GRE

SEPTEMBER 2022

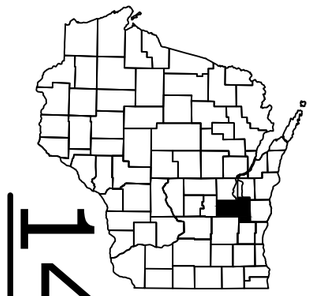
PROJECT ID: 4080-06-71

WITH: N/A

COUNTY: FOND DU LAC

ORDER OF SHEETS

TOTAL SHEETS = 122



N

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
4080-06-71	WISC 2022515	1

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

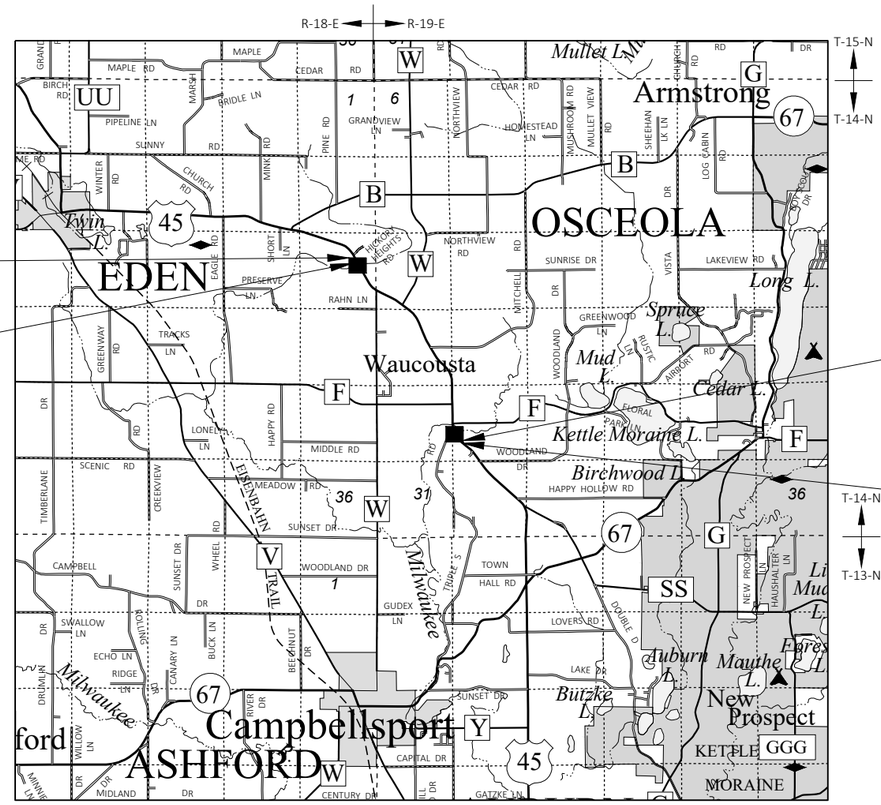
KEWASKUM - EDEN

MILWAUKEE RIVER BRIDGE

USH 45

FOND DU LAC COUNTY

STATE PROJECT NUMBER
4080-06-71



END PROJECT
STA 690+00

STRUCTURE C-20-0163
STA 681+50 TO STA 690+05

STRUCTURE C-20-0164
STA 543+65 TO STA 547+46

BEGIN PROJECT
STA 543+65
Y: 339739.36
X: 866509.93

DESIGN DESIGNATION			4080-06-00
A.A.D.T.	2023	=	3100
A.A.D.T.	2043	=	3600
D.H.V.		=	415 (K30)
D.D.		=	60/40
T.		=	6.4%
DESIGN SPEED		=	60 MPH
ESALS		=	610,000

LAYOUT

SCALE 0 2.0 MI

TOTAL NET LENGTH OF CENTERLINE = 0.000 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.

CONVENTIONAL SYMBOLS

PLAN		PROFILE	
CORPORATE LIMITS		GRADE LINE	
PROPERTY LINE		ORIGINAL GROUND	
LOT LINE		MARSH OR ROCK PROFILE (To be noted as such)	ROCK
LIMITED HIGHWAY EASEMENT		SPECIAL DITCH	LABEL
EXISTING RIGHT OF WAY		GRADE ELEVATION	95.36
PROPOSED OR NEW R/W LINE		CULVERT (Profile View)	
SLOPE INTERCEPT		**UTILITIES**	
REFERENCE LINE	300'EB'	ELECTRIC	E
EXISTING CULVERT		FIBER OPTIC	FO
PROPOSED CULVERT (Box or Pipe)		GAS	G
COMBUSTIBLE FLUIDS	CAUTION	SANITARY SEWER	SAN
		STORM SEWER	SS
MARSH AREA		TELEPHONE	T
		WATER	W
		UTILITY PEDESTAL	
WOODED OR SHRUB AREA		POWER POLE	
		TELEPHONE POLE	

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	NE REGION
Designer	ERIK BRATTLUND
Project Manager	KIMBERLEY SLEZAK
Regional Examiner	
Regional Supervisor	ROBERT WAGNER

APPROVED FOR THE DEPARTMENT

DATE: 4/20/22 Kimberly A Slezak, P.E (Signature)

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.

ORDER OF SECTION 2 DETAIL SHEETS

UTILITIES CONTACTS

COMMUNICATIONS

RUSS RYAN
FRONTIER COMMUNICATIONS OF WI LLC
118 DIVISION STREET
PLYMOUTH, WI 53073
PHONE: (920) 583-3275
EMAIL: Russell.w.ryan@ftr.com

GAS/PETROLEUM

ANR PIPELINE CO - GAS/PETROLEUM
TODD BRISTER (PRIMARY CONTACT)
W3925 PIPELINE LANE
EDEN, WI 53019
PHONE: (920) 477-2235
EMAIL: todd_brister@transcanada.com

ELECTRICAL

MARY MONTGOMERY
ALLIANT ENERGY
200 FIRST ST
CEDAR RAPIDS, IA 52401
PHONE: (319) 786-4768
EMAIL: MaryMontgomery@alliantenergy.com

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

DNR LIASION

JAY SCHIEFELBEIN (NORTHEAST-GREEN LAKE, FOND DU LAC, SHEBOYGAN, WINNEBAGO)
2984 SHAWANO AVE.
GREEN BAY, WI 54313
(920) 360-3784
jeremiah.schiefelbein@wisconsin.gov

COUNTY HIGHWAY COMMISSIONER

TOM JANKE
301 DIXIE ST
PO BOX 1234
FOND DU LAC, WI 54936-1234
920-929-3489
tom.janke@fdlco.wi.gov

NE REGION SURVEY COORDINATOR

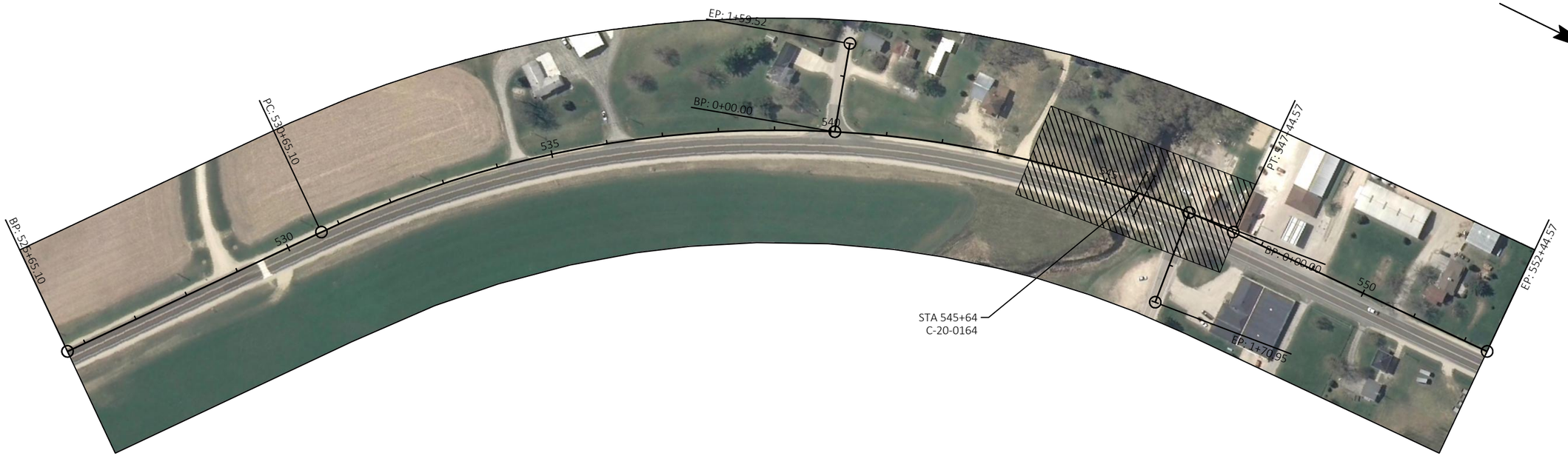
CORMAC MCINNIS, RLS
944 VANDERPERREN WAY
GREEN BAY, WI 54304
(920)492-5638
cormac.mcinnis@dot.wi.gov

DESIGN CONTACT

KIMBERLY SLEZAK, PE
944 VANDERPERREN WAY
GREEN BAY, WI 54304
(920) 492-4131

2

2

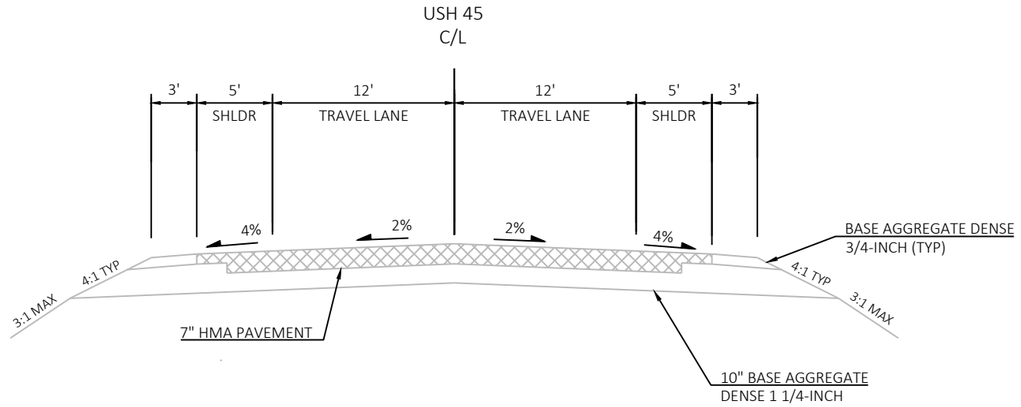


PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	PROJECT OVERVIEW	SHEET 3	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\020201-PO.DWG
LAYOUT NAME - 020201-PO

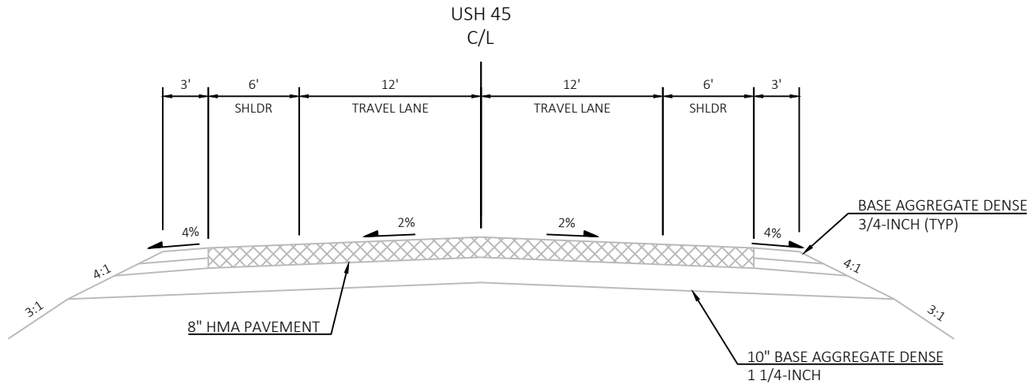
PLOT DATE : 2/28/2022 8:25 AM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:200 FT

2



EXISTING TYPICAL SECTION USH 45 OVER C-20-0164

STA 543+65 to STA 547+46

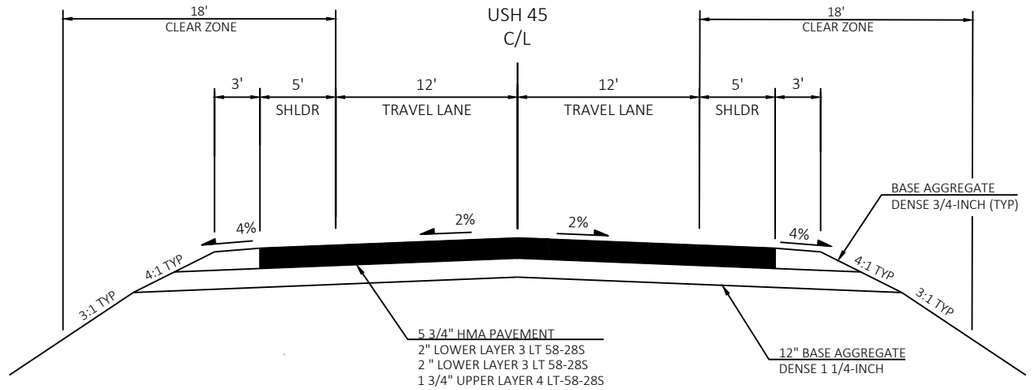


EXISTING TYPICAL SECTION USH 45 OVER C-20-0163

STA 683+89 to 690+49

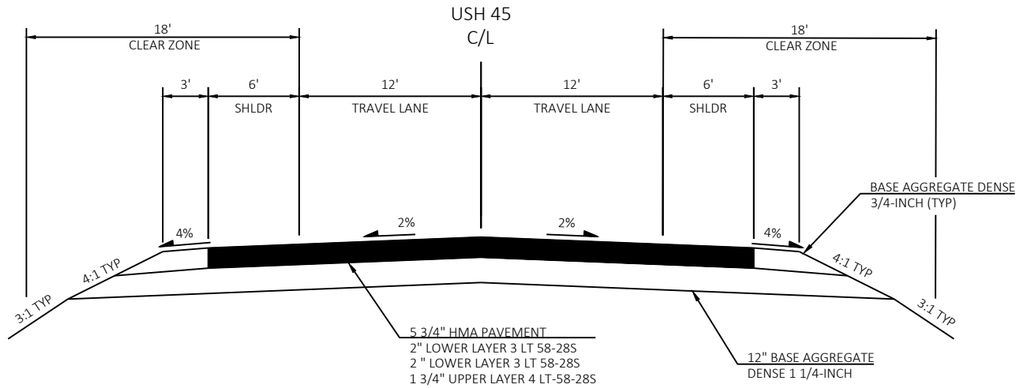
PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	TYPICAL SECTIONS	SHEET 4	E

2



FINISHED TYPICAL SECTION USH 45 OVER C-20-0164

STA 545+41 to STA 545+94



FINISHED TYPICAL SECTION USH 45 OVER C-20-0163

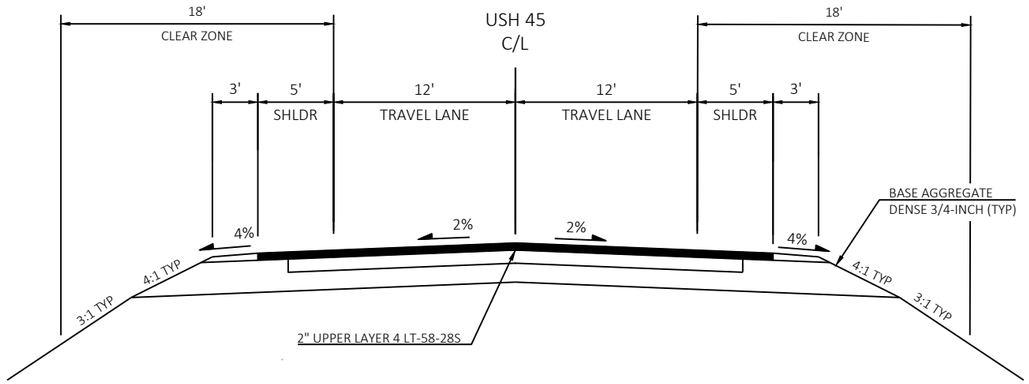
STA 683+50 to STA 684+60

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	TYPICAL SECTIONS	SHEET 5	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\020301-TS.DWG
LAYOUT NAME - 020302-ts

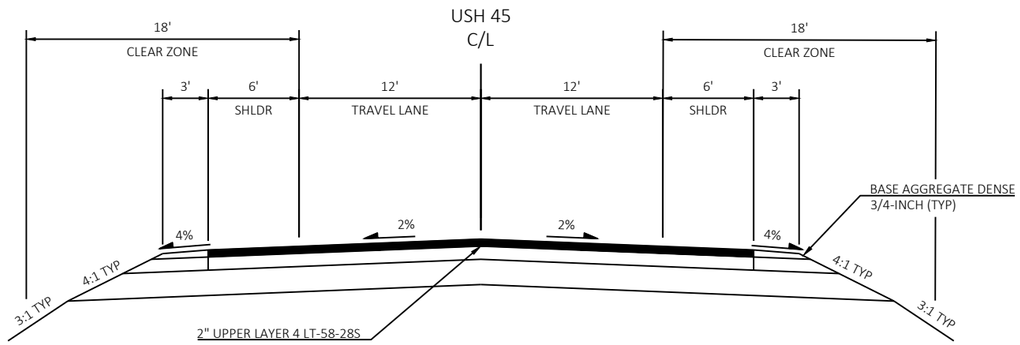
PLOT DATE : 6/15/2022 4:00 PM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1IN:10 FT

2



FINISHED TYPICAL SECTION USH 45 MILLED SECTIONS

STA 543+65 to STA 545+41
STA 545+94 to STA 547+46



FINISHED TYPICAL SECTION USH 45 MILLED SECTIONS

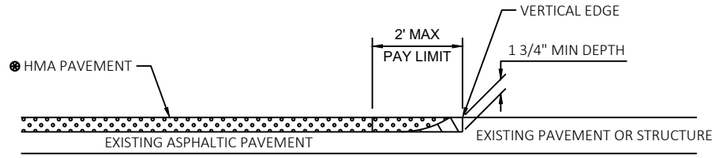
STA 681+89 to STA 683+50
STA 684+60 to STA 690+49

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN: TYPICAL SECTIONS	SHEET 6	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\020301-TS.DWG
LAYOUT NAME - 020303-ts

PLOT DATE : 6/15/2022 4:00 PM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1IN:10 FT

2



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

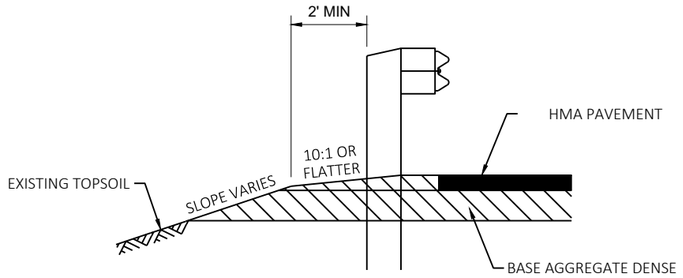
REMOVING ASPHALTIC SURFACE, MILLING

REMOVE ASPHALTIC SURFACE WEDGE AT BUTT JOINT TO CREATE VERTICAL EDGE

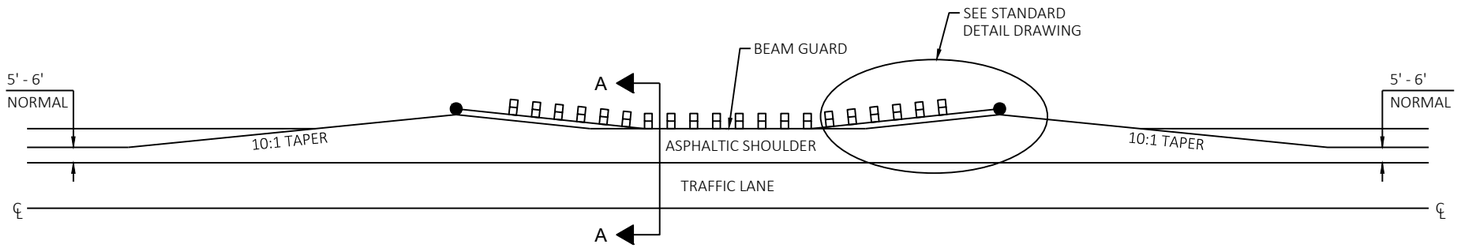
BUTT JOINT DETAIL FOR ASPHALTIC PAVEMENTS (NO PROFILE CHANGE)

USH 151
STA 543+65
STA 547+46

CTH F
STA 0+68.50



SECTION A-A



DETAIL FOR ASPHALTIC SHOULDER AT BEAM GUARD

STA 543+65 - STA 547+46
STA 681+50 - STA 690+00

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN: CONSTRUCTION DETAILS	SHEET 7	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\021001-CD.DWG
LAYOUT NAME - 021001-cd
PLOT DATE : 6/15/2022 4:10 PM
PLOT BY : BRATTLUND, ERIK JOHN
PLOT NAME :
PLOT SCALE : 1IN:10 FT
WISDOT/CADDS SHEET 42

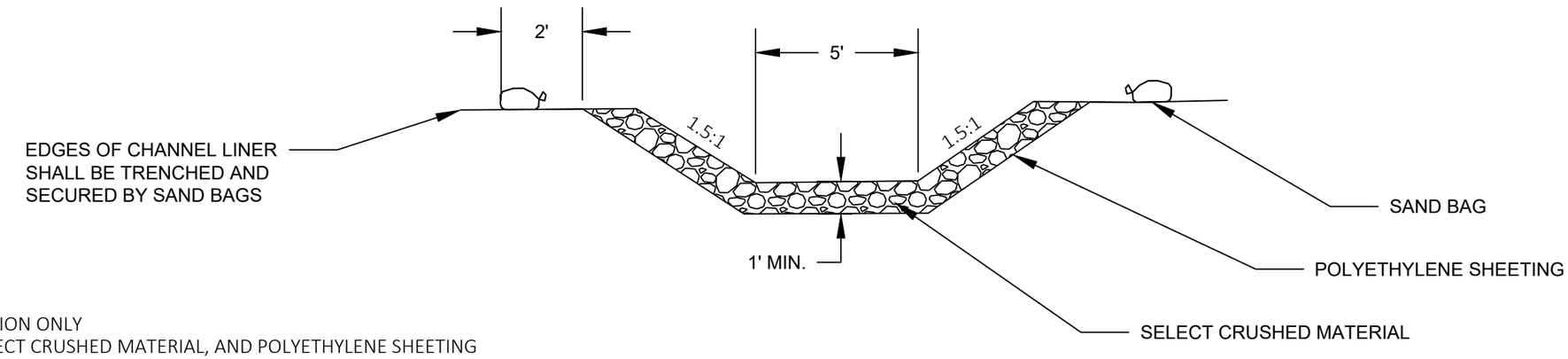
2

2

TEMPORARY WATER DIVERSION

685

PLAN VIEW WATER DIVERSION



*FOR INFORMATION ONLY
SAND BAGS, SELECT CRUSHED MATERIAL, AND POLYETHYLENE SHEETING SHALL BE CONSIDERED INCIDENTAL TO ROADWAY ITEM "TEMPORARY WATER DIVERSION"

TYPICAL SECTION DIVERSION CHANNEL

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CONSTRUCTION DETAILS	SHEET 8	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\021002-CD.DWG
LAYOUT NAME - 021002-cd

PLOT DATE : 4/27/2022 4:20 PM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:50 FT

WISDOT/CADDS SHEET 42

2

2

TEMPORARY SHORING

IMPERVIOUS BARRIER

545

PT: 547+44.57

G.P.I.

TEMPORARY WATER DIVERSION STAGE 1

IMPERVIOUS BARRIER

545

PT: 547+44.57

G.P.I.

TEMPORARY WATER DIVERSION STAGE 2

*FOR INFORMATION ONLY
IMPERVIOUS BARRIER SHALL BE CONSIDERED INCIDENTAL TO ROADWAY ITEM
"TEMPORARY WATER DIVERSION"
SEE STRUCTURE PLAN FOR TEMPORARY SHORING IN STAGE 1 ALONG EXISTING PIPE
PAID FOR UNDER STRUCTURE ITEM "TEMPORARY SHORING C-20-164"

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CONSTRUCTION DETAILS	SHEET 9	E

2

N

TLE

EXISTING R/W

REMOVE BEAMGUARD

B-20-0238
REMOVE 2 CRCS CULVERTS

SAWCUT

R/L USH 45

SAWCUT

543+00

544+00

545+00

546+00

547+00

548+00

USH 45

SEC120

PT: 547+44.57

REMOVING PAVEMENT
BUTT JOINT

SAWCUT

SAWCUT

REMOVE EXISTING PAVEMENT

REMOVE BEAMGUARD

Mill 2" ASPHALT AND RESURFACE WITH
2" HMA PAVEMENT TYPE 4LT 58-28 S

REMOVING PAVEMENT
BUTT JOINT

EXISTING R/W

TLE

Mill 2" ASPHALT AND RESURFACE WITH 2"
HMA PAVEMENT TYPE 4LT 58-28 S

REMOVING PAVEMENT
BUTT JOINT

1+00

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	REMOVAL PLAN	SHEET 10	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\021100-RM.DWG
LAYOUT NAME - 021100-RM

PLOT DATE : 4/27/2022 1:01 PM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:40 FT

2

2

EXISTING R/W

TLE

TEMPORARY WATER DIVERSION

C-20-0163
REMOVE 1 CPCS CULVERT

REMOVE BEAMGUARD

680+00 681+00 682+00 683+00 684+00 685+00

USH 45

R/L USH 45

REMOVING PAVEMENT
BUTT JOINT

Mill 2" ASPHALT AND RESURFACE WITH
2" HMA PAVEMENT TYPE 4LT 58-28 S

SAWCUT

REMOVE BEAMGUARD

TEMPORARY WATER DIVERSION

Mill 2" ASPHALT AND RESURFACE WITH
2" HMA PAVEMENT TYPE 4LT 58-28 S

SAWCUT

REMOVE PAVEMENT

EXISTING R/W

TLE

REMOVE 1 RCP CULVERT

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	REMOVAL PLAN	SHEET 11	E

2

2

TLE

EXISTING R/W

REMOVE BEAMGUARD

REMOVING PAVEMENT
BUTT JOINT

686+00 687+00 688+00 689+00 690+00 691+00

USH 45

R/L USH 45

H

EXISTING R/W

TLE

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	REMOVAL PLAN	SHEET 12	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\021100-RM.DWG
LAYOUT NAME - 021103-RM

PLOT DATE : 4/27/2022 1:02 PM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:40 FT

2

N

TLE

C-20-0164

R/W

USH 45

R/L USH 45

542+00

543+00

544+00

545+00

546+00

547+00

PT: 547+44.57

548+00

R/W

TLE

1+00

LEGEND

- EROSION MAT URBAN CLASS I, TYPE B
- SILT FENCE
- SLOPE INTERCEPT
- TEMPORARY DITCH CHECK
- SURFACE WATER FLOW

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	EROSION CONTROL	SHEET 13	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\022001-EC.DWG
LAYOUT NAME - 022001-ec
PLOT DATE : 6/15/2022 9:07 AM
PLOT BY : BRATTLUND, ERIK JOHN
PLOT NAME :
PLOT SCALE : 1 IN:40 FT
WISDOT/CADDS SHEET 42

2

2

R/W

TLE

USH 45

680+00

681+00

682+00

683+00

684+00

685+00

C-20-163

R/L USH 45

R/W

TLE

LEGEND

EROSION MAT URBAN CLASS I, TYPE B

SILT FENCE

SLOPE INTERCEPT

TEMPORARY DITCH CHECK

SURFACE WATER FLOW

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	EROSION CONTROL	SHEET 14	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\022001-EC.DWG
LAYOUT NAME - 022002-ec

PLOT DATE : 6/15/2022 9:07 AM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:40 FT

2

2

TLE

R/W

686+00 687+00 688+00 689+00 690+00 USH 45 691+00

R/L USH 45

R/W

TLE

LEGEND

- EROSION MAT URBAN CLASS I, TYPE B
- SILT FENCE
- SLOPE INTERCEPT
- TEMPORARY DITCH CHECK
- SURFACE WATER FLOW

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	EROSION CONTROL	SHEET 15	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\022001-EC.DWG
LAYOUT NAME - 022003-ec

PLOT DATE : 6/15/2022 9:07 AM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:40 FT

2

N

DETAIL 2
SEE SHEET 3 OF 3

21 BRIDGE OUT 1 MILE AHEAD LOCAL TRAFFIC ONLY R11-3B 60" X 30"

PCMS 20

PCMS 19

WORK ZONE

18 BRIDGE OUT 2 ½ MILES AHEAD LOCAL TRAFFIC ONLY R11-3B 60" X 30"

PCMS 17

WORK ZONE

BRIDGE OUT 1 ½ MILES AHEAD LOCAL TRAFFIC ONLY R11-3B 60" X 30" 15

PCMS 16

39 DETOUR M04-8 24" X 12" SOUTH M3-3 24" X 12" 45 M1-4 24" X 24" M06-1 21" X 21"

40 DETOUR M04-8 24" X 12" NORTH M3-1 24" X 12" 45 M1-4 24" X 24" M06-1 21" X 21"

41 DETOUR M04-8 24" X 12" SOUTH M3-3 24" X 12" 45 M1-4 24" X 24" M06-1 21" X 21"

42 DETOUR M04-8 24" X 12" NORTH M3-1 24" X 12" 45 M1-4 24" X 24" M06-1 21" X 21"

43 DETOUR M04-8 24" X 12" SOUTH M3-3 24" X 12" 45 M1-4 24" X 24" M06-1 21" X 21"

44 DETOUR M04-8 24" X 12" SOUTH M3-3 24" X 12" 45 M1-4 24" X 24" M06-1 21" X 21"

45 DETOUR M04-8 24" X 12" NORTH M3-1 24" X 12" 45 M1-4 24" X 24" M06-1 21" X 21"

46 DETOUR M04-8 24" X 12" NORTH M3-1 24" X 12" 45 M1-4 24" X 24" M05-1R 21" X 21"

47 DETOUR M04-8 24" X 12" SOUTH M3-3 24" X 12" 45 M1-4 24" X 24" M06-2 21" X 21"

48 DETOUR M04-8 24" X 12" NORTH M3-1 24" X 12" 45 M1-4 24" X 24" M06-2 21" X 21"

DETAIL 1
SEE SHEET 2 OF 3

LEGEND

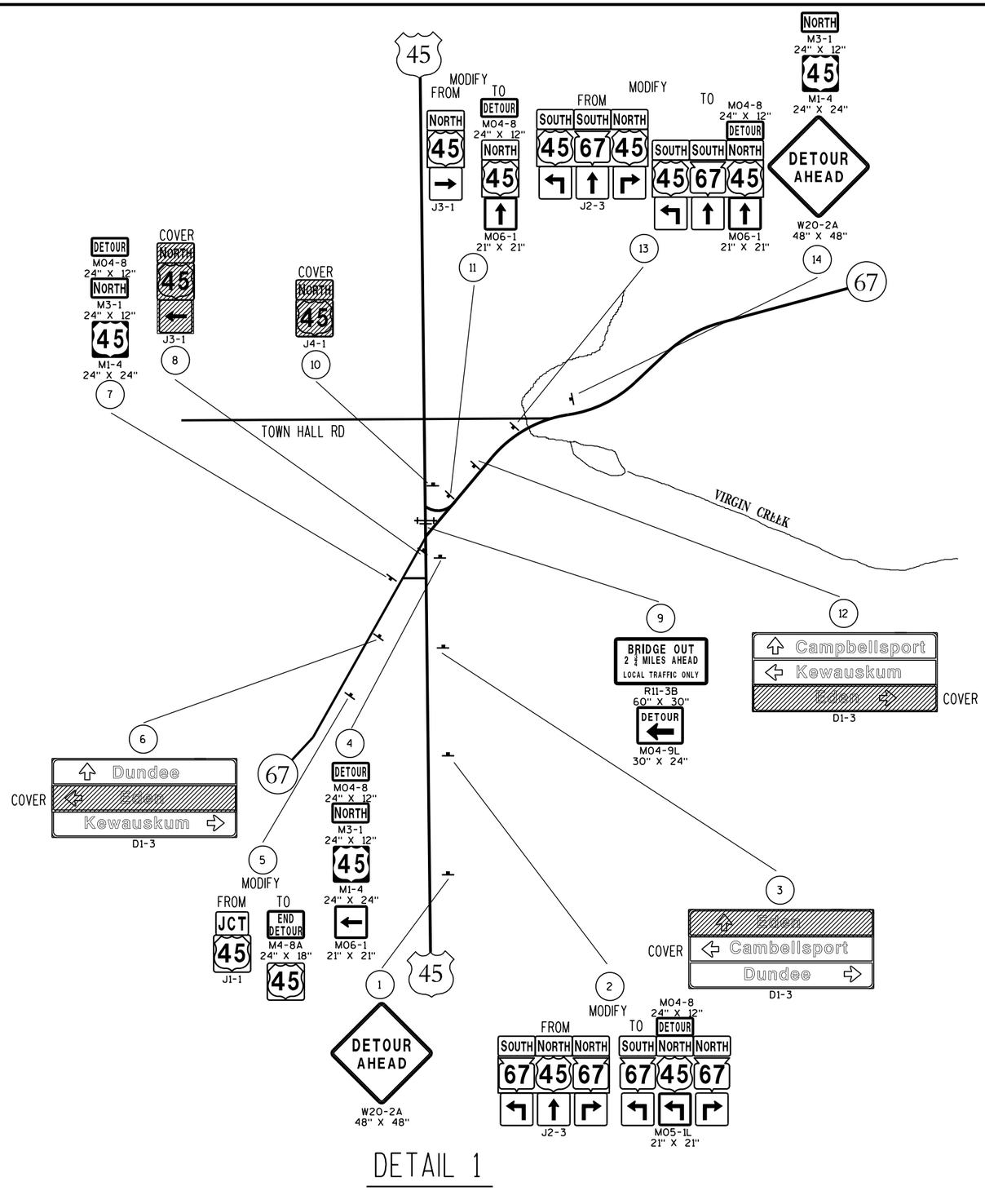
- (X) SIGN NUMBER. REFER TO MISCELLANEOUS QUANTITY SHEET
- ▲ PCMS (X) PORTABLE CHANGEABLE MESSAGE SIGN
- SIGN MOUNTED ON TYPE III BARRICADE
- POST MOUNTED SIGN

SHEET 1 OF 3

PLAN SHEET PRODUCED BY WisDOT-NE REGION

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	DETOUR SIGNING DETAIL	SHEET 16	E

FILE NAME : N:\spo\traffic\A Work Zone\Detours\Fond du Lac County\USH 45\CTH B - STH 67\027003_dt.dgn PLOT DATE : 18-JUN-2018 09:20 PLOT BY : dotjlf PLOT NAME : PLOT SCALE : 200:1



DETAIL 1

LEGEND

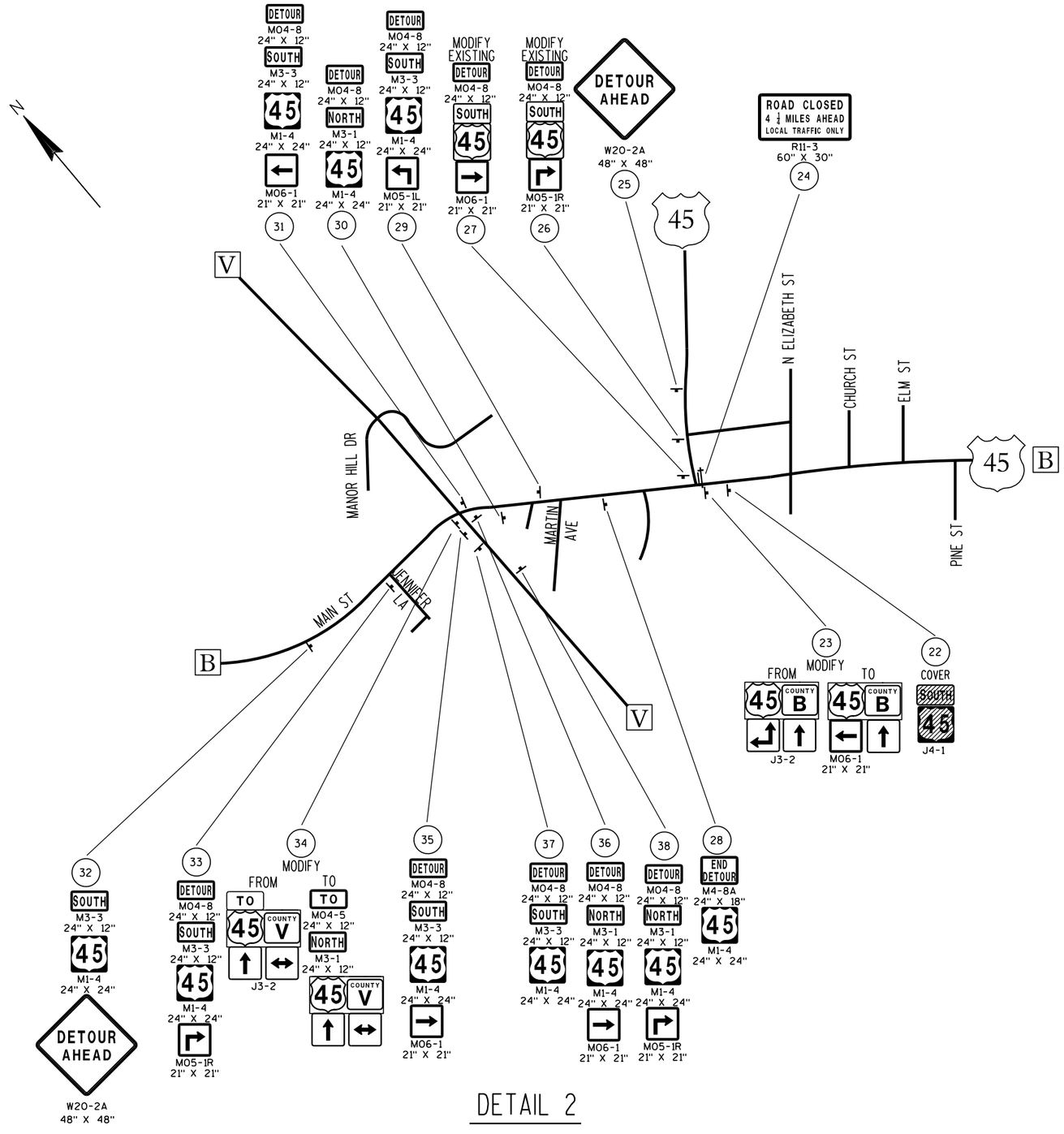
- (X) SIGN NUMBER. REFER TO MISCELLANEOUS QUANTITY SHEET
- ▲ PCMS (X) PORTABLE CHANGEABLE MESSAGE SIGN
- SIGN MOUNTED ON TYPE III BARRICADE
- POST MOUNTED SIGN

SHEET 2 OF 3

PLAN SHEET PRODUCED BY WisDOT-NE REGION

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	DETOUR SIGNING DETAIL	SHEET 17	E

2



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 2

SHEET 3 OF 3

PLAN SHEET PRODUCED BY WisDOT-NE REGION

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	DETOUR SIGNING DETAIL	SHEET 18	E

4080-06-71

Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	2.000	2.000
0004	201.0205	Grubbing	STA	2.000	2.000
0006	203.0220	Removing Structure (structure) 01. C-20-0109	EACH	1.000	1.000
0008	203.0220	Removing Structure (structure) 02. B-20-0154	EACH	1.000	1.000
0010	204.0115	Removing Asphaltic Surface Butt Joints	SY	319.000	319.000
0012	204.0120	Removing Asphaltic Surface Milling	SY	4,602.000	4,602.000
0014	204.0165	Removing Guardrail	LF	1,509.000	1,509.000
0016	205.0100	Excavation Common	CY	573.000	573.000
0018	206.2000	Excavation for Structures Culverts (structure) 01. C-20-164	LS	1.000	1.000
0020	206.2000	Excavation for Structures Culverts (structure) 02. C-20-163	LS	1.000	1.000
0022	208.0100	Borrow	CY	1,713.000	1,713.000
0024	210.2500	Backfill Structure Type B	TON	4,282.000	4,282.000
0026	213.0100	Finishing Roadway (project) 01. 4080-06-71	EACH	1.000	1.000
0028	305.0110	Base Aggregate Dense 3/4-Inch	TON	414.000	414.000
0030	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	464.000	464.000
0032	311.0115	Breaker Run	CY	193.000	193.000
0034	455.0605	Tack Coat	GAL	265.000	265.000
0036	460.2000	Incentive Density HMA Pavement	DOL	640.000	640.000
0038	460.5223	HMA Pavement 3 LT 58-28 S	TON	320.000	320.000
0040	460.5224	HMA Pavement 4 LT 58-28 S	TON	650.000	650.000
0042	504.0100	Concrete Masonry Culverts	CY	437.000	437.000
0044	505.0400	Bar Steel Reinforcement HS Structures	LB	43,550.000	43,550.000
0046	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	6,290.000	6,290.000
0048	511.1200	Temporary Shoring (structure) 01. C-20-164	SF	790.000	790.000
0050	516.0500	Rubberized Membrane Waterproofing	SY	77.000	77.000
0052	522.0436	Culvert Pipe Reinforced Concrete Class IV 36-Inch	LF	18.000	18.000
0054	606.0300	Riprap Heavy	CY	90.000	90.000
0056	614.2300	MGS Guardrail 3	LF	1,235.000	1,235.000
0058	614.2340	MGS Guardrail 3 L	LF	88.000	88.000
0060	614.2350	MGS Guardrail Short Radius	LF	131.250	131.250
0062	614.2610	MGS Guardrail Terminal EAT	EACH	7.000	7.000
0064	614.2630	MGS Guardrail Short Radius Terminal	EACH	1.000	1.000
0066	618.0100	Maintenance And Repair of Haul Roads (project) 01. 4080-06-71	EACH	1.000	1.000
0068	619.1000	Mobilization	EACH	1.000	1.000
0070	624.0100	Water	MGAL	7.000	7.000
0072	625.0500	Salvaged Topsoil	SY	4,430.000	4,430.000
0074	628.1504	Silt Fence	LF	1,945.000	1,945.000
0076	628.1520	Silt Fence Maintenance	LF	973.000	973.000
0078	628.1905	Mobilizations Erosion Control	EACH	6.000	6.000
0080	628.1910	Mobilizations Emergency Erosion Control	EACH	4.000	4.000
0082	628.2008	Erosion Mat Urban Class I Type B	SY	4,430.000	4,430.000
0084	628.7504	Temporary Ditch Checks	LF	1.000	1.000
0086	629.0210	Fertilizer Type B	CWT	2.730	2.730
0088	630.0120	Seeding Mixture No. 20	LB	117.000	117.000
0090	630.0500	Seed Water	MGAL	99.230	99.230
0092	633.5200	Markers Culvert End	EACH	4.000	4.000
0094	638.2102	Moving Signs Type II	EACH	1.000	1.000
0096	642.5001	Field Office Type B	EACH	1.000	1.000
0098	643.0420	Traffic Control Barricades Type III	DAY	5,035.000	5,035.000

4080-06-71

Line	Item	Item Description	Unit	Total	Qty
0100	643.0705	Traffic Control Warning Lights Type A	DAY	10,070.000	10,070.000
0102	643.0900	Traffic Control Signs	DAY	11,501.000	11,501.000
0104	643.0920	Traffic Control Covering Signs Type II	EACH	6.000	6.000
0106	643.1050	Traffic Control Signs PCMS	DAY	28.000	28.000
0108	643.5000	Traffic Control	EACH	1.000	1.000
0110	645.0105	Geotextile Type C	SY	765.000	765.000
0112	645.0120	Geotextile Type HR	SY	205.000	205.000
0114	646.1020	Marking Line Epoxy 4-Inch	LF	3,386.000	3,386.000
0116	646.6120	Marking Stop Line Epoxy 18-Inch	LF	12.000	12.000
0118	650.5000	Construction Staking Base	LF	200.000	200.000
0120	650.6500	Construction Staking Structure Layout (structure) 01. C-20-0164	LS	1.000	1.000
0122	650.6500	Construction Staking Structure Layout (structure) 02. C-20-0163	LS	1.000	1.000
0124	650.9910	Construction Staking Supplemental Control (project) 01. 4080-06-71	LS	1.000	1.000
0126	650.9920	Construction Staking Slope Stakes	LF	1,163.000	1,163.000
0128	690.0150	Sawing Asphalt	LF	304.000	304.000
0130	715.0502	Incentive Strength Concrete Structures	DOL	2,622.000	2,622.000
0132	SPV.0060	Special 01. Temporary Water Diversion Milwaukee River Station 545+57	EACH	1.000	1.000
0134	SPV.0060	Special 02. Temporary Water Diversion Milwaukee River Station 683+90	EACH	1.000	1.000

3

CLEARING & GRUBBING

STATION	LOCATION	201.0105 CLEARING STATIONS	201.0205 GRUBBING STATIONS
544+50 TO 545+50	USH 45	1	1
683+50 TO 684+50	USH 45	1	1
PROJECT TOTAL		**2**	**2**

REMOVING PAVEMENT

STATION	-	STATION	204.0120 REMOVING ASPHALTIC SURFACE MILLING SY	204.0115 REMOVING ASPHALTIC SURFACE BUTT JOINTS SY
543+65	-	545+40	709	---
545+40	-	545+93	---	---
545+93	-	547+46	893	---
543+65	-	---	---	66
0+68	-	---	---	64
547+44	-	---	---	69
681+90		683+50	650	60
683+50	-	684+60	---	---
684+60	-	690+50	2350	60
PROJECT TOTAL			**4602**	**319**

3

REMOVING GUARDRAIL

STATION	-	STATION	LOCATION	204.0165 REMOVING GUARDRAIL LF
544+75	-	545+94	USH 45	118
544+89	-	546+43	USH 45	156
682+32	-	687+36	USH 45	505
682+74	-	690+03	USH 45	730
			PROJECT TOTAL	**1,509**

3

EARTHWORK

DIVISION	FROM/TO STATION	LOCATION	205.0100 COMMON EXCAVATION (1) CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	AVAILABLE MATERIAL (2)	EXPANDED ROCK (12) FACTOR 1.00	UNEXPANDED FILL	EXPANDED FILL (3) FACTOR 1.15	MASS ORDINATE +/- (4)	WASTE	208.0100 BORROW
DIVISION 1											
C-20-0164	STA 543+25 to STA 546+50.779		285	169	116	0	242	278	-162	0	162
DIVISION 1 SUBTOTAL			285	169	116	0	242	278	-162	0	162
DIVISION 2											
C-20-0163	STA 681+50 To STA 690+00		288	510	-222	0	1,155	1,328	-1,550	0	1,550
DIVISION 2 SUBTOTAL			288	510	-222	0	1,155	1,328	-1,550	0	1,550
GRAND TOTAL			573	679	-106	0	1,397	1,607	-1,713	0	1,713
TOTAL COMMON EXC			573								

NOTES:

(1) SALVAGED/UNSUABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.

(2) AVAILABLE MATERIAL = CUT

(3) EXPANDED FILL FACTOR = 1.15

EXPANDED FILL = (UNEXPANDED FILL) * FILL FACTOR

(4) THE MASS ORDINATE + OR - QTY CALCULATED FOR THE DIVISION. PLUS QUANTITY INDICATES AN EXCESS OF MATERIAL WITHIN THE DIVISION. MINUS INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.

MO = Cut – (Unexp Fill) * Fill Factor

BASE AGGREGATE DENSE

STATION	-	STATION	LOCATION	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON	624.0100 WATER MGAL
543+65	-	547+46	USH 45	143	---	1.43
681+89	-	683+50	USH 45	271	---	2.71
545+41	-	545+94	USH 45	---	158	1.58
683+50	-	684+60	USH 45	---	306	3.06
			PROJECT TOTAL	**414**	**464**	**7**

HMA PAVEMENT

STATION	-	STATION	LOCATION	460.5223 3 LT 58-28 S TON	460.5224 4 LT 58-28 S TON	455.0605 TACK COAT GAL
543+65	-	545+41	USH 45	---	90	35
545+41	-	545+94	USH 45	210	30	12
545+94	-	547+46	USH 45	---	110	45
681+89	-	683+50	USH 45	---	80	32
683+50	-	684+60	USH 45	110	50	23
684+60	-	690+49	USH 45	---	290	118
			TOTALS	**320**	**650**	**265**

3

CULVERT PIPE

STATION	LOCATION	522.0436 CULVERT PIPE REINFORCE CONCRETE CLASS IV 36-INCH LF
684+21 OFFSET 81' RT	USH 45	18
	TOTALS	**18**

MGS GUARDRAIL 3

STATION	-	STATION	LOCATION	614.2300 MGS GUARDRAIL 3 LF	614.2350 MGS GUARDRAIL SHORT RADIUS LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH	614.2630 MGS GUARDRAIL SHORT RADIUS TERMINAL EACH	614.234 MGS GUARDRAIL 3 L EACH
544+19.84	-	544+69.31	USH 45 LT	---	---	1	---	---
544+27.02	-	544+77.25	USH 45 RT	---	---	1	---	---
544+69.31	-	546+24.08	USH 45 LT	156.2	---	---	---	---
544+77.25	-	545+06.27	USH 45 RT	28.7	---	---	---	---
545+06.27	-	545+91.03	USH 45 RT	---	---	---	---	88.4
545+91.03	-	546+44.12	USH 45 RT	---	68.78	---	---	---
546+24.08	-	546+52.98	USH 45 LT	---	62.5	---	---	---
546+52	-	546+53	USH 45 LT	---	---	---	1	---
0+64.79	-	0+89.79	CTH F LT	25	---	---	---	---
0+89.79	-	1+39.79	CTH F LT	---	---	1	---	---
682+29.24	-	682+79.22	USH 45 RT	---	---	1	---	---
682+66.69	-	683+16.65	USH 45 LT	---	---	1	---	---
682+79.22	-	686+91.71	USH 45 RT	406.25	---	---	---	---
683+16.65	-	689+41.69	USH 45 LT	618.75	---	---	---	---
686+91.71	-	687+41.74	USH 45 RT	---	---	1	---	---
689+41.69	-	689+91.69	USH 45 LT	---	---	1	---	---
			PROJECT TOTAL	**1,235**	**131**	**7**	**1**	**88**

3

EROSION CONTROL

STATION	TO	STATION	LOCATION	625.0500 SALVAGED TOPSOIL SY	628.2008 URBAN CLASS I TYPE B SY	629.0210 FERTILIZER TYPE B CWT	630.0120 SEEDING MIXTURE NO. 20 LB	630.0500 SEED WATER MGAL	REMARKS
543+25	-	546+38	USH 45 RT	470	470	0.29	13	10.53	
544+00	-	546+50	USH 45 LT	560	560	0.35	15	12.54	
681+50	-	688+00	USH 45 RT	1,700	1,700	1.02	44	38.08	
682+50	-	690+00	USH 45 LT	1,700	1,700	1.07	46	38.08	
			TOTALS	**4,430**	**4,430**	**2.73**	**117**	**99.23**	

SILT FENCE

STATION	TO	STAION	LOCATION	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF
542+94	-	545+34	USH 45 RT	234	117
543+76	-	545+65	USH 45 LT	200	100
545+92	-	546+22	USH 45 RT	36	18
681+18	-	684+08	USH 45 RT	295	148
684+33	-	688+32	USH 45 RT	415	208
681+89	-	684+03	USH 45 LT	210	105
684+53	-	690+02	USH 45 LT	555	278
			TOTALS	**1,945**	**973**

3

TEMPORARY DITCH CHECKS

STATION	LOCATION	628.7504 TEMPORARY DITCH CHECKS LF
545+83	USH 45 RT	1
	TOTAL	**1**

MARKERS CULVERT END

STATION	LOCATION	633.5200 MARKERS CULVERT END EACH	REMARKS
545+64	USH 45	2	C-20-0164
684+25	USH 45	2	C-20-0163
PROJECT TOTAL		**4**	

SIGNS

STATION	LOCATION	638.2102 MOVING SIGNS TYPE II EA	REMARKS
546+45	USH 45 LT	1	
	Totals	**1**	

3

TRAFFIC CONTROL

Location	NUMBER IN SERVICE	*643.0420 BARRICADES TYPE III DAYS	NUMBER IN SERVICE	*643.0705 WARNING LIGHTS TYPE A DAYS	NUMBER IN SERVICE	*643.0900 SIGNS DAYS
N ELIZABETH ST	4	212	8	424	5	265
CHURCH ST	3	159	6	318	3	159
ELM ST	3	159	6	318	3	159
PINE ST	3	159	6	318	3	159
WINTER RD	3	159	6	318	4	212
TWIN LAKE LN	3	159	6	318	4	212
CHURCH RD	3	159	6	318	4	212
EAGLE RD	3	159	6	318	4	212
MINK RD	3	159	6	318	4	212
SHORT LN	3	159	6	318	4	212
CTH B	3	159	6	318	4	212
HICKORY HEIGHTS RD	3	159	6	318	4	212
CTH W SOUTH	3	159	6	318	4	212
CTH W NORTH	3	159	6	318	4	212
MITCHELL RD	3	159	6	318	4	212
CTH F WEST	3	159	6	318	4	212
CTH F EAST	3	159	6	318	4	212
CTH SSS	3	159	6	318	4	212
SOLAR LN	3	159	6	318	4	212
WOODLAND DR	3	159	6	318	4	212
HAPPY HOLLOW RD	3	159	6	318	4	212
CTH SS	3	159	6	318	4	212
TOWN HALL RD	3	159	6	318	4	212
C-20-0163	10	530	20	1060	10	530
C-20-0164	10	530	20	1060	10	530
TOTALS		**4770**		**9540**		**5830**

*ADDITIONAL QUANTITIES SHOWN ELSEWHERE

3

PAVEMENT MARKING EPOXY

STATION		STATION	LOCATION	646.1020 MARKING LINE EPOXY 4-INCH WHITE SOLID LF	646.1020 MARKING LINE EPOXY 4-INCH YELLOW DOUBLE SOLID LF	646.1020 MARKING LINE EPOXY 4-INCH YELLOW DASHED LF	646.6120 MARKING LINE EPOXY 4-INCH LF
543+65	-	547+46	USH 151	624	762	---	---
0+50	-	---	USH 151	---	---	---	12
681+75	-	690+75	USH 151	1800	---	200	---
			SUB TOTALS	**2424**	**762**	**200**	**12**
			PROJECT TOTAL		**3386**		**12**

3

SAWING ASPHALT

STATION	LOCATION	690.0150 SAWING ASPHALT LF
545+41	USH 45	40
544+65 - 545+41	USH 45 LT	78
545+41 - 546+80	USH 45 LT	70
545+93	USH 45	40
683+50	USH 45	38
684+60	USH 45	38
	TOTAL	**304**

SPECIAL TEMPORARY WATER DIVERSION

STATION	LOCATION	SPV.0060.01 SPECIAL TEMPORARY WATER DIVERSION EA
545+57	USH 45	1
683+90	USH 45	1
	TOTAL	**2**

CONSTRUCTION STAKING

STATION		STATION	650.5000 BASE LF	650.6500 STRUCTURE LAYOUT C-20-0164 LS	650.6500 STRUCTURE LAYOUT C-20-0163 LS	650.9910 SUPPLEMENTAL CONTROL (4080-06-00) LS	650.9920 SLOPE STAKES LF	REMARKS
545+03	-	546+33	130	1	---	---	---	
543+25	-	546+38	---	---	---	---	313	
681+50	-	690+00	---	---	---	---	850	
683+90	-	684+60	70	---	1	1	---	
		TOTALS	**200**	**1**	**1**	**1**	**1,163**	

3

TRAFFIC CONTROL DETOUR SIGNING SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 53 DAYS	*643.0900 SIGNS DAYS	*643.0420 BARRICADES TYPE III DAYS	*643.0705 WARNING LIGHTS TYPE A DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
1	USH 45, S. OF STH 67, PLACE 1500' S. OF STH 67 INTERSECTION	W 20-2A	48"x48"	1	53	53						
2	USH 45, S. OF STH 67, MODIFY EXISTING J2-3 SIGN AS SHOWN	MO 4-8	24"x12"	1	53	53						
	"	MO 5-1L	21"x21"	1	53	53						
3	USH 45, S. OF STH 67, COVER EXISTING D1-3 SIGN AS SHOWN									1	1	COVER "EDEN"
4	USH 45, S. OF STH 67, PLACE 150' S. OF STH 67 INTERSECTION	MO 4-8	24"x12"	1	53	53						
	"	M 3-1	24"x12"	1	53	53						
	"	M 1-4	24"x24"	1	53	53						45
	"	MO 6-1	21"x21"	1	53	53						LEFT
5	STH 67, S. OF USH 45, MODIFY EXISTING J1-1 SIGN AS SHOWN	M 4-8A	24"x18"	1	53	53						
6	STH 67, S. OF USH 45, COVER EXISTING D1-3 SIGN AS SHOWN									1	1	COVER "EDEN"
7	STH 67, S. OF USH 45, PLACE RIGHT OF EXISTING J4-1 SIGN	MO 4-8	24"x12"	1	53	53						
	"	M 3-1	24"x12"	1	53	53						
	"	M 1-4	24"x24"	1	53	53						45
8	STH 67, AT USH 45, COVER EXISTING J3-1 SIGN AS SHOWN									1	1	COVER ENTIRE SIGN
9	USH 45, AT STH 67, PLACE ON RIGHT SHOULDER IN NE QUADRANT OF INTERSECTION			1	53	53	53	106				2 3/4 MILES AHEAD
	"			1	53	53						
10	USH 45, N. OF STH 67, COVER EXISTING J4-1 SIGN AS SHOWN									1	1	COVER ENTIRE SIGN
11	STH 67, N. OF USH 45, MODIFY EXISTING J3-1 SIGN AS SHOWN	MO 4-8	24"x12"	1	53	53						
	"	MO 6-1	21"x21"	1	53	53						AHEAD
12	STH 67, N. OF USH 45, COVER EXISTING D1-3 SIGN AS SHOWN									1	1	COVER "EDEN"
13	STH 67, N. OF USH 45, MODIFY EXISTING J2-3 SIGN AS SHOWN	MO 4-8	24"x12"	1	53	53						
	"	MO 6-1	21"x21"	1	53	53						AHEAD
14	STH 67, N. OF USH 45, PLACE 1/4 MILE N. OF USH 45 INTERSECTION	M 3-1	24"x12"	1	53	53						
	"	M 1-4	24"x24"	1	53	53						45
	"	W 20-2A	48"x48"	1	53	53						
15	USH 45, AT CTH SS, PLACE ON RIGHT SHOULDER AT CTH SS INTERSECTION	R 11-3B	60"x30"	1	53	53	53	106				1 1/2 MILES AHEAD
16	USH 45, S. OF CTH F, PLACE ON RIGHT SHOULDER, FIELD DETERMINED	PCMS		1					7			PLACE IN ADVANCE OF CLOSURE
17	USH 45, N. OF CTH F, PLACE ON RIGHT SHOULDER, FIELD DETERMINED	PCMS		1					7			PLACE IN ADVANCE OF CLOSURE
18	USH 45, AT CTH W, PLACE ON RIGHT SHOULDER IN SE QUADRANT OF THE INTERSECTION	R 11-3B	60"x30"	1	53	53	53	106				2 1/4 MILES AHEAD
19	USH 45, N. OF CTH W, PLACE ON RIGHT SHOULDER, FIELD DETERMINED	PCMS		1					7			PLACE IN ADVANCE OF CLOSURE
20	USH 45, S. OF CTH B, PLACE ON RIGHT SHOULDER, FIELD DETERMINED	PCMS		1					7			PLACE IN ADVANCE OF CLOSURE
21	USH 45, AT CTH B, PLACE ON RIGHT SHOULDER AT CTH B INTERSECTION	R 11-3B	60"x30"	1	53	53	53	106				1 MILE AHEAD
22	USH 45, E. OF FOND DU LAC AVE, COVER EXISTING J4-1 SIGN AS SHOWN									1	1	COVER ENTIRE SIGN
23	USH 45, AT FOND DU LAC AVE, MODIFY EXISTING J3-2 AS SHOWN	MO 6-1	21"x21"	1	53	53						LEFT
24	USH 45, AT FOND DU LAC AVE, PLACE ON RIGHT SHOULDER	R 11-3	60"x30"	1	53	53	53	106				4 1/2 MILES AHEAD
25	USH 45, N. OF MAIN ST, PLACE 1/4 MILE N. OF MAIN ST INTERSECTION	W 20-2A	48"x48"	1	53	53						
26	USH 45, N. OF MAIN ST, MODIFY EXISTING J2-1 SIGN AS SHOWN	MO 4-8	24"x12"	1	53	53						
	"	MO 5-1R	21"x21"	1	53	53						
27	USH 45, N. OF MAIN ST, MODIFY EXISTING J3-1 SIGN AS SHOWN	MO 4-8	24"x12"	1	53	53						
	"	MO 6-1	21"x21"	1	53	53						RIGHT
28	CTH B, W. OF USH 45, PLACE 750' W. OF USH 45 INTERSECTION	M 4-8A	24"x18"	1	53	53						
	"	M 1-4	24"x24"	1	53	53						45
29	CTH B, E. OF CTH V, PLACE 500' E. OF CTH V INTERSECTION	MO 4-8	24"x12"	1	53	53						
	"	M 3-3	24"x12"	1	53	53						
	"	M 1-4	24"x24"	1	53	53						45
	"	MO 5-1L	21"x21"	1	53	53						
30	CTH B, E. OF CTH V, PLACE 250' E. OF CTH V INTERSECTION	MO 4-8	24"x12"	1	53	53						
		M 3-1	24"x12"	1	53	53						
		M 1-4	24"x24"	1	53	53						45
	PAGE SUBTOTALS			43		2,067	265	530	28		6	

*ADDITIONAL QUANTITIES SHOWN ELSEWHERE

PLAN SHEET PRODUCED

BY WisDOT - NE REGION

TRAFFIC CONTROL DETOUR SIGNING SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 53 DAYS	*643.0900 SIGNS DAYS	*643.0420 BARRICADES TYPE III DAYS	*643.0705 WARNING LIGHTS TYPE A DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
31	CTH B, E. OF CTH V, PLACE RIGHT OF EXISTING J3-2 SIGN	MO 4-8	24"X12"	1	53	53						
	"	M 3-3	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 6-1	21"X21"	1	53	53						LEFT
32	CTH B, W. OF CTH V, PLACE 1/4 MILE W. OF CTH V INTERSECTION	M 3-3	24"x12"	1	53	53						
	"	M 1-4	24"x24"	1	53	53						45
	"	W 20-2A	48"X48"	1	53	53						
33	CTH B, W. OF CTH V, PLACE 750' W. OF CTH V INTERSECTION	MO 4-8	24"X12"	1	53	53						
	"	M 3-3	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 5-1R	21"X21"	1	53	53						
34	CTH B, AT CTH V, MODIFY EXISTING J3-2 SIGN AS SHOWN	MO 4-5	24"X12"	1	53	53						
	"	M 3-1	24"X12"	1	53	53						
35	CTH B, AT CTH V, PLACE RIGHT OF EXISTING J3-2 SIGN	MO 4-8	24"X12"	1	53	53						
	"	M 3-3	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 6-1	21"X21"	1	53	53						RIGHT
36	CTH V, AT CTH B, PLACE RIGHT OF EXISTING J3-2 SIGN	MO 4-8	24"X12"	1	53	53						
	"	M 3-1	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 6-1	21"X21"	1	53	53						RIGHT
37	CTH V, S. OF CTH B, PLACE 200' S. OF CTH B INTERSECTION	MO 4-8	24"X12"	1	53	53						
	"	M 3-3	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
38	CTH V, S. OF CTH B, PLACE 500' S. OF CTH B INTERSECTION	MO 4-8	24"X12"	1	53	53						
	"	M 3-1	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 5-1R	21"X21"	1	53	53						
39	CTH V, N. OF TIMBERLANE DR, PLACE 150' N. OF TIMBERLANE DR INTERSECTION	MO 4-8	24"X12"	1	53	53						
	"	M 3-3	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 6-1	21"X21"	1	53	53						AHEAD
40	CTH V, S. OF TIMBERLANE DR, PLACE 150' S. OF TIMBERLANE DR INTERSECTION	MO 4-8	24"X12"	1	53	53						
	"	M 3-1	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 6-1	21"X21"	1	53	53						AHEAD
41	CTH V, N. OF CTH F, PLACE 150' N. OF CTH F INTERSECTION	MO 4-8	24"X12"	1	53	53						
	"	M 3-3	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 6-1	21"X21"	1	53	53						AHEAD
42	CTH V, S. OF CTH F, PLACE 150' S. OF CTH F INTERSECTION	MO 4-8	24"X12"	1	53	53						
	"	M 3-1	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 6-1	21"X21"	1	53	53						AHEAD
43	CTH V, N. OF STH 67, PLACE RIGHT OF EXISTING J13-1 SIGN N. OF INTERSECTION	MO 4-8	24"X12"	1	53	53						
	"	M 3-3	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 6-1	21"X21"	1	53	53						AHEAD
	PAGE SUBTOTALS			48		2,544	0	0	0		0	

*ADDITIONAL QUANTITIES SHOWN ELSEWHERE

PLAN SHEET PRODUCED

BY WisDOT - NE REGION

3

TRAFFIC CONTROL DETOUR SIGNING SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 53 DAYS	*643.0900 DETOUR SIGNS DAYS	*643.0420 BARRICADES TYPE III DAYS	*643.0705 WARNING LIGHTS TYPE A DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
44	STH 67/CTH V, N. OF MAIN ST, PLACE 250' N. OF MAIN ST INTERSECTION	MO 4-8	24"X12"	1	53	53						
	"	M 3-3	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 6-1	21"X21"	1	53	53						LEFT
45	STH 67, E. OF CTH V, PLACE 150' E. OF CTH V INTERSECTION	MO 4-8	24"X12"	1	53	53						
	"	M 3-1	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 6-1	21"X21"	1	53	53						RIGHT
46	STH 67, E. OF CTH V, PLACE 700' E. OF CTH V INTERSECTION	MO 4-8	24"X12"	1	53	53						
	"	M 3-1	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 5-1R	21"X21"	1	53	53						
47	STH 67, S. OF CTH SSS, PLACE 150' S. OF CTH SSS INTERSECTION	MO 4-8	24"X12"	1	53	53						
	"	M 3-3	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 6-2	21"X21"	1	53	53						TILT RIGHT
48	STH 67, N. OF CTH SSS, PLACE 150' N. OF CTH SSS INTERSECTION	MO 4-8	24"X12"	1	53	53						
	"	M 3-1	24"X12"	1	53	53						
	"	M 1-4	24"X24"	1	53	53						45
	"	MO 6-2	21"X21"	1	53	53						TILT LEFT
	PAGE SUBTOTALS			20		1,060	0	0	0		0	
	TOTAL			**111**		**5,671**	**265**	**530**	**28**		**6**	

*ADDITIONAL QUANTITIES SHOWN ELSEWHERE

PLAN SHEET PRODUCED
BY WisDOT - NE REGION

PI STA = 539+63.49
Y = 339217.473
X = 866481.550
DELTA = 50°23'03"
D = 3°00'00"
T = 898.39'
L = 1679.47'
R = 1909.86'
PC STA = 530+65.10
Y = 338656.931
X = 867183.615
PT STA = 547+44.57
Y = 340115.722
X = 866465.693
BK = N51°23'43.6"W
AH = N01°00'40.7"W

N

C-20-0164
STA 545+69
1-DUAL 8'X8' REQD

TLE

R/W

SLOPE INTERCEPT

RADIUS PT
546+45.66
-26.54' LT
Y=340,015.070
X=866,443.524

546+53.43, -54.63' LT
SHORT RADIUS TERMINAL

CRT POST: 546+52.98, -23.49' LT

CRT POST: 546+48.76, -19.15' LT

546+24.08, -18.19' LT
BEGIN SHORT RADIUS

544+19.84
-20.11' LT
POST 1

544+44.57
-19.19' LT
POST 5

544+69.31
-18.26' LT
POST 9

545+03.07

546+40.00

EAT

156.2' MGS

USH 45

544+00

545+00

546+00

547+00

548+00

543+00

542+00

R/L USH 45

EAT

28.7' MGS

88.4' LONG SPAN

R8.02'

PT: 547+44.57

STA 546+58.77 R/L USH 45 =
STA 0+00.00 R/L CTH F
Y=340,029.992
X=866,469.134

R45.46'

544+27.02
22.84' RT
POST 1

544+51.98
21.80' RT
POST 5

544+77.25
20.73' RT
POST 9

END MGS BEGIN LONG SPAN: 545+06.27, 21.20' RT

MGS L CRT POST 3: 545+40.45, 21.68' RT

MGS L CRT POST 2: 545+46.77, 21.76' RT

MGS L CRT POST 1: 545+53.09, 21.82' RT

SLOPE INTERCEPT

TLE

R/W

MGS L CRT POST 1: 545+78.38, 22.20' RT

MGS L CRT POST 2: 545+84.71, 22.39' RT

MGS L CRT POST 3: 545+91.03, 22.54' RT

CRT POST: 545+97.35, 22.71' RT

CRT POST: 546+03.66, 23.17' RT

CRT POST: 546+09.85, 24.45' RT

CRT POST: 546+15.81, 26.54' RT

CRT POST: 546+21.45, 29.40' RT

CRT POST: 546+26.65, 32.98' RT

RADIUS PT
545+97.10
68.18' RT
Y=339,974.980
X=866,541.854

CRT POST: 546+31.31, 37.20' RT

CRT POST: 546+35.39, 42.03' RT

CRT POST: 546+38.76, 47.34' RT

CRT POST: 546+41.37, 53.04' RT

CRT POST: 546+43.17, 59.04' RT

CRT POST: 546+44.12, 65.19' RT

CTH F

END SHORT RADIUS, BEGIN EAT 0+87.52, 15.50' RT

1+00

EAT

0+89.79
15.44' RT
POST 9

1+14.79
15.64' RT
POST 5

1+39.79
15.94' RT
POST 1

NOTES:

SEE THE FOLLOWING SDDS FOR ADDITIONAL DETAILS:
14B42 "MIDWEST GUARDRAIL SYSTEM (MGS)"
14B43 "MIDWEST GUARDRAIL SYSTEM LONG SPAN (MGS L)"
14B44 "MIDWEST GUARDRAIL SYSTEM (MGS) ENERGY ABSORBING TERMINAL (EAT)"

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN SHEETS	SHEET 30	E

R/W

TLE

SLOPE INTERCEPT

EAT

C-20-0163
STA 684+25
1-11'x10' BOX CULVERT REQD

5

5

STA 682+66.69
-20.83' LT
POST 1

STA 682+91.67
-19.83' LT
POST 5

STA 683+16.65
-18.83' LT
POST 9

680+00

681+00

USH 45

682+00

683+00

684+00

685+00

R/L USH 45

682+29.24
20.98' RT
POST 1

682+54.24
19.98' RT
POST 5

682+79.22
18.97' RT
POST 9

28'

SLOPE INTERECEPT

EAT

406.3' MGS

HO

R/W

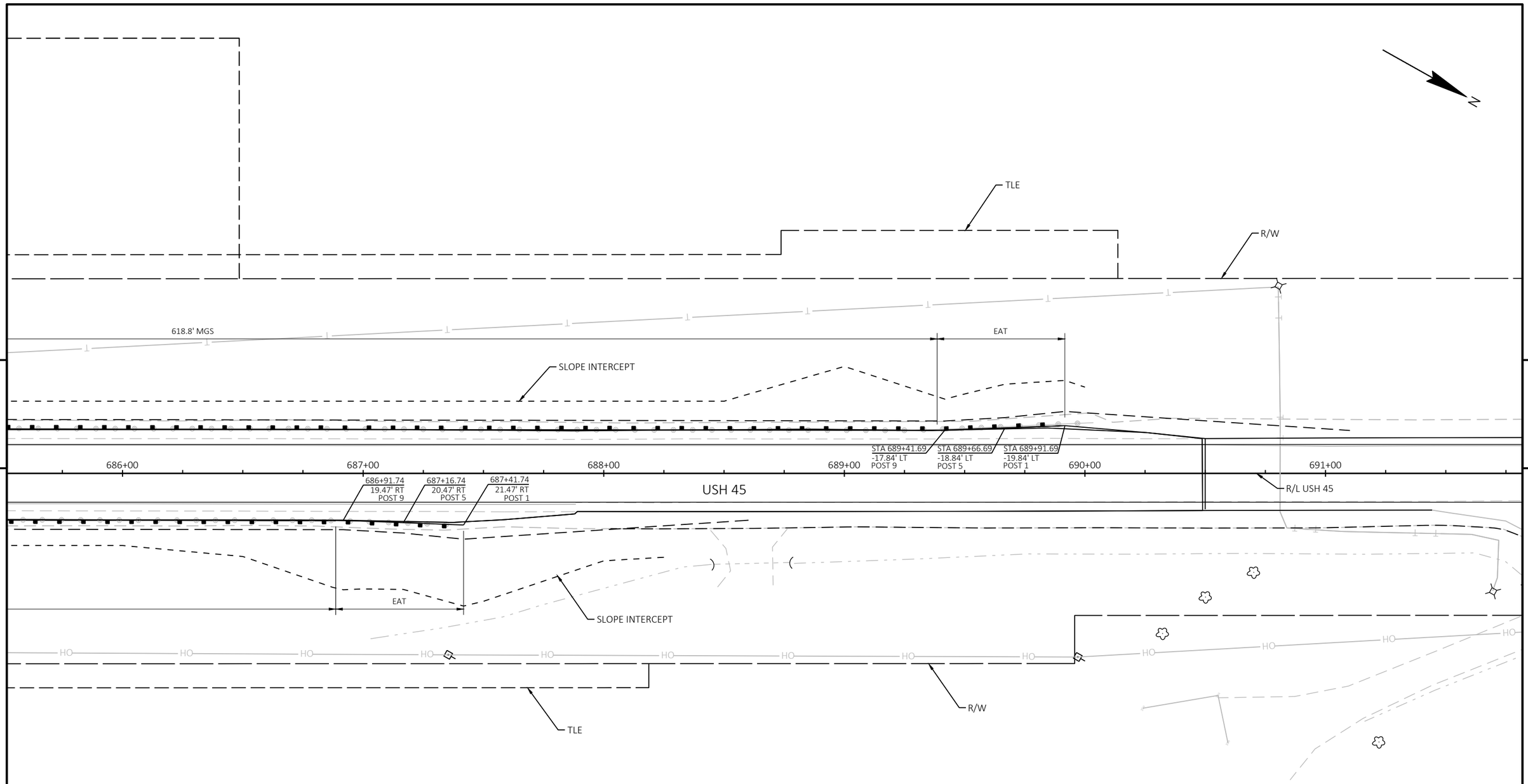
TLE

STA 684+21
1-36" CRCP REQD

NOTES:

SEE THE FOLLOWING SDDS FOR ADDITIONAL DETAILS:
14B42 "MIDWEST GUARDRAIL SYSTEM (MGS)"
14B43 "MIDWEST GUARDRAIL SYSTEM LONG SPAN (MGS L)"
14B44 "MIDWEST GUARDRAIL SYSTEM (MGS) ENERGY ABSORBING TERMINAL (EAT)"

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN SHEETS	SHEET 31	E



NOTES:

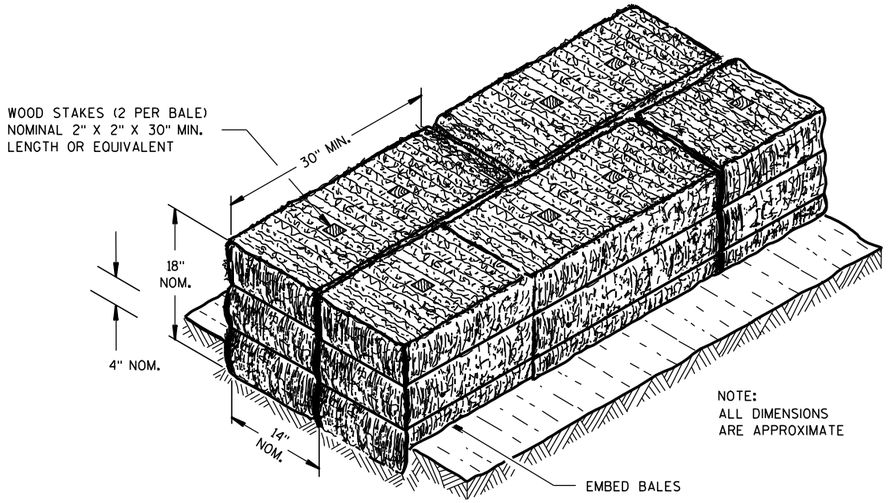
SEE THE FOLLOWING SDDS FOR ADDITIONAL DETAILS:
14B42 "MIDWEST GUARDRAIL SYSTEM (MGS)"
14B43 "MIDWEST GUARDRAIL SYSTEM LONG SPAN (MGS L)"
14B44 "MIDWEST GUARDRAIL SYSTEM (MGS) ENERGY ABSORBING TERMINAL (EAT)"

PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	PLAN SHEETS	SHEET 32	E

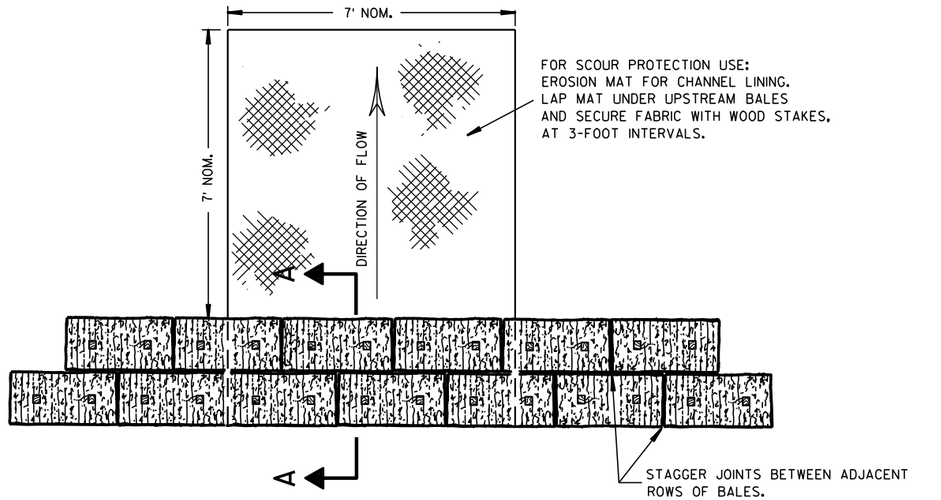
Standard Detail Drawing List

08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
12A03-10	NAME PLATE (STRUCTURES)
13C19-03	HMA LONGITUDINAL JOINTS
14B42-07A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B43-04A	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
14B43-04B	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
14B43-04C	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B47-03A	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-03B	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-03C	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-03D	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-03E	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-03F	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-03G	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B53-01A	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01B	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01C	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01D	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01E	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01F	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01G	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01H	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01I	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C02-08A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-08B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C02-08C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C03-05	BARRICADES AND SIGNS FOR SIDEROAD CLOSURES
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C05-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M.P.H. OR LESS
15C08-20A	LONGITUDINAL MARKING (MAINLINE)
15C11-09B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C33-04	STOP LINE AND CROSSWALK PAVEMENT MARKING
15C35-04A	PAVEMENT MARKING (INTERSECTIONS)

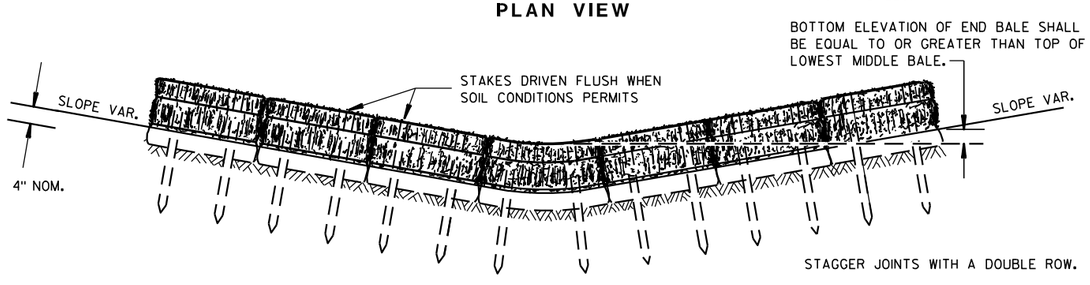
6



SECTION A-A



PLAN VIEW



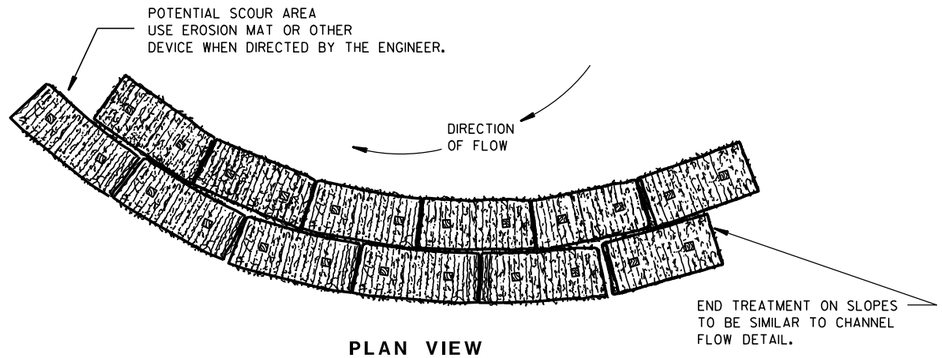
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

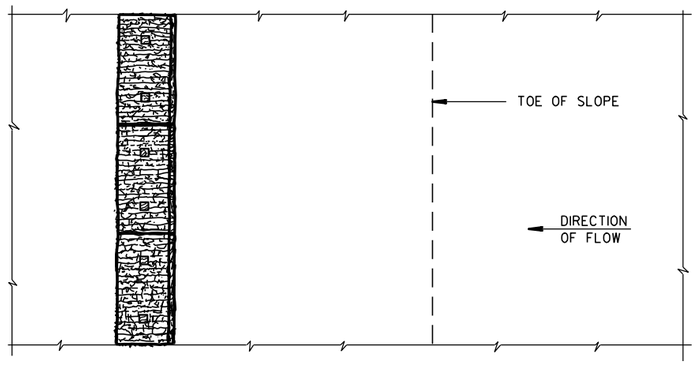
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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.

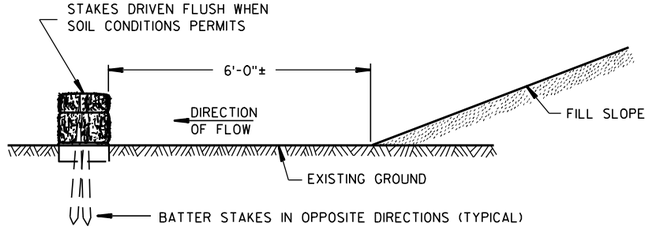


PLAN VIEW

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

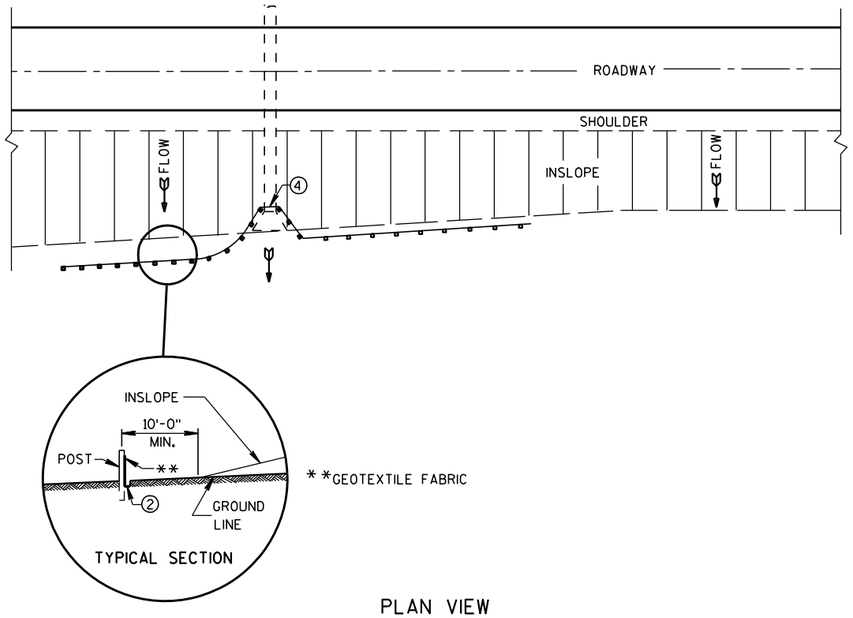
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02 — DATE

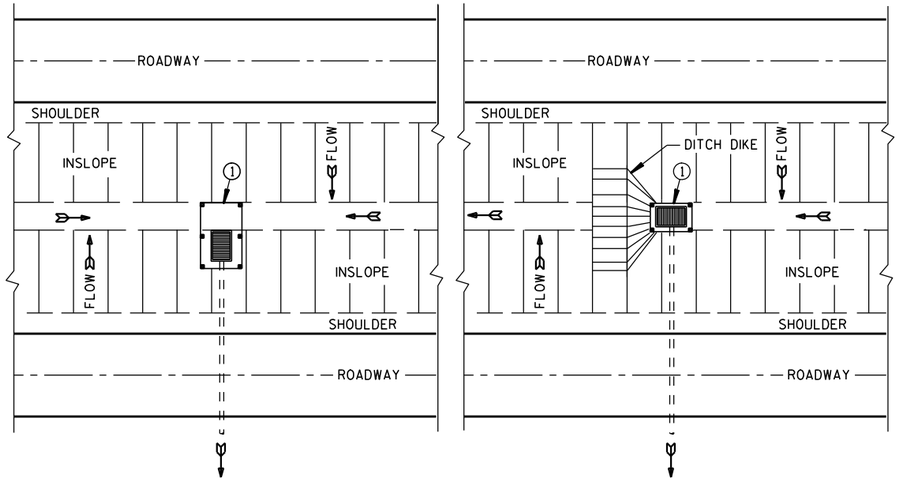
/S/ Beth Cannestra — CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA



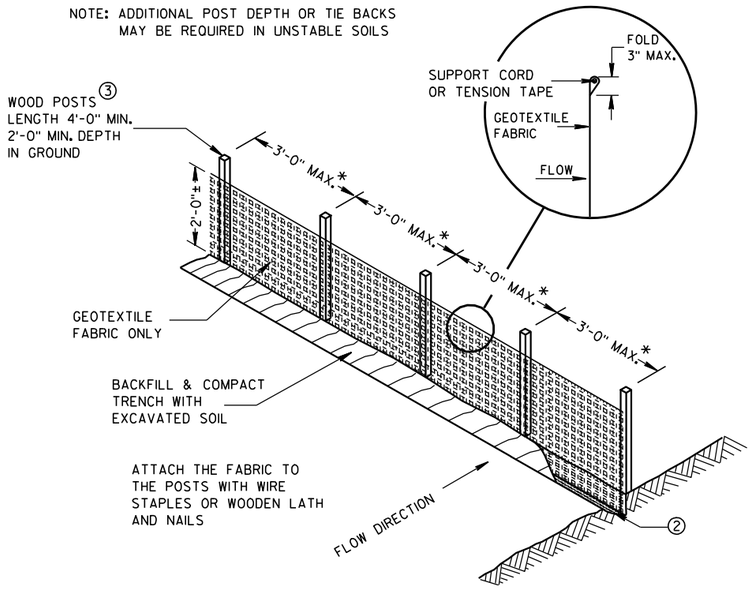
PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



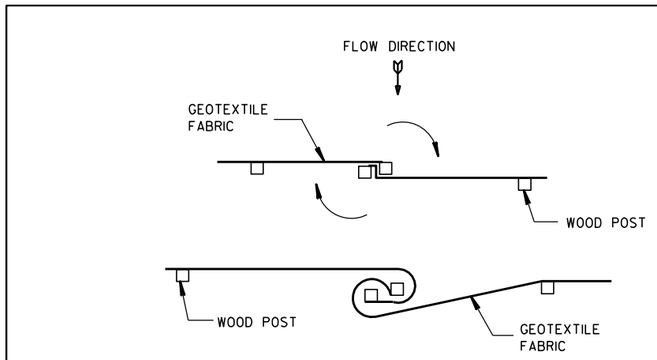
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS



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

SILT FENCE

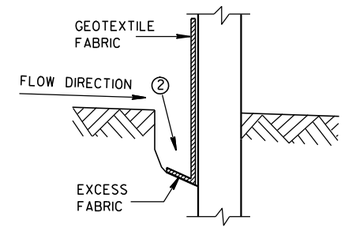


JOINING TWO LENGTHS OF SILT FENCE 5

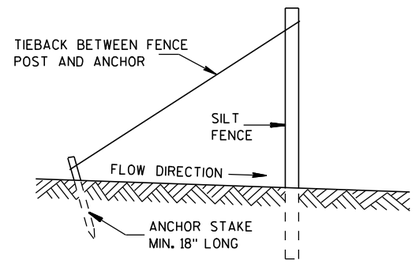
GENERAL NOTES

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

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



TRENCH DETAIL



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

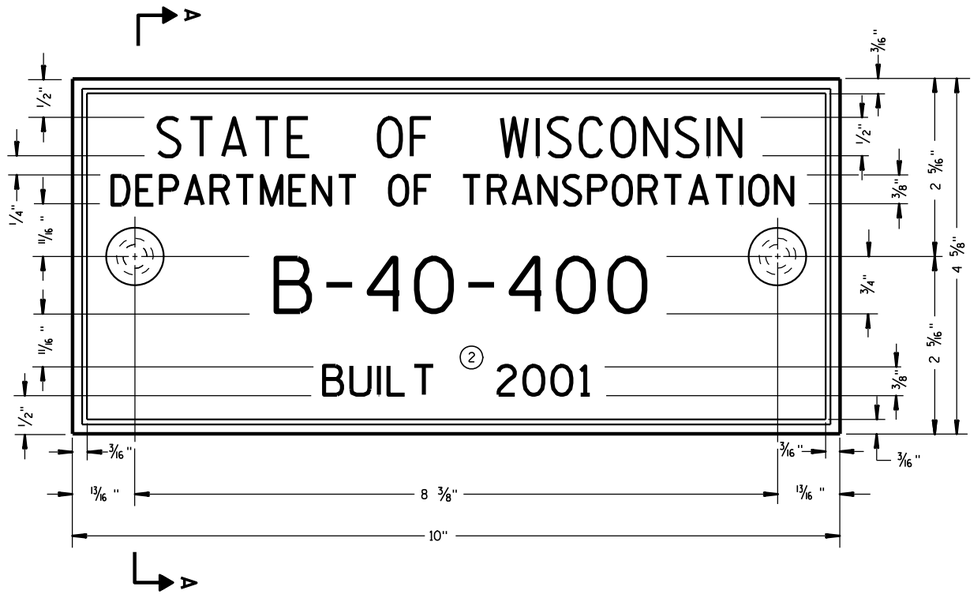
APPROVED
4-29-05 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 8 E 9-6

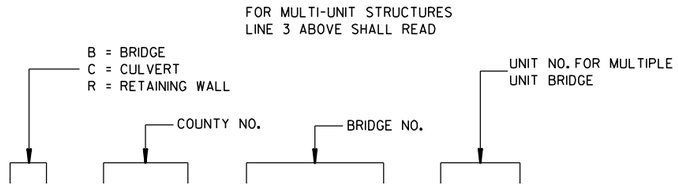
6

S.D.D. 8 E 9-6



TYPICAL NAME PLATE

(BRIDGES, CULVERTS, AND RETAINING WALLS)



NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

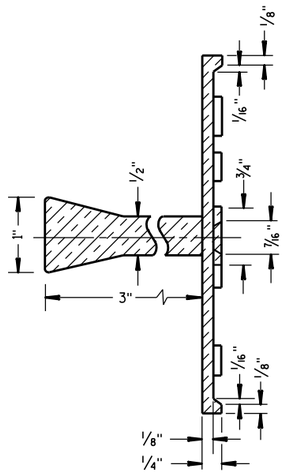
GENERAL NOTES

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

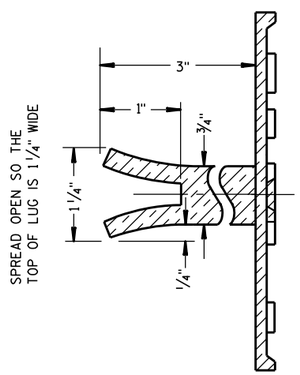
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

(1) EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

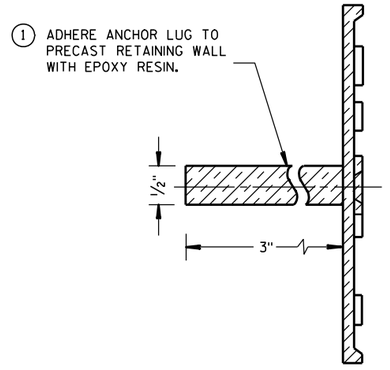
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A



ALTERNATE LUG



ALTERNATE LUG

(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE (STRUCTURES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

3/26/10 DATE — /S/ Scot Beck — CHIEF STRUCTURAL DEVELOPMENT ENGINEER

FHWA

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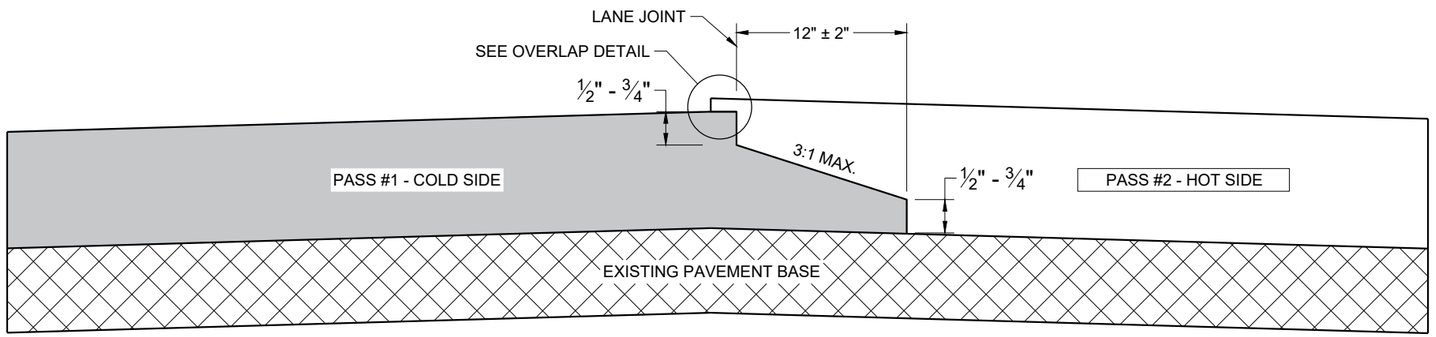
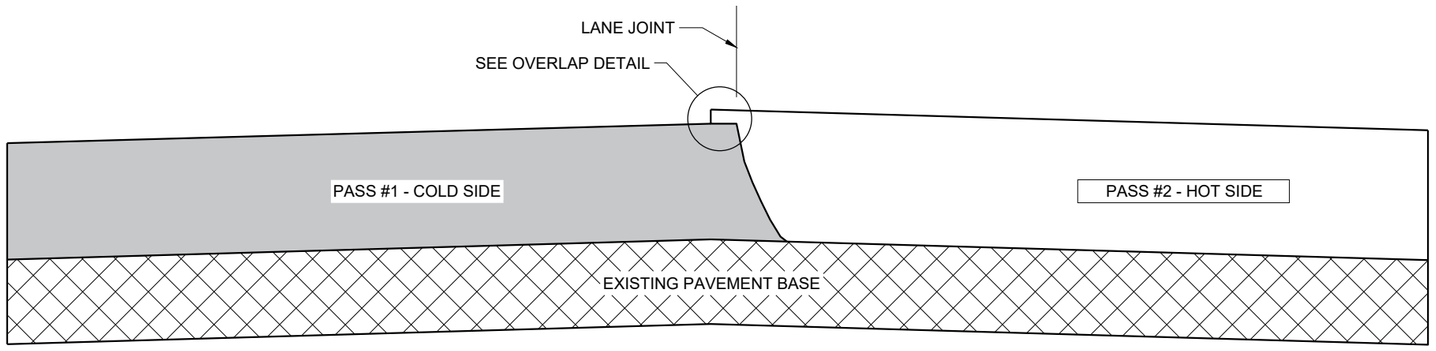
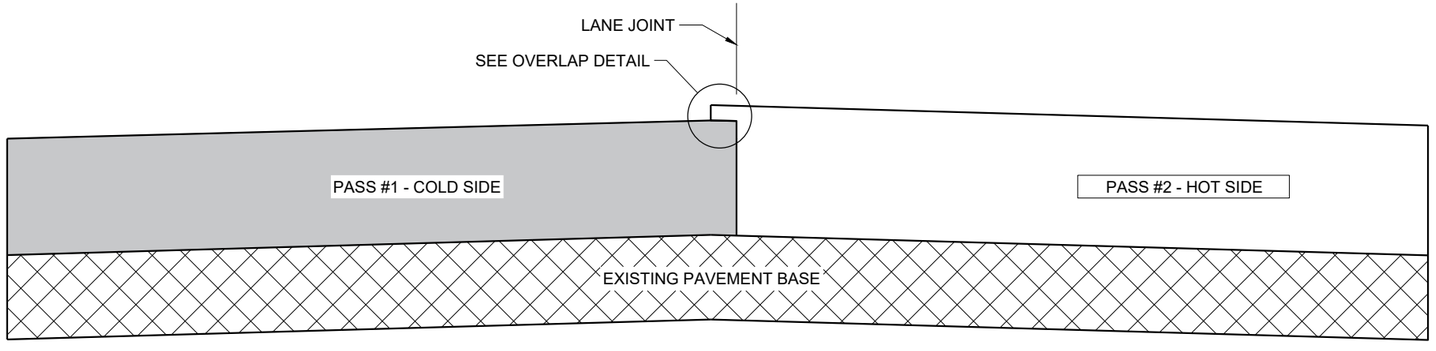
S.D.D. 12 A 3-10



TYPICAL PAVEMENT CROSS SECTION
NOTCHED WEDGE JOINT



TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT



TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT (MILLED)

GENERAL NOTES

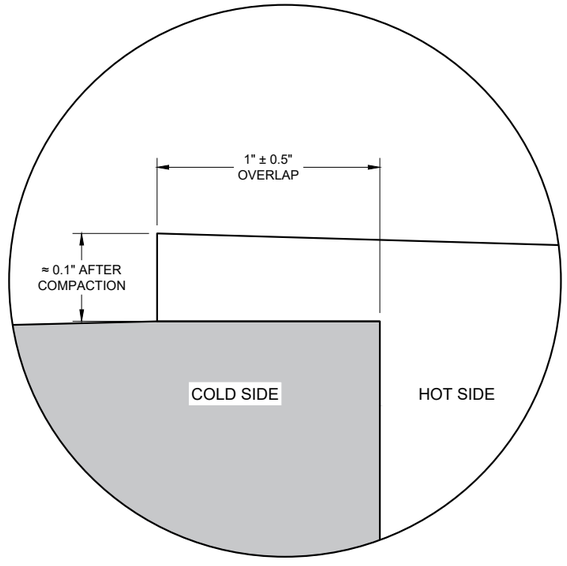
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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

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

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

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



OVERLAP DETAIL (TYPICAL)

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SDD 13C19 - 03

SDD 13C19 - 03

HMA LONGITUDINAL JOINTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2020
DATE

/S/ Steven Hefel
HMA PAVEMENT ENGIN

FHWA

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

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

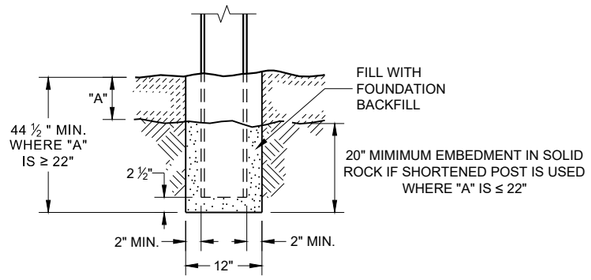
(3) IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL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

(4) WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).

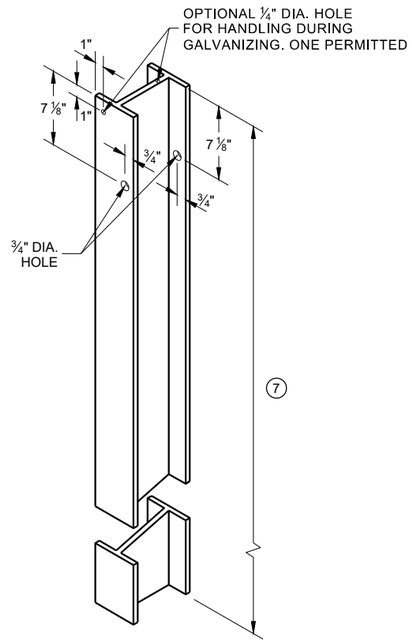
(5) FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ±1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 ¾" TO 32".

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

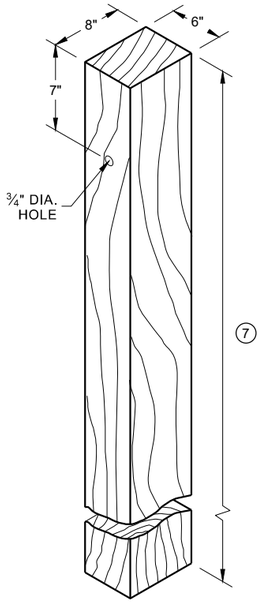
(7) TOTAL POST LENGTH FOR TYPE K IS 7' - 0".
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".



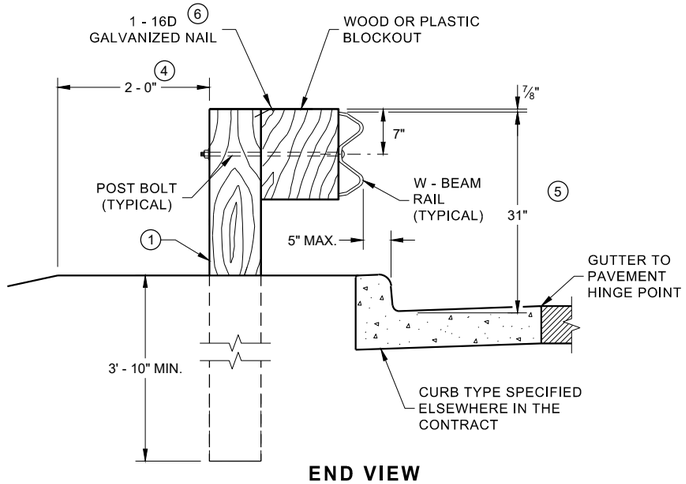
END VIEW
SETTING STEEL OR WOOD POST IN ROCK (3)



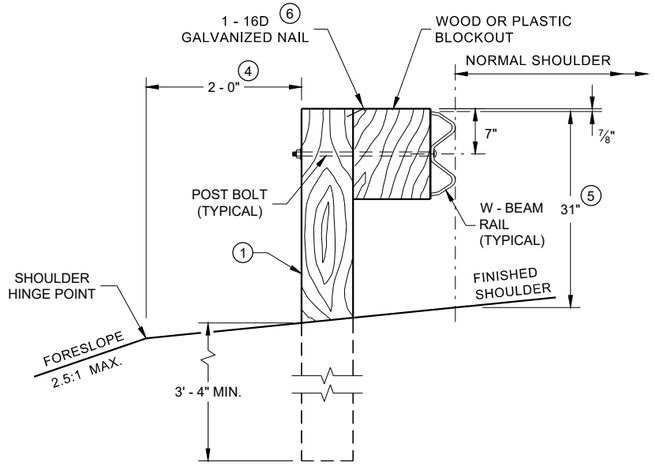
STEEL POST & HOLE PUNCHING DETAIL (W 6 X 9) (1)



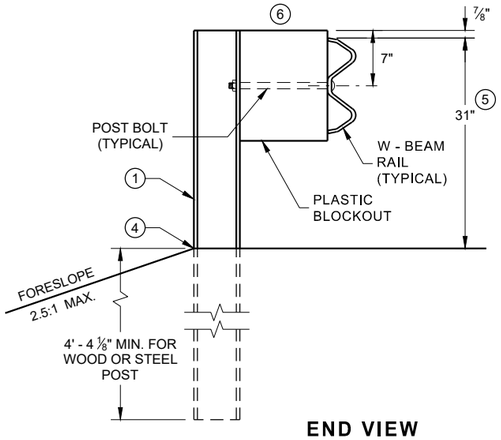
WOOD POST (6" X 8") NOMINAL (1)



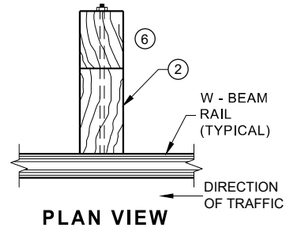
END VIEW
LOCATED ALONG A CURBED ROADWAY



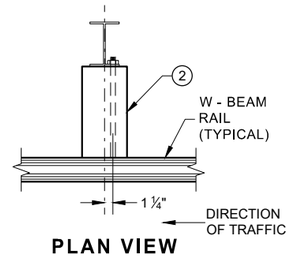
END VIEW
LOCATED ALONG A ROADWAY SHOULDER STANDARD INSTALLATION



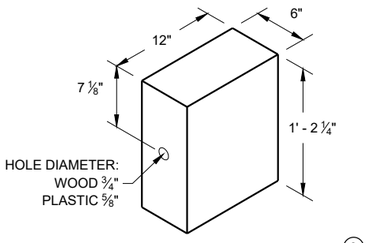
END VIEW
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



PLAN VIEW
WOOD POST, BLOCKOUT & BEAM



PLAN VIEW
STEEL POST, PLASTIC BLOCKOUT & BEAM



WOOD OR PLASTIC BLOCKOUT (2)

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

SDD 14B42 - 07a

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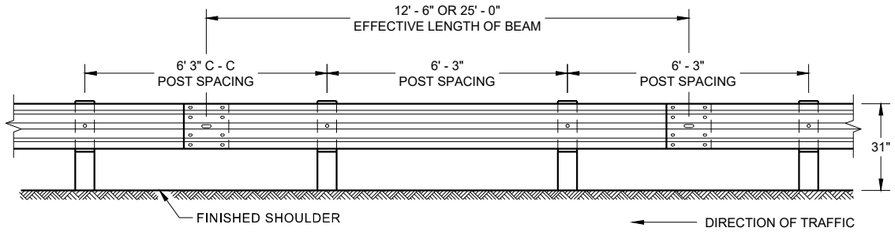
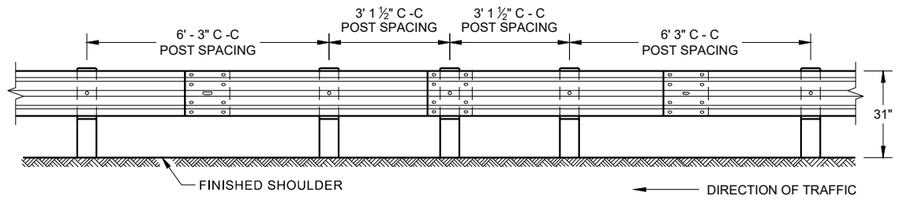
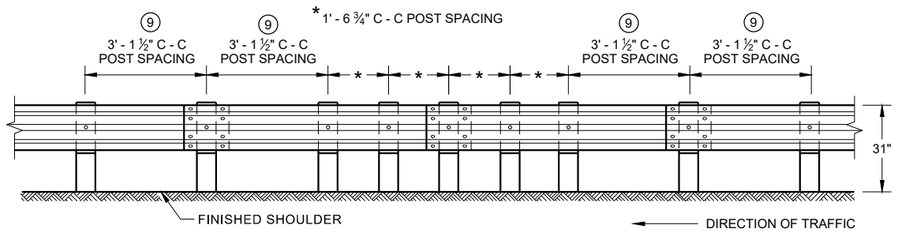
SDD 14B42 - 07a



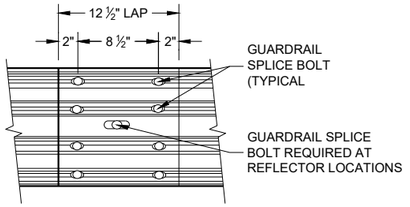
FRONT VIEW
POST SPACING STANDARD INSTALLATION



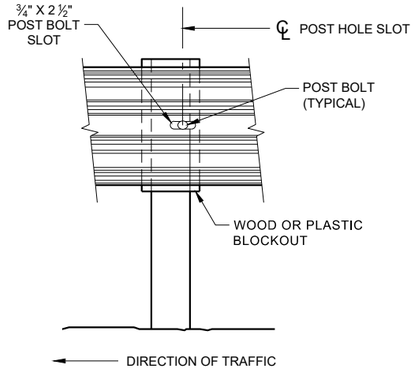
FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)



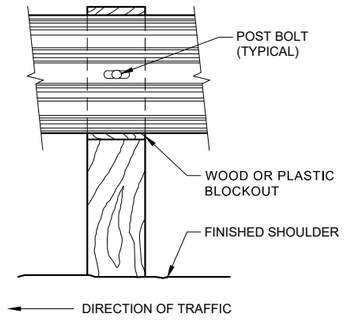
FRONT VIEW
QUARTER POST SPACING (QS)



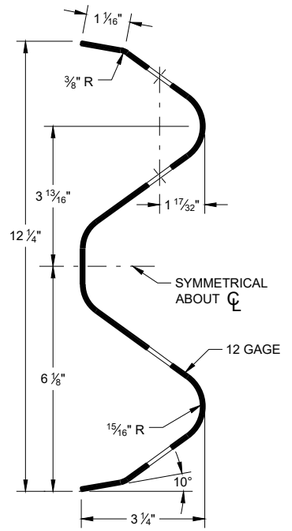
FRONT VIEW
MID-SPAN BEAM SPLICE



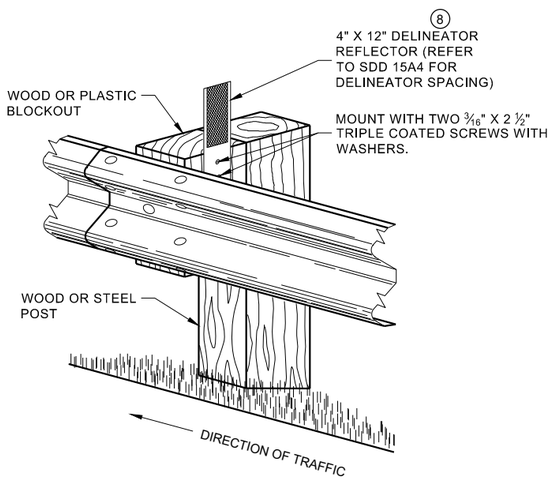
FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



SECTION THRU W-BEAM RAIL



ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION

GENERAL NOTES

⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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

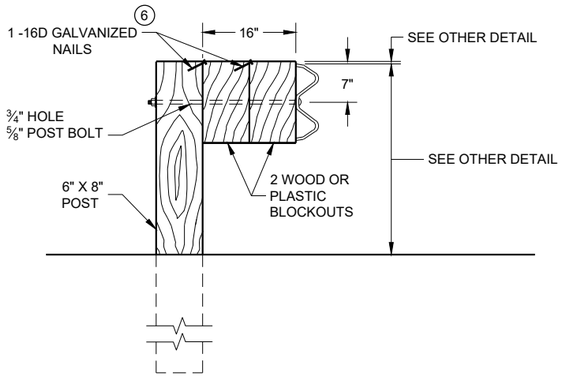
POST BOLTS ARE A ⅝" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES ⅝" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND ⅝" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

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

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6
SDD 14B42 - 07b

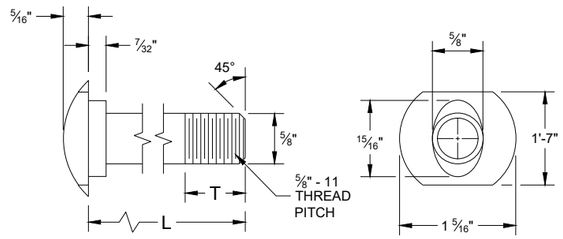


DETAIL FOR 16" BLOCKOUT DEPTH

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.

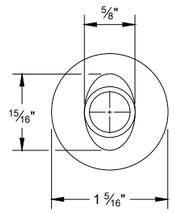
NOTE:

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.

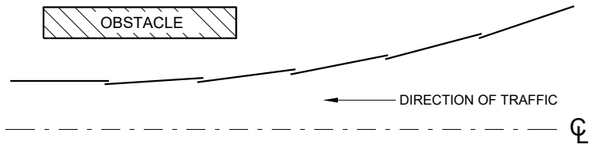


POST BOLT TABLE

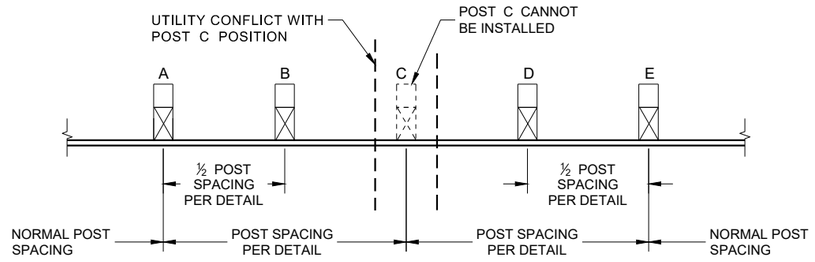
L	T (MIN.)
1 ¼"	1 ⅛"
2"	1 ¾"
10"	4"
14"	4 1⁄16"
18"	4"
21"	4 1⁄16"
25"	4"



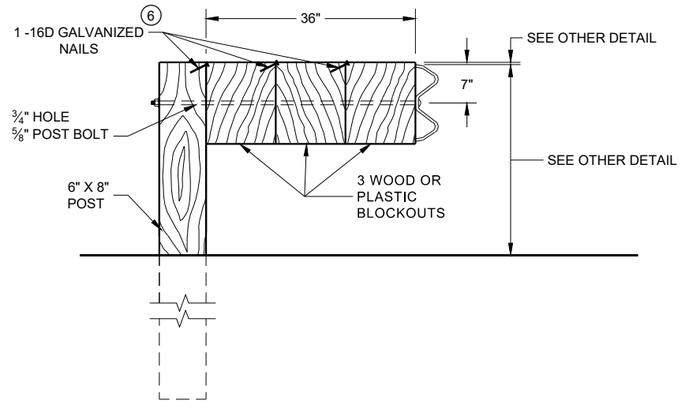
ALTERNATE BOLT HEAD



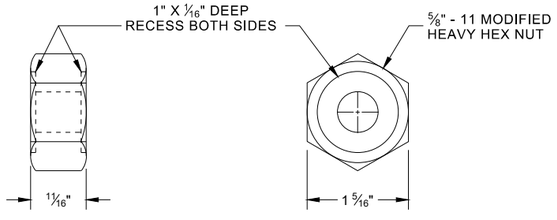
PLAN VIEW
BEAM LAPPING DETAIL



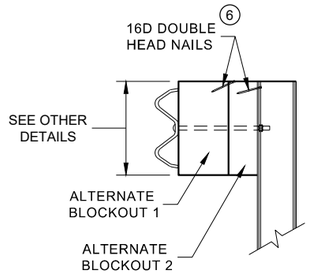
POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



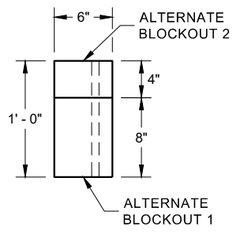
DETAIL FOR 36" BLOCKOUT DEPTH



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.

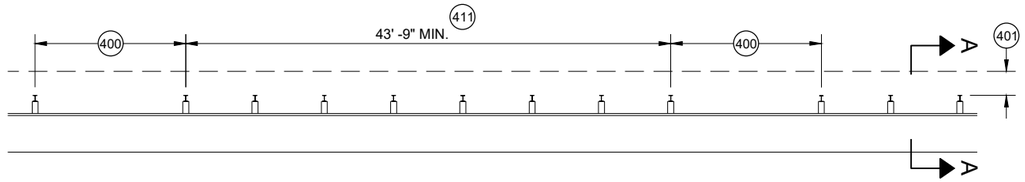
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

(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.

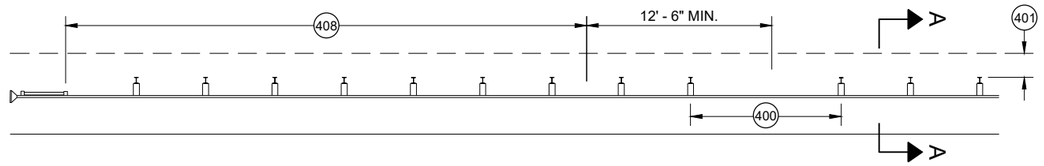
MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

6

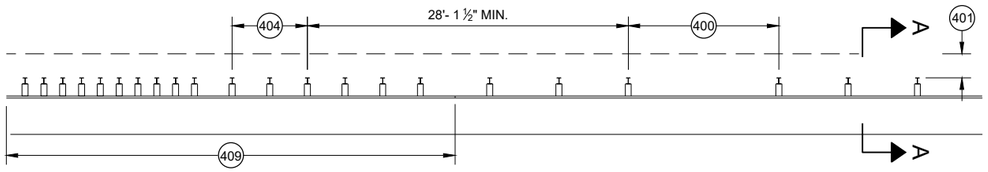
SDD 14B42 - 07c



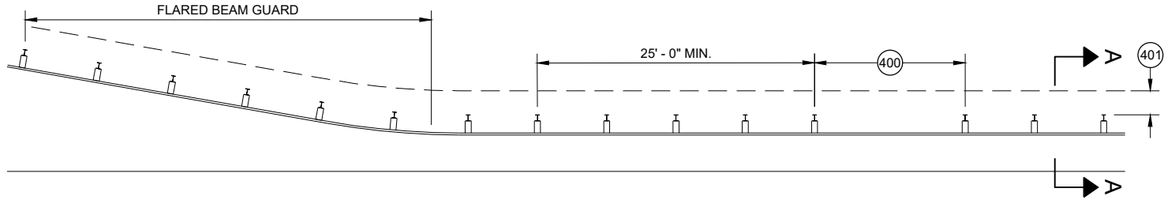
MISSING POST IN MGS GUARDRAIL



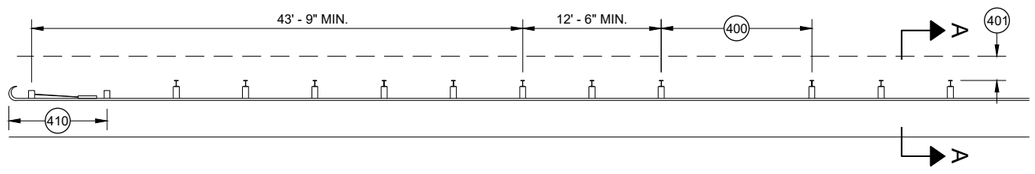
MISSING POST IN MGS GUARDRAIL NEAR EAT



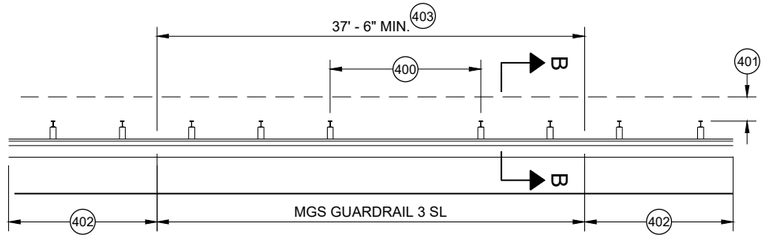
MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD

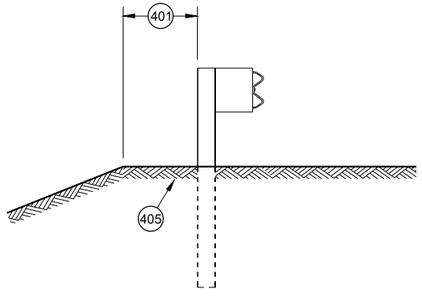


MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL

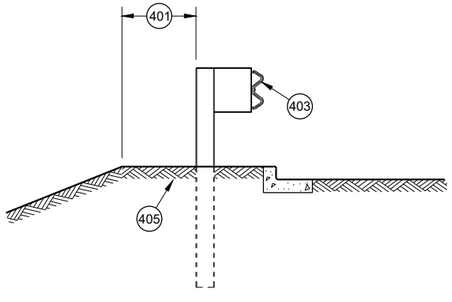


MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL) 407

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



SECTION A - A 406



SECTION B - B 406

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

6

SDD 14B42 - 07d

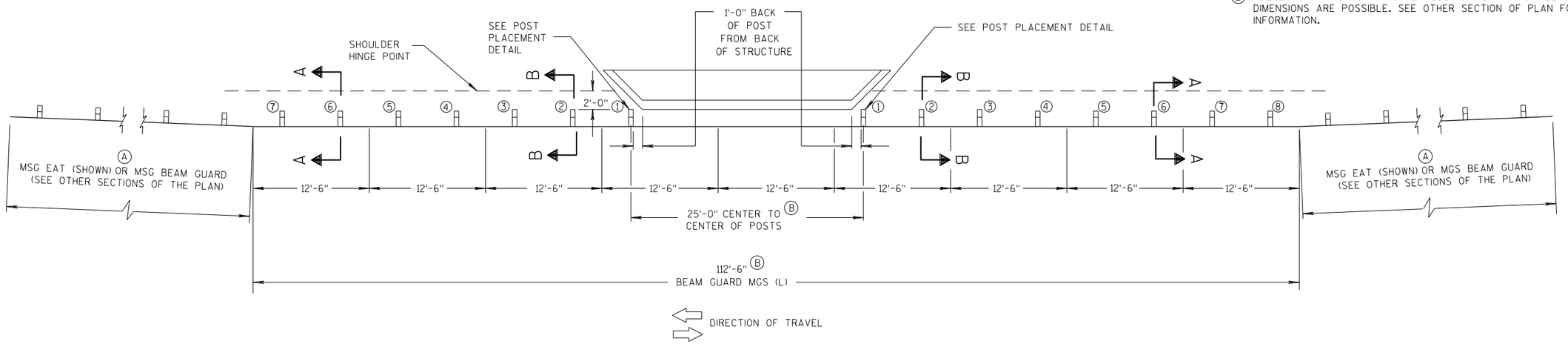
GENERAL NOTES

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

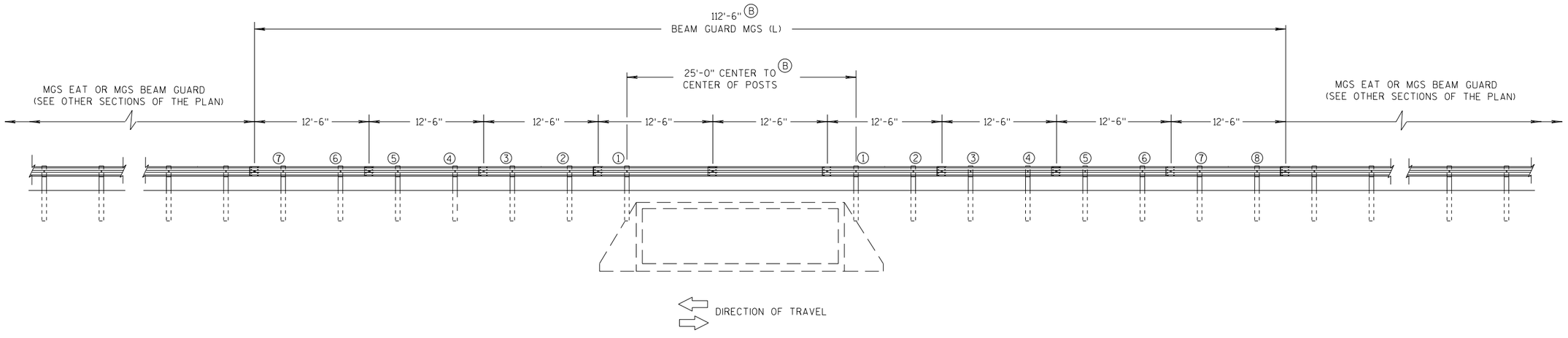
SEE SDD 14 B 42 FOR MORE DETAILS.

(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

6
S.D.D. 14 B 43-4a

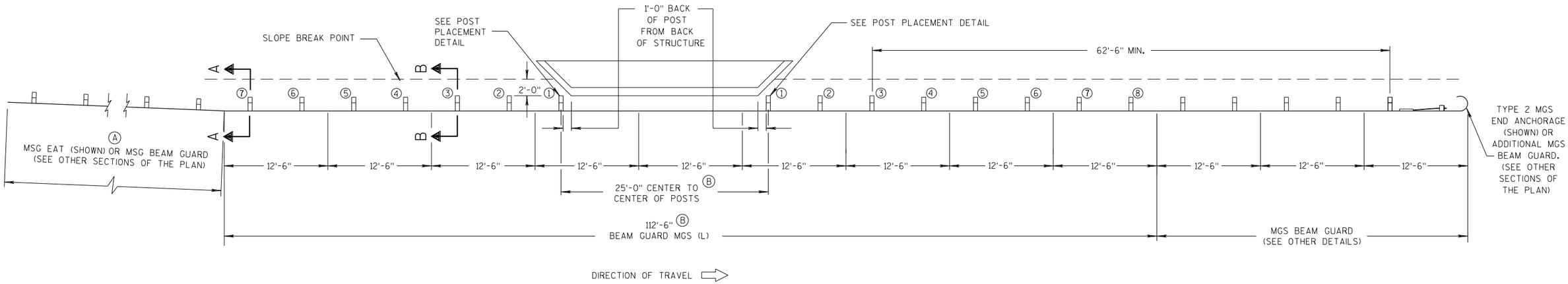
GENERAL NOTES

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

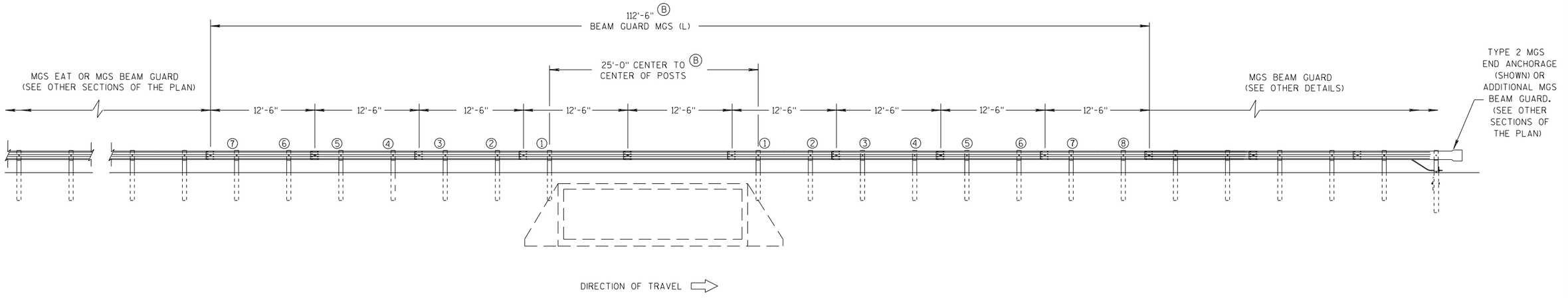
SEE SDD 14 B 42 FOR MORE DETAILS.

(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



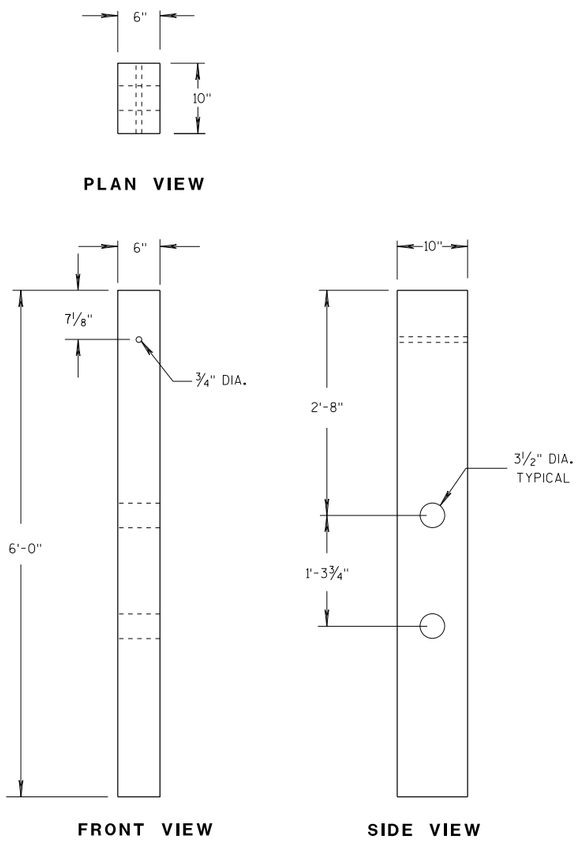
ELEVATION VIEW

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

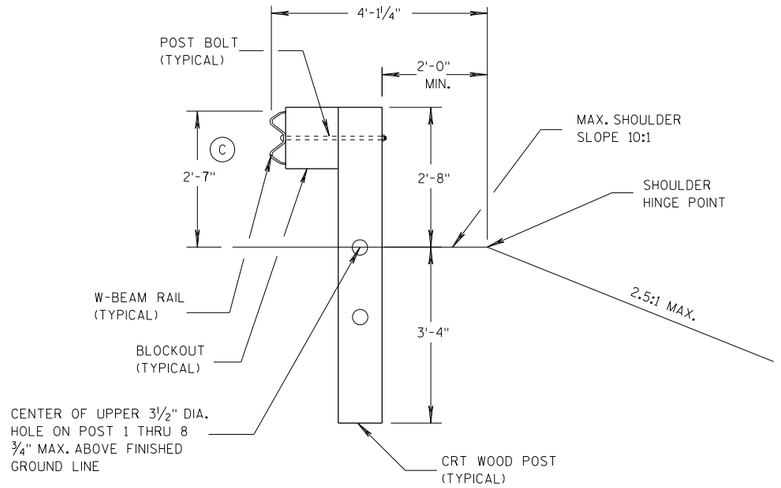
MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	43

6

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



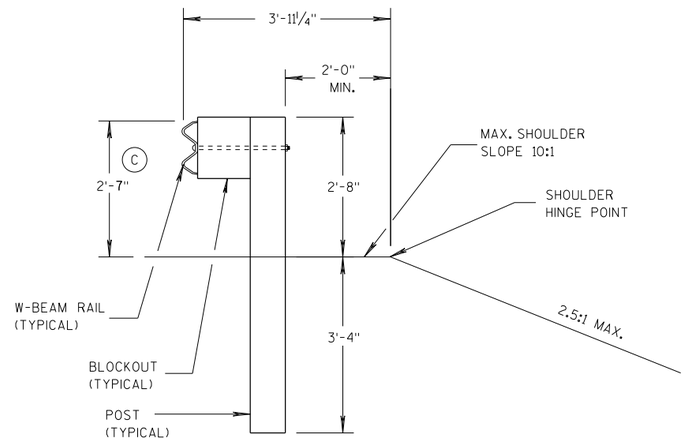
CRT WOOD POST



SECTION B-B

POSTS NO. 1-3

SEE OTHER DETAILS



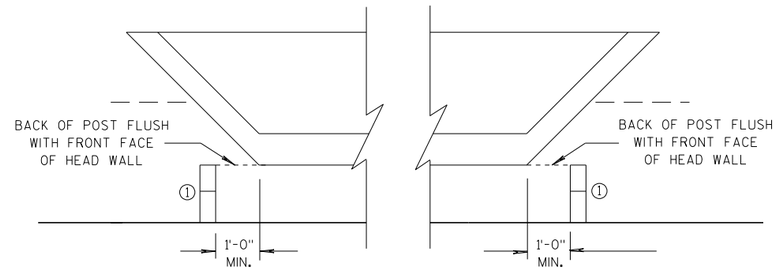
SECTION A-A

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 D 44 NT
ENGINEER

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.

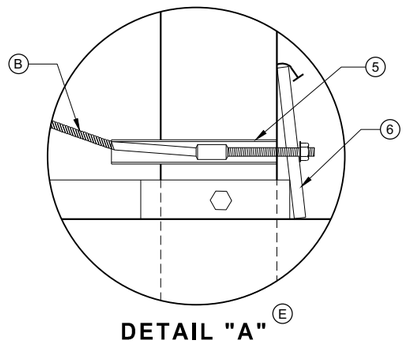
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

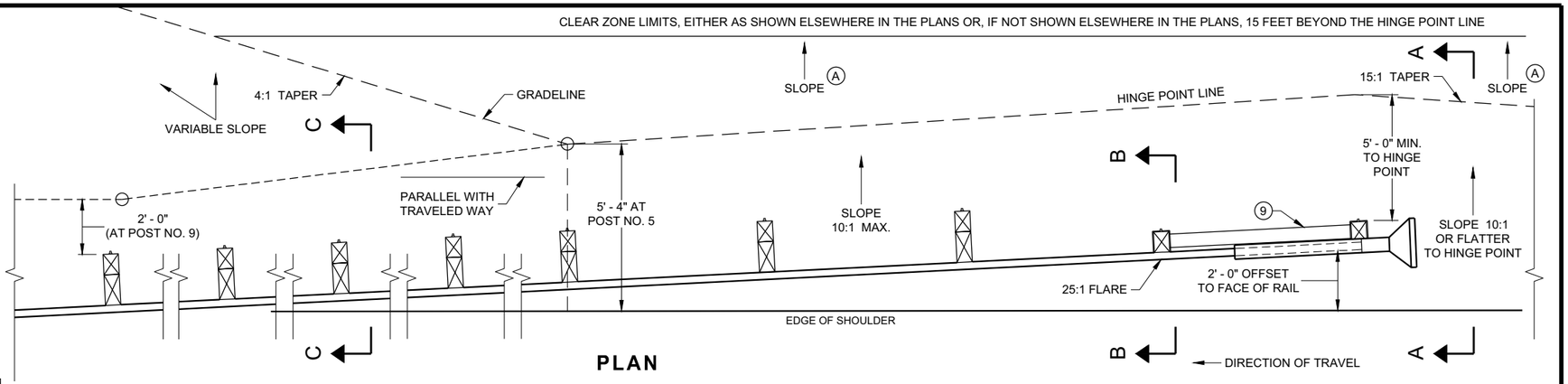
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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

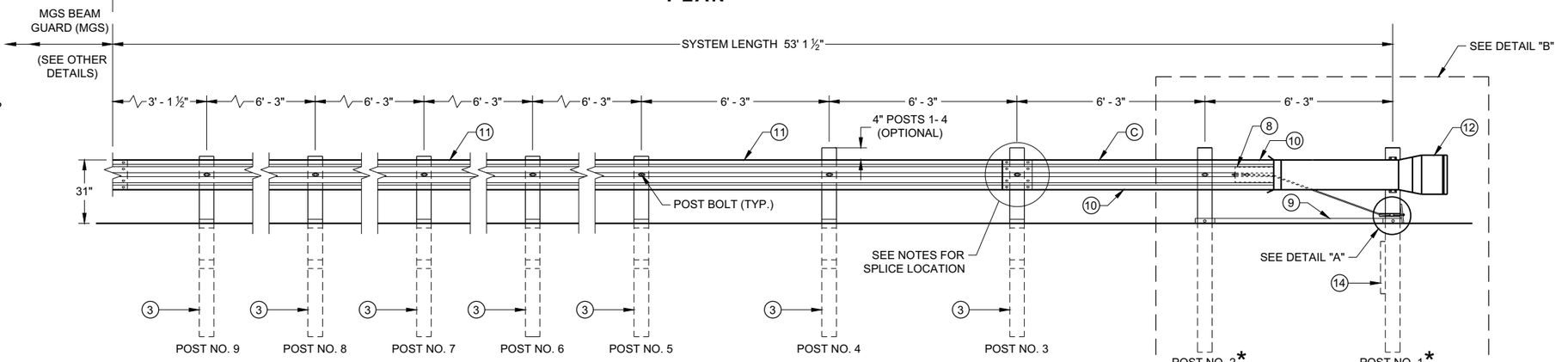
THE CENTER OF THE UPPER 3 ½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



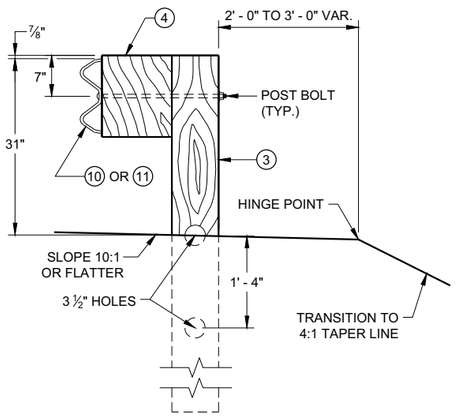
DETAIL "A" (E)



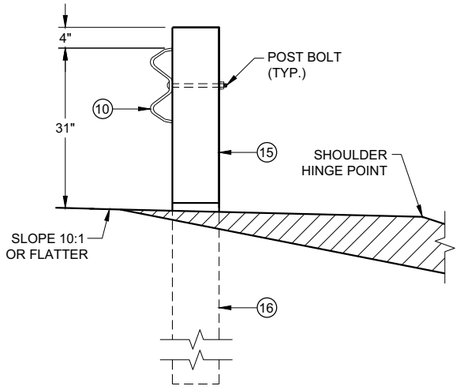
PLAN



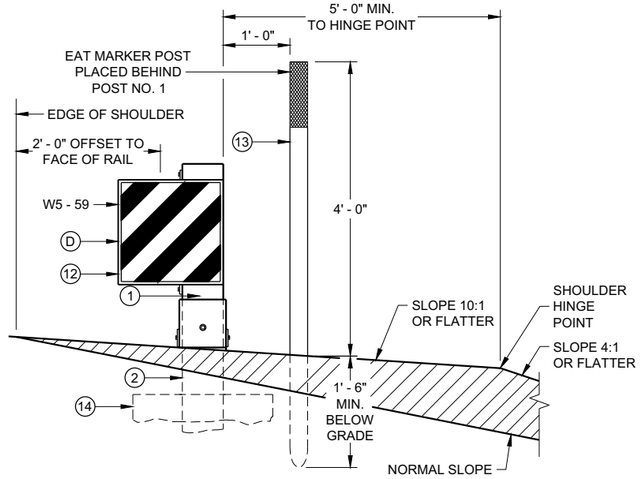
ELEVATION



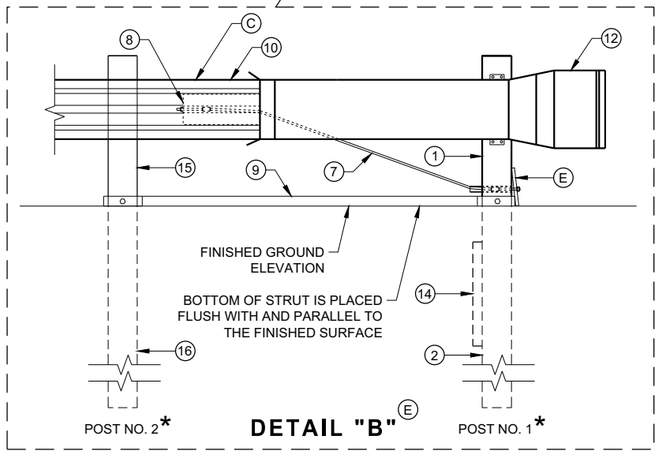
SECTION C - C
TYPICAL AT POST NOS. 3 - 9



SECTION B - B
TYPICAL AT POST NO. 2*



SECTION A - A
TYPICAL AT POST NO. 1*



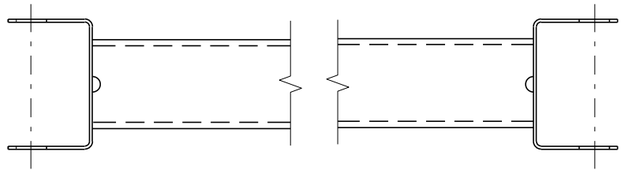
DETAIL "B" (E)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

SDD 14B44 - 04a

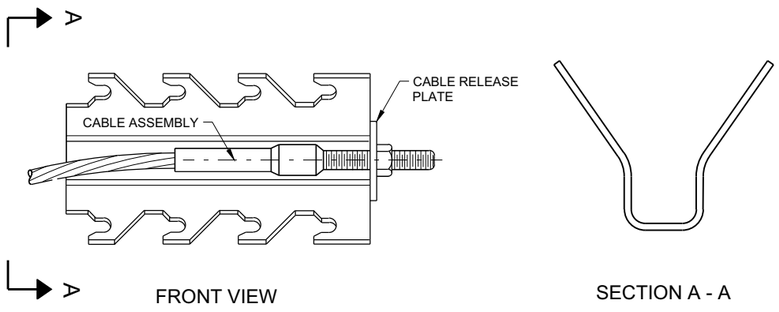
SDD 14B44 - 04a



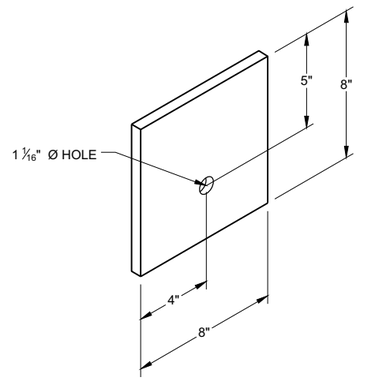
GENERIC GROUND STRUT ⑨ Ⓔ

BILL OF MATERIALS

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



GENERIC ANCHOR CABLE BOX ⑨ Ⓔ



BEARING PLATE ⑥ Ⓔ

6

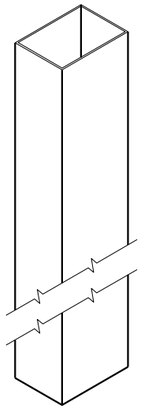
6

SDD 14B44 - 04b

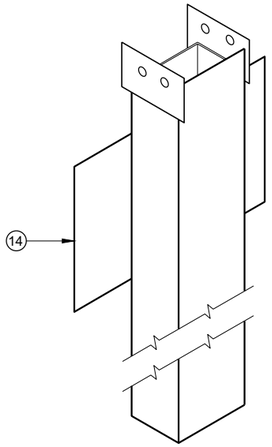
SDD 14B44 - 04b

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

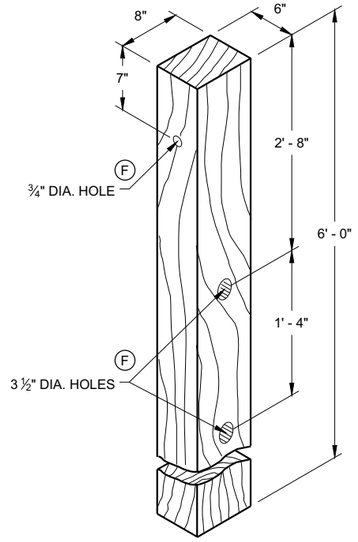
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



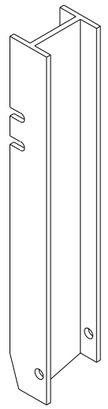
UPPER POST NO. 1 (1) (E)



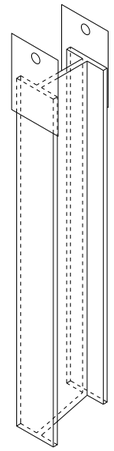
LOWER POST NO. 1 (2) (E)



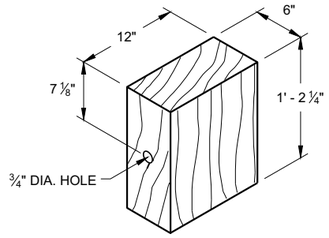
WOOD CRT POST (3) (E)
POSTS NUMBER 3-9



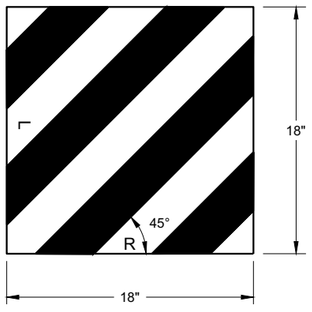
UPPER POST NO. 2 (15) (E)



LOWER POST NO. 2 (16) (E)

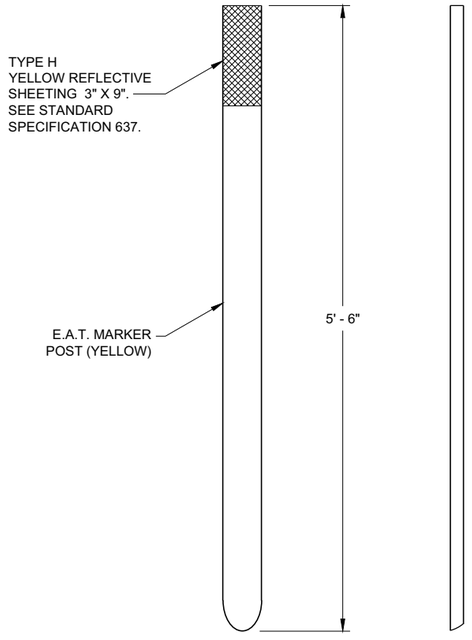


WOOD BLOCKOUT (4)
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



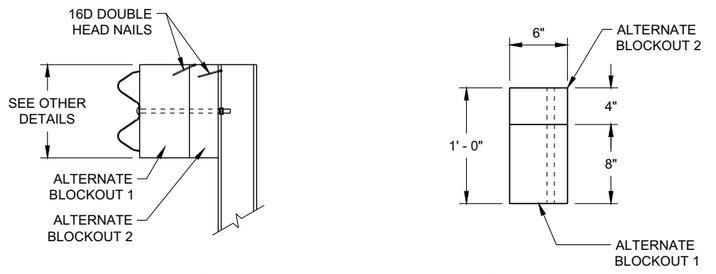
W5 - 59

REFLECTIVE SHEETING DETAIL (E)



FRONT VIEW SIDE VIEW

E.A.T. MARKER POST (13)



SIDE VIEW TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

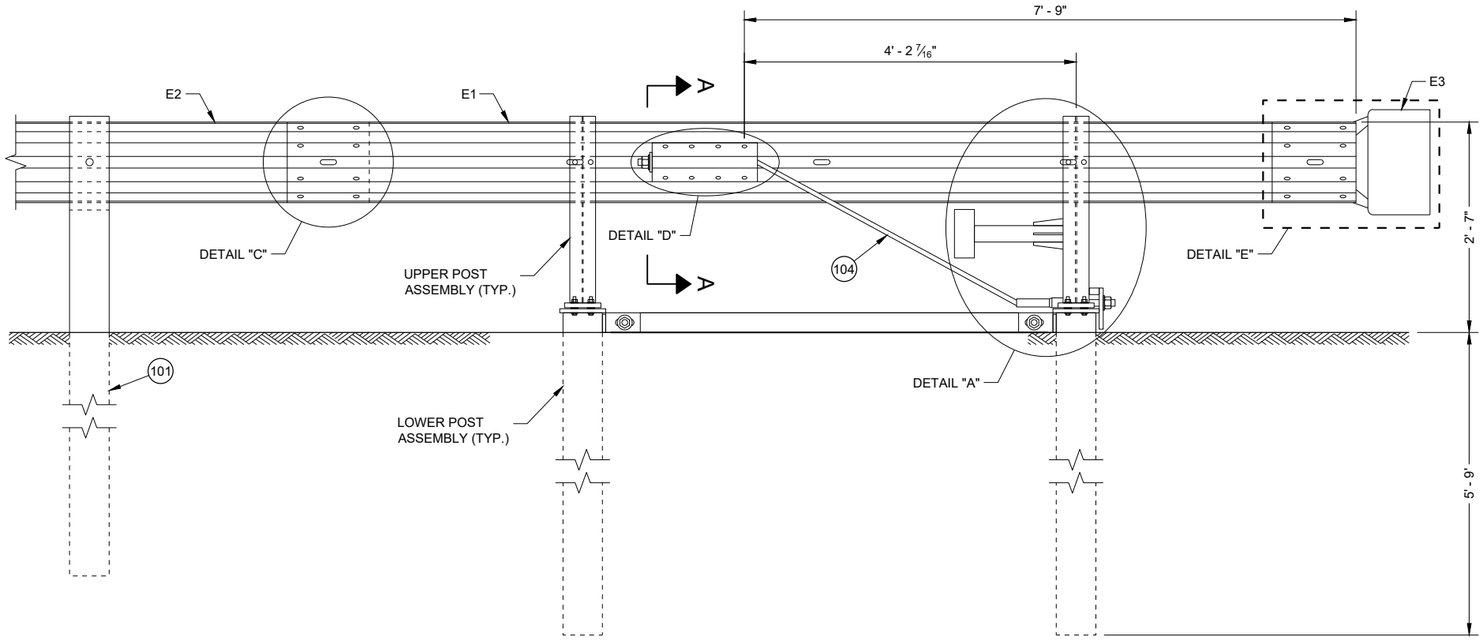
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

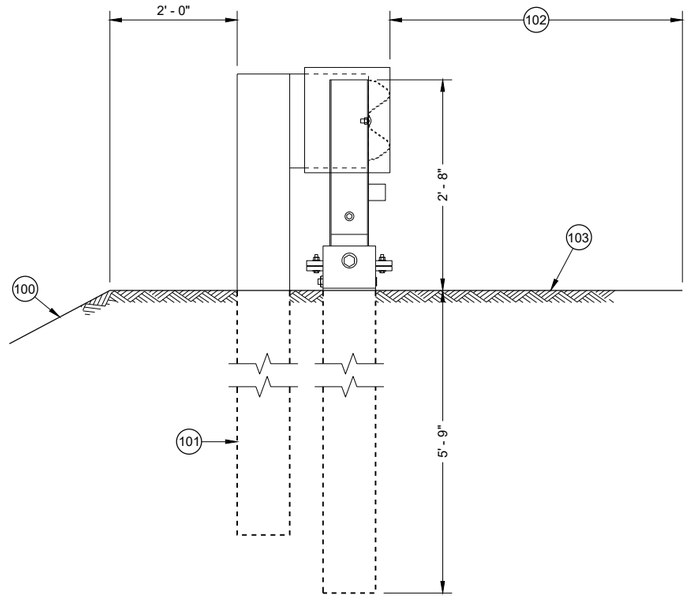
FHWA

6

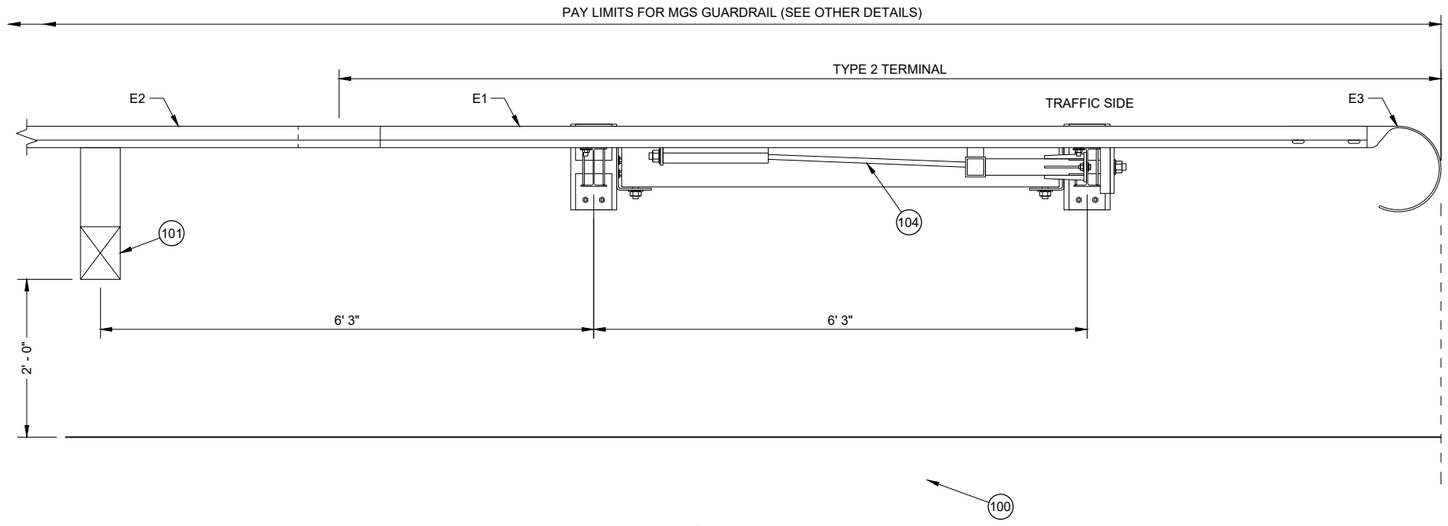
SDD 14B44 - 04c



BACK VIEW
TYPE 2 TERMINAL



SIDE VIEW
TYPE 2 TERMINAL



TOP VIEW
TYPE 2 TERMINAL

GENERAL NOTES

(100) MAXIMUM SLOPE IS 2.5:1.

(101) SEE SDD 14B42 FOR MORE INFORMATION.

(102) SHOULDER

(103) MAXIMUM SLOPE IS 10:1.

(104) AFTER ASSEMBLY, CABLE IS TO BE TIGHTENED WITHOUT TWISTING THE CABLE.

MIDWEST GUARDRAIL SYSTEM (MGS)
TYPE 2 TERMINAL

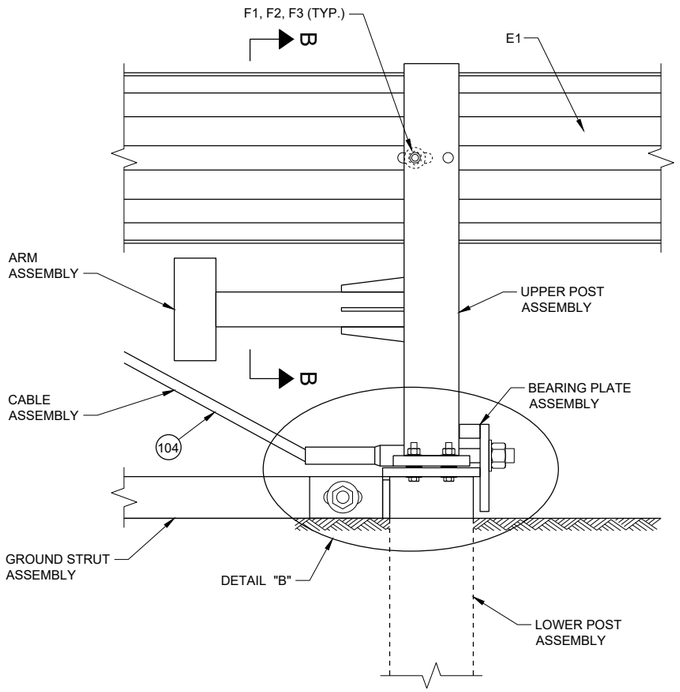
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

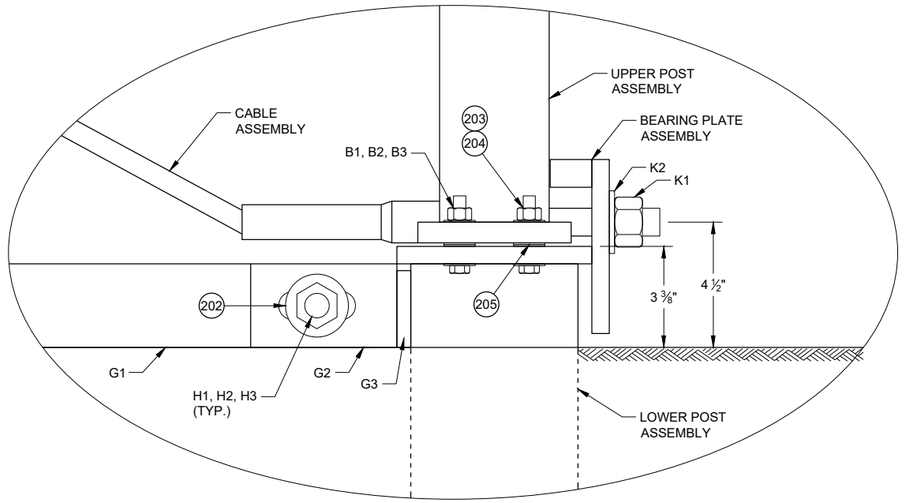
6

SDD 14B47 - 03a

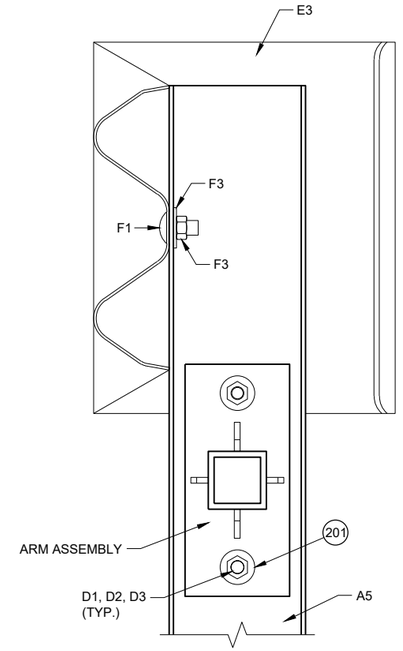
SDD 14B47 - 03a



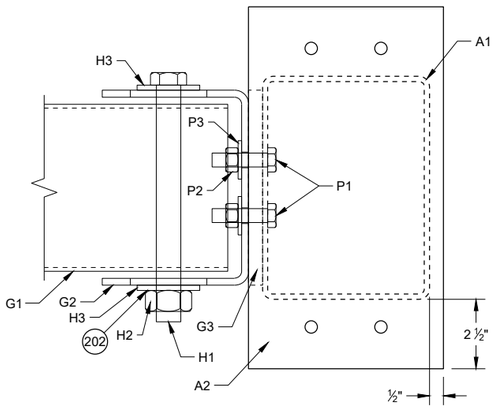
DETAIL "A"



DETAIL "B"

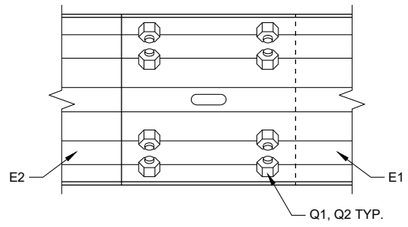


SECTION B - B

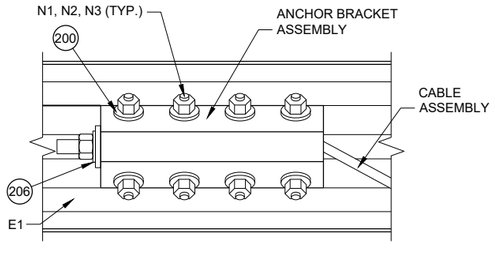


TOP VIEW

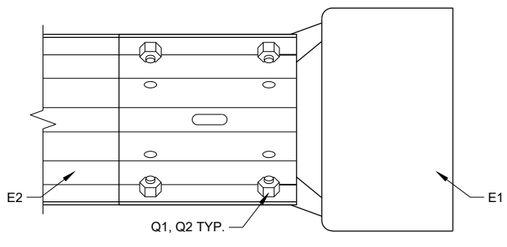
GROUND STRUT CONNECTION DETAIL



DETAIL "C"



DETAIL "D"



DETAIL "E"

GENERAL NOTES

200 INSTALL ONE WASHER UNDER BOLT HEAD AND RAIL AND ON WASHER BETWEEN NUT AND ANCHOR BRACKET ASSEMBLY.

201 INSTALL ONE WASHER UNDER BOLT HEAD AND UPPER POST ASSEMBLY AND ONE WASHER BETWEEN NUT AND ARM PLATE.

202 INSTALL ONE WASHER UNDER BOLT HEAD AND GROUND STRUT CONNECTOR AND ONE WASHER BETWEEN NUT AND GROUND STRUT CONNECTOR.

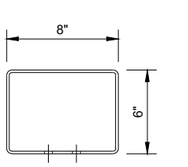
203 INSTALL ONE WASHER UNDER BOLT HEAD AND LOWER POST ASSEMBLY AND ONE WASHER BETWEEN NUT AND UPPER POST ASSEMBLY.

204 TORQUE VALUE IS BETWEEN 60 - 75 FT-LB.

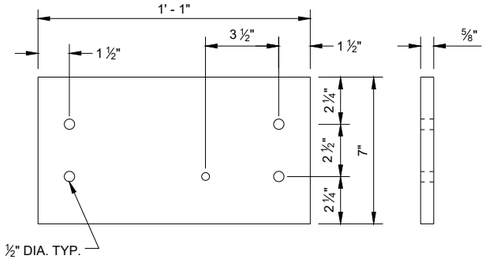
205 TWO WASHERS BETWEEN UPPER AND LOWER POST ASSEMBLY.

206 INSTALL ONE WASHER BETWEEN NUT AND ANCHOR BRACKET ASSEMBLY.

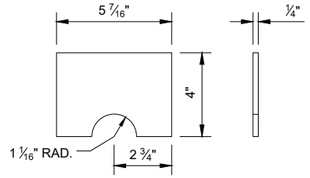
MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL



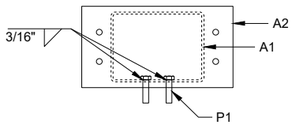
TOP VIEW



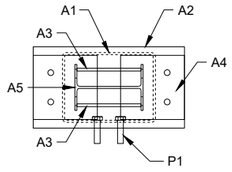
LOWER PLATE (A2)

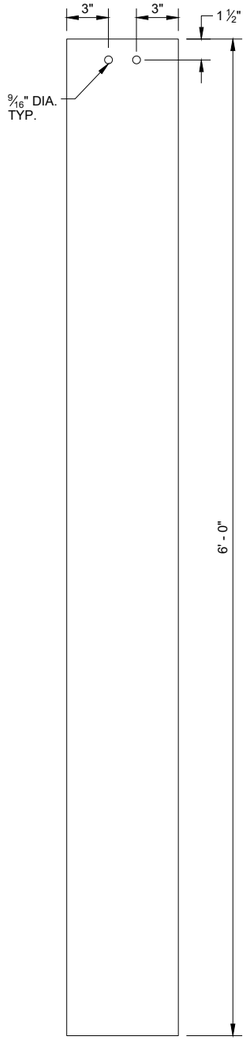


POST GUSSET (A3)



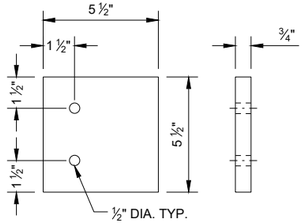
PLAN VIEW



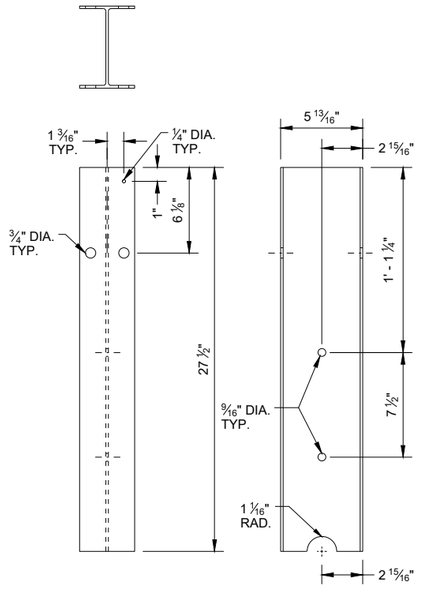


SIDE VIEW

FOUNDATION TUBE (A1)

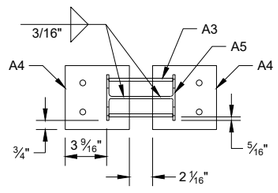


UPPER PLATE (A4)

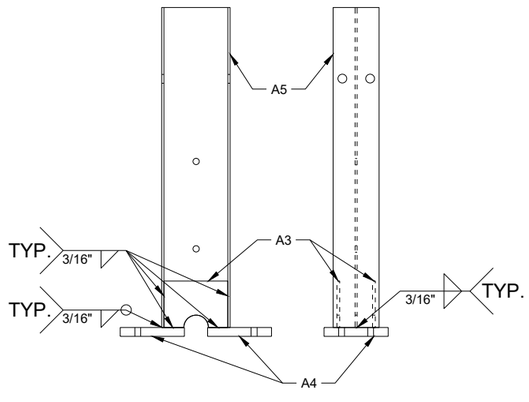


FRONT VIEW SIDE VIEW

TYPE 2 POST (A5)

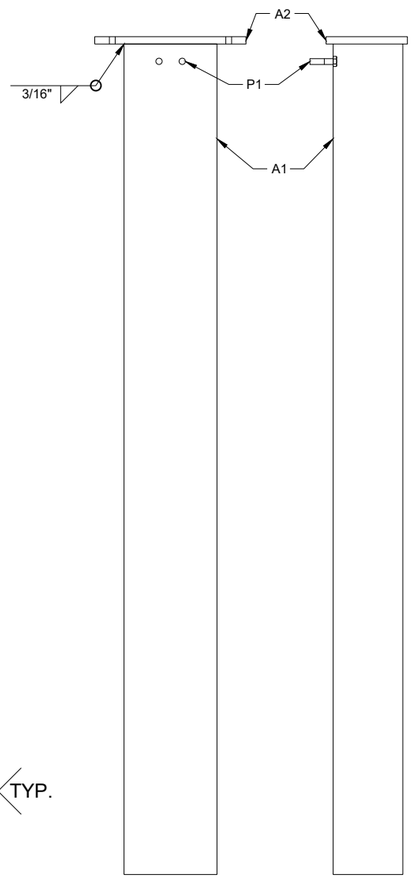


PLAN VIEW



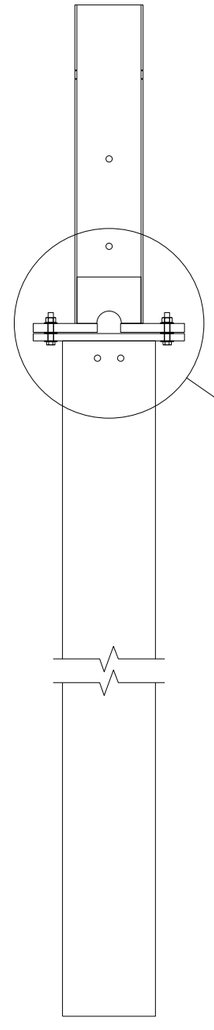
SIDE VIEW FRONT VIEW

UPPER POST ASSEMBLY

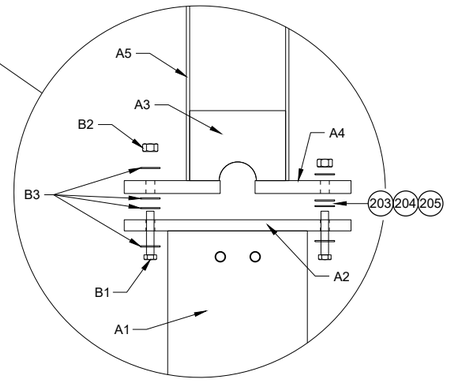


FRONT VIEW SIDE VIEW

LOWER POST ASSEMBLY



ASSEMBLED POST



POST CONNECTION DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL

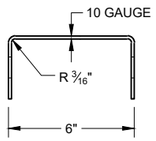
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

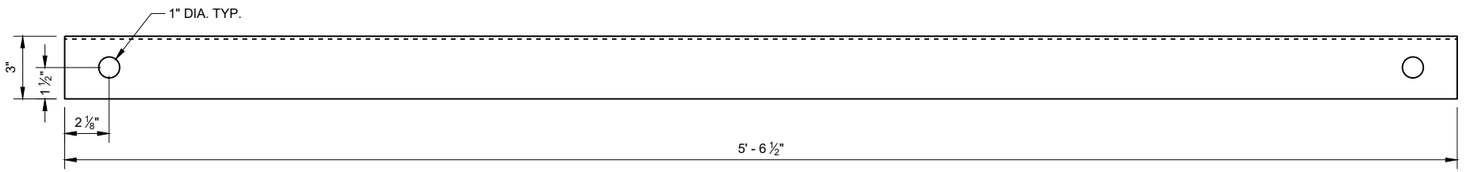
SDD 14B47 - 03c

6

SDD 14B47 - 03c

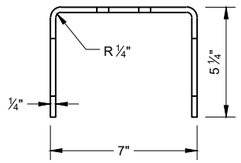


SIDE VIEW

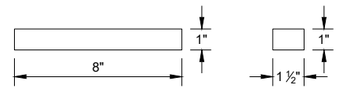


FRONT VIEW

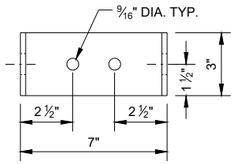
GROUND STRUT CHANNEL (G1)



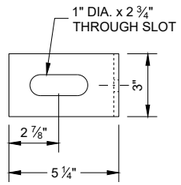
TOP VIEW



BEARING PLATE FLANGE (L2)

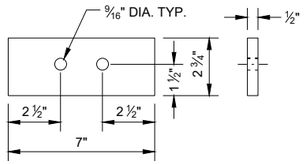


FRONT VIEW

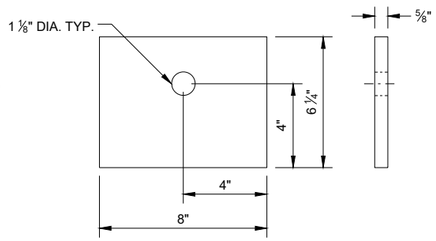


SIDE VIEW

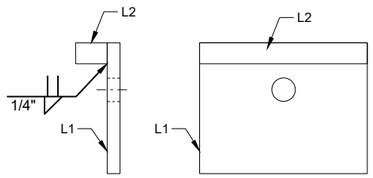
GROUND STRUT CONNECTOR (G2)



GROUND STRUT PLATE (G3)



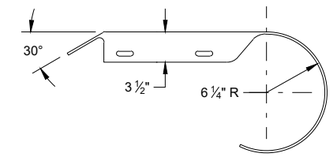
BEARING PLATE (L1)



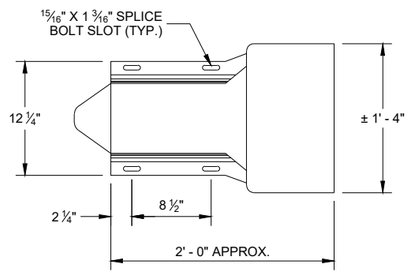
SIDE VIEW

FRONT VIEW

BEARING PLATE ASSEMBLY

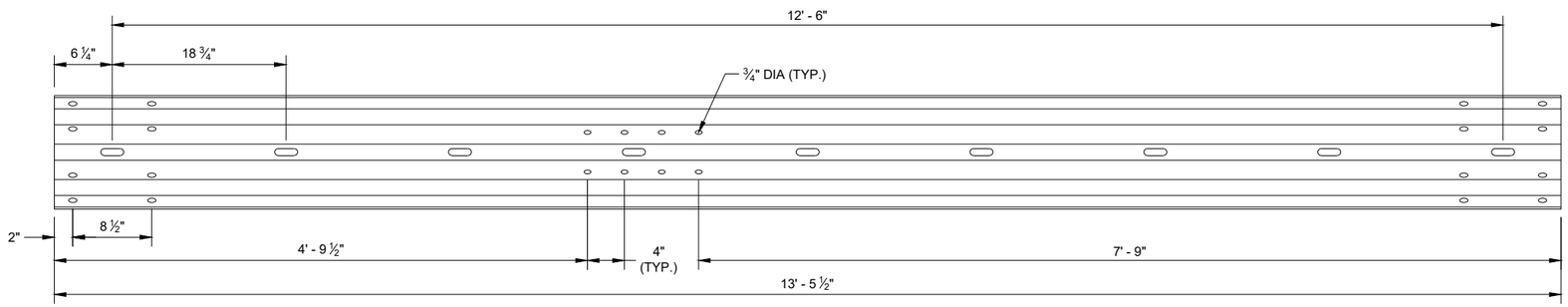


PLAN VIEW

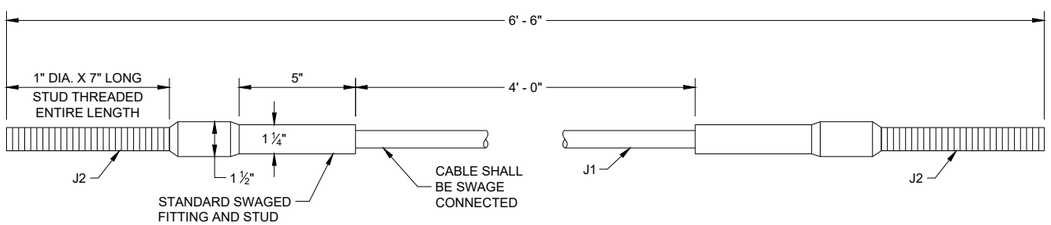


ELEVATION VIEW

ROUNDED BUFFER END (E3)



TYPE 2 GUARDRAIL (E1)



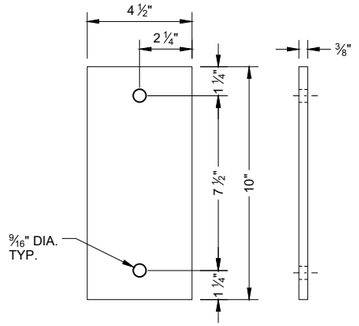
CABLE ASSEMBLY

MIDWEST GUARDRAIL SYSTEM (MGS)
TYPE 2 TERMINAL

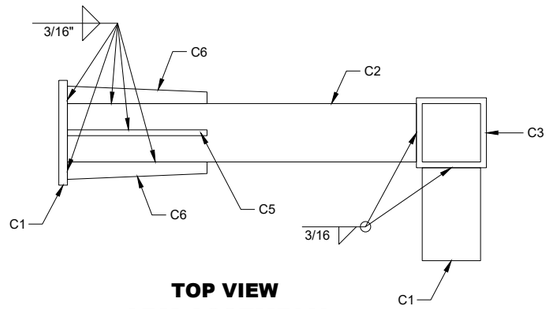
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

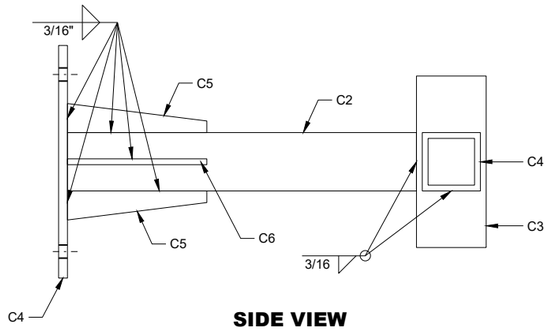
SDD 14B47 - 03d
SDD 14B47 - 03d



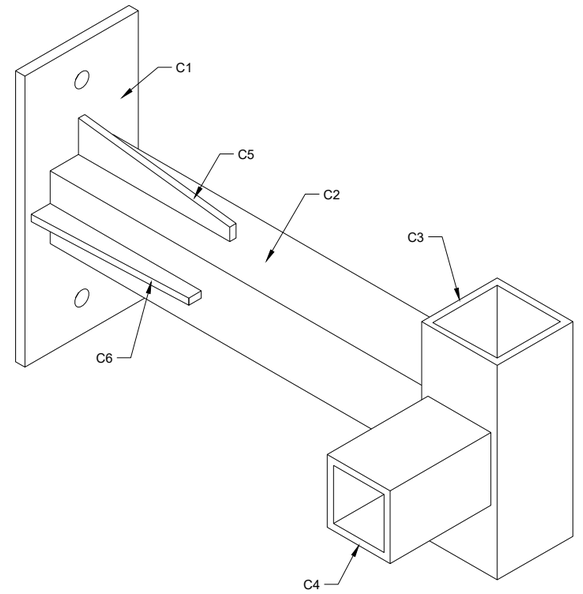
ARM PLATE (C1)



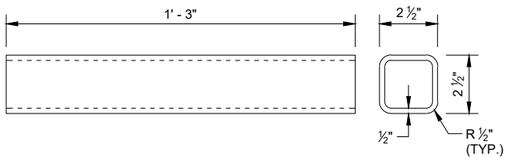
TOP VIEW
ARM ASSEMBLY



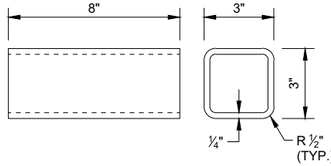
SIDE VIEW
ARM ASSEMBLY



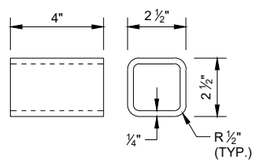
ISOMETRIC VIEW
ARM ASSEMBLY



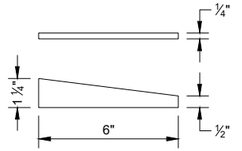
ARM TUBE 1 (C2)



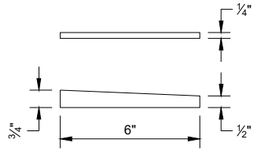
ARM TUBE 2 (C3)



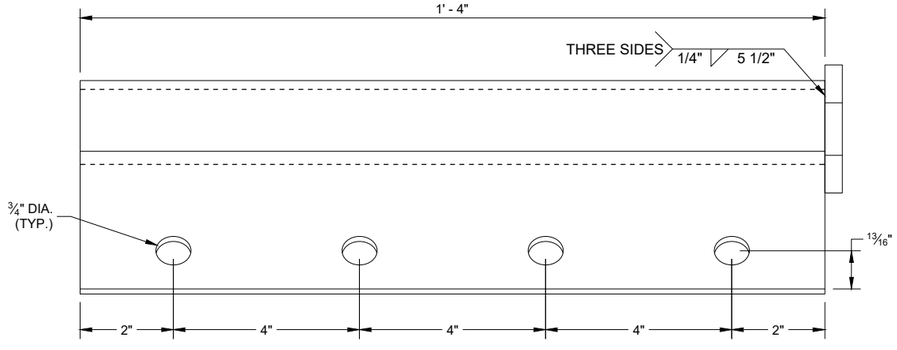
ARM TUBE 3 (C4)

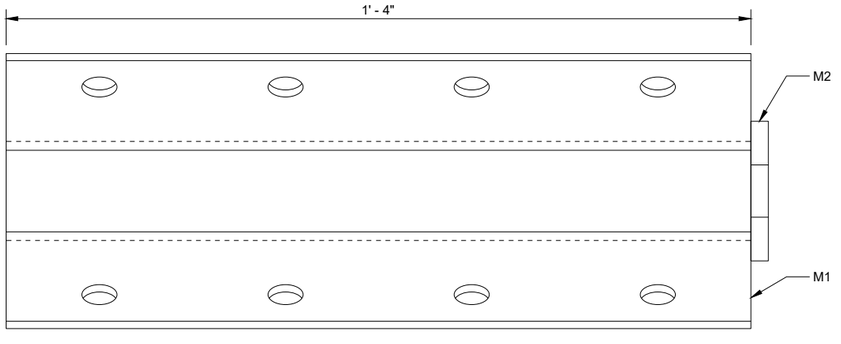


ARM GUSSET PLATE 1 (C5)

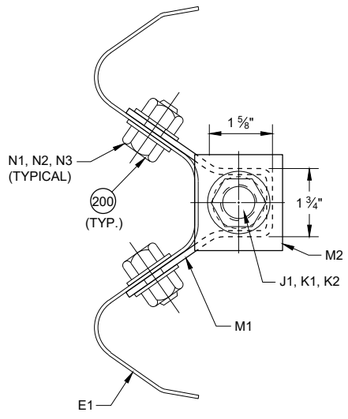


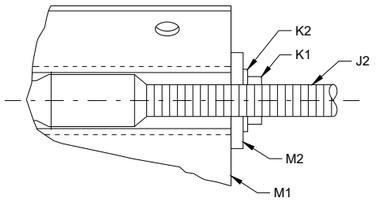
ARM GUSSET PLATE 2 (C6)



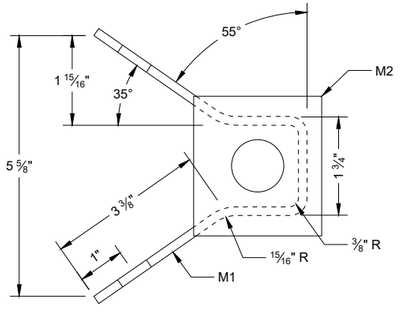


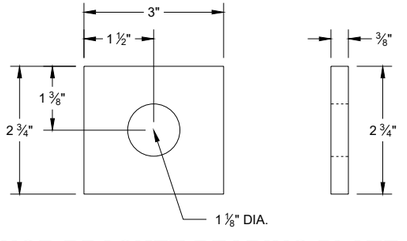
ANCHOR BRACKET (M1, M2)





SECTION A - A





ANCHOR BRACKET BEARING PLATE (M2)

MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

SDD 14B47 - 03e

BILL OF MATERIALS - TYPE 2 TERMINAL (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
A1	TYPE 2 FOUNDATION TUBE	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 8" x 6" x 3/16"
A2	LOWER PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	5/8" THICKNESS
A3	POST GUSSET	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1/4" THICKNESS
A4	UPPER PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	3/4" THICKNESS
A5	TYPE 2 POST	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	
B1	BREAKAWAY BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM F3125 GRADE A325 TYPE 1 HEAVY HEX HEAD OR SAE J429 GRADE 5 HEAVY HEX HEAD / ASTM A449 TYPE 1 HEAVY HEX HEAD. BOLTS MAY BE FULLY THREADED . PROVIDE ENOUGH THREADING FOR PROPER TIGHTENING OF BOLT.	7/16" DIA.
B2	BREAKAWAY BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	7/16" DIA.
B3	BREAKAWAY BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
C1	ARM ASSEMBLY PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	3/8" THICKNESS
C2	ARM ASSEMBLY TUBE 1	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 8" x 6" x 3/16"
C3	ARM ASSEMBLY TUBE 2	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 3" x 3" x 1/4"
C4	ARM ASSEMBLY TUBE 3	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 2 1/2" x 2 1/2" X 1/4"
C5	ARM ASSEMBLY GUSSET PLATE 1	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1/4" THICKNESS
C6	ARM ASSEMBLY GUSSET PLATE 2	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1/4" THICKNESS
D1	ARM ASSEMBLY BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	1/2" DIA.
D2	ARM ASSEMBLY WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	1/2" DIA.
D3	ARM ASSEMBLY NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	1/2" DIA.
E1	TYPE 2 GUARD RAIL	AASHTO M180 CLASS A TYPE 2 12 GAUGE APPROVED PRODUCER	
E2	BEAM GUARD RAIL	AASHTO M180 CLASS A TYPE 2 12 GAUGE APPROVED PRODUCER	
E3	BEAM GUARD ROUNDED BUFFER END	AASHTO M180 CLASS A TYPE 2 12 GAUGE APPROVED PRODUCER	
F1	POST BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	5/8" DIA.
F2	POST BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	5/8" DIA.
F3	POST BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
G1	GROUND STRUT CHANNEL	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1/2" x 11 3/4" x 10 GAUGE
G2	GROUND STRUT CONNECTOR	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1/4" THICKNESS
G3	GROUND STRUT PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1/2" THICKNESS

BILL OF MATERIALS - TYPE 2 TERMINAL (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
H1	GROUND STRUT BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	7/8" DIA.
H2	GROUND STRUT BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	7/8" DIA.
H3	GROUND STRUT BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD 5/8" ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	
J1	BCT CABLE	AASHTO M30 / ASTM A741 6 x 19 INDEPENDENT WIRE CORE (IWRC) IMPROVED PLOW STEEL (IPS), 6 x 19 INDEPENDENT WIRE CORE (IWRC) IMPROVED PLOW STEEL (IPS) TYPE II OR IIC, CLASS C ZINC COATED MIN. BREAKING STRENGTH OF 42.7 KIPS	**3/4" DIA.**
J2	BCT CABLE	UNC 1" ASTM A576 GRADE 1035 SWAGE FITTINGS ARE TO BE FACTORY SWEDGED. MIN BREAKING STRENGTH OF 42.7 KIPS ASME B30.26 "FORGED, CAST, OR DIE STAMPED WITH THE FOLLOWING IN TO CONNECTION: NAME OF MANUFACTURE OR TRADEMARK OF CONNECTION'S MANUFACTURER, SIZE OR RATED LOAD, GRADE FOR ALLOY EYEBOLTS."	
K1	CABLE ASSEMBLY NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	1" DIA.
K2	CABLE ASSEMBLY WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1	1" DIA.
L1	BEARING PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	5/8" THICKNESS
L2	BEARING PLATE FLANGE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	1" THICKNESS
M1	BEAM GUARD ANCHOR BRACKET	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	
M2	BEAM GUARD ANCHOR END PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI, OR ASTM A709 MAX STRENGTH 50 KSI, OR ASTM A992 MAX STRENGTH 50 KSI	3/8" THICKNESS
N1	ANCHOR BRACKET BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC AASHTO M180 HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	5/8" DIA.
N2	ANCHOR BRACKET BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	5/8" DIA.
N3	ANCHOR BRACKET BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 /ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
P1	FOUNDATION TUBE BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 /ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	1/2" DIA.
P2	FOUNDATION TUBE WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 7/8" ASTM F844 TYPE 1 (HARDENED WASHER ONLY)	1/2" DIA.
P3	FOUNDATION TUBE NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
Q1	SPLICE BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC AASHTO M180 HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	
Q2	SPLICE NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	5/8" DIA.

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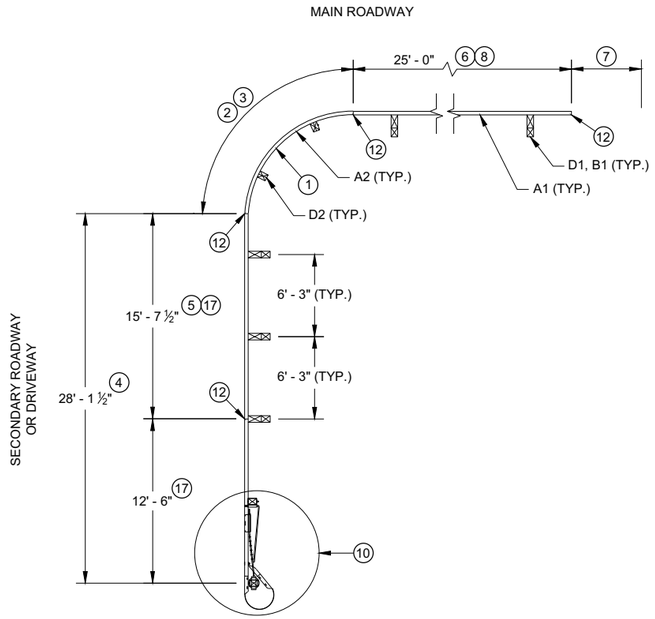
SDD 14B47 - 03g

SDD 14B47 - 03g

MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL

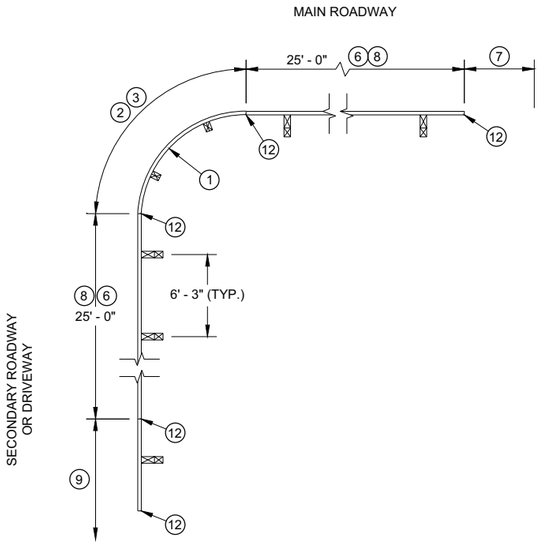
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
August 2021
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVE ENGINEER
FHWA



PLAN VIEW

SHORT RADIUS BEAM GUARD WITH SHORT RADIUS TERMINAL ON SECONDARY ROAD OR DRIVEWAY

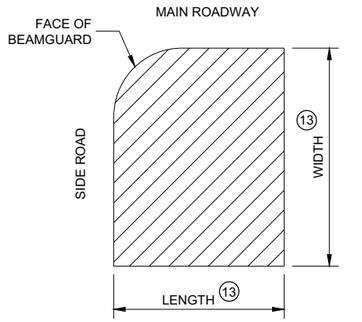


PLAN VIEW

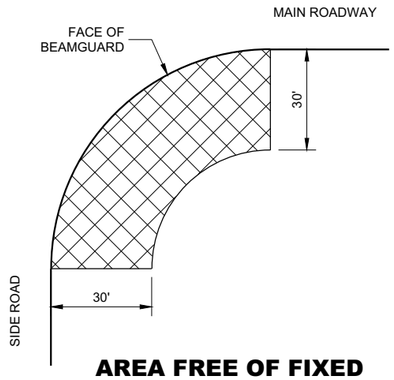
SHORT RADIUS BEAM GUARD WITH EAT, ADDITIONAL BEAM GUARD OR TRANSITION TO RIGID BARRIER ON SECONDARY ROAD OR DRIVEWAY

TABLE FOR RADIUS OF 32' AND LESS

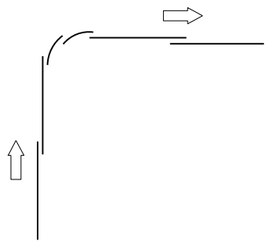
RADIUS (FT)	LENGTH (FT)	WIDTH (FT)
8	25	15
16	30	15
24	40	20
32	50	30



AREA FREE OF FIXED OBJECTS FOR RADIUS 32' AND LESS (16)



AREA FREE OF FIXED OBJECTS FOR RADIUS GREATER THAN 32'



LAP SPLICE DETAIL

GENERAL NOTES

SEE PLANS FOR OTHER BARRIER SYSTEM AND LOCATION SPECIFICS.

SEE SDD 14B42 FOR MORE INFORMATION ON BEAM GUARD INSTALLATION, PARTS, MATERIALS, AND INSTALLATION INFORMATION.

GALVANIZE PARTS AFTER FABRICATION.

WELDING TO FOLLOW CURRENT REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE ANSI / AWS D1.1.

UNLESS NOTED OTHERWISE, ALL PLATES ARE FLAT AND FREE OF WARP.

UNLESS NOTED OTHERWISE, ALL EDGES ARE SMOOTH, STRAIGHT AND VERTICAL.

ALL CUTS AND HOLES, EXCEPT IN BEAM GUARD RAIL ARE TO BE MACHINED OR MACHINE FLAME CUT.

UNLESS NOTED OTHERWISE, CUT OR PROVIDE BOLTS THAT ARE ¼" TO ½" BEYOND THE NUT.

DRAWINGS ARE NOT TO SCALE.

(1) RADIUS MEASURE FROM INSIDE OF RAIL. LENGTH OF BEAM GUARD SHORT RADIUS GUARD MEASURED ALONG TRAFFIC SIDE OF RAIL. RADIUS BETWEEN 8 FEET TO 150 FEET. SEE PLAN FOR REQUIRED RADIUS. BEAM GUARD RAIL IN RADIUS IS SHOP BENT. ODD RAIL LENGTH OR FIELD CUTS MAY BE REQUIRED.

(2) CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE USED IN THE RADIUS. CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE SPACED 6' - 3". SEE PLAN FOR NUMBER OF CONTROLLED RELEASE (CRT) POSTS.

(3) WITHIN RADIUS BEAM GUARD RAILS ARE NOT BOLTED TO POSTS. BEAM GUARD RAIL IS RESTED ON TOP OF LAG SCREW.

(4) MINIMUM LENGTH OF BEAM GUARD ALONG SIDE ROAD OR DRIVEWAY TO INSTALL SHORT RADIUS TERMINAL. BEAM GUARD IS PAID WITH BEAM GUARD ITEM.

(5) ODD LENGTH OF BEAM GUARD REQUIRED TO INSTALL SHORT RADIUS TERMINAL.

(6) MINIMUM AMOUNT OF BEAM GUARD TO BE INSTALLED PRIOR TO TRANSITION TO RIGID BARRIER. ADDITIONAL BEAM GUARD, OR EAT. BEAM GUARD PAID FOR WITH BEAM GUARD ITEM. SEE PLANS FOR MORE DETAIL.

(7) BEAM GUARD, EAT, OR TRANSITION TO RIGID BARRIER. SEE PLAN.

(8) TOP OF BEAM GUARD BY THE RADIUS IS 27". HEIGHT OF BEAM GUARD IS 31" BY TRANSITION TO RIGID BARRIER, ADDITIONAL BEAM GUARD OR EAT.

(9) ADDITIONAL BEAM GUARD, EAT OR TRANSITION TO RIGID BARRIER. BEAM GUARD SHOWN. SEE PLAN FOR DETAILS.

(10) SHORT RADIUS TERMINAL (SEE OTHER DETAILS).

(11) HEIGHT VARIES. SEE NOTE (8) AND (8).

(12) BEAM GUARD RAIL SPLICE LOCATION. SPLICE LOCATION REQUIRES PART F1 AND F2. SEE SDD 14B42 FOR DETAILS.

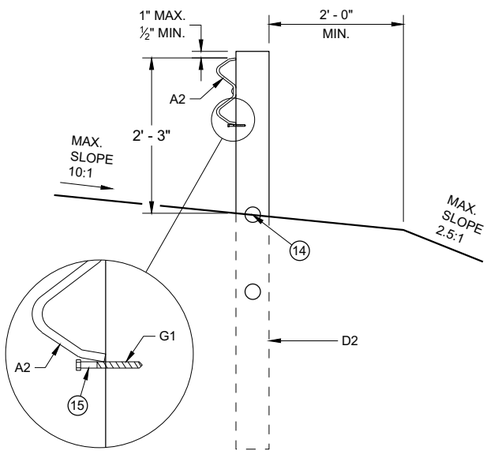
(13) SEE TABLE FOR VALUES.

(14) MAXIMUM HEIGHT FOR CENTER OF HOLE IS ¾" ABOVE FINISHED GROUND ±1".

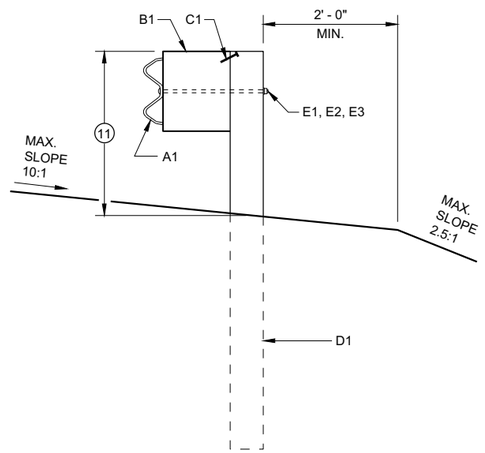
(15) DRILL POST $^{15}/_{64}$" DIA. PILOT HOLE. DO NOT HAMMER LAG SCREW INTO POST.

(16) SMALL SIGNS ON BREAKAWAY HARDWARE ARE ACCEPTABLE.

(17) TOP OF RAIL HEIGHT IS 27" WHEN USING A SHORT RADIUS TERMINAL (CRT).



CONTROLLED RELEASE TERMINAL POST (CRT) IN RADIUS



BEAM GUARD POSTS IN HEIGHT TRANSITION

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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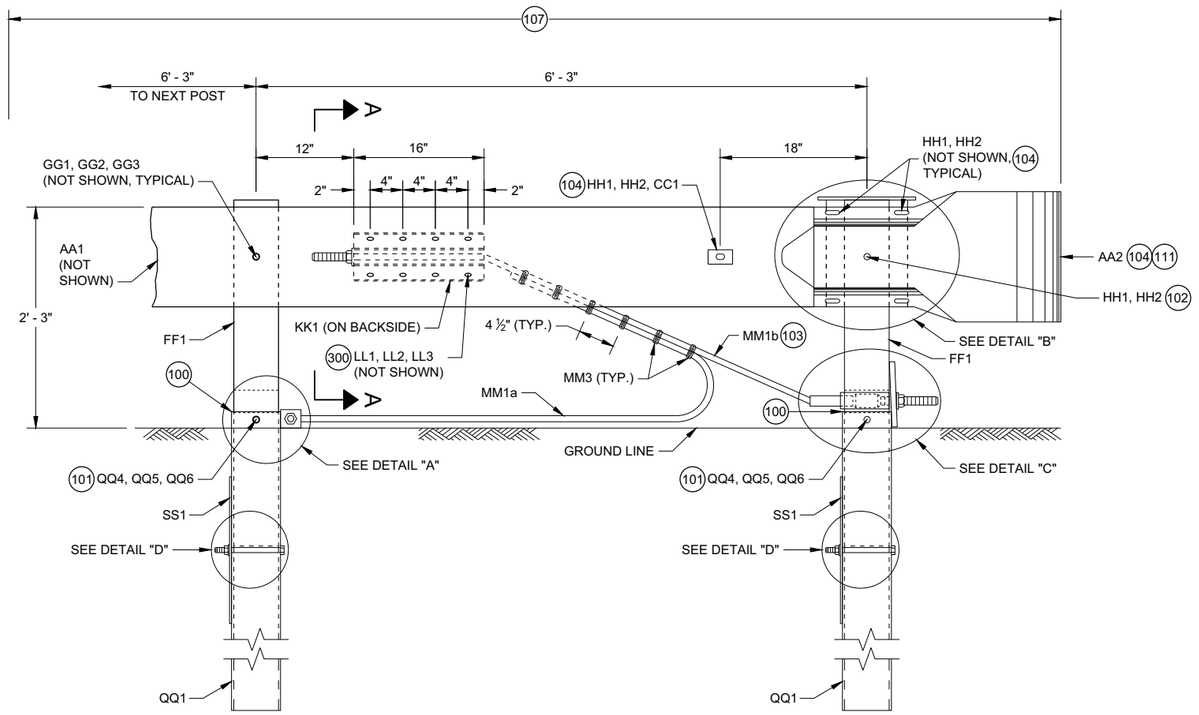
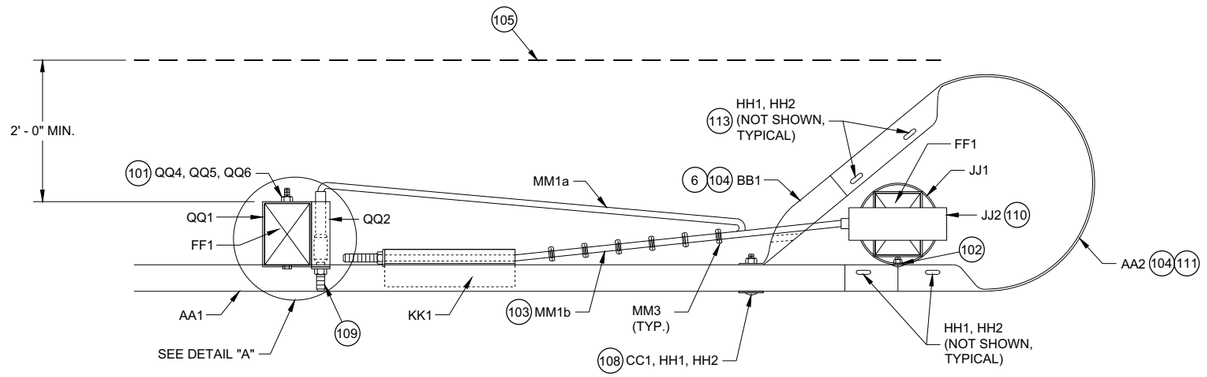
SDD 14B53 - 01a

SDD 14B53 - 01a



PROFILE VIEW

SHORT RADIUS TERMINAL



TOP VIEW

SHORT RADIUS TERMINAL

GENERAL NOTES

100 TOP OF FOUNDATION TUBE 2 INCHES MAXIMUM ABOVE FINISHED GROUND.

101 WASHERS REQUIRED BETWEEN BOLT HEAD AND FOUNDATION TUBE AND BETWEEN NUT AND FOUNDATION TUBE.

102 SPLICE BOLT AND NUT CONNECTS BEAM GUARD RAIL, W-BEAM SECTION BUFFER, AND STEEL PIPE ASSEMBLY. NO WASHER REQUIRED. SEE DETAIL "B".

103 CABLE IS TAUT.

104 ADJUST AA2 AND BB1 TO FIT.

105 BREAK POINT OF SHOULDER.

106 TACK WELD CABLE CONNECTOR TUBE PLATE TO CABLE CONNECTION TUBE. SEE DETAIL "A" PROFILE VIEW.

107 PAY LIMIT FOR BEAM GUARD.

108 SQUARE WASHER BETWEEN HEAD OF BOLT AND TRAFFIC FACE OF BEAM GUARD. ROUND WASHER REQUIRED BETWEEN NUT AND BB1.

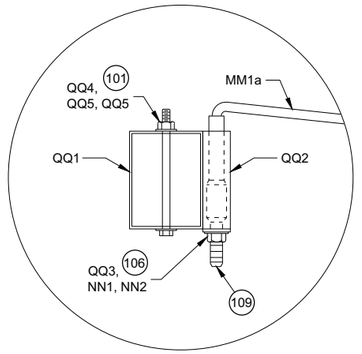
109 CUT OR PROVIDE THREADED STUD THAT IS FLUSH WITH FACE OF BEAM GUARD RAIL KK1 (PLUS OR MINUS ½" TOLERANCE). DEBURR AFTER CUTTING.

110 SEE STEEL PIPE ASSEMBLY DETAILS.

111 ATTACH UU2 WITH UU3. SHOP APPLY UU1 TO UU2.

112 FOUR (4) HH1 AND HH2 REQUIRED TO ATTACH AA1 TO AA2.

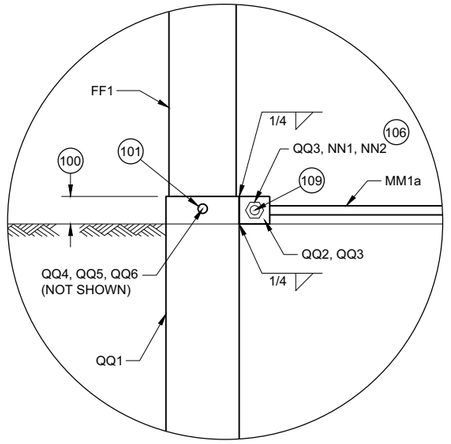
113 FOUR (4) HH1 AND HH2 REQUIRED TO ATTACH AA2 TO BB1.



TOP VIEW

DETAIL "A"

(WOOD BREAKAWAY AND BEAM GUARD RAIL POSTS NOT SHOWN)



PROFILE VIEW

DETAIL "A"

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

SDD 14B53 - 01b

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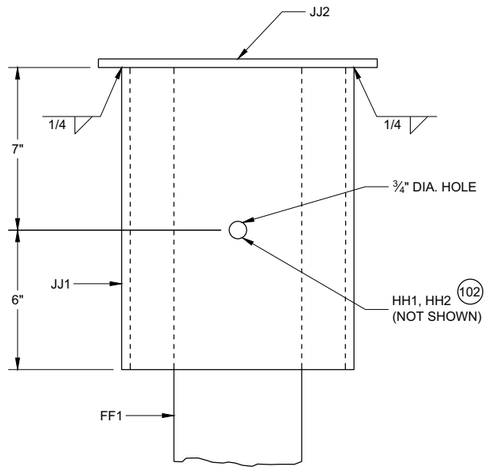
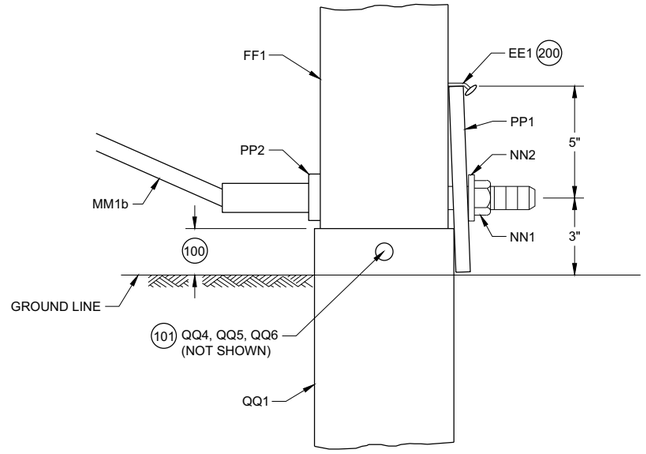
GENERAL NOTES

(200) TWO (2) NAILS SPACED 4 INCHES CENTER TO CENTER.



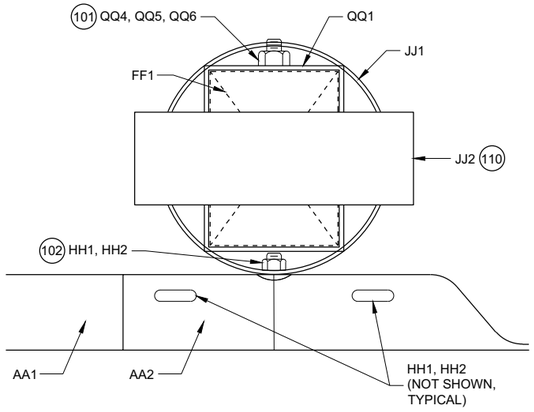
PROFILE VIEW

DETAIL "B"
STEEL PIPE ASSEMBLY
(BEAM GUARD AND W BEAM END SECTION NOT SHOWN)



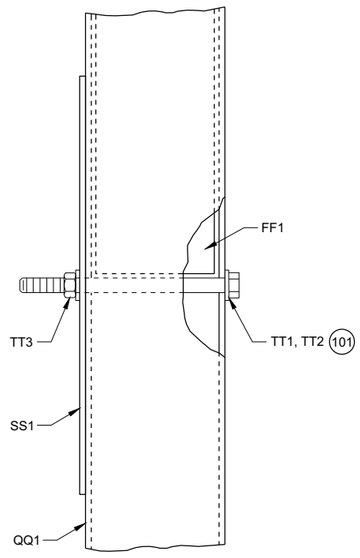
PROFILE VIEW

DETAIL "C"



PLAN VIEW

DETAIL "B"
STEEL PIPE ASSEMBLY



PROFILE VIEW

DETAIL "D"

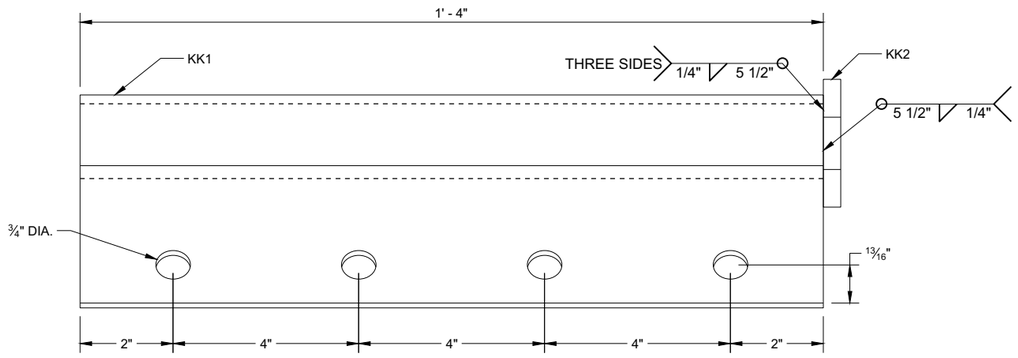
SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

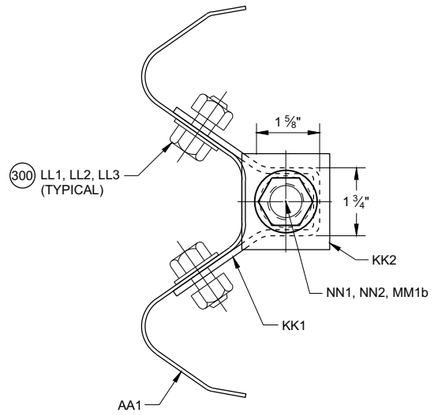
6

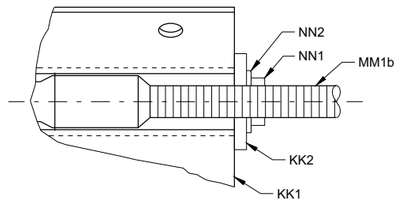
SDD 14B53 - 01c

GENERAL NOTES

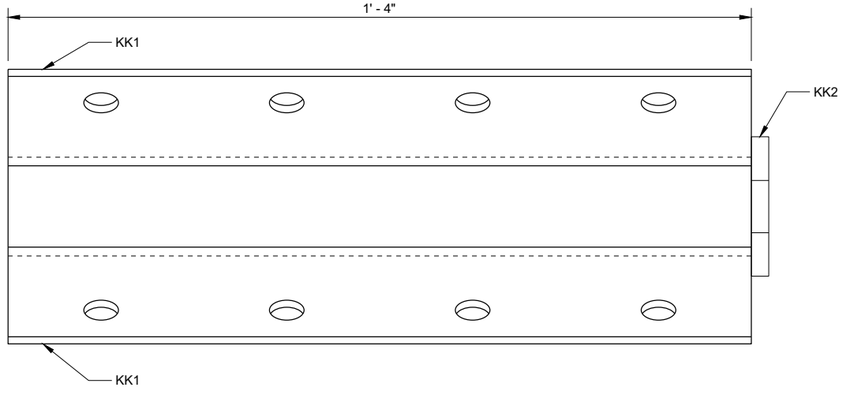
(300) WASHERS REQUIRED BETWEEN BOLT HEAD AND BEAM GUARD RAIL AND BETWEEN NUT AND ANCHOR BRACKET. EIGHT (8) LL1 AND LL3 REQUIRED. SIXTEEN (16) LL2 REQUIRED.

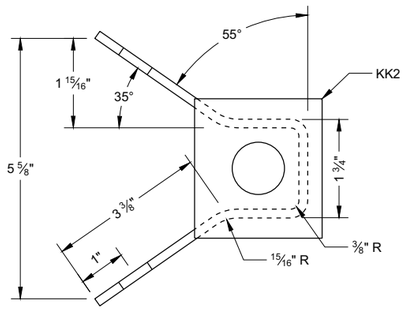




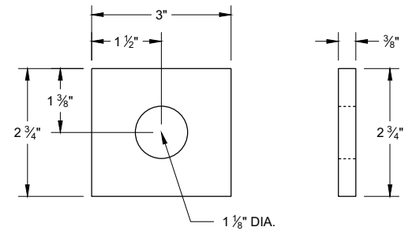


SECTION A - A





ANCHOR BRACKET (KK1, KK2)



ANCHOR BRACKET BEARING PLATE (KK2)

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SDD 14B53 - 01d

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
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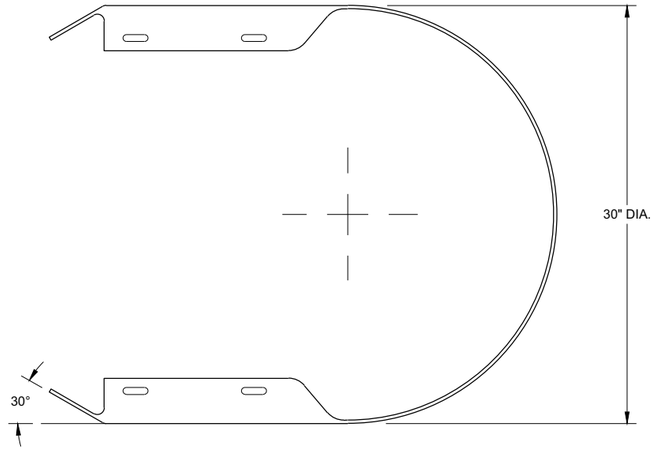
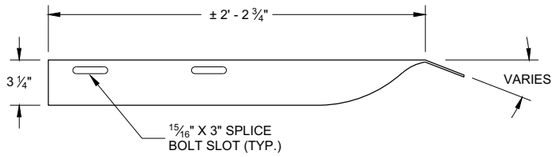
GENERAL NOTES

(400) CROSS SECTION OF PART IS TO FIT OVER AA1 .

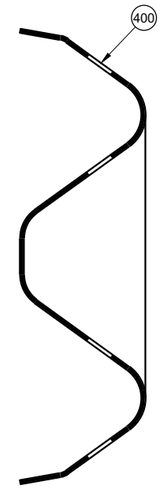
(401) CROSS SECTION OF PART IS TO FIT OVER OR UNDER AA1 .



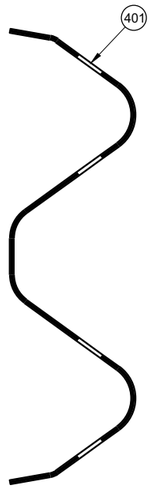
TOP VIEW



TOP VIEW



SECTION B -B



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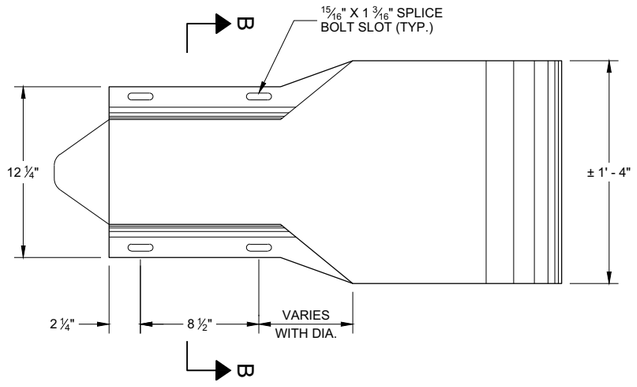
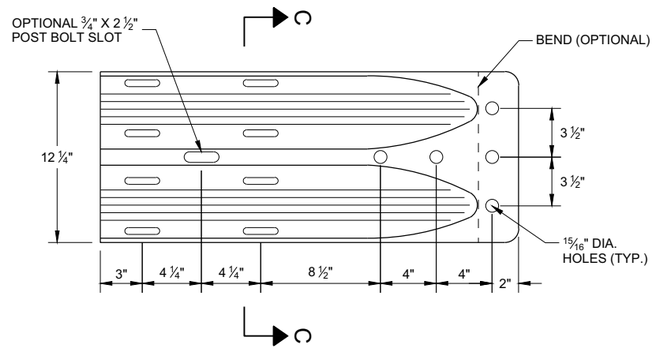


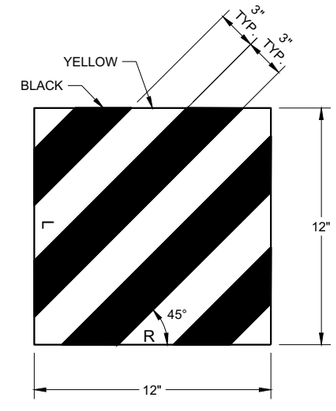
PROFILE VIEW

W BEAM
END SECTION BUFFER (AA2)



PROFILE VIEW

W BEAM
TERMINAL CONNECTOR (BB1)



REFLECTIVE SHEETING (UU1, UU2)

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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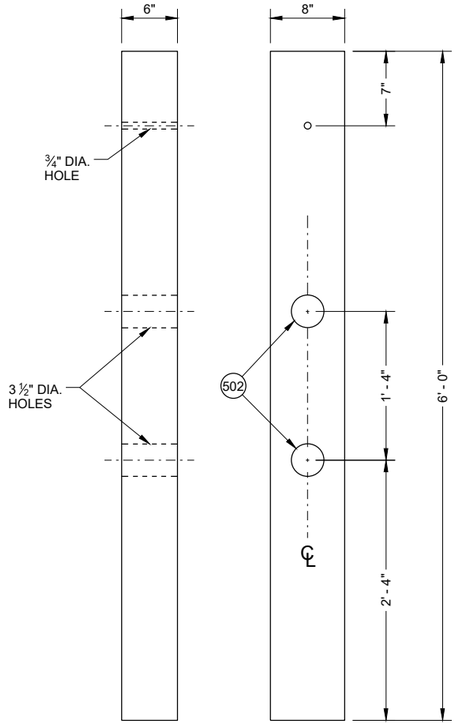
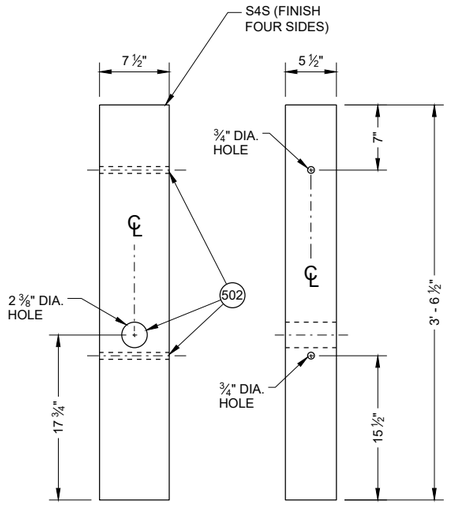
SDD 14B53 - 01e



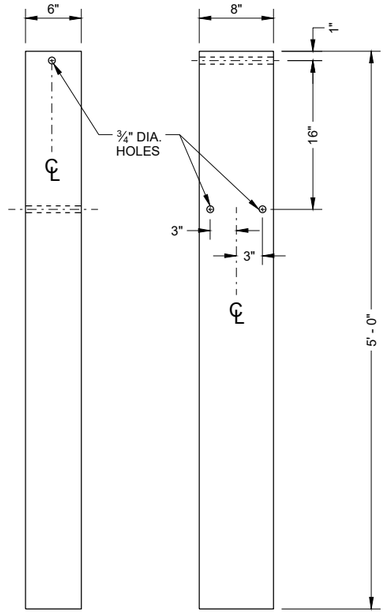
FRONT VIEW SIDE VIEW

CONTROLLED RELEASE POST (CRT) (DD2)



FRONT VIEW SIDE VIEW

WOOD BREAKAWAY POST (FF1)



FRONT VIEW SIDE VIEW

FOUNDATION TUBE (QQ1) 500

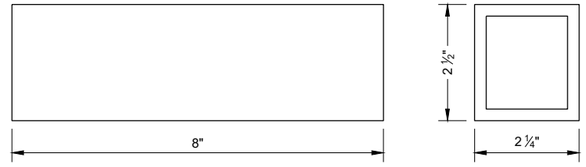
GENERAL NOTES

500 SEE DETAIL "D" FOR LOCATION AND ATTACHMENT OF SS1.

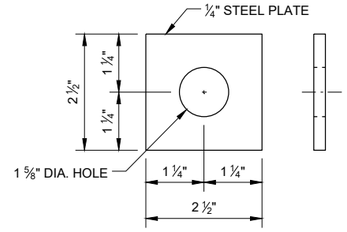
501 FOR MM1a THREADED STUD ONLY REQUIRED ON ONE END. SWAGED FITTING REQUIRED.

502 LOCATE HOLES ON THE CENTERLINE OF THE SIDE OF THE POST.

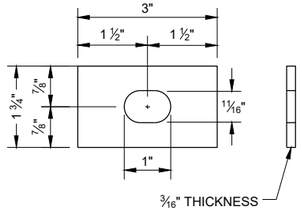
503 MM1a MAY HAVE ONE THREADED STUD 4 INCHES LONG. SEE NOTE 109.



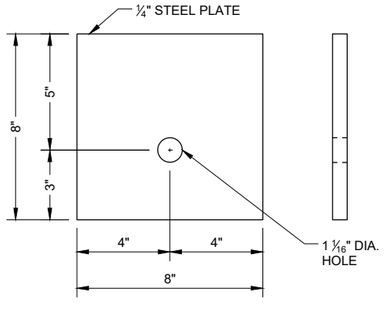
FOUNDATION TUBE - ANCHOR CABLE TUBE (QQ2)



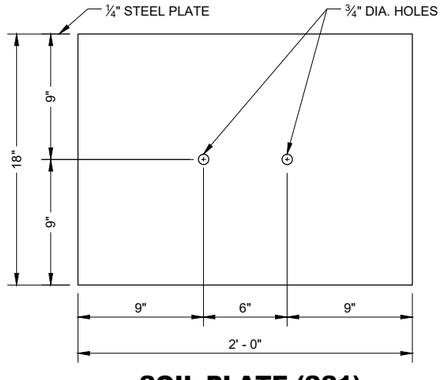
ANCHOR CABLE TUBE END PLATE (QQ3)



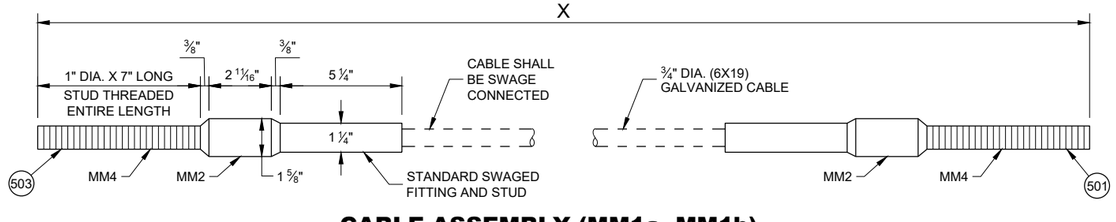
RECTANGULAR PLATE WASHER (CC1)



BEARING PLATE (PP1)



SOIL PLATE (SS1)



CABLE ASSEMBLY (MM1a, MM1b)

"X" LENGTH

MM1b	9' - 0"
MM1b	6' - 8"

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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SDD 14B53 - 01f

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
A1	BEAM GUARD RAIL	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
A2	BEAM GUARD RAIL - SHOP BENT	INDICATE ON BACK OF RAIL THE RADIUS THAT RAIL WAS BENT TO. SHOP BEND RADIUS IS TO THE NEAREST FOOT. FOLLOW AASHTO M180 ON HOW TO MARK RADIUS INFORMATION.	
		AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
B1	BLOCK - WOOD	WISDOT SPEC. 614	SEE SDD 14B42
C1	NAIL	ASTM A153 HOT DIP CLASS D	
		ASTM F1667 TYPE 1 STYLE 12 (16 DOUBLE HEAD)	
D1	POST-STRONG POST-WOOD	WISDOT SPEC. 614	SEE SDD 14B42
D2	POST-CRT-WOOD	WISDOT SPEC. 614	
E1	POST BOLT	ASTM A307 GRADE A OR SAE J429 GRADE 2	5/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		AASHTO M180	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	
E2	POST BOLT - WASHER	ASTM F436 TYPE 1 (HARDEN TYPICALLY USED WITH STEEL) OR ASTM F844 (UNHARDENED TYPICALLY WITH WOOD)	5/8" DIA.
		GALV. AASHTO M111 / ASTM A 123 OR GALV. HOT DIP. TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
E3	POST BOLT - NUT	AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	5/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		ASTM A563 GRADE A HEAVY HEX HEAD	
F1	SPLICE BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	5/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		ASTM A307 GRADE A OR SAE J429 GRADE 2	
		UNC	
		AASHTO M180	

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
F2	SPLICE BOLT - NUT	ASTM A563 GRADE A	5/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		UNC	
G1	LAG SCREW	ASTM A308 GRADE A ASTM A153 CLASS D	1/2" DIA. 6" LONG
H1	DELINEATOR - BEAM GUARD		SEE SDD 14B42 FOR MORE INFORMATION
H2	DELINEATION - SHEETING	YELLOW OR WHITE	
		WISDOT SPEC 637 TYPE SH	
		APPROVED PRODUCT LIST	
J1	FOUNDATION BACKFILL	STANDARD SPEC. 614	
AA1	BEAM GUARD RAIL - PUNCHED	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
AA2	BEAM GUARD RAIL - END SECTION BUFFER	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
BB1	BEAM GUARD RAIL - TERMINAL CONNECTOR MODIFIED	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
CC1	SHORT RADIUS - SQUARE WASHER	AASHTO M180	
		GALV. AASHTO M111 / ASTM A123	
EE1	NAIL	ASTM A153 HOT DIP CLASS D	
		ASTM F1667 TYPE 1 STYLE 12 (16 DOUBLE HEADED)	
FF1	POST - BCT - WOOD	S4S FINISH ON 4 SIDES	
		WISDOT SPEC. 614	
GG1	POST BOLT	ASTM A307 GRADE A OR SAE J429 GRADE 2	3/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		AASHTO M180	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
GG2	POST BOLT - WASHER	ASTM F436 TYPE 1 (HARDEN TYPICALLY USED WITH STEEL) OR ASTM F844 (UNHARDENED TYPICALLY WITH WOOD)	3/8" DIA.
		GALV. AASHTO M111 / ASTM A 123 OR GALV. HOT DIP. TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329	

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTA

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SDD 14B53 - 01g

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
GG3	POST BOLT - NUT	ASTM A563 GRADE A	⅜" DIA. SEE 14B42 FOR GEOMETRY
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		ASTM A563 GRADE A HEAVY HEX HEAD	
HH1	SPLICE BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	⅜" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		ASTM A307 GRADE A OR SAE J429 GRADE 2	
		UNC	
		AASHTO M180 HEAD GEOMETRY	
HH2	SPLICE BOLT - NUT	ASTM A563 GRADE A	⅜" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		UNC	
JJ1	PIPE - STEEL	ASTM A53 GALVANIZED GRADE B SCHEDULE 40	10" O.D.
JJ2	TOP PLATE	ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	DIMENSIONS ⅜" X 4" X 1' - 0"
		GALV. AASHTO M111 / ASTM A123	
KK1	ANCHOR BRACKET	ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
KK2	ANCHOR BRACKET - BEARING PLATE	ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
LL1	ANCHOR BRACKET - BOLT	ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	⅝" DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
LL2	ANCHOR BRACKET - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	⅝" DIA.
		GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
LL3	ANCHOR BRACKET - NUT	ASTM A563 GRADE A	⅝" DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		UNC	
MM1a	ANCHOR CABLE	AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIc CLASS C ZINC COATED	
MM1b	ANCHOR CABLE	AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIc CLASS C ZINC COATED	
MM2	ANCHOR CABLE - SWAGE FITTING	ASTM A576 GRADE 1035	
		SWAGE FITTINGS ARE TO BE FACTORY SWEDGED. WITH A BREAKING STRENGTH 40,000 LBS.	
		GALV. AASHTO M111 / ASTM A123	
		ASME B30.26 FORGED, CAST, OR DIE STAMPED WITH THE FOLLOWING INTO CONNECTION: NAME OF MANUFACTURER OR TRADEMARK OF CONNECTION'S MANUFACTURER, SIZE OR RATED LOAD, GRADE.	
MM3	WIRE ROPE CABLE CLAMPS	FF-C-450D TYPE 1 CLASS 1	¾"
		ASTM A153 HOT DIP CLASS D	
MM4	ANCHOR CABLE - SWAGE FITTING - STUD	ASTM F3125 GRADE A325 TYPE 1 OR SAE GRADE 5 OR ASTM A449 TYPE 1 HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	
NN1	ANCHOR CABLE - NUT	ASTM A563 GRADE A	1" DIA.
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		UNC	
NN2	ANCHOR CABLE - NUT - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	1" DIA.
		GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
PP1	BEARING PLATE AT POST	ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
PP2	PIPE - STEEL	ASTM A53 GALVANIZED GRADE B SCHEDULE 40	2" DIA. x 6" LONG
QQ1	FOUNDATION TUBE	ASTM A500 GRADE B	8" X 6" X 3/16"
		GALV. AASHTO M111 / ASTM A123	
QQ2	SHORT RADIUS - FOUNDATION TUBE - ANCHOR CABLE - TUBE	ASTM A500 GRADE B	DIMENSIONS 2 1/2" X 2 1/4" X 1/4" X 8"
		GALV. AASHTO M111 / ASTM A123	
QQ3	SHORT RADIUS - SOIL TUBE - ANCHOR CABLE - TUBE - END PLATE	ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	DIMENSIONS 2 1/2" X 2 1/2" X 1/4"
		GALV. AASHTO M111 / ASTM A123	
QQ4	GROUND STRUT AND YOKE - BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	5/8 DIA.
		ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	
		UNC	
QQ5	GROUND PLATE AND YOKE - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	5/8 DIA.
		GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
QQ6	GROUND STRUT AND YOKE - NUT	HEAVY HEX	5/8 DIA.
		UNC	
		ASTM A563 GRADE A	
		OVER TAPPED NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
SS1	SOIL PLATE	ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / A123	
TT1	SOIL PLATE - BOLT	ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	5/8 DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	
TT2	SOIL PLATE - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	5/8 DIA.
		GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
TT3	SOIL PLATE - NUT	GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	5/8 DIA.
UU1	OBJECT MARKER - SHEETING	MUTCD / WISDOT OBJECT MARKER TYPE 3	PATTERN AND COLOR FOR SHEETING. SHEETING TYPE FOR MARKER.
		WISDOT SPEC 637 TYPE F	
		APPROVED PRODUCT LIST	
UU2	OBJECT MARKER - ALUMINUM PLATE	WISDOT SPEC 637 ALUMINUM PLATE	MATERIAL AND THICKNESS OF MATERIALS
UU3	OBJECT MARKER - SCREWS	STAINLESS SELF-TAPPING SCREWS	
VV1	FOUNDATION BACKFILL	WISDOT SPEC 614	

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SDD 14B53 - 01i

SDD 14B53 - 01i

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

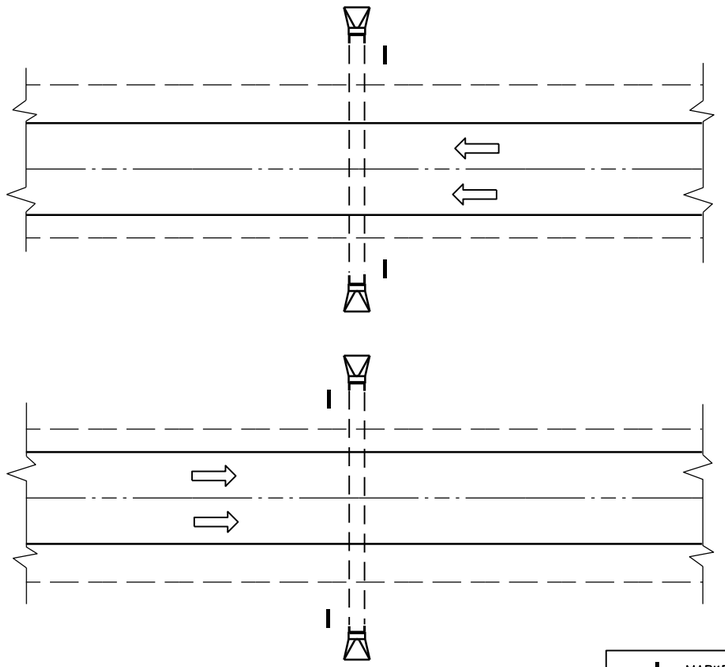
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June 2017
DATE

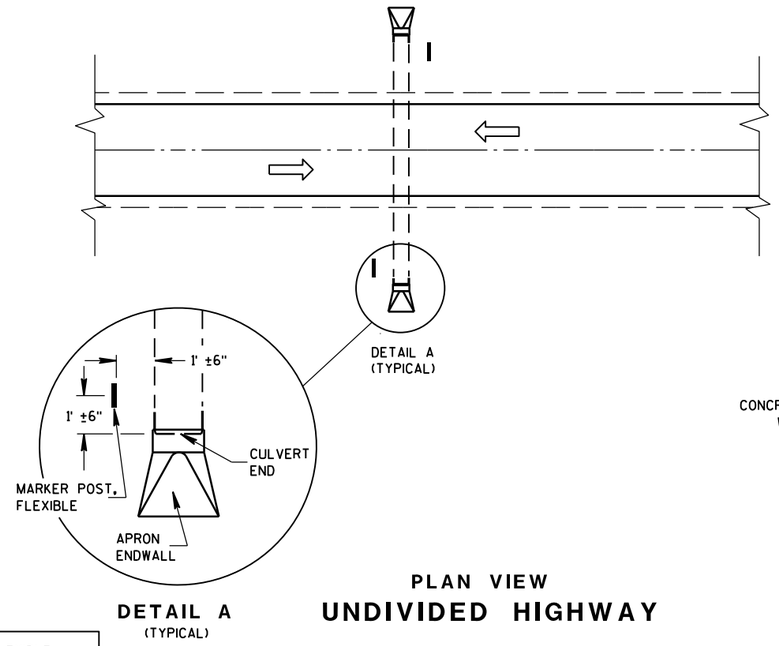
/S/ Rodney Taylor
ROADWAY STANDARDS DEVE ENGINEER

FHWA



PLAN VIEW

DIVIDED HIGHWAY



DETAIL A
(TYPICAL)

PLAN VIEW

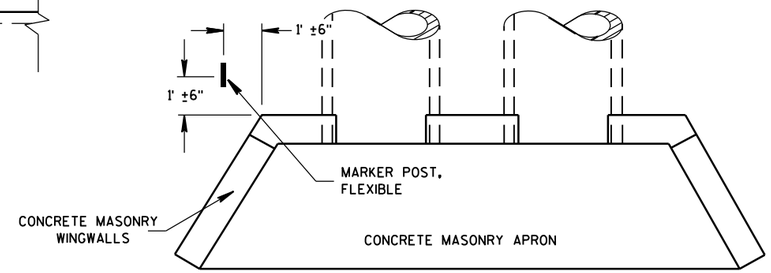
UNDIVIDED HIGHWAY

MARKER POST, FLEXIBLE

DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

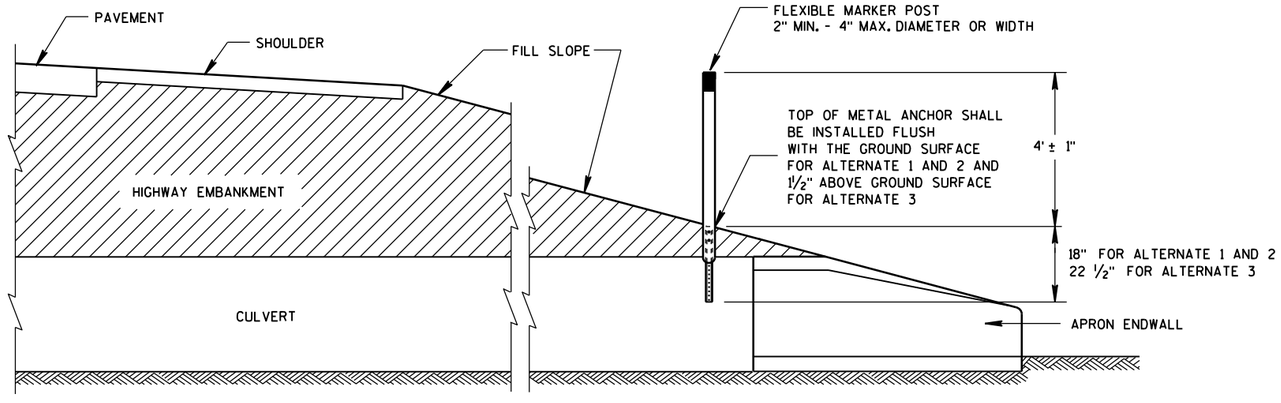
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.



PLAN VIEW

CONCRETE MASONRY ENDWALLS FOR CULVERT PIPE AND PIPE ARCH

FLEXIBLE MARKER POST LOCATION



CROSS SECTION

FLEXIBLE MARKER POST

FLEXIBLE MARKER POST FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

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

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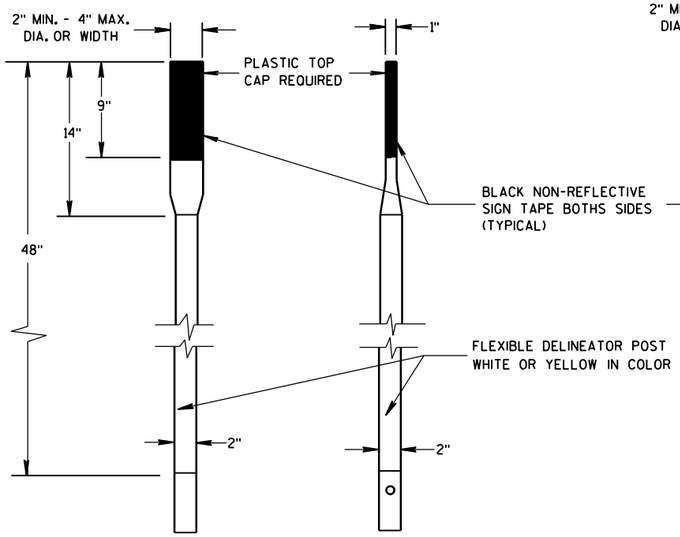
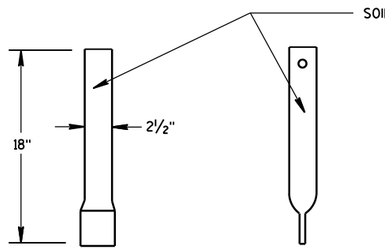
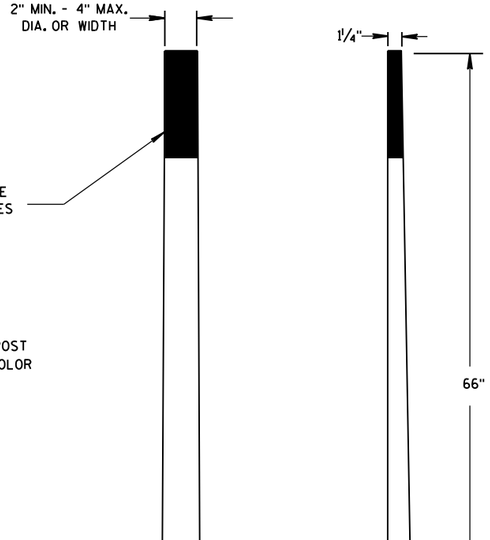
S.D.D. 15 A 3-2a





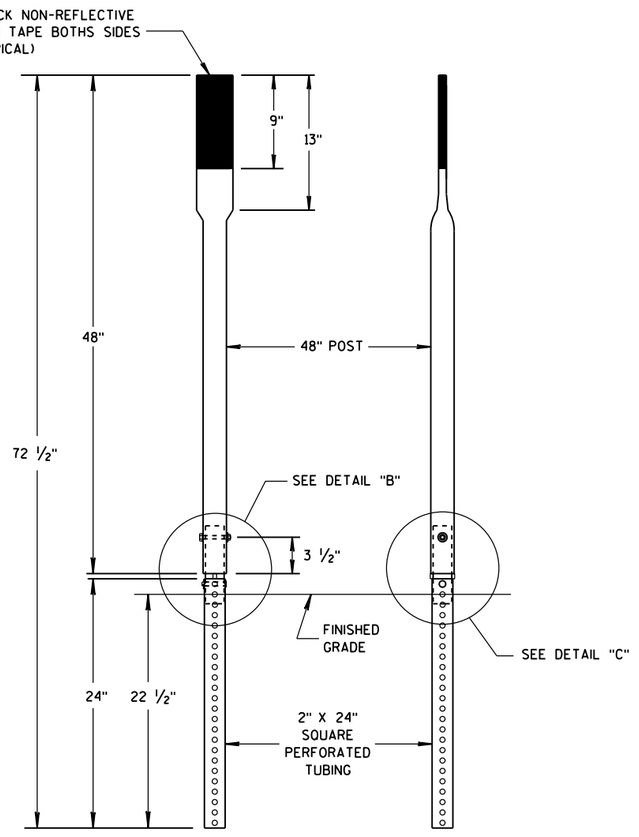
FRONT VIEW SIDE VIEW

ALTERNATE 1



FRONT VIEW SIDE VIEW

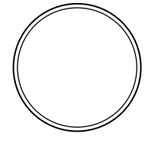
ALTERNATE 2



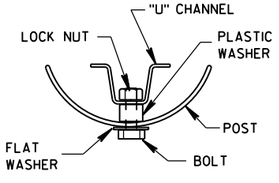
FRONT VIEW SIDE VIEW

ALTERNATE 3

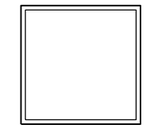
FLEXIBLE MARKER POSTS



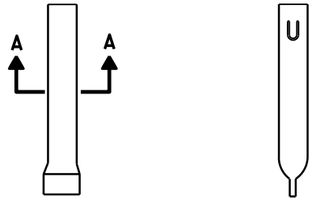
SECTION A-A



SECTION B-B

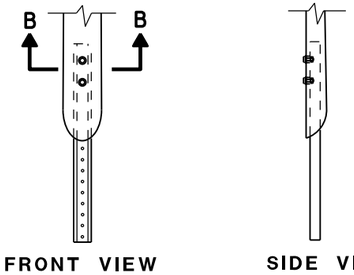


SECTION C-C



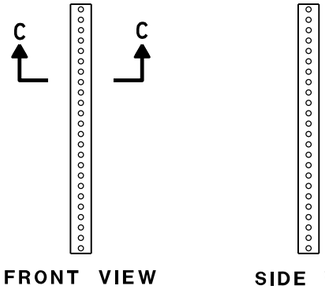
FRONT VIEW SIDE VIEW

ALTERNATE 1



FRONT VIEW SIDE VIEW

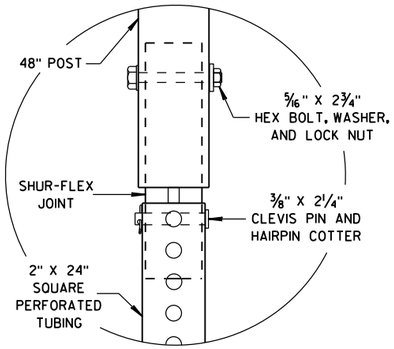
ALTERNATE 2



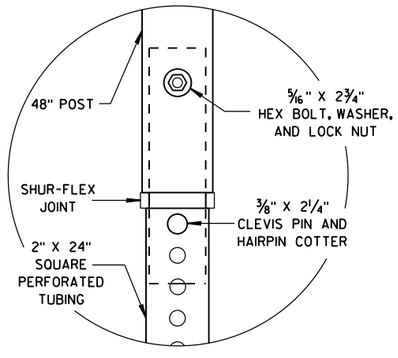
FRONT VIEW SIDE VIEW

ALTERNATE 3

FLEXIBLE MARKER POST ANCHORS



DETAIL B



DETAIL C

FLEXIBLE MARKER POST
FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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

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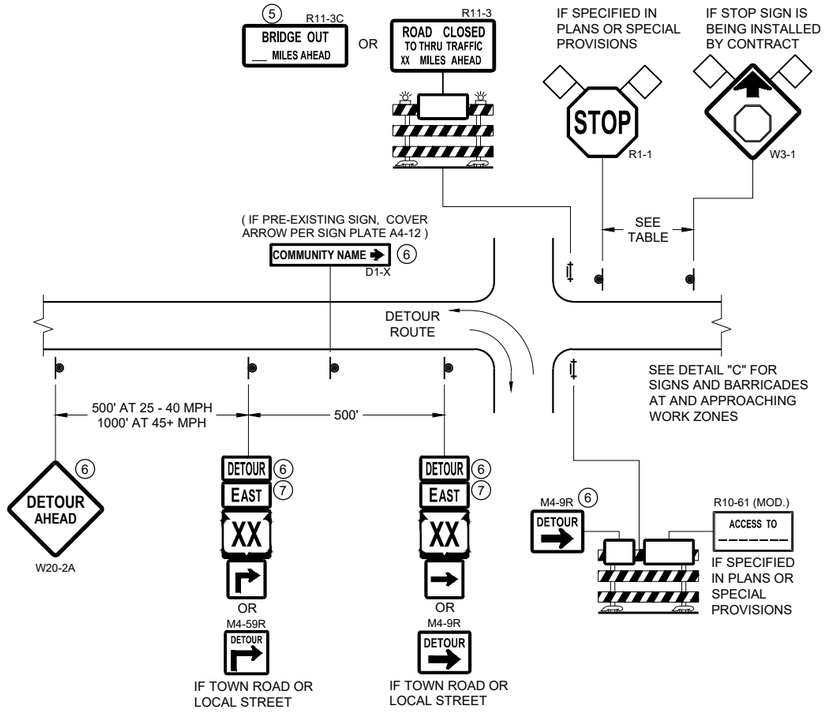
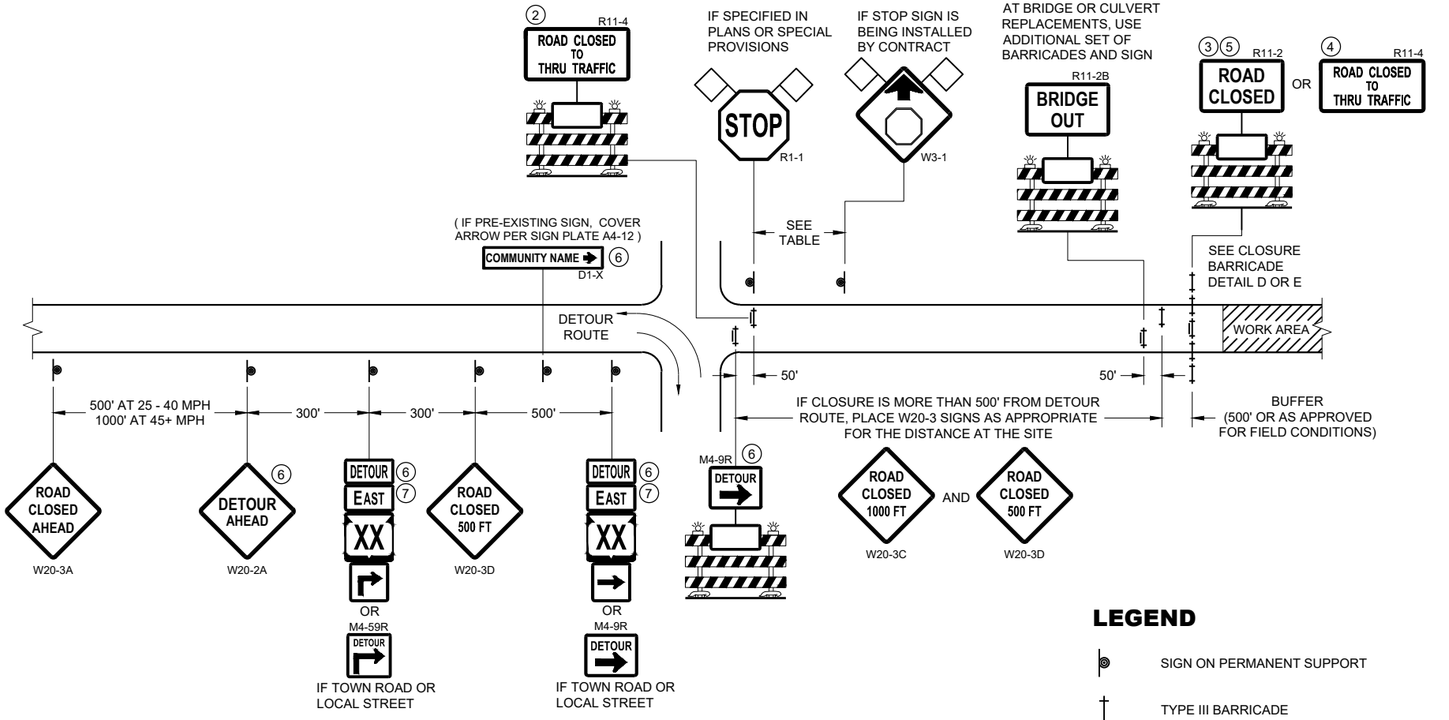
S.D.D. 15 A 3-2b



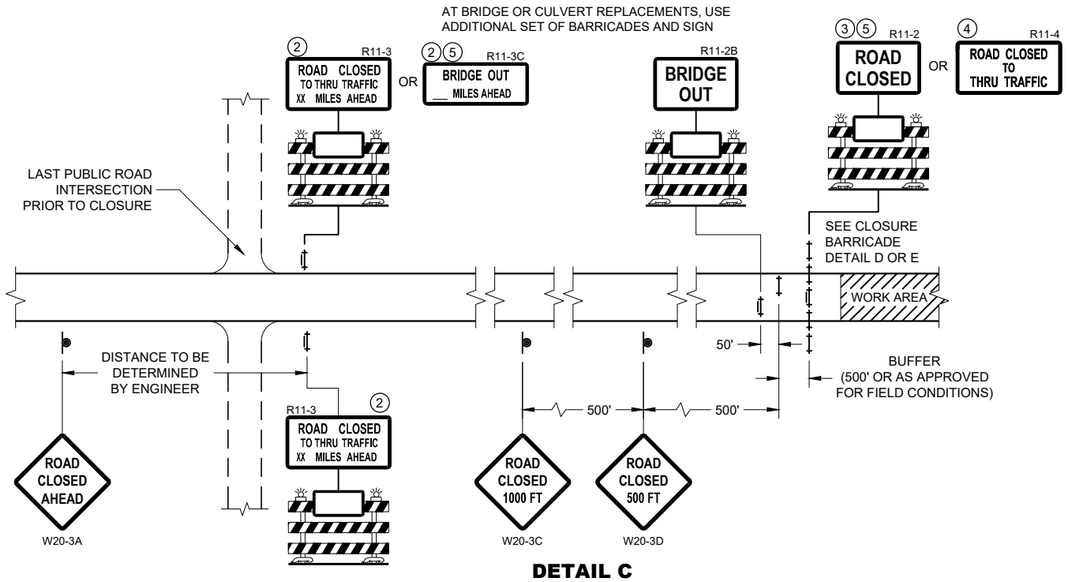
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

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)



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

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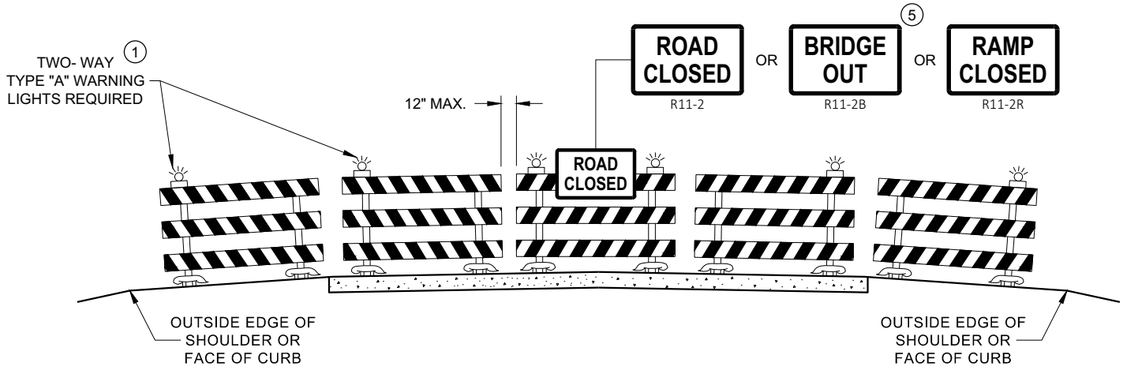
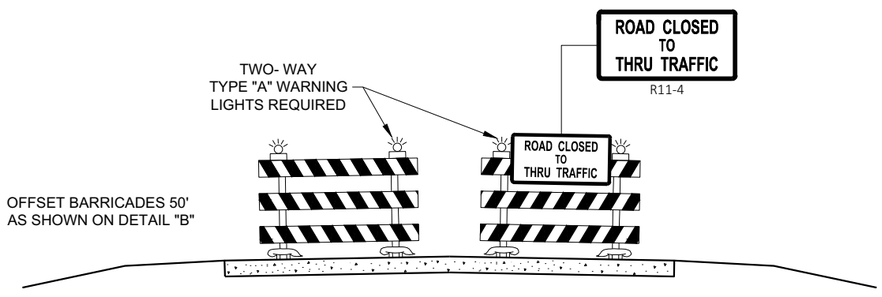
SDD 15C02 - 08a



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
February 2020
DATE
/S/ Andrew Heidtke
WORK ZONE ENGINEE
FHWA

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SDD 15C02 - 08b

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SDD 15C02 - 08b

THIS DRAWING PROVIDES GENERAL GUIDANCE ON TYPICAL DETOUR SIGN LAYOUT AND SPACING. SEE PROJECT DETOUR SIGNING SHEETS FOR SPECIFIC DETAILS FOR EACH PROJECT.

LEGEND

- SIGN ON PERMANENT SUPPORT
- WORK AREA
- DETOUR — M4 - 8
- EAST — M3 - X
- XX — M1 - 4 OR XX — M1 - 6 OR COUNTY X — M1 - 5A
- M05 - 1 OR M06 - 1 OR M06 - 1

GENERAL NOTES

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

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. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. MODIFY EXISTING SIGNS WHERE POSSIBLE.

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

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

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

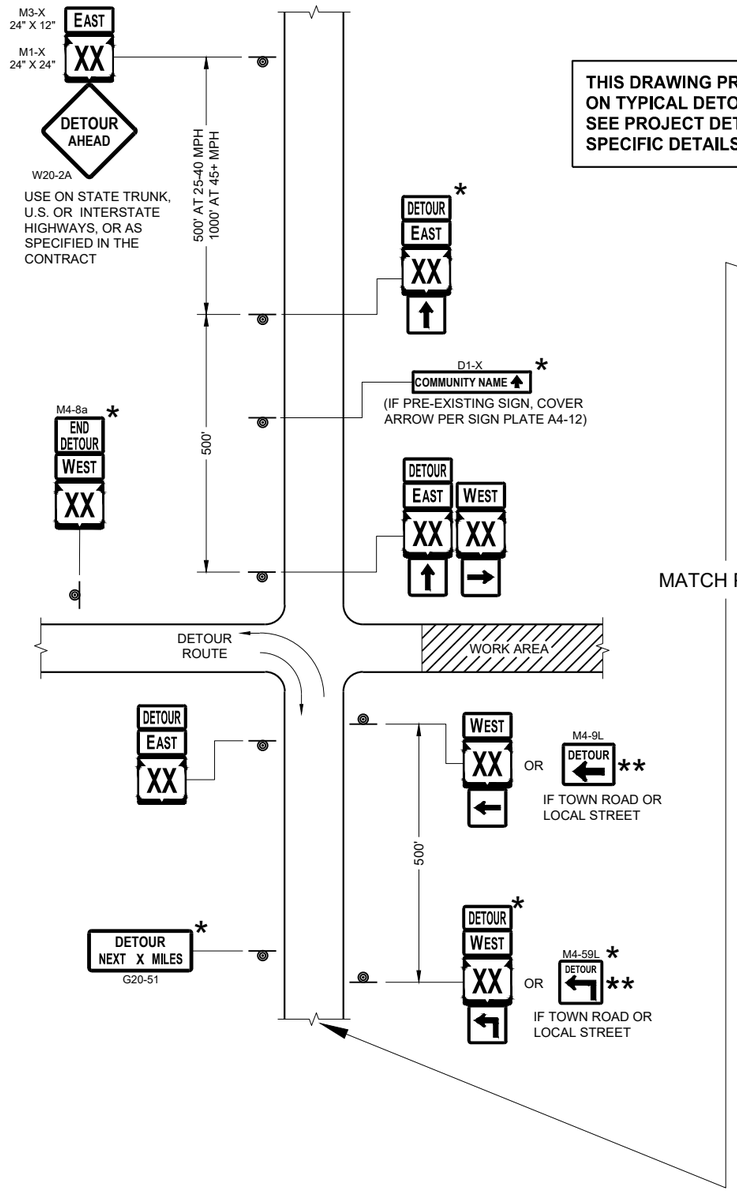
"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

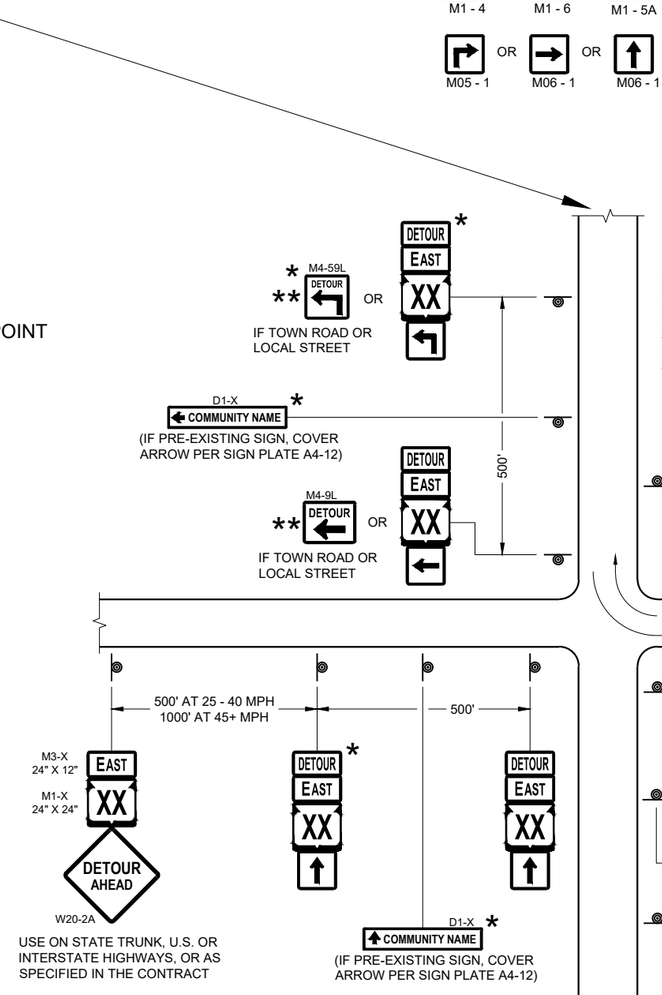
SIGN SIZES SHALL BE AS FOLLOWS:

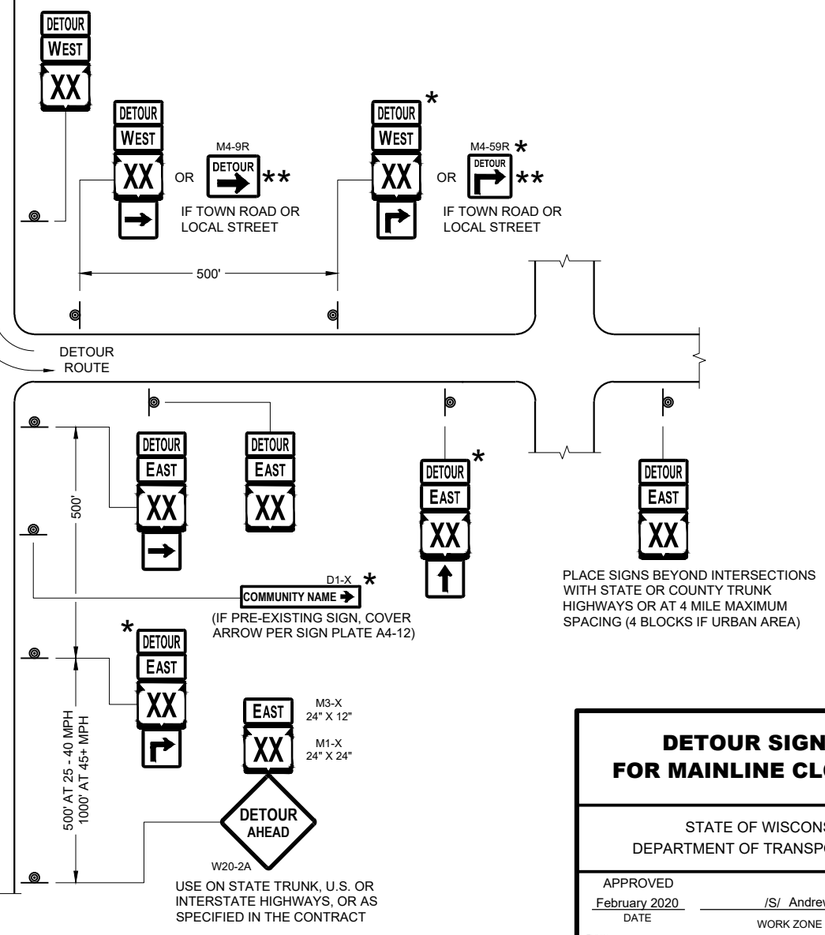
- M3-X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4-8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1-4, M1-5A AND M1-6 SHALL BE 24" X 24" (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS)
- M05-1 AND M06-1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- M4-9 AND M4-59 SHALL BE 30" X 24"
- M4-8a SHALL BE 24" X 18"
- G20-51 SHALL BE 60" X 24"
- W20-2A SHALL BE 48" X 48"
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

* OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.

** FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.







SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS AND DETAIL A OR B ON SDD SHEET 15C02 - SHEET "a"

DETAIL F
DETOUR SIGNING

DETOUR SIGNING FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEER

FHWA

SDD 15C02 - 08c

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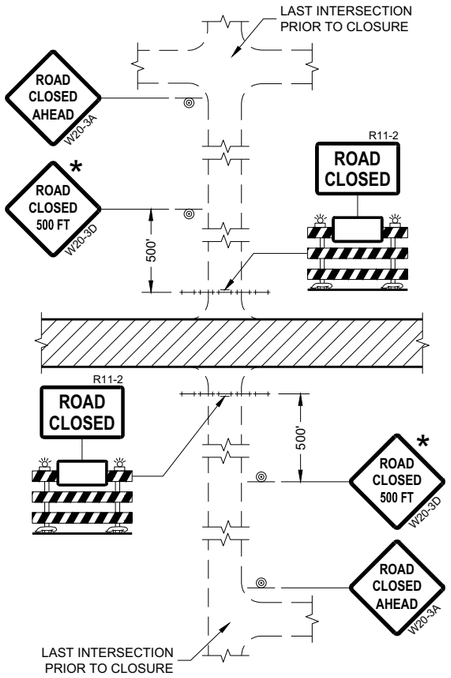
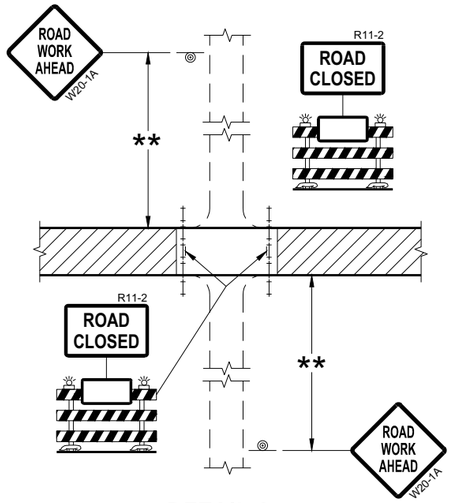
SDD 15C02 - 08c



DETAIL 1
(NO ACCESS TO PROJECT)



DETAIL 2
(PUBLIC CROSS-TRAFFIC MAINTAINED.
NO ACCESS TO PROJECT)

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 (500 FEET DESIRABLE) TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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

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

SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN 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.

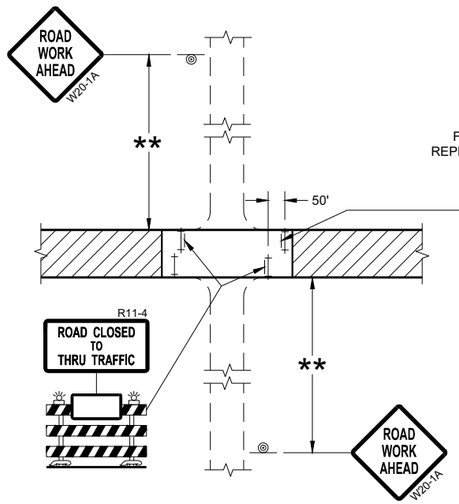
TYPE "A" LOW-INTENSITY FLASHING WARNING LIGHTS SHALL BE VISIBLE ON BOTH SIDES OF THE BARRICADE.

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

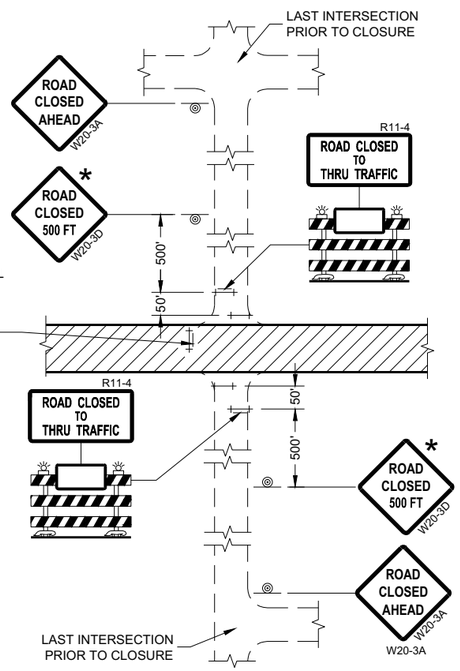
ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
R11-2 SHALL BE 48" X 30".
R11-4 AND R11-3 SHALL BE 60" X 30".

* OMIT THE "ROAD CLOSED 500 FT." SIGN IF THE LAST INTERSECTION IS 500 FEET OR LESS FROM THE WORK ZONE.

** 500' MAX. OR AT LAST INTERSECTION, WHICHEVER IS CLOSEST.



DETAIL 3
(PUBLIC CROSS-TRAFFIC MAINTAINED.
CONTRACTOR, LOCAL BUSINESS AND
RESIDENT ACCESS TO PROJECT)



DETAIL 4
(CONTRACTOR, LOCAL BUSINESS AND
RESIDENT ACCESS TO PROJECT)

LEGEND

- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA

BARRICADES AND SIGNS FOR SIDEROAD CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
July 2018
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA

6

SDD 15C03 - 05

SDD 15C03 - 05

GENERAL NOTES

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

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

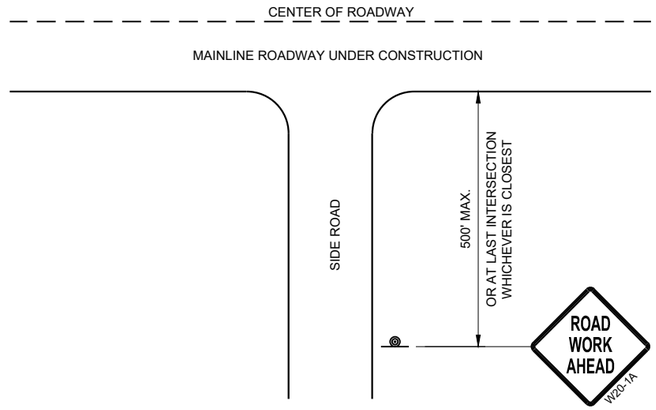
ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

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

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

* OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS

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



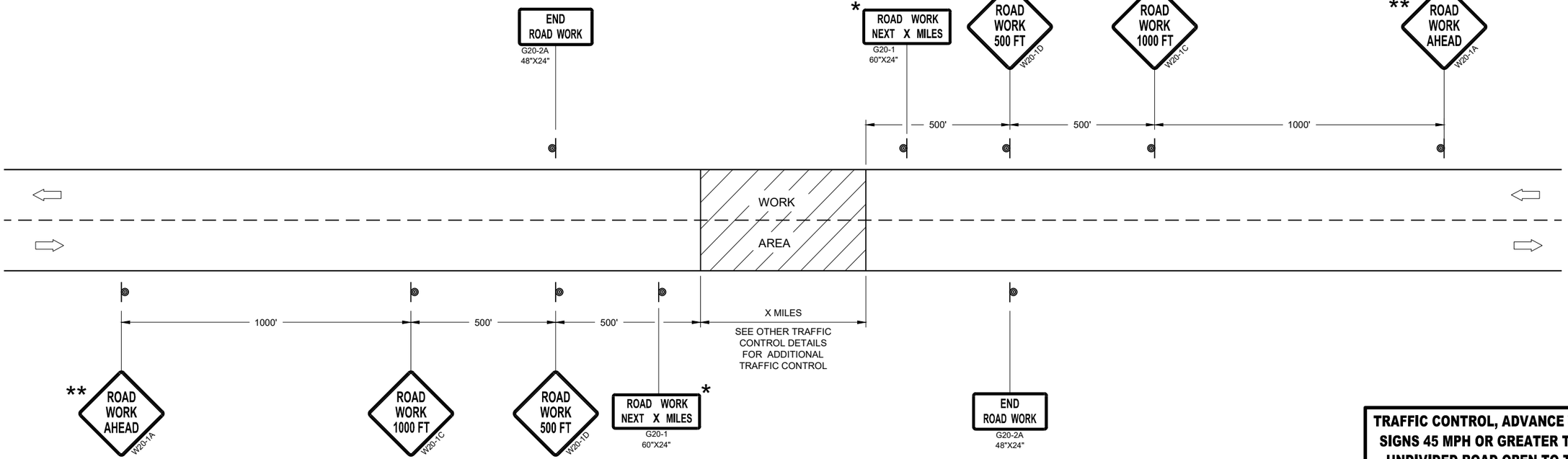
TYPICAL SIDE ROAD APPROACH WARNING SIGN DETAIL

LEGEND

SIGN ON PERMANENT SUPPORT

DIRECTION OF TRAFFIC

WORK AREA



TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
July 2018
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA

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SDD 15C04 - 05

GENERAL NOTES

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

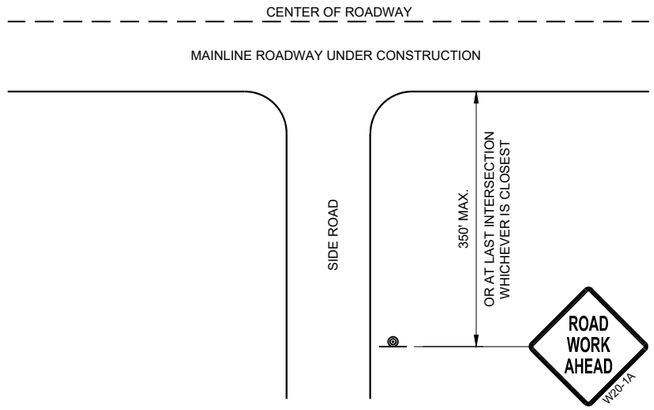
THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS, 36"X36" SIGNS MAY BE USED INSTEAD OF 48" X 48" SIGNS.

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

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

* THE THIRD W20-1 SIGN IS REQUIRED ONLY IF THERE IS AN INTERSECTION BETWEEN THE "ROAD WORK 500 FEET" SIGN AND THE WORK ZONE. ADJUST THE PLACEMENT OF THIS SIGN BASED ON INTERSECTION LOCATION AND OTHER FIELD CONDITIONS.



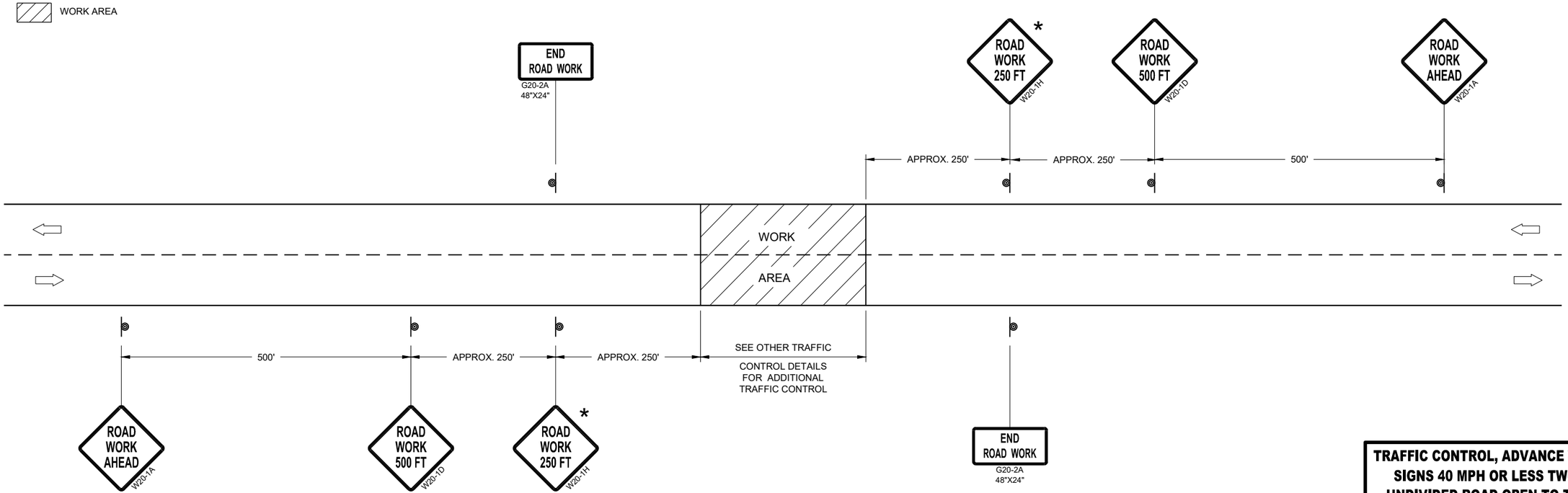
TYPICAL SIDE ROAD APPROACH WARNING SIGN DETAIL

LEGEND

SIGN ON PERMANENT SUPPORT

DIRECTION OF TRAFFIC

WORK AREA



TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40MPH OR LESS

TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 MPH OR LESS TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
July 2018
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA

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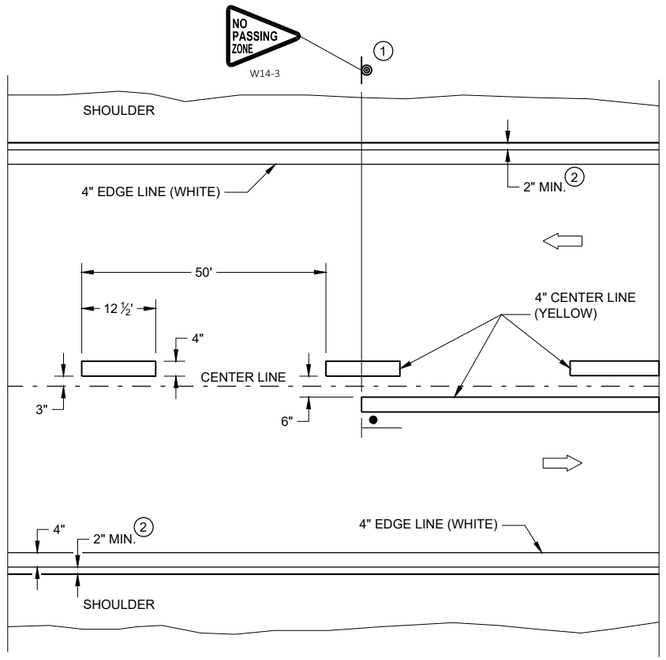
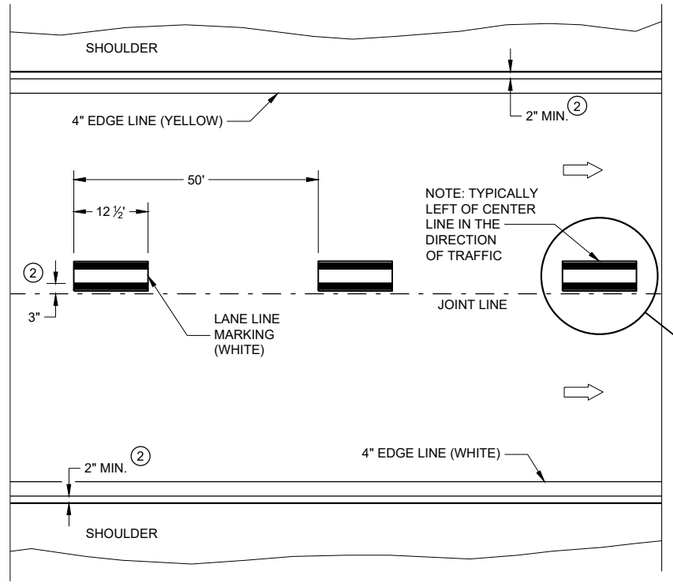
SDD 15C05 - 05

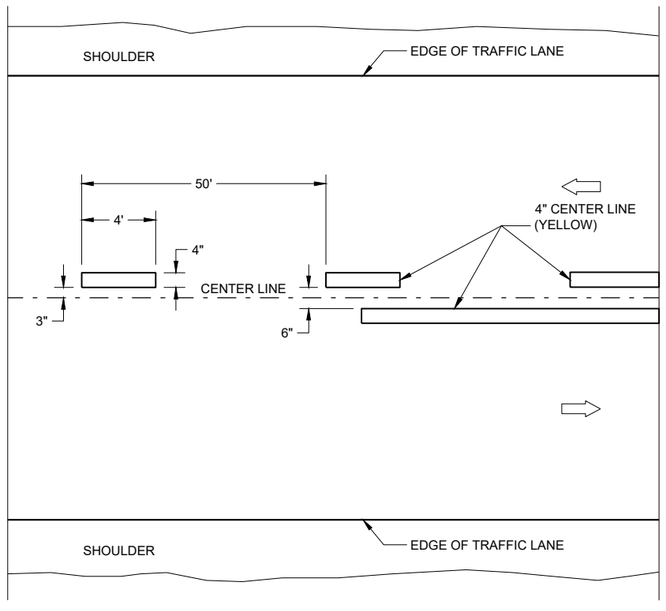


TWO WAY TRAFFIC

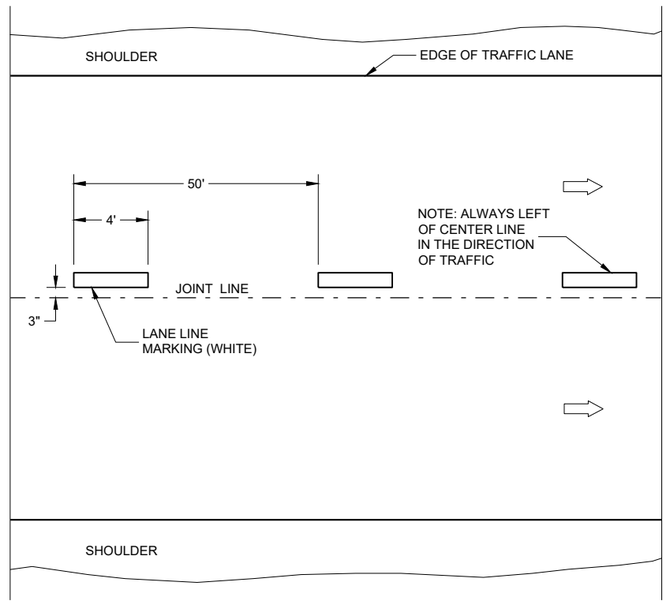


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

GENERAL NOTES

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

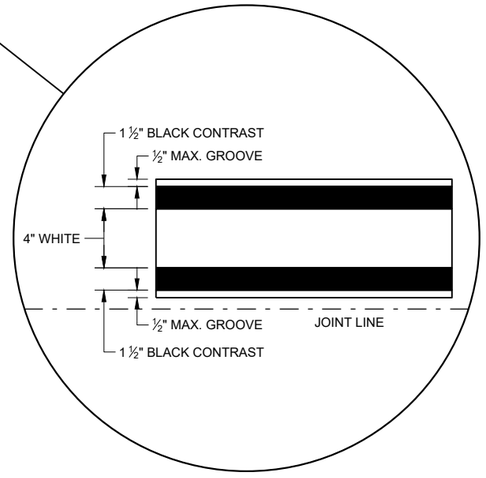
1. LOCATE THE NO PASSING ZONE W14-3 SIGN WITHIN 50 FEET OF THE "T" MARKING
2. MEASURE FROM EDGE OF MARKING TO JOINT LINE. THIS DOES NOT INCLUDE SPACE NEEDED FOR GROOVING OPERATIONS.

LEGEND

"T" MARKING

SIGN ON PERMANENT SUPPORT

DIRECTION OF TRAFFIC



LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

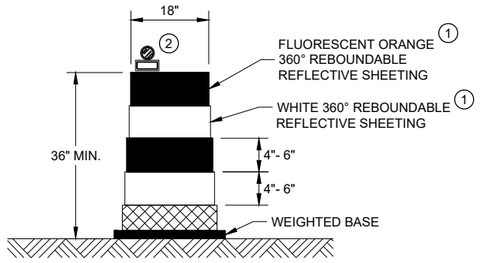
FHWA

SDD 15C08 - 20a

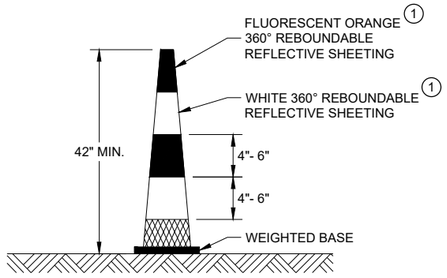
SDD 15C08 - 20a

GENERAL NOTES

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

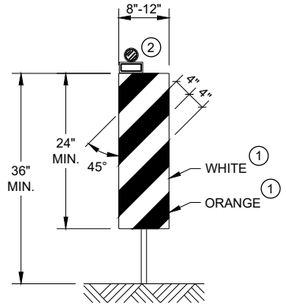


DRUM



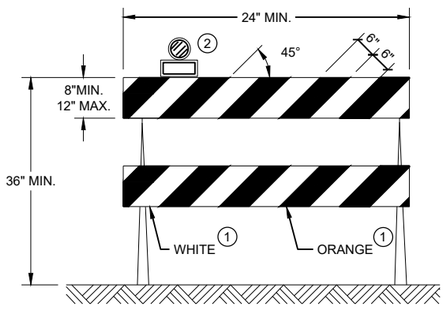
42" CONE

DO NOT USE IN TAPERS
½ SPACING OF DRUMS



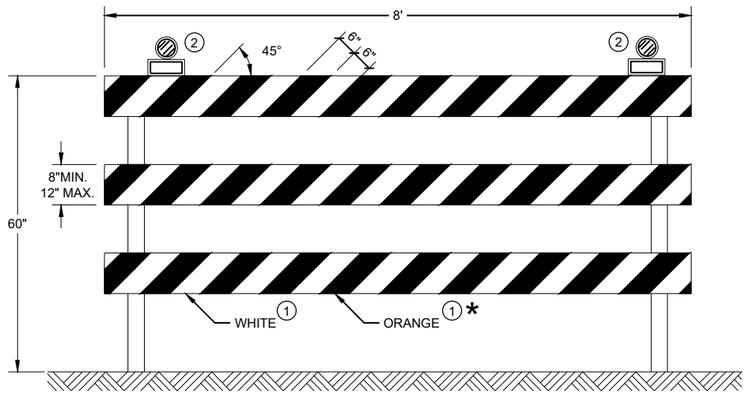
VERTICAL PANEL

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



TYPE II BARRICADE

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



TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2021
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA

6

SDD 15C11 - 09b

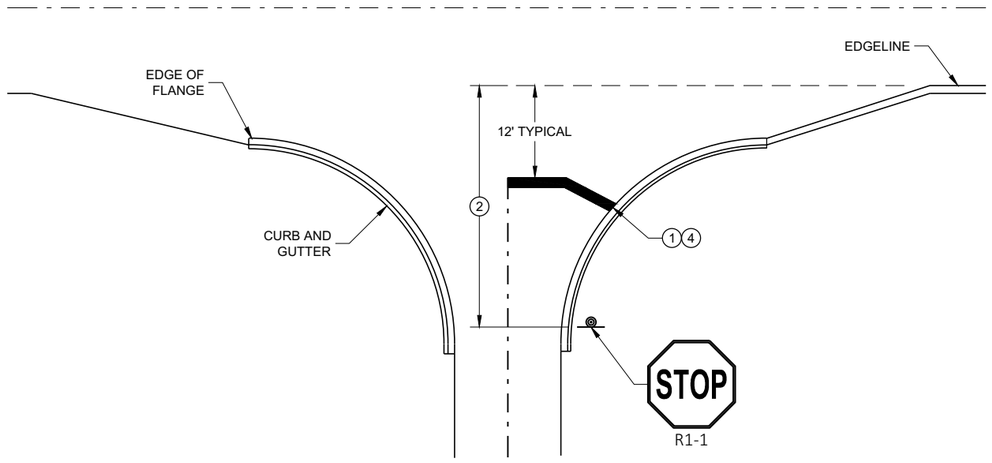
6

SDD 15C11 - 09b

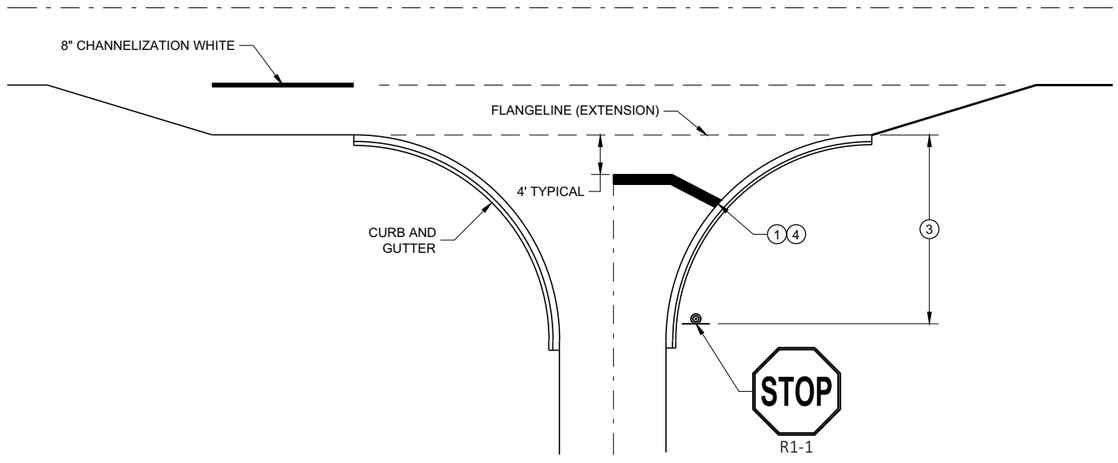
GENERAL NOTES

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

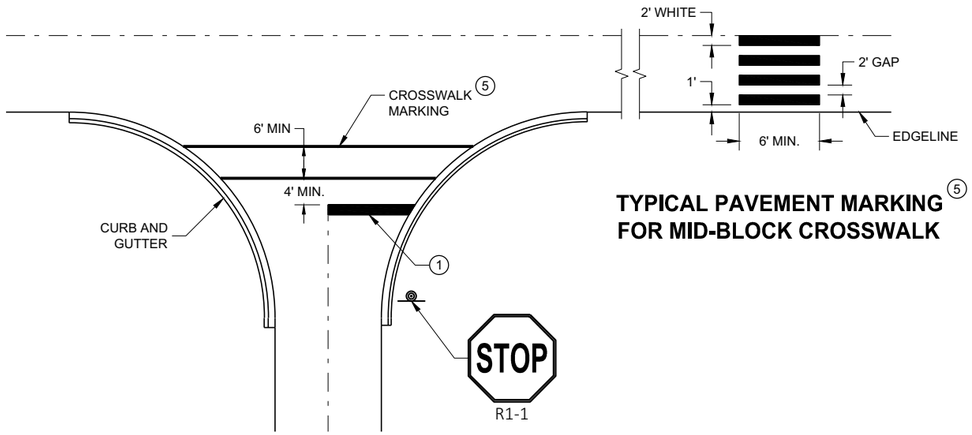
1. 18-INCH STOP LINES MAY BE DELETED OR ADDED BY THE REGION MARKING ENGINEER BASED ON VISIBILITY AND SIGHT LINES.
2. NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 40 FEET FROM THE EDGELINE.
3. NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 30 FEET FROM THE FLANGELINE EXTENSION.
4. MOVE CLOSER TO THE EDGE OF TRAVEL LINE AS NEEDED FOR VISIBILITY AND SIGHT LINES (NO CLOSER THAN 4 FEET).
5. LADDER BAR CROSSWALKS SHOULD ONLY BE USED FOR MID BLOCK CROSSINGS. USE 2 - 6" TRANSVERSE LINES INSTEAD.



TYPICAL STOP LINE PAVEMENT MARKING WITH CURB AND GUTTER

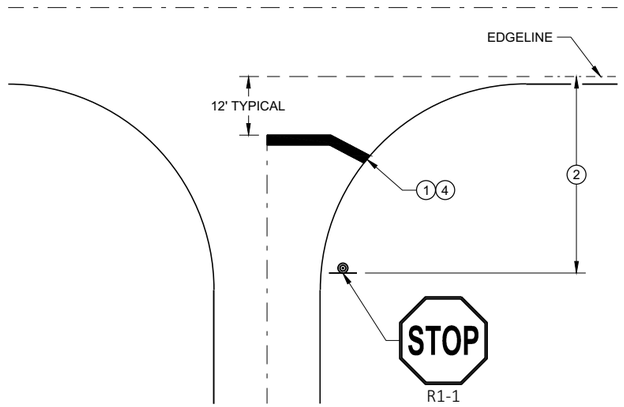


TYPICAL STOP LINE PAVEMENT MARKING FOR SIDEROADS WITH RIGHT TURN LANE



TYPICAL PAVEMENT MARKING FOR MID-BLOCK CROSSWALK 5

TYPICAL STOP LINE PAVEMENT MARKING FOR SIDEROADS WITH CROSSWALK MARKING



TYPICAL STOP LINE PAVEMENT MARKING WITHOUT CURB AND GUTTER

STOP LINE AND CROSSWALK PAVEMENT MARKING

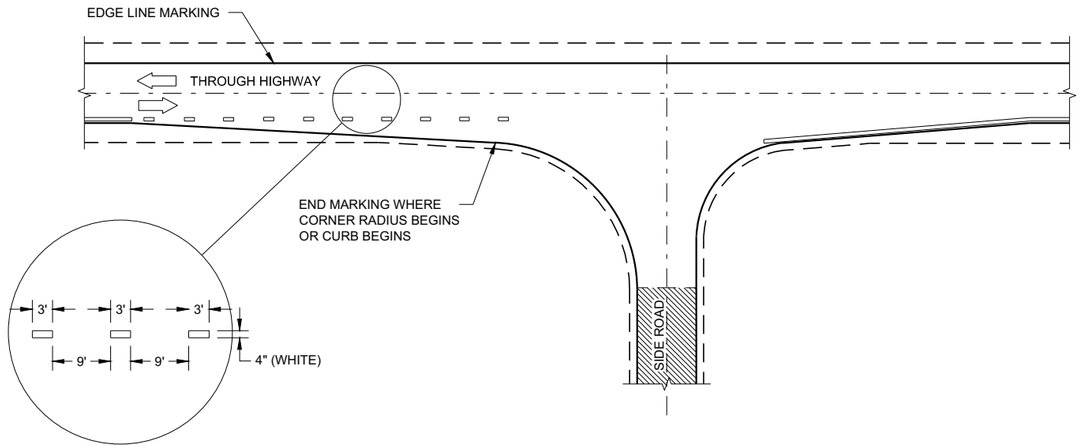
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2019
DATE

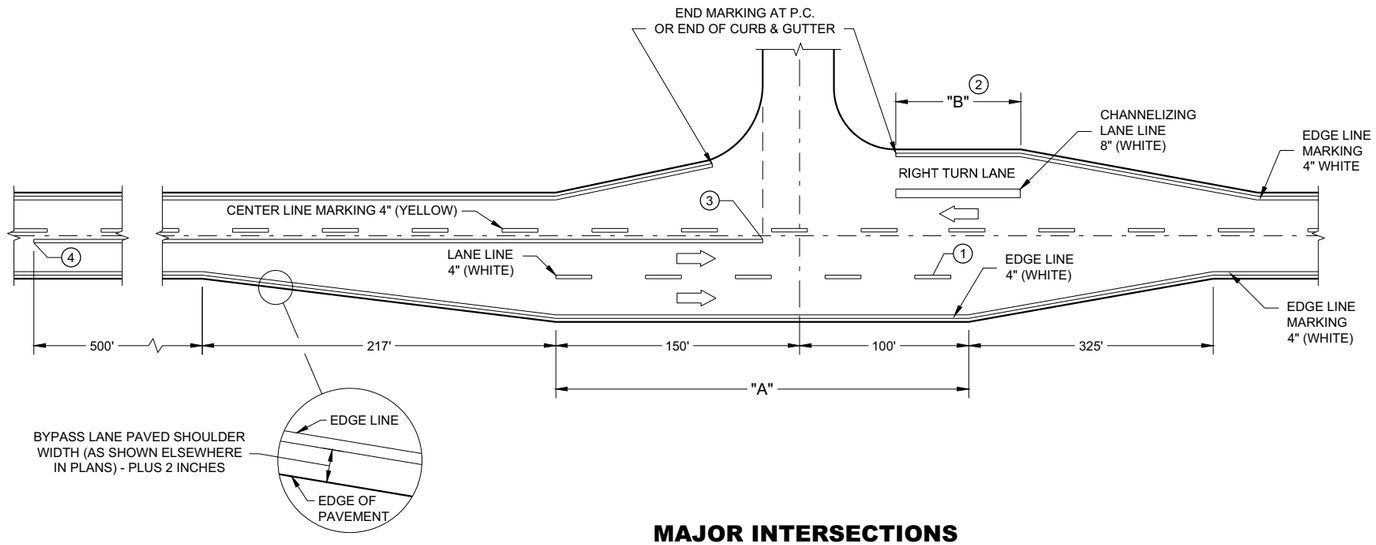
/S/ Matthew Rauch
STATE SIGNING AND MAF ENGINEER

FHWA

6
SDD 15C33 - 04



MINOR INTERSECTION



MAJOR INTERSECTIONS

(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANE)

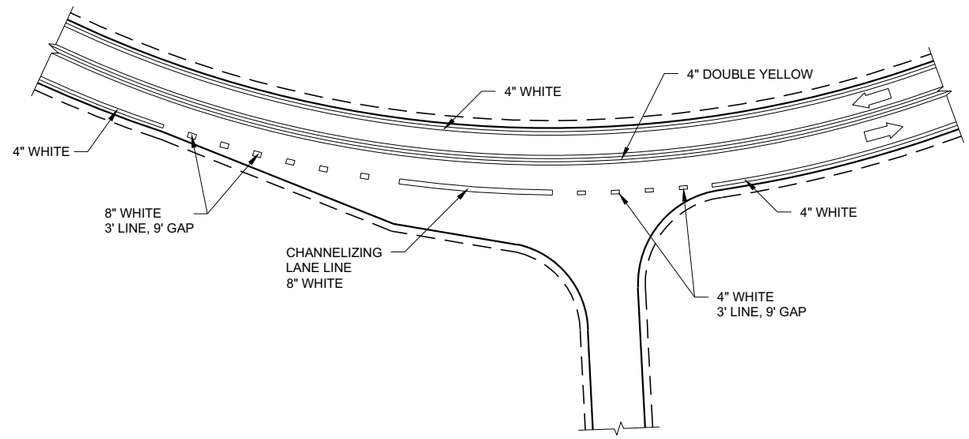
GENERAL NOTES

OMIT EDGE LINES THROUGH INTERSECTIONS. CONTINUE EDGE LINES THROUGH DRIVEWAYS.

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

LEGEND

DIRECTION OF TRAVEL



INTERSECTION ON OUTSIDE OF CURVE

PAVEMENT MARKING (INTERSECTIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

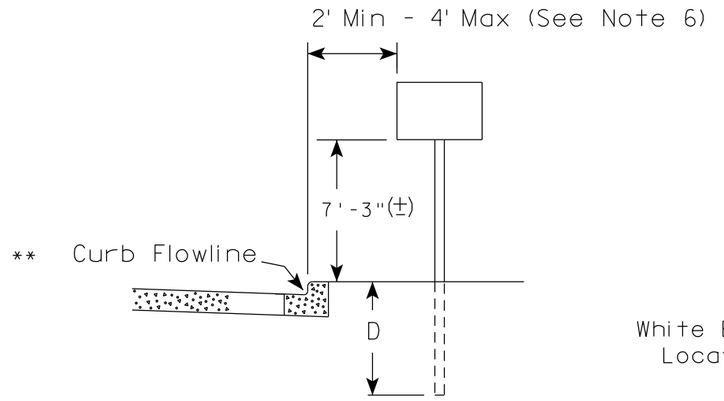
6

SDD 15C35 - 04a

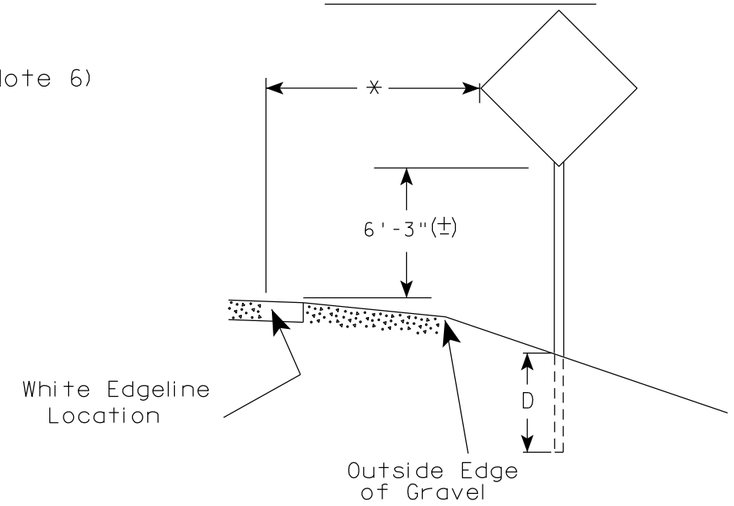
6

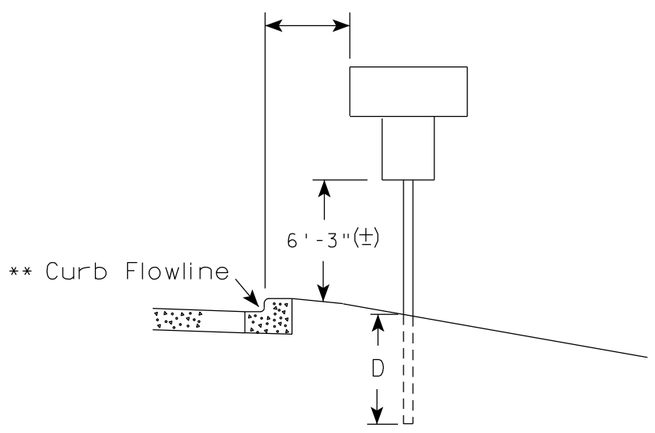
SDD 15C35 - 04a

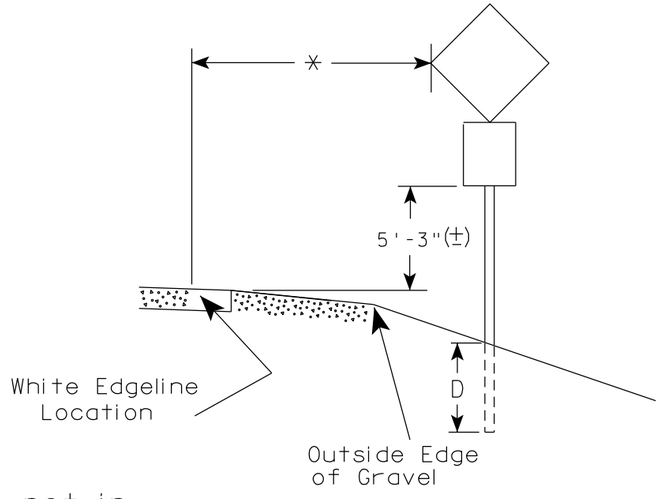
URBAN AREA



RURAL AREA (See Note 2)







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

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

POST EMBEDMENT DEPTH

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

GENERAL NOTES

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

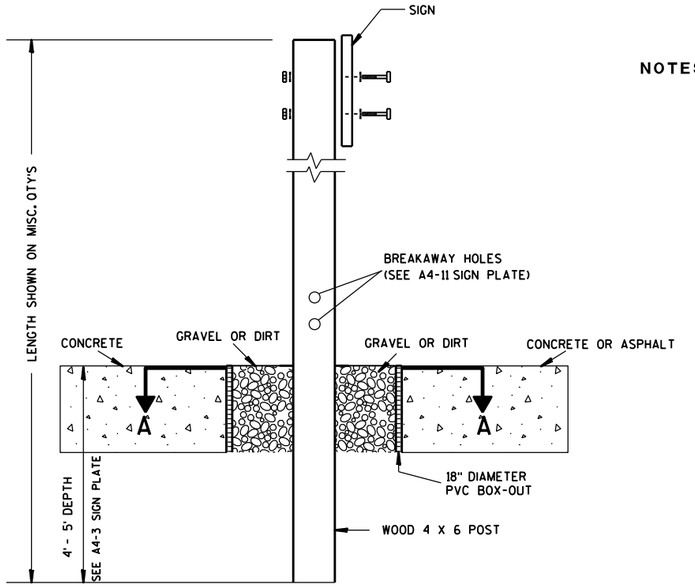
TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

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

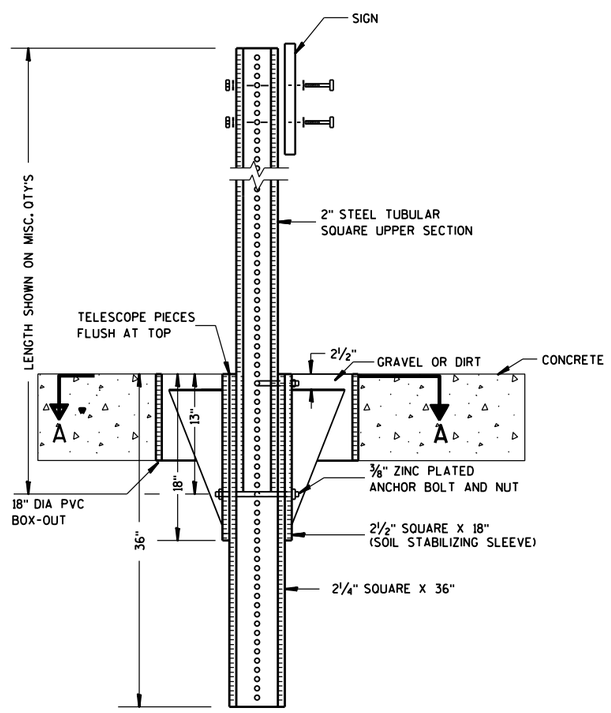
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 76	E



ELEVATION VIEW

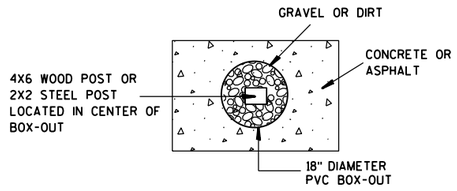
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST BOX-OUTS A4-3B

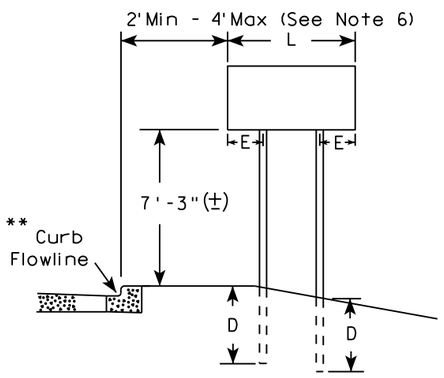
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

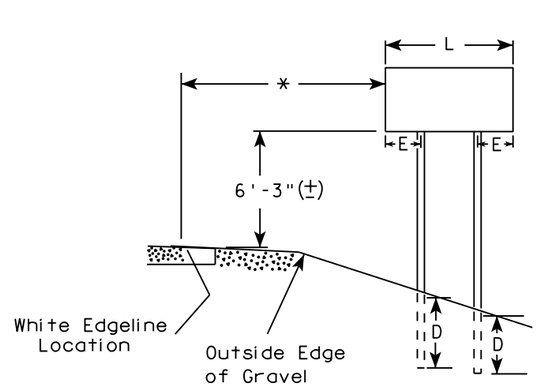
DATE 1/27/14 PLATE NO. A4-3B.1

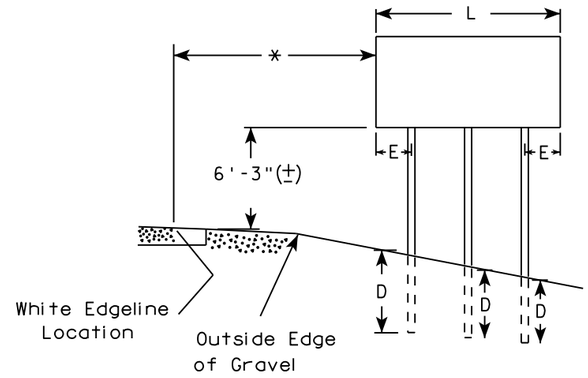
PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E

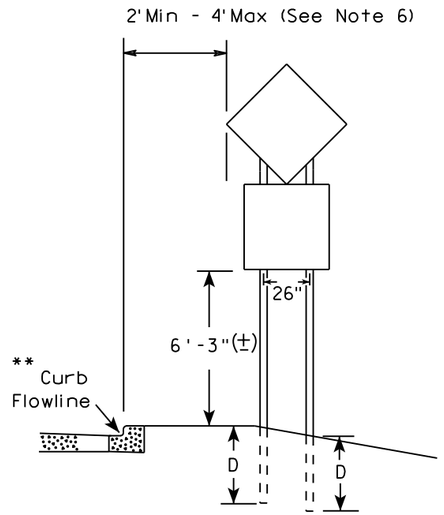
URBAN AREA



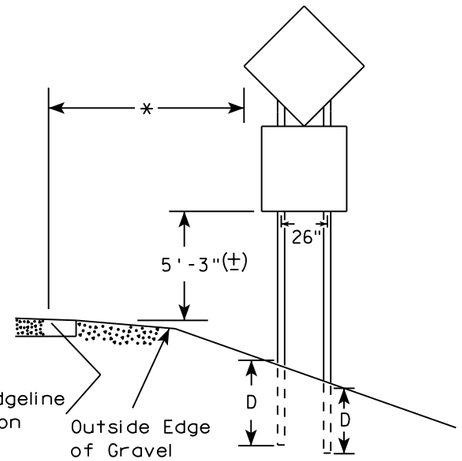
RURAL AREA (See Note 3)







48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

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

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

GENERAL NOTES

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

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

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

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

POST EMBEDMENT DEPTH

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

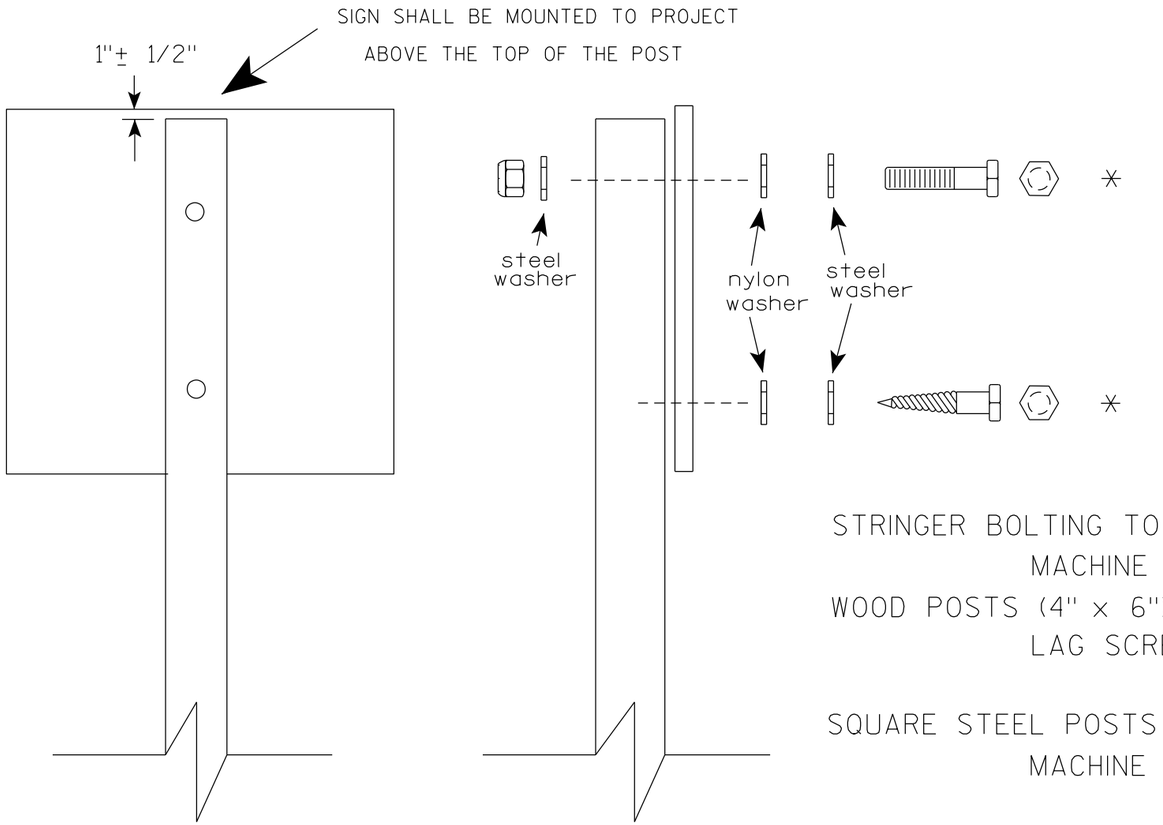
TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
For State Traffic Engineer

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

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 78	E



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

a. Hot dip galvanized in accordance with ASTM Designation: A 153, Class D, or SC 3

b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

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

STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)

MACHINE BOLTS - 5/16" X 1-3/4" Length w/ lock nuts

WOOD POSTS (4" x 6")

LAG SCREWS - 3/8" X 3" (NO STRINGERS ON BACK OF SIGN)
3/8" X 4" (STRINGERS ON BACK OF SIGN)

SQUARE STEEL POSTS (2" x 2")

MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
3/8" X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)

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

WASHERS (ALL POSTS) -

1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON

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

ATTACHMENT OF SIGNS TO POSTS

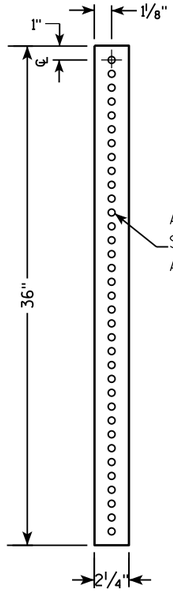
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

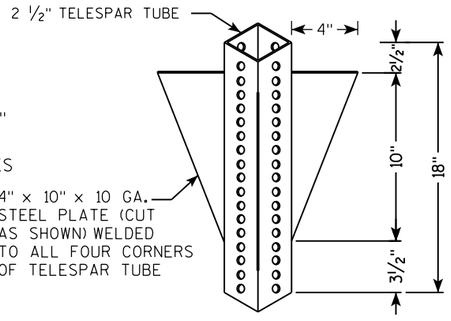
DATE 4/1/2020 PLATE NO. A4-8.9

TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM

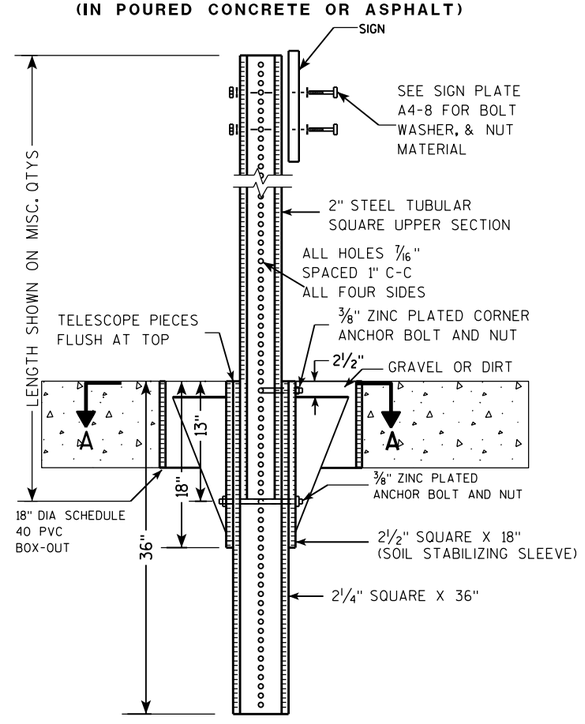
2 1/4 " SQUARE
12 GAUGE
PERFORATED
GALVANIZED FINISH



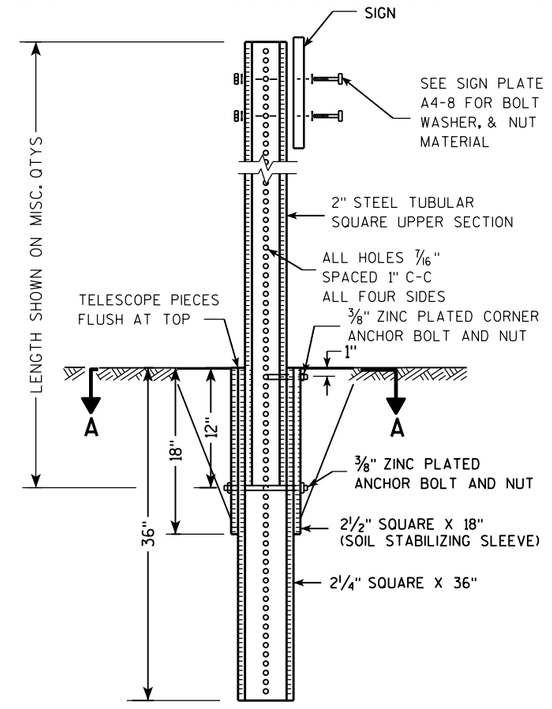
2 1/2 " SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH

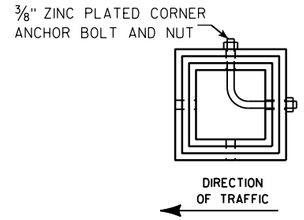


DETAIL OF TUBULAR STEEL SIGN POST
(IN POURED CONCRETE OR ASPHALT)



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





SECTION A-A

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

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

TUBULAR STEEL
SIGN POST
A4-9

WISCONSIN DEPT OF TRANSPORTATION

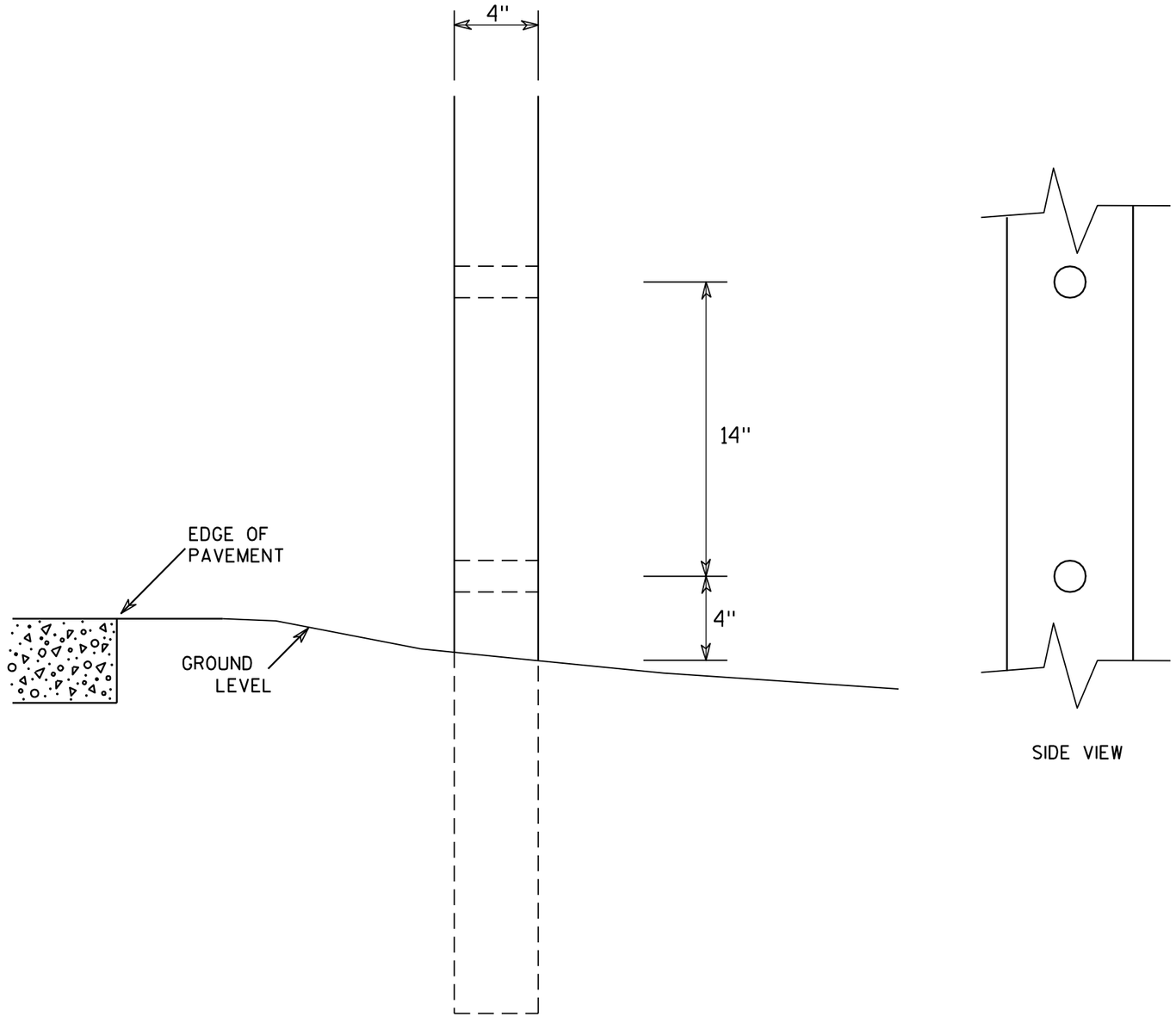
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 2/05/15 PLATE 80 A4-9.9

PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E

FILE NAME : C:\CAEFiles\Projects\tr_stdplate\A49.DGN PLOT DATE : 05-FEB-2015 17:09 PLOT BY : mscsja PLOT NAME : PLOT SCALE : 13.659812:1.000000

WISDOT/CADDS SHEET 42



SIDE VIEW

GENERAL NOTES

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

4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

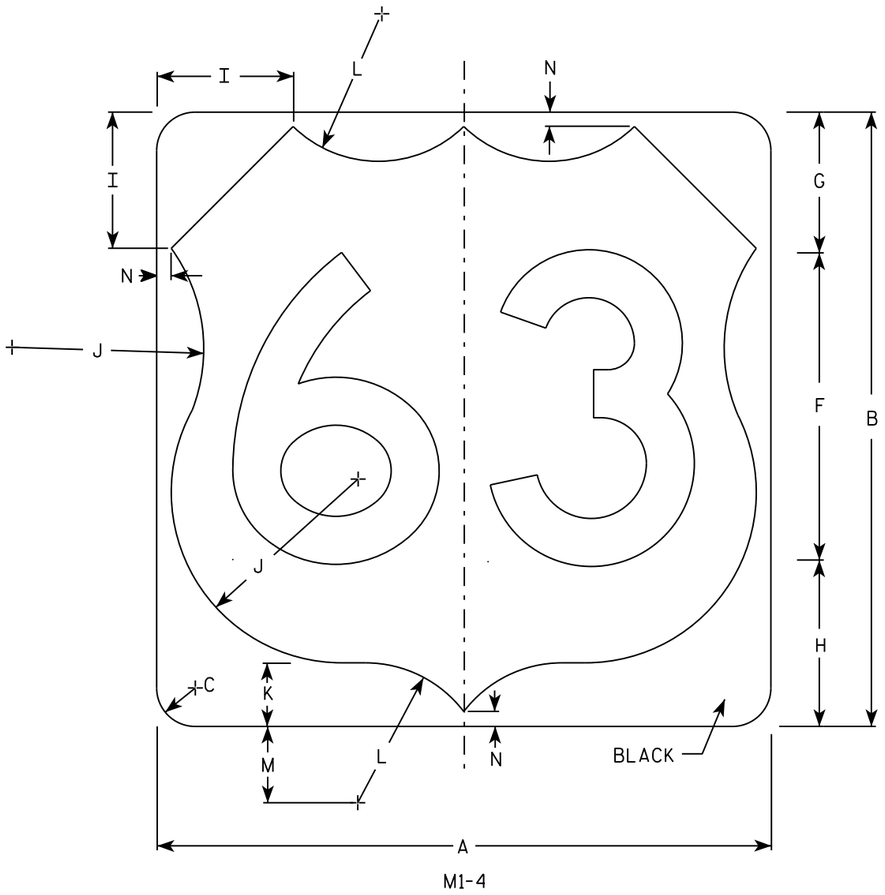
APPROVED Chester J Spang for State Traffic Engineer

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

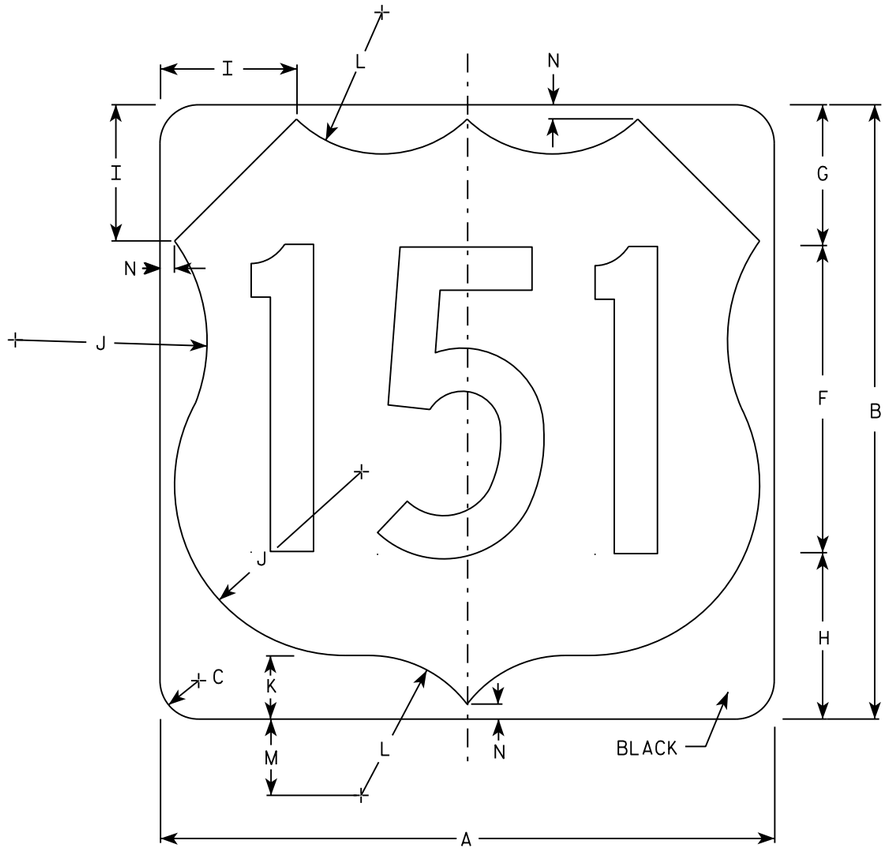
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 81	E

NOTES

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



M1-4



M1-4

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area Sq. ft.
1																											
2	24	24	1 1/2			12	5 1/2	6 1/2	5	7 1/2	2 1/2	5 1/2	3	1/2													4.0
3	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0
4	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0
5	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0

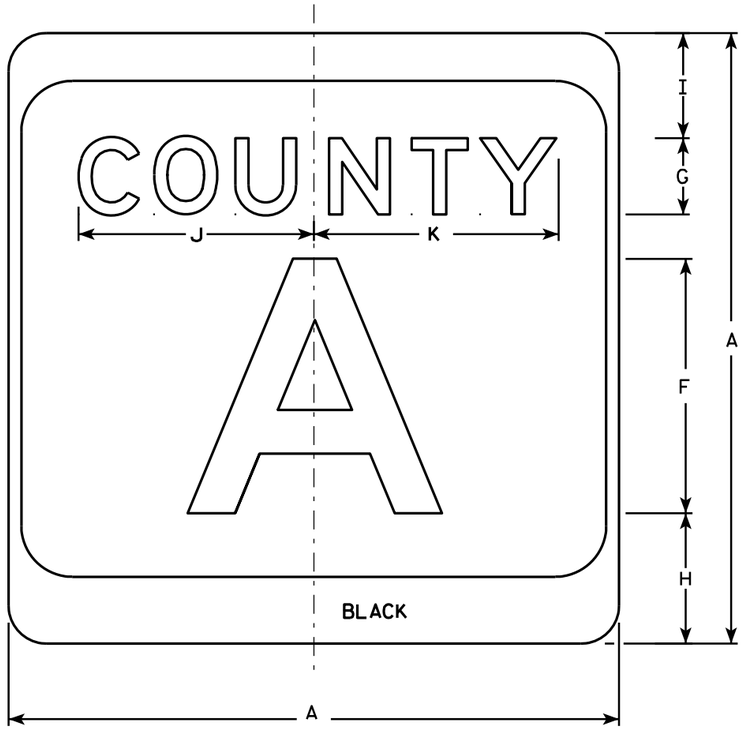
USH MARKER
M1-4 FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

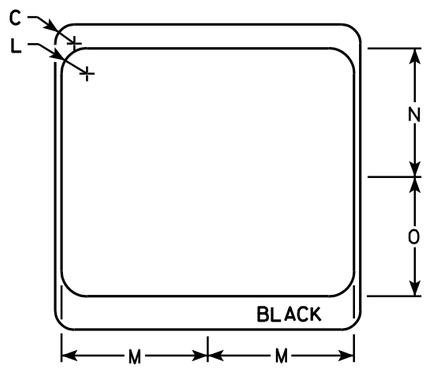
APPROVED Matthew R Rauch
for State Traffic Engineer

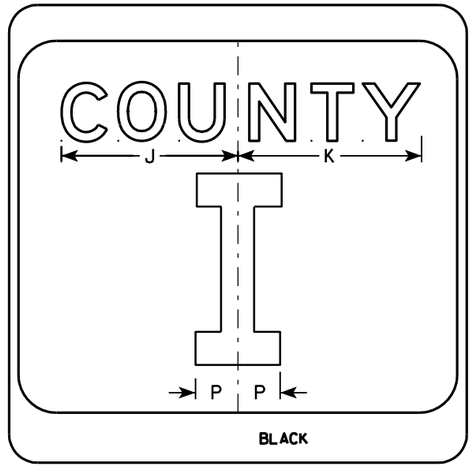
DATE 3/16/18 PLATE NO. M1-4.10

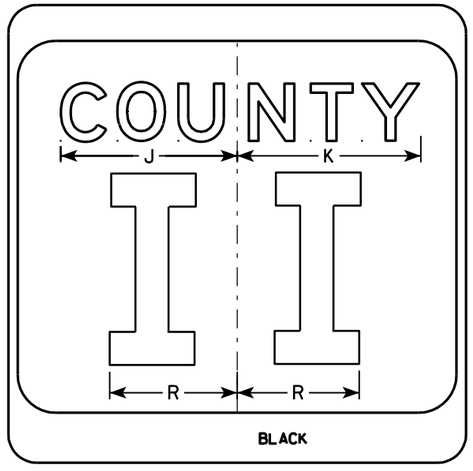
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 82	E



M1-5A







NOTES

1. Sign is Type II - see Note 7 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - White & Black - See Note 7
   Message - Black
3. Message Series - see Note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Message Series E for 1 letter.
   Message Series D for 2 letters unless message is too big then Series C.
   Message Series C for 3 letters unless message is too big then Series B.
6. Substitute appropriate letters & optically center to achieve proper balance.
7. Permanent Signs
   Background - Type H Reflective
   Detour or temporary Signs
   Background - Reflective

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24		1 1/2			10	3	5 1/8	4 1/8	9 1/4	9 5/8	2	11 1/2	10 1/8	9 3/8	2 1/4		6 5/8									4.0
3	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0
4	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0
5	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0

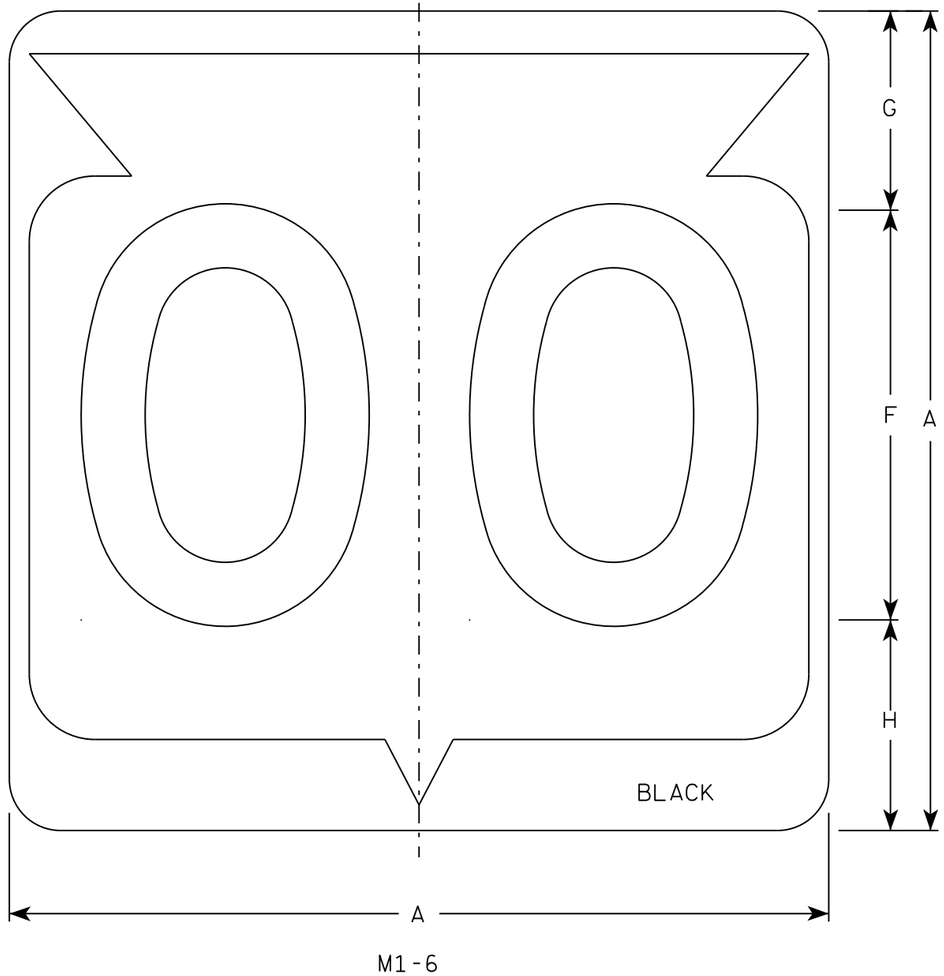
CTH MARKER
M1-5A FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 9/27/11 PLATE NO. M1-5A.8

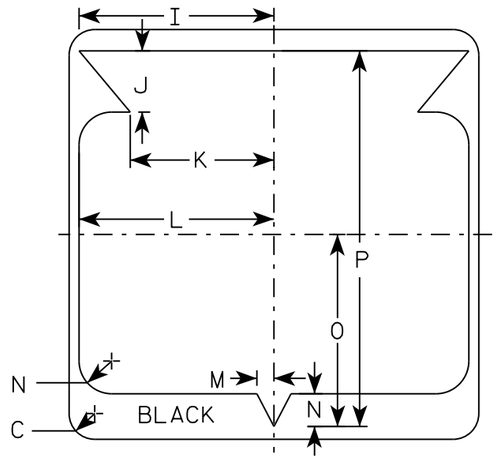
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 83	E



M1-6

NOTES

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



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24		1 1/2			12	5 1/2	6 1/2	10 1/4	2 1/2	8 7/8	11 1/2	1	1 7/8	11 1/4	21 7/8											4.0
3	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0
4	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0
5	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0

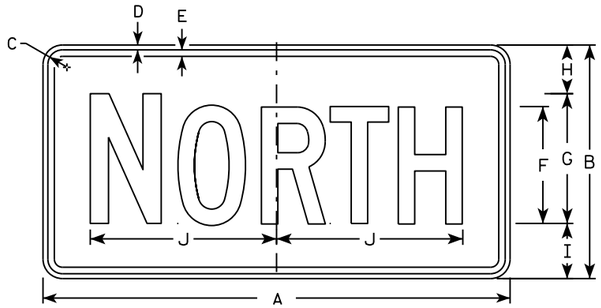
STATE ROUTE MARKER M1-6 FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

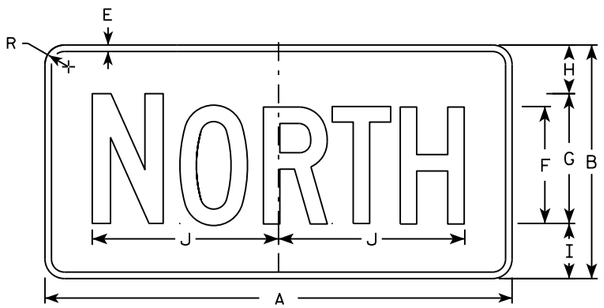
APPROVED Matthew R Rauch for State Traffic Engineer

DATE 3/16/18 PLATE NO. M1-6.10

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



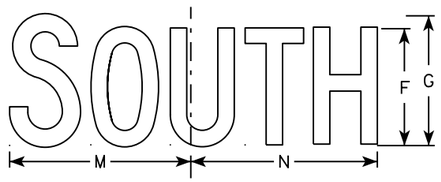
M3-1
MM3-1
MP3-1



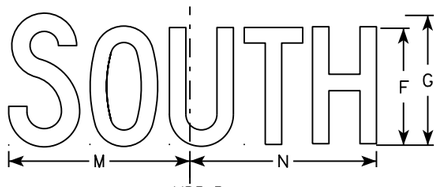
MB3-1
MK3-1
MN3-1

M3-2
MM3-2
MP3-2

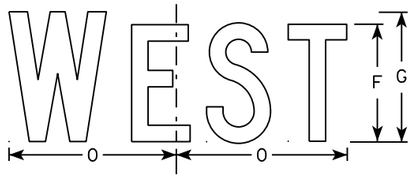
MB3-2
MK3-2
MN3-2



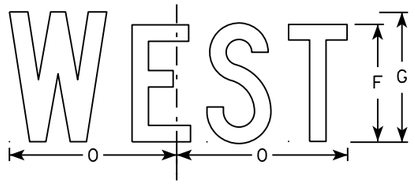
M3-3
MM3-3
MP3-3



MB3-3
MK3-3
MN3-3



M3-4
MM3-4
MP3-4



MB3-4
MK3-4
MN3-4

NOTES

1. All Signs Type II - Type H
2. Color:
   Background - See note 5
   Message - See note 5
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. M3-1 thru M3-4 Background - White
   Message - Black
   MB3-1 thru MB3-4 Background - Blue
   Message - White
   MK3-1 thru MK3-4 Background - Green
   Message - White
   MM3-1 thru MM3-4 Background - White
   Message - Green
   MN3-1 thru MN3-4 Background - Brown
   Message - White
   MP3-1 thru MP3-4 Background - White
   Message - Blue
6. Note the first letter of each direction is larger than the remainder of the message.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/8	3/8	3/8	6	7	2 1/4	2 3/4	10 1/4	7 7/8	8 3/8	10 1/4	9 3/4	8 3/4			1 1/2									2.00
3	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
4	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
5	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5

STANDARD SIGNS
M3-1 thur M3-4
SERIES

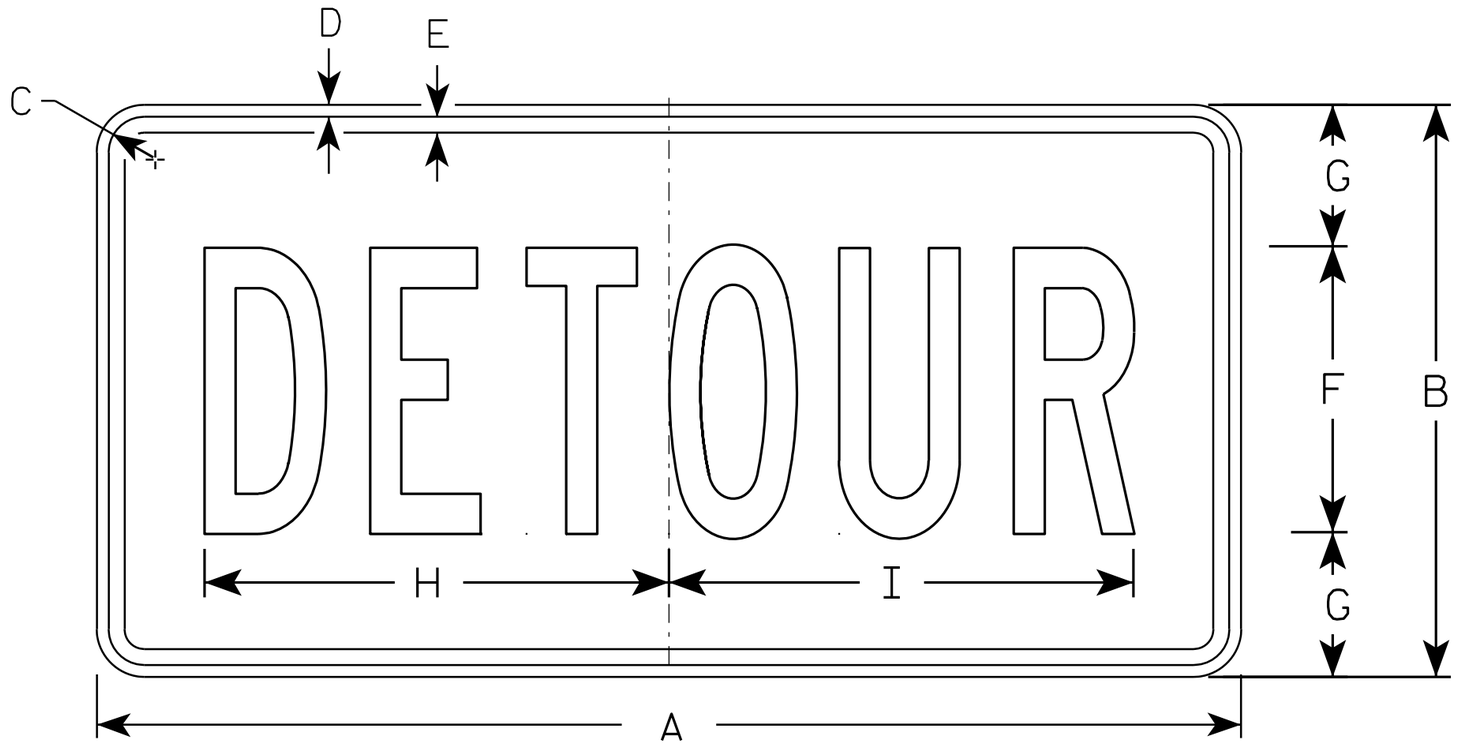
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew P Rauch for State Traffic Engineer

DATE 10/15/15 PLATE NO M3-1.14

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

FILE NAME : C:\CAEfiles\Projects\tr_stdplate\M31.DGN PLOT DATE : 01-DEC-2015 17:54 PLOT BY : $$ plotuser $$ PLOT NAME : PLOT SCALE : 11.675051:1.000000



M4-8

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Orange
   Message - Black
3. Message Series - B
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/8	3/8	3/8	6	3	10	10 1/4																		2.0
3	36	18	1 1/8	3/8	1/2	9	4 1/2	14 5/8	14 1/2																		4.5
4																											
5																											

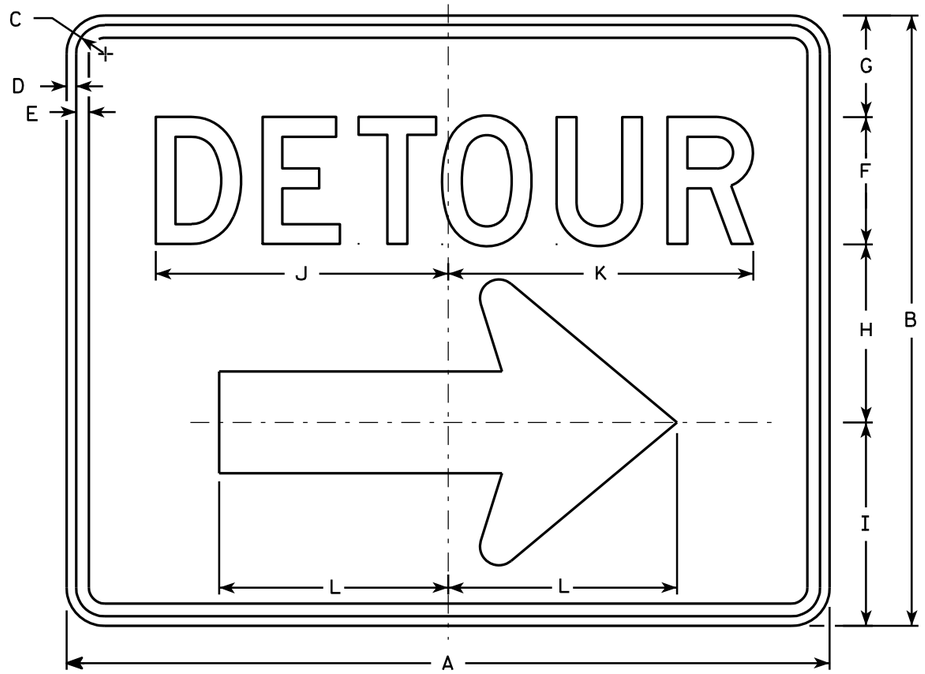
STANDARD SIGN
M4-8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 11/10/10 PLATE NO. M4-8.2

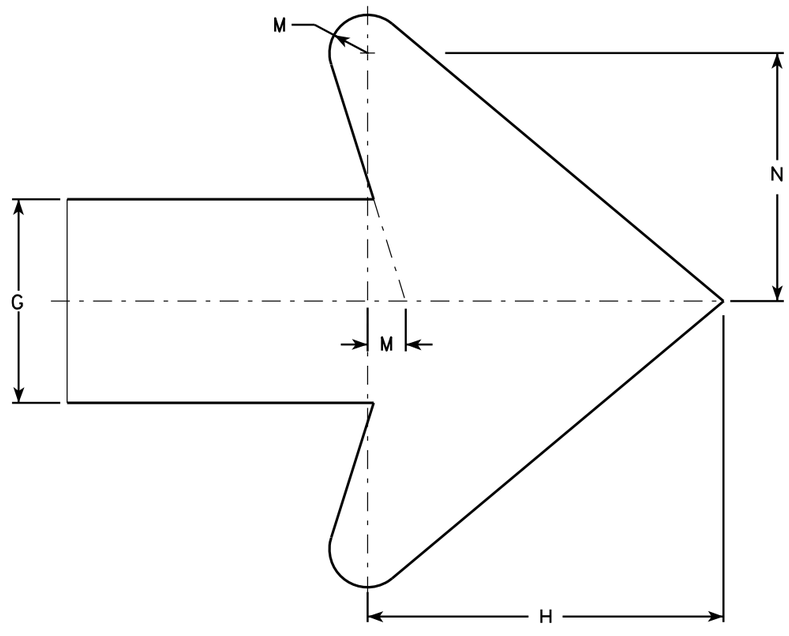
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 86	E



M4-9R

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Orange
   Message - Black
3. Message Series - D
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. M4-9L is the same as M4-9R except the arrow is reversed.



Arrow Detail

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	30	24	1 1/8	3/8	1/2	5	4	7	8	11 1/2	12	9	3/4	4 7/8													5.00
3	30	24	1 1/8	3/8	1/2	5	4	7	8	11 1/2	12	9	3/4	4 7/8													5.00
4	48	36	1 3/8	1/2	5/8	8	6	10 1/2	11 5/8	20 5/8	20 1/2	13 1/4	1 1/8	6 7/8													12.0
5	48	36	1 3/8	1/2	5/8	8	6	10 1/2	11 5/8	20 5/8	20 1/2	13 1/4	1 1/8	6 7/8													12.0

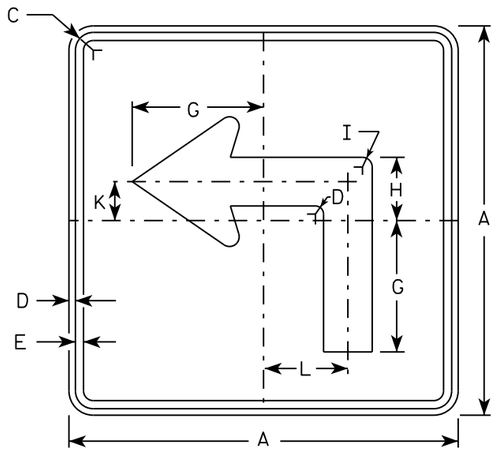
STANDARD SIGN
M4-9 R & L

WISCONSIN DEPT OF TRANSPORTATION

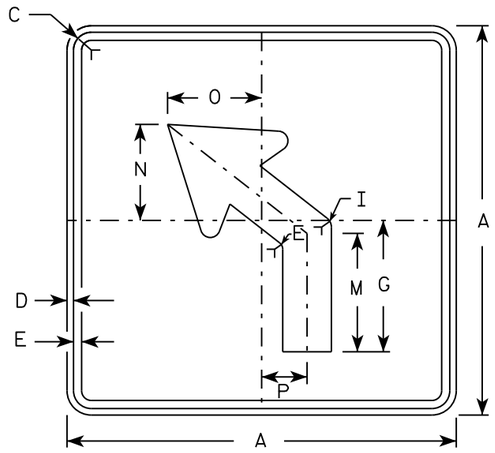
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/9/11 PLATE NO. M4-9R.4

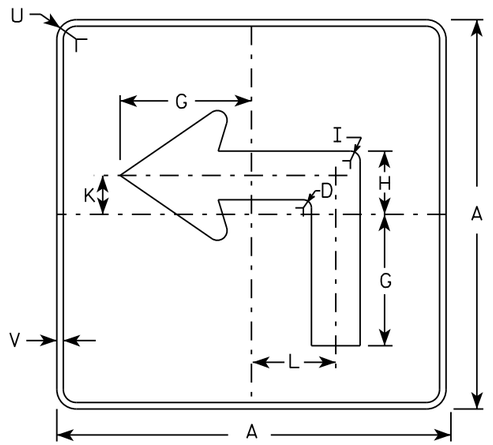
PROJECT NO: | HWY: | COUNTY: | SHEET NO: 87 | E



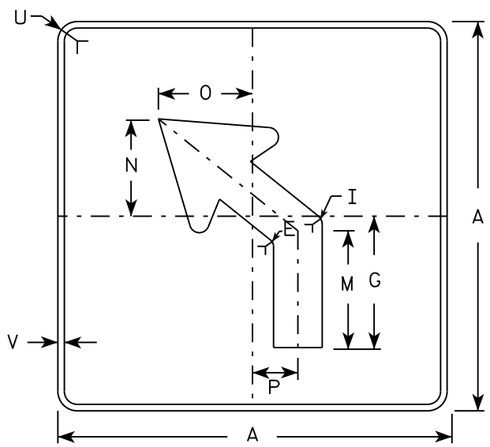
M5-1L
MM5-1L
MO5-1L
MP5-1L



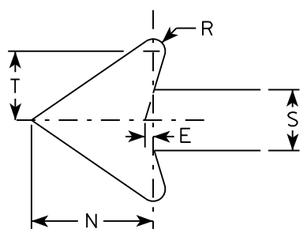
M5-2L
MM5-2L
MO5-2L
MP5-2L



MB5-1L
MK5-1L
MN5-1L
MR5-1L



MB5-2L
MK5-2L
MN5-2L
MR5-2L



NOTES

1. Signs are Type II - Type H reflective except as shown
2. Color:
   Background - See note 4
   Message - See note 4
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. M5-1 and M5-2 Background - White
   Message - Black
   MB5-1 and MB5-2 Background - Blue
   Message - White
   MK5-1 and MK5-2 Background - Green
   Message - White
   MM5-1 and MM5-2 Background - White
   Message - Green
   MN5-1 and MN5-2 Background - Brown
   Message - White
   MO5-1 and MO5-2 Background - Orange - Type F Reflective
   Message - Black
   MP5-1 and MP5-2 Background - White - Type H Reflective
   Message - Blue
   MR5-1 and MR5-2 Background - Brown
   Message - Yellow
5. M5-1R same as M5-1L except arrow points right.
6. M5-2R same as M5-2L except arrow tilts right.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	21		1 1/8	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3	1 1/2	1/2					3.06
3	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25
4	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25
5	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25

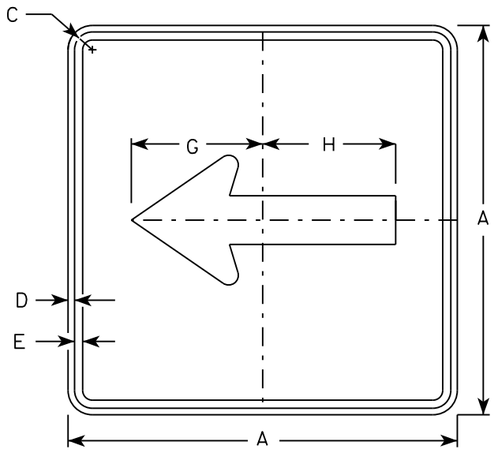
STANDARD SIGN
M5-1 & M5-2

WISCONSIN DEPT OF TRANSPORTATION

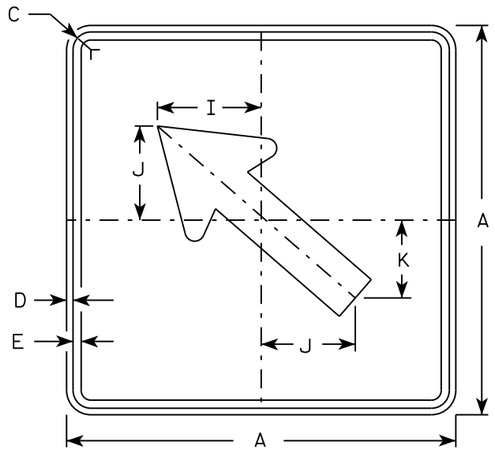
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 10/15/15 PLATE NO. M5-1.13

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



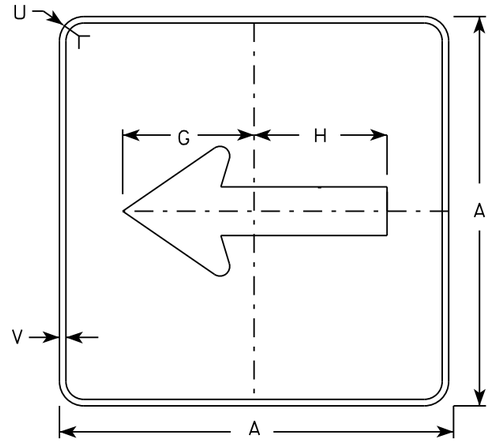
M6-1
MM6-1
MO6-1
MP6-1



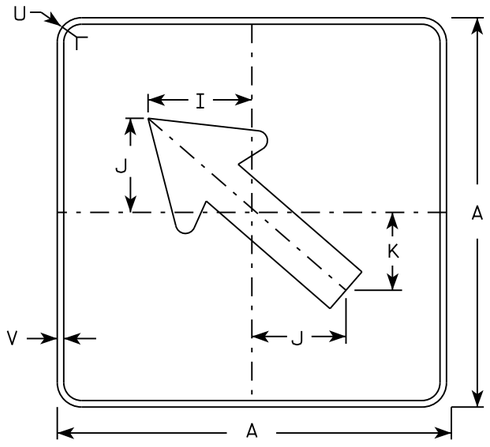
M6-2
MM6-2
MO6-2
MP6-2

NOTES

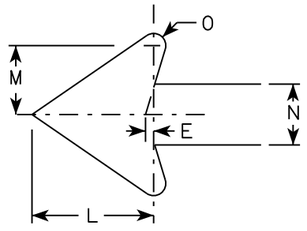
1. Signs are Type II - Type H except as Shown
2. Color:
   Background - See note 4
   Message - See note 4
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. M6-1 and M6-2 Background - White
   Message - Black
   MB6-1 and MB6-2 Background - Blue
   Message - White
   MK6-1 and MK6-2 Background - Green
   Message - White
   MM6-1 and MM6-2 Background - White
   Message - Green
   MN6-1 and MN6-2 Background - Brown
   Message - White
   MO6-1 and MO6-2 Background - Orange - Type F Reflective
   Message - Black
   MP6-1 and MP6-2 Background - White
   Message - Blue
   MR6-1 and MR6-2 Background - Brown
   Message - Yellow



MB6-1
MK6-1
MN6-1
MR6-1



MB6-2
MK6-2
MN6-2
MR6-2



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	21		1 1/8	3/8	3/8		7 1/2	7 1/8	5 5/8	5	4 1/4	5 1/4	3	2 5/8	1/2						1 1/2	1/2						3.06
3	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2						6.25
4	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2						6.25
5	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2						6.25

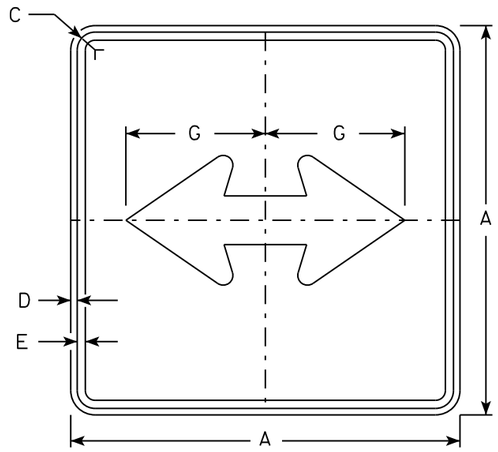
STANDARD SIGN
M6-1 & M6-2
SERIES

WISCONSIN DEPT OF TRANSPORTATION

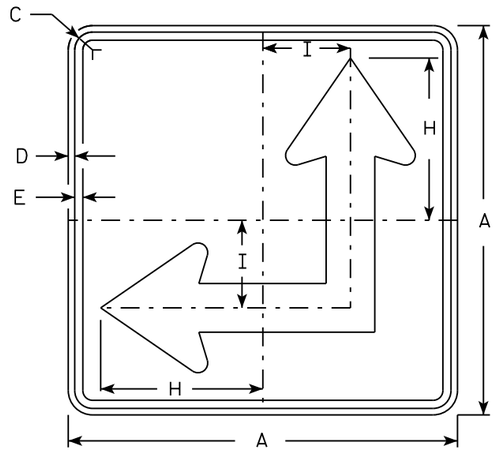
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 10/15/15 PLATE 89 M6-1.15

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



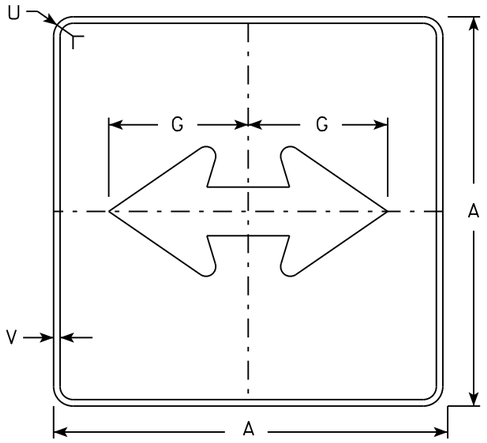
M6-4
MM6-4
MO6-4
MP6-4



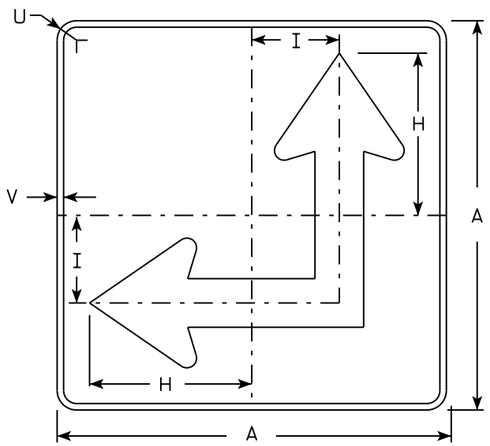
M6-6
MM6-6
MO6-6
MP6-6

NOTES

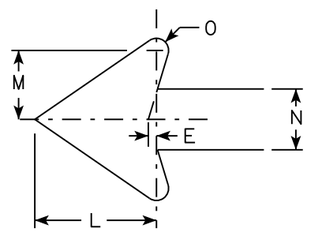
1. Signs are Type II - Type H except as Shown
2. Color:
   Background - See Note 4
   Message - See Note 4
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. M6-4 and M6-6 Background - White
   Message - Black
   MB6-4 and MB6-6 Background - Blue
   Message - White
   MK6-4 and MK6-6 Background - Green
   Message - White
   MM6-4 and MM6-6 Background - White
   Message - Green
   MN6-4 and MN6-6 Background - Brown
   Message - White
   MO6-4 and MO6-6 Background - Orange - Type F Reflective
   Message - Black
   MP6-4 and MP6-6 Background - White
   Message - Blue
   MR6-4 and MR6-6 Background - Brown
   Message - Yellow
5. M6-6R same as M6-6L except arrow points ahead and right.



MB6-4
MK6-4
MN6-4
MR6-4



MB6-6
MK6-6
MN6-6
MR6-6



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	21		1 1/8	3/8	3/8		7 1/2	8 3/4	4 1/4			5 1/4	3	2 5/8	1/2						1 1/2	1/2					3.06
3	30		1 3/8	1/2	5/8		10 3/4	12 1/2	6 3/4			7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25
4	30		1 3/8	1/2	5/8		10 3/4	12 1/2	6 3/4			7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25
5	30		1 3/8	1/2	5/8		10 3/4	12 1/2	6 3/4			7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25

STANDARD SIGN
M6-4 & M6-6
SERIES

WISCONSIN DEPT OF TRANSPORTATION

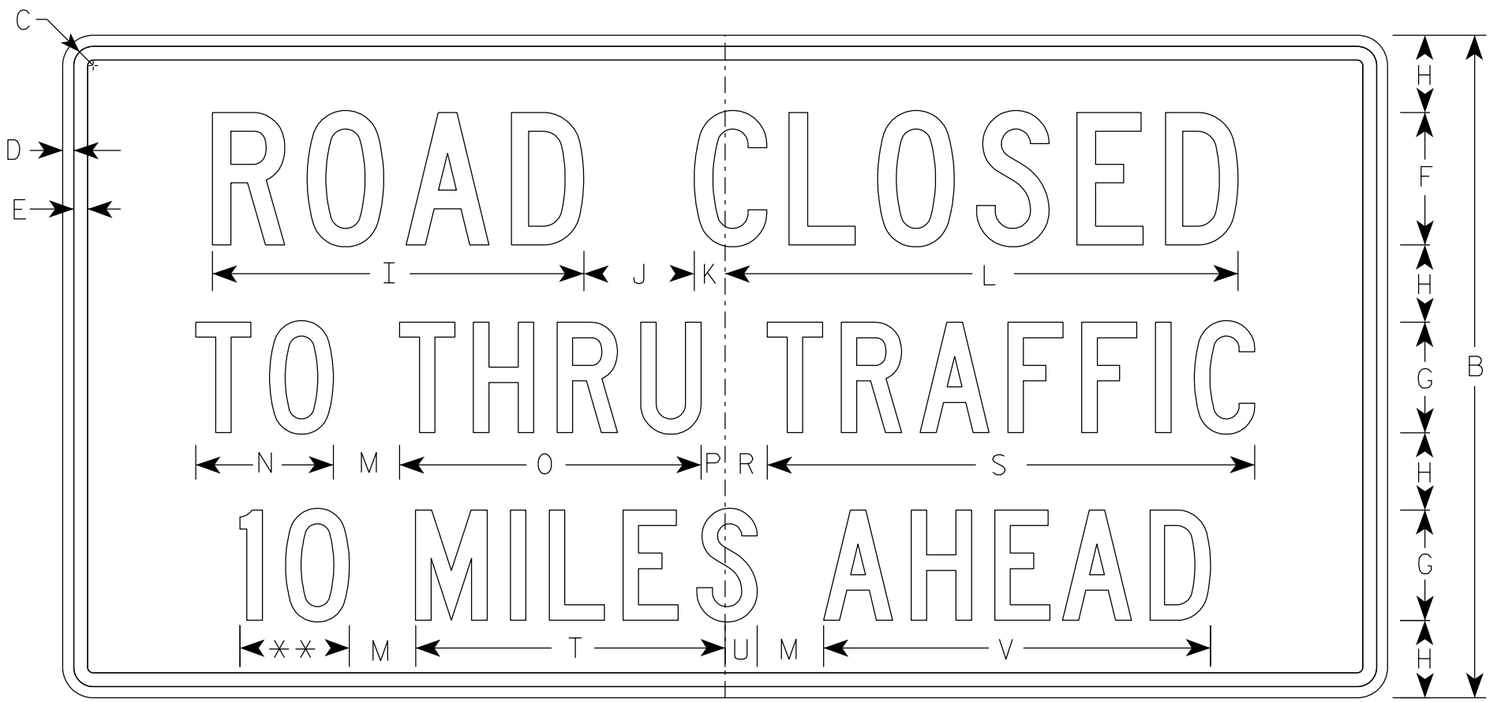
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 10/15/15 PLATE 90 M6-4.10

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

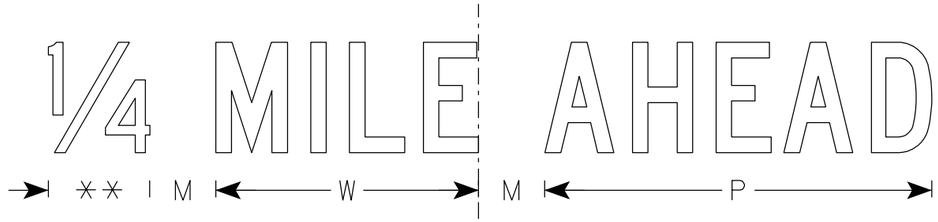
NOTES

1. Sign is Type II - Type H Reflective
2. Color:
   Background - White
   Message - Black
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Substitute appropriate numerals to nearest quarter mile and optically adjust spacing to achieve proper balance.



R11-3

** See Note 5



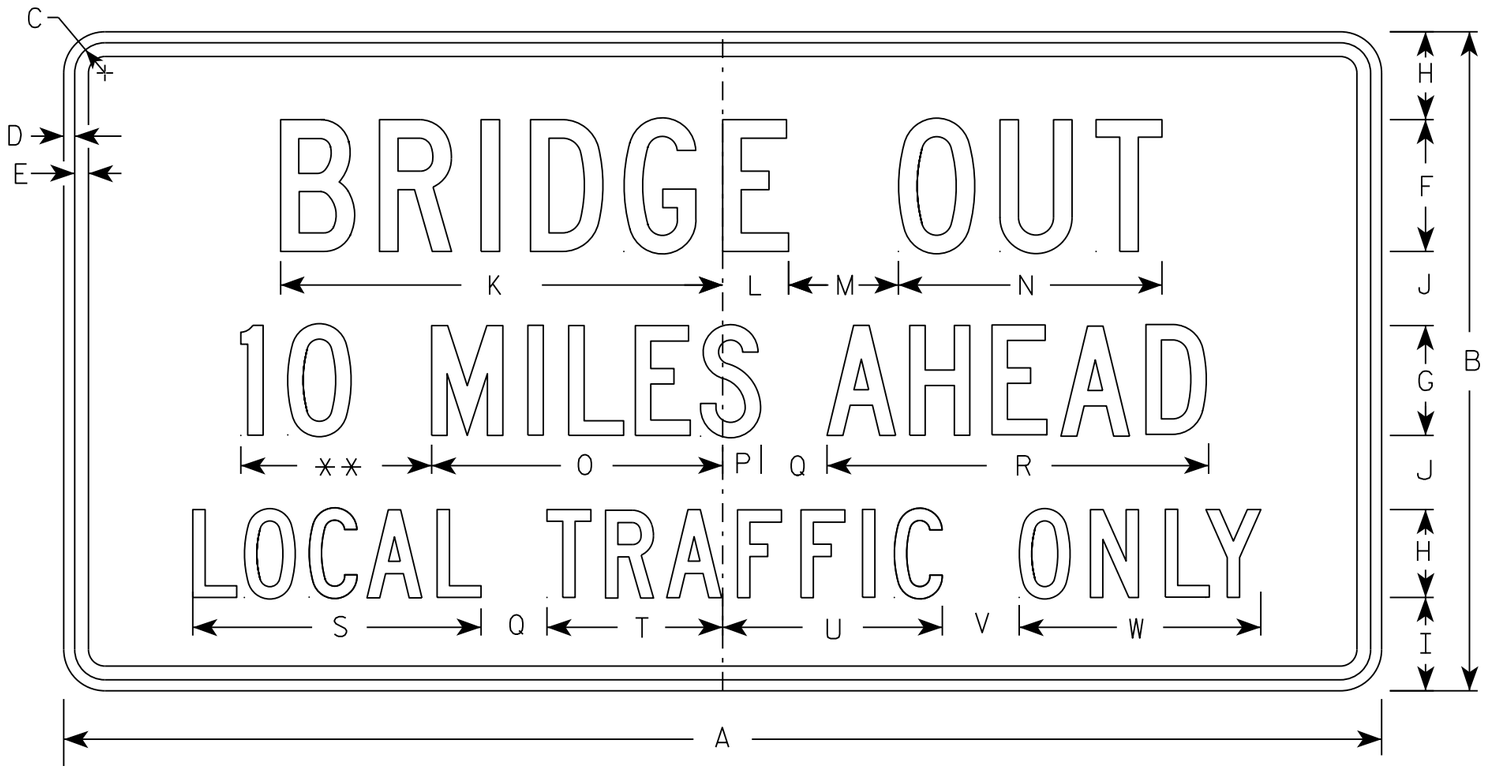
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	18	1 1/4	3/8	3/8	4	3	2	11 1/4	3	1 1/8	15 3/8	2	3 3/4	8 1/4	5/8		1 3/8	13 1/4	8 3/8	7/8	10 1/2	7 1/8				4.5
2S	60	30	1 3/8	1/2	5/8	6	5	3 1/2	16 7/8	5	1 3/8	23 1/4	3	6 1/4	13 5/8	1 1/8		1 7/8	22 1/8	14	1 1/2	17 1/2	11 7/8				12.5
2M	60	30	1 3/8	1/2	5/8	6	5	3 1/2	16 7/8	5	1 3/8	23 1/4	3	6 1/4	13 5/8	1 1/8		1 7/8	22 1/8	14	1 1/2	17 1/2	11 7/8				12.5
3																											
4																											
5																											

STANDARD SIGN
R11-3

WISCONSIN DEPT OF TRANSPORTATION

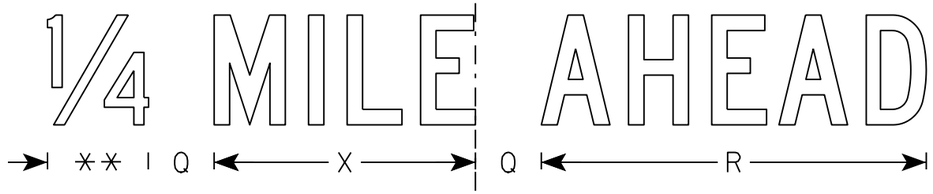
APPROVED Matthew R Rauch
for State Traffic Engineer
DATE 6/14/2021 PLATE NO. R11-3.9

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 91	E



R11-3B

** See Note 5



NOTES

1. Sign is Type II - Type H Reflective
2. Color:
   Background - White
   Message - Black
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Substitute appropriate numerals to nearest quarter mile and optically adjust spacing to achieve proper balance.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	18	1 3/8	1/2	5/8	4	3	2 1/2	2	2	13 1/4	2 1/4	3	8	8	1 1/2	2	10 3/4	8 3/8	4 3/4	6 1/2	2	6 3/4	7 1/8			4.5
2S	60	30	1 3/8	1/2	5/8	6	5	4	4 1/4	3 3/8	20 1/8	3	5	12	13 1/4	1 3/4	3	17 3/8	13 1/8	8	10	3 1/2	11	11 7/8			12.5
2M	60	30	1 3/8	1/2	5/8	6	5	4	4 1/4	3 3/8	20 1/8	3	5	12	13 1/4	1 3/4	3	17 3/8	13 1/8	8	10	3 1/2	11	11 7/8			12.5
3																											
4																											
5																											

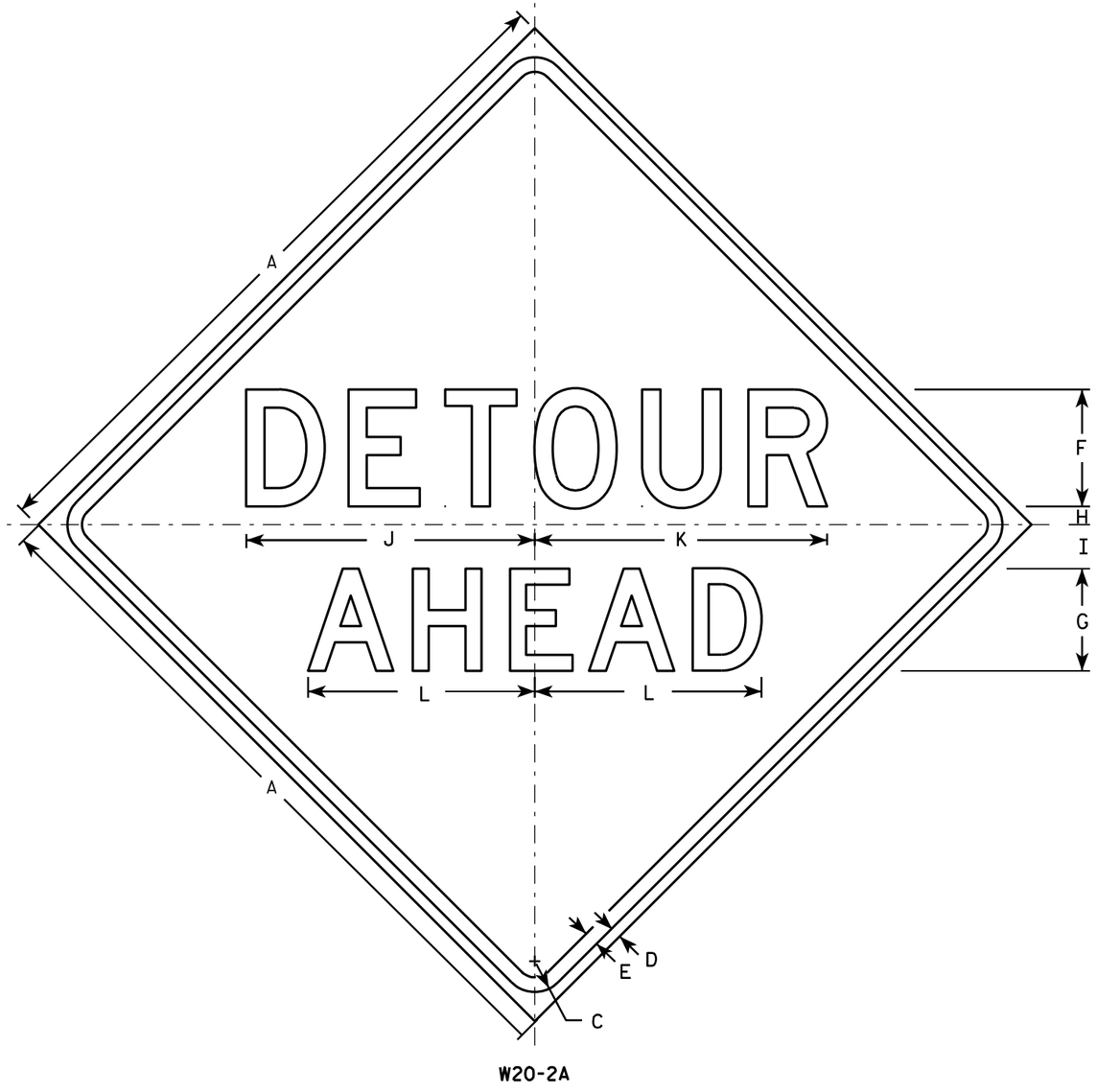
STANDARD SIGN
R11-3B

WISCONSIN DEPT OF TRANSPORTATION

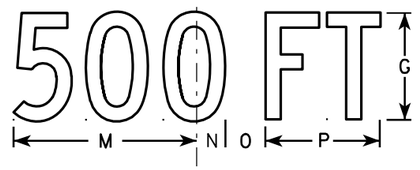
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/21/17 PLATE NO. R11-3B.3

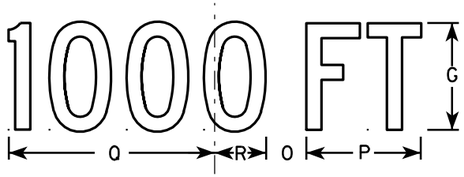
PROJECT NO: | HWY: | COUNTY: | SHEET NO: 92 | E



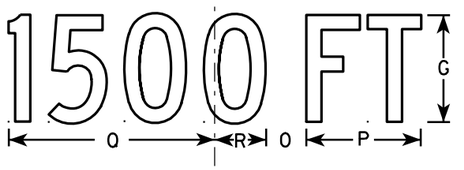
W20-2A



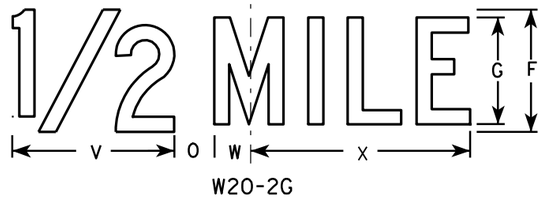
W20-2D



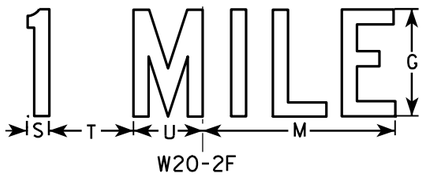
W20-2C



W20-2B



W20-2G



W20-2F

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Orange
   Message - Black
3. Message Series - See note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Line 1 is Series D.
   Line 2 is Series D for AHEAD and Series C for all other distances.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	O	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		1 5/8	5/8	3/4	6	5	1	2 1/4	14 3/4	15	11 5/8	9	1 3/8	1 7/8	5 5/8	10 1/8	2 1/2	1 1/8	4 1/2	3 1/2	8	1 3/4	10 3/4			9.0
2S	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
2M	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
3	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
4	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
5	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0

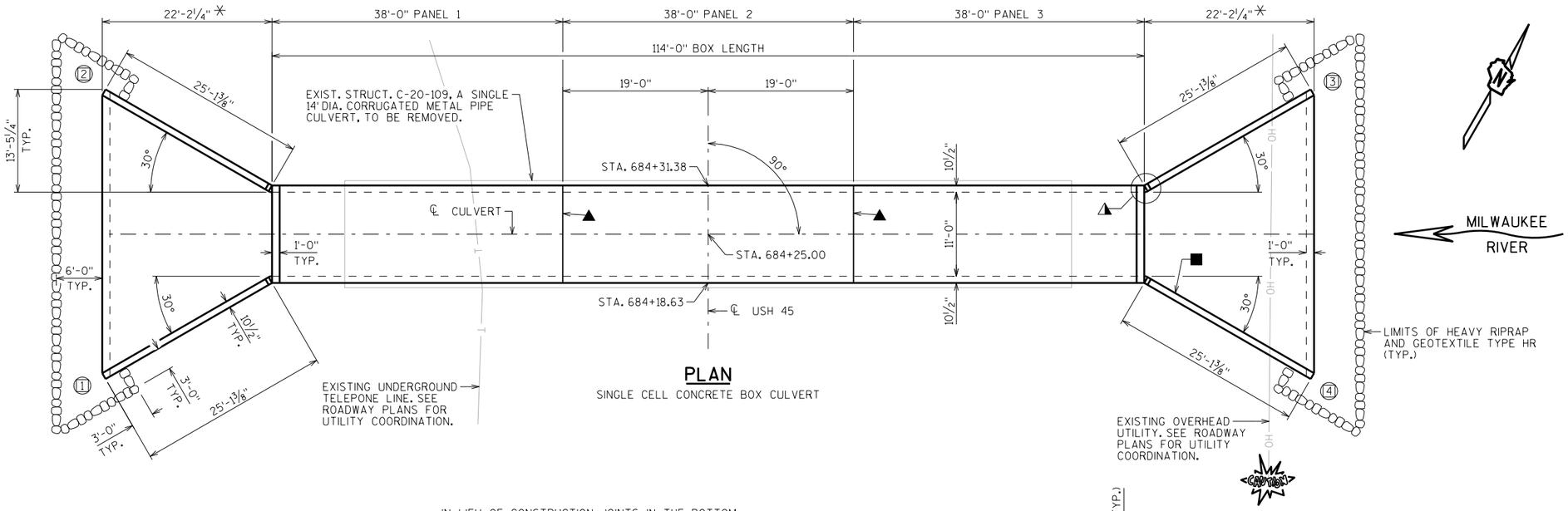
STANDARD SIGN
W20-2A,B,C,D,F & G

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

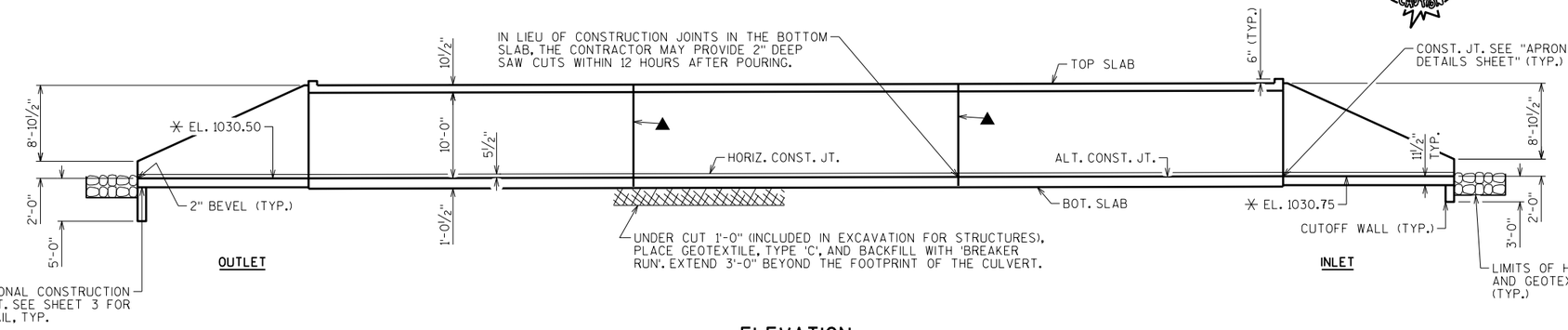
DATE 3/18/11 PLATE NO. W20-2.6

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 93	E



PLAN

SINGLE CELL CONCRETE BOX CULVERT



ELEVATION

DESIGN DATA

LIVE LOAD:
DESIGN LOADING: HL-93
INVENTORY RATING FACTOR: RF = 1.05
OPERATING RATING FACTOR: RF = 1.35
WISCONSIN STANDARD PERMIT VEHICLE (WIS.-SPV): 255 (KIPS)

EARTHLOAD:
DESIGNED FOR 12 FT. OF FILL.

MATERIAL PROPERTIES:
CONCRETE MASONRY: ——— f'c = 3,500 P.S.I.
BAR STEEL REINFORCEMENT: ——— fy = 60,000 P.S.I.

HYDRAULIC DATA

100 YEAR FREQUENCY
Q_{100} = 275 C.F.S.
$VEL._{100}$ = 5.43 F.P.S.
$HW._{100}$ = EL. 1036.26
WATERWAY AREA = 110 SQ. FT.
DRAINAGE AREA = 3.9 SQ. MI.
ROADWAY OVERTOPPING = N/A
SCOUR CRITICAL CODE = 8

2 YEAR FREQUENCY
Q_2 = 70 C.F.S.
$VEL._2$ = 1.76 F.P.S.
$HW._2$ = EL. 1035.33

TRAFFIC VOLUME

USH 45
ADT = 3,300 (2043)
R.D.S. = 60 M.P.H.

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	TOTALS
203.0220	REMOVING STRUCTURE C-20-109	EACH	1
206.2000	EXCAVATION FOR STRUCTURES CULVERTS C-20-163	LS	1
210.2500	BACKFILL STRUCTURE TYPE B	TON	2,877
311.0115	BREAKER RUN	CY	137
504.0100	CONCRETE MASONRY CULVERTS	CY	248
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	23,120
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	4,060
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	37
606.0300	RIPRAP HEAVY	CY	48
645.0105	GEOTEXTILE TYPE C	SY	425
645.0120	GEOTEXTILE TYPE HR	SY	109
	NON-BID ITEMS		
	FILLER	SIZE	¾"

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

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

THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

BEVEL EXPOSED EDGES OF CONCRETE ¾" UNLESS OTHERWISE NOTED.

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES CULVERTS C-20-163" SHALL BE THE EXISTING GROUNDLINE.

ALL VOLUME WHICH CANNOT BE PLACED BEFORE CULVERT CONSTRUCTION AND NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL WITHIN THE LENGTH OF THE CULVERT INCLUDING THE APRON WING WALLS.

THE QUANTITY FOR BACKFILL STRUCTURE IS CALCULATED BASED ON THE DETAIL SHOWN IN THE PLANS.

THE CONCRETE IN THE CUTOFF WALLS MAY BE PLACED UNDERWATER IF THE EXCAVATION CANNOT BE DEWATERED.

PLACE 18" (MIN.) WIDE SHEET OF "RUBBERIZED MEMBRANE WATERPROOFING" ON TOP SLAB OVER ALL CONSTRUCTION JOINTS AND EXTEND DOWN TO 6" BELOW TOP OF BOTTOM SLAB.

THE CONTRACTOR MAY FURNISH A PRECAST CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE BOX CULVERT WITH THE ACCEPTANCE OF THE SHOP DRAWINGS BY THE STRUCTURES DESIGN SECTION. THE PRECAST CONCRETE BOX CULVERT SHALL CONFORM TO PRECAST DETAILS ON CHAPTER 36 STANDARDS OF THE CURRENT WISC. DOT BRIDGE MANUAL. PAYMENT FOR THE PRECAST CULVERT SHALL BE BASED ON THE QUANTITIES AND PRICES BID FOR THE ITEMS LISTED IN THE "TOTAL ESTIMATED QUANTITIES".

THE CONTRACTOR MAY ELECT TO SUBSTITUTE #1 OR #2 CONCRETE COARSE AGGREGATE, SELECT CRUSHED MATERIAL OR OTHER GRANULAR MATERIAL AS APPROVED BY THE FIELD ENGINEER, IN LIEU OF THE BREAKER RUN, TO BE UTILIZED AS A CONSTRUCTION PLATFORM FOR THE BOX. THE CONTRACTOR IS RESPONSIBLE FOR BASE STABILITY WITH ANY SUBSTITUTED MATERIAL.

STATE PROJECT NUMBER
4080-06-71

- ◭ SEE CORNER DETAILS ON "DETAILS" SHEET
- ■ NAME PLATE LOCATION (SEE "DETAILS" SHEET)
- ✳ BUILD APRON AND END OF BOX LEVEL
- ◯ INDICATES WING NUMBER
- ▲ VERT. CONST. JOINT (TYP.)

NOTE: STRUCTURE BACKFILL REQUIRED BEHIND ALL WING WALLS.

LIST OF DRAWINGS

STRUCTURE DESIGN CONTACTS:
MICAH BROOKS (608) 266-5080
LAURA SHADEWALD (608) 267-9592

NO.	DATE	REVISION	BY

WISCONSIN DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURES

ACCEPTED LLS 7/7/22
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE C-20-163

USH 45 OVER MILWAUKEE RIVER

COUNTY: FOND DU LAC | TOWN: EDEN

DESIGN SPEC.
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGNED CK'D.	DRAWN BY	PLANS CK'D.
MWB	IFC	MWB	IFC

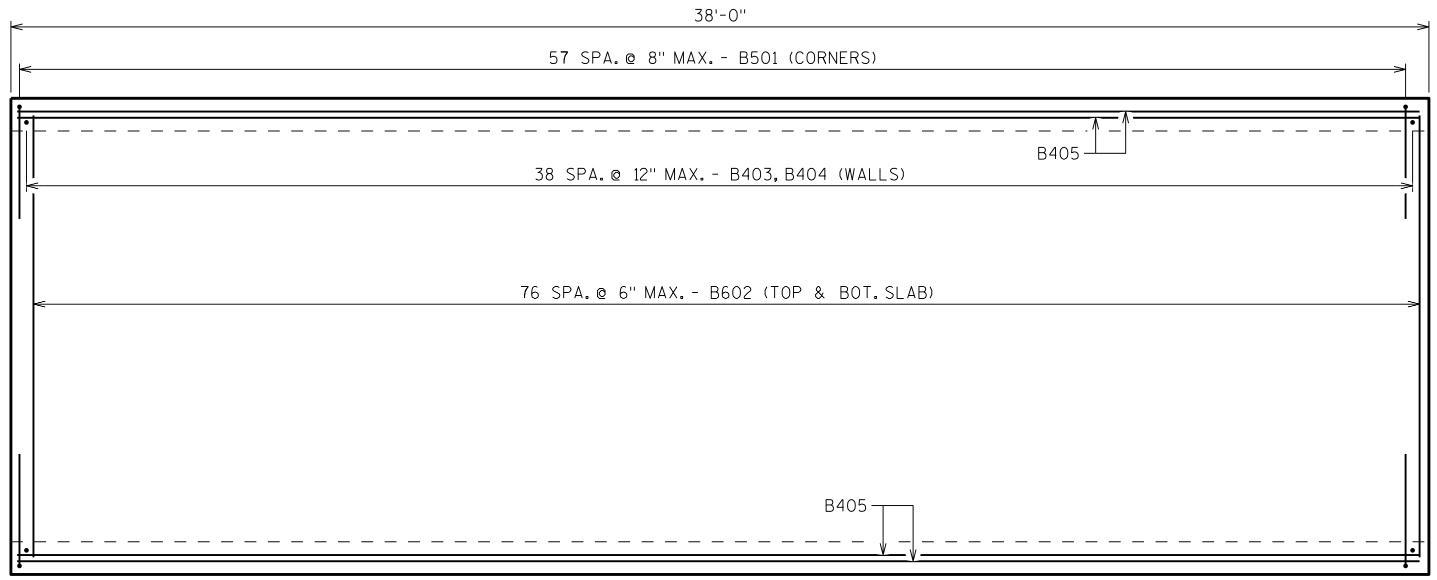
LAYOUT

SHEET 1 OF 5

94

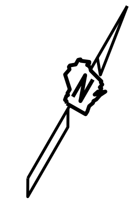
I.D. 4080-06-00B DATE: JAN. 2022

SCALE = 8.00



PLAN

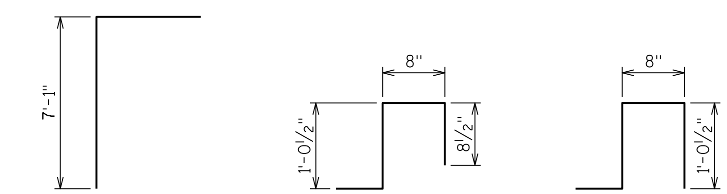
REINF. TYP. ALL PANELS
HEADER NOT SHOWN



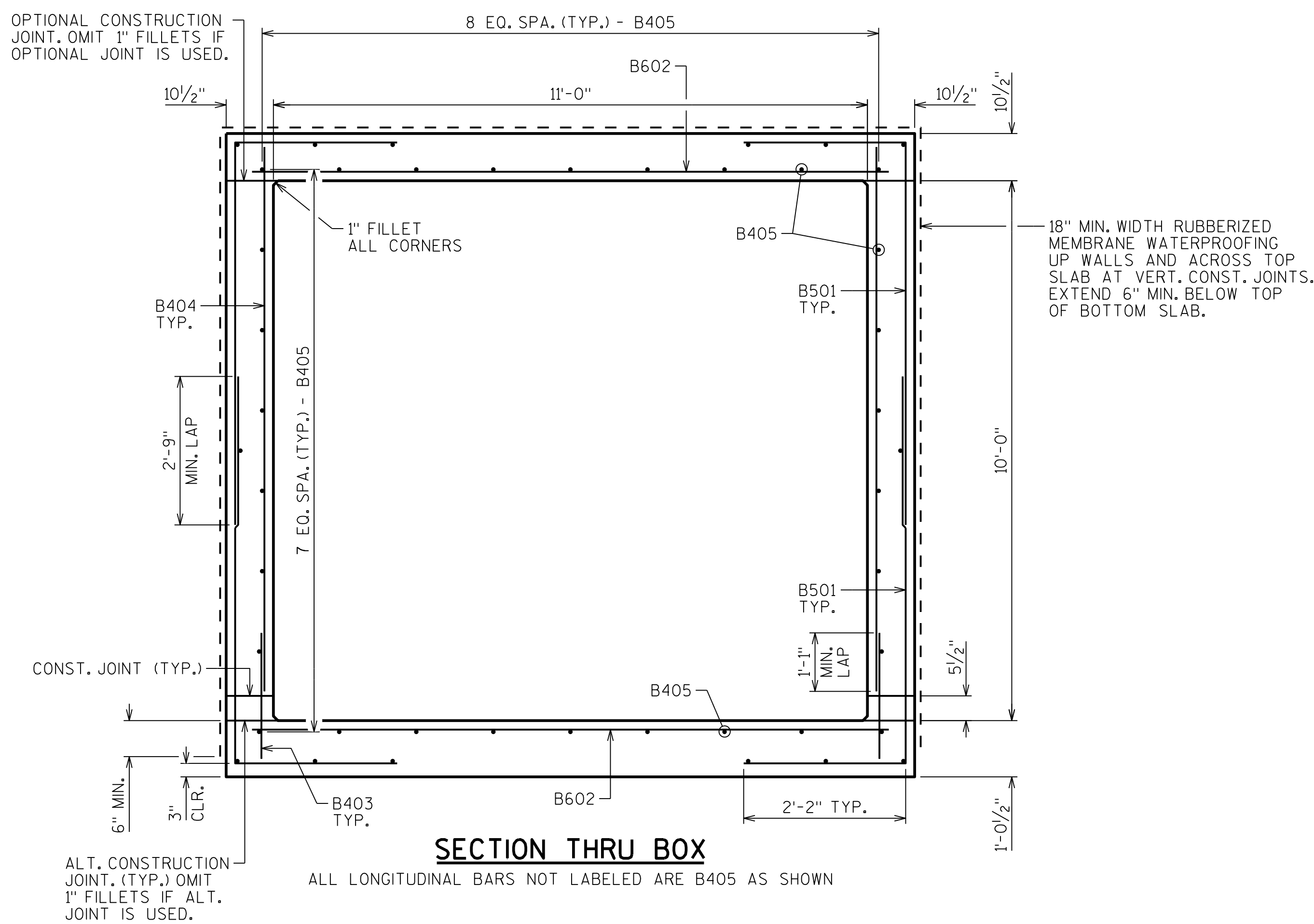
BILL OF BARS

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
B501		696	9'-2"	X		VERT. - CORNERS
B602		462	12'-5"			HORIZ. - TOP & BOT. SLAB
B403		234	2'-2"			VERT. - WALLS - DOWELS
B404		234	10'-2"			VERT. - WALLS
B405		132	37'-8"			LONGIT. - ALL SLABS & WALLS
B506		92	4'-0"			HORIZ. - AT VERT. CONST. JOINTS
B307		18	3'-2"	X		VERT. - INLET HEADER
B308		18	3'-6"	X		VERT. - OUTLET HEADER
B409		4	12'-5"			HORIZ. - HEADERS

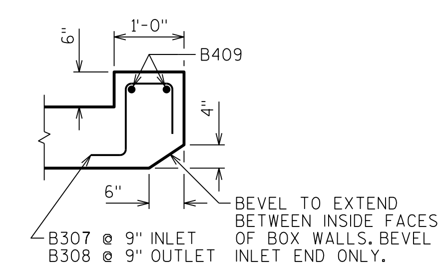


B501 B307 B308

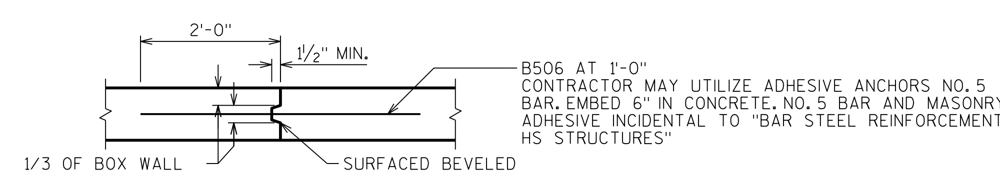


SECTION THRU BOX

ALL LONGITUDINAL BARS NOT LABELED ARE B405 AS SHOWN



SECTION THRU HEADER



VERTICAL CONSTRUCTION JOINT

2" DEEP SAW CUT WITHIN 12 HOURS AFTER POURING MAY BE USED IN LIEU OF CONST. JT. IN BOTTOM SLAB.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-20-163

DRAWN BY MWB | PLANS CK'D. IFC

BOX DETAILS

SHEET 2

8

8

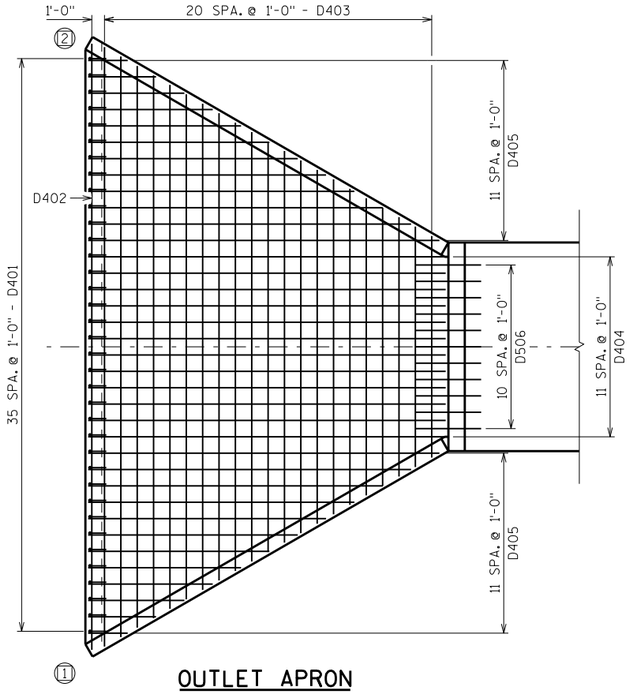
SCALE = 2.50

STATE PROJECT NUMBER

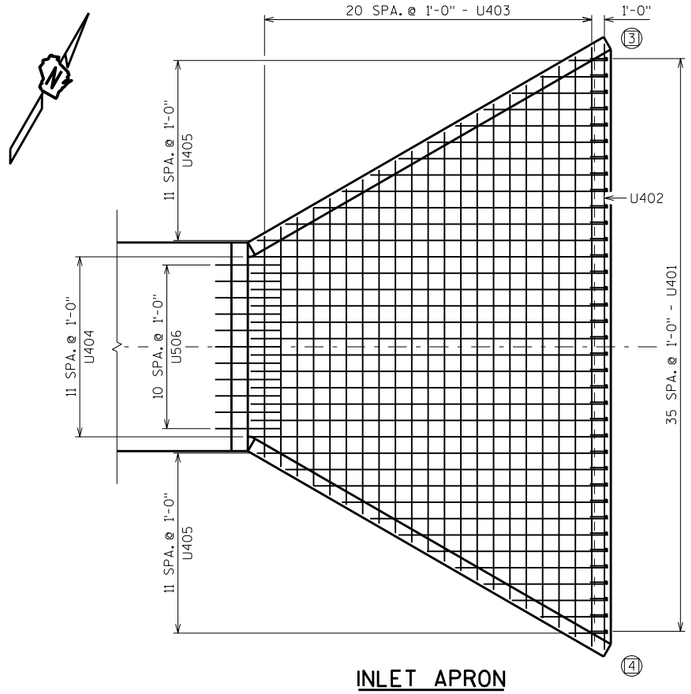
4080-06-71

(X) INDICATES WING NUMBER

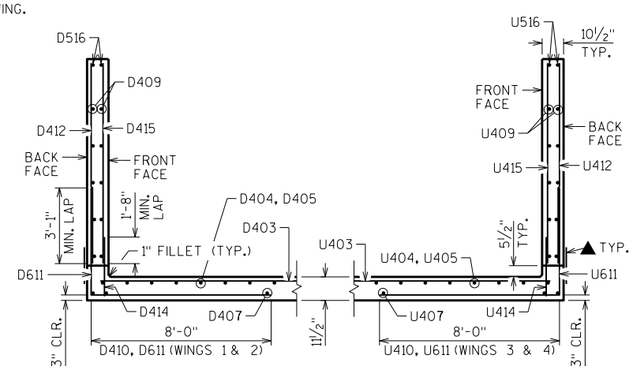
▲ 18" MIN. WIDTH RUBBERIZED MEMBRANE WATERPROOFING. PLACE ALONG HORIZ. CONST. JOINT ENTIRE LENGTH OF WING.



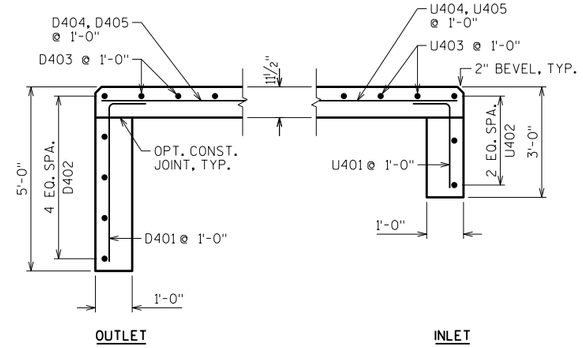
OUTLET APRON



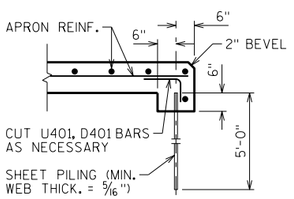
INLET APRON



SECTION THRU WINGS

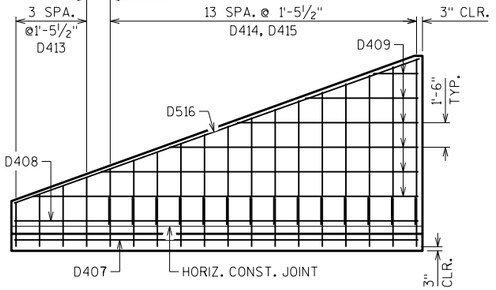


CUT-OFF WALLS



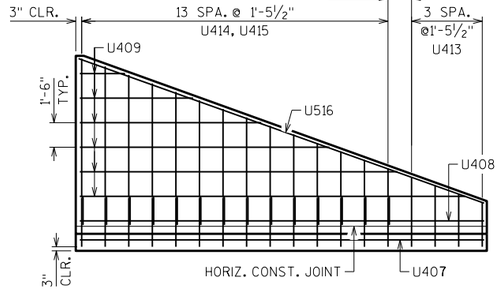
ALTERNATE CUT-OFF WALLS

THE ABOVE ALTERNATIVE MAY BE USED IN LIEU OF CAST-IN-PLACE CONCRETE CUT-OFF WALLS. PAYMENT WILL BE BASED ON THE CONCRETE CUT-OFF WALLS.



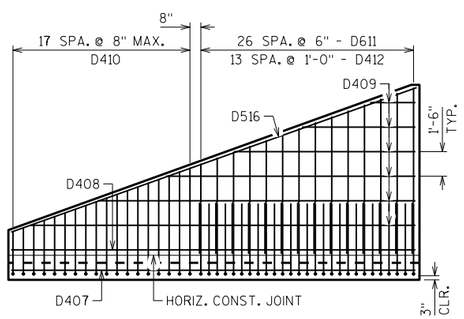
WINGS 1 & 2

SHOWING F.F. REINFORCEMENT



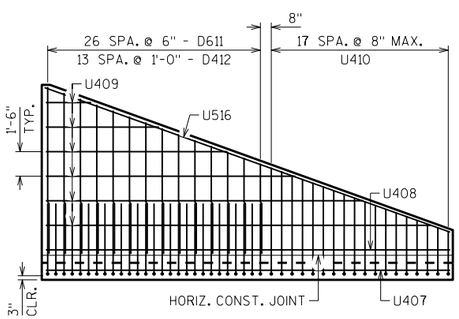
WINGS 3 & 4

SHOWING F.F. REINFORCEMENT



WINGS 1 & 2

SHOWING B.F. REINFORCEMENT



WINGS 3 & 4

SHOWING B.F. REINFORCEMENT

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-20-163

DRAWN BY MWB | PLANS CK'D. IFC

APRON DETAILS

SHEET 3

96

8

8

SCALE = 4.50

STATE PROJECT NUMBER

4080-06-71

BILL OF BARS

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE

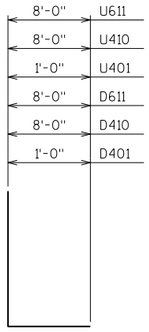
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
D401		36	5'-7"	X		OUTLET CUTOFF WALL - VERT.
D402		5	37'-0"			OUTLET CUTOFF WALL - HORIZ.
D403		21	25'-1"		⚠	OUTLET APRON - TRANS.
D404		12	21'-9"			OUTLET APRON - LONGIT.
D405		24	11'-11"		⚠	OUTLET APRON - LONGIT.
D506		11	4'-0"			OUTLET APRON - CONST. JOINT
D407		6	24'-8"			WINGS 1 & 2 - HORIZ. - BOT.
D408	X	4	24'-8"			WINGS 1 & 2 - HORIZ.
D409	X	24	13'-2"		⚠	WINGS 1 & 2 - HORIZ.
D410	X	36	12'-6"	X	⚠	WINGS 1 & 2 - VERT. - B.F.
D611	X	54	12'-3"	X		WINGS 1 & 2 - VERT. - B.F.
D412	X	28	7'-11"		⚠	WINGS 1 & 2 - VERT. - B.F.
D413	X	8	3'-5"		⚠	WINGS 1 & 2 - VERT. - F.F.
D414	X	28	2'-11"			WINGS 1 & 2 - VERT. - F.F.
D415	X	28	6'-11"		⚠	WINGS 1 & 2 - VERT. - F.F.
D516	X	4	26'-3"			WINGS 1 & 2 - HORIZ. - TOP
U401		36	3'-7"	X		INLET CUTOFF WALL - VERT.
U402		3	37'-0"			INLET CUTOFF WALL - HORIZ.
U403		21	25'-1"		⚠	INLET APRON - TRANS.
U404		12	21'-9"			INLET APRON - LONGIT.
U405		24	11'-11"		⚠	INLET APRON - LONGIT.
U506		11	4'-0"			INLET APRON - CONST. JOINT
U407		6	24'-8"			WINGS 3 & 4 - HORIZ. - BOT.
U408	X	4	24'-8"			WINGS 3 & 4 - HORIZ.
U409	X	24	13'-2"		⚠	WINGS 3 & 4 - HORIZ.
U410	X	36	12'-6"	X	⚠	WINGS 3 & 4 - VERT. - B.F.
U611	X	54	12'-3"	X		WINGS 3 & 4 - VERT. - B.F.
U412	X	28	7'-11"		⚠	WINGS 3 & 4 - VERT. - B.F.
U413	X	8	3'-5"		⚠	WINGS 3 & 4 - VERT. - F.F.
U414	X	28	2'-11"			WINGS 3 & 4 - VERT. - F.F.
U415	X	28	6'-11"		⚠	WINGS 3 & 4 - VERT. - F.F.
U516	X	4	26'-3"			WINGS 3 & 4 - HORIZ. - TOP

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

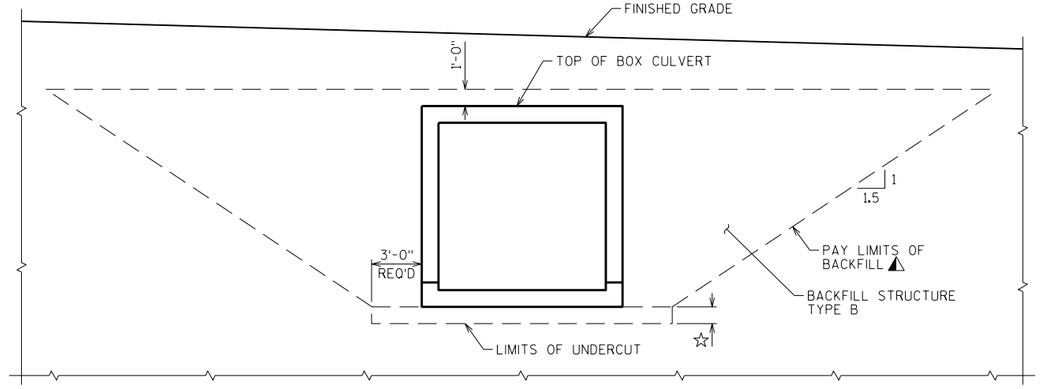
BAR SERIES TABLE

BAR MARK	NO. REQ'D.	LENGTH
D403	1 SERIES OF 21	13'-6" TO 36'-7"
D405	2 SERIES OF 12	2'-5" TO 21'-6"
D409	4 SERIES OF 6	2'-9" TO 23'-7"
D410	2 SERIES OF 18	10'-6" TO 14'-7"
D412	2 SERIES OF 14	5'-8" TO 10'-3"
D413	2 SERIES OF 4	2'-8" TO 4'-2"
D415	2 SERIES OF 14	3'-7" TO 10'-3"
U403	1 SERIES OF 21	13'-6" TO 36'-7"
U405	2 SERIES OF 12	2'-5" TO 21'-6"
U409	4 SERIES OF 6	2'-9" TO 23'-7"
U410	2 SERIES OF 18	10'-6" TO 14'-7"
U412	2 SERIES OF 14	5'-8" TO 10'-3"
U413	2 SERIES OF 4	2'-8" TO 4-2"
U415	2 SERIES OF 14	3'-7" TO 10'-3"

BUNDLE AND TAG EACH SERIES SEPARATELY.



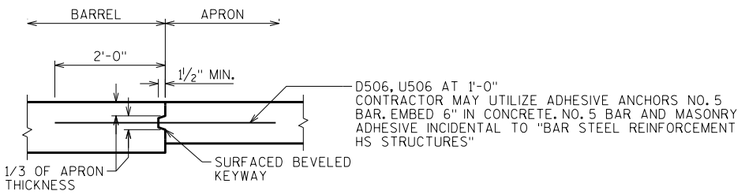
D401, D410, D611, U401, U410, U611



TYPICAL SECTION THRU BOX CULVERT

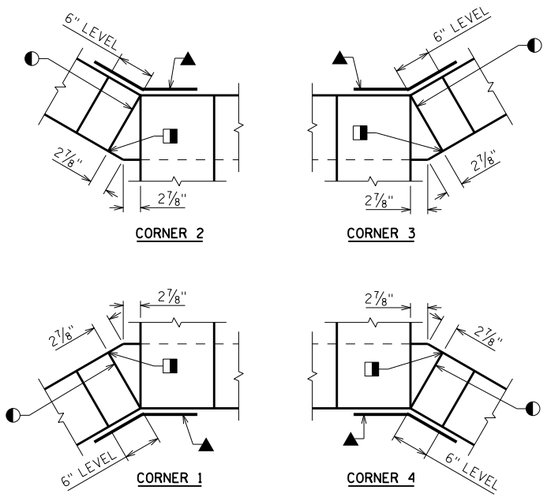
⚠ BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

☆ UNDER CUT 1'-0". EXCAVATION FOR UNDER CUT TO BE INCLUDED IN EXCAVATION FOR STRUCTURES. PLACE "GEOTEXTILE TYPE C" AND BACKFILL WITH "BREAKER RUN".

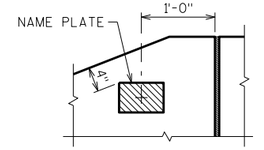


APRON TO SLAB CONNECTION

2" DEEP SAW CUT WITHIN 12 HOURS AFTER POURING MAY BE USED IN LIEU OF CONST. JT. IN BOTTOM SLAB.



CORNER DETAILS



NAME PLATE LOCATION WING 4

◐ ¾" FILLER (TYP.) EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WING.

◨ 1" BEVEL (TYP.)

▲ 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WALL.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-20-163

DRAWN BY MWB | PLANS CK'D. IFC

DETAILS

SHEET 4

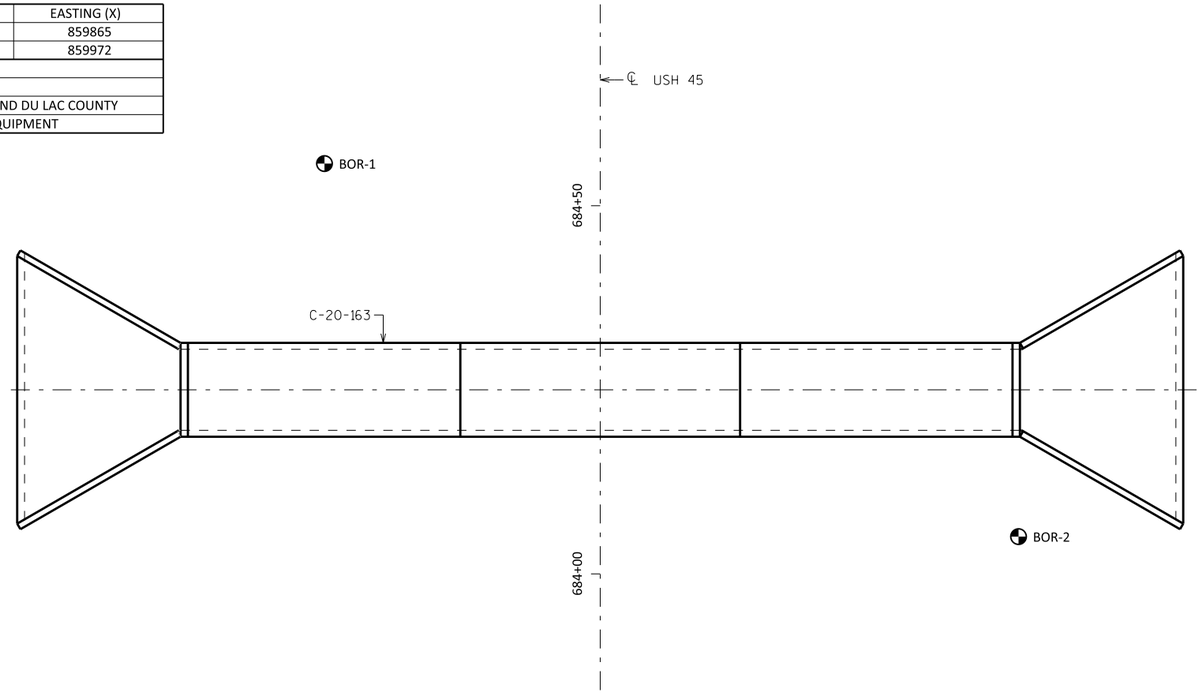
97

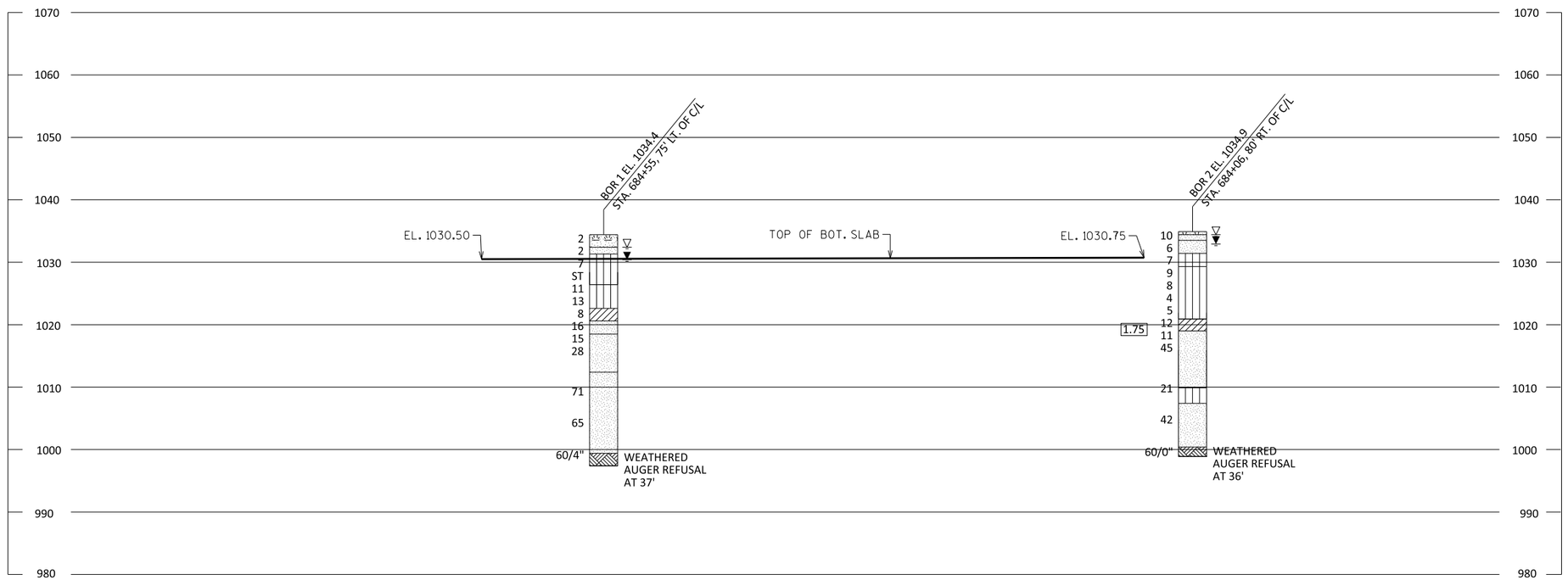
SCALE = 1.00

8

8

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
1	11/23/2021	351106	859865
2	11/23/2021	351108	859972
BORINGS COMPLETED BY: GESTRA			
REPORT COMPLETED BY: WISDOT			
ALL COORDINATES REFERENCED TO WCCS NAD 83 (91) FOND DU LAC COUNTY			
COORDINATES COLLECTED USING NON-SURVEY GRADE EQUIPMENT			





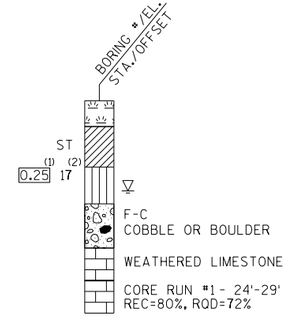
STATE PROJECT NUMBER

4080-06-71

MATERIAL SYMBOLS

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

LEGEND OF BORING



(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)

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

GROUND WATER ELEVATION

- AT TIME OF DRILLING
- END OF DRILLING
- AFTER DRILLING

ABBREVIATIONS

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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-20-163

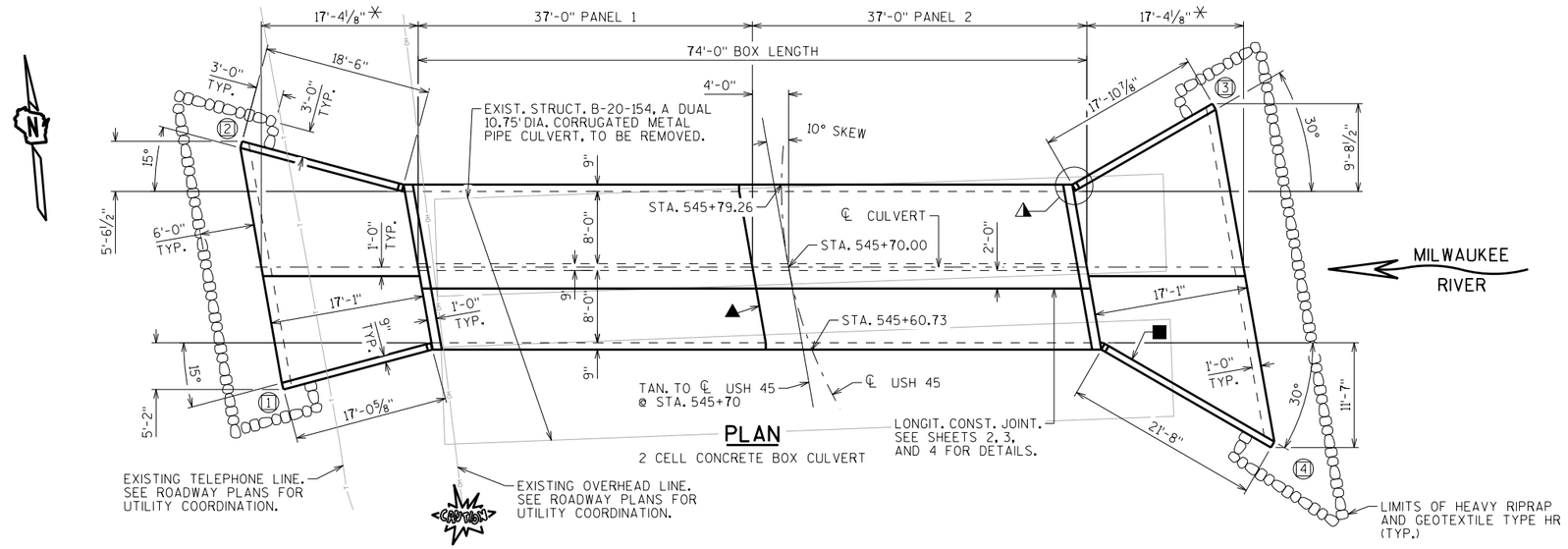
DRAWN BY TLP/MWB | PLANS CK'D. IFC

SUBSURFACE EXPLORATION

SHEET 5

98

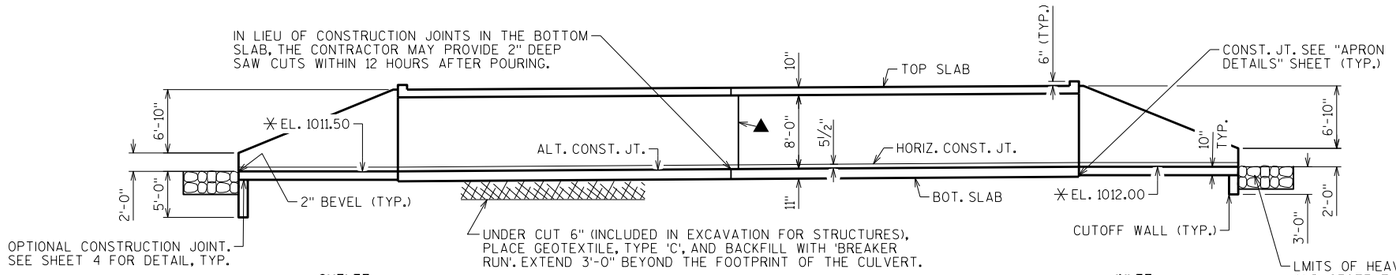
SCALE = 10.00



NOTE: STRUCTURE BACKFILL REQUIRED BEHIND ALL WINGWALLS

STATE PROJECT NUMBER
4080-06-71

- ◭ SEE CORNER DETAILS ON "DETAILS" SHEET
- ■ NAME PLATE LOCATION (SEE "DETAILS" SHEET)
- ✳ BUILD APRON AND END OF BOX LEVEL
- ◯ INDICATES WING NUMBER
- ▲ VERT. CONST. JOINT (TYP.)



OUTLET — INLET

ELEVATION

LIST OF DRAWINGS

DESIGN DATA

LIVE LOAD:
DESIGN LOADING: HL-93
INVENTORY RATING FACTOR: RF = 1.05
OPERATING RATING FACTOR: RF = 1.35
WISCONSIN STANDARD PERMIT VEHICLE (WIS.-SPV): 255 (KIPS)

EARTHLOAD:
DESIGNED FOR 3 TO 6 FT. OF FILL.

MATERIAL PROPERTIES:
CONCRETE MASONRY: ——— f'c = 3,500 P.S.I.
BAR STEEL REINFORCEMENT: ——— fy = 60,000 P.S.I.

HYDRAULIC DATA

100 YEAR FREQUENCY
Q_{100} = 500 C.F.S.
$VEL._{100}$ = 8.82 F.P.S.
$HW._{100}$ = EL. 1018.0
WATERWAY AREA = 128 SQ. FT.
DRAINAGE AREA = 14.5 SQ. MI.
ROADWAY OVERTOPPING = N/A
SCOUR CRITICAL CODE = 8

2 YEAR FREQUENCY
Q_2 = 150 C.F.S.
$VEL._2$ = 4.8 F.P.S.
$HW._2$ = EL. 1015.4

TRAFFIC VOLUME

USH 45
ADT = 3,300 (2043)
R.D.S. = 60 M.P.H.

CURVE DATA

USH 45
P.I. = 539+63.49
△ = 50°23'04"
D = 3°00'00"
T = 898.39'
L = 1679.47'
R = 1909.85'
S.E. = 5.0%
P.C. = 530+65.10
P.T. = 547+44.57

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	TOTALS
203.0220	REMOVING STRUCTURE B-20-154	EACH	1
206.2000	EXCAVATION FOR STRUCTURES CULVERTS C-20-164	LS	1
210.2500	BACKFILL STRUCTURE TYPE B	TON	1,405
311.0115	BREAKER RUN	CY	56
504.0100	CONCRETE MASONRY CULVERTS	CY	189
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	20,430
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	2,230
511.1200	TEMPORARY SHORING C-20-164	SF	790
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SF	40
606.0300	RIPRAP HEAVY	CY	42
645.0105	GEOTEXTILE TYPE C	SY	340
645.0120	GEOTEXTILE TYPE HR	SY	96
	NON-BID ITEMS		
	FILLER	SIZE	¾"

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

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

THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

BEVEL EXPOSED EDGES OF CONCRETE ¾" UNLESS OTHERWISE NOTED.

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES CULVERTS C-20-164" SHALL BE THE EXISTING GROUNDLINE.

ALL VOLUME WHICH CANNOT BE PLACED BEFORE CULVERT CONSTRUCTION AND NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL WITHIN THE LENGTH OF THE CULVERT INCLUDING THE APRON WING WALLS.

THE QUANTITY FOR BACKFILL STRUCTURE IS CALCULATED BASED ON THE DETAIL SHOWN IN THE PLANS.

THE CONCRETE IN THE CUTOFF WALLS MAY BE PLACED UNDERWATER IF THE EXCAVATION CANNOT BE DEWATERED.

PLACE 18" (MIN.) WIDE SHEET OF "RUBBERIZED MEMBRANE WATERPROOFING" ON TOP SLAB OVER ALL CONSTRUCTION JOINTS AND EXTEND DOWN TO 6" BELOW TOP OF BOTTOM SLAB.

THE CONTRACTOR MAY FURNISH A PRECAST CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE BOX CULVERT WITH THE ACCEPTANCE OF THE SHOP DRAWINGS BY THE STRUCTURES DESIGN SECTION. THE PRECAST CONCRETE BOX CULVERT SHALL CONFORM TO PRECAST DETAILS ON CHAPTER 36 STANDARDS OF THE CURRENT WISC. DOT BRIDGE MANUAL. PAYMENT FOR THE PRECAST CULVERT SHALL BE BASED ON THE QUANTITIES AND PRICES BID FOR THE ITEMS LISTED IN THE "TOTAL ESTIMATED QUANTITIES".

THE CONTRACTOR MAY ELECT TO SUBSTITUTE #1 OR #2 CONCRETE COARSE AGGREGATE, SELECT CRUSHED MATERIAL OR OTHER GRANULAR MATERIAL AS APPROVED BY THE FIELD ENGINEER, IN LIEU OF THE BREAKER RUN, TO BE UTILIZED AS A CONSTRUCTION PLATFORM FOR THE BOX. THE CONTRACTOR IS RESPONSIBLE FOR BASE STABILITY WITH ANY SUBSTITUTED MATERIAL.

STRUCTURE DESIGN CONTACTS:

MICAH BROOKS (608) 266-5080
LAURA SHADEWALD (608) 267-9592

NO.	DATE	REVISION	BY

WISCONSIN DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURES

ACCEPTED _____ LLS 7/7/22
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE C-20-164

USH 45 OVER MILWAUKEE RIVER

COUNTY	TOWN
FOND DU LAC	OSCEOLA

DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGNED CK'D.	DRAWN BY	PLANS CK'D.
MWB	IFC	MWB	IFC

LAYOUT

SHEET 1 OF 6

99

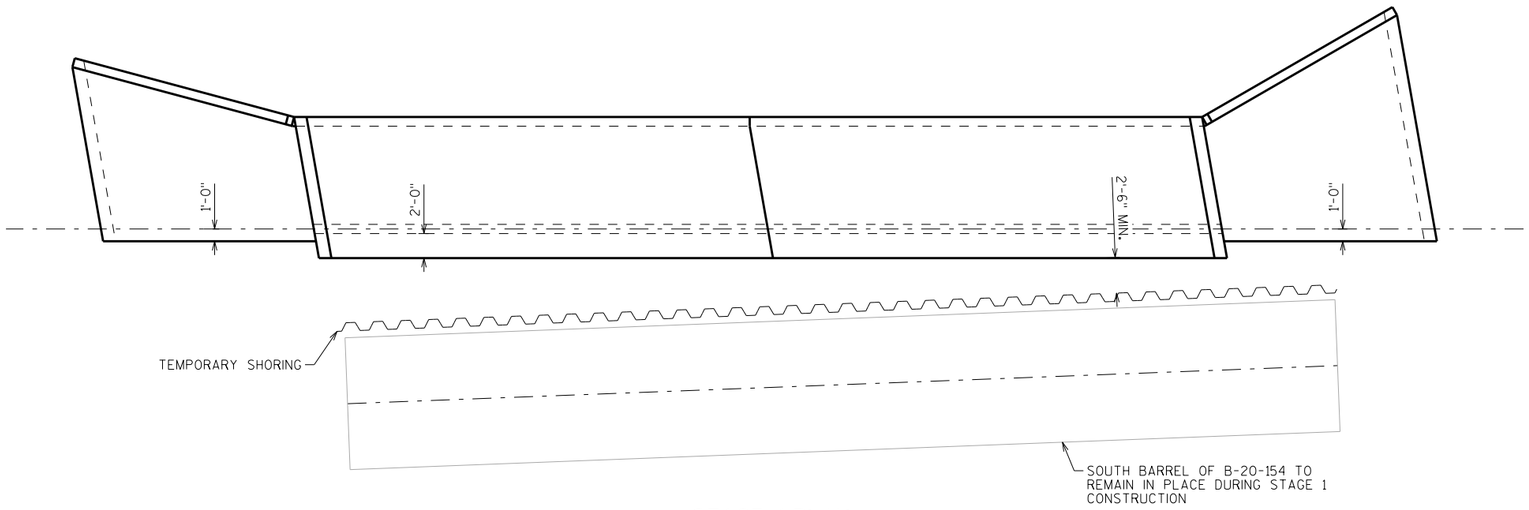
I.D. 4080-06-00A DATE: APR. 2022

SCALE = 8.00

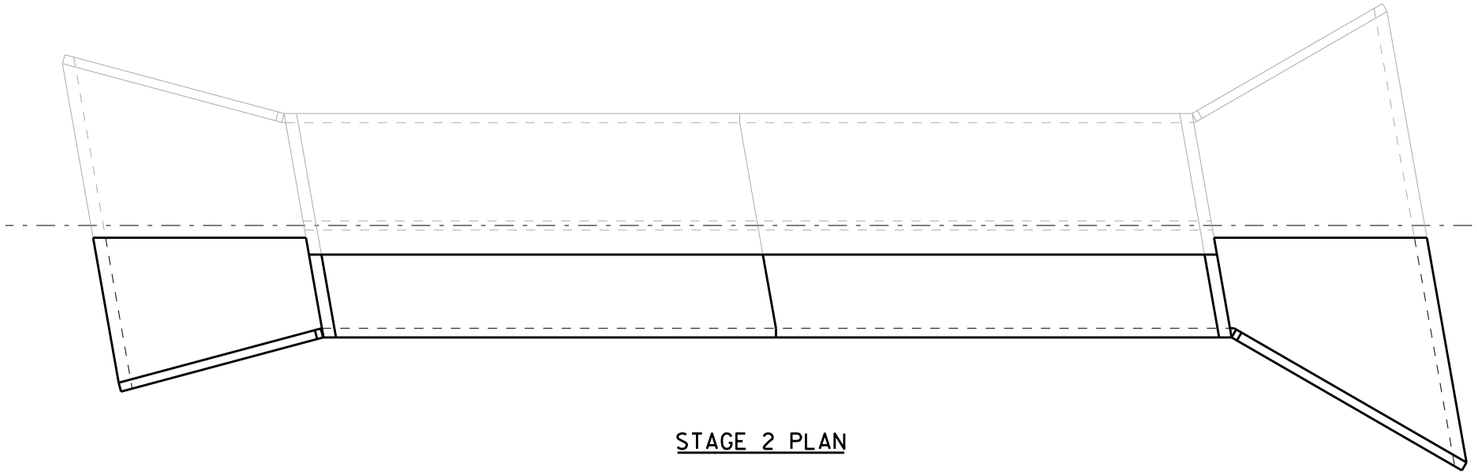
8

8

STATE PROJECT NUMBER
4080-06-71



STAGE 1 PLAN



STAGE 2 PLAN

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-20-164

DRAWN BY MWB | PLANS CK'D. IFC

STAGING PLAN

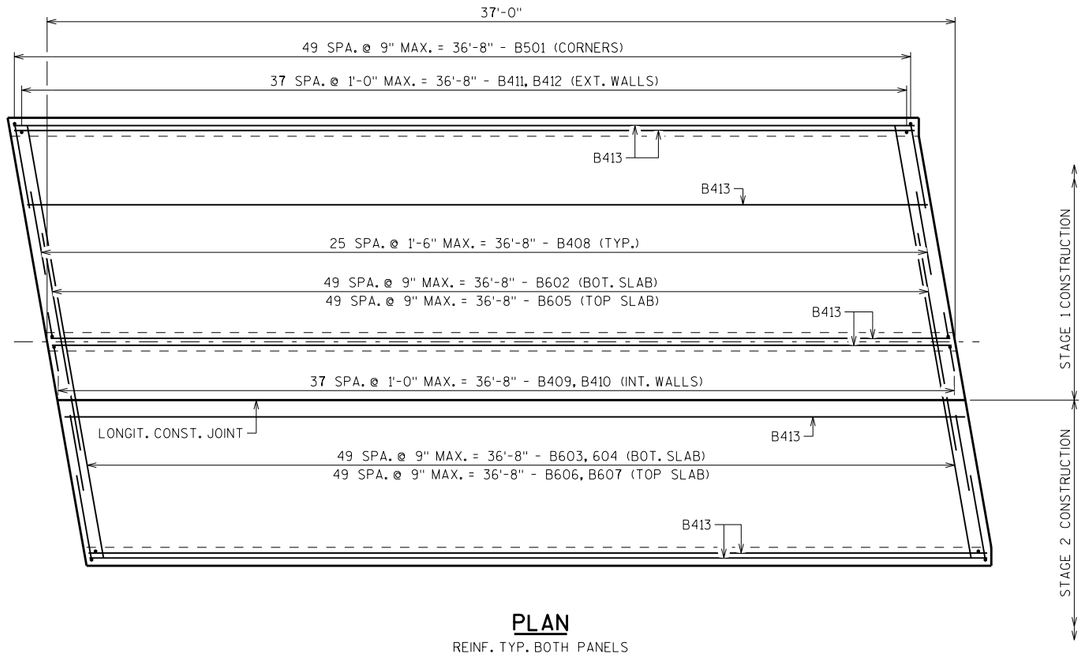
SHEET 2

100

SCALE = 6.00

STATE PROJECT NUMBER

4080-06-71



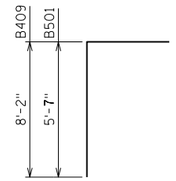
PLAN

REINF. TYP. BOTH PANELS
HEADER NOT SHOWN

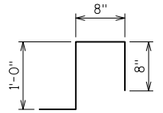
BILL OF BARS

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
B501		400	7'-8"	X		VERT. - CORNERS
B602		100	9'-0"			HORIZ. - BOT. SLAB - AT INT. WALL
B603		100	13'-4"			HORIZ. - BOT. SLAB - STAGE 1
B604		100	6'-5"			HORIZ. - BOT. SLAB - STAGE 2
B605		100	9'-0"			HORIZ. - TOP SLAB - AT INT. WALL
B606		100	13'-4"			HORIZ. - TOP SLAB - STAGE 1
B607		100	6'-5"			HORIZ. - TOP SLAB - STAGE 2
B408		104	4'-7"			HORIZ. - TOP SLAB - OVER CELLS
B409		152	9'-1"	X		VERT. - INT. WALLS
B410		152	2'-2"			VERT. - INT. WALLS - DOWELS
B411		152	8'-2"			VERT. - EXT. WALLS
B412		152	2'-2"			VERT. - EXT. WALLS - DOWELS
B413		152	36'-8"			LONGIT. - ALL SLABS & WALLS
B514		54	4'-0"			HORIZ. - AT VERT. CONST. JOINTS
B315		26	2'-9"	X		VERT. - INLET HEADER
B316		26	3'-1"	X		VERT. - OUTLET HEADER
B417		4	12'-7"			HORIZ. - HEADERS - STAGE 1
B418		4	6'-8"			HORIZ. - HEADERS



B501, B409



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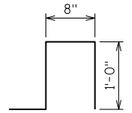

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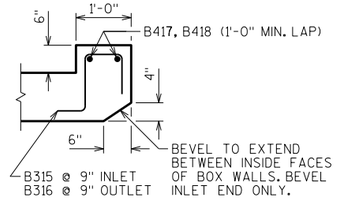
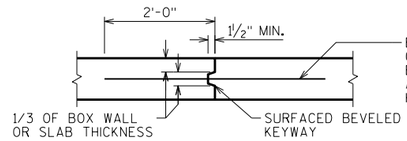


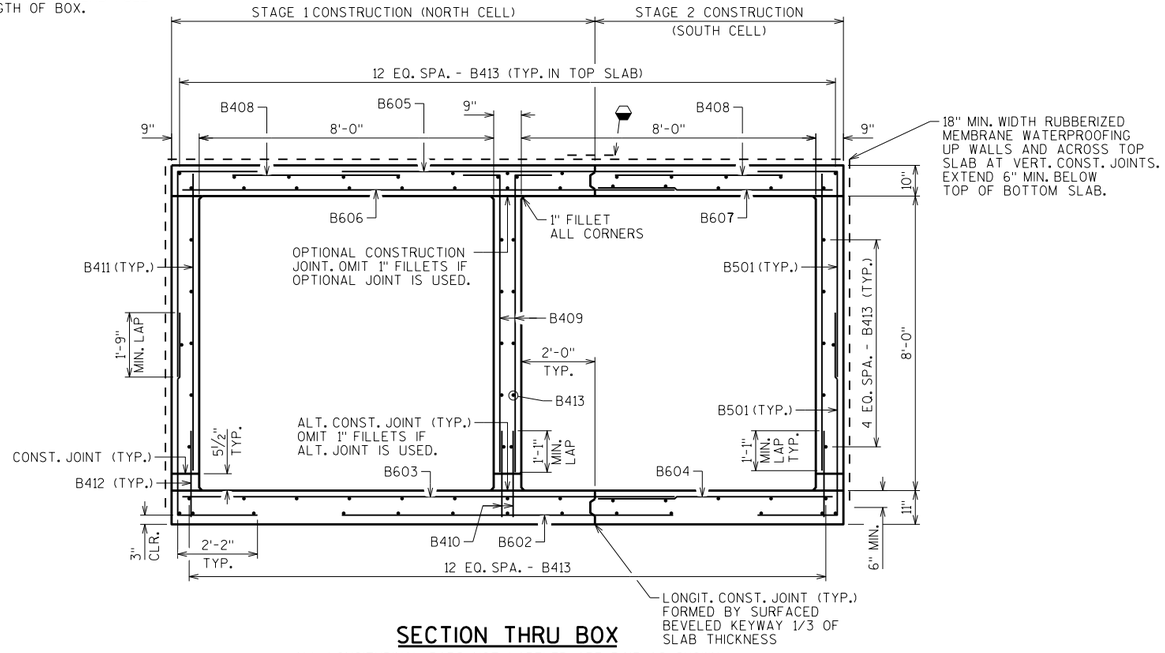
SECTION THRU HEADER



VERTICAL CONSTRUCTION JOINT

2" DEEP SAW CUT WITHIN 12 HOURS AFTER POURING MAY BE USED IN LIEU OF CONST. JT. IN BOTTOM SLAB.

18" MIN. WIDTH RUBBERIZED MEMBRANE WATERPROOFING. PLACE ALONG LONGIT. CONST. JOINT IN TOP SLAB FULL LENGTH OF BOX.



SECTION THRU BOX

ALL LONGITUDINAL BARS NOT LABELED ARE B413 AS SHOWN

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-20-164

DRAWN BY MWB | PLANS CK'D. IFC

BOX DETAILS

SHEET 3

101

SCALE = 3.00

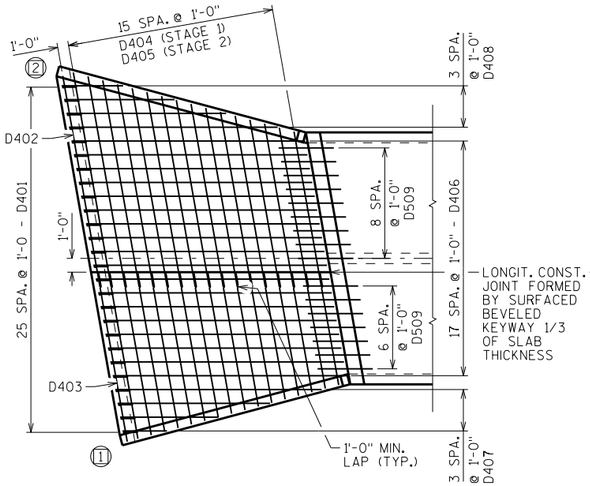
8

8

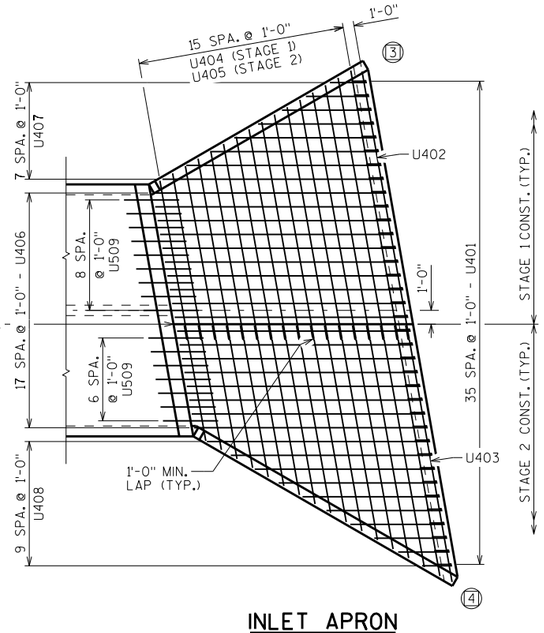
STATE PROJECT NUMBER

4080-06-71

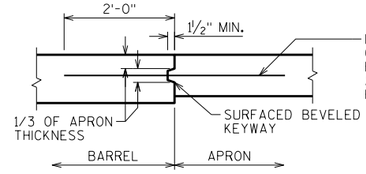
ⓧ INDICATES WING NUMBER



OUTLET APRON

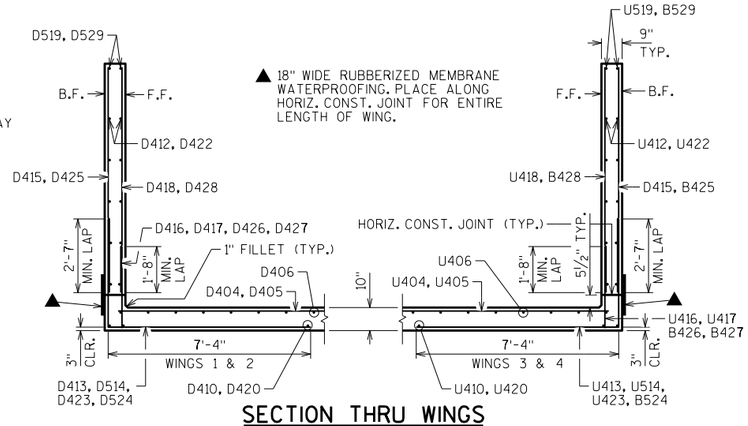


INLET APRON

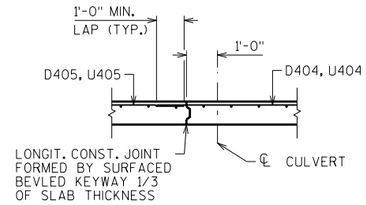


APRON TO SLAB CONNECTION

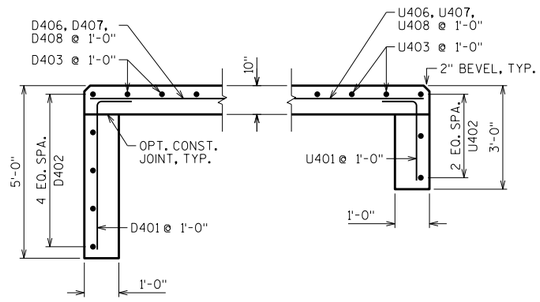
2" DEEP SAW CUT WITHIN 12 HOURS AFTER POURING MAY BE USED IN LIEU OF CONST. JT. IN BOTTOM SLAB.



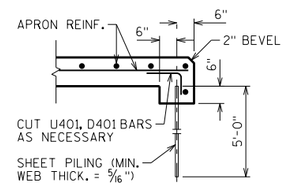
SECTION THRU WINGS



CONSTRUCTION JOINT

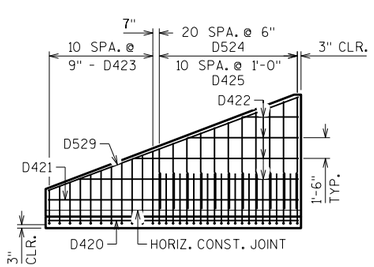


CUT-OFF WALLS



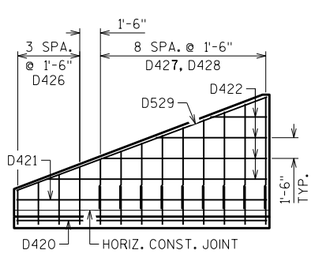
ALTERNATE CUT-OFF WALLS

THE ABOVE ALTERNATIVE MAY BE USED IN LIEU OF CAST-IN-PLACE CONCRETE CUT-OFF WALLS. PAYMENT WILL BE BASED ON THE CONCRETE CUT-OFF WALLS.



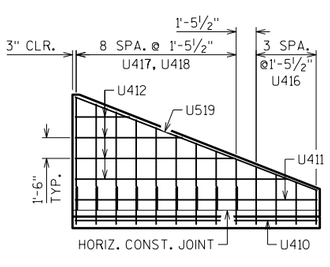
WING 2

SHOWING B.F. REINFORCEMENT



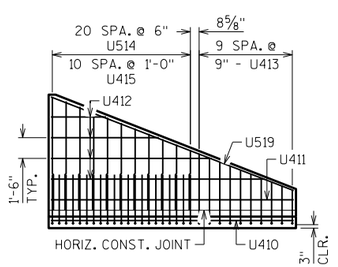
WING 2

SHOWING F.F. REINFORCEMENT



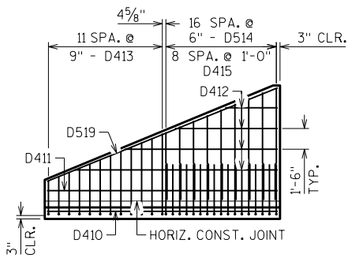
WING 3

SHOWING F.F. REINFORCEMENT



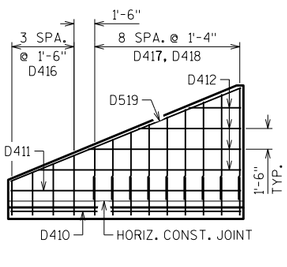
WING 3

SHOWING B.F. REINFORCEMENT



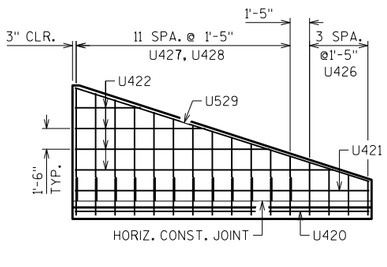
WING 1

SHOWING B.F. REINFORCEMENT



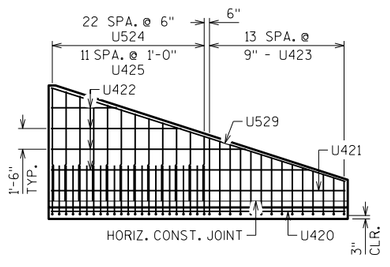
WING 1

SHOWING F.F. REINFORCEMENT



WING 4

SHOWING F.F. REINFORCEMENT



WING 4

SHOWING B.F. REINFORCEMENT

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-20-164

DRAWN BY MWB | PLANS CK'D. IFC

APRON DETAILS

SHEET 4

102

SCALE = 5.33

8

8

STATE PROJECT NUMBER

4080-06-71

BILL OF BARS

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE

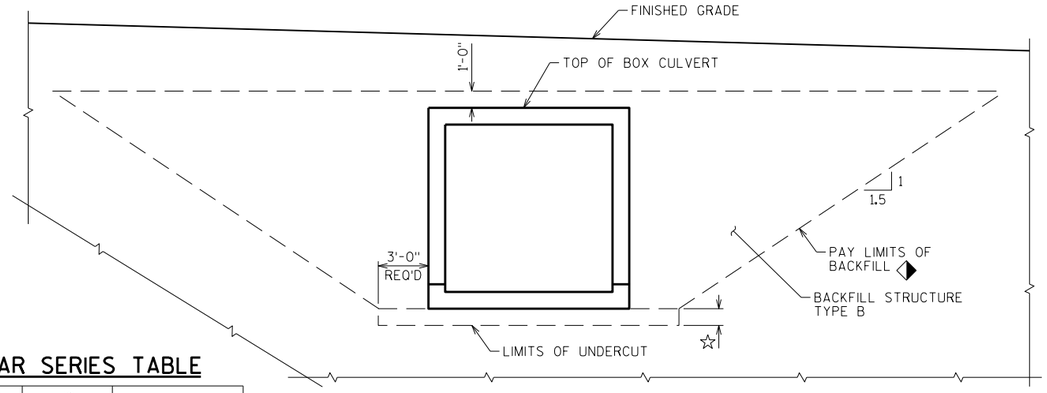
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
D401		26	5'-7"	X		OUTLET CUTOFF WALL - VERT.
D402		5	15'-6"			OUTLET CUTOFF WALL - HORIZ. - STAGE 1
D403		5	12'-5"			OUTLET CUTOFF WALL - HORIZ. - STAGE 2
D404		16	13'-7"		⚠	OUTLET APRON - TRANS. - STAGE 1
D405		16	10'-4"		⚠	OUTLET APRON - TRANS. - STAGE 2
D406		18	16'-11"			OUTLET APRON - LONGIT.
D407		4	9'-1"		⚠	OUTLET APRON - LONGIT.
D408		4	9'-9"		⚠	OUTLET APRON - LONGIT.
D509		17	4'-0"			OUTLET APRON - CONST. JOINT
D410		3	16'-8"			WING 1 - HORIZ. - BOT.
D411	X	2	16'-8"			WING 1 - HORIZ.
D412	X	8	9'-11"		⚠	WING 1 - HORIZ.
D413	X	12	11'-6"	X	⚠	WING 1 - VERT. - B.F.
D514	X	17	10'-11"	X		WING 1 - VERT. - B.F.
D415	X	9	6'-8"		⚠	WING 1 - VERT. - B.F.
D416	X	4	3'-5"		⚠	WING 1 - VERT. - F.F.
D417	X	9	2'-8"			WING 1 - VERT. - F.F.
D418	X	9	6'-1"		⚠	WING 1 - VERT. - F.F.
D519	X	2	18'-0"			WING 1 - HORIZ. - TOP
D420		3	18'-1"			WING 2 - HORIZ. - BOT.
D421	X	2	18'-1"			WING 2 - HORIZ.
D422	X	8	10'-9"		⚠	WING 2 - HORIZ.
D423	X	11	11'-3"	X	⚠	WING 2 - VERT. - B.F.
D524	X	21	10'-11"	X		WING 2 - VERT. - B.F.
D425	X	11	6'-4"		⚠	WING 2 - VERT. - B.F.
D426	X	4	3'-4"		⚠	WING 2 - VERT. - F.F.
D427	X	9	2'-8"			WING 2 - VERT. - F.F.
D428	X	9	5'-11"		⚠	WING 2 - VERT. - F.F.
D529	X	2	19'-4"			WING 2 - HORIZ. - TOP
U401		36	3'-7"	X		INLET CUTOFF WALL - VERT.
U402		3	19'-8"			INLET CUTOFF WALL - HORIZ. - STAGE 1
U403		3	18'-11"			INLET CUTOFF WALL - HORIZ. - STAGE 2
U404		16	15'-8"		⚠	INLET APRON - TRANS. - STAGE 1
U405		16	13'-8"		⚠	INLET APRON - TRANS. - STAGE 2
U406		18	16'-11"			INLET APRON - LONGIT.
U407		8	9'-4"		⚠	INLET APRON - LONGIT.
U408		10	9'-2"		⚠	INLET APRON - LONGIT.
U509		17	4'-0"			INLET APRON - CONST. JOINT
U410		3	17'-6"			WING 3 - HORIZ. - BOT.
U411	X	2	17'-6"			WING 3 - HORIZ.
U412	X	8	10'-5"		⚠	WING 3 - HORIZ.
U413	X	10	11'-2"	X	⚠	WING 3 - VERT. - B.F.
U514	X	21	10'-11"	X		WING 3 - VERT. - B.F.
U415	X	11	6'-3"		⚠	WING 3 - VERT. - B.F.
U416	X	4	3'-5"		⚠	WING 3 - VERT. - F.F.
U417	X	9	2'-8"			WING 3 - VERT. - F.F.
U418	X	9	6'-0"		⚠	WING 3 - VERT. - F.F.
U519	X	2	18'-10"			WING 3 - HORIZ. - TOP
U420		3	21'-3"			WING 4 - HORIZ. - BOT.
U421	X	2	21'-3"			WING 4 - HORIZ.
U422	X	8	12'-8"		⚠	WING 4 - HORIZ.
U423	X	14	11'-5"	X	⚠	WING 4 - VERT. - B.F.
U524	X	23	10'-11"	X		WING 4 - VERT. - B.F.
U425	X	12	6'-6"		⚠	WING 4 - VERT. - B.F.
U426	X	4	3'-2"		⚠	WING 4 - VERT. - F.F.
U427	X	12	2'-8"			WING 4 - VERT. - F.F.
U428	X	12	5'-9"		⚠	WING 4 - VERT. - F.F.
U529	X	2	22'-4"			WING 4 - HORIZ. - TOP

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

BAR SERIES TABLE

BAR MARK	NO. REQ'D.	LENGTH
D404	1 SERIES OF 16	11'-5" TO 15'-9"
D405	1 SERIES OF 16	8'-4" TO 12'-3"
D407	1 SERIES OF 4	3'-2" TO 14'-11"
D408	1 SERIES OF 4	4'-5" TO 15'-1"
D412	2 SERIES OF 4	4'-5" TO 15'-4"
D413	1 SERIES OF 12	9'-10" TO 13'-2"
D415	1 SERIES OF 9	5'-0" TO 8'-3"
D416	1 SERIES OF 4	2'-6" TO 4'-4"
D418	1 SERIES OF 9	3'-11" TO 8'-2"
D422	2 SERIES OF 4	4'-10" TO 16'-8"
D423	1 SERIES OF 11	9'-10" TO 12'-8"
D425	1 SERIES OF 11	4'-6" TO 8'-3"
D426	1 SERIES OF 4	2'-6" TO 4'-2"
D428	1 SERIES OF 9	3'-8" TO 8'-2"
U404	1 SERIES OF 16	11'-7" TO 19'-9"
U405	1 SERIES OF 16	8'-8" TO 18'-7"
U407	1 SERIES OF 8	2'-8" TO 16'-0"
U408	1 SERIES OF 10	2'-2" TO 16'-2"
U412	2 SERIES OF 4	4'-8" TO 16'-2"
U413	1 SERIES OF 10	9'-10" TO 12'-5"
U415	1 SERIES OF 11	4'-4" TO 8'-2"
U416	1 SERIES OF 4	2'-6" TO 4'-3"
U418	1 SERIES OF 9	3'-9" TO 8'-3"
U422	2 SERIES OF 4	5'-8" TO 19'-7"
U423	1 SERIES OF 14	9'-9" TO 12'-11"

BUNDLE AND TAG EACH SERIES SEPARATELY.



TYPICAL SECTION THRU BOX CULVERT

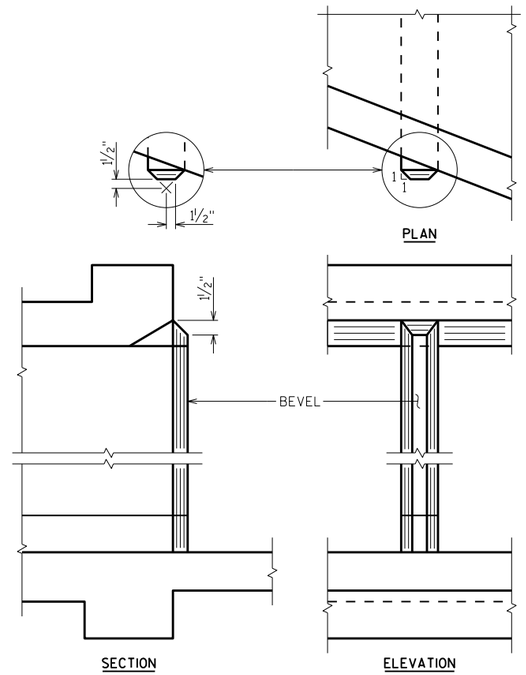
◆ BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

☆ UNDER CUT 6". EXCAVATION FOR UNDER CUT TO BE INCLUDED IN EXCAVATION FOR STRUCTURES. PLACE "GEOTEXTILE TYPE C" AND BACKFILL WITH "BREAKER RUN".

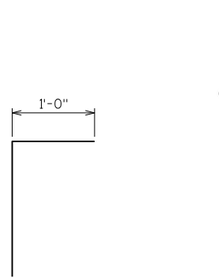
BAR SERIES TABLE CON'D.

BAR MARK	NO. REQ'D.	LENGTH
U425	1 SERIES OF 12	4'-9" TO 8'-3"
U426	1 SERIES OF 4	2'-6" TO 3'-10"
U428	1 SERIES OF 12	3'-3" TO 8'-3"

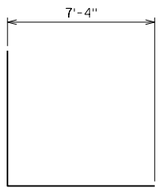
BUNDLE AND TAG EACH SERIES SEPARATELY.



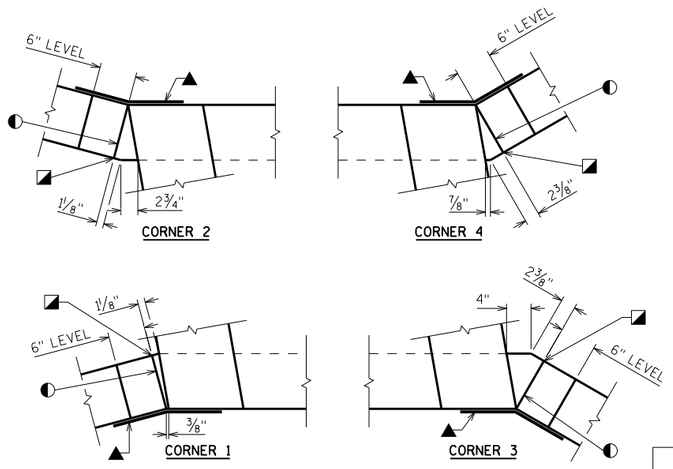
INLET NOSE DETAILS



D401, U401



D413, D514, D423, D524, U413, U514, U423, U524

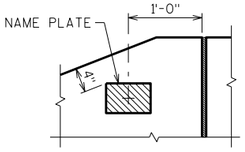


CORNER DETAILS

◐ ¾" FILLER TYP. EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WING.

◪ 1" BEVEL TYP.

▲ 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. PLACE ALONG HORIZ. CONST. JOINT FOR ENTIRE LENGTH OF WING.



NAME PLATE LOCATION WING 4

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-20-164

DRAWN BY MWB | PLANS CK'D. IFC

DETAILS

SHEET 5

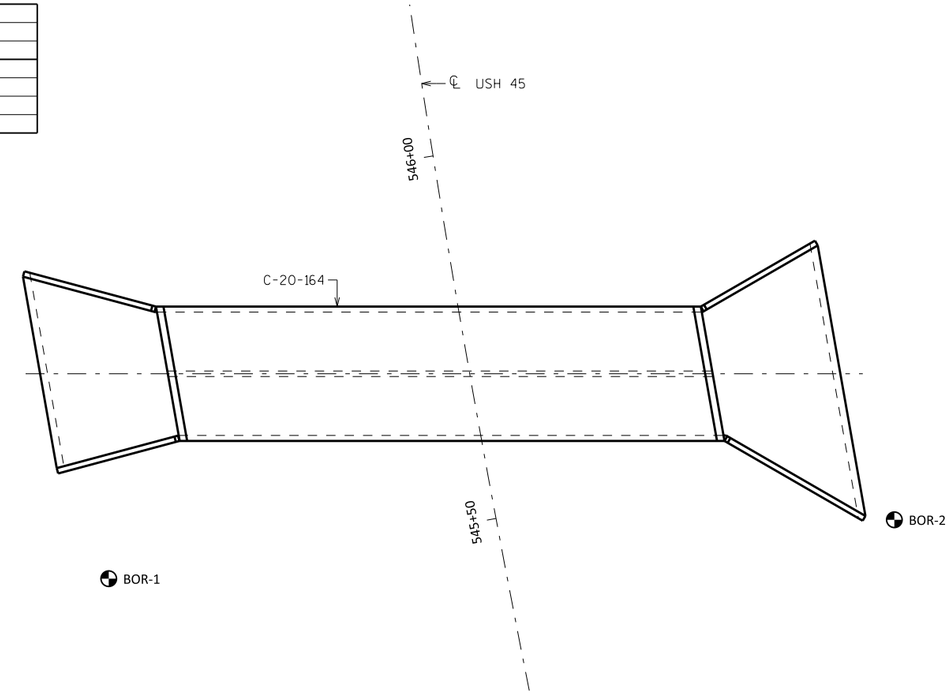
103

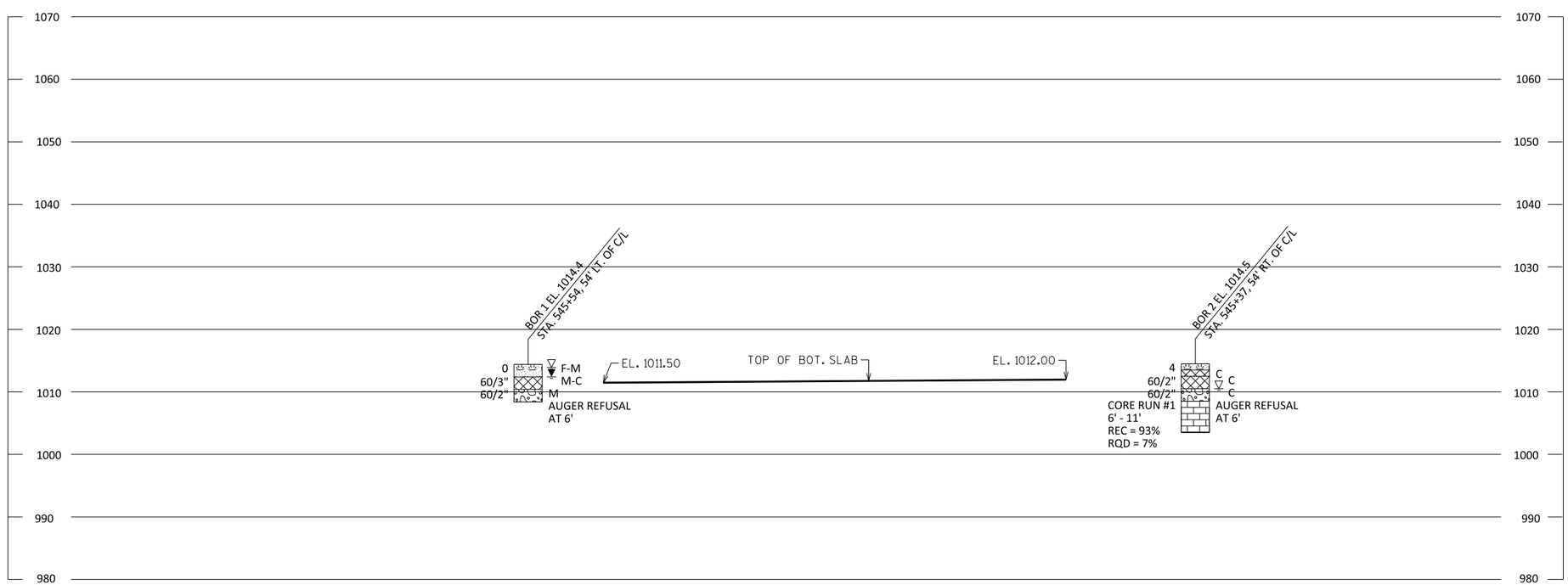
SCALE = 1.00

8

8

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
1	11/10/2021	339917	866426
2	11/10/2021	339918	866533
BORINGS COMPLETED BY: GESTRA			
REPORT COMPLETED BY: WISDOT			
ALL COORDINATES REFERENCED TO WCCS NAD 83 (91) FOND DU LAC COUNTY			
COORDINATES COLLECTED USING NON-SURVEY GRADE EQUIPMENT			





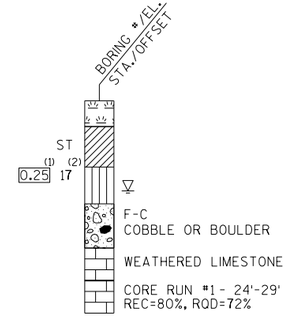
STATE PROJECT NUMBER

4080-06-71

MATERIAL SYMBOLS

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

LEGEND OF BORING



(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)

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

GROUND WATER ELEVATION

- AT TIME OF DRILLING
- END OF DRILLING
- AFTER DRILLING

ABBREVIATIONS

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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE C-20-164

DRAWN BY TLP/MWB | PLANS CK'D. IFC

SUBSURFACE EXPLORATION

SHEET 6

104

SCALE = 10.00

DIVISION 1 C-20-0164

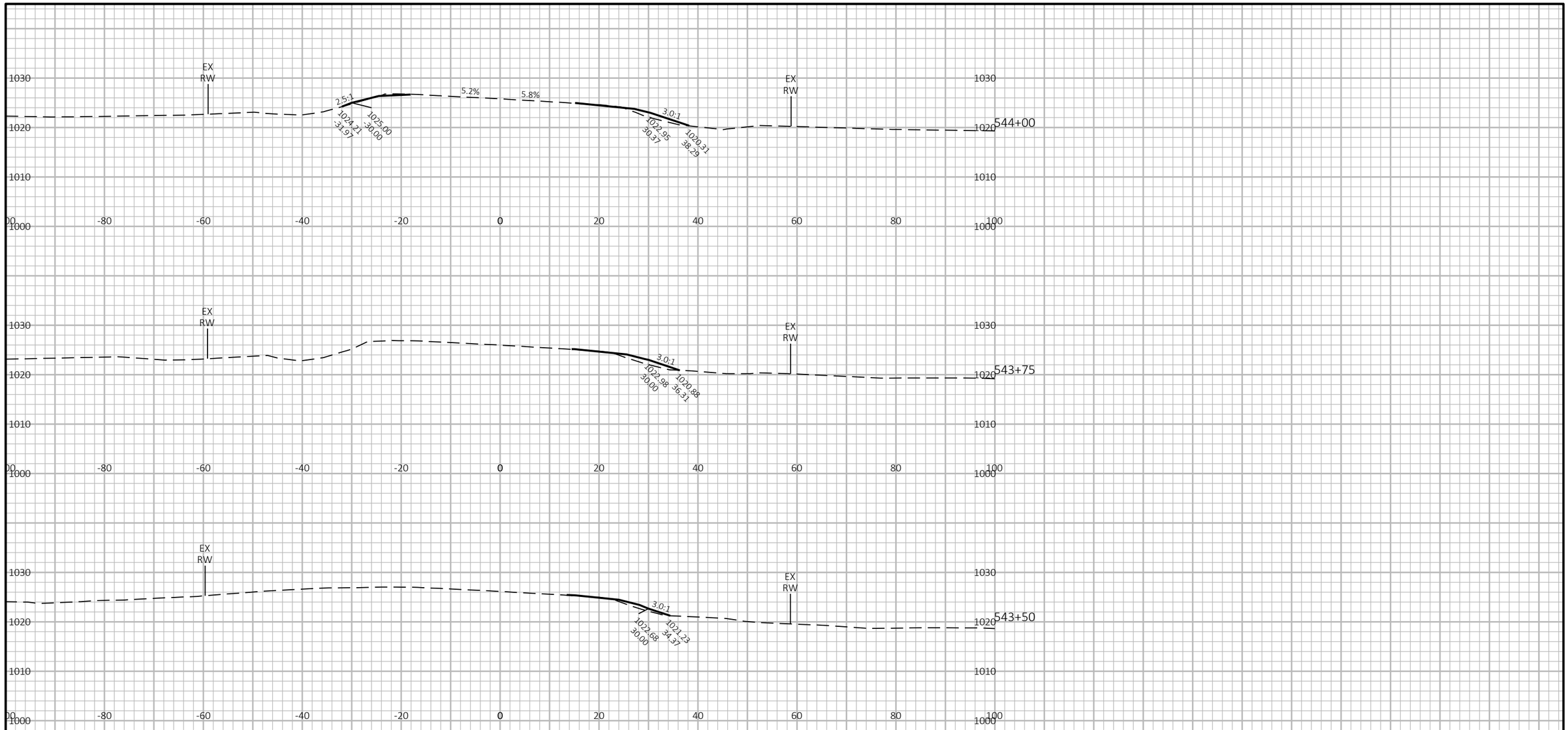
STATION	REAL STATION	DISTANCE	AREA (SF)			INCREMENTAL VOL (CY) (UNADJUSTED)			CUMULATIVE VOL (CY)		
			CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	EXPANDED FILL	MASS ORDINATE
						NOTE 1		NOTE 2	1.00 NOTE 1	1.15	NOTE 3
543+25	54325.00	0.00	0.00	14.00	0.00	0	0	0	0	0	0
543+50	54350.00	25.00	5.47	14.00	0.25	3	13	0	3	0	-10
544+00	54400.00	50.00	9.36	14.00	2.09	14	26	2	17	2	-24
544+50	54450.00	50.00	3.70	14.00	1.67	12	26	3	29	6	-42
545+00	54500.00	50.00	7.50	14.00	0.59	10	26	2	39	8	-60
545+50	54550.00	50.00	54.70	14.00	63.11	58	26	59	97	76	-96
546+00	54600.00	50.00	74.23	14.00	63.42	119	26	117	216	210	-137
546+50	54650.00	50.00	0.00	14.00	0.41	69	26	59	285	278	-162
546+50.779	54650.78	0.78	0.00	14.00	0.00	0	0	0	285	278	-162

DIVISION 2 C-20-0163

STATION	REAL STATION	DISTANCE	AREA (SF)			INCREMENTAL VOL (CY) (UNADJUSTED)			CUMULATIVE VOL (CY)		
			CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	EXPANDED FILL	MASS ORDINATE
						NOTE 1		NOTE 2	1.00 NOTE 1	1.15	NOTE 3
681+50	68150.00	0.00	0.38	16.00	1.53	0	0	0	0	0	0
682+00	68200.00	50.00	0.00	16.00	11.26	0	30	12	0	14	-44
682+50	68250.00	50.00	0.07	16.00	24.68	0	30	33	0	52	-112
683+00	68300.00	50.00	0.02	16.00	15.02	0	30	37	0	94	-184
683+50	68350.00	50.00	0.07	16.00	19.64	0	30	32	0	131	-251
684+00	68400.00	50.00	77.77	16.00	230.35	72	30	231	72	397	-475
684+50	68450.00	50.00	77.65	16.00	229.54	144	30	426	216	887	-851
685+00	68500.00	50.00	0.00	16.00	13.08	72	30	225	288	1,145	-1,067
685+50	68550.00	50.00	0.18	16.00	3.71	0	30	16	288	1,164	-1,116
686+00	68600.00	50.00	0.04	16.00	4.37	0	30	7	288	1,172	-1,154
686+50	68650.00	50.00	0.00	16.00	8.29	0	30	12	288	1,186	-1,198
687+00	68700.00	50.00	0.00	16.00	21.10	0	30	27	288	1,217	-1,259
687+50	68750.00	50.00	0.00	16.00	25.83	0	30	43	288	1,266	-1,338
688+00	68800.00	50.00	0.38	16.00	6.86	0	30	30	288	1,301	-1,403
688+50	68850.00	50.00	0.00	16.00	1.48	0	30	8	288	1,310	-1,442
689+00	68900.00	50.00	0.00	16.00	4.29	0	30	5	288	1,316	-1,478
689+50	68950.00	50.00	0.00	16.00	2.48	0	30	6	288	1,323	-1,515
690+00	69000.00	50.00	0.01	16.00	3.00	0	30	5	288	1,328	-1,550

Notes:

1 - CUT	CUT INCLUDES SALVAGED/UNUSABLE PAVEMENT MATERIAL
2 - FILL	DOES NOT INCLUDE UNUSABLE PAVEMENT EXC VOLUME
3 - MASS ORDINATE	THE MASS ORDINATE + OR - QTY CALCULATED FOR THE DIVISION. PLUS QUANTITY INDICATES AN EXCESS OF MATERIAL WITHIN THE DIVISION. MINUS INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.

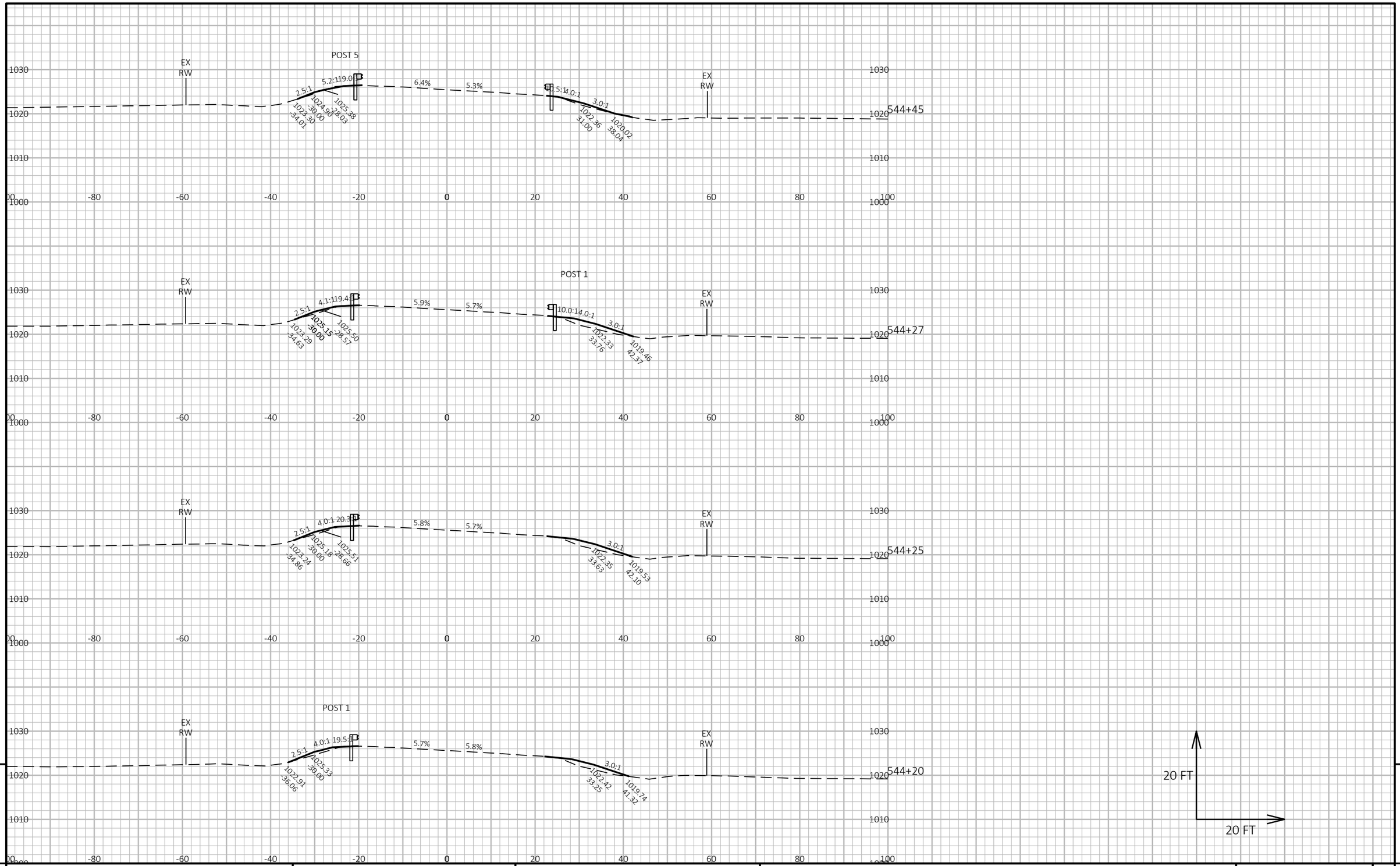


PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: CROSS SECTIONS	SHEET 106	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS_UPDATE.DWG
LAYOUT NAME - 090208-xs

PLOT DATE : 2/28/2022 8:36 AM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49



20 FT

20 FT

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PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: CROSS SECTIONS	SHEET 107	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS_UPDATE.DWG
LAYOUT NAME - 090209-xs

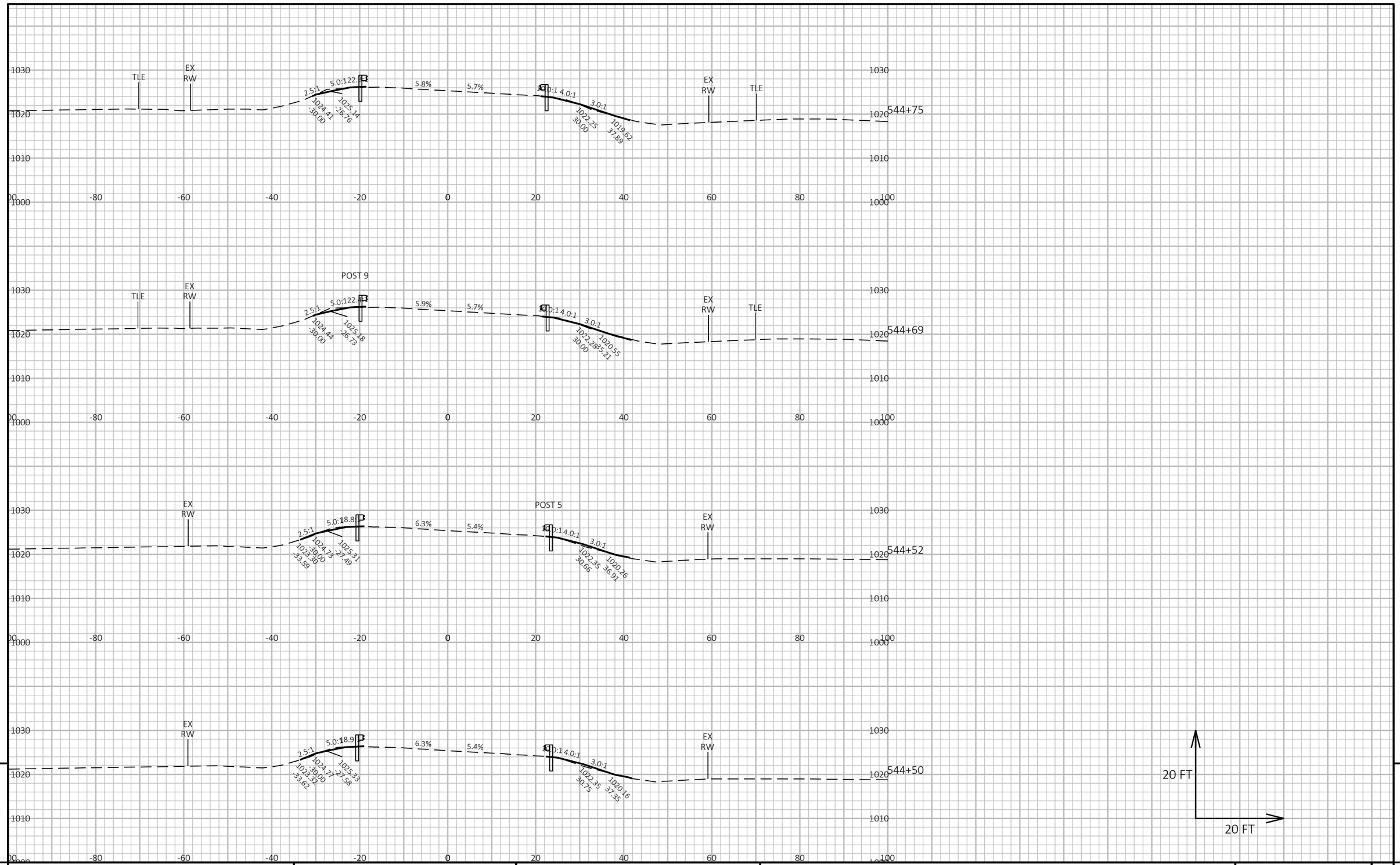
PLOT DATE : 2/28/2022 8:36 AM

PLOT BY : BRATTLUND, ERIK JOHN

PLOT NAME :

PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49



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PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: CROSS SECTIONS	SHEET 108	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS_UPDATE.DWG
LAYOUT NAME - 090210-xs

PLOT DATE : 2/28/2022 8:36 AM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49

CTH F

EX
RW

1030
1020
1010
1000
0 20 40 60 80 100 120 140 160

0+75

1030
1020
1010
1000
0 20 40 60 80 100 120 140 160

0+50

1030
1020
1010
1000
0 20 40 60 80 100 120 140 160

0+25

20 FT

20 FT

9

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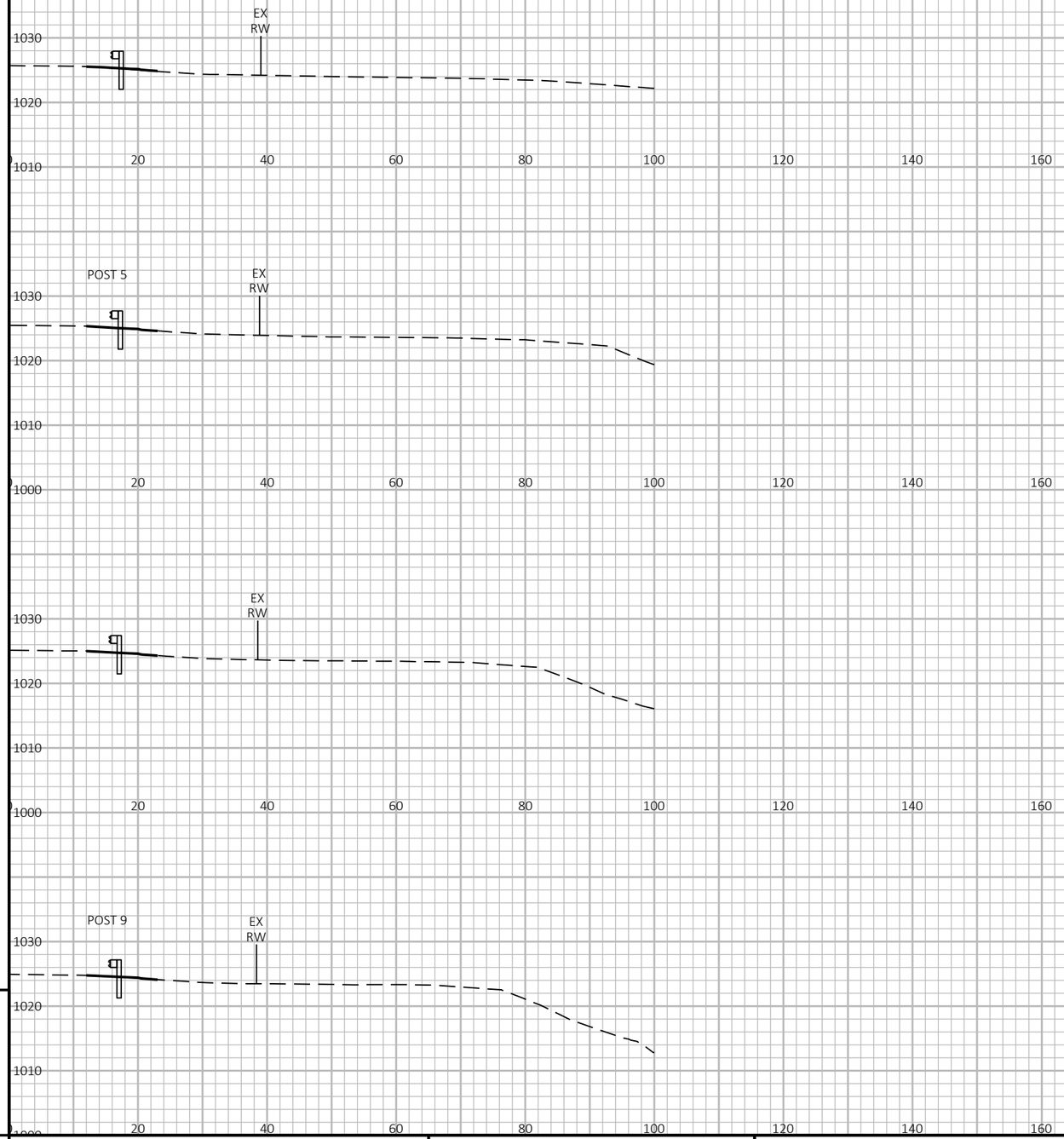
PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: CROSS SECTIONS	SHEET 109	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS_UPDATE.DWG
LAYOUT NAME - 090214-xs

PLOT DATE : 2/28/2022 8:36 AM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49

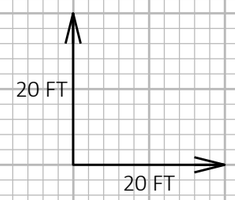


1+25

1+15

1+00

0+90



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PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: CROSS SECTIONS	SHEET 110	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS_UPDATE.DWG
LAYOUT NAME - 090215-xs

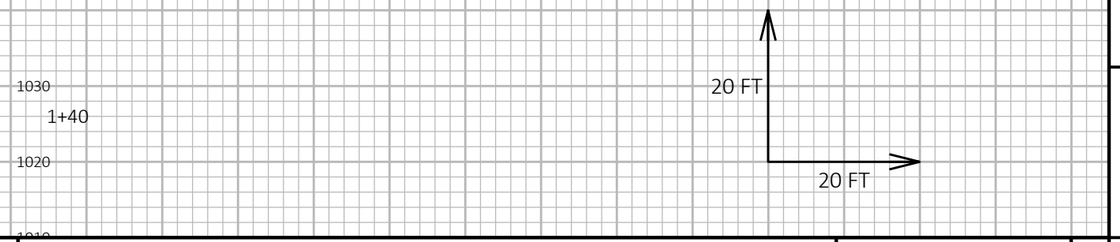
PLOT DATE : 2/28/2022 8:36 AM

PLOT BY : BRATTLUND, ERIK JOHN

PLOT NAME :

PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49



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PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: CROSS SECTIONS	SHEET 111	E

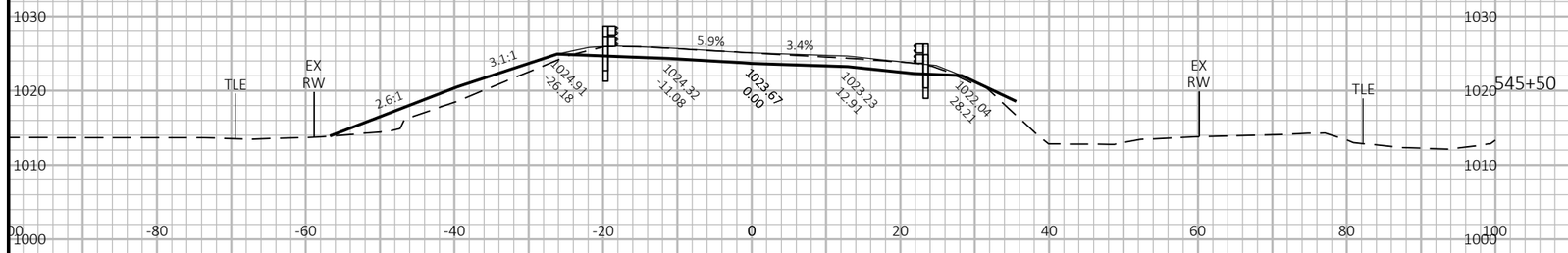
FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS_UPDATE.DWG
LAYOUT NAME - 090216-xs

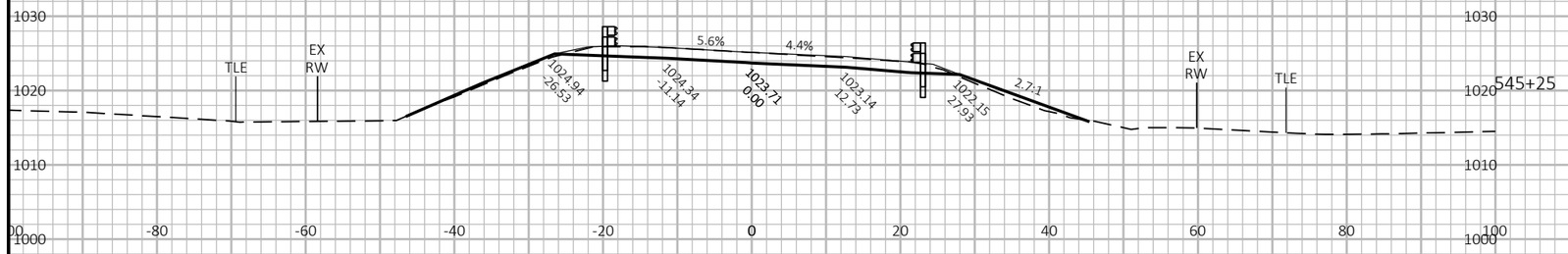
PLOT DATE : 2/28/2022 8:36 AM

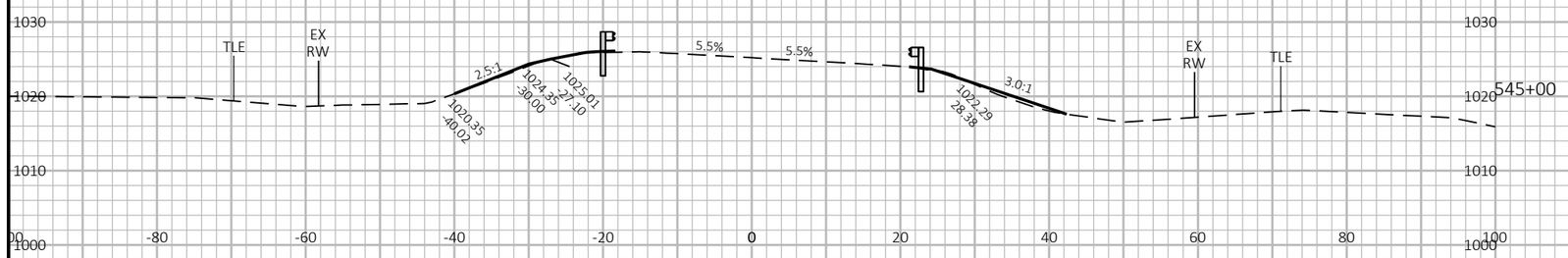
PLOT BY : BRATTLUND, ERIK JOHN

PLOT NAME :

PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.







POST 9

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PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: CROSS SECTIONS	SHEET 112	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS_UPDATE.DWG
LAYOUT NAME - 090211-xs

PLOT DATE : 2/28/2022 8:36 AM

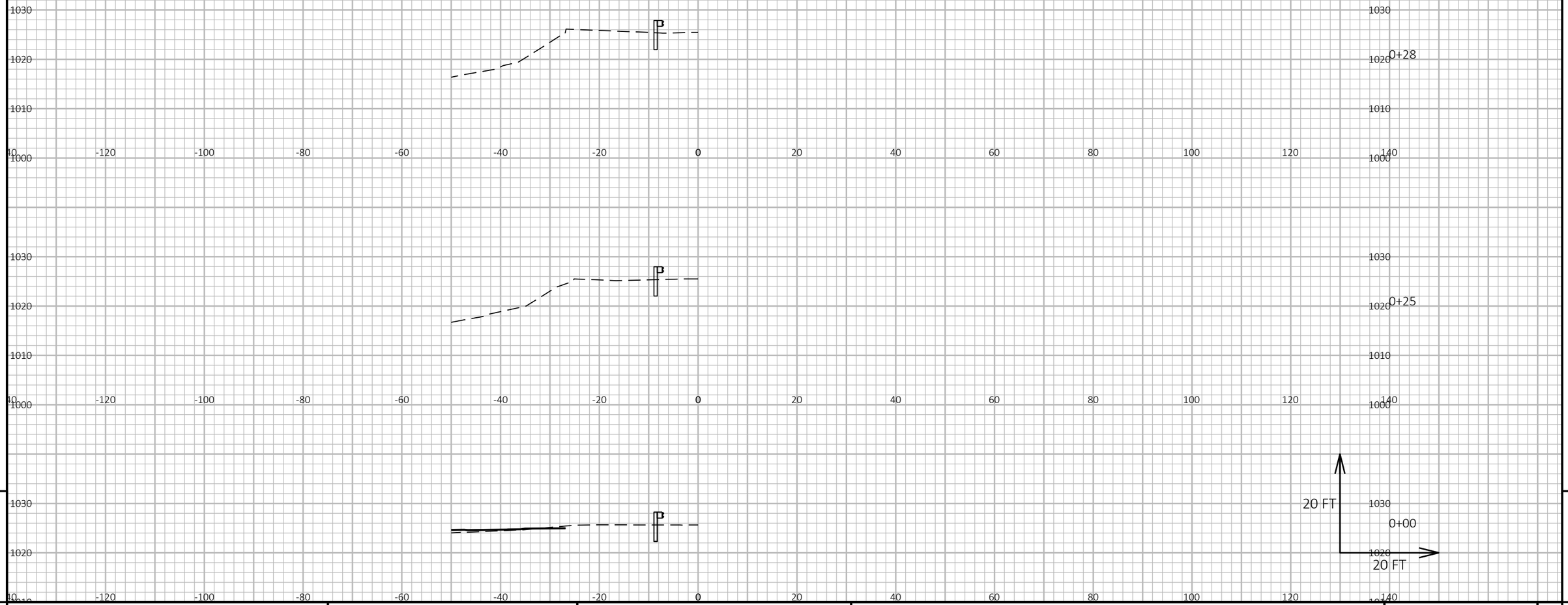
PLOT BY : BRATTLUND, ERIK JOHN

PLOT NAME :

PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49

TYPE II END TERMINAL IN PARKING LOT ON WEST SIDE OF USH 45



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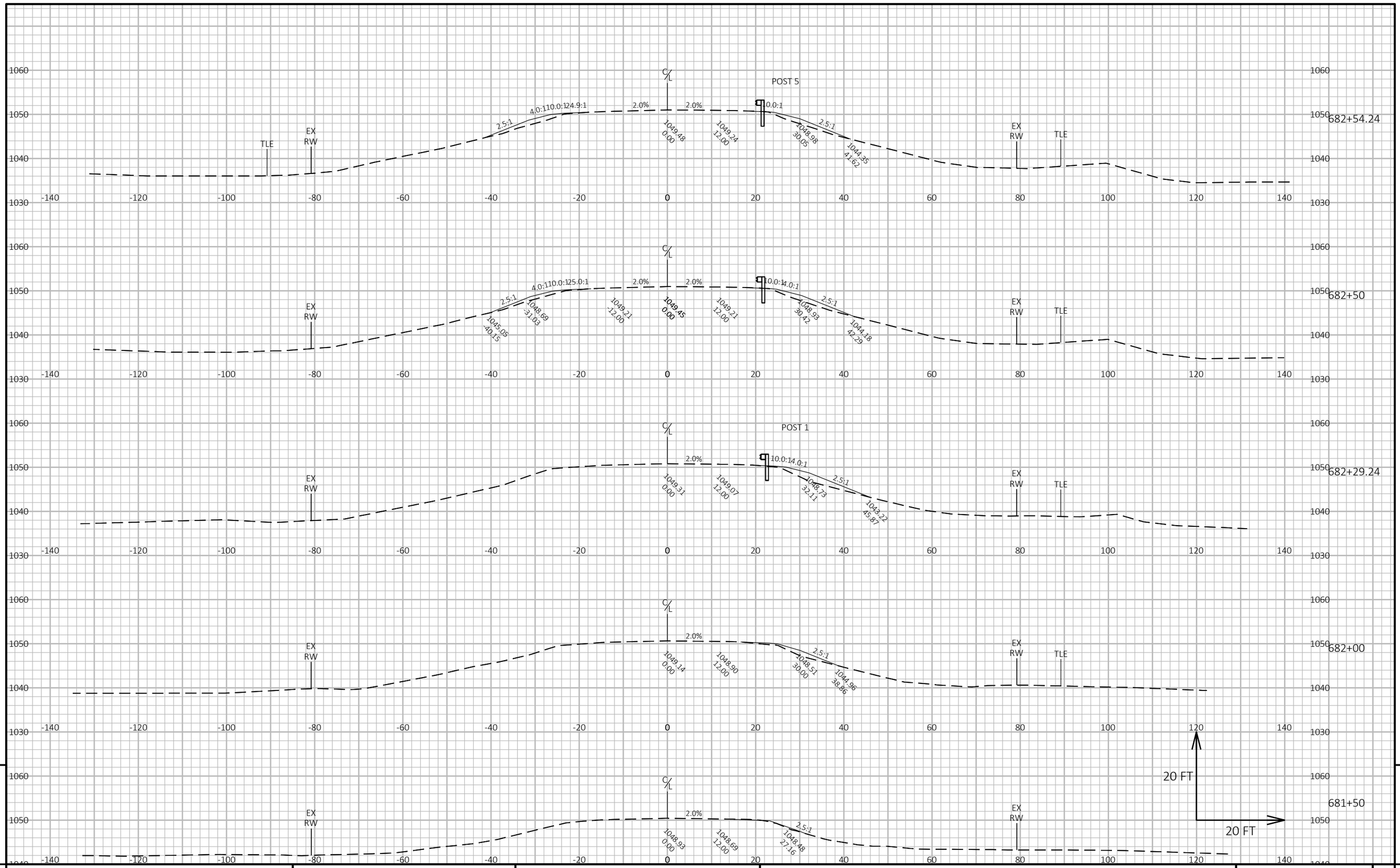
PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS: CROSS SECTIONS	SHEET 113	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS_UPDATE.DWG
LAYOUT NAME - 090217-xs

PLOT DATE : 2/28/2022 8:36 AM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.



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PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET 114	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-xs

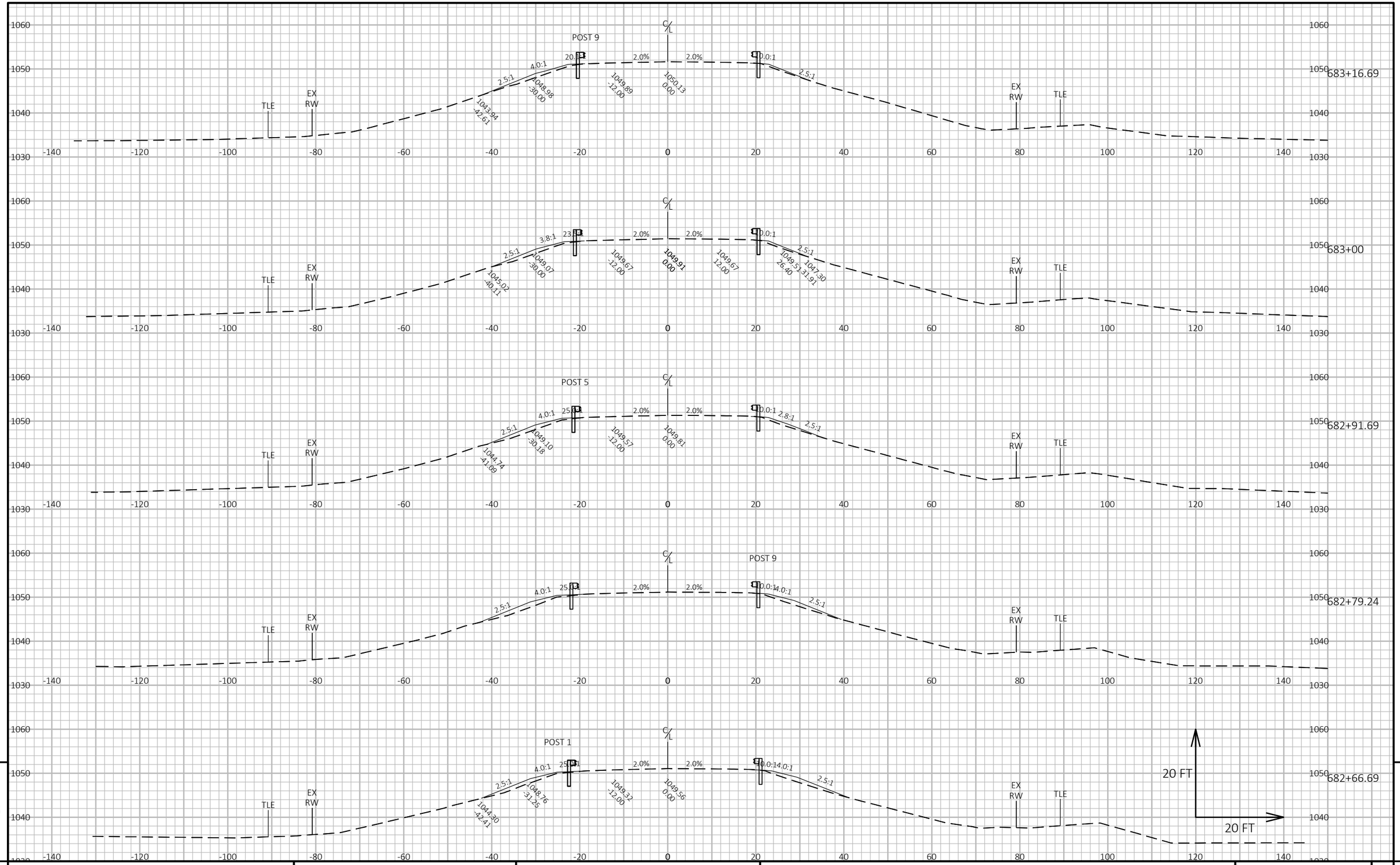
PLOT DATE : 2/28/2022 8:38 AM

PLOT BY : BRATTLUND, ERIK JOHN

PLOT NAME :

PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49

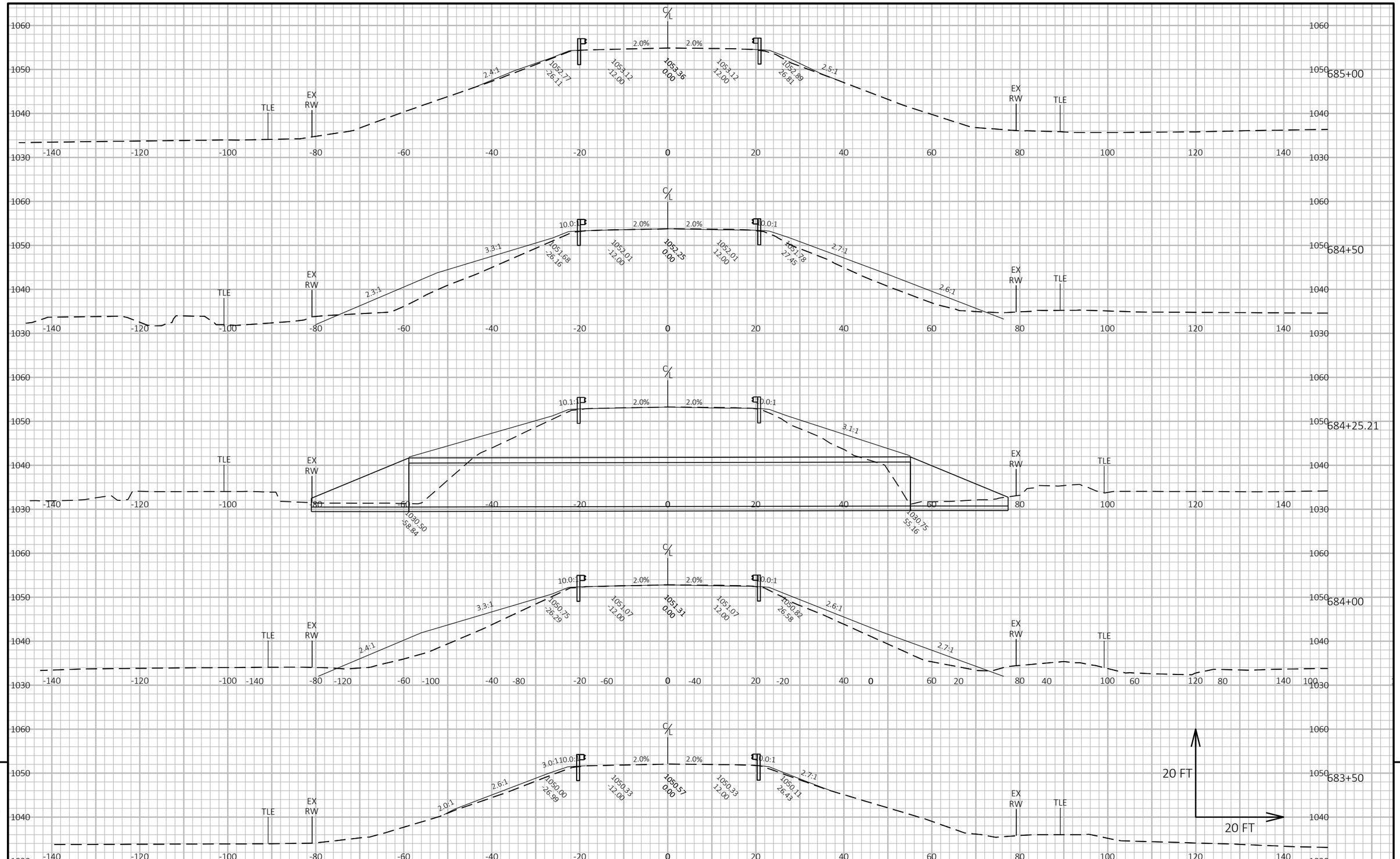


PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET 115 E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090202-xs

PLOT DATE : 2/28/2022 8:38 AM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49

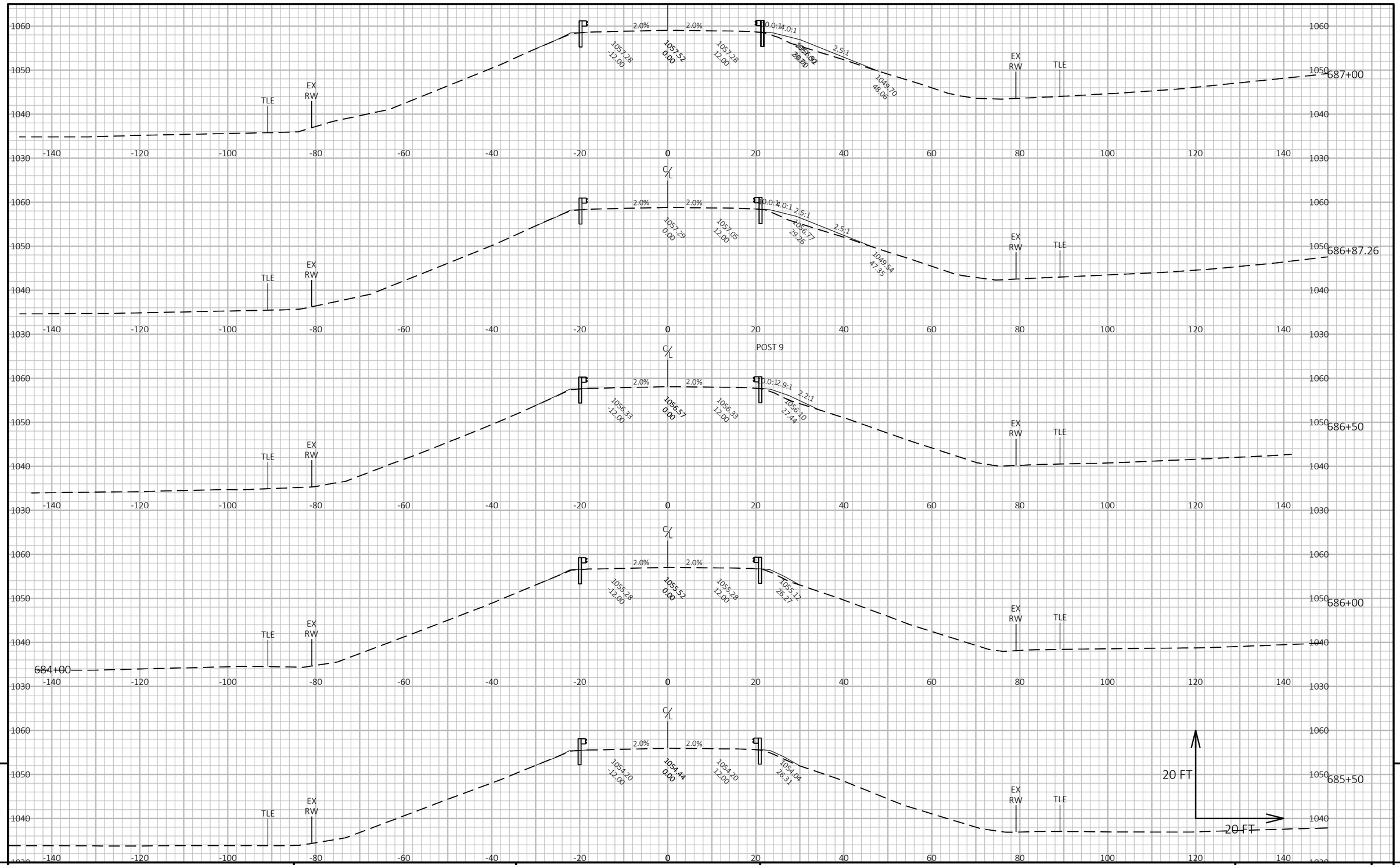


PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET 116	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090203-xs

PLOT DATE : 2/28/2022 8:38 AM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49



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PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET 117	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090204-xs

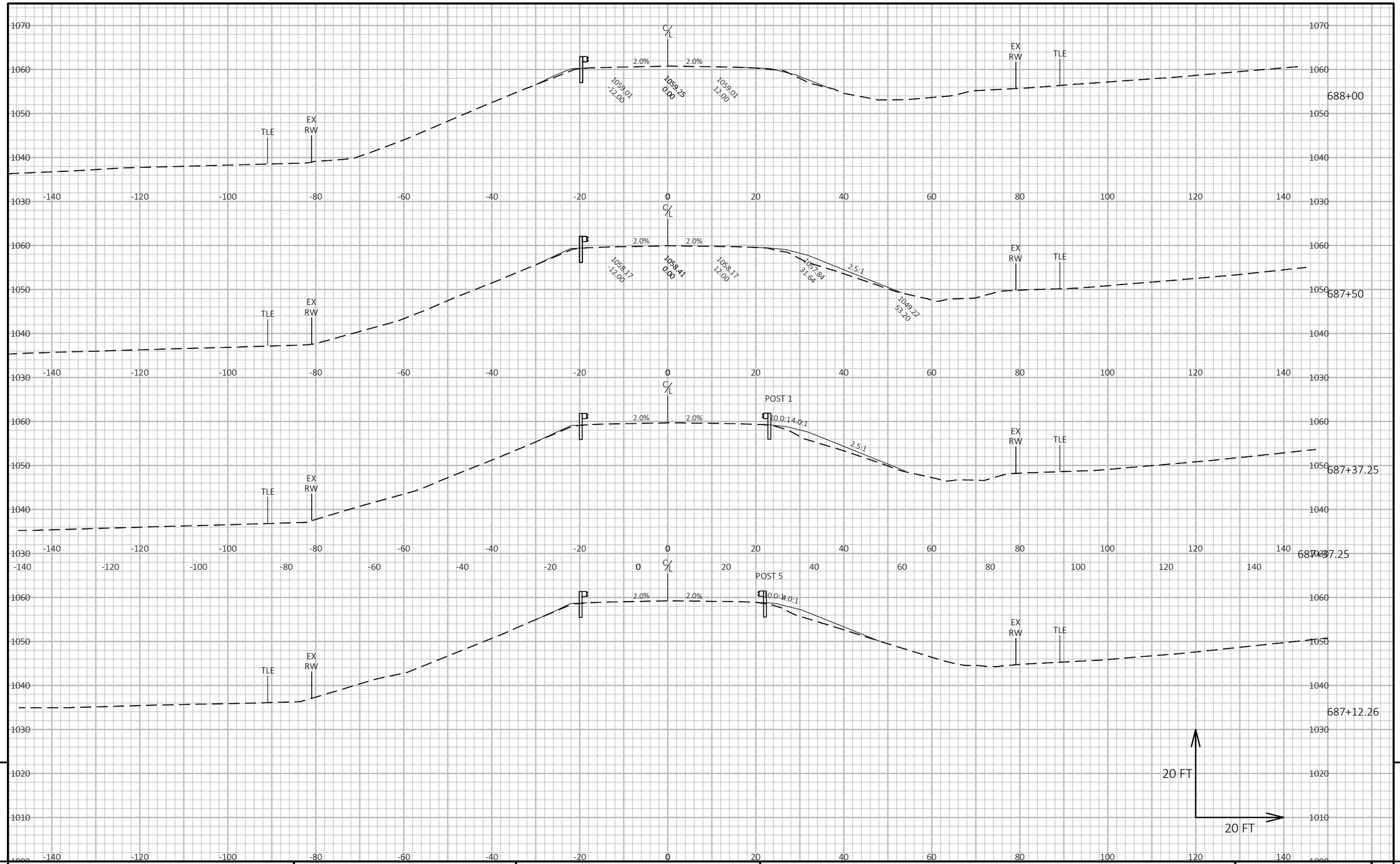
PLOT DATE : 2/28/2022 8:38 AM

PLOT BY : BRATTLUND, ERIK JOHN

PLOT NAME :

PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49



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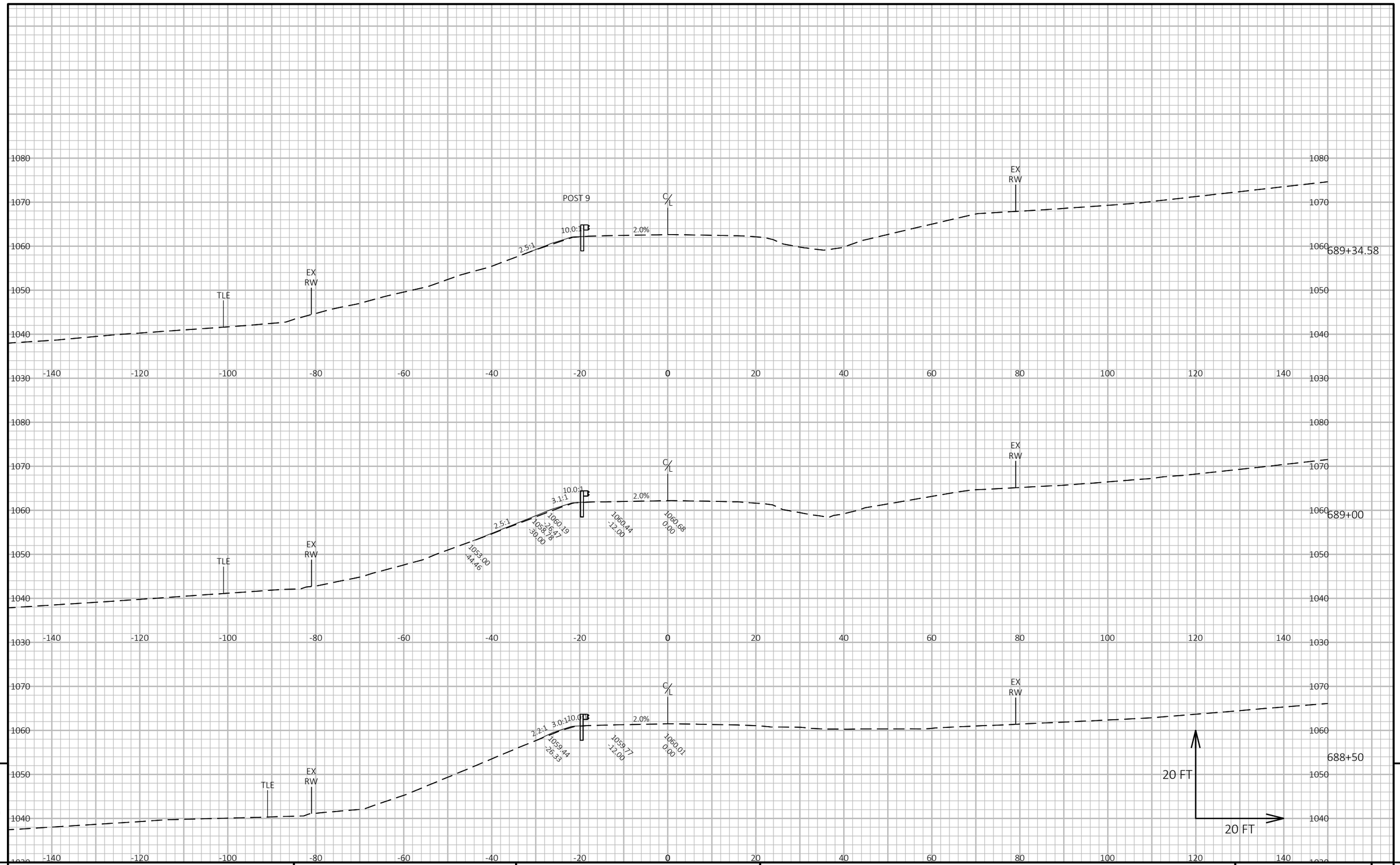
PROJECT NO: 4080-06-71 | HWY: USH 45 | COUNTY: FOND DU LAC | CROSS SECTIONS | SHEET 118 E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090205-xs

PLOT DATE : 2/28/2022 8:38 AM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49



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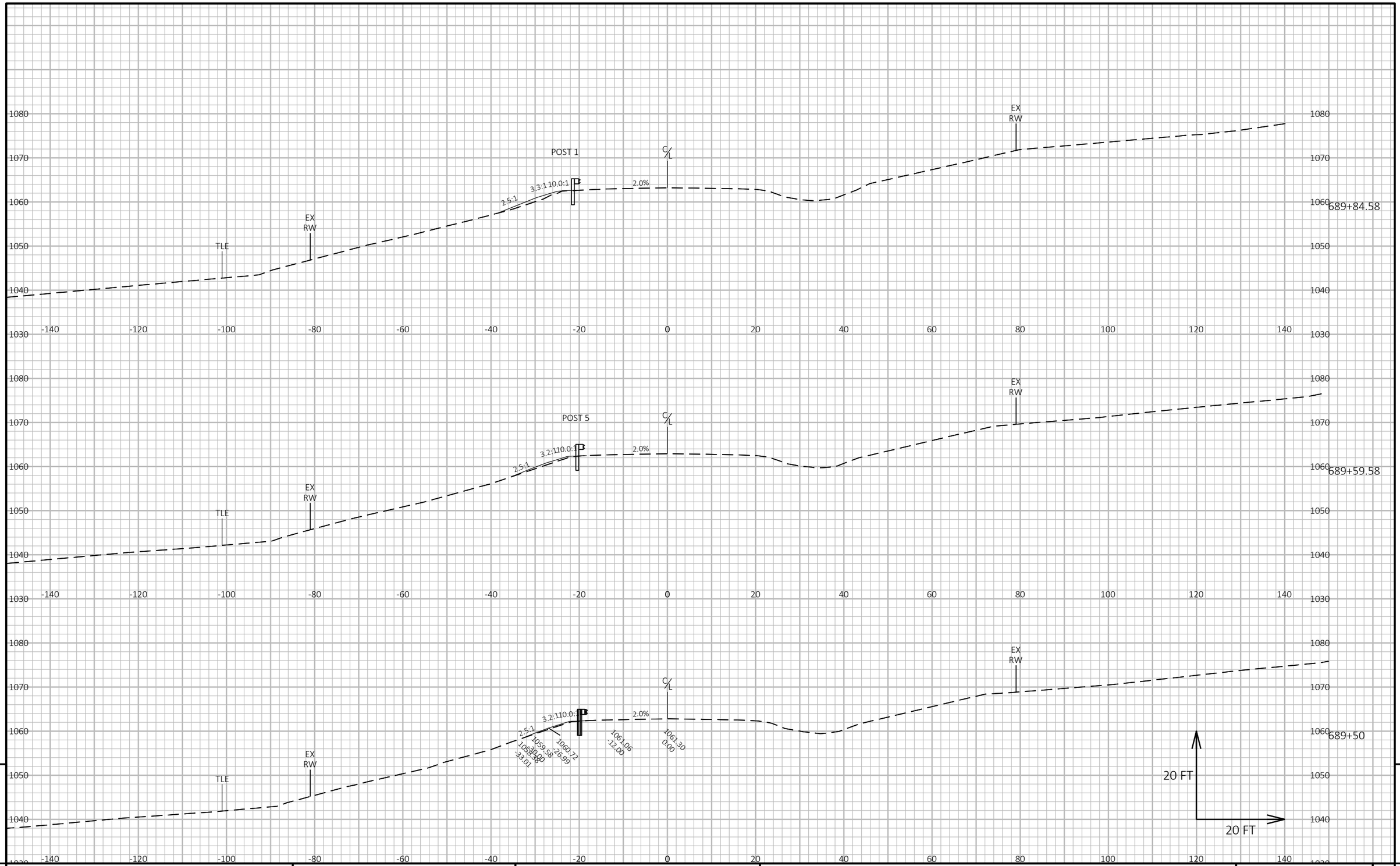
PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET 119	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090206-xs

PLOT DATE : 2/28/2022 8:38 AM PLOT BY : BRATTLUND, ERIK JOHN PLOT NAME : PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49



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PROJECT NO: 4080-06-71	HWY: USH 45	COUNTY: FOND DU LAC	CROSS SECTIONS	SHEET 120	E

FILE NAME : N:\PDS\C3D\40800600\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090207-xs

PLOT DATE : 2/28/2022 8:38 AM

PLOT BY : BRATTLUND, ERIK JOHN

PLOT NAME :

PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49

Notes

Wisconsin Department of Transportation

Dedicated people creating transportation solutions
through innovation and exceptional service.

http://www.dot.wisconsin.gov