EAU

JUNE 2020

PROJECT ID: 7090-02-71

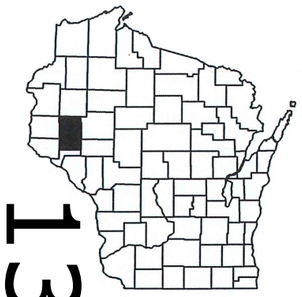
WITH: N/A

COUNTY: DUNN

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 = 108



13

N

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

MENOMONIE - EAU CLAIRE

CTH B TO IH 94

USH 12

DUNN COUNTY

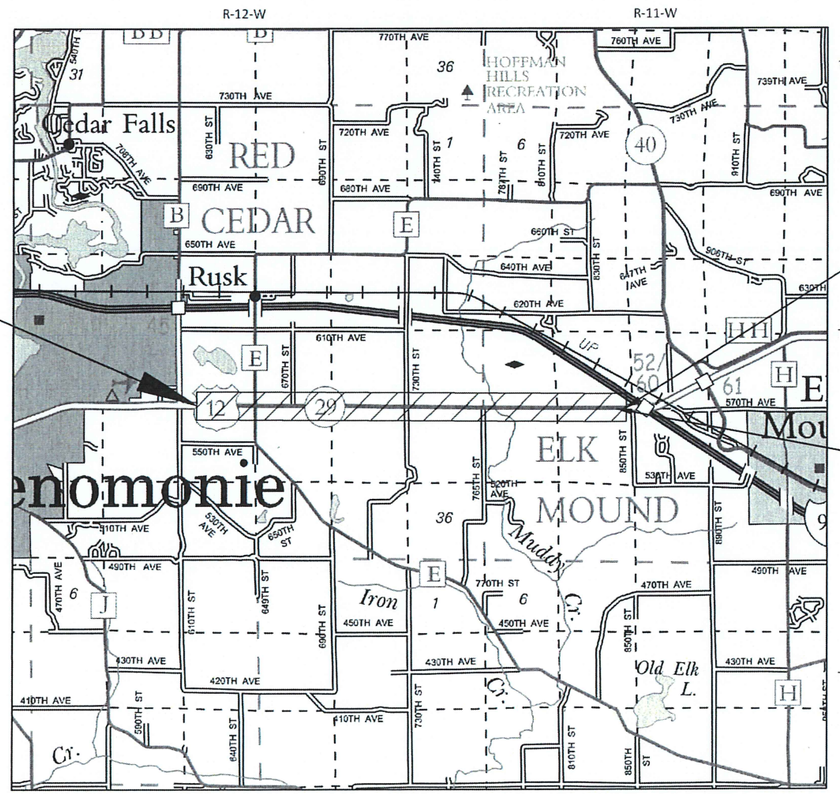
STATE PROJECT NUMBER
7090-02-71

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
7090-02-71	WISC 2020337	1

DESIGN DESIGNATION

A.A.D.T.	(2019)	=	5,770
A.A.D.T.	(2041)	=	6,640
D.H.V.		=	
D.D.		=	50/50
T.		=	17.4%
DESIGN SPEED		=	55 MPH
ESALS		=	1,900,000

BEGIN PROJECT
STA 179+97.94
Y=174,328.331
X=182,398.948



END PROJECT
STA 476+97.87'WB'

END CONSTRUCTION
STA 475+85.30

LAYOUT

SCALE 0 2 MI

TOTAL NET LENGTH OF CENTERLINE = 5.606 MI

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), DUNN 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. GPS DERIVED ELEVATIONS ARE BASED ON GEOID 12A.

CONVENTIONAL SYMBOLS

PLAN		PROFILE		UTILITIES	
CORPORATE LIMITS		GRADE LINE		ELECTRIC	E
PROPERTY LINE		ORIGINAL GROUND		FIBER OPTIC	FO
LOT LINE		MARSH OR ROCK PROFILE (To be noted as such)	ROCK	GAS	G
LIMITED HIGHWAY EASEMENT		SPECIAL DITCH	LABEL	SANITARY SEWER	SAN
EXISTING RIGHT OF WAY		GRADE ELEVATION	95.36	STORM SEWER	SS
PROPOSED OR NEW R/W LINE		CULVERT (Profile View)		TELEPHONE	T
SLOPE INTERCEPT				WATER	W
REFERENCE LINE	300 FR			UTILITY PEDESTAL	
EXISTING CULVERT				POWER POLE	
PROPOSED CULVERT (Box or Pipe)				TELEPHONE POLE	
COMBUSTIBLE FLUIDS	CAUTION				
MARSH AREA					
WOODED OR SHRUB AREA					

ORIGINAL PLANS PREPARED BY
CBS SQUARED, INC.

WISCONSIN
JOSEPH W. MALENOFSKI
E-40076
APPLETON, WI
PROFESSIONAL ENGINEER

DATE: 1/27/2020 (Professional Engineer Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	CBS SQUARED
Designer	CBS SQUARED
Project Manager	TYLER RONGSTAD
Regional Examiner	TOU YANG
Regional Supervisor	JAMES KOENIG

APPROVED FOR THE DEPARTMENT

DATE: 1/27/2020 (Signature) Tyler Rongstad

E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\010101_TI.DWG PLOT DATE : 1/27/2020 3:46 PM PLOT BY : JOE MALENOFSKI PLOT NAME :

GENERAL NOTES

THE ALIGNMENT ON THIS PLAN IS BASED ON AERIAL DRAWINGS AND AS BUILTS (PROJECT ID 9815-05-60).

THE EXISTING RIGHT OF WAY ON THIS PLAN IS BASED ON AVAILABLE PLAT INFORMATION.

THE CENTERLINE AS SHOWN IN THE PLANS MAY REQUIRE ADJUSTMENT TO MATCH FIELD CONDITIONS. ANY ADJUSTMENTS SHALL BE INCIDENTAL TO OTHER ITEMS IN THE CONTRACT.

THE CONTRACTOR IS TO WORK WITH UTMOST CARE AND PROTECT ALL SURVEY MARKERS. SURVEY MARKERS SHALL NOT BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

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

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

THE CONTRACTOR'S HMA PAVING OPERATION SHALL BE CONSTRUCTED TO PREVENT LONGITUDINAL JOINTS FROM BEING LOCATED WITHIN THE DRIVING, TURNING, PASSING OR PARKING LANE.

EXISTING SUPERELEVATION RATES AS SHOWN ON THE PLAN SHEETS REPRESENT THE APPROXIMATE EXISTING RATES. WHERE NO PROPOSED SUPERELEVATION RATE IS SHOWN, THE EXISTING SUPERELEVATION SHALL BE MAINTAINED.

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

HMA PAVEMENT SHALL BE CONSTRUCTED WITH THE FOLLOWING LAYER THICKNESS:

PAVEMENT THICKNESS (INCH)	LOWER (INCH)	MIDDLE (INCH)	UPPER (INCH)
3.25 - MAINLINE	1.25	-	2.00
6.0 - CULVERT REPLACEMENTS	2.75	1.25	2.00
3.25 - SHOULDERS	1.25	-	2.00

ORDER OF TYPICAL SECTION AND DETAIL SHEETS

GENERAL NOTES
PROJECT OVERVIEW
TYPICAL SECTIONS
CONSTRUCTION DETAILS

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 .22	.16 .30	.22 .38	.12 .26	.20 .34	.27 .44	.15 .30	.24 .37	.33 .50	.19 .34	.28 .41	.38 .56
MEDIAN STRIP-TURF	.19 .24	.20 .26	.24 .30	.19 .25	.22 .28	.26 .33	.20 .26	.23 .30	.30 .37	.20 .27	.25 .32	.30 .40
SIDE SLOPE-TURF	.25 .32	.27 .34	.28 .36								.30 .38	
PAVEMENT:												
ASPHALT	.70 - .95											
CONCRETE	.80 - .95											
BRICK	.70 - .80											
DRIVES, WALKS	.75 - .85											
ROOFS	.75 - .95											
GRAVEL ROADS, SHOULDERS	.40 - .60											

TOTAL PROJECT AREA = 67.95 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.28 ACRES

UTILITY CONTACTS

WISCONSIN DNR LIASON

AMY LESIK
DNR WEST CENTRAL REGION
1300 WEST CLAIREMONT AVENUE
EAU CLAIRE, WI 54701
(715) 836-6571
AMYL.LESIK@WISCONSIN.GOV

ELECTRIC

ROB MALY
DAIRYLAND POWER COOPERATIVE - ELECTRICITY
3200 EAST AVE S
P.O. BOX 817
LA CROSSE, WI 54602-0817
(608) 787-1427
(608) 518-2633 (MOBILE)
ROB.MALY@DAIRYLANDPOWER.COM

MIKE ANDRASCHKO
DUNN ENERGY COOPERATIVE - ELECTRICITY
N5725 600TH ST
P.O. BOX 220
MENOMONIE, WI 54751-0220
(715) 232-6240
(715) 231-0214 (MOBILE)
MANDRA@DUNNENERGY.COM

TRAVIS WERLEIN
XCEL ENERGY - ELECTRICITY
320 HELLER ROAD
MENOMONIE, WI 54751
(715) 262-7415
(715) 495-3441 (MOBILE)
TRAVIS.A.WERLEIN@XCELENERGY.COM

ELECTRIC - TRANSMISSION

MITCHELL DIENGER
XCEL ENERGY - ELECTRICITY TRANSMISSION
414 NICOLLET MALL, 5TH FLOOR
MINNEAPOLIS, MN 545401
(612) 321-3109
(612) 386-2233 (MOBILE)
MITCHELL.A.DIENGER@XCELENERGY.COM

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

COMMUNICATIONS

JERRY GUCK
ARVIG COM SYS - COMMUNICATION LINE
150 2ND ST SW
PERHAM, MN 56573
(182) 346-8437
JERRY.GUCK@ARVIG.COM

WILLIAM KOENIG (JMC ENGINEERS)
AT&T LEGACY - COMMUNICATION LINE
110 N MAIN ST
CULVER, IN 46511
(574) 842-8830
(608) 628-0575 (MOBILE)
WEKOENIG@ATT.NET

RICK PODOLAK
AT&T WI - COMMUNICATION LINE
304 S DEWEY ST 4TH FLOOR
EAU CLAIRE, WI 54701
(715) 839-5565
(715) 410-0656 (MOBILE)
RICK.T.PODOLAK@ATT.COM

PAUL DEBRUYNE
CENTURY LINK - COMMUNICATION LINE
425 ELLINGSON AVE
HAWKINS, WI 54530
(715) 585-7767
(920) 309-0515 (MOBILE)
PAUL.C.DEBRUYNE@CENTURYLINK.COM

SHAD GARCIA
CENTURYLINK COM LLC - COMMUNICATION LINE
3235 INTERTECH DRIVE, SUITE 600
BROOKFIELD, WI 53045
(414) 908-1009
(262) 606-0896 (MOBILE)
SHAD.GARCIA@CENTURYLINK.COM

SHANE YODER
CHARTER COM - COMMUNICATION LINE
1201 MCCANN DRIVE
ALTOONA, WI 54720
(715) 831-8940 x51113
SHANE.YODER@CHARTER.COM

SHAD GARCIA
LEVEL 3 COM LLC - COMMUNICATION LINE
3235 INTERTECH DRIVE, SUITE 600
BROOKFIELD, WI 53045
(414) 908-1009
(262) 606-0896 (MOBILE)
SHAD.GARCIA@CENTURYLINK.COM

2

2

2

N

BEGIN PROJECT
STA 179+97.94
Y=174328.331
X=182398.948

BEGIN CENTERLINE &
SHOULDER RUMBLE STRIPS

STA 204+30
CULVERT REHABILITATION

CTH E

670TH ST

USH 12

RED CEDAR WATERFOWL
PRODUCTION AREA

730TH ST

MATCHLINE STA 325+00

180 190 200 210 220 230 240 250 260 270 280 290 300 310 320

MATCHLINE STA 325+00

STA 332+90
CULVERT REPLACEMENT

STA 356+69
CULVERT REPLACEMENT

STA 204+30
CULVERT REHABILITATION

BEAM GUARD
END TERMINAL GRADING

BEAM GUARD
END TERMINAL GRADING

BEAM GUARD
END TERMINAL GRADING

END CENTERLINE &
SHOULDER RUMBLE STRIPS

END PROJECT
STA 476+97.87'WB'

330 340 350 360 370 380 390 400 410 420 430 440 450 460 470'WB' 475'WB'

USH 12

MUDDY CREEK

715TH ST

STA 418+83
CULVERT REPLACEMENT

MUDDY CREEK
STATE WILDLIFE AREA

END CONSTRUCTION
STA 475+85.30

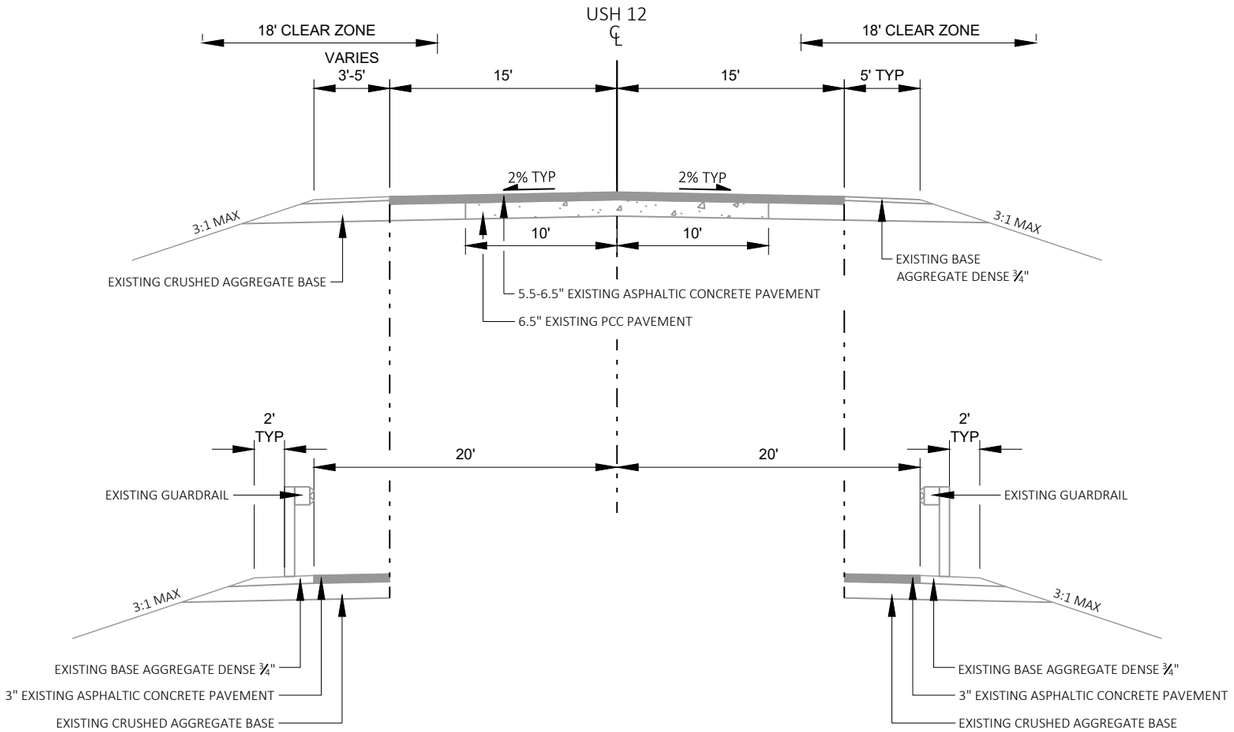
PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PROJECT OVERVIEW	SHEET 3	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\020201_PO.DWG
LAYOUT NAME - 020201_po

PLOT DATE : 1/30/2020 4:47 PM PLOT BY : JOE MALENOFSKI PLOT NAME : PLOT SCALE : 1 IN:1000 FT

WISDOT/CADDS SHEET 42

2



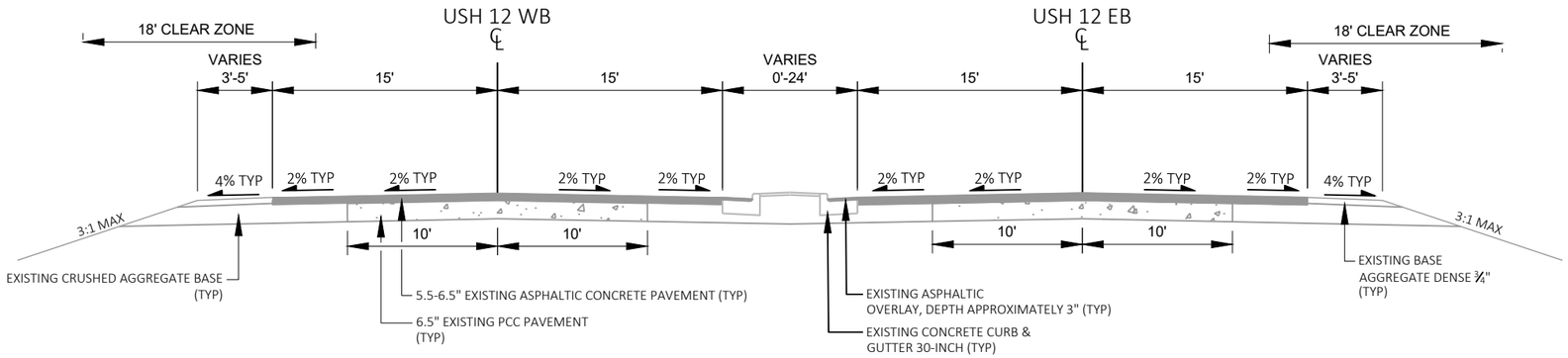
BEAM GUARD ON SHOULDERS
STA 378+23 LT TO 381+25 LT
STA 403+45 LT TO 405+99 LT
STA 417+60 LT TO 420+14 LT

BEAM GUARD ON SHOULDERS
STA 378+38 RT TO 381+55 RT

TYPICAL EXISTING SECTION
STA 179+97.94 TO 468+10.34

PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN: TYPICAL SECTIONS	SHEET 4	E

2



TYPICAL EXISTING SECTION
STA 468+10.34 TO 475+85.30

PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN: TYPICAL SECTIONS	SHEET 5	E

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LAYOUT NAME - 020302_ts
PLOT DATE : 1/30/2020 4:47 PM
PLOT BY : JOE MALENOFSKI
PLOT NAME :
PLOT SCALE : 1 IN:10 FT

NOTES:

DEPTH OF MILLING/HMA PAVEMENT IS TO BE HELD AT 3.25". ANY VARIATIONS FROM THE PLAN CROSS SLOPES ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

(1) STA 179+92.94 TO STA 468+10.34 ASPHALT CENTER LINE RUMBLE STRIP 2-LANE RURAL REQ'D IN ACCORDANCE WITH SDD '2-LANE RURAL CENTERLINE RUMBLE STRIP, MILLING'.

(2) STA 179+92.94 TO STA 468+10.34 2 LANE RURAL SHOULDER RUMBLE STRIP, MILLING REQ'D IN ACCORDANCE WITH SDD '2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING'.

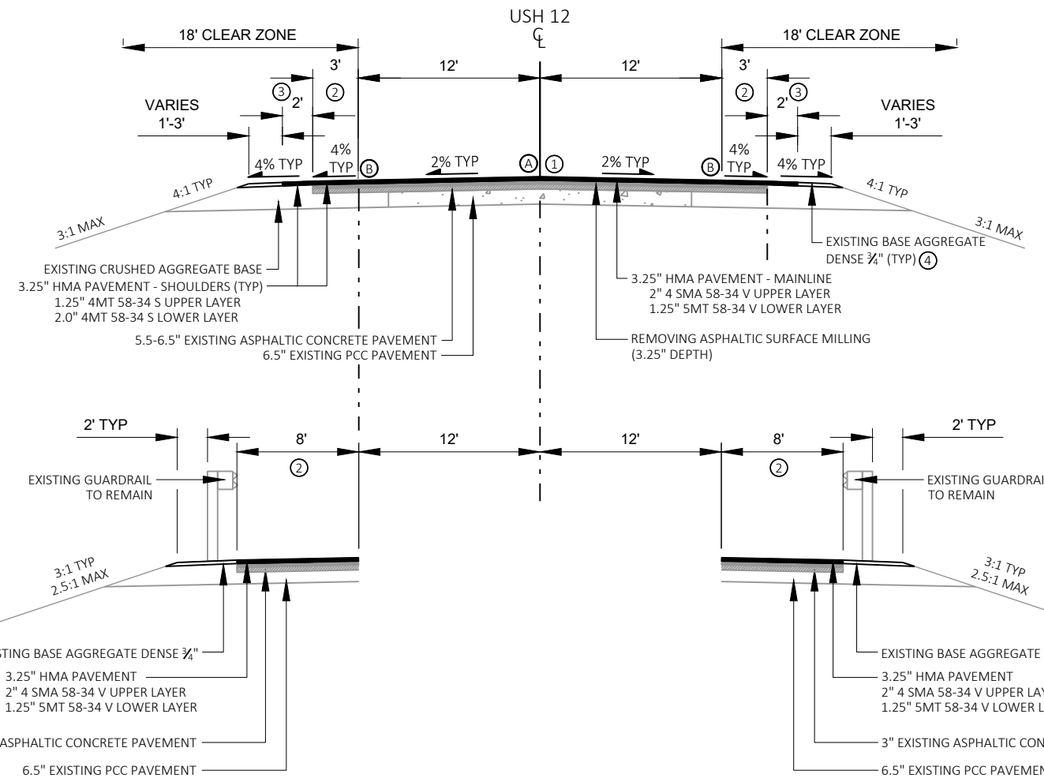
(3) CONSTRUCT SAFETY EDGE IN ACCORDANCE WITH SDD 'SAFETY EDGE'.

(4) ADDITIONAL BASE AGGREGATE DENSE ¾" MAY BE REQUIRED TO CONSTRUCT TO ELEVATION OF FINISHED HMA PAVEMENT AND AS DIRECTED BY THE ENGINEER.

(5) REMOVE EXISTING GUARDRAIL. INSTALL MGS GUARDRAIL, ENERGY ABSORBING TERMINALS, 3, AND 3L. SEE DETAILS.

(A) TEMPORARY MARKING LINE PAINT 4-INCH, TEMPORARY MARKING EPOXY 4-INCH, MARKING LINE EPOXY 4-INCH.

(B) MARKING LINE GROOVED WET REFLECTIVE EPOXY 4-INCH



BEAM GUARD ON SHOULDERS
STA 378+23 LT TO 381+25 LT
STA 403+45 LT TO 405+99 LT
(5) STA 417+60 LT TO 420+14 LT

BEAM GUARD ON SHOULDERS
STA 378+38 RT TO 381+55 RT

TYPICAL FINISHED SECTION
STA 179+97.94 TO 468+10.34

NOTES:

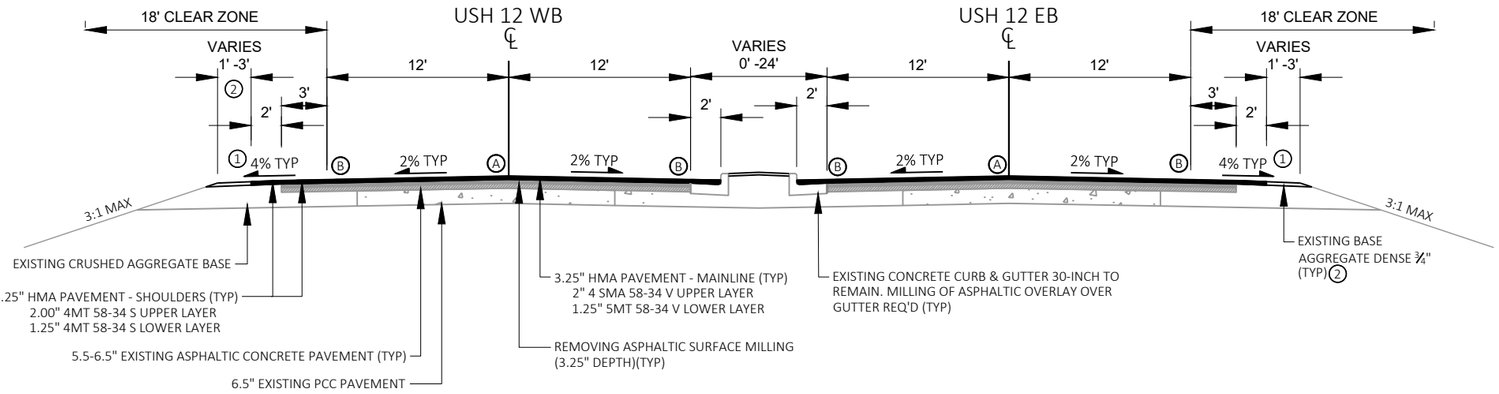
DEPTH OF MILLING/HMA PAVEMENT IS TO BE HELD AT 3.25". ANY VARIATIONS FROM THE PLAN DEPTHS ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

(1) CONSTRUCT SAFETY EDGE IN ACCORDANCE WITH SDD 'SAFETY EDGE'.

(2) ADDITIONAL BASE AGGREGATE DENSE ¾" MAY BE REQUIRED TO CONSTRUCT TO ELEVATION OF FINISHED HMA PAVEMENT AND AS DIRECTED BY THE ENGINEER.

(A) TEMPORARY MARKING LINE PAINT 4-INCH, TEMPORARY MARKING EPOXY 4-INCH, MARKING LINE EPOXY 4-INCH.

(B) MARKING LINE GROOVED WET REFLECTIVE EPOXY 4-INCH



TYPICAL FINISHED SECTION
STA 468+10.34 TO 475+85.30

PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN: TYPICAL SECTIONS	SHEET 7	E

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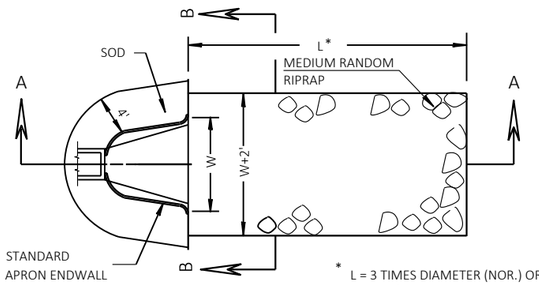
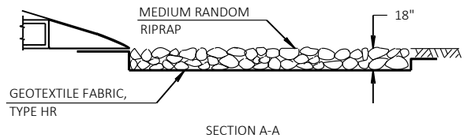
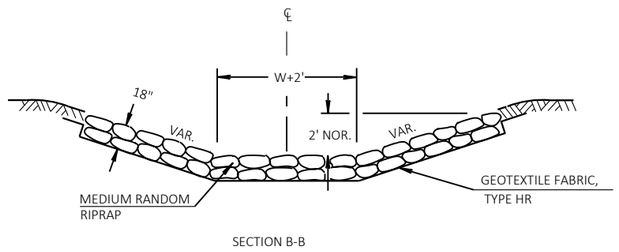
PLOT BY : JOE MALENOFSKI
PLOT NAME :
PLOT SCALE : 1 IN:10 FT



* L = 3 TIMES DIAMETER (NOR.) OR 10' MIN. OR AS DIRECTED BY THE ENGINEER

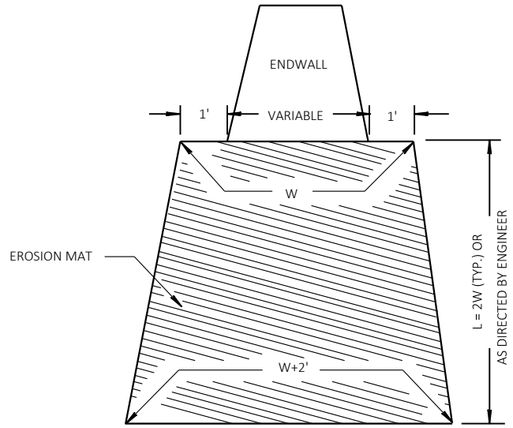


SECTION A-A

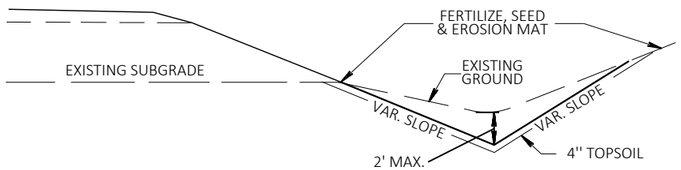


SECTION B-B

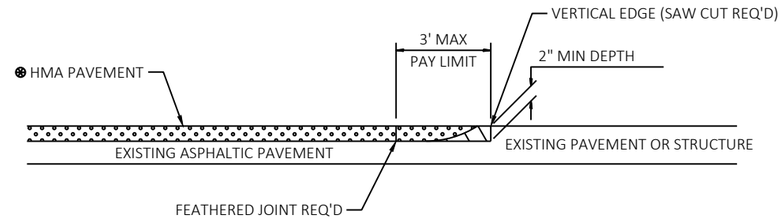
MEDIUM RANDOM RIPRAP AND GEOTEXTILE FABRIC DETAIL AT APRON ENDWALL



EROSION MAT TREATMENT AT CULVERTS

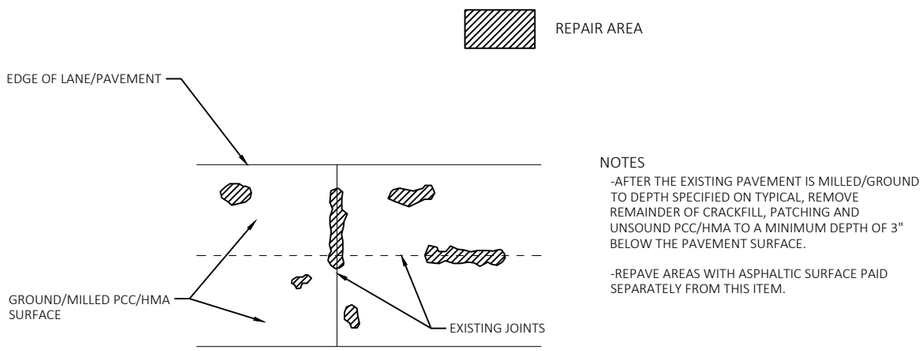


DITCH CLEANING DETAIL



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

BUTT JOINT DETAIL FOR ASPHALTIC PAVEMENTS (NO PROFILE CHANGE)

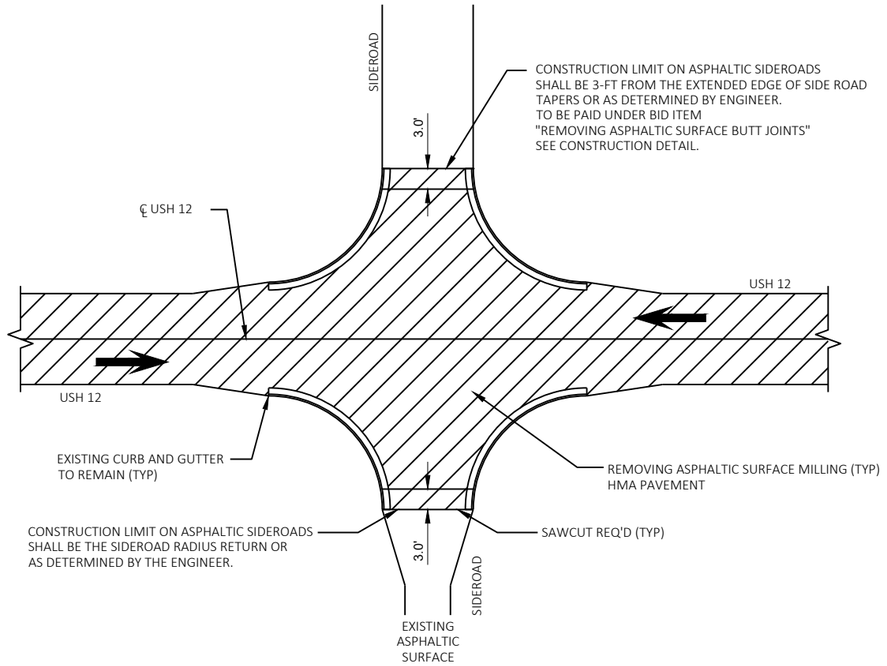


NOTES

-AFTER THE EXISTING PAVEMENT IS MILLED/GROUND TO DEPTH SPECIFIED ON TYPICAL, REMOVE REMAINDER OF CRACKFILL, PATCHING AND UNSOUND PCC/HMA TO A MINIMUM DEPTH OF 3" BELOW THE PAVEMENT SURFACE.

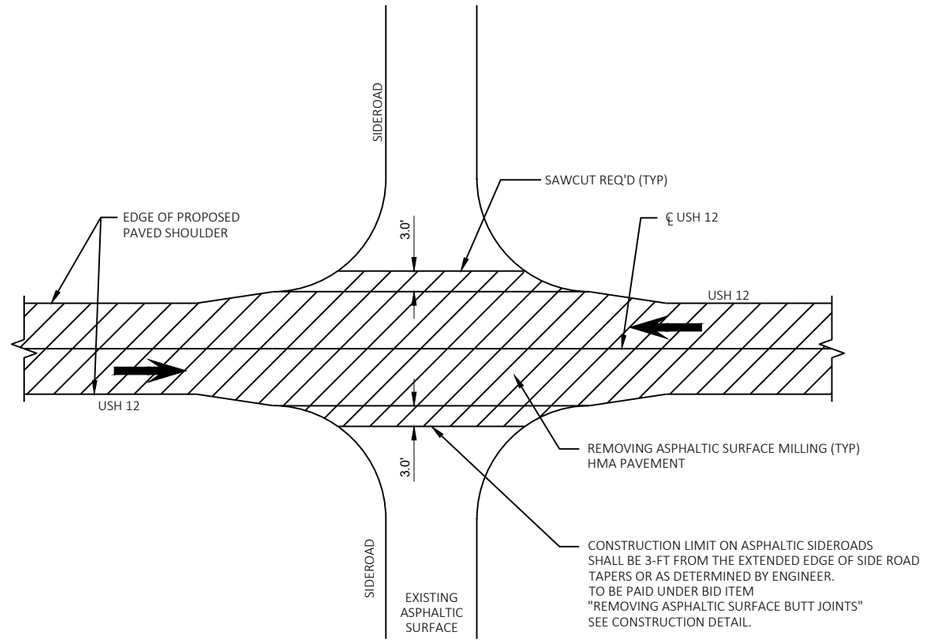
-REPAVE AREAS WITH ASPHALTIC SURFACE PAID SEPARATELY FROM THIS ITEM.

PREPARE FOUNDATION FOR ASPHALTIC PAVING



SIDEROAD / INTERSECTION PAVING
WITH CURB & GUTTER

CTH E



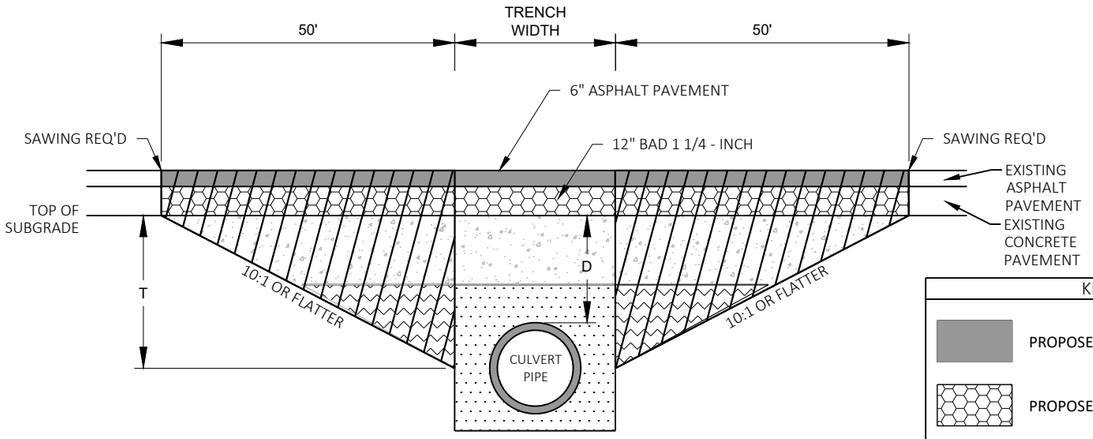
MAINLINE AND SIDEROAD / INTERSECTION
PAVING WITH NO CURB & GUTTER

670TH ST
730TH ST
765TH ST
850TH ST

PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CONSTRUCTION DETAILS	SHEET 9	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\021001_CD.DWG
LAYOUT NAME - 021002_cd

PLOT DATE : 4/18/2020 8:38 AM PLOT BY : JOE MALENOFSKI PLOT NAME : PLOT SCALE : 1 IN:10 FT

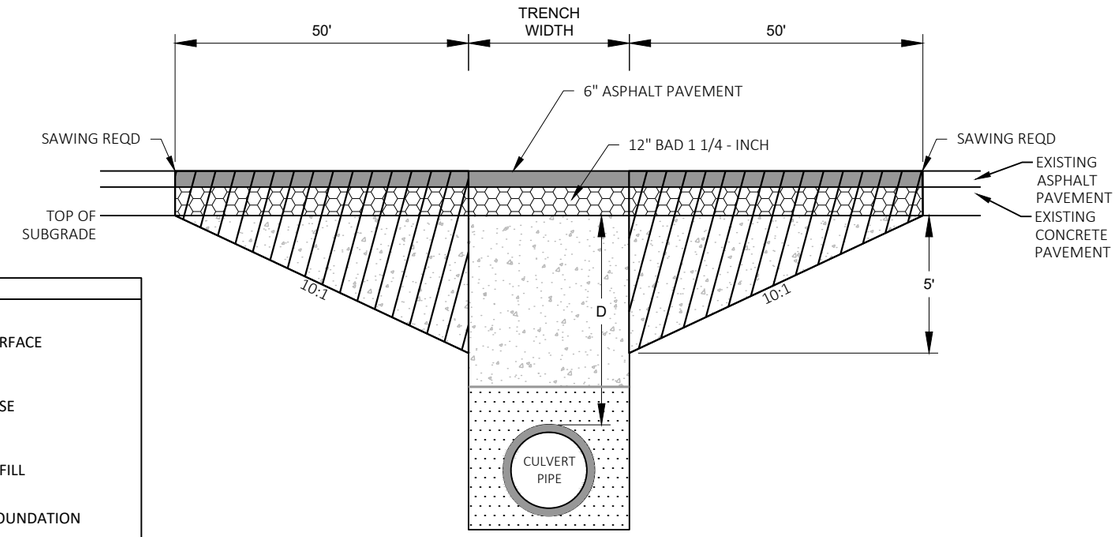


TRANSITION CUT DEPTH (T) = THE LESSER OF DEPTH TO CENTER OF PIPE OR 5 FT.
DO NOT EXTEND TRANSITION CUT BELOW HORIZONTAL CENTER OF PIPE.

DEPTH D < 6 FT

KEY

- PROPOSED SURFACE
- PROPOSED BASE
- TRENCH BACKFILL
- TRENCH OR FOUNDATION BACKFILL
- FOUNDATION BACKFILL
- TRANSITION CUT



DEPTH D ≥ 6 FT

NOTES

TRANSITION CUT IS PAID AS EXCAVATION COMMON.

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

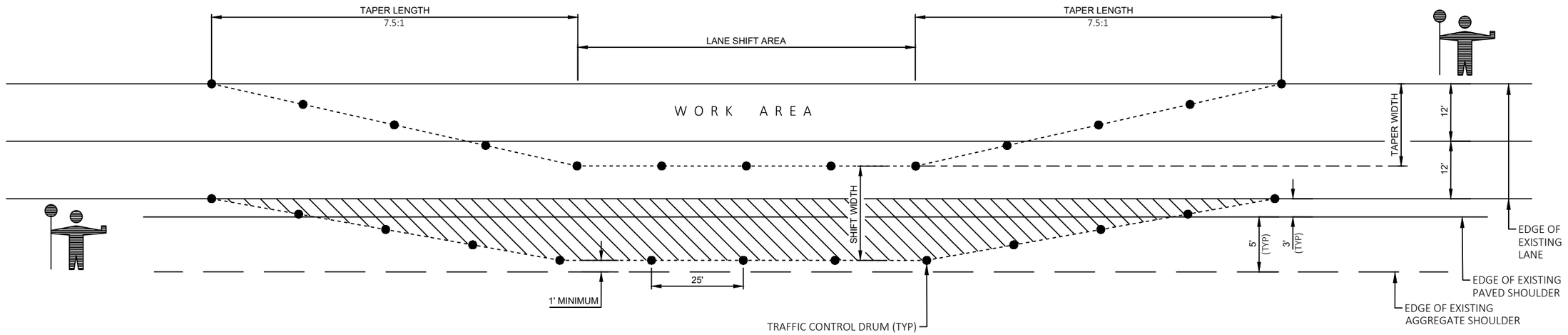
BACKFILL THE TRANSITION CUT AREAS WITH FOUNDATION AND TRENCH BACKFILL AS SPECIFIED IN STANDARD SPEC 520.

PERFORM CULVERT PIPE INSTALLATION BEFORE MILLING AND PAVING. PLACE ASPHALTIC SURFACE WITHIN LIMITS OF USH 12 ROADWAY AND EXISTING PAVED SHOULDERS PRIOR TO RE-OPENING TO TRAFFIC. REMOVE ASPHALTIC SURFACE AND PLACE HMA PAVEMENT DURING MAINLINE MILLING AND PAVING WORK.

CULVERT PIPE TRANSITION

ROUTE	STA (CL)	DEPTH D (FT)	PIPE DIA (IN)
USH 12	332+90	1.5	30
USH 12	356+69	4.5	42
USH 12	418+83	2.3	43X68

2



LANE SHIFT DETAIL
CULVERT REPLACEMENTS

NOTES

1. EXTEND TAPERS ACROSS THE SHOULDER
   UNLESS DOING SO WOULD GREATLY CONFLICT WITH THE WORK OPERATION.

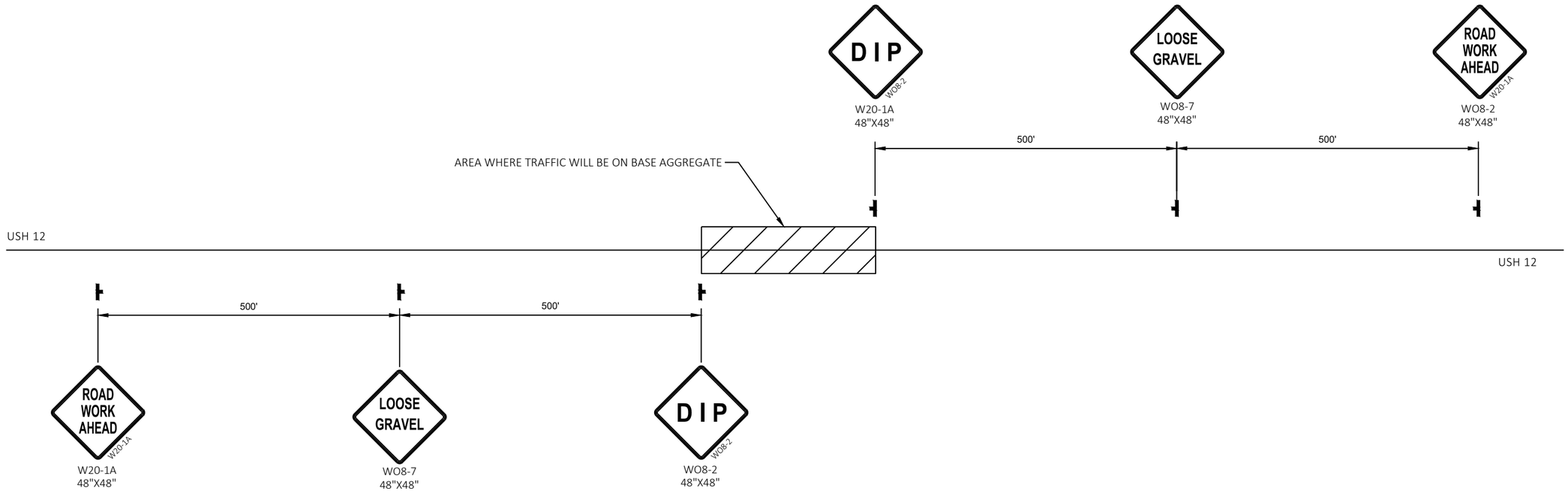
2. WHEN WORK IS NOT IN PROGRESS:
   - REMOVE OR COVER ALL LANE CLOSURE SIGNS.
   - MOVE ALL DEVICES A SAFE DISTANCE OUTSIDE THE SHOULDER.
   - RESTORE LANES TO A SAFE OPERATING CONDITION PRIOR TO SHIFTING TRAFFIC BACK ONTO EXISTING LANES.

3. USE WITH SDD "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION"

4. MAINTAIN MINIMUM 14' TRAFFIC PATH WIDTH. PROVIDE ADDITIONAL 2' WIDTH FOR TRAFFIC CONTROL DRUMS ALONG EACH EDGE OF TRAFFIC PATH. TOTAL SHIFT WIDTH SHALL BE 18' MINIMUM.

5. WHEN SHIFTING TRAFFIC, PROVIDE A CONTINUOUS SLOPE ON THE UNPAVED SHOULDER THAT IS FREE OF BUMPS, DEPRESSIONS, GRADE BREAKS, ETC. BASE AGGREGATE DENSE 3/4-INCH SHALL BE USED TO CORRECT SHOULDER SURFACE AS DIRECTED BY THE ENGINEER AND WILL BE PAID UNDER BID ITEM "BASE AGGREGATE DENSE 3/4-INCH".

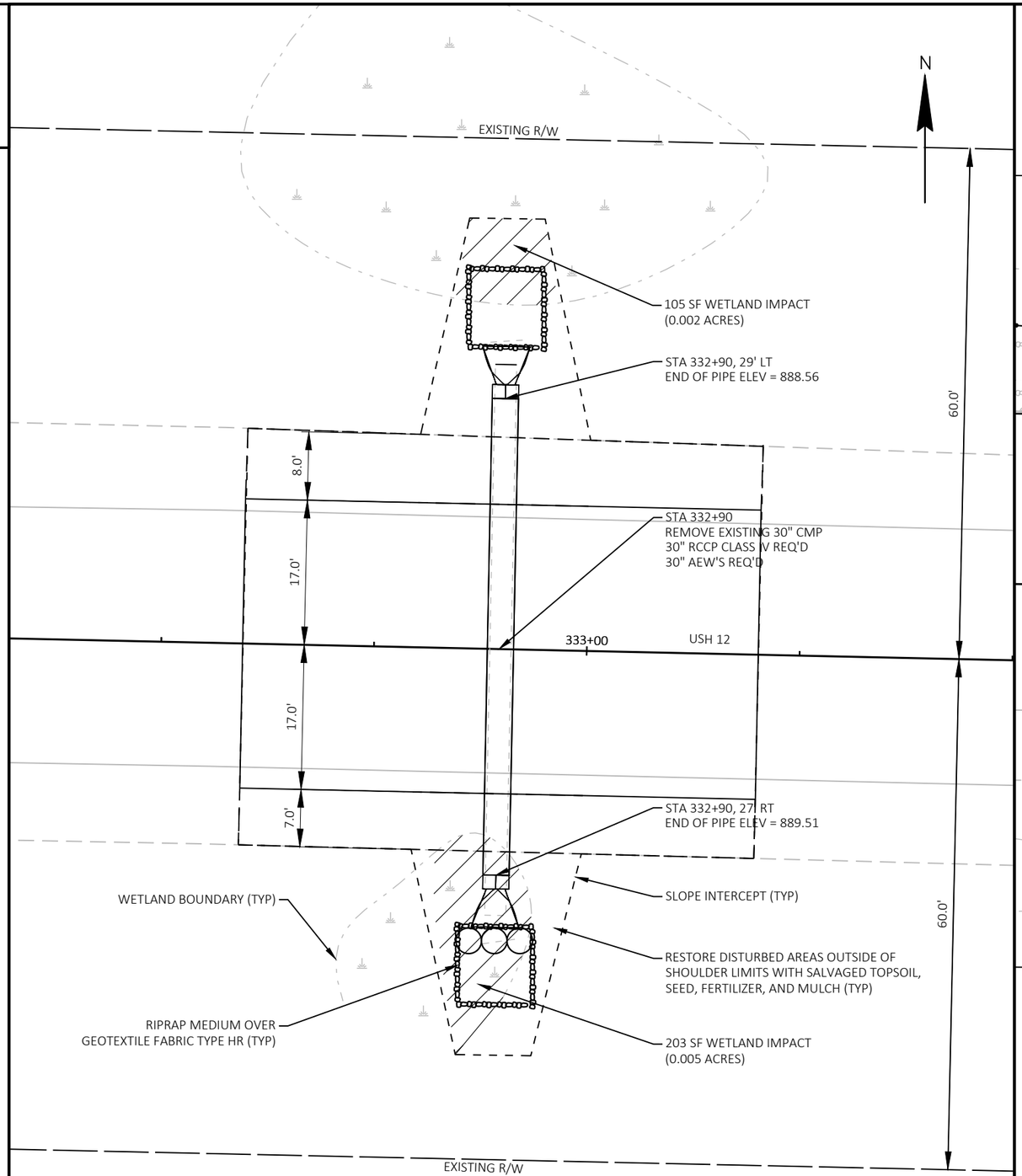
2

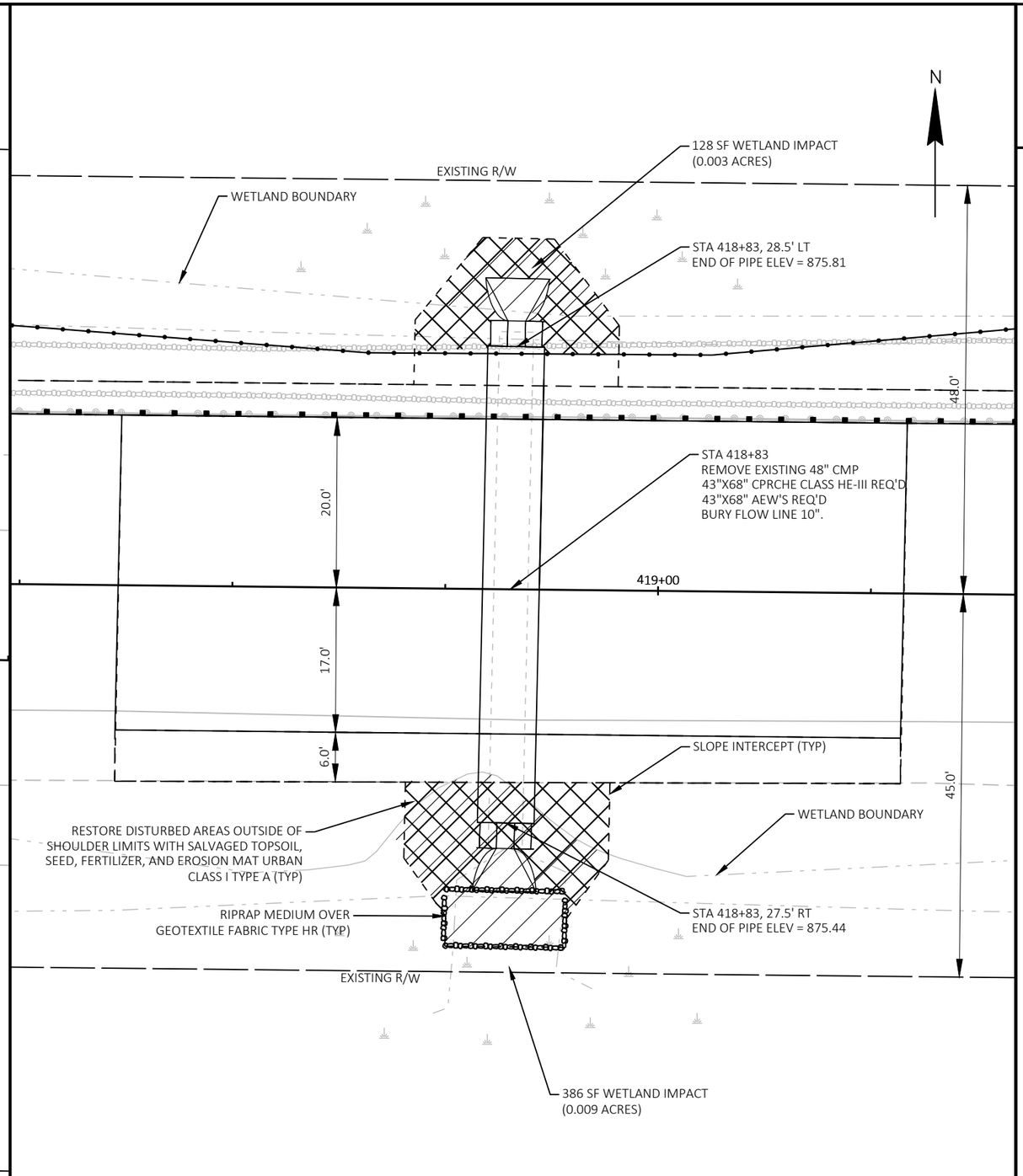


LOOSE GRAVEL SIGNING

CULVERT REPLACEMENTS

2





PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CONSTRUCTION DETAILS - CULVERTS	SHEET 13	E

2

STA 356+25 TO 356+95 RT
DITCH CLEANING REQ'D

N

60.0'

60.0'

8.0'

17.0'

17.0'

8.0'

707 SF WETLAND IMPACT
(0.016 ACRES)

RESTORE DISTURBED DITCH AREA WITH
SALVAGED TOPSOIL, SEED, FERTILIZER, AND
EROSION MAT URBAN CLASS I TYPE A

SLOPE INTERCEPT (TYP)

EXISTING R/W

USH 12

STA 356+69
REMOVE EXISTING 36" CMP
42" RCCP CLASS III REQ'D
42" AEW'S REQ'D
BURY FLOW LINE 12".

STA 356+74, 40.5' LT
END OF PIPE ELEV = 882.53

EXISTING R/W

STA 356+63, 39.5' RT
END OF PIPE ELEV = 884.24

RIPRAP MEDIUM OVER
GEOTEXTILE FABRIC TYPE HR (TYP)

RESTORE DISTURBED AREAS OUTSIDE OF
SHOULDER LIMITS WITH SALVAGED TOPSOIL,
SEED, FERTILIZER, AND MULCH (TYP)

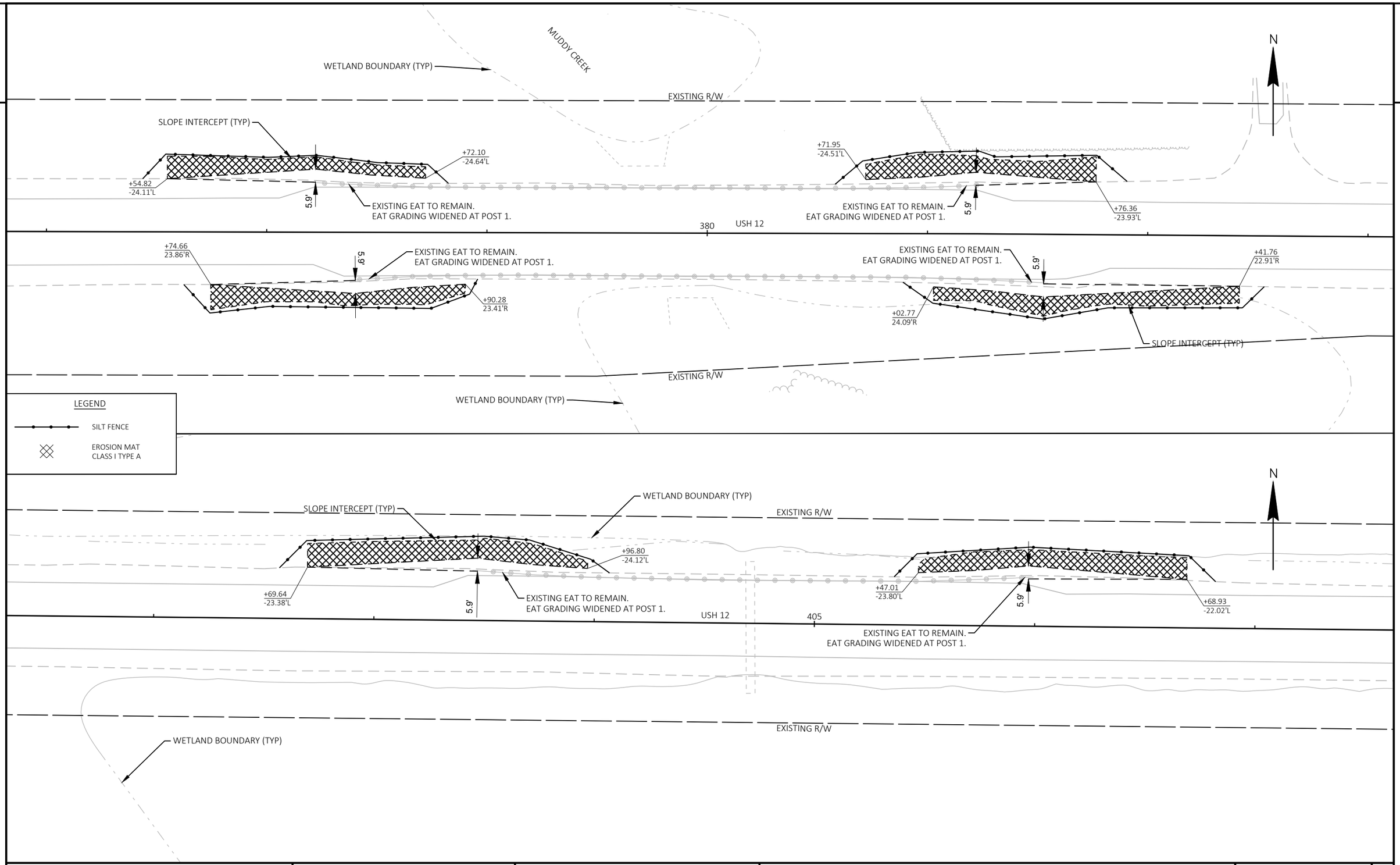
357+00

WETLAND BOUNDARY

2

PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CONSTRUCTION DETAILS - CULVERTS	SHEET 14	E

2



PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CONSTRUCTION DETAILS - BEAM GUARD	SHEET 15	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\021001_CD.DWG
LAYOUT NAME - 020208_cd_bmgrd
PLOT DATE : 1/31/2020 1:46 PM
PLOT BY : JOE MALENOFSKI
PLOT NAME :
PLOT SCALE : 1 IN:40 FT
WISDOT/CADDS SHEET 42

2

2

N

8.7' MGS GUARDRAIL 3 L SPAN

POST 1 EAT LT

MGS GUARDRAIL 3 L LIMITS

MGS GUARDRAIL 3

WETLAND BOUNDARY (TYP)

POST 9 EAT LT

SLOPE INTERCEPT (TYP)

POST 5 EAT LT

EROSION MAT
URBAN CLASS I TYPE A

MGS GUARDRAIL 3 L LIMITS

MGS GUARDRAIL 3

EXISTING R/W

POST 9 EAT LT

POST 5 EAT LT

POST 1 EAT LT

5.9'

+85.09
-23.45'L

+51.78
-20.00'L

+76.78
-20.00'L

+01.78
-20.00'L

+26.78
-20.00'L

+78.61
-20.00'L

+87.28
-20.00'L

+39.28
-20.00'L

+64.28
-20.00'L

+89.28
-20.00'L

5.9'

+14.28
-20.00'L

+97.34
-22.36'L

USH 12

420

REMOVE EXISTING EAT & INSTALL MGS
GUARDRAIL TERMINAL EAT WITHOUT 2' FLARE

REMOVE EXISTING EAT & INSTALL MGS
GUARDRAIL TERMINAL EAT WITHOUT 2' FLARE

LEGEND

SILT FENCE

EROSION MAT
CLASS I TYPE A

43" X 68" CPRCHE CL HE-III REQ'D

EXISTING R/W

EROSION MAT
URBAN CLASS I TYPE A

WETLAND BOUNDARY (TYP)

PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CONSTRUCTION DETAILS - BEAM GUARD	SHEET 16	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\021001_CD.DWG
LAYOUT NAME - 020209_cd_bmgrd

PLOT DATE : 4/18/2020 8:43 AM PLOT BY : JOE MALENOFSKI PLOT NAME : PLOT SCALE : 1 IN:40 FT

7090-02-71

Line	Item	Item Description	Unit	Total	Qty
0002	202.0105	Roadside Clearing	STA	5.000	5.000
0004	203.0100	Removing Small Pipe Culverts	EACH	5.000	5.000
0006	204.0100	Removing Pavement	SY	595.000	595.000
0008	204.0115	Removing Asphaltic Surface Butt Joints	SY	67.000	67.000
0010	204.0120	Removing Asphaltic Surface Milling	SY	113,700.000	113,700.000
0012	204.0126.S	Removing Asphaltic Longitudinal Notched Wedge Joint Milling	LF	91,000.000	91,000.000
0014	204.0165	Removing Guardrail	LF	270.000	270.000
0016	204.9060.S	Removing (item description) 01. Apron Endwall	EACH	1.000	1.000
0018	205.0100	Excavation Common	CY	1,450.000	1,450.000
0020	211.0100	Prepare Foundation for Asphaltic Paving (project) 01. 7090-02-71	LS	1.000	1.000
0022	211.0400	Prepare Foundation for Asphaltic Shoulders	STA	592.000	592.000
0024	213.0100	Finishing Roadway (project) 01. 7090-02-71	EACH	1.000	1.000
0026	305.0110	Base Aggregate Dense 3/4-Inch	TON	1,195.000	1,195.000
0028	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,085.000	1,085.000
0030	450.4000	HMA Cold Weather Paving	TON	3,500.000	3,500.000
0032	455.0605	Tack Coat	GAL	16,000.000	16,000.000
0034	460.0115.S	HMA Pavement Test Strips Volumetrics	EACH	1.000	1.000
0036	460.0120.S	HMA Pavement Test Strips Density	EACH	1.000	1.000
0038	460.2000	Incentive Density HMA Pavement	DOL	13,310.000	13,310.000
0040	460.6244	HMA Pavement 4 MT 58-34 S	TON	3,720.000	3,720.000
0042	460.6645	HMA Pavement 5 MT 58-34 V	TON	8,029.000	8,029.000
0044	460.8644	HMA Pavement 4 SMA 58-34 V	TON	9,050.000	9,050.000
0046	465.0105	Asphaltic Surface	TON	308.000	308.000
0048	465.0110	Asphaltic Surface Patching	TON	50.000	50.000
0050	465.0425	Asphaltic Shoulder Rumble Strips 2-Lane Rural	LF	59,200.000	59,200.000
0052	465.0475	Asphalt Centerline Rumble Strips 2-Lane Rural	LF	28,820.000	28,820.000
0054	511.1100	Temporary Shoring	SF	330.000	330.000
0056	520.8000	Concrete Collars for Pipe	EACH	2.000	2.000
0058	520.8700	Cleaning Culvert Pipes	EACH	3.000	3.000
0060	522.0118	Culvert Pipe Reinforced Concrete Class III 18-Inch	LF	16.000	16.000
0062	522.0142	Culvert Pipe Reinforced Concrete Class III 42-Inch	LF	80.000	80.000
0064	522.0430	Culvert Pipe Reinforced Concrete Class IV 30-Inch	LF	56.000	56.000
0066	522.1018	Apron Endwalls for Culvert Pipe Reinforced Concrete 18-Inch	EACH	2.000	2.000
0068	522.1024	Apron Endwalls for Culvert Pipe Reinforced Concrete 24-Inch	EACH	1.000	1.000
0070	522.1030	Apron Endwalls for Culvert Pipe Reinforced Concrete 30-Inch	EACH	2.000	2.000
0072	522.1042	Apron Endwalls for Culvert Pipe Reinforced Concrete	EACH	2.000	2.000

7090-02-71

Line	Item	Item Description	Unit	Total	Qty
		42-Inch			
0074	522.2343	Culvert Pipe Reinforced Concrete Horizontal Elliptical Class HE-III 43x68-Inch	LF	56.000	56.000
0076	522.2643	Apron Endwalls for Culvert Pipe Reinforced Concrete Horizontal Elliptical 43x68-Inch	EACH	2.000	2.000
0078	606.0200	Riprap Medium	CY	32.000	32.000
0080	614.0010	Barrier System Grading Shaping Finishing	EACH	8.000	8.000
0082	614.2300	MGS Guardrail 3	LF	50.000	50.000
0084	614.2340	MGS Guardrail 3 L	LF	113.000	113.000
0086	614.2610	MGS Guardrail Terminal EAT	EACH	2.000	2.000
0088	618.0100	Maintenance And Repair of Haul Roads (project) 01. 7090-02-71	EACH	1.000	1.000
0090	619.1000	Mobilization	EACH	1.000	1.000
0092	624.0100	Water	MGAL	16.300	16.300
0094	625.0500	Salvaged Topsoil	SY	393.000	393.000
0096	627.0200	Mulching	SY	328.000	328.000
0098	628.1504	Silt Fence	LF	1,515.000	1,515.000
0100	628.1520	Silt Fence Maintenance	LF	1,515.000	1,515.000
0102	628.1905	Mobilizations Erosion Control	EACH	3.000	3.000
0104	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0106	628.2002	Erosion Mat Class I Type A	SY	923.000	923.000
0108	628.2006	Erosion Mat Urban Class I Type A	SY	126.000	126.000
0110	628.7555	Culvert Pipe Checks	EACH	15.000	15.000
0112	629.0210	Fertilizer Type B	CWT	0.230	0.230
0114	630.0130	Seeding Mixture No. 30	LB	7.400	7.400
0116	630.0500	Seed Water	MGAL	9.400	9.400
0118	633.5200	Markers Culvert End	EACH	9.000	9.000
0120	642.5001	Field Office Type B	EACH	1.000	1.000
0122	643.0300	Traffic Control Drums	DAY	338.000	338.000
0124	643.0900	Traffic Control Signs	DAY	2,129.000	2,129.000
0126	643.1000	Traffic Control Signs Fixed Message	SF	36.000	36.000
0128	643.5000	Traffic Control	EACH	1.000	1.000
0130	645.0120	Geotextile Type HR	SY	57.000	57.000
0132	646.1020	Marking Line Epoxy 4-Inch	LF	18,900.000	18,900.000
0134	646.1040	Marking Line Grooved Wet Ref Epoxy 4-Inch	LF	60,400.000	60,400.000
0136	646.3040	Marking Line Grooved Wet Ref Epoxy 8-Inch	LF	190.000	190.000
0138	646.6464	Cold Weather Marking Epoxy 4-Inch	LF	79,300.000	79,300.000
0140	646.6468	Cold Weather Marking Epoxy 8-Inch	LF	190.000	190.000
0142	646.7120	Marking Diagonal Epoxy 12-Inch	LF	65.000	65.000
0144	649.0105	Temporary Marking Line Paint 4-Inch	LF	28,400.000	28,400.000

7090-02-71

Line	Item	Item Description	Unit	Total	Qty
0146	649.0120	Temporary Marking Line Epoxy 4-Inch	LF	18,900.000	18,900.000
0148	650.6000	Construction Staking Pipe Culverts	EACH	3.000	3.000
0150	650.8000	Construction Staking Resurfacing Reference	LF	30,476.000	30,476.000
0152	650.9910	Construction Staking Supplemental Control (project) 01. 7090-02-71	LS	1.000	1.000
0154	690.0150	Sawing Asphalt	LF	458.000	458.000
0156	690.0250	Sawing Concrete	LF	120.000	120.000
0158	740.0440	Incentive IRI Ride	DOL	11,210.000	11,210.000
0160	SPV.0090	Special 01. Ditch Cleaning	LF	120.000	120.000
0162	SPV.0105	Special 01. Material Transfer Vehicle	LS	1.000	1.000

204-REMOVALS

CATEGORY	STATION	TO	STATION	LOCATION	202.0105 ROADSIDE CLEARING STA	204.0100 REMOVING PAVEMENT SY	204.0115 REMOVING ASPHALTIC SURFACE BUTT JOINTS SY	690.0150 SAWING ASPHALT LF	690.0250 SAWING CONCRETE LF	REMARKS
0010	179+98	-	180+00	USH 12 LT & RT	---	---	7	28	---	PROJECT LIMITS
0010	212+21	-	212+46	USH 12 LT	---	---	6	25	---	CTH E
0010	212+25	-	212+55	USH 12 RT	---	---	7	30	---	CTH E
0010	238+77	-	239+00	USH 12 LT	---	---	6	23	---	670TH ST
0010	293+00	-	295+00	USH 12 LT	2	---	---	---	---	BRUSH CLEARING
0010	318+15	-	318+40	USH 12 LT	---	---	6	25	---	730TH ST
0010	318+18	-	318+42	USH 12 RT	---	---	6	25	---	730TH ST
0010	329+00	-	331+00	USH 12 RT	2	---	---	---	---	BRUSH CLEARING
0010	332+60	-	333+20	USH 12 LT & RT	---	135	---	60	40	CULVERT REPLACEMENT
0010	346+00	-	347+00	USH 12 LT & RT	1	---	---	---	---	BRUSH CLEARING
0010	356+11	-	357+26	USH 12 LT & RT	---	255	---	60	40	CULVERT REPLACEMENT
0010	371+00	-	371+23	USH 12 RT	---	---	6	23	---	765TH ST
0010	418+37	-	419+29	USH 12 LT & RT	---	205	---	60	40	CULVERT REPLACEMENT
0010	474+92	-	475+29	USH 12 RT	---	---	9	37	---	850TH ST
0010	475+85	-	475+85	USH 12 RT	---	---	6	27	---	PROJECT LIMITS
0010	476+96	-	476+98	USH 12 LT	---	---	8	35	---	PROJECT LIMITS
				TOTAL 0010	5	595	67	458	120	

614-GUARDRAIL

CATEGORY	STATION	TO	STATION	LOCATION	204.0165 REMOVING GUARDRAIL LF	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	614.0010 BARRIER SYSTEM GRADING SHAPING FINISHING EACH	614.2300 MGS GUARDRAIL 3 LF	614.2340 MGS GUARDRAIL 3 L LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH	REMARKS
0010	377+54	-	378+72	USH 12 LT	---	20	1	---	---	---	
0010	377+74	-	378+90	USH 12 RT	---	20	1	---	---	---	
0010	380+71	-	381+76	USH 12 LT	---	23	1	---	---	---	
0010	381+02	-	382+41	USH 12 RT	---	24	1	---	---	---	
0010	402+69	-	403+96	USH 12 LT	---	30	1	---	---	---	
0010	405+47	-	406+69	USH 12 LT	---	26	1	---	---	---	
0010	417+51	-	418+01	USH 12 LT	50	23	1	---	---	1	
0010	418+01	-	418+26	USH 12 LT	25	---	---	25	---	---	
0010	418+26	-	419+39	USH 12 LT	120	---	---	---	113	---	
0010	419+39	-	419+64	USH 12 LT	25	---	---	25	---	---	
0010	419+64	-	420+14	USH 12 LT	50	29	1	---	---	1	
0010	179+97	-	476+98	USH 12	---	1,000	---	---	---	---	UNDISTRIBUTED - SHOULDERS
				TOTAL 0010	270	1,195	8	50	113	2	

3

BARRIER SYSTEM GRADING SHAPING FINISHING

FOR INFORMATIONAL PURPOSES ONLY

LOCATION	STATION	TO	STATION	BARRIER SYSTEM GRADING SHAPING FINISHING	CUT	UNEXPANDED FILL	EXPANDED FILL (1.3)	SALVAGED TOPSOIL	FERTILIZER TYPE B	SEEDING	CONSTRUCTION STAKING BASE	CONSTRUCTION STAKING SLOPE STAKES
				EACH	CY	CY	CY	SY	CWT	LB	LF	LF
USH 12												
	377+55 LT	-	378+72 LT	1	5	0	0	84	0.05	1.5	117	117
	377+75 RT	-	378+90 RT	1	23	2	3	86	0.05	1.5	115	115
	380+72 LT	-	381+76 LT	1	18	7	9	98	0.06	1.8	104	104
	381+03 RT	-	382+42 RT	1	20	5	7	103	0.06	1.9	139	139
	402+70 LT	-	403+97 LT	1	22	18	23	127	0.08	2.3	127	127
	405+47 LT	-	406+69 LT	1	16	14	18	110	0.07	2.0	122	122
	416+85 LT	-	420+97 LT	2	85	18	23	220	0.14	4.0	412	412
			TOTAL	**8**	**189**	**64**	**83**	**828**	**0.52**	**14.9**	**1,136**	**1,136**

460-PAVEMENT

CATEGORY	STATION	TO	STATION	LOCATION	204.0120 REMOVING ASPHALTIC SURFACE MILLING SY	204.0126.S REMOVING ASPHALTIC LONGITUDINAL NOTCHED WEDGE JOINT MILLING LF	211.0100.01 PREPARE FOUNDATION FOR ASPHALTIC PAVING (PROJECT) (01. 7090-02-71) LS	211.0400 PREPARE FOUNDATION FOR ASPHALTIC SHOULDERS STA	213.0100.01 FINISHING ROADWAY (PROJECT) (01. 7090-02-71) EACH	450.4000 HMA COLD WEATHER PAVING TON	455.0605 TACK COAT GAL	460.6244 HMA PAVEMENT 4 MT 58-34 S TON	460.6645 HMA PAVEMENT 5 MT 58-34 V TON	460.8644 HMA PAVEMENT 4 SMA 58-34 V TON
0010	332+80	-	333+00	USH 12	---	---	---	---	---	---	---	---	---	---
0010	356+41	-	356+96	USH 12	---	---	---	---	---	---	---	---	---	---
0010	418+71	-	418+95	USH 12	---	---	---	---	---	---	---	---	---	---
0010	179+97	-	476+98	USH 12	113,700	91,000	1	---	1	3,100	14,140	2,280	7,130	9,050
0010	179+97	-	476+98	USH 12 (UNDISTRIBUTED)	---	---	---	---	---	---	---	---	---	---
				TOTAL 0010	113,700	91,000	1	0	1	3,100	14,140	2,280	7,130	9,050
0020	179+97	-	476+98	USH 12	---	---	---	592	---	400	1,860	1,440	899	---
				TOTAL 0020	0	0	0	592	0	400	1,860	1,440	899	0
				PROJECT TOTAL	113,700	91,000	1	592	1	3,500	16,000	3,720	8,029	9,050

460-PAVEMENT

CATEGORY	STATION	TO	STATION	LOCATION	465.0105 ASPHALTIC SURFACE TON	465.0110 ASPHALTIC SURFACE PATCHING TON	465.0425 ASPHALTIC SHOULDER RUMBLE STRIPS 2-LANE RURAL LF	465.0475 ASPHALT CENTERLINE RUMBLE STRIPS 2-LANE RURAL LF	SPV.0105.01 SPECIAL (01. MATERIAL TRANSFER VEHICLE) LS	460.0120.S HMA PAVEMENT TEST STRIPS DENSITY EACH	460.0115.S HMA PAVEMENT TEST STRIPS VOLUMETRICS EACH	REMARKS
0010	332+80	-	333+00	USH 12	22	---	---	---	---	---	---	CULVERT REPLACEMENT
0010	356+41	-	356+96	USH 12	60	---	---	---	---	---	---	CULVERT REPLACEMENT
0010	418+71	-	418+95	USH 12	26	---	---	---	---	---	---	CULVERT REPLACEMENT
0010	179+97	-	476+98	USH 12	---	---	---	28,820	1	1	1	
0010	179+97	-	476+98	USH 12 (UNDISTRIBUTED)	200	50	---	---	---	---	---	465.0105: SPOT LANE FAILURES 465.0110: POT HOLES, POP-OUTS, RAMPING
				TOTAL 0010	308	50	0	28,820	1	1	1	
0020	179+97	-	476+98	USH 12	---	---	59,200	---	---	---	---	
				TOTAL 0020	0	0	59,200	0	0	0	0	
				PROJECT TOTAL	308	50	59,200	28,820	1	1	1	

520-Culverts & Shoulder Grading

CATEGORY	STATION	TO	STATION	LOCATION	203.0100 REMOVING SMALL PIPE CULVERTS EACH	204.9060.S.01 REMOVING (ITEM DESCRIPTION) (01. APRON ENDWALL) EACH	205.0100 EXCAVATION COMMON CY	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON	511.1100 TEMPORARY SHORING SF	520.8000 CONCRETE COLLARS FOR PIPE EACH	520.8700 CLEANING CULVERT PIPES EACH	522.0118 CULVERT PIPE REINFORCED CONCRETE CLASS III 18-INCH LF	522.0142 CULVERT PIPE REINFORCED CONCRETE CLASS III 42-INCH LF	REMARKS
0010	204+30	-	204+30	USH 12 LT & RT	2	---	---	---	---	2	1	16	---	EXISTING 18" RCP
0010	332+60	-	333+20	USH 12 LT & RT	1	---	250	220	---	---	---	---	---	EXISTING 30" CMP
0010	356+11	-	357+26	USH 12 LT & RT	1	---	670	425	200	---	---	---	80	EXISTING 36" CMP
0010	370+63	-	370+63	USH 12 LT	---	1	---	---	---	---	---	---	---	EXISTING 24" RCP
0010	391+41	-	391+41	USH 12 LT & RT	---	---	---	---	---	---	1	---	---	
0010	404+71	-	404+71	USH 12 LT & RT	---	---	---	---	---	---	1	---	---	
0010	418+37	-	419+29	USH 12 LT & RT	1	---	480	340	130	---	---	---	---	EXISTING 48" CMP
				TOTAL 0010	5	1	1,400	985	330	2	3	16	80	
0020	179+97	-	476+98	USH 12 (UNDISTRIBUTED)	---	---	50	100	---	---	---	---	---	Shoulder Widening - Base Repair
				TOTAL 0020	0	0	50	100	0	0	0	0	0	
				PROJECT TOTAL	5	1	1,450	1,085	330	2	3	16	80	

520-Culverts & Shoulder Grading

CATEGORY	STATION	TO	STATION	LOCATION	522.0430 CULVERT PIPE REINFORCED CONCRETE CLASS IV 30-INCH LF	522.1018 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 18-INCH EACH	522.1024 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 24-INCH EACH	522.1030 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 30-INCH EACH	522.1042 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 42-INCH EACH	522.2343 CULVERT PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL CLASS HE-III 43X68-INCH LF	522.2643 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL 43X68-INCH EACH	624.0100 WATER MGAL	633.5200 MARKERS CULVERT END EACH	650.6000 CONSTRUCTION STAKING PIPE CULVERTS EACH
0010	204+30	-	204+30	USH 12 LT & RT	---	2	---	---	---	---	---	---	2	---
0010	332+60	-	333+20	USH 12 LT & RT	56	---	---	2	---	---	---	3.3	2	1
0010	356+11	-	357+26	USH 12 LT & RT	---	---	---	---	2	---	---	6.4	2	1
0010	370+63	-	370+63	USH 12 LT	---	---	1	---	---	---	---	---	1	---
0010	391+41	-	391+41	USH 12 LT & RT	---	---	---	---	---	---	---	---	---	---
0010	404+71	-	404+71	USH 12 LT & RT	---	---	---	---	---	---	---	---	---	---
0010	418+37	-	419+29	USH 12 LT & RT	---	---	---	---	---	56	2	5.1	2	1
				TOTAL 0010	56	2	1	2	2	56	2	14.8	9	3
0020	179+97	-	476+98	USH 12 (UNDISTRIBUTED)	---	---	---	---	---	---	---	1.5	---	---
				TOTAL 0020	0	0	0	0	0	0	0	1.5	0	0
				PROJECT TOTAL	56	2	1	2	2	56	2	16.3	9	3

2

EARTHWORK SUMMARY

From/To Station	Location	205.0100 Common Excavation (1)		Salvaged/Unusable Pavement Material (4)	Available Material (5)	Unexpanded Fill	Expanded Fill (6)	Mass Ordinate +/- (7)	Waste	Comment:
		Cut (2) CY	EBS Excavation (3) CY	CY	CY	CY	Factor 1.30 CY	CY	CY	
332+60.00 - 333+20.00	USH 12	247	0	57	190	0	0	190	190	Culvert Transition Cut
356+11.00 - 357+26.00	USH 12	670	0	110	560	0	0	560	560	Culvert Transition Cut
418+37.00 - 419+29.00	USH 12	478	0	88	390	0	0	390	390	Culvert Transition Cut
		1,395	0	255	1,140	0	0	1,140	1,140	
Total Common Exc		**1,395**								

Notes:

(1) Common Excavation is the sum of the Cut and EBS Excavation columns. Item number 205.0100 (includes existing asphaltic pavement).

(2) Salvaged/Unsuable Pavement Material is included in Cut.

(3) EBS Excavation to be backfilled with Cut material.

(4) Salvaged/Unusable Pavement Material.

(5) Available Material = Cut - Salvaged/Unusuable Pavement Material

(6) Expanded Fill Factor = 1.3; Expanded Fill = Unexpanded Fill * Fill Factor

(7) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material within the Division. Minus indicates a shortage of material within the Division.

2

618-Maint-Mob-Office

CATEGORY	STATION	TO	STATION	LOCATION	618.0100.01 MAINTENANCE AND REPAIR OF HAUL ROADS (PROJECT) (01. 7090-02-71) EACH	619.1000 MOBILIZATION EACH	642.5001 FIELD OFFICE TYPE B EACH
0010	179+97	-	476+98	USH 12 (PROJECT)	1	1	1
				TOTAL 0010	1	1	1

630-EROSION CONTROL

CATEGORY	STATION	TO	STATION	LOCATION	606.0200 RIPRAP MEDIUM CY	625.0500 SALVAGED TOPSOIL SY	627.0200 MULCHING SY	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH	628.2002 EROSION MAT CLASS I TYPE A SY	628.2006 EROSION MAT URBAN CLASS I TYPE A SY	628.7555 CULVERT PIPE CHECKS EACH	629.0210 FERTILIZER TYPE B CWT	630.0130 SEEDING MIXTURE NO. 30 LB	630.0500 SEED WATER MGAL	645.0120 GEOTEXTILE TYPE HR SY	REMARKS
0010	204+30	-	204+30	USH 12 LT	---	17	17	---	---	---	---	---	---	---	0.01	0.3	0.4	---	
0010	204+30	-	204+30	USH 12 RT	---	17	17	---	---	---	---	---	---	2	0.01	0.3	0.4	---	
0010	278+21	-	278+21	USH 12 LT	2	---	---	---	---	---	---	---	---	---	---	---	---	3	
0010	278+21	-	278+21	USH 12 RT	2	---	---	---	---	---	---	---	---	---	---	---	---	4	
0010	332+90	-	332+90	USH 12 LT	4	36	36	---	---	---	---	---	---	---	0.02	0.7	0.8	7	
0010	332+90	-	332+90	USH 12 RT	4	35	35	---	---	---	---	---	---	3	0.02	0.6	0.8	7	
0010	356+69	-	356+69	USH 12 LT	7	83	83	---	---	---	---	---	---	---	0.05	1.5	1.9	13	
0010	356+69	-	356+69	USH 12 RT	7	110	110	---	---	---	---	---	51	3	0.07	2.0	2.5	13	
0010	377+54	-	378+72	USH 12 LT	---	---	---	147	147	---	---	84	---	---	---	---	---	---	BEAMGUARD GRADING
0010	377+74	-	378+90	USH 12 RT	---	---	---	145	145	---	---	86	---	---	---	---	---	---	BEAMGUARD GRADING
0010	380+70	-	381+76	USH 12 LT	---	---	---	142	142	---	---	98	---	---	---	---	---	---	BEAMGUARD GRADING
0010	381+02	-	382+41	USH 12 RT	---	---	---	172	172	---	---	110	---	---	---	---	---	---	BEAMGUARD GRADING
0010	402+69	-	403+96	USH 12 LT	---	---	---	158	158	---	---	130	---	---	---	---	---	---	BEAMGUARD GRADING
0010	405+47	-	406+68	USH 12 LT	---	---	---	155	155	---	---	110	---	---	---	---	---	---	BEAMGUARD GRADING
0010	416+85	-	420+97	USH 12 LT	---	---	---	456	456	---	---	220	---	---	---	---	---	---	BEAMGUARD GRADING
0010	418+83	-	418+83	USH 12	3	60	---	---	---	---	---	---	60	4	0.03	1.0	1.4	5	
0010	179+97	-	476+98	USH 12	3	35	30	140	140	3	3	85	15	3	0.02	1.0	1.4	5	UNDISTRIBUTED
				TOTAL 0010	32	393	328	1,515	1,515	3	3	923	126	15	0.23	7.4	9.4	57	

643-TRAFFIC CONTROL

CATEGORY	ROADWAY	643.5000 TRAFFIC CONTROL EACH
0010	USH 12 (PROJECT)	1
	TOTAL 0010	1

643-TRAFFIC CONTROL

CATEGORY	ROADWAY	LOCATION	USAGE	DURATION DAYS**	643.0300 TRAFFIC CONTROL DRUMS EACH**	643.0300 TRAFFIC CONTROL DRUMS DAY	643.0900 TRAFFIC CONTROL SIGNS EACH**	643.0900 TRAFFIC CONTROL SIGNS DAY	643.1000 TRAFFIC CONTROL SIGNS FIXED MESSAGE SF	REMARKS
0010	USH 12	W PROJECT LIMITS	ADVANCED WARNING	101	---	---	5	505	18	PLACE G20-57 SIGN 7 DAYS PRIOR TO START OF CONSTRUCTION
0010	USH 12	E PROJECT LIMITS	ADVANCED WARNING	101	---	---	5	505	18	PLACE G20-57 SIGN 7 DAYS PRIOR TO START OF CONSTRUCTION
0010	USH 12	SIDE ROADS	ADVANCED WARNING	101	---	---	7	707	---	SDD 15C4
0010	USH 12	BEAMGUARD WORK	SHOULDER CLOSURES	13	10	130	6	78	---	SDD 15D28
0010	USH 12	CULVERTS	CULVERT WORK	8	26	208	6	48	---	CONSTRUCTION DETAIL
0010	USH 12	ROADWAY	MILLING OPERATIONS	11	---	---	26	286	---	SDD 15D44
			TOTAL 0010			338		2,129	36	

** FOR INFORMATION ONLY

646-PAVEMENT MARKING

CATEGORY	STATION	TO	STATION	LOCATION	646.1020 MARKING LINE EPOXY 4-INCH LF	646.1040 MARKING LINE GROOVED WET REF EPOXY 4-INCH LF	646.3040 MARKING LINE GROOVED WET REF EPOXY 8-INCH LF	646.6464 COLD WEATHER MARKING EPOXY 4-INCH LF	646.6468 COLD WEATHER MARKING EPOXY 8-INCH LF	646.7120 MARKING DIAGONAL EPOXY 12-INCH LF	649.0105 TEMPORARY MARKING LINE PAINT 4-INCH LF	649.0120 TEMPORARY MARKING LINE EPOXY 4-INCH LF
0010	179+97	-	468+10.34	USH 12	---	---	---	---	---	---	---	---
0010	179+97	-	476+98	USH 12 (PROJECT)	18,900	60,400	190	79,300	190	65	28,400	18,900
				TOTAL 0010	18,900	60,400	190	79,300	190	65	28,400	18,900

650-CONSTRUCTION STAKING

CATEGORY	STATION	TO	STATION	LOCATION	650.8000 CONSTRUCTION STAKING RESURFACING REFERENCE LF	650.9910.01 CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) (01. 7090-02-71) LS
0010	179+97	-	475+85	USH 12 (EB)	29,588	1
0010	468+10	-	476+98	USH 12 (WB)	888	---
				TOTAL 0010	30,476	1

DITCH CLEANING

CATEGORY	STATION	TO	STATION	LOCATION	SPV.0090.01 LF	REMARKS
0010	356+25	-	356+95	USH 12 RT	70	
0010	179+97	-	476+98	USH 12	50	UNDISTRIBUTED
				TOTAL 0010	120	

PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN	SHEET 27	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\050201_PN.DWG
LAYOUT NAME - 050201_pn

PLOT DATE : 1/31/2020 1:48 PM PLOT BY : JOE MALENOFSKI PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44

PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN	SHEET 28	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\050201_PN.DWG
LAYOUT NAME - 050202_pn

PLOT DATE : 1/31/2020 1:48 PM PLOT BY : JOE MALENOFSKI PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44

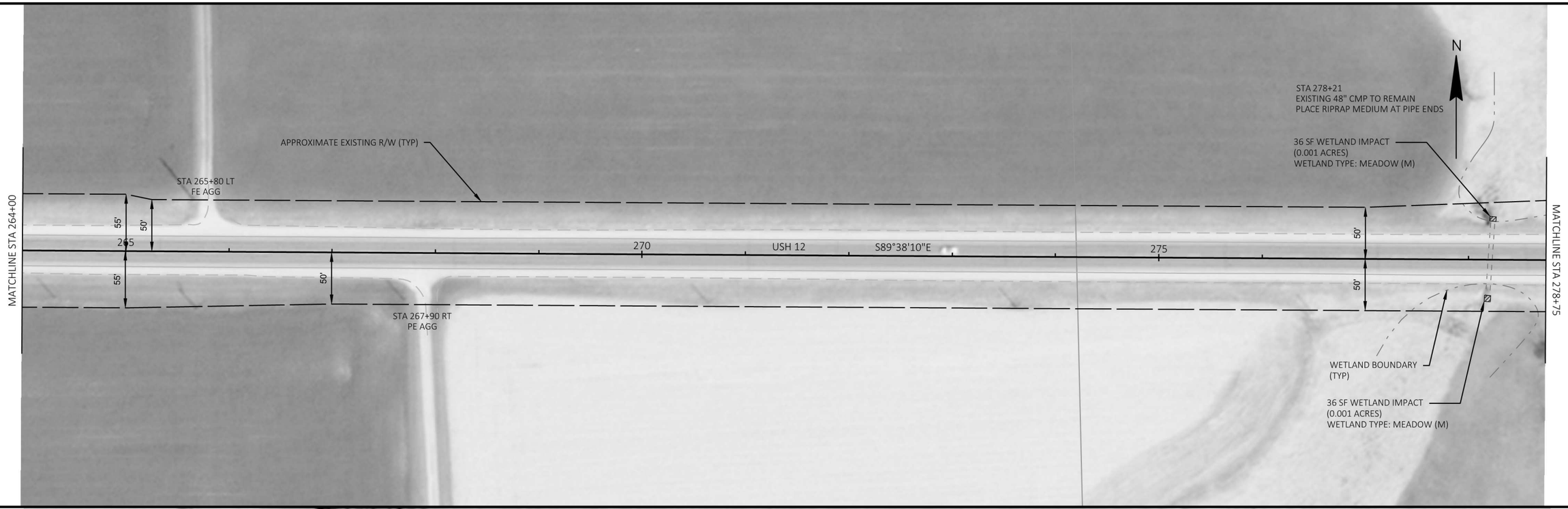
5

5

PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN	SHEET 29	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\050201_PN.DWG
LAYOUT NAME - 050203_pn

PLOT DATE : 1/31/2020 1:48 PM PLOT BY : JOE MALENOFSKI PLOT NAME : PLOT SCALE : 1 IN:100 FT



PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN	SHEET 30 E

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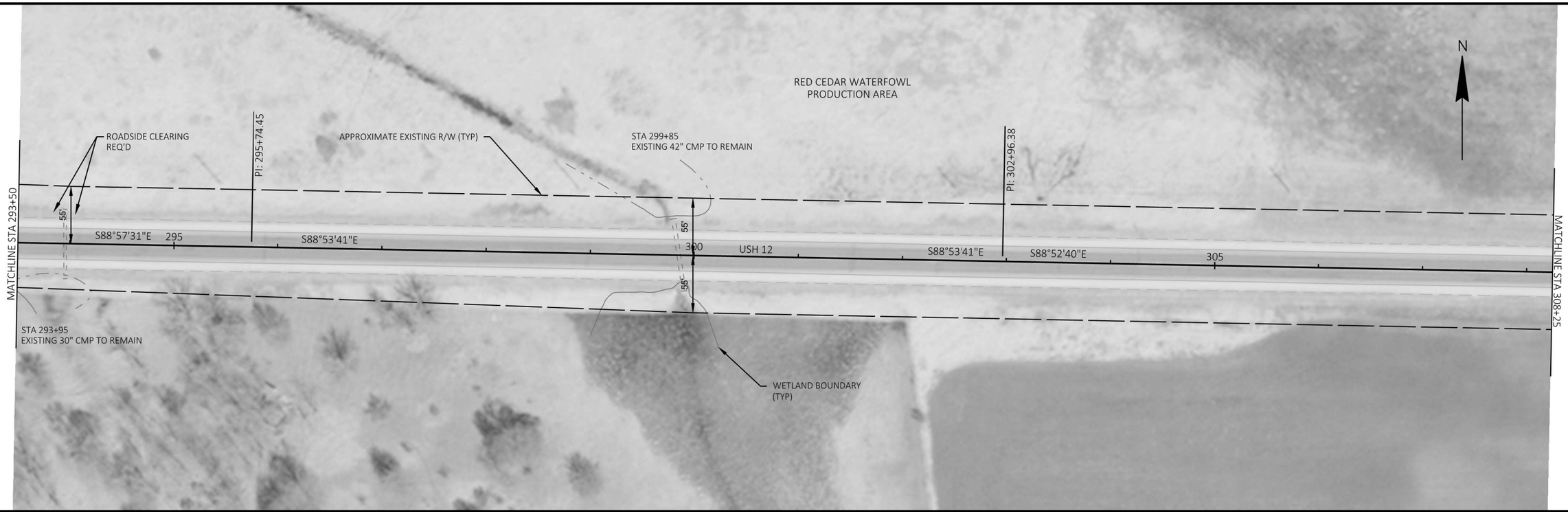
LAYOUT NAME - 050204_pn

PLOT DATE : 1/31/2020 1:48 PM PLOT BY : JOE MALENOFSKI PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44



PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN	SHEET 31	E

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LAYOUT NAME - 050205_pn

PLOT DATE : 1/31/2020 1:49 PM PLOT BY : JOE MALENOFSKI PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44

5

PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN	SHEET 32	E

PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN	SHEET 33 E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\050201_PN.DWG
LAYOUT NAME - 050207_pn

PLOT DATE : 1/31/2020 1:49 PM PLOT BY : JOE MALENOFSKI PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44

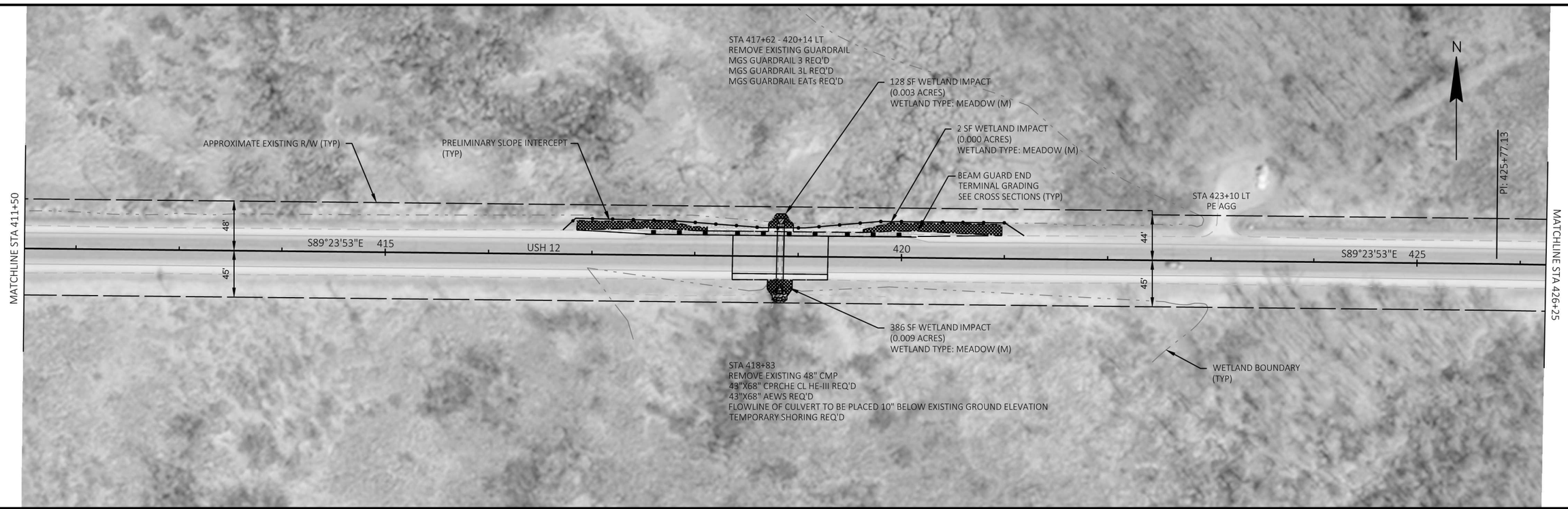
5

5

PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN	SHEET 34	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\050201_PN.DWG
LAYOUT NAME - 050208_pn

PLOT DATE : 1/31/2020 1:49 PM PLOT BY : JOE MALENOFSKI PLOT NAME : PLOT SCALE : 1 IN:100 FT



PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN	SHEET 35	E

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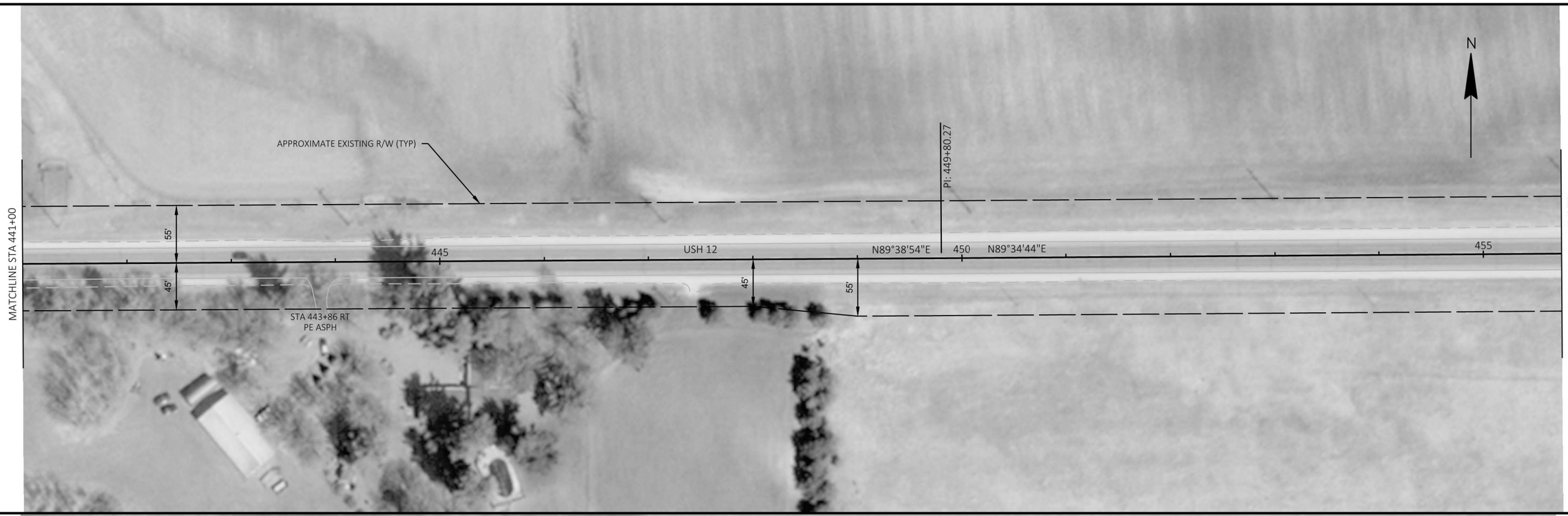
LAYOUT NAME - 050209_pn

PLOT DATE : 1/31/2020 1:49 PM PLOT BY : JOE MALENOFSKI PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44



PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN	SHEET 36 E

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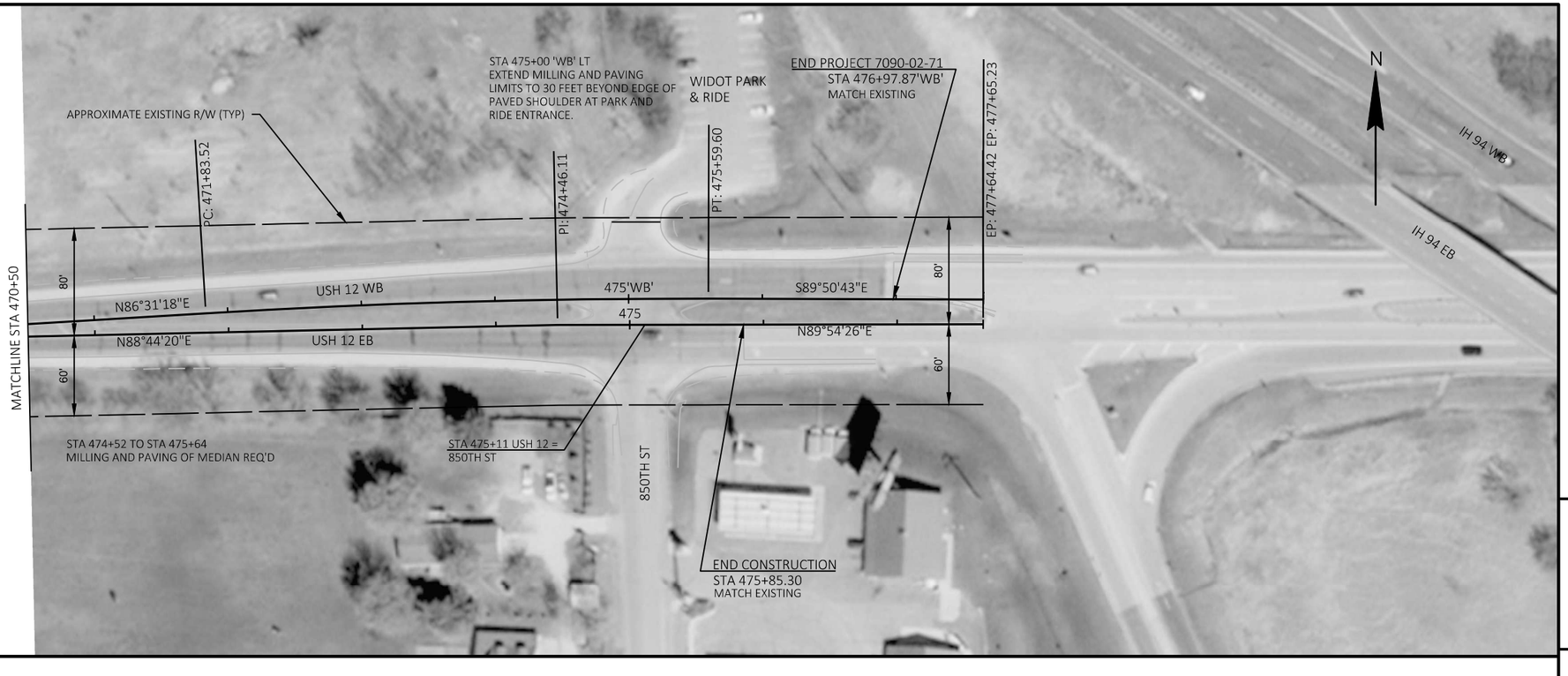
LAYOUT NAME - 0502010_pn

PLOT DATE : 1/31/2020 1:49 PM PLOT BY : JOE MALENOFSKI PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44



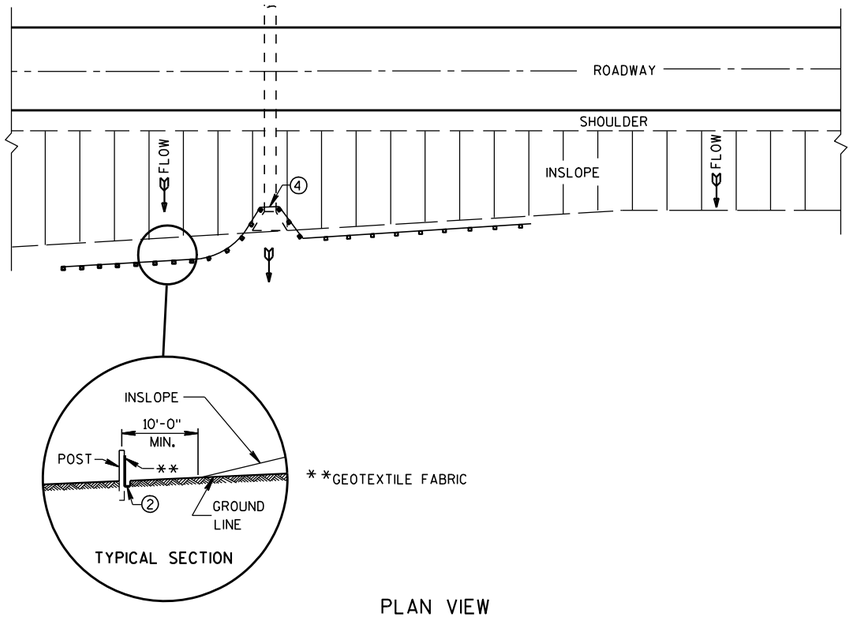
5

5

PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	PLAN	SHEET 37	E

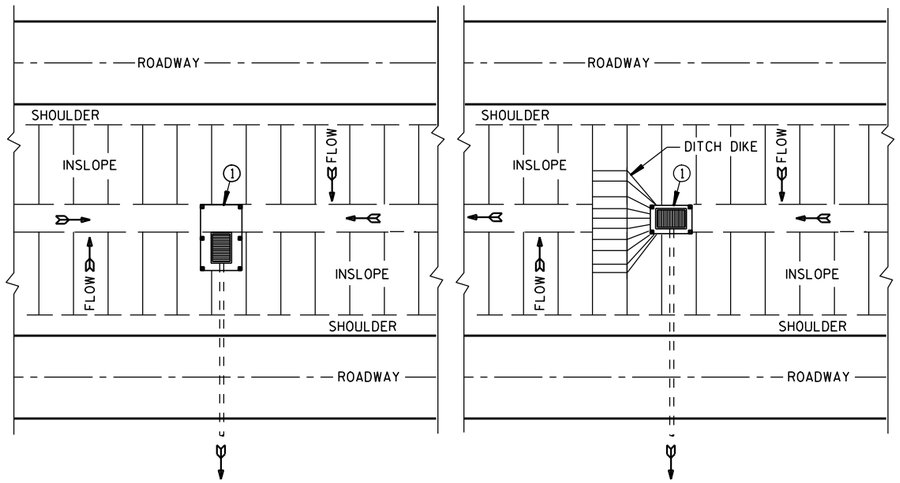
Standard Detail Drawing List

08E09-06	SILT FENCE
08E15-01	CULVERT PIPE CHECK
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F02-01	APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
13A10-02A	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-02B	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-02C	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-02D	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A11-03A	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13A11-03B	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13C19-01	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
14B43-04A	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
14B43-04B	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
14B43-04C	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
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
15C02-07F	ADVANCED WIDTH RESTRICTION SIGNING
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C08-19A	LONGITUDINAL MARKING (MAINLINE)
15C08-19B	PAVEMENT MARKING (TURN LANES)
15C08-19C	PAVEMENT MARKING (TURN LANES)
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-07	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C18-04	MEDIAN ISLAND MARKING
15C19-06A	MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY
15C19-06B	MOVING PAVEMENT MARKING OPERATION MULTI-LANE UNDIVIDED ROADWAY
15C19-06C	MOVING PAVEMENT MARKING OPERATION MULTI-LANE DIVIDED ROADWAY
15C35-04A	PAVEMENT MARKING (INTERSECTIONS)
15D28-03	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS
15D39-02	TRAFFIC CONTROL, DROP-OFF SIGNING
15D44-01	TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES
15D45-01	TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH LOOSE GRAVEL



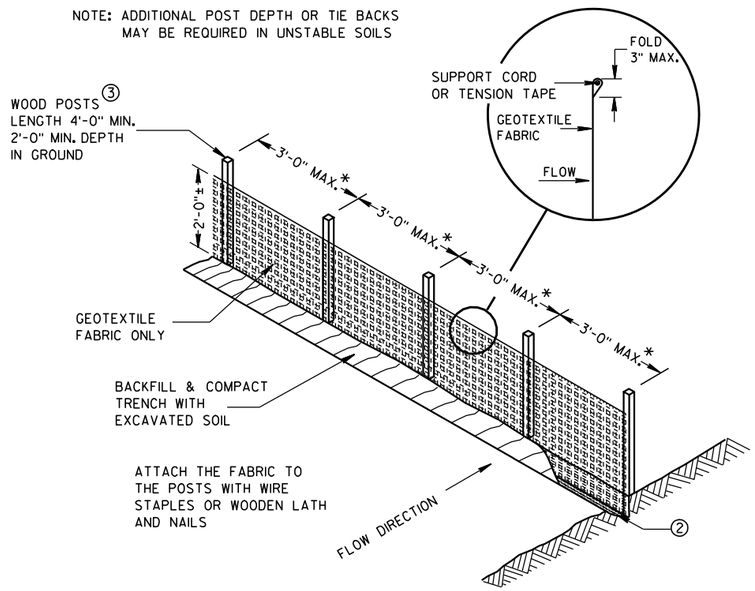
PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



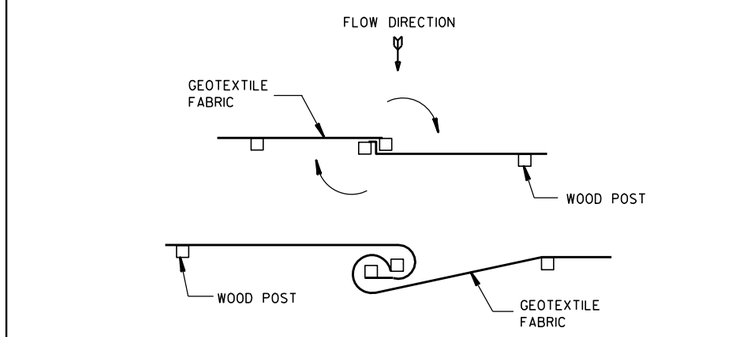
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

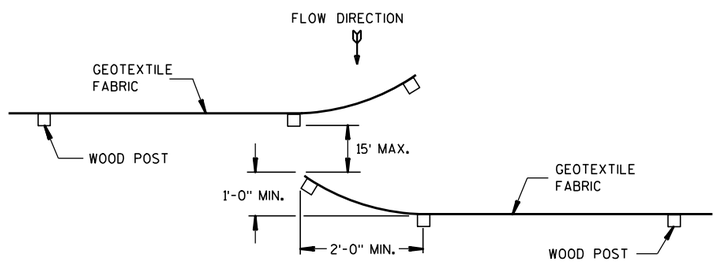


*NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.

SILT FENCE



TWIST METHOD



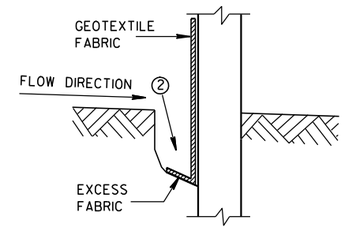
HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE 5

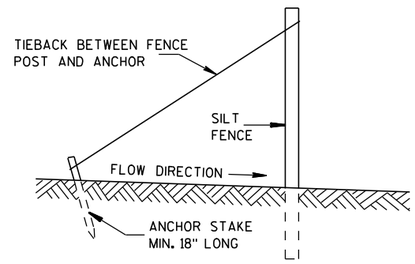
GENERAL NOTES

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

1. HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
2. FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL BE A MINIMUM SIZE OF 1⅛" X 1⅛" OF OAK OR HICKORY.
4. SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
5. CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



TRENCH DETAIL



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

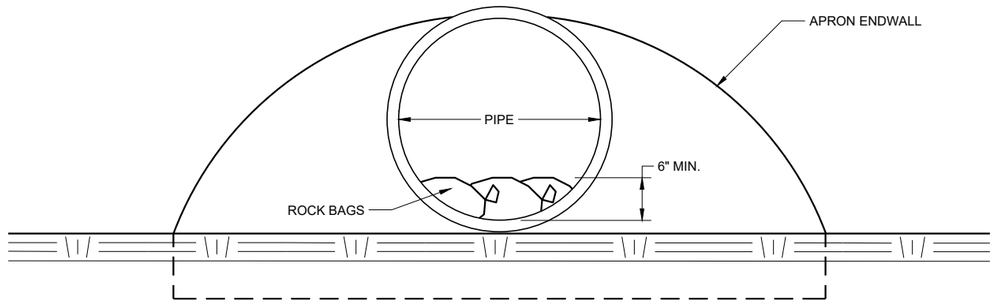
APPROVED
4-29-05 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

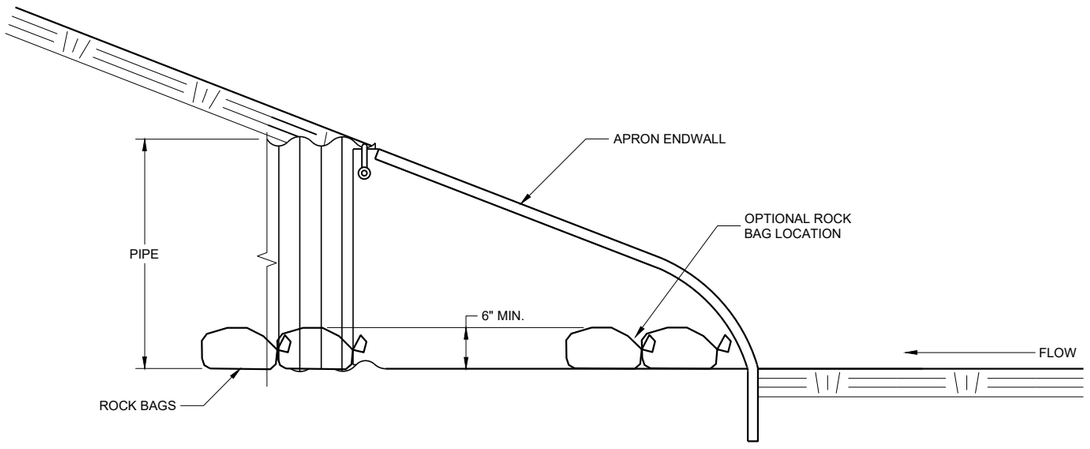
S.D.D. 8 E 9-6

6

S.D.D. 8 E 9-6



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

FHWA

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METAL APRON ENDWALLS

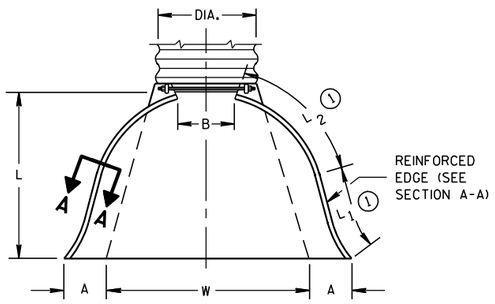
PIPE DIA. (IN.)	MIN. THICK. (Inches) STEEL	MIN. THICK. (Inches) ALUM.	DIMENSIONS (Inches) A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")	APPROX. SLOPE	BODY
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4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

× EXCEPT CENTER PANEL SEE GENERAL NOTES

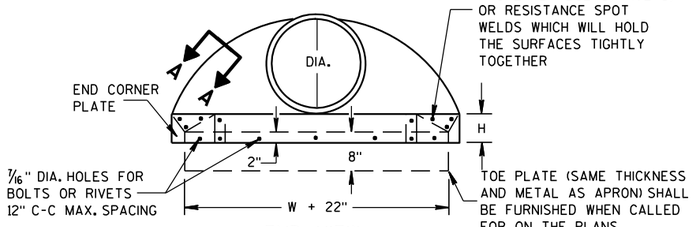
REINFORCED CONCRETE APRON ENDWALLS

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

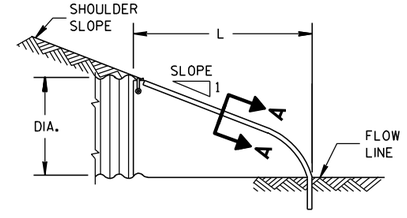
*MINIMUM
**MAXIMUM



PLAN VIEW

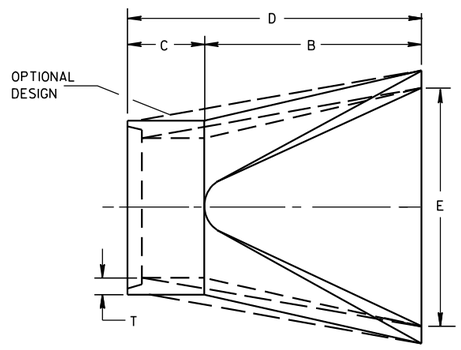


END VIEW

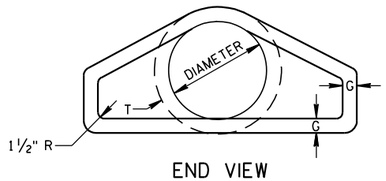


SIDE ELEVATION

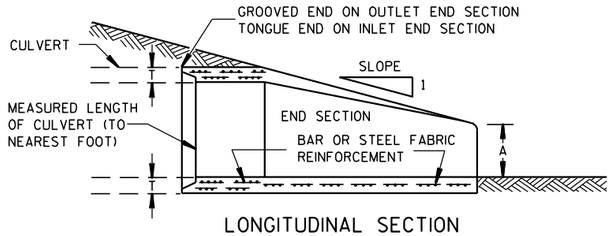
METAL ENDWALLS



PLAN

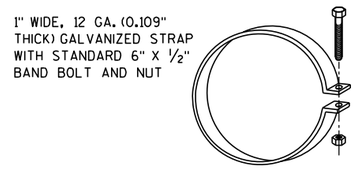


END VIEW



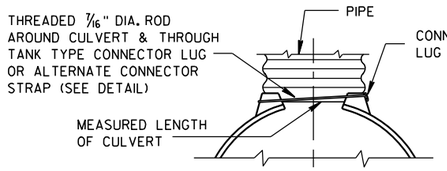
LONGITUDINAL SECTION

CONCRETE ENDWALLS

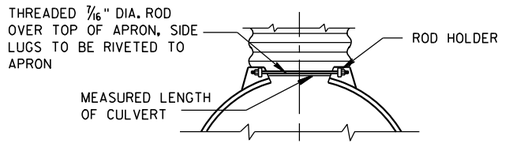


ALTERNATE FOR TYPE 1 CONNECTION

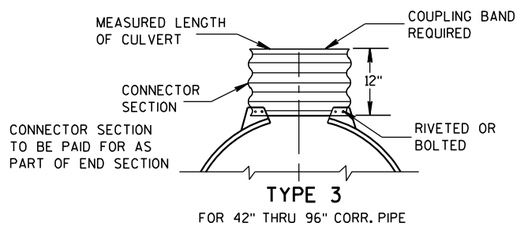
END SECTION CONNECTOR STRAP



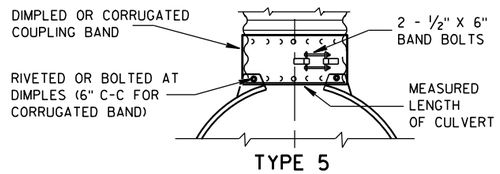
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

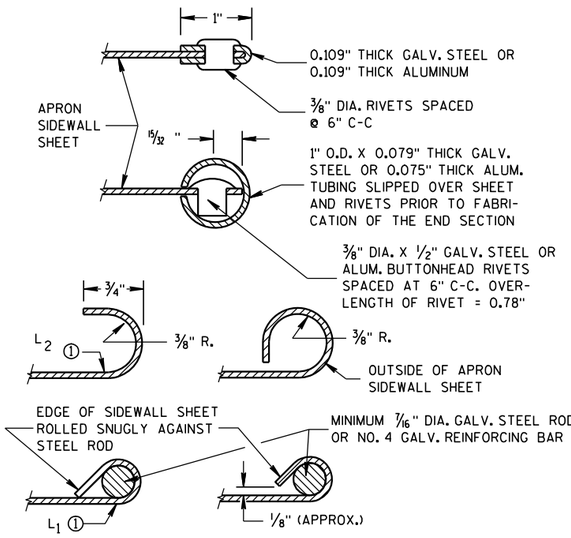
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

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

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

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

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

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

APRON ENDWALLS FOR CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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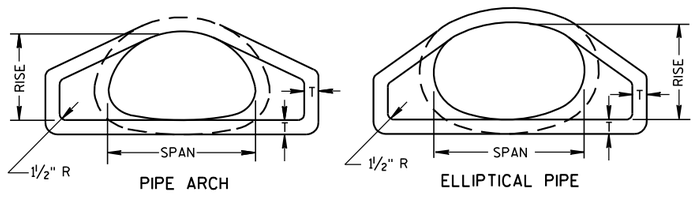
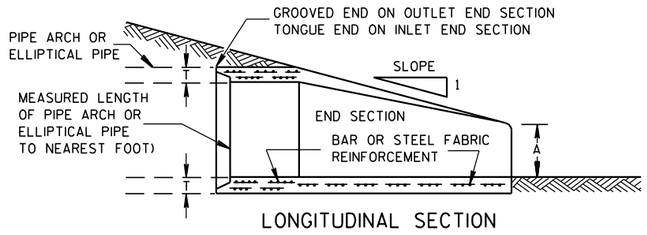
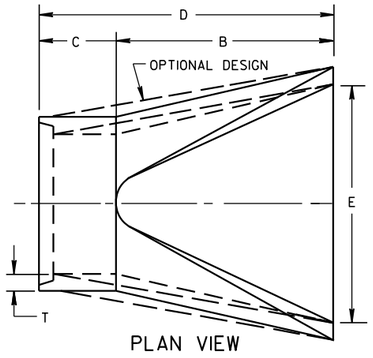
S.D.D. 8 F 1-11



END VIEW

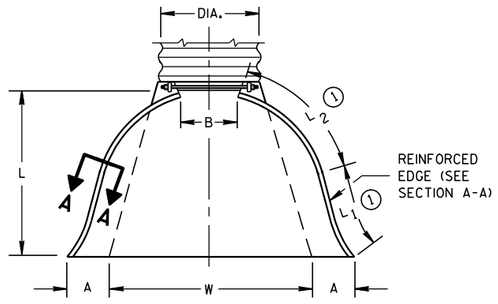


LONGITUDINAL SECTION

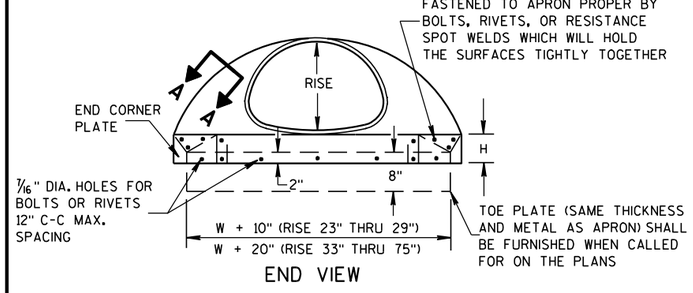


PLAN VIEW

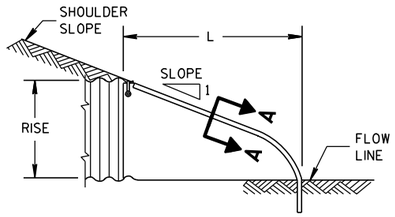
CONCRETE ENDWALLS



PLAN VIEW

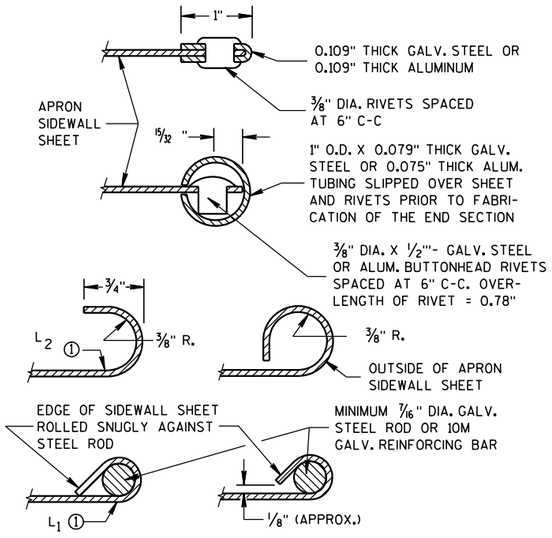


END VIEW



SIDE ELEVATION

METAL ENDWALLS



SECTION A-A

2- 2/3" X 1/2" CORRUGATIONS

EQUIV. DIA. (Inches)	(Inches) SPAN	(Inches) RISE	MIN. THICK. (Inches) STEEL	MIN. THICK. (Inches) ALUM.	DIMENSIONS (Inches) A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")	APPROX. SLOPE	BODY
15	17	13	.064	.060	7	9	6	19	14	16	30	2½ to 1	1 Pc.
18	21	15	.064	.060	7	10	6	23	14	19⅜	36	2½ to 1	1 Pc.
21	24	18	.064	.060	8	12	6	28	18	21¾	42	2½ to 1	1 Pc.
24	28	20	.064	.060	9	14	6	32	18	27½	48	2½ to 1	1 Pc.
30	35	24	.079	.075	10	16	6	39	18	37⅝	60	2½ to 1	1 Pc.
36	42	29	.079	.075	12	18	8	46	24	45⅜	75	2½ to 1	1 Pc.
42	49	33	.109	.105	13	21	9	53	24	54¾	85	2½ to 1	2 Pc.
48	57	38	.109	.105	18	26	12	63	24	68	90	2½ to 1	3 Pc.
54	64	43	.109	.105	18	30	12	70	24	72¾	102	2¼ to 1	3 Pc.
60	71	47	.109*	.105*	18	33	12	77	30	82¼	114	2¼ 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) SPAN	(Inches) RISE	MIN. THICK. (Inches) STEEL	MIN. THICK. (Inches) ALUM.	DIMENSIONS (Inches) A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")	APPROX. SLOPE	BODY
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

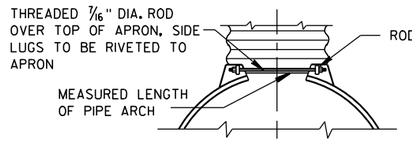
REINFORCED CONCRETE PIPE ARCH

EQUIV. DIA. (Inches)	DIMENSIONS (Inches) ** SPAN	** RISE	T	A	B	C	D	E	APPROX. SLOPE
24	29	18	3	8½	39	33	72	48	3 to 1
30	36	22	3½	9½	50	46	96	60	3 to 1
36	44	27	4	11⅛	60	36	96	72	3 to 1
42	51	31	4½	15 13/16	60	36	96	78	3 to 1
48	58	36	5	21	60	36	96	84	3 to 1
54	65	40	5½	25½	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	28½	83	19	102	144	2 to 1

REINFORCED CONCRETE ELLIPTICAL PIPE

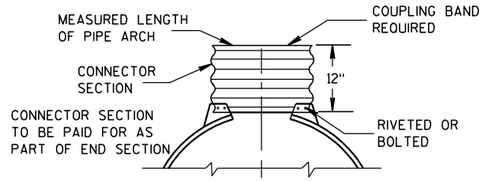
EQUIV. DIA. (Inches)	DIMENSIONS (Inches) ** SPAN	** RISE	T	A	B	C	D	E	APPROX. SLOPE
24	30	19	3¼	8½	39	33	72	48	3 to 1
30	38	24	3¾	9½	54	18	72	60	3 to 1
36	45	29	4½	11⅛	60	24	84	72	2½ to 1
42	53	34	5	15¾	60	36	96	78	2½ to 1
48	60	38	5½	21	60	36	96	84	2½ to 1
54	68	43	6	25½	60	36	96	90	2½ to 1
60	76	48	6½	30	60	36	96	96	2½ to 1

**NOMINAL SIZE



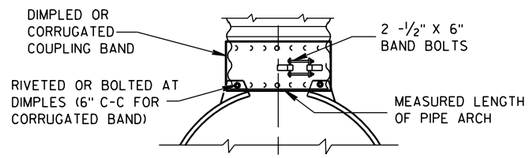
TYPE 2

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

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 PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

11/30/94 — DATE

/S/ Rory L. Rhinesmith — CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

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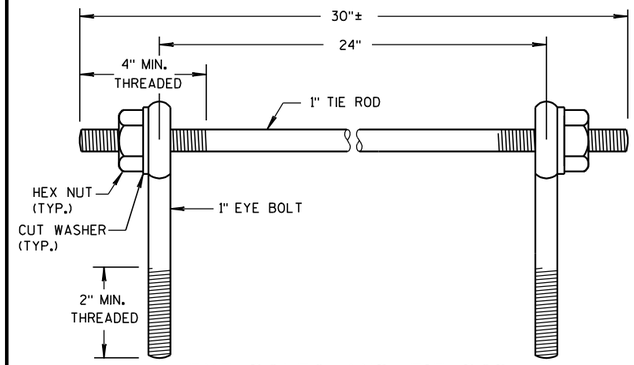
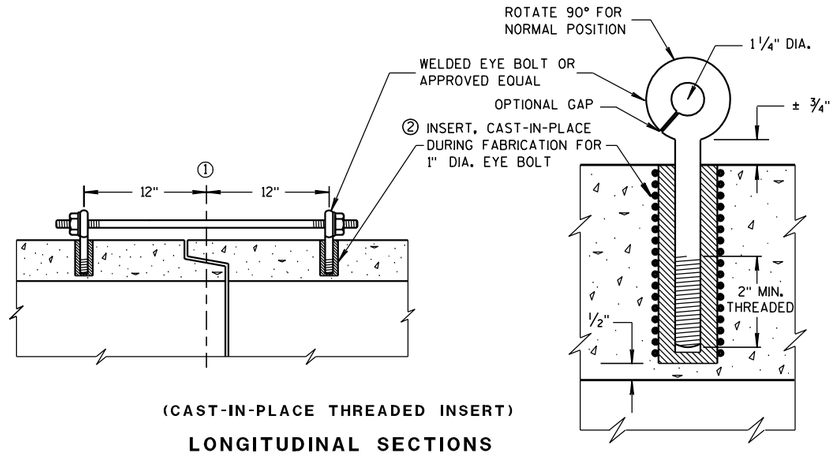
S.D.D. 8 F 2-1



EYE BOLTS AND TIE ROD



(CAST-IN-PLACE THREADED INSERT)

LONGITUDINAL SECTIONS

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

GENERAL NOTES

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

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

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

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

① ℄ OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.

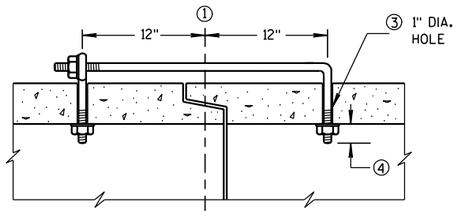
② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.

③ HOLES SHALL BE CAST-IN-PLACE OR DRILLED 12 INCHES FROM ℄ OF TONGUE AND GROOVE.

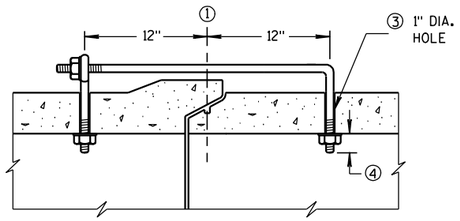
④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.

⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.

⑥ LENGTH ADEQUATE TO EXTEND TO WITHIN 1/2 INCH OF THE INNER SURFACE OF THE PIPE.



(TONGUE & GROOVE PIPE)

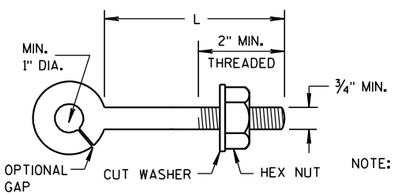


(MODIFIED BELL PIPE)

LONGITUDINAL SECTION

EYE BOLT DIMENSION TABLE

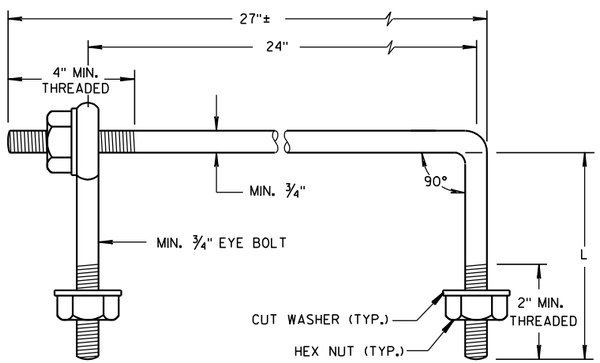
PIPE SIZE	L = LENGTH	
	TONGUE & GROOVE PIPE	MODIFIED BELL PIPE
18" TO 24"	4 1/2"	6 1/4"
30"	5"	7"
36"	5 1/2"	7"
42"	6"	
48"	6 1/2"	
60"	7 1/2"	
66"	8"	



NOTE:

EYE BOLT

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



EYE BOLT AND TIE ROD

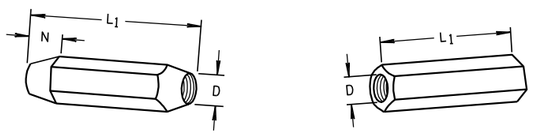
(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)

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

ADJUSTABLE TIE ROD TABLE

PIPE DIAMETER	TIE ROD DIAMETER	D	L_1	N
12-60	5/8	5/8	5	1/2
66-84	3/4	3/4	5	1/2
90-108	1	1	7	1 1/16

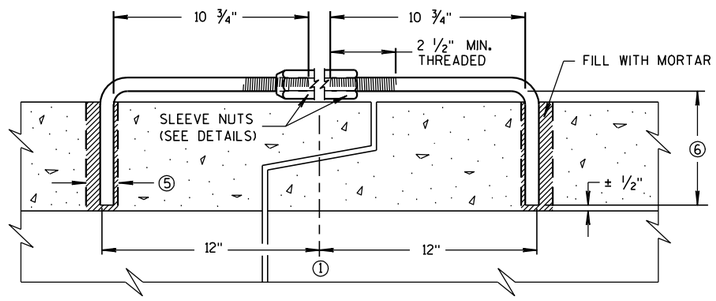
DIMENSIONS SHOWN ARE IN INCHES



TAPERED PLAIN

RIGHT AND LEFT THREADS

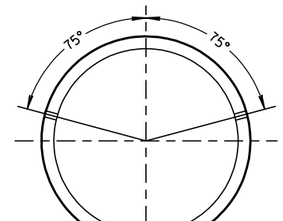
SLEEVE NUTS



LONGITUDINAL SECTION

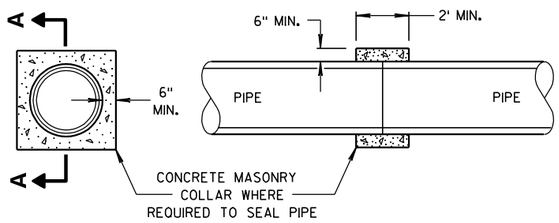
(JOINT TIES FOR 12" TO 108" DIA. CONCRETE PIPE)

ADJUSTABLE TIE ROD (ALTERNATE NO. 3)



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

TRANSVERSE SECTION



SECTION A-A

CONCRETE COLLAR DETAIL

JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

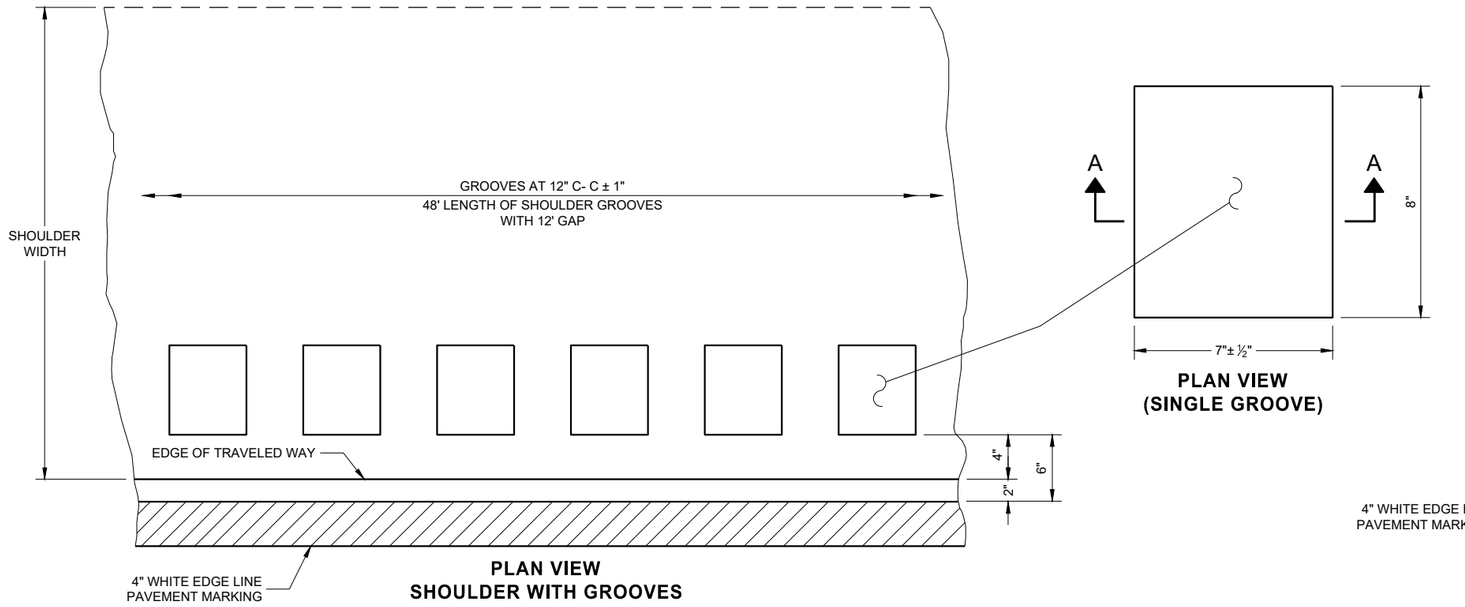
APPROVED
6/5/2012 DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER
FHWA

6

S.D.D. 8 F 4-7

6

S.D.D. 8 F 4-7



PLAN VIEW
SHOULDER WITH GROOVES

PLAN VIEW
(SINGLE GROOVE)

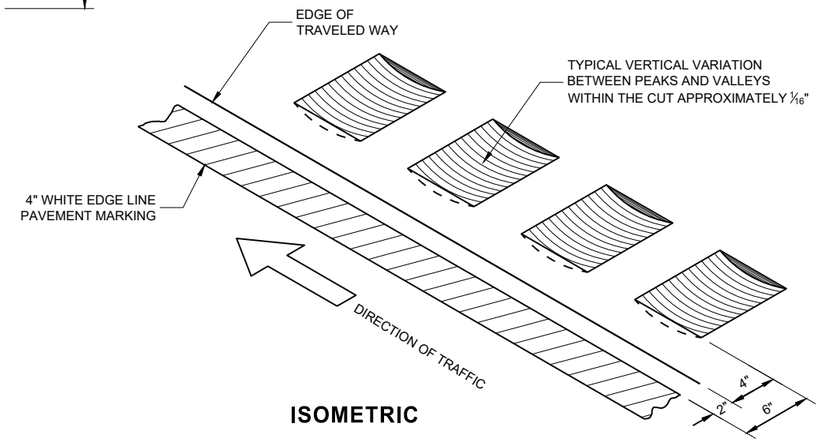
PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP

GENERAL NOTES

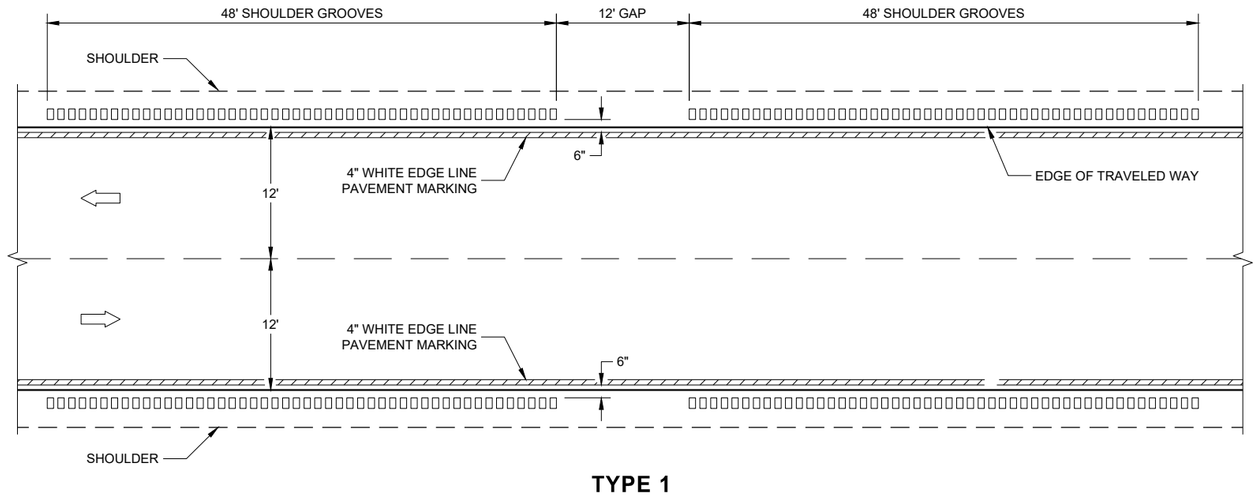
DETAILS OF CONSTRUCTION NO SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

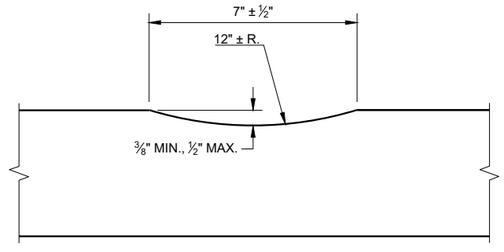
(1) SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



ISOMETRIC

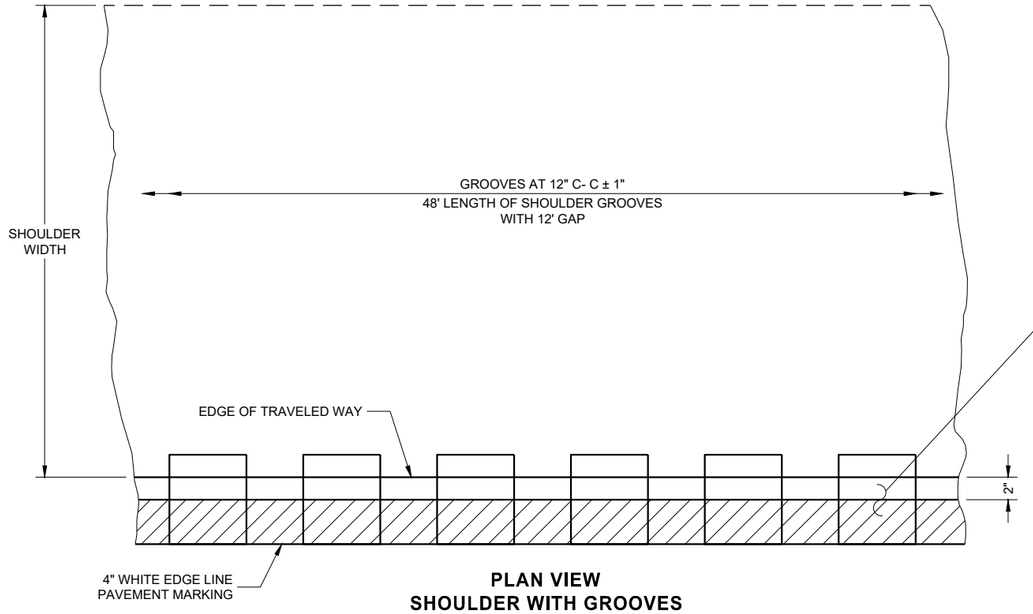


TYPE 1
2 - LANE SHOULDER RUMBLE STRIP

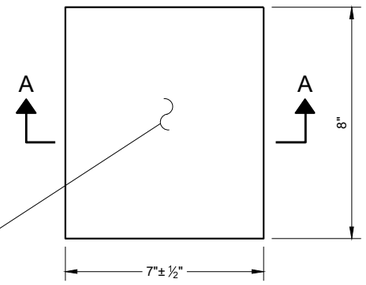


SECTION A - A

2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING



PLAN VIEW
SHOULDER WITH GROOVES



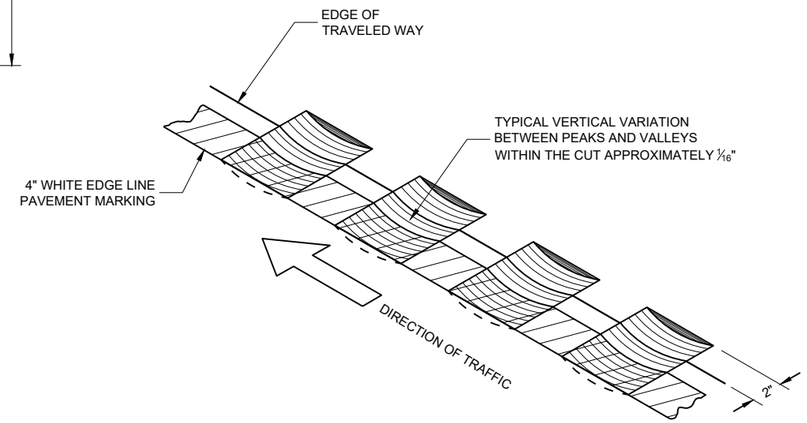
PLAN VIEW
(SINGLE GROOVE)

GENERAL NOTES

DETAILS OF CONSTRUCTION NO SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

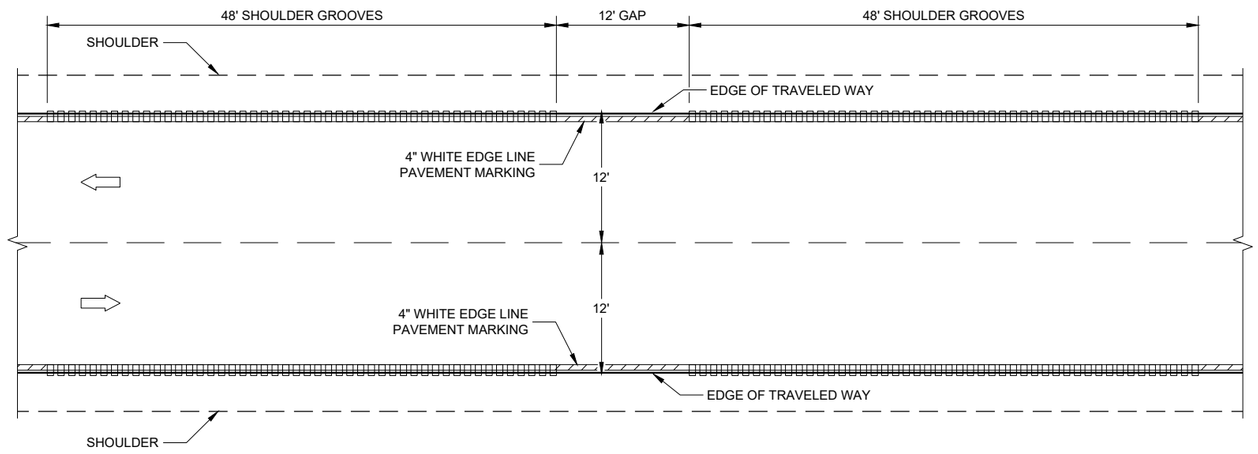
DO NOT MILL SHOULDER GROOVES THROUGH ANY INTERSECTION, MARKED CROSSWALK, NON-MOTORIZED PATH CROSSING, OR SNOWMOBILE CROSSING.

(1) SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.

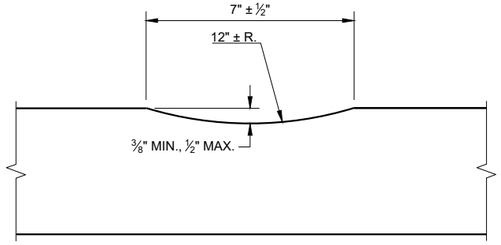


ISOMETRIC

PLACEMENT DETAIL FOR TYPE 2 MILLED RUMBLE STRIP



TYPE 2
2 - LANE SHOULDER RUMBLE STRIP



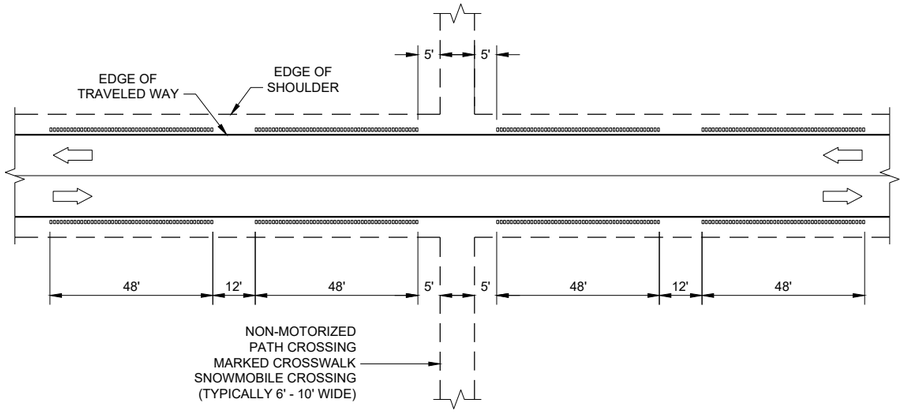
SECTION A - A

2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING

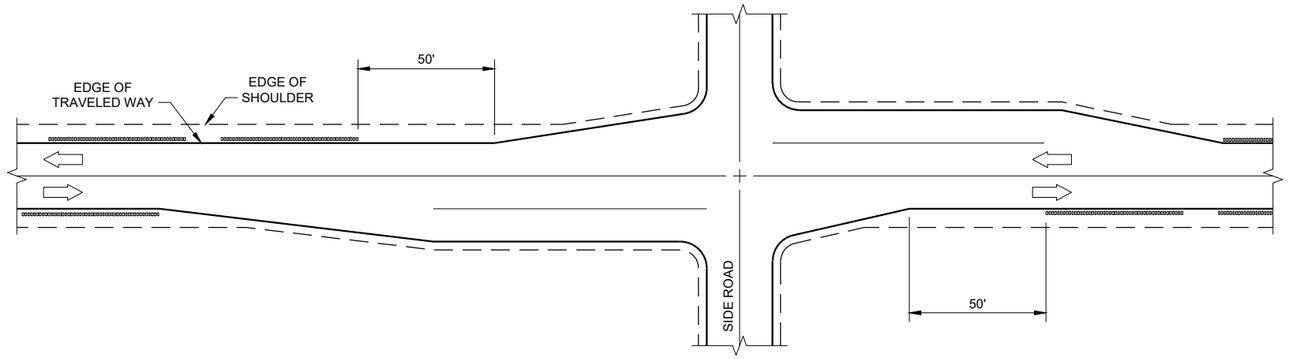
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

SDD 13A10 - 02b

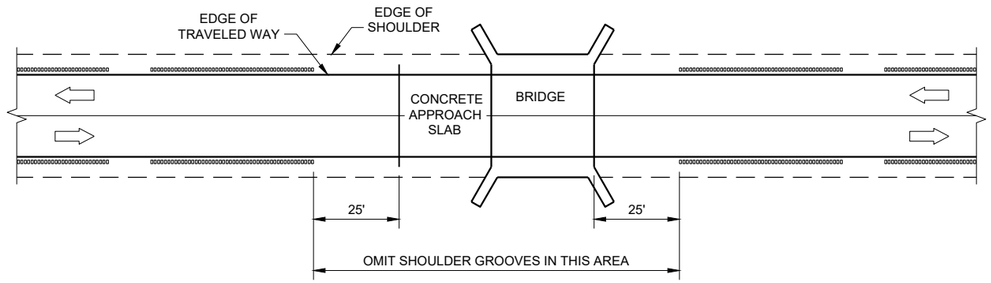
SDD 13A10 - 02b



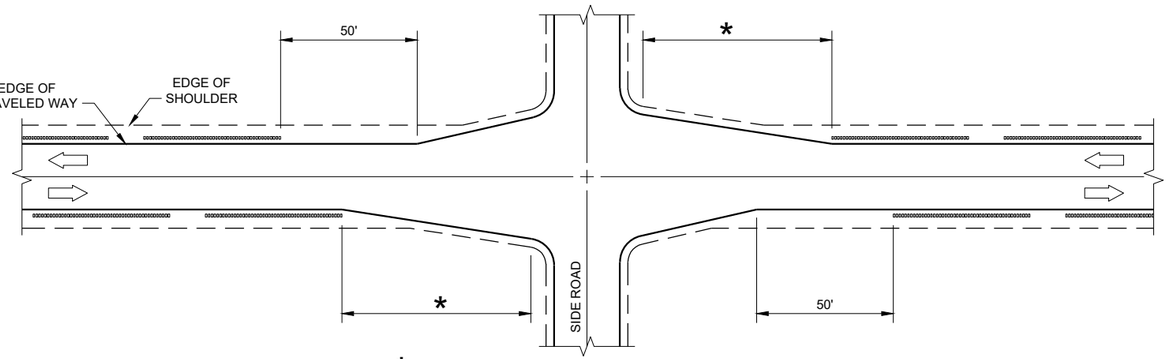
SHOULDER GROOVES AT MISCELLANEOUS CROSSINGS



SHOULDER GROOVES AT RIGHT TURN LANE

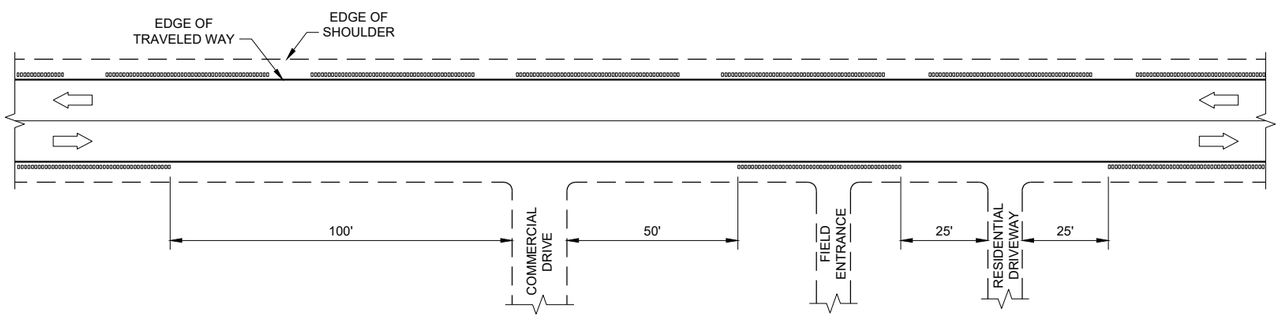


SHOULDER GROOVES AT BRIDGES



* GREATER OF 100' OR APPROACH TAPER LENGTH

SHOULDER GROOVES AT INTERSECTIONS WITH APPROACH TAPER



SHOULDER GROOVES AT DRIVEWAYS (1)

GENERAL NOTES

(1) SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.

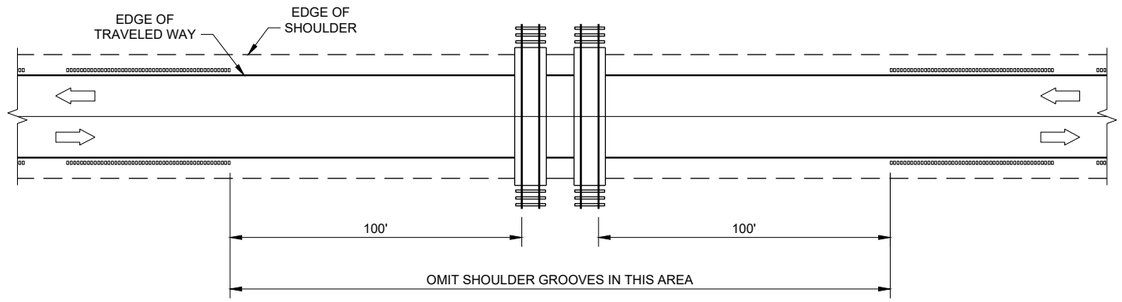
2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

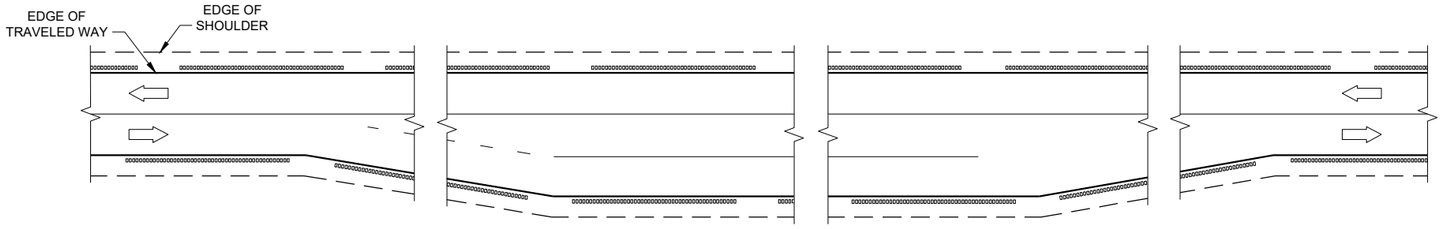
6

SDD 13A10 - 02c

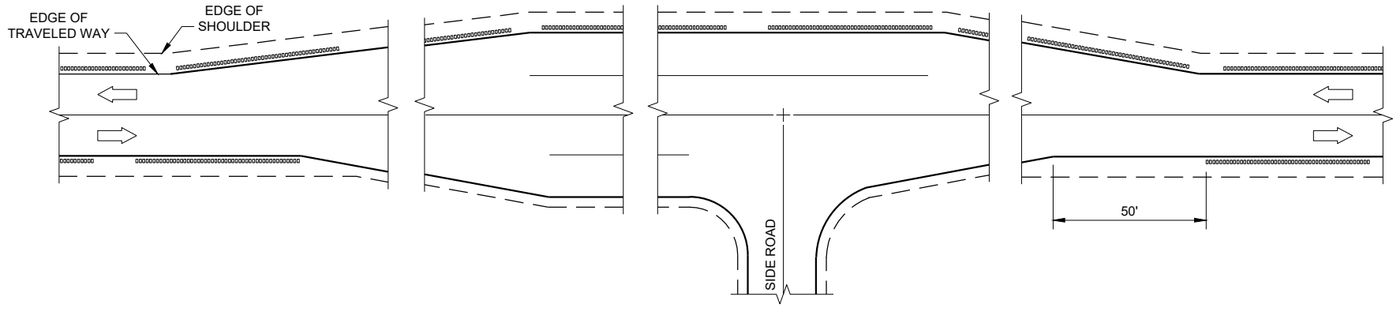
SDD 13A10 - 02c



SHOULDER GROOVES AT RAILROADS



SHOULDER GROOVES AT PASSING AND CLIMBING LANES



SHOULDER GROOVES AT BYPASS LANES

6

6

SDD 13A10 - 02d

SDD13A10 - 02d

2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING

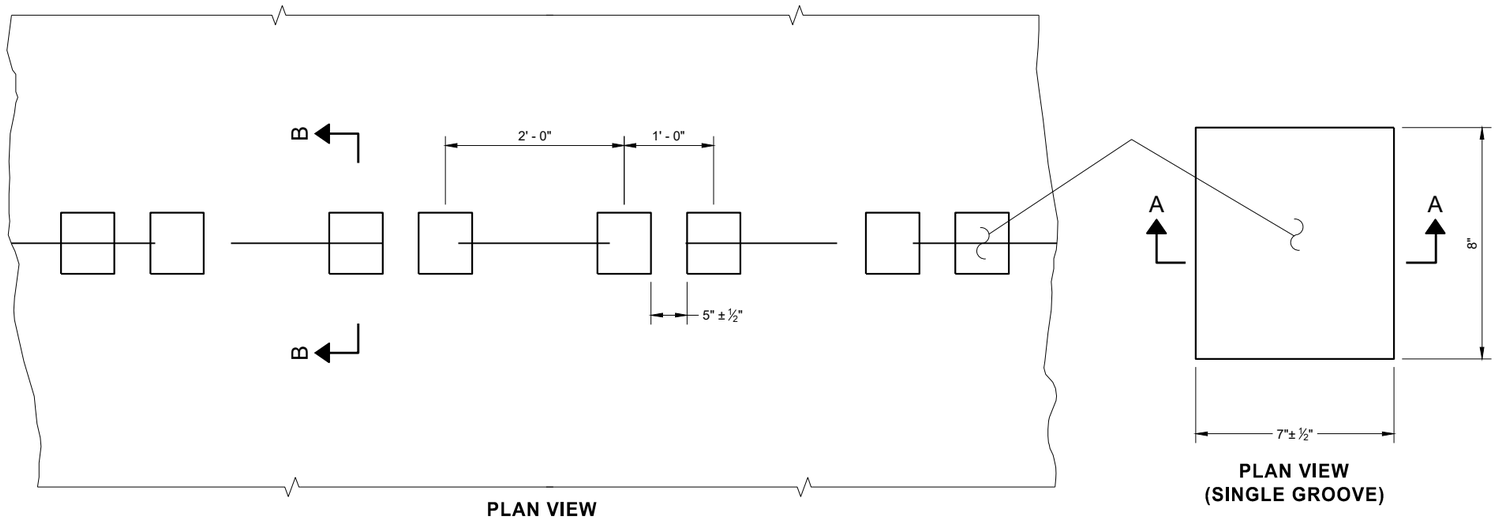
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

7/2018
DATE

/S/ Rodney Taylor
ROADWAY STANDARDS DEVE ENGINEER

FHWA



PLAN VIEW
SHOULDER WITH GROOVES

PLAN VIEW
(SINGLE GROOVE)

PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP

GENERAL NOTES

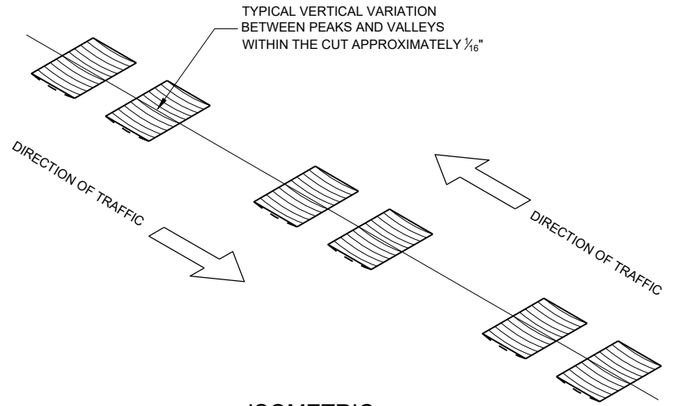
DETAILS OF CONSTRUCTION NO SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

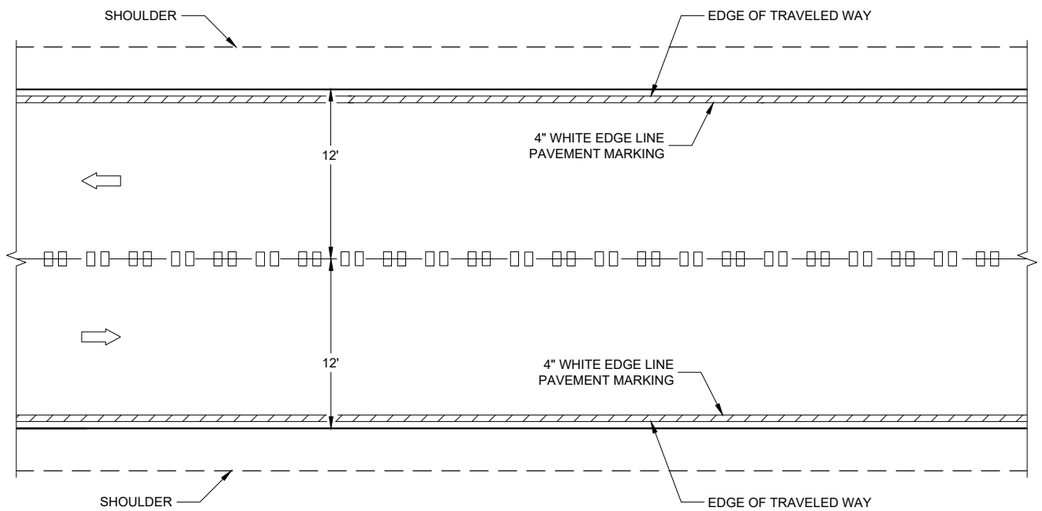
INSTALL PAVEMENT MARKING AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

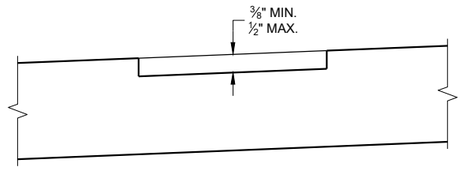
(1) CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



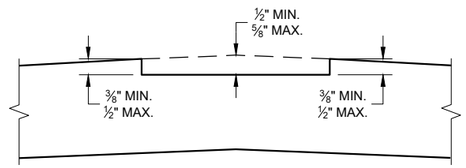
ISOMETRIC



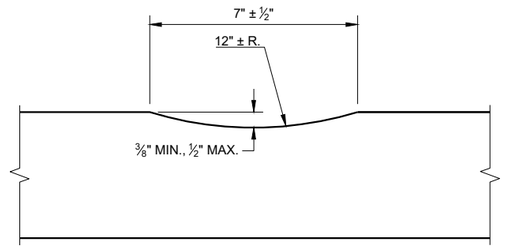
CENTERLINE GROOVES ON TWO-WAY ROADWAYS



SECTION B - B
SUPERELEVATED ROADWAY



SECTION B - B
CROWNED ROADWAY



SECTION A - A

6

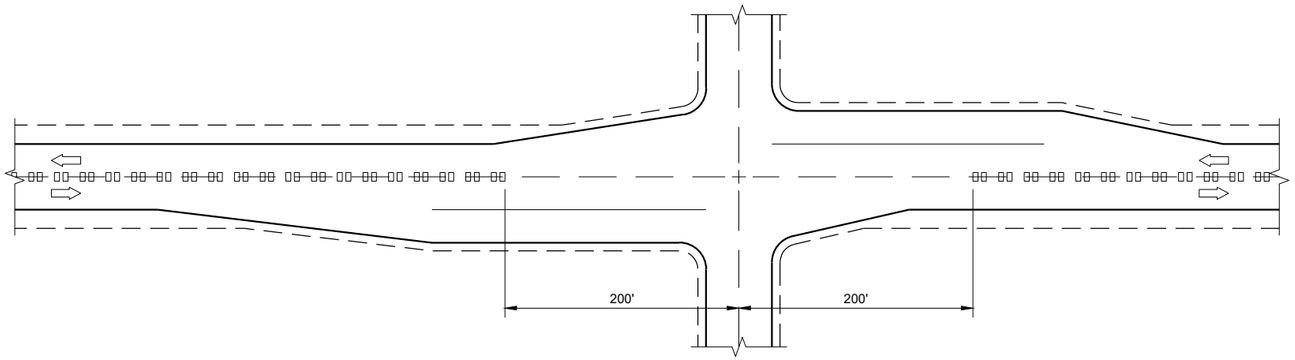
6

SDD 13A11 - 03a

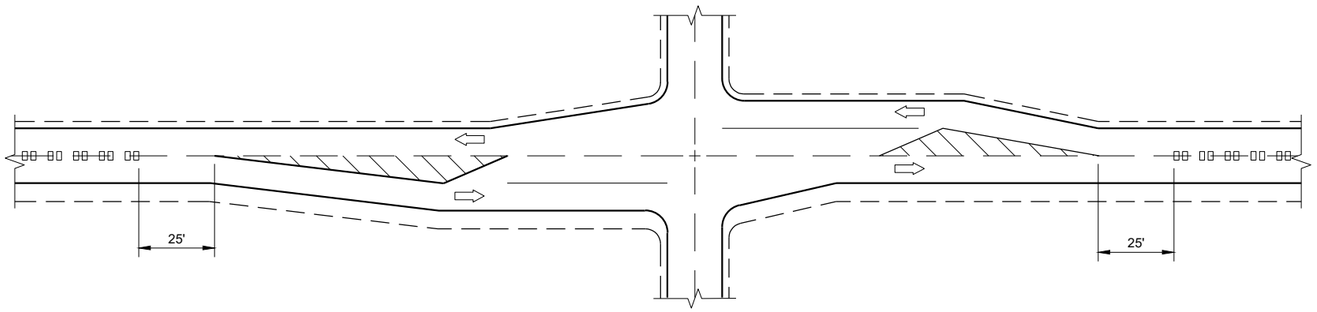
SDD 13A11 - 03a

2-LANE RURAL
CENTER LINE RUMBLE STRIP, MILLING

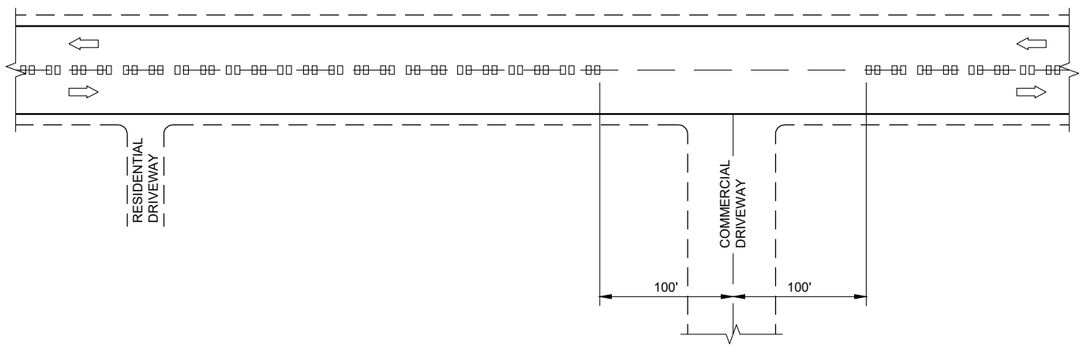
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



CENTERLINE GROOVES AT INTERSECTIONS



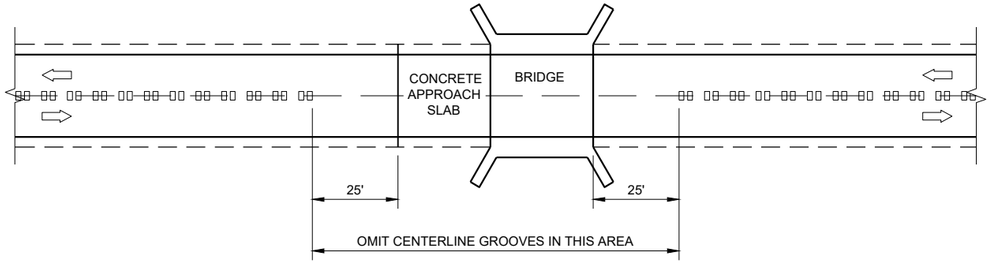
CENTERLINE GROOVES AT INTERSECTIONS (WITH LEFT TURN LANES)



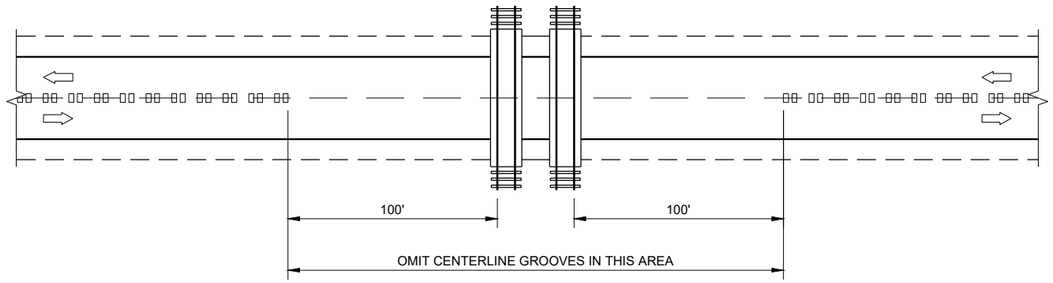
CENTERLINE GROOVES AT DRIVEWAYS (1)

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

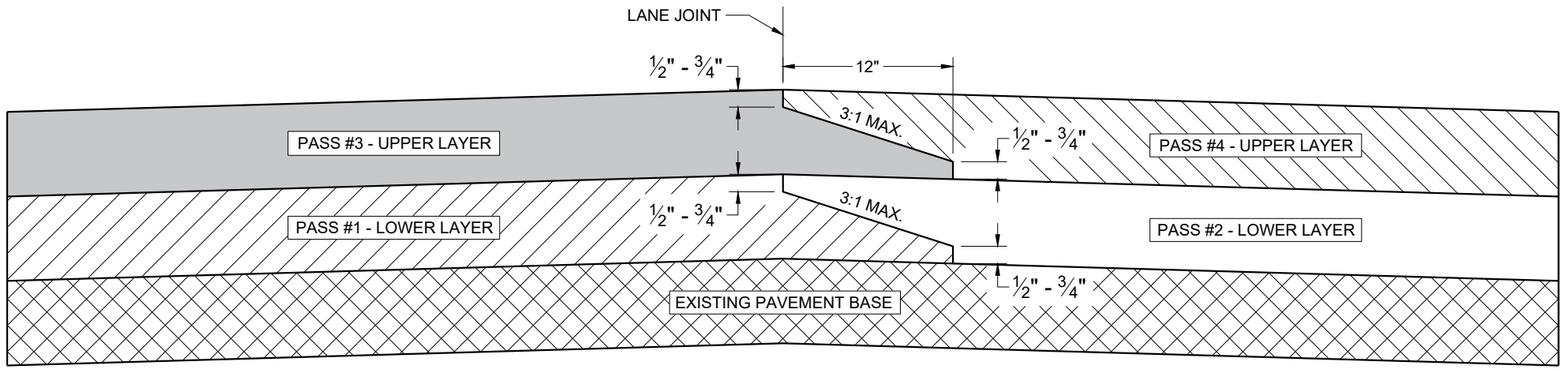
APPROVED
7/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVE ENGINEER

FHWA

6
SDD 13A11 - 03b

GENERAL NOTES

CONFORM TO STANDARD SPECIFICATION 450.3.2.8



TYPICAL PAVEMENT CROSS SECTION
OF NOTCHED WEDGE LONGITUDINAL JOINTS

6

6

SDD 13C19 - 01

SDD 13C19 - 01

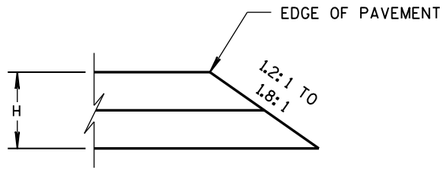
HMA LONGITUDINAL JOINTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2019
DATE

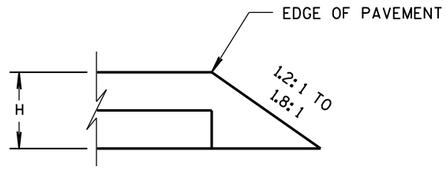
/S/ Steven Hefel
HMA PAVEMENT ENGIN

FHWA



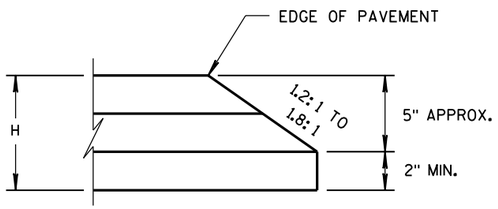
CONSTRUCTED WITH FINAL TWO LAYERS

FOR H 5" OR LESS



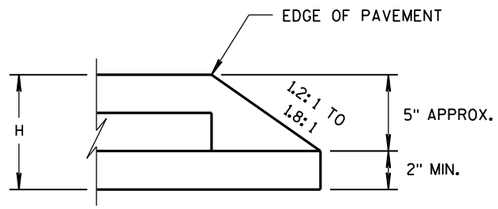
CONSTRUCTED WITH FINAL LAYER

FOR H 5" OR LESS



CONSTRUCTED WITH FINAL TWO LAYERS

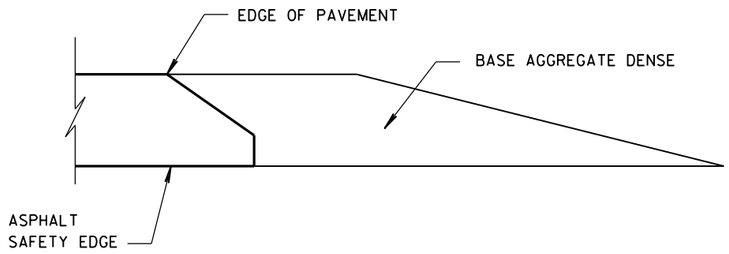
FOR H GREATER THAN 5"



CONSTRUCTED WITH FINAL LAYER

FOR H GREATER THAN 5"

HMA PAVEMENT AND HMA OVERLAYS



FINISHED SHOULDER AGGREGATE PLACEMENT

6

SAFETY EDGE SM

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

11/30/2012
DATE

/S/ Jerry H. Zoda
ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA

S.D.D. 14 B 29-1

S.D.D. 14 B 29-1

(1) WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

(2) USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

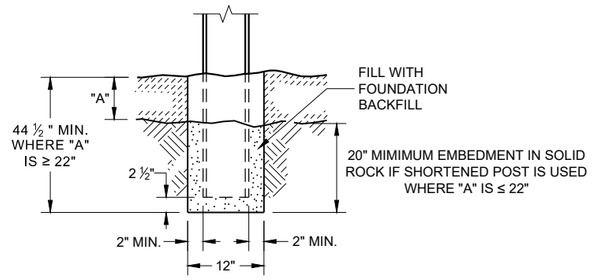
(3) IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL 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).

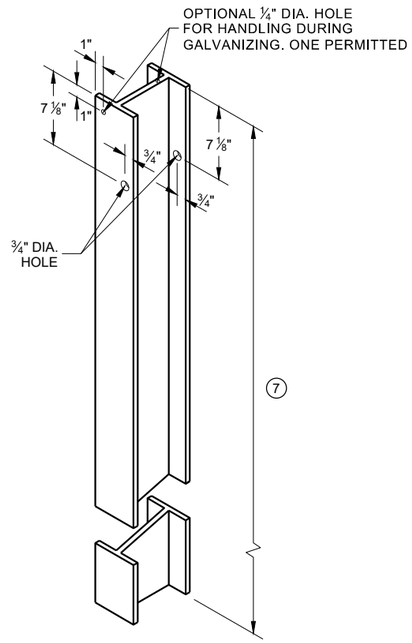
(5) FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS +1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 ¾" TO 32".

(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.

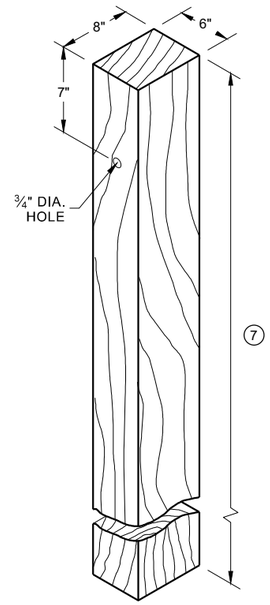
(7) TOTAL POST LENGTH FOR TYPE K IS 7' - 0".
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".



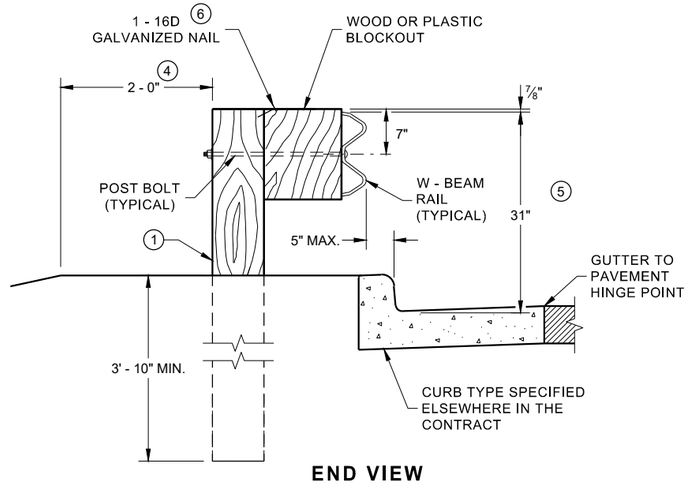
END VIEW
SETTING STEEL OR WOOD POST IN ROCK (3)



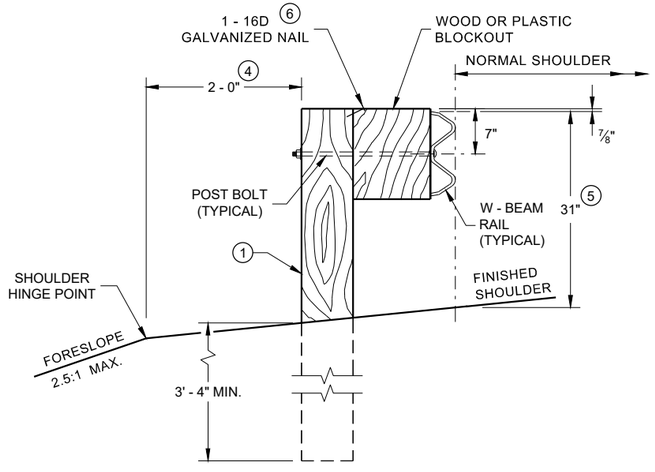
STEEL POST & HOLE PUNCHING DETAIL (W 6 X 9) (1)



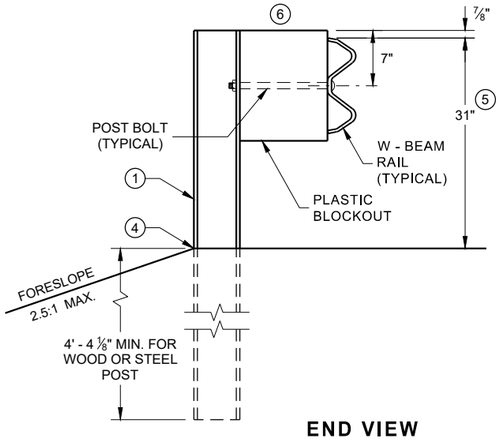
WOOD POST (6" X 8") NOMINAL (1)



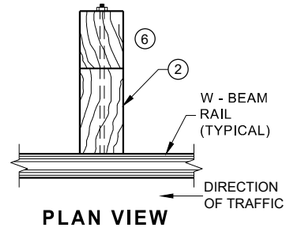
END VIEW
LOCATED ALONG A CURBED ROADWAY



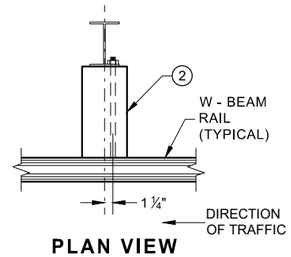
END VIEW
LOCATED ALONG A ROADWAY SHOULDER STANDARD INSTALLATION



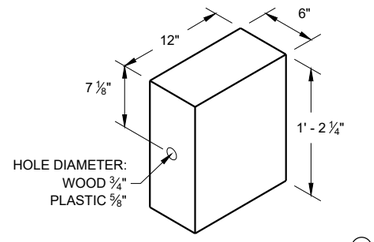
END VIEW
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



PLAN VIEW
WOOD POST, BLOCKOUT & BEAM



PLAN VIEW
STEEL POST, PLASTIC BLOCKOUT & BEAM

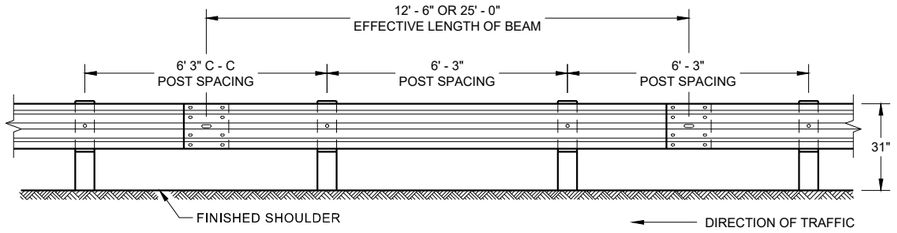


WOOD OR PLASTIC BLOCKOUT (2)

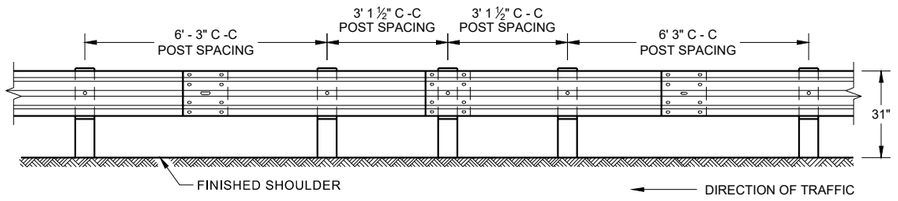
MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

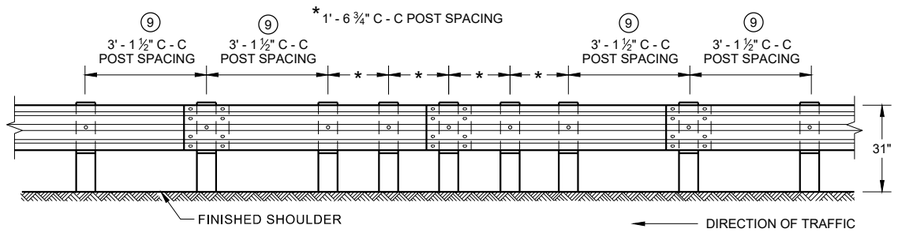
SDD 14B42 - 06a



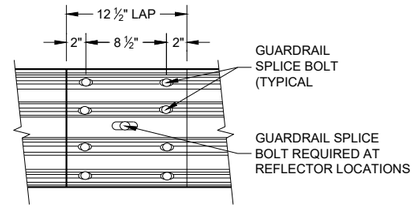
FRONT VIEW
POST SPACING STANDARD INSTALLATION



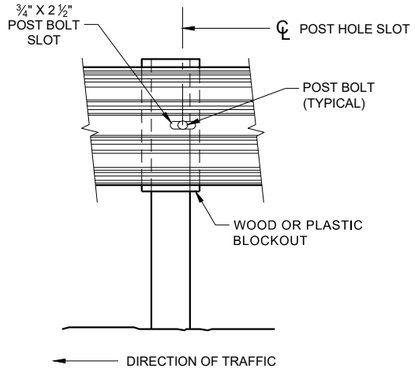
FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)



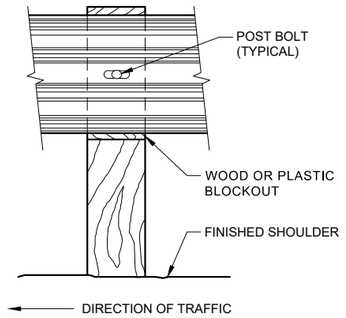
FRONT VIEW
QUARTER POST SPACING (QS)



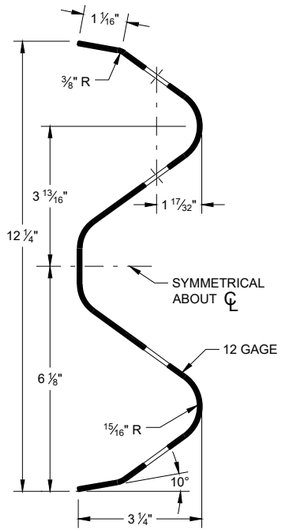
FRONT VIEW
MID-SPAN BEAM SPLICE



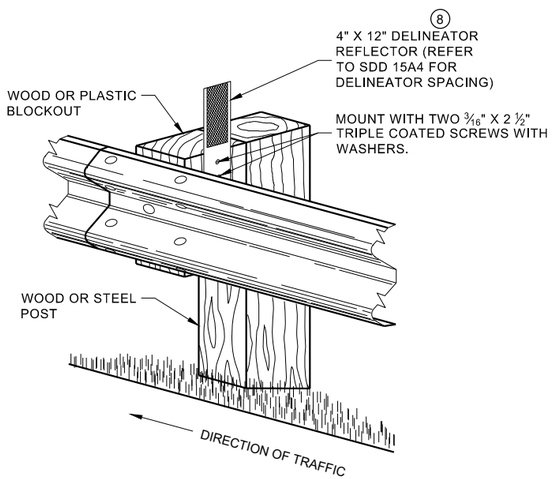
FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



SECTION THRU W-BEAM RAIL



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 ⅝" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES ⅝" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND ⅝" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

GUARD RAIL SPLICE BOLTS ARE A ⅝" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES ⅝" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
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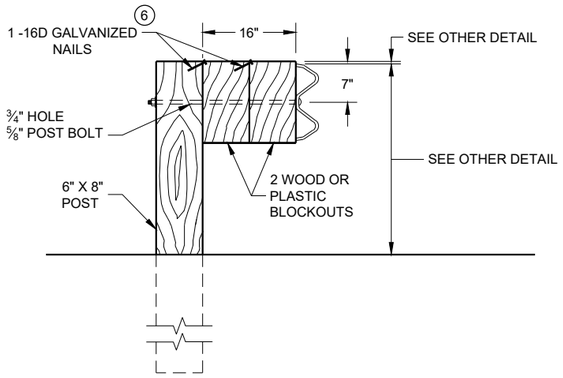
SDD 14B42 - 06b

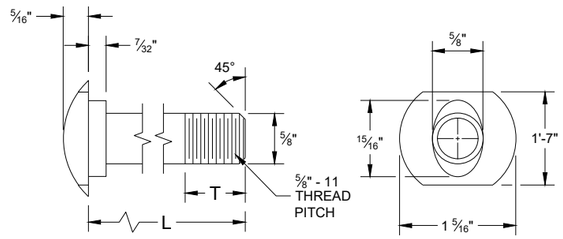


DETAIL FOR 16" BLOCKOUT DEPTH

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

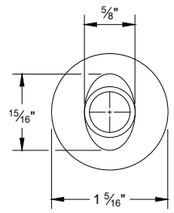
NOTE:

1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 3/16".
2. IF THE BOLT EXTENDS MORE THAN ¼" FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

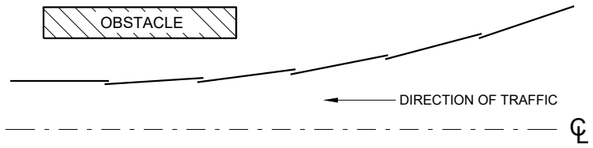


POST BOLT TABLE

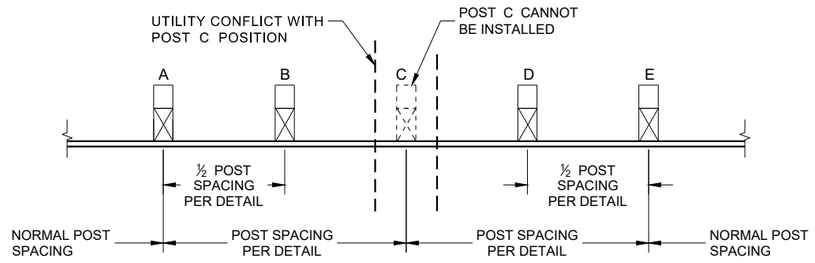
L	T (MIN.)
1 ¼"	1 ⅛"
2"	1 ¾"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



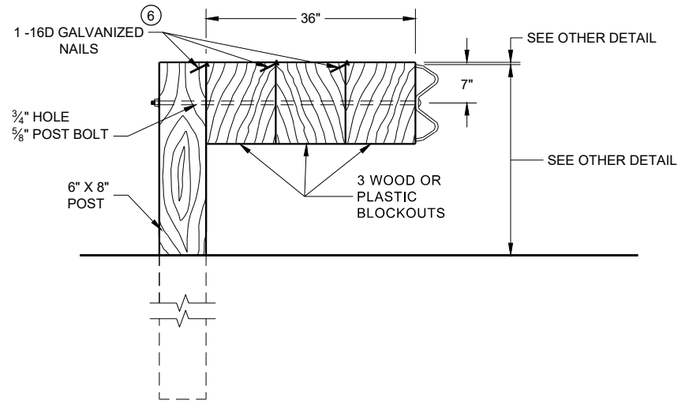
ALTERNATE BOLT HEAD



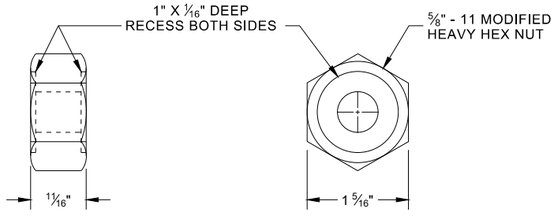
PLAN VIEW
BEAM LAPPING DETAIL



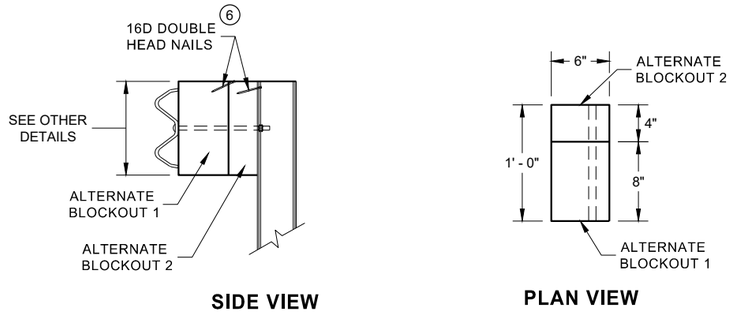
POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



DETAIL FOR 36" BLOCKOUT DEPTH



POST BOLT, SPLICE BOLT AND RECESS NUT



SIDE VIEW

PLAN VIEW

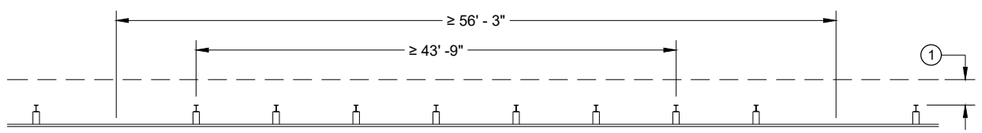
ALTERNATE WOOD BLOCKOUT DETAIL

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

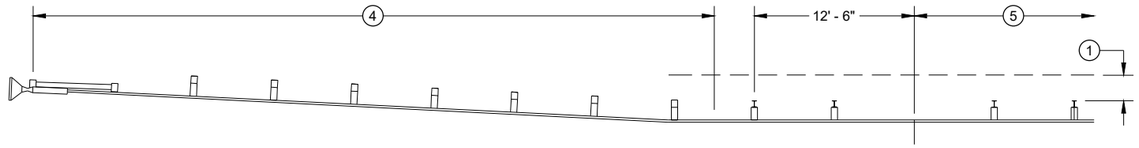
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

(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.

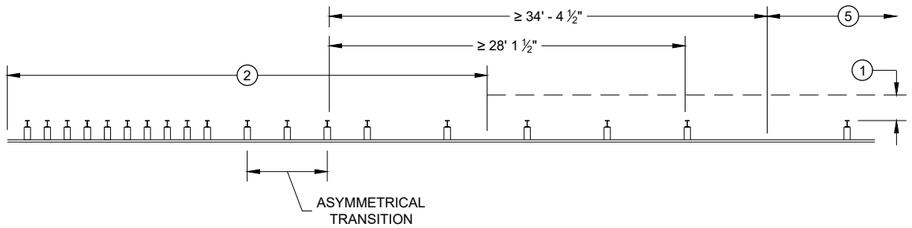
MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL



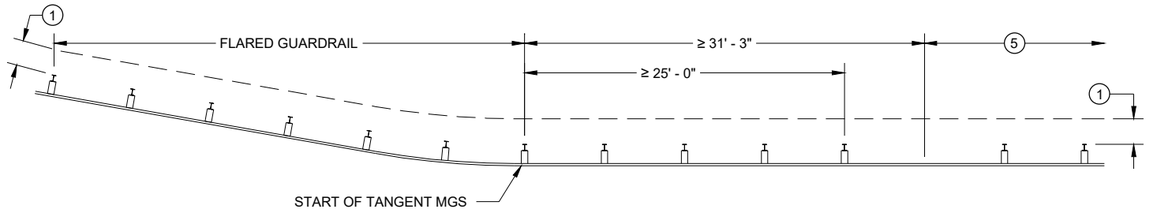
MISSING POST IN NORMAL BEAM GUARD RUN



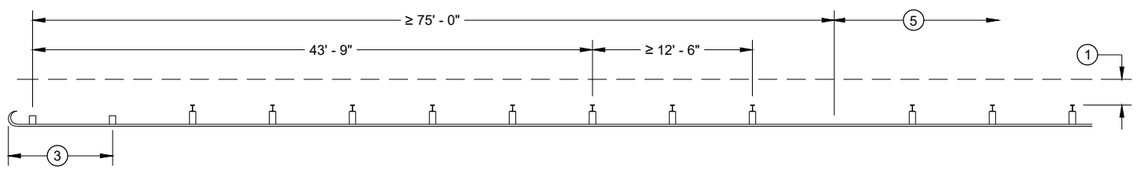
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



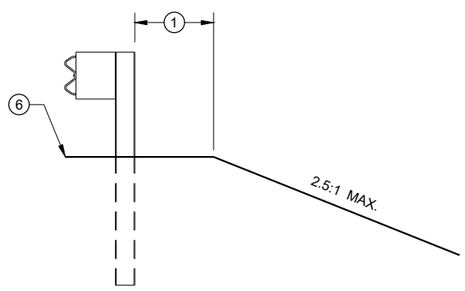
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



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 DEVE UNIT SUPERVISOR
FHWA

SDD 14B42 - 06d

SDD 14B42 - 06d

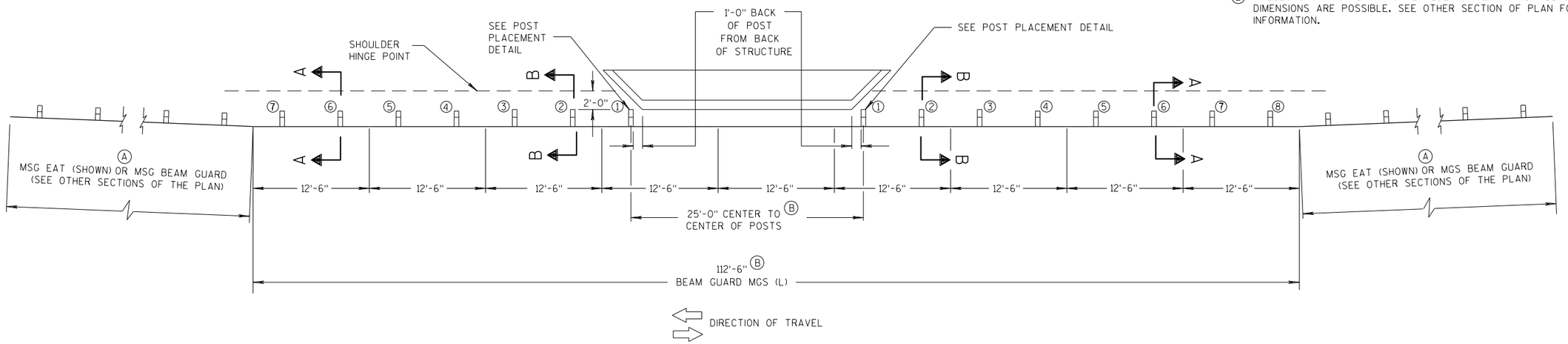
GENERAL NOTES

POSTS 1 THROUGH 3 ARE CRT POSTS.
ALL OTHER POSTS SHALL BE WOOD OR STEEL.

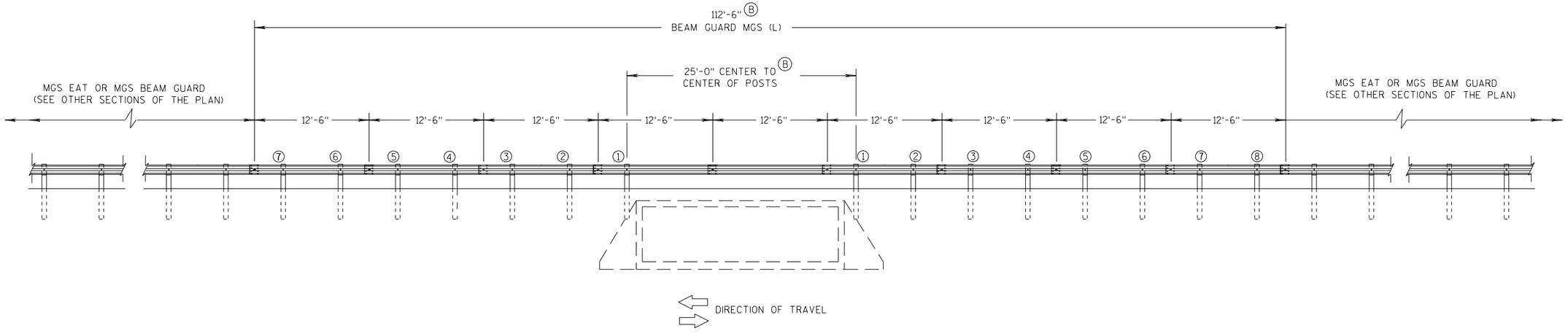
SEE SDD 14 B 42 FOR MORE DETAILS.

(A) FLARE FOR MGS EAT SHOWN. IF INSTALLING MGS NO FLARE NEEDED.

(B) VALUES SHOWN ON DRAWING REPRESENT THE MAXIMUM LENGTH. SHORTER DIMENSIONS ARE POSSIBLE. SEE OTHER SECTION OF PLAN FOR MORE INFORMATION.



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L) TWO-WAY TRAFFIC

MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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S.D.D. 14 B 43-4a

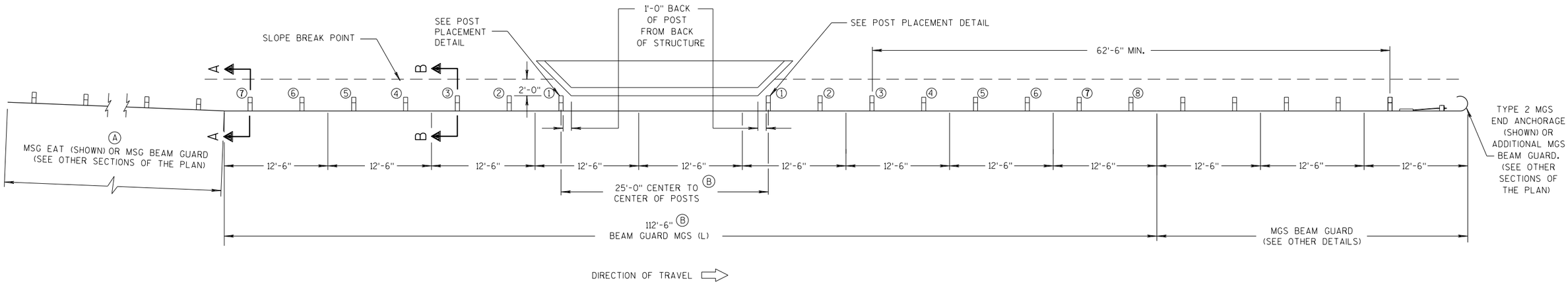
GENERAL NOTES

POSTS 1 THROUGH 3 ARE CRT POSTS.
ALL OTHER POSTS SHALL BE WOOD OR STEEL.

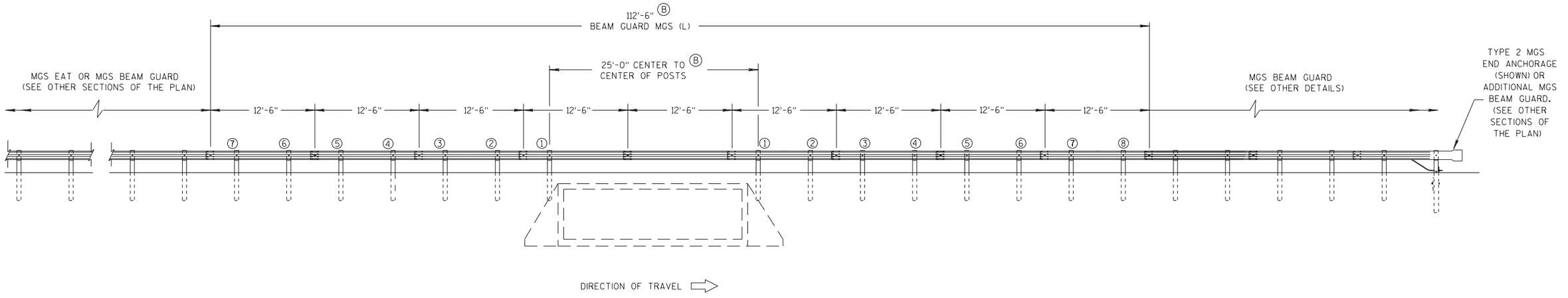
SEE SDD 14 B 42 FOR MORE DETAILS.

(A) FLARE FOR MGS EAT SHOWN. IF INSTALLING MGS NO FLARE NEEDED.

(B) VALUES SHOWN ON DRAWING REPRESENT THE MAXIMUM LENGTH. SHORTER DIMENSIONS ARE POSSIBLE. SEE OTHER SECTION OF PLAN FOR MORE INFORMATION.



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L) ONE-WAY TRAFFIC

MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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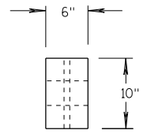
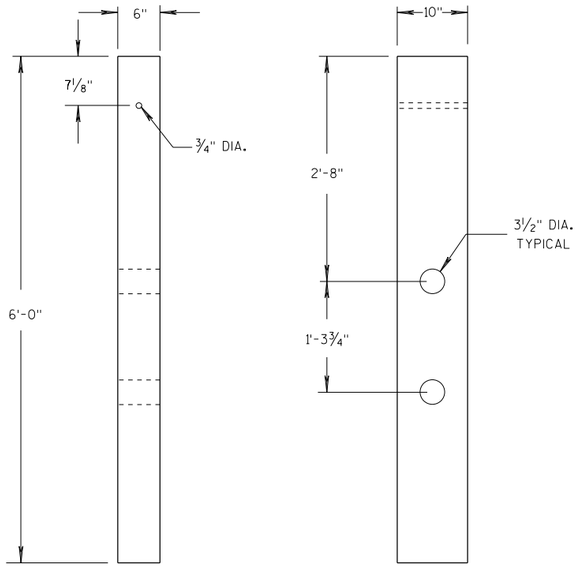
S.D.D. 14 B 43-4b

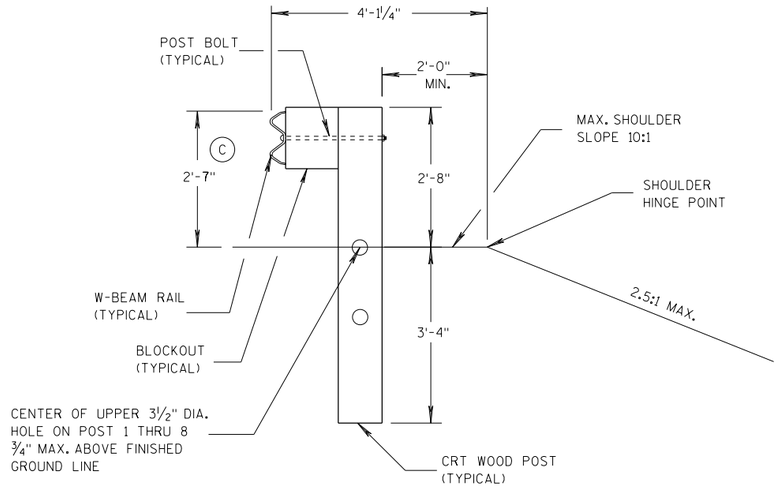


PLAN VIEW



FRONT VIEW SIDE VIEW

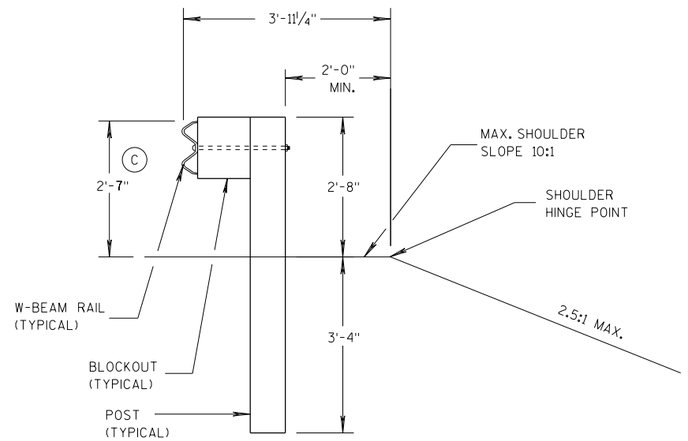
CRT WOOD POST



SECTION B-B

POSTS NO. 1-3

SEE OTHER DETAILS



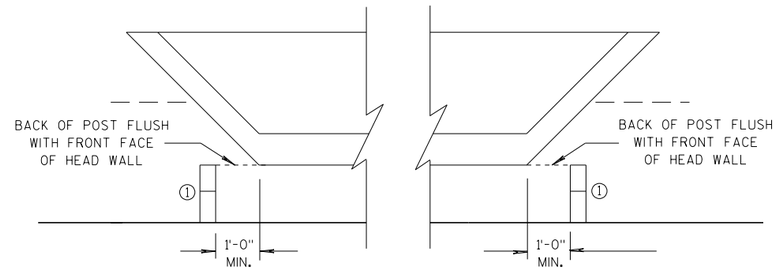
SECTION A-A

POSTS NO. 4-8

SEE OTHER DETAILS

GENERAL NOTES

(C) TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



POST PLACEMENT DETAIL

MIDWEST GUARDRAIL SYSTEM
LONG SPAN MGS (L)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
07/2018
DATE
FHWA

/S/ Rodney Taylor
ROADWAY STANDARDS DIRECTOR
ENGINEER

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S.D.D. 14 B 43-4c

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S.D.D. 14 B 43-4c

GENERAL NOTES

(A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.

(B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED

(C) DIFFERENT 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.

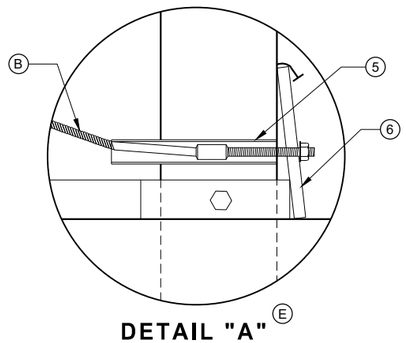
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

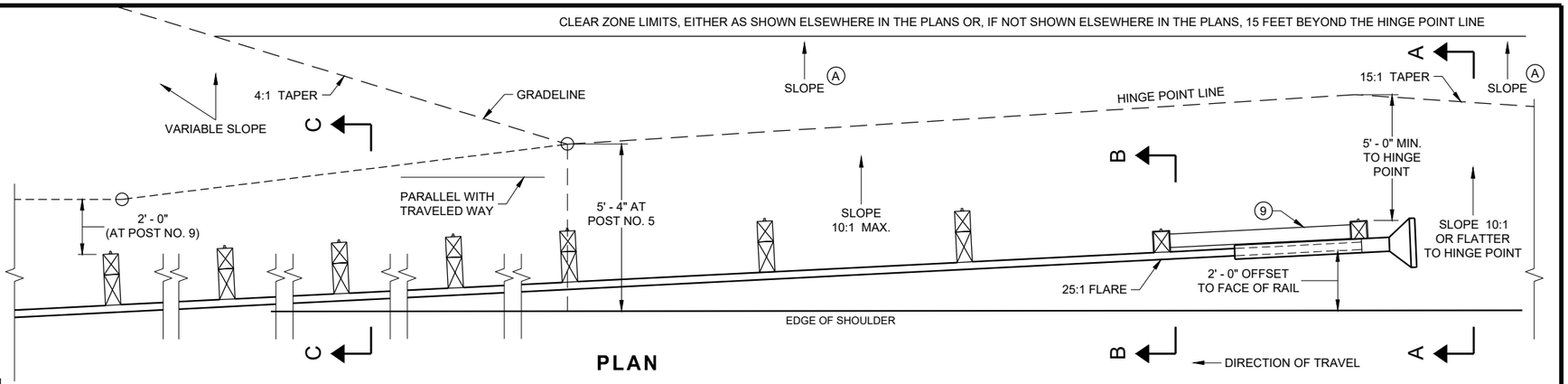
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

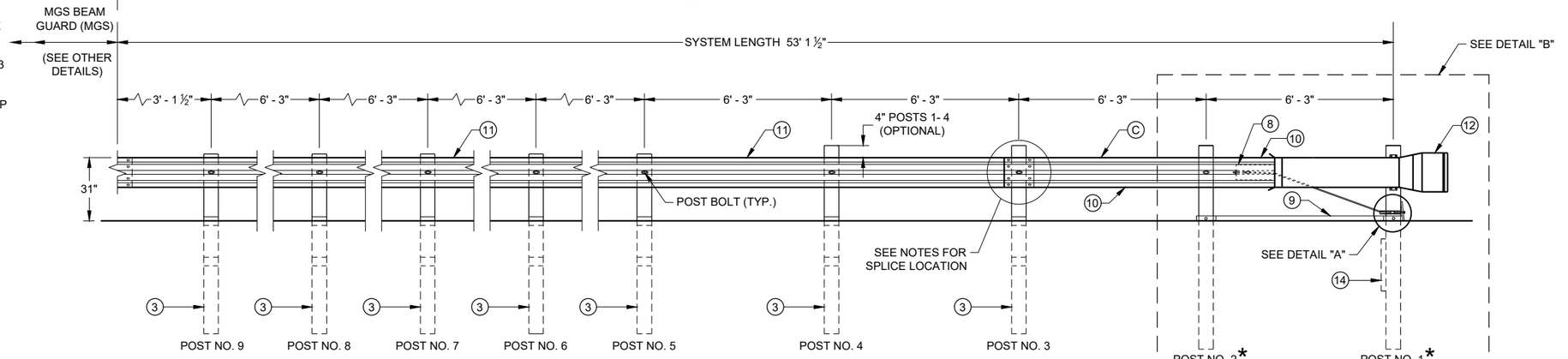
THE CENTER OF THE UPPER 3 ½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



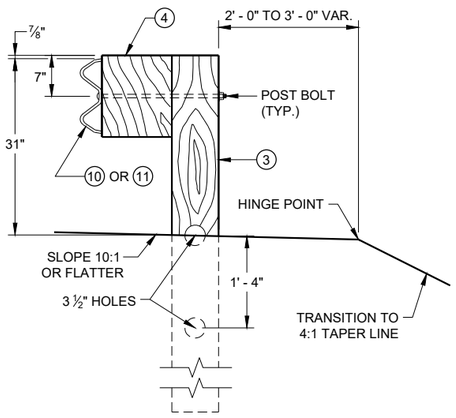
DETAIL "A" (E)



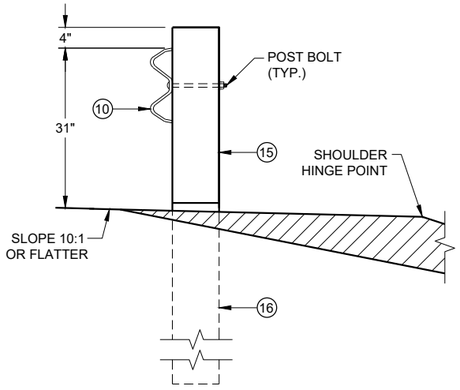
PLAN



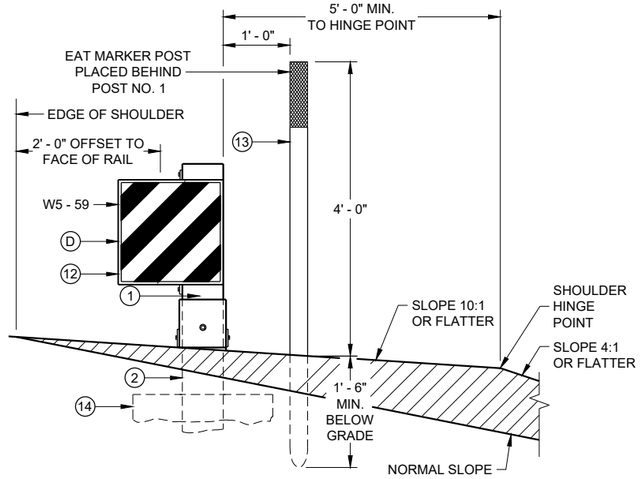
ELEVATION



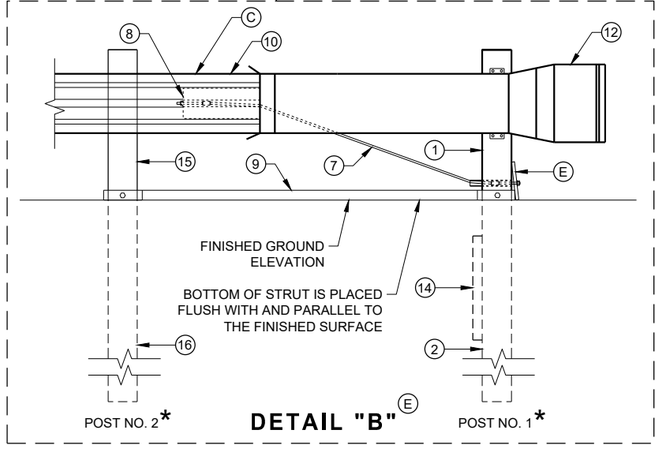
SECTION C - C
TYPICAL AT POST NOS. 3 - 9



SECTION B - B
TYPICAL AT POST NO. 2*



SECTION A - A
TYPICAL AT POST NO. 1*

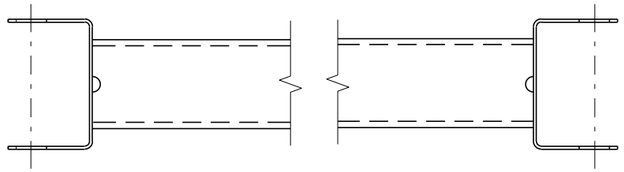


DETAIL "B" (E)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

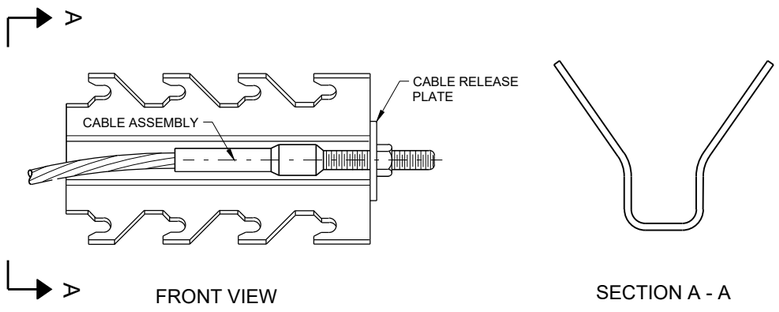
SDD 14B44 - 04a



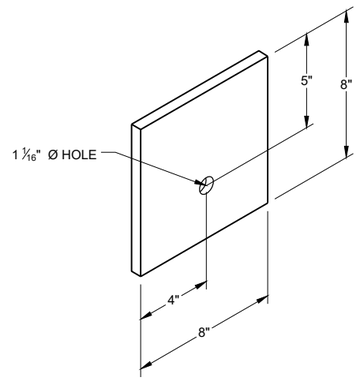
GENERIC GROUND STRUT (9) (E)

BILL OF MATERIALS

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



GENERIC ANCHOR CABLE BOX (9) (E)



BEARING PLATE (6) (E)

6

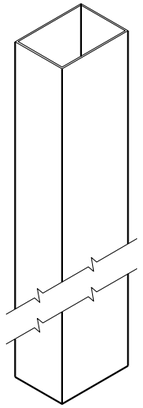
6

SDD 14B44 - 04b

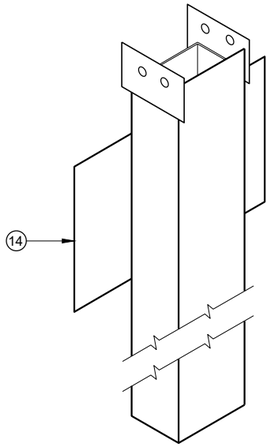
SDD 14B44 - 04b

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

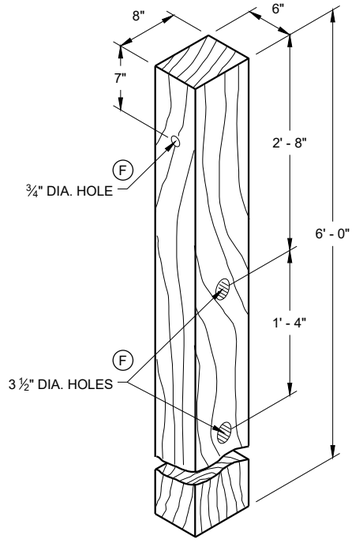
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



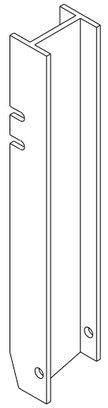
UPPER POST NO. 1 (1) (E)



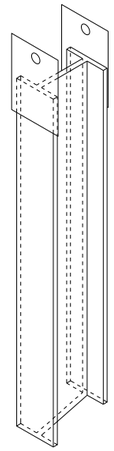
LOWER POST NO. 1 (2) (E)



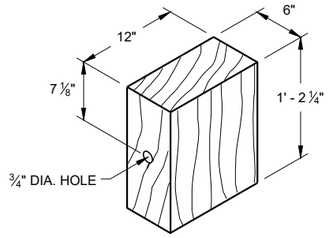
WOOD CRT POST (3) (E)
POSTS NUMBER 3-9



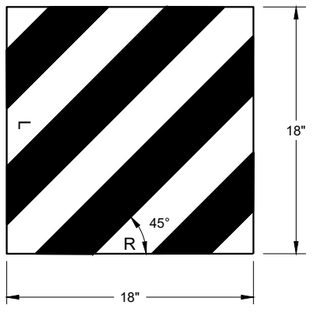
UPPER POST NO. 2 (15) (E)



LOWER POST NO. 2 (16) (E)

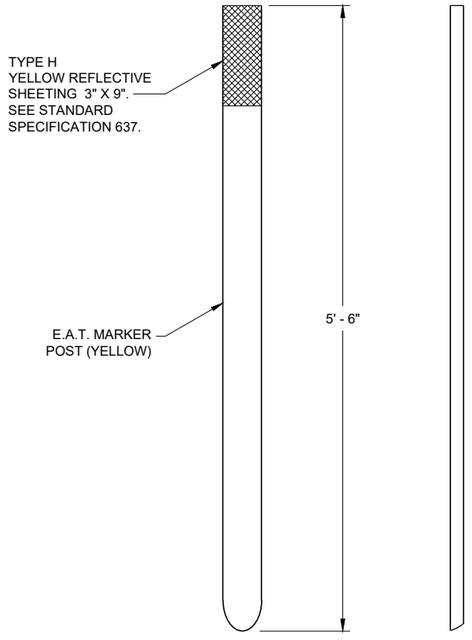


WOOD BLOCKOUT (4)
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



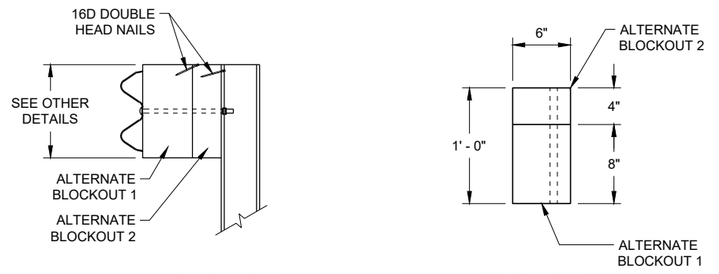
W5 - 59

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)

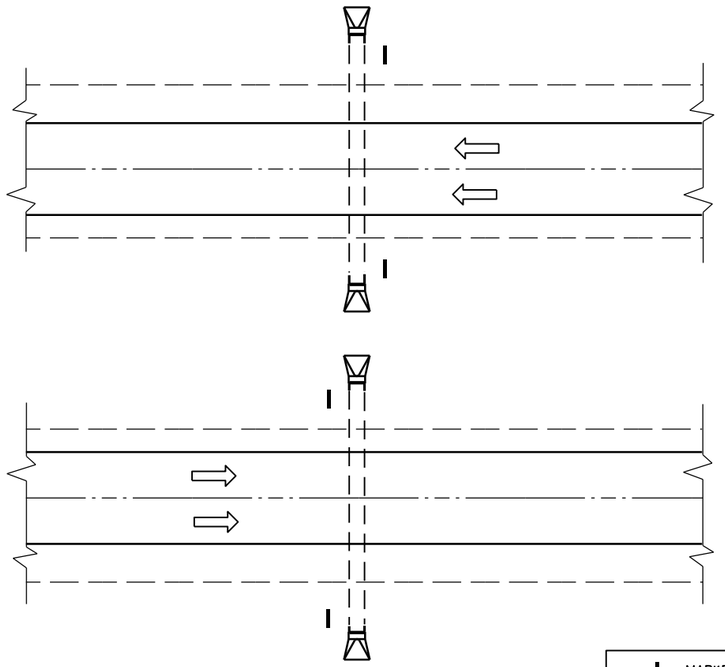
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS DEVE UNIT SUPERVISOR

FHWA

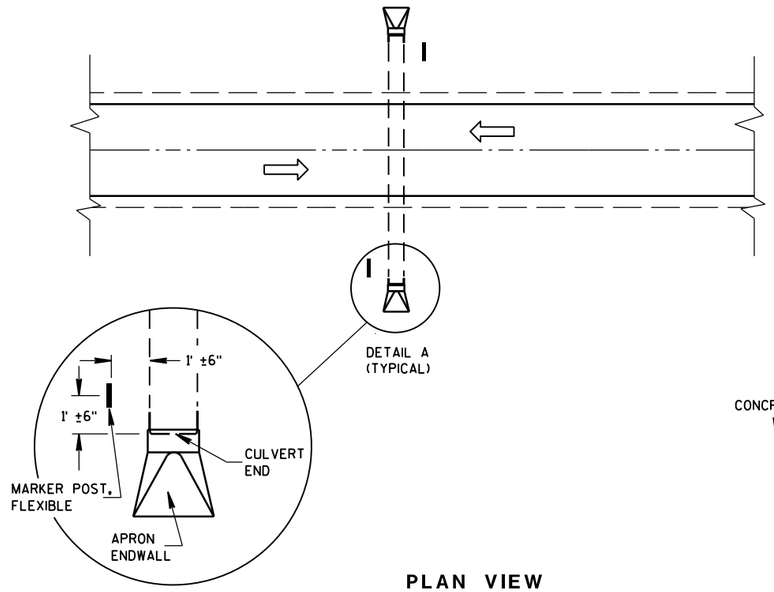
6

SDD 14B44 - 04c



PLAN VIEW

DIVIDED HIGHWAY



DETAIL A
(TYPICAL)

PLAN VIEW

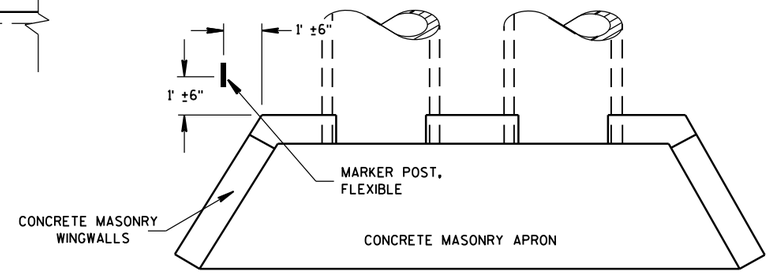
UNDIVIDED HIGHWAY

MARKER POST, FLEXIBLE

DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

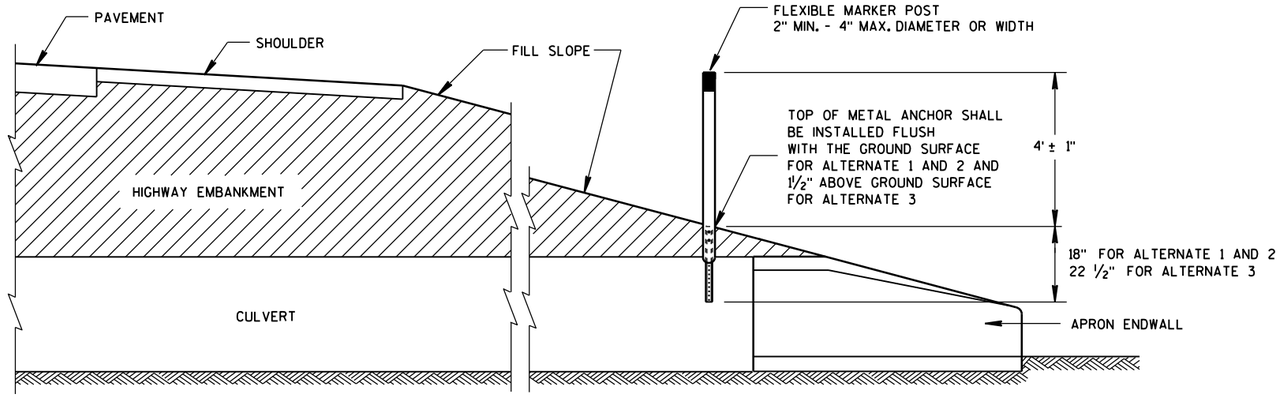
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.



PLAN VIEW

CONCRETE MASONRY ENDWALLS FOR CULVERT PIPE AND PIPE ARCH

FLEXIBLE MARKER POST LOCATION



CROSS SECTION

FLEXIBLE MARKER POST

FLEXIBLE MARKER POST FOR CULVERT END

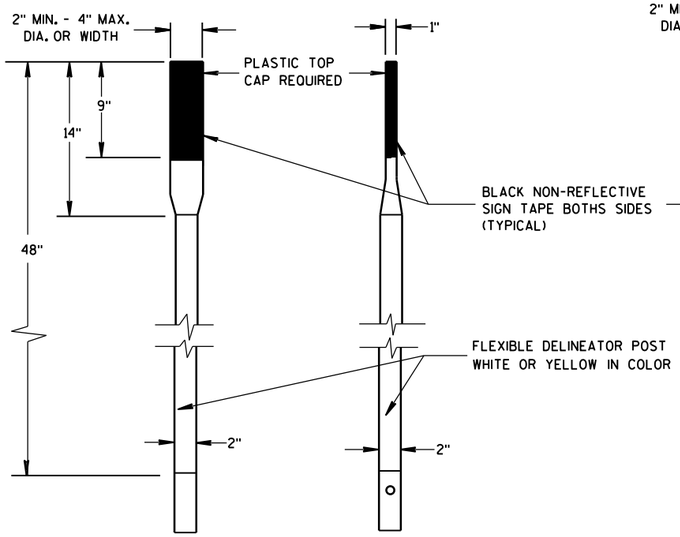
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

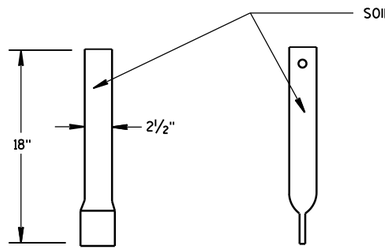
6

S.D.D. 15 A 3-2a

6

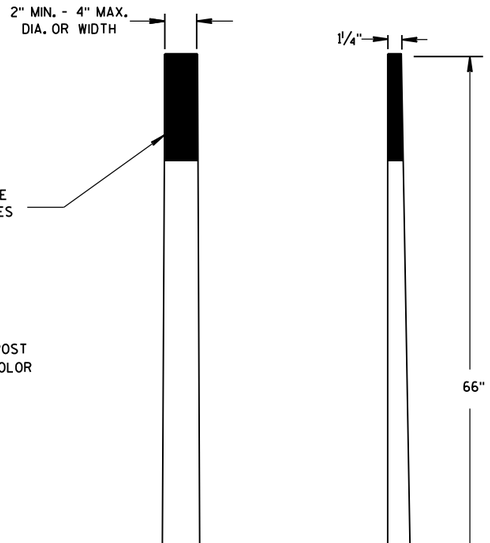
S.D.D. 15 A 3-2a





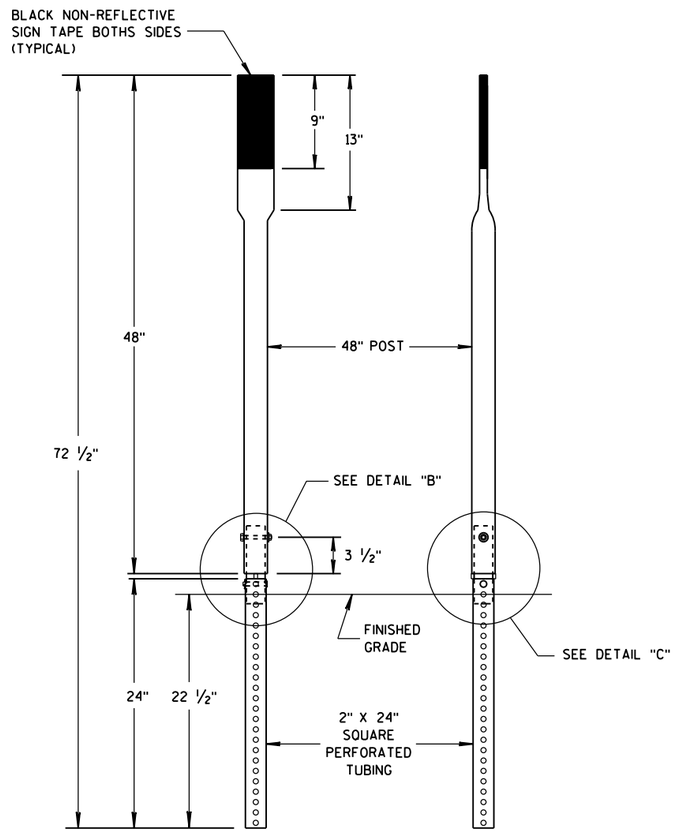
FRONT VIEW SIDE VIEW

ALTERNATE 1



FRONT VIEW SIDE VIEW

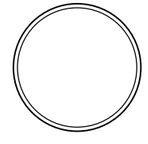
ALTERNATE 2



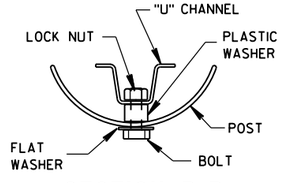
FRONT VIEW SIDE VIEW

ALTERNATE 3

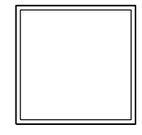
FLEXIBLE MARKER POSTS



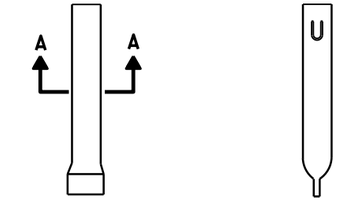
SECTION A-A



SECTION B-B

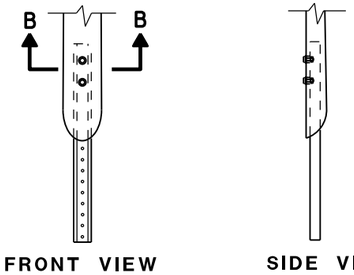


SECTION C-C



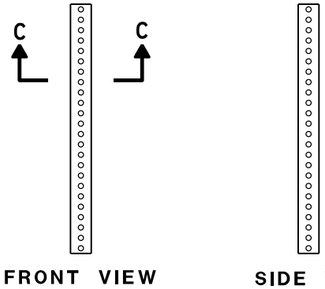
FRONT VIEW SIDE VIEW

ALTERNATE 1



FRONT VIEW SIDE VIEW

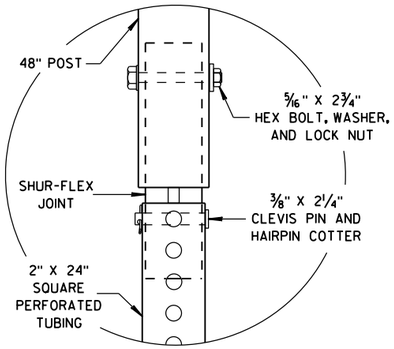
ALTERNATE 2



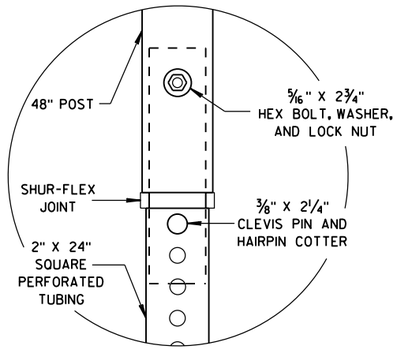
FRONT VIEW SIDE VIEW

ALTERNATE 3

FLEXIBLE MARKER POST ANCHORS



DETAIL B



DETAIL C

FLEXIBLE MARKER POST
FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

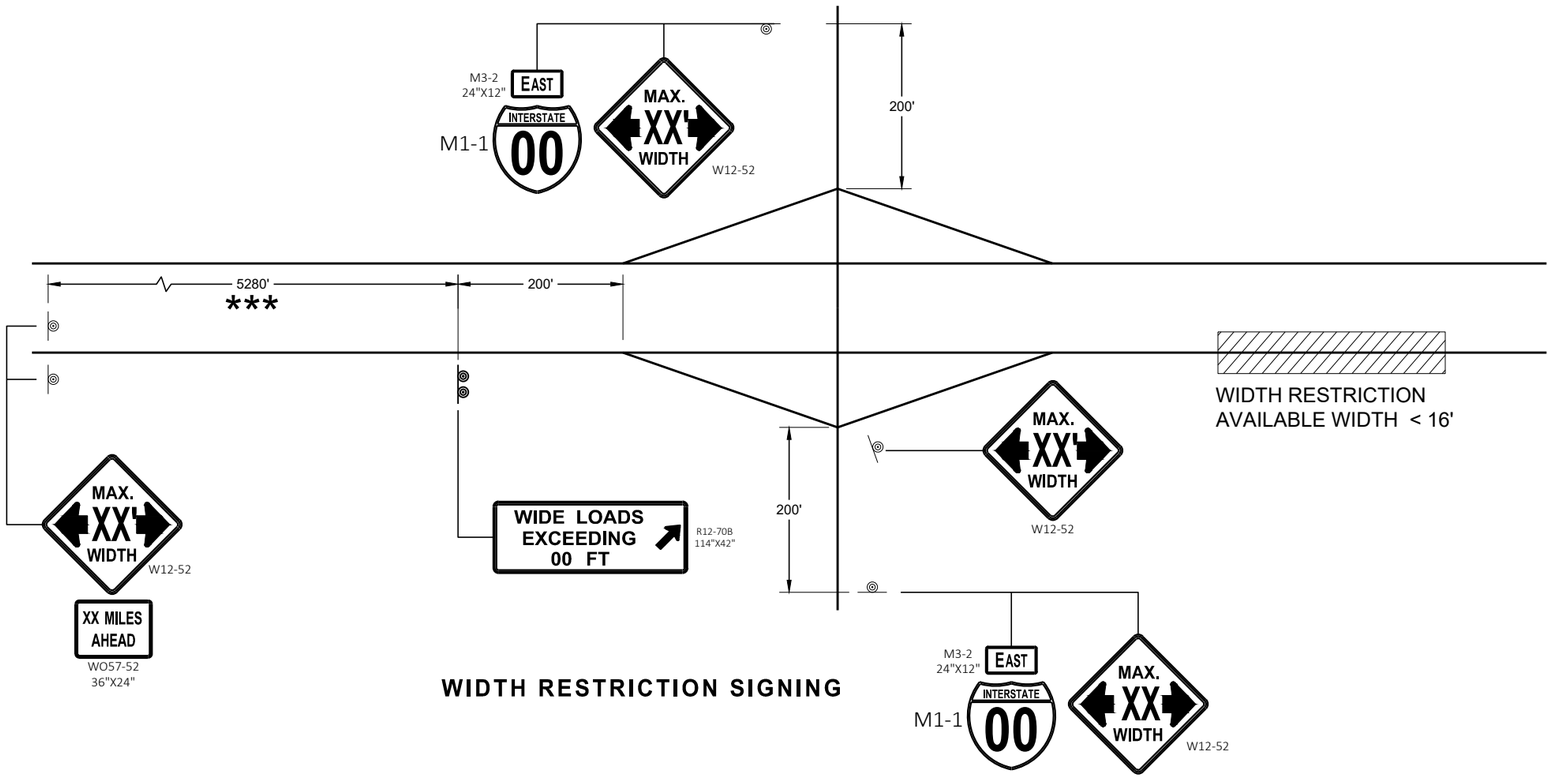
APPROVED
10/1/2012
DATE
/S/ Travis Feltes
STATE TRAFFIC ENGINEER
IGN
FHWA

6

S.D.D. 15 A 3-2b

6

S.D.D. 15 A 3-2b



WIDTH RESTRICTION SIGNING

LEGEND

SIGN ON PERMANENT SUPPORT

GENERAL NOTES

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

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

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

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

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

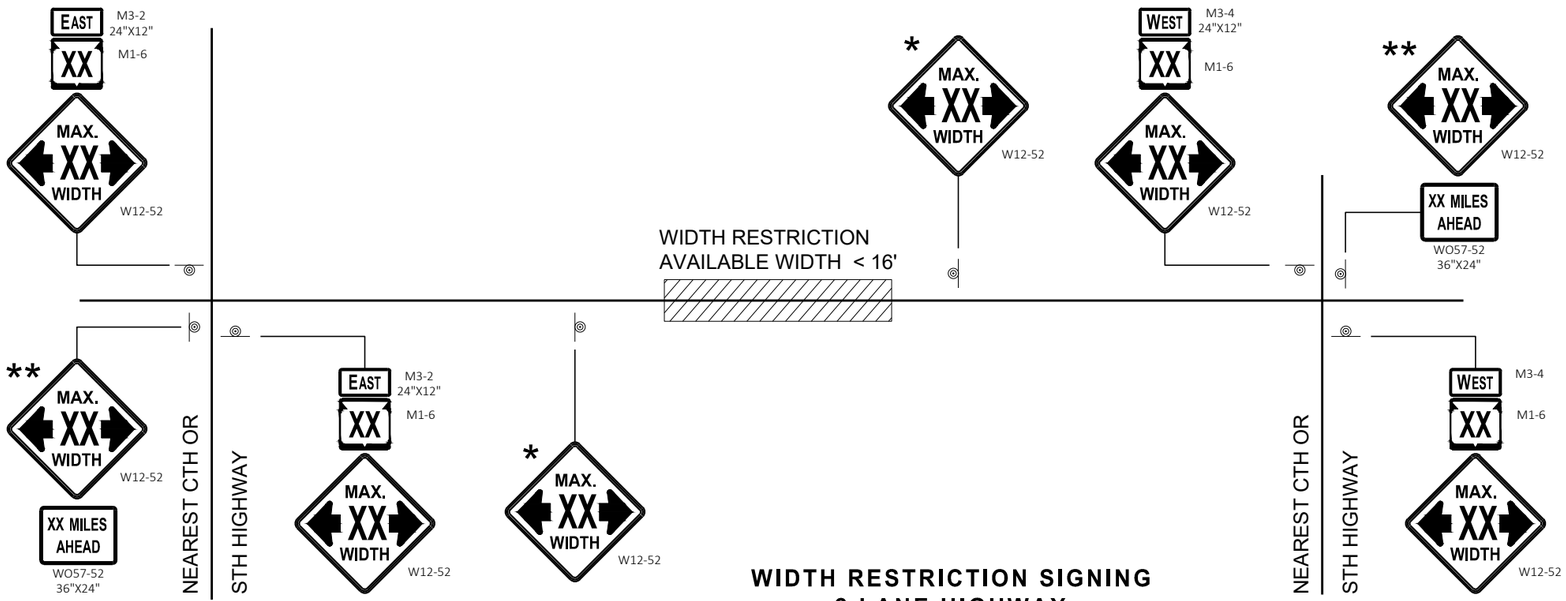
WIDTH ON SIGN TO BE APPROXIMATELY ONE FOOT LESS THAN AVAILABLE WIDTH.

* PLACE 500 FEET BEFORE THE W20 - 1A AND 500 FEET BEFORE ADDITIONAL SIGNS FOR ROADWAYS WITH A PRE - CONSTRUCTION SPEED LIMIT OF 45 MPH OR MORE. FOR 35-40 MPH, USE 350 FOOT TYPICAL SPACING. FOR 25-30 MPH, USE 200 FOOT TYPICAL SPACING.

** SIGN SHALL BE VISIBLE FROM ROADWAY.

*** ADDITIONAL SIGNS NEEDED IF THERE IS AN ON RAMP BETWEEN SIGNS.

WIDTH ON SIGN TO BE APPROX. 1 - FOOT LESS THAN AVAILABLE WIDTH



WIDTH RESTRICTION SIGNING
2 LANE HIGHWAY

ADVANCED WIDTH RESTRICTION SIGNING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA

6

SDD 15C02 - 07f

SDD 15C02 - 07f

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.

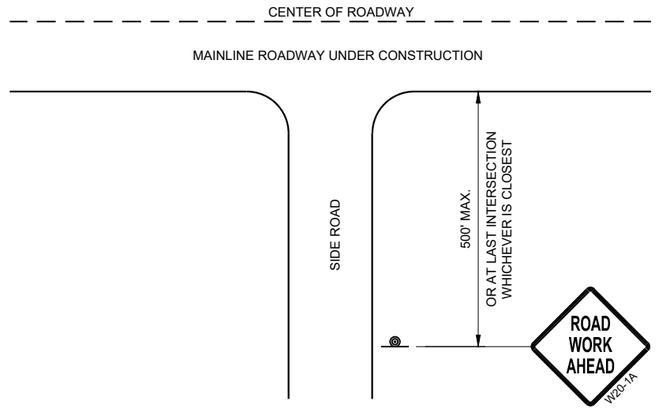
ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

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.



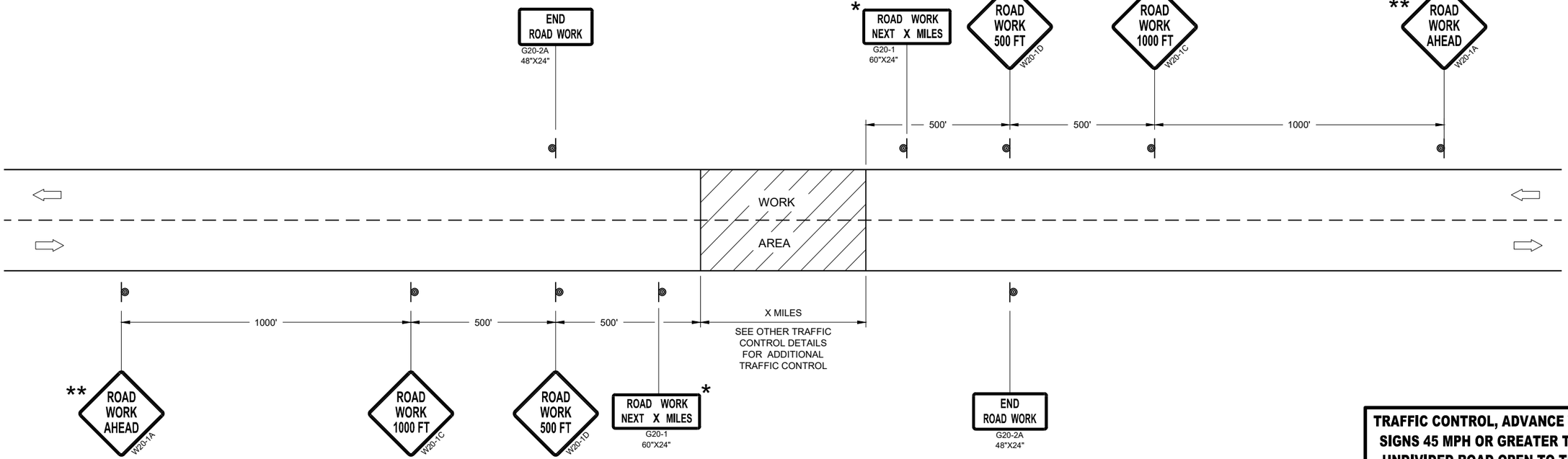
TYPICAL SIDE ROAD APPROACH WARNING SIGN DETAIL

LEGEND

SIGN ON PERMANENT SUPPORT

DIRECTION OF TRAFFIC

WORK AREA



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

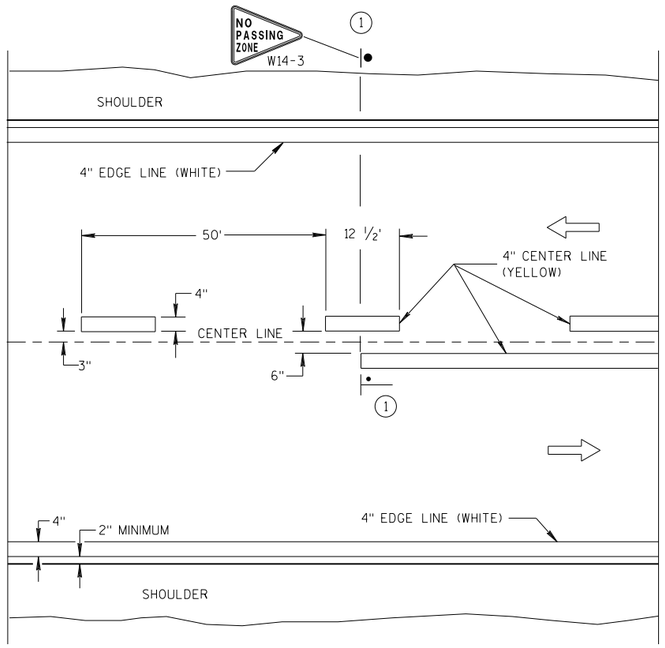
APPROVED
July 2018
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

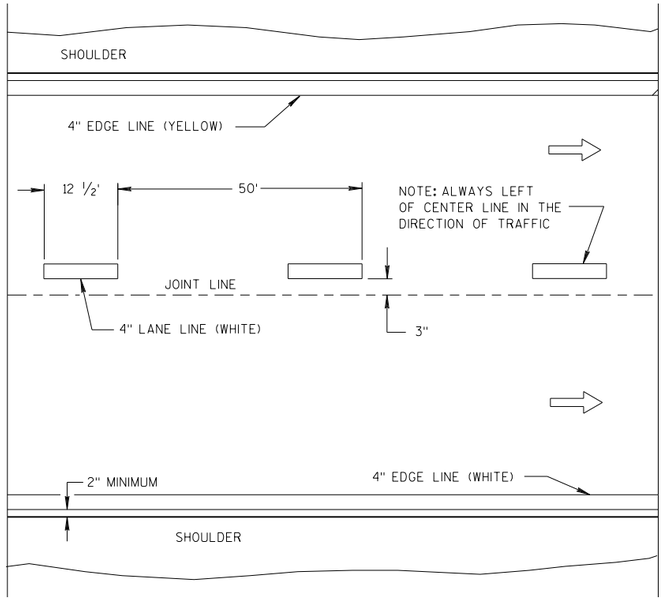
FHWA

6

SDD 15C04 - 05



TWO WAY TRAFFIC



ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING

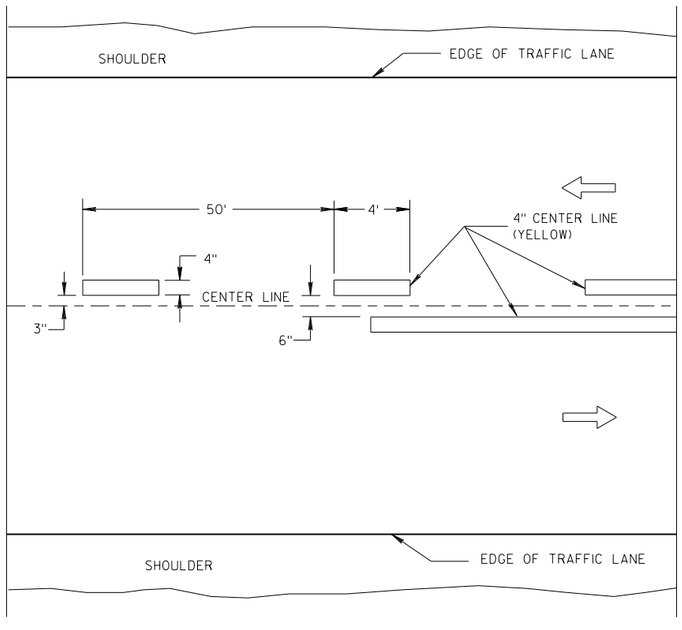
GENERAL NOTES

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

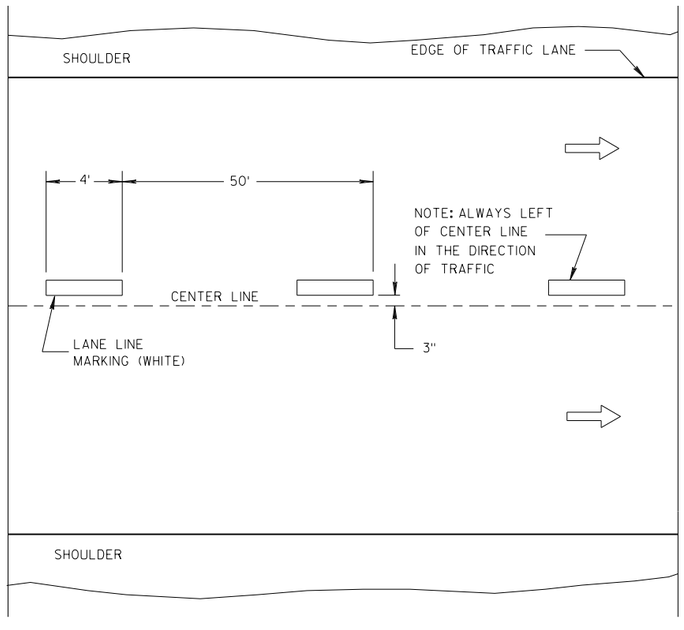
(1) LOCATE THE NO PASSING ZONE W14-3 SIGN WITHIN 50 FEET OF THE "T" MARKING.

NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

LEGEND

"T" MARKING

POST MOUNTED SIGN

LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

7/2018 — DATE

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

FHWA

6

S.D.D. 15 C 8-19a

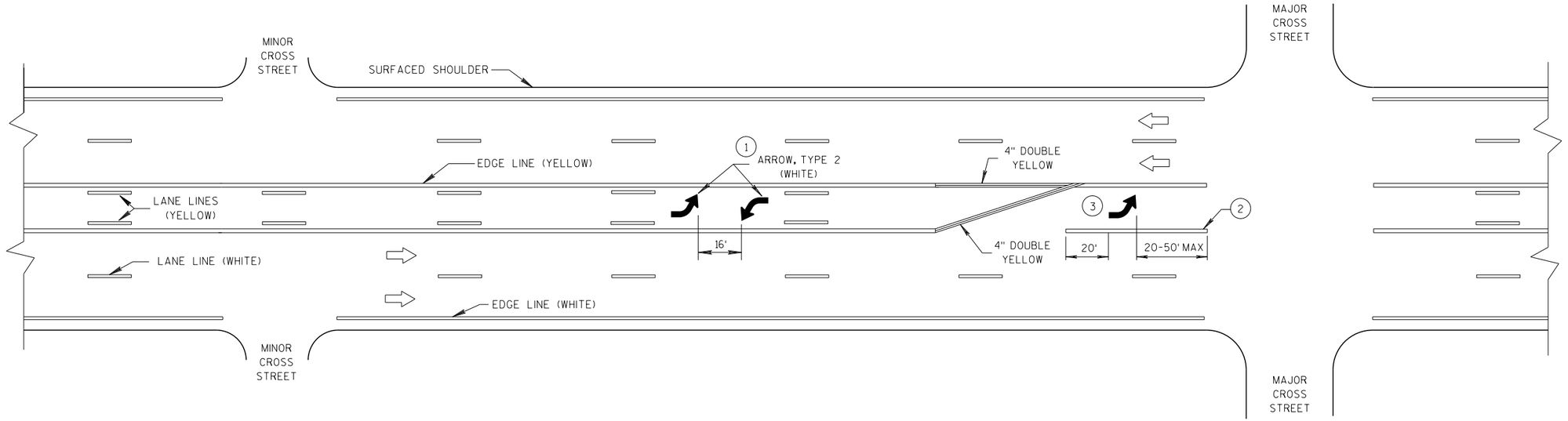
6

S.D.D. 15 C 8-19a

GENERAL NOTES

1. A SET OF ARROWS IS REQUIRED EVERY 400 FEET OR NEAR INTERSECTIONS OR DRIVEWAYS WITH TURNING TRAFFIC.
2. 8" WHITE
3. TURN BAY LENGTH OF LESS THAN 48'DOES NOT REQUIRE PAVEMENT ARROWS OR TEXT

DIRECTION OF TRAFFIC



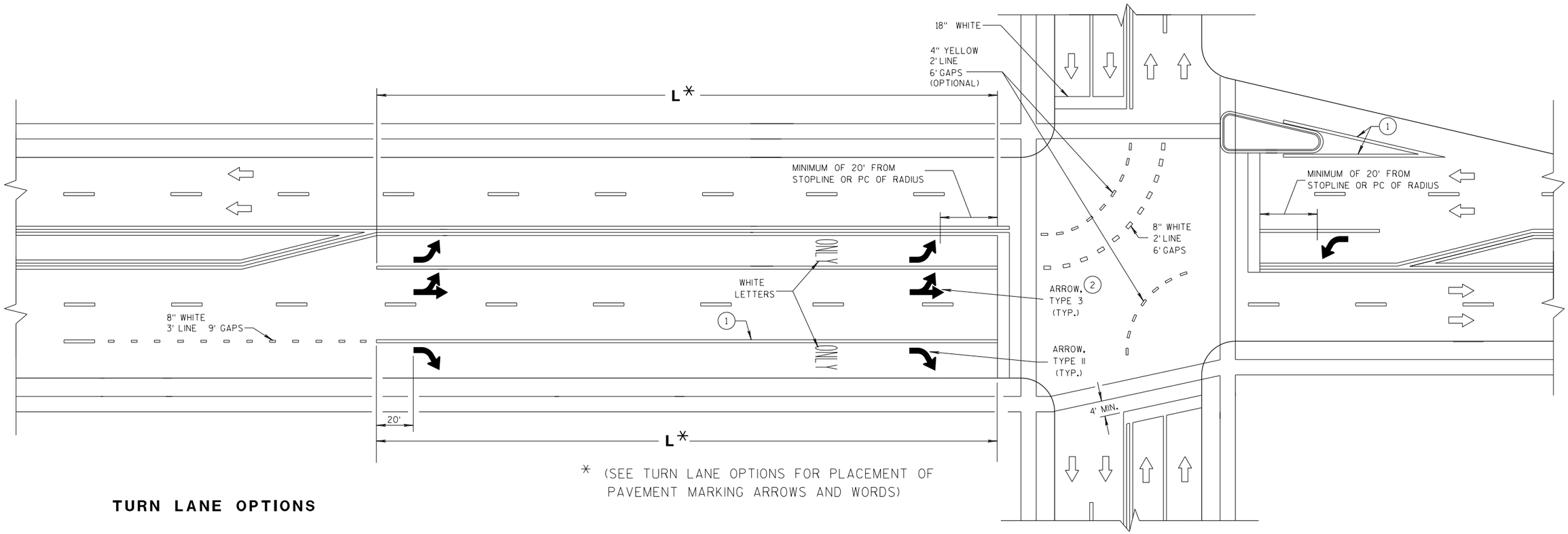
TWO WAY LEFT TURN LANE

PAVEMENT MARKING (TURN LANES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

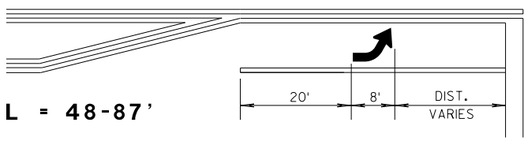
S.D.D. 15 C 8-19b



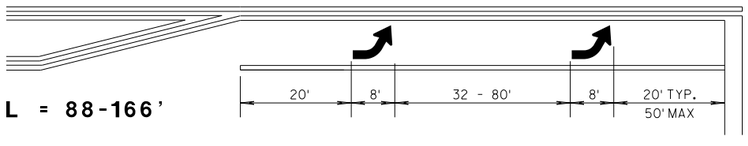
* (SEE TURN LANE OPTIONS FOR PLACEMENT OF PAVEMENT MARKING ARROWS AND WORDS)

TURN LANE OPTIONS

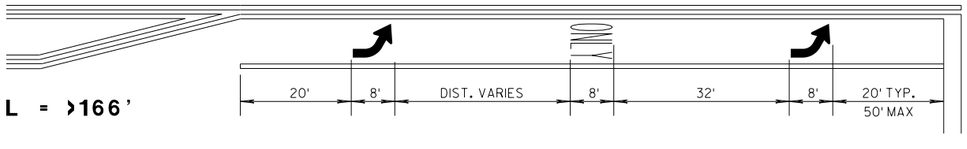
LENGTH OF TURN BAY (**L**) OF 0-47' DOES NOT REQUIRE PAVEMENT MARKING ARROWS OR WORDS



L = 48-87'



L = 88-166'



L = >166'

GENERAL NOTES

(1) 8" WHITE

(2) QUANTITY AND LOCATION OF TYPE 3 ARROW ARE THE SAME AS THE TYPE II ARROWS IN THE ADJACENT TURN LANE. FOR TURN LANES WITH A PHYSICAL SEPARATION, THE ARROWS AND ONLY MARKING ARE ELIMINATED.

⇨ DIRECTION OF TRAFFIC

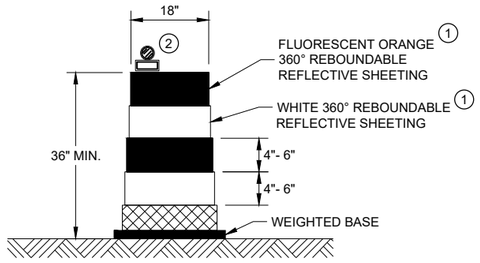
L = LENGTH OF TURN BAY

PAVEMENT MARKING (TURN LANES)

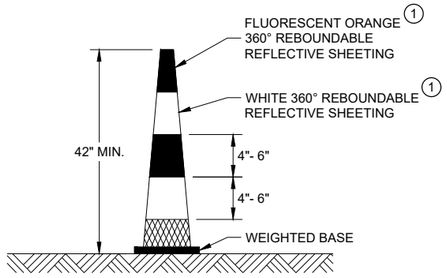
6
S.D.D. 15 C 8-19c

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.

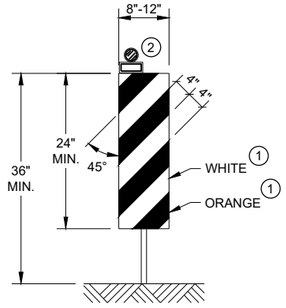


DRUM



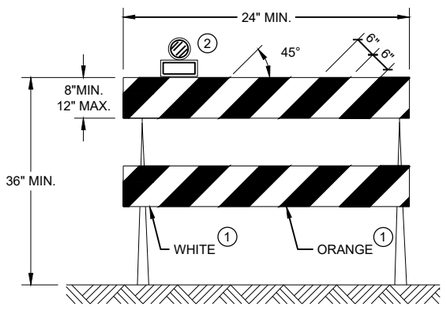
42" CONE

DO NOT USE IN TAPERS
½ SPACING OF DRUMS



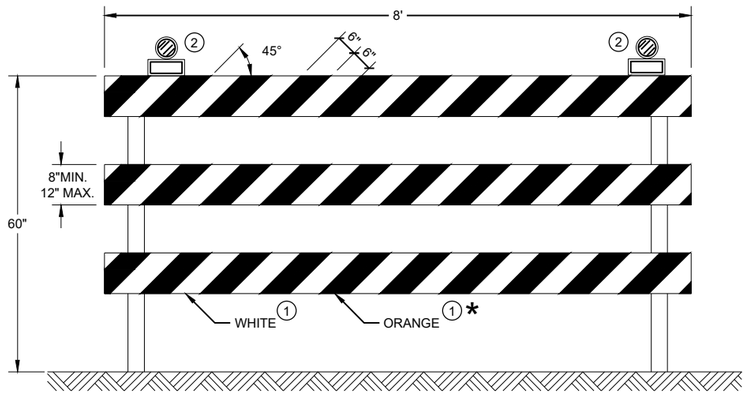
VERTICAL PANEL

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.

CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA

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SDD 15C11 - 07b

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SDD 15C11 - 07b

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.

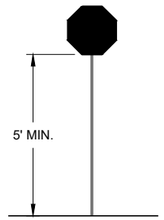
(3) EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS SPACED ACCORDING TO MANUFACTURER'S RECOMMENDATION, PLACED TRANSVERSE ACROSS THE LANE AT LOCATIONS SHOWN.

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.



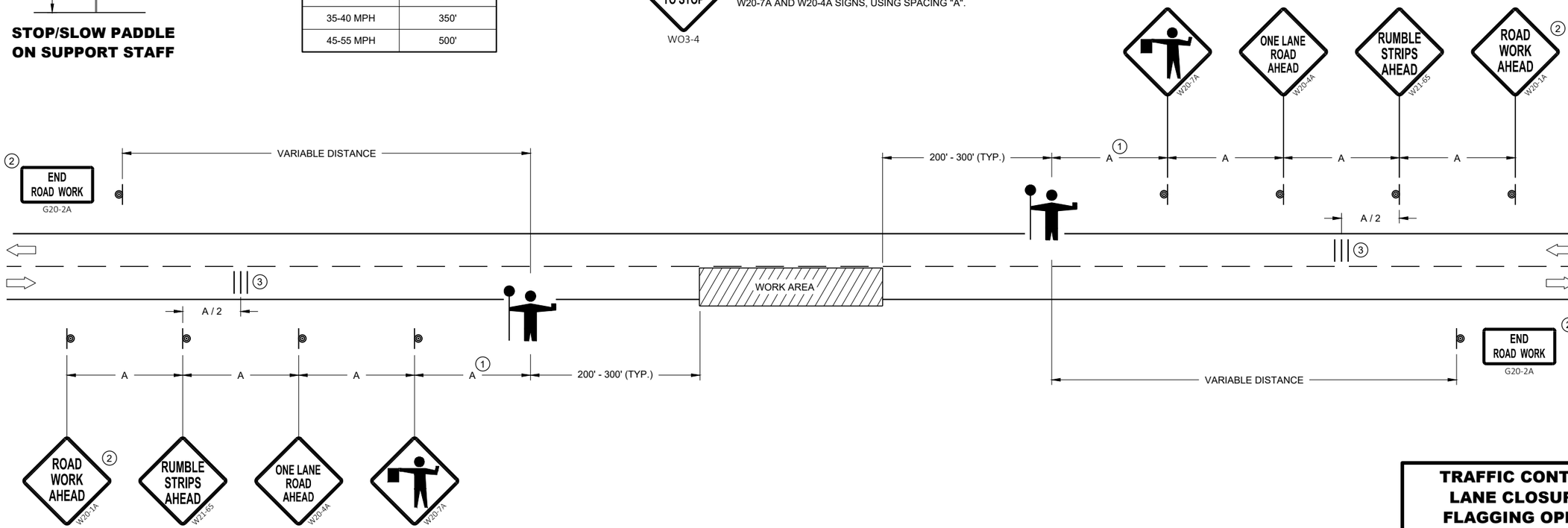
STOP/SLOW PADDLE ON SUPPORT STAFF

SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

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

WO3-4

USE OF WO3-4 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

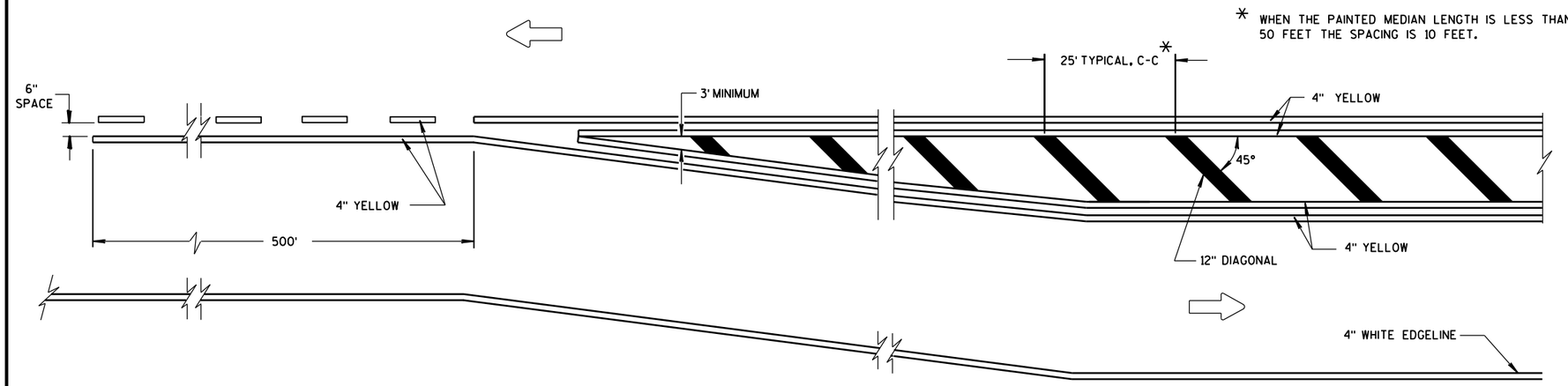
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2019
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA

6
SDD 15C12 - 07

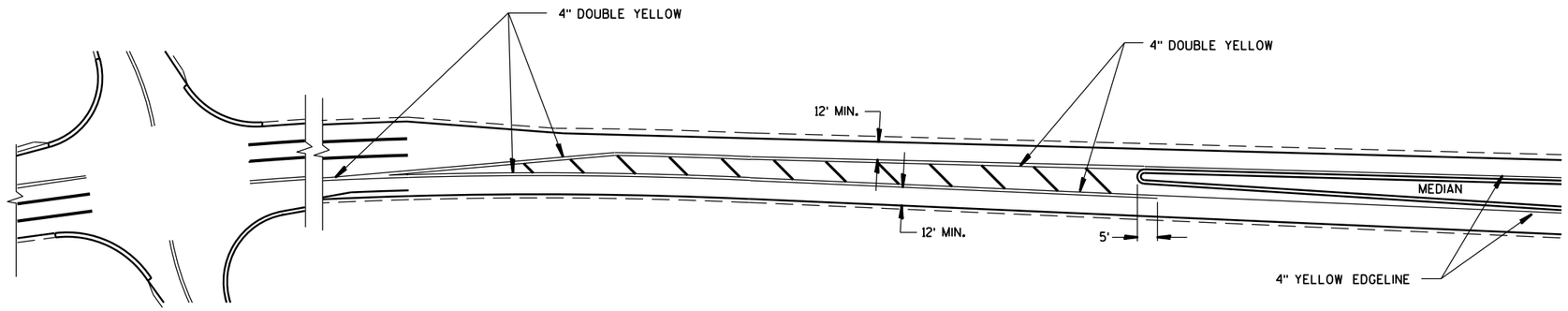


MEDIAN ISLAND DETAIL

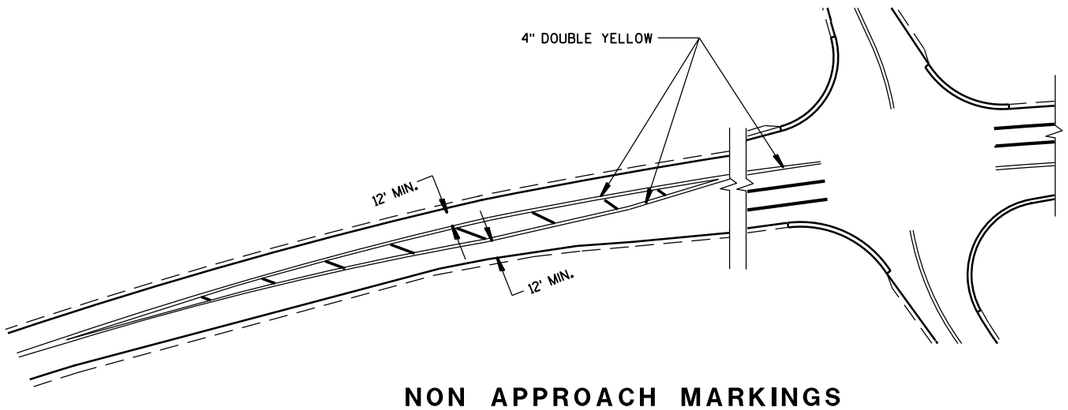
GENERAL NOTE

DIAGONALS ARE OPTIONAL WHEN PAINTED ISLAND IS LESS THAN 6 FEET AT WIDEST POINT.

DIRECTION OF TRAVEL



APPROACH MARKINGS FOR OTHER MEDIAN TYPES



NON APPROACH MARKINGS

MEDIAN ISLAND MARKING	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE FHWA	/S/ Matthew Rauch STATE SIGNING AND MARK ER

6

S.D.D. 15 C 18-4

6

S.D.D. 15 C 18-4

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.

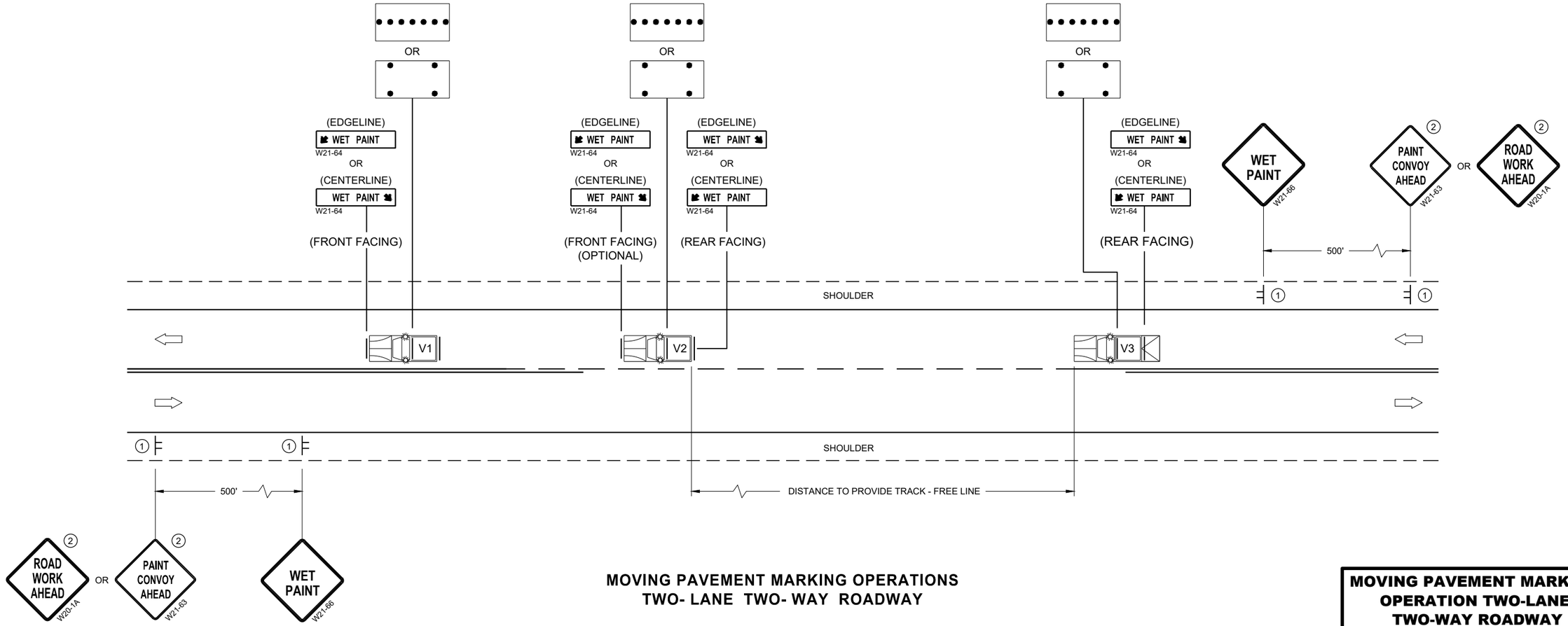
WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR LAY STATIONARY SIGNS AND SUPPORTS FLAT ON THE GRADE WITH UPRIGHTS ORIENTED PARALLEL TO AND DOWNSTREAM FROM TRAFFIC.

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
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA

6

SDD 15C19 - 06a

6

SDD 15C19 - 06a

LEGEND

V1 LEAD VEHICLE

V2 MARKING VEHICLE

V3 SHADOW VEHICLE

TRUCK MOUNTED ATTENUATOR (TMA)

SIGN ON TEMPORARY SUPPORT

DIRECTION OF TRAFFIC

FLASHING ARROW PANEL (MERGE)

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. 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.

WHEN WORK ACTIVITY BLOCKS THE LEFT LANE, REVERSE TRAFFIC CONTROL.

WHEN A RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, PROVIDE ADDITIONAL TRAFFIC CONTROLS AS SPECIFIED IN THE CONTRACT OR AS APPROVED BY THE ENGINEER.

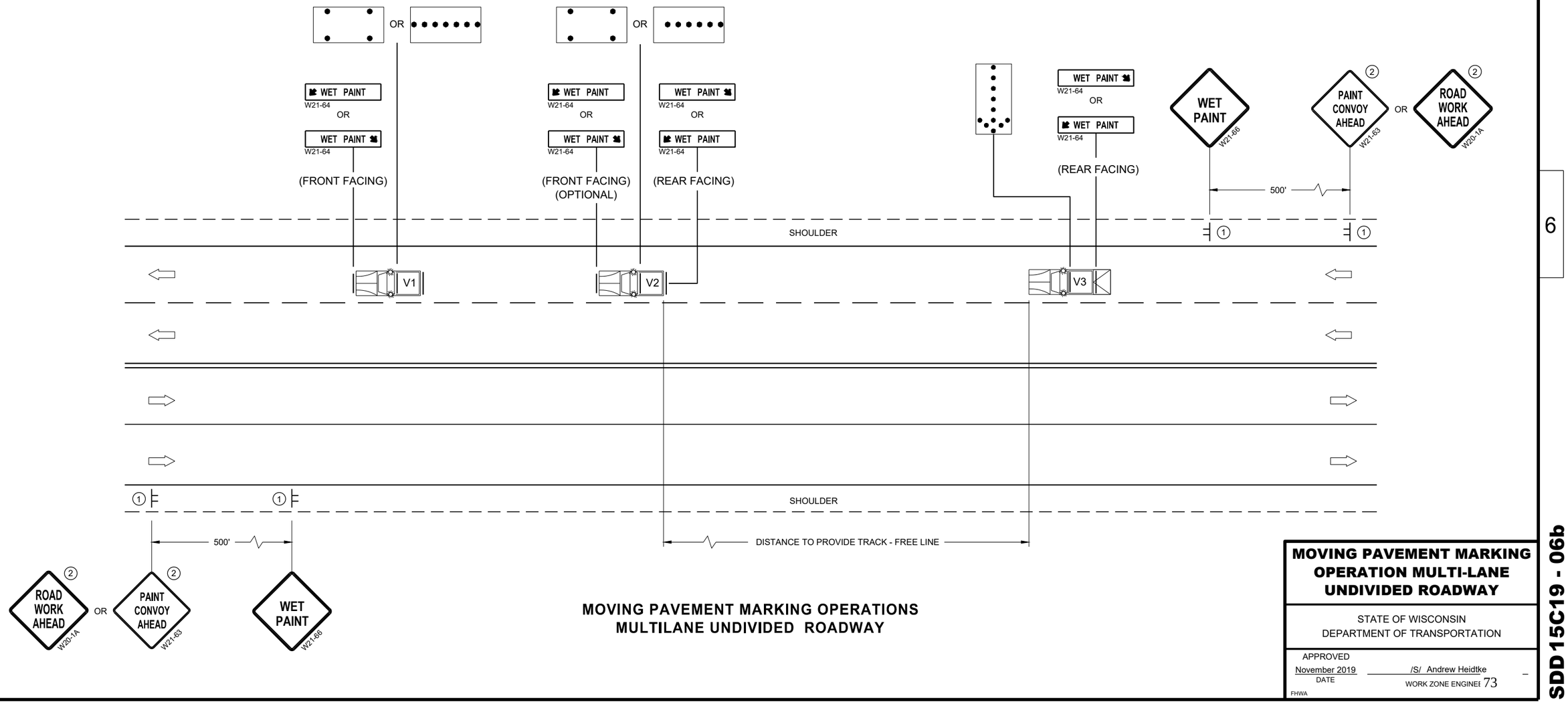
WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR LAY STATIONARY SIGNS AND SUPPORTS FLAT ON THE GRADE WITH UPRIGHTS ORIENTED PARALLEL TO AND DOWNSTREAM FROM TRAFFIC.

CONES SHOULD BE USED BETWEEN THE MARKING AND SHADOW VEHICLES 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 HAVE A MINIMUM HEIGHT OF 18" FOR WET PAVEMENT MARKINGS.

(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
MULTILANE UNDIVIDED ROADWAY

MOVING PAVEMENT MARKING OPERATION MULTI-LANE UNDIVIDED ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2019 — DATE
/S/ Andrew Heidtke — WORK ZONE ENGINEER

FHWA

6

SDD 15C19 - 06b

LEGEND

V1 MARKING VEHICLE

V2 SHADOW VEHICLE

V3 TRAIL VEHICLE

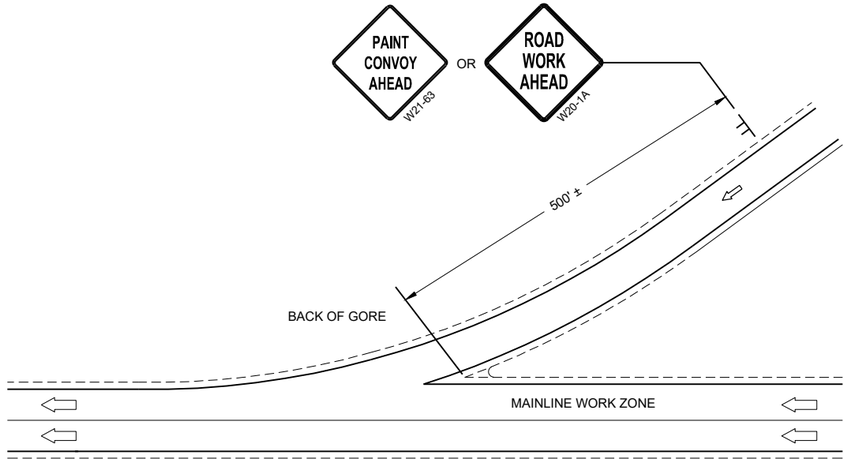
TRUCK MOUNTED ATTENUATOR (TMA)

SIGN ON TEMPORARY SUPPORT

DIRECTION OF TRAFFIC

FLASHING ARROW PANEL (MERGE)

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. 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.

WHEN WORK ACTIVITY BLOCKS THE LEFT LANE, REVERSE TRAFFIC CONTROL.

WHEN A RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, PROVIDE ADDITIONAL TRAFFIC CONTROLS AS SPECIFIED IN THE CONTRACT OR AS APPROVED BY THE ENGINEER.

USE AN ATTENUATOR ON THE REARMOST VEHICLE THAT BLOCKS ALL OR PART OF THE TRAFFIC LANE.

IF THE SHOULDER IS TOO NARROW TO ACCOMMODATE THE LAST TRAILING VEHICLE, THE VEHICLE SHOULD STRADDLE THE EDGE LINE.

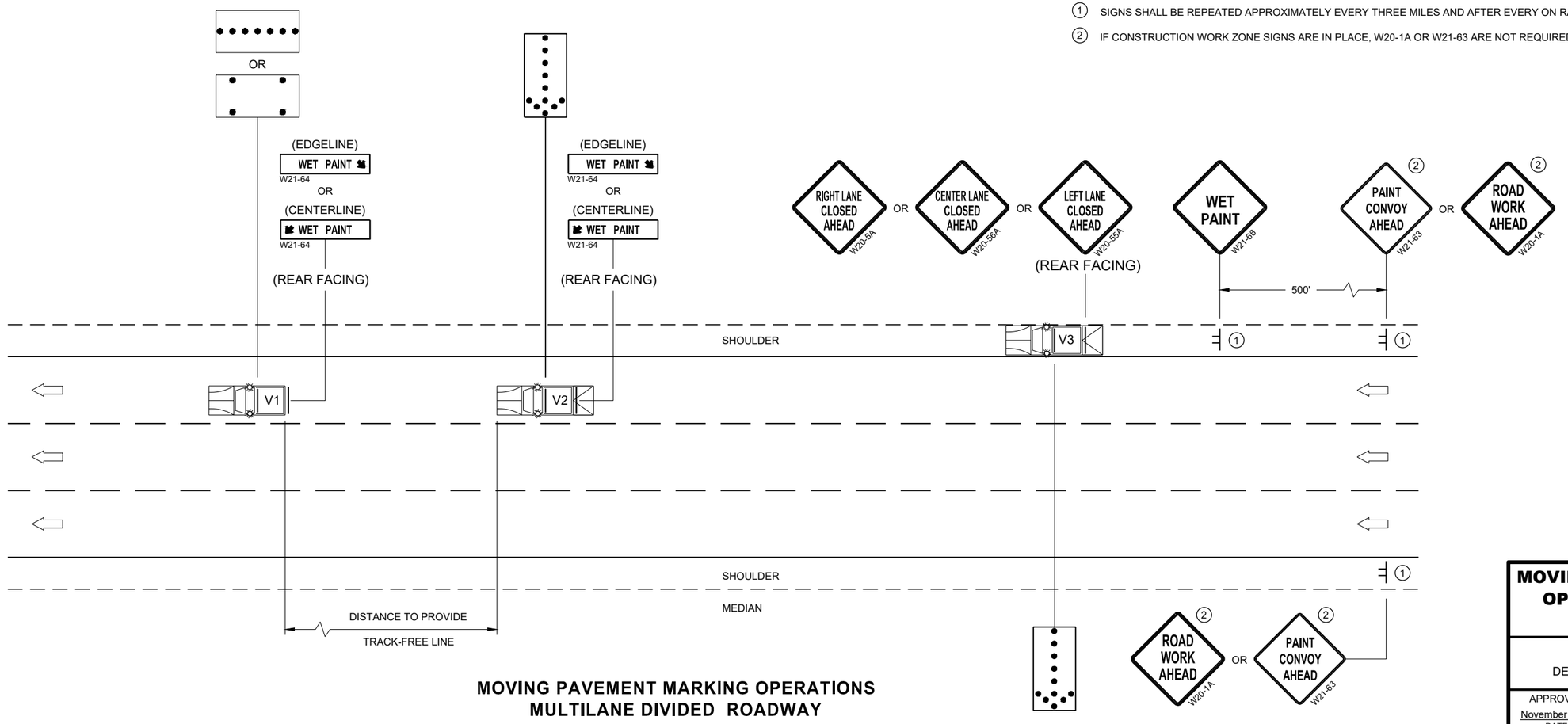
WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR LAY STATIONARY SIGNS AND SUPPORTS FLAT ON THE GRADE WITH UPRIGHTS ORIENTED PARALLEL TO AND DOWNSTREAM FROM TRAFFIC

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 HEIGHT OF 18" FOR WET PAVEMENT MARKINGS

(1) SIGNS SHALL BE REPEATED APPROXIMATELY EVERY THREE MILES AND AFTER EVERY ON RAMP.

(2) IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1A OR W21-63 ARE NOT REQUIRED.



MOVING PAVEMENT MARKING OPERATIONS
MULTILANE DIVIDED ROADWAY

MOVING PAVEMENT MARKING OPERATION MULTI-LANE DIVIDED ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2019
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA

6

SDD 15C19 - 06c

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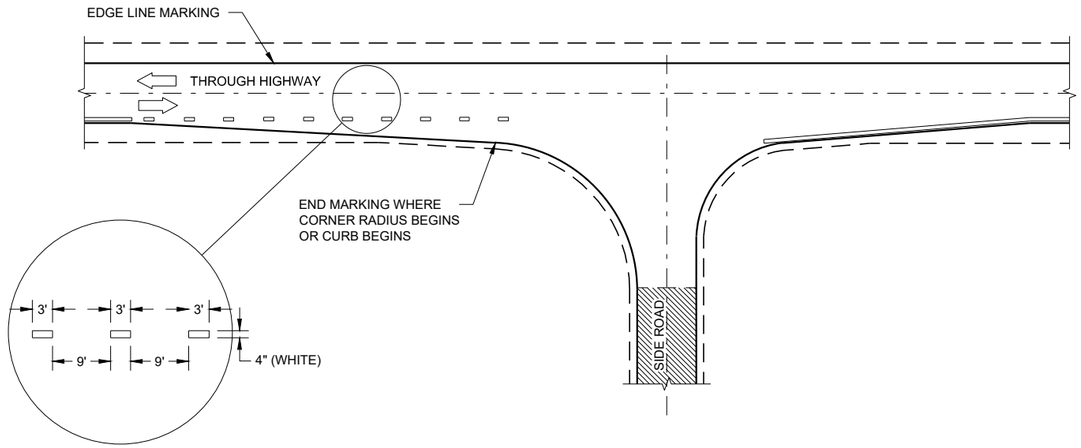
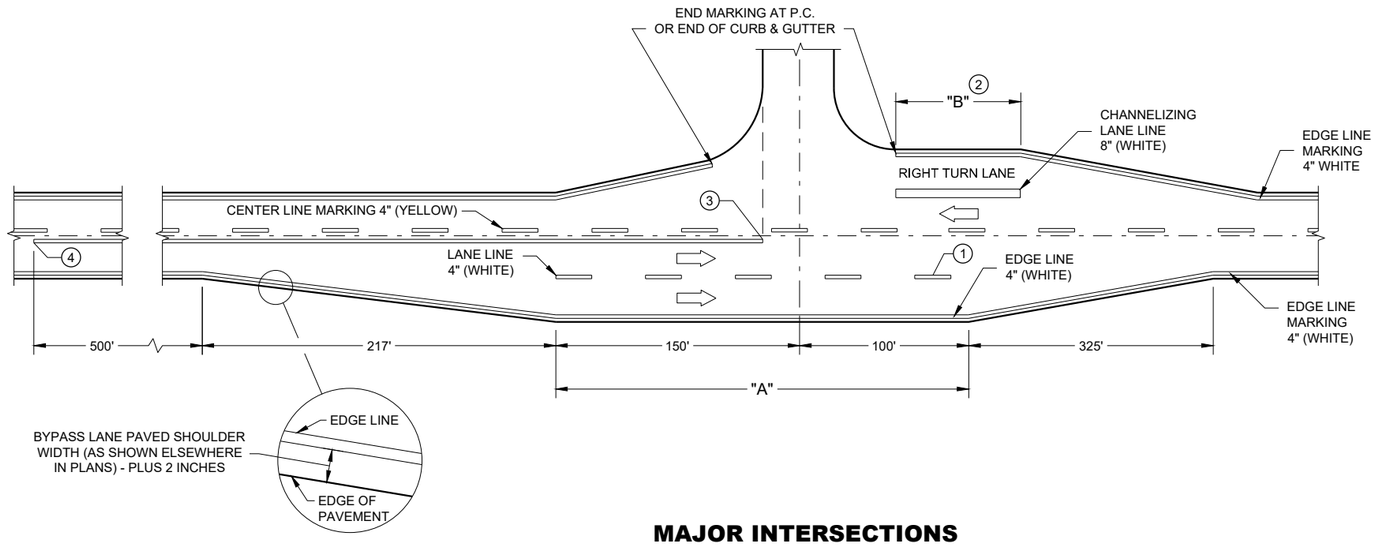
SDD 15C19 - 06c



MINOR INTERSECTION



MAJOR INTERSECTIONS

(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANE)

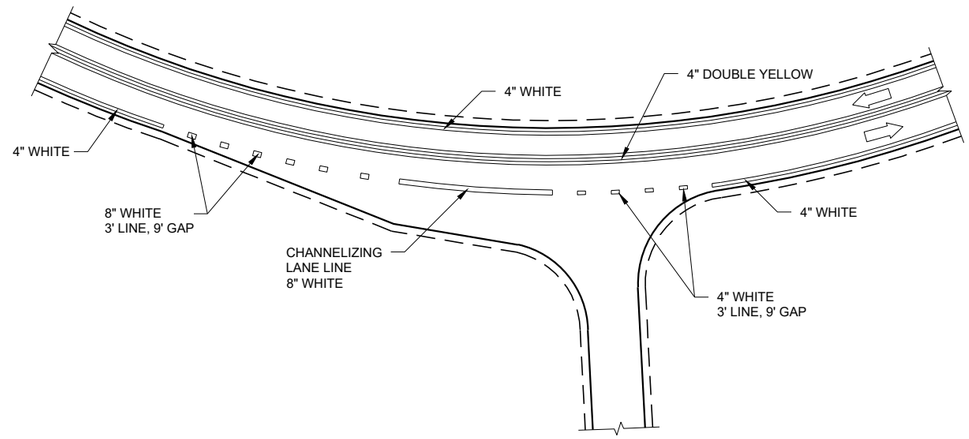
GENERAL NOTES

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

6

SDD 15C35 - 04a

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SDD 15C35 - 04a

LEGEND

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

TABLE A

SHOULDER TAPER LENGTH (FEET)					BUFFER SPACE (FEET)
W / S	4	6	8	10	
30	20	30	40	50	200
35	30	45	55	70	250
40	40	55	75	90	305
45	60	90	120	150	360
50	70	100	135	170	425
55	75	110	150	185	495

W = SHOULDER WIDTH (FEET
S = NON-CONSTRUCTION SPEED LIMIT (MPH)

TAPER LENGTH

L= WS AT 45 MPH OR GREATER
L = WS² / 60 AT 40 MPH OR LESS

SHOULDER TAPER LENGTH = 1/3L

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

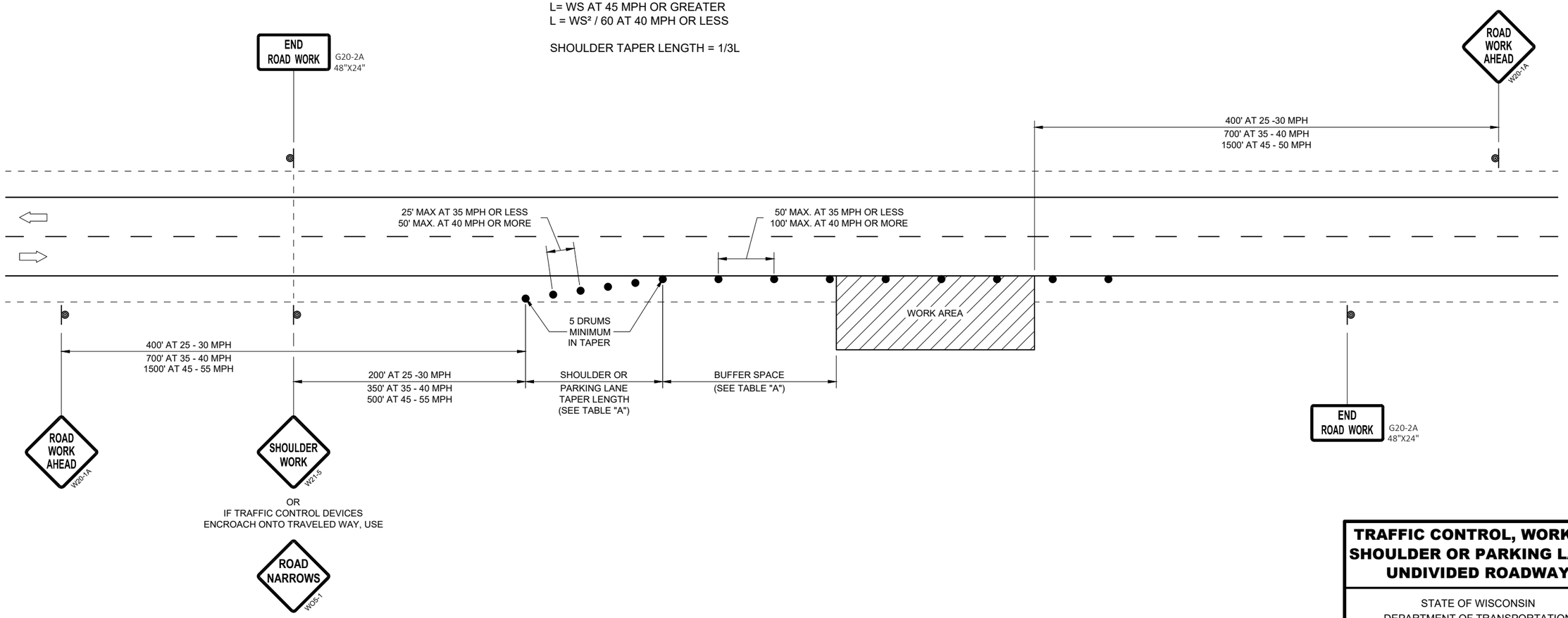
ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

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

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 WITHN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY RESENT. 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

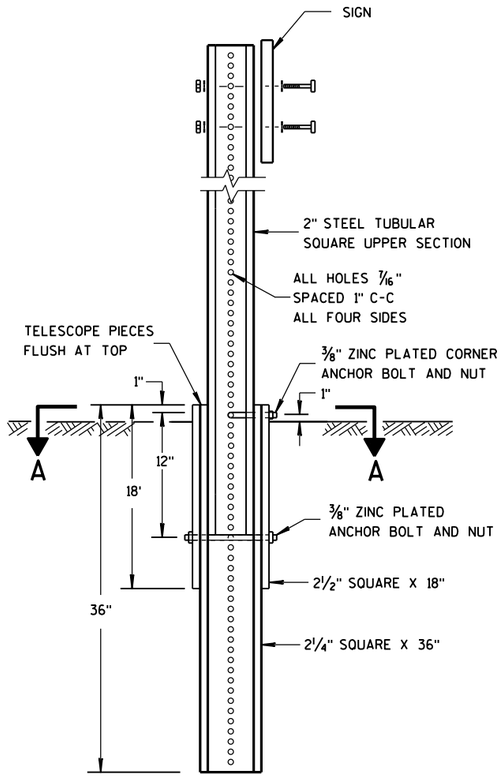
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
August 2019 — DATE
/S/ Andrew Heidtke — STATEWIDE WORK ZONE T SAFETY ENGINEER

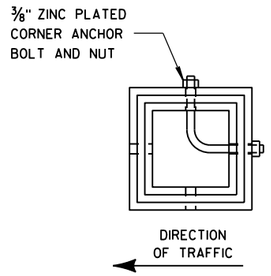
FHWA

6

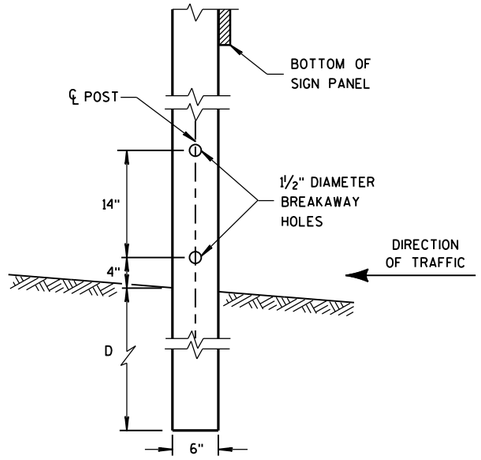
SDD 15D28 - 03



DETAIL OF TUBULAR STEEL SIGN POST



SECTION A-A



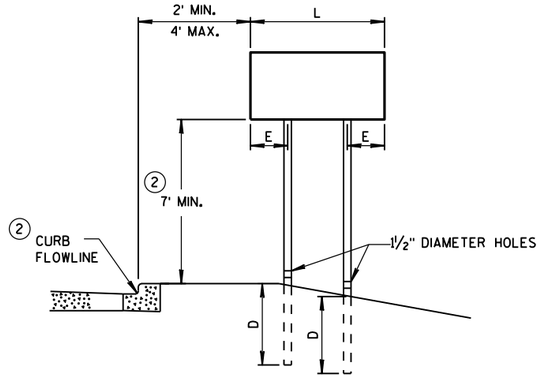
4"x6" WOOD POST MODIFICATION

GENERAL NOTES

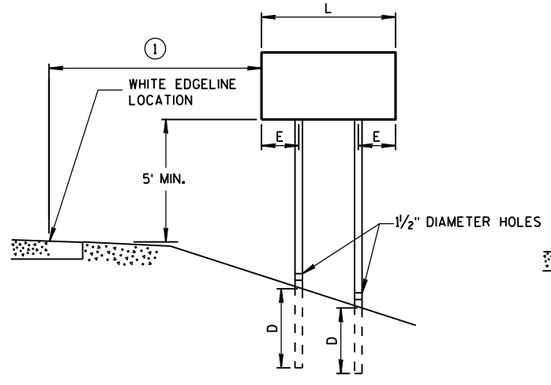
(1) 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.

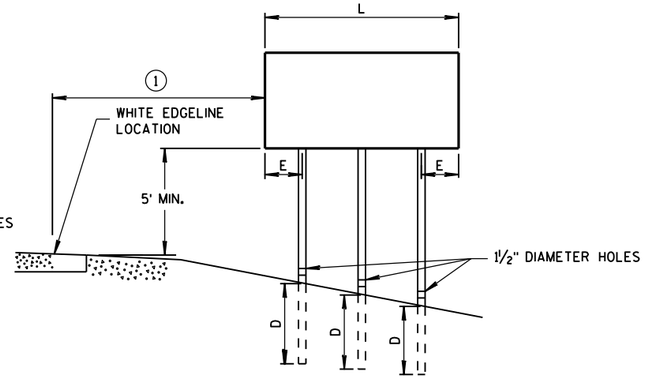
(2) THE EXISTENCE OF CURB AND GUTTER DOES NOT IN ITSELF MANDATE THE VERTICAL CLEARANCE ILLUSTRATED. THAT HEIGHT IS TYPICALLY MEASURED WHERE THERE IS SIDEWALK ADJACENT TO THE ROADWAY OR PARKING IS PERMITTED. IN THE ABSENCE OF SIDEWALK, VERTICAL CLEARANCE IS MEASURED FROM THE TOP OF THE CURB. IF NO SIDEWALK 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.



URBAN AREA





RURAL AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

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.

WOOD POST EMBEDMENT DEPTH

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

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

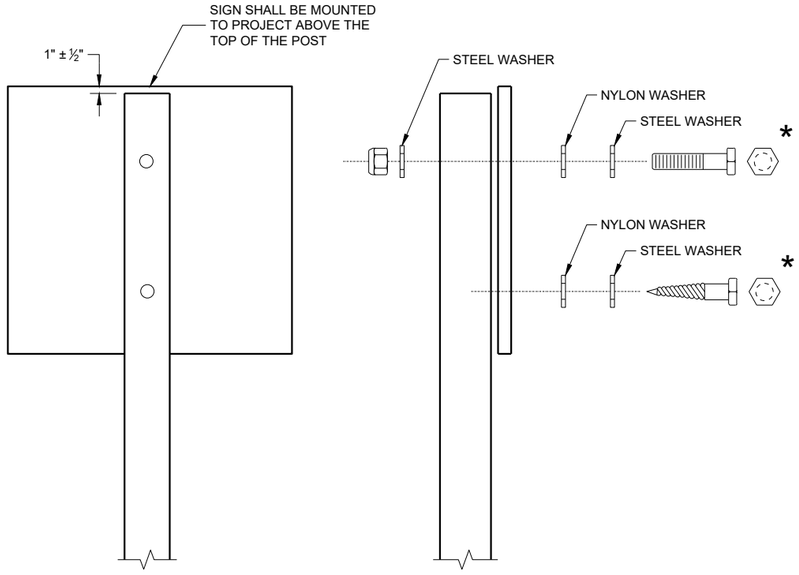
SEE NOTE (3)

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

S.D.D. 15 D 38-2a



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 - ⅜" x 3"
MACHINE BOLTS - 5/16" x 6 ½" OR 7" LENGTH W/NUTS

SQUARE STEEL POST (2" x 2")
MACHINE BOLTS - ⅜" x 3 ¼" LENGTH W/NUTS
RIVETS - 9/32" (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 1/16" 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.

6

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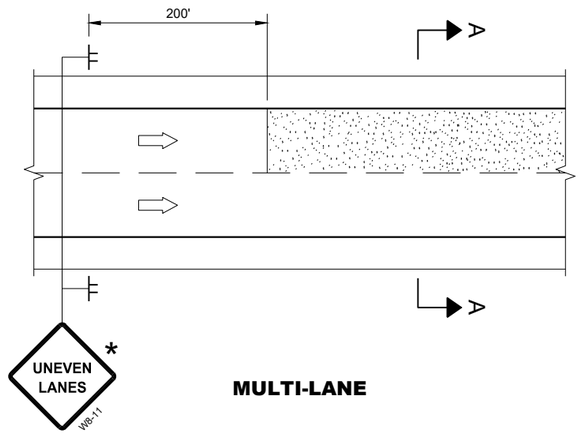
SDD 15D38 - 02b

SDD15D38 - 02b

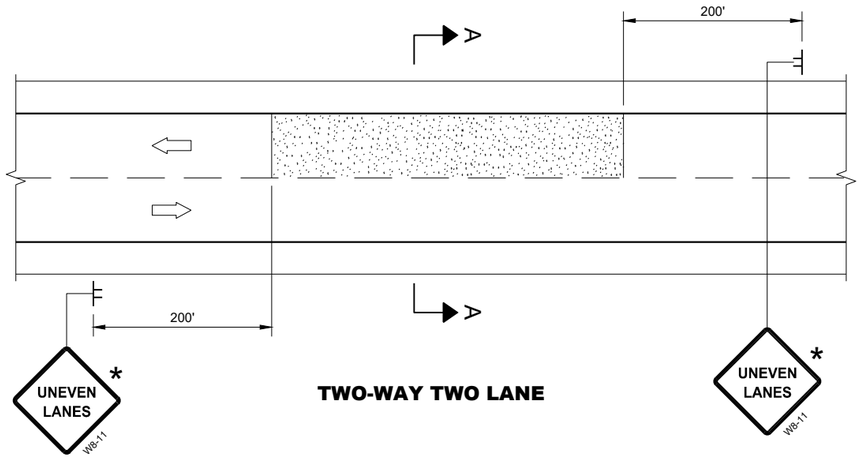
ATTACHMENT OF SIGNS TO POSTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017
DATE
/S/ Andrew Heidtke
WORK ZONE ENGINEE
FHWA



MULTI-LANE



TWO-WAY TWO LANE

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.

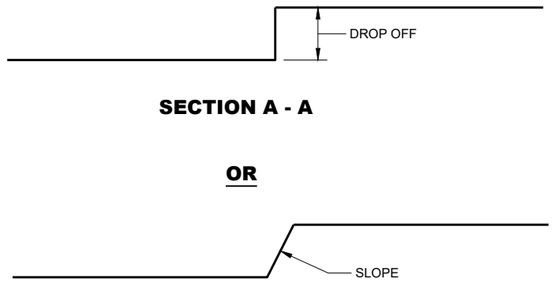
WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

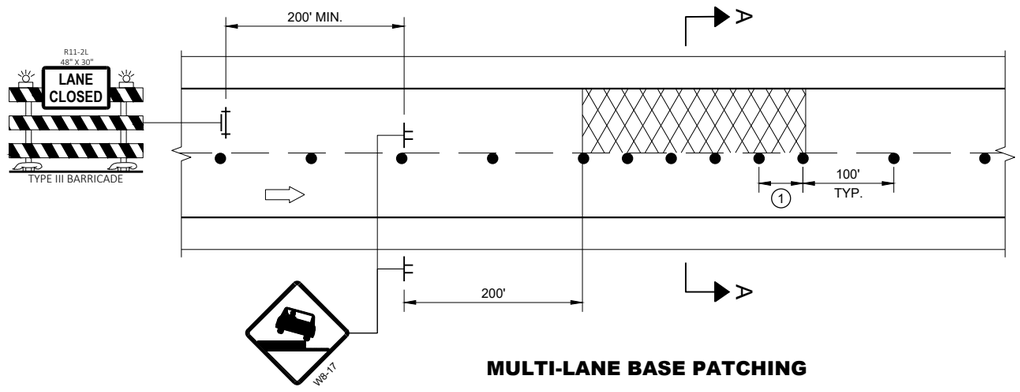
* IF THE DROP-OFF IS CONTINUOUS ALONG THE PROJECT, PLACE ADDITIONAL SIGNS EVERY 1 MILE AND AFTER EVERY ENTRANCE RAMP.

(1) USE CLOSER SPACING WHEN DELINEATING DROP-OFF.

LEGEND

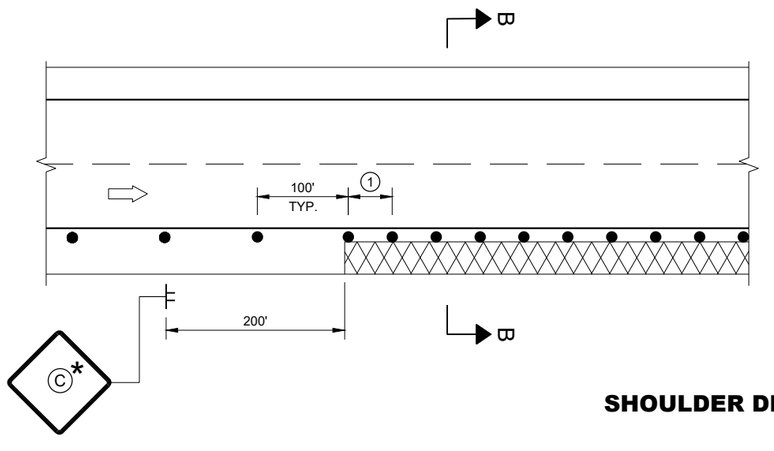
- SIGN ON TEMPORARY SUPPORT
- TRAFFIC CONTROL DRUM
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC
- WORK AREA WITH DROP-OFF
- MILLED SURFACE



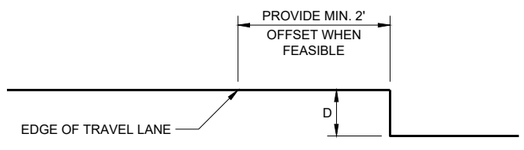


MULTI-LANE BASE PATCHING

ADJACENT LANE DROP-OFFS



SHOULDER DROP-OFFS



SECTION B - B

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
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA

6

SDD 15D39 - 02

6

SDD 15D39 - 02

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.

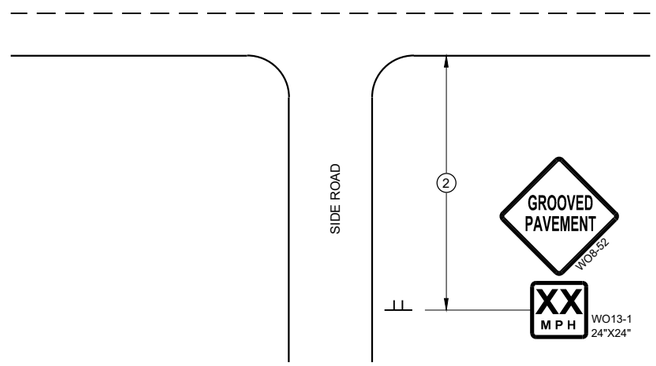
(1) PLACE SIGNS 350' IN ADVANCE OF MILLED SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.

(2) PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.

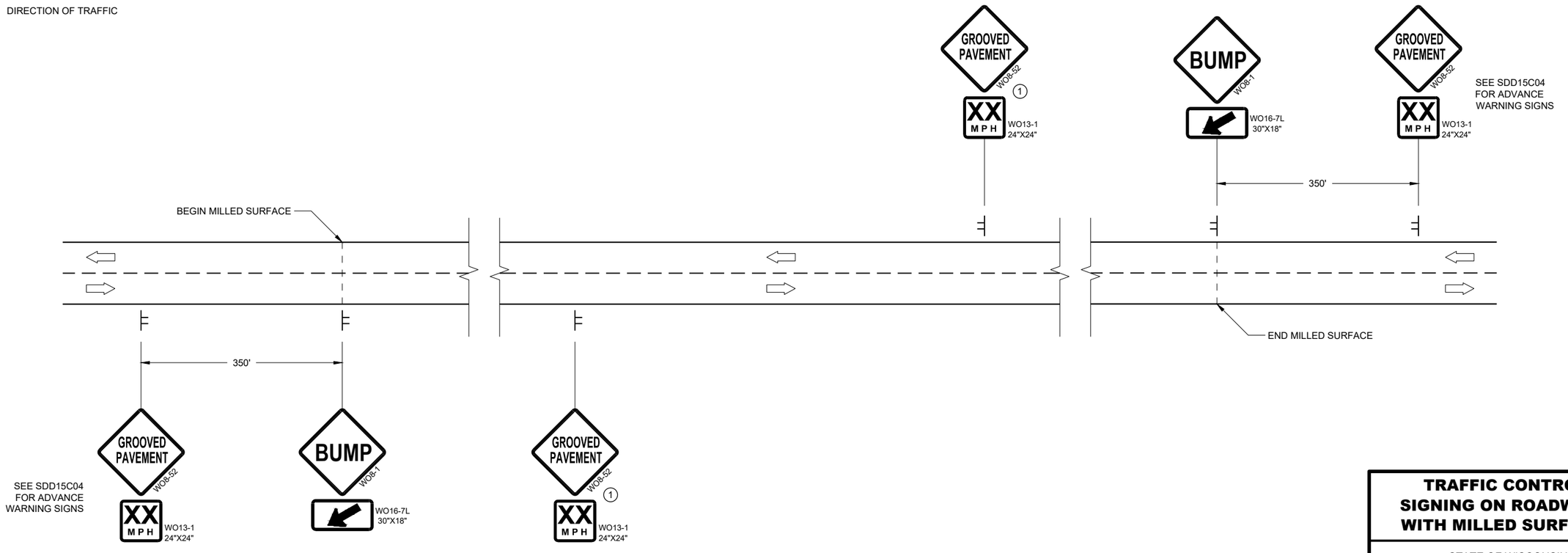
LEGEND

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
August 2019
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEER

FHWA

6

SDD 15D44 - 01

GENERAL NOTES

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

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

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

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

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

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

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

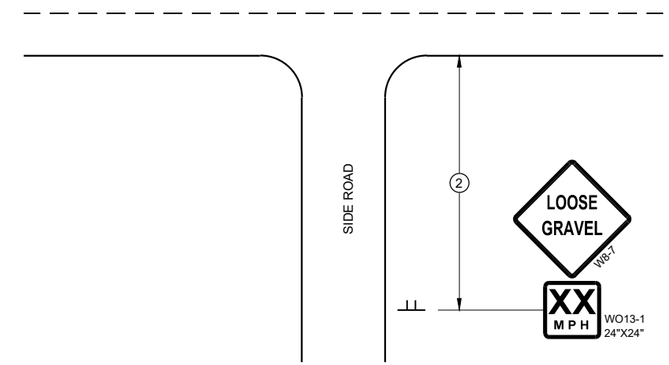
(1) PLACE SIGNS 350' IN ADVANCE OF CHIP SEALED SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.

(2) PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.

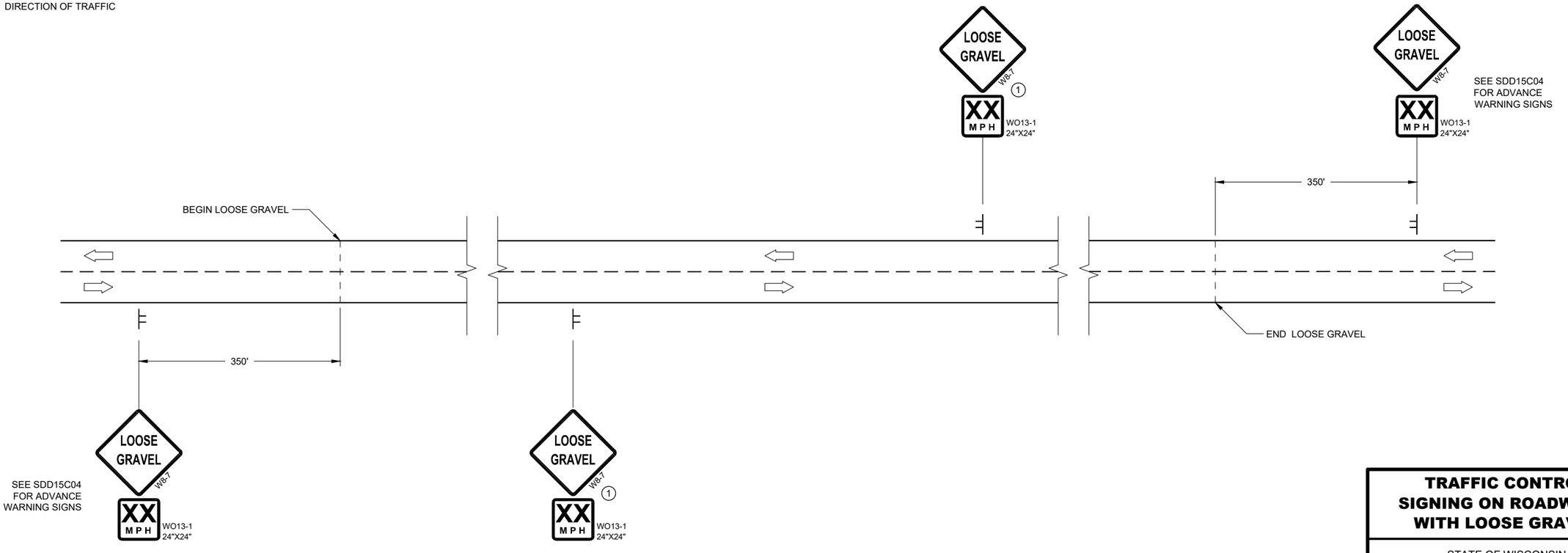
LEGEND

SIGN ON TEMPORARY SUPPORT

DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH SIGN DETAIL



DETAIL FOR SIGNING ON CHIP SEALED SURFACES

TRAFFIC CONTROL SIGNING ON ROADWAYS WITH LOOSE GRAVEL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
August 2019
DATE

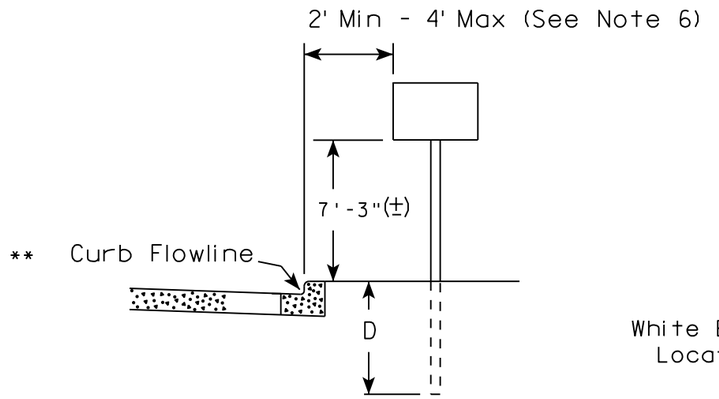
/S/ Andrew Heidtke
WORK ZONE ENGINEER

FHWA

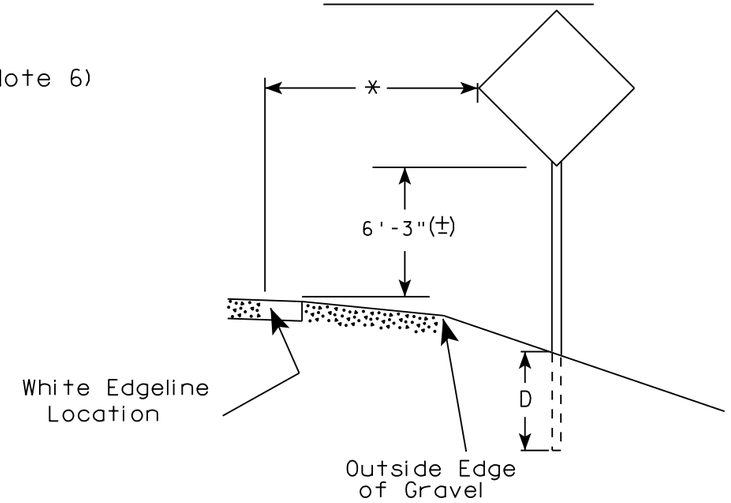
6

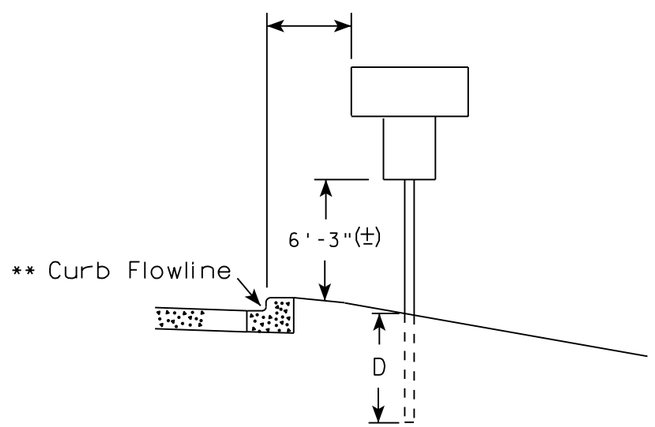
SDD 15D45 - 01

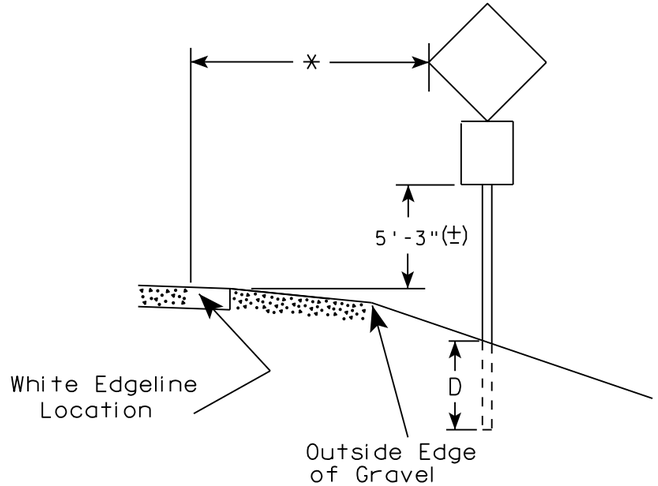
URBAN AREA



RURAL AREA (See Note 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. Offset of signs is measured from the flow line.

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

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

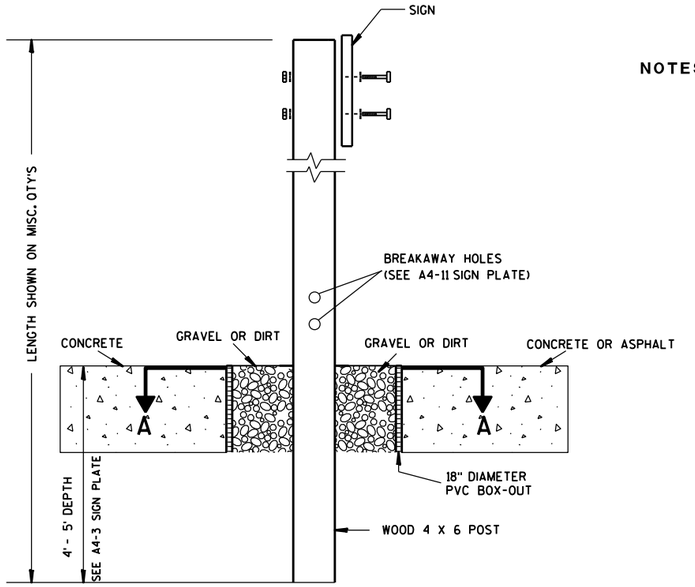
TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 8/21/17 PLATE NO. A4-3.21

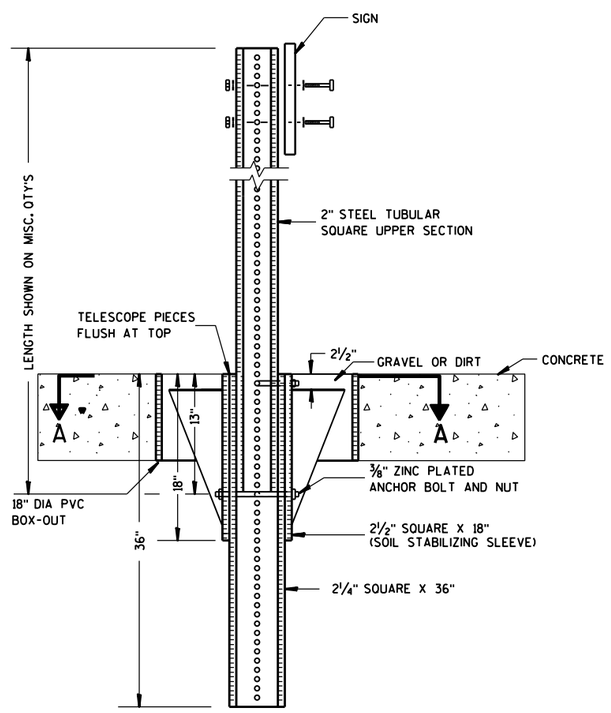
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 82	E



ELEVATION VIEW

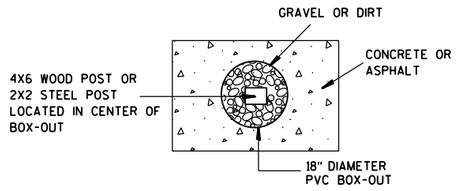
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST BOX-OUTS A4-3B

WISCONSIN DEPT OF TRANSPORTATION

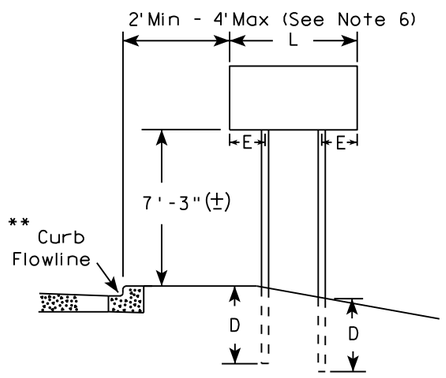
APPROVED Matthew R Rauch
for State Traffic Engineer

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

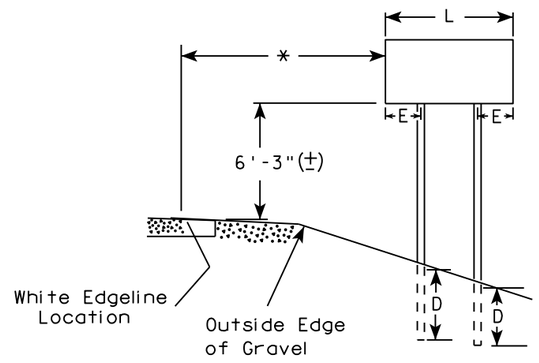
PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E

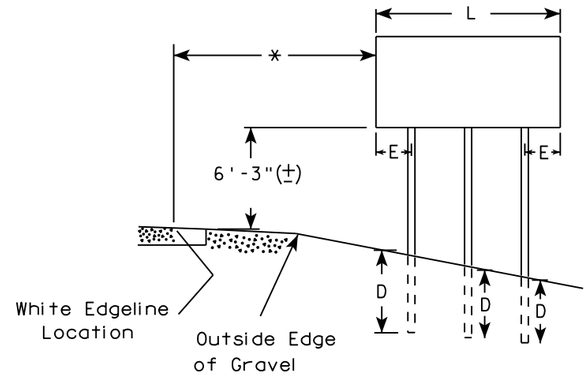
FILE NAME : C:\CAEFiles\Projects\tr_stdplate\A43B.DGN PLOT DATE : 27-JAN-2014 09:48 PLOT BY : mscsja PLOT NAME : PLOT SCALE : 13.659812:1.000000 WISDOT/CADDS SHEET 42

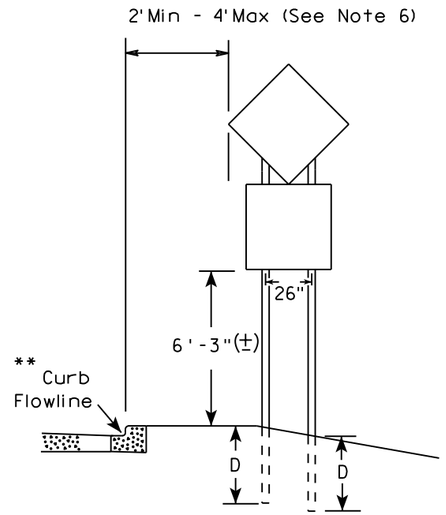
URBAN AREA



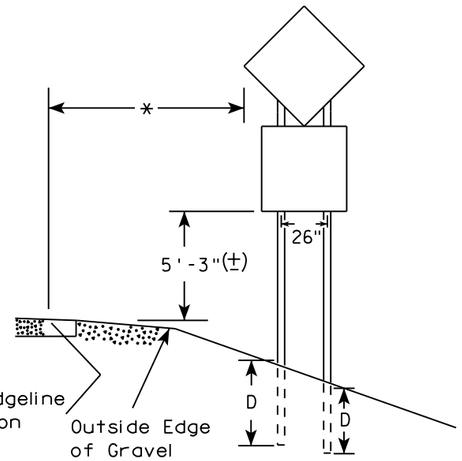
RURAL AREA (See Note 3)







48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

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

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

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.

POST EMBEDMENT DEPTH

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

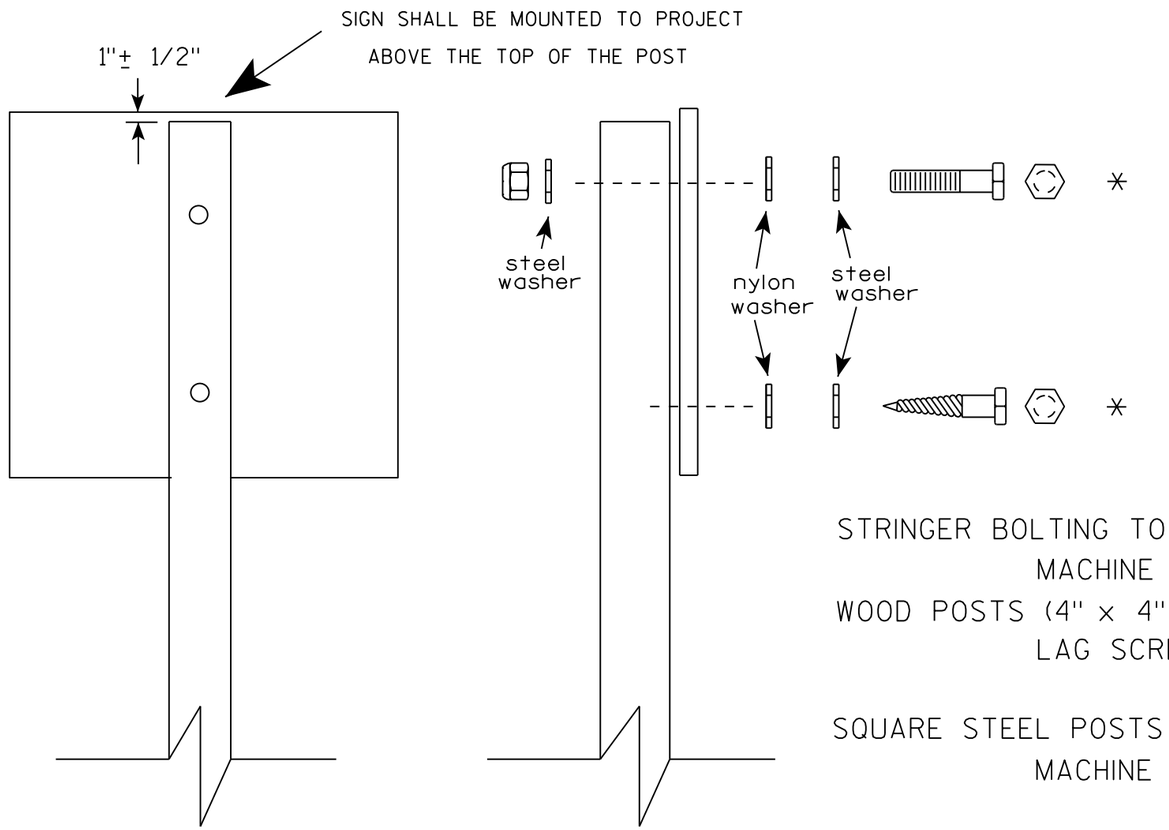
TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
For State Traffic Engineer

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

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 84	E



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

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

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

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

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

ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

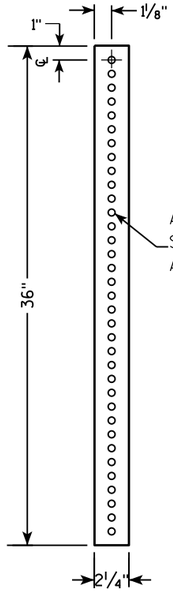
APPROVED Matthew R Rauch
For State Traffic Engineer

DATE 8/11/16 PLATE NO. A4-8.8

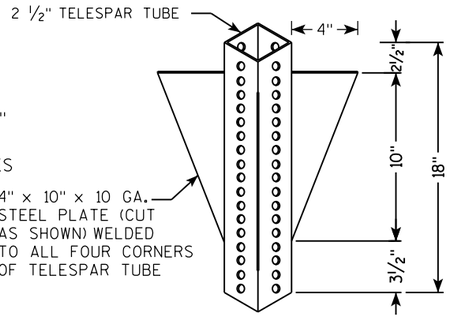
PROJECT NO: SHEET NO: E

TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM

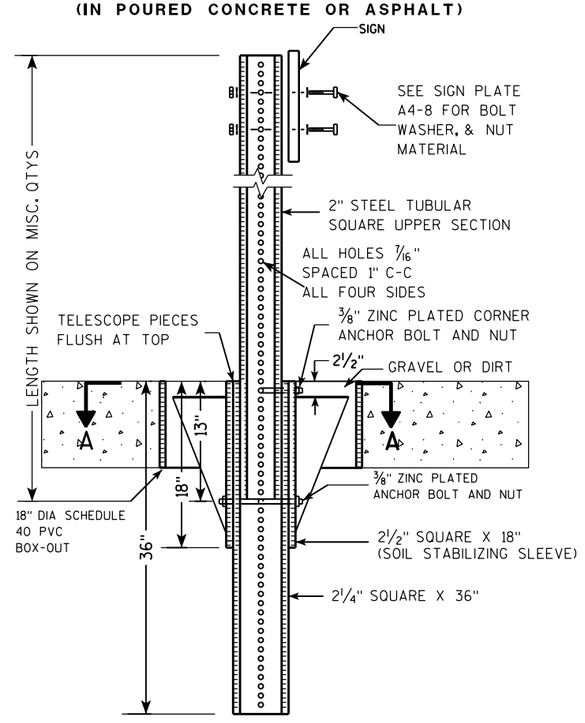
2 1/4 " SQUARE
12 GAUGE
PERFORATED
GALVANIZED FINISH



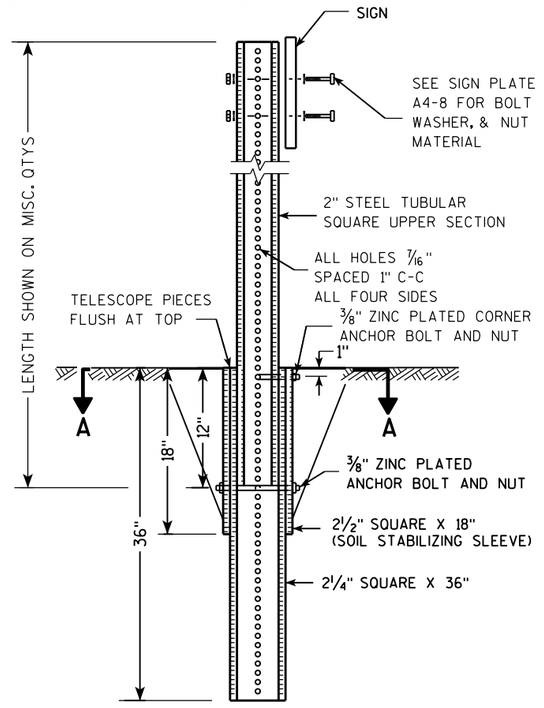
2 1/2 " SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH

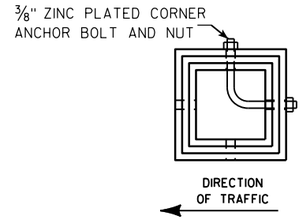


DETAIL OF TUBULAR STEEL SIGN POST
(IN POURED CONCRETE OR ASPHALT)



DETAIL OF TUBULAR STEEL SIGN POST
(IN LOCATIONS OTHER THAN POURED CONCRETE OR ASPHALT)





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

Signs wider than 3 feet or larger than 9 sq. ft shall be mounted on multiple posts (see above table).

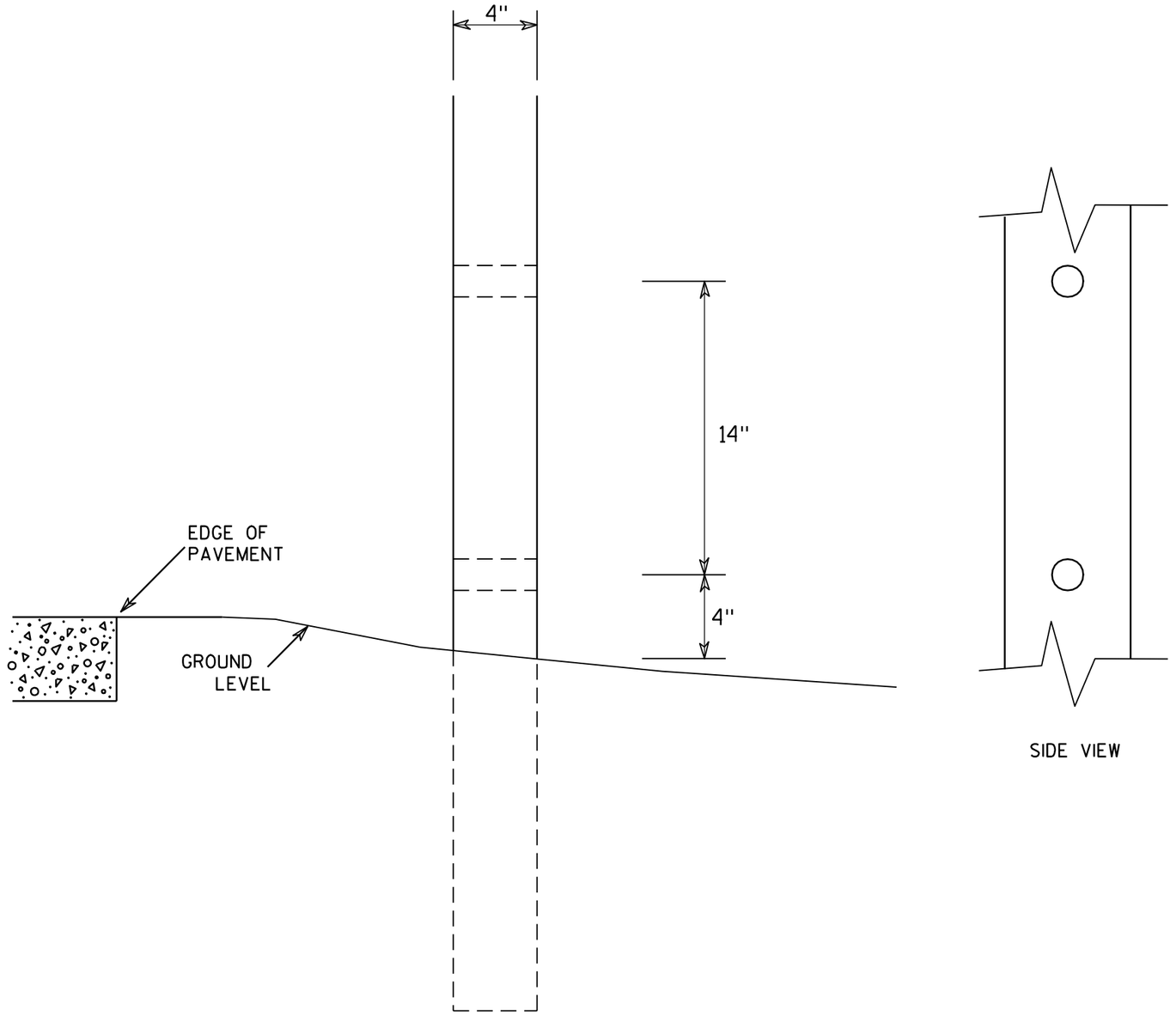
TUBULAR STEEL
SIGN POST
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 2/05/15 PLATE 86 A4-9.9

PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E



SIDE VIEW

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

7

4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

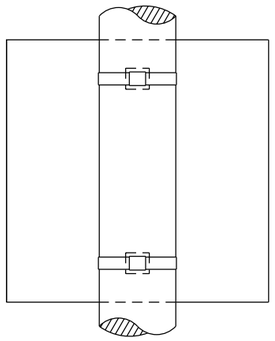
APPROVED Chester J Spang for State Traffic Engineer

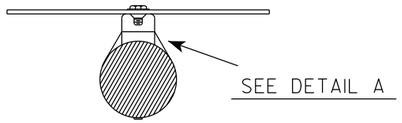
DATE 3/27/97 PLATE NO. A4-11.2

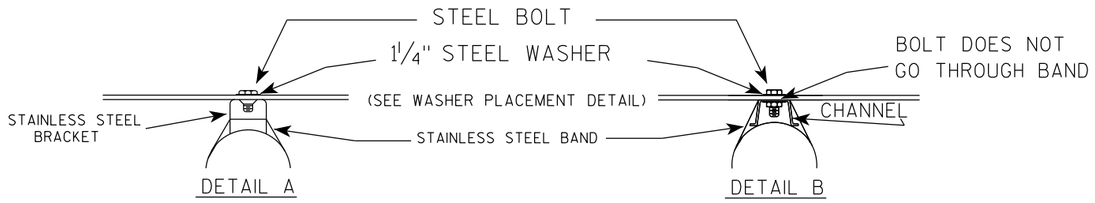
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 87	E

BANDING

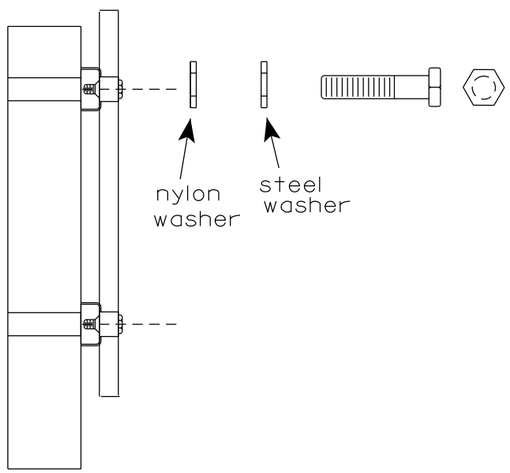
SINGLE SIGN







WASHER PLACEMENT

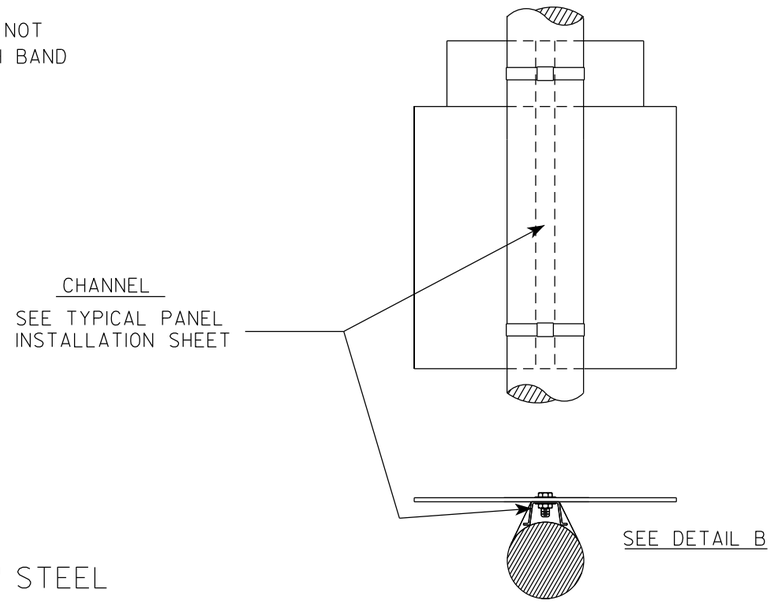


WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON
FOR ALL TYPE H SIGNS

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 ¾" 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



STANDARD SIGN
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

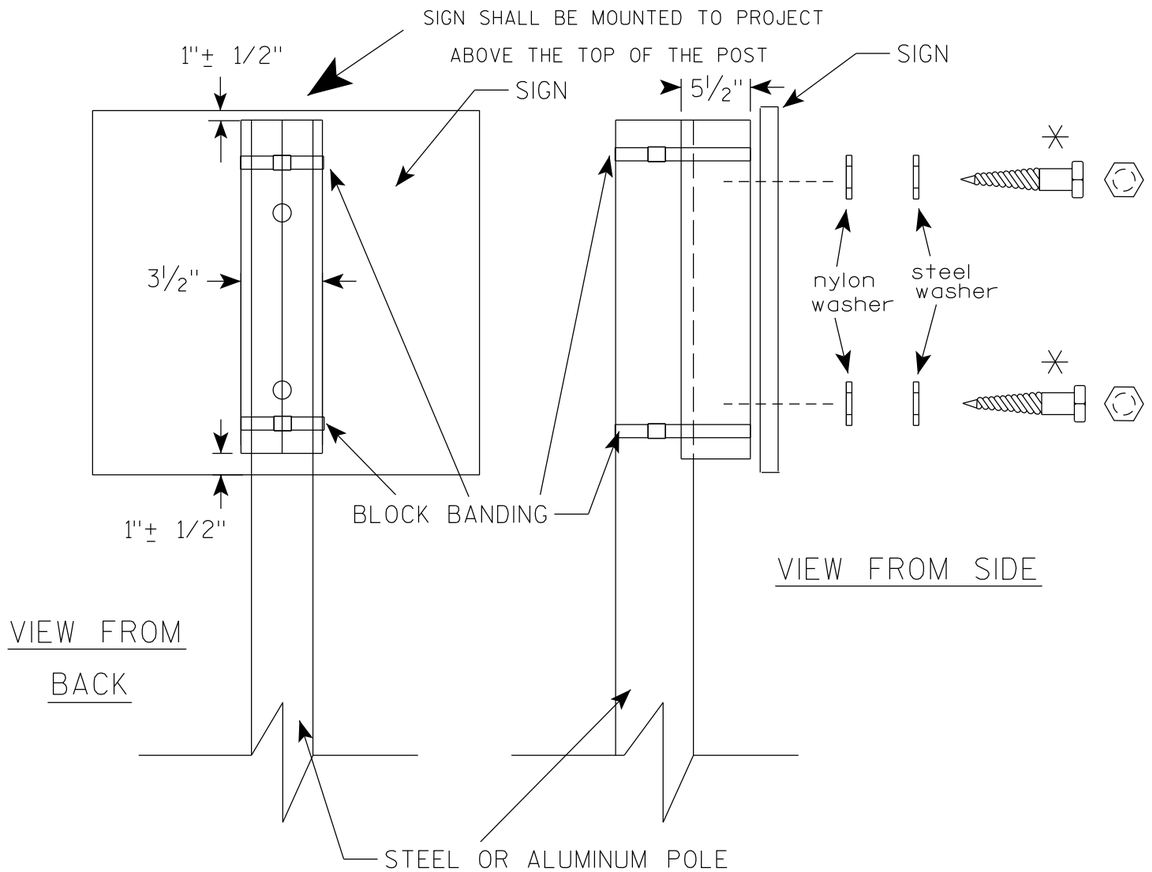
DATE 6/10/19 PLATE NO. A5-9.4

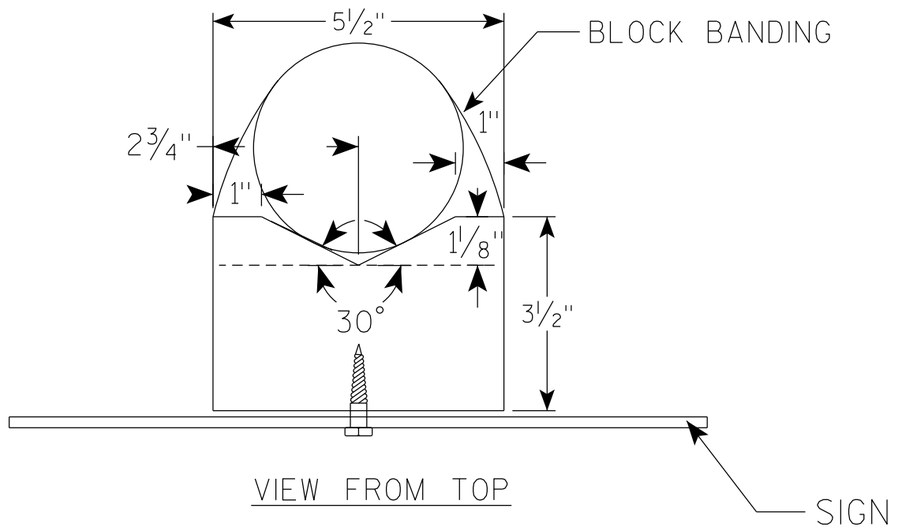
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 88	E

FILE NAME : C:\CAEfiles\Projects\tr_stdplate\A59.dgn PLOT DATE : 10-JUN 2019 4:10 PLOT BY : mscj9h PLOT NAME : PLOT SCALE : $$.....plotscale.....$$ WISDOT/CADDS SHEET 42

7

7





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, ¾" 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 NORNALLY 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 1¼" O.D. X ⅜" I.D. X 1/16"
8. NYLON WASHERS SHALL BE 1¼" O.D. X ⅜" I.D. X .080 FOR TYPE H OR TYPE F FACE SIGN

✳ LAG BOLTS SHALL BE ⅜" X 2½"

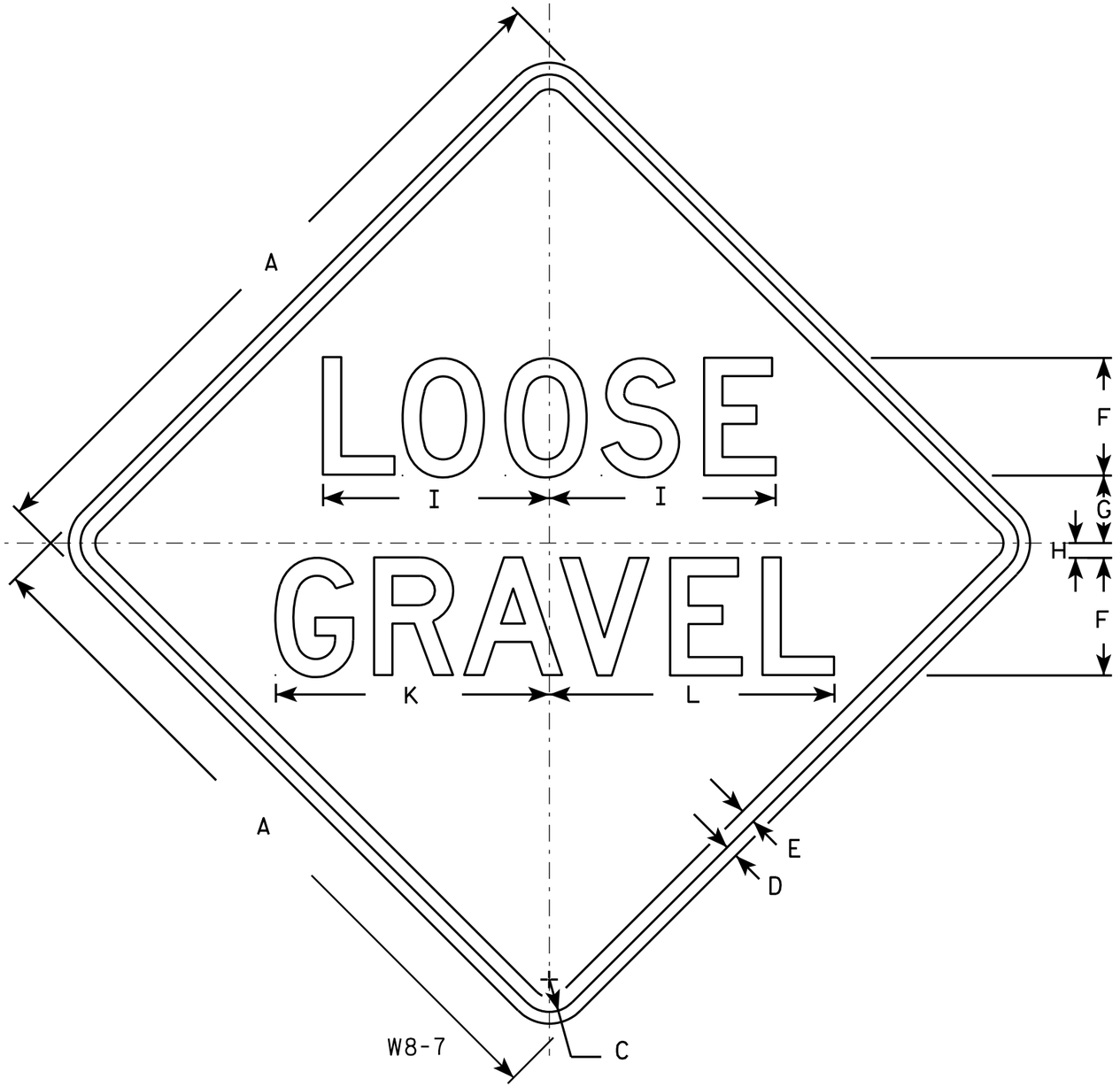
BLOCK BANDING DETAIL (V-BLOCK OPTION)

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: 89	E



NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - 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	24		1 1/8	3/8	1/2	4	2 3/4	1/2	7 3/4		9 1/4	9 3/4															4.0
2S	36		1 5/8	5/8	3/4	6	4 1/8	3/4	11 5/8		14	14 1/2															9.0
2M	36		1 5/8	5/8	3/4	6	4 1/8	3/4	11 5/8		14	14 1/2															9.0
3	36		1 5/8	5/8	3/4	6	4 1/8	3/4	11 5/8		14	14 1/2															9.0
4	36		1 5/8	5/8	3/4	6	4 1/8	3/4	11 5/8		14	14 1/2															9.0
5	48		2 1/4	3/4	1	8	5 1/2	1	15 1/2		18 5/8	19 3/8															16.0

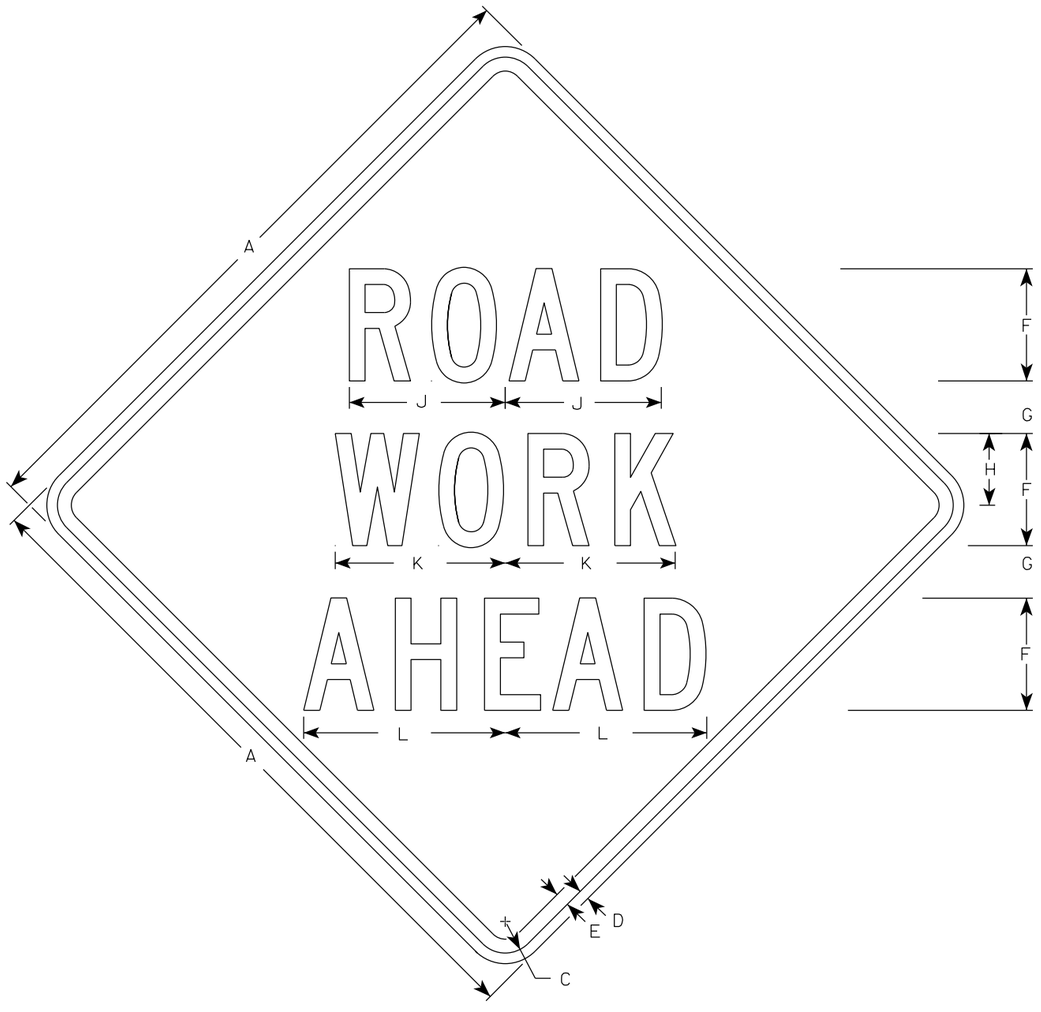
STANDARD SIGN
W8-7

WISCONSIN DEPT OF TRANSPORTATION

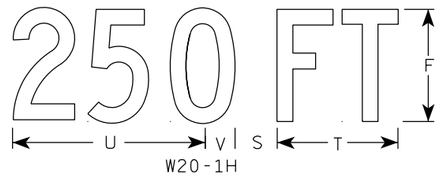
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 5/30/12 PLATE NO. W8-7.7

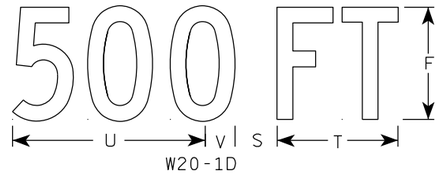
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 90	E



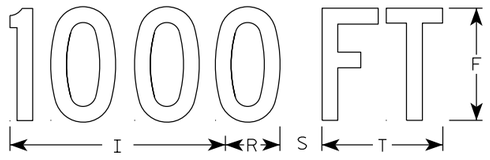
W20-1A



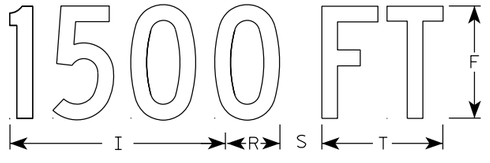
W20-1H



W20-1D



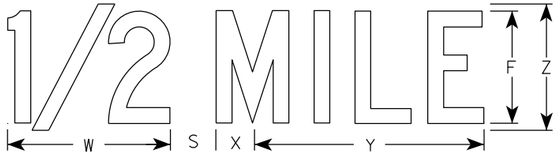
W20-1C



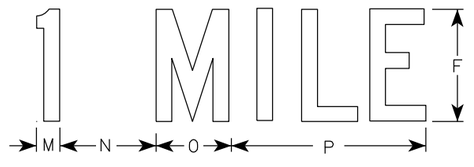
W20-1B

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.



W20-1G



W20-1F

W20-1E

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 3/8	1/2	5/8	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		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, F & G

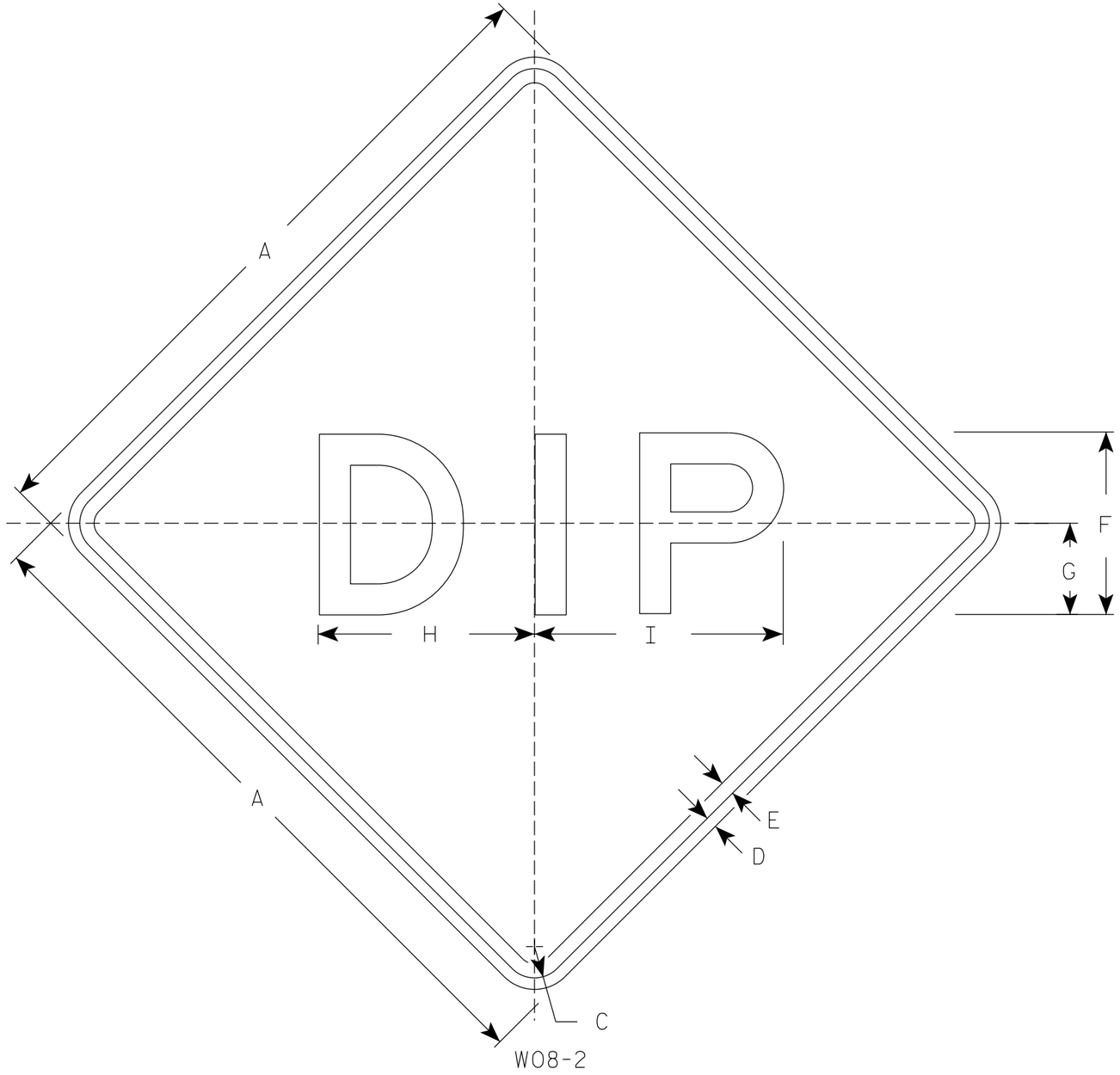
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 9/25/19 PLATE NO. W20-1.11

PROJECT NO:

SHEET NO: 91 E



W08-2

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.

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

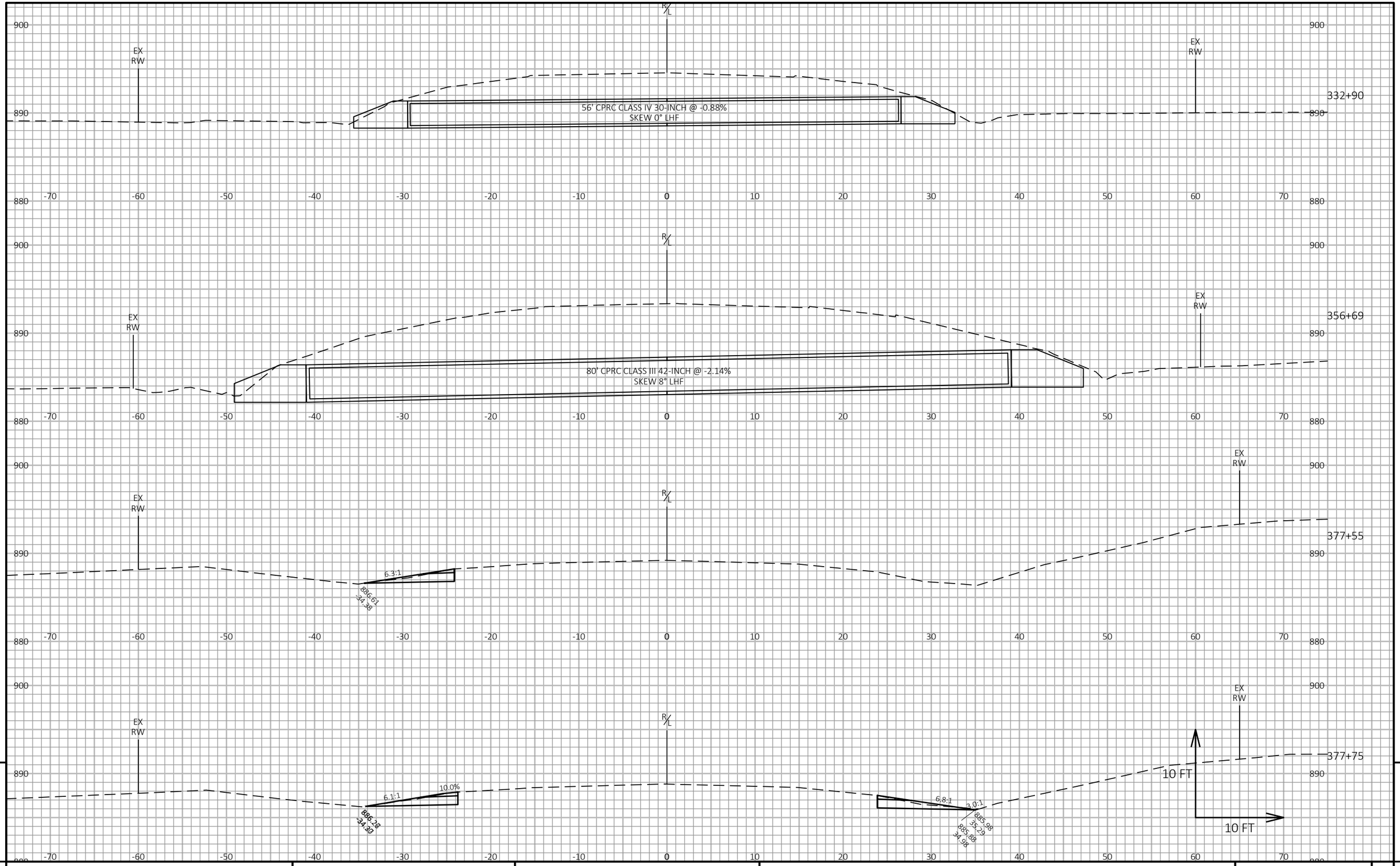
DATE 3/7/19 PLATE NO. W08-2.2

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 92 | E

USH 12 EARTHWORK SUMMARY - PROJECT ID 7090-02-71

STATION	Real Station	Distance	AREA (SF)			Incremental Vol (CY) (Unadjusted)			Cumulative Vol (CY)		
			Cut	Salvaged/Unusable Pavement Material	Fill	Cut	Salvaged/Unusable Pavement Material	Fill	Cut 1.00	Expanded Fill 1.30	Mass Ordinate
						Note 1	Note 2	Note 3	Note 1		Note 8
332+60	33260.00	0.00	52.00	25.80	0.00	0	0	0	0	0	0
332+87	33287.00	27.00	189.50	25.80	0.00	121	26	0	121	0	95
332+87	33287.00	0.00	25.80	25.80	0.00	0	0	0	0	0	95
332+93	33293.00	6.00	25.80	25.80	0.00	6	6	0	6	0	95
332+93	33293.00	0.00	189.50	25.80	0.00	0	0	0	0	0	95
333+20	33320.00	27.00	52.00	25.80	0.00	121	26	0	121	0	190
356+11	35611.00	0.00	52.00	25.80	0.00	0	0	0	0	0	190
356+61	35661.00	50.00	302.00	25.80	0.00	328	48	0	328	0	470
356+61	35661.00	0.00	25.80	25.80	0.00	0	0	0	0	0	470
356+76	35676.00	15.00	25.80	25.80	0.00	14	14	0	14	0	470
356+76	35676.00	0.00	52.00	25.80	0.00	0	0	0	0	0	470
357+26	35726.00	50.00	302.00	25.80	0.00	328	48	0	328	0	750
418+37	41837.00	0.00	52.00	25.80	0.00	0	0	0	0	0	750
418+78	41878.00	41.00	256.50	25.80	0.00	234	39	0	234	0	945
418+78	41878.00	0.00	25.80	25.80	0.00	0	0	0	0	0	945
418+88	41888.00	10.00	25.80	25.80	0.00	10	10	0	10	0	945
418+88	41888.00	0.00	256.50	25.80	0.00	0	0	0	0	0	945
419+29	41929.00	41.00	52.00	25.80	0.00	234	39	0	234	0	1,140

Notes:	
1 - Cut	Cut includes Salvaged/Unusable Pavement material
2 - Salvaged/Unusable Pavement Material	This does not show up in cross sections
3 - Fill	Does not include Unusable Pavement Exc volume
8 - Mass Ordinate	[(Cut - Salvaged Pavt) - (Fill * Fill Factor)]



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PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 94	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090201_xs

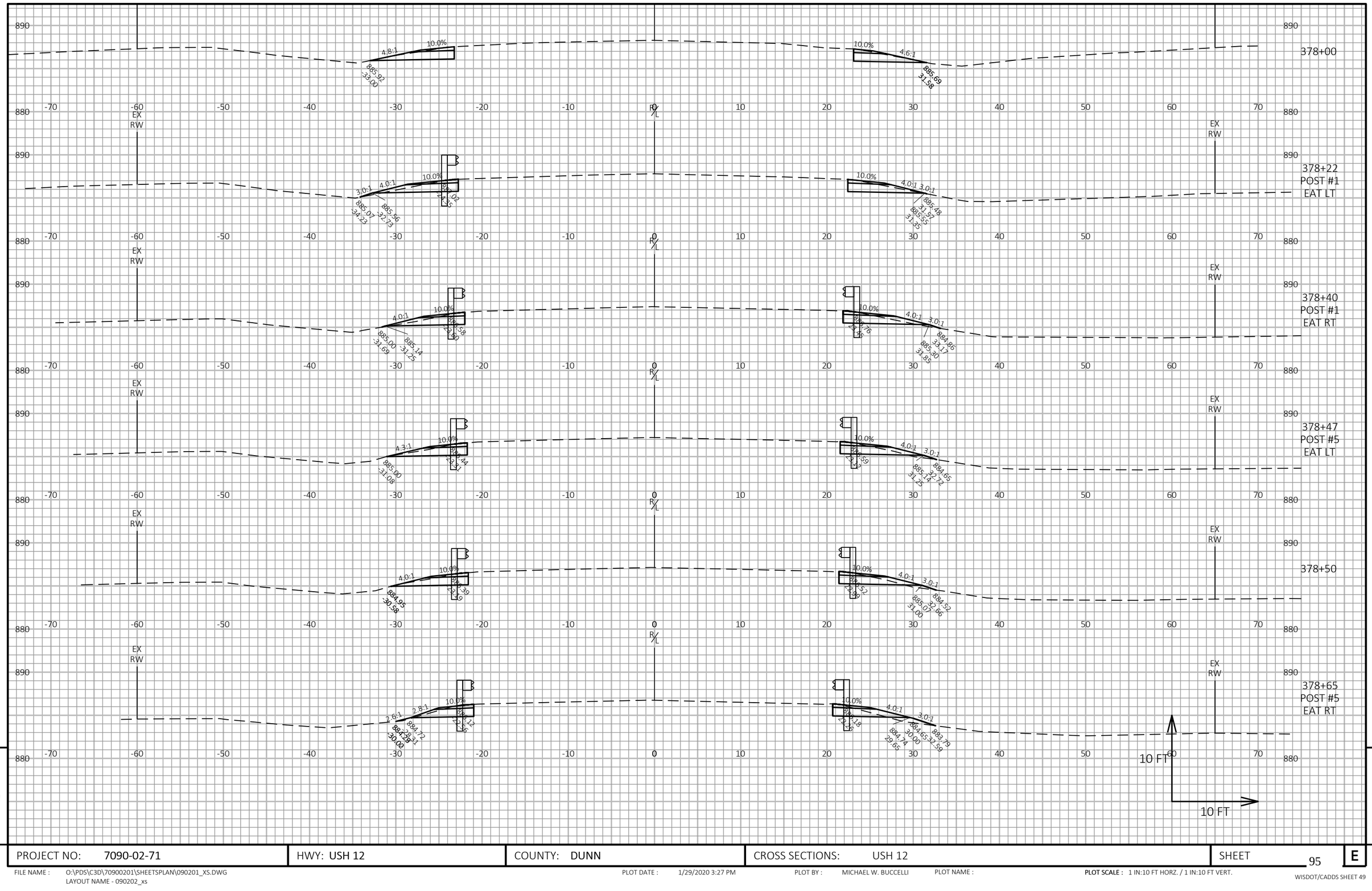
PLOT DATE : 1/29/2020 3:27 PM

PLOT BY : MICHAEL W. BUCCELLI

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



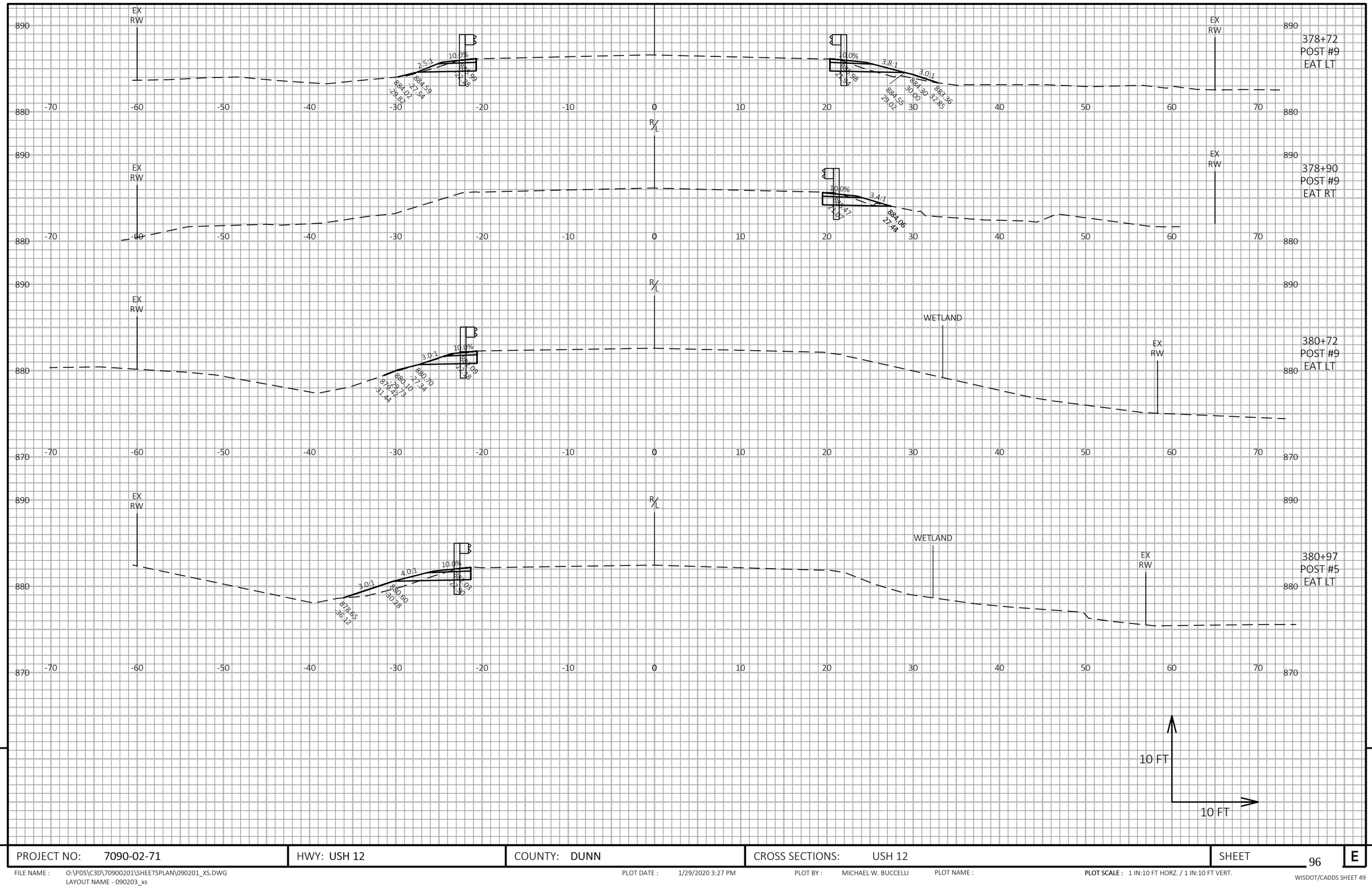
PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 95	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090202_xs

PLOT DATE : 1/29/2020 3:27 PM PLOT BY : MICHAEL W. BUCCELLI PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



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PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 96	E

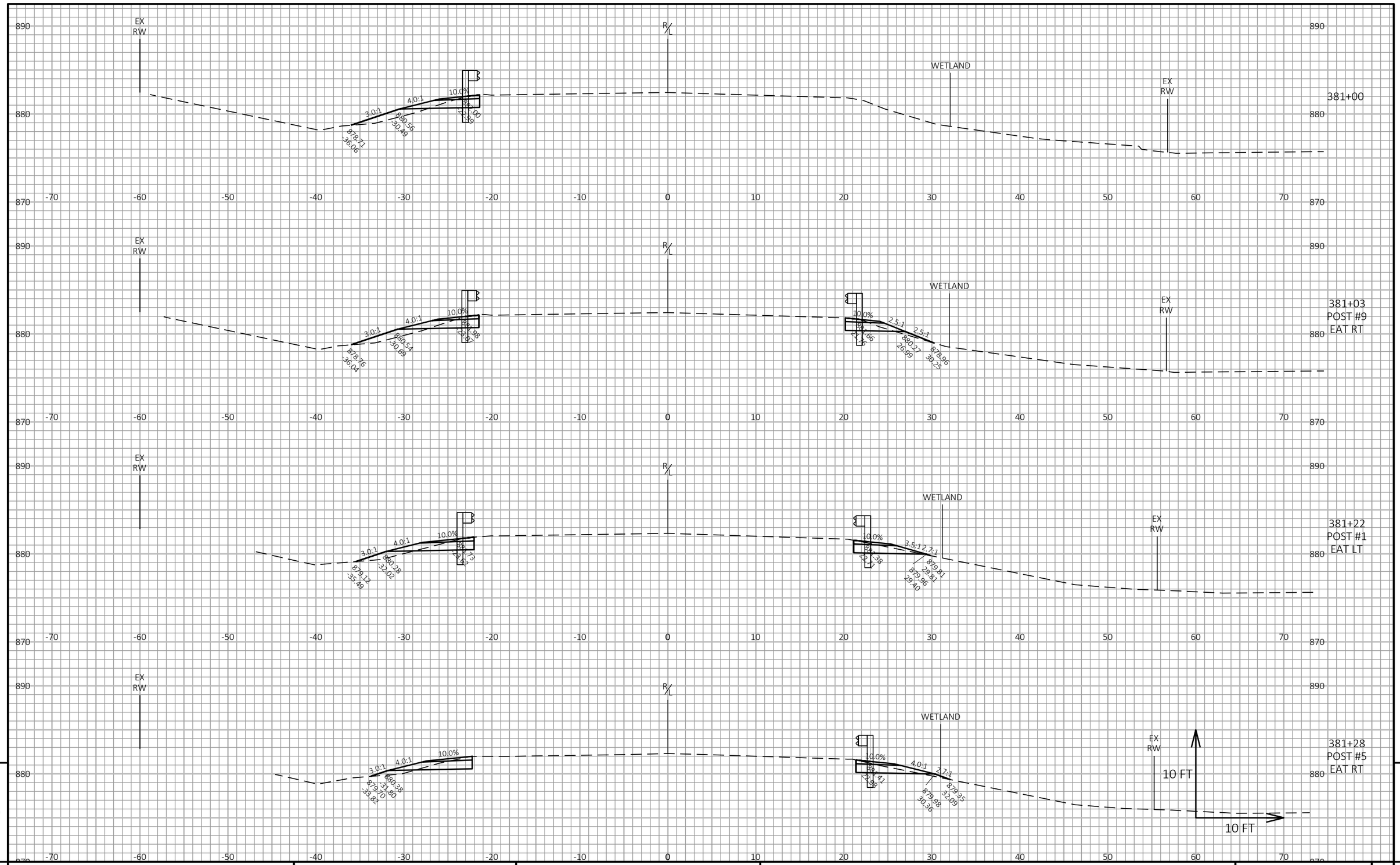
FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090203_xs

PLOT DATE : 1/29/2020 3:27 PM

PLOT BY : MICHAEL W. BUCCELLI

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.



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PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 97	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090204_xs

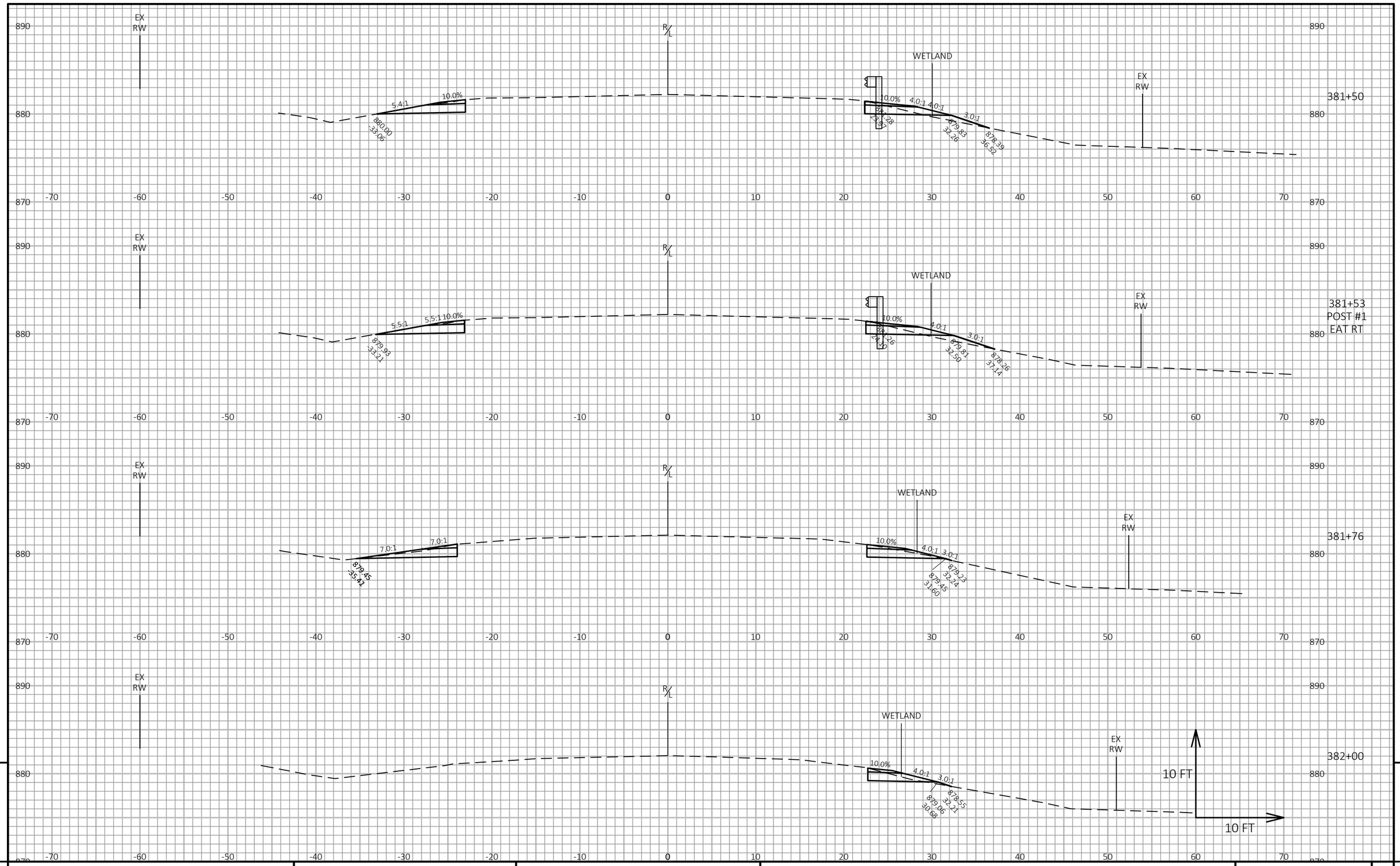
PLOT DATE : 1/29/2020 3:27 PM

PLOT BY : MICHAEL W. BUCCELLI

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



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PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 98	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090205_xs

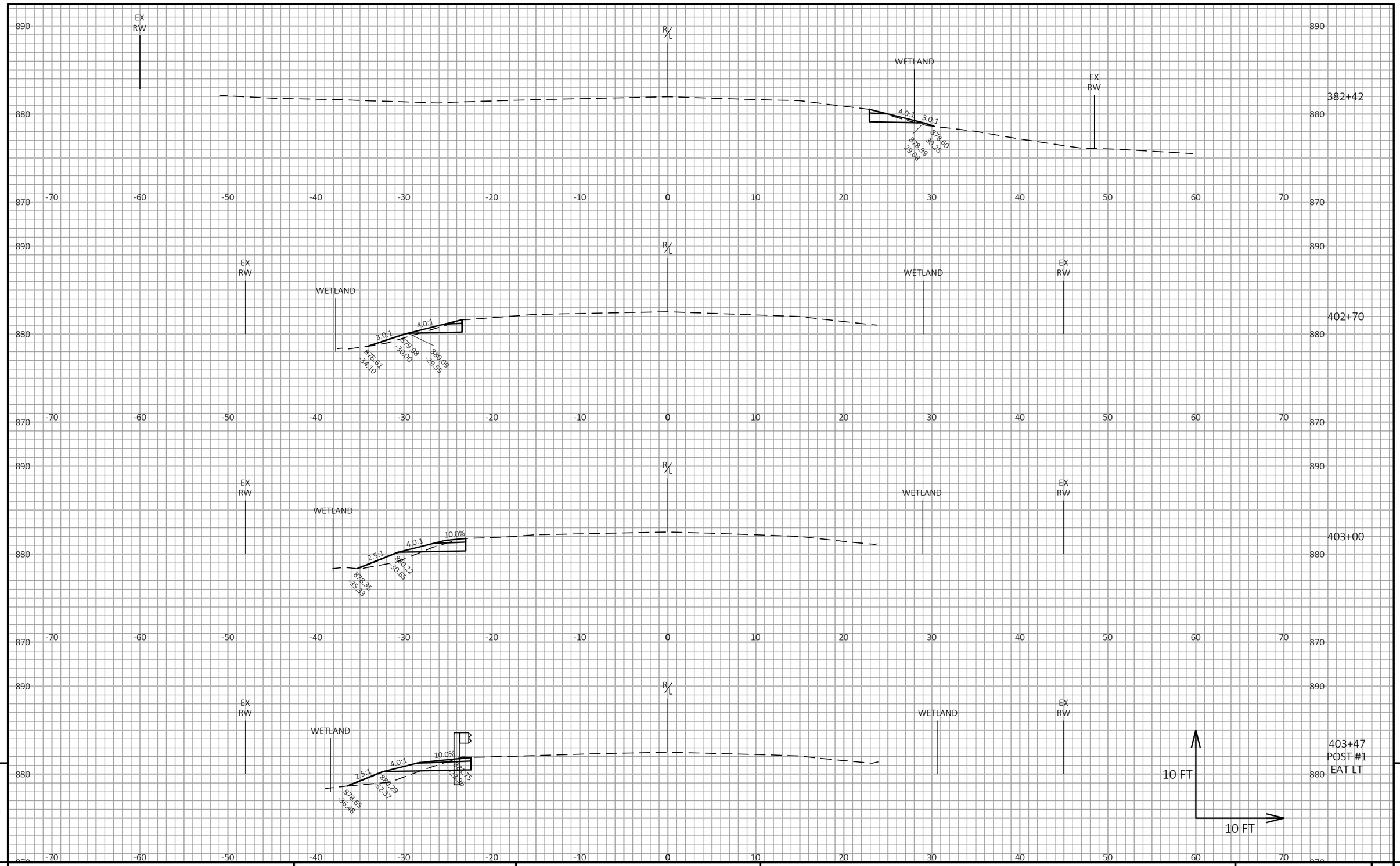
PLOT DATE : 1/29/2020 3:27 PM

PLOT BY : MICHAEL W. BUCCELLI

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



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PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 99	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090206_xs

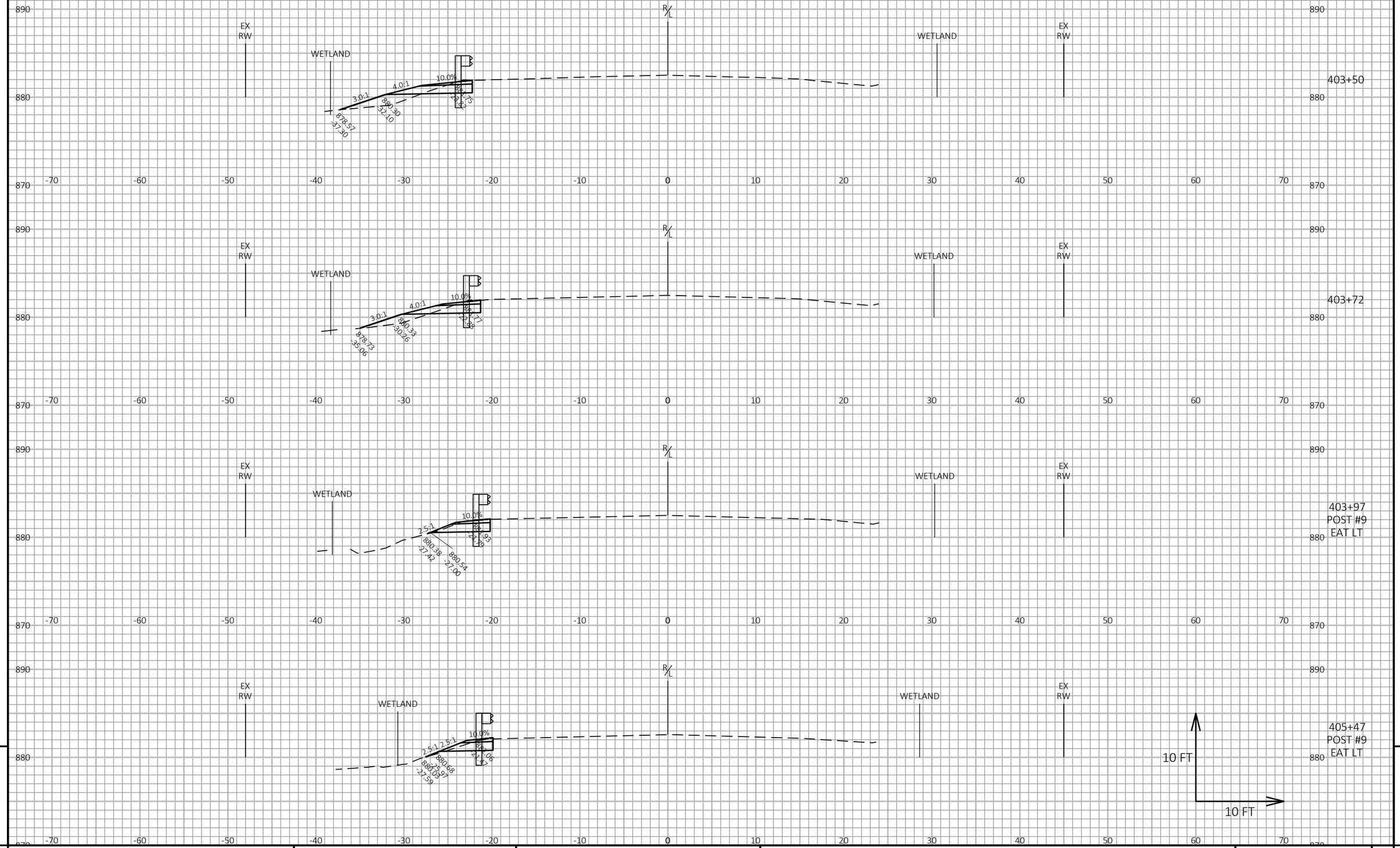
PLOT DATE : 1/29/2020 3:27 PM

PLOT BY : MICHAEL W. BUCCELLI

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 100	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090207_xs

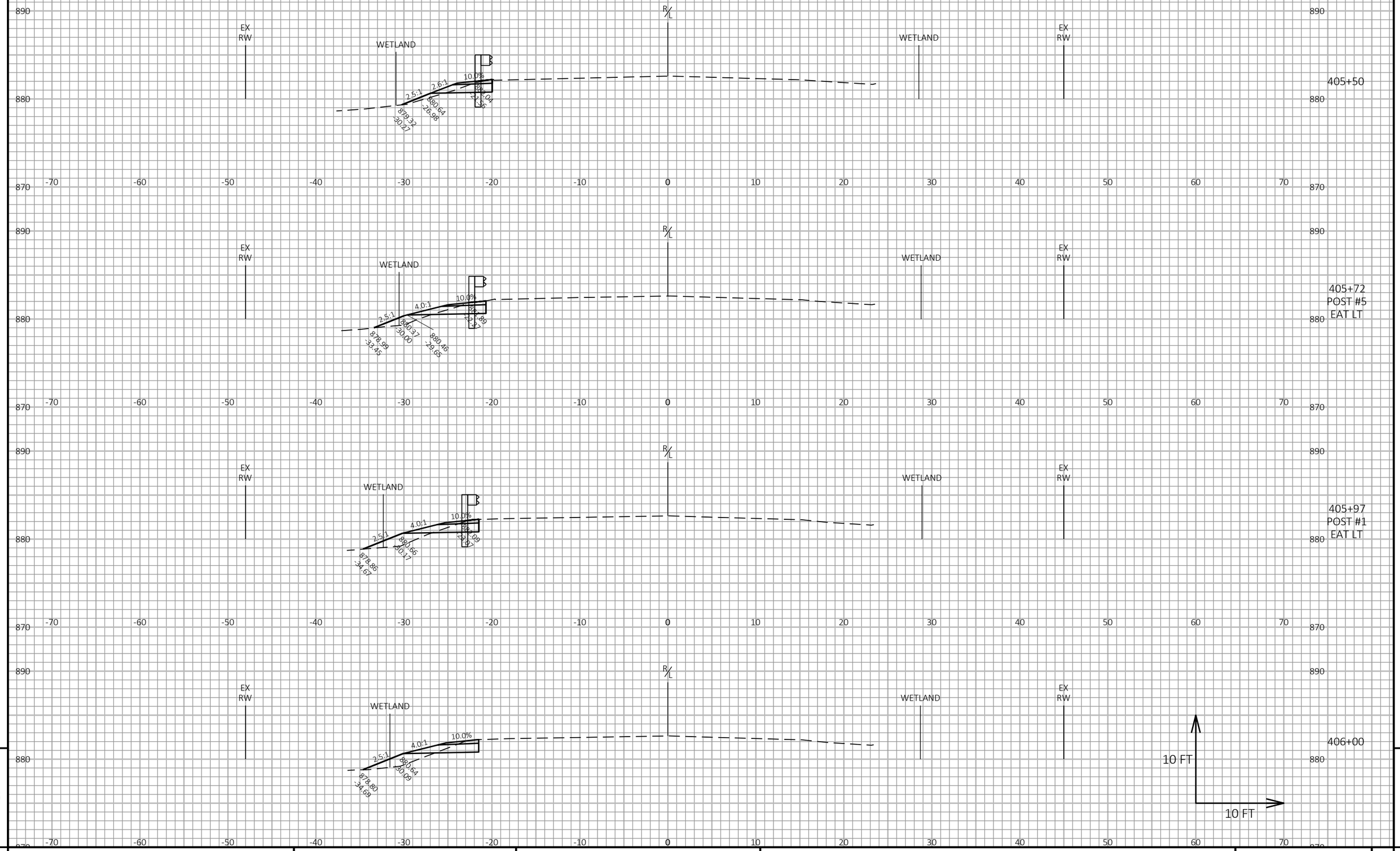
PLOT DATE : 1/29/2020 3:27 PM

PLOT BY : MICHAEL W. BUCCELLI

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 101	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090208_xs

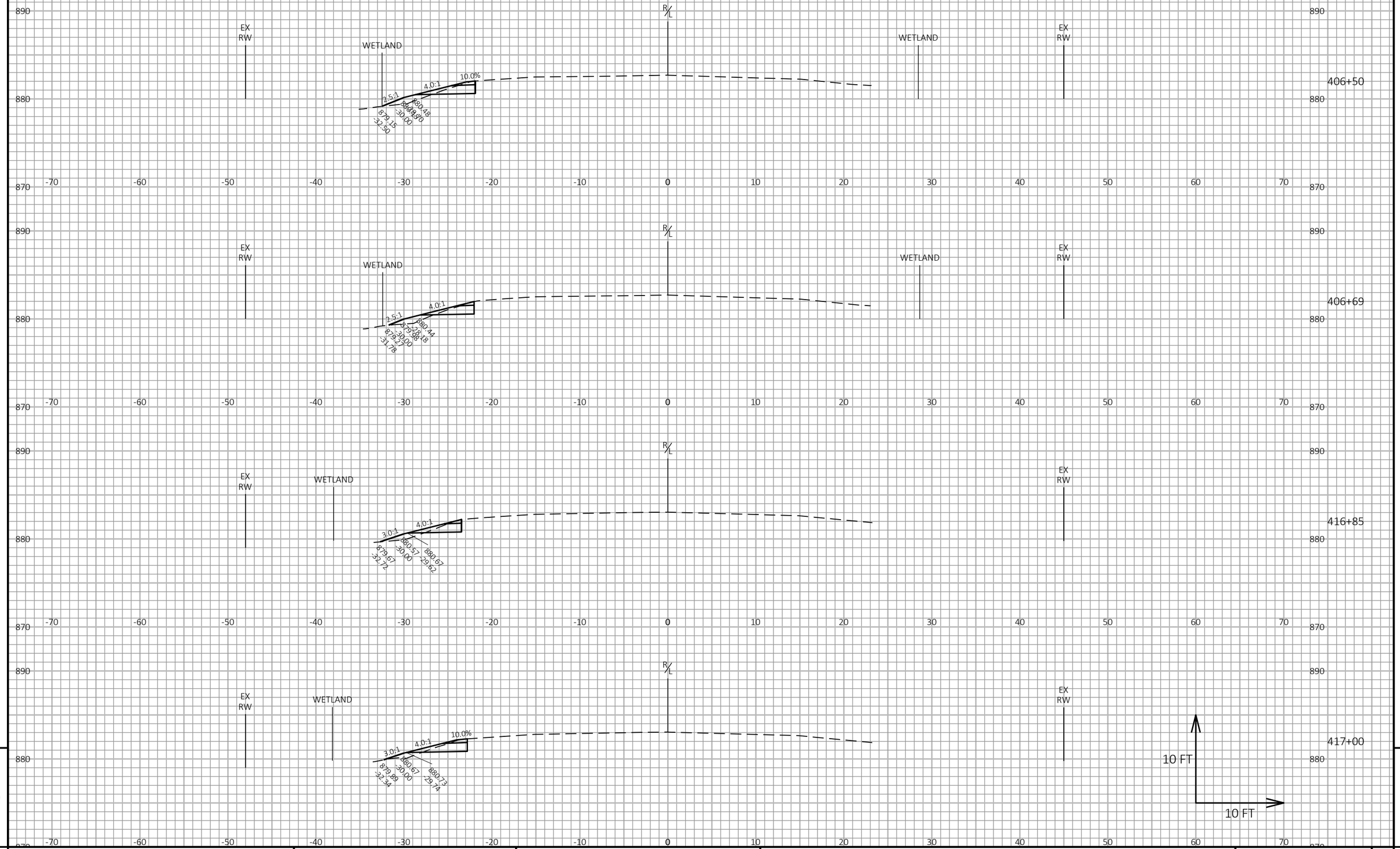
PLOT DATE : 1/29/2020 3:27 PM

PLOT BY : MICHAEL W. BUCCELLI

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



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PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 102	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090209_xs

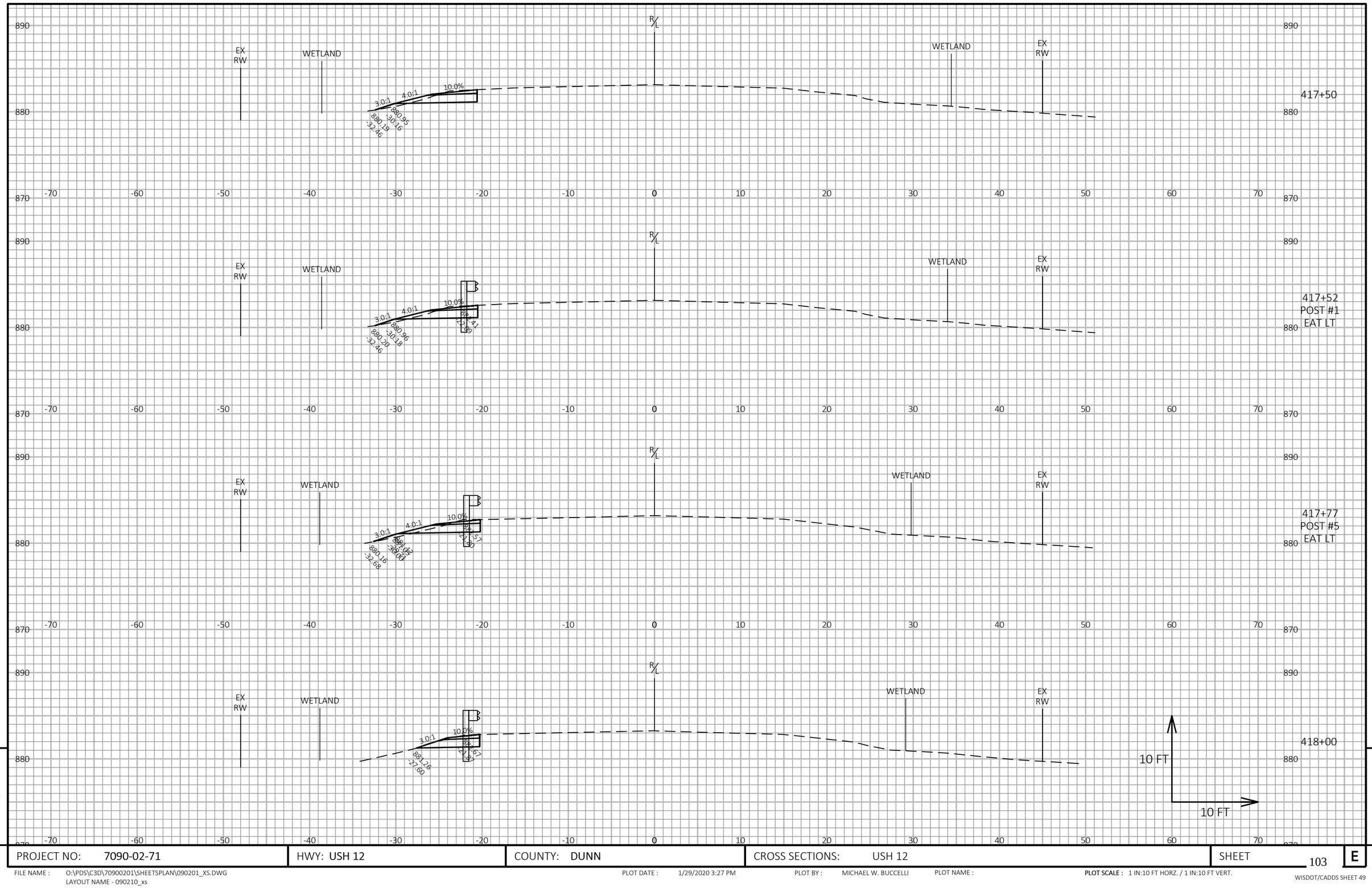
PLOT DATE : 1/29/2020 3:27 PM

PLOT BY : MICHAEL W. BUCCELLI

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



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PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 103	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090210_xs

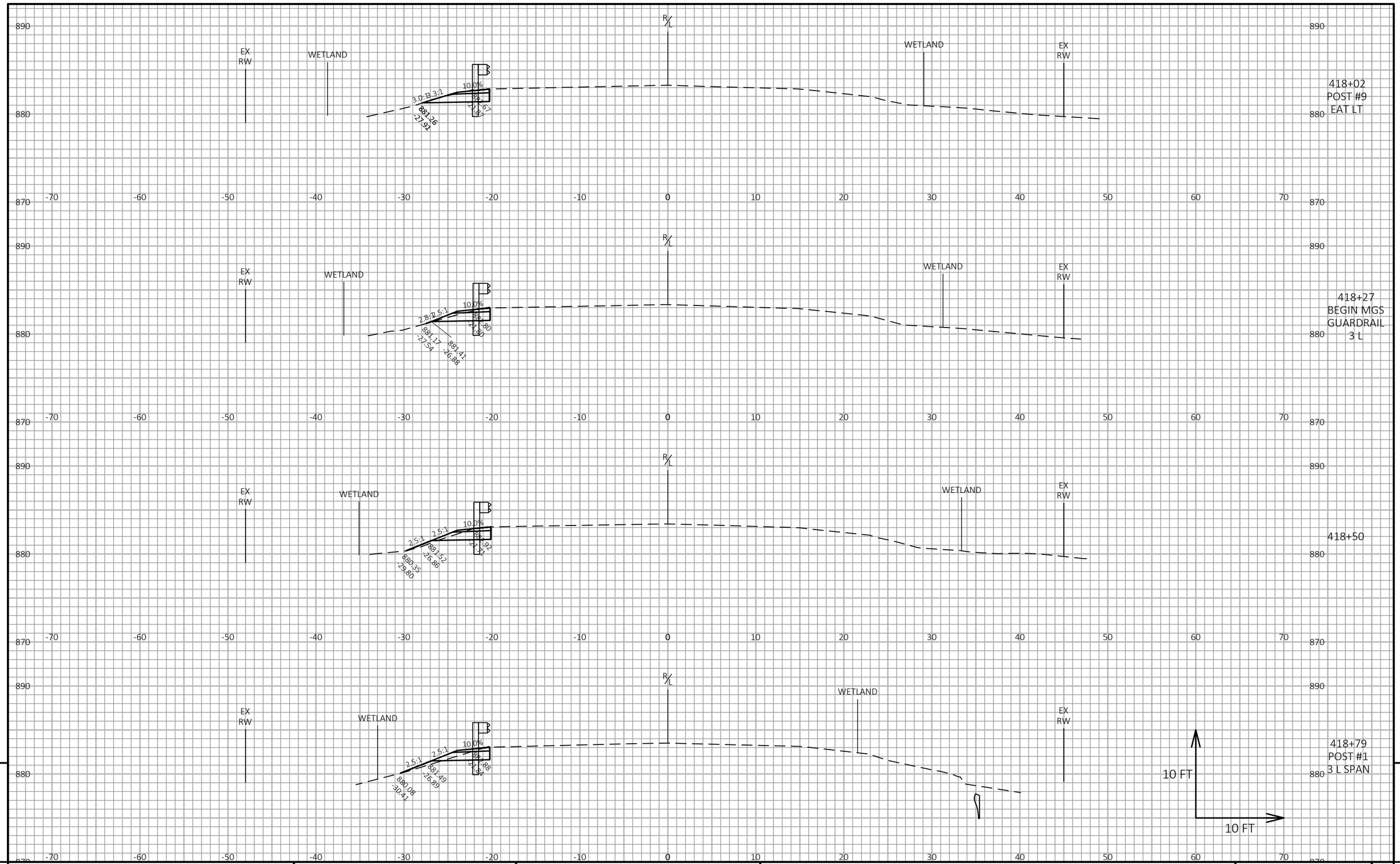
PLOT DATE : 1/29/2020 3:27 PM

PLOT BY : MICHAEL W. BUCCELLI

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



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PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 104	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090211_xs

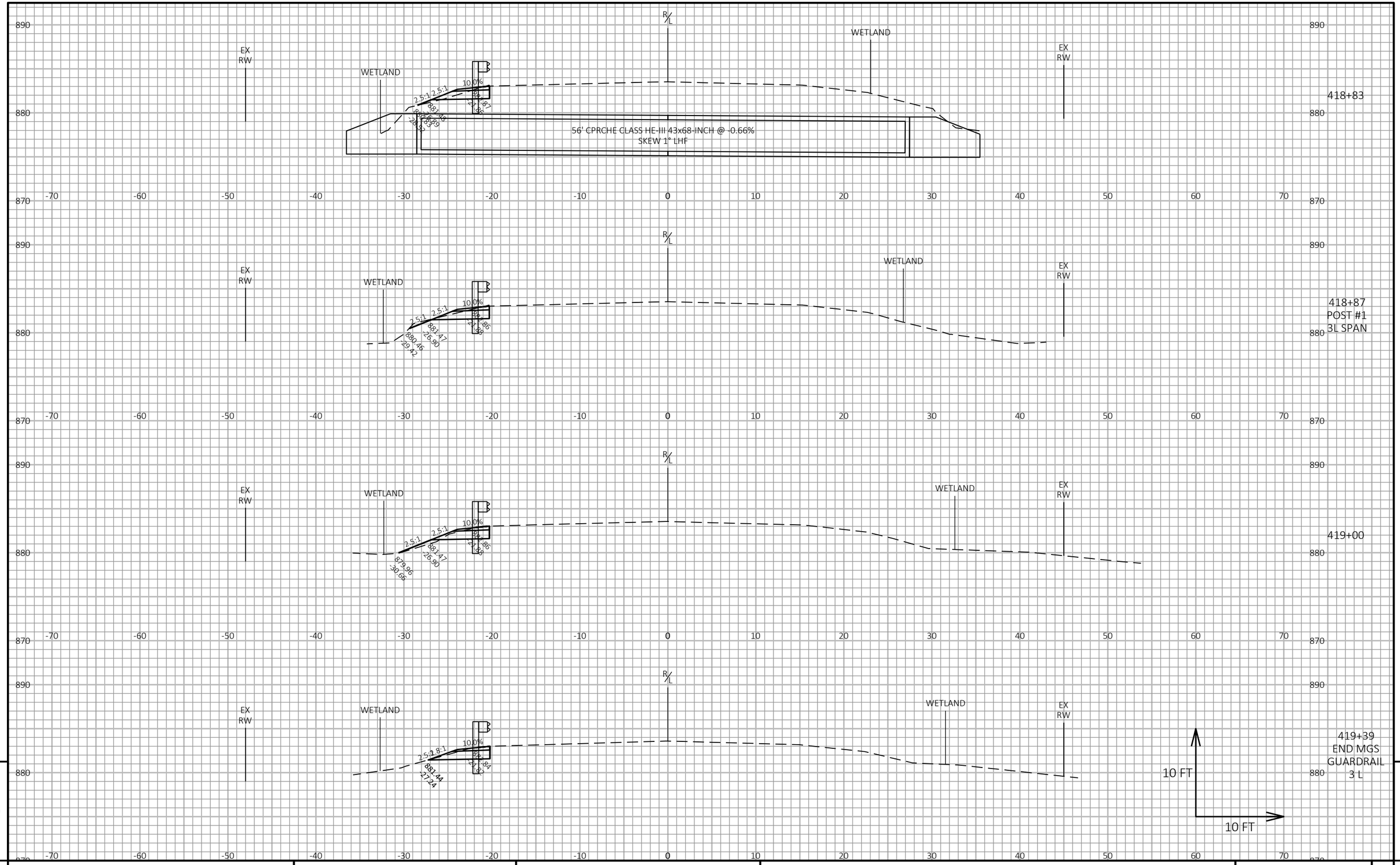
PLOT DATE : 1/29/2020 3:27 PM

PLOT BY : MICHAEL W. BUCCELLI

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



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PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 105	E

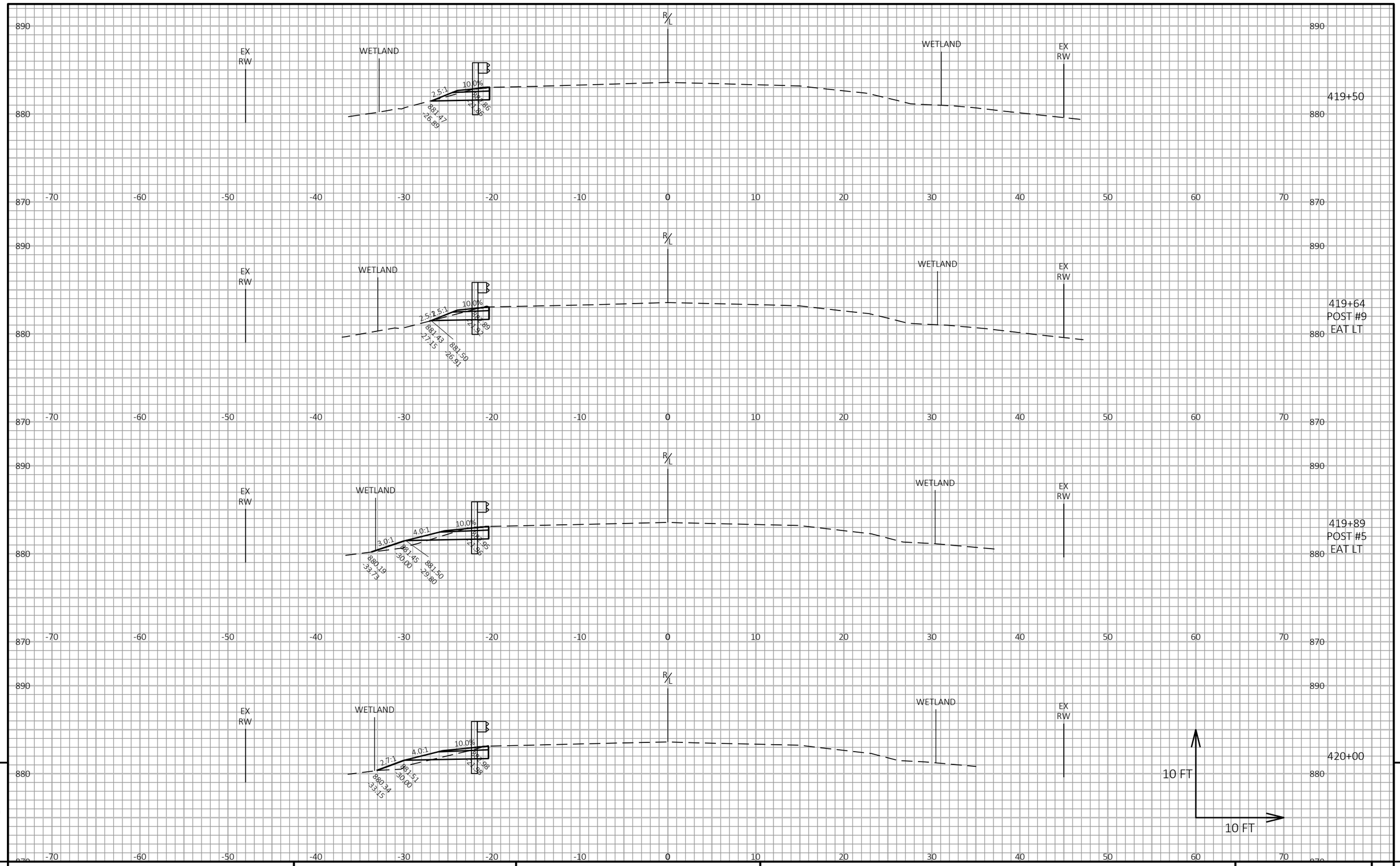
FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090212_xs

PLOT DATE : 1/29/2020 3:27 PM

PLOT BY : MICHAEL W. BUCCELLI

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.



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PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 106	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090213_xs

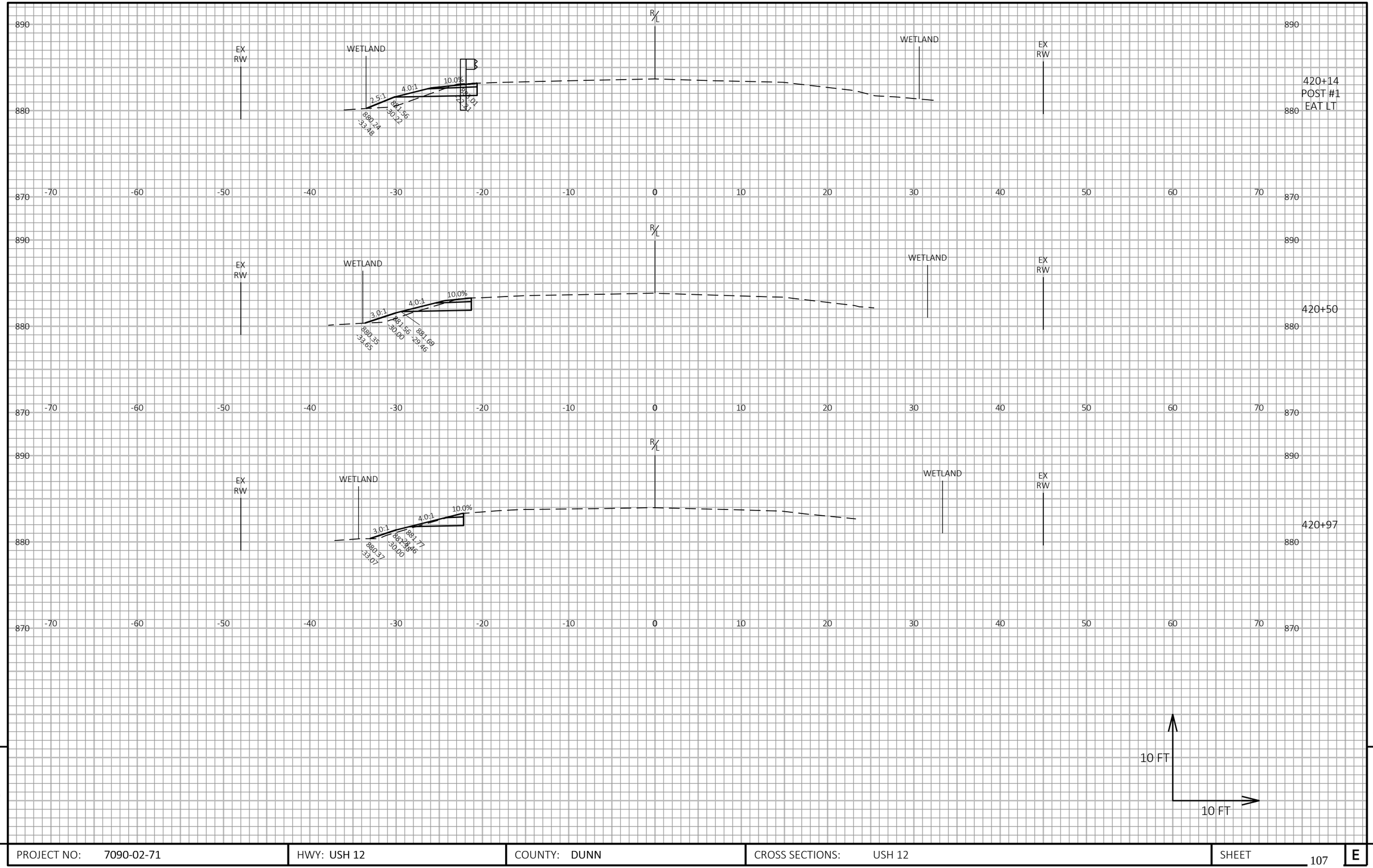
PLOT DATE : 1/29/2020 3:28 PM

PLOT BY : MICHAEL W. BUCCELLI

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49



PROJECT NO: 7090-02-71	HWY: USH 12	COUNTY: DUNN	CROSS SECTIONS: USH 12	SHEET 107	E

FILE NAME : O:\PDS\C3D\70900201\SHEETSPLAN\090201_XS.DWG
LAYOUT NAME - 090214_xs

PLOT DATE : 1/29/2020 3:28 PM PLOT BY : MICHAEL W. BUCCELLI PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49

Wisconsin Department of Transportation

Dedicated people creating transportation solutions
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