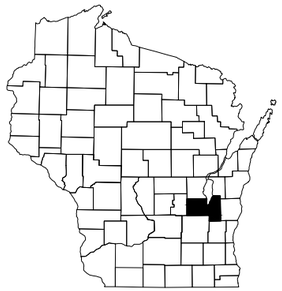
PROJECT ID: 3360-16-60

WITH: N/A

COUNTY: FOND DU LAC

ORDER OF SHEETS

TOTAL SHEETS =



DESIGN DESIGNATION			CTH Y-CTH F	CTH F-CTH B	CTH B-CTH B	CTH B-USH 151
A.A.D.T.	2020	=	2,100	2,900	3,600	5,100
A.A.D.T.	2040	=	2,400	3,400	5,100	10,100
D.H.V.	2040	=		216	312	667
D.D.		=		60/40	60/40	59/41
T.		=		10.4%	10.4%	10.6%
DESIGN SPEED		=	45-55 MPH	55 MPH	55 MPH	55 MPH
ESALS		=				1,600,000

CONVENTIONAL SYMBOLS

PLAN

- CORPORATE LIMITS
- PROPERTY LINE
- LOT LINE
- LIMITED HIGHWAY EASEMENT
- EXISTING RIGHT OF WAY
- PROPOSED OR NEW R/W LINE
- SLOPE INTERCEPT
- REFERENCE LINE (300'EB')
- EXISTING CULVERT
- PROPOSED CULVERT (Box or Pipe)
- COMBUSTIBLE FLUIDS (CAUTION)
- MARSH AREA
- WOODED OR SHRUB AREA

PROFILE

- GRADE LINE
- ORIGINAL GROUND
- MARSH OR ROCK PROFILE (To be noted as such) (ROCK)
- SPECIAL DITCH (LABEL)
- GRADE ELEVATION (95.36)
- CULVERT (Profile View)

UTILITIES

- ELECTRIC (E)
- FIBER OPTIC (FO)
- GAS (G)
- SANITARY SEWER (SAN)
- STORM SEWER (SS)
- TELEPHONE (T)
- WATER (W)
- UTILITY PEDESTAL
- POWER POLE
- TELEPHONE POLE

STATE OF WISCONSIN

DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

LOMIRA - FOND DU LAC

SCL - USH 151

STH 175

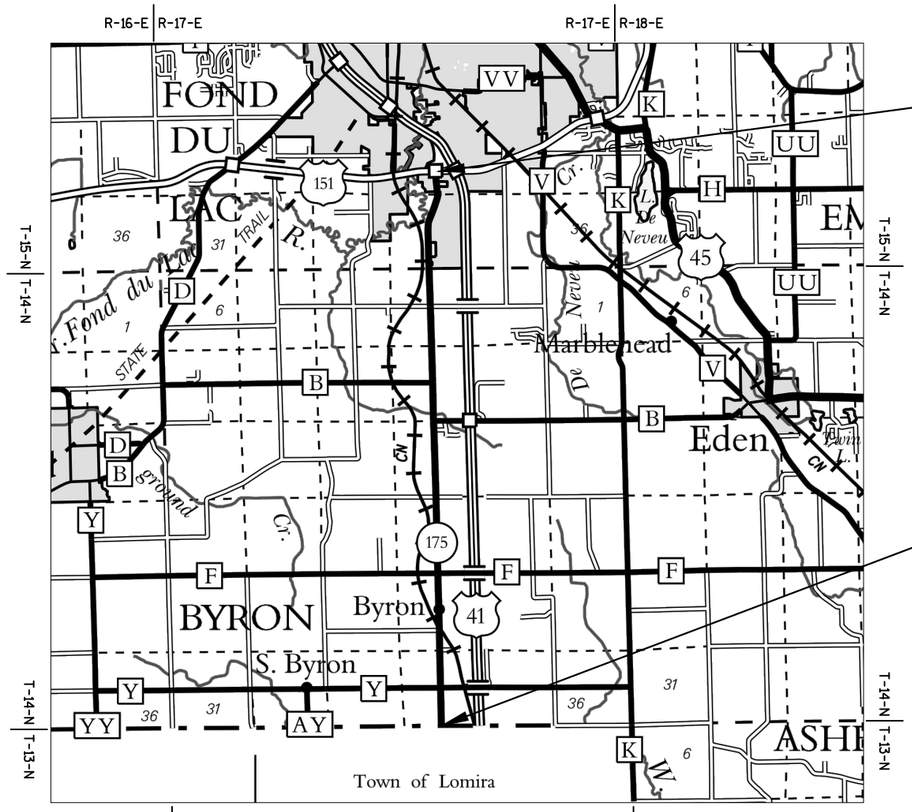
FOND DU LAC COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
3360-16-60		

TRANS 220
PROJECT PLAN
FOR
DESIGN OF UTILITY FACILITY ALTERATIONS OR RELOCATIONS

Date: 12/19/2019

STATE PROJECT NUMBER
3360-16-60



LAYOUT

SCALE 0 2 MILES

TOTAL NET LENGTH OF CENTERLINE = 7.083 MI.

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	NE REGION
Designer	K. BERG & J. ZAVADA
Project Manager	K. TREML
Regional Examiner	
Regional Supervisor	R. WAGNER

APPROVED FOR THE DEPARTMENT

DATE: _____ _____ (Signature)

PRE_1

E

GENERAL NOTES

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

THE EXACT CONSTRUCTION LIMITS AND LOCATIONS OF ALL ENTRANCES SHALL BE DETERMINED BY THE IN ENGINEER IN THE FIELD.

ROCK WAS ENCOUNTERED WITHIN THE PROJECT LIMITS FROM 242+00 TO STA 270+00 AND MAY BE ENCOUNTERED DURING CONSTRUCTION. SEE ROCK BORING DETAIL.

THE EXISTING RIGHT OF WAY IS TO BE ASSUMED TO BE 33-FOOT FROM STH 175 ROADWAY CENTERLINE.

NO TREES AND SHRUBS ARE TO BE REMOVED BEYOND WHAT IS SHOWN IN THE PLANS WITHOUT APPROVAL OF THE ENGINEER.

UTILITIES

DNR LIAISON

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
JAY SCHIEFELBEIN
2984 SHAWANO AVENUE
GREEN BAY, WI 54313-6727
PHONE: (920)360-3784
EMAIL: JEREMIAH.SCHIEFELBEIN@WISCONSIN.GOV

FOND DU LAC COUNTY HIGHWAY COMMISSIONER

FOND DU LAC COUNTY
TOM JANKE, PE
301 DIXIE STREET
FOND DU LAC, WI 54935
PHONE: (920) 929-3488
EMAIL: TOM.JANKE@FDLCO.WI.GOV

FOND DU LAC COUNTY SURVEYOR

FOND DU LAC COUNTY
PETER KUEN, PLS
301 DIXIE STREET
FOND DU LAC, WI 54935
PHONE: (920) 929-3492
EMAIL: PETER.KUEN@FDLCO.WI.GOV

NE REGION SURVEY COORDINATOR

WISCONSIN DEPARTMENT OF TRANSPORTATION
CORMAC MCINNIS, PLS
944 VANDERPERREN WAY
GREEN BAY, WI 54304
PHONE: (920) 492-5638
EMAIL: CORMAC.MCINNIS@DOT.WI.GOV

EMERGENCY CONTACT NUMBERS FOR WISCONSIN POWER AND LIGHT COMPANY

ELECTRIC 24 HOUR EMERGENCY SERVICE: 1-800-862-6261
GAS 24 HOUR EMERGENCY SERVICE: 1-800-862-6263

EMERGENCY CONTACT NUMBERS FOR WISCONSIN PUBLIC SERVICE

ELECTRIC 24 HOUR EMERGENCY SERVICE: 1-800-450-7240
GAS 24 HOUR EMERGENCY SERVICE: 1-800-450-7280

EMERGENCY CONTACT NUMBERS FOR WE ENERGIES

ELECTRIC 24 HOUR EMERGENCY SERVICE: 1-800-662-4797
GAS 24 HOUR EMERGENCY SERVICE: 1-800-261-5325

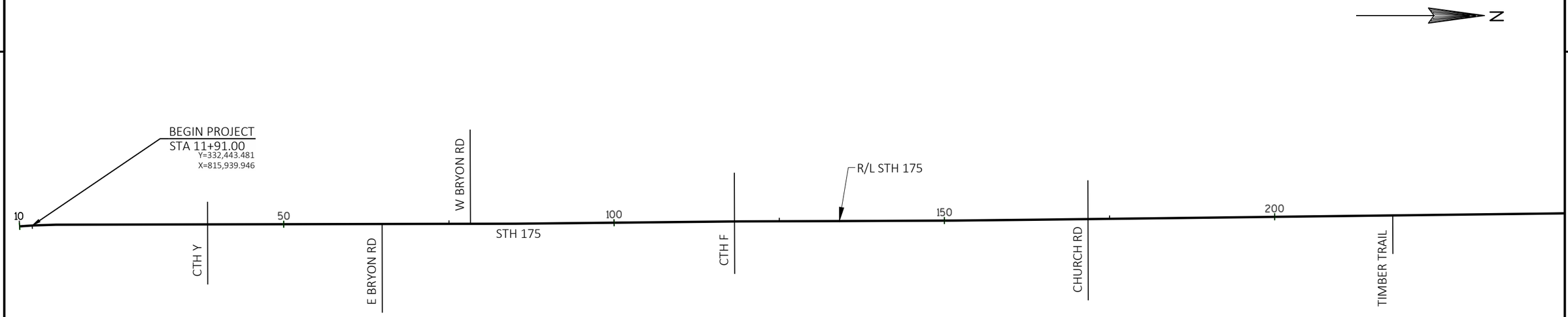
DIGGERS HOTLINE
Dial 811 or (800)242-8511
www.DiggersHotline.com

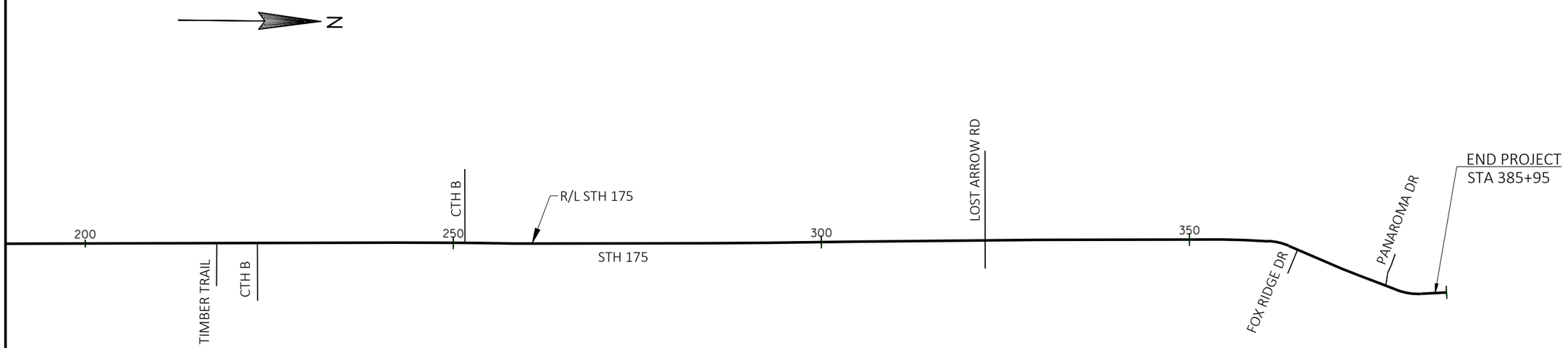
PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	UTILITY & GENERAL NOTES	SHEET E

PRE_2

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\020101-GN.DWG
LAYOUT NAME - 020101-gn
PLOT DATE : 11/20/2019 10:57 AM PLOT BY : MALUEG, RYAN P PLOT NAME : PLOT SCALE : 1 IN:10 FT

2

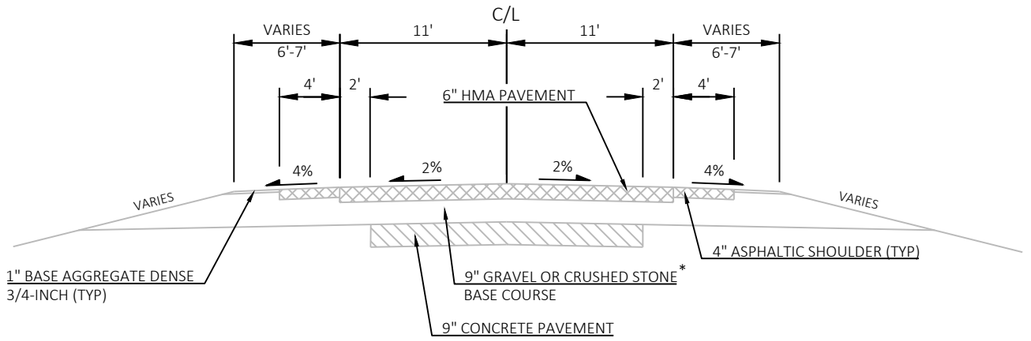




PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PROJECT OVERVIEW	SHEET E

PRE_3

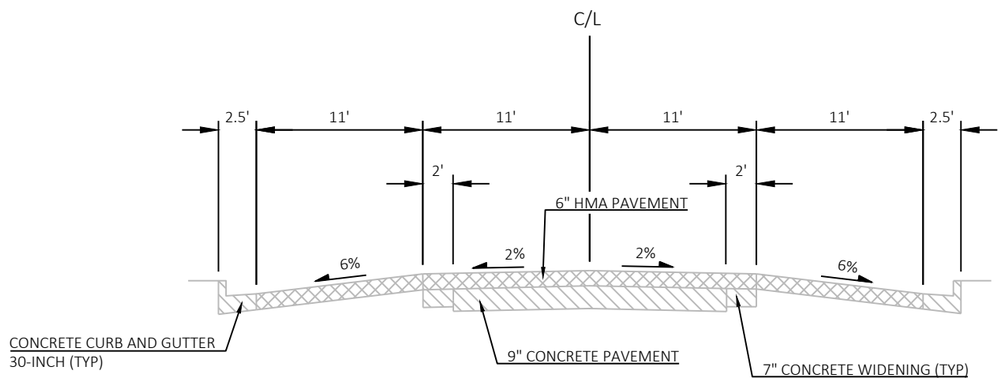
2



*LAYER MAY NOT EXIST IN ALL AREAS - EXACT LOCATIONS ARE UNKNOWN

TYPICAL EXISTING CROSS SECTION FOR STH 175

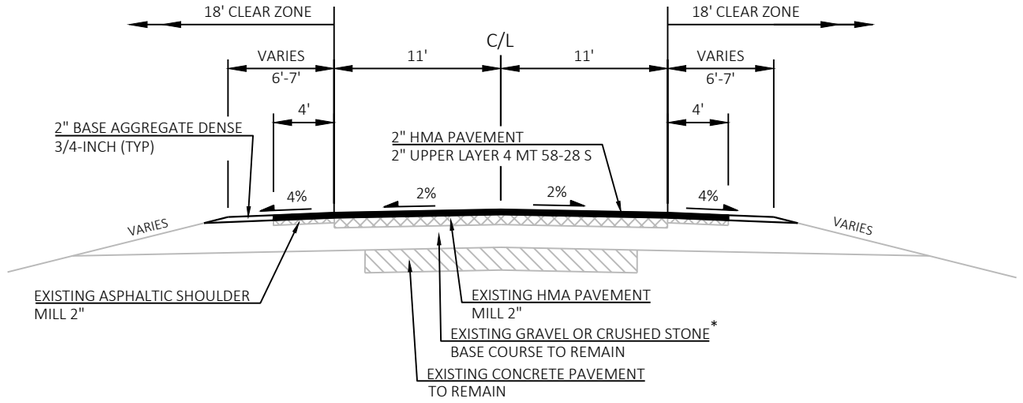
STA 11+91 TO STA 81+00
STA 93+10 LT TO STA 385+90
STA 97+20 RT TO STA 385+90



TYPICAL EXISTING CROSS SECTION FOR STH 175

STA 81+00 TO STA 93+10 LT
STA 81+00 TO STA 97+20 RT

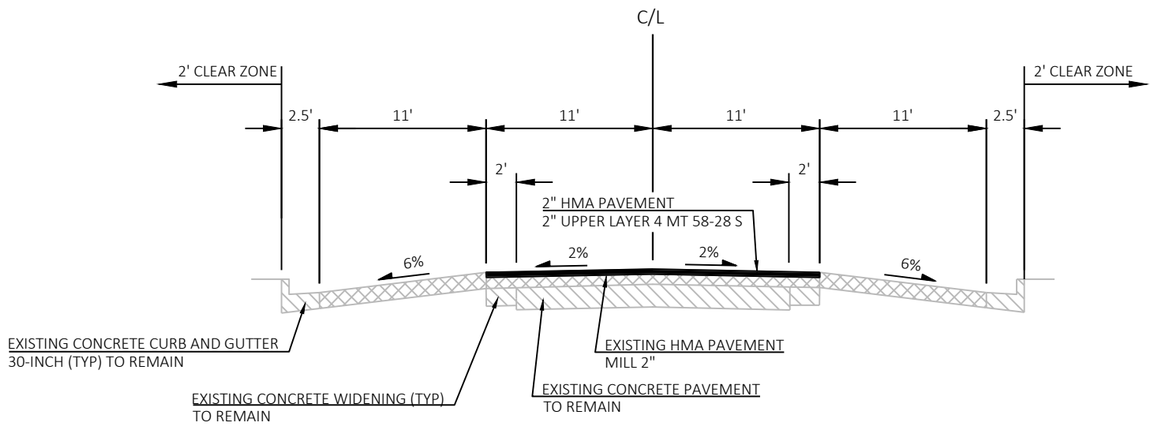
2



*LAYER MAY NOT EXIST IN ALL AREAS - EXACT LOCATIONS ARE UNKNOWN

TYPICAL FINISHED CROSS SECTION FOR STH 175

STA 11+91 TO STA 81+00
STA 93+10 LT TO STA 385+90
STA 97+20 RT TO STA 385+90



TYPICAL FINISHED CROSS SECTION FOR STH 175

STA 81+00 TO STA 93+10 LT
STA 81+00 TO STA 97+20 RT

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN: TYPICAL SECTIONS	SHEET E

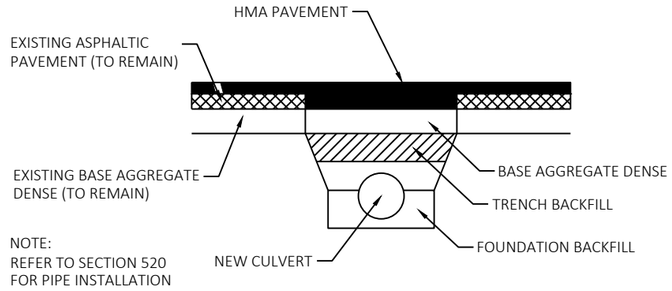
PRE_5

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\020301-TS.DWG
LAYOUT NAME - 020302-ts

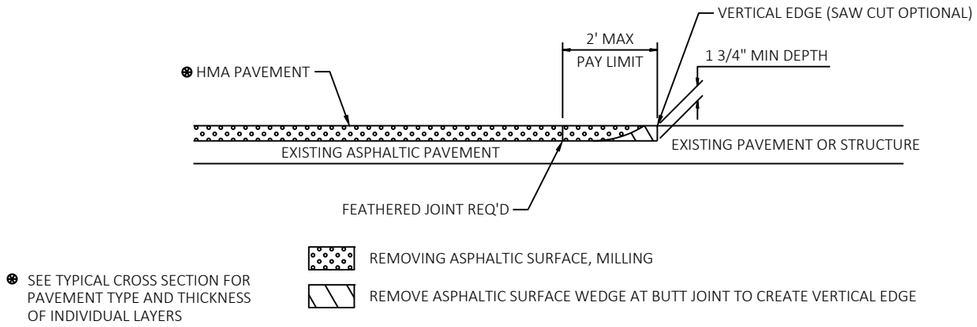
PLOT DATE : 11/26/2019 10:21 AM PLOT BY : MALUEG, RYAN P PLOT NAME : PLOT SCALE : 1IN:10 FT

ROCK BORING LOCATIONS							
BORING	NORTHING	EASTING	STA & OFFSET FROM CENTERLINE (APPROX)	EXISTING GROUND ELEVATION	EDGE OF EXISTING PAVEMENT	DEPTH OF BEDROCK	DEPTH BELOW EDGE OF PAVEMENT OR EXISTING SHOULDER
						(FEET)	(FEET)
RP-1	355559.326	815735.604	243+08.09 -20.67	996.39	997.86	0	1.5
RP-2	355648.341	815734.273	243+97.11 -21.471	1001.02	1001.7	0.5	1.2
RP-3	355749.816	815733.389	244+98.60 -21.743	1005.49	1006.1	3.1	3.7
RP-4	355876.444	815732.219	246+25.18 -22.175	1010.65	1011.56	2.3	3.2
RP-5	355960.444	815730.635	247+09.19 -23.273	1013.76	1015.05	1.4	2.7
RP-6	356062.39	815730.147	248+11.19 -23.162	1018.21	1019.6	4	5.4
B-1	356117.059	815769.997	248+65.65 17.065	1021.89	-----	2	2
B-2	356535.33	815768.652	252+84.01 16.416	1040.12	-----	4	4
B-3	356739.299	815769.374	254+88.01 16.475	1042.1	-----	4.5	4.5
B-4	356942.728	815770.839	256+91.53 16.427	1040.09	-----	3.2	3.2
B-5	357145.126	815738.058	258+93.94 -16.879	1031.68	-----	2.5	2.5
B-6	357355.634	815736.133	261+04.45 -17.113	1018.59	-----	1.5	1.5
B-7	357543.74	815765.517	262+91.54 14.266	1007.67	-----	1.9	1.9
B-8	357757.456	815736.242	265+06.30 -12.677	994.81	-----	2.5	2.5
B-9	357951.223	815733.171	267+00.08 -13.637	982.74	-----	9.3+	9.3
B-10	358157.881	815730.754	269+06.76 -13.807	972.02	-----	6.6	6.6
(FOR INFORMATION ONLY)							

NOTE:
ROCK MAY BE ENCOUNTERED ELSEWHERE
WITHIN THE PROJECT LIMITS.

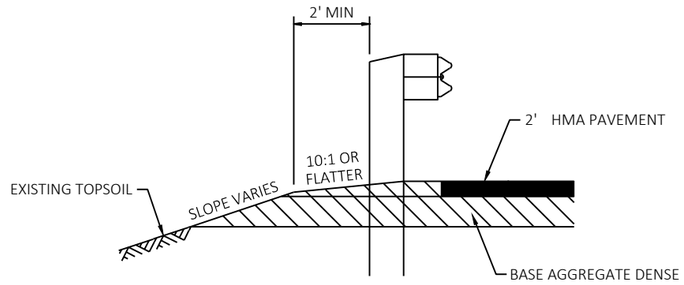


PAVEMENT AT CULVERT REPLACEMENTS

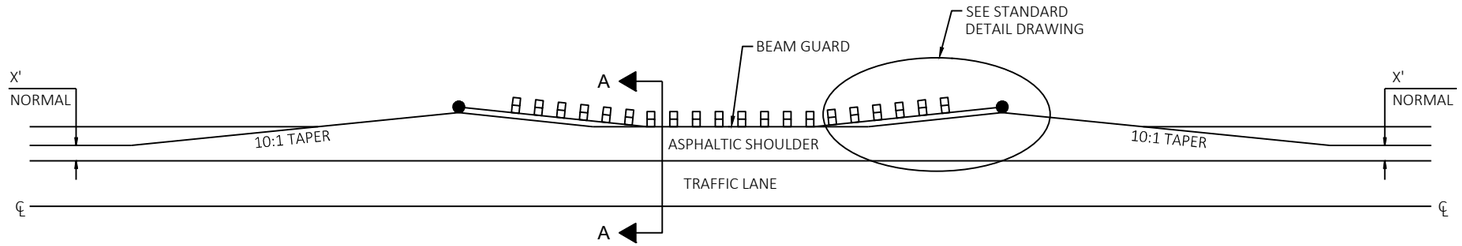


BUTT JOINT DETAIL FOR ASPHALTIC PAVEMENTS (NO PROFILE CHANGE)

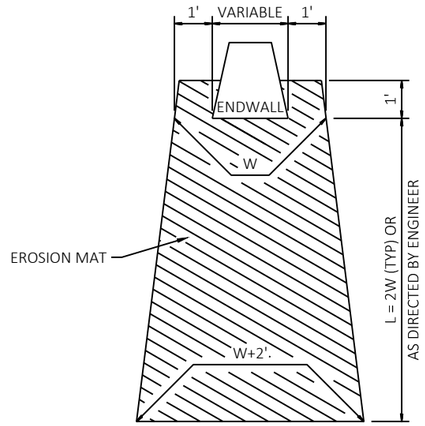
2



SECTION A-A

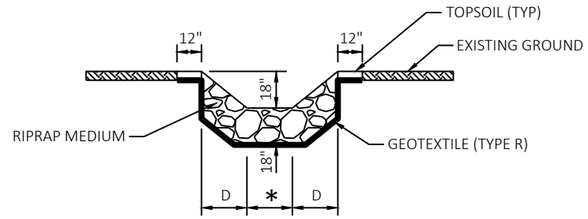


DETAIL FOR ASPHALTIC SHOULDER AT BEAM GUARD



EROSION MAT TREATMENT AT CULVERTS

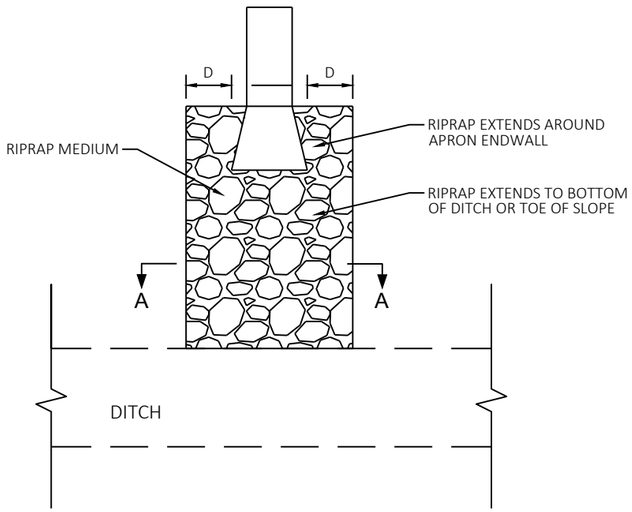
PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN: CONSTRUCTION DETAILS	SHEET E



SECTION A-A

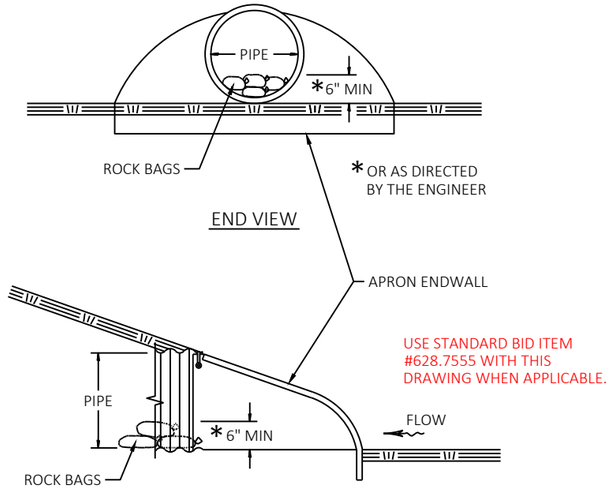
* APRON ENDWALL WIDTH

D = PIPE DIAMETER



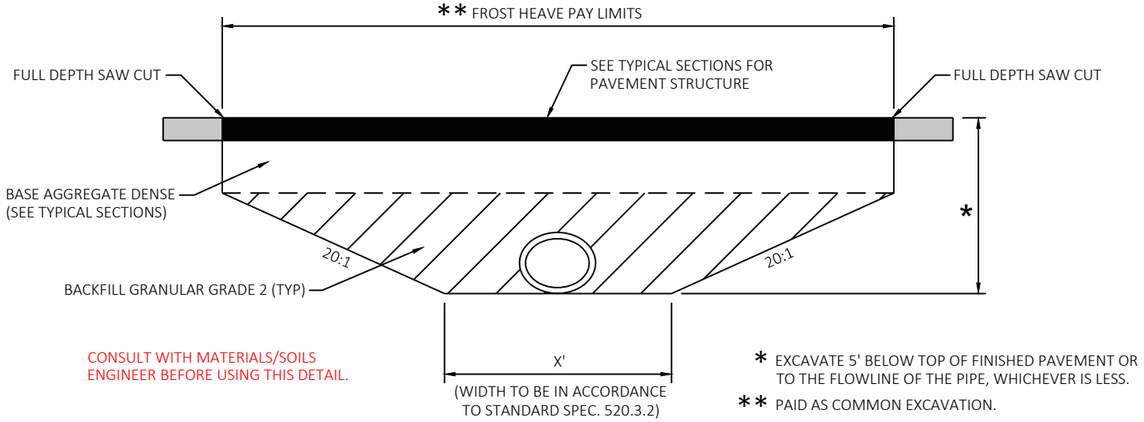
PLAN VIEW

RIPRAP TREATMENT AT STORM SEWER OUTFALLS



SIDE VIEW

CULVERT PIPE CHECKS



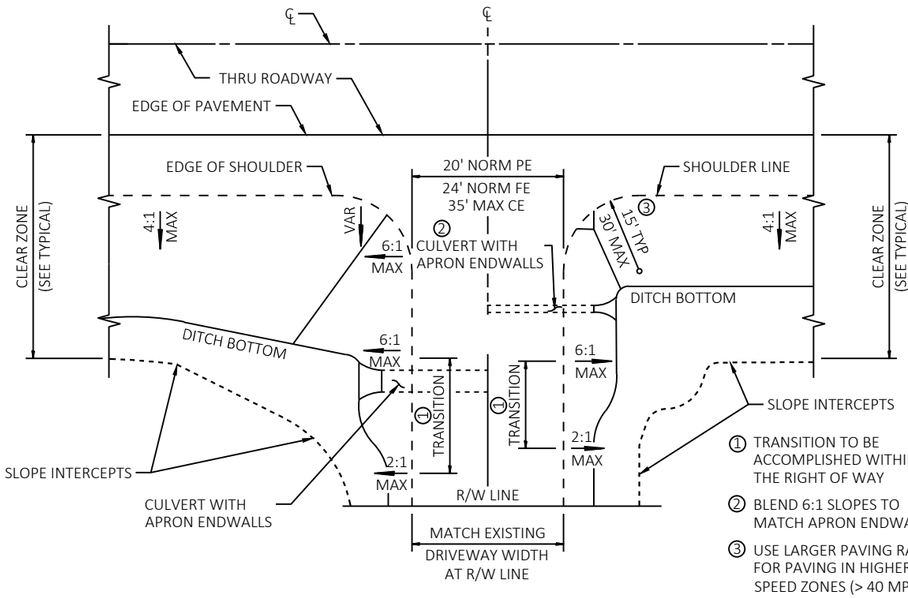
CONSULT WITH MATERIALS/SOILS ENGINEER BEFORE USING THIS DETAIL.

* EXCAVATE 5' BELOW TOP OF FINISHED PAVEMENT OR TO THE FLOWLINE OF THE PIPE, WHICHEVER IS LESS.

** PAID AS COMMON EXCAVATION.

LONGITUDINAL DETAIL FOR CULVERT PIPE FROST HEAVE REPAIR AREA

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN: CONSTRUCTION DETAILS	SHEET PRE_8 E

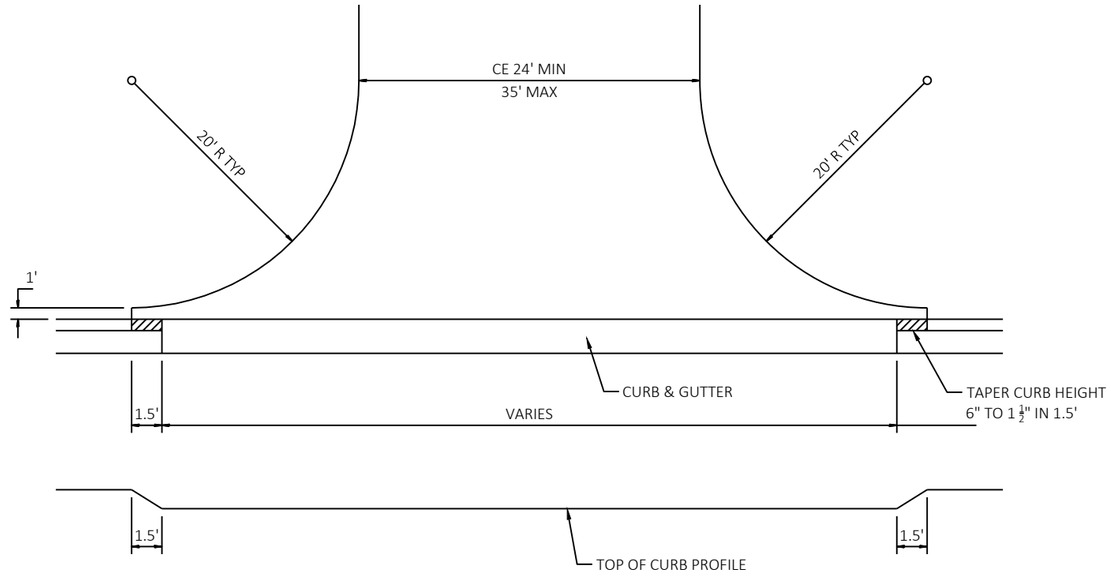


FOR CULVERTS OVER 24" DIAMETER

FOR CULVERTS 24" DIAMETER & LESS

PLAN VIEW

RURAL DRIVEWAY GRADING AND/OR PAVING DETAIL



COMMERCIAL ENTRANCES

NOTES:
NON-PAVED DRIVEWAYS SHALL CONSIST OF 6" OF BASE AGGREGATE DENSE.

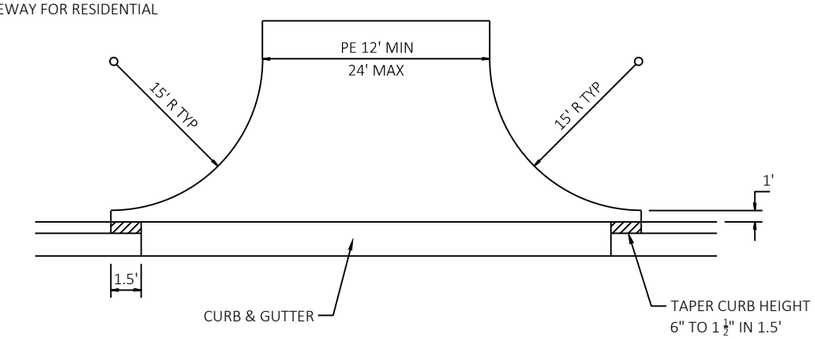
RESIDENTIAL ENTRANCE ASPHALTIC DRIVEWAYS SHALL CONSIST OF 6" BASE AGGREGATE DENSE AND 3" OF ASPHALTIC PAVEMENT.

COMMERCIAL ENTRANCE ASPHALTIC DRIVEWAYS SHALL CONSIST OF 12" BASE AGGREGATE DENSE AND 4" OF ASPHALTIC PAVEMENT

6" CONCRETE DRIVEWAY FOR RESIDENTIAL ENTRANCES.

① A LARGER PAVING RADIUS FOR PAVING IN HIGHER SPEED ZONE (> 40 MPH) CAN BE USED IF WARRANTED.

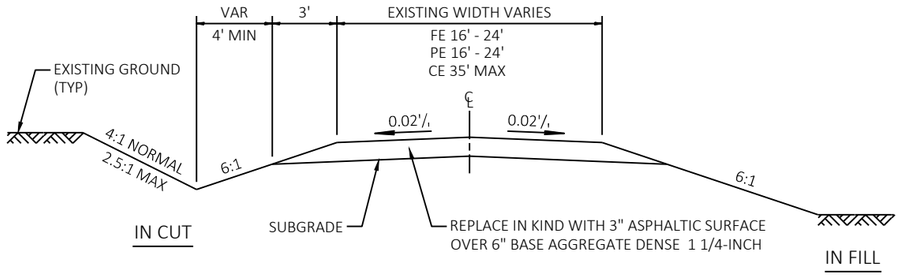
IF POSTED SPEED IS >40MPH CONSIDER USING THIS DETAIL ESPECIALLY FOR COMMERCIAL ENTRANCES



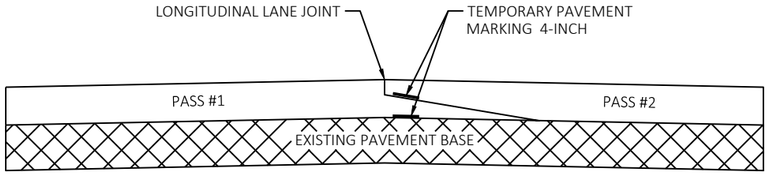
PRIVATE ENTRANCES

RURAL DRIVEWAYS WITH CURB & GUTTER

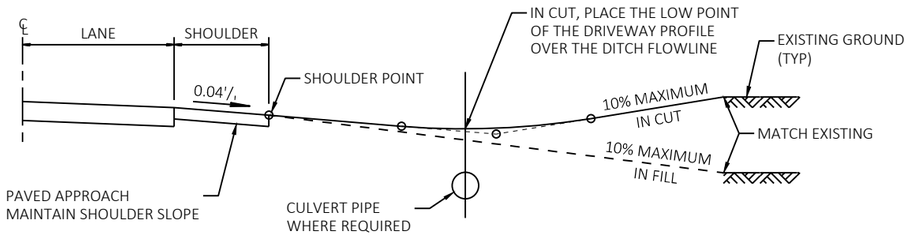
2



TYPICAL CROSS SECTION FOR DRIVEWAYS



PAVEMENT MARKING DETAIL FOR TAPERED OVERLAPPING JOINTS IN HMA PAVEMENTS



TYPICAL DRIVEWAY PROFILES

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN: CONSTRUCTION DETAILS	SHEET PRE_10 E

2

N

W. BYRON RD

50'
MILL TRANSITION

50'
MILL TRANSITION

MILL 3" ASPHALT & REPLACE
WITH 2" HMA PAVEMENT
TYPE 4 MT 58-28 S

STA 81+45.00
(BEGIN TAPER TO 3" MILL)

1058.152
BM
105

2' MILL DEPTH

2' MILL DEPTH

78+00

79+00

80+00

81+00

82+00

83+00

STH 175

STA 79+70.00
(BEGIN TAPER TO 3" MILL)

SAWCUT

I SIGN

SIGN

CANADIAN NATIONAL RAILROAD

CANADIAN NATIONAL RAILROAD

FULL DEPTH 3" MILL AT RAILROAD TRACK

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN: CONSTRUCTION DETAILS	SHEET E

PRE_11

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\021001-CD.DWG
LAYOUT NAME - 021007-cd

PLOT DATE : 11/22/2019 7:04 AM PLOT BY : MALUEG, RYAN P PLOT NAME : PLOT SCALE : 1IN:10 FT

2

2

N

INLET TYPE MS

STA 242+09.35-242+66.27 LT
REMOVE 1-15" CPCM
1-15" CPCM & 1 APRON ENDWALL

53.125
MGS EAT

39.40'
THRIE BEAM

SLOPE INTERCEPT(TYP)

CONCRETE BARRIER TYPE S36

R/L STH 175

242+73.55

243+67.00

242

244

245

246

STH 175

HO HO HO HO

CONCRETE CURB & GUTTER
4-INCH SLOPED 30-INCH TYPE TBT

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN DETAILS	SHEET E

PRE_12

2

2

N

CTH B (WEST)

CONCRETE BARRIER TYPE S36

SLOPE INTERCEPT (TYP)

39.40'
THRIE BEAM

53.125'
MGS EAT

249+50.00

250+42.52

248

250

252

254

R/L STH 175

STH 175

249+65.05

250+57.55

53.125'
MGS EAT

39.40'
THRIE BEAM

CONCRETE BARRIER TYPE S36

REMOVE SMALL CULVERT PIPE

REMOVING DRIVEWAY?

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN DETAILS	SHEET E

PRE_13

2

2

N

R/L STH 175

255

256

258

260

STH 175

OH

HO

SLOPE INTERCEPT (TYP)

CONCRETE BARRIER TYPE S36

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN DETAILS	SHEET E

PRE_14

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\021201-PD.DWG
LAYOUT NAME - 021203-pd

PLOT DATE : 12/18/2019 9:30 AM PLOT BY : SMITH, JENNIFER B PLOT NAME : PLOT SCALE : 1 IN:40 FT

2

2

N

53.125'
MGS EAT

39.40'
THRIE BEAM

CONCRETE BARRIER TYPE S36

SLOPE INTERCEPT (TYP)

R/L STH 175

260+69.63

261+62.04

STH 175

262

264

265

266

262+59.02

263+51.50

39.40'
THRIE BEAM

53.125'
MGS EAT

CONCRETE BARRIER TYPE S36

STA 263+47.95-264+43.29 RT
REMOVE 1-15" CPCM

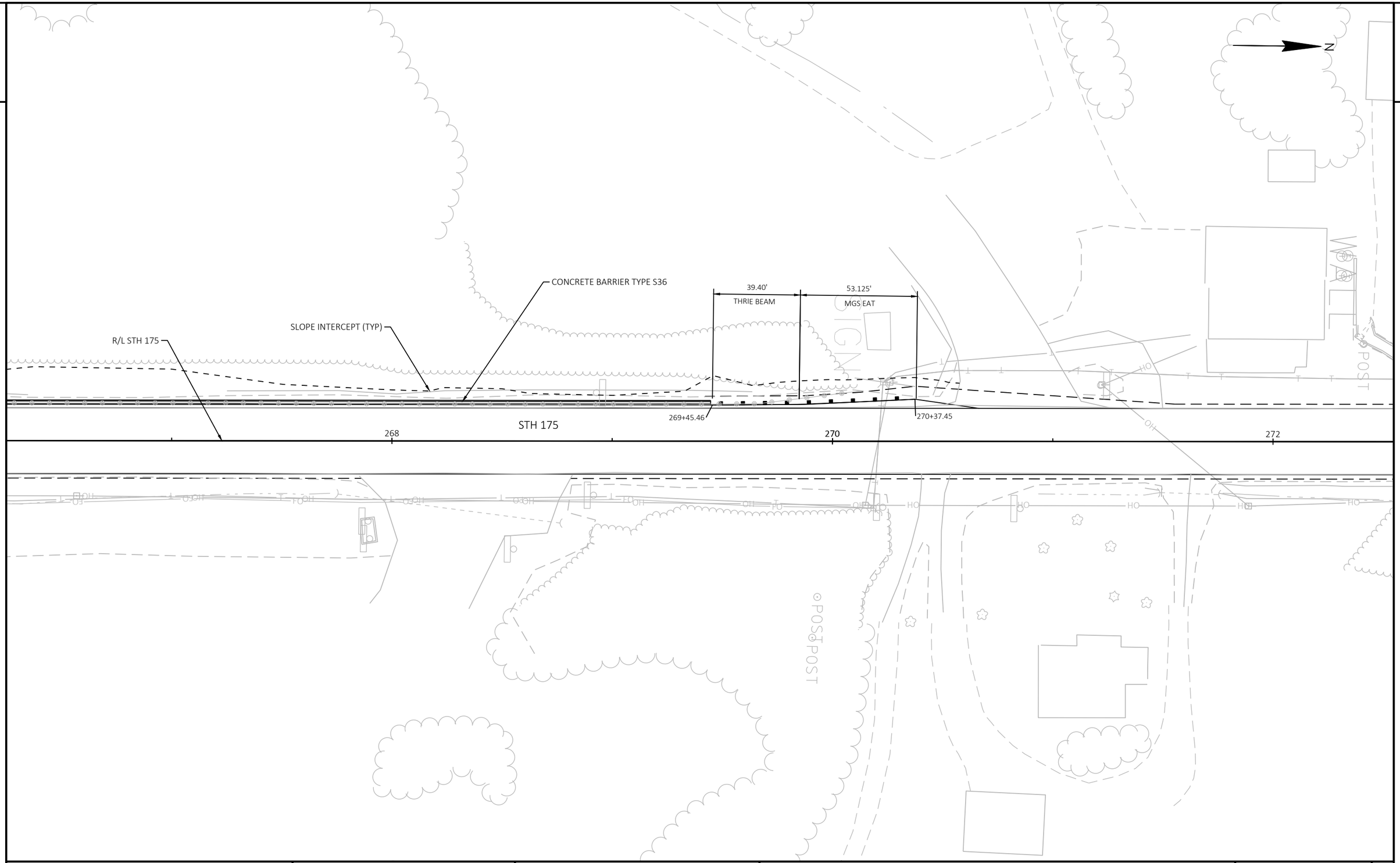
PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN DETAILS	SHEET E

PRE_15

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\021201-PD.DWG
LAYOUT NAME - 021204-pd

PLOT DATE : 12/18/2019 9:30 AM PLOT BY : SMITH, JENNIFER B PLOT NAME : PLOT SCALE : 1 IN:40 FT

2



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN DETAILS	SHEET E

PRE_16

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\021201-PD.DWG
LAYOUT NAME - 021205-pd

PLOT DATE : 12/18/2019 9:30 AM PLOT BY : SMITH, JENNIFER B PLOT NAME : PLOT SCALE : 1 IN:40 FT

2

2

N

SEPV

53.125'
MGS EAT

31.33'
MGS TYPE K

25.00'
MGS TYPE L

97.10'
MGS TYPE K

53.125'
MGS EAT

SLOPE INTERCEPT (TYP)

335+41.85

338+01.50

STH 175

STH 175 R/L

334

335

336

338

334+85.60

337+53.52

53.125'
MGS EAT

86.30'
MGS TYPE K

25.00'
MGS TYPE L

50.43'
MGS TYPE K

53.125'
MGS EAT

GUY

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN DETAILS	SHEET E

PRE_17

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\021201-PD.DWG
LAYOUT NAME - 021206-pd

PLOT DATE : 12/18/2019 9:30 AM PLOT BY : SMITH, JENNIFER B PLOT NAME : PLOT SCALE : 1 IN:40 FT

WISDOT/CADDS SHEET 44

2

N

SLOPE INTERCEPT (TYP)

53.125'
MGS EAT

106.71'
MGS TYPE K

184.79'
MGS TYPE K

53.125'
MGS EAT

361+97.78

362

364

365

STH 175

365+88.04

366

364+84.10

R/L STH 175

360

357+92.03

325.32'
MGS TYPE K

64.49'
MGS TYPE K

53.125'
MGS EAT

53.125'
MGS EAT

POST

POST

POST

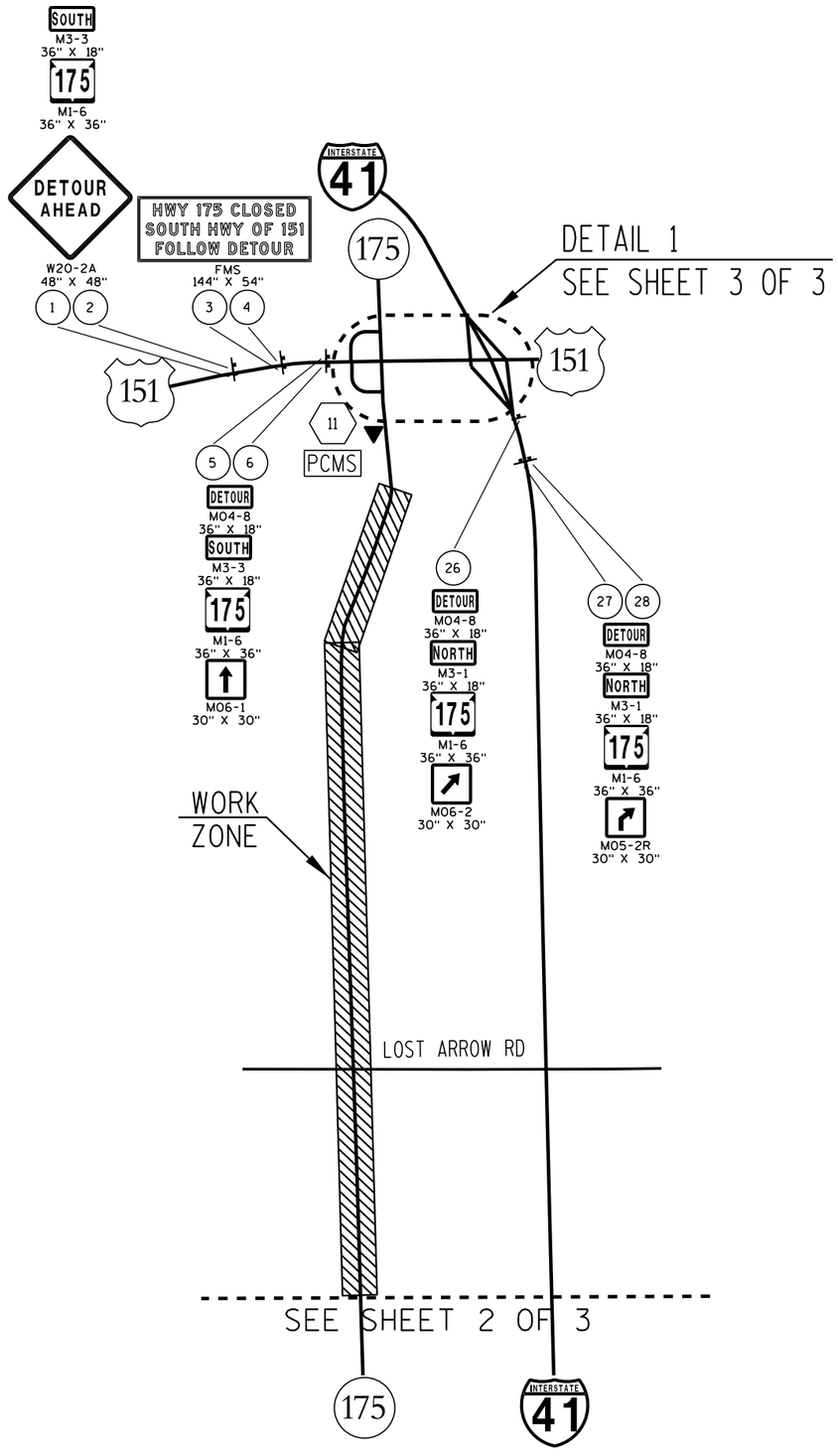
POST

MH

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN DETAILS	SHEET E

PRE_18

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\021201-PD.DWG
LAYOUT NAME - 021207-pd
PLOT DATE : 12/18/2019 9:30 AM
PLOT BY : SMITH, JENNIFER B
PLOT NAME :
PLOT SCALE : 1 IN:40 FT
WISDOT/CADDS SHEET 44



LEGEND

- (X) SIGN NUMBER. REFER TO MISCELLANEOUS QUANTITY SHEET
- ▲ PCMS (X) PORTABLE CHANGEABLE MESSAGE SIGN
- SIGN MOUNTED ON TYPE III BARRICADE
- POST MOUNTED SIGN

SHEET 1 OF 3

PLAN SHEET PRODUCED BY WisDOT-NE REGION

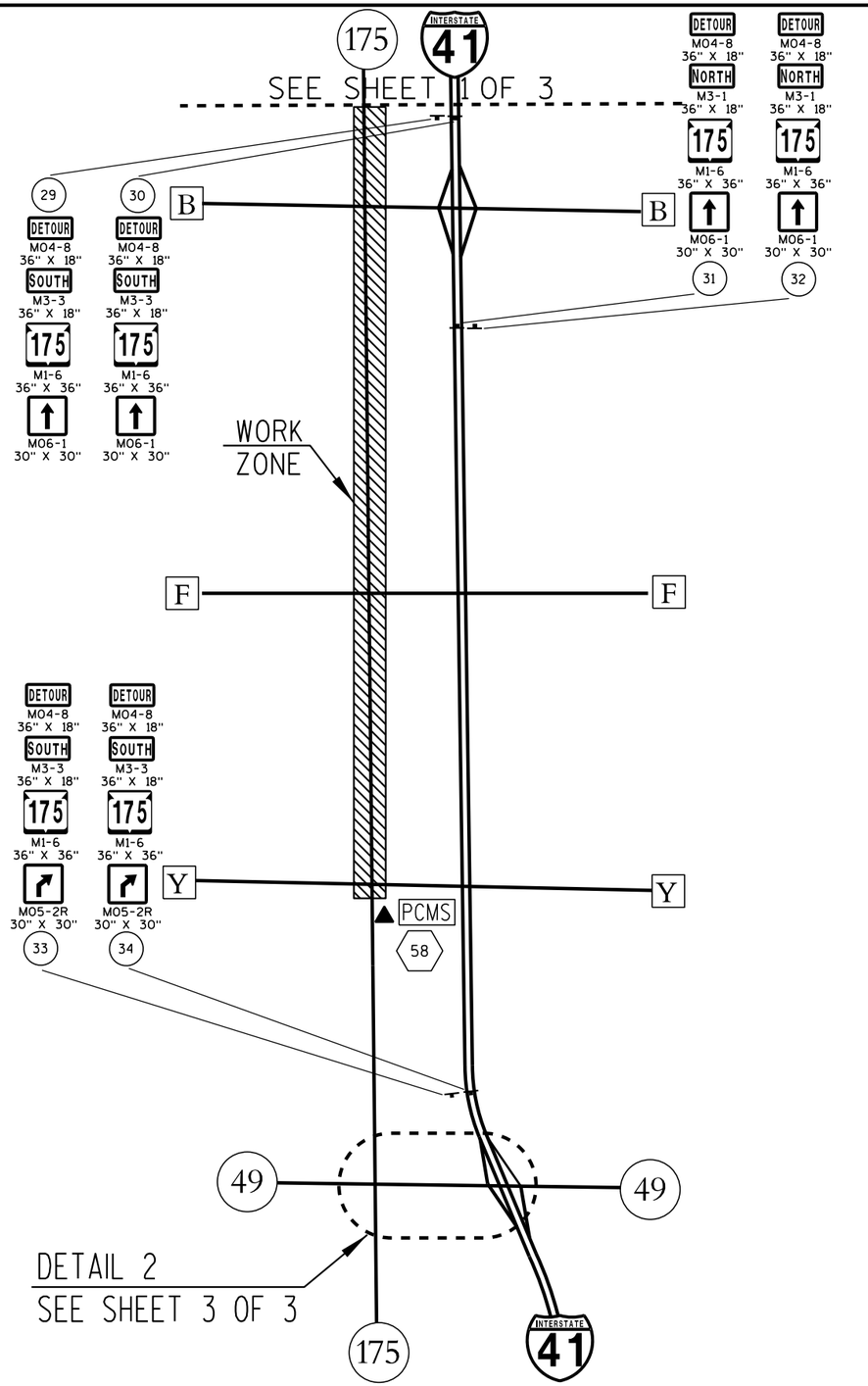
PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	DETOUR SIGNING DETAIL	SHEET E

PRE_19

FILE NAME : N:\spo\traffic\A Work Zone\Detours\Fond du Lac County\STH 175\US 151 - CTH Y\027001_dt.dgn PLOT DATE : 15-JUL-2019 10:22 PLOT BY : dotj1f PLOT NAME : PLOT SCALE : 200:1

WISDOT/CADDS SHEET 42

2



N

LEGEND

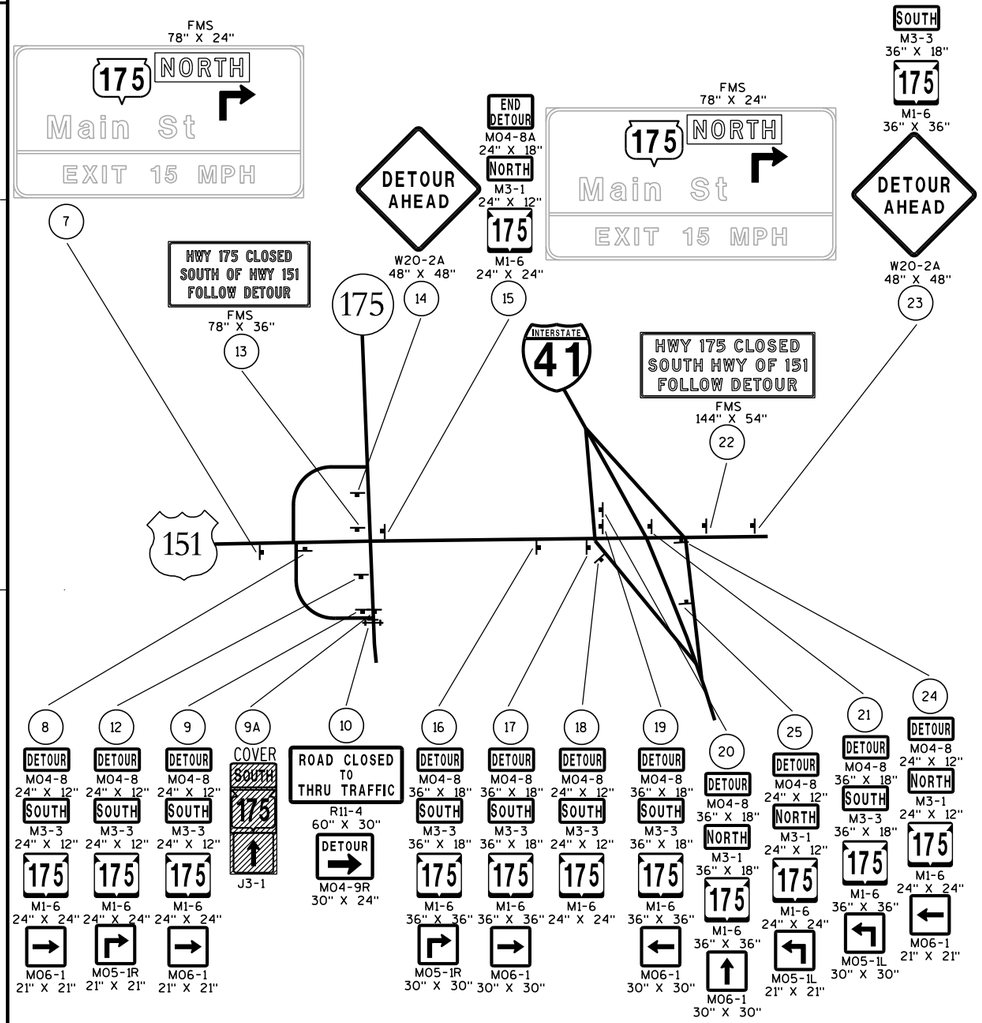
- (X) SIGN NUMBER. REFER TO MISCELLANEOUS QUANTITY SHEET
- ▲ PCMS (X) PORTABLE CHANGEABLE MESSAGE SIGN
- SIGN MOUNTED ON TYPE III BARRICADE
- POST MOUNTED SIGN

SHEET 2 OF 3

PLAN SHEET PRODUCED BY WisDOT-NE REGION

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	DETOUR SIGNING DETAIL	SHEET	E

PRE_20



LEGEND

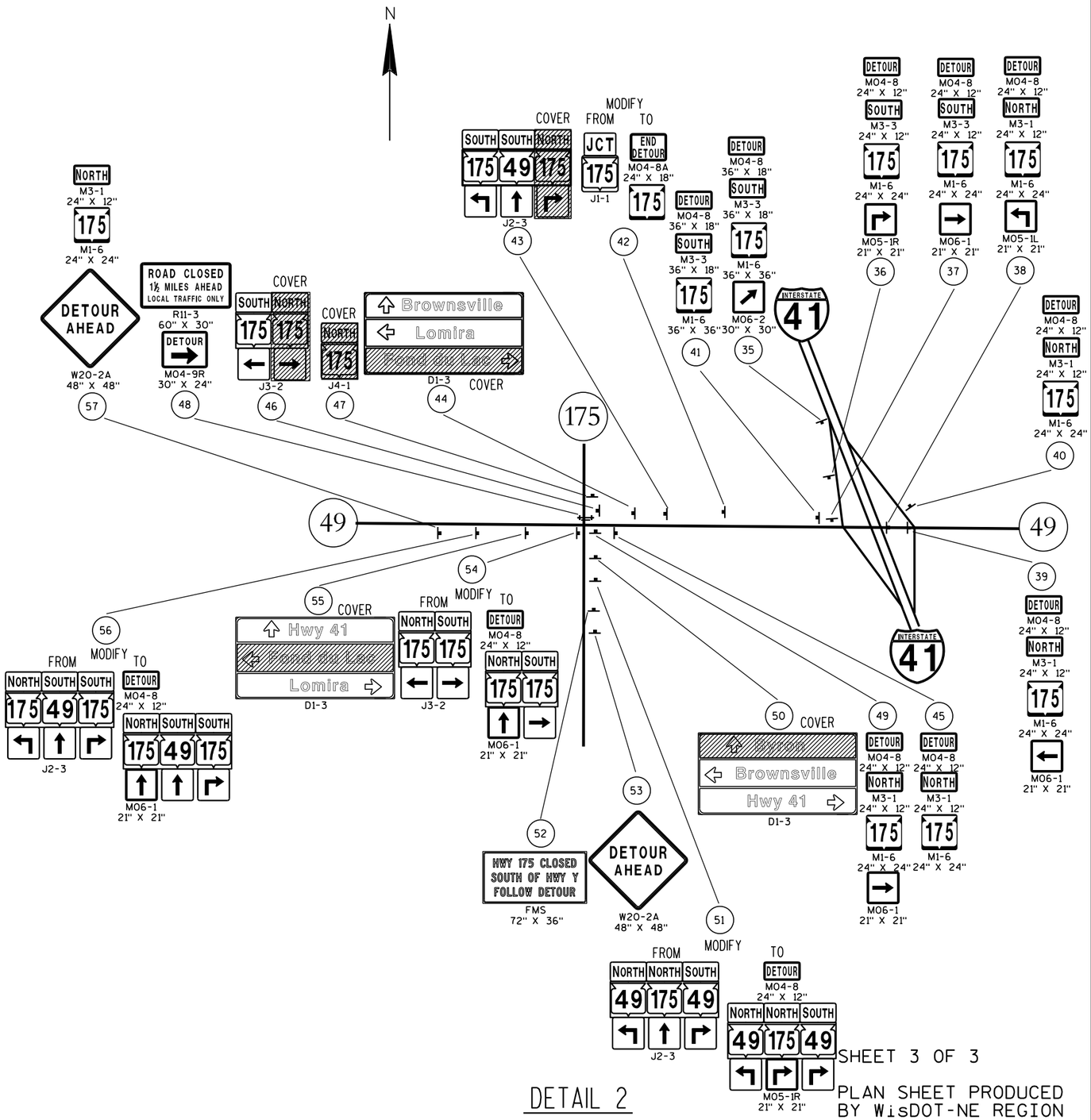
(X) SIGN NUMBER. REFER TO MISCELLANEOUS QUANTITY SHEET

▲ PCMS (X) PORTABLE CHANGEABLE MESSAGE SIGN

SIGN MOUNTED ON TYPE III BARRICADE

POST MOUNTED SIGN

DETAIL 1



DETAIL 2

SHEET 3 OF 3

PLAN SHEET PRODUCED BY WisDOT-NE REGION

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	DETOUR SIGNING DETAIL	SHEET E

PRE_21

FILE NAME : N:\spo\traffic\A Work Zone\Detours\Fond du Lac County\STH 175\US 151 - CTH Y\027003_dt.dgn PLOT DATE : 15-JUL-2019 10:22 PLOT BY : dotj1f PLOT NAME : PLOT SCALE : 200:1

WISDOT/CADDS SHEET 42

REMOVALS

STATION TO STATION	LOCATION	203.0100 REMOVING SMALL PIPE CULVERTS EACH	203.0200 REMOVING OLD STRUCTURE LS	204.0120 REMOVING ASPHALTIC SURFACE MILLING SY	204.0157 REMOVING CONCRETE BARRIER LF	204.0165 REMOVING GUARDRAIL LF	REMARKS
CATEGORY 0010							
11+91 - 37+38	STH 175	-	-	8,535	-	-	BEGINNING OF PROJECT TO CTH Y INTERSECTION
37+38 - 39+18	STH 175	-	-	1,006	-	-	CTH Y INTERSECTION
39+18 - 64+58	STH 175	-	-	572	-	-	CTH Y INTERSECTION TO E BYRON RD
64+58 - 65+12	STH 175	-	-	256	-	-	E BYRON RD INTERSECTION
65+12 - 77+96	STH 175	1	-	4,270	-	-	E BYRON RD INTERSECTION TO W BYRON RD INTERSECTION
77+96 - 78+88	STH 175	-	-	506	-	-	W BYRON RD INTERSECTION
78+88 - 117+49	STH 175	-	-	15,134	-	-	W BYRON RD INTERSECTION TO CTH F INTERSECTION
117+49 - 118+88	STH 175	-	-	1,008	-	-	CTH F INTERSECTION
118+88 - 170+83	STH 175	1	-	17,383	-	-	CTH F INTERSECTION TO CHURCH RD
170+83 - 171+47	STH 175	-	-	373	-	-	CHURCH RD INTERSECTION
171+47 - 217+64	STH 175	1	-	15,439	-	-	CHURCH RD INTERSECTION TO TIMBER TRAIL W
217+64 - 218+07	STH 175	-	-	190	-	-	TIMBER TRAIL W INTERSECTION
218+07 - 223+56	STH 175	-	-	2,003	-	-	TIMBER TRAIL W INTERSECTION TO CTH B INTERSECTION EAST
223+56 - 224+72	STH 175	-	-	760	-	-	CTH B INTERSECTION EAST
224+72 - 250+29	STH 175	-	-	8,754	-	-	CTH B INTERSECTION EAST TO CTH B INTERSECTION WEST
250+29 - 251+33	STH 175	-	-	601	-	-	CTH B INTERSECTION WEST
251+33 - 304+16	STH 175	1	-	17,108	-	-	CTH B INTERSECTION WEST TO LOST ARROW RD INTERSECTION
260+49 - 262+55	STH 175, RT	-	-	-	206	-	CONCERTE BARRIER
304+16 - 304+16	STH 175	-	-	1008	-	-	LOST ARROW RD INTERSECTION
304+16 - 374+12	STH 175	2	2	23,065	-	-	LOST ARROW RD INTERSECTION TO FOX RIDGE DR INTERSECTION
335+12 - 336+86	STH 175, RT	-	-	-	-	173	BEAM GUARD
335+66 - 337+02	STH 175, LT	-	-	-	-	136	BEAM GUARD
361+23 - 364+89	STH 175, RT	-	-	-	-	366	BEAM GUARD
362+05 - 365+55	STH 175, LT	-	-	-	-	350	BEAM GUARD
374+12 - 374+12	STH 175	-	-	250	-	-	FOX RIDGE DR INTERSECTION
374+12 - 385+90	STH 175	-	-	3726	-	-	FOX RIDGE DR INTERSECTION TO END OF PROJECT
380+13 - 380+37	STH 175	-	-	133	-	-	PANORAMA DR INTERSECTION
	TOTAL	**6**	**2**	**122,080**	**206**	**1,025**	

3

CLEARING & GRUBBING

STATION TO	STATION	LOCATION	201.0105 CLEARING STA	201.0205 GRUBBING STA	REMARKS
CATEGORY 0010					
48+20	- 48+50	STH 175, LT	1	1	LINE OF TREES
117+50	- 119+00	STH 175, RT	2	2	2 TREES
284+34		STH 175, LT	1	1	1 TREE
		TOTAL	**4**	**4**	

BUTT JOINTS AND SAW CUTTING

LOCATION	OFFSET	204.0115 REMOVING ASPHALTIC SURFACE BUTT JOINTS SY	690.0150* SAWING ASPHALT LF	REMARKS
CATEGORY 0010				
STH 175 / BEGINNING OF PROJECT	LT/RT	7	30	
CTH Y	LT/RT	11	47	
E BYRON RD	RT	5	20	
W BYRON RD	LT	5	22	
CTH F	LT/RT	11	47	
CHURCH RD	LT/RT	11	49	
TIMBER TRAIL RD	RT	6	24	
E CTH B	RT	7	30	
W CTH B (HAMILTON RD)	LT	6	25	
LOST ARROW RD	LT/RT	13	55	
FOX RIDGE DR	RT	41	181	
PANORAMA DR	LT	9	40	
STH 175 / END OF PROJECT	LT/RT	10	41	
	TOTAL	**142**	**611**	

*ADDITIONAL QUANTITIES ELSEWHERE IN THE PLAN

SHOULDER WORK SUMMARY

STATION TO STATION	LOCATION	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON	305.0500 SHAPING SHOULDERS STA	624.0100 WATER MGAL	REMARKS
CATEGORY 0010						
11+91 - 38+04	STH 175, LT	128		27	1.8	BEGINNING OF PROJECT TO CTH Y CURB AND GUTTER
39+30 - 78+06	STH 175, LT	190		39	2.7	CTH Y CURB AND GUTTER TO W BYRON RD
78+85 - 80+65	STH 175, LT	9		2	0.1	W BYRON RD TO RAILROAD
81+09 - 82+84	STH 175, LT	9		2	0.1	RAILROAD TO TOWN OF BYRON CURB AND GUTTER
93+21 - 117+68	STH 175, LT	120		25	1.7	TOWN OF BYRON CURB AND GUTTER TO CTH F CURB AND GUTTER
119+17 - 170+93	STH 175, LT	254		52	3.6	CTH F CURB AND GUTTER TO CHURCH RD
171+40 - 250+42	STH 175, LT	387		80	5.4	CHURCH RD TO CTH B WEST
251+18 - 303+77	STH 175, LT	258		53	3.6	CTH B WEST TO LOST ARROW RD
304+69 - 385+90	STH 175, LT	398		82	5.6	LOST ARROW RD TO END OF PROJECT
11+91 - 37+63	STH 175, RT	126		26	1.8	BEGINNING OF PROJECT TO CTH Y CURB AND GUTTER
39+03 - 64+63	STH 175, RT	125		26	1.8	CTH Y CURB AND GUTTER TO E BYRON RD
65+05 - 80+04	STH 175, RT	73		15	1.0	E BYRON RD TO RAILROAD
76+66	STH 175		187			
80+48 - 80+90	STH 175, RT	2		1	0.0	RAILROAD TO TOWN OF BYRON CURB AND GUTTER
98+24 - 117+11	STH 175, RT	92		19	1.3	TOWN OF BYRON CURB AND GUTTER TO CTH F CURB AND GUTTER
118+77 - 170+76	STH 175, RT	255		52	3.6	CTH F CURB AND GUTTER TO CHURCH RD
121+35	STH 175		187			
171+37 - 217+62	STH 175, RT	227		47	3.2	CHURCH RD TO TIMBER TRAIL W
200+22	STH 175		187			
218+09 - 223+46	STH 175, RT	26		6	0.4	TIMBER TRAIL W TO CTH B EAST CURB AND GUTTER
224+79 - 250+62	STH 175, RT	127		26	1.8	CTH B EAST CURB AND GUTTER TO CTH B WEST
251+08 - 303+58	STH 175, RT	257		53	3.6	CTH B WEST TO LOST ARROW RD
304+64 - 373+22	STH 175, RT	336		69	4.7	LOST ARROW RD TO FOX RIDGE DR CURB AND GUTTER
317+08	STH 175		187			
343+14	STH 175		187			
375+02 - 385+90	STH 175, RT	53		11	0.7	FOX RIDGE DR CURB AND GUTTER TO END OF PROJECT
	TOTAL	**3452**	**933**	**713**	**48.5**	

ASPHALTIC MATERIALS SUMMARY

			455.0605 TACK COAT	460.4110.S REHEATING HMA PAVEMENT LONGITUDINAL JOINTS	HMA PAVEMENT 4 MT 58-28 S 460.6224	PWL DENSITY INCENTIVE	PWL AIR VOIDS	
STATION TO	STATION	LOCATION	GAL	LF	TON	TON*	TON**	REMARKS
CATEGORY 0010								
11+91 -	80+34	STH 175	1597	6,843	2,737	2,007	2,737	BEGINNING OF PROJECT TO R/R
80+51 -	80+62	STH 175	2	11	4	3	4	BETWEEN RAIL LINES
80+78 -	385+90	STH 175	7119	30,512	12,205	8,950	12,205	RAILROAD TO END OF PROJECT
37+82 -	39+18	STH 175	39	136	66	-	66	CTH Y APPROACHES
64+58 -	65+12	STH 175	5	55	9	-	9	E BYRON RD APPROACH
77+96 -	78+88	STH 175	14	92	24	-	24	W BYRON RD APPROACH
117+49 -	118+88	STH 175	38	139	65	-	65	CTH F APPROACHES
170+83 -	171+47	STH 175	11	64	19	-	19	CHURCH RD APPROACHES
217+64 -	218+07	STH 175	4	43	6	-	6	TIMBER TRAIL W APPROACH
223+56 -	224+72	STH 175	18	116	31	-	31	CTH B EAST APPROACH
250+29 -	251+33	STH 175	17	103	30	-	30	CTH B WEST APPROACH
303+40 -	304+84	STH 175	37	144	63	-	63	LOST ARROW RD APPROACHES
373+19 -	374+98	STH 175	21	179	37	-	37	FOX RIDGE DR APPROACH
380+00	380+60	STH 175	9	60	16	-	16	PANORAMA DR APPROACH
220+87 -	227+32	STH 175, LT	34	645	58	-	58	BYPASS LANE AT CTH B EAST
226+72 -	230+45	STH 175, LT	19	372	33	-	33	WIDE SHOULDER AT BEAM GUARD
226+93 -	230+09	STH 175, RT	21	317	35	-	35	WIDE SHOULDER AT BEAM GUARD
243+67 -	250+24	STH 175, LT	36	657	118	-	118	WIDE SHOULDER AT CONCRETE BARRIER
249+25 -	263+91	STH 175, RT	80	1,466	262	-	262	WIDE SHOULDER AT CONCRETE BARRIER
260+29 -	270+59	STH 175, LT	52	1,030	171	-	171	WIDE SHOULDER AT CONCRETE BARRIER
277+33 -	280+62	STH 175, LT	14	330	23	-	23	WIDE SHOULDER AT BEAM GUARD
277+25 -	280+57	STH 175, RT	14	332	24	-	24	WIDE SHOULDER AT BEAM GUARD
334+69 -	338+02	STH 175, RT	18	333	60	-	60	WIDE SHOULDER AT BEAM GUARD
335+17 -	338+45	STH 175, LT	18	328	59	-	59	WIDE SHOULDER AT BEAM GUARD
359+47 -	365+48	STH 175, RT	33	601	108	-	108	WIDE SHOULDER AT BEAM GUARD
361+78 -	366+12	STH 175, LT	24	434	78	-	78	WIDE SHOULDER AT BEAM GUARD
369+88 -	379+26	STH 175, LT	53	938	90	-	90	BYPASS LANE AT FOX RIDGE DR
369+23 -	373+20	STH 175, RT	23	396	39	-	39	TURN LANE AT FOX RIDGE DR
385+10 -	385+90	STH 175	2	80	3	-	3	PAINTED MEDIAN
		TOTAL	**9,372**	**46,755**	**16,473**	**10,960**	**16,473**	

* Tonnage is eligible for Incentive Density PWL 460.2005 and Incentive Air Voids 460.2010.

** Tonage is eligible for Incentive Air Voids 460.2010 and density is tested for acceptance in those areas.

*** Tonnage is eligible for QMP Density Incentive 460.2000

3

CULVERT PIPES

STATION TO STATION	LOCATION	521.3115 CULVERT PIPE CORRUGATED STEEL 15-INCH LF	522.0424 CPRC CLASS IV 24-INCH LF	522.0430 CPRC CLASS IV 30-INCH LF	522.0436 CPRC CLASS IV 36-INCH LF	522.0448 CPRC CLASS IV 48-INCH LF	522.2429 CPRC HORIZONTAL ELLIPTICAL CLASS HE-IV 29X45-INCH LF	JOINT TIES* EACH	650.6000 CONSTRUCTION STAKING PIPE CULVERTS EACH	INLET ELEVATION	DISCHARGE ELEVATION	SLOPE FT/FT
CATEGORY 0010												
76+66 - 76+66	STH 175	-	-	-	-	-	48	12	1	1049.86	1049.00	0.0179
121+35 - 121+35	STH 175	-	48	-	-	-	-	12	1	1080.87	1080.23	0.0133
200+22 - 200+23	STH 175	-	-	-	-	48	-	12	1	1005.53	1005.00	0.0110
317+08 - 317+08	STH 175	-	-	-	48	-	-	12	1	854.95	854.38	0.0119
343+14 - 343+12	STH 175	-	-	48	-	-	-	12	1	833.09	832.64	0.0094
242+68 - 242+07	STH 175 LT	62	-	-	-	-	-	0	1	993.11	990.40	0.0437
	TOTAL	**62**	**48**	**48**	**48**	**48**	**48**	**60**	**6**			

* NON-BID ITEM: FOR INFORMATION ONLY

ASPHALT CENTERLINE RUMBLE STRIPS 2-LANE RURAL

465.0475

STATION TO STATION	LOCATION	LF	REMARKS
CATEGORY 0010			
11+91 - 38+49	STH 175	2,458	BEGINNING OF PROJECT TO CTH Y
38+49 - 64+84	STH 175	2,235	CTH Y TO E BYRON RD
64+84 - 78+44	STH 175	961	E BYRON RD TO W BYRON RD
78+44 - 80+38	STH 175	-	W BYRON RD TO RAILROAD
98+71 - 118+18	STH 175	1,647	TOWN OF BYRON TO CTH F
118+18 - 171+18	STH 175	4,899	CTH F TO CHURCH RD
171+18 - 217+86	STH 175	4,268	CHURCH RD TO TIMBER TRAIL W
217+86 - 224+24	STH 175	238	TIMBER TRAIL W TO CTH B EAST
224+24 - 250+81	STH 175	1,394	CTH B EAST TO CTH B WEST
250+81 - 304+04	STH 175	4,464	CTH B WEST TO LOST ARROW RD
304+04 - 374+12	STH 175	6,607	LOST ARROW RD TO FOX RIDGE DR
374+12 - 385+90	STH 175	978	FOX RIDGE DR TO END OF PROJECT
TOTAL		**30,149**	

CLEANING CULVERT PIPES

520.8700

STATION	LOCATION	EACH	REMARKS
CATEGORY 0010			
11+80	STH 175	1	24 INCH
30+63	STH 175	1	24 INCH
81+03	STH 175	1	24 INCH
99+75	STH 175	1	24 INCH
151+28	STH 175	1	3'X2' BOX W/EXTENTIONS
171+45	STH 175	1	3'X2' BOX W/EXTENTIONS
TOTAL		**6**	

MARKERS CULVERT END

633.5200

STATION	LOCATION	EACH
CATEGORY 0010		
11+80	STH 175	2
30+63	STH 175	2
76+66	STH 175	2
81+03	STH 175	2
99+75	STH 175	2
121+35	STH 175	2
151+28	STH 175	2
171+45	STH 175	2
200+22	STH 175	2
242+07	STH 175	2
263+48	STH 175	2
317+08	STH 175	2
343+14	STH 175	2
	TOTAL	**22**

CULVERT PIPE STRUCTURES

STATION	OFFSET*	LOCATION	521.1018 AE FOR CP STEEL 18-INCH EACH	521.1024 AE FOR CP STEEL 24-INCH EACH	521.1235 AE FOR PIPE ARCH STEEL 35X24-INCH EACH	522.1024 AE FOR CPRC 24-INCH EACH	522.1030 AE FOR CPRC 30-INCH EACH	522.1036 AE FOR CPRC 36-INCH EACH	522.1048 AE FOR CPRC 48-INCH EACH	522.2634 AE FOR CPRC HE 34X53-INCH EACH	611.0642 INLET COVERS TYPE MS EACH	611.3901 INLETS MEDIAN 1 GRATE EACH	650.4000 CONSTRUCTION STAKING STORM SEWER EACH	RIM ELEVATION	INVERT** ELEVATION	DEPTH*** FT
CATEGORY 0010																
30+63.18	25.1' LT	STH 175	-	1	-	-	-	-	-	-	-	-	-		1082.31	
30+63.38	24.6' RT	STH 175	-	1	-	-	-	-	-	-	-	-	-		1083.31	
121+34.89	24' LT	STH 175	-	-	-	1	-	-	-	-	-	-	-		1080.87	
121+35.82	24' RT	STH 175	-	-	-	1	-	-	-	-	-	-	-		1080.23	
171+44.73	23.8' RT	STH 175	-	-	1	-	-	-	-	-	-	-	-		1072.43	
171+44.88	24.2' LT	STH 175	-	-	1	-	-	-	-	-	-	-	-		1072.03	
99+74.85	25.8' LT	STH 175	-	1	-	-	-	-	-	-	-	-	-		1058.24	
99+75.31	26.1' RT	STH 175	-	1	-	-	-	-	-	-	-	-	-		1058.53	
76+66.52	23.1' LT	STH 175	-	-	-	-	-	-	-	1	-	-	-		1049.86	
76+66.97	25.3' RT	STH 175	-	-	-	-	-	-	-	1	-	-	-		1049.00	
200+22.90	24' RT	STH 175	-	-	-	-	-	-	1	-	-	-	-		1005.53	
200+22.01	24' LT	STH 175	-	-	-	-	-	-	1	-	-	-	-		1005.00	
263+48.40	21.5' RT	STH 175	-	-	-	-	-	-	-	-	1	1	1	1001.35	1001.13	8.95
264+43.27	30.6' RT	STH 175	1	-	-	-	-	-	-	-	-	-	-		996.91	
317+08.37	24.7' RT	STH 175	-	-	-	-	-	1	-	-	-	-	-		854.95	
317+08.00	23.4' LT	STH 175	-	-	-	-	-	1	-	-	-	-	-		854.38	
343+12.30	23' RT	STH 175	-	-	-	-	1	-	-	-	-	-	-		832.64	
343+13.82	25.1' LT	STH 175	-	-	-	-	1	-	-	-	-	-	-		833.09	
	TOTAL		**1**	**4**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**1**			

REMARKS
* STATIONS AND OFFSETS ARE TO CENTER OF STRUCTURE
** THE INVERT ELEVATION IS THE ELEVATION OF THE LOWEST PIPE FLOW LINE
*** DEPTH = RIM ELEV - TOP OF STRUCTURE BASE ELEV - COVER HEIGHT - X-INCH ADJUSTMENT RING HEIGHT

CURB & GUTTER 4-INCH SLOPED

STATION TO	STATION	LOCATION	601.0584 30-INCH TBT LF	REMARKS
CATEGORY 0010				
242+10	- 243+67	STH 175, LT	157	
		TOTAL	**157**	

3

CONCRETE BARRIER

STATION TO	STATION	LOCATION	603.1136 CONCRETE BARRIER TYPE S36 LF	603.1436 CONCRETE BARRIER TYPE S36C LF	633.1000 DELINEATOR BRACKETS EACH	210.1100 BACKFILL STRUCTURE TYPE A? TON	REMARKS
CATEGORY 0010							
243+67 -	249+55	STH 175, LT	588	-	7	-	
250+58 -	262+59	STH 175, RT	-	1,201	13	389	
261+62 -	269+46	STH 175, LT	784	-	9	-	
		TOTAL	**1,372**	**1,201**	**29**	**389**	

BARRIER SYSTEM GRADING SHAPING FINISHING

STATION TO	STATION	LOCATION	614.0010 EACH
CATEGORY 0010			
242+75 -	CTH B	STH 175 LT	1
249+65 -	263+51	STH 175 RT	1
260+70 -	270+52	STH 175 LT	1
334+70 -	337+53	STH 175 RT	1
335+27 -	338+02	STH 175 LT	1
359+85 -	364+92	STH 175 RT	1
361+83 -	366+07	STH 175 LT	1
		TOTAL	**7**

BEAM GUARD

STATION TO	STATION	LOCATION	614.2500 MGS THRIE BEAM TRANSITION LF	614.2300 MGS GUARDRAIL 3 LF	614.2340 MGS GUARDRAIL 3 L LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH	614.0200 STEEL THRIE BEAM STRUCTURE APPROACH LF	614.0305 STEEL PLATE BEAM GUARD CLASS A LF	614.0345 STEEL PLATE BEAM GUARD SHORT RADIUS LF	614.0397 GUARDRAIL MOW STRIP EMULSIFIED ASPHALT SY	REMARKS
CATEGORY 0010											
242+73 -	243+67	STH 175, LT	40	-	-	1	-	-	-		
249+55	250+20	STH 175, LT	-	-	-	-	21	25	-		
0+70 -	2+07	CTH B WEST, RT	-	-	-	-	-	138	81		CONNECT TO EXISTING
249+65 -	250+58	STH 175, RT	40	-	-	1	-	-	-		
262+59 -	263+51	STH 175, RT	40	-	-	1	-	-	-		
260+70 -	261+62	STH 175, LT	40	-	-	1	-	-	-		
269+45 -	270+37	STH 175, LT	40	-	-	1	-	-	-		
334+85 -	337+54	STH 175, RT	-	163		2	-	-	-		
335+42 -	338+02	STH 175, LT	-	154		2	-	-	-		
359+85 -	364+92	STH 175, RT	-	401		2	-	-	-		
361+83 -	366+07	STH 175, LT	-	318		2	-	-	-		
		TOTAL	**200**	**1,035**	**0**	**13**	**21**	**163**	**81**	**0**	

PAVEMENT MARKING SUMMARY

STATION TO STATION	LOCATION	646.1020 MARKING LINE EPOXY 4-INCH YELLOW LF	646.4520 MARKING LINE SAME DAY EPOXY 4-INCH YELLOW LF	646.1040 MARKING LINE GROOVED WET REF EPOXY 4-INCH WHITE LF	646.3040 MARKING LINE GROOVED WET REF EPOXY 8-INCH WHITE LF	646.532 MARKING RAILROAD CROSSING EPOXY EACH	649.0105 TEMPORARY MARKING LINE PAINT 4-INCH YELLOW LF	REMARKS
CATEGORY 0010								
11+91 - 37+90	STH 175	650	650	5,228	-	-	210	
37+90 - 49+85	STH 175	1,490	1,490	2,423	-	-	1,290	
49+85 - 59+00	STH 175	1,830	1,830	1,830	-	-	1,830	
59+00 - 70+00	STH 175	1,380	1,380	2,200	-	-	1,190	
70+00 - 74+00	STH 175	800	800	800	-	-	800	
74+00 - 80+38	STH 175	800	800	1,276	-	1	690	
80+38 - 87+00	STH 175	830	830	1,324	-	1	710	
87+00 - 108+25	STH 175	530	530	4,250	-	-	170	
108+25 - 116+10	STH 175	980	980	1,570	-	-	850	
116+10 - 119+00	STH 175	70	70	640	-	-	20	
119+00 - 124+60	STH 175	700	700	1,120	-	-	600	
124+60 - 127+50	STH 175	580	580	580	-	-	580	
127+50 - 133+35	STH 175	730	730	1,170	-	-	630	
133+35 - 135+60	STH 175	60	60	450	-	-	20	
135+60 - 144+70	STH 175	1,140	1,140	1,820	-	-	980	
144+70 - 162+40	STH 175	440	440	3,540	-	-	140	
162+40 - 173+20	STH 175	1,350	1,350	2,160	-	-	1,170	
173+20 - 233+75	STH 175	12,110	12,110	12,191	-	-	12,110	
233+75 - 242+00	STH 175	1,030	1,030	1,650	-	-	890	
242+00 - 244+30	STH 175	460	460	460	-	-	460	
244+30 - 253+00	STH 175	1,090	1,090	1,740	-	-	940	
253+00 - 257+75	STH 175	950	950	950	-	-	950	
257+75 - 268+50	STH 175	1,340	1,340	2,150	-	-	1,160	
268+50 - 277+25	STH 175	220	220	1,750	-	-	70	
277+25 - 288+00	STH 175	1,340	1,340	2,150	-	-	1,160	
288+00 - 299+30	STH 175	1,410	1,410	2,260	-	-	1,220	
299+30 - 349+80	STH 175	1,260	1,260	10,130	-	-	400	
349+80 - 361+00	STH 175	1,400	1,400	2,240	-	-	1,210	
361+00 - 385+90	STH 175	3,110	3,110	5,068	250	-	2,690	
TOTAL		**40,080**	**40,080**	**75,120**	**250**	**2**	**35,140**	

TRAFFIC CONTROL SUMMARY

STATION TO STATION	LOCATION	DAYS IN SERVICE	643.0300 TRAFFIC CONTROL DRUMS NO. REQ'D	643.0300 TRAFFIC CONTROL DRUMS TOTAL DAY	643.0900 TRAFFIC CONTROL SIGNS NO. REQ'D	643.0900 TRAFFIC CONTROL SIGNS TOTAL DAY	643.1050 TRAFFIC CONTROL SIGNS PCMS NO. REQ'D	643.1050 TRAFFIC CONTROL SIGNS PCMS TOTAL DAY	REMARKS
CATEGORY 0010									
100+00 - 100+00	STH 175	7					2	14	
100+00 - 100+00	STH 175								
100+00 - 100+00	STH 175								
100+00 - 100+00	STH 175								
100+00 - 100+00	STH 175								
	TOTAL		0	**0**	0	**0**	2	**14**	

TEMPORARY PORTABLE RUMBLE STRIPS

STATION TO STATION	LOCATION	643.0310.S LS	REMARKS
CATEGORY 0010			
11+91 - 385+90	STH 175	1	ENTIRE PROJECT LENGTH
TOTAL		**1**	

LOCATING NO-PASSING ZONES

STATION TO STATION	LOCATION	648.0100 MI	REMARKS
CATEGORY 0010			
11+91 - 385+90	STH 175	7.1	ENTIRE PROJECT LENGTH
TOTAL		**7.1**	

3

TRAFFIC CONTROL DETOUR SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 33 DAYS	643.0900 SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1000 FIXED MESSAGE SIGN SF	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO. OF CYCLES	643.0910 COVERING SIGNS TYPE II EACH	REMARKS
1	US 151, W. OF STH 175, PLACE 1/4 MILE W. OF STH 175 EXIT ON RIGHT SHOULDER	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	W 20-2A	48"X48"	1	33	33							
2	US 151, W. OF STH 175, PLACE 1/4 MILE W. OF STH 175 EXIT IN MEDIAN	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	W 20-2A	48"X48"	1	33	33							
3	US 151, W. OF STH 175, PLACE 750' W. OF STH 175 EXIT ON RIGHT SHOULDER	FMS	144"X54"	1					54				SEE SIGN DETAIL SHEET
4	US 151, W. OF STH 175, PLACE 750' W. OF STH 175 EXIT IN MEDIAN	FMS	144"X54"	1					54				SEE SIGN DETAIL SHEET
5	US 151, AT STH 175 EXIT, PLACE ACROSS FROM TYPE I GROUND MOUNT SIGN	MO 4-8	36"X18"	1	33	33							
	"	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 6-1	30"X30"	1	33	33							AHEAD
6	US 151, AT STH 175 EXIT, PLACE LEFT OF EXISTING TYPE I GROUND MOUNT SIGN	MO 4-8	36"X18"	1	33	33							
	"	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 6-1	30"X30"	1	33	33							AHEAD
7	US 151, AT STH 175 EXIT, MODIFY EXISTING TYPE I GROUND MOUNT SIGN	FMS	78"X24"	1					13				NORTH
8	US 151, ON JUGHANDLE RAMP, PLACE RIGHT OF R1-1 SIGN AT US 151 INTERSECTION	MO 4-8	24"X12"	1	33	33							
	"	M 3-3	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
	"	MO 6-1	21"X21"	1	33	33							RIGHT
9	STH 175, AT JUGHANDLE RAMP, PLACE RIGHT OF EXISTING J3-1 SIGN	MO 4-8	24"X12"	1	33	33							
	"	M 3-3	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
	"	MO 6-1	21"X21"	1	33	33							RIGHT
9A	STH 175, AT JUGHANDLE RAMP, COVER EXISTING J3-1 SIGN IN MEDIAN										1	1	COVER ENTIRE SIGN
10	STH 175, S. OF JUGHANDLE RAMP, PLACE ON RIGHT SHOULDER IN SW QUADRANT OF INTERSECTION	R 11-4	60"X30"	1	33	33	33	66					
	"	MO 4-9R	30"X24"	1	33	33							
11	STH 175, S. OF JUGHANDLE RAMP, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS		1						7			PLACE IN ADVANCE OF CLOSURE
12	STH 175, N. OF JUGHANDLE RAMP, PLACE 400' N. OF JUGHANDLE RAMP INTERSECTION	MO 4-8	24"X12"	1	33	33							
	"	M 3-3	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
	"	MO 5-1R	21"X21"	1	33	33							
13	STH 175, N. OF US 151, PLACE JUST N. OF US 151 STRUCTURE	FMS	78"X36"	1					19.5				SEE SIGN DETAIL SHEET
14	STH 175, N. OF US 151, PLACE 250' N. OF US 151 STRUCTURE	W 20-2A	48"X48"	1	33	33							
15	US 151, AT STH 175 EXIT, PLACE/MODIFY LEFT OF EXISTING TYPE I GROUND MOUNT SIGN	MO 4-8A	24"X12"	1	33	33							
	"	M 3-1	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
	"	FMS	78"X24"	1					13				SEE SIGN DETAIL SHEET
16	US 151, W. OF I-41 SB RAMP, PLACE 1000' W. OF I-41 SB RAMP INTERSECTION	MO 4-8	36"X18"	1	33	33							
	"	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 5-1R	30"X30"	1	33	33							
	PAGE SUBTOTALS			42		1,188	33	66	153.5	7		1	

3

TRAFFIC CONTROL DETOUR SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 33 DAYS	643.0900 SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1000 FIXED MESSAGE SIGN SF	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO. OF CYCLES	643.0910 COVERING SIGNS TYPE II EACH	REMARKS
17	US 151, AT I-41 SB RAMP, PLACE 100' W. OF I-41 SB RAMP INTERSECTION	MO 4-8	36"X18"	1	33	33							
	"	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 6-1	30"X30"	1	33	33							RIGHT
18	US 151 ON-RAMP TO I-41 SB, PLACE ON RAMP 250' S. OF RAMP INTERECTION	MO 4-8	24"X12"	1	33	33							
	"	M 3-3	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
19	US 151, AT I-41 SB RAMP, PLACE 100' E. OF I-41 SB RAMP INTERSECTION	MO 4-8	36"X18"	1	33	33							
	"	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 6-1	30"X30"	1	33	33							LEFT
20	US 151, AT I-41 SB RAMP, PLACE RIGHT OF SIGN #19	MO 4-8	36"X18"	1	33	33							
	"	M 3-1	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 6-1	30"X30"	1	33	33							AHEAD
21	US 151, BETWEEN I-41 RAMPS, PLACE JUST E. OF I-41 STRUCTURE	MO 4-8	36"X18"	1	33	33							
	"	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 5-1L	30"X30"	1	33	33							
22	US 151, E. OF I-41 NB RAMPS, PLACE 750' E. OF I-41 NB RAMP INTERSECTION	FMS	144"X54"	1					54				SEE SIGN DETAIL SHEET
23	US 151, E. OF I-41 NB RAMPS, PLACE 1/4 MILE E. OF I-41 NB RAMP INTERSECTION	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	W 20-2A	48"X48"	1	33	33							
24	I-41 OFF-RAMP TO US 151, PLACE LEFT OF EXISTING SIGNAL	MO 4-8	24"X12"	1	33	33							
	"	M 3-1	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
	"	MO 6-1	21"X21"	1	33	33							LEFT
25	I-41 OFF-RAMP TO US 151, PLACE 750' S. OF RAMP INTERSECTION	MO 4-8	24"X12"	1	33	33							
	"	M 3-1	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
	"	MO 5-1L	21"X21"	1	33	33							
26	I-41, S. OF US 151, PLACE LEFT OF EXISTING TYPE I GROUND MOUNT SIGN AT EXIT RAMP	MO 4-8	36"X18"	1	33	33							
	"	M 3-1	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 6-2	30"X30"	1	33	33							TILT RIGHT
27	I-41, S. OF US 151, PLACE 1/4 MILE S. OF US 151 EXIT RAMP IN MEDIAN	MO 4-8	36"X18"	1	33	33							
	"	M 3-1	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 5-2R	30"X30"	1	33	33							
28	I-41, S. OF US 151, PLACE 1/4 MILE S. OF US 151 EXIT RAMP ON RIGHT SHOULDER	MO 4-8	36"X18"	1	33	33							
	"	M 3-1	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 5-2R	30"X30"	1	33	33							
	PAGE SUBTOTALS			43		1,386	0	0	54	0		0	

TRAFFIC CONTROL DETOUR SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 33 DAYS	643.0900 SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1000 FIXED MESSAGE SIGN SF	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO. OF CYCLES	643.0910 COVERING SIGNS TYPE II EACH	REMARKS
29	I-41, N. OF CTH B, PLACE LEFT OF EXISTING TYPE I GROUND MOUNT SIGN	MO 4-8	36"X18"	1	33	33							
	"	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 6-1	30"X30"	1	33	33							AHEAD
30	I-41, N. OF CTH B, PLACE ACROSS FROM SIGN #29 IN MEDIAN	MO 4-8	36"X18"	1	33	33							
	"	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 6-1	30"X30"	1	33	33							AHEAD
31	I-41, S. OF CTH B, PLACE ACROSS FROM SIGN #32	MO 4-8	36"X18"	1	33	33							
	"	M 3-1	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 6-1	30"X30"	1	33	33							AHEAD
32	I-41, S. OF CTH B, PLACE LEFT OF EXISTING TYPE I GROUND MOUNT SIGN	MO 4-8	36"X18"	1	33	33							
	"	M 3-1	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 6-1	30"X30"	1	33	33							AHEAD
33	I-41, N. OF STH 49, PLACE 1/4 MILE N. OF STH 49 OFF-RAMP	MO 4-8	36"X18"	1	33	33							
	"	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 5-2R	30"X30"	1	33	33							
34	I-41, N. OF STH 49, PLACE ACROSS FROM SIGN #33 IN MEDIAN	MO 4-8	36"X18"	1	33	33							
	"	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 5-2R	30"X30"	1	33	33							
35	I-41, N. OF STH 49, PLACE LEFT OF EXISTING TYPE I GROUND MOUNT SIGN	MO 4-8	36"X18"	1	33	33							
	"	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
	"	MO 6-2	30"X30"	1	33	33							TILT RIGHT
36	I-41 OFF-RAMP TO STH 49, PLACE 750' N. OF STH 49 RAMP INTERSECTION	MO 4-8	24"X12"	1	33	33							
	"	M 3-3	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
	"	MO 5-1R	21"X21"	1	33	33							
37	I-41 OFF-RAMP TO STH 49, PLACE RIGHT OF EXISTING J3-1 SIGN	MO 4-8	24"X12"	1	33	33							
	"	M 3-3	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
	"	MO 6-1	21"X21"	1	33	33							RIGHT
38	STH 49, BETWEEN I-41 RAMPS, PLACE JUST E. OF I-41 STRUCTURE IN MEDIAN	MO 4-8	24"X12"	1	33	33							
	"	M 3-1	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
	"	MO 5-1L	21"X21"	1	33	33							
39	STH 49, AT I-41 NB RAMP, PLACE ON BACK OF R4-7 SIGN ON NB RAMP INTERSECTION	MO 4-8	24"X12"	1	33	33							
	"	M 3-1	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
	"	MO 6-1	21"X21"	1	33	33							LEFT
40	STH 49 ON-RAMP TO I-41, PLACE 250' N. OF I-41 NB RAMP INTERSECTION	MO 4-8	24"X12"	1	33	33							
	"	M 3-1	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
	PAGE SUBTOTALS			47		1,551	0	0	0	0		0	

3

TRAFFIC CONTROL DETOUR SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 19 DAYS	643.0900 SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1000 FIXED MESSAGE SIGN SF	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO. OF CYCLES	643.0910 COVERING SIGNS TYPE II EACH	REMARKS
41	STH 49, W. OF I-41, PLACE 250' W. OF I-41 RAMP INTERSECTION	MO 4-8	36"X18"	1	33	33							
	"	M 3-3	36"X18"	1	33	33							
	"	M 1-6	36"X36"	1	33	33							175
42	STH 49, W. OF I-41, MODIFY EXISTING J1-1 SIGN AS SHOWN	MO 4-8A	24"X18"	1	33	33							
43	STH 49, W. OF I-41, COVER EXISTING J2-3 SIGN AS SHOWN										1	1	COVER "NORTH 175 ADV RT"
44	STH 49, W. OF I-41, COVER EXISTING D1-3 SIGN AS SHOWN										1	1	COVER "FOND DU LAC"
45	STH 49, E. OF STH 175, PLACE RIGHT OF EXISTING J4-2 SIGN	MO 4-8	24"X12"	1	33	33							
	"	M 3-1	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
46	STH 49, AT STH 175, COVER EXISTING J3-2 SIGN AS SHOWN										1	1	COVER "NORTH 175 RT"
47	STH 175, N. OF STH 49, COVER EXISTING J4-1 SIGN AS SHOWN										1	1	COVER ENTIRE SIGN
48	STH 175, AT STH 49, PLACE ON RIGHT SHOULDER IN NE QUADRANT OF INTERSECTION	R 11-3	60"X30"	1	33	33							1 1/2 MILES AHEAD
	"	MO 4-9R	30"X24"	1	33	33							
49	STH 175, AT STH 49, PLACE RIGHT OF EXISTING J3-1 SIGN AT INTERSECTION	MO 4-8	24"X12"	1	33	33							
	"	M 3-1	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
	"	MO 6-1	21"X21"	1	33	33							RIGHT
50	STH 175, S. OF STH 49, COVER EXISTING D1-3 SIGN AS SHOWN										1	1	COVER "BYRON"
51	STH 175, S. OF STH 49, MODIFY EXISTING J2-3 SIGN AS SHOWN	MO 4-8	24"X12"	1	33	33							
	"	MO 5-1R	21"X21"	1	33	33							
52	STH 175, S. OF STH 49, PLACE 750' S. OF STH 49 INTERSECTION	FMS	72"X36"	1					18				SEE SIGN DETAIL SHEET
53	STH 175, S. OF STH 49, PLACE 1/4 MILE S. OF STH 49 INTERSECTION	W 20-2A	48"X48"	1	33	33							
54	STH 49, AT STH 175, MODIFY EXISTING J3-2 SIGN AS SHOWN	MO 4-8	24"X12"	1	33	33							
	"	MO 6-1	21"X21"	1	33	33							AHEAD
55	STH 49, W. OF STH 175, COVER EXISTING D1-3 SIGN AS SHOWN										1	1	COVER "FOND DU LAC"
56	STH 49, W. OF STH 175, MODIFY EXISTING J2-3 SIGN AS SHOWN	MO 4-8	24"X12"	1	33	33							
	"	MO 6-1	21"X21"	1	33	33							AHEAD
57	STH 49, W. OF STH 175, PLACE 1/4 MILE W. OF STH 49 INTERSECTION	M 3-1	24"X12"	1	33	33							
	"	M 1-6	24"X24"	1	33	33							175
	"	W 20-2A	48"X48"	1	33	33							
58	STH 175, S. OF CTH Y, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS		1						7			PLACE IN ADVANCE OF CLOSURE
	PAGE SUBTOTALS			25		759	0	0	18	7		6	
	PROJECT DETOUR TOTALS			**157**		**4,884**	**33**	**66**	**225.5**	**14**		**7**	

3

3

ASPHALT CENTERLINE RUMBLE STRIPS 2-LANE RURAL

465.0475

STATION TO	STATION	LOCATION	LF	REMARKS
CATEGORY 0010				
11+91	- 38+49	STH 175	2,458	BEGINNING OF PROJECT TO CTH Y
38+49	- 64+84	STH 175	2,235	CTH Y TO E BYRON RD
64+84	- 78+44	STH 175	961	E BYRON RD TO W BYRON RD
78+44	- 80+38	STH 175	-	W BYRON RD TO RAILROAD
98+71	- 118+18	STH 175	1,647	TOWN OF BYRON TO CTH F
118+18	- 171+18	STH 175	4,899	CTH F TO CHURCH RD
171+18	- 217+86	STH 175	4,268	CHURCH RD TO TIMBER TRAIL W
217+86	- 224+24	STH 175	238	TIMBER TRAIL W TO CTH B EAST
224+24	- 250+81	STH 175	1,394	CTH B EAST TO CTH B WEST
250+81	- 304+04	STH 175	4,464	CTH B WEST TO LOST ARROW RD
304+04	- 374+12	STH 175	6,607	LOST ARROW RD TO FOX RIDGE DR
374+12	- 385+90	STH 175	978	FOX RIDGE DR TO END OF PROJECT

TOTAL 30,149

SAWING ASPHALT

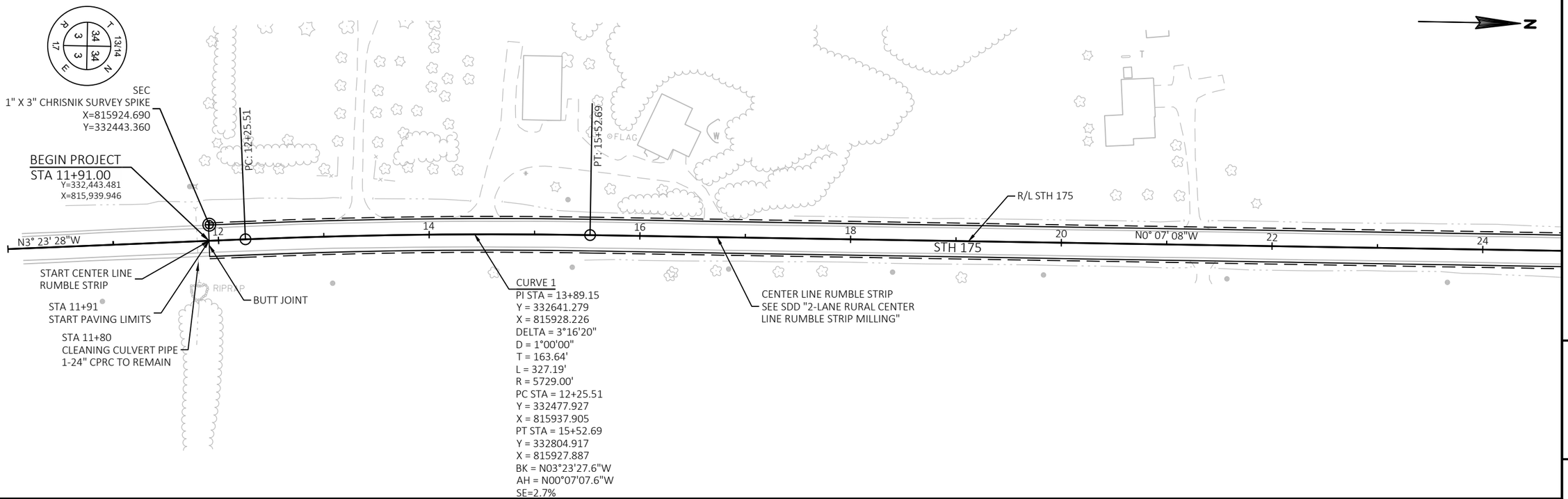
690.0150*

STATION TO	STATION	LOCATION	LF	REMARKS
CATEGORY 0010				
121+35		STH 175	64	CULVERT REPLACEMENT
200+22		STH 175	64	CULVERT REPLACEMENT
243+67	- 250+24	STH 175, LT	671	CONCRETE BARRIER SHOULDER
249+25	- 263+91	STH 175, RT	1480	CONCRETE BARRIER SHOULDER
277+25	- 280+57	STH 175, RT	346	CONCRETE BARRIER SHOULDER
317+08		STH 175	64	CULVERT REPLACEMENT
334+69	- 338+02	STH 175, RT	347	BEAM GUARD SHOULDER
335+17	- 338+45	STH 175, LT	342	BEAM GUARD SHOULDER
343+14		STH 175	64	CULVERT REPLACEMENT
359+47	- 365+48	STH 175, RT	615	BEAM GUARD SHOULDER
361+78	- 366+12	STH 175, LT	448	BEAM GUARD SHOULDER

TOTAL 4505

*ADDITIONAL QUANTITIES ELSEWHERE IN THE PLAN

3



BENCHMARK TABLE		
POINT	ELEVATION	DESCRIPTION
100	1088.84	BM - 8IN SPK N. FACE PP# 70-25475, S. SIDE CTH Y, 225' W. OF STH 175

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN	SHEET E

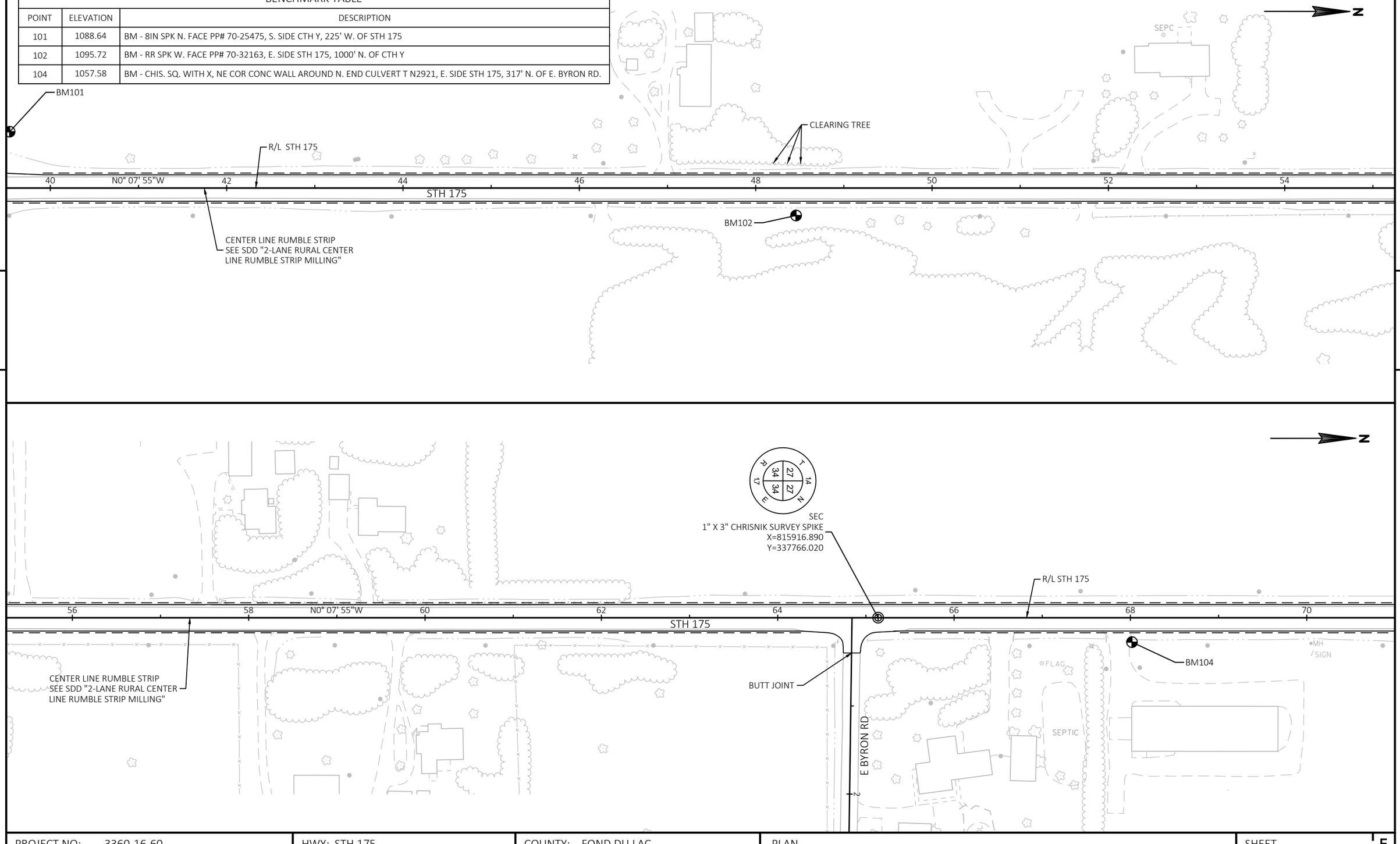
PRE_36

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 050201-pn

PLOT DATE : 12/11/2019 2:27 PM PLOT BY : SMITH, JENNIFER B PLOT NAME : PLOT SCALE : 1:100

WISDOT/CADDS SHEET 44

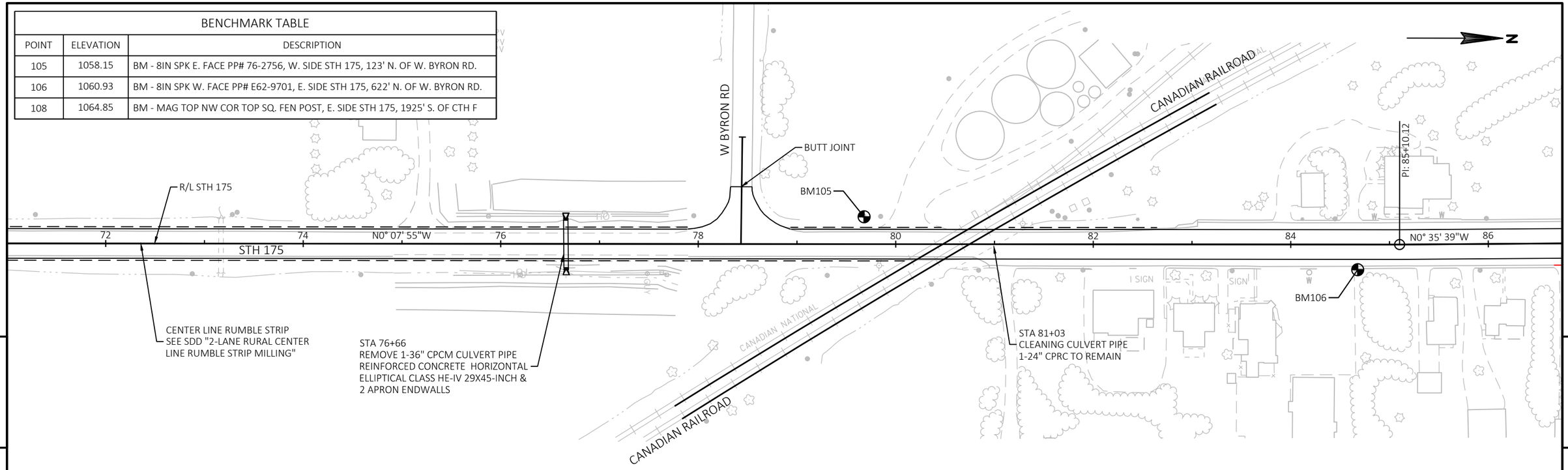
BENCHMARK TABLE		
POINT	ELEVATION	DESCRIPTION
101	1088.64	BM - 8IN SPK N. FACE PP# 70-25475, S. SIDE CTH Y, 225' W. OF STH 175
102	1095.72	BM - RR SPK W. FACE PP# 70-32163, E. SIDE STH 175, 1000' N. OF CTH Y
104	1057.58	BM - CHIS. SQ. WITH X, NE COR CONC WALL AROUND N. END CULVERT T N2921, E. SIDE STH 175, 317' N. OF E. BYRON RD.

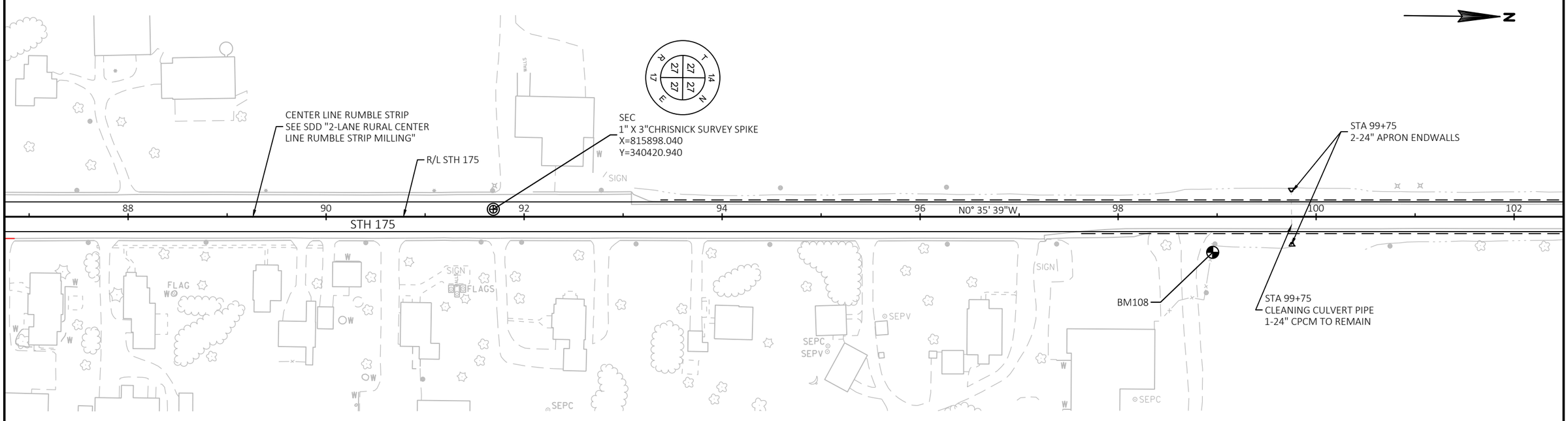


PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN	SHEET E

PRE_37

BENCHMARK TABLE		
POINT	ELEVATION	DESCRIPTION
105	1058.15	BM - 8IN SPK E. FACE PP# 76-2756, W. SIDE STH 175, 123' N. OF W. BYRON RD.
106	1060.93	BM - 8IN SPK W. FACE PP# E62-9701, E. SIDE STH 175, 622' N. OF W. BYRON RD.
108	1064.85	BM - MAG TOP NW COR TOP SQ. FEN POST, E. SIDE STH 175, 1925' S. OF CTH F





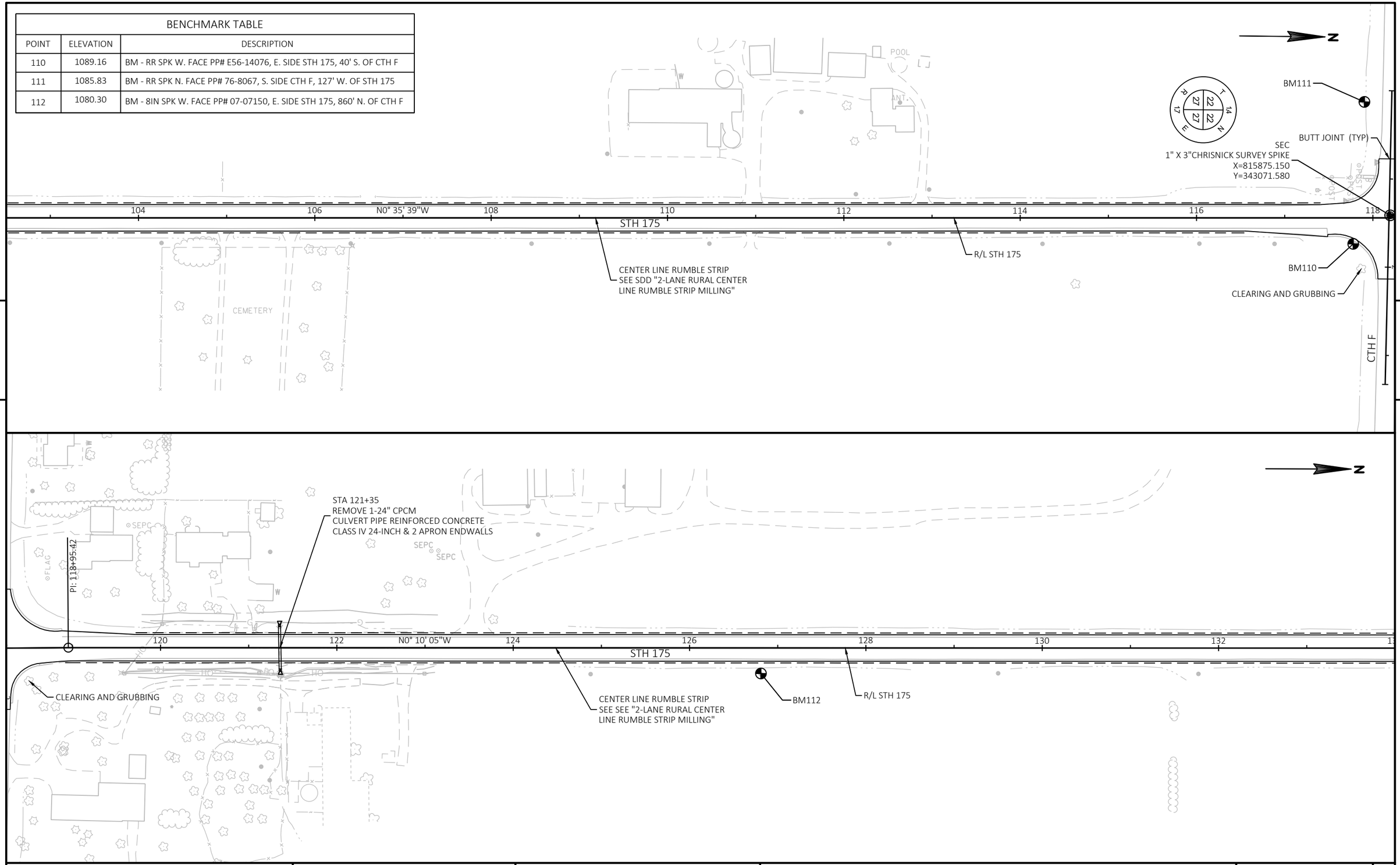
PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN	SHEET E

PRE_38

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 050203-pn

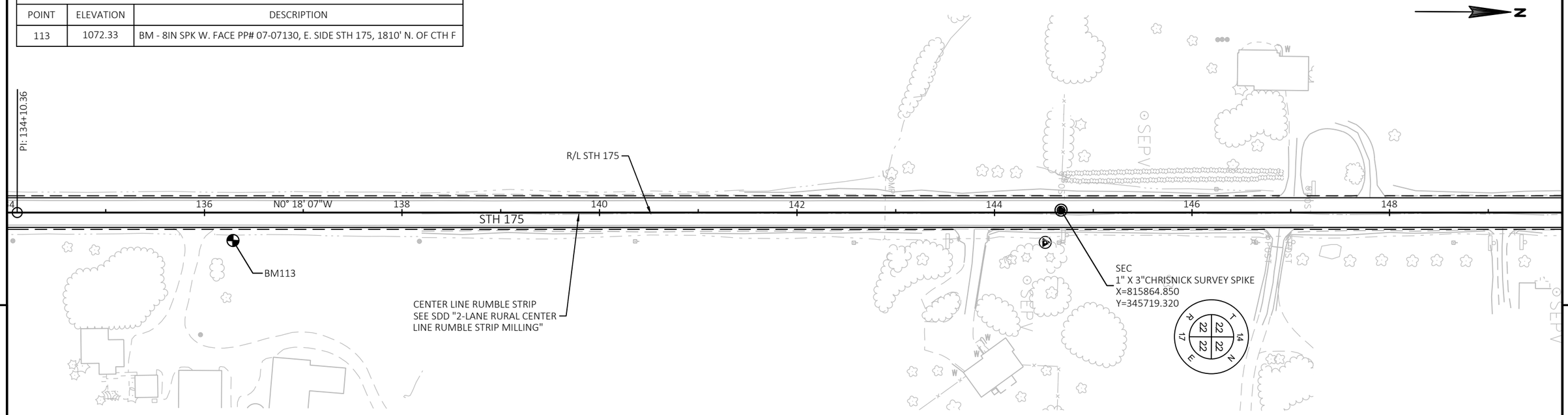
PLOT DATE : 12/11/2019 2:27 PM PLOT BY : SMITH, JENNIFER B PLOT NAME : PLOT SCALE : 1:100

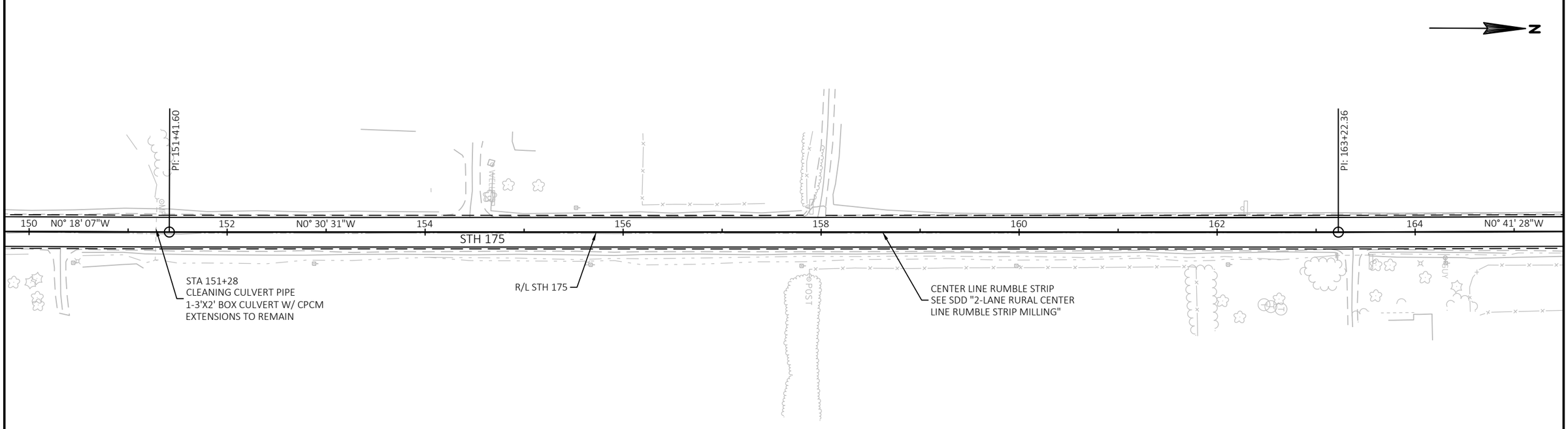
BENCHMARK TABLE		
POINT	ELEVATION	DESCRIPTION
110	1089.16	BM - RR SPK W. FACE PP# E56-14076, E. SIDE STH 175, 40' S. OF CTH F
111	1085.83	BM - RR SPK N. FACE PP# 76-8067, S. SIDE CTH F, 127' W. OF STH 175
112	1080.30	BM - 8IN SPK W. FACE PP# 07-07150, E. SIDE STH 175, 860' N. OF CTH F



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN	SHEET E

BENCHMARK TABLE		
POINT	ELEVATION	DESCRIPTION
113	1072.33	BM - 8IN SPK W. FACE PP# 07-07130, E. SIDE STH 175, 1810' N. OF CTH F

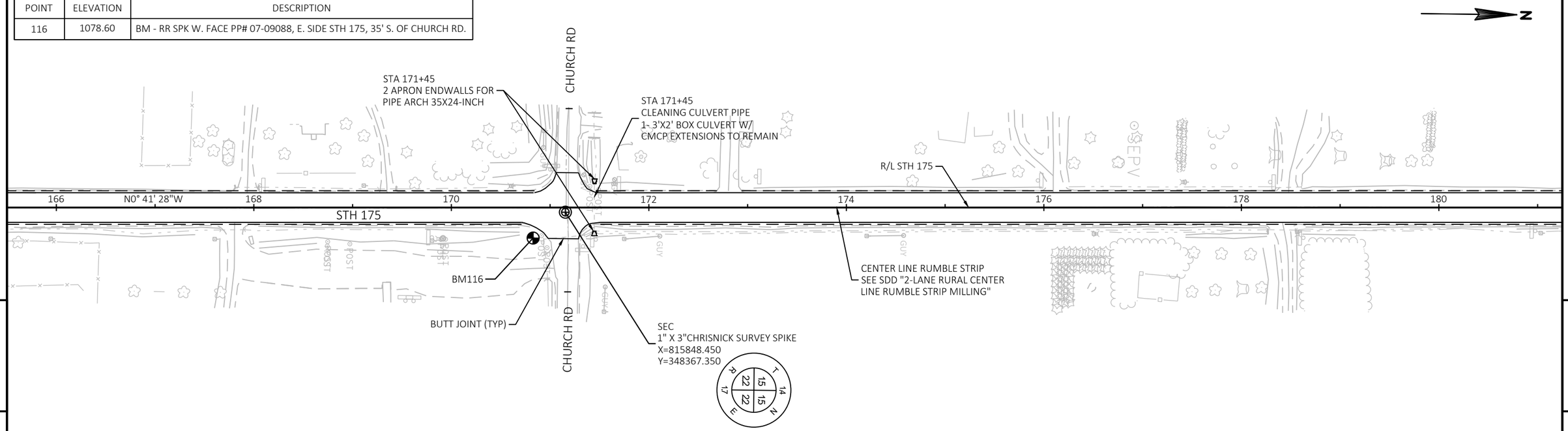


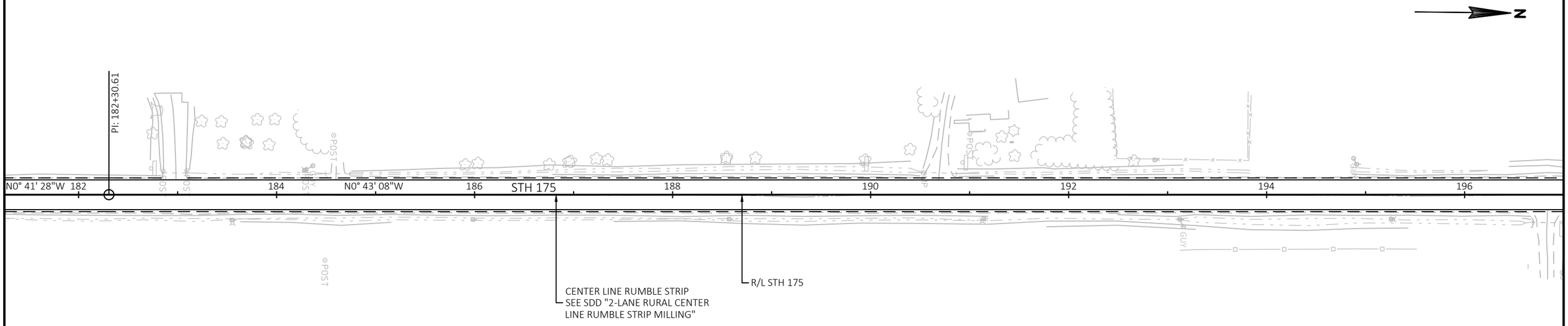


PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN	SHEET E

PRE_40

BENCHMARK TABLE		
POINT	ELEVATION	DESCRIPTION
116	1078.60	BM - RR SPK W. FACE PP# 07-09088, E. SIDE STH 175, 35' S. OF CHURCH RD.





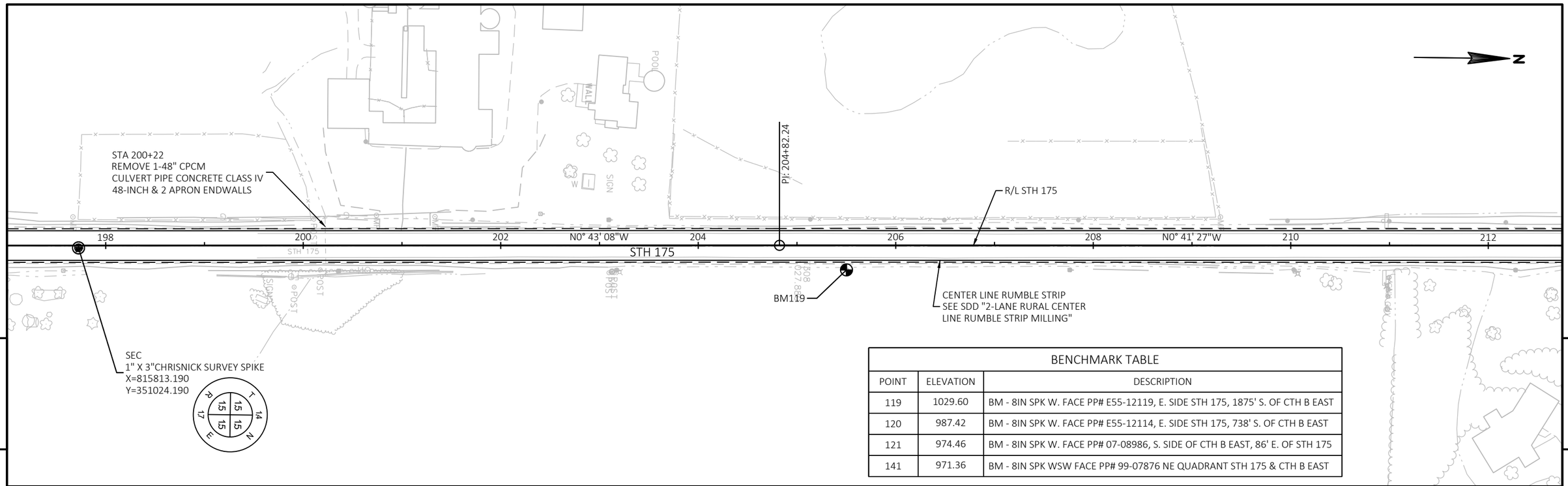
PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN	SHEET E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 050206-pn

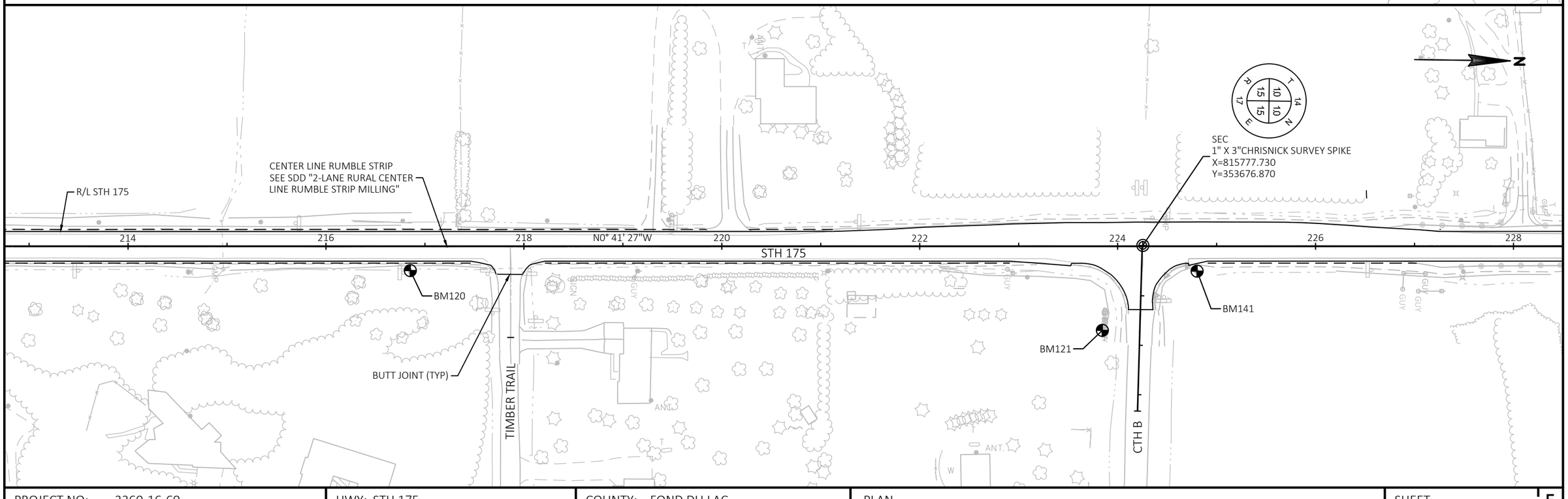
PLOT DATE : 12/11/2019 2:28 PM PLOT BY : SMITH, JENNIFER B PLOT NAME : PLOT SCALE : 1:100

PRE_41

WISDOT/CADDS SHEET 44

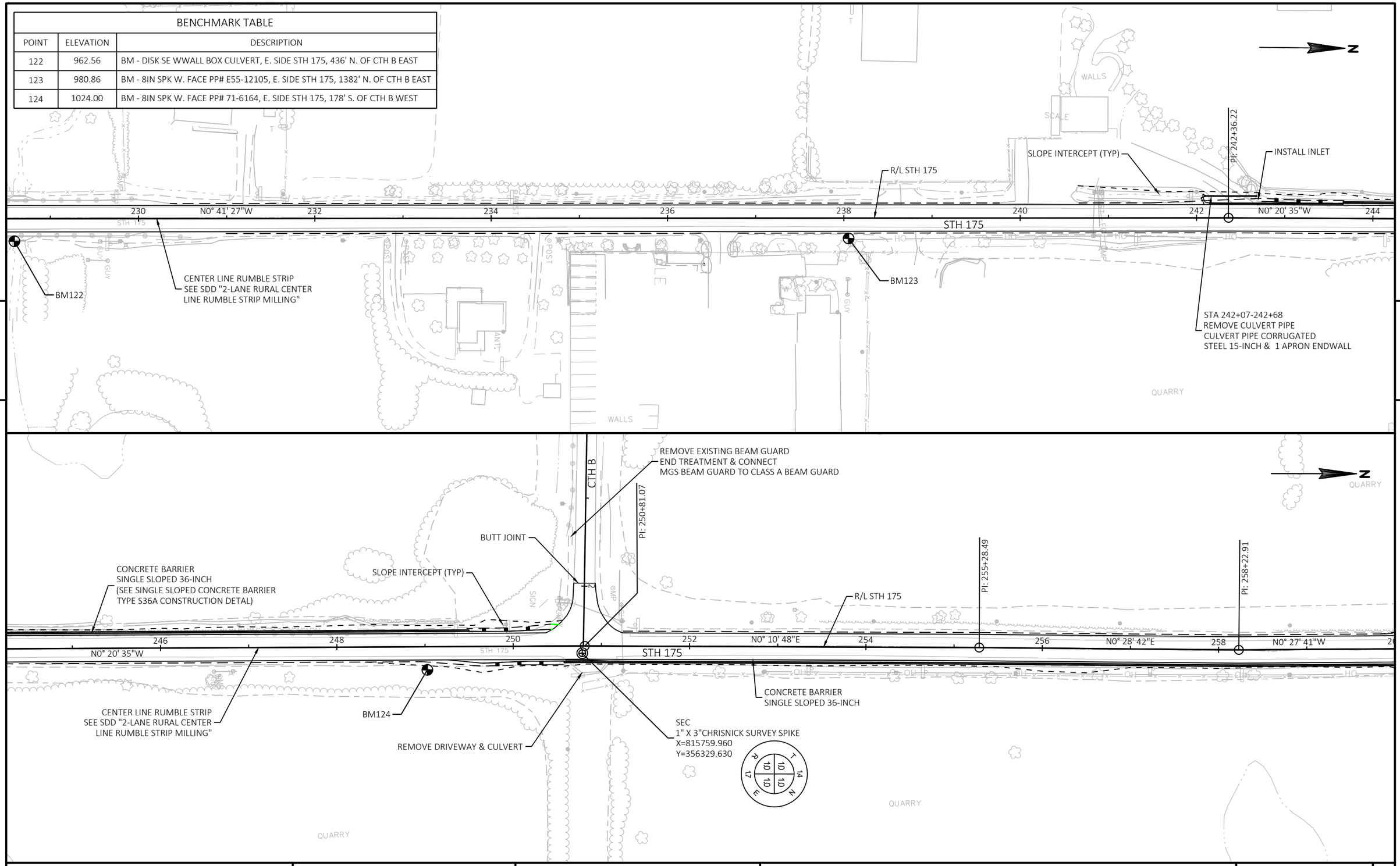


BENCHMARK TABLE		
POINT	ELEVATION	DESCRIPTION
119	1029.60	BM - 8IN SPK W. FACE PP# E55-12119, E. SIDE STH 175, 1875' S. OF CTH B EAST
120	987.42	BM - 8IN SPK W. FACE PP# E55-12114, E. SIDE STH 175, 738' S. OF CTH B EAST
121	974.46	BM - 8IN SPK W. FACE PP# 07-08986, S. SIDE OF CTH B EAST, 86' E. OF STH 175
141	971.36	BM - 8IN SPK WSW FACE PP# 99-07876 NE QUADRANT STH 175 & CTH B EAST



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN	SHEET E

BENCHMARK TABLE		
POINT	ELEVATION	DESCRIPTION
122	962.56	BM - DISK SE WWALL BOX CULVERT, E. SIDE STH 175, 436' N. OF CTH B EAST
123	980.86	BM - 8IN SPK W. FACE PP# E55-12105, E. SIDE STH 175, 1382' N. OF CTH B EAST
124	1024.00	BM - 8IN SPK W. FACE PP# 71-6164, E. SIDE STH 175, 178' S. OF CTH B WEST



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN	SHEET E

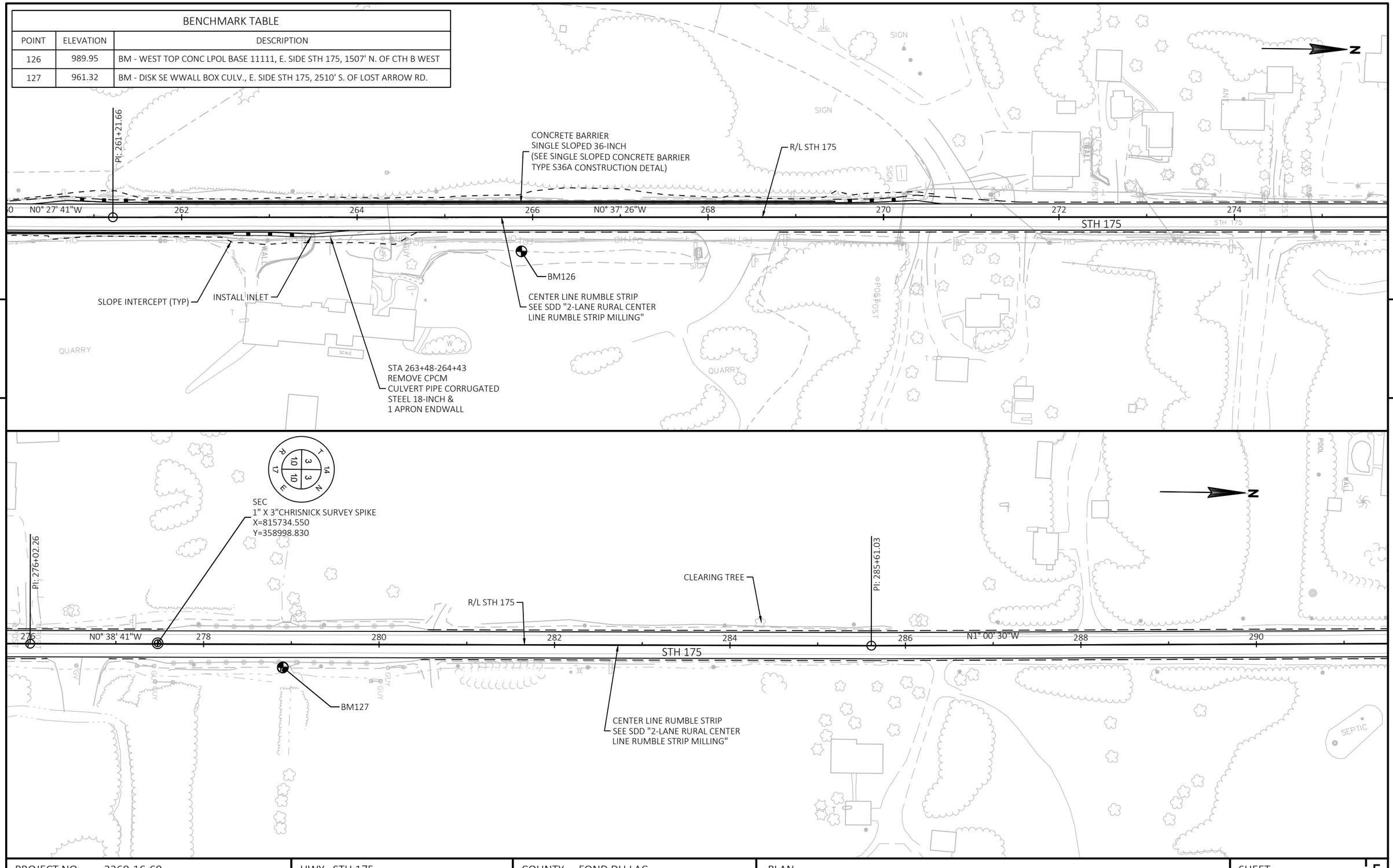
FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 050208-pn

PLOT DATE : 12/11/2019 2:28 PM PLOT BY : SMITH, JENNIFER B PLOT NAME : PLOT SCALE : 1:100

PRE_43

WISDOT/CADDS SHEET 44

BENCHMARK TABLE		
POINT	ELEVATION	DESCRIPTION
126	989.95	BM - WEST TOP CONC LPOL BASE 11111, E. SIDE STH 175, 1507' N. OF CTH B WEST
127	961.32	BM - DISK SE WWALL BOX CULV., E. SIDE STH 175, 2510' S. OF LOST ARROW RD.

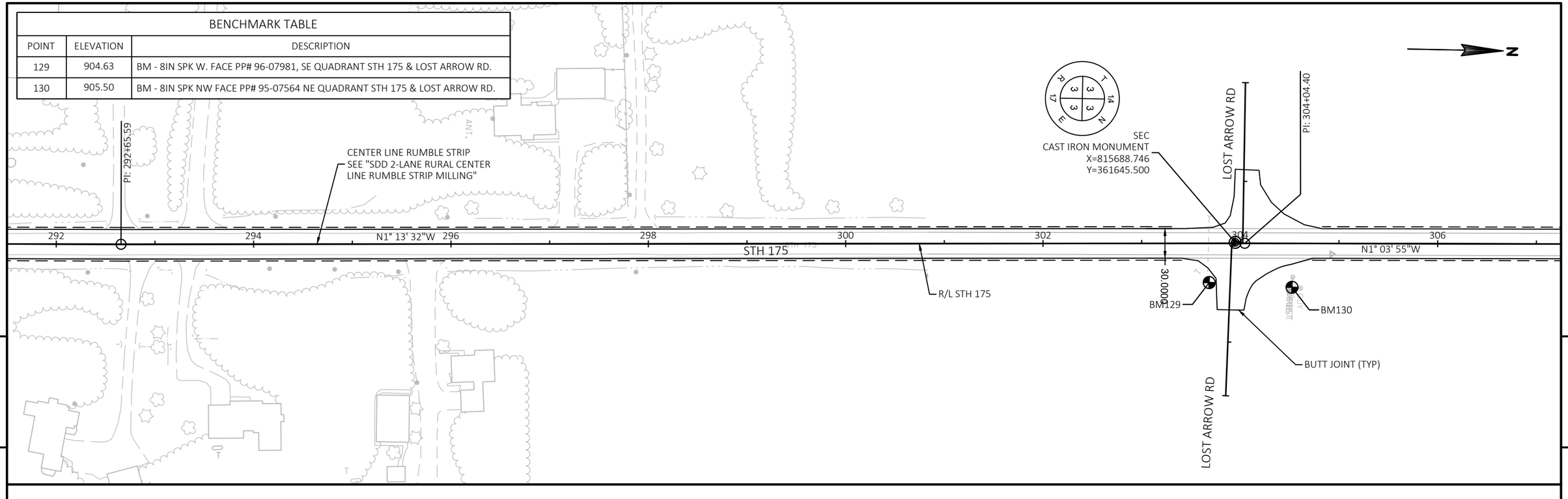


PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN	SHEET E

PRE_44

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 050209-pn
PLOT DATE : 12/11/2019 2:29 PM
PLOT BY : SMITH, JENNIFER B
PLOT NAME :
PLOT SCALE : 1:100
WISDOT/CADDS SHEET 44

BENCHMARK TABLE		
POINT	ELEVATION	DESCRIPTION
129	904.63	BM - 8IN SPK W. FACE PP# 96-07981, SE QUADRANT STH 175 & LOST ARROW RD.
130	905.50	BM - 8IN SPK NW FACE PP# 95-07564 NE QUADRANT STH 175 & LOST ARROW RD.



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN	SHEET E

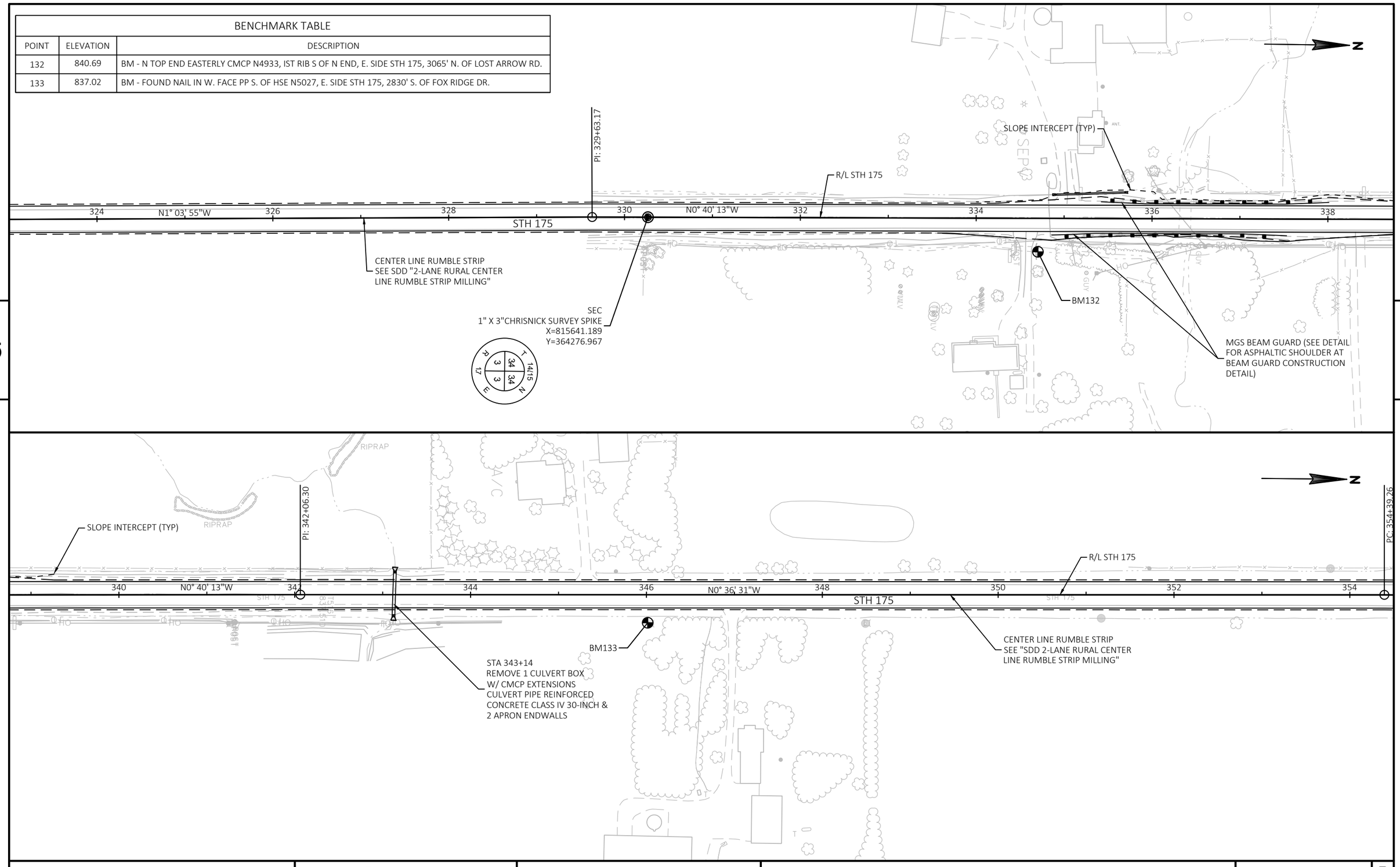
FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 050210-pn

PLOT DATE : 12/11/2019 2:29 PM PLOT BY : SMITH, JENNIFER B PLOT NAME : PLOT SCALE : 1:100

PRE_45

WISDOT/CADDS SHEET 44

BENCHMARK TABLE		
POINT	ELEVATION	DESCRIPTION
132	840.69	BM - N TOP END EASTERLY CMCP N4933, IST RIB S OF N END, E. SIDE STH 175, 3065' N. OF LOST ARROW RD.
133	837.02	BM - FOUND NAIL IN W. FACE PP S. OF HSE N5027, E. SIDE STH 175, 2830' S. OF FOX RIDGE DR.



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN	SHEET E

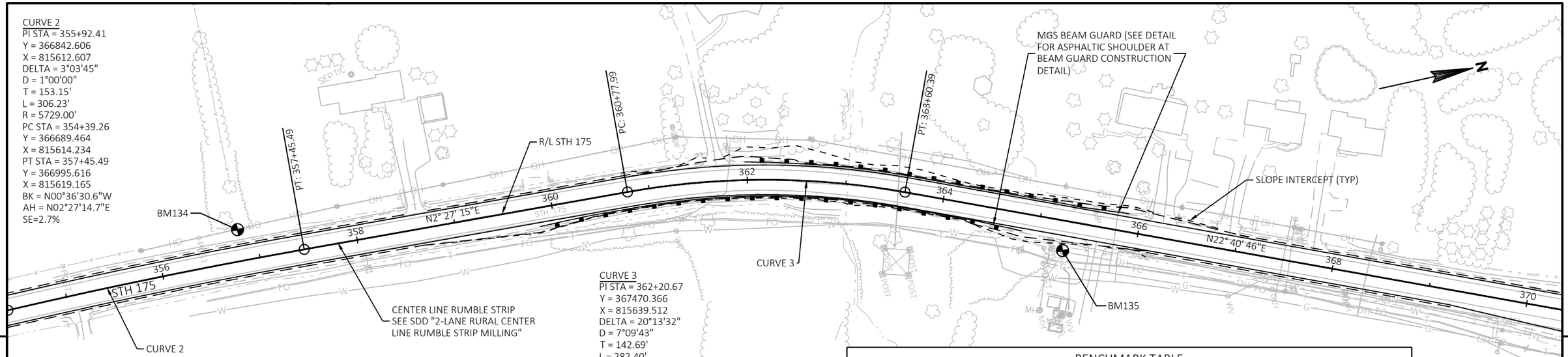
PRE_46

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 050211-pn

PLOT DATE : 12/11/2019 2:29 PM PLOT BY : SMITH, JENNIFER B PLOT NAME : PLOT SCALE : 1:100

CURVE 2
PI STA = 355+92.41
Y = 366842.606
X = 815612.607
DELTA = 3°03'45"
D = 1°00'00"
T = 153.15'
L = 306.23'
R = 5729.00'
PC STA = 354+39.26
Y = 366689.464
X = 815614.234
PT STA = 357+45.49
Y = 366995.616
X = 815619.165
BK = N00°36'30.6"W
AH = N02°27'14.7"E
SE=2.7%

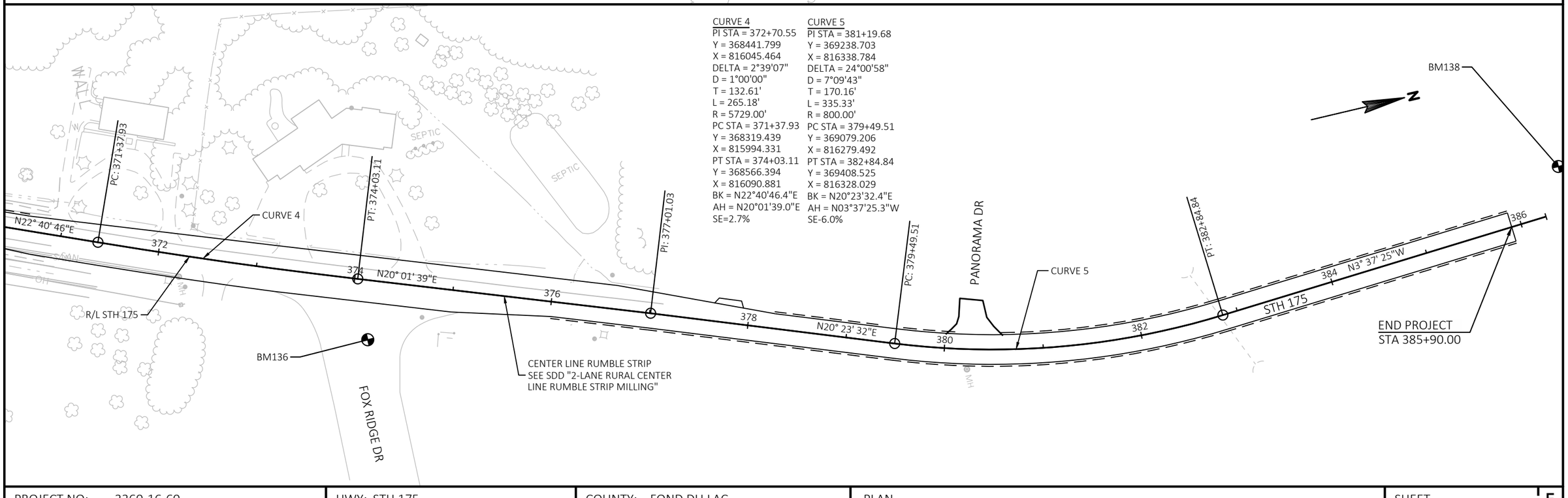
CURVE 3
PI STA = 362+20.67
Y = 367470.366
X = 815639.512
DELTA = 20°13'32"
D = 7°09'43"
T = 142.69'
L = 282.40'
R = 800.00'
PC STA = 360+77.99
Y = 367327.812
X = 815633.402
PT STA = 363+60.39
Y = 367602.018
X = 815694.528
BK = N02°27'14.7"E
AH = N22°40'46.4"E
SE=6.0%



BENCHMARK TABLE		
POINT	ELEVATION	DESCRIPTION
134	829.74	BM - 8IN SPK E. FACE PP 2ND POLE S. OF N5112, W. SIDE OF STH 175, 1750' S. OF FOX RIDGE DR.
135	827.21	BM - 8IN SPK W. FACE PP# 15-17-34, E. SIDE STH 175, 890' S. OF FOX RIDGE DR.
136	836.46	BM - CHIS. X TOP W. SIDE CONC LPOL BASE IN MEDIAN OF FOX RIDGE DR., 1ST POLE E. OF STH 175
138	838.79	BM - SW TAG BOLT HYD, W. SIDE OF STH 175, 125' S.OF DRIVEWAY TO ST. PETER'S CHURCH

CURVE 4
PI STA = 372+70.55
Y = 368441.799
X = 816045.464
DELTA = 2°39'07"
D = 1°00'00"
T = 132.61'
L = 265.18'
R = 5729.00'
PC STA = 371+37.93
Y = 368319.439
X = 815994.331
PT STA = 374+03.11
Y = 368566.394
X = 816090.881
BK = N22°40'46.4"E
AH = N20°01'39.0"E
SE=2.7%

CURVE 5
PI STA = 381+19.68
Y = 369238.703
X = 816338.784
DELTA = 24°00'58"
D = 7°09'43"
T = 170.16'
L = 335.33'
R = 800.00'
PC STA = 379+49.51
Y = 369079.206
X = 816279.492
PT STA = 382+84.84
Y = 369408.525
X = 816328.029
BK = N20°23'32.4"E
AH = N03°37'25.3"W
SE-6.0%



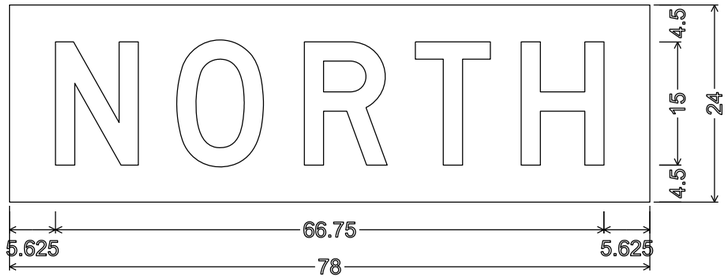
PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	PLAN	SHEET E

PRE_47

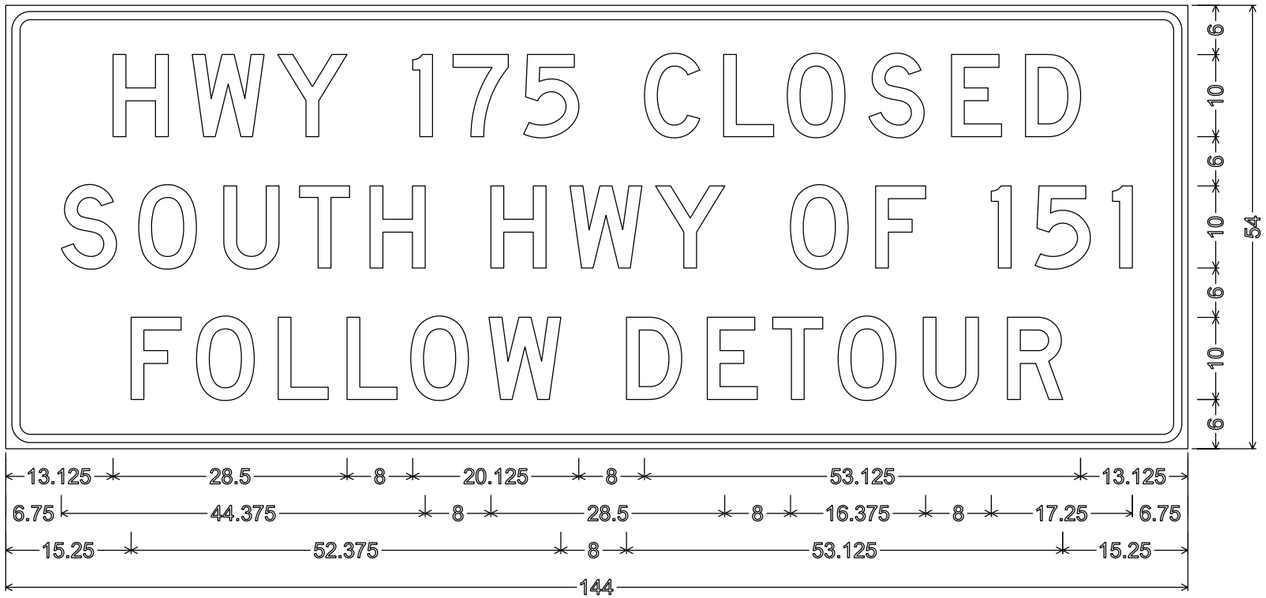
FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 050212-pn
PLOT DATE : 12/11/2019 2:29 PM PLOT BY : SMITH, JENNIFER B PLOT NAME : PLOT SCALE : 1:100

NOTES

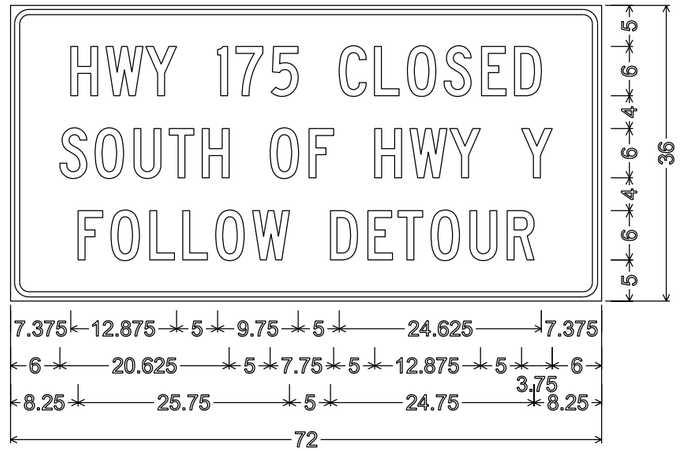
1. All Signs Type II - Type F Reflective
2. Color:
   Background - Orange
   Message - Black
3. Message Series - C except as noted



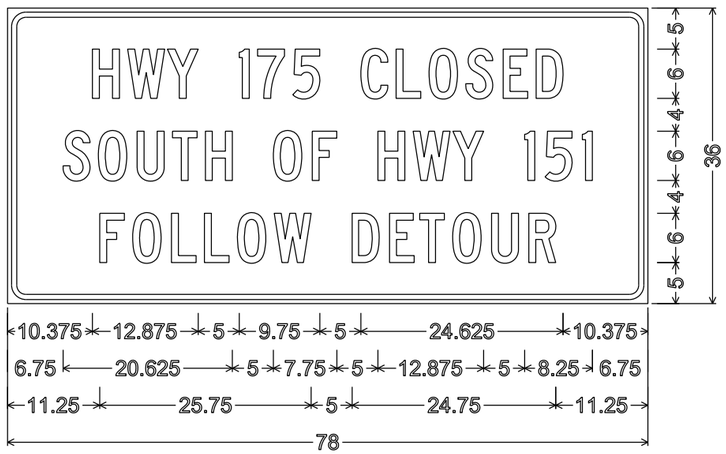
No border, Black on Fluorescent orange;
"NORTH" D;



3.000" Radius, 1.000" Border, 0.750" Indent



2.250" Radius, 0.625" Border, 0.500" Indent

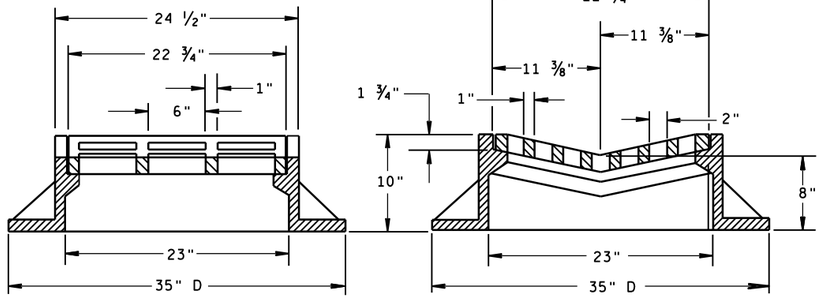


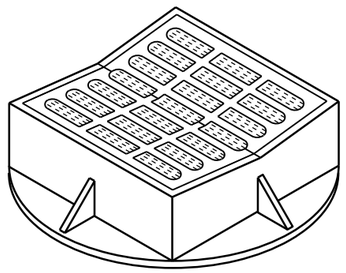
2.250" Radius, 0.625" Border, 0.500" Indent

7

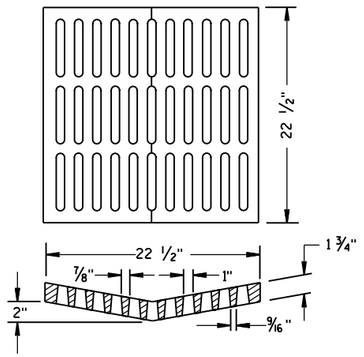
7

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	TEMPORARY SIGNING	SHEET N PRE_48	E



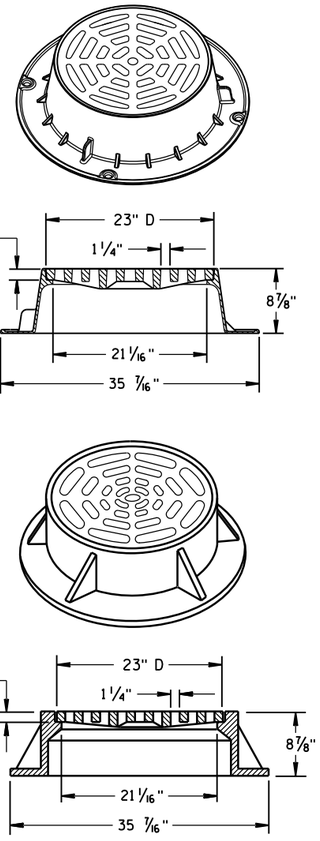


TYPE "B"



ALTERNATIVE GRATE FOR TYPE "B" COVER

USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS POSSIBLE.
NOTED AS TYPE B-A ON THE DRAINAGE TABLE



TYPE "C"

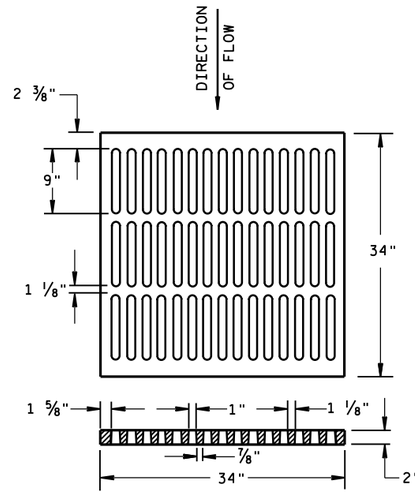
NOTE: EITHER CASTING IS ACCEPTABLE

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.

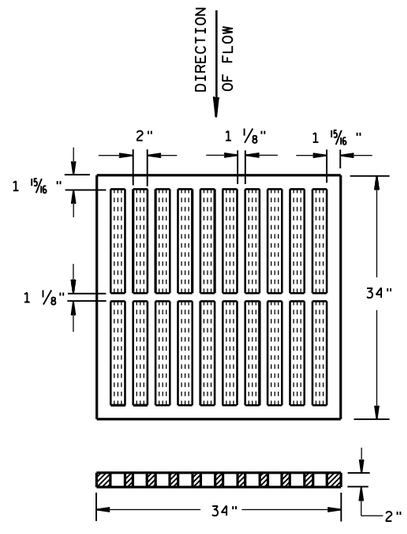
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.



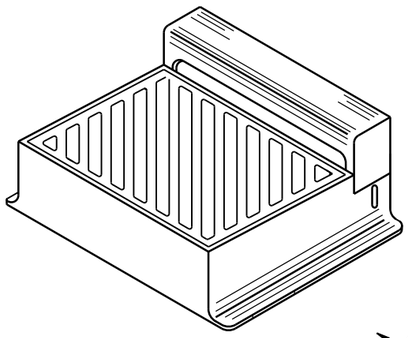
ALTERNATIVE TYPE "MS"

USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS PERMITTED
NOTED AS TYPE MS-A ON THE DRAINAGE TABLE

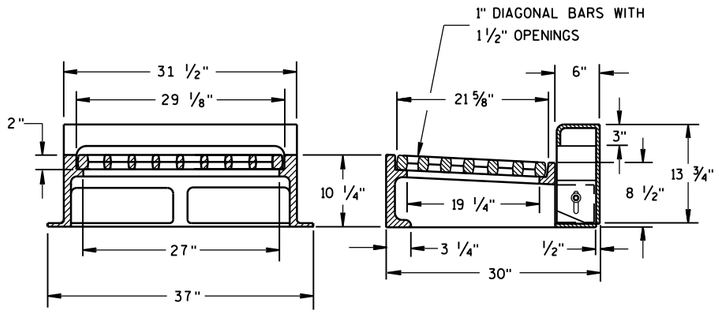


TYPE "MS"

USE ON FREEWAYS AND EXPRESSWAYS
NOTED AS TYPE MS ON DRAINAGE TABLE



DIAGONAL SLOTS, SHALL BE ORIENTED TO THE DIRECTION OF FLOW AS ILLUSTRATED. GRATES ARE MANUFACTURED TO BE REVERSIBLE.



NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"

TYPE "WM"

INLET COVERS
TYPE B, B-A, C,
MS, MS-A, & WM

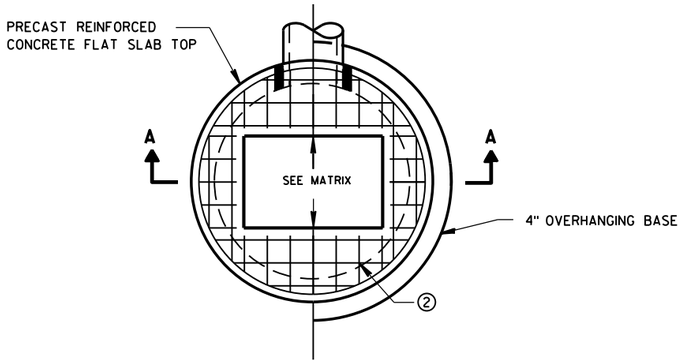
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/27/2013 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA

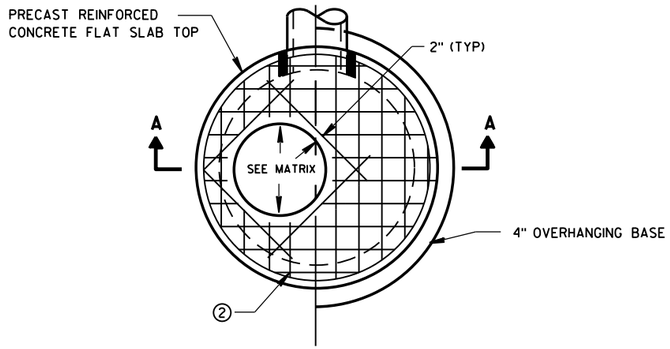
PRE_49

6

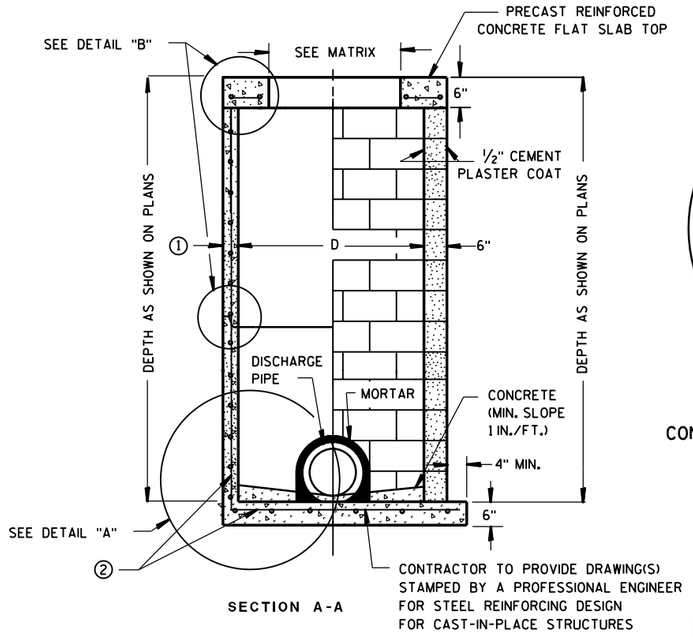
S.D.D. 8 A 5-19b



PLAN VIEW RECTANGULAR OPENING



PLAN VIEW CIRCULAR OPENING

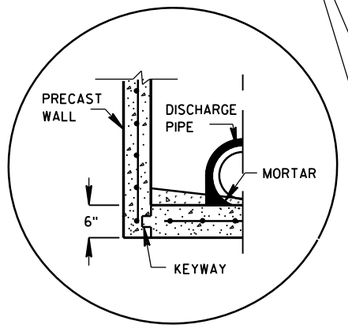


SECTION A-A

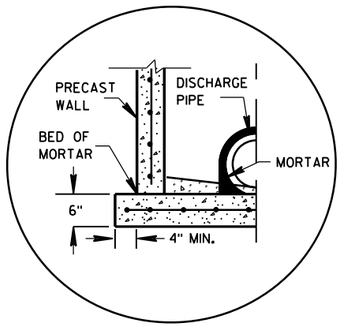
PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE

CONCRETE BLOCK WITH CAST-IN-PLACE OR PRECAST REINFORCED CONCRETE BASE ②

CIRCULAR INLETS W/ FLAT TOP

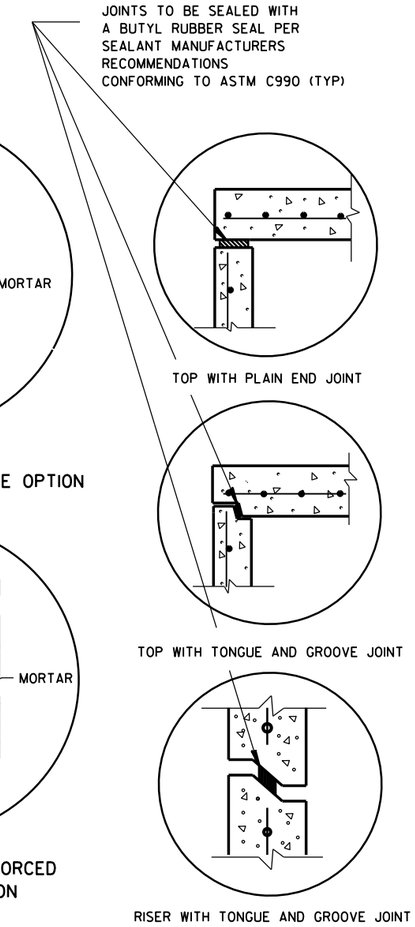


PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION



SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

DETAIL "A"



DETAIL "B"

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.

UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST INLET UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATE THE SIZE OF THE STRUCTURE, AND THE FOLLOWING LETTER DESIGNATES THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF FOUNDATION BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

ALL BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M199.

PRECAST REINFORCED RISERS SHALL HAVE A TONGUE AND GROOVE JOINT WITH TONGUE UP OR DOWN.

4" OVERHANGING BASES ARE REQUIRED FOR ALL CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

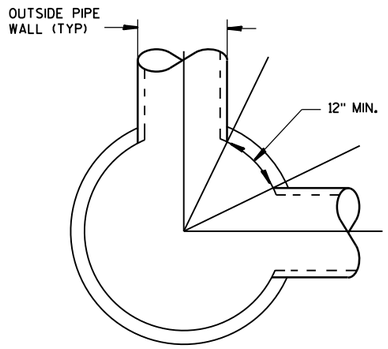
FOR ADDITIONAL CONFIGURATIONS, MAINTAIN A MINIMUM OF 12 INCHES AS MEASURED FROM THE INSIDE OF THE STRUCTURE WALL BETWEEN THE OUTSIDE PIPE WALLS OF ADJACENT PIPES. SEE DETAIL "C".

① MINIMUM WALL THICKNESS SHALL BE 4-IN FOR 3-FT DIAMETER AND 5-IN FOR 4-FT DIAMETER PRECAST INLETS.

② FOR PRECAST CATCH BASINS PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.

INLET COVER OPENING MATRIX

	INLET COVER TYPE	ALL A'S	ALL B'S	BW	C	F	ALL H'S	S	T	V	WM	Z
INLET SIZE	OPENING SIZE (FT)											
3-FT	2 DIA.				X							X
	2X2	X	X					X		X		
4-FT	2 DIA.				X							X
	2X2	X	X					X		X		
	2X2.5			X				X	X	X	X	
	2X3						X					
	2.5X3					X						



DETAIL "C"

PIPE MATRIX

INLET SIZE	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES	
	180° SEPARATION (IN)	90° SEPARATION (IN)
3-FT	15	12
4-FT	24	18

INLETS 3-FT AND 4-FT DIAMETER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept.. 2016 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS UNIT
FHWA

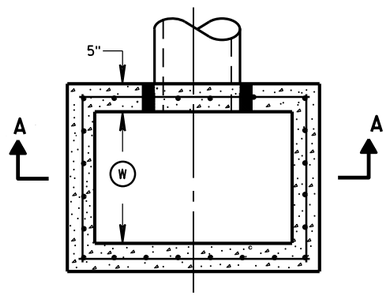
PRE_50

6

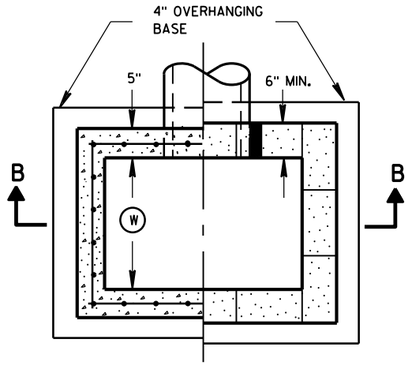
S.D.D. 8 C 6-2

6

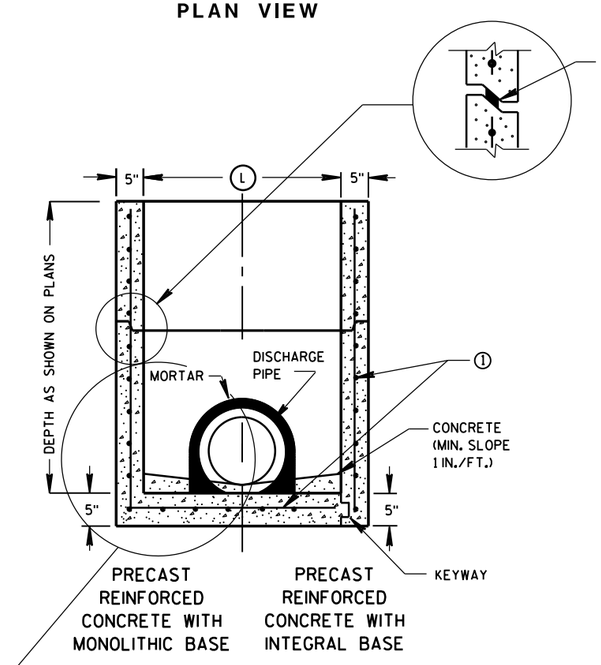
S.D.D. 8 C 6-2



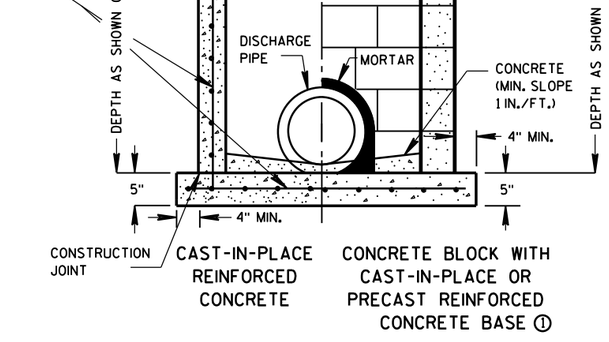
PLAN VIEW



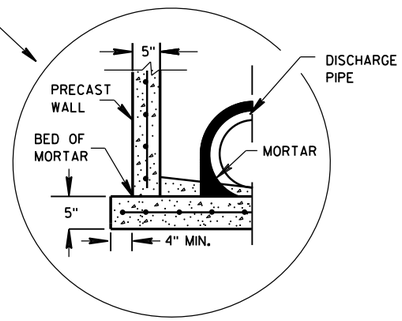
PLAN VIEW



SECTION A-A



SECTION B-B



SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

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.

UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST INLET UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATES THE SIZE OF THE STRUCTURE, AND THE FOLLOWING LETTER DESIGNATES THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF FOUNDATION BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

ALL BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

PRECAST REINFORCED RISERS SHALL HAVE A TONGUE AND GROOVE JOINT WITH TONGUE UP OR DOWN.

4" OVERHANGING BASES ARE REQUIRED FOR CAST-IN-PLACE REINFORCED CONCRETE AND CONCRETE BLOCK INSTALLATIONS.
4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED.
OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

MAXIMUM INSIDE PIPE DIAMETER DETERMINED BY 3 INCH CLEARANCE ON EACH SIDE OF THE OUTSIDE WALL OF THE PIPE. SEE DETAIL "A". ASSUMES PIPE ENTERS PERPENDICULAR TO THE STRUCTURE.

① FOR PRECAST INLETS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.

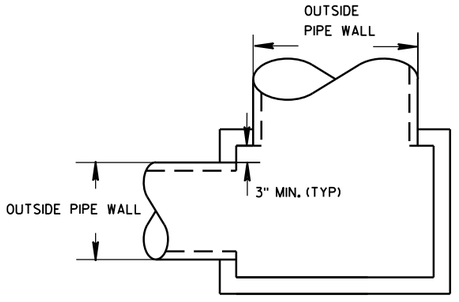
② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

INLET COVER MATRIX

INLET SIZE		INLET COVER TYPE	ALL A'S	ALL B'S	BW	F	ALL H'S	S	T	V	WM
	WIDTH (W) (FT)	LENGTH (L) (FT)									
2X2-FT	2	2	X	X				X		X	
2X2.5-FT	2	2.5			X			X	X	X	X
2X3-FT	2	3					X				
2.5X3-FT	2.5	3				X					

PIPE MATRIX

INLET SIZE	MAXIMUM INSIDE PIPE DIAMETER	
	WIDTH (IN)	LENGTH (IN)
2X2-FT	12	12
2X2.5-FT	12	18
2X3-FT	12	24
2.5X3-FT	18	24



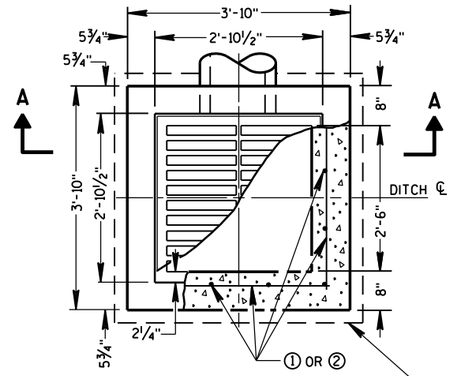
DETAIL "A"

INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT

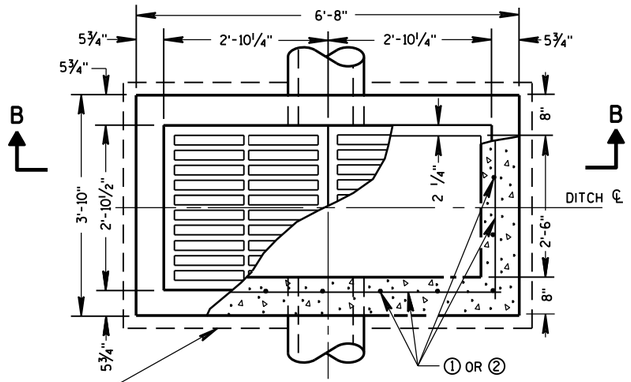
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept., 2016
DATE
/S/ Rodney Taylor
ROADWAY STANDAR
UNIT SUP
FHWA

PRE_51

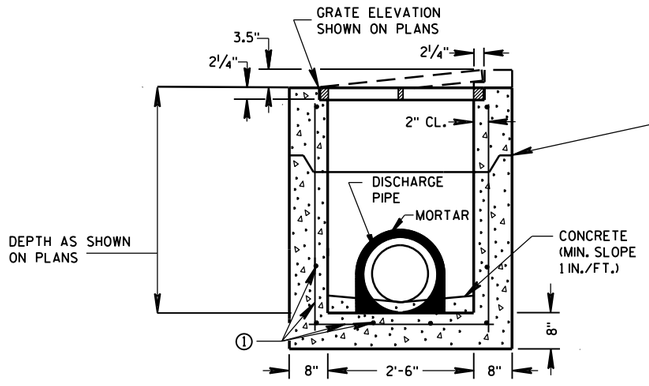


PLAN VIEW

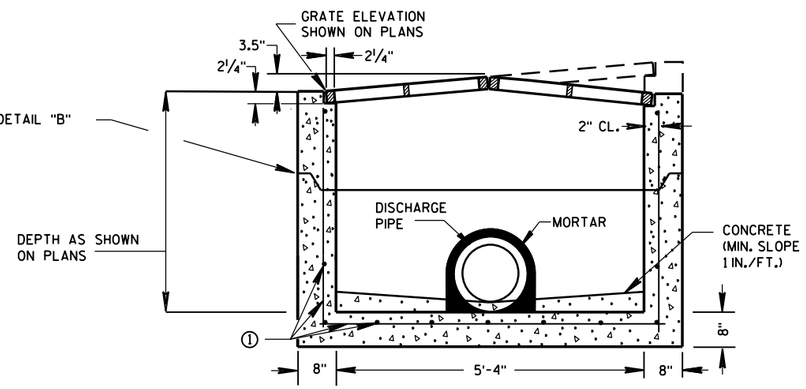


PLAN VIEW

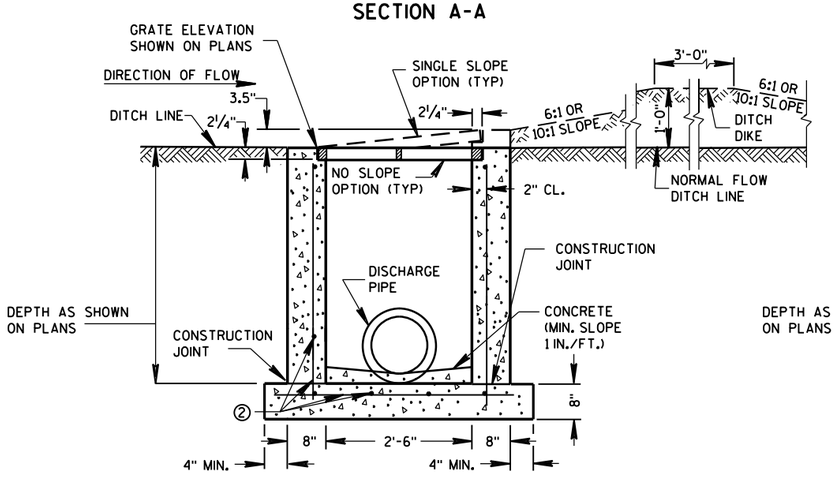
4" OVERHANGING BASE ON REINFORCED CAST-IN-PLACE CONCRETE INLETS



PRECAST REINFORCED CONCRETE SECTION A-A

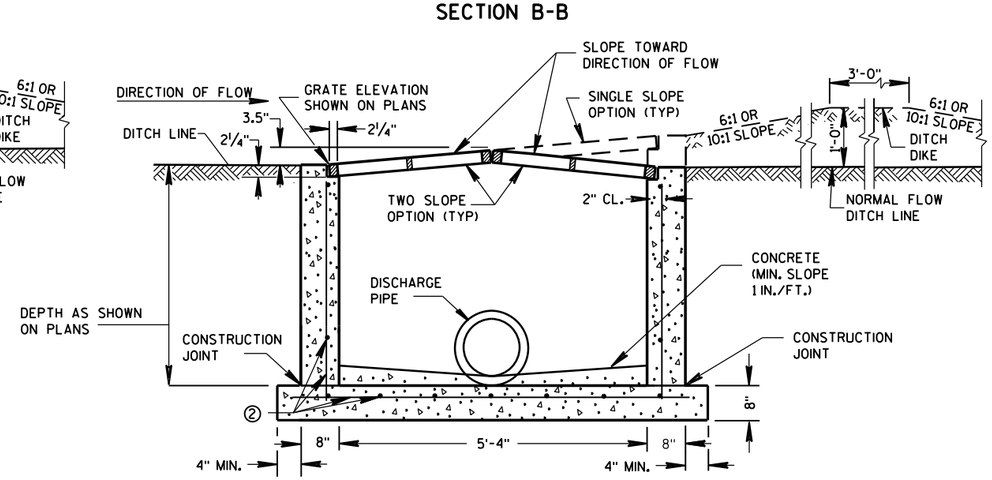


PRECAST REINFORCED CONCRETE SECTION B-B



REINFORCED CAST-IN-PLACE CONCRETE SECTION A-A

INLETS MEDIAN 1 GRATE



REINFORCED CAST-IN-PLACE CONCRETE SECTION B-B

INLETS MEDIAN 2 GRATE

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.

UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST INLET UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR INLETS WHICH MAY INCLUDE PRECAST REINFORCED CONCRETE INLETS, SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL MEDIAN INLETS ARE DESIGNATED ON THE PLANS AS "INLETS, IG-MS", ETC. THE FIRST NUMBER AND LETTER DESIGNATE THE TYPE OF STRUCTURE, AND THE FOLLOWING LETTERS DESIGNATE THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF FOUNDATION BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

ALL BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

PRECAST REINFORCED RISERS SHALL HAVE A TONGUE AND GROOVE JOINT WITH TONGUE UP OR DOWN.

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

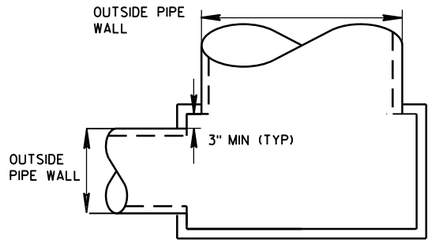
MAXIMUM INSIDE PIPE DIAMETER DETERMINED BY 3" CLEARANCE ON EACH SIDE OF THE OUTSIDE WALL OF THE PIPE. SEE DETAIL "A". ASSUMES PIPE ENTERS PERPENDICULAR TO THE STRUCTURE.

① FOR PRECAST INLETS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.

② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

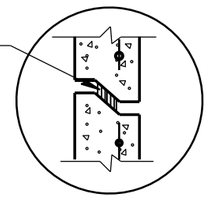
PIPE MATRIX

	MAXIMUM INSIDE PIPE DIAMETER	
INLET SIZE	WIDTH (IN)	LENGTH (IN)
1 GRATE	18	18
2 GRATE	18	42



DETAIL "A"

JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C 990 (TYP)



DETAIL "B"

INLETS MEDIAN 1 AND 2 GRATE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept., 2016 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS UNIT SU
FHWA

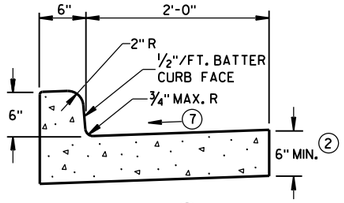
PRE_52

6

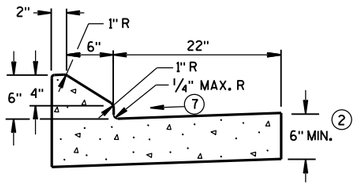
S.D.D. 8 C 8-2

6

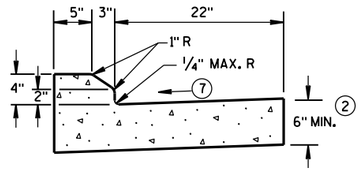
S.D.D. 8 C 8-2



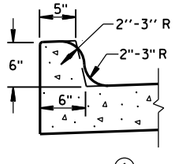
TYPES A (1) & D



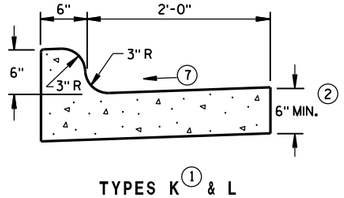
6" SLOPED CURB TYPES G (1) & J



4" SLOPED CURB TYPES G (1) & J

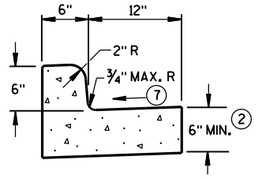


TYPES K (1) & L
(OPTIONAL CURB SHAPE)



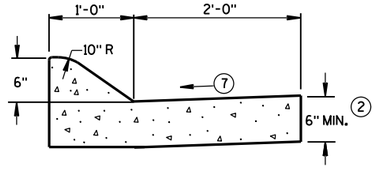
TYPES K (1) & L

CONCRETE CURB & GUTTER 30"

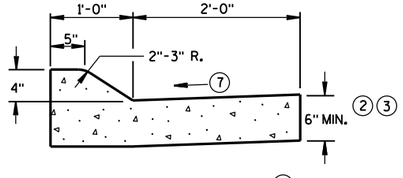


TYPES A (1) & D

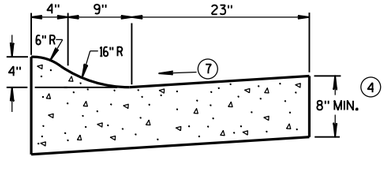
CONCRETE CURB & GUTTER 18"



6" SLOPED CURB TYPES A (1) & D

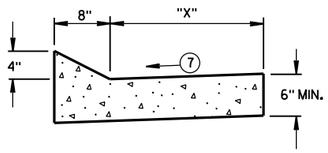


4" SLOPED CURB TYPES A (1) & D



4" SLOPED CURB TYPES R (1) & T (5)

CONCRETE CURB & GUTTER 36"



TYPES TBT & TBTT (1)

CONCRETE CURB & GUTTER

TBT & TBTT	"X"
30"	22"
36"	28"

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

INTEGRAL CURB & GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB & GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

WHERE THE TRANSVERSE JOINTS IN THE PAVEMENT ARE REQUIRED TO BE SEALED, THE JOINTS IN THE INTEGRAL CURB AND GUTTER SHALL BE SEALED TO THE FACE OF CURB WITH THE SAME TYPE OF SEALANT. THE COST OF FURNISHING AND INSTALLING THIS SEALANT SHALL BE INCIDENTAL TO THE ITEM CONCRETE CURB AND GUTTER.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2'-0" BEHIND THE BACK OF CURBS.

(1) TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G, K, R AND TBTT.

(2) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.

(3) USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.

(4) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.

(5) THE FACE OF CURB IS 6" FROM THE BACK OF CURB.

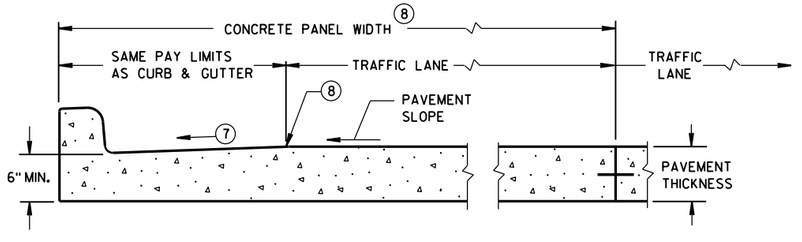
(6) WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.

(7) USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.

(8) INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.

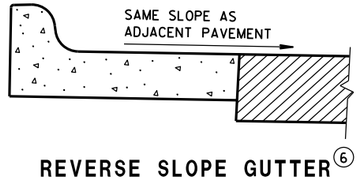
PAVEMENT THICKNESS AND MAXIMUM CONCRETE PANEL WIDTH TABLE

PAVEMENT THICKNESS	MAXIMUM PANEL WIDTH
LESS THAN 10"	12'
10" & ABOVE	15'



PARTIAL SECTION OF PAVEMENT *
WITH INTEGRAL CURB & GUTTER

* BIKE LANE IS NOT SHOWN.



REVERSE SLOPE GUTTER (6)
(TYPICAL FOR ALL CURB & GUTTER TYPES)

CONCRETE CURB & GUTTER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

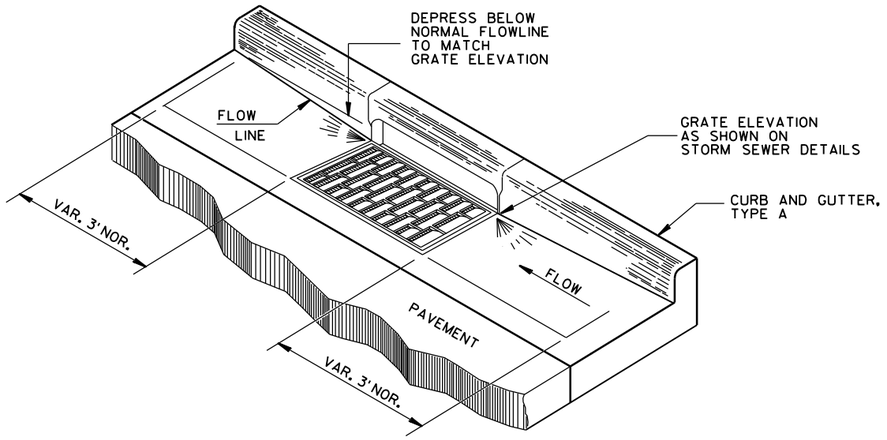
PRE_53

6

6

S.D.D. 8 D 1-20a

S.D.D. 8 D 1-20a



DETAIL OF CURB AND GUTTER AT INLETS

(TYPE H INLET COVER SHOWN)

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

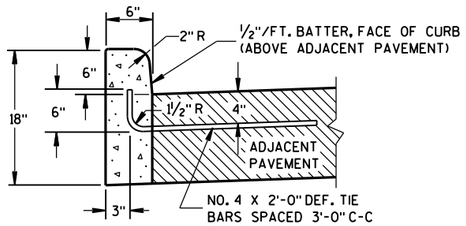
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2'-0" BEHIND THE BACK OF CURBS.

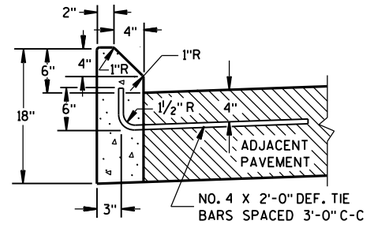
(1) TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G, K, R AND TBTT.

(2) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.

(9) REFER TO SDD 8D18 AND SDD 8D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.

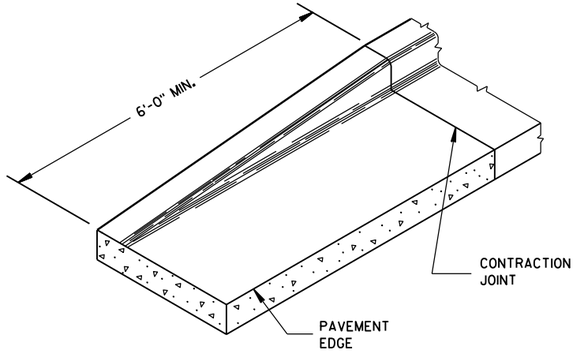


TYPES A (1) & D

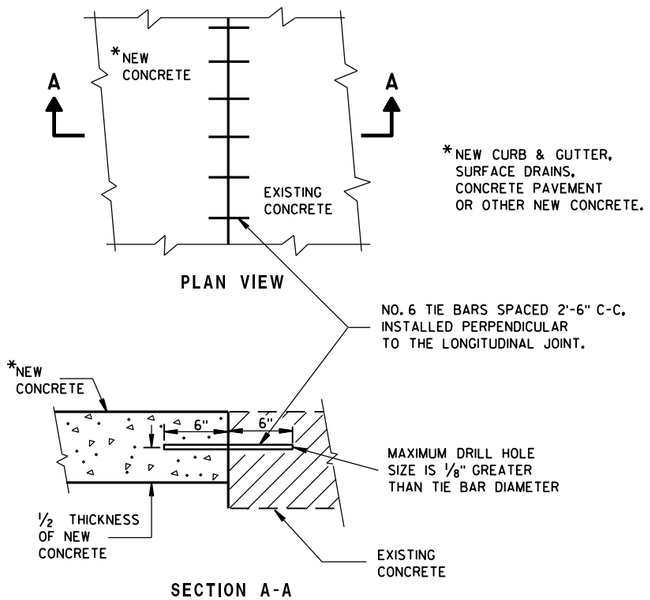


TYPES G (1) & J

CONCRETE CURB



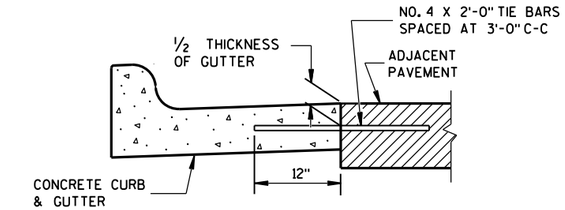
END SECTION CURB & GUTTER



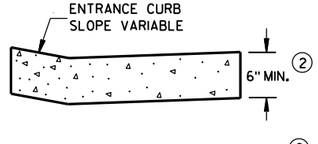
PLAN VIEW

SECTION A-A

TIE BARS DRILLED INTO EXISTING PAVEMENT



TYPICAL TIE BAR LOCATION (1)



DRIVEWAY ENTRANCE CURB (9)

(WHEN DIRECTED BY THE ENGINEER)

CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2017 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS UNIT SUPERVISOR
NT
FHWA

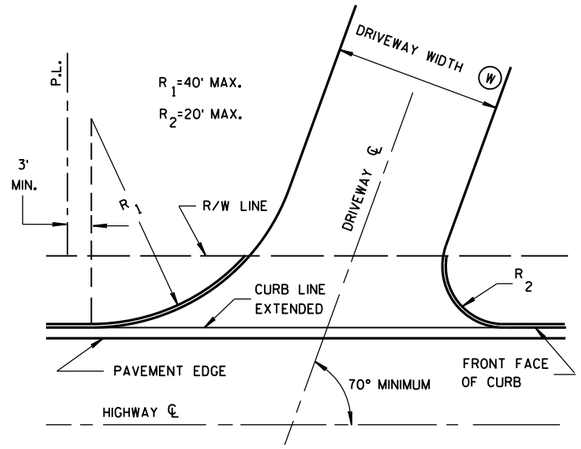
PRE_54

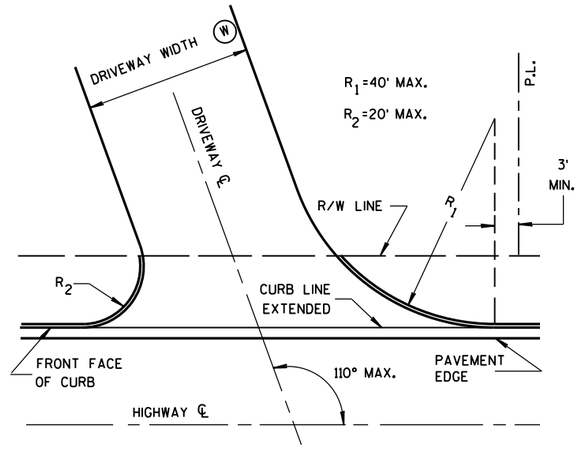
6

S.D.D. 8 D 1-20b

6

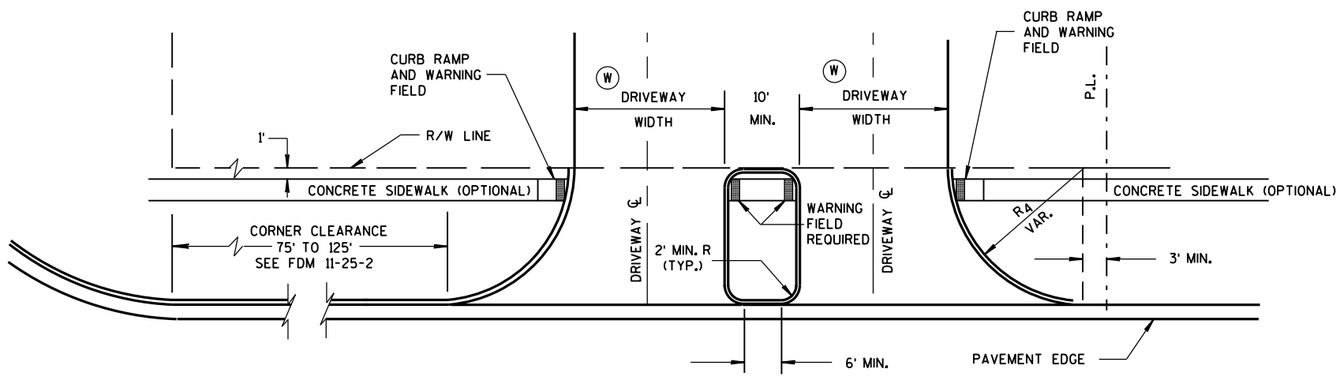
S.D.D. 8 D 1-20b





SKEWED DRIVEWAY DETAILS
(COMMERCIAL AND NON-COMMERCIAL)

SIDEWALK NOT SHOWN



DRIVEWAY LOCATION AND SPACING DETAILS

SIDEWALK SHOWN

NOTES

A MAXIMUM RADIUS OF 10 FEET SHALL BE USED FOR NON-COMMERCIAL PRIVATE ENTRANCES. RADII FOR COMMERCIAL DRIVEWAYS SHALL BE DETERMINED BY THE ENGINEER BASED ON TRAFFIC AND DRIVEWAY PERMIT RESTRICTIONS.

THE MINIMUM ANGLE OF INTERSECTION BETWEEN THE DRIVEWAY AND HIGHWAY CENTERLINES SHALL BE 70°.

ALL CURVILINEAR PRIVATE ENTRANCE OUTLINES SHALL BE CONTAINED WITHIN THE HIGHWAY R/W.

NO DRIVEWAY SHALL BE BUILT WITHIN 3 FEET OF THE PROPERTY LINE EXCEPT FOR EXISTING JOINT DRIVEWAY SHARED BY TWO OWNERS.

Ⓦ DRIVEWAY WIDTHS:

COMMERCIAL - 35' MAX., 16' MIN.

RESIDENTIAL AND NON-COMMERCIAL - 24' MAX., 12' MIN.

DRIVEWAYS WITH CURB & GUTTER RETURNS

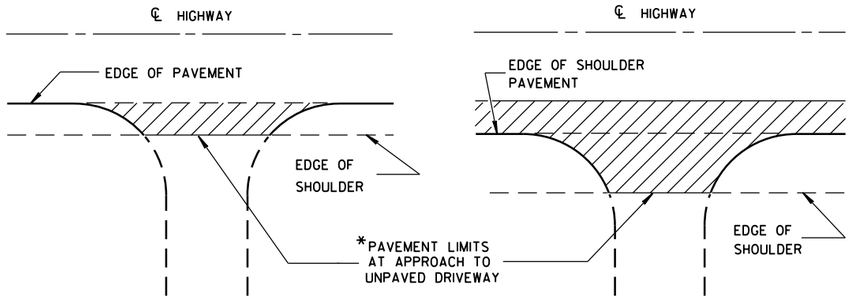
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
December, 2016 /S/ Rodney Taylor
DATE ROADWAY STANDARDS UNIT SUPERVISOR
FHWA

PRE_55

6

S.D.D. 8 D 20-1



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

PLAN VIEW
(UNPAVED SHOULDER ON HIGHWAY)

PLAN VIEW
(PAVED SHOULDER ON HIGHWAY)

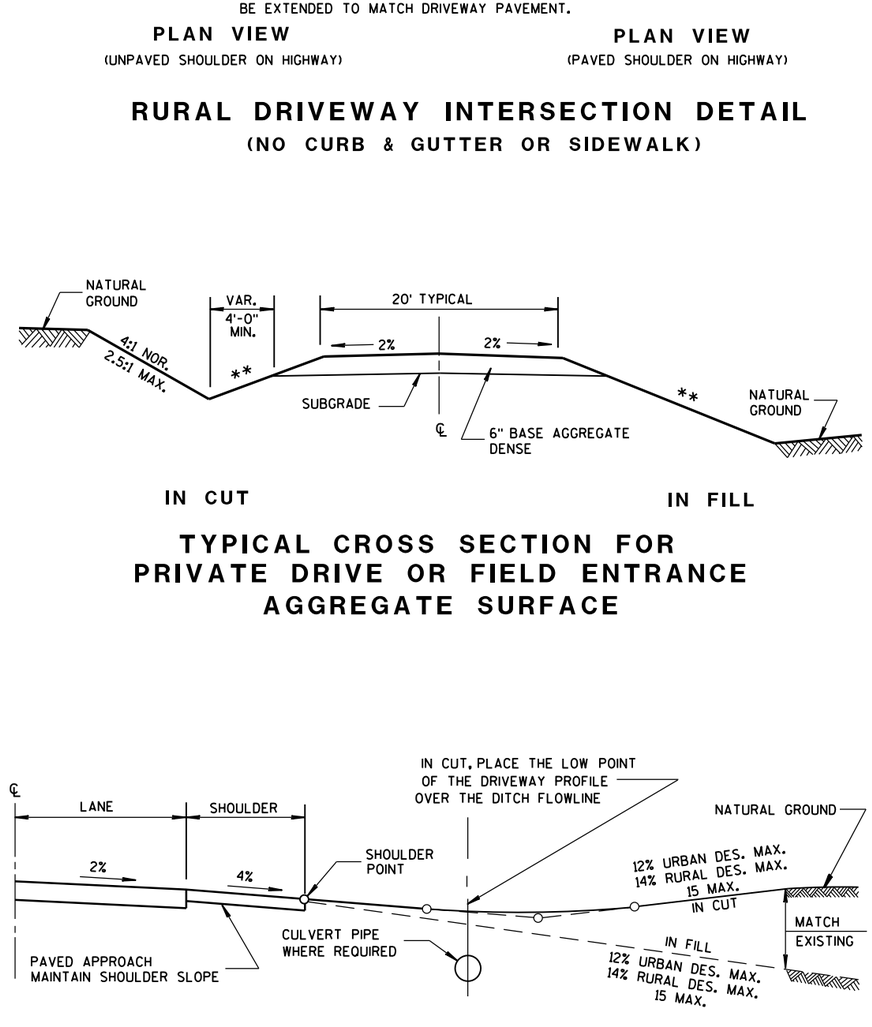
RURAL DRIVEWAY INTERSECTION DETAIL
(NO CURB & GUTTER OR SIDEWALK)

IN CUT **IN FILL**

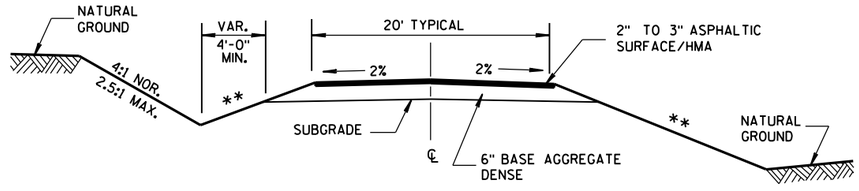
TYPICAL CROSS SECTION FOR PRIVATE DRIVE OR FIELD ENTRANCE AGGREGATE SURFACE

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

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



TYPICAL DRIVEWAY PROFILES



IN CUT **IN FILL**

TYPICAL CROSS SECTION FOR PRIVATE DRIVE OR FIELD ENTRANCE ASPHALTIC SURFACE

DRIVEWAYS WITHOUT CURB & GUTTER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
December, 2016 /S/ Rodney Taylor
DATE ROADWAY STANDARDS UNIT SUPERVISOR
FHWA

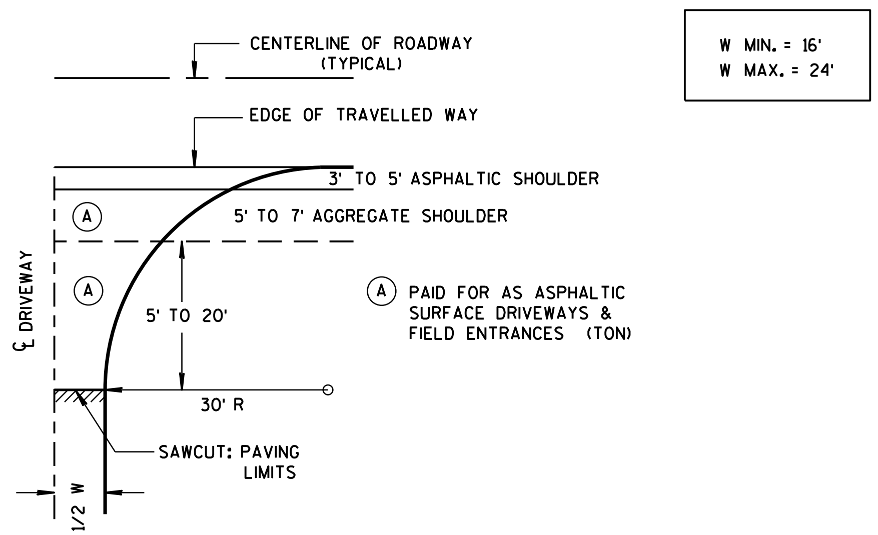
PRE_56

6

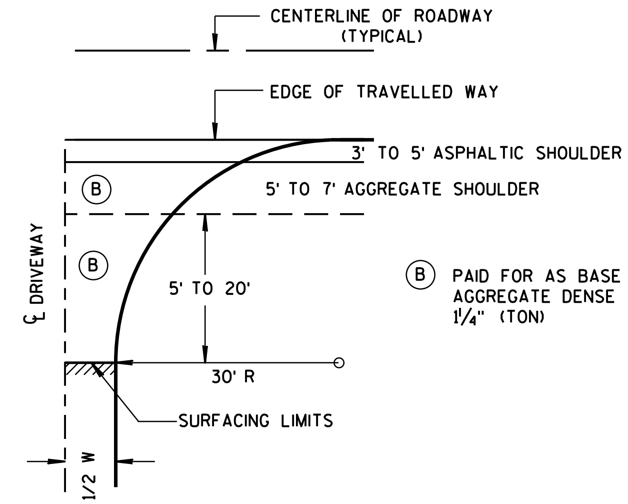
S.D.D. 8 D 21-1

6

S.D.D. 8 D 21-1



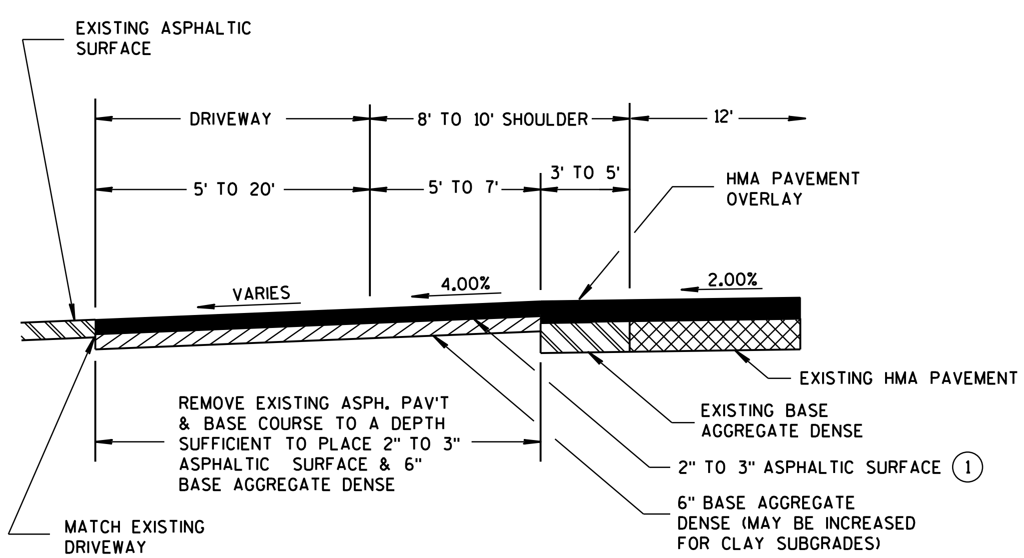
PLAN VIEW
HALF SECTION



PLAN VIEW
HALF SECTION

GENERAL NOTES

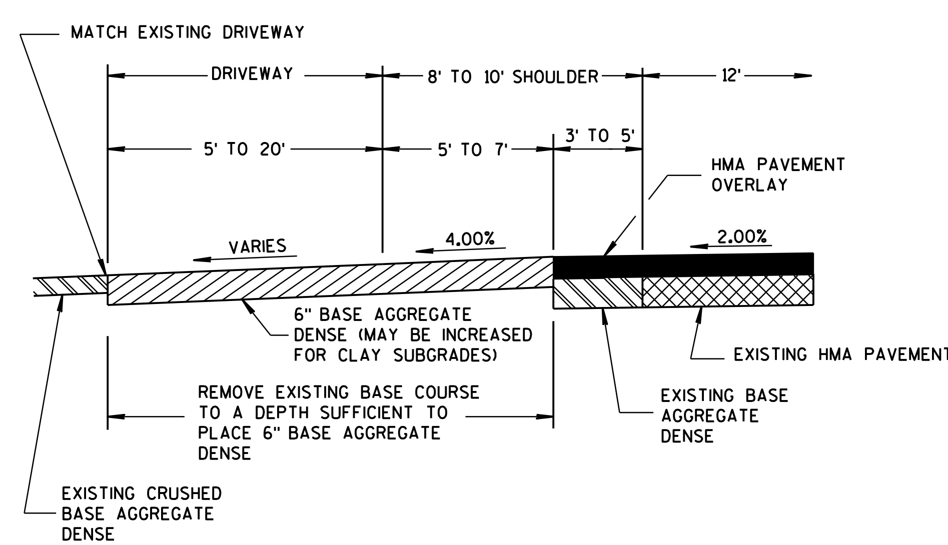
(1) DESIGN WILL DETERMINE FINAL DRIVEWAY ASPHALTIC THICKNESS BASED ON TYPE OF USAGE AND LOADINGS.



PROFILE VIEW

RURAL ENTRANCE WITH ASPHALTIC SURFACE

RESURFACING PROJECTS



PROFILE VIEW

RURAL ENTRANCE WITH AGGREGATE SURFACE

6" BASE AGGREGATE DENSE
RESURFACING PROJECTS

6

6

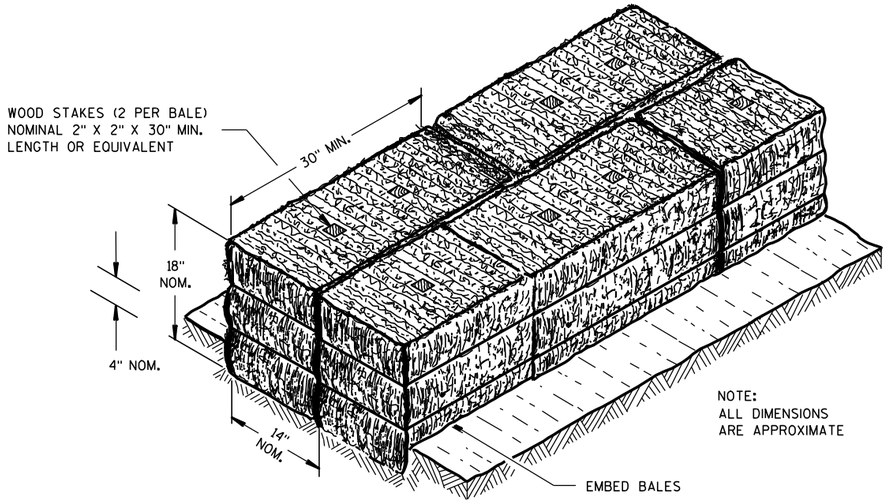
DRIVEWAYS WITHOUT CURB & GUTTER RESURFACING PROJECTS RURAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

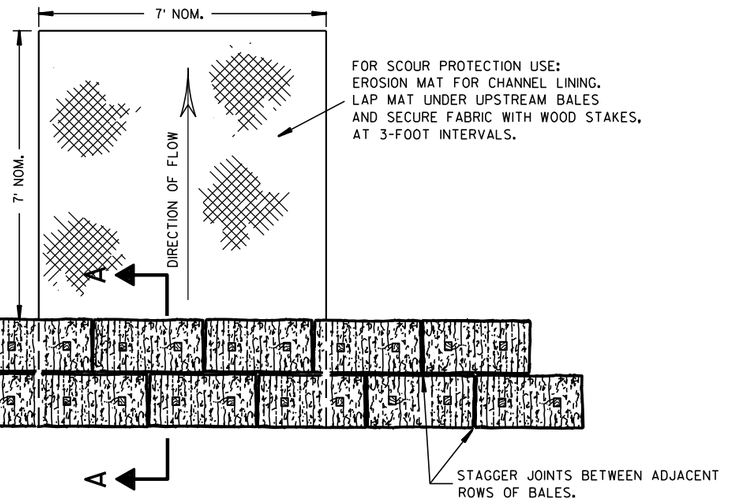
APPROVED
December, 2016 — DATE
/S/ Rodney Taylor — ROADWAY STANDA[RDS DEVELOPME]NT UNIT SU[PERVISOR]
FHWA

PRE_57

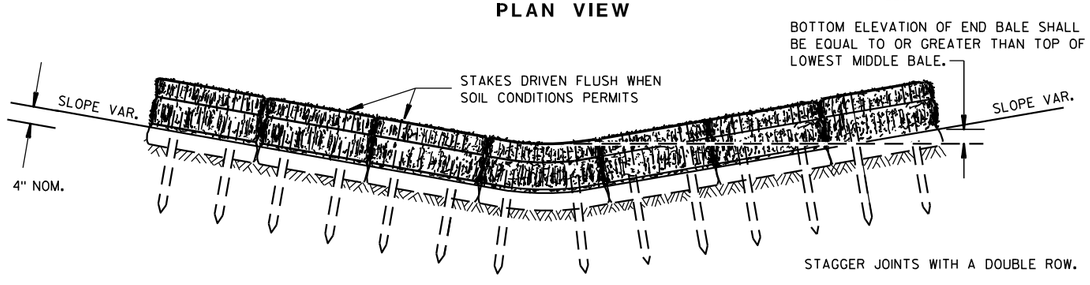
S.D.D. 8 D 22-1



SECTION A-A



PLAN VIEW



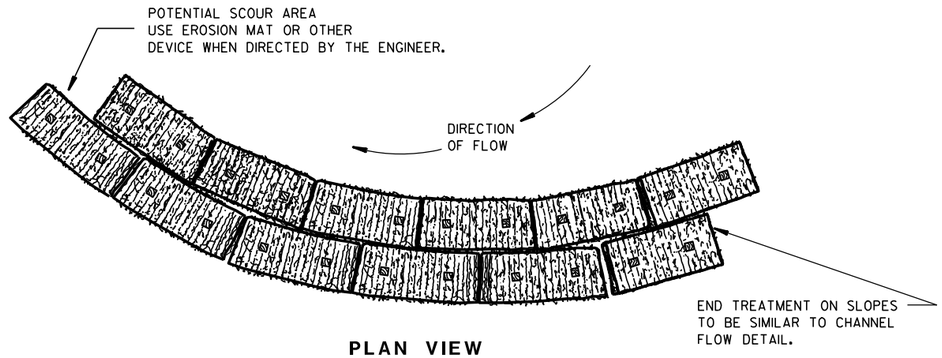
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES (1)

GENERAL NOTES

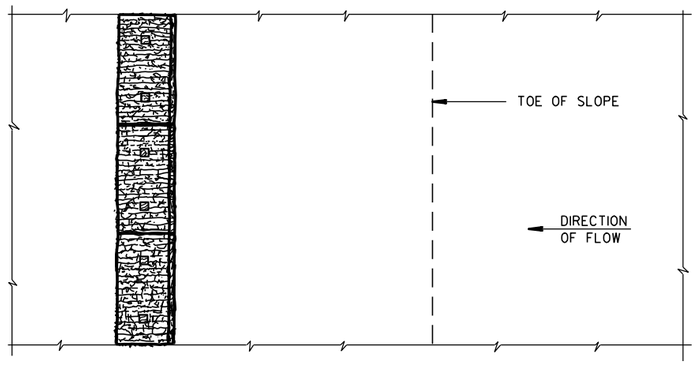
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

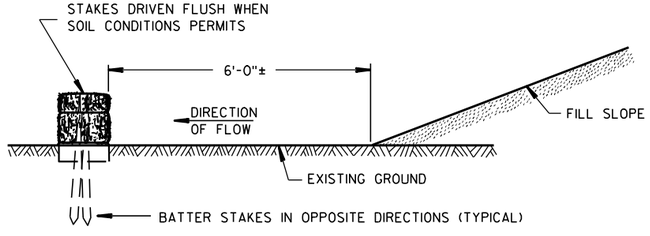


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02 — DATE

/S/ Beth [illegible] — CHIEF ROADWAY DE[illegible] — NEER

FHWA

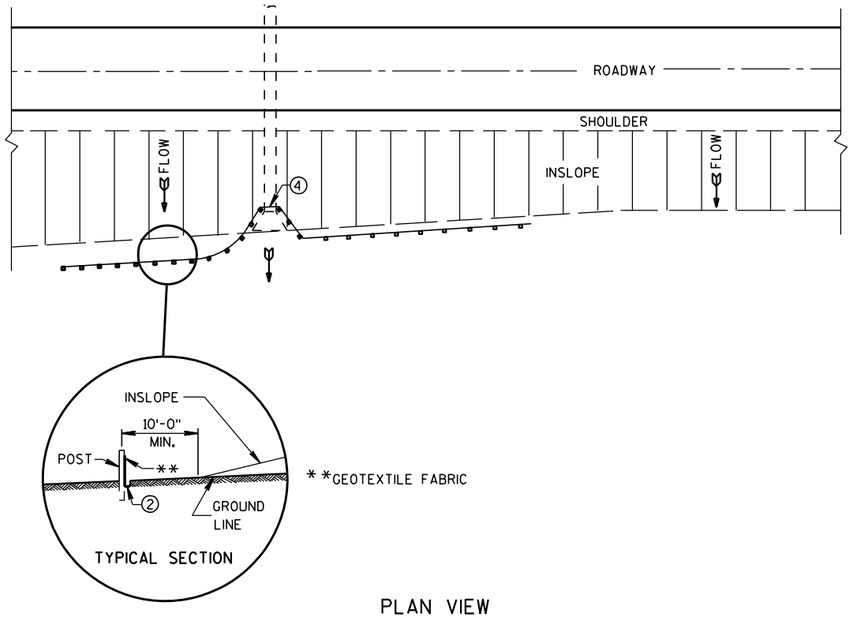
PRE_58

6

S.D.D. 8 E 8-3

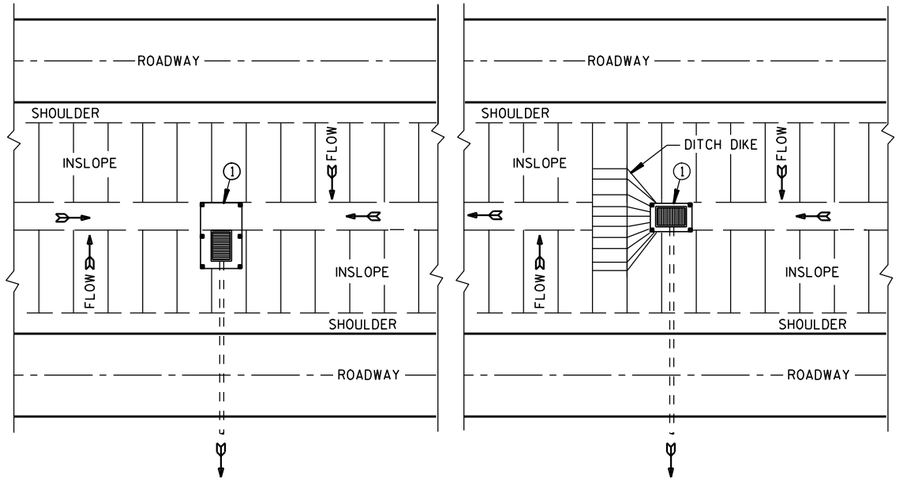
6

S.D.D. 8 E 8-3



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



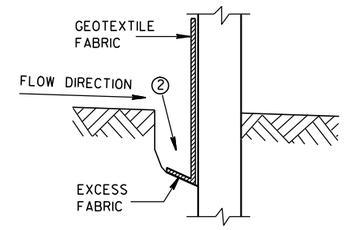
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

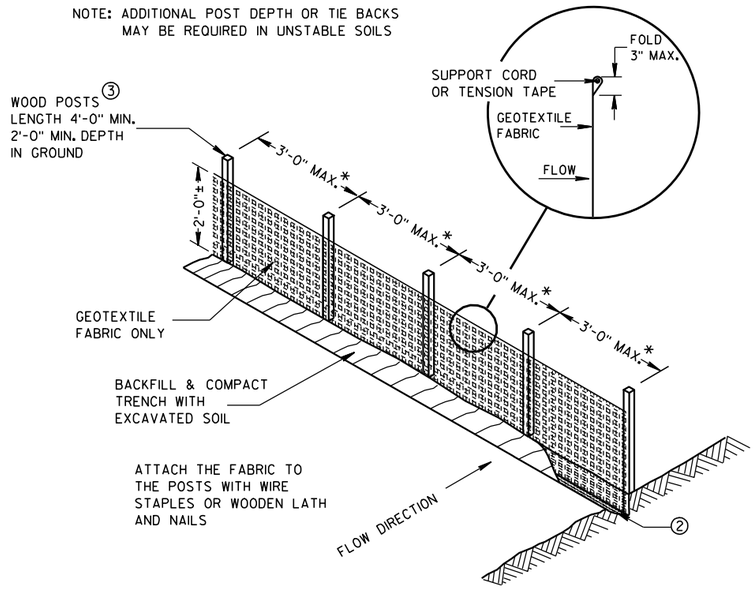
GENERAL NOTES

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

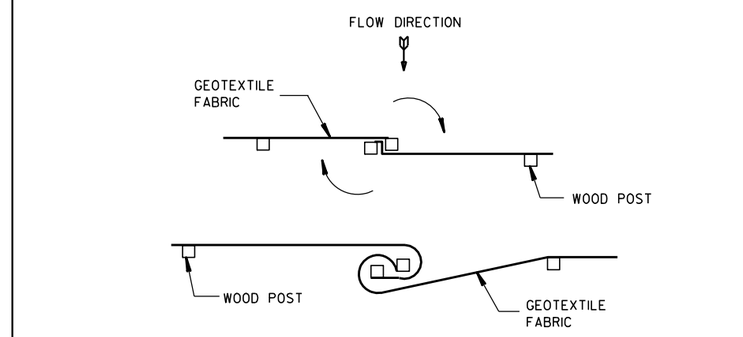
1. HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
2. FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL 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.



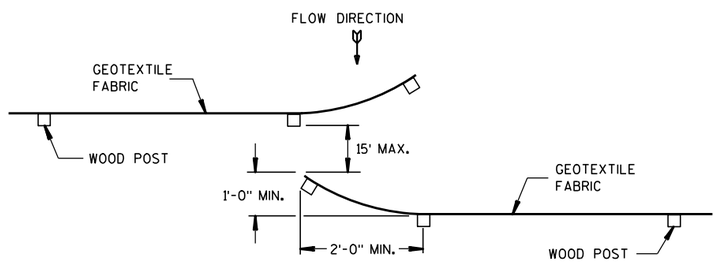
TRENCH DETAIL



SILT FENCE

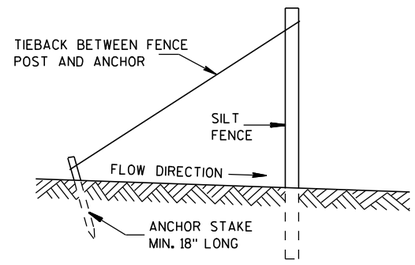


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE 5



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-29-05 DATE
/S/ Beth [illegible] CHIEF ROADWAY DE[illegible] NEER
FHWA

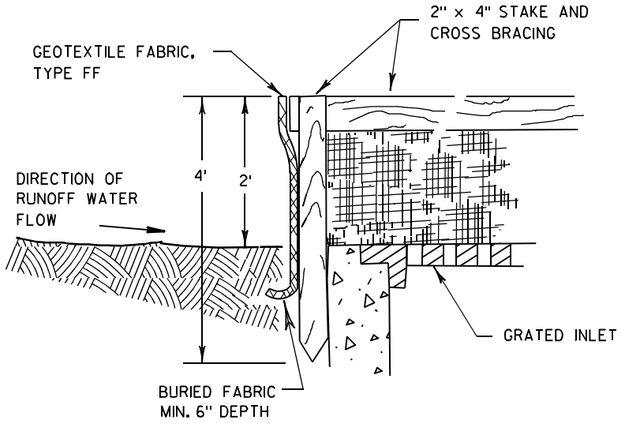
PRE_59

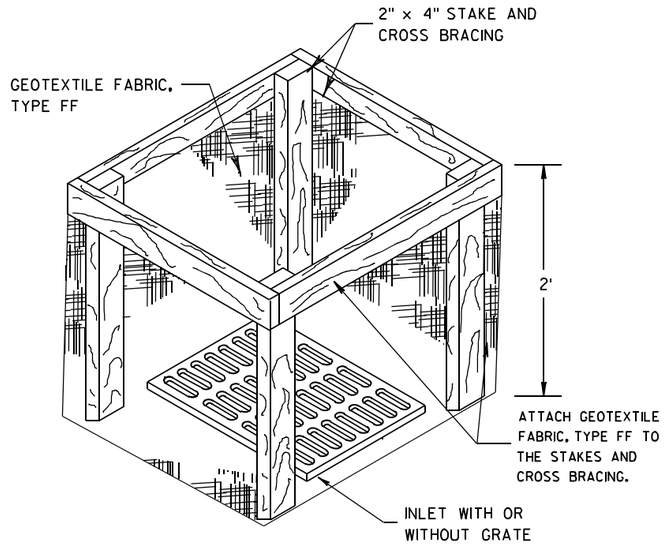
6

S.D.D. 8 E 9-6

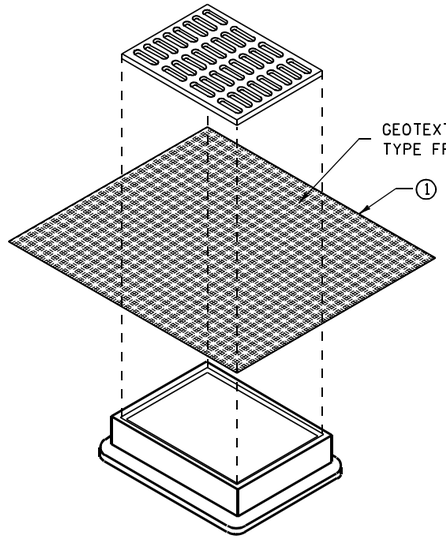
6

S.D.D. 8 E 9-6



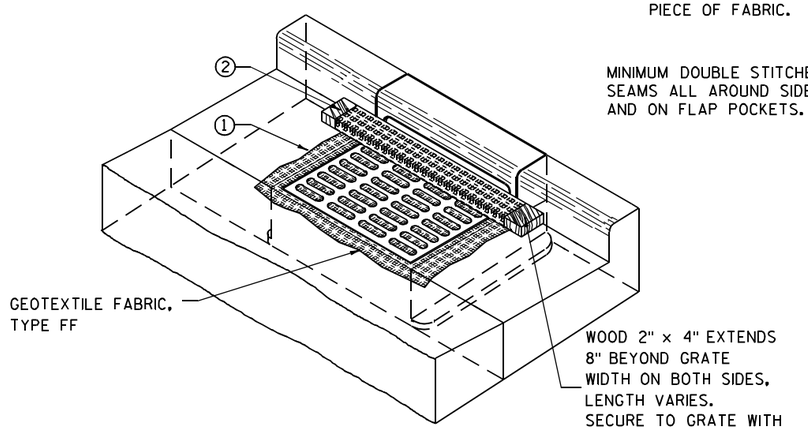


INLET PROTECTION, TYPE A

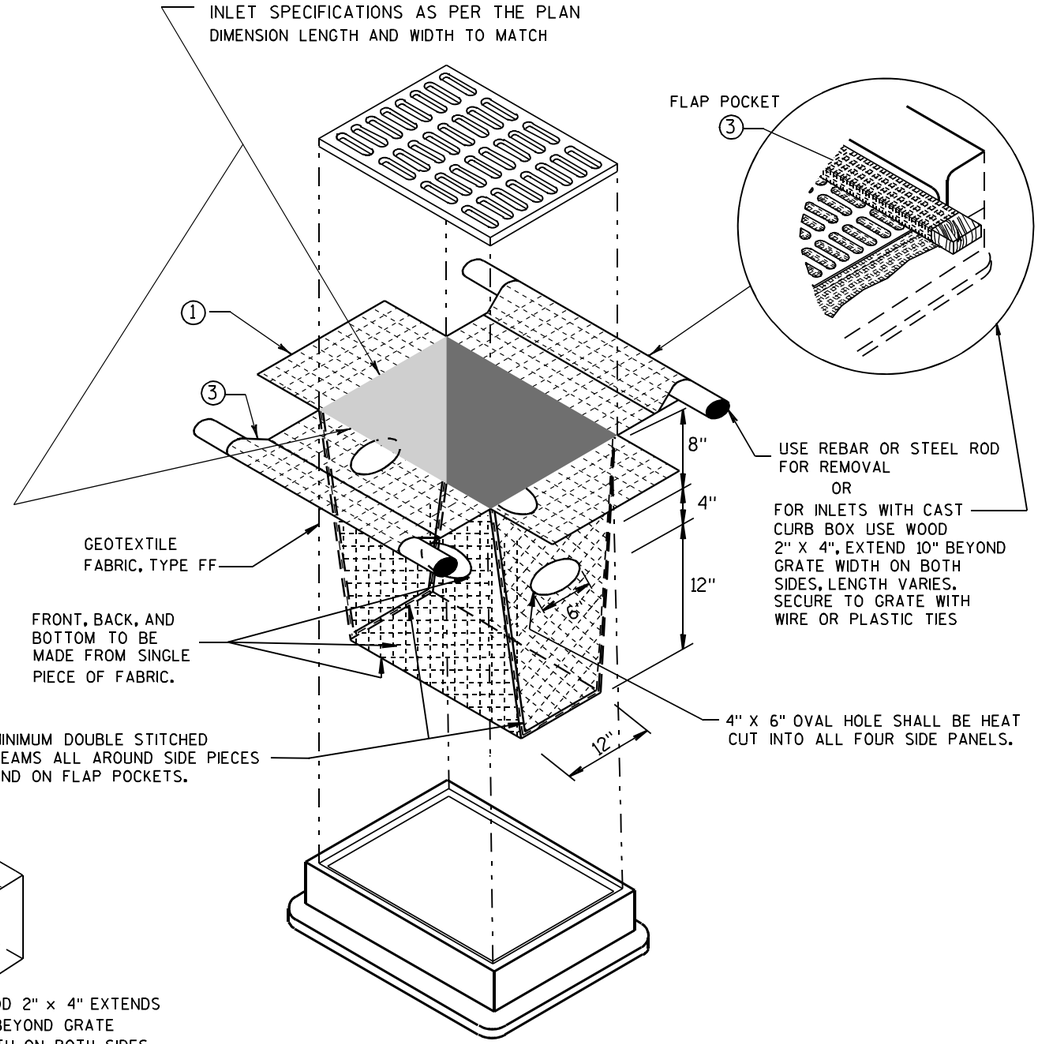


INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)

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



INLET PROTECTION, TYPE C (WITH CURB BOX)



INLET PROTECTION, TYPE D

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

GENERAL NOTES

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

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

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

① FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

② FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.

③ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.

INSTALLATION NOTES

TYPE B & C

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

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

TYPE D

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

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

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

INLET PROTECTION
TYPE A, B, C, AND D

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/16/02
DATE
/S/ Beth C[illegible]
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

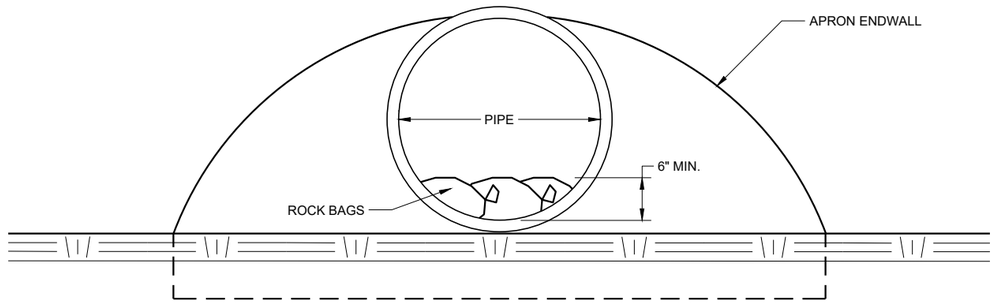
PRE_60

6

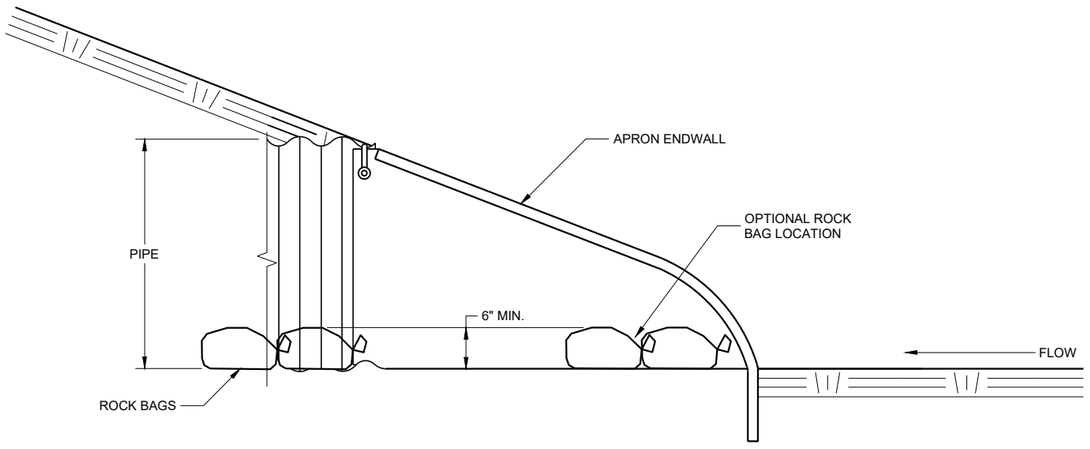
S.D.D. 8 E 10-2

6

S.D.D. 8 E 10-2



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 CONTRO

FHWA

PRE_61

6

SDD 08E15 - 01

6

SDD 08E15 - 01

METAL APRON ENDWALLS

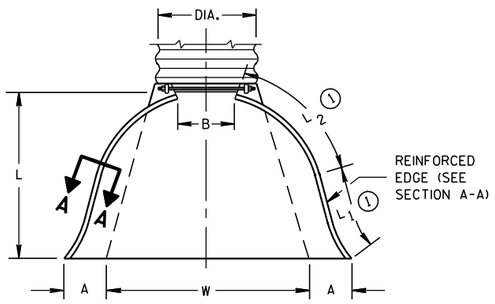
PIPE DIA. (IN.)	MIN. THICK. (Inches) STEEL	MIN. THICK. (Inches) ALUM.	DIMENSIONS (Inches) A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")	APPROX. SLOPE	BODY
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	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

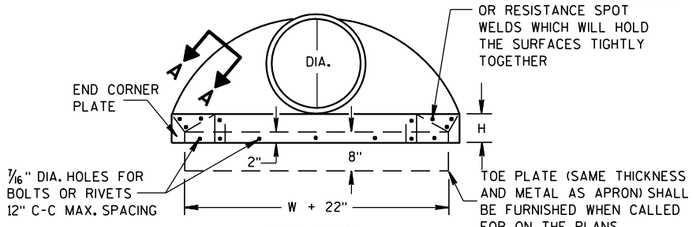
REINFORCED CONCRETE APRON ENDWALLS

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

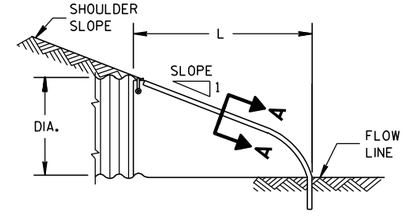
*MINIMUM
**MAXIMUM



PLAN VIEW

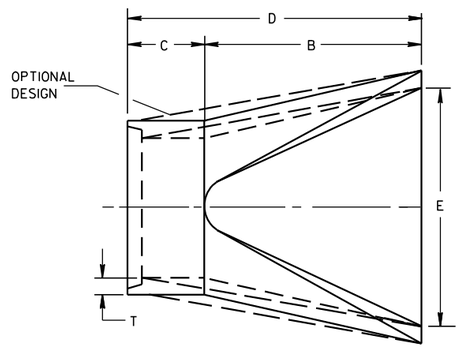


END VIEW

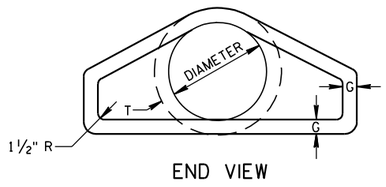


SIDE ELEVATION

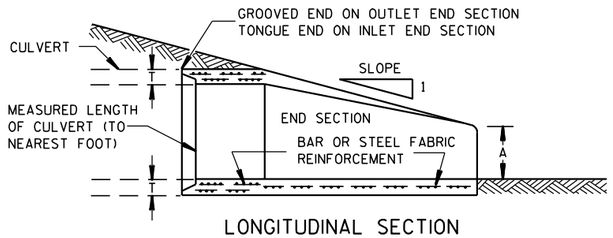
METAL ENDWALLS



PLAN

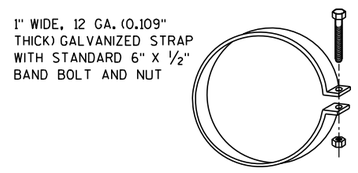


END VIEW



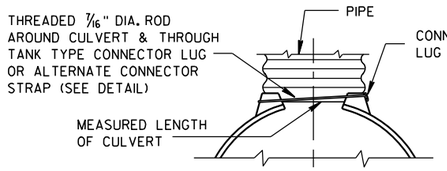
LONGITUDINAL SECTION

CONCRETE ENDWALLS

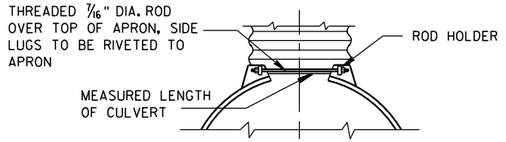


ALTERNATE FOR TYPE 1 CONNECTION

END SECTION CONNECTOR STRAP

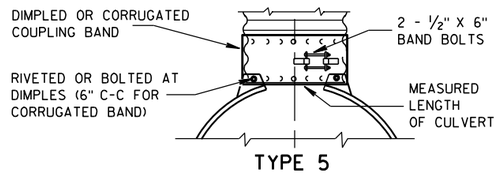


TYPE 1
FOR 12" THRU 24" CORR. PIPE



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

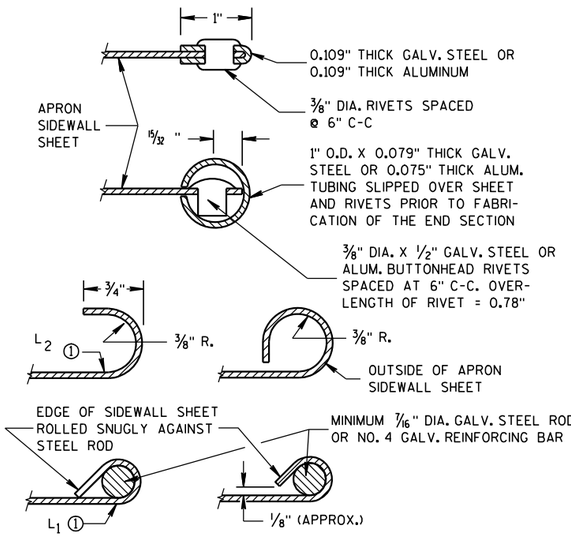
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

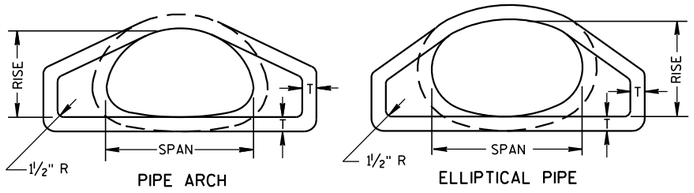
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/30/94 DATE
/S/ Rory L. [illegible] CHIEF ROADWAY DE[illegible]IEER
FHWA

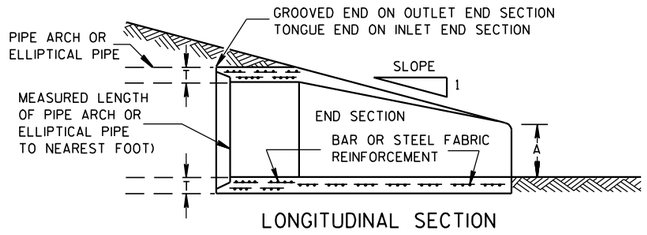
PRE_62

6

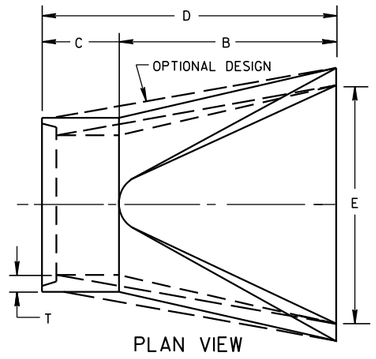
S.D.D. 8 F 1-11



END VIEW

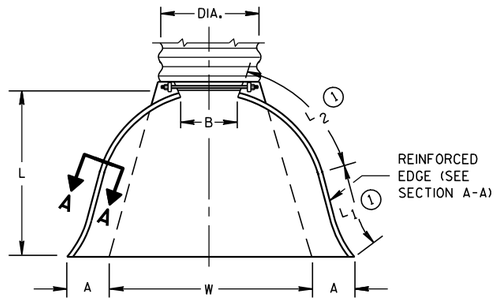


LONGITUDINAL SECTION

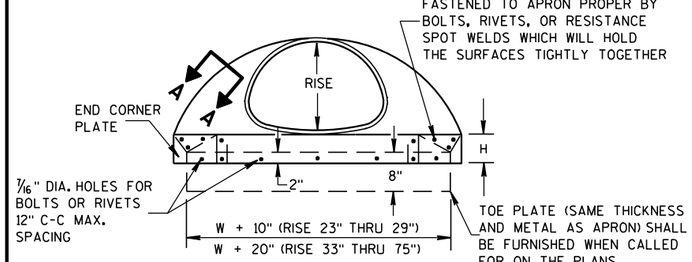


PLAN VIEW

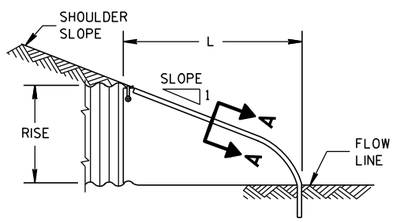
CONCRETE ENDWALLS



PLAN VIEW

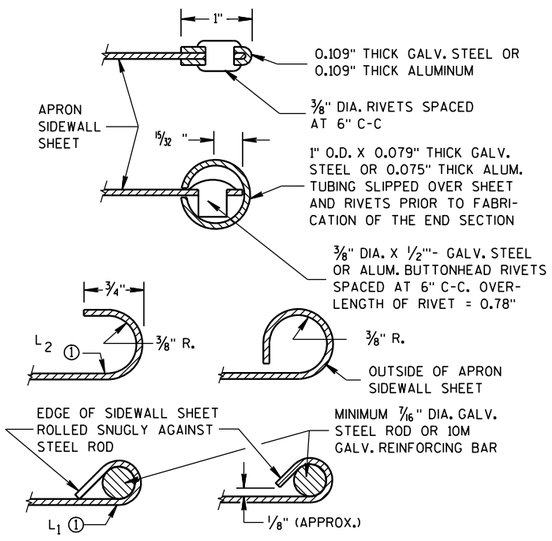


END VIEW



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

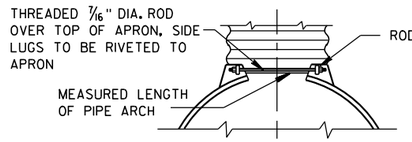
REINFORCED CONCRETE PIPE ARCH

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

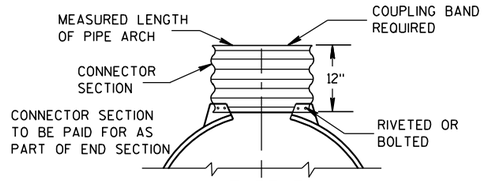
EQUIV. DIA. (Inches)	DIMENSIONS (Inches) ** SPAN	** RISE	T	A	B	C	D	E	APPROX. SLOPE
24	30	19	3¼	8½	39	33	72	48	3 to 1
30	38	24	3¾	9½	54	18	72	60	3 to 1
36	45	29	4½	11⅛	60	24	84	72	2½ to 1
42	53	34	5	15¾	60	36	96	78	2½ to 1
48	60	38	5½	21	60	36	96	84	2½ to 1
54	68	43	6	25½	60	36	96	90	2½ to 1
60	76	48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

**NOMINAL SIZE



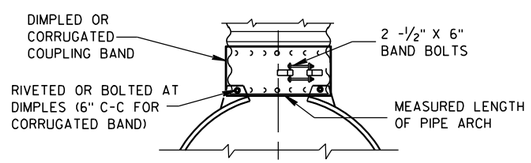
TYPE 2

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. [illegible]
CHIEF ROADWAY DE PRE_63 INEER

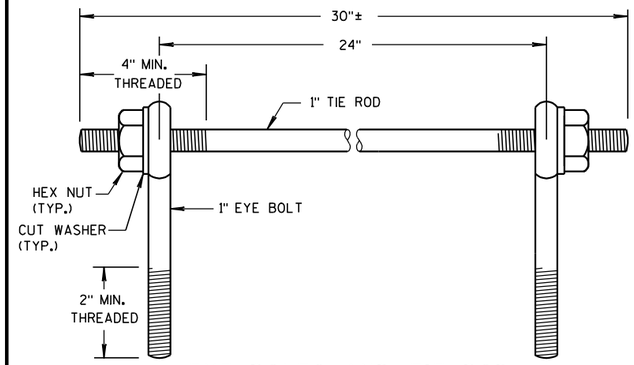
FHWA

6

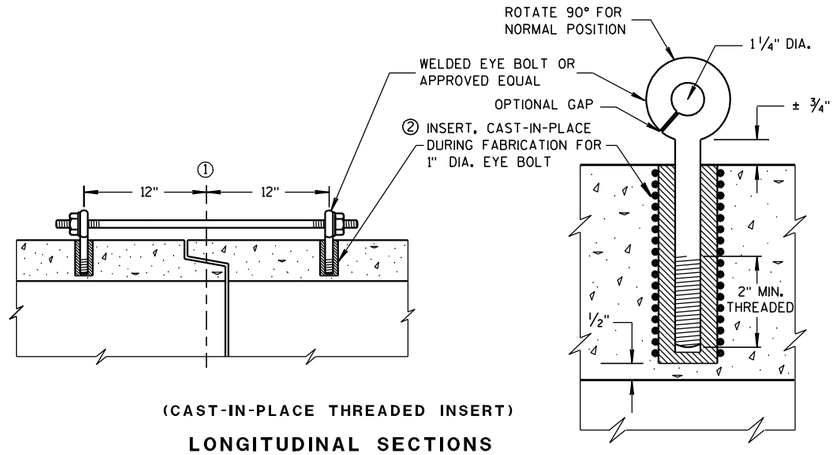
S.D.D. 8 F 2-1

6

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.

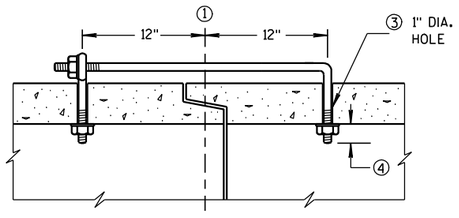
② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.

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

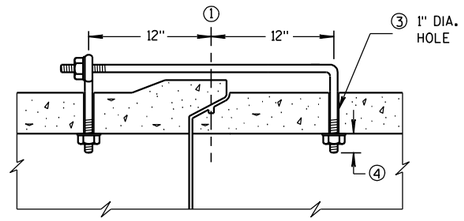
④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.

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)

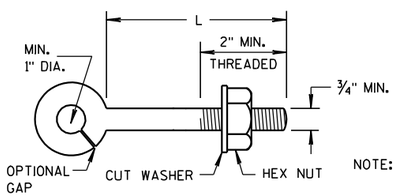


(MODIFIED BELL PIPE)

LONGITUDINAL SECTION

EYE BOLT DIMENSION TABLE

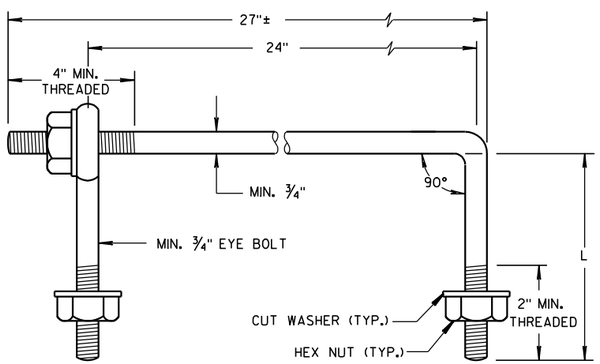
PIPE SIZE	L = LENGTH	
	TONGUE & GROOVE PIPE	MODIFIED BELL PIPE
18" TO 24"	4 1/2"	6 1/4"
30"	5"	7"
36"	5 1/2"	7"
42"	6"	
48"	6 1/2"	
60"	7 1/2"	
66"	8"	



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

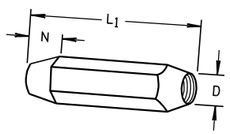
(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)

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

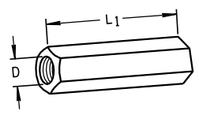
ADJUSTABLE TIE ROD TABLE

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



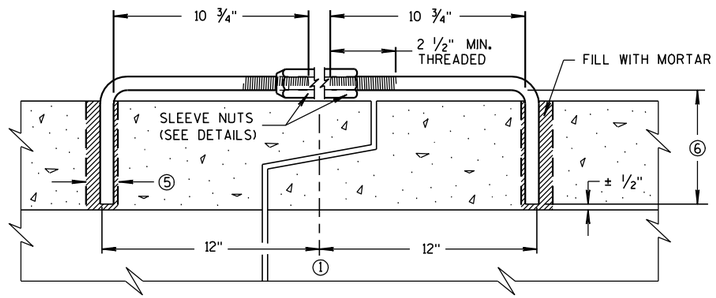
TAPERED



PLAIN

RIGHT AND LEFT THREADS

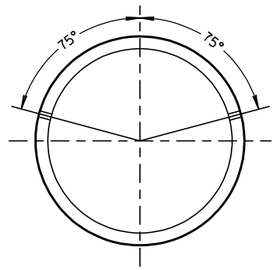
SLEEVE NUTS



LONGITUDINAL SECTION

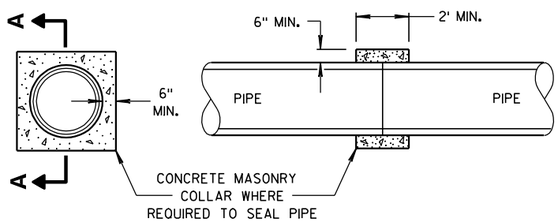
(JOINT TIES FOR 12" TO 108" DIA. CONCRETE PIPE)

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 DEVELOPMENT ENGINEER
FHWA

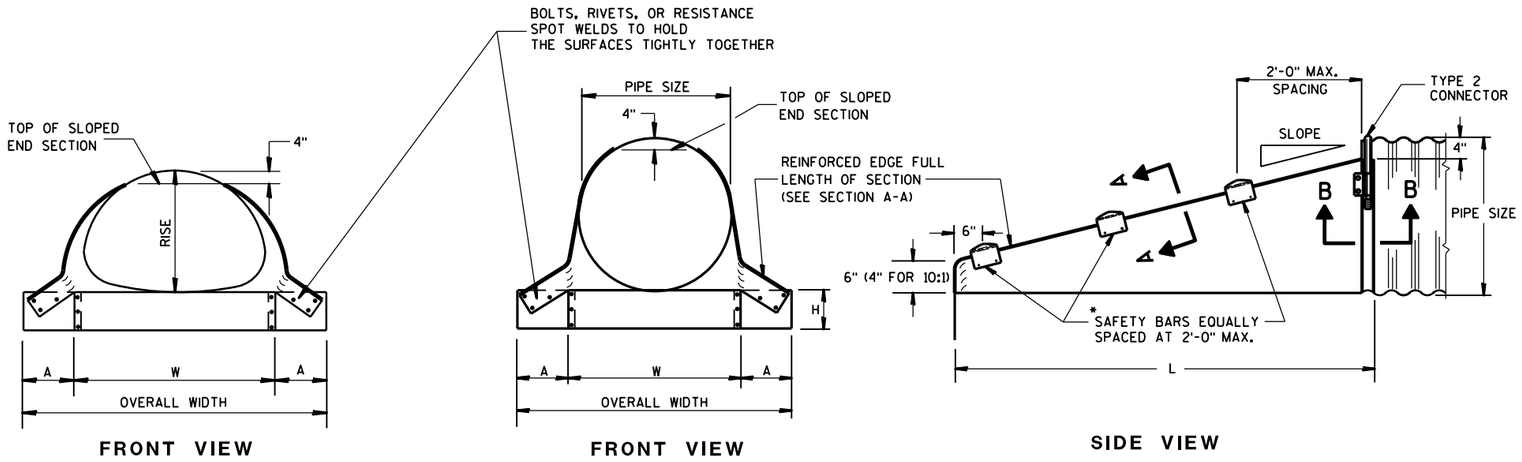
PRE_64

6

S.D.D. 8 F 4-7

6

S.D.D. 8 F 4-7



FRONT VIEW

FRONT VIEW

SIDE VIEW

GENERAL NOTES

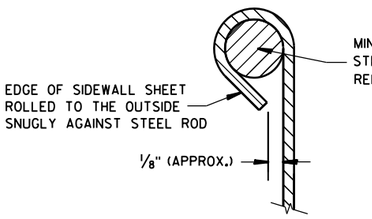
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

SLOPED END SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS, SECTION 521 FOR STEEL APRON ENDWALLS.

SAFETY BARS SHALL BE FABRICATED FROM GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A-53, GRADE B, SCHEDULE 40 OR APPROVED EQUAL.

STEEL APRON ENDWALLS FOR CULVERT PIPE SLOPED SIDE DRAINS

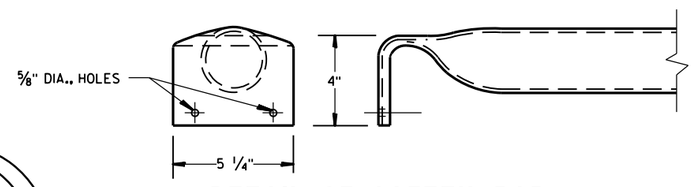
PIPE DIA. (IN.)	MIN. THICK. (Inches)	DIMENSIONS (Inches)				L DIMENSIONS					
		A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
15	.064	8	6	21	37	4:1	20	6:1	30	10:1	70
18	.064	8	6	24	40	4:1	32	6:1	48	10:1	100
21	.064	8	6	27	43	4:1	44	6:1	66	10:1	130
24	.064	8	6	30	46	4:1	56	6:1	84	10:1	160
30	.109	12	9	36	60	4:1	80	6:1	120	10:1	220
36	.109	12	9	42	66	4:1	104	6:1	156	10:1	280
42	.109	16	12	48	80	4:1	128	6:1	192	——	——
48	.109	16	12	54	86	4:1	152	6:1	228	——	——
54	.109	16	12	60	92	4:1	176	6:1	264	——	——
60	.109	16	12	66	98	4:1	200	6:1	300	——	——



SECTION A-A

*NOTE:
THREE SAFETY BARS ARE SHOWN. ACTUAL NUMBER OF BARS REQUIRED AT A 2'-0" C-C MAX. SPACING WILL VARY DEPENDING ON THE LENGTH OF THE END SECTION.

3" GALVANIZED PIPE. FLATTEN ENDS, THEN BEND OUTSIDE 4" TO MATCH END SECTION SIDES.

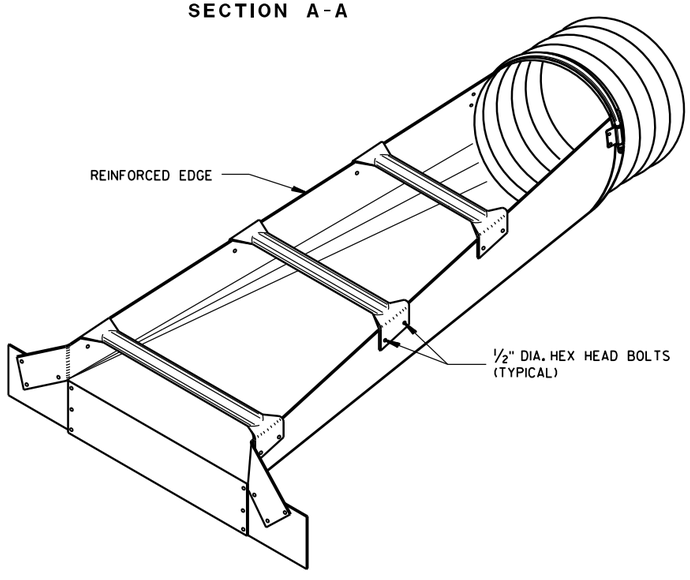


DETAIL OF SAFETY BAR

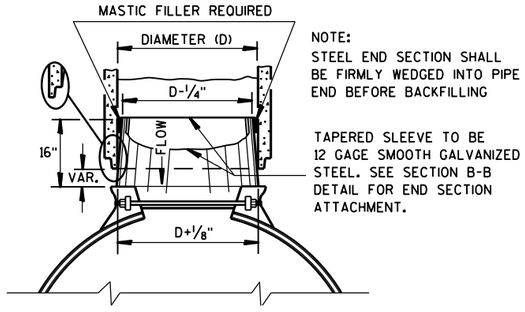
STEEL APRON ENDWALLS FOR PIPE ARCH SLOPED SIDE DRAINS

EQUIV. DIA. (Inches)	(Inches) SPAN	(Inches) RISE	MIN. THICK. (Inches) ①	DIMENSIONS (Inches) A	H	W	OVERALL WIDTH	L DIMENSIONS SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
15	17	13	.064 *	7	6	30	44	4:1	19	6:1	30	10:1 ②	70
18	21	15	.064 *	8	6	27	43	4:1	20	6:1	30	10:1	70
21	24	18	.064 *	8	6	30	46	4:1	32	6:1	48	10:1	100
24	28	20	.064 *	8	6	34	50	4:1	40	6:1	60	10:1	120
30	35	24	.079 *	12	9	41	65	4:1	56	6:1	84	10:1	160
36	42	29	.109 *	12	9	48	72	4:1	76	6:1	114	10:1	210
42	49	33	.109	16	12	55	87	4:1	92	6:1	138	——	——
48	57	38	.109	16	12	63	95	4:1	112	6:1	168	——	——
54	64	43	.109	16	12	70	102	4:1	132	6:1	198	——	——

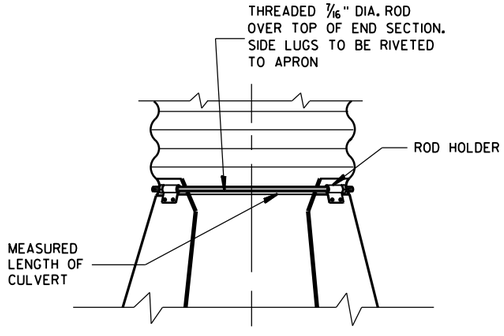
① * MINIMUM THICKNESS OF ALL 10:1 SLOPED SIDE DRAINS IS 0.109".
② ACTUAL SLOPE GREATER THAN 10:1.



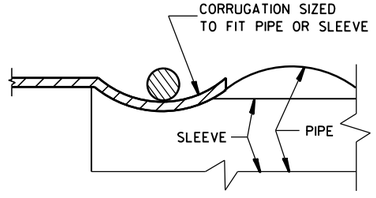
ISOMETRIC VIEW



STEEL ADAPTER SLEEVE FOR CONCRETE PIPE



TYPE 2 CONNECTION DETAIL



SECTION B-B

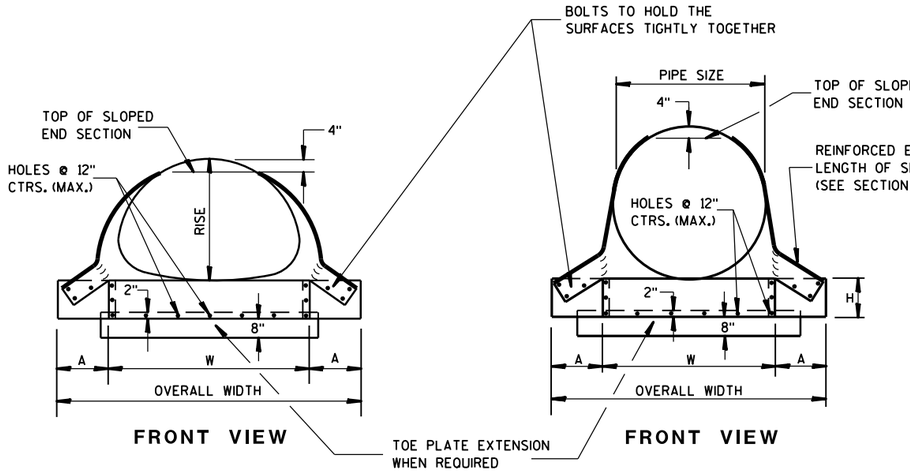
STEEL APRON ENDWALLS FOR CULVERT PIPE AND PIPE ARCH SLOPED SIDE DRAINS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9/14/2012 DATE
/S/ Jerry H. Zoda
ROADWAY STANDARDS ENGINEER
FHWA

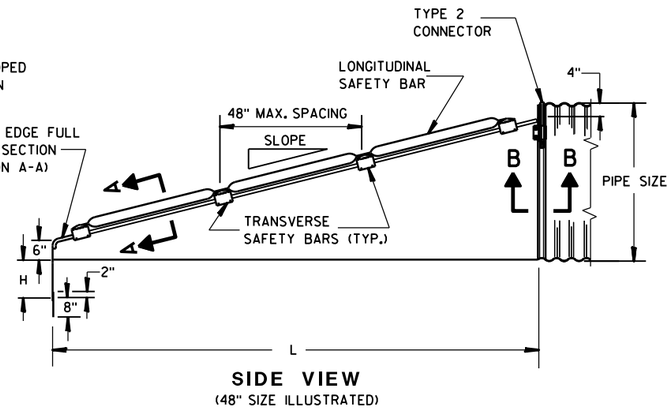
PRE_65

6
S.D.D. 8 F 7-5



FRONT VIEW

FRONT VIEW



SIDE VIEW
(48" SIZE ILLUSTRATED)

GENERAL NOTES

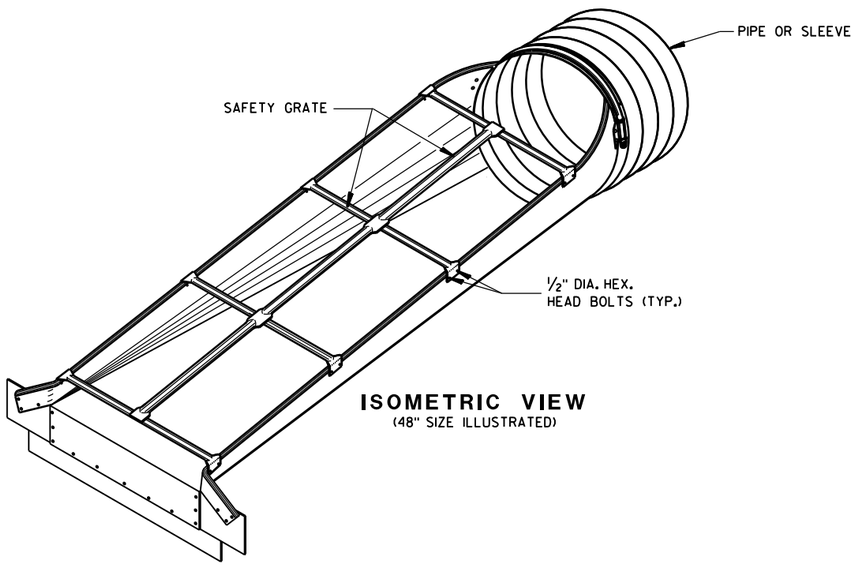
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

SAFETY GRATES SHALL BE FABRICATED FROM 3-INCH DIAMETER GALVANIZED PIPE MEETING THE REQUIREMENTS OF ASTM A-53, GRADE B, SCHEDULE 40 OR APPROVED EQUAL. THE LONGITUDINAL BAR SHALL BE WELDED TO THE TRANSVERSE BARS WHERE THE BARS CROSS. THE NUMBER OF TRANSVERSE BARS REQUIRED WILL VARY DEPENDING ON THE LENGTH OF THE END SECTION.

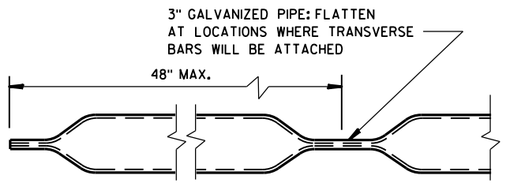
SLOPED STEEL ENDWALLS LOCATED AT THE ENDS OF CONCRETE CULVERT PIPE SHALL BE FURNISHED WITH STEEL ADAPTER SLEEVES.

STEEL APRON ENDWALLS FOR CULVERT PIPE CROSS DRAINS

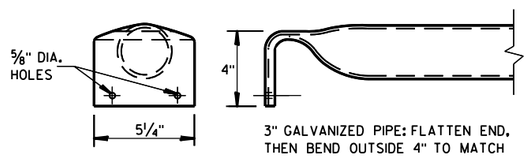
PIPE DIA. (IN.)	MIN. THICK.		DIMENSIONS (Inches)				L DIMENSIONS			
	IN.	GAGE	A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
36	.109	12	12	9	42	66	4:1	104	6:1	156
42	.109	12	16	12	48	80	4:1	128	6:1	192
48	.109	12	16	12	54	86	4:1	152	6:1	228
54	.109	12	16	12	60	92	4:1	176	6:1	264
60	.109	12	16	12	66	98	4:1	200	6:1	300



ISOMETRIC VIEW
(48" SIZE ILLUSTRATED)



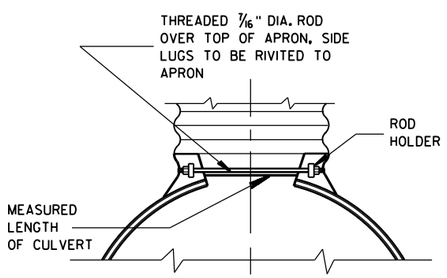
LONGITUDINAL SAFETY BAR



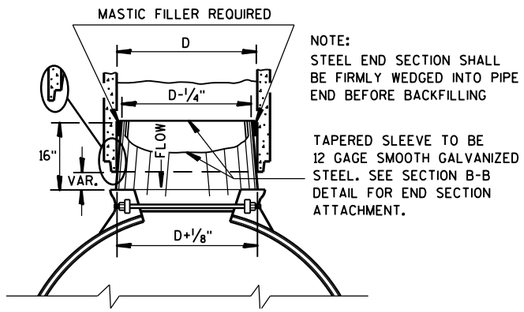
TRANSVERSE SAFETY BAR

STEEL APRON ENDWALLS FOR PIPE ARCH SLOPED CROSS DRAINS

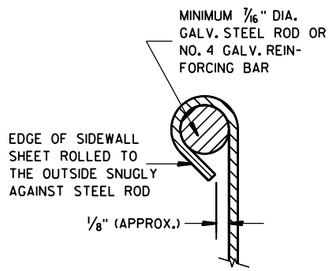
EQUIV. DIA. (IN.)	INCHES		MIN. THICK.		DIMENSIONS (Inches)				L DIMENSIONS			
	SPAN	RISE	IN.	GAGE	A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
30	35	24	.079	14	12	9	41	65	4:1	56	6:1	84
36	42	29	.109	12	12	9	48	72	4:1	76	6:1	114
42	49	33	.109	12	16	12	55	87	4:1	92	6:1	138
48	57	38	.109	12	16	12	63	95	4:1	112	6:1	168
54	64	43	.109	12	16	12	70	102	4:1	132	6:1	198
60	71	47	.109	12	16	12	77	109	4:1	148	6:1	222



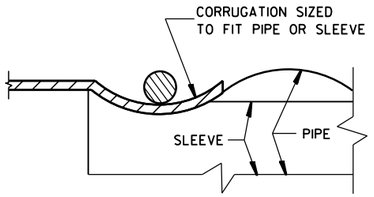
TYPE 2 CONNECTOR DETAIL



STEEL ADAPTER SLEEVE FOR CONCRETE PIPE



SECTION A-A



SECTION B-B

STEEL APRON ENDWALLS FOR CULVERT PIPE AND PIPE ARCH SLOPED CROSS DRAINS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

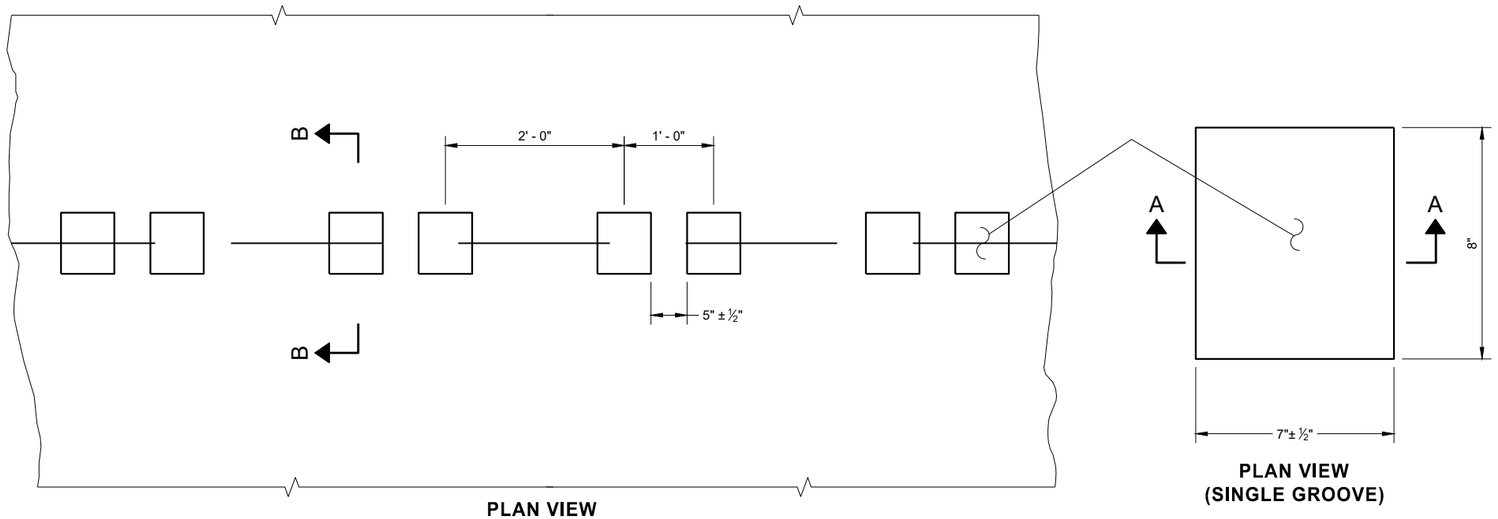
APPROVED
6/5/2012 DATE
/S/ Jerry H. Zogg
ROADWAY STANDA ENGI
PRE_66
FHWA

6

S.D.D. 8 F 8-2

6

S.D.D. 8 F 8-2



PLAN VIEW
SHOULDER WITH GROOVES

PLAN VIEW
(SINGLE GROOVE)

PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP

GENERAL NOTES

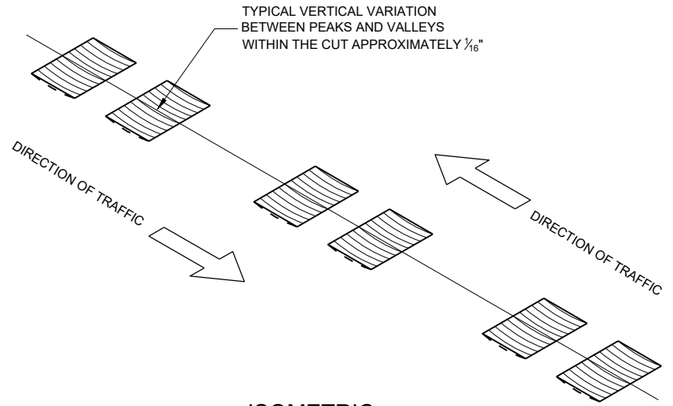
DETAILS OF CONSTRUCTION NO SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

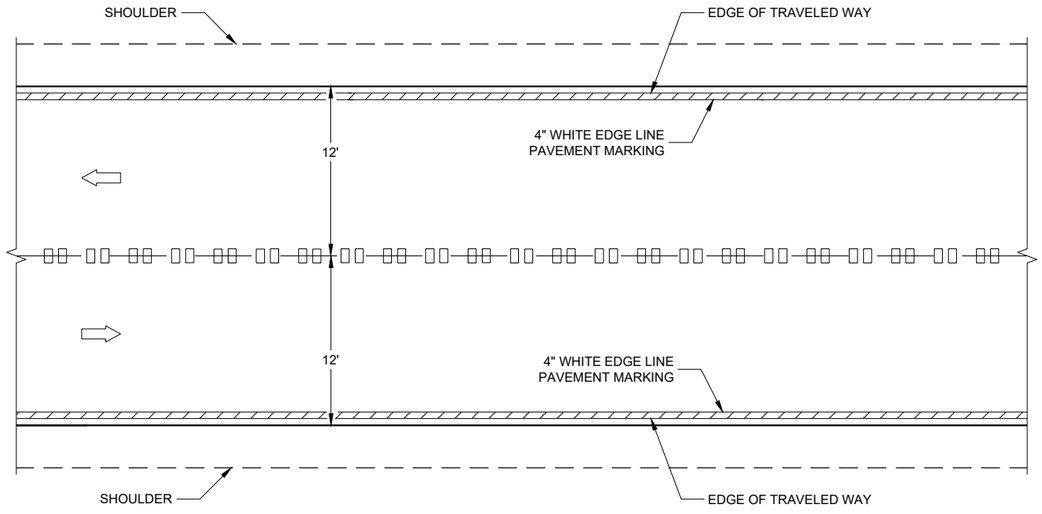
INSTALL PAVEMENT MARKING AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

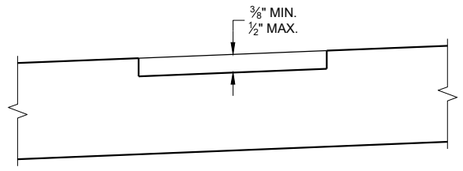
(1) CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



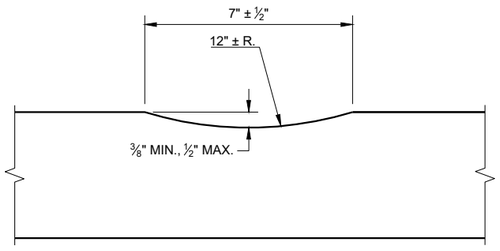
ISOMETRIC



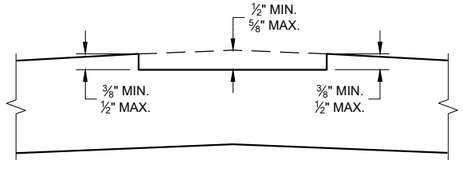
CENTERLINE GROOVES ON TWO-WAY ROADWAYS



SECTION B - B
SUPERELEVATED ROADWAY



SECTION A - A



SECTION B - B
CROWNED ROADWAY

2-LANE RURAL
CENTER LINE RUMBLE STRIP, MILLING

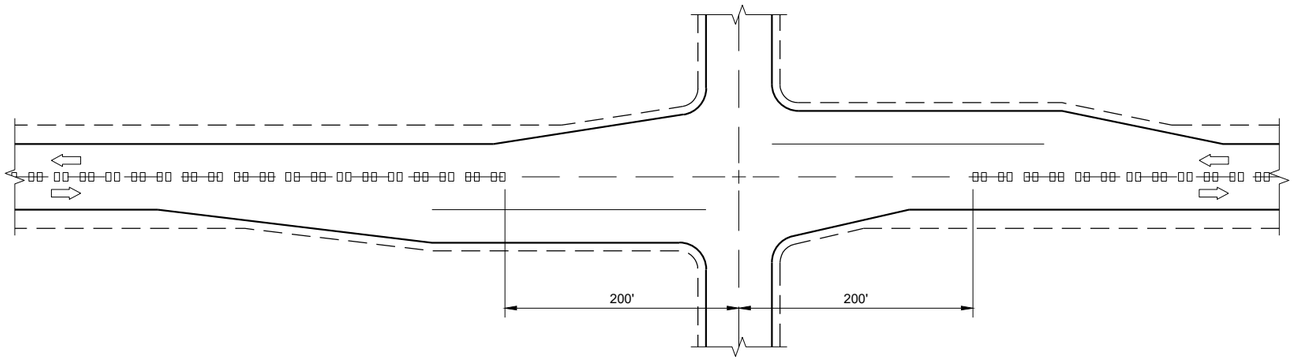
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO PRE_67

6

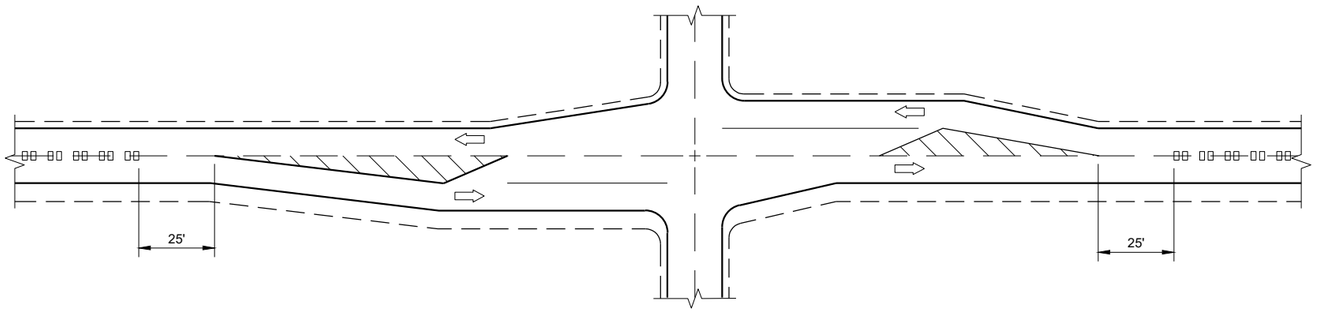
SDD 13A11 - 03a

6

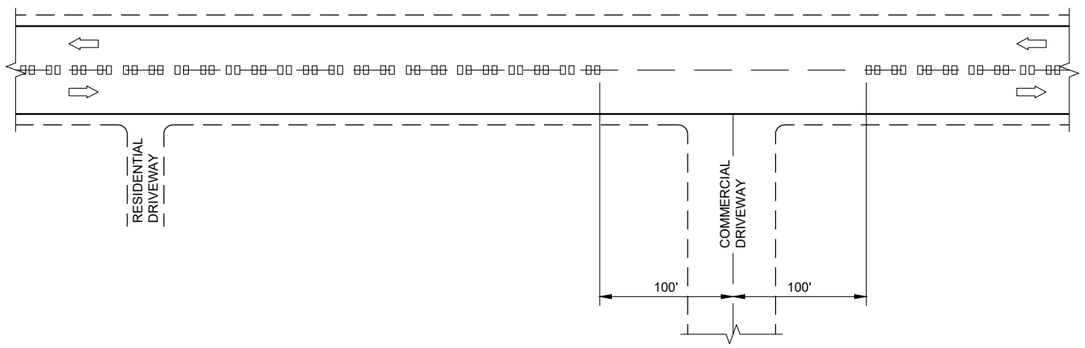
SDD 13A11 - 03a



CENTERLINE GROOVES AT INTERSECTIONS



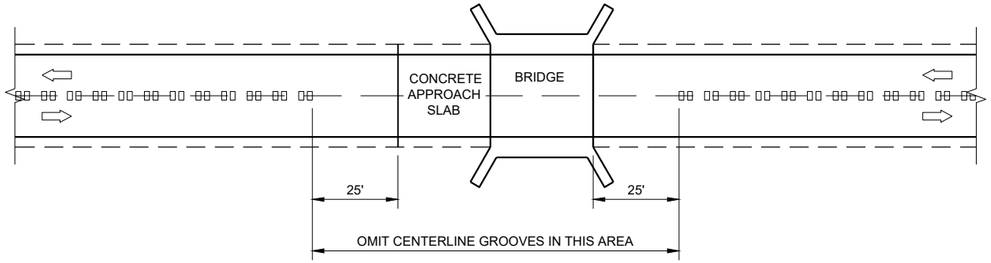
CENTERLINE GROOVES AT INTERSECTIONS (WITH LEFT TURN LANES)



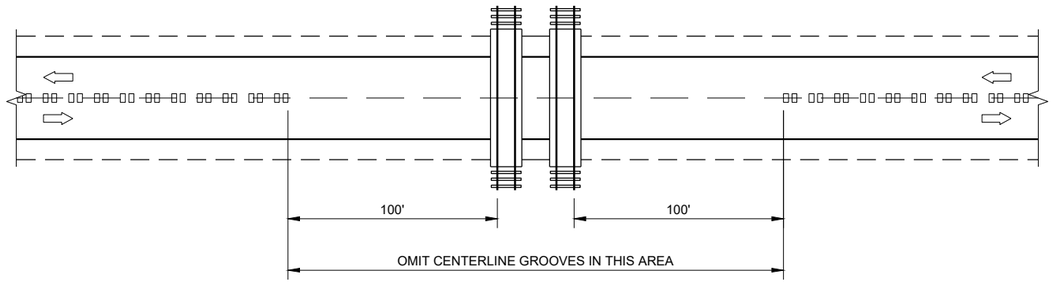
CENTERLINE GROOVES AT DRIVEWAYS (1)

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

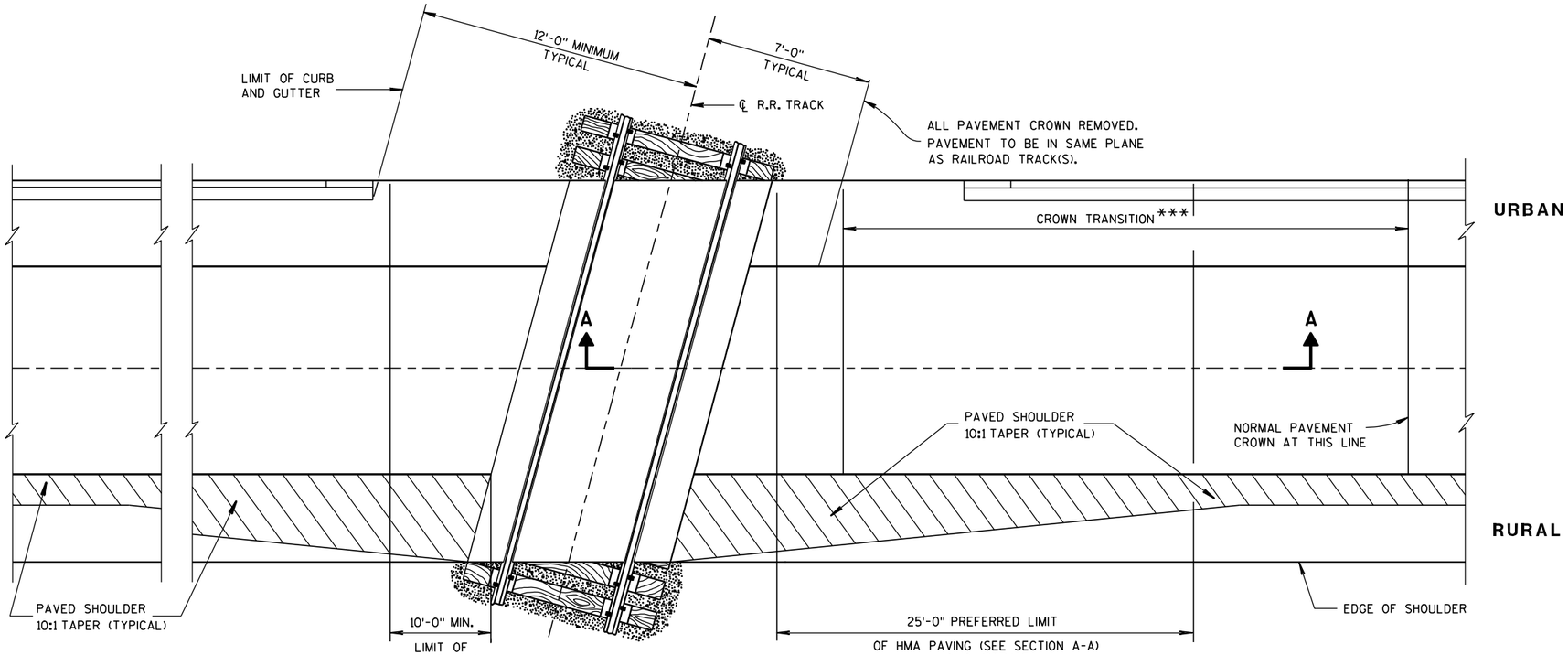
/S/ Rodney Tavlor
ROADWAY STANDARDS ENGINEE

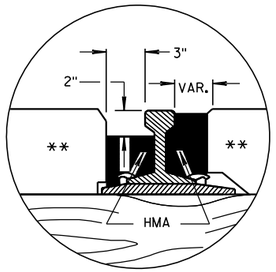
PRE_68

FHWA

6

SDD 13A11 - 03b





DETAIL B

HMA FLANGEWAY AND FIELD FILLERS

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.

TIMBER, CONCRETE OR RUBBER CROSSING SURFACE MATERIAL, RAILS, TIES, BALLAST, GEOTEXTILE FABRIC AND CROSSING DRAINAGE SYSTEM BY OTHERS UNLESS OTHERWISE PROVIDED.

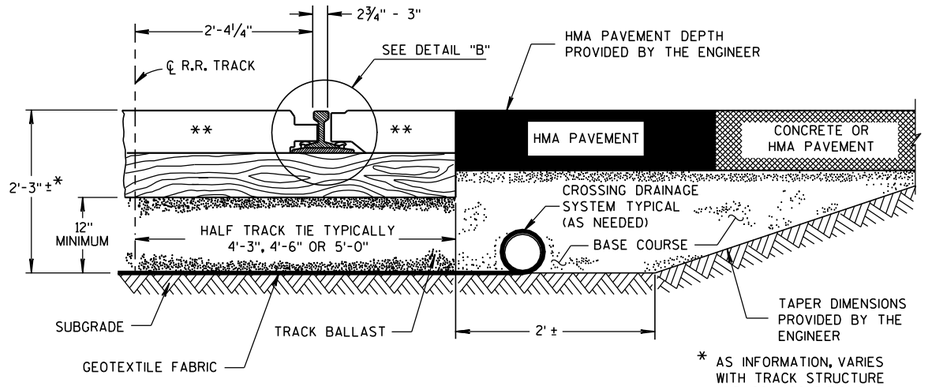
HMA PAVEMENT APPROACHES AND HMA PAVEMET CROSSING SURFACES TO BE PLACED BY CONTRACTOR UNLESS OTHERWISE PROVIDED.

HMA FLANGEWAY AND FIELD FILLERS TO BE PLACED AND THOROUGHLY HAND COMPACTED BY THE CONTRACTOR WHEN NOT PROVIDED BY OTHERS. SEE DETAIL B. HMA FILLERS NOT REQUIRED WHEN RUBBER FILLERS ARE PROVIDED.

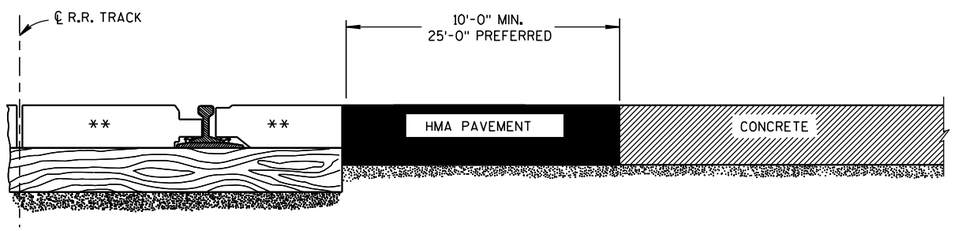
HMA PAVEMENT SHALL BE ROLLED PARALLEL TO THE TRACK.

** CROSSING SURFACE MAY BE TIMBER, RUBBER, CONCRETE, HMA PAVEMENT OR A COMBINATION OF SUCH MATERIALS.

*** CROWN TRANSITION LENGTH SHOWN ELSEWHERE IN THE PLAN.

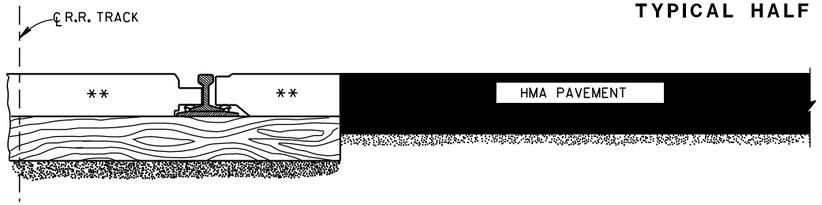


TYPICAL HALF SECTION



SECTION A-A

CONCRETE PAVEMENT APPROACH



SECTION A-A

HMA PAVEMENT APPROACH

EXAMPLES OF PAVEMENT APPROACHES

PAVEMENT DETAILS FOR RAILROAD APPROACH

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8-28-09 DATE
/S/ Ronald E. Adams
CHIEF, RAILROADS & PUBLIC TRANSPORTATION
FHWA

PRE_69

6

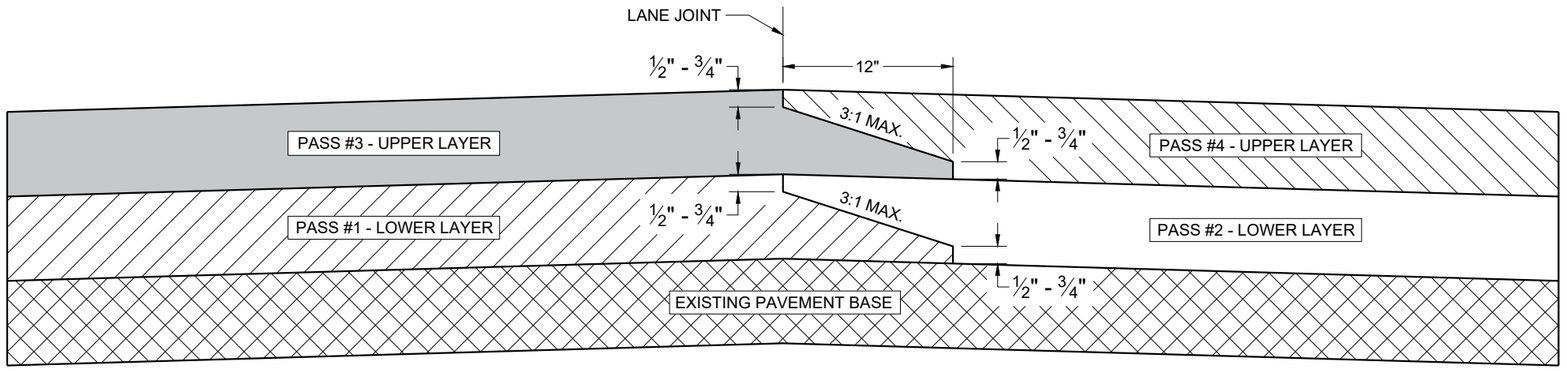
S.D.D. 13 B 1-10

6

S.D.D. 13 B 1-10

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

FHWA

PRE_70

GENERAL NOTES

(1) W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. APPROVED PLASTIC BLOCKOUT DESIGNS MAY VARY FROM THIS TYPICAL DETAIL WHEN USED IN CONJUNCTION WITH STEEL POSTS.

DO NOT MIX STEEL POSTS AND WOOD POSTS IN A SINGLE INSTALLATION.

(2) USE STRUCTURAL STEEL POSTS CONFORMING TO ASTM A 36. GALVANIZED POSTS ACCORDING TO AASHTO M 111. EITHER SET THE POSTS IN DRILLED HOLES OR DRIVE TO GRADE. REMOVE MUSHROOMING CAUSED BY DRIVING AND REPAIR DAMAGED SPELTER COATING ON GALVANIZED POSTS.

(3) INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

(4) USE EITHER WOOD OR APPROVED PLASTIC BLOCKOUTS ON WOOD POSTS.

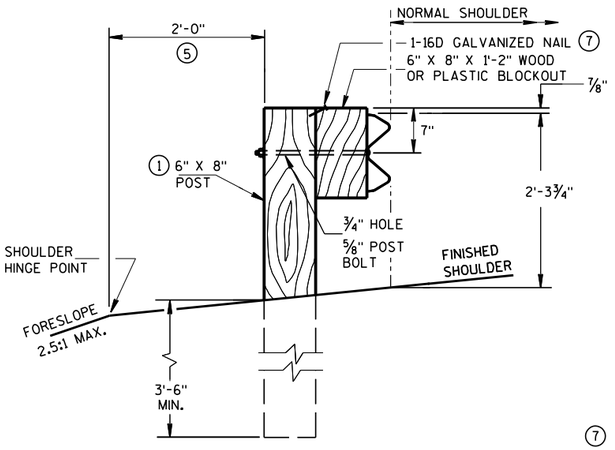
(5) IF THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING, W BEAM (LHW).

(6) IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE ENGINEER MAY APPROVE USING A 12 INCH DIAMETER POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE APPROXIMATELY 2½ INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN YHE HOLE. BACKFILL WITH MATERIAL EXCAVATED FROM THE HOLE AND COMPACT ADEQUATEY.

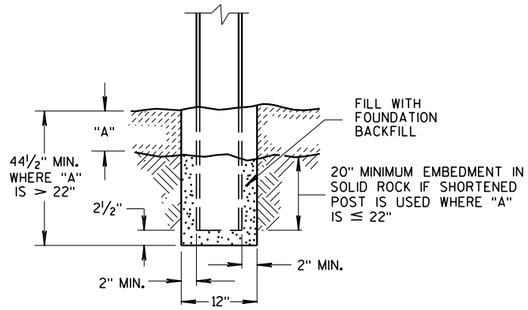
(7) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

INSTALL BEAM GUARD SECTIONS AND ALL NECESSARY HARDWARE ACCORDING TO THE APPLICABLE PLAN AND CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS.

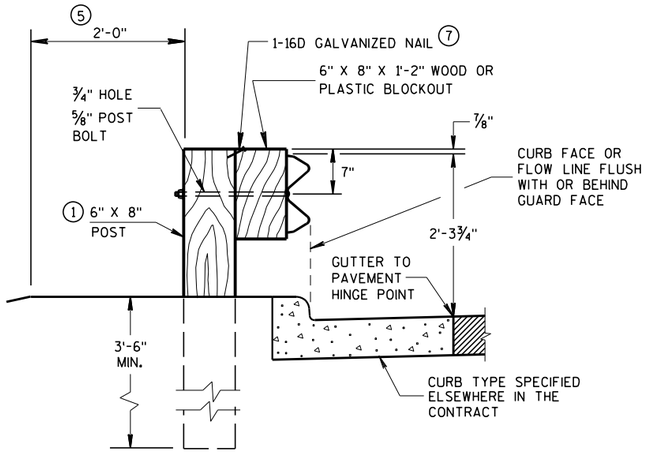
ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



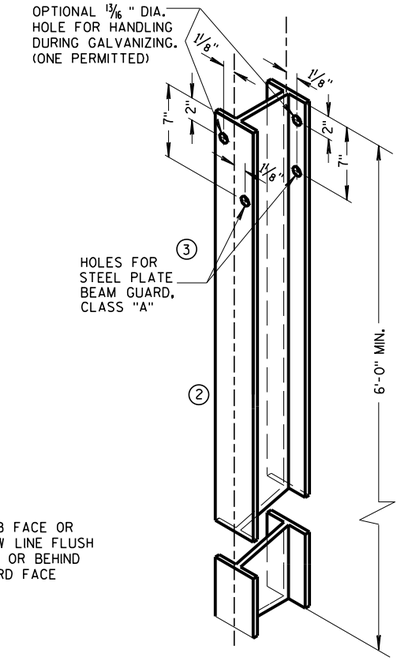
END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



END VIEW
SETTING STEEL OR WOOD POST IN ROCK (6)

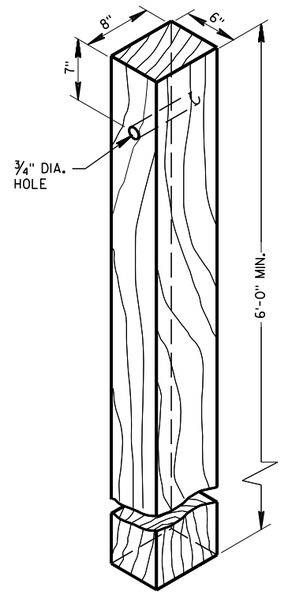


END VIEW
LOCATED ALONG A CURBED ROADWAY

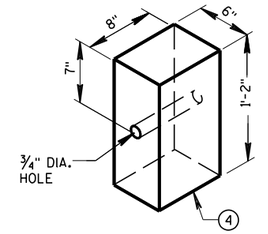


STEEL POST &
HOLE PUNCHING DETAIL
(W6 X 9) (1)

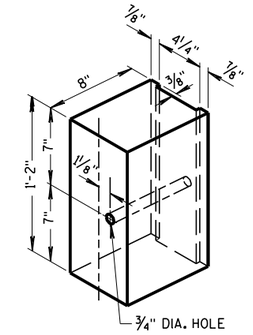
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED



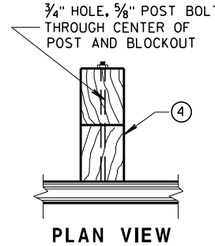
WOOD POST
(6"X8") NOMINAL



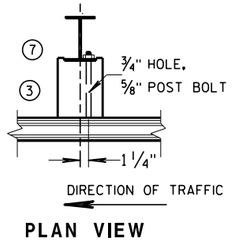
WOOD OR PLASTIC
BLOCKOUT FOR
WOOD POSTS



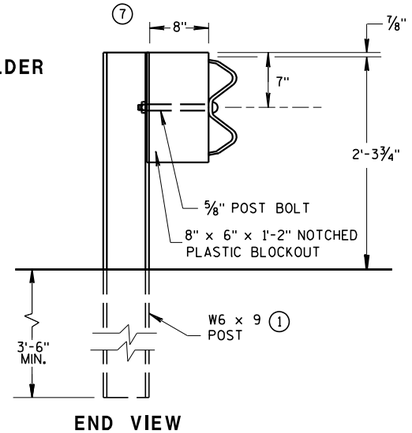
TYPICAL NOTCHED
PLASTIC BLOCKOUT
FOR STEEL POSTS (1)



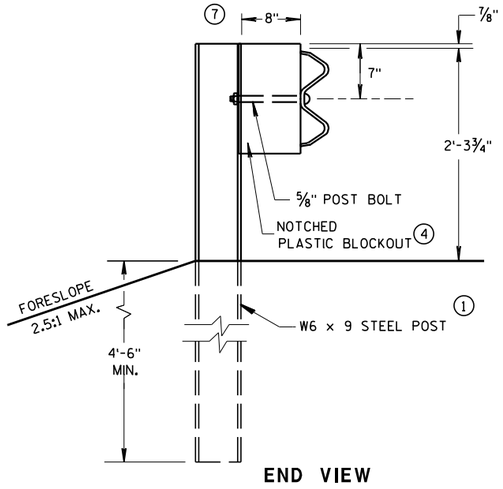
PLAN VIEW
WOOD POST, BLOCKOUT & BEAM



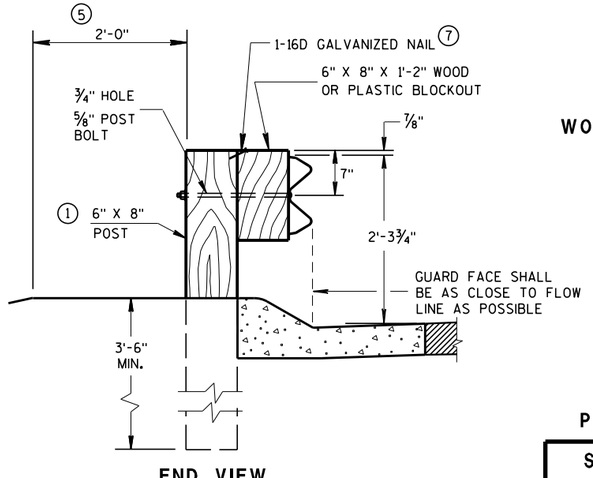
PLAN VIEW
STEEL POST, NOTCHED
PLASTIC BLOCKOUT & BEAM



END VIEW
STEEL POST & NOTCHED
PLASTIC BLOCKOUT ALTERNATIVE
STANDARD INSTALLATION



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



END VIEW
LOCATED ALONG A
MOUNTABLE CURBED ROADWAY

TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD

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

STATE OF WISC
DEPARTMENT OF TRANSPORTATION

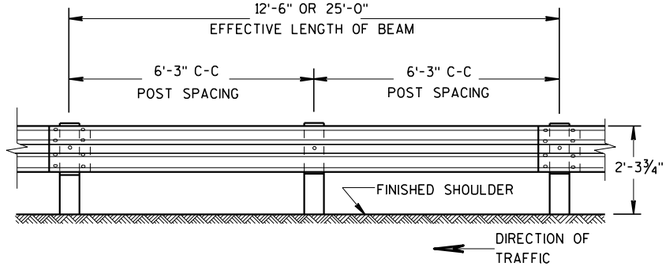
PRE_71

6

S.D.D. 14 B 15-11a

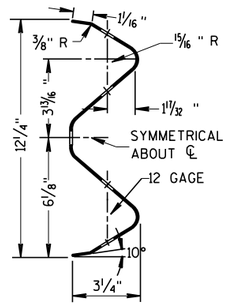
6

S.D.D. 14 B 15-11a

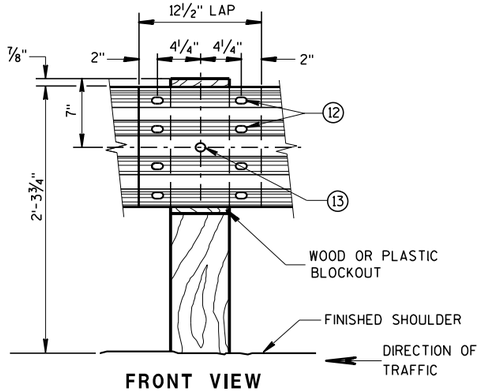


FRONT VIEW

POST SPACING STANDARD INSTALLATION



SECTION THRU W BEAM



FRONT VIEW

BEAM SPLICE AT WOOD POST AND POST MOUNTING DETAIL

GENERAL NOTES

FURNISH GUARDRAIL DEFLECTORS FROM APPROVED PRODUCTS LIST.

(9) DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINA. START REFLECTORS AT POST #9 AND SPACE EVENLY EVERY 100 FEET (MAX.) TO THE END OF GUARDRAIL RUN, USING A MINIMUM OF 3 REFLECTORS.

(12) 8 -5/8" ϕ X 2" BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.

(13) 5/8" DIA. BUTTON HEAD BOLT AND RECESS NUT WITH 5/8" DIA. F844 FLAT WASHER UNDER NUT.

FRONT VIEW

POST SPACING FOR LONGER POST AT HALF POST SPACING W BEAM (LHW)

FRONT VIEW

BEAM SPLICE AT STEEL POST

TYPICAL SPLICING DETAILS OF STEEL PLATE BEAM GUARD

NESTED W BEAM (NW)

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

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

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

4"x 12" GUARDRAIL REFLECTOR

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

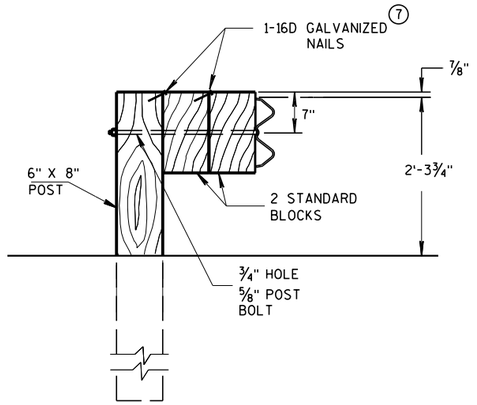
STATE OF W PRE_72
DEPARTMENT OF TRANSPORTATION

6

S.D.D. 14 B 15-11b

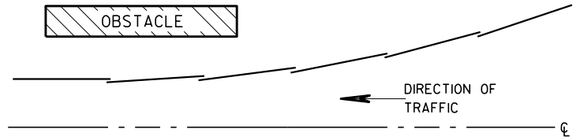
6

S.D.D. 14 B 15-11b

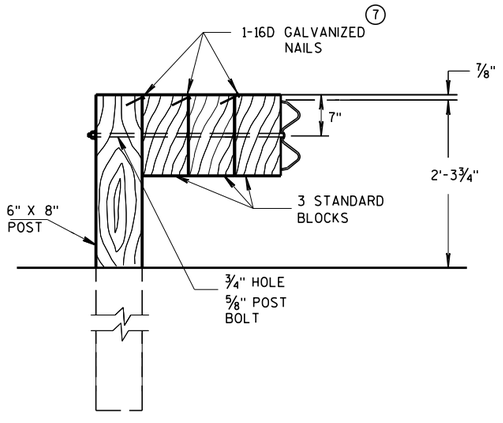


DETAIL FOR DOUBLE BLOCKS

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

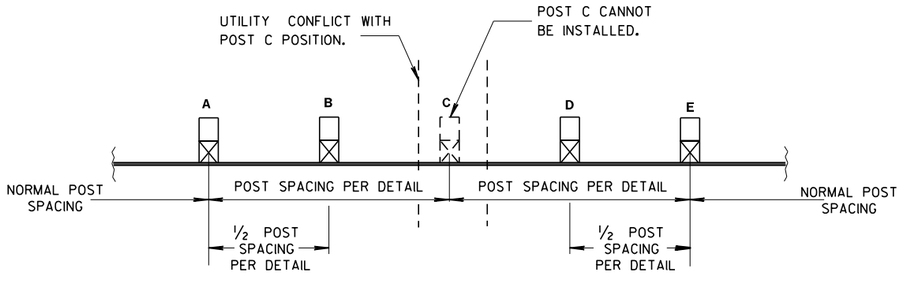


PLAN VIEW
BEAM LAPPING DETAIL



DETAIL FOR TRIPLE BLOCKS

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



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION

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

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

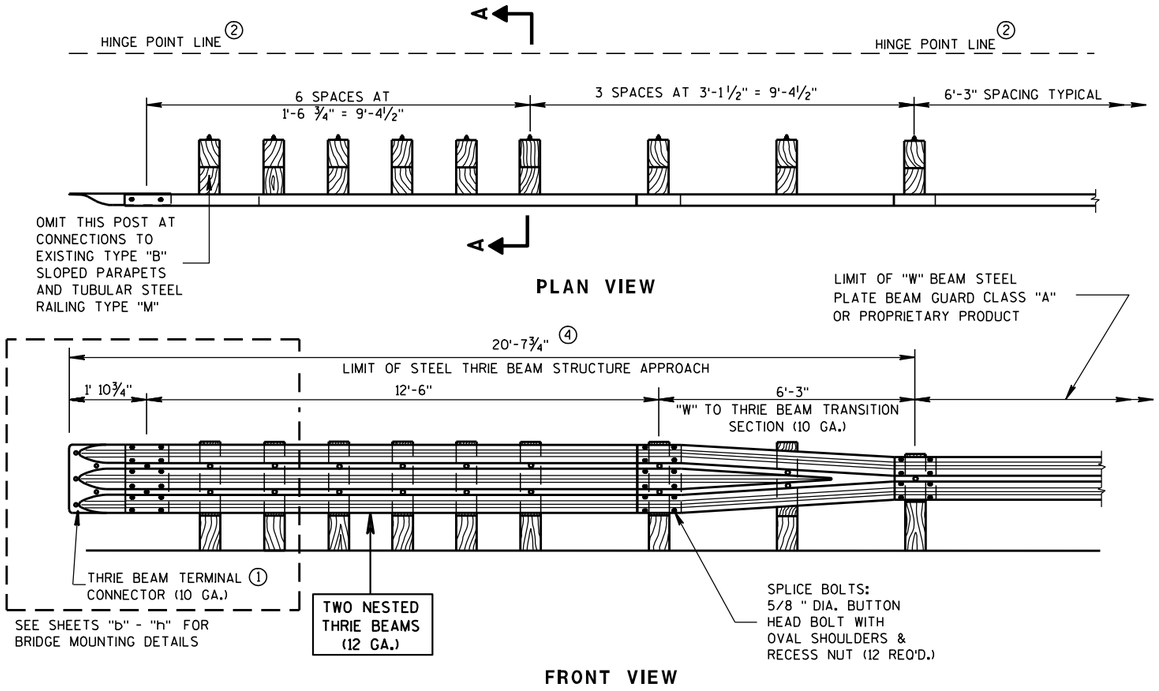
APPROVED
June 2017
DATE

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR

FHWA

PRE_73

6
S.D.D. 14 B 15-11c



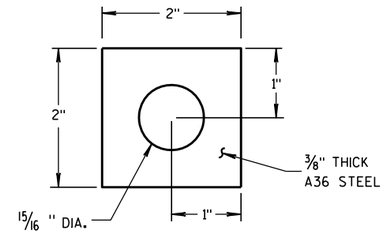


PLATE WASHER DETAIL

GENERAL NOTES

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

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

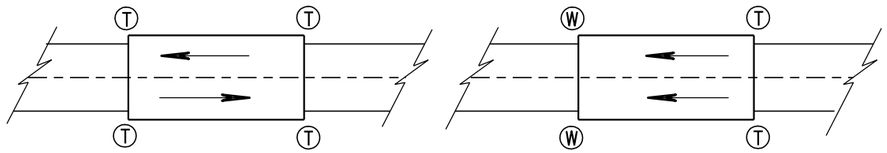
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2" , AND 12" DIAMETER AROUND POST. SEE 14B15 FOR MORE DETAILS.

① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

② MINIMUM EMBEDMENT SHALL BE 4'-0". WHERE EXISTING CONDITIONS DO NOT PERMIT THE APPROPRIATE EARTHWORK SHOWN ON THE PLAN TYPICAL SECTIONS OR DETAILS, THE ENGINEER MAY ALLOW THE REDUCTION OR ELIMINATION OF THE 2 FOOT DISTANCE TO THE HINGE POINT. OTHERWISE BUILD AS THE PLAN SHOWS OR AS THE ENGINEER DIRECTS. IF THE 2 FOOT DISTANCE TO THE HINGE POINT IS REDUCED OR ELIMINATED, INCREASE THE POST EMBEDMENT DEPTH TO 4'-6" OR MORE.

③ POST BOLTS ARE 5/8" DIAMETER ASTM A307 BUTTON HEAD BOLT. A POST BOLT REQUIRES A 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX AND A 5/8" DIAMETER F844 FLAT WASHER. LENGTH OF POST BOLT MAY VARY.

④ ALL WOOD POSTS MUST BE 6" X 8" AND AT LEAST 7'-0" LONG.



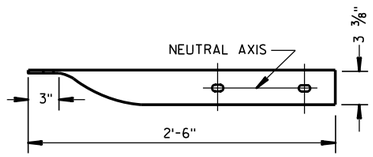
TWO WAY TRAFFIC

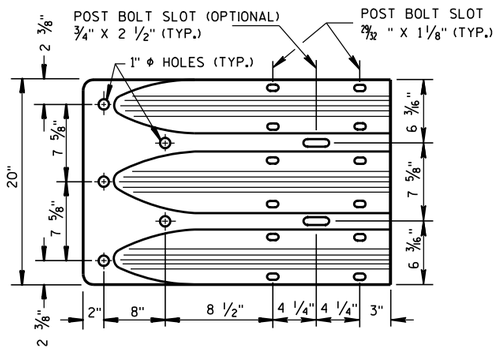
ONE WAY TRAFFIC

T THRIE BEAM CONNECTION

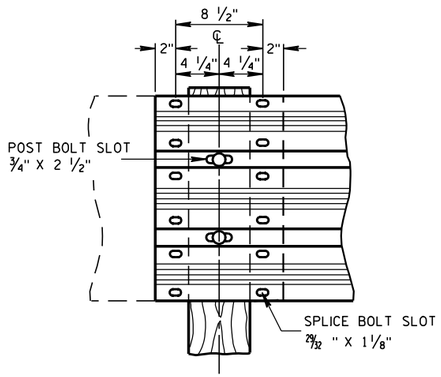
W W-BEAM CONNECTION WHEN REQUIRED

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

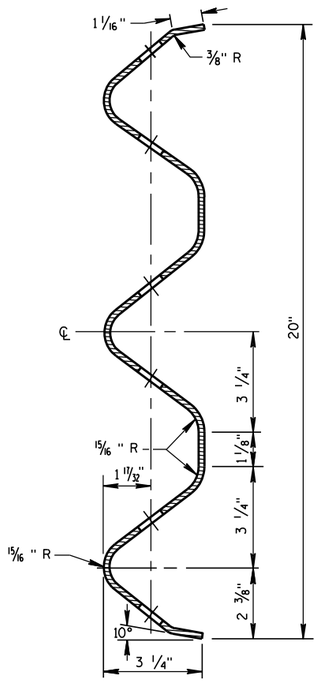




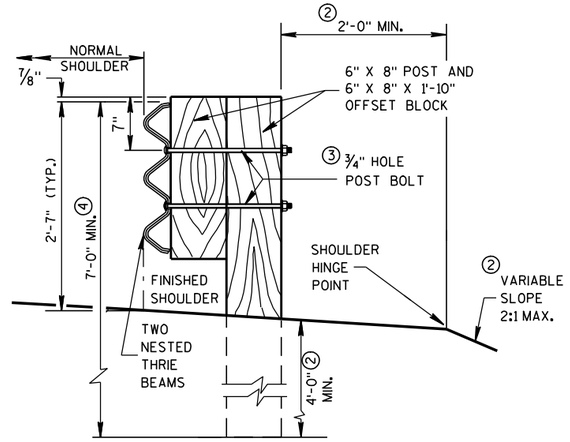
THRIE BEAM TERMINAL CONNECTOR



THRIE BEAM SPLICE



SECTION THRU THRIE BEAM RAIL ELEMENT



SECTION A-A

STEEL THRIE BEAM STRUCTURE APPROACH

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012 DATE

/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER

FHWA

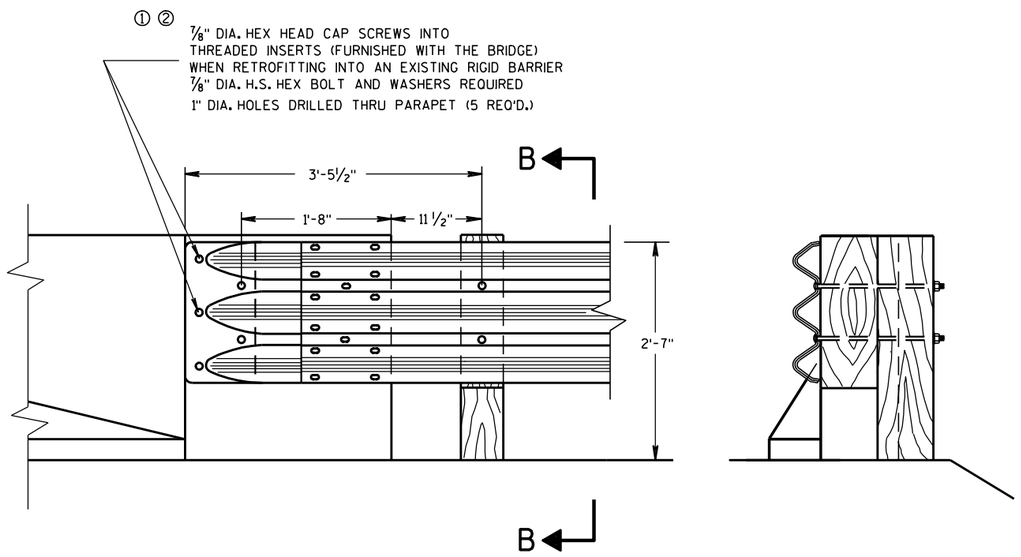
PRE_74

6

S.D.D. 14 B 20-11a

6

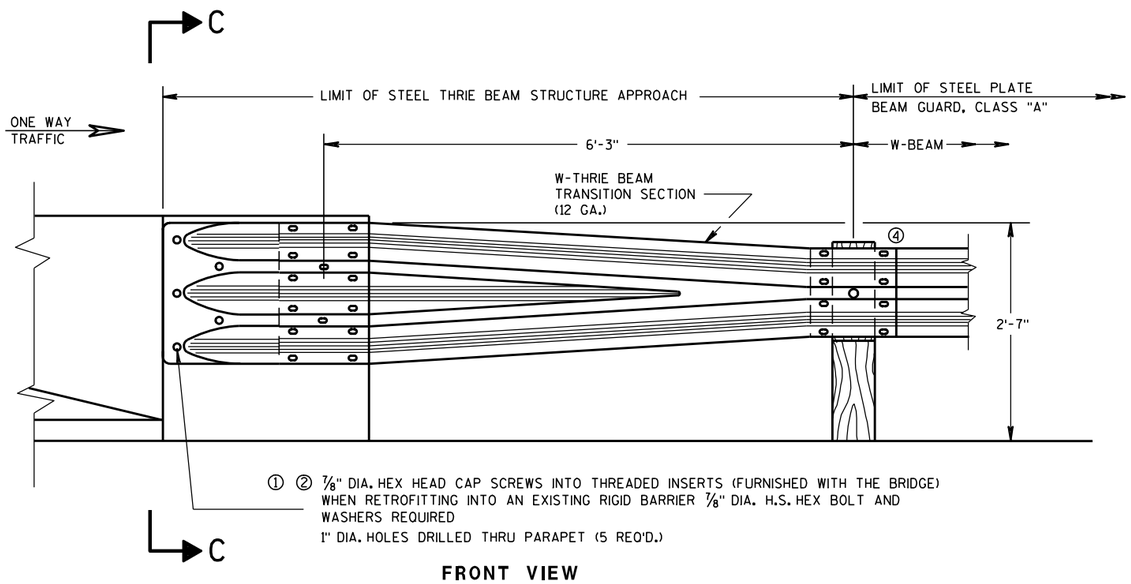
S.D.D. 14 B 20-11a



FRONT VIEW

SECTION B-B

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS



① ② ⅞" DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER ⅞" DIA. H.S. HEX BOLT AND WASHERS REQUIRED
1" DIA. HOLES DRILLED THRU PARAPET (5 REQ'D.)

FRONT VIEW

W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

GENERAL NOTES

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

BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A325, A449 AND GALVANIZED PER STANDARD SPECIFICATIONS 614.

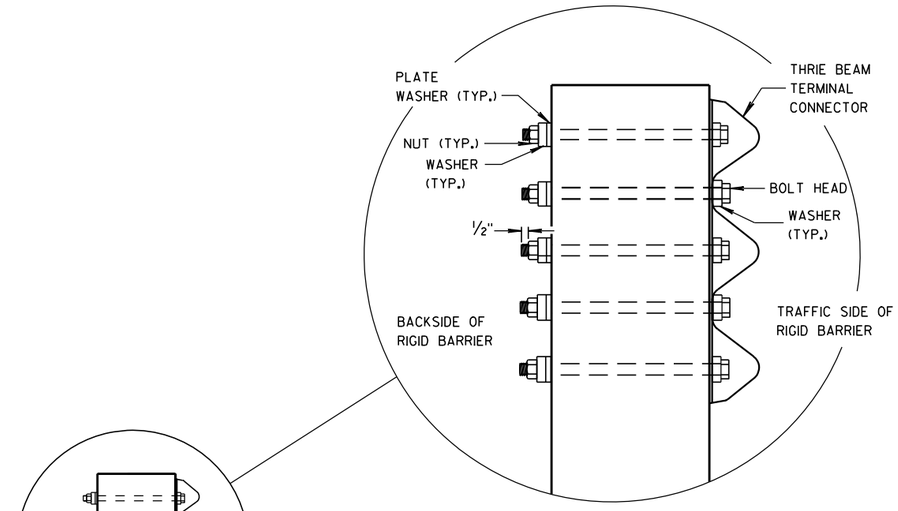
① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

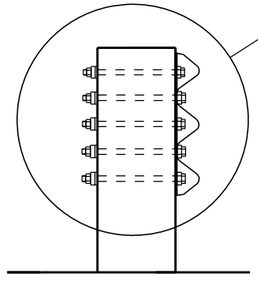
② BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM TERMINAL CONNECTOR. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X ⅝" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

③ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 ½".

④ W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POST WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.





SECTION C-C

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SQUARE END PARAPETS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012
DATE

/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER

FHWA

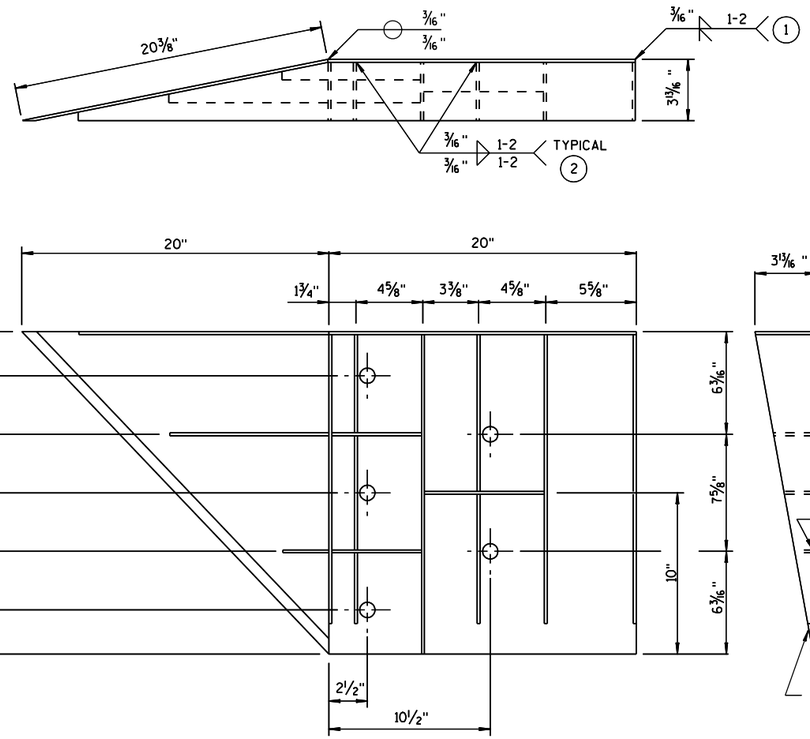
PRE_75

6

S.D.D. 14 B 20-11b

6

S.D.D. 14 B 20-11b



WELDING INSTRUCTION

(VIEWED FROM BACK SIDE OF PLATE)

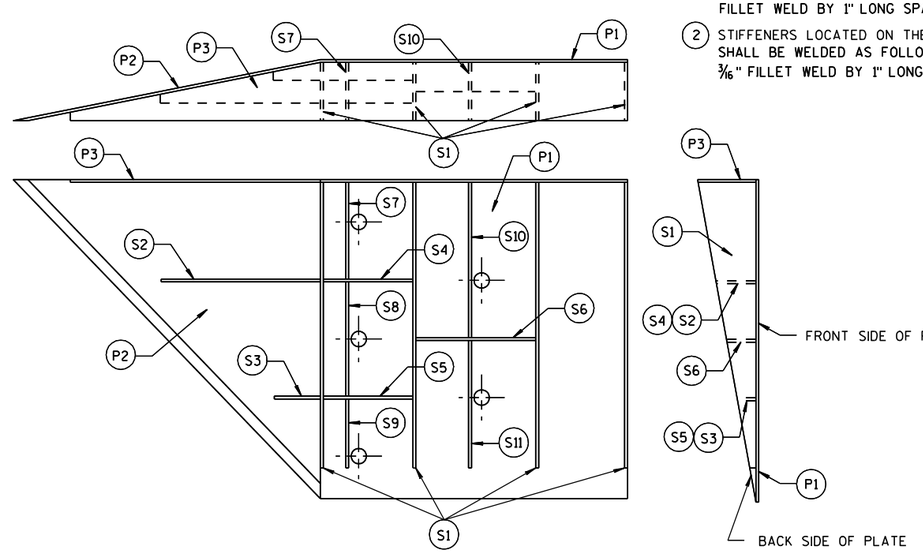


PLATE AND STIFFENER IDENTIFICATION

(VIEWED FROM BACK SIDE OF PLATE)

GENERAL NOTES

COVER PLATE PANELS ARE 3/16" THICK.

ALL STIFFENERS ARE 1/4" THICK.

CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.

FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.

ALL HOLE DIAMETERS SHALL BE 1".

FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.

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

(2) STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
3/16" FILLET WELD BY 1" LONG SPACED AT 2".

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)

PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 9/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 5/16"	3/16"
S1	4		18 7/16" x 3 5/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 7/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 1/8" x 1/2"	1/4"
S4	1		6 1/8" x 2 7/16"	1/4"
S5	1		6 1/8" x 1 1/16"	1/4"
S6	1		7 3/4" x 1 3/4"	1/4"
S7	1		2 9/16" x 6" x 3 5/8" x 5 7/8"	1/4"
S8	1		1 5/32" x 7 1/2" x 2 1/2" x 7 3/8"	1/4"
S9	1		6 1/16" x 6 3/16" x 1 3/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 5/8" x 9 11/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 13/16"	1/4"

STEEL THRIE BEAM STRUCTURE APPROACH

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTOR PLATE DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

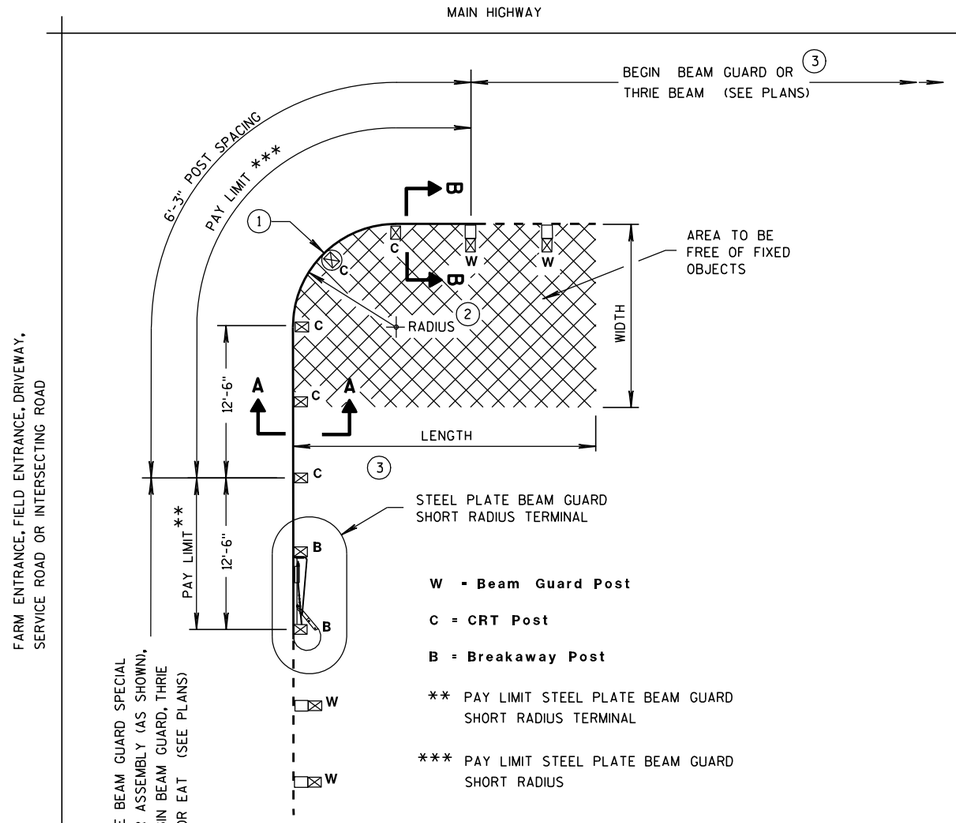
PRE_76

6

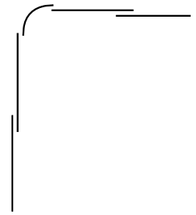
S.D.D. 14 B 20-11g

6

S.D.D. 14 B 20-11g



TYPICAL LAYOUT
(8' RADIUS SHOWN)



TYPICAL LAP SPLICES
(8' RADIUS SHOWN)

GENERAL NOTES

ALL ANGLES, CHANNELS, AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36 AND THE STRUCTURAL TUBING SHALL CONFORM TO ASTM A 500. WELDING SHALL MEET THE CURRENT REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE ANSI/AWS D1.1. ALL STRUCTURAL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A 123. PUNCHING, DRILLING, CUTTING, OR WELDING WILL NOT BE PERMITTED AFTER GALVANIZING. FURNISH AND INSTALL HARDWARE PER STANDARD SPECIFICATION 614.2. UNLESS NOTED OTHERWISE.

SHOP BEND CURVED RAIL SECTIONS.

SEE STANDARD DETAIL DRAWING 14 B 15 FOR OTHER DETAIL.

(1) ON THE 8 FOOT RADIUS INSTALLATION, DO NOT INSTALL BUTTON HEAD BOLT AT CENTER CRT POST.

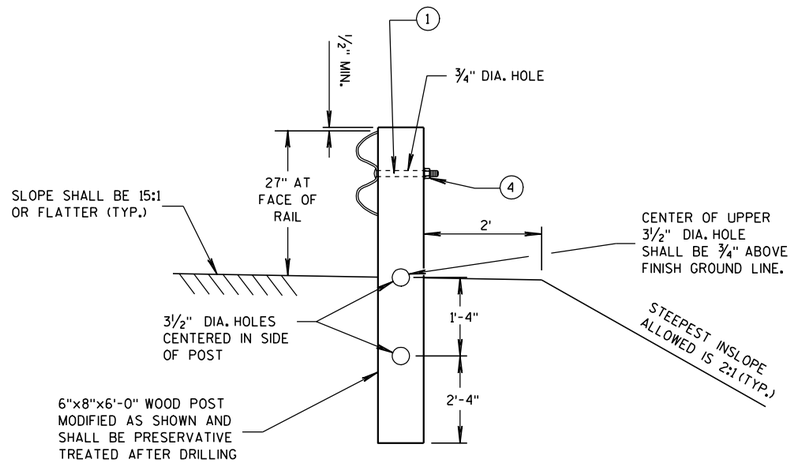
(2) RADIUS FROM 8' - 36'. SEE PLAN.

(3) HEIGHT TRANSITION MAY BE REQUIRED. SEE PLAN OR PROJECT ENGINEER.

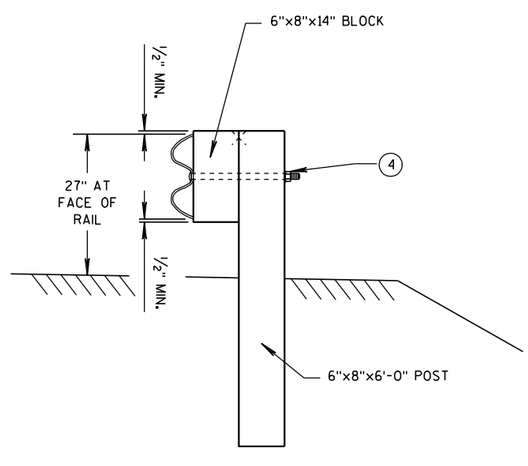
(4) 5/8" ø X 1'-6" BUTTON HEAD BOLT AND RECESS NUT WITH ROUND WASHER UNDER NUT.

RADIUS	NUMBER OF CRT POSTS	* NUMBER AND LENGTH OF CURVED RAILS	REQUIRED AREA FREE OF FIXED OBJECTS (LENGTH x WIDTH)
8'	5	1 at 12.5'	25' x 15'
16'	7	1 at 25'	30' x 15'
24'	9	1 at 25' and 1 at 12.5'	40' x 20'
32'	11	2 at 25'	50' x 20'

* THE NUMBER OF RAILS IS BASED ON A 90° INTERSECTION. SEE PLAN FOR NON 90° INSTALLATIONS.



SECTION A-A
(CRT POST)



SECTION B-B
(BEAM GUARD POST)

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

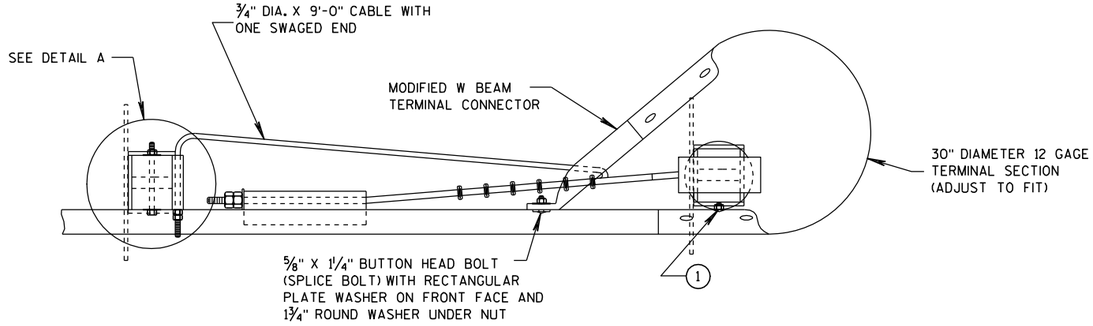
PRE_77

6

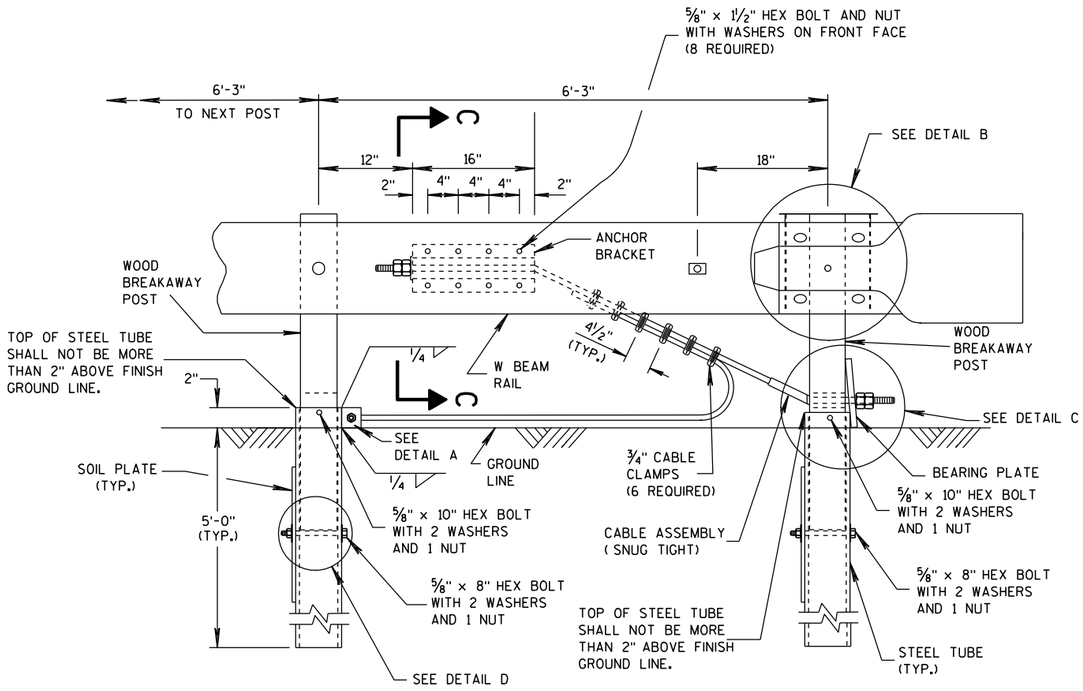
S.D.D. 14 B 27-1a

6

S.D.D. 14 B 27-1a



PLAN VIEW



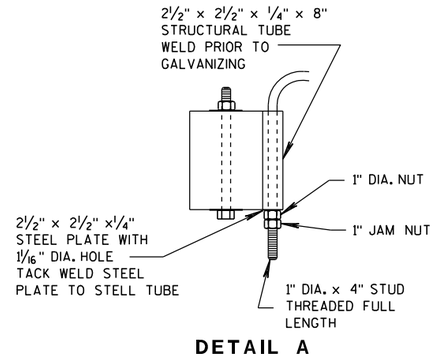
ELEVATION VIEW

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

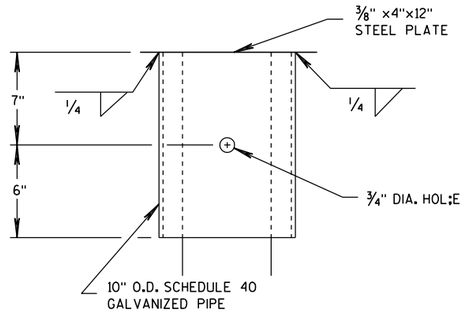
GENERAL NOTES

(1) ATTACH W BEAM RAIL TO THE STEEL PIPE WITH A ⅝" X 2" BUTTON HEAD BOLT WITH NO WASHER. CONNECTION TO THE POST IS NOT REQUIRED.

INSTALL GALVANIZED ¾" (6X19) PREFORMED WIRE OR INDEPENDENT WIRE ROPE CORE CONFORMING TO AASHTO M 30. MANUFACTURE WIRE ROPE OUT OF IMPROVED PLOW STEEL WITH A MINIMUM BREAKING STRENGTH OF 42,800 PSI.



DETAIL A



DETAIL B

(BEAM GUARD AND TERMINAL SECTION NOT SHOWN)

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

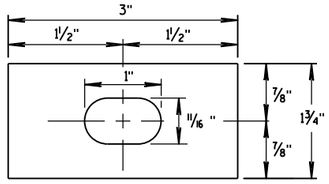
PRE_78

6

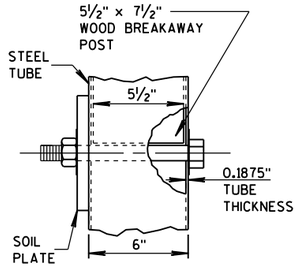
S.D.D. 14 B 27-1b

6

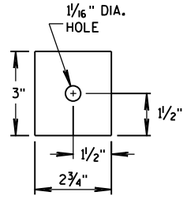
S.D.D. 14 B 27-1b



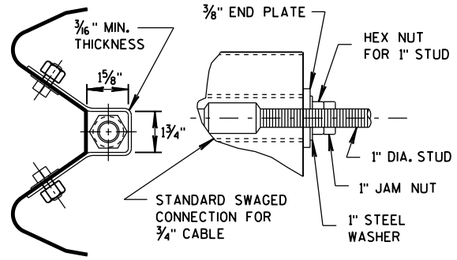
RECTANGULAR PLATE WASHER



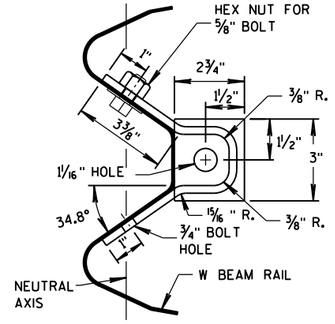
DETAIL D



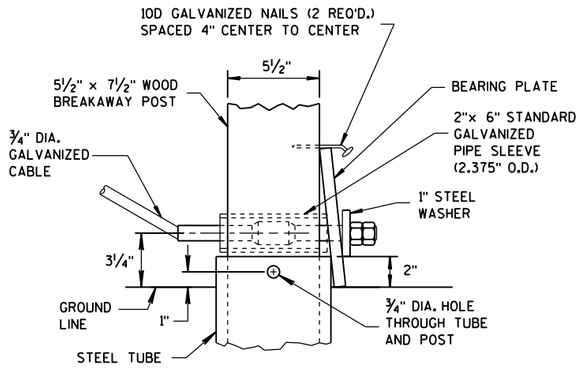
END PLATE



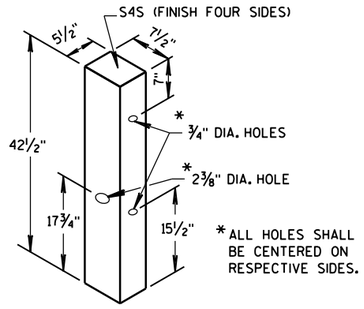
SECTION C-C
(END PLATE REMOVED)



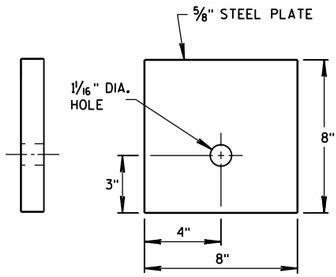
ANCHOR BRACKET



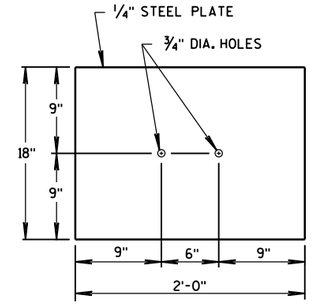
DETAIL C



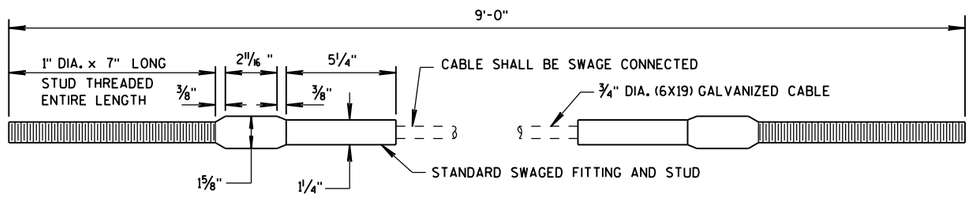
WOOD BREAKAWAY POST



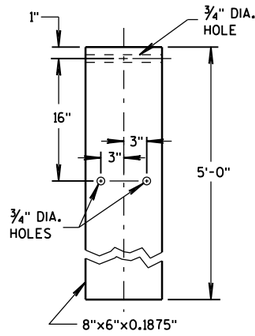
BEARING PLATE



SOIL PLATE



CABLE ASSEMBLY



STEEL TUBE

STEEL PLATE BEAM GUARD
SHORT RADIUS TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
12/18/08 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA

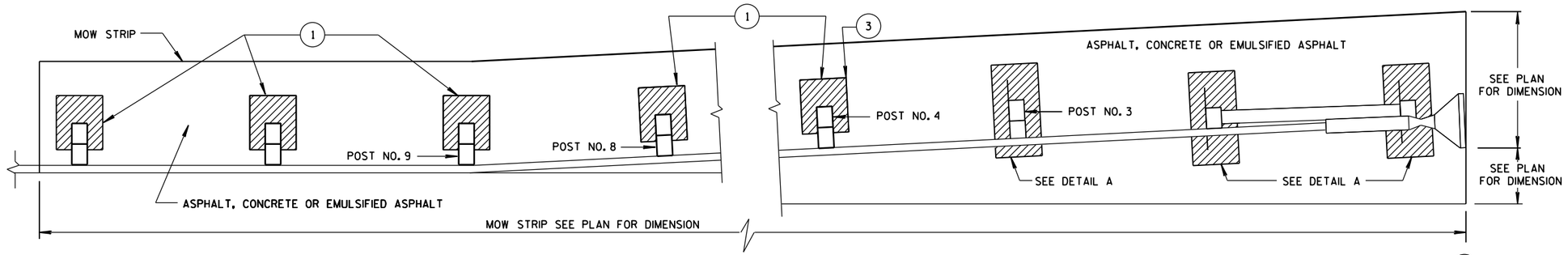
PRE_79

6

S.D.D. 14 B 27-1c

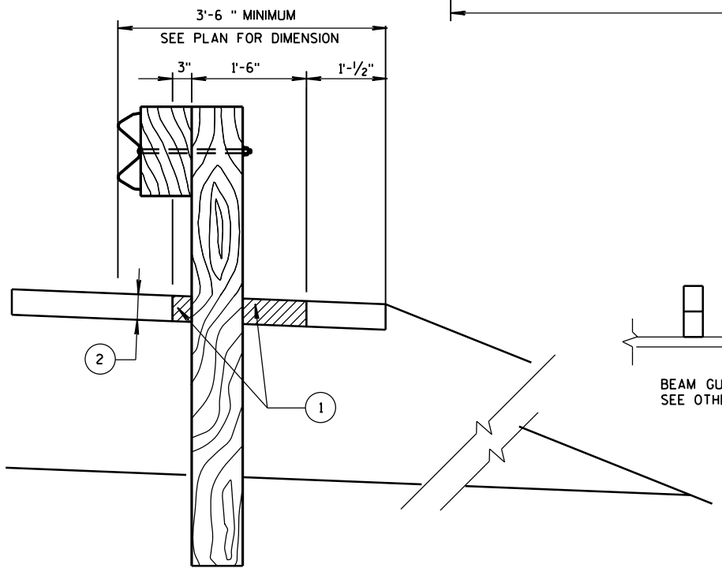
6

S.D.D. 14 B 27-1c

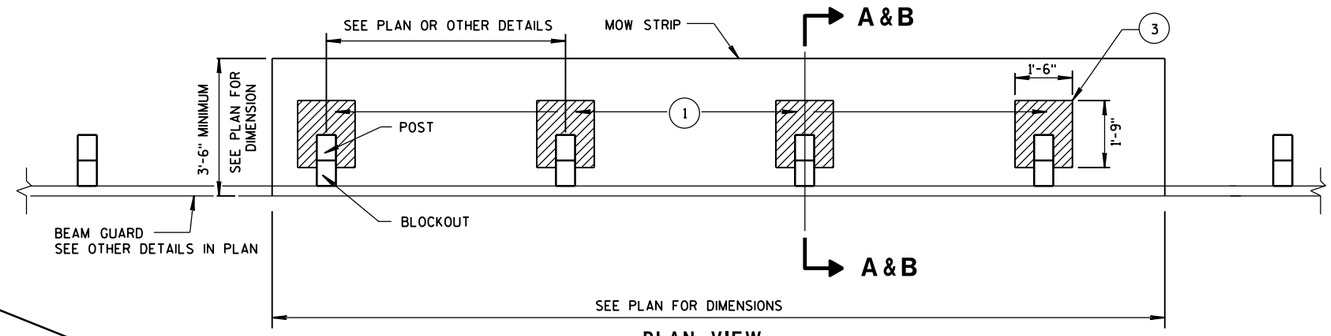


PLAN VIEW

MOW STRIP LAYOUT FOR ENERGY ABORBING TERMINAL

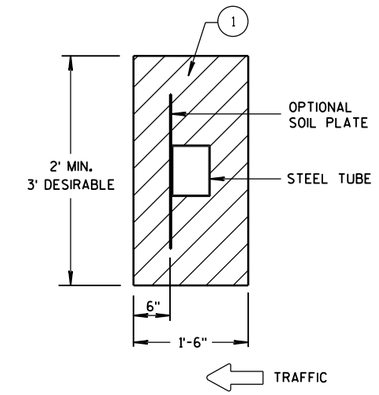


SECTION A-A

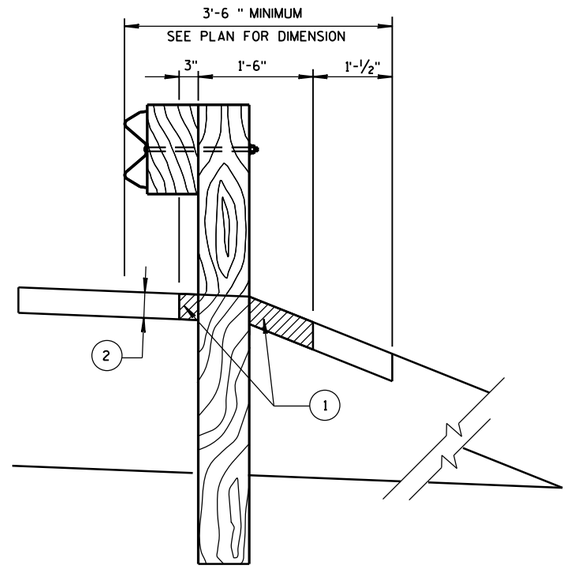


PLAN VIEW

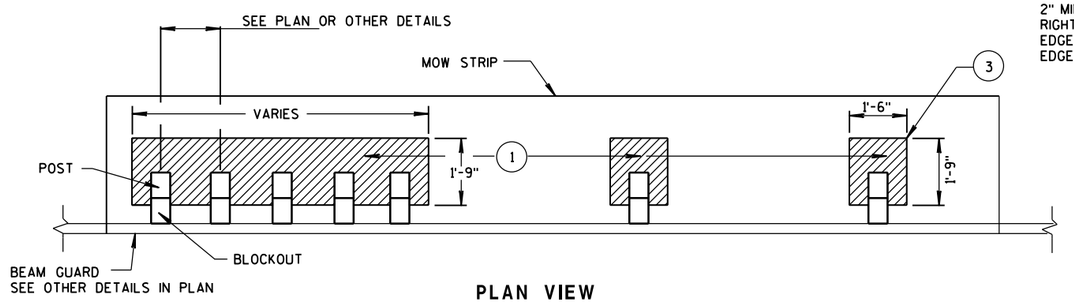
MOW STRIP FOR TYPICAL BLOCKOUT LAYOUT



DETAIL A

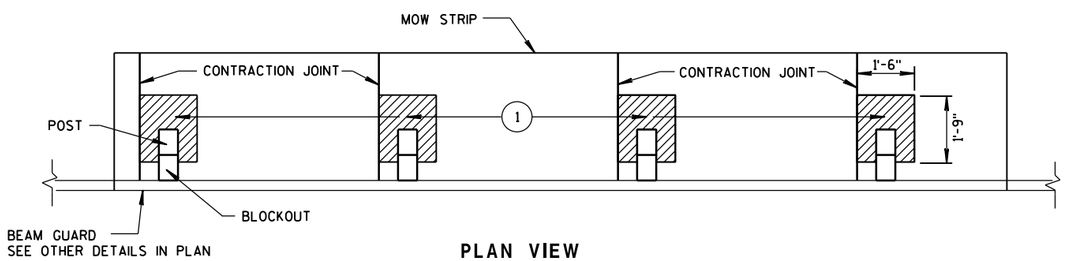


SECTION B-B



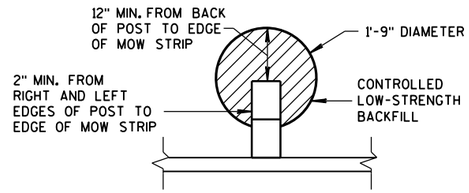
PLAN VIEW

MOW STRIP FOR TIGHT SPACING LAYOUT



PLAN VIEW

JOINT PLACEMENT FOR CONCRETE MOW STRIP



ALTERNATIVE HMA
MOW STRIP DESIGN

1. CONTROLLED LOW-STRENGTH BACKFILL OR EMULSIFIED ASPHALT.
2. DEPTH OF MOW STRIP:
   ASPHALT - 4"
   CONCRETE - 4"
   EMULSIFIED ASPHALT - 1" OR LESS
3. FOR EMULSIFIED ASPHALT MOW STRIP LEAVE OUTS NOT REQUIRED. (TYPICAL FOR ALL POSTS.)

GUARDRAIL MOW STRIP

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

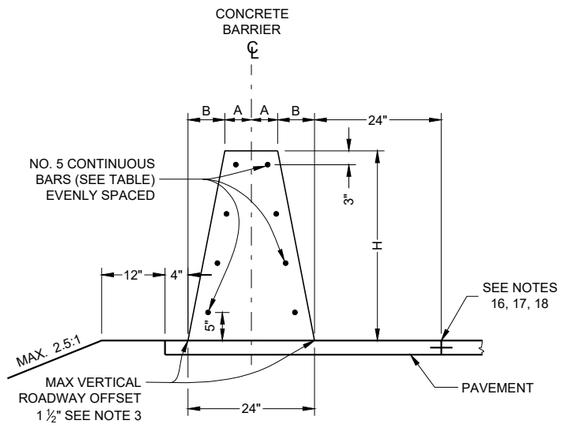
PRE_80

6

S.D.D. 14 B 28-3

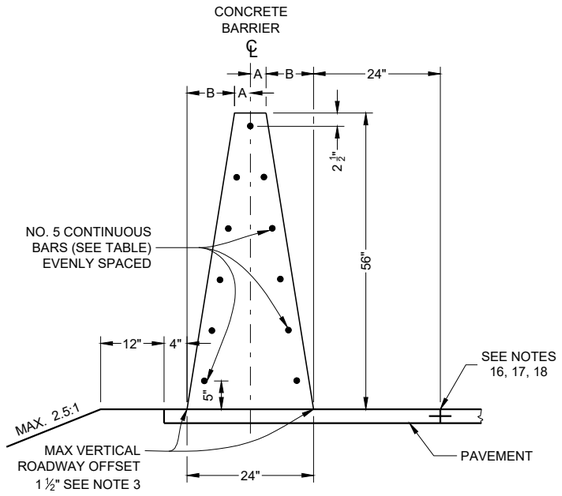
6

S.D.D. 14 B 28-3



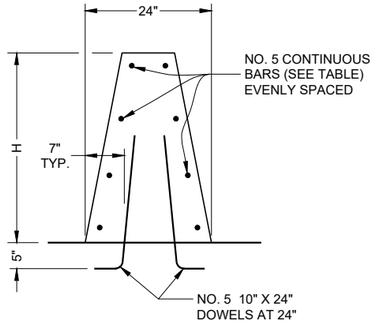
32 - INCH, 36 - INCH OR 42 - INCH SINGLE SLOPE CONCRETE BARRIER

(TYPE S32, TYPE S36, TYPE S42)



56 - INCH SINGLE SLOPE CONCRETE BARRIER

(TYPE S56)

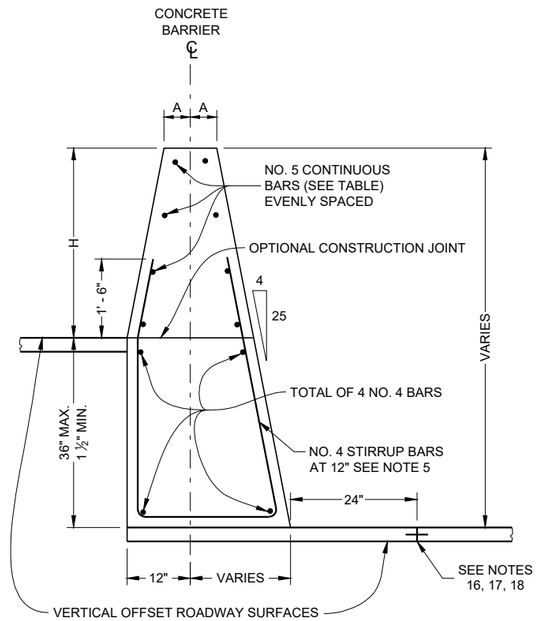


SINGLE SLOPE CONCRETE BARRIER ON BRIDGE

(NON OUTER PARAPET APPLICATION)

GENERAL NOTES

1. WHERE THE CONCRETE BARRIER IS ADDED TO THE FACE OF EXISTING CONCRETE STRUCTURE, MATCH EXISTING WEEP HOLES.
2. EXPANSION JOINTS IN CONCRETE BARRIER SHALL BE LOCATED AT ALL DECK AND PRINCIPAL WALL JOINTS. EXPANSION JOINT FILLER MATERIAL SHALL BE THE SAME SIZE AS JOINT OF ½" MINIMUM.
3. WHERE VERTICAL ROADWAY OFFSET IS GREATER THAT 1", USE TYPE A.
4. PLACE BARRIER PERPENDICULAR TO SHOULDER GRADE, UNLESS INDICATED IN PLAN.
5. EXCEPT IN ANCHORS, VERTICAL REINFORCING STIRRUP NOT REQUIRED FOR ROADWAY OFFSETS LESS THAN 1' - 0".
6. FOR TYPE S32, TYPE S36, TYPE S42 AND TYPE S56 MONLITHIC FOOTING OR DOWELED FOOTING 2 - #8 X 8" @ 2'- 0".
7. STAGGER LAPPING OF LONGITUDINAL STEEL. MINIMUM OVERLAP OF STEEL 2 FEET. BARS AT LAPS TO BE FIRMLY TIED OR CONNECTED.
8. 4000 PSI CONCRETE AIR ENTRAINMENT PER STANDARD SPECIFICATION 501.
9. WHEN SWITCHING BETWEEN SLIP FORM AND CAST - IN - PLACE OPERATIONS, EXTEND LONGITUDINAL STEEL 3 FEET BEYOND SLIP FORMING CUT - OFF POINT. EXPOSED STEEL INTO NEXT POURS REINFORCEMENT. LAPS TO BE FIRMLY TIED.
10. USE ¾" BEVEL OR 1" RADIUS ON ALL EXPOSED SHARP EDGES UNLESS OTHERWISE NOTED.
11. 2" CLEAR COVER TYPICAL
12. COLD-JOINTS MAY BE USED BETWEEN ANCHOR INSTALLATIONS. WHEN A COLD JOINT IS NEEDED, 3 FEET OF LAP OF LONGITUDINAL STEEL IS REQUIRED. LAPS TO BE FIRMLY TIED.
13. IN TYPE S32, TYPE S36, TYPE S42 AND TYPE S56 NO ADDITIONAL VERTICAL STEEL IS NEEDED. IN TYPE S32A, TYPE S36A, TYPE S42A AND TYPE S56A REQUIRES VERTICAL STEEL. SEE OTHER DETAIL.
14. IN TYPE S32, TYPE S36, TYPE S42 AND TYPE S56 DEPTH OF FOOTING 10". IN TYPE S32A, TYPE S36A, TYPE S42A AND TYPE S56A MATCH TOTAL HEIGHT OF SINGLE SLOPE BARRIER RETAINING WALL.
15. FOR ALL BARRIER TYPES SHOWN, ANCHOR IS REQUIRED AT CONCRETE BARRIER ENDS AND AT INTERRUPTIONS IN CONCRETE BARRIER. ANCHOR MAY BE AS SHOWN ON DRAWING OR DETAILS SHOWN ON S.D.D. 14B33. ANCHORS INCIDENTAL TO CBSS.
16. CONCRETE PAD UNDER CBSS MAY BE PLACED INTEGRAL WITH BARRIER, PLACED SEPARATELY OR PLACED WITH CONCRETE SHOULDER AND SAWED FULL DEPTH. SAWING OF CONCRETE SHOULDER IS INCIDENTAL TO CONCRETE BARRIER BID ITEM. CONCRETE PAD MINIMUM DEPTH IS 6 INCHES, OR EQUAL TO THE DEPTH OF THE CONCRETE SHOULDER.
17. CONSTRUCTION JOINTS MAY BE ELIMINATED WHEN CONCRETE SHOULDER IS LESS THAN 10'.
18. SEE SDD 13C1 FOR DETAILS TYING BARRIER FOOTING TO ADJACENT CONCRETE.
19. PROVIDE A 1" DEEP, ," WIDE CONTRACTION JOINT IN BARRIER FOOTING AND BARRIER. JOINT IS TO MATCH ADJACENT CONCRETE JOINTS. IF ADJACENT TO ASPHALT CONTRACTION JOINT IS REQUIRED EVERY 15'.

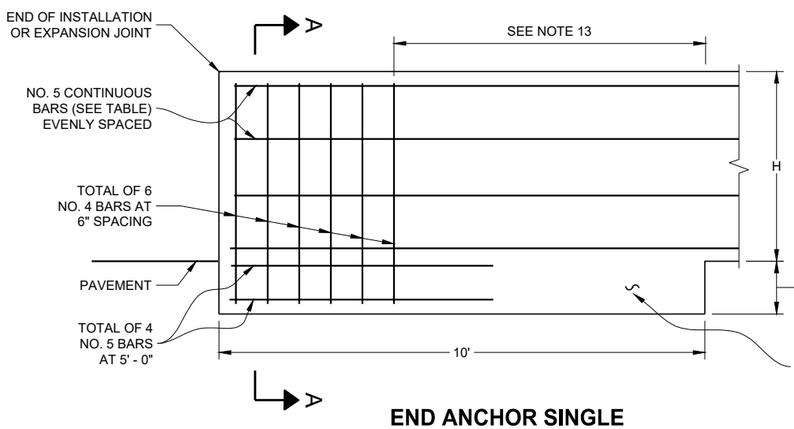


SINGLE SLOPE CONCRETE BARRIER AND RETAINING WALL

(TYPE S32A, TYPE S36A, TYPE S42A, TYPE S56A)

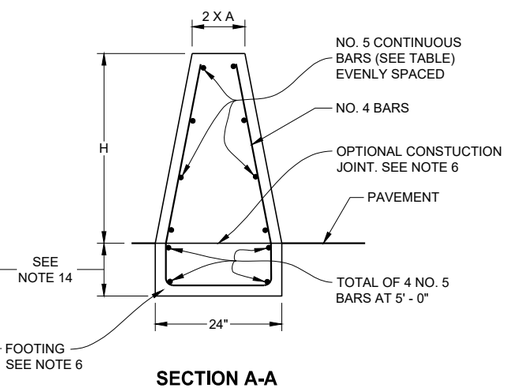
(BETWEEN ADJACENT ROADWAYS)

BARRIER HEIGHT H INCHES	A INCHES	B INCHES	NUMBER OF NO. 5 BARS EACH
32	7	5	8
36	6 ¼	5 ¾	8
42	5 ¼	6 ¾	10
56	3	9	11

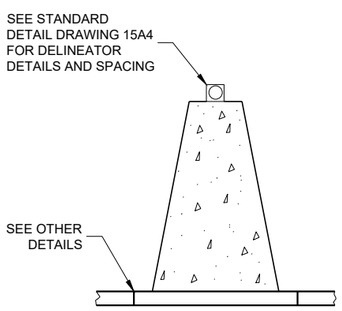


END ANCHOR SINGLE SLOPE CONCRETE BARRIER

(AT CONSTRUCTION JOINT)



SECTION A-A



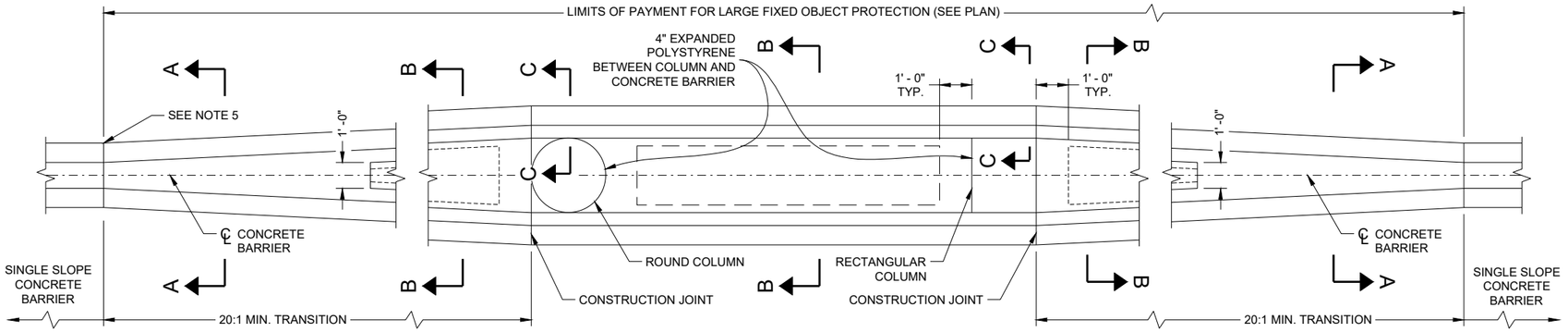
DELINEATION

CONCRETE BARRIER SINGLE SLOPE (CBSS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO PRE_81

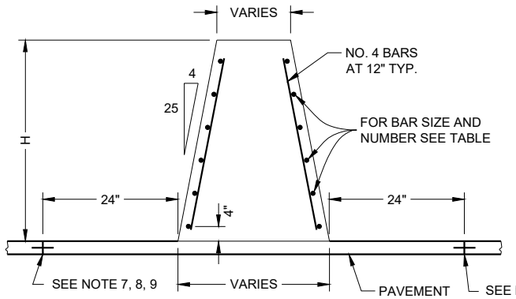
6

SDD 14B32 - 06a

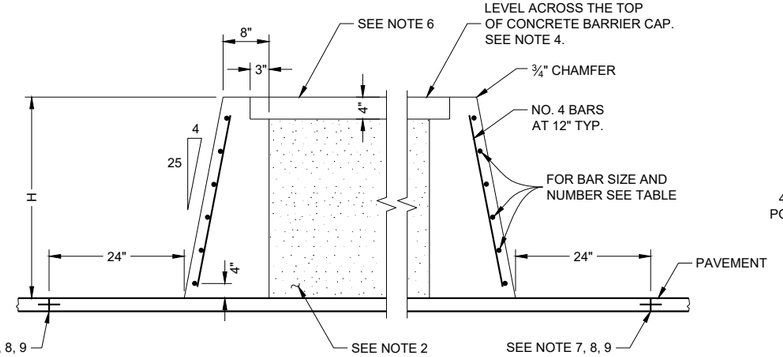


LARGE FIXED OBJECTS PROTECTION
(TYPE S32, TYPE S36, TYPE S42, TYPE S56)

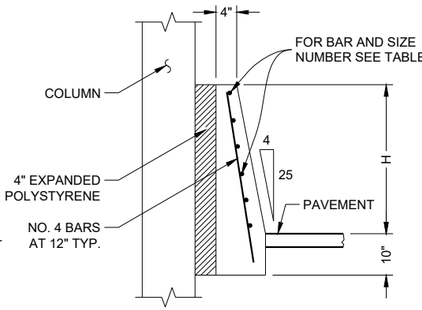
BARRIER HEIGHT H INCHES	BAR SIZE	NUMBER OF BARS EACH
32	4	6
36	4	6
42	5	6
56	5	6



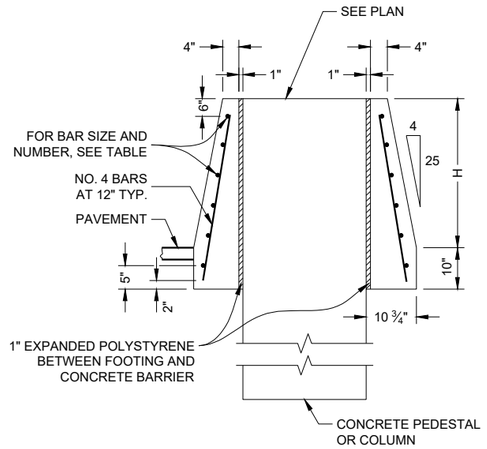
SECTION A - A



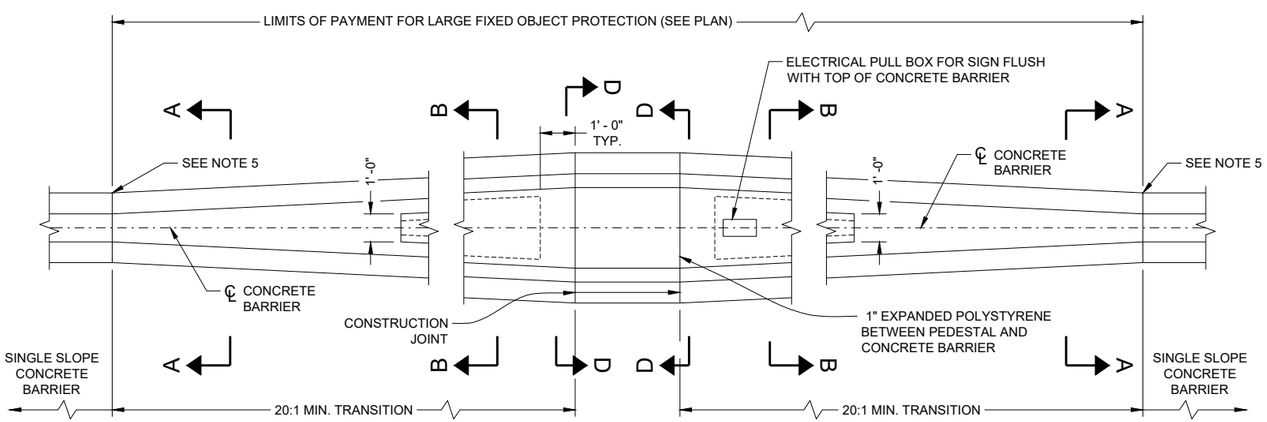
SECTION B - B



SECTION C - C



SECTION D - D



SMALL FIXED OBJECTS PROTECTION
(TYPE S32, TYPE S36, TYPE S42, TYPE S56)

GENERAL NOTES

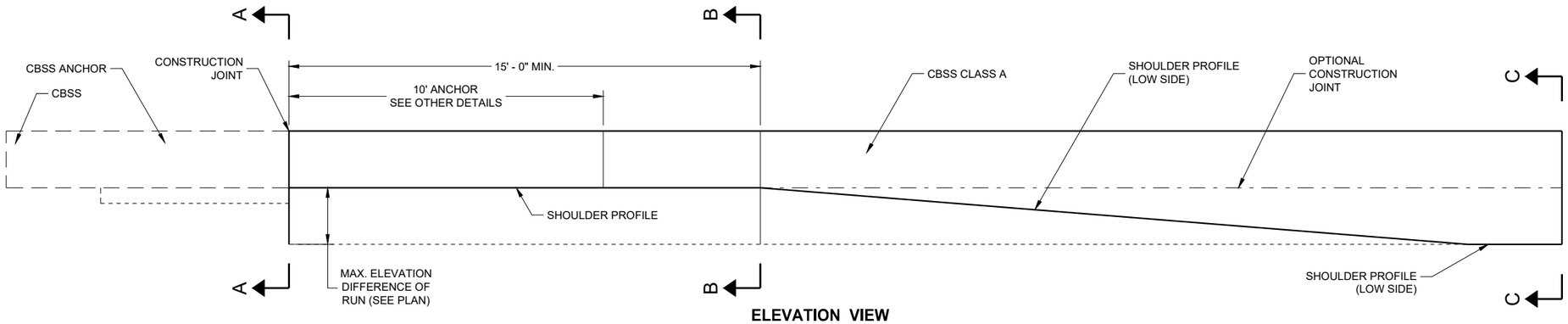
1. INSTALL 1 INCH DIAMETER DRAIN PIPE EVERY 20 FEET OF CROSS SECTION B -B. MINIMUM ONE DRAIN CAVITY.
2. BETWEEN CONCRETE BARRIER WALLS FILL WITH FOUNDATION BACKFILL.
3. REINFORCING STEEL SHALL EXTEND CONTINUOUS THROUGH CONSTRUCTION JOINTS.
4. ADJUST HEIGHT OF CONCRETE BARRIER WALL ON LOW SIDE OF OFFSET OR SUPERELEVATED ROADWAYS TO PROVIDE LEVEL GRADE ACROSS TOP OF CONCRETE CAP.
5. IF FIXED OBJECT PROTECTION IS INSTALLED FIRST, USE COLD JOINTS. IF CBSS PLACED FIRST, USE EXPANSION JOINT.
6. USE NO. 3 BAR SPACED 12 INCHES CENTER TO CENTER (PLACED IN EACH DIRECTION) OR EQUIVALENT WIRE MESH.
7. CONCRETE PAD UNDER CBSS MAY BE PLACED INTEGRAL WITH BARRIER, PLACED SEPARATELY OR PLACED ITH CONCRETE SHOULDER AND SAWED FULL DEPTH. SAWING OF CONCRETE SHOULDER IS INCIDENTAL TO CONCRETE BARRIER BID ITEM. CONCRETE PAD MINIMUM DEPTH IS 6 INCHES, OR EQUAL TO THE DEPTH OF THE CONCRETE SHOULDER.
8. CONSTRUCTION JOINTS MAY BE ELIMINATED WHEN CONCRETE SHOULDER IS LESS THAN 10',
9. SEE SDD 13C1 FOR DETAILS TYING BARRIER FOOTING TO ADJACENT CONCRETE.

CONCRETE BARRIER SINGLE SLOPE (CBSS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO PRE_82

GENERAL NOTES

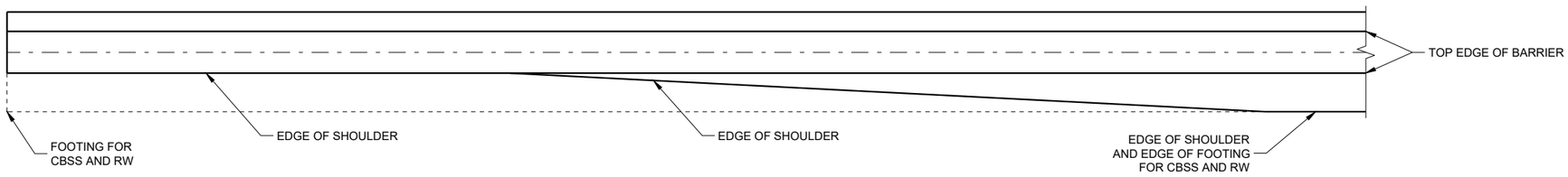
1. SAWING OF CONCRETE SHOULDER IS INCIDENTAL TO CONCRETE BARRIER BID ITEM. SEE SDD 13C18 FOR JOINT DEPTH AND WIDTH. CONCRETE PAD MINIMUM DEPTH IS 6 INCHES, OR EQUAL TO THE DEPTH OF THE CONCRETE SHOULDER.
2. CONSTRUCTION JOINTS MAY BE ELIMINATED WHEN CONCRETE SHOULDER IS LESS THAN 10',
3. SEE SDD 13C1 FOR DETAILS TYING BARRIER FOOTING TO ADJACENT CONCRETE.



ELEVATION VIEW

TRANSITION TO CBSS CLASS A

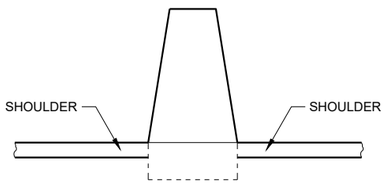
(TYPE S32A, TYPE S36A TYPE S42A TYPE S56A)



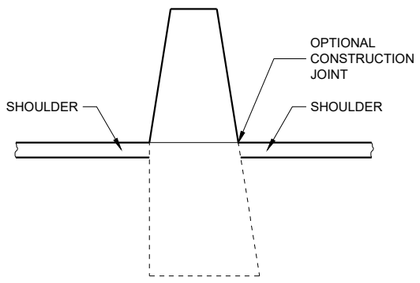
PLAN VIEW

TRANSITION TO CBSS CLASS A

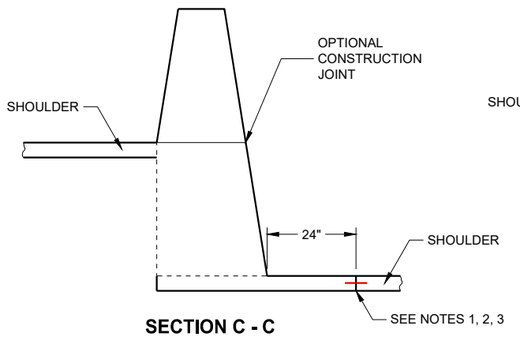
(TYPE S32A, TYPE S36A TYPE S42A TYPE S56A)



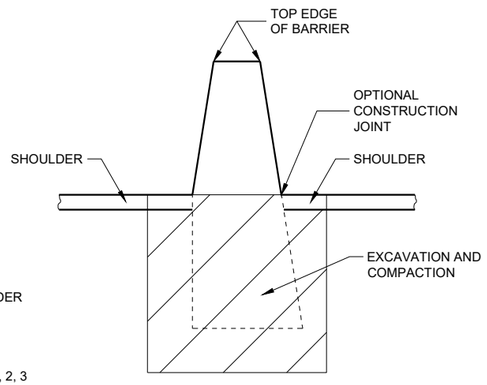
SECTION A - A



SECTION B - B



SECTION C - C



CONCRETE BARRIER SINGLE SLOPE (CBSS)

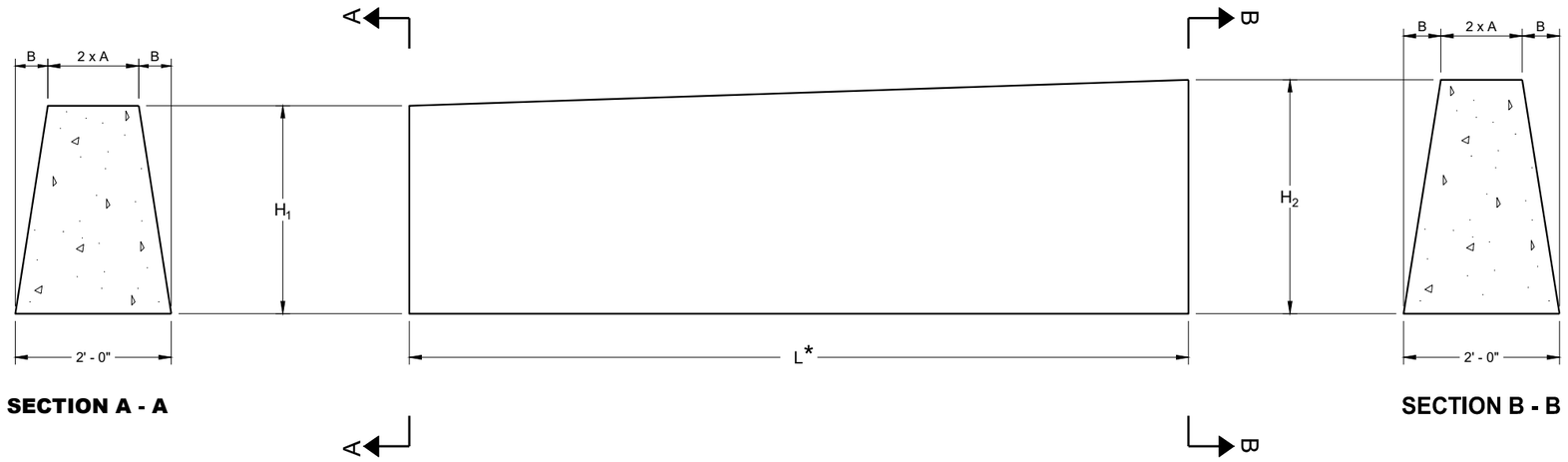
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO PRE_83

6

SDD 14B32 - 06c

6

SDD 14B32 - 06c



DOUBLE COLD JOINT HEIGHT TRANSITION

BARRIER DIMENSIONS

BARRIER HEIGHT INCHES	A INCHES	B INCHES
32	7	5
36	6 ¼	5 ¾
42	5 ¼	6 ¾
56	3	9

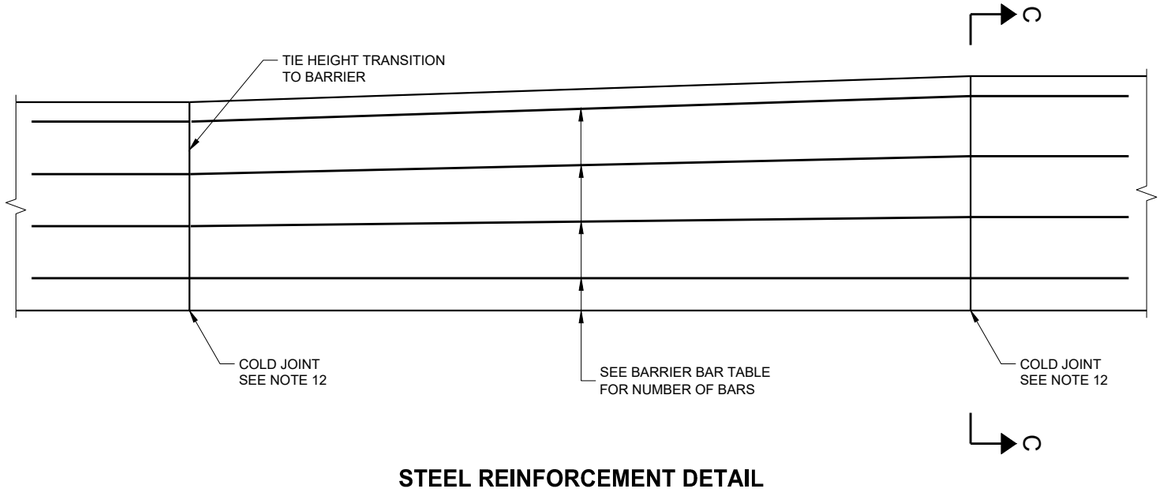
MULTIPLE HEIGHT TRANSITIONS MAY BE USED IN SEQUENCE TO GET TO APPROPRIATE HEIGHT.

USE COLD JOINT TO CONNECT MULTIPLE HEIGHT TRANSITIONS.

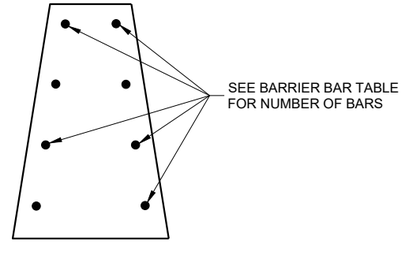
BARRIER BARS

H_1	H_2	L*	NUMBER OF NO. 5 BARS
32"	36"	10' - 0"	8
36"	42"	10' - 6"	10
42"	56"	24' - 6"	11

* LENGTH OF DOUBLE COLD JOINT INCLUDED IN THE TOTAL LENGTH OF CBSS.



STEEL REINFORCEMENT DETAIL



SECTION C-C

CONCRETE BARRIER SINGLE SLOPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018
DATE

/S/ Rodney Tavlor
ROADWAY STANDARDS UNIT SUPER

FHWA

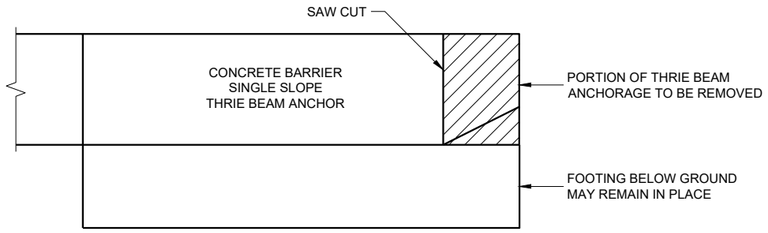
PRE_84

6

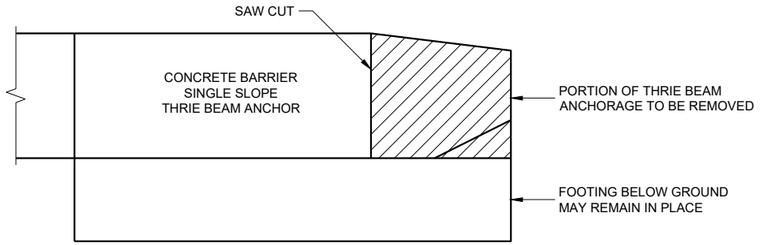
SDD 14B32 - 06d

6

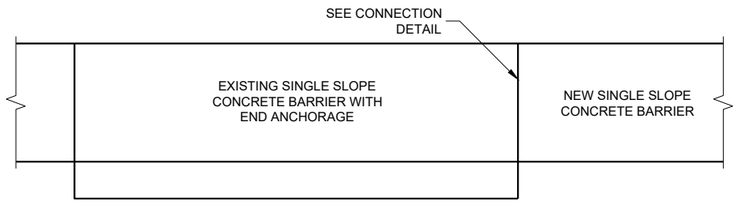
SDD 14B32 - 06d



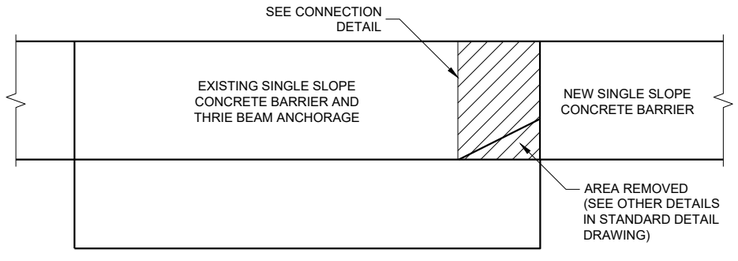
REMOVAL AREA OF
32" CONCRETE THRIE BEAM ANCHORAGE



REMOVAL AREA OF CONCRETE THRIE BEAM
ANCHORAGE WITH HEIGHT GREATER THAN 32"



ELEVATION VIEW OF CONCRETE
BARRIER EXTENSION NEAR END ANCHORAGE



ELEVATION VIEW OF CONCRETE
BARRIER EXTENSION NEAR THRIE BEAM TERMINAL

GENERAL NOTES

1 THE NUMBER OF DRILL HOLES IS EQUAL TO THE NUMBER OF REBAR IN BARRIER (SEE OTHER DETAILS).

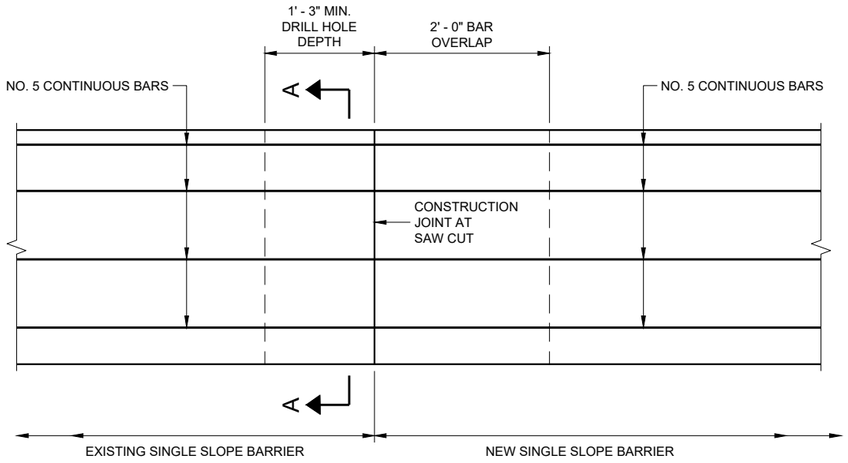
2. MINIMUM DEPTH OF DRILL HOLES IS 1' - 3".

3. DRILL HOLES TO BE A MINIMUM OF 4 INCHES FROM THE EDGE OF CONCRETE

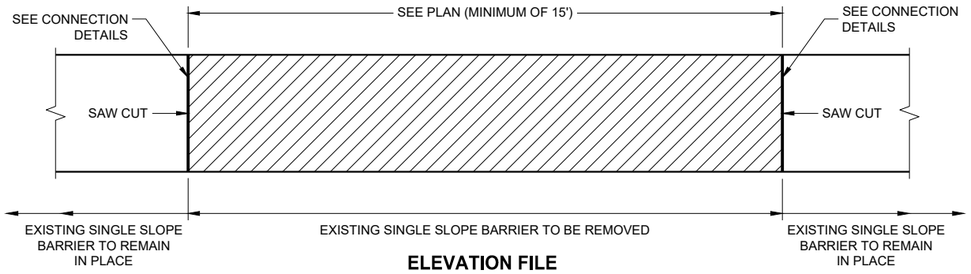
4. INSTALL EPOXY COATED NO. 5 BARS IN DRILL HOLES.

5. END ANCHORAGE MAY OR MAY NOT BE PRESENT ON EXISTING BARRIERS.

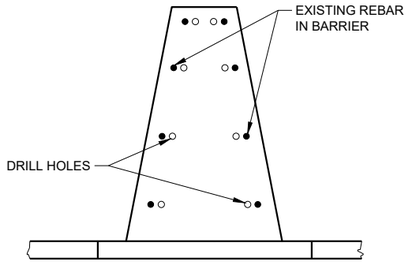
6. REMOVE THRIE BEAM ANCHORAGE AS SHOWN.



CONNECTION OF EXISTING SINGLE SLOPE CONCRETE BARRIER TO
NEW SINGLE SLOPE CONCRETE BARRIER



ELEVATION FILE
BARRIER REMOVAL AND REPLACEMENT



SECTION A-A

RETROFIT OR REPAIR SINGLE SLOPE CONCRETE BARRIER

CONCRETE BARRIER
SINGLE SLOPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS UNIT SUPER
FHWA

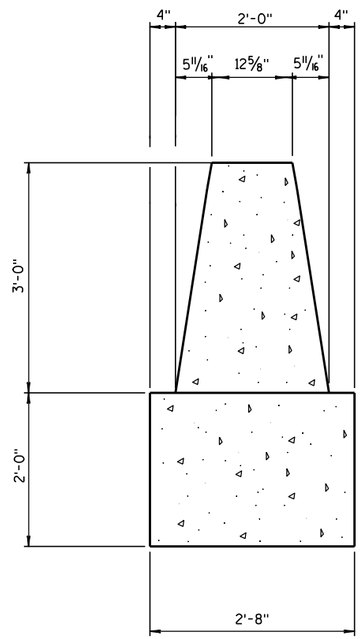
PRE_85

6

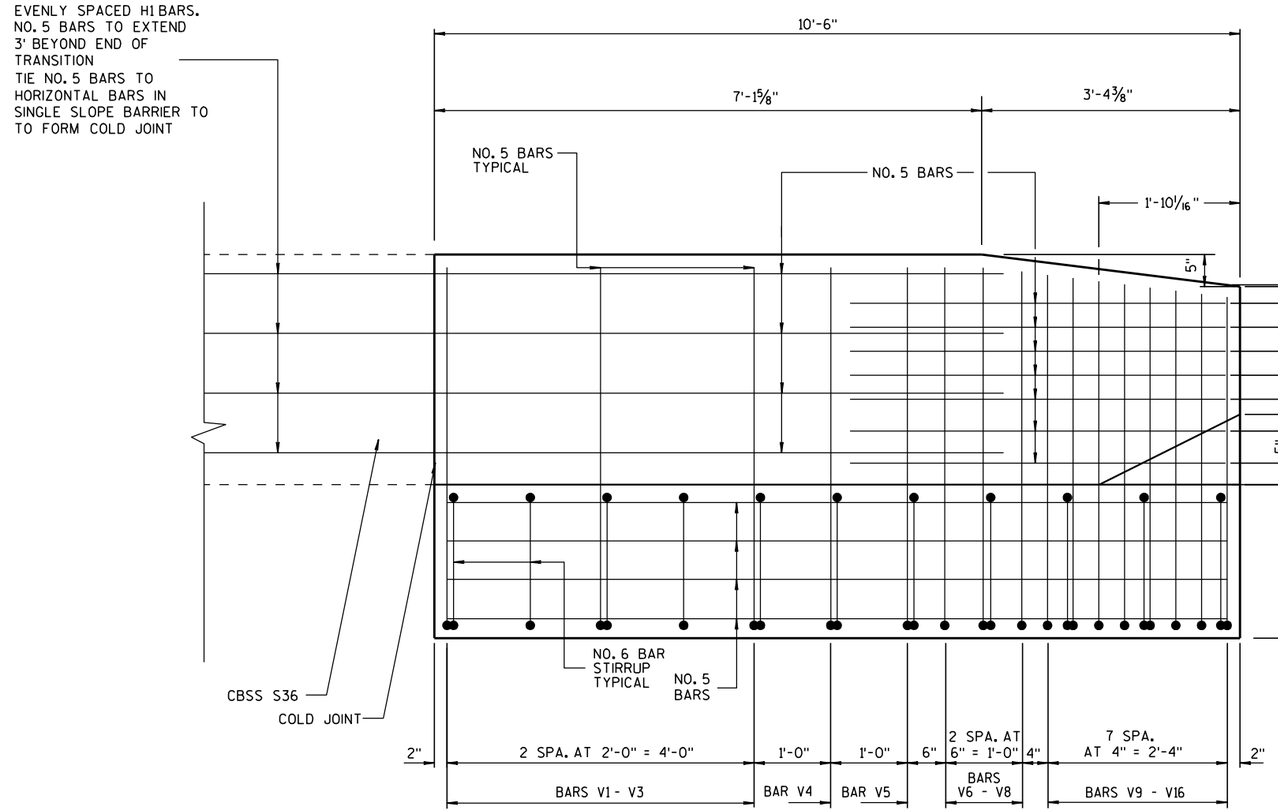
6

SDD 14B32 - 06e

SDD 14B32 - 06e

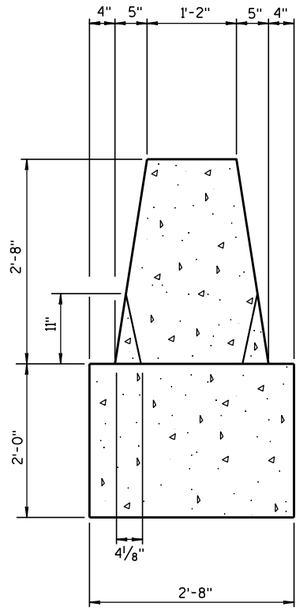


SECTION A-A

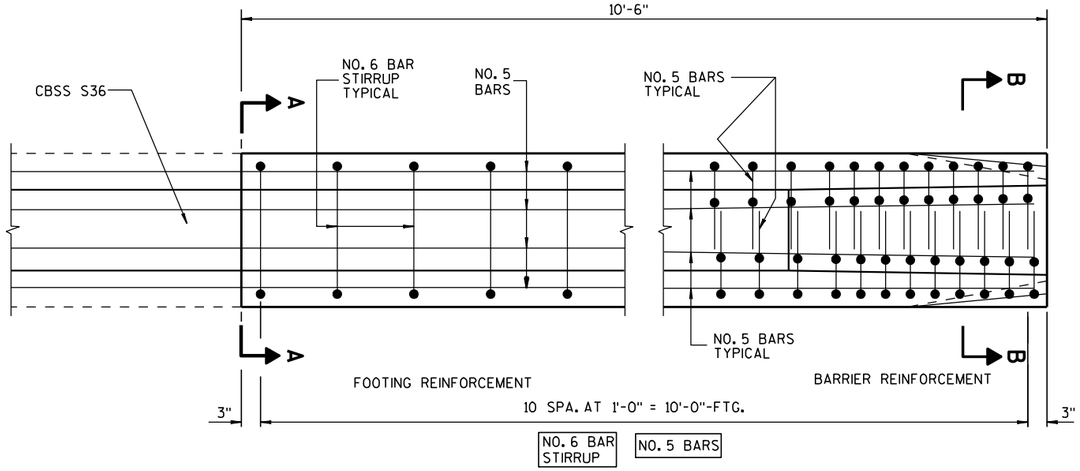


SEE SECTIONS (1) THRU (16)

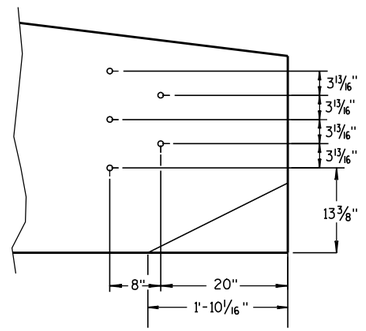
ELEVATION VIEW



SECTION B-B



PLAN VIEW



PVC PIPE LOCATIONS

GENERAL NOTES

CONSTRUCT PER STANDARD SPECIFICATION 603.

SPLICES OF LONGITUDINAL BARS TO BE 2' LONG AND FIRMLY TIED AND FASTENED TOGETHER UNLESS NOTED OTHERWISE.

4000 PSI CONCRETE AIR ENTRAINMENT PER STANDARD SPECIFICATIONS SECTION 501.

USE 3/4" BEVEL OR 1" RADIUS ON ALL EXPOSED SHARP EDGES UNLESS NOTED OTHERWISE.

THRIE BEAM ANCHOR INCIDENTAL TO CONCRETE BARRIER ITEM.

INSTALL SCHEDULE 40 PVC PIPE 1" DIAMETER AT LOCATIONS INDICATED.

EXTEND PVC PIPE COMPLETELY THROUGH BARRIER.

CUT ENDS OF PVC PIPE FLUSH WITH FINISHED FACE of BARRIER.

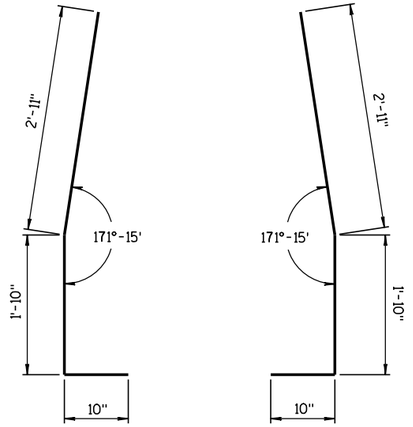
THE NUMBER IN BAR DESIGNATION REPRESENTS THE BARS LOCATION.

2" CLEAR COVER TYPICAL.

CONCRETE BARRIER
SINGLE SLOPE 36"
THRIE BEAM ANCHOR

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

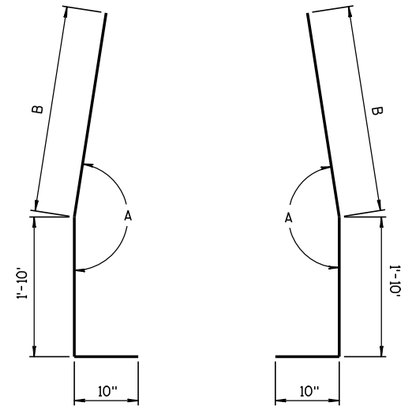
6
S.D.D. 14 B 33-1d



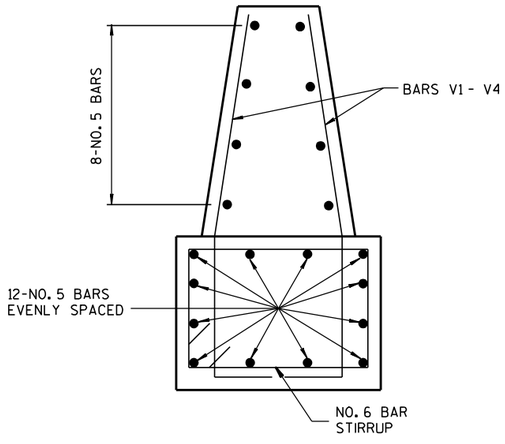
BAR BENDING DETAIL
FOR BARS V1 - V6

BAR CHART
SECTIONS V7 - V11

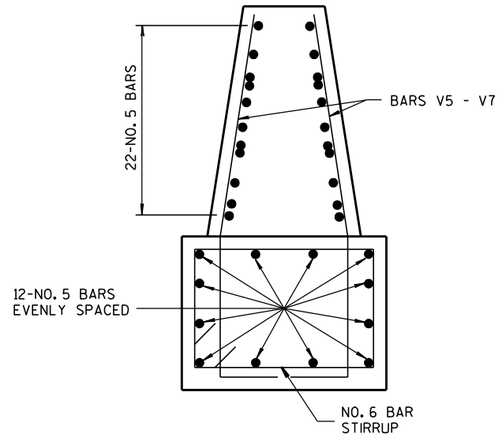
BAR	A	B
V7	171°-20'	2'-10½"
V8	171°-10'	2'-9½"
V9	171°-10'	2'-9"
V10	171°-05'	2'-8½"
V11	171°-10'	2'-8"



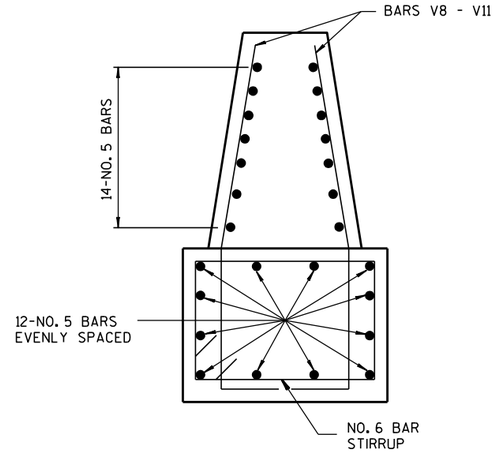
BAR BENDING DETAIL
FOR BARS V7 - V11



BAR DETAIL
SECTIONS 1 - 4



BAR DETAIL
SECTIONS 5 - 7



BAR DETAIL
SECTIONS 8 - 11

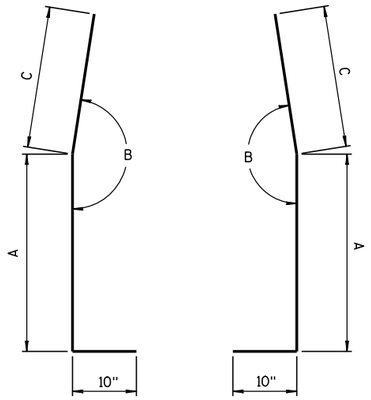
CONCRETE BARRIER
SINGLE SLOPE 36"
THRIE BEAM ANCHOR

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6
S.D.D. 14 B 33-1e

BAR CHART
SECTIONS V12 - V13

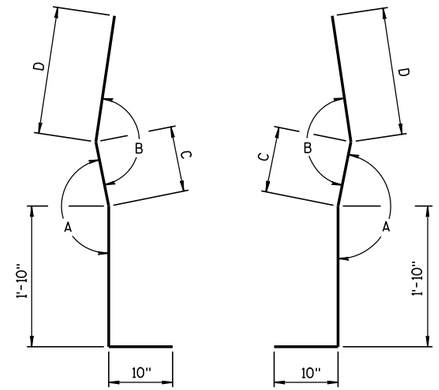
BAR	A	B	C
V12	2'-2"	171°-15'	2'-3½"
V13	2'-7"	171°-05'	1'-10"



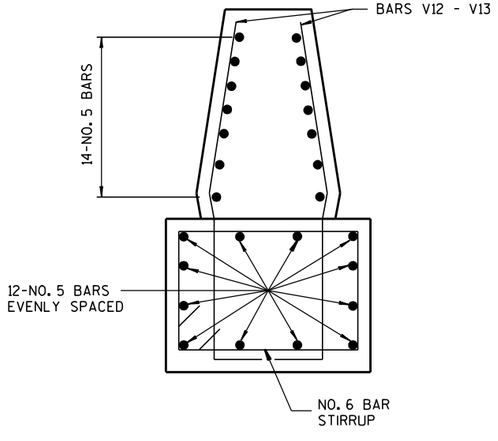
BAR BENDING DETAIL
FOR BARS V12 - V13

BAR CHART
SECTIONS V14 - V16

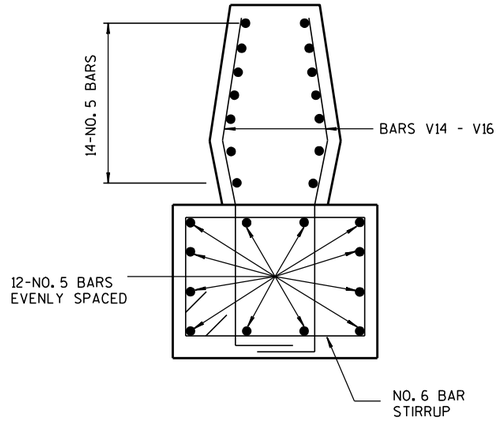
BAR	A	B	C	D
V14	168°-15'	159°-15'	6"	2'-0"
V15	169°-20'	161°-00'	8"	1'-10"
V16	168°-40'	160°-10'	10"	1'-8"



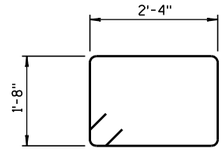
BAR BENDING DETAIL
FOR BARS V14 - V16



BAR DETAIL
SECTIONS 12 - 13



BAR DETAIL
SECTIONS 14 - 16



STIRRUP BAR
BENDING DETAIL

CONCRETE BARRIER
SINGLE SLOPE 36"
THRIE BEAM ANCHOR

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6-3-2010
DATE

/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER

NT

FHWA

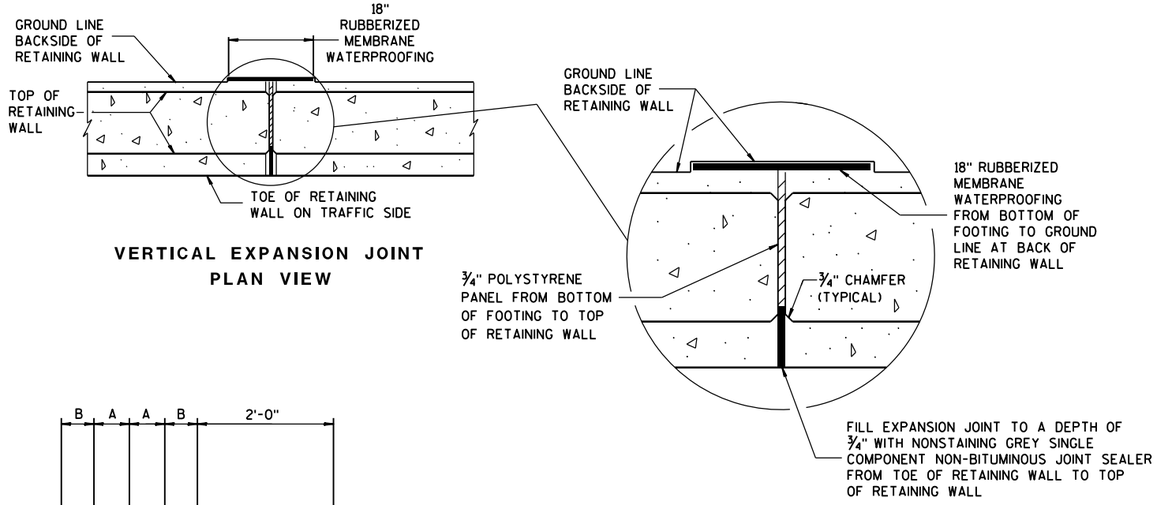
PRE_88

6

S.D.D. 14 B 33-1f

6

S.D.D. 14 B 33-1f



VERTICAL EXPANSION JOINT
PLAN VIEW

DELINEATION

GENERAL NOTES

PROVIDE EXPANSION JOINTS WHERE THERE ARE EXISTING EXPANSION JOINTS OR AT THE END OF EACH POUR.

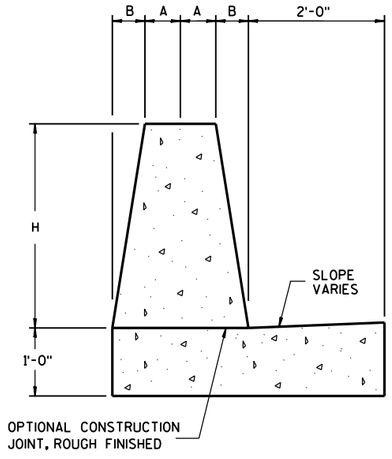
NO HORIZONTAL STEEL CROSSES EXPANSION JOINTS.

CONSTRUCT PER STANDARD SPECIFICATION 603. SPLICES OF LONGITUDINAL BARS TO BE 2' LONG AND FIRMLY TIED AND FASETENED TOGETHER UNLESS NOTED OTHERWISES.

4000 PSI CONCRETE AIR ENTRAINMENT PER STANDARD SPECIFICATIONS 501.

USE ¾" BEVEL OR 1" RADIUS ON ALL EXPOSED SHARP EDGES UNLESS NOTED OTHERWISE.

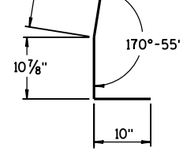
ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR.



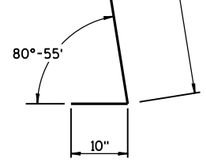
ROADSIDE RETAINING WALL

BARRIER WALL DIMENSIONS

BARRIER HEIGHT H INCHES	A INCHES	B INCHES	NUMBER OF NO. 5 BARS EACH
32	7	5	8
36	6¼	5¾	8
42	5¼	6¾	10
56	3	9	11



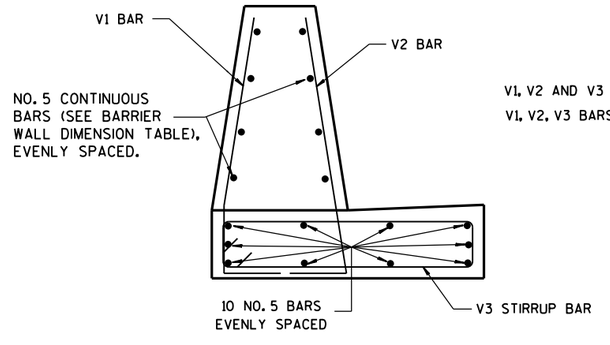
V1 BAR
BENDING DETAIL



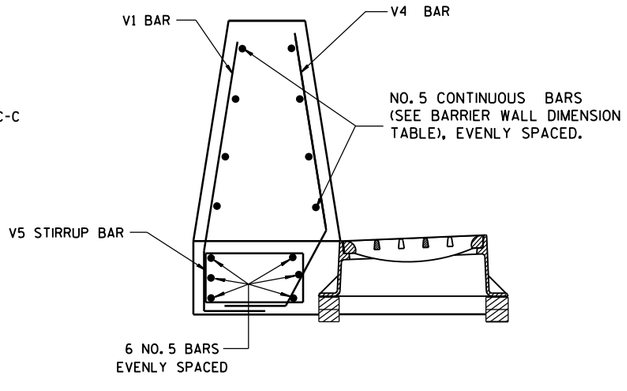
V2 BAR
BENDING DETAIL

BAR CHART
ROADSIDE RETAINING WALL

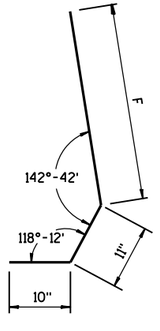
BARRIER HEIGHT	V1 BAR D	V2 BAR E	V4 BAR F
32"	2'-5½"	3'-4½"	2'-6½"
36"	2'-9½"	3'-9¾"	2'-10¾"
42"	3'-3½"	4'-2½"	3'-4¾"
56"	4'-5¾"	5'-4¾"	4'-6¾"



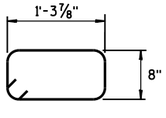
ROADSIDE RETAINING WALL
NORMAL BAR PLACEMENT



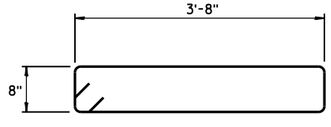
ROADSIDE RETAINING WALL
BAR PLACEMENT NEAR
INLET



V4 BAR
BENDING DETAIL



V5 STIRRUP BAR
BENDING DETAIL



V3 STIRRUP BAR
BENDING DETAIL

SINGLE SLOPE
ROADSIDE RETAINING WALL

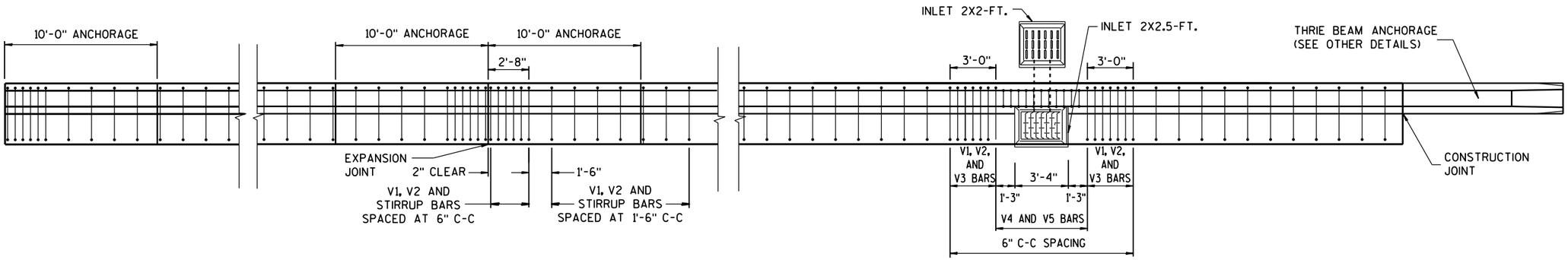
STATE OF WISCONSIN
DEPARTMENT OF TRAN PRE_89

6

S.D.D. 14 B 41-3a

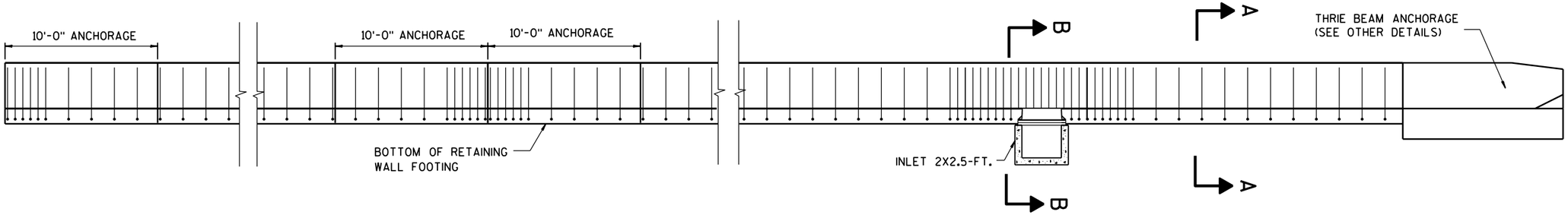
6

S.D.D. 14 B 41-3a



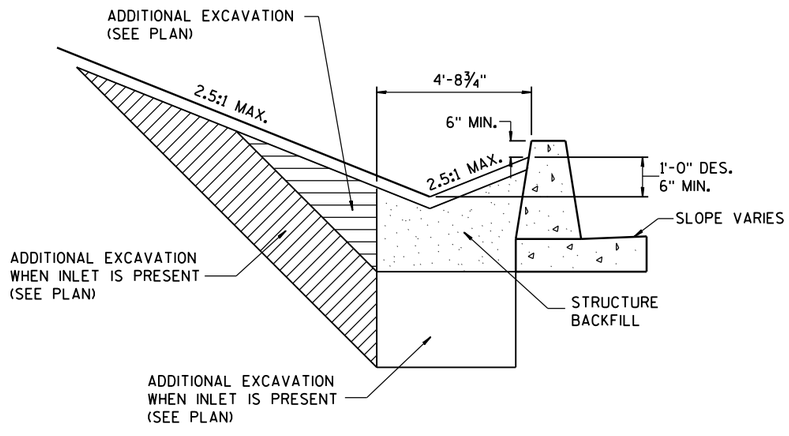
PLAN VIEW

NOTE: HORIZONTAL BARS ARE NOT SHOWN. SEE OTHER DETAILS FOR HORIZONTAL BARS.

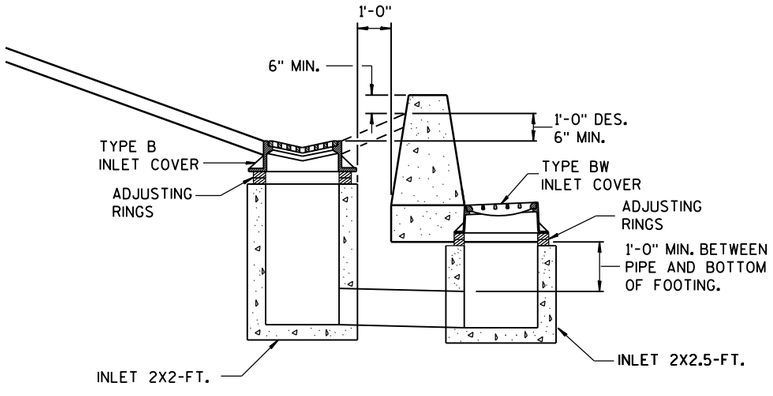


ELEVATION VIEW

NOTE: HORIZONTAL BARS ARE NOT SHOWN. SEE OTHER DETAILS FOR HORIZONTAL BARS.

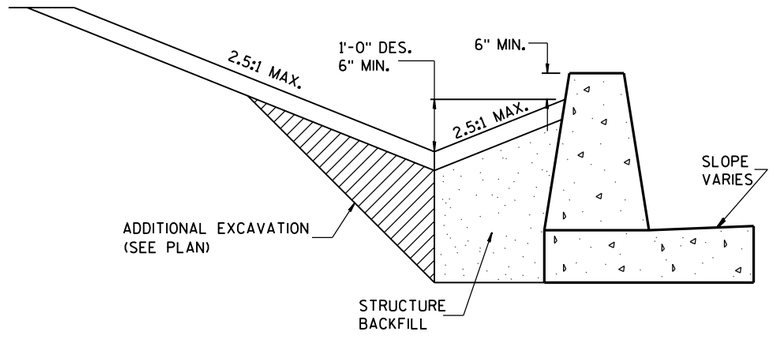


SECTION A-A



SECTION B-B

MINIMUM DESIGN OF EARTH WORK FOR INLET



MINIMUM DESIGN OF EARTH WORK

SINGLE SLOPE ROADSIDE RETAINING WALL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS UNIT SUPERVISOR
FHWA

PRE_90

6

S.D.D. 14 B 41-3b

6

S.D.D. 14 B 41-3b

(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.

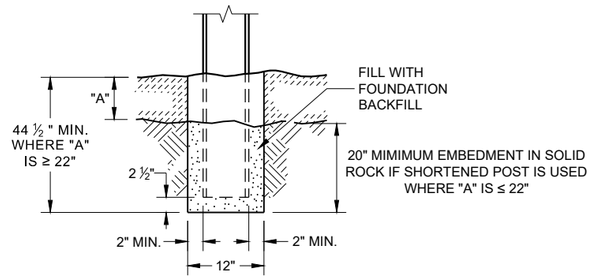
(3) IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL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

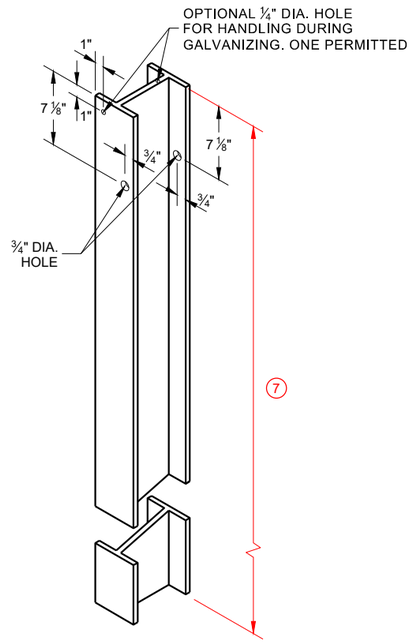
(5) FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ±1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 ¾" TO 32".

(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.

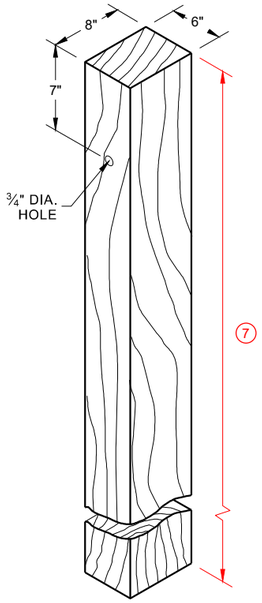
(7) TOTAL POST LENGTH FOR TYPE K IS 7' - 0".
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".



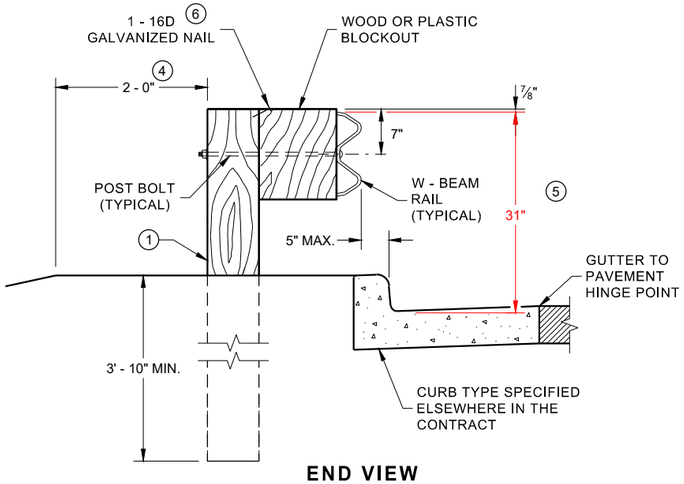
END VIEW
SETTING STEEL OR WOOD POST IN ROCK (3)



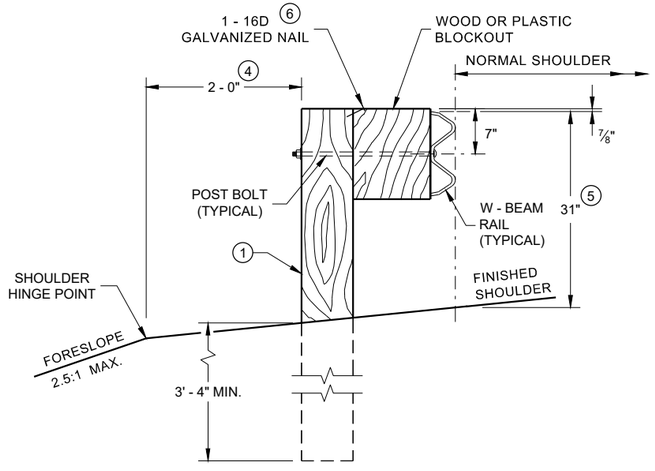
STEEL POST & HOLE PUNCHING DETAIL (W 6 X 9) (1)



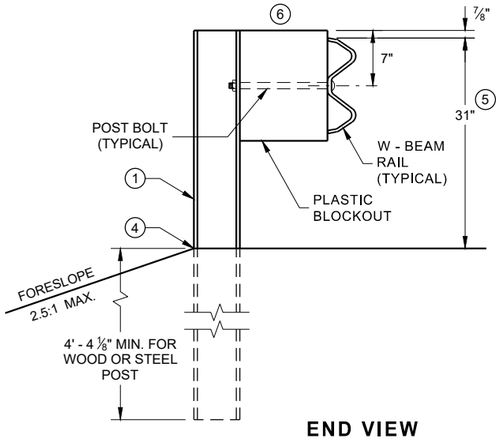
WOOD POST (6" X 8") NOMINAL (1)



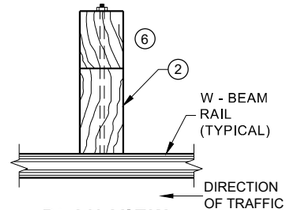
END VIEW
LOCATED ALONG A CURBED ROADWAY



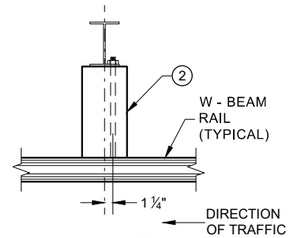
END VIEW
LOCATED ALONG A ROADWAY SHOULDER STANDARD INSTALLATION



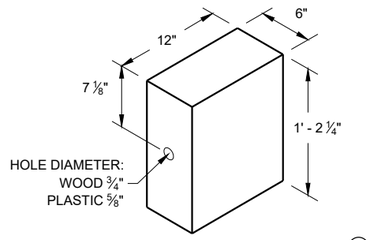
END VIEW
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



PLAN VIEW
WOOD POST, BLOCKOUT & BEAM



PLAN VIEW
STEEL POST, PLASTIC BLOCKOUT & BEAM



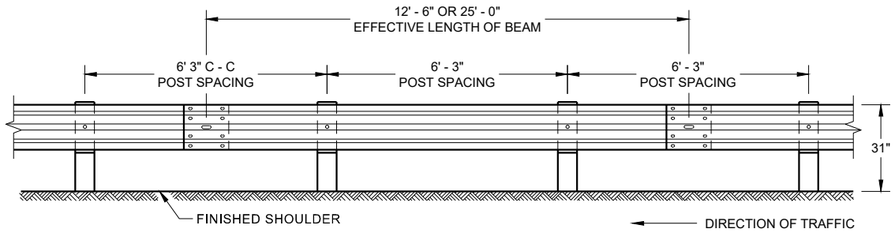
WOOD OR PLASTIC BLOCKOUT (2)

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

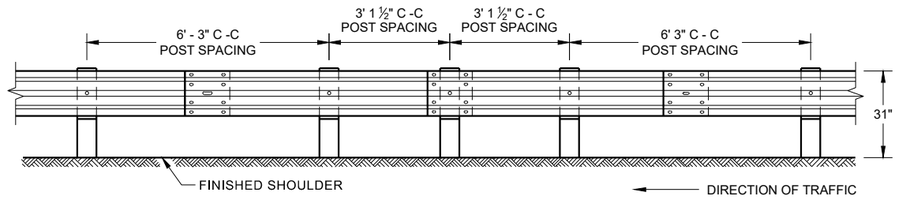
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO PRE_91

SDD 14B42 - 06a

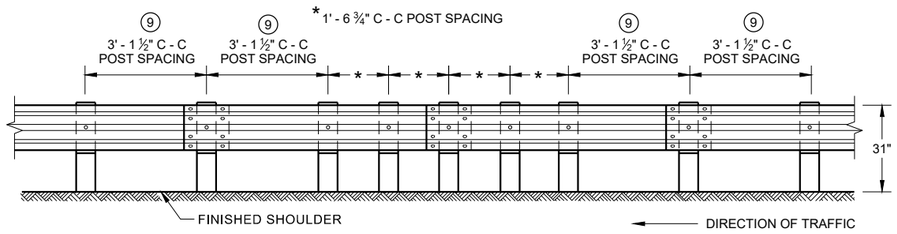
6
SDD 14B42 - 06a



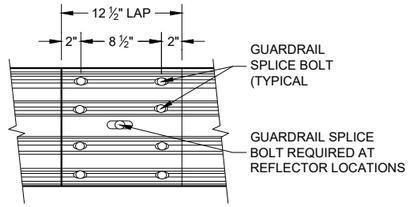
FRONT VIEW
POST SPACING STANDARD INSTALLATION



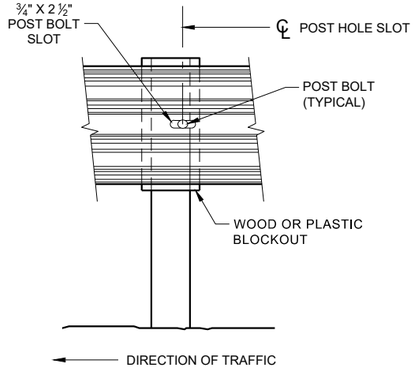
FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)



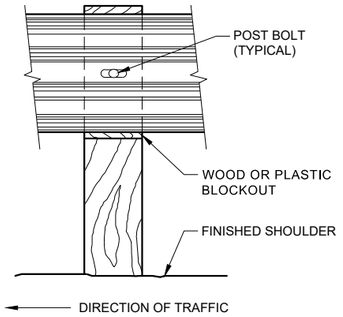
FRONT VIEW
QUARTER POST SPACING (QS)



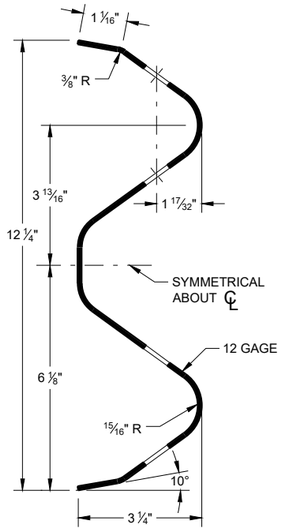
FRONT VIEW
MID-SPAN BEAM SPLICE



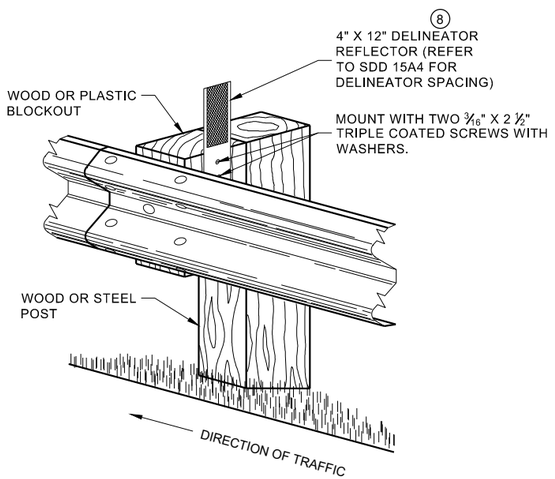
FRONT VIEW AT STEEL POST



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. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.

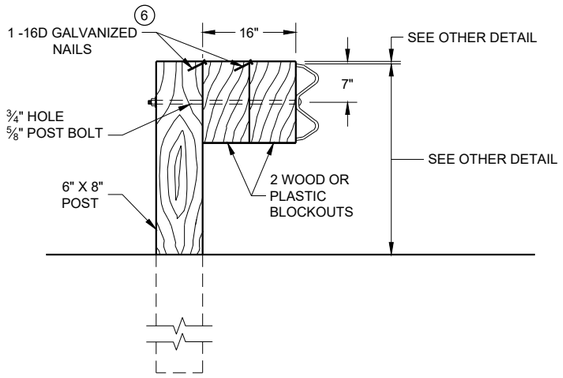
⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

POST BOLTS ARE A ¾" 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
DEPARTMENT OF TRANSPO PRE_92

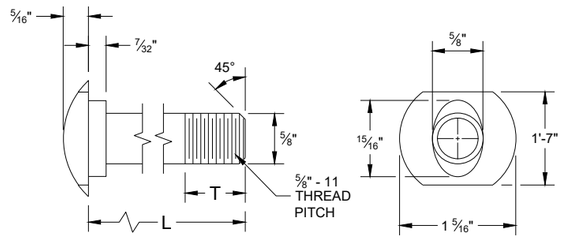


DETAIL FOR 16" BLOCKOUT DEPTH

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.

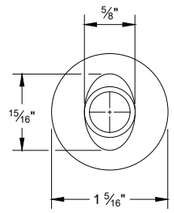
NOTE:

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.

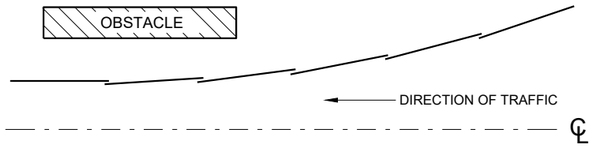


POST BOLT TABLE

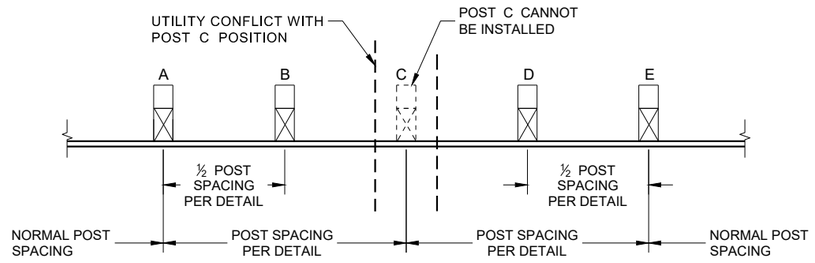
L	T (MIN.)
1 ¼"	1 ⅛"
2"	1 ¾"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



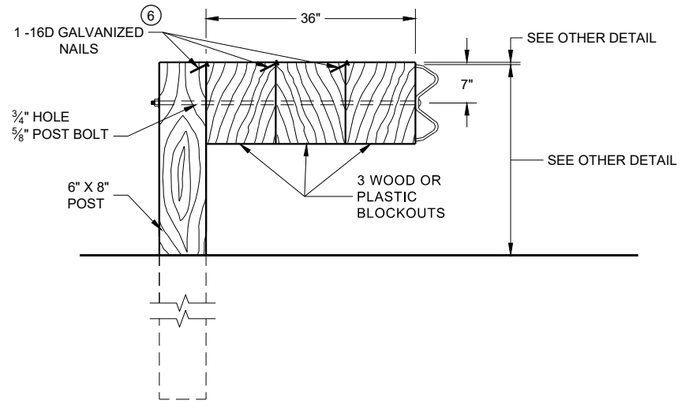
ALTERNATE BOLT HEAD



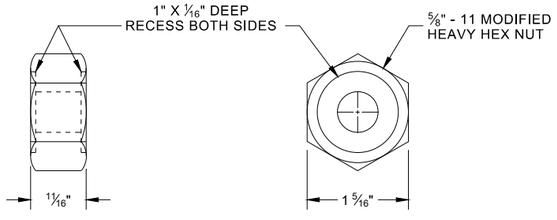
PLAN VIEW
BEAM LAPPING DETAIL



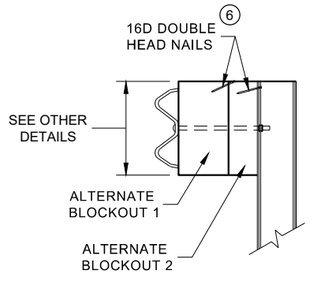
POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



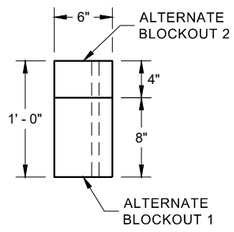
DETAIL FOR 36" BLOCKOUT DEPTH



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.

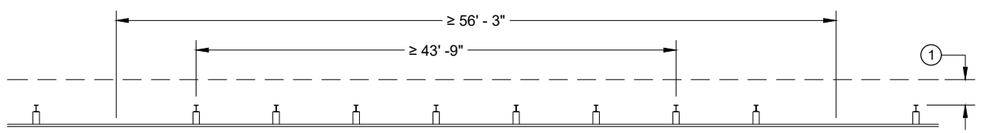
(6) WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

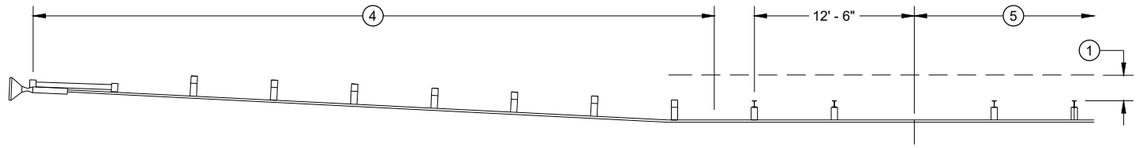
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO PRE_93

6

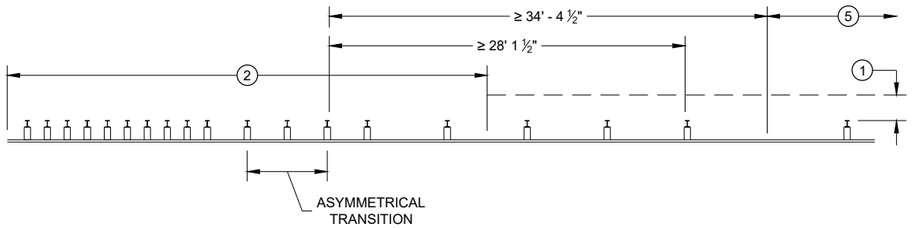
SDD 14B42 - 06c



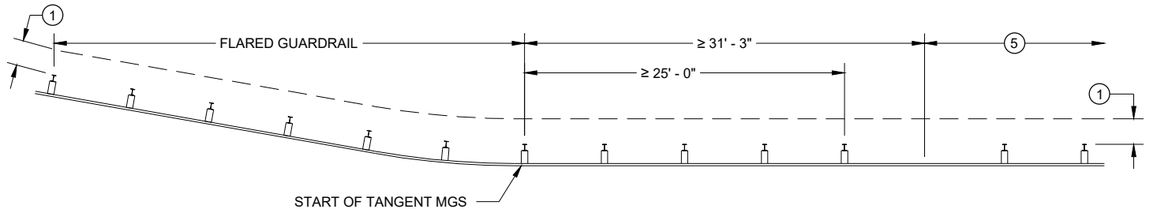
MISSING POST IN NORMAL BEAM GUARD RUN



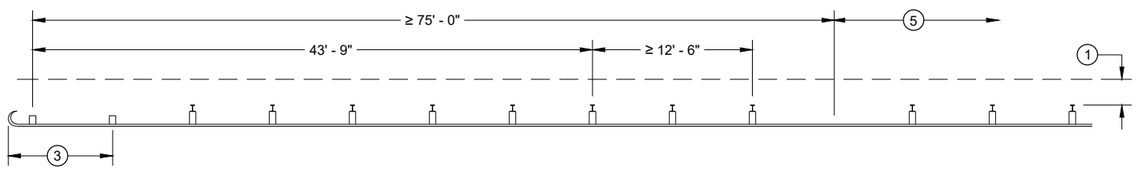
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



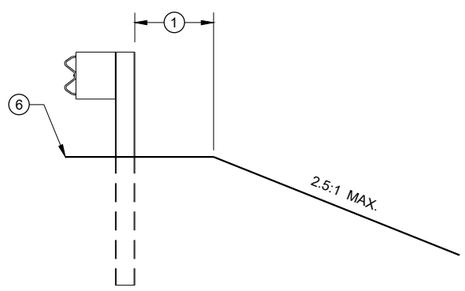
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



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 Tavlor
ROADWAY STANDARDS
UNIT SUPER
FHWA

PRE_94

6

SDD 14B42 - 06d

6

SDD 14B42 - 06d

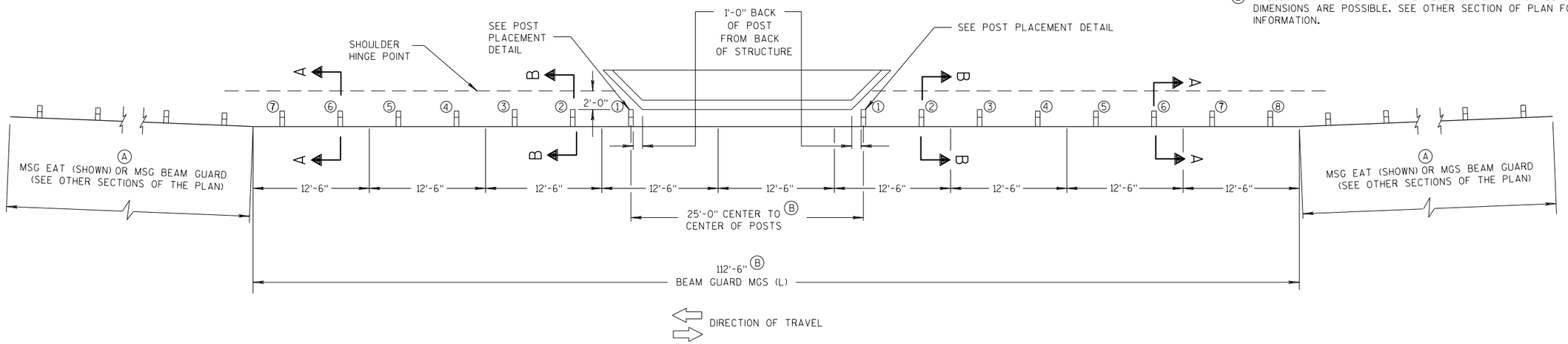
GENERAL NOTES

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

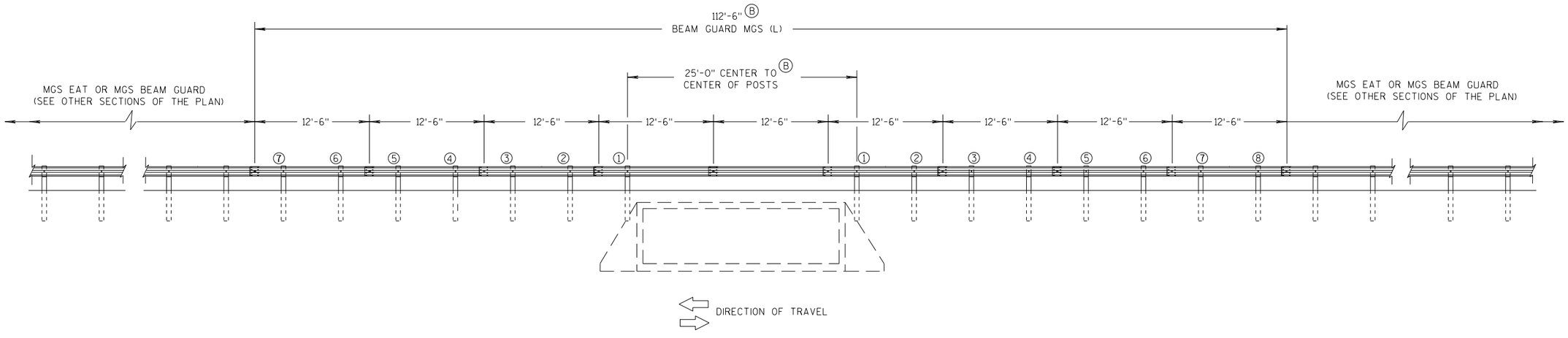
SEE SDD 14 B 42 FOR MORE DETAILS.

(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

PRE_95

6

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

6

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

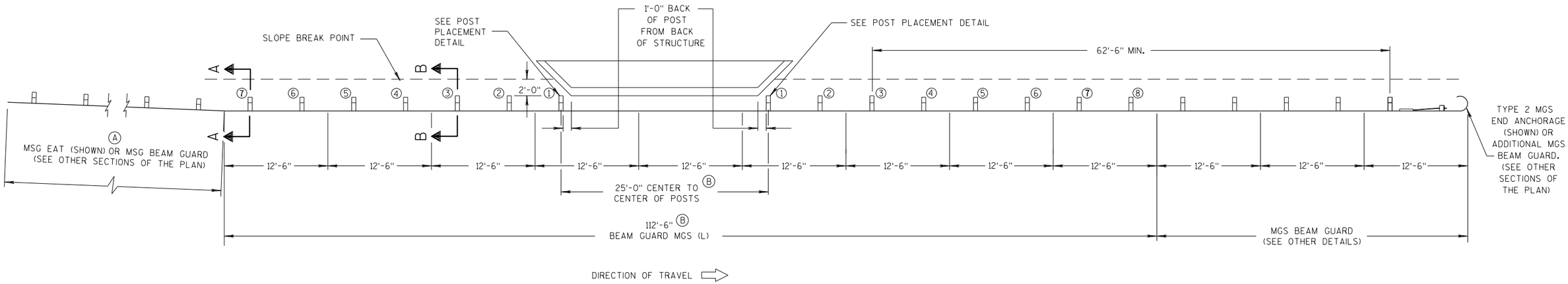
GENERAL NOTES

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

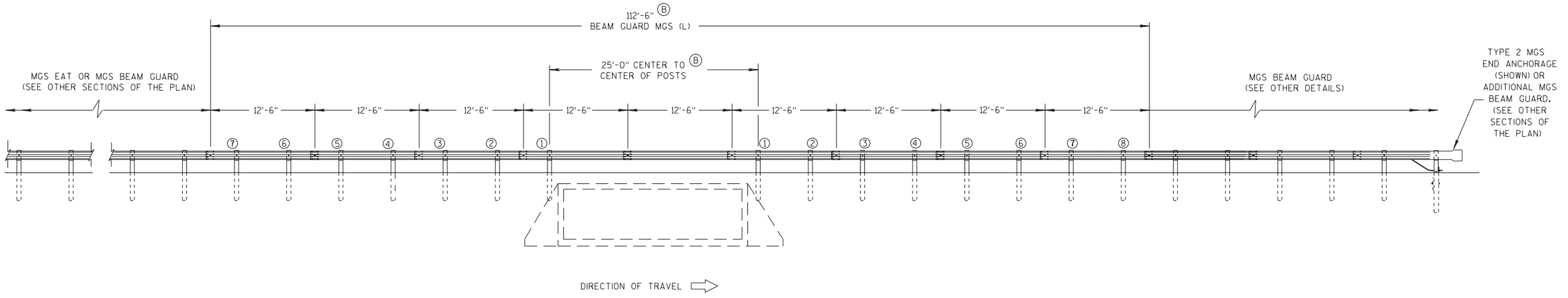
SEE SDD 14 B 42 FOR MORE DETAILS.

(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

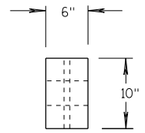
MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)	
STATE OF WISCONSIN DEPARTMENT OF TRANS	PRE_96

6

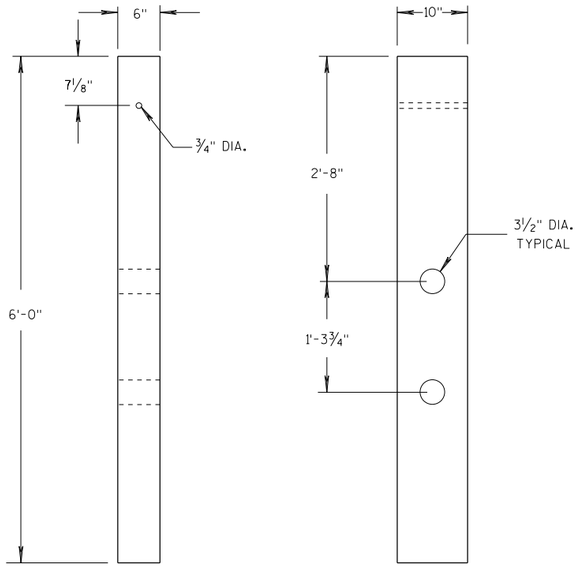
S.D.D. 14 B 43-4b

6

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

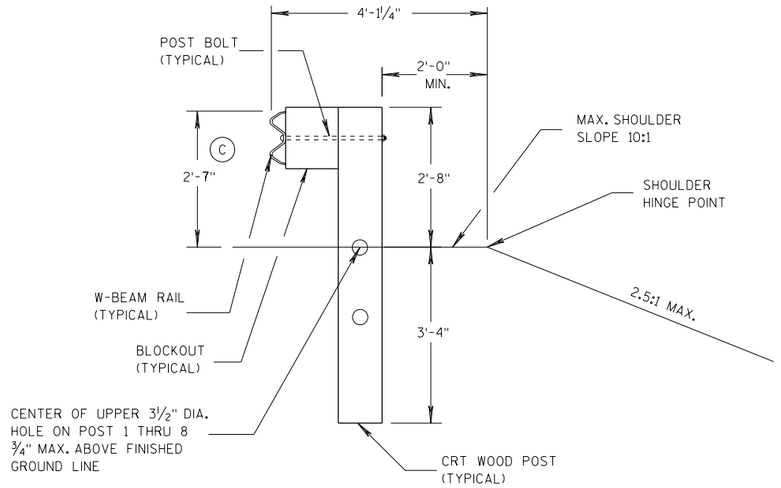


PLAN VIEW



FRONT VIEW SIDE VIEW

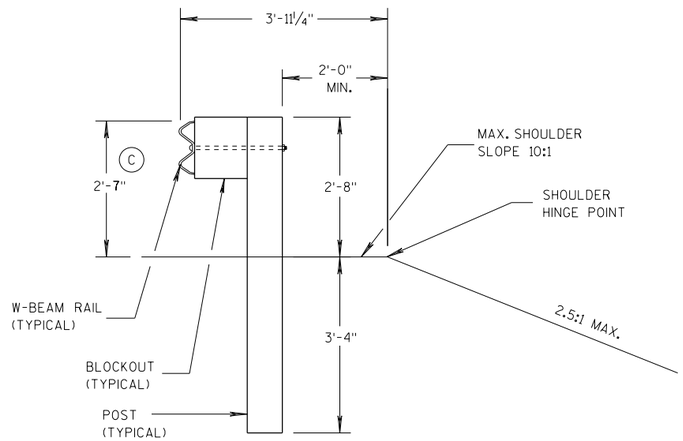
CRT WOOD POST



SECTION B-B

POSTS NO. 1-3

SEE OTHER DETAILS



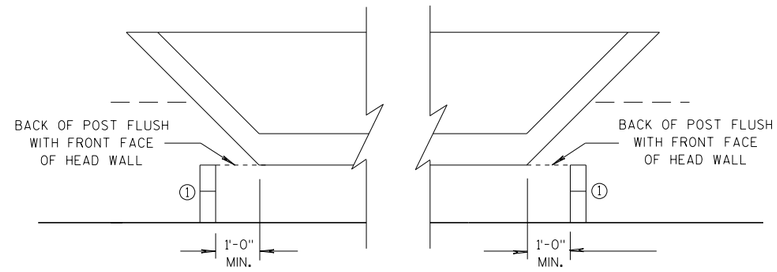
SECTION A-A

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 DEVELOPMENT ENGINEER

PRE_97

6

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

6

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.

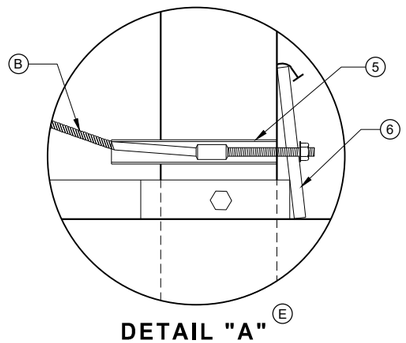
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

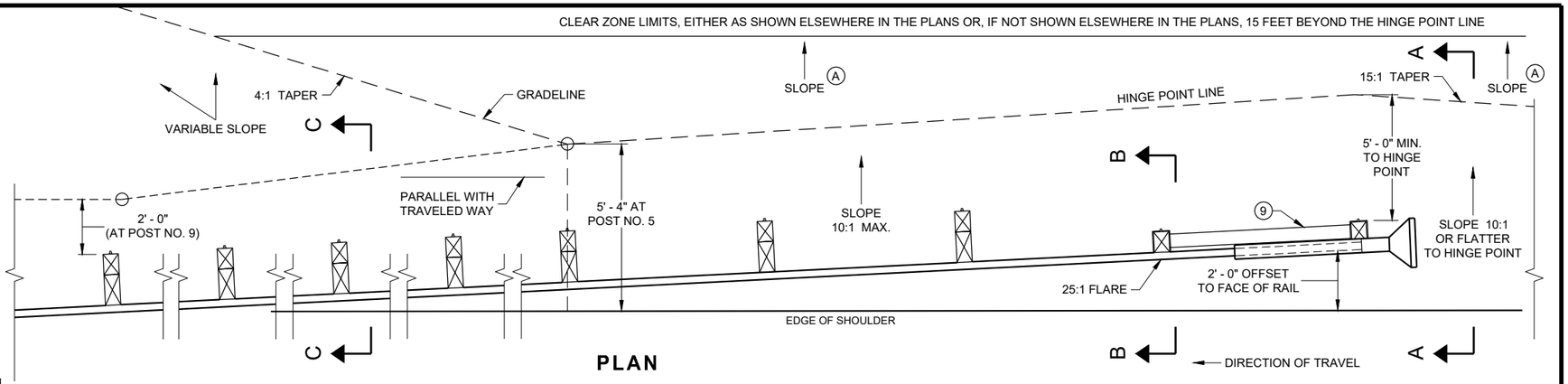
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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

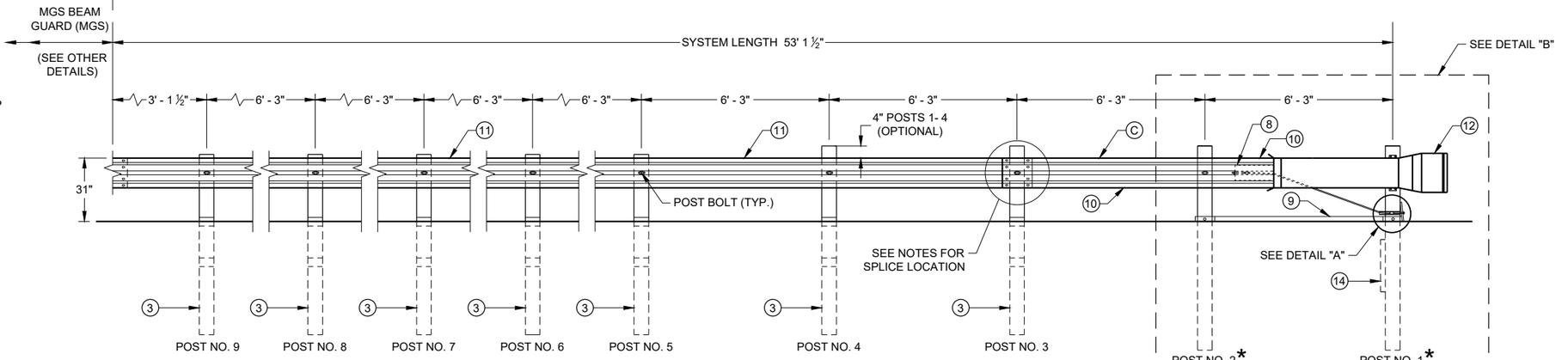
THE CENTER OF THE UPPER 3 ½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



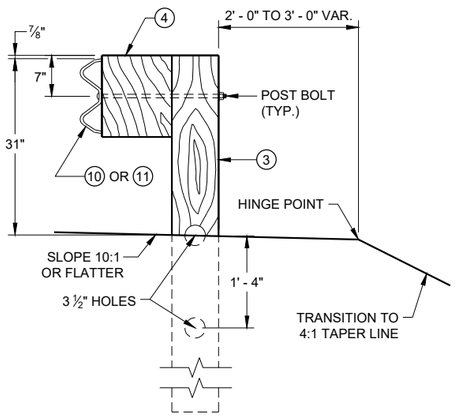
DETAIL "A" (E)



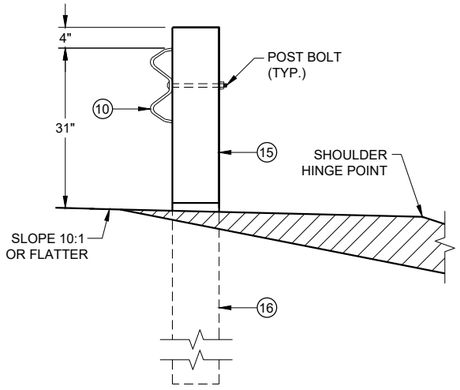
PLAN



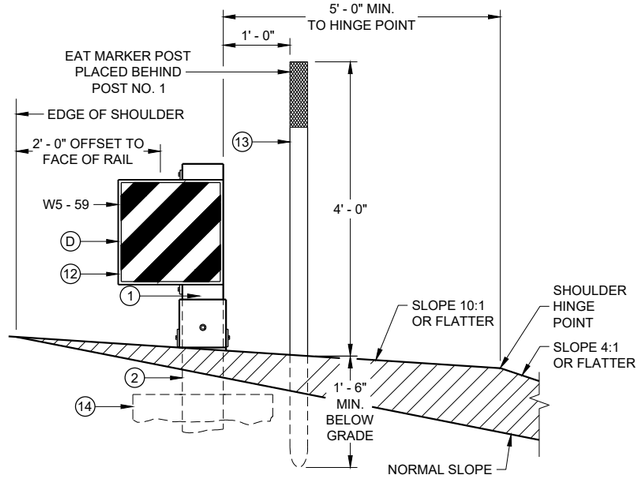
ELEVATION



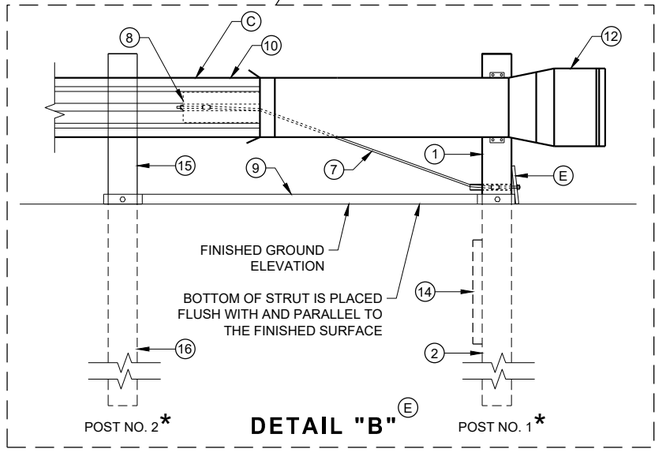
SECTION C - C
TYPICAL AT POST NOS. 3 - 9



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 TRANSPO PRE_98

SDD 14B44 - 04a

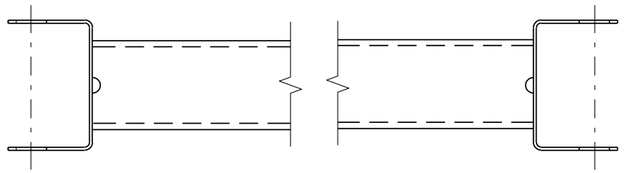
SDD 14B44 - 04a

6

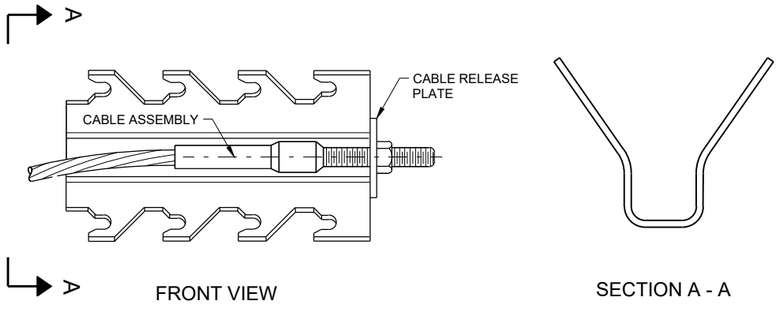
6

BILL OF MATERIALS

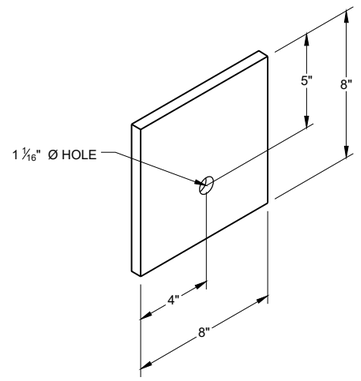
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUGACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED W-BEAM RAIL 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 GROUND STRUT ⑨ Ⓔ



GENERIC ANCHOR CABLE BOX ⑧ Ⓔ



BEARING PLATE ⑥ Ⓔ

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

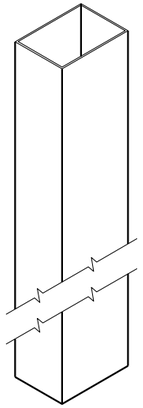
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO PRE_99

SDD 14B44 - 04b

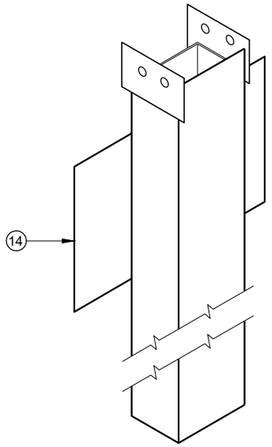
SDD 14B44 - 04b

6

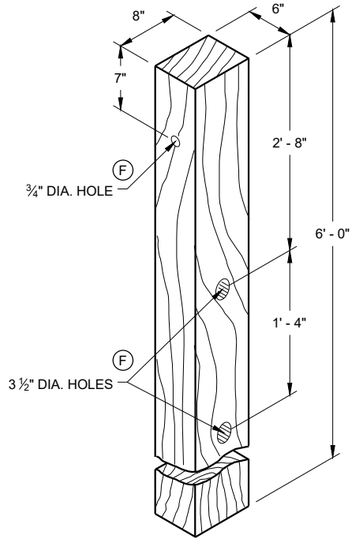
6



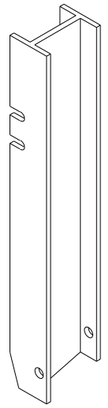
UPPER POST NO. 1 (1) (E)



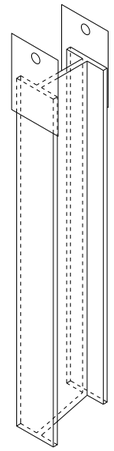
LOWER POST NO. 1 (2) (E)



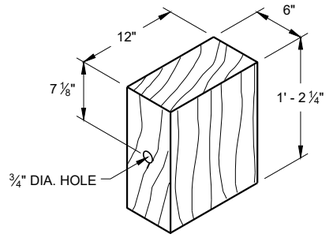
WOOD CRT POST (3) (E)
POSTS NUMBER 3-9



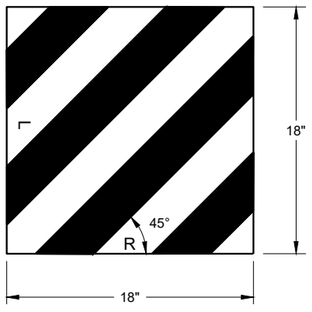
UPPER POST NO. 2 (15) (E)



LOWER POST NO. 2 (16) (E)

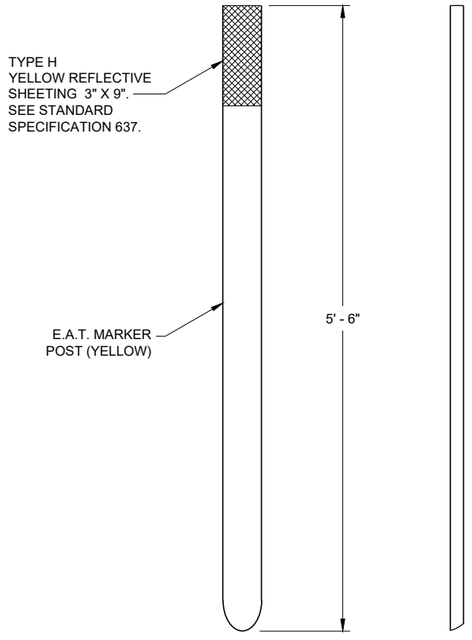


WOOD BLOCKOUT (4)
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



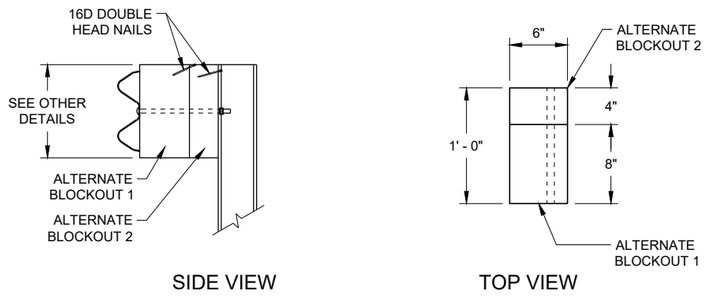
W5 - 59

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
UNIT SUPER

FHWA

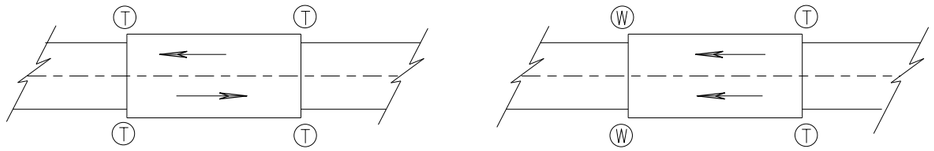
PRE_100

6

6

SDD 14B44 - 04c

SDD 14B44 - 04c



TWO WAY TRAFFIC

ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

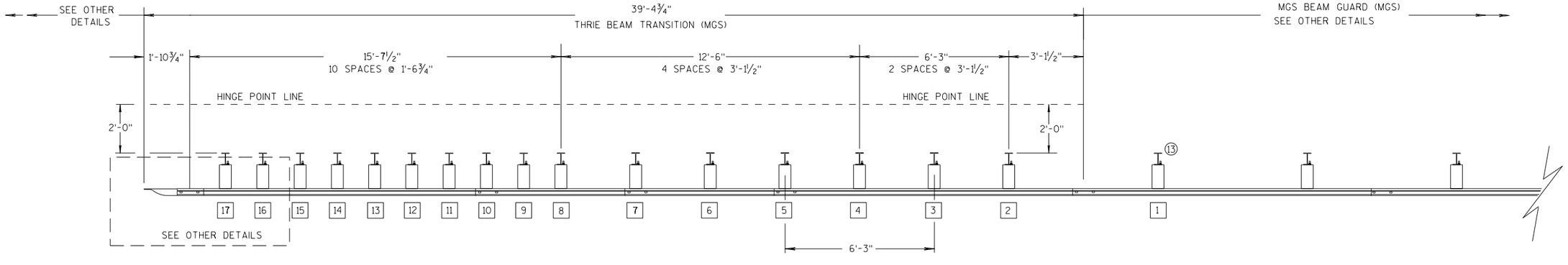
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

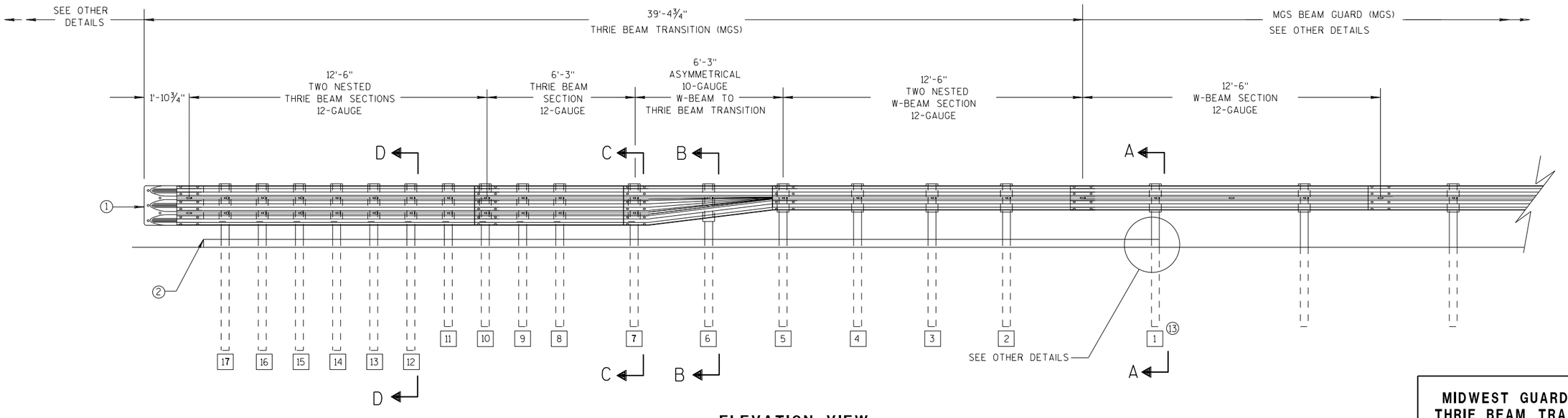
(1) BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

(2) OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

(13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANS

PRE_101

6

S.D.D. 14 B 45-5a

6

S.D.D. 14 B 45-5a

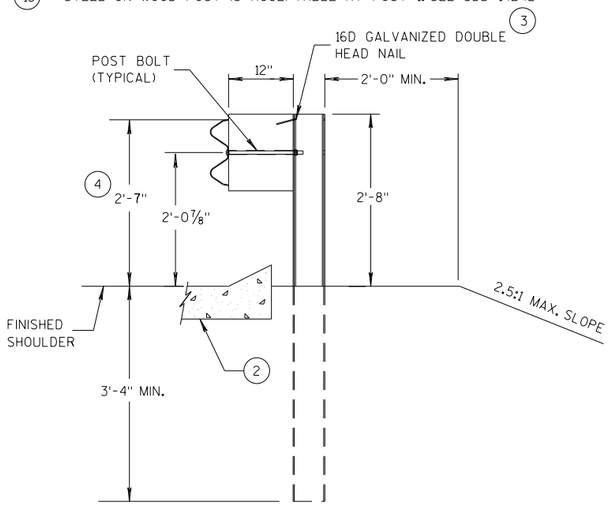
GENERAL NOTES

(2) OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

(3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

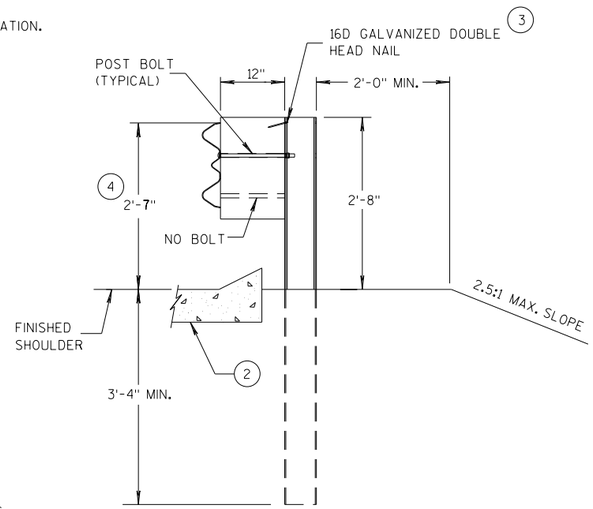
(4) TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".

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



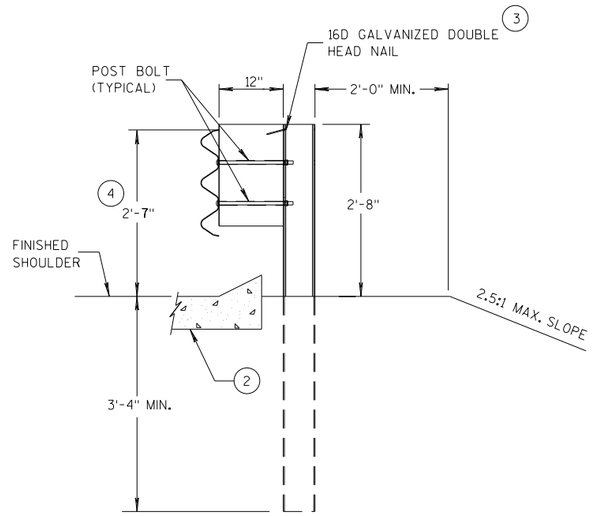
SECTION A-A (13)

POSTS 1-5



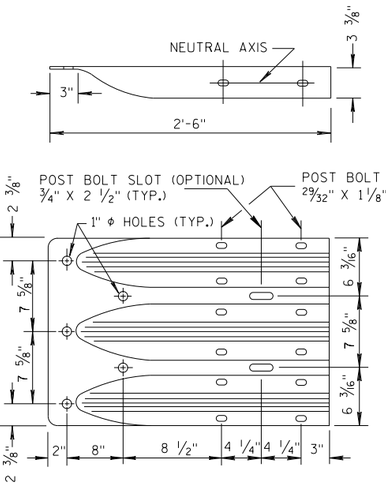
SECTION B-B

POST 6

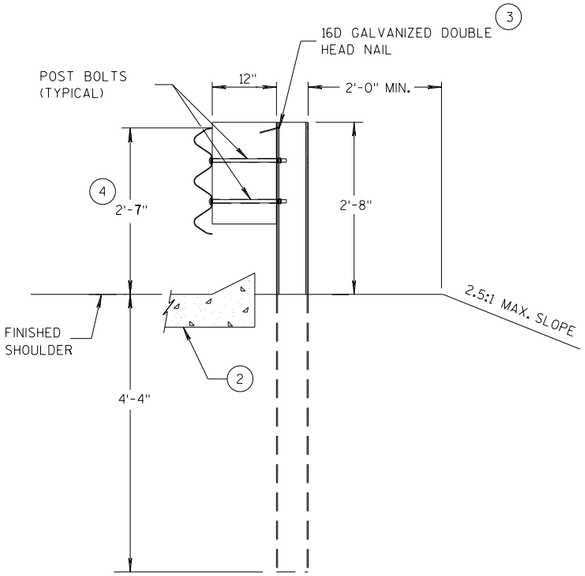


SECTION C-C

POSTS 7-11

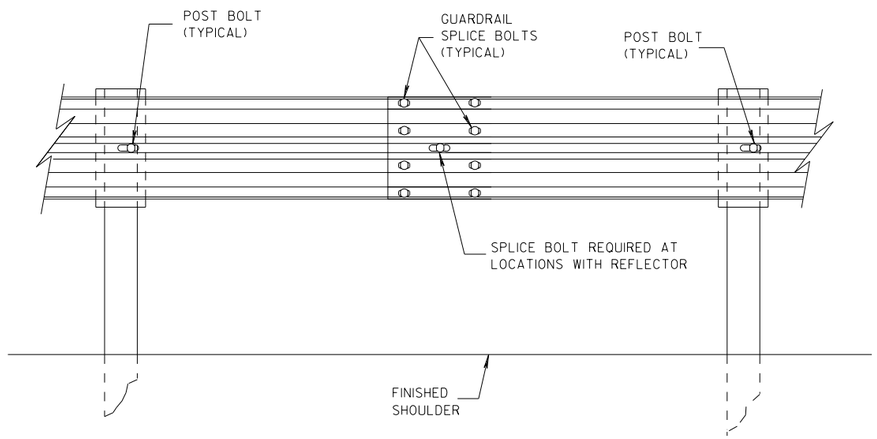


THRIE BEAM TERMINAL CONNECTOR



SECTION D-D

POSTS 12-17



SPLICE DETAIL

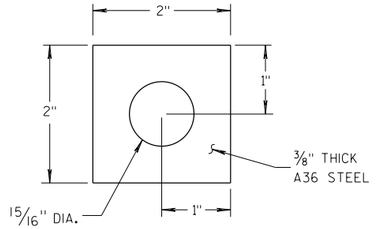
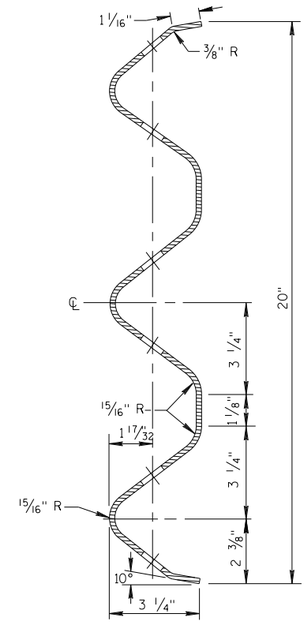


PLATE WASHER DETAIL



SECTION THRU THRIE BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

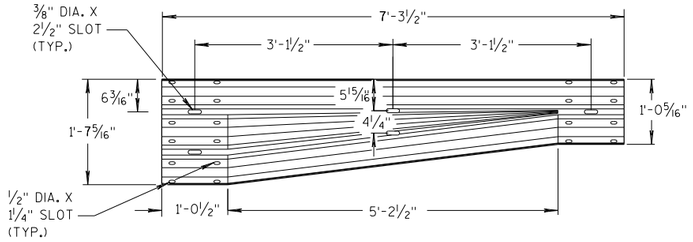
STATE OF WISCONSIN
DEPARTMENT OF TRANS PRE_102

6

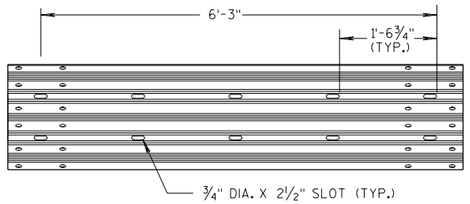
S.D.D. 14 B 45-5b

6

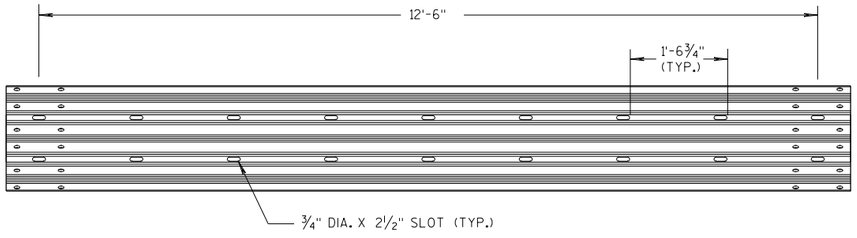
S.D.D. 14 B 45-5b



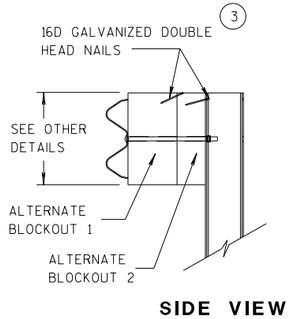
W-BEAM TO THRIE BEAM TRANSITION SECTION



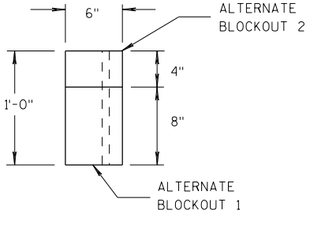
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

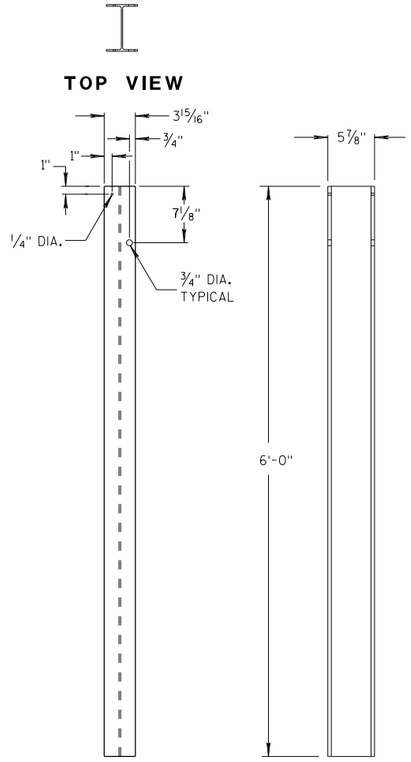


SIDE VIEW



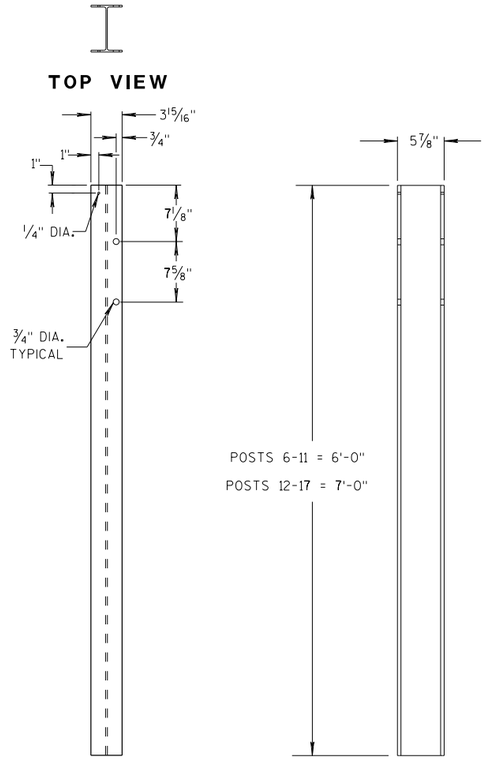
TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL



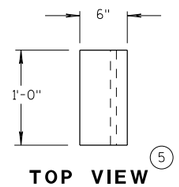
FRONT VIEW SIDE VIEW

STEEL POSTS 1-5 (13)

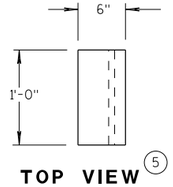


FRONT VIEW SIDE VIEW

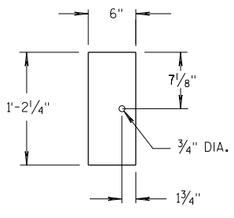
STEEL POSTS 6-17



TOP VIEW (5)

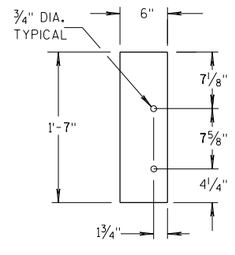


TOP VIEW (5)



FRONT VIEW

BLOCKOUT POSTS 1-5



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

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

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

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

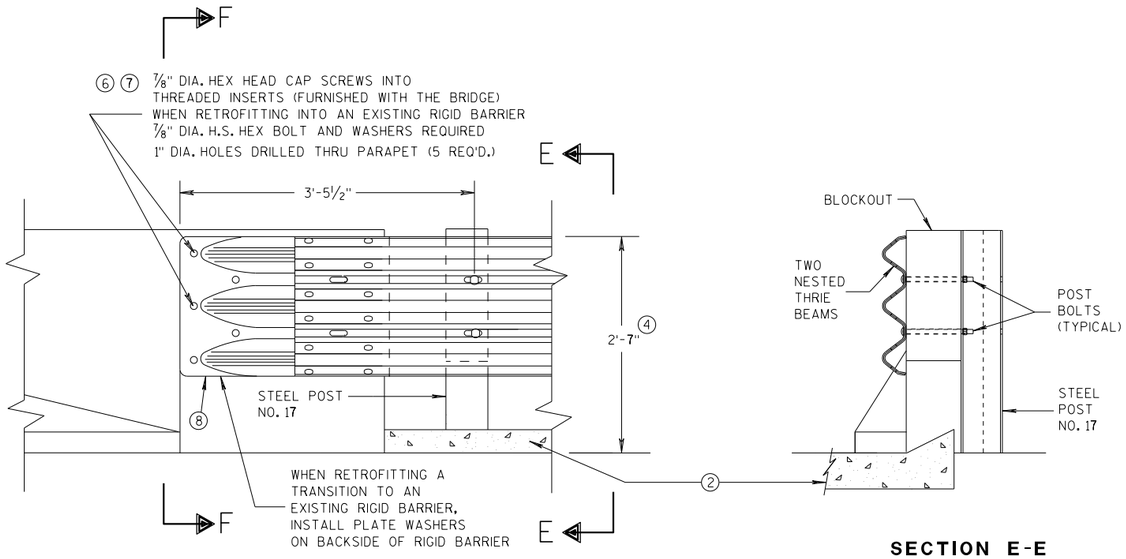
(13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANS

PRE_103

6
S.D.D. 14 B 45-5c



FRONT VIEW

SECTION E-E

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

GENERAL NOTES

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

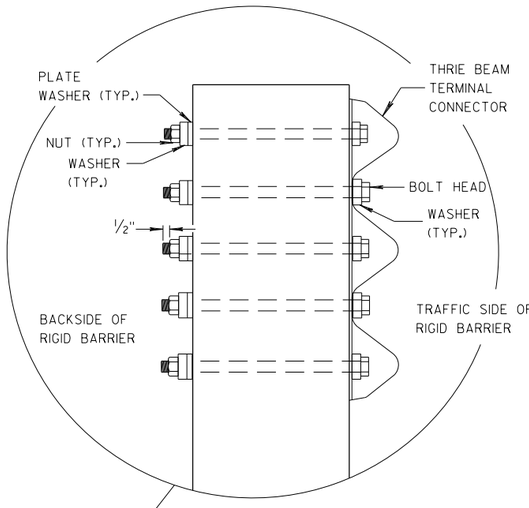
② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

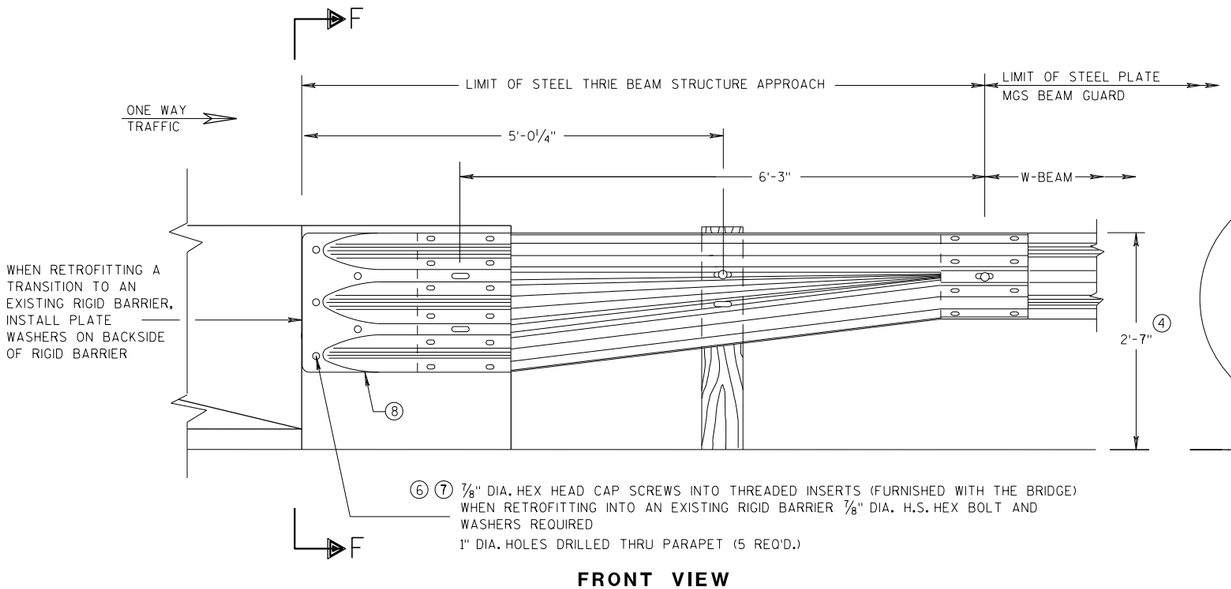
④ TOLERANCE FOR TOP OF BEAM IS ± 1".

⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

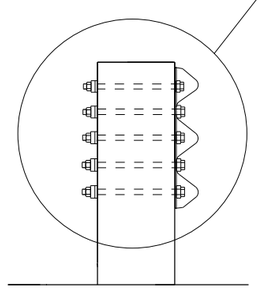
⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".

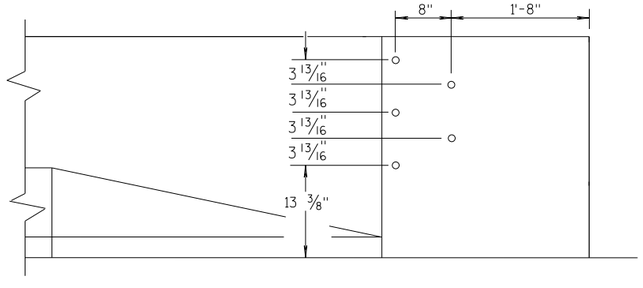




FRONT VIEW



SECTION F-F



DRILL HOLE LOCATION

W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

PRE_104

6

S.D.D. 14 B 45-5d

6

S.D.D. 14 B 45-5d

GENERAL NOTES

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

(2) OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

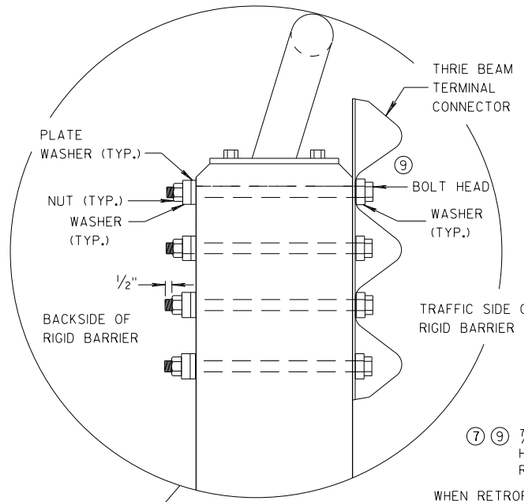
(4) TOLERANCE FOR TOP OF BEAM IS ± 1".

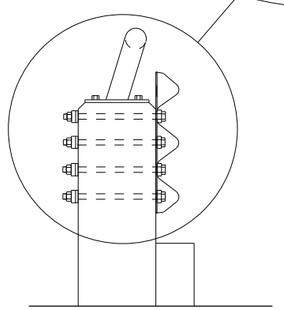
(6) DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

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

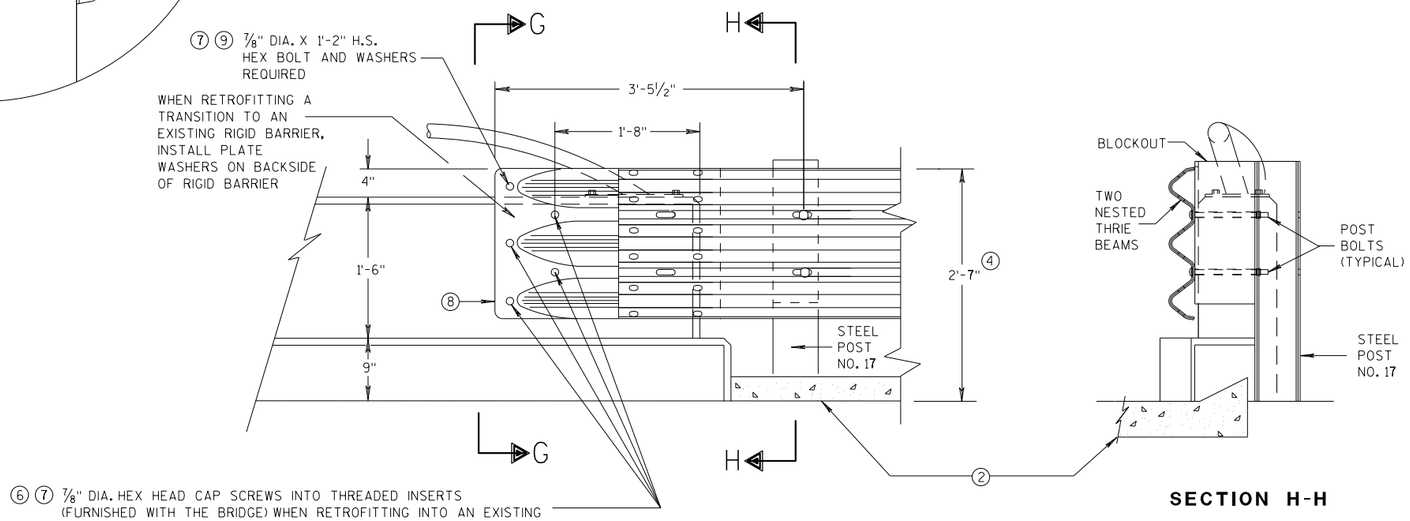
(8) THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".

(9) BOLT, NUT AND WASHERS NOT REQUIRED FOR THIS LOCATION WHEN RETROFITTING AN EXISTING PAPAPET AND THE HOLE IS EITHER ABOVE PARAPET OR WITHIN 4 INCHES OF THE EDGE OF PARAPET.





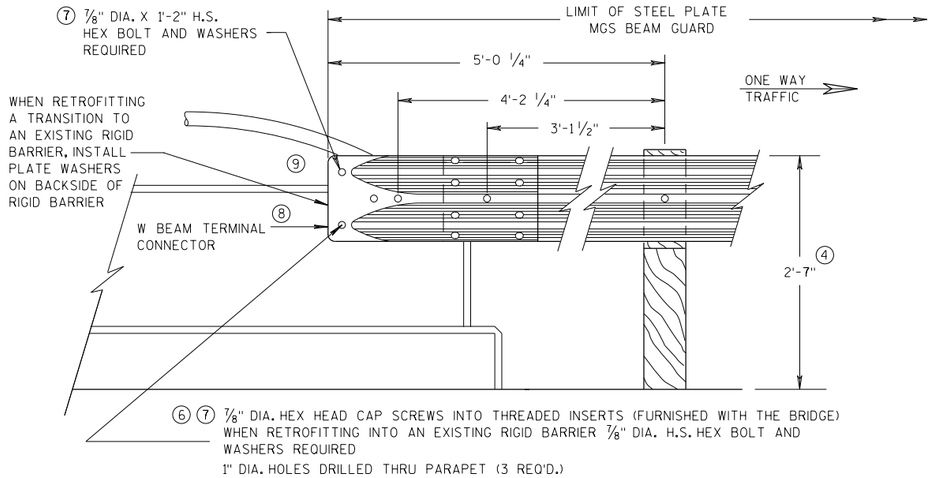
SECTION G-G



FRONT VIEW

SECTION H-H

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS



FRONT VIEW

W BEAM CONNECTION TO VERTICAL FACE PARAPET

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

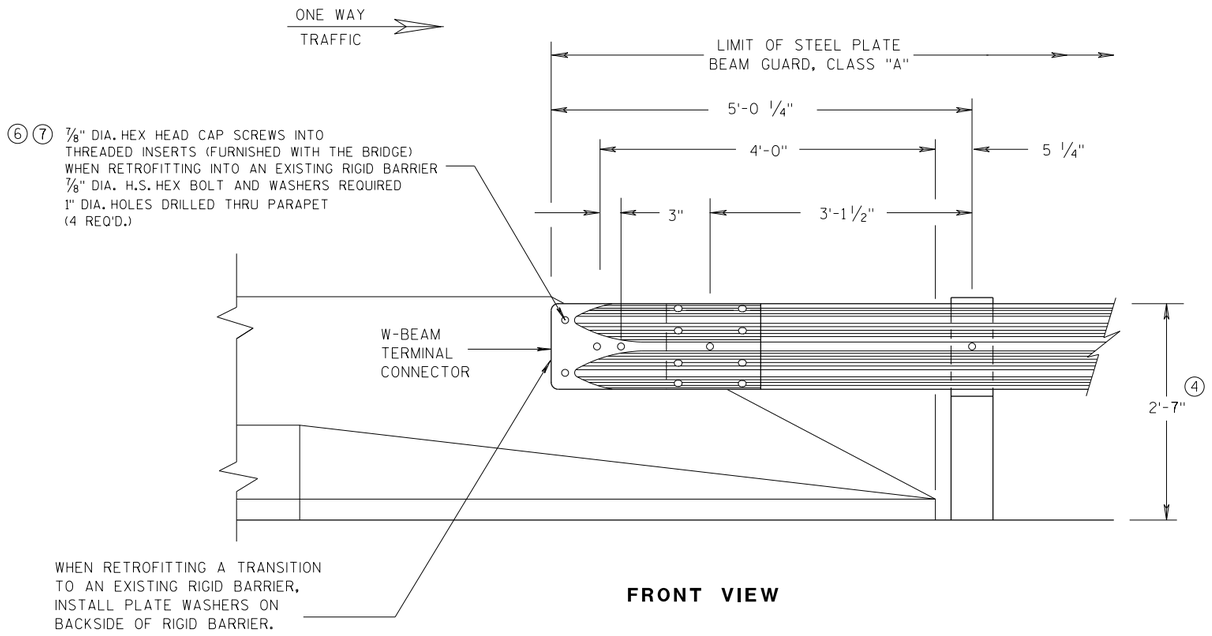
PRE_105

6

S.D.D. 14 B 45-5e

6

S.D.D. 14 B 45-5e



FRONT VIEW

W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS

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

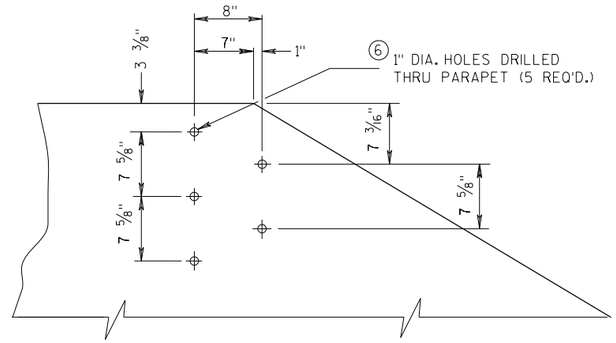
GENERAL NOTES

② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

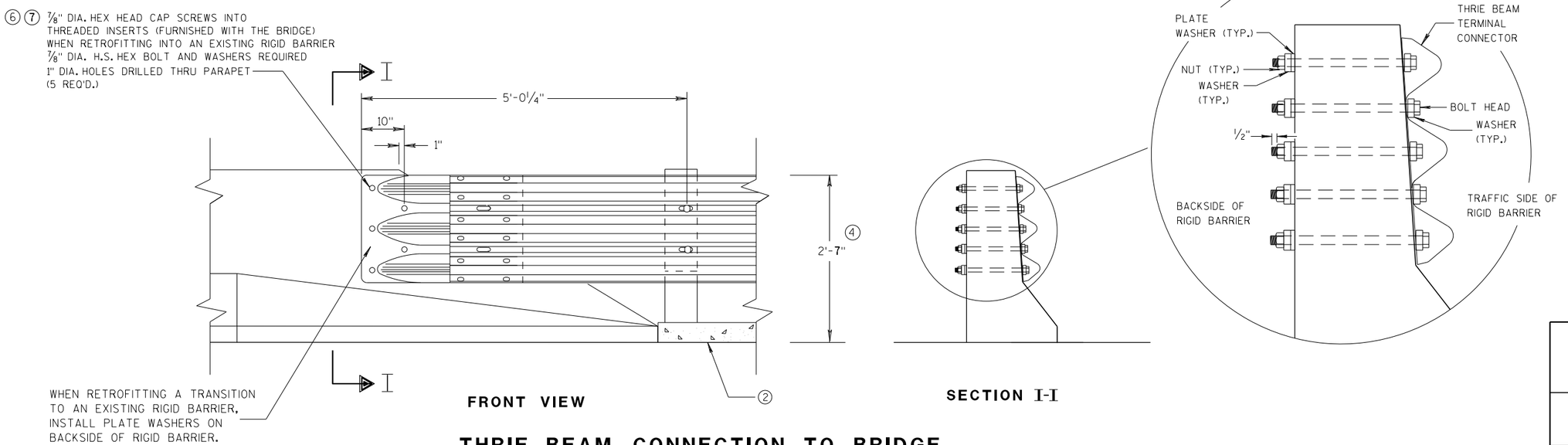
④ TOLERANCE FOR TOP OF BEAM IS ± 1".

⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



DRILL HOLE LOCATION AND PATTERN
FOR THRIE BEAM CONNECTION



FRONT VIEW

SECTION I-I

THRIE BEAM CONNECTION TO BRIDGE PARAPETS WITH SLOPED ENDS

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
07/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDA
UNIT SU
NT
FHWA

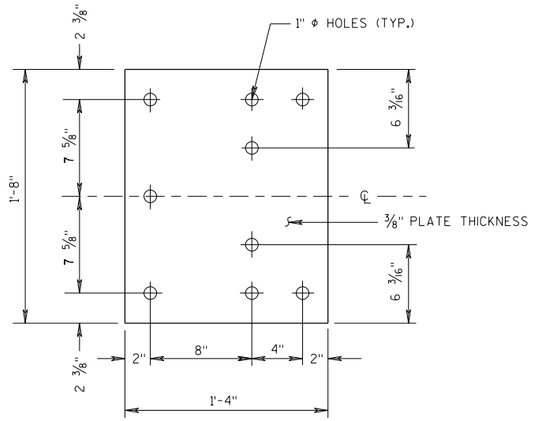
PRE_106

6

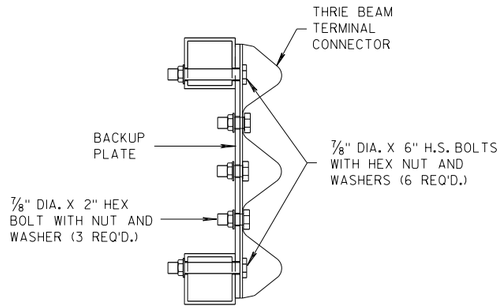
S.D.D. 14 B 45-5f

6

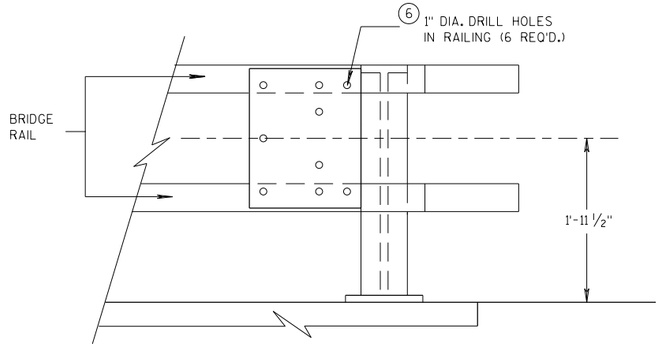
S.D.D. 14 B 45-5f



BACK-UP PLATE DETAIL



SECTION J-J

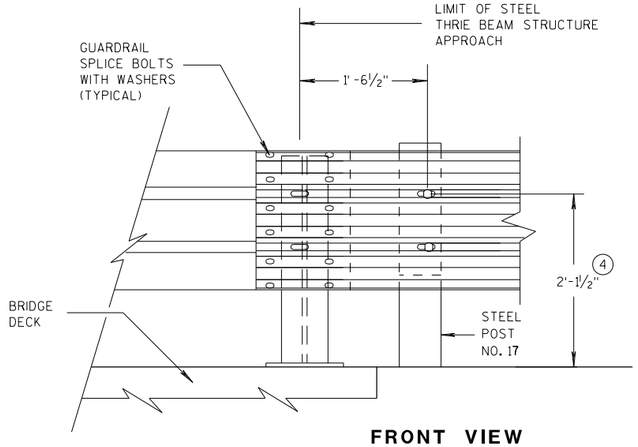


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

GENERAL NOTES

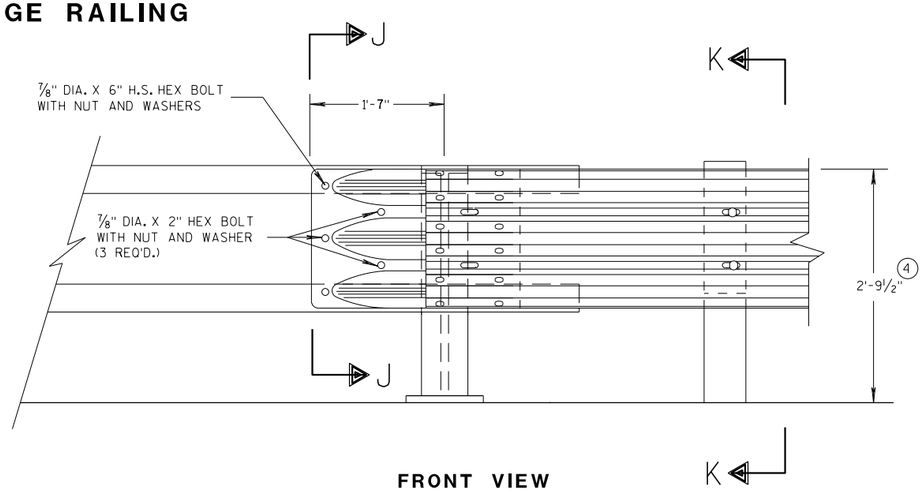
④ TOLERANCE FOR TOP OF BEAM IS ± 1".

⑥ DRILLING HOLES THROUGH THE PAPRPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

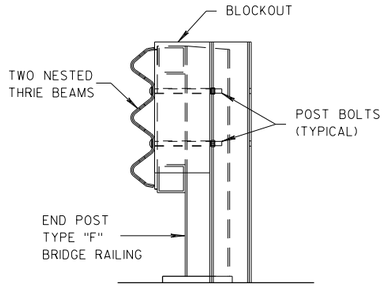


FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"



FRONT VIEW



SECTION K-K

THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 07/2018
DATE
FHWA

/S/ Rodney Tay PRE_107
ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR

6

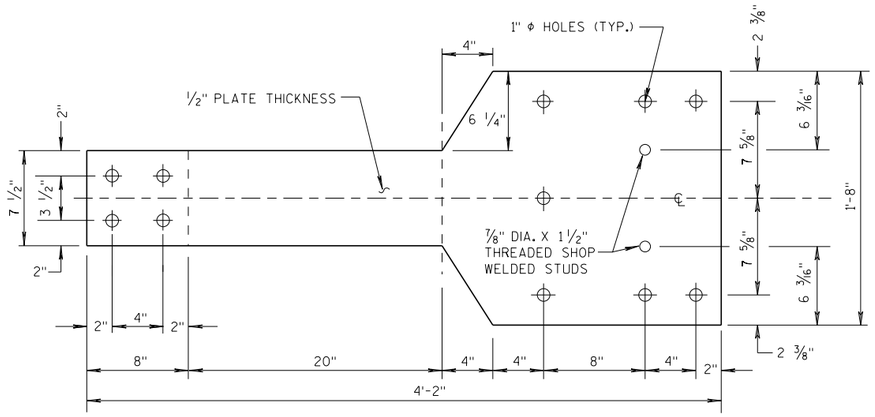
S.D.D. 14 B 45-5g

6

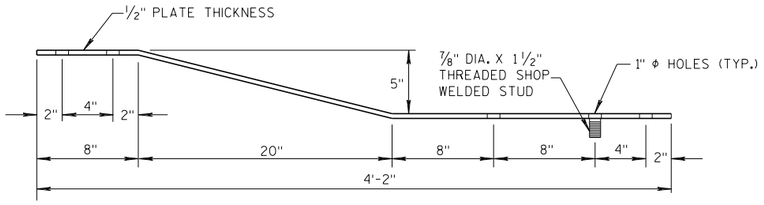
S.D.D. 14 B 45-5g

GENERAL NOTES

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

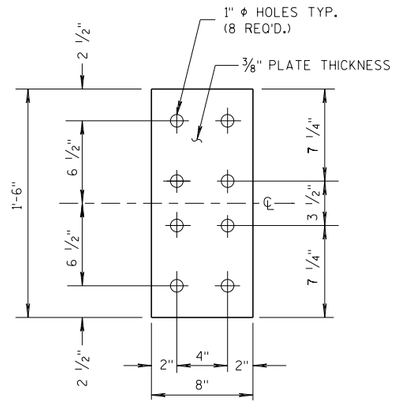


FRONT VIEW



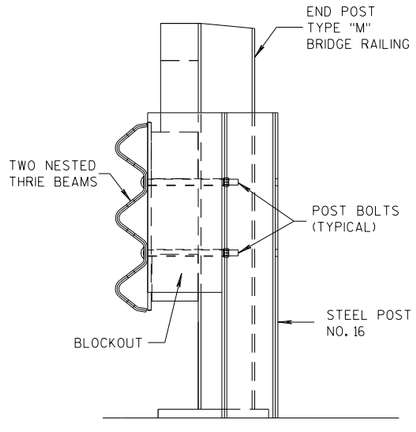
PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

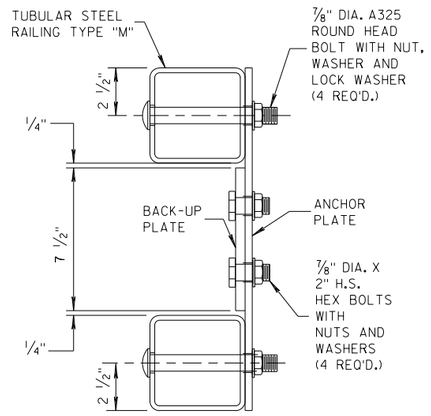


FRONT VIEW

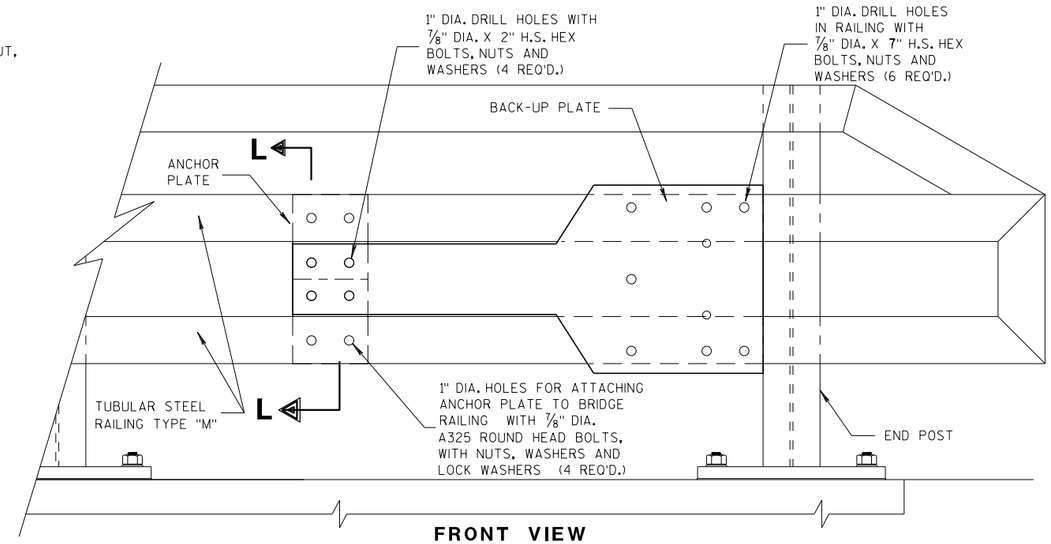
ANCHOR PLATE DETAIL, TYPE "M"



SECTION M-M

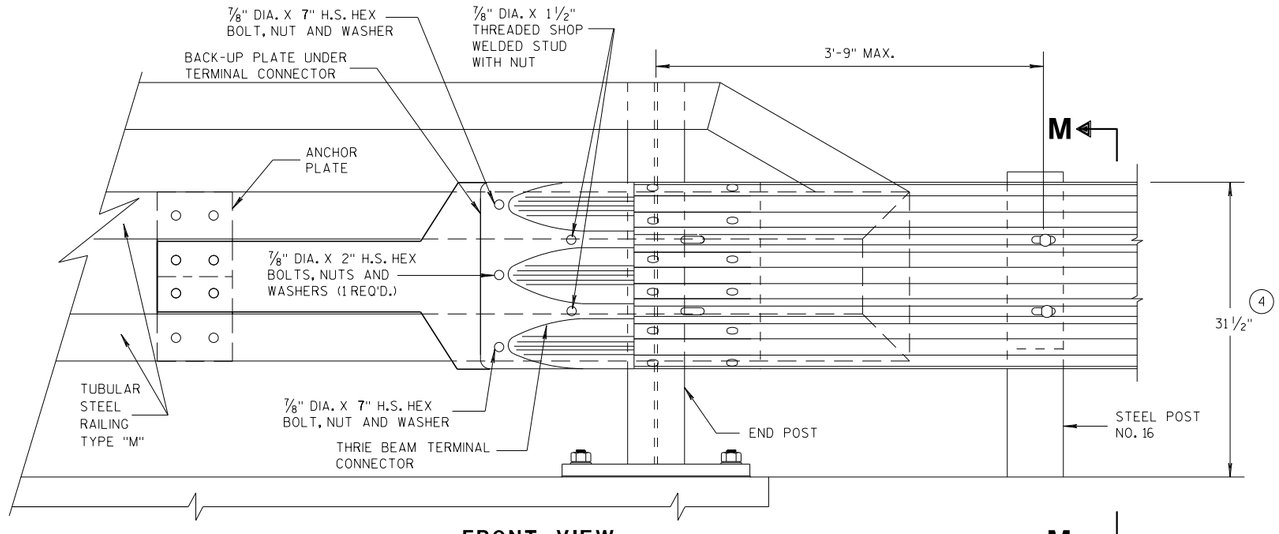


SECTION L-L

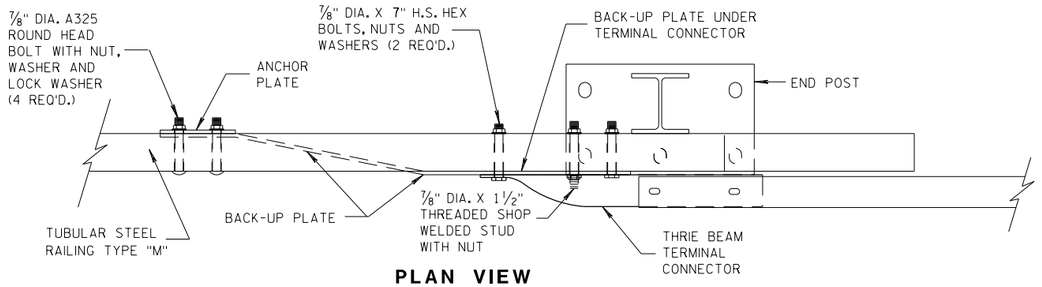


FRONT VIEW

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



FRONT VIEW



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
07/2018 — DATE
/S/ Rodney Taylor — ROADWAY STANDA UNIT SU VT
FHWA

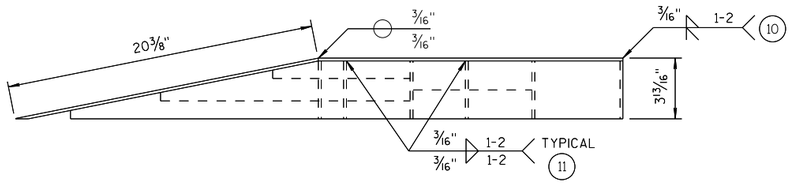
PRE_108

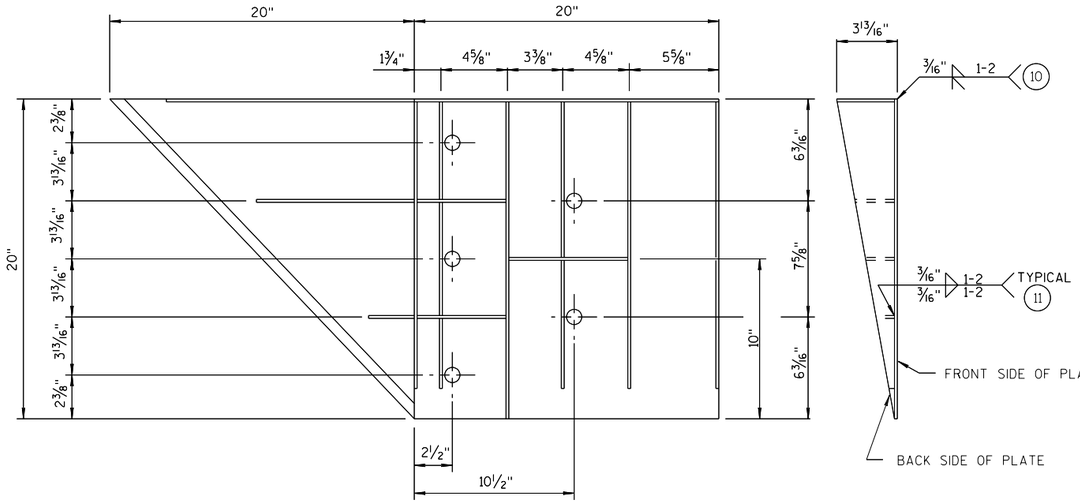
6

S.D.D. 14 B 45-5h

6

S.D.D. 14 B 45-5h





WELDING INSTRUCTION

(VIEWED FROM BACK SIDE OF PLATE)

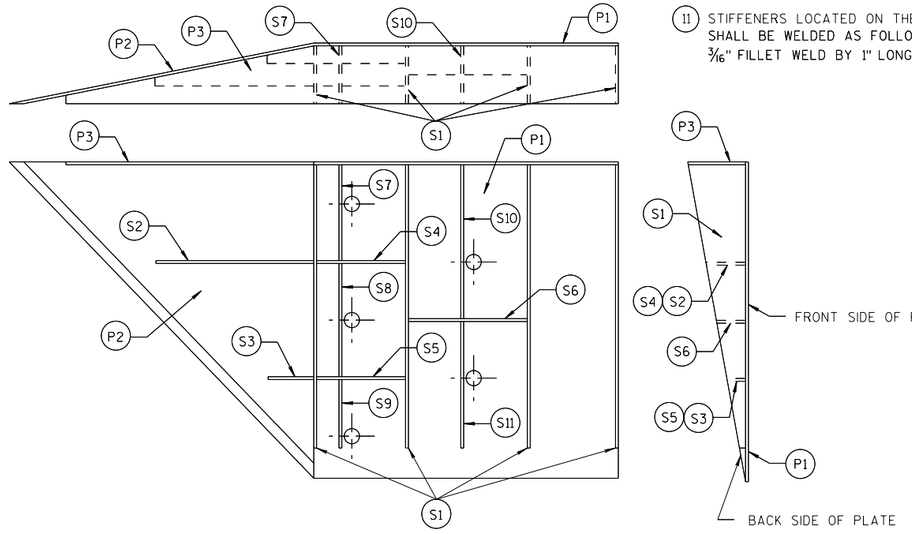


PLATE AND STIFFENER IDENTIFICATION

(VIEWED FROM BACK SIDE OF PLATE)

GENERAL NOTES

COVER PLATE PANELS ARE 3/16" THICK.

ALL STIFFENERS ARE 1/4" THICK.

CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.

FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.

ALL HOLE DIAMETERS SHALL BE 1".

FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.

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

(11) STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
3/16" FILLET WELD BY 1" LONG SPACED AT 2".

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)

PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 9/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 5/16"	3/16"
S1	4		18 7/16" x 3 5/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 7/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 1/8" x 1/2"	1/4"
S4	1		6 1/8" x 2 7/16"	1/4"
S5	1		6 1/8" x 1 1/16"	1/4"
S6	1		7 3/4" x 1 3/4"	1/4"
S7	1		2 9/16" x 6" x 3 5/8" x 5 7/8"	1/4"
S8	1		1 5/32" x 7 1/2" x 2 1/2" x 7 3/8"	1/4"
S9	1		6 1/16" x 6 3/16" x 1 3/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 5/8" x 9 11/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 13/16"	1/4"

SINGLE SLOPE CONNECTION PLATE

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018
DATE
FHWA

/S/ Rodney Taylor
ROADWAY STANDARDS UNIT SUPERVISOR

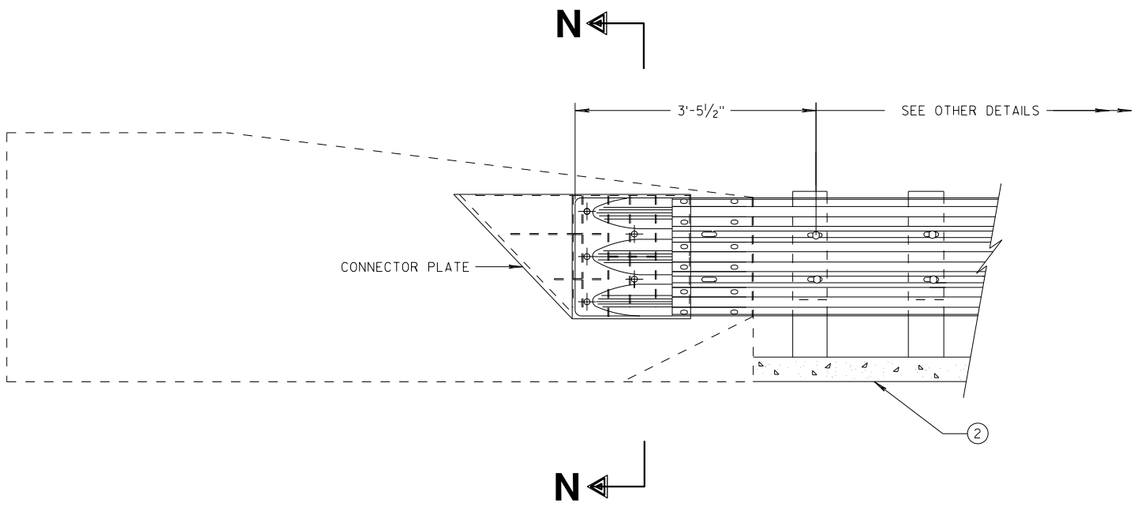
PRE_109

6

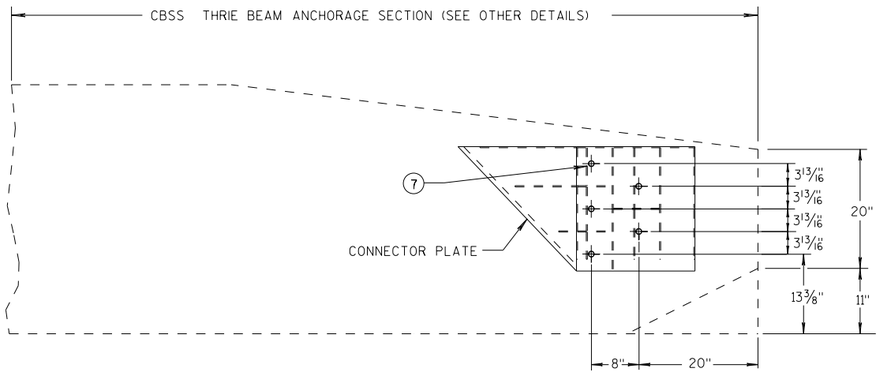
S.D.D. 14 B 45-5i

6

S.D.D. 14 B 45-5i



THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



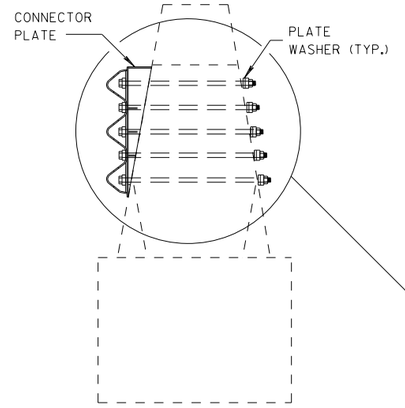
SINGLE SLOPE CONNECTION PLATE PLACEMENT

GENERAL NOTES

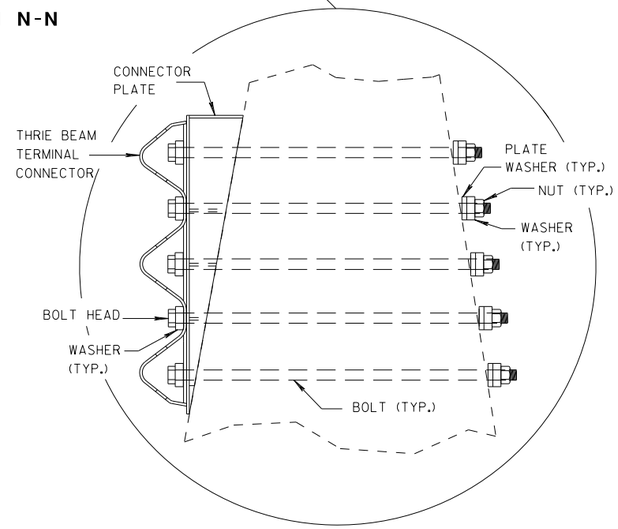
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

(2) OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

(7) BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X ⅝" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



SECTION N-N



MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018
DATE
FHWA

/S/ Rodney Taylor
ROADWAY STANDARDS UNIT SUP

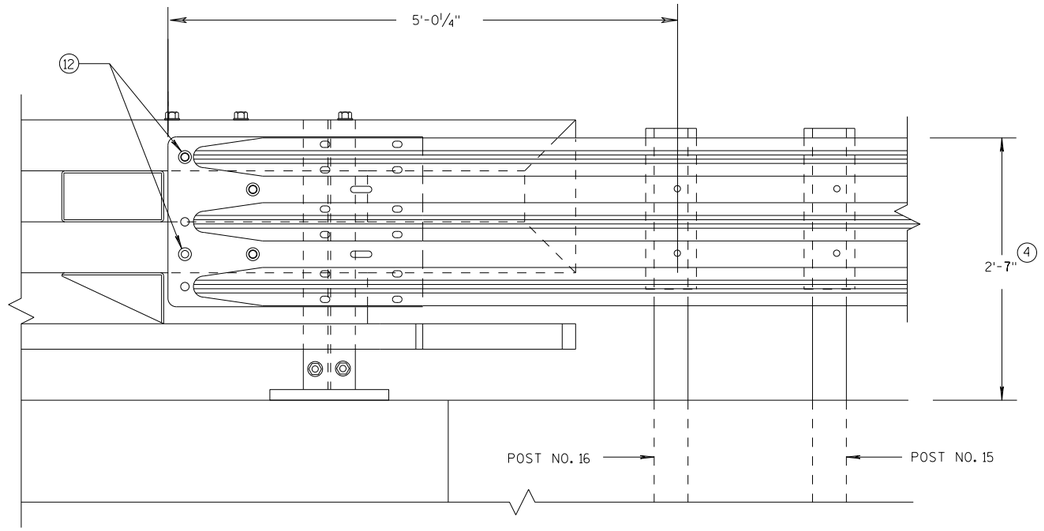
PRE_110

6

S.D.D. 14 B 45-5j

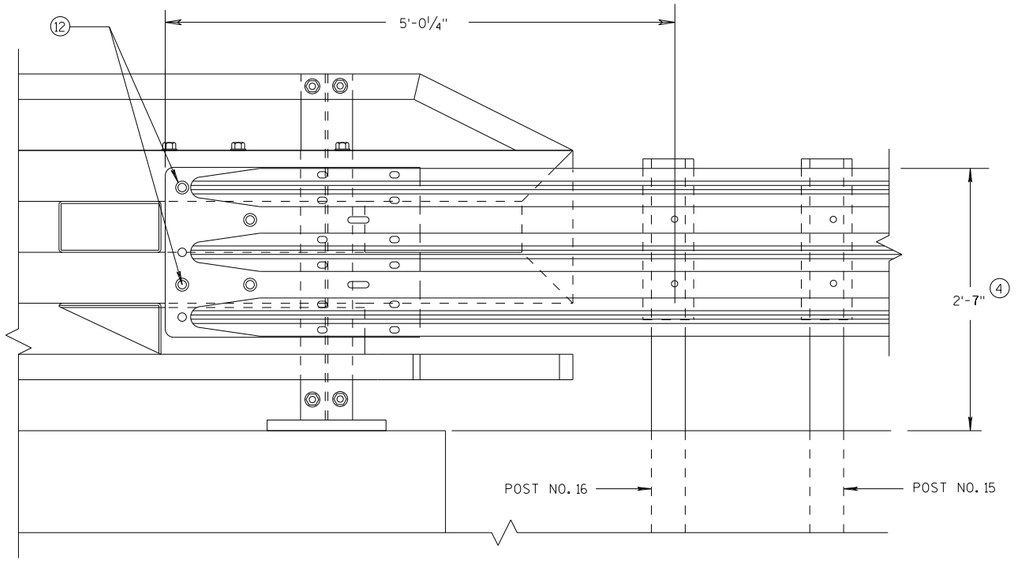
6

S.D.D. 14 B 45-5j



ELEVATION OF DETAIL AT NY3 END POST

THRIE BEAM RAIL ATTACHMENT



ELEVATION OF DETAIL AT NY4 END POST

THRIE BEAM RAIL ATTACHMENT

GENERAL NOTES

(4) TOLERANCE FOR TOP OF BEAM IS ± 1".

(12) BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND 1/2-INCH BEYOND NUT.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

7/2018
DATE

/S/ Rodney Taylor
ROADWAY STANDARDS UNIT SUPERVISOR

FHWA

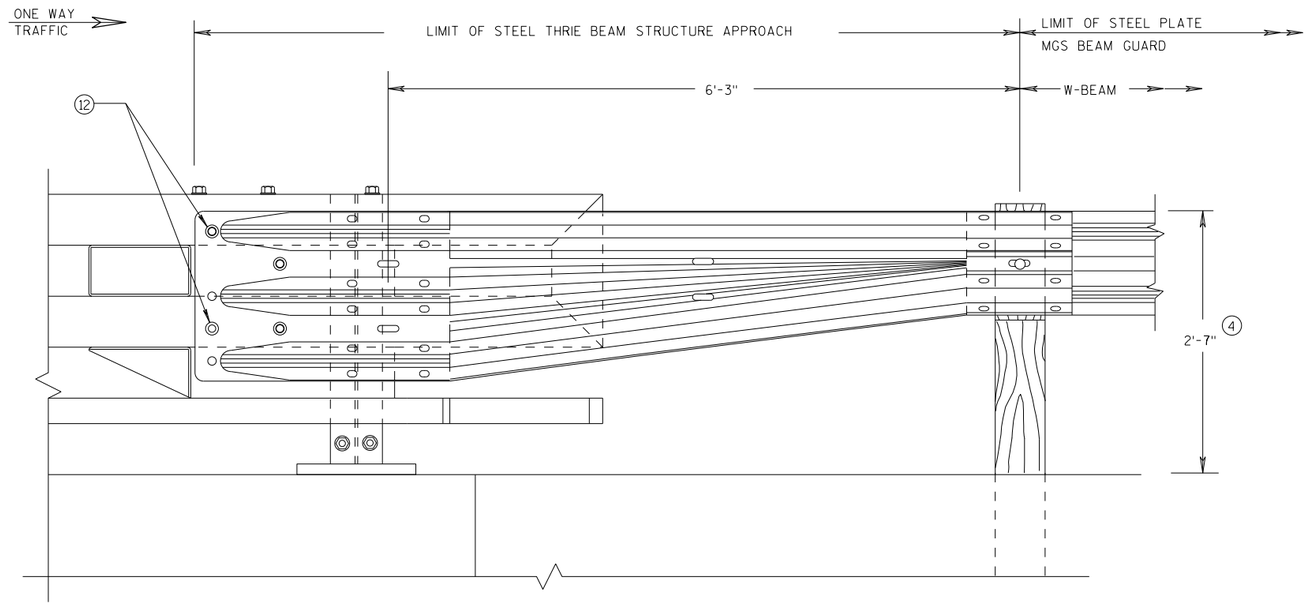
PRE_111

6

S.D.D. 14 B 45-5k

6

S.D.D. 14 B 45-5k



FRONT VIEW

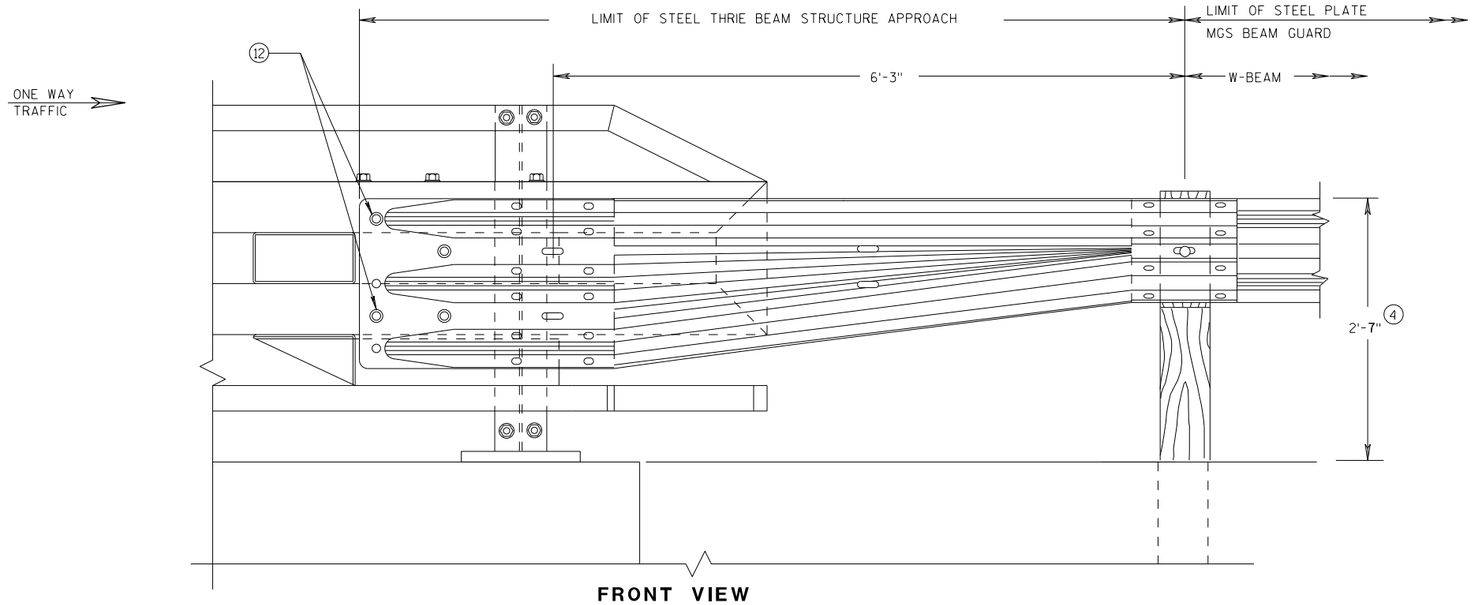
W BEAM TRANSITION AND CONNECTION TO BRIDGE RAILING TYPE "NY3"

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

GENERAL NOTES

(4) TOLERANCE FOR TOP OF BEAM IS ± 1".

(12) BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND 1/2-INCH BEYOND NUT.



FRONT VIEW

W BEAM TRANSITION AND CONNECTION TO BRIDGE RAILING TYPE "NY4"

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

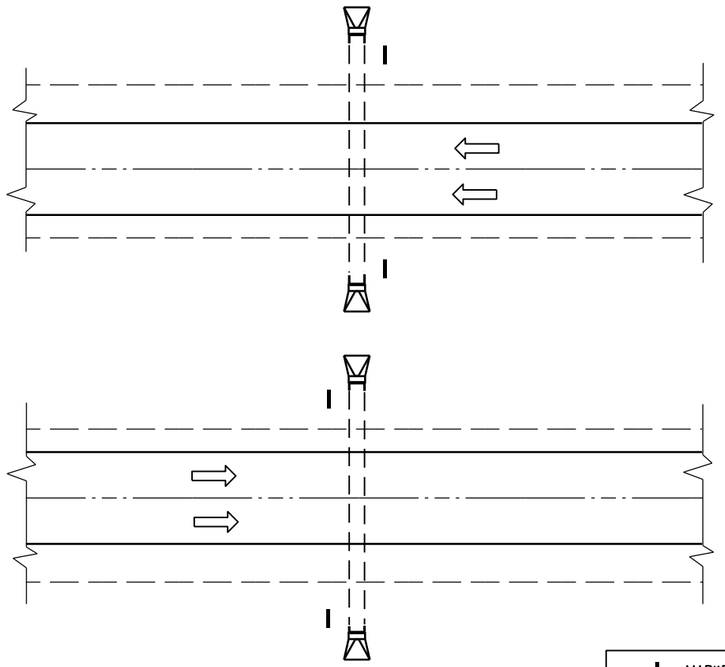
PRE_112

6

S.D.D. 14 B 45-5L

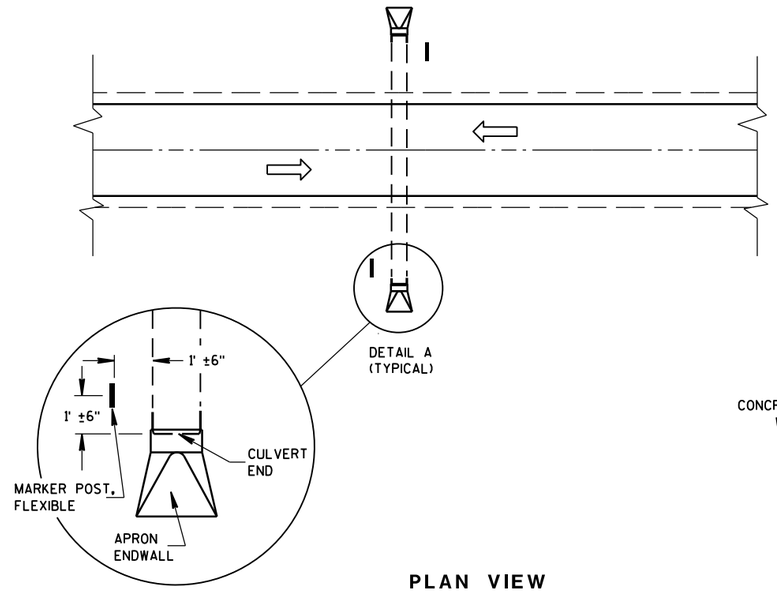
6

S.D.D. 14 B 45-5L



PLAN VIEW

DIVIDED HIGHWAY



DETAIL A
(TYPICAL)

PLAN VIEW

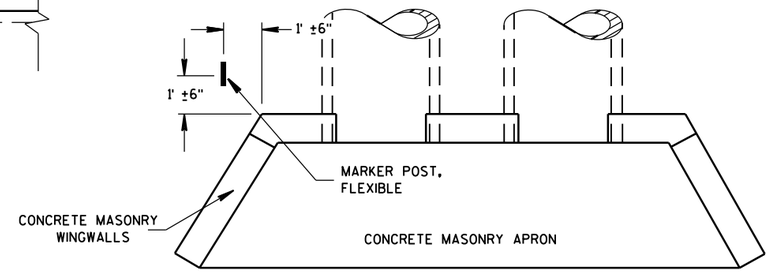
UNDIVIDED HIGHWAY

MARKER POST, FLEXIBLE

DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

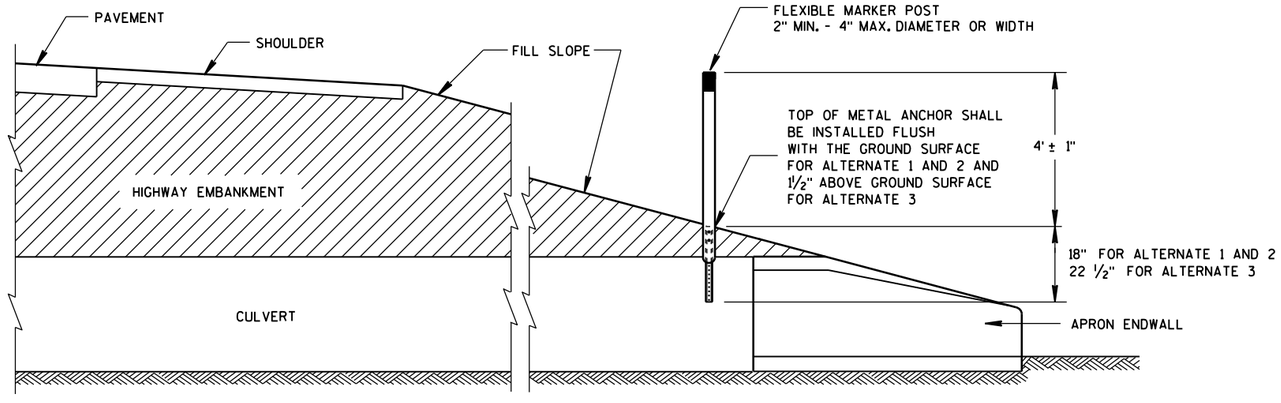
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.



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

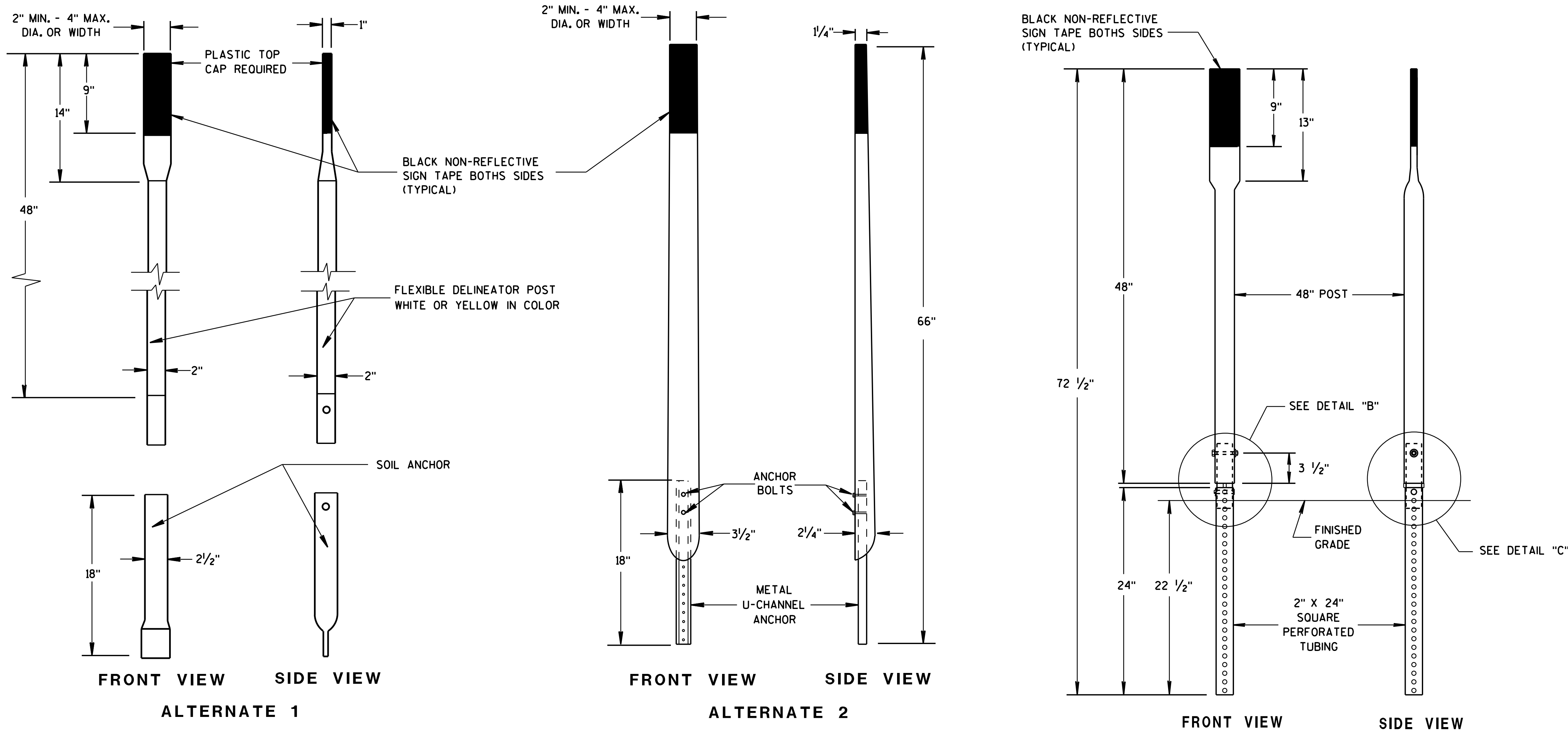
STATE OF WISCONSIN
DEPARTMENT OF TRAN PRE_113

6

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

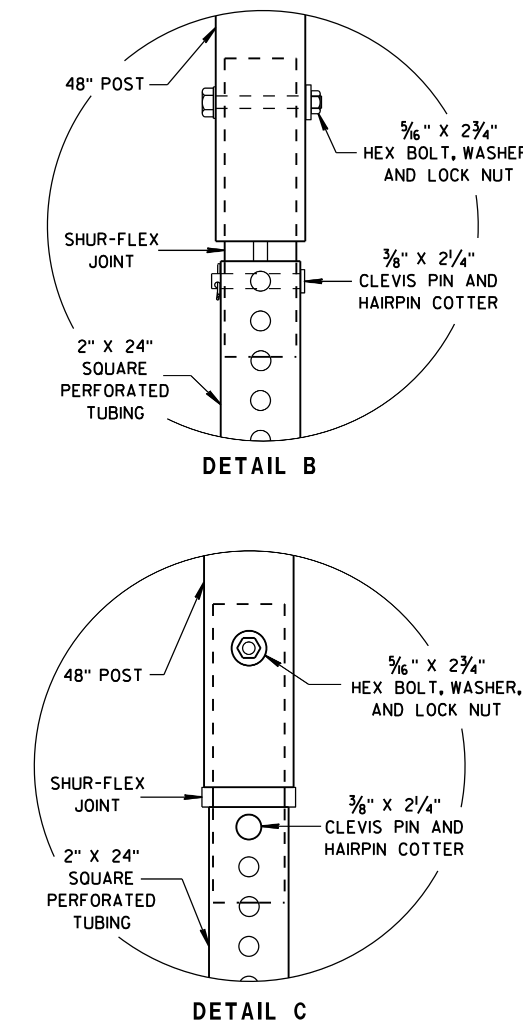
6

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

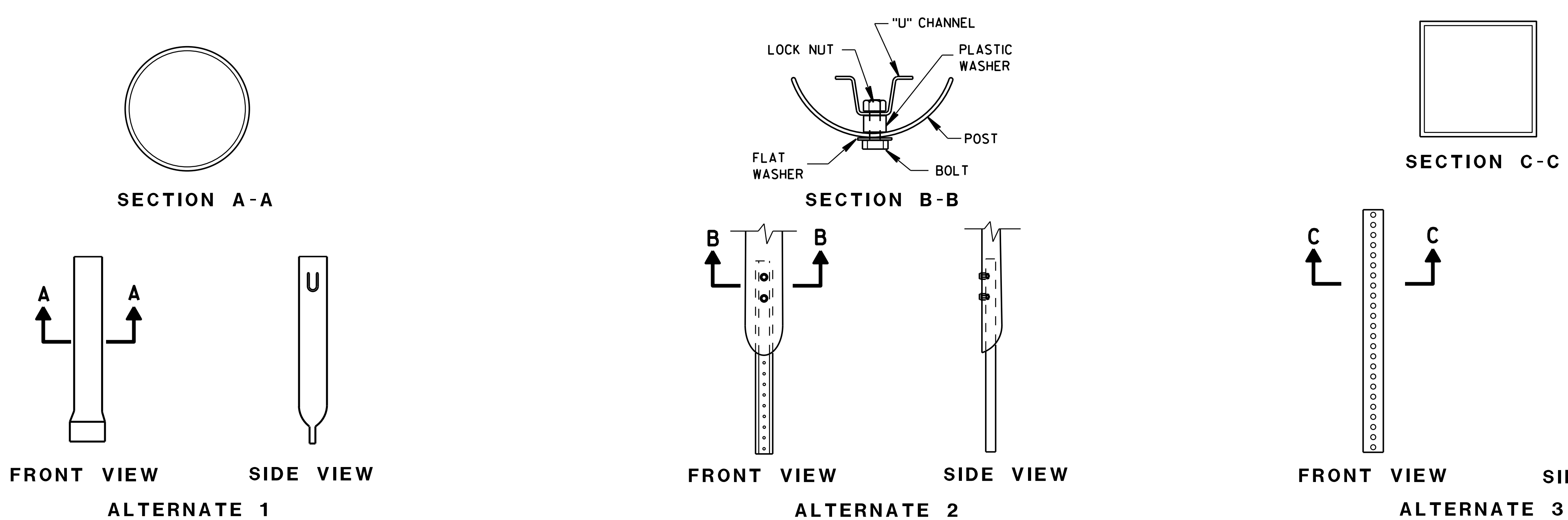


2" MIN. - 4" MAX. DIA. OR WIDTH
1"
PLASTIC TOP CAP REQUIRED
9"
14"
48"
BLACK NON-REFLECTIVE SIGN TAPE BOTHS SIDES (TYPICAL)
FLEXIBLE DELINEATOR POST WHITE OR YELLOW IN COLOR
2"
2"
SOIL ANCHOR
18"
2 1/2"
FRONT VIEW
SIDE VIEW
ALTERNATE 1
2" MIN. - 4" MAX. DIA. OR WIDTH
1 1/4"
66"
ANCHOR BOLTS
3 1/2"
2 1/4"
18"
METAL U-CHANNEL ANCHOR
FRONT VIEW
SIDE VIEW
ALTERNATE 2
BLACK NON-REFLECTIVE SIGN TAPE BOTHS SIDES (TYPICAL)
9"
13"
48"
48" POST
72 1/2"
SEE DETAIL "B"
3 1/2"
FINISHED GRADE
SEE DETAIL "C"
24"
22 1/2"
2" X 24" SQUARE PERFORATED TUBING
FRONT VIEW
SIDE VIEW
ALTERNATE 3

FLEXIBLE MARKER POSTS



48" POST
5/16" X 2 3/4" HEX BOLT, WASHER, AND LOCK NUT
SHUR-FLEX JOINT
3/8" X 2 1/4" CLEVIS PIN AND HAIRPIN COTTER
2" X 24" SQUARE PERFORATED TUBING
DETAIL B
48" POST
5/16" X 2 3/4" HEX BOLT, WASHER, AND LOCK NUT
SHUR-FLEX JOINT
3/8" X 2 1/4" CLEVIS PIN AND HAIRPIN COTTER
2" X 24" SQUARE PERFORATED TUBING
DETAIL C



FLEXIBLE MARKER POST ANCHORS

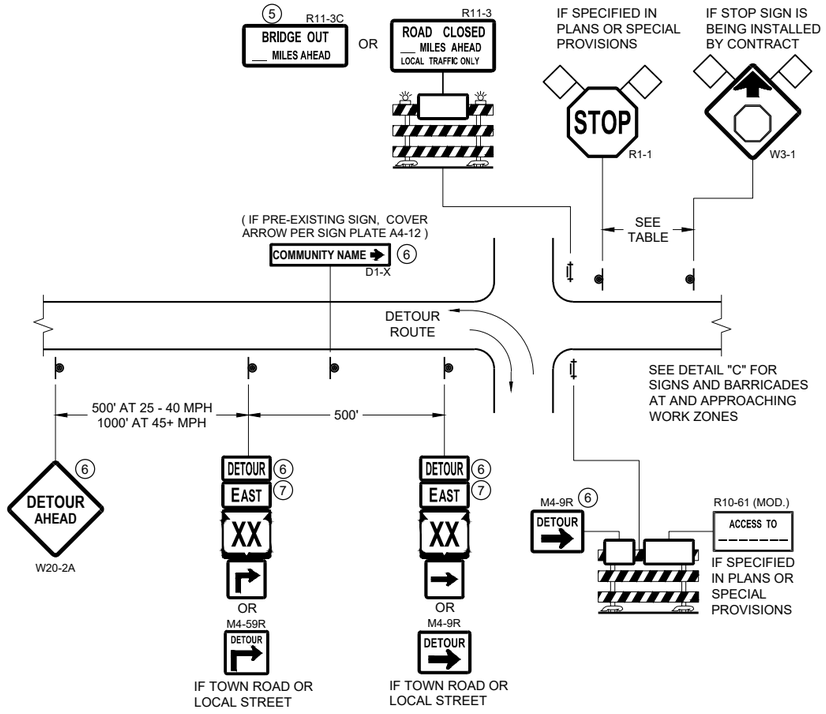
6

6

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

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

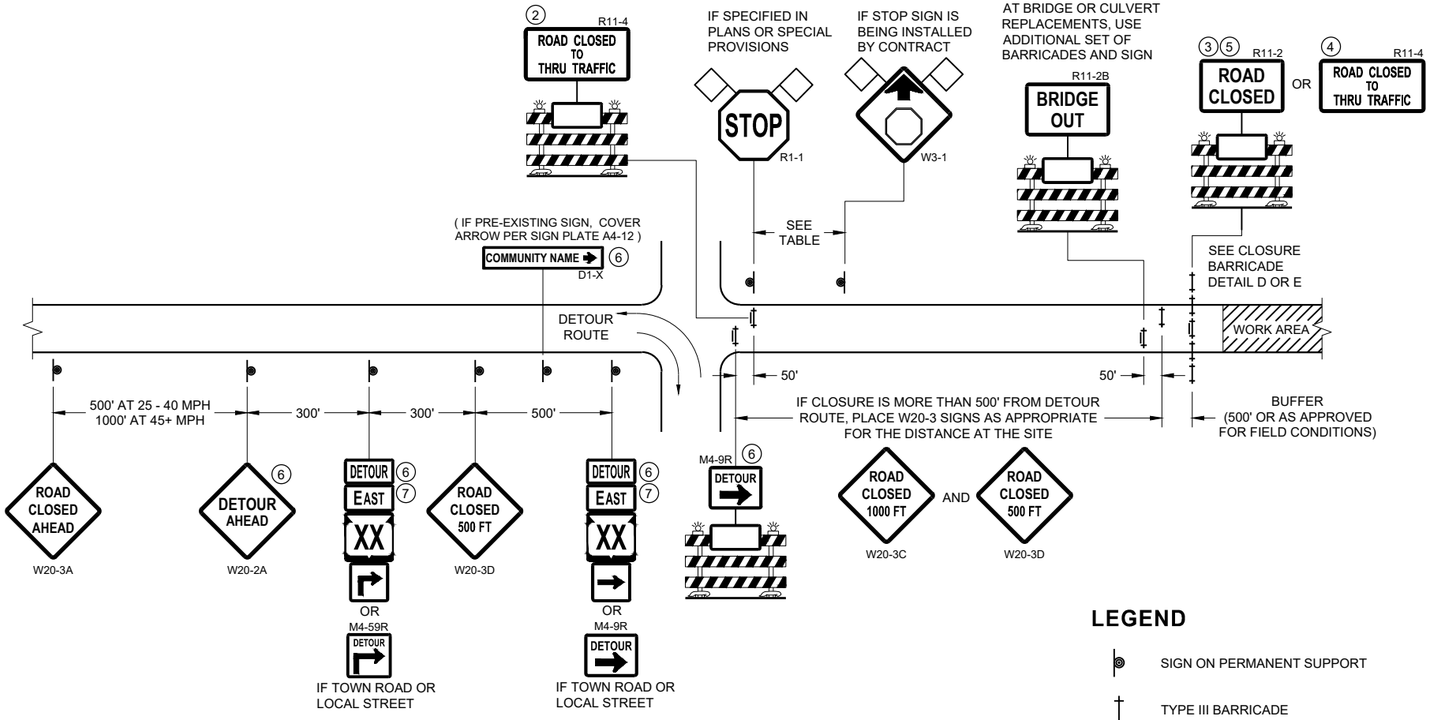
FLEXIBLE MARKER POST FOR CULVERT END
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION
APPROVED 10/1/2012 DATE /S/ Travis Feltes STATE TRAFFIC EN[illegible] FHWA



DETAIL A

MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE GREATER THAN OR EQUAL TO ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL B

MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE LESS THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)

SPEED LIMIT (MPH)	"STOP AHEAD" ADVANCE WARNING DISTANCE (FT)
25	200
30	200
35	350
40	350
45	500
50	550
55	750

SEE SDD 15C2-SHEET "b" FOR GENERAL NOTES AND FOOTNOTES ① THROUGH ⑦

LEGEND

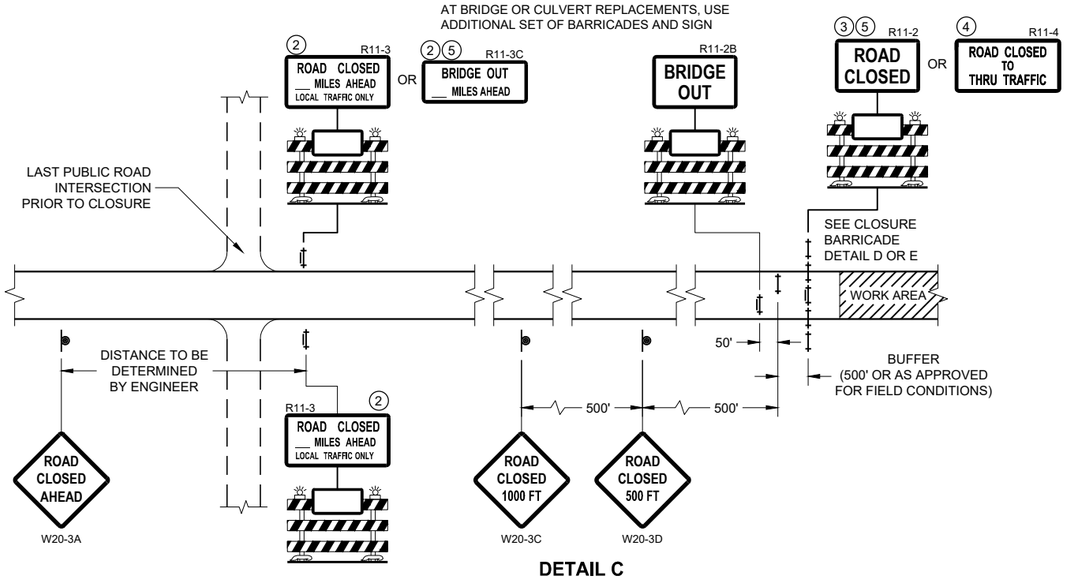
- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA
- FLAGS, 16" X 16" MIN. (ORANGE)

DETOUR M4 - 8

EAST M3 - X

XX M1 - 4 OR XX M1 - 6 OR COUNTY X M1 - 5A

M05 - 1 OR M06 - 1



DETAIL C

MAINLINE CLOSURE, NO POSTED DETOUR

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018
DATE

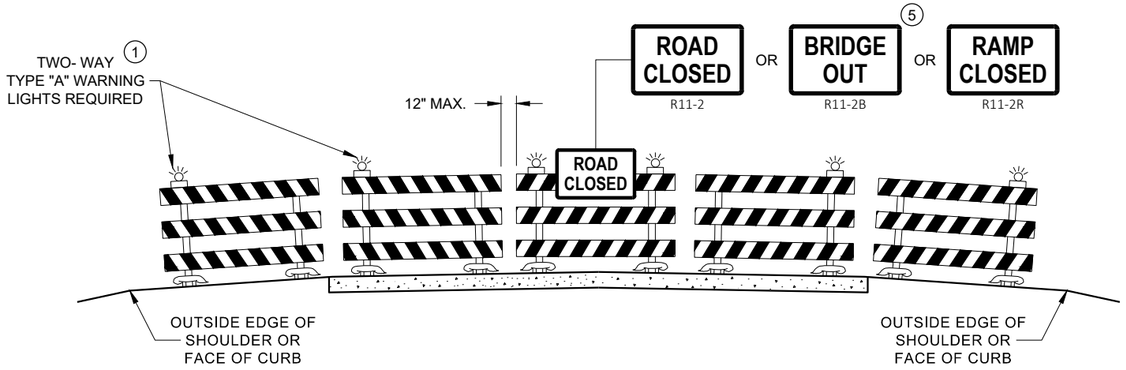
/S/ Andrew Heidtke
WORK ZONE EN

FHWA

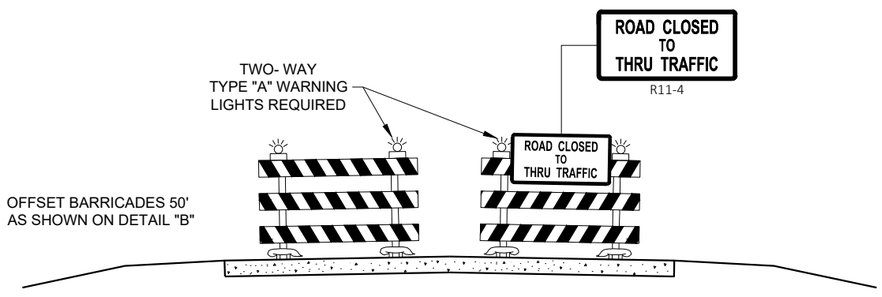
PRE_115

6

SDD 15C02 - 07a



DETAIL D
ROAD CLOSURE BARRICADE DETAIL
APPROACH VIEW



DETAIL E
LANE CLOSURE BARRICADE DETAIL
APPROACH VIEW

SEE SDD 15C2 - SHEET "a" FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
- R11 - 2 SHALL BE 48" X 30"
- R11 - 3 SHALL, R11 - 4 AND R10 - 61 SHALL BE 60 " X 30"
- M4 - 9 SHALL BE 30" X 24"
- M3 - X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4 - 8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1 - 4, M1 - 5A AND M1 - 6 SHALL BE 24" X 24" (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS)
- MO5 - 1 AND MO6 - 1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- D1 - X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1 - 1 SHALL BE 36" X 36"

(1) TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8 FOOT LIGHT SPACING.

(2) THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT AN INTERSECTION.

(3) FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "D".

(4) FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "E".

(5) FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11 - 2 AND R11 - 3 SIGNS.

(6) INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.

(7) "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

BARRICADES AND SIGNS FOR VARIOUS CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018
DATE
/S/ Andrew Heidtke
WORK ZONE EN
FHWA

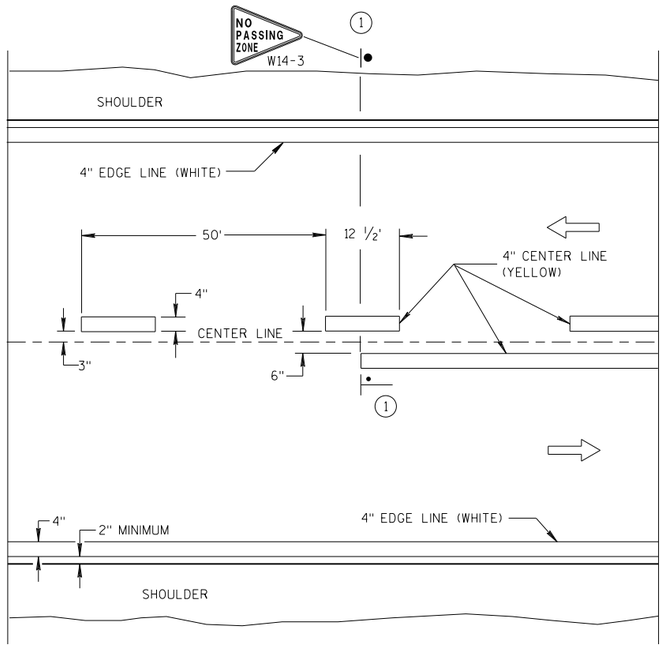
PRE_116

6

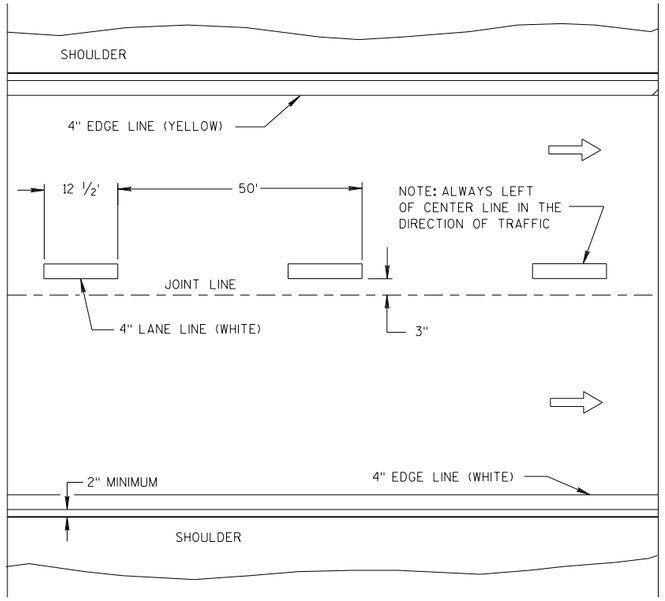
6

SDD 15C02 - 07b

SDD 15C02 - 07b



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.

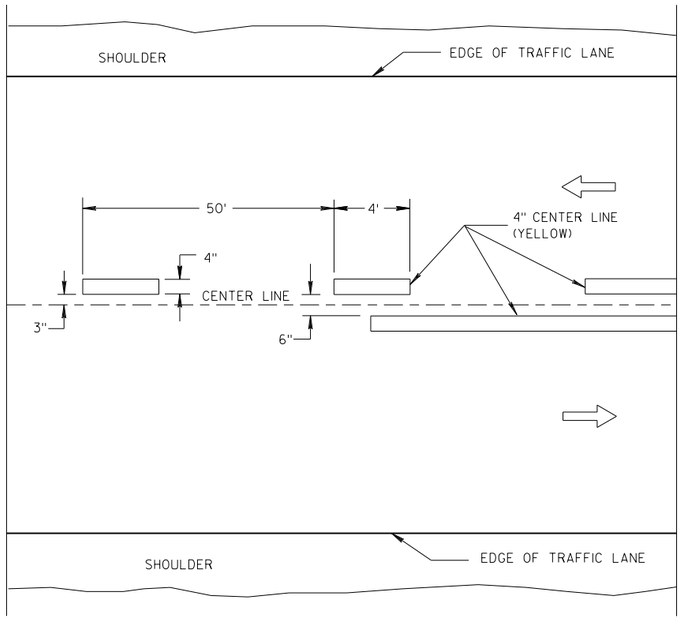
NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL

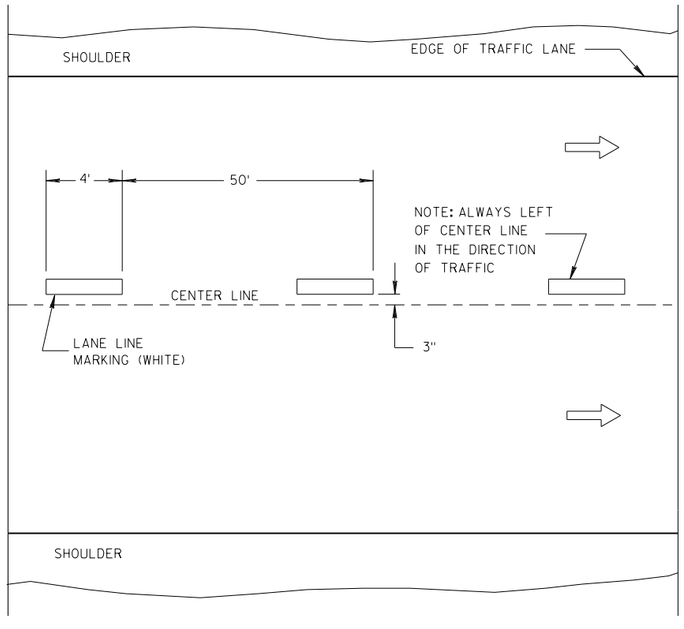
LEGEND

"T" MARKING

POST MOUNTED SIGN



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

7/2018 DATE

/S/ Matthew R. Rauch
STATE SIGNING AND PRE_117 NEER

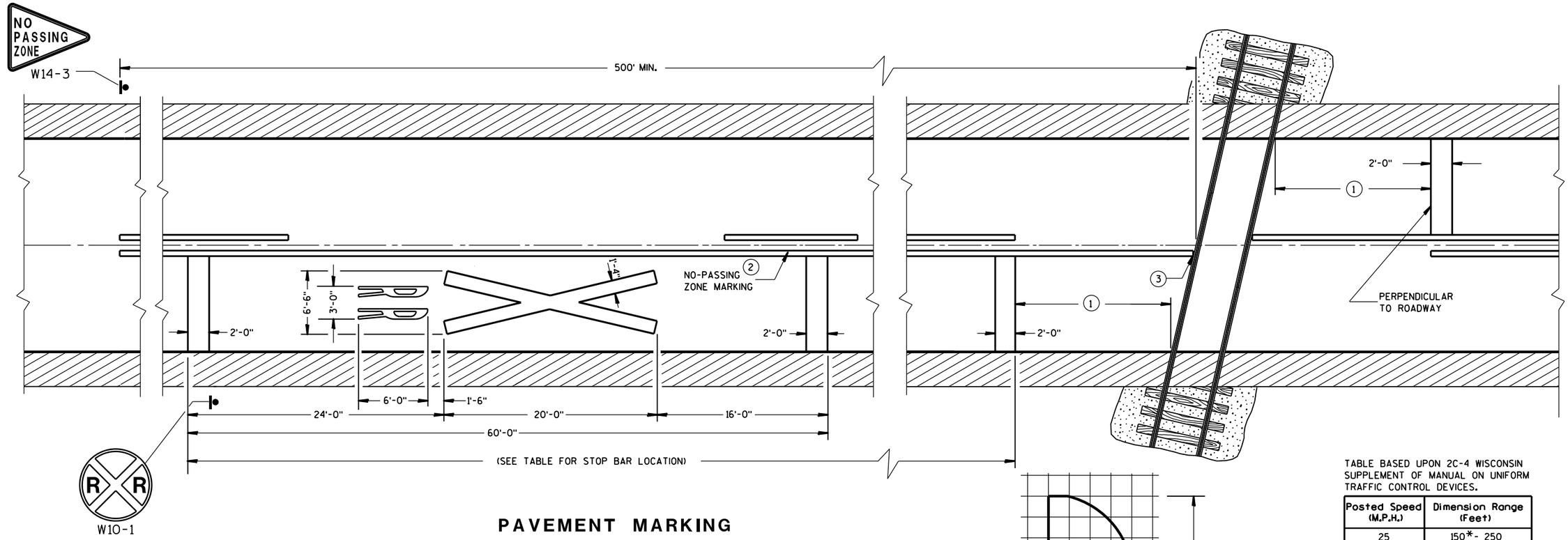
FHWA

6

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

6

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



PAVEMENT MARKING

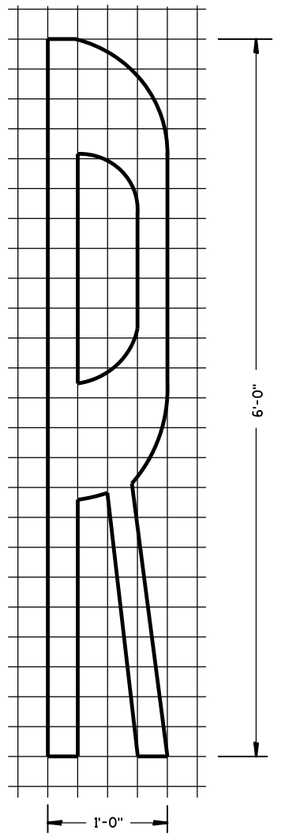


TABLE BASED UPON 2C-4 WISCONSIN SUPPLEMENT OF MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

Posted Speed (M.P.H.)	Dimension Range (Feet)
25	150*- 250
30	200*- 300
35	250*- 450
40	300*- 500
45	400*- 650
50	550*- 800
55	750*- 1000
60	1000*- 1250
65	1000*- 1250

* THE MINIMUM DISTANCES IN THE TABLE ARE DESIRABLE AND SHOULD BE USED. THE DISTANCES MAY BE INCREASED UP TO THE MAXIMUM TO ALLOW FOR FIELD CONDITIONS SUCH AS THE CLOSE PROXIMITY OF DRIVEWAYS, BRIDGES, SIDEROADS OR OTHER FEATURES THAT WOULD PROHIBIT THE MINIMUM DISTANCES FROM BEING USED.

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.

ON MULTI-LANE ROADS THE TRANSVERSE BANDS SHOULD EXTEND ACROSS ALL APPROACH LANES, AND INDIVIDUAL R X R SYMBOLS SHOULD BE USED IN EACH APPROACH LANE.

CENTER OR LANE LINES AND NO-PASSING ZONE MARKINGS SHOWN ON THIS DRAWING ARE REQUIRED AND PAID FOR UNDER OTHER ITEMS IN THE CONTRACT.

RETRACE EXISTING SYMBOL WHERE EXISTING SYMBOLS ARE PLACED.

(1) MINIMUM 8' FROM ANY RAILROAD WARNING DEVICES (SIGNALS, GATES, ETC.) OR 25' FROM THE NEAREST RAIL, WHICHEVER DISTANCE IS GREATER.

(2) 500' MINIMUM. MARKING LIMITS MAY BE EXTENDED AS DIRECTED BY THE ENGINEER TO MEET ADJACENT NO-PASSING ZONE MARKINGS.

(3) FOR MULTIPLE TRACK CROSSINGS, THE BARRIER LINE SHALL EXTEND TO THE NEAR RAIL OF THE FURTHEST TRACK IN THE DIRECTION OF HIGHWAY TRAVEL.

SIGNING AND PAVEMENT MARKING DETAILS FOR RAILROAD-HIGHWAY GRADE CROSSINGS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

Sept., 2017 — DATE

/S/ Matthew R. Rauch — STATE SIGNING AND [illegible]INEER

FHWA

6

S.D.D. 15 C 9-11a

6

S.D.D. 15 C 9-11a

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.

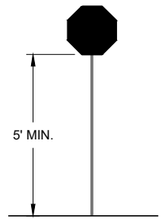
(3) EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS SPACED ACCORDING TO MANUFACTURER'S RECOMMENDATION, PLACED TRANSVERSE ACROSS THE LANE AT LOCATIONS SHOWN.

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.



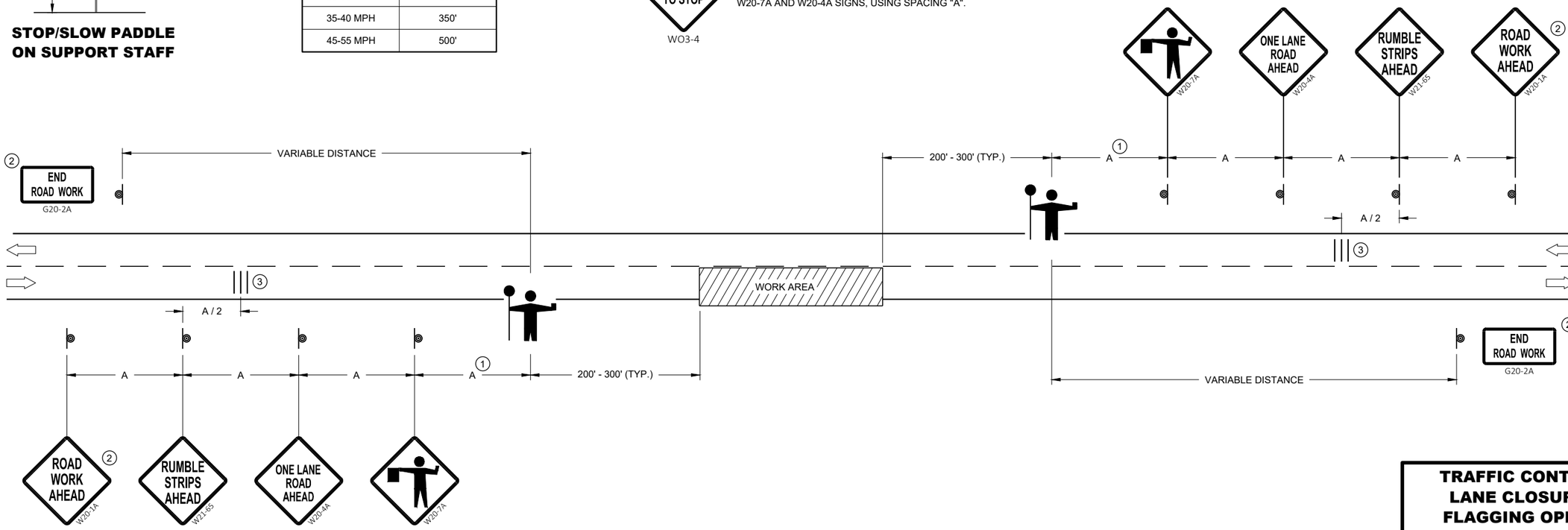
STOP/SLOW PADDLE ON SUPPORT STAFF

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 EN

FHWA

PRE_119

6

SDD 15C12 - 07

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.

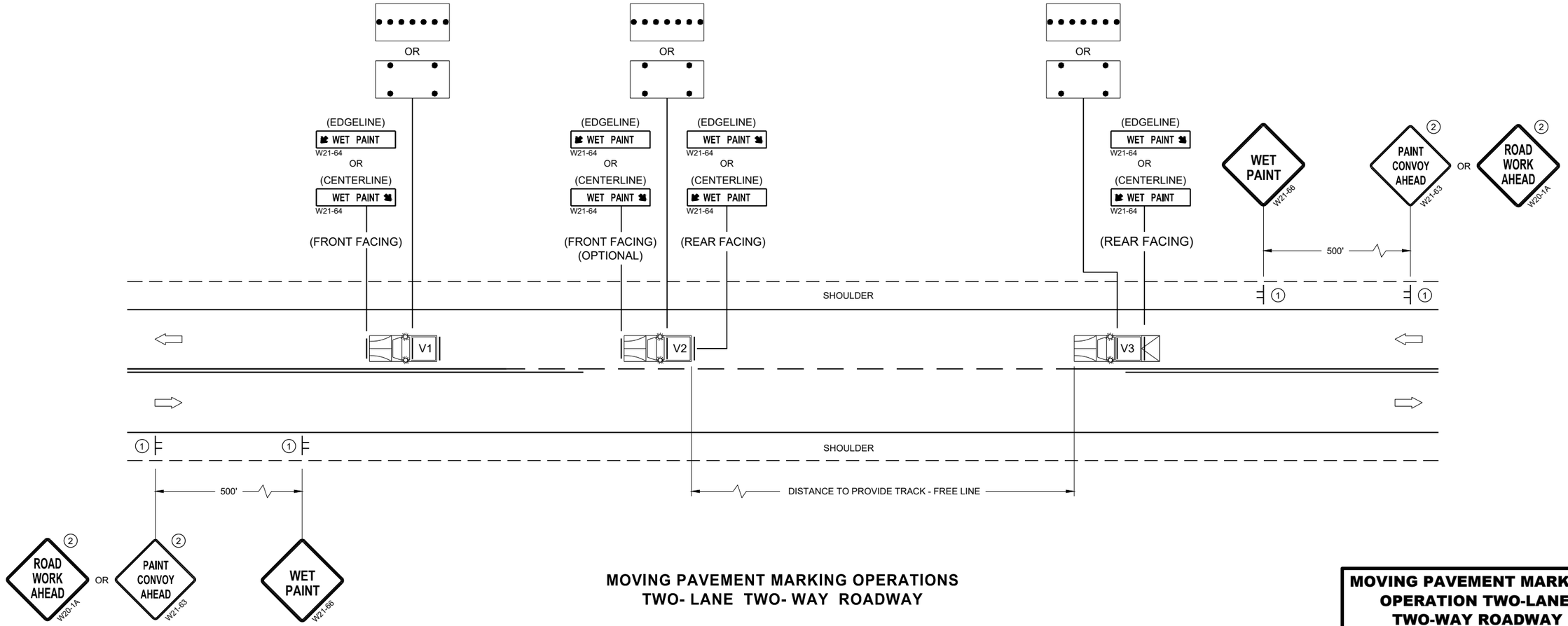
WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR LAY STATIONARY SIGNS AND SUPPORTS FLAT ON THE GRADE WITH UPRIGHTS ORIENTED PARALLEL TO AND DOWNSTREAM FROM TRAFFIC.

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 EN

FHWA

PRE_120

6

SDD 15C19 - 06a

6

SDD 15C19 - 06a

GENERAL NOTES

SIGNING AND MARKING IS SHOWN AS TYPICAL PLACEMENT. FIELD CONDITIONS MAY DICTATE CHANGES IN SIGNING AND MARKING PLACEMENT.

(1) USED ONLY WHEN APPROVED BY REGION TRAFFIC ENGINEER.

* SIGNS MAY BE OMITTED IF SPACE DOES NOT PERMIT PLACEMENT.

** IF POSTED SPEED IS 45 MPH OR GREATER, PLACE W5-54 SIGN UNDER R4-7 SIGN. MOUNT W5-54 SIGN AT 4' MOUNTING HEIGHT (TOP OF ROADWAY TO BOTTOM OF SIGN).

LEGEND

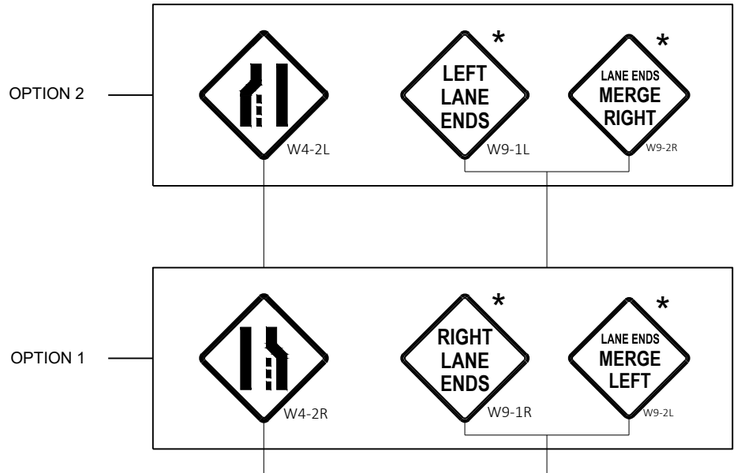
A DISTANCE DEPENDENT ON SPEED (SEE TABLE)

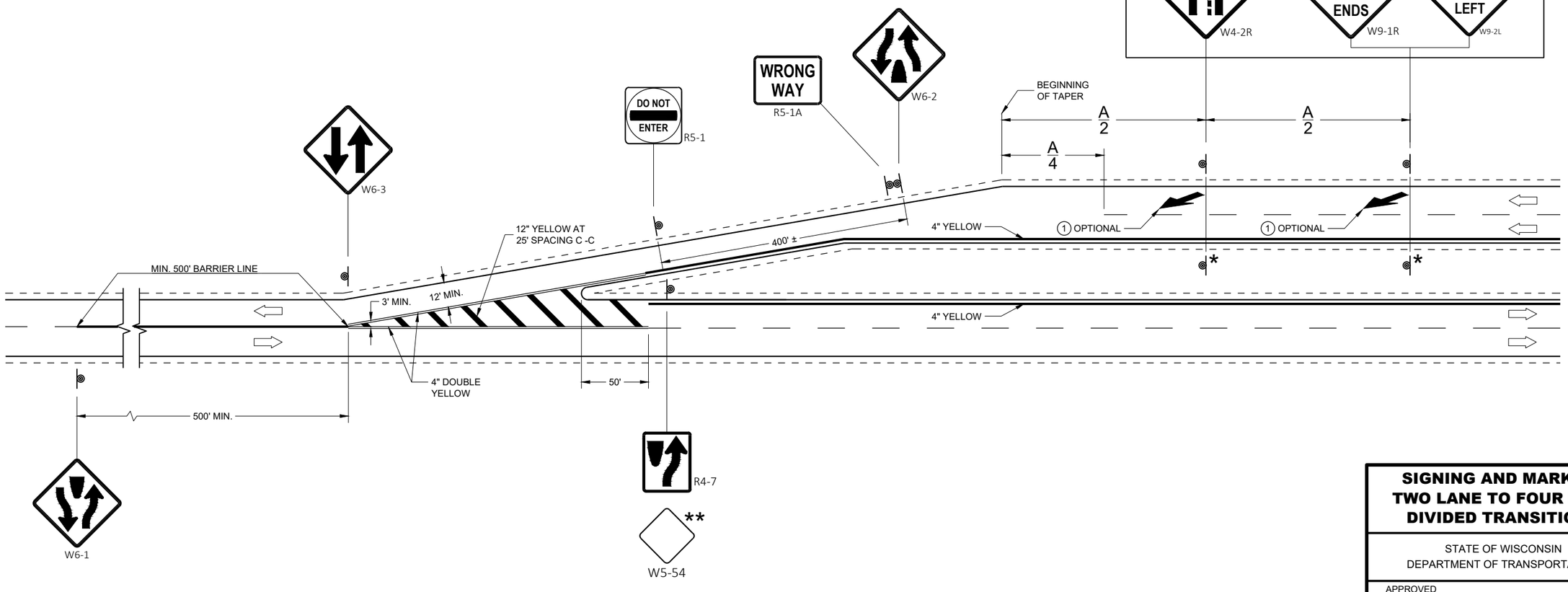
SIGN MOUNTED ON PERMANENT SUPPORT

DIRECTION OF TRAFFIC

DISTANCE TABLE

POSTED OR 85TH PERCENTILE SPEED	DISTANCE "A"
25	325'
30	460'
35	565'
40	670'
45	775'
50	885'
55	990'





SIGNING AND MARKING TWO LANE TO FOUR LANE DIVIDED TRANSITIONS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2019
DATE

/S/ Matthew Rauch
STATE SIGNING AN ENGINEE

FHWA

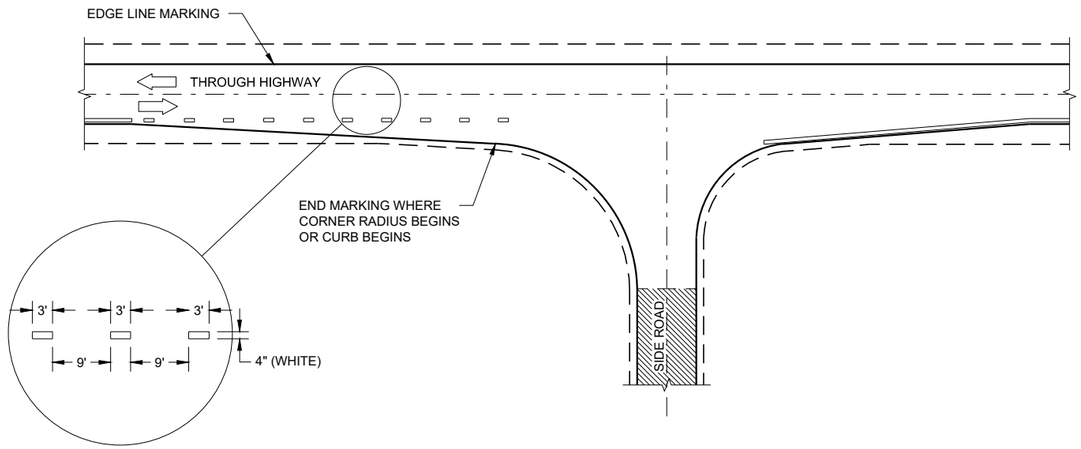
PRE_121

6

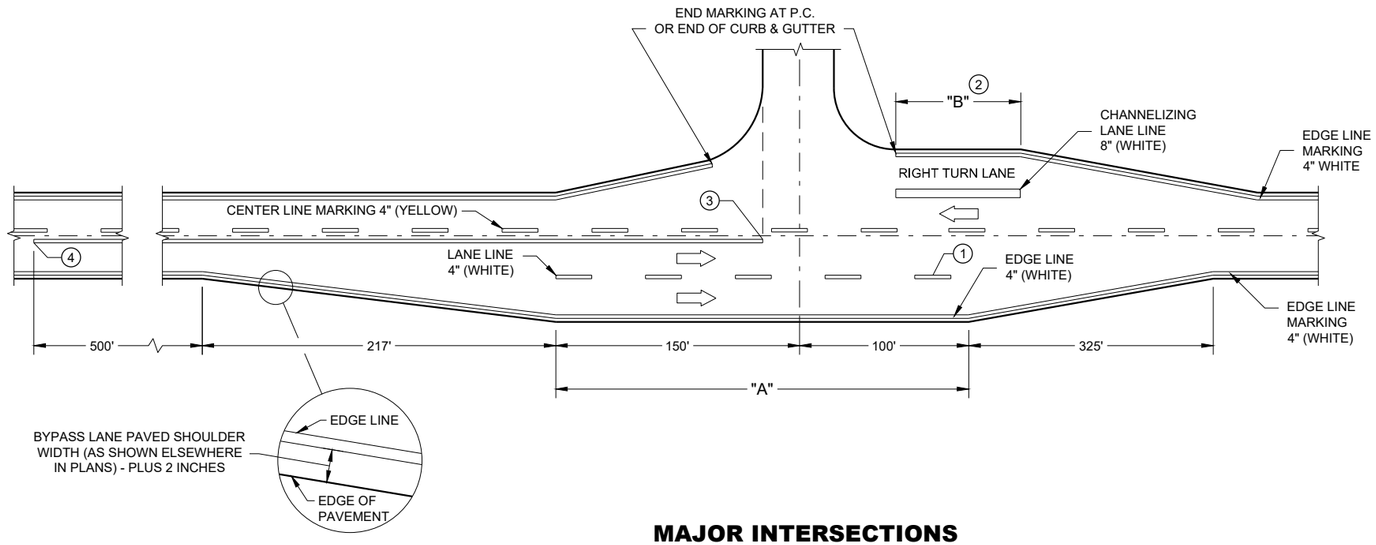
SDD 15C21 - 09

6

SDD 15C21 - 09



MINOR INTERSECTION



MAJOR INTERSECTIONS

(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANE)

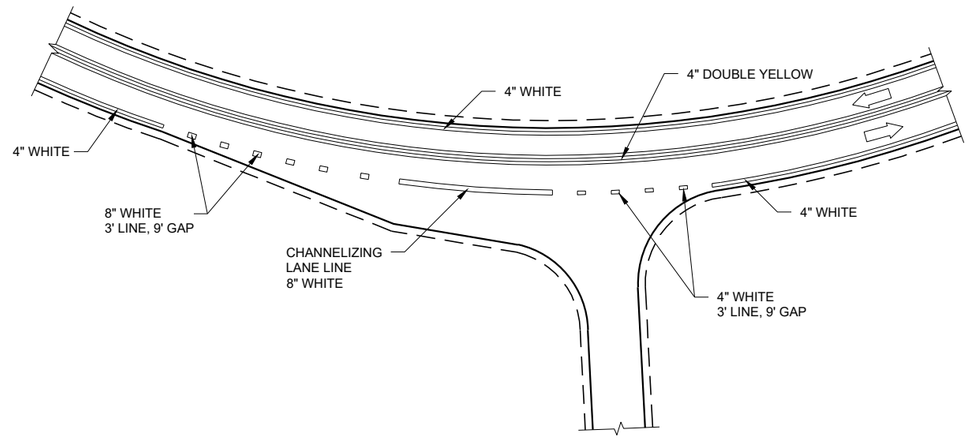
GENERAL NOTES

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 TRANSPO PRE_122

SDD 15C35 - 04a

6

SDD 15C35 - 04a

6

LEGEND

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

TABLE A

S \ W	4	6	8	10	BUFFER SPACE (FEET)
	SHOULDER TAPER LENGTH (FEET)				
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.

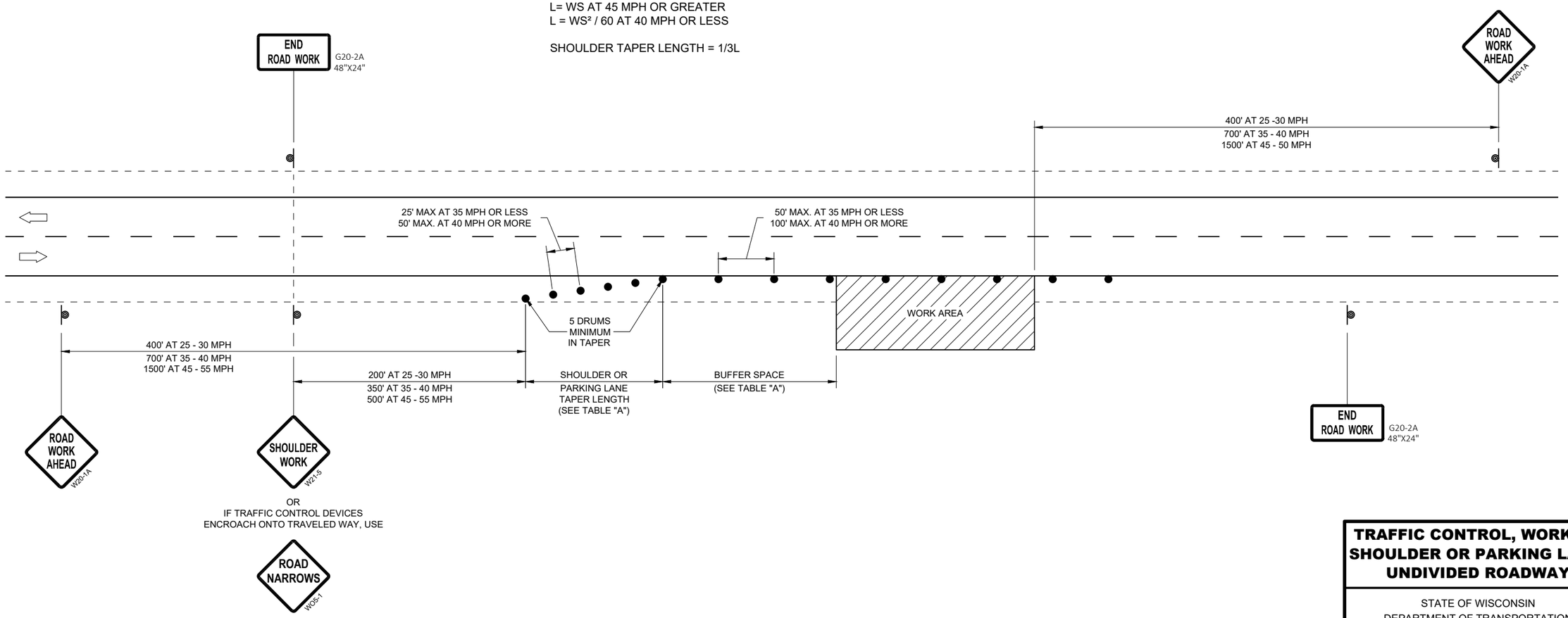
ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

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 Z SAFETY ENG

FHWA

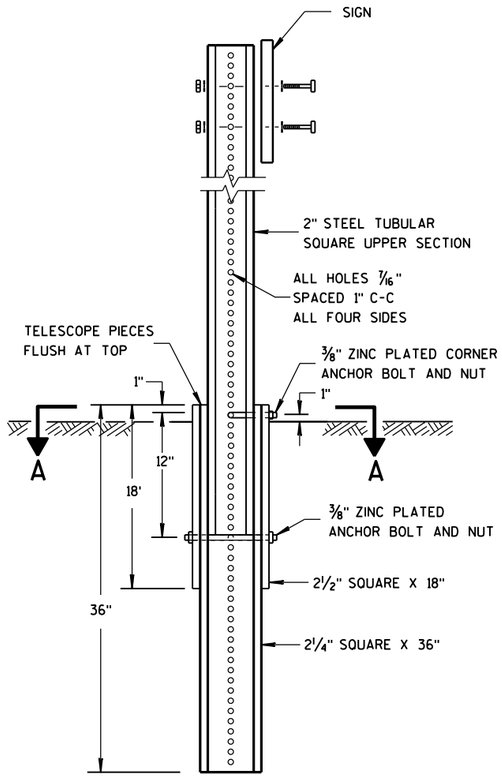
PRE_123

6

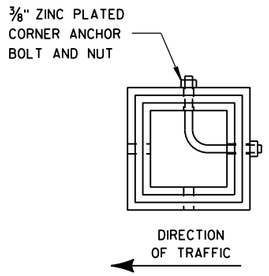
6

SDD 15D28 - 03

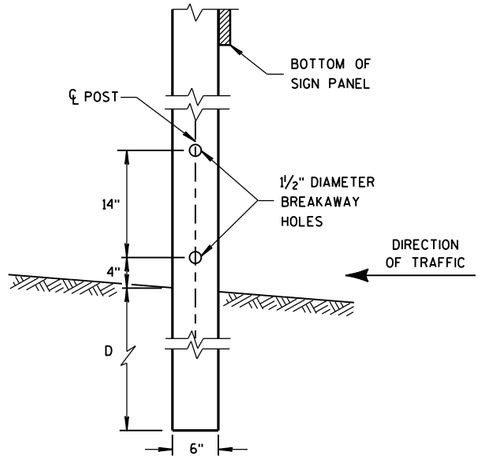
SDD 15D28 - 03



DETAIL OF TUBULAR STEEL SIGN POST



SECTION A-A



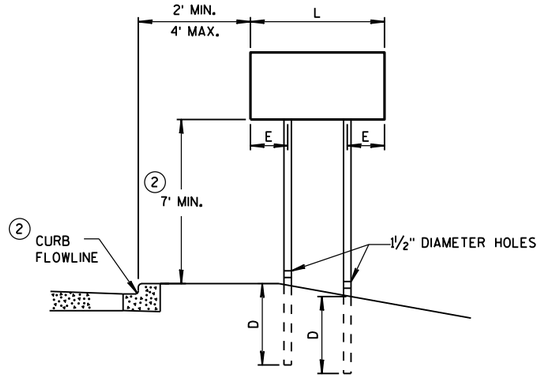
4"x6" WOOD POST MODIFICATION

GENERAL NOTES

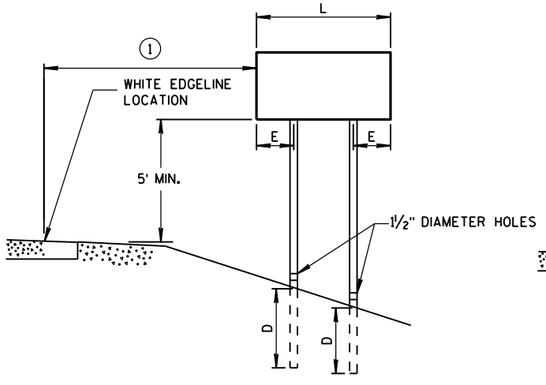
(1) 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.

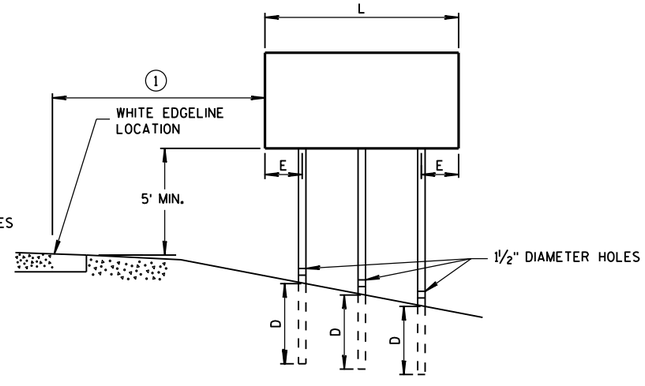
(2) THE EXISTENCE OF CURB AND GUTTER DOES NOT IN ITSELF MANDATE THE VERTICAL CLEARANCE ILLUSTRATED. THAT HEIGHT IS TYPICALLY MEASURED WHERE THERE IS SIDEWALK ADJACENT TO THE ROADWAY OR PARKING IS PERMITTED. IN THE ABSENCE OF SIDEWALK, VERTICAL CLEARANCE IS MEASURED FROM THE TOP OF THE CURB. IF NO SIDEWALK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

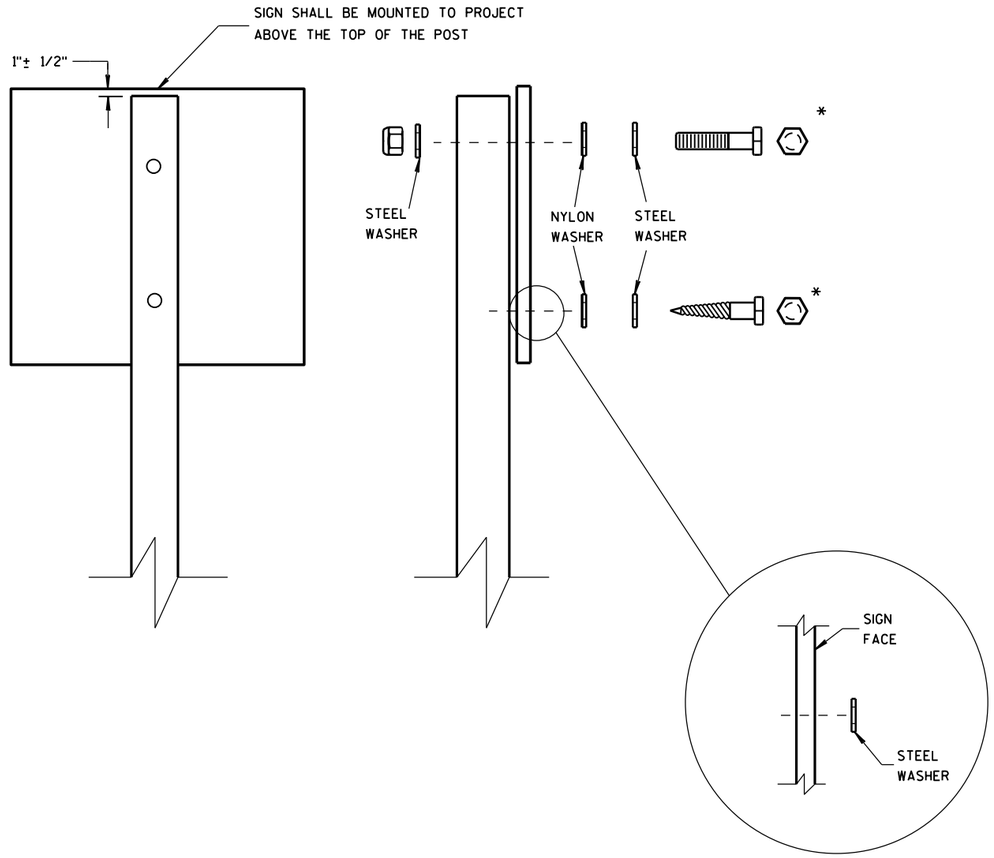
STATE OF WISCONSIN
DEPARTMENT OF TRAN PRE_124

6

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

6

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



WASHER PLACEMENT WHEN SIGN HAS OTHER THAN TYPE H OR TYPE F FACE

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

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

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

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

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

LAG SCREWS - 3/8" X 3"

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

SQUARE STEEL POSTS (2" x 2")

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

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

WASHERS (ALL POSTS) -

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

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

* 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

6

S.D.D. 15 D 38-2b

S.D.D. 15 D 38-2b

ATTACHMENT OF SIGNS TO POSTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June 2017
DATE

/S/ Andrew Heldtke
WORK ZON PRE_125

FHWA

GENERAL NOTES

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

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

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

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

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

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

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

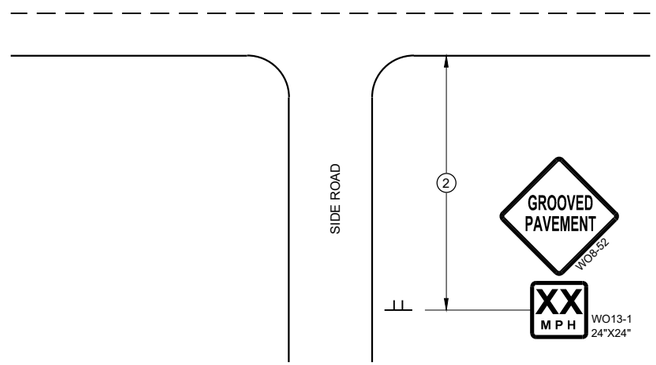
(1) PLACE SIGNS 350' IN ADVANCE OF MILLED SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.

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

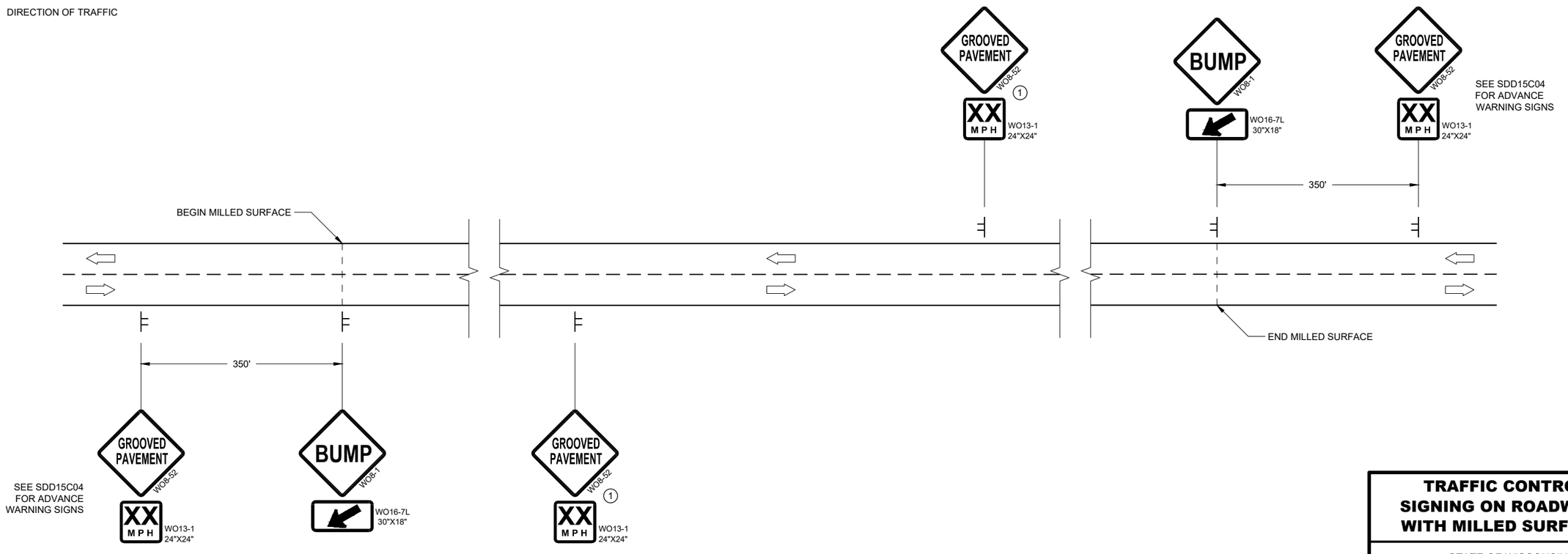
LEGEND

SIGN ON TEMPORARY SUPPORT

DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH SIGN DETAIL



DETAIL FOR SIGNING ON MILLED SURFACES

TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
August 2019
DATE

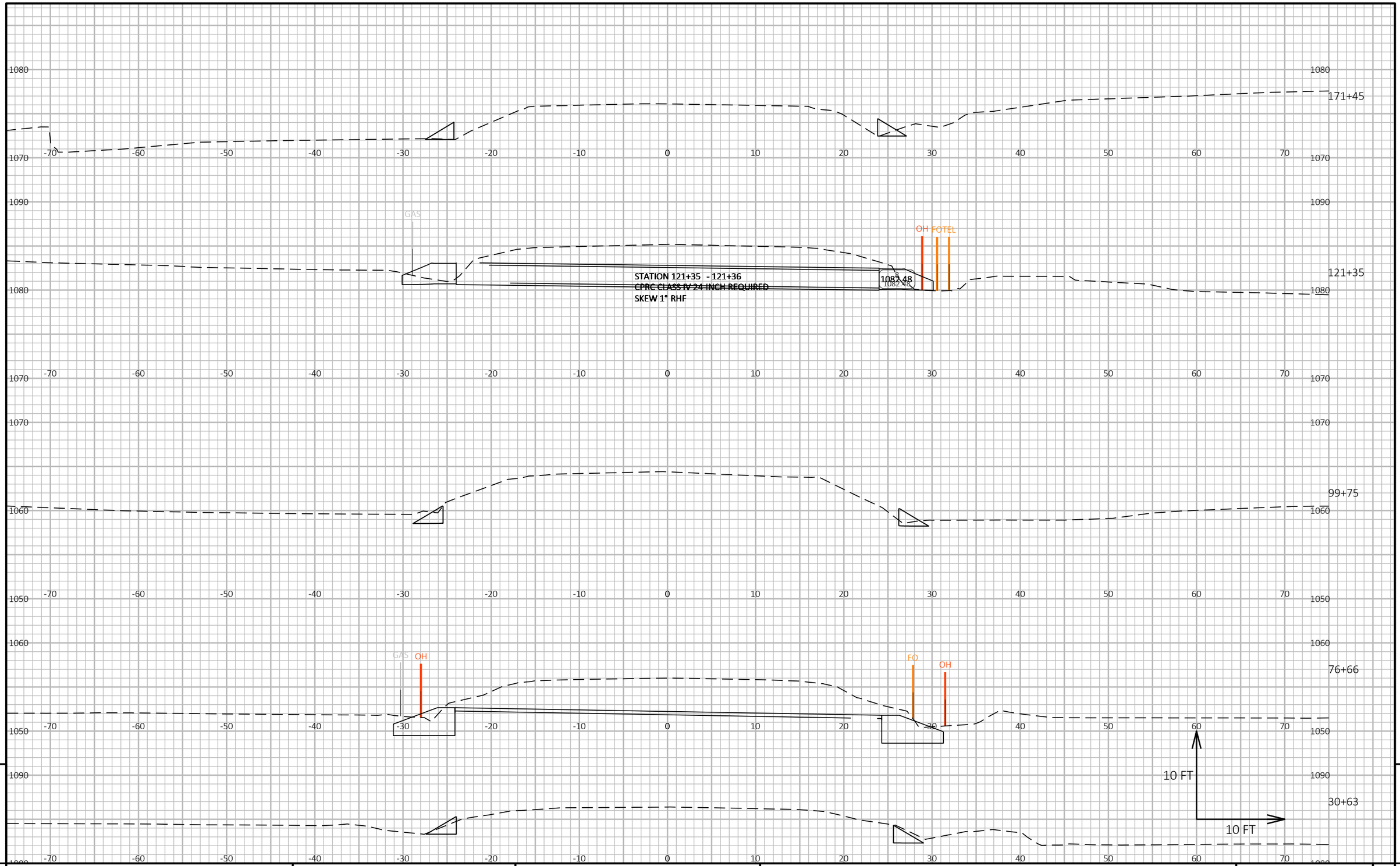
/S/ Andrew Heidtke
WORK ZONE EN

FHWA

PRE_126

6

SDD 15D44 - 01



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-xs

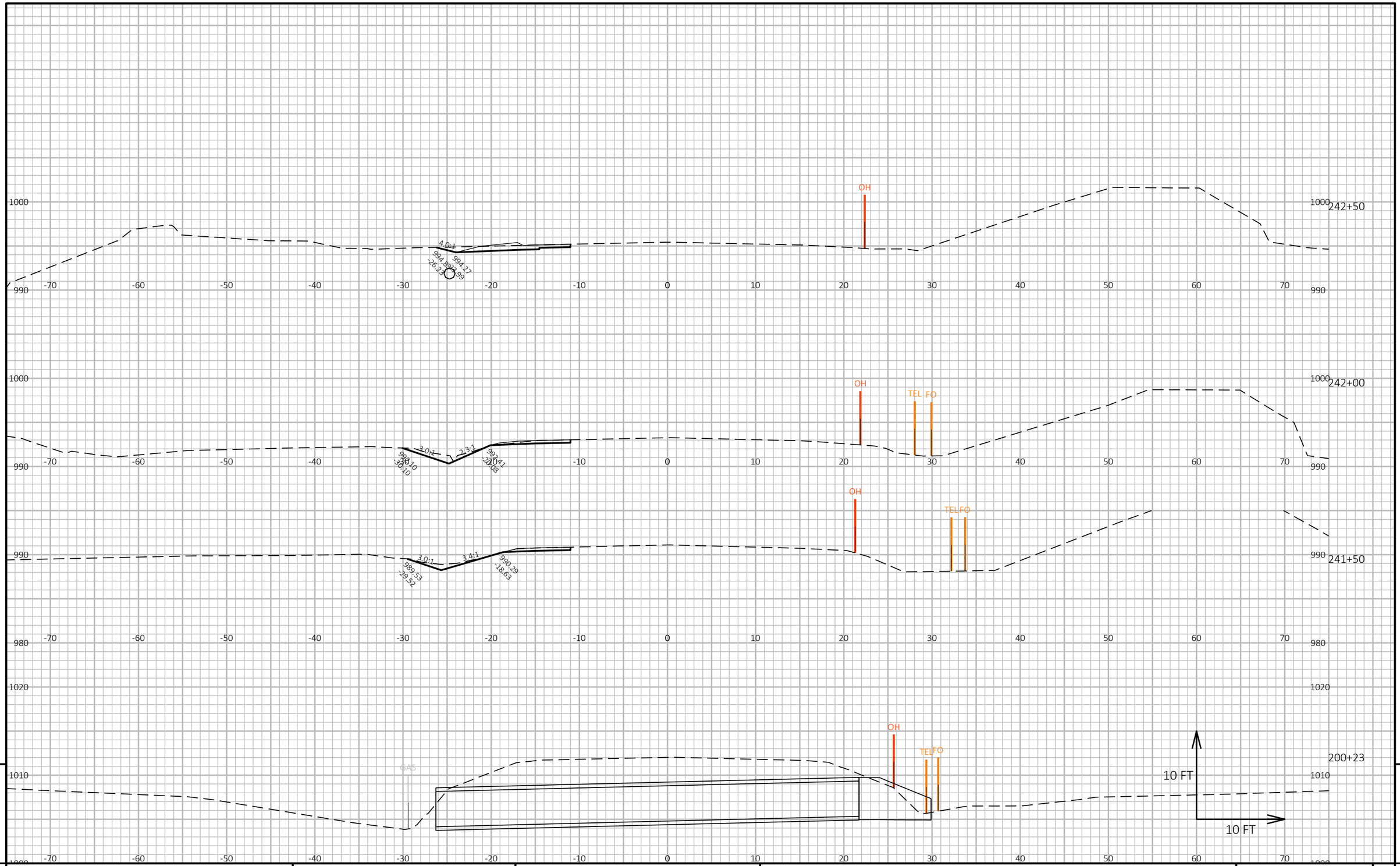
PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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

WISDOT/CADDS SHEET 49



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090202-xs

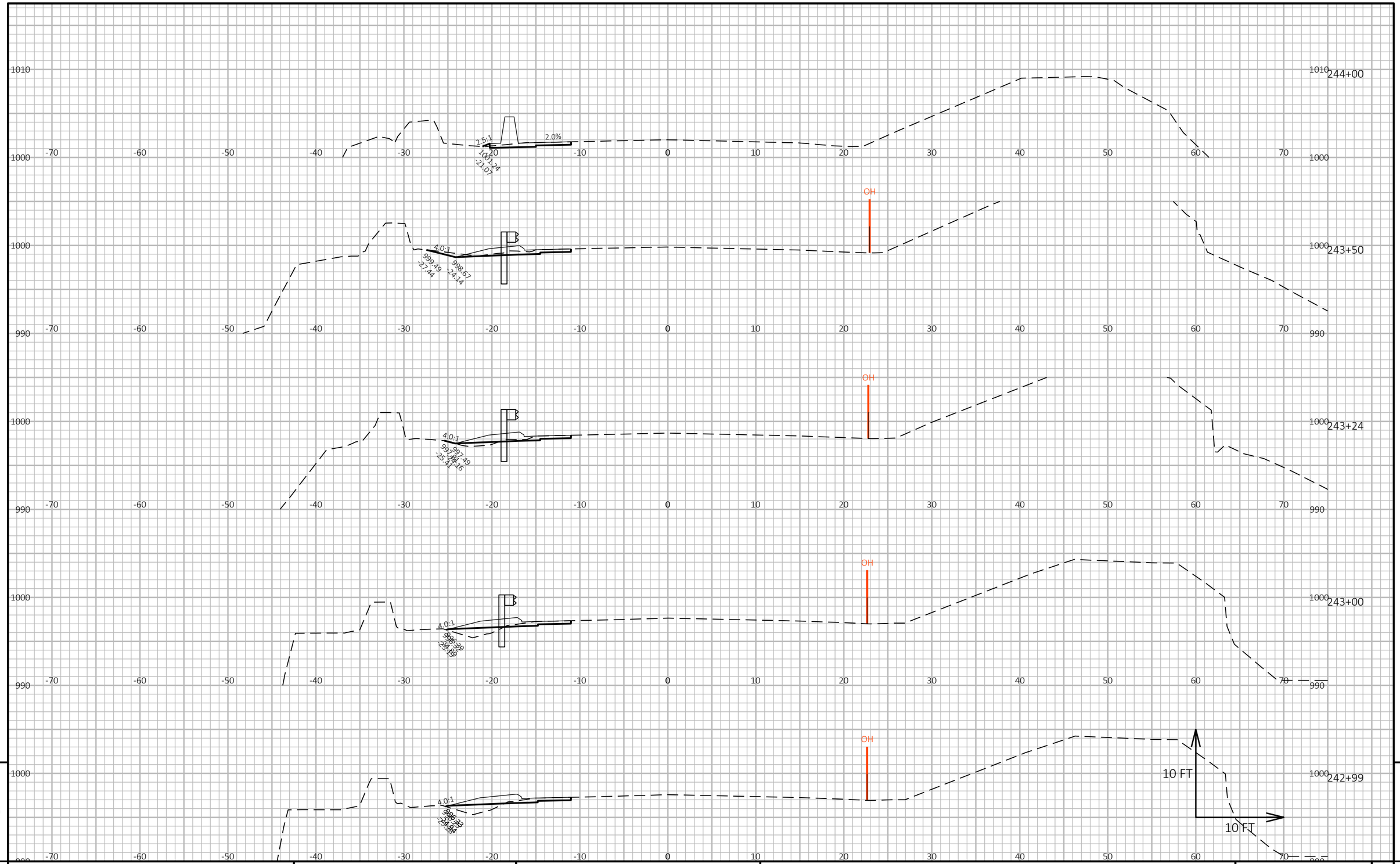
PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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

WISDOT/CADDS SHEET 49



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090203-xs

PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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

WISDOT/CADDS SHEET 49

246+50

246+00

245+50

245+00

244+50

10 FT

10 FT

9

9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

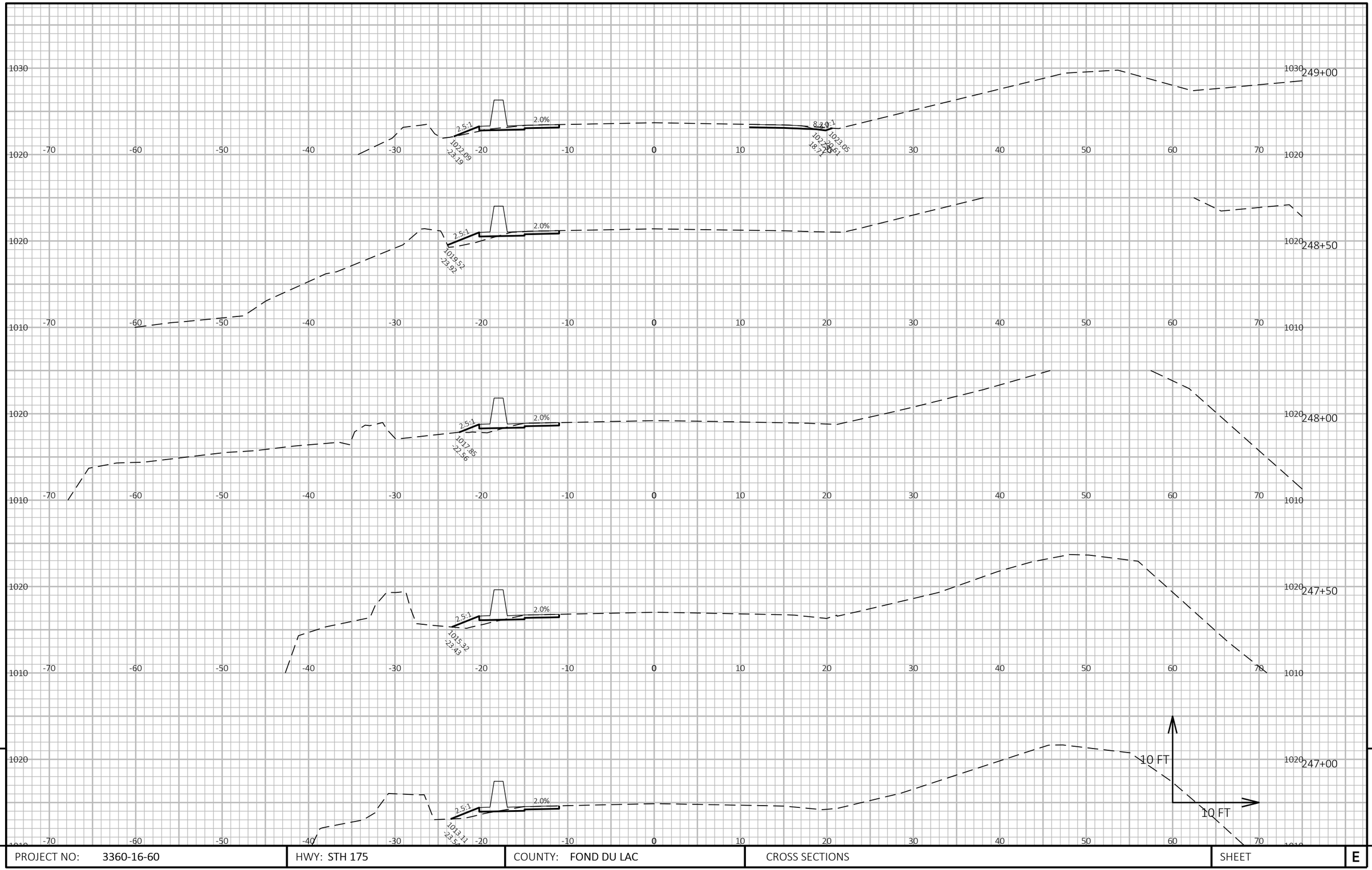
FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090204-xs

PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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



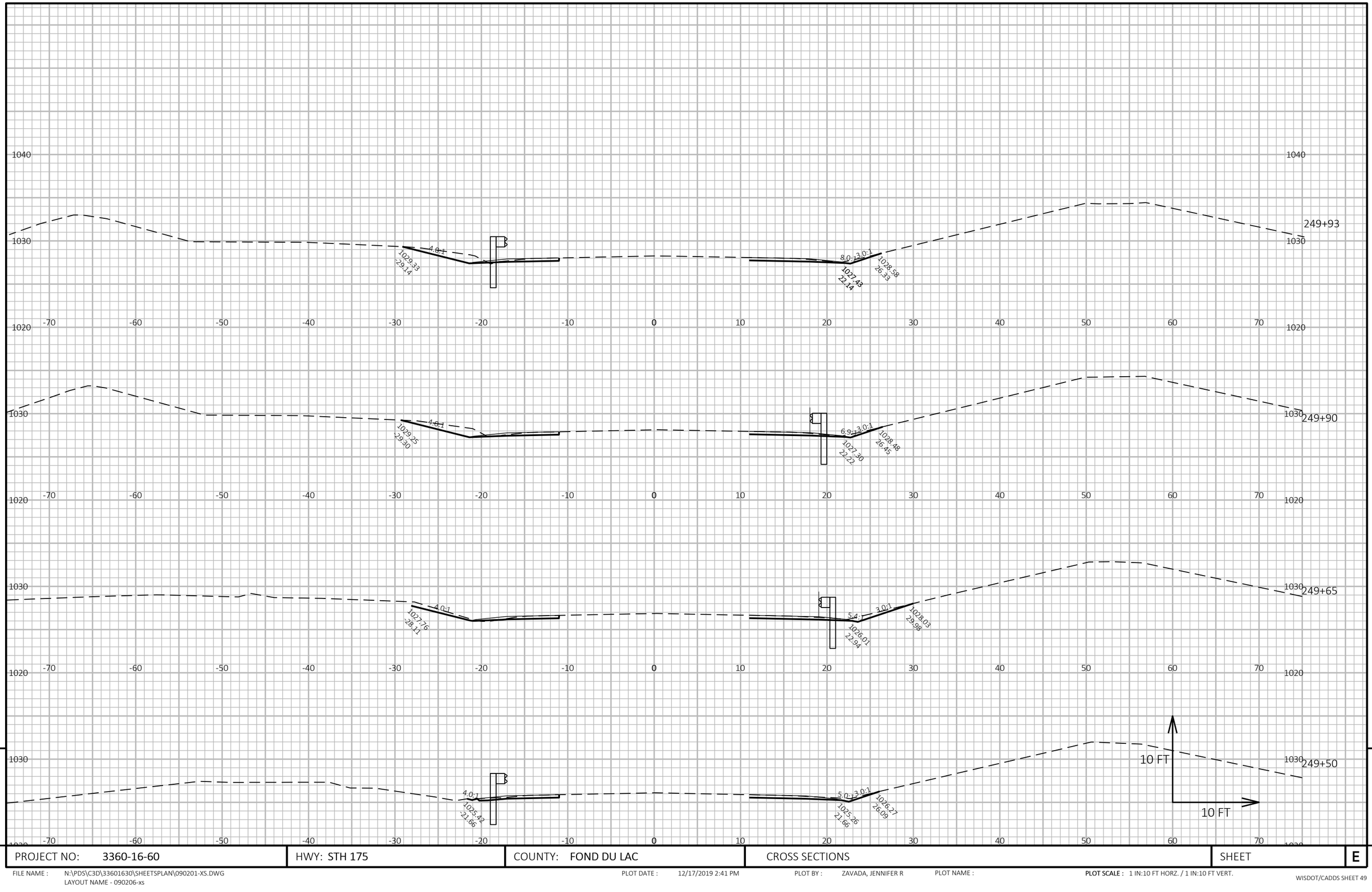
9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

9

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090205-xs

PLOT DATE : 12/17/2019 2:41 PM PLOT BY : ZAVADA, JENNIFER R PLOT NAME : **PLOT SCALE :** 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.



9

9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

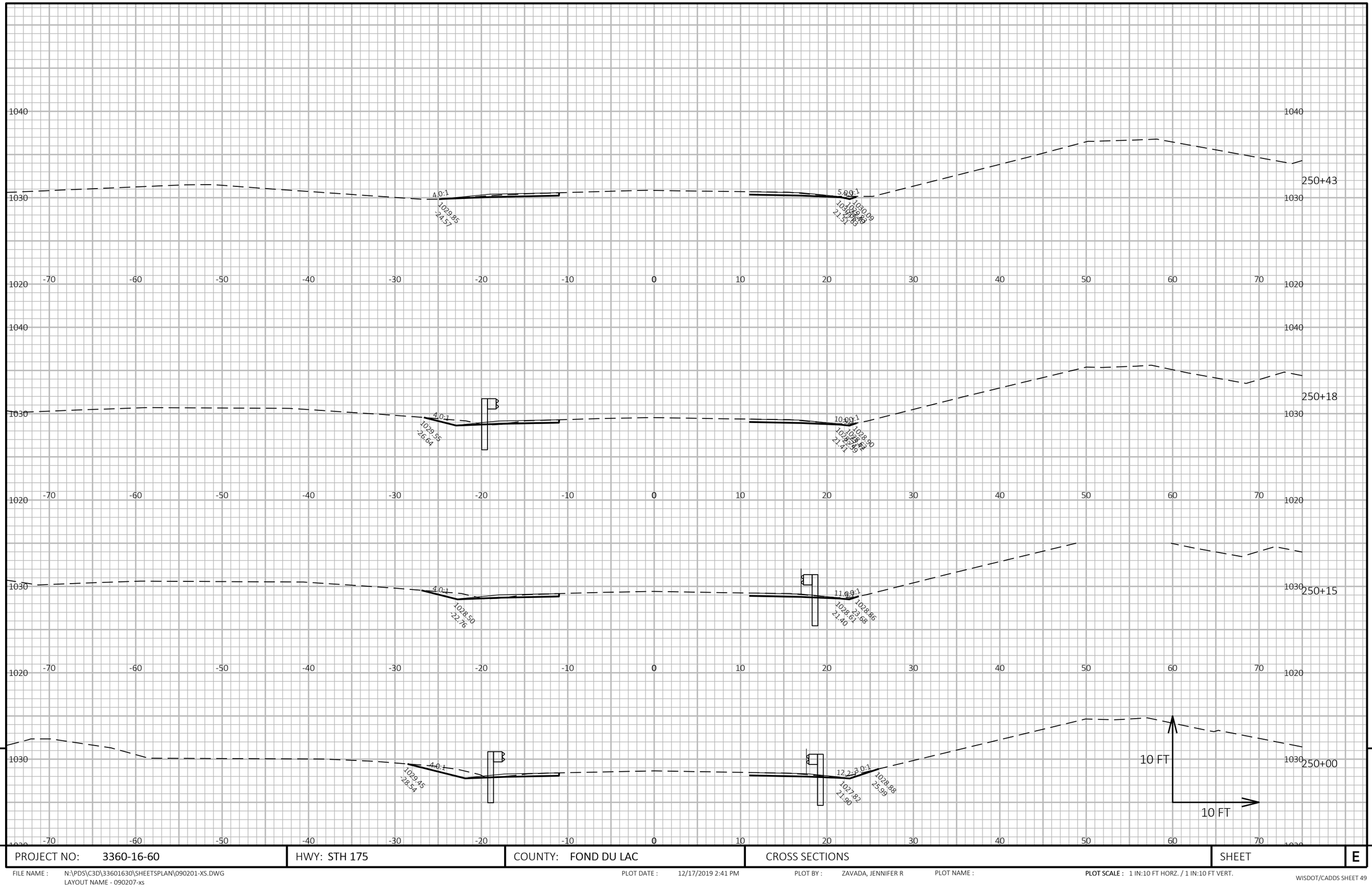
FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090206-xs

PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090207-xs

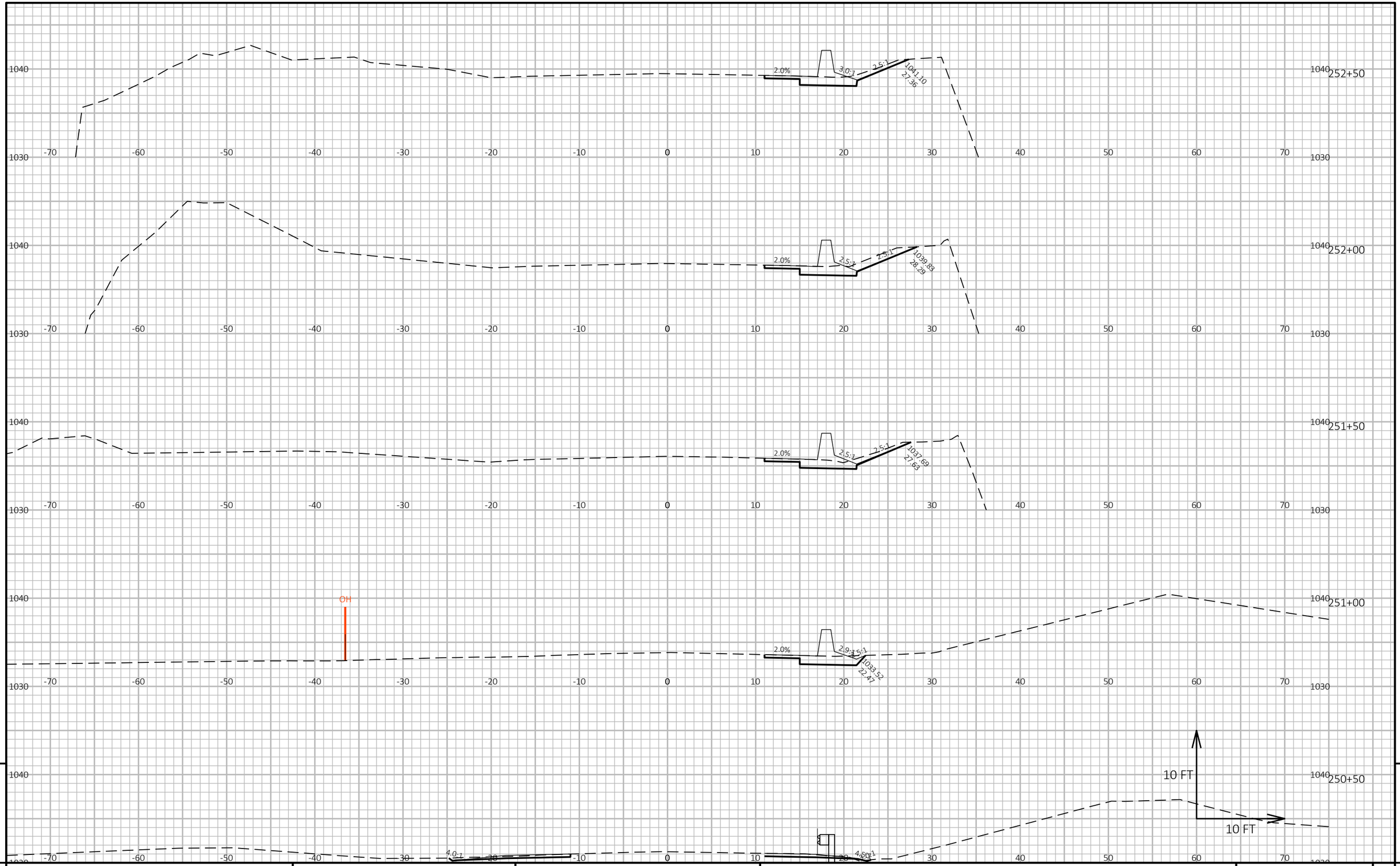
PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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

WISDOT/CADDS SHEET 49



9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

9

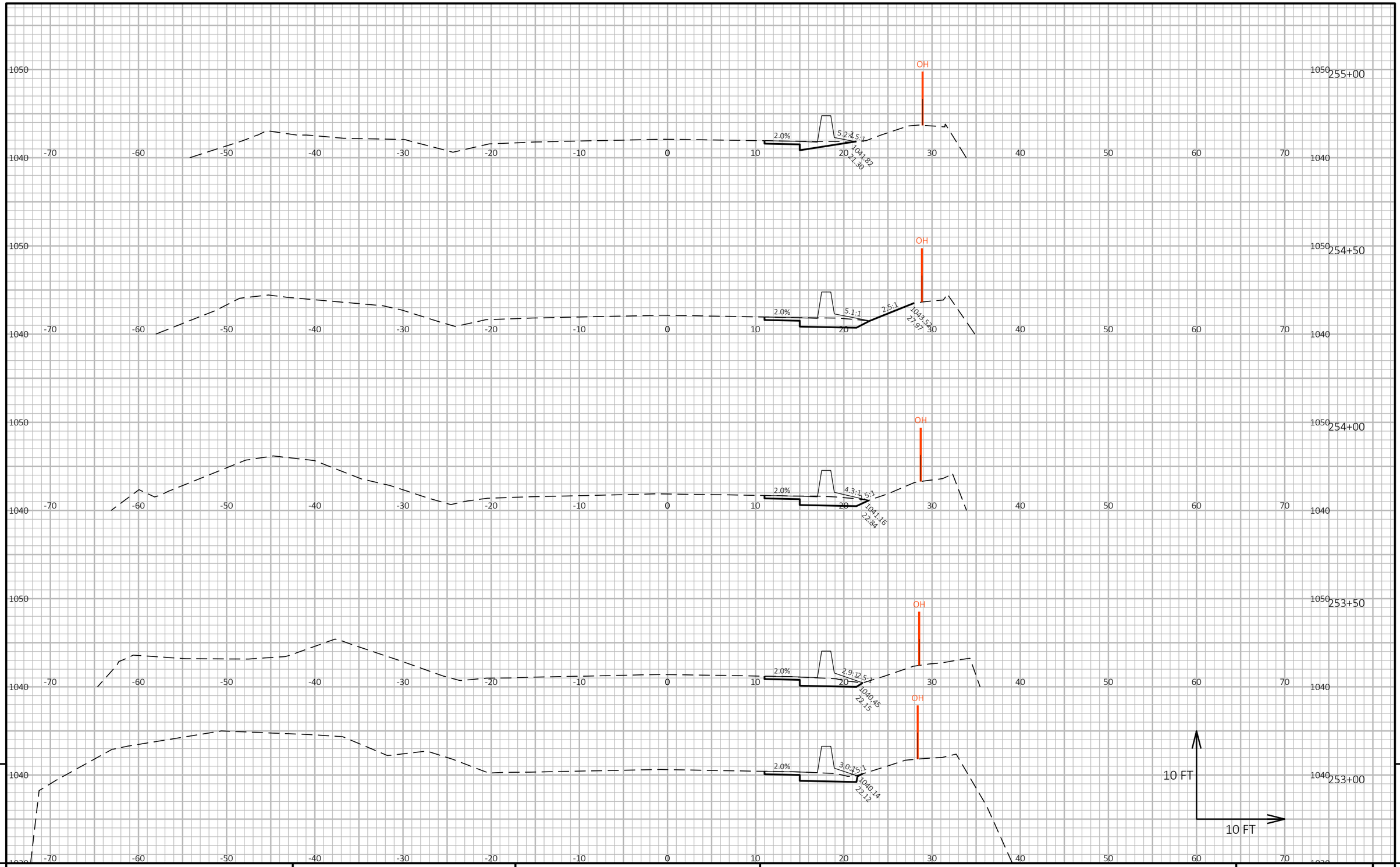
FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090208-xs

PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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



9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

9

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090209-xs

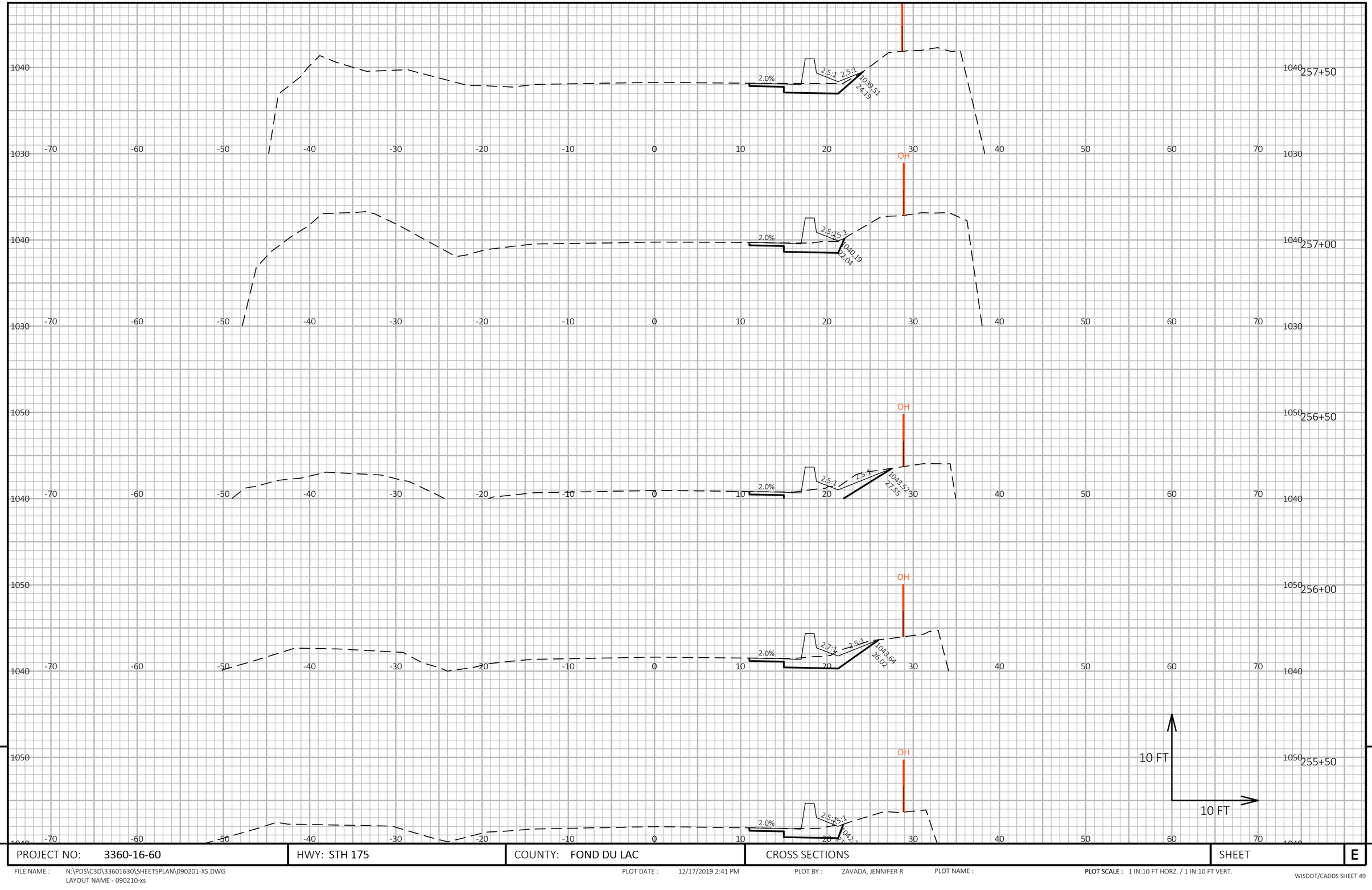
PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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

WISDOT/CADDS SHEET 49



9

9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090210-xs

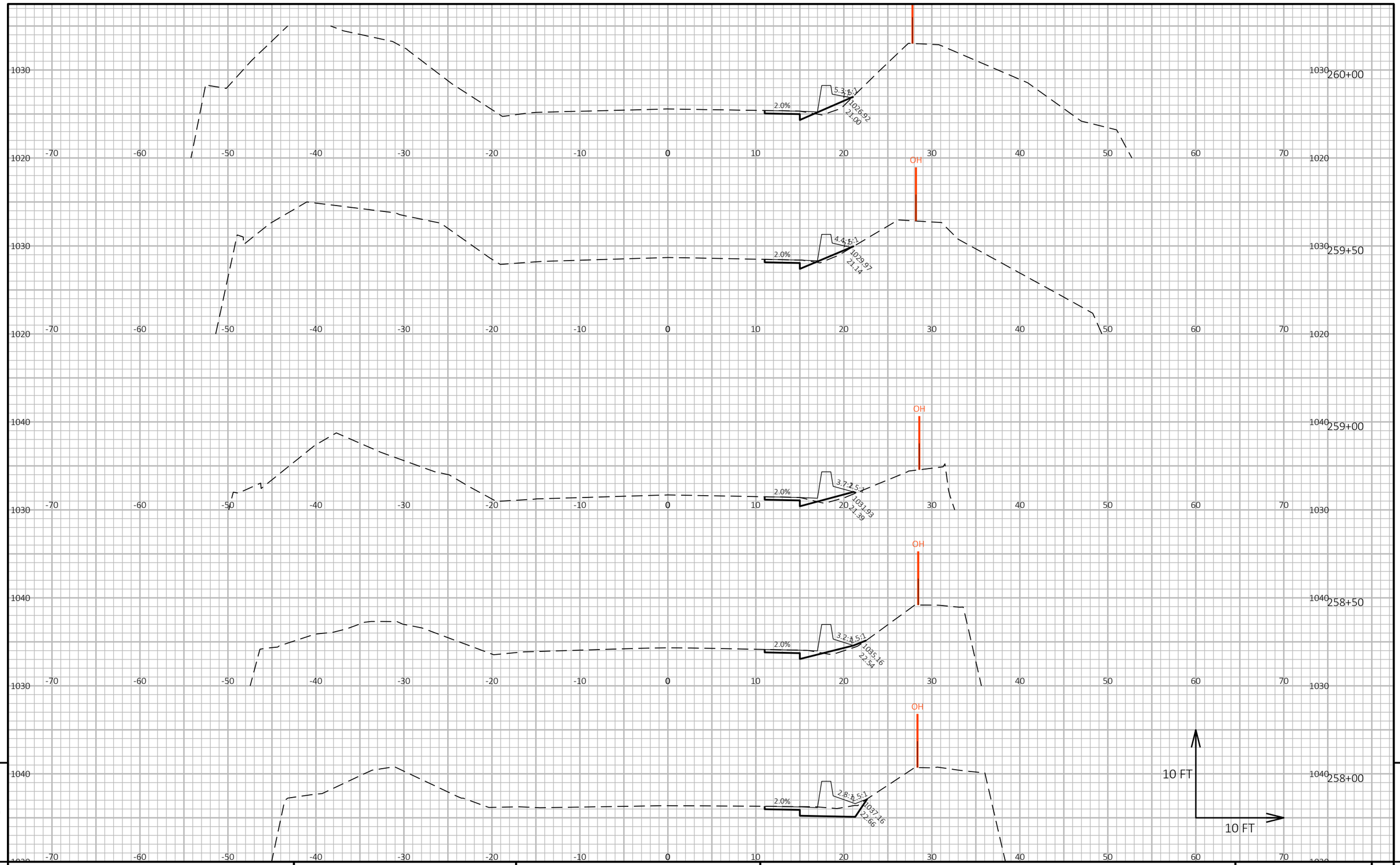
PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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

WISDOT/CADDS SHEET 49



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090211-xs

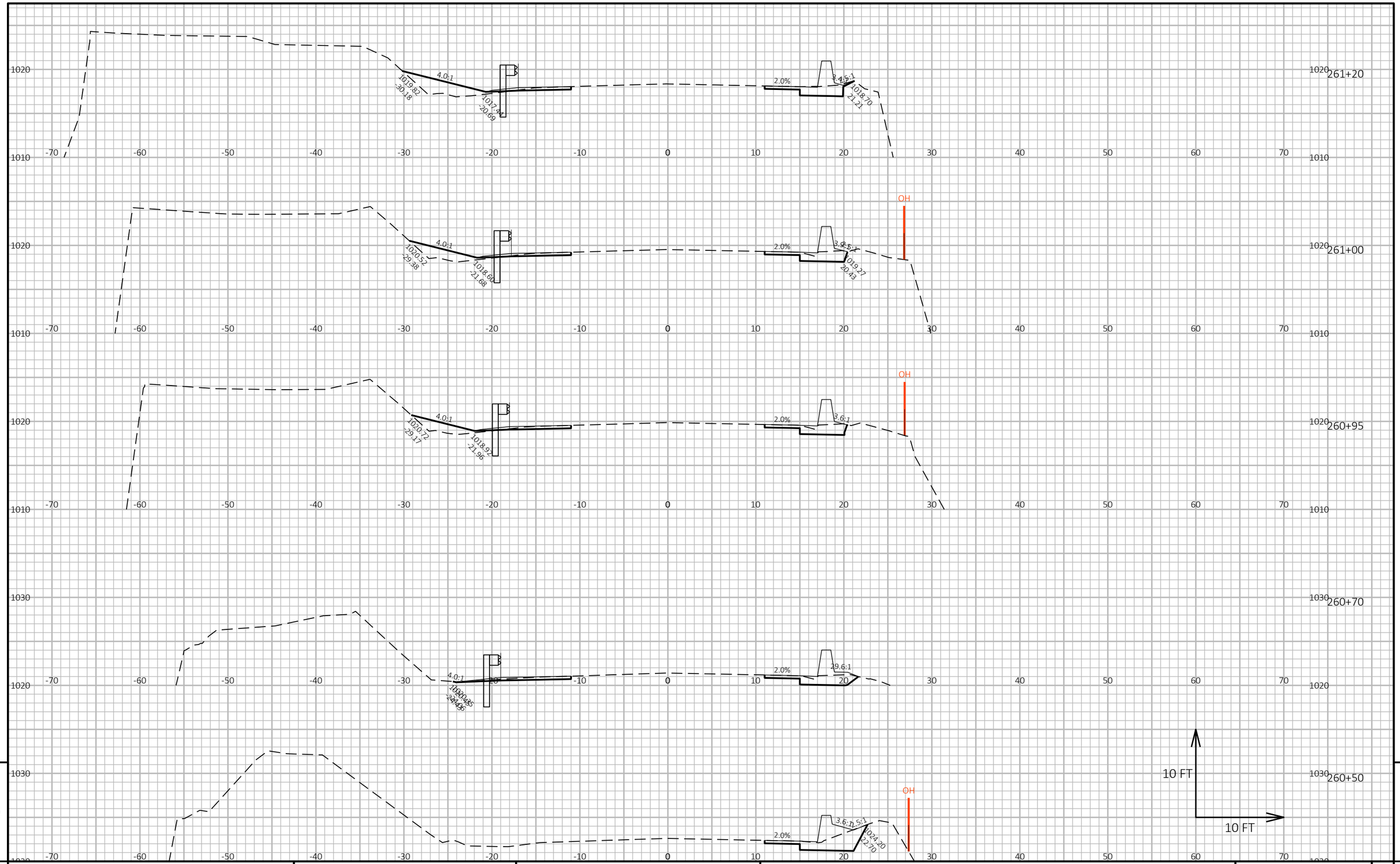
PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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

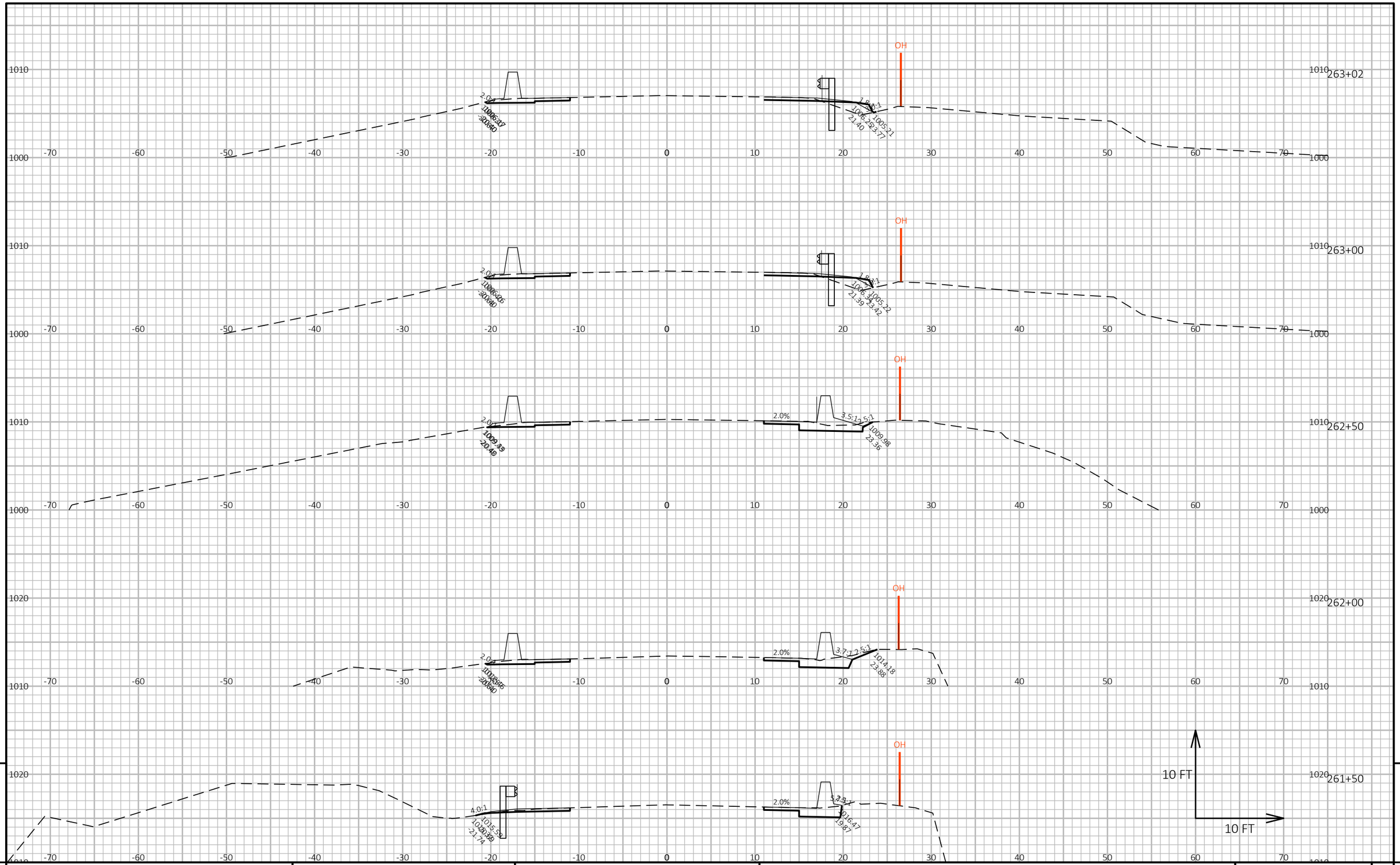
WISDOT/CADDS SHEET 49



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090212-xs

PLOT DATE : 12/17/2019 2:41 PM PLOT BY : ZAVADA, JENNIFER R PLOT NAME : **PLOT SCALE :** 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.



9

9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090213-xs

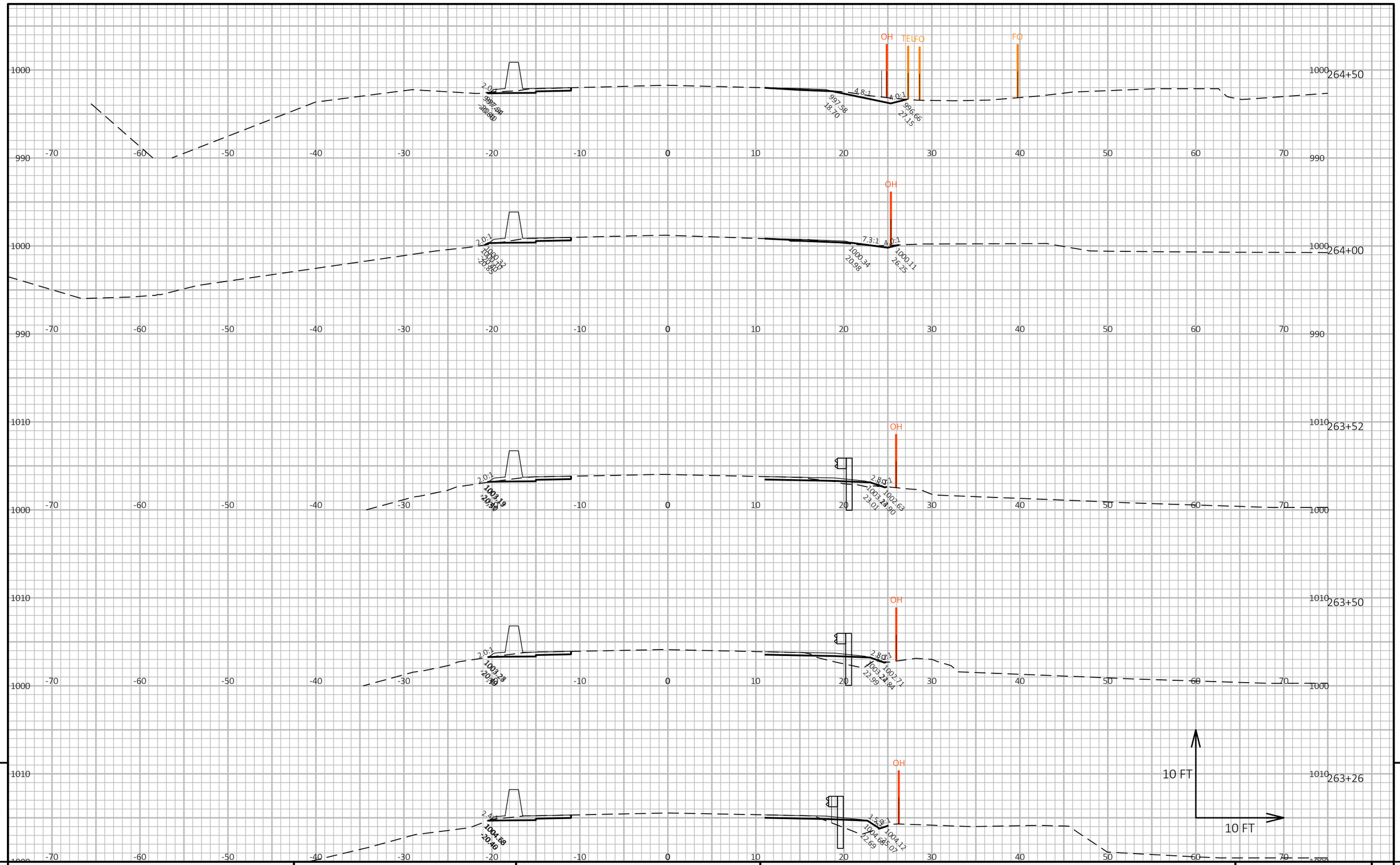
PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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

WISDOT/CADDS SHEET 49



9

9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090214-xs

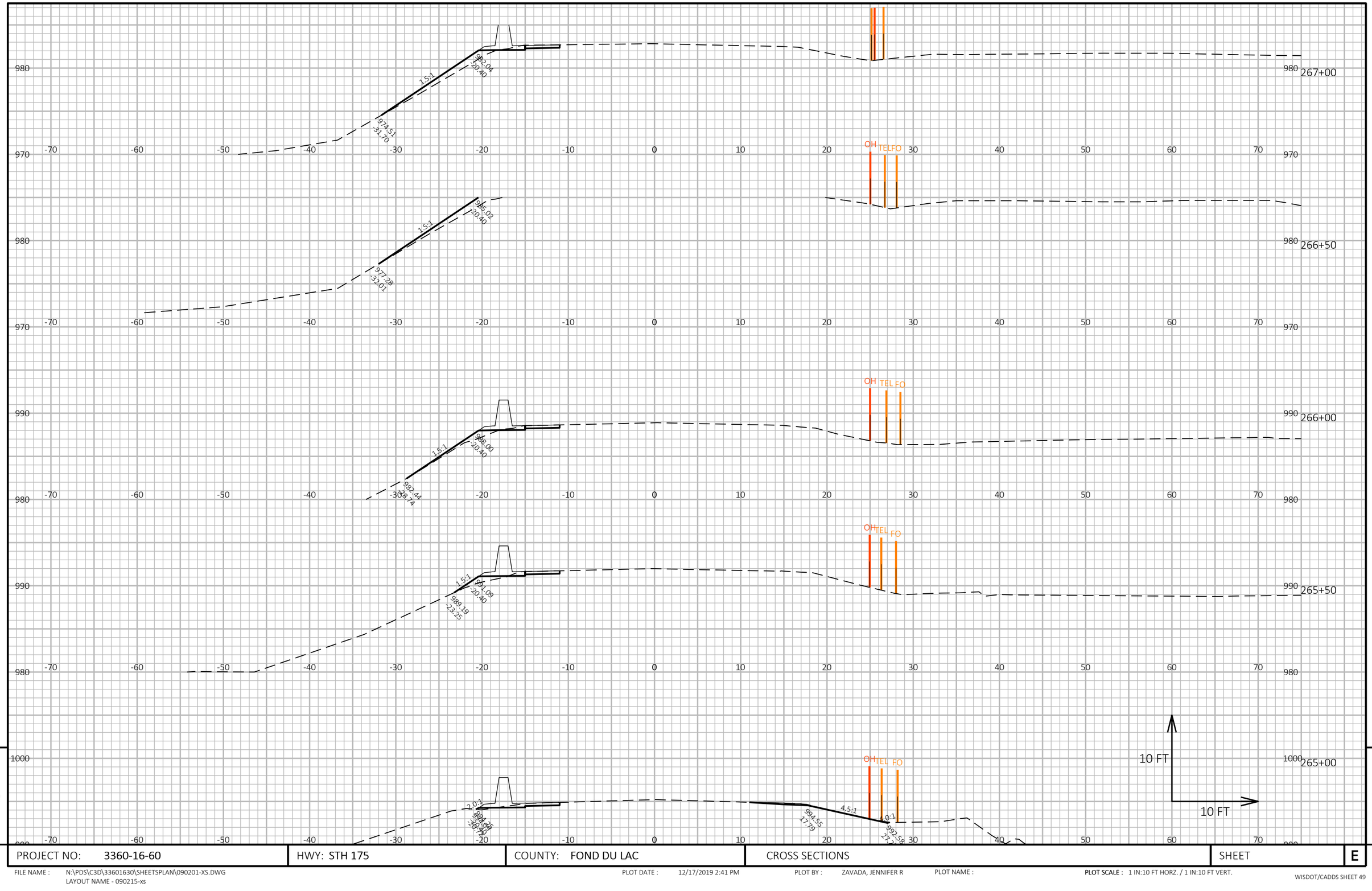
PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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

WISDOT/CADDS SHEET 49



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090215-xs

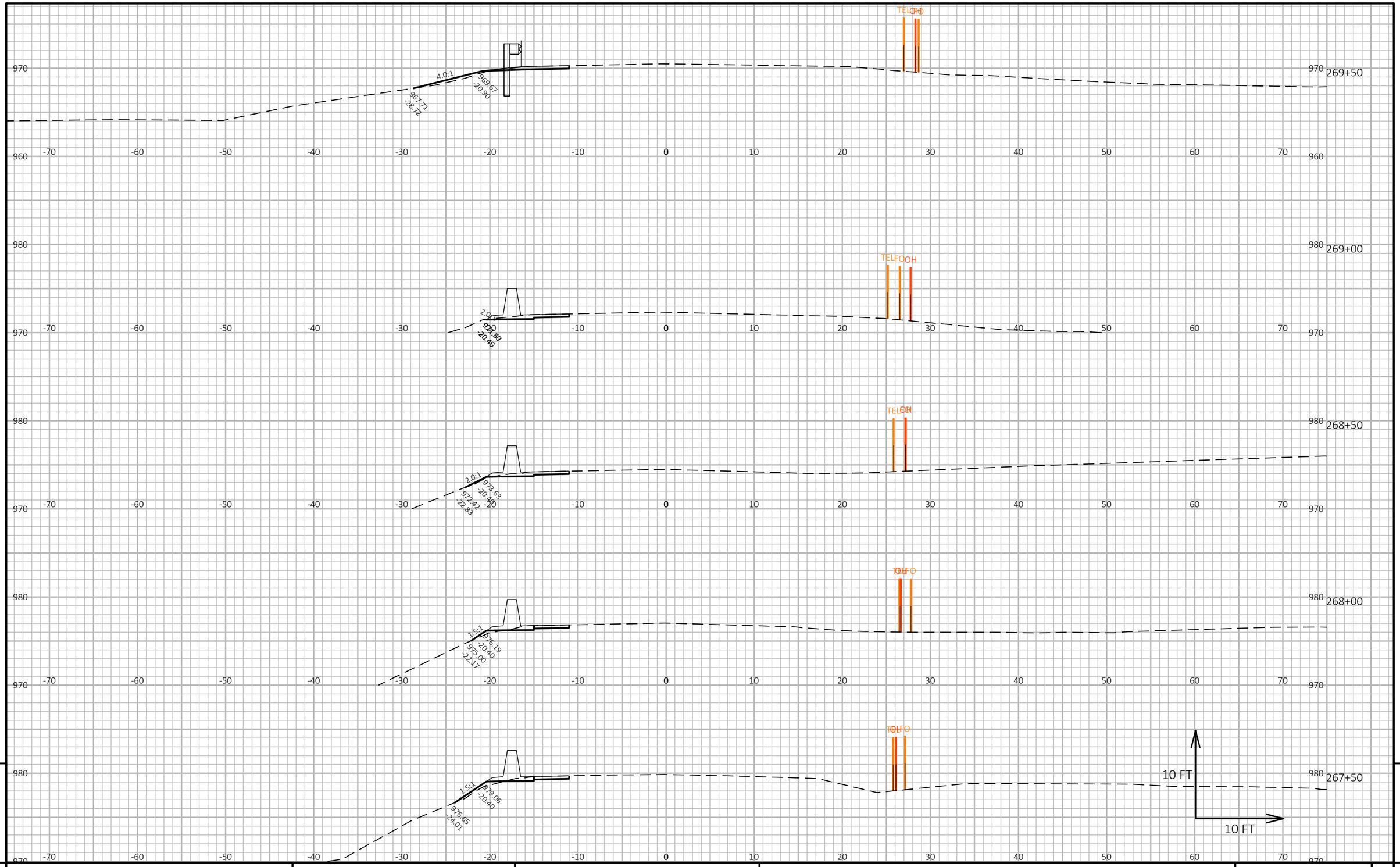
PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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

WISDOT/CADDS SHEET 49



9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

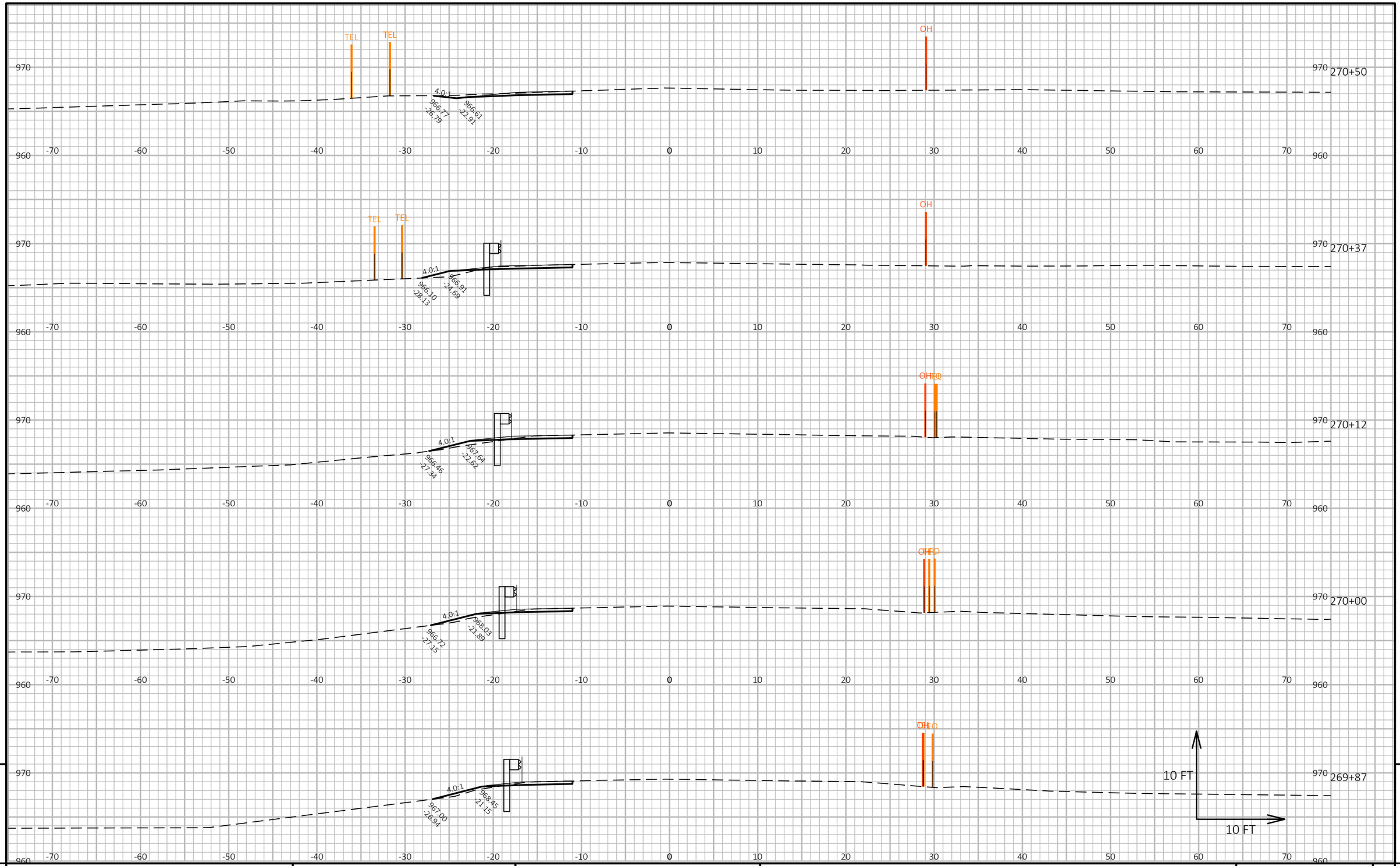
FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090216-xs

PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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



9

9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

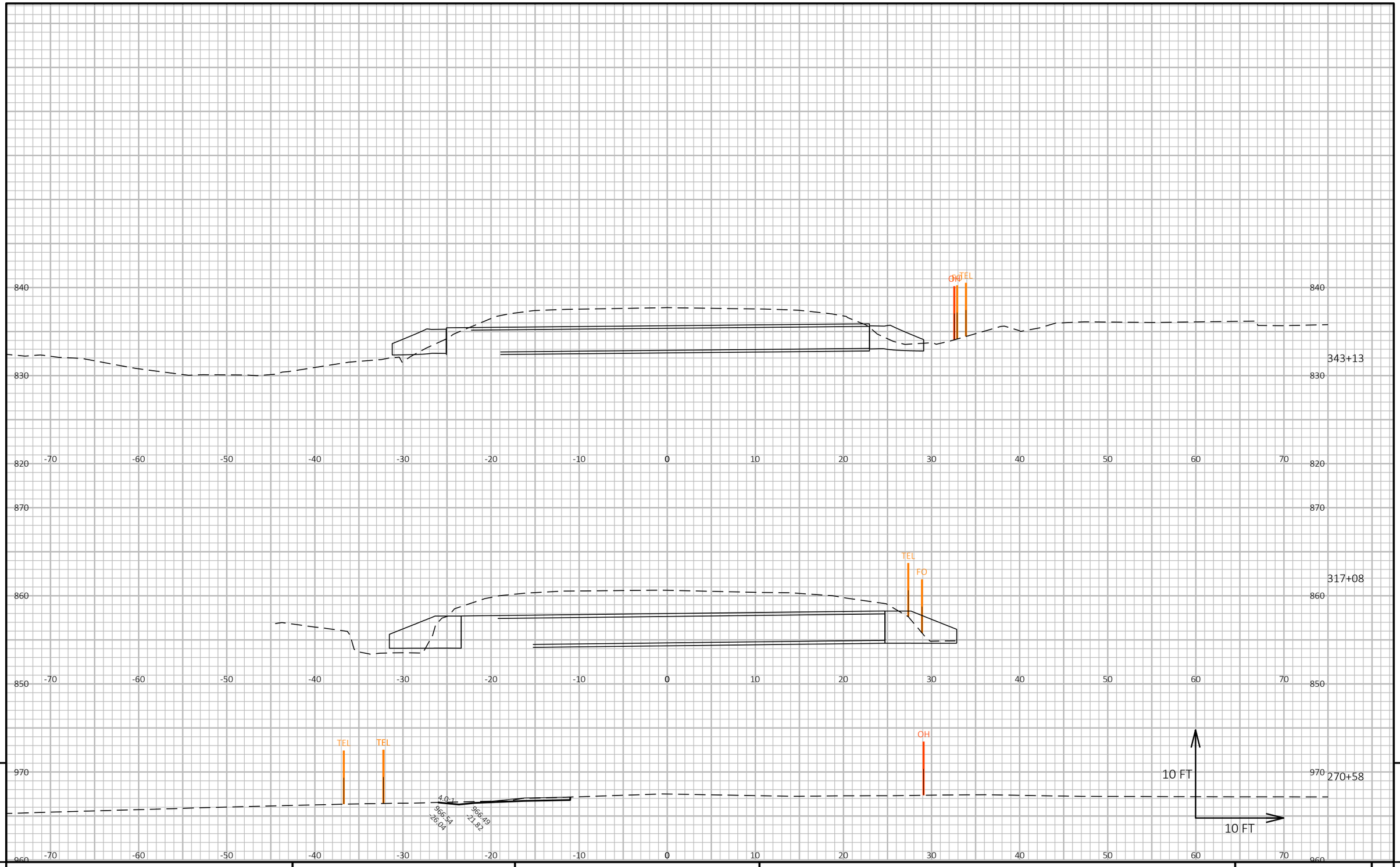
FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090217-xs

PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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



9

9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

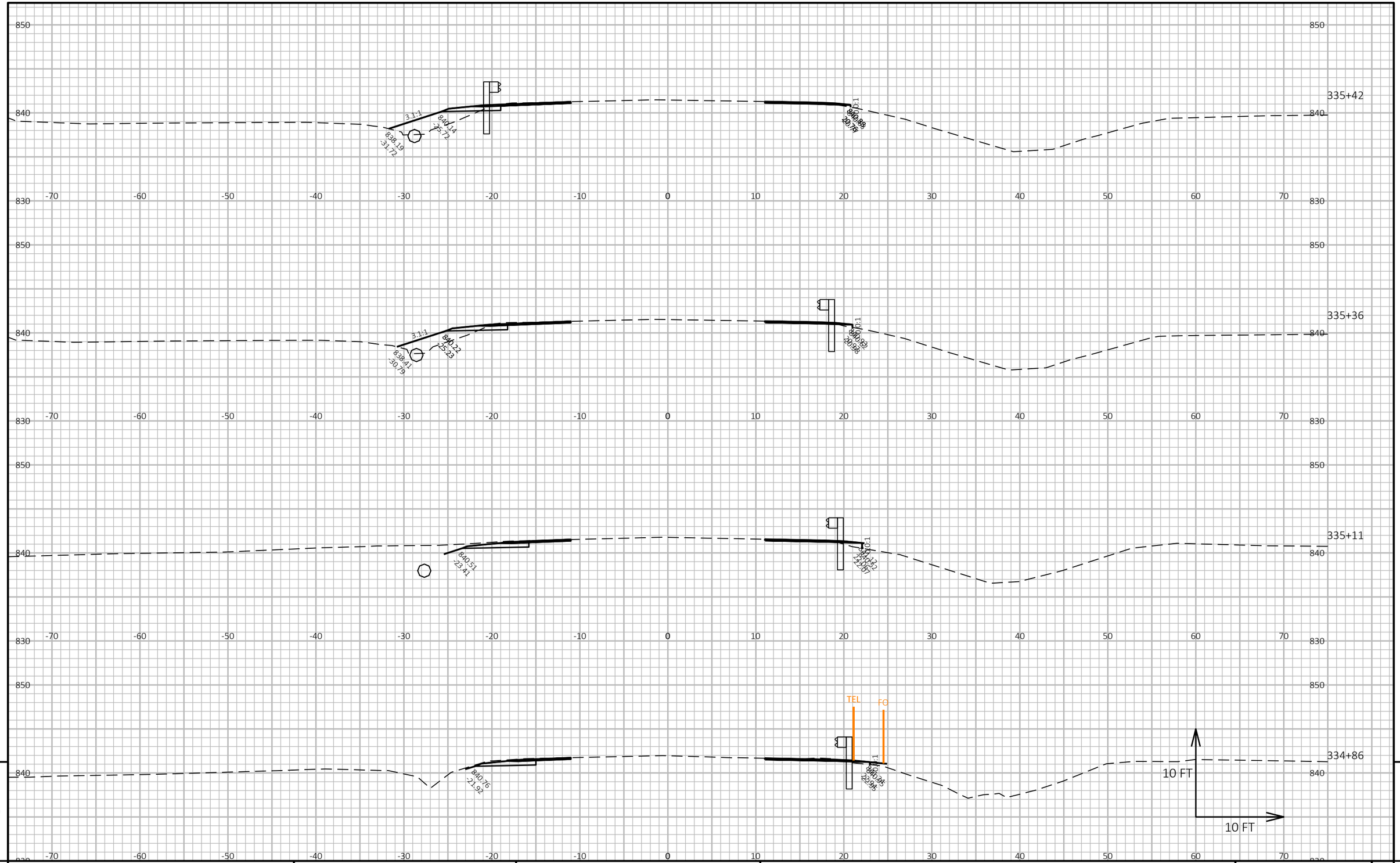
FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090218-xs

PLOT DATE : 12/17/2019 2:41 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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



9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

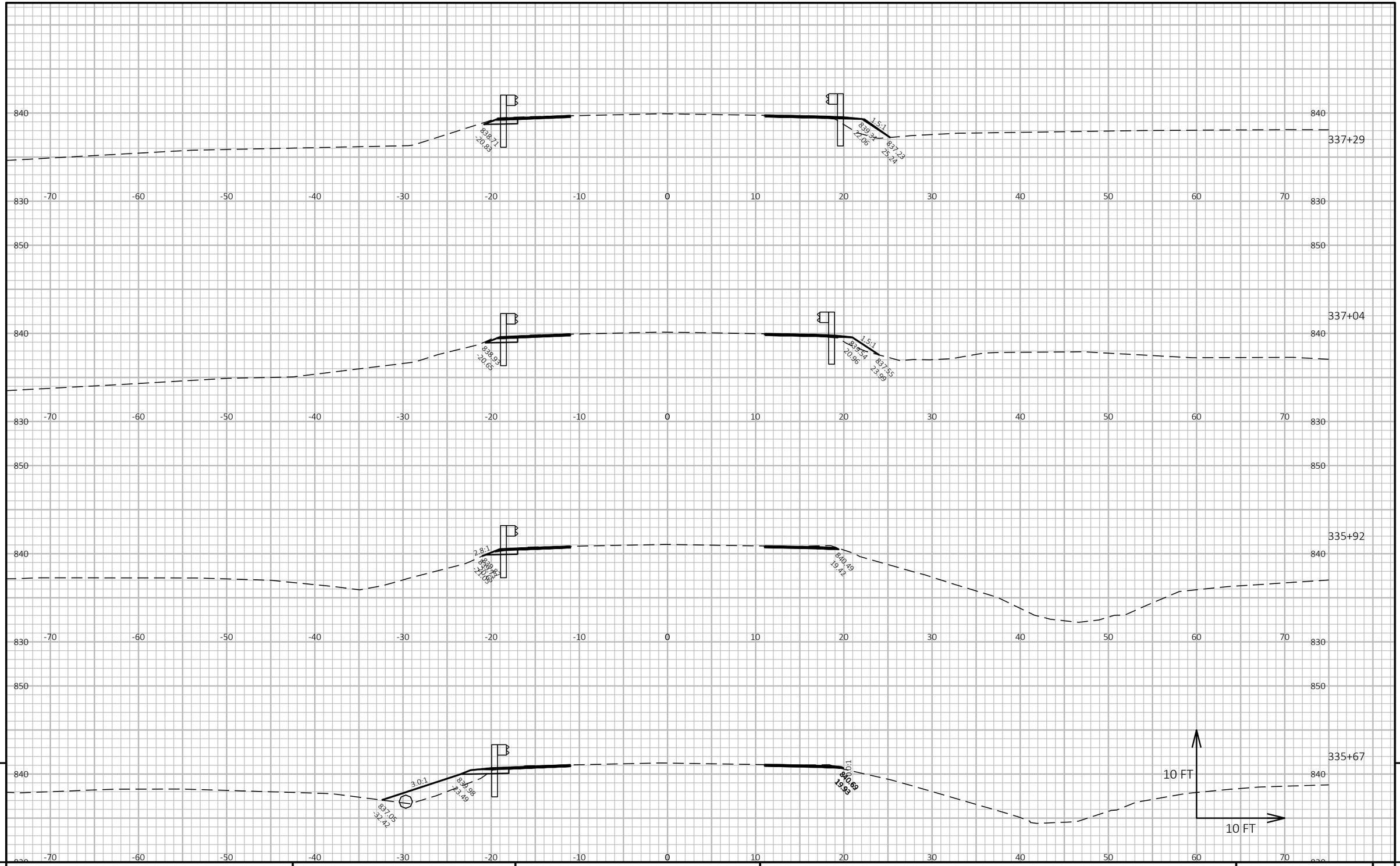
FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090301-XS.DWG
LAYOUT NAME - 090301-xs

PLOT DATE : 12/17/2019 2:42 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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



9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

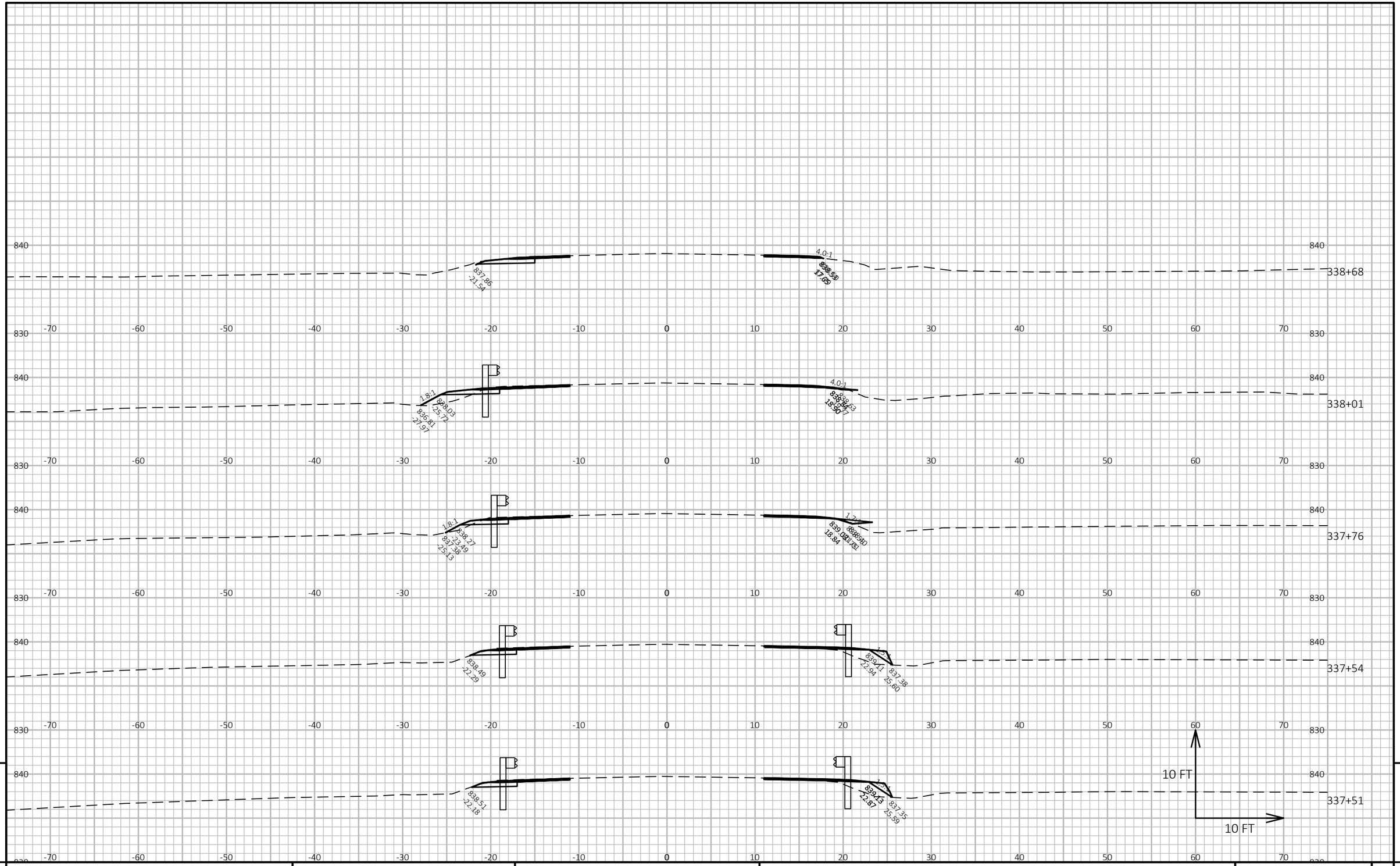
FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090301-XS.DWG
LAYOUT NAME - 090302-xs

PLOT DATE : 12/17/2019 2:42 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090301-XS.DWG
LAYOUT NAME - 090303-xs

PLOT DATE : 12/17/2019 2:42 PM PLOT BY : ZAVADA, JENNIFER R PLOT NAME :

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

WISDOT/CADDS SHEET 49

9 9

361+68

360+75

360+35

360+10

359+85

358+70

10 FT

10 FT

9

9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

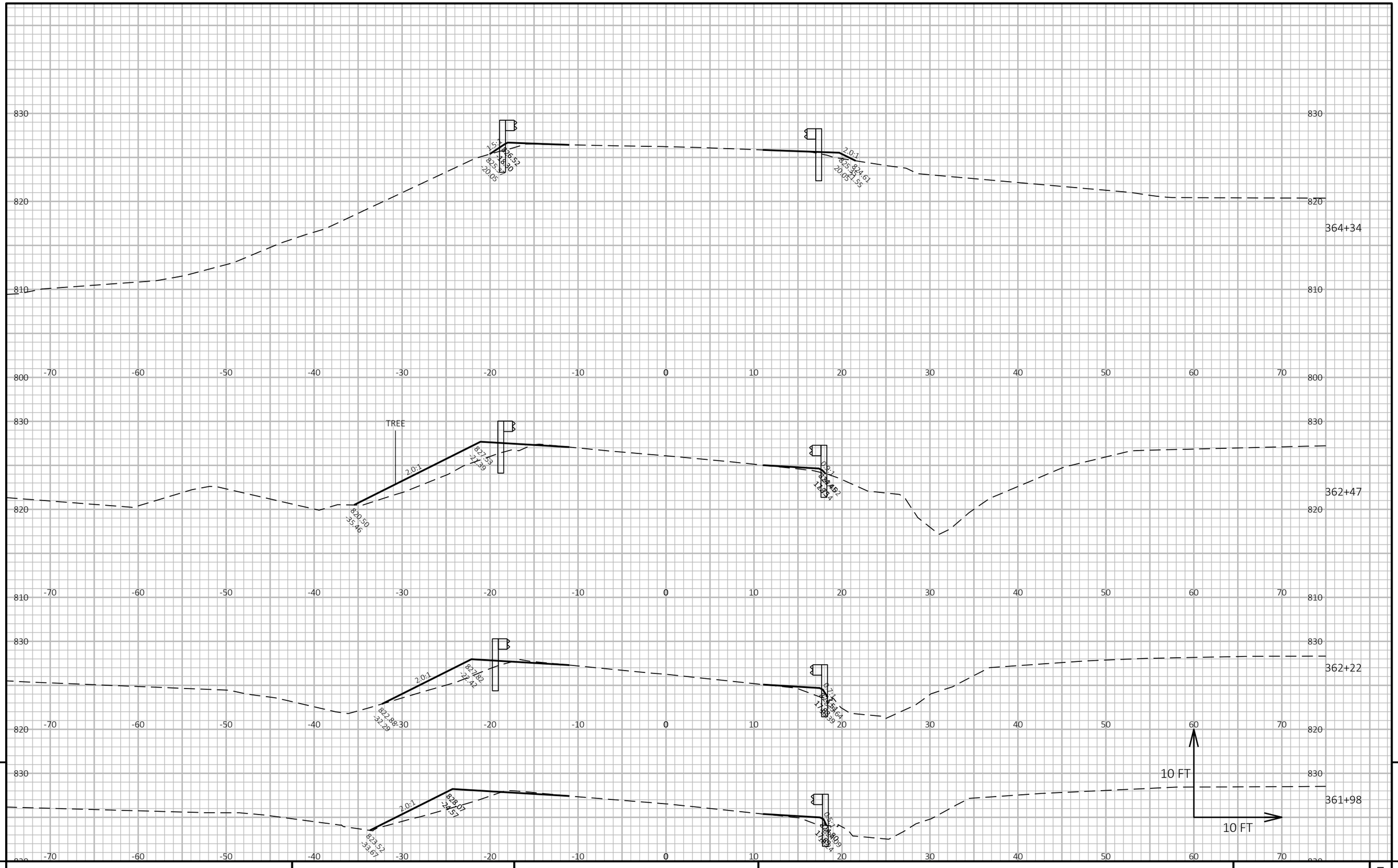
FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090301-XS.DWG
LAYOUT NAME - 090304-xs

PLOT DATE : 12/17/2019 2:42 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

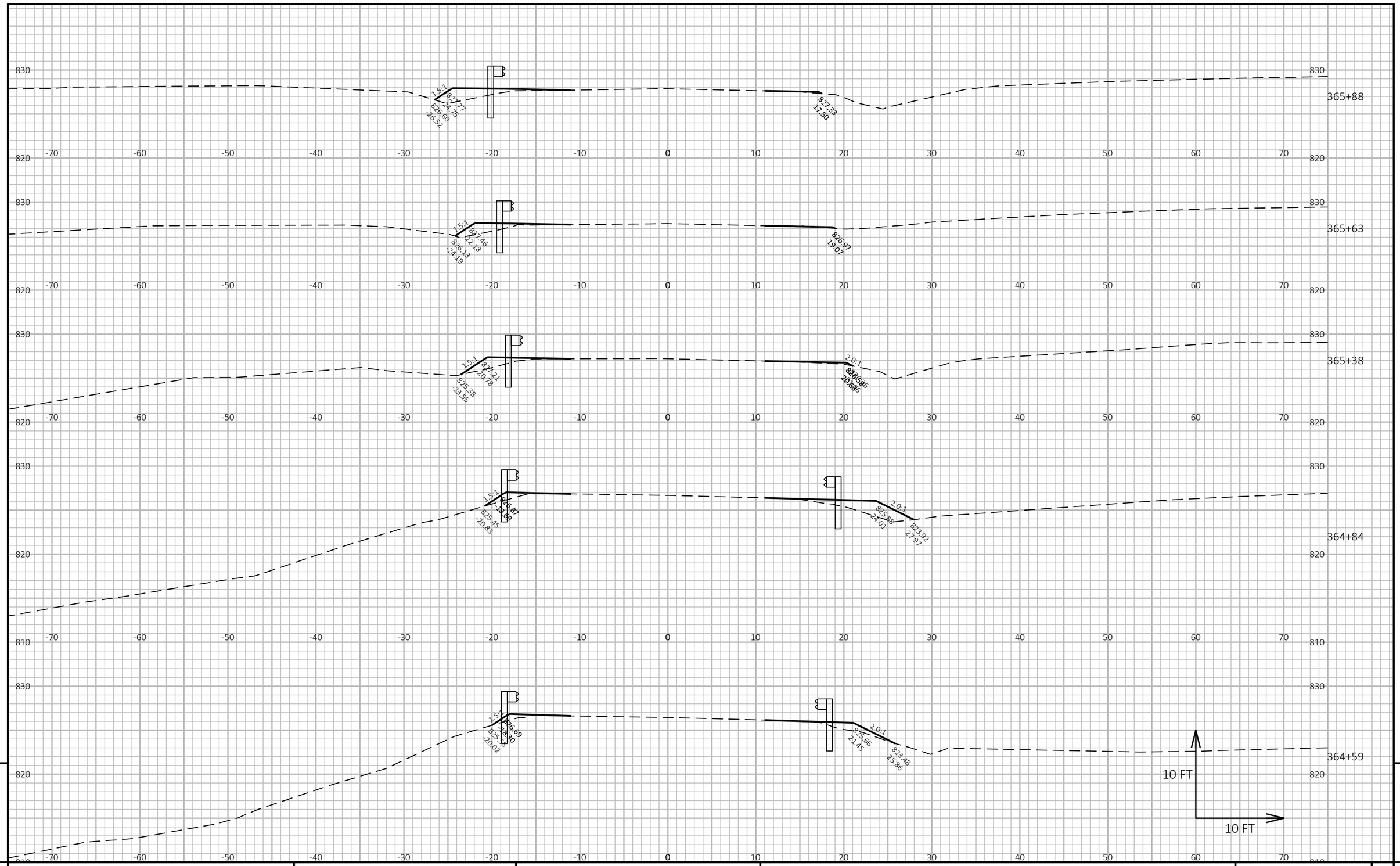
PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090301-XS.DWG
LAYOUT NAME - 090305-xs

PLOT DATE : 12/17/2019 2:42 PM PLOT BY : ZAVADA, JENNIFER R PLOT NAME : **PLOT SCALE :** 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.



PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090301-XS.DWG
LAYOUT NAME - 090306-xs

PLOT DATE : 12/17/2019 2:42 PM PLOT BY : ZAVADA, JENNIFER R PLOT NAME :

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

9

9

PROJECT NO: 3360-16-60	HWY: STH 175	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET	E

FILE NAME : N:\PDS\C3D\33601630\SHEETSPLAN\090301-XS.DWG
LAYOUT NAME - 090307-xs

PLOT DATE : 12/17/2019 2:42 PM

PLOT BY : ZAVADA, JENNIFER R

PLOT NAME :

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

WISCONSIN DEPARTMENT OF TRANSPORTATION

EPlans Preliminary Sheet Numbering Tool

This sheet: ftp://ftp.dot.state.wi.us/transp/roads/eplans/prelim_sheet_numbers.pdf

Notes

- Acrobat 5 or higher is required to use this tool.
- The Bureau of Highway Construction places sheet numbers in the final plan.
- This sheet is for placing preliminary sheet numbers with a “PRE_" prefix.
- If a plan contains multiple projects, number each plan individually.
- Leave this sheet in the plan.

TO ADD PRELIMINARY SHEET NUMBERS

1. Insert this sheet at the end of the plan

a. With the plan open in Acrobat, select Document > Insert Pages.
b. In the Select File to Insert dialog box, select this file (prelim_sheet_numbers.pdf)
c. In the Insert dialog box, choose After for Location and Last page for Page.
d. Click OK.

2. Click the Place Preliminary Sheet Numbers button

a. Go to the last sheet of the plan.
b. Click the Place Preliminary Sheet Numbers button once.
(The preliminary sheet number appears in the bottom right corner of the sheets.
The number should match te page number in the Acrobat Status bar).

3. Re-Save the PDF

a. Select File > Save As and save the PDF.

Place Preliminary Sheet Numbers

TO REMOVE PRELIMINARY SHEET NUMBERS

Remove