

ORDER OF SHEETS

- Section No. 1 Title
- Section No. 2 Typical Sections and Details
- Section No. 3 Estimate of Quantities
- Section No. 3 Miscellaneous Quantities
- Section No. 4 Right of Way Plat
- Section No. 5 Plan and Profile
- 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 = 76

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

HUDSON - BALDWIN

(KINNICKINNIC RIV TO CTH T (EB & WB))

IH 94

ST. CROIX COUNTY

STATE PROJECT NUMBER
1020-01-77

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1020-01-77	WISC 2019809	1

PROJECT ID: 1020-01-77

COUNTY: ST. CROIX

21



BEGIN PROJECT
1020-01-77
STA. 624'EB'+90
X=572676.8171'
Y=330244.0672'
STA. 627'WB'+75

END PROJECT
1020-01-77
STA. 821'EB'+00
STA. 820'WB'+95

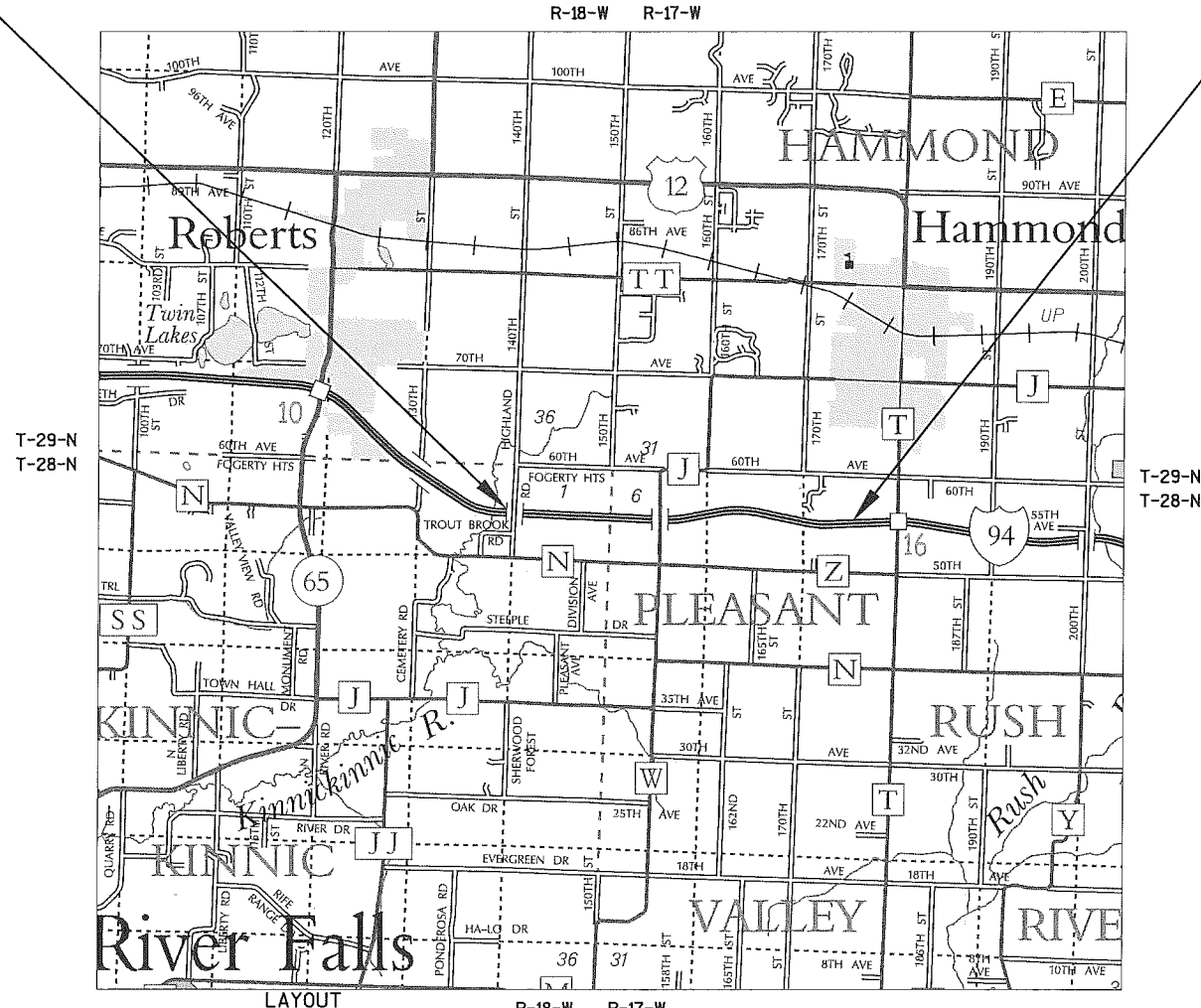
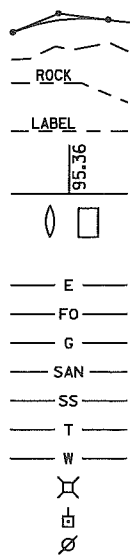
DESIGN DESIGNATION 1020-01-77

- A.A.D.T. (2018) = 36,300
- A.A.D.T. (2038) = 45,400
- D.H.V. = 4,540
- D.D. = 58/42
- T. = 28.0% OF A.A.D.T.
- DESIGN SPEED = 70 MPH
- ESALS = 32,700,000

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
- SWAMP AREA
- WOODED OR SHRUB AREA

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



LAYOUT
SCALE 0 2 MILE

TOTAL NET LENGTH OF CENTERLINE = 3.714 MILES

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, ST. CROIX COUNTY, NAD83 (YEAR), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor: NW REGION, EAU CLAIRE

Designer: K. KOPACZ

Project Manager: S. LAMBELE

Regional Examiner: NW REGION, EAU CLAIRE

Regional Supervisor: T. WEISS

APPROVED FOR THE DEPARTMENT

DATE: 5/24/18 *T. Weisse*
(Signature)

UTILITIES CONTACTS

COMMUNICATIONS

AT&T LEGACY
MR. BRAD KEMPH
PHONE: 715-254-5238
COPY ALL CORRESPONDENCE TO:
MR. BILL KOENIG
128 WEST SUNSET AVENUE
APPLETON, WI 54911
PHONE: 608-628-0575
EMAIL: WEKOENIG@ATT.NET

CENTURYLINK COMMUNICATIONS - QWEST
MR. BOB SAMPSON
1310 EAST MARY STREET
OTTUMWA, IA 52501
PHONE: 641-684-4106 (CELL 636-887-5367)
EMAIL: ROBERT.SAMPSON@CENTURYLINK.COM

LEVEL 3 COMMUNICATIONS
MR. BRAD MORSETH
5480 FELTL ROAD
MINNETONKA, MN 55343
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EMAIL: BRAD.MORSETH@LEVEL3.COM

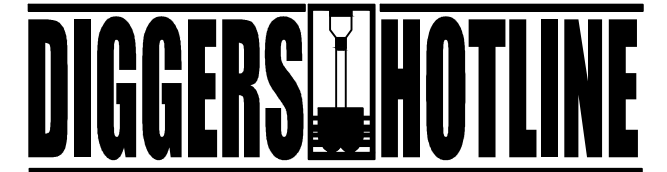
WISDOT COMMUNICATION LINE
MR. JEFF MADSON
433 WEST ST. PAUL AVENUE, SUITE 300
MILWAUKEE, WI 53203-3007
PHONE: 414-225-3723
EMAIL: JEFFREY.MADSON@DOT.WI.GOV

ELECTRICITY

ST. CROIX ELECTRIC COOPERATIVE
MR. ROB DOOLEY
1925 RIDGEWAY STREET
HAMMOND, WI 54015
PHONE: 715-796-5637
EMAIL: ROBDOO@SCECNET.NET

GAS

WE ENERGIES
MR. LEWIS KNAPP
104 W. SOUTH STREET
RICE LAKE, WI 54868
PHONE: 715-234-9605 (CELL 715-419-2196)
EMAIL: LEWIS.KNAPP@WE-ENERGIES.COM
WE ENERGIES
24-HOUR EMERGENCY (GAS)
800-261-5325



Dial **811** or (800)242-8511

www.DiggersHotline.com

WISDNR CONTACT

WISCONSIN DEPT. OF NATURAL RESOURCES
MS. AMY LESIK
1300 WEST CLAIREMONT AVENUE
EAU CLAIRE, WI 54701
PHONE: 715-836-6571
EMAIL: AMYL.LESIK@WISCONSIN.GOV

GENERAL NOTES

THE EXACT LOCATIONS OF BUTT JOINTS AND CONCRETE PAVEMENT REPAIR NON DOWELED SPECIAL ARE TO BE DETERMINED BY THE ENGINEER.

THE EXACT LOCATIONS OF BEAM GUARD REPLACEMENTS ARE TO BE DETERMINED BY THE ENGINEER.

DISTURBED AREAS WITHIN THE RIGHT OF WAY SHALL BE RESTORED AS DIRECTED BY THE ENGINEER.

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

PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL CONTACT THE COUNTY SURVEYOR CONCERNING MONUMENT AND PROPERTY CORNER PRESERVATION.

TYPICAL FINISHED SECTIONS SHOW THE GENERAL ROADWAY FEATURES THROUGHOUT THE PROJECT. SLOPES AND DISTANCES MAY VARY WITHIN THE STATION LIMITS.

WHEN THE QUANTITY OF THE ITEM OF HMA PAVEMENT IS MEASURED BY THE TON, THE DEPTH OR THICKNESS OF THE COURSE SHOWN ON THE PLANS IS APPROXIMATE, AND THE ACTUAL THICKNESS WILL DEPEND ON THE THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER.

LOCATIONS FOR PERMANENT SIGNS SHOWN ON THE PLAN ARE APPROXIMATE. ACTUAL LOCATIONS OF PERMANENT SIGNS ARE TO BE COORDINATED IN THE FIELD BY THE ENGINEER.

TEMPORARY PAVEMENT MARKING PAINT FOR LANE LINES ON THE FINAL ASPHALT SURFACE ARE INTENDED TO BE INTERIM LANE LINE MARKINGS UNTIL GROOVES CAN BE CUT IN THE FINAL ASPHALT SURFACE FOR GROOVED WET REFLECTIVE EPOXY APPLICATION. CUT THE GROOVES FOR GROOVED WET REFLECTIVE EPOXY APPLICATION AT THE SAME LOCATION WHERE THE TEMPORARY PAVEMENT MARKING PAINT WAS APPLIED AS LANE LINES.

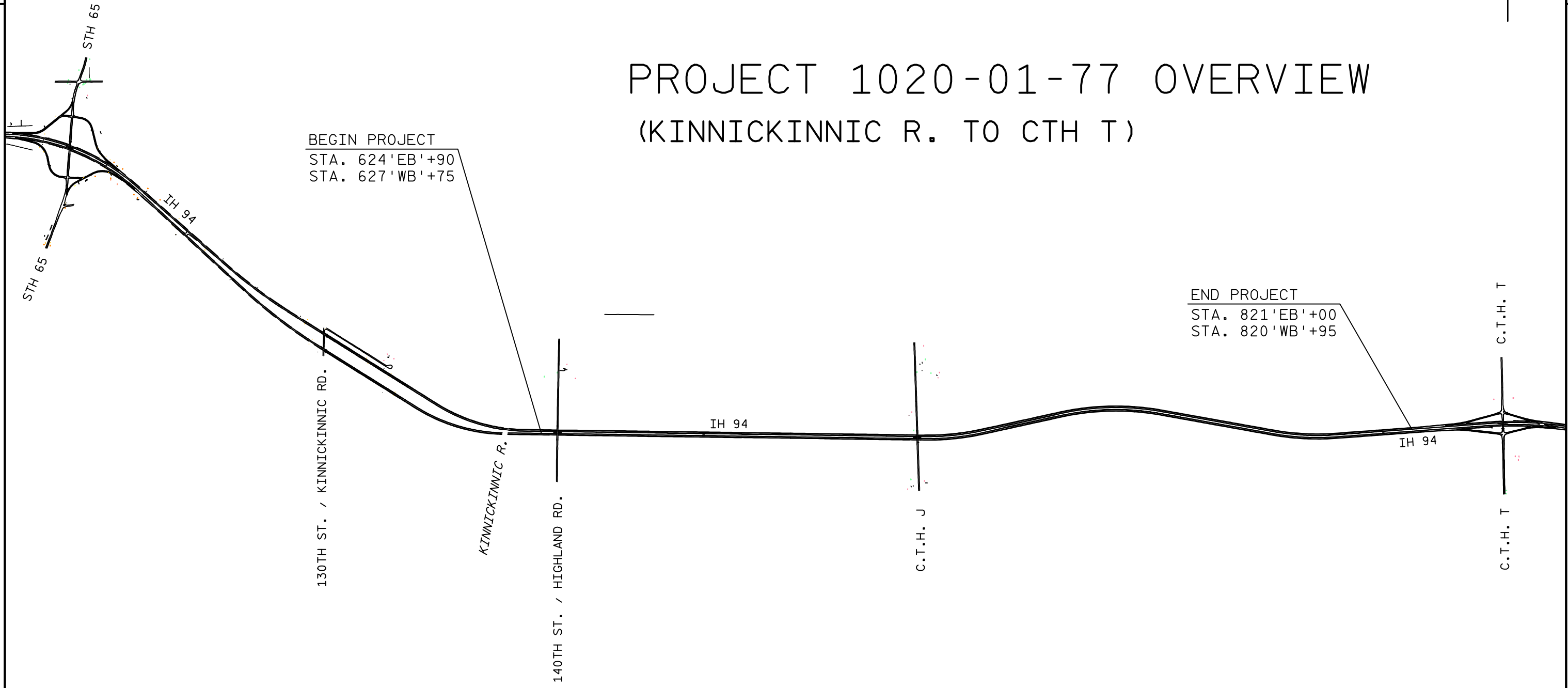
THE 4 1/2" HMA PAVEMENT SHALL BE PLACED WITH A 2 1/2" 3 HT 58-28 H LOWER LAYER AND A 2" 4 SMA 58-34 V UPPER LAYER.
THE 2" HMA PAVEMENT SHALL BE PLACED IN ONE LAYER WITH A 2" 4 LT 58-28 S.

MAINTENANCE AND REPAIR OF TEMPORARY WEDGE JOINT WILL BE INCIDENTAL TO THE APPROPRIATE HMA PAVEMENT BID ITEM.

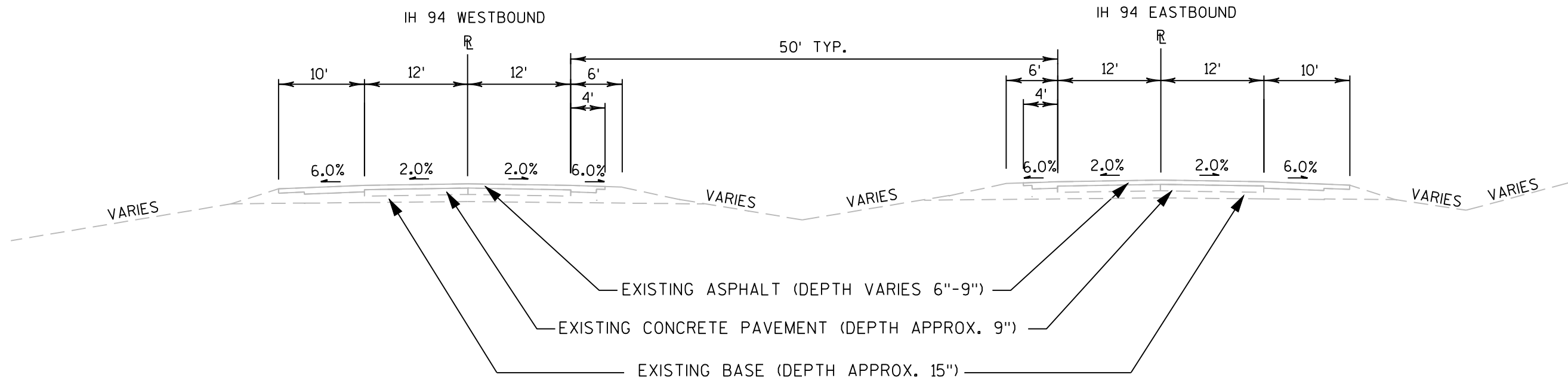
TRAFFIC CONTROL NEEDED DURING MAINTENANCE AND REPAIR OF TEMPORARY WEDGE JOINT WILL BE INCIDENTAL TO THE TRAFFIC CONTROL PROJECT BID ITEM.



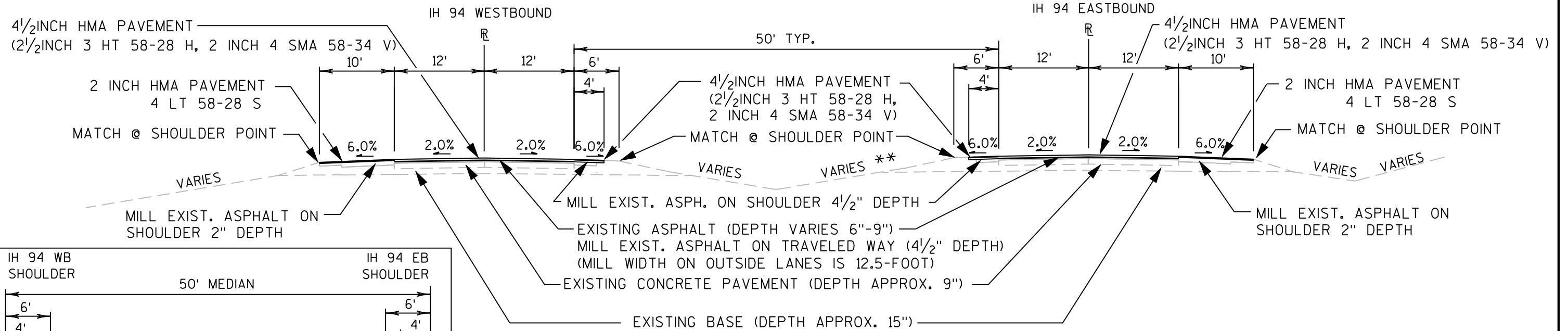
PROJECT 1020-01-77 OVERVIEW (KINNICKINNIC R. TO CTH T)



PROJECT NO: 1020-01-77	HWY: IH 94	COUNTY: ST. CROIX	PROJECT OVERVIEW	SHEET	E
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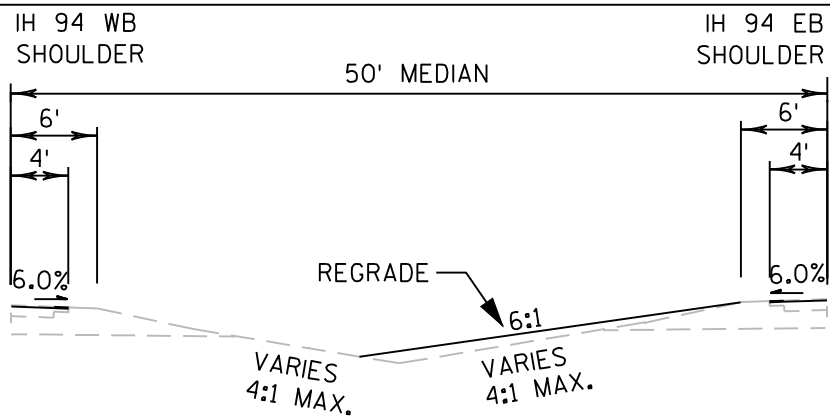
TYPICAL EXISTING SECTION
IH 94
(KINNICKINNIC R. - CTH T)



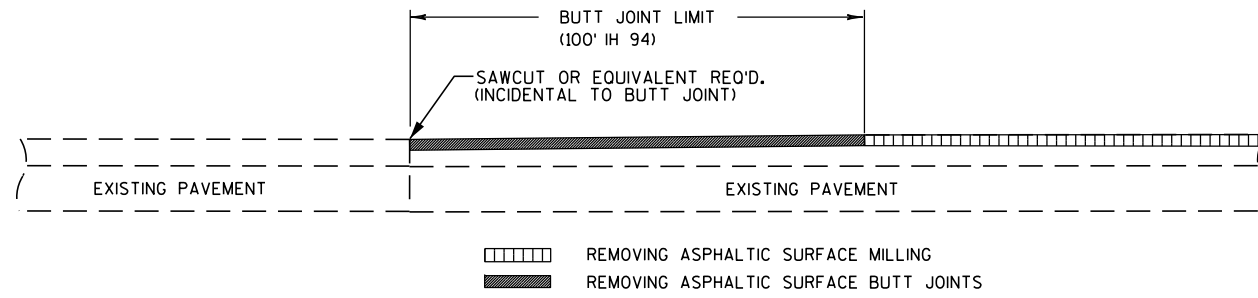
TYPICAL FINISHED SECTION
IH 94
(KINNICKINNIC R. - CTH T)

STA. 627'WB'+75 TO 820'WB'+95 STA. 624'EB'+90 TO 821'EB'+00 **

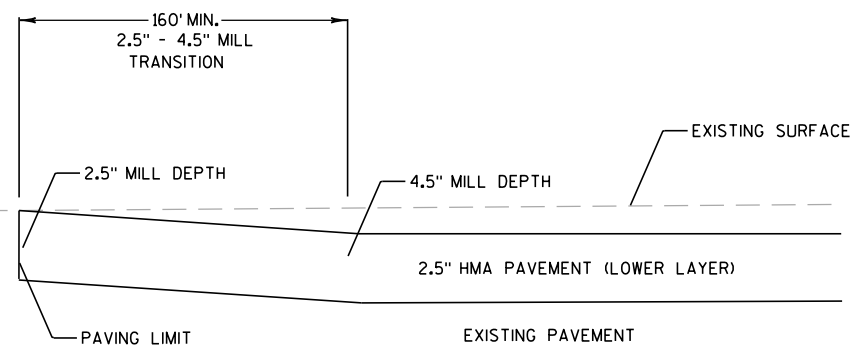
** REGRADE MEDIAN DITCH SLOPE, STA. 659'EB'+00 TO 707'EB'+00, LT. SEE REGRADE TYPICAL.



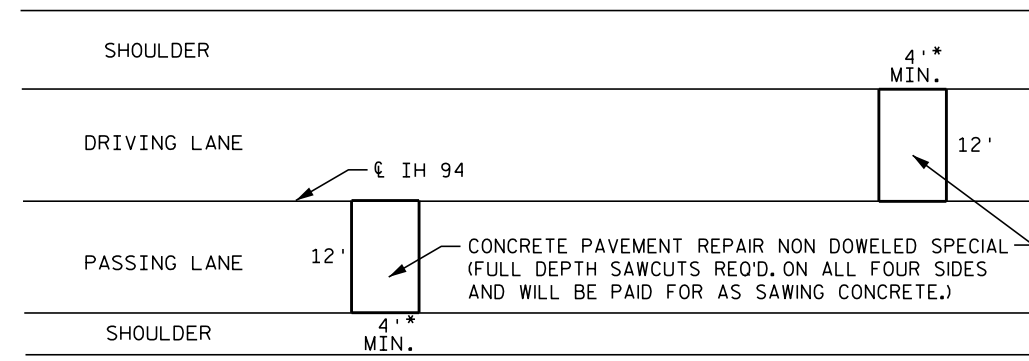
TYPICAL REGRADE MEDIAN DITCH SLOPE
STA. 659'EB'+00 TO 707'EB'+00, LT.



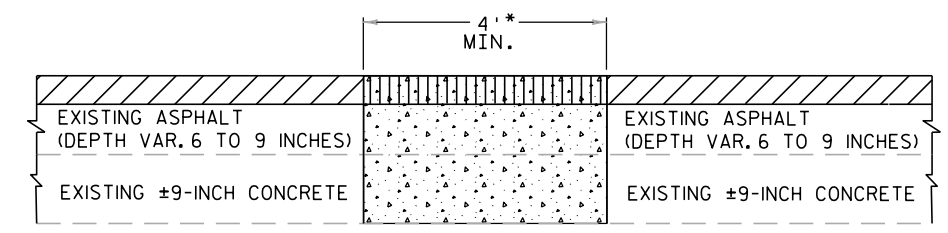
BUTT JOINT DETAIL (ASPHALT)
EXACT LOCATIONS AND LENGTHS DETERMINED BY THE ENGINEER.



HMA PAVEMENT JOINT TRANSITION DETAIL (LOWER LAYER)
REQUIRED AT BEGIN AND END PRIOR TO OPENING TO TRAFFIC



PLAN VIEW



SIDE VIEW

* 4'-8' TYPICAL OR AS DIRECTED BY THE ENGINEER.

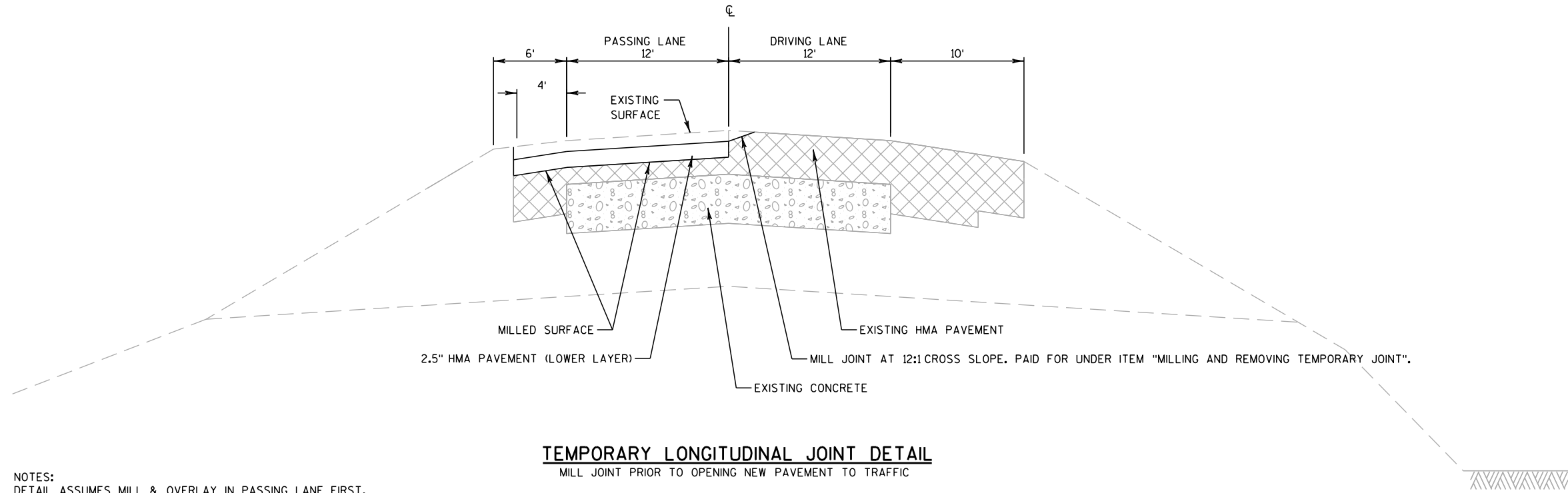
NOTES

CONSTRUCT CONCRETE PAVEMENT REPAIR PRIOR TO HMA MILL & OVERLAY.
SAWING EXISTING ASPHALT OVERLAYED ON CONCRETE IS CONSIDERED INCIDENTAL TO SAWING CONCRETE.
THICKNESS OF CONCRETE REPAIR MAY VARY. 15" TO 18" THICKNESS IS EXPECTED.

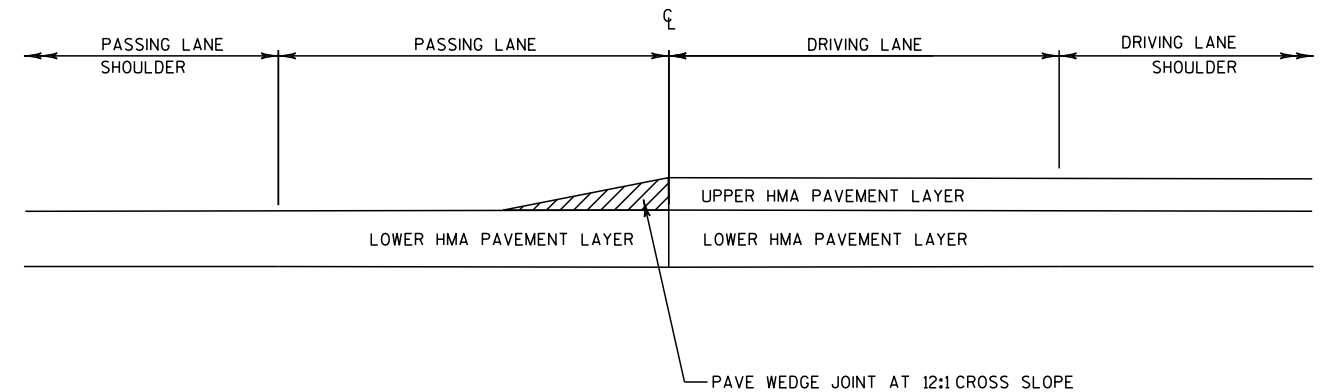
DAMAGE TO EITHER EXISTING PAVEMENTS OR EXISTING SHOULDERS DURING CONCRETE PAVEMENT REPAIR NON DOWELED SPECIAL SHALL BE REPAIRED AND CONSIDERED INCIDENTAL TO THE ITEM OF CONCRETE PAVEMENT REPAIR NON DOWELED SPECIAL.

CONCRETE PAVEMENT REPAIR NON DOWELED SPECIAL DETAIL

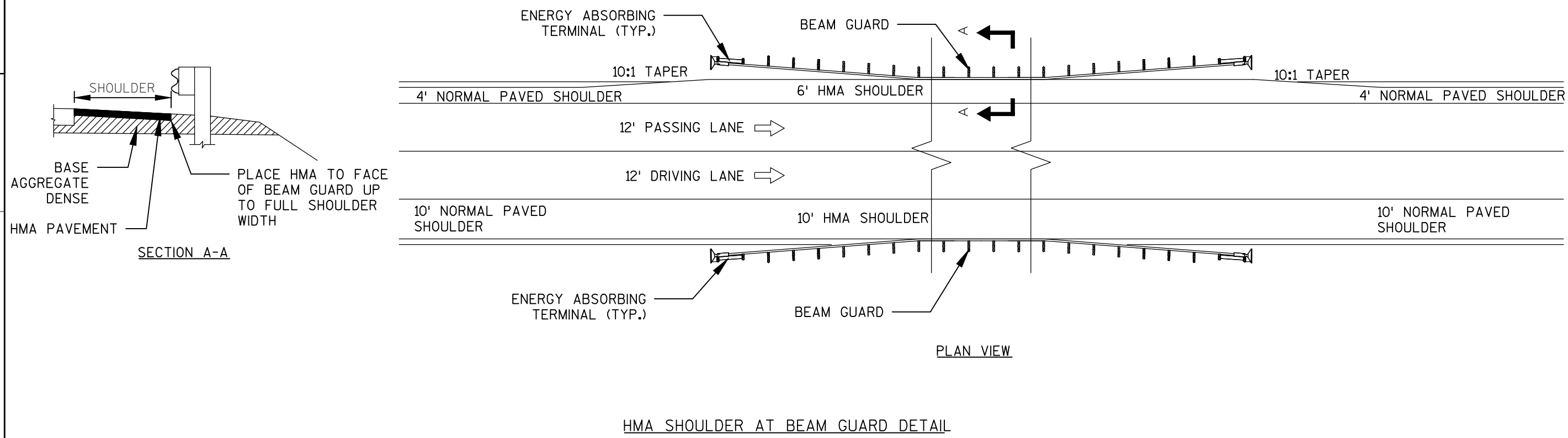
EXACT LOCATIONS DETERMINED BY THE ENGINEER.







NOTES:
DETAIL ASSUMES MILL & OVERLAY IN PASSING LANE FIRST.
MILL AND REMOVE TEMPORARY JOINT PRIOR TO OPENING LANE TO TRAFFIC.

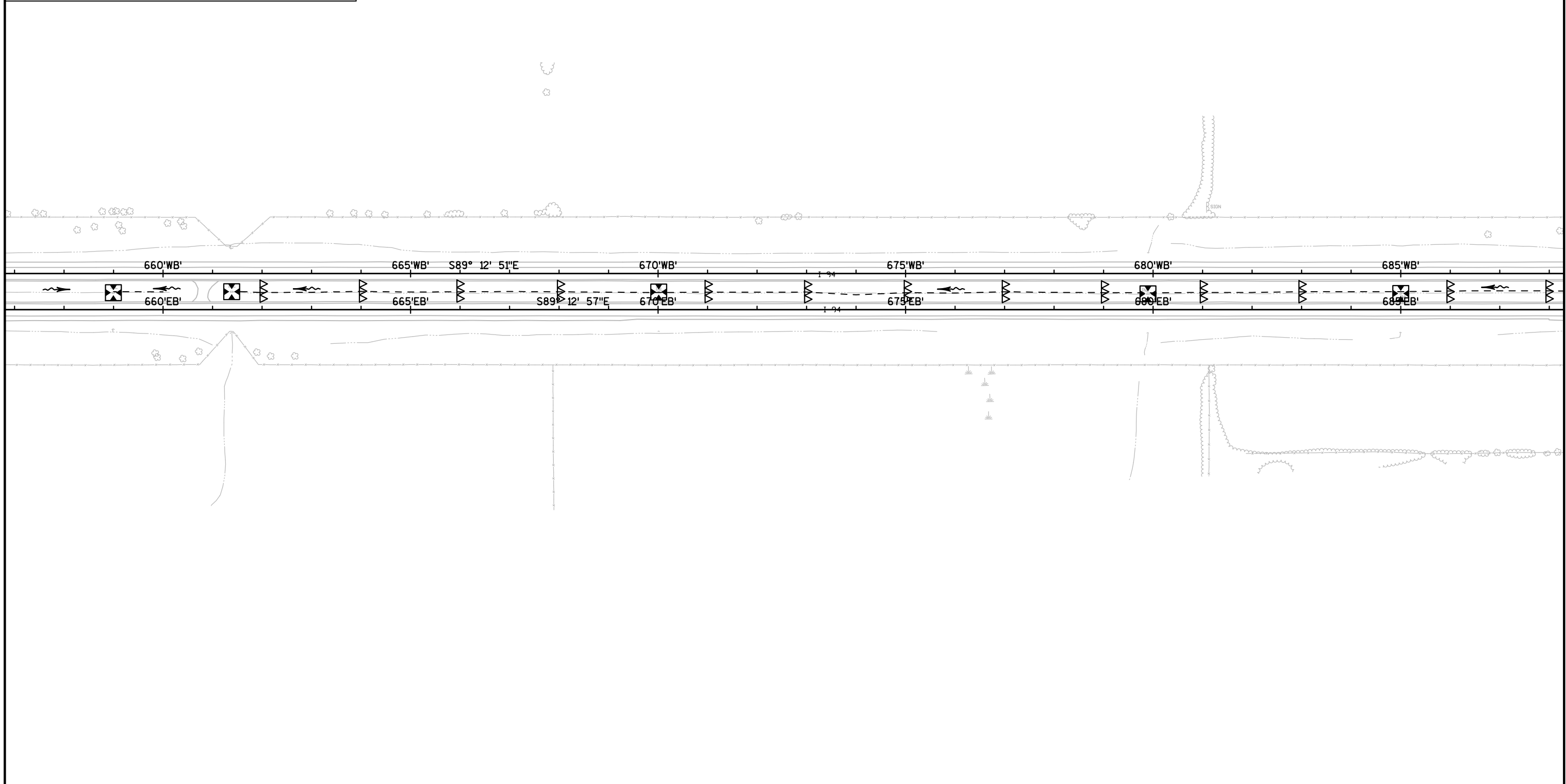


NOTES:
DETAIL ASSUMES PAVING WEDGE JOINT FROM DRIVING LANE.
PLACE TEMPORARY WEDGE JOINT PRIOR TO OPENING LANE TO TRAFFIC.







EROSION CONTROL LEGEND

-  INLET PROTECTION TYPE A
-  TEMPORARY DITCH CHECK
-  DRAINAGE FLOW DIRECTION
-  SLOPE INTERCEPT



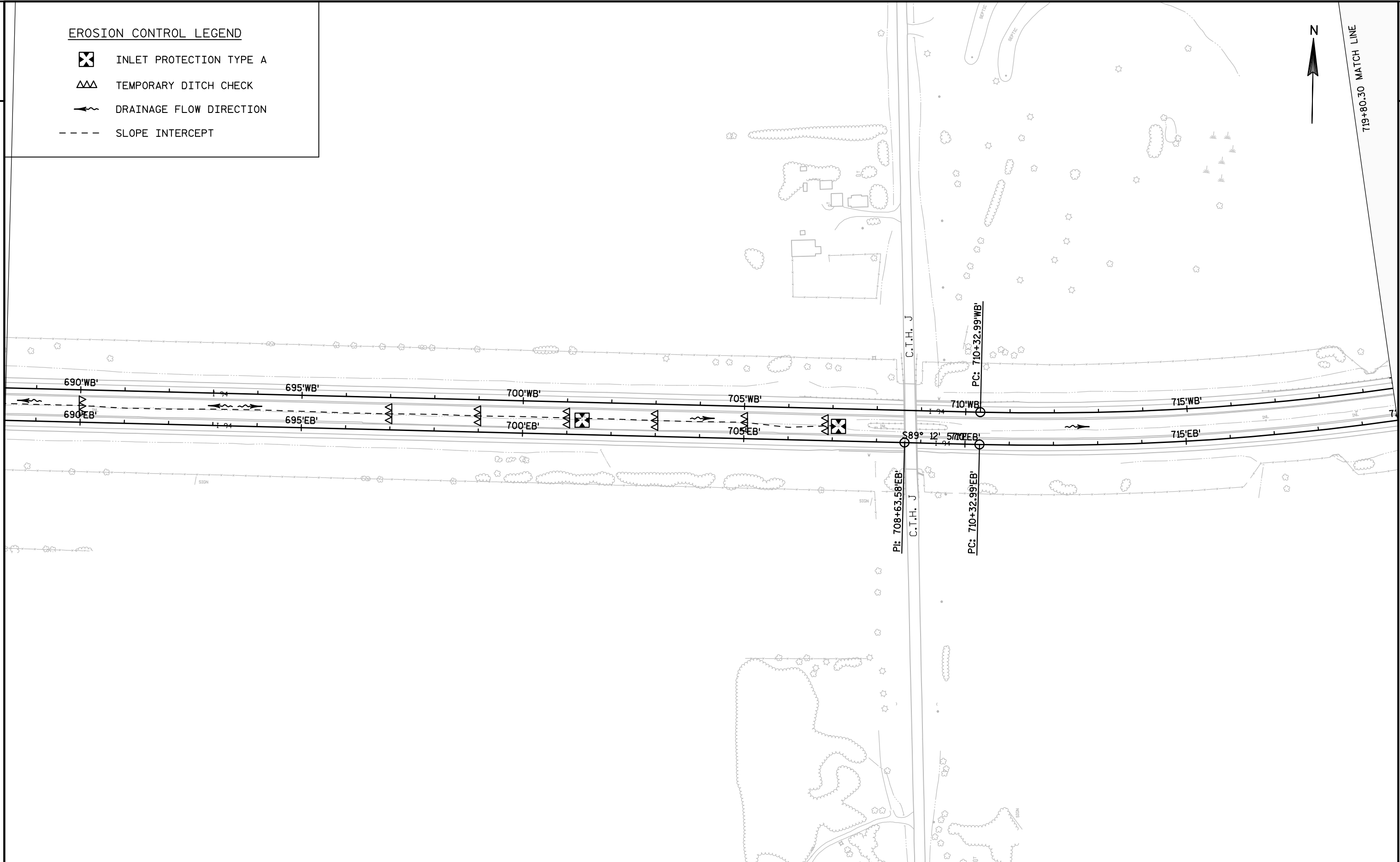
PROJECT NO: 1020-01-77	HWY: IH 94	COUNTY: ST. CROIX	EROSION CONTROL	SHEET	E
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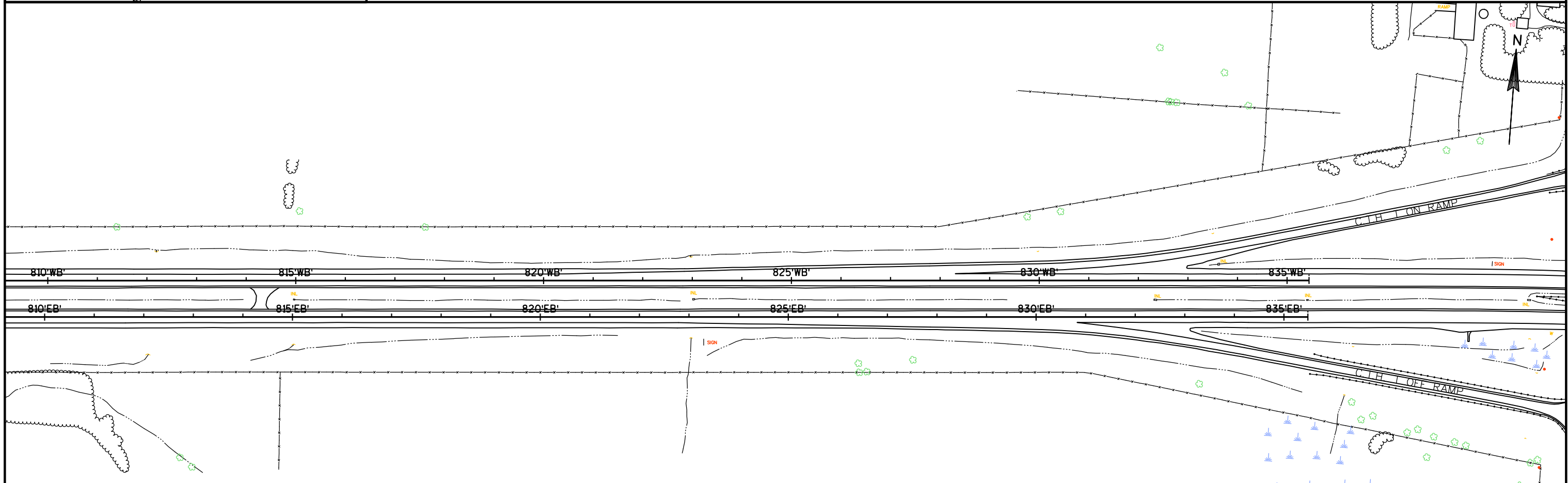
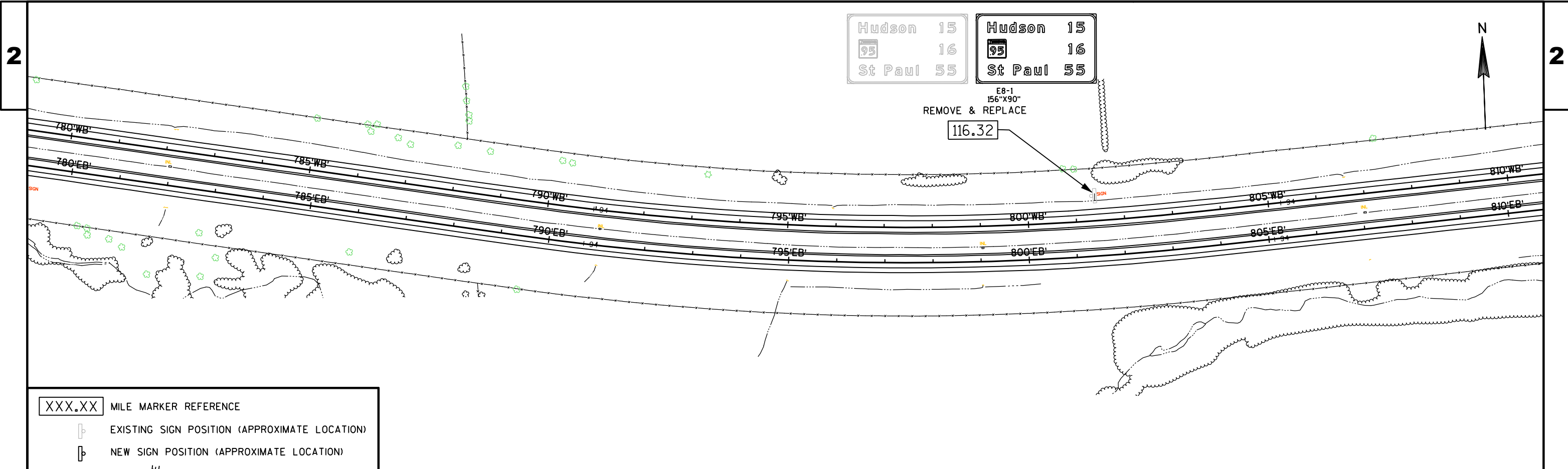
EROSION CONTROL LEGEND

-  INLET PROTECTION TYPE A
-  TEMPORARY DITCH CHECK
-  DRAINAGE FLOW DIRECTION
-  SLOPE INTERCEPT



719+80.30 MATCH LINE





PROJECT NO: 1020-01-77 | HWY: IH 94 | COUNTY: ST. CROIX | PERMANENT SIGNS | SHEET | E

Estimate Of Quantities

1020-01-77

Line	Item	Item Description	Unit	Total	Qty
0002	204.0109.S	Removing Concrete Surface Partial Depth	SF	16,430.000	16,430.000
0004	204.0115	Removing Asphaltic Surface Butt Joints	SY	1,688.000	1,688.000
0006	204.0120	Removing Asphaltic Surface Milling	SY	162,683.000	162,683.000
0008	204.0165	Removing Guardrail	LF	500.000	500.000
0010	204.0180	Removing Delineators and Markers	EACH	100.000	100.000
0012	205.0100	Excavation Common	CY	96.000	96.000
0014	208.0100	Borrow	CY	1,752.000	1,752.000
0016	211.0100	Prepare Foundation for Asphaltic Paving (project) 01. 1020-01-77	LS	1.000	1.000
0018	213.0100	Finishing Roadway (project) 01. 1020-01-77	EACH	1.000	1.000
0020	305.0110	Base Aggregate Dense 3/4-Inch	TON	3,500.000	3,500.000
0022	305.0500	Shaping Shoulders	STA	778.000	778.000
0024	455.0605	Tack Coat	GAL	17,706.000	17,706.000
0026	460.0100.S	HMA Pavement Test Strip	EACH	1.000	1.000
0028	460.0105.S	HMA Percent Within Limits (PWL) Test Strip Volumetrics	EACH	1.000	1.000
0030	460.0110.S	HMA Percent Within Limits (PWL) Test Strip Density	EACH	1.000	1.000
0032	460.2000	Incentive Density HMA Pavement	DOL	12,140.000	12,140.000
0034	460.2005	Incentive Density PWL HMA Pavement	DOL	15,240.000	15,240.000
0036	460.2010	Incentive Air Voids HMA Pavement	DOL	17,730.000	17,730.000
0038	460.5224	HMA Pavement 4 LT 58-28 S	TON	4,777.000	4,777.000
0040	460.7423	HMA Pavement 3 HT 58-28 H	TON	17,722.000	17,722.000
0042	460.8644	HMA Pavement 4 SMA 58-34 V	TON	14,178.000	14,178.000
0044	465.0110	Asphaltic Surface Patching	TON	200.000	200.000
0046	465.0125	Asphaltic Surface Temporary	TON	550.000	550.000
0048	465.0400	Asphaltic Shoulder Rumble Strips	LF	77,860.000	77,860.000
0050	520.9700.S	Culvert Pipe Liners (size) 01. 28-Inch	LF	225.000	225.000
0052	520.9750.S	Cleaning Culvert Pipes for Liner Verification	EACH	1.000	1.000
0054	611.0430	Reconstructing Inlets	EACH	3.000	3.000
0056	611.8115	Adjusting Inlet Covers	EACH	4.000	4.000
0058	614.0305	Steel Plate Beam Guard Class A	LF	500.000	500.000
0060	614.0950	Replacing Guardrail Posts and Blocks	EACH	50.000	50.000
0062	618.0100	Maintenance And Repair of Haul Roads (project) 01. 1020-01-77	EACH	1.000	1.000
0064	619.1000	Mobilization	EACH	1.000	1.000
0066	624.0100	Water	MGAL	53.000	53.000
0068	625.0500	Salvaged Topsoil	SY	8,000.000	8,000.000
0070	627.0200	Mulching	SY	8,000.000	8,000.000
0072	628.1905	Mobilizations Erosion Control	EACH	2.000	2.000
0074	628.1910	Mobilizations Emergency Erosion Control	EACH	1.000	1.000
0076	628.7005	Inlet Protection Type A	EACH	7.000	7.000

Estimate Of Quantities

1020-01-77

Line	Item	Item Description	Unit	Total	Qty
0078	628.7504	Temporary Ditch Checks	LF	400.000	400.000
0080	629.0210	Fertilizer Type B	CWT	5.000	5.000
0082	630.0130	Seeding Mixture No. 30	LB	144.000	144.000
0084	630.0200	Seeding Temporary	LB	216.000	216.000
0086	630.0500	Seed Water	MGAL	180.000	180.000
0088	633.0100	Delineator Posts Steel	EACH	100.000	100.000
0090	633.0500	Delineator Reflectors	EACH	100.000	100.000
0092	635.0300	Sign Supports Replacing Base Connection Bolts	EACH	8.000	8.000
0094	637.1220	Signs Type I Reflective SH	SF	97.500	97.500
0096	638.2601	Removing Signs Type I	EACH	1.000	1.000
0098	642.5201	Field Office Type C	EACH	1.000	1.000
0100	643.0300	Traffic Control Drums	DAY	58,600.000	58,600.000
0102	643.0420	Traffic Control Barricades Type III	DAY	7,400.000	7,400.000
0104	643.0705	Traffic Control Warning Lights Type A	DAY	15,000.000	15,000.000
0106	643.0715	Traffic Control Warning Lights Type C	DAY	3,200.000	3,200.000
0108	643.0800	Traffic Control Arrow Boards	DAY	160.000	160.000
0110	643.0900	Traffic Control Signs	DAY	5,920.000	5,920.000
0112	643.0920	Traffic Control Covering Signs Type II	EACH	80.000	80.000
0114	643.1051	Traffic Control Signs PCMS with Cellular Communications	DAY	320.000	320.000
0116	643.4100.S	Traffic Control Interim Lane Closure	EACH	160.000	160.000
0118	643.5000	Traffic Control	EACH	1.000	1.000
0120	646.1020	Marking Line Epoxy 4-Inch	LF	77,860.000	77,860.000
0122	646.1040	Marking Line Grooved Wet Ref Epoxy 4-Inch	LF	9,755.000	9,755.000
0124	646.5420	Marking Aerial Enforcement Bar Epoxy	EACH	10.000	10.000
0126	646.9000	Marking Removal Line 4-Inch	LF	1,000.000	1,000.000
0128	649.0105	Temporary Marking Line Paint 4-Inch	LF	19,465.000	19,465.000
0130	650.8000	Construction Staking Resurfacing Reference	LF	38,930.000	38,930.000
0132	650.9910	Construction Staking Supplemental Control (project) 01. 1020-01-77	LS	1.000	1.000
0134	690.0250	Sawing Concrete	LF	12,300.000	12,300.000
0136	740.0440	Incentive IRI Ride	DOL	29,500.000	29,500.000
0138	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	2,400.000	2,400.000
0140	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	990.000	990.000
0142	SPV.0045	Special 01. Portable Speed Trailer	DAY	160.000	160.000
0144	SPV.0060	Special 01. Cleaning Ditch	EACH	2.000	2.000
0146	SPV.0105	Special 01. Material Transfer Vehicle	LS	1.000	1.000
0148	SPV.0105	Special 02. Milling and Removing Temporary Joint	LS	1.000	1.000
0150	SPV.0170	Special 01. Reheating HMA Pavement Longitudinal Joints Special	STA	389.000	389.000

Estimate Of Quantities

					1020-01-77
0152	SPV.0180	Special 01. Concrete Pavement Repair Non Doweled Special	SY	1,900.000	1,900.000

3

3

REMOVING CONCRETE SURFACE PARTIAL DEPTH

CATEGORY	STATION TO	STATION	LOCATION	204.0109.S SF	REMARKS
0010	624'EB'+90 -	821'EB'+00	IH 94 EB	8215	CONCRETE PAVEMENT REPAIR AREAS
0010	627'WB'+75 -	820'WB'+95	IH 94 WB	8215	CONCRETE PAVEMENT REPAIR AREAS
TOTAL 0010				16430	

REMOVING ASPHALTIC SURFACE BUTT JOINTS

REMOVING ASPHALTIC SURFACE MILLING

CATEGORY	STATION TO	STATION	LOCATION	204.0115 SY	REMARKS
0010	624'EB'+90 -	625'EB'+90	IH 94 EASTBOUND	422	BEGIN PROJECT
0010	820'EB'+00 -	821'EB'+00	IH 94 EASTBOUND	422	END PROJECT
0010	627'WB'+75 -	628'WB'+75	IH 94 WESTBOUND	422	BEGIN PROJECT
0010	819'WB'+95 -	820'WB'+95	IH 94 WESTBOUND	422	END PROJECT
TOTAL 0010				1688	

CATEGORY	STATION TO	STATION	LOCATION	204.0120 SY	REMARKS
0010	625'EB'+90 -	820'EB'+00	IH 94 EASTBOUND	81954	
0010	628'WB'+75 -	819'WB'+95	IH 94 WESTBOUND	80729	
TOTAL 0010				162683	

REMOVING GUARDRAIL

REMOVING DELINEATORS AND MARKERS

CATEGORY	STATION TO	STATION	LOCATION	204.0165 LF	REMARKS
0010			UNDISTRIBUTED	500	REPLACE DAMAGED SECTIONS
TOTAL 0010				500	

CATEGORY	STATION TO	STATION	LOCATION	204.0180 EACH	REMARKS
0010	624'EB'+90 -	821'EB'+00	IH 94 EASTBOUND	50	
0010	627'WB'+75 -	820'WB'+95	IH 94 WESTBOUND	50	
TOTAL 0010				100	

EXCAVATION COMMON

CATEGORY	STATION TO	STATION	LOCATION	205.0100 CY	REMARKS
0010	659'EB'+00	- 707'EB'+00	IH 94 EB, LT.	96	SEE EARTHWORK DATA SHEET
TOTAL 0010				<u>96</u>	

BASE AGGREGATE DENSE 3/4-INCH

CATEGORY	STATION TO	STATION	LOCATION	305.0110 TON	REMARKS
0010	624'EB'+90	- 821'EB'+00	IH 94 EASTBOUND	1750	SHOULDERS
0010	627'WB'+75	- 820'WB'+95	IH 94 WESTBOUND	1750	SHOULDERS
TOTAL 0010				<u>3500</u>	

WATER

CATEGORY	STATION TO	STATION	LOCATION	624.0100 MGAL	REMARKS
0010	624'EB'+90	- 821'EB'+00	IH 94 EASTBOUND	26.5	SHOULDER GRAVEL
0010	627'WB'+75	- 820'WB'+95	IH 94 WESTBOUND	26.5	SHOULDER GRAVEL
TOTAL 0010				<u>53</u>	

BORROW

CATEGORY	STATION TO	STATION	LOCATION	208.0100 CY	REMARKS
0010	659'EB'+00	- 707'EB'+00	IH 94 EB, LT.	1752	SEE EARTHWORK DATA SHEET
TOTAL 0010				<u>1752</u>	

SHAPING SHOULDERS

CATEGORY	STATION TO	STATION	LOCATION	305.0500 STA	REMARKS
0010	624'EB'+90	- 821'EB'+00	IH 94 EASTBOUND	392	
0010	627'WB'+75	- 820'WB'+95	IH 94 WESTBOUND	386	
TOTAL 0010				<u>778</u>	

HMA ITEMS

**HMA PERCENT WITHIN LIMITS (PWL)
TEST STRIP VOLUMETRICS**

CATEGORY	STATION TO	STATION	LOCATION	TACK COAT	HMA PAVEMENT	HMA PAVEMENT	HMA PAVEMENT	REMARKS	CATEGORY	LOCATION	460.0105.S
				455.0605	4 LT 58-28 S 460.5224	3 HT 58-28 H 460.7423	4 SMA 58-34 V 460.8644				EACH
0010	624'EB'+90 -	821'EB'+00	IH 94 EB LANES & MEDIAN SHOULDER	4347	-	8927	-	LOWER LAYER	0010	PROJECT	1
0010	627'WB'+75 -	820'WB'+95	IH 94 WB LANES & MEDIAN SHOULDER	4283	-	8795	-	LOWER LAYER			
0010	624'EB'+90 -	821'EB'+00	IH 94 EB LANES & MEDIAN SHOULDER	3105	-	-	7142	UPPER LAYER			
0010	627'WB'+75 -	820'WB'+95	IH 94 WB LANES & MEDIAN SHOULDER	3059	-	-	7036	UPPER LAYER			
0010	624'EB'+90 -	821'EB'+00	IH 94 EB OUTSIDE SHOULDER	1449	2381	-	-	ONE LAYER			
0010	627'WB'+75 -	820'WB'+95	IH 94 WB OUTSIDE SHOULDER	1428	2346	-	-	ONE LAYER			
0010			IH 94 MAINT. CROSSOVERS MEDIAN	35	50	-	-	ONE LAYER			
TOTAL 0010				17706	4777	17722	14178				

HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP DENSITY		460.0110.S
CATEGORY	LOCATION	EACH
0010	PROJECT	1
TOTAL 0010		1

PWL MIXTURE USE TABLE - The following acceptance criteria are applicable for this project:

Location	Station	Mixture Use	Underlying Surface	Bid Item	Tons	Thickness	Quality Management Program to be used for:	
							Mixture Acceptance	Density Acceptance
Lanes	624'EB'+90 to 821'EB'+00	Lower Layer	Milled Existing HMA Surface	3 HT 58-28 H	7674	2 1/2"	PWL Incentive Air Voids HMA Pavement 460.2010	Incentive Density PWL HMA Pavement 460.2005
Median Shoulder	624'EB'+90 to 821'EB'+00	Lower Layer	Milled Existing HMA Surface	3 HT 58-28 H	1253	2 1/2"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for density
Lanes	627'WB'+75 to 820'WB'+95	Lower Layer	Milled Existing HMA Surface	3 HT 58-28 H	7561	2 1/2"	PWL Incentive Air Voids HMA Pavement 460.2010	Incentive Density PWL HMA Pavement 460.2005
Median Shoulder	627'WB'+75 to 820'WB'+95	Lower Layer	Milled Existing HMA Surface	3 HT 58-28 H	1234	2 1/2"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for density
Lanes & Median Shoulder	624'EB'+90 to 821'EB'+00	Upper Layer	3 HT 58-28 H	4 SMA 58-34 V	7142	2"	QMP as per Standard Specifications 460	Incentive Density HMA Pavement 460.2000
Lanes & Median Shoulder	627'WB'+75 to 820'WB'+95	Upper Layer	3 HT 58-28 H	4 SMA 58-34 V	7036	2"	QMP as per Standard Specifications 460	Incentive Density HMA Pavement 460.2000
Outside Shoulder	624'EB'+90 to 821'EB'+00	One Layer	Milled Existing HMA Surface	4 LT 58-28 S	2381	2"	QMP as per Standard Specifications 460	Incentive Density HMA Pavement 460.2000
Outside Shoulder	627'WB'+75 to 820'WB'+95	One Layer	Milled Existing HMA Surface	4 LT 58-28 S	2346	2"	QMP as per Standard Specifications 460	Incentive Density HMA Pavement 460.2000
Maintenance Crossovers Median	Various	One Layer	Milled Existing HMA Surface	4 LT 58-28 S	50	1 3/4"	QMP as per Standard Specifications 460	Incentive Density HMA Pavement 460.2000

ASPHALTIC SURFACE PATCHING

CATEGORY	STATION TO	STATION	LOCATION	465.0110 TON	REMARKS
0010	624'EB'+90	- 821'EB'+00	IH 94 EASTBOUND	100	
0010	627'WB'+75	- 820'WB'+95	IH 94 WESTBOUND	100	
TOTAL 0010				<u>200</u>	

ASPHALTIC SURFACE TEMPORARY

CATEGORY	STATION TO	STATION	LOCATION	465.0125 TON	REMARKS
0010	624'EB'+90	- 821'EB'+00	IH 94 EASTBOUND	275	FILLING RUMBLE STRIPS
0010	627'WB'+75	- 820'WB'+95	IH 94 WESTBOUND	275	FILLING RUMBLE STRIPS
TOTAL 0010				<u>550</u>	

ASPHALTIC SHOULDER RUMBLE STRIPS

CATEGORY	STATION TO	STATION	LOCATION	465.0400 LF	REMARKS
0010	624'EB'+90	- 821'EB'+00	IH 94 EASTBOUND	39220	
0010	627'WB'+75	- 820'WB'+95	IH 94 WESTBOUND	38640	
TOTAL 0010				<u>77860</u>	

CULVERT PIPE LINERS (28-INCH)

CATEGORY	STATION TO	STATION	LOCATION	520.9700.S LF	REMARKS
0010		812'EB'+16	IH 94	225	
TOTAL 0010				<u>225</u>	

CLEANING CULVERT PIPES FOR LINER VERIFICATION

CATEGORY	STATION TO	STATION	LOCATION	520.9750.S EACH	REMARKS
0010		812'EB'+16	IH 94	1	
TOTAL 0010				<u>1</u>	

RECONSTRUCTING INLETS

CATEGORY	STATION TO	STATION	LOCATION	611.0430 EACH	REMARKS
0010		679'EB'+89	IH 94 EASTBOUND, LT.	1	
0010		685'EB'+00	IH 94 EASTBOUND, LT.	1	
0010		701'EB'+34	IH 94 EASTBOUND, LT.	1	
TOTAL 0010				<u>3</u>	

ADJUSTING INLET COVERS

CATEGORY	STATION TO	STATION	LOCATION	611.8115 EACH	REMARKS
0010		659'EB'+00	IH 94 EASTBOUND, LT.	1	
0010		661'EB'+38	IH 94 EASTBOUND, LT.	1	
0010		670'EB'+00	IH 94 EASTBOUND, LT.	1	
0010		707'EB'+13	IH 94 EASTBOUND, LT.	1	
TOTAL 0010				<u>4</u>	

3

3

STEEL PLATE BEAM GUARD CLASS A

CATEGORY	STATION TO	STATION	LOCATION	614.0305 LF	REMARKS
0010			UNDISTRIBUTED	500	REPLACEMENT OF DAMAGED SECTIONS
TOTAL 0010				500	

REPLACING GUARDRAIL POSTS AND BLOCKS

CATEGORY	STATION TO	STATION	LOCATION	614.0950 EACH	REMARKS
0010			UNDISTRIBUTED	50	REPLACE DAMAGED LOCATIONS
TOTAL 0010				50	

RESTORATION

CATEGORY	STATION TO	STATION	LOCATION	SALVAGED TOPSOIL 625.0500 SY	MULCHING 627.0200 SY	FERTILIZER TYPE B 629.0210 CWT	SEEDING MIXTURE NO. 30 630.0130 LB	SEEDING TEMPORARY 630.0200 LB	SEED WATER 630.0500 MGAL	REMARKS
0010	659'EB'+00 -	707'EB'+00	IH 94 EB, LT.	8000	8000	5	144	216	180	MEDIAN GRADING AREA
TOTAL 0010				8000	8000	5	144	216	180	

MOBILIZATIONS EROSION CONTROL

CATEGORY	STATION TO	STATION	LOCATION	628.1905 EACH	REMARKS
0010			PROJECT	2	
TOTAL 0010				<u>2</u>	

EROSION CONTROL

CATEGORY	STATION TO	STATION	LOCATION	628.7005 EACH	INLET PROTECTION TYPE A 628.7005	TEMPORARY DITCH CHECKS 628.7504 LF	REMARKS
0010	659'EB'+00 -	707'EB'+00	IH 94 EB, LT.	7		400	MEDIAN GRADING AREA
TOTAL 0010				<u>7</u>		<u>400</u>	

MOBILIZATIONS EMERGENCY EROSION CONTROL

CATEGORY	STATION TO	STATION	LOCATION	628.1910 EACH	REMARKS
0010			PROJECT	1	
TOTAL 0010				<u>1</u>	

DELINEATOR POSTS STEEL

DELINEATOR REFLECTORS

CATEGORY	STATION TO	STATION	LOCATION	633.0100 EACH	REMARKS
0010	624'EB'+90 -	821'EB'+00	IH 94 EASTBOUND	50	
0010	627'WB'+75 -	820'WB'+95	IH 94 WESTBOUND	50	
TOTAL 0010				<u>100</u>	

CATEGORY	STATION TO	STATION	LOCATION	633.0500 EACH	REMARKS
0010	624'EB'+90 -	821'EB'+00	IH 94 EASTBOUND	50	
0010	627'WB'+75 -	820'WB'+95	IH 94 WESTBOUND	50	
TOTAL 0010				<u>100</u>	

TRAFFIC CONTROL

CATEGORY	STATION TO	STATION	LOCATION	DRUMS 643.0300 DAY	BARRICADES TYPE III 643.0420 DAY	WARNING LIGHTS TYPE A 643.0705 DAY	WARNING LIGHTS TYPE C 643.0715 DAY	ARROW BOARDS 643.0800 DAY	SIGNS 643.0900 DAY	SIGNS PCMS WITH CELLULAR COMMUNICATIONS 643.1051 DAY	INTERIM LANE CLOSURE 643.4100.S EACH	PORTABLE SPEED TRAILER SPV.0045.01 DAY	REMARKS
0010			IH 94 EASTBOUND	29300	3700	7500	1600	80	2960	160	80	80	
0010			IH 94 WESTBOUND	29300	3700	7500	1600	80	2960	160	80	80	
TOTAL 0010				<u>58600</u>	<u>7400</u>	<u>15000</u>	<u>3200</u>	<u>160</u>	<u>5920</u>	<u>320</u>	<u>160</u>	<u>160</u>	

3

3

TRAFFIC CONTROL COVERING SIGNS TYPE II

MARKING REMOVAL LINE 4-INCH

CATEGORY	STATION TO	STATION	LOCATION	643.0920 EACH	REMARKS
0010			IH 94 EASTBOUND	40	SPEED LIMIT 70 SIGNS; 40 CYCLES; 1 SIGN
0010			IH 94 WESTBOUND	40	SPEED LIMIT 70 SIGNS; 40 CYCLES; 2 SIGN
TOTAL 0010				<u>80</u>	

CATEGORY	STATION TO	STATION	LOCATION	646.9000 LF	REMARKS
0010			UNDISTRIBUTED	1000	
TOTAL 0010				<u>1000</u>	

MARKING LINE EPOXY 4-INCH

MARKING LINE GROOVED WET REF EPOXY 4-INCH

CATEGORY	STATION TO	STATION	LOCATION	646.1020 LF	REMARKS
0010	624' EB'+90 -	821' EB'+00	IH 94 EASTBOUND	19610	EDGELINES (YELLOW)
0010	624' EB'+90 -	821' EB'+00	IH 94 EASTBOUND	19610	EDGELINES (WHITE)
0010	627' WB'+75 -	820' WB'+95	IH 94 WESTBOUND	19320	EDGELINES (YELLOW)
0010	627' WB'+75 -	820' WB'+95	IH 94 WESTBOUND	19320	EDGELINES (WHITE)
TOTAL 0010				<u>77860</u>	

CATEGORY	STATION TO	STATION	LOCATION	646.1040 LF	REMARKS
0010	624' EB'+90 -	821' EB'+00	IH 94 EASTBOUND	4925	LANELINES (WHITE)
0010	627' WB'+75 -	820' WB'+95	IH 94 WESTBOUND	4830	LANELINES (WHITE)
TOTAL 0010				<u>9755</u>	

MARKING AERIAL ENFORCEMENT BAR EPOXY

TEMPORARY MARKING LINE PAINT 4-INCH

CATEGORY	STATION TO	STATION	LOCATION	646.5420 EACH	REMARKS
0010	762' EB'+60 -	789' EB'+00	IH 94 EASTBOUND	10	
TOTAL 0010				<u>10</u>	

CATEGORY	STATION TO	STATION	LOCATION	649.0105 LF	REMARKS
0010	624' EB'+90 -	821' EB'+00	IH 94 EASTBOUND	9805	INTERIM LANELINES
0010	627' WB'+75 -	820' WB'+95	IH 94 WESTBOUND	9660	INTERIM LANELINES
TOTAL 0010				<u>19465</u>	

CONSTRUCTION STAKING RESURFACING REFERENCE

CATEGORY	STATION TO	STATION	LOCATION	650.8000 LF	REMARKS
0010	624' EB'+90 -	821' EB'+00	IH 94 EASTBOUND	19610	
0010	627' WB'+75 -	820' WB'+95	IH 94 WESTBOUND	19320	
TOTAL 0010				<u>38930</u>	

3

SAWING CONCRETE

CLEANING DITCH

				690.0250	
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS
0010	624'EB'+90 -	821'EB'+00	IH 94 EASTBOUND	6150	
0010	627'WB'+75 -	820'WB'+95	IH 94 WESTBOUND	6150	
TOTAL 0010				<u>12300</u>	

				SPV.0060.01	
CATEGORY	STATION TO	STATION	LOCATION	EACH	REMARKS
0010	812'EB'+16		IH 94 EB, LT.	1	
0010	812'EB'+16		IH 94 EB, RT.	1	
TOTAL 0010				<u>2</u>	

REHEATING HMA PAVEMENT LONGITUDINAL JOINTS SPECIAL

CONCRETE PAVEMENT REPAIR NON DOWELED SPECIAL

				SPV.0170.01	
CATEGORY	STATION TO	STATION	LOCATION	STA	REMARKS
0010	624'EB'+90 -	821'EB'+00	IH 94 EASTBOUND	196	FINAL CENTERLINE JOINT
0010	627'WB'+75 -	820'WB'+95	IH 94 WESTBOUND	193	FINAL CENTERLINE JOINT
TOTAL 0010				<u>389</u>	

				SPV.0180.01	
CATEGORY	STATION TO	STATION	LOCATION	SY	REMARKS
0010	624'EB'+90 -	821'EB'+00	IH 94 EASTBOUND	950	
0010	627'WB'+75 -	820'WB'+95	IH 94 WESTBOUND	950	
TOTAL 0010				<u>1900</u>	

3

TYPE I PERMANENT SIGNS

IH 94 Mile Marker	Existing Sign Code	Existing Sign Description	Existing Sign Position	635.0300 Sign Supports Replacing Base	638.2601 Signs Type I (Each)	New Sign Code	New Sign Description	New Sign Position	New Sign Width	New Sign Height	637.1220 Signs Type I Reflective SH (SF)	Order -Line 1	Order -Line 2	Order -Line 3	Order -Line 4	Notes
WB 116.32 mi	D2-3	Sequence Sign - City Name - Highways	Right	8	1	D2-3	Sequence Sign - City Name - Highways	Right	156.00	90.00	97.50	Hudson 15	Minn. 95 16	St. Paul 31		See Sign Detail
Project Totals				8	1						97.50					

3

3

BEGIN PROJECT

STA. 624'EB'+90

N = 330244.0672'

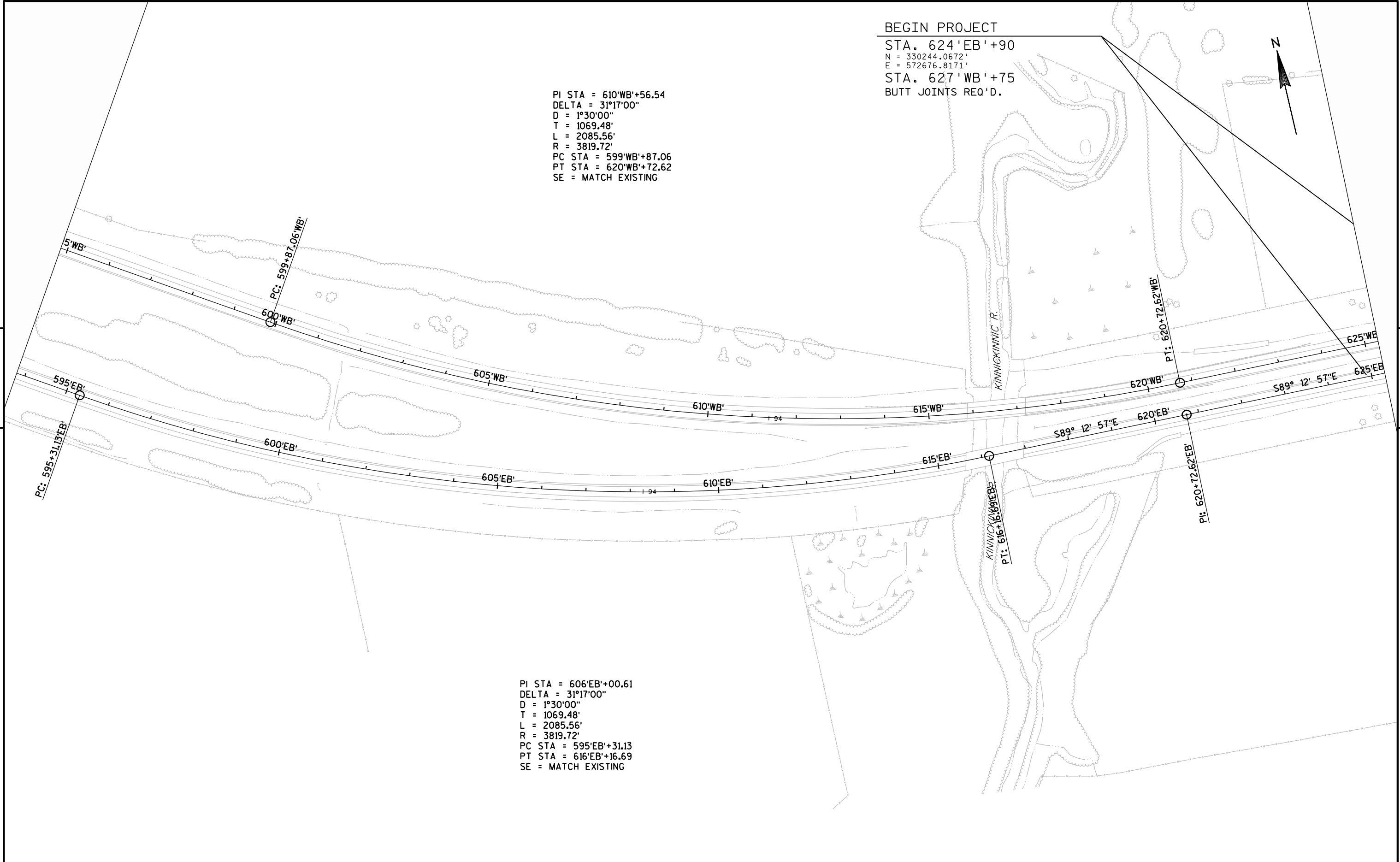
E = 572676.8171'

STA. 627'WB'+75

BUTT JOINTS REQ'D.

PI STA = 610'WB'+56.54
DELTA = 31°17'00"
D = 1°30'00"
T = 1069.48'
L = 2085.56'
R = 3819.72'
PC STA = 599'WB'+87.06
PT STA = 620'WB'+72.62
SE = MATCH EXISTING

PI STA = 606'EB'+00.61
DELTA = 31°17'00"
D = 1°30'00"
T = 1069.48'
L = 2085.56'
R = 3819.72'
PC STA = 595'EB'+31.13
PT STA = 616'EB'+16.69
SE = MATCH EXISTING



5

5



BEGIN PROJECT
 STA. 624'EB'+90
 N = 330244.0672'
 E = 572676.8171'
 STA. 627'WB'+75
 BUTT JOINTS REQ'D.

140TH ST. / HIGHLAND RD.

Pi: 627+93.52EB'
 140TH ST. / HIGHLAND RD.

ST. CROIX
 ELECTRIC
 COOP.

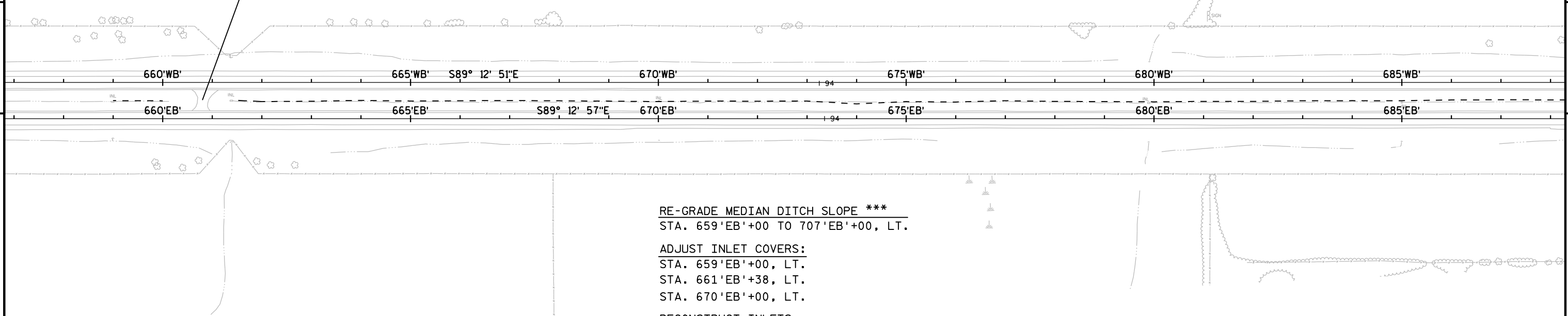
630'WB' 635'WB' 640'WB' 645'WB' 650'WB' 655'WB'
 630'EB' 635'EB' 640'EB' 645'EB' 650'EB' 655'EB'

5

5



RE-PAVE MAINTENANCE CROSSOVER
 MILL 1 3/4" & PAVE 1 3/4"
 W/HMA PAVEMENT 4 LT 58-28 S



RE-GRADE MEDIAN DITCH SLOPE ***
 STA. 659'EB'+00 TO 707'EB'+00, LT.

ADJUST INLET COVERS:
 STA. 659'EB'+00, LT.
 STA. 661'EB'+38, LT.
 STA. 670'EB'+00, LT.

RECONSTRUCT INLETS:
 STA. 679'EB'+89, LT.
 STA. 685'EB'+00, LT.

*** AS DIRECTED BY THE ENGINEER, PROVIDE ADDITIONAL GRADING AND SHAPING AS NEEDED
 IN IMMEDIATE AREA AROUND INLETS TO ENSURE POSITIVE DRAINAGE TO INLETS.



PI STA = 716'WB'+84.96
 DELTA = 13°09'07"
 D = 1°00'47"
 T = 651.97'
 L = 1298.21'
 R = 5655.58'
 PC STA = 710'WB'+32.99
 PT STA = 723'WB'+31.20
 SE = MATCH EXISTING

ST. CROIX
 ELECTRIC
 COOP.

PC: 710+32.99'WB'

C.T.H. J

PI: 708+63.58'EB'

C.T.H. J

PC: 710+32.99'EB'

WE ENERGIES (GAS)



PI STA = 716'EB'+93.39
 DELTA = 13°09'00"
 D = 1°00'00"
 T = 660.40'
 L = 1315.00'
 R = 5729.58'
 PC STA = 710'EB'+32.99
 PT STA = 723'EB'+47.99
 SE = MATCH EXISTING

RE-GRADE MEDIAN DITCH SLOPE ***
 STA. 659'EB'+00 TO 707'EB'+00, LT.
 ADJUST INLET COVERS:
 STA. 707'EB'+13, LT.
 RECONSTRUCT INLETS:
 STA. 701'EB'+34, LT.

*** AS DIRECTED BY THE ENGINEER, PROVIDE ADDITIONAL GRADING AND SHAPING AS NEEDED
 IN IMMEDIATE AREA AROUND INLETS TO ENSURE POSITIVE DRAINAGE TO INLETS.

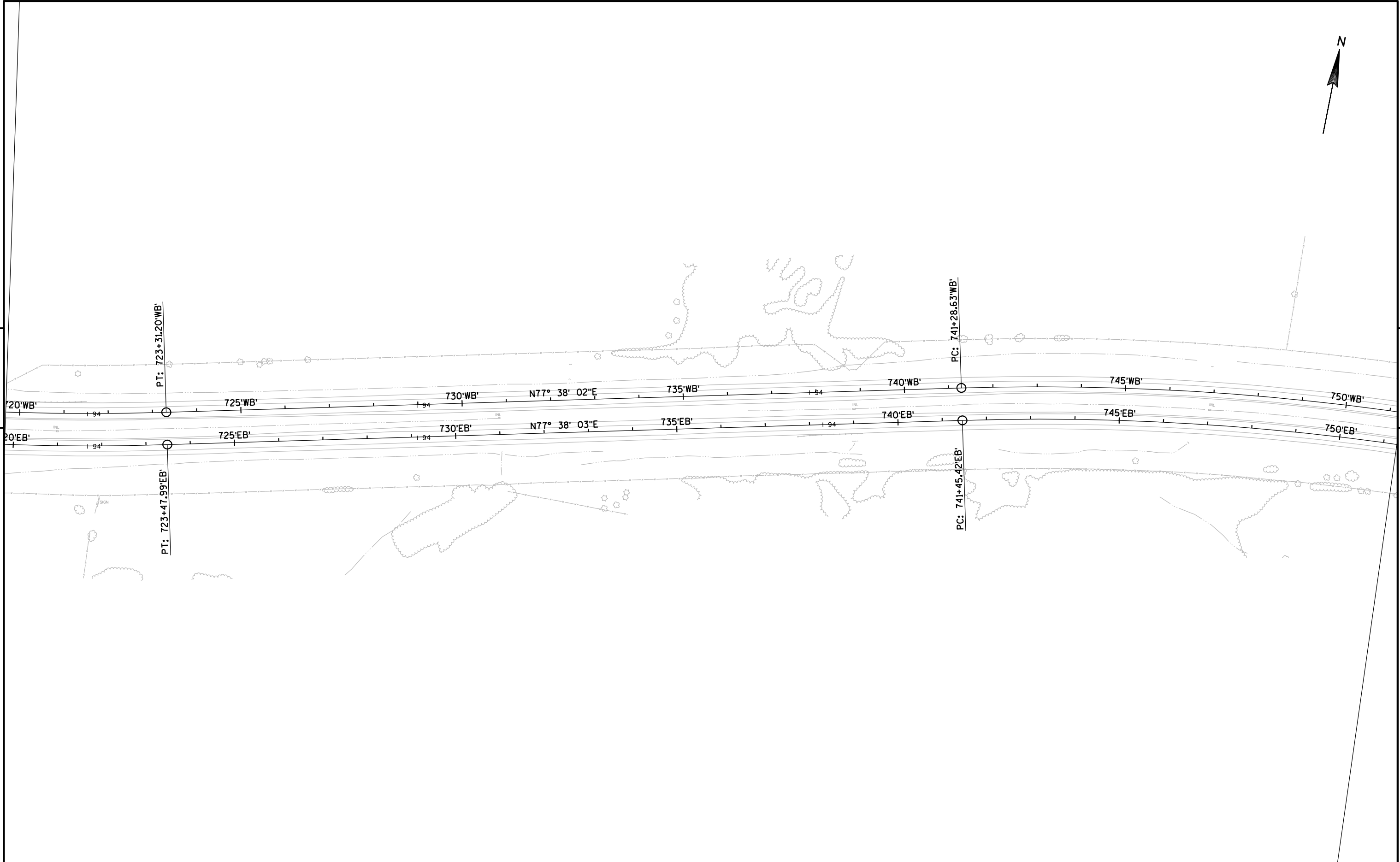
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PROJECT NO: 1020-01-77	HWY: IH 94	COUNTY: ST. CROIX	PLAN	SHEET
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PI STA = 752'WB'+83.74
 DELTA = 22°30'48"
 D = 0°59'14"
 T = 1155.11'
 L = 2280.42'
 R = 5803.58'
 PC STA = 741'WB'+28.63
 PT STA = 764'WB'+09.05
 SE = MATCH EXISTING

PT: 764+09.05WB'

PT: 763+97.08EB'

755'WB'

760'WB'

765'WB'

770'WB'

775'WB'

780'WB'

755'EB'

760'EB'

765'EB'

770'EB'

775'EB'

780'EB'

S79° 51' 10"E

S79° 50' 57"E

PI STA = 752'EB'+85.97
 DELTA = 22°31'00"
 D = 1°00'00"
 T = 1140.55'
 L = 2251.67'
 R = 5729.58'
 PC STA = 741'EB'+45.42
 PT STA = 763'EB'+97.08
 SE = MATCH EXISTING

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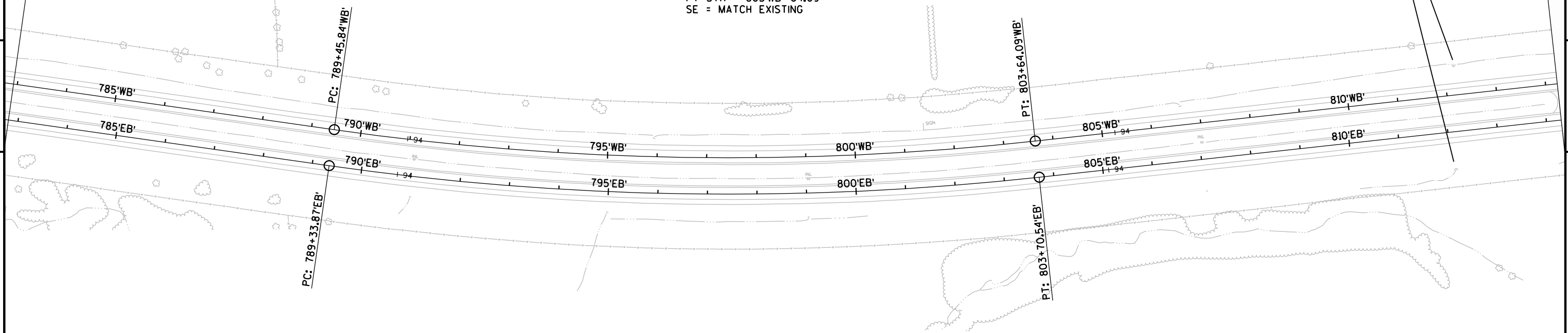


INSTALL PIPE LINER & CLEAN DITCHES
STA. 812'EB'+16

PI STA = 796'WB'+58.71
DELTA = 14°22'05"
D = 1°00'47"
T = 712.87'
L = 1418.25'
R = 5655.58'
PC STA = 789'WB'+45.84
PT STA = 803'WB'+64.09
SE = MATCH EXISTING

5

5



PI STA = 796'EB'+55.99
DELTA = 14°22'00"
D = 1°00'00"
T = 722.12'
L = 1436.67'
R = 5729.58'
PC STA = 789'EB'+33.87
PT STA = 803'EB'+70.54
SE = MATCH EXISTING

N

RE-PAVE MAINTENANCE CROSSOVER
MILL 1 3/4" & PAVE 1 3/4"
W/HMA PAVEMENT 4 LT 58-28 S

815'WB' N85° 46' 45"E 820'WB' 825'WB' 830'WB' 835'WB'
815'EB' N85° 47' 03"E 820'EB' 825'EB' 830'EB' 835'EB'

EP: 835+44.09'WB'

C.T.H. T ON RAMP

EP: 835+48.42'EB'

C.T.H. T OFF RAMP

END PROJECT
STA. 821'EB'+00
STA. 820'WB'+95
BUTT JOINTS REQ'D.

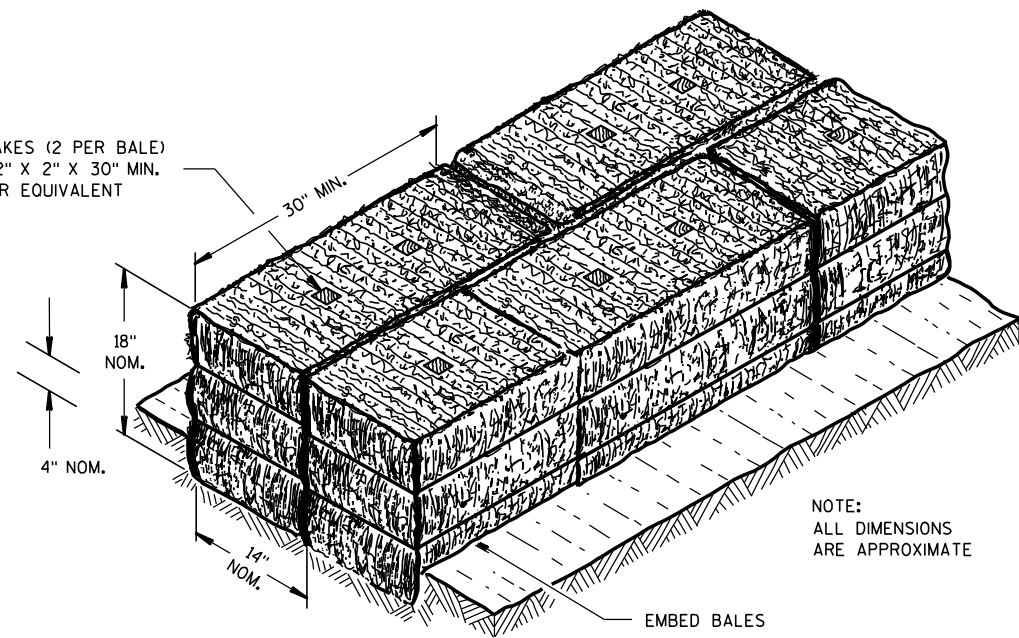
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Standard Detail Drawing List

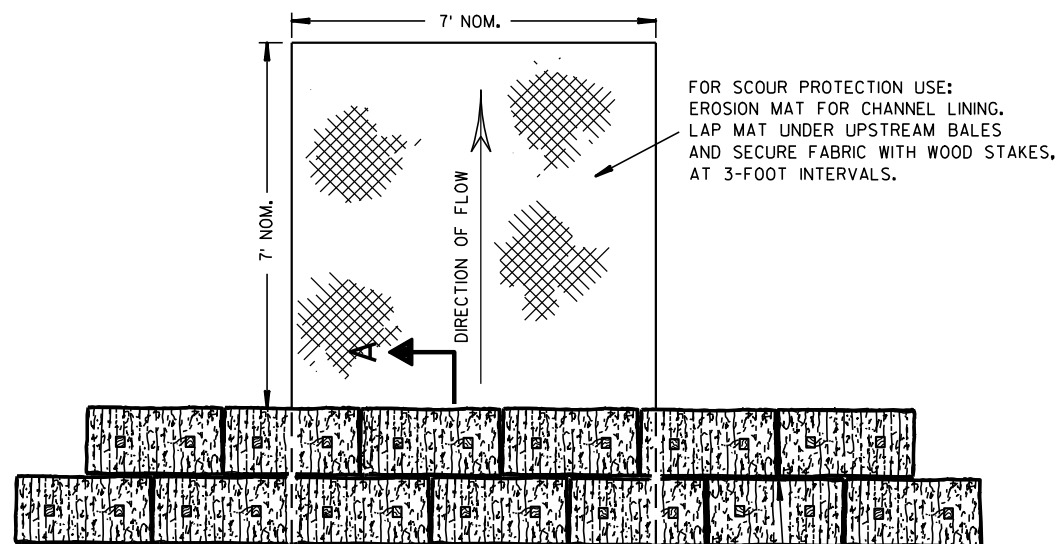
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E10-02	INLET PROTECTION TYPE A, B, C AND D
13A05-05A	SHOULDER RUMBLE STRIP, MILLING
13A05-05B	SHOULDER RUMBLE STRIP, MILLING
14B15-11A	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-11B	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-11C	STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS
14B16-04A	ANCHORAGE FOR STEEL PLATE BEAM GUARD TYPE 2
14B16-04B	ANCHORAGE FOR STEEL PLATE BEAM GUARD TYPE 2
14B18-06A	STEEL PLATE BEAM GUARD, CLASS "A" (AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS)
15A04-05C	DELINEATOR POST WITH REFLECTIVE SHEETING
15C08-19A	LONGITUDINAL MARKING (MAINLINE)
15C14-03	AERIAL ENFORCEMENT BARS PAVEMENT MARKING DETAILS
15D12-07B	TRAFFIC CONTROL, LANE CLOSURE, SPEED REDUCTION
15D15-05A	TRAFFIC CONTROL, PARALLEL ENTRANCE RAMP WITHIN LANE CLOSURE
15D15-05E	TRAFFIC CONTROL, PARALLEL EXIT RAMP WITHIN LANE CLOSURE
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS
15D40-01	TRAFFIC CONTROL, LANE SHIFT, MULTILANE DIVIDED OR ONE WAY ROAD

WOOD STAKES (2 PER BALE)
NOMINAL 2" X 2" X 30" MIN.
LENGTH OR EQUIVALENT



NOTE:
ALL DIMENSIONS
ARE APPROXIMATE

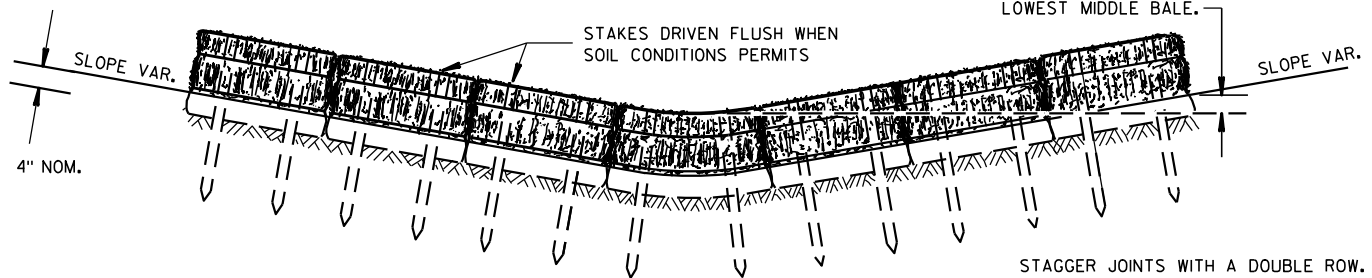
SECTION A-A



PLAN VIEW

STAGGER JOINTS BETWEEN ADJACENT
ROWS OF BALES.

BOTTOM ELEVATION OF END BALE SHALL
BE EQUAL TO OR GREATER THAN TOP OF
LOWEST MIDDLE BALE.



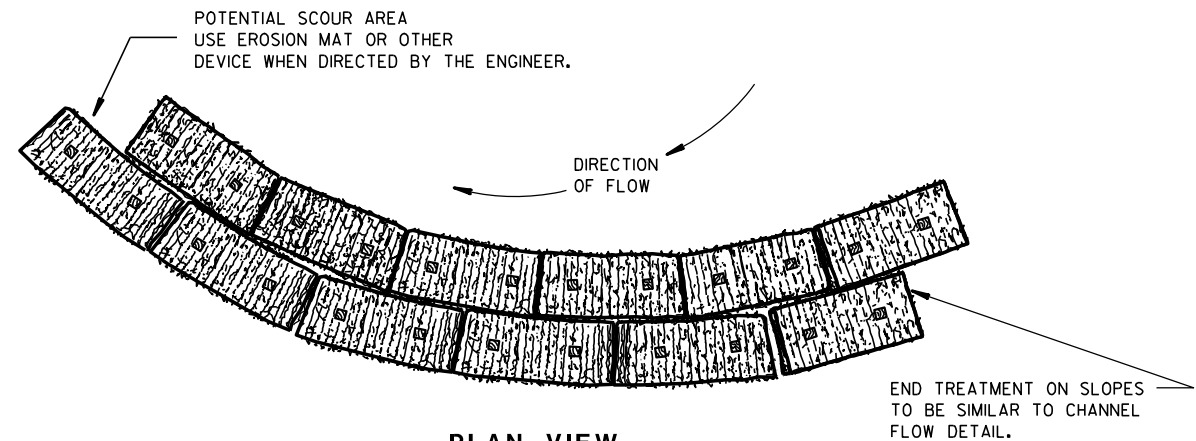
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

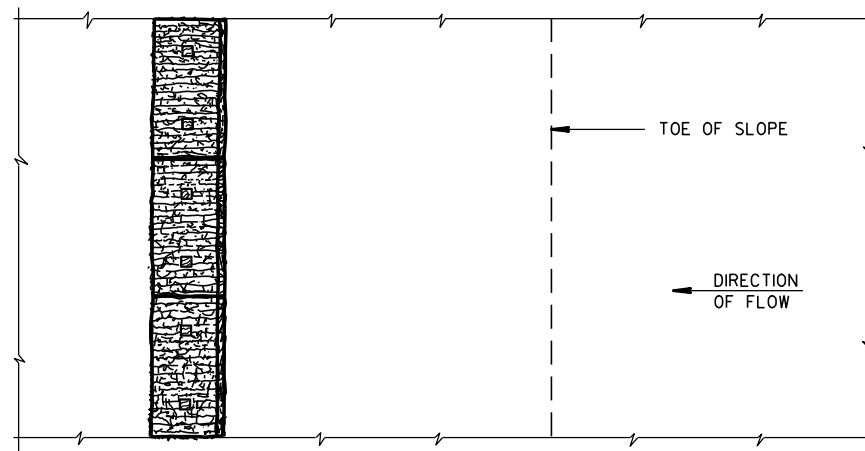
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

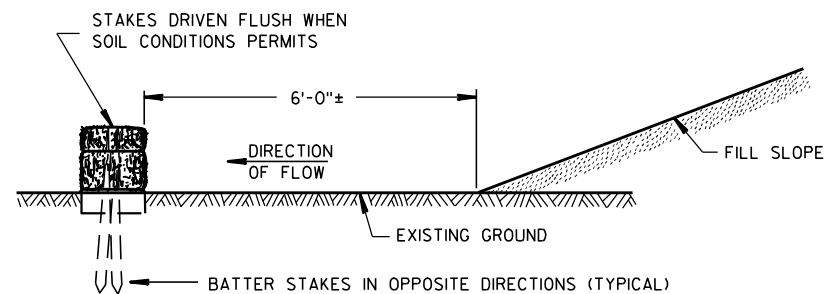


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

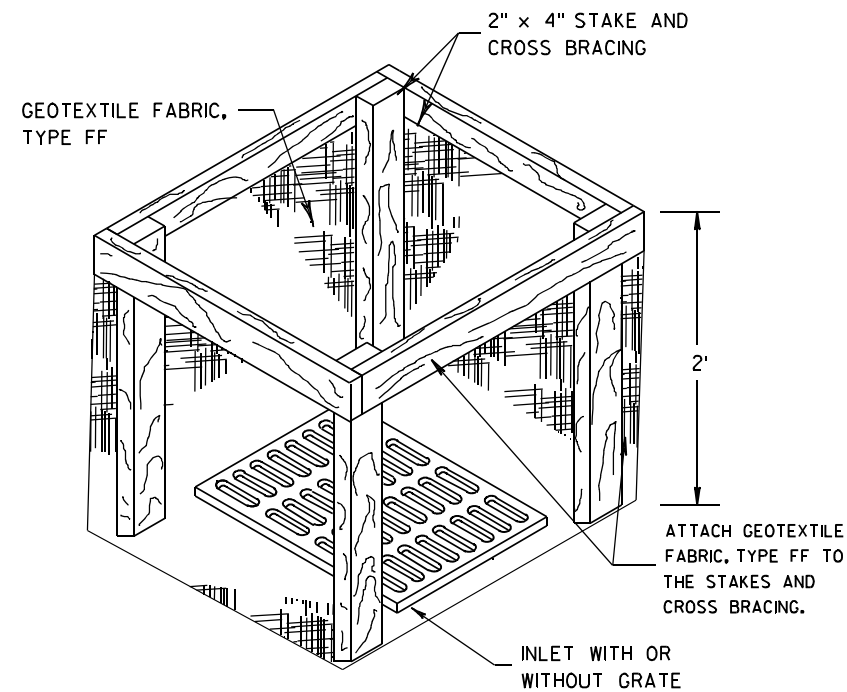
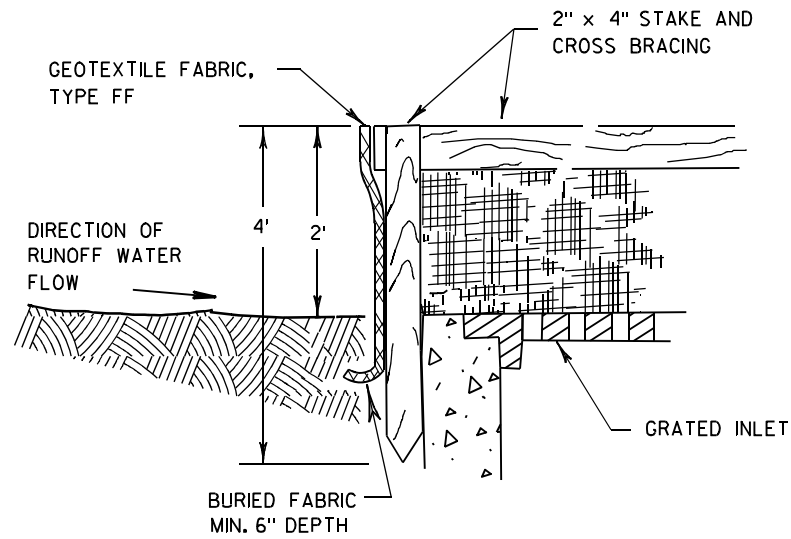
WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF
EROSION BALES / TEMPORARY
DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



INLET PROTECTION, TYPE A

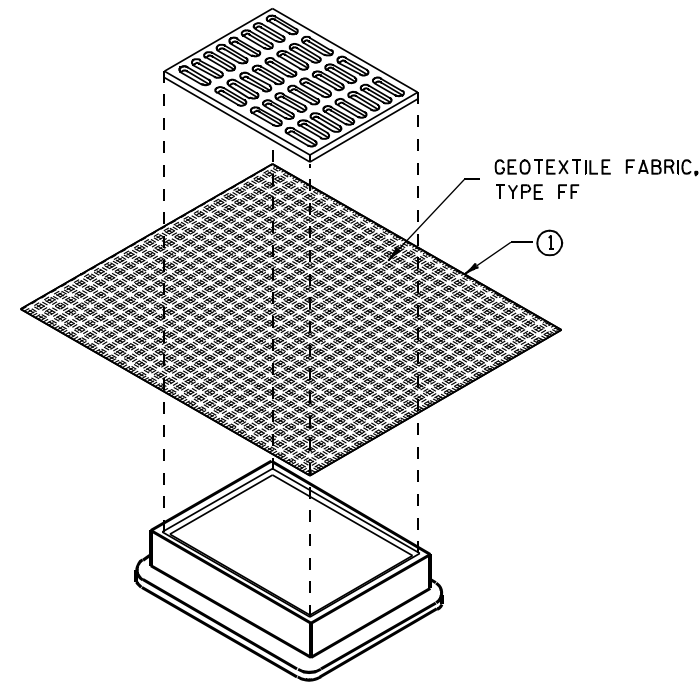
GENERAL NOTES

INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.

MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENT'S EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.

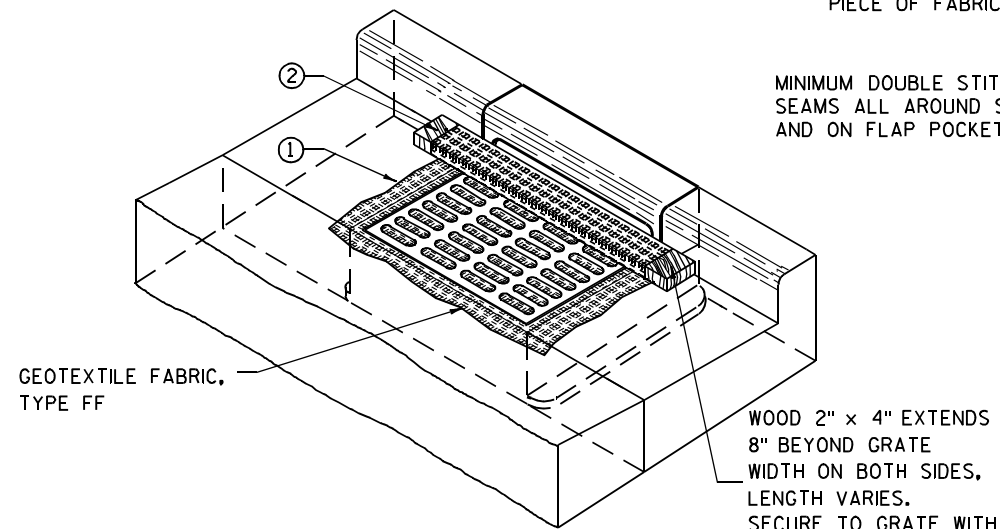
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

- ① FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
- ② FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.
- ③ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.



**INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)**

(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)



INLET PROTECTION, TYPE C (WITH CURB BOX)

INSTALLATION NOTES

TYPE B & C

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

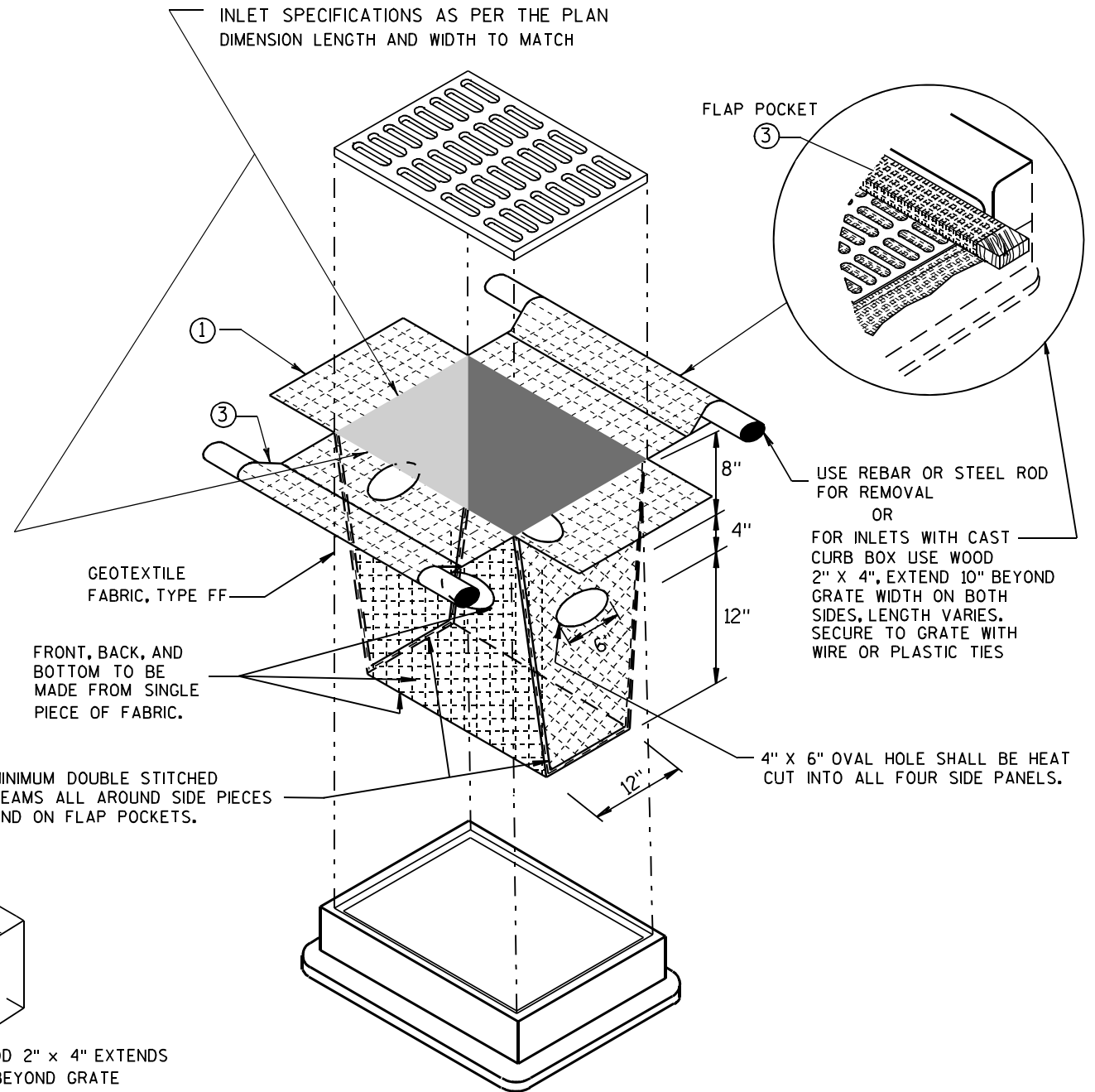
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

TYPE D

DO NOT INSTALL INLET PROTECTION TYPE D IN INLETS SHALLOWER THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

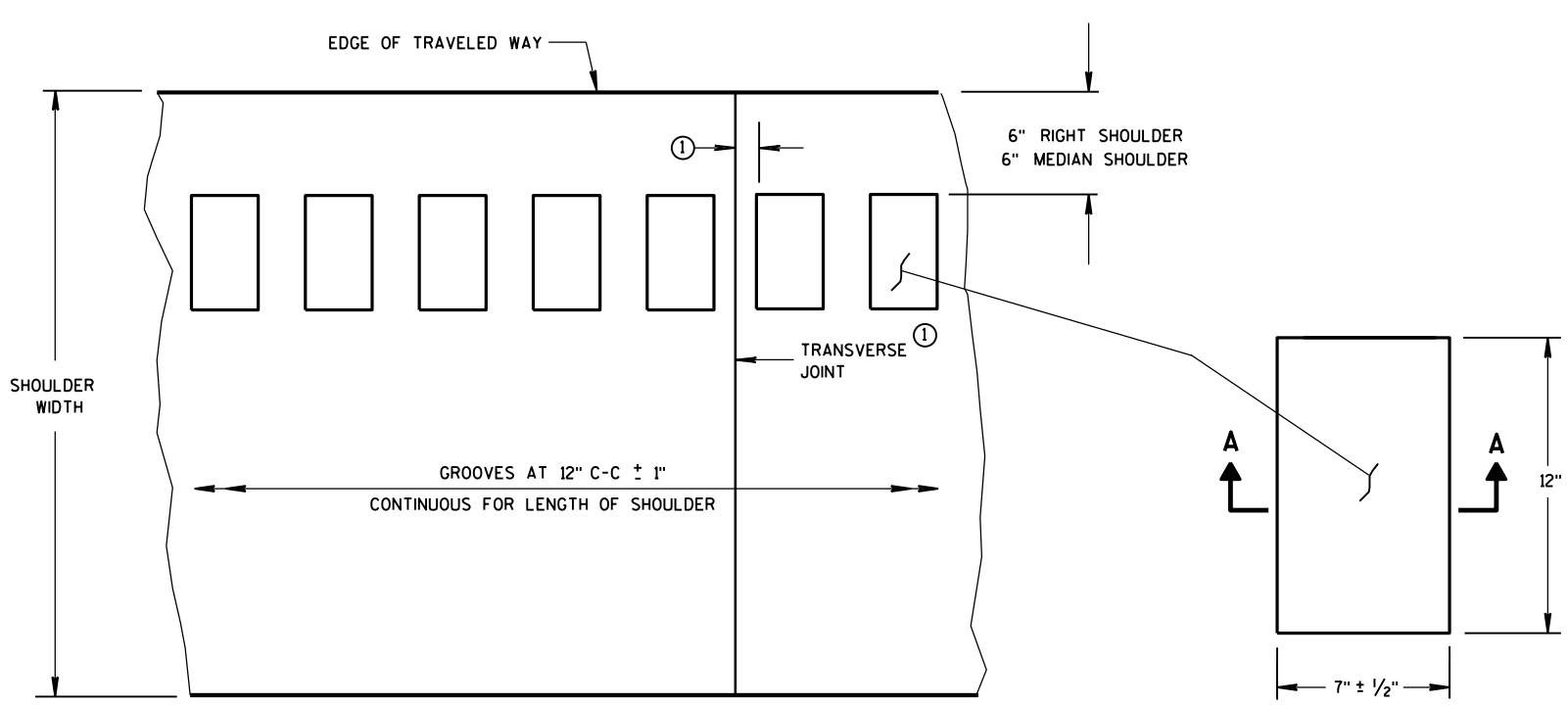
THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.



INLET PROTECTION, TYPE D

(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX AS PER NOTE ②)

INLET PROTECTION TYPE A, B, C, AND D	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 10/16/02 DATE	/s/ Beth Connestra CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	



PLAN VIEW
SHOULDER WITH GROOVES

PLAN VIEW
(SINGLE GROOVE)

PLACEMENT DETAIL FOR MILLED RUMBLE STRIP

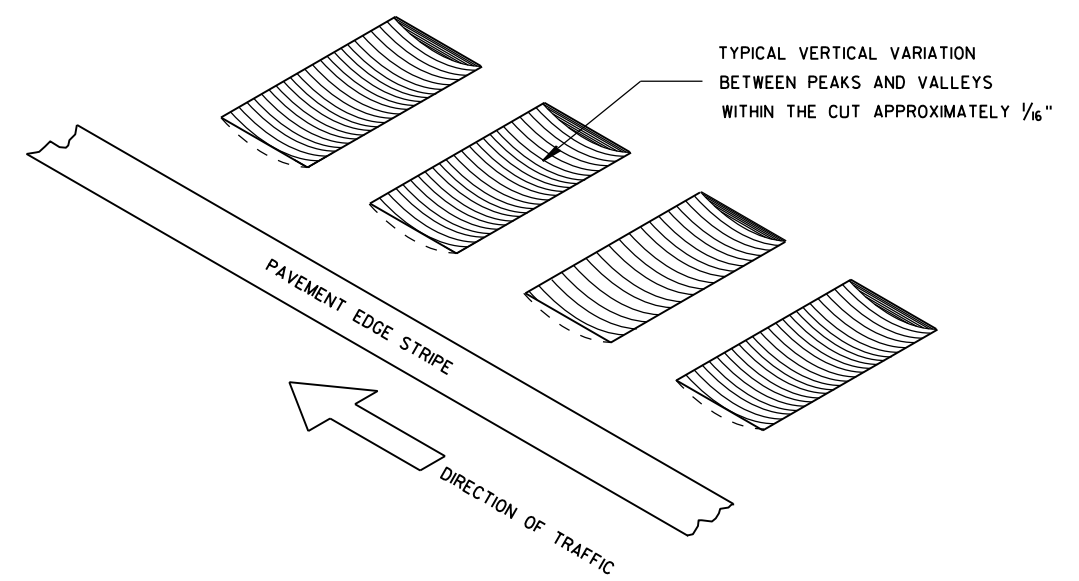
GENERAL NOTES

DETAILS OF CONSTRUCTION SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

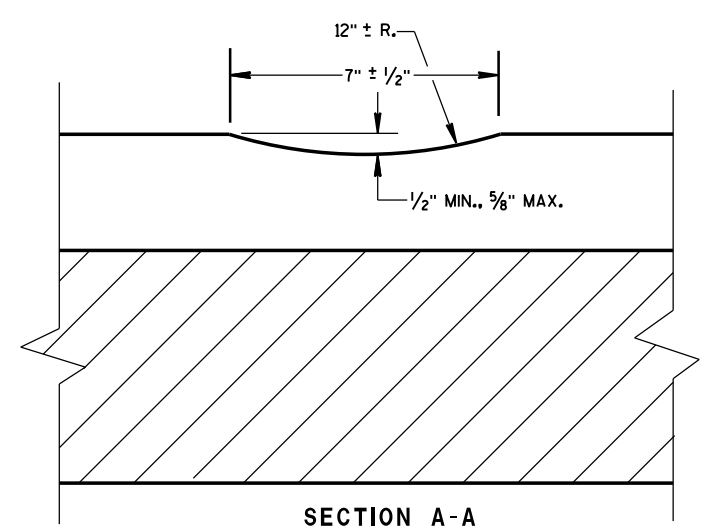
RUMBLE STRIPS ON EXPRESSWAYS

DO NOT INSTALL RUMBLE STRIPS ACROSS SIDE ROAD INTERSECTIONS, COMMERCIAL DRIVEWAYS, PRIVATE DRIVEWAYS OR ADJACENT TO RIGHT TURN LANES, LEFT TURN LANES, TURN LANE TAPERS, BRIDGE DECKS, BRIDGE APPROACHES, OR 100 FEET IN ADVANCE OF RAILROAD CROSSING. THE ATTACHED STANDARD DETAIL DRAWING SHOWS THE LOCATION OF THE RUMBLE STRIPS AT INTERCHANGE AREAS.

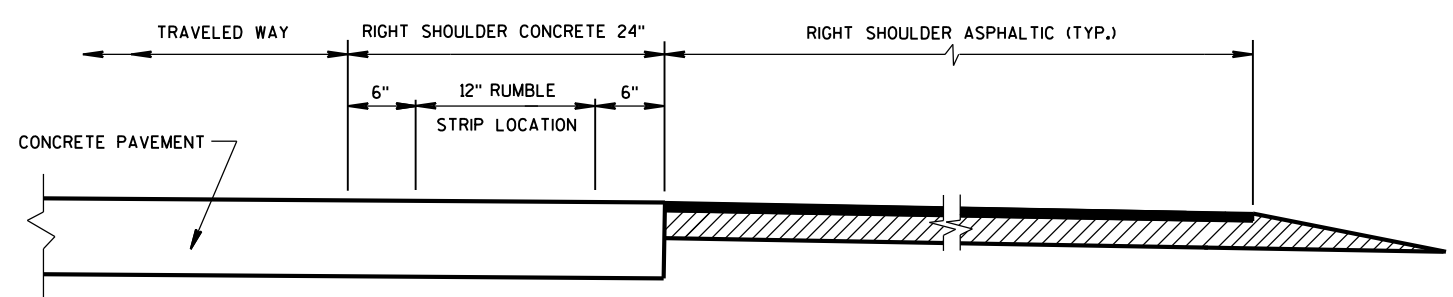
① CONCRETE PAVEMENT - RUMBLE STRIPS SHALL BE A MINIMUM OF 6" AWAY FROM TRANSVERSE JOINTS.



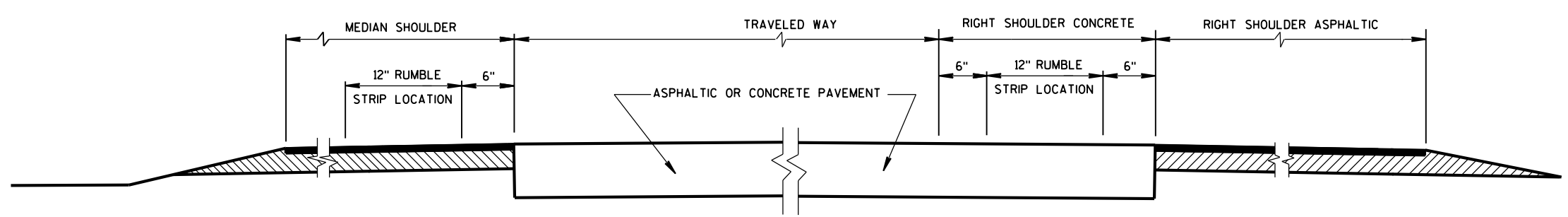
ISOMETRIC



SECTION A-A



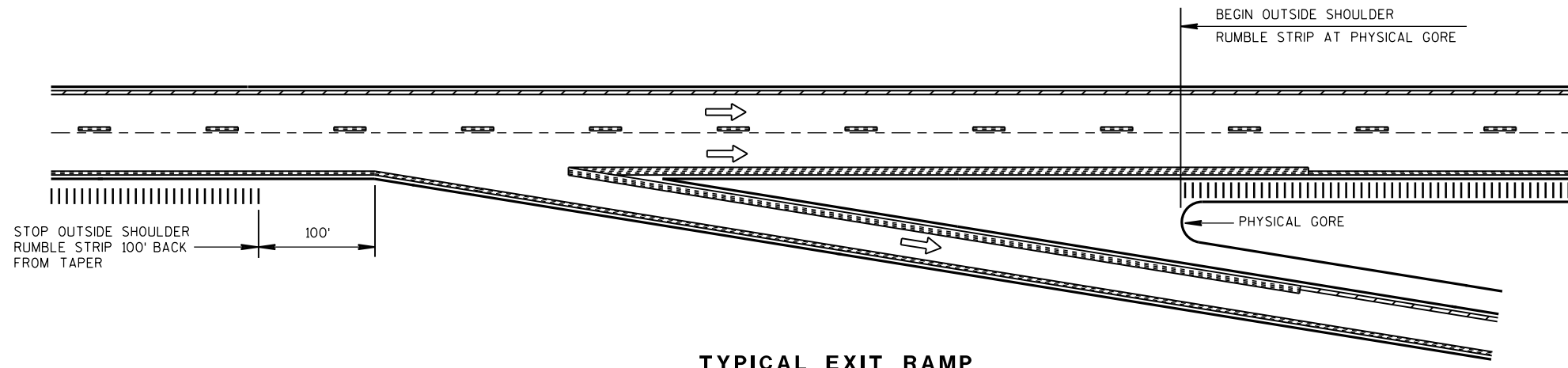
SECTION VIEW
(CONCRETE PAVEMENT EXTENDS INTO RIGHT SHOULDER)



SECTION VIEW
TYPICAL LOCATIONS OF SHOULDER RUMBLE STRIPS
IN RURAL DIVIDED HIGHWAYS
(ONE ROADWAY IS SHOWN)

SHOULDER RUMBLE STRIP,
MILLING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

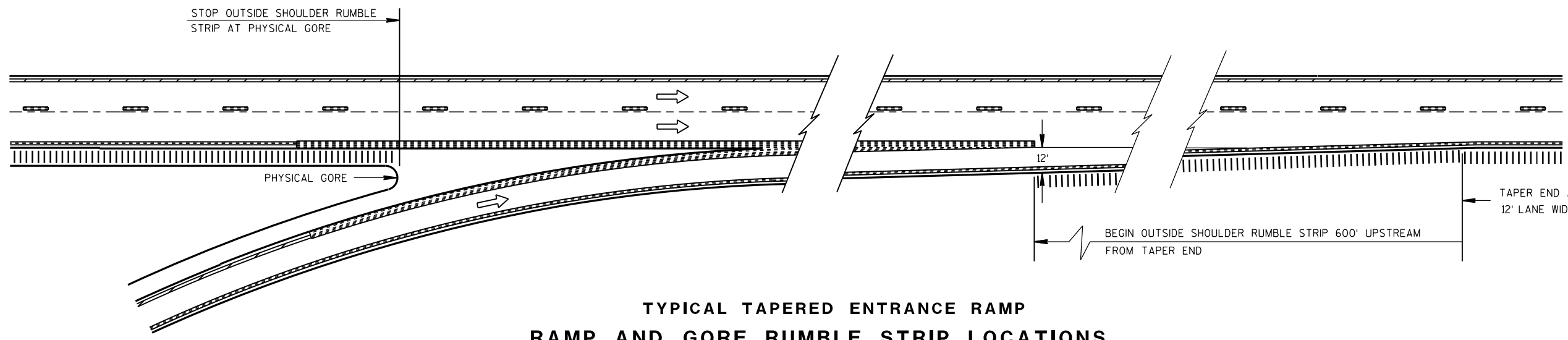


TYPICAL EXIT RAMP

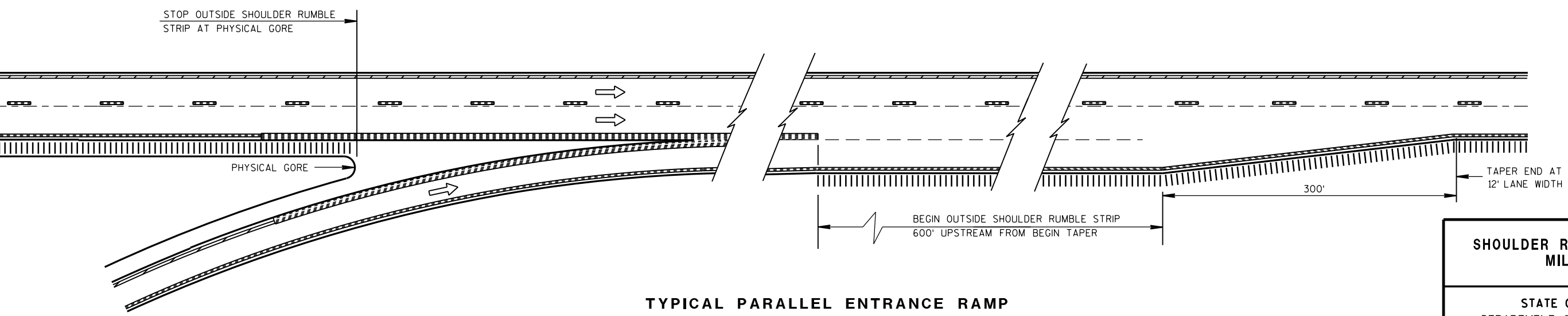
NOTES:

NO RUMBLE STRIP ON EXIT, DIRECTIONAL, OR ENTRANCE RAMP, EXCEPT NEAR THE ENTRANCE TAPER END AND ALONG THE PARALLEL RAMP AREA AS SHOWN.
 PAVEMENT MARKING DETAILS AND SPECIFICATIONS ARE PROVIDED ELSEWHERE IN THE CONTRACT.

NOTE:
 ARROW SYMBOL (→) SHOWS DIRECTION OF TRAVEL



TYPICAL TAPERED ENTRANCE RAMP
 RAMP AND GORE RUMBLE STRIP LOCATIONS



TYPICAL PARALLEL ENTRANCE RAMP
 RAMP AND GORE RUMBLE STRIP LOCATIONS

6

6

S.D.D. 13 A 5-5b

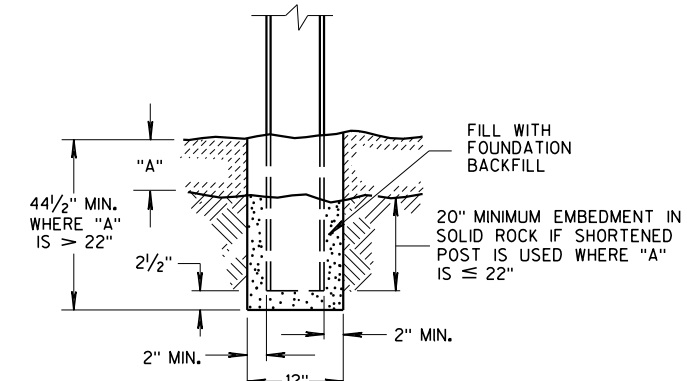
S.D.D. 13 A 5-5b

SHOULDER RUMBLE STRIP, MILLING	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED DATE 12/17/2012	/s/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	

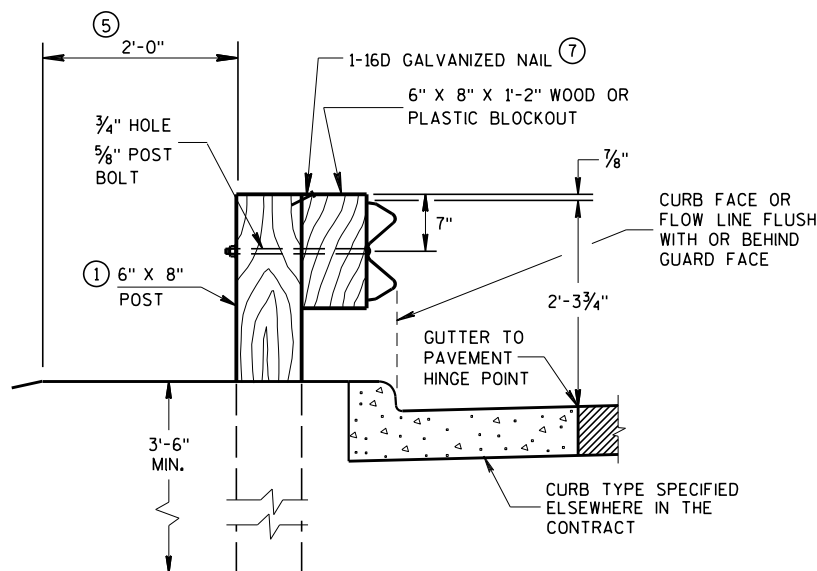
GENERAL NOTES

- ① W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. APPROVED PLASTIC BLOCKOUT DESIGNS MAY VARY FROM THIS TYPICAL DETAIL WHEN USED IN CONJUNCTION WITH STEEL POSTS. DO NOT MIX STEEL POSTS AND WOOD POSTS IN A SINGLE INSTALLATION.
- ② USE STRUCTURAL STEEL POSTS CONFORMING TO ASTM A 36. GALVANIZED POSTS ACCORDING TO AASHTO M 111. EITHER SET THE POSTS IN DRILLED HOLES OR DRIVE TO GRADE. REMOVE MUSHROOMING CAUSED BY DRIVING AND REPAIR DAMAGED SPELTER COATING ON GALVANIZED POSTS.
- ③ INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ④ USE EITHER WOOD OR APPROVED PLASTIC BLOCKOUTS ON WOOD POSTS.
- ⑤ IF THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING, W BEAM (LHW).
- ⑥ IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE ENGINEER MAY APPROVE USING A 12 INCH DIAMETER POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE APPROXIMATELY 2 1/2 INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN THE HOLE. BACKFILL WITH MATERIAL EXCAVATED FROM THE HOLE AND COMPACT ADEQUATELY.
- ⑦ 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.

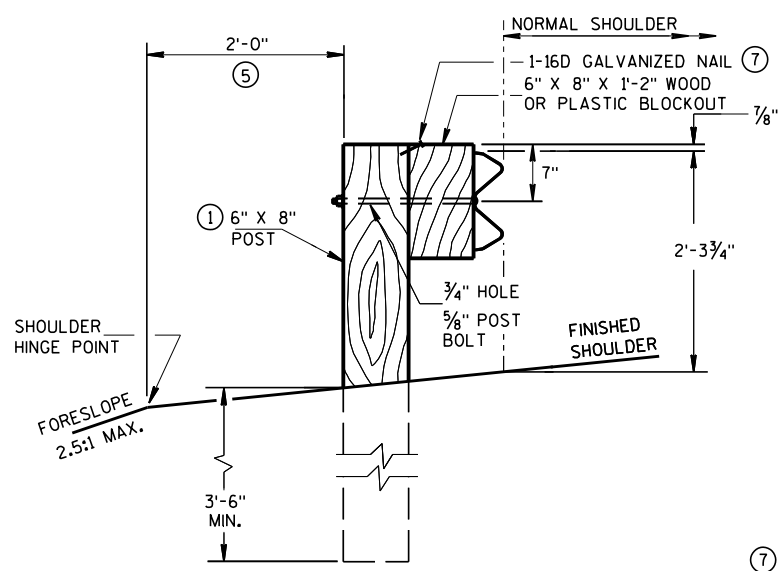
INSTALL BEAM GUARD SECTIONS AND ALL NECESSARY HARDWARE ACCORDING TO THE APPLICABLE PLAN AND CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



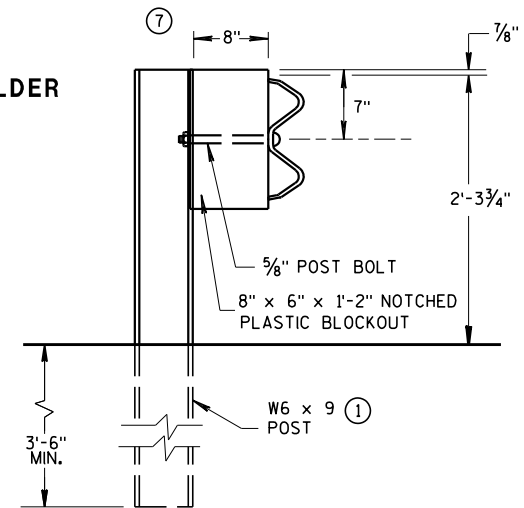
END VIEW SETTING STEEL OR WOOD POST IN ROCK ⑥



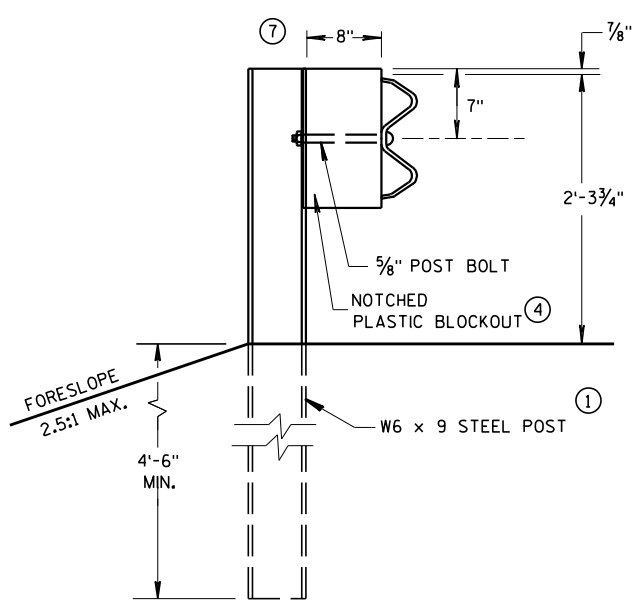
END VIEW LOCATED ALONG A CURBED ROADWAY



END VIEW LOCATED ALONG A ROADWAY SHOULDER STANDARD INSTALLATION

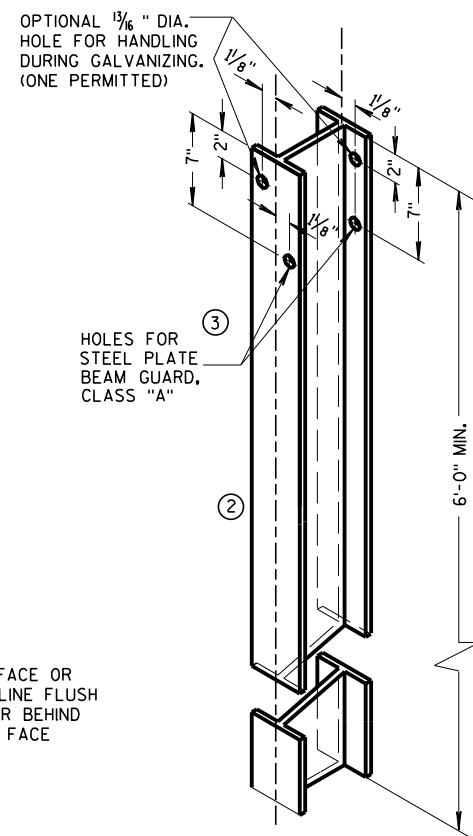


END VIEW STEEL POST & NOTCHED PLASTIC BLOCKOUT ALTERNATIVE STANDARD INSTALLATION

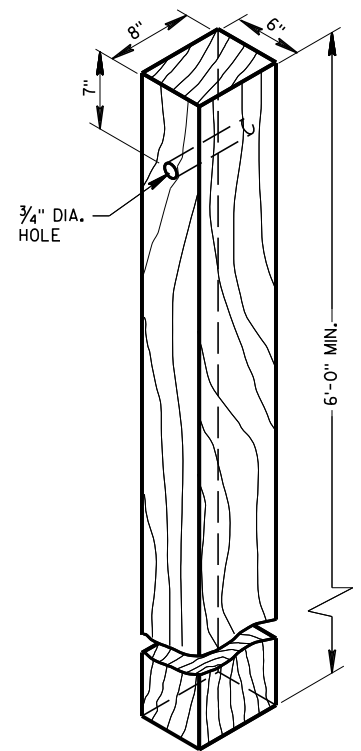


END VIEW LONGER POST AT HALF POST SPACING W BEAM (LHW)

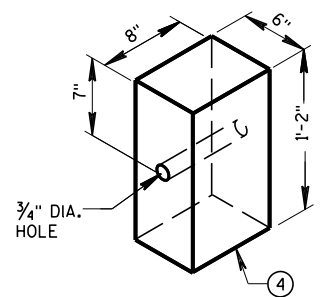
TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD



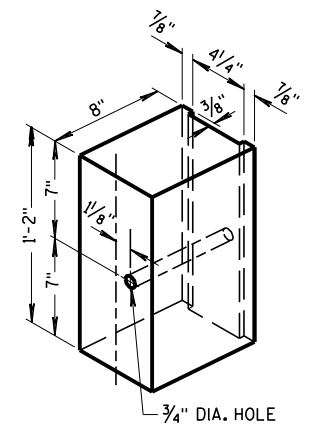
STEEL POST & HOLE PUNCHING DETAIL (W6 X 9) ①
ALL HOLES 3/8" DIAMETER EXCEPT AS NOTED



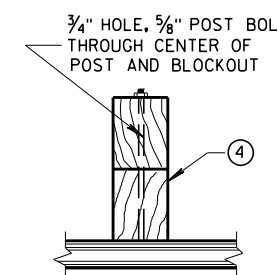
WOOD POST (6" X 8") NOMINAL



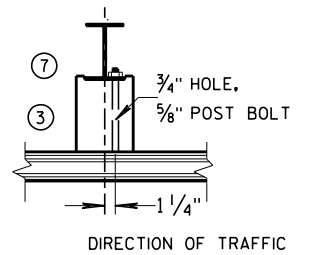
WOOD OR PLASTIC BLOCKOUT FOR WOOD POSTS



TYPICAL NOTCHED PLASTIC BLOCKOUT FOR STEEL POSTS ①



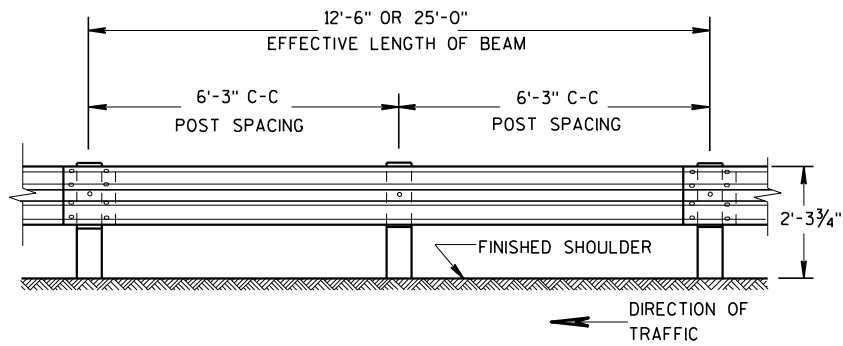
PLAN VIEW WOOD POST, BLOCKOUT & BEAM



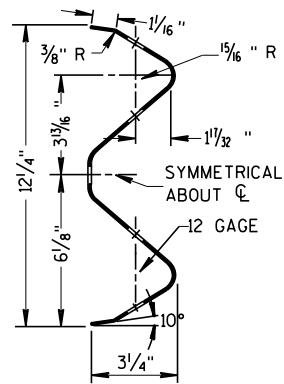
PLAN VIEW STEEL POST, NOTCHED PLASTIC BLOCKOUT & BEAM

STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS

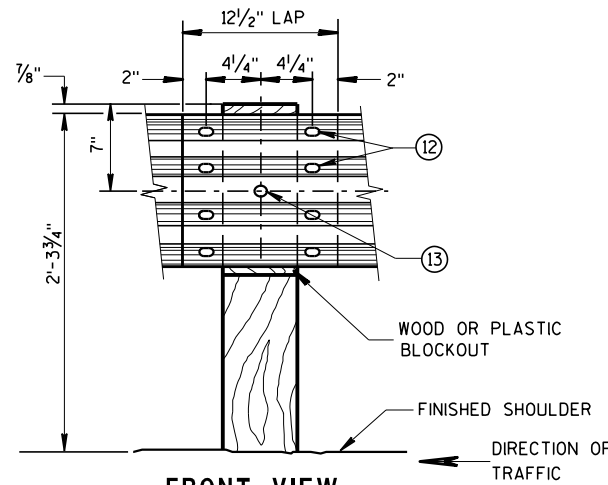
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



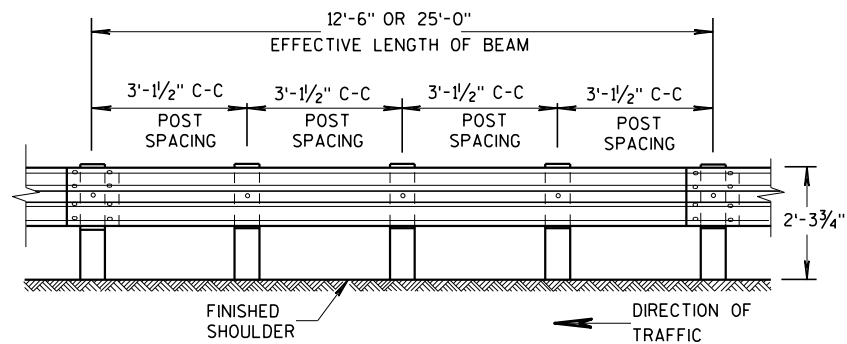
SECTION THRU W BEAM



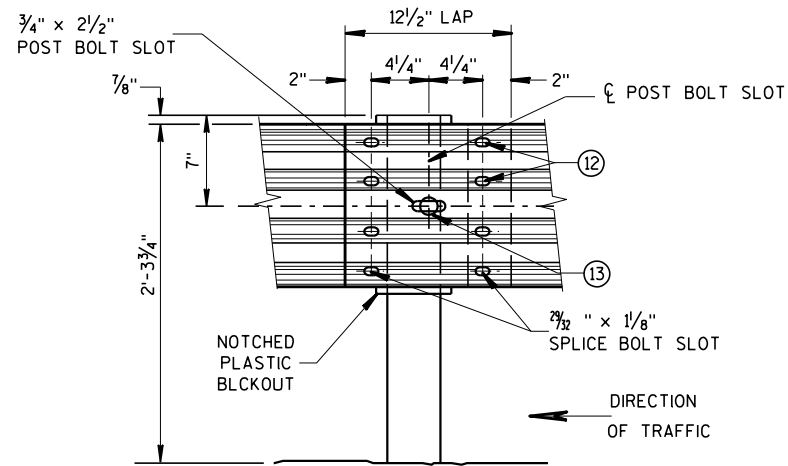
**FRONT VIEW
BEAM SPLICE AT WOOD POST
AND POST MOUNTING DETAIL**

GENERAL NOTES

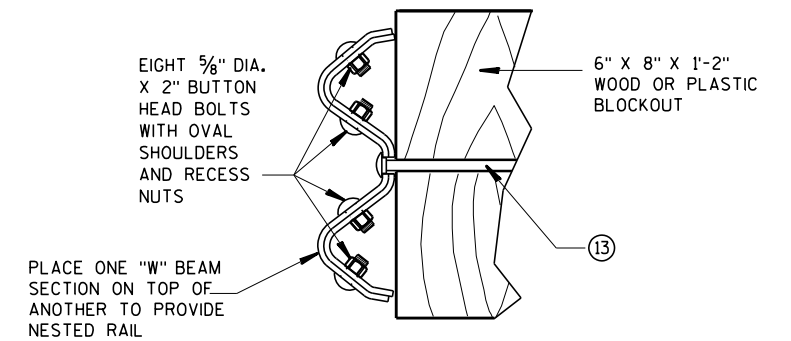
- FURNISH GUARDRAIL DEFLECTORS FROM APPROVED PRODUCTS LIST.
- ⑨ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINA. START REFLECTORS AT POST #9 AND SPACE EVENLY EVERY 100 FEET (MAX.) TO THE END OF GUARDRAIL RUN, USING A MINIMUM OF 3 REFLECTORS.
 - ⑫ 8 - 5/8" ϕ X 2" BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.
 - ⑬ 5/8" DIA. BUTTON HEAD BOLT AND RECESS NUT WITH 5/8" DIA. F844 FLAT WASHER UNDER NUT.



**FRONT VIEW
POST SPACING FOR LONGER POST
AT HALF POST SPACING W BEAM (LHW)**

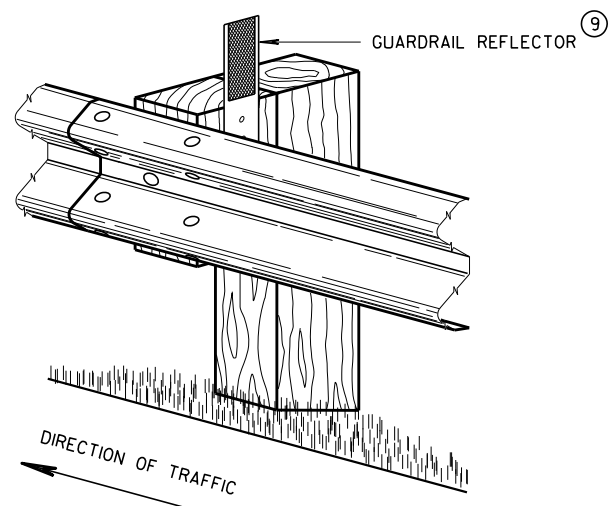


**FRONT VIEW
BEAM SPLICE AT STEEL POST
TYPICAL SPLICING DETAILS
OF STEEL PLATE BEAM GUARD**

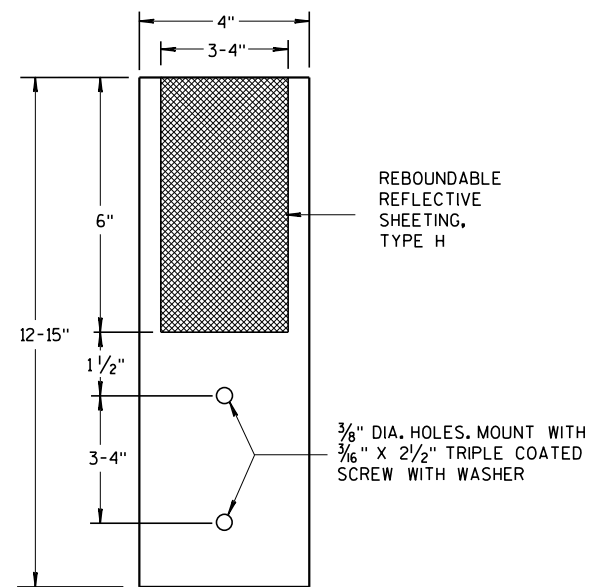


NESTED W BEAM (NW)
USE ALL OTHER STANDARD BEAM GUARD DETAILS FOR CONSTRUCTING NESTED W BEAM (NW)

* USE DOUBLE SIDED WHITE GUARDRAIL REFLECTORS ON ROADWAYS WITH BI-DIRECTIONAL TRAFFIC (NO MEDIAN). USE SINGLE SIDED WHITE (RIGHT SIDE) AND SINGLE SIDED YELLOW (LEFT SIDE) ON ROADWAYS WITH MEDIAN SEPARATION.



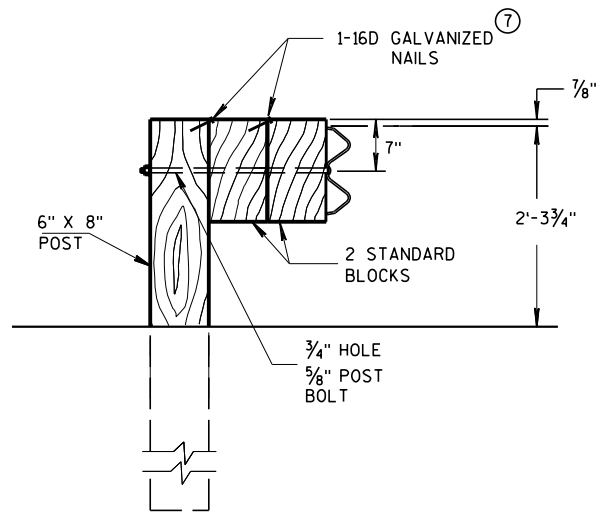
**4" X 12" GUARDRAIL REFLECTOR DETAIL
AND TYPICAL INSTALLATION ***



4" x 12" GUARDRAIL REFLECTOR

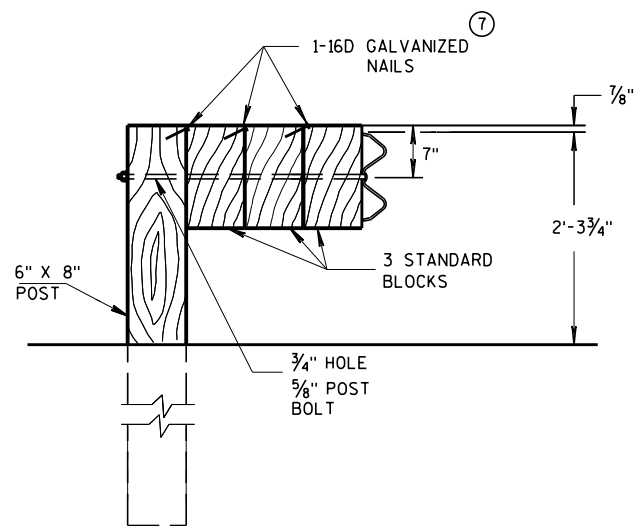
**STEEL PLATE BEAM GUARD,
CLASS "A",
INSTALLATION & ELEMENTS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR DOUBLE BLOCKS

THE NUMBER OF DOUBLE BLOCK POSTS WITHIN A BARRIER RUN IS UNLIMITED

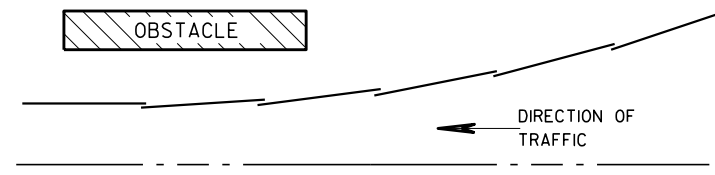


DETAIL FOR TRIPLE BLOCKS

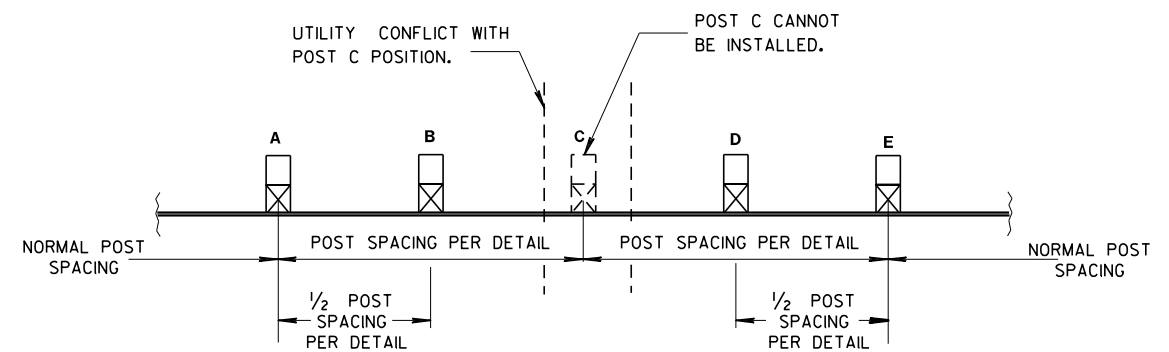
TRIPLE BLOCK DETAIL IS LIMITED TO ONE LOCATION WITHIN A BEAM GUARD RUN.

NOTES: USE DOUBLE OR TRIPLE BLOCKS WHEN UNDERGROUND OBSTACLES PREVENT THE POST FROM BEING INSTALLED.

DO NOT USE EXTRA 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.

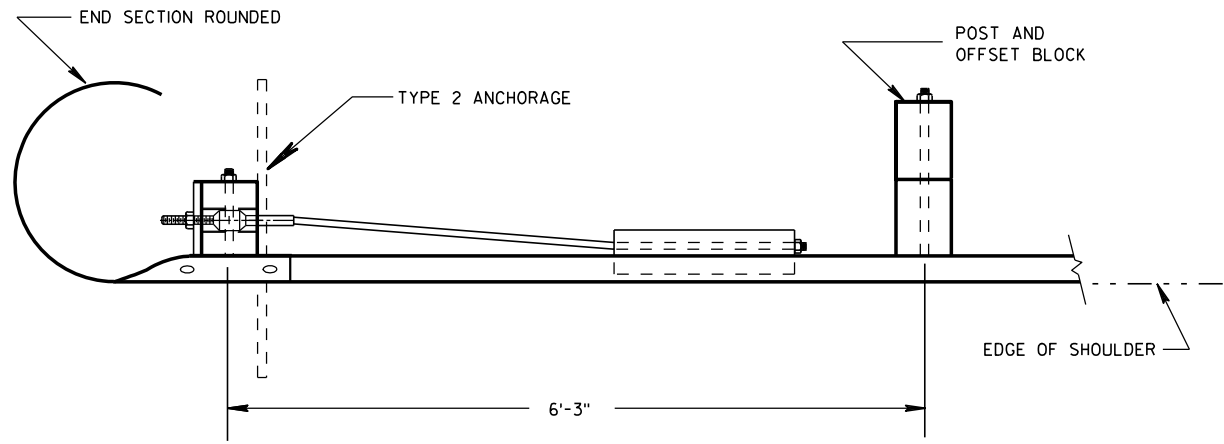


**PLAN VIEW
BEAM LAPPING DETAIL**

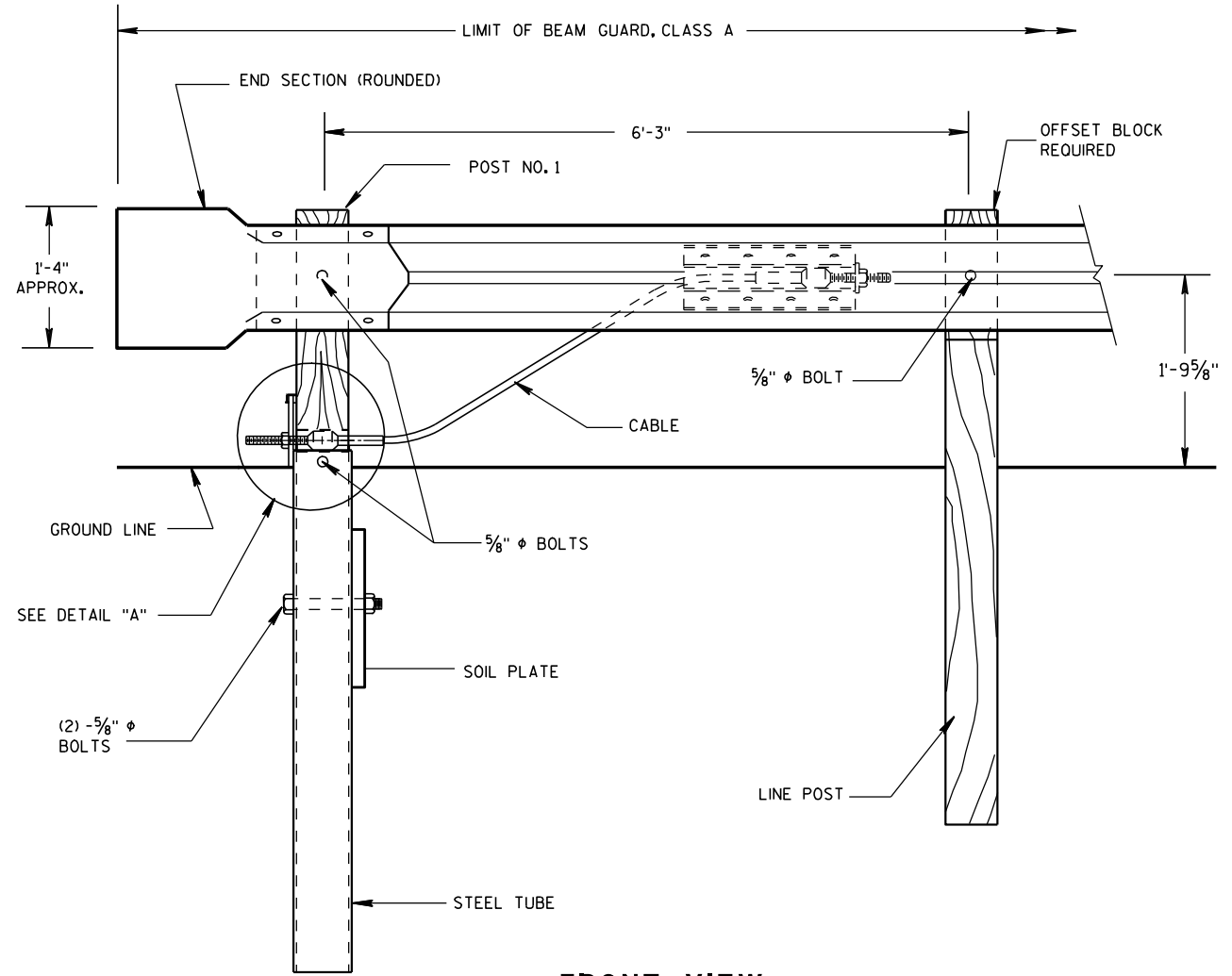


**POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION**

STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017	/s/ Rodney Taylor
DATE	ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

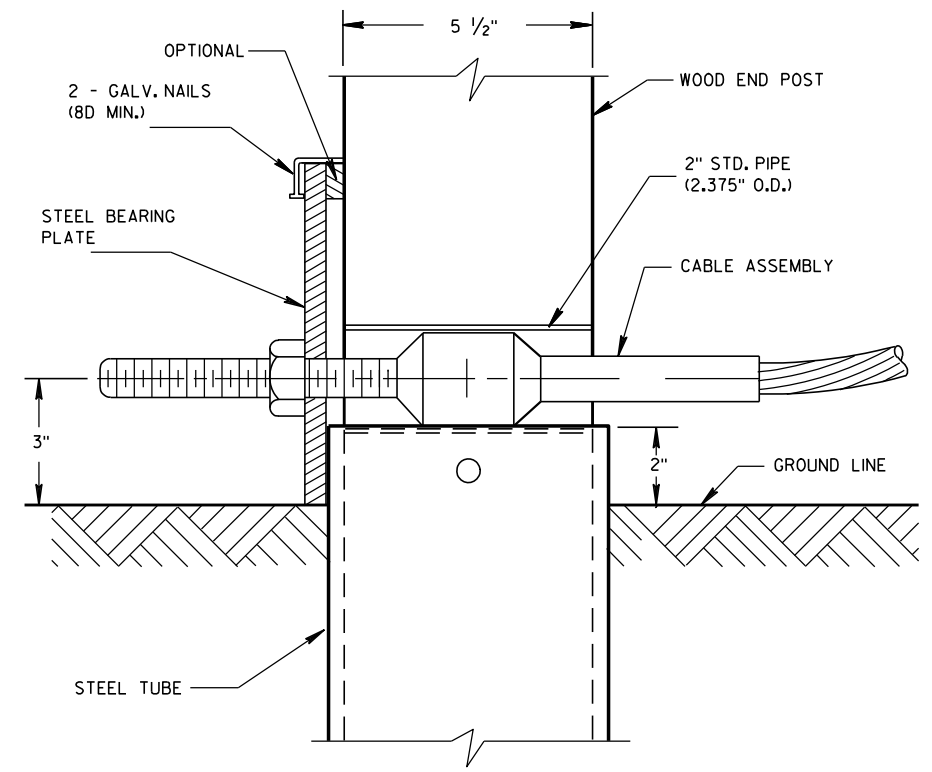


PLAN VIEW



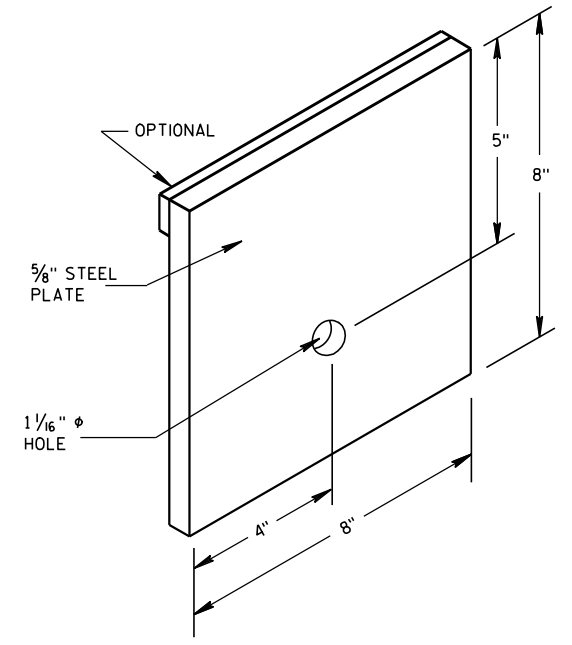
FRONT VIEW

END TREATMENT WITH TYPE 2 ANCHORAGE
(USE ON ONE-WAY ROADWAYS ONLY - DEPARTING END)



DETAIL "A"

POST NO. 1



STEEL BEARING PLATE

**ANCHORAGE FOR STEEL
PLATE BEAM GUARD
TYPE 2**

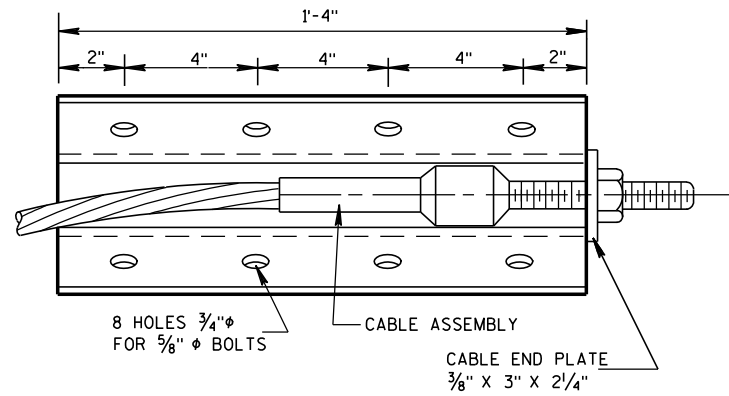
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

6

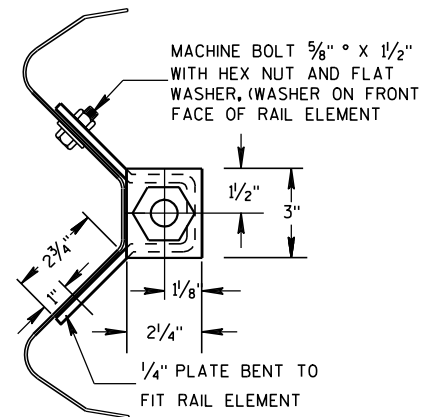
S.D.D. 14 B 16-4a

S.D.D. 14 B 16-4a

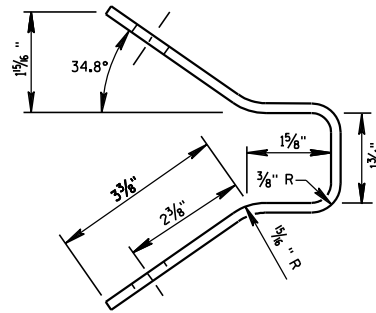


FRONT VIEW

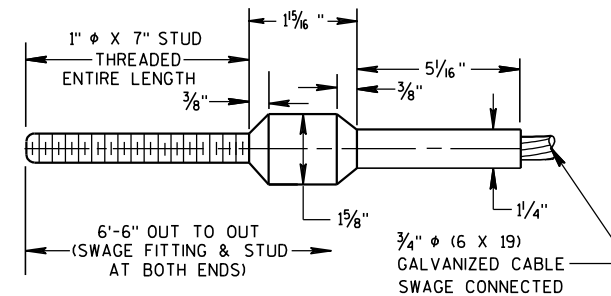
ANCHOR PLATE DETAIL



END VIEW



END VIEW OF BRACKET



CABLE ASSEMBLY

CABLE, SWAGE FITTING, STUD AND NUT SHALL DEVELOP A MINIMUM BREAKING STRENGTH OF 40,000 LB (TIGHTEN UNTIL TAUT)

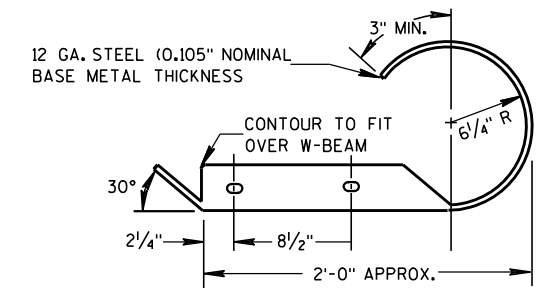
GENERAL NOTES

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.

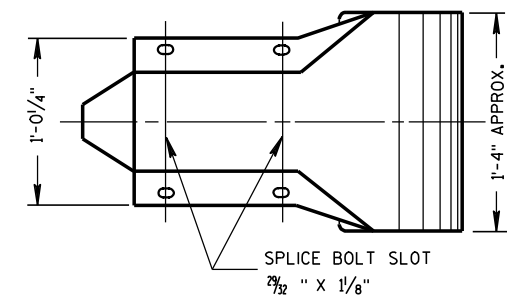
STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-500 GRADE B OR ASTM A-501.

POST NO. 1 SHALL BE WOOD BREAKAWAY POST INSERTED AND BOLTED INTO STEEL TUBE.

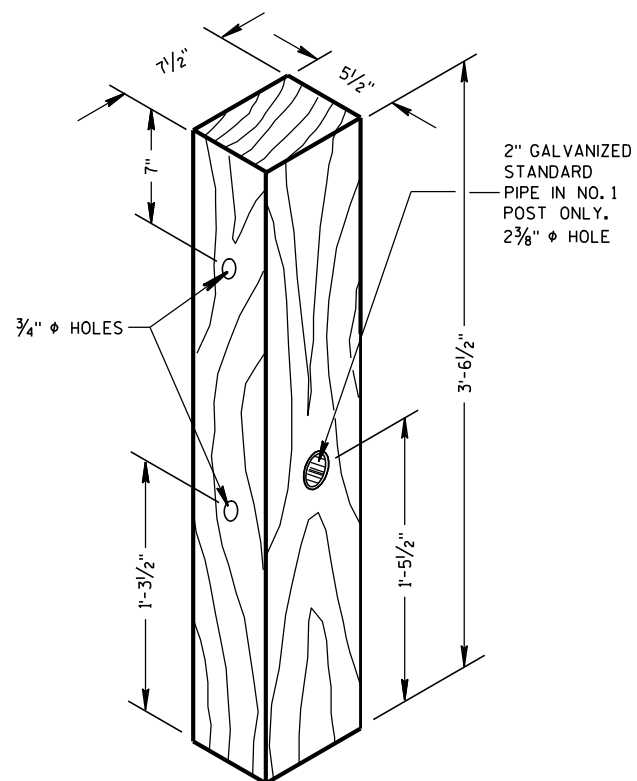
TYPE 2 ANCHORAGE SHALL CONSIST OF A STEEL TUBE, SOIL PLATE, WOOD BREAKAWAY POST, BEARING PLATE, ANCHOR PLATE, CABLE ASSEMBLY AND ALL ASSOCIATED HARDWARE, ALL STEEL PARTS SHALL BE GALVANIZED.



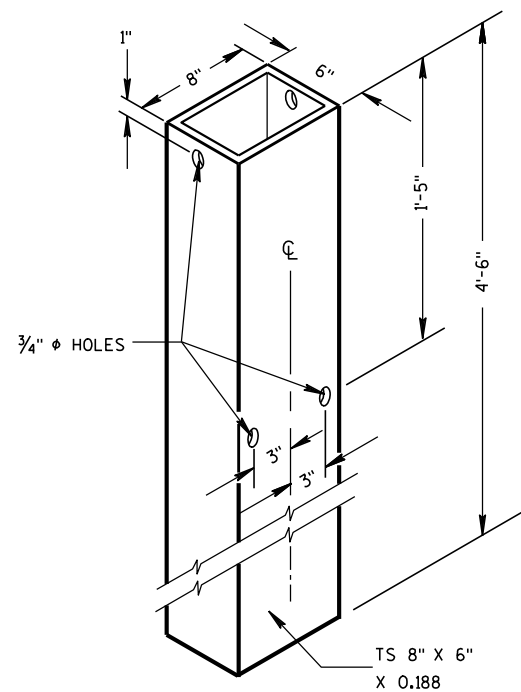
PLAN VIEW



FRONT VIEW
W BEAM END SECTION ROUNDED

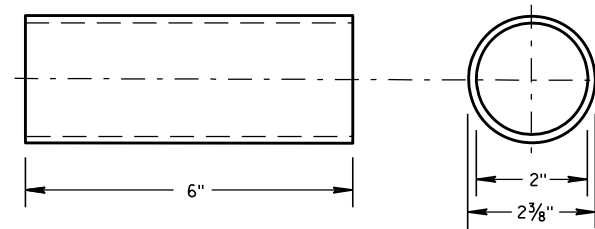


WOOD BREAKAWAY POST



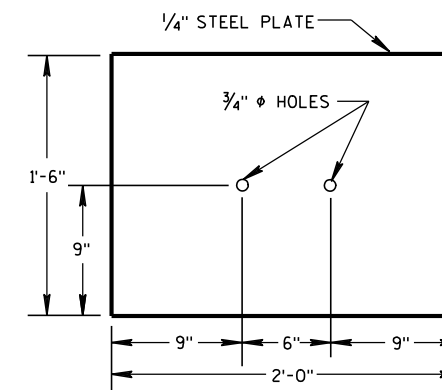
STEEL TUBE

STEEL TUBE SHALL CONFORM TO REQUIREMENTS OF ASTM A500



BREAKAWAY TERMINAL POST SLEEVE

GALVANIZED STANDARD STRENGTH STEEL PIPE, ASTM 53 GRADE "B"

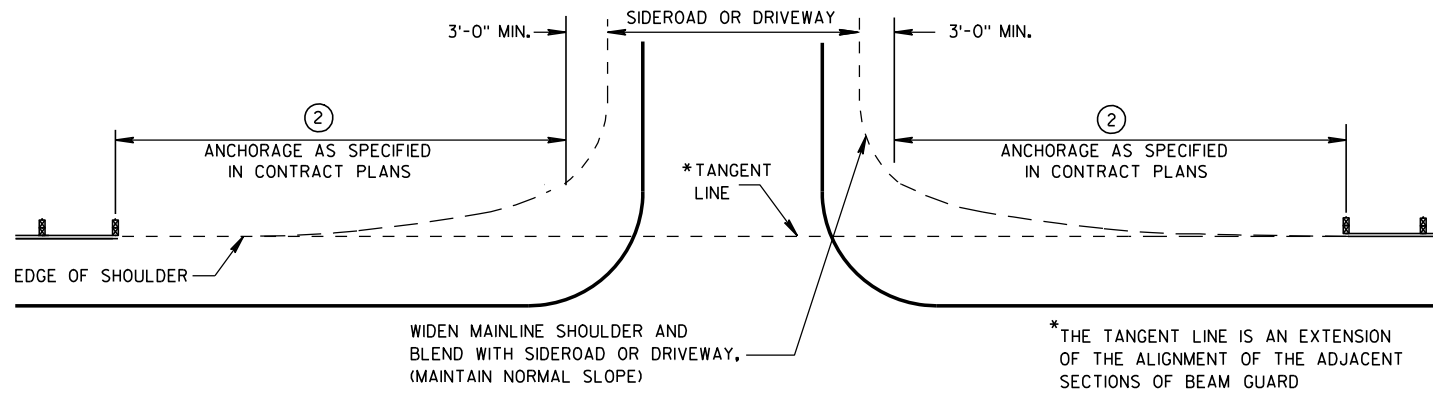


SOIL PLATE

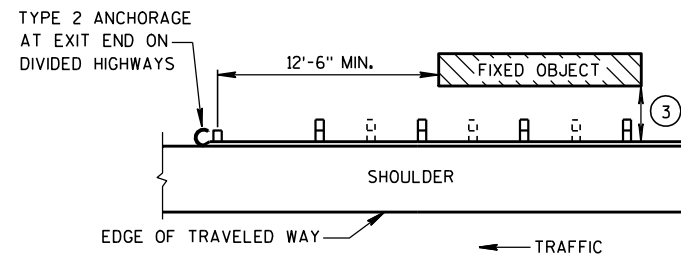
ANCHORAGE FOR STEEL PLATE BEAM GUARD TYPE 2

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

APPROVED
8/21/2007 DATE /S/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA



BEAM GUARD AT SIDEROADS OR DRIVEWAYS



**BEAM GUARD AT OBSTACLES
EXIT END - ONE WAY TRAFFIC**

GENERAL NOTES

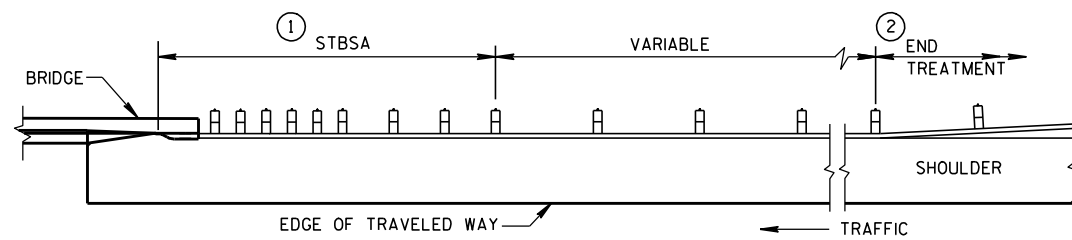
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE PERTINENT STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

W6 X 9 OR W6 X 8.5 STEEL POSTS WITH NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

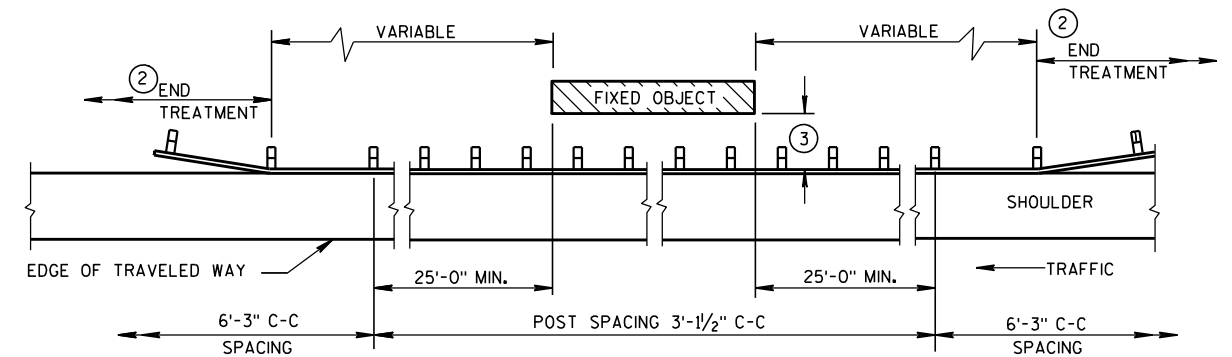
THE LOCATIONS AND LENGTHS OF BEAM GUARD ARE SHOWN ELSEWHERE IN THE PLAN.

- ① STEEL THRIE BEAM STRUCTURAL APPROACH (STBSA) - SEE CURRENT SDD 14B20.
- ② USE AN APPROVED END TREATMENT FOR THE TRAFFIC APPROACH SIDE OF BRIDGE/OBSTACLES. USE TYPE 2 ANCHORAGE ONLY AT THE DOWNSTREAM ENDS OF BEAM GUARD LOCATED ALONG ROADWAYS WITH ONE WAY TRAFFIC.

MINIMUM LATERAL DISTANCE FROM FACE OF BEAM GUARD TO FIXED OBJECT	POST SPACING
3'-6"	3' - 1 1/2"
4'-6"	6' - 3"



BEAM GUARD AT FULL WIDTH BRIDGES

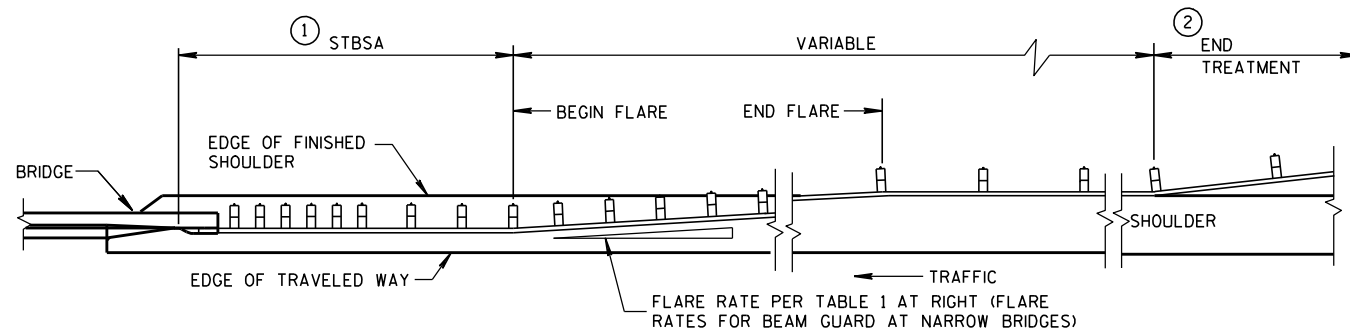


BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC

(RAIL TO OBSTACLE CLEARANCE 3'-6" TO 4'-6")

**TABLE 1
FLARE RATES FOR BEAM
GUARD AT NARROW BRIDGES**

POSTED SPEED (MPH)	FLARE RATE
25	13:1
30	15:1
35	16:1
40	18:1
45	21:1
50	24:1
55	26:1
65	30:1

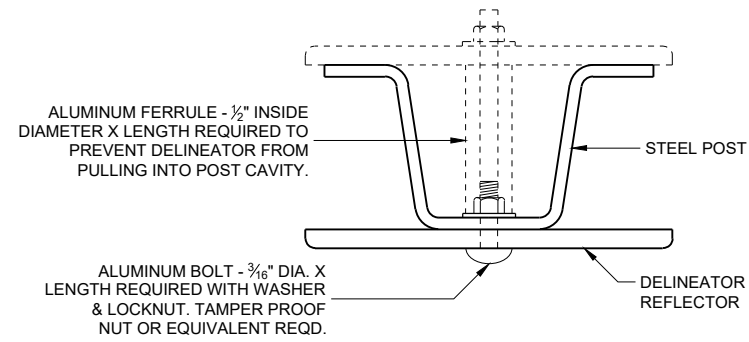


**BEAM GUARD AT NARROW BRIDGES
(FLARED TO SHOULDER EDGE, THEN PARALLEL TO ROADWAY)**

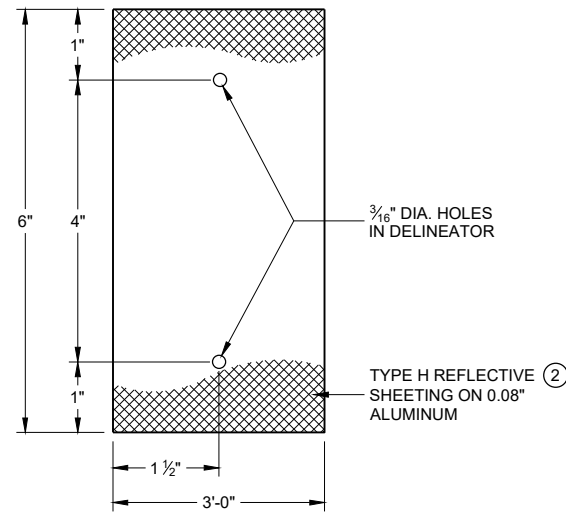
**STEEL PLATE BEAM GUARD
CLASS "A"
AT BRIDGES, OBSTACLES
AND SIDEROADS/DRIVEWAYS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

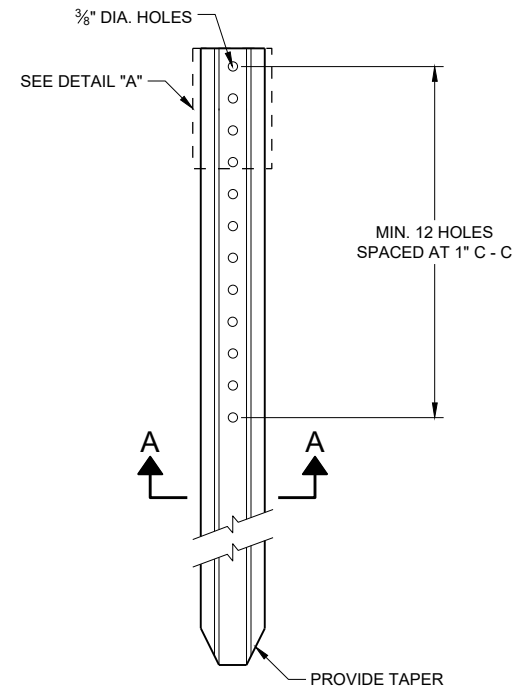
APPROVED
8-21-07 /s/ Jerry H. Zogg
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA



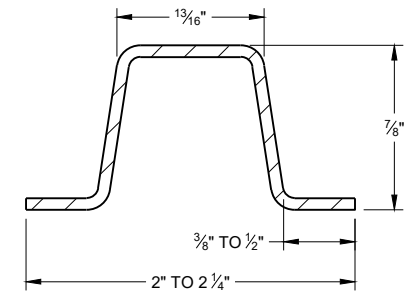
MOUNTING DETAIL FOR DELINEATOR REFLECTOR



DETAIL "A" 3" X 6" DELINEATOR REFLECTOR



DELINEATOR POST



SECTION A - A
WEIGHT 1.12 LBS PER FT. \ 0.1 LB.

REFLECTOR SPACING TABLE

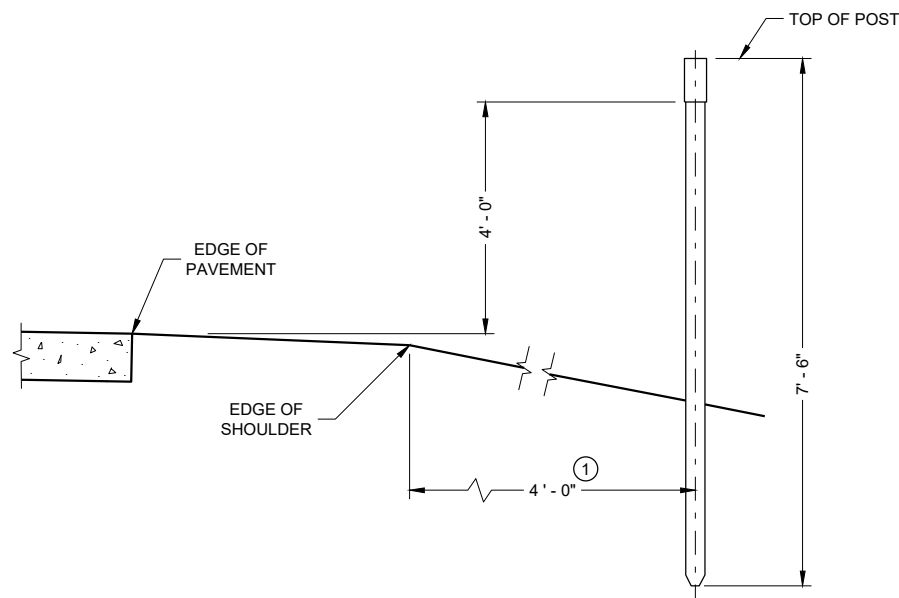
REFLECTOR SPACING	LOCATION
* 100' C-C	RAMPS
400' C-C	MAINLINE

* START AT BEGINNING OF RAMP TAPER AND END AT END OF RAMP TAPER

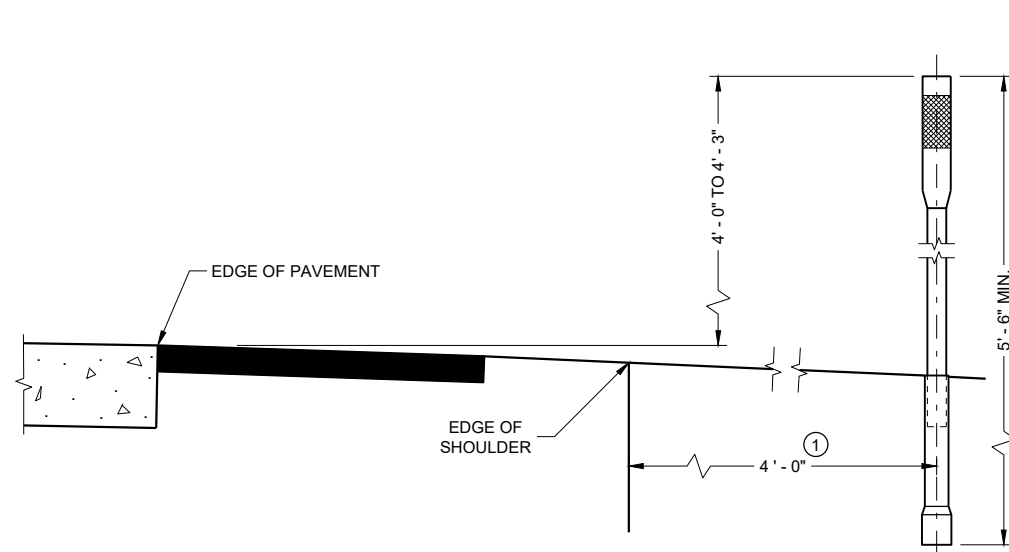
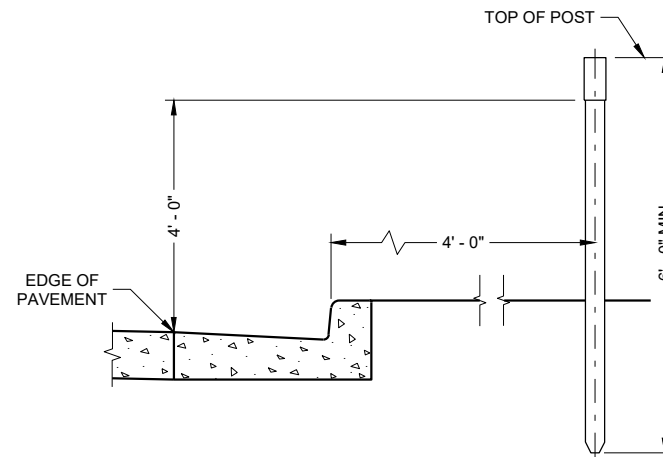
GENERAL NOTES

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

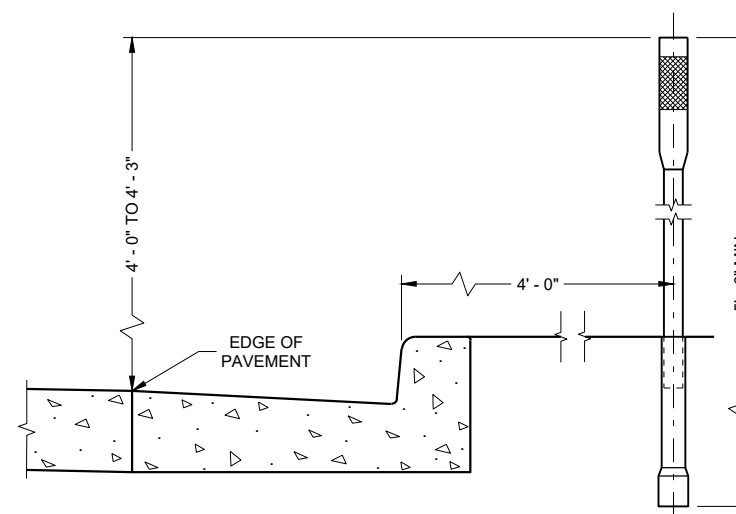
- ① DELINEATORS SHALL BE PLACED AT A CONSTANT DISTANCE FROM THE EDGE OF THE SHOULDER FOR THE LENGTH OF THE INSTALLATION.
- ② FURNISH TYPE H SHEETING FROM THE APPROVED PRODUCTS LIST.



TYPICAL INSTALLATIONS OF DELINEATOR POSTS



TYPICAL INSTALLATIONS OF FLEXIBLE DELINEATOR POSTS

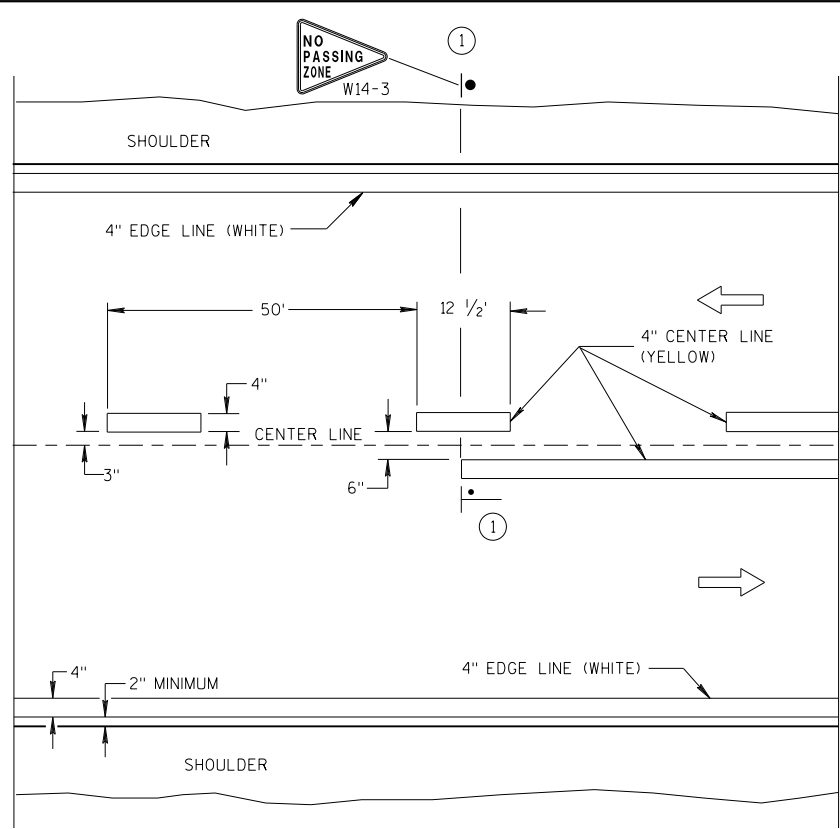


DELINEATOR POST WITH REFLECTIVE SHEETING

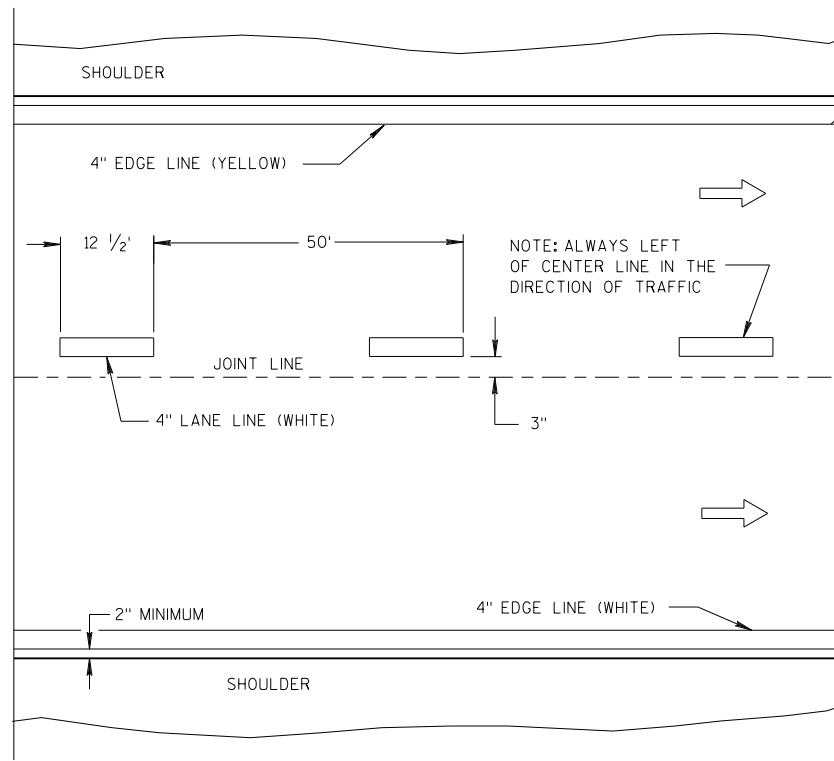
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
August 2019 /S/ Matthew Rauch
DATE STATE SIGNING AND MARKING ENGINEER

FHWA

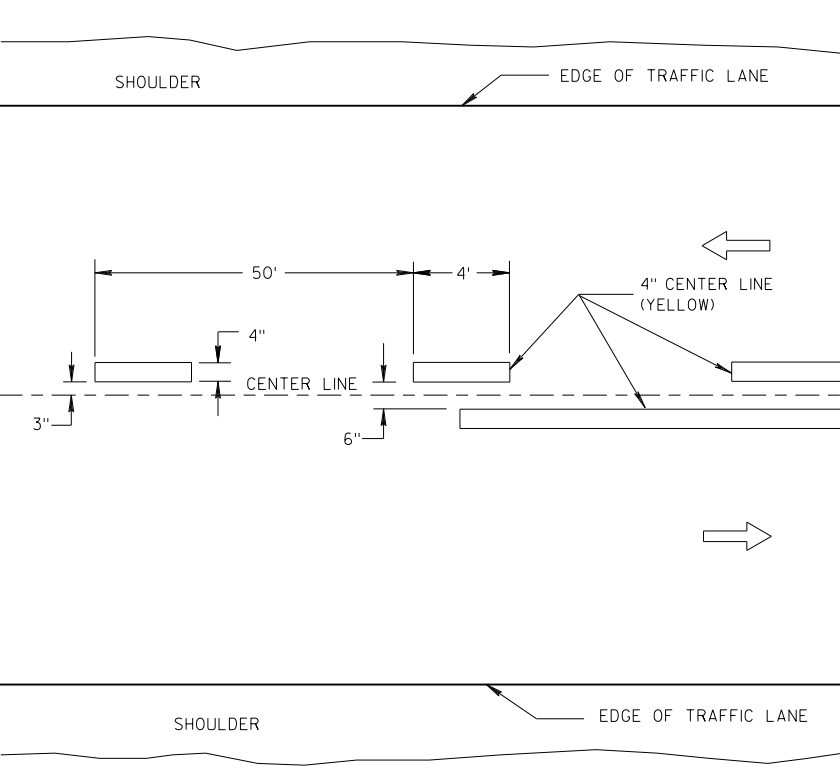


TWO WAY TRAFFIC

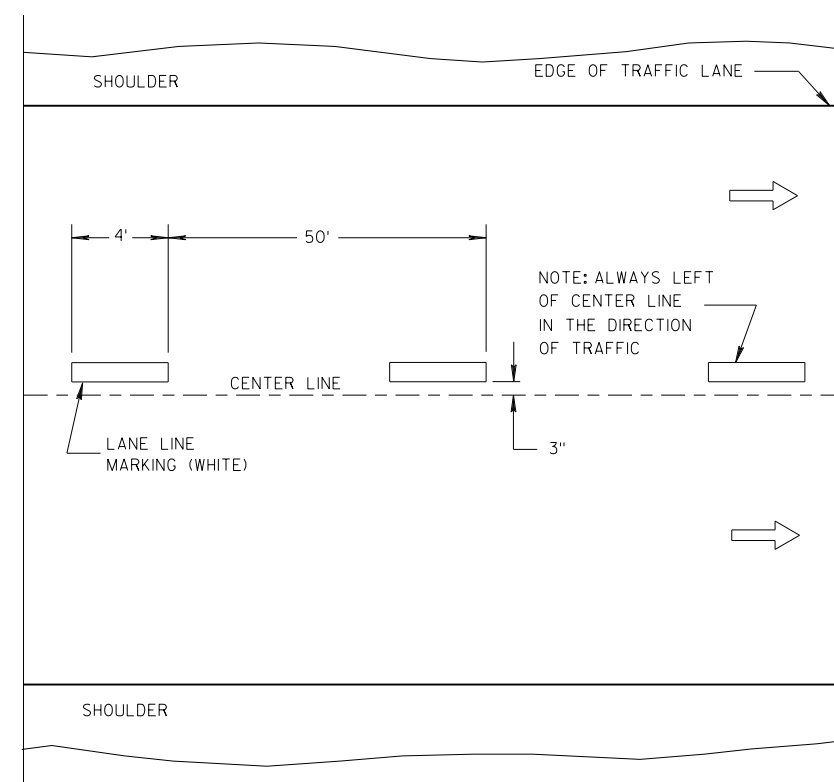


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

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.

NOTE

ARROW SYMBOL (→) SHOWS DIRECTION OF TRAVEL

LEGEND

- "T" MARKING
- POST MOUNTED SIGN

LONGITUDINAL MARKING (MAINLINE)

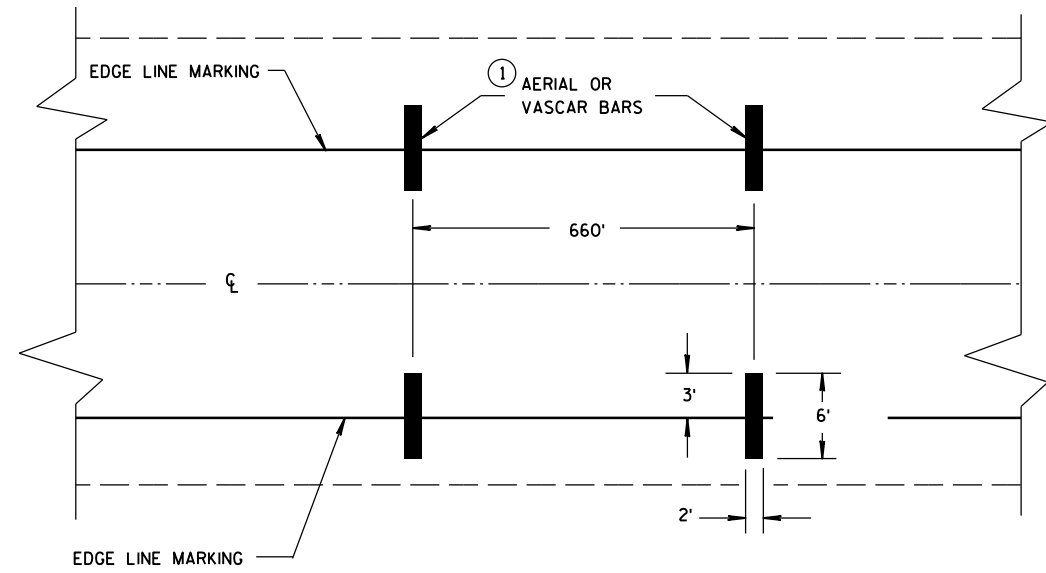
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE 7/2018 /S/ Matthew R. Rauch
STATE SIGNING AND MARKING ENGINEER
FHWA

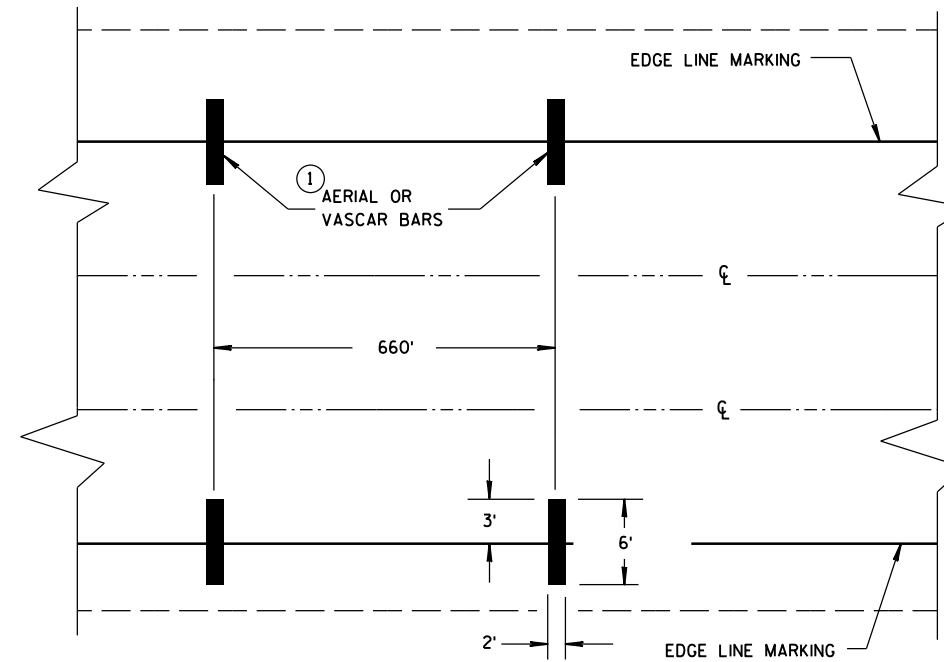
GENERAL NOTES

① PLACE TWO TO FIVE AERIAL OR VASCAR BARS AT 660 FOOT SPACING.

A CAR CAN BE PROVIDED BY THE WISCONSIN STATE PATROL FOR TRAFFIC CONTROL.



TYPICAL FOR TWO WAY OR ONE WAY TRAFFIC



TYPICAL FOR MULTILANE TRAFFIC

SPEED ENFORCEMENT ZONE WITH AERIAL OR VASCAR BARS

6

6

S.D.D. 15 C 14-3

S.D.D. 15 C 14-3

**AERIAL ENFORCEMENT BARS
PAVEMENT MARKING DETAILS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MARKING ENGINEER
FHWA

GENERAL NOTES

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 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS.

THIS LANE CLOSURE IS TYPICAL FOR CLOSING RIGHT LANE - REVERSE FOR CLOSING LEFT LANE.

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

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

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

CONSIDER ROADWAY GEOMETRICS WHEN LOCATING SIGNS AND ARROW BOARD SO THE DRIVER HAS A CLEAR VIEW OF THE ARROW BOARD AND LANE CLOSURE DRUMS.

FOR A LANE CLOSURE THAT IS IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, THE ADVANCED WARNING SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS.

REMOVE PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE 4 OR MORE CONTINUOUS DAYS AND NIGHTS.










WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

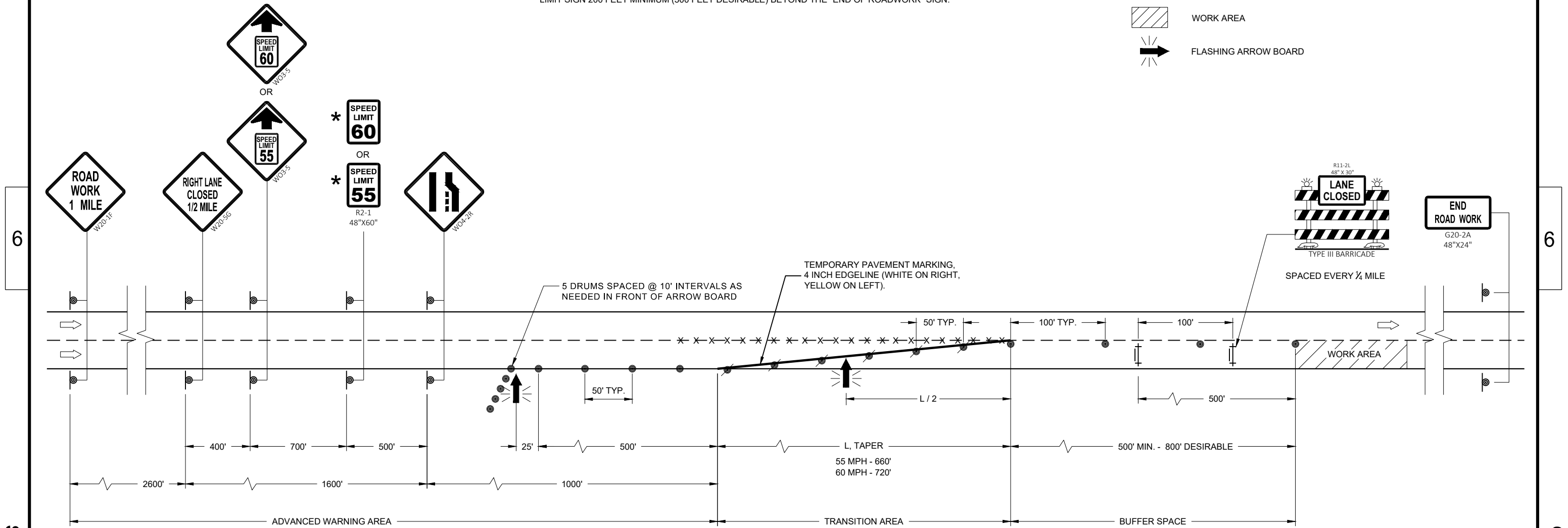
IF THE HORIZONTAL ALIGNMENT IS SUCH THAT A CURVE MAY REQUIRE ADDITIONAL DELINEATION, THE DEVICE SPACING MAY BE DECREASED TO 50 FEET.

ADJUSTMENTS IN BUFFER SPACE NEED TO BE INCORPORATED WHEN THE LANE CLOSURE OCCURS NEAR AN INTERCHANGE EXIT OR ENTRANCE RAMP OR INTERSECTION. THE LANE CLOSURE MUST TAKE PLACE FAR ENOUGH IN ADVANCE OF AN EXIT OR ENTRANCE RAMP TO STILL ALLOW FOR ADEQUATE BUFFER SPACE. THE MINIMUM LENGTH OF THE BUFFER SPACE BEFORE AN EXIT RAMP SHOULD BE ONE HALF THE LENGTH OF THE TRANSITION AREA. THE ENTRANCE RAMP SHOULD BE FOLLOWED BY THE ORIGINAL BUFFER SPACE LENGTH OF 800 FEET DESIRABLE PRIOR TO ANOTHER TRAFFIC CONTROL CHANGE SUCH AS A CROSSOVER MANEUVER.

* A SPEED LIMIT SIGN SHALL BE LOCATED 1500 FEET BEYOND THE END OF THE ACCELERATION LANE OF EACH ENTRANCE RAMP. PLACE A SPEED LIMIT SIGN A MINIMUM OF EVERY 3 MILES. INCLUDE A RESUME SPEED LIMIT SIGN 200 FEET MINIMUM (500 FEET DESIRABLE) BEYOND THE "END OF ROADWORK" SIGN.

LEGEND

-  TYPE III BARRICADE WITH ATTACHED SIGN
-  SIGN ON PERMANENT SUPPORT
-  TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
-  TRAFFIC CONTROL DRUM
-  TYPE "A" WARNING LIGHT (FLASHING)
-  REMOVING PAVEMENT MARKING
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  FLASHING ARROW BOARD



SDD 15D12 - 07b

SDD 15D12 - 07b

TRAFFIC CONTROL, LANE CLOSURE, SPEED REDUCTION	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED November 2018 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

LEGEND

-  SIGN ON PERMANENT SUPPORT
-  SIGN ON TEMPORARY SUPPORT
-  TRAFFIC CONTROL DRUM
-  TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
-  REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)
-  TYPE III BARRICADE WITH ATTACHED SIGN
-  DIRECTION OF TRAFFIC

GENERAL NOTES

THE INSTALLATIONS SHOWN ON THIS SHEET ARE TYPICAL EXAMPLES AND ARE NOT INTENDED TO REPRESENT ANY PARTICULAR RAMP. AT SPECIFIC FIELD LOCATIONS, SIMILAR INSTALLATIONS SHALL BE USED AND ADJUSTED TO THE GEOMETRICS OF THE RAMP AS COORDINATED WITH 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 TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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

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

SEE SEPARATE LANE CLOSURE DETAIL FOR TYPICAL SPACING OF TYPE III BARRICADES AND R11-2L "LANE CLOSED" SIGNS.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONSECUTIVE DAYS AND NIGHTS OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS. USE SUPPORTS THAT PROVIDE A MINIMUM OF 5 FEET FROM THE BOTTOM OF THE SIGN TO THE PAVEMENT.

IF INDICATED IN MISCELLANEOUS QUANTITIES, SUBSTITUTE FLEXIBLE TUBULAR MARKERS FOR DRUMS IN THE GORE BETWEEN THE ENTRANCE RAMP AND MAINLINE TRAFFIC.

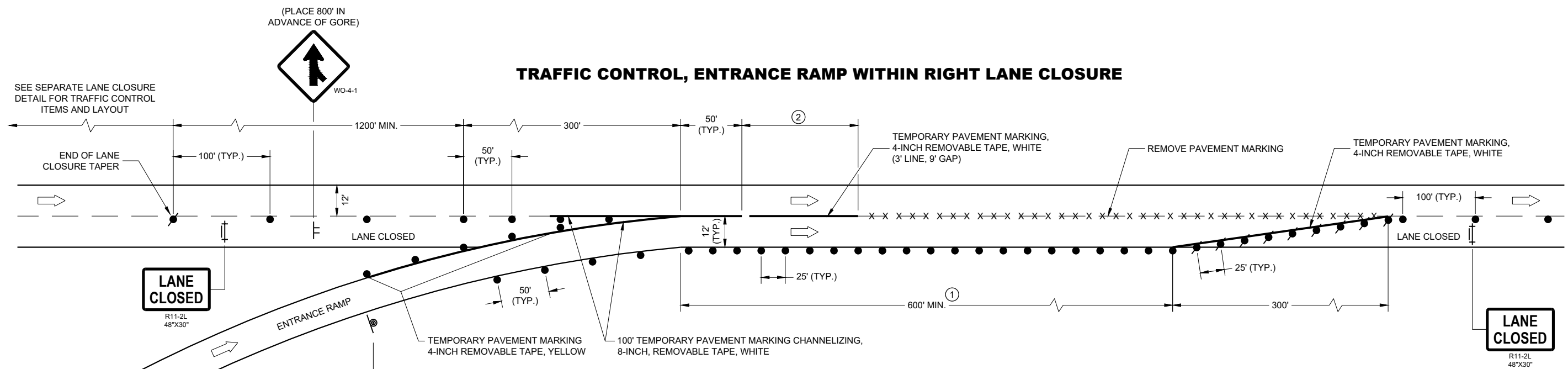
ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

REMOVE PAVEMENT MARKINGS AND PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF LANE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

- ① EXTEND THE LENGTH OF THE MERGE ARE IF THE ENTERING (DESIGN) SPEED IS LESS THAN 50MPH OR IF THE MAINLINE GRADE EXCEEDS ±2.2%.
- ② END TEMPORARY MARKING AT ½ THE LENGTH OF FULL WIDTH OF THE ACCELERATION LANE.

TRAFFIC CONTROL, ENTRANCE RAMP WITHIN RIGHT LANE CLOSURE



PARALLEL EXIT RAMP

6

6

SDD 15D15 - 05a

SDD 15D15 - 05a

**TRAFFIC CONTROL,
PARALLEL ENTRANCE RAMP
WITHIN LANE CLOSURE**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE May 2019 /S/ Andrew Heidtke
WORK ZONE ENGINEER

FHWA

LEGEND

- ⊙ SIGN ON PERMANENT SUPPORT
- ⊞ SIGN ON TEMPORARY SUPPORT
- TRAFFIC CONTROL DRUM
- ⦿ TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- ×-×-× REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)
- ⊞ TYPE III BARRICADE WITH ATTACHED SIGN
- ➡ DIRECTION OF TRAFFIC

GENERAL NOTES

THE INSTALLATIONS SHOWN ON THIS SHEET ARE TYPICAL EXAMPLES AND ARE NOT INTENDED TO REPRESENT ANY PARTICULAR RAMP. AT SPECIFIC FIELD LOCATIONS, SIMILAR INSTALLATIONS SHALL BE USED AND ADJUSTED TO THE GEOMETRICS OF THE RAMP AS COORDINATED WITH 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 TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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

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

SEE SEPARATE LANE CLOSURE DETAIL FOR TYPICAL SPACING OF TYPE III BARRICADES AND R11-2L "LANE CLOSED" SIGNS.

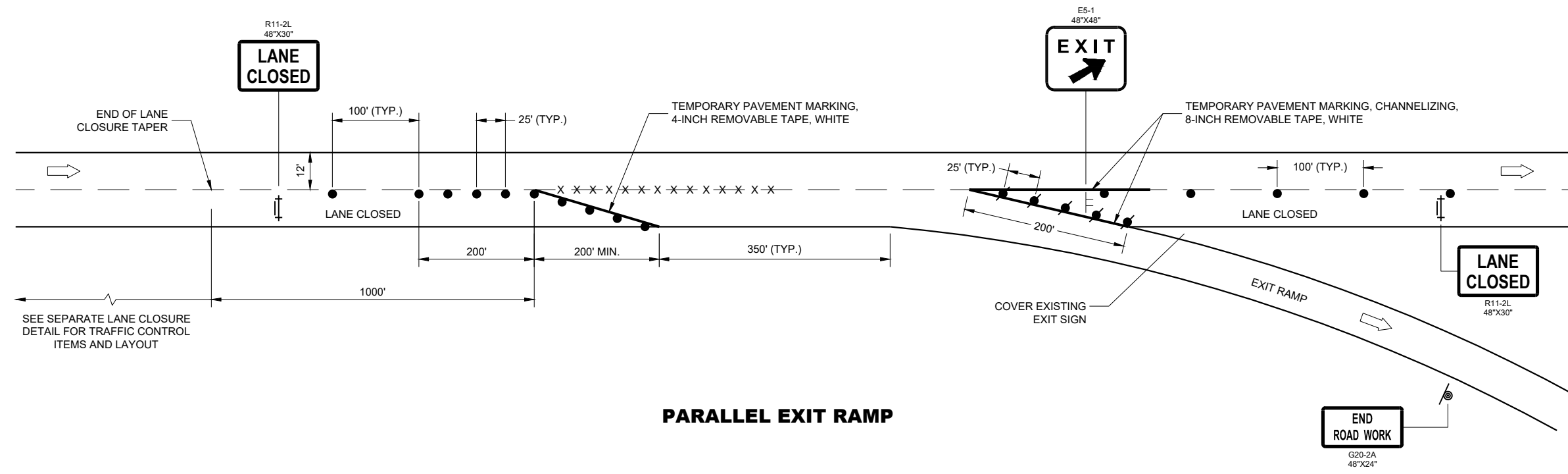
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONSECUTIVE DAYS AND NIGHTS OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS.

IF INDICATED IN MISCELLANEOUS QUANTITIES, SUBSTITUTE FLEXIBLE TUBULAR MARKERS FOR DRUMS IN THE GORE BETWEEN THE EXIT RAMP AND MAINLINE TRAFFIC.

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

REMOVE PAVEMENT MARKINGS AND PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF LANE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.



PARALLEL EXIT RAMP

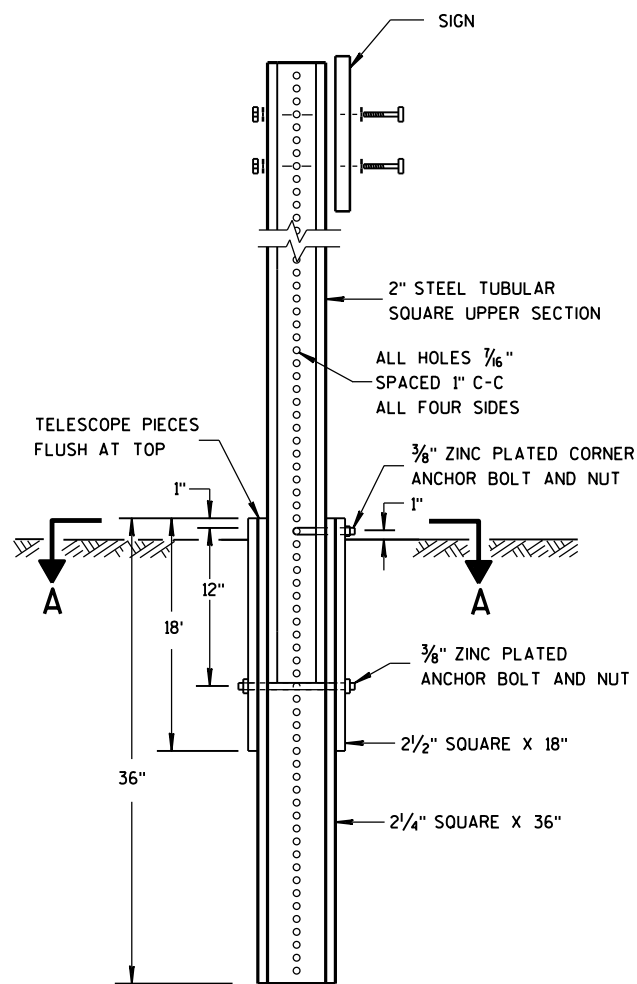
6

6

SDD 15D15 - 05e

SDD 15D15 - 05e

TRAFFIC CONTROL, PARALLEL EXIT RAMP WITHIN LANE CLOSURE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2019 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	



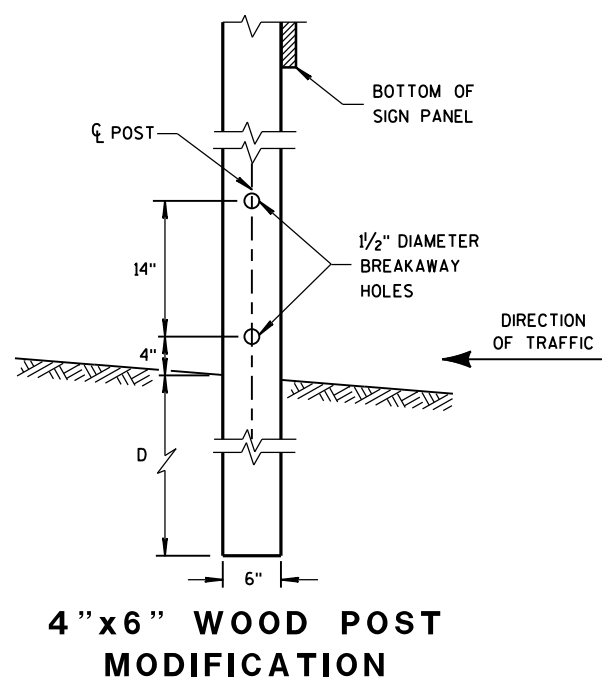
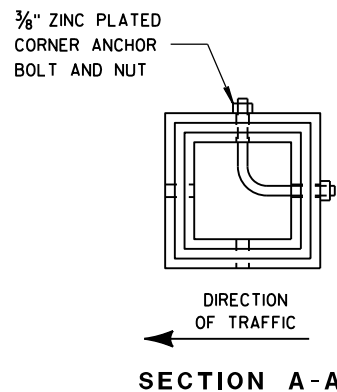
DETAIL OF TUBULAR STEEL SIGN POST

TUBULAR STEEL POSTS

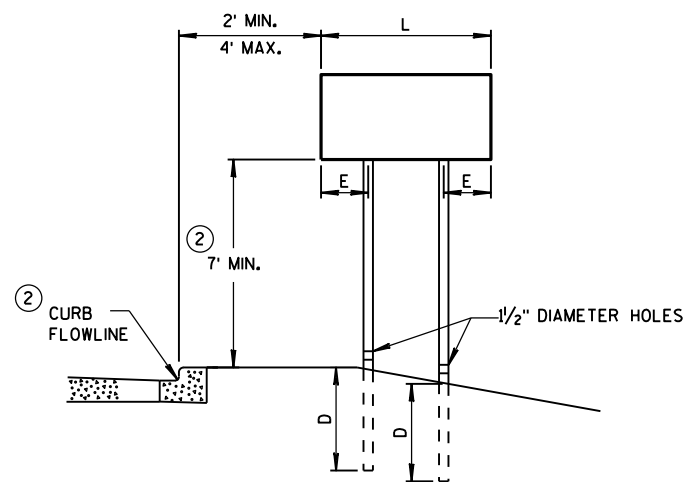
AREA OF SIGN INSTALLATION (SQ. FT.)	NUMBER OF REQUIRED TUBULAR STEEL POSTS
9 OR LESS	1
GREATER THAN 9 LESS THAN OR EQUAL TO 18	2
GREATER THAN 18 LESS THAN OR EQUAL TO 27	3

SIGNS WIDER THAN 3 FEET OR LARGER THAN 9 SQ. FT. SHALL BE MOUNTED ON MULTIPLE POSTS (SEE ABOVE TABLE).

SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED ON TUBULAR STEEL POSTS.



4" X 6" WOOD POST MODIFICATION

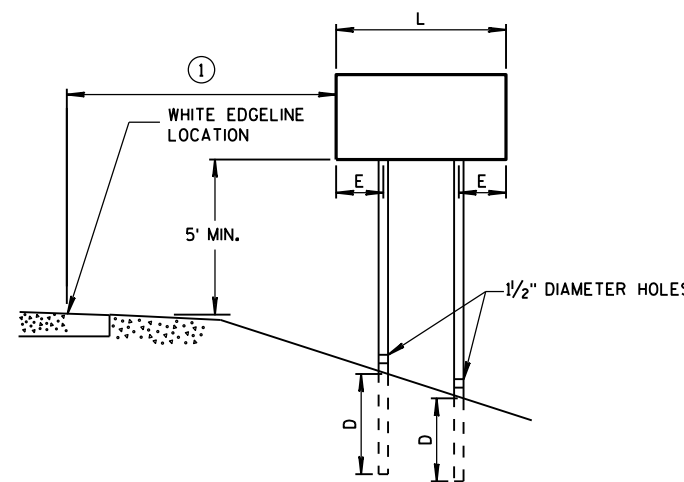


URBAN AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST EMBEDMENT DEPTH

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



RURAL AREA

4" X 6" WOOD POST

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

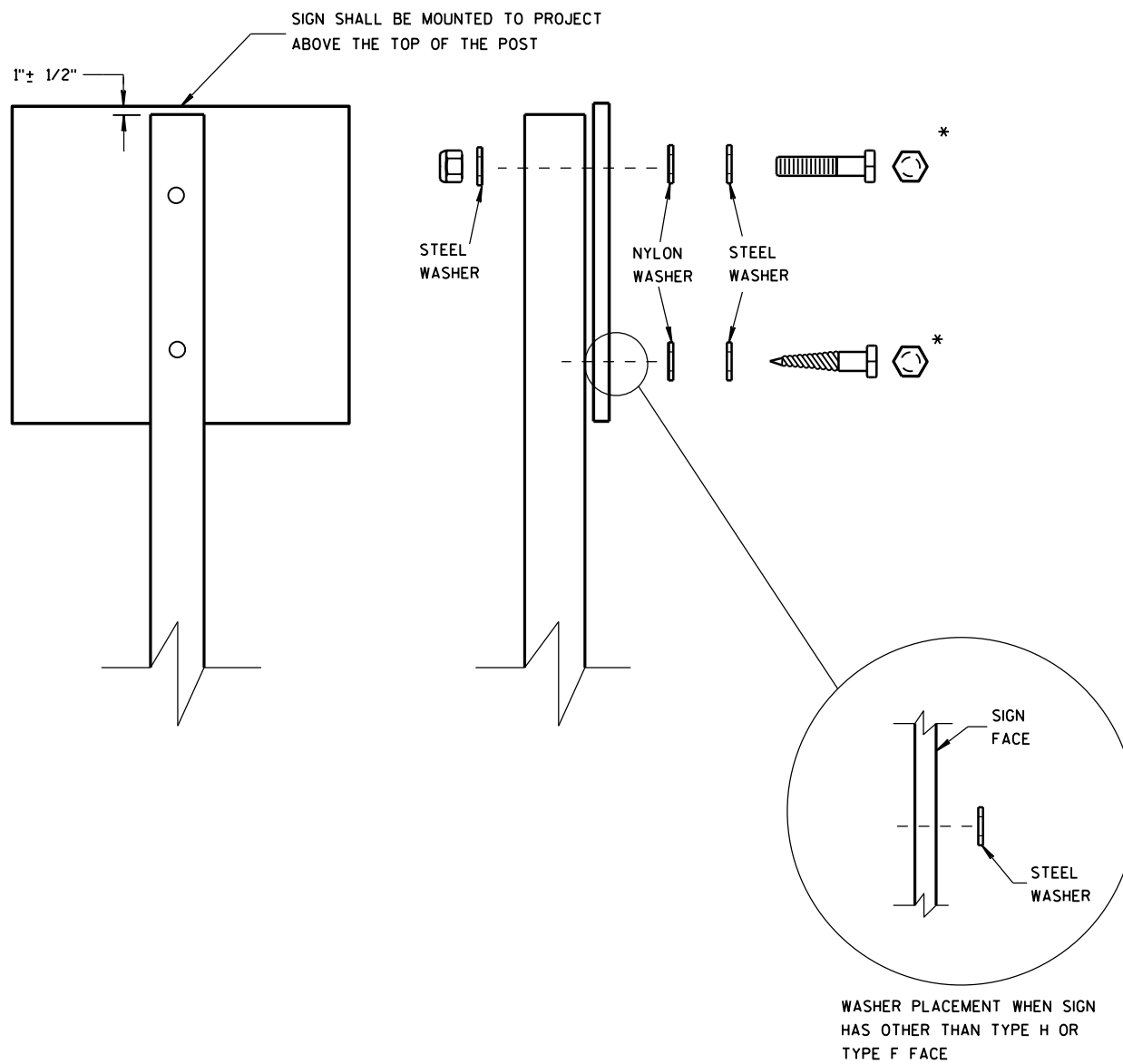
SEE NOTE ③

GENERAL NOTES

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

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



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

A. HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: A 153, CLASS D, OR SC 3

B. ELECTRO-GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: B 633, TYPE III, SC 3

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

WOOD POSTS (4" x 4" or 4" x 6")

LAG SCREWS - 3/8" x 3"

MACHINE BOLTS - 5/16" x 6-1/2" OR 7" LENGTH W/ NUTS

SQUARE STEEL POSTS (2" x 2")

MACHINE BOLTS - 3/8" x 3-1/4" LENGTH W/ NUTS

RIVETS - 5/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

WASHERS (ALL POSTS) -

1-1/4" O.D. x 3/8" I.D. x 1/16" STEEL

1-1/4" O.D. x 3/8" I.D. x .080 NYLON FOR ALL TYPE H SIGNS

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

ATTACHMENT OF SIGNS TO POSTS

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

APPROVED

June 2017

DATE









FHWA

/s/ Andrew Heidtke

WORK ZONE ENGINEER

GENERAL NOTES

LEGEND

-  TYPE III BARRICADE WITH ATTACHED SIGN
-  SIGN ON PERMANENT SUPPORT
-  TRAFFIC CONTROL DRUM
-  TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
-  TYPE "A" WARNING LIGHT (FLASHING)
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)

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 FEET DESIREABLE) DISTANCE TO EXISTING SIGNS.

THIS LANE CLOSURE IS TYPICAL FOR SHIFTING RIGHT LANE - REVERSE FOR SHIFTING LEFT LANE.

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 TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER. NO WARNING LIGHTS SHALL BE WORKING ON "COVERED" OR "DOWNED" SIGNS.

CONSIDER GEOMETRICS WHEN LOCATING SIGNS AND ARROW BOARD SO THE DRIVER HAS A CLEAR VIEW OF THE ARROW BOARD AND LANE CLOSURE DRUMS FOR A MINIMUM 1500 FEET IN FRONT OF DRUMS.

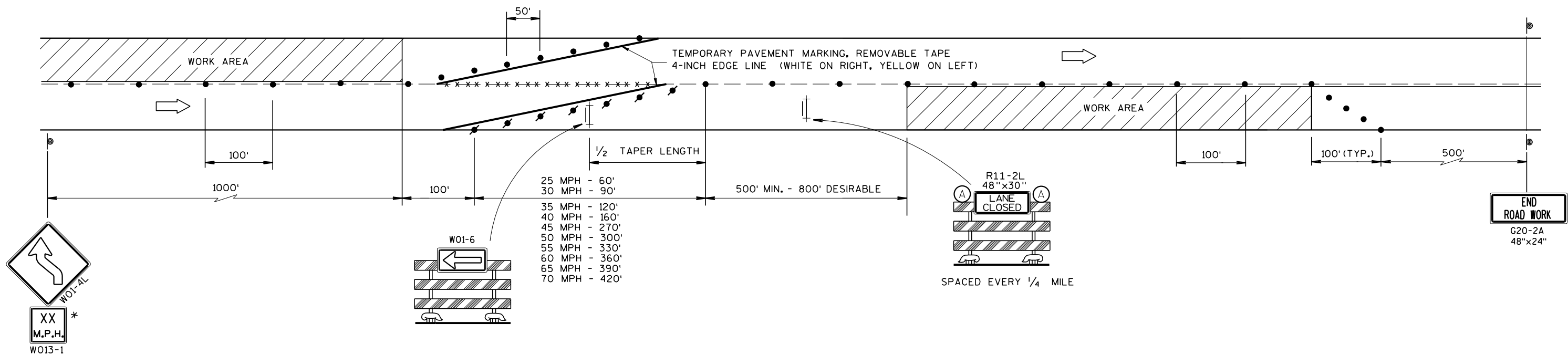
FOR A LANE CLOSURE THAT IS IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, THE ADVANCED WARNING SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS.

REMOVE PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE FOR LONGER THAN 4 OR MORE DAYS AND NIGHTS.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

IF THE HORIZONTAL ALIGNMENT IS SUCH THAT A CURVE MAY REQUIRE ADDITIONAL DELINEATION, THE DEVICE SPACING MAY BE DECREASED TO 50 FEET.

ADJUSTMENTS IN BUFFER SPACE NEED TO BE INCORPORATED WHEN THE LANE CLOSURE OCCURS NEAR AN INTERCHANGE EXIT OR ENTRANCE RAMP. THE LANE CLOSURE MUST TAKE PLACE FAR ENOUGH IN ADVANCE OF AN EXIT OR ENTRANCE RAMP TO STILL ALLOW FOR ADEQUATE BUFFER SPACE. THE MINIMUM LENGTH OF THE BUFFER SPACE BEFORE AN EXIT RAMP SHOULD BE 1/2 THE LENGTH OF THE TRANSITION AREA. THE ENTRANCE RAMP SHOULD BE FOLLOWED BY THE ORIGINAL BUFFER SPACE LENGTH OF 800 FEET DESIRABLE PRIOR TO ANOTHER TRAFFIC CONTROL CHANGE SUCH AS A CROSSOVER MANEUVER.



LANE SHIFT MULTI-LANE DIVIDED OR ONE WAY ROAD

**TRAFFIC CONTROL,
LANE SHIFT, MULTI-LANE
DIVIDED OR ONE WAY ROAD**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA

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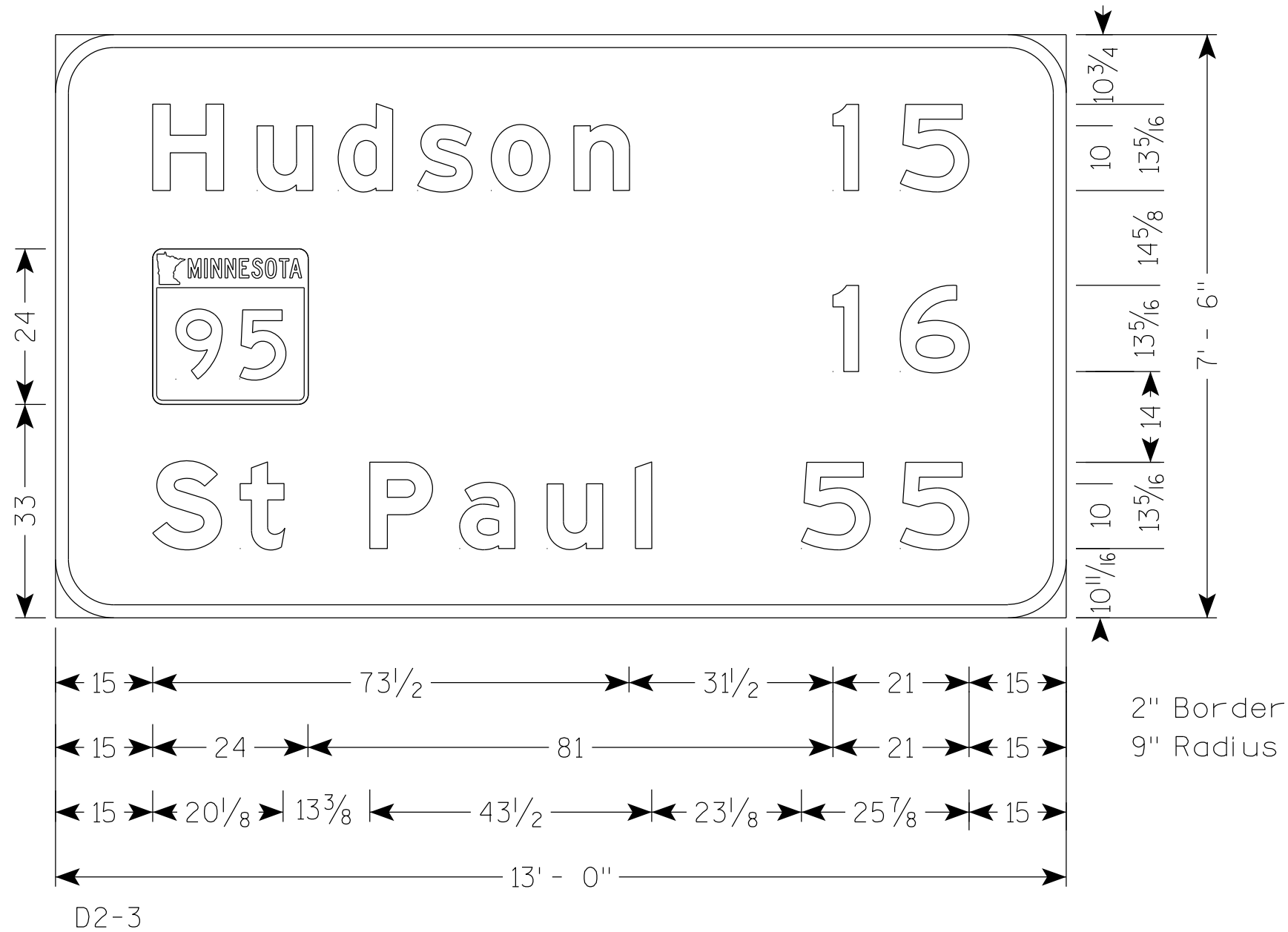
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S.D.D. 15 D 40-1

S.D.D. 15 D 40-1

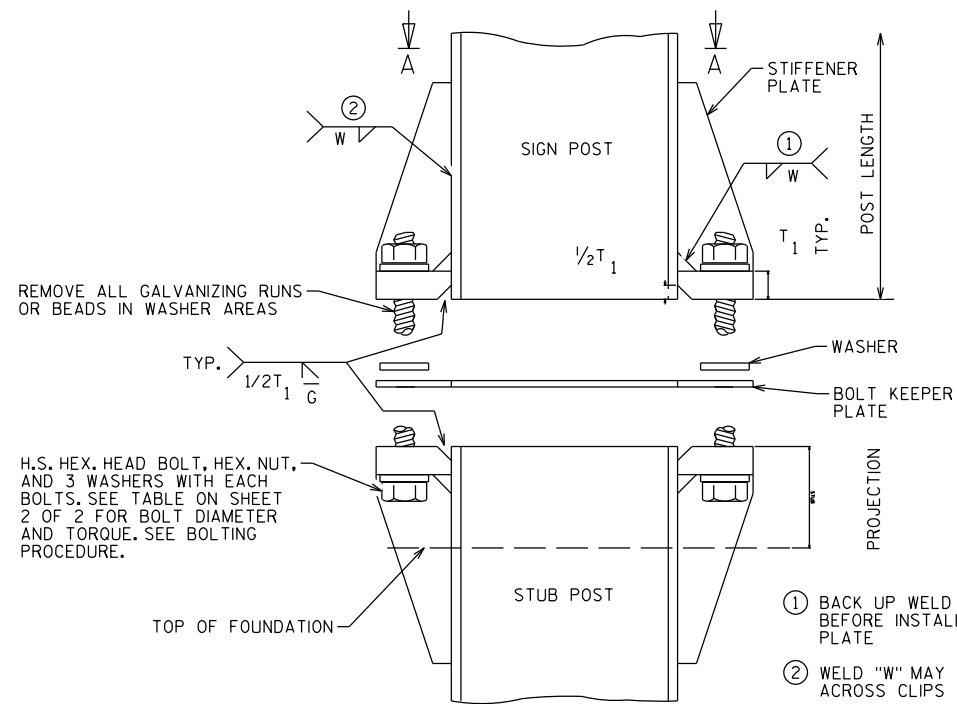
NOTES

1. All Signs are Type I - Type SH Reflective
2. Color:
Background - Green
Message - White
3. Message Series - E Modified except all cap Words are Series E



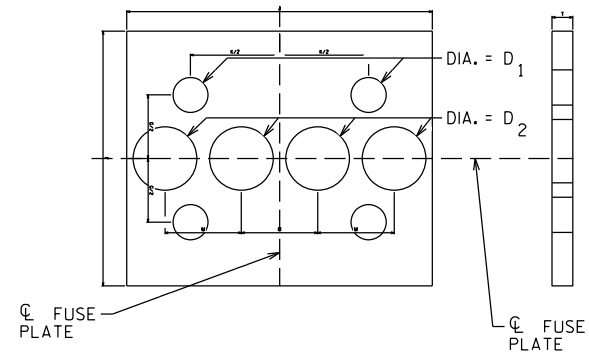
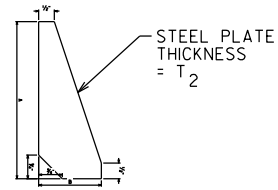
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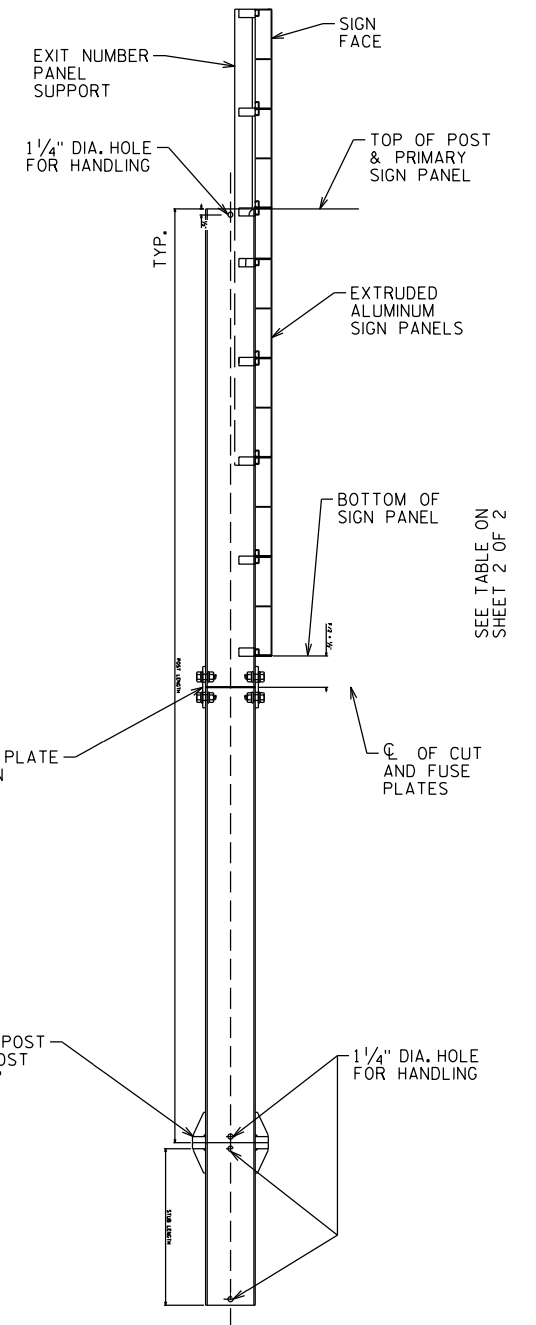
SIGN POST & STUB POST ELEVATION

STIFFENER PLATE DETAIL
(REFER TO TABLE ON SHEET 2 OF 2 FOR DIMENSIONS)

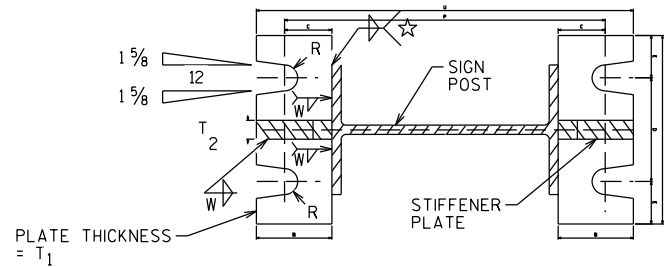


PERFORATED FUSE PLATE DETAIL

USE H.S. HEX HEAD BOLTS, HEX HEAD NUT AND FLAT WASHER UNDER NUT. ALL HOLES SHALL BE DRILLED, SUB-PUNCHED AND REAMED. ALL PLATE CUTS SHALL PREFERABLY BE SAW CUTS. HOWEVER, FLAME CUTTING WILL BE PERMITTED PROVIDED ALL EDGES ARE GROUND. METAL PROJECTING BEYOND THE PLANE OF THE PLATE FACE WILL NOT BE PERMITTED. STEEL FUSE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36, ASTM A572 GRADE 50 OR ASTM A588 MAY BE SUBSTITUTED FOR A36 AT THE OPTION OF THE FABRICATOR. MILL TEST REPORTS SHALL BE SUBMITTED FOR FUSE PLATES. STEEL USED SHALL HAVE AN ULTIMATE TENSILE STRENGTH NOT TO EXCEED 80 KSI.

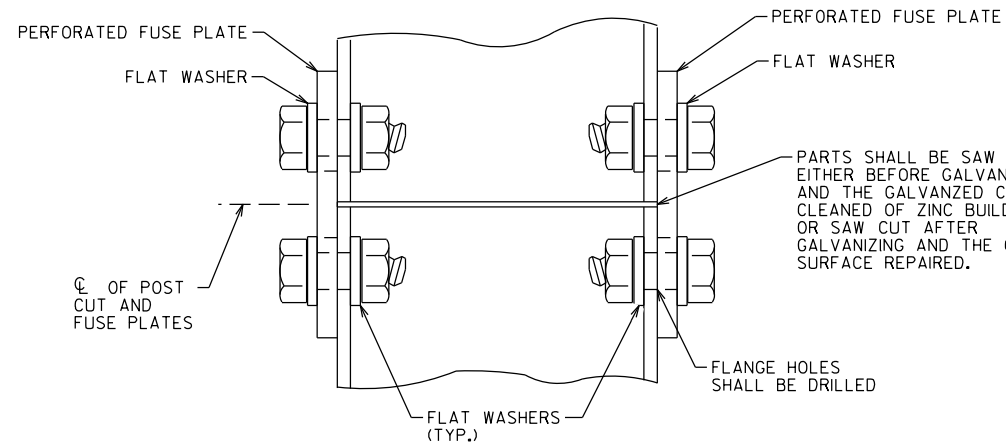


POST DETAIL

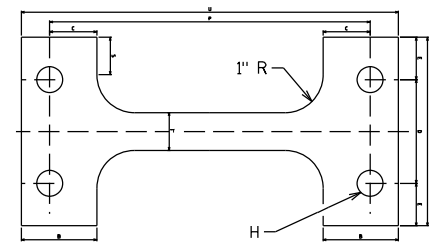


SECTION A-A

☆ WELD THICKNESS = FLANGE THICKNESS - 1/16"

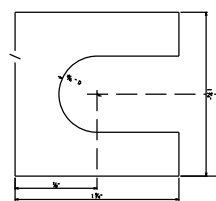


FUSE PLATE CONNECTION DETAIL



BOLT KEEPER PLATE DETAIL
30 GA GALVANIZED SHEET STEEL

H = BOLT DIA. + 1/8"



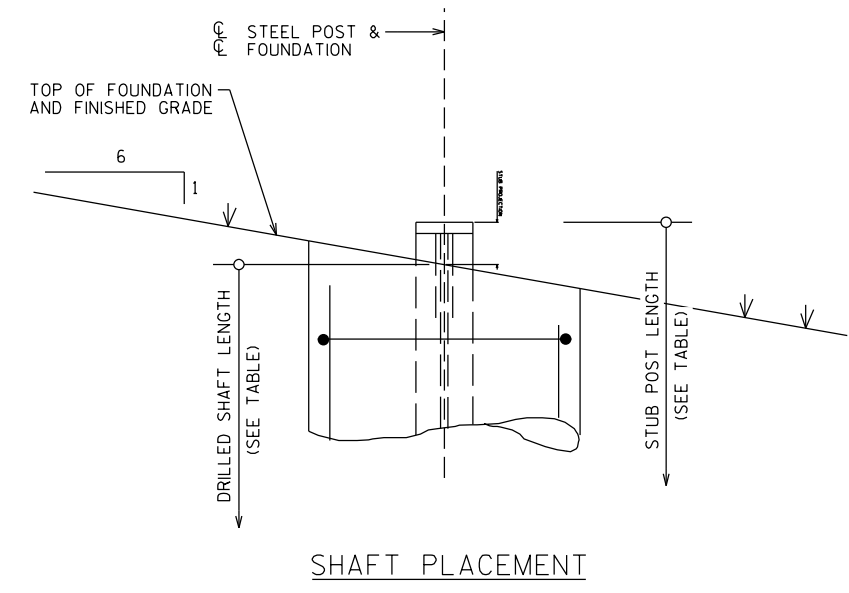
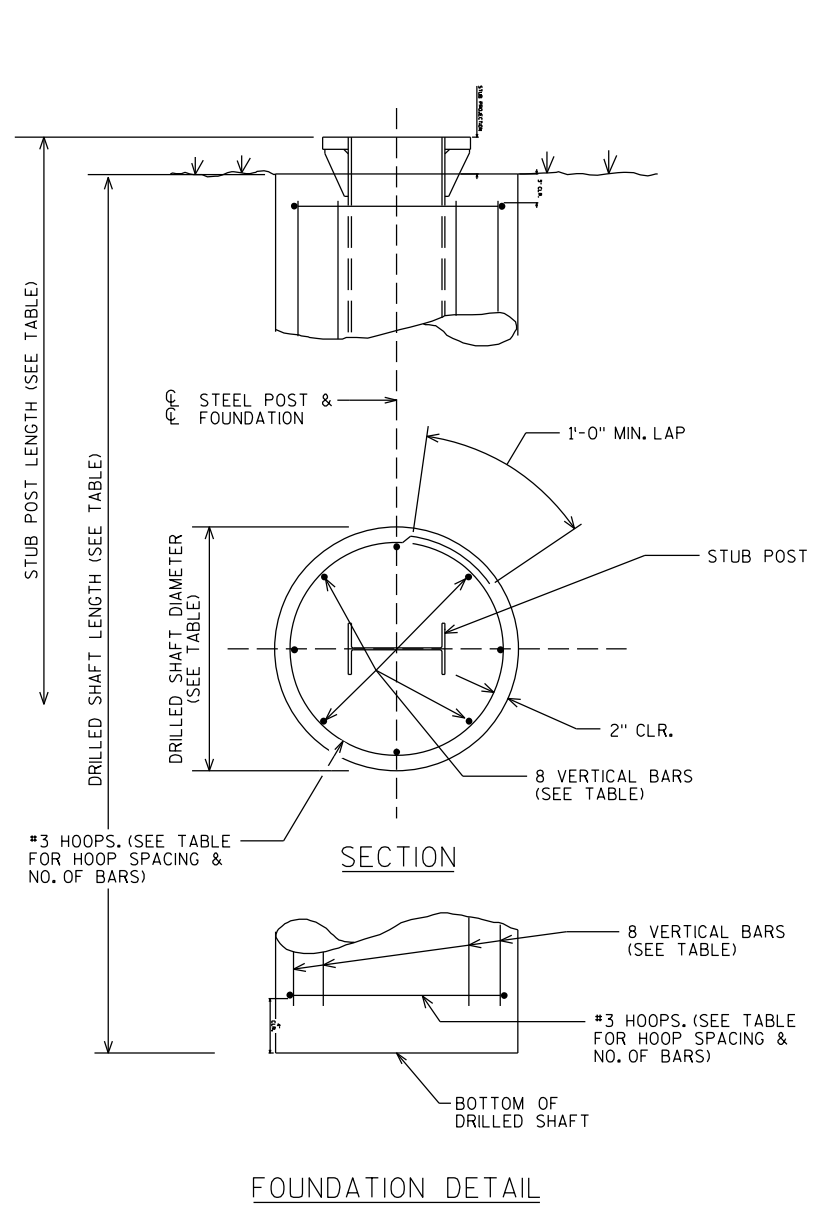
SHIM DETAIL

FURNISH TWO .012"± THICK AND TWO .032"± THICK SHIMS PER POST. SHIMS SHALL BE FABRICATED FROM BRASS SHIM STOCK OR STRIP CONFORMING TO ASTM B36.

BOLTING PROCEDURE FOR BASE CONNECTION

1. ASSEMBLE SIGN POST, BOLT KEEPER PLATE, AND STUB POST WITH BOLTS AND THREE FLAT WASHERS PER BOLT AS SHOWN.
2. SHIM AS REQUIRED TO PLUMB POST.
3. PRIOR TO BOLT TIGHTENING, LUBRICATE BASE CONNECTION BOLTS WITH BEESWAX OR OTHER HIGH-WAX LUBRICANT.
4. TIGHTEN ALL BOLTS THE MAXIMUM POSSIBLE WITH A 12" OR 15" WRENCH TO BED WASHERS & SHIMS AND TO CLEAN BOLT THREADS.
5. LOOSEN EACH BOLT IN TURN AND RETIGHTEN IN A SYSTEMATIC ORDER TO THE PERSCRIBED TORQUE. (SEE TABLE FOR PERSCRIBED TORQUE). DO NOT OVER-TIGHTEN.
6. BURR THREADS AT JUNCTION WITH NUT USING A CENTER PUNCH TO PREVENT NUT LOOSENING.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE BTO TYPE I SIGNS			
DRAWN BY		PLANS CK'D.	
CONNECTION & FOUNDATION DETAILS 1 OF 2			SHEET A3-1.18



FOUNDATION DATA TABLE

POST SHAPE	STUB LENGTH	STUB PROJECTION	DRILLED SHAFT DIAMETER	DRILLED SHAFT LENGTH	VERTICAL BARS		HOOPS		CONCRETE VOLUME	TOTAL REINF. WEIGHT
					SIZE	LENGTH	MAX SPA.	NO.		
W6X15	2'-6"	3"	24"	6'-0"	#5	5'-5"	10"	8	0.7 CY	64 LB
W8X18	2'-6"	3"	24"	7'-0"	#6	6'-5"	12"	8	0.8 CY	96 LB
W8X21	3'-0"	2 1/2"	24"	7'-6"	#6	6'-11"	12"	8	0.9 CY	102 LB
W10X22	3'-0"	2 1/2"	24"	8'-0"	#7	7'-5"	12"	9	1.0 CY	143 LB
W12X26	3'-0"	2 1/2"	24"	9'-0"	#7	8'-5"	12"	10	1.1 CY	161 LB

◆ QUANTITIES SHOWN ARE FOR ONE DRILLED SHAFT

BASE CONNECTION & FUSE PLATE DATA TABLE

POST SHAPE	WEIGHT PER FOOT	BOLT SIZE & TORQUE	BASE CONNECTION DATA										BOLT KEEPER PLATE DATA			PERFORATED FUSE PLATE DATA										BOLT DIA.	WGT. EA. LBS	BOLT LENGTH	V
			A	B	C	D	E	T1	T2	W	R	P	S	U	F	G	J	K	M	D1	D2	T3							
W6X15	15 LB	5/8" DIA. X 2 3/4"	5"	2"	1 1/4"	2 3/4"	1 1/8"	3/4"	1/2"	1/4"	1 1/2"	8 1/2"	1"	10"	5"	2 1/2"	6"	3 1/2"	1 1/2"	1 1/8"	1 1/4"	3/8"	5/8"	2.4	2 1/4"	61.5 LB			
W8X18	18 LB	36 TO 38 FT-LB	5"	2"	1 1/4"	2 3/4"	1 1/8"	3/4"	1/2"	1/4"	1 1/2"	10 5/8"	1"	12 1/8"	5"	2 1/2"	5 1/4"	2 3/4"	1 1/4"	1 1/8"	1 1/8"	3/8"	5/8"	2.0	2 1/4"	68.5 LB			
W8X21	21 LB	3/4" DIA. X 3 1/2"	6"	2 1/4"	1 3/8"	3 1/2"	1 1/4"	1"	3/4"	5/8"	1 1/2"	11"	1 1/2"	12 3/4"	5 1/2"	2 1/2"	5 1/4"	2 3/4"	1 1/4"	1 3/8"	1"	1/2"	3/4"	3.1	2 1/4"	98.5 LB			
W10X22	22 LB	62 TO 63 FT-LB	6"	2 1/4"	1 3/8"	3 1/2"	1 1/4"	1"	3/4"	5/8"	1 1/2"	12 7/8"	1 1/2"	14 5/8"	6"	3"	5 3/4"	2 3/4"	1 3/8"	1 3/8"	1 1/8"	1/2"	3/4"	3.9	2 1/4"	103.1 LB			
W12X26	26 LB	62 TO 63 FT-LB	6"	2 1/4"	1 3/8"	3 1/2"	1 1/4"	1"	3/4"	5/8"	1 1/2"	15"	1 1/2"	16 3/4"	6"	3"	6 1/2"	3 1/2"	1 5/8"	1 5/8"	1 1/2"	3/4"	4.5	2 1/4"	116.4 LB				

■ TOTAL STRUCTURAL CARBON STEEL WEIGHT FOR ONE POST = V + (POST LENGTH X POST WEIGHT PER FOOT)
 "V" INCLUDES STUB POST, BASE PLATES, STIFFENER PLATES, PERFORATED FUSE PLATES, BOLTS, NUTS, AND WASHERS.

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED
 ALL POST, POST STUBS & ATTACHMENTS SHALL BE ASTM A709 GRADE 50, GALVANIZED IN ACCORDANCE WITH ASTM A123.
 THE POST, BASE PLATES, UPPER SIX INCHES OF STUB POST, FLANGE SPLICE PLATE AND FUSE PLATE SHALL BE GALVANIZED AFTER FABRICATION.
 H.S. BOLTS, WASHERS, & NUTS SHALL BE A325 GALVANIZED WHEN POSTS, POST STUBS AND ATTACHMENTS ARE A709 GRADE 50 AND GALVANIZED.

MATERIAL PROPERTIES

CONCRETE MASONRY F'C = 3,500 P.S.I.
 BAR STEEL REINFORCEMENT (UNCOATED), GRADE 60 F_y = 60,000 P.S.I.

DESIGN DATA

DESIGN CONFORMS TO AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS 1ST EDITION 2015 (WITH 2017 & 2018 INTERIM REVISIONS).
 DEAD LOADS (DL):
 - STEEL POST SELF WEIGHT
 - SIGN PANEL WEIGHT = 3 PSF
 WIND LOADS (WL):
 WIND LOADS WERE APPLIED TO THE PROJECTED AREAS OF THE SIGN PANELS AND THE STEEL SIGN POSTS.
 - BASIC WIND SPEED = 76 MPH
 - MEAN RECURRENT INTERVAL (MRI) = 10 YEARS
 - HEIGHT & EXPOSURE FACTOR = 1.00
 - DIRECTIONALITY FACTOR = 0.85
 - GUST EFFECT FACTOR = 1.14

WIND LOAD CASES:
 - WL CASE 1: 1.0 X NORMAL WIND
 - WL CASE 2: 1.0 X TRANSVERSE WIND
 - WL CASE 3: 0.75 X NORMAL WIND + 0.75 X TRANSVERSE WIND

LOAD COMBINATIONS:

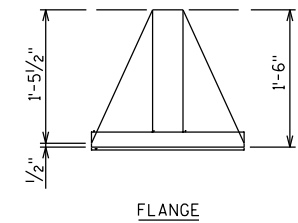
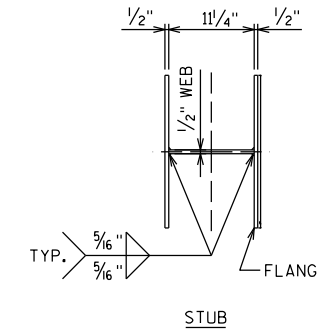
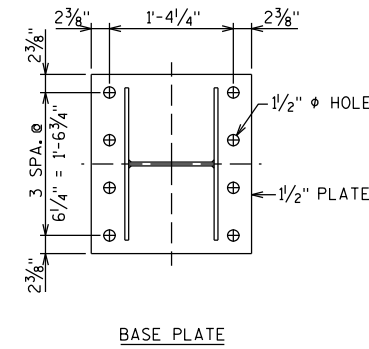
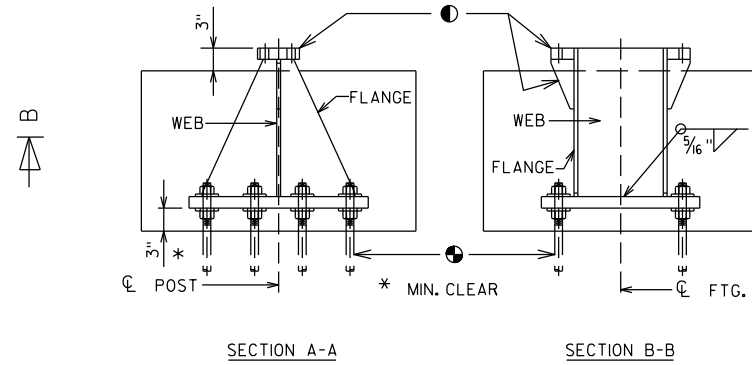
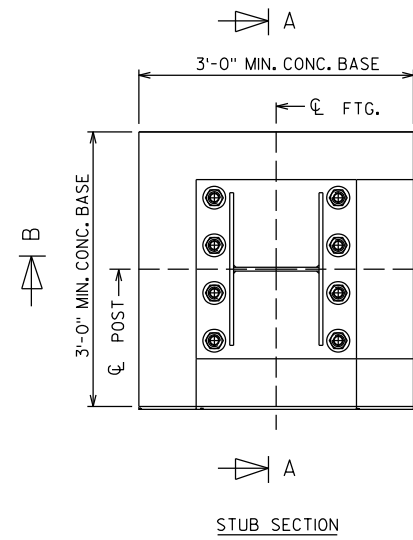
LOAD COMBINATION	TYPE	DL FACTOR	WL FACTOR
STRENGTH I	GRAVITY	1.25	-
EXTREME I	WIND	1.10	1.0
		0.9	1.0
SERVICE I	DEFLECTION	1.0	1.0

FOUNDATION DESIGN DATA

THE FOUNDATION DESIGN ASSUMED COHESIONLESS SOILS (LOOSE SAND) WITH THE FOLLOWING PROPERTIES:
 - SOIL UNIT WEIGHT = 100 PCF
 - ANGLE OF INTERNAL FRICTION = 30 DEGREES
 - SOIL MODULUS PARAMETER = 25 LB/IN³

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE BTO TYPE 1 SIGNS			
DRAWN BY		PLANS CK'D.	
CONNECTION & FOUNDATION DETAILS 2 OF 2			SHEET A3-1.18

STUB AND ADHESIVE ANCHOR DETAILS



- SEE BASE CONNECTION DETAILS ON "CONNECTIONS & FOUNDATION DETAILS" SHEETS.
- ADHESIVE ANCHORS 1/4"-INCHES, ALLOWABLE PULL OUT CAPACITY = 15 KIPS. EMBED 1'-3" INTO ROCK.

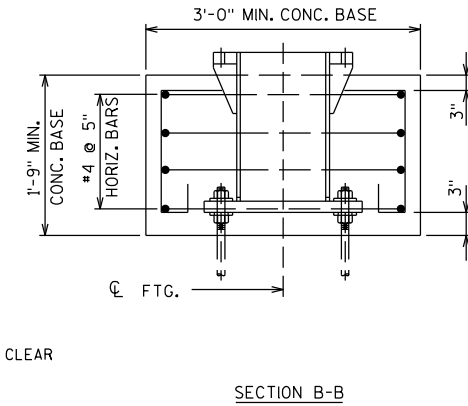
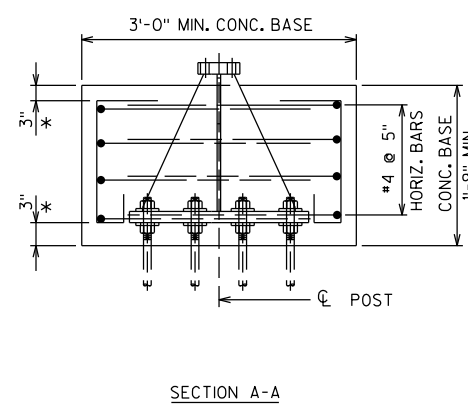
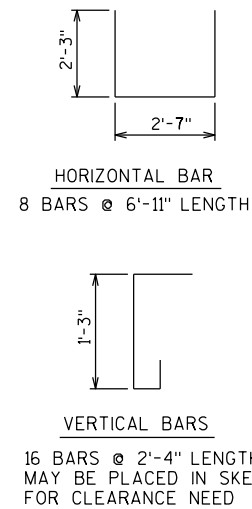
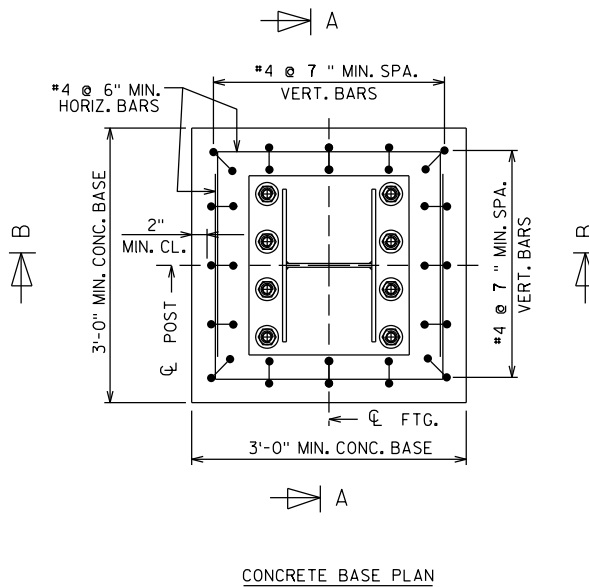
GENERAL NOTES:

QUANTITIES PER BASE:
 REINFORCING STEEL = 62 LB
 CONCRETE = 0.6 CY
 STRUCTURAL STEEL = 335 LB

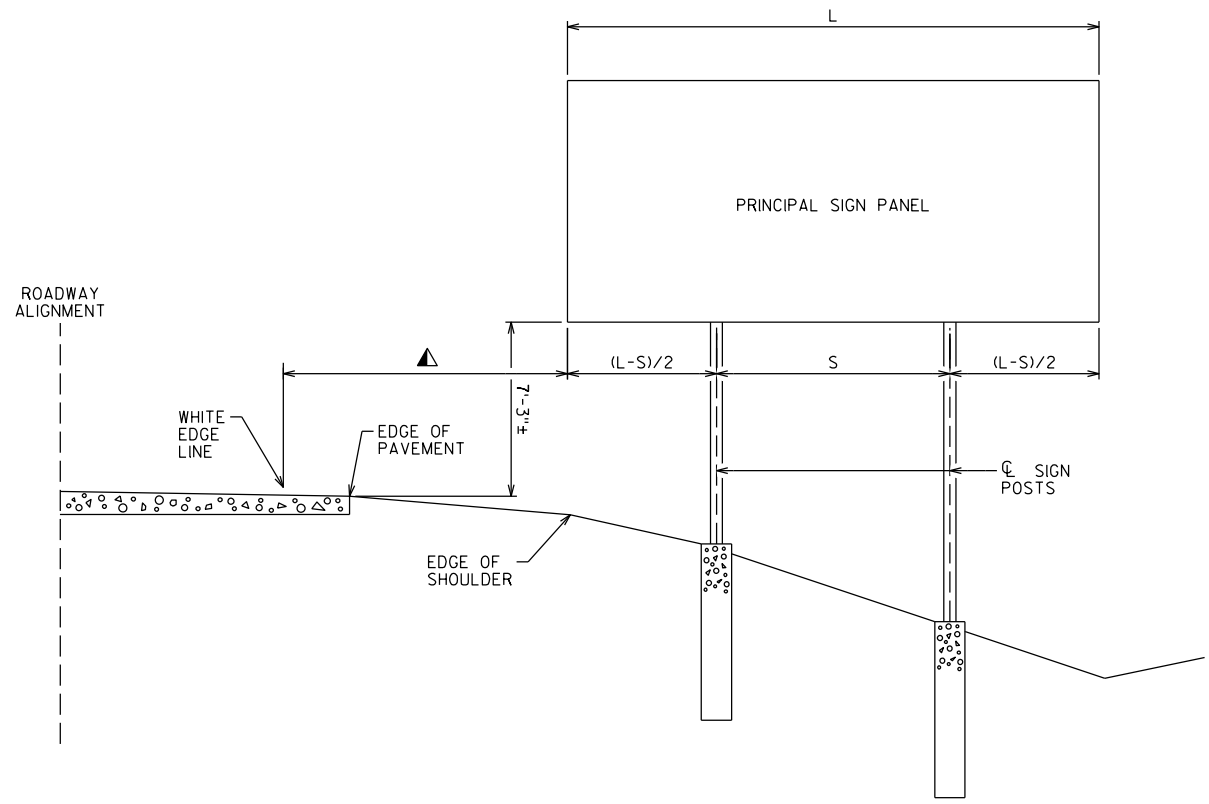
ALL MATERIALS, EXCEPT FOR ANCHOR ROD, NUTS, AND WASHERS, SHALL BE ASTM A709 GRADE 50. ALL MATERIALS TO BE GALVANIZED AFTER FABRICATION.

IF ROCK IS ENCOUNTERED PRIOR TO REACHING THE MINIMUM DRILLED SHAFT EMBEDMENT DEPTH DEFINED ON THE FOUNDATION DATA TABLE OF THE "CONNECTIONS & FOUNDATION DETAILS 2 OF 2" SHEET, THE CONTRACTOR SHALL INSTALL A TEST ADHESIVE ANCHOR AND DETERMINE THE PULL-OUT CAPACITY. IF THE FIELD TEST RESULTS IN A PULL-OUT CAPACITY GREATER THAN OR EQUAL TO 15 KIPS, THE CONTRACTOR MAY INSTALL THE ALTERNATE CONCRETE BASE AND BREAK-AWAY STUB PER THE DETAILS ON THIS SHEET.

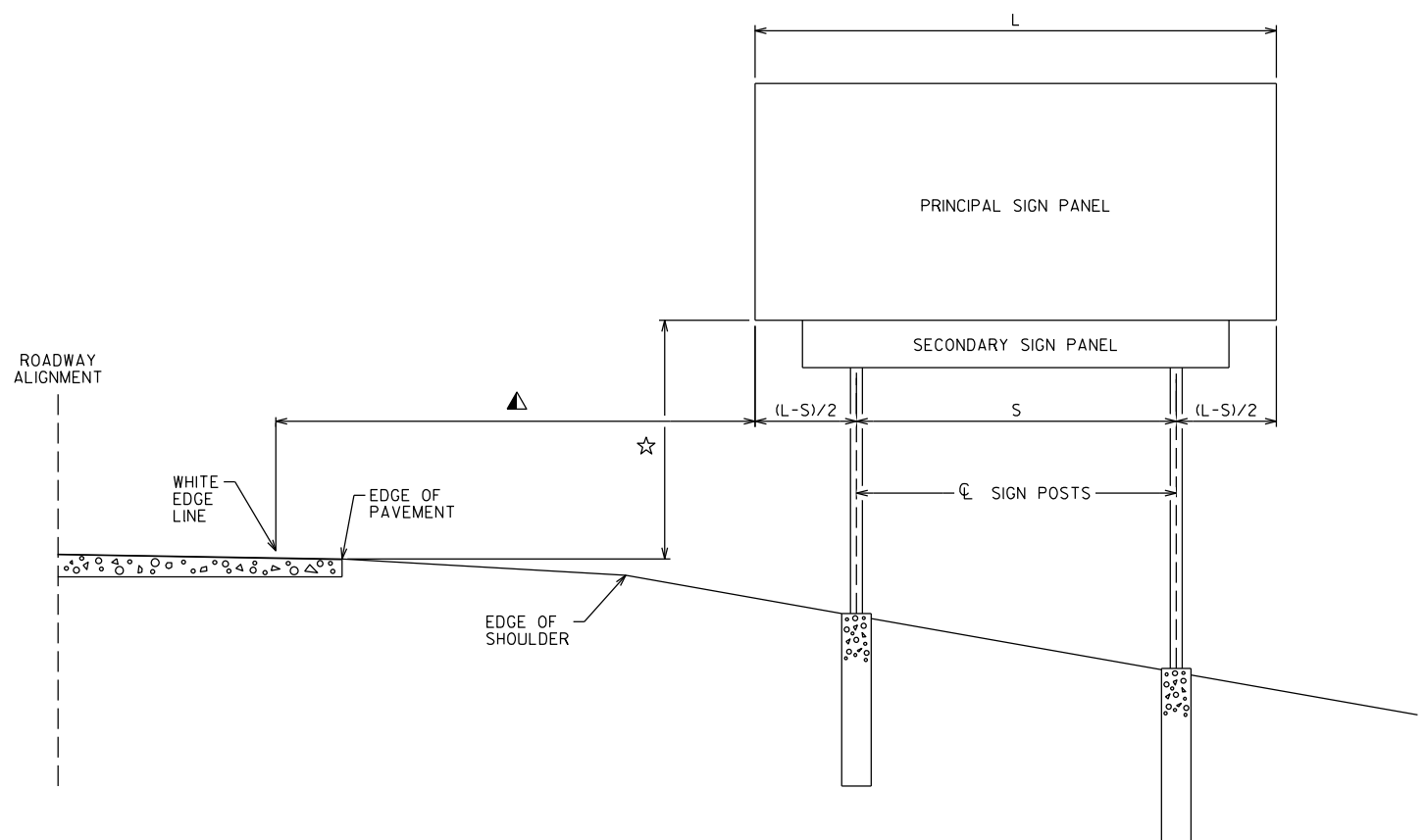
CONCRETE BASE DETAILS



NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE BTO TYPE 1 SIGNS			
DRAWN BY		PLANS CK'D.	
ALTERNATE BREAK-AWAY BASE ON ROCK		SHEET A3-1M.2	



INSTALLATION WITHOUT SECONDARY SIGN



INSTALLATION WITH SECONDARY SIGN

TYPE 1 SIGN INSTALLATION NOTES:

FOR A 2-POST INSTALLATION, "S" EQUALS $3L/5$, BUT SHALL NOT BE LESS THAN 6'-0".

FOR A 3-POST INSTALLATION, "S" EQUALS $5L/7$, BUT SHALL NOT BE LESS THAN 12'-0". THE SPACING BETWEEN ANY TWO POSTS SHALL NOT BE LESS THAN 6'-0".

▲ UNLESS NOTED IN THE PLANS, THE SIGN OFFSET DISTANCE SHALL BE A MINIMUM OF 17'-6" FROM THE WHITE EDGE LINE, DESIRABLE 30'-0".

THE ± TOLERANCE SHOWN ON THIS SHEETS IS 3".

THE VERTICAL SIGN HEIGHT CLEARANCES SHOWN ON THIS SHEET ARE MEASURED FROM THE BOTTOM OF THE SIGN PANEL TO THE NEAR EDGE OF PAVEMENT.

☆ THE VERTICAL CLEARANCE SHALL BE 8'-3"± WHEN THE SECONDARY SIGN HEIGHT IS 3'-0" OR LESS. FOR SECONDARY SIGN HEIGHTS LARGER THAN 3'-0", THE VERTICAL CLEARANCE TO THE BOTTOM OF THE SECONDARY SIGN PANEL SHALL BE 5'-3"±.

POST LENGTHS SHOWN IN THE MISCELLANEOUS QUANTITIES ARE ESTIMATED LENGTHS. THE CONTRACTOR SHALL VERIFY POST LENGTHS AT THE TIME OF FINAL GRADING.

REFER TO THE TRAFFIC ENGINEERING OPERATIONS AND SAFETY MANUAL FOR FURTHER GUIDANCE ON MINIMUM VERTICAL CLEARANCE REQUIREMENTS.

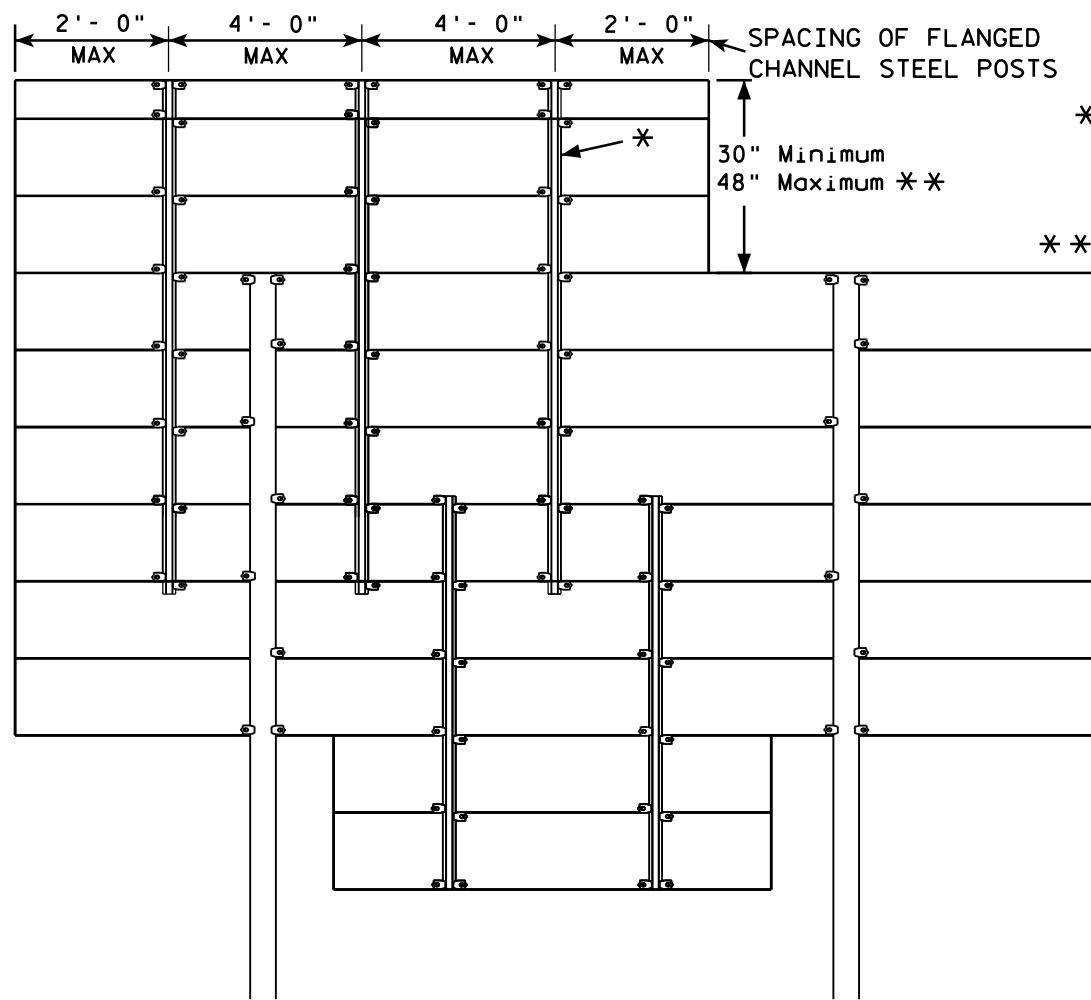
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE BTO TYPE 1 SIGNS			
DRAWN BY		PLANS CK'D.	
TYPICAL TYPE 1 SIGN INSTALLATION			SHEET A4-1.10

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: _____ **E**

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GROUND MOUNTED SIGN

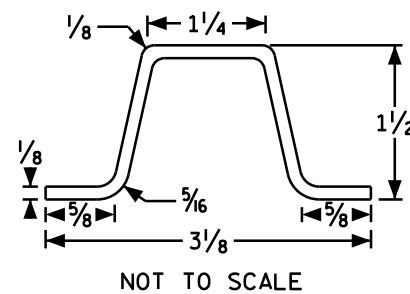


* = 2.00 lb/ft FLANGED CHANNEL, MIN. YIELD STRENGTH = 60,000 PSI (GRADE 60) GALVANIZED

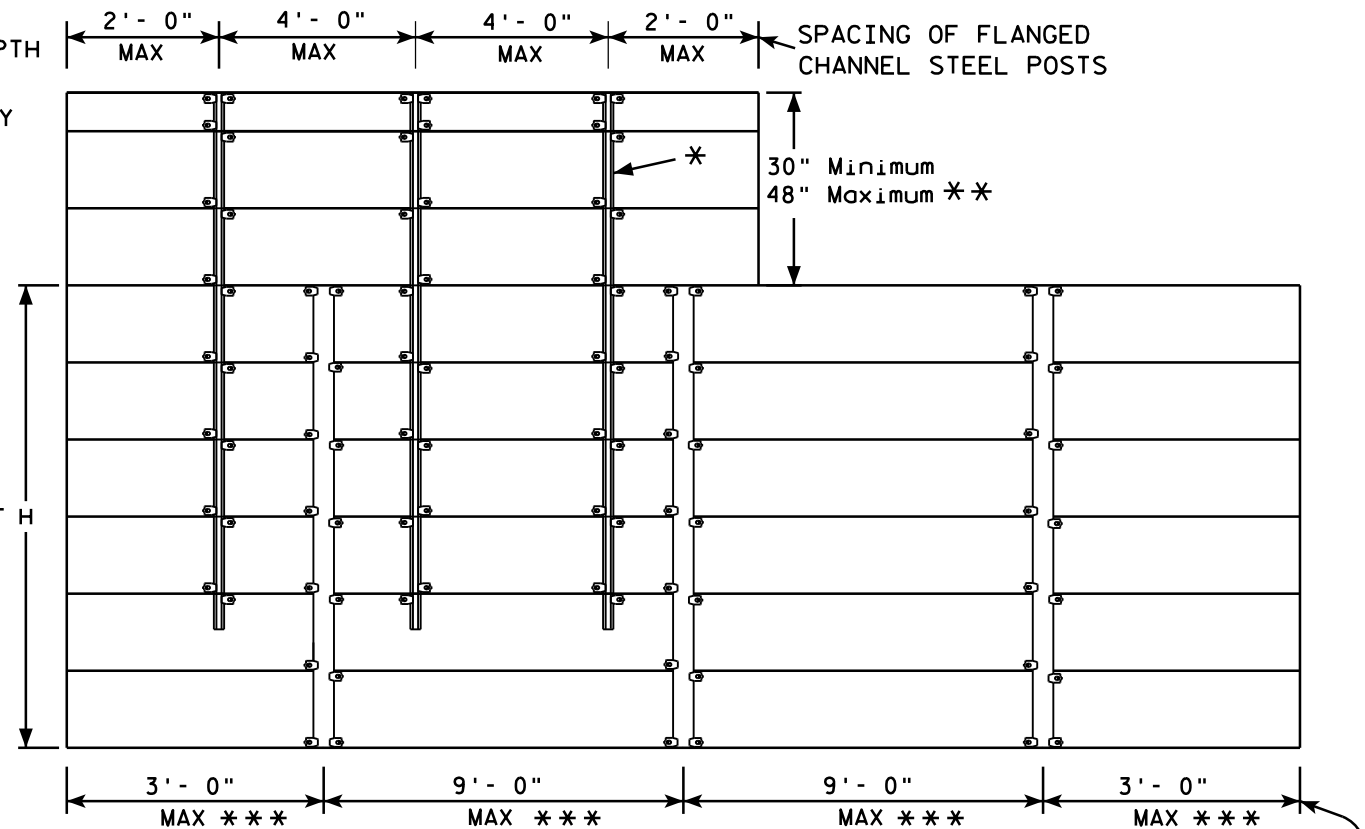
** = FOR 48" HEIGHT PANELS ON OVERHEAD STRUCTURES, ENTIRE SIGN SHALL BE CENTERED VERTICALLY ABOUT THE DEPTH OF THE TRUSS.

*** THESE SPACING DISTANCES SHALL ONLY BE USED WHEN THE MAIN SIGN HAS A MAXIMUM HEIGHT (DIMENSION H) OF 16 FT OR LESS. FOR SIGNS WITH A HEIGHT OF GREATER THAN 16 FT, STRUCTURAL CALCULATIONS SHALL BE PERFORMED.

FLANGE CHANNEL DETAIL



SIGN BRIDGE MOUNTED SIGN



SPACING OF ALUMINUM SIGN SUPPORTS 5" X 3.5" X 3.7 LBS./ft.

GENERAL NOTES

1. Flanged channel steel posts shall conform to size and material above, and shall be considered as incidental to other items in the contract.
2. Number of Flanged channel steel supports varies with length of panel and shall be spaced as shown:
 PANEL LENGTH 8'-0" OR LESS = 2 CHANNELS
 PANEL LENGTH 9'-0" - 12'-0" = 3 CHANNELS
 PANEL LENGTH 13'-0" OR MORE = 4 CHANNELS
 If the flanged channel steel posts can not be horizontally spaced as shown, they can be moved so as to securely hold the sign.

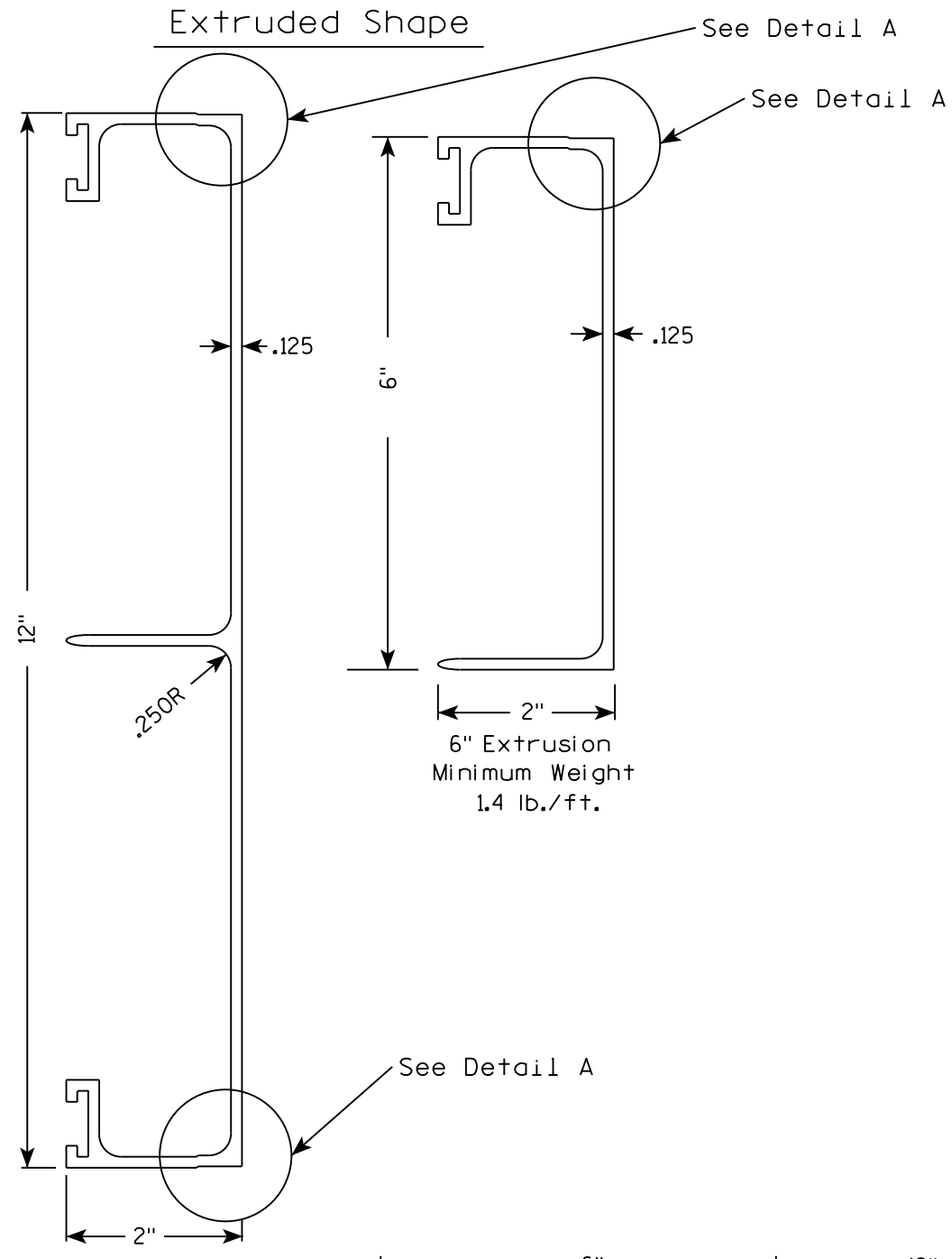
3. The EXIT NUMBER PANEL shall normally be positioned above the guide sign aligned with the right edge of the guide sign. If the guide sign indicates a left exit, the EXIT NUMBER PANEL shall be aligned with the left edge of the guide sign.
4. If the bolt holes in the top panel (EXIT NUMBER), or sub panel (NEXT EXIT) line up with holes in main sign panel, stitch bolts shall be used in addition to the channels.
5. Provide post clips for each sign as shown. (Please note the differences between a ground mounted versus Sign bridge mounted sign as far as number of clips required on the main supports or beams)
6. Structural steel sign supports shall extend to the top of the main signs, as shown on the above details.

ATTACHMENT OF GUIDE SIGNS TO SUPPORTS

WISCONSIN DEPT OF TRANSPORTATION
 APPROVED *Matthew R. Rauch*
 for State Traffic Engineer
 DATE 12/05/13 PLATE NO. A4-6.12

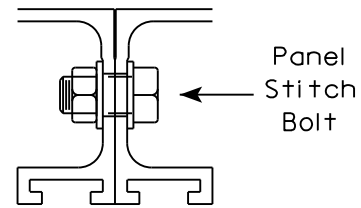
Extruded Shape

Hardware



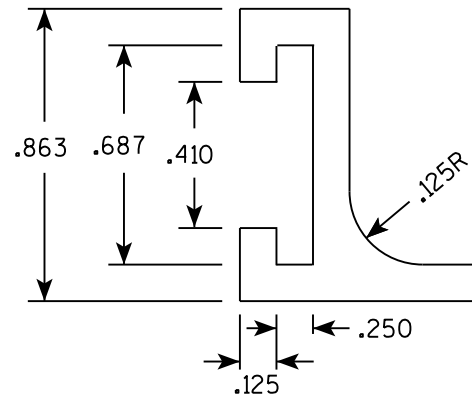
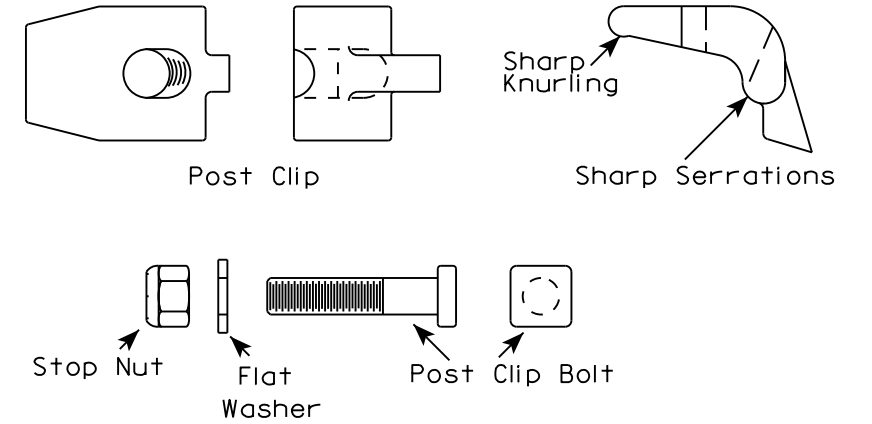
STITCH BOLT, WASHER & NUT

The hardware includes:
 3/8 " - 16 X 3/4 " Economy Bolt 2024-T4 alloy
 3/8 " - Stainless steel stop nut
 3/8" X .064 Flat Washers, Alclad 2024-T4 alloy



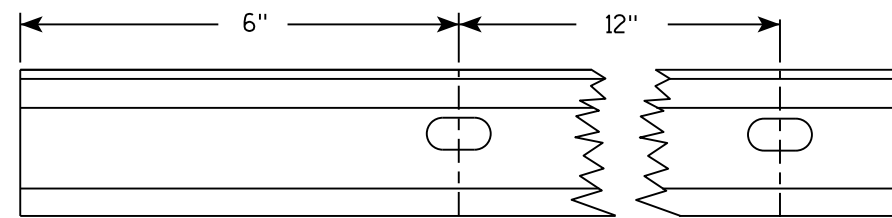
POST CLIP, POST CLIP BOLT, WASHER & NUT

Post Clip shall be Alum. Alloy 356-T6
 Post Clip Bolt shall be Stainless Steel.
 Flat washer shall be 3/8" X .091, Stainless Steel.
 Stop nut shall be stainless steel.

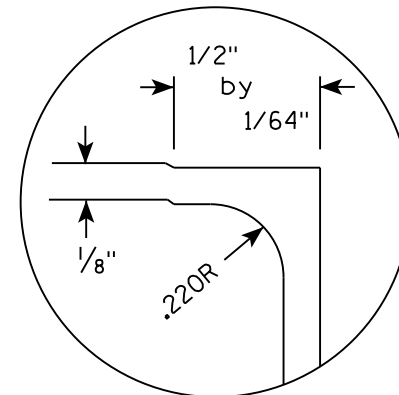


NOTES

1. The contractor may select any brand of extrusion that conforms to the illustrations or meets with the approval of the engineer, but all extrusions used on this contract shall be of the same brand.
2. Panel Stitch Bolts shall be used to assemble adjacent panels. Maximum stitch bolt spacing shall be 24" C-C, and a minimum of 4 bolts shall be used to connect any two extrusions.
3. Post Clips shall be used to attach the sign panel to the sign support.
4. Edge wrapping of sign sheeting required on all extrusions joints shown in Detail A.

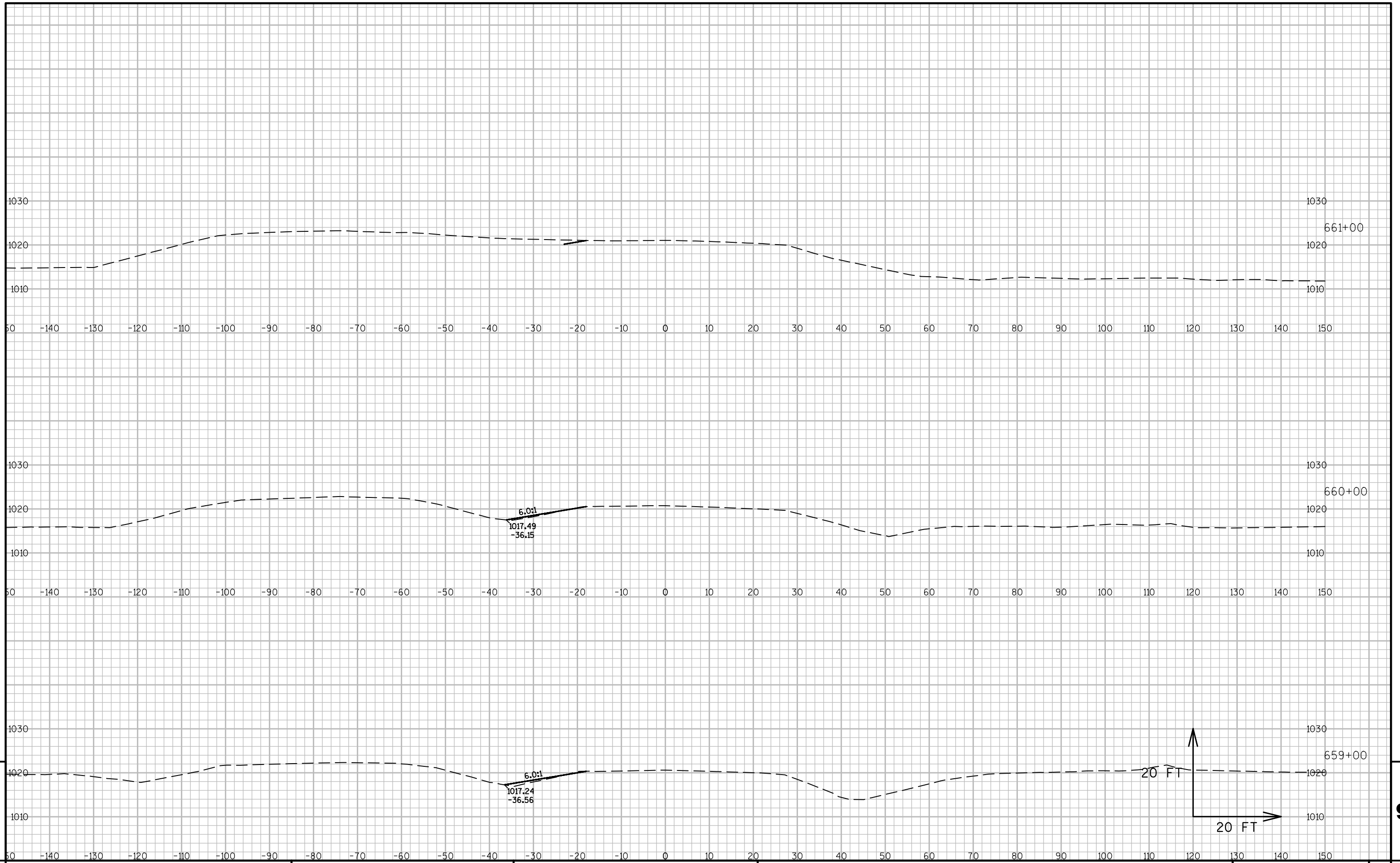


Punch 7/16" x 7/8" oval holes beginning 6" in from end of extrusion 12" CC on both edges of 6" and 12" panels.



DETAIL A (EDGE WRAP JOINT)

ALUMINUM EXTRUSIONS FOR TYPE I SIGNS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 11/30/16	PLATE NO. A5-2.10



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PROJECT NO:1020-01-77

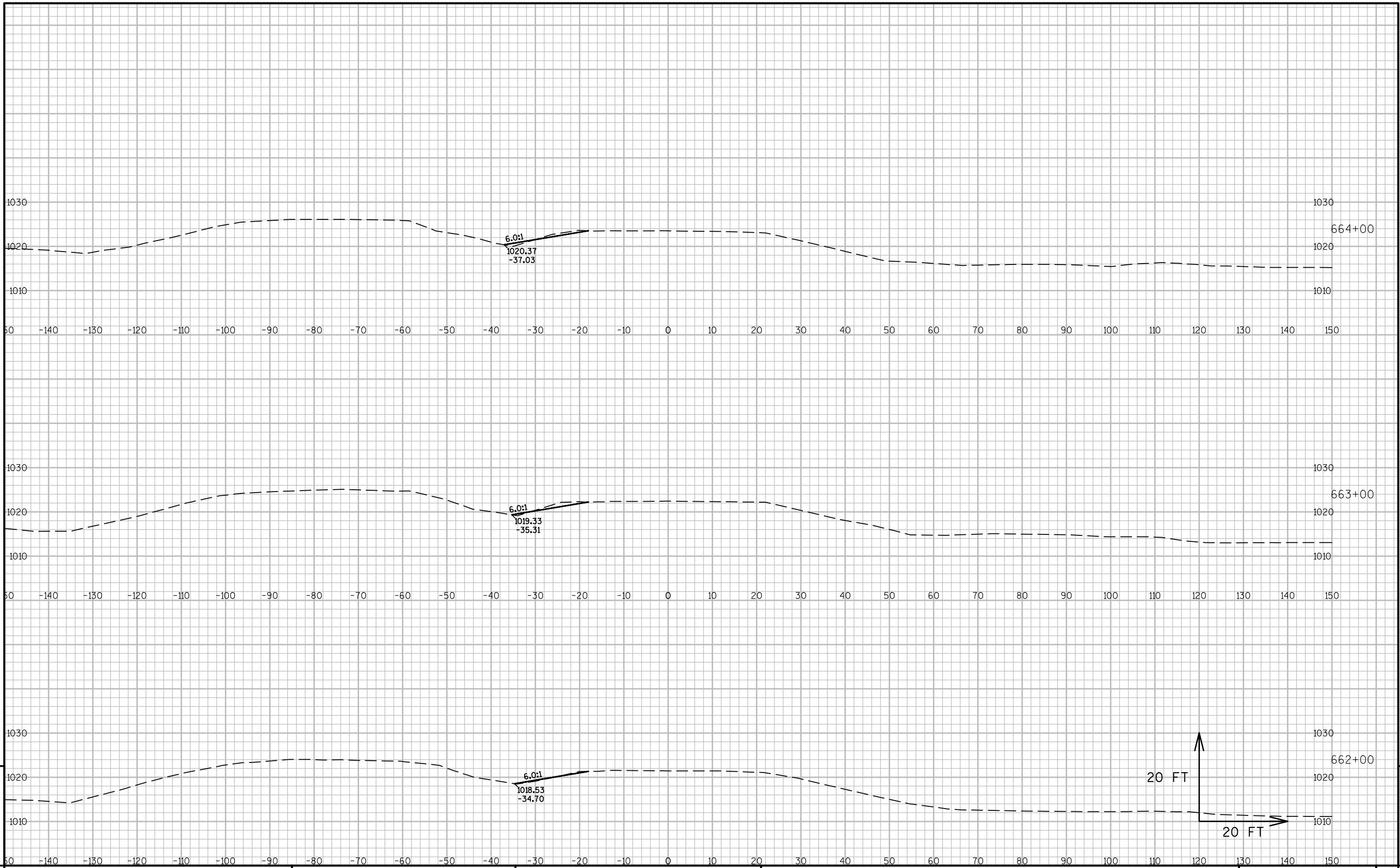
HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS ----

SHEET

E



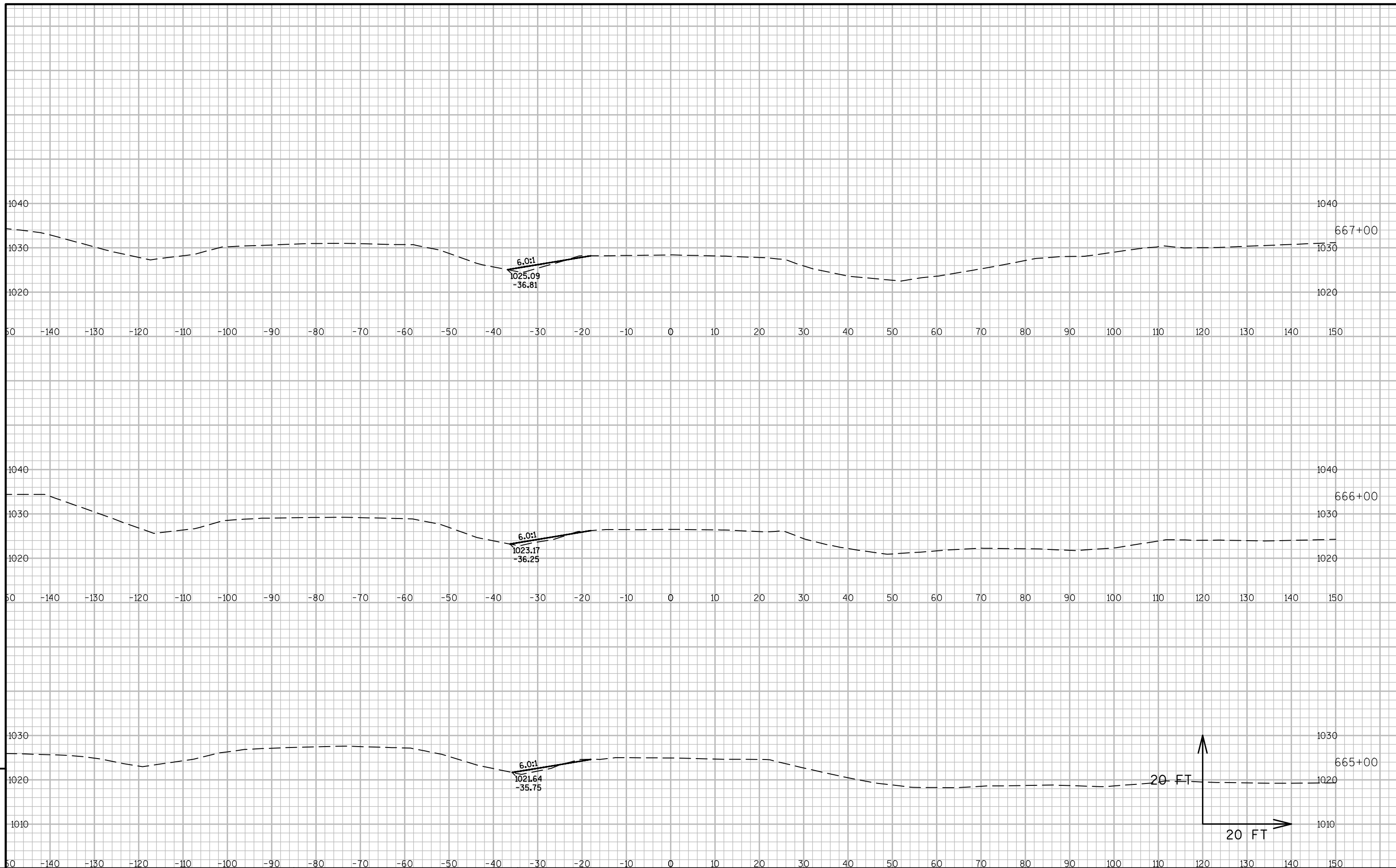
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PROJECT NO:1020-01-77 HWY:IH 94 COUNTY:ST. CROIX CROSS SECTIONS ---- SHEET E

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LAYOUT NAME - XSSHEETS2



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PROJECT NO: 1020-01-77

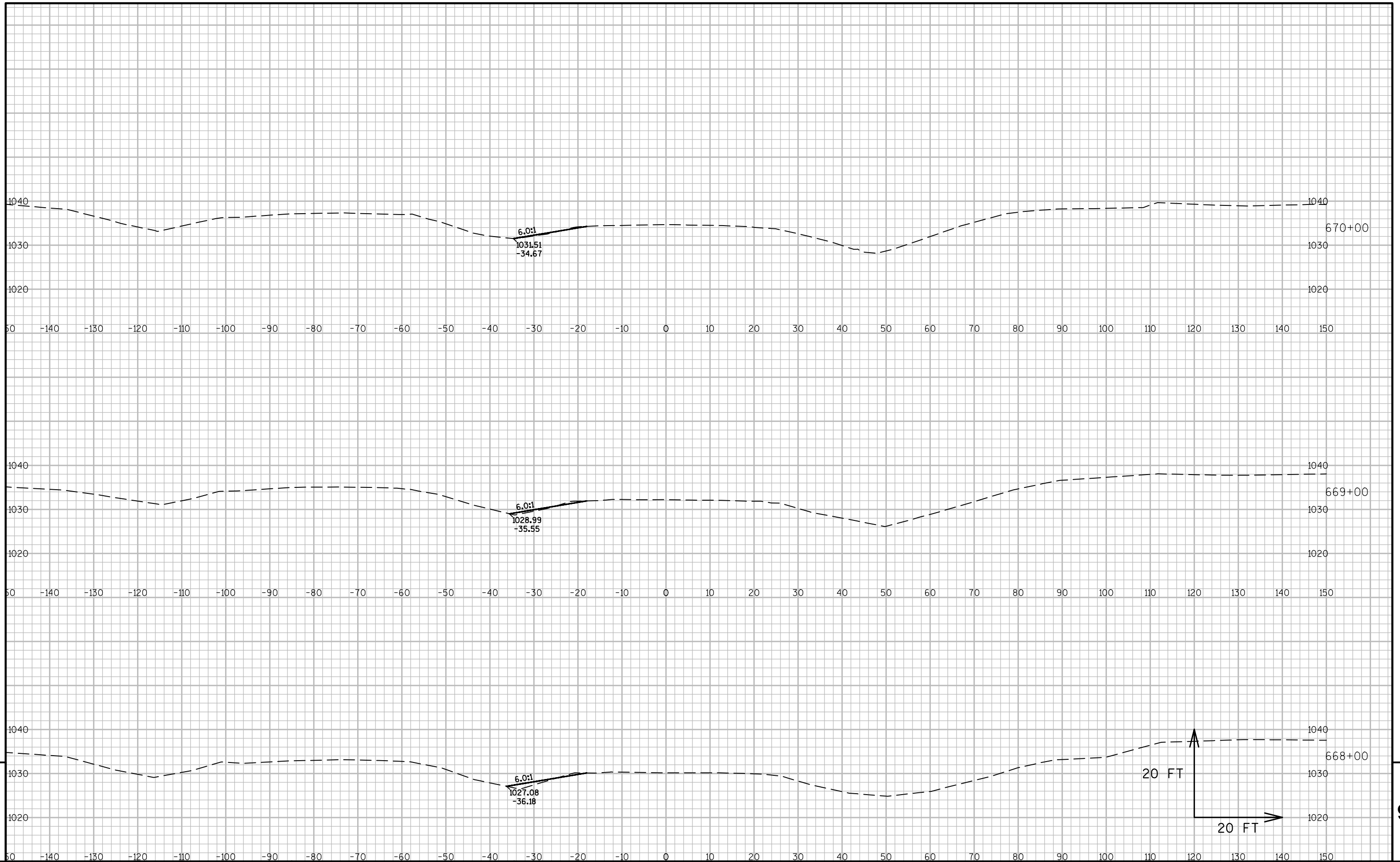
HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS ----

SHEET

E



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PROJECT NO:1020-01-77

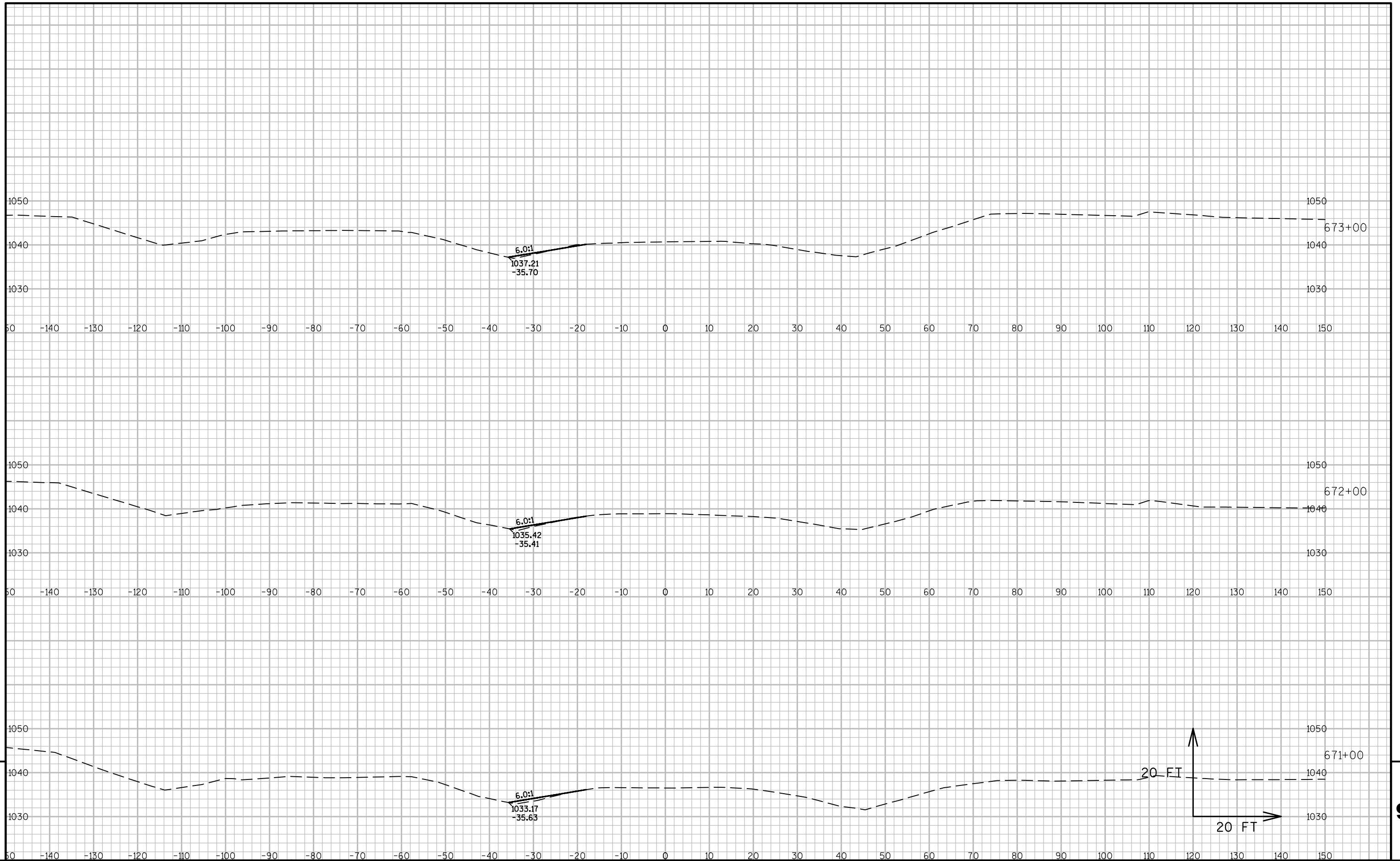
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COUNTY: ST. CROIX

CROSS SECTIONS ----

SHEET

E



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PROJECT NO:1020-01-77

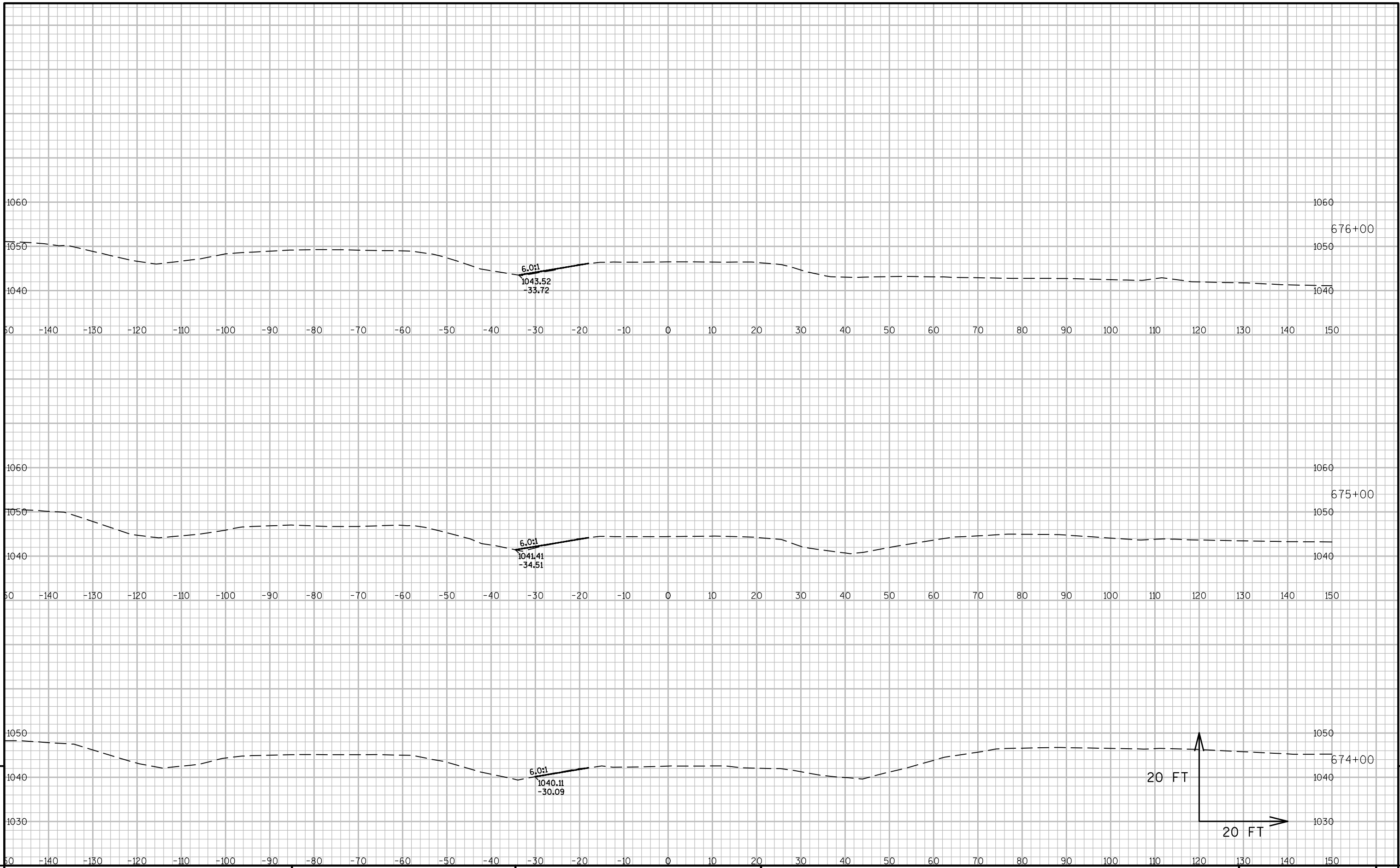
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COUNTY: ST. CROIX

CROSS SECTIONS ----

SHEET

E



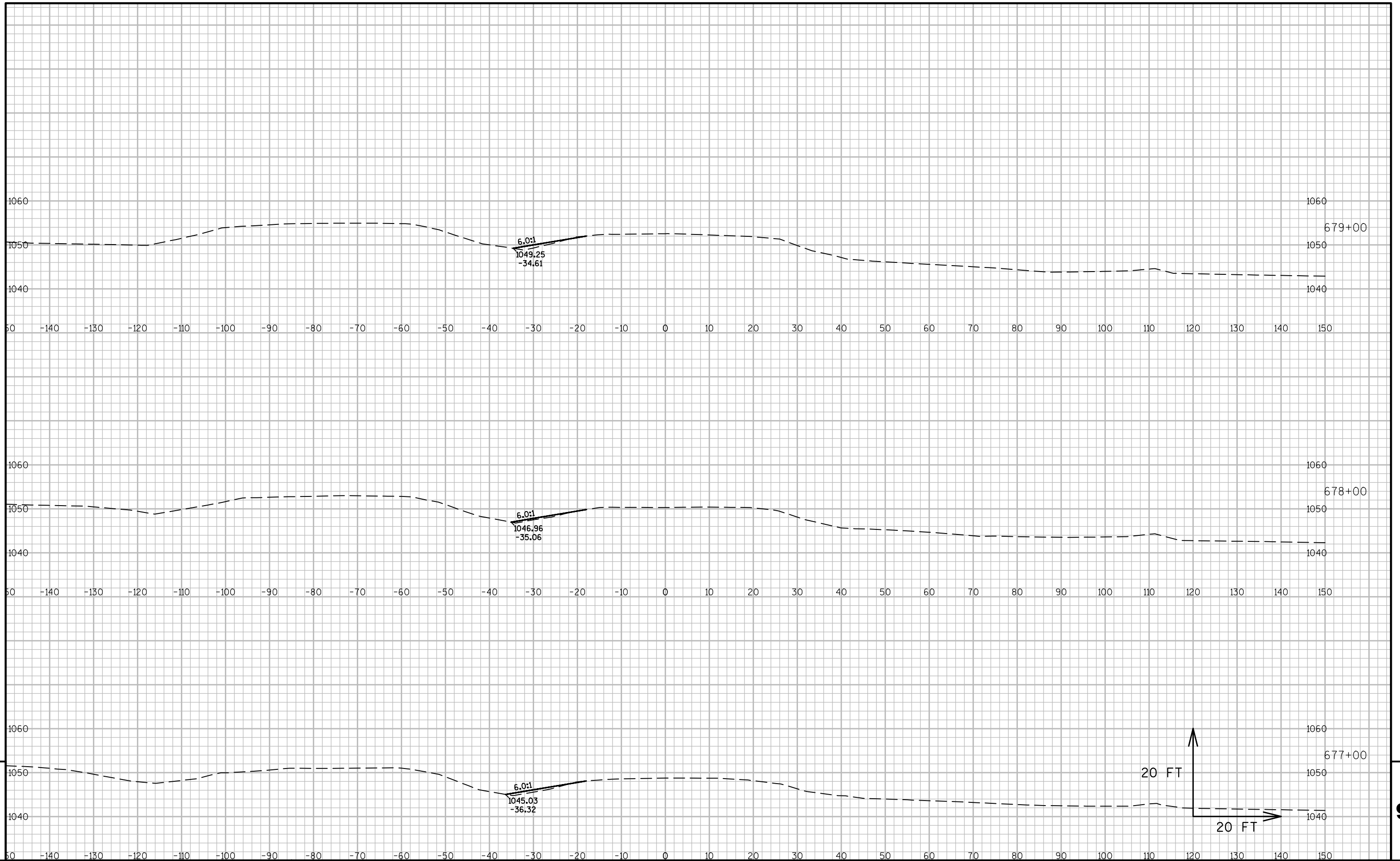
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PROJECT NO: 1020-01-77 HWY: IH 94 COUNTY: ST. CROIX CROSS SECTIONS ---- SHEET E

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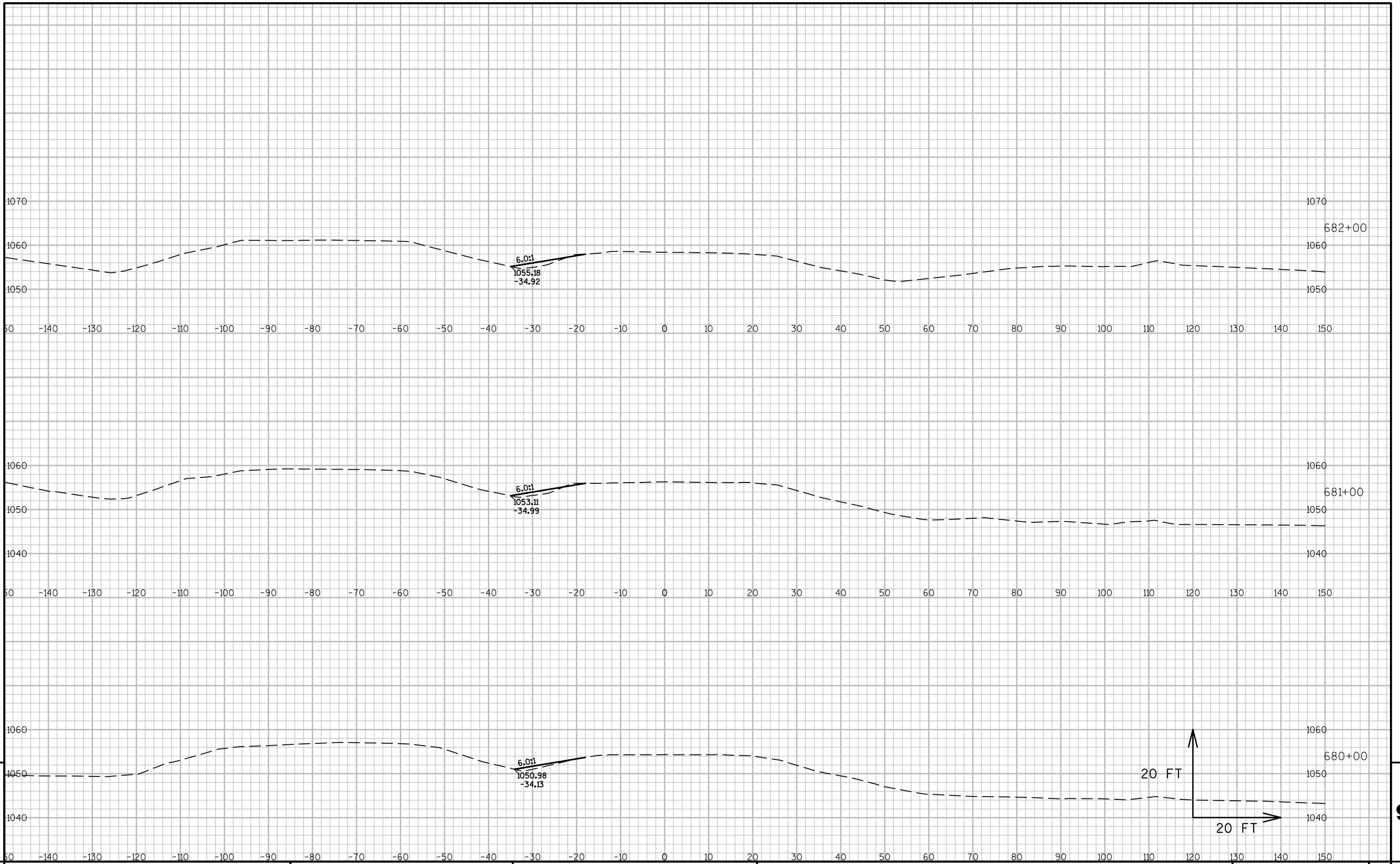
LAYOUT NAME - XSSHEETS6



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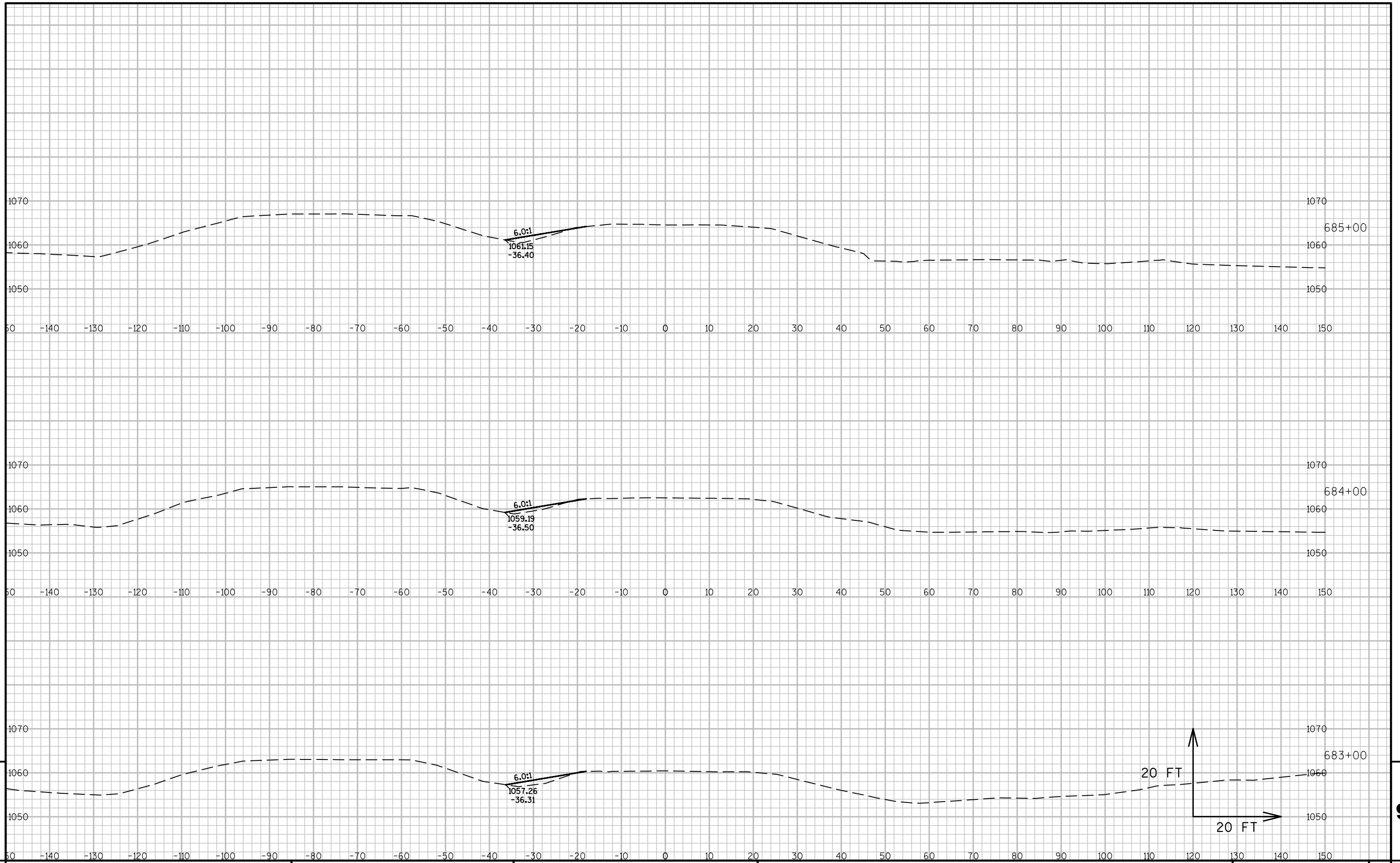
PROJECT NO: 1020-01-77 HWY: IH 94 COUNTY: ST. CROIX CROSS SECTIONS ---- SHEET E



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PROJECT NO: 1020-01-77 HWY: IH 94 COUNTY: ST. CROIX CROSS SECTIONS ---- SHEET E



PROJECT NO:1020-01-77

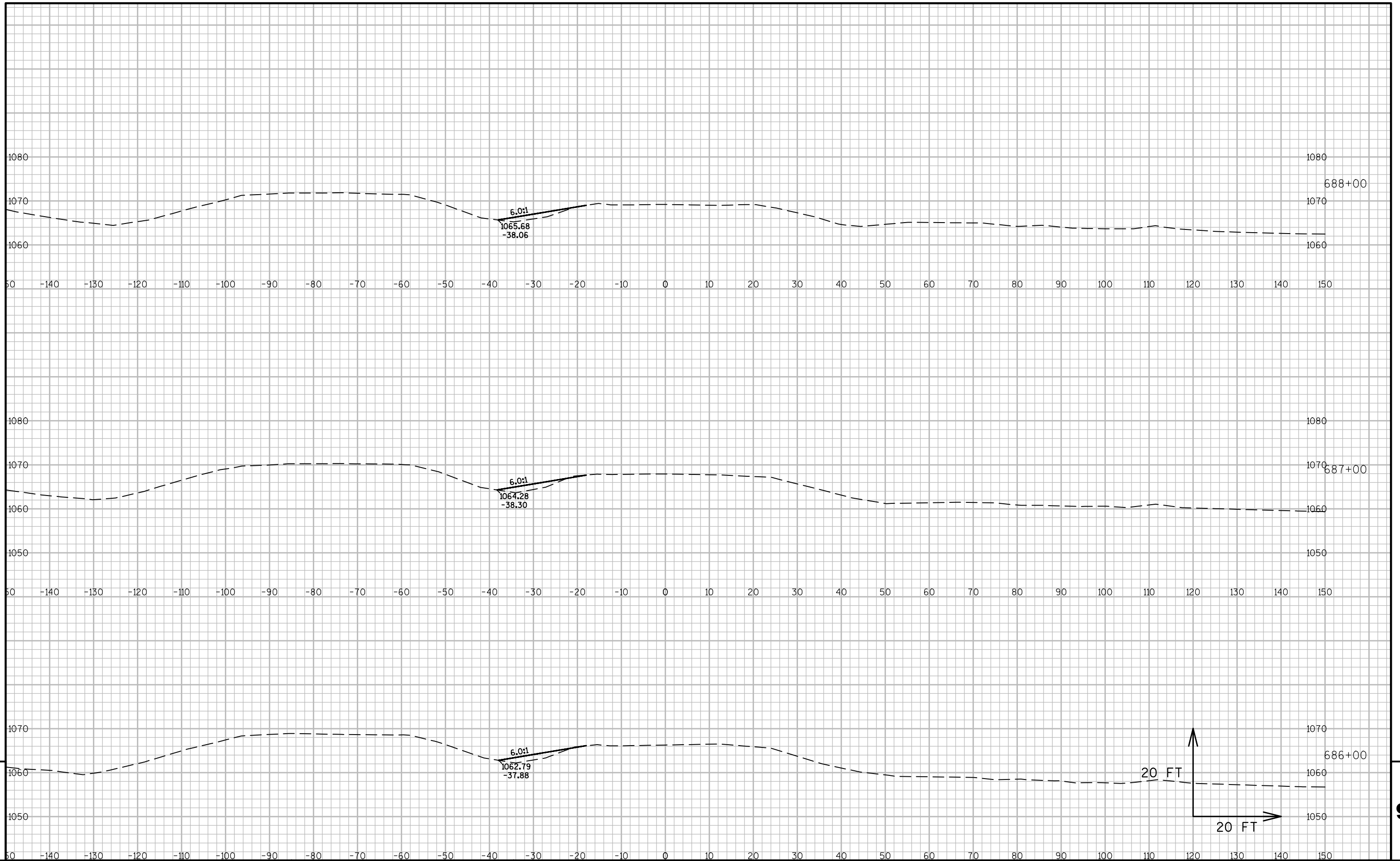
HWY:IH 94

COUNTY:ST. CROIX

CROSS SECTIONS ----

SHEET

E



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PROJECT NO: 1020-01-77

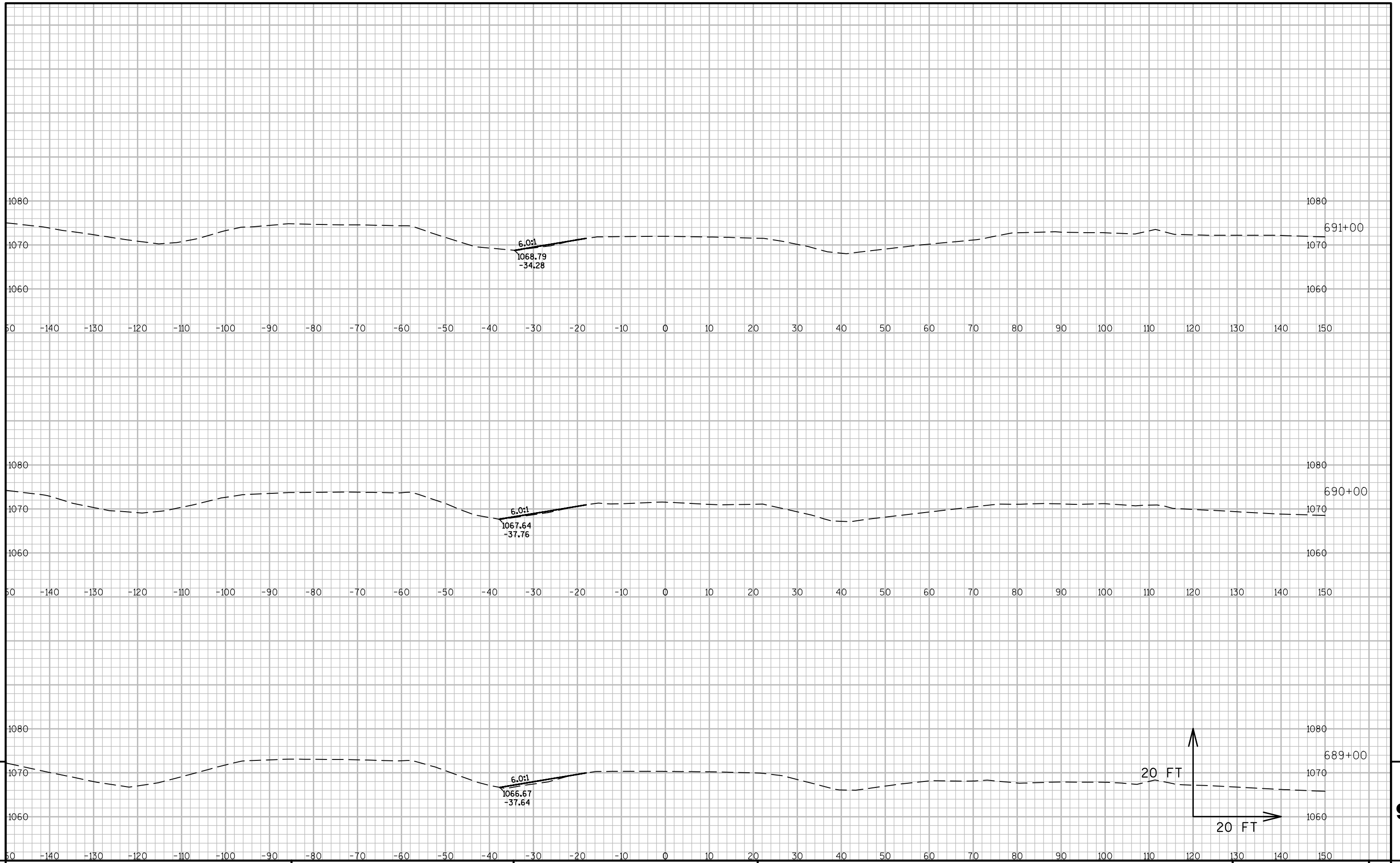
HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS ----

SHEET

E



PROJECT NO: 1020-01-77

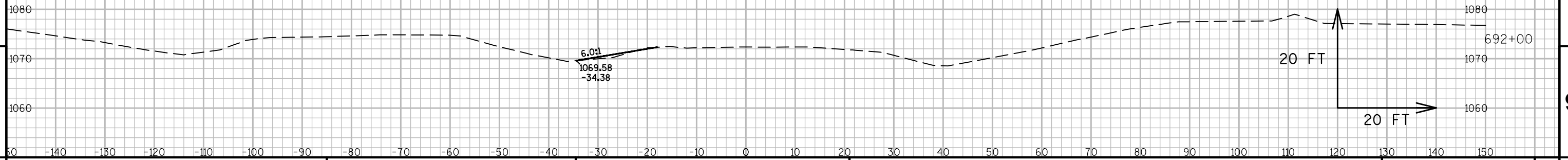
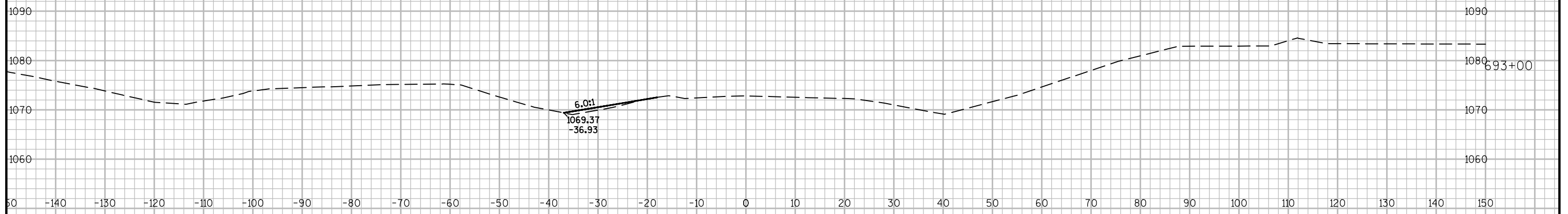
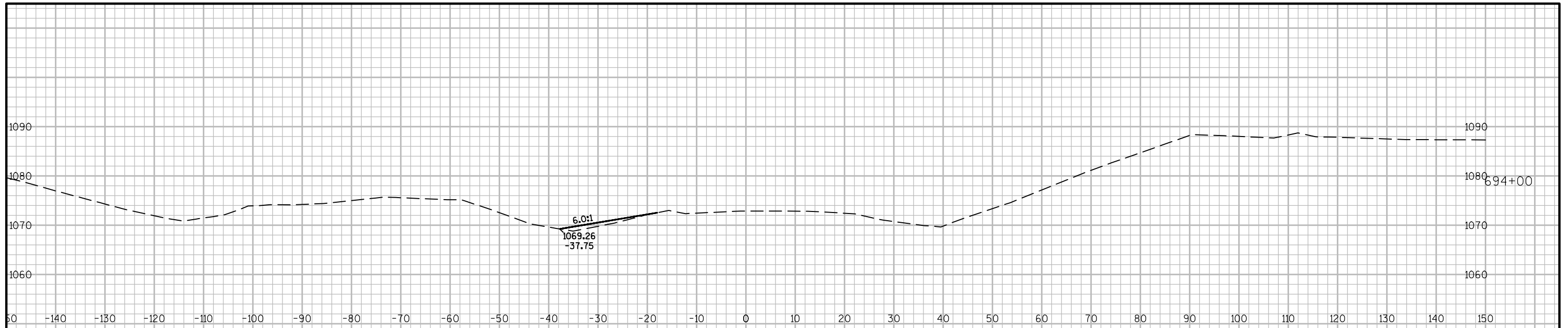
HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS ----

SHEET

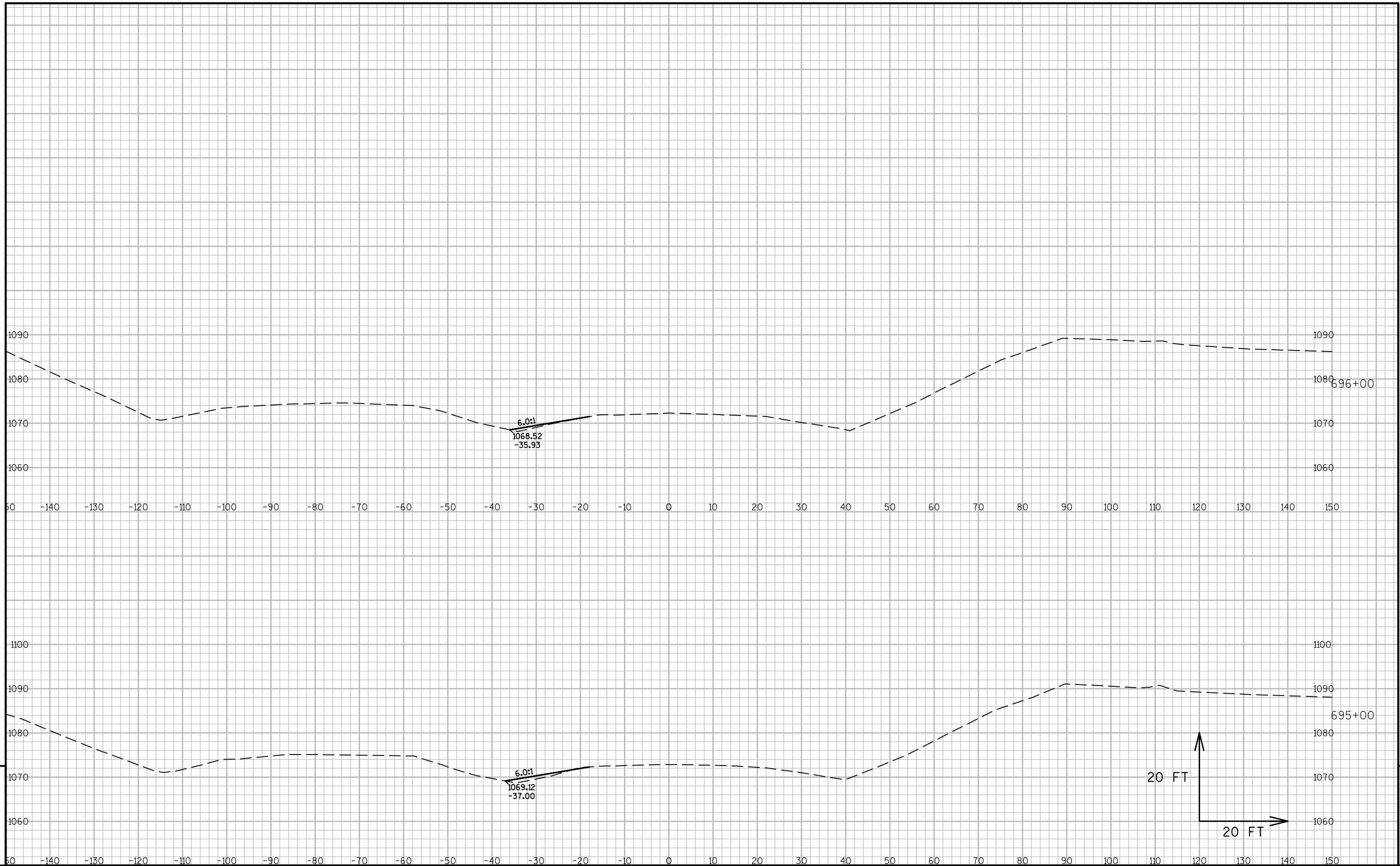
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PROJECT NO: 1020-01-77 HWY: IH 94 COUNTY: ST. CROIX CROSS SECTIONS ---- SHEET E



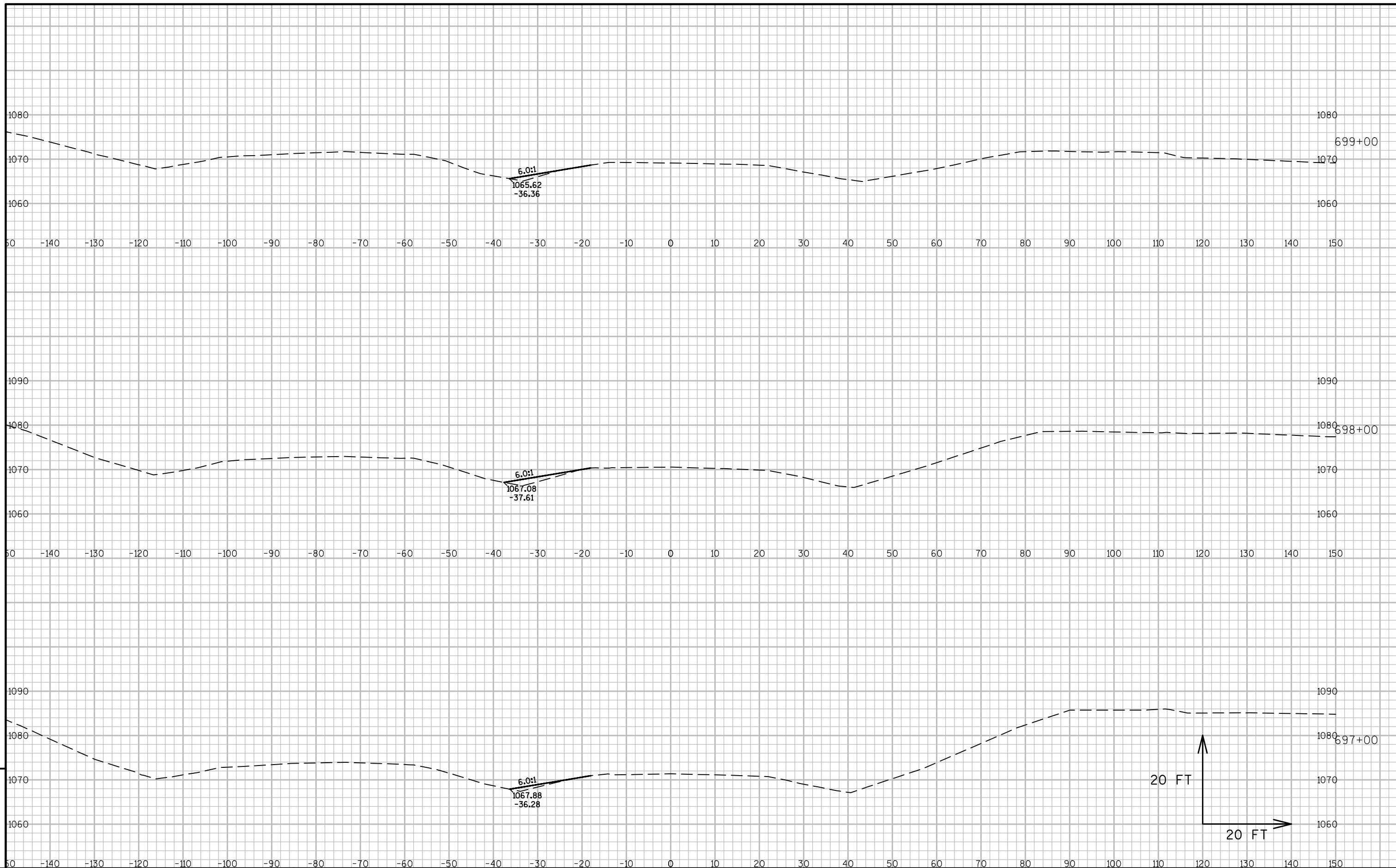
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PROJECT NO: 1020-01-77 HWY: IH 94 COUNTY: ST. CROIX CROSS SECTIONS ---- SHEET E

FILE NAME : C:\WISDOT\DESIGN\C3D\10200107\SHEETSPLAN\090210_XS.DWG PLOT DATE : 1/22/2016 12:55 PM PLOT BY : K. KOPACZ PLOT NAME : PLOT SCALE : 1 IN:20 FT WISDOT/CADD SHEET 49

LAYOUT NAME - XSSHEETS13



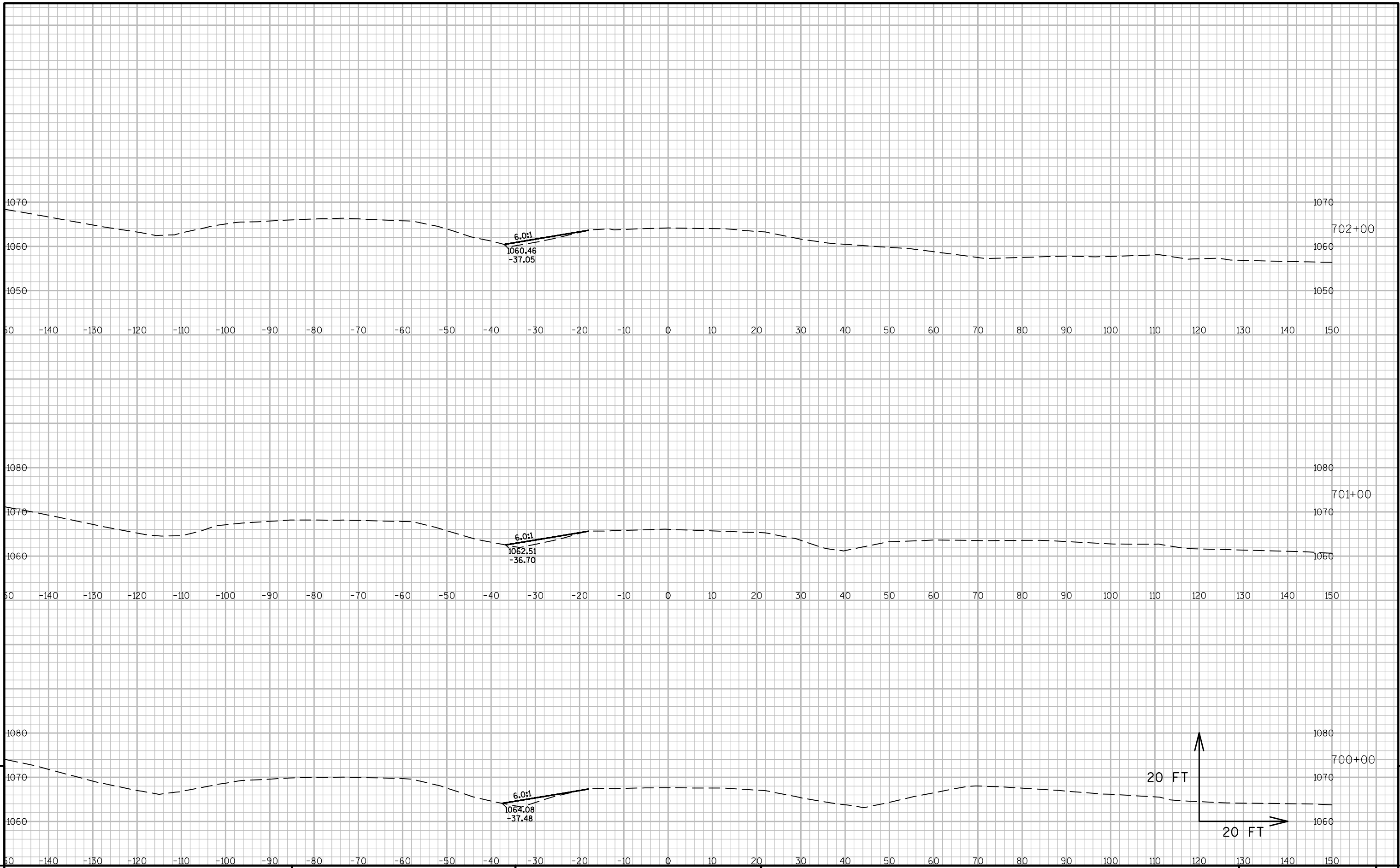
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PROJECT NO: 1020-01-77 HWY: IH 94 COUNTY: ST. CROIX CROSS SECTIONS ---- SHEET E

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LAYOUT NAME - XSSHEETS14



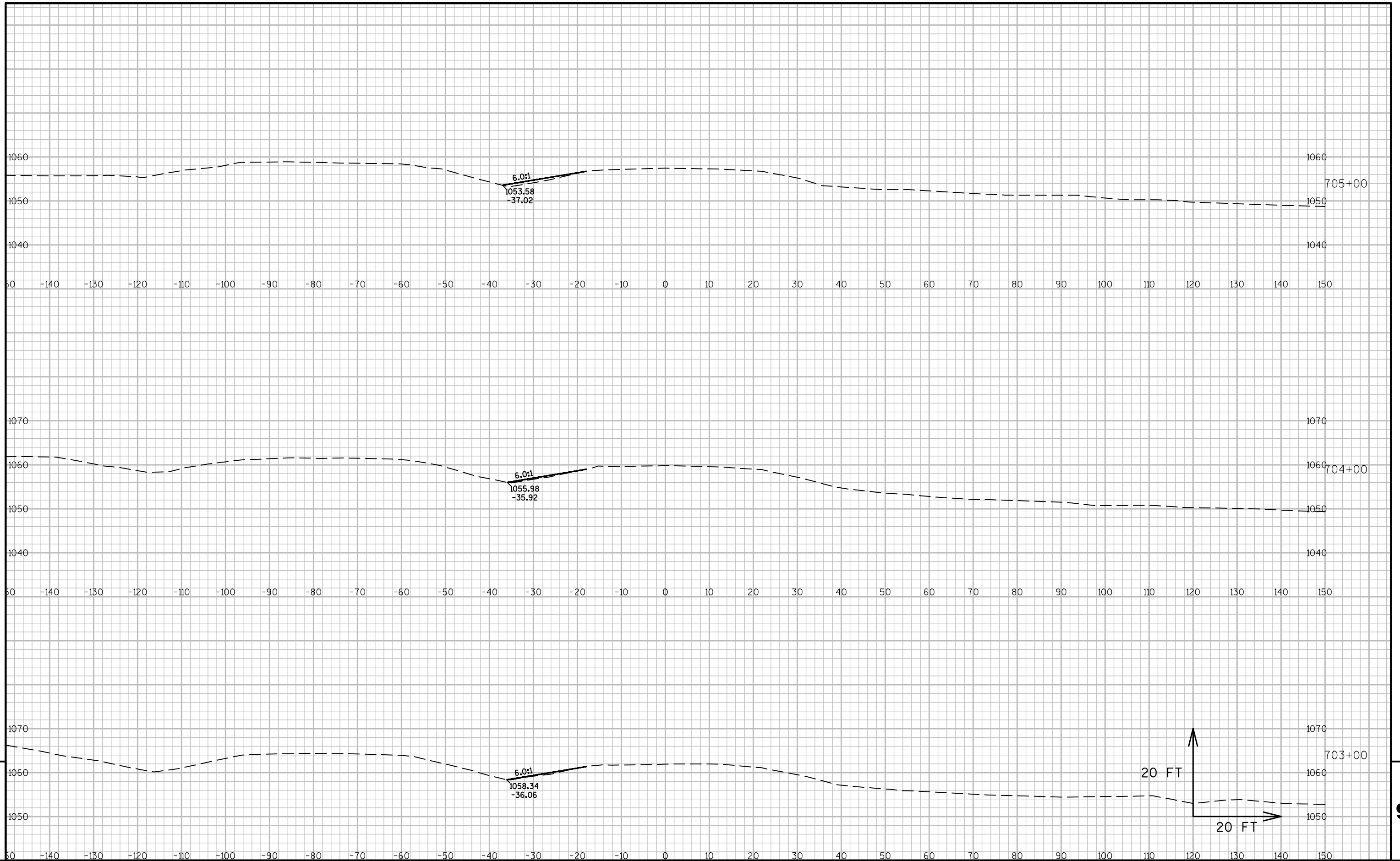
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PROJECT NO: 1020-01-77 HWY: IH 94 COUNTY: ST. CROIX CROSS SECTIONS ---- SHEET E

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LAYOUT NAME - XSSHEETS15



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PROJECT NO:1020-01-77

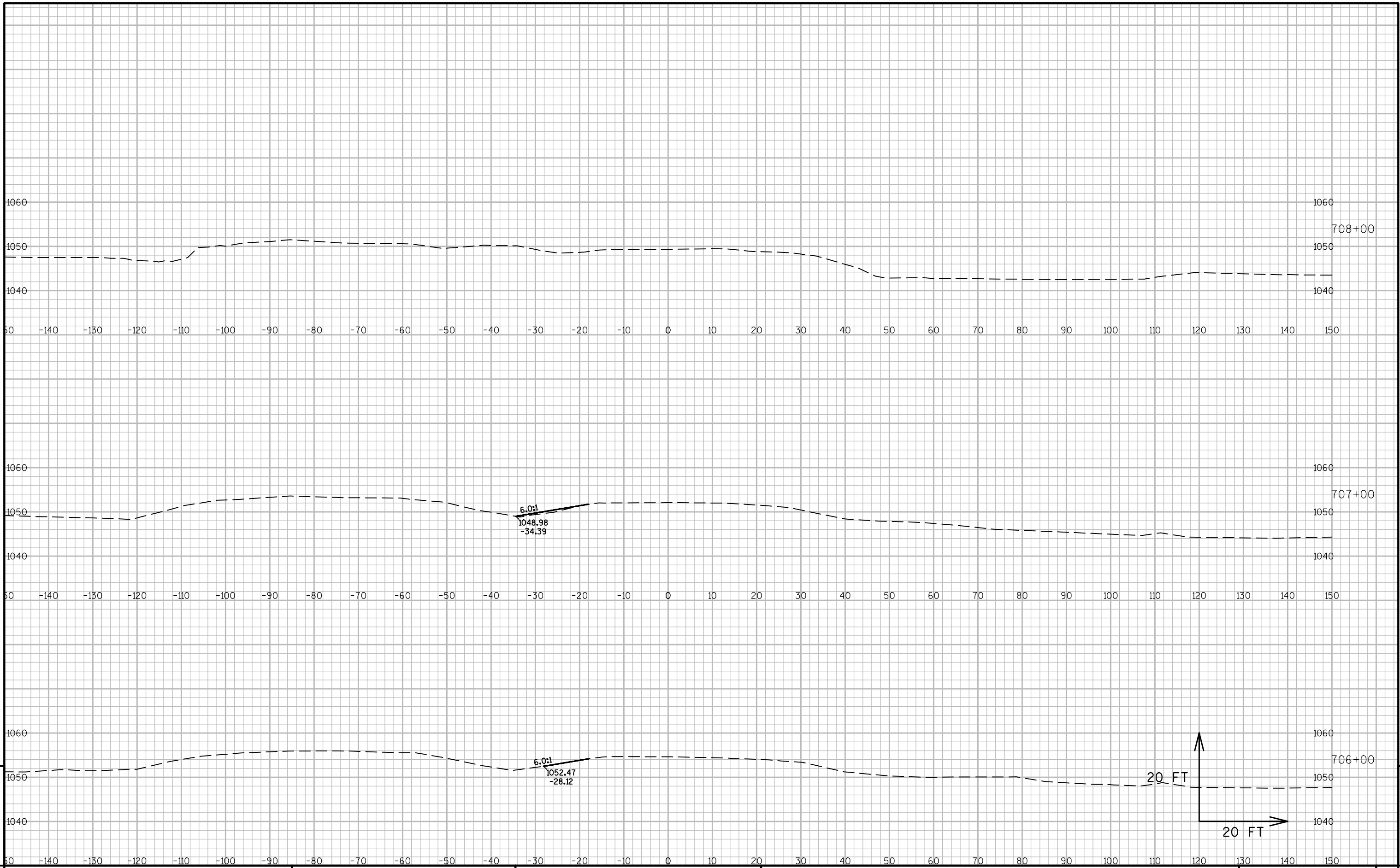
HWY: IH 94

COUNTY: ST. CROIX

CROSS SECTIONS ----

SHEET

E



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PROJECT NO: 1020-01-77	HWY: IH 94	COUNTY: ST. CROIX	CROSS SECTIONS ----	SHEET	E
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Wisconsin Department of Transportation

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