

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 = 94

PROJECT LOCATION



DESIGN DESIGNATION

A.A.D.T.	2021	=	3,440
A.A.D.T.	2041	=	3,440
D.H.V.	2041	=	480
D.D.		=	61/39
T.		=	14.3%
DESIGN SPEED		=	60 MPH
ESALS		=	1,190,000

BEGIN PROJECT
STA. 543+50
Y=387243.151
X=692614.671

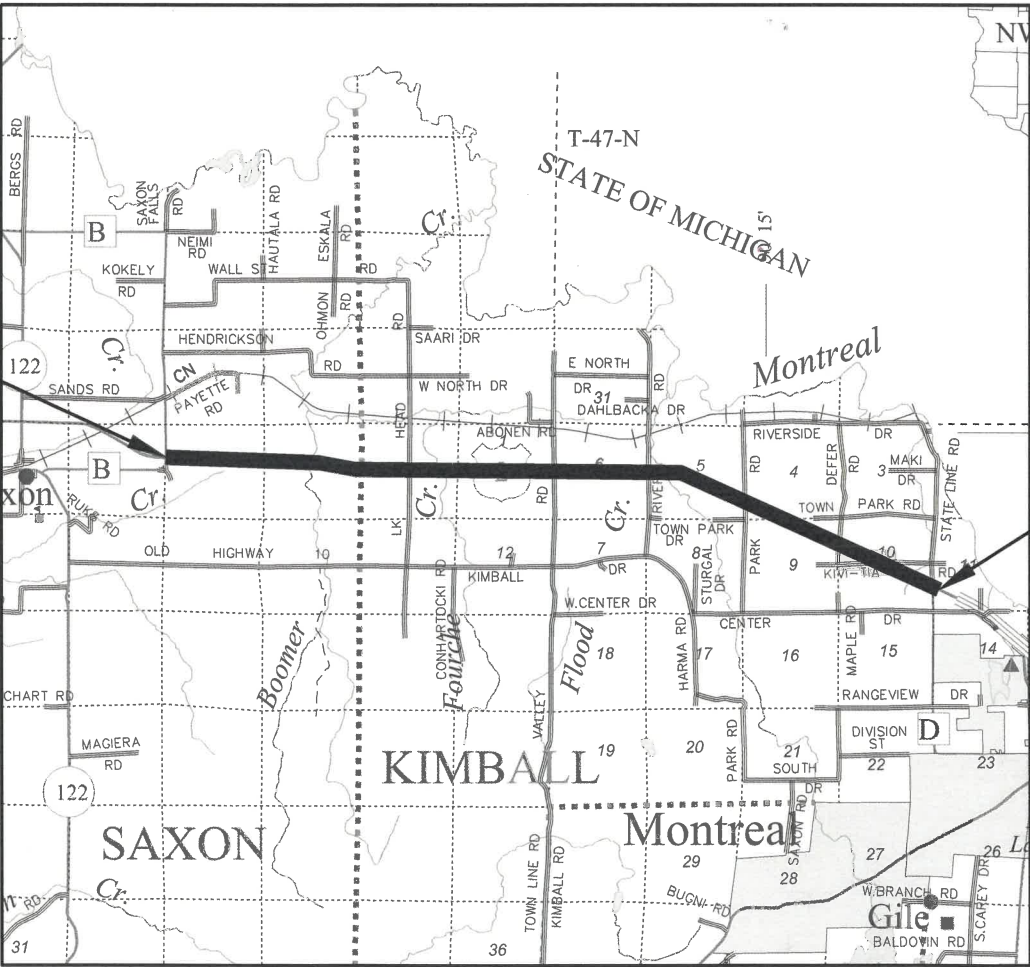
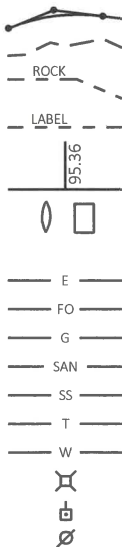
CONVENTIONAL SYMBOLS

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	
MARSH AREA	
WOODED OR SHRUB AREA	

PROFILE

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



LAYOUT
SCALE 0 2 Mi

TOTAL NET LENGTH OF CENTERLINE = 8.390 MI.

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), IRON COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES. ELEVATIONS ARE REFERENCED TO NAVD 88 (2012). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 12A.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

SAXON - HURLEY

CTH B-MICHIGAN STATE LINE

USH 2
IRON COUNTY

STATE PROJECT NUMBER
1185-03-71

STATE PROJECT

1185-03-71

FEDERAL PROJECT

PROJECT

WISC 2021177

CONTRACT

1

ORIGINAL PLANS PREPARED BY

AYRES



(Date) 10-26-2020

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	AYRES
Designer	AYRES
Project Manager	DANIEL ERVA
Regional Supervisor	ROBIN STAFFORD

APPROVED FOR THE DEPARTMENT

DATE: 10/27/2020

(Signature)

GENERAL NOTES

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

THE CONTRACTOR SHALL NOTIFY DIGGERS HOTLINE AND AFFECTED UTILITIES PRIOR TO THE START OF WORK. ANY LOCAL MUNICIPAL UTILITY WHICH IS NOT A MEMBER OF THE DIGGERS HOTLINE MUST BE CONTACTED SEPARATELY.

RESHAPE AND SEEDING OF ANY PREVIOUSLY GRASSED AREAS WHICH ARE DISTURBED BY OPERATIONS OUTSIDE OF THE ENGINEER DETERMINED CONSTRUCTION LIMITS ARE INCIDENTAL TO THE CONTRACT.

CURVE DATA IS BASED ON ARC DEFINITION.

BEARINGS SHOWN ON THIS PLAN ARE TRUE BEARINGS.

PROPERTY LINES SHOWN ARE APPROXIMATE.

PROJECT AND UTILITY CONTACTS

- * WISCONSIN DEPARTMENT OF NATURAL RESOURCES
NORTH REGION HEADQUARTERS
ATTN: JON SIMONSEN
107 SUTLIFF AVENUE
RHINELANDER, WI 54501
PHONE: (715) 367-1936
EMAIL: jonathan.simonsen@wisconsin.gov

* BAYFIELD ELECTRIC COOPERATIVE INC.
ATTN: TROY SEEGER
P.O. BOX 68 HWY 2
IRON RIVER, WI 54847
PHONE: 715-372-4287
EMAIL: troyseeger41@gmail.com

* CENTURYLINK-COMMUNICATION LINE
ATTN: BEN BAKER
625 SOUTH AVENUE
HAWKINS, WI 54530
PHONE: 715-567-0725
EMAIL: ben.baker@Centurylink.com

* MERIT NETWORK, INC.-COMMUNICATION LINE
ATTN: JAMIE LaROCCA
880 TECHNOLOGY DRIVE, SUITE 8
ANN ARBOR, MI 48108
PHONE: 734-527-5698
EMAIL: j.larocca@merit.edu
- * NORTHERN NATURAL GAS COMPANY-GAS/PETROLEUM
ATTN: KAREN PERREAULT
118 US HWY 41E
NEGAUNEE, MI 49866
PHONE: 402-530-3102
E-MAIL: karen.perreault@nngco.com

* XCEL ENERGY-ELECTRICITY
ATTN: BRENNAN HENRY
1751 LIBERTY STREET
IRONWOOD, MI 49938
PHONE: 715-737-3317
EMAIL: brennan.j.henry@xcelenergy.com

* XCEL ENERGY-GAS/PETROLEUM
ATTN: BRENNAN HENRY
1751 LIBERTY STREET
IRONWOOD, MI 49938
PHONE: 715-737-3317
EMAIL: brennan.j.henry@xcelenergy.com

* XCEL ENERGY-ELECTRICITY TRANSMISSION
ATTN: MITCHELL DIENGER
414 5th FLOOR NICOLLET MALL
MINNEAPOLIS, MN 55401
PHONE: 608-386-2233
EMAIL: mitchell.a.dienger@xcelenergy.com

* -MEMBER OF DIGGERS HOTLINE



Dial  or (800)242-8511

www.DiggersHotline.com

RUNOFF COEFFICIENT TABLE

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

TOTAL PROJECT AREA = 42.73 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.96 ACRES
SOIL GROUPS A AND D

ORDER OF SECTION 2 SHEETS

- GENERAL NOTES & CONTACTS
- PROJECT OVERVIEW
- TYPICAL SECTIONS
- CONSTRUCTION DETAILS
- PLAN DETAILS



BEGIN PROJECT

STA 543+50

Y=387243.151

X=692614.671



PROJECT NO: 1185-03-71

HWY: USH 2

COUNTY: IRON

PROJECT OVERVIEW

SHEET

3

E

FILE NAME : V:\TRANS-GB\450480 USH 2\C3D\SHEETSPLAN\020201 PO.DWG
LAYOUT NAME - 020201 po

PLOT DATE : 10/27/2020 8:54 AM

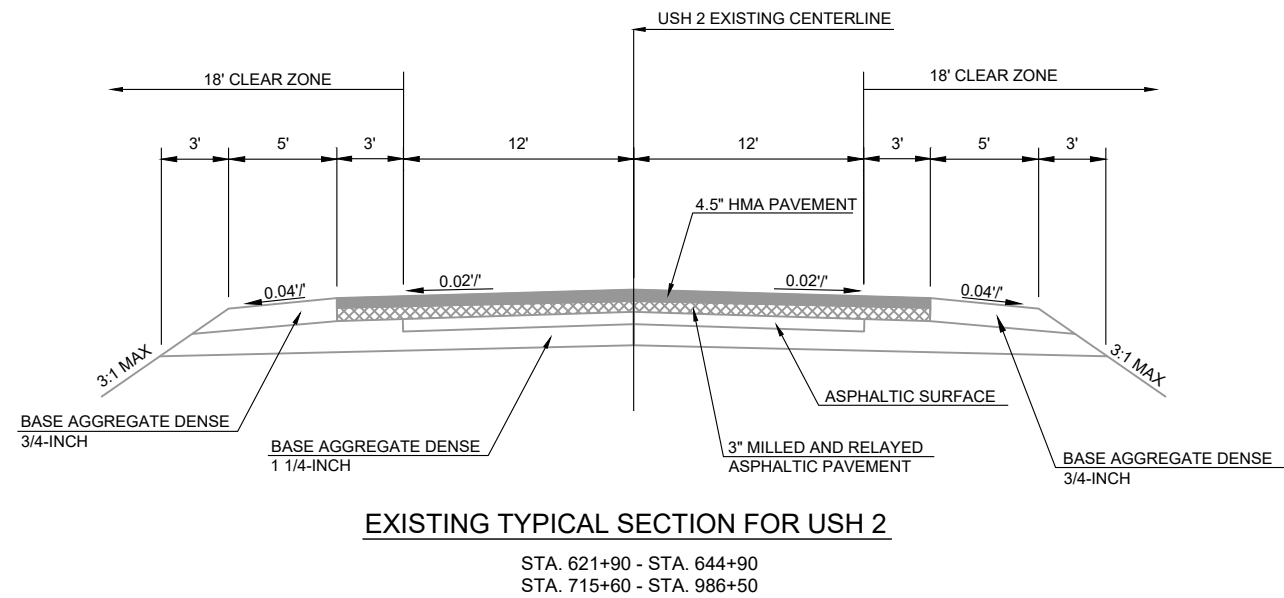
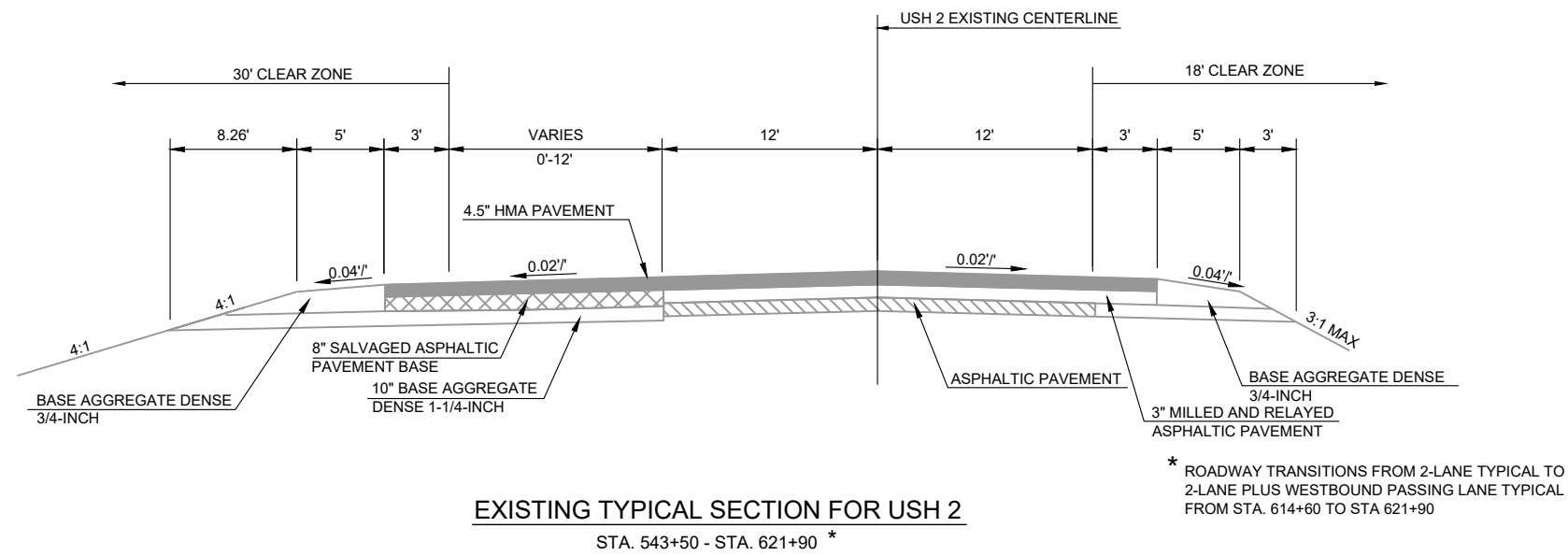
PLOT BY : SOUFAL, KEVIN

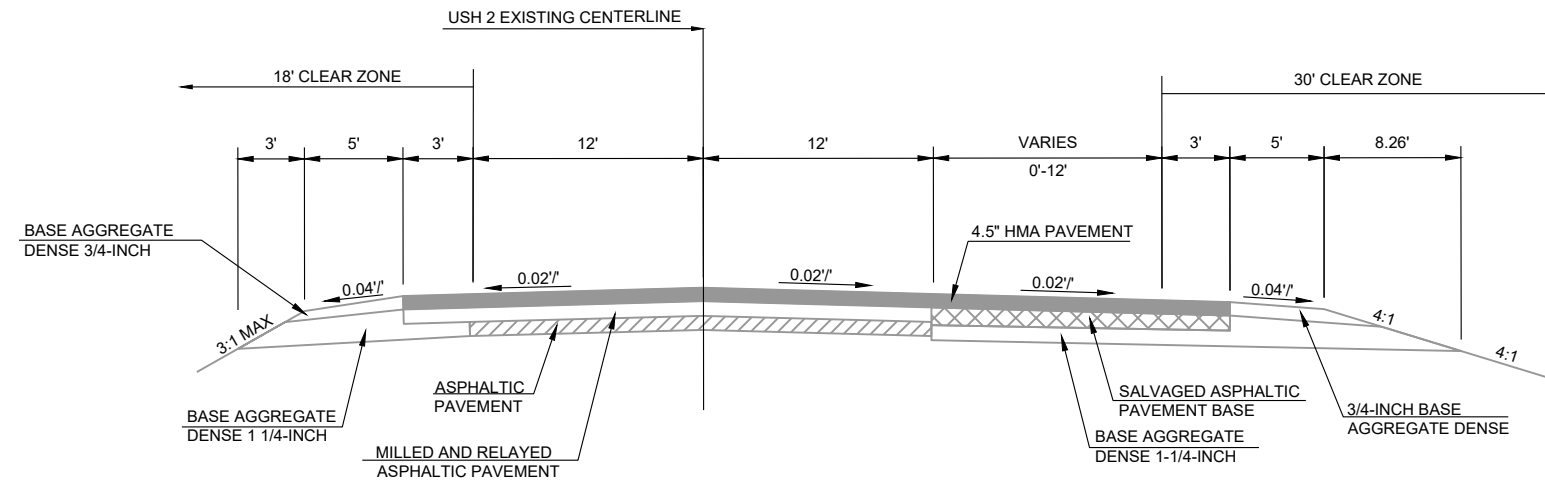
PLOT NAME :

PLOT SCALE : 1 IN:2000 FT

WISDOT/CADDs SHEET 42

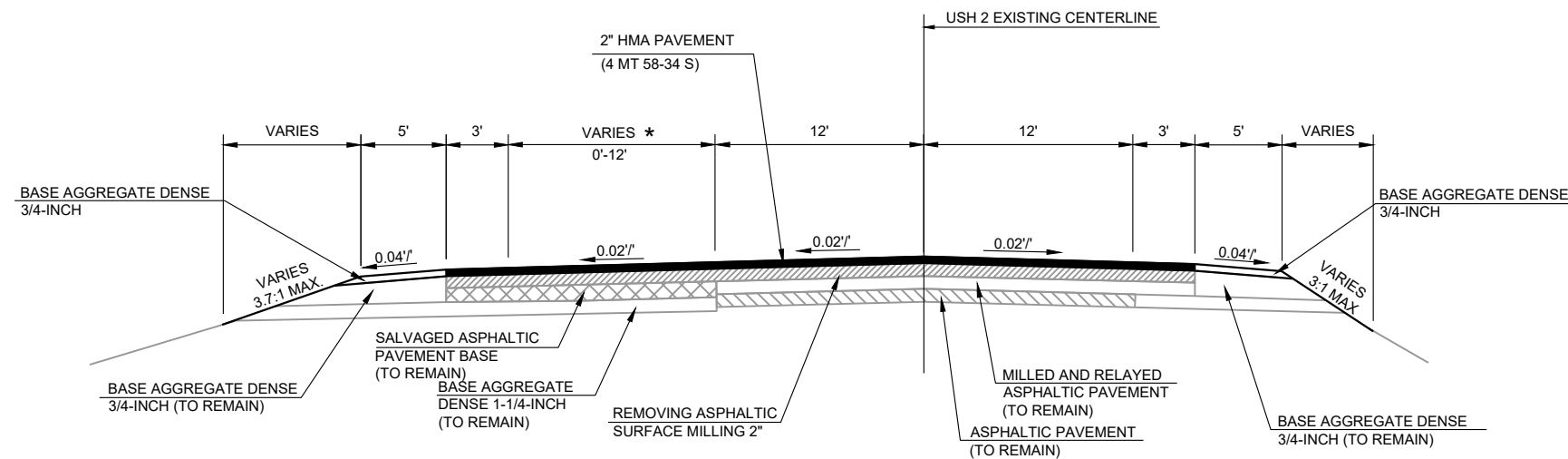






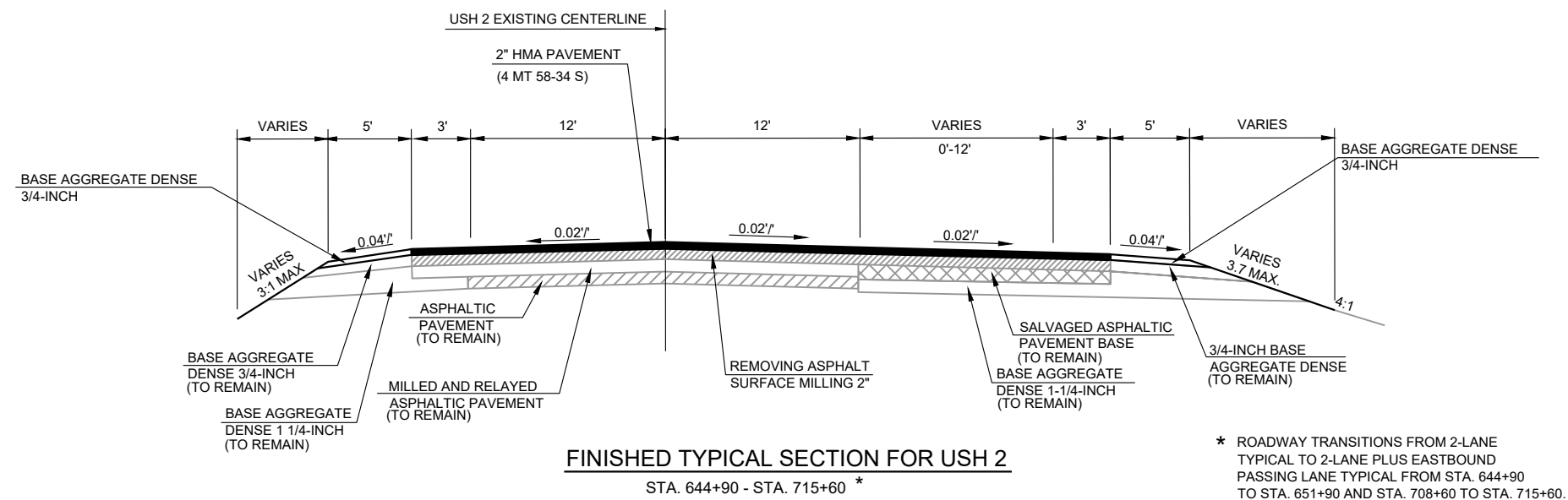
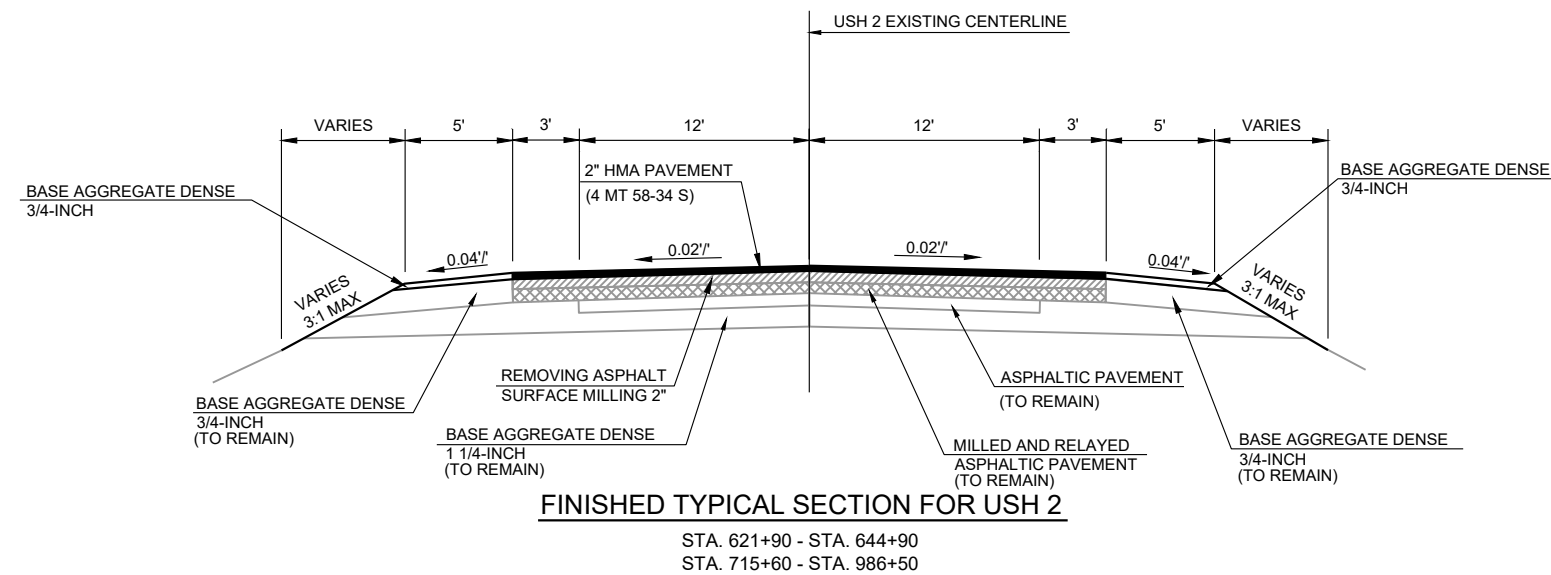
EXISTING TYPICAL SECTION FOR USH 2
STA. 644+90 - STA. 715+60 *

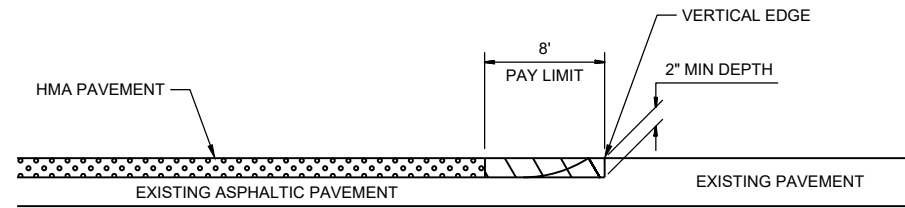
* ROADWAY TRANSITIONS FROM 2-LANE TYPICAL TO 2-LANE PLUS EASTBOUND
PASSING LANE TYPICAL FROM STA. 644+90 TO STA. 651+90 AND STA. 708+60 TO STA. 715+60.



FINISHED TYPICAL SECTION FOR USH 2
STA. 543+50 - STA. 621+90

* ROADWAY TRANSITIONS FROM 2-LANE TYPICAL TO
2-LANE PLUS WESTBOUND PASSING LANE TYPICAL
FROM STA. 614+60 TO STA 621+90.





* SEE TYPICAL CROSS SECTION FOR
PAVEMENT TYPE AND THICKNESS
OF INDIVIDUAL LAYERS

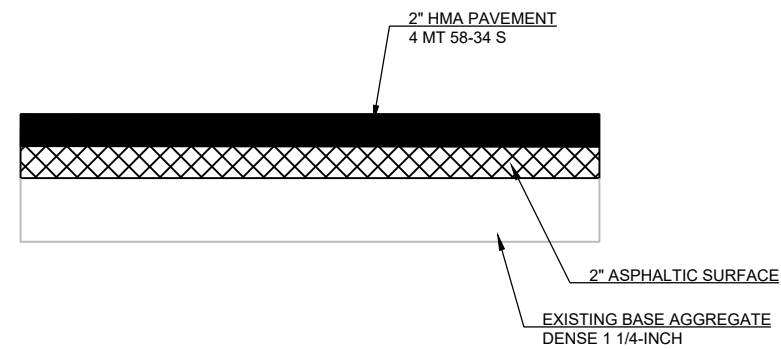


REMOVING ASPHALTIC SURFACE, MILLING



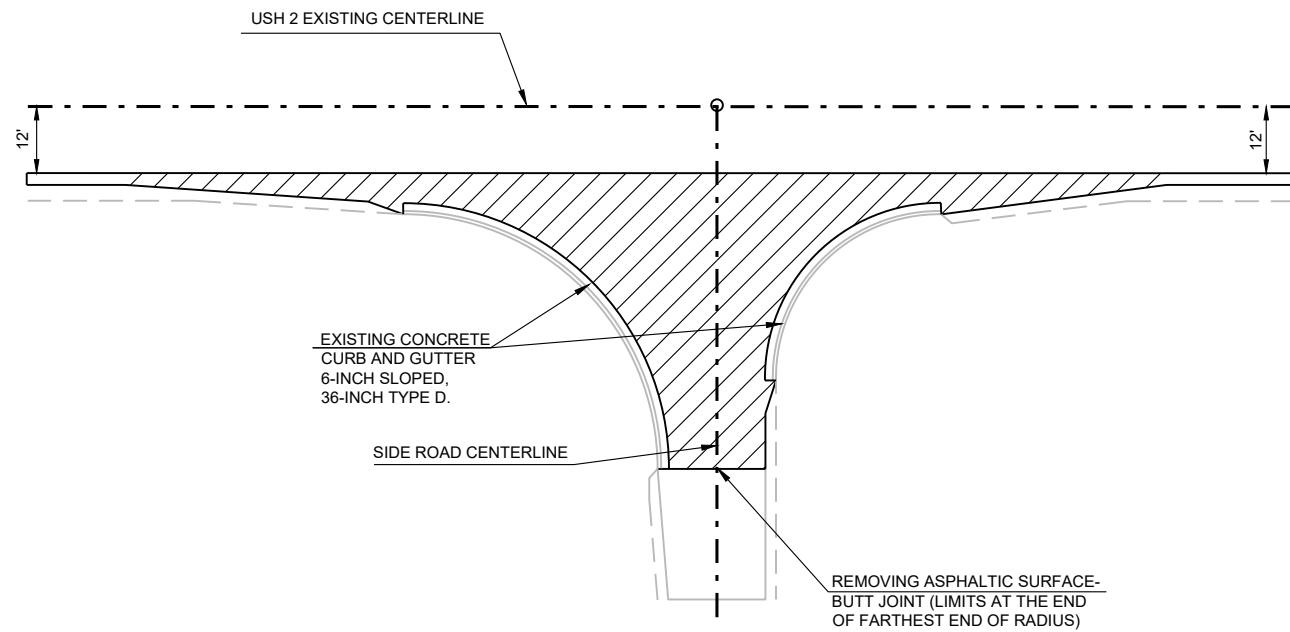
REMOVE ASPHALTIC SURFACE WEDGE AT BUTT JOINT TO CREATE VERTICAL EDGE

BUTT JOINT DETAIL FOR ASPHALTIC PAVEMENTS (NO PROFILE CHANGE)

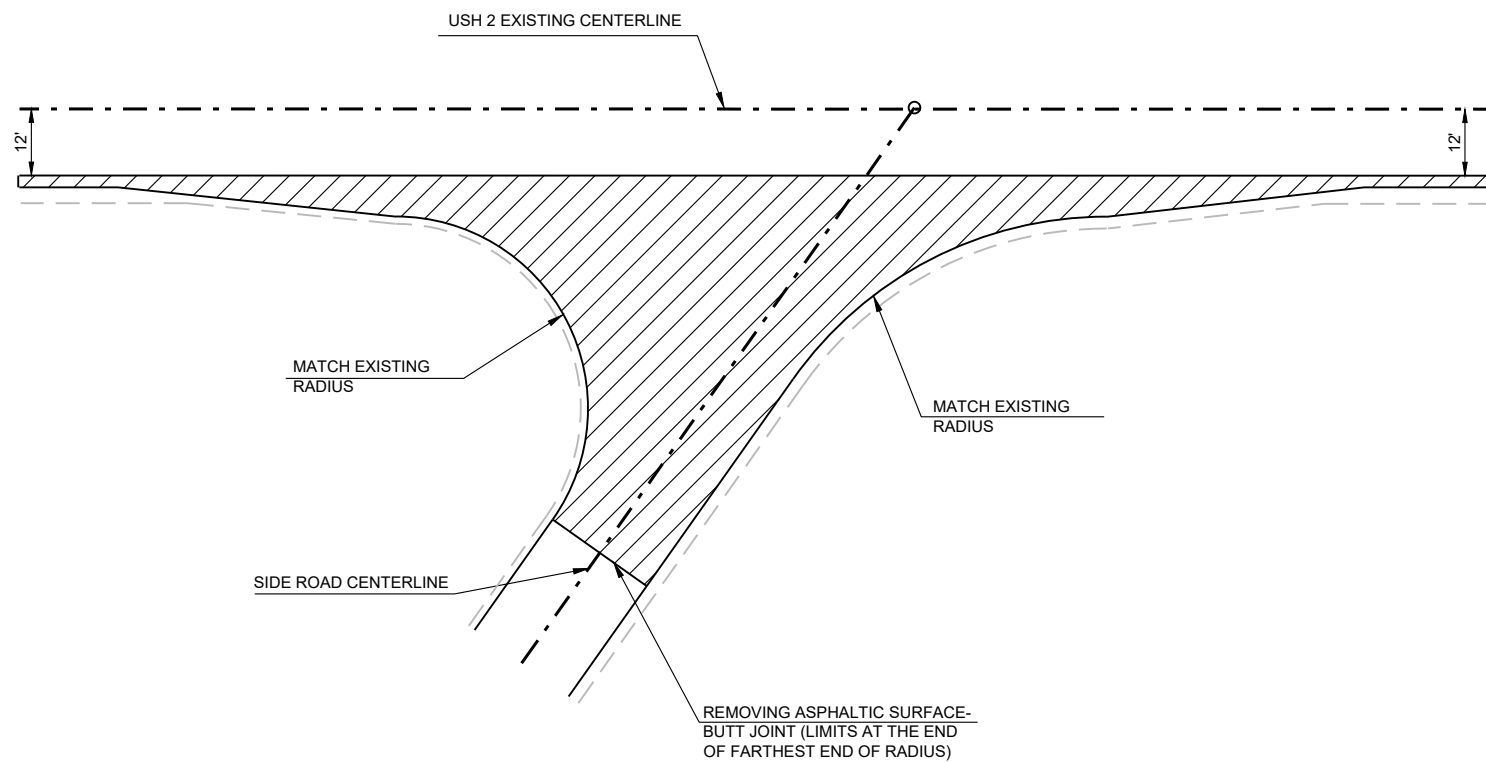


DETAIL FOR SHOULDER WIDENING

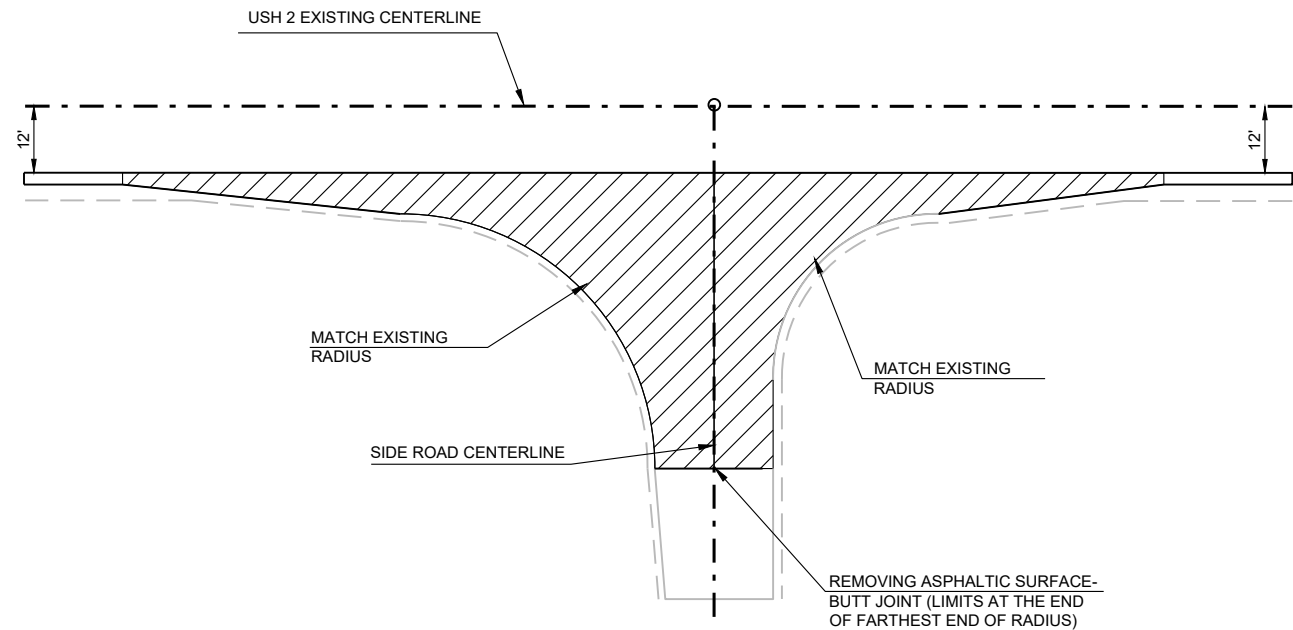
STA. 819+89 -STA. 825+19



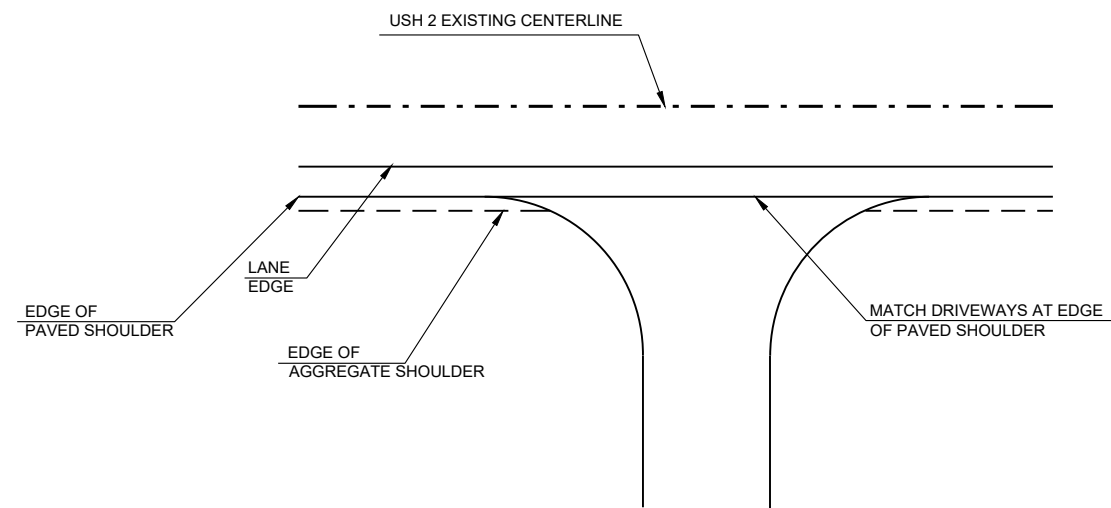
SIDE ROAD CONSTRUCTION LIMITS
INTERSECTION WITH CONCRETE CURB AND GUTTER



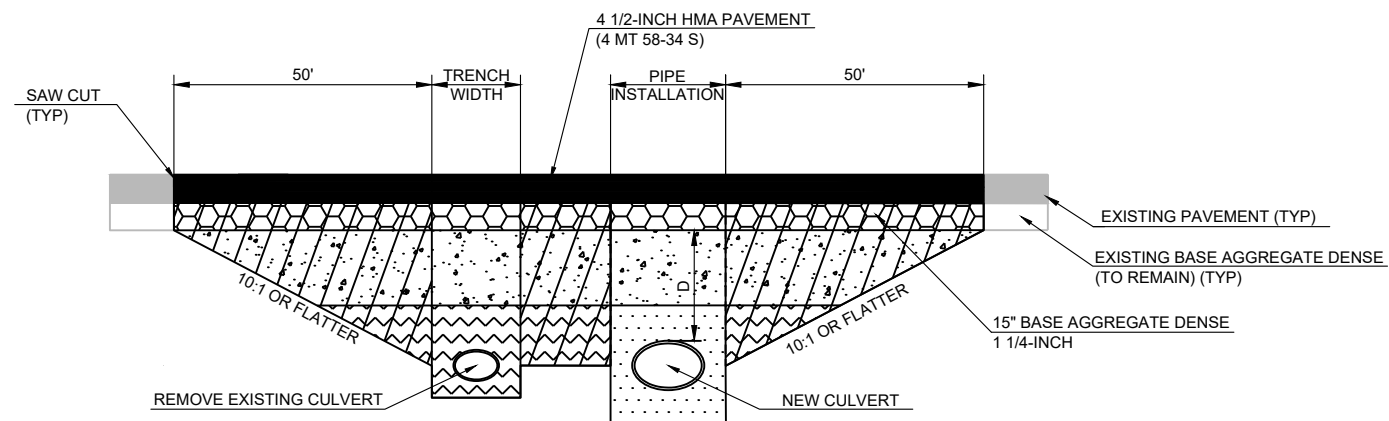
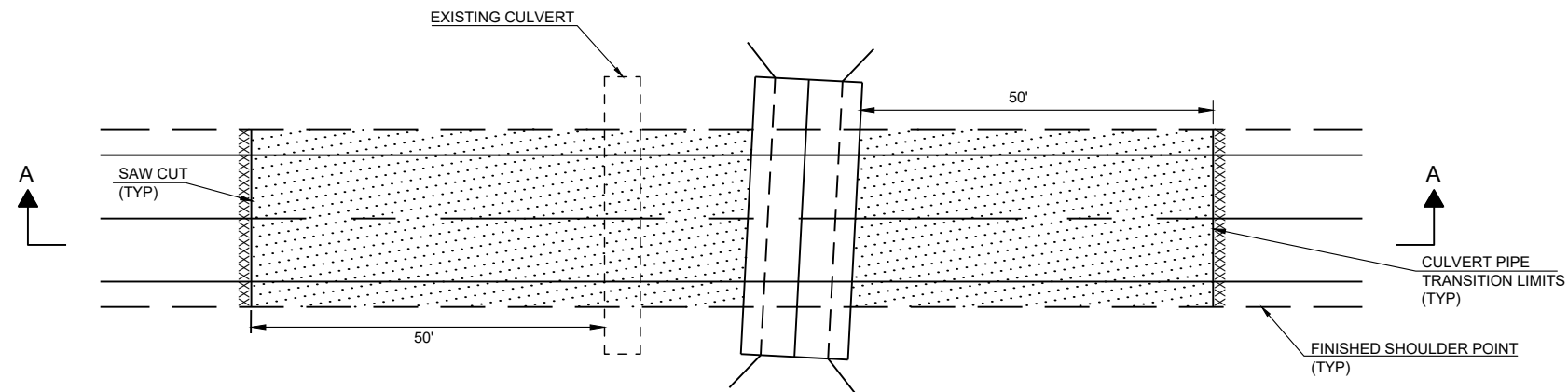
SIDE ROAD CONSTRUCTION LIMITS
SKEWED SIDE ROAD LOCATIONS



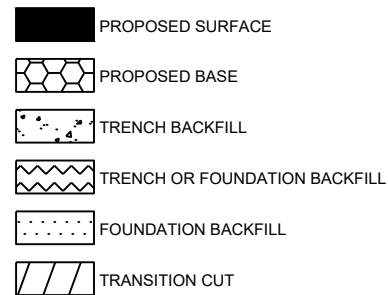
SIDE ROAD CONSTRUCTION LIMITS
INTERSECTION WITHOUT CONCRETE CURB AND GUTTER



DETAIL FOR TYPICAL DRIVEWAY PAVING LIMITS



SECTION A-A



NOTE:

TRANSITION CUT IS PAID AS EXCAVATION COMMON.

TRANSITION CUT WIDTH IS FROM SUBGRADE SHOULDER POINT TO SUBGRADE SHOULDER POINT.

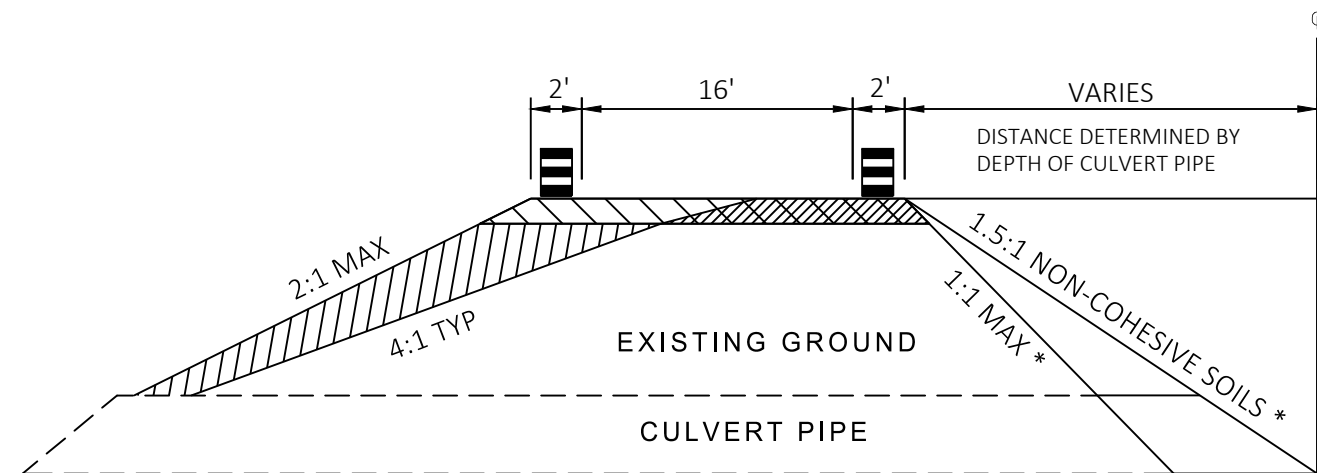
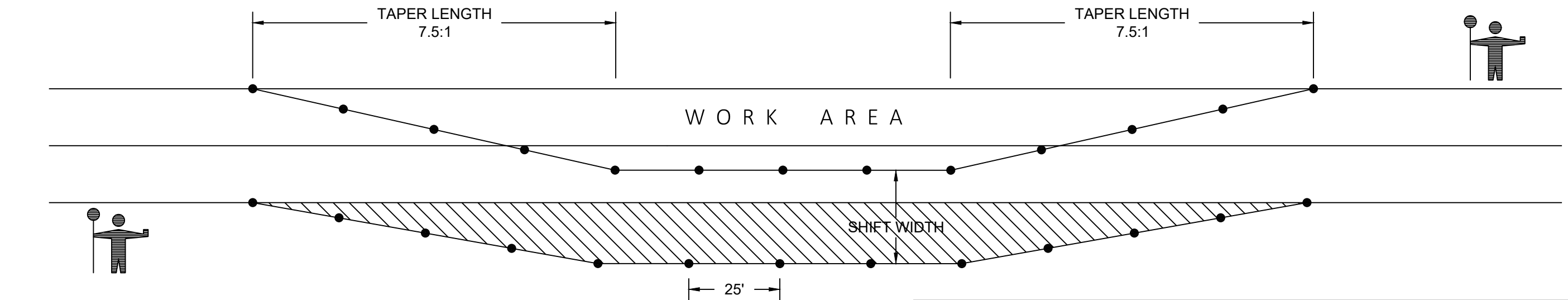
BACKFILL THE TRANSITION CUT AREAS WITH FOUNDATION AND TRENCH BACKFILL AS SPECIFIED IN STANDARD SPEC. 520.

PERFORM CULVERT PIPE INSTALLATION BEFORE MILLING AND PAVING.

PLACE CULVERT PIPE AND CONSTRUCT CHANNEL CHANGES BEFORE REMOVING EXISTING CULVERT PIPE AT STA. 970+39.

CULVERT PIPE TRANSITION

ROUTE	STA. (CL)	DEPTH D (FT)	PIPE DIA (IN)
USH 2	970+49	4.0	43X68



NOTES

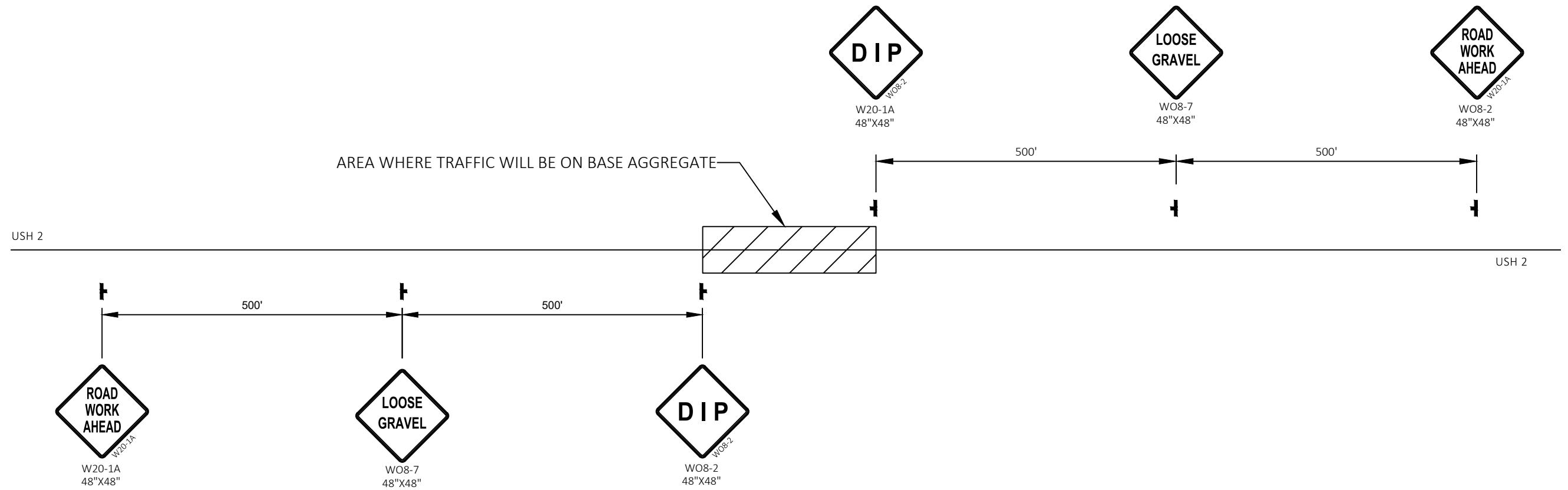
1. EXTEND TAPER ACROSS SHOULDER UNLESS DOING SO CONFLICTS WITH THE WORK OPERATION
 2. WHEN WORK IS NOT IN PROGRESS:
 - REMOVE OR COVER ALL LANE CLOSURE SIGNS
 - MOVE ALL DEVICES PAST THE OUTSIDE EDGE OF THE SHOULDER
 - RESTORE LANES TO TYPICAL OPERATING CONDITIONS
 3. USE WITH SDD "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION"
- * USE 1:1 FOR COHESIVE CLAYS AND SILTS, LOAMS, SANDY CLAYS, & ANGULAR GRAVEL SOILS
USE 1.5:1 FOR NON-COHESIVE SANDY SOILS

KEY

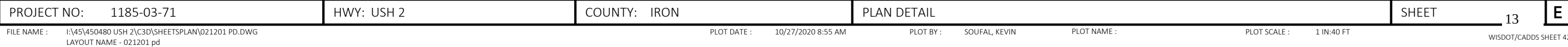
- TRAFFIC CONTROL DRUM
- ▨ EXISTING PAVED SURFACE
-OR-
6" BASE AGGREGATE DENSE 1 1/4 INCH
- INCIDENTAL TO LANE SHIFT SYSTEM
- ▧ 6" BASE AGGREGATE DENSE 1 1/4 INCH
- INCIDENTAL TO LANE SHIFT SYSTEM
- ▩ FILL
- INCIDENTAL TO LANE SHIFT SYSTEM

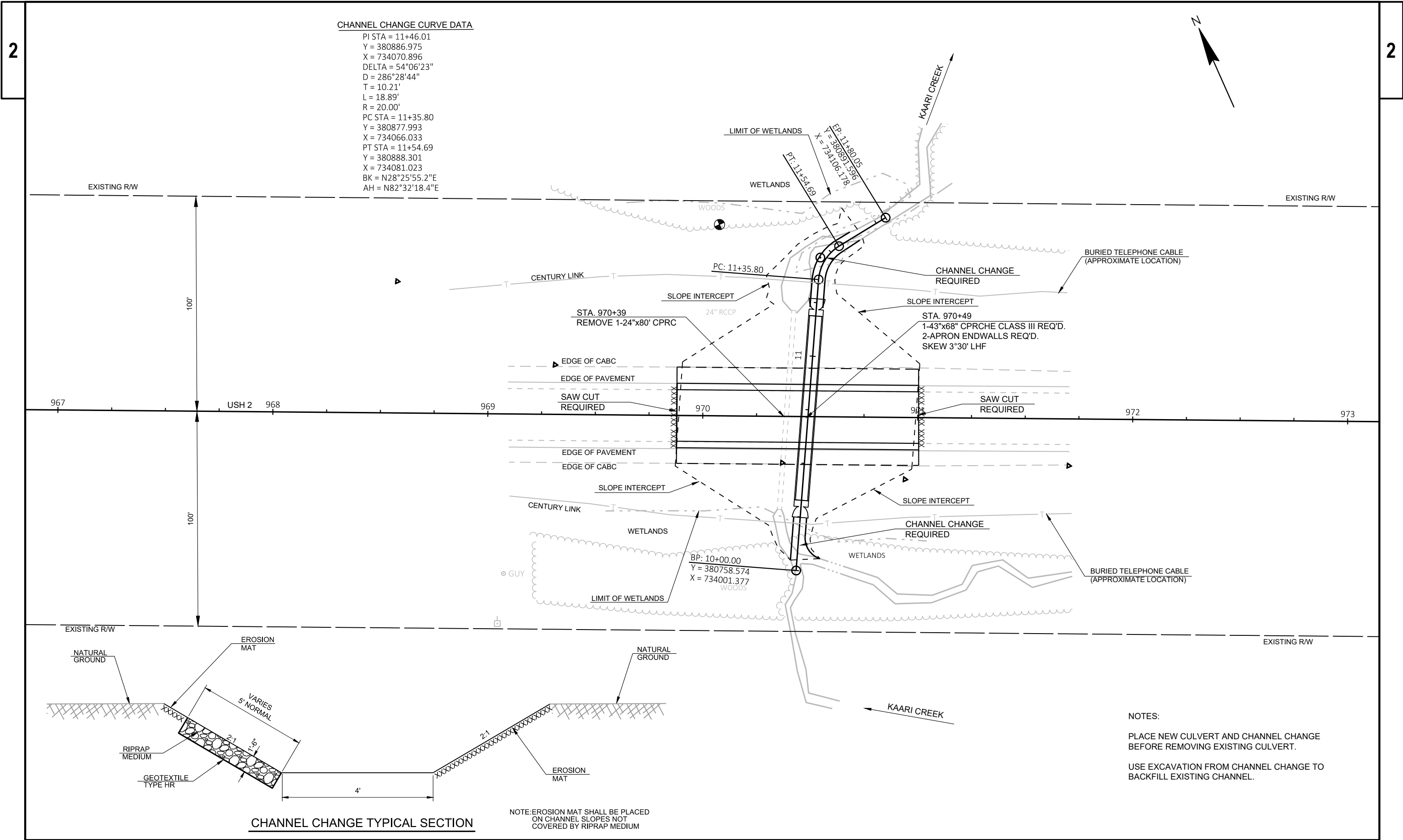
LANE SHIFT DETAIL

STA 970+49 (USH 2)



LOOSE GRAVEL SIGNING





CHANNEL CHANGE CURVE DATA

PI STA = 11+46.01
Y = 380886.975
X = 734070.896
DELTA = 54°06'23"
D = 286°28'44"
T = 10.21'
L = 18.89'
R = 20.00'
PC STA = 11+35.80
Y = 380877.993
X = 734066.033
PT STA = 11+54.69
Y = 380888.301
X = 734081.023
BK = N28°25'55.2"E
AH = N82°32'18.4"E

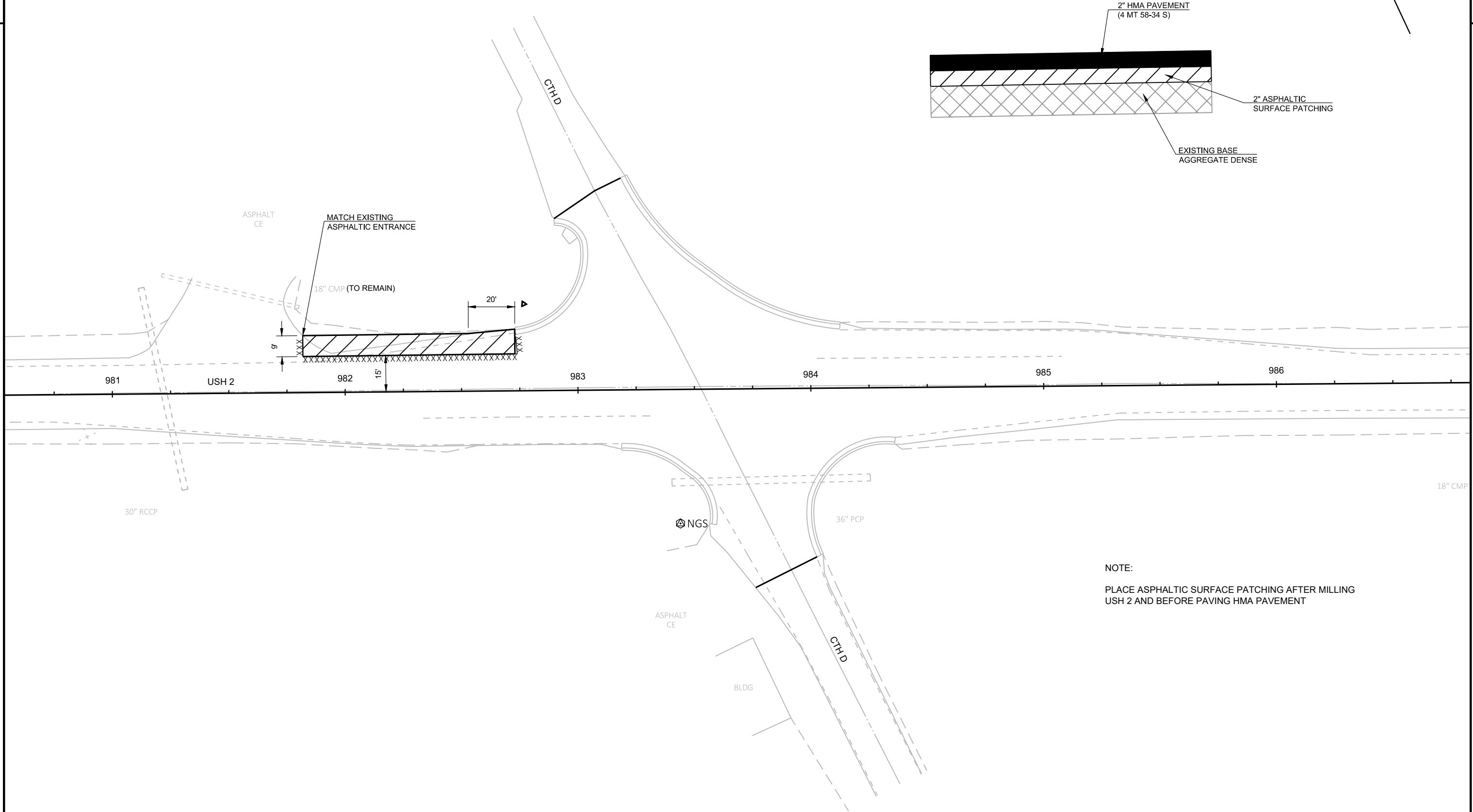
NOTES:

PLACE NEW CULVERT AND CHANNEL CHANGE BEFORE REMOVING EXISTING CULVERT.

USE EXCAVATION FROM CHANNEL CHANGE TO BACKFILL EXISTING CHANNEL.

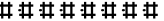
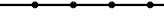
LEGEND

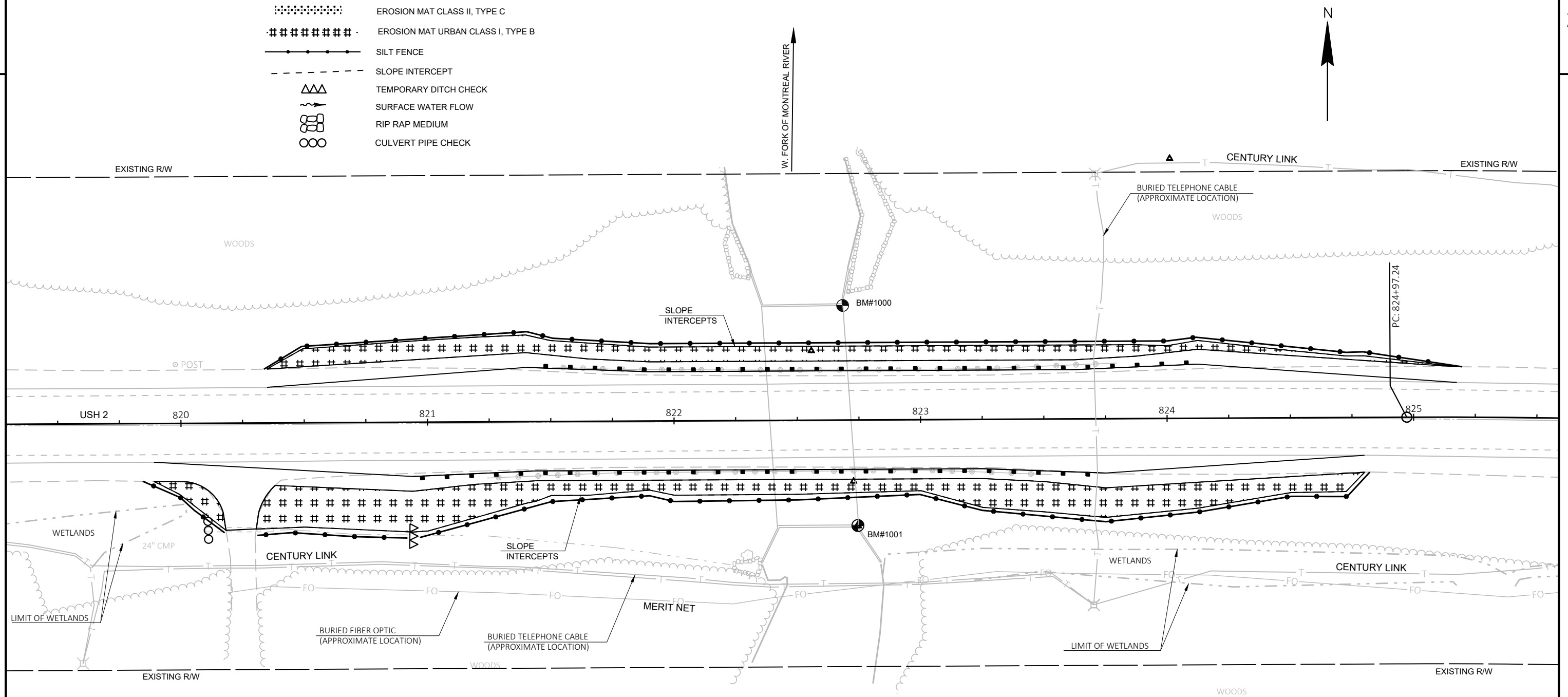
- .XXXX. SAW CUTS
- ASPHALTIC SURFACE PATCHING



NOTE:
PLACE ASPHALTIC SURFACE PATCHING AFTER MILLING
USH 2 AND BEFORE PAVING HMA PAVEMENT

LEGEND

	EROSION MAT CLASS II, TYPE C
	EROSION MAT URBAN CLASS I, TYPE B
	SILT FENCE
	SLOPE INTERCEPT
	TEMPORARY DITCH CHECK
	SURFACE WATER FLOW
	RIP RAP MEDIUM
	CULVERT PIPE CHECK



PROJECT NO: 1185-03-71

HWY: USH 2

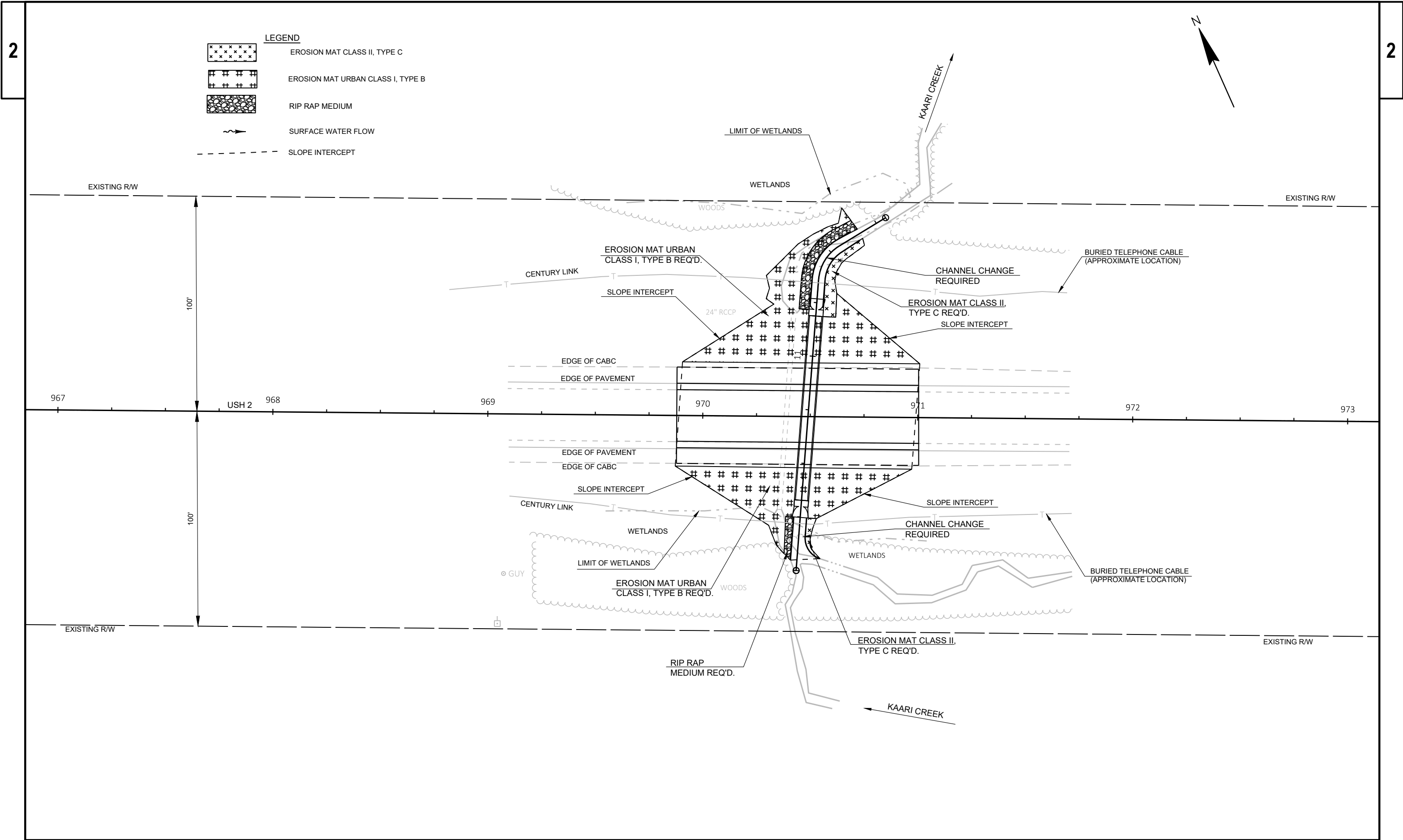
COUNTY: IRON

EROSION CONTROL

SHEET

16

E



Estimate Of Quantities

1185-03-71					
Line	Item	Item Description	Unit	Total	Qty
0002	203.0100	Removing Small Pipe Culverts	EACH	1.000	1.000
0004	204.0115	Removing Asphaltic Surface Butt Joints	SY	440.000	440.000
0006	204.0120	Removing Asphaltic Surface Milling	SY	173,240.000	173,240.000
0008	204.0165	Removing Guardrail	LF	460.000	460.000
0010	204.0180	Removing Delineators and Markers	EACH	4.000	4.000
0012	205.0100	Excavation Common	CY	930.000	930.000
0014	211.0100	Prepare Foundation for Asphaltic Paving (project) 01. 1185-03-71	LS	1.000	1.000
0016	211.0400	Prepare Foundation for Asphaltic Shoulders	STA	12.000	12.000
0018	213.0100	Finishing Roadway (project) 01. 1185-03-71	EACH	1.000	1.000
0020	305.0110	Base Aggregate Dense 3/4-Inch	TON	3,780.000	3,780.000
0022	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,030.000	1,030.000
0024	455.0605	Tack Coat	GAL	11,990.000	11,990.000
0026	460.0105.S	HMA Percent Within Limits (PWL) Test Strip Volumetrics	EACH	1.000	1.000
0028	460.0110.S	HMA Percent Within Limits (PWL) Test Strip Density	EACH	1.000	1.000
0030	460.2000	Incentive Density HMA Pavement	DOL	660.000	660.000
0032	460.2005	Incentive Density PWL HMA Pavement	DOL	15,590.000	15,590.000
0034	460.2007	Incentive Density HMA Pavement Longitudinal Joints	DOL	11,440.000	11,440.000
0036	460.2010	Incentive Air Voids HMA Pavement	DOL	18,990.000	18,990.000
0038	460.6244	HMA Pavement 4 MT 58-34 S	TON	20,094.000	20,094.000
0040	465.0105	Asphaltic Surface	TON	180.000	180.000
0042	465.0110	Asphaltic Surface Patching	TON	100.000	100.000
0044	465.0475	Asphalt Centerline Rumble Strips 2-Lane Rural	LF	44,300.000	44,300.000
0046	522.2343	Culvert Pipe Reinforced Concrete Horizontal Elliptical Class HE-III 43x68-Inch	LF	92.000	92.000
0048	522.2643	Apron Endwalls for Culvert Pipe Reinforced Concrete Horizontal Elliptical 43x68-Inch	EACH	2.000	2.000
0050	606.0200	Riprap Medium	CY	12.000	12.000
0052	614.0010	Barrier System Grading Shaping Finishing	EACH	2.000	2.000
0054	614.2300	MGS Guardrail 3	LF	761.000	761.000
0056	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0058	618.0100	Maintenance And Repair of Haul Roads (project) 01. 1185-03-71	EACH	1.000	1.000
0060	619.1000	Mobilization	EACH	1.000	1.000
0062	624.0100	Water	MGAL	86.000	86.000
0064	625.0100	Topsoil	SY	730.000	730.000
0066	628.1504	Silt Fence	LF	1,350.000	1,350.000
0068	628.1520	Silt Fence Maintenance	LF	714.000	714.000
0070	628.1905	Mobilizations Erosion Control	EACH	4.000	4.000
0072	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0074	628.2008	Erosion Mat Urban Class I Type B	SY	1,480.000	1,480.000

Estimate Of Quantities

1185-03-71

Line	Item	Item Description	Unit	Total	Qty
0076	628.2027	Erosion Mat Class II Type C	SY	32.000	32.000
0078	628.7504	Temporary Ditch Checks	LF	10.000	10.000
0080	628.7555	Culvert Pipe Checks	EACH	5.000	5.000
0082	629.0210	Fertilizer Type B	CWT	0.600	0.600
0084	630.0120	Seeding Mixture No. 20	LB	21.000	21.000
0086	630.0500	Seed Water	MGAL	18.000	18.000
0088	633.5200	Markers Culvert End	EACH	6.000	6.000
0090	642.5001	Field Office Type B	EACH	1.000	1.000
0092	643.0300	Traffic Control Drums	DAY	772.000	772.000
0094	643.0900	Traffic Control Signs	DAY	2,776.000	2,776.000
0096	643.1050	Traffic Control Signs PCMS	DAY	14.000	14.000
0098	643.5000	Traffic Control	EACH	1.000	1.000
0100	645.0120	Geotextile Type HR	SY	35.000	35.000
0102	646.1020	Marking Line Epoxy 4-Inch	LF	42,520.000	42,520.000
0104	646.1040	Marking Line Grooved Wet Ref Epoxy 4-Inch	LF	88,660.000	88,660.000
0106	646.3020	Marking Line Epoxy 8-Inch	LF	325.000	325.000
0108	646.6120	Marking Stop Line Epoxy 18-Inch	LF	80.000	80.000
0110	648.0100	Locating No-Passing Zones	MI	8.400	8.400
0112	649.0105	Temporary Marking Line Paint 4-Inch	LF	30,840.000	30,840.000
0114	649.0120	Temporary Marking Line Epoxy 4-Inch	LF	30,840.000	30,840.000
0116	650.6000	Construction Staking Pipe Culverts	EACH	1.000	1.000
0118	650.8000	Construction Staking Resurfacing Reference	LF	44,300.000	44,300.000
0120	650.9910	Construction Staking Supplemental Control (project) 01. 1185-03-71	LS	1.000	1.000
0122	650.9920	Construction Staking Slope Stakes	LF	123.000	123.000
0124	690.0150	Sawing Asphalt	LF	60.000	60.000
0126	740.0440	Incentive IRI Ride	DOL	38,450.000	38,450.000
0128	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	2,000.000	2,000.000
0130	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	1,260.000	1,260.000
0132	SPV.0060	Special 01. Lane Shift	EACH	3.000	3.000
0134	SPV.0105	Special 01. Grading and Shaping Channel Station 970+49	LS	1.000	1.000

REMOVING ASPHALTIC SURFACE					
					204.0120 REMOVING ASPHALTIC SURFACE MILLING SY
CATEGORY	STATION	TO	STATION	LOCATION	
0010	543+50	-	546+05	USH 2	1,354
0010	546+05	-	548+50	USH 2	1,412
0010	548+50	-	551+29	USH 2	1,440
0010	551+29	-	566+04	USH 2	7,067
0010	566+04	-	613+99	USH 2	22,513
0010	613+99	-	664+01	USH 2	19,774
0010	664+01	-	679+77	USH 2	7,397
0010	679+77	-	683+69	USH 2	1,846
0010	683+69	-	702+58	USH 2	8,856
0010	702+58	-	718+21	USH 2	6,603
0010	718+21	-	751+88	USH 2	11,262
0010	751+88	-	760+94	USH 2	3,533
0010	760+94	-	762+29	USH 2	457
0010	762+29	-	763+42	USH 2	380
0010	763+42	-	811+80	USH 2	16,191
0010	811+80	-	815+87	USH 2	1,364
0010	815+87	-	818+09	USH 2	741
0010	818+09	-	830+88	USH 2	4,269
0010	830+88	-	832+37	USH 2	501
0010	832+37	-	840+75	USH 2	2,807
0010	840+75	-	861+64	USH 2	6,975
0010	861+64	-	867+93	USH 2	2,099
0010	867+93	-	871+99	USH 2	1,358
0010	871+99	-	892+70	USH 2	6,927
0010	892+70	-	914+04	USH 2	7,130
0010	914+04	-	925+16	USH 2	3,715
0010	925+16	-	929+45	USH 2	1,444
0010	929+45	-	945+19	USH 2	5,292
0010	945+19	-	949+09	USH 2	1,307
0010	949+09	-	956+12	USH 2	2,352
0010	956+12	-	969+10	USH 2	4,327
0010	969+10	-	969+88	USH 2	264
0010	969+88	-	971+00	USH 2 Culvert Replacement	-
0010	971+00	-	971+71	USH 2	235
0010	971+71	-	980+05	USH 2	2,786
0010	980+05	-	981+44	USH 2	475
0010	981+44	-	982+97	USH 2	713
0010	982+97	-	984+25	USH 2	677
0010	984+25	-	985+82	USH 2	745
0010	985+82	-	986+50	USH 2	226
0010	547+25		CTH B RT		406
0010	547+25		CTH B LT		361
0010	681+44		N HEADLAKERD RT		339
0010	681+54		N HEAD LAKE RD LT		251
1923	761+56		VALLEY RD RT		214

REMOVING ASPHALTIC SURFACE (CONTINUED)					
					204.0120 REMOVING ASPHALTIC SURFACE MILLING SY
CATEGORY	STATION	TO	STATION	LOCATION	
0010	761+56			VALLEY RD LT	294
0010	813+51			N RIVER RD RT	204
0010	813+51			N RIVER RD LT	220
0010	869+92			PARK RD RT	262
0010	869+92			PARK RD LT	332
0010	927+09			N DEFER RD RT	369
0010	927+09			N DEFER RD LT	284
0010	950+62			KIVA TIA RT	132
0010	953+66			KIVA TIA LT	164
0010	983+53			N STATE LINE RD RT	255
0010	983+53			N STATE LINE RD LT	339
TOTAL 0010					173,240
REMOVING BUTT JOINTS					
					204.0115 REMOVING ASPHALTIC SURFACE BUTT JOINTS SY
CATEGORY	STATION			LOCATION	
0010	543+50			BEGIN PROJECT	38
0010	547+25			CTH B RT	25
0010	547+25			CTH B LT	25
0010	681+44			N HEADLAKERD RT	23
0010	681+54			N HEAD LAKE RD LT	21
0010	761+56			VALLEY RD RT	21
0010	761+56			VALLEY RD LT	20
0010	813+51			N RIVER RD RT	21
0010	813+51			N RIVER RD LT	22
0010	869+92			PARK RD RT	19
0010	869+92			PARK RD LT	21
0010	927+09			N DEFER RD RT	18
0010	927+09			N DEFER RD LT	19
0010	950+62			KIVA TIA RT	25
0010	953+66			KIVA TIA LT	21
0010	983+53			N STATE LINE RD RT	48
0010	983+53			N STATE LINE RD LT	26
0010	986+50			END PROJECT	27
TOTAL 0010					440

REMOVING SMALL PIPE CULVERTS

203.0100 REMOVING SMALL PIPE CULVERTS				
CATEGORY	STATION	LOCATION	EACH	REMARKS
0010	970+39	USH 2	1	24"x80' CPRC
TOTAL 0010			1	

REMOVING DELINEATORS AND MARKERS

204.0180 REMOVING DELINEATORS AND MARKERS					
CATEGORY	STATION	TO	STATION	LOCATION	EACH
0010	969+88	-	971+00	USH 2	4
TOTAL 0010					4

EARTHWORK SUMMARY

Division	From/To Station	Location	Common Excavation 205.0100 (1)	Unusable Pavement Material (2)	Comment:
			Cut		
1	969+84 - 971+00	USH 2	930	80	CULVERT PIPE REPLACEMENT
Division 1 Total			930	80	
Total Common Exc			930		

1) Common Excavation is the sum of the Cut column.
1) Cut material for channel realignment to be wasted.
2) Unusable Pavement Material is included in Cut.

PREPARING FOUNDATION

211.0100.01 PREPARE FOUNDATION FOR ASPHALTIC PAVING (1185-03-71)					211.0400 PREPARE FOUNDATION FOR ASPHALTIC SHOULDERS
CATEGORY	STATION	TO	STATION	LOCATION	LS STA
0010	543+50	-	986+50	USH 2	1 -
0010	819+89	-	824+80	USH 2	- 6
0010	820+35	-	825+18	USH 2	- 6
TOTAL 0010					1 12

BASE AGGREGATE DENSE 3/4-INCH

					305.0110	
					BASE	
					AGGREGATE	
					DENSE 3/4-INCH	
CATEGORY	STATION	TO	STATION	LOCATION	TON	REMARKS
0010	543+50	-	551+29	USH 2 RT	23	
0010	543+50	-	551+29	USH 2 LT	32	
0010	551+29	-	679+77	USH 2 RT	532	
0010	551+29	-	679+77	USH 2 LT	580	
0010	679+77	-	683+69	USH 2 RT	18	
0010	679+77	-	683+69	USH 2 LT	16	
0010	683+69	-	760+94	USH 2 RT	355	
0010	683+69	-	760+94	USH 2 LT	334	
0010	760+94	-	763+42	USH 2 RT	9	
0010	760+94	-	763+42	USH 2 LT	10	
0010	763+42	-	840+75	USH 2 RT	329	
0010	763+42	-	840+75	USH 2 LT	331	
0010	840+75	-	969+10	USH 2 RT	470	
0010	840+75	-	969+10	USH 2 LT	595	
0010	969+10	-	969+88	USH 2 RT	3	
0010	969+10	-	969+88	USH 2 LT	4	
0010	969+88	-	971+00	USH 2 Culvert Replacement RT	10	
0010	969+88	-	971+00	USH 2 Culvert Replacement LT	11	
0010	971+00	-	971+71	USH 2 RT	3	
0010	971+00	-	971+71	USH 2 LT	3	
0010	971+71	-	986+50	USH 2 RT	48	
0010	971+71	-	986+50	USH 2 LT	64	
TOTAL 0010					3,780	

BASE AGGREGATE DENSE 1 1/4-INCH

					305.0120 BASE AGGREGATE DENSE 1 1/4- INCH	
CATEGORY	STATION	TO	STATION	LOCATION	TON	REMARKS
0010	819+89	-	824+80	USH 2 RT	177	GUARDRAIL WIDENING
0010	820+35	-	825+17	USH 2 LT	228	GUARDRAIL WIDENING
0010	969+84	-	971+07	USH 2	625	CULVERT
TOTAL 0010					1,030	

3

3

HMA PAVEMENT											
					455.0605	460.0105.S HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP VOLUMETRICS	460.0110.S HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP DENSITY	460.6244 HMA PAVEMENT 4 MT 58-34 S	465.0105 ASPHALTIC SURFACE	465.0110 ASPHALTIC SURFACE PATCHING	
CATEGORY	STATION	TO	STATION	LOCATION	TACK COAT GAL	EACH	EACH	TON	TON	TON	REMARKS
0010	543+50	-	546+05	USH 2	95	-	-	156	-	-	
0010	546+05	-	548+50	USH 2	99	-	-	162	-	-	
0010	548+50	-	551+29	USH 2	101	-	-	166	-	-	
0010	551+29	-	566+04	USH 2	495	-	-	813	-	-	
0010	566+04	-	613+99	USH 2	1,580	-	-	2,589	-	-	
0010	613+99	-	664+01	USH 2	1,388	-	-	2,274	-	-	
0010	664+01	-	679+77	USH 2	518	-	-	851	-	-	
0010	679+77	-	683+69	USH 2	129	-	-	212	-	-	
0010	683+69	-	702+58	USH 2	620	-	-	1,018	-	-	
0010	702+58	-	718+21	USH 2	462	-	-	759	-	-	
0010	718+21	-	751+88	USH 2	788	-	-	1,295	-	-	
0010	751+88	-	760+94	USH 2	247	-	-	406	-	-	
0010	760+94	-	762+29	USH 2	32	-	-	53	-	-	
0010	762+29	-	763+42	USH 2	27	-	-	44	-	-	
0010	763+42	-	811+80	USH 2	1,133	-	-	1,862	-	-	
0010	811+80	-	815+87	USH 2	95	-	-	157	-	-	
0010	815+87	-	818+09	USH 2	52	-	-	85	-	-	
0010	818+09	-	830+88	USH 2	299	-	-	491	-	-	
0010	819+71	-	825+48	USH 3	40	-	-	-	60	-	
0010	830+88	-	832+37	USH 2	35	-	-	130	-	-	
0010	832+37	-	840+75	USH 2	197	-	-	323	-	-	
0010	840+75	-	861+64	USH 2	488	-	-	802	-	-	
0010	861+64	-	867+93	USH 2	147	-	-	241	-	-	
0010	867+93	-	871+99	USH 2	95	-	-	156	-	-	
0010	871+99	-	892+70	USH 2	485	-	-	797	-	-	
0010	892+70	-	914+04	USH 2	499	-	-	820	-	-	
0010	914+04	-	925+16	USH 2	260	-	-	427	-	-	
0010	925+16	-	929+45	USH 2	101	-	-	166	-	-	
0010	929+45	-	945+19	USH 2	370	-	-	608	-	-	
0010	945+19	-	949+09	USH 2	92	-	-	150	-	-	
0010	949+09	-	956+12	USH 2	165	-	-	270	-	-	
0010	956+12	-	969+10	USH 2	303	-	-	498	-	-	
0010	969+10	-	969+88	USH 2	18	-	-	30	-	-	
0010	969+88	-	971+00	USH 2	27	-	-	44	-	-	CULVERT REPLACEMENT
0010	971+00	-	971+71	USH 2	16	-	-	27	-	-	
0010	971+71	-	980+05	USH 2	195	-	-	320	-	-	
0010	980+05	-	981+44	USH 2	33	-	-	55	-	-	
0010	981+44	-	982+97	USH 2	58	-	-	94	12	-	
0010	982+97	-	984+25	USH 2	47	-	-	78	-	-	
0010	984+25	-	985+82	USH 2	52	-	-	86	-	-	
0010	985+82	-	986+50	USH 2	16	-	-	26	-	-	
0010	969+84	-	971+07	USH 2 RT	30	-	-	-	108	-	CULVERT REPLACEMENT
0010		547+25		CTH B RT	5	-	-	50	-	-	

						455.0605	460.0105.S HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP VOLUMETRICS	460.0110.S HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP DENSITY	460.6244 HMA PAVEMENT 4 MT 58-34 S	465.0105 ASPHALTIC SURFACE	465.0110 ASPHALTIC SURFACE PATCHING	REMARKS
CATEGORY	STATION	TO	STATION	LOCATION	TACK COAT	GAL	EACH	EACH	TON	TON	TON	
0010		547+25		CTH B LT	5	-	-	-	44	-	-	
0010		681+44		N HEADLAKERD RT	4	-	-	-	42	-	-	
0010		681+54		N HEAD LAKE RD LT	3	-	-	-	31	-	-	
0010		761+56		VALLEY RD RT	3	-	-	-	27	-	-	
0010		761+56		VALLEY RD LT	4	-	-	-	36	-	-	
0010		813+51		N RIVER RD RT	3	-	-	-	26	-	-	
0010		813+51		N RIVER RD LT	3	-	-	-	28	-	-	
0010		869+92		PARK RD RT	3	-	-	-	32	-	-	
0010		869+92		PARK RD LT	4	-	-	-	41	-	-	
0010		927+09		N DEFER RD RT	4	-	-	-	45	-	-	
0010		927+09		N DEFER RD LT	4	-	-	-	35	-	-	
0010		950+62		KIVA TIA RT	3	-	-	-	18	-	-	
0010		953+66		KIVA TIA LT	3	-	-	-	21	-	-	
0010		983+53		N STATE LINE RD RT	5	-	-	-	35	-	-	
0010		983+53		N STATE LINE RD LT	5	-	-	-	42	-	-	
0010	PROJECT LIMITS			USH 2	-	1	1	1	-	-	100	
TOTAL 0010						11,990	1	1	20,094	180	100	

PWL MIXTURE USE TABLE

LOCATION	MIXTURE USE	UNDERLYING SURFACE	BID ITEM	THICKNESS	TONS*	QUALITY MANAGEMENT PROGRAM TO BE USED:	
						MIXTURE ACCEPTANCE	DENSITY ACCEPTANCE
12 FOOT DRIVING LANE	UPPER LAYER	MILLED EXISTING HMA SURFACE	4 MT 58-34 S	2"	13,585	PWL INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010	INCENTIVE DENSITY PWL HMA PAVEMENT 460.2005
12 FOOT PASSING LANE	UPPER LAYER	MILLED EXISTING HMA SURFACE	4 MT 58-34 S	2"	2,000	PWL INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010	INCENTIVE DENSITY PWL HMA PAVEMENT 460.2005
3 FOOT PAVED SHOULDER	UPPER LAYER	MILLED EXISTING HMA SURFACE	4 MT 58-34 S	2"	3,400	PWL INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010	ACCEPTANCE TESTING BY THE DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE
INTERSECTION, TURN LANE	UPPER LAYER	MILLED EXISTING HMA SURFACE	4 MT 58-34 S	2"	1,025	QMP AS PER SS 460	INCENTIVE DENSITY HMA PAVEMENT 460.2000
SHOULDER WIDENING, CULVERT REPLACEMENT	LOWER LAYER	BASE AGGREGATE	ASPHALTIC SURFACE	7.5" TOTAL	200	QMP AS PER SS 465	ACCEPTANCE BY ORDINARY COMPACTION

*QUANTITIES ARE APPROXIMATE

ASPHALT CENTERLINE RUMBLE STRIPS

					465.0475	
					ASPHALT	
					CENTERLINE	
					RUMBLE STRIPS	
					2-LANE RURAL	
CATEGORY	STATION	TO	STATION	LOCATION	LF	REMARKS
0010	543+50	-	986+50	USH 2	44,300	
TOTAL 0010					44,300	

RIPRAP

					606.0200	
					RIPRAP	
					MEDIUM	
CATEGORY	STATION	TO	STATION	LOCATION	CY	REMARKS
0010	969+88	-	971+00	USH 2 RT	3	
0010	969+88	-	971+00	USH 2 LT	9	
TOTAL 0010					12	

BARRIER SYSTEM GRADING SHAPING FINISHING

614.0010 BARRIER SYSTEM GRADING SHAPING FINISHING						FOR INFORMATIONAL PURPOSES ONLY						
CATEGORY	STATION	TO	STATION	LOCATION	EACH	EXCAVATION COMMON SY	FILL SY	WASTE SY	TOPSOIL SY	FERTILIZER TYPE B CWT	SEEDING MIXTURE NO. 20 LB	SEED WATER MGAL
0010	819+89	-	825+18	USH 2, LT & RT	2	170	80	70	775	0.4	21	18
TOTAL 0010					2							

CULVERT PIPE

522.2343 CULVERT PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL CLASS HE-III 43X68-INCH					522.2643 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL 43X68-INCH					ELEVATION		END OF PIPE OFFSETS		DESCRIPTION
CATEGORY	STATION	LOCATION	LF	EACH	INLET	OUTLET	INLET	OUTLET						
0010	970+49	USH 2	92	2	1328.49	1327.05	47' RT	55' LT	SKEW 3.5 DEGREES LHF					
TOTAL 0010			92	2										

GUARDRAIL

						204.0165 REMOVING GUARDRAIL	614.2300 MGS GUARDRAIL 3	614.2610 MGS GUARDRAIL TERMINAL EAT			REMARKS
CATEGORY	STATION	TO	STATION	LOCATION	LF	LF	LF	EACH			
0010	819+89	-	824+80	USH 2 RT	230	385		2			
0010	820+35	-	825+18	USH 2 LT	230	376		2			
TOTAL 0010					460	761		4			

WATER

						624.0100 WATER MGAL			REMARKS
CATEGORY	STATION	TO	STATION	LOCATION		MGAL			
0010	543+50	-	986+50	USH 2 RT		86			BASE AGREGATE DENSE
					TOTAL 0010	86			

3

SILT FENCE

				628.1504	628.1520		
				SILT FENCE	SILT FENCE		
CATEGORY	STATION	TO	STATION	LOCATION	LF	LF	REMARKS
0010	819+89	-	824+80	USH 2 RT	497	145	
0010	820+35	-	825+17	USH 2 LT	492	212	
0010	969+88	-	971+00	USH 2 RT	147	145	
0010	969+88	-	971+00	USH 2 LT	214	212	
				TOTAL 0010	1,350	714	

TEMPORARY DITCH CHECKS

				628.7504		
				TEMPORARY		
				DITCH CHECKS		
CATEGORY	STATION		LOCATION	LF	REMARKS	
0010	820+93		USH 2 RT	10		
				TOTAL 0010	10	

CULVERT PIPE CHECKS

				628.7555		
				CULVERT PIPE		
				CHECKS		
CATEGORY	STATION		LOCATION	EACH	REMARKS	
0010	820+00		USH 2 RT	5		
				TOTAL 0010	5	

3

LANDSCAPING ITEMS

					625.0100	628.2008	628.2027	629.0210	630.0120	630.0500		
					EROSION MAT							
					URBAN CLASS I		EROSION MAT	FERTILIZER TYPE	SEEDING			
					TOPSOIL	TYPE B	CLASS II TYPE C	B	MIXTURE NO. 20	SEED WATER		
CATEGORY	STATION	TO	STATION	LOCATION	SY	SY	SY	CWT	LB	MGAL	REMARKS	
0010	819+89	-	824+80	USH 2 RT	-	498	-	-	-	-		
0010	820+35	-	825+17	USH 2 LT	-	279	-	-	-	-		
0010	969+88	-	971+00	USH 2 RT	190	186	6	0.2	6	5		
0010	969+88	-	971+00	USH 2 LT	290	270	21	0.2	8	7		
0010	UNDISTRIBUTED			USH 2	250	247	5	0.2	7	6		
TOTAL 0010					730	1,480	32	0.6	21	18		

MOBILIZATION EROSION CONTROL

				628.1905	628.1910		
				MOBILIZATIONS	MOBILIZATIONS		
				EROSION	EROSION		
				CONTROL	CONTROL		
CATEGORY	STATION	TO	STATION	LOCATION	EACH	EACH	REMARKS
0010	969+84	-	971+07	USH 2	4	3	
				TOTAL 0010	4	3	

MARKERS CULVERT END

				633.5200		
				MARKERS		
				CULVERT END		
CATEGORY	STATION	TO	STATION	LOCATION	EACH	REMARKS
0010		585+00		USH 2	2	
0010		927+80		USH 2	2	
0010		970+49		USH 2	2	
				TOTAL 0010	6	

TRAFFIC CONTROL SIGNS								
LOCATION	APPROXIMATE SERVICE DAYS	643.0300 TRAFFIC CONTROL DRUMS		643.0900 TRAFFIC CONTROL SIGNS		643.1050 TRAFFIC CONTROL SIGNS PCMS		REMARKS
		NO. IN SERVICE	DAY	NO. IN SERVICE	DAY	NO. IN SERVICE	DAY	
ADVANCE WARNING								
USH 2, WEST PROJECT LIMITS	7	3	21	-	-	1	7	PLACE 7 CALENDAR DAYS BEFORE WORK BEGINSAND REMOVE WHEN CONSTRUCTION BEGINS
USH 2, EAST PROJECT LIMITS	7	3	21	-	-	1	7	PLACE 7 CALENDAR DAYS BEFORE WORK BEGINSAND REMOVE WHEN CONSTRUCTION BEGINS
USH 2, WEST PROJECT LIMITS	71	-	-	4	284	-	-	ADVANCE WARNING SIGNS, ROAD WORK NEXT 8 MILES
USH 2, EAST PROJECT LIMITS	71	-	-	4	284	-	-	ADVANCE WARNING SIGNS, ROAD WORK NEXT 8 MILES
CTH B	71	-	-	4	284	-	-	ROAD WORK AHEAD, END ROAD WORK
SIDE ROADS	71	-	-	14	994	-	-	ROAD WORK AHEAD
SUBTOTALS			42	1,846		14		
MILL AND OVERLAY								
USH 2	50	-	-	9	450	-	-	LOW SHOULDER, UNEVEN LANES (EVERY MILE AS APPLICABLE)
USH 2	50	-	-	8	400	-	-	MILLED SURFACE
GUARDRAIL REPLACEMENT	10	56	560	6	60	-	-	
CULVERT REPLACEMENT	5	34	170	4	20	-	-	
SUBTOTALS			730	930		0		
TOTAL 0010			772	2,776		14		

GEOTEXTILE TYPE HR						
CATEGORY	STATION	TO	STATION	LOCATION	SY	REMARKS
0010	969+88	-	971+00	USH 2 RT	7	
0010	969+88	-	971+00	USH 2 LT	28	
TOTAL 0010					35	

LOCATING NO-PASSING ZONES						
CATEGORY	STATION	TO	STATION	LOCATION	MI	REMARKS
0010	543+50	-	986+50	USH 2	8.4	
TOTAL 0010					8.4	

MARKING LINES

CATEGORY	STATION	TO	STATION	LOCATION	646.1020	646.1040	646.3020	646.6120	649.0105	649.0120	REMARKS
					MARKING LINE EPOXY 4-INCH LF	GROOVED WET REF EPOXY 4-INCH LF	MARKING LINE EPOXY 8-INCH LF	MARKING STOP LINE EPOXY 18-INCH LF	TEMPORARY MARKING LINE PAINT 4-INCH LF	TEMPORARY MARKING LINE EPOXY 4-INCH LF	
0010	543+50	-	657+97	USH 2	5,056	22,894	120	20	1,601	1,601	BEGIN PROJECT - CTH B (1)
0010	657+97	-	685+94	USH 2	5,100	5,594	-	20	2,758	2,758	CTH B - N HEAD LAKE RD (2)
0010	685+94	-	766+61	USH 2	10,829	16,135	-	-	8,526	8,526	N HEAD LAKE RD - VALLEY RD (3)
0010	766+61	-	817+47	USH 2	4,940	10,173	-	-	4,158	4,158	VALLEY RD - N RIVER RD
0010	817+47	-	870+06	USH 2	5,286	10,519	-	-	4,422	4,422	N RIVER RD - PARK RD
0010	870+06	-	934+45	USH 2	7,033	11,249	-	-	5,923	5,923	PARK RD - N DEFER RD
0010	934+45	-	955+61	USH 2	1,504	5,863	-	-	1,144	1,144	N DEFER RD - KIVI TIA RD
0010	955+61	-	984+04	USH 2	2,280	5,637	100	20	1,816	1,816	KIVI TIA RD - N STATE LINE RD
0010	984+04	-	986+50	USH 2	492	596	105	20	492	492	N STATE LINE RD - END PROJECT
TOTAL 0010					42,520	88,660	325	80	30,840	30,840	

NOTE:
PLACE TEMPORARY MARKING LINE PAINT ON MILLED SURFACE
PLACE TEMPORARY MARKING LINE EPOXY ON PAVEMENT SURFACE PRIOR TO CENTERLINE RUMBLE INSTALLATION
(1) 322 FEET OF MARKING LINE EPOXY 4-INCH IS WHITE RATHER THAN YELLOW FOR PASSING LANE SKIPS

SAWING ASPHALT

CATEGORY	STATION	LOCATION	690.0150 SAWING ASPHALT LF	REMARKS
0010	969+88	CULVERT REPLACEMENT	30	
0010	971+00	CULVERT REPLACEMENT	30	
TOTAL 0010			60	

LANE SHIFT

CATEGORY	STATION	LOCATION	SPV.0060.01 LANE SHIFT EACH
0010	970+49	USH 2,LT	1
0010	970+49	USH 2,RT	1
0010	970+39	USH 2,LT	1
TOTAL 0010			3

CONSTRUCTION STAKING

CATEGORY	STATION	TO	STATION	LOCATION	650.6000	650.8000	650.9910.01 CONSTRUCTION STAKING CONTROL (PROJECT) (01. 1185-03-71)	650.9920 CONSTRUCTION STAKING SLOPE STAKES	REMARKS
					CONSTRUCTION STAKING PIPE CULVERTS EACH	CONSTRUCTION STAKING RESURFACING REFERENCE LF	LS	LF	
0010	543+50	-	969+84	USH 2	-	42,634	1	-	CULVERT REPLACEMENT
0010	969+84	-	971+07	USH 2	1	123	-	123	
0010	971+07	-	986+50	USH 2	-	1,543	-	-	
TOTAL 0010					1	44,300	1	123	

GRADING AND SHAPING CHANNEL

					SPV.0105.01 GRADING AND SHAPING CHANNEL LS	FOR INFORMATIONAL PURPOSES ONLY		
CATEGORY	STATION	TO	STATION	LOCATION		EXCAVATION COMMON SY	FILL SY	BOROW SY
0010	970+39		970+49	USH 2	1	20	45	25
TOTAL 0010					1			

LEGEND

. XXXX . SAW CUTS

CONTROL POINTS						
NO.	STATION	OFFSET	DESCRIPTION	Y	X	ELEVATION
901	558+67.66	81.53'RT	SURVEY DISC IN CONCRETE MONUMENT	387116.412	694129.408	1219.57



5

5



PROJECT NO: 1185-03-71

HWY: USH 2

COUNTY: IRON

PLAN

SHEET

29

E





STA.725+96
EXISTING 24" CPRC
(TO REMAIN)

STA.731+15
EXISTING 30" CPRC
(TO REMAIN)

STA.744+77
EXISTING 24" CPRC
(TO REMAIN)



5

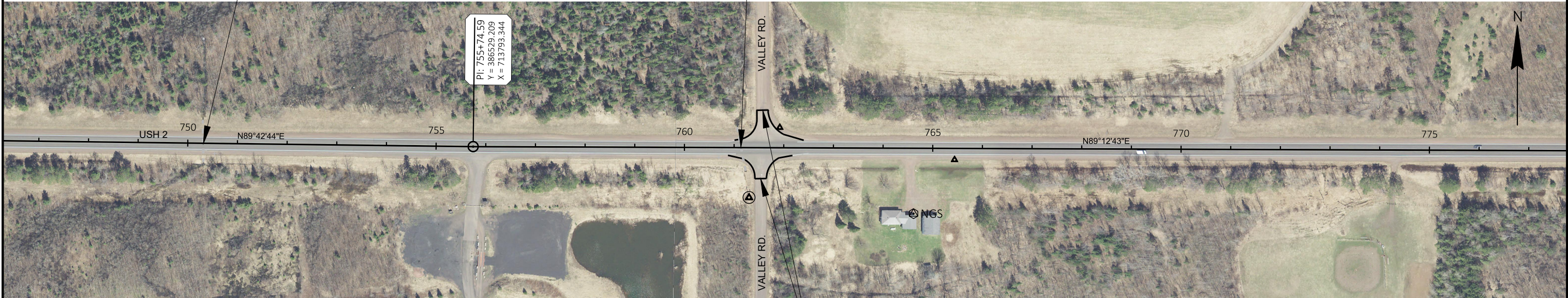
5

STA. 750+31
EXISTING 24" CPRC
(TO REMAIN)

STA. 761+14
EXISTING 30" CPRC
(TO REMAIN)

CONTROL POINTS						
NO.	STATION	OFFSET	DESCRIPTION	Y	X	ELEVATION
904	764+61.79	131.88'RT	SURVEY DISC IN CONCRETE MONUMENT	386409.549	714682.271	1196.751

PI: 755+74.59
Y = 386529.209
X = 713793.344



BUTT JOINT REQ'D.
(SEE DETAIL)

PROJECT NO: 1185-03-71

HWY: USH 2

COUNTY: IRON

PLAN

SHEET

32

E

FILE NAME : V:\TRANS-GB\450480 USH 2\C3D\SHEETSPLAN\050101 PP.DWG
LAYOUT NAME - 050104 pp

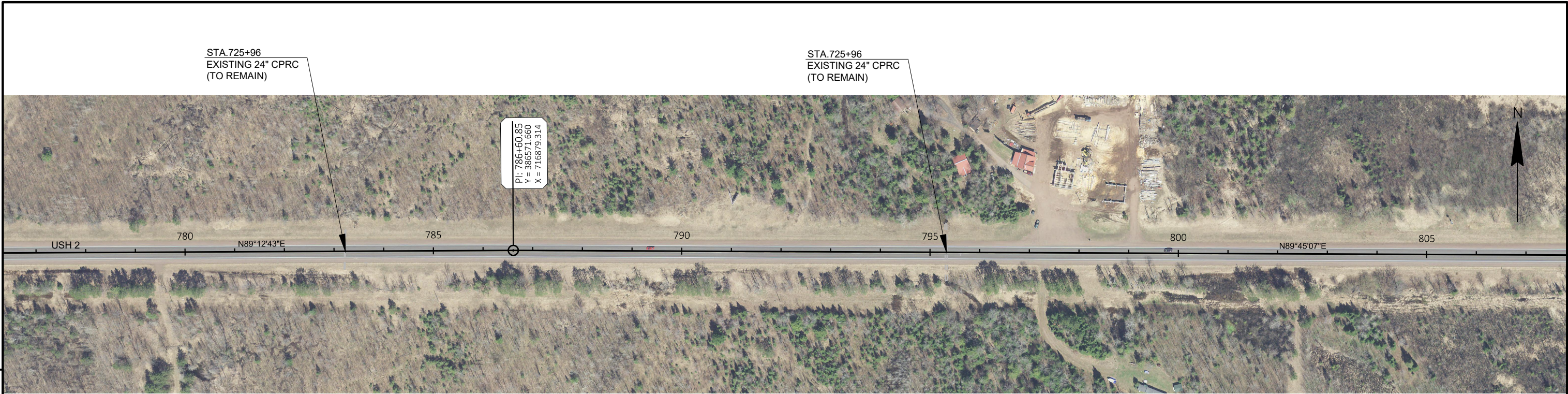
PLOT DATE : 10/27/2020 8:57 AM

PLOT BY : SOUFAL, KEVIN

PLOT NAME :

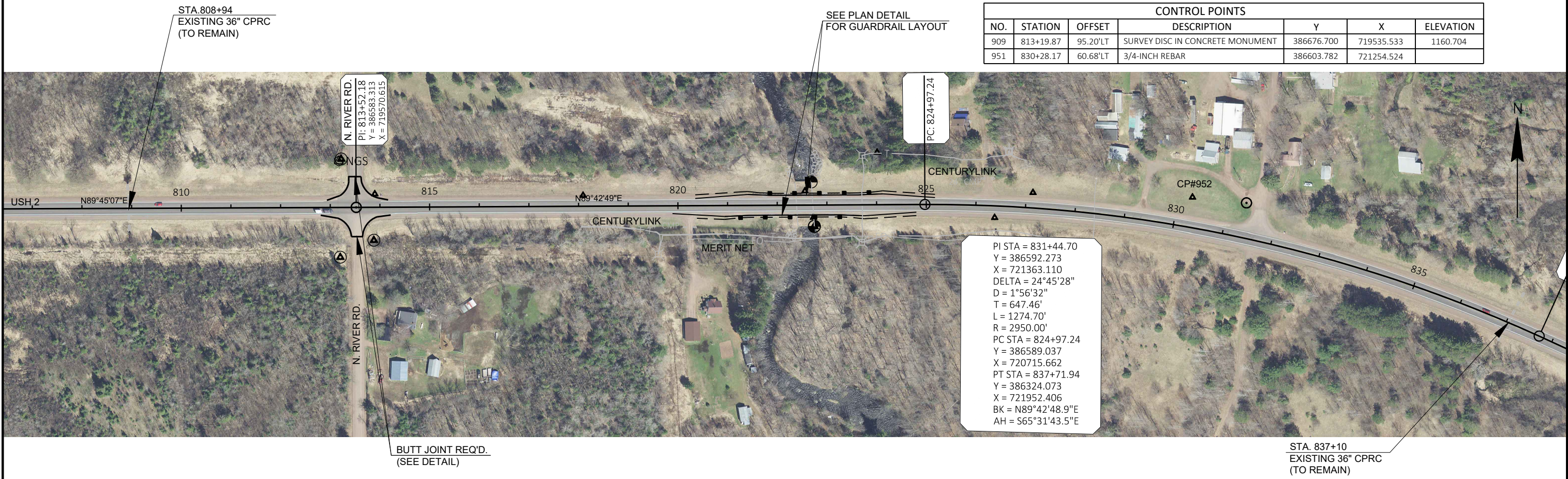
PLOT SCALE : #####

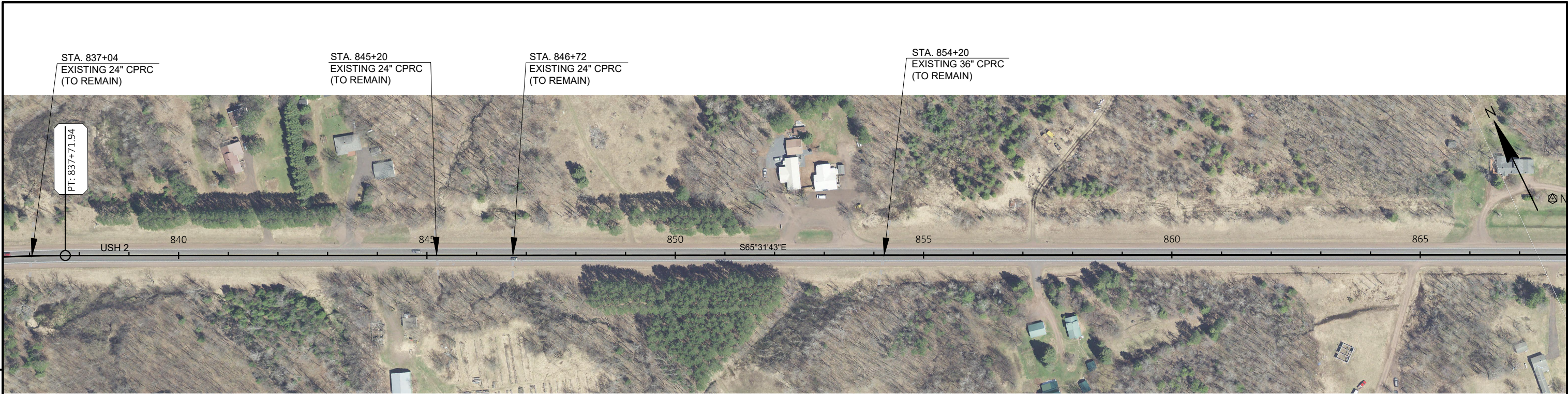
WISDOT/CADDs SHEET 44



5

5

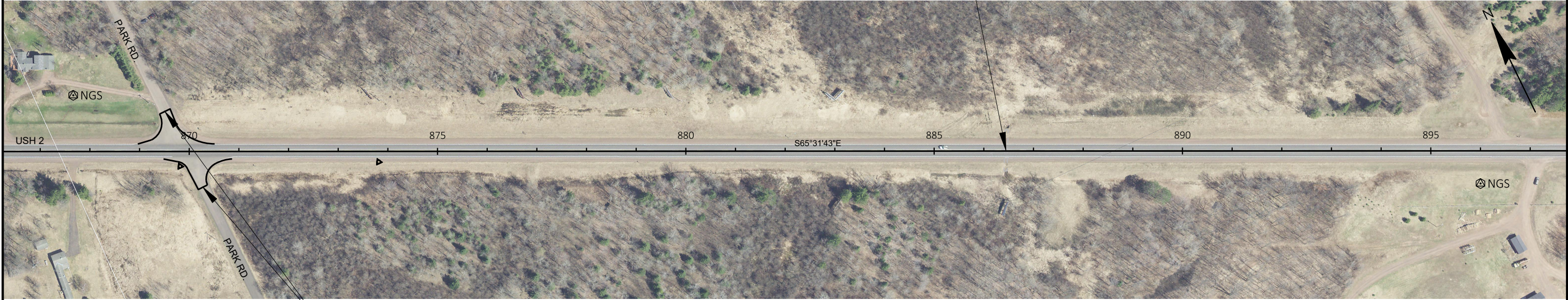


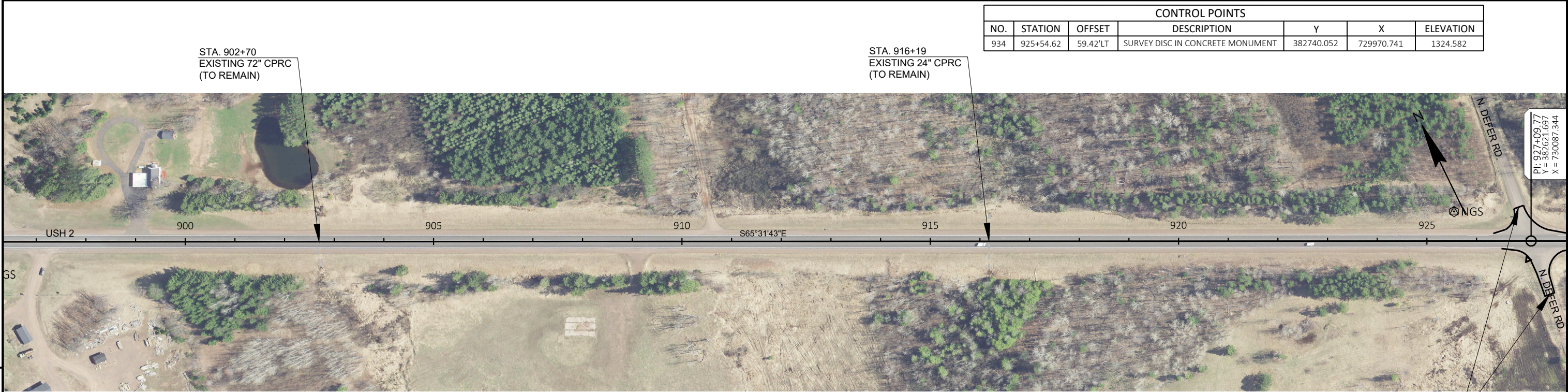


5

5

CONTROL POINTS						
NO.	STATION	OFFSET	DESCRIPTION	Y	X	ELEVATION
905	867+66.54	113.06'LT	SURVEY DISC IN CONCRETE MONUMENT	385186.505	724724.834	1230.395
906	895+99.99	65.68'RT	SURVEY DISC IN CONCRETE MONUMENT	383850.100	727229.704	1295.382

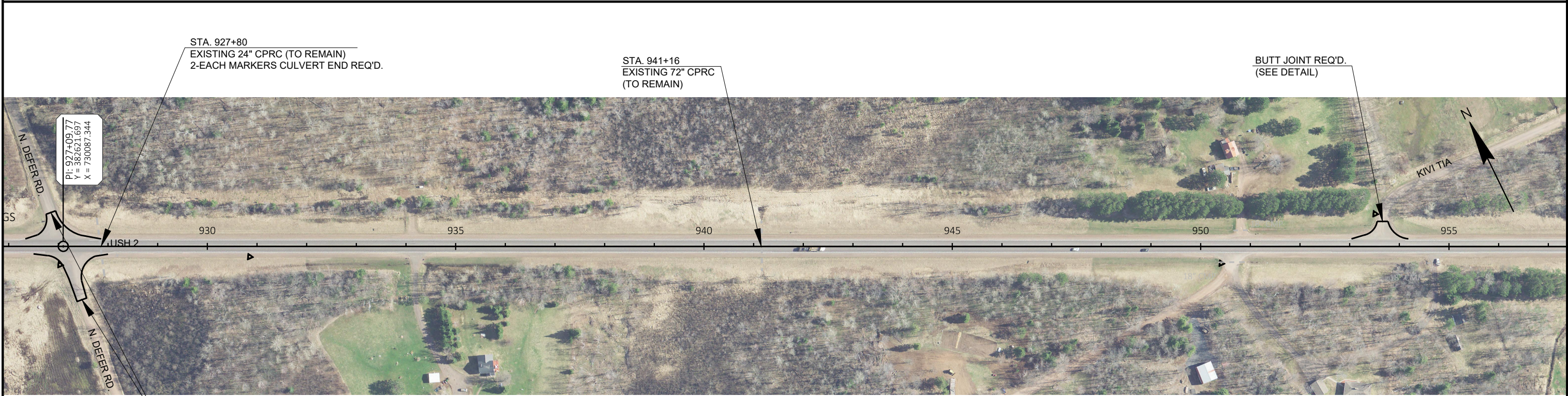




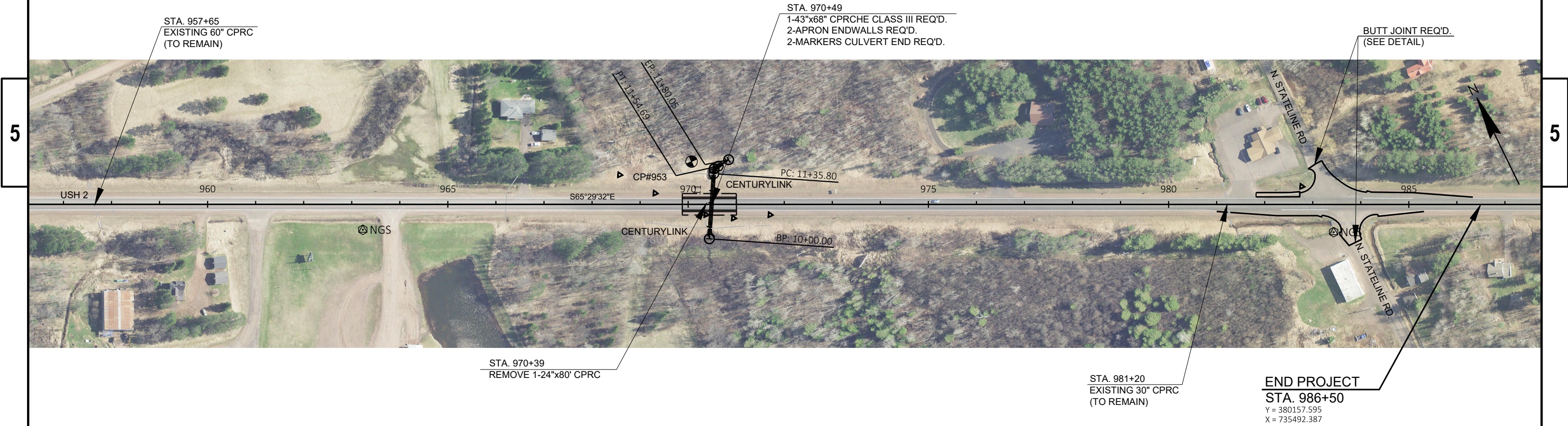
CONTROL POINTS						
NO.	STATION	OFFSET	DESCRIPTION	Y	X	ELEVATION
934	925+54.62	59.42'LT	SURVEY DISC IN CONCRETE MONUMENT	382740.052	729970.741	1324.582

5

5

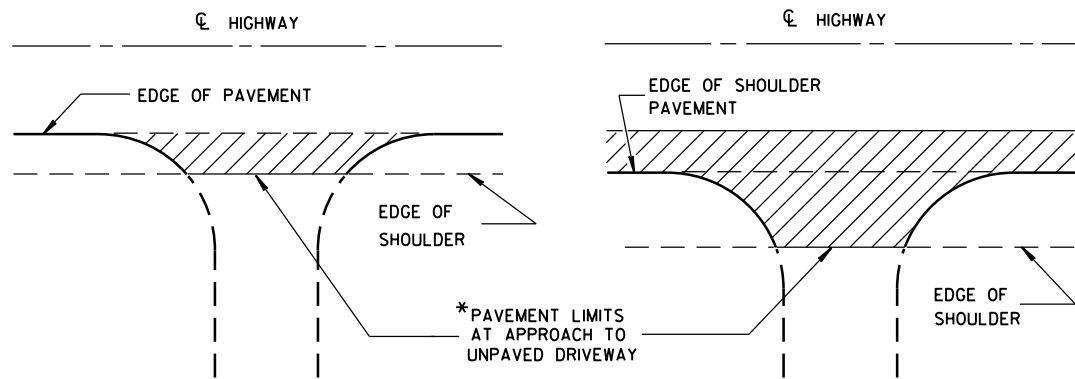


CONTROL POINTS						
NO.	STATION	OFFSET	DESCRIPTION	Y	X	ELEVATION
907	963+23.03	52.90'RT	SURVEY DISC IN CONCRETE MONUMENT	381074.721	733353.123	1340.715
908	983+43.53	57.60'RT	SURVEY DISC IN CONCRETE MONUMENT	380232.314	735189.632	1347.191
950	968+57.32	61.23'LT	3/4-INCH REBAR	380956.938	733886.621	



Standard Detail Drawing List

08D21-01	DRIVEWAYS WITHOUT CURB & GUTTER
08D22-01	DRIVEWAYS WITHOUT CURB & GUTTER RESURFACING PROJECTS RURAL
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E15-01	CULVERT PIPE CHECK
08F02-01	APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
13A11-03A	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13A11-03B	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13C19-02	HMA LONGITUDINAL JOINTS
14B29-01	SAFETY EDGE
14B42-06A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C02-08F	ADVANCED WIDTH RESTRICTION SIGNING
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C08-20A	LONGITUDINAL MARKING (MAINLINE)
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-07	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C19-06A	MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY
15C33-04	STOP LINE AND CROSSWALK PAVEMENT MARKING
15C35-04A	PAVEMENT MARKING (INTERSECTIONS)
15C35-04B	PAVEMENT MARKING AND SIGNING (CLIMBING LANE & PASSING LANE)
15C35-04C	PAVEMENT MARKING AND SIGNING (CLIMBING LANE & PASSING LANE)
15D28-04	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY
15D29-06	TRAFFIC CONTROL, VEHICLE ENTRANCE/EXIT OR HAUL ROAD
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS
15D39-02	TRAFFIC CONTROL, DROP-OFF SIGNING
15D44-02	TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES

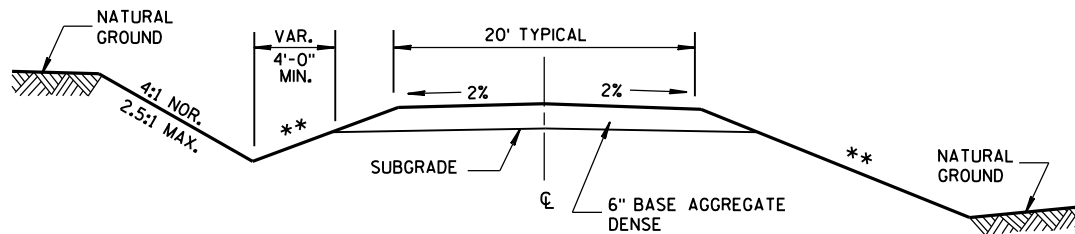


*WHERE DRIVEWAY IS PAVED, APPROACH PAVEMENT SHOULD BE EXTENDED TO MATCH DRIVEWAY PAVEMENT.

PLAN VIEW
(UNPAVED SHOULDER ON HIGHWAY)

PLAN VIEW
(PAVED SHOULDER ON HIGHWAY)

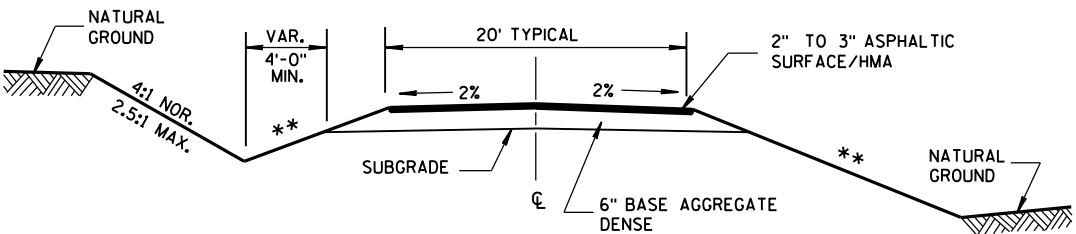
RURAL DRIVEWAY INTERSECTION DETAIL
(NO CURB & GUTTER OR SIDEWALK)



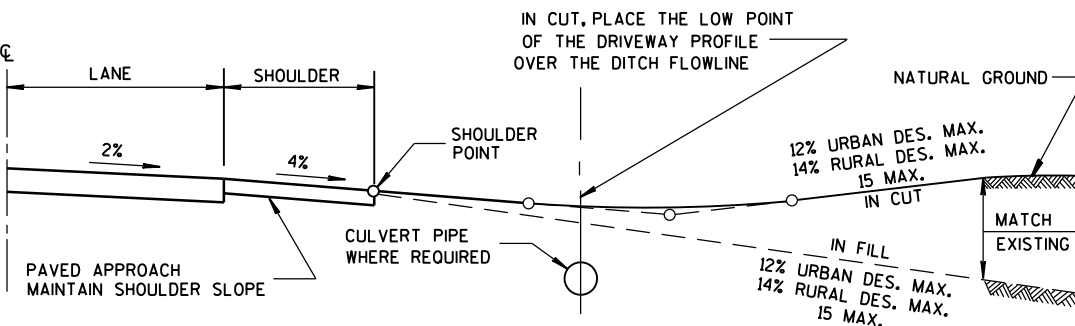
TYPICAL CROSS SECTION FOR PRIVATE DRIVE OR FIELD ENTRANCE
AGGREGATE SURFACE

** SLOPE CAN VARY WITH SPEED. SEE 11-45-2.6.2.

POSTED SPEED MPH	MAX. SLOPE
<35	4:1
≥35 TO <60	6:1
≥60	10:1

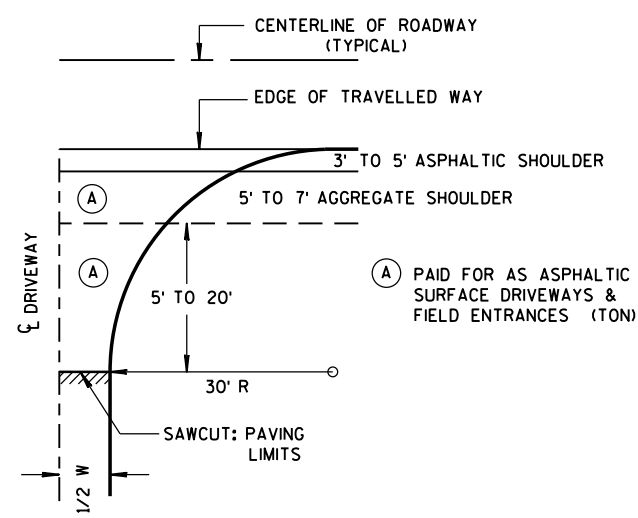


TYPICAL CROSS SECTION FOR PRIVATE DRIVE OR FIELD ENTRANCE
ASPHALTIC SURFACE



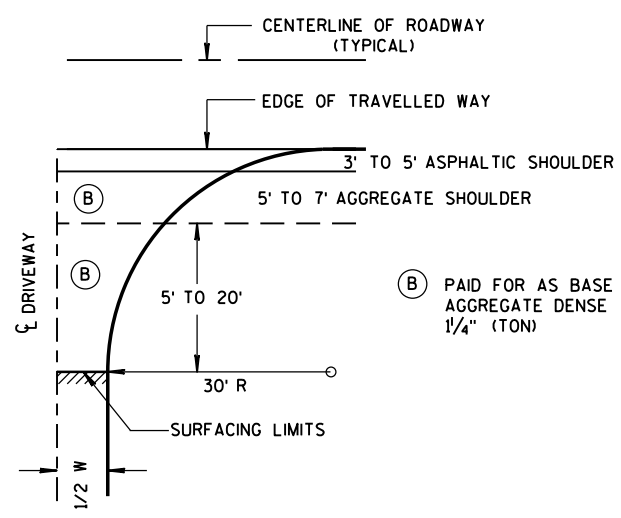
TYPICAL DRIVEWAY PROFILES

DRIVEWAYS WITHOUT CURB & GUTTER		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
APPROVED December, 2016 DATE	/S/ Rodney Taylor ROADWAY STANDARDS UNIT SUPERV	38 ENT
FHWA		



PLAN VIEW
HALF SECTION

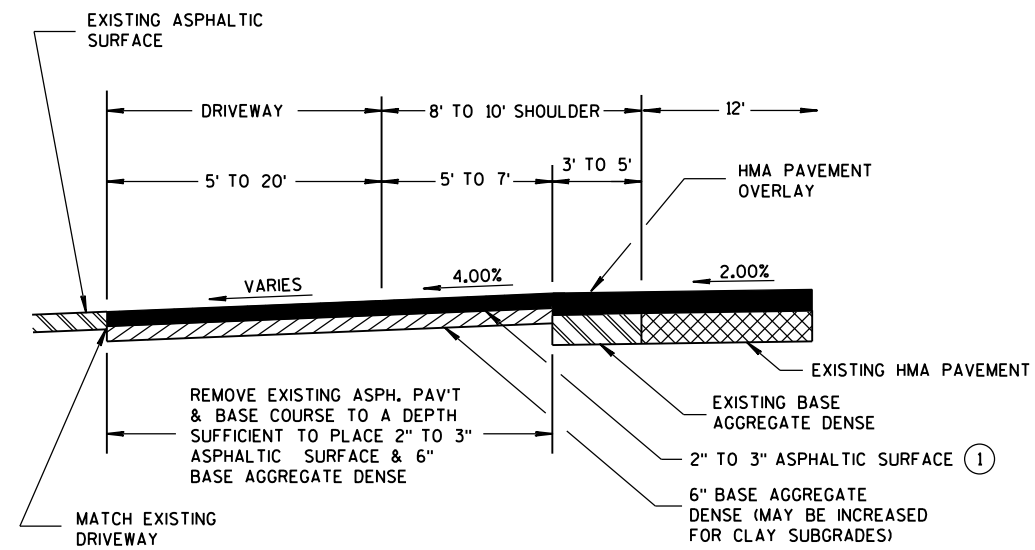
W MIN. = 16'
W MAX. = 24'



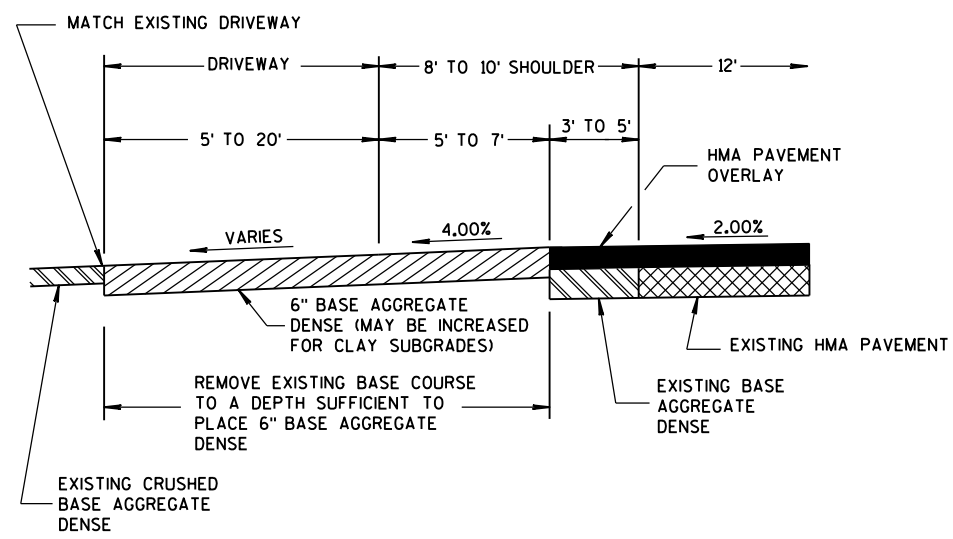
PLAN VIEW
HALF SECTION

GENERAL NOTES

① DESIGN WILL DETERMINE FINAL DRIVEWAY ASPHALTIC THICKNESS BASED ON TYPE OF USAGE AND LOADINGS.

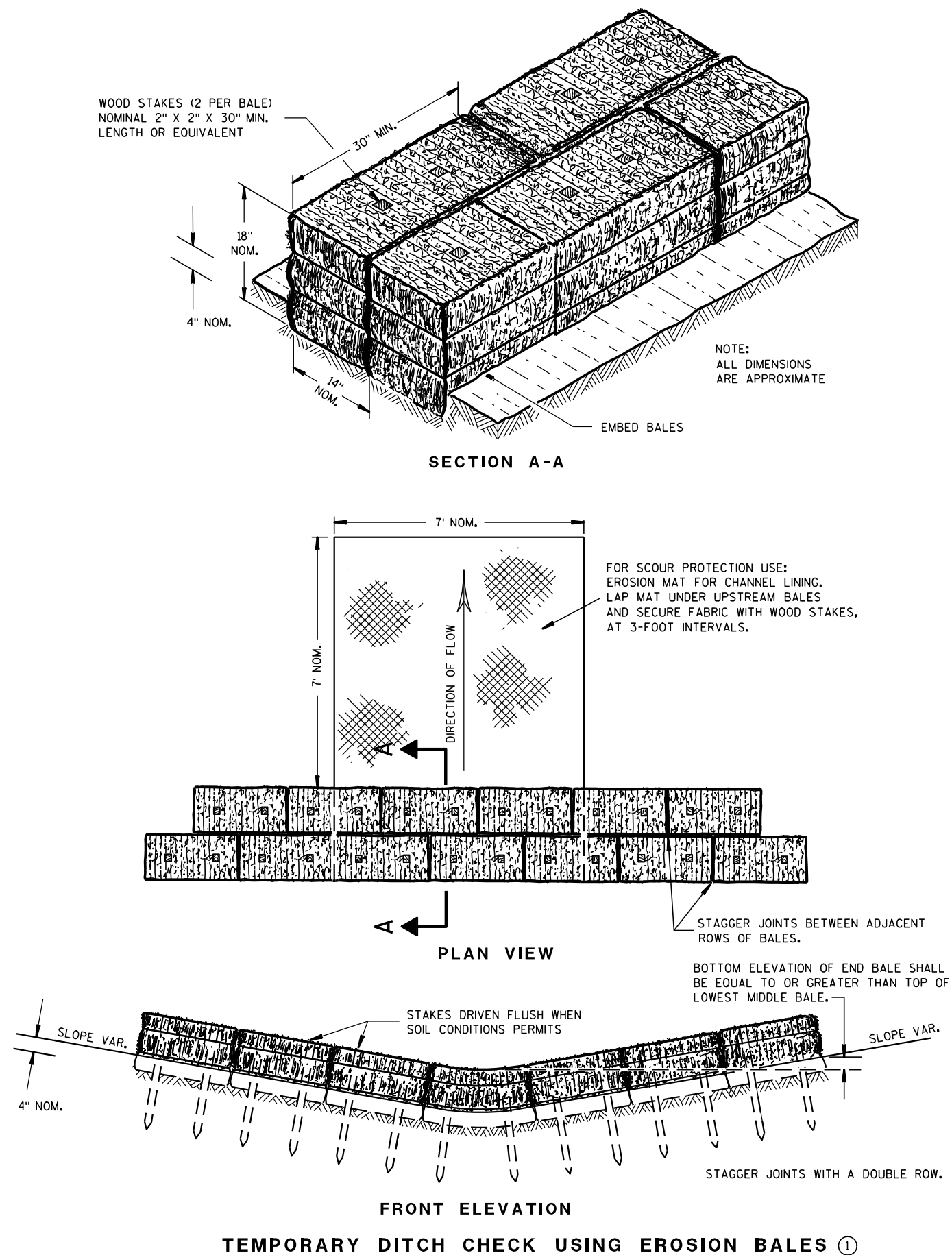


PROFILE VIEW
RURAL ENTRANCE
WITH ASPHALTIC SURFACE
RESURFACING PROJECTS



PROFILE VIEW
RURAL ENTRANCE
WITH AGGREGATE SURFACE
6" BASE AGGREGATE DENSE
RESURFACING PROJECTS

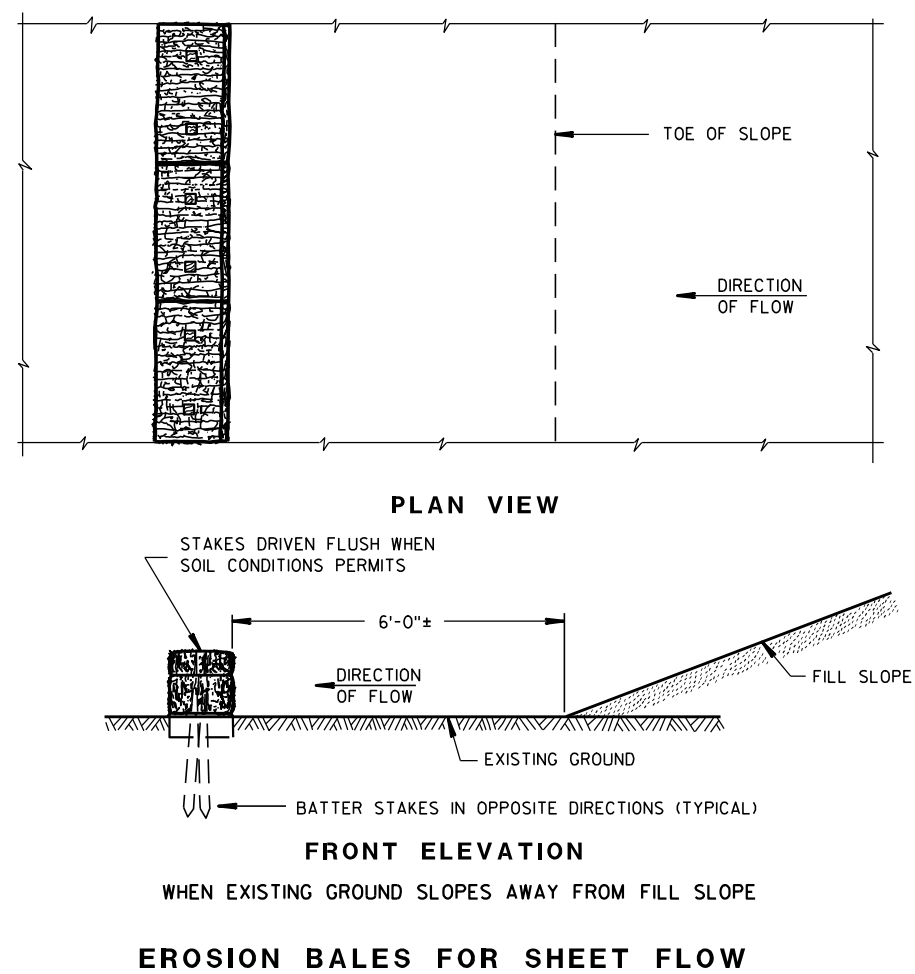
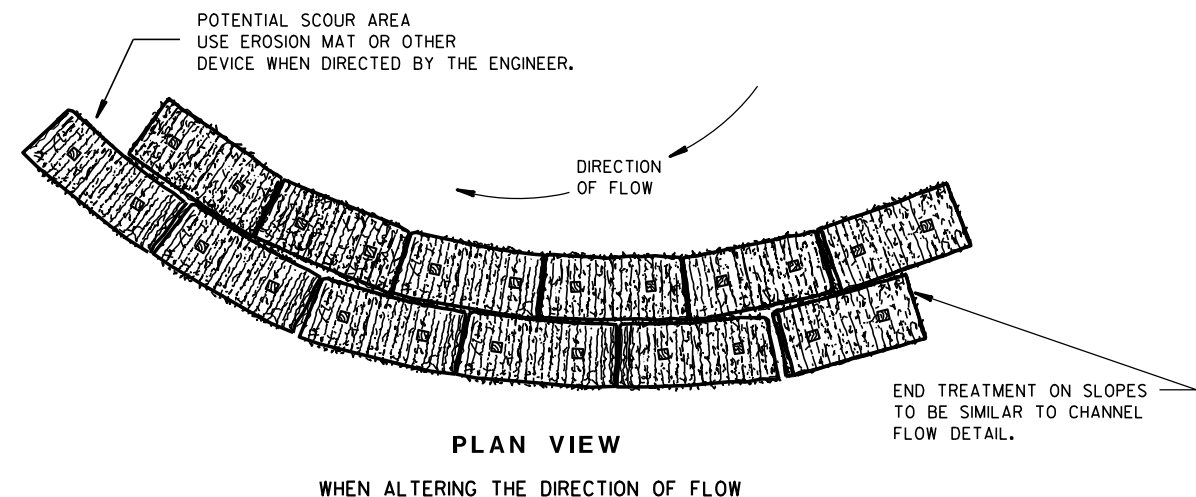
DRIVEWAYS WITHOUT CURB & GUTTER RESURFACING PROJECTS RURAL		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
APPROVED December, 2016	/S/ Rodney Taylor	DATE
ROADWAY STANDARDS UNIT SUPERV		39 ENT
FHWA		



GENERAL NOTES

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

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

TYPICAL INSTALLATIONS OF
EROSION BALES / TEMPORARY
DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02
DATE

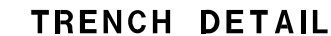
/S/ Beth Conn-----
CHIEF ROADWAY DEVELOP 40

ENGINEER

FHWA



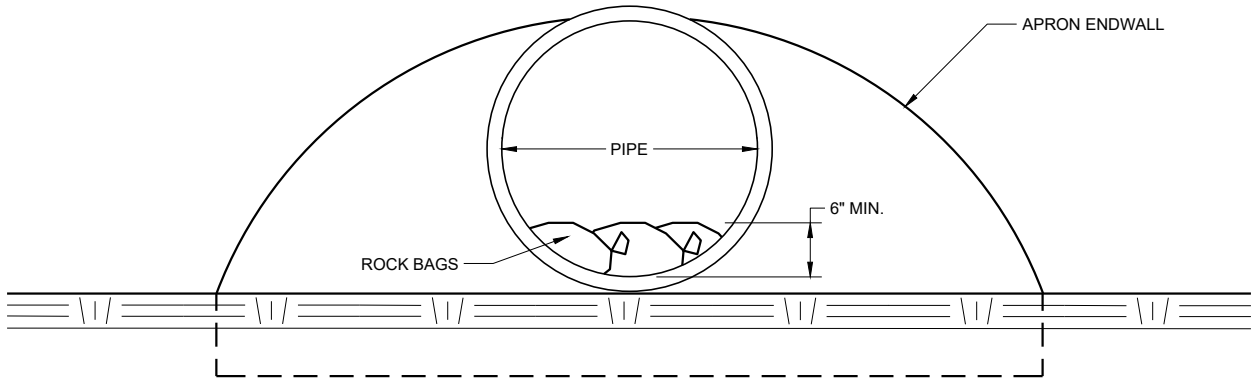
- ① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
- ② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- ③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1½" X 1½" OF OAK OR HICKORY.
- ④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
- ⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



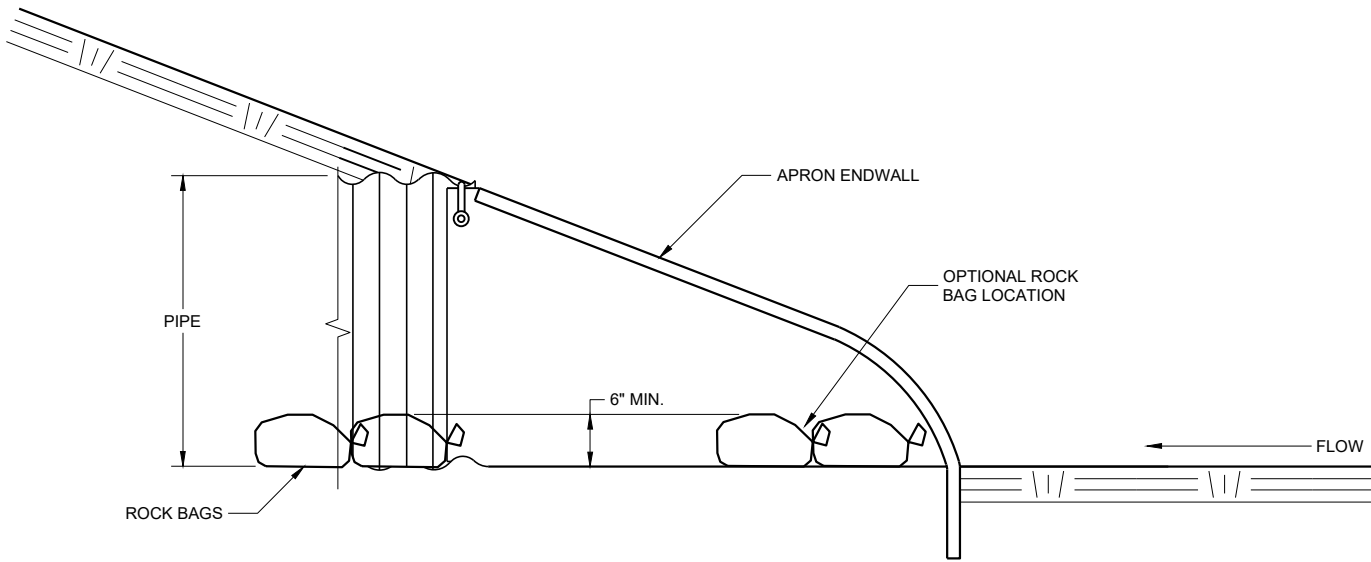
SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-29-05
DATE /S/ Beth Connolly
CHIEF ROADWAY DEVELOPMENT 41 INCHES
FHWA



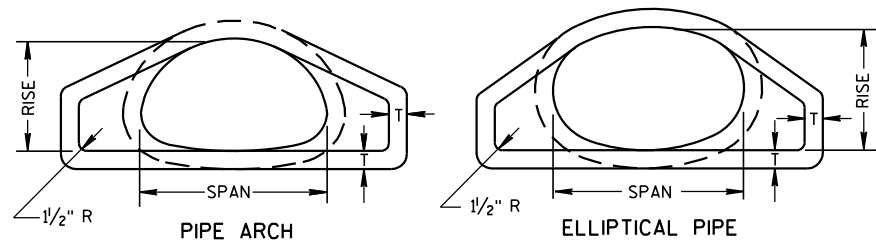
END VIEW



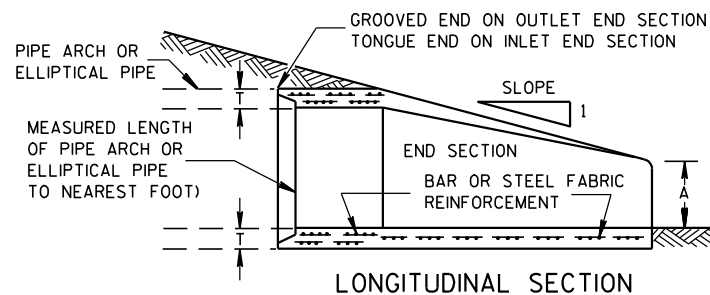
SIDE VIEW

CULVERT PIPE CHECK
(INSTALL ON INLET END ONLY)

CULVERT PIPE CHECK	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2019 DATE	/S/ Daniel Schave EROSION CONTROL ENGI 42

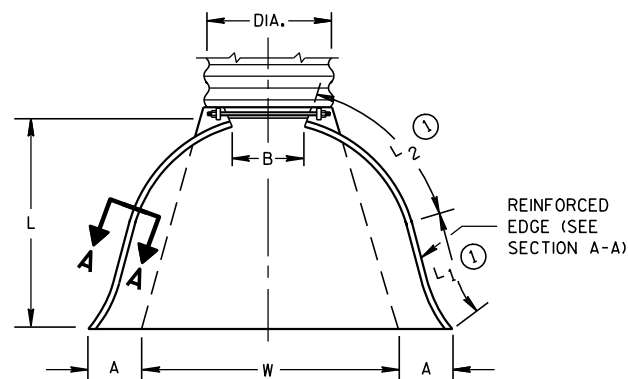


END VIEW



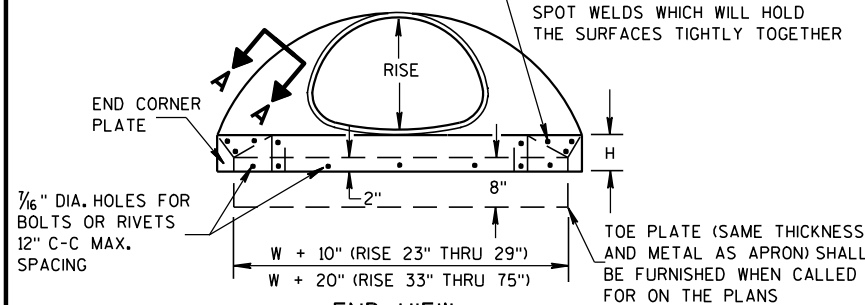
LONGITUDINAL SECTION

CONCRETE ENDWALLS

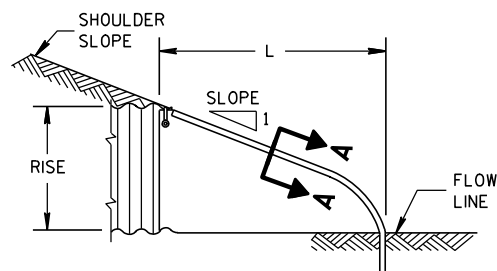
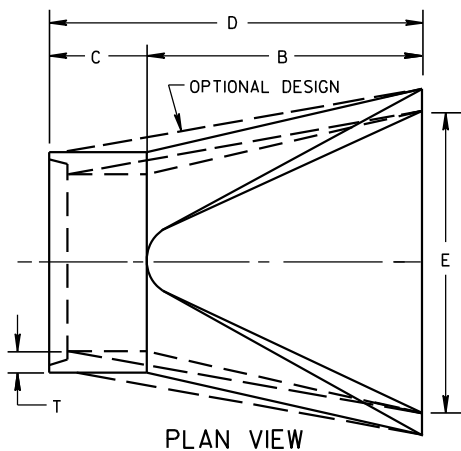


PLAN VIEW

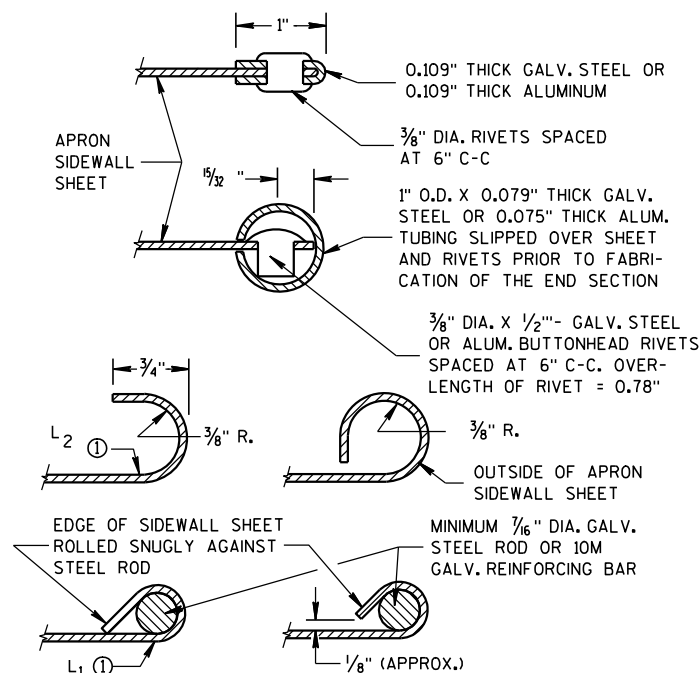
END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER



END VIEW

SIDE ELEVATION
METAL ENDWALLS

PLAN VIEW



SECTION A-A

2- 2 ² / ₃ " x 1 ¹ / ₂ " CORRUGATIONS													
EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	SPAN	RISE	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 ¹ / ₂ ")	L1 ①	L2 ①	W (±2")		
15	17	13	.064	.060	7	9	6	19	14	16	30	2 ¹ / ₂ to 1	1 Pc.
18	21	15	.064	.060	7	10	6	23	14	19 ³ / ₈	36	2 ¹ / ₂ to 1	1 Pc.
21	24	18	.064	.060	8	12	6	28	18	21 ³ / ₄	42	2 ¹ / ₂ to 1	1 Pc.
24	28	20	.064	.060	9	14	6	32	18	27 ¹ / ₂	48	2 ¹ / ₂ to 1	1 Pc.
30	35	24	.079	.075	10	16	6	39	18	37 ⁵ / ₈	60	2 ¹ / ₂ to 1	1 Pc.
36	42	29	.079	.075	12	18	8	46	24	45 ³ / ₈	75	2 ¹ / ₂ to 1	1 Pc.
42	49	33	.109	.105	13	21	9	53	24	54 ³ / ₄	85	2 ¹ / ₂ to 1	2 Pc.
48	57	38	.109	.105	18	26	12	63	24	68	90	2 ¹ / ₂ to 1	3 Pc.
54	64	43	.109	.105	18	30	12	70	24	72 ³ / ₄	102	2 ¹ / ₄ to 1	3 Pc.
60	71	47	.109*	.105*	18	33	12	77	30	82 ¹ / ₄	114	2 ¹ / ₄ to 1	3 Pc.
66	77	52	.109*	.105*	18	36	12	77	—	—	126	2 to 1	3 Pc.
72	83	57	.109*	.105*	18	39	12	77	—	—	138	2 to 1	3 Pc.

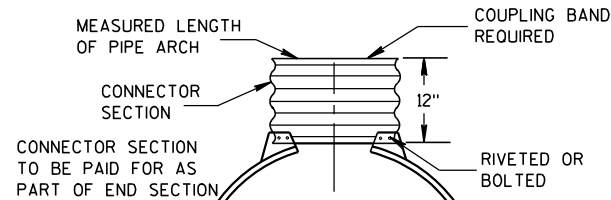
3" X 1" CORRUGATIONS													
EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	SPAN	RISE	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ⓪	L2 ⓪	W (±2")		
48	53	41	.109	.105	18	26	12	63	24	72¾	90	2½ to 1	2 Pc.
54	60	46	.109	.105	18	30	12	70	30	82¼	102	2 to 1	2 Pc.
60	66	51	.109*	.105*	18	33	12	77	—	—	114	1½ to 1	3 Pc.
66	73	55	.109*	.105*	18	36	12	77	—	—	126	1½ to 1	3 Pc.
72	81	59	.109*	.105*	18	39	12	77	—	—	138	2 to 1	3 Pc.
78	87	63	.109*	.105*	22	38	12	77	—	—	148	1½ to 1	3 Pc.
84	95	67	.109*	.105*	22	34	12	77	—	—	162	1½ to 1	3 Pc.
90	103	71	.109*	.105*	22	38	12	77	—	—	174	1½ to 1	3 Pc.
96	112	75	.109*	.105*	24	40	12	77	—	—	174	1½ to 1	3 Pc.

NOTE: ALL SPLICES TO BE LAP RIVETED OR BOLTED.

* EXCEPT CENTER PANEL
SEE GENERAL NOTES

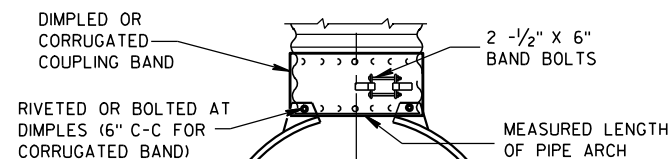
TYPE 2

FOR 17" X 13" THRU 112" X 75" PIPE ARCH



TYPE 3

FOR 64" X 43" THRU 112" X 75" PIPE ARCH



TYPE 5

ALTERNATE FOR:

ALL SIZES CORRUGATED PIPE ARCHES

NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL,
AND CORRUGATED BAND FITS INSIDE ENDWALL.

CONNECTION DETAILS

REINFORCED CONCRETE PIPE ARCH

EQUIV. DIA. (Inches)	DIMENSIONS (Inches)								APPROX. SLOPE
	** SPAN	** RISE	T	A	B	C	D	E	
24	29	18	3	8 1/2	39	33	72	48	3 to 1
30	36	22	3 1/2	9 1/2	50	46	96	60	3 to 1
36	44	27	4	11 1/8	60	36	96	72	3 to 1
42	51	31	4 1/2	15 1/8	60	36	96	78	3 to 1
48	58	36	5	21	60	36	96	84	3 to 1
54	65	40	5 1/2	25 1/2	60	36	96	90	3 to 1
60	73	45	6	31	60	36	96	96	3 to 1
72	88	54	7	31	60	39	99	120	2 to 1
84	102	62	8	28 1/2	83	19	102	144	2 to 1

REINFORCED CONCRETE ELLIPTICAL PIPE

EQUIV. DIA. (Inches)	DIMENSIONS (Inches)								APPROX. SLOPE
	** SPAN	** RISE	T	A	B	C	D	E	
24	30	19	3 1/4	8 1/2	39	33	72	48	3 to 1
30	38	24	3 3/4	9 1/2	54	18	72	60	3 to 1
36	45	29	4 1/2	11 1/8	60	24	84	72	2 1/2 to 1
42	53	34	5	15 1/4	60	36	96	78	2 1/2 to 1
48	60	38	5 1/2	21	60	36	96	84	2 1/2 to 1
54	68	43	6	25 1/2	60	36	96	90	2 1/2 to 1
60	76	48	6 1/2	30	60	36	96	96	2 1/2 to 1

**NOMINAL SIZE

GENERAL NOTES

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

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

ALL THREE PIECE STEEL APRON ENDWALLS FOR 66" X 51" PIPE ARCH AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 66" X 51" PIPE ARCH AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE ARCH PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 77" X 52" THROUGH 112" X 75" APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.

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

① FOR PIPE ARCH SIZES UP TO 73" X 55" A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR
PIPE ARCH AND
ELLIPTICAL PIPESTATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

11/30/94

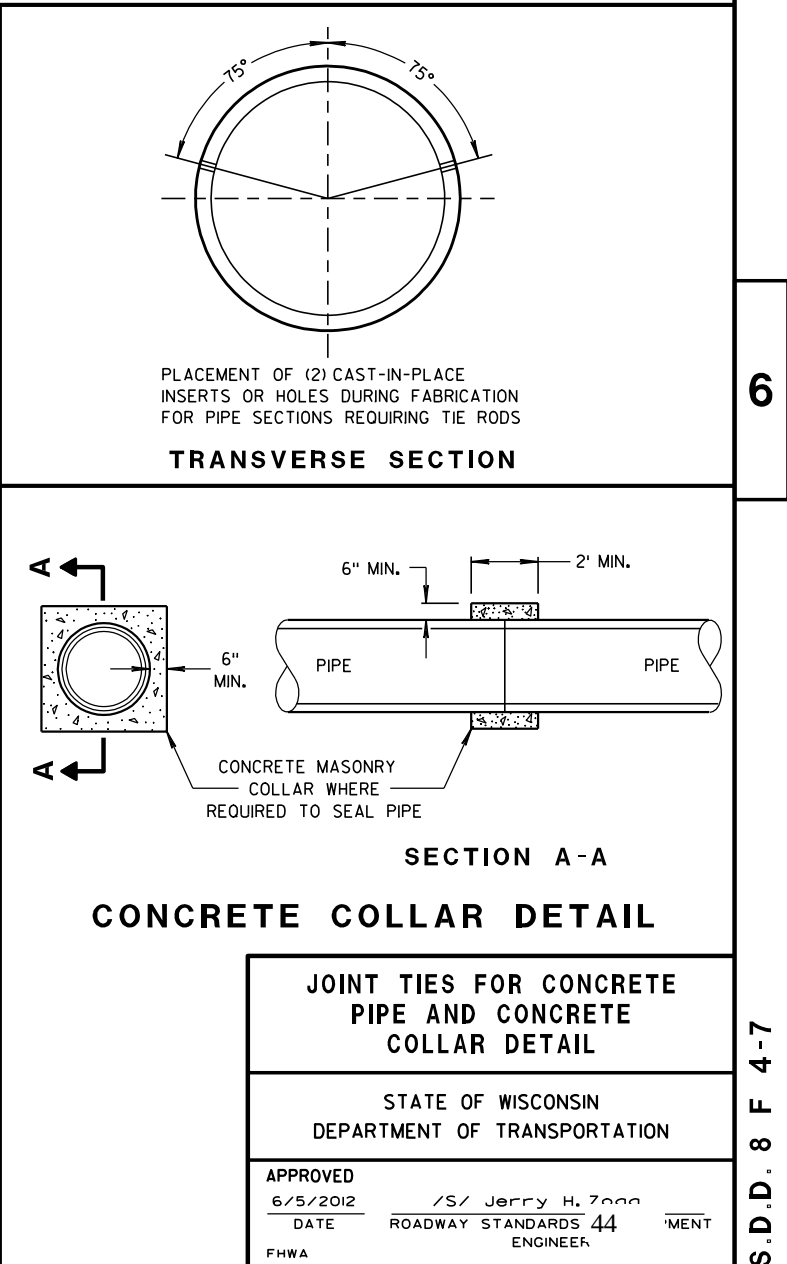
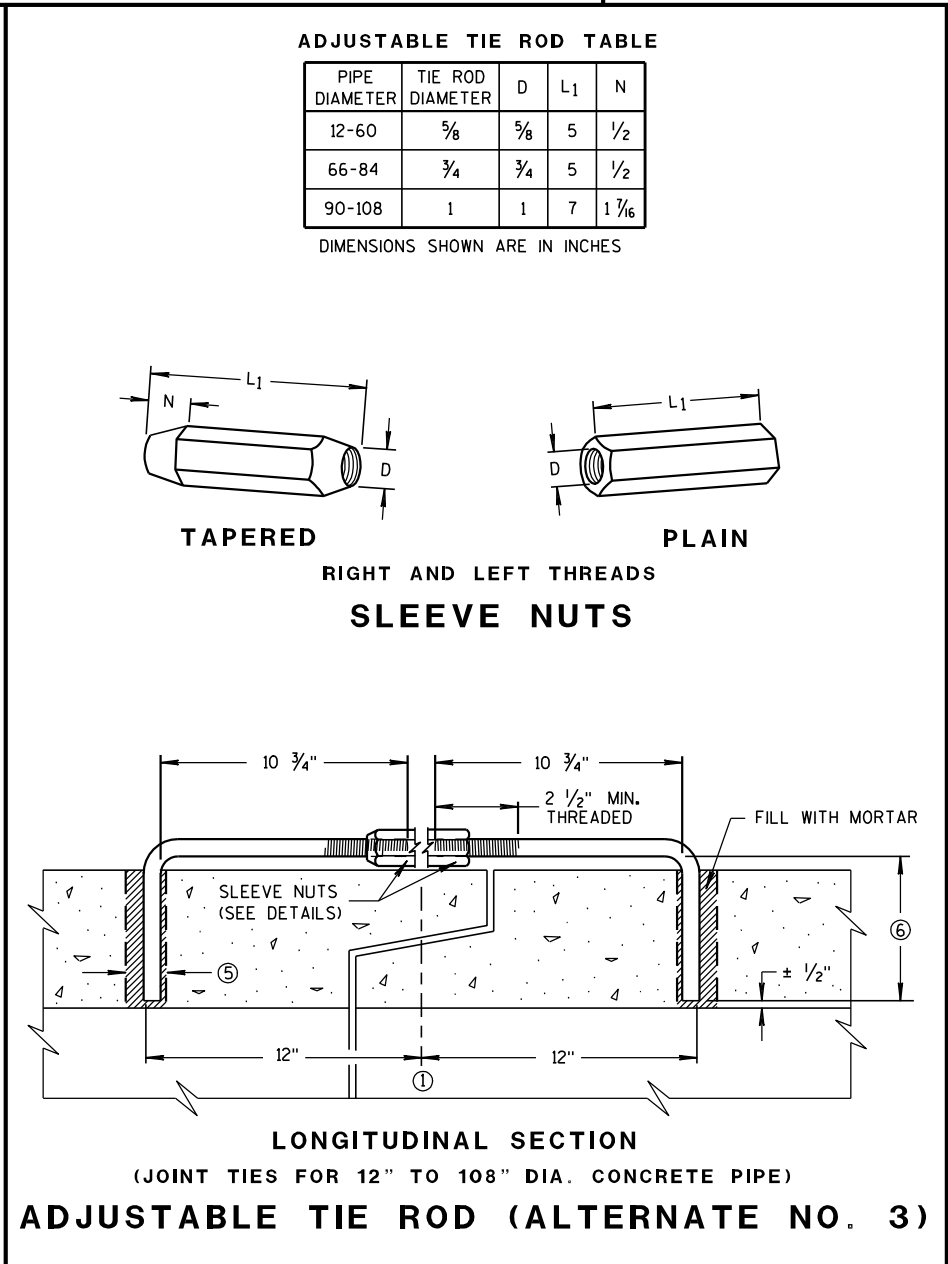
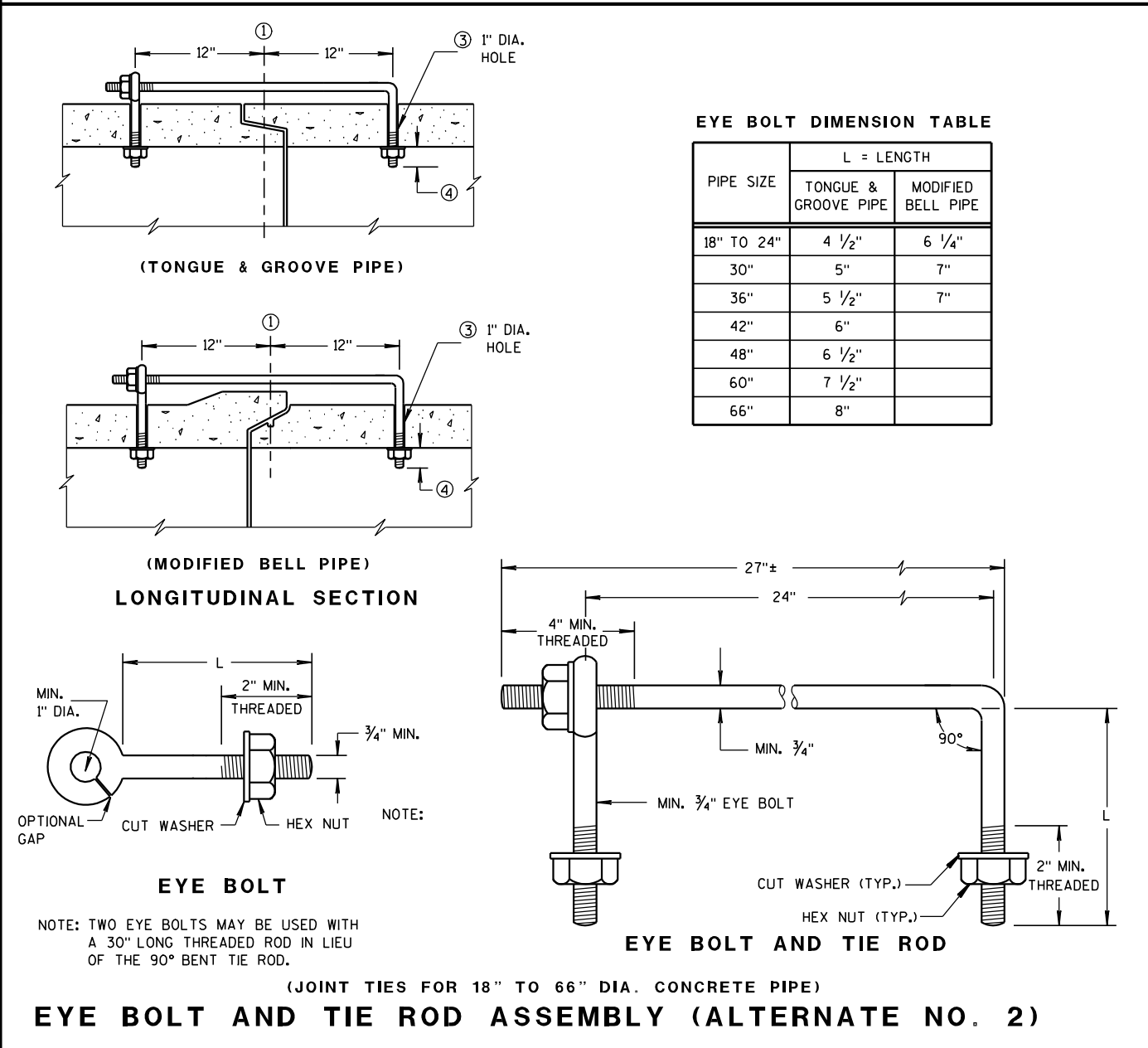
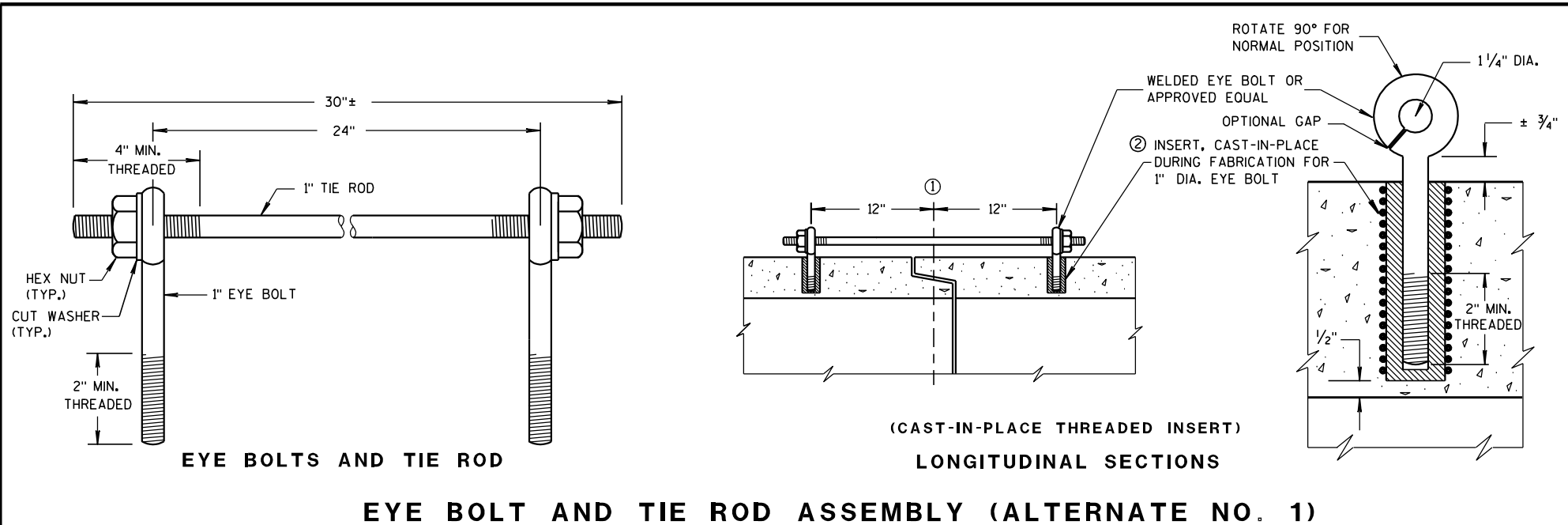
DATE

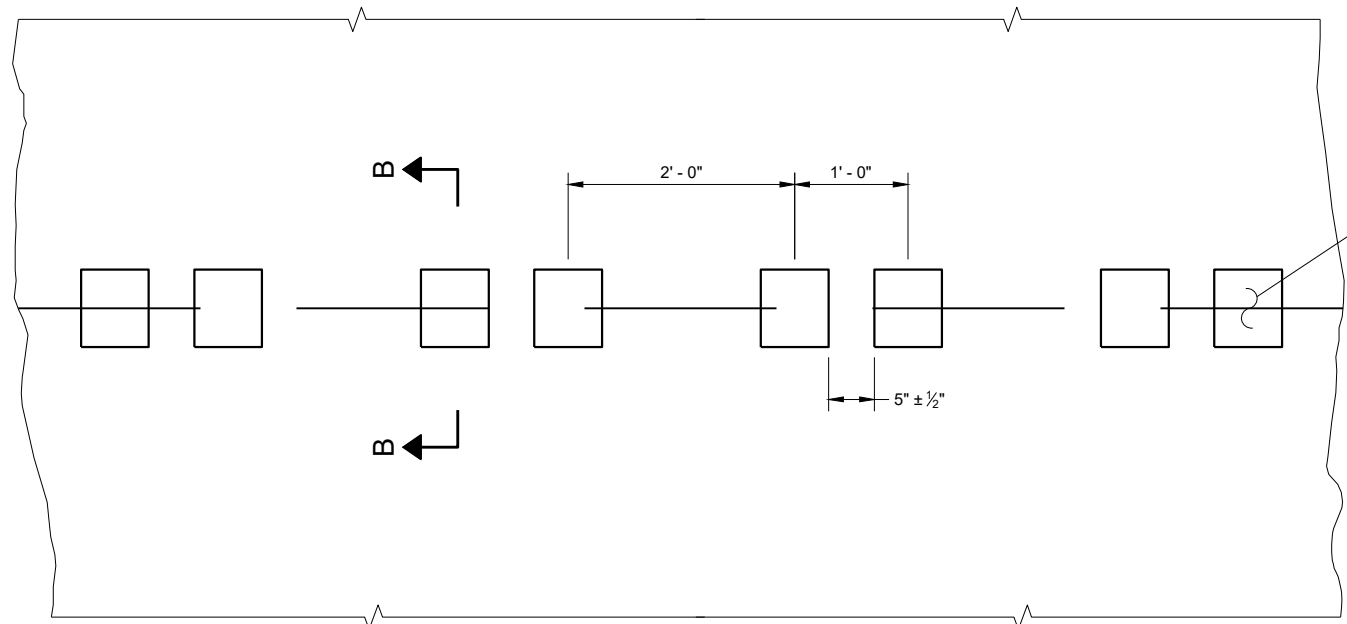
FHWA

/S/ Rory L. Rhinehart

CHIEF ROADWAY DEVELOPER

ENGINEER

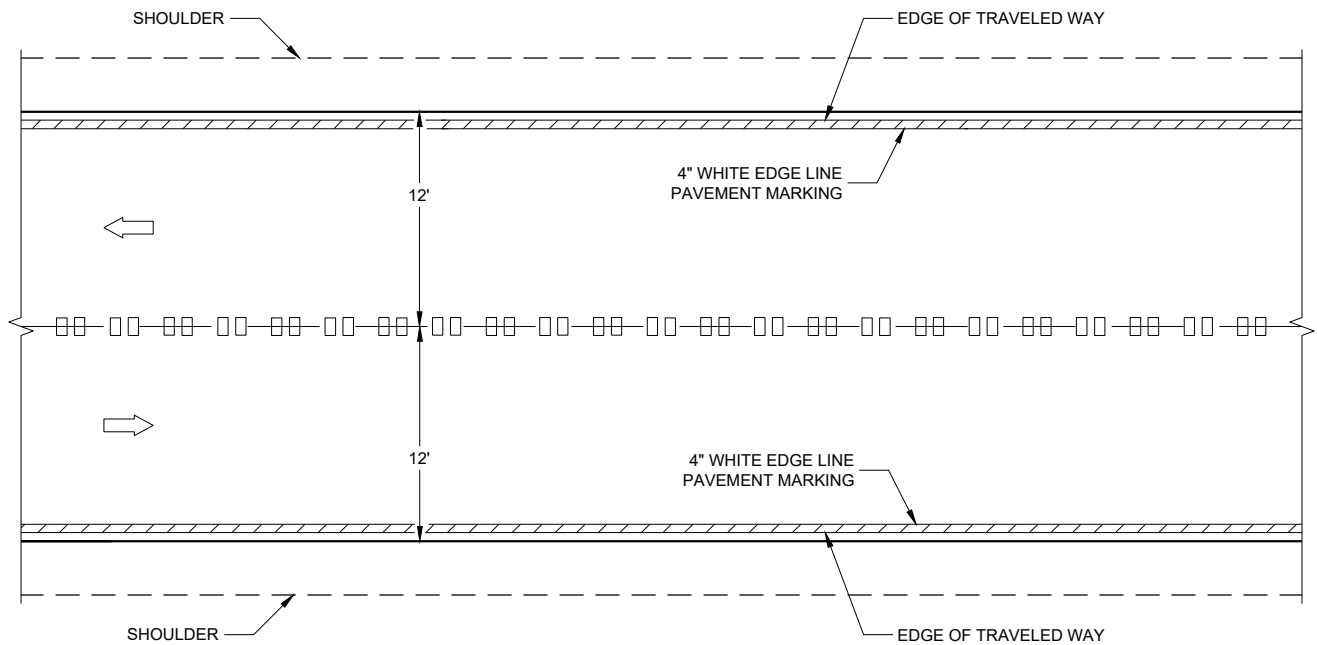




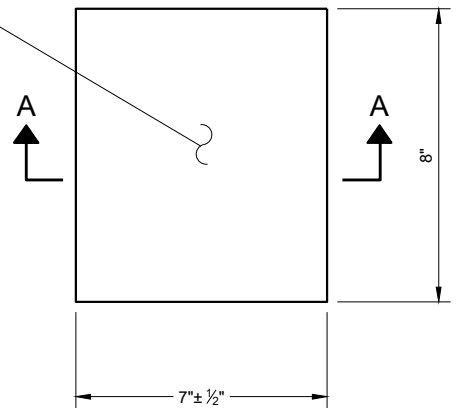
PLAN VIEW
SHOULDER WITH GROOVES

6

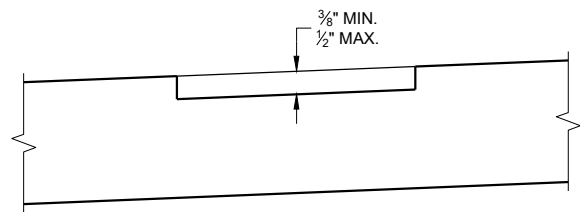
PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP



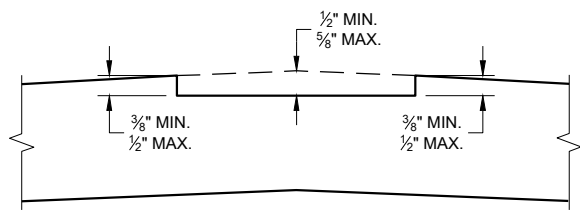
CENTERLINE GROOVES ON TWO-WAY ROADWAYS



PLAN VIEW
(SINGLE GROOVE)



SECTION B - B
SUPERELEVATED ROADWAY



SECTION B - B
CROWNED ROADWAY

GENERAL NOTES

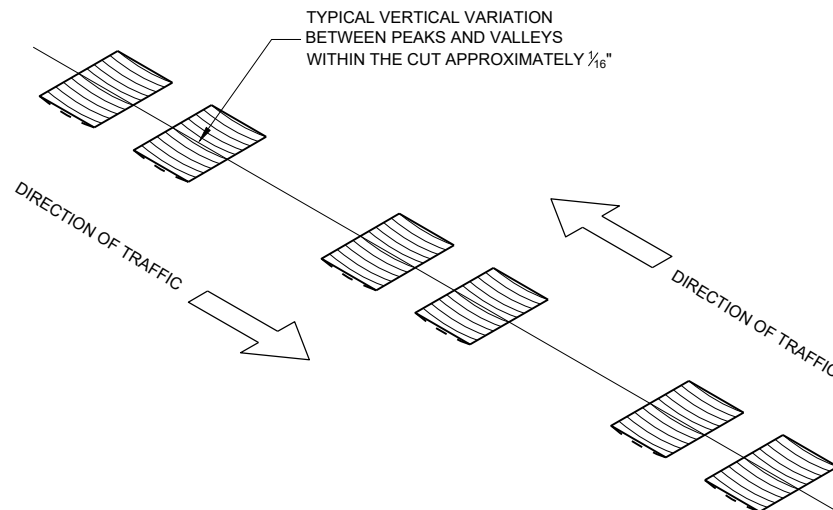
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

DO NOT MILL CENTERLINE GROOVES THROUGH ANY INTERSECTION, MARKED CROSSWALK, NON-MOTORIZED PATH CROSSING, OR SNOWMOBILE CROSSING.

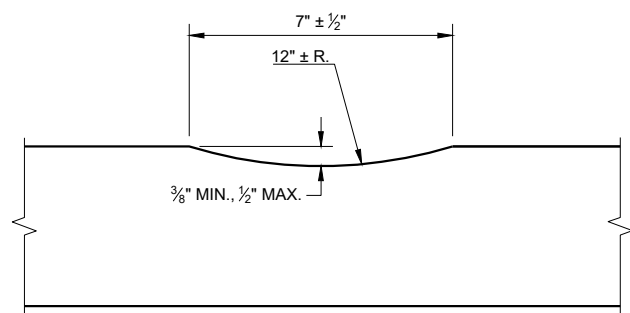
INSTALL PAVEMENT MARKING AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

- ① CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



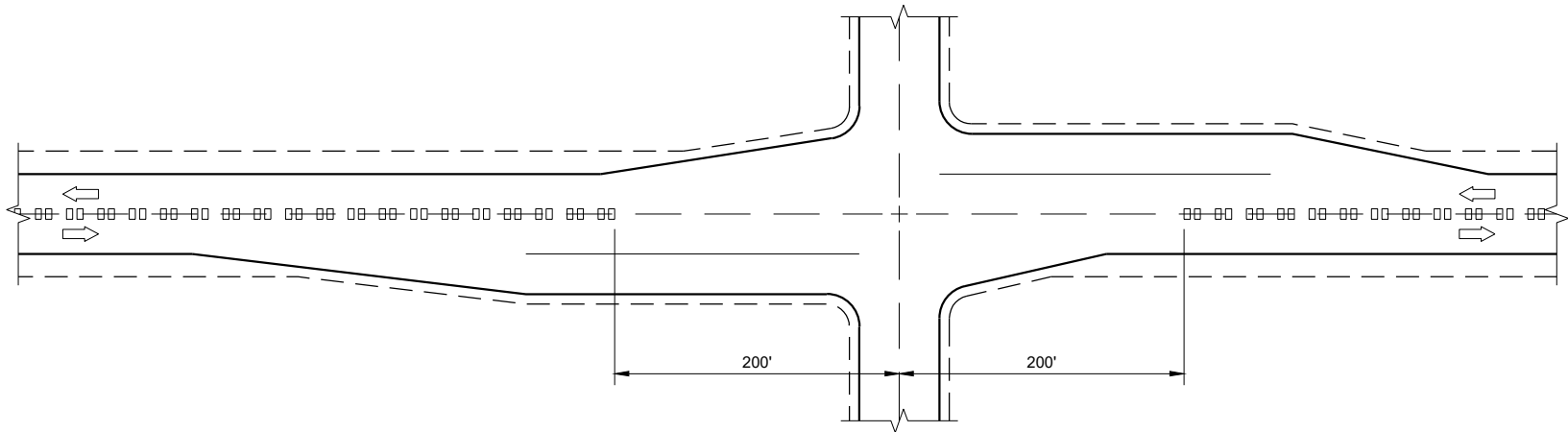
ISOMETRIC



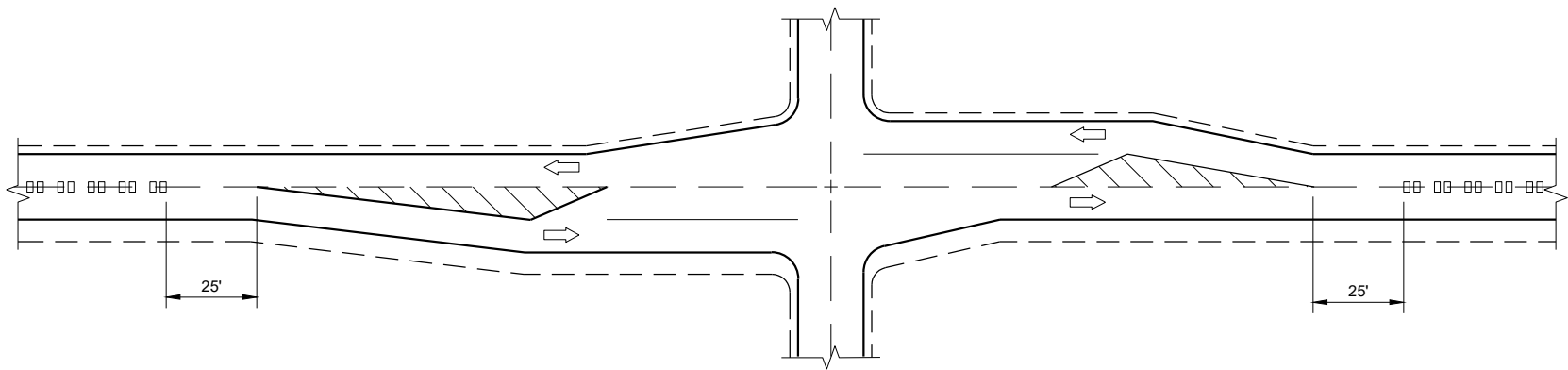
SECTION A - A

2-LANE RURAL
CENTER LINE RUMBLE STRIP,
MILLING

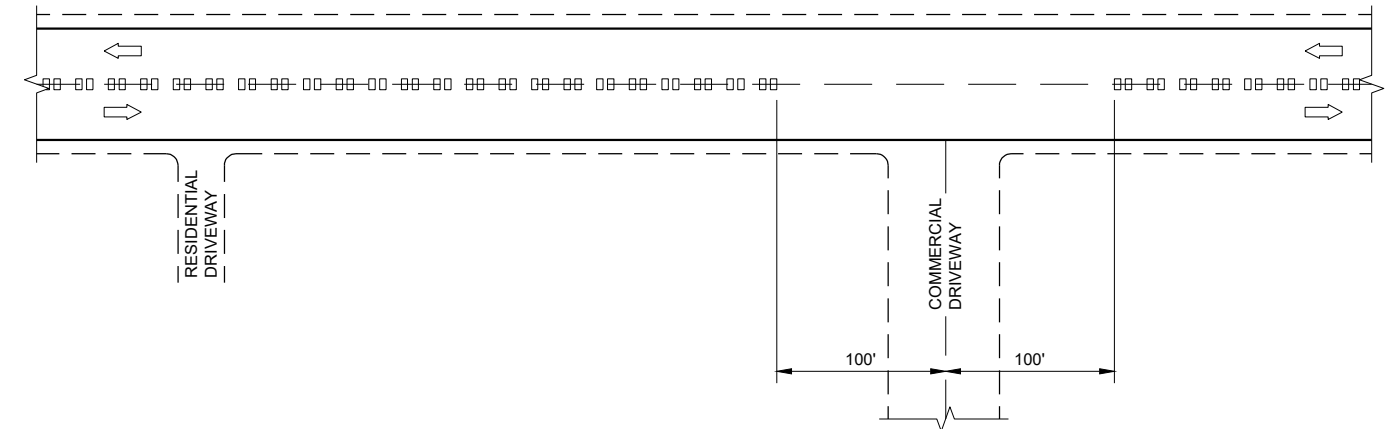
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



CENTERLINE GROOVES AT INTERSECTIONS



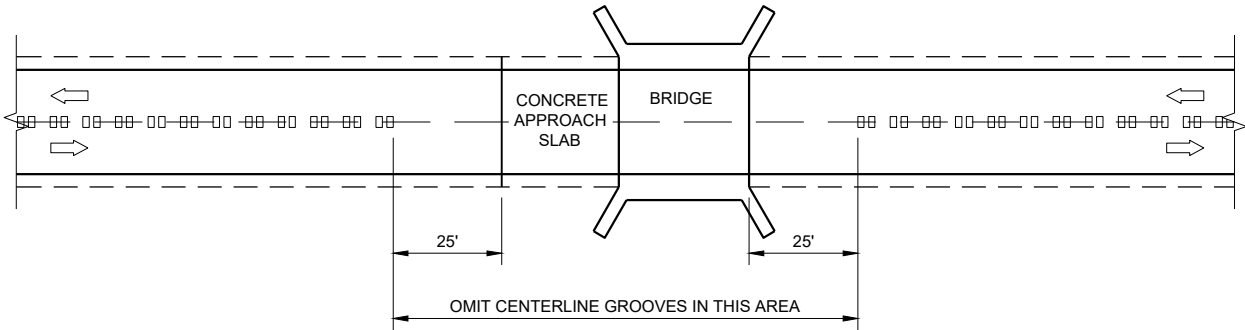
CENTERLINE GROOVES AT INTERSECTIONS
(WITH LEFT TURN LANES)



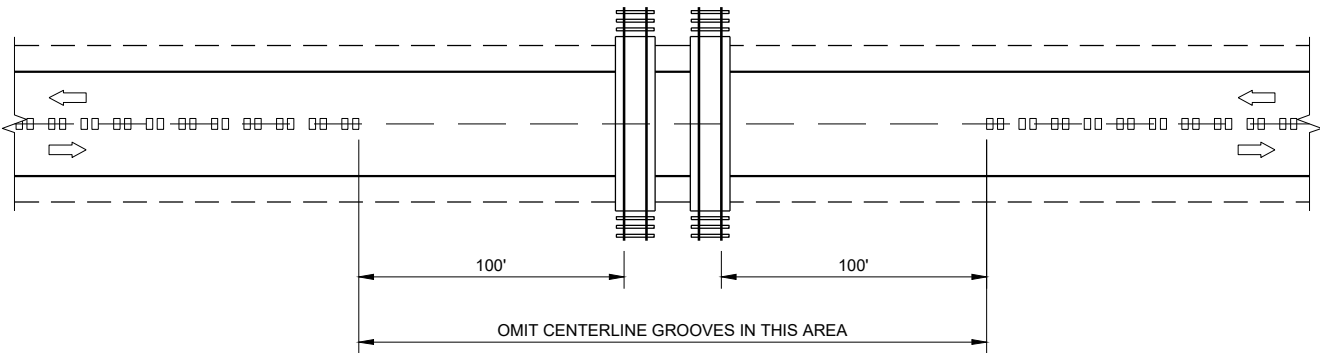
CENTERLINE GROOVES AT DRIVEWAYS^①

GENERAL NOTES

- ① CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



CENTERLINE GROOVES AT BRIDGES

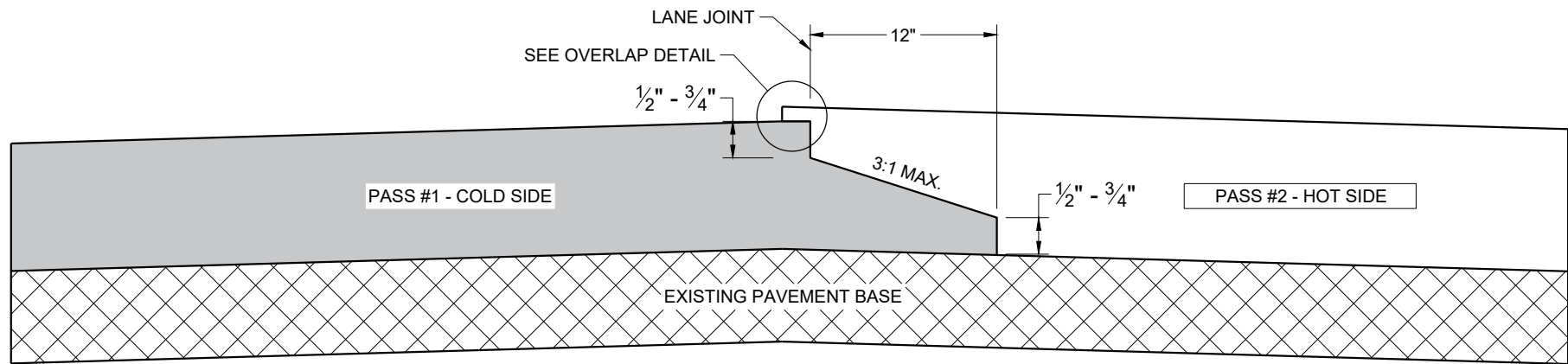


CENTERLINE GROOVES AT RAILROADS

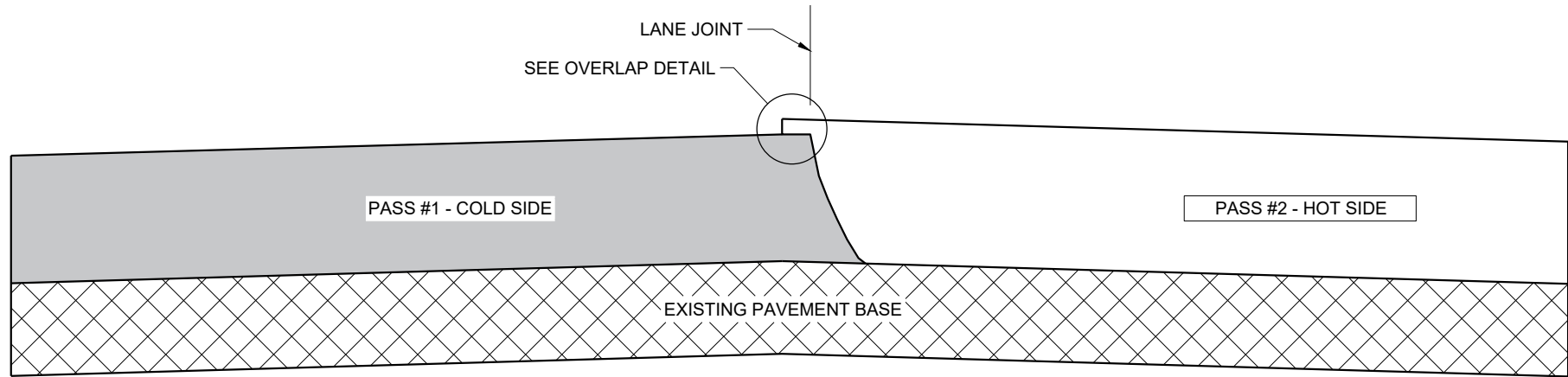
2-LANE RURAL
CENTERLINE RUMBLE STRIP,
MILLING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

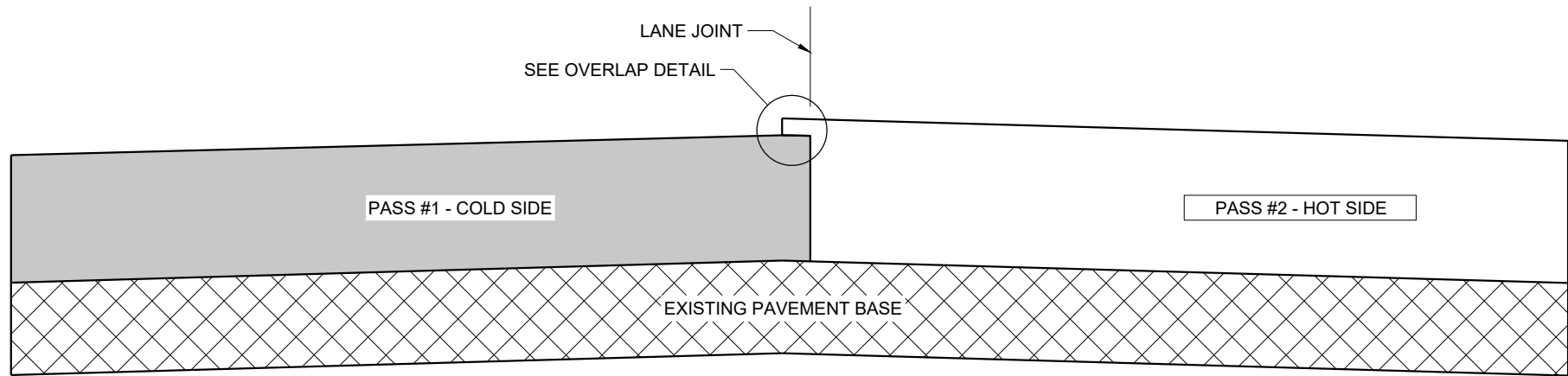
APPROVED
7/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
ENGINEER 46
FHWA



**TYPICAL PAVEMENT CROSS SECTION
OF NOTCHED WEDGE LONGITUDINAL JOINT**



**TYPICAL PAVEMENT CROSS SECTION
VERTICAL LONGITUDINAL JOINT**



**TYPICAL PAVEMENT CROSS SECTION
OF MILLED LONGITUDINAL JOINT**

GENERAL NOTES

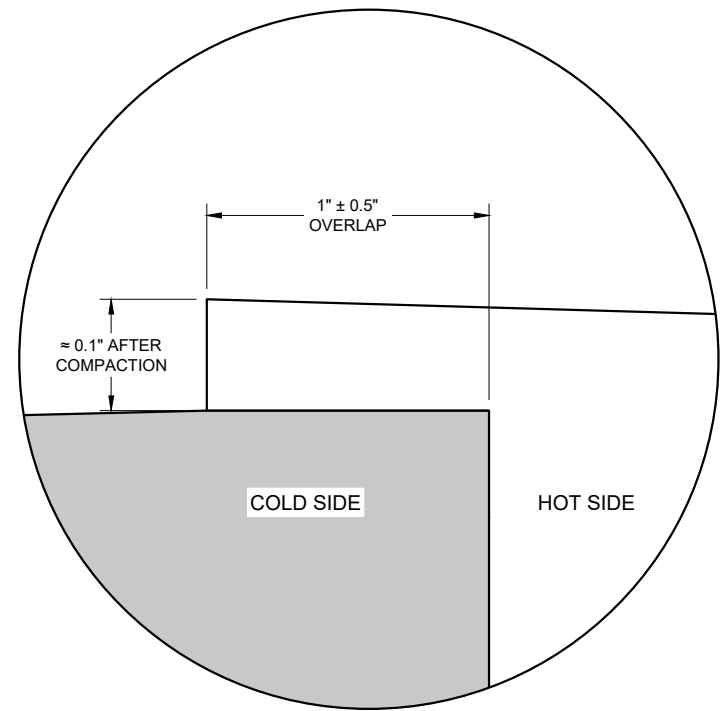
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

FOR ALL LONGITUDINAL JOINTS, ENSURE THE PAVER SCREED OVERLAPS THE PREVIOUSLY PLACED PAVEMENT BY 1" ± 0.5" AND THE HOT SIDE OF THE JOINT REMAINS HIGHER THAN THE COLD SIDE BY APPROXIMATELY 0.1" AFTER FINAL COMPACTION.

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

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

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

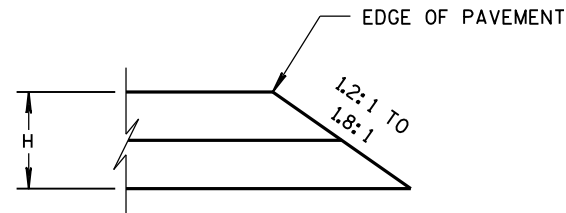


OVERLAP DETAIL (TYPICAL)

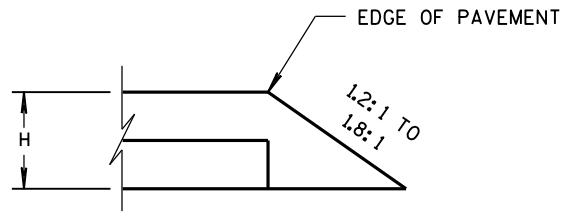
HMA LONGITUDINAL JOINTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

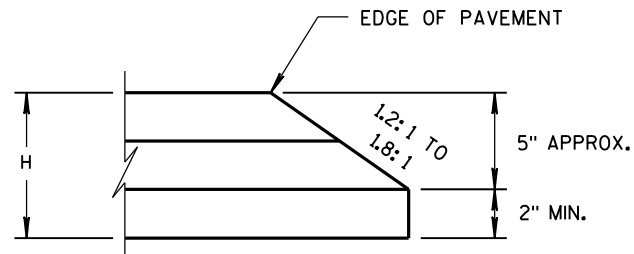
APPROVED
February 2020 /S/ Steven Hefel
DATE HMA PAVEMENT ENGIN 47
FHWA



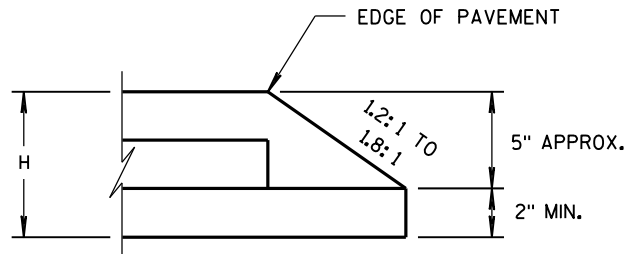
CONSTRUCTED WITH FINAL TWO LAYERS
FOR H 5" OR LESS



CONSTRUCTED WITH FINAL LAYER
FOR H 5" OR LESS

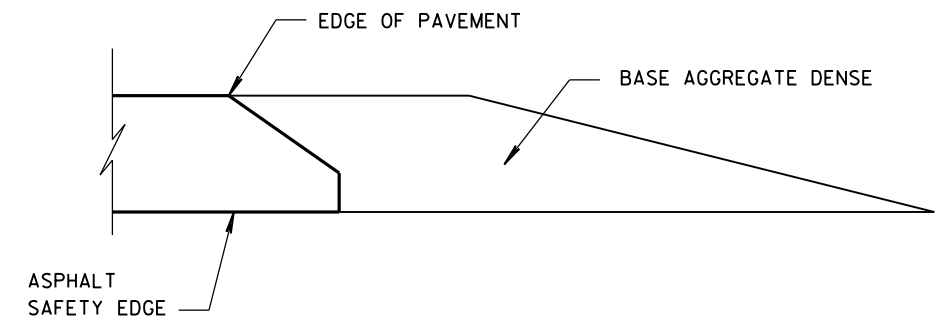


CONSTRUCTED WITH FINAL TWO LAYERS
FOR H GREATER THAN 5"



CONSTRUCTED WITH FINAL LAYER
FOR H GREATER THAN 5"

HMA PAVEMENT AND HMA OVERLAYS



FINISHED SHOULDER AGGREGATE PLACEMENT

SAFETY EDGE_{SM}

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

11/30/2012
DATE

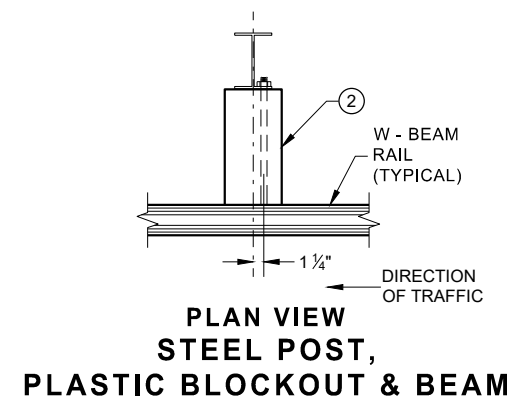
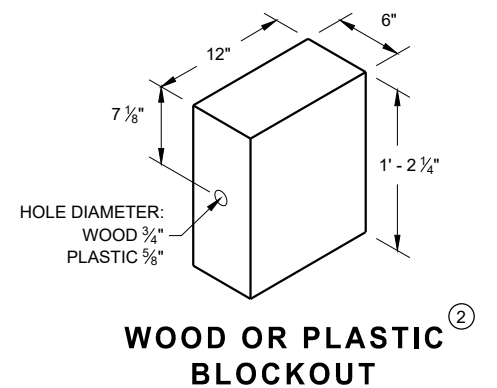
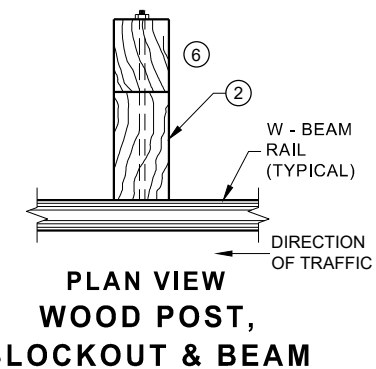
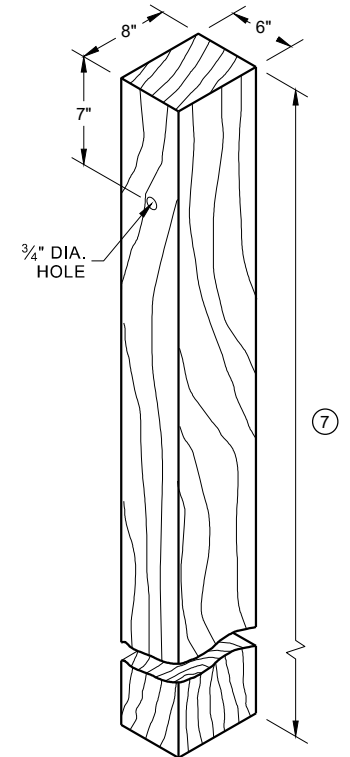
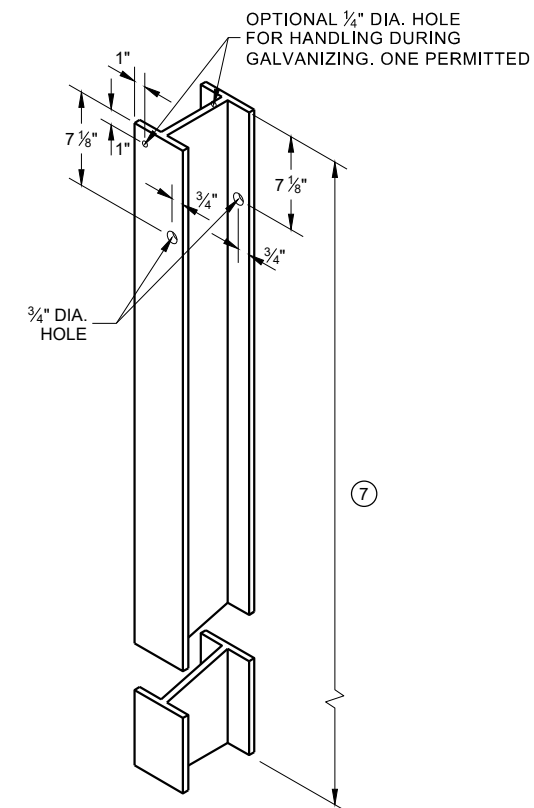
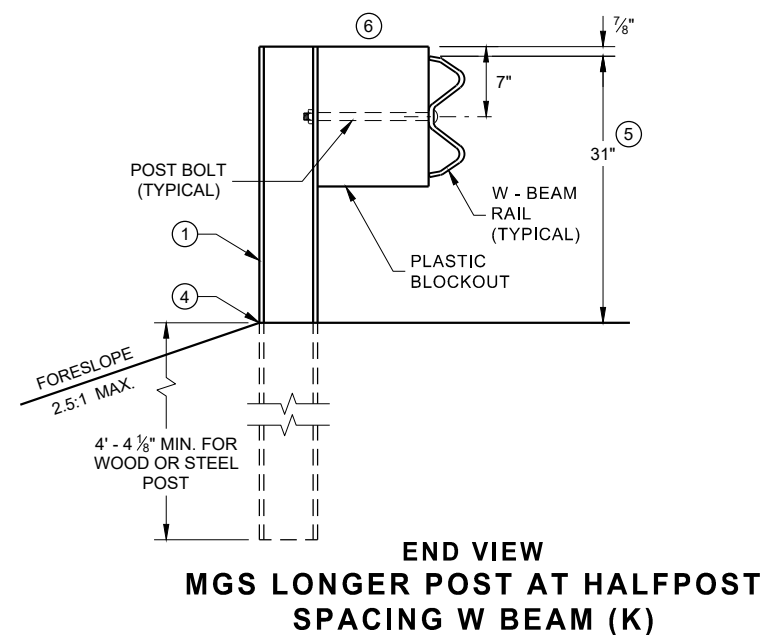
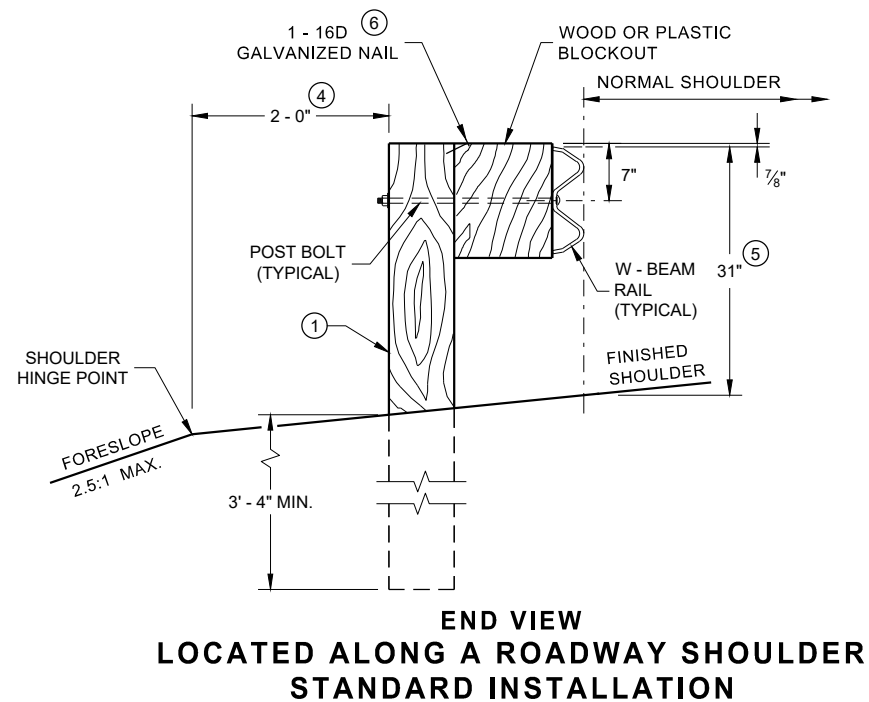
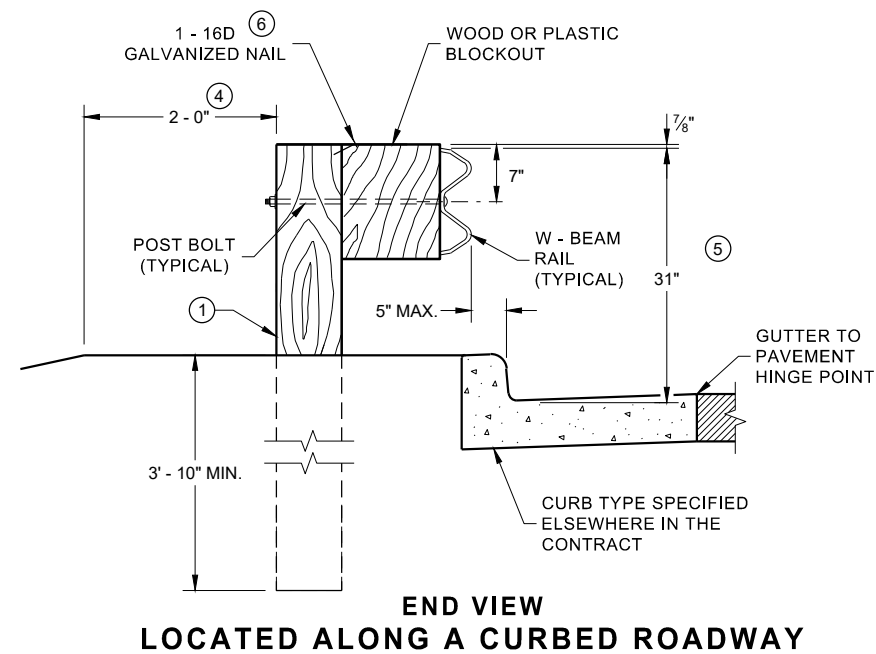
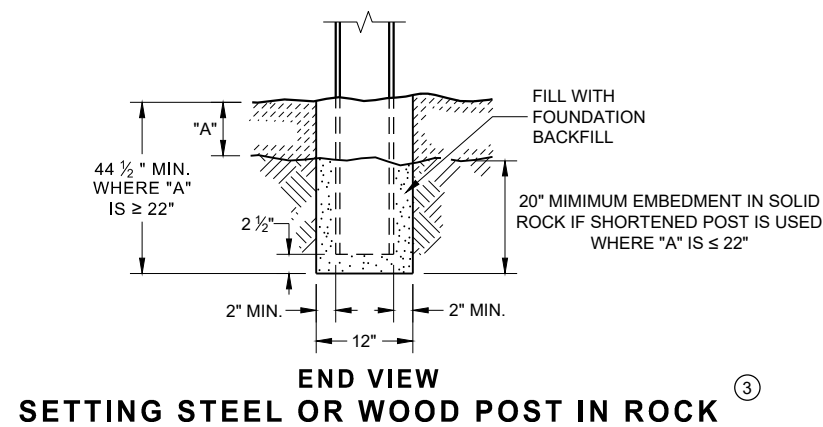
FHWA

/s/ Jerry H. Zoog
ROADWAY STANDARDS
ENGINEER

48

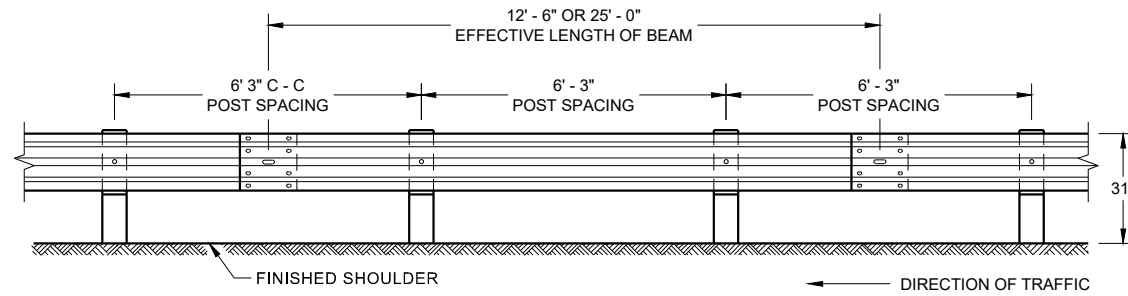
INT

- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.
- ③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 30 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS TO LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- ④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- ⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS +1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 3/4" TO 32".
- ⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ⑦ TOTAL POST LENGTH FOR TYPE K IS 7' - 0".
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".

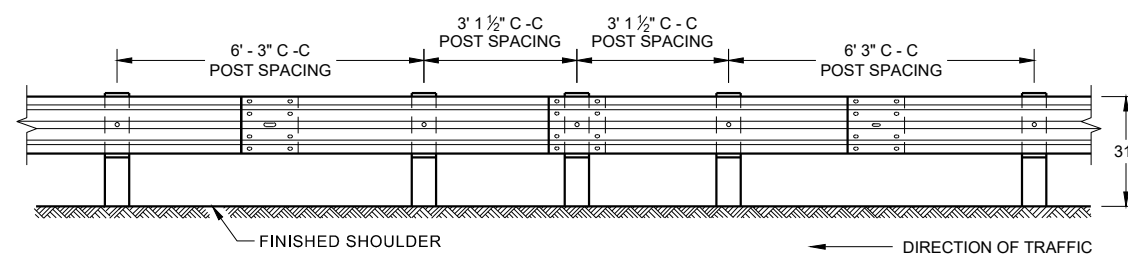


**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

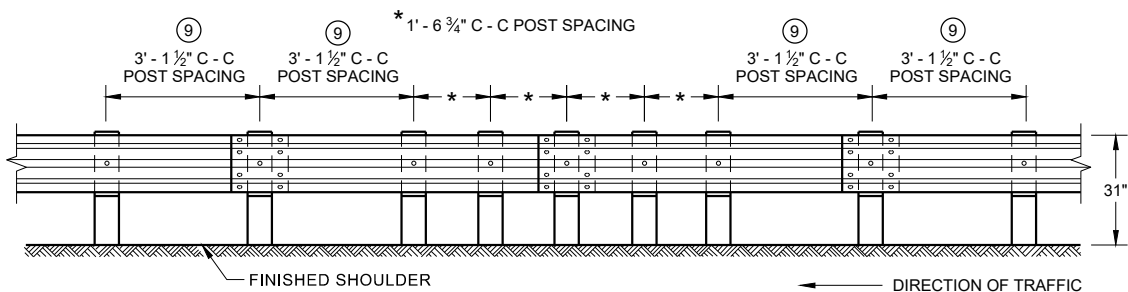
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 49



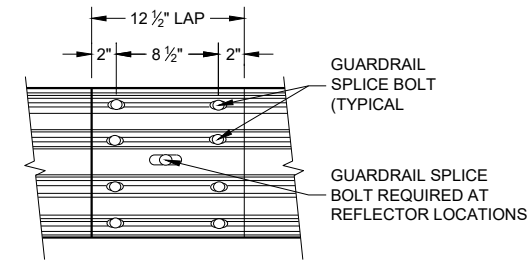
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



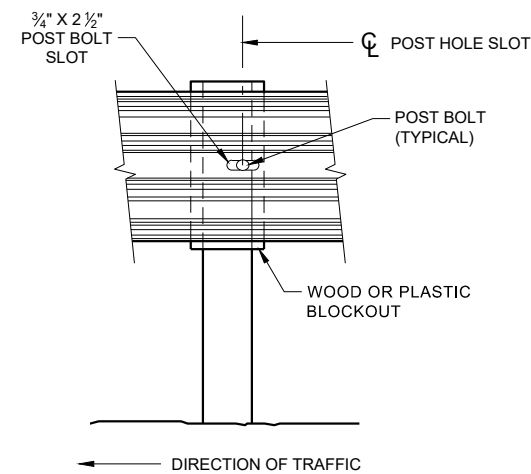
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



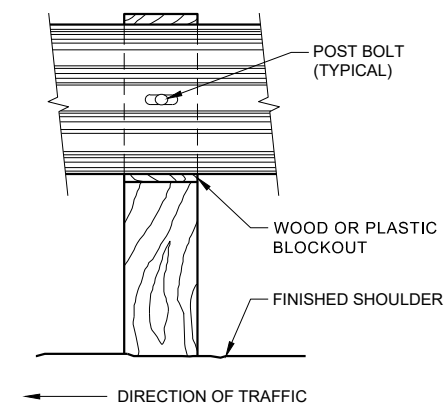
**FRONT VIEW
QUARTER POST SPACING (QS)**



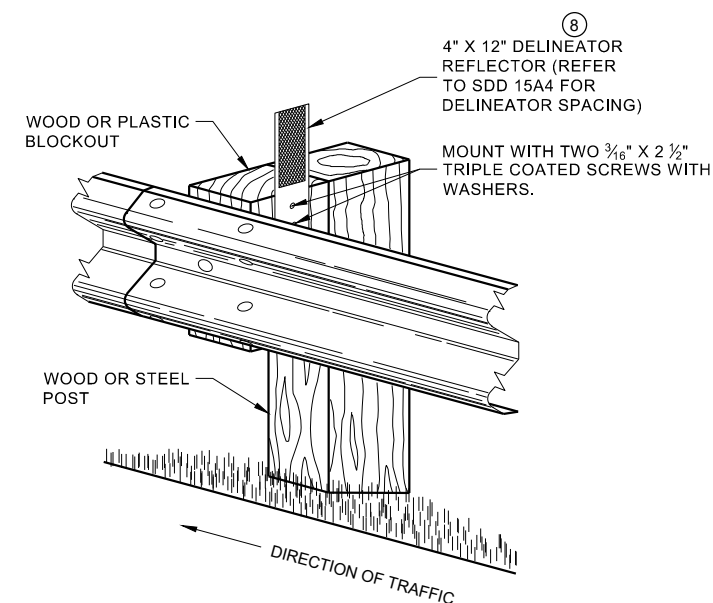
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



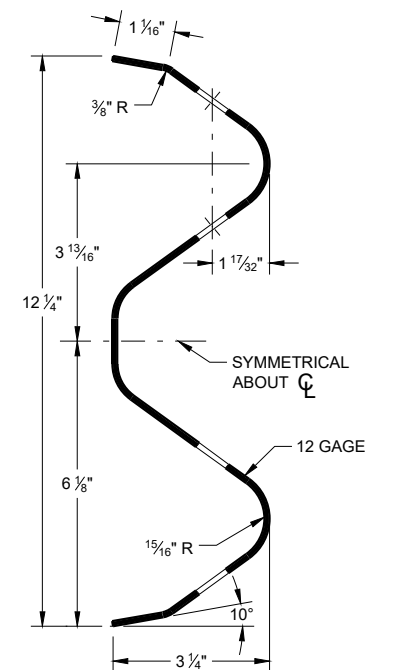
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

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

POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 3/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

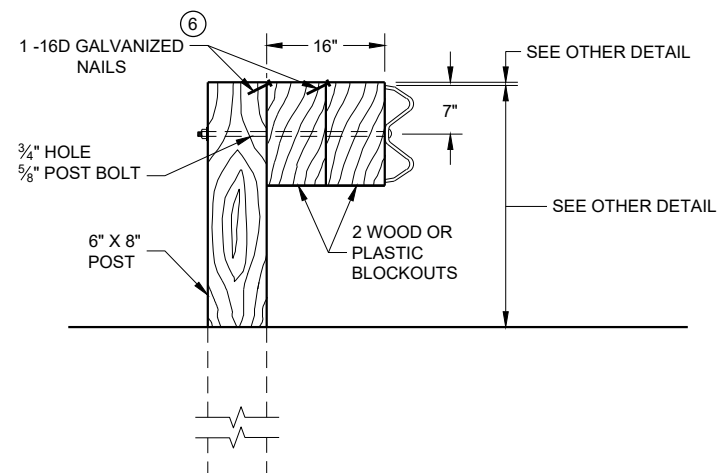
GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

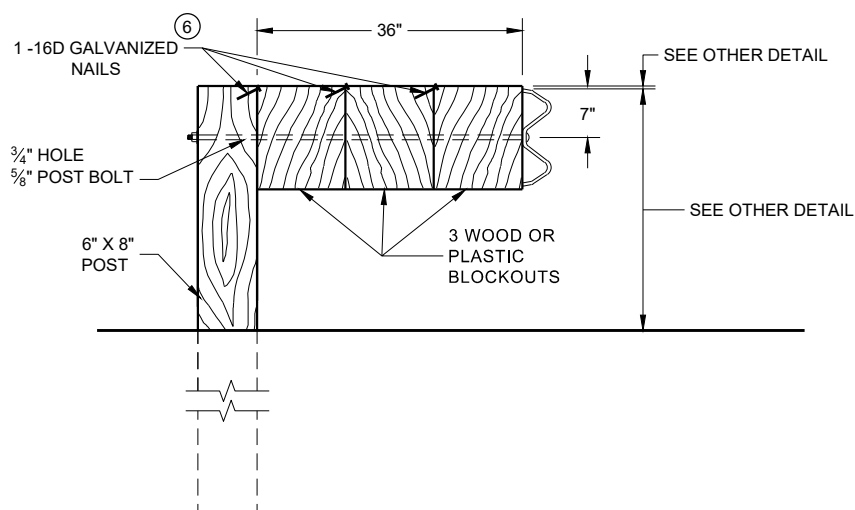
**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

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



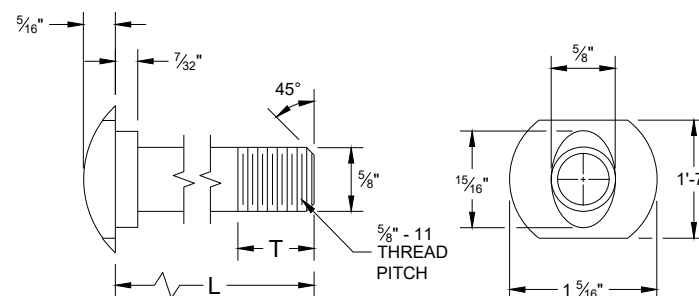
DETAIL FOR 36" BLOCKOUT DEPTH

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

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

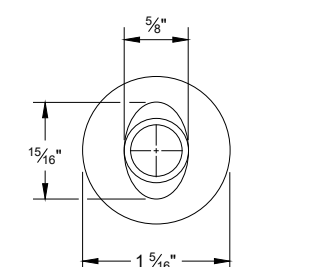
NOTE:

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

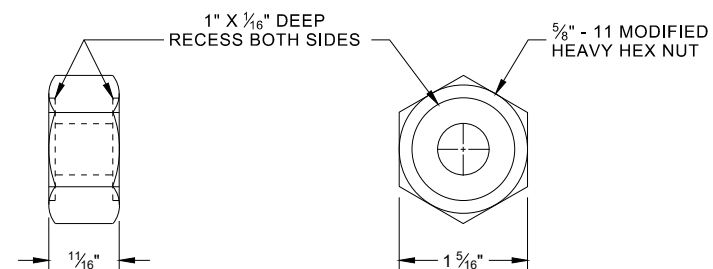


POST BOLT TABLE

L	T (MIN.)
1 ¼"	1 ⅝"
2"	1 ¾"
10"	4"
14"	4 ⅙"
18"	4"
21"	4 ⅙"
25"	4"

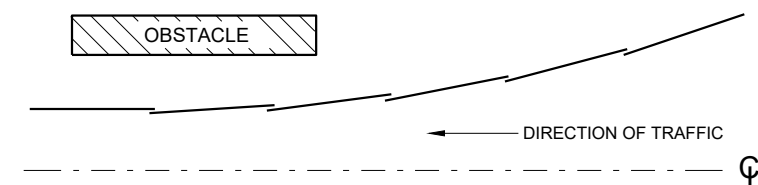


ALTERNATE BOLT HEAD

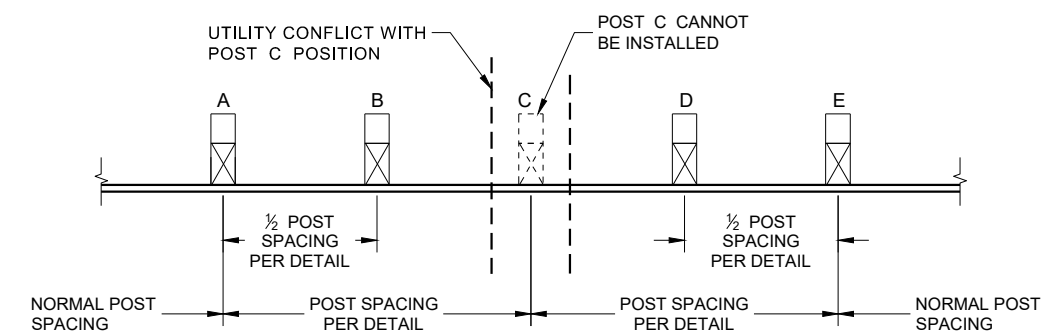


POST BOLT, SPLICE BOLT AND RECESS NUT

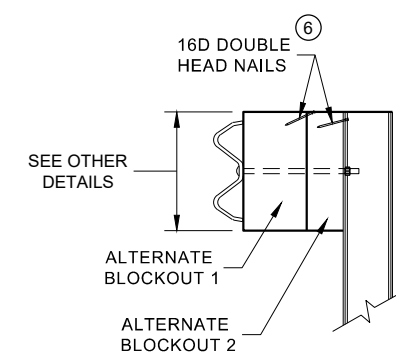
⑥ WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



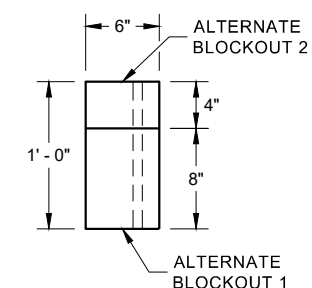
**PLAN VIEW
BEAM LAPPING DETAIL**



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW

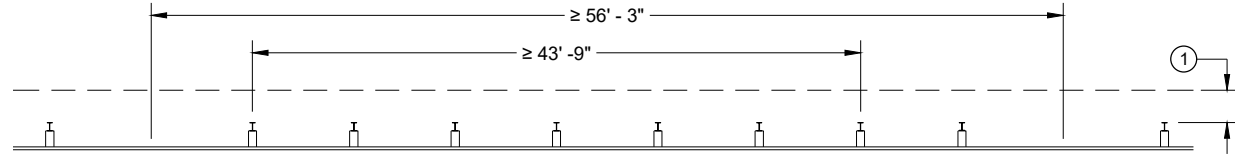


PLAN VIEW

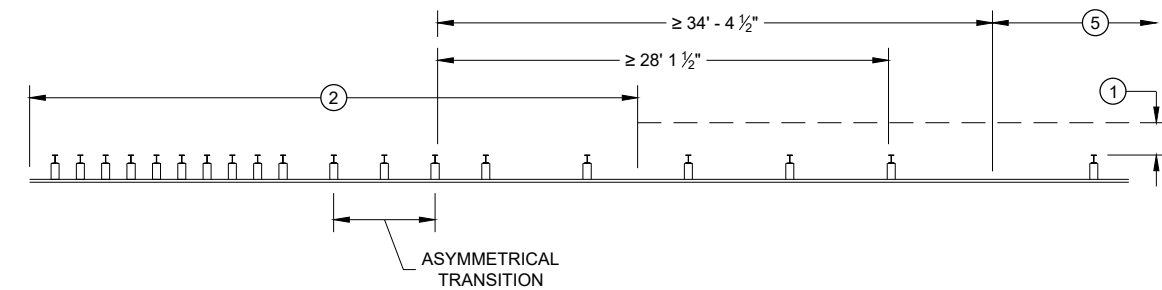
ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

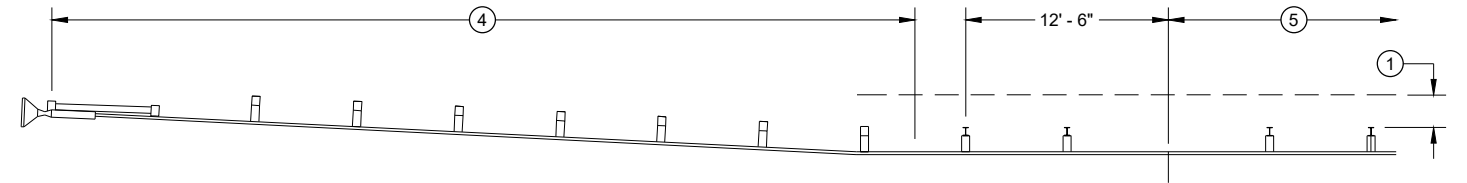
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 51



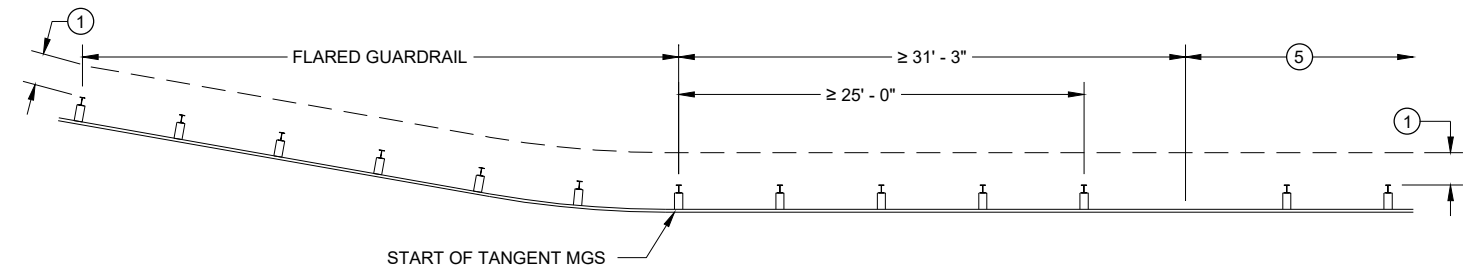
MISSING POST IN NORMAL BEAM GUARD RUN



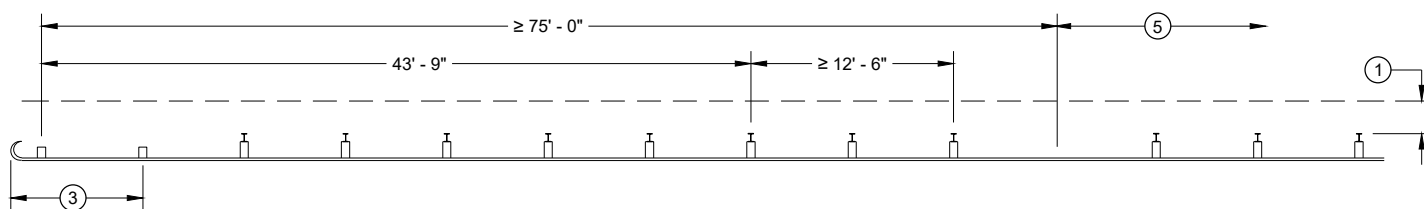
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



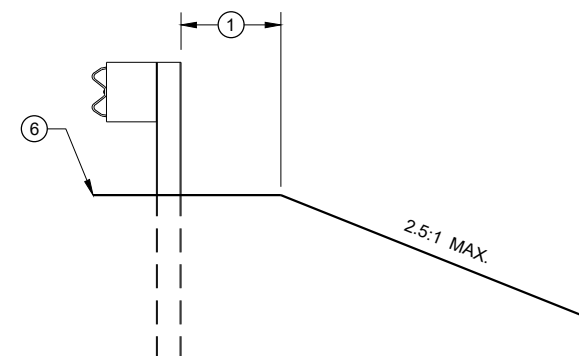
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR FLARED BEAM GUARD



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR TYPE 2 TERMINAL



CROSS SECTION VIEW

- (1) MINIMUM OF 2 FEET OF GRADING BEHIND POST.
- (2) SEE SDD 14B45 FOR MORE DETAILS.
- (3) SEE SDD 14B47 FOR MORE DETAILS.
- (4) SEE SDD 14B44 FOR MORE DETAILS.
- (5) SEE MISSING POST IN NORMAL BEAM GUARD RUN FOR DISTANCE TO NEXT MISSING POST AND AREA FOR WELL DRAINED, COMPACTED SOILS.
- (6) SEE PLAN FOR SHOULDER DESIGN.

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

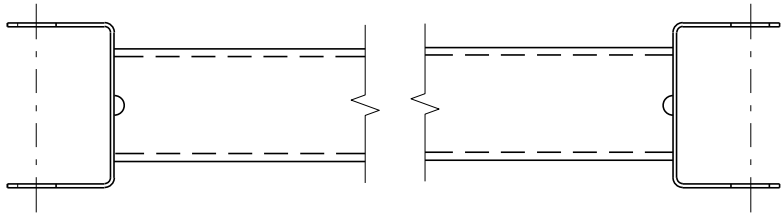
APPROVED
7/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
52
FHWA

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

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

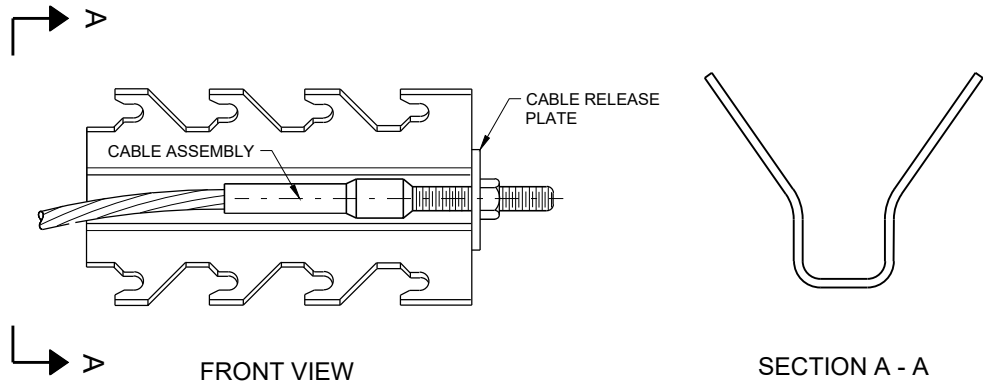
THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 53

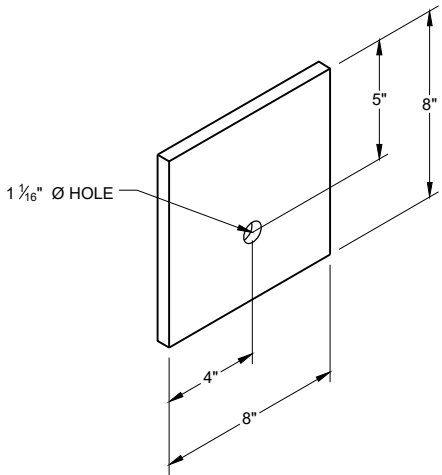


GENERIC GROUND STRUT⁹ ^E

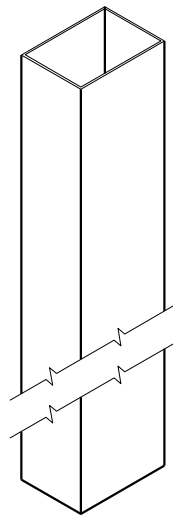
BILL OF MATERIALS	
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED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



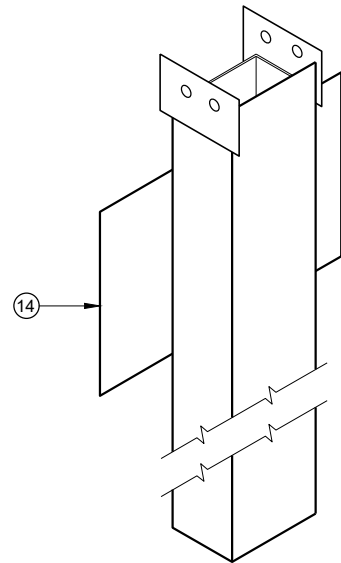
GENERIC ANCHOR CABLE BOX⁹ ^E



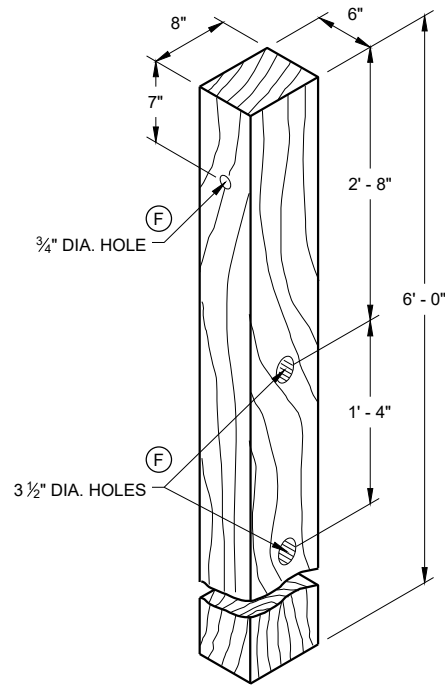
BEARING PLATE⁶ ^E



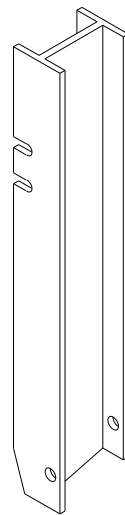
UPPER POST NO. 1 ⁽¹⁾ (E)



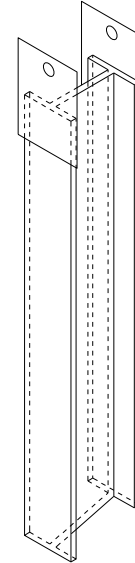
LOWER POST NO. 1 ⁽²⁾ (E)



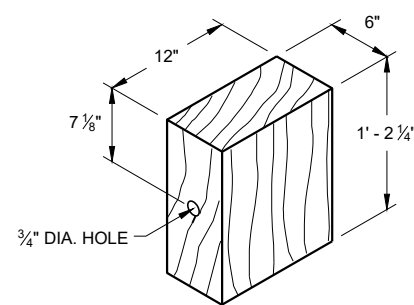
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



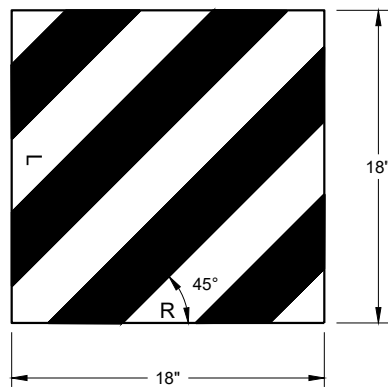
UPPER POST NO. 2 ⁽¹⁵⁾ (E)



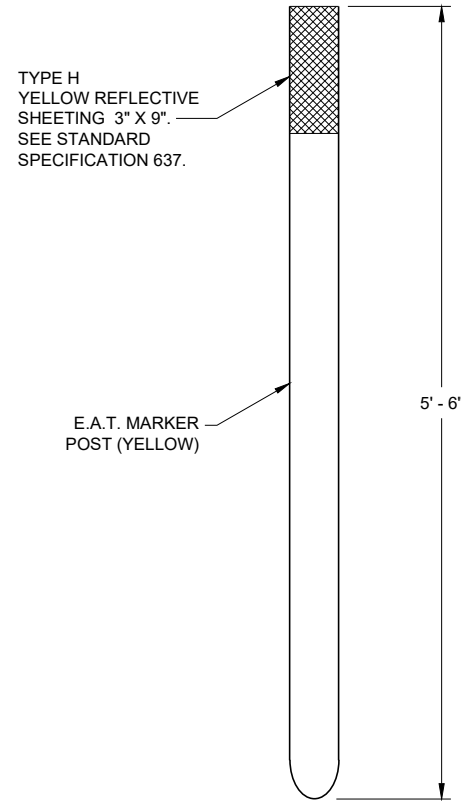
LOWER POST NO. 2 ⁽¹⁶⁾ (E)



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



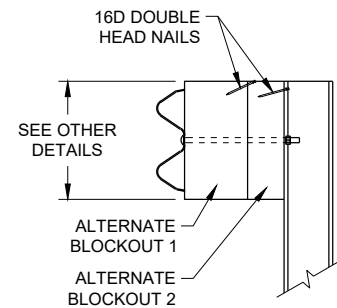
REFLECTIVE SHEETING DETAIL ^(E)



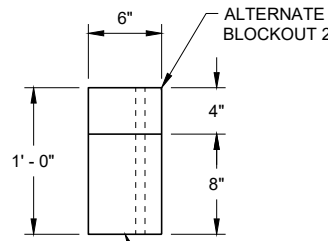
FRONT VIEW

SIDE VIEW

E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW



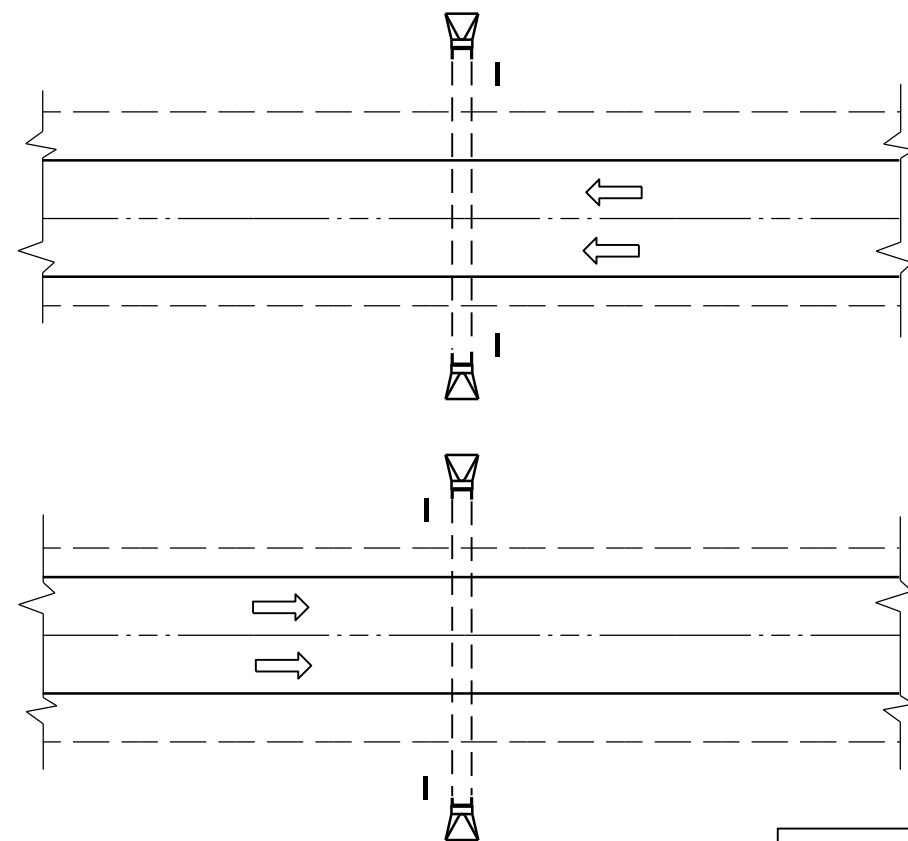
TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

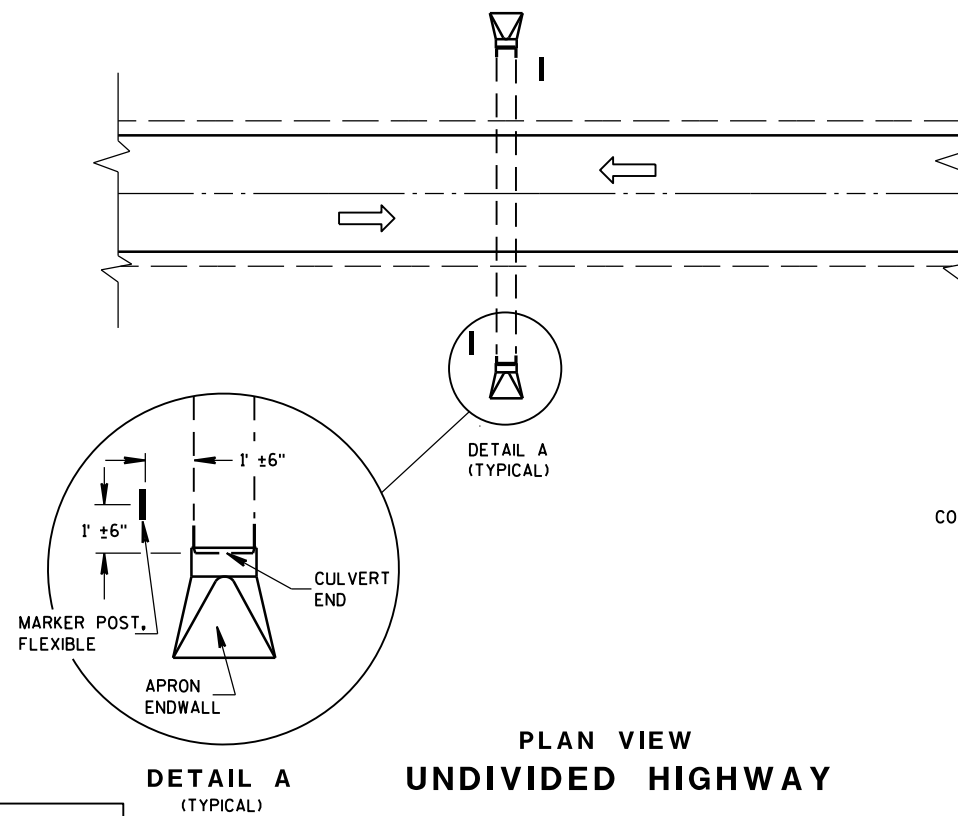
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

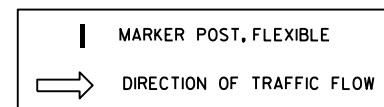
APPROVED
7/2018 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA



PLAN VIEW
DIVIDED HIGHWAY



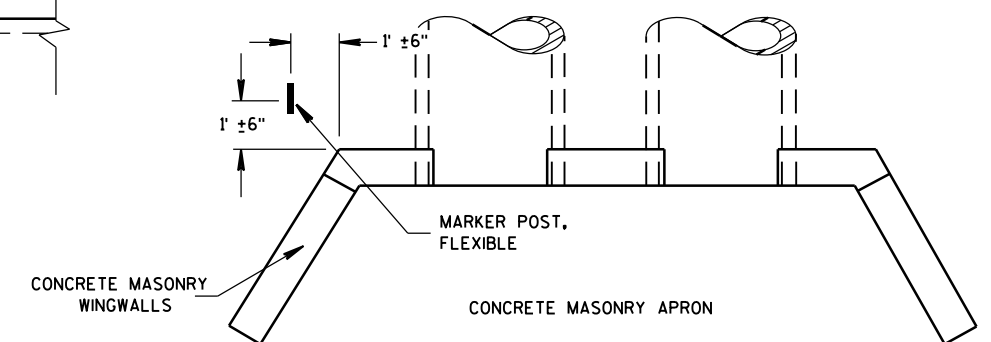
PLAN VIEW
UNDIVIDED HIGHWAY



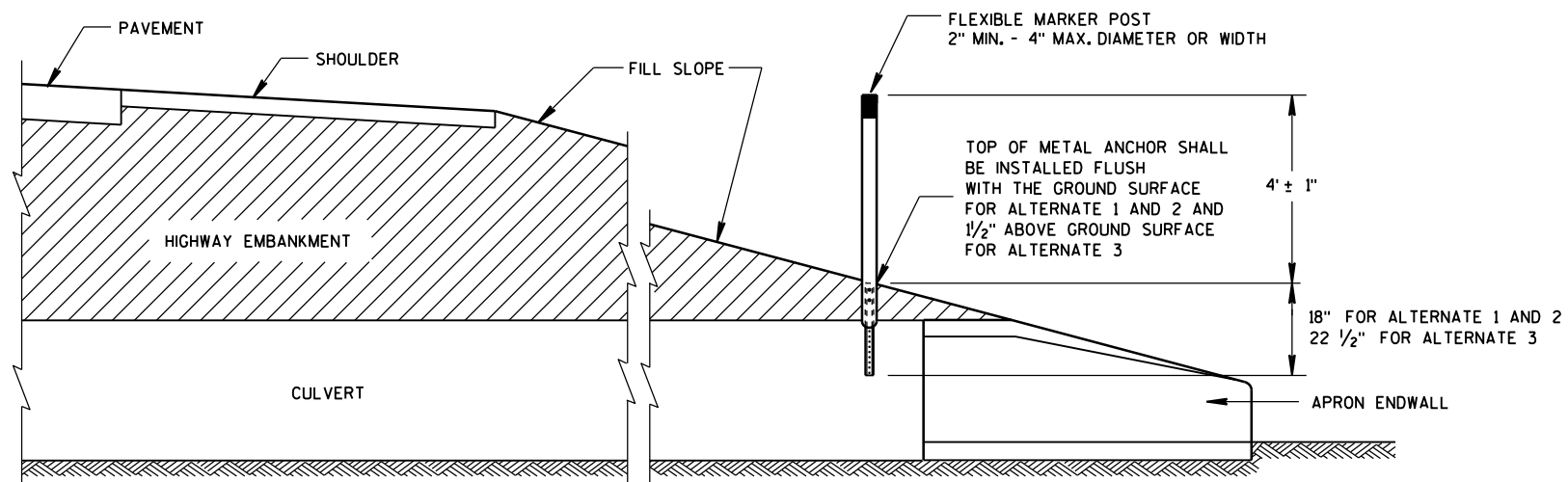
FLEXIBLE MARKER POST LOCATION

GENERAL NOTES

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



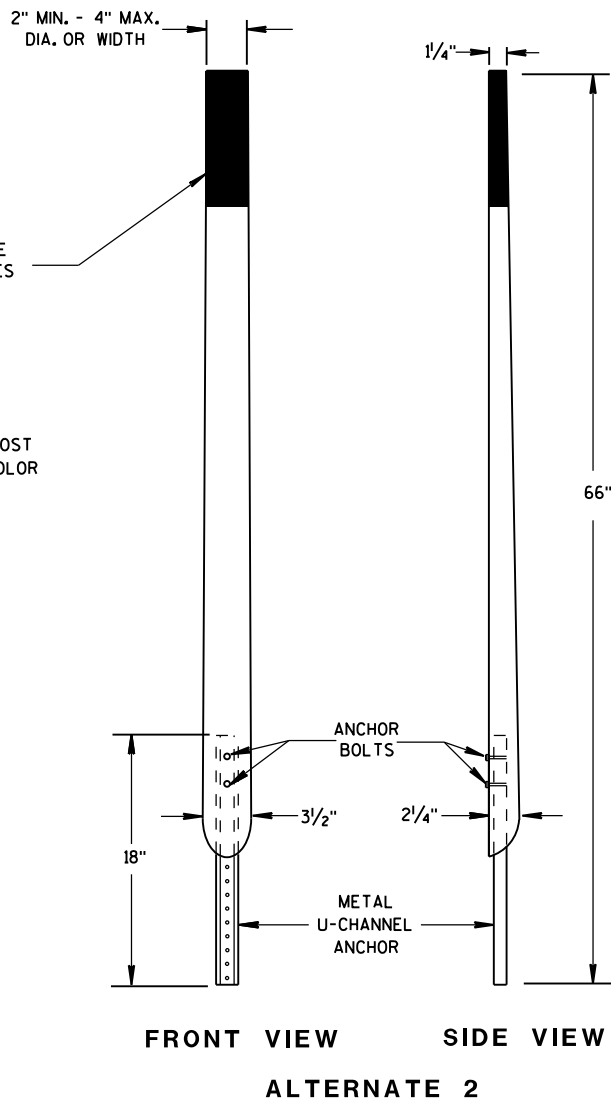
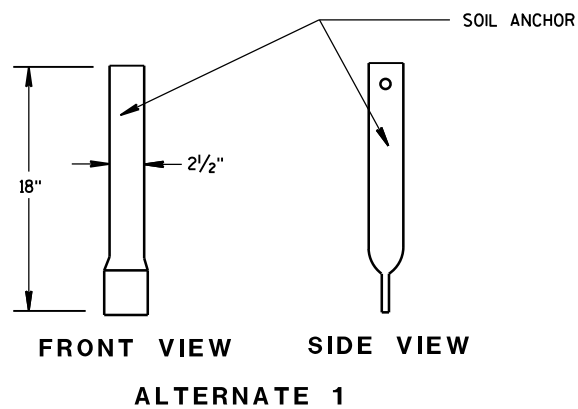
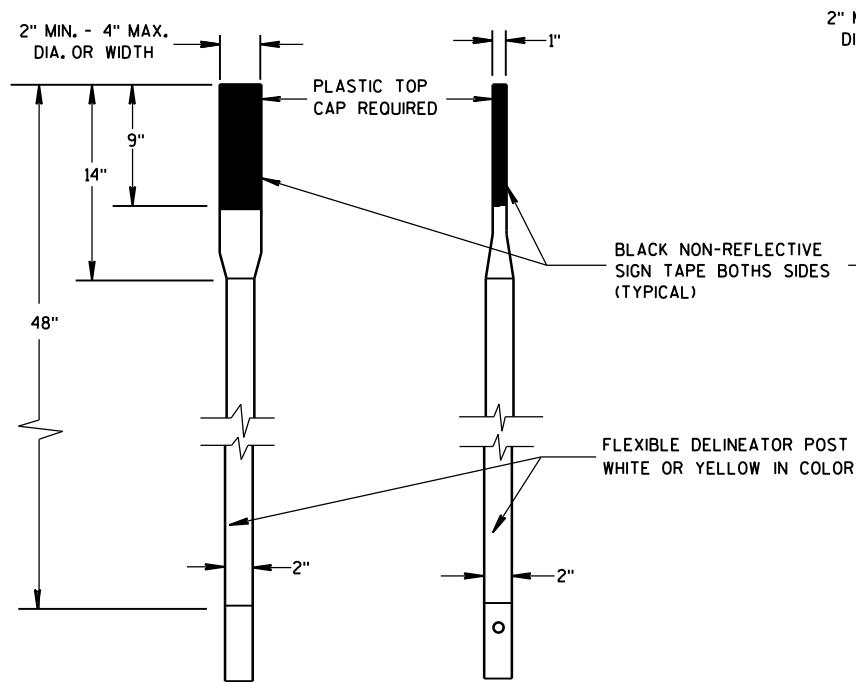
PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH



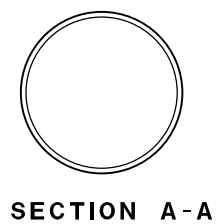
CROSS SECTION
FLEXIBLE MARKER POST

FLEXIBLE MARKER POST
FOR CULVERT END

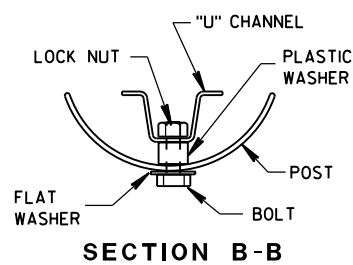
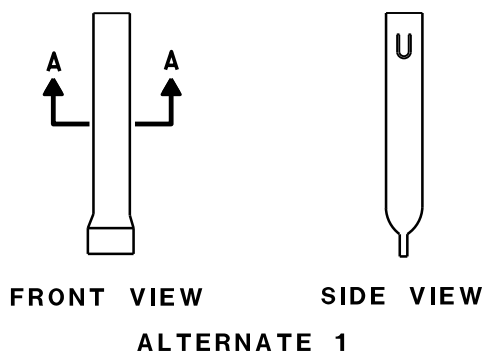
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



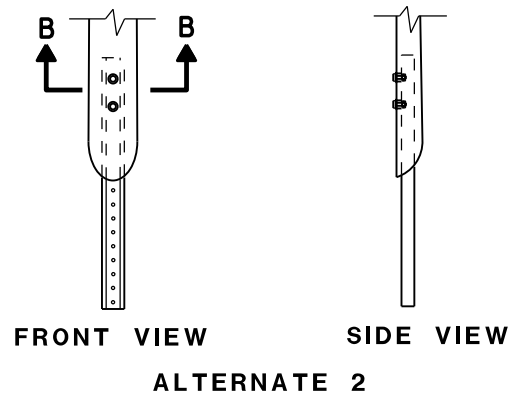
FLEXIBLE MARKER POSTS



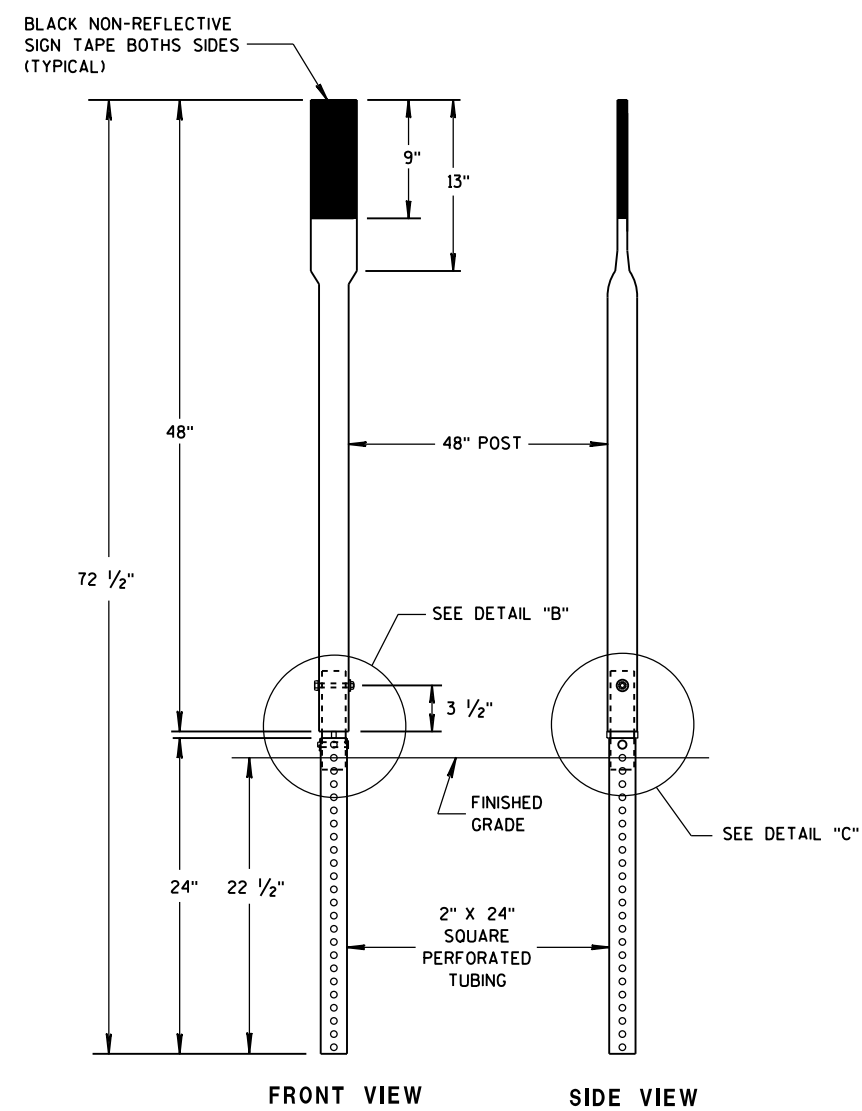
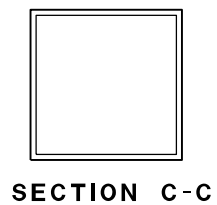
SECTION A-A



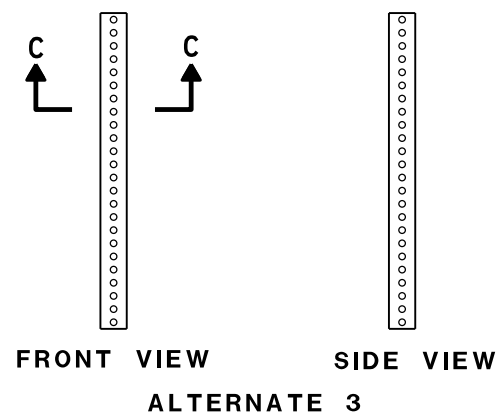
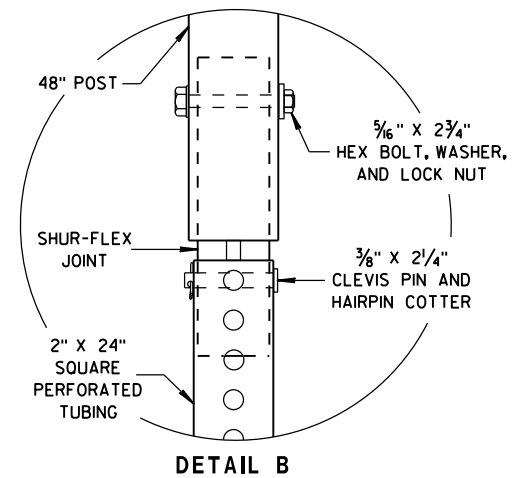
SECTION B-B



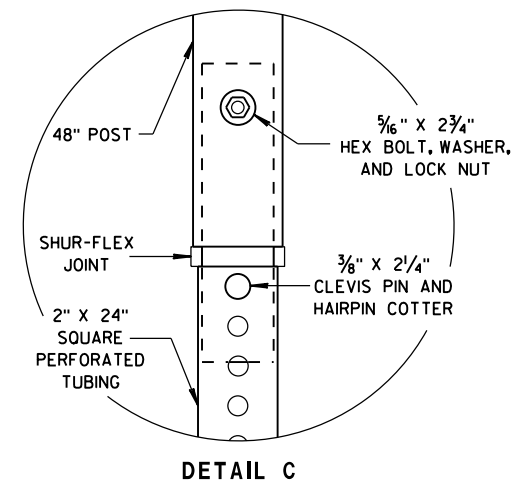
FLEXIBLE MARKER POST ANCHORS

FLEXIBLE MARKER POSTS
ALTERNATE 3

SECTION C-C

FLEXIBLE MARKER POSTS
ALTERNATE 3

DETAIL B



DETAIL C

FLEXIBLE MARKER POST
FOR CULVERT ENDSTATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

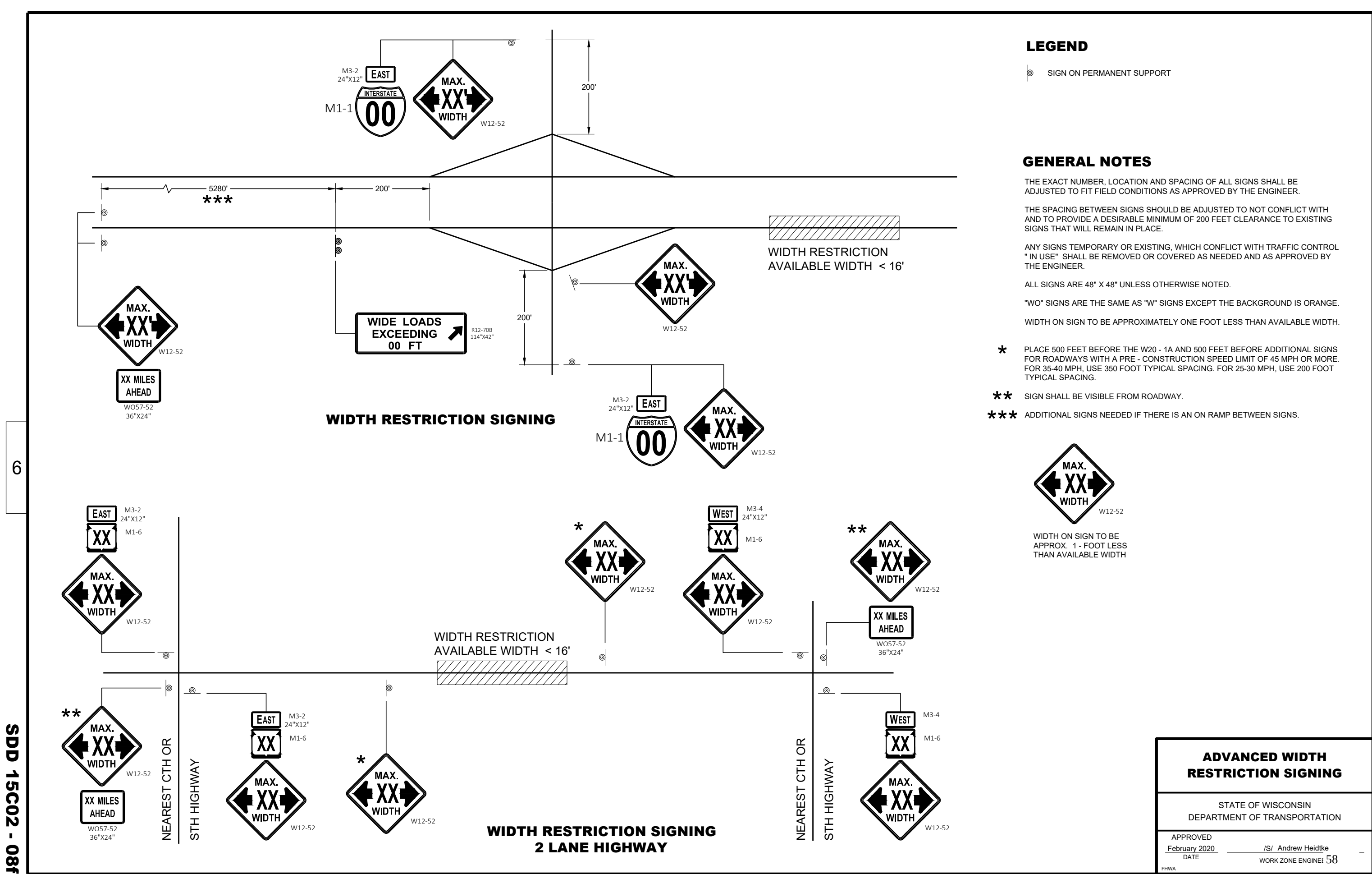
APPROVED

10/1/2012
DATE

FHWA

/S/ Travis Feltes
STATE TRAFFIC ENGINEER 57

IGN



GENERAL NOTES

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

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

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

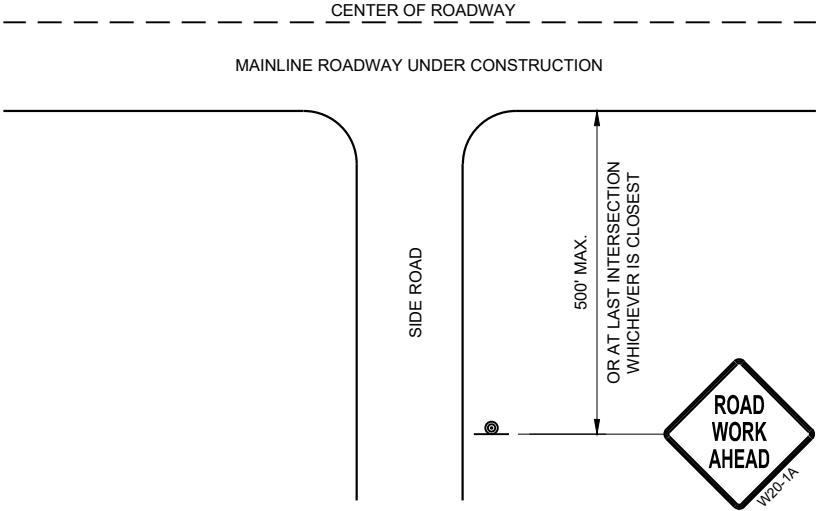
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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

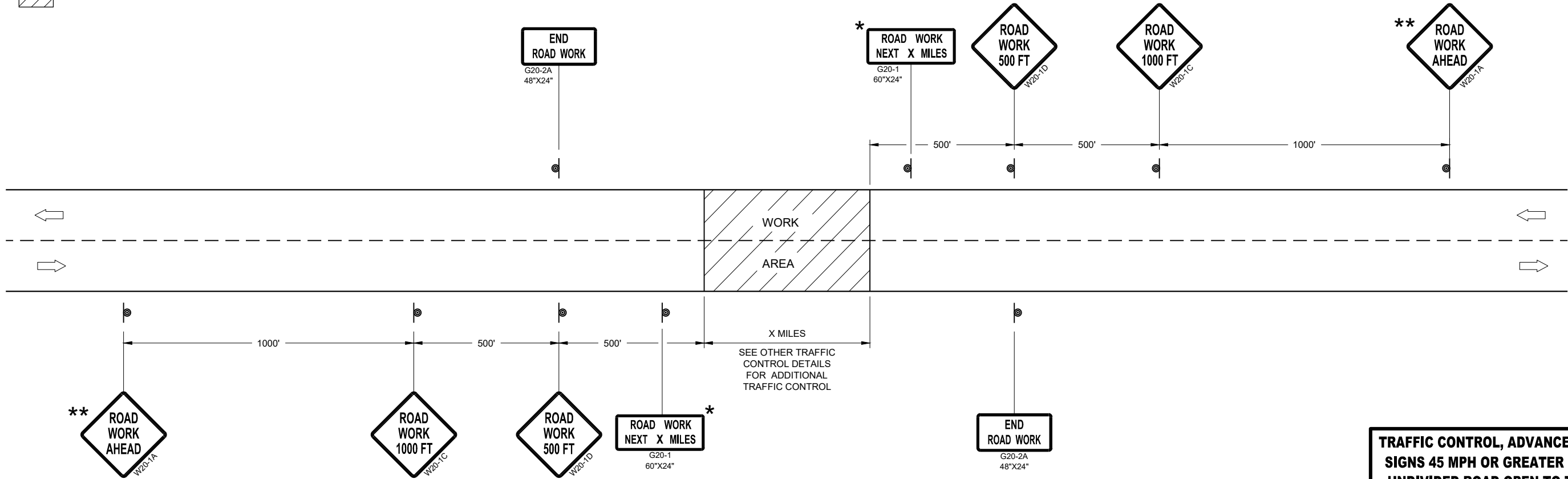
- * OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- ** PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.

LEGEND

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



TYPICAL SIDE ROAD APPROACH
WARNING SIGN DETAIL



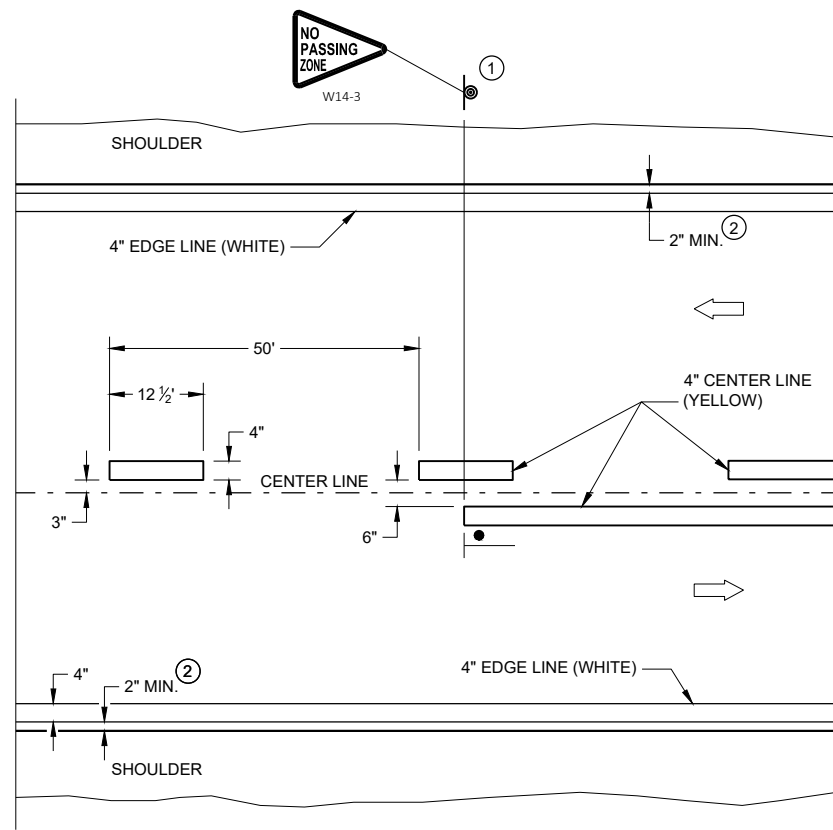
TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

TRAFFIC CONTROL, ADVANCE WARNING
SIGNS 45 MPH OR GREATER TWO-WAY
UNDIVIDED ROAD OPEN TO TRAFFICE

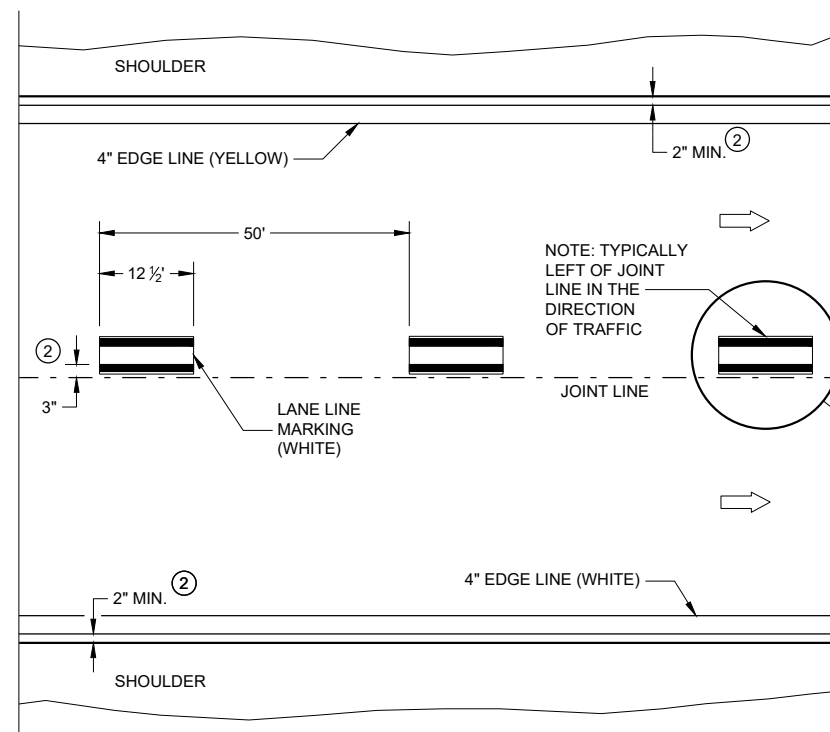
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
July 2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 59

FHWA

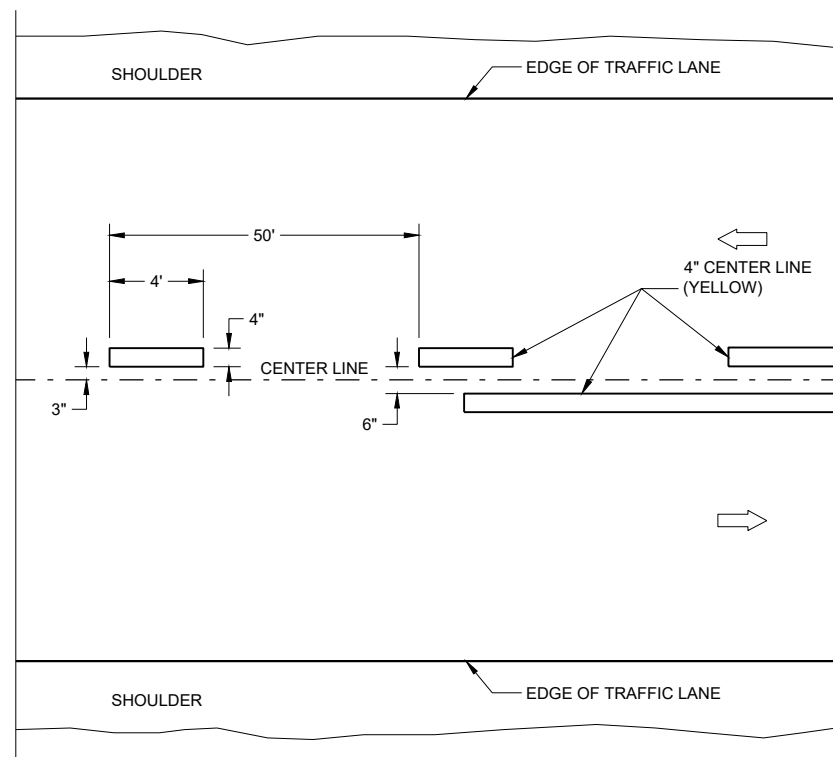


TWO WAY TRAFFIC

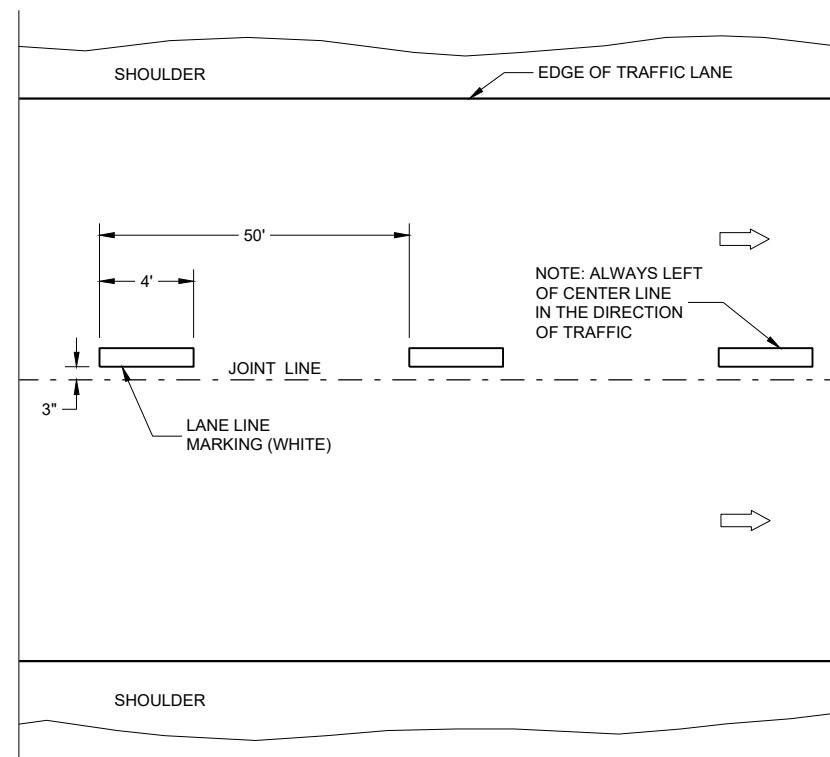


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

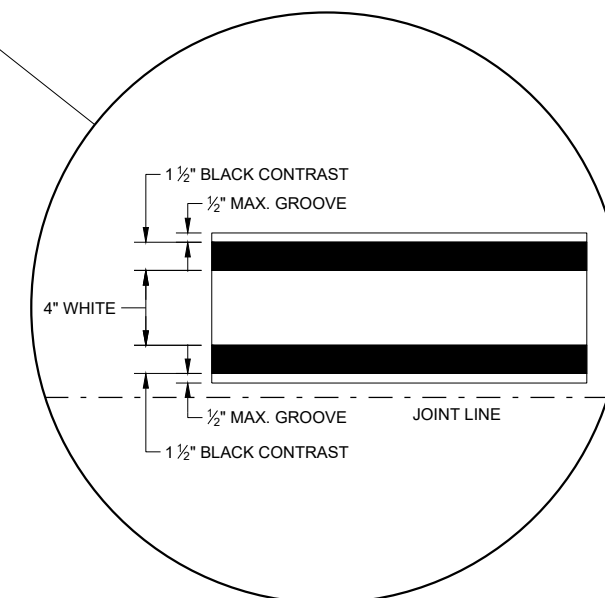
GENERAL NOTES

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 WITH 50 FEET OF THE "T" MARKING
- ② MEASURE FROM EDGE OF MARKING TO JOINT LINE. THIS DOES NOT INCLUDE SPACE NEEDED FOR GROOVING OPERATIONS.

LEGEND

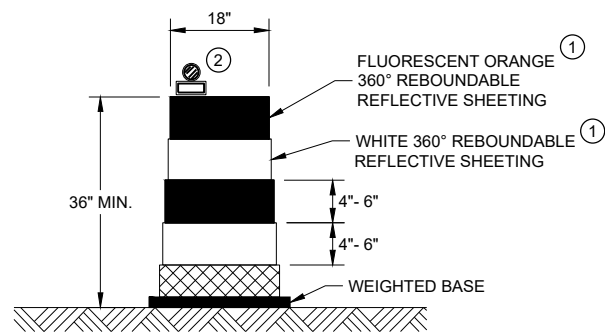
-  "T" MARKING
 SIGN ON PERMANENT SUPPORT
 DIRECTION OF TRAFFIC



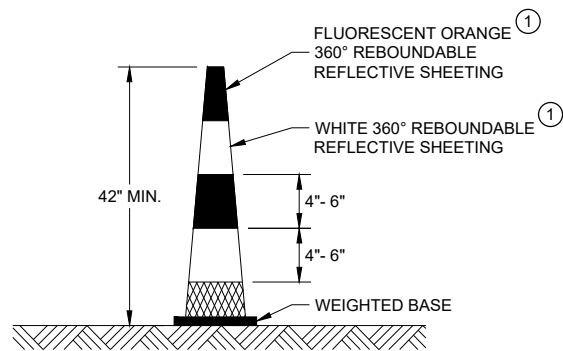
LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Matthew Rauch
DATE STATEWIDE SIGNING AND N
ENGINEER 60

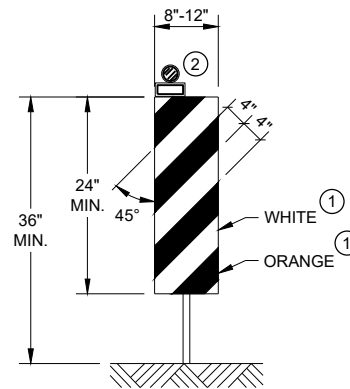


DRUM



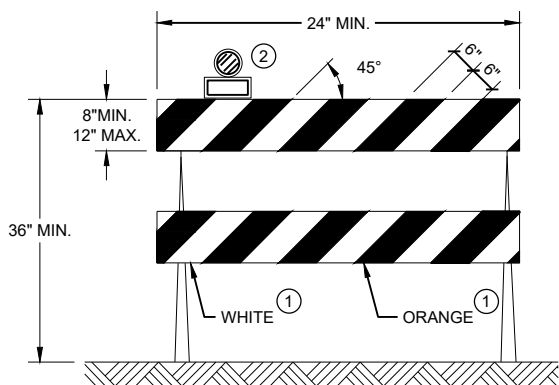
42" CONE

DO NOT USE IN TAPERS
½ SPACING OF DRUMS



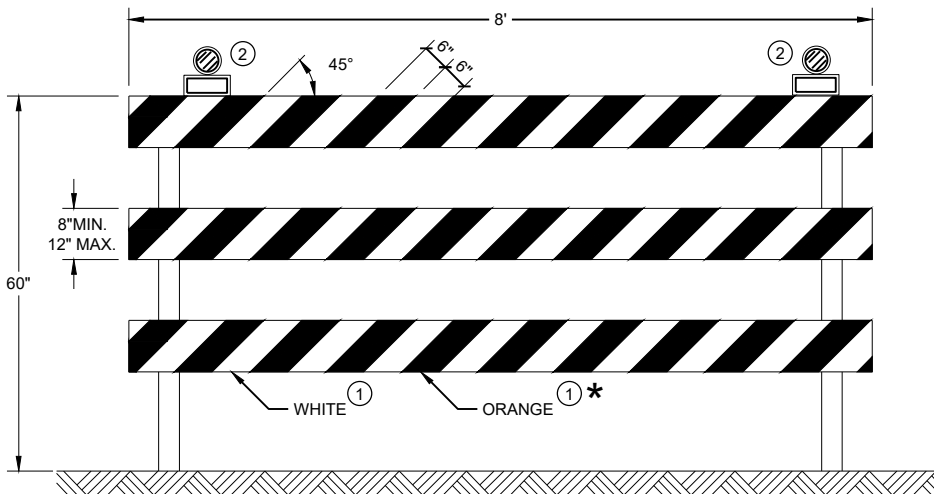
VERTICAL PANEL

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



TYPE II BARRICADE

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



TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

GENERAL NOTES

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

CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 61
FHWA

LEGEND

-  SIGN ON PORTABLE OR PERMANENT SUPPORT
-  TEMPORARY PORTABLE RUMBLE STRIP ARRAY
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

GENERAL NOTES

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

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

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

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

THE FIRST ADVANCE WARNING SIGN SHOULD TYPICALLY BE LOCATED IN ADVANCE OF THE ANTICIPATED TRAFFIC BACKUP OR QUEUE.

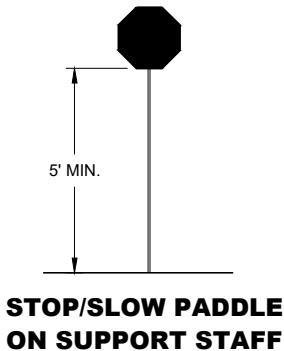
WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

FLAGGING

- FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT REMOVE TEMPORARY PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.
- ① FOR MOVING WORK OPERATIONS, POST ADDITIONAL W20-7A FLAGGER SIGNS AT APPROXIMATELY 3,500' INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.
 - ② SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.
- WHEN THE DISTANCE BETWEEN FLAGGERS EXCEEDS 2 MILES, A PILOT CAR IS REQUIRED. WHEN CURVES REDUCE SIGHT DISTANCE BELOW 400', A PILOT CAR IS REQUIRED.

TEMPORARY PORTABLE RUMBLE STRIPS

- UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.
- ③ EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS SPACED ACCORDING TO MANUFACTURER'S RECOMMENDATION, PLACED TRANSVERSE ACROSS THE LANE AT LOCATIONS SHOWN.
- ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FOR THE APPROVED PRODUCTS LIST.
- INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS.
- PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.
- DO NOT INSTALL TEMPORARY PORTABLE RUMBLE STRIPS ON GRAVEL, MILLED SURFACES, OR ASPHALT THAT HAS BEEN PAVED LESS THAN 12 HOURS.

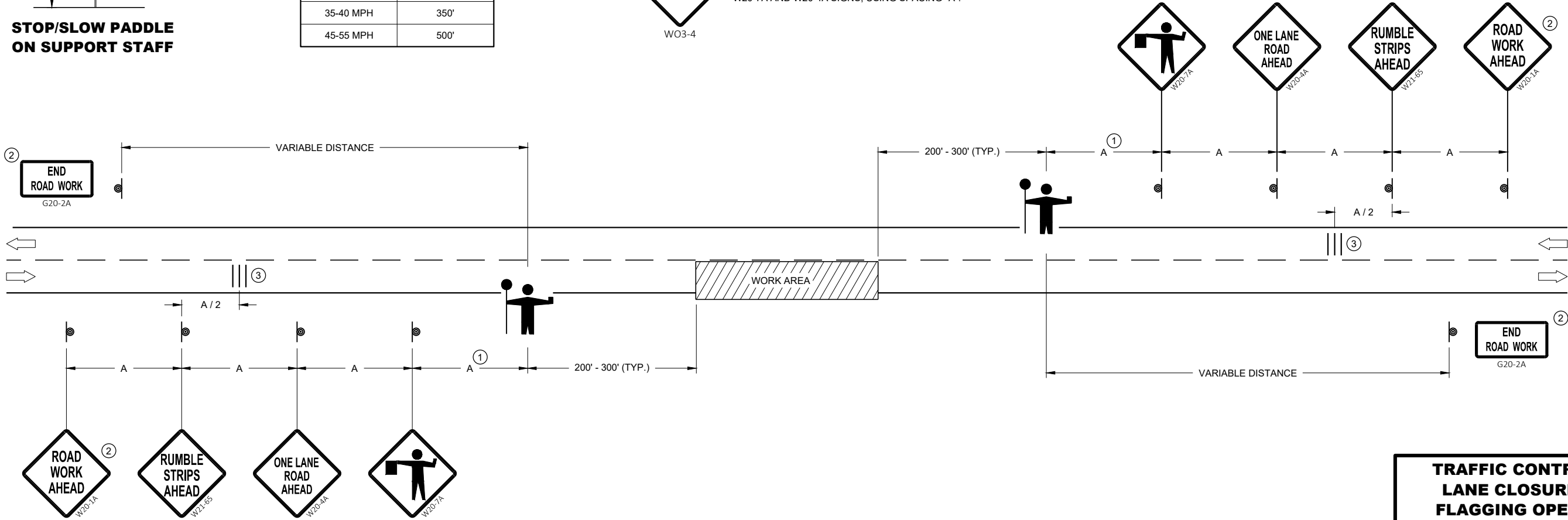


SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

SPEED LIMIT	SPACING "A"
25-30 MPH	200'
35-40 MPH	350'
45-55 MPH	500'



USE OF W03-4 SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7A AND W20-4A SIGNS, USING SPACING "A".



TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2019 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 62

FHWA

LEGEND

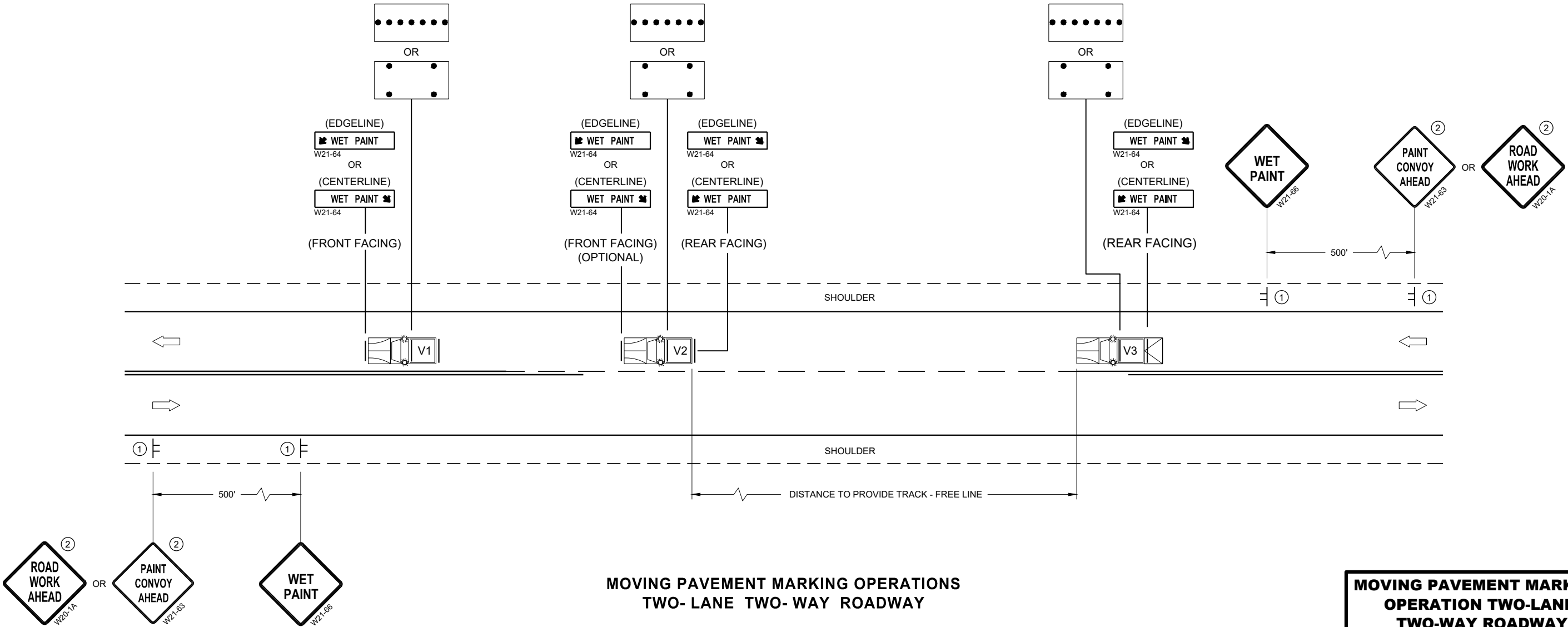
- V1 LEAD VEHICLE
- V2 MARKING VEHICLE
- V3 SHADOW VEHICLE
-  TRUCK MOUNTED ATTENUATOR (TMA)
-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC
-  FLASHING ARROW PANEL (CAUTION)

GENERAL NOTES

- ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.
- ALL VEHICLES SHALL BE EQUIPPED WITH REAR FACING TYPE B OR C FLASHING ARROW PANEL OPERATING IN CAUTION MODE. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.
- ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE SPECIFIED.
- DISTANCE BETWEEN VEHICLES MAY VARY ACCORDING TO TERRAIN, SIGHT DISTANCE, PAINT DRYING TIME, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL AND HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.
- THE WORK AND SHADOW VEHICLES SHOULD PULL OVER PERIODICALLY TO ALLOW TRAFFIC TO PASS.

- WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR LAY STATIONARY SIGNS AND SUPPORTS FLAT ON THE GRADE WITH UPRIGHTS ORIENTED PARALLEL TO AND DOWNSTREAM FROM TRAFFIC.
- CONES SHOULD BE USED BETWEEN THE MARKING AND SHADOW VEHICLE AT 100 FOOT SPACING. CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.
- CONES SHALL BE A MINIMUM OF 18" FOR WET PAVEMENT MARKING .

- ① SIGNS SHALL BE REPEATED APPROXIMATELY EVERY THREE MILES.
- ② IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1A OR W21-63 ARE NOT REQUIRED.

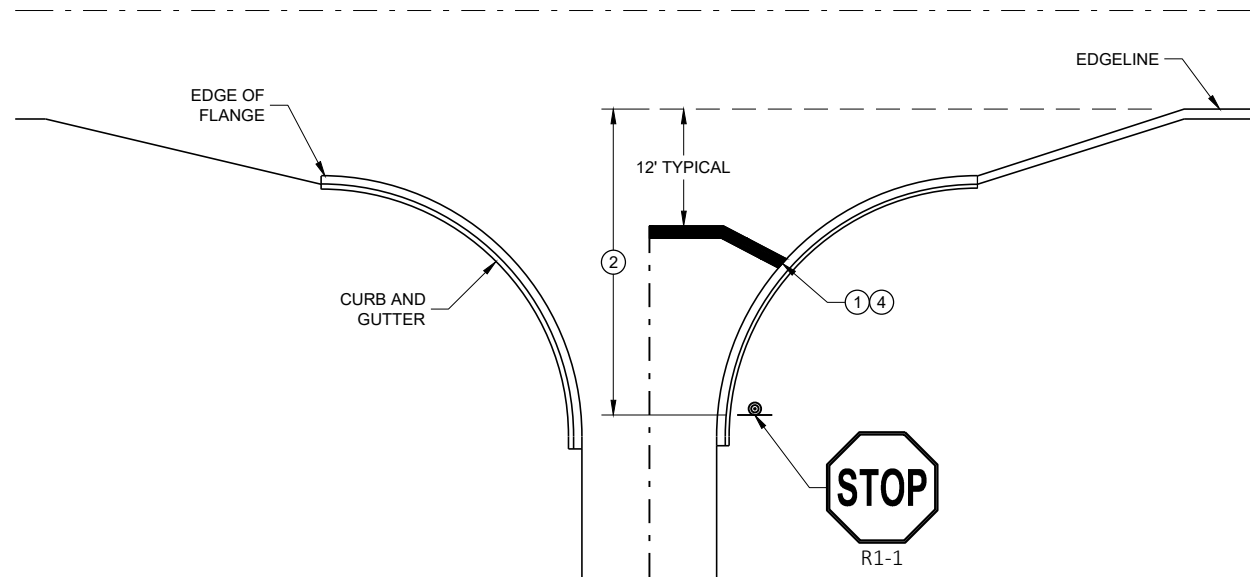


MOVING PAVEMENT MARKING OPERATIONS
TWO-LANE TWO-WAY ROADWAY

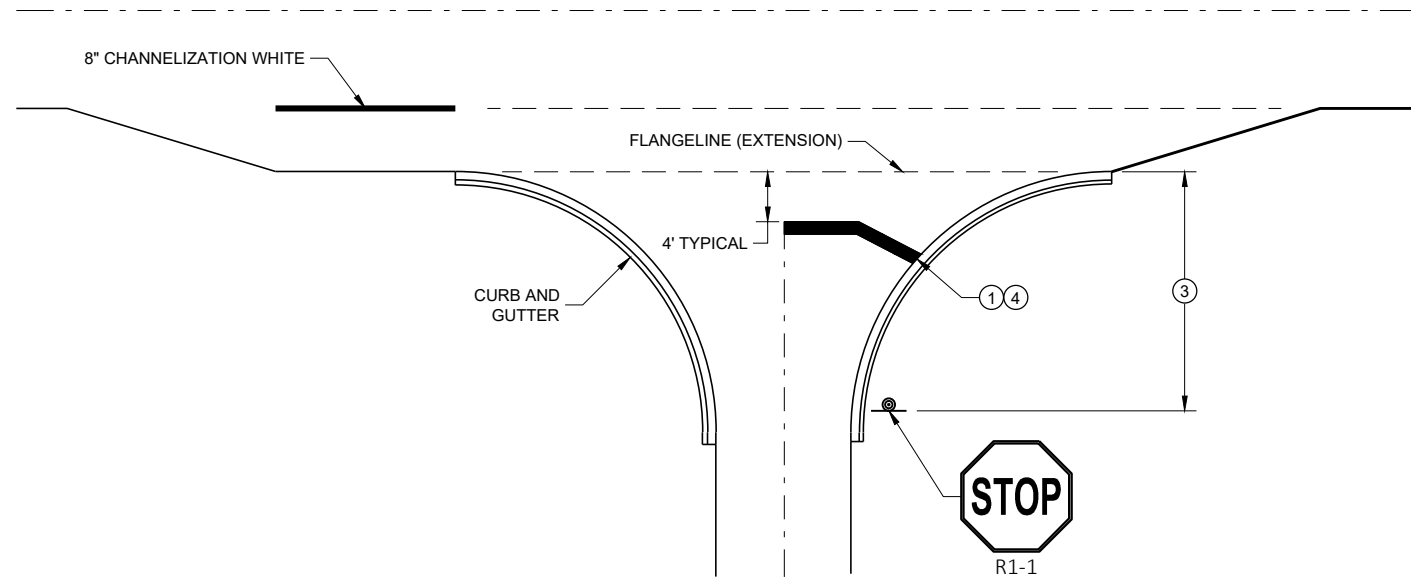
MOVING PAVEMENT MARKING
OPERATION TWO-LANE
TWO-WAY ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

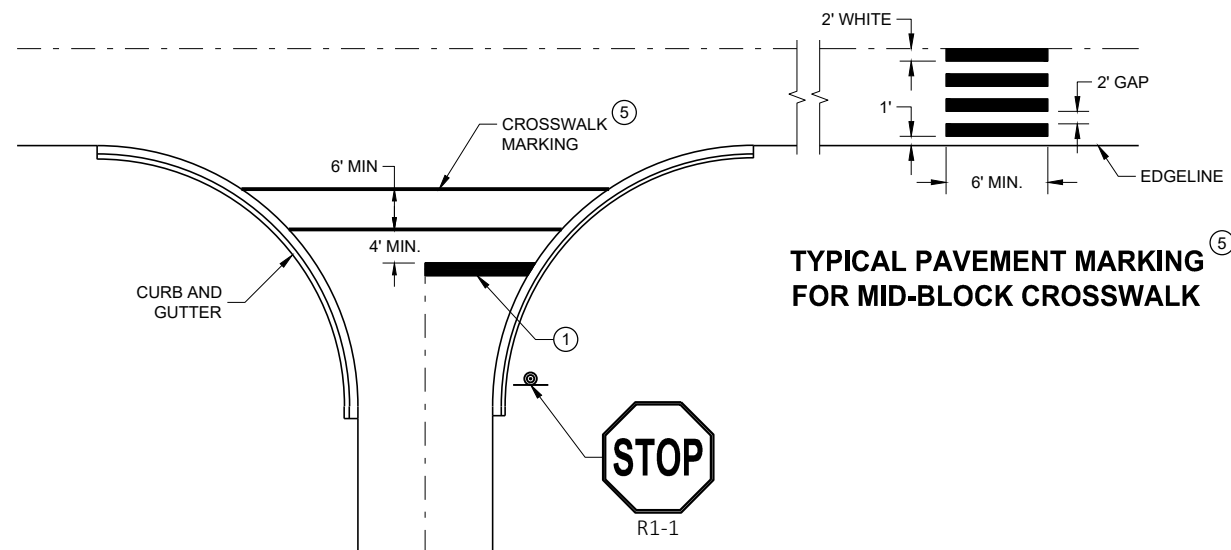
APPROVED
November 2019 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 63
FHWA



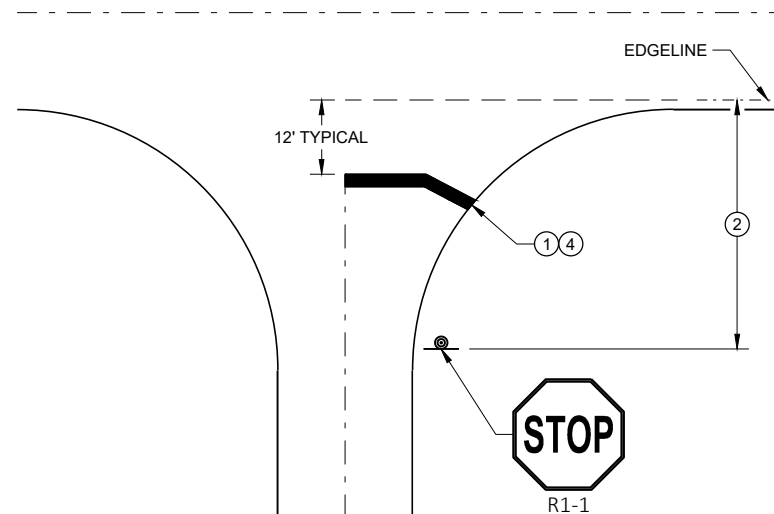
TYPICAL STOP LINE PAVEMENT MARKING
WITH CURB AND GUTTER



TYPICAL STOP LINE PAVEMENT MARKING
FOR SIDEROADS WITH RIGHT TURN LANE



TYPICAL STOP LINE PAVEMENT MARKING FOR
SIDEROADS WITH CROSSWALK MARKING



TYPICAL STOP LINE PAVEMENT MARKING
WITHOUT CURB AND GUTTER

GENERAL NOTES

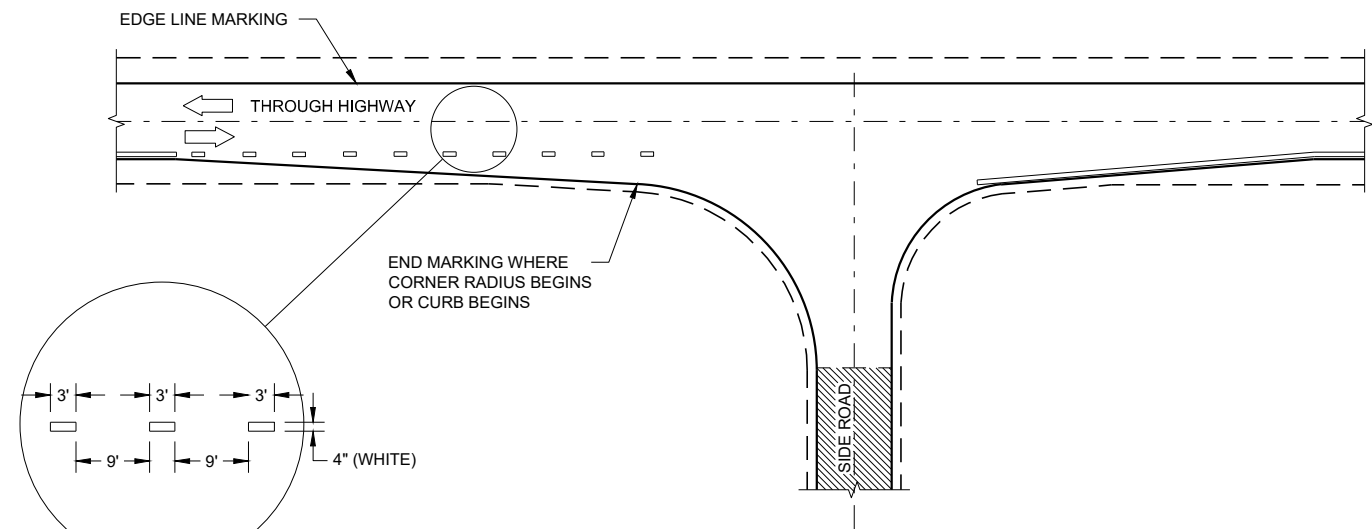
STOP SIGN SHALL BE PLACED A MINIMUM OF 6 FEET TO A MAXIMUM OF 50 FEET FROM THE EDGE LINE LOCATION.

- 18-INCH STOP LINES MAY BE DELETED OR ADDED BY THE REGION MARKING ENGINEER BASED ON VISIBILITY AND SIGHT LINES.
- NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 40 FEET FROM THE EDGE LINE.
- NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 30 FEET FROM THE FLANGELINE EXTENSION.
- MOVE CLOSER TO THE EDGE OF TRAVEL LINE AS NEEDED FOR VISIBILITY AND SIGHT LINES (NO CLOSER THAN 4 FEET).
- LADDER BAR CROSSWALKS SHOULD ONLY BE USED FOR MID BLOCK CROSSINGS. USE 2 - 6" TRANSVERSE LINES INSTEAD.

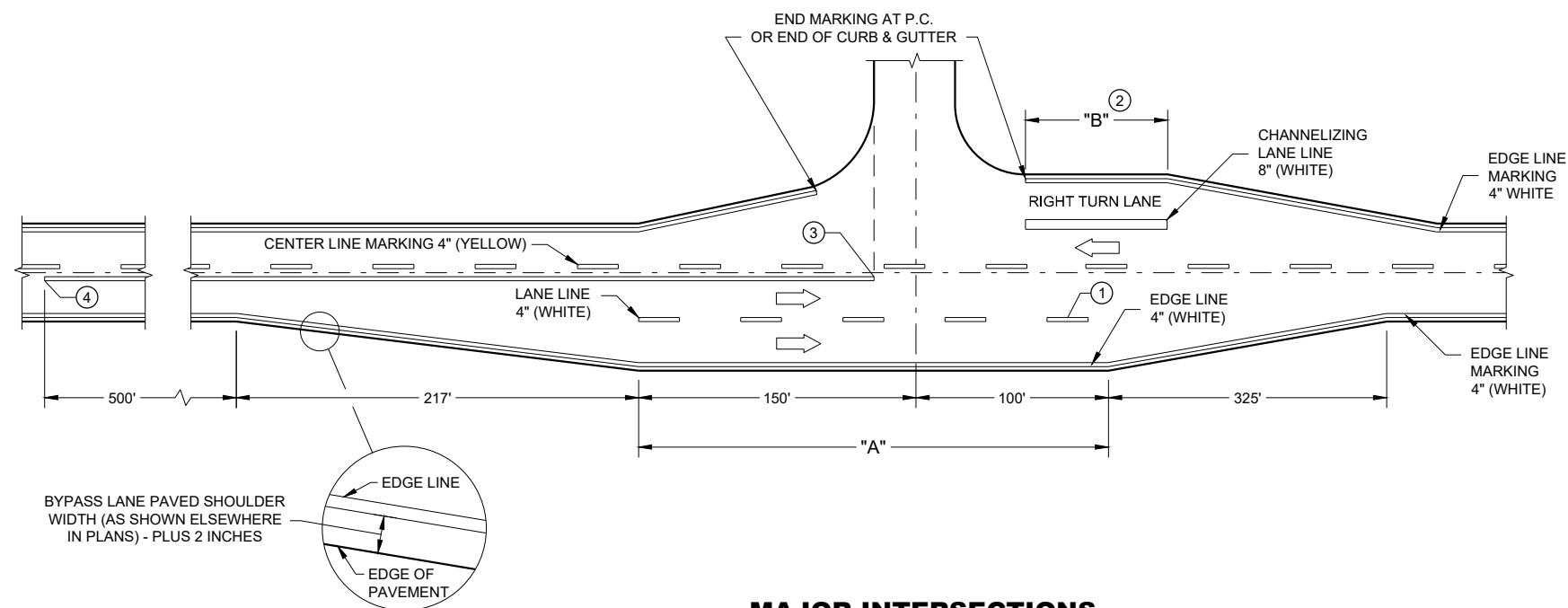
STOP LINE AND CROSSWALK PAVEMENT MARKING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2019 /S/ Matthew Rauch
DATE STATE SIGNING AND MAP ENGINEER 64
FHWA



MINOR INTERSECTION



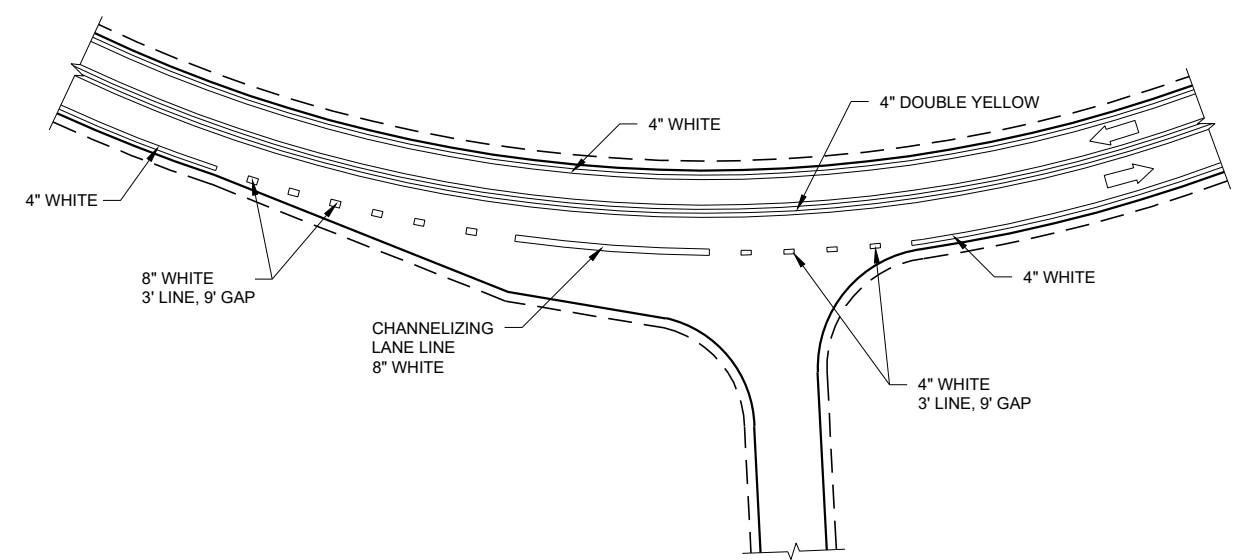
MAJOR INTERSECTIONS
(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANE)

GENERAL NOTES

- OMIT EDGE LINES THROUGH INTERSECTIONS. CONTINUE EDGE LINES THROUGH DRIVEWAYS.
- ① WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT LANE LINE.
 - ② WHEN DISTANCE "B" IS LESS THAN 100 FEET, OMIT CHANNELIZING LANE LINE.
 - ③ BARRIER LINE ENDS AT SIDE ROAD PAVEMENT / SURFACE EDGE EXTENSION.
 - ④ BARRIER LINE STARTS 500 FEET PRIOR TO THE BYPASS TAPER.

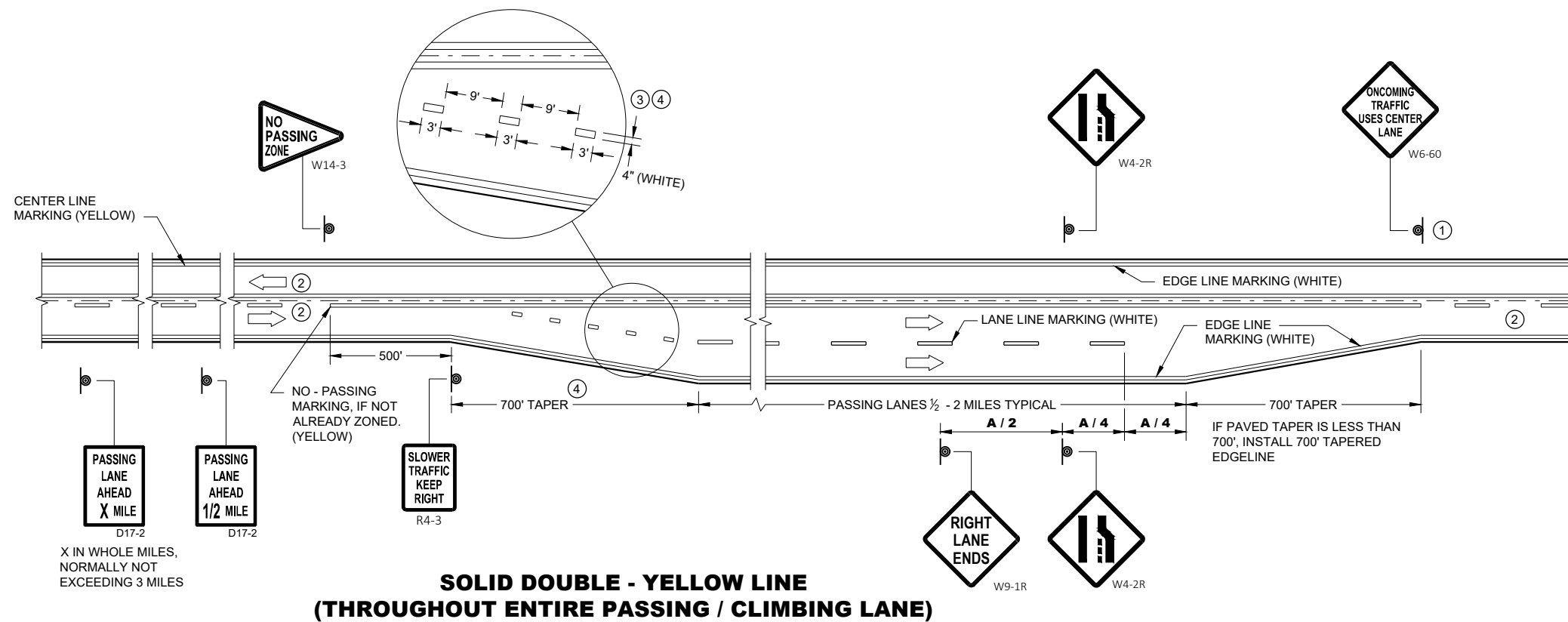
LEGEND

➡ DIRECTION OF TRAVEL



INTERSECTION ON OUTSIDE OF CURVE

PAVEMENT MARKING (INTERSECTIONS)
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION 65

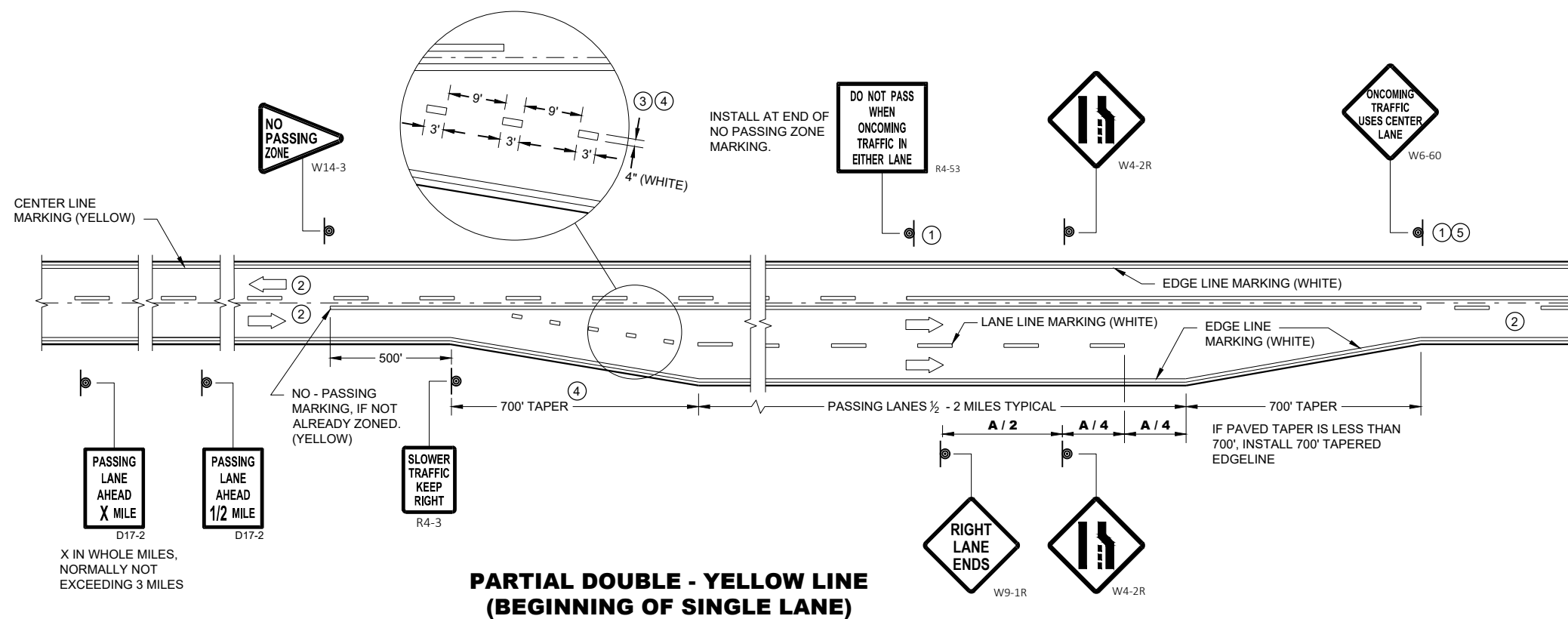


GENERAL NOTES

- ① SIGN SHALL BE REPEATED AT 1 MILE INCREMENTS OR AT THE DISCRETION OF THE REGIONAL TRAFFIC ENGINEER.
- ② THERE MAY BE SOLID YELLOW ON THE CENTERLINE DUE TO SIGHT CONDITIONS.
- ③ THE TAPER LENGTH OF THE DOTTED LINE PAVEMENT MARKING SHALL BE 700 FEET, 3' LINE, 9' GAP, EXCEPT RETRACE THE EXISTING LINE - GAP PATTERN WHERE EXISTING MARKINGS ARE IN PLACE.
- ④ WHEN THE ENTRANCE TAPER IS LESS THAN 700 FEET OR THE SHOULDER WIDTH IN THE PASSING / CLIMBING LANE IS LESS THAN THE ADJACENT HIGHWAY, DO NOT INSTALL DOTTED LINE PAVEMENT MARKING.
- ⑤ REPEAT EVERY 1 MILE UP UNTIL R4-53.

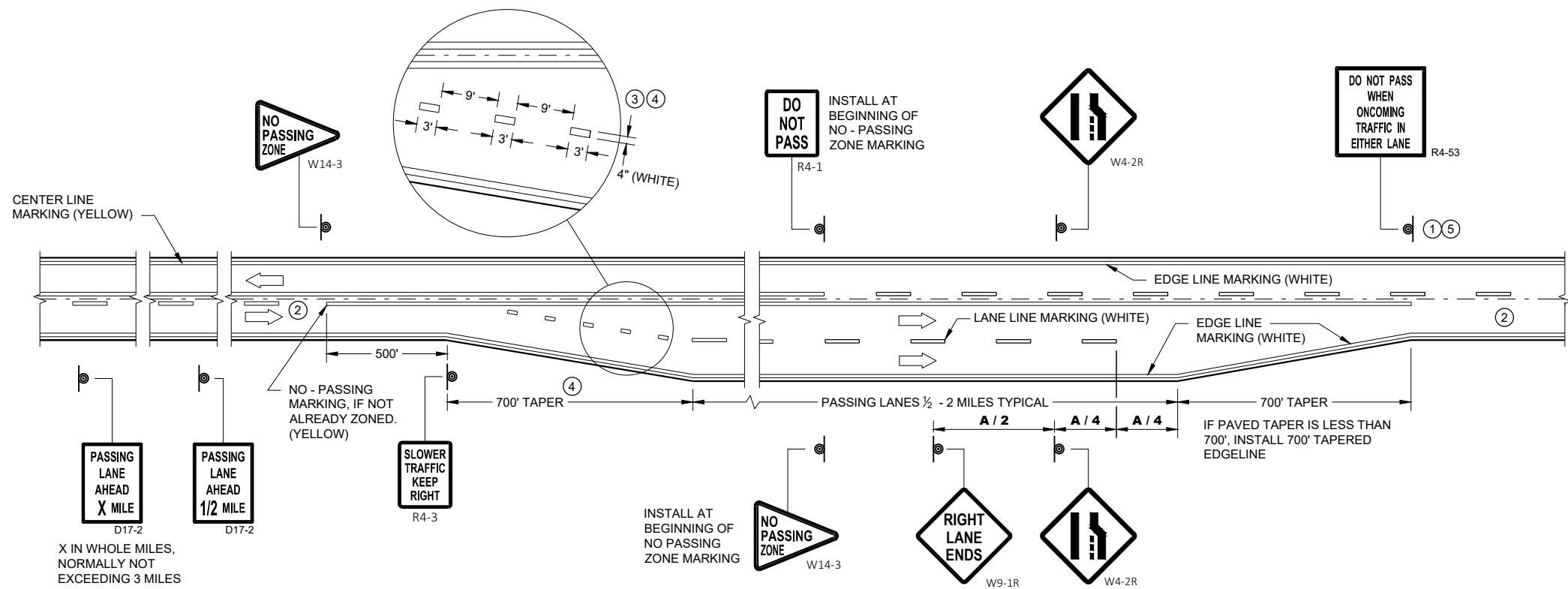
ARROW SYMBOL () SHOWS DIRECTION OF TRAVEL

POSTED OR 85th PERCENTILE SPEED	DISTANCE "A"
45	775
50	885
55	990

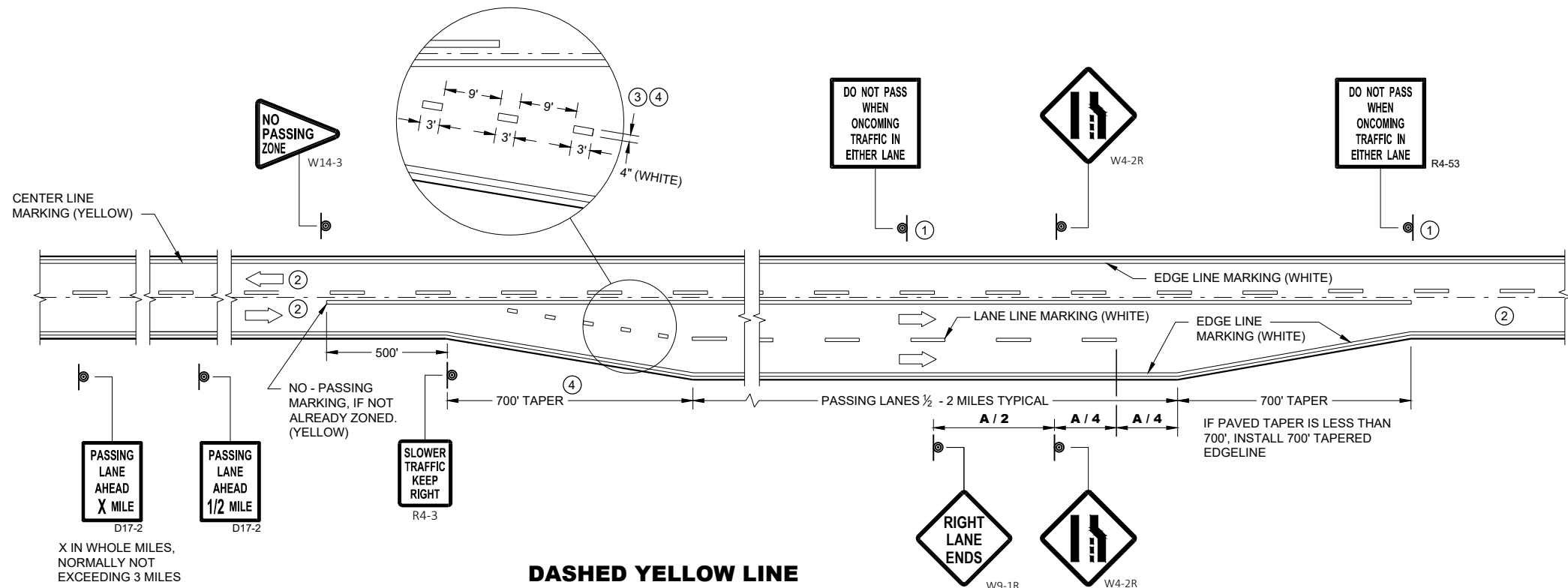


PAVEMENT MARKING & SIGNING (CLIMBING LANE & PASSING LANE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 66



**SOLID DOUBLE - YELLOW LINE
(END OF SINGLE LANE)**



**DASHED YELLOW LINE
(THROUGHOUT SINGLE LANE)**

GENERAL NOTES

- ① SIGN SHALL BE REPEATED AT 1 MILE INCREMENTS OR AT THE DISCRETION OF THE REGIONAL TRAFFIC ENGINEER.
- ② THERE MAY BE SOLID YELLOW ON THE CENTERLINE DUE TO SIGHT CONDITIONS.
- ③ THE TAPER LENGTH OF THE DOTTED LINE PAVEMENT MARKING SHALL BE 700 FEET, 3' LINE, 9' GAP, EXCEPT RETRACE THE EXISTING LINE - GAP PATTERN WHERE EXISTING MARKINGS ARE IN PLACE.
- ④ WHEN THE ENTRANCE TAPER IS LESS THAN 700 FEET OR THE SHOULDER WIDTH IN THE PASSING / CLIMBING LANE IS LESS THAN THE ADJACENT HIGHWAY, DO NOT INSTALL DOTTED LINE PAVEMENT MARKING.
- ⑤ REPEAT EVERY ONE MILE UP UNTIL NO PASSING ZONE.

ARROW SYMBOL () SHOWS DIRECTION OF TRAVEL

DISTANCE TABLE

POSTED OR 85th PERCENTILE SPEED	DISTANCE "A"
45	775
50	885
55	990

**PAVEMNET MARKING & SIGNING
(CLIMBING LANE & PASSING LANE)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2019 /S/ Matthew Rauch
DATE STATE SIGNING AND MAP ENGINEER 67
FHWA

LEGEND

-  SIGN ON PERMANENT SUPPORT
-  TRAFFIC CONTROL DRUM
-  DIRECTION OF TRAFFIC
-  WORK ZONE

GENERAL NOTES

ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY THE REGIONAL TRAFFIC UNIT.

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

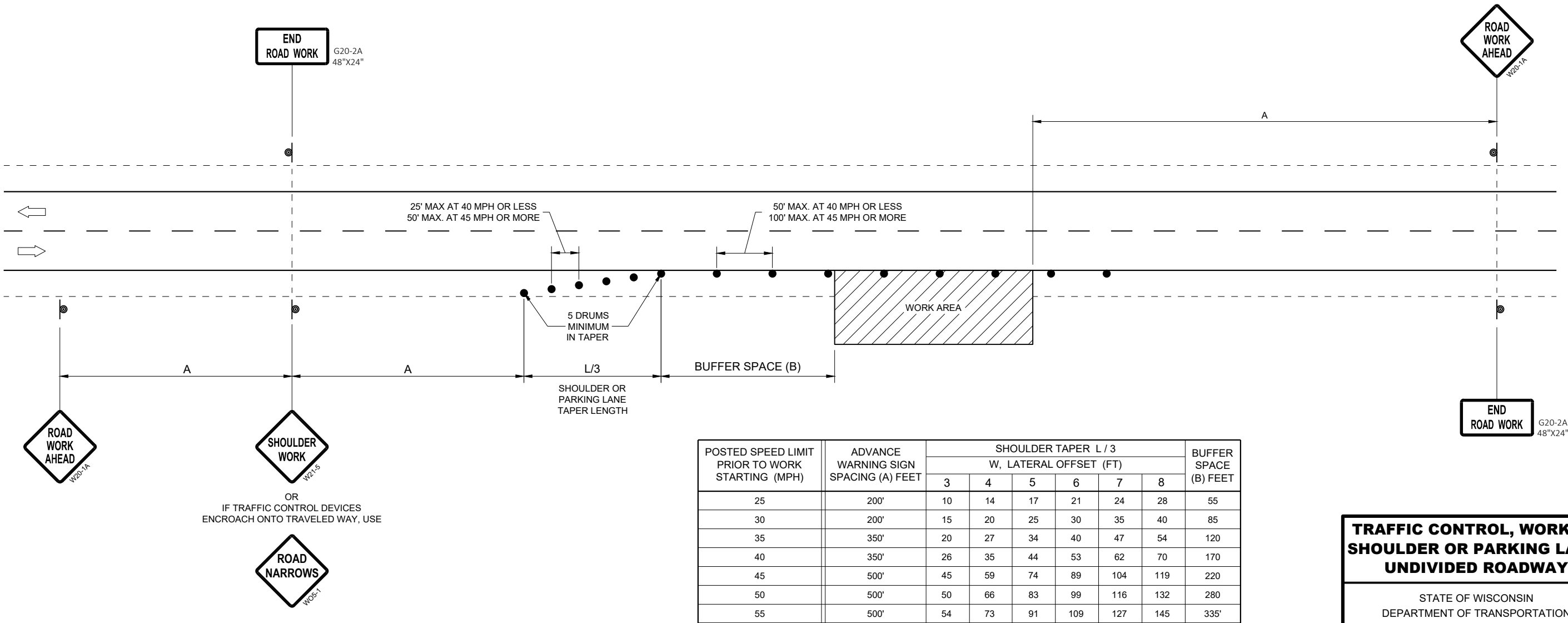
ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

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

CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

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

W20-1A AND G20-2A SIGNS ARE NOT REQUIRED IF THE WORK AREA IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT. G20-2A SIGNS MAY ALSO BE OMITTED IF DURATION OF WORK IS LESS THAN 7 CONTINUOUS DAYS AND NIGHTS.



TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2020
DATE
/S/ Andrew Heidtke
STATEWIDE WORK ZONE T
SAFETY ENGINEER
68
FHWA

LEGEND

-  SIGN ON TEMPORARY SUPPORT
-  SIGN ON PERMANENT SUPPORT
-  TYPE III BARRICADE
-  TYPE III BARRICADE WITH ATTACHED SIGN
-  TYPE "A" WARNING LIGHT (FLASHING)
-  DIRECTION OF TRAFFIC
-  FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

POSTED SPEED LIMIT PRIOR TO WORK STARTING (MPH)	ADVANCE WARNING SIGN SPACING (A) FEET
0-30	200'
35-40	350'
45-55	500'

GENERAL NOTES

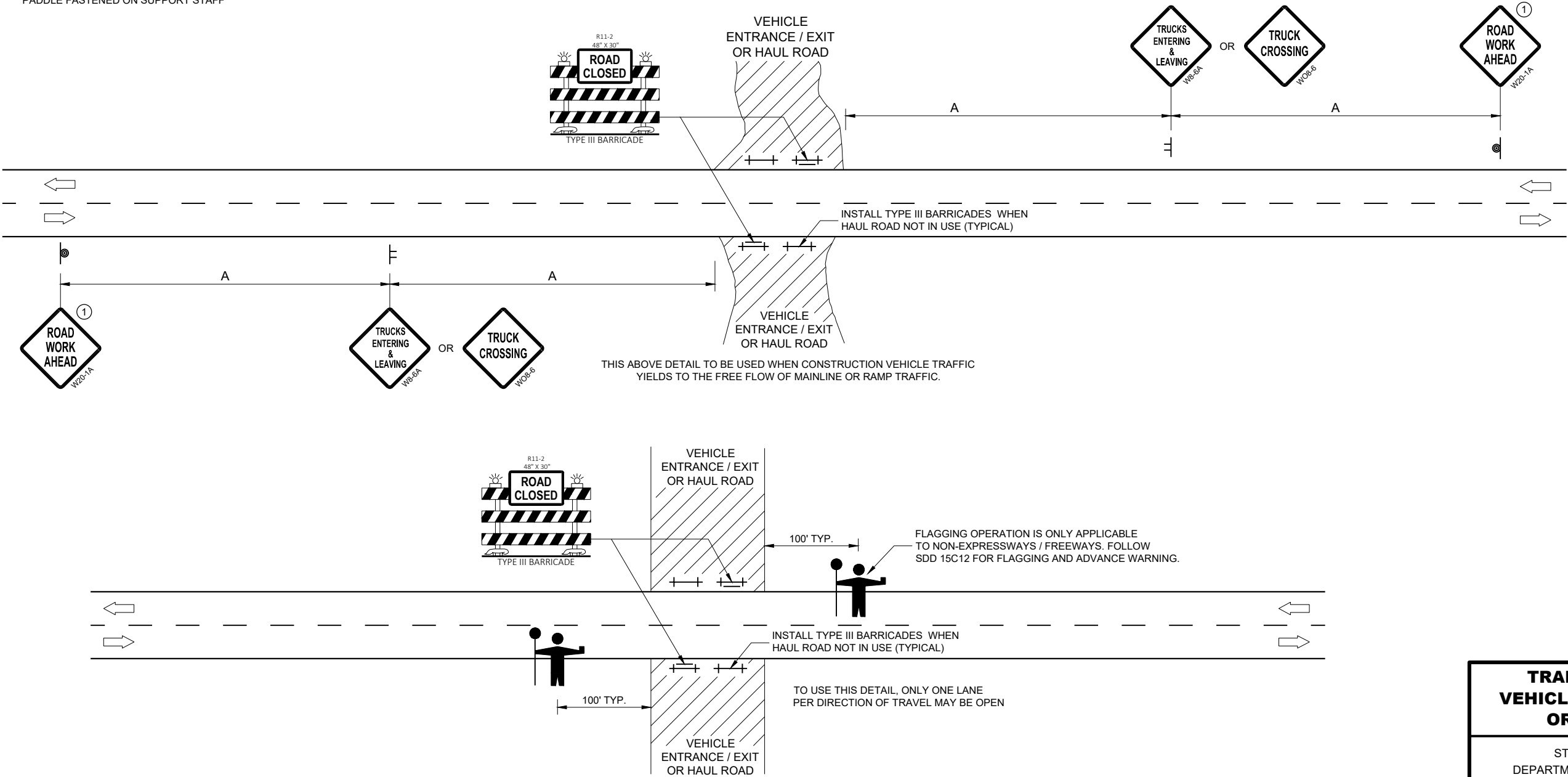
- ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED.
- "WO" SIGN IS THE SAME AS "W" SIGN EXCEPT THE BACKGROUND IS ORANGE.
- THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.
- WARNING SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.
- WHEN ACTIVITY REFLECTED BY THE SIGN IS NOT CURRENTLY TAKING PLACE, THE HIGHWAY SHALL BE RESTORED TO NORMAL CONDITION AND THE SIGNS SHALL BE REMOVED, COVERED OR TURNED AWAY FROM TRAFFIC.
- WHEN A SIDE ROAD OR RAMP INTERSECTS WITHIN THE ADVANCE SIGNING AREA, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND / OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.
- PLACE SIGNS ON BOTH SIDES IF USED ON DIVIDED HIGHWAY.
- ① THESE SIGNS ARE TO BE USED ONLY WHEN VEHICLE ENTRANCE / EXIT CONDITIONS ARE SEPARATED BY MORE THAN TWO MILES FROM PREVIOUS WORK AREA OR SIGNING OR AS DIRECTED BY THE ENGINEER.

6

6

SDD 15D29 - 06

SDD 15D29 - 06



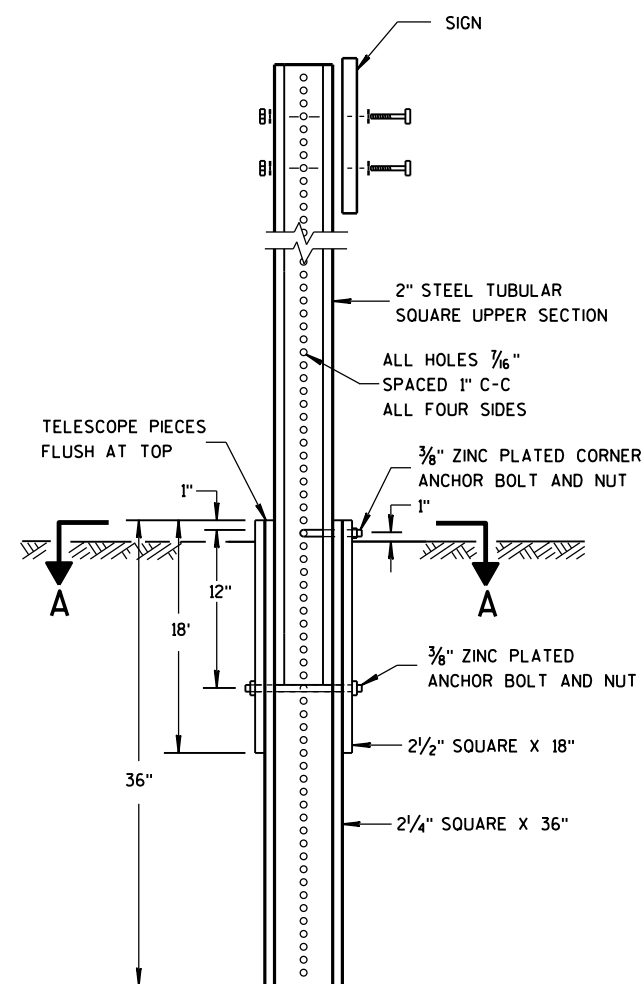
THIS DETAIL TO BE USED WHEN CONSTRUCTION WORK INCLUDING TRUCKING ACTIVITY REQUIRES MAINLINE TRAFFIC TO BE TEMPORARILY STOPPED IN ONE OR BOTH DIRECTIONS. DELAY TO HIGHWAY TRAFFIC SHALL BE MINIMIZED.

TRAFFIC CONTROL,
VEHICLE ENTRANCE/EXIT
OR HAUL ROAD

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 69

FHWA



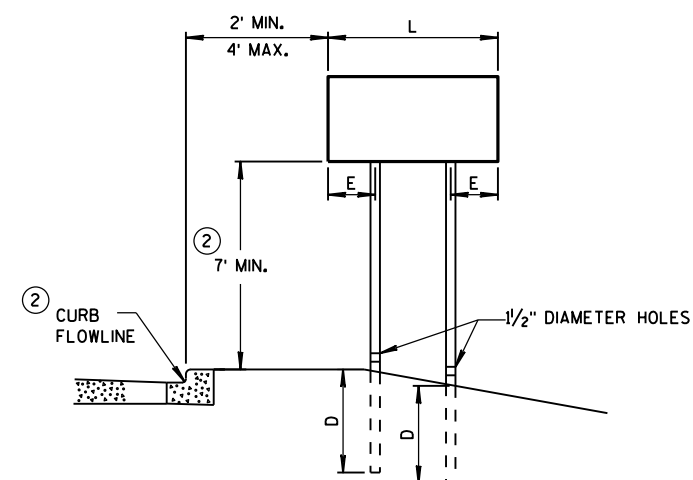
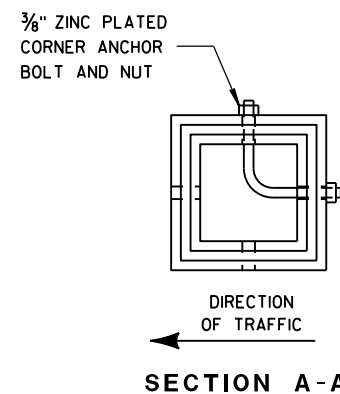
DETAIL OF TUBULAR STEEL SIGN POST

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.

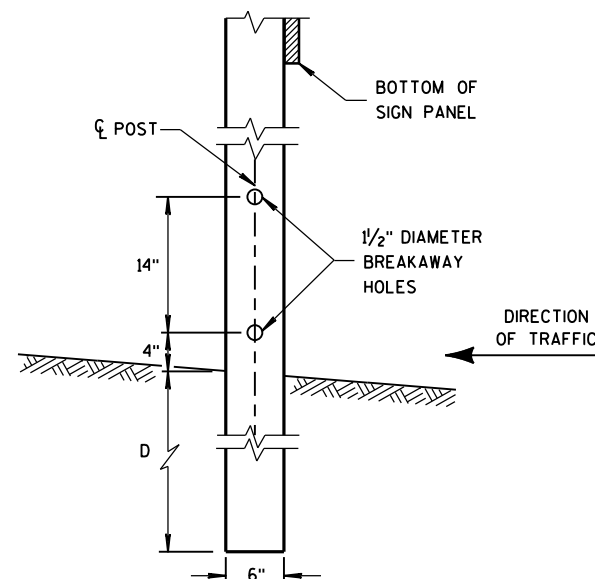


URBAN AREA

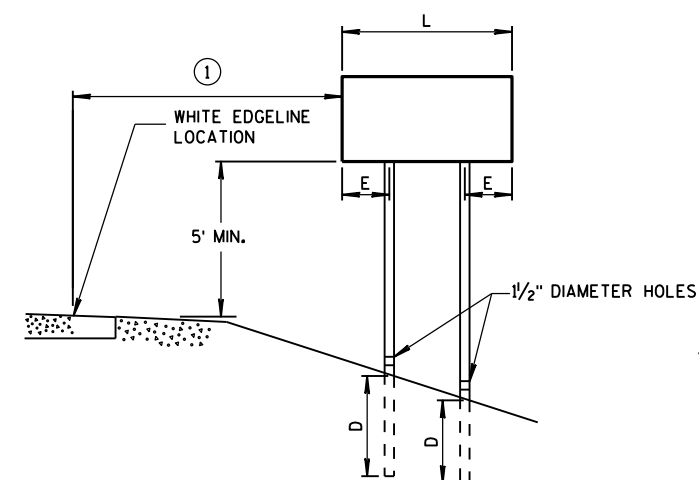
POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST
EMBEDMENT DEPTH

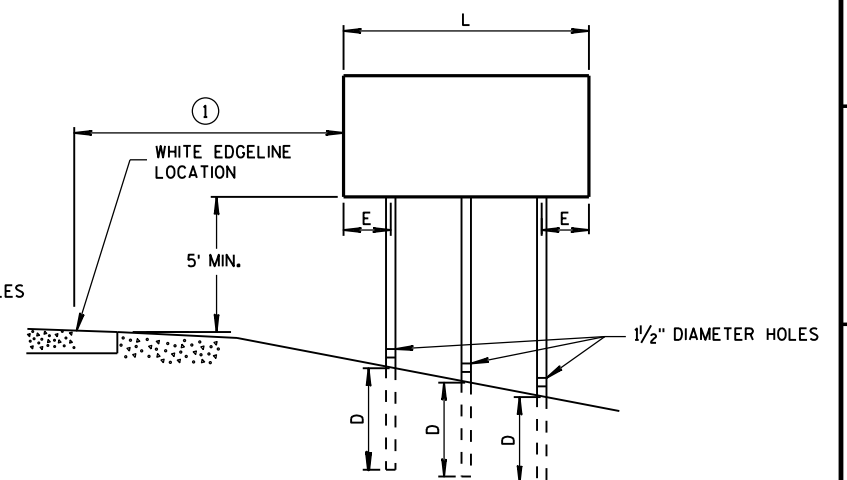
AREA OF SIGN INSTALLATION (SQ. FT.)	D (MIN)
20 OR LESS	4'
GREATER THAN 20	5'



4"x6" WOOD POST MODIFICATION



RURAL AREA



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

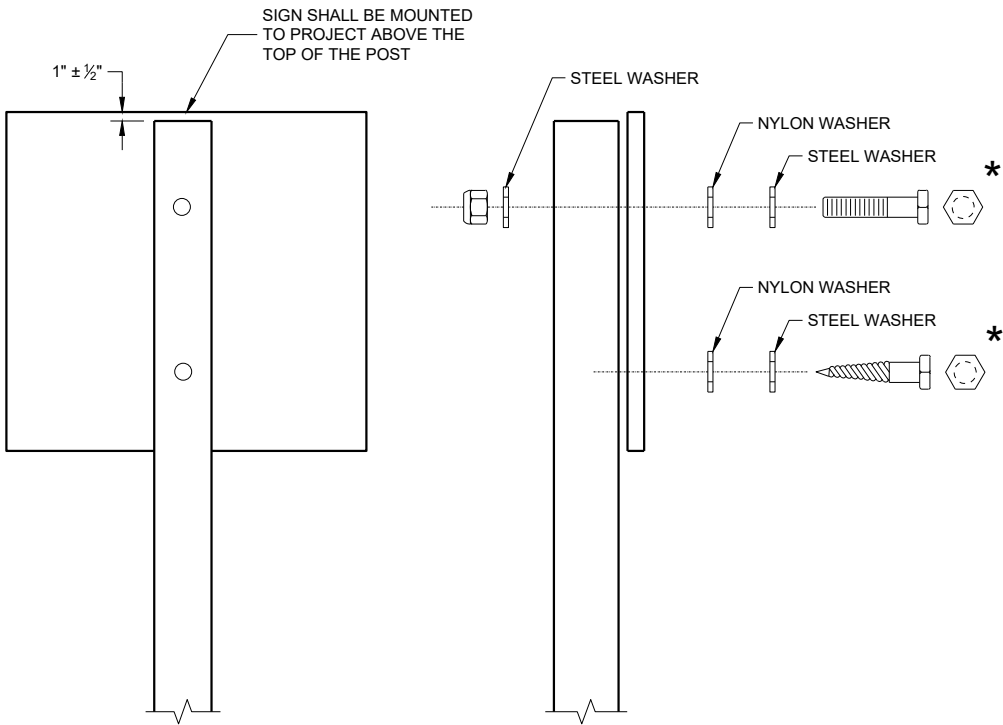
SEE NOTE (3)

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 TRANSPORTATION⁷⁰



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 POST (4" x 6")
LAG SCREWS - ¾" x 3"
MACHINE BOLTS - ⅝" x 6 ½" OR 7" LENGTH W/NUTS

SQUARE STEEL POST (2" x 2")
MACHINE BOLTS - ¾" x 3 ¼" LENGTH W/NUTS
RIVETS - ⅝" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM
BODY/MANDREL O.D. FLANGE 0.720 - 0.765 INCH,
GRIP RANGE 0.042 - 0.375 INCH

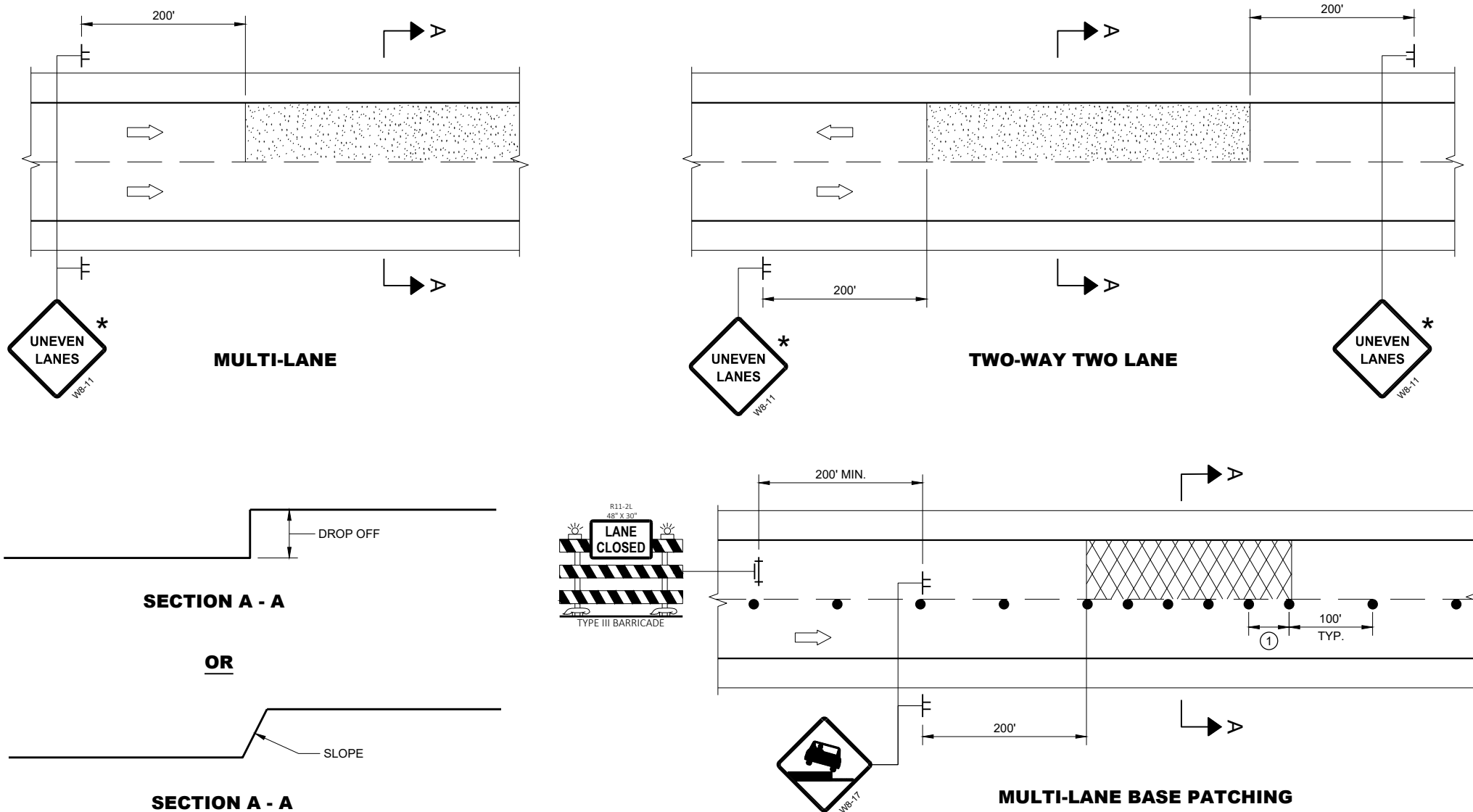
WASHERS (ALL POSTS) -
1 ¼" O.D. x ⅜" I.D. x ⅛" STEEL
1 ¼" O.D. x ⅜" I.D. x 0.080 NYLON

* TWO DIFFERENT FASTENING SYSTEMS ARE SHOWN FOR ILLUSTRATION PURPOSES. ON ANY INDIVIDUAL SIGN, EITHER ONE OR THE OTHER SYSTEM SHALL BE USED. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA. 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 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 71
FHWA

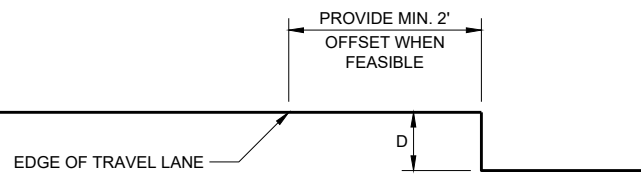
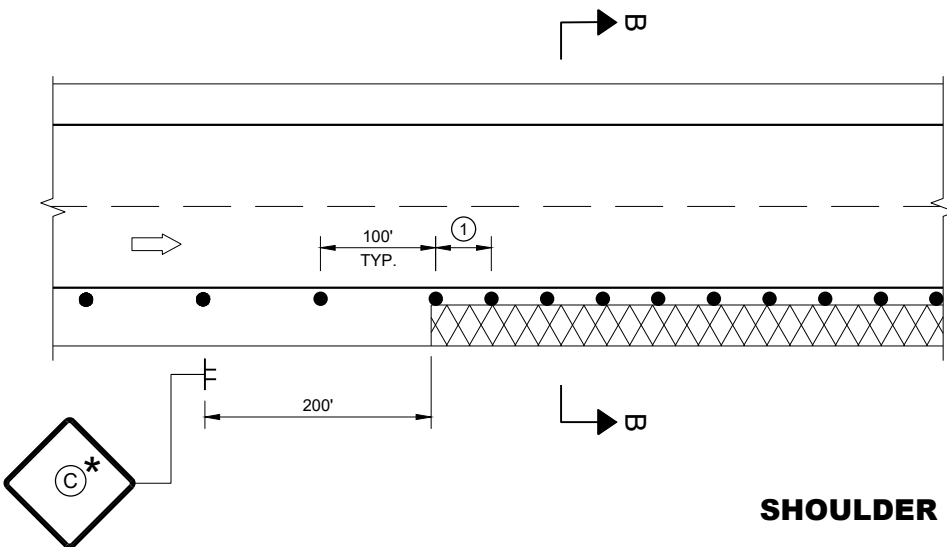


GENERAL NOTES

- FOR SPOT LOCATIONS USE ENGINEERING JUDGEMENT WHEN PLACING ADDITIONAL SIGNS.
- ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.
- "WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.
- WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.
- * IF THE DROP-OFF IS CONTINUOUS ALONG THE PROJECT, PLACE ADDITIONAL SIGNS EVERY 1 MILE AND AFTER EVERY ENTRANCE RAMP.
- ① USE CLOSER SPACING WHEN DELINEATING DROP-OFF.

LEGEND

- SIGN ON TEMPORARY SUPPORT
- TRAFFIC CONTROL DRUM
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC
- WORK AREA WITH DROP-OFF
- MILLED SURFACE



SECTION B - B

SHOULDER DROP-OFFS

D	SIGN C
< 2" WITH A SLOPE STEEPER THAN 3:1	LOW SHOULDER WO8-9
2" < 6" WITH A SLOPE STEEPER THAN 3:1	SHOULDER DROP - OFF W8-9A PROVIDE A 3:1 OR FLATTER SLOPE OF MATERIAL ADJACENT TO THE PAVEMENT

TRAFFIC CONTROL, DROP-OFF SIGNING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 72
FHWA

GENERAL NOTES

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

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

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

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

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

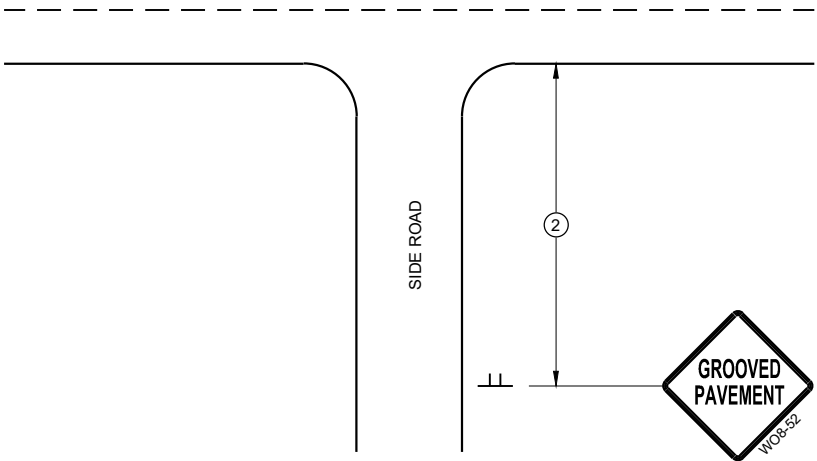
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

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

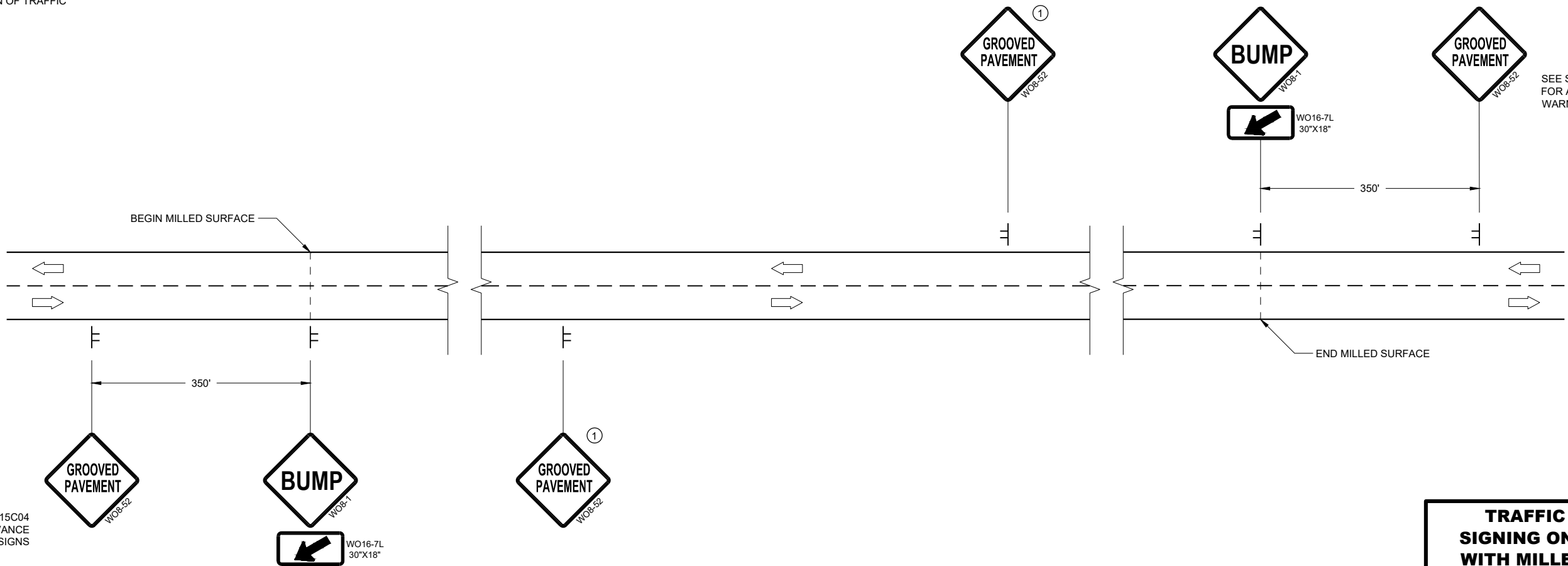
- 1 PLACE SIGNS 350' IN ADVANCE OF MILLED SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- 2 PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.

LEGEND

-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH
SIGN DETAIL



DETAIL FOR SIGNING ON MILLED SURFACES

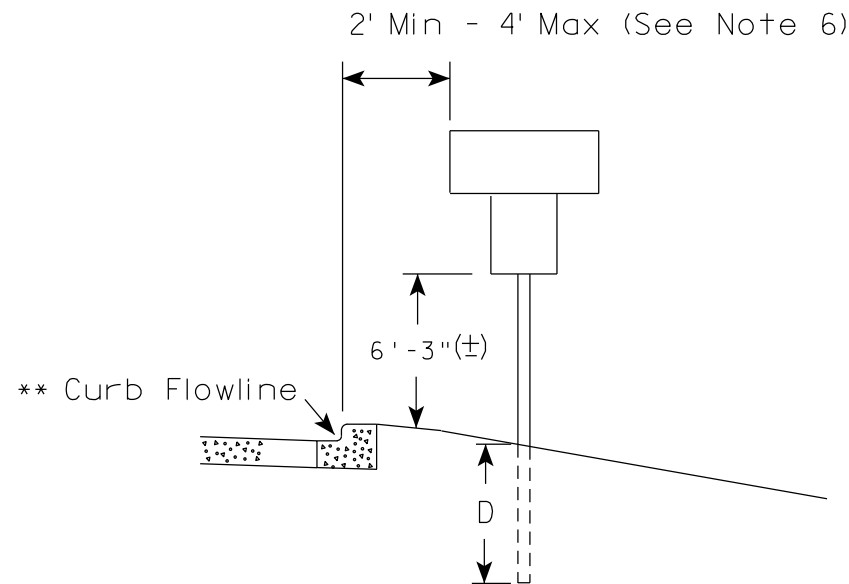
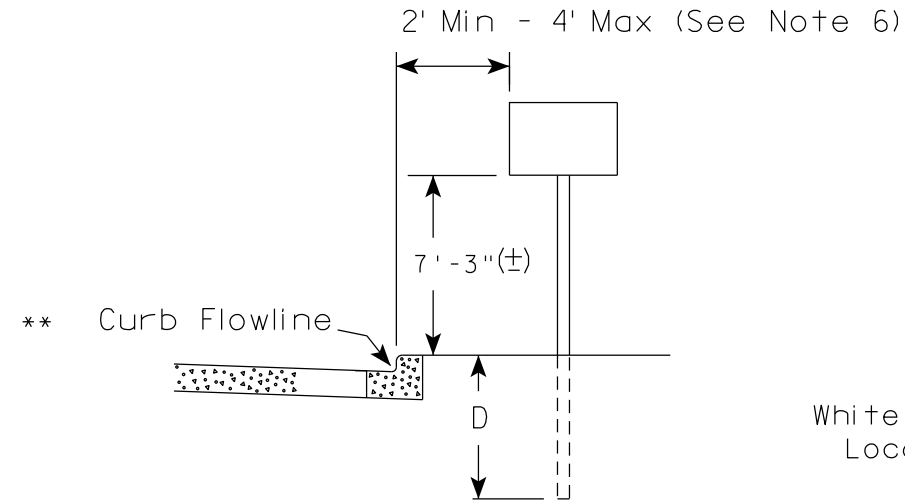
TRAFFIC CONTROL,
SIGNING ON ROADWAYS
WITH MILLED SURFACES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 73

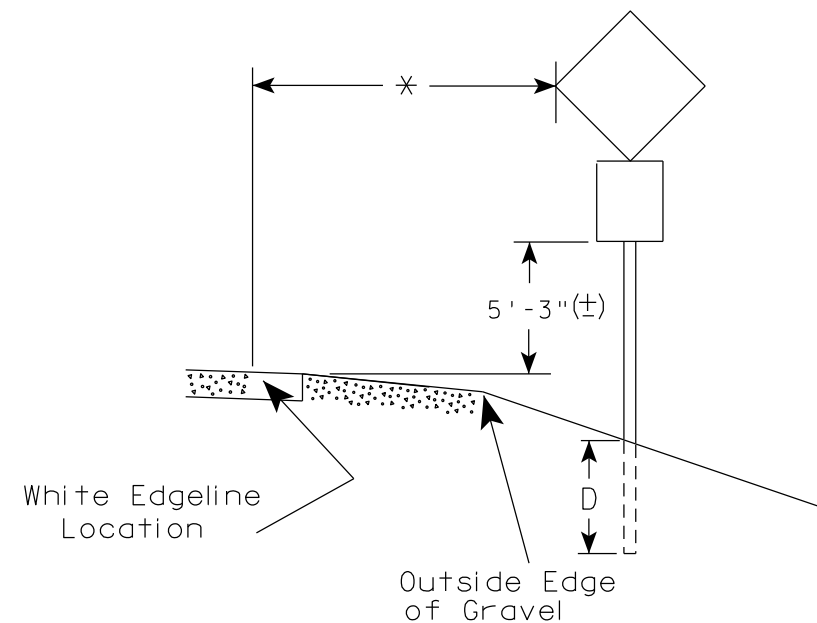
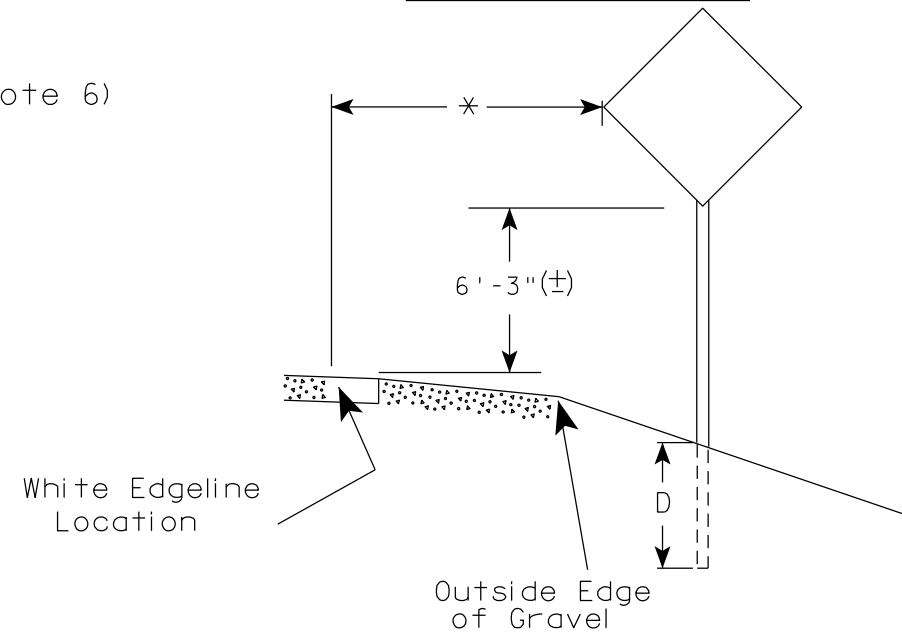
FHWA

URBAN AREA



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

RURAL AREA (See Note 2)



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

POST EMBEDMENT DEPTH

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

GENERAL NOTES

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

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 5/13/2020 PLATE NO. A4-3.22

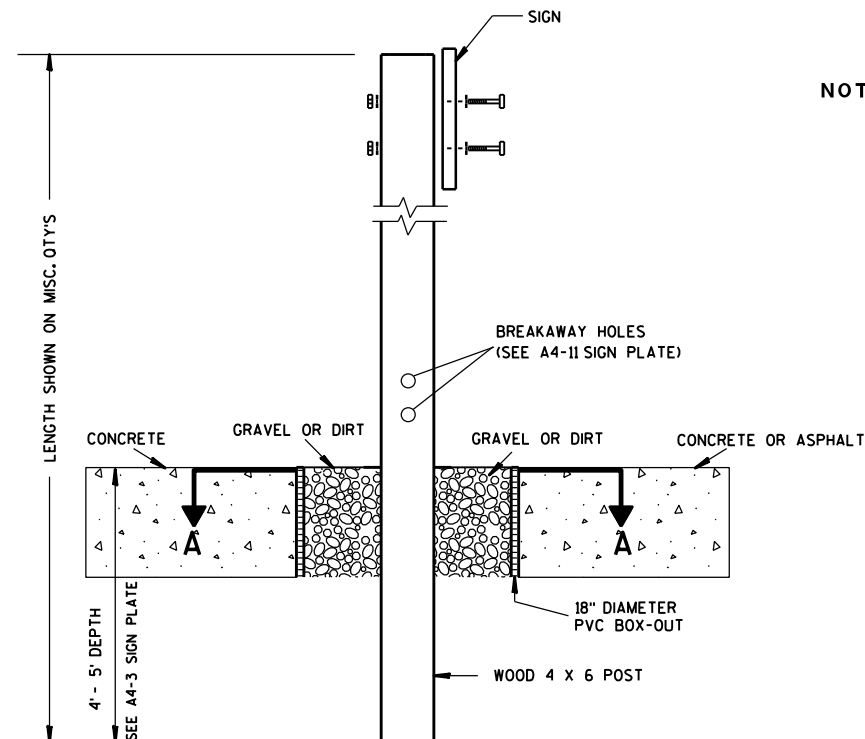
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 74

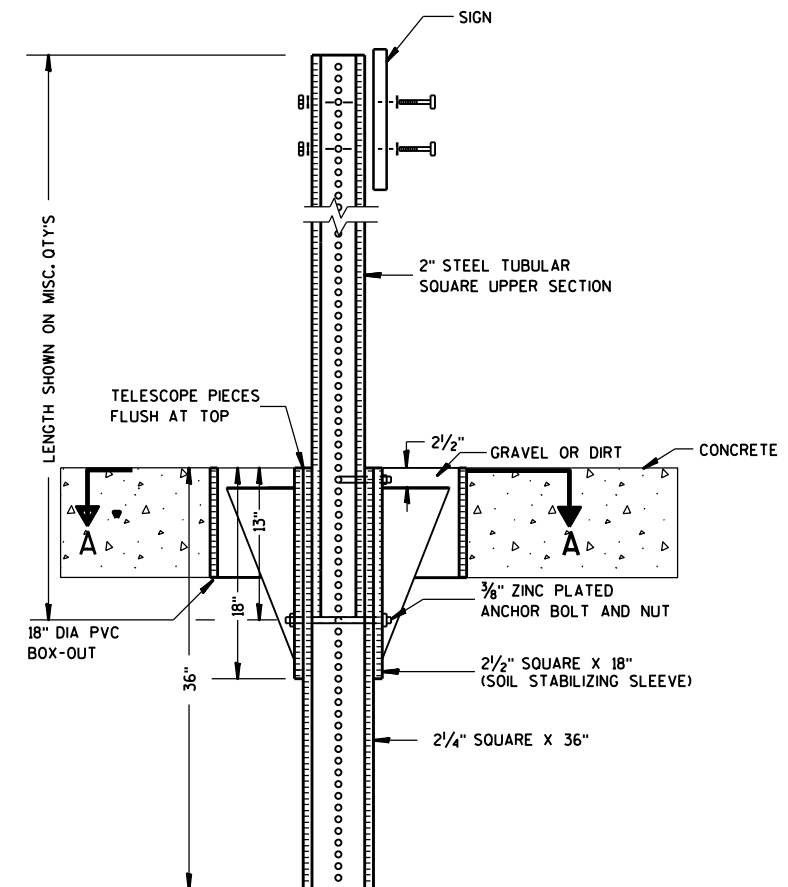
E



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

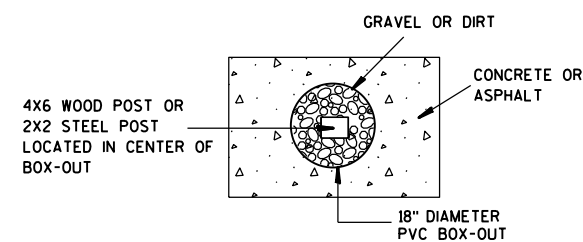
ELEVATION VIEW

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST
BOX-OUTS
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/27/14 PLAT 75 A4-3B.1

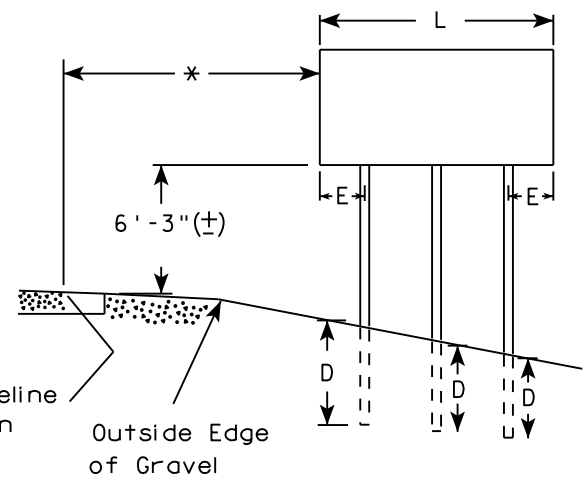
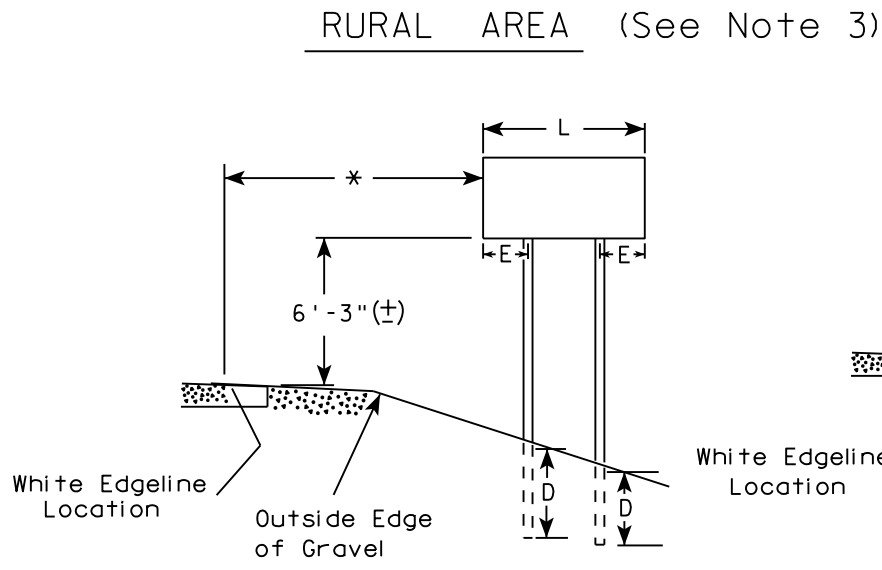
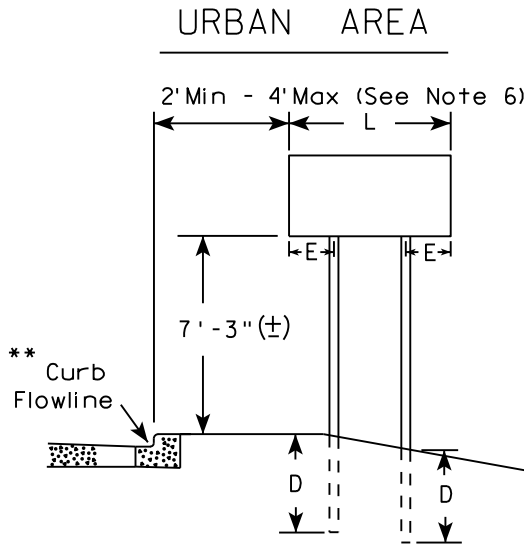
PROJECT NO:

HWY:

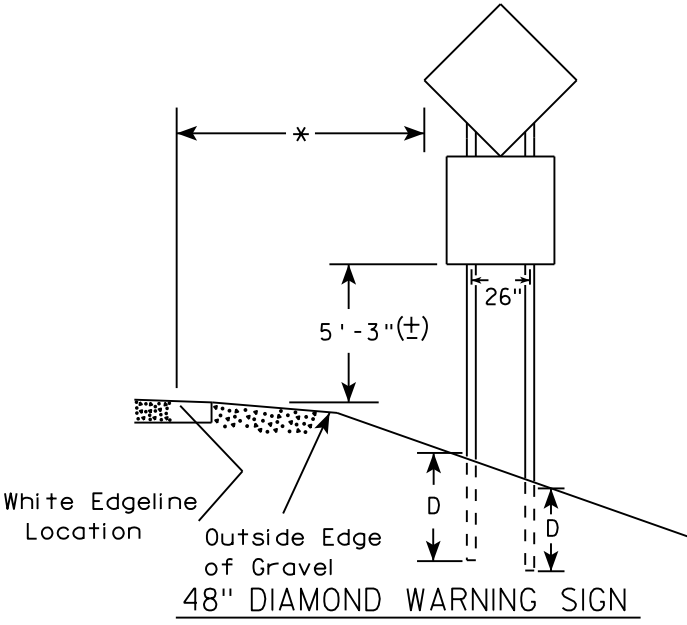
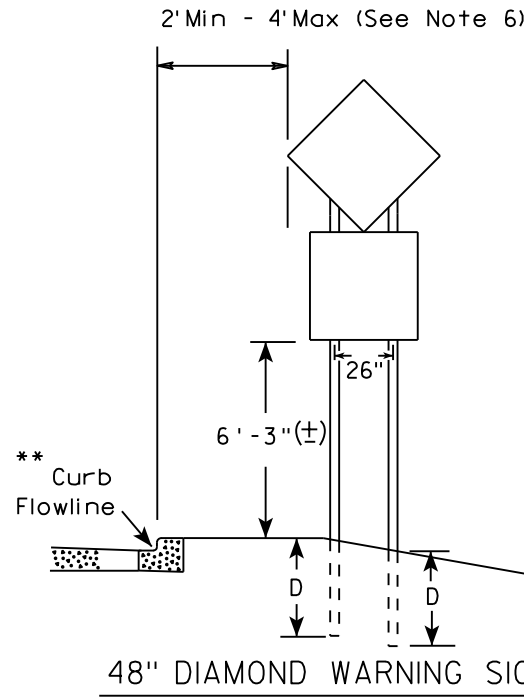
COUNTY:

SHEET NO:

E



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



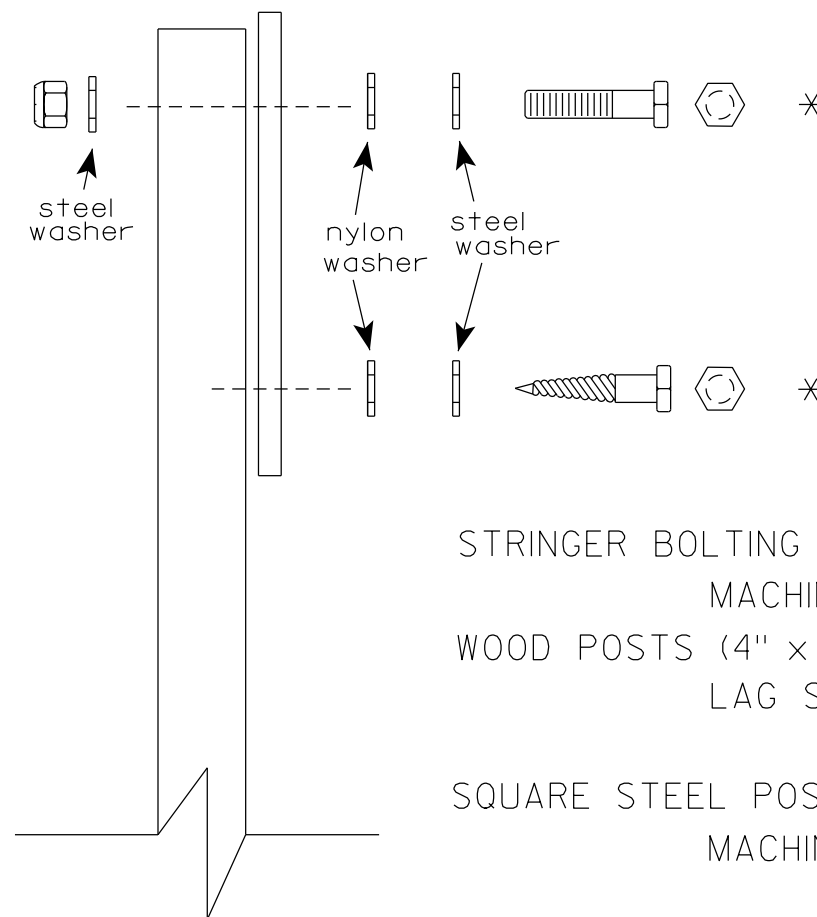
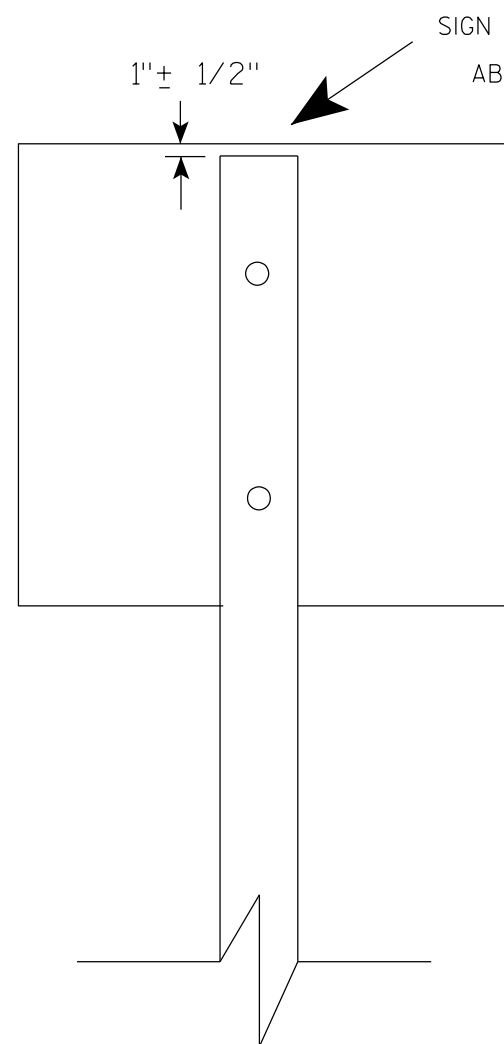
- * 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.
- ** The existence of curb and gutter does not in itself mandate the vertical clearance illustrated. That height is typically measured where there is sidewalk adjacent to the roadway or parking is permitted. In the absence of sidewalk vertical clearance is measured from the top of the curb. Offset of signs is measured from the flow line.
- *** See A4-3 sign plate for signs 4' or less in width and less than 20 S.F. in area.

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

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

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

TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> for State Traffic Engineer
DATE 8/21/17	PLATE NO. A4-4.15



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

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

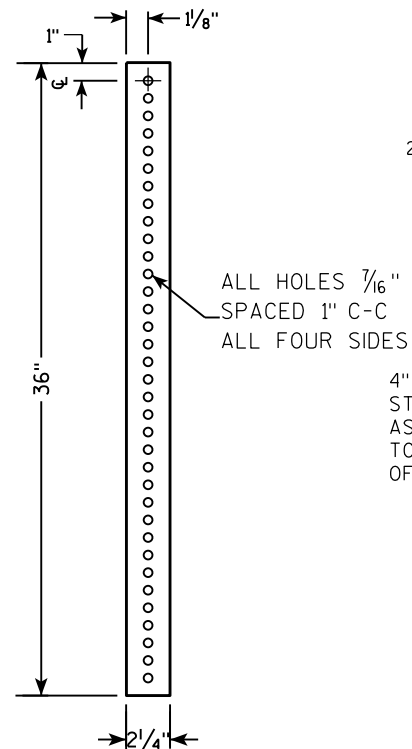
Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

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

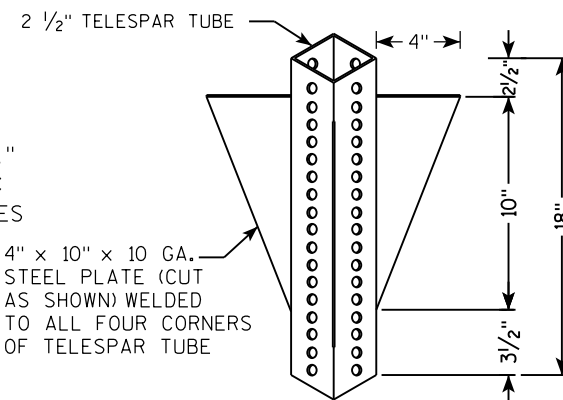
* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require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

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

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



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



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

LENGTH SHOWN ON MISC. QTY'S

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

2" STEEL TUBULAR SQUARE UPPER SECTION

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

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

1"

TELESCOPE PIECES FLUSH AT TOP

18"

12"

36"

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

2 1/2" SQUARE X 18" (SOIL STABILIZING SLEEVE)

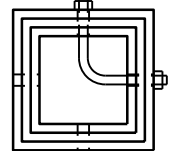
2 1/4" SQUARE X 36"

A

B

C

3/8" ZINC PLATED CORNER
ANCHOR BOLT AND NUT



DIRECTION
OF TRAFFIC

SECTION A-A

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

TUBULAR STEEL
SIGN POST
A4-9

WISCONSIN DEPT OF TRANSPORTATION

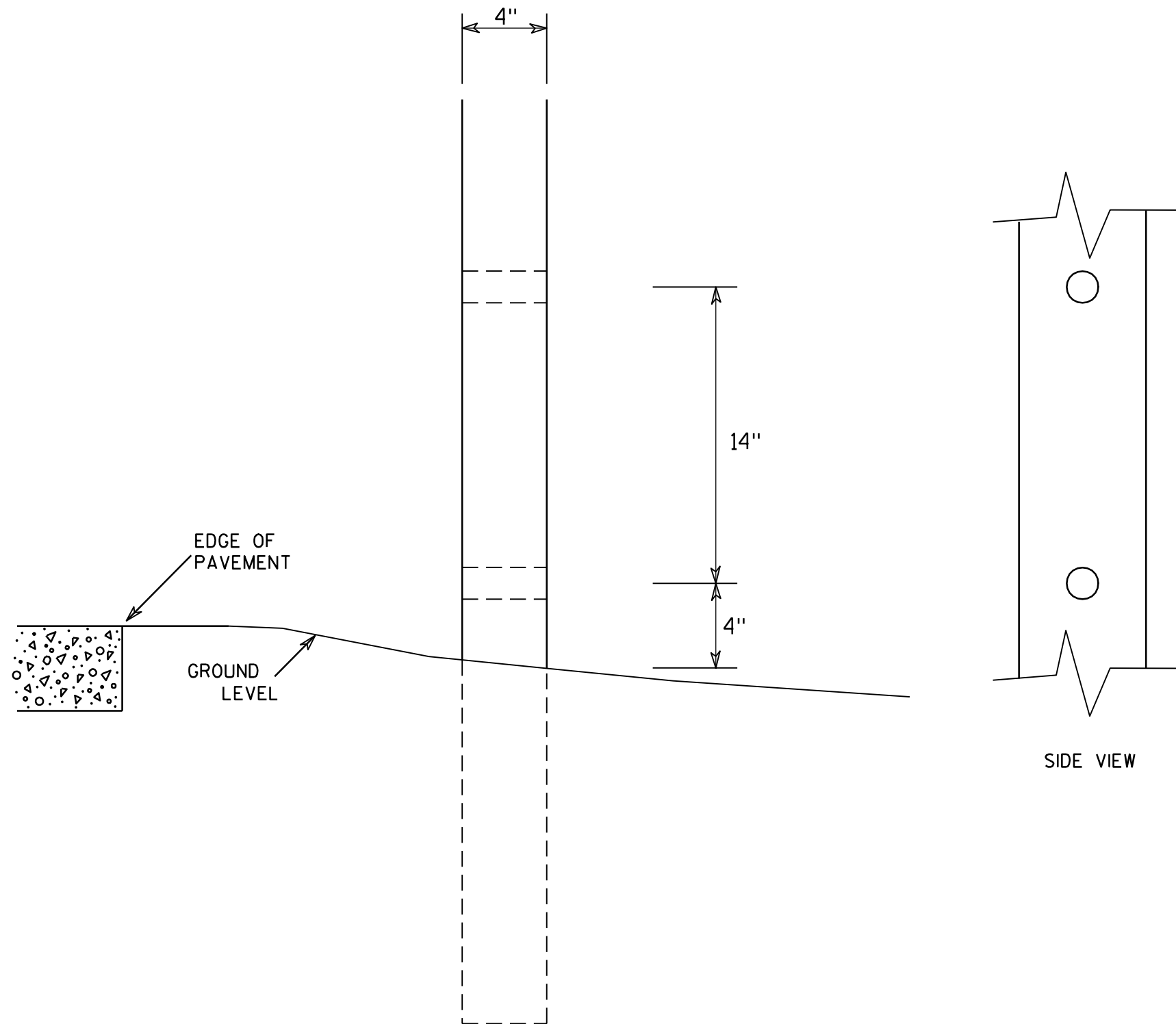
APPROVED Matthieu R. Rauch

for State Traffic Engineer

DATE 2/05/15 PLAT 78 14-9.9DATE 2/05/15 PLAT 78 14-9.9

PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E
-------------	------	---------	--	-----------	---

7



GENERAL NOTES

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

7

4 X 6 WOOD POST
MODIFICATIONS

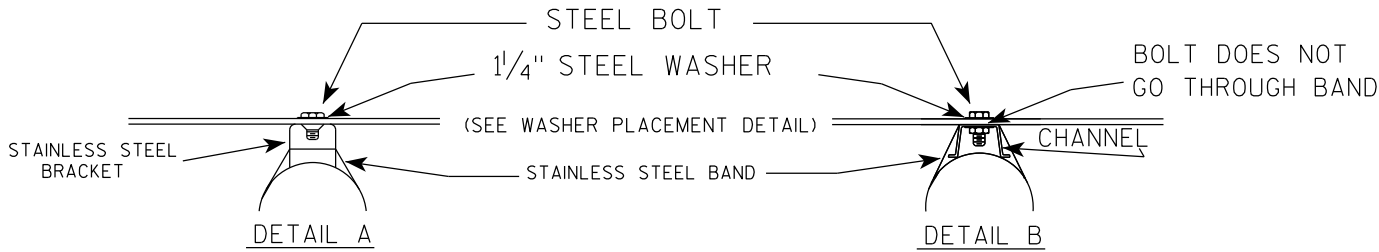
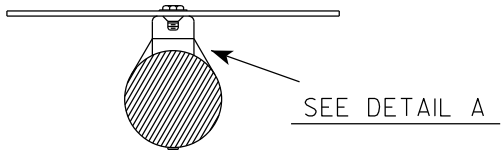
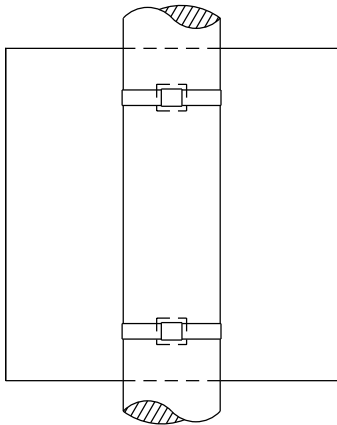
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Chester J. Spang*
for State Traffic Engineer

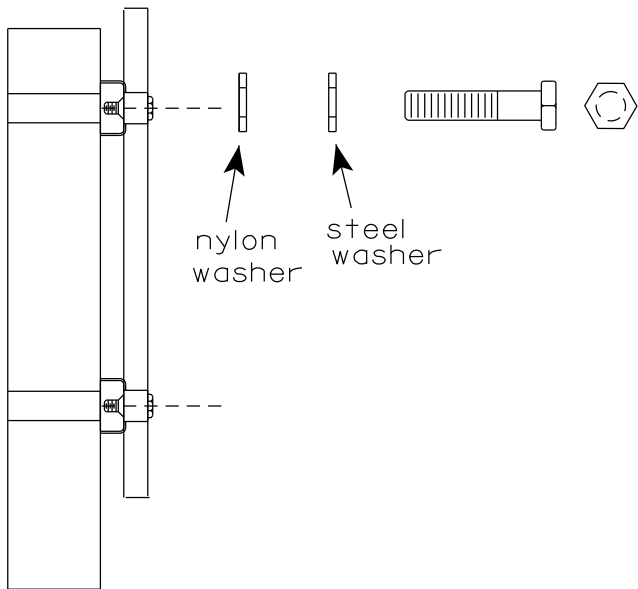
DATE 3/27/97 PLATE NO. A4-11.2

BANDING

SINGLE SIGN



WASHER PLACEMENT

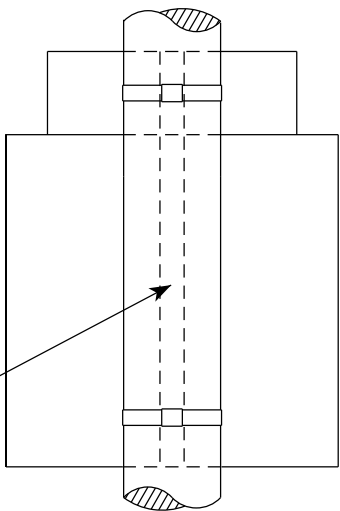


WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON
FOR ALL TYPE H SIGNS

GENERAL NOTES

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

"J" ASSEMBLY



CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET

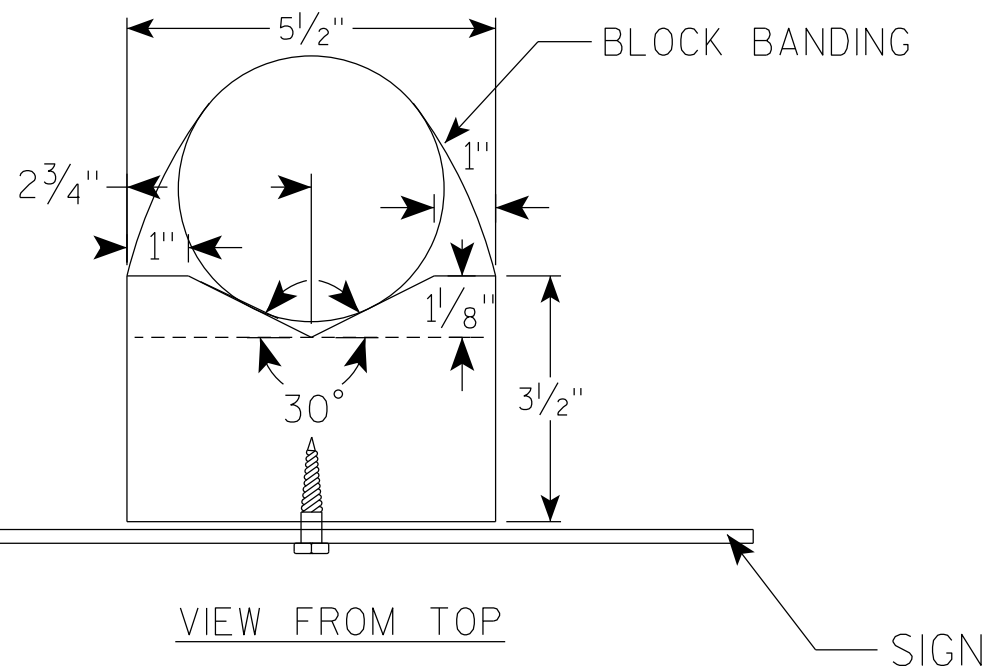
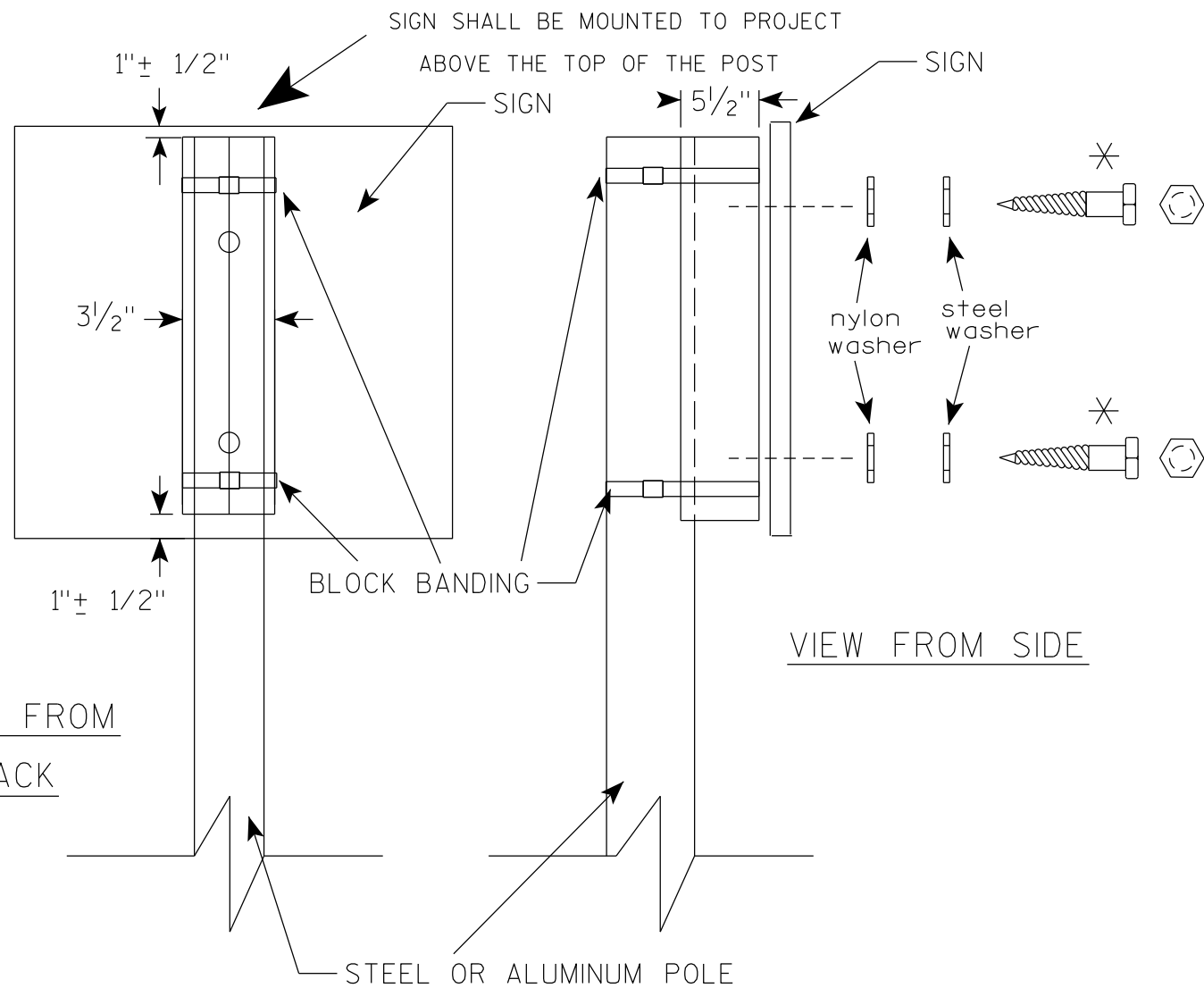
SEE DETAIL B

STANDARD SIGN
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

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

VIEW FROM
BACK



GENERAL NOTES

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

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

BLOCK BANDING DETAIL
(V-BLOCK OPTION)

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 6/10/19 PLATE NO. A5-10.2

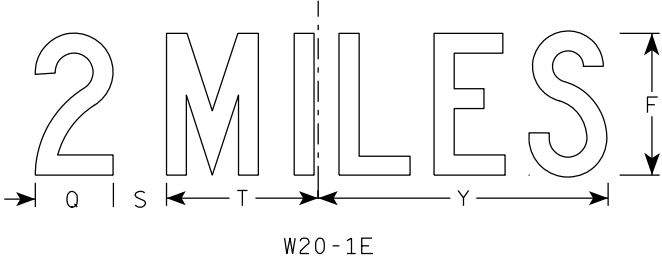
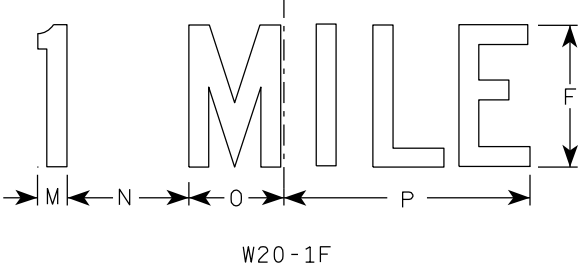
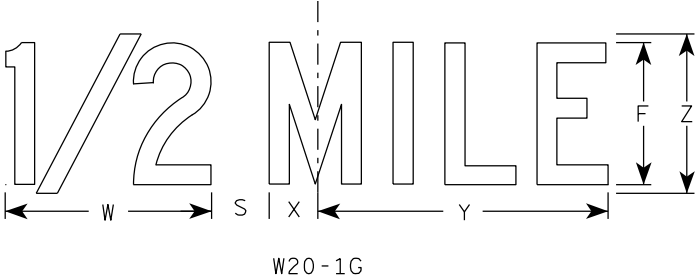
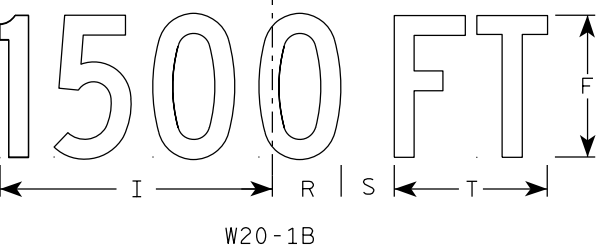
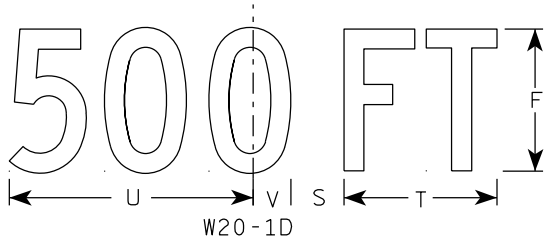
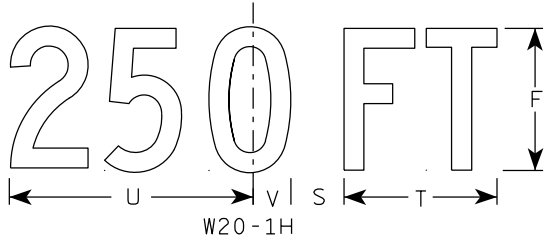
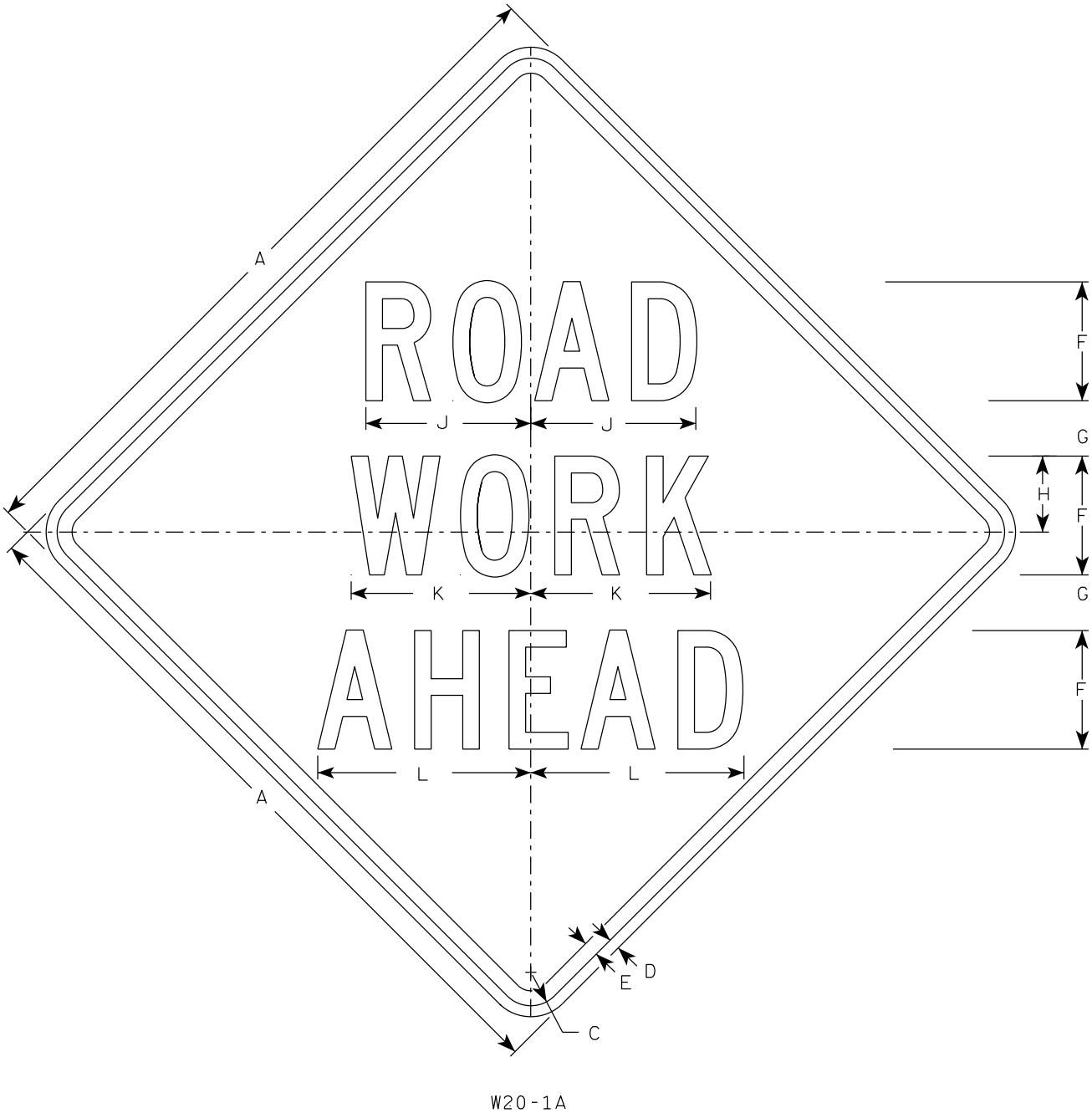
PROJECT NO:

SHEET NO: 81

E

NOTES

1. Sign is Type II - Type F Reflective
2. Color:
Background - Orange
Message - Black
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A _{req} sq. ft.
1	36		1 5/8	5/8	3/4	5	2 5/8	3 1/4	10 1/8	7	7 5/8	8 7/8	1 1/8	4 1/2	3 1/2	9	3 1/4	2 1/2	2 1/4	5 5/8	9	1 3/8	8	1 3/4	10 3/4	6	9.0
2S	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8	4 3/8	3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0
2M	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8	4 3/8	3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0
3	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8	4 3/8	3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0
4	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8	4 3/8	3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0
5	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8	4 3/8	3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0

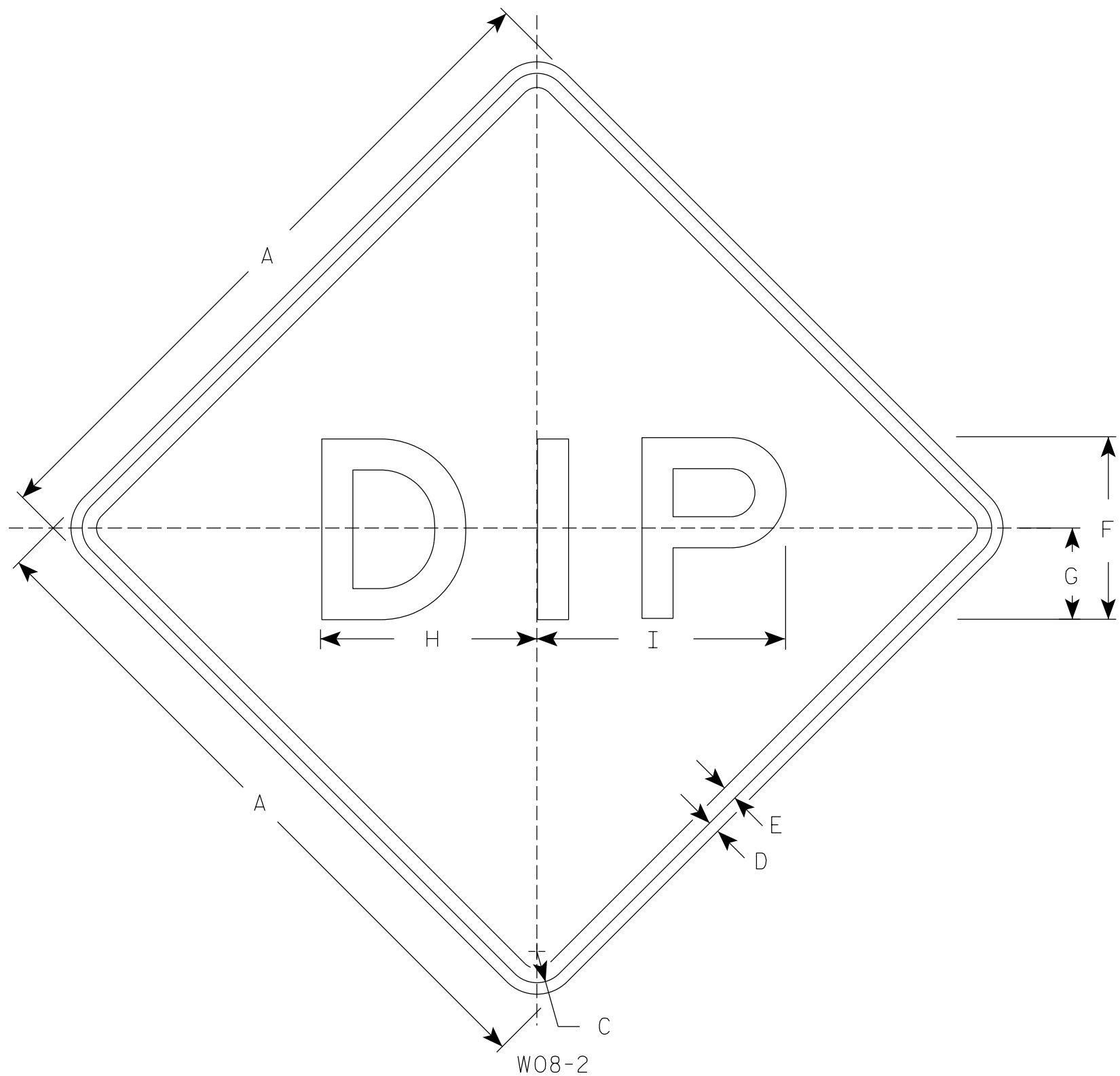
STANDARD SIGN
W20-1A, B, C, D, E, F, G & H

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 3/25/2020 PLATE NO. W20-1.11

7



NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
Background - Orange
Message - Black
- 3. Message Series - E
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

7

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		1 5/8	5/8	3/4	10	5	11 7/8	13 1/2																		9.0
2S	48		2 1/4	3/4	1	12	6	14 1/4	16 1/4																		16.0
2M	48		2 1/4	3/4	1	12	6	14 1/4	16 1/4																		16.0
3	48		2 1/4	3/4	1	12	6	14 1/4	16 1/4																		16.0
4	48		2 1/4	3/4	1	12	6	14 1/4	16 1/4																		16.0
5	48		2 1/4	3/4	1	12	6	14 1/4	16 1/4																		16.0

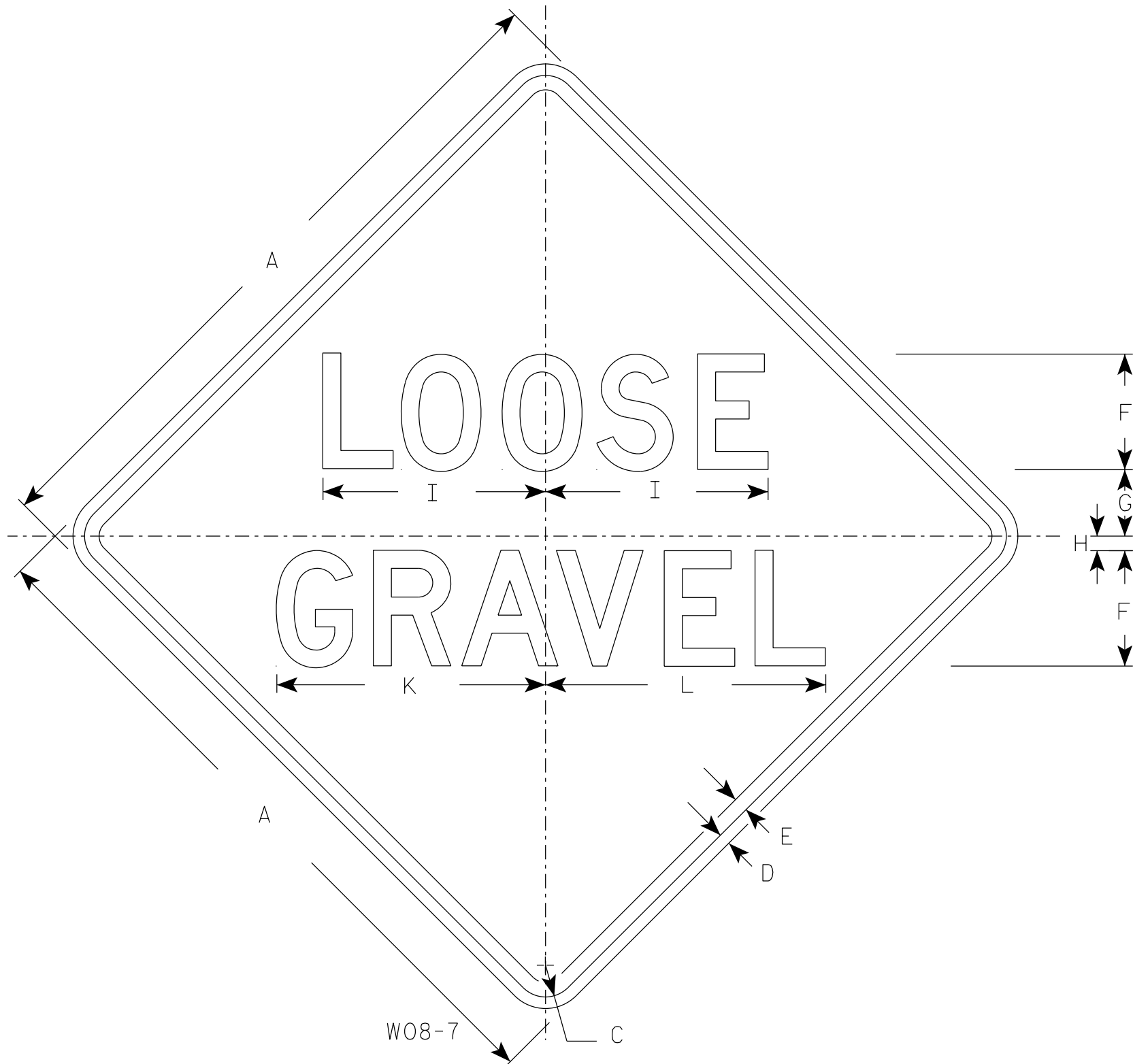
STANDARD SIGN
W08-2

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 3/7/19 PLATE NO. W08-2.2

SHEET NO: 83



NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
Background - Orange
Message - Black
- 3. Message Series - D
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		1 5⁄8	5⁄8	3⁄4	6	4 1⁄8	3⁄4	11 5⁄8		14	14 1⁄2															9.0
2S	48		2 1⁄4	3⁄4	1	8	5 1⁄2	1	15 1⁄2		18 5⁄8	19 3⁄8															16.0
2M	48		2 1⁄4	3⁄4	1	8	5 1⁄2	1	15 1⁄2		18 5⁄8	19 3⁄8															16.0
3	48		2 1⁄4	3⁄4	1	8	5 1⁄2	1	15 1⁄2		18 5⁄8	19 3⁄8															16.0
4	48		2 1⁄4	3⁄4	1	8	5 1⁄2	1	15 1⁄2		18 5⁄8	19 3⁄8															16.0
5	48		2 1⁄4	3⁄4	1	8	5 1⁄2	1	15 1⁄2		18 5⁄8	19 3⁄8															16.0

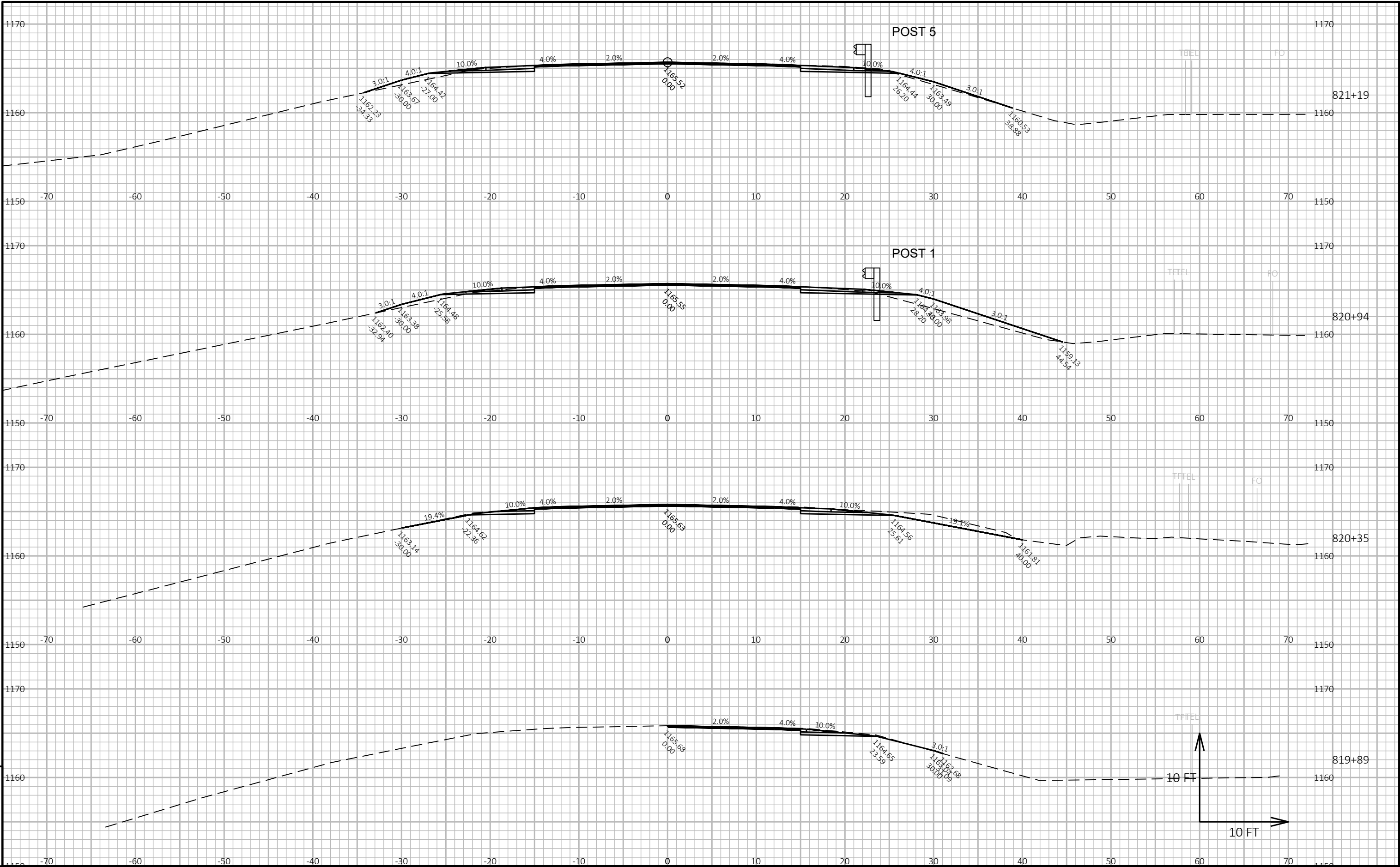
STANDARD SIGN

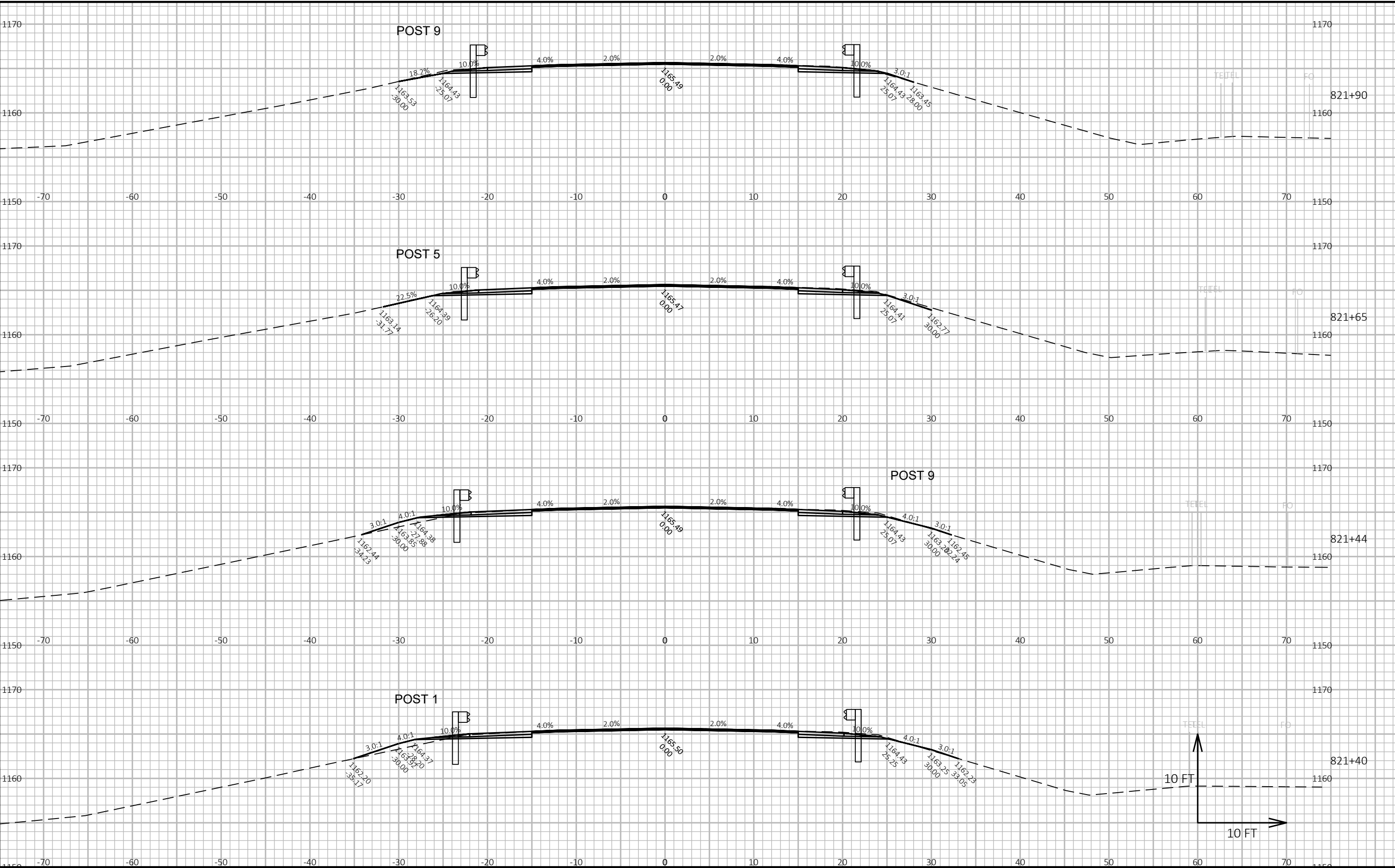
W08 - 7

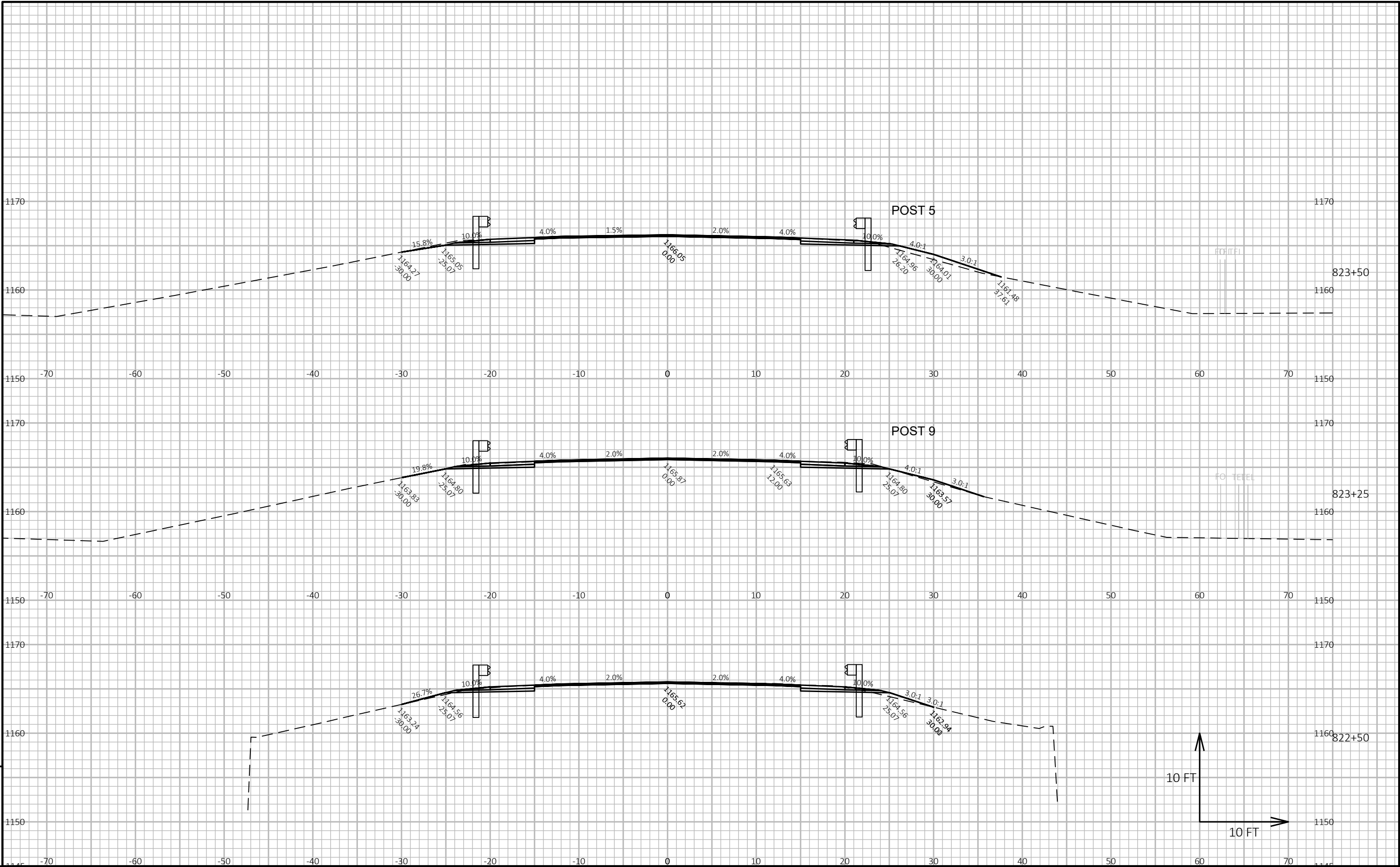
WISCONSIN DEPT OF TRANSPORTATION

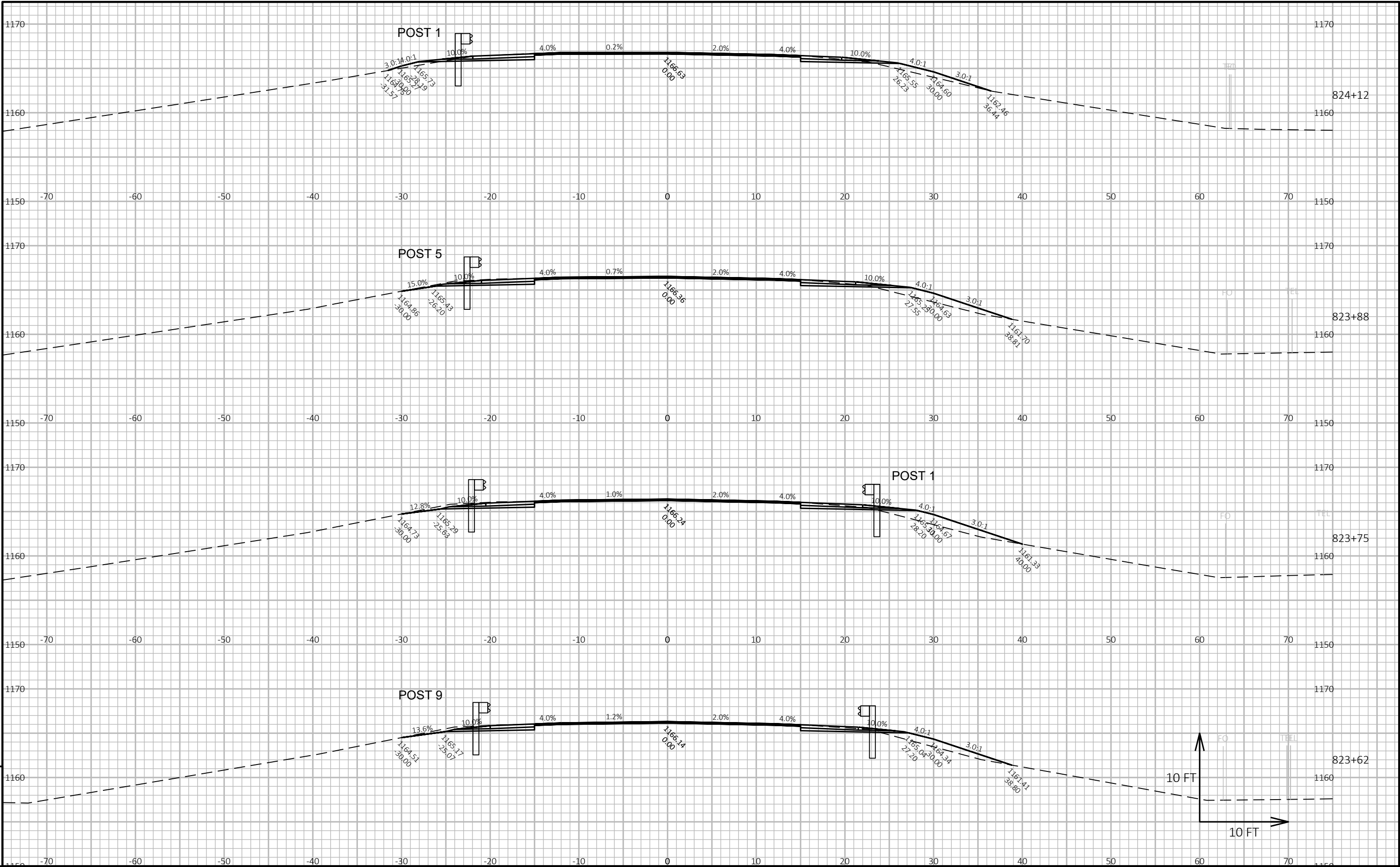
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

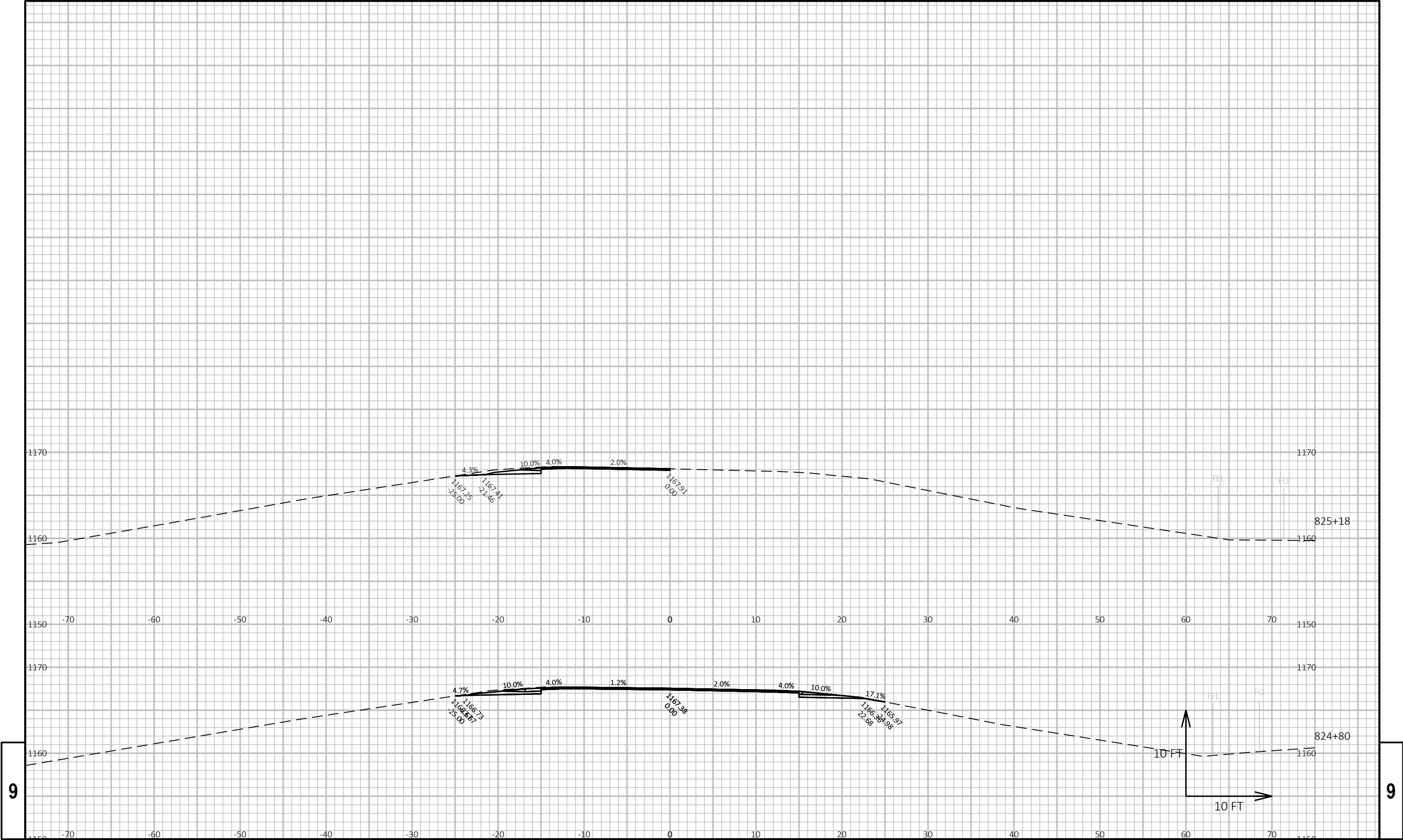
DATE 4/16/2020 PLATE NO. W08-7.8

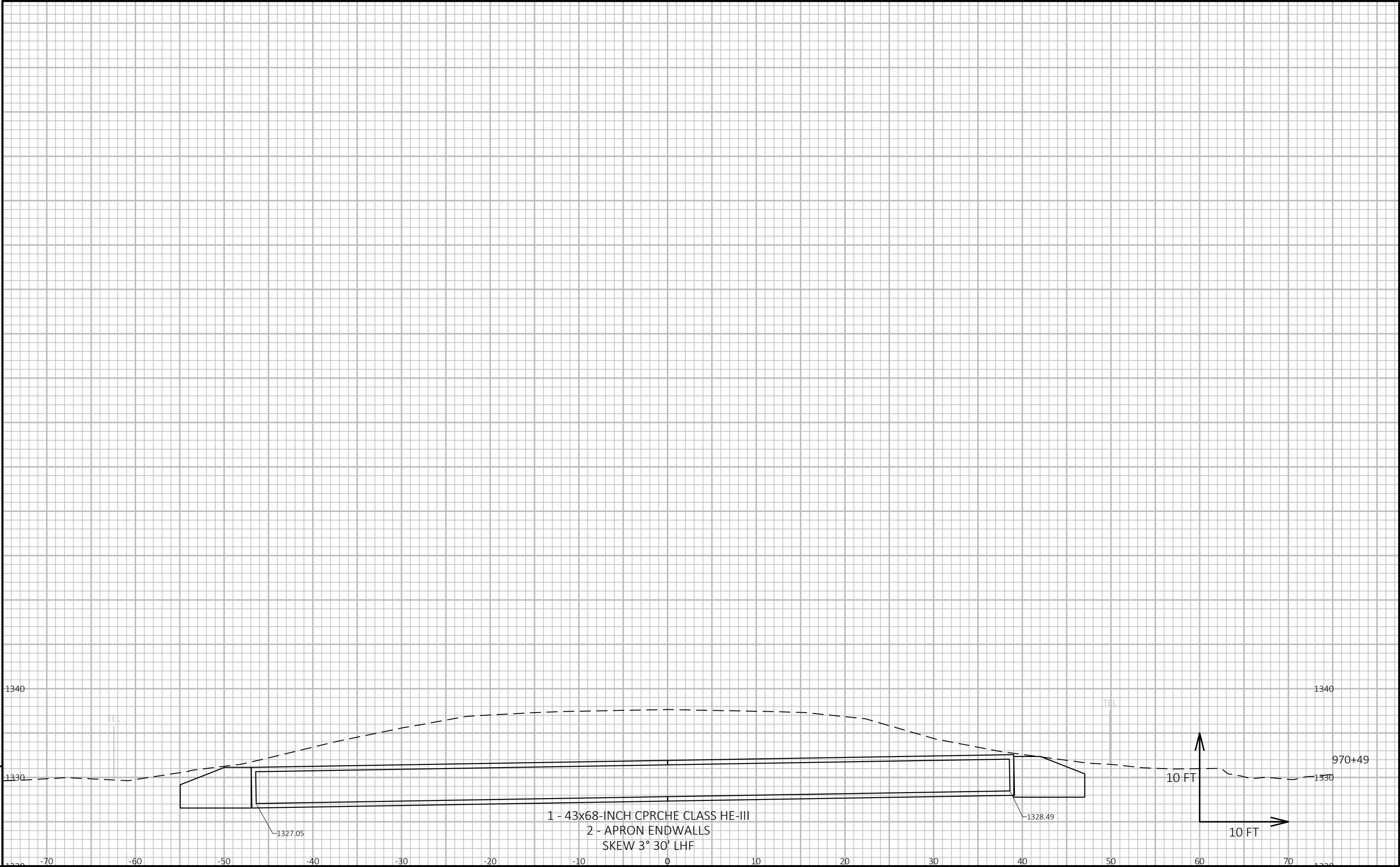


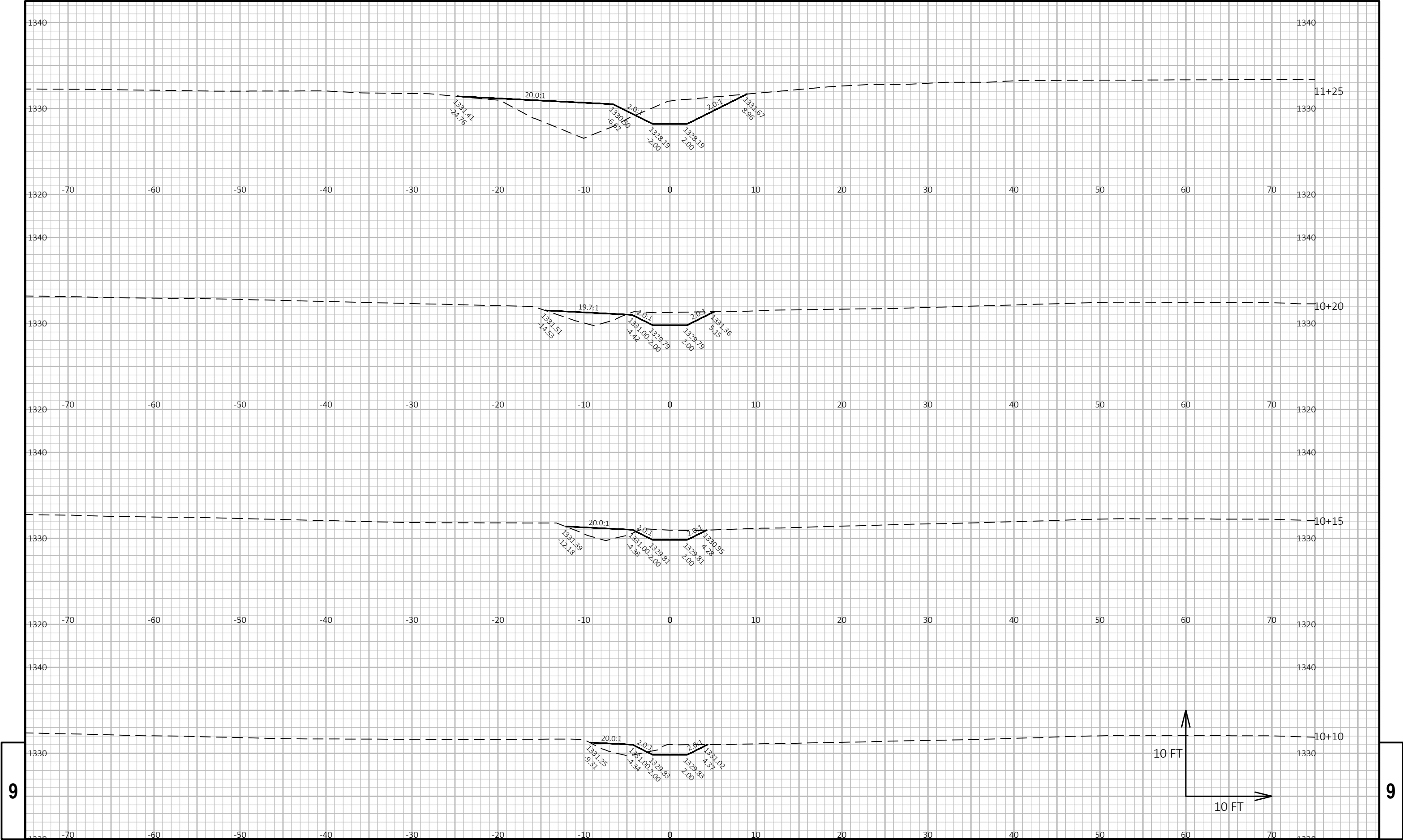


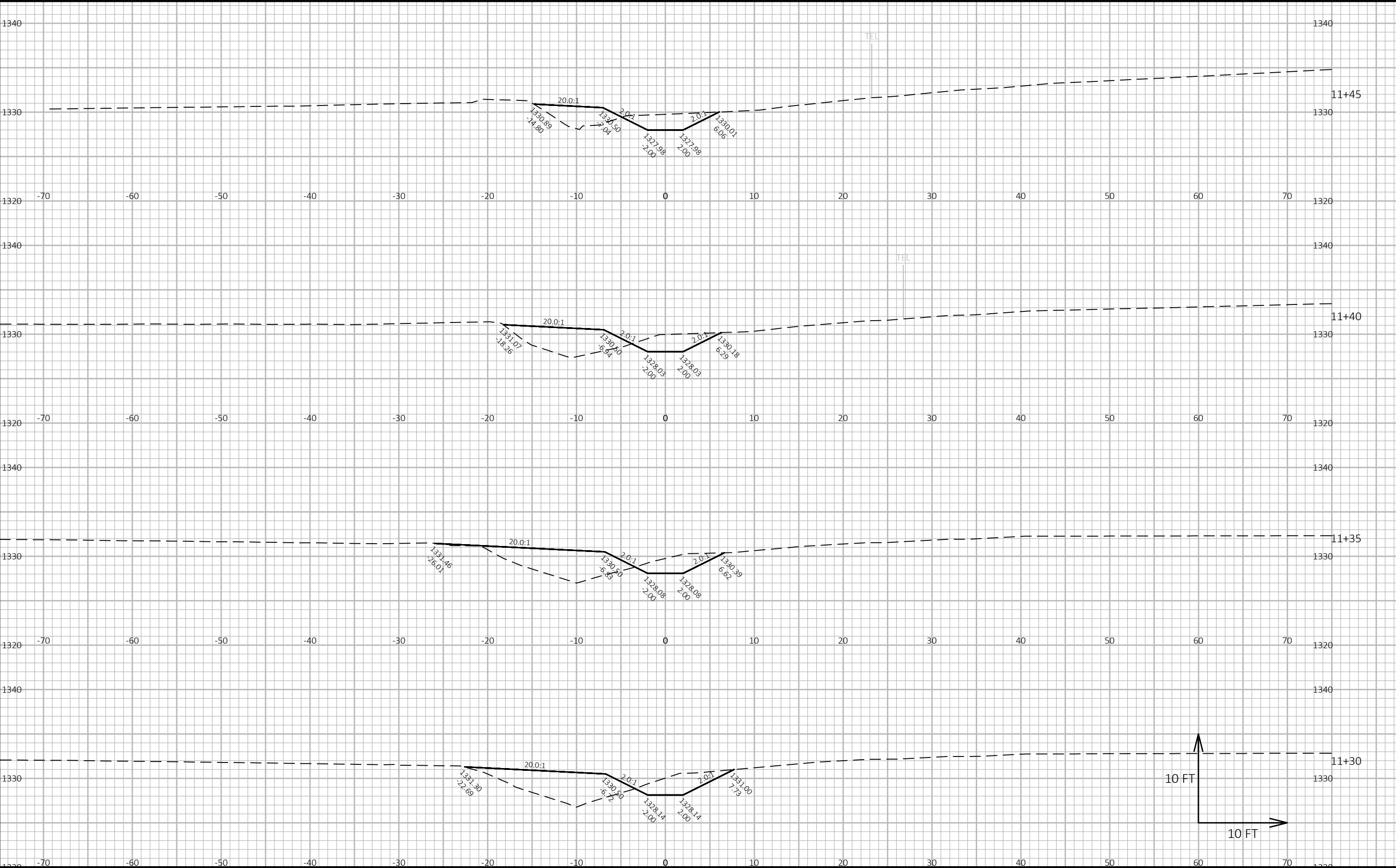


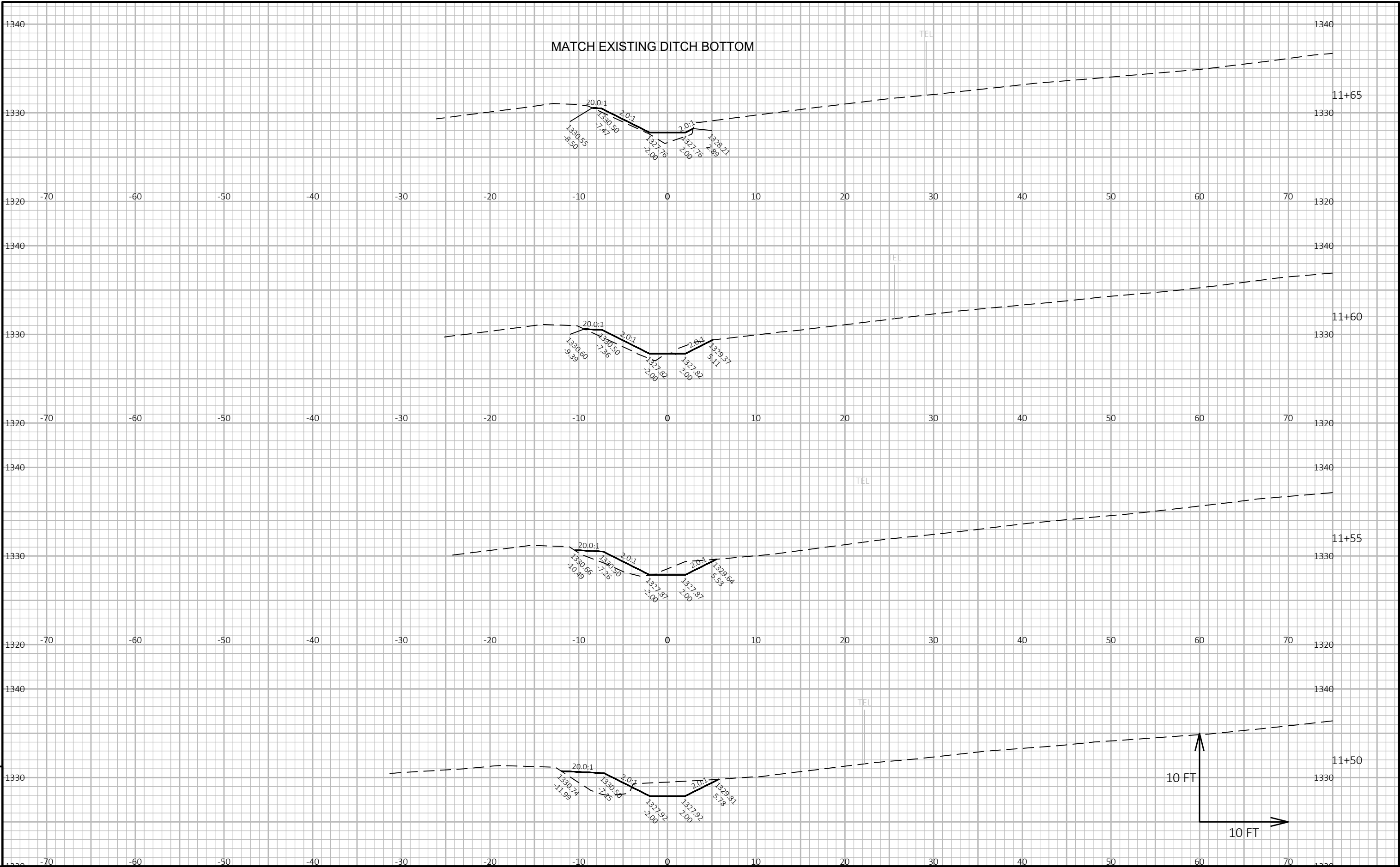


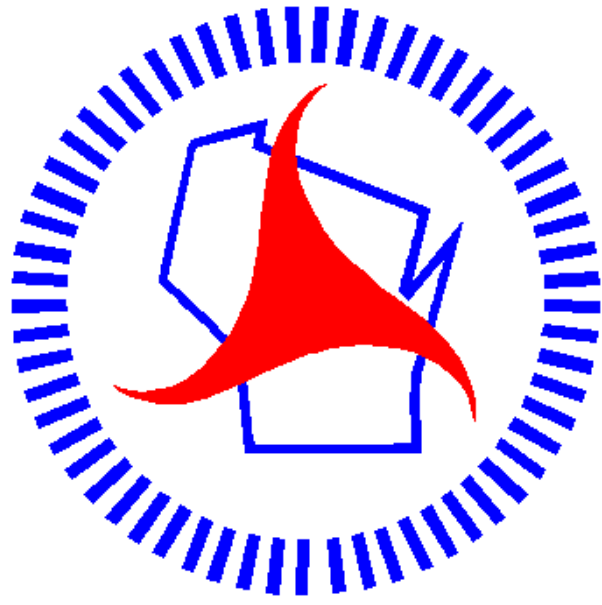












Wisconsin Department of Transportation

Dedicated people creating transportation solutions through innovation and exceptional service.

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