WKE

MAR 2014

PROJECT ID: 1000-20-66

WITH:

COUNTY: MILWAUKEE & WALWORTH

ORDER OF SHEETS

TOTAL SHEETS = 60

080

N

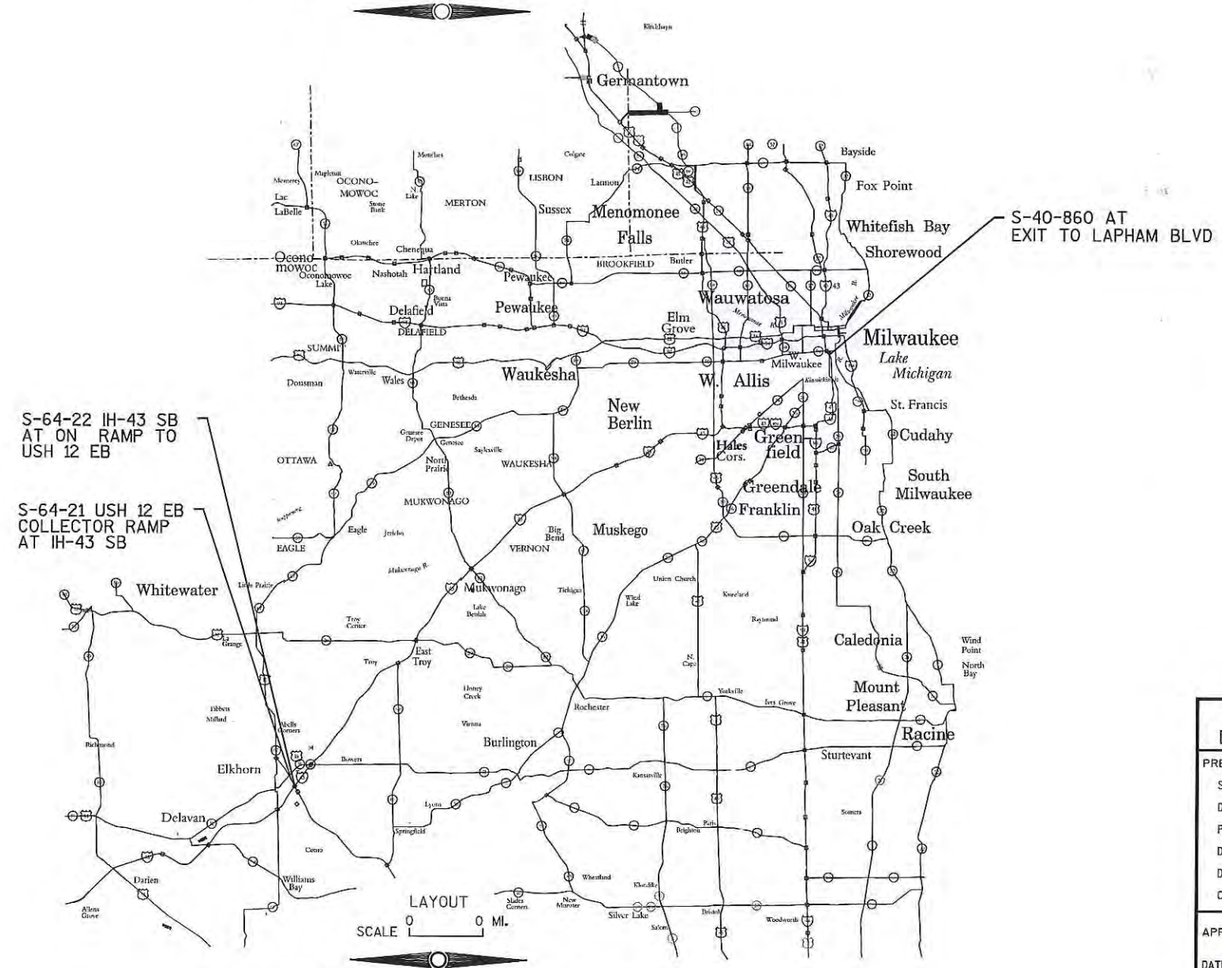
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
PLAN OF PROPOSED IMPROVEMENT

SIGN BRIDGE REPLACEMENT 2014
VARIOUS FREEWAYS
MILWAUKEE & WALWORTH COUNTIES

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1000-20-66		

STATE PROJECT NUMBER

1000-20-66



TOTAL NET LENGTH OF CENTERLINE = 0.00 MI.

DESIGN DESIGNATION		IH-43 IH-94 ON/OFF RAMP	I-43 OFF RAMP	USH 12
A.D.T. (2012)	=	54650-SB	2200-SB	1850-SB (COLLECTOR)
A.D.T.	=	N/A	N/A	N/A
D.H.V.	=	N/A	N/A	N/A
D.	=	N/A	N/A	N/A
T. %	=	9.1%	15%	15%
DESIGN SPEED	=	55	70	60
ESALS	=	N/A	N/A	N/A

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		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	COLLINS ENGINEERS, INC.
Designer	COLLINS ENGINEERS, INC.
Project Manager	TOM HEYDEL
District Examiner	
District Supervisor	JAMES FORSETH
C.O. Examiner	

APPROVED FOR DISTRICT OFFICE

DATE: 10/29/13 Tom Heydel (Signature)

E

UTILITIES CONTACT LIST

MILWAUKEE COUNTY HIGHWAY DIVISION
ELECTRICAL SHOP
MR. STANLEY JACKSON
10320 W WATERTOWN PLANK RD
WAUWATOSA, WI 53226
(414) 257-6593

WE ENERGIES-GAS
MR. TOM MINESAL
5400 GREEN BAY AVE
MILWAUKEE, WI 53209
(414) 944-5755

WE ENERGIES-ELECTRIC
MR. DAN SANDE
333 W EVERETT ST-A299
MILWAUKEE, WI 53203
(414) 221-4578
DAN.SANDE@WE-ENERGIES.COM

WISCONSIN DEPARTMENT OF TRANSPORTATION
SE REGION LIGHTING ENGINEER
MR. MATT PFEIFER
(262) 548-8778
MATTHEW.PFEIFER@DOT.WI.GOV

WISCONSIN DEPARTMENT OF TRANSPORTATION
TRAFFIC OPERATIONS CENTER
MR. JEFF MADSON
433 W ST PAUL AVE, STE 300
MILWAUKEE, WI 53203
(414) 225-3723
JEFFERY.MADISON@DOT.WI.GOV

DNR CONTACT LIST

MILWAUKEE COUNTY
MS. KRISTINA BETZOLD
2300 N DR MARTIN LUTHER KING JR. DRIVE
MILWAUKEE, WI 53212
(414) 263-8517

WALWORTH COUNTY
MR. CRAIG WEBSTER
141 NW BARSTOW ST, RM. 180
WAUKESHA, WI 53188
(262) 574-2141

DESIGN CONTACT

COLLINS ENGINEERS, INC.
2033 W HOWARD AVE
MILWAUKEE, WI 53221
ATTN: VERONICA CHAVEZ DE FERNANDEZ
(414) 282-6905

GENERAL NOTES

THE LOCATION OF EXISTING OR PROPOSED UTILITIES AS NOTED ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. UTILITY SERVICES ARE NOT SHOWN.

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

2

N

ROCK FREEWAY
IH 43

E-W FREEWAY
IH 94 E-W

ZOO FREEWAY
IH894/USH45

ZOO FREEWAY
USH 45

USH 41/45

FOND DU LAC FREEWAY
STH 145

AIRPORT FREEWAY
IH894/IH43

STADIUM FREEWAY
USH 41

N-S FREEWAY
IH 94 N-S

IH 43 N-S

LAKE FREEWAY
IH-794

AIRPORT SPUR
STH 119

MILWAUKEE (40)
RACINE (51)

OZAUKEE (45)
MILWAUKEE (40)

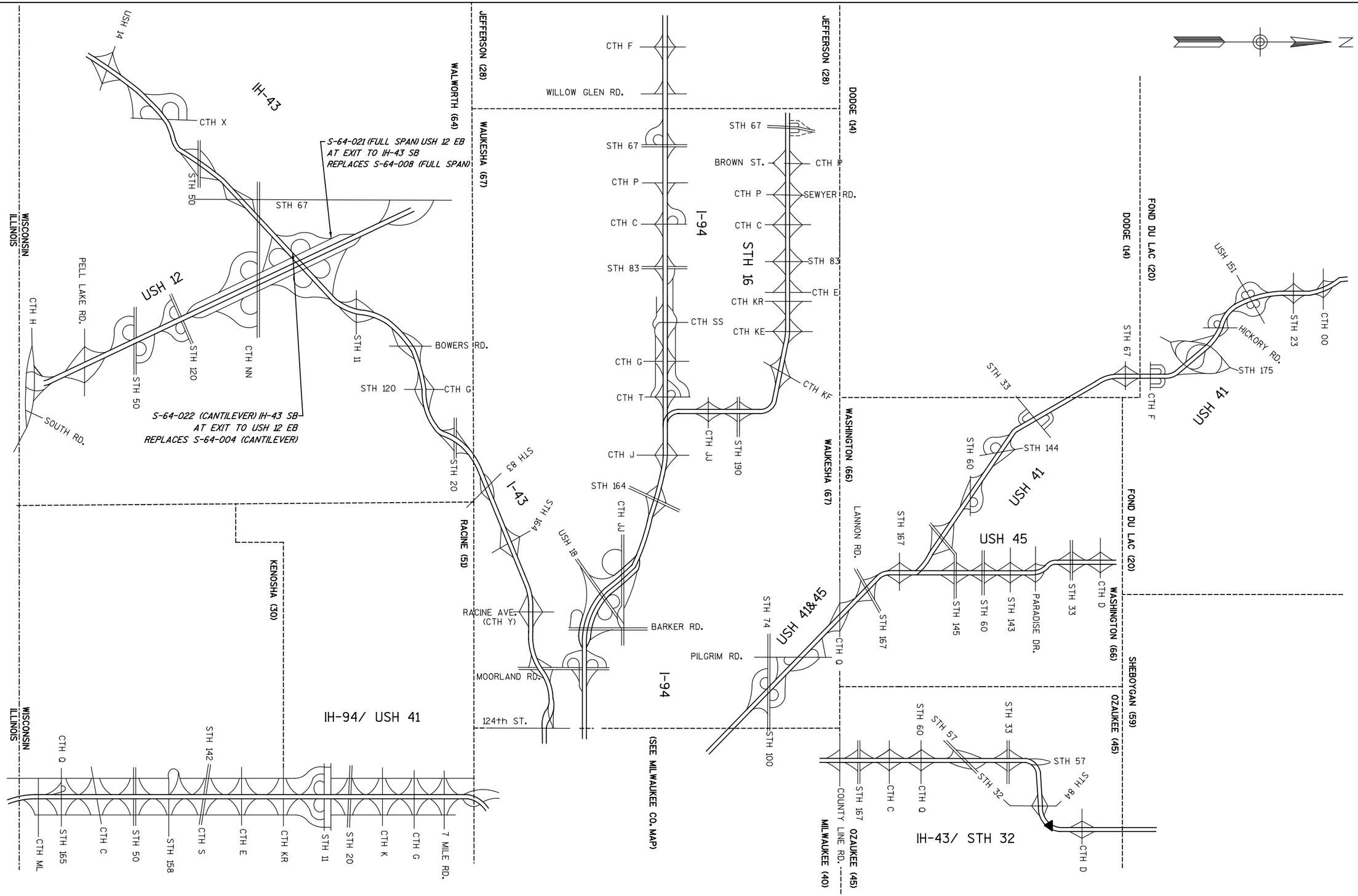
WAUKESHA (67)
MILWAUKEE (40)

WAUK.
MILW.

CTH T
CTH J / 164
CTH F
BARKER RD
MOORLAND RD
124th ST
USH 45, STH 100
84th ST
FOREST HOME AVE
76th ST
60th ST
LOOMIS RD (STH 36)
27th ST (USH 41)
20th ST
9th ST
6th ST
HOWELL AVE (STH 38)
STH 31
CTH M
STH 20
7 MILE RD
RYAN RD (STH 100)
27th ST (USH 41)
RAWSON AVE
COLLEGE AVE
LAYTON AVE
HOWARD AVE
HOLT AVE
LINCOLN AVE
BECHER ST
CO. DIST. ROAD
LAPHAM ST
MINERAL ST
NAT. AVE
7th ST
2nd ST
PLK.
BDY.
MIL.
JACK.
VAN.
CARFERRY DR
LIN. MEM. DR
HALE INT
ZOO INT
MITCHELL INT
STADIUM INT
MARQ. INT
LAKE INT
NORTH INT
S-40-860 (CANTILEVER) IH 43 SB AT EXIT TO LAPHAM BLVD
REPLACES S-40-154 (CANTILEVER)
LAYTON AVE
OKLAHOMA AVE
BELOIT RD
GREENFIELD AVE (STH 59)
LINCOLN AVE
NATIONAL AVE
84th ST (STH 181)
70th ST
68th ST
HAWLEY RD
MITCHELL BLVD
GATE 6
NATIONAL AVE (STH 59)
35th ST
28th ST
26th ST
25th ST
16th ST
13th ST
9th ST
6th ST
7th ST
2nd ST
PLK.
BDY.
MIL.
JACK.
VAN.
WISCONSIN AVE
BLUE MOUND RD (USH 18)
WELLS ST
WISCONSIN AVE
STATE ST
WATERTOWN PLANK RD
SWAN BLVD
WASHINGTON BLVD
LLOYD ST
LISBON AVE
MAYFAIR RD (STH 100)
NORTH AVE
BURLEIGH ST
CAPITOL DR
HAMPTON AVE
SILVER SPRING DR
APPLETON AVE (STH 175)
GOOD HOPE RD
107th ST
91st ST
MILL RD
76th ST (STH 181)
68th ST
GRANTOSA DR
FOND DU LAC AVE
MAIN ST (STH 74)
MAIN ST (STH 100)
PILGRIM RD
STH 145
WELLS ST
FOND DU LAC AVE
NORTH AVE
LOCUST ST
KEEFE AVE
ATKINSON AVE
GREEN BAY AVE
CAPITOL DR (STH 190)
FIEBRANTZ AVE
HAMPTON AVE
SILVER SPRING DR
GOOD HOPE RD
BROWN DEER RD (STH 32)
COUNTY LINE RD
MEQUON RD
(STH 100)
(STH 167)

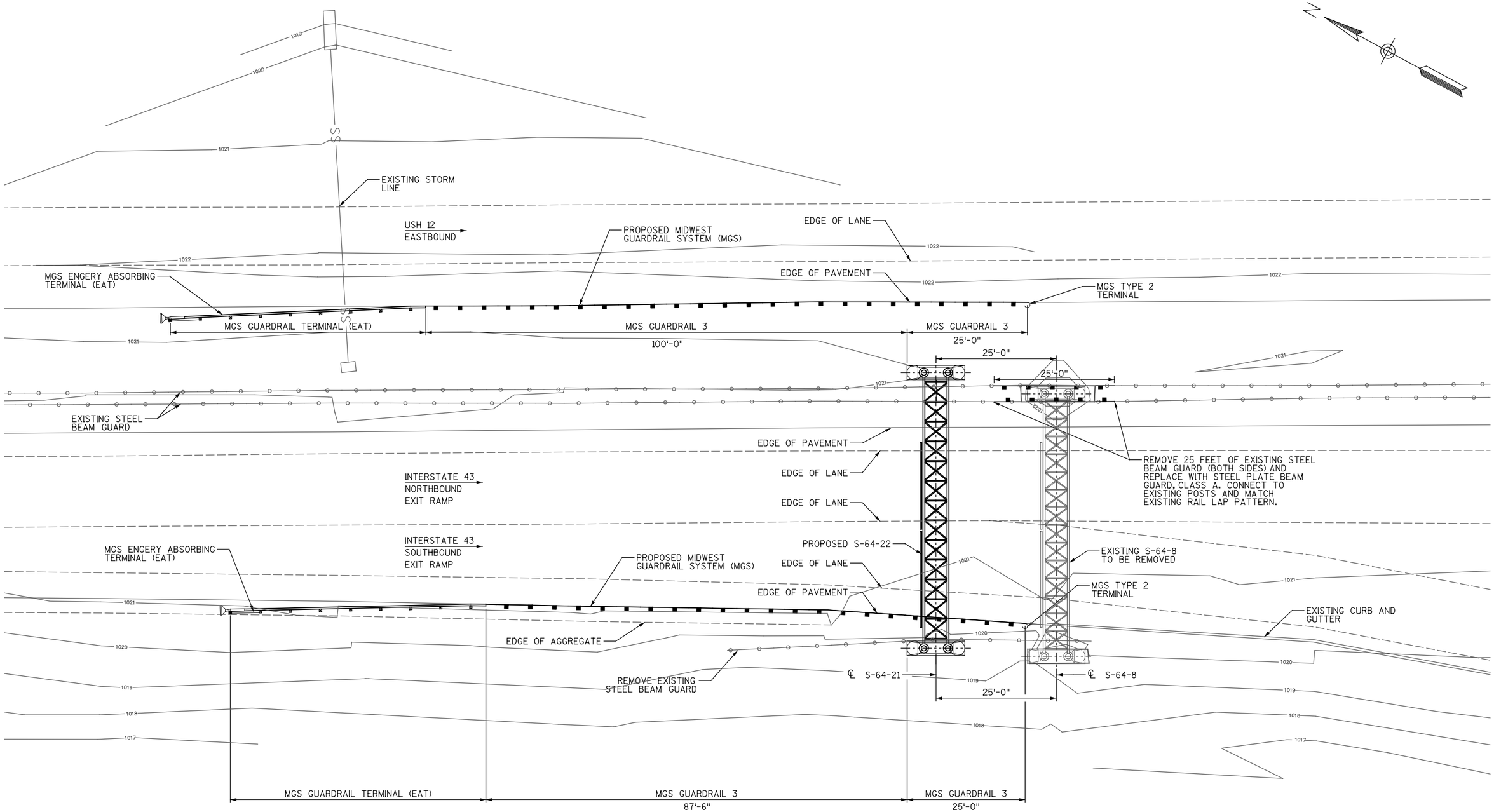
PROJECT NO: 1000-20-66	HWY: IH-43, USH 12	COUNTY: MILWAUKEE, WALWORTH	PROJECT OVERVIEW: MILWAUKE COUNTY	SHEET NO: 3	E

2



PROJECT NO: 1000-20-66	HWY: IH-43, USH 12	COUNTY: MILWAUKEE, WALWORTH	PROJECT OVERVIEW: WALWORTH COUNTY	SHEET NO: 4	E

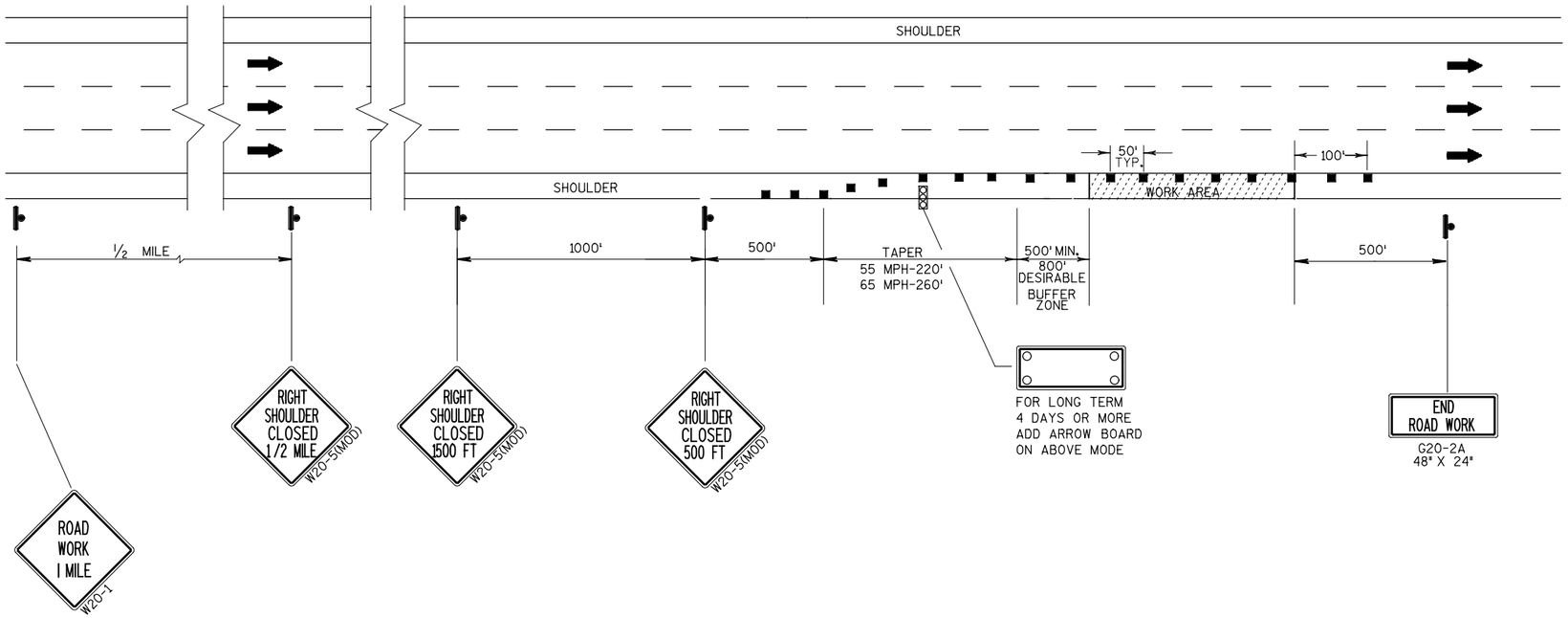
2



PROJECT NO: 1000-20-66	HWY: IH-43, USH 12	COUNTY: MILWAUKEE, WALWORTH	PLAN DETAIL - S-64-21	SHEET NO: 5	E

2

TYPICAL SHOULDER CLOSURE (SHORT TERM-3 DAYS OR LESS OR 4 DAYS OR MORE)



LEGEND

- ■ TRAFFIC CONTROL DEVICE
- ⊨ SIGN ON TEMPORARY SUPPORT (FOR 3 DAYS OR LESS SHORT TERM)
- ┣ SIGN ON FIXED SUPPORT FOR 4 DAYS OR MORE (LONG TERM)
- ⊠ ARROW BOARD

TRAFFIC CONTROL NOTES

RIGHT LANE CLOSURE SHOWN, LEFT LANE CLOSURE SIMILAR.

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

FOR NIGHTIME OPERATION ALL DRUMS IN TAPERS SHALL HAVE A WARNING LIGHT, TYPE C (STEADY BURN).

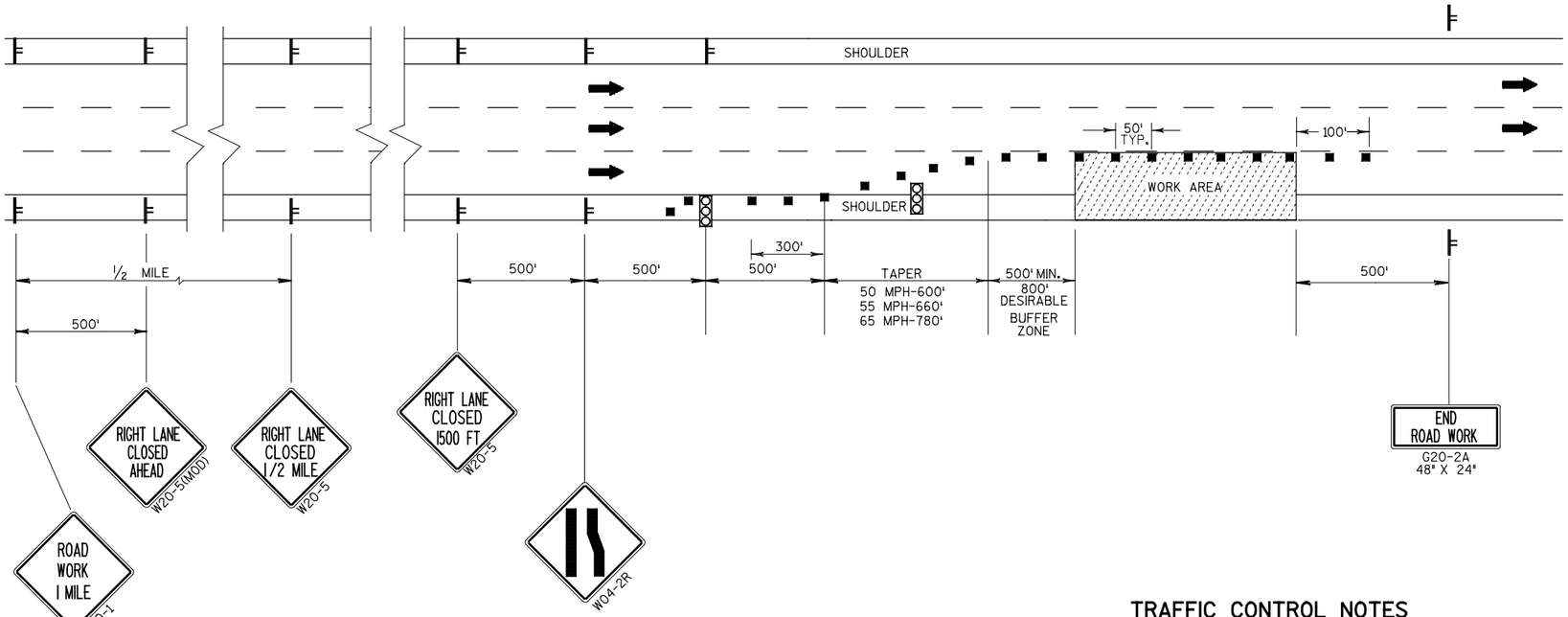
ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

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

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

ALL SHORT TERM LANE CLOSURE SIGNS SHALL BE REMOVED OR COVERED AND ALL ARROWBOARDS AND DEVICES REMOVED BEYOND THE SHOULDER WHEN THE WORK IS NOT IN PROGRESS AND THE LANE IS RESTORED TO A SAFE OPERATING CONDITION.

TYPICAL ONE-LANE CLOSURE (SHORT TERM-3 DAYS OR LESS)



LEGEND

- ■ TRAFFIC CONTROL DEVICE
- SIGN ON FIXED SUPPORT
- SIGN ON TEMPORARY SUPPORT
- ARROW BOARD

TRAFFIC CONTROL NOTES

RIGHT LANE CLOSURE SHOWN, LEFT LANE CLOSURE SIMILAR.

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

FOR NIGHTTIME OPERATION ALL DRUMS IN TAPERS SHALL HAVE A WARNING LIGHT, TYPE C (STEADY BURN).

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

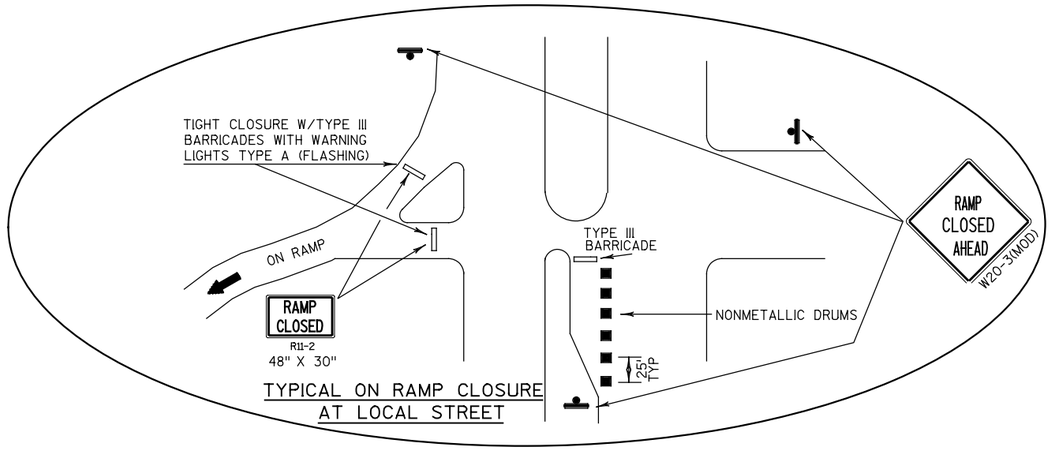
"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

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

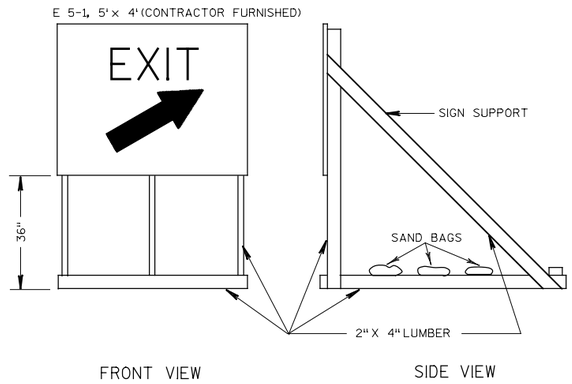
ALL SHORT TERM LANE CLOSURE SIGNS SHALL BE REMOVED OR COVERED AND ALL ARROWBOARDS AND DEVICES REMOVED BEYOND THE SHOULDER WHEN THE WORK IS NOT IN PROGRESS AND THE LANE IS RESTORED TO A SAFE OPERATING CONDITION.

IF LANE CLOSURE IS MORE THAN 1 MILE, PLACE A TYPE III BARRICADE APPROXIMATELY EVERY 1000' ACROSS THE CLOSED LANE TO HELP ENFORCE THE DRUM LINE.

CONSIDER GEOMETRICS WHEN LOCATING SIGNS AND ARROWBOARDS SO THE DRIVER HAS A CLEAR VIEW OF THE ARROWBOARD AND LANE CLOSURE DRUMS FOR A MINIMUM 1500' IN FRONT OF DRUMS.



TYPICAL ON RAMP CLOSURE
AT LOCAL STREET



MOUNTING DETAIL FOR TEMPORARY EXIT SIGN

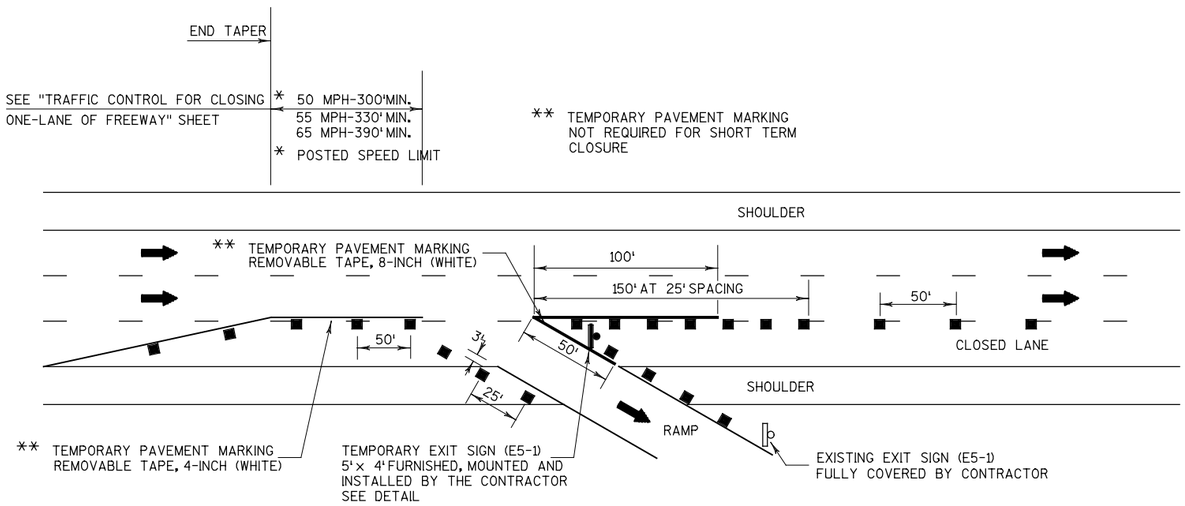
GENERAL NOTES

1. ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED.
2. FOR NIGHTIME OPERATION ALL DRUMS SHALL HAVE A WARNING LIGHT, TYPE C (STEADY BURN).
3. FOR SHORT TERM (3 DAYS OR LESS) FREEWAY LANE CLOSURES TEMPORARY SIGN SUPPORTS MAY BE USED. REMOVE OR COVER SIGNS WHEN NOT IN USE.

LEGEND

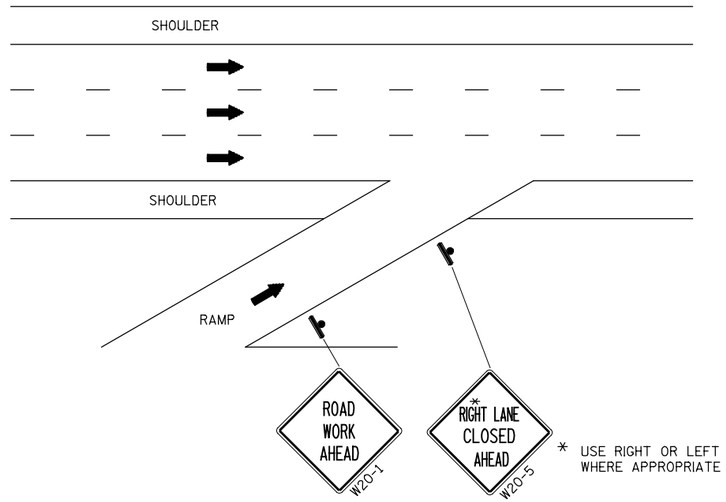
■ — DRUM

— SIGN ON TEMPORARY SUPPORT



EXIT RAMP

LOCATED WITHIN CLOSED FREEWAY LANE AREA

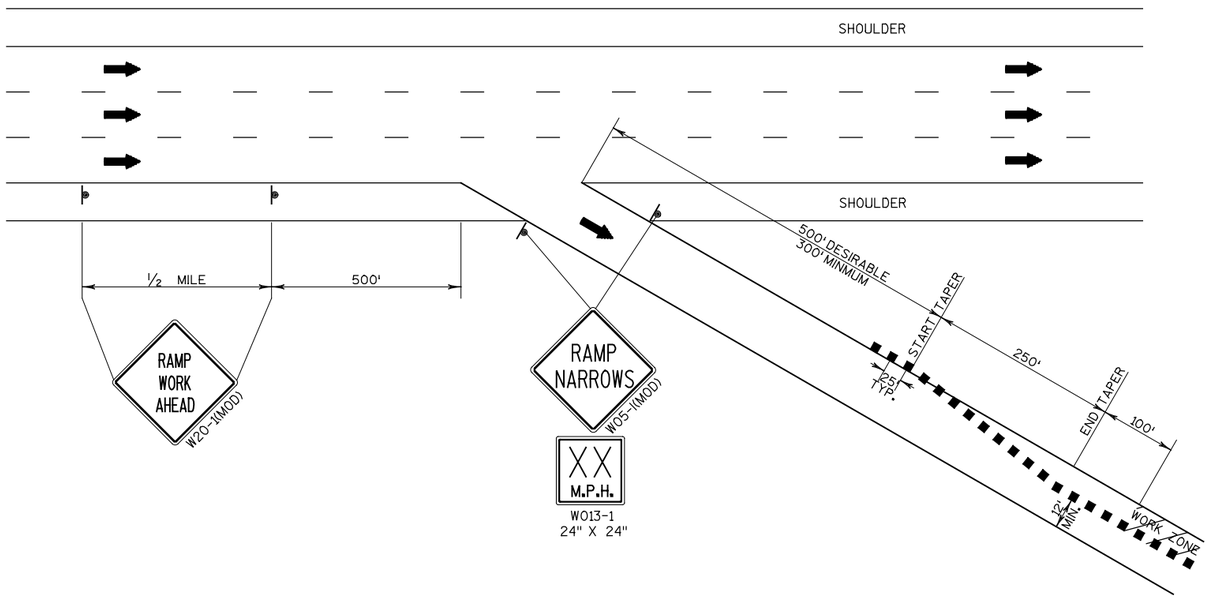


ON RAMP

LOCATED WITHIN FREEWAY LANE CLOSURE
ADVANCE SIGNING AREA

2

TYPICAL PARTIAL EXIT RAMP CLOSURE (SHORT TERM-3 DAYS OR LESS)



LEGEND

- ■ TRAFFIC CONTROL DEVICE
- SIGN ON TEMPORARY SUPPORT
- ⊗ WARNING LIGHT, TYPE A (FLASHING)

TRAFFIC CONTROL NOTES

LEFT SIDE CLOSURE SHOWN, RIGHT SIDE CLOSURE SIMILAR.

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

FOR NIGHTIME OPERATION ALL DRUMS IN TAPERS SHALL HAVE A WARNING LIGHT, TYPE "C" (STEADY BURN).

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

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

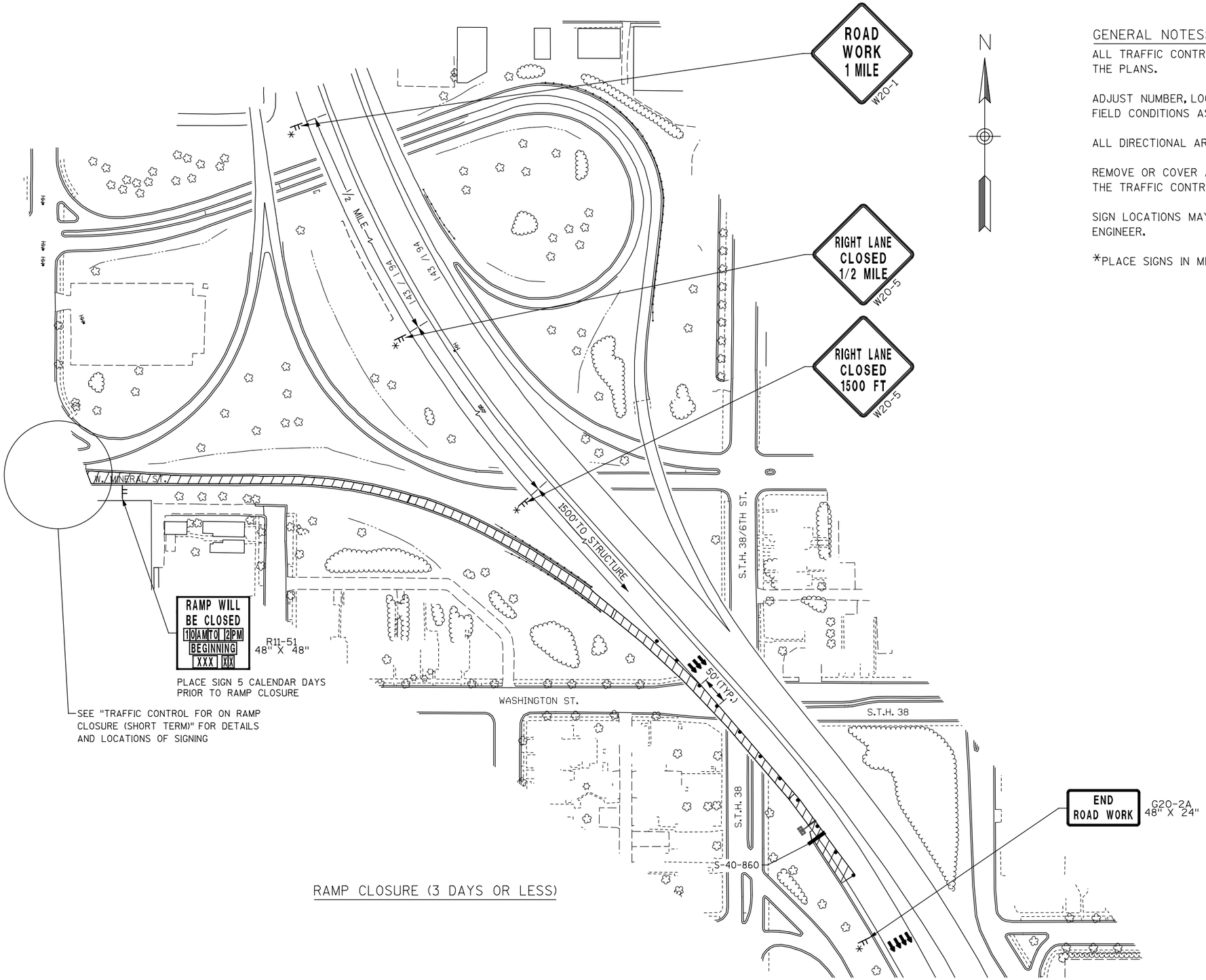
WHEN A RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS DIRECTED BY THE ENGINEER.

ALL SHORT TERM LANE CLOSURE SIGNS SHALL BE REMOVED OR COVERED AND ALL ARROWBOARDS AND DEVICES REMOVED BEYOND THE SHOULDER WHEN THE WORK IS NOT IN PROGRESS AND THE ROADWAY IS RESTORED TO A SAFE OPERATING CONDITION.

SPEED RECOMMENDED BY W05-1(MOD) SIGN SHALL BE 5 M.P.H. BELOW ADVISORY EXIT RAMP SPEED OR AS DIRECTED BY THE ENGINEER.

SIGNING ON FREEWAY IN ADVANCE OF EXIT RAMP GORE SHALL BE LOCATED ON THE SAME SIDE OF THE FREEWAY AS THE EXIT RAMP.

2



RAMP CLOSURE (3 DAYS OR LESS)

N

GENERAL NOTES:

ALL TRAFFIC CONTROL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED IN THE PLANS.

ADJUST NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

ALL DIRECTIONAL ARROWS SHALL HAVE AN ORANGE BACKGROUND.

REMOVE OR COVER ALL SIGNS TEMPORARY OR EXISTING WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" AND AS APPROVED BY THE ENGINEER.

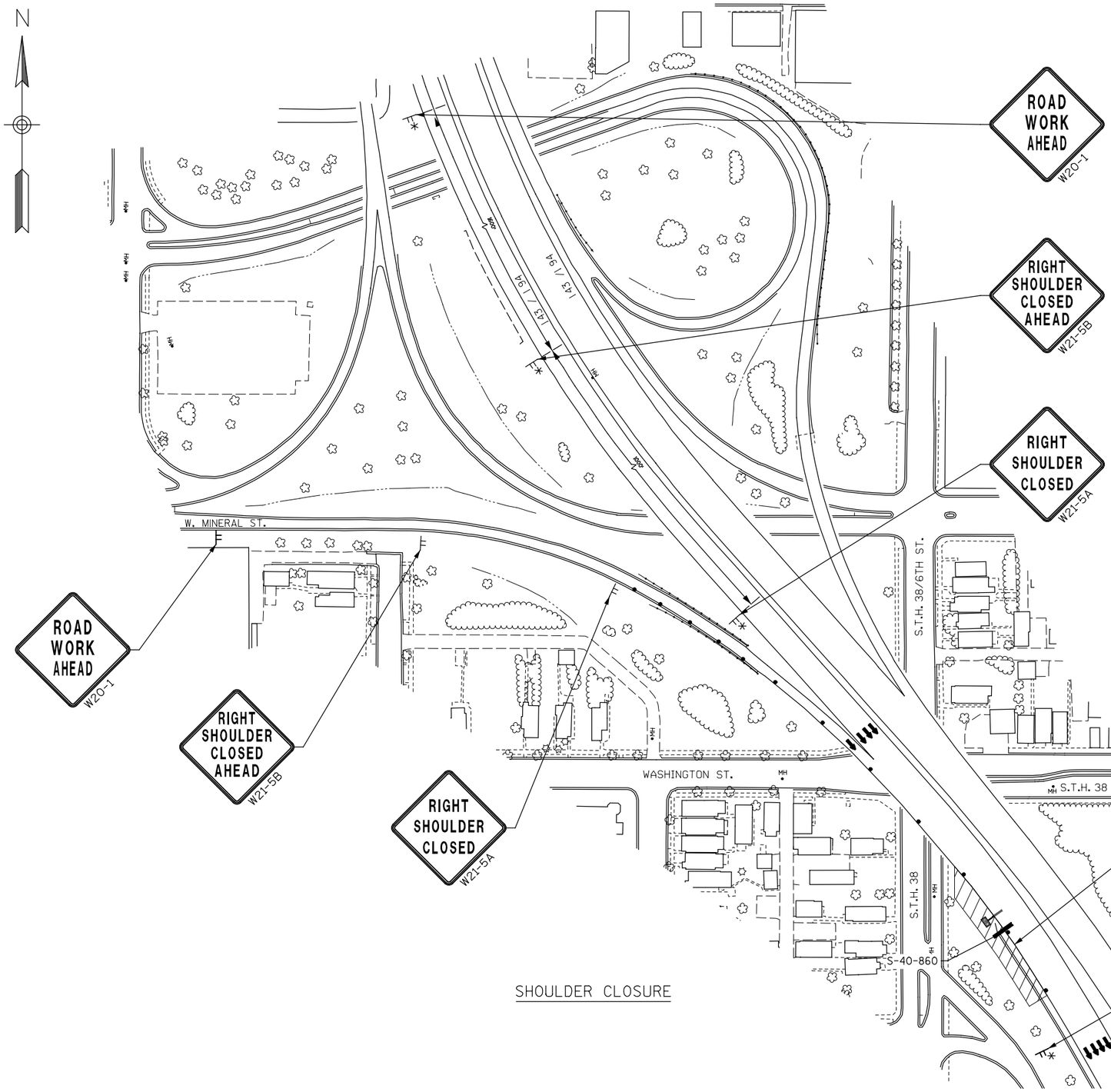
SIGN LOCATIONS MAY BE ADJUSTED IN THE FIELD AS APPROVED BY THE ENGINEER.

*PLACE SIGNS IN MEDIAN AND OUTSIDE SHOULDER

LEGEND

- SIGN ON PORTABLE SUPPORT
- WORK ZONE
- DIRECTION OF TRAFFIC
- DRUM

PROJECT NO: 1000-20-66	HWY: IH-43, USH 12	COUNTY: MILWAUKEE, WALWORTH	TRAFFIC CONTROL - S-40-860 (RAMP CLOSURE)	SHEET NO: 10	E



SHOULDER CLOSURE

GENERAL NOTES:

ALL TRAFFIC CONTROL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED IN THE PLANS.

ADJUST NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

ALL DIRECTIONAL ARROWS SHALL HAVE AN ORANGE BACKGROUND.

REMOVE OR COVER ALL SIGNS TEMPORARY OR EXISTING WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" AND AS APPROVED BY THE ENGINEER.

SIGN LOCATIONS MAY BE ADJUSTED IN THE FIELD AS APPROVED BY THE ENGINEER.

*PLACE SIGNS IN MEDIAN AND OUTSIDE SHOULDER

LEGEND

- SIGN ON PORTABLE SUPPORT
- WORK ZONE
- DIRECTION OF TRAFFIC
- DRUM

PROJECT NO: 1000-20-66	HWY: IH-43, USH 12	COUNTY: MILWAUKEE, WALWORTH	TRAFFIC CONTROL - S-40-860 (SHOULDER CLOSURE)	SHEET NO: 11	E

2

LEGEND

- DETOUR ROUTE
- SIGN ON PORTABLE SUPPORT
- WORK ZONE
- DIRECTION OF TRAFFIC

DETOUR AHEAD W20-2

ROAD WORK AHEAD W20-1

RAMP CLOSED AHEAD W20-3(MOD)

RAMP CLOSED 1000 FT W20-3(MOD)

PLACE SIGN 5 CALENDAR DAYS PRIOR TO RAMP CLOSURE

RAMP WILL BE CLOSED 10 AM TO 2 PM BEGINNING XXX XX — R11-51 48" X 48"

M4-8 36" X 18"
M03-3 36" X 18"
M1-1 36" X 36"
M06-1 30" X 30"

S-64-21

SEE S.D.D. "TRAFFIC CONTROL, EXIT RAMP CLOSURE" FOR ADVANCE SIGN SPACING AND WORK ZONE DETAILS

END ROAD WORK G20-2A 48" X 24"

M4-8A 36" X 18"
M03-3 36" X 18"
M1-1 36" X 36"
M05-2R 30" X 30"

M4-8 24" X 12"
M03-3 24" X 12"
M1-1 24" X 24"
M06-1 21" X 21"

M4-8 24" X 12"
M03-3 24" X 12"
M1-1 24" X 24"
M05-1R 21" X 21"

M4-8 24" X 12"
M03-3 24" X 12"
M1-1 24" X 24"
M06-1 21" X 21"

M4-8 24" X 12"
M03-3 24" X 12"
M1-1 24" X 24"
M05-1L 21" X 21"

M4-8 24" X 12"
M03-3 24" X 12"
M1-1 24" X 24"
M06-1 21" X 21"

M4-8 36" X 18"
M03-3 36" X 18"
M1-1 36" X 36"
M06-2 30" X 30"

END DETOUR M4-8A 30" X 24"

BOWERS RD.
CTH G
STH 20
IH-43
STH 120
STH 11
STH 67
STH 67
CTH NN
IH-43
CTH X
STH 50
USH 12
STH 120
N

GENERAL NOTES:

ALL TRAFFIC CONTROL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED IN THE PLANS.

ADJUST NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

ALL DIRECTIONAL ARROWS SHALL HAVE AN ORANGE BACKGROUND.

REMOVE OR COVER ALL SIGNS TEMPORARY OR EXISTING WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" AND AS APPROVED BY THE ENGINEER.

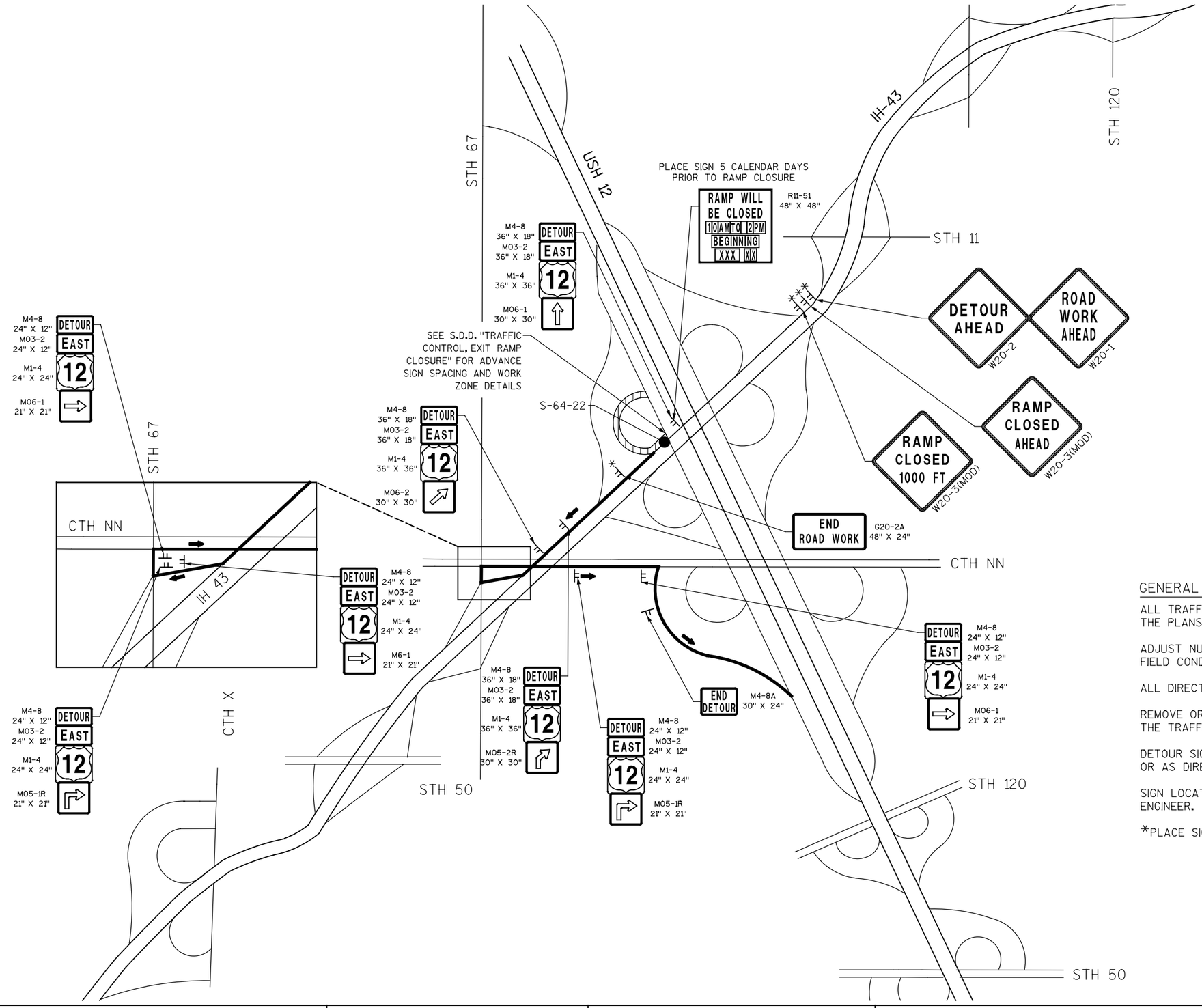
DETOUR SIGNS SHALL BE COVERED OR REMOVED WHEN DETOUR IS NOT IN USE OR AS DIRECTED BY THE ENGINEER.

SIGN LOCATIONS MAY BE ADJUSTED IN THE FIELD AS APPROVED BY THE ENGINEER.

*PLACE SIGNS IN MEDIAN AND OUTSIDE SHOULDER

PROJECT NO: 1000-20-66	HWY: IH-43, USH 12	COUNTY: MILWAUKEE, WALWORTH	TRAFFIC CONTROL S-64-21	SHEET NO: 12	E

2



LEGEND

- DETOUR ROUTE
- SIGN ON PORTABLE SUPPORT
- WORK ZONE
- DIRECTION OF TRAFFIC

GENERAL NOTES:

ALL TRAFFIC CONTROL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED IN THE PLANS.

ADJUST NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

ALL DIRECTIONAL ARROWS SHALL HAVE AN ORANGE BACKGROUND.

REMOVE OR COVER ALL SIGNS TEMPORARY OR EXISTING WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" AND AS APPROVED BY THE ENGINEER.

DETOUR SIGNS SHALL BE COVERED OR REMOVED WHEN DETOUR IS NOT IN USE OR AS DIRECTED BY THE ENGINEER.

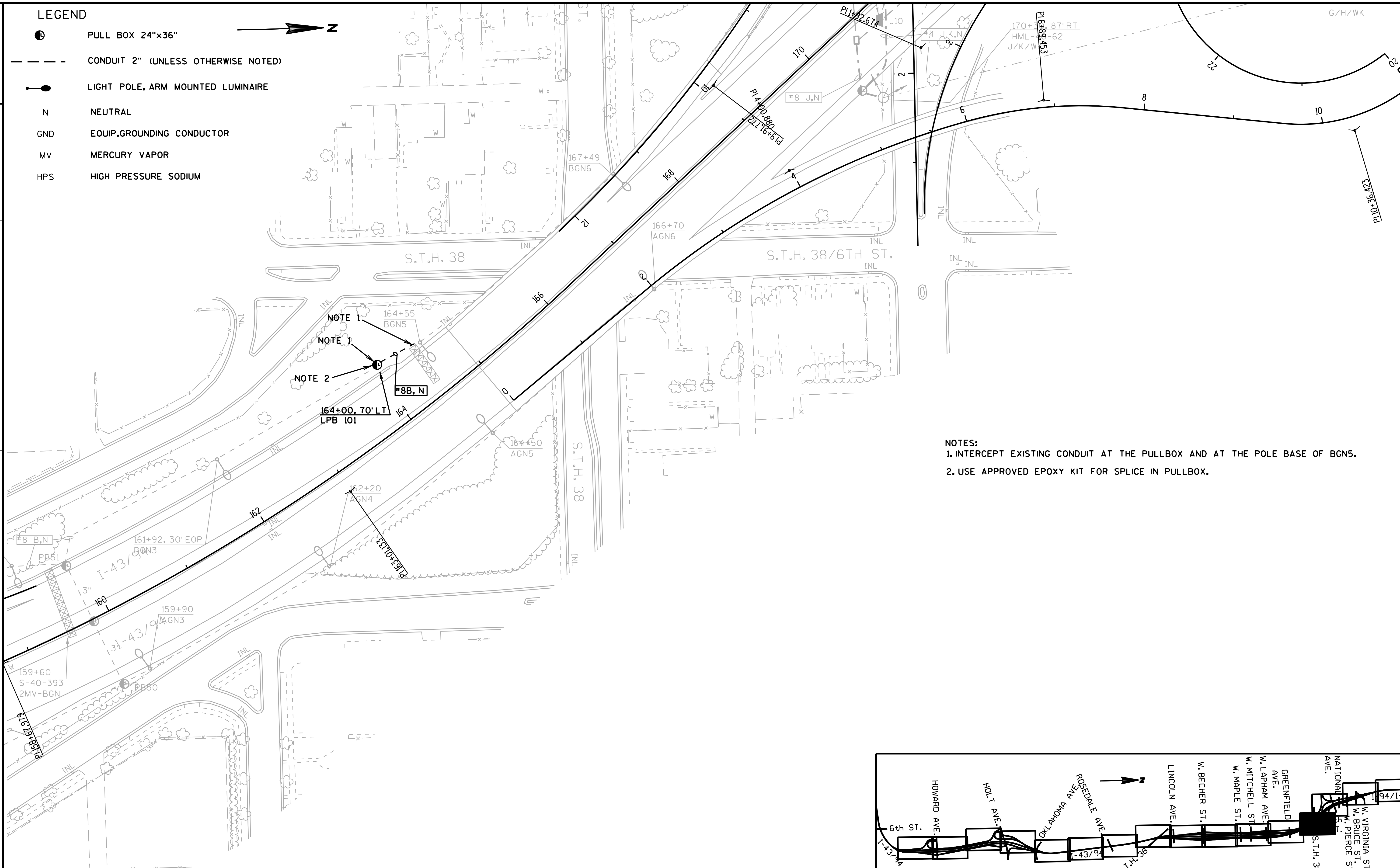
SIGN LOCATIONS MAY BE ADJUSTED IN THE FIELD AS APPROVED BY THE ENGINEER.

*PLACE SIGNS IN MEDIAN AND OUTSIDE SHOULDER

PROJECT NO: 1000-20-66	HWY: IH-43, USH 12	COUNTY: MILWAUKEE, WALWORTH	TRAFFIC CONTROL S-64-22	SHEET NO: 13	E

LEGEND

(pull box symbol)	PULL BOX 24"x36"
— — — —	CONDUIT 2" (UNLESS OTHERWISE NOTED)
(light pole symbol)	LIGHT POLE, ARM MOUNTED LUMINAIRE
N	NEUTRAL
GND	EQUIP. GROUNDING CONDUCTOR
MV	MERCURY VAPOR
HPS	HIGH PRESSURE SODIUM

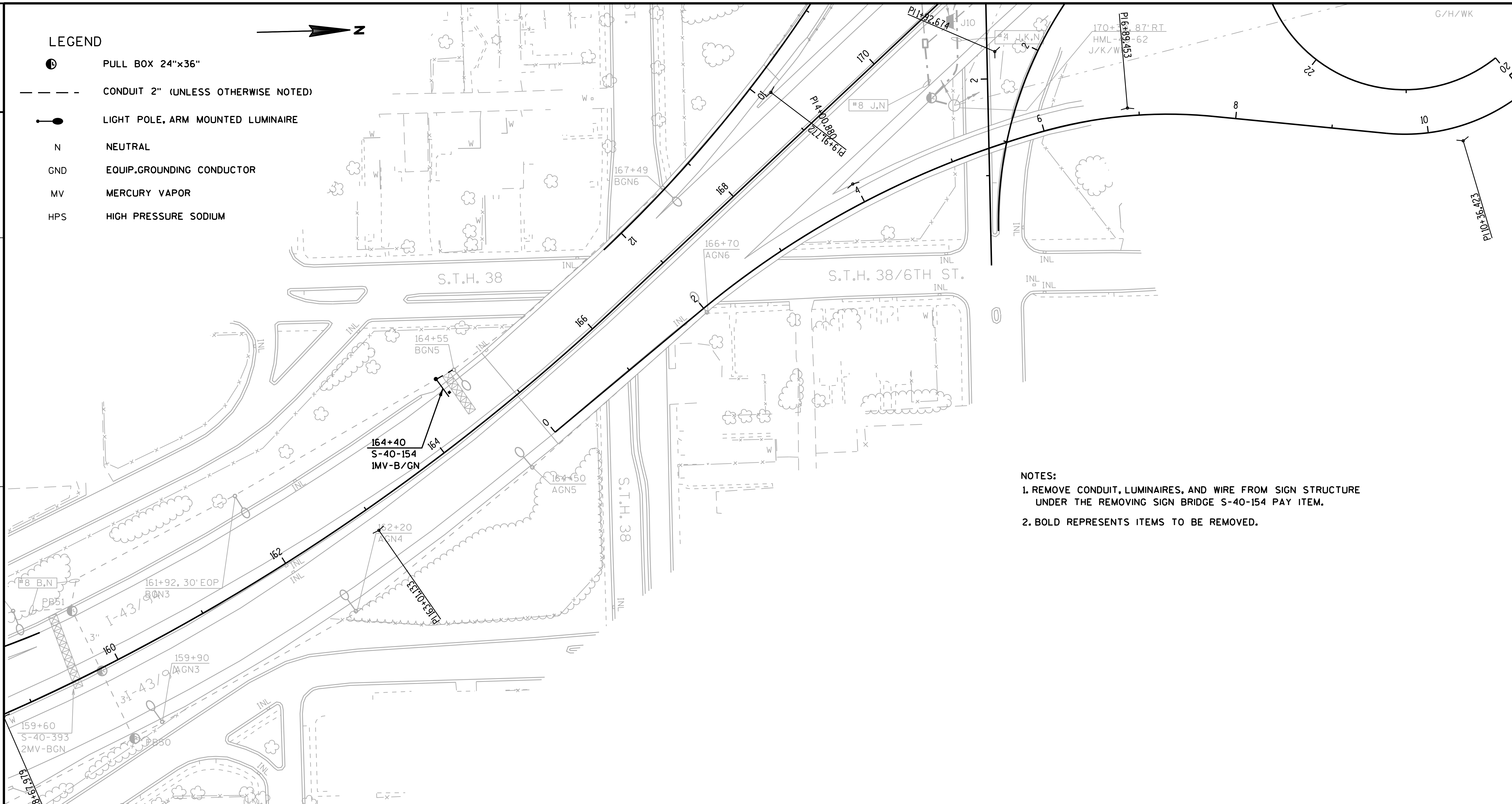


NOTES:
1. INTERCEPT EXISTING CONDUIT AT THE PULLBOX AND AT THE POLE BASE OF BGN5.
2. USE APPROVED EPOXY KIT FOR SPLICE IN PULLBOX.

PROJECT NO: 1000-20-66	HWY: I-43, I-94	COUNTY: MILWAUKEE	LIGHTING PLAN: FINAL	SHEET 14	E

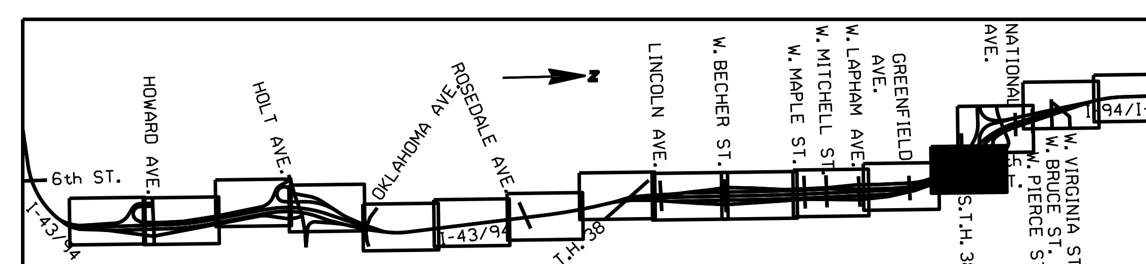
LEGEND

Symbol	Description
(pull box symbol)	PULL BOX 24"x36"
— — —	CONDUIT 2" (UNLESS OTHERWISE NOTED)
(light pole symbol)	LIGHT POLE, ARM MOUNTED LUMINAIRE
N	NEUTRAL
GND	EQUIP.GROUNDING CONDUCTOR
MV	MERCURY VAPOR
HPS	HIGH PRESSURE SODIUM



NOTES:

1. REMOVE CONDUIT, LUMINAIRES, AND WIRE FROM SIGN STRUCTURE UNDER THE REMOVING SIGN BRIDGE S-40-154 PAY ITEM.
2. BOLD REPRESENTS ITEMS TO BE REMOVED.



PROJECT NO: 1000-20-66	HWY: I-43, I-94	COUNTY: MILWAUKEE	LIGHTING REMOVAL: S-40-154	SHEET 15	E

DATE 13JAN14 E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	1000-20-66 QUANTITY
0010	204.0165	REMOVING GUARDRAIL	LF	126.000	126.000
0020	614.0305	STEEL PLATE BEAM GUARD CLASS A	LF	50.000	50.000
0030	614.2300	MGS GUARDRAIL 3	LF	238.000	238.000
0040	614.2610	MGS GUARDRAIL TERMINAL EAT	EACH	2.000	2.000
0050	614.2620	MGS GUARDRAIL TERMINAL TYPE 2	EACH	2.000	2.000
0060	619.1000	MOBILIZATION	EACH	1.000	1.000
0070	636.0100	SIGN SUPPORTS CONCRETE MASONRY	CY	39.000	39.000
0080	636.1000	SIGN SUPPORTS STEEL REINFORCEMENT HS	LB	2,310.000	2,310.000
0090	636.1500	SIGN SUPPORTS STEEL COATED REINFORCEMENT HS	LB	2,030.000	2,030.000
0100	637.2230	SIGNS TYPE II REFLECTIVE F	SF	40.000	40.000
0110	638.2101	MOVING SIGNS TYPE I	EACH	7.000	7.000
0120	638.2602	REMOVING SIGNS TYPE II	EACH	2.000	2.000
0130	641.1200	SIGN BRIDGE CANTILEVERED (STRUCTURE) 01. S-40-860	LS	1.000	1.000
0140	641.1200	SIGN BRIDGE CANTILEVERED (STRUCTURE) 02. S-64-22	LS	1.000	1.000
0150	641.6600	SIGN BRIDGE (STRUCTURE) 01. S-64-21	LS	1.000	1.000
0160	643.0100	TRAFFIC CONTROL (PROJECT) 01. 1000-20-66	EACH	1.000	1.000
0170	643.0300	TRAFFIC CONTROL DRUMS	DAY	2,307.000	2,307.000
0180	643.0420	TRAFFIC CONTROL BARRICADES TYPE III	DAY	47.000	47.000
0190	643.0705	TRAFFIC CONTROL WARNING LIGHTS TYPE A	DAY	93.000	93.000
0200	643.0800	TRAFFIC CONTROL ARROW BOARDS	DAY	20.000	20.000
0210	643.0900	TRAFFIC CONTROL SIGNS	DAY	731.000	731.000
0220	643.2000	TRAFFIC CONTROL DETOUR (PROJECT) 01. 1000-20-66	EACH	1.000	1.000
0230	643.3000	TRAFFIC CONTROL DETOUR SIGNS	DAY	218.000	218.000
0240	650.6500	CONSTRUCTION STAKING STRUCTURE LAYOUT (STRUCTURE) 01. S-40-860	LS	1.000	1.000
0250	650.6500	CONSTRUCTION STAKING STRUCTURE LAYOUT (STRUCTURE) 02. S-64-21	LS	1.000	1.000
0260	650.6500	CONSTRUCTION STAKING STRUCTURE LAYOUT (STRUCTURE) 03. S-64-22	LS	1.000	1.000
0270	652.0225	CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH	LF	55.000	55.000
0280	655.0620	ELECTRICAL WIRE LIGHTING 8 AWG	LF	120.000	120.000
0290	SPV.0060	SPECIAL 01. LAMP DISPOSAL HIGH INTENSITY DISCHARGE	EACH	1.000	1.000
0300	SPV.0060	SPECIAL 02. PULL BOXES 24X36-INCH GROUNDED	EACH	1.000	1.000
0310	SPV.0105	SPECIAL 01. REMOVING OLD SIGN STRUCTURE S-40-154	LS	1.000	1.000
0320	SPV.0105	SPECIAL 02. REMOVING OLD SIGN STRUCTURE S-64-4	LS	1.000	1.000
0330	SPV.0105	SPECIAL 03. REMOVING OLD SIGN STRUCTURE S-64-8	LS	1.000	1.000

3

3

BEAM GUARD/GUARDRAIL ITEMS

STRUCTURE NUMBER	204.0165 REMOVING GUARDRAIL LF	614.0305 STEEL PLATE BEAM GUARD CLASS A LF	614.2300 MGS GUARDRAIL 3 LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH	614.2620 MGS GUARDRAIL TERMINAL TYPE 2 EACH
S-64-21	126	50	238	2	2
TOTAL	126	50	238	2	2

SIGN BRIDGE REMOVALS

STRUCTURE NUMBER REMOVED	STRUCTURE NUMBER PROPOSED	SPV.0105.XX REMOVING OLD SIGN STRUCTURE (EXISTING STRUC. NO.) LS	REMARKS
S-40-154	S-40-860	1	SPV.0105.01
S-64-4	S-64-22	1	SPV.0105.02
S-64-8	S-64-21	1	SPV.0105.03

3

SIGNS

STRUCTURE NUMBER	SIGN NO.	TYPE I SIGN SIZE FT X FT	TYPE I SIGN MESSAGE	TYPE II SIGN CODE	TYPE II SIGN SIZE IN X IN	TYPE II SIGN MESSAGE	637.2230 SIGNS TYPE II REFLECTIVE F SF	638.2101 MOVING SIGNS TYPE I EACH	638.2602 REMOVING SIGNS TYPE II EACH
S-40-860	1	16.0 X 9.0	Lapham Blvd Mitchell St	---	---	---	---	1	---
S-40-860	2	12.0 X 2.5	EXIT ONLY EXIT 312A	---	---	---	---	1	---
S-64-21	3	18.0 X 12.5	43 NORTH NN Milwaukee Elkhorn	---	---	---	---	1	---
S-64-21	4	20.0 X 10.0	43 SOUTH Delevan Beloit	---	---	---	---	1	---
S-64-21	5	9.0 X 2.5	EXIT 321	---	---	---	---	1	---
S-64-21	6	---	---	W13-3	48 X 60	RAMP 25 MPH	20.00	---	1
S-64-22	7	19.0 X 7.5	12 EAST Lake Geneva	---	---	---	---	1	---
S-64-22	8	11.0 X 2.5	EXIT 27A	---	---	---	---	1	---
S-64-22	9	---	---	W13-2	48 X 60	EXIT 35 MPH	20.00	---	1
TOTAL							40.00	7	2

ALL ITEMS ON THIS SHEET ARE CATEGORY 0010.

TRAFFIC CONTROL ITEMS

LOCATION	DURATION	643.0100 TRAFFIC CONTROL 1000-20-66 EACH	643.0300 TRAFFIC CONTROL DRUMS DAY	643.0420 TRAFFIC CONTROL BARRICADES TYPE III DAY	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A DAY	643.0800 TRAFFIC CONTROL ARROW BOARDS DAY	643.0900 TRAFFIC CONTROL SIGNS DAY	643.2000 TRAFFIC CONTROL DETOUR 1000-20-66 EACH	643.3000 TRAFFIC CONTROL DETOUR SIGNS DAY
PROJECT	90	1	---	---	---	---	---	1	---
S-40-860 SHLDR CLOSURE	27	---	324	---	---	---	297	---	---
S-40-860 RAMP CLOSURE	3	---	33	18	36	---	39	---	---
S-64-21 SHLDR CLOSURE	27	---	810	---	---	---	135	---	
S-64-21 RAMP CLOSURE	3	---	60	12	24	---	29	---	99
S-64-22 SHLDR CLOSURE	27	---	810	---	---	---	135	---	
S-64-22 SHLDR CLOSURE	3	---	60	12	24	---	29	---	99
UNDISTRIBUTED	---	---	210	5	9	20	67	---	20
PROJECT TOTAL		1	2307	47	93	20	731	1	218

SIGN LIGHTING REMOVALS

SPV.0060.01 LAMP DISPOSAL HIGH INTENSITY DISCHARGE

STRUCTURE	SYSTEM	SPV.0060.01 LAMP DISPOSAL EACH
S-40-154	HL-40-GN	1
	TOTAL	1

LIGHTING PULL BOXES

SPV.0060.02 PULL BOXES STEEL 24x36-INCH GROUNDED

SYSTEM	LOCATION	SEQUENCE	SPV.0060.02 PULL BOXES 24X36-INCH GROUNDED EACH
HL-40-GN	164+00, 70' LT	LPB101	1
		TOTAL	1

LIGHTING BRANCH CIRCUIT CONDUIT

652.0225 CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH

SYSTEM	LOCATION TO LOCATION	652.0225 CONDUIT 2-INCH SCHEDULE 40 LF
HL-40-GN	LPB101 TO BGN5	55
	TOTAL	55

LIGHTING WIRE QUANTITIES

240/480 VAC 3-WIRE GROUNDED NEUTRAL SYSTEM

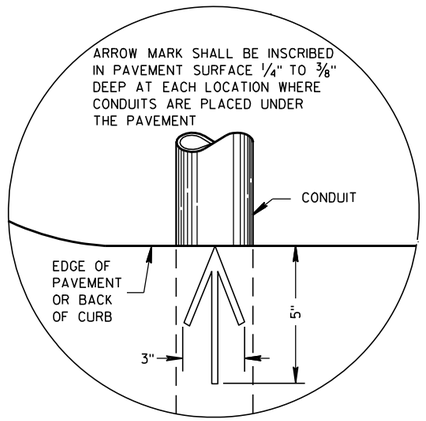
655.0620 ELECTRICAL WIRE LIGHTING 8 AWG

SYSTEM	NETWORK	LOCATION TO LOCATION	DISTANCE	655.0620 8 AWG LF
HL-40-GN	B/N	LPB101 TO BGN5	120	120
			TOTAL	120

ALL ITEMS ON THIS SHEET ARE CATEGORY 0010.

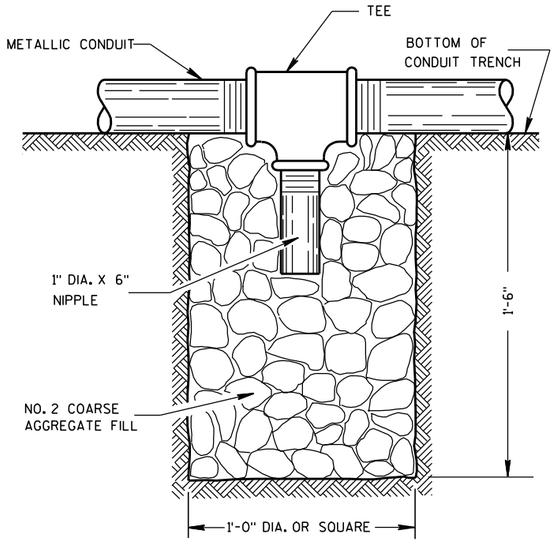
Standard Detail Drawing List

09B02-07	CONDUIT
09B04-10	PULL BOX
10A03-03	CIRCUIT IDENTIFICATION PLAQUES SIGN BRIDGES
12A04-03	STRUCTURE IDENTIFICATION PLAQUES, RAMP GATES, SIGN BRIDGES & OVERHEAD SIGN SUPPORTS & TRAFFIC SIGNALS
14B15-07A	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-07B	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-07C	STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS
14B18-06A	STEEL PLATE BEAM GUARD, CLASS "A" (AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS)
14B42-02A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-02B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-02C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-01A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-01B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-01C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B47-01A	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-01B	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
14B47-01C	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL
15D12-03	TRAFFIC CONTROL, LANE CLOSURE, SPEEDS GREATER THAN 40 M.P.H.
15D14-01	TRAFFIC CONTROL, TWO LANE CLOSURE ON FREEWAY OR EXPRESSWAY, SHORT-TERM (LESS THAN 24 HOURS)
15D16-02	TRAFFIC CONTROL, EXIT RAMP CLOSURE



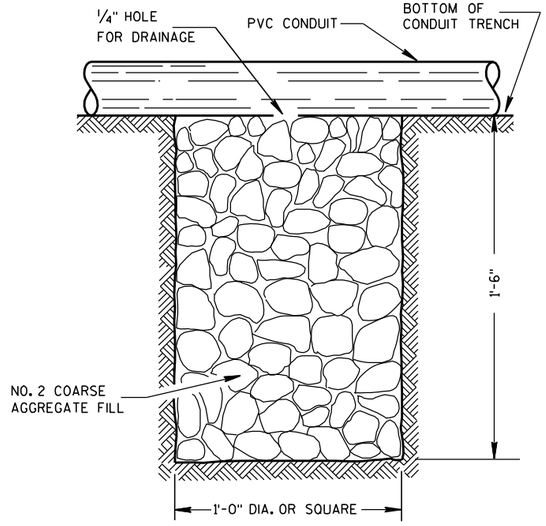
PLAN VIEW

ARROW MARK



NOTE: INSTALL AT LOCATIONS WHERE METALLIC CONDUITS CANNOT BE PITCHED TO DRAIN INTO A PULL BOX.

DRAIN SUMP FOR METALLIC CONDUIT



NOTE: INSTALL AT LOCATIONS WHERE PVC CONDUITS CANNOT BE PITCHED TO DRAIN INTO A PULL BOX.

DRAIN SUMP FOR PVC CONDUIT

GENERAL NOTES

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

METALLIC (STANDARD SPECIFICATION 652.2.2) OR NONMETALLIC (STANDARD SPECIFICATION 652.2.3) CONDUIT SHALL BE FURNISHED AND PLACED AS SHOWN.

DEPTH OF CONDUIT INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES MINIMUM AND 36 INCHES MAXIMUM.

DEPTH OF CONDUIT INSTALLED THAT IS NOT BELOW THE TRAVELED WAY SHALL BE 18 INCHES MINIMUM AND 36 INCHES MAXIMUM.

ANY EXCEPTION TO THE MAXIMUM DEPTH SHALL BE ONLY WITH THE WRITTEN APPROVAL OF THE ENGINEER.

THE TRENCH SHALL NOT BE BACKFILLED PRIOR TO INSPECTION OF THE CONDUIT.

ALL METALLIC CONDUIT RACEWAY ENDS SHALL BE REAMED AND THREADED.

ALL METALLIC CONDUIT IN WHICH WIRE OR CABLE IS TO BE INSTALLED SHALL BE BUSHED WITH APPROVED THREADED BUSHINGS BEFORE INSTALLATION OF THE WIRE OR CABLE.

ALL METALLIC CONDUITS IN WHICH WIRE OR CABLE IS NOT TO BE INSTALLED SHALL BE CAPPED WITH THREADED PROTECTIVE CAPS, AS APPROVED BY THE ENGINEER.

ALL NONMETALLIC CONDUIT SHALL BE CAPPED OR PLUGGED IMMEDIATELY AFTER INSTALLATION AND SHALL REMAIN CAPPED OR PLUGGED UNTIL WIRE/CABLES ARE INSTALLED.

NONMETALLIC CONDUITS IN WHICH WIRE OR CABLE IS NOT BEING INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

BENDING OF PVC ELECTRICAL CONDUIT SHALL BE ACCOMPLISHED BY USING A BLANKET OR EMERSION TYPE TANK DESIGNED FOR THE PURPOSE OF BENDING PVC ELECTRICAL CONDUIT.

ALL CUT ENDS SHALL BE TRIMMED INSIDE AND OUTSIDE TO REMOVE ALL ROUGH EDGES ON NONMETALLIC CONDUIT. (SEE NEC 347.5)

WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY U.L. LISTED ADAPTER FITTINGS SHALL BE USED.

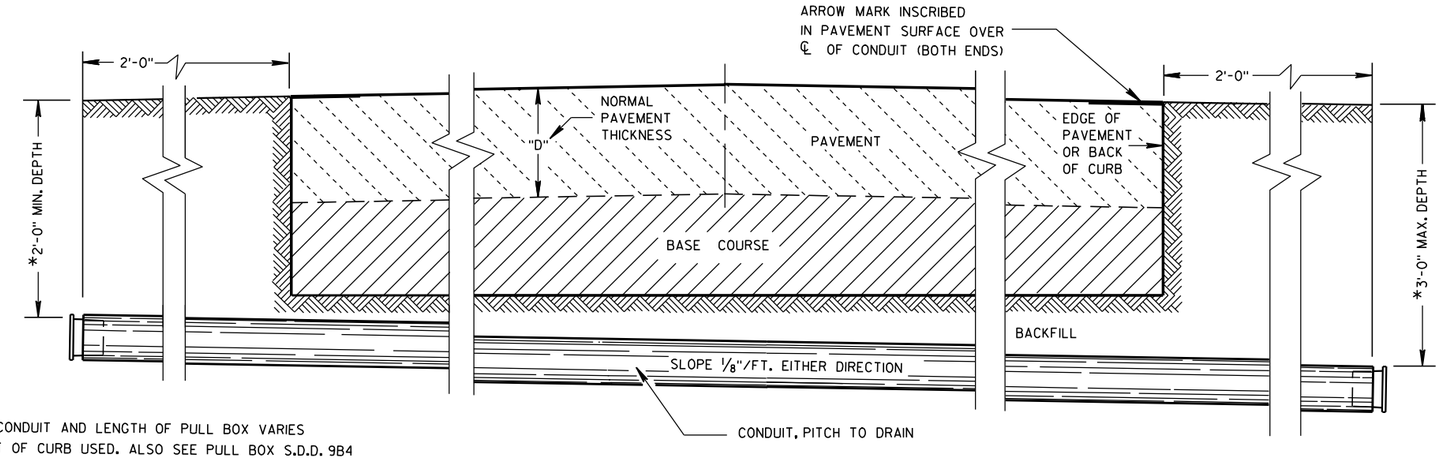
PRIOR TO CONDUIT ACCEPTANCE, CONDUIT CAPS OR PLUGS SHALL BE REMOVED, AND THE CAPS, PLUGS AND CONDUIT ENDS SHALL BE THOROUGHLY CLEANED AND THEN THE CAPS OR PLUGS REINSTALLED TO ENSURE THAT THE CAPS OR PLUGS CAN BE EASILY REMOVED IN THE FUTURE.

ALL CONDUIT BEING FURNISHED AND INSTALLED SHALL HAVE THE U.L. LABEL FIRMLY ATTACHED.

CONDUIT RUNS SHALL BE THE SAME SIZE OF CONDUIT FROM ONE END TO THE OTHER (FROM PULL BOX TO PULL BOX-OR-JUNCTION BOX TO JUNCTION BOX-OR-BASE TO BASE, ETC.).

POLY ROPE OR A PULL WIRE SHALL BE INSTALLED AS STATED IN THE STANDARD SPECIFICATION, ITEM 652.3.1.1.

ALL CONDUIT RUNS SHALL BE STRAIGHT (WITHOUT BENDS) FROM PULL BOX TO PULL BOX, PULL BOX TO BASE AND BASE TO BASE AS SHOWN ON THE PLANS.



*DEPTH OF CONDUIT AND LENGTH OF PULL BOX VARIES WITH HEIGHT OF CURB USED. ALSO SEE PULL BOX S.D.D. 9B4

SIDE ELEVATION

DETAIL FOR CONDUIT UNDER PAVED HIGHWAYS

CONDUIT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

10/23/03 — DATE

/S/ Balu Ananthanarayanan — STATE ELECTRICAL ENGI

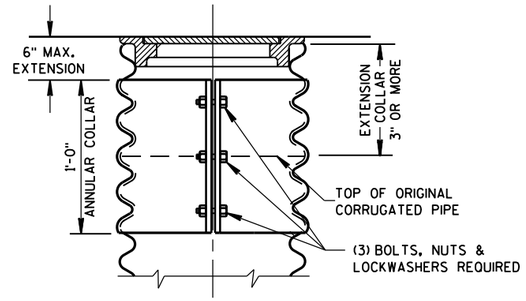
FHWA — 20 — HWYS

TABLE OF NOMINAL DIMENSIONS AND WEIGHTS

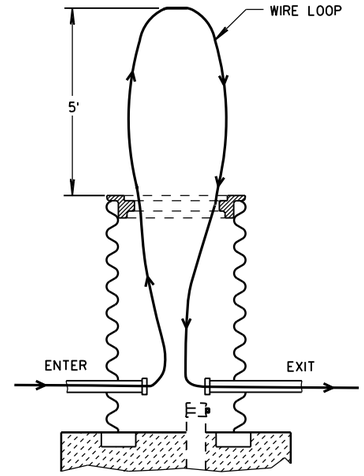
DIMENSION IN INCHES		CORRUGATED STEEL PIPE								
PIPE DIAMETER (INSIDE)	A	12	12	12	18	18	18	24	24	24
PIPE LENGTH **	B	24	30	36	24	30	36	36	42	48
WALL THICKNESS	C	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
COVER	D	10 1/4	10 1/4	10 1/4	16 1/4	16 1/4	16 1/4	22 1/4	22 1/4	22 1/4
FRAME	E	14 1/2	14 1/2	14 1/2	20 1/2	20 1/2	20 1/2	26 1/2	26 1/2	26 1/2
FRAME	F	8 1/2	8 1/2	8 1/2	14 1/2	14 1/2	14 1/2	20 1/2	20 1/2	20 1/2
FRAME	G	11 1/2	11 1/2	11 1/2	17 1/2	17 1/2	17 1/2	23 1/2	23 1/2	23 1/2
WEIGHT IN POUNDS *										
FRAME AND COVER		60	60	60	110	110	110	155	155	155

* THE ACTUAL WEIGHT OF THE MANHOLE FRAME AND COVER MAY VARY WITHIN 5 PERCENT PLUS OR MINUS OF THE WEIGHTS SHOWN.

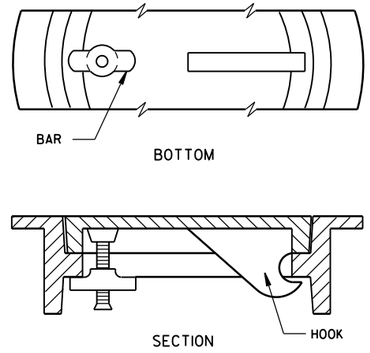
** NORMALLY USED LENGTHS. THE PROJECT ENGINEER SHALL DETERMINE IF PIPE LENGTHS, OTHER THAN THOSE SPECIFIED, SHALL BE USED, TO A MAXIMUM OF 48" (CONTINUOUS LENGTH, NON-SPLICED). THE ADDITIONAL LENGTH SHALL BE INCIDENTAL TO THE PULL BOX BID PRICE.



CORRUGATED PIPE EXTENDER

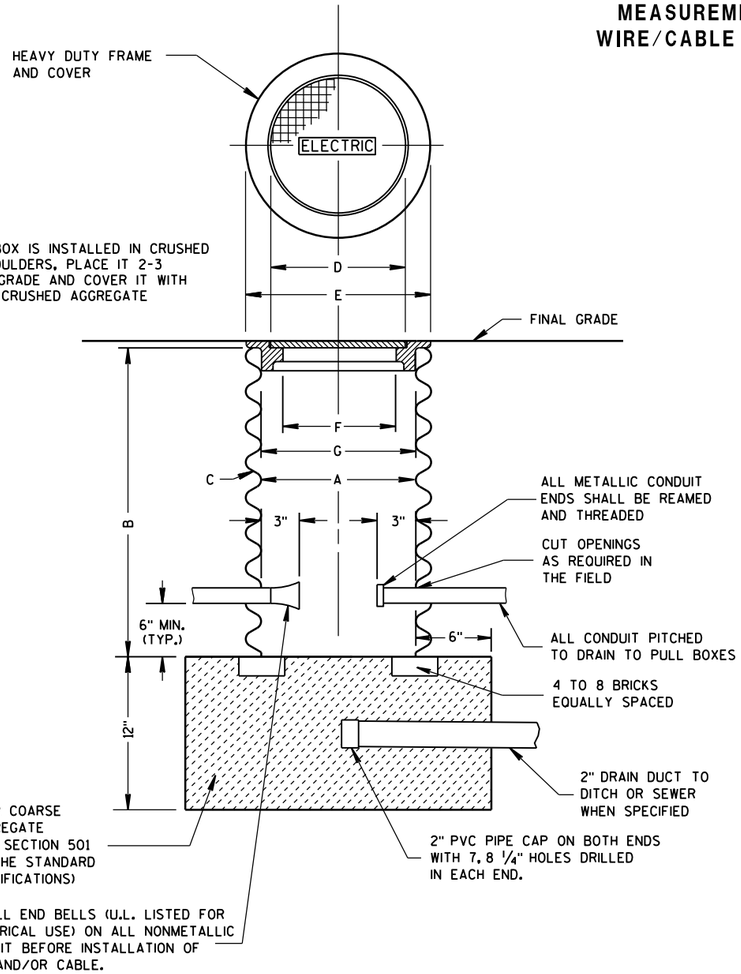


MEASUREMENT DETAIL FOR WIRE/CABLE IN THE PULL BOX



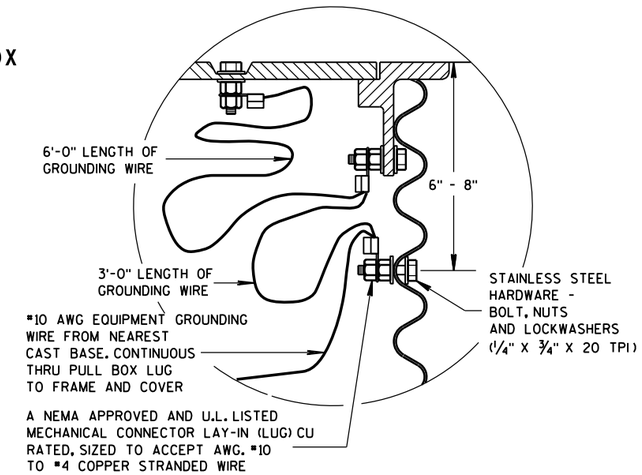
ALTERNATE COVER (LOCKING)

TIGHTENING BAR TYPE

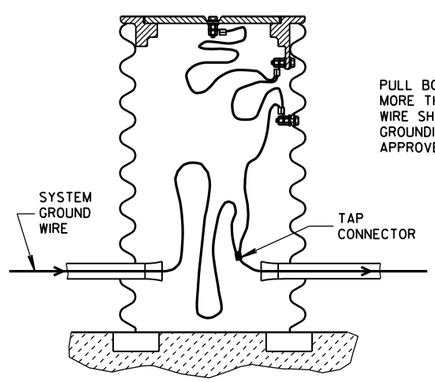


WHEN A PULL BOX IS INSTALLED IN CRUSHED AGGREGATE SHOULDERS, PLACE IT 2-3 INCHES BELOW GRADE AND COVER IT WITH 2-3 INCHES OF CRUSHED AGGREGATE

PULL BOX



EQUIPMENT GROUNDING LUG AND LOCATION IN STEEL PULL BOXES



PULL BOX TO NEAREST BASE DISTANCE MORE THAN 20 FEET. PULL BOX GROUND WIRE SHALL CONNECT AT SYSTEM GROUNDING WIRE. USE DEPARTMENT APPROVED TAP CONNECTOR.

EQUIPMENT GROUNDING LUG AND LOCATION IN STEEL PULL BOXES

GENERAL NOTES

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

ALL FRAMES AND COVERS SHALL BE HEAVY DUTY TYPE, SUITABLE FOR VEHICULAR TRAFFIC LOADS.

PULL BOXES LOCATED IN THE ROADWAYS SHALL HAVE LOCKING COVERS.

ENTRANCE HOLES INTO PULL BOXES SHALL BE CUT WITH A CIRCULAR HOLE SAW OR HYDRAULIC CONDUIT PUNCH. HOLE SIZE SHALL BE THE OUTSIDE DIAMETER OF THE CONDUIT THAT IS TO FIT IN THE OPENING PLUS NO MORE THAN 1/4".

THE CONTRACTOR SHALL NOT INSTALL WIRE IN ANY PULL BOX UNTIL ITS INSTALLATION HAS BEEN INSPECTED AND ACCEPTED BY THE ENGINEER.

GROUNDING LUGS (MECHANICAL CONNECTORS) SHALL BE U.L. LISTED AND APPROVED FOR USE WITH COPPER WIRE.

GROUNDING LUGS ARE NOT REQUIRED IN PULL BOXES WHEN VOLTAGES OF LESS THAN 50 VOLTS AC ARE THE ONLY VOLTAGES ENCOUNTERED IN THE BOXES.

ALL METALLIC CONDUIT IN WHICH WIRE AND/OR CABLE IS TO BE INSTALLED, SHALL BE BUSHED BEFORE INSTALLATION OF THE WIRE AND/OR CABLE.

S.D.D. 9B2, "CONDUIT", APPLIES TO THIS DRAWING.

WHEN PULL BOXES ARE INSTALLED FOR FUTURE USE, DO NOT INSTALL THE EQUIPMENT GROUNDING LUG. THE EQUIPMENT GROUNDING LUG, THE EQUIPMENT GROUNDING ELECTRODE AND THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE REQUIRED AND INSTALLED UNDER A FUTURE WIRING CONTRACT.

PULL BOX	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	
2-7-2013 DATE	/S/ Ahmet Demirbilek STATE ELECTRICAL
FHWA	

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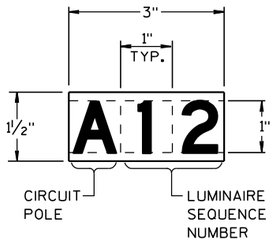
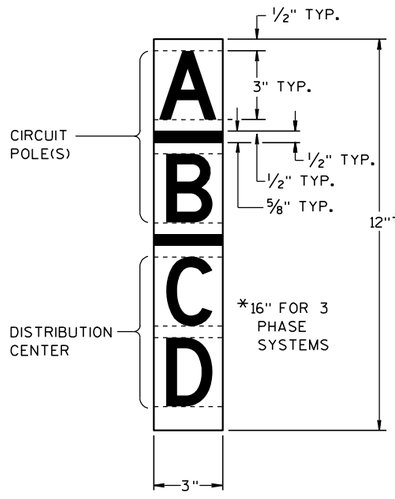
S.D.D. 9 B 4-10



SEQUENCE DECAL

(MOUNT ON LUMINAIRE)



SIGN BRIDGE CIRCUIT PLAQUE

GENERAL NOTES

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

PLAQUES SHALL BE INCIDENTAL TO ALL NEW INSTALLATIONS.

WHERE SHOWN IN THE PLANS, REPLACEMENT PLAQUES WILL BE MEASURED AND PAID SEPARATELY.

FASTEN TOP, CENTER AND BOTTOM OF PLAQUE TO POLE OR OTHER LOCATION AS FOLLOWS:

GALVANIZED STEEL SHAFT - 3 STAINLESS STEEL POP RIVETS

A588 STEEL SHAFT - SHIM FOR DRAINAGE WITH STAINLESS WASHERS; FASTEN WITH STAINLESS SELF-TAPPING SCREWS

ALUMINUM SHAFTS - 3 ALUMINUM POP RIVETS

MOUNTING HEIGHT SHALL BE APPROXIMATELY 5.0' ABOVE CURB OR SHOULDER. ADJUST IF IT IS KNOWN THAT REQUIRED TRAFFIC SIGNS WILL OBSTRUCT.

PLAQUE MATERIALS:

BASE - SHEET ALUMINUM, 0.060" THICK.

FACE - WHITE, SELF-ADHESIVE VINYL SHEETING, NON-RETROREFLECTIVE

LINES - BLACK, ½" WIDE, SELF-ADHESIVE

CHARACTERS - BLACK, SELF-ADHESIVE, SERIES "D", SIZE AS SHOWN

WITH THE APPROVAL OF THE ENGINEER, THE BASE MATERIAL MAY BE OMITTED AND THE FACE ADHERED DIRECTLY TO THE SURFACE, IN CASES SUCH AS SMOOTH, CLEAN ALUMINUM STRUCTURES.

ALTERNATIVE COMPUTER-GENERATED SIGN LETTERING MAY BE ACCEPTED IF THE ENGINEER FINDS IT TO BE EQUIVALENT.

ALL SIGN BRIDGE STRUCTURES MUST ALSO HAVE STRUCTURE ID PLAQUES AS SHOWN IN THE STRUCTURE DETAILS.

CIRCUIT PLAQUES SHALL BE MOUNTED IN THE STEM WHICH HAS THE ELECTRICAL CIRCUIT, FACING TRAFFIC.

CIRCUIT IDENTIFICATION PLAQUES SIGN BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/25/2010 — DATE
/S/ John Corbin — STATE ELECTRICAL ENGI
FHWA

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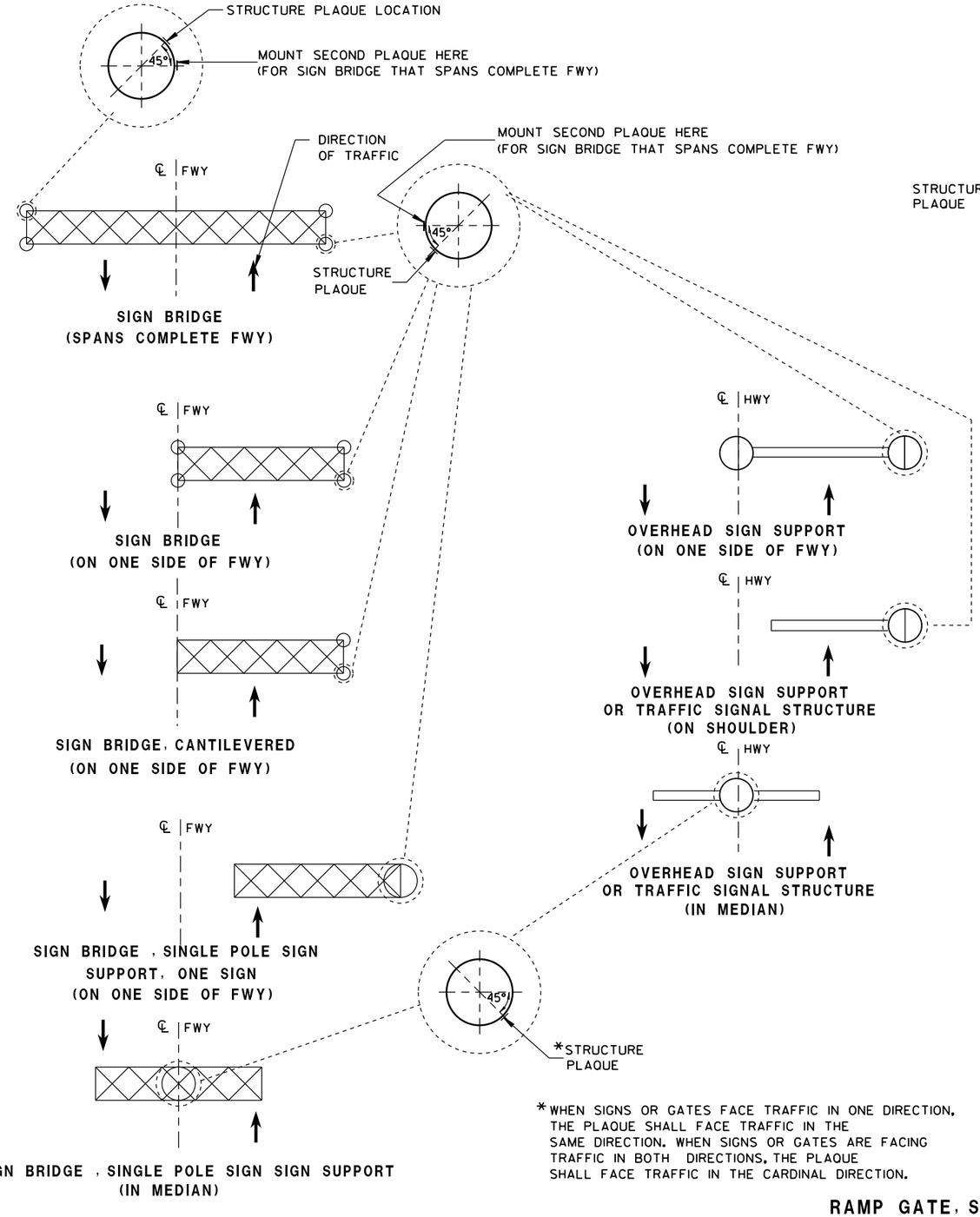
S.D.D. 10 A 3-3

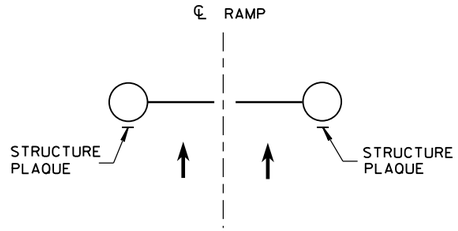
6

S.D.D. 10 A 3-3

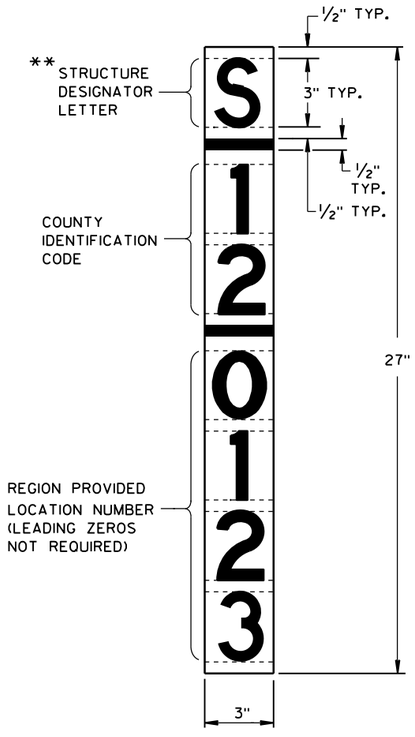


*WHEN SIGNS OR GATES FACE TRAFFIC IN ONE DIRECTION, THE PLAQUE SHALL FACE TRAFFIC IN THE SAME DIRECTION. WHEN SIGNS OR GATES ARE FACING TRAFFIC IN BOTH DIRECTIONS, THE PLAQUE SHALL FACE TRAFFIC IN THE CARDINAL DIRECTION.

LOCATION OF RAMP GATE, SIGN BRIDGE, OVERHEAD SIGN SUPPORT & TRAFFIC SIGNAL STRUCTURE PLAQUES



**RAMP GATE
(ACROSS FWY ON-RAMP)**



RAMP GATE, SIGN BRIDGE, OVERHEAD SIGN SUPPORT AND TRAFFIC SIGNAL STRUCTURE PLAQUE FOR SIGN BRIDGES AND OVERHEAD SIGN SUPPORT WHICH ARE NOT STRUCTURE MOUNTED

** LETTER "G" UTILIZED FOR RAMP GATES. LETTER "S" UTILIZED FOR SIGN BRIDGES, OVERHEAD SIGN SUPPORTS, AND TRAFFIC SIGNALS.

GENERAL NOTES

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

PLAQUES SHALL BE INCIDENTAL TO ALL NEW INSTALLATIONS.

IF THE PROPOSED SIGN BRIDGE OR OVERHEAD SIGN SUPPORT IS REPLACING AN EXISTING SIGN BRIDGE OR OVERHEAD SIGN SUPPORT, A NEW IDENTIFICATION PLAQUE WILL BE REQUIRED.

FASTEN TOP, CENTER AND BOTTOM OF PLAQUE TO POLE OR OTHER LOCATION AS FOLLOWS:

GALVANIZED STEEL SHAFT - 3 STAINLESS STEEL POP RIVETS

A588 STEEL SHAFT - SHIM FOR DRAINAGE WITH STAINLESS WASHERS; FASTEN WITH STAINLESS SELF-TAPPING SCREWS

ALUMINUM SHAFTS - 3 ALUMINUM POP RIVETS

MOUNTING HEIGHT SHALL BE APPROXIMATELY 5.0' ABOVE CURB OR SHOULDER. ADJUST IF IT IS KNOWN THAT REQUIRED TRAFFIC SIGNS WILL OBSTRUCT.

PLAQUE MATERIALS:

BASE - SHEET ALUMINUM, 0.060" THICK.

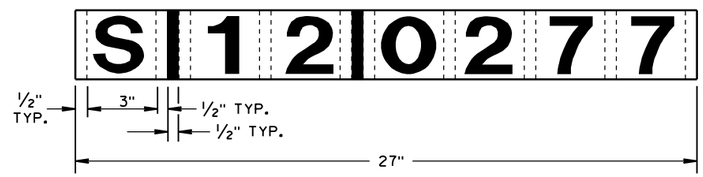
FACE - WHITE, SELF-ADHESIVE VINYL SHEETING, NON-RETROREFLECTIVE

LINES - BLACK, ½" WIDE, SELF-ADHESIVE

CHARACTERS:- BLACK, SELF ADHESIVE, SERIES "D", SIZE AS SHOWN.

FOR SIGN BRIDGES, STRUCTURE MOUNTED, THE STRUCTURE PLAQUE SHALL BE MOUNTED HORIZONTALLY AS SHOWN ON THE DRAWING. THE STRUCTURE PLAQUE SHALL BE MOUNTED HORIZONTALLY TO THE BACK OF THE SIGN, BETWEEN THE ALUMINUM EXTRUSIONS, NEAR THE TOP LEFT HAND CORNER OF THE SIGN. THE BASE MATERIAL SHALL BE OMITTED AND THE FACE ADHERED DIRECTLY TO THE ALUMINUM SURFACE. PRIOR TO ADHERING THE MATERIAL, THE ALUMINUM SURFACE SHALL BE SMOOTH, CLEAN AND DRY.

WHERE SIGN BRIDGE ILLUMINATION IS PROVIDED, THE STRUCTURE MUST ALSO HAVE A SIGN BRIDGE CIRCUIT PLAQUE AS SHOWN IN THE ELECTRICAL DETAILS.



IDENTIFICATION PLAQUE FOR SIGN BRIDGE, STRUCTURE MOUNTED

STRUCTURE IDENTIFICATION PLAQUES, RAMP GATES, SIGN BRIDGES, OVERHEAD SIGN SUPPORTS, & TRAFFIC SIGNALS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
12/4/2012 DATE
/S/ Travis Feltes STATE TRAFFIC ENGINEER
FHWA

GENERAL NOTES

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

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

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

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

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

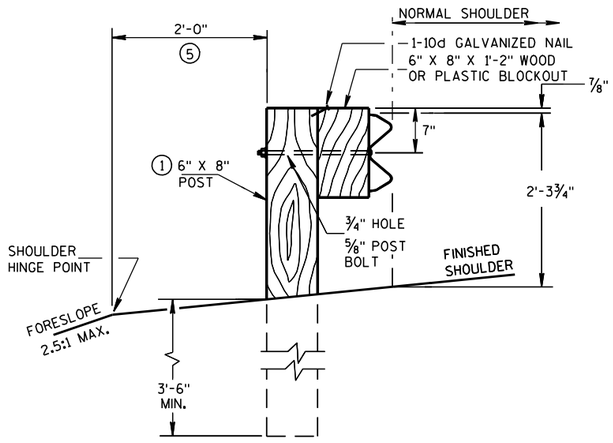
(4) USE EITHER WOOD OR APPROVED PLASTIC BLOCKOUTS ON WOOD POSTS.

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

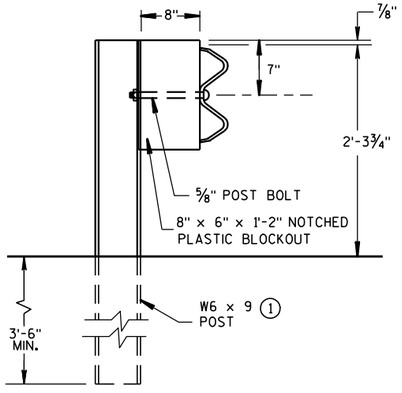
(6) IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE ENGINEER MAY APPROVE USING A 12 INCH DIAMETER POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE APPROXIMATELY 2½ INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN YHE HOLE. BACKFILL WITH MATERIAL EXCAVATED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

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

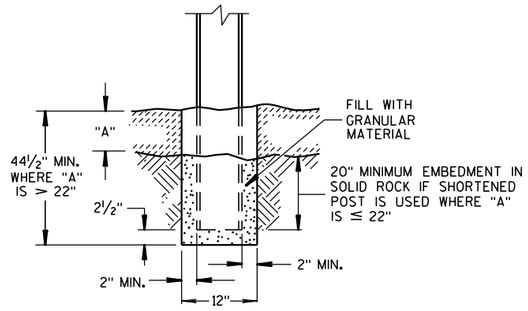
ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



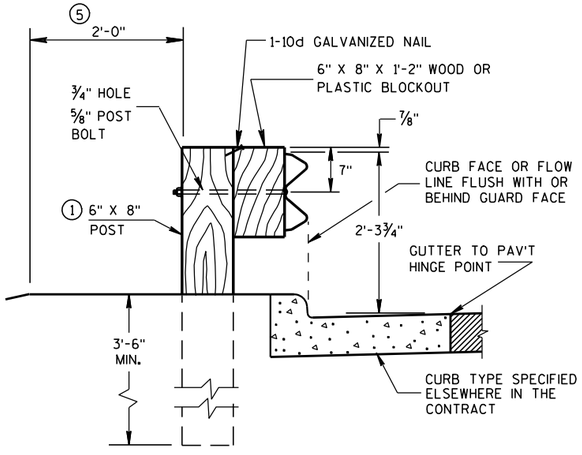
END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



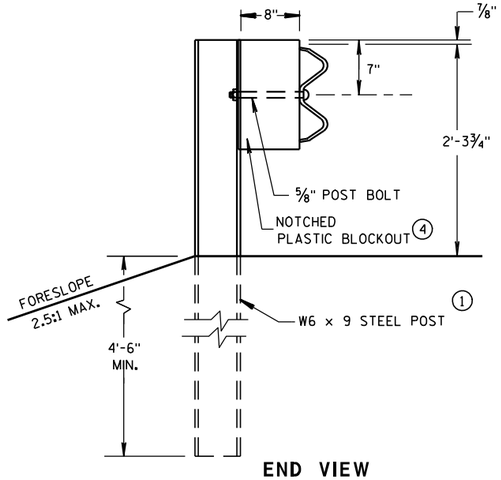
END VIEW
STEEL POST & NOTCHED
PLASTIC BLOCKOUT ALTERNATIVE
STANDARD INSTALLATION



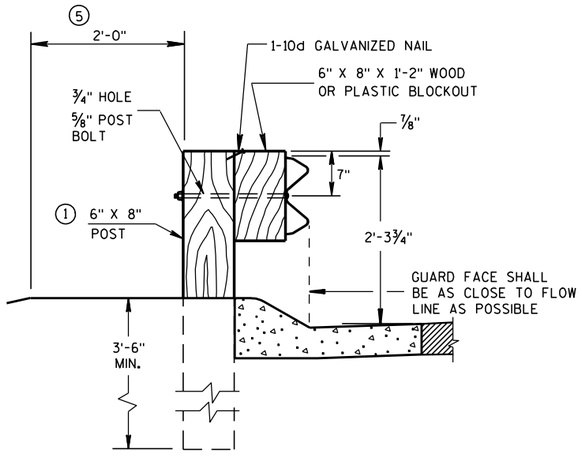
END VIEW
SETTING STEEL OR WOOD POST IN ROCK (6)



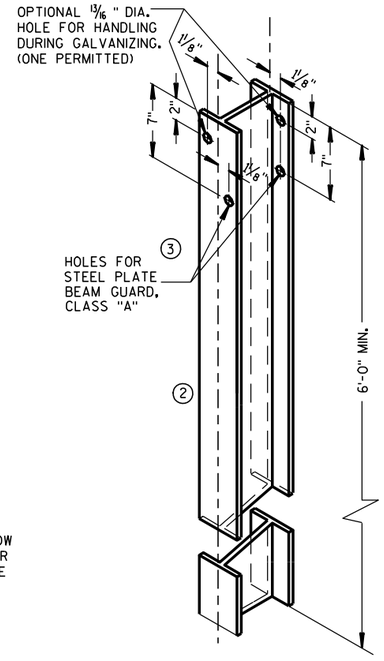
END VIEW
LOCATED ALONG A CURBED ROADWAY



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

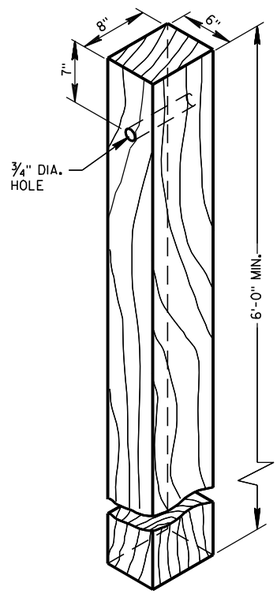


END VIEW
LOCATED ALONG A
MOUNTABLE CURBED ROADWAY

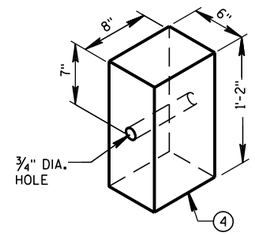


STEEL POST &
HOLE PUNCHING DETAIL
(W6 X 9) (1)

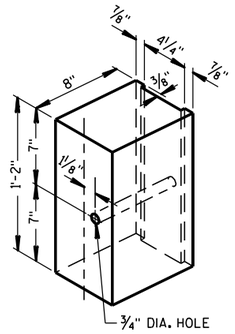
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED



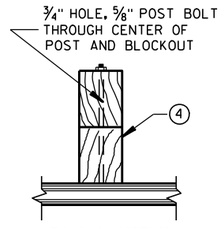
WOOD POST
(6"X8") NOMINAL



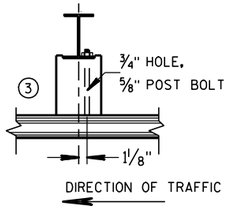
WOOD OR PLASTIC
BLOCKOUT FOR
WOOD POSTS



TYPICAL NOTCHED (1)
PLASTIC BLOCKOUT
FOR STEEL POSTS



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



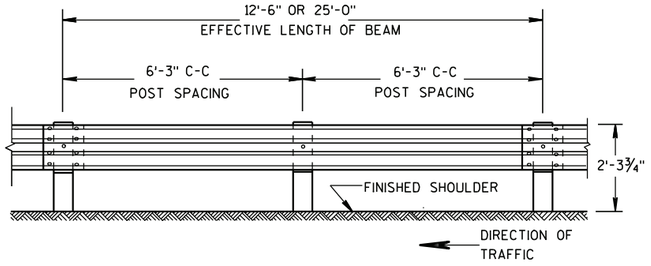
PLAN VIEW
STEEL POST, NOTCHED
PLASTIC BLOCKOUT & BEAM

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

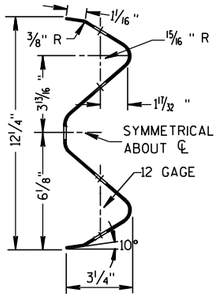
TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD

6
S.D.D. 14 B 15-7a

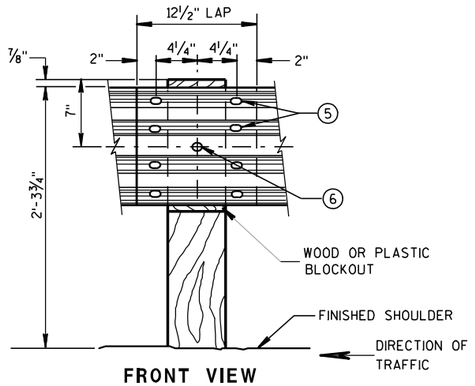


FRONT VIEW

POST SPACING STANDARD INSTALLATION



SECTION THRU W BEAM

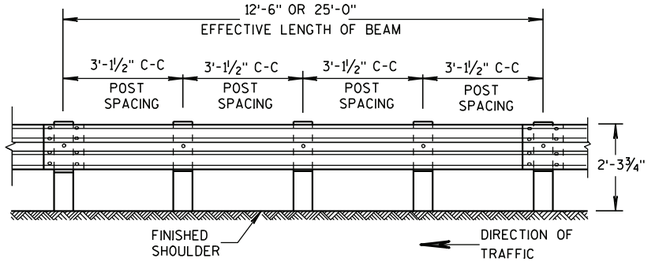


FRONT VIEW

BEAM SPLICE AT WOOD POST AND POST MOUNTING DETAIL

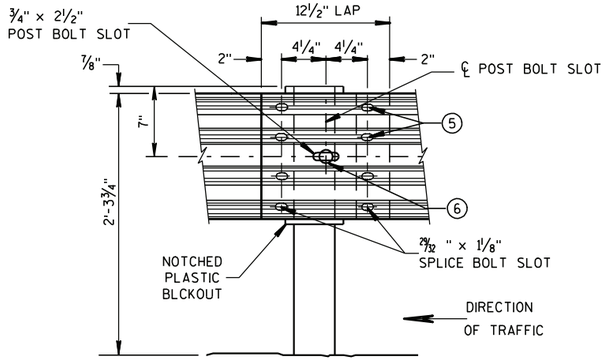
GENERAL NOTES

1. PROVIDE TYPE "H" SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH TYPE "H" YELLOW REFLECTIVE SHEETING.
2. DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
3. REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.
4. PROVIDE AN ANGLE OF BEND OF 90° ± 1° FOR TWO-SIDED REFLECTORS.
5. 8 - 5/8" ϕ X 2 " BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.
6. 5/8" ϕ X 1'-6" BUTTON HEAD BOLT AND AND RECESS NUT WITH ROUND WASHER UNDER NUT.



FRONT VIEW

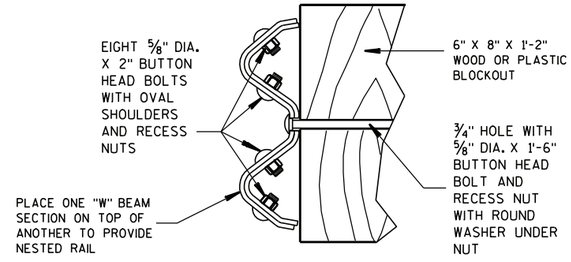
POST SPACING FOR LONGER POST AT HALF POST SPACING W BEAM (LHW)



FRONT VIEW

BEAM SPLICE AT STEEL POST

TYPICAL SPLICING DETAILS OF STEEL PLATE BEAM GUARD

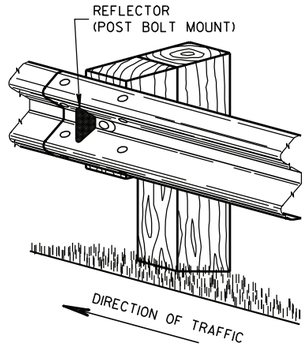


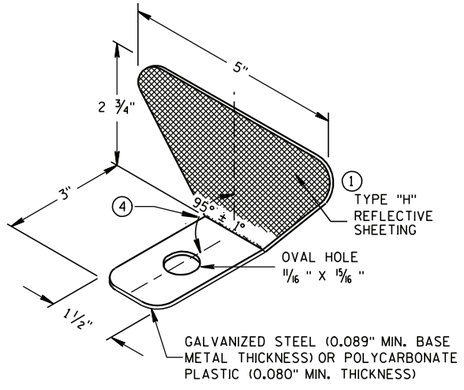
NESTED W BEAM (NW)

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

REFLECTOR SPACING (2)

	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200'	50' C-C	1	3
	> 200'	100' C-C	1	
TWO WAY TRAFFIC	< 200'	25' C-C	1 (3)	6
	> 200'	50' C-C	1	
TWO WAY TRAFFIC	< 200'	50' C-C	2 (4)	3
	> 200'	100' C-C	2	



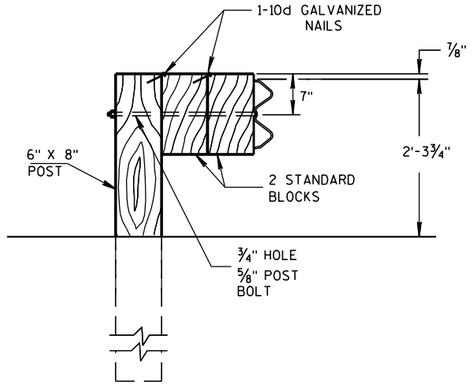


ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION (1)

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

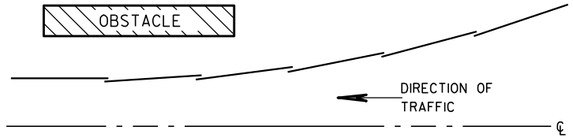
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6
S.D.D. 14 B 15-7b

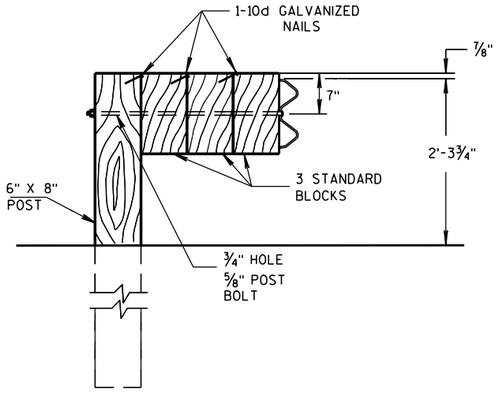


DETAIL FOR DOUBLE BLOCKS

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

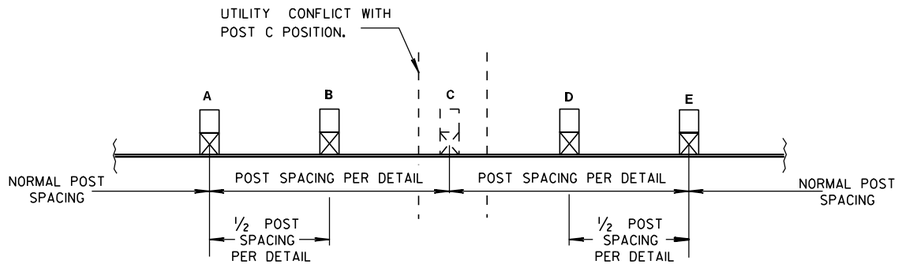


PLAN VIEW
BEAM LAPPING DETAIL



DETAIL FOR TRIPLE BLOCKS

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



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION

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

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

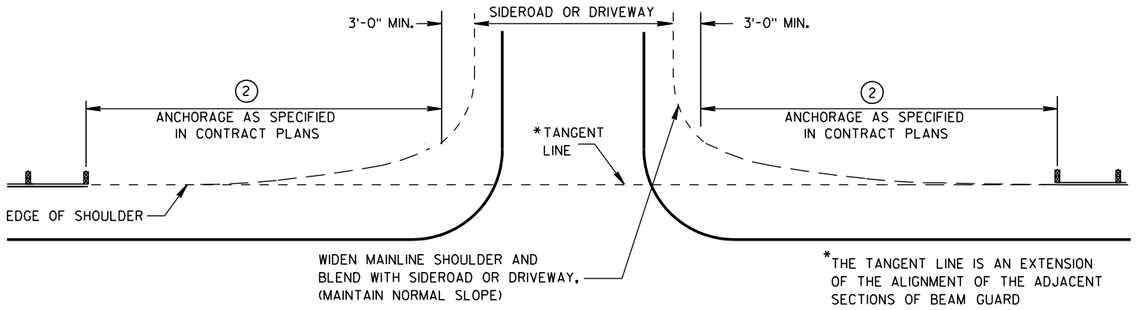
APPROVED

5/23/11
DATE

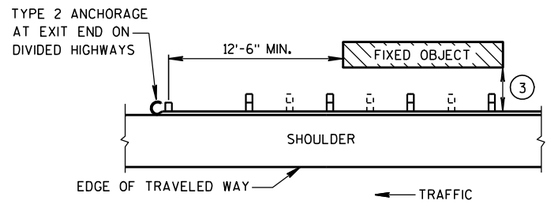
/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER

FHWA

6
S.D.D. 14 B 15-7c



BEAM GUARD AT SIDEROADS OR DRIVEWAYS



BEAM GUARD AT OBSTACLES EXIT END - ONE WAY TRAFFIC

GENERAL NOTES

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

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

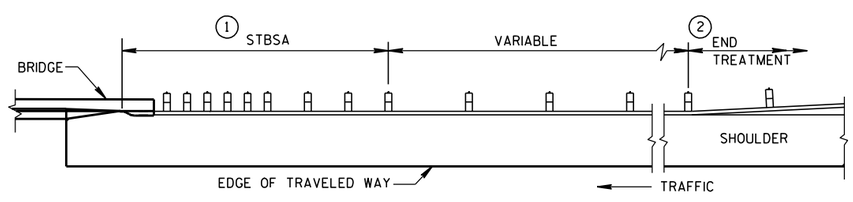
THE LOCATIONS AND LENGTHS OF BEAM GUARD ARE SHOWN ELSEWHERE IN THE PLAN.

(1) STEEL THRIE BEAM STRUCTURAL APPROACH (STBSA) - SEE CURRENT SDD 14B20.

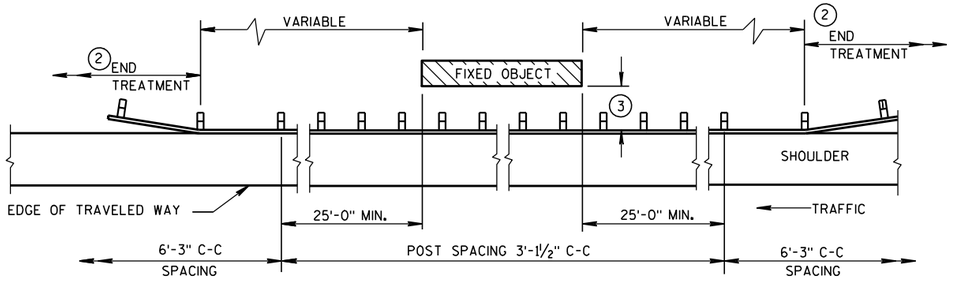
(2) USE AN APPROVED END TREATMENT FOR THE TRAFFIC APPROACH SIDE OF BRIDGE/OBSTACLES. USE TYPE 2 ANCHORAGE ONLY AT THE DOWNSTREAM ENDS OF BEAM GUARD LOCATED ALONG ROADWAYS WITH ONE WAY TRAFFIC.

(3)

MINIMUM LATERAL DISTANCE FROM FACE OF BEAM GUARD TO FIXED OBJECT	POST SPACING
3'-6"	3' - 1½"
4'-6"	6' - 3"

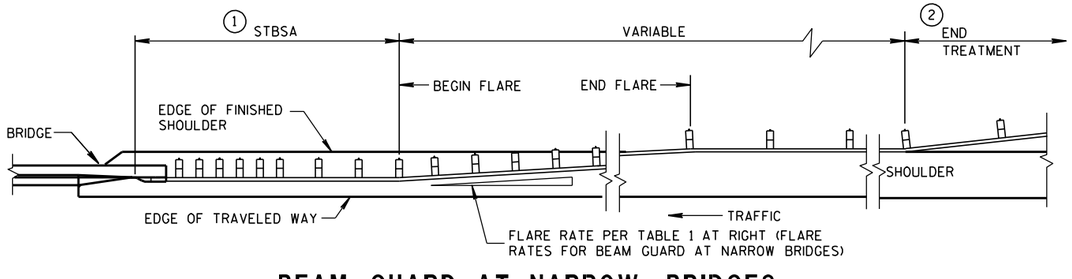


BEAM GUARD AT FULL WIDTH BRIDGES



BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC

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



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

TABLE 1
FLARE RATES FOR BEAM GUARD AT NARROW BRIDGES

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

S.D.D. 14 B 18-6a

6

S.D.D. 14 B 18-6a

GENERAL NOTES

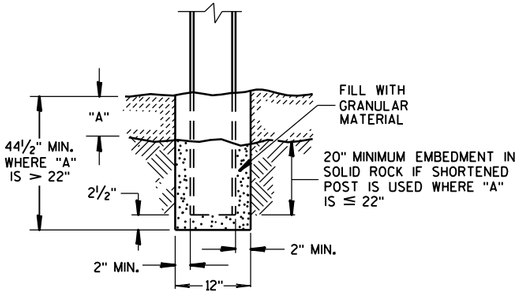
1. WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

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.

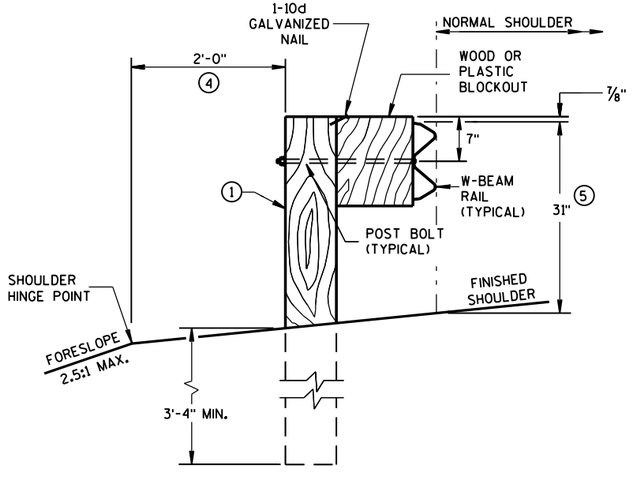
3. IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2½INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO 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 27¾" TO 32".

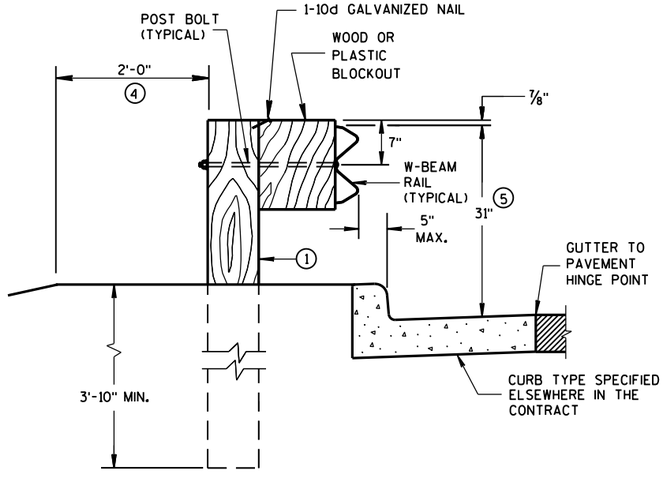


END VIEW
SETTING STEEL OR WOOD POST IN ROCK ③



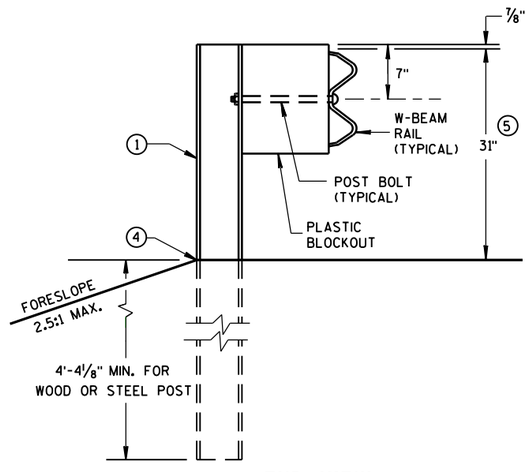
END VIEW

LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



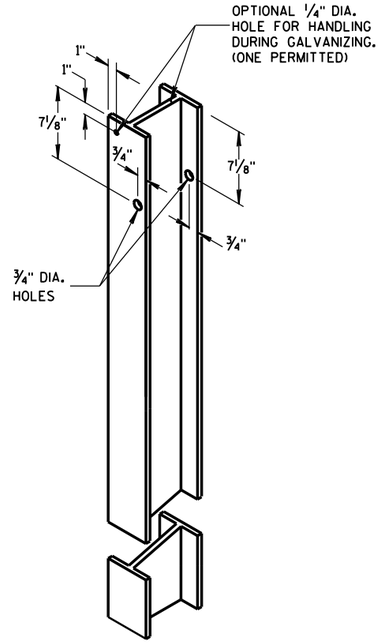
END VIEW

LOCATED ALONG A CURBED ROADWAY

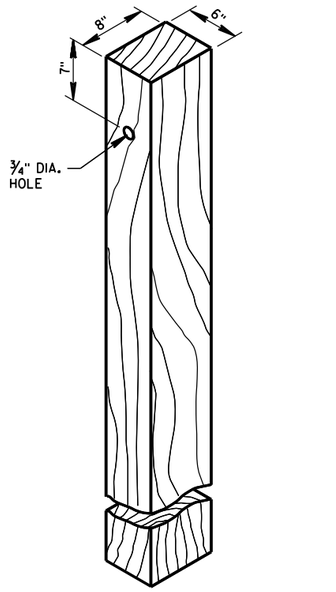


END VIEW

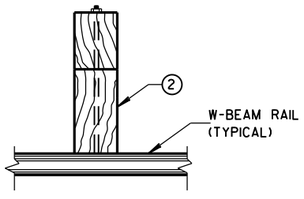
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



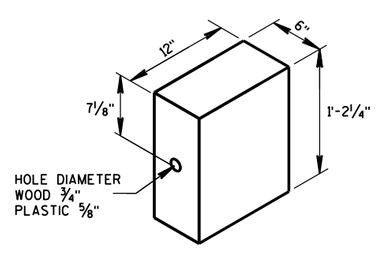
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) ①



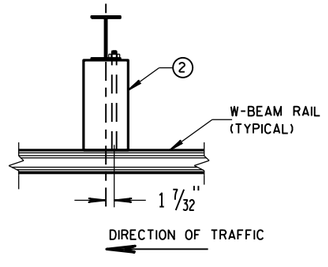
WOOD POST
(6" X 8") NOMINAL ①



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT ②



PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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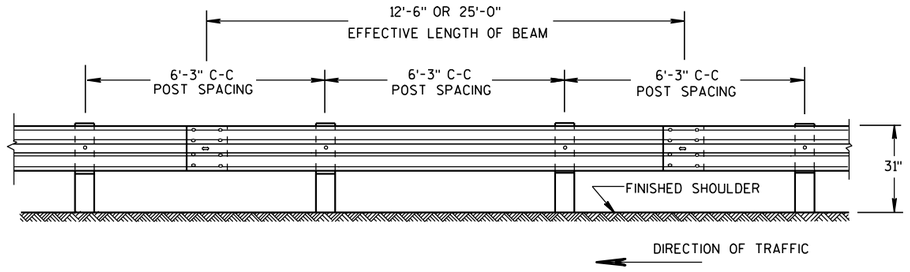
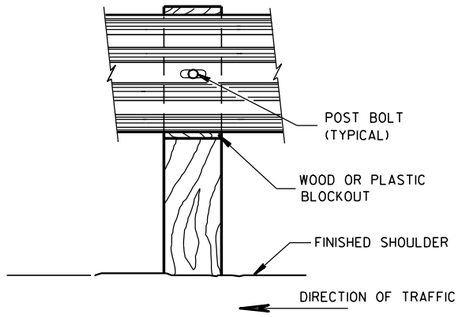
S.D.D. 14 B 42-2a



FRONT VIEW

POST SPACING STANDARD INSTALLATION



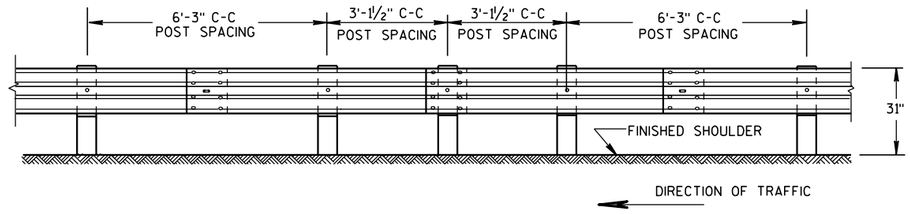
FRONT VIEW AT WOOD POST

GENERAL NOTES

1. PROVIDE TYPE "H" SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH TYPE "H" YELLOW REFLECTIVE SHEETING.
2. DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
3. REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.
4. PROVIDE AN ANGLE OF BEND OF 90° ± 1° FOR TWO-SIDED REFLECTORS.
5. 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

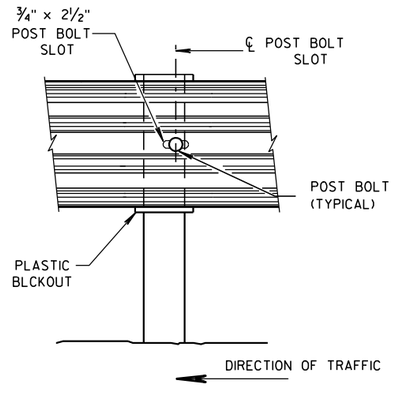
POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

GUARD RAIL SPLICE BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

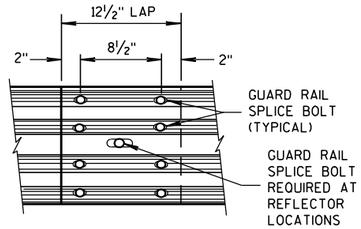


FRONT VIEW

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

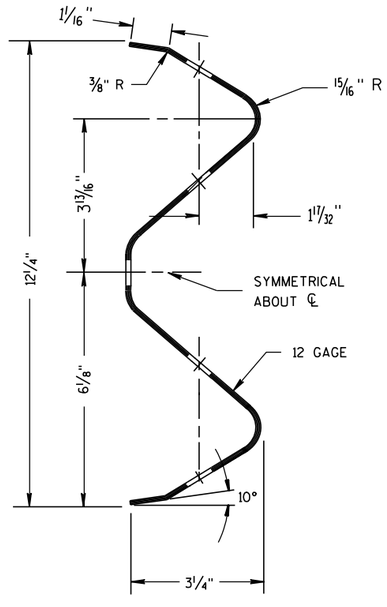


FRONT VIEW AT STEEL POST

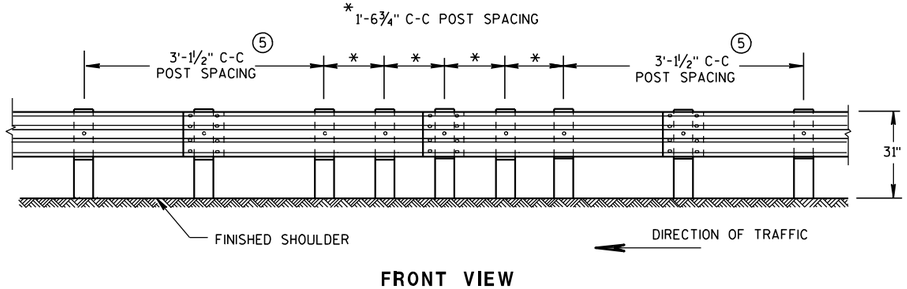


FRONT VIEW

MID-SPAN BEAM SPLICE

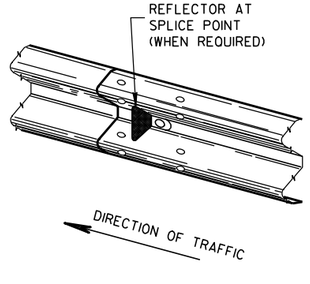


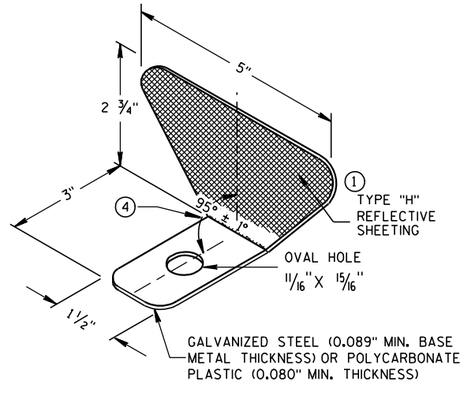
SECTION THRU W-BEAM RAIL



FRONT VIEW

QUARTER POST SPACING (QS)





ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION ①

REFLECTOR SPACING ②

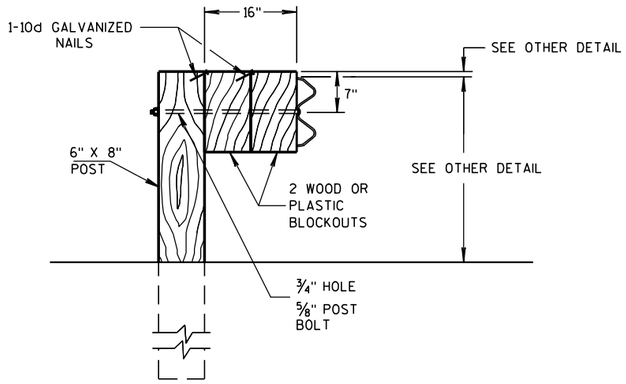
	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	1 1	3
TWO WAY TRAFFIC	< 200' > 200'	25' C-C 50' C-C	1 1 ③	6
TWO WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	2 2 ④	3

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

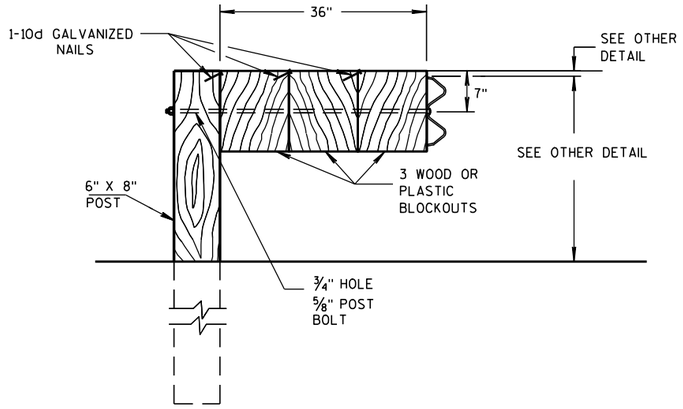
S.D.D. 14 B 42-2b

S.D.D. 14 B 42-2b



DETAIL FOR 16" BLOCKOUT DEPTH

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

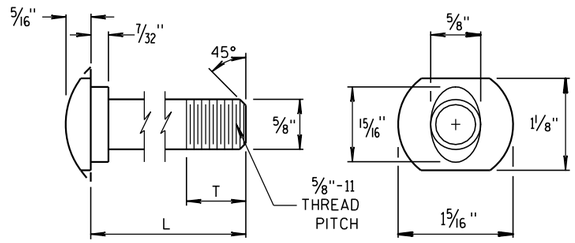


DETAIL FOR 36" BLOCKOUT DEPTH

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

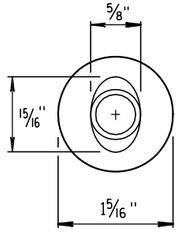
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

NOTE: 1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 1/16".
2. IF THE BOLT EXTENDS MORE THAN 1/4" FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

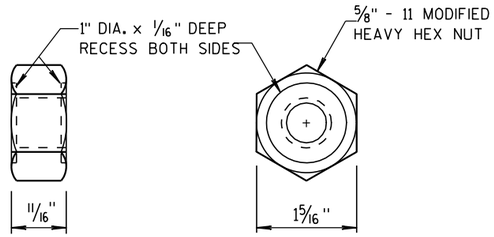


POST BOLT TABLE

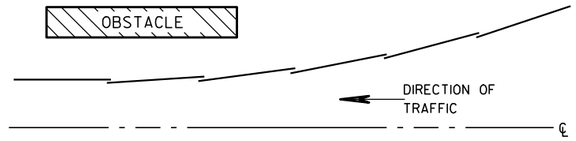
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

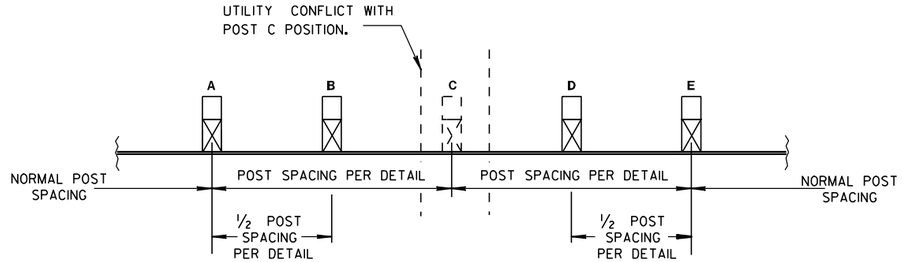


POST BOLT AND RECESS NUT

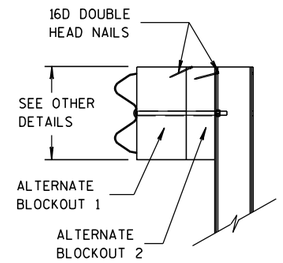


PLAN VIEW

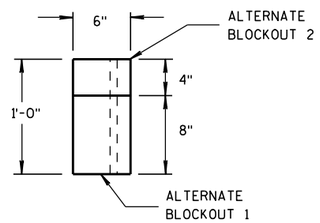
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

11/15/2011
DATE

/S/ Jerry H. [illegible]
ROADWAY STANDARDS ENGINEER

FHWA

30

ENT

6

S.D.D. 14 B 42-2c

GENERAL NOTES

(A) THE SLOPE IN THE AREA BOUNDED BY THE EXTENDED VEHICLE RUNOUT PATH (EVRP), 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 MANUFACTURES REQUIRE DIFFERENT PERFORATED W-BEAM RAIL END PANELS. SEE MANUFACTURES INFORMATION.

(D) THE TOP OF THE STEEL TUBE ON POST 1 AND POST 2 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.

(F) SHEETING IS ATTACHED TO 0.040 ALUMINUM SHEET AND ATTACHED TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS. ONE SCREW PER CORNER OF E.A.T.

(G) ½" DIAMETER X 3" LONG LAG BOLT AND WASHER.

(H) HARDWARE VARIES BETWEEN DIFFERENT MANUFACTURES. SEE MANUFACTURE'S DRAWING FOR INFORMATION.

(I) DIMENSIONS MAY VARY. SEE MANUFACTURE'S INFORMATION.

SEE SDD 14B42 FOR MORE INFORMATION.

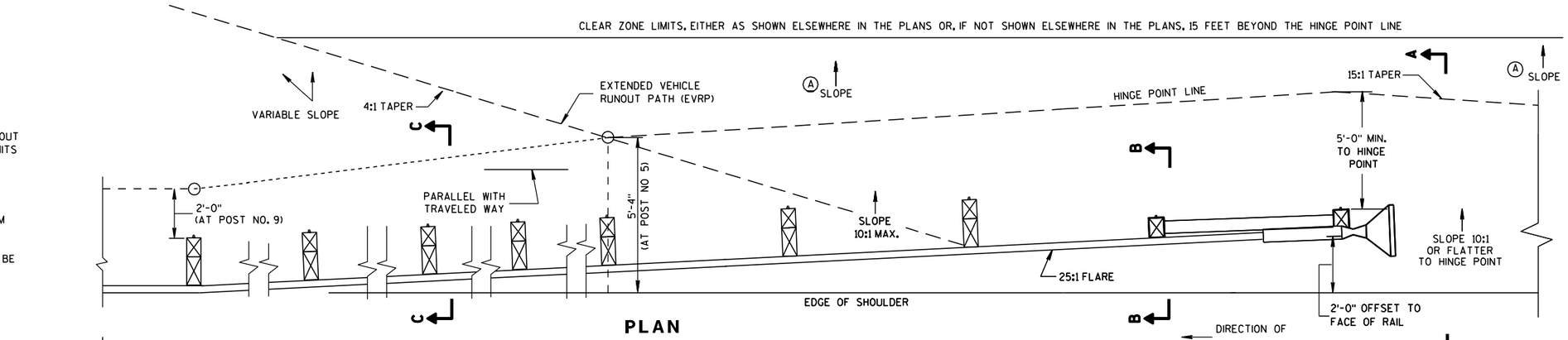
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

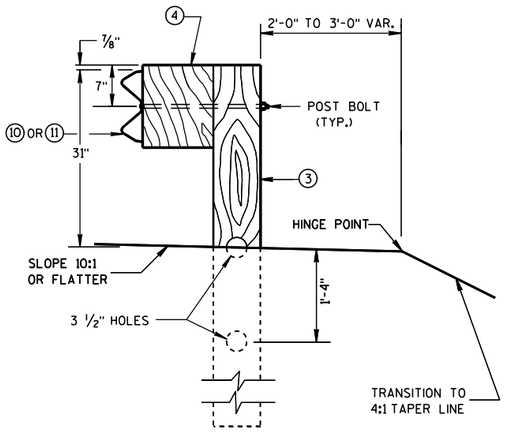
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

W-BEAM RAIL SPLICES ARE LOCATED AT POST NUMBER 3, AND BETWEEN POST 5 AND 6, BETWEEN POSTS 7 AND 8, AND MIDDLE OF THE SPAN AFTER POST 9.

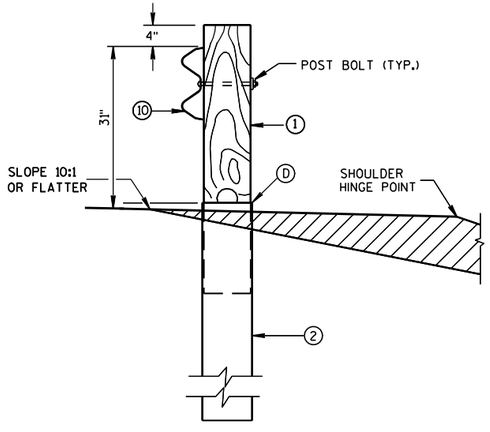
PATTERN AND COLORS ON REFLECTIVE SHEETING TYPE H ARE TO CONFORM TO OM3-L OR OM3-R OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE (± ¾")

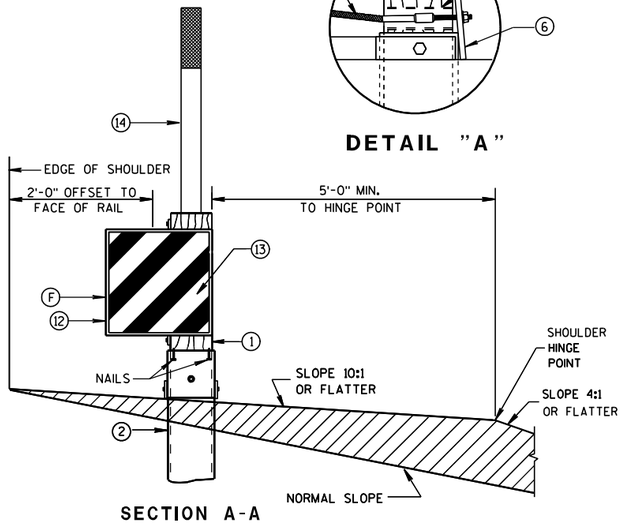




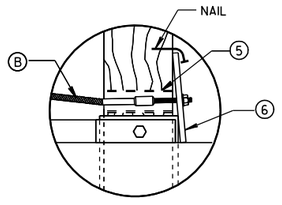
SECTION C-C
TYPICAL AT POST NOS. 3-9



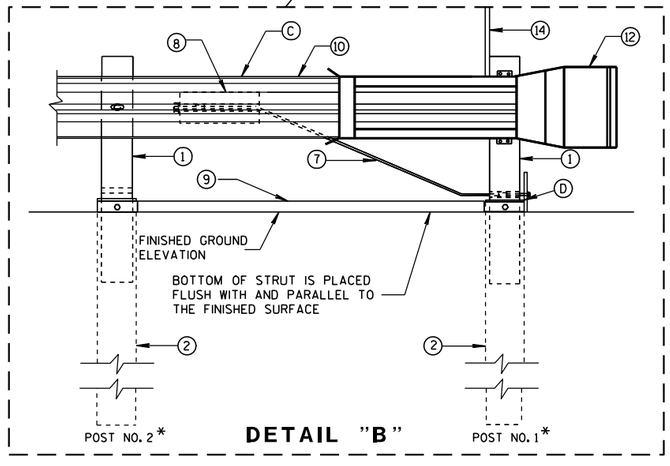
SECTION B-B
TYPICAL AT POST NO. 2*



SECTION A-A
TYPICAL AT POST NO. 1*



DETAIL "A"



DETAIL "B"

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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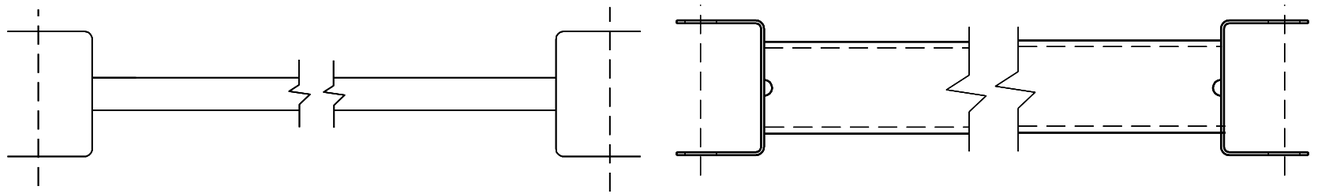
S.D.D. 14 B 44-1a

6

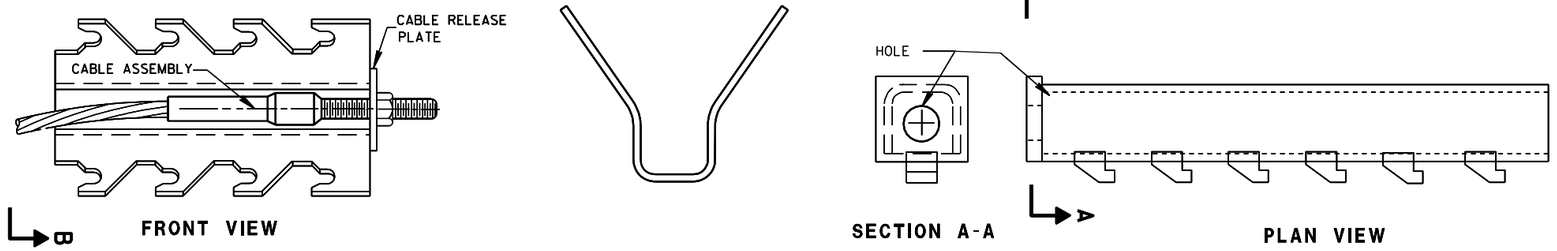
S.D.D. 14 B 44-1a



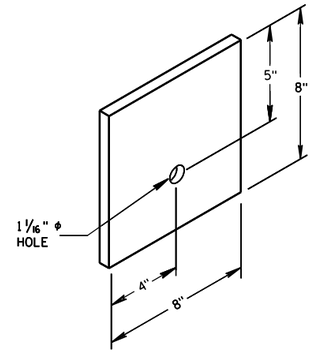
GENERIC GROUND STRUT (9) (H)

BILL OF MATERIALS

PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
(1)	WOOD BREAKAWAY POST
(2)	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
(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)	END SECTION EAT
(13)	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE H (ONLY THE SHEETING IS SUPPLIED BY THE MANUFACTURER)
(14)	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)



GENERIC ANCHOR CABLE BOX (8) (H)



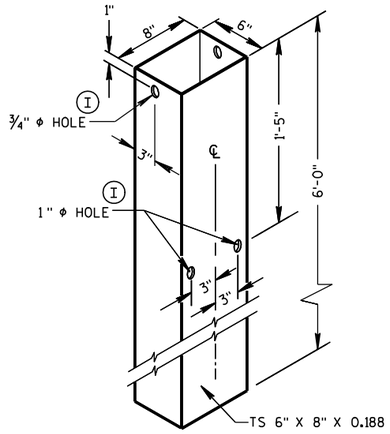
BEARING PLATE (6)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

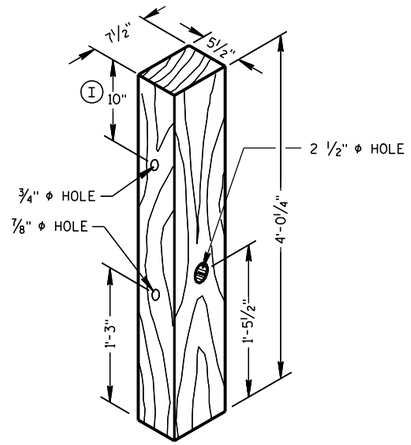
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

S.D.D. 14 B 44-1b

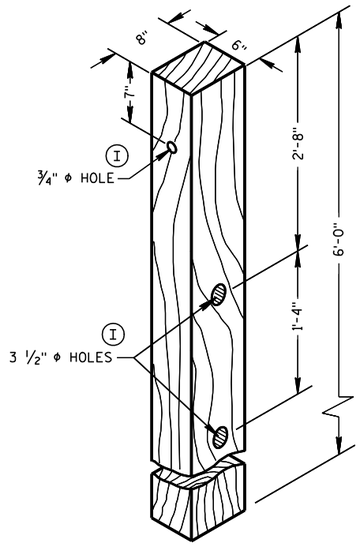


FOUNDATION TUBE (2)



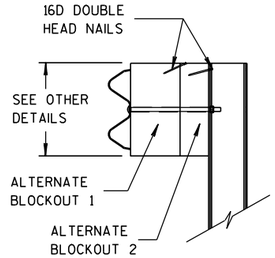
POSTS NUMBER 1 AND 2

WOOD BREAKAWAY POST (1)

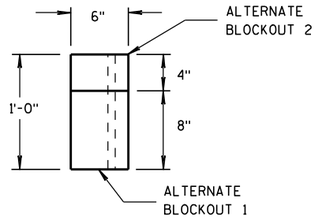


POSTS NUMBER 3-9

WOOD CRT POST (3)

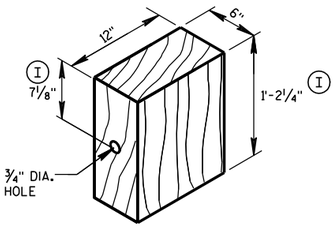


SIDE VIEW



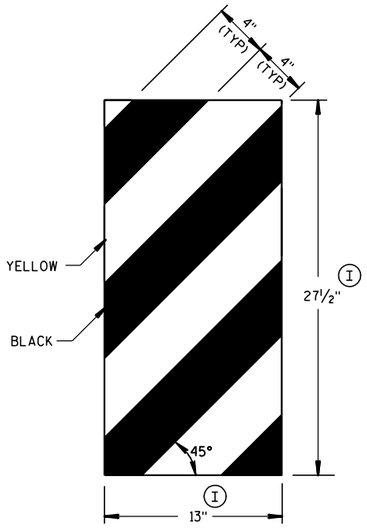
TOP VIEW

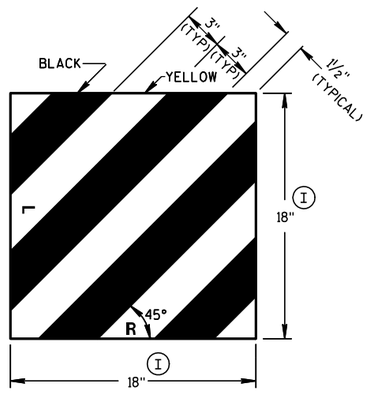
ALTERNATE WOOD BLOCKOUT DETAIL



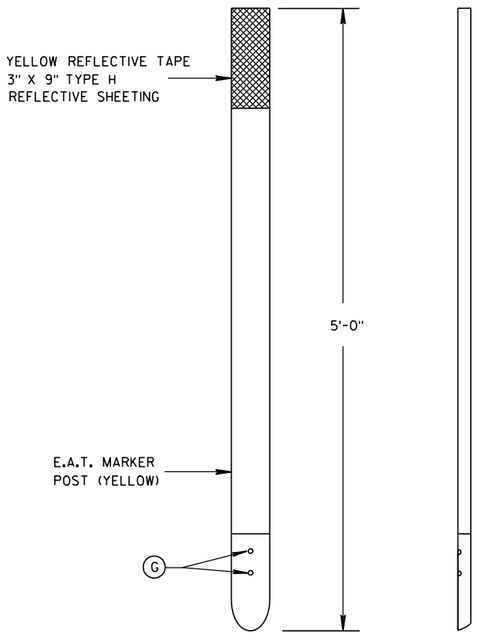
WOOD BLOCKOUT (4)

REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2





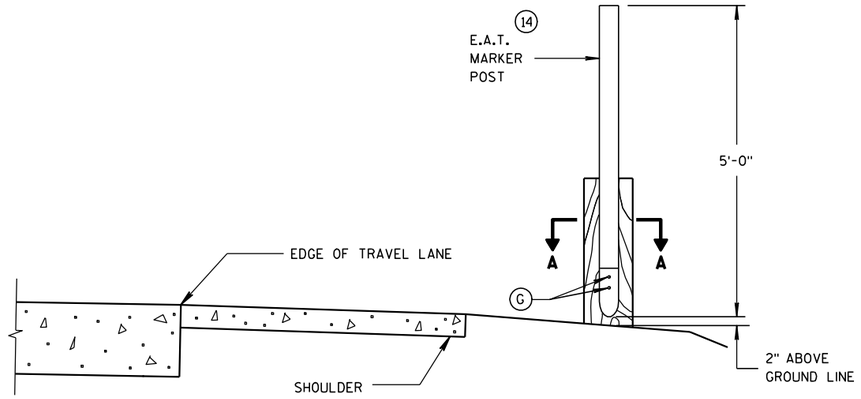
GENERIC REFLECTIVE SHEETING (13) (H)



FRONT VIEW

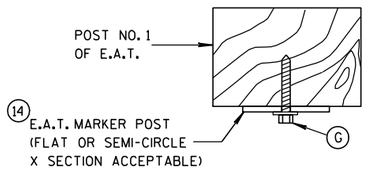
SIDE VIEW

E.A.T. MARKER POST (14)



TYPICAL INSTALLATION OF E.A.T. MARKER POST BACKSIDE OF POST NO. 1

(E.A.T. AND RAIL REMOVED FOR CLARITY)

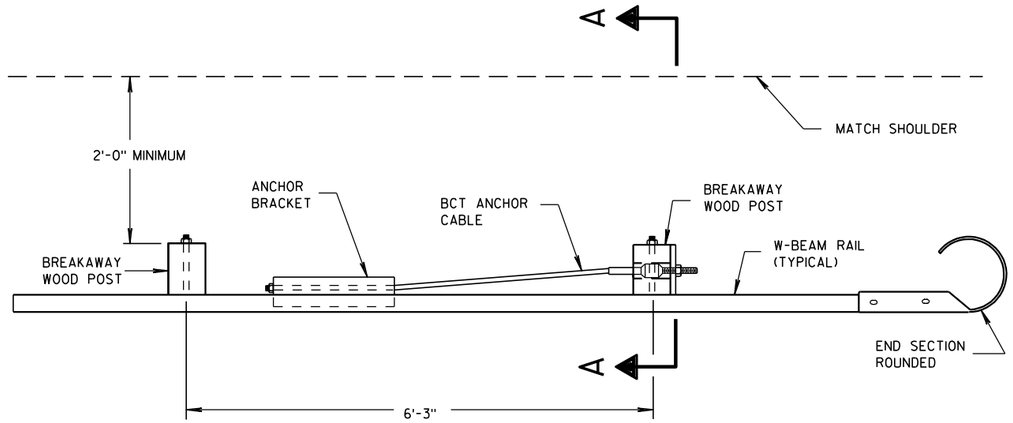


SECTION A-A

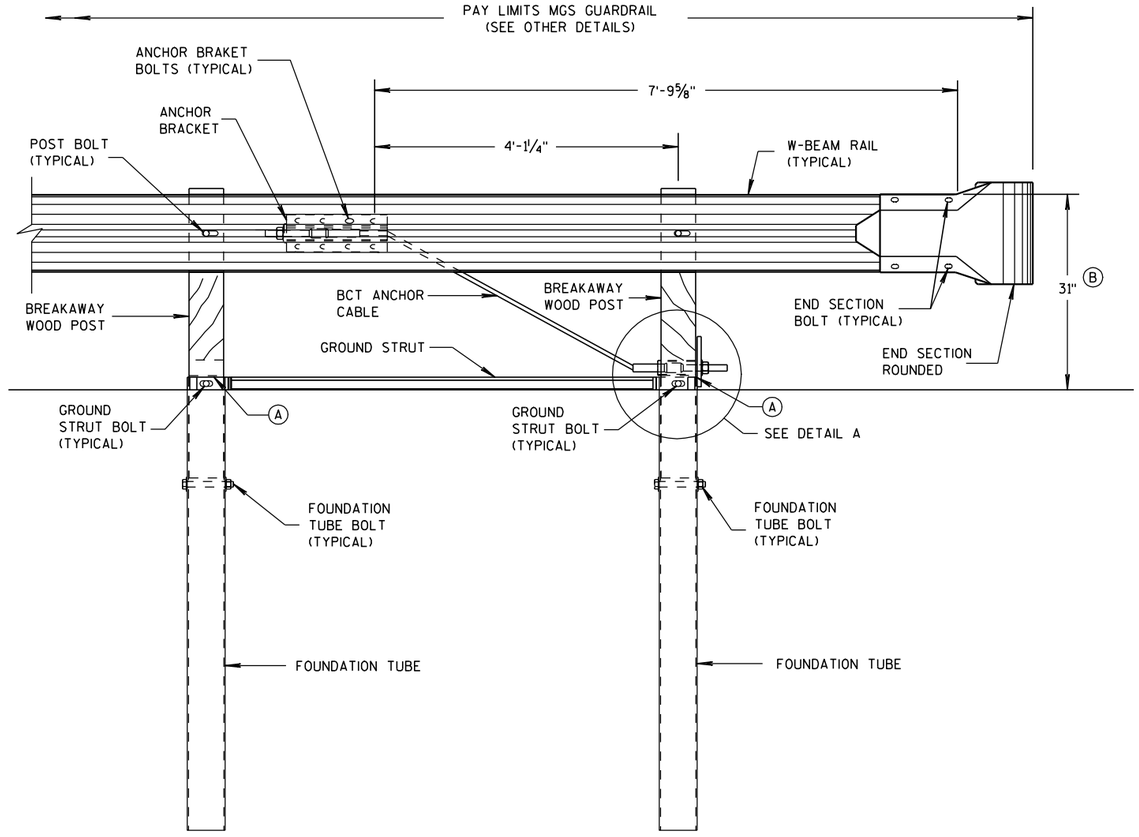
MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
5/23/2011
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER
FHWA

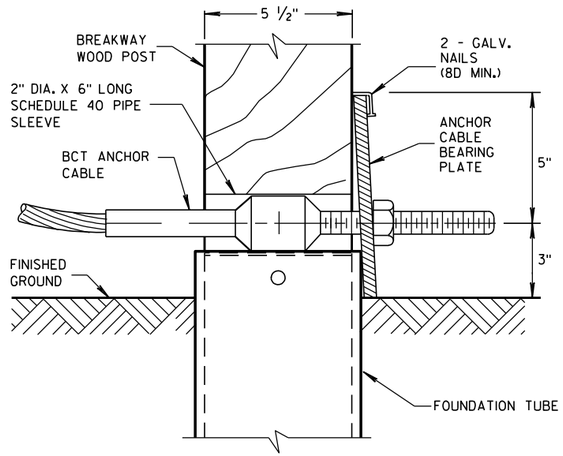


PLAN VIEW



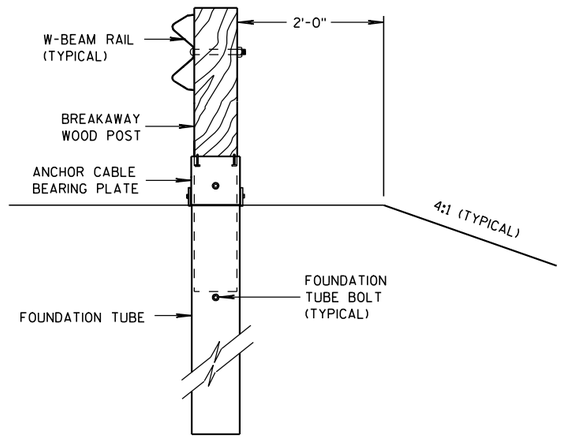
FRONT VIEW

END RAIL DETAIL



DETAIL A

POST NO. 1
GROUNG STRUT NOT SHOWN FOR CLARITY.



SECTION A-A

GENERAL NOTES

SEE SDD 14 B 42 FOR MORE INFORMATION.

POST BOLTS ARE A ⅝" DIAMETER X 10" LONG GUARDRAIL BOLT. A POST BOLT REQUIRES A ⅝" DIAMETER DH MODIFIED (RECESSED) HEAVY HEX NUT AND ⅝" DIAMETER FLAT WASHER.

FOUNDATION TUBE BOLTS ARE A ⅞" DIAMETER X 7½" LONG HEAVY HEX HEAD BOLT. A FOUNDATION TUBE BOLT REQUIRES A ⅞" DIAMETER DH HEAVY HEX NUT AND A ⅝" DIAMETER FLAT WASHER.

GROUND STRUT BOLTS ARE A ⅝" DIAMETER X 10" LONG HEAVY HEX HEAD BOLT. A GROUND STRUT BOLT REQUIRES A ⅝" DIAMETER DH HEAVY HEX NUT AND A ⅝" DIAMETER FLAT WASHER.

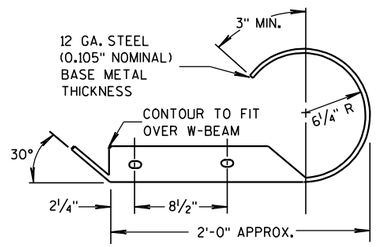
ANCHOR BRAKET BOLTS ARE A ⅝" DIAMETER X 1½" LONG HEAVY HEX HEAD BOLT. AN ANCHOR BRAKET BOLT REQUIRES A ⅝" DIAMETER DH HEAVY HEX NUT AND A FLAT WASHER.

END SECTION BOLTS ARE A ⅝" DIAMETER X 1½" HEAVY HEX HEAD BOLT. AN END SECTION BOLT REQUIRES ⅝" DIAMETER DH HEAVY HEX NUT AND A ⅝" DIAMETER FLAT WASHER.

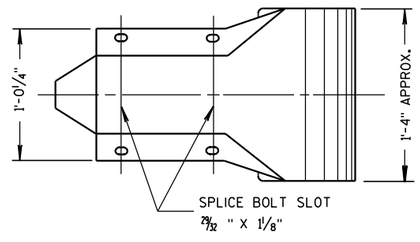
W-BEAM END SECTION ROUNDED HAS THE SAME MATERIAL PROPERTIES AS STANDARD STEEL RAIL.

(A) TOP OF FOUNDATION TUBE SHALL BE NO MORE THAN 3" ABOVE FINISHED GROUND.

(B) FOR NEW CONSTRUCTION TOP OF RAIL IS 31" ± 1".
FOR EXISTING INSTALLATIONS TOP OF RAIL IS BETWEEN 27¾" TO 32" ± 1".



PLAN VIEW



FRONT VIEW

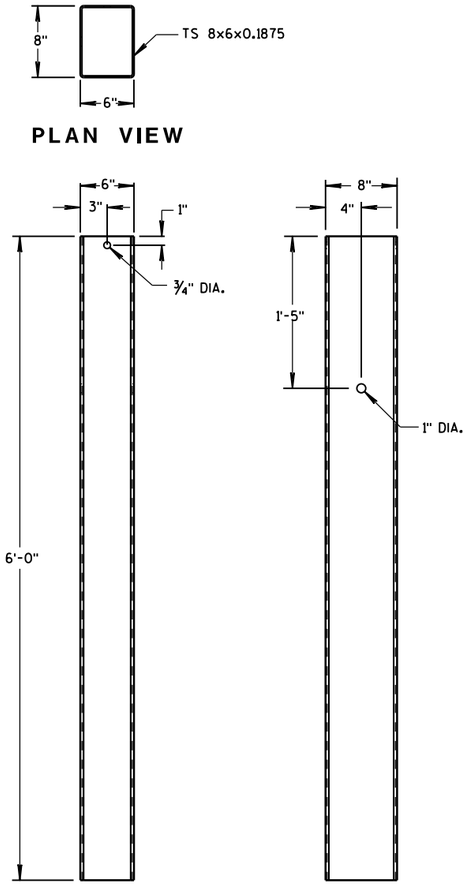
W BEAM END SECTION ROUNDED

MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL

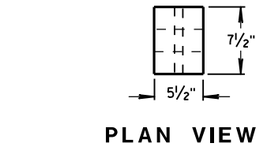
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

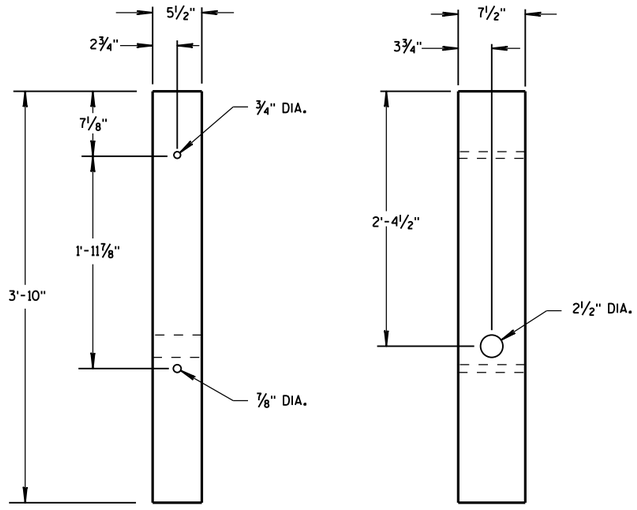
6

S.D.D. 14 B 47-1a



FOUNDATION TUBE



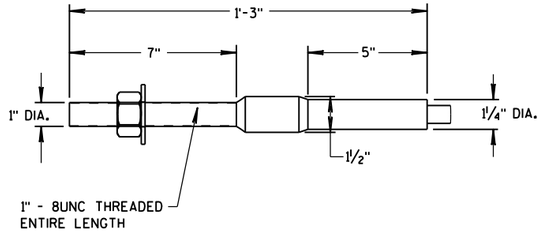


BREAKAWAY WOOD POST

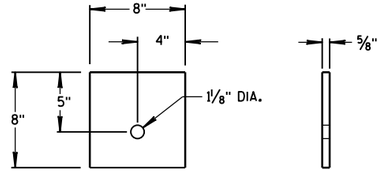
GENERAL NOTES

BCT ANCHOR CABLE IS A ⅜" DIAMETER 6X19 IWRC IPS GALVANIZED WIRE ROPE. THE SWAGED FITTINGS AND STUD ARE REQUIRED. THE END FITTING SHALL BE MACHINED FROM HOT-ROLLED CARBON STEEL CONFORMING TO ASTM A576 GRADE 1035 AND GALVANIZED ACCORDING TO ASTM A123. THE TREADED STUD SHOULD CONFORM TO ASTM A325 OR SAE GRADE 5. MINIMUM BREAKING STRENGTH OF WIRE ROPE IS 43,000 LB. WIRE ROPE IS TO BE TAUT.

BCT ANCHOR CABLE



DETAIL B



ANCHOR CABLE
BEARING PLATE

MIDWEST GUARDRAIL
SYSTEM (MGS) TYPE 2 TERMINAL

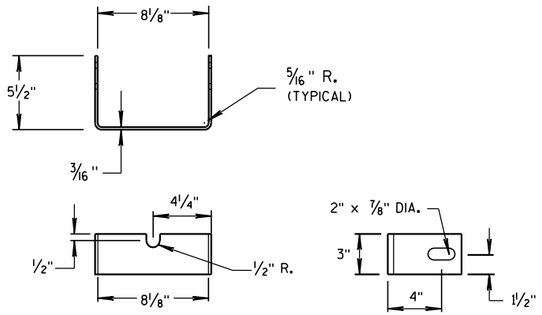
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

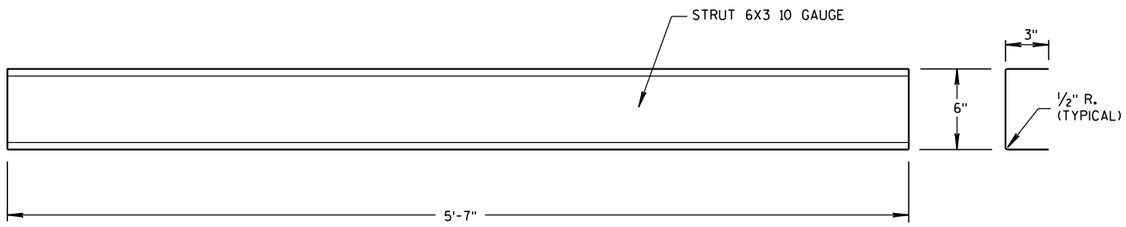
S.D.D. 14 B 47-1b

6

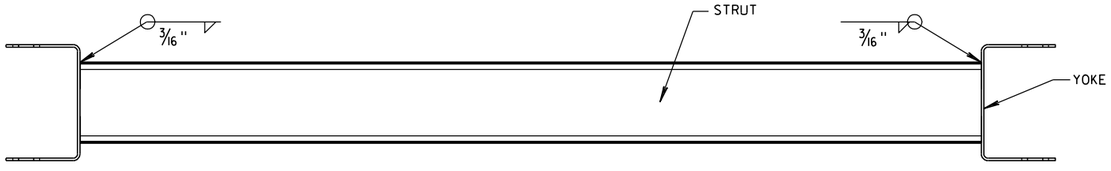
S.D.D. 14 B 47-1b



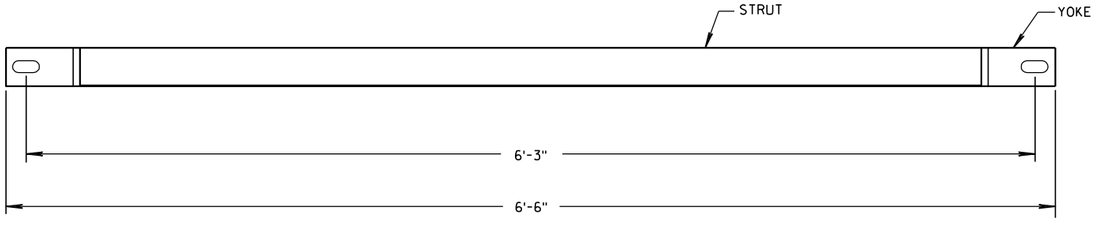
YOKE DETAIL



STRUT DETAIL

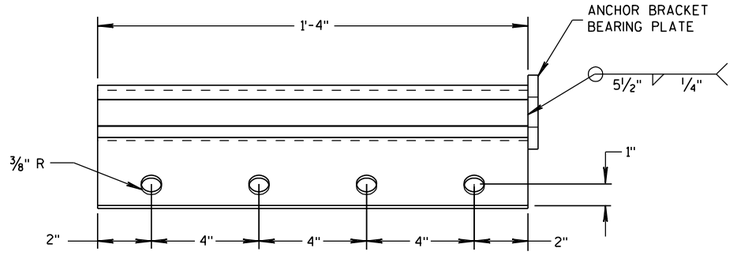


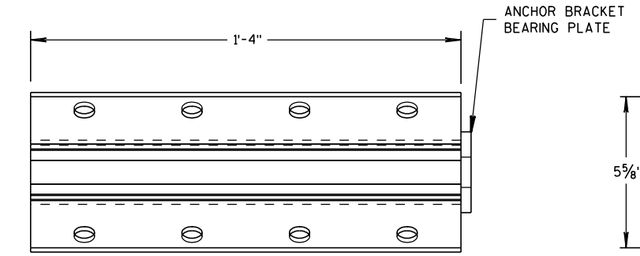
PLAN VIEW

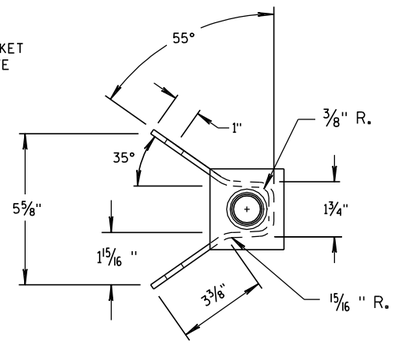


FRONT VIEW

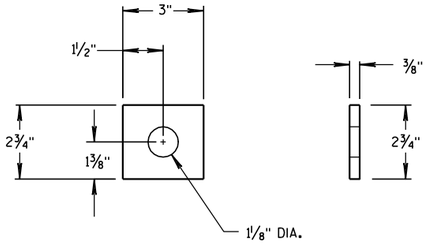
GROUND STRUT DETAIL







ANCHOR BRACKET



ANCHOR BRACKET BEARING PLATE

6

6

S.D.D. 14 B 47-1c

S.D.D. 14 B 47-1c

MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

5/23/2011
DATE

/S/ Jerry H. [illegible]
ROADWAY STANDARDS ENGINEER

[illegible]

FHWA

LEGEND

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

GENERAL NOTES

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

THE SPACING BETWEEN SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 200 FEET, (500 FEET DESIREABLE) DISTANCE TO EXISTING SIGNS.

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

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

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

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER. NO WARNING LIGHTS SHALL BE WORKING ON "COVERED" OR "DOWNED" SIGNS.

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

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

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

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

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

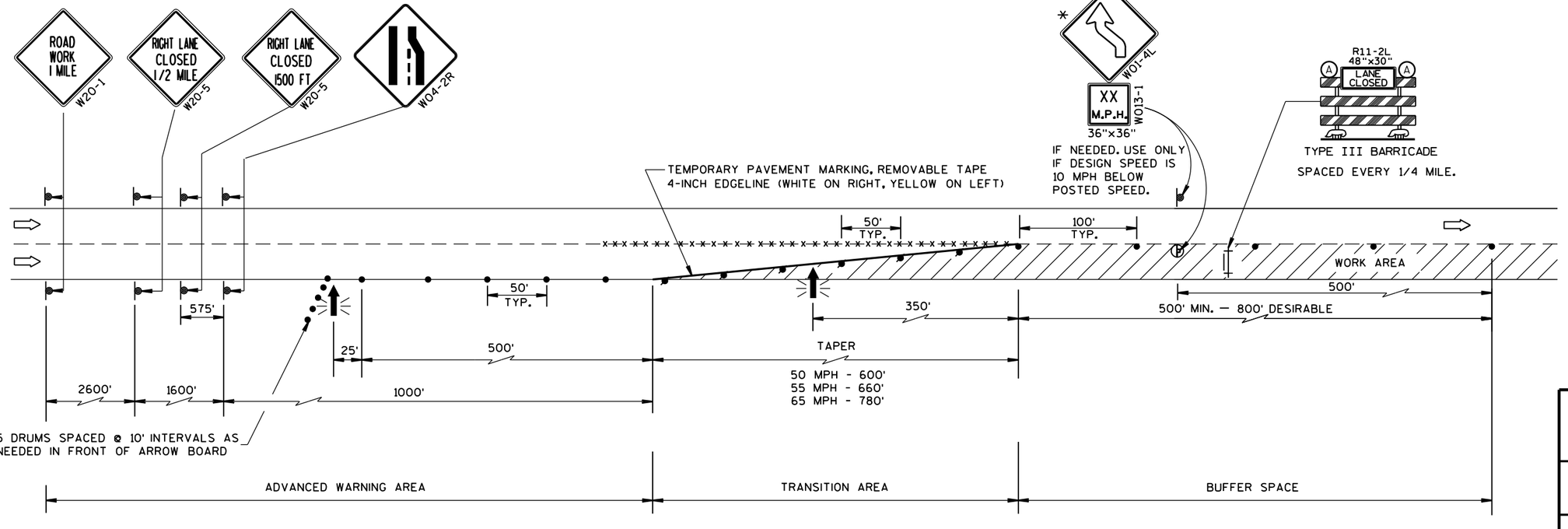
ADJUSTMENTS IN BUFFER SPACE NEED TO BE INCORPORATED WHEN THE LANE CLOSURE OCCURS NEAR AN INTERCHANGE EXIT OR ENTRANCE RAMP. THE LANE CLOSURE MUST MUST TAKE PLACE FAR ENOUGH IN ADVANCE OF AN EXIT OR ENTRANCE RAMP TO STILL ALLOW FOR ADEQUATE BUFFER SPACE. THE MINIMUM LENGTH OF THE BUFFER SPACE BEFORE AN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

* THE LEFT REVERSE CURVE SIGN (W01-4L) IS ONLY REQUIRED WHEN THIS DETAIL IS USED IN COMBINATION WITH "SINGLE LANE CROSSOVER" DETAIL.

LOCATED 500 FEET IN ADVANCE OF R2-1 SIGN AND 500 FEET BEYOND THE "ROAD WORK 1 MILE" SIGN.

R2-1
48"×60"
(BLACK AND WHITE)

IF THE REGULATORY SPEED HAS BEEN REDUCED, A SPEED LIMIT SIGN SHALL BE LOCATED 1500 FEET BEYOND THE END OF THE ACCELERATION LANE OF EACH ENTRANCE RAMP. THERE SHOULD BE A SPEED LIMIT SIGN INCORPORATED A MINIMUM OF EVERY 2 OR 3 MILES.



TRAFFIC CONTROL, LANE CLOSURE, SPEEDS GREATER THAN 40 M.P.H.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

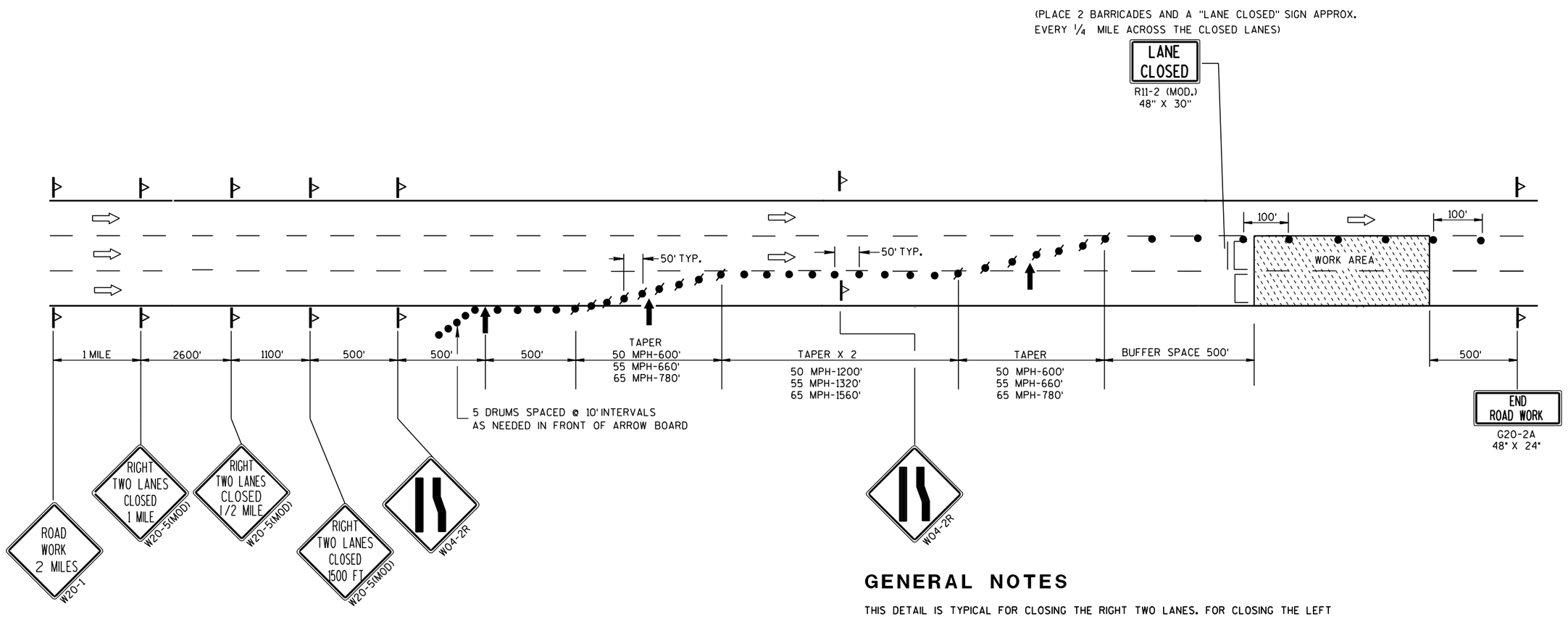
APPROVED
8/2013 — DATE
/S/ Travis Feltes — STATE TRAFFIC ENGINEER
FHWA

6

S.D.D. 15 D 12-3

6

S.D.D. 15 D 12-3



LEGEND

- DRUM WITH/WITHOUT WARNING LIGHT, TYPE C (STEADY BURN)
- SIGN ON POST OR PORTABLE SUPPORT
- FLASHING ARROW BOARD
- TYPE III BARRICADE (8' EQUIVALENT) WITH/WITHOUT SIGN
- DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

THIS DETAIL IS TYPICAL FOR CLOSING THE RIGHT TWO LANES. FOR CLOSING THE LEFT TWO LANES, REVERSE THE TRAFFIC CONTROL.

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

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

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

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

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

W20-1 AND G20-2A SIGNS ARE NOT REQUIRED IF THE LANE CLOSURE IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT.

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

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

BARRICADES IN A CLOSED LANE 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.

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

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

TRAFFIC CONTROL, TWO LANE CLOSURE ON FREEWAY OR EXPRESSWAY, SHORT-TERM (LESS THAN 24 HOURS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
5/23/2000 DATE
/S/ Chester J. [illegible]
CHIEF SIGNS AND MARKINGS ENGINEER
FHWA

6
S.D.D. 15 D 14-1

LEGEND

TYPE III BARRICADE

TYPE III BARRICADE WITH ATTACHED SIGN

TRAFFIC CONTROL DRUM

SIGN ON PERMANENT SUPPORT

TYPE "A" WARNING LIGHT (FLASHING)

DIRECTION OF TRAFFIC

GENERAL NOTES

THIS RAMP CLOSURE DETAIL IS TYPICAL FOR CLOSING A RIGHT SIDE EXIT RAMP. FOR A LEFT SIDE EXIT RAMP, REVERSE THE TRAFFIC CONTROL.

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

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

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

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

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.

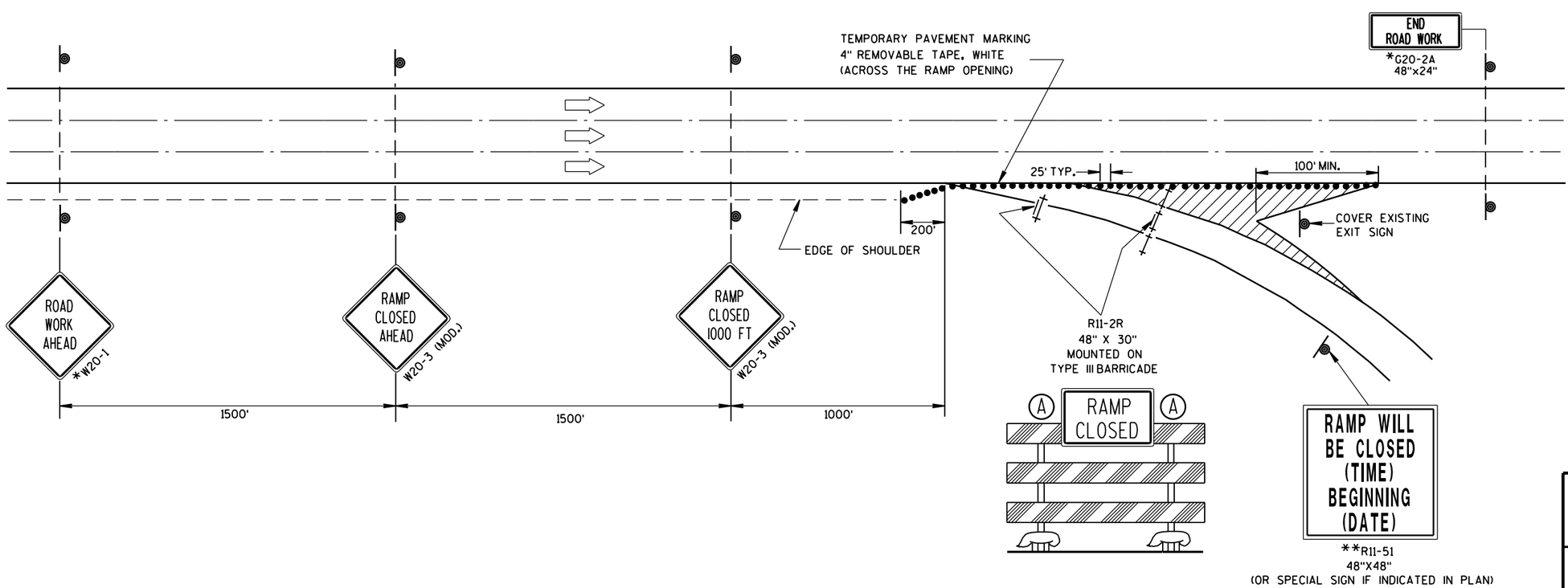
PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF RAMP CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

WORK AREAS WITH A DROPOFF ALONG THE EDGE OF AN OPEN TRAVEL LANE SHALL BE LEVELED WITH TEMPORARY FILL WHEN THE CONTRACTOR IS NOT WORKING ADJACENT TO THE TRAVEL LANE. DRUMS SHALL BE PLACED ENTIRELY OUTSIDE THE TRAVEL LANE, ALLOWING THE FULL UNOBSTRUCTED LANE WIDTH, WHEN THE WORK IS NOT IN PROGRESS.

WHERE MEDIAN BARRIER IS IN PLACE, SIGNS SHOWN ON LEFT SIDE OF ROADWAY MAY BE OMITTED FOR RIGHT SIDE RAMP CLOSURES OF LESS THAN 12-HOUR DURATION.

*W20-1 AND G20-2A SIGNS ARE NOT REQUIRED IF THE RAMP CLOSURE IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT.

** PLACE "RAMP WILL BE CLOSED" SIGN 10 CALENDAR DAYS PRIOR TO CLOSURE OR AS DIRECTED BY THE ENGINEER. SEE WISCONSIN STANDARD SIGN PLATES FOR SIGN LAYOUT.



TRAFFIC CONTROL,
EXIT RAMP CLOSURE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/2013
DATE

/S/ Travis Feltes
STATE TRAFFIC ENGINEER

DESIGN

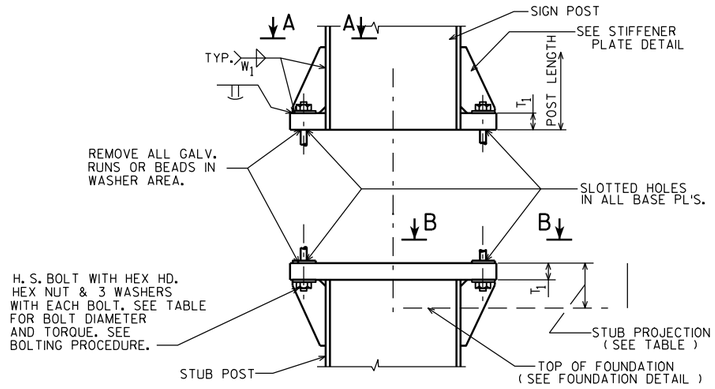
FHWA

6

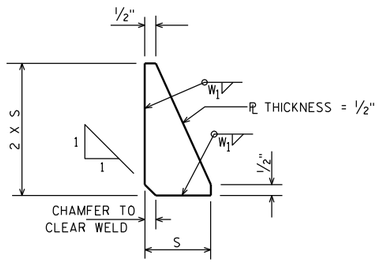
S.D.D. 15 D 16-2

6

S.D.D. 15 D 16-2

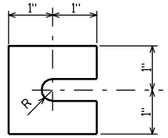


SIGN POST AND STUB POST ELEVATION



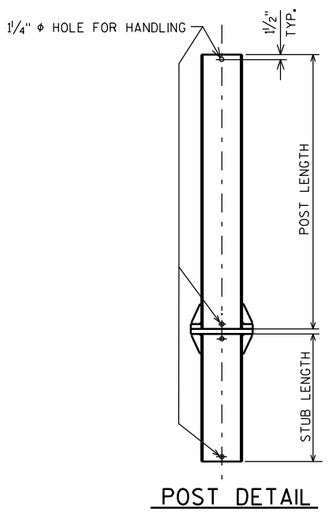
STIFFENER PLATE DETAIL

(SEE TABLE FOR DIMENSIONS)



FURNISH 2 @ .012" ± THICK AND 2 @ .032" ± THICK SHIMS PER POST. SHIMS SHALL BE FABRICATED FROM BRASS SHIM STOCK OR STRIP CONFORMING TO A.S.T.M.- B36.

SHIM DETAIL



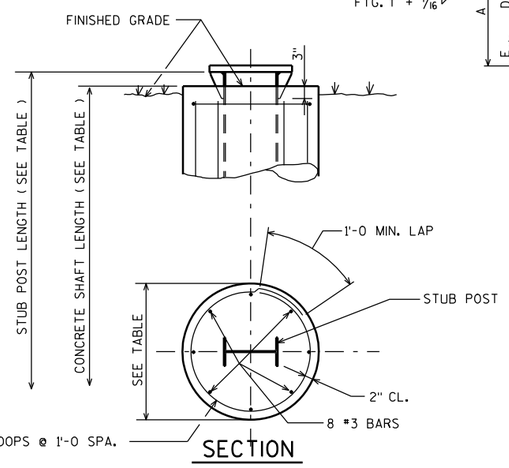
POST DETAIL

	QUANTITIES FOR 1 FOOTING	
	CONC. MASONRY C.Y.	REINF. STEEL LBS.
A	0.6	34
B	0.8	49
C	0.9	50
D	0.9	56
E	1.0	62

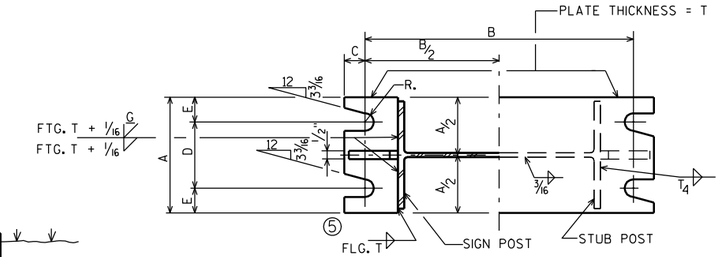
⑦

REINF.	TYPE	#3	#4
	A	8 @ 4'-5	5 @ 6'-3
	B	8 @ 6'-5	7 @ 6'-3
	C	8 @ 6'-11	7 @ 6'-3
	D	8 @ 7'-5	8 @ 6'-3
	E	8 @ 7'-11	9 @ 6'-3

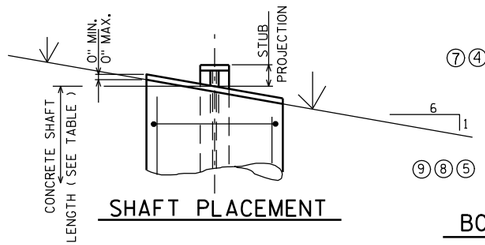
⑦



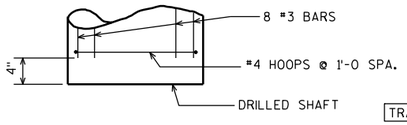
SECTION



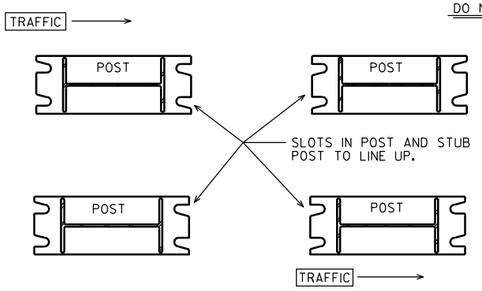
SECTION A-A SECTION B-B



SHAFT PLACEMENT



FOUNDATION DETAIL



POST SLOT ORIENTATION ⑦

DESIGN DATA

WIND PRESSURE = 75 M.P.H.
WIND COMPONENTS - NORMAL = 1.0 TRANSVERSE = 0.0
ICE LOAD = 3 P.S.F.

GROUP LOADS	PERCENT OF ALLOWABLE STRESS
1. DEAD	100
2. DEAD & WIND	140
3. DEAD, ICE & 1/2 WIND△	140 △25 P.S.F. MIN.

ALLOWABLE SOIL PRESSURE = 1½T / SQ. FT.
WIND LOAD WAS APPLIED TO THE AREA OF THE SIGN AND TO THE SUPPORTING MEMBERS.
ICE LOAD WAS APPLIED TO ONE FACE OF THE SIGN AND AROUND THE SURFACE OF THE SUPPORTING MEMBERS.

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.
DESIGN CONFORMS WITH A.A.S.H.T.O. SPECIFICATIONS 1985.
ALL POSTS, POST STUBS & ATTACHMENTS SHALL BE A.S.T.M. A709 GRADE 50.
⑨ THE POST, BASE PLATES, UPPER SIX INCHES OF STUB POST FLANGE SPLICE PLATE AND FUSE PLATE SHALL BE GALVANIZED AFTER FABRICATION.
H.S. BOLTS, WASHERS & NUTS SHALL BE A325 GALVANIZED WHEN POSTS, POST STUBS AND ATTACHMENTS ARE A709 GRADE 50 AND GALVANIZED.

BOLTING PROCEDURE - BASE CONNECTION

1. ASSEMBLE SIGN POST TO STUB POST WITH BOLTS AND ONE OF THE FLAT WASHERS ON EACH BOLT BETW. PLATES.
2. SHIM AS REQ'D. TO PLUMB POST.
3. TIGHTEN ALL BOLTS THE MAXIMUM POSSIBLE WITH 12" OR 15" WRENCH TO BED WASHERS & SHIMS AND TO CLEAN BOLT THREADS, THEN LOOSEN EACH BOLT IN TURN AND RETIGHTEN IN A SYSTEMATIC ORDER TO THE PRESCRIBED TORQUE. (SEE TABLE)
4. BURR THREADS AT JUNCTION WITH NUT USING A CENTER PUNCH TO PREVENT NUT LOOSENING.

NOTE:
TIGHTEN THE HIGH STRENGTH BOLTS TO THE TORQUE SHOWN. DO NOT OVERTIGHTEN.

		BASE CONNECTION DATA TABLE												FOUNDATION DATA				②
	TYPE	DIMENSION / POST SIZE	BOLT SIZE & TORQUE	A	B	C	D	E	T_1	T_4	W_1	R	S	STUB LENGTH	STUB PROJECTION	SHAFT DIAMETER	SHAFT LENGTH	K
④	A	W10"X12.0 #/FT.	3/4" ϕ @ 75#-FT.	5 1/4"	1'-0 3/8	7/8"	3 1/2"	7/8"	1"	3/16"	5/16"	13/32 "	2 1/8"	3'-6	3"	2'-0 ϕ	5'-0	76.0# ④
④	B	W12"X16.0 #/FT.	7/8" ϕ @ 85#-FT.	5 1/2"	1'-4 1/4	1"	3 1/2"	1"	1 1/4"	1/4"	5/16"	15/32 "	3"	5'-6	3"	2'-0 ϕ	7'-0	146.5# ④
	C	W12"X19.0 #/FT.	7/8" ϕ @ 85#-FT.	5 1/2"	1'-4 1/4	1"	3 1/2"	1"	1 1/2"	5/16"	5/16"	15/32 "	3"	6'-0	3"	2'-0 ϕ	7'-6	182.1#
	D	W12"X22.0 #/FT.	7/8" ϕ @ 85#-FT.	5 1/2"	1'-4 1/4	1"	3 1/2"	1"	1 1/2"	3/8"	5/16"	15/32 "	3"	6'-6	3"	2'-0 ϕ	8'-0	210.5#
③	E	W12"X26.0 #/FT.	1" ϕ @ 90#-FT.	7"	1'-4 1/4	1 1/4"	4"	1 1/2"	1 1/2"	3/8"	5/16"	17/32 "	3"	7'-0	3"	2'-0 ϕ	8'-6	293.0# ③

① ⑥ ①

STRUCTURAL CARBON STEEL PAY WTS. (1 POST) = K+ (POST LENGTH X POST WT.)
" K " INCLUDES STUB, BASE PLATES, STIFFS., BOLTS, AND WASHERS.

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch for State Traffic Engineer
DATE 4/26/11 PLATE NO. A3-1.13

NO.	DATE	REVISION
⑨	4-26-11	REMOVE NON-GALVANIZED
⑧	10-30-96	NOT GALVANIZED/GALVANIZED
⑦	10-30-92	QUANT., A588 EXCEPT., ADD SLOT VIEW
⑥	8-24-87	BASE CONN. WELD
⑤	10-13-81	BASE CONN. WELD & FUSE ℄ WASHERS
④	10-19-79	POST A & B, A572 GR. 50, & K
②	11-28-78	"K" ③4-23-79 TYPE "E"
①	5-4-78	T_1 , T_2 & W_1

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

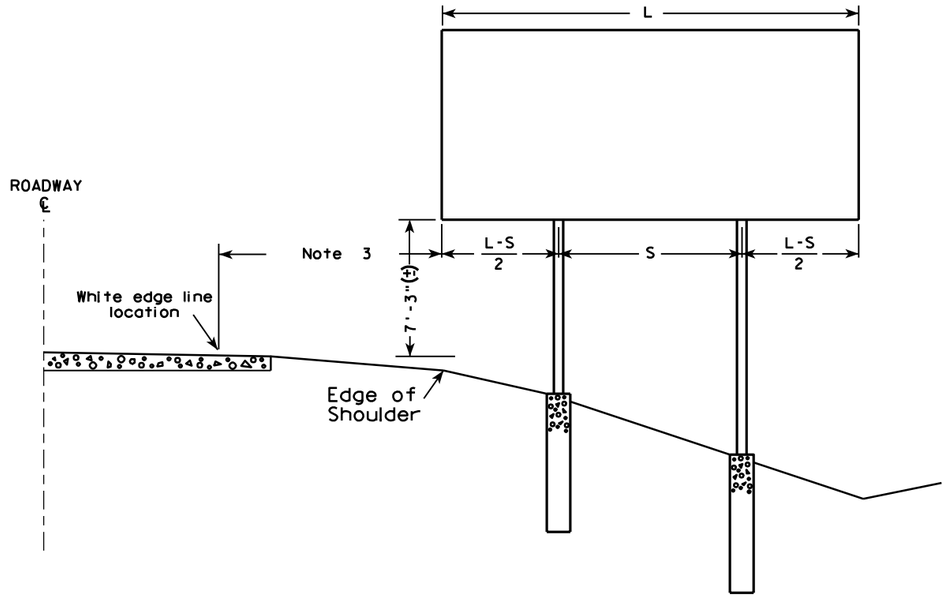
TYPE A, B, C, D, & E

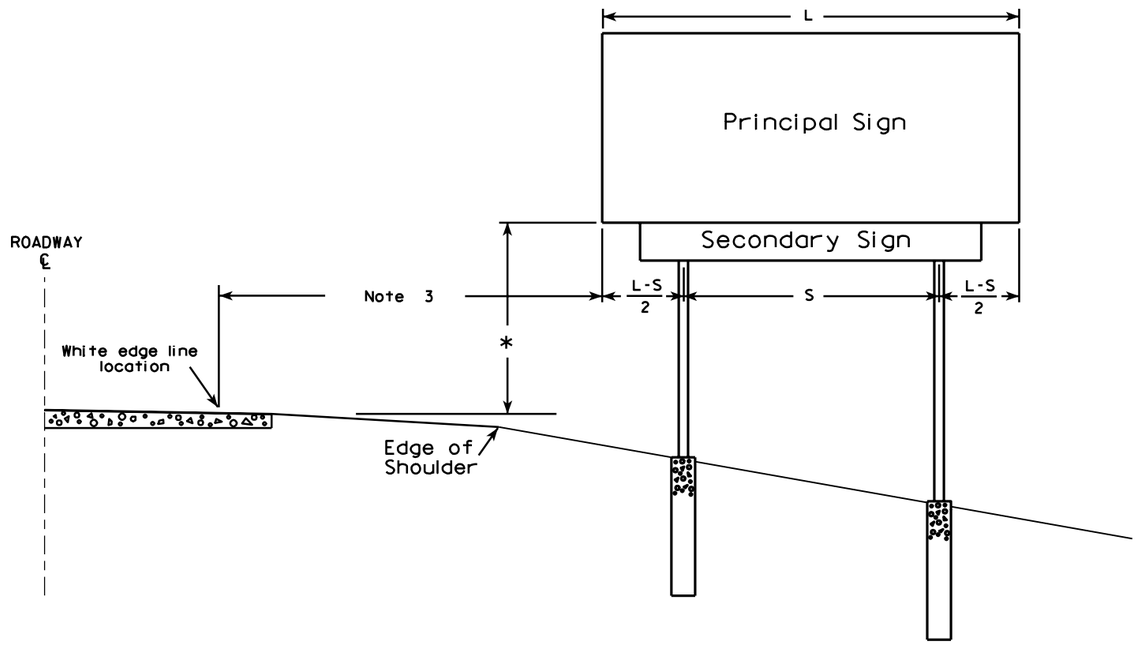
CONST. SPEC. 2011 | DRAWN BY JPH | PLANS CK'D.

FTG. & SIGN SUPPORT DETAILS GROUND MOUNT BREAK-AWAY SIGNS

SHEET

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 40 | E





GENERAL NOTES

1. For a 2 post installation, S equals 3L/5, but shall not be less than 9 ft.
2. For a 3 post installation, S equals 5L/7, but shall not be less than 18 ft., and the space between any two posts shall not be less than 9 ft.
3. Unless noted in the plan, the sign offset distance shall be a minimum of 17'-6", desirable 30'-0".
4. The (±) tolerance shown on this sheet is 3 in.
5. The vertical sign height clearance detailed is measured from the bottom of the sign to the near edge of pavement.
6. Post lengths shown in the miscellaneous quantities are estimated lengths. The contractor shall verify post lengths at the time of final grading.
7. Refer to the Traffic Guidelines Manual for further guidance on minimum vertical clearance requirements.

* Clearance is 8'-3"(±) when the secondary sign is 3 ft. or less in height. For secondary signs larger than 3 ft., the clearance to the bottom of the secondary sign shall be 5'-3"(±).

7

7

TYPICAL INSTALLATION
OF TYPE I SIGNS

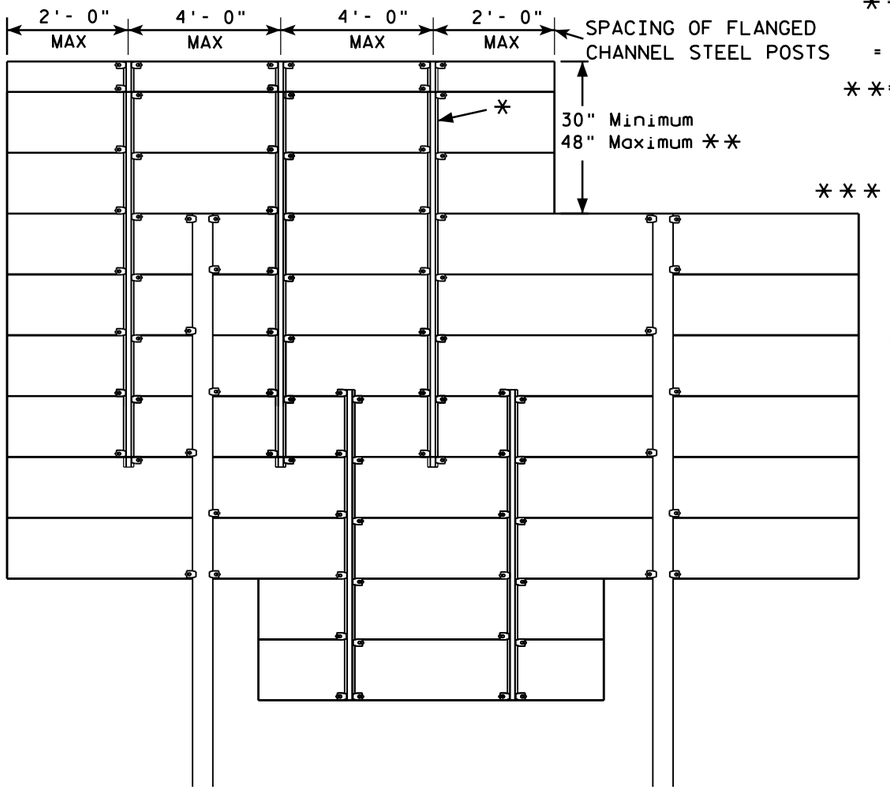
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 4/02/08 PLATE NO. A4-1.9

PROJECT NO:				SHEET NO: 41	E

GROUND MOUNTED SIGN

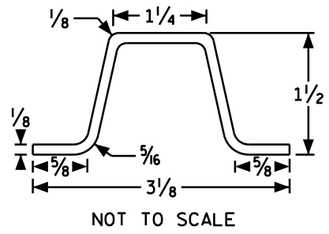


* =2.00 lb/ft FLANGED CHANNEL, MIN. YIELD STRENGTH = 60,000 PSI (GRADE 60) GALVANIZED

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

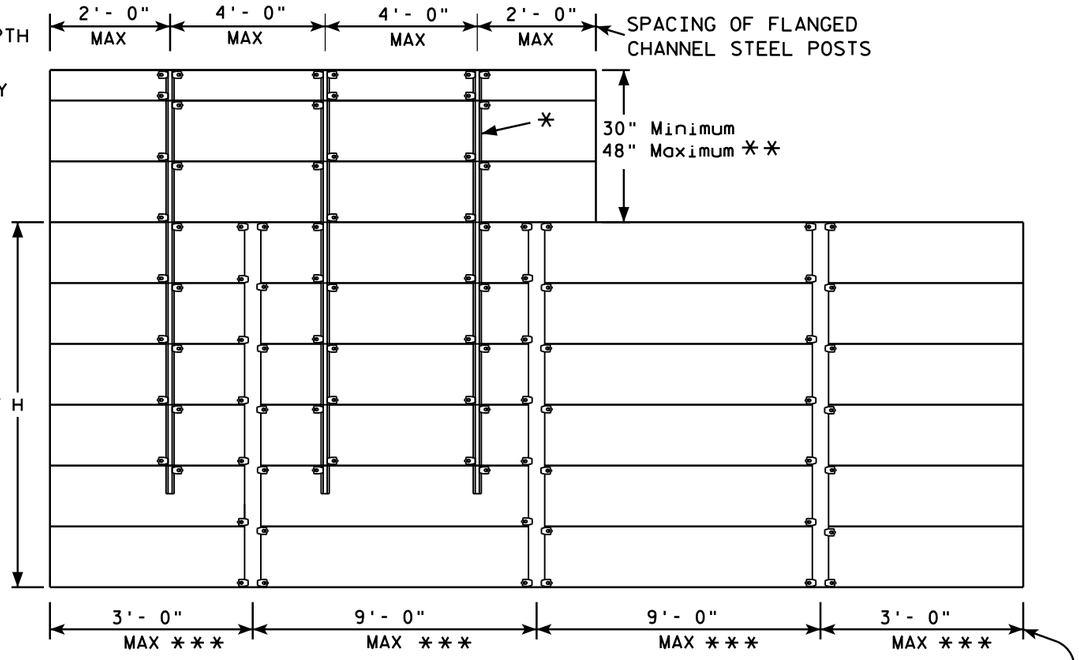
*** THESE SPACING DISTANCES SHALL ONLY BE USED WHEN THE MAIN SIGN HAS A MAXIMUM HEIGHT (DIMENSION H) OF 16 FT OR LESS. FOR SIGNS WITH A HEIGHT OF GREATER THAN 16 FT, STRUCTURAL CALCULATIONS SHALL BE PERFORMED.

FLANGE CHANNEL DETAIL



NOT TO SCALE

SIGN BRIDGE MOUNTED SIGN



GENERAL NOTES

1. Flanged channel steel posts shall conform to size and material above, and shall be considered as incidental to other items in the contract.
2. Number of Flanged channel steel supports varies with length of panel and shall be spaced as shown:

   PANEL LENGTH 8'-0" OR LESS = 2 CHANNELS
   PANEL LENGTH 9'- 0" - 12'- 0" = 3 CHANNELS
   PANEL LENGTH 13'- 0" OR MORE = 4 CHANNELS

   If the flanged channel steel posts can not be horizontally spaced as shown, they can be moved so as to securely hold the sign.
3. The EXIT NUMBER PANEL shall normally be positioned above the guide sign aligned with the right edge of the guide sign. If the guide sign indicates a left exit, the EXIT NUMBER PANEL shall be aligned with the left edge of the guide sign.
4. If the bolt holes in the top panel (EXIT NUMBER), or sub panel (NEXT EXIT) line up with holes in main sign panel, stitch bolts shall be used in addition to the channels.
5. Provide post clips for each sign as shown. (Please note the differences between a ground mounted versus Sign bridge mounted sign as far as number of clips required on the main supports or beams)
6. Structural steel sign supports shall extend to the top of the main signs, as shown on the above details.

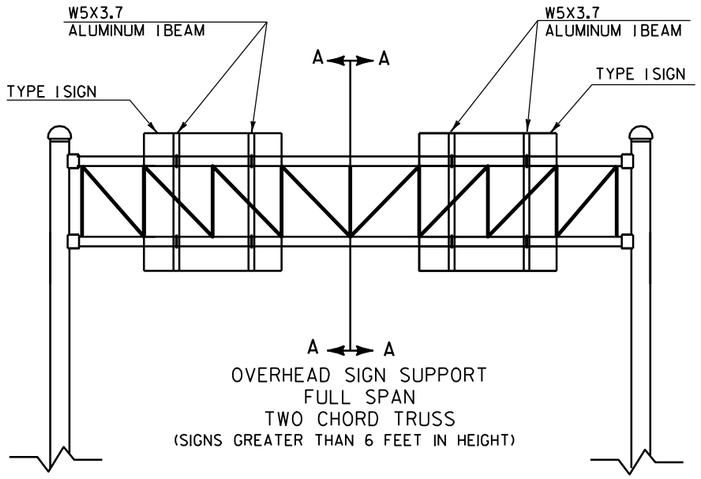
ATTACHMENT OF GUIDE SIGNS TO SUPPORTS

WISCONSIN DEPT OF TRANSPORTATION

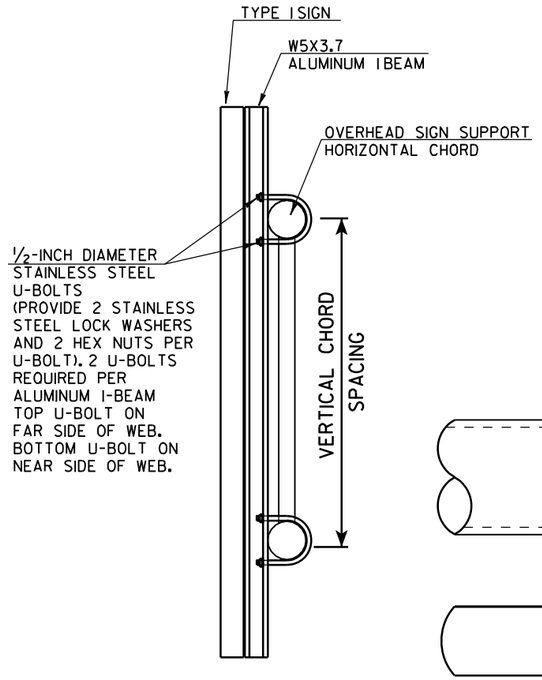
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 12/05/13 PLAT 42 A4-6.12

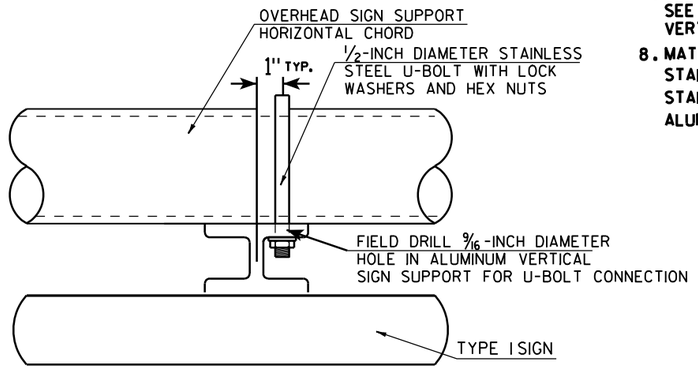
PROJECT NO: | SHEET NO: E



OVERHEAD SIGN SUPPORT
FULL SPAN
TWO CHORD TRUSS
(SIGNS GREATER THAN 6 FEET IN HEIGHT)



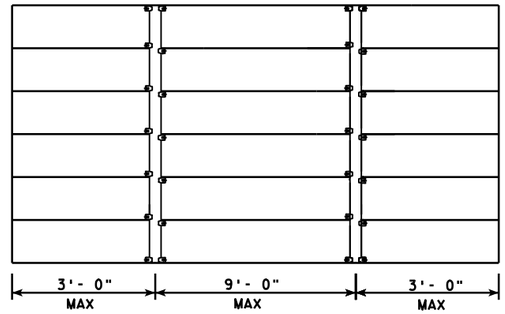
CUT SECTION A-A



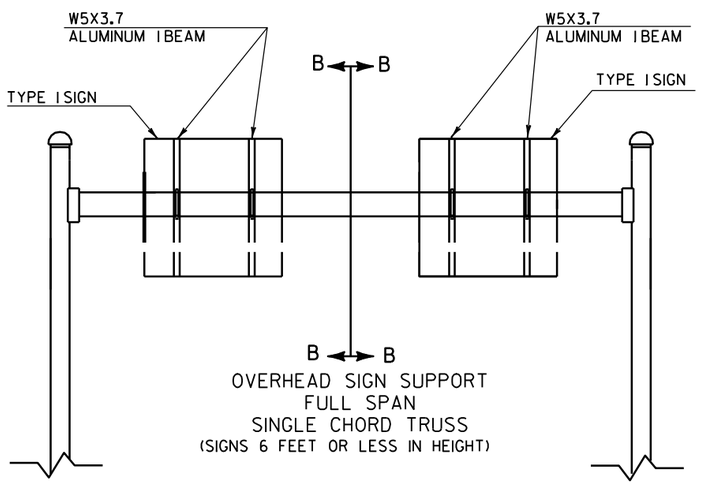
TYPICAL SIGN CONNECTION FOR
TWO CHORD TRUSS
PLAN VIEW

GENERAL NOTES

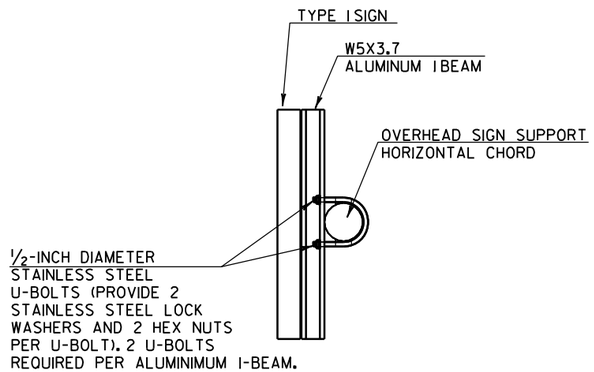
1. USE STAINLESS STEEL U-BOLTS, WASHERS, AND NUTS.
2. USE CLIPS ON EVERY EXTRUDED PANEL JOINT PER SIGN PLATE A4-6.
3. USE ALUMINUM VERTICAL SIGN SUPPORT BEAMS HAVING A 5 INCH BEAM DEPTH AND WEIGHT OF 3.7 LBS PER FOOT.
4. U-BOLTS SHALL BE STAINLESS STEEL AND MANUFACTURED TO THE PROPER SIZE TO FIT THE CHORDS OF THE OVERHEAD SIGN STRUCTURE.
5. DIAMETER OF U-BOLTS SHALL BE AS SHOWN.
6. THE LENGTH OF THE ALUMINUM VERTICAL SIGN SUPPORT BEAMS SHALL BE THE SAME AS THE HEIGHT OF THE SIGN THEY ARE SUPPORTING. BEAM LENGTHS MAY BE LONGER FOR PROPER ATTACHMENT TO CHORDS.
7. MINIMUM NUMBER OF BRACKETS PER SIGN IS TWO. SEE DETAIL BELOW FOR SPACING OF ALUMINUM VERTICAL SIGN SUPPORTS
8. MATERIAL NOTES:
   STAINLESS STEEL U-BOLTS AND LOCKWASHERS ASTM 304.
   STAINLESS STEEL HEX NUTS ASTM A276.
   ALUMINUM I-BEAMS ARE 6061-T6.



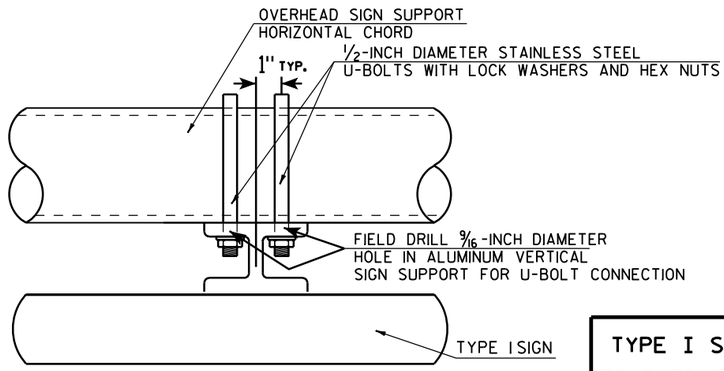
SPACING OF W5X3.7 ALUMINUM
VERTICAL SIGN SUPPORT



OVERHEAD SIGN SUPPORT
FULL SPAN
SINGLE CHORD TRUSS
(SIGNS 6 FEET OR LESS IN HEIGHT)



CUT SECTION B-B



TYPICAL SIGN CONNECTION FOR
SINGLE CHORD TRUSS
PLAN VIEW

TYPE I SIGN CONNECTION TO OVERHEAD SIGN SUPPORT

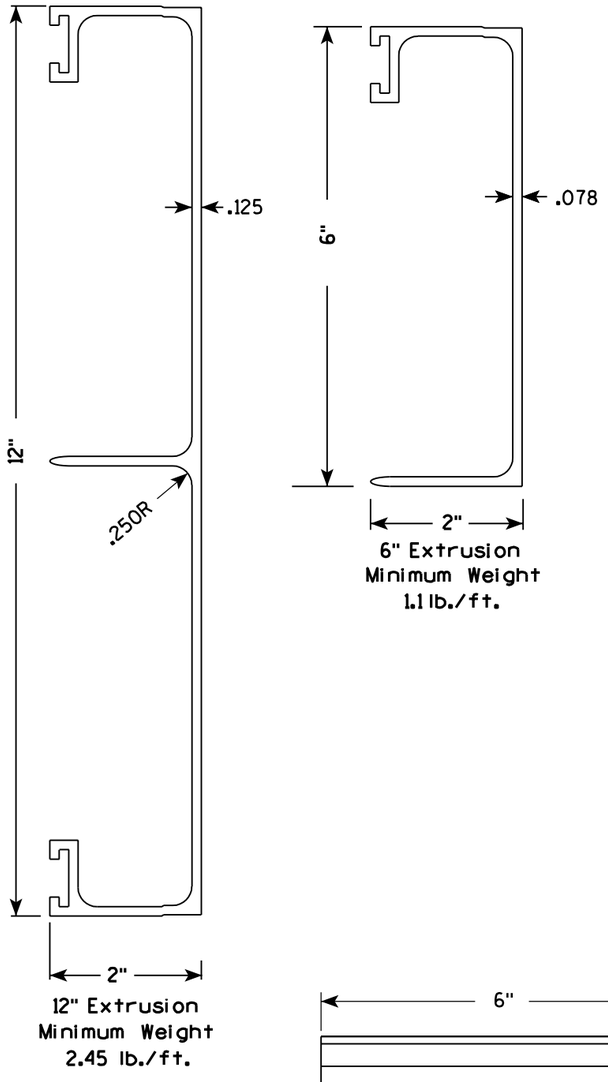
WISCONSIN DEPT OF TRANSPORTATION

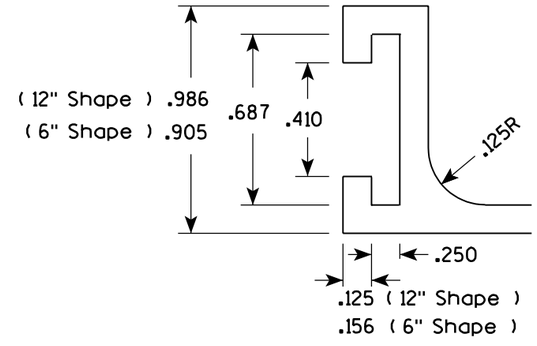
APPROVED Matthew R Rauch for State Traffic Engineer

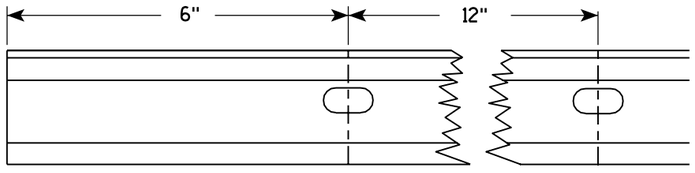
DATE 11/12/12 PLATE NO. A4-7.3

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 43	E

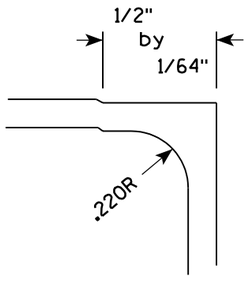
Extruded Shape







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

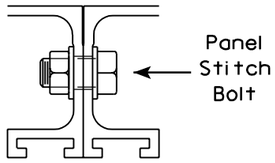


Hardware

STITCH BOLT, WASHER & NUT

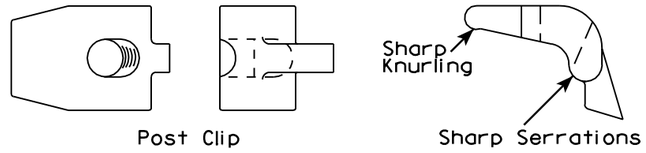
The hardware includes:

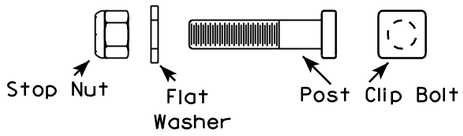
3/8 " - 16 X 3/4 " Economy Bolt 2024-T4 alloy
3/8 " - Stainless steel stop nut
3/8" X .064 Flat Washers, Alclad 2024-T4 alloy



POST CLIP, POST CLIP BOLT, WASHER & NUT

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





NOTES

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

ALUMINUM EXTRUSIONS FOR TYPE I SIGNS

WISCONSIN DEPT OF TRANSPORTATION

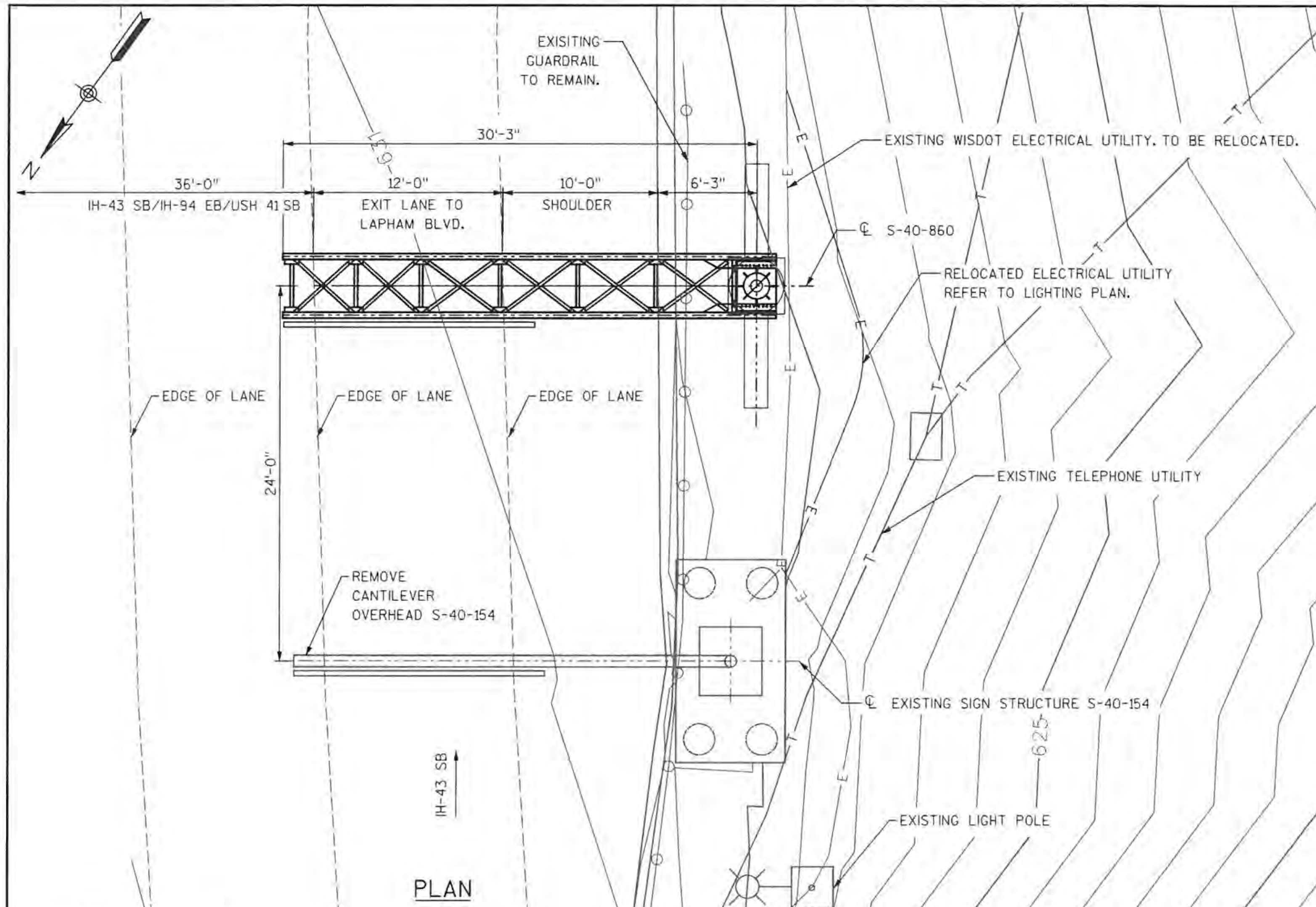
APPROVED Chester J Spang
for State Traffic Engineer

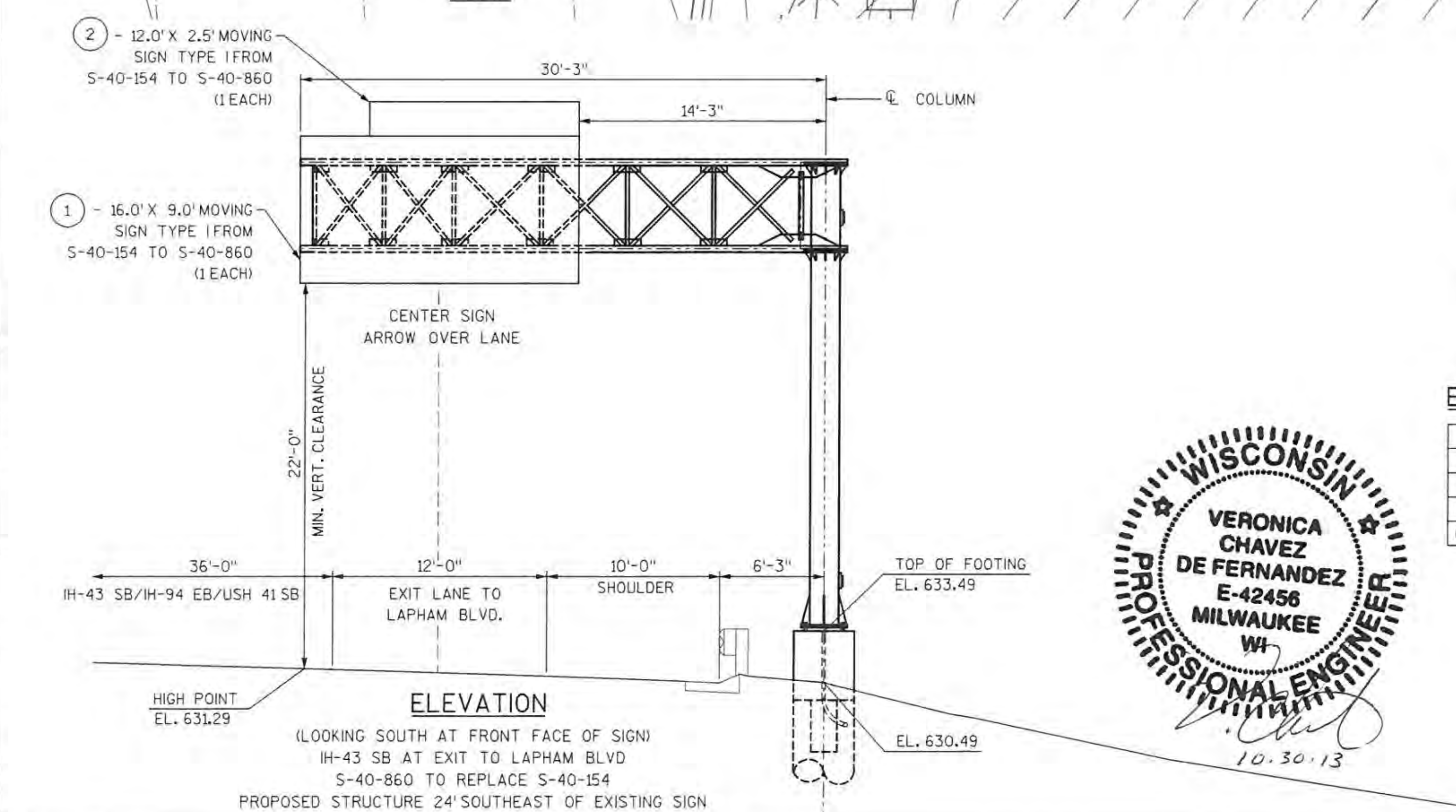
DATE 11/18/99 PLATE NO. A5-2.9

PROJECT NO:

SHEET NO: 44 E

STATE PROJECT NUMBER
1000-20-66





ELEVATION
(LOOKING SOUTH AT FRONT FACE OF SIGN)
IH-43 SB AT EXIT TO LAPHAM BLVD
S-40-860 TO REPLACE S-40-154
PROPOSED STRUCTURE 24' SOUTHEAST OF EXISTING SIGN

WISCONSIN PROFESSIONAL ENGINEER
VERONICA CHAVEZ DE FERNANDEZ E-42456 MILWAUKEE WI
10.30.13

LIST OF DRAWINGS

1. PLAN & ELEVATION
2. CANTILEVER TRUSS FOOTING
3. GALVANIZED STEEL CANTILEVER SIGN TRUSS
4. GALVANIZED STEEL CANTILEVER SIGN TRUSS DETAILS
5. HANDHOLE DETAILS

ULTIMATE DESIGN STRESSES:

FOUNDATION
CONCRETE: .... f'c = 3,500 psi
HIGH STRENGTH BAR
STEEL REINFORCEMENT: .... fy = 60,000 psi

SIGN BRIDGE
STEEL COLUMN & CHORDS: .... fy = 42,000 psi
(INCLD. HANDHOLE) A.P.I. SPEC 5L GRADE X42
PLATES, BARS, STRUCTURAL ANGLES: .... fy = 36,000 psi
A.S.T.M. A709 GRADE 36
STEEL ANCHOR BOLTS: .... fy = 55,000 psi
A.A.S.H.T.O. M314 GRADE 55
HIGH STRENGTH BOLTS A325 .... fy=92,000 psi
STRUCTURAL MEMBERS GALVANIZED A123
HARDWARE GALVANIZED .... A153 CLASS C

DESIGN DATA

DEAD LOAD - WT. OF SIGN AND SUPPORTING STRUCTURE, CATWALK, LIGHTS AND RAILINGS.
LIVE LOAD - SINGLE LINE LOAD OF 500 LBS. DISTRIBUTED OVER 2'-0" OF CATWALK.
ICE LOAD - 3 P.S.F. TO 1 FACE OF SIGN & AROUND SURFACE OF MEMBERS.
WIND PRESSURE - 90 M.P.H. (3-SECOND GUST SPEED) TO SIGN AREA & EXPOSED MEMBERS.

WIND COMPONENTS	NORMAL	TRANSVERSE
COMBINATION 1	1.0	0.2
COMBINATION 2	0.6	0.3

GROUP LOADS	% OF ALLOWABLE STRESS
1. DEAD	100
2. DEAD + WIND	133
3. DEAD + ICE + 1/2 (WIND*)	133

*MIN. VALUE OF 25 PSF FOR GR. 3

TYPE I SIGN DESIGN DATA

MAX DESIGN SIGN AREA (SQ. FT.)	MAX. TYPE I SIGN DEPTH
264	12'-0"

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL
636.0100	SIGN SUPPORTS CONCRETE MASONRY	CY	8
636.1000	SIGN SUPPORTS STEEL REINFORCEMENT HS	LB	980
641.1200.01	SIGN BRIDGE CANTILEVERED S-40-860	LS	1
650.6500.01	CONSTRUCTION STAKING STRUCTURE LAYOUT S-40-860	LS	1

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL ELEVATIONS ARE BASED ON NGVD 29 UNLESS OTHERWISE SHOWN OR NOTED.

THE SIGN BRIDGE WAS DESIGNED ACCORDING TO THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES, AND TRAFFIC SIGNALS.

ALL STRUCTURAL STEEL MEMBERS SHALL BE GALVANIZED.

CENTER SIGNS VERTICALLY ON CHORD/TRUSS.

CENTER SIGNS OVER RESPECTIVE LANE IF THEY HAVE A DOWN ARROW.

ALTERNATE DESIGNS ARE NOT ALLOWED.

THE LOCATION OF EXISTING OR PROPOSED UTILITIES AS NOTED ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. UTILITY SERVICES ARE NOT SHOWN.

VERIFY UTILITY INTERFERENCES PRIOR TO CONSTRUCTION.

THE EXACT LOCATION OF THE SIGN BRIDGE SHALL BE DETERMINED BY THE TRAFFIC ENGINEER.

REMOVE EXISTING FOOTINGS 2'-0" BELOW FINISHED GRADE, CONSIDERED INCIDENTAL TO BID ITEM "REMOVING OLD SIGN STRUCTURE S-40-154".

PROVIDE VENTILATING RODENT SCREENS AT ALL COLUMN BASES (NO GROUT), CONSIDERED INCIDENTAL TO BID ITEM "SIGN BRIDGE CANTILEVERED S-40-860".

PROVIDE A 3/4" CHAMFER OR 1" RADIUS ON ALL EXPOSED CONCRETE EDGES.

THE SIGN BRIDGE AND VERTICAL CLEARANCE INCLUDE THE PROVISION FOR THE INSTALLATION OF A FUTURE CATWALK.

NEW I-BEAMS AND MOUNTING HARDWARE REQUIRED FOR SIGNS SHALL BE INCIDENTAL TO "SIGN BRIDGE CANTILEVERED S-40-860".

PROVIDE HANDHOLES ON UPRIGHT.

PROVIDE AN IDENTIFICATION PLAQUE FOR THE SIGN BRIDGE IN ACCORDANCE WITH SDD STRUCTURE IDENTIFICATION PLAQUES, SIGN BRIDGES AND OVERHEAD SIGN SUPPORT. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "SIGN BRIDGE CANTILEVERED S-40-860".

THE UPPER 12" OF ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE A.A.S.H.T.O. SPECIFICATION AS STATED IN SECTION 641 OF THE WIS. D.O.T. STANDARD SPECIFICATIONS.

SIGNS OR BLANKS SHALL BE INSTALLED ON THE TRUSS AT THE TIME OF ERECTION. BLANKS SHALL BE 1/4 THE LENGTH OF THE BRIDGE, 2'-0" DEEPER THAN CENTER TO CENTER OF CHORDS & SHALL BE CENTERED ON THE BRIDGE. SIGNS SHALL BE AS DESIGNATED IN PLANS. SIGN BLANKS AND MOUNTING HARDWARE SHALL BE INCIDENTAL TO "SIGN BRIDGE CANTILEVERED S-40-860".

INSTALL CONDUIT PLUGS IN ALL UNUSED CONDUIT HOLES, CONSIDERED INCIDENTAL TO BID ITEM "SIGN BRIDGE CANTILEVERED S-40-860".

WELD TEST AS PER AWS D1.1

(##) - REPRESENTS THE SIGN NO. REFER TO THE PERMANENT SIGNING SHEETS.

SE REGION CONTACT:
TOM HEYDEL (262) 548-6763

BUREAU OF STRUCTURES CONTACT:
WILLIAM DREHER (608) 266-8489

CONSULTANT CONTACT:
VERONICA CHAVEZ DE FERNANDEZ (414) 282-6905

NO.	DATE	REVISION	BY

COLLINS ENGINEERS INC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher KAR 12/12/13
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE S-40-860

IH 43

COUNTY	MILWAUKEE	~~TOWN~~/CITY/~~VILLAGE~~	MILWAUKEE
DESIGN SPEC.	AASHTO STD. SPECIFICATIONS		
DESIGNED BY VC	DESIGN CK'D. NJH	DRAWN BY CI	PLANS CK'D. RJW

PLAN & ELEVATION

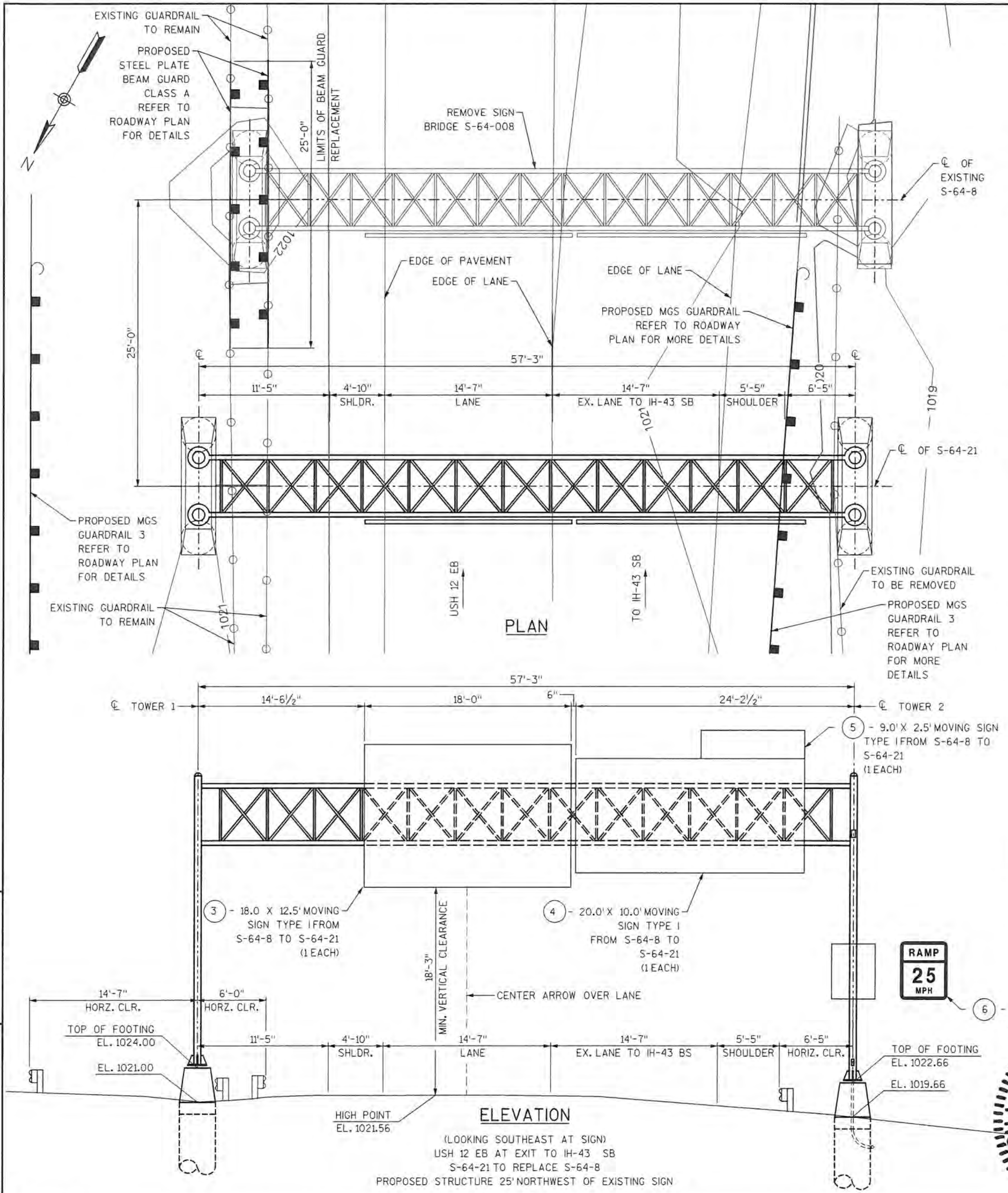
SHEET 1 OF 5

8

8

FILE NAME: 106A_S-40-860.dgn
PLOT DATE: 10/30/2013
PLOT BY: Veronica ChavezS
DRV: Pdf_bw_HS_by level.plt
PEN: CEL.TextSub_ScreenControlByLevel.tbl

STATE PROJECT NUMBER
1000-20-66



LIST OF DRAWINGS

1. PLAN & ELEVATION
2. TOWER 1 & 2 FOUNDATION DETAILS
3. GALVANIZED STEEL SIGN BRIDGE
4. SIGN BRIDGE DETAILS
5. HANDHOLE DETAILS

ULTIMATE DESIGN STRESSES:

FOUNDATION

CONCRETE: .... f'c = 3,500 psi
HIGH STRENGTH BAR
STEEL REINFORCEMENT: .... fy = 60,000 psi

SIGN BRIDGE

STEEL COLUMN PIPE: .... fy = 42,000 psi
A.P.I. SPEC 5L GRADE X42
STEEL PIPE MEMBERS OF TRUSS: .... fy = 42,000 psi
A.P.I. SPEC 5L GRADE X42
PLATES, BARS, STRUCTURAL ANGLES: .... fy = 36,000 psi
A.S.T.M. A709 GRADE 36
STEEL ANCHOR BOLTS: .... fy = 55,000 psi
A.A.S.H.T.O. M314-90 GRADE 55
ALL BOLTED CONNECTIONS: ¾" ϕ A325 BOLTS, GALVANIZED A.S.T.M. A153, CLASS C

DESIGN DATA

DEAD LOAD - WT. OF SIGN AND SUPPORTING STRUCTURE. NO PROVISIONS HAVE BEEN INCLUDED FOR A CATWALK LOAD, RAILING LOAD OR LIGHTING LOAD.
LIVE LOAD - NONE.
ICE LOAD - 3 P.S.F. TO 1 FACE OF SIGN & AROUND SURFACE OF MEMBERS.
WIND PRESSURE - 90 M.P.H. (3-SECOND GUST SPEED) TO SIGN AREA & EXPOSED MEMBERS.

WIND COMPONENTS	NORMAL	TRANSVERSE
COMBINATION 1	1.0	0.2
COMBINATION 2	0.6	0.3

GROUP LOADS	% OF ALLOWABLE STRESS
1. DEAD	100
2. DEAD + WIND	133
3. DEAD + ICE + ½ (WIND*)	133

*MIN. VALUE OF 25 PSF FOR GR. 3

TYPE I SIGN DESIGN DATA

MAX DESIGN SIGN AREA (SQ. FT.)	MAX. TYPE I SIGN DEPTH
450	12'-6"

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL
636.0100	SIGN SUPPORTS CONCRETE MASONRY	CY	23
636.1000	SIGN SUPPORTS STEEL REINFORCEMENT HS	LB	350
636.1500	SIGN SUPPORTS STEEL COATED REINFORCEMENT HS	LB	2030
641.6600	SIGN BRIDGE S-64-21	LS	1
650.6500.02	CONSTRUCTION STAKING STRUCTURE LAYOUT S-64-21	LS	1

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL ELEVATIONS ARE BASED ON NGVD 29 UNLESS OTHERWISE SHOWN OR NOTED.

THE SIGN BRIDGE WAS DESIGNED ACCORDING TO THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES, AND TRAFFIC SIGNALS.

ALL STRUCTURAL STEEL MEMBERS SHALL BE GALVANIZED.

CENTER SIGNS VERTICALLY ON CHORD/TRUSS.

CENTER SIGNS OVER RESPECTIVE LANE IF THEY HAVE A DOWN ARROW.

ALTERNATE DESIGNS ARE NOT ALLOWED.

CENTER TYPE I SIGN #3 OVER RESPECTIVE LANE.

THE LOCATION OF EXISTING OR PROPOSED UTILITIES AS NOTED ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. UTILITY SERVICES ARE NOT SHOWN.

VERIFY UTILITY INTERFERENCES PRIOR TO CONSTRUCTION.

THE EXACT LOCATION OF THE SIGN BRIDGE SHALL BE DETERMINED BY THE TRAFFIC ENGINEER.

REMOVE EXISTING FOOTINGS 2'-0" BELOW FINISHED GRADE, CONSIDERED INCIDENTAL TO BID ITEM "REMOVING OLD SIGN STRUCTURE S-64-8".

PROVIDE VENTILATING RODENT SCREENS AT ALL COLUMN BASES (NO GROUT), CONSIDERED INCIDENTAL TO BID ITEM "SIGN BRIDGE S-64-21".

PROVIDE A ¾" CHAMFER OR 1" RADIUS ON ALL EXPOSED CONCRETE EDGES.

NEW I-BEAMS AND MOUNTING HARDWARE REQUIRED FOR SIGNS SHALL BE INCIDENTAL TO "SIGN BRIDGE

PROVIDE HANDHOLES ON TOWER 2.

PROVIDE AN IDENTIFICATION PLAQUE FOR THE SIGN BRIDGE IN ACCORDANCE WITH SDD STRUCTURE IDENTIFICATION PLAQUES, SIGN BRIDGES AND OVERHEAD SIGN SUPPORT. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "SIGN BRIDGE S-64-21".

THE UPPER 12" OF ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE A.A.S.H.T.O. SPECIFICATION AS STATED IN SECTION 641 OF THE WIS. D.O.T. STANDARD SPECIFICATIONS.

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WELDED CONNECTIONS CAN BE USED IN LIEU OF BOLTED CONNECTIONS IF UNIT CAN BE GALVANIZED IN ONE PIECE.

INSTALL CONDUIT PLUGS IN ALL UNUSED CONDUIT HOLES, CONSIDERED INCIDENTAL TO THE BID ITEM "SIGN BRIDGE S-64-21".

WELD TEST AS PER AWS D1.1

(##) - REPRESENTS THE SIGN NO. REFER TO THE PERMANENT SIGNING SHEETS.

SE REGION CONTACT:
TOM HEYDEL (262) 548-6763

BUREAU OF STRUCTURES CONTACT:
WILLIAM DREHER (608) 266-8489

CONSULTANT CONTACT:
VERONICA CHAVEZ DE FERNANDEZ (414) 282-6905

WISCONSIN VERONICA CHAVEZ DE FERNANDEZ E-42456 MILWAUKEE WI PROFESSIONAL ENGINEER

10·30·13

NO.	DATE	REVISION	BY

COLLINS ENGINEERS INC.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher KAR 12/12/13
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE S-64-21

USH 12

COUNTY WALWORTH | ~~TOWN~~/CITY/~~VILLAGE~~ ELKHORN

DESIGN SPEC. AASHTO STD. SPECIFICATIONS

DESIGNED BY VC | DESIGN CK'D. NJH | DRAWN BY CI | PLANS CK'D. RJW

PLAN & ELEVATION

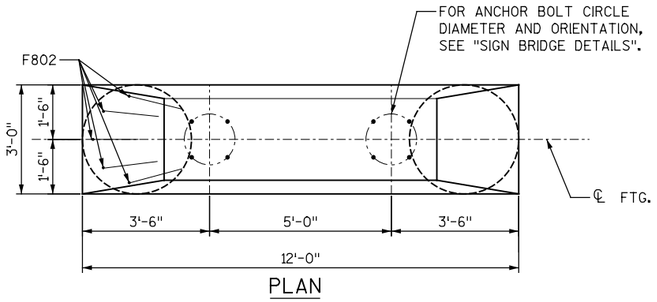
SHEET 1 OF 5

8

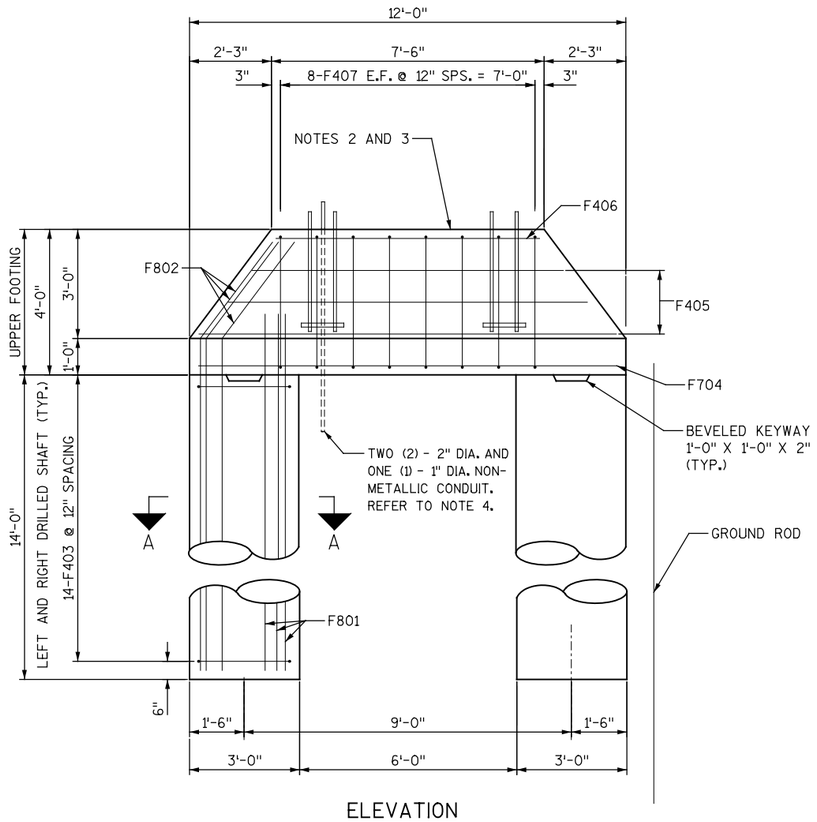
FILE NAME 1088_S-64-ELEV
PLOT DATE 10/30/2013
PLOT BY : Veronica Chavez
DRV : Pdf_bw_HS_by_level.plt PEN : CELTextSub_ScreenControlByLevel.tbl

STATE PROJECT NUMBER

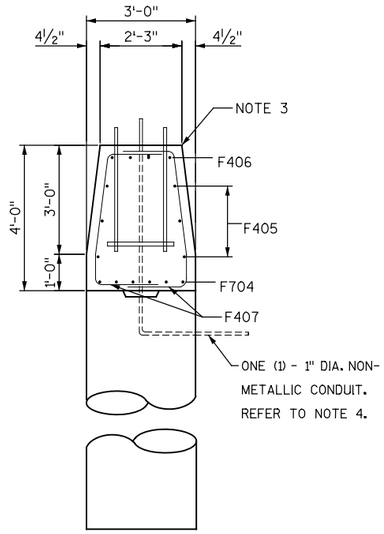
1000-20-66



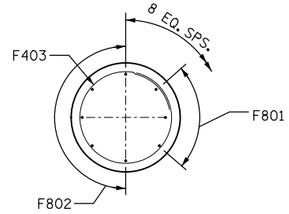
PLAN



ELEVATION



END VIEW



SECTION A-A

GENERAL NOTES

1. BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 3" CLEAR UNLESS OTHERWISE NOTED.
2. THE TOP OF THE FOOTING SURFACE SHALL BE SMOOTHED AND SLOPED TO DRAIN.
3. REFER TO THE PLAN AND ELEVATION SHEET FOR TOP OF FOOTING ELEVATIONS. BOTTOM OF FOOTING TO BE EMBEDDED 1'-0" BELOW GRADE.
4. INSTALL CONDUIT IN FOOTING AND SWEEP CONDUIT, CAP BOTH ENDS OF THE CONDUIT. THE WORK SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "SIGN SUPPORTS CONCRETE MASONRY."

FOUNDATION DATA

THE FOLLOWING SOIL PARAMETERS WERE USED FOR THE DESIGN OF THE FOUNDATION SYSTEM. IF VARIATIONS IN THE SOIL PARAMETERS ARE FOUND DURING CONSTRUCTION NOTIFY PROJECT ENGINEER FOR REQUIRED MODIFICATION TO THE FOUNDATION SYSTEM.

SOIL UNIT WEIGHT = 120 pcf
COHESION VALUE = 800 psf
FRICTION ANGLE = 0 °
ALLOWABLE SOIL BEARING PRESSURE = 0 psf
ALLOWABLE SKIN FRICTION = 0 psf

BAR SERIES TABLE

MARK	NO. REQ'D	LENGTH
F405	4 SERIES OF 3	8'-8" TO 11'-4"

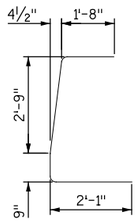
BUNDLE AND TAG EACH SERIES SEPARATELY

BILL OF BARS

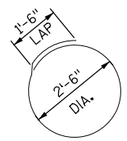
NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
F801	X	12	16'-0"			DRILLED SHAFT VERTICAL
F802	X	20	18'-0"	▲		DRILLED SHAFT VERTICAL
F403		56	9'-4"	▲		DRILLED SHAFT HOOP
F704	X	12	11'-6"			CAP BEAM LONGITUDINAL
F405	X	12	10'-0"		△	CAP BEAM LONGITUDINAL
F406	X	8	7'-4"			CAP BEAM LONGITUDINAL
F407	X	32	7'-3"	▲		CAP BEAM STIRRUP

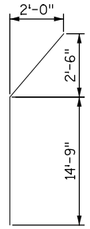
△ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WIEGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.



F407



F403



F802

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-64-21

CONST. SPEC. 2014	DRAWN BY CI	PLANS CK'D. RJW

TOWER 1 & 2 FOUNDATION DETAILS

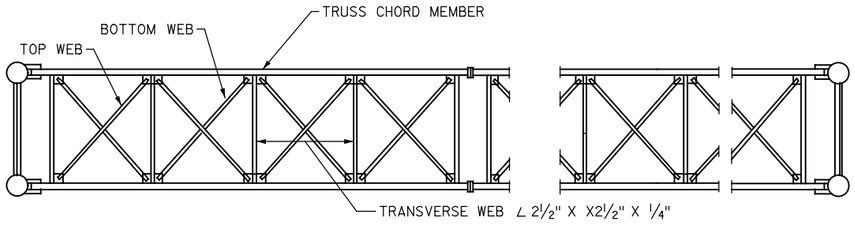
SHEET 2 OF 5

47

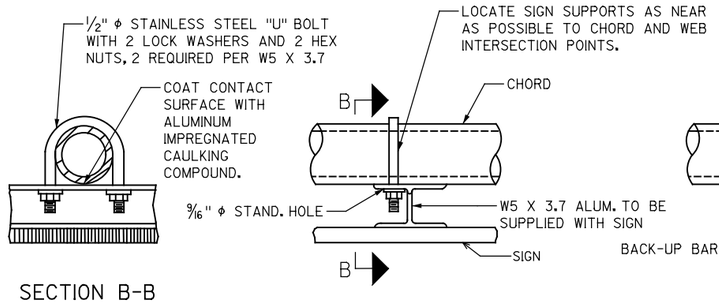
FILE NAME :088_S-64-21.DGN
PLOT DATE :10/30/2013
PLOT BY : Veronica Chavez
DRV :Pdf_bw_HS.by level.plt PEN :CELTextSub_ScreenControlByLevel.tbl

STATE PROJECT NUMBER

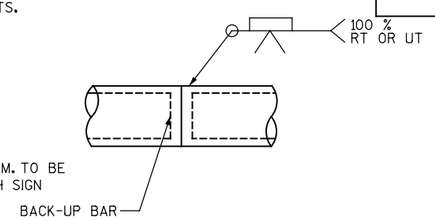
1000-20-66



PLAN

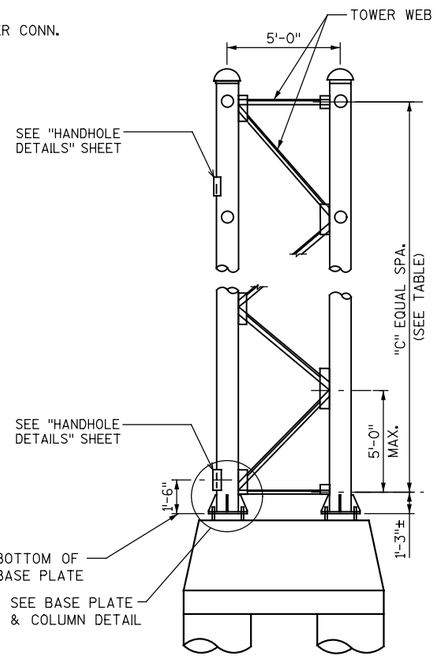


SECTION B-B

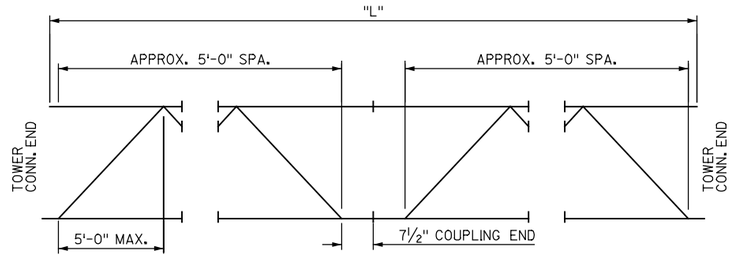


CHORD SPLICE

TYPICAL SIGN CONNECTION

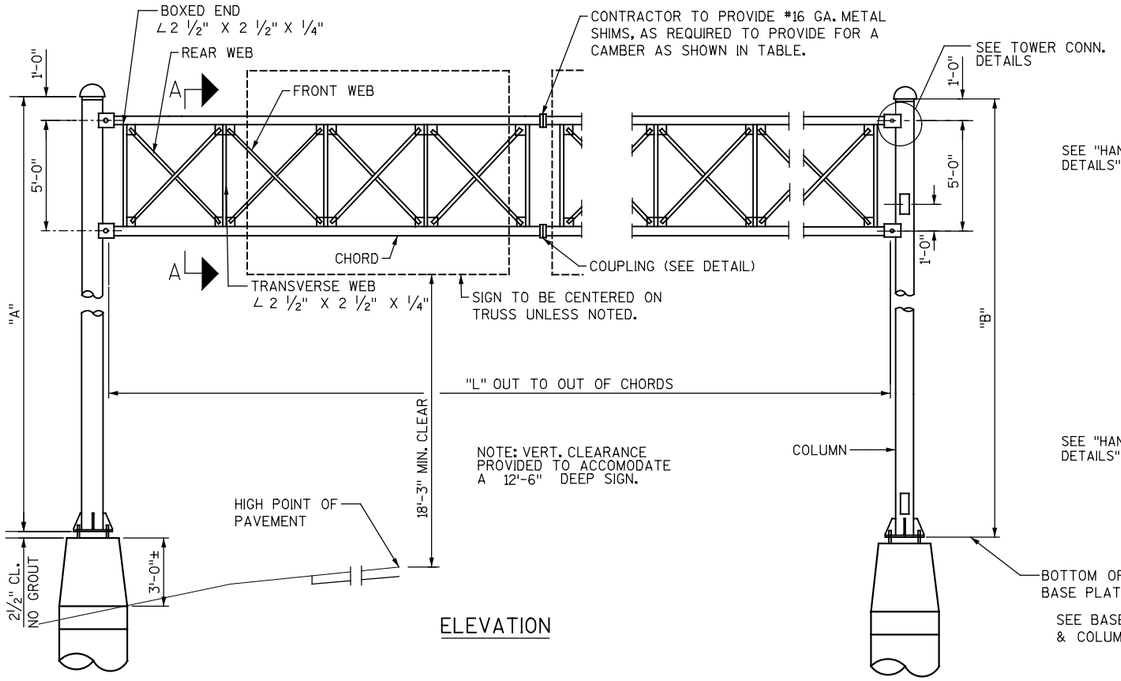


END VIEW



TRUSS ARRANGEMENT

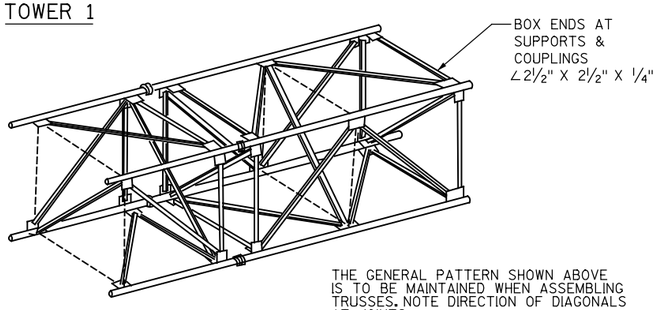
FABRICATOR MAY MAKE TRUSSES ANY LENGTH KEEPING A SECTION A MINIMUM OF 20'-0" & A MULTPLE OF 5'-0". CHORD FIELD SPLICES SHALL BE MADE WITH COUPLINGS. CHORD SHOP SPLICE SHALL BE THE WELDED SPLICE SHOWN ABOVE.



ELEVATION

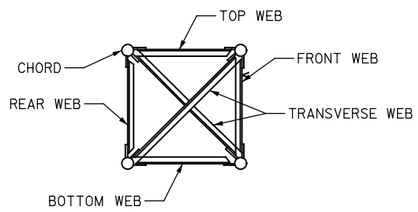
TOWER 1

TOWER 2



THE GENERAL PATTERN SHOWN ABOVE IS TO BE MAINTAINED WHEN ASSEMBLING TRUSSES. NOTE DIRECTION OF DIAGONALS AT JOINTS.

TYPICAL TRUSS SECTION



SECTION A-A

TABLE

STRUCTURE	A	B	C	CHORDS O.D. X THK.	TOP & BOTTOM WEB	FRONT & REAR WEB	COUPLING PLATE D1 & "T"	BOLT CIRCLE DIA. "D2"	NO. OF BOLTS IN COUPLING	CAMBER	COLUMN O.D. X THK.	TOWER WEBS	"L"
S-64-21	25'-4¼"	26'-8¼"	5	4 X 0.226	3 X 3 X 3/16	3 X 3 X 3/16	10" X 0.75"	7"	6	13/16 "	10.75 X 0.250	3 X 3 X 3/16	56'-1 1/4"

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

S-64-21

CONST. SPEC. 2014	DRAWN BY CI	PLANS CK'D. RJW

GALVANIZED STEEL SIGN BRIDGE

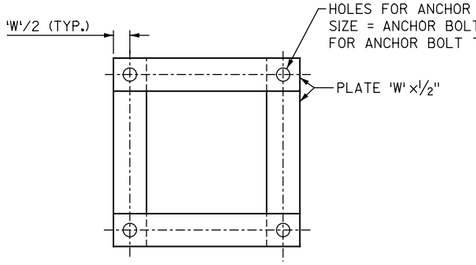
SHEET 3 OF 5

48

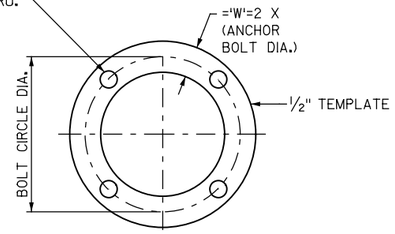
FILE NAME :I:\RB\S-64-21.DGN
PLOT DATE :10/30/2015
PLOT BY : Veronica Chavez
DRV :Pdf_bw_HS.by level.pit PEN :CEL.TextSub.ScreenControlByLevel.tbl

STATE PROJECT NUMBER

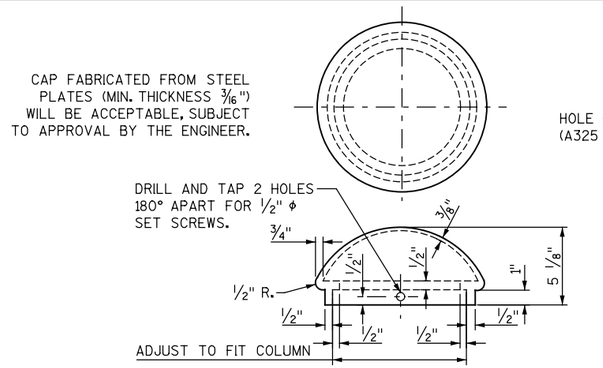
1000-20-66



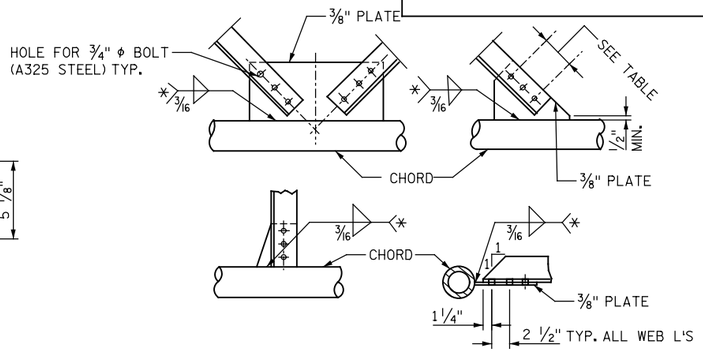
ALTERNATE ANCHOR PLATE/TEMPLATE PLAN



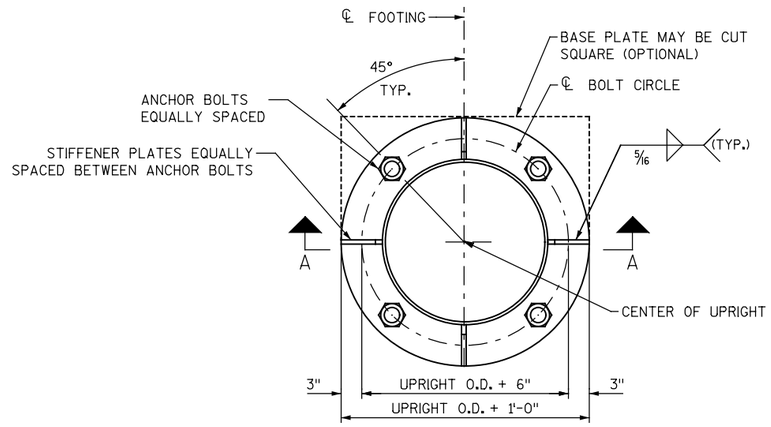
ANCHOR PLATE/TEMPLATE PLAN



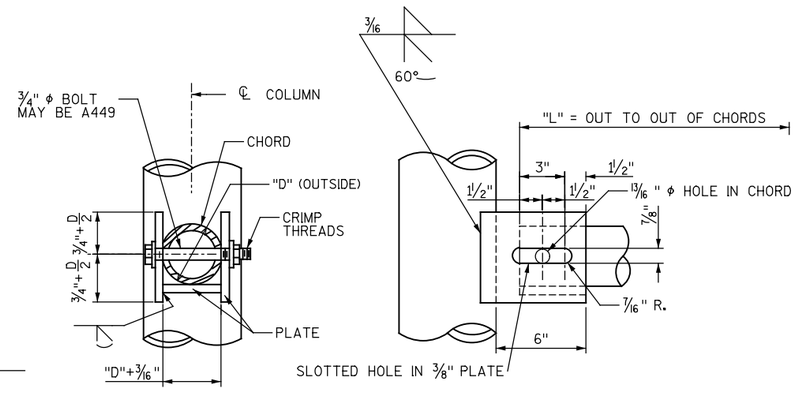
TOWER CAP DETAIL



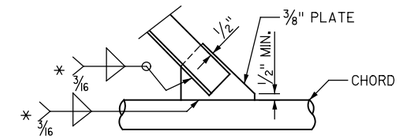
TYPICAL TRUSS CONNECTION DETAILS



PLAN VIEW (BASE PLATE)



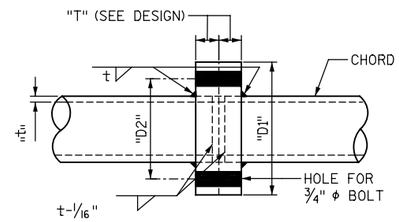
TOWER CONNECTION DETAIL



TYPICAL WELDED ALTERNATE

*ANGLE	WELD LENGTH	NO. OF BOLTS
● 2 1/2"x2 1/2"x1/4"	11"	3
3"x3"x3/16"	10"	3
3"x3"x1/4"	13"	4
3"x3"x5/16"	16 1/2"	5
3"x3"x3/8"	19 1/2"	6
4"x4"x1/4"	18"	5
4"x4"x5/16"	22"	6
4"x4"x3/8"	26"	8
4"x4"x7/16"	30"	9
4"x4"x1/2"	34"	10

● ONLY USED FOR BOXED END AND TRANSVERSE BRACING.



COUPLING DETAIL

SECTION A-A

NOTE:
PRIOR TO INSTALLATION, ANCHOR BOLTS SHALL BE RIGIDLY HELD IN POSITION DURING CONCRETE PLACEMENT USING STEEL ANCHOR PLATE AND TOP TEMPLATE. REMOVE TOP TEMPLATE (NOT SHOWN) AFTER CONCRETE SETS.

BASE PLATE & UPRIGHT COLUMN DETAILS

STRUCTURE	COLUMN O.D. X THK.	ANCHOR BOLTS	BASE PLATE THICKNESS (IN.)	STIFFENER PLATE THICKNESS (IN.)	STIFFENER PLATE HEIGHT (IN.)	tw (IN.)
S-64-21	10.75 X 0.250	1 1/4" ϕ	1 1/4"	3/8"	12"	5/16"

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-64-21

CONST. SPEC. 2014 | DRAWN BY CI | PLANS CK'D. RJW

SIGN BRIDGE DETAILS

SHEET 4 OF 5

49

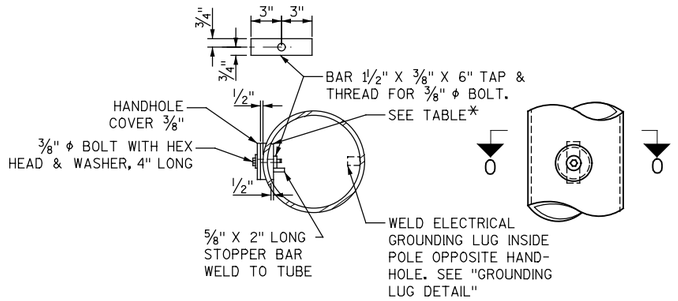
8

8

FILE NAME :088.S-64-21.DGN
PLOT DATE :10/30/2015
PLOT BY : Veronica Chavez
DRV :Pdf_bw_HS.by level.pit PEN :CEL TextSub.ScreenControlByLevel.tbl

STATE PROJECT NUMBER

1000-20-66



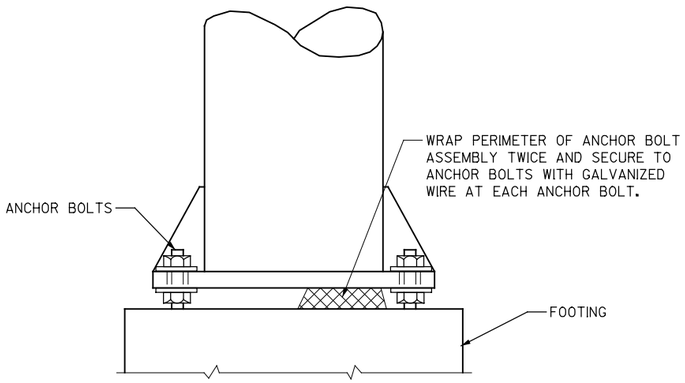
SECTION O-O HANDHOLE DETAILS

HANDHOLE NOTES

HANDHOLES SHALL BE LOCATED IN ONE COLUMN OF THE SIGN BRIDGE STRUCTURE IF ELECTRICALLY OPERATED DEVICES ARE INSTALLED ON/IN THE STRUCTURE. COLUMNS WITH HANDHOLES SHALL BE NEAR THE ELECTRICAL SERVICE. THE CONTRACTOR SHALL VERIFY THE LOCATION OF THE ELECTRICAL SERVICE ENTRANCE WITH THE DISTRICT TRAFFIC SECTION PRIOR TO FABRICATION OF THE SIGN BRIDGE COLUMNS AND MEMBERS. CONDUIT (AS REQ'D.) SHALL BE LOCATED, PLACED AND SIZED AS SHOWN ON THE ELECTRICAL DETAIL PLAN SHEETS.

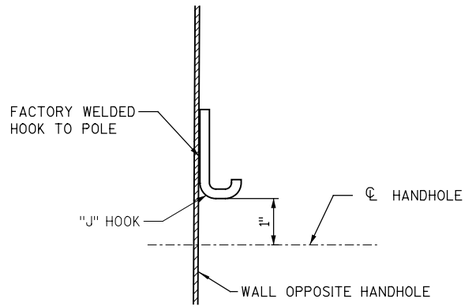
*

UPRIGHT DIAM.	HANDHOLE PIPE O.D. X MIN. THK.
SIZE UP TO AND INCLD. 16" X .375"	5.562" X .500"
GREATER THAN 16" X .375" TO AND INCLD. 24" X .562"	6.625" X .562"



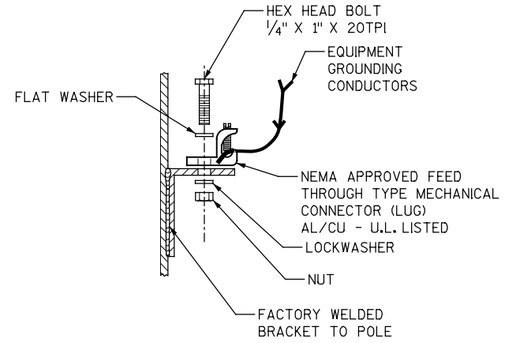
RODENT SCREEN

(ONLY REQ'D. WHEN ELECTRICAL DEVICES ARE INSTALLED)



TYPICAL "J" HOOK LOCATION

THE "J" HOOK SHALL BE FACTORY WELDED TO THE INSIDE OF ALL COLUMNS CONTAINING ELECTRICAL WIRING. THE "J" HOOK SHALL BE ATTACHED ABOVE THE CENTERLINE OF THE UPPER HANDHOLE AND MOUNTED DIRECTLY OPPOSITE THE HANDHOLE AS SHOWN IN THE DRAWING.



GROUNDING LUG DETAIL

NUT, BOLT, AND WASHERS SHALL BE STAINLESS STEEL.

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-64-21

CONST. SPEC. 2014	DRAWN BY CI	PLANS CK'D. RJW

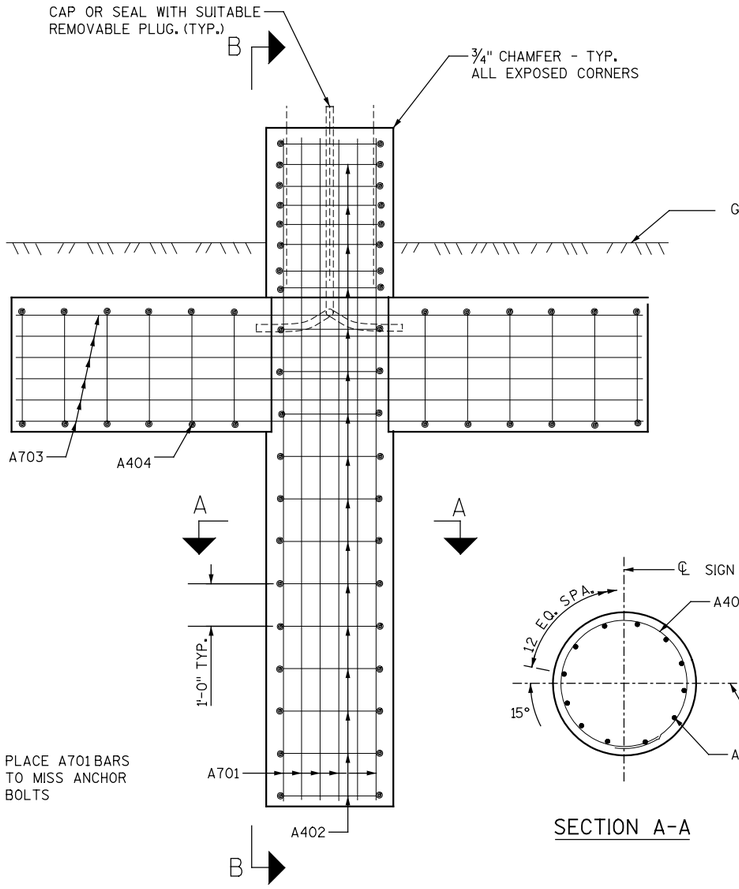
HANDHOLE DETAILS

SHEET 5 OF 5

50

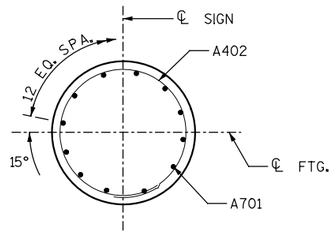
FILE NAME :088_S-64-21DGN
PLOT DATE :10/30/2013
PLOT BY : Veronica Chavez-B
DRV :Pdf_bw_HS.by level.pit PEN :CELTextSub_ScreenControlByLevel.tbl

STATE PROJECT NUMBER
1000-20-66

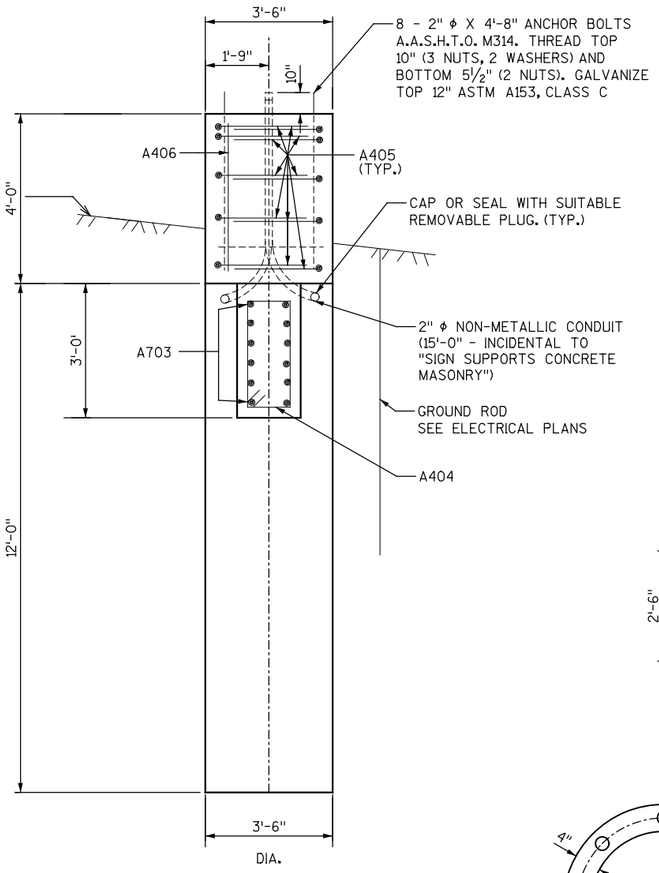


ELEVATION

(8 C.Y.)



SECTION A-A



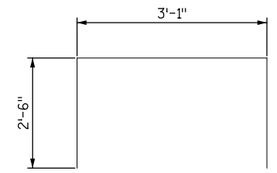
SECTION B-B

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

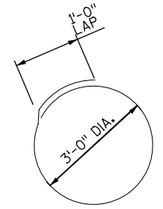
BILL OF BARS

980 LB.

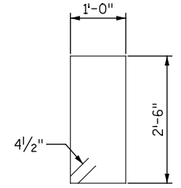
BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	CUT. DIAG.	BUN-DLE	LOCATION
A701		12	15'-6"				FOOTING - COLUMN/TOP
A402		16	10'-6"	X			FOOTING - COLUMN/TOP
A703		12	15'-0"				FOOTING - WINGS
A404		12	7'-6"	X			FOOTING - WINGS
A405		10	7'-11"	X			FOOTING - TOP
A406		4	3'-6"				FOOTING - TOP - COLUMNS



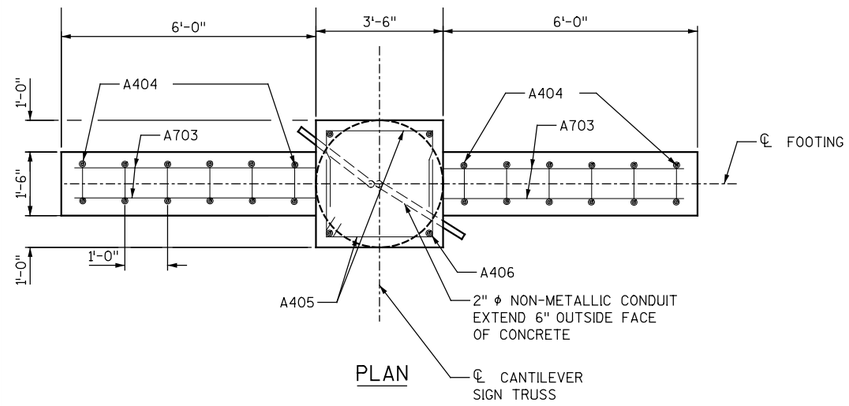
A405



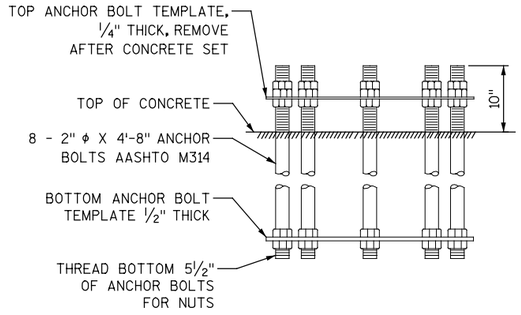
A402



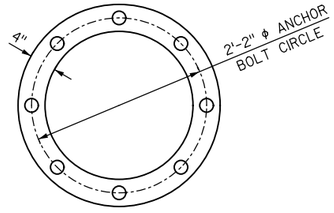
A404
(STIRRUP)



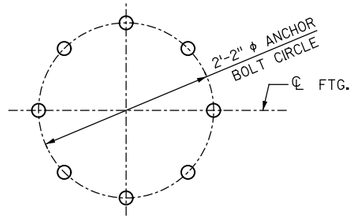
PLAN



ANCHOR BOLT DETAILS



TOP VIEW OF TOP & BOTTOM TEMPLATES



GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.
BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 3" CLEAR UNLESS DETAILED OTHERWISE.

ALLOWABLE DESIGN STRESSES

CONCRETE MASONRY — f'c=3,500 P.S.I.
HIGH STRENGTH BAR STEEL REINFORCEMENT, GRADE 60 — fy=60,000 P.S.I.
ANCHOR BOLTS A.A.S.H.T.O. M314 — fy=55,000 P.S.I.

FOUNDATION DATA

ALLOWABLE SOIL BEARING PRESSURE = 2T/SQ. FT.

TOTAL ESTIMATED QUANTITIES (1 FTG.)

SIGN SUPPORTS CONCRETE MASONRY — 8 C.Y.
SIGN SUPPORTS STEEL REINFORCEMENT HS — 980 LB.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-860

CONST. SPEC. 2014	DRAWN BY CI	PLANS CK'D. RJW

CANTILEVER TRUSS FOOTING

SHEET 2 OF 5

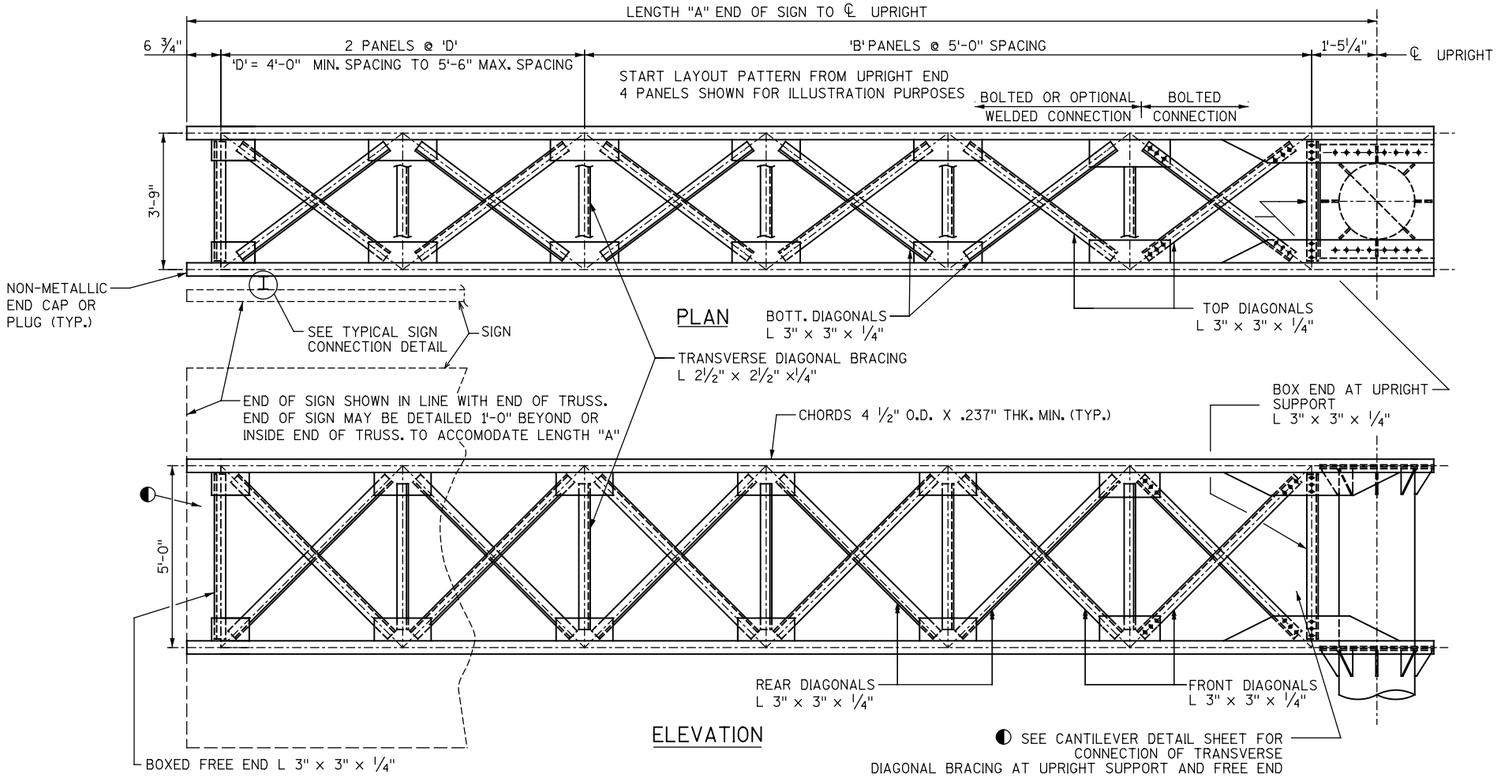
51

8

8

FILE NAME :\08A_S-40-860.dgn
PLOT DATE :10/30/2015
PLOT BY : Veronica Chavez-Vil
DRV :Pdf_bw_HS_by level.pit
PEN :CEL.TextSub_ScreenControlByLevel.tbl

STATE PROJECT NUMBER
1000-20-66



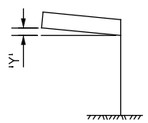
GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

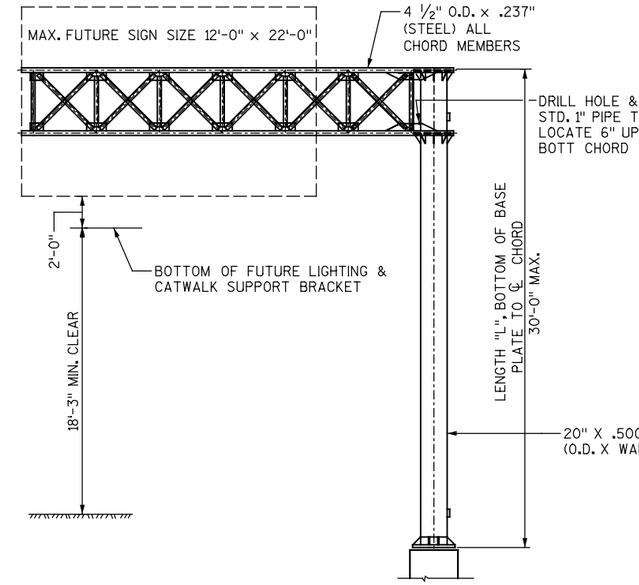
PREFABRICATE CAMBER INTO THE HORIZONTAL SUPPORT PROVIDING AN AMOUNT "Y" AT END OF TRUSS SHOWN IN "CAMBER DIAGRAM". DO NOT RAKE VERTICAL UPRIGHT BY ADJUSTMENT OF LEVELING NUTS.

WELDED CONNECTIONS CAN BE USED IN LIEU OF BOLTED CONNECTIONS IF UNIT CAN BE GALVANIZED IN ONE PIECE.

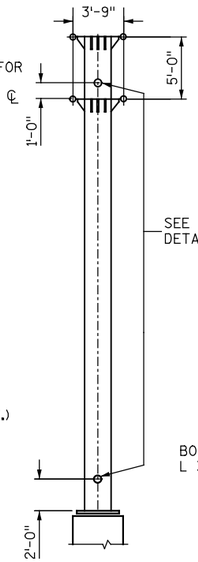
STRUCTURE	"A"	"L"	"B"	"D"	"Y"
S-40-860	30'-3"	26'-7 1/8"	4	4'-1 1/2"	3 1/8"



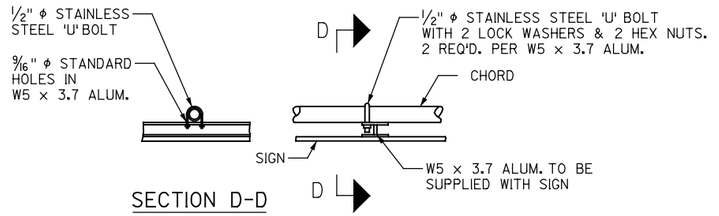
CAMBER DIAGRAM



ELEVATION

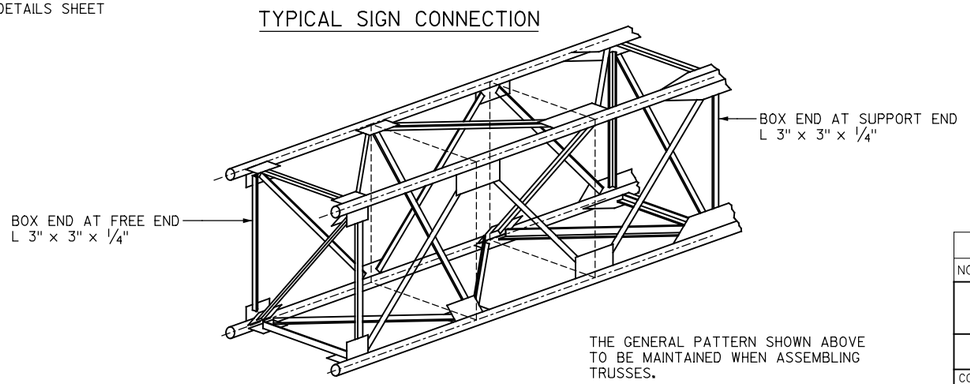


END VIEW



SECTION D-D

TYPICAL SIGN CONNECTION



THE GENERAL PATTERN SHOWN ABOVE TO BE MAINTAINED WHEN ASSEMBLING TRUSSES.

TYPICAL TRUSS SECTION

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-860

CONST. SPEC. 2014	DRAWN BY CI	PLANS CK'D. RJW

GALVANIZED STEEL CANTILEVER SIGN TRUSS

SHEET 3 OF 5

52

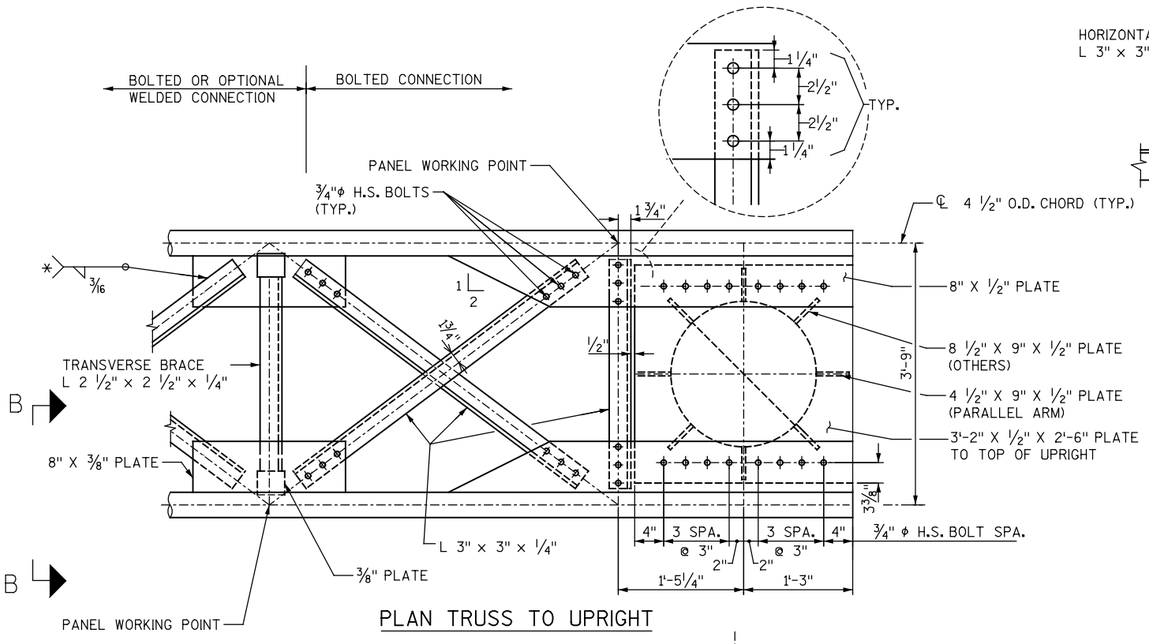
8

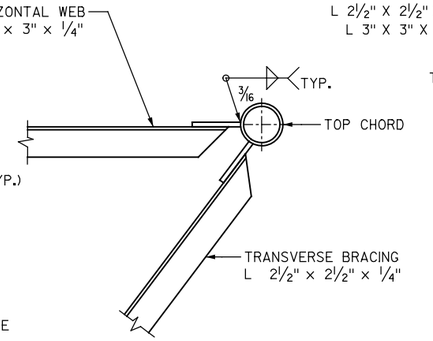
8

FILE NAME :108A.S-40-860.dgn
PLOT DATE :10/30/2015
PLOT BY : Veronica Chavez
DRV :Pdf_bw_HS.by level.plt PEN :CELTextSub.ScreenControlByLevel.tbl

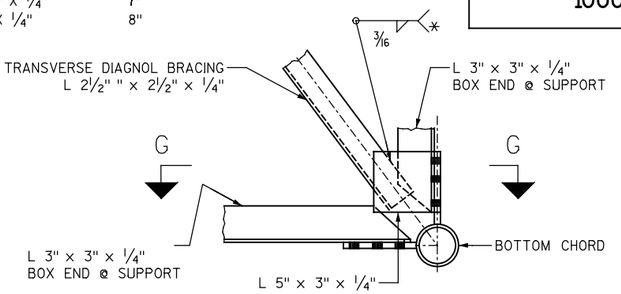
STATE PROJECT NUMBER

1000-20-66

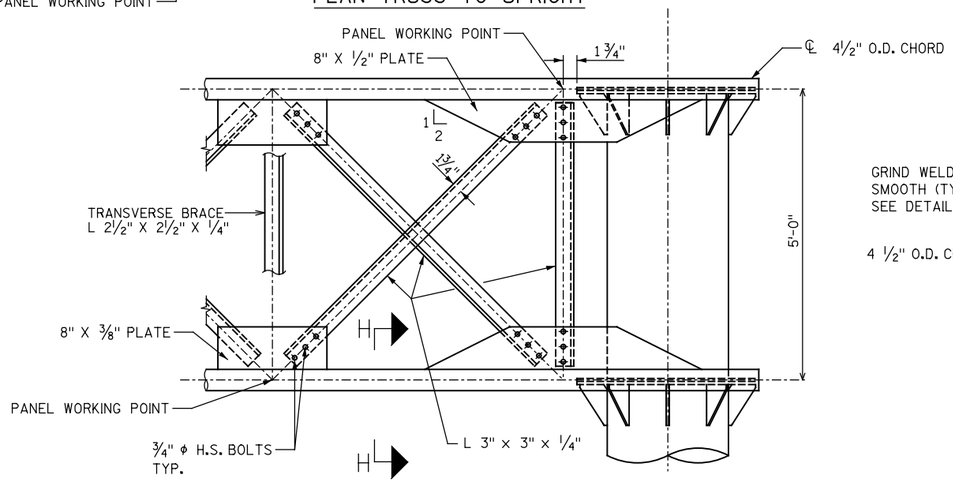




* ANGLE	WELD LENGTH (MIN.)
L 2 1/2" X 2 1/2" X 1/4"	7"
L 3" X 3" X 1/4"	8"

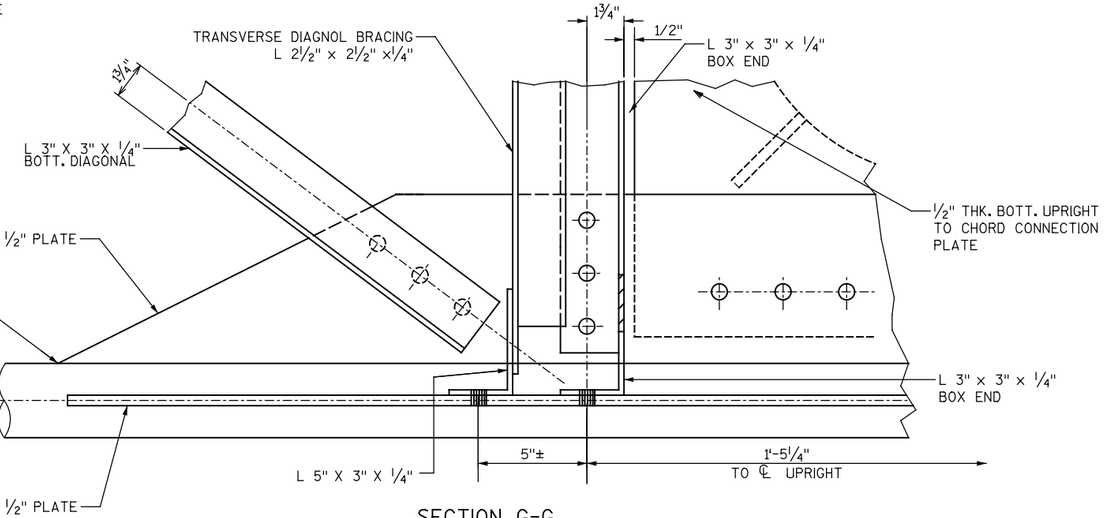


PLAN TRUSS TO UPRIGHT



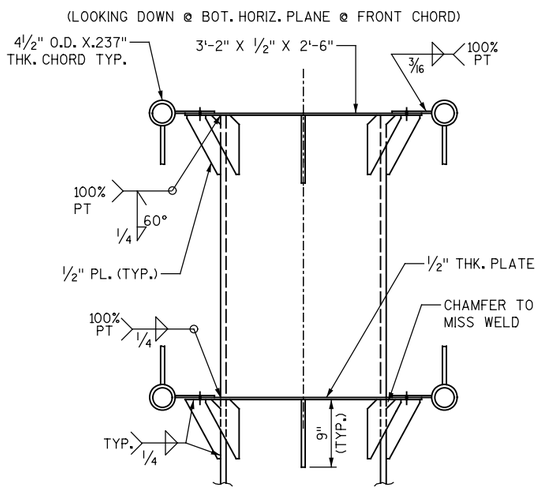
ELEVATION TRUSS TO UPRIGHT

SECTION B-B

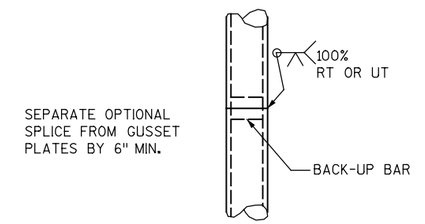


SECTION H-H

SECTION G-G

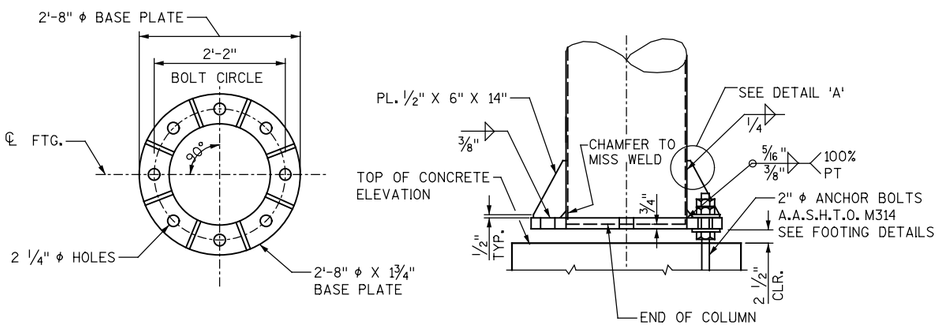


END VIEW TRUSS TO UPRIGHT

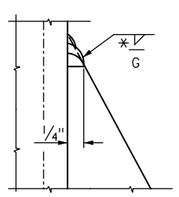


SEPARATE OPTIONAL SPLICE FROM GUSSET PLATES BY 6" MIN.

OPTIONAL COLUMN OR CHORD SPLICE DETAIL



BASE PLATE DETAILS



DETAIL 'A'

* SIZE AS NEEDED

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-860

CONST. SPEC. 2014	DRAWN BY CI	PLANS CK'D. RJW

GALVANIZED STEEL CANTILEAVER SIGN TRUSS DETAILS

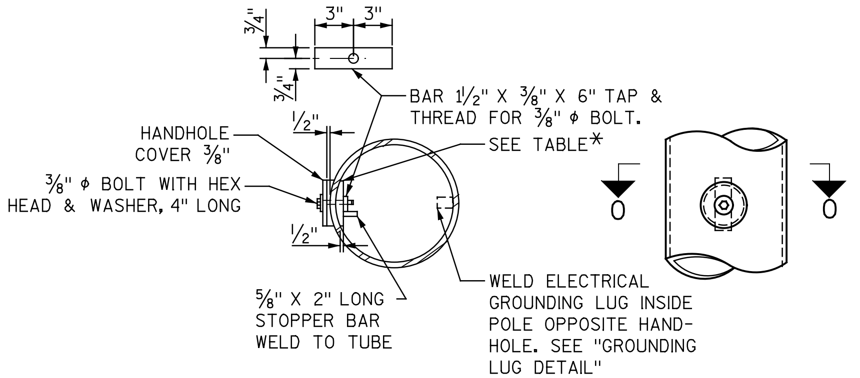
SHEET 4 OF 5

53

8

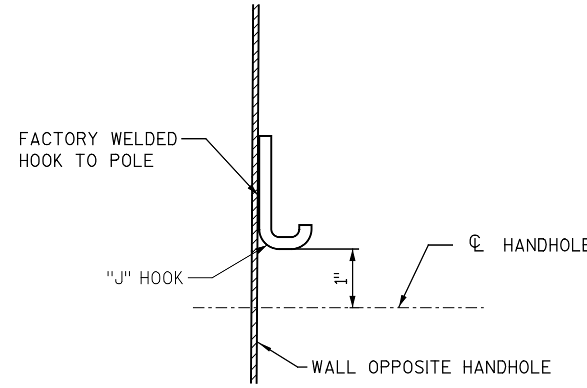
8

FILE NAME :\08A_S-40-860.dgn
PLOT DATE :10/30/2015
PLOT BY : Veronica Chavez-Vil
DRV :Pdf_bw_HS_by level.plt
PEN :CEL.TextSub_ScreenControlByLevel.tbl



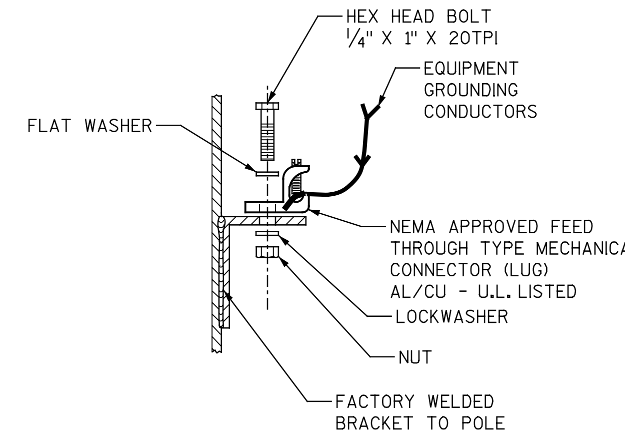
SECTION O-O

HANDHOLE DETAILS



TYPICAL "J" HOOK LOCATION

THE "J" HOOK SHALL BE FACTORY WELDED TO THE INSIDE OF ALL COLUMNS CONTAINING ELECTRICAL WIRING. THE "J" HOOK SHALL BE ATTACHED ABOVE THE CENTERLINE OF THE UPPER HANDHOLE AND MOUNTED DIRECTLY OPPOSITE THE HANDHOLE AS SHOWN IN THE DRAWING.



GROUNDING LUG DETAIL

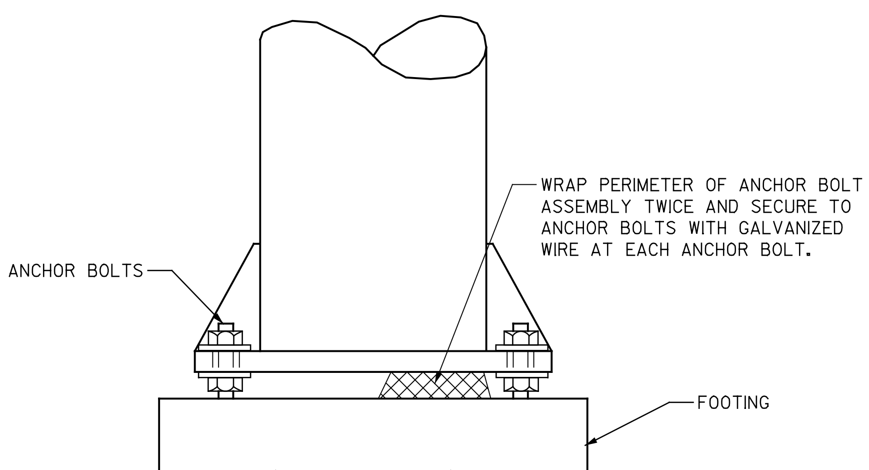
NUT, BOLT, AND WASHERS SHALL BE STAINLESS STEEL.

HANDHOLE NOTES

HANDHOLES SHALL BE LOCATED IN ONE COLUMN OF THE SIGN BRIDGE STRUCTURE IF ELECTRICALLY OPERATED DEVICES ARE INSTALLED ON/IN THE STRUCTURE. COLUMNS WITH HANDHOLES SHALL BE NEAR THE ELECTRICAL SERVICE. THE CONTRACTOR SHALL VERIFY THE LOCATION OF THE ELECTRICAL SERVICE ENTRANCE WITH THE DISTRICT TRAFFIC SECTION PRIOR TO FABRICATION OF THE SIGN BRIDGE COLUMNS AND MEMBERS. CONDUIT (AS REQ'D.) SHALL BE LOCATED, PLACED AND SIZED AS SHOWN ON THE ELECTRICAL DETAIL PLAN SHEETS.

*

UPRIGHT DIAM.	HANDHOLE PIPE O.D. X MIN. THK.
SIZE UP TO AND INCLD. 16" X .375"	5.562" X .500"
GREATER THAN 16" X .375" TO AND INCLD. 24" X .562"	6.625" X .562"



RODENT SCREEN

(ONLY REQ'D. WHEN ELECTRICAL DEVICES ARE INSTALLED)

8

8

NO.	DATE	REVISION	BY

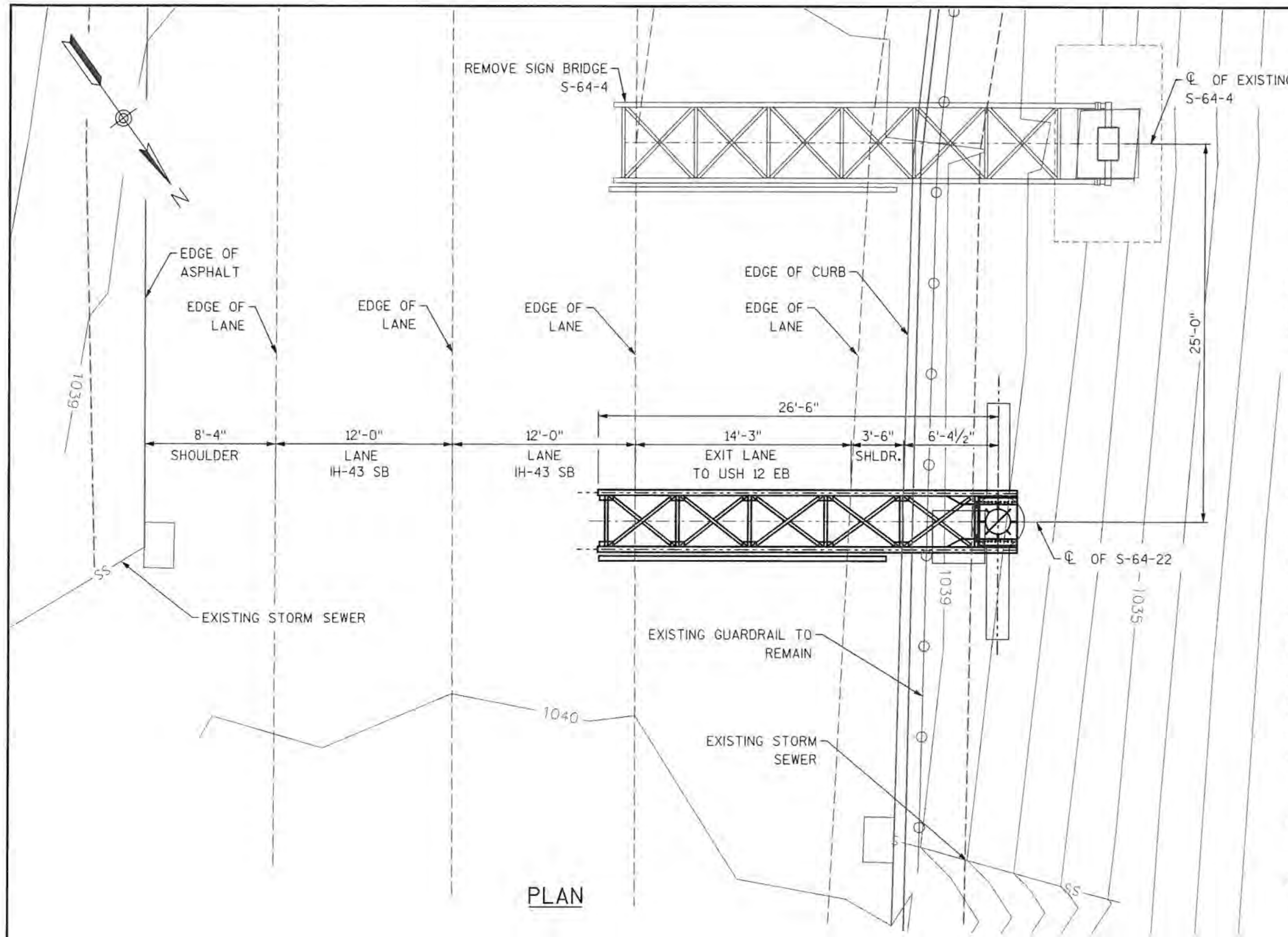
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-860

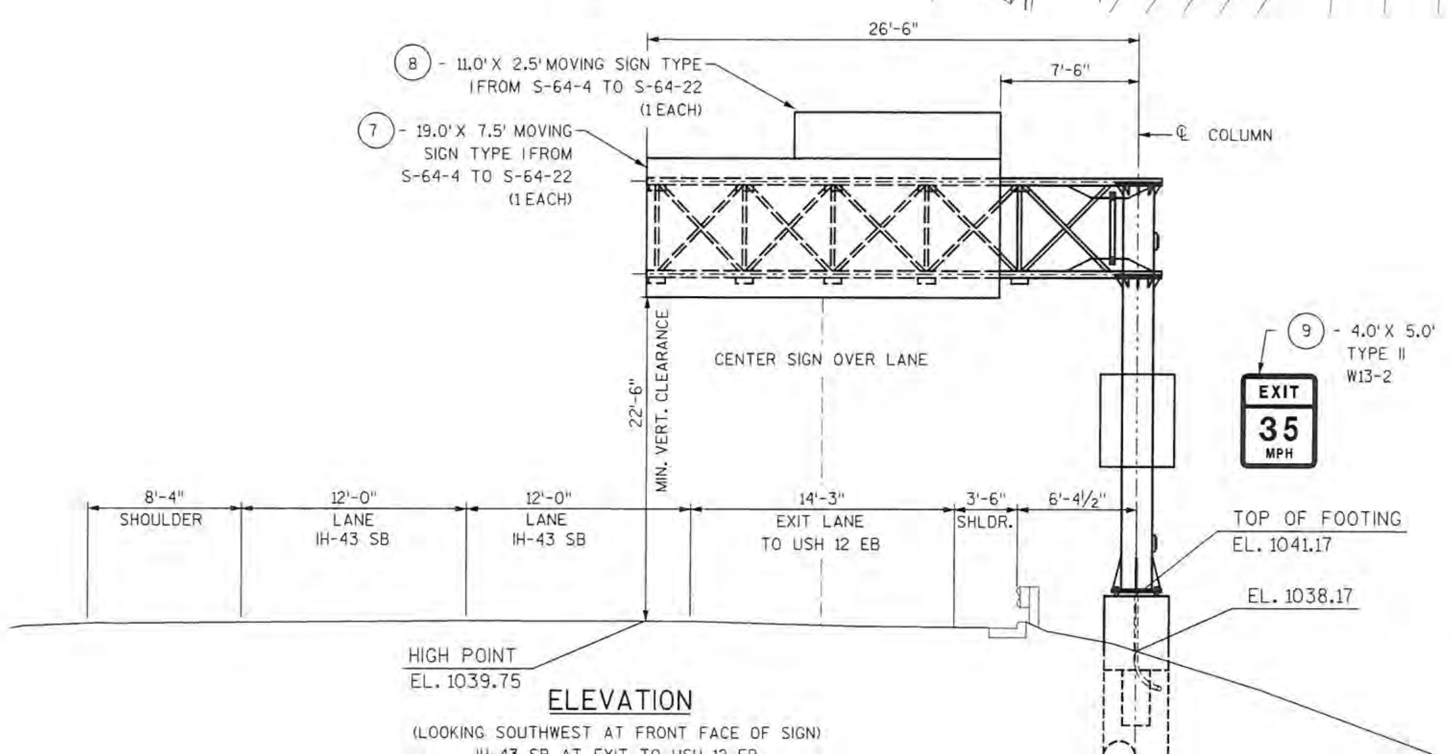
CONST. SPEC. 2014 | DRAWN BY CI | PLANS CK'D. RJW

HANDHOLE DETAILS

FILE NAME : 08A_S-40-860.dgn
PLOT DATE : 10/30/2013
PLOT BY : Veronica Chavez
DRV : Pdf_bw_HS_by level.plt PEN : CEL.TextSub_ScreenControlByLevel.tbl



PLAN



ELEVATION

(LOOKING SOUTHWEST AT FRONT FACE OF SIGN)
IH-43 SB AT EXIT TO USH 12 EB
S-64-22 TO REPLACE S-64-4
PROPOSED STRUCTURE 25' NORTHEAST OF EXISTING SIGN

LIST OF DRAWINGS

1. PLAN & ELEVATION
2. CANTILEVER TRUSS FOOTING
3. GALVANIZED STEEL CANTILEVER SIGN TRUSS
4. GALVANIZED STEEL CANTILEVER SIGN TRUSS DETAILS
5. HANDHOLE DETAILS

ULTIMATE DESIGN STRESSES:

FOUNDATION

CONCRETE: .... f'c = 3,500 psi
HIGH STRENGTH BAR
STEEL REINFORCEMENT: .... fy = 60,000 psi

SIGN BRIDGE

STEEL COLUMN & CHORDS: .... fy = 42,000 psi
(INCLD. HANDHOLE) A.P.I. SPEC 5L GRADE X42
PLATES, BARS, STRUCTURAL ANGLES: .... fy = 36,000 psi
A.S.T.M. A709 GRADE 36
STEEL ANCHOR BOLTS: .... fy = 55,000 psi
A.A.S.H.T.O. M314 GRADE 55
HIGH STRENGTH BOLTS A325 .... fy=92,000 psi
STRUCTURAL MEMBERS GALVANIZED A123
HARDWARE GALVANIZED .... A153 CLASS C

DESIGN DATA

DEAD LOAD - WT. OF SIGN AND SUPPORTING STRUCTURE. NO PROVISIONS HAVE BEEN INCLUDED FOR A CATWALK LOAD, RAILING LOAD OR LIGHTING LOAD.
LIVE LOAD - NONE.
ICE LOAD - 3 P.S.F. TO 1 FACE OF SIGN & AROUND SURFACE OF MEMBERS.
WIND PRESSURE - 90 M.P.H. (3-SECOND GUST SPEED) TO SIGN AREA & EXPOSED MEMBERS.

WIND COMPONENTS	NORMAL	TRANSVERSE
COMBINATION 1	1.0	0.2
COMBINATION 2	0.6	0.3

GROUP LOADS	% OF ALLOWABLE STRESS
1. DEAD	100
2. DEAD + WIND	133
3. DEAD + ICE + ½ (WIND*)	133

*MIN. VALUE OF 25 PSF FOR GR. 3

TYPE I SIGN DESIGN DATA

MAX DESIGN SIGN AREA (SQ. FT.)	MAX. TYPE I SIGN DEPTH
264	12'-0"

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL
636.0100	SIGN SUPPORTS CONCRETE MASONRY	CY	8
636.1000	SIGN SUPPORTS STEEL REINFORCEMENT HS	LB	980
641.1200.02	SIGN BRIDGE CANTILEVERED S-64-022	LS	1
650.6500.03	CONSTRUCTION STAKING STRUCTURE LAYOUT S-64-22	LS	1

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL ELEVATIONS ARE BASED ON NGVD 29 UNLESS OTHERWISE SHOWN OR NOTED.

THE SIGN BRIDGE WAS DESIGNED ACCORDING TO THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES, AND TRAFFIC SIGNALS.

ALL STRUCTURAL STEEL MEMBERS SHALL BE GALVANIZED.

CENTER SIGNS VERTICALLY ON CHORD/TRUSS.

CENTER SIGNS OVER RESPECTIVE LANE IF THEY HAVE A DOWN ARROW.

ALTERNATE DESIGNS ARE NOT ALLOWED.

THE LOCATION OF EXISTING OR PROPOSED UTILITIES AS NOTED ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. UTILITY SERVICES ARE NOT SHOWN.

VERIFY UTILITY INTERFERENCES PRIOR TO CONSTRUCTION.

THE EXACT LOCATION OF THE SIGN BRIDGE SHALL BE DETERMINED BY THE TRAFFIC ENGINEER.

REMOVE EXISTING FOOTINGS 2'-0" BELOW FINISHED GRADE. CONSIDERED INCIDENTAL TO BID ITEM "REMOVING OLD SIGN STRUCTURE S-64-4".

PROVIDE VENTILATING RODENT SCREENS AT ALL COLUMN BASES (NO GROUT). CONSIDERED INCIDENTAL TO BID ITEM "SIGN BRIDGE CANTILEVERED S-64-22".

PROVIDE A ¾" CHAMFER OR 1" RADIUS ON ALL EXPOSED CONCRETE EDGES.

NEW I-BEAMS AND MOUNTING HARDWARE REQUIRED FOR SIGNS SHALL BE INCIDENTAL TO "SIGN BRIDGE CANTILEVERED S-64-22".

PROVIDE HANDHOLES ON UPRIGHT.

PROVIDE AN IDENTIFICATION PLAQUE FOR THE SIGN BRIDGE IN ACCORDANCE WITH SDD STRUCTURE IDENTIFICATION PLAQUES, SIGN BRIDGES AND OVERHEAD SIGN SUPPORT. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "SIGN BRIDGE CANTILEVERED S-64-22".

THE UPPER 12" OF ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE A.A.S.H.T.O. SPECIFICATION AS STATED IN SECTION 641. OF THE WIS. D.O.T. STANDARD SPECIFICATIONS.

SIGNS OR BLANKS SHALL BE INSTALLED ON THE TRUSS AT THE TIME OF ERECTION. BLANKS SHALL BE ¼ THE LENGTH OF THE BRIDGE, 2'-0" DEEPER THAN CENTER TO CENTER OF CHORDS & SHALL BE CENTERED ON THE BRIDGE. SIGNS SHALL BE AS DESIGNATED IN PLANS. SIGN BLANKS AND MOUNTING HARDWARE SHALL BE INCIDENTAL TO "SIGN BRIDGE CANTILEVERED S-64-22".

INSTALL CONDUIT PLUGS IN ALL UNUSED CONDUIT HOLES, CONSIDERED INCIDENTAL TO THE BID ITEM "SIGN BRIDGE CANTILEVERED S-64-22".

WELD TEST AS PER AWS D1.1

(■■) - REPRESENTS THE SIGN NO. REFER TO THE PERMANENT SIGNING SHEETS.

WISCONSIN
VERONICA CHAVEZ DE FERNANDEZ
E-42456
MILWAUKEE
WI
PROFESSIONAL ENGINEER
V. Chavez
10.30.13

SE REGION CONTACT:
TOM HEYDEL (262) 548-6763

BUREAU OF STRUCTURES CONTACT:
WILLIAM DREHER (608) 266-8489

CONSULTANT CONTACT:
VERONICA CHAVEZ DE FERNANDEZ (414) 282-6905

NO.	DATE	REVISION	BY

COLLINS ENGINEERS INC.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher KAR 12/12/13
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE S-64-22

IH-43

COUNTY WALWORTH | ~~TOWN~~/CITY/~~VILLAGE~~ ELKHORN

DESIGN SPEC. AASHTO STD. SPECIFICATIONS

DESIGNED BY VC | DESIGN CK'D. NJH | DRAWN BY CI | PLANS CK'D. RJW

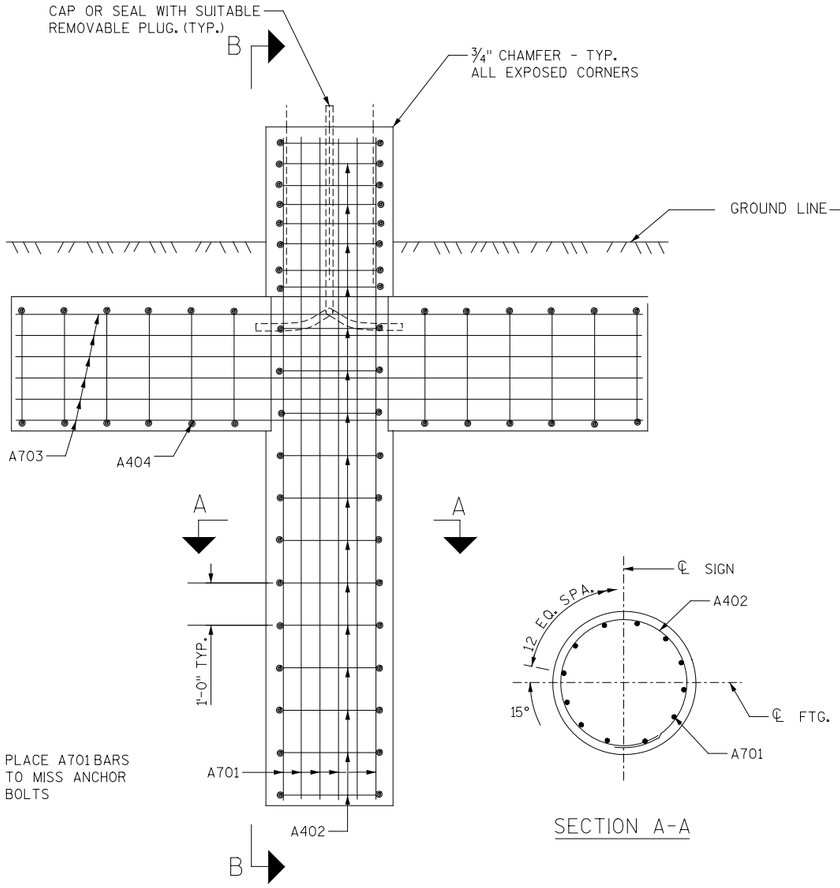
PLAN & ELEVATION

SHEET 1 OF 5

8

FILE NAME 106C_S-64-22.DGN
PLOT DATE 10/30/2013
PLOT BY : Veronica Chavez
DRV : Pdf_bw_HS_by_level.plt
PEN : CD_TextSub_ScreenControlByLevel.tbl

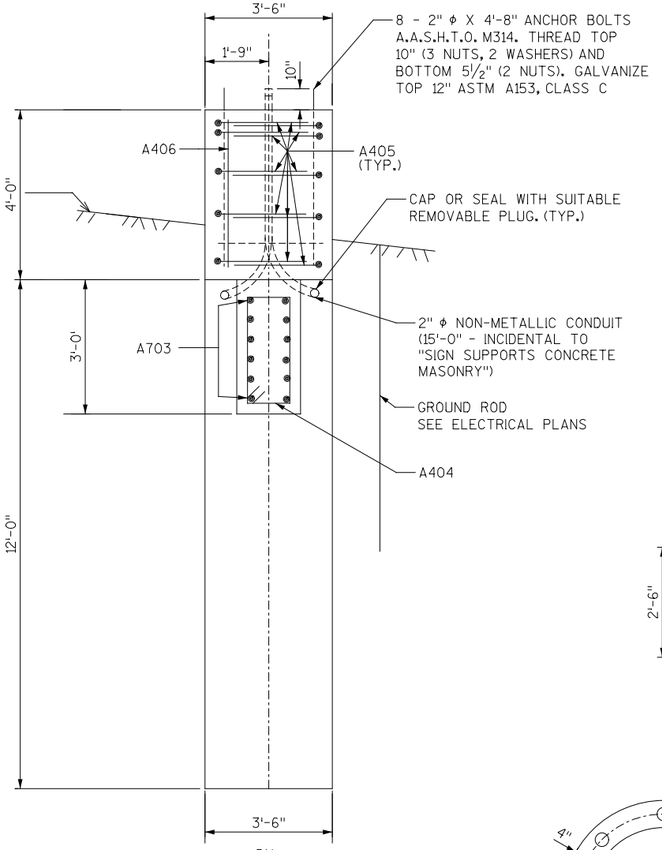
STATE PROJECT NUMBER
1000-20-66



ELEVATION

(8 C.Y.)

SECTION A-A



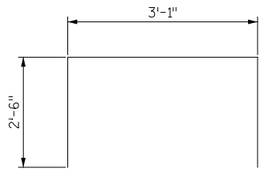
SECTION B-B

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

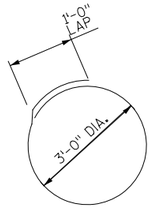
BILL OF BARS

980 LB.

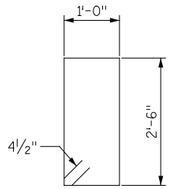
BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	CUT. DIAG.	BUN-DLE	LOCATION
A701		12	15'-6"				FOOTING - COLUMN/TOP
A402		16	10'-6"	X			FOOTING - COLUMN/TOP
A703		12	15'-0"				FOOTING - WINGS
A404		12	7'-6"	X			FOOTING - WINGS
A405		10	7'-11"	X			FOOTING - TOP
A406		4	3'-6"				FOOTING - TOP - COLUMNS



A405

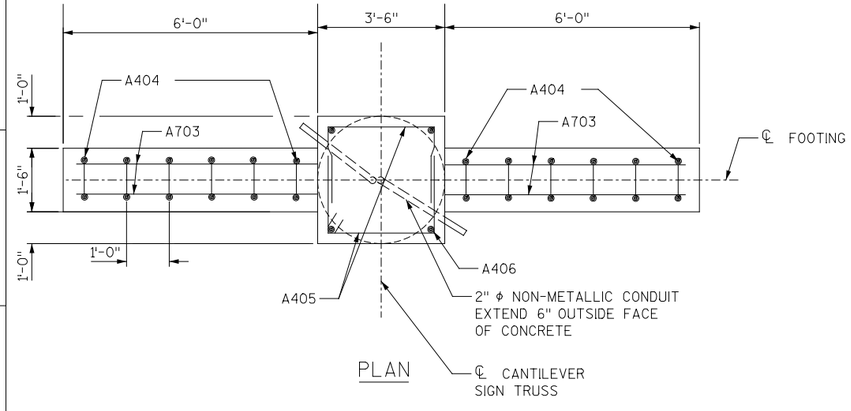


A402

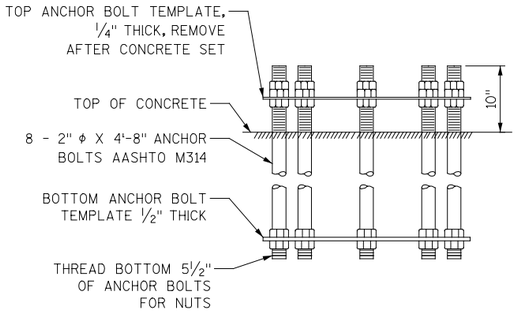


A404

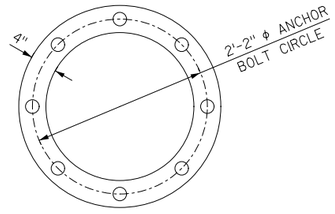
(STIRRUP)



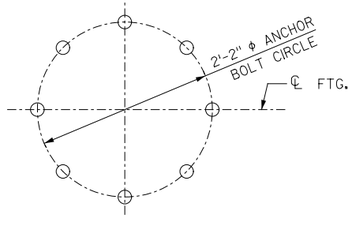
PLAN



ANCHOR BOLT DETAILS



TOP VIEW OF TOP & BOTTOM TEMPLATES



GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.
BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 3" CLEAR UNLESS DETAILED OTHERWISE.

ALLOWABLE DESIGN STRESSES

CONCRETE MASONRY — f'c=3,500 P.S.I.
HIGH STRENGTH BAR STEEL REINFORCEMENT, GRADE 60 — fy=60,000 P.S.I.
ANCHOR BOLTS A.A.S.H.T.O. M314 — fy=55,000 P.S.I.

FOUNDATION DATA

ALLOWABLE SOIL BEARING PRESSURE = 2T/SQ. FT.

TOTAL ESTIMATED QUANTITIES (1 FTG.)

SIGN SUPPORTS CONCRETE MASONRY — 8 C.Y.
SIGN SUPPORTS STEEL REINFORCEMENT HS — 980 LB.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-64-22

CONST. SPEC. 2014	DRAWN BY CI	PLANS CK'D. RJW

CANTILEVER TRUSS FOOTING

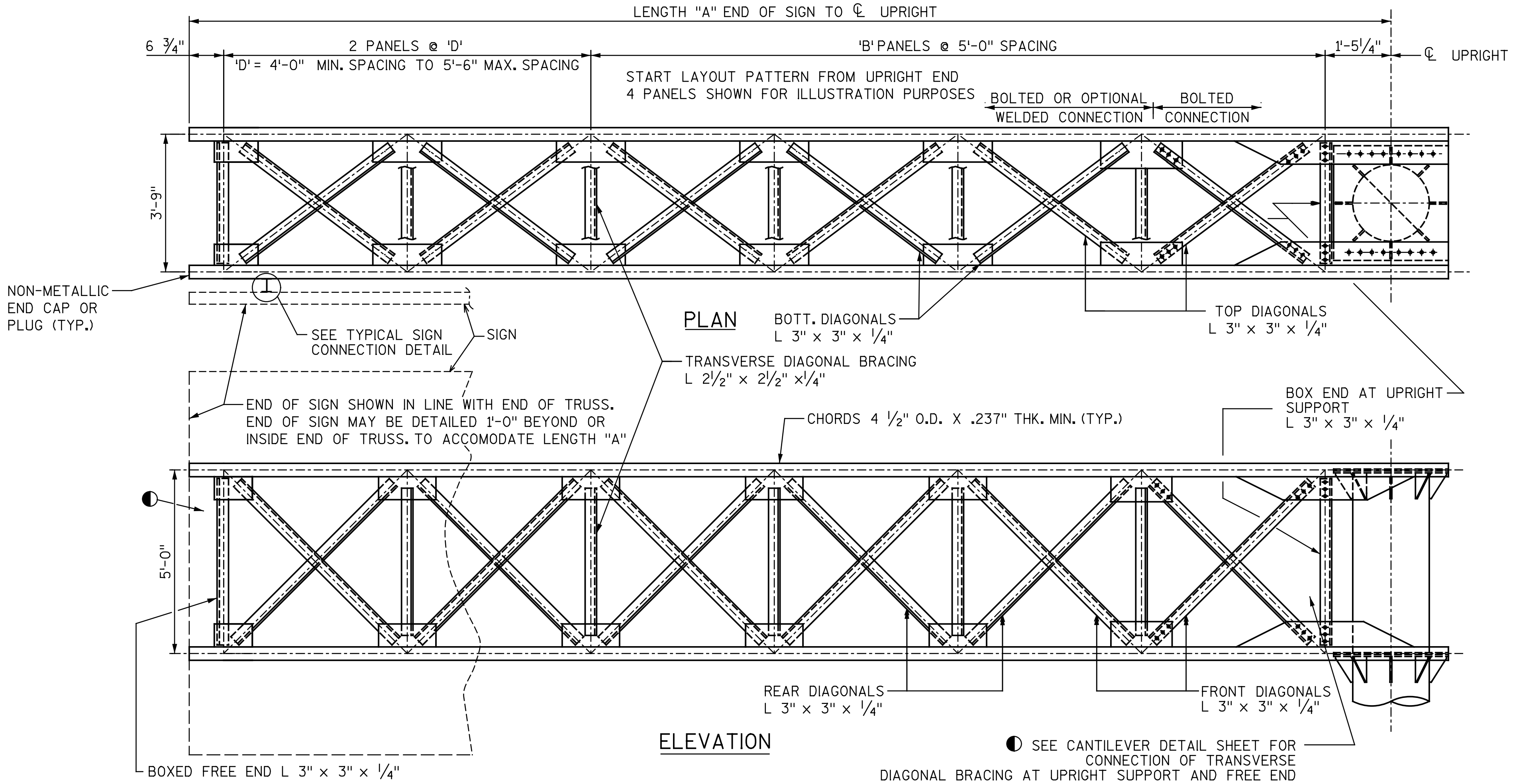
SHEET 2 OF 5

56

8

8

FILE NAME :08C_S-64-22.DGN
PLOT DATE :10/30/2013
PLOT BY : Veronica Chavez-Bl
DRV :Pdf_bw_HS.by level.plt PEN :CELTextSub.ScreenControlByLevel.tbl



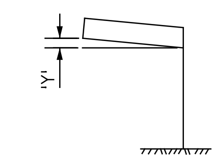
GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

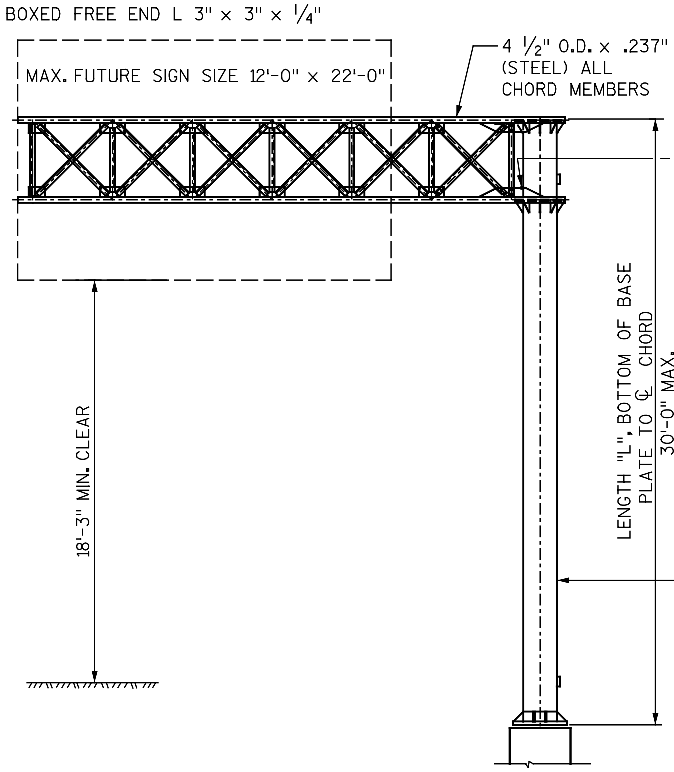
PREFABRICATE CAMBER INTO THE HORIZONTAL SUPPORT PROVIDING AN AMOUNT "Y" AT END OF TRUSS SHOWN IN "CAMBER DIAGRAM". DO NOT RAKE VERTICAL UPRIGHT BY ADJUSTMENT OF LEVELING NUTS.

WELDED CONNECTIONS CAN BE USED IN LIEU OF BOLTED CONNECTIONS IF UNIT CAN BE GALVANIZED IN ONE PIECE.

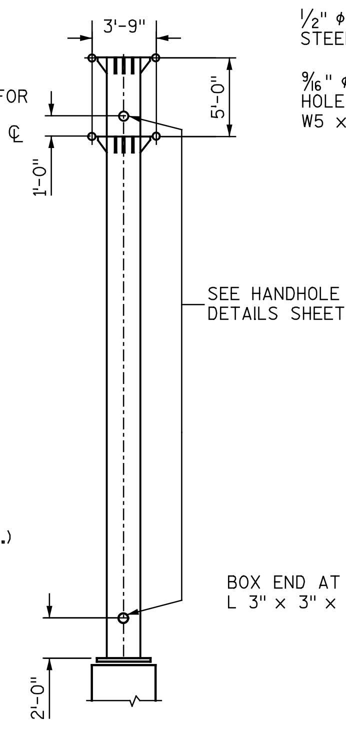
STRUCTURE	"A"	"L"	"B"	"D"	"Y"
S-64-22	26'-6"	27'-1 1/2"	3	4'-9"	2 3/8"



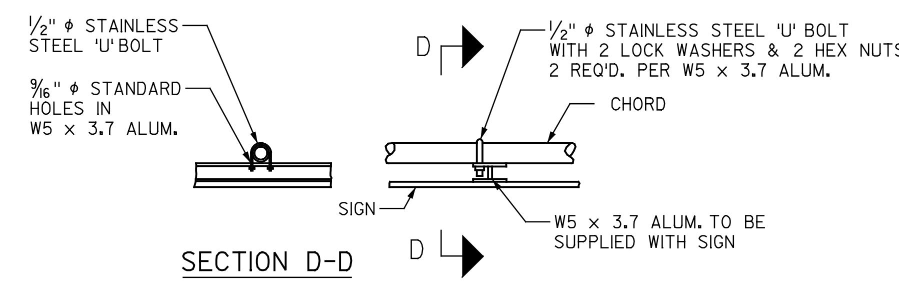
CAMBER DIAGRAM



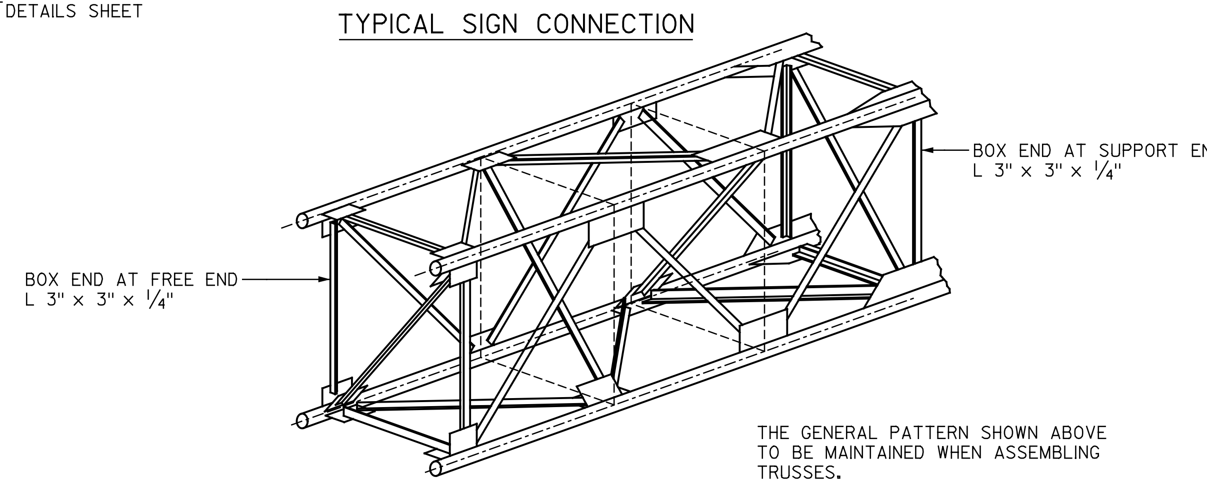
ELEVATION



END VIEW



TYPICAL SIGN CONNECTION



THE GENERAL PATTERN SHOWN ABOVE TO BE MAINTAINED WHEN ASSEMBLING TRUSSES.

TYPICAL TRUSS SECTION

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-64-22

CONST. SPEC. 2014 | DRAWN BY CI | PLANS CK'D. RJW

GALVANIZED STEEL CANTILEVER SIGN TRUSS

SHEET 3 OF 5

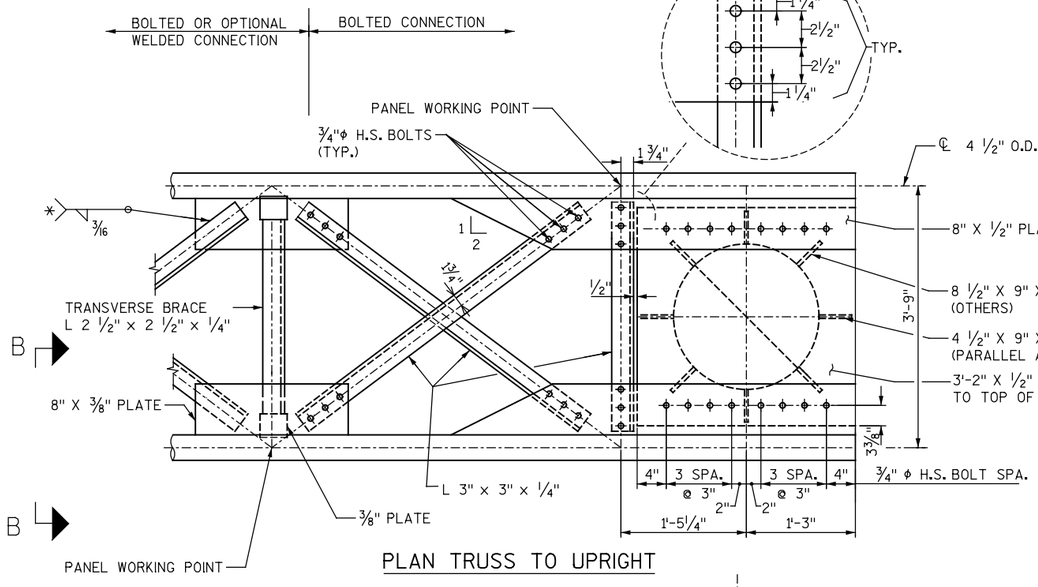
8

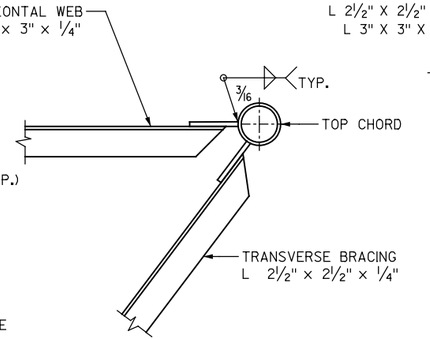
8

FILE NAME : 08C_S-64-22.DGN
PLOT DATE : 10/30/2013
PLOT BY : Veronica Chavezv8l
DRV : Pdf_bw_HS_by levelplt PEN : CEL.TextSub_ScreenControlByLevel.tbl

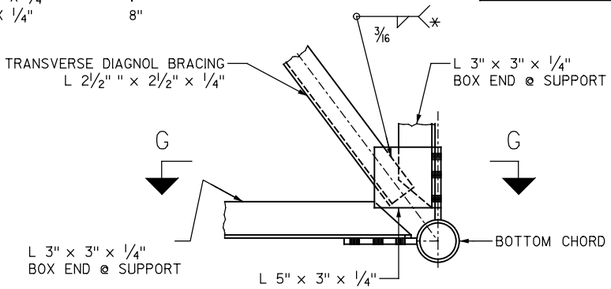
STATE PROJECT NUMBER

1000-20-66



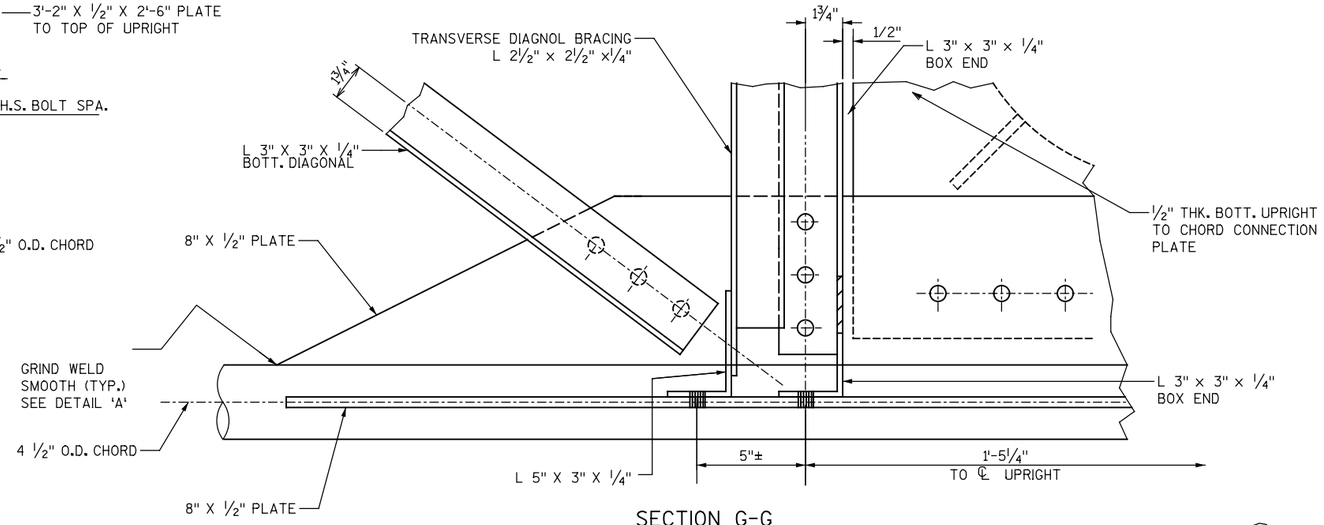


* ANGLE	WELD LENGTH (MIN.)
L 2 1/2" X 2 1/2" X 1/4"	7"
L 3" X 3" X 1/4"	8"



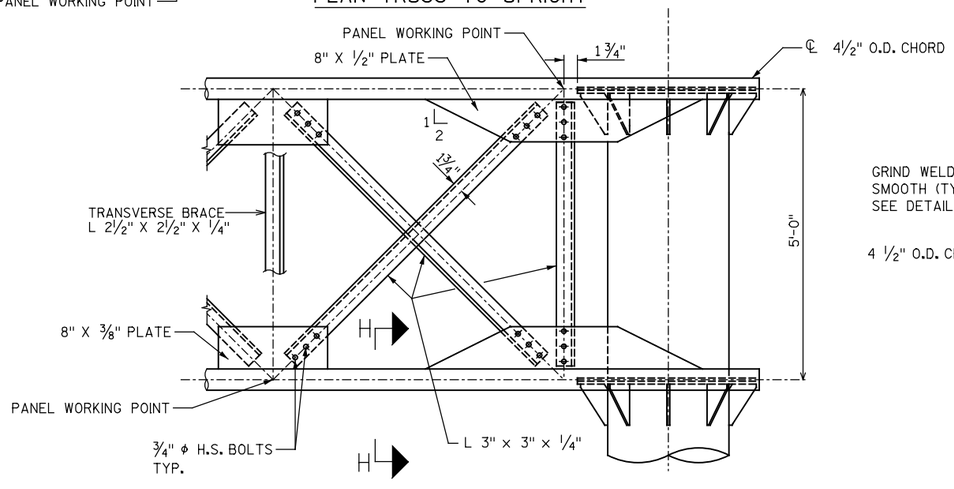
SECTION B-B

SECTION H-H

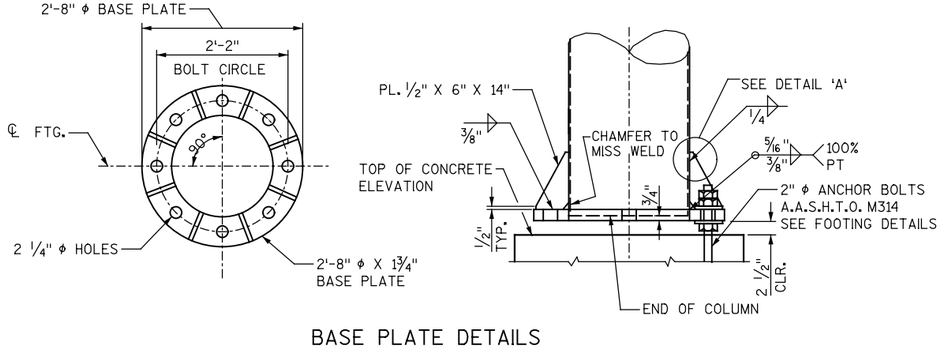


SECTION G-G

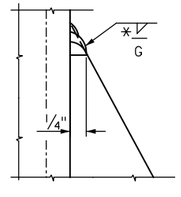
PLAN TRUSS TO UPRIGHT



ELEVATION TRUSS TO UPRIGHT

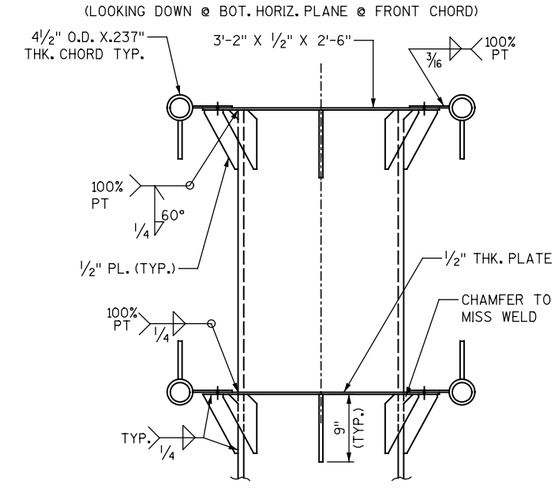


BASE PLATE DETAILS

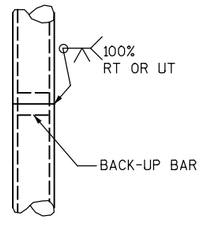


DETAIL 'A'

* SIZE AS NEEDED



END VIEW TRUSS TO UPRIGHT



SEPARATE OPTIONAL SPLICE FROM GUSSET PLATES BY 6" MIN.

OPTIONAL COLUMN OR CHORD SPLICE DETAIL

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-64-22

CONST. SPEC. 2014	DRAWN BY CI	PLANS CK'D. RJW

GALVANIZED STEEL CANTILEVER SIGN TRUSS DETAILS

SHEET 4 OF 5

58

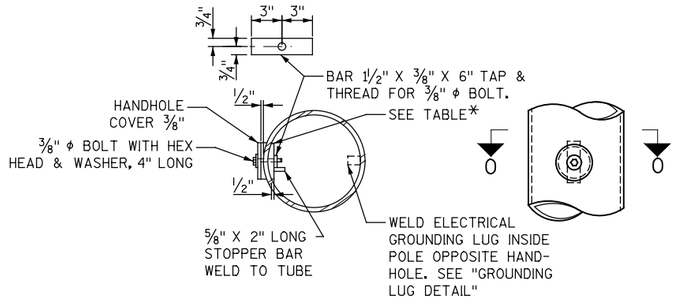
8

8

FILE NAME :\08C.S-64-22.DGN
PLOT DATE :10/30/2015
PLOT BY : Veronica Chavez
DRV :Pdf_bw_HS.by level.plt PEN :CELTextSub.ScreenControlByLevel.tbl

STATE PROJECT NUMBER

1000-20-66



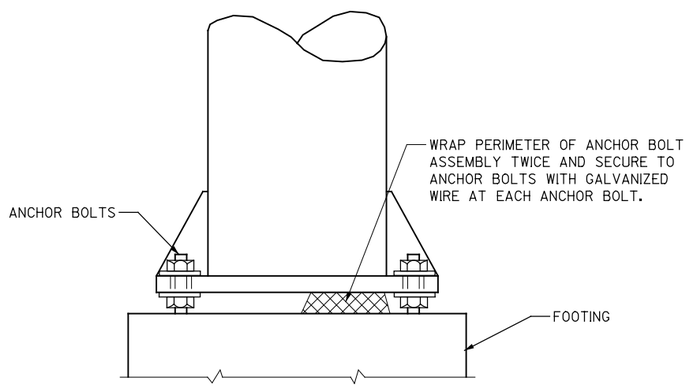
SECTION O-O HANDHOLE DETAILS

HANDHOLE NOTES

HANDHOLES SHALL BE LOCATED IN ONE COLUMN OF THE SIGN BRIDGE STRUCTURE IF ELECTRICALLY OPERATED DEVICES ARE INSTALLED ON/IN THE STRUCTURE. COLUMNS WITH HANDHOLES SHALL BE NEAR THE ELECTRICAL SERVICE. THE CONTRACTOR SHALL VERIFY THE LOCATION OF THE ELECTRICAL SERVICE ENTRANCE WITH THE DISTRICT TRAFFIC SECTION PRIOR TO FABRICATION OF THE SIGN BRIDGE COLUMNS AND MEMBERS. CONDUIT (AS REQ'D.) SHALL BE LOCATED, PLACED AND SIZED AS SHOWN ON THE ELECTRICAL DETAIL PLAN SHEETS.

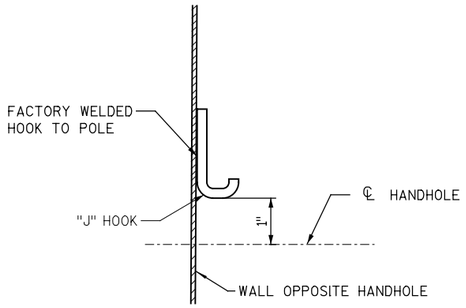
*

UPRIGHT DIAM.	HANDHOLE PIPE O.D. X MIN. THK.
SIZE UP TO AND INCLD. 16" X .375"	5.562" X .500"
GREATER THAN 16" X .375" TO AND INCLD. 24" X .562"	6.625" X .562"



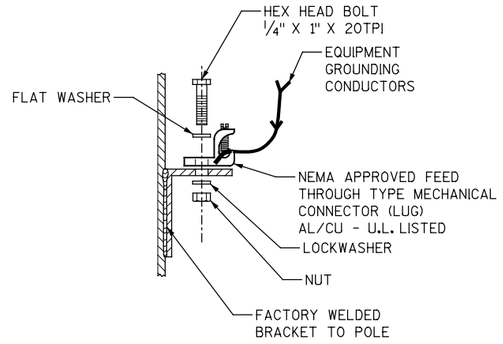
RODENT SCREEN

(ONLY REQ'D. WHEN ELECTRICAL DEVICES ARE INSTALLED)



TYPICAL "J" HOOK LOCATION

THE "J" HOOK SHALL BE FACTORY WELDED TO THE INSIDE OF ALL COLUMNS CONTAINING ELECTRICAL WIRING. THE "J" HOOK SHALL BE ATTACHED ABOVE THE CENTERLINE OF THE UPPER HANDHOLE AND MOUNTED DIRECTLY OPPOSITE THE HANDHOLE AS SHOWN IN THE DRAWING.



GROUNDING LUG DETAIL

NUT, BOLT, AND WASHERS SHALL BE STAINLESS STEEL.

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-64-22

CONST. SPEC. 2014	DRAWN BY CI	PLANS CK'D. RJW

HANDHOLE DETAILS 59

SHEET 5 OF 5

FILE NAME :\08C_S-64-22.DGN
PLOT DATE :10/30/2013
PLOT BY : Veronica Chavez\tl
DRV :Pdf_bw_HS.by level.pit PEN :CEL.TextSub.ScreenControlByLevel.tbl

Wisconsin Department of Transportation

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