 12TH AVENUE S
ONALASKA, WI 54650
ATTN: PERRY MCCLELLAN
608-317-6213
608-370-7140 (mobile)
perry.mcclellan@charter.com

MIDWEST NATURAL GAS INC. - GAS
3600 STH 157
P.O. BOX 429
LA CROSSE, WI 54602
ATTN: NICK MAIER
608-781-1011
608-780-9233 (MOBILE)
nickm@midwestnaturalgas.com

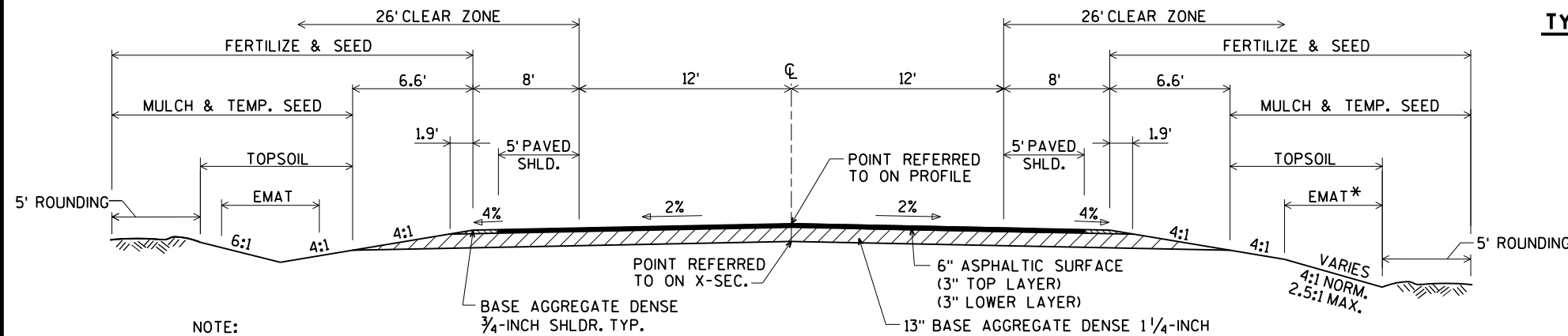
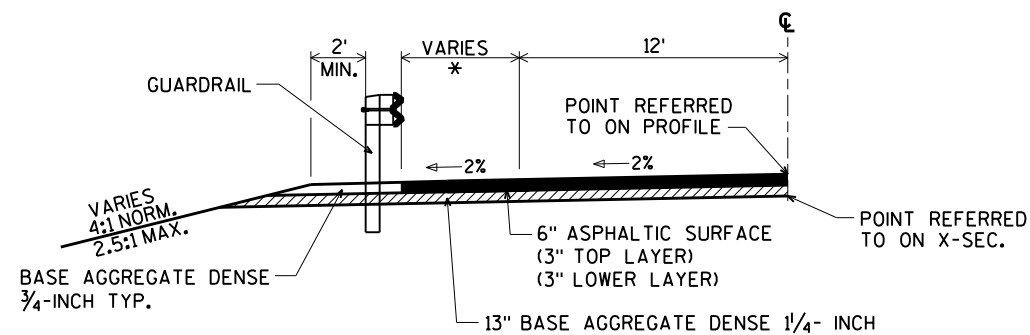
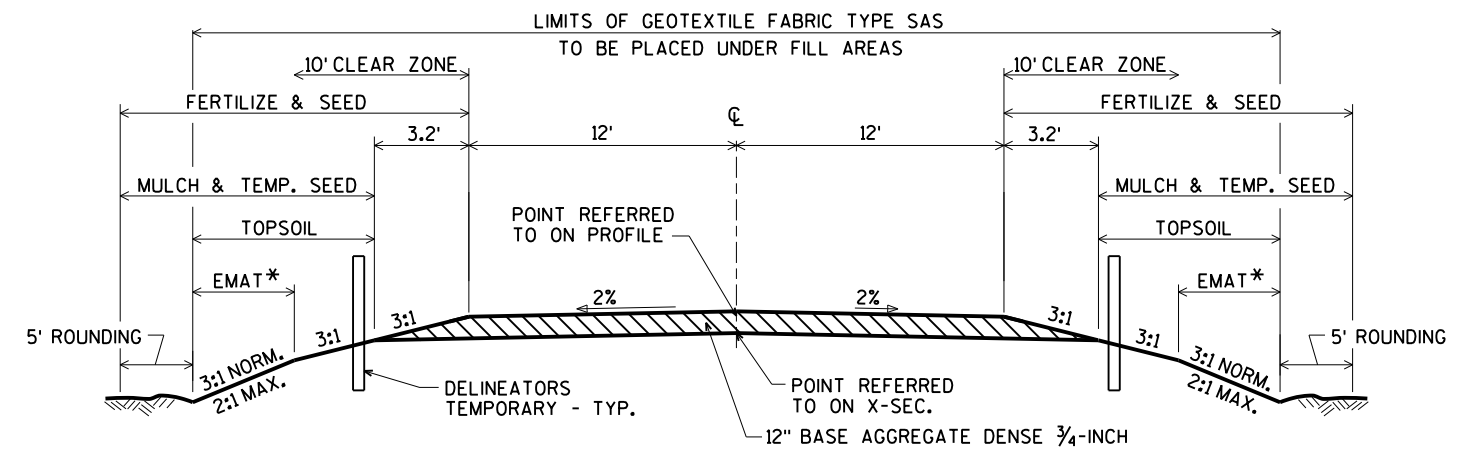
XCEL ENERGY - ELECTRIC DISTRIBUTION
1414 W. HAMILTON AVEUNE
PO BOX 8
EAU CLAIRE, WI 54702
ATTN: JOHN KELSER
715-737-6020
john.kelser@xcelenergy.com
ATTN: DAWN SCHULTZ
dawn.schultz@xcelenergy.com



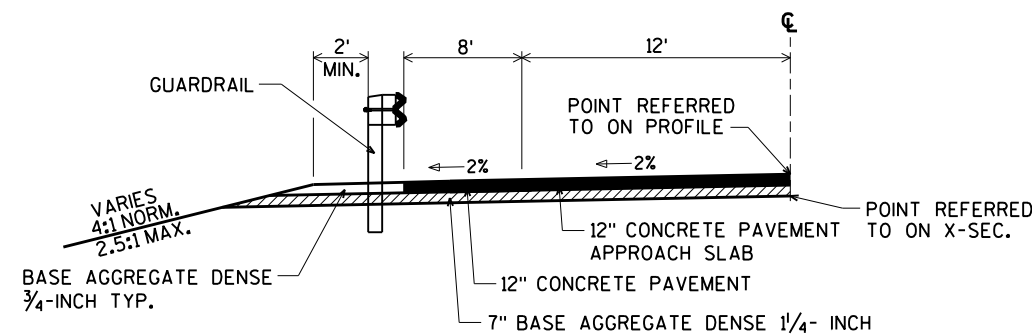
Dial 811 or (800) 242-8511
www.DiggersHotline.com

**EXISTING TYPICAL SECTION**

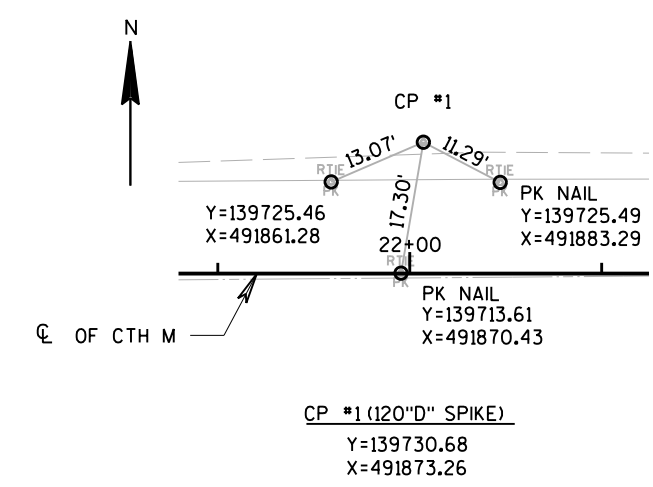
STA. 17+50 - STA. 22+75

NOTE:
EMAT 1' DEPTH OF DITCH**FINISHED TYPICAL SECTION**STA. 17+50 - STA. 19+66.56
STA. 20+33.44 - STA. 22+75**TYPICAL FINISHED HALF SECTION WITH GUARDRAIL*** 8' MIN (AT END OF BRIDGE)
10' MAX (AT END TERMINAL)**TYPICAL SECTION - TEMPORARY BYPASS**

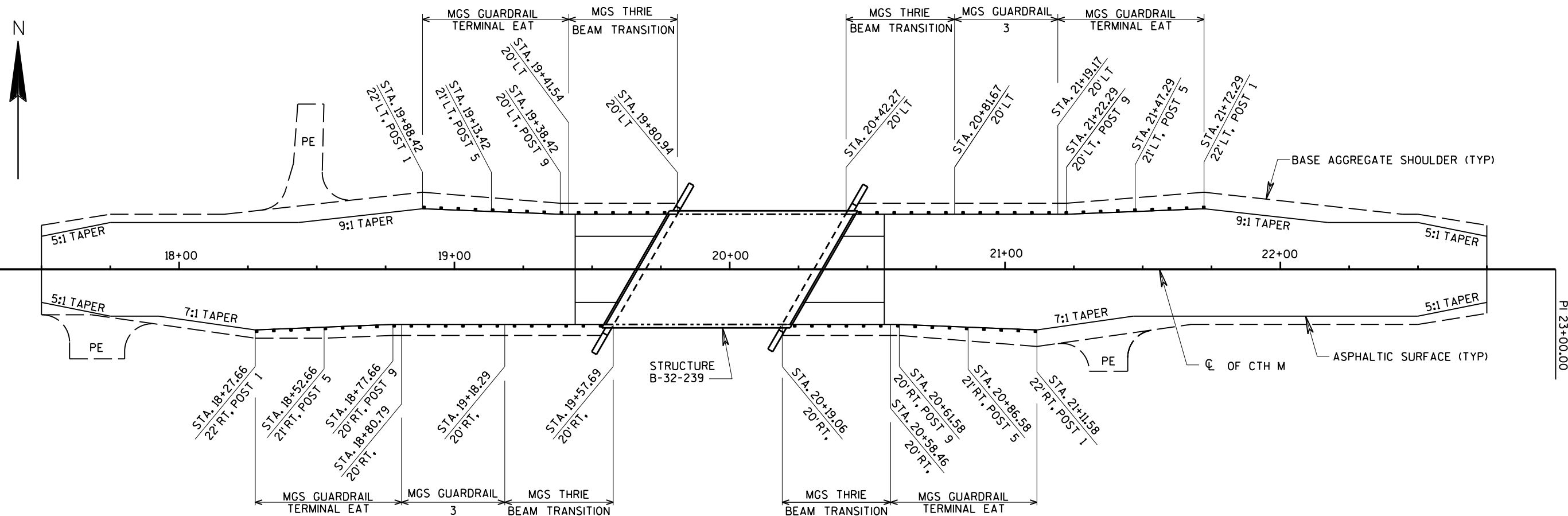
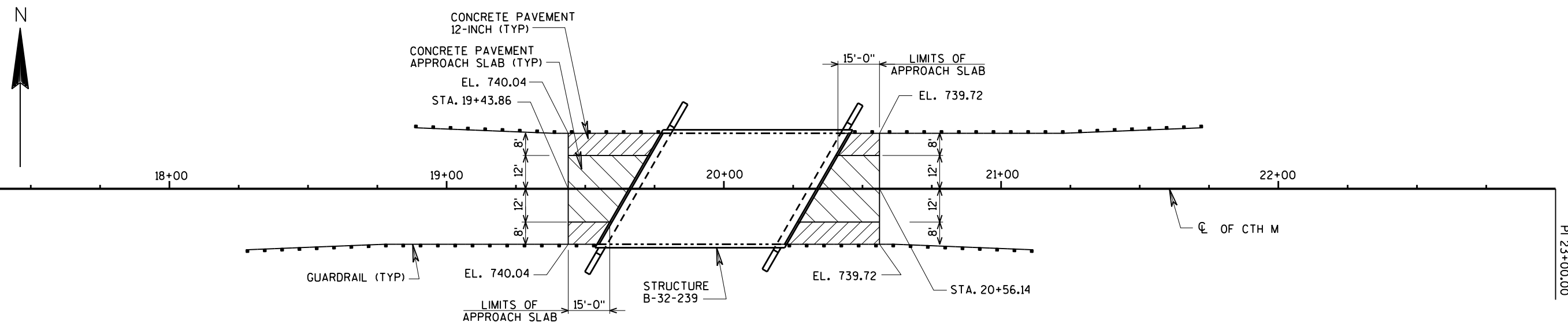
STA. 28+58.51 TO STA. 32+89.18

*PLACE EROSION MAT ON SLOPES
STEEPER THAN 3:1 INSTEAD OF MULCH.NOTE:
FLAT BOTTOM DITCH ON RIGHT SIDE**TYPICAL FINISHED HALF SECTION WITH GUARDRAIL**

SEE CONSTRUCTION DETAILS SHEET FOR APPROACH SLAB DETAIL

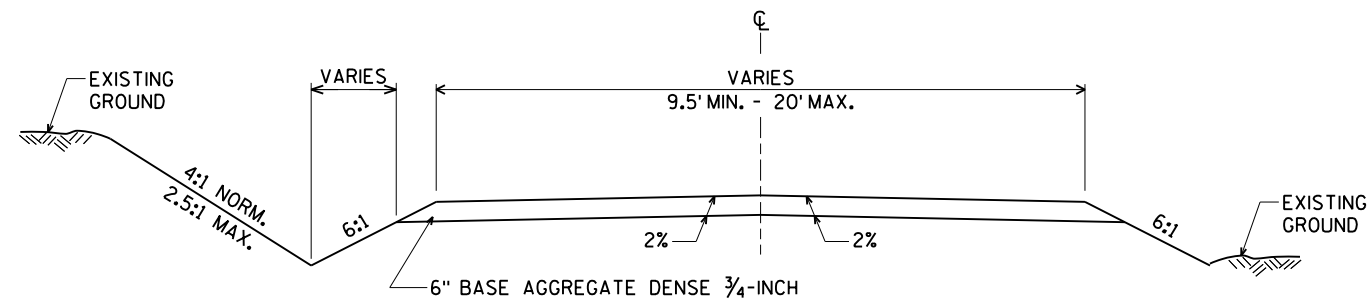
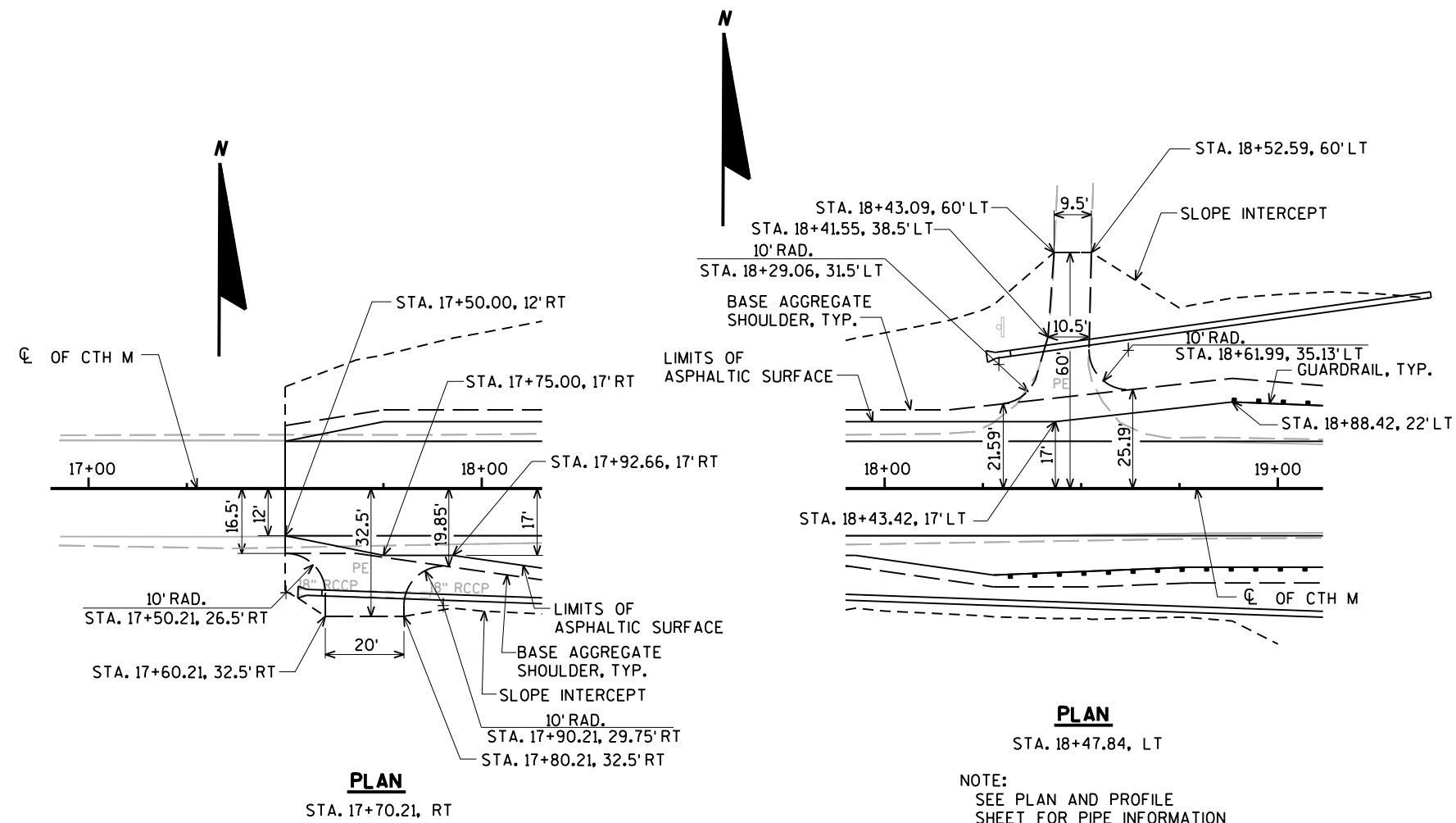


CONTROL POINT TIES

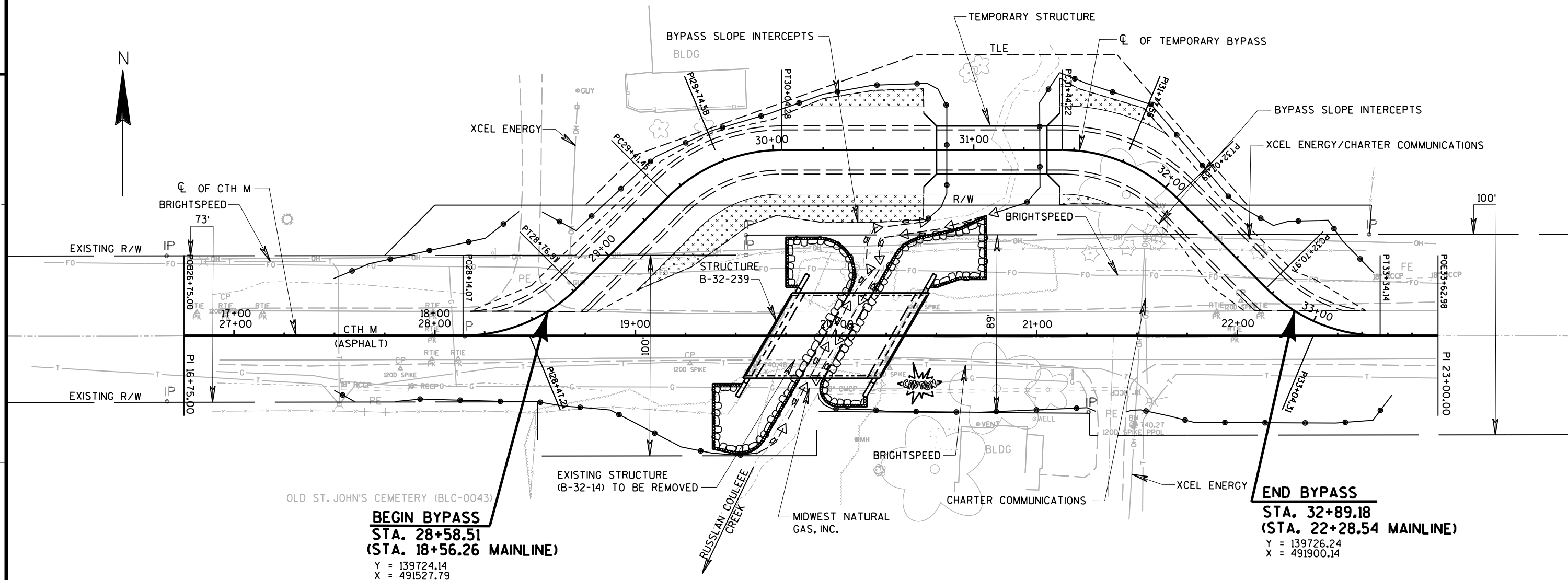
**GUARDRAIL LAYOUT****APPROACH SLAB DETAIL**

NOTE:
ELEVATIONS WILL BE FIELD VERIFIED BY ENGINEER.

PLACE 7" OF BASE AGGREGATE DENSE 1 1/4-INCH UNDER THE
CONCRETE PAVEMENT 12-INCH AND CONCRETE PAVEMENT
APPROACH SLAB.



PRIVATE ENTRANCE DETAILS



NOTES:
NO DISTURBANCE OR TOPSOIL STOCKPILING IS ALLOWED OUTSIDE OF THE SLOPE INTERCEPTS. WETLANDS EXIST IN THE PROJECT AREA.

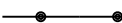
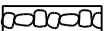
MULCH TO BE PLACED ON SIDES SLOPES NOT PROTECTED BY EROSION MAT.

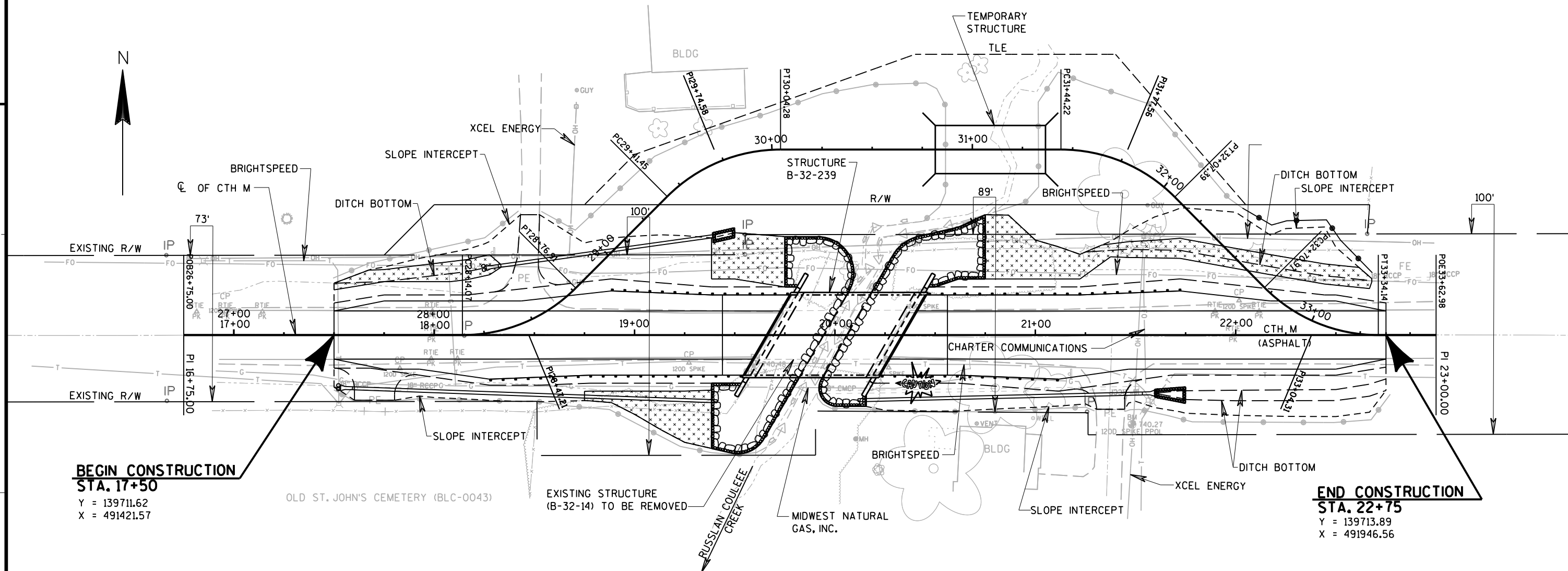
GEOTEXTILE TYPE SAS TO BE PLACED UNDER THE FILL FOR TEMPORARY BYPASS.

NO GRUBBING TO BE DONE ALONG THE TEMPORARY BYPASS

HIGH WATER ₂ EL. 725.07

LEGEND

-  SILT FENCE
-  TURBIDITY BARRIER
-  RIPRAP HEAVY
-  EROSION MAT CLASS II TYPE C



BEGIN CONSTRUCTION
STA. 17+50

Y = 139711.62
X = 491421.57

END CONSTRUCTION
STA. 22+75

Y = 139713.89
X = 491946.56

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

TOTAL PROJECT AREA = 1.71 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 1.42 ACRES

NOTES:
NO DISTURBANCE OR TOPSOIL STOCKPILING
IS ALLOWED OUTSIDE OF THE SLOPE
INTERCEPTS. WETLANDS EXIST IN THE
PROJECT AREA.
MULCH TO BE PLACED ON SIDE SLOPES
NOT PROTECTED BY EROSION MAT.

LEGEND

- EROSION MAT CLASS II TYPE C
- SILT FENCE
- TURBIDITY BARRIER
- RIPRAP HEAVY
- RIPRAP MEDIUM
- CULVERT PIPE CHECKS

HIGH WATER 2 EL. 725.07

Estimate Of Quantities

5436-00-75

Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	5.000	5.000
0004	201.0205	Grubbing	STA	5.000	5.000
0006	203.0100	Removing Small Pipe Culverts	EACH	2.000	2.000
0008	203.0260	Removing Structure Over Waterway Minimal Debris (structure) 01. B-32-0014	EACH	1.000	1.000
0010	204.0170	Removing Fence	LF	550.000	550.000
0012	204.0270	Abandoning Culvert Pipes	EACH	1.000	1.000
0014	205.0100	Excavation Common	CY	3,995.000	3,995.000
0016	206.1001	Excavation for Structures Bridges (structure) 01. B-32-0239	EACH	1.000	1.000
0018	208.0100	Borrow	CY	2,560.000	2,560.000
0020	210.1500	Backfill Structure Type A	TON	740.000	740.000
0022	213.0100	Finishing Roadway (project) 01. 5436-00-75	EACH	1.000	1.000
0024	305.0110	Base Aggregate Dense 3/4-Inch	TON	915.000	915.000
0026	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,695.000	1,695.000
0028	415.0120	Concrete Pavement 12-Inch	SY	80.000	80.000
0030	415.0410	Concrete Pavement Approach Slab	SY	120.000	120.000
0032	455.0605	Tack Coat	GAL	110.000	110.000
0034	465.0105	Asphaltic Surface	TON	535.000	535.000
0036	502.0100	Concrete Masonry Bridges	CY	232.000	232.000
0038	502.3200	Protective Surface Treatment	SY	388.000	388.000
0040	505.0400	Bar Steel Reinforcement HS Structures	LB	5,890.000	5,890.000
0042	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	21,190.000	21,190.000
0044	506.2605	Bearing Pads Elastomeric Non-Laminated	EACH	10.000	10.000
0046	506.4000	Steel Diaphragms (structure) 01. B-32-0239	EACH	4.000	4.000
0048	513.4061	Railing Tubular Type M	LF	140.000	140.000
0050	516.0500	Rubberized Membrane Waterproofing	SY	24.000	24.000
0052	522.0118	Culvert Pipe Reinforced Concrete Class III 18-Inch	LF	432.000	432.000
0054	522.1018	Apron Endwalls for Culvert Pipe Reinforced Concrete 18-Inch	EACH	3.000	3.000
0056	526.0101	Temporary Structure (station) 01. 31+10	EACH	1.000	1.000
0058	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	1,120.000	1,120.000
0060	606.0200	Riprap Medium	CY	15.000	15.000
0062	606.0300	Riprap Heavy	CY	560.000	560.000
0064	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	200.000	200.000
0066	614.2300	MGS Guardrail 3	LF	75.000	75.000
0068	614.2500	MGS Thrie Beam Transition	LF	160.000	160.000
0070	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0072	618.0100	Maintenance and Repair of Haul Roads (project) 01. 5436-00-75	EACH	1.000	1.000
0074	619.1000	Mobilization	EACH	1.000	1.000
0076	624.0100	Water	MGAL	81.000	81.000
0078	625.0100	Topsoil	SY	2,355.000	2,355.000
0080	627.0200	Mulching	SY	3,515.000	3,515.000
0082	628.1504	Silt Fence	LF	1,475.000	1,475.000
0084	628.1520	Silt Fence Maintenance	LF	2,950.000	2,950.000
0086	628.1905	Mobilizations Erosion Control	EACH	4.000	4.000
0088	628.1910	Mobilizations Emergency Erosion Control	EACH	4.000	4.000
0090	628.2027	Erosion Mat Class II Type C	SY	1,120.000	1,120.000
0092	628.6005	Turbidity Barriers	SY	345.000	345.000
0094	628.7555	Culvert Pipe Checks	EACH	8.000	8.000
0096	629.0210	Fertilizer Type B	CWT	3.800	3.800
0098	630.0120	Seeding Mixture No. 20	LB	261.000	261.000

Estimate Of Quantities

5436-00-75

Line	Item	Item Description	Unit	Total	Qty
0100	630.0200	Seeding Temporary	LB	125.000	125.000
0102	630.0500	Seed Water	MGAL	130.000	130.000
0104	633.1100	Delineators Temporary	EACH	40.000	40.000
0106	634.0614	Posts Wood 4x6-Inch X 14-FT	EACH	4.000	4.000
0108	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0110	638.2602	Removing Signs Type II	EACH	4.000	4.000
0112	638.3000	Removing Small Sign Supports	EACH	4.000	4.000
0114	642.5001	Field Office Type B	EACH	1.000	1.000
0116	643.0300	Traffic Control Drums	DAY	3,280.000	3,280.000
0118	643.0420	Traffic Control Barricades Type III	DAY	2,400.000	2,400.000
0120	643.0705	Traffic Control Warning Lights Type A	DAY	930.000	930.000
0122	643.0715	Traffic Control Warning Lights Type C	DAY	1,420.000	1,420.000
0124	643.0900	Traffic Control Signs	DAY	4,480.000	4,480.000
0126	643.5000	Traffic Control	EACH	1.000	1.000
0128	645.0111	Geotextile Type DF Schedule A	SY	140.000	140.000
0130	645.0120	Geotextile Type HR	SY	985.000	985.000
0132	645.0140	Geotextile Type SAS	SY	2,540.000	2,540.000
0134	646.1020	Marking Line Epoxy 4-Inch	LF	1,300.000	1,300.000
0136	650.4500	Construction Staking Subgrade	LF	956.000	956.000
0138	650.5000	Construction Staking Base	LF	956.000	956.000
0140	650.6000	Construction Staking Pipe Culverts	EACH	3.000	3.000
0142	650.6501	Construction Staking Structure Layout (structure) 01. B-32-0239	EACH	1.000	1.000
0144	650.9911	Construction Staking Supplemental Control (project) 01. 5436-00-75	EACH	1.000	1.000
0146	650.9920	Construction Staking Slope Stakes	LF	956.000	956.000
0148	690.0150	Sawing Asphalt	LF	48.000	48.000
0150	715.0502	Incentive Strength Concrete Structures	DOL	1,392.000	1,392.000
0152	715.0720	Incentive Compressive Strength Concrete Pavement	DOL	500.000	500.000
0154	999.2005.S	Maintaining Bird Deterrent System (station) 01. 20+00	EACH	1.000	1.000
0156	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	300.000	300.000
0158	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	300.000	300.000
0160	SPV.0090	Special 01. Removing Existing Timber Piling	LF	175.000	175.000

CLEARING & GRUBBING

STATION	TO	STATION	LOCATION	201.0105	201.0205
				CLEARING STA	GRUBBING STA
18+00	-	23+00	CTH M	5	5
TOTAL 0010				5	5

NOTE: TREES TO BE CUT DOWN BY OTHERS PRIOR TO CONSTRUCTION AND LEFT IN PLACE.

REMOVING SMALL PIPE CULVERTS

STATION	TO	STATION	LOCATION	SIZE/MATERIAL	203.0100	204.0270
					REMOVING SMALL PIPE CULVERTS EACH	ABANDONING CULVERT PIPES EACH
17+53	-	17+87	RT	18" RCCP	1	-
19+95	-	21+52	RT	18" RCCP	1	1
TOTAL 0010					2	1

NOTE: RCCP FROM STA. 19+95 TO STA. 21+52, TO BE REMOVED WHERE FEASIBLE, REMAINING CULVERT SHALL BE ABANDONED IN PLACE.

REMOVING FENCE

STATION	TO	STATION	LOCATION	204.0170
				REMOVING FENCE LF
18+90	-	19+58	RT	80
18+69	-	22+55	LT	390
19+60	-	19+71	RT	50
19+86	-	19+98	LT	30
TOTAL 0010				550

FINISHING ROADWAY

LOCATION	213.0100.01
	FINISHING ROADWAY (PROJECT) (01. 5436-00-75) EACH
PROJECT LIMITS	1
TOTAL 0010	1

CTH M EARTHWORK SUMMARY

From/To Station	Location	Excavation Common (1)	Salvaged / Unuseable Pavement Material (5)	Unexpanded Fill	Expanded Fill (2)	Mass Ordinate +/- (3)	Waste	Borrow
		205.0100 Cut			Factor 1.30			
17+50 - 22+75	CTH M	1,299	407	928	1,207	-315	0	315
28+58.51 - 32+89.18	TEMP. BYPASS	70	-	1,781	2,315	-2,245	0	2,245
28+58.51 - 32+89.18	TEMP. BYPASS REMOVAL	2,626	-	70	90	2,536	2536	0
TOTAL		3,995		2779	3,612			2,560

- 1) Excavation Common is the Cut. Item number 205.0100.
- 2) Expanded Fill. Factor = 1.30; Expanded Fill = Unexpanded Fill * Fill Factor
- 3) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material on the project.
- 4) All quantities shown in CY.
- 5) Existing existing salvaged/unuseable asphalt pavement.

BASE AGGREGATE DENSE

STATION	TO	STATION	LOCATION	305.0110	305.0120
				BASE AGGREGATE DENSE 3/4-INCH TON	BASE AGGREGATE DENSE 1 1/4-INCH TON
28+58.51	-	32+89.18	BYPASS	710	--
17+50	-	19+66.56	CTH M	70	745
20+33.44	-	22+75	CTH M	90	950
		17+70.	PE RT	15	--
		18+48.	PE IT	20	--
		21+38.	PE RT	10	--
TOTAL 0010				915	1,695

ASPHALTIC SURFACE

STATION	TO	STATION	LOCATION	455.0605	465.0105
				TACK COAT GAL	ASPHALTIC SURFACE TON
17+50	-	19+43.86	CTH M	47	230
20+56.14	-	22+75	CTH M	63	305
TOTAL 0010				110	535

CULVERT PIPE REINFORCED CONCRETE

STATION	TO	STATION	LOCATION	522.0118	522.1018	650.6000
				CULVERT PIPE REINFORCED CONCRETE CLASS III 18-INCH LF	APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 18-INCH EACH	CONSTRUCTION STAKING PIPE CULVERTS EACH
17+53	-	19+41	PERT	182	1	1
18+26	-	19+39	PE LT	108	1	1
20+12	-	21+60	PERT	142	1	1
TOTAL 0010				432	3	3

NOTE: JOINT TIES ARE REQUIRED FOR ALL SECTIONS OF PIPE AND THE ENDWALL.

ALL ITEMS ON THIS SHEET ARE CATEGORY 0010 UNLESS OTHERWISE NOTED

TEMPORARY STRUCTURE		
	526.0101.01 TEMPORARY STRUCTURE (STATION) (01. STA 31+10)	
STATION	LOCATION	EACH
31+10	BYPASS	1
TOTAL 0010		1

MGS GUARDRAIL				614.2300 MGS GUARDRAIL 3 LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH
STATION	TO	STATION	LOCATION			
18+27.66	-	19+57.69	RT	37.5	40	1
19+88.42	-	19+80.94	LT	--	40	1
20+19.06	-	21+11.58	RT	--	40	1
20+42.27	-	21+72.29	LT	37.5	40	1
TOTAL 0010				75	160	4

MOBILIZATIONS EROSION CONTROL		
	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH
LOCATION		
PROJECT LIMITS	4	4
TOTAL 0010	4	4

MAINTENANCE AND REPAIR OF HAUL ROADS		
	618.0100.01 MAINTENANCE AND REPAIR OF HAUL ROADS (PROJECT) (01. 5436-00-75)	
CATEGORY	LOCATION	EACH
0030	PROJECT LIMITS	1
TOTAL 0030		1

MOBILIZATION	
	619.1000 MOBILIZATION EACH
PROJECT	
5436-00-75	1
TOTAL 0010	1

WATER	
	624.0100 WATER MGAL
LOCATION	
COMPACTION DUST CONTROL	39 42
TOTAL 0010	81

DELINEATORS TEMPORARY				
				633.1100 DELINEATORS TEMPORARY EACH
STATION	TO	STATION	LOCATION	
28+58	-	32+89	BYPASS UNDISTRIBUTED	34 6
TOTAL 0010				40

EROSION CONTROL ITEMS									
		628.1504	628.1520	628.2027	628.6005	628.7555 CULVERT	645.0140		
		SILT FENCE	SILT FENCE	EROSION MAT	TURBIDITY	PIPE	GEOTEXTILE		
		LF	MAINTENANCE LF	CLASS II TYPE C SY	BARRIERS SY	CHECKS EACH	TYPE SAS SY		
STATION	TO	STATION	LOCATION						
27+50	-	30+87	LT/RT	605	1,210	260	--	--	1,415
31+33	-	33+40	LT/RT	575	1,150	55	--	--	615
17+50	-	19+55	LT/RT	--	--	285	--	--	--
20+00	-	22+75	LT/RT	--	--	295	--	--	--
30+04	-	31+11	LT/RT	--	--	--	275	--	--
		17+53	PERT	--	--	--	--	2	--
		18+26	PE LT	--	--	--	--	2	--
		21+60	PERT	--	--	--	--	2	--
		UNDISTRIBUTED		295	590	225	70	2	510
TOTAL 0010				1,475	2,950	1,120	345	8	2,540

RESTORATION ITEMS									
		625.0100	627.0200	629.0210	630.0120 SEEDING	630.0200	630.0500		
		TOPSOIL	MULCHING	FERTILIZER	MIXTURE	SEEDING	SEED WATER		
		SY	SY	TYPE B CWT	NO. 20 LB	TEMPORARY LB	MGAL		
STATION	TO	STATION	LOCATION						
28+57	-	32+90	BYPASS	600	1,005	1.0	72	36	36
17+50	-	19+66	CTH M	535	770	0.9	61	28	30
20+33	-	22+75	CTH M	750	1,035	1.1	76	36	38
		UNDISTRIBUTED		470	705	0.8	52	25	26
TOTAL 0010				2,355	3,515	3.8	261	125	130

SIGNING TYPE II								
		634.0614 POSTS WOOD 4X6- INCH X 14-FT EACH	637.2230 SIGNS TYPE II REFLECTIVE F SF	638.2602 REMOVING SIGNS TYPE II EACH	638.3000 REMOVING SMALL SIGN SUPPORTS EACH			
STATION	LOCATION	SIGN CODE	SIGN SIZE (INCHES)					
19+53	RT	W5-52R	12x36	1	3	-	-	
19+58	RT	W5-52R	12x36	-	-	1	1	
19+73	LT	W5-52L	12x36	-	-	1	1	
19+77	LT	W5-52L	12x36	1	3	-	-	
20+23	RT	W5-52L	12x36	1	3	-	-	
20+25	RT	W5-52L	12x36	-	-	1	1	
20+40	LT	W5-52R	12x36	-	-	1	1	
20+48	LT	W5-52R	12x36	1	3	-	-	
TOTAL 0010				4	12	4	4	

FIELD OFFICE TYPE B	
	642.5001 FIELD OFFICE TYPE B EACH
LOCATION	
PROJECT LIMITS	1
TOTAL 0010	1

ALL ITEMS ON THIS SHEET
ARE CATEGORY 0010
UNLESS OTHERWISE NOTED

TRAFFIC CONTROL

LOCATION	DURATION DAYS	643.0300	643.0420	643.0705	643.0715	643.0900	643.5000
		TRAFFIC CONTROL DRUMS	TRAFFIC CONTROL BARRICADES TYPE III	TRAFFIC CONTROL WARNING LIGHTS TYPE A	TRAFFIC CONTROL WARNING LIGHTS TYPE C	TRAFFIC CONTROL SIGNS	TRAFFIC CONTROL
		DAY	DAY	DAY	DAY	DAY	EACH
PER SDD 15D31	110	3,080	2,200	880	1,320	3,520	--
PER SDD 15D45	110	--	--	--	--	660	--
CTH M		--	--	--	--	--	1
UNDISTRIBUTED		200	200	50	100	300	--
TOTAL 0010		3,280	2,400	930	1,420	4,480	1

RIPRAP MEDIUM & GEOTEXTILE TYPE HR

STATION	LOCATION	606.0200	645.0120
		RIPRAP MEDIUM CY	GEOTEXTILE TYPE HR SY
21+60	RT	5	18
19+39	LT	5	12
	UNDISTRIBUTED	5	10
TOTAL 0010		15	40

CONSTRUCTION STAKING

STATION	TO	STATION	LOCATION	650.4500	650.5000	650.9920
				CONSTRUCTION STAKING SUBGRADE LF	CONSTRUCTION STAKING BASE LF	CONSTRUCTION STAKING SLOPE STAKES LF
28+58	-	32+89	BYPASS	431	431	431
17+50	-	22+75	MAINLINE	525	525	525
TOTAL 0010				956	956	956

MARKIING LINE EPOXY 4-INCH

STATION	TO	STATION	LOCATION	COLOR/DESCRIPTION	646.1020
					MARKING LINE EPOXY 4-INCH LF
17+50	-	22+75	CTH M	WHITE/EDGE LINE	1,050
17+50	-	22+75	CTH M	DASHED YELLOW/CENTERLINE	250
TOTAL 0010					1,300

CONSTRUCTION STAKING STRUCTURE LAYOUT

CATEGORY	STATION	LOCATION	650.6501.01
			CONSTRUCTION STAKING STRUCTURE LAYOUT (STRUCTURE) (01. B-32-239) EACH
0020	20+00	CTH M	1
TOTAL 0020			1

CONSTRUCTION STAKING SUPPLEMENTAL CONTROL

LOCATION	650.9911.01
	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) (01. 5436-00-75) EACH
PROJECT LIMITS	1
TOTAL 0010	1

SAWING ASPHALT

STATION	LOCATION	690.0150
		SAWING ASPHALT LF
17+50	CTH M	24
22+75	CTH M	24
TOTAL 0010		48

MAINTAINING BIRD DETERRENT SYSTEM

STATION	LOCATION	999.2005.S.01
		MAINTAINING BIRD DETERRENT SYSTEM (STATION) (01. STA 20+00) EACH
20+00	CTH M	1
TOTAL 0010		1

ALL ITEMS ON THIS SHEET
ARE CATEGORY 0010
UNLESS OTHERWISE NOTED

FILE NAME : I:\74\EC\421169.00 CTH M_RUSSLAN COULEE CREEK\CADD\C3D\RW\54360005_0401.DWG	PLOT DATE : 5/2/2024 7:39 AM	PLOT BY : D'JOCK, DOUGLAS	PLOT NAME :
---	------------------------------	---------------------------	-------------

BENCH MARKS			
NO.	STA.	DESCRIPTION	ELEV.
50	19+60.4	CHISELED 'X' IN TOP OF SW WINGWALL, 14.5' RT	740.48
51	21+48.4	120'D SPIKE IN POWER POLE, 44.6' RT.	740.27

NOTES:
FOR ALIGNMENT CONTROL POINTS,
TIES, BEARINGS, AND COORDINATES,
SEE "ALIGNMENT CONTROLS" SHEET.

MILLER FARM
HISTORIC BOUNDARY

BYPASS SLOPE INTERCEPTS
BLDG

TEMPORARY STRUCTURE

CL OF TEMPORARY BYPASS

TEMPORARY BYPASS
ADVISORY SPEED
15 MPH

X CUT TREES (BY OTHERS)

XCEL ENERGY/CHARTER COMMUNICATIONS

EXISTING R/W

BRIGHTSPEED

CP #3

CTH M
(ASPHALT)

EXISTING R/W

BEGIN BYPASS
STA. 28+58.51
Y = 139724.14
X = 491527.79

EXISTING STRUCTURE
(B-32-14) TO BE REMOVED

CHARTER COMMUNICATIONS

BRIGHTSPEED

CL OF CTH M

XCEL ENERGY

BM #51

END BYPASS
STA. 32+89.18
Y = 139726.24
X = 491900.14

EARTHWORK SUMMARY - TEMP. BYPASS

EXC. COMMON 70 C.Y.
FILL 1781 C.Y.
SHR. = 30%
BORROW 2245 C.Y.

EARTHWORK SUMMARY - TEMP. BYPASS REMOVAL

EXC. COMMON 2626 C.Y.*
FILL 90 C.Y.
WASTE 2536 C.Y.

*INCLUDES 381CY OF BASE AGGREGATE
DENSE 3/4-INCH

STA. 31+09
TEMPORARY STRUCTURE
MINIMUM 55' CLEAR SPAN
MINIMUM LOW CHORD OF 729.65
24' CLEAR ROADWAY WIDTH
MINIMUM BRIDGE OPENING OF 49 SF

EXISTING ELEVATION

PROPOSED ELEVATION

PROJECT NO: 5436-00-75

HWY: CTH M

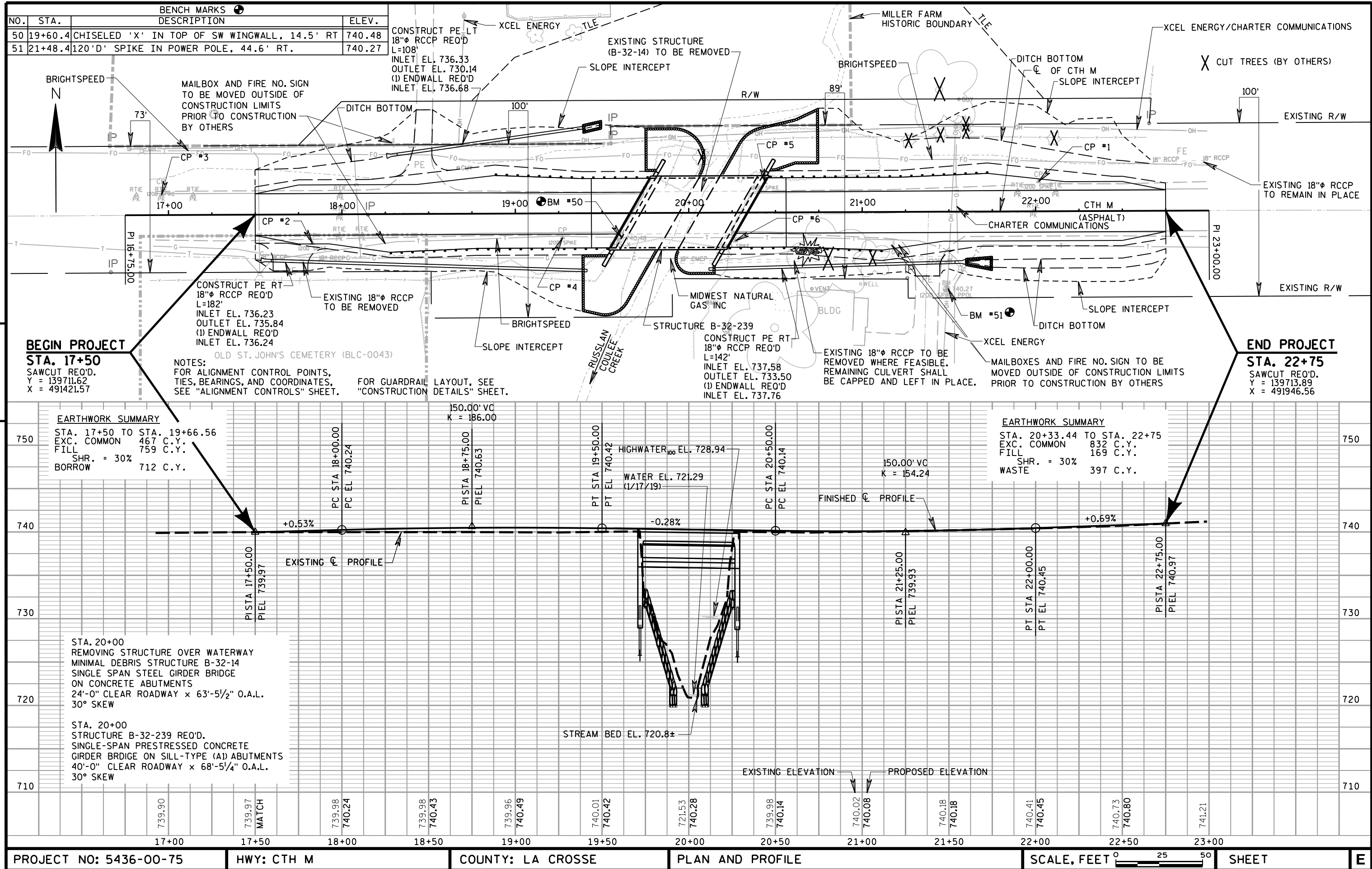
COUNTY: LA CROSSE

PLAN AND PROFILE - BYPASS

SCALE, FEET 0 25 50

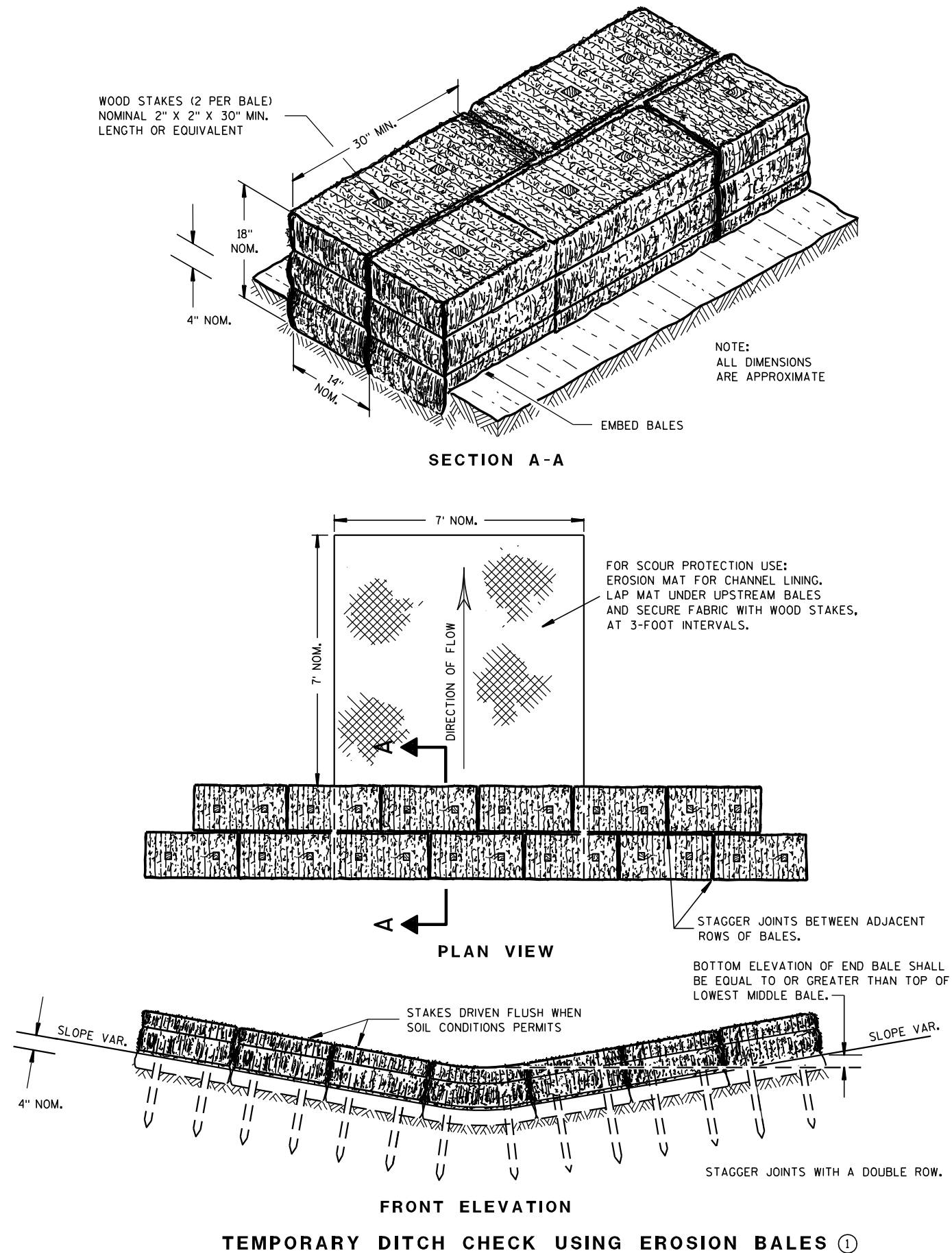
SHEET

E



Standard Detail Drawing List

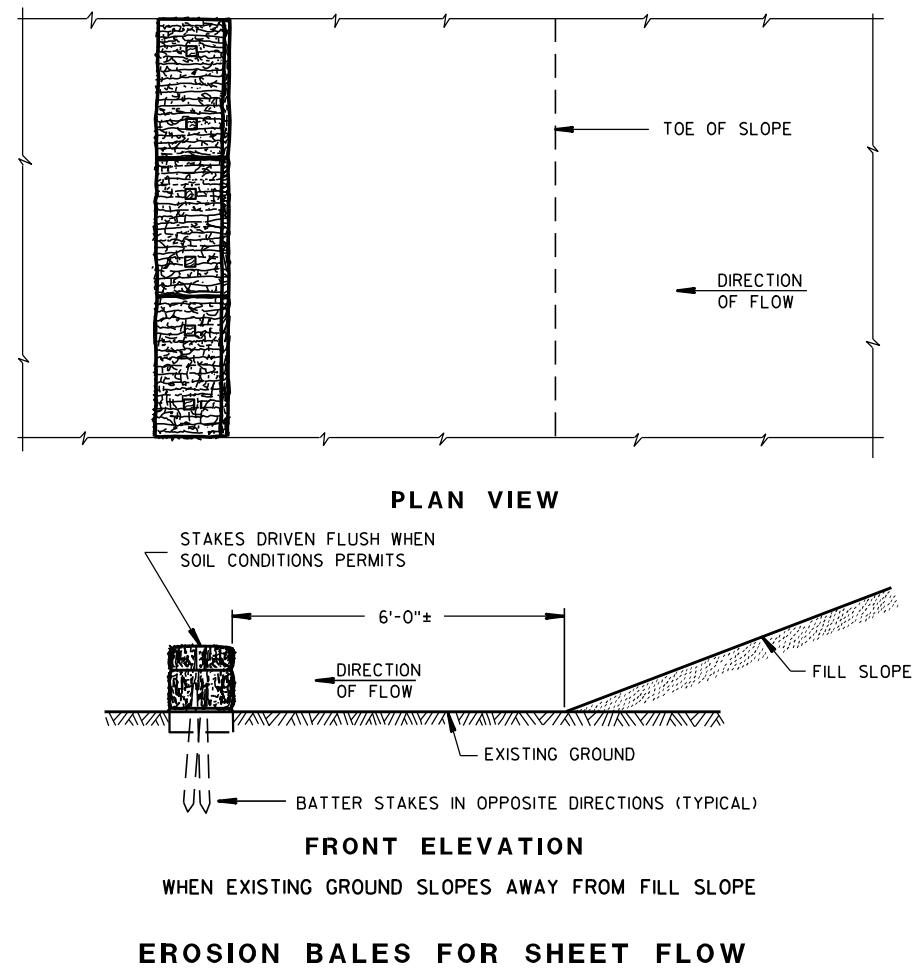
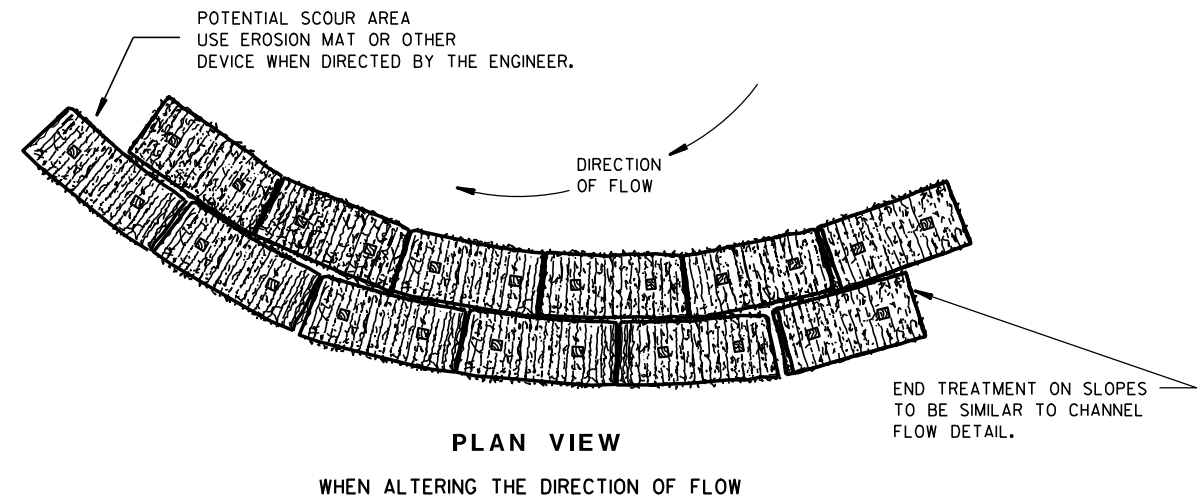
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
08E15-01	CULVERT PIPE CHECK
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F04-08	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
12A03-10	NAME PLATE (STRUCTURES)
13B02-09A	CONCRETE PAVEMENT APPROACH SLAB
13C19-03	HMA LONGITUDINAL JOINTS
14B42-07A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C06-12	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-23A	PERMANENT LONGITUDINAL PAVEMENT MARKINGS
15C11-10B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15D31-05	TRAFFIC CONTROL, TEMPORARY BYPASS ROADWAY
15D45-03	TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH LOOSE GRAVEL



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

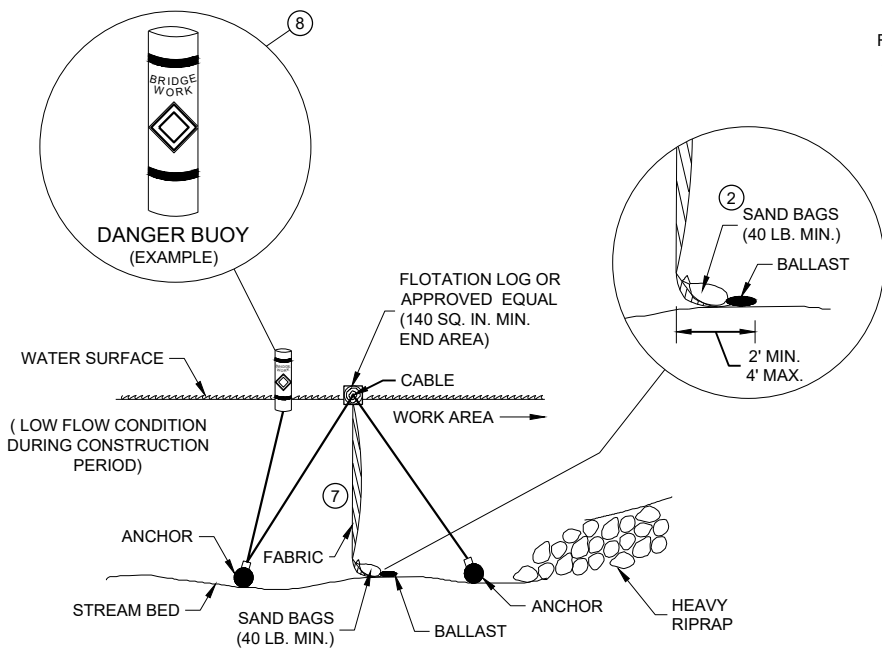
FHWA



- 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 1½" X 1½" 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.

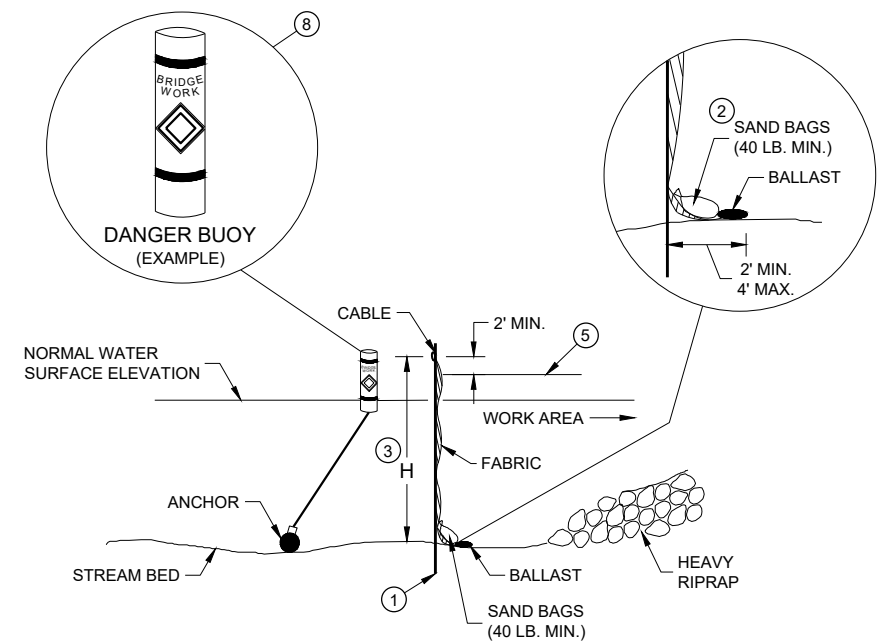


SILT FENCE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 4-29-05 DATE	/s/ Beth Cannestra CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	



SECTION B - B

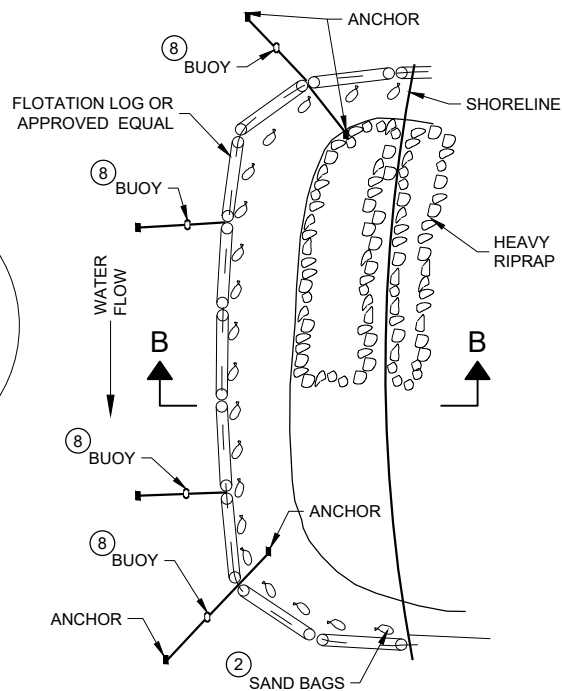
TURBIDITY BARRIER - FLOAT ALTERNATIVE
CAUTION - SEE NOTE 6



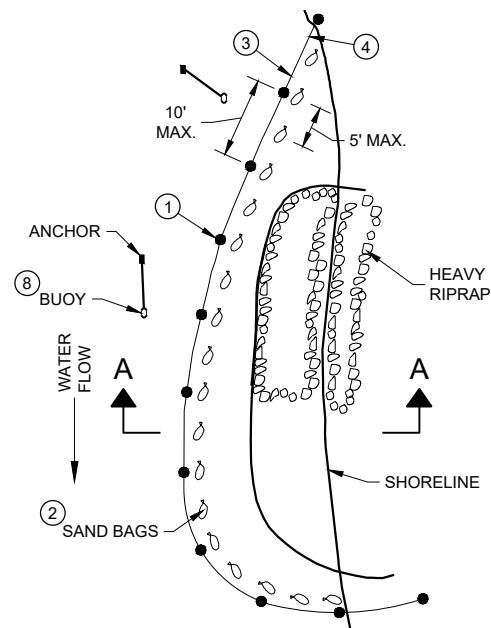
SECTION A - A

TURBIDITY BARRIER - STANDARD POST INSTALLATION

TURBIDITY BARRIER PLACEMENT DETAILS



PLAN VIEW



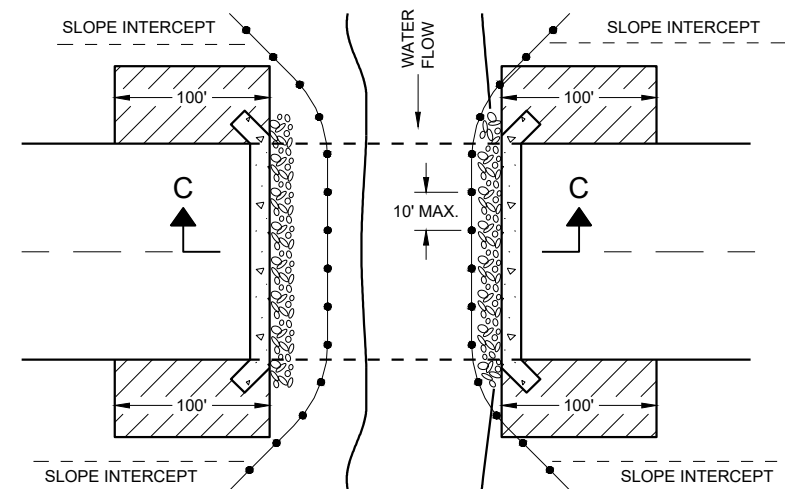
PLAN VIEW

GENERAL NOTES

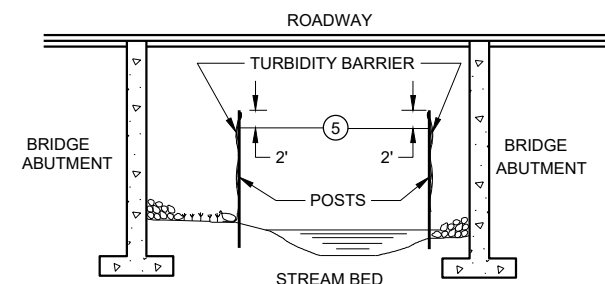
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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 SAND BAGS 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 FEET, 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 Q2 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 BEDROCK PREVENTS THE INSTALLATION OF POSTS.
- 7 ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.
- 8 USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



PLAN VIEW



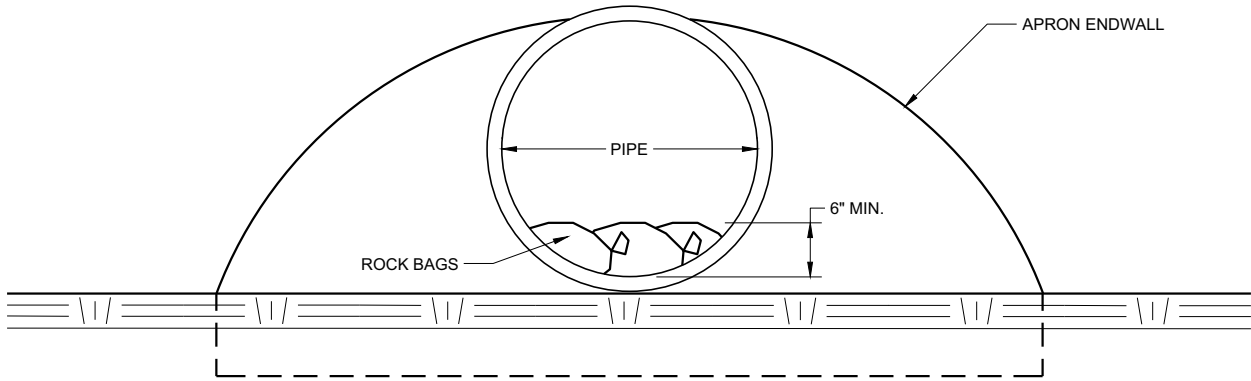
SECTION C - C

TURBIDITY BARRIER DETAIL SHOWING
TYPICAL PLACEMENT AT STRUCTURES

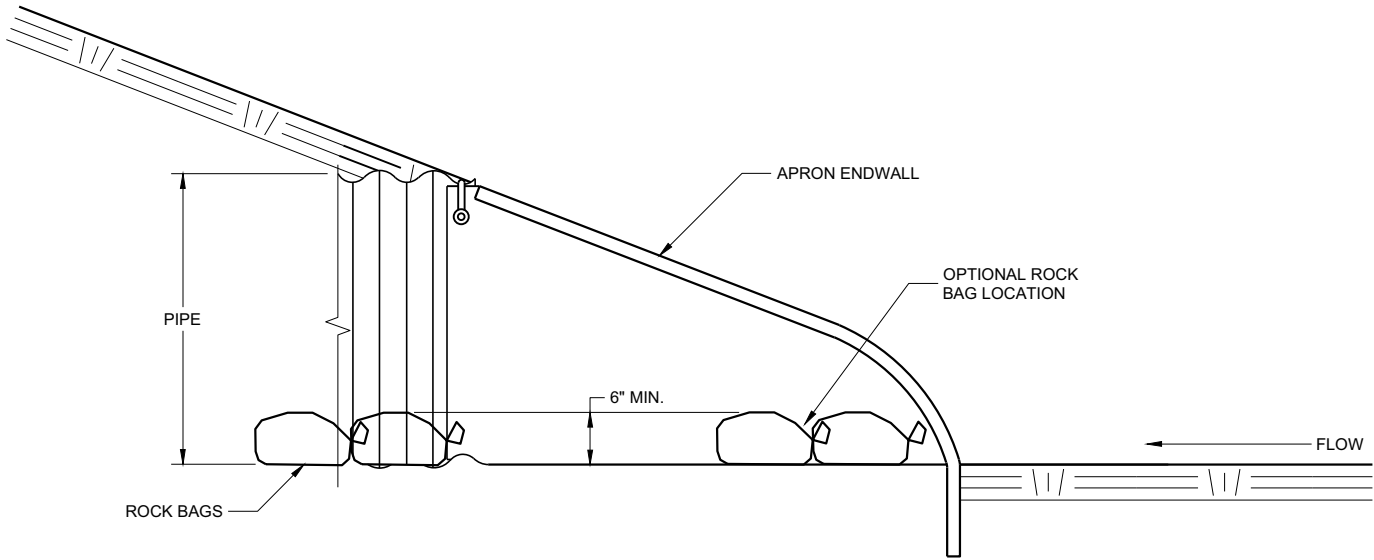
TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/4/02 DATE /S/ Beth Cannestra
DATE CHIEF ROADWAY DEVELOPMENT
ENGINEER
FHWA



END VIEW



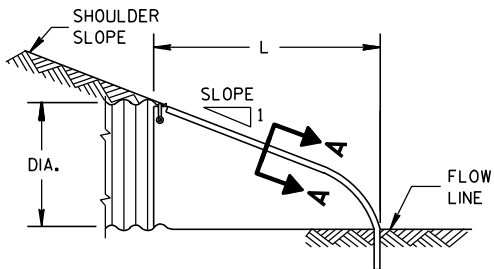
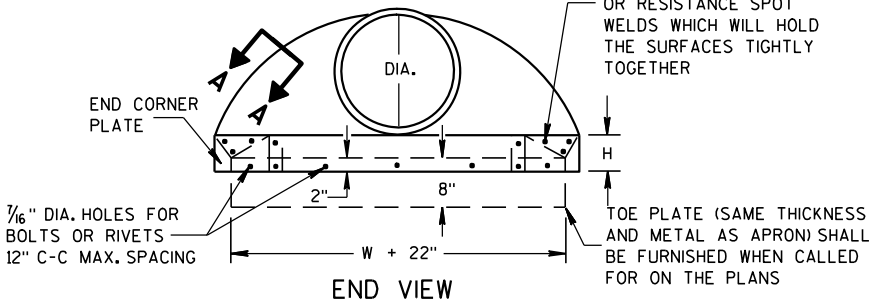
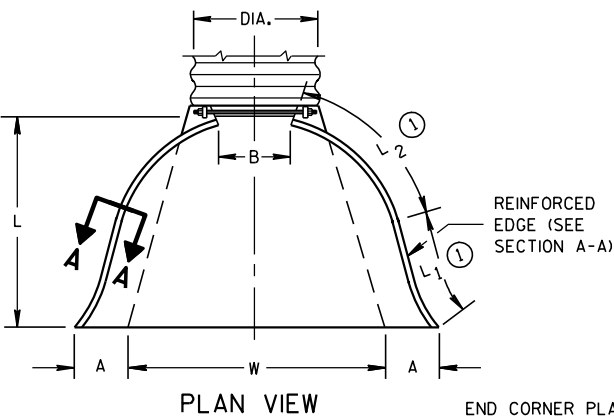
SIDE VIEW

CULVERT PIPE CHECK
(INSTALL ON INLET END ONLY)

CULVERT PIPE CHECK	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2019 DATE	/S/ Daniel Schave EROSION CONTROL ENGINEER
FHWA	

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

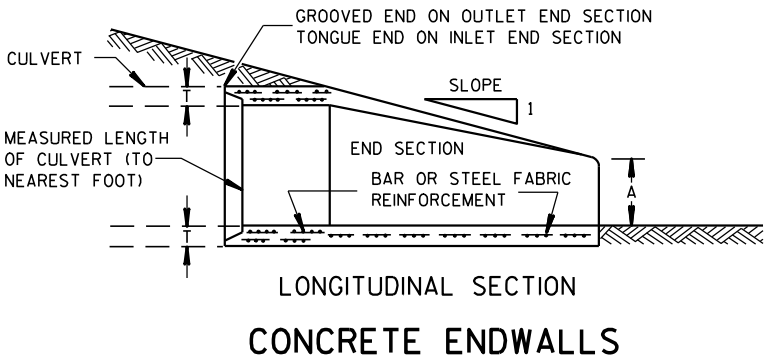
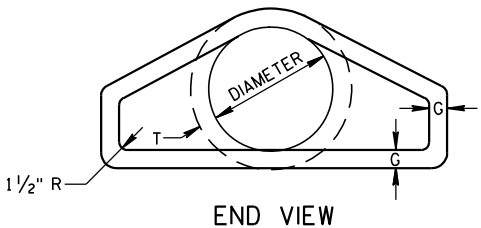
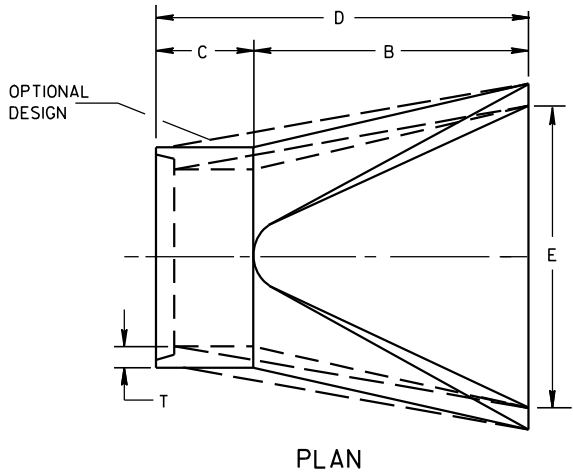
* EXCEPT CENTER PANEL
SEE GENERAL NOTES



SIDE ELEVATION
METAL ENDWALLS

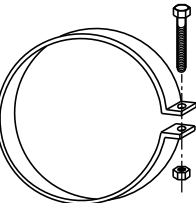
REINFORCED CONCRETE APRON ENDWALLS												
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE				
	T	A	B	C	D	E	G					
12	2	4	24	48 1/8	72 1/8	24	2	3 to 1				
15	2 1/4	6	27	46	73	30	2 1/4	3 to 1				
18	2 1/2	9	27	46	73	36	2 1/2	3 to 1				
21	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	3 to 1				
24	3	9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

* MINIMUM
** MAXIMUM

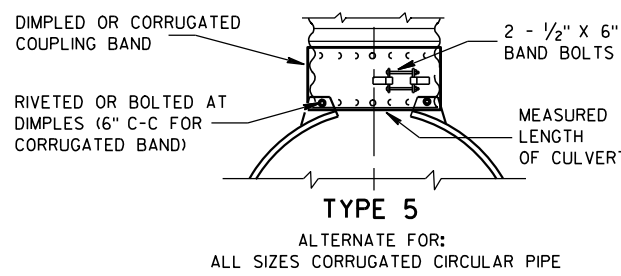
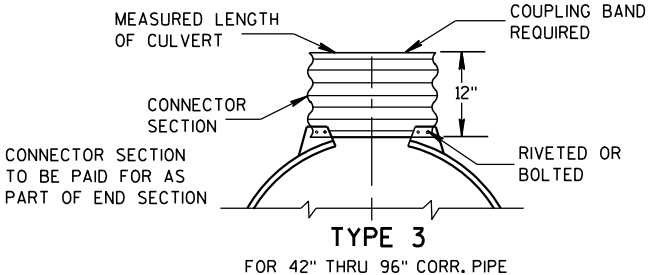
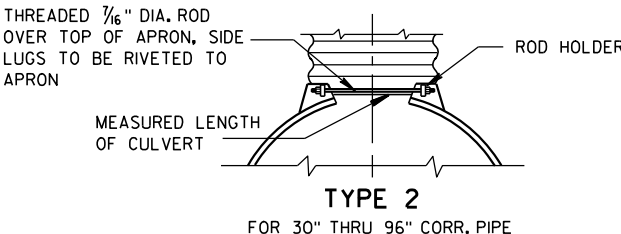
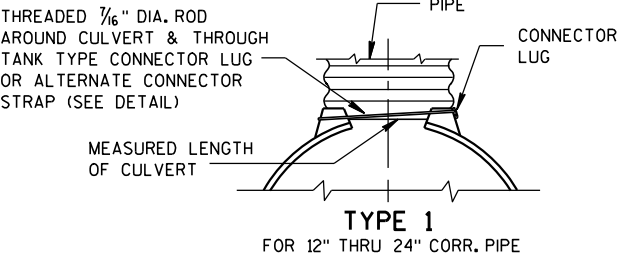


LONGITUDINAL SECTION
CONCRETE ENDWALLS

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



ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



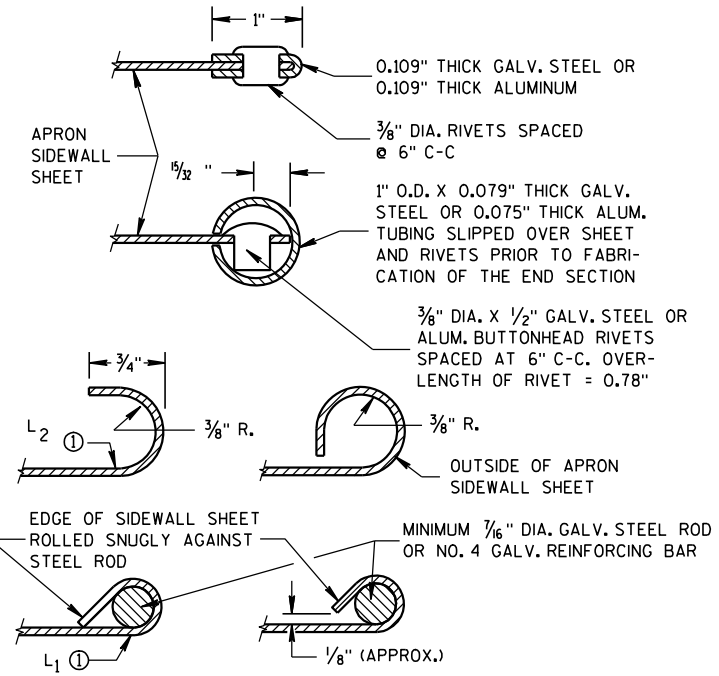
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

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

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

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

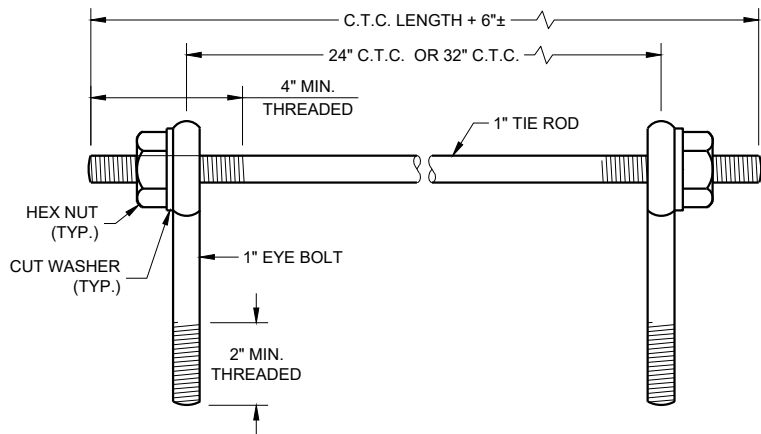
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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

APRON ENDWALLS FOR
CULVERT PIPE

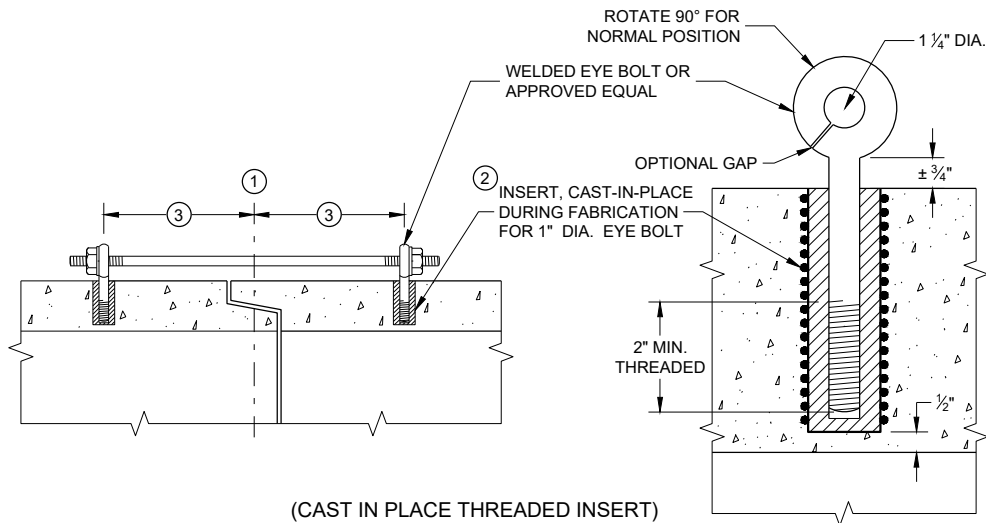
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



EYE BOLTS AND TIE ROD

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



(CAST IN PLACE THREADED INSERT)

LONGITUDINAL SECTIONS

GENERAL NOTES

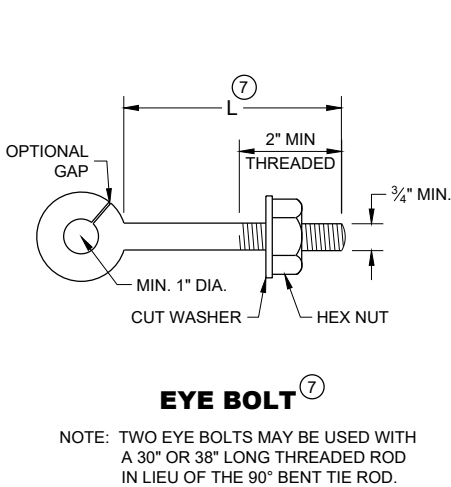
DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

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

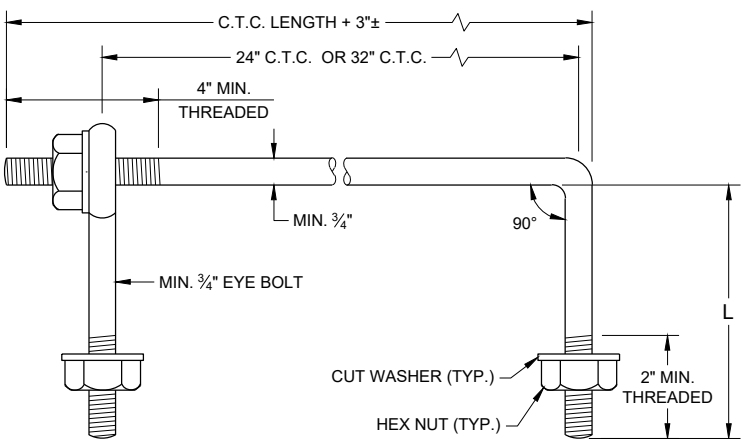
JOINT TIES TO BE HOT-DIP GALVANIZED PER ASTM A 153.

- 1 CENTER LINE OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.
- 2 THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.
- 3 HOLES SHALL BE CAST-IN-PLACE OR DRILLED PER THE APPLICABLE DETAIL, AND EQUAL DISTANCE FROM THE CENTERLINE OF THE JOINT.
- 4 BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.
- 5 OPENING TO BE ROD DIAMETER PLUS 1 INCH.
- 6 LENGTH ADEQUATE TO EXTEND TO WITHIN 1/2 INCH OF THE INNER SURFACE OF THE PIPE.
- 7 EYE BOLT LENGTH DETERMINED BY WALL THICKNESS, BELL THICKNESS AND BOLT PROJECTION INSIDE PIPE.

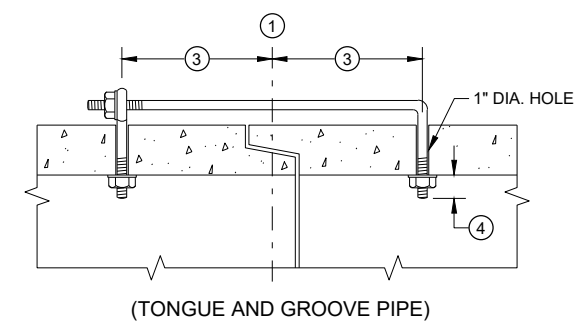


EYE BOLT 7

NOTE: TWO EYE BOLTS MAY BE USED WITH A 30" OR 38" LONG THREADED ROD IN LIEU OF THE 90° BENT TIE ROD.



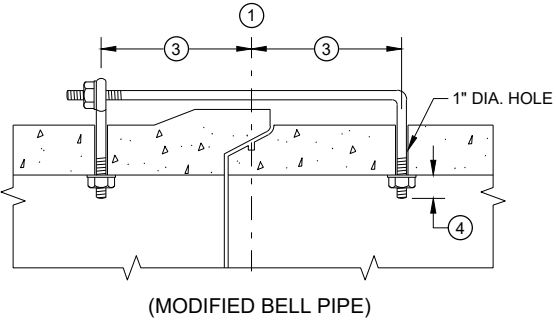
EYE BOLT AND TIE ROD



LONGITUDINAL SECTION

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

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

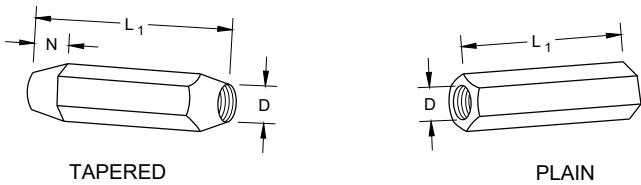


(MODIFIED BELL PIPE)

ADJUSTABLE TIE ROD TABLE

PIPE DIAMETER	TIE ROD DIAMETER	D	L ₁	N
12 - 60	5/8	5/8	5	1/2
66 - 84	3/4	3/4	5	1/2
90 - 144	1	1	7	1 1/16

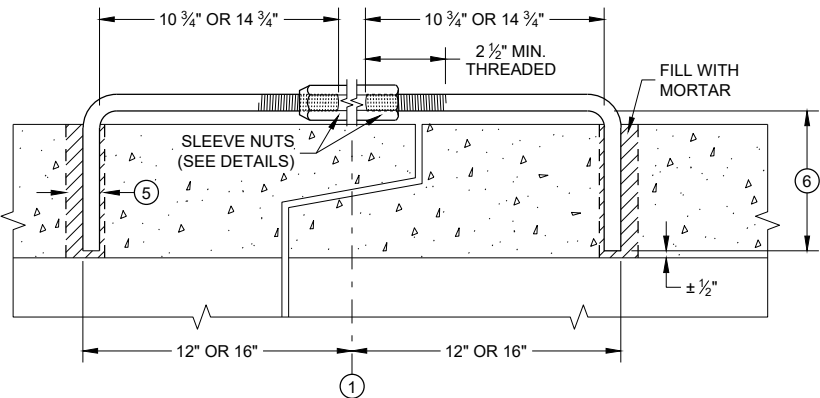
DIMENSIONS SHOWN ARE IN INCHES



TAPERED

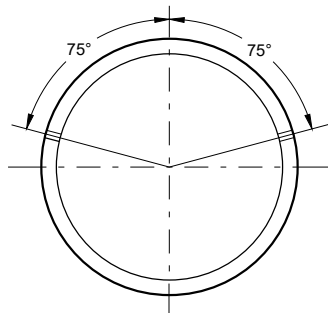
PLAIN

RIGHT AND LEFT THREADS
SLEEVE NUTS



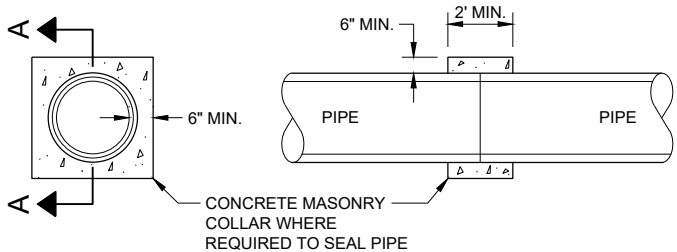
LONGITUDINAL SECTION

ADJUSTABLE TIE ROD (ALTERNATE NO. 3)



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

TRANSVERSE SECTION



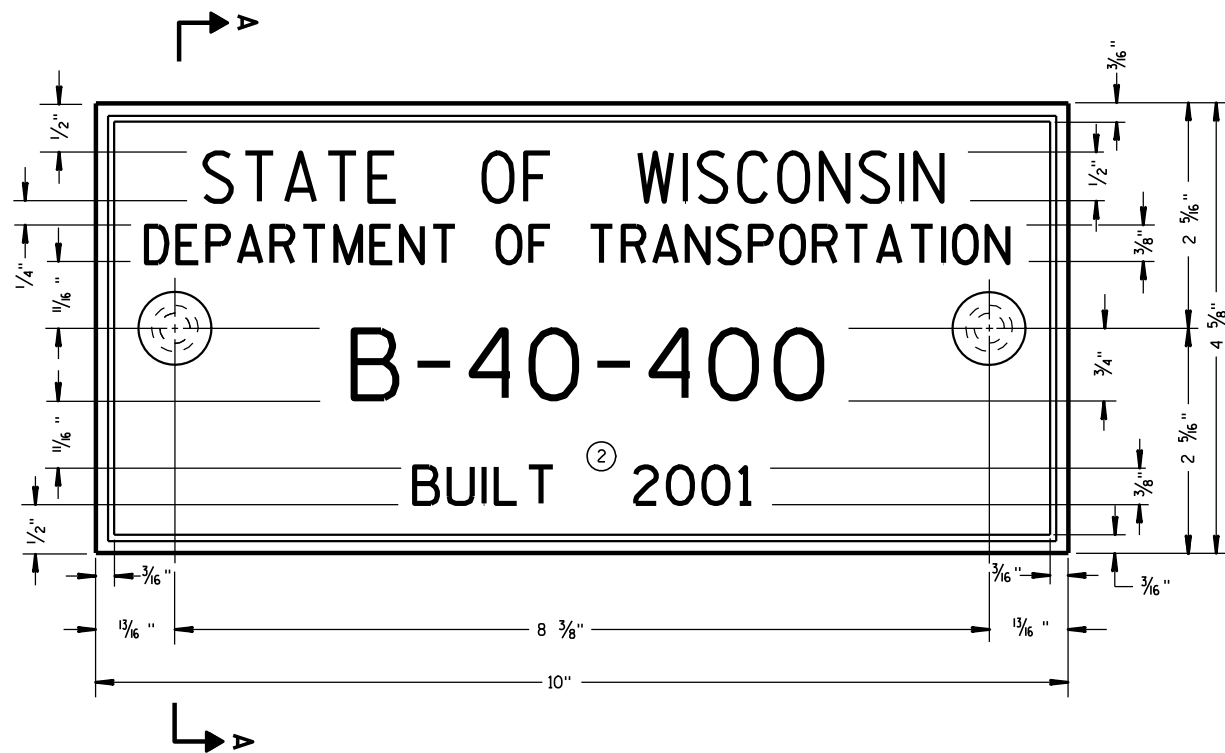
SECTION A - A

CONCRETE COLLAR DETAIL

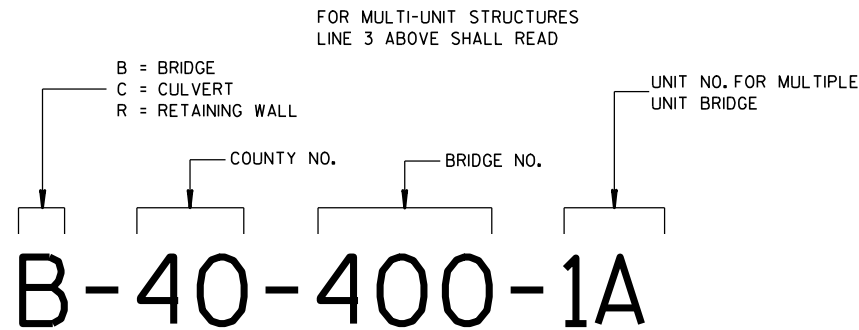
JOINT TIES FOR CONCRETE
PIPE AND CONCRETE
COLLAR DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2021 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA



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



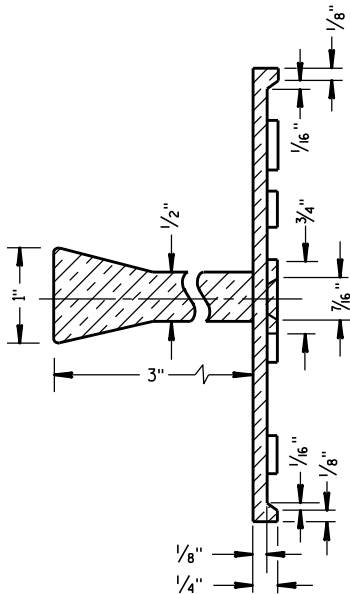
NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

GENERAL NOTES

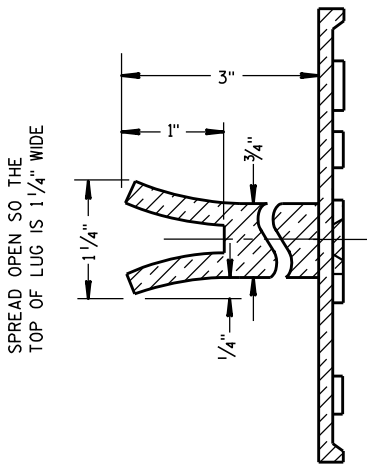
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

- ① EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ② REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.

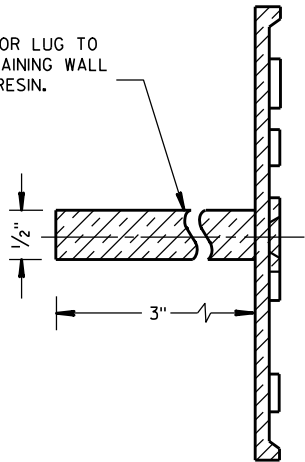


SECTION A-A



ALTERNATE LUG

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

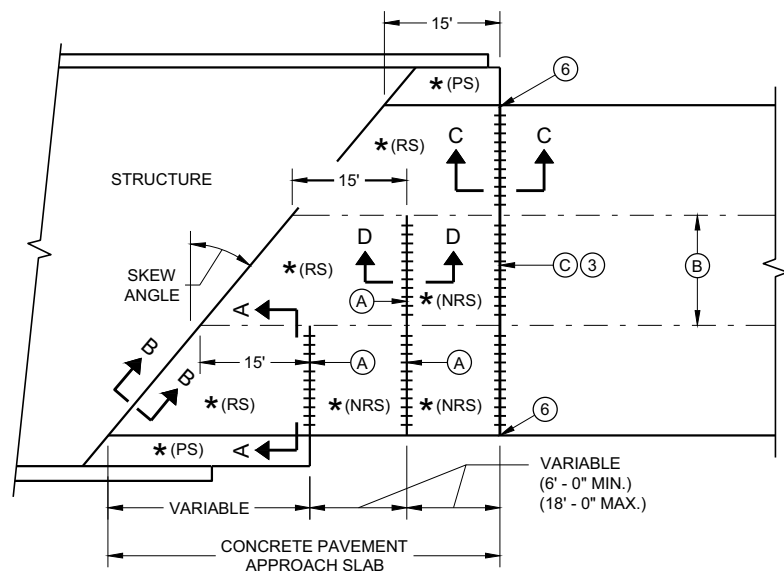


ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

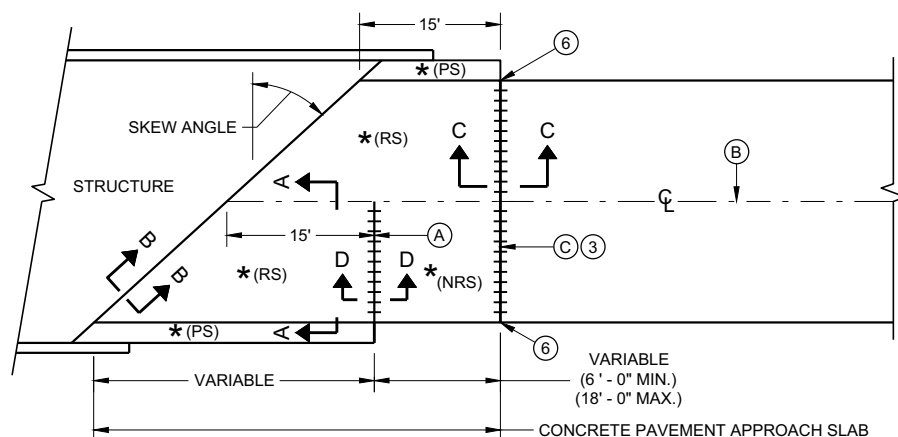
NAME PLATE
(STRUCTURES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

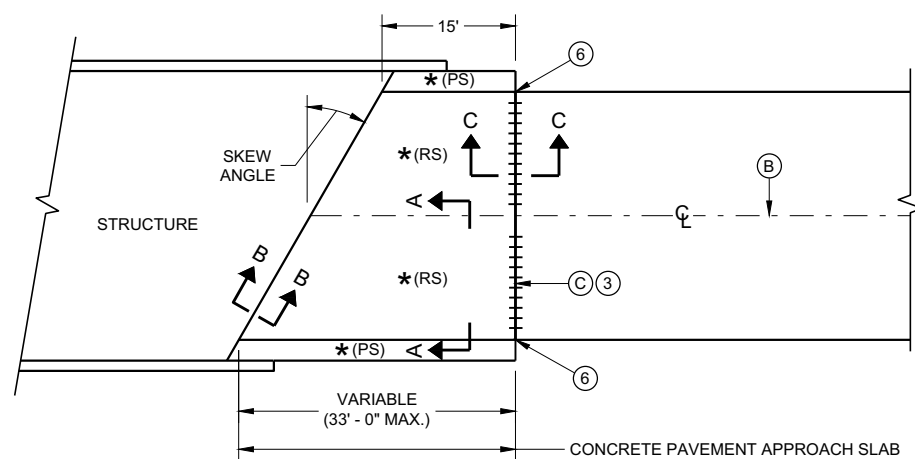
APPROVED
3/26/10
DATE
/S/ Scot Becker
CHIEF STRUCTURAL DEVELOPMENT ENGINEER
FHWA



**SKewed APPROACH
(PAVEMENT MORE THAN TWO LANES)**



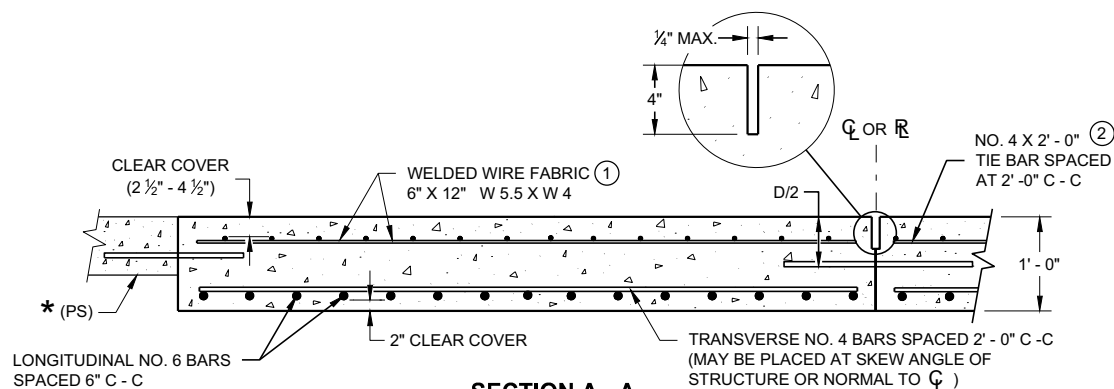
**SKews > 20°
(PAVEMENT WIDTH ≤ 30')**



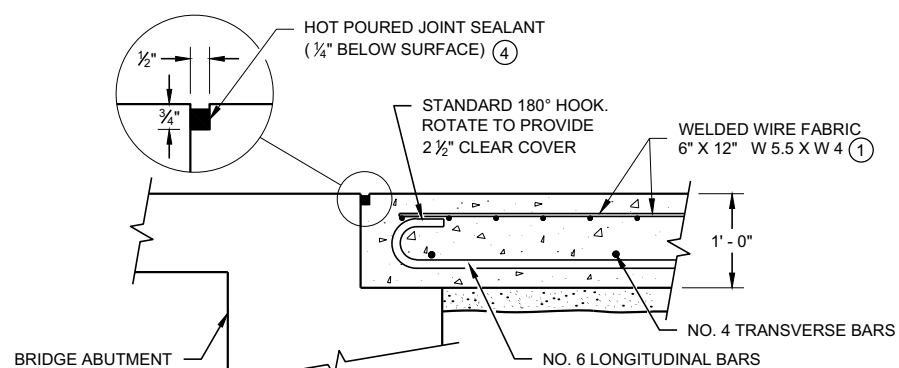
**SKews ≤ 20°
(PAVEMENT WIDTH ≤ 30')**

APPROACH SLAB AND ADJACENT PAVEMENT

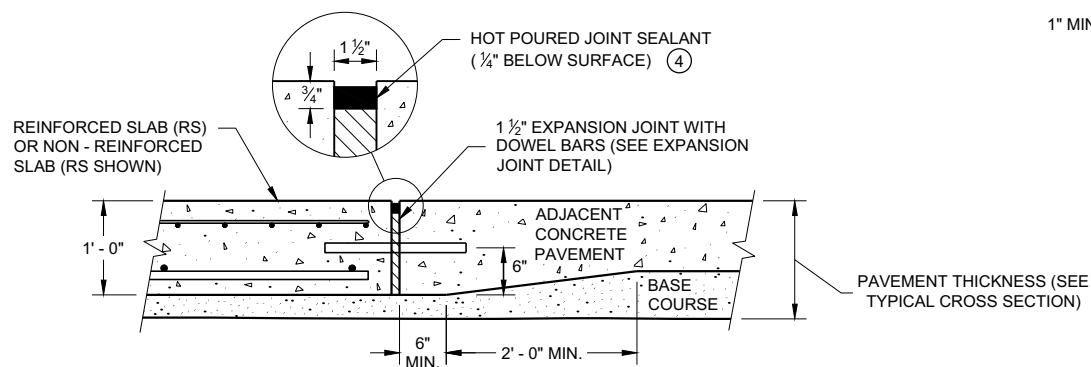
- * (RS) = REINFORCED CONCRETE SLAB
- * (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
- * (NRS) = NON - REINFORCED CONCRETE SLAB
- *** STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11 AND SDD 13C13)



**SECTION A - A
REINFORCEMENT POSITIONING DETAIL**



**SECTION B - B
BEND DETAIL
BOTTOM REINFORCEMENT**



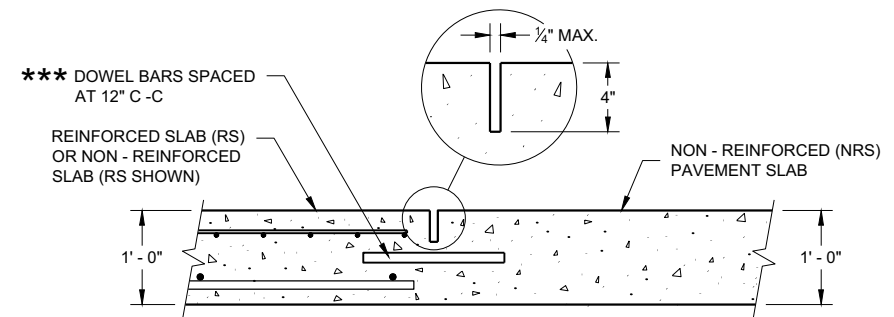
**SECTION C - C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT**

GENERAL NOTES

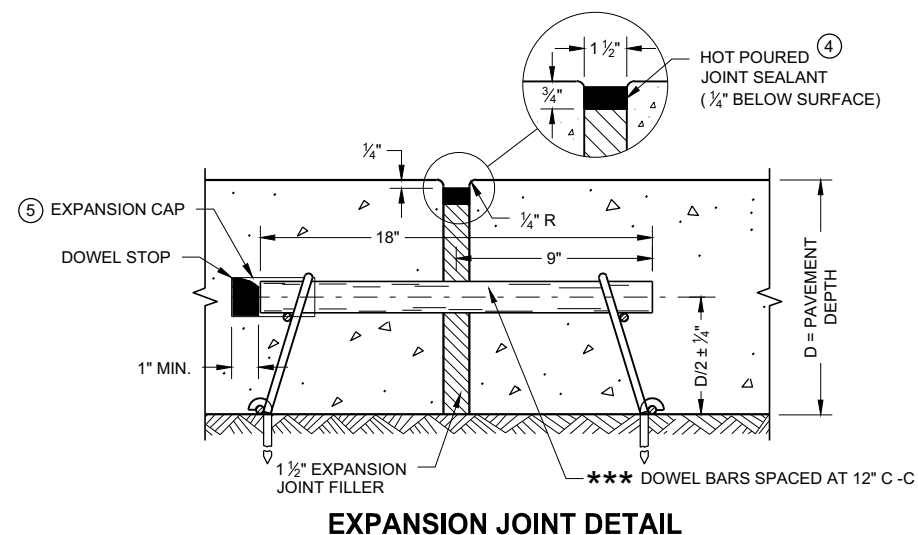
THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

- ① THE CONTRACTOR MAY USE NO. 4 BARS SPACED AT 2' - 0" C - C IN BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTIONS FOR TOP REINFORCEMENT AS AN ALTERNATIVE TO THE WELDED WIRE FABRIC.
- ② THE CONTRACTOR MAY OMIT THE BARS BETWEEN REINFORCED SLABS WHERE SLAB REINFORCEMENT BARS EXTEND ACROSS THE CENTERLINE OR REFERENCE LINE.
- ③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.
- ④ USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- ⑤ PLACE EXPANSION CAP ON THE END OF THE DOWEL THAT IS NOT TACK WELDED TO THE BASKET. DO NOT FORCE DOWEL BAR PAST THE DOWEL STOP.
- ⑥ EXTEND EXPANSION JOINT THROUGH ANY ADJACENT TIED CONCRETE.
- (A) STANDARD CONTRACTION JOINT NORMAL TO $\mathcal{C}$ OR $\mathcal{R}$.
- (B) STANDARD LONGITUDINAL JOINT WITH TIE BARS.
- (C) 1 1/2" EXPANSION JOINT WITH DOWEL BARS NORMAL TO $\mathcal{C}$ OR $\mathcal{R}$.



**SECTION D - D
CONTRACTION JOINT**



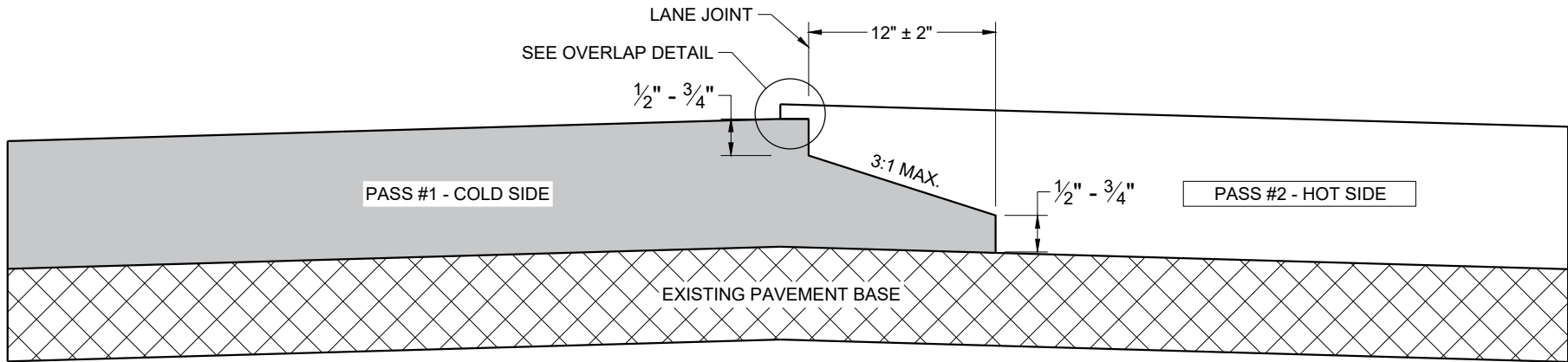
EXPANSION JOINT DETAIL

CONCRETE PAVEMENT APPROACH SLAB

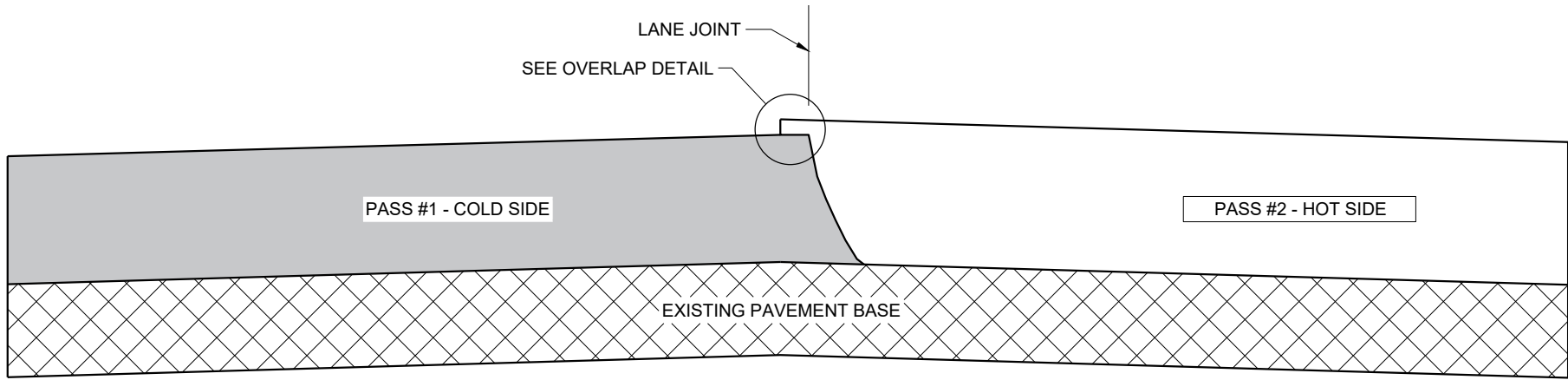
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018 /S/ Peter Kemp, P.E.
DATE PAVEMENT SUPERVISOR

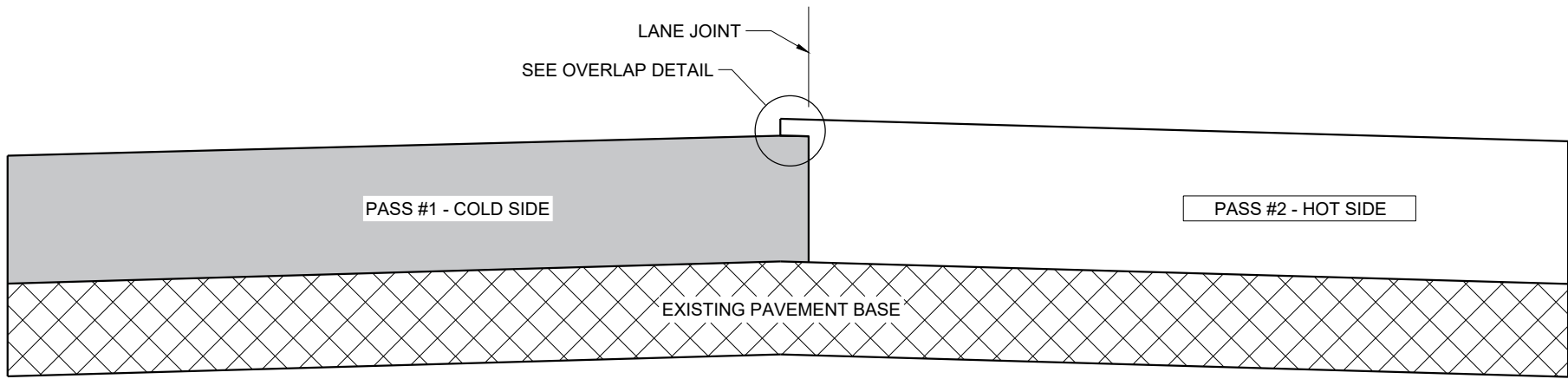
FHWA



TYPICAL PAVEMENT CROSS SECTION
NOTCHED WEDGE JOINT



TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT



TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT (MILLED)

GENERAL NOTES

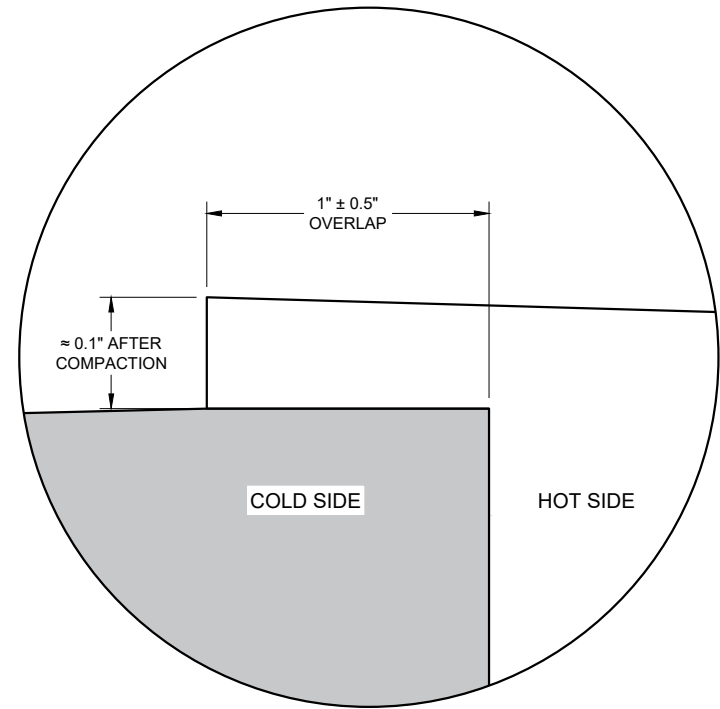
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

FOR ALL LONGITUDINAL JOINTS, ENSURE THE PAVER SCREED OVERLAPS THE PREVIOUSLY PLACED PAVEMENT BY $1" \pm 0.5"$ AND THE HOT SIDE OF THE JOINT REMAINS HIGHER THAN THE COLD SIDE BY APPROXIMATELY $0.1"$ AFTER FINAL COMPACTION. (IT WILL BE FLUSH WHEN PAVING IN ECHELON.)

ONLY REMOVE THE LONGITUDINAL NOTCHED WEDGE JOINT FOR SMA PAVEMENT OR AS DIRECTED BY THE ENGINEER TO ADDRESS SPECIFIC LENGTHS OF JOINT DAMAGED BY TRAFFIC.

WHEN MILLING BACK OR REMOVING ANY LONGITUDINAL JOINT, LIMIT THE MATERIAL REMOVED TO $2"$ FROM THE TOP NOTCH OR FROM THE VERTICAL JOINT EDGE ON THE COLD SIDE OF THE JOINT.

USE LONGITUDINAL MILLED JOINT AS PLANS SHOW OR THE AS THE ENGINEER DIRECTS.



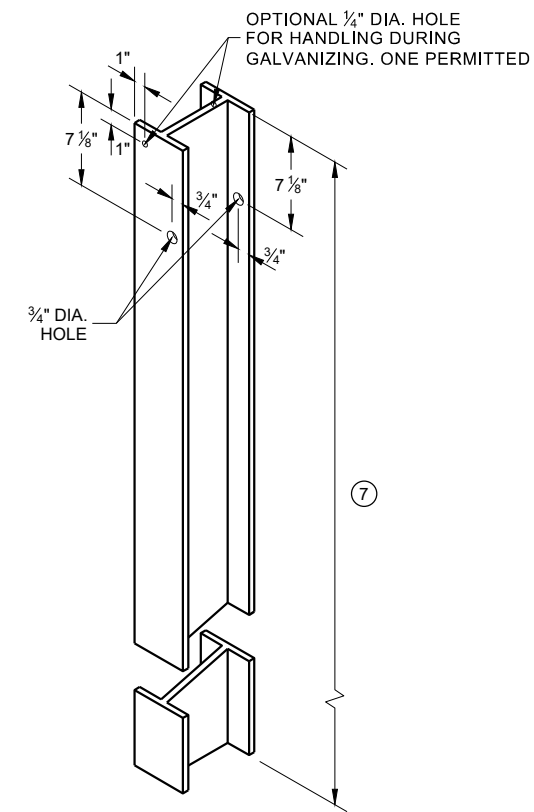
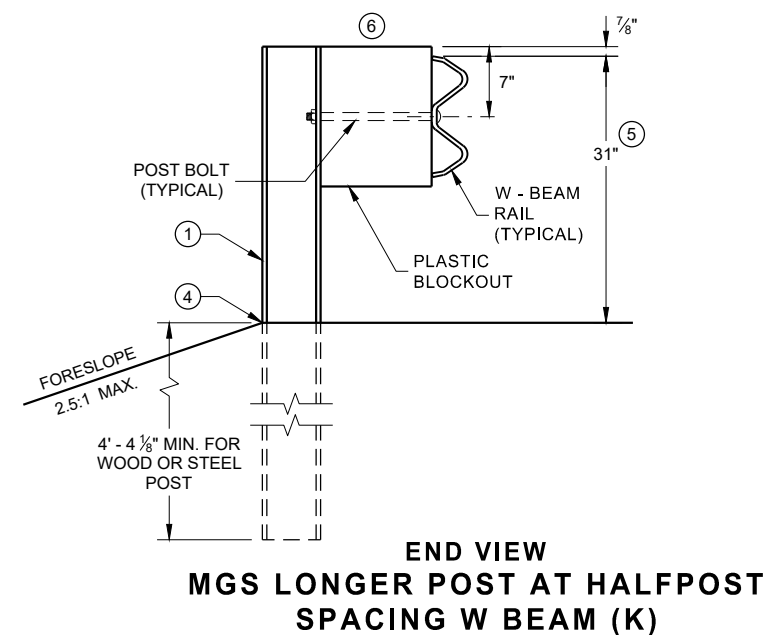
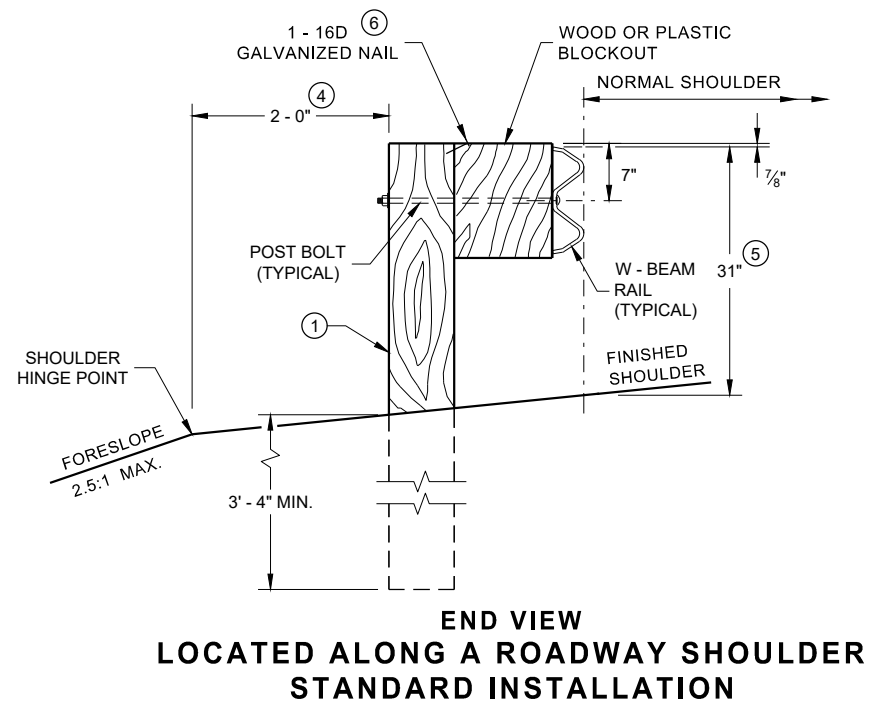
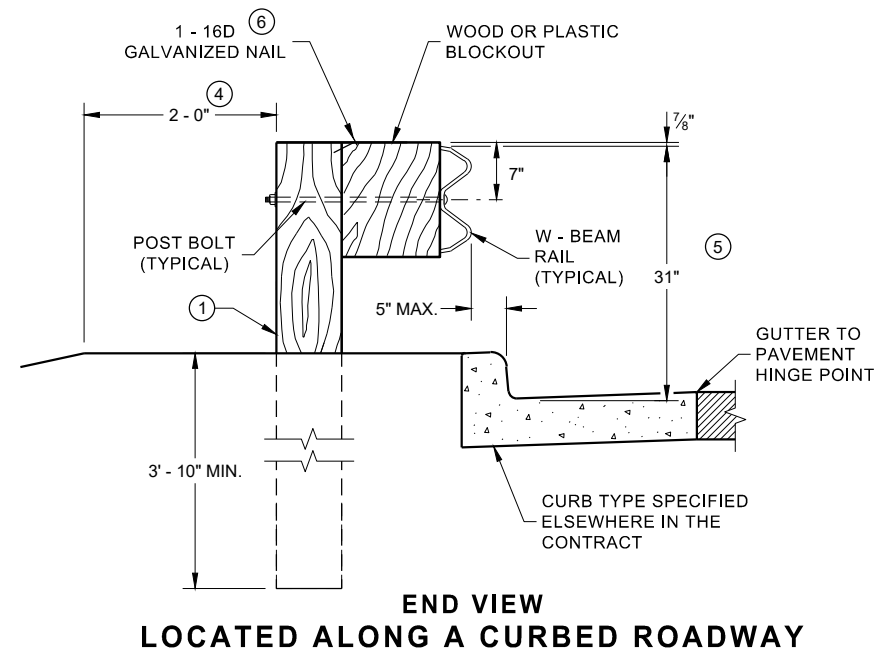
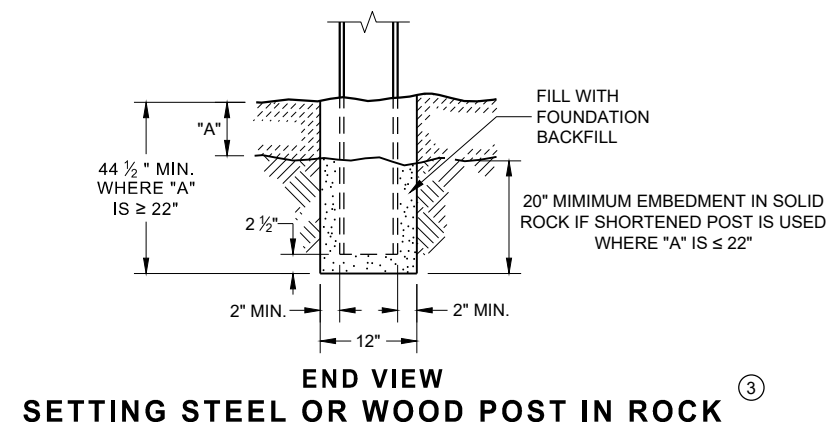
OVERLAP DETAIL (TYPICAL)

HMA LONGITUDINAL JOINTS

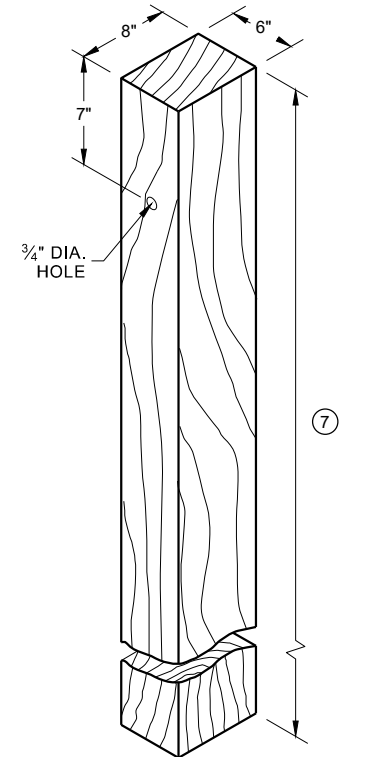
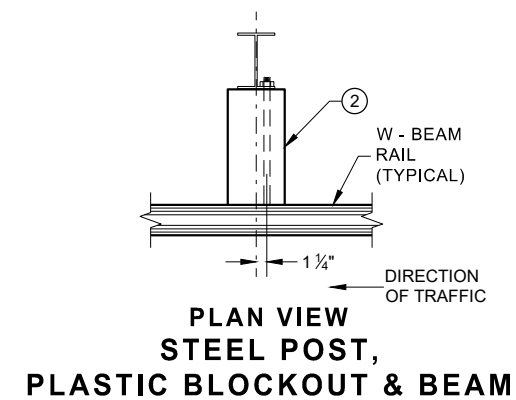
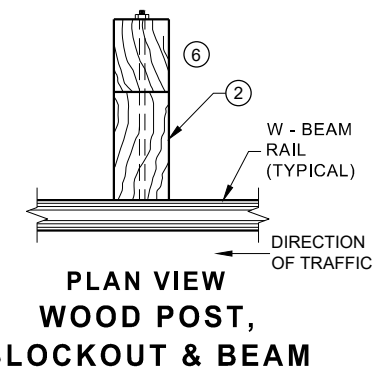
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2020 /S/ Steven Hefel
DATE HMA PAVEMENT ENGINEER
FHWA

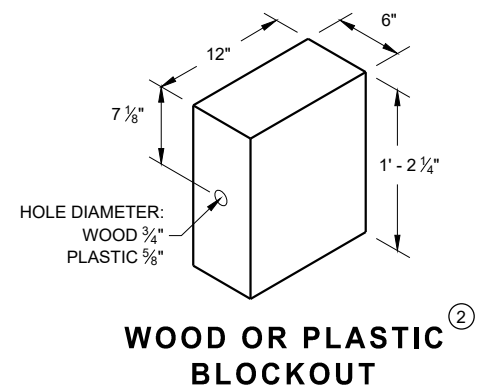
- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. 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 TO LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- ④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- ⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS $\pm 1"$. FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 3/4" TO 32".
- ⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ⑦ TOTAL POST LENGTH FOR TYPE K IS 7' - 0".
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".

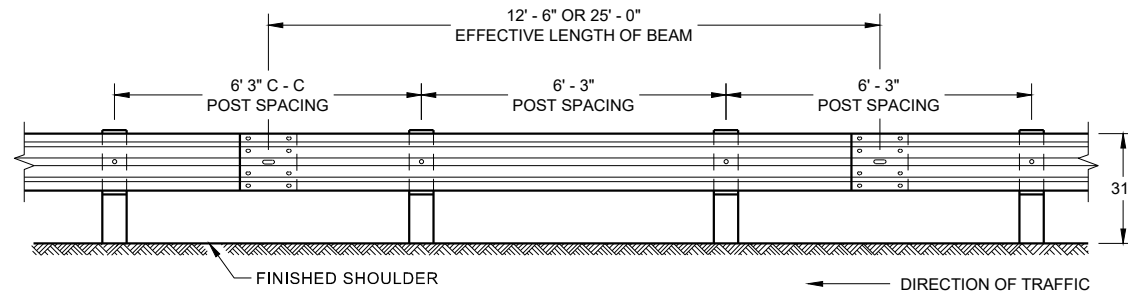


STEEL POST & HOLE PUNCHING DETAIL (W 6 X 9) ①

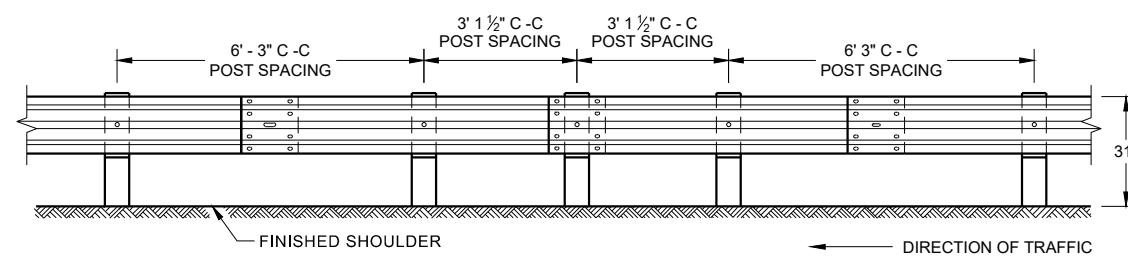


WOOD POST (6" X 8") NOMINAL ^①

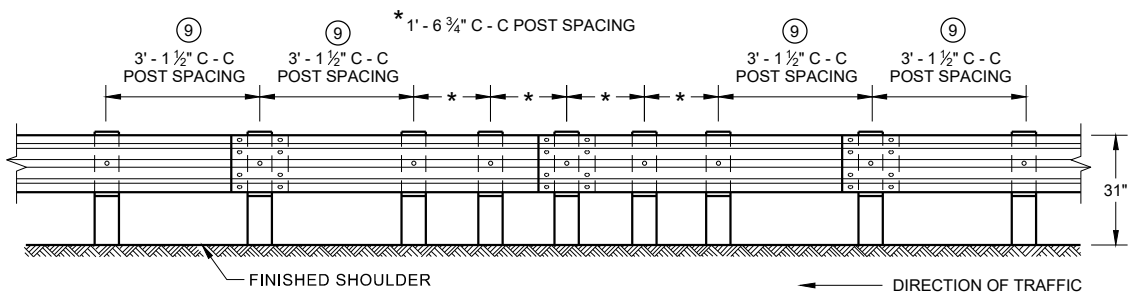




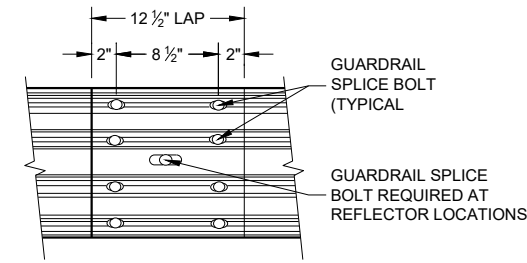
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



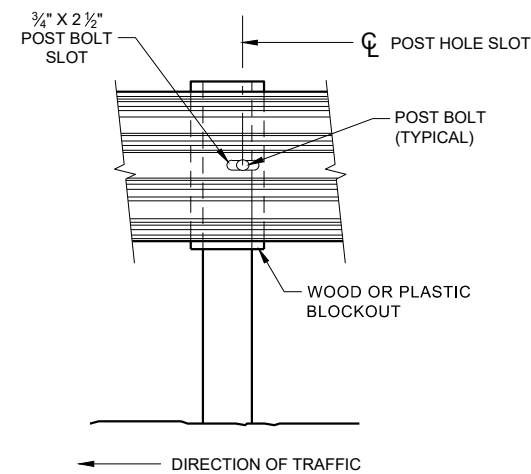
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



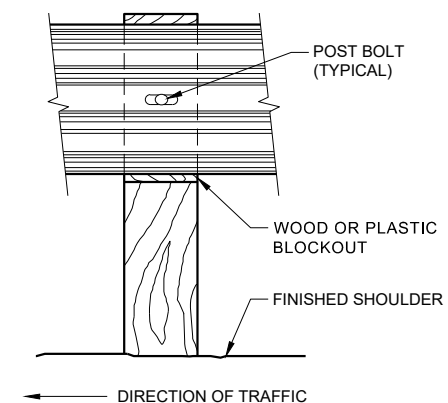
**FRONT VIEW
QUARTER POST SPACING (QS)**



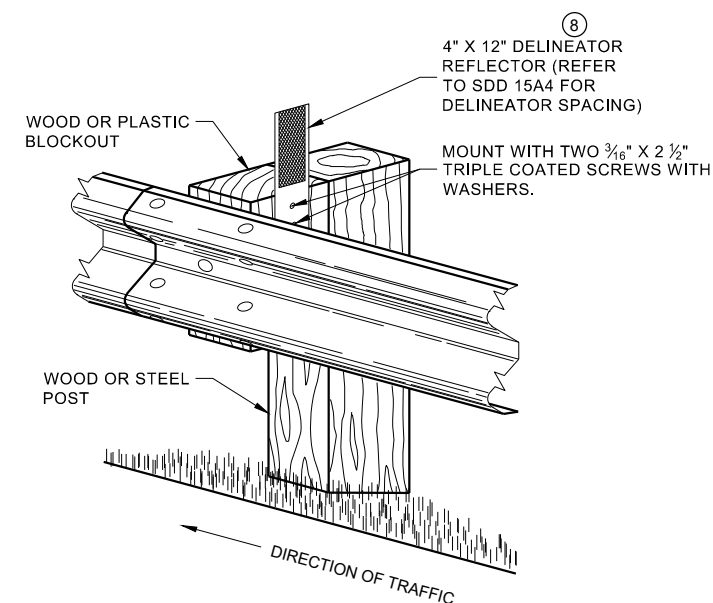
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



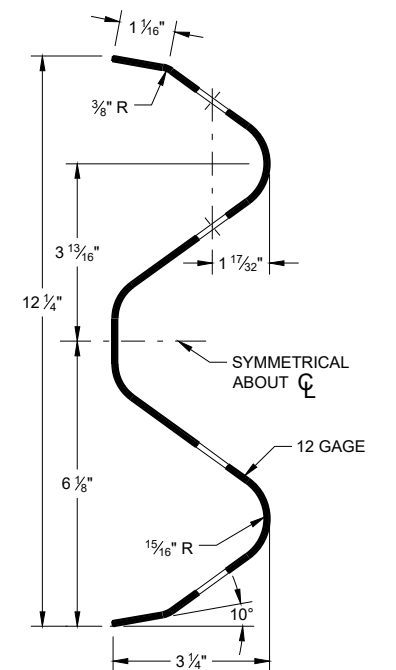
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

- 8 DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
- 9 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 3/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

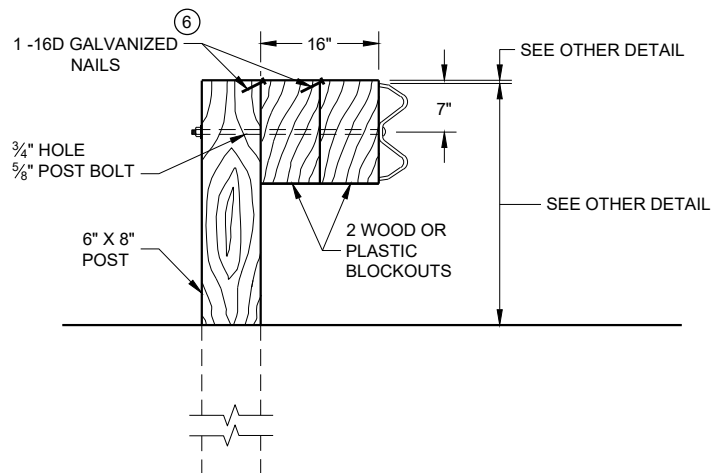
GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

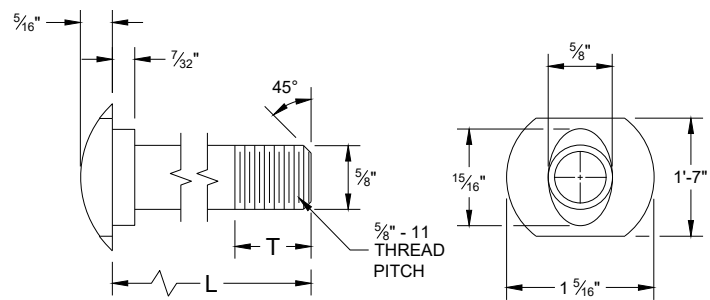
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

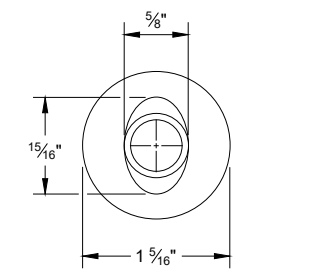
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.

- NOTE:
1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF $\frac{3}{16}$ ".
 2. IF THE BOLT EXTENDS MORE THAN $\frac{1}{4}$ " FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

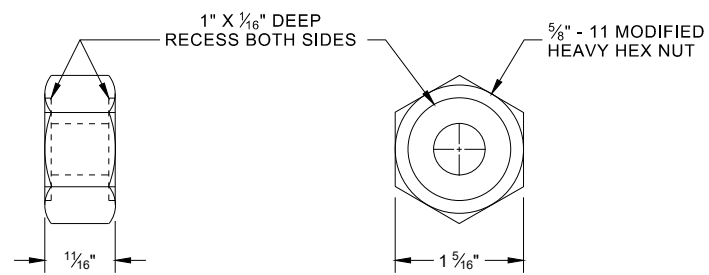


POST BOLT TABLE

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

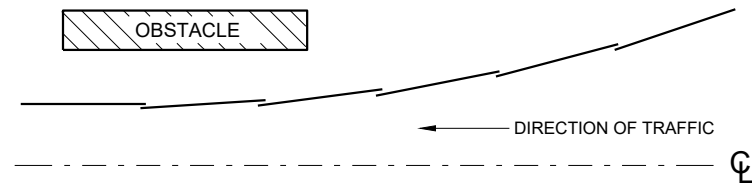


ALTERNATE BOLT HEAD

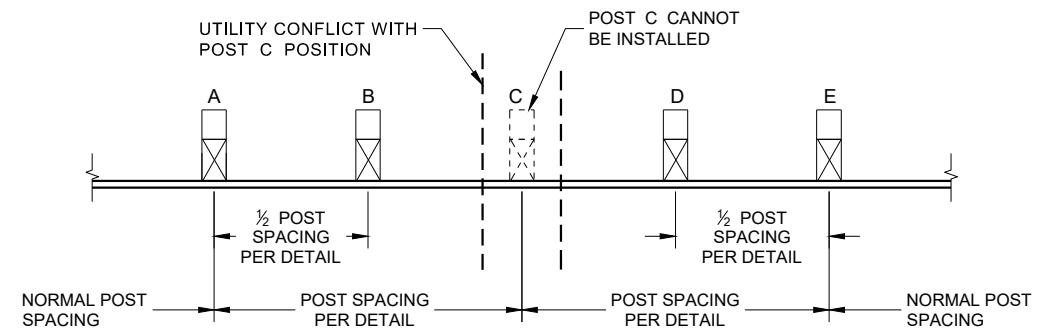


POST BOLT, SPLICE BOLT AND RECESS NUT

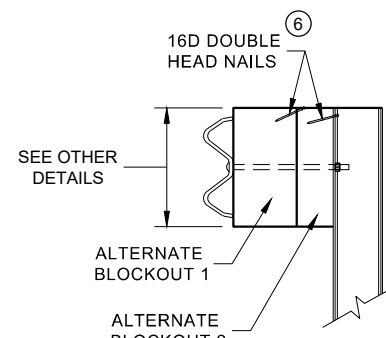
- ⑥ WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



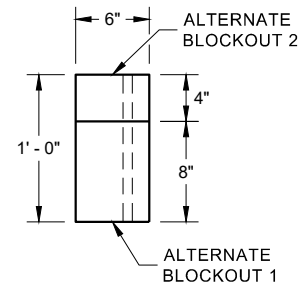
PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



SIDE VIEW



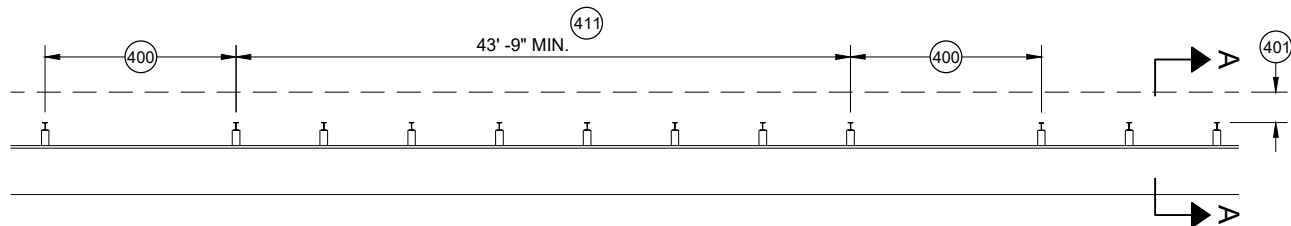
PLAN VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

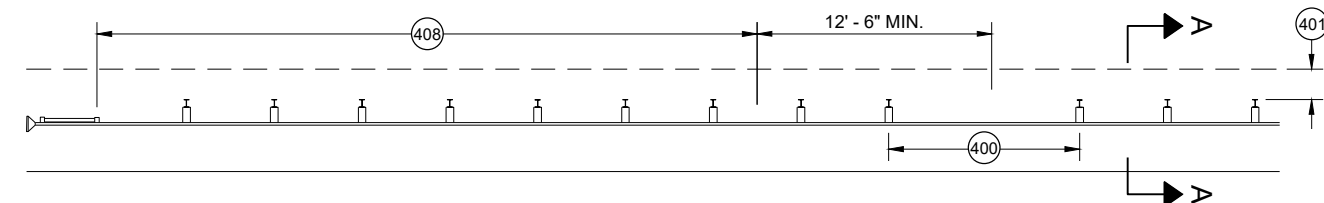
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

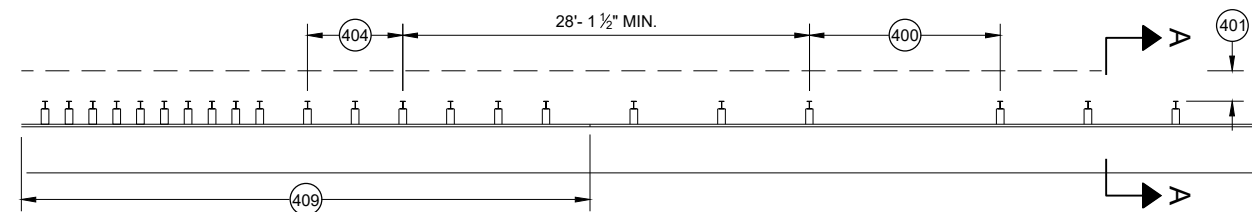
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DEPARTMENT OF TRANSPORTATION



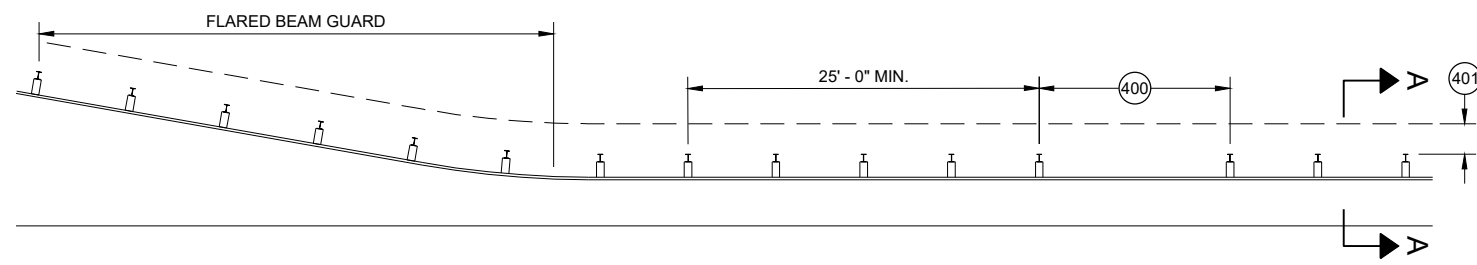
MISSING POST IN MGS GUARDRAIL



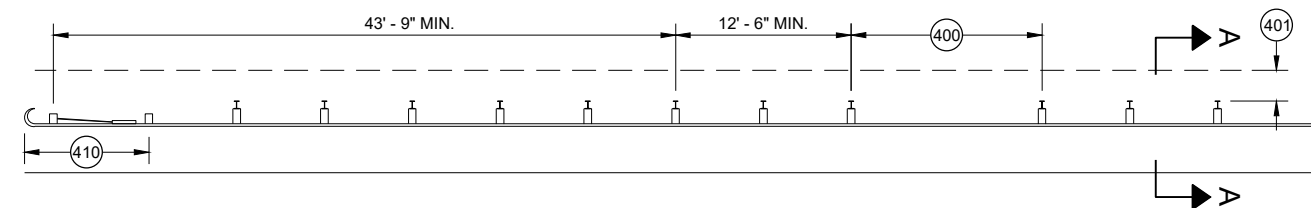
MISSING POST IN MGS GUARDRAIL NEAR EAT



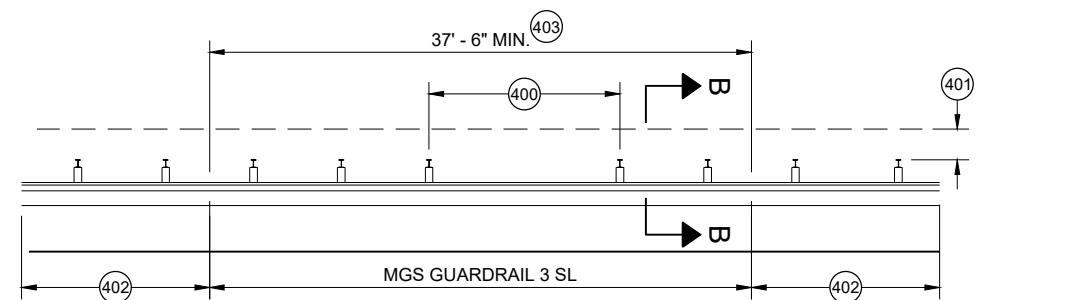
MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD

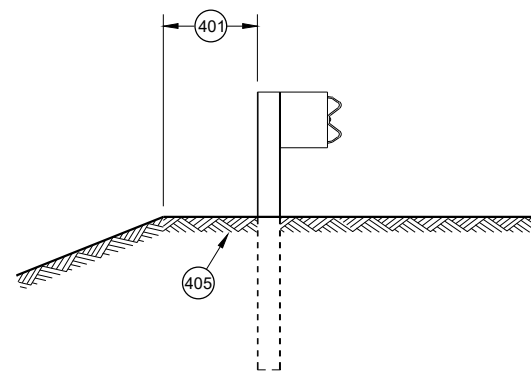


MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL

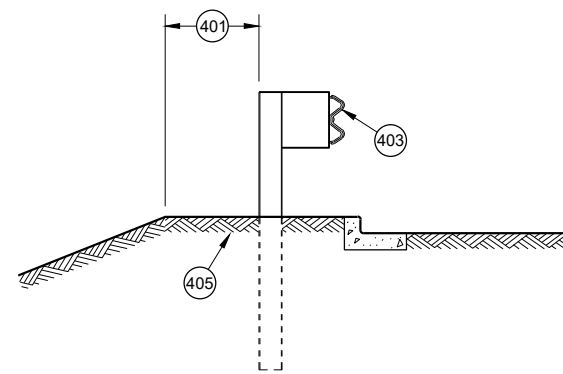


MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)

- (400) MAX SPAN 12' - 6"
- (401) 2' MIN.
- (402) MGS GUARDRAIL 3
- (403) NESTING BEAM GUARD
- (404) ASYMMETRIC TRANSITION
- (405) SOIL WELL DRAINED AND COMPACTED
- (406) SEE OTHER DRAWINGS IN THIS SDD
- (407) SEE OTHER DRAWINGS FOR MIN. SPACING BETWEEN SPANS
- (408) SEE SDD 14B44
- (409) SEE SDD 14B45
- (410) SEE SDD 14B47
- (411) MINIMUM DISTANCE BETWEEN MISSING POST SPANS.



SECTION A - A



SECTION B - B

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2021
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

FHWA

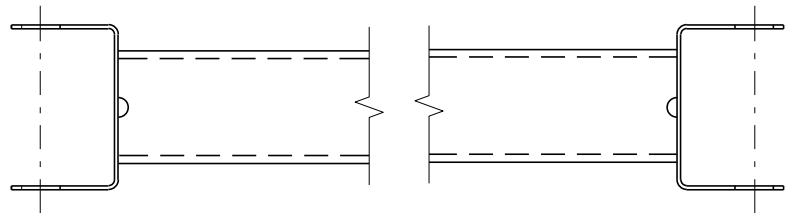
- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
- (C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS. SEE MANUFACTURER'S INFORMATION.
- (D) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF - TAPPING SCREWS. ONE SCREW PER CORNER.
- (E) HARDWARE MAY VARY BETWEEN MANUFACTURER. SEE MANUFACTURER'S DRAWING FOR INFORMATION.

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

THE CENTER OF THE UPPER 3 1/2" 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. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.

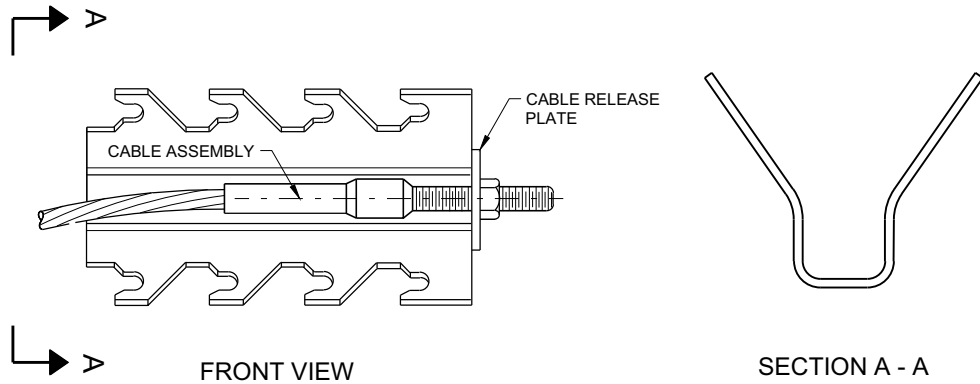


STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

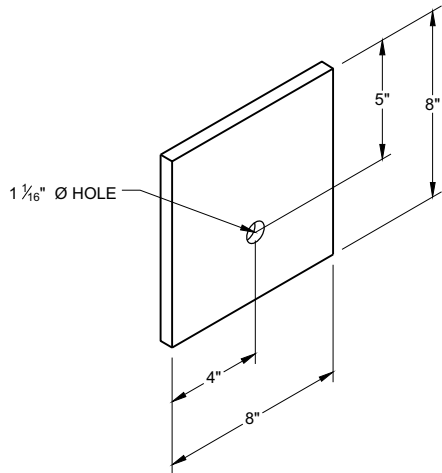


GENERIC GROUND STRUT 9 E

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



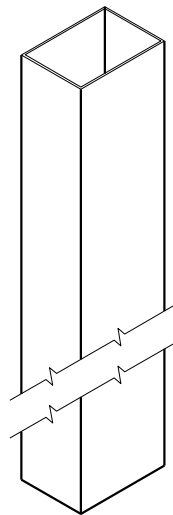
GENERIC ANCHOR CABLE BOX 9 E



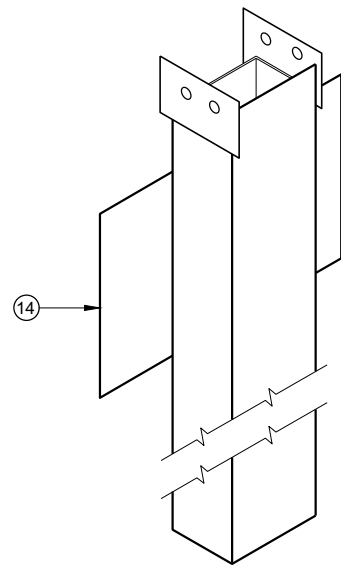
BEARING PLATE 6 E

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

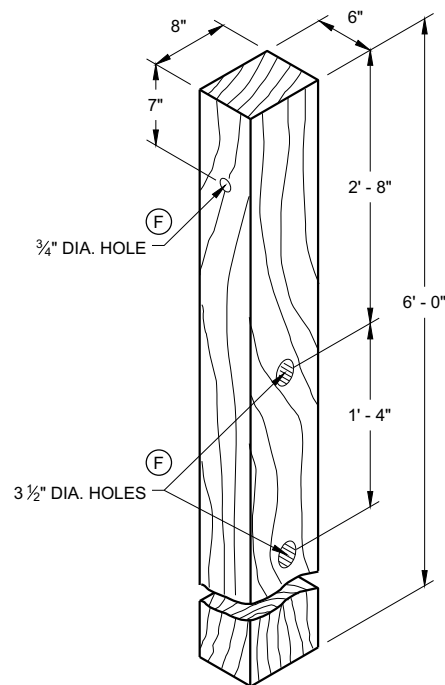
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



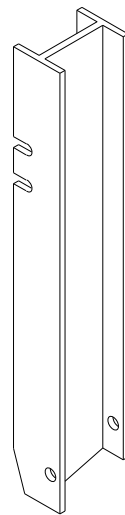
UPPER POST NO. 1 ⁽¹⁾ (E)



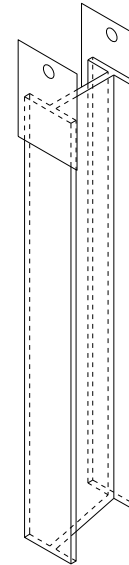
LOWER POST NO. 1 ⁽²⁾ (E)



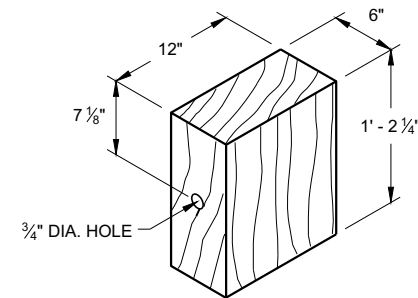
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



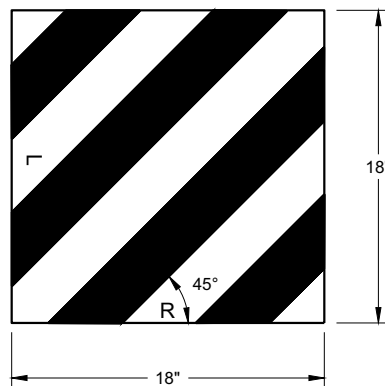
UPPER POST NO. 2 ⁽¹⁵⁾ (E)



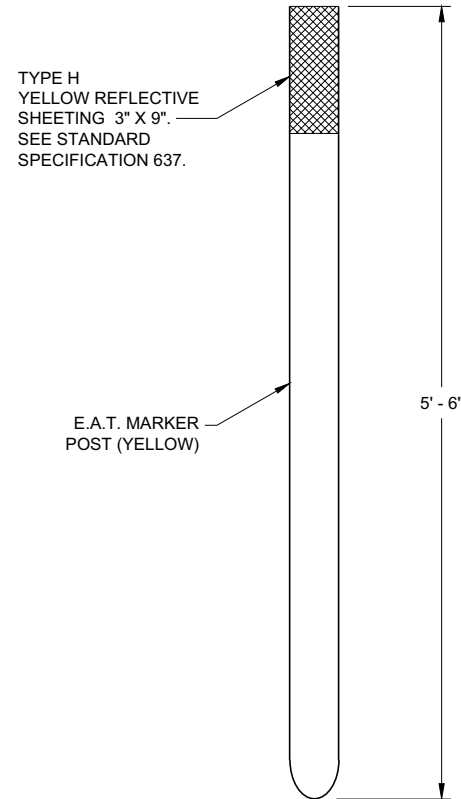
LOWER POST NO. 2 ⁽¹⁶⁾ (E)



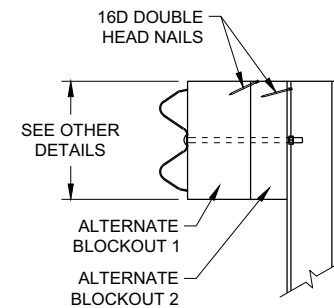
WOOD BLOCKOUT ⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



REFLECTIVE SHEETING DETAIL ^(E)

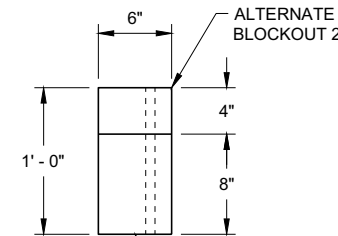


E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

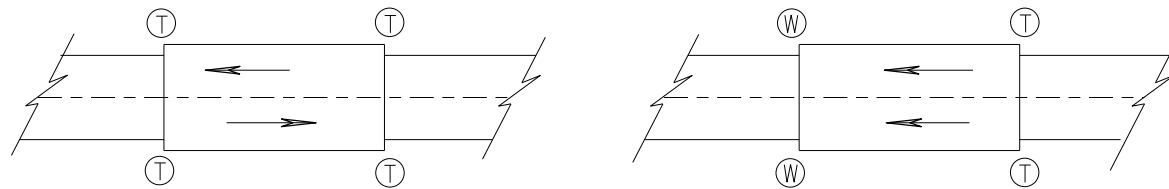


TOP VIEW

**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



TWO WAY TRAFFIC

ONE WAY TRAFFIC

T THRIE BEAM CONNECTION

W W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

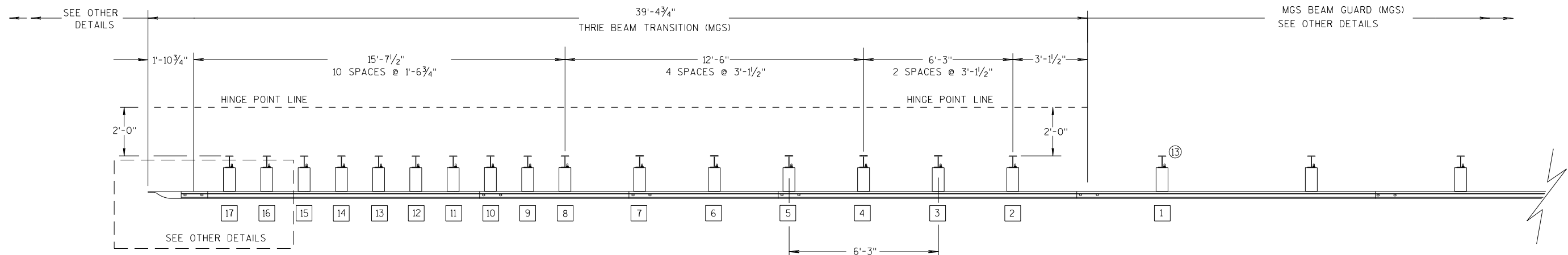
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

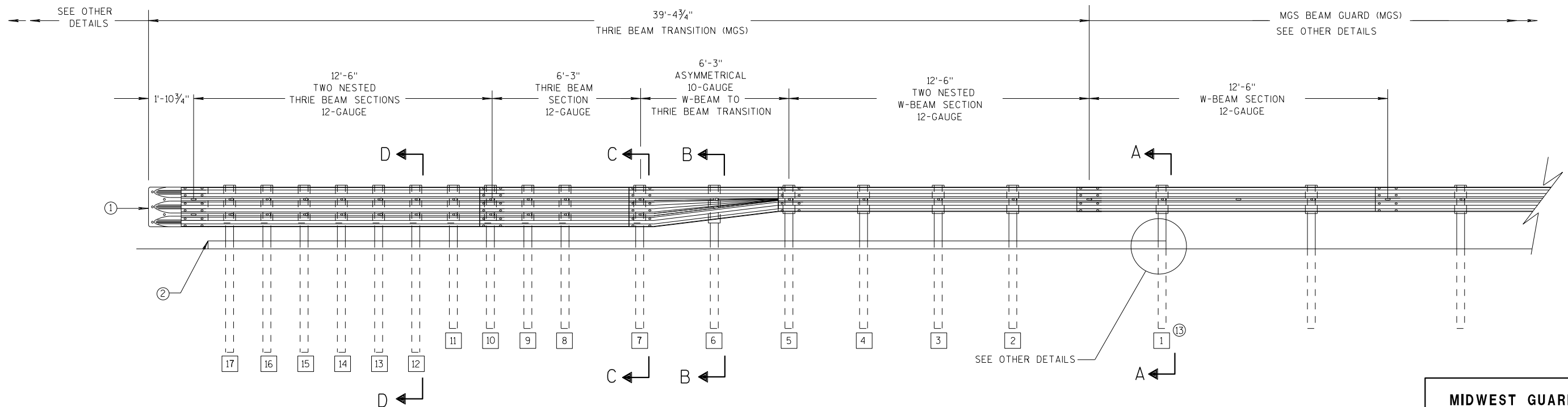
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

- ① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42



PLAN VIEW



ELEVATION VIEW

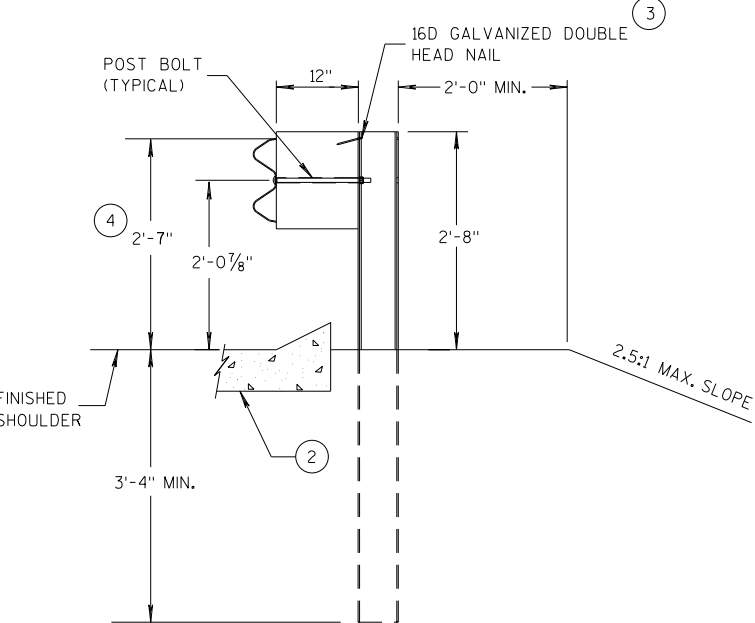
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

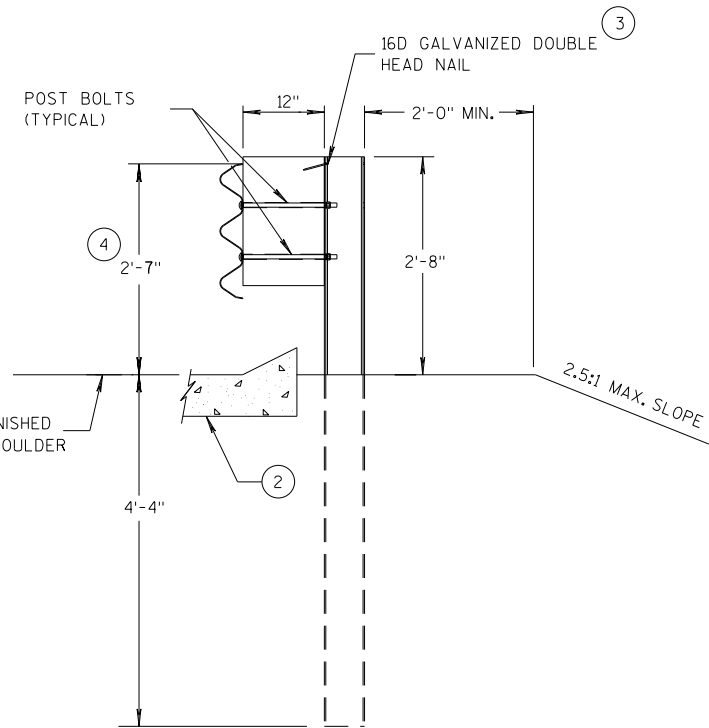
STATE OF WISCONSIN
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GENERAL NOTES

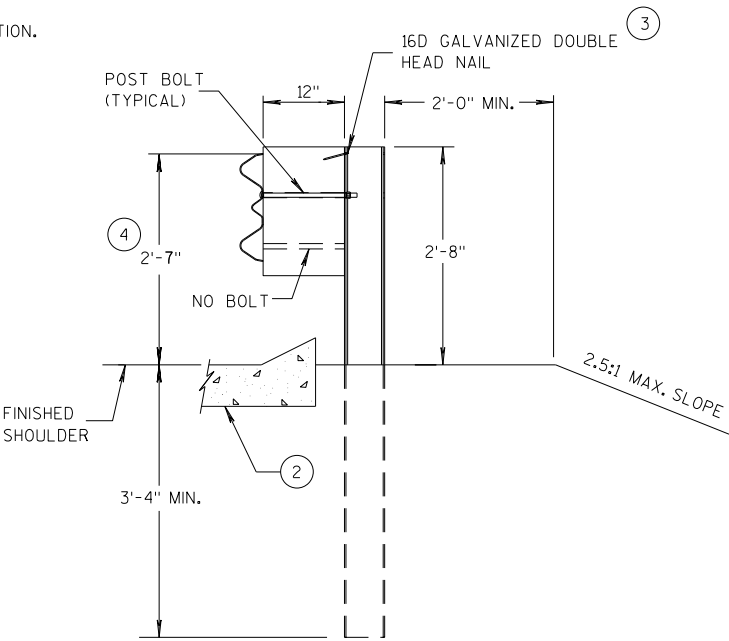
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.
- 13 STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42



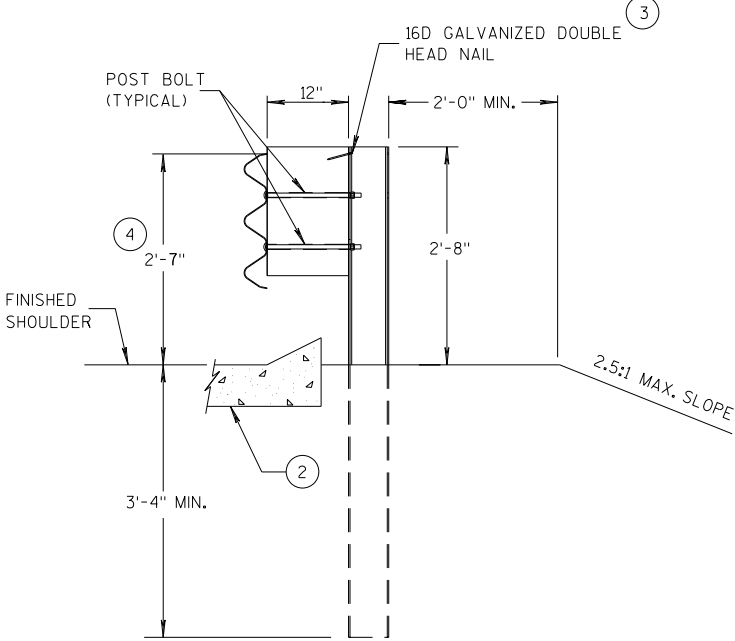
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

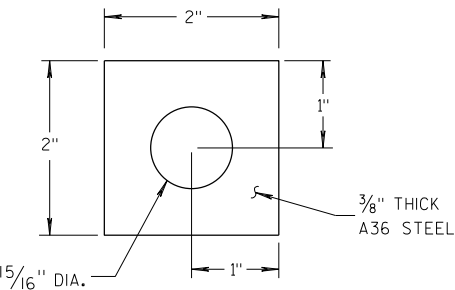
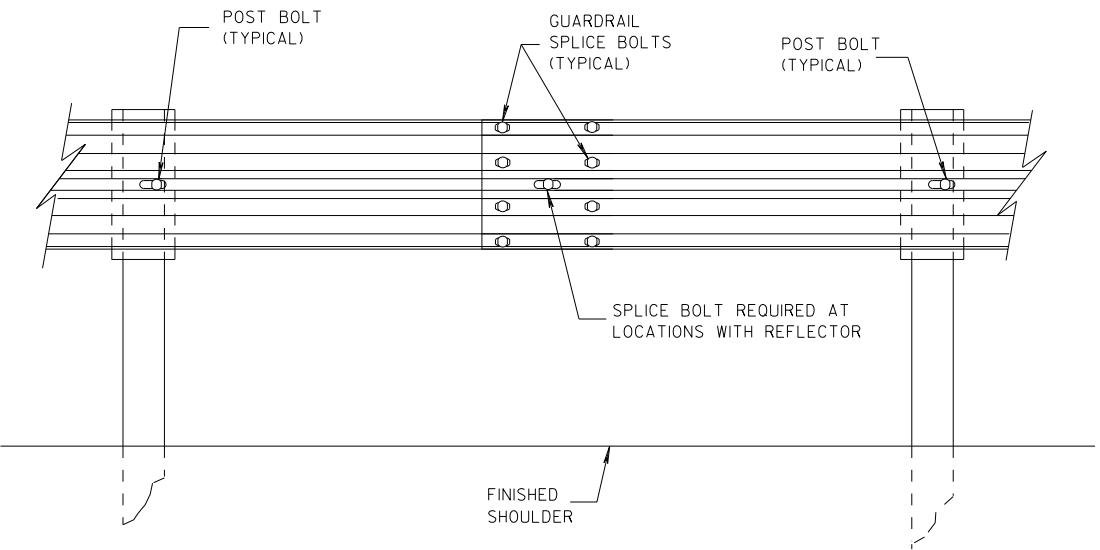
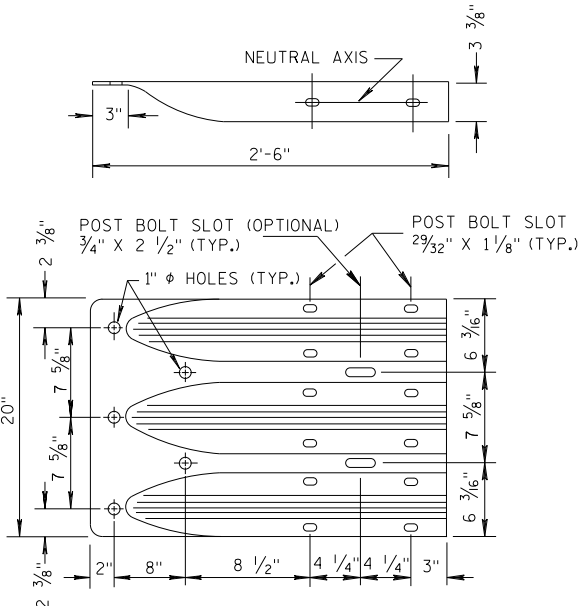


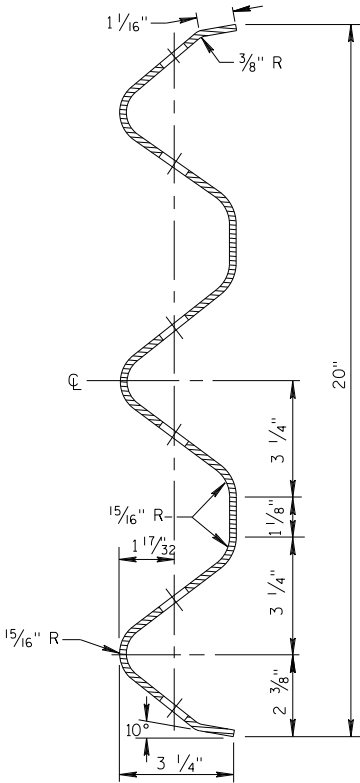
PLATE WASHER DETAIL



SPLICE DETAIL



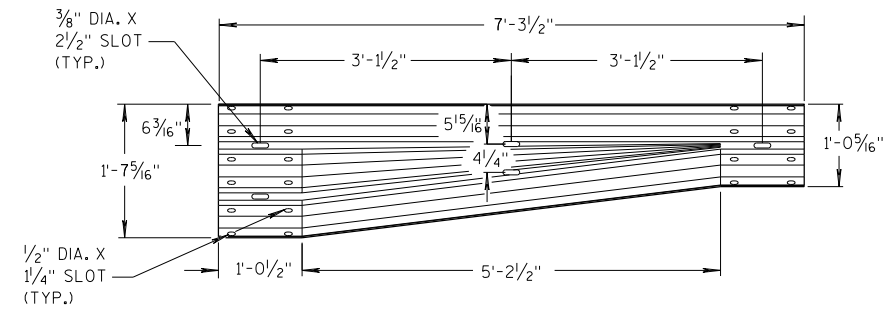
THRIE BEAM
TERMINAL CONNECTOR



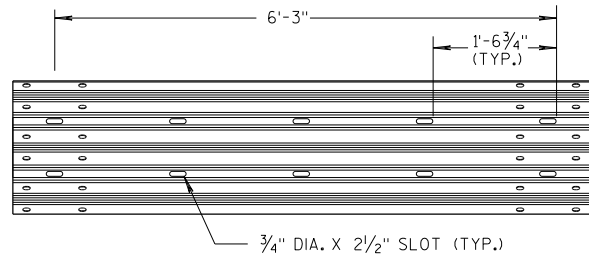
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

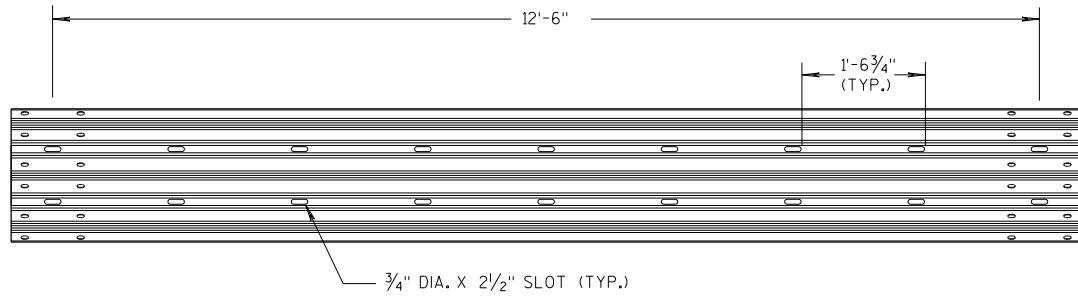
STATE OF WISCONSIN
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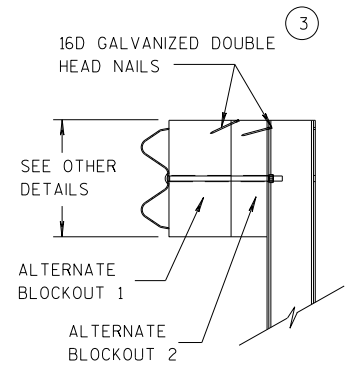
W-BEAM TO THRIE BEAM TRANSITION SECTION



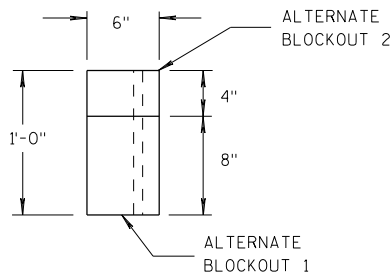
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

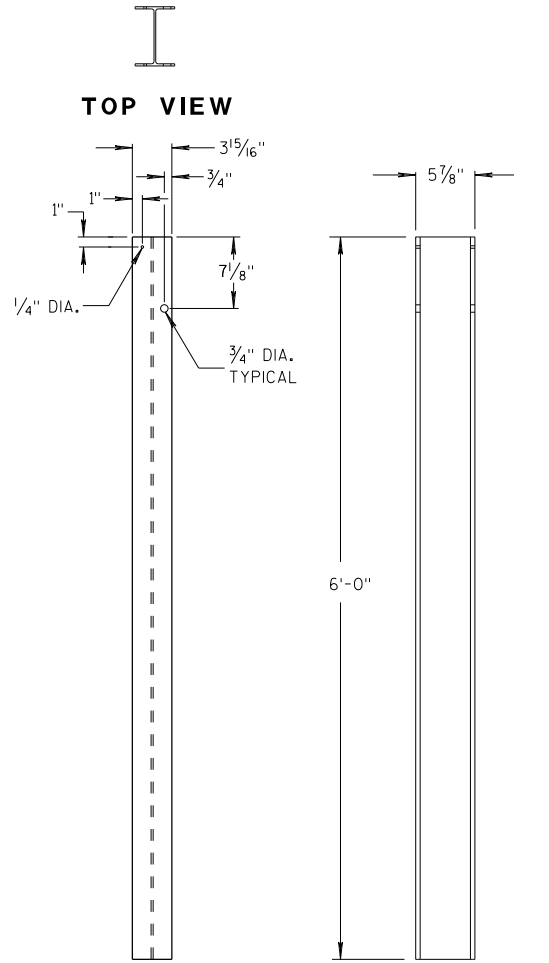


SIDE VIEW



TOP VIEW

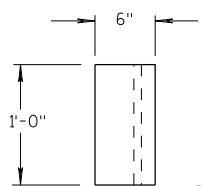
ALTERNATE WOOD BLOCKOUT DETAIL



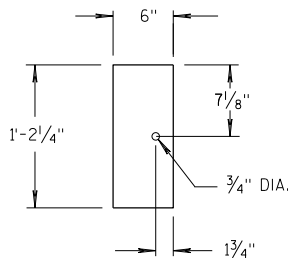
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

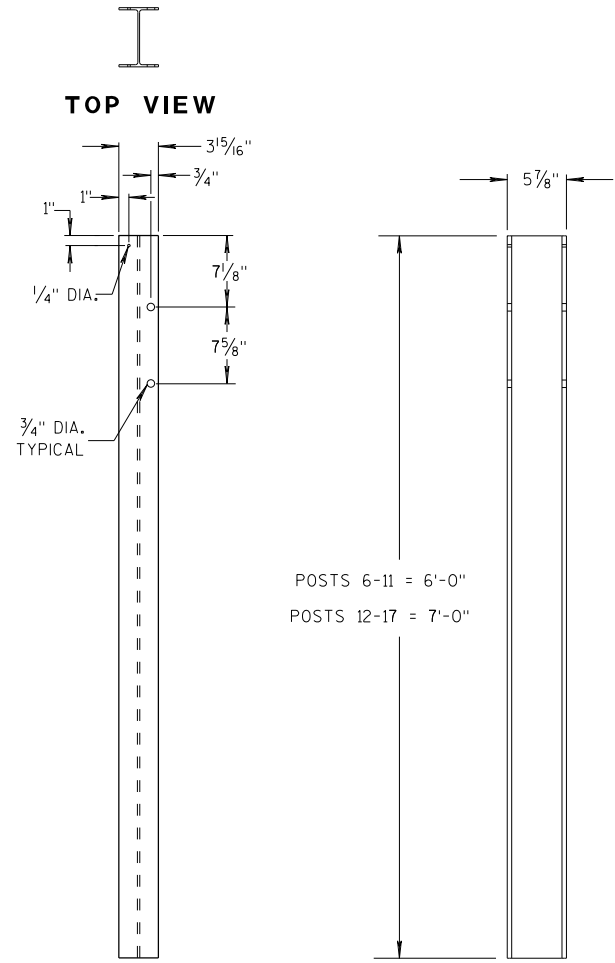


TOP VIEW



FRONT VIEW

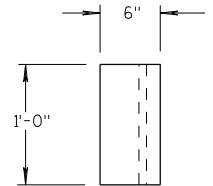
BLOCKOUT POSTS 1-5



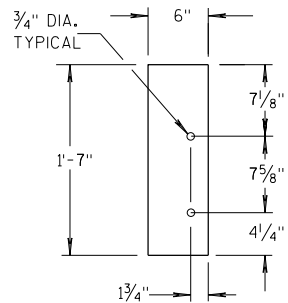
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

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

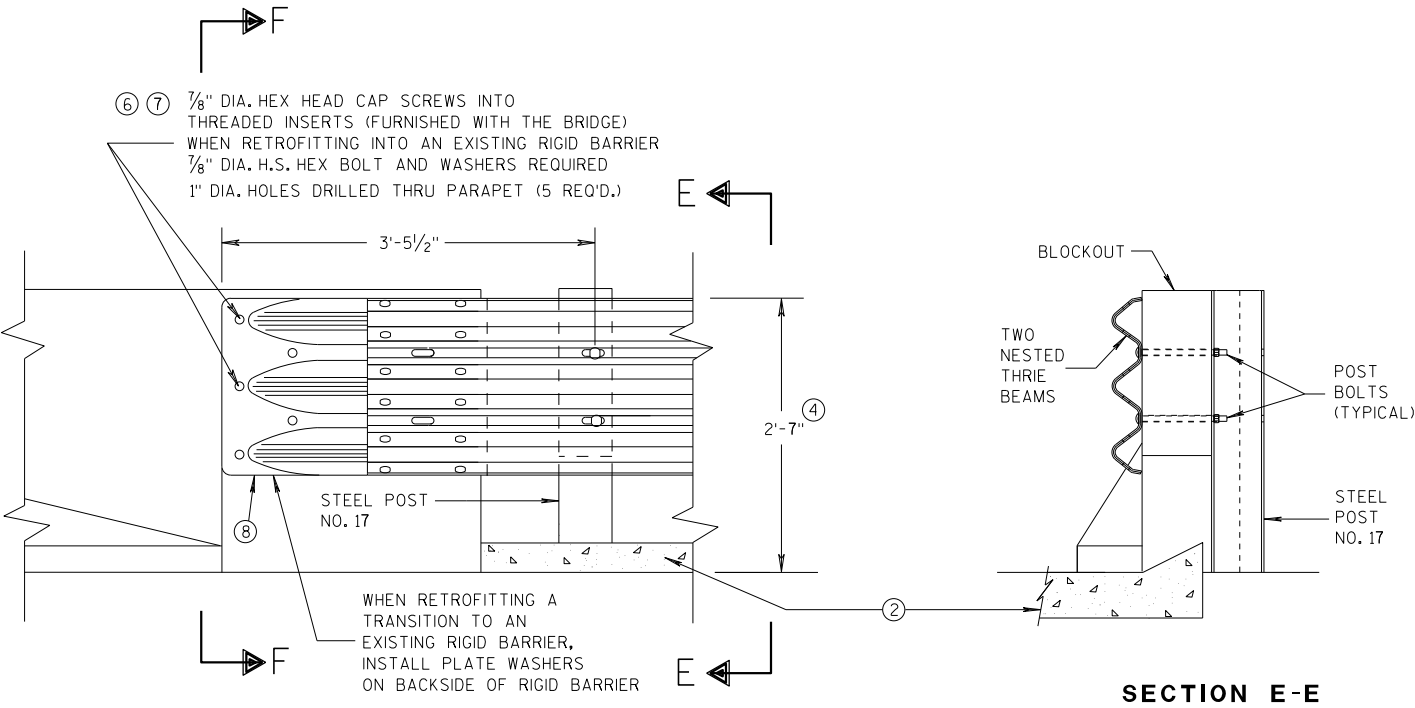
③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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

⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

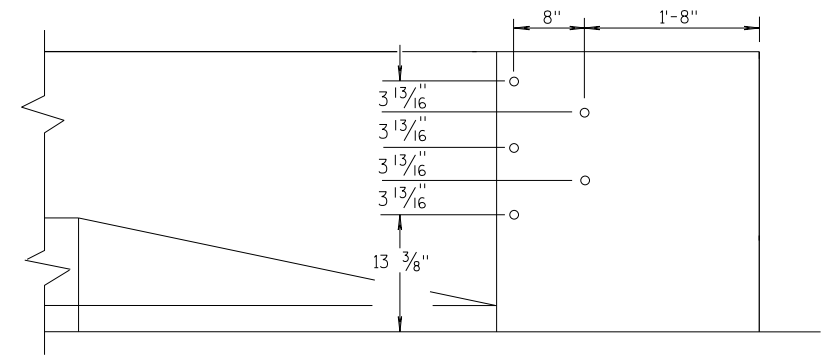
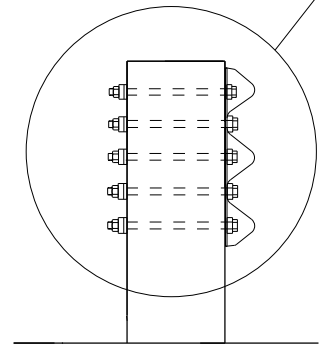
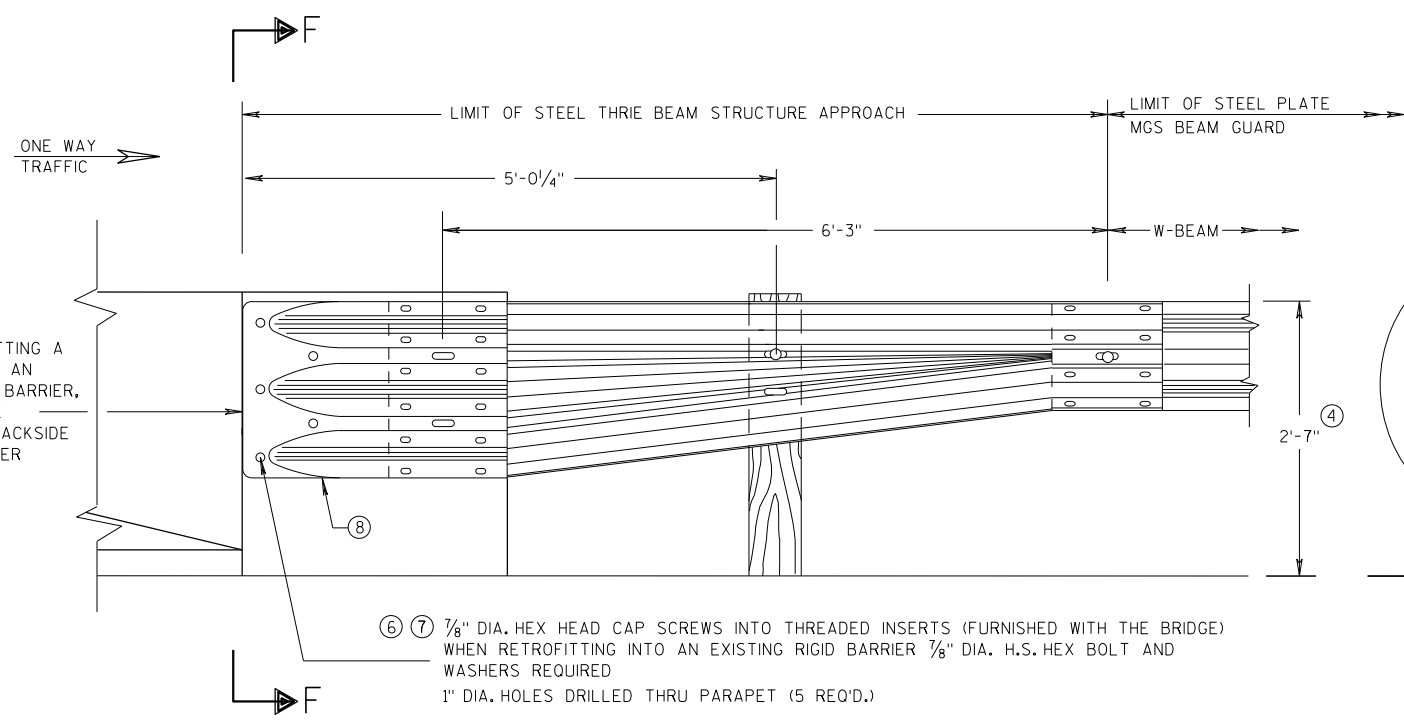
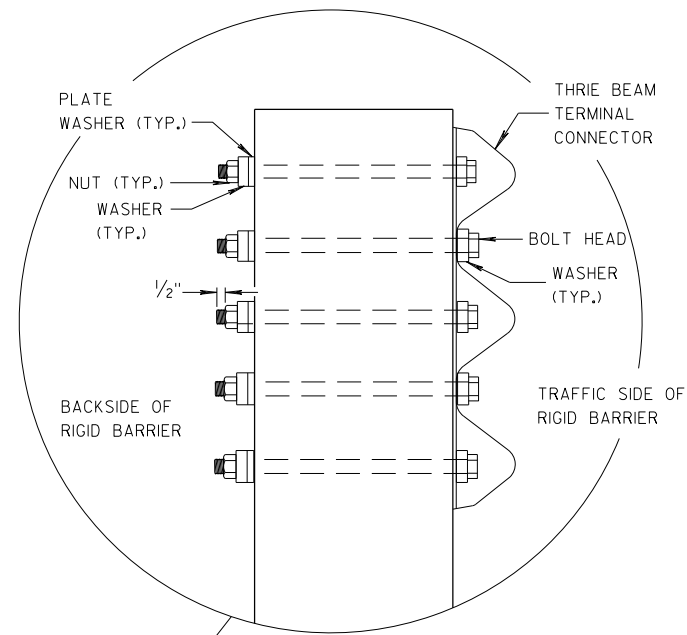
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



GENERAL NOTES

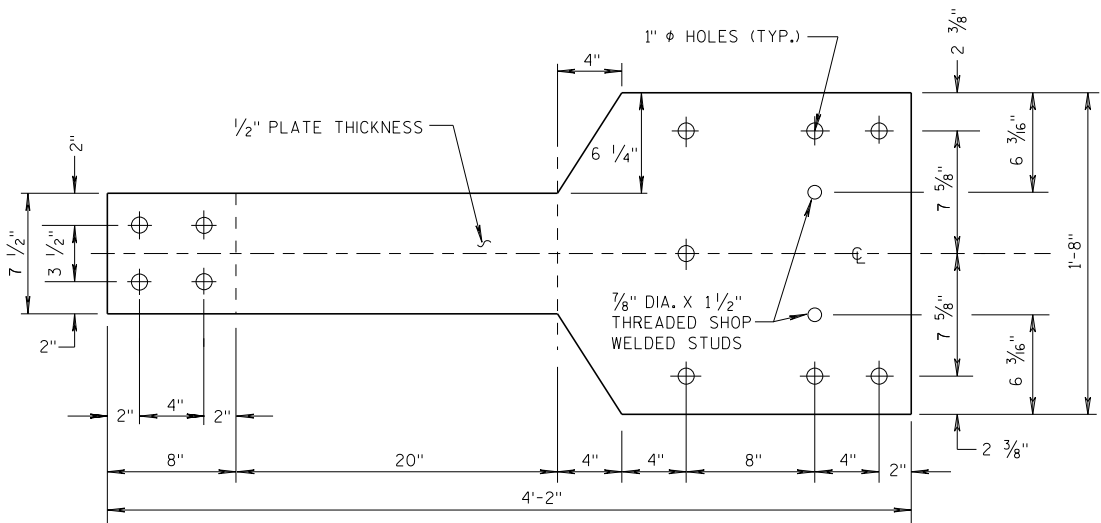
- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".



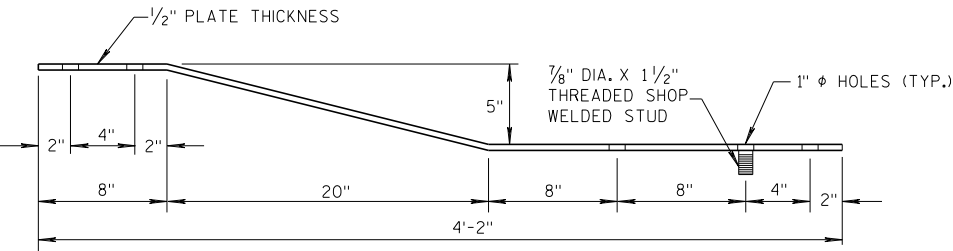
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

GENERAL NOTES

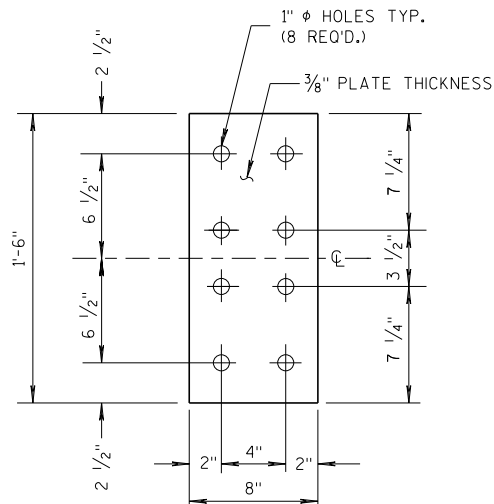
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



FRONT VIEW

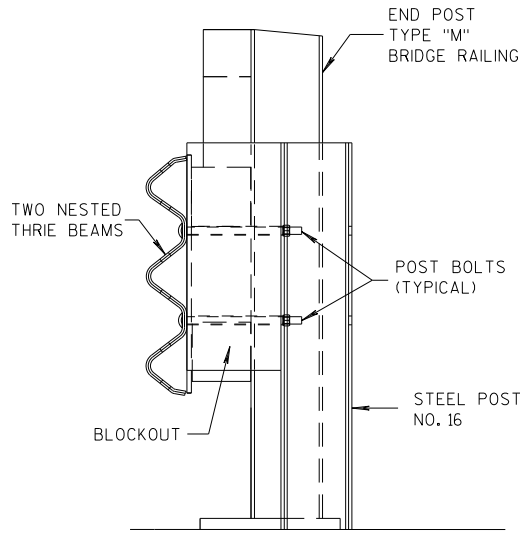


PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"

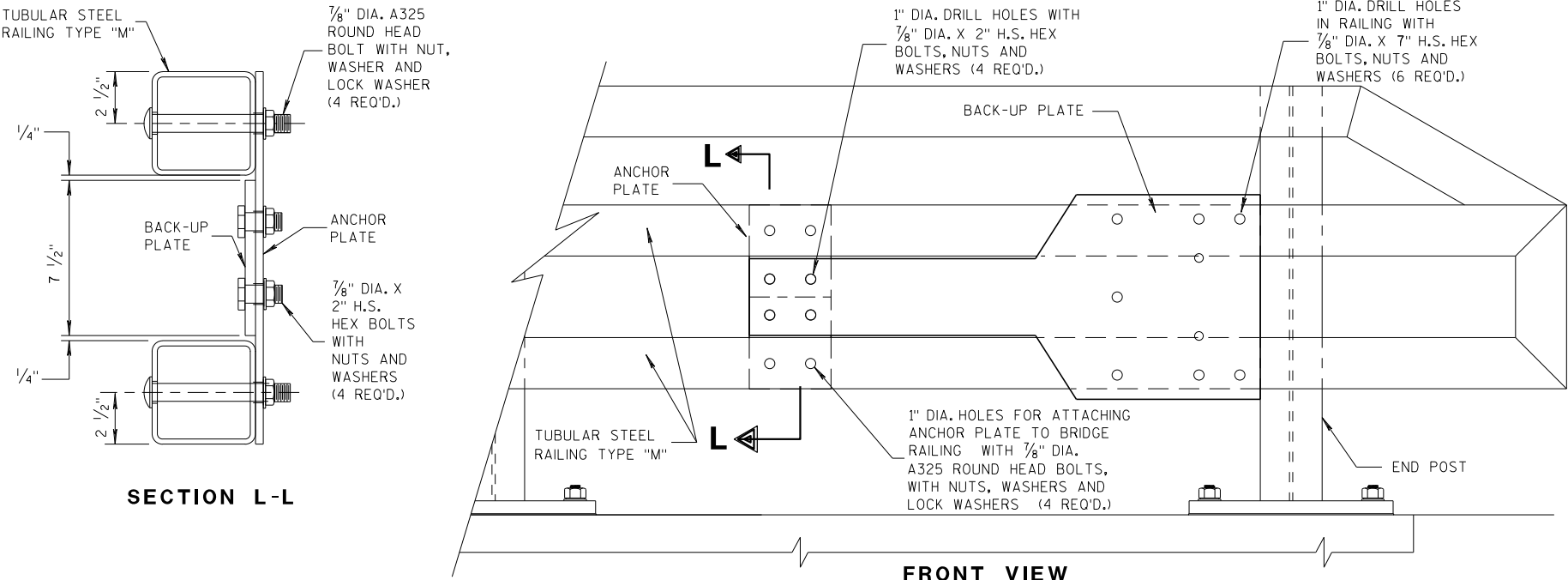


FRONT VIEW

ANCHOR
PLATE DETAIL,
TYPE "M"



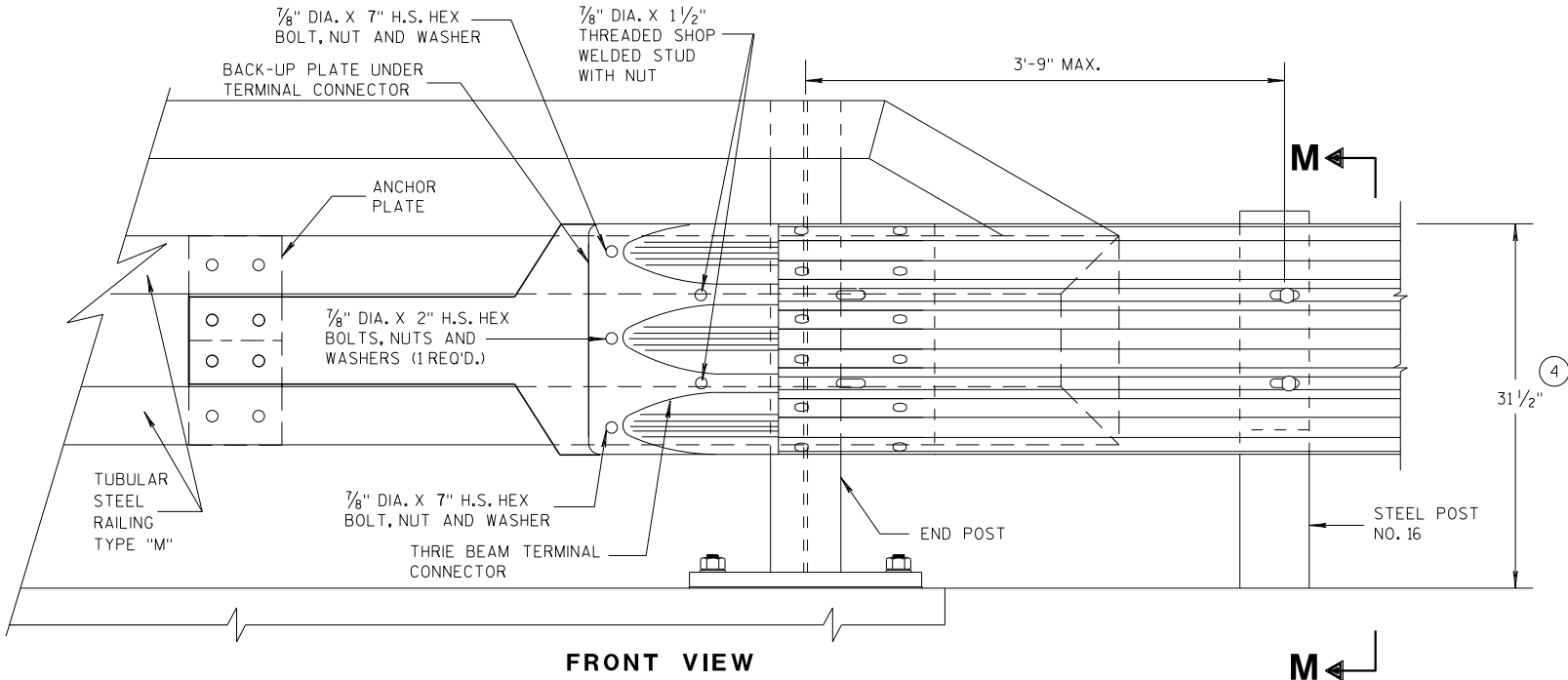
SECTION M-M



SECTION L-L

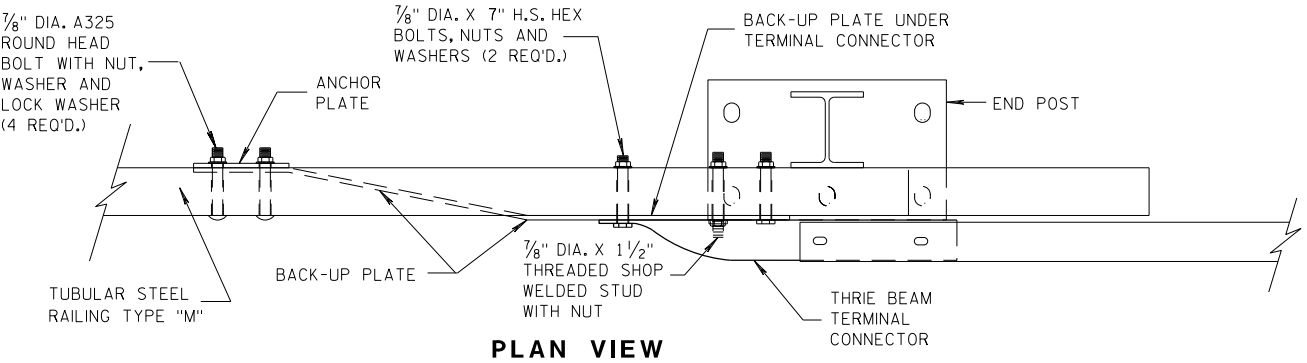
FRONT VIEW

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



FRONT VIEW

M



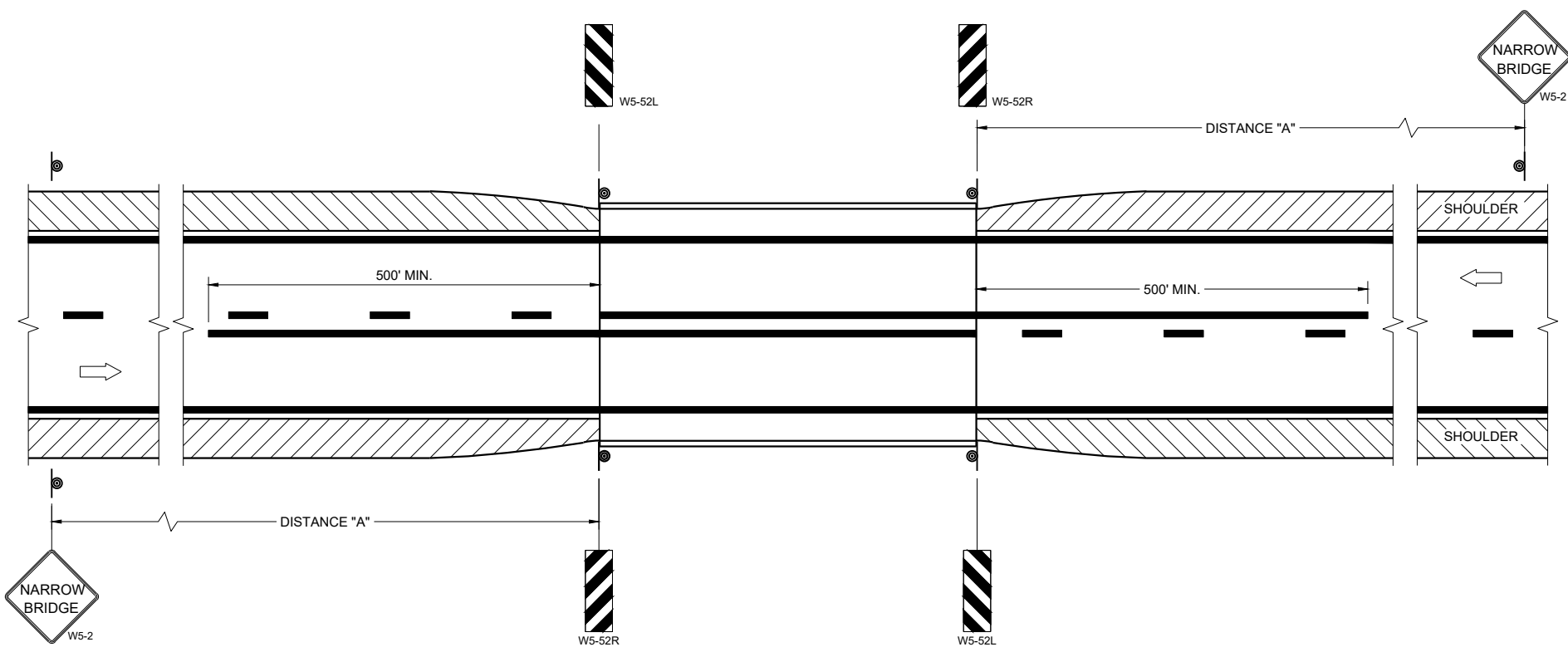
PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

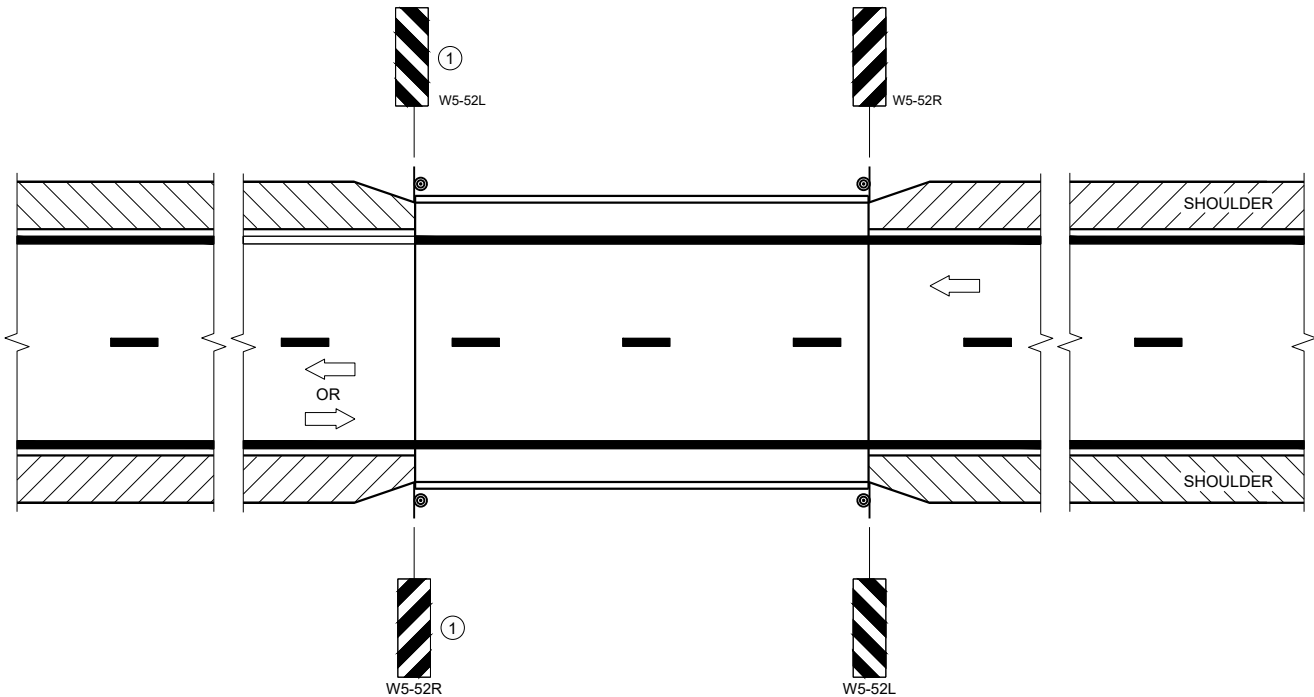
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
07/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



SITUATION 1
WARRANTING CRITERIA:
BRIDGE WIDTH IS AT LEAST 16 FEET BUT LESS THAN 24 FEET.



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

GENERAL NOTES

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

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

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

ON BRIDGE ONLY PROJECTS, PLACE 300 FEET OF EDGELINE.

OMIT EDGELINES ON ROADWAYS WITHOUT EXISTING EDGELINES.

① OMIT ON ONE-WAY TRAVELED WAYS.

LEGEND

⊙ SIGN ON PERMANENT SUPPORT

➡ DIRECTION OF TRAFFIC

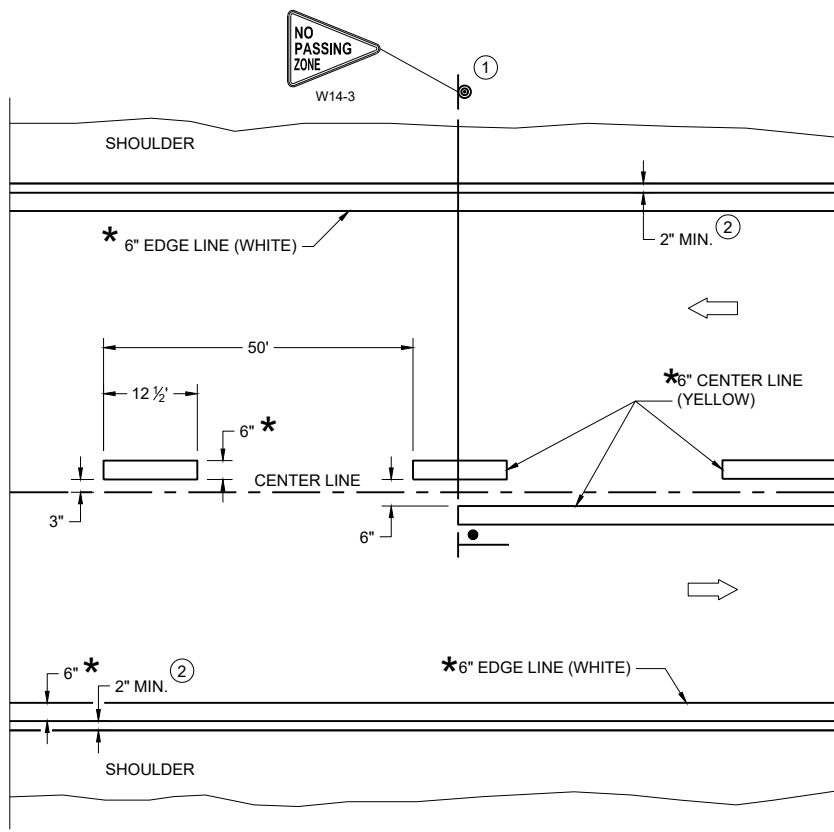
DISTANCE TABLE

POSTED OR 85TH PERCENTILE SPEED	DISTANCE "A"
25	150'
30	200'
35	250'
40	300'
45	400'
50	550'
55	700'

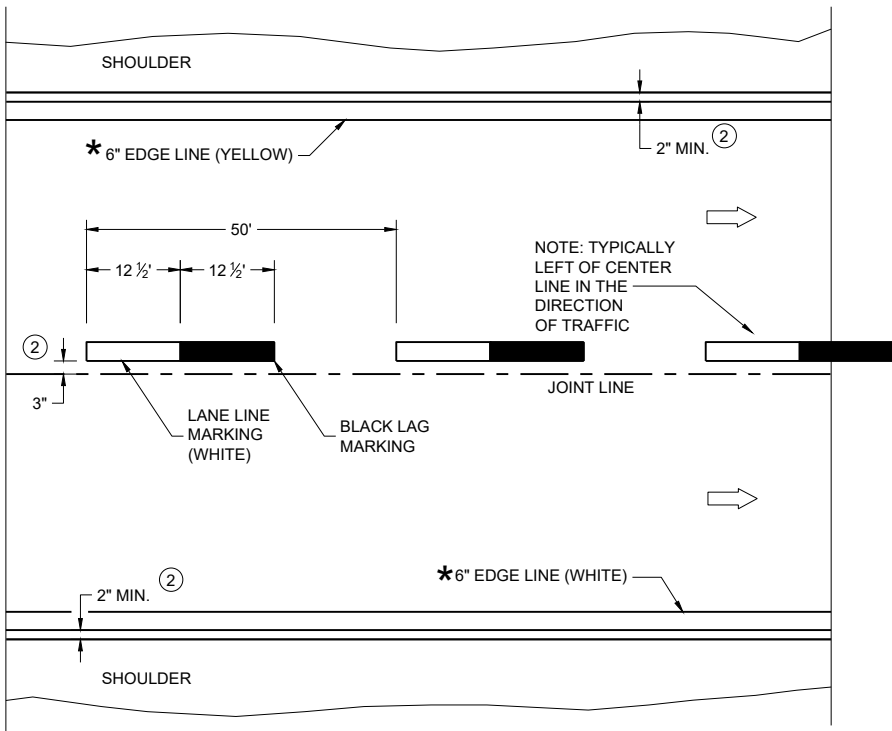
**SIGNING AND MARKING
FOR TWO LANE BRIDGES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2023 /S/ Jeannie Silver
DATE Statewide Pavement Marking Engineer
FHWA



TWO WAY TRAFFIC



ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING

*CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES

GENERAL NOTES

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

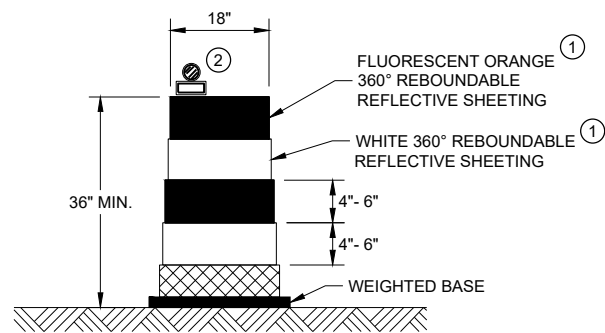
- ① LOCATE THE NO PASSING ZONE W14-3 SIGN WITHIN 50 FEET OF THE "T" MARKING
- ② MEASURE FROM EDGE OF MARKING TO JOINT LINE. THIS DOES NOT INCLUDE SPACE NEEDED FOR GROOVING OPERATIONS.

LEGEND

- "T" MARKING
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC

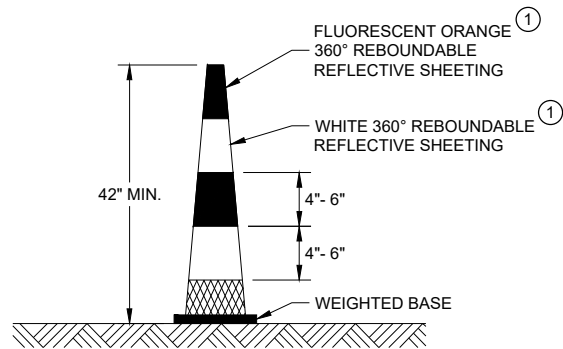
PERMANENT LONGITUDINAL PAVEMENT MARKINGS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2023 DATE	/S/ Jeannie Silver Statewide Pavement Marking Engineer

FHWA



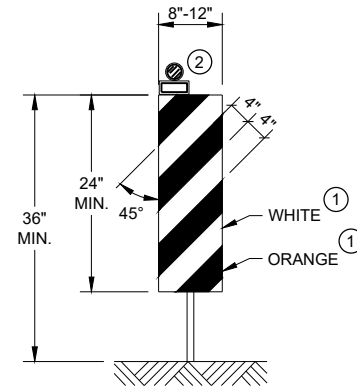
DRUM

BALLAST WIDTHS
RANGE FROM 24"-36"



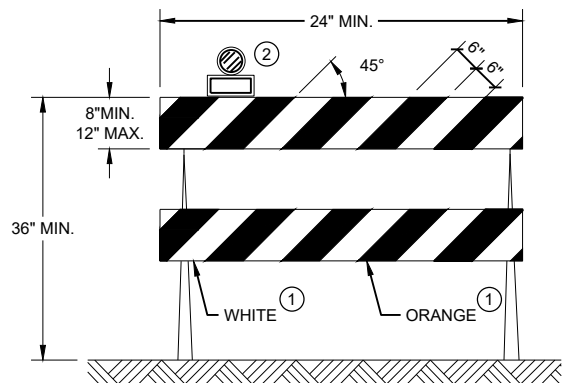
42" CONE

DO NOT USE IN TAPERS
½ SPACING OF DRUMS
BALLAST WIDTHS
RANGE FROM 14"-20"



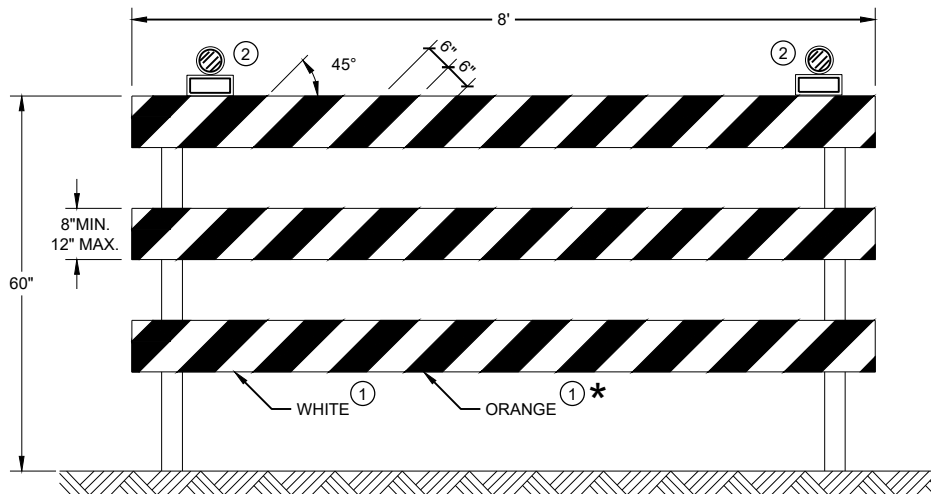
VERTICAL PANEL

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



TYPE II BARRICADE

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



TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

GENERAL NOTES

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

**CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2022 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA

	SIGN ON PERMANENT SUPPORT		TEMPORARY RAISED PAVEMENT MARKERS (TWO WAY YELLOW)
	TRAFFIC CONTROL DRUM		TEMPORARY STEEL PLATE BEAM GUARD AND END TREATMENT
	TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT		DIRECTION OF TRAFFIC
	TEMPORARY DELINEATOR (WHITE, SINGLE DELINEATOR)		REMOVE PAVEMENT MARKINGS
	TYPE III BARRICADE		WORK AREA
	TYPE III BARRICADE WITH ATTACHED SIGN		
	TYPE "A" WARNING LIGHT (FLASHING)		

ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED.

"WO" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

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

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

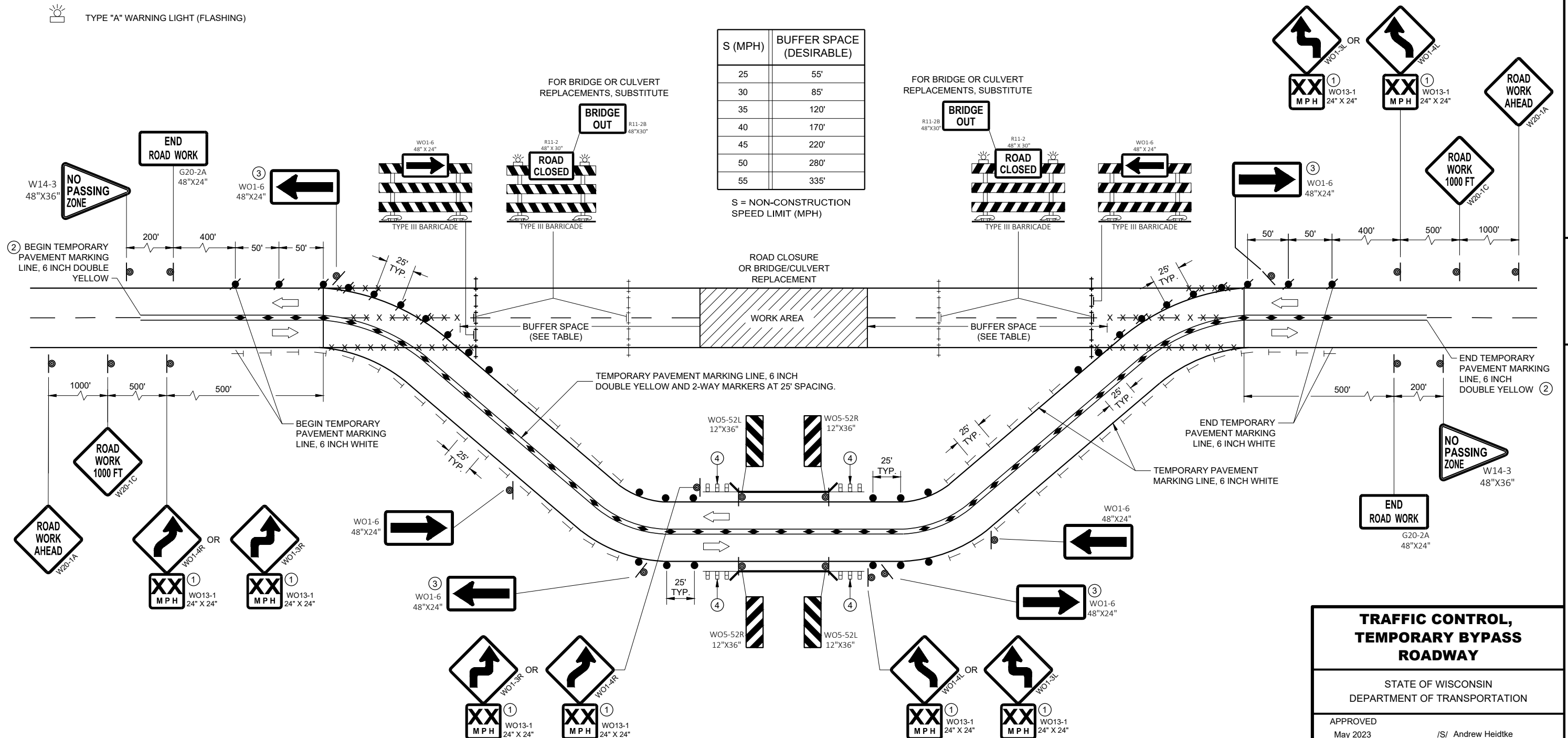
THE SPACING BETWEEN SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 200 FEET (500' DESIRABLE) DISTANCE TO EXISTING SIGNS.

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FHWA'S MANUAL ON STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

EQUIPMENT, VEHICLES, OR MATERIAL SHOULD NOT BE STORED IN BUFFER SPACE.

S (MPH)	BUFFER SPACE (DESIRABLE)
25	55'
30	85'
35	120'
40	170'
45	220'
50	280'
55	335'

S = NON-CONSTRUCTION
SPEED LIMIT (MPH)



TRAFFIC CONTROL, TEMPORARY BYPASS ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED	
<u>May 2023</u>	<u>/S/ Andrew Heidtke</u>
DATE	WORK ZONE ENGINEER

FHWA

6

SDD 15D31-05

6 |

SDD 15D31-05

GENERAL NOTES

DRAWING NOT TO SCALE. ALL SIGNS AND POSTS ON THIS SHEET SHALL BE PAID FOR WITH 'TRAFFIC CONTROL SIGNS' BID ITEM. ALL SIDE ROADS WHICH ARE UNDER CONSTRUCTION OF CURB AND GUTTER AND/OR GRADING SHALL BE ADEQUATELY SIGNED.

ALL SIGNS AND DEVICES SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD). SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE WISDOT STANDARD SIGN PLATES.

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

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

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

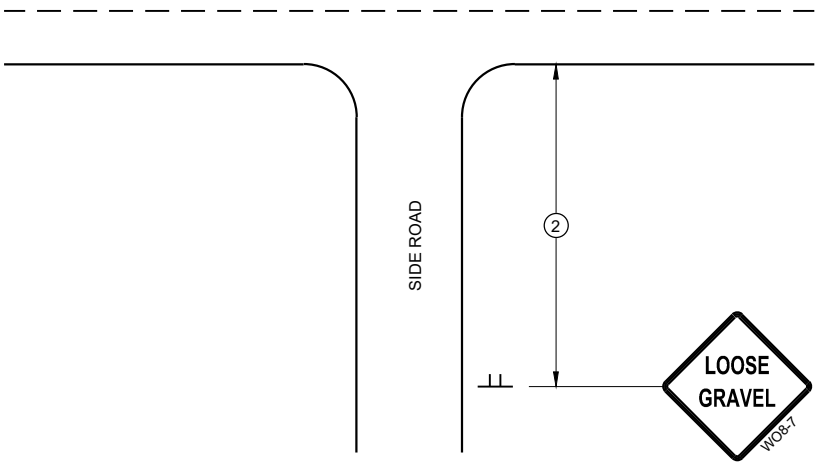
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

SEE 15C34 FOR ADDITIONAL TRAFFIC CONTROL SIGNING WHEN CENTERLINE PAVEMENT MAKINGS ARE MISSING. 'DO NOT PASS' SIGNS MUST BE INSTALLED ON THE SAME DAY AS MILLING OPERATIONS.

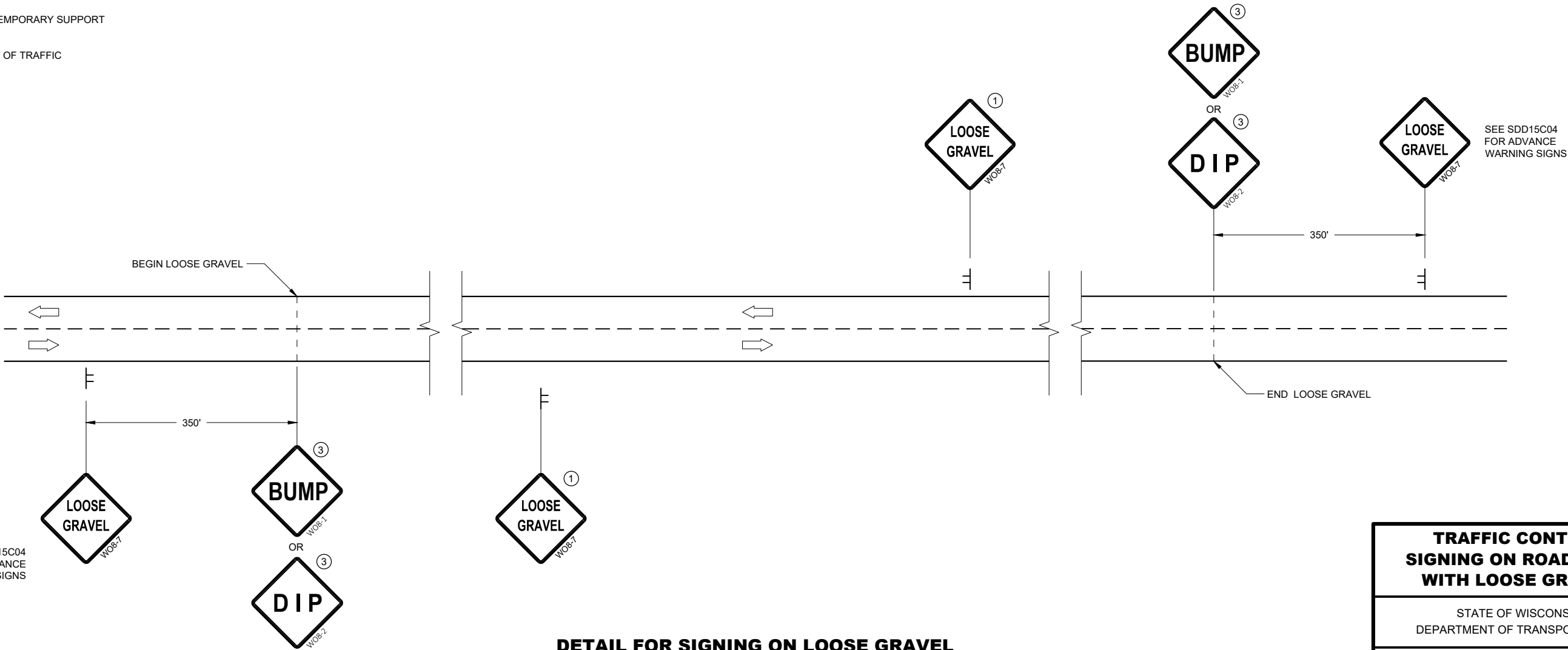
- 1 PLACE SIGNS 350' IN ADVANCE OF CHIP SEALED OR LOOSE GRAVEL SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- 2 PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.
- 3 ADD WO8-1 OR WO8-2 SIGN WHEN THE CONDITION IS PRESENT.

LEGEND

-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH
SIGN DETAIL



DETAIL FOR SIGNING ON LOOSE GRAVEL
OR CHIP SEALED SURFACES

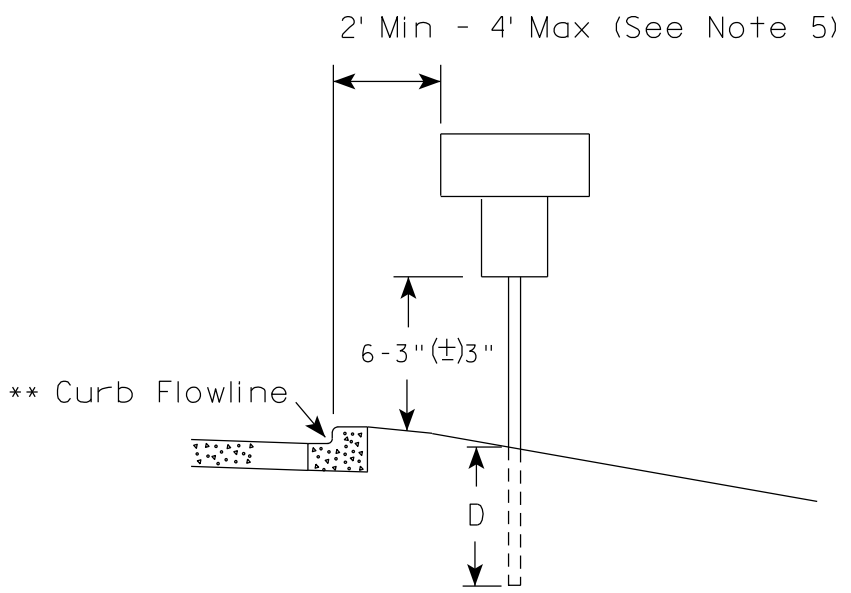
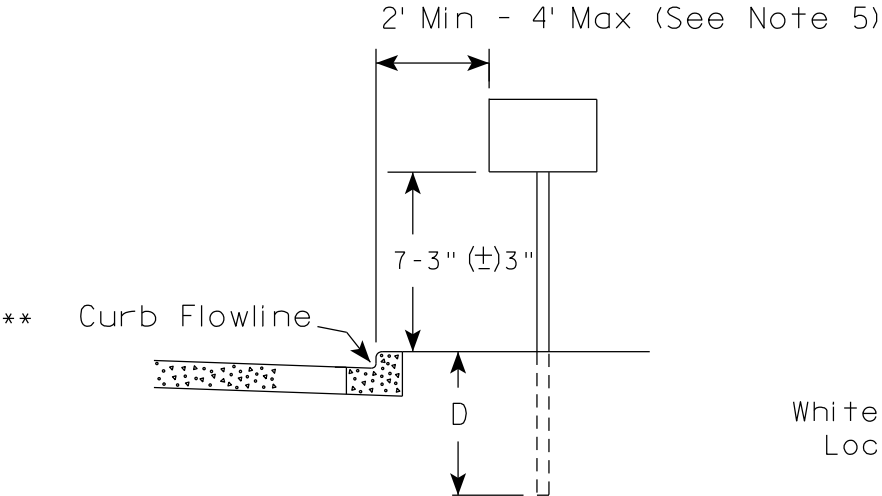
TRAFFIC CONTROL
SIGNING ON ROADWAYS
WITH LOOSE GRAVEL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

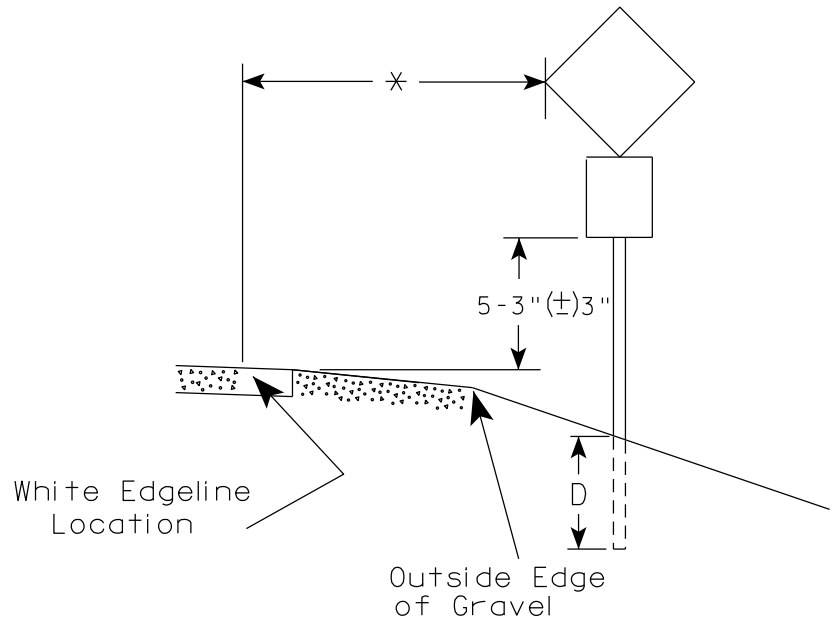
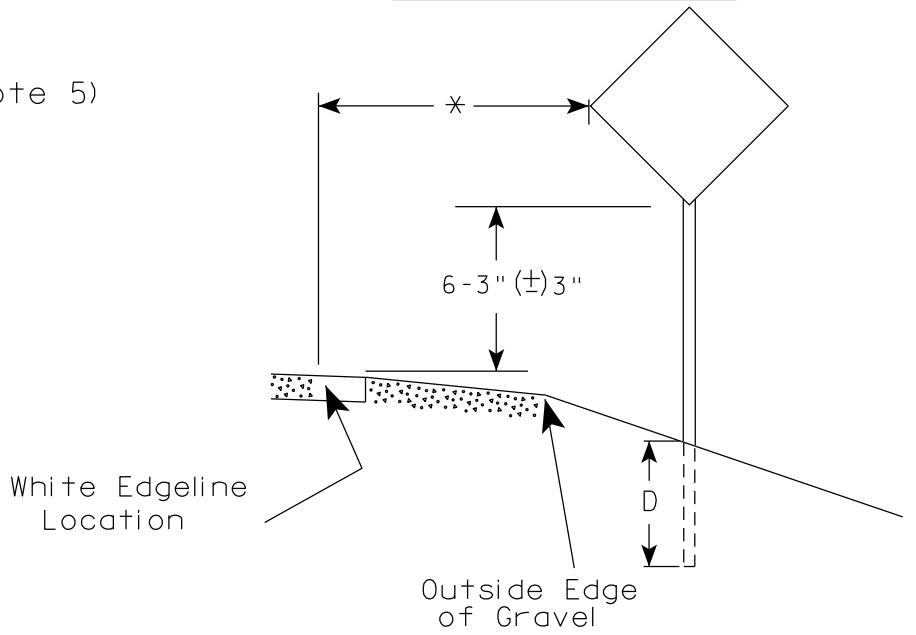
APPROVED
February 2021 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA

URBAN AREA



RURAL AREA (See Note 2)



POST EMBEDMENT DEPTH

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

GENERAL NOTES

1. Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on or behind barrier wall, see A4-10 sign plate.
The Double Arrow sign (W12-1D) shall be mounted at a height of 2'-3" (±) 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" (±) 3".
3. For expressways and freeways, mounting height is 7'- 3" (±) 3" or 6'-3" (±) 3" depending upon existence of a sub-sign.
4. Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±) 3".
5. Offset distance shall be consistent with existing signs or consistent throughout length of project.
6. Folding signs shall be mounted at a height of 5'-3" (±) 3" or as directed by the Engineer.

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

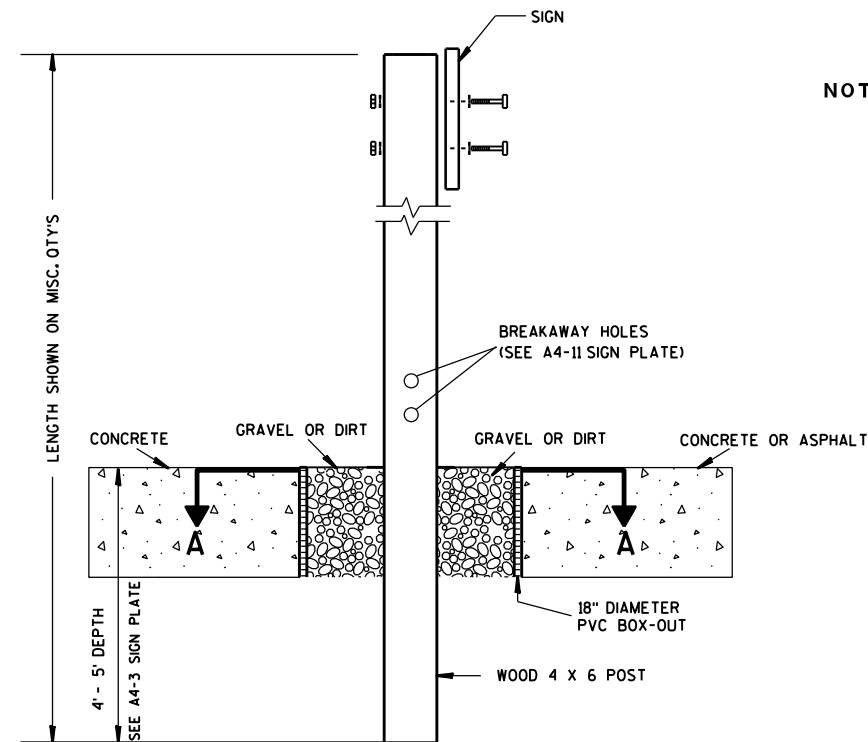
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED 
for State Traffic Engineer

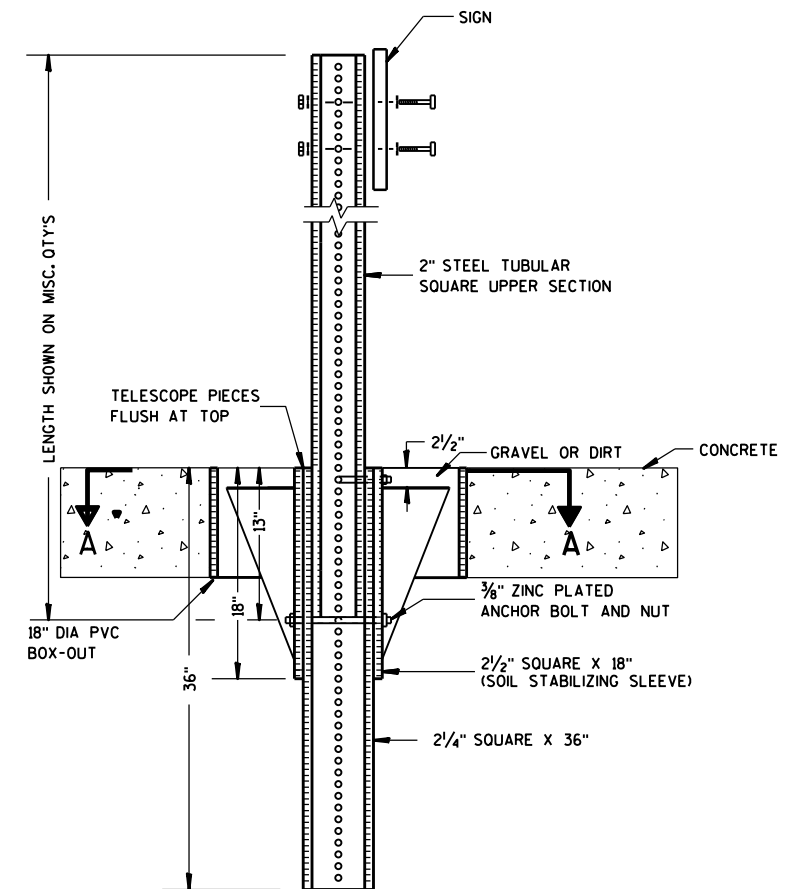
DATE 12/6/23 PLATE NO. A4-3.23



ELEVATION VIEW

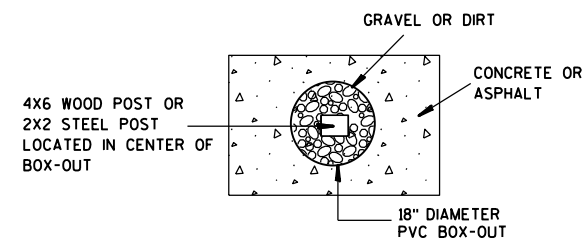
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST
BOX-OUTS
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

PROJECT NO:

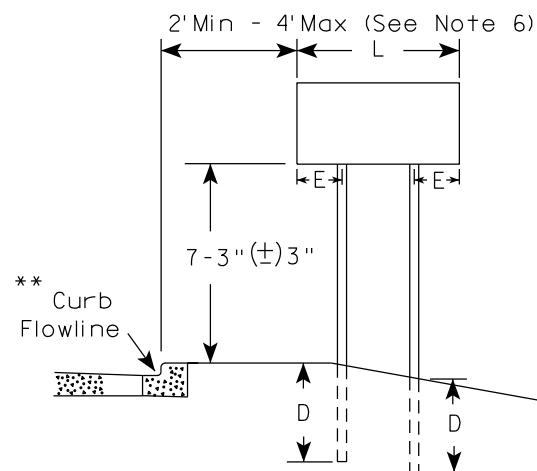
HWY:

COUNTY:

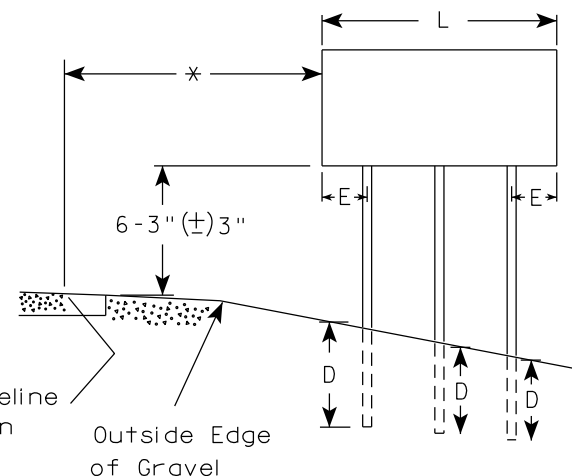
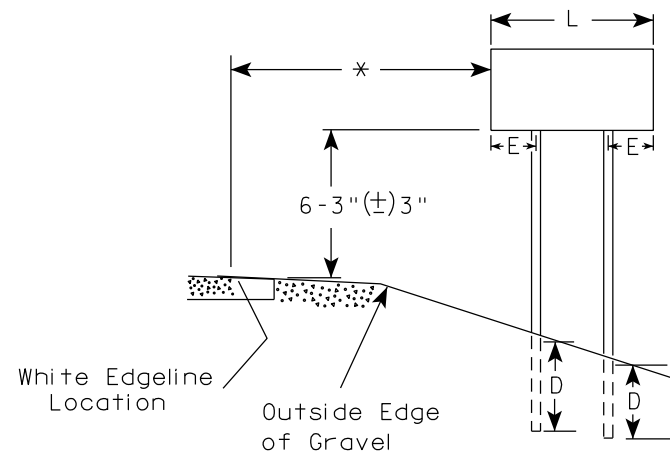
SHEET NO:

E

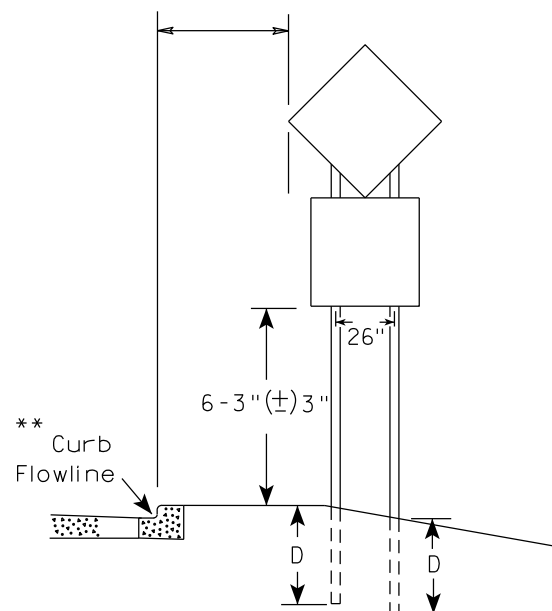
URBAN AREA



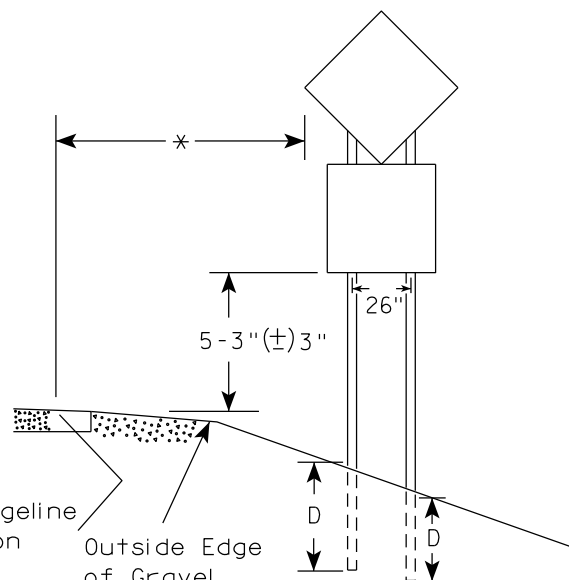
RURAL AREA (See Note 3)



2' Min - 4' Max (See Note 6)



48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

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

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

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION
OF TYPE II SIGNS
ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 12/6/23 PLATE NO. A4-4.16

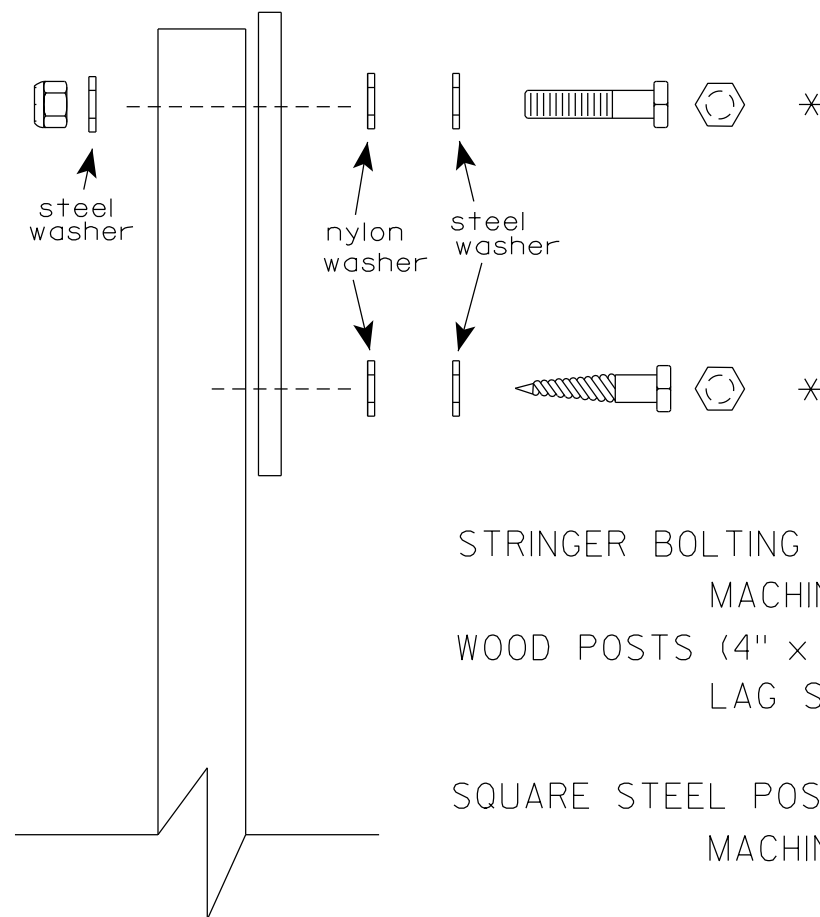
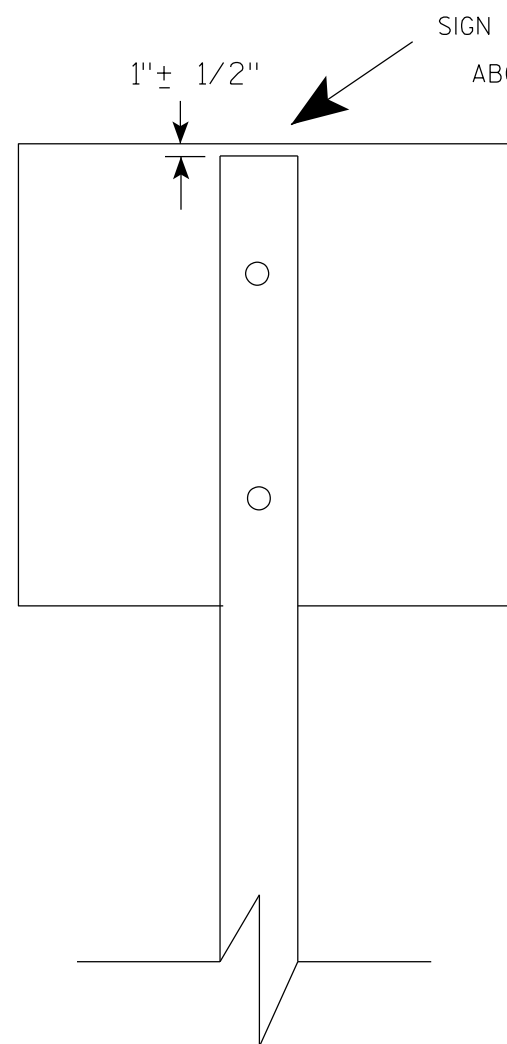
GENERAL NOTES

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

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

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

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



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

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

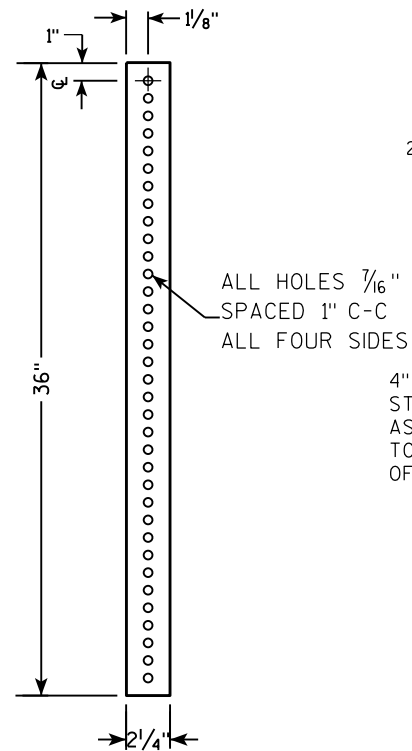
Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

- STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)
- MACHINE BOLTS - $\frac{5}{16}$ " X 1-3/4" Length w/ lock nuts
- WOOD POSTS (4" x 6")
- LAG SCREWS - $\frac{3}{8}$ " X 3" (NO STRINGERS ON BACK OF SIGN)
 $\frac{3}{8}$ " X 4" (STRINGERS ON BACK OF SIGN)
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - $\frac{3}{8}$ " X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
 $\frac{3}{8}$ " X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)
- RIVETS - $\frac{9}{32}$ " (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 $\frac{3}{8}$ " I.D. X $\frac{1}{16}$ " STEEL
- 1-1/4" O.D. X $\frac{3}{8}$ " I.D. X .080 NYLON

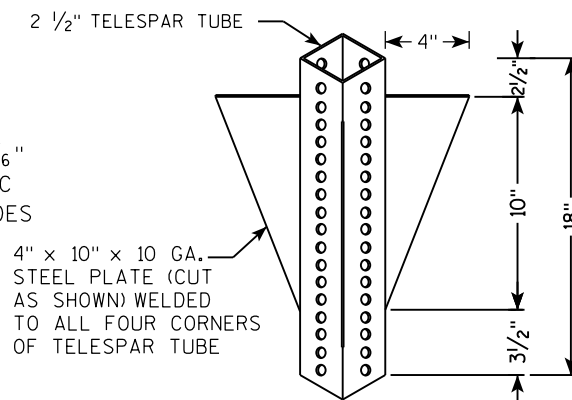
* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require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

ATTACHMENT OF SIGNS TO POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 4/1/2020	PLATE NO. A4-8.9

**2 1/4 " SQUARE
12 GAUGE
PERFORATED
GALVANIZED FINISH**



**2 1/2" SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH**



LENGTH SHOWN ON MISC. QTY'S
 18" DIA SCHEDULE 40 PVC BOX-OUT
 TELESCOPE PIECES FLUSH AT TOP
 36"
 18"
 13"
 2 1/2"
 2 1/4" SQUARE X 36"
 2 1/2" SQUARE X 18" (SOIL STABILIZING SLEEVE)
 3/8" ZINC PLATED ANCHOR BOLT AND NUT
 2 1/2" GRAVEL OR DIRT
 3/8" ZINC PLATED CORNER ANCHOR BOLT AND NUT
 ALL HOLES 7/16" SPACED 1" C-C ALL FOUR SIDES
 2" STEEL TUBULAR SQUARE UPPER SECTION
 SEE SIGN PLATE A4-8 FOR BOLT WASHER, & NUT MATERIAL
 SIGN

LENGTH SHOWN ON MISC. QTY'S

SIGN

SEE SIGN PLATE A4-8 FOR BOLT WASHER, & NUT MATERIAL

2" STEEL TUBULAR SQUARE UPPER SECTION

ALL HOLES $\frac{7}{16}$ " SPACED 1" C-C ALL FOUR SIDES

$\frac{3}{8}$ " ZINC PLATED CORNER ANCHOR BOLT AND NUT

TELESCOPE PIECES FLUSH AT TOP

1"

$\frac{3}{8}$ " ZINC PLATED ANCHOR BOLT AND NUT

2 $\frac{1}{2}$ " SQUARE X 18" (SOIL STABILIZING SLEEVE)

2 $\frac{1}{4}$ " SQUARE X 36"

36"

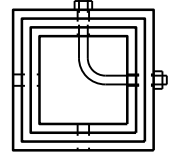
18"

12"

A

B

3/8" ZINC PLATED CORNER
ANCHOR BOLT AND NUT



DIRECTION
OF TRAFFIC

SECTION A-A

Area of Sign Installation (Sq. Ft.)	Number of Required Posts
9 or less	1
Greater than 9 less than or equal to 18	2
Greater than 18 less than or equal to 27	3

TUBULAR STEEL
SIGN POST
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch

for State Traffic Engineer

DATE 2/05/15 PLATE NO. A4-9.9

PROJECT NO:

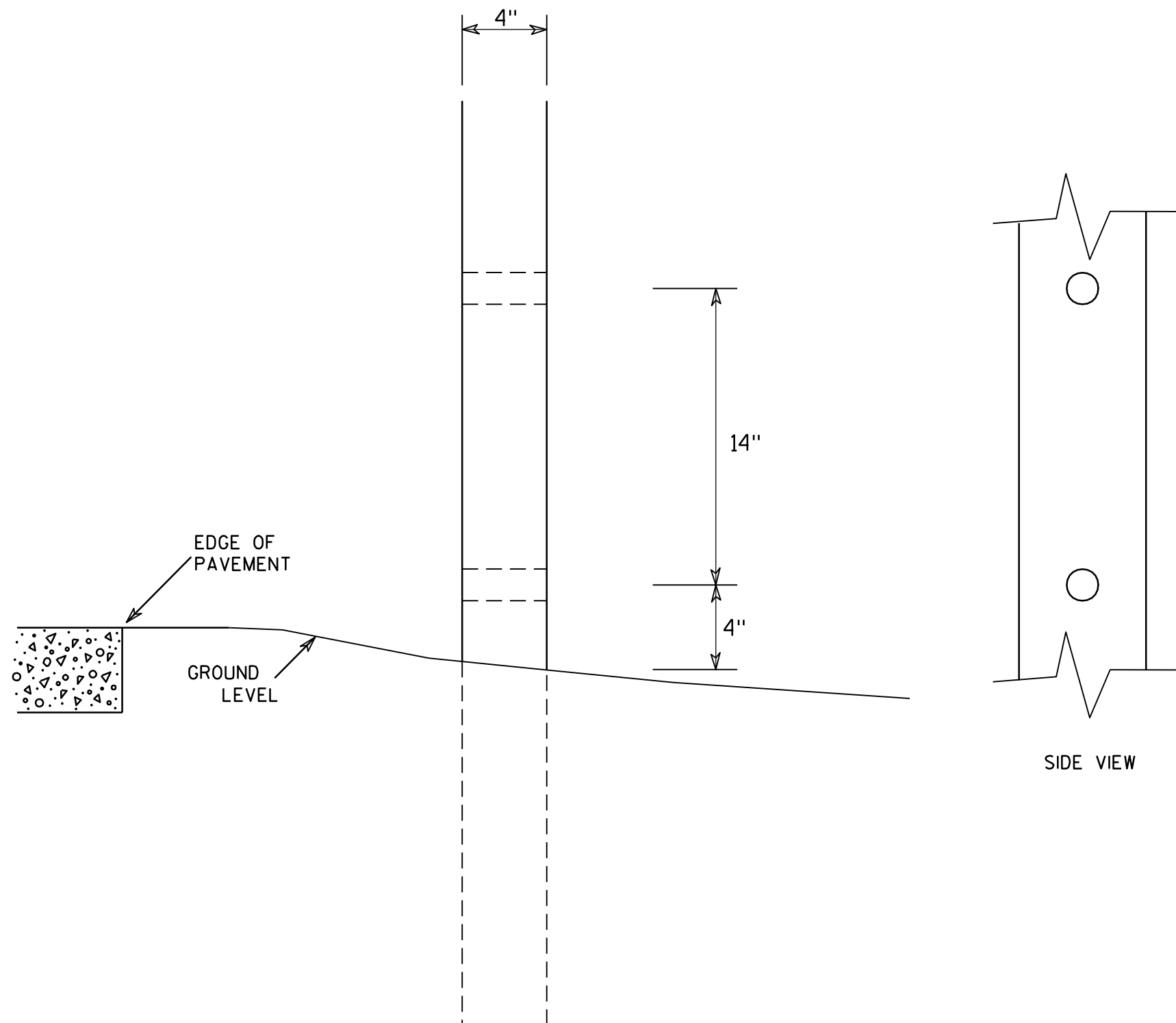
HWY:

COUNTY:

SHEET NO:

三

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:

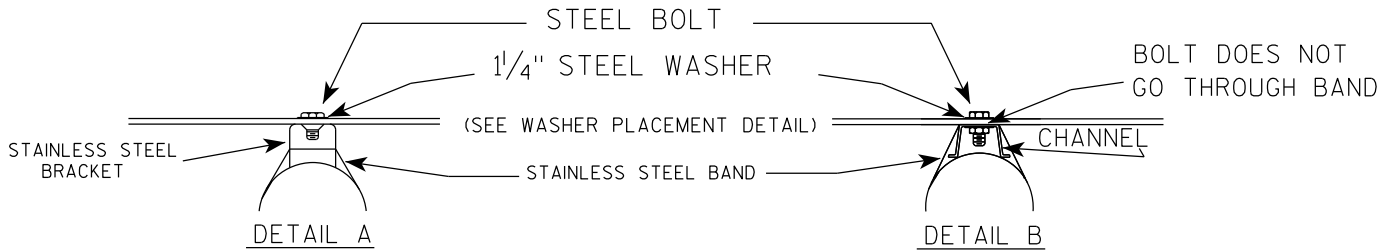
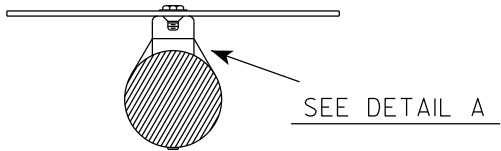
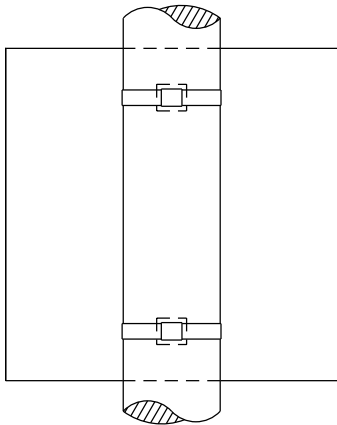
COUNTY:

SHEET NO:

E

BANDING

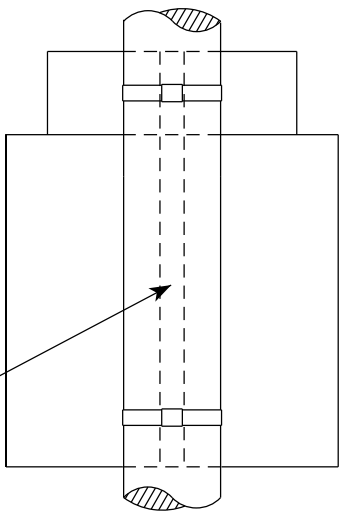
SINGLE SIGN



GENERAL NOTES

1. Any sign over 3 feet in width shall use the V-Block banding method. See A5-10 standard plate.
2. Signs 3 feet or greater in height shall have three bracket bands installed. Signs less than 3 feet in height shall have two bracket bands installed.
3. Banding and assembly bracket shall be stainless steel. All bands shall be $\frac{3}{4}$ " in width and 0.025" thickness.
4. ALL SIGN MOUNTING BOLTS AND WASHERS SHALL BE EITHER:
 - a. Hot dip or mechanically galvanized in accordance with ASTM Designation: A 153, Class D
 - b. Electro-galvanized in accordance with ASTM designation: B 633, Type III, SC 3

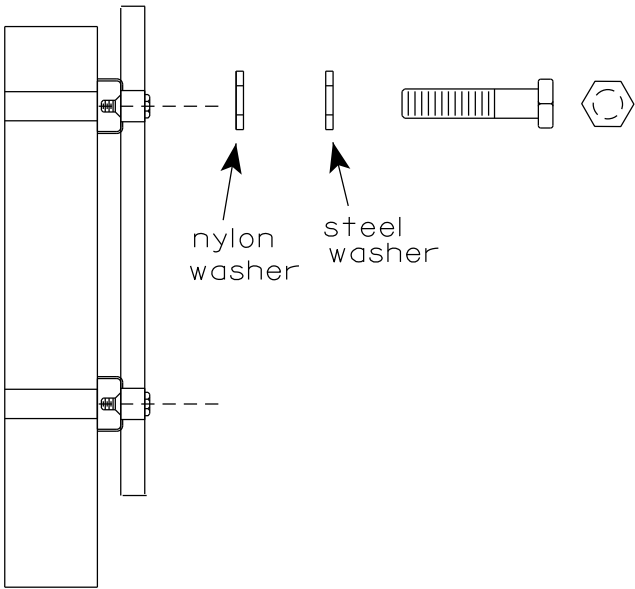
"J" ASSEMBLY



CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET

SEE DETAIL B

WASHER PLACEMENT

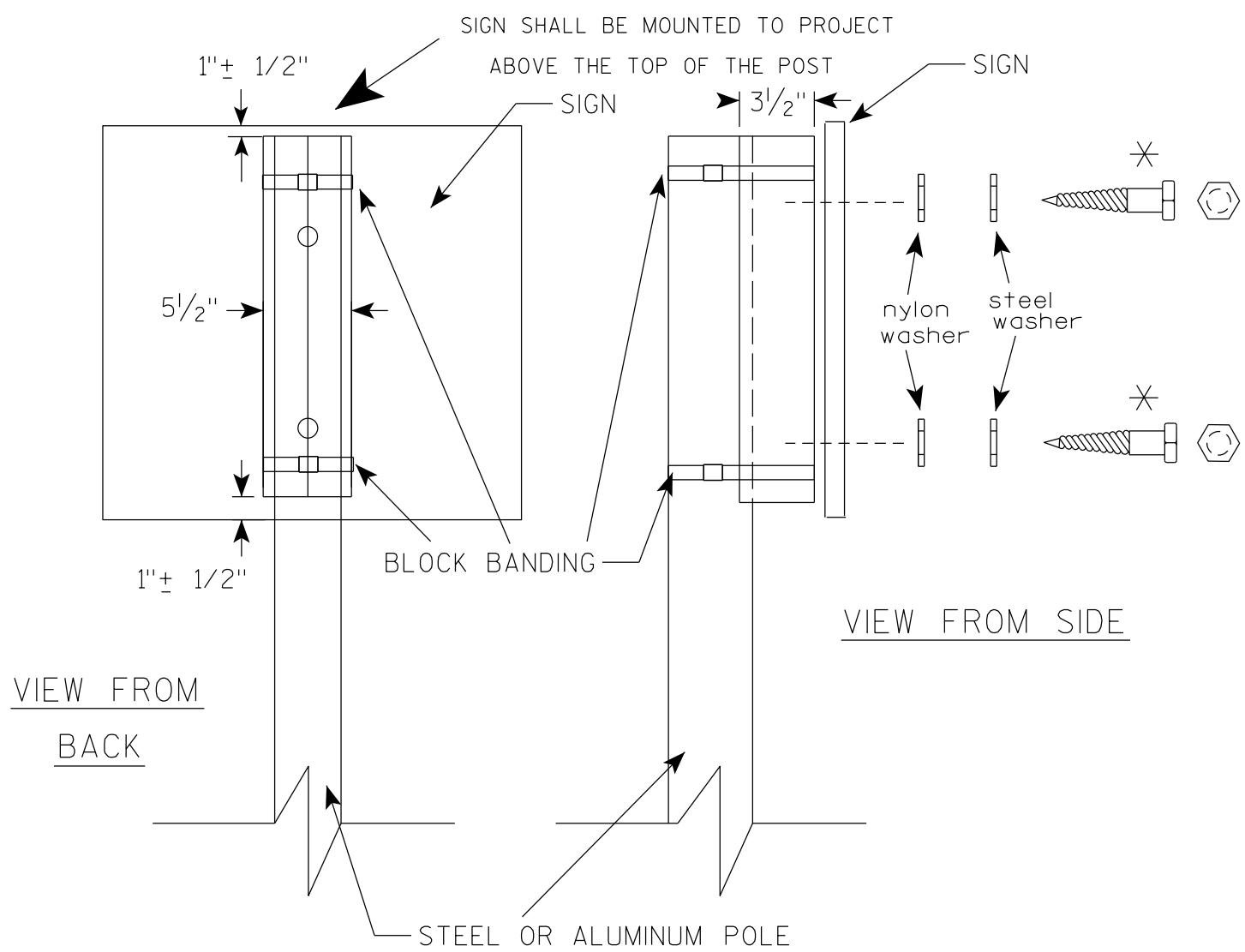


WASHERS (ALL POSTS) -
1-1/4" O.D. X $\frac{3}{8}$ " I.D. X $\frac{1}{16}$ " STEEL
1-1/4" O.D. X $\frac{3}{8}$ " I.D. X .080 NYLON
FOR ALL TYPE H SIGNS

STANDARD SIGN
SIGN BANDING DETAILS

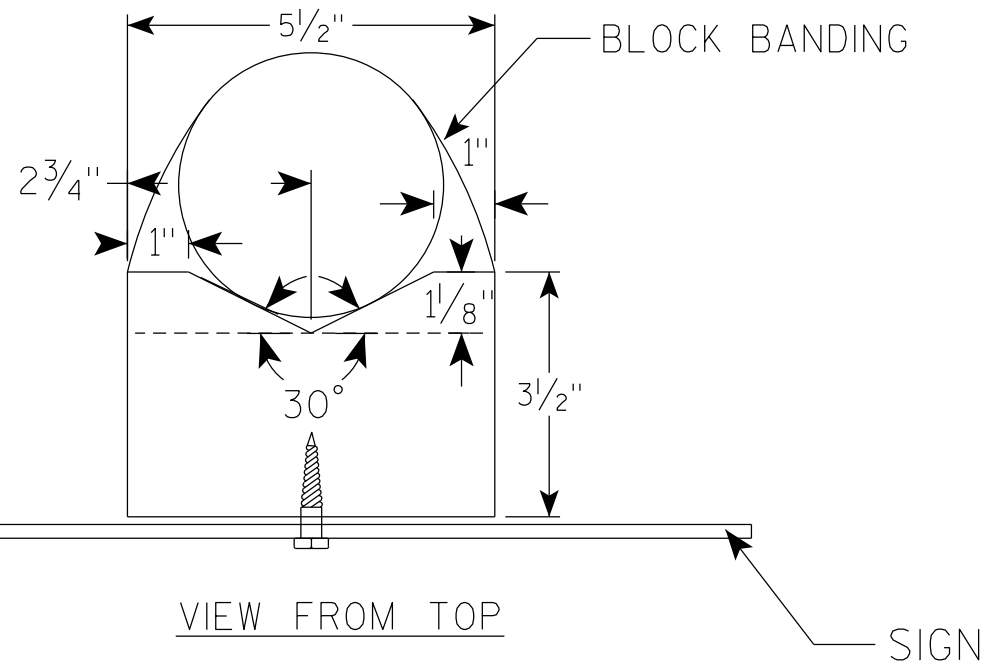
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer
DATE 6/10/19 PLATE NO. A5-9.4



VIEW FROM
BACK

VIEW FROM SIDE



VIEW FROM TOP

GENERAL NOTES

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

✱ LAG BOLTS SHALL BE $\frac{3}{8}$ " X $2\frac{1}{2}$ "

BLOCK BANDING DETAIL
(V-BLOCK OPTION)

WISCONSIN DEPT OF TRANSPORTATION

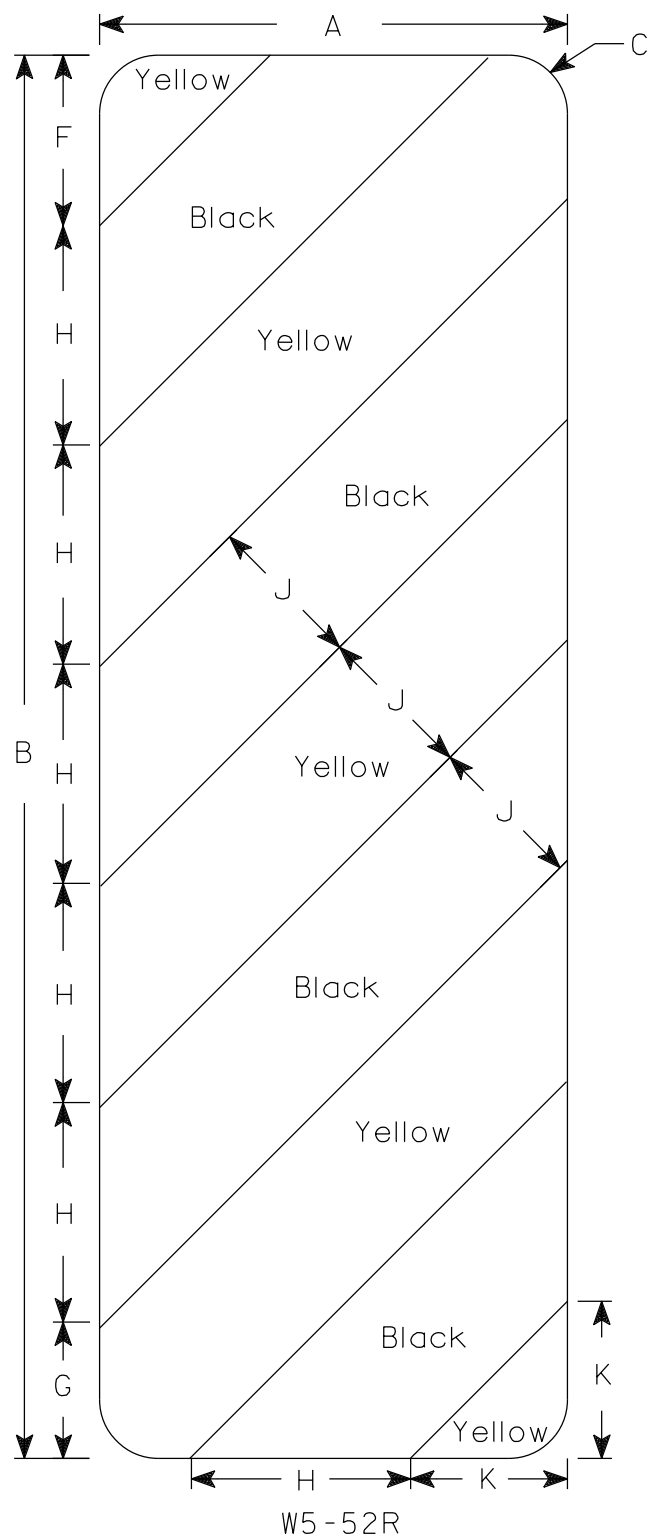
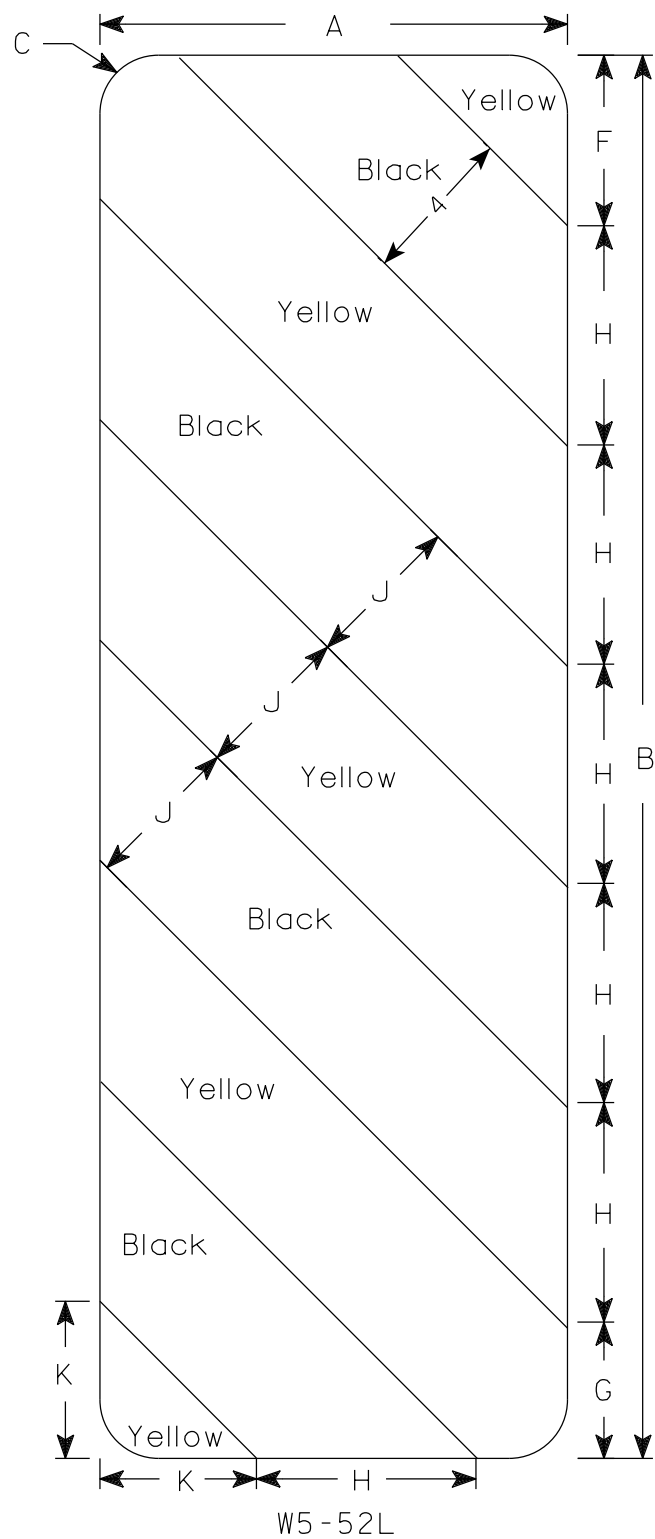
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 4/19/2022 PLATE NO. A5-10.3

PROJECT NO:

SHEET NO:

E



NOTES

1. Sign is Type II - Type F Reflective
2. Color:
Background - Yellow
Message - Black
3. 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	1 1/2			4 3/8	3 1/2	5 5/8	45°	4	4																3.0
2M	12	36	1 1/2			4 3/8	3 1/2	5 5/8	45°	4	4																3.0
3	18	54	1 1/2			6	5 1/2	8 1/2	45°	6	6 9/16																6.75
4																											
5																											

STANDARD SIGN
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 3/4/2024 PLATE NO. W5-52.10

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
INVENTORY RATING FACTOR: 1.21
OPERATING RATING FACTOR: 1.66
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS

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

MATERIAL PROPERTIES:

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

36W" PRESTRESSED GIRDER
CONCRETE MASONRY f'_c = 8,000 p.s.i.
STRANDS - 0.6" DIA. WITH ULTIMATE TENSILE STRENGTH OF = 270,000 p.s.i.

HYDRAULIC DATA:

100 YEAR FREQUENCY

Q_{100} = 770 c.f.s.
VEL. = 7.4 f.p.s.
HW₁₀₀ = EL. 728.94
WATERWAY AREA = 104 sq. ft.
DRAINAGE AREA = 3.1 sq. mi.
SCOUR CRITICAL CODE = 5
DATUM = NAVD88 (2012)

2 YEAR FREQUENCY

Q_2 = 130 c.f.s.
VEL. = 6.6 f.p.s.
HW₂ = EL. 725.07

FOUNDATION DATA:

ABUTMENTS TO BE SUPPORTED ON HP 10 x 42 STEEL PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 180 TONS * PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA, ESTIMATED LENGTH 70'-0".

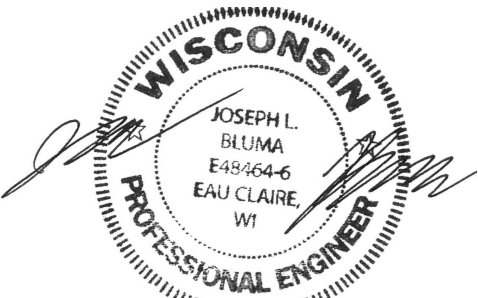
*THE FACTORED AXIAL RESISTANCE OF PILES IN COMPRESSION USED FOR DESIGN IS THE REQUIRED DRIVING RESISTANCE MULTIPLIED BY A RESISTANCE FACTOR OF 0.5 USING MODIFIED GATES TO DETERMINE DRIVEN PILE CAPACITY.

TRAFFIC DATA:

A.A.D.T. = 2,700 (2025)
A.A.D.T. = 3,600 (2045)
R.D.S. = 50 M.P.H.

LIST OF DRAWINGS

1. GENERAL PLAN
2. TYPICAL SECTION, QUANTITIES AND NOTES
3. STRUCTURE DETAILS
4. SUBSURFACE EXPLORATION
5. WEST ABUTMENT
6. WEST ABUTMENT DETAILS AND BILL OF BARS
7. EAST ABUTMENT
8. EAST ABUTMENT DETAILS AND BILL OF BARS
9. ALTERNATE CONSTRUCTION JOINT
10. 36W" PRESTRESSED GIRDER DETAILS
11. 36W" PRESTRESSED GIRDER DETAILS
12. STEEL DIAPHRAGM
13. SUPERSTRUCTURE
14. SUPERSTRUCTURE PLAN
15. SUPERSTRUCTURE TRANSVERSE DECK STEEL LAYOUT
16. SUPERSTRUCTURE DETAILS
17. TUBULAR STEEL RAILING TYPE 'M'



08/30/2024

BRIDGE OFFICE CONTACT:
AARON BONK
(608)-261-0261

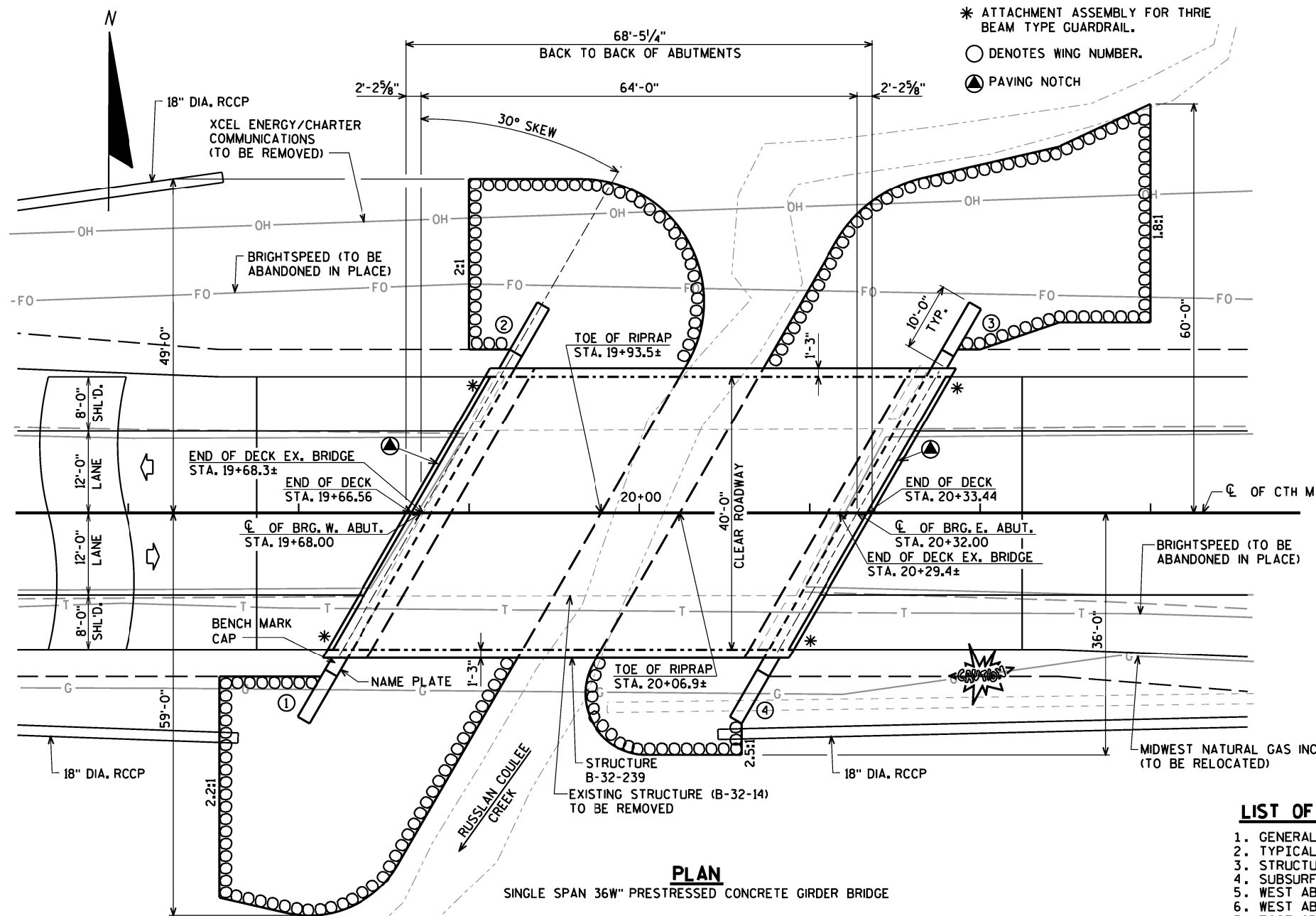
CONSULTANT CONTACT:
JOE BLUMA
(715)-834-3161

GENERAL
PLAN

SHEET 1 OF 17

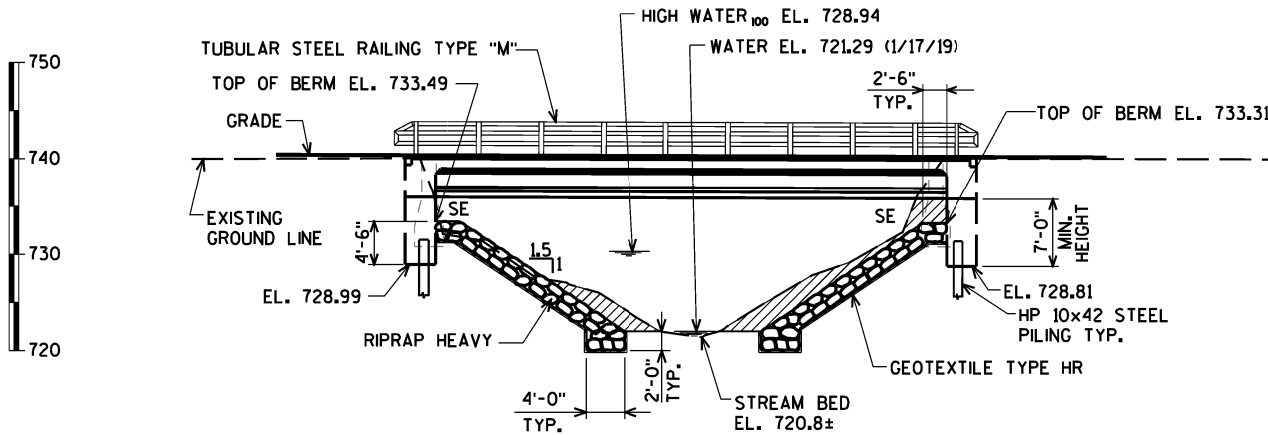
I.D.

DATE:



PLAN

SINGLE SPAN 36W" PRESTRESSED CONCRETE GIRDER BRIDGE



ELEVATION

(NORMAL TO C OF RUSSIAN COULEE CREEK)

REMOVE EXISTING SUBSTRUCTURE TO 2-FOOT BELOW FINISHED GRADE. COST CONSIDERED INCIDENTAL TO "REMOVING STRUCTURE" AND "REMOVING PILING" ITEMS. TYPICAL AT ALL SUBSTRUCTURES.

COST OF EXCAVATION IN THE HATCHED AREA SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "EXCAVATION FOR STRUCTURES BRIDGES B-32-239".

8/28/2024
PENTABLE:Bracu-shd_util.tbl

CHECKED BY:
DATE:
BACK CHECKED BY:
DATE:

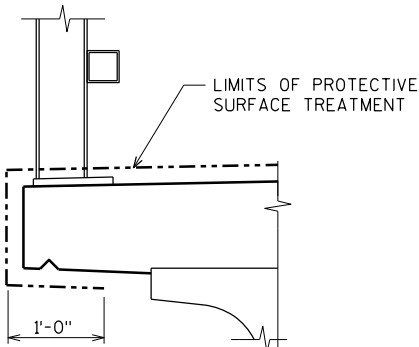
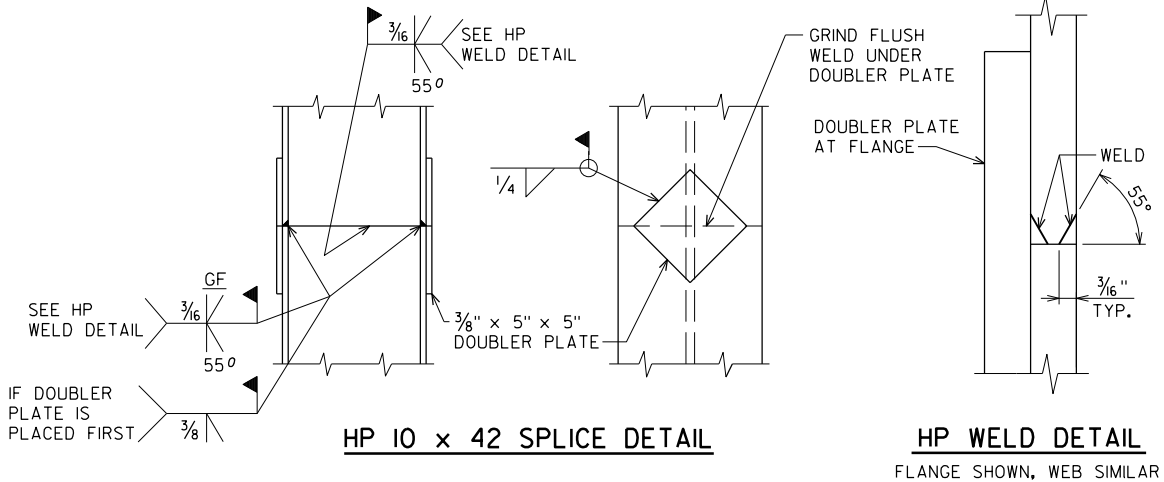
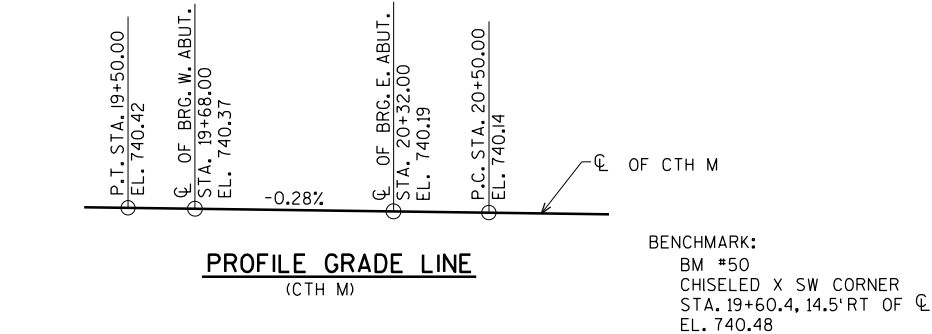
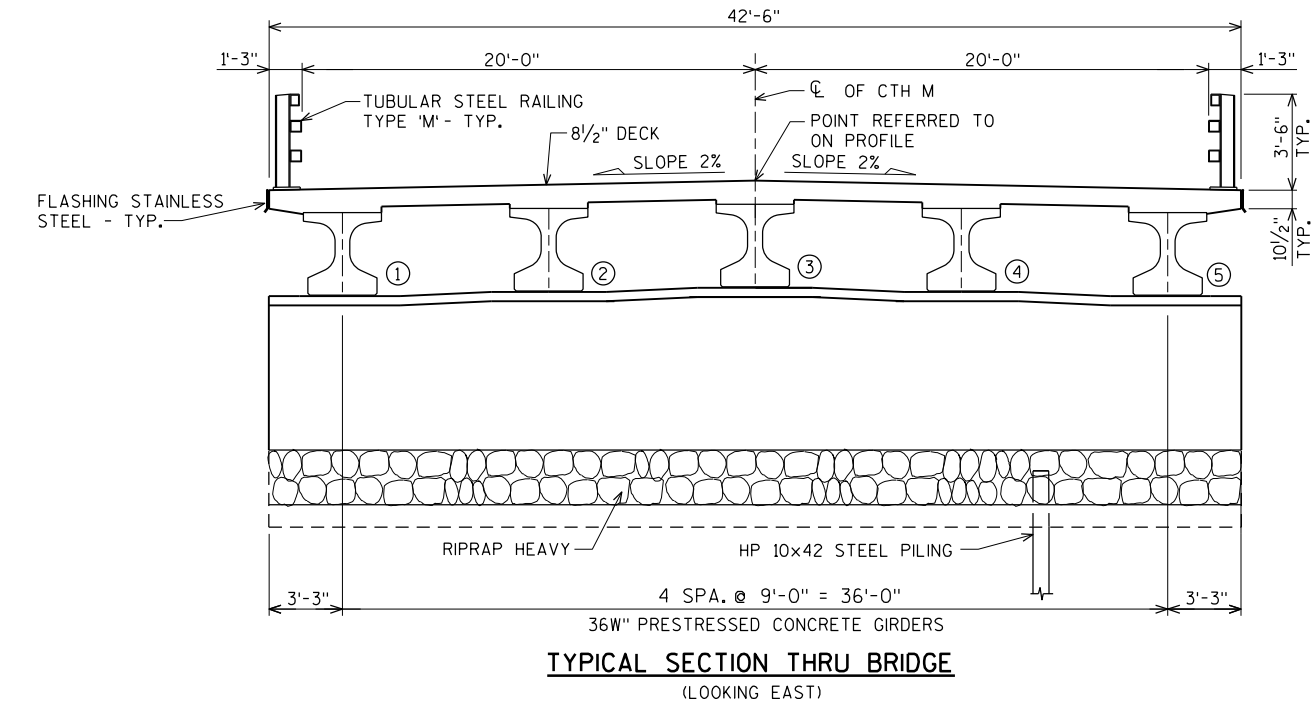
8

8

GENERAL NOTES

[illegible]

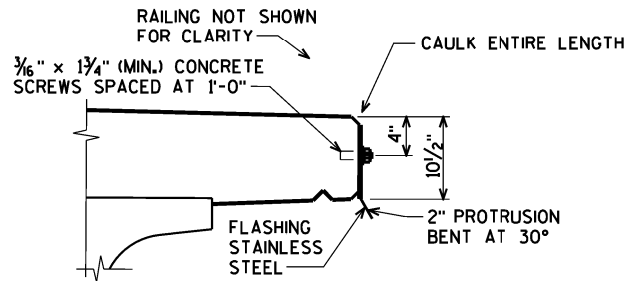
EXISTING SUBSTRUCTURE LOCATIONS ARE BASED ON SURVEY AND ASBUILTS. REMOVE EXISTING SUBSTRUCTURES TO 2-FOOT BELOW FINISHED GRADE TO BUILD NEW SUBSTRUCTURES. COST OF REMOVAL IS CONSIDERED INCIDENTAL TO "REMOVING STRUCTURE" AND "REMOVING PILING" BID ITEMS.



PROTECTIVE SURFACE TREATMENT DETAIL

NOTE: APPLY TO THE VERTICAL AND HORIZONTAL SURFACES OF PAVING NOTCHES.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
		DRAWN BY ZSS/CLP	PLANS CK'D. JLB
TYPICAL SECTION, QUANTITIES AND NOTES		SHEET 2 OF 17	



FLASHING DETAIL FOR NEW BRIDGES WITH OPEN RAILING

THE BID ITEM "FLASHING STAINLESS STEEL" SHALL INCLUDE PROVIDING AND INSTALLING THE STAINLESS STEEL FLASHING, SILICONE CAULK, 3/16" CONCRETE SCREWS AND CLEANING THE EDGE OF THE DECK PRIOR TO ATTACHMENT OF THE FLASHING.

FLASHING TO BE INSTALLED AFTER PROTECTIVE SURFACE TREATMENT APPLICATION.

CONCRETE SCREWS SHALL BE 410 STAINLESS STEEL.

EXTEND FLASHING TO FRONT FACE OF ABUTMENT DIAPHRAGM.

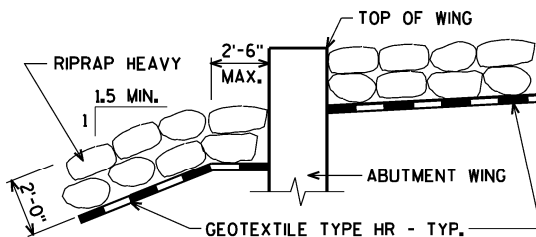
TOP OF FLASHING TO BEGIN APPROX. 1-INCH BELOW TOP OF DECK SURFACE.

THE FLASHING IS TO BE A CONSTANT HEIGHT BASED ON THE THINNEST DECK DEPTH OVER THE BRIDGE LENGTH.

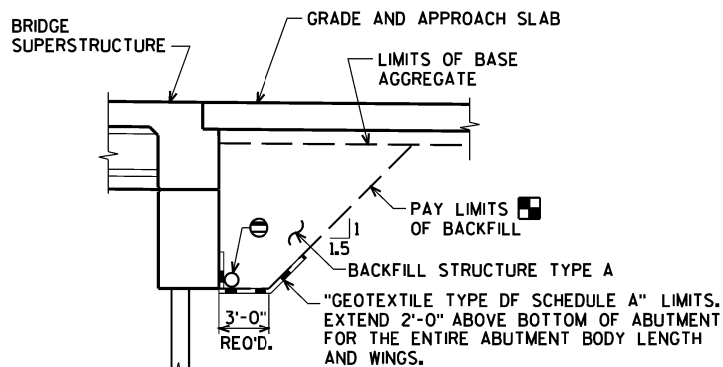
PROVIDE 2" MINIMUM FLASHING OVERLAP. FASTEN WITH 3/16" x 2" (MIN.) CONCRETE SCREWS.

CAULK SHALL BE NON-STAINING, GRAY NON-BITUMINOUS JOINT SEALER.

NOTE: PLACE RIPRAP HEAVY AS SHOWN ON GENERAL PLAN SHEET



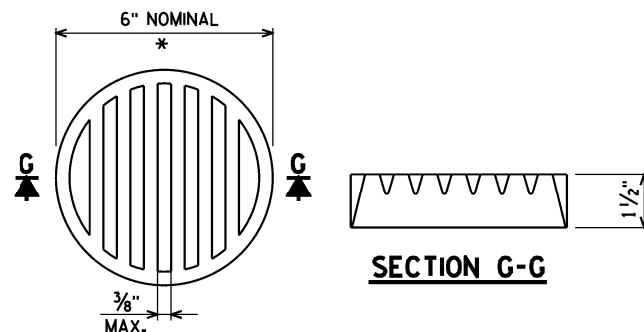
TYPICAL FILL SECTION AT WING TIPS



BACKFILL STRUCTURE LIMITS

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

PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON THIS SHEET.

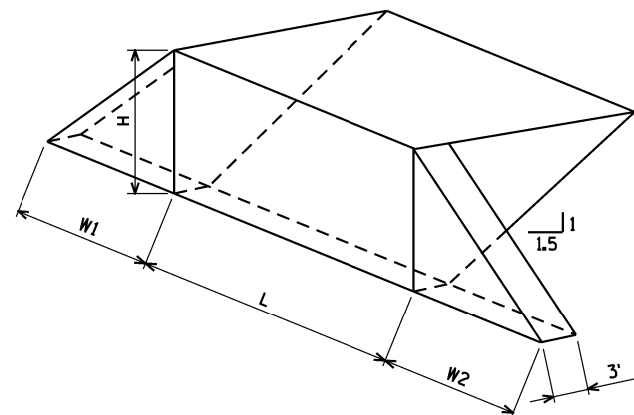


* DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

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



ABUTMENT BACKFILL DIAGRAM FOR WINGS PARALLEL TO ABUTMENT

L = OUT TO OUT OF ABUTMENT BODY (FT)

H = AVERAGE ABUTMENT FILL HEIGHT (FT)

W1 = WING 1 LENGTH (FT)

W2 = WING 2 LENGTH (FT)

EF = EXPANSION FACTOR (1.20 FOR CY BID ITEMS AND 1.00 FOR TON BID ITEMS)

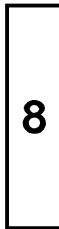
$V_{CF} = (L)(3.0')(H) + (L)(0.5)(1.5H)(H) + (3.0')(0.5)(W1+W2)(H)$

$V_{CY} = V_{CF} (EF) / 27$

$V_{TON} = V_{CY} (2.0)$

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
DRAWN BY	CLP	PLANS CK'D.	JLB
STRUCTURE DETAILS		SHEET 3 OF 17	

8/23/2024
PENTABLE:Breau-shd_util.tbl



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5436-00-75

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

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

 AT TIME OF DRILLING
 END OF DRILLING
 AFTER DRILLING

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

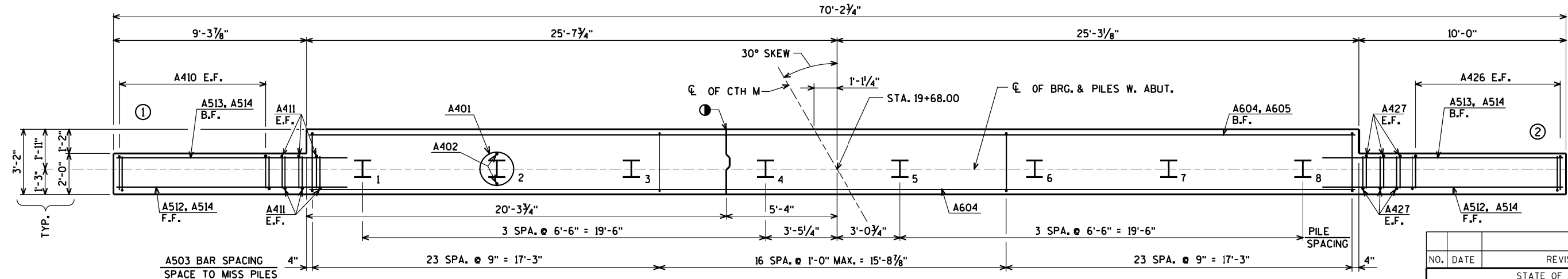
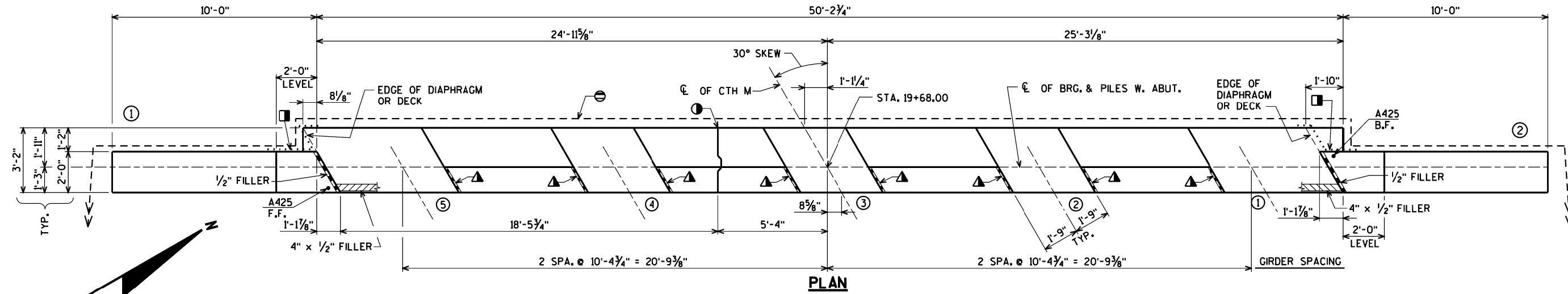
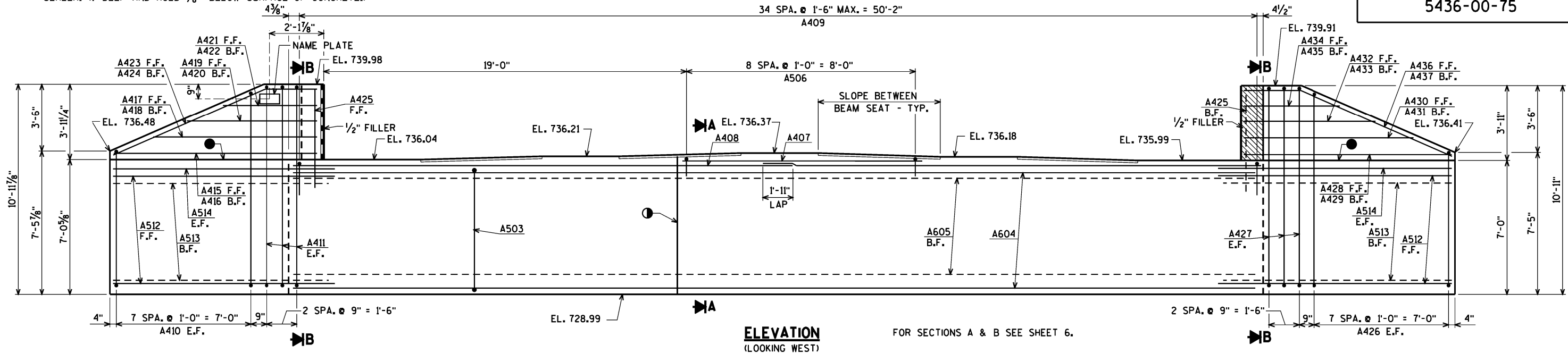
BORINGS WERE COMPLETED AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING TO OBTAIN INFORMATION CONCERNING THE CHARACTER OF SUBSURFACE MATERIALS FOUND AT THE SITE. BECAUSE THE INVESTIGATED DEPTHS ARE LIMITED AND THE AREA OF THE BORINGS IS VERY SMALL IN RELATION TO THE ENTIRE SITE, THE WISCONSIN DEPARTMENT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

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
		DRAWN BY	ZSS PLANS CK'D. JLB
SUBSURFACE EXPLORATION		SHEET 4 OF 17	

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

5436-00-75



PILE LAYOUT

● OPT. KEYED CONST. JOINT FORMED BY BEVELED 2" x 6" WITH RUBBERIZED MEMBRANE WATERPROOFING ON B.F. (RUBBERIZED MEMBRANE WATERPROOFING INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES" IF CONST. JOINT IS USED).

⊖ PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED.

① VERT. CONST. JOINT: KEYWAY FORMED BY A BEVELED 2" x 8". 3/4" V-GROOVE AT FRONT FACE AND 18" RMW AT BACK FACE. FOR OPTIONAL DETAILS SEE "ALTERNATE CONSTRUCTION JOINT" SHEET.

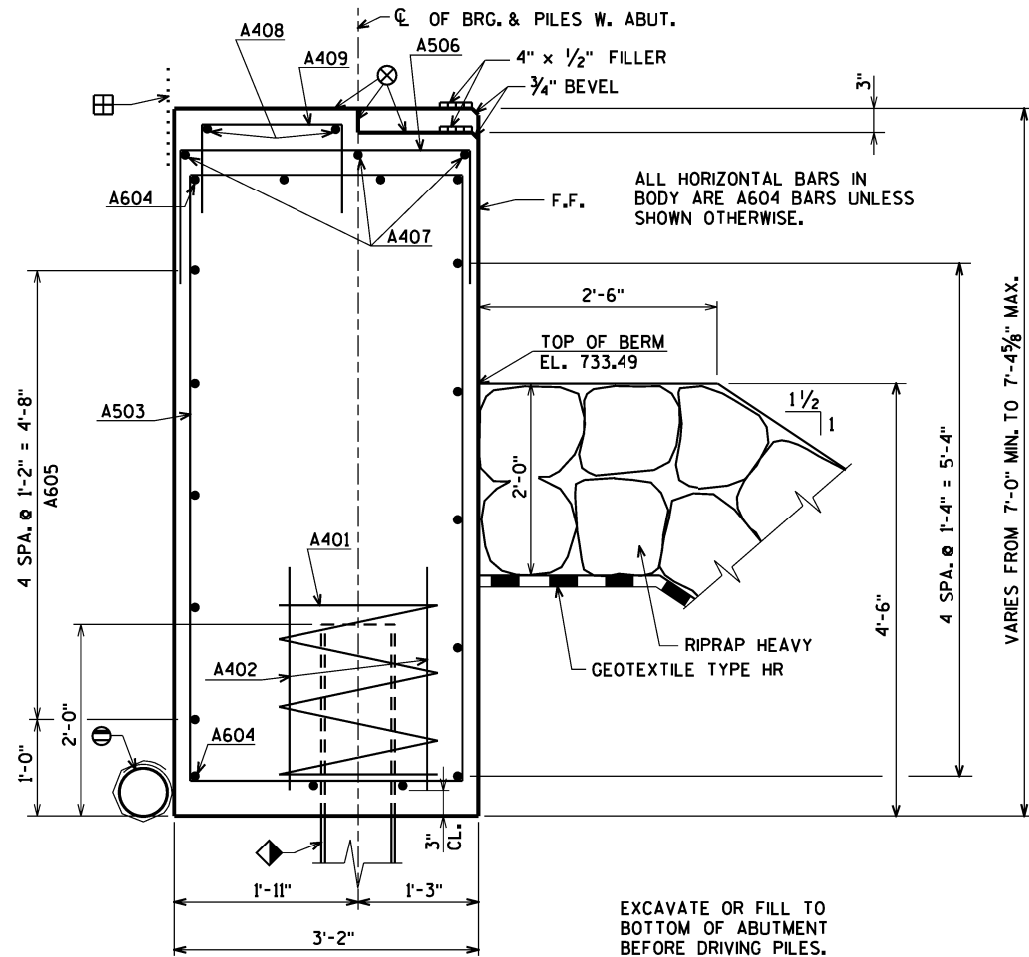
▣ 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. AND VERT. JOINTS AT BACKFACE.

▲ 3/4" CORK FILLER ON VERTICAL BEAM SEAT FACES THAT RUN PARALLEL WITH GIRDER.

FOR PILE SPLICE DETAIL SEE SHEET 2.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
DRAWN BY		CLP	PLANS CK'D. JLB
WEST ABUTMENT			SHEET 5 OF 17

8/26/2024
PENTABLE:BReou_shd_util.tbl



SECTION A

ABUTMENT TO BE SUPPORTED ON HP 10 x 42 STEEL PILING DRIVEN TO A REQ'D. DRIVING RESISTANCE OF 180 TONS PER PILE. ESTIMATED LENGTH 70'-0".

BAR SERIES TABLE

BAR MARK	NO REQ'D.	LENGTH
A410	2 SERIES OF 8	9'-8" TO 12'-8"
A426	2 SERIES OF 8	9'-7" TO 12'-7"

BUNDLE AND TAG EACH SERIES SEPARATELY.

FOR LOCATIONS OF SECTIONS A & B SEE SHEET 5.

RUBBERIZED MEMBRANE WATERPROOFING IF CONST. JOINT IS USED (COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES")

OPT. CONST. JOINT FORMED BY A BEVELED 2" x 6" KEYWAY WITH MEMBRANE ON BACKFACE.

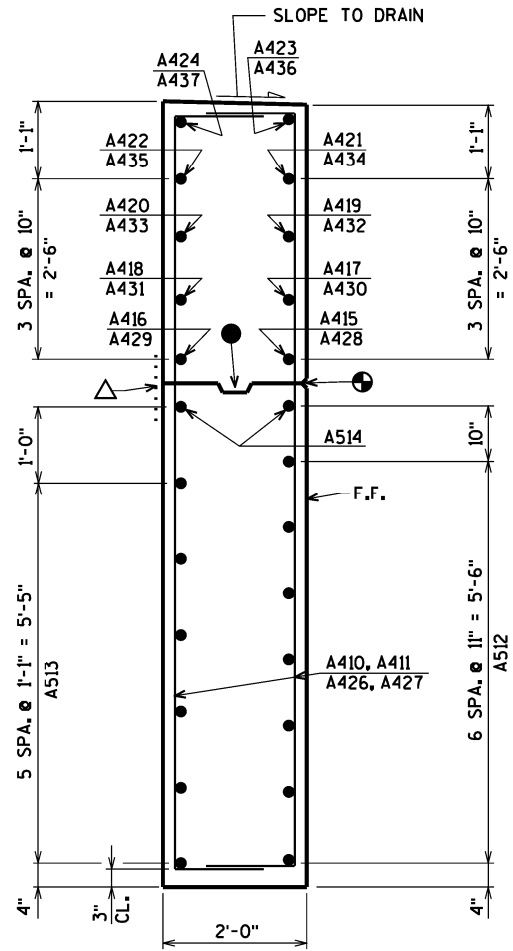
3/4" 'V' GROOVE ON F.F. OF WINGWALL. ONLY REQUIRED IF OPTIONAL CONST. JOINT IS USED.

PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED.

18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE OF ABUTMENT.

STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING BEARING PADS AND/OR SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".

FOR PILE SPlice DETAIL SEE SHEET 2.



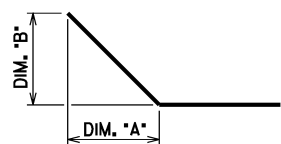
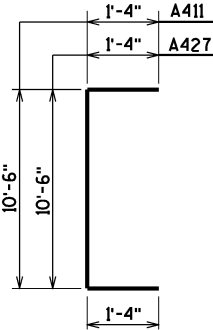
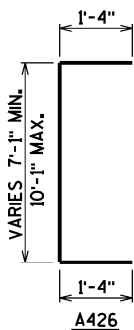
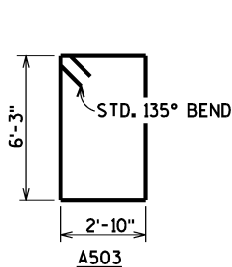
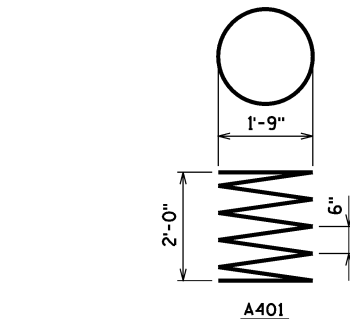
SECTION B

BILL OF BARS

BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR	BAR SERIES	LOCATION
A401		8	28-0	X			BODY PILES
A402		16	2-3				BODY PILES
A503		63	18-10	X			BODY VERT.
A604		12	50-6				BODY HORIZ.
A605		5	50-6				BODY HORIZ. B.F.
A506		9	5-7	X			BODY VERT. TOP
A407		3	8-6				BODY HORIZ. TOP
A408		4	26-3				BODY HORIZ. TOP
A409		35	4-5	X			BODY VERT. TOP
A410	X	16	11-2	X			WING 1 VERT. E.F.
A411	X	6	13-0	X			WING 1 VERT. E.F.
A512	X	14	11-7				WINGS 1 & 2 HORIZ. F.F.
A513	X	12	11-7				WINGS 1 & 2 HORIZ. B.F.
A514	X	4	11-7				WINGS 1 & 2 HORIZ. E.F.
A415	X	1	10-8				WING 1 HORIZ. F.F.
A416	X	1	9-8				WING 1 HORIZ. B.F.
A417	X	1	8-9				WING 1 HORIZ. F.F.
A418	X	1	7-9				WING 1 HORIZ. B.F.
A419	X	1	6-10				WING 1 HORIZ. F.F.
A420	X	1	5-10				WING 1 HORIZ. B.F.
A421	X	1	4-11				WING 1 HORIZ. F.F.
A422	X	1	3-11				WING 1 HORIZ. B.F.
A423	X	1	11-4	X			WING 1 DIAG. F.F.
A424	X	1	10-3	X			WING 1 DIAG. B.F.
A425	X	2	5-3				WINGS 1 & 2 VERT. E.F.
A426	X	16	11-1	X			WING 2 VERT. E.F.
A427	X	6	13-0	X			WING 2 VERT. E.F.
A428	X	1	9-8				WING 2 HORIZ. F.F.
A429	X	1	10-8				WING 2 HORIZ. B.F.
A430	X	1	7-9				WING 2 HORIZ. F.F.
A431	X	1	8-9				WING 2 HORIZ. B.F.
A432	X	1	5-10				WING 2 HORIZ. F.F.
A433	X	1	6-10				WING 2 HORIZ. B.F.
A434	X	1	3-11				WING 2 HORIZ. F.F.
A435	X	1	4-11				WING 2 HORIZ. B.F.
A436	X	1	10-3	X			WING 2 DIAG. F.F.
A437	X	1	11-4	X			WING 2 DIAG. B.F.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

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



BAR NO.	DIM. "A"	DIM. "B"
A423	7'-10"	3'-6"
A424	7'-10"	3'-6"
A436	7'-10"	3'-6"
A437	7'-10"	3'-6"

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
DRAWN BY		CLP	PLANS CK'D. JLB
WEST ABUTMENT DETAILS AND BILL OF BARS			SHEET 6 OF 17

STATE PROJECT NUMBER

ELEVATION
(LOOKING EAST)

FOR SECTIONS A & B SEE SHEET 8.

PLAN

The plan view shows a bridge deck with a total width of 10'-0" on each side of the centerline. The centerline is marked with a dashed line and labeled "CL OF CTH M". The bridge is skewed at 30°. Key dimensions and features include:

- Overall Dimensions:** 10'-0" on each side of the centerline, totaling 20'-0" width.
- Centerline Markings:** "CL OF CTH M" and "CL OF BRG. & PILES E. ABUT." are indicated.
- Stationing:** "STA. 20+32.00" is marked at the centerline.
- Structural Details:**
 - Diaphragms:** "EDGE OF DIAPHRAGM OR DECK" is labeled at both ends.
 - Reinforcement:** "B425 F.F." (Flexural Reinforcement) is shown at the ends.
 - Filler:** "1/2" FILLER" and "4" x 1/2" FILLER" are indicated.
 - Level:** "2'-0" LEVEL" is marked at the left end.
 - Spacing:** "2 SPA. @ 10'-4 3/4" = 20'-9 3/8" is shown for the main deck sections.
 - Other Dimensions:** 24'-11 5/8", 50'-2 3/4", 25'-3 1/8", 18'-5 3/4", 5'-4", 8 5/8", 1'-1 1/4", 1'-1 7/8", 1'-10", 1'-9", 1'-9" TYP., 1'-1 1/8", 1'-3", 1'-11", 2'-0", 1'-2", 3'-2", 1'-10", 1'-1 7/8", 2'-0", 4" x 1/2" FILLER, 2'-0" LEVEL.

PLAN

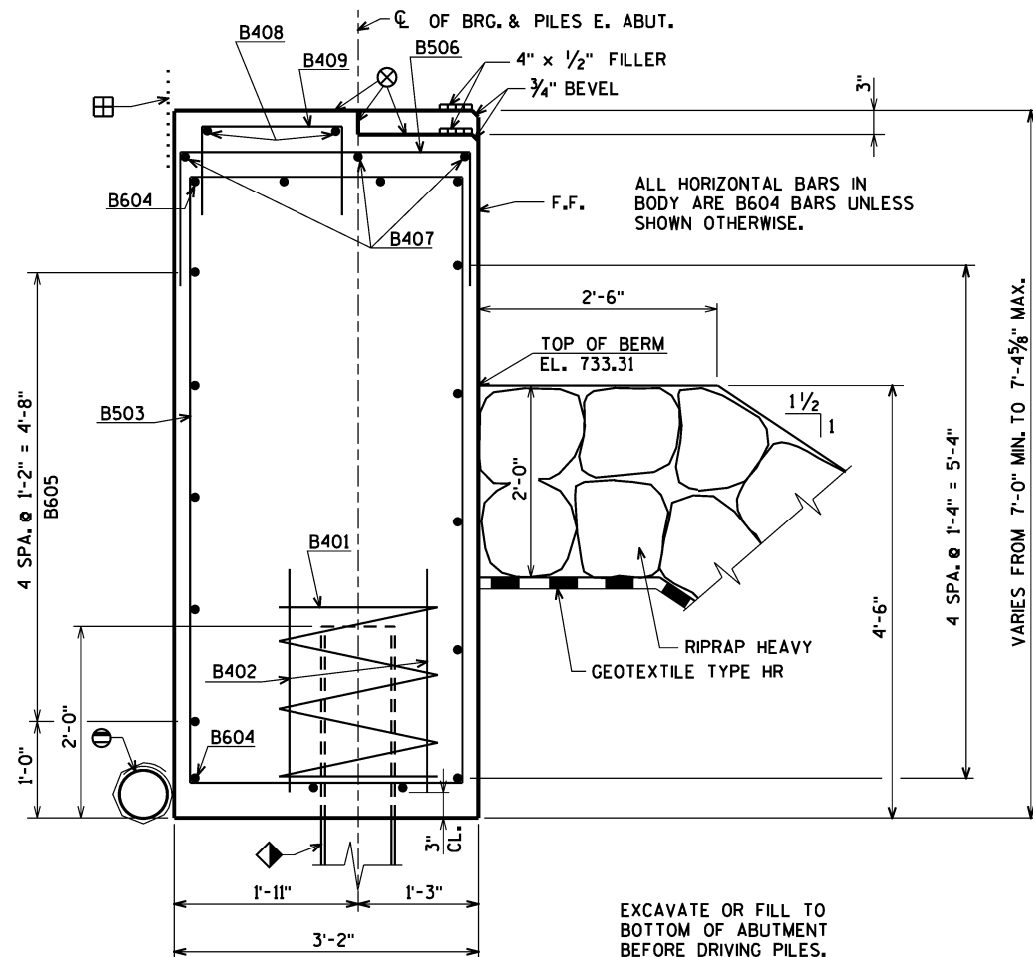
Technical drawing of a bridge deck cross-section. The drawing shows a long, narrow rectangular structure with various reinforcement details and dimensions. Key features include:

- Dimensions:**
 - Overall width: 70'-2 3/4"
 - Overall length: 25'-3 1/8"
 - Section length: 10'-0"
 - Section width: 9'-3 1/8"
 - Section width: 25'-7 3/4"
 - Section width: 20'-3 3/4"
 - Section width: 5'-4"
 - Section width: 3'-5 1/4"
 - Section width: 3'-0 3/4"
 - Section width: 3 SPA. @ 6'-6" = 19'-6"
 - Section width: 23 SPA. @ 9" = 17'-3"
 - Section width: 16 SPA. @ 1'-0" MAX. = 15'-8 1/8"
 - Section width: 23 SPA. @ 9" = 17'-3"
 - Section width: 4"
- Reinforcement Details:**
 - B410 E.F.
 - B513, B514 B.F.
 - B411 E.F.
 - B401
 - B402
 - B512, B514 F.F.
 - B411 E.F.
 - B604
 - B604, B605 B.F.
 - B427 E.F.
 - B513, B514 B.F.
 - B512, B514 F.F.
- Structural Components:**
 - 30° SKEW
 - CL OF CTH M
 - CL OF BRG. & PILES E. ABUT.
 - STA. 20+32.00
 - 1
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
- Other Details:**
 - 3'-2"
 - 1'-3"
 - 2'-0"
 - 1'-2"
 - TYP.
 - B503 BAR SPACING SPACE TO MISS PILES
 - 4"
 - 4"

PILE LAYOUT

- 18" RUBBERIZED MEMBRANE WATERPROOFING.
 SEAL ALL HORIZ. AND VERT. JOINTS AT BACKFACE.
 ▲ ¾" CORK FILLER ON VERTICAL BEAM SEAT
 FACES THAT RUN PARALLEL WITH GIRDER.
 FOR PILE SPLICE DETAIL SEE SHEET 2.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
DRAWN BY		CLP	PLANS CK'D. JLB
EAST ABUTMENT		SHEET 7 OF 17	



SECTION A

ABUTMENT TO BE SUPPORTED ON HP 10 x 42 STEEL PILING DRIVEN TO A REQ'D. DRIVING RESISTANCE OF 180 TONS PER PILE. ESTIMATED LENGTH 70'-0".

BAR SERIES TABLE

BAR MARK	NO REQ'D.	LENGTH
B410	2 SERIES OF 8	9'-7" TO 12'-7"
B426	2 SERIES OF 8	10'-5" TO 12'-9"

BUNDLE AND TAG EACH SERIES SEPARATELY.

FOR LOCATIONS OF SECTIONS A & B SEE SHEET 7.

RUBBERIZED MEMBRANE WATERPROOFING IF CONST. JOINT IS USED (COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES")

OPT. CONST. JOINT FORMED BY A BEVELED 2" x 6" KEYWAY WITH MEMBRANE ON BACKFACE.

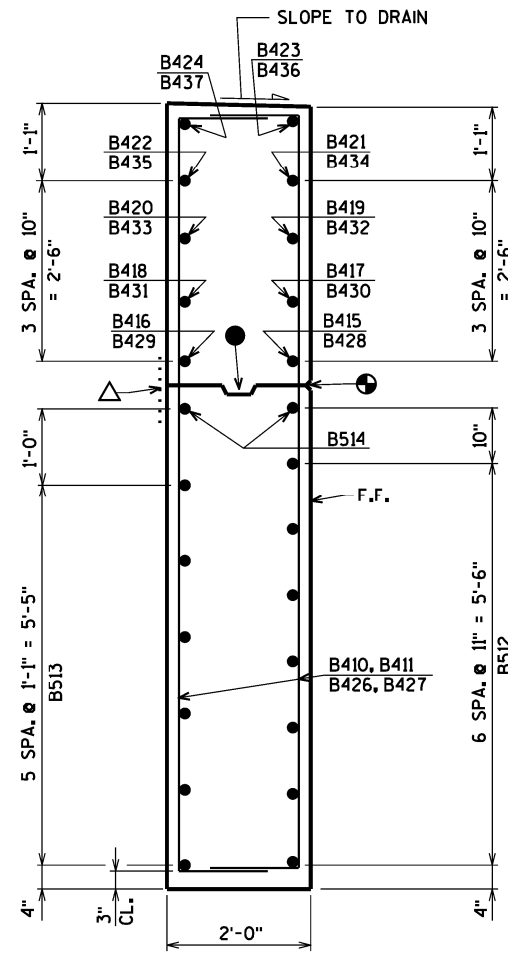
3/4" 'V' GROOVE ON F.F. OF WINGWALL. ONLY REQUIRED IF OPTIONAL CONST. JOINT IS USED.

PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED.

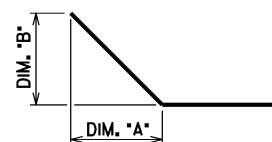
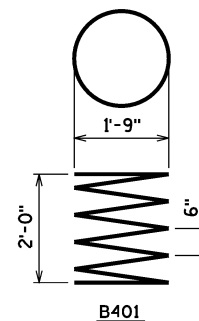
18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE OF ABUTMENT.

STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING BEARING PADS AND/OR SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".

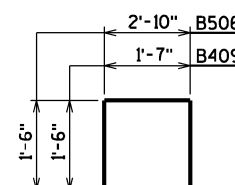
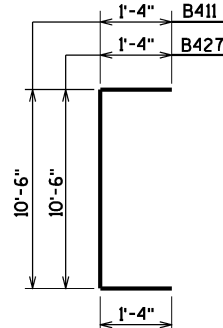
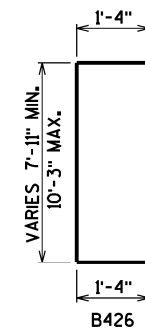
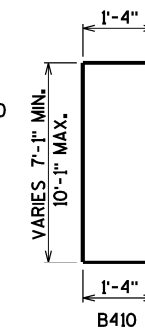
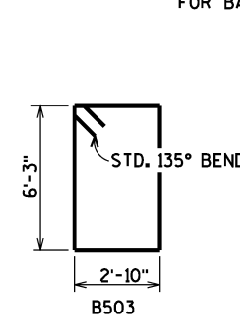
FOR PILE SPlice DETAIL SEE SHEET 2.



SECTION B



BAR NO.	DIM. 'A'	DIM. 'B'
B423	7'-10"	3'-6"
B424	7'-10"	3'-6"
B436	7'-10"	2'-10"
B437	7'-10"	2'-10"



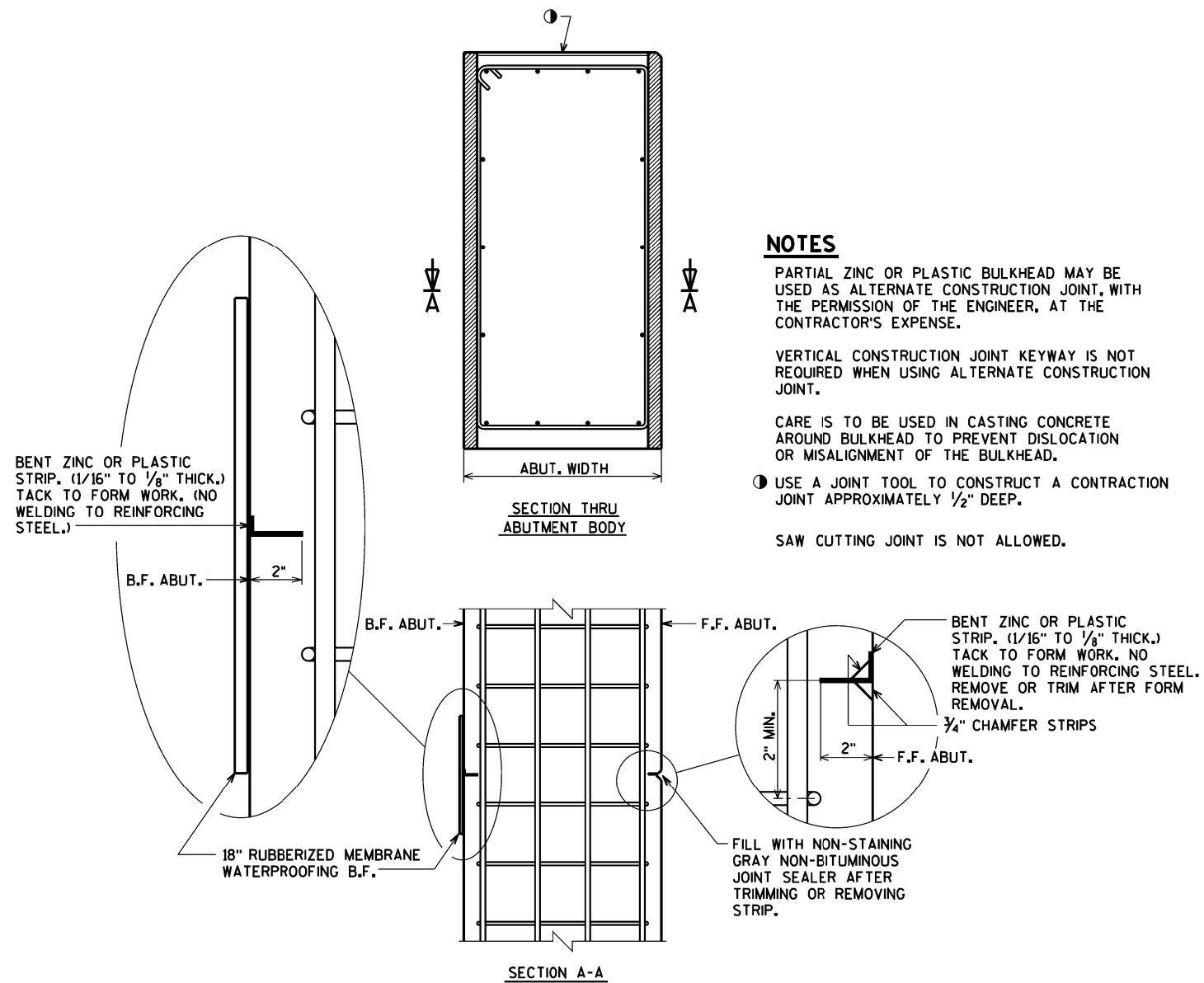
BILL OF BARS

BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR	BAR SERIES	LOCATION
B401		8	28-0	X			BODY @ PILES
B402		16	2-3				BODY @ PILES
B503		63	18-10	X			BODY VERT.
B604		12	50-6				BODY HORIZ.
B605		5	50-6				BODY HORIZ. B.F.
B506		10	5-7	X			BODY VERT. TOP
B407		3	9-6				BODY HORIZ. TOP
B408		4	26-3				BODY HORIZ. TOP
B409		35	4-5	X			BODY VERT. TOP
B410	X	16	11-2	X			WING 3 VERT. E.F.
B411	X	6	13-0	X			WING 3 VERT. E.F.
B512	X	14	11-7				WINGS 3 & 4 HORIZ. F.F.
B513	X	12	11-7				WINGS 3 & 4 HORIZ. B.F.
B514	X	4	11-7				WINGS 3 & 4 HORIZ. E.F.
B415	X	1	10-8				WING 3 HORIZ. F.F.
B416	X	1	9-8				WING 3 HORIZ. B.F.
B417	X	1	8-9				WING 3 HORIZ. F.F.
B418	X	1	7-9				WING 3 HORIZ. B.F.
B419	X	1	6-10				WING 3 HORIZ. F.F.
B420	X	1	5-10				WING 3 HORIZ. B.F.
B421	X	1	4-11				WING 3 HORIZ. F.F.
B422	X	1	3-11				WING 3 HORIZ. B.F.
B423	X	1	11-4	X			WING 3 DIAG. F.F.
B424	X	1	10-3	X			WING 3 DIAG. B.F.
B425	X	2	5-3				WINGS 3 & 4 VERT. E.F.
B426	X	16	11-7	X			WING 4 VERT. E.F.
B427	X	6	13-0	X			WING 4 VERT. E.F.
B428	X	1	9-6				WING 4 HORIZ. F.F.
B429	X	1	10-8				WING 4 HORIZ. B.F.
B430	X	1	9-3				WING 4 HORIZ. F.F.
B431	X	1	10-5				WING 4 HORIZ. B.F.
B432	X	1	6-10				WING 4 HORIZ. F.F.
B433	X	1	8-0				WING 4 HORIZ. B.F.
B434	X	1	4-5				WING 4 HORIZ. F.F.
B435	X	1	5-8				WING 4 HORIZ. B.F.
B436	X	1	10-0	X			WING 4 DIAG. F.F.
B437	X	1	11-1	X			WING 4 DIAG. B.F.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

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

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
DRAWN BY		CLP	PLANS CK'D. JLB
EAST ABUTMENT DETAILS AND BILL OF BARS		SHEET 8 OF 17	

**ALTERNATE CONSTRUCTION JOINT AT ABUTMENT**

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
DRAWN BY		CLP	PLANS CK'D. JLB
ALTERNATE CONSTRUCTION JOINT		SHEET 9 OF 17	

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 8" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH, AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 8" OF THE TOP FLANGE.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING
DEVICE FOR HANDLING AND ERECTING THE GIRDERS. SEE
SECT. 503.3.3 OF STANDARD SPECIFICATIONS FOR GUIDANCE.

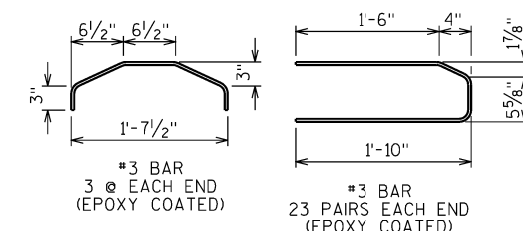
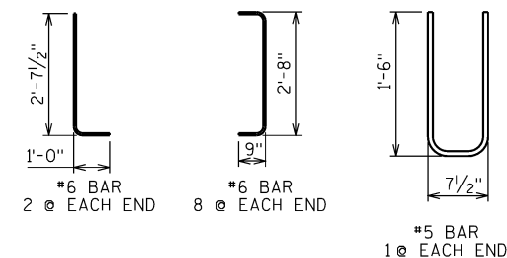
STRANDS SHALL BE FLUSH WITH END OF GIRDER, FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER, FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE III, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

SPACING SHOWN FOR #4 AND #5 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

AN EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A1064
MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT
SHOWN, UPON APPROVAL OF THE STRUCTURES MAINTENANCE
SECTION. IF USED, WWF SUBSTITUTION DETAILS SHALL BE
SUBMITTED ELECTRONICALLY TO THE WISDOT FABRICATION
LIBRARY AND ACCEPTED PRIOR TO SHOP DRAWING SUBMITTAL.

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

FOR DIAPHRAGM INSERT & CONNECTION DETAILS SEE
"STEEL DIAPHRAGM" SHEET.



(A) DETAIL TYP. AT EACH END

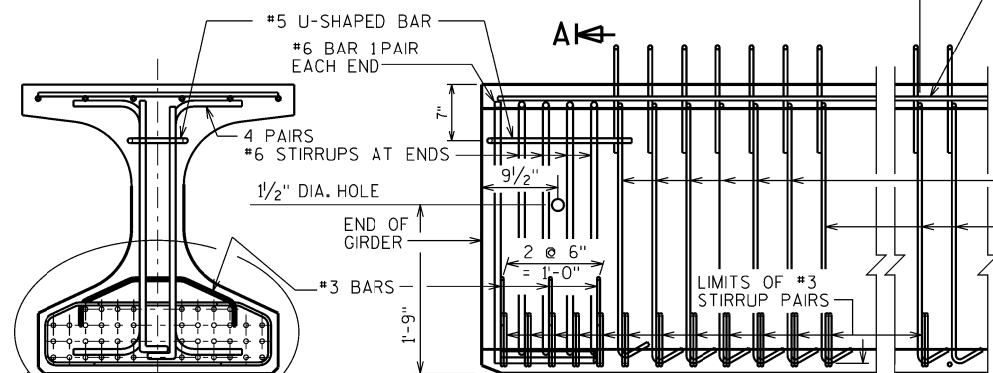
(B) 6 #4 BARS, FULL LENGTH, MIN. LAP = 2'-4"

GIRDER DATA

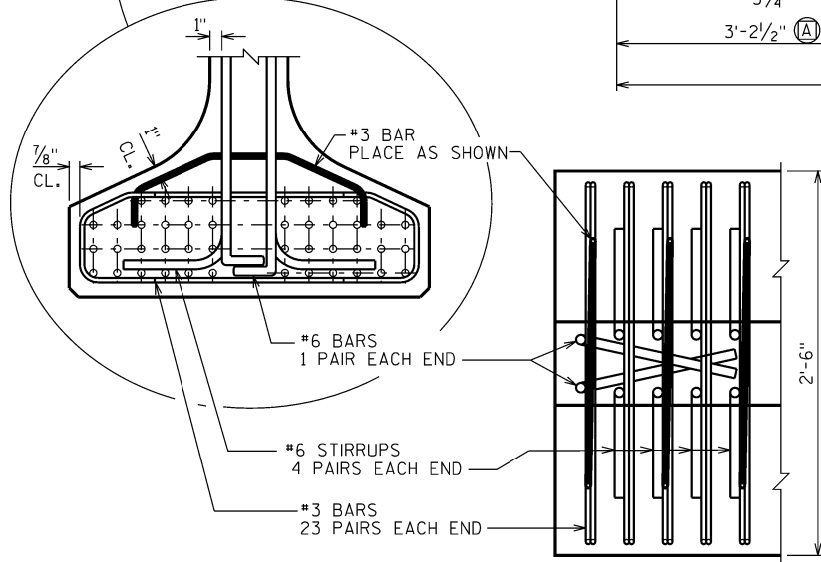
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
DRAWN BY		CLP	PLANS CK'D. JLB
36W" PRESTRESSED GIRDER DETAILS		SHEET 10 OF 17	

TOP FLANGE



SECTION A-A



DETAIL A

BOTTOM FLANGE

\$PRNAME\$
I:\42\42-1169.00 - La Crosse Co. CTH M over Russian Coulee Creek\Structure\Final\421169_36W.dgn

8

STATE PROJECT NUMBER

5436-00-75

#4 BAR, EPOXY COATED. PLACE @ STIRRUP SPACING REQUIRED FOR NON WWF STIRRUPS. EMBED INTO GIRDER 1'-3".

HORIZ. WIRES SHALL BE LOCATED IN TOP AND BOT. FLANGES AND NOT IN THE WEB.

AREA OF HORIZ. WIRE SHALL BE $\geq$ 40% OF VERT. WIRE AREA (ASTM A1064)

D18 MIN. VERTICAL WIRE (DEFORMED)

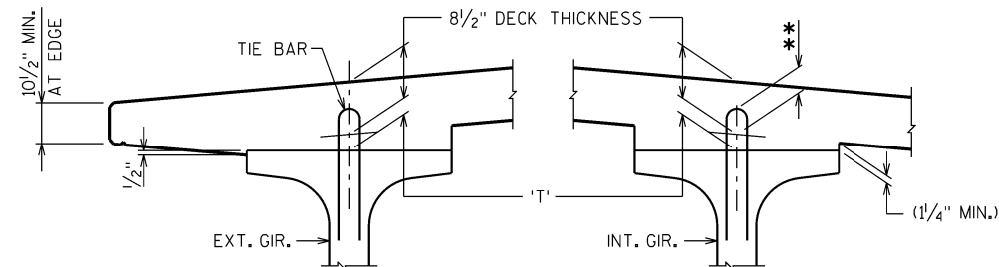
1" MIN. CLEARANCE TO VERTICAL WIRE

2" MIN. TYP.

1" CL.

SECTION THRU GIRDER

SHOWING WELDED WIRE FABRIC (WWF) STIRRUPS
ASTM A1064 (FY = 70 KSI)



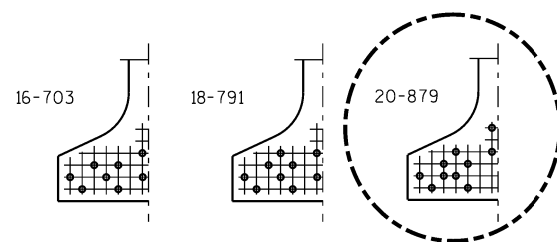
DECK HAUNCH DETAIL

IF $1/4$ " MINIMUM HAUNCH HEIGHT AT EDGE OF GIRDER CANNOT BE MAINTAINED, THE GRADE LINE MAY BE REVISED BY THE ENGINEER AT THE OPTION OF THE CONTRACTOR, THE PLAN DECK THICKNESS SHALL BE HELD. NOTIFY THE STRUCTURES SECTION IF THE GRADE LINE IS RAISED FROM THE PLAN PROFILE BY MORE THAN $1/2$ " OR, ** IF 3" MINIMUM DECK EMBEDMENT OF TIE BAR CANNOT BE OBTAINED.

TO DETERMINE 'T', ELEV. OF TOP OF GIR'S. AT $\mathcal{C}$ OF SUBSTRUCTURE UNITS & AT 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. THEN FOLLOW THIS PROCESS:

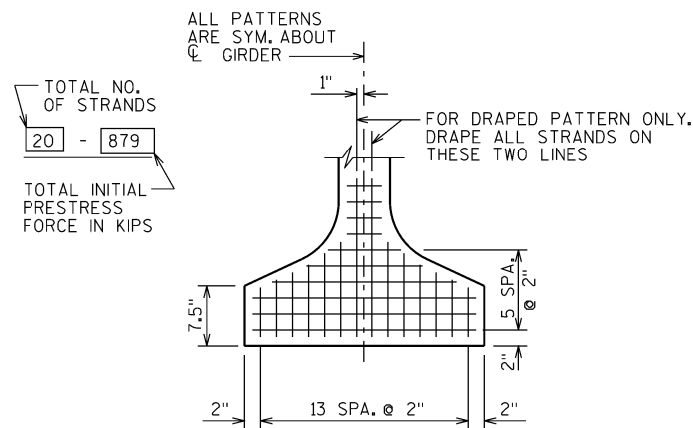
- TOP OF DECK ELEV. AT FINAL GRADE
- TOP OF GIRDER ELEVATION
- + DEAD LOAD DEFLECTION
- DECK THICKNESS
- = HAUNCH HEIGHT 'T'

NOTE: AN AVERAGE HAUNCH ('T') OF $2\frac{5}{8}$ " WAS USED IN THE QUANTITY "CONCRETE MASONRY BRIDGES".

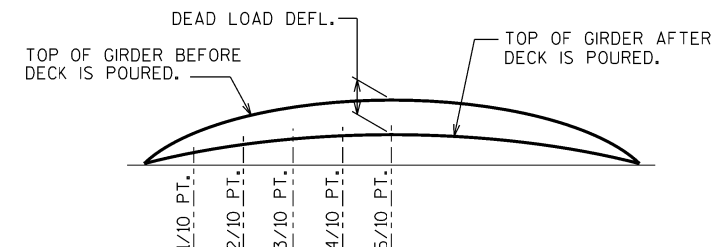


STANDARD ARRANGEMENTS TO RAISE CENTER OF GRAVITY TO AVOID DRAPING OF STRANDS

0.6" DIA. STRANDS



TYP. STRAND PATTERN



DEAD LOAD DEFLECTION DIAGRAM

*THE THEORETICAL INITIAL CAMBER VALUE AT THE TIME OF STRAND RELEASE AT MIDSPAN MULTIPLIED BY A FACTOR OF 1.4 TO ACCOUNT FOR CAMBER GROWTH FROM THE TIME OF STRAND RELEASE TO JOBSITE PLACEMENT.

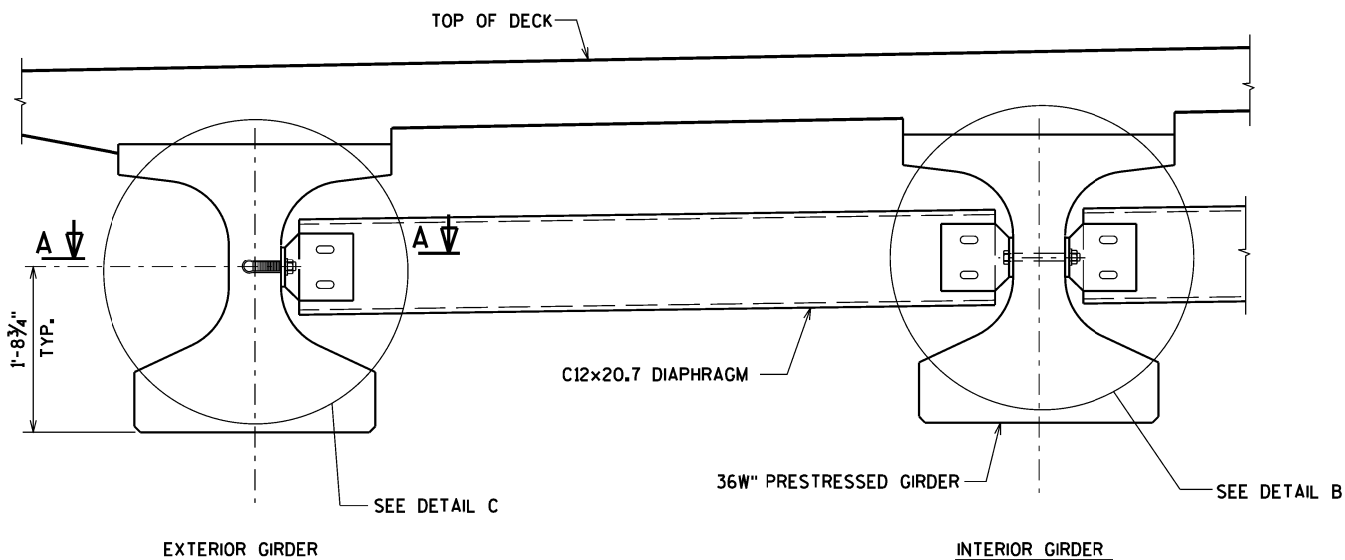
SPAN	CAMBER (IN.) *
1	1.2

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

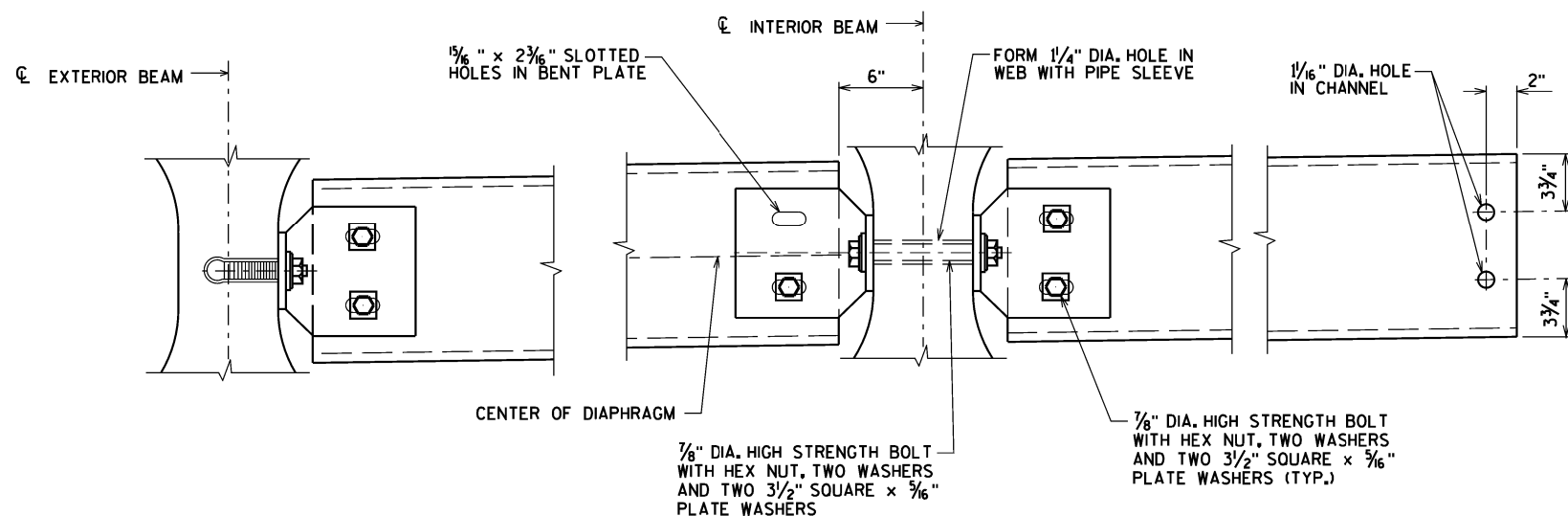
THESE VALUES ARE FOR INFORMATIONAL PURPOSES ONLY.

8

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
	DRAWN BY	CLP	PLANS CK'D. JLB
36W" PRESTRESSED GIRDER DETAILS			SHEET 11 OF 17

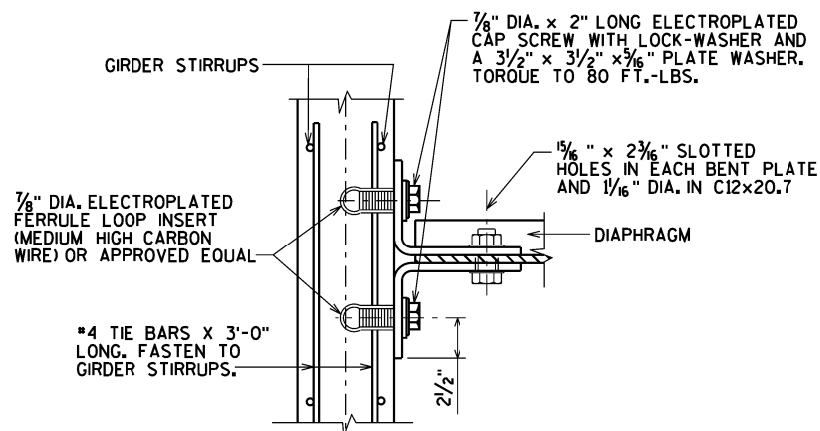
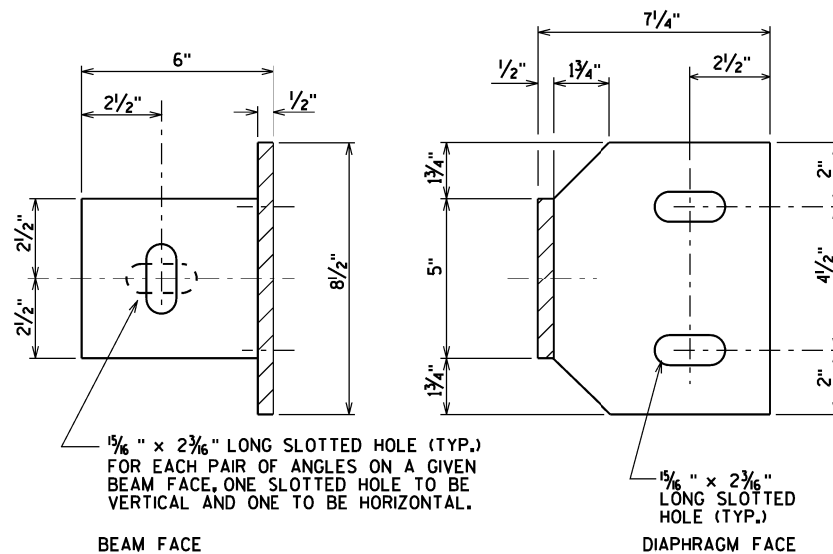


PART TRANSVERSE SECTION AT DIAPHRAGM



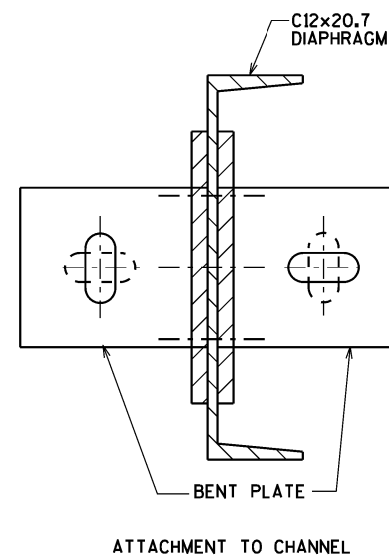
DETAIL C

DETAIL B

SECTION A-A
(FOR EXTERIOR ATTACHMENT)

BEAM FACE

DIAPHRAGM FACE



ATTACHMENT TO CHANNEL

NOTES

ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-32-239", EACH.

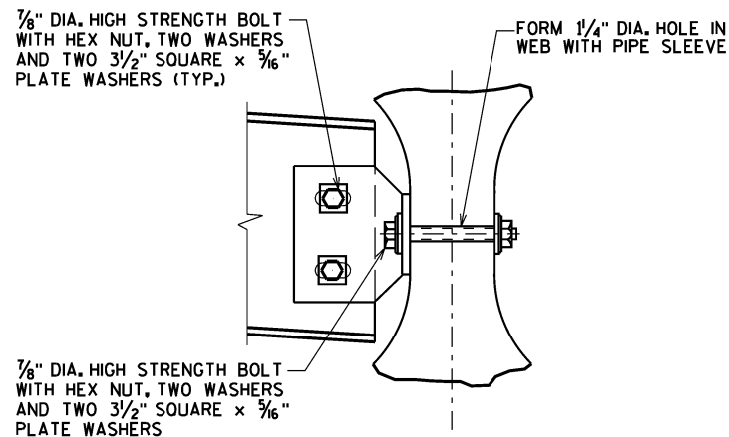
EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

ALL DIAPHRAGM MATERIAL INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.

STEEL DIAPHRAGM TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS $\frac{1}{4}$ TURN, UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.

FOR DIAPHRAGM SPACING SEE SHEET 14.

SECTION AT INTERIOR GIRDERS THRU
DIAPHRAGM FOR SKEW ANGLES $> 10^\circ$

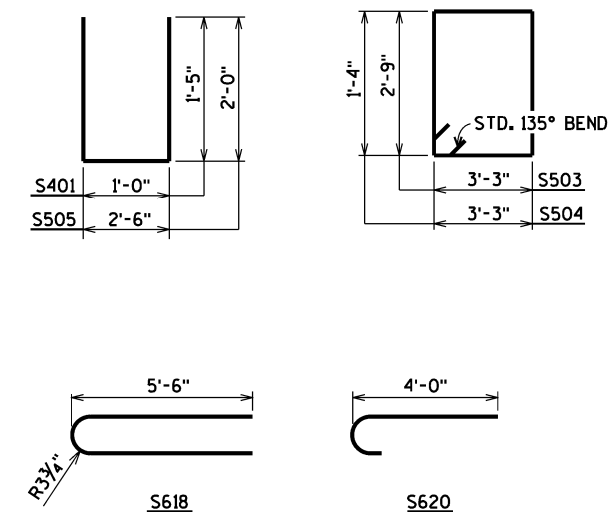
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
DRAWN BY		CLP	PLANS CK'D. JLB
STEEL DIAPHRAGM			SHEET 12 OF 17

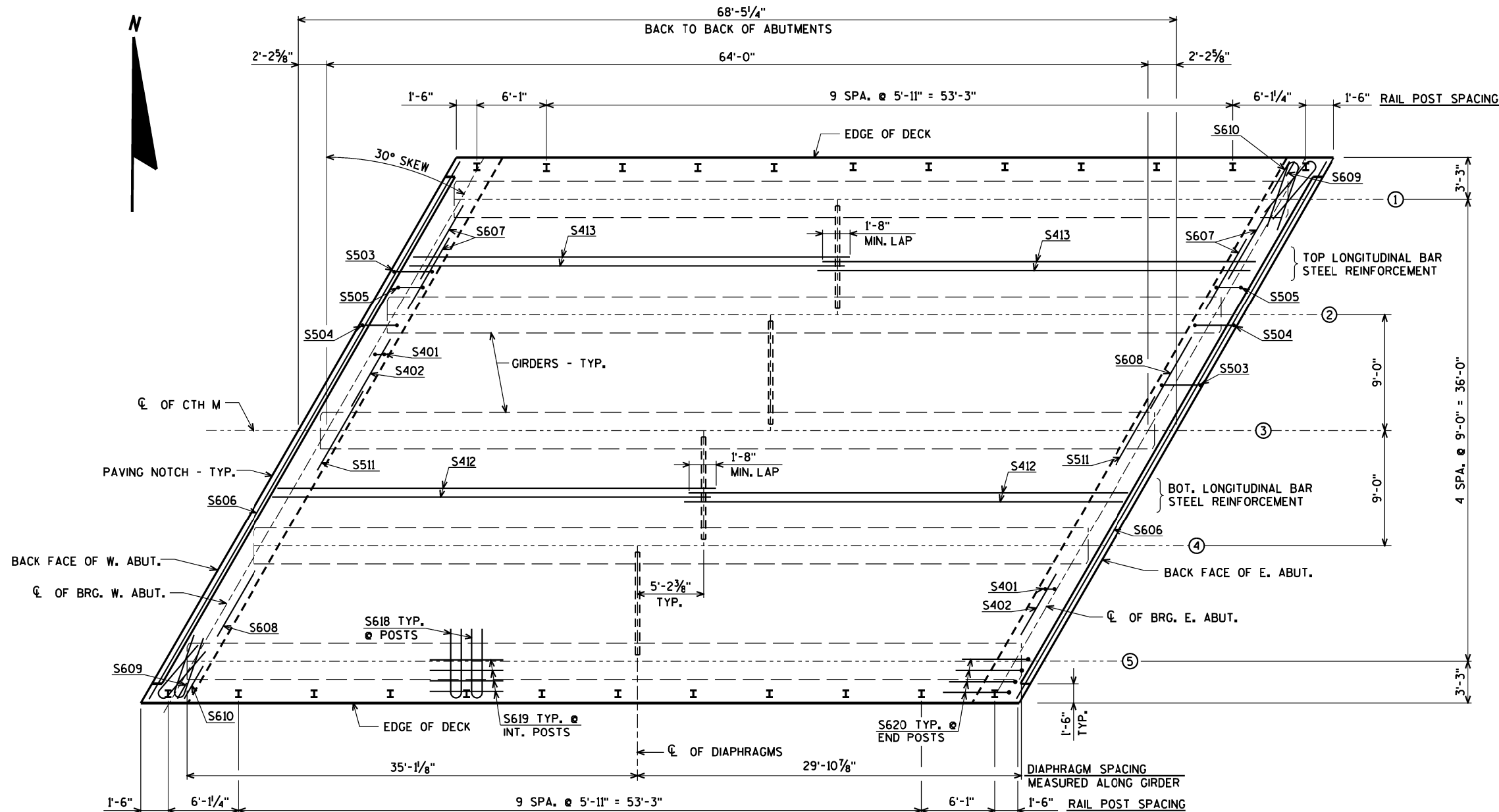


⊗ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.



BUNDLE AND TAG EACH SERIES SEPARATELY.

PENTABLE:Breau-shd_util.tbl



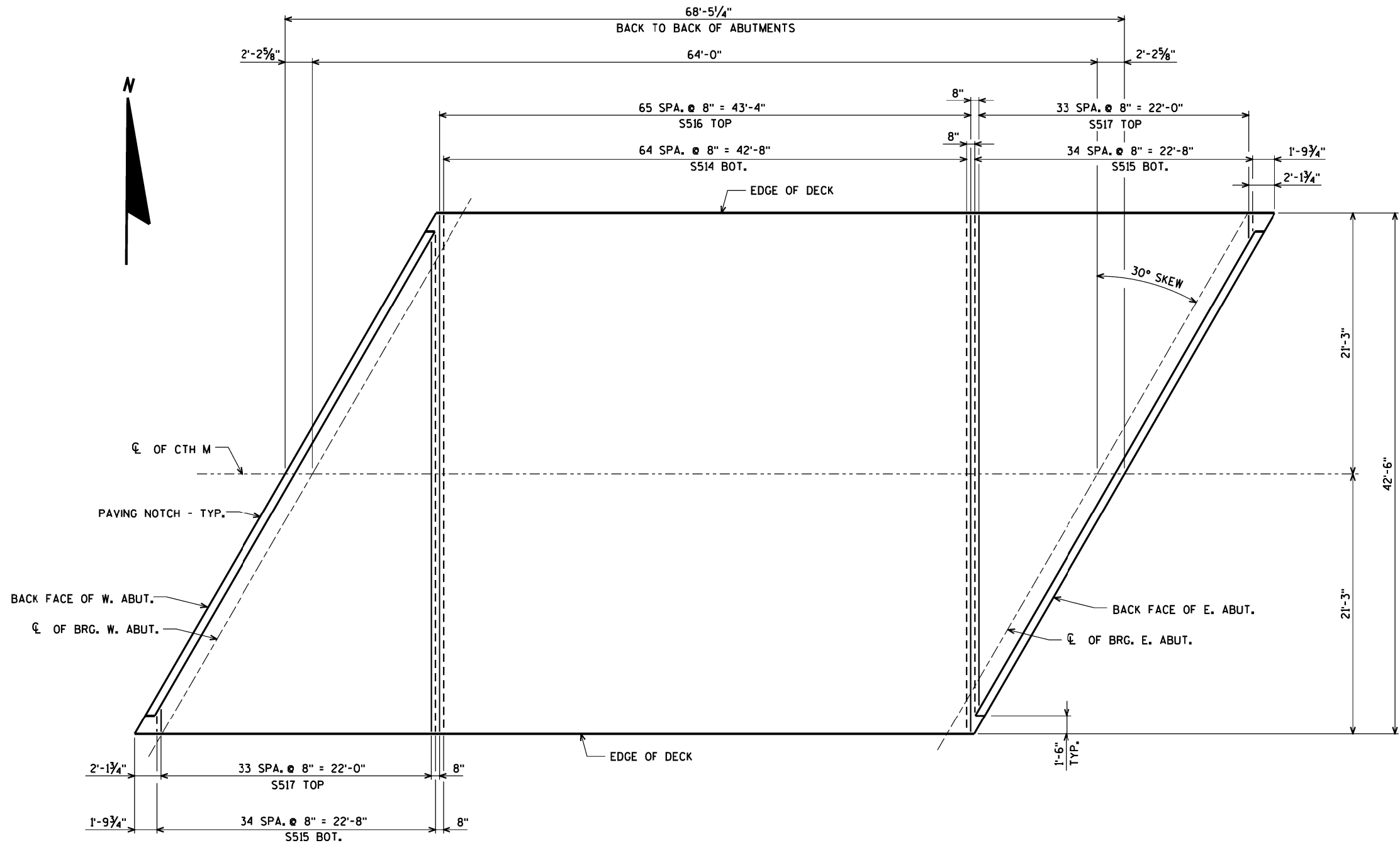
PLAN

TOP OF DECK ELEVATIONS

LOCATION	CL OF BRG. W. ABUT.	0.1 PT.	0.2 PT.	0.3 PT.	0.4 PT.	0.5 PT.	0.6 PT.	0.7 PT.	0.8 PT.	0.9 PT.	CL OF BRG. E. ABUT.
NORTH EDGE OF DECK	739.91	739.89	739.87	739.86	739.84	739.82	739.80	739.78	739.77	739.75	739.73
GIRDER 1	739.98	739.96	739.94	739.93	739.91	739.89	739.87	739.86	739.84	739.82	739.80
GIRDER 2	740.18	740.16	740.14	740.12	740.10	740.09	740.07	740.05	740.03	740.01	740.00
CL OF CTH M & GIRDER 3	740.37	740.35	740.33	740.32	740.30	740.28	740.26	740.24	740.23	740.21	740.19
GIRDER 4	740.20	740.19	740.17	740.15	740.13	740.11	740.10	740.08	740.06	740.04	740.02
GIRDER 5	740.04	740.02	740.00	739.98	739.97	739.95	739.93	739.91	739.90	739.88	739.86
SOUTH EDGE OF DECK	739.98	739.96	739.94	739.93	739.91	739.89	739.87	739.85	739.84	739.82	739.80

ELEVATIONS SHOWN ARE FINISHED DECK AND DO NOT INCLUDE ALLOWANCES FOR DEAD LOAD DEFLECTION.

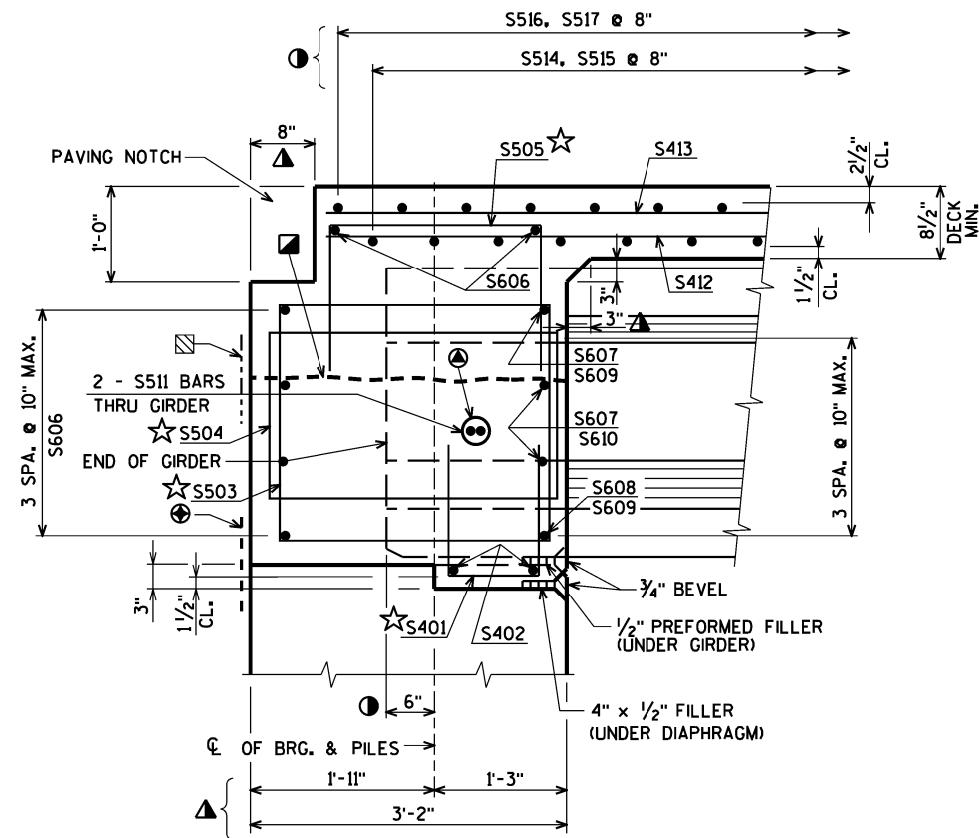
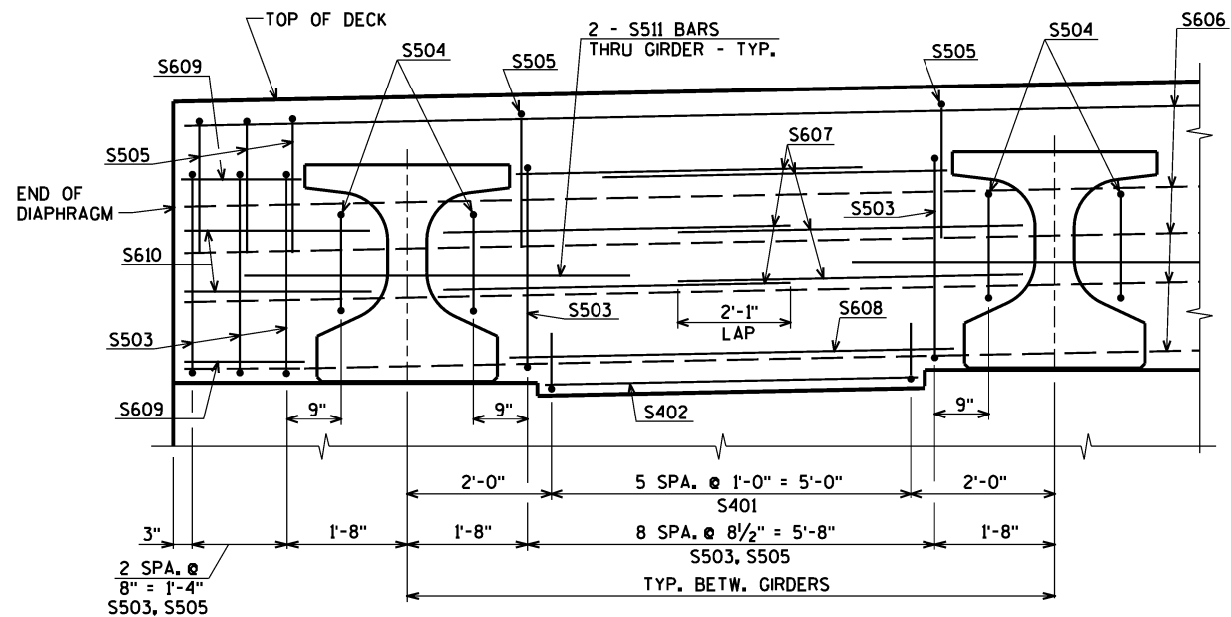
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
DRAWN BY		CLP	PLANS CK'D. JLB
SUPERSTRUCTURE PLAN		SHEET 14 OF 17	



TRANSVERSE BAR STEEL LAYOUT

8/23/2024
PENTABLE:BRou.shd_util.tbl

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
DRAWN BY		CLP	PLANS CK'D. JLB
SUPERSTRUCTURE TRANSVERSE DECK STEEL LAYOUT		SHEET 15 OF 17	

**PART LONGITUDINAL SECTION****PART TRANSVERSE SECTION AT ABUTMENT DIAPHRAGM**

① DIMENSIONS MEASURED ALONG ϕ OF GIRDER.

▲ DIMENSIONS MEASURED NORMAL TO ϕ OF SUBSTRUCTURE UNIT.

⊕ 18" RUBBERIZED MEMBRANE WATERPROOFING

▣ OPTIONAL CONSTRUCTION JOINT 1'-2" BELOW TOP OF GIRDER. IF USED, DECK POUR MUST BE WITHIN 2 WEEKS FROM THE TIME OF THE DIAPHRAGM POUR.

▤ 18" RUBBERIZED MEMBRANE WATERPROOFING IF CONST. JT. IS USED. COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES"

⊙ 1/2" DIA. HOLE IN WEB FOR S511 BARS. PLACE S511 BARS SYM. ABOUT ϕ OF GIRDERS. FIELD BEND ALONG SKEW.

★ BARS PLACED PARELLEL TO GIRDERS. SPACING PERPENDICULAR TO ϕ OF GIRDERS.

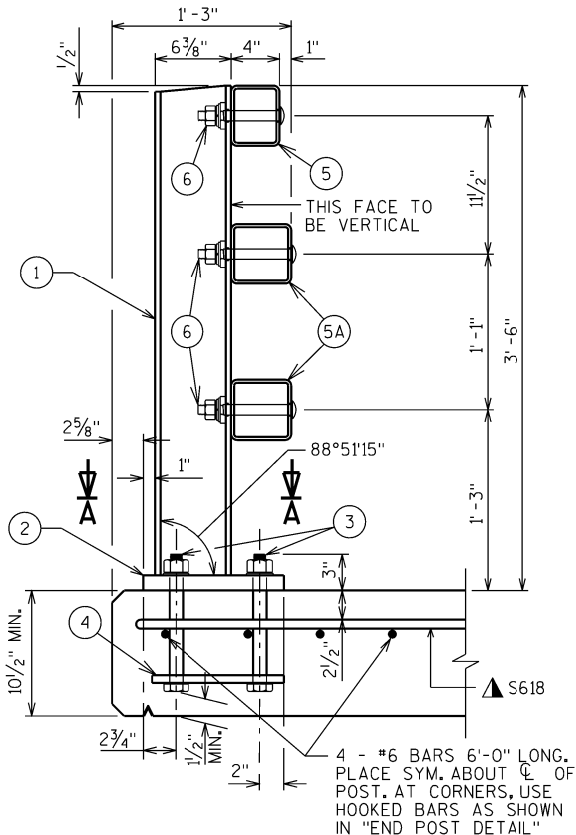
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
DRAWN BY		CLP	PLANS CK'D. JLB
SUPERSTRUCTURE DETAILS		SHEET 16 OF 17	

LEGEND

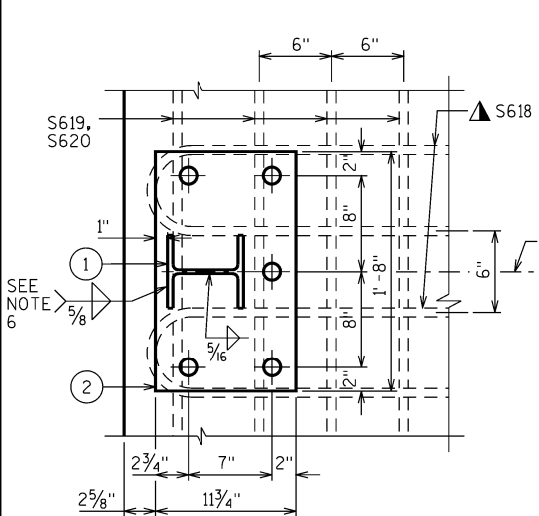
- ① W6 x 25 with 1/8" x 1/2" HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
- ② PLATE 1/4" x 11 3/4" x 1'-8" WITH 1 1/8" DIA. OVERSIZED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN.
- ③ ASTM A449 - 1/8" DIA. ANCHOR BOLTS WITH NUT AND HARDENED WASHER (ALL GALVANIZED). 5 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. ~~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 CONSTRUCTABILITY.)~~
- ④ 5/8" x 11" x 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1 1/8" DIA. HOLES FOR ANCHOR BOLTS NO. 3
- ⑤ TS 5 x 4 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- ⑤A TS 5 x 5 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- ⑥ 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, 3/16" x 1 5/8" x 1 5/8" MIN. WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)
- ⑦ 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.
- ⑧ 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.
- ⑨ SPLICE SLEEVE FABRICATED FROM 1/4" PLATE. PROVIDE "SLIDING FIT".
- ⑩ 3/8" x 3 5/8" x 2'-4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.
- ⑩A 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.
- ⑪ 7/8" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 1/8" x 1/4" LONGIT. SLOTTED HOLES AT FIELD JOINTS IN PLATE NO. 10A. PROVIDE 1/8" DIA. ROUND HOLES IN TUBES NO. 5 AND NO. 5A.
- ⑫ 7/8" DIA. x 1/2" LONG THREADED SHOP WELDED STUDS (2 REQ'D.).
- ⑬ 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.
- ⑭ 7/8" DIA. x 2" LONG A325 HEX BOLT WITH NUT AND WASHER (5 REQ'D.).
- ⑮ 1" DIA. HOLES IN TUBES NO. 5A FOR 7/8" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.

GENERAL NOTES

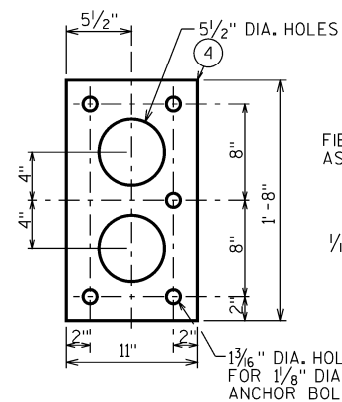
1. BID ITEM SHALL BE "RAILING TUBULAR TYPE M" WHICH INCLUDES ALL ITEMS SHOWN.
2. RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 KSI. ANCHOR PLATES,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



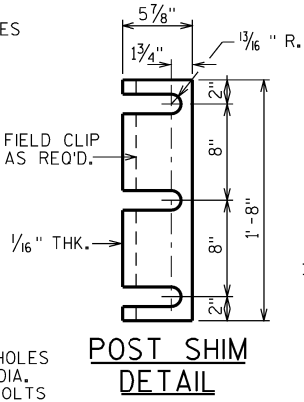
SECTION THRU RAILING ON DECK



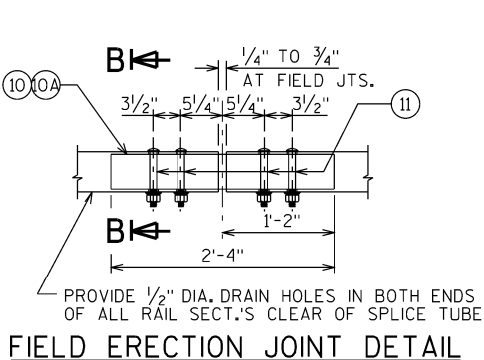
SECTION A-A



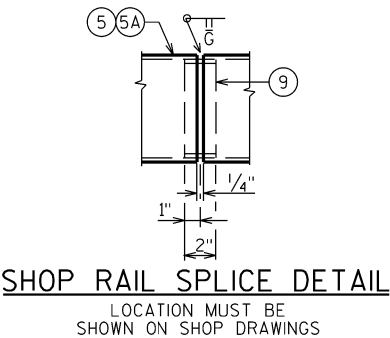
ANCHOR PLATE AT RAIL TO DECK CONNECTION



POST SHIM DETAIL

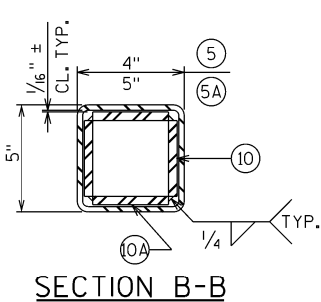


FIELD ERECTION JOINT DETAIL

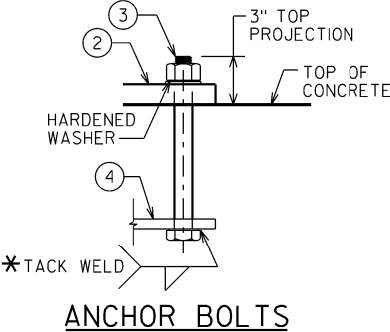


SHOP RAIL SPLICE DETAIL

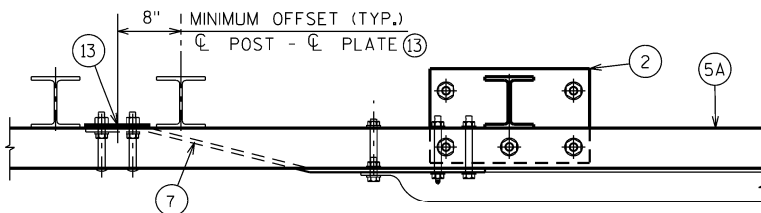
LOCATION MUST BE SHOWN ON SHOP DRAWINGS



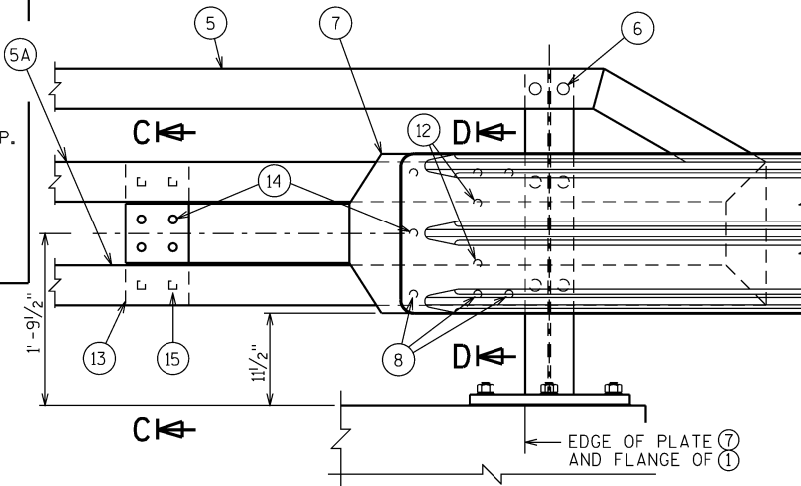
SECTION B-B



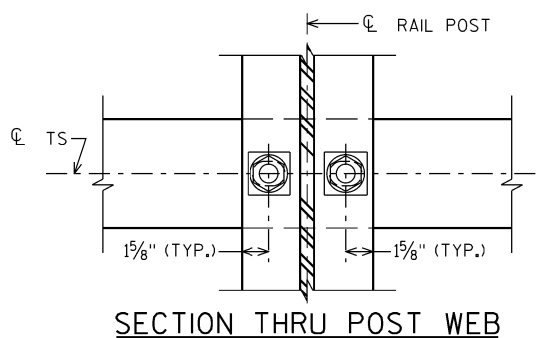
ANCHOR BOLTS



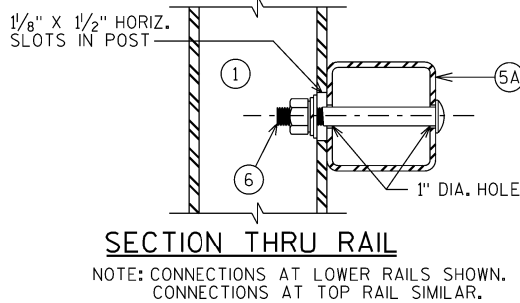
TOP VIEW AT END POST THRIE BEAM RAIL ATTACHMENT



DETAIL AT END POST THRIE BEAM RAIL ATTACHMENT



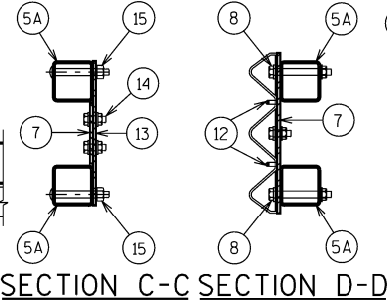
SECTION THRU POST WEB



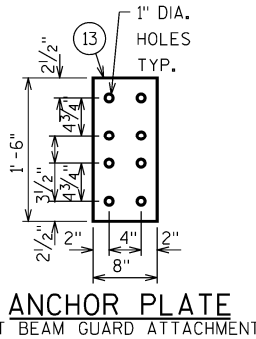
SECTION THRU RAIL

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

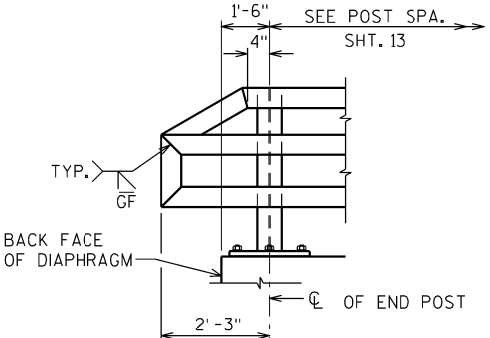
TYPICAL RAIL TO POST CONNECTIONS



SECTION C-C SECTION D-D



ANCHOR PLATE AT BEAM GUARD ATTACHMENT



PART ELEVATION OF RAILING

▲ TIE TO TOP MAT OF STEEL.

* ANCHOR BOLT ASSEMBLY MAY BE TACK WELDED, EITHER IN THE SHOP, OR IN THE FIELD AFTER THE ANCHOR PLATE IS PLACED.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-32-239			
DRAWN BY		CLP	PLANS CK'D. JLB
TUBULAR STEEL RAILING TYPE 'M'			SHEET 17 OF 17

CTH M TEMPORARY BYPASS COMPUTER EARTHWORK

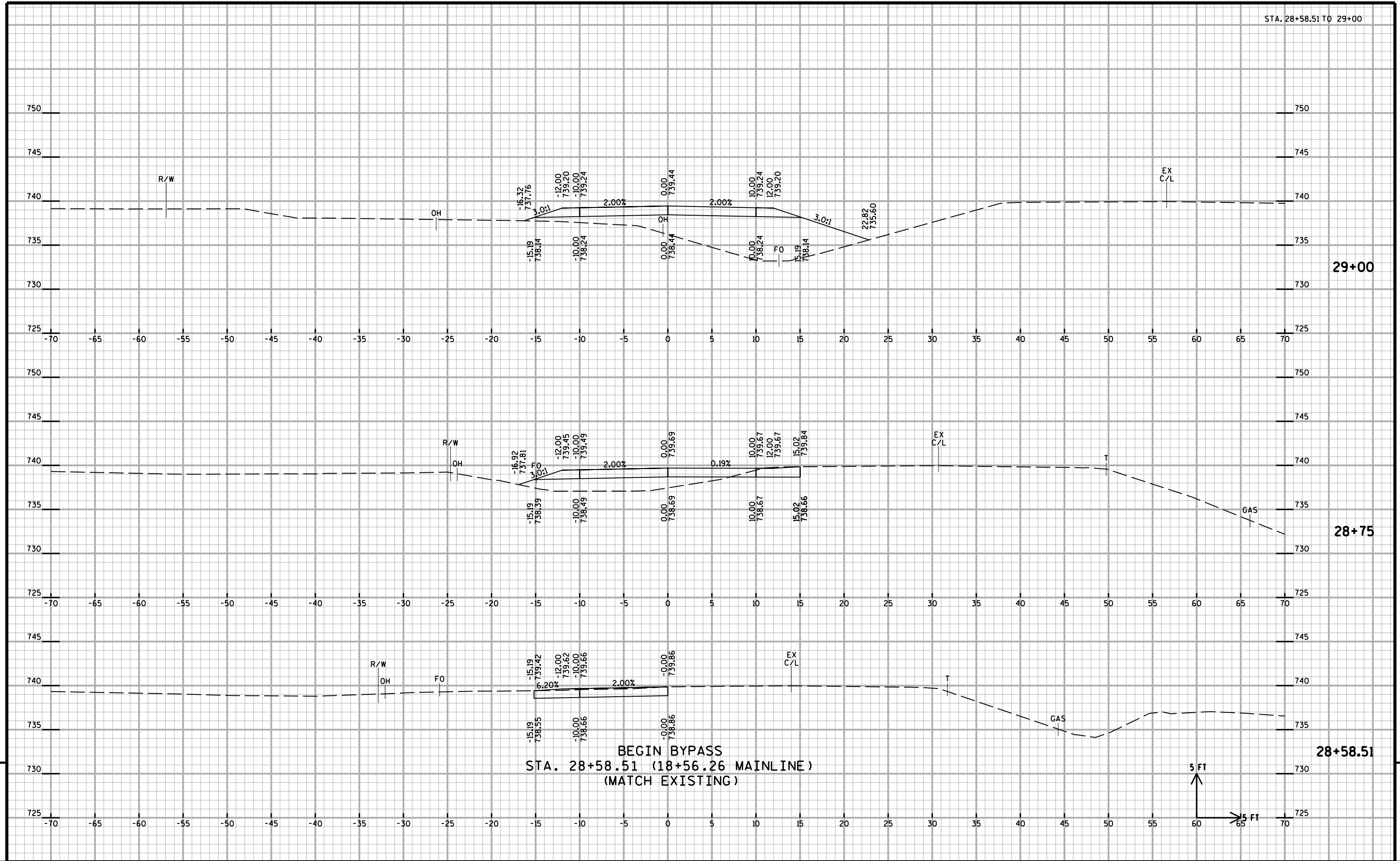
Station	Distance	Area (SF)			Incremental Vol (CY) (Unadjusted)			Cumulative Vol (CY)		Mass Ordinate
		Cut	Unuseable Pavement Material	Fill	Salvaged /			Expanded		
					Cut	Unuseable Pavement Material	Fill	Cut 1.00	Fill 1.30	
Note 1	Note 4	Note 2	Note 5	Note 3						
28+58.51	--	13.5	0.0	0.0						
28+75	16.49	6.6	0.0	26.9	6	0	8	6	11	-5
29+00	25.00	0.0	0.0	94.1	3	0	56	9	84	-74
29+25	25.00	0.0	0.0	113.8	0	0	96	9	209	-199
29+50	25.00	0.0	0.0	105.8	0	0	102	9	341	-332
29+75	25.00	9.5	0.0	85.9	4	0	89	14	456	-443
30+00	25.00	0.4	0.0	120.2	5	0	95	18	580	-562
30+25	25.00	0.0	0.0	280.7	0	0	186	18	821	-803
30+50	25.00	0.0	0.0	346.7	0	0	290	18	1199	-1181
30+75	25.00	0.0	0.0	313.7	0	0	306	18	1597	-1578
30+81.5	6.50	0.0	0.0	313.7	0	0	76	18	1695	-1676
TEMP. STRUCTURE	--	--	--	--	--	--	--	--	--	--
31+36.5	--	0.0	0.0	273.5	--	--	--	--	--	--
31+50	13.50	0.0	0.0	273.5	0	0	137	18	1872	-1854
31+75	25.00	0.0	0.0	180.8	0	0	210	18	2146	-2127
32+00	25.00	0.6	0.0	8.3	0	0	88	19	2260	-2241
32+25	25.00	42.4	0.0	0.0	20	0	4	39	2265	-2226
32+50	25.00	5.8	0.0	25.4	22	0	12	61	2280	-2219
32+75	25.00	5.6	0.0	19.0	5	0	21	66	2307	-2240
32+89.18	14.18	6.5	0.0	5.4	3	0	6	70	2315	-2245
					70	0	1781			

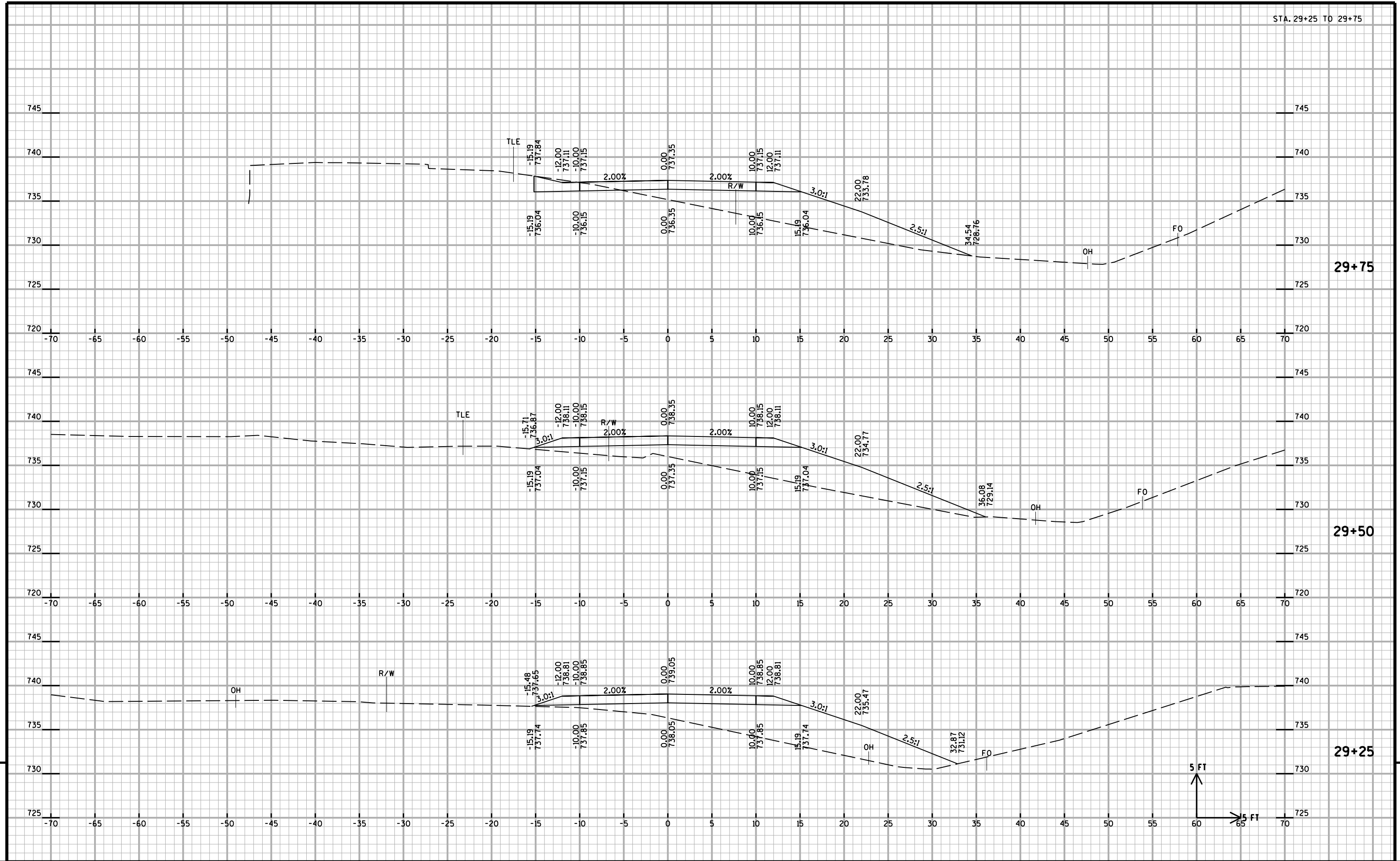
CTH M REMOVAL OF TEMPORARY BYPASS COMPUTER EARTHWORK

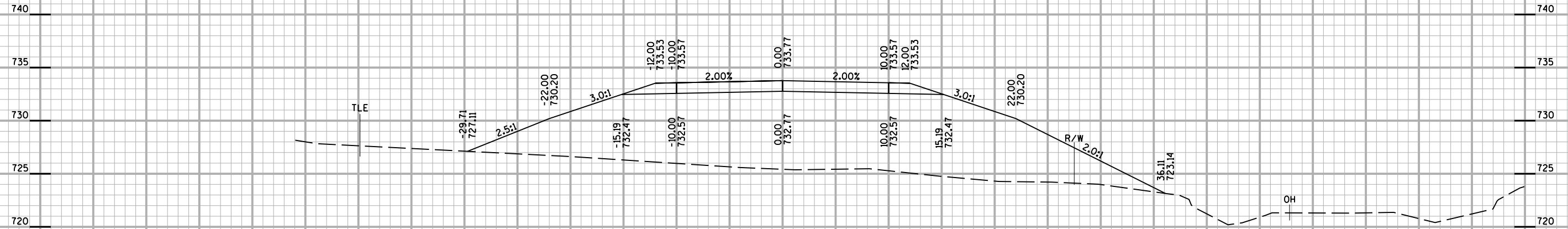
Station	Distance	Area (SF)			Incremental Vol (CY) (Unadjusted)			Cumulative Vol (CY)		Mass Ordinate
		Cut	Unuseable Pavement Material	Fill	Salvaged /			Expanded		
					Cut	Unuseable Pavement Material	Fill	Cut 1.00	Fill 1.30	
Note 1	Note 4	Note 2	Note 5	Note 3						
28+58.51	--	--	--	--						
32+89.18	430.67	--	--	--	2626	0	70	2626	90	2536

CTH M COMPUTER EARTHWORK

Station	Distance	Area (SF)			Incremental Vol (CY) (Unadjusted)			Cumulative Vol (CY)		Mass Ordinate
		Cut	Unuseable Pavement Material	Fill	Cut	Salvaged / Unuseable Pavement Material	Fill	Cut 1.00	Expanded Fill 1.30	
Note 1	Note 4	Note 2	Note 5	Note 3						
17+50	--	56.6	24.0	0.0						
17+75	25.00	78.0	24.0	0.0	62	22	0	40	0	40
18+00	25.00	68.6	24.0	13.1	68	22	6	86	8	78
18+25	25.00	72.8	24.0	21.2	65	22	16	129	29	100
18+27.66	2.66	76.2	24.0	22.1	7	2	2	134	31	103
18+50	22.34	115.7	24.0	26.2	79	20	20	193	57	136
18+52.66	2.66	114.3	24.0	27.0	11	2	3	202	61	142
18+75	22.34	35.6	24.0	75.4	62	20	42	245	116	129
18+77.66	2.66	34.7	24.0	80.3	3	2	8	246	126	120
18+88.42	10.76	33.2	24.0	105.0	14	10	37	250	174	76
19+00	11.58	32.2	24.0	147.8	14	10	54	253	244	9
19+13.42	13.42	31.5	24.0	225.1	16	12	93	257	365	-107
19+25	11.58	31.4	24.0	262.9	13	10	105	261	501	-240
19+38.42	13.42	32.6	24.0	224.3	16	12	121	264	658	-394
19+50	11.58	34.0	24.0	247.1	14	10	101	268	790	-521
19+66.56	16.56	34.0	24.0	247.1	21	15	152	275	987	-712
B-32-239	--	--	--	--	--	--	--	--	--	--
20+33.44	--	62.2	24.0	45.4	--	--	--	--	--	--
20+50	16.56	62.2	24.0	45.4	38	15	28	298	1023	-725
20+61.58	11.58	65.5	24.0	39.4	27	10	18	315	1046	-731
20+75	13.42	73.4	24.0	14.8	35	12	13	338	1064	-726
20+86.58	11.58	78.9	24.0	43.0	33	10	12	360	1080	-720
21+00	13.42	82.4	24.0	39.3	40	12	20	388	1107	-718
21+11.58	11.58	88.7	24.0	31.3	37	10	15	415	1126	-712
21+22.29	10.71	87.9	24.0	21.6	35	10	10	440	1140	-700
21+25	2.71	86.3	24.0	24.5	9	2	2	447	1143	-696
21+37.57	12.57	88.9	24.0	23.4	41	11	11	476	1157	-681
21+47.29	9.72	105.2	24.0	20.7	35	9	8	502	1168	-665
21+50	2.71	109.3	24.0	18.7	11	2	2	511	1170	-659
21+59.5	9.50	110.0	24.0	14.2	39	8	6	541	1178	-637
21+72.29	12.79	135.7	24.0	8.3	58	11	5	588	1185	-597
21+75	2.71	140.6	24.0	7.4	14	2	1	599	1186	-586
22+00	25.00	121.7	24.0	6.2	121	22	6	698	1194	-495
22+25	25.00	111.2	24.0	4.6	108	22	5	784	1200	-416
22+50	25.00	82.4	24.0	3.0	90	22	4	851	1205	-354
22+75	25.00	52.5	24.0	0.0	62	22	1	892	1207	-315
					1299	407	928			



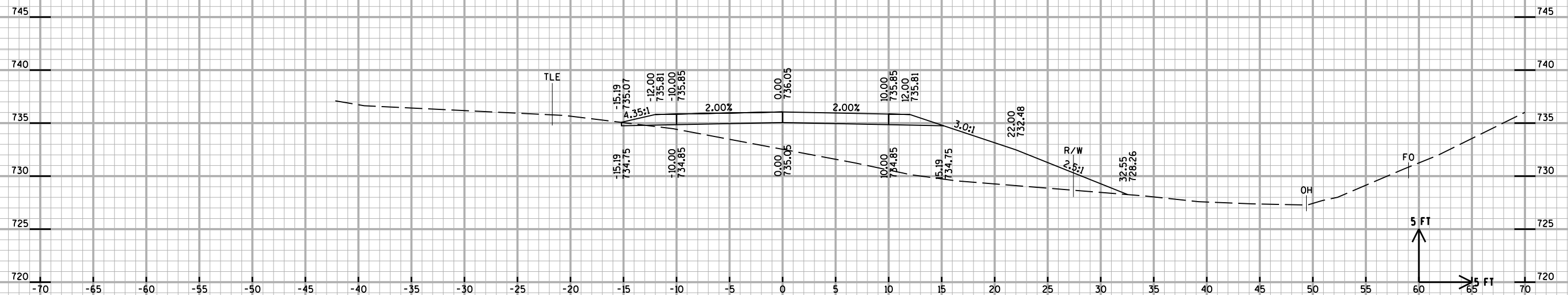




30+50

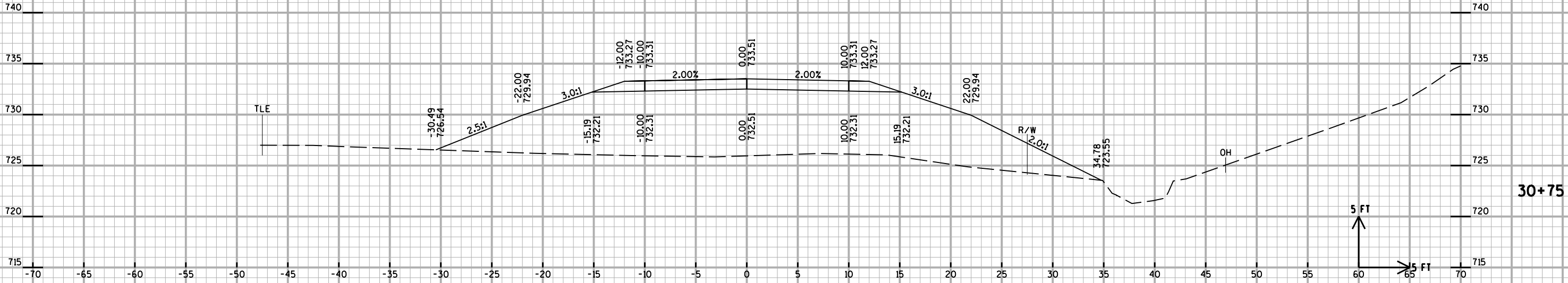


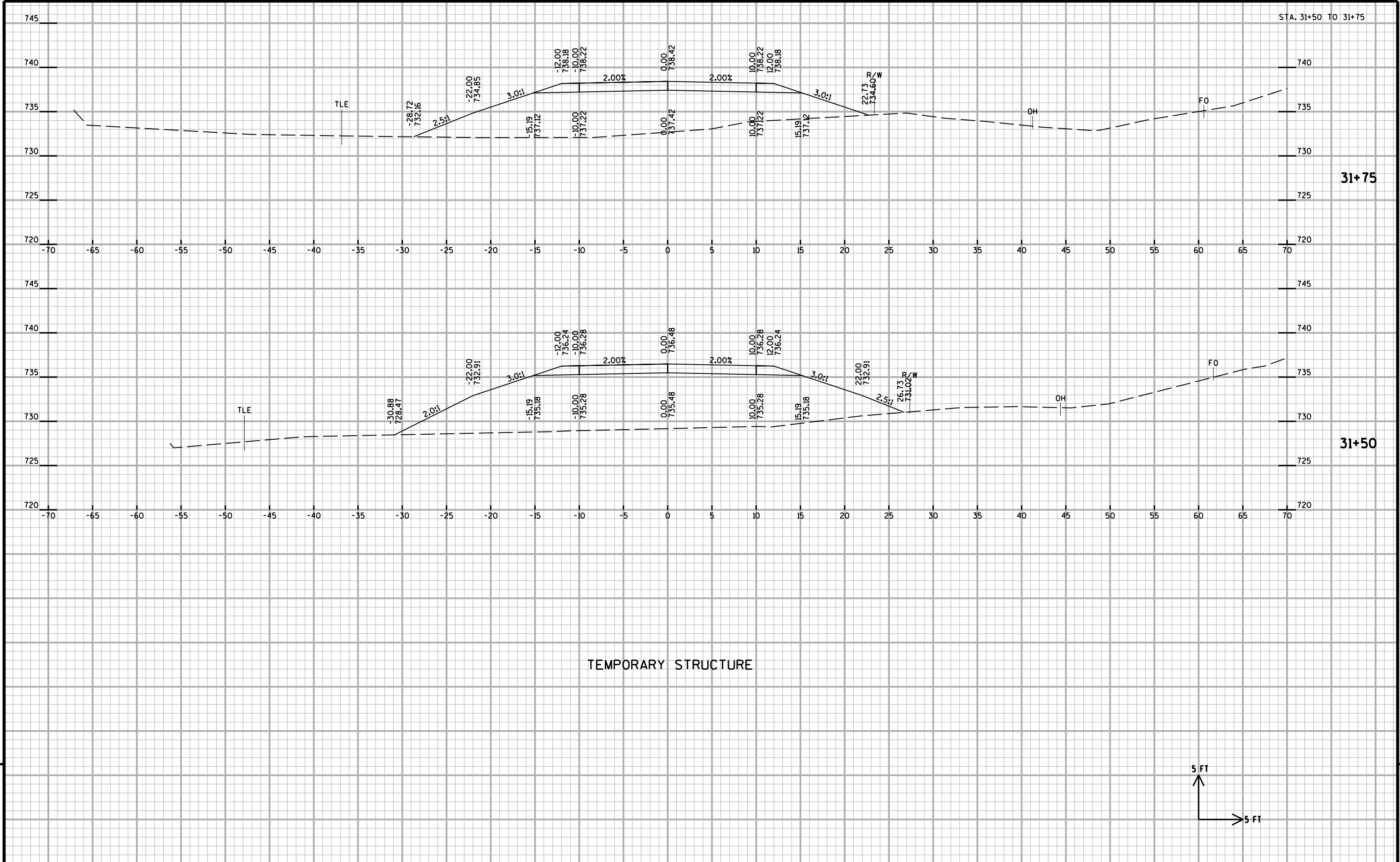
30+25



30+00

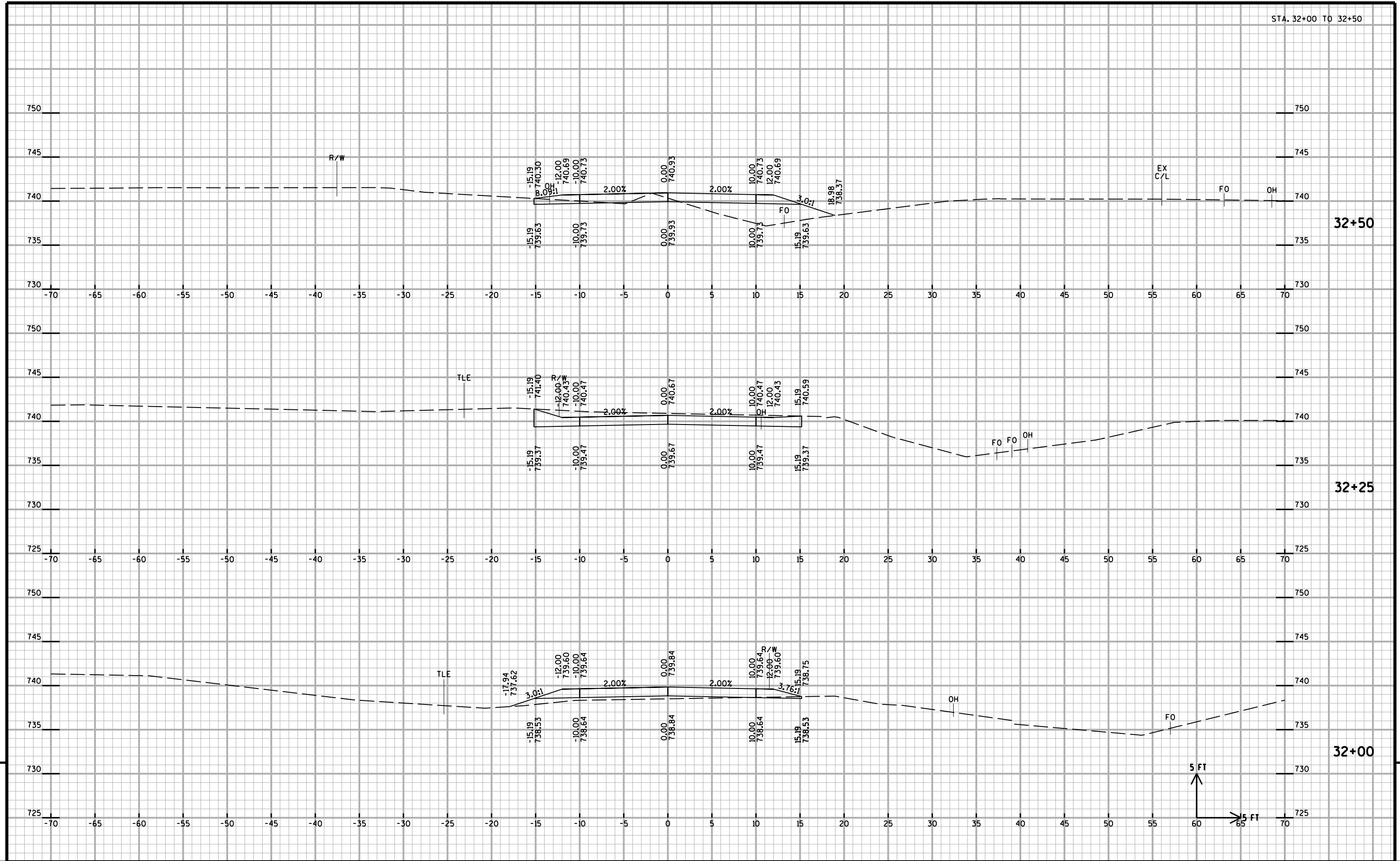
TEMPORARY STRUCTURE



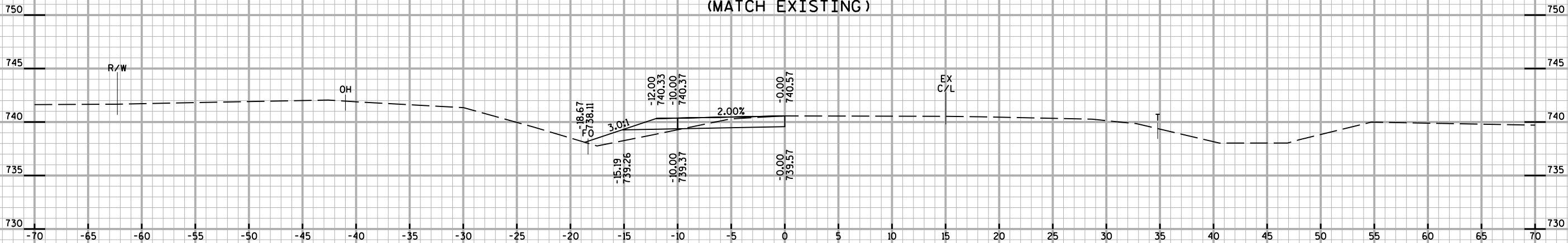


9

9



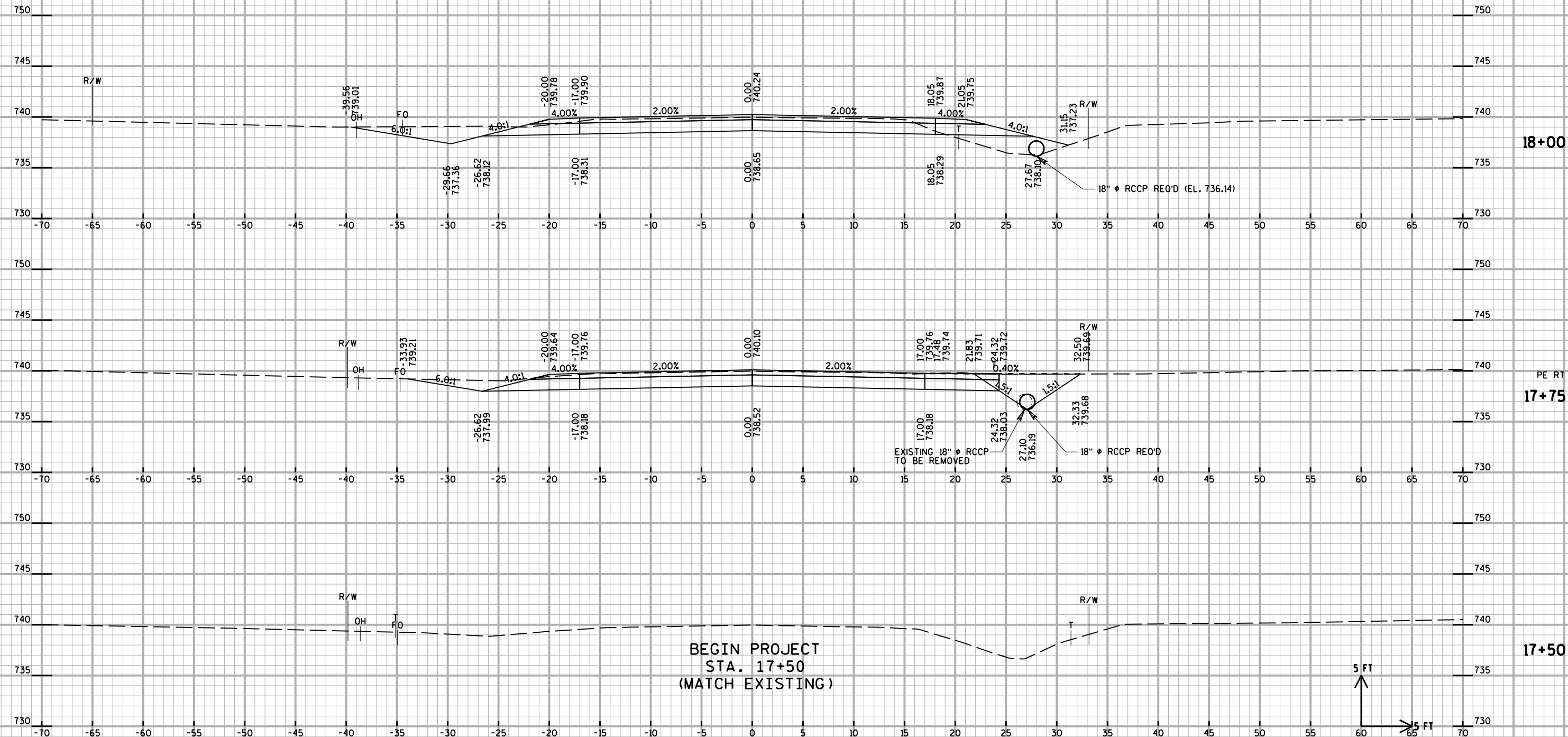
END BYPASS
STA. 32+89.18 (22+28.54 MAINLINE)
(MATCH EXISTING)

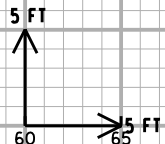


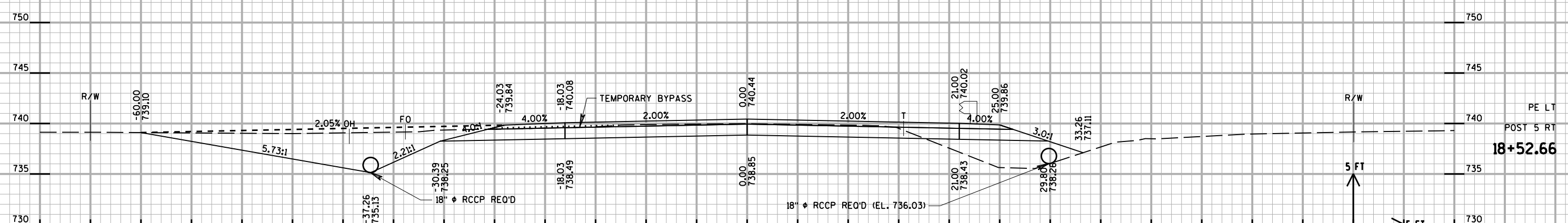
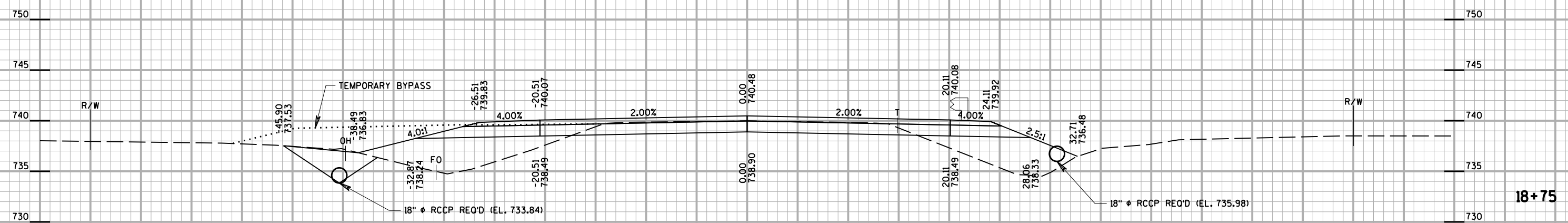
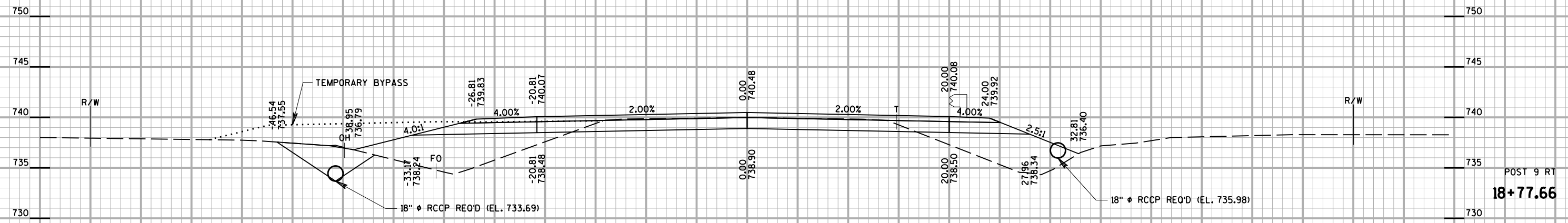
32+89.18

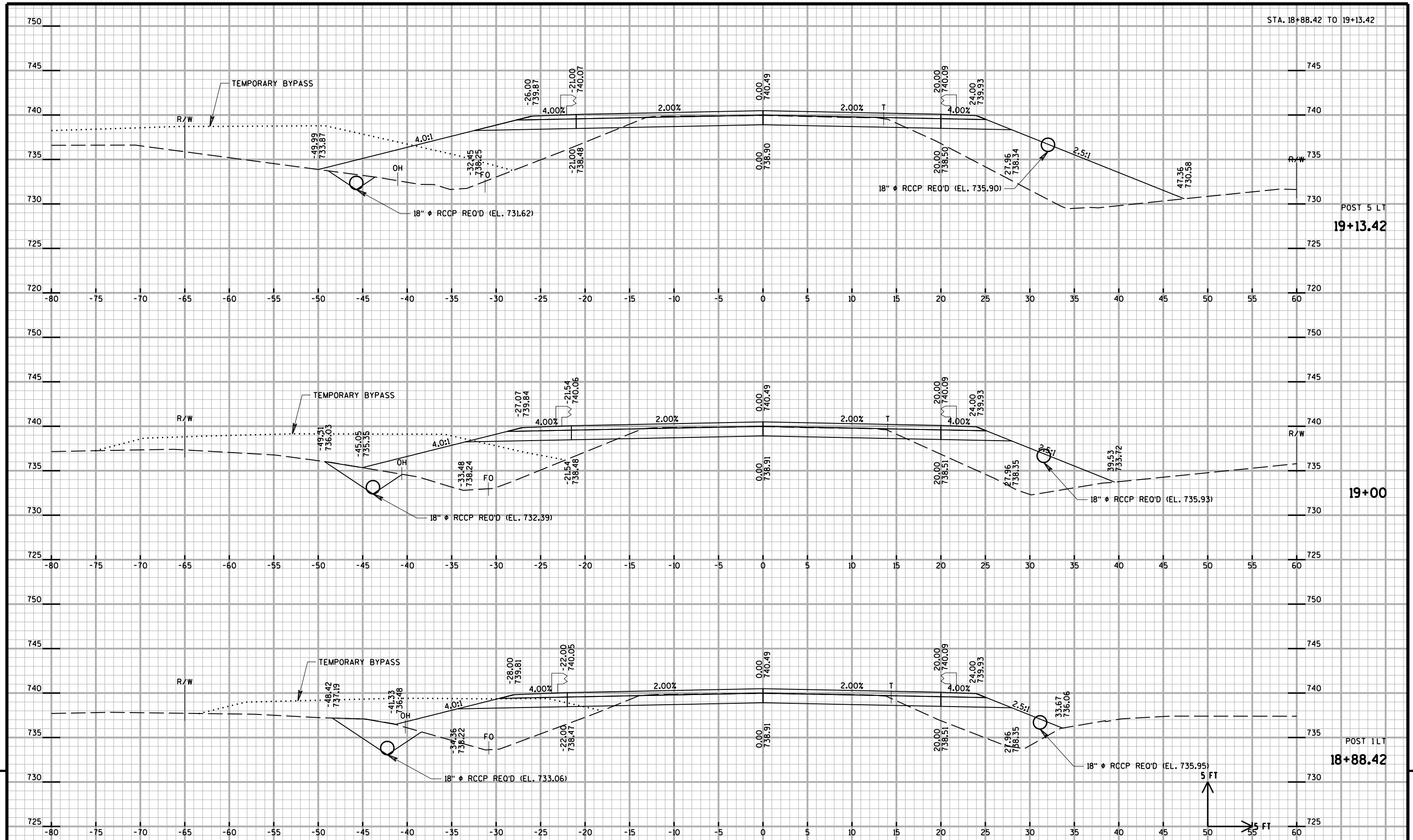


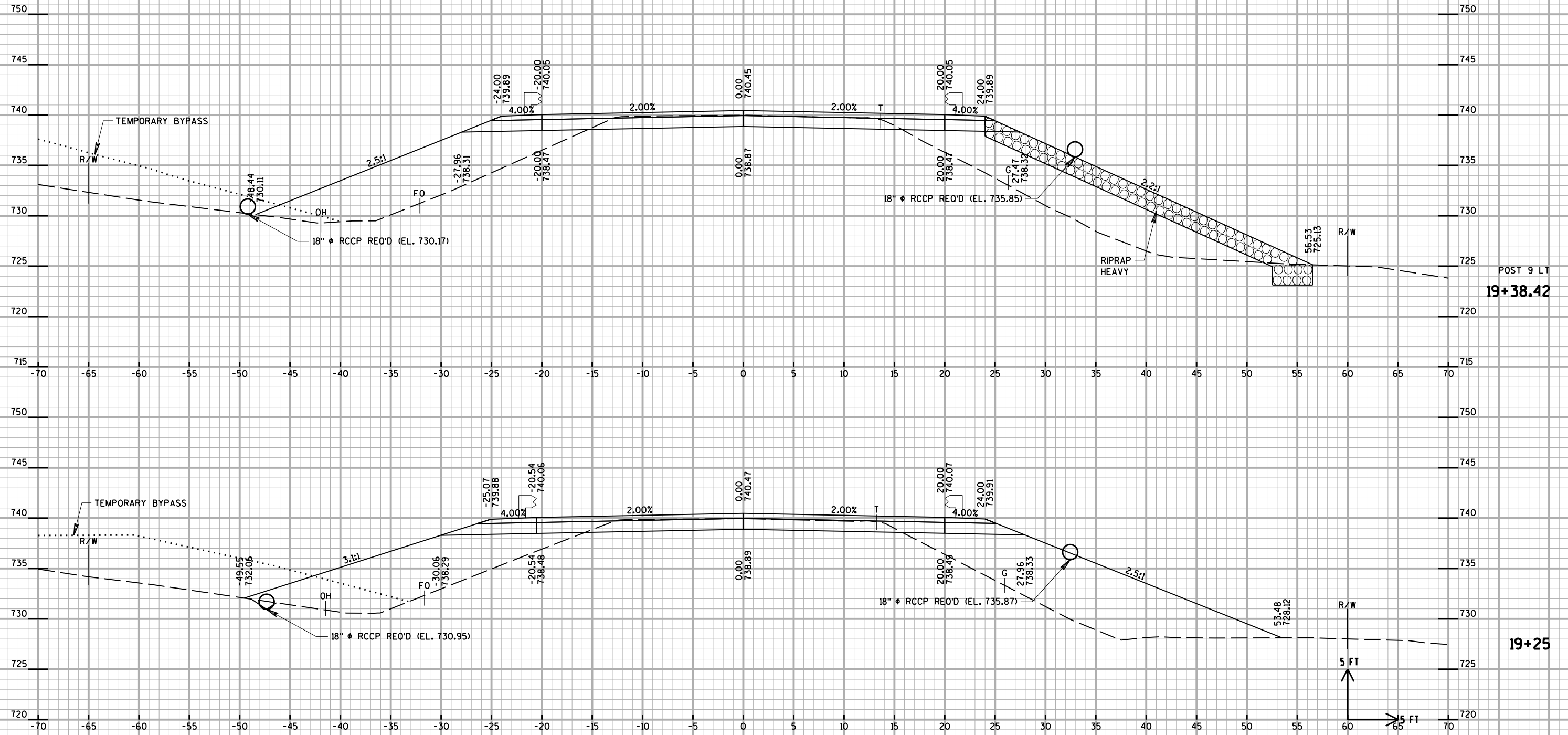
32+75



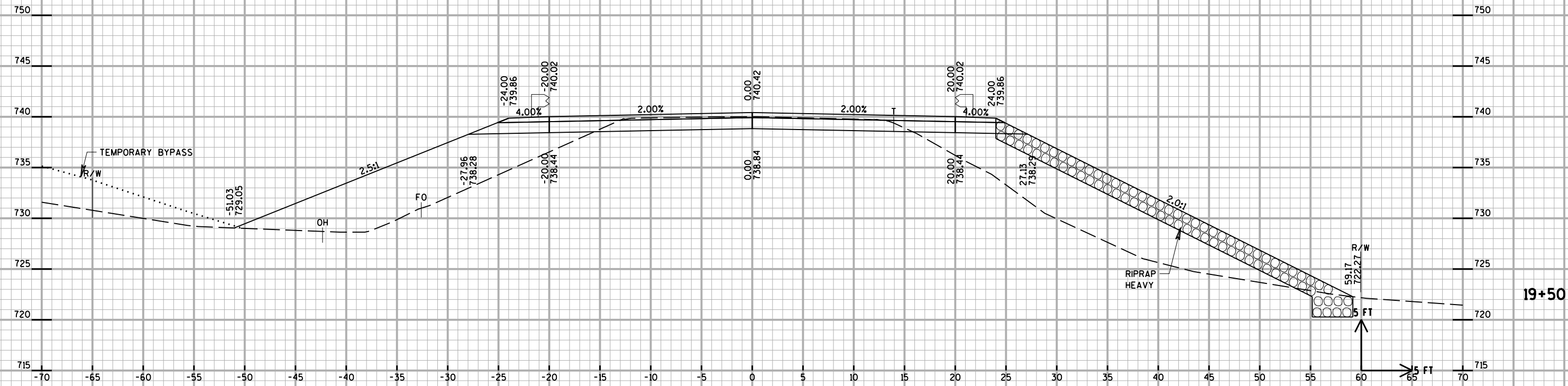








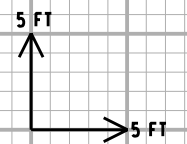
STRUCTURE B-32-239





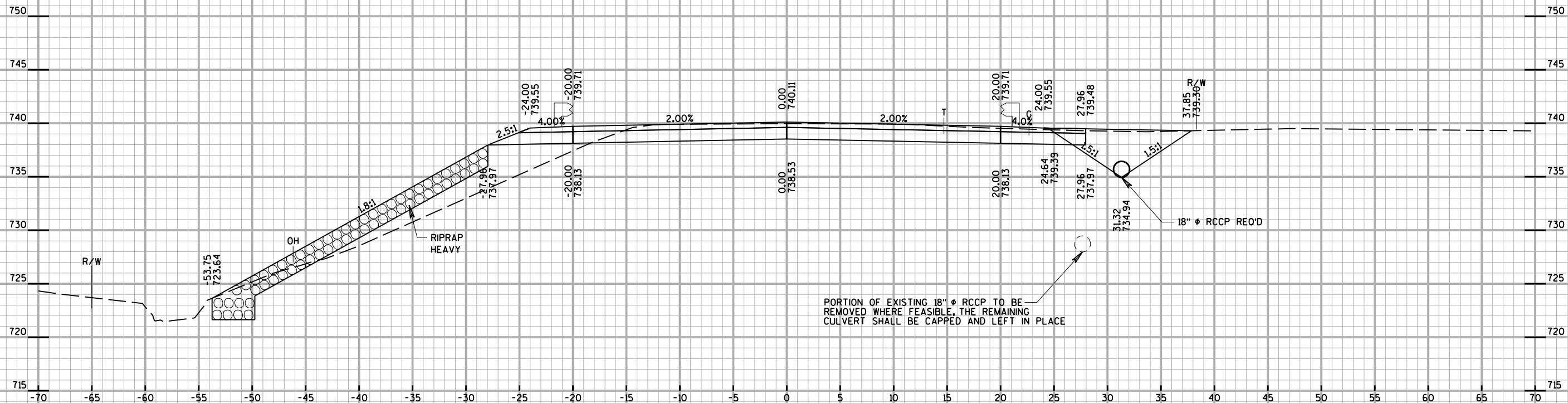
20+25

STRUCTURE B-32-239

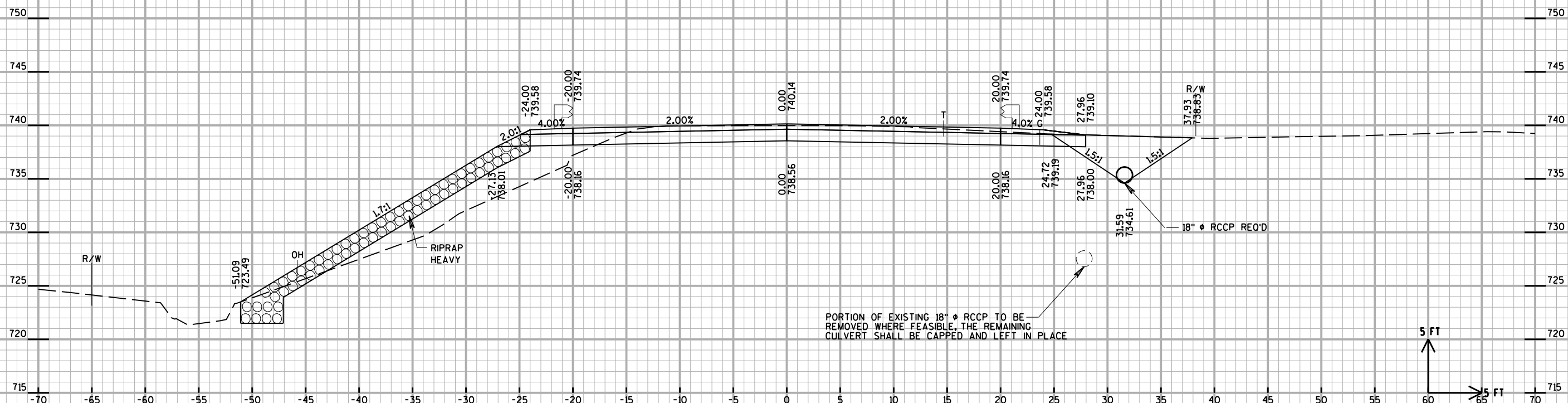


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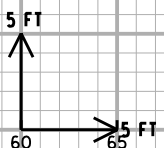
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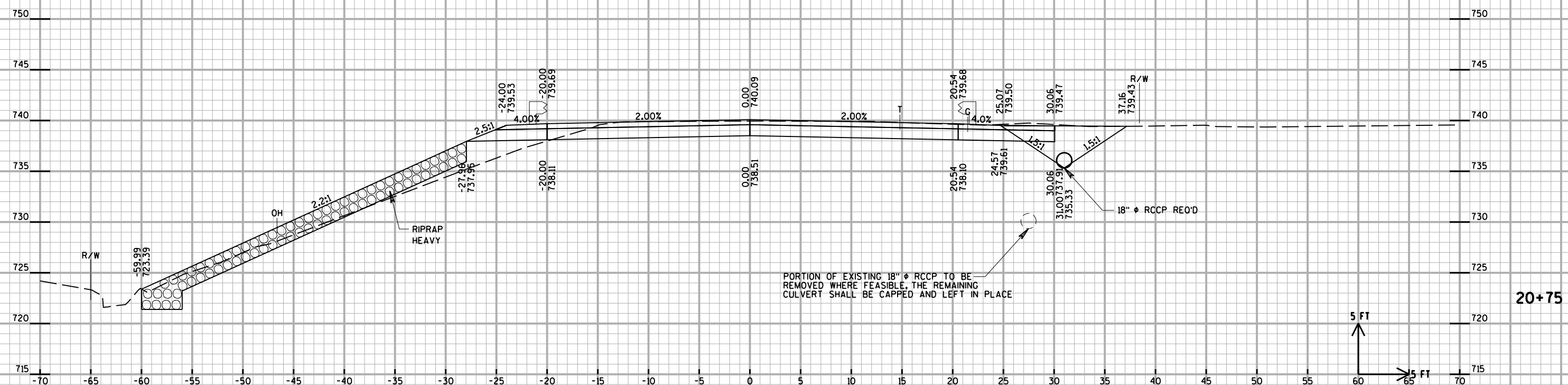
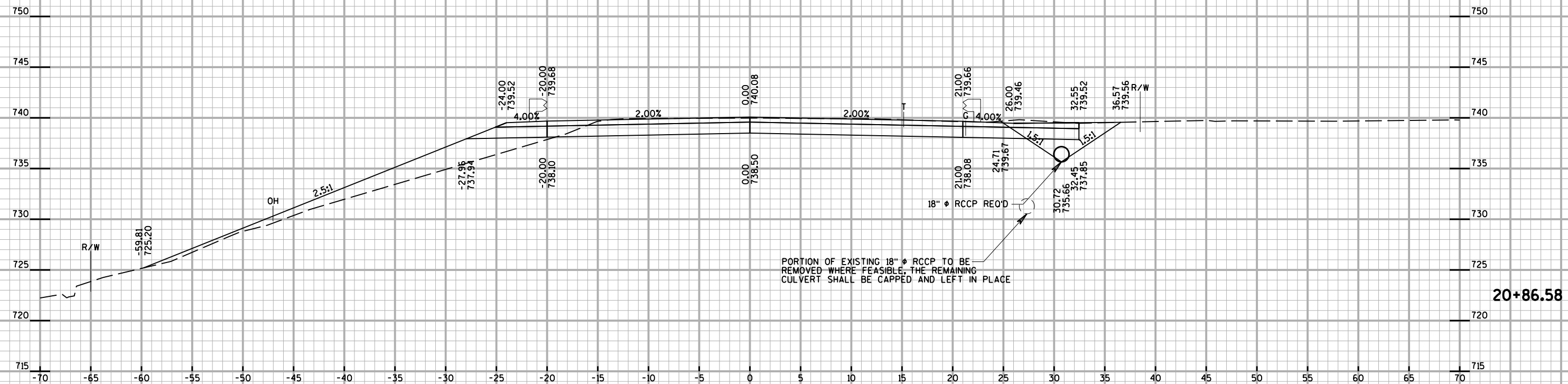


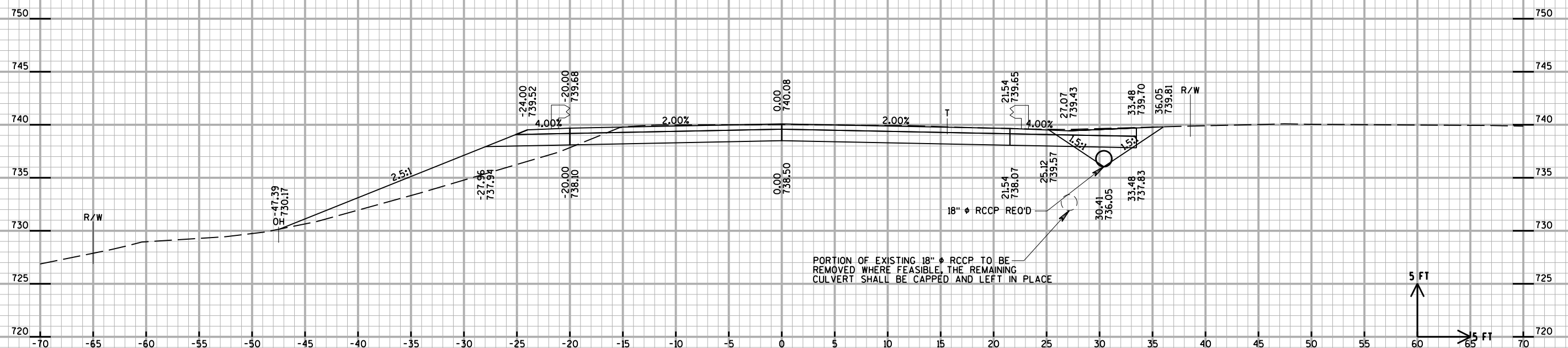
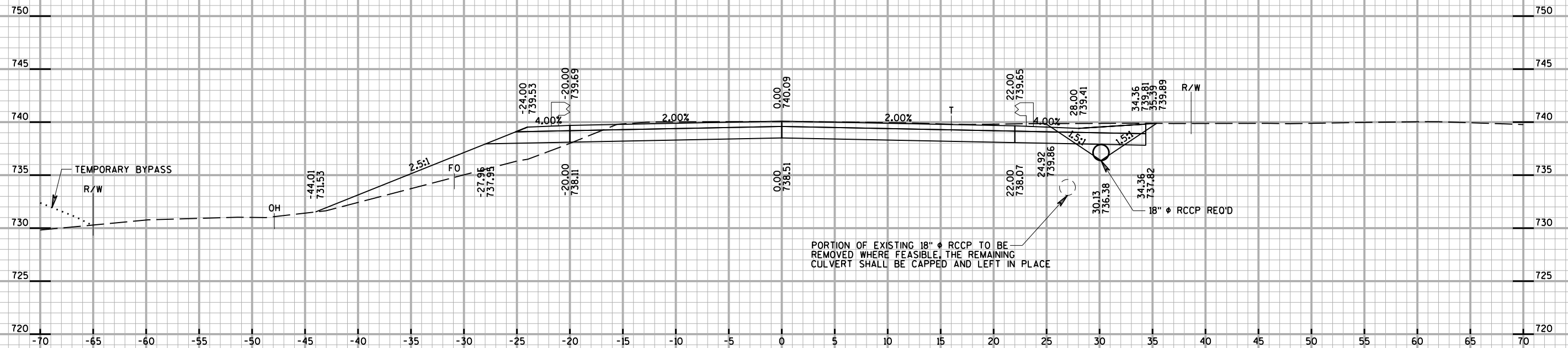
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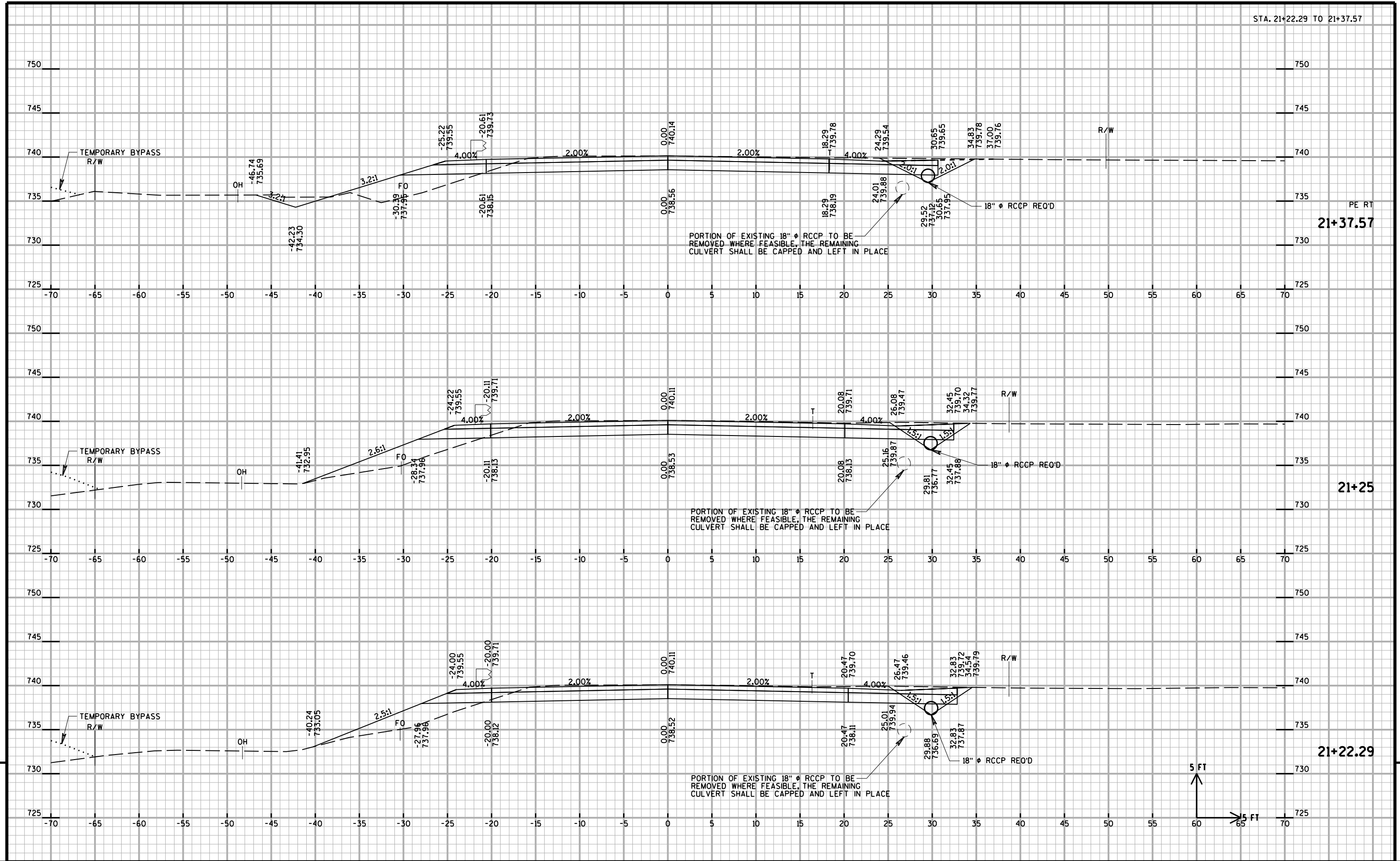


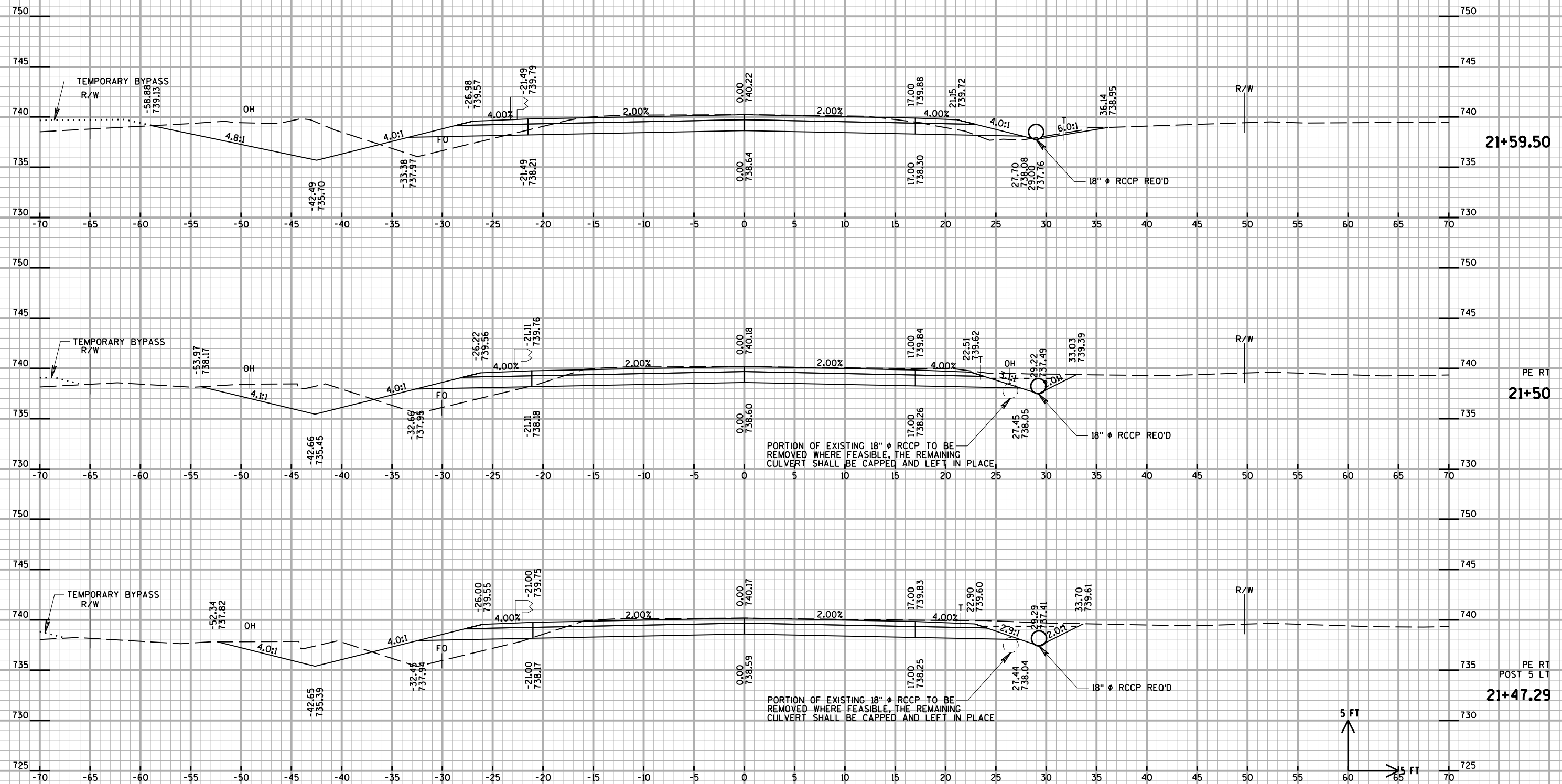
20+50

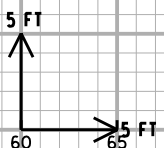
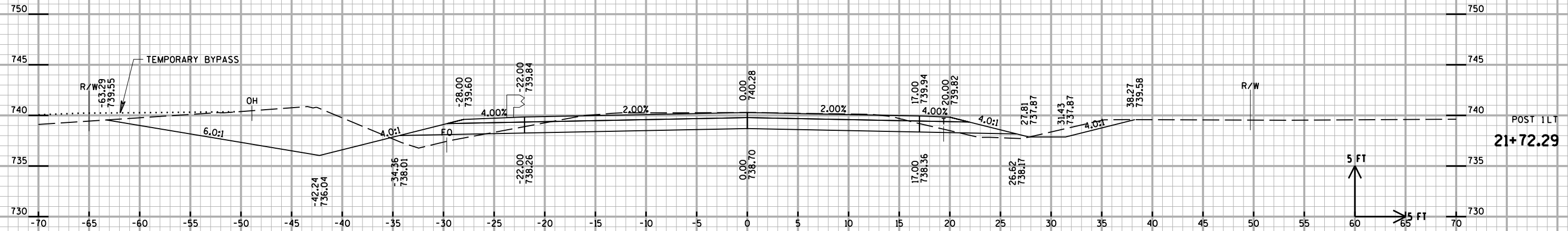
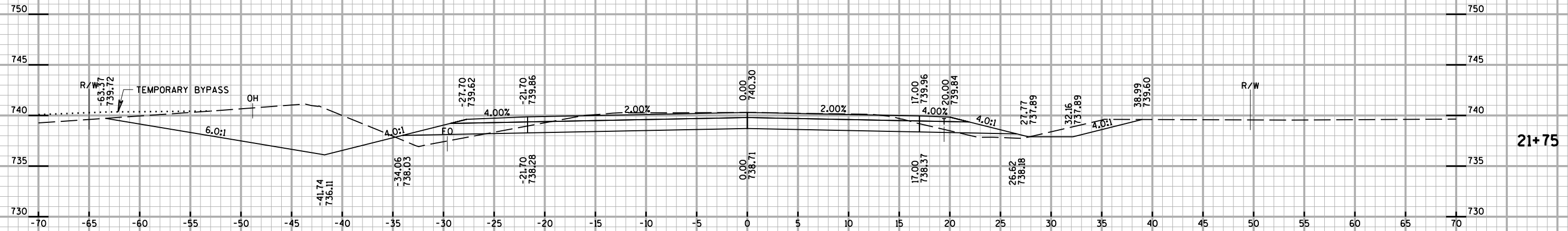
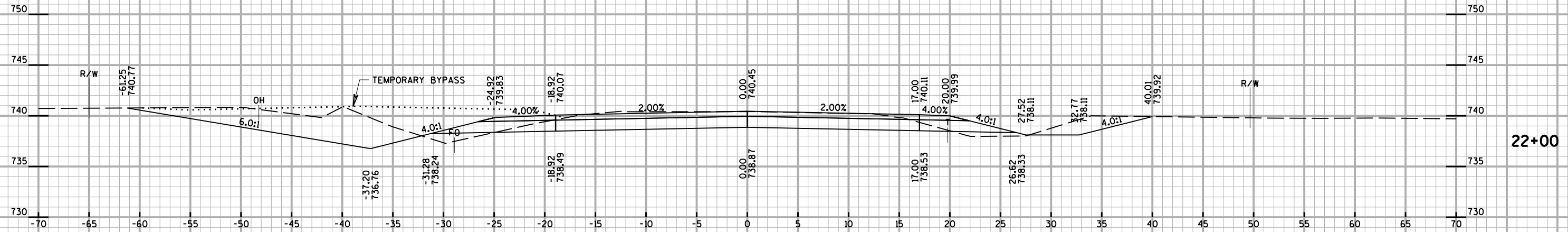




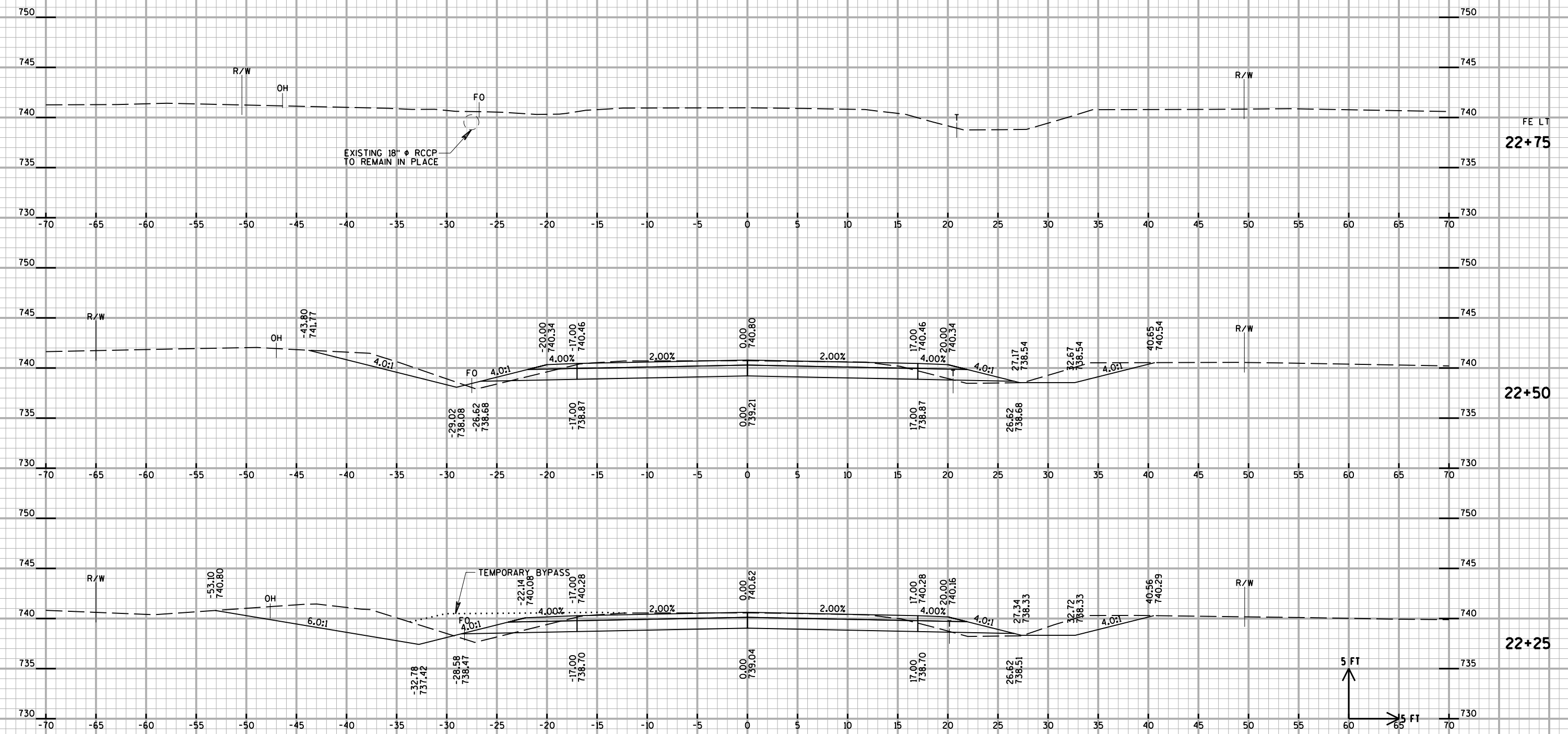




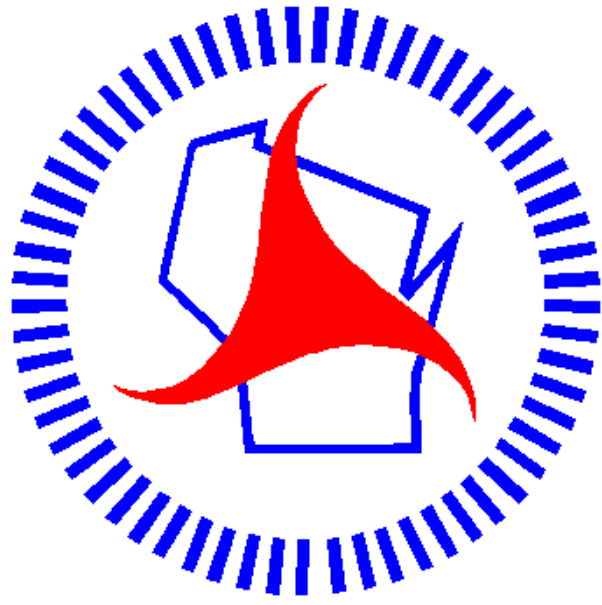




END PROJECT
STA. 22+75
(MATCH EXISTING)



Notes



Wisconsin Department of Transportation

Dedicated people creating transportation solutions
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<http://www.dot.wisconsin.gov>