WKE

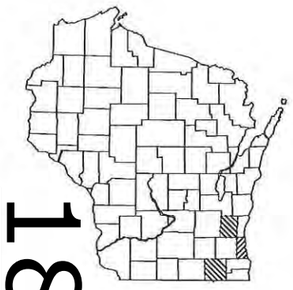
MAY 2013

PROJECT ID: 1000-19-89

COUNTY: MILWAUKEE

ORDER OF SHEETS

TOTAL SHEETS = 100



18

N

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

SIGN BRIDGE REPLACEMENT 2013

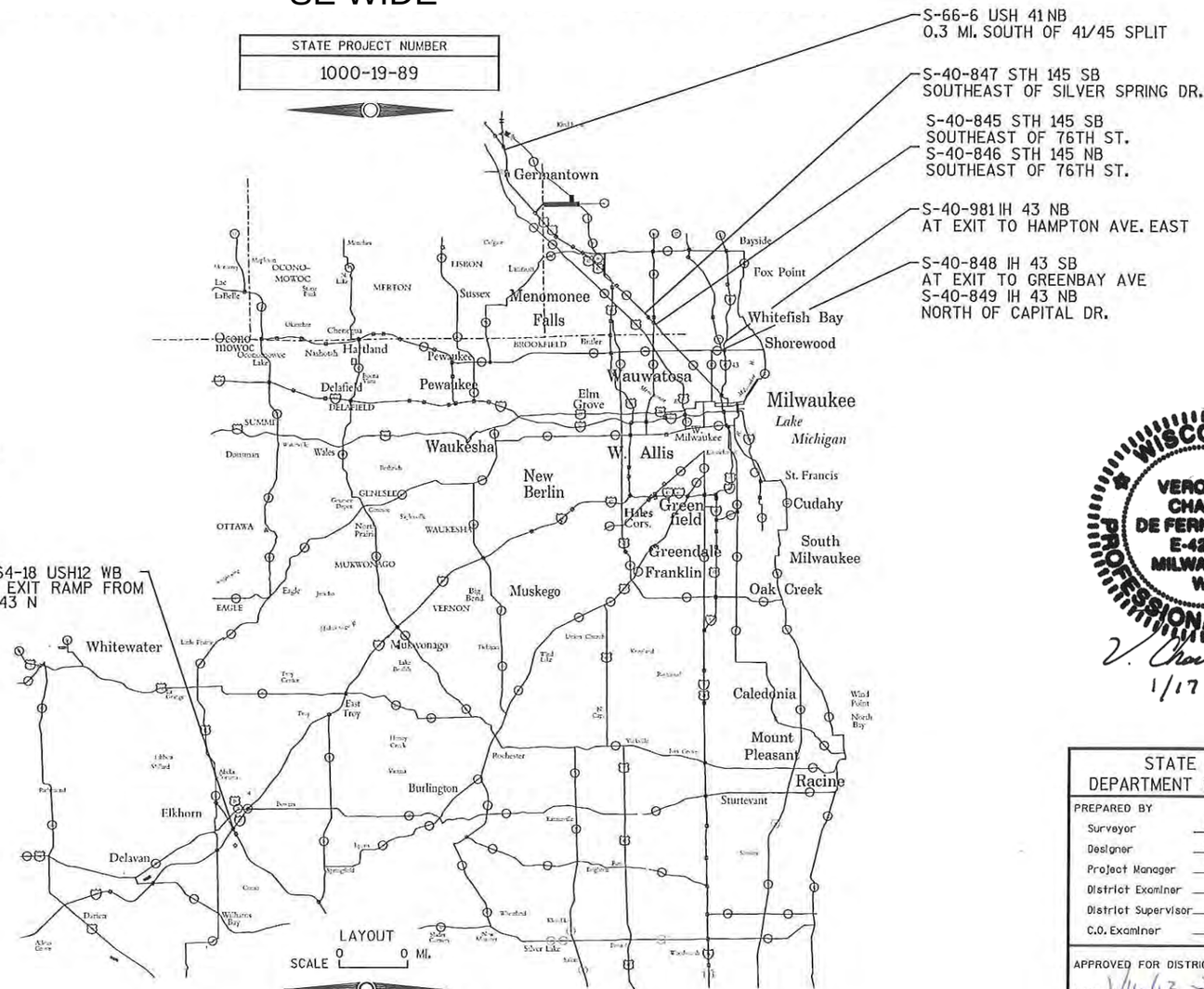
VARIOUS HIGHWAYS

SE WIDE

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1000-19-89		

STATE PROJECT NUMBER

1000-19-89



TOTAL NET LENGTH OF CENTERLINE = 0.00 MI.

DESIGN DESIGNATION

		STH 145	I-43	USH 12	USH 41
A.D.T. (2009)	=	21300-NB/11200-SB	57000-NB/57000-SB	3600-NB (COLLECTOR)	36300-NB/36300-SB
A.D.T.	=	N/A	N/A	N/A	N/A
D.H.V.	=	N/A	N/A	N/A	N/A
D.	=	N/A	N/A	N/A	N/A
T. %	=	6%	15%	15%	15%
DESIGN SPEED	=	55	60	70	70
ESALS	=	N/A	N/A	N/A	N/A

CONVENTIONAL SYMBOLS

PLAN

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

PROFILE

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

UTILITIES

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

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

V. Chavez de Fernandez

1/17/2013

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

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

APPROVED FOR DISTRICT OFFICE

DATE: 1/16/13 Tom Heydel (Signature)

E

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.

UTILITIES CONTACT LIST

MILWAUKEE COUNTY HIGHWAY DIVISION
ELECTRICAL SHOP
ATTN: STANLEY JACKSON
10320 W. WATERTOWN PLANK RD.
WAUWATOSA, WI. 53226
(414) 257-6566

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.-A279
MILWAUKEE WI 53203
414-221-4578
DAN.SANDE@WE-ENERGIES.COM

WISCONSIN DEPARTMENT OF TRANSPORTATION
SE REGION LIGHTING ENGINEER
MR MATT PFEIFER
414-266-1154
MATTHEW.PFEIFER@DOT.GOV

WISCONSIN DEPARTMENT OF TRANSPORTATION
TRAFFIC OPERATIONS CENTER
MR JEFF MADISON
433 W ST PAUL AVE, STE 300
MILWAUKEE, WI 53203
414-255-3723
JEFFERY.MADISON@DOT.WI.GOV

DNR CONTACT LIST

OZAUKEE COUNTY
JOANNE KLINE
2300 N. MARTIN LUTHER KING DR.
MILWAUKEE, WI 53212
(414) 263-8756

MILWAUKEE COUNTY
MIKE THOMPSON
2300 N. MARTIN LUTHER KING DR.
MILWAUKEE, WI 53212
(414) 263-8648

WASHINGTON AND WAUKESHA COUNTY
MAUREEN MILLMANN
2300 N. MARTIN LUTHER KING DR.
MILWAUKEE, WI 53212
(414) 263-8613

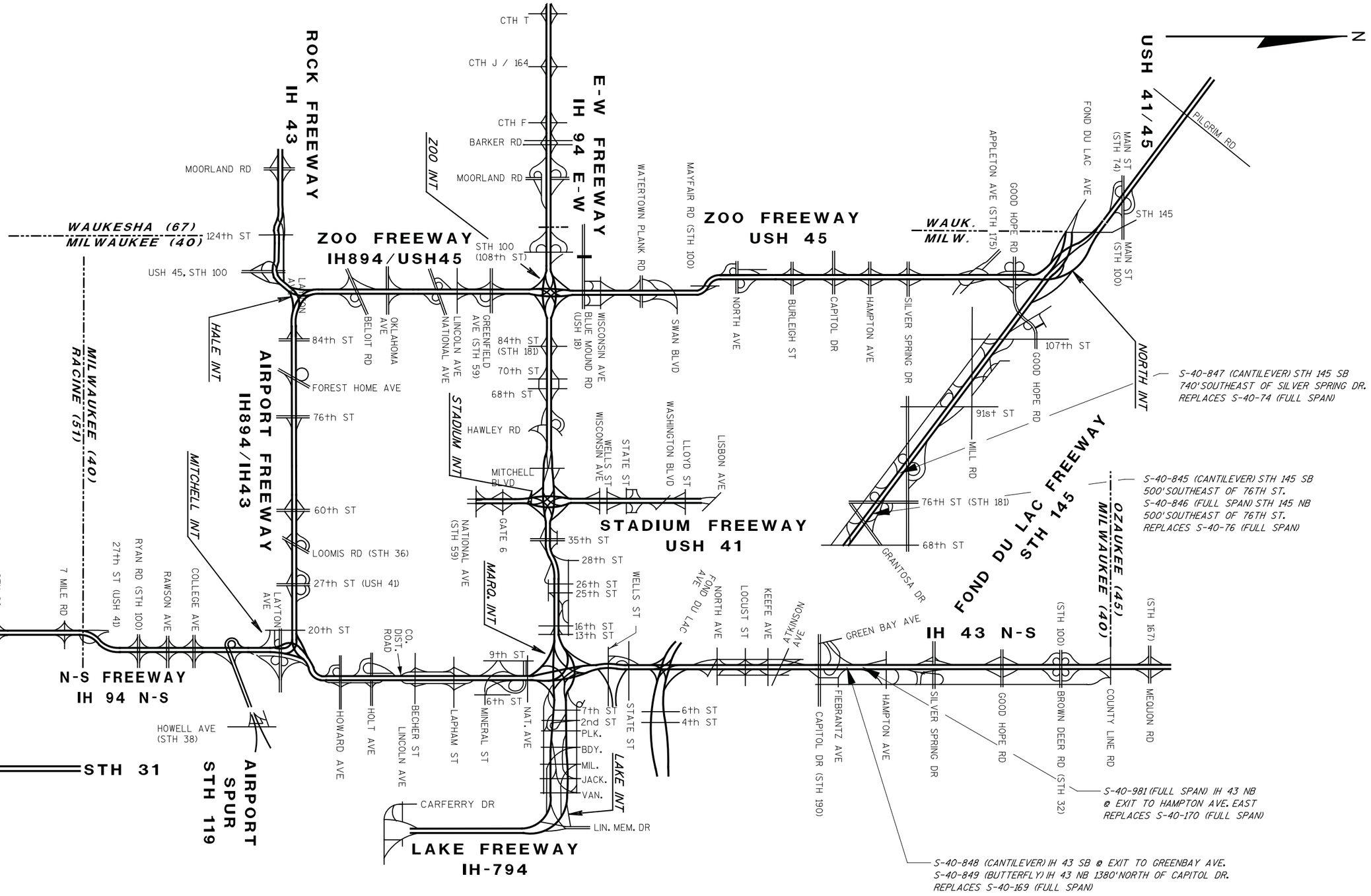
KENOSHA, RACINE, WALWORTH COUNTY
CRAIG WEBSTER
141 N W BARSTOW ST., RM. 180
WAUKESHA, WI 53187
(262) 574-2141

DIGGERS HOTLINE

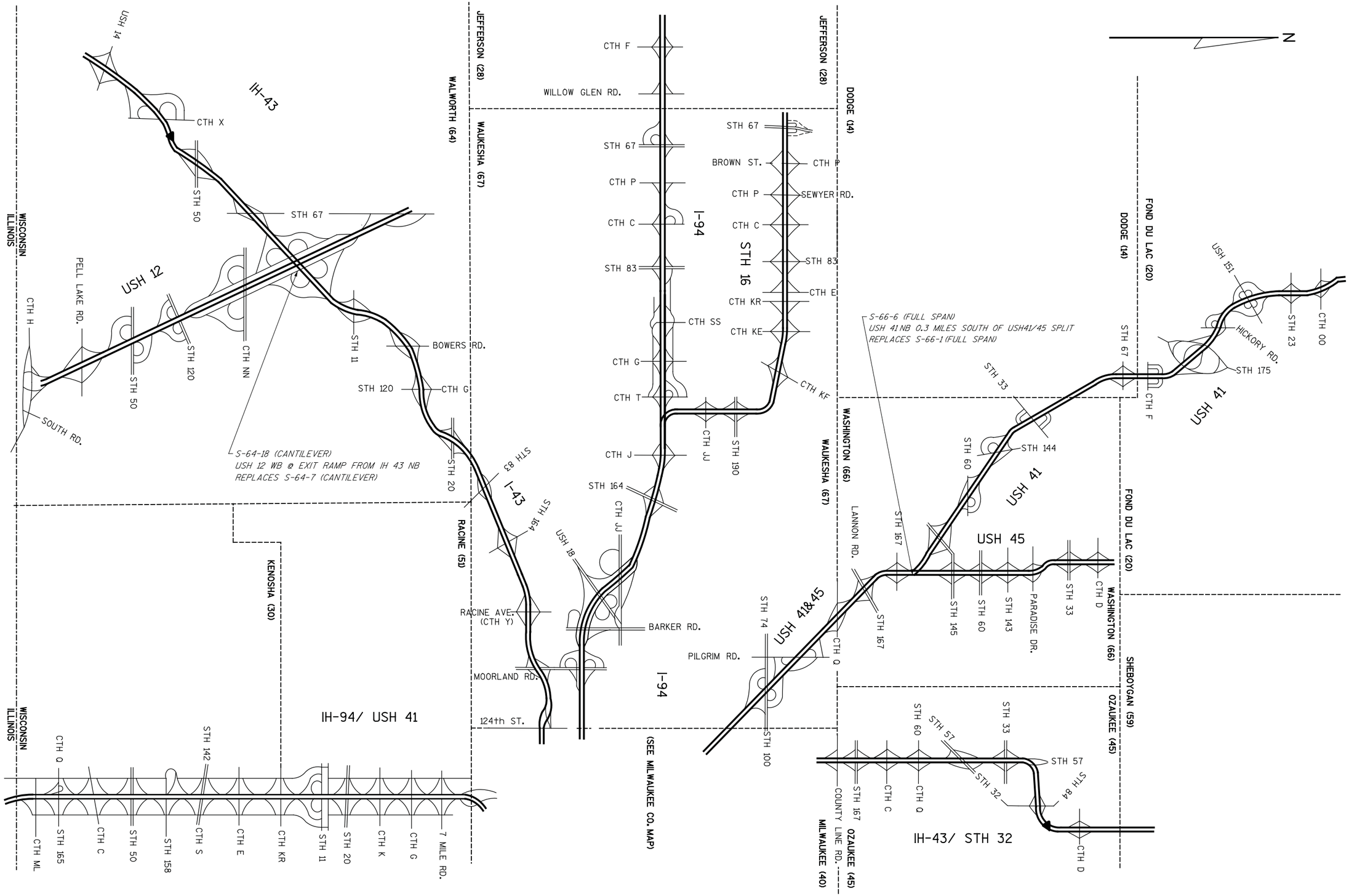
Toll Free (800) 242-8511 or (811)
Hearing Impaired TDD (800) 542-2289
www.DiggersHotline.com

DESIGN CONTACT

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



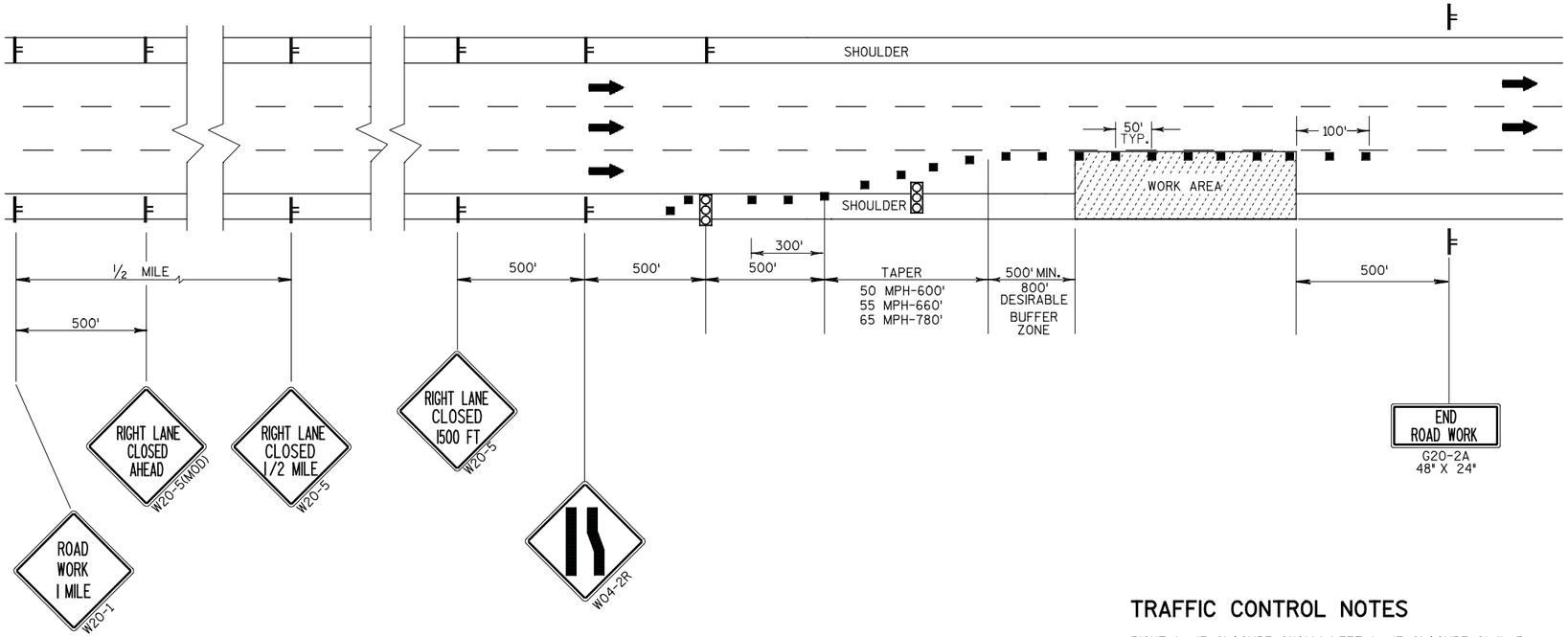
PROJECT NO: 1000-19-89	HWY: IH-43 & STH 145	COUNTY: MILWAUKEE	OVERVIEW	SHEET 3	E



PROJECT NO: 1000-19-89	HWY: USH 12 AND USH 41	COUNTY: VARIOUS	OVERVIEW	SHEET 4	E

2

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.

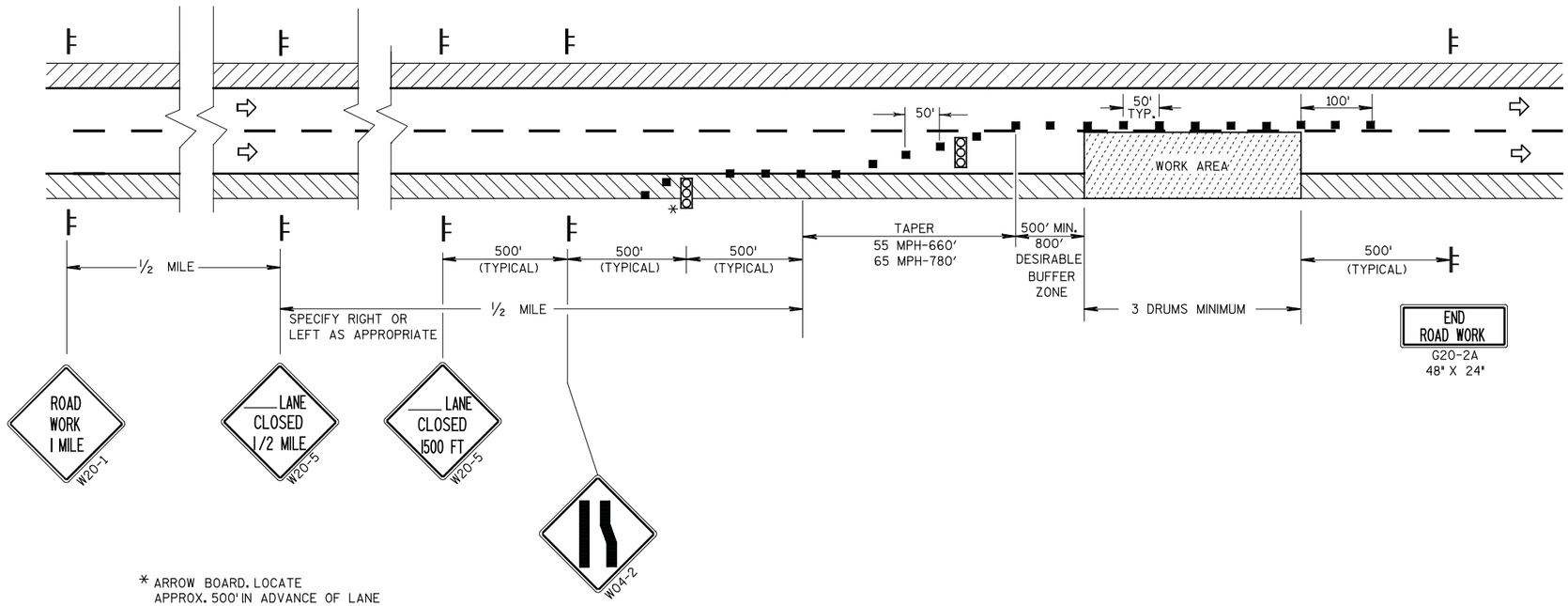
"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

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.



* ARROW BOARD. LOCATE APPROX. 500' IN ADVANCE OF LANE TAPER OR POSITION FOR OPTIMUM VISIBILITY.

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

LEGEND

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

SPECIAL APPLICATION NOTES

THE TAPER SHOULD EXTEND ACROSS THE SHOULDER, UNLESS DOING SO WOULD GREATLY CONFLICT WITH THE WORK OPERATION.

ALL 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.

GENERAL NOTES FOR TRAFFIC CONTROL

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

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

DURING HOURS OF DARKNESS, TYPE "C" (STEADY BURN) LIGHTS SHALL BE PROVIDED ON ALL CHANNELIZING DEVICES IN TAPERS. BARRICADES SHIELDING AN ISOLATED HAZARD, SHALL BE EQUIPPED WITH TYPE "A" (LOW-INTENSITY FLASHING) LIGHTS.

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 SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

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

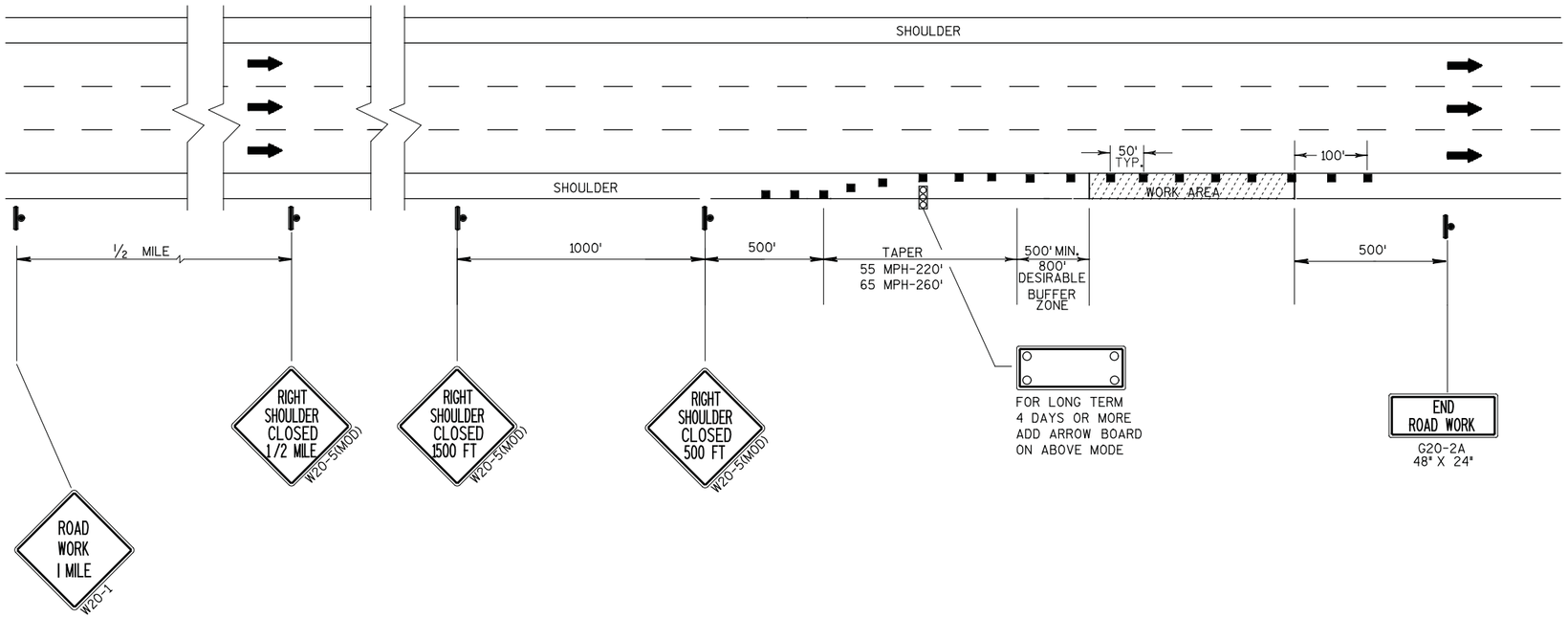
IF LANE CLOSURE IS MORE THAN 1 MILE, PLACE A TYPE III BARRICADE APPROXIMATELY EVERY 1000' ACROSS THE CLOSED LANE TO HELP ENFORCE THE DRUM LINE.

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.

RIGHT LANE CLOSURE SHOWN, LEFT LANE CLOSURE SIMULAR.

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.

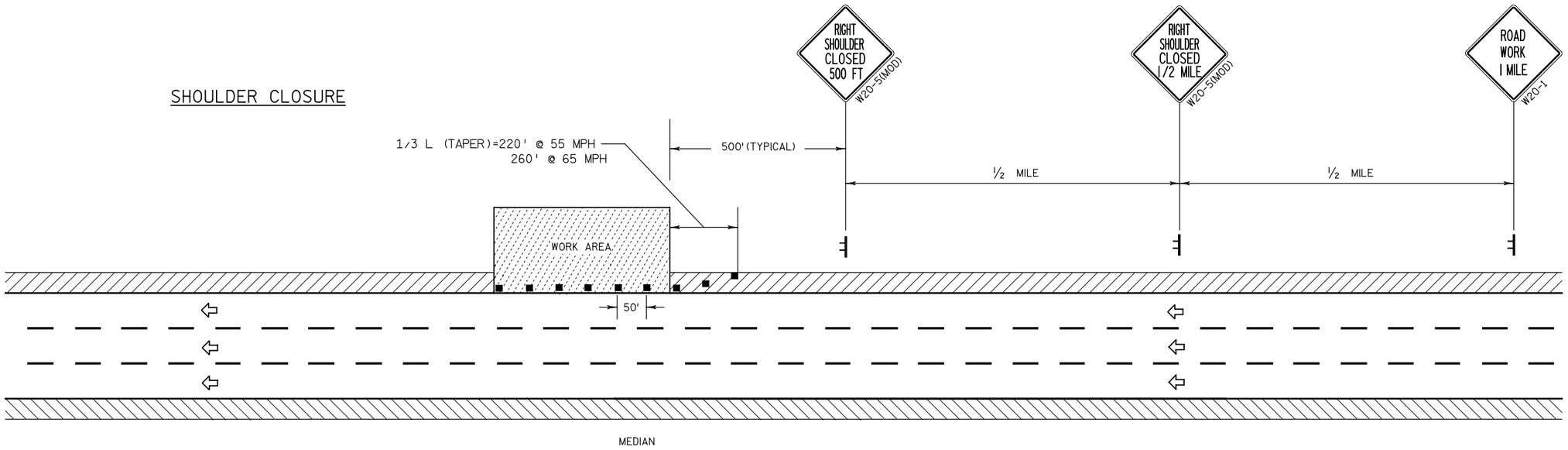
"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

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.

2

SHOULDER CLOSURE



LEGEND

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

SPECIAL APPLICATION NOTES

THE TAPER SHOULD EXTEND ACROSS THE SHOULDER, UNLESS DOING SO WOULD GREATLY CONFLICT WITH THE WORK OPERATION.

ALL 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.

GENERAL NOTES FOR TRAFFIC CONTROL

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

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

DURING HOURS OF DARKNESS, TYPE "C" (STEADY BURN) LIGHTS SHALL BE PROVIDED ON ALL CHANNELIZING DEVICES IN TAPERS. BARRICADES SHIELDING AN ISOLATED HAZARD, SHALL BE EQUIPPED WITH TYPE "A" (LOW-INTENSITY FLASHING) LIGHTS.

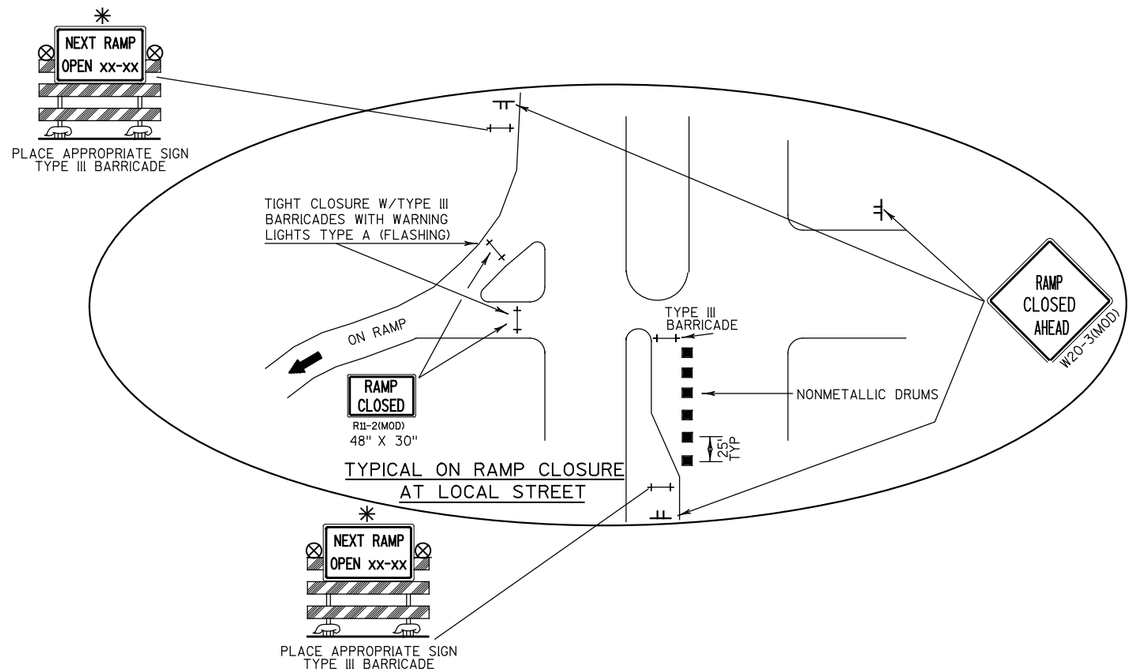
WHEN A RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS DIRECTED BY THE ENGINEER.

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

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

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

TRAFFIC CONTROL NOTES

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

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

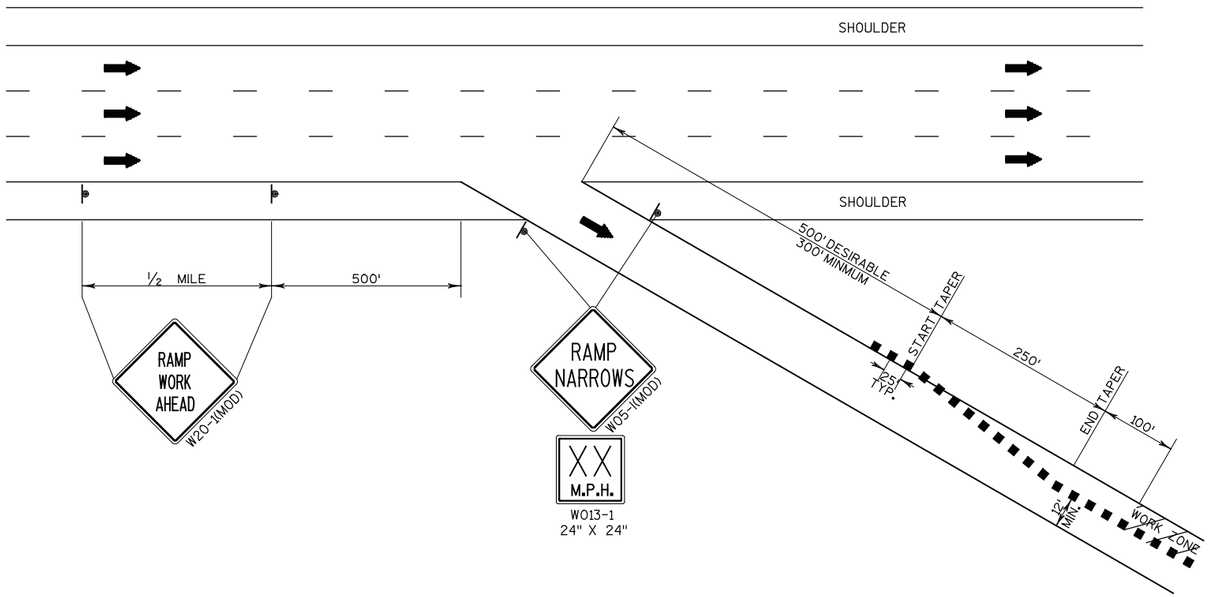
"WO" SIGNS ARE THE SAME AS "W" SIGNS
EXCEPT THE BACKGROUND IS ORANGE.

LEGEND

- ■ TRAFFIC CONTROL DEVICE
- ⊢ SIGN ON TEMPORARY SUPPORT FOR SHORT TERM 3 DAYS OR LESS
- ↕ TYPE III BARRICADE
- ⊗ WARNING LIGHT, TYPE A (FLASHING)

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.

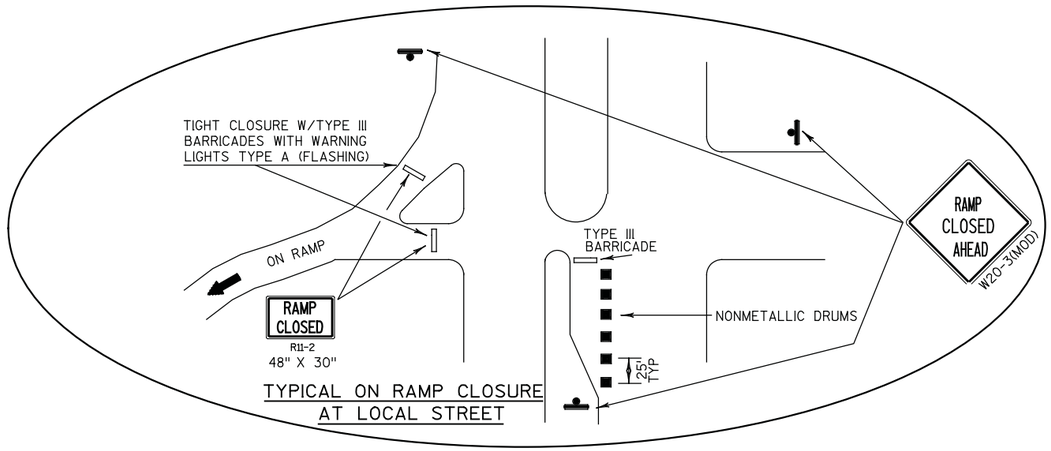
"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

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.

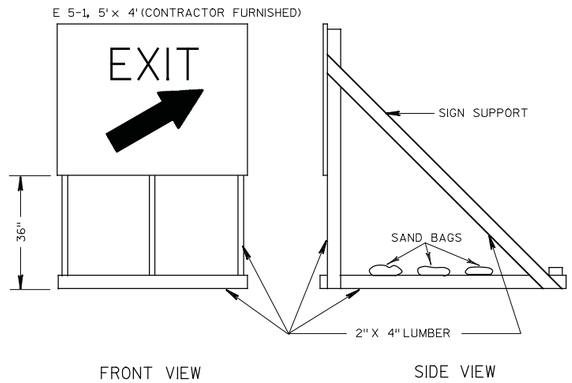
ALL SHORT TERM LANE CLOSURE SIGNS SHALL BE REMOVED OR COVERED AND ALL ARROWBOARDS AND DEVICES REMOVED BEYOND THE SHOULDER WHEN THE WORK IS NOT IN PROGRESS AND THE ROADWAY IS RESTORED TO A SAFE OPERATING CONDITION.

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.



TYPICAL ON RAMP CLOSURE
AT LOCAL STREET



MOUNTING DETAIL FOR TEMPORARY EXIT SIGN

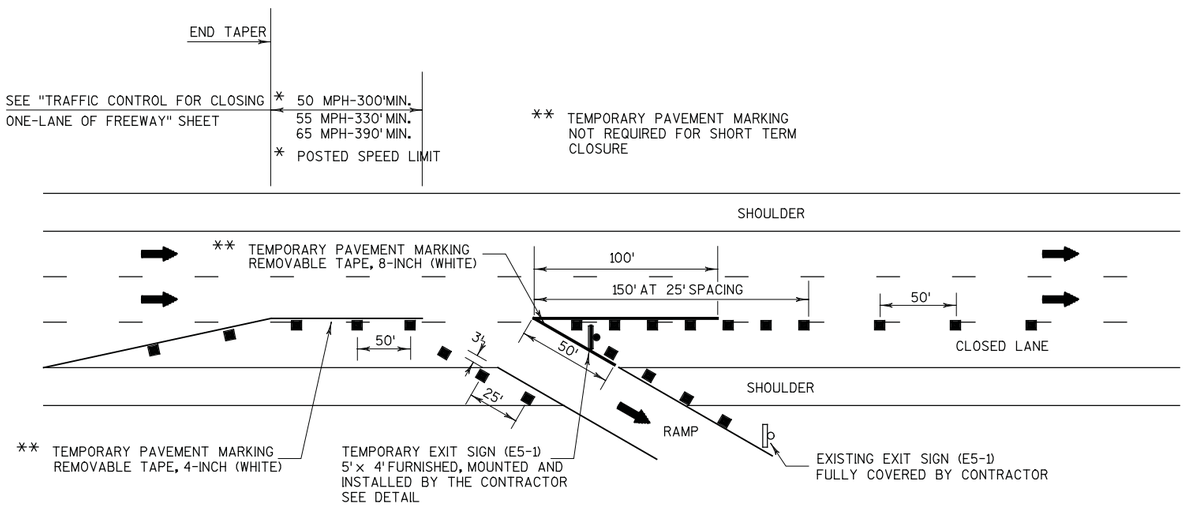
GENERAL NOTES

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

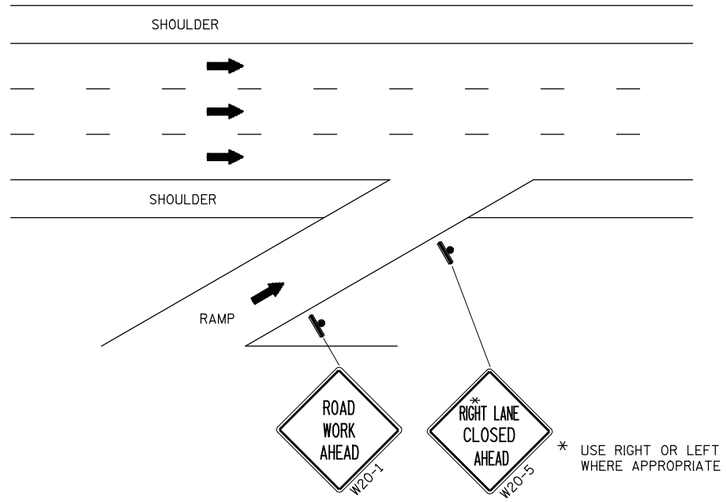
■ — DRUM

— SIGN ON TEMPORARY SUPPORT



EXIT RAMP

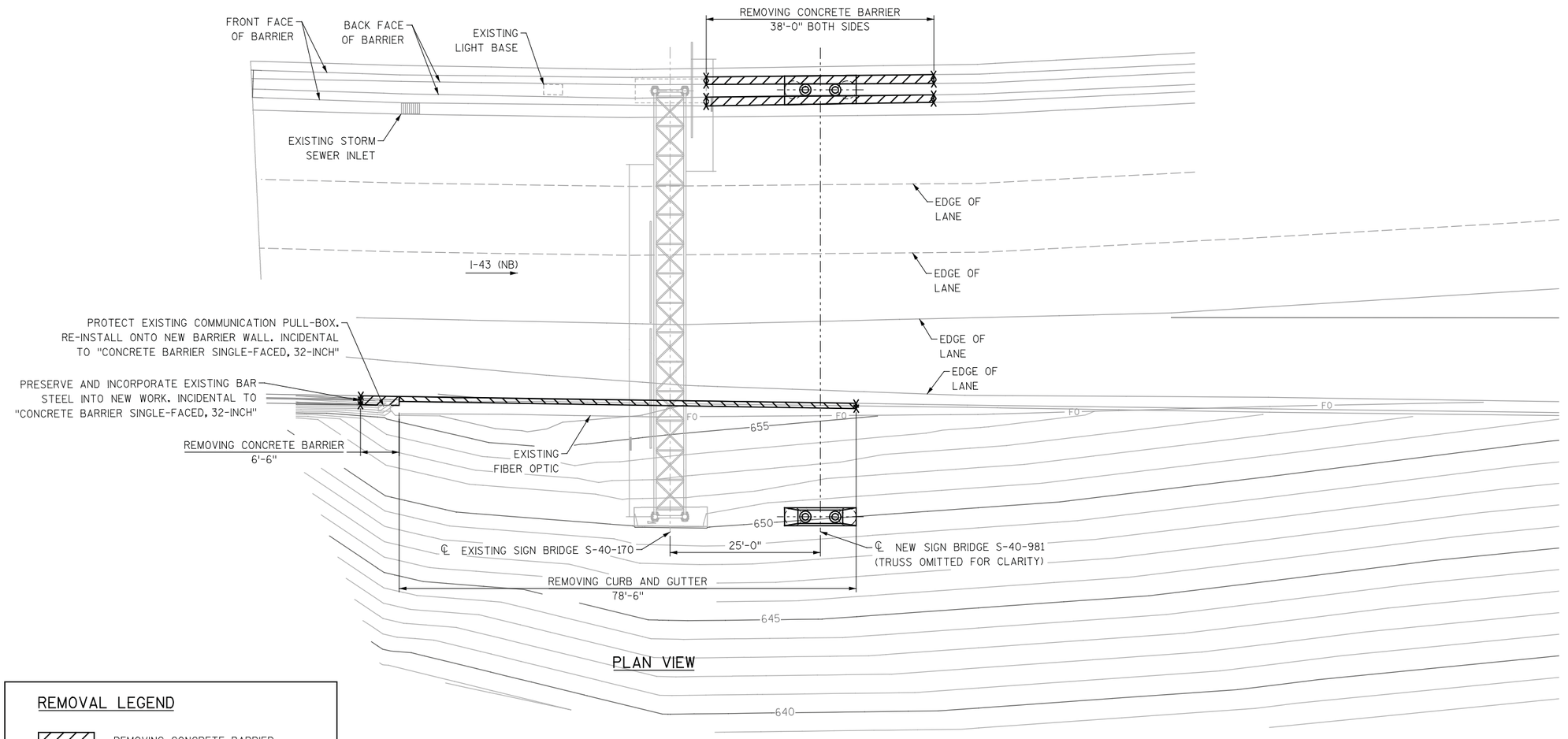
LOCATED WITHIN CLOSED FREEWAY LANE AREA



ON RAMP

LOCATED WITHIN FREEWAY LANE CLOSURE
ADVANCE SIGNING AREA

2



PLAN VIEW

REMOVAL LEGEND

- REMOVING CONCRETE BARRIER
- XXXXXXXXXX SAWING CONCRETE
- REMOVING CURB AND GUTTER

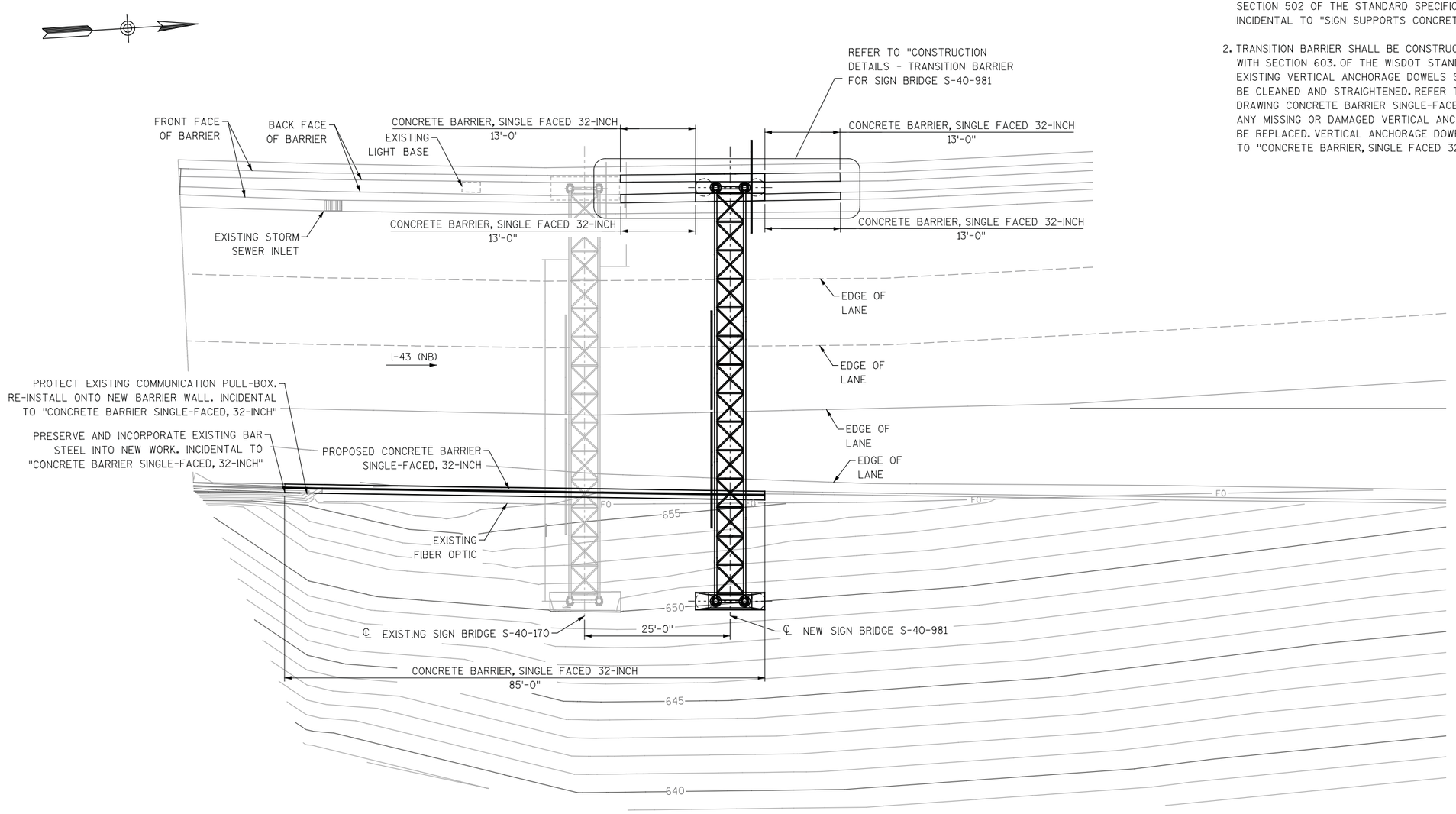
PROJECT NO: 1000-19-89	HWY: IH-43	COUNTY: MIWAUKEE	PLAN REMOVAL - SIGN BRIDGE S-40-981	SHEET NO: 12	E

2

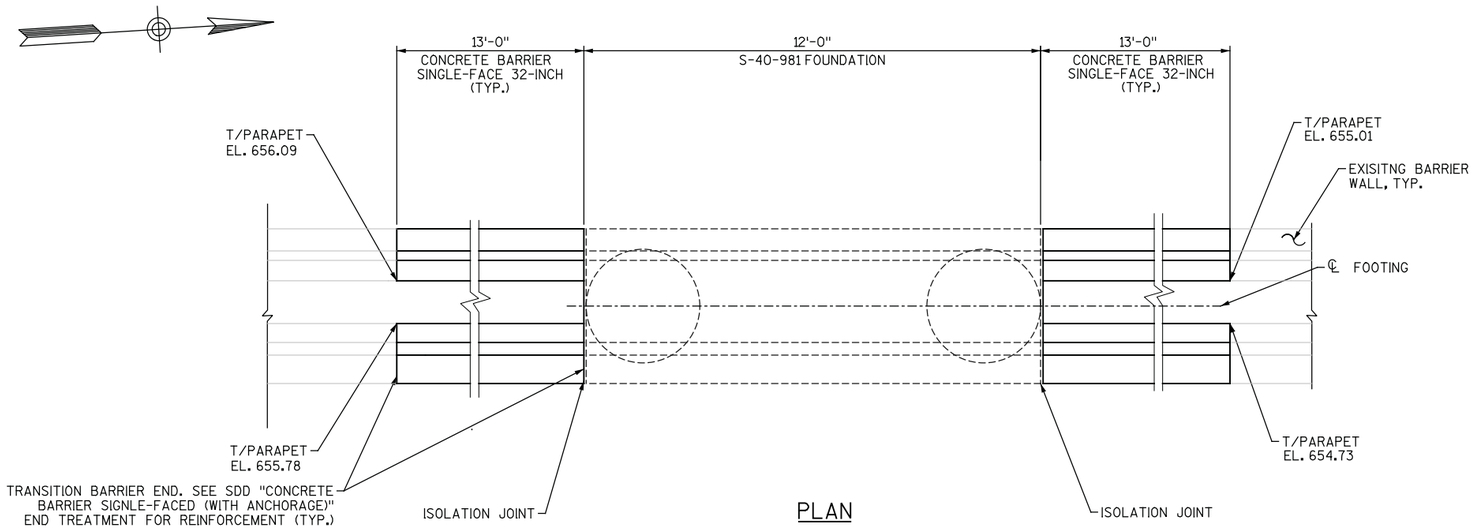
GENERAL NOTES

1. AT ISOLATION JOINTS PROVIDE ½" PREFORMED JOINT FILLER WITH NON-BITUMINOUS JOINT SEALER. THE PREFORMED JOINT FILLER AND NON-BITUMINOUS JOINT SEALER SHALL MEET THE REQUIREMENTS OF SECTION 502 OF THE STANDARD SPECIFICATIONS. INCIDENTAL TO "SIGN SUPPORTS CONCRETE MASONRY". (TYP.)

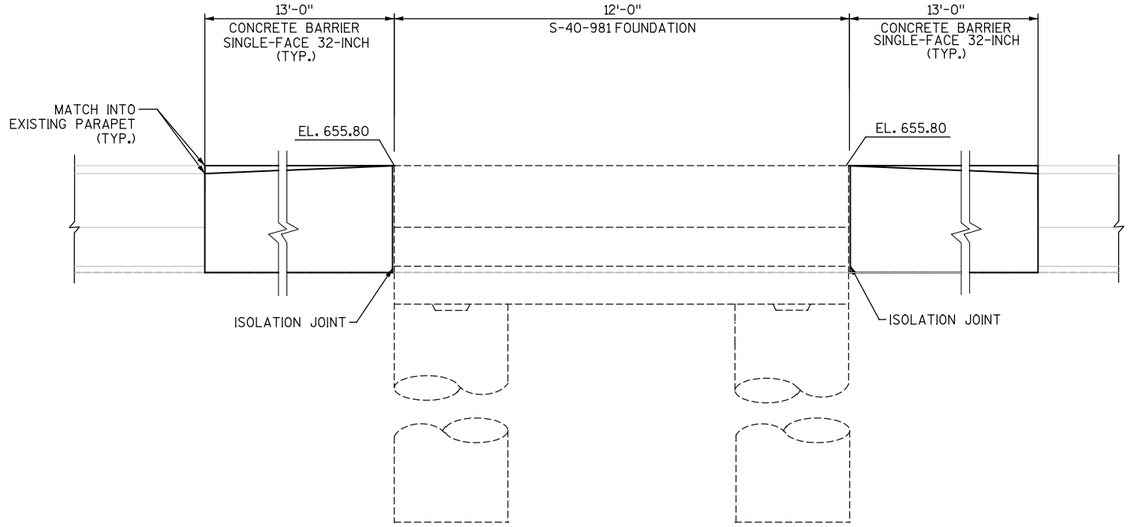
2. TRANSITION BARRIER SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 603. OF THE WISDOT STANDARD SPECIFICATION. EXISTING VERTICAL ANCHORAGE DOWELS SHALL REMAIN AND SHALL BE CLEANED AND STRAIGHTENED. REFER TO STANDARD DETAIL DRAWING CONCRETE BARRIER SINGLE-FACED (WITH ANCHORAGE). ANY MISSING OR DAMAGED VERTICAL ANCHORAGE DOWELS SHALL BE REPLACED. VERTICAL ANCHORAGE DOWELS ARE INCIDENTAL TO "CONCRETE BARRIER, SINGLE FACED 32-INCH".



PROJECT NO: 1000-19-89	HWY: IH-43	COUNTY: MILWAUKEE	CONSTRUCTION DETAILS - SIGN BRIDGE S-40-981	SHEET NO: 13	E



PLAN



ELEVATION

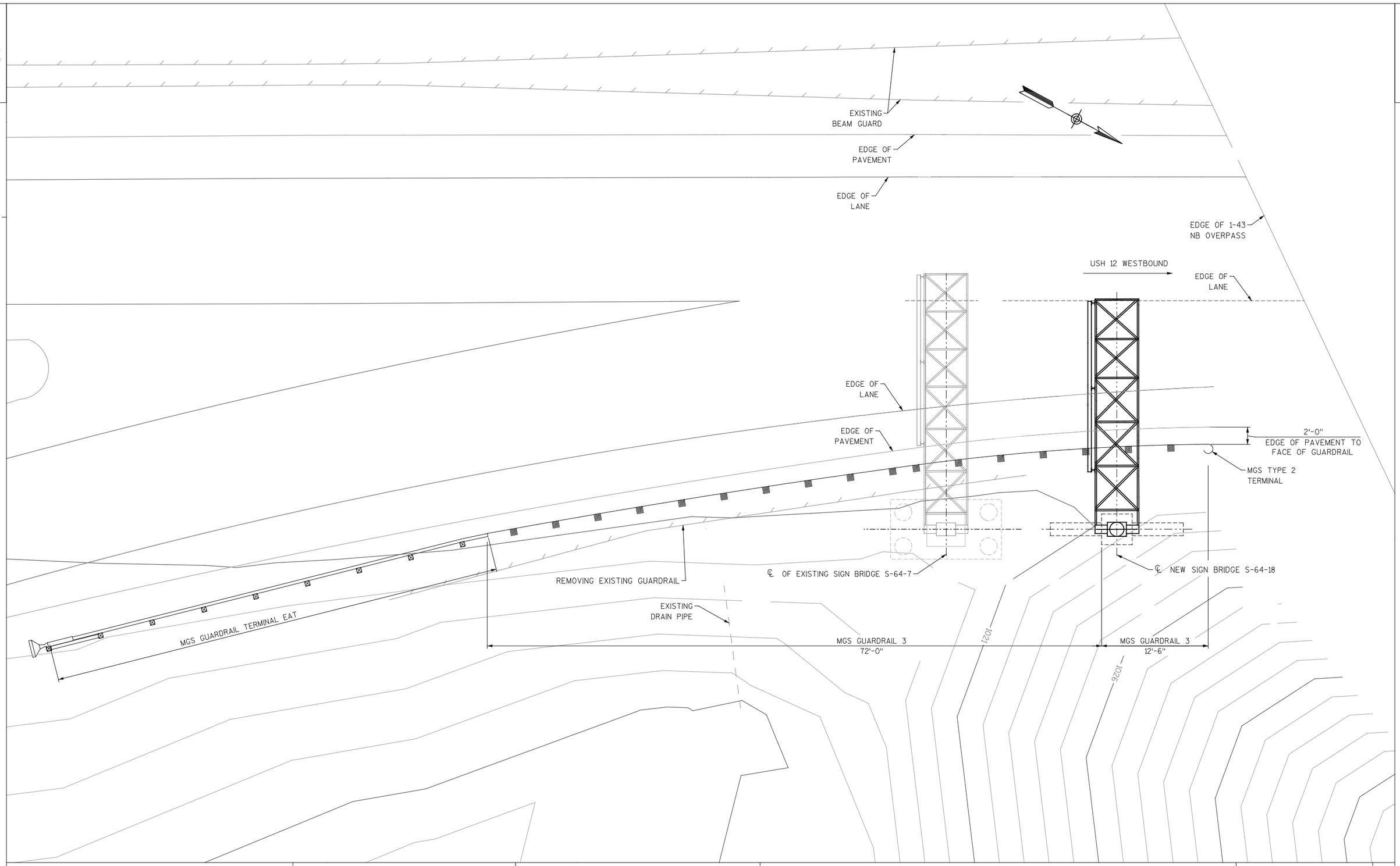
LOOKING WEST

TRANSITION BARRIER NOTES

1. DRAWINGS SHALL NOT BE SCALED.
2. AT ISOLATION JOINTS PROVIDE ½" PREFORMED JOINT FILLER WITH NON-BITUMINOUS JOINT SEALER. THE PREFORMED JOINT FILLER AND NON-BITUMINOUS JOINT SEALER SHALL MEET THE REQUIREMENTS OF SECTION 502 OF THE STANDARD SPECIFICATIONS. INCIDENTAL TO "SIGN SUPPORTS CONCRETE MASONRY". (TYP.)
3. CONCRETE DIMENSIONS SHALL BE ADJUSTED IF NECESSARY TO MATCH EXISTING TRAFFIC BARRIER. IF DISCREPANCIES ARE FOUND BETWEEN PLAN DIMENSIONS AND FIELD DIMENSIONS THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER FOR RESOLUTION.
4. TRANSITION BARRIER SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 603. OF THE WISDOT STANDARD SPECIFICATION. EXISTING VERTICAL ANCHORAGE DOWELS SHALL REMAIN AND SHALL BE CLEANED AND STRAIGHTENED. REFER TO STANDARD DETAIL DRAWING CONCRETE BARRIER SINGLE-FACED (WITH ANCHORAGE). ANY MISSING OR DAMAGED VERTICAL ANCHORAGE DOWELS SHALL BE REPLACED. VERTICAL ANCHORAGE DOWELS ARE INCIDENTAL TO "CONCRETE BARRIER SINGLE-FACED 32-INCH".

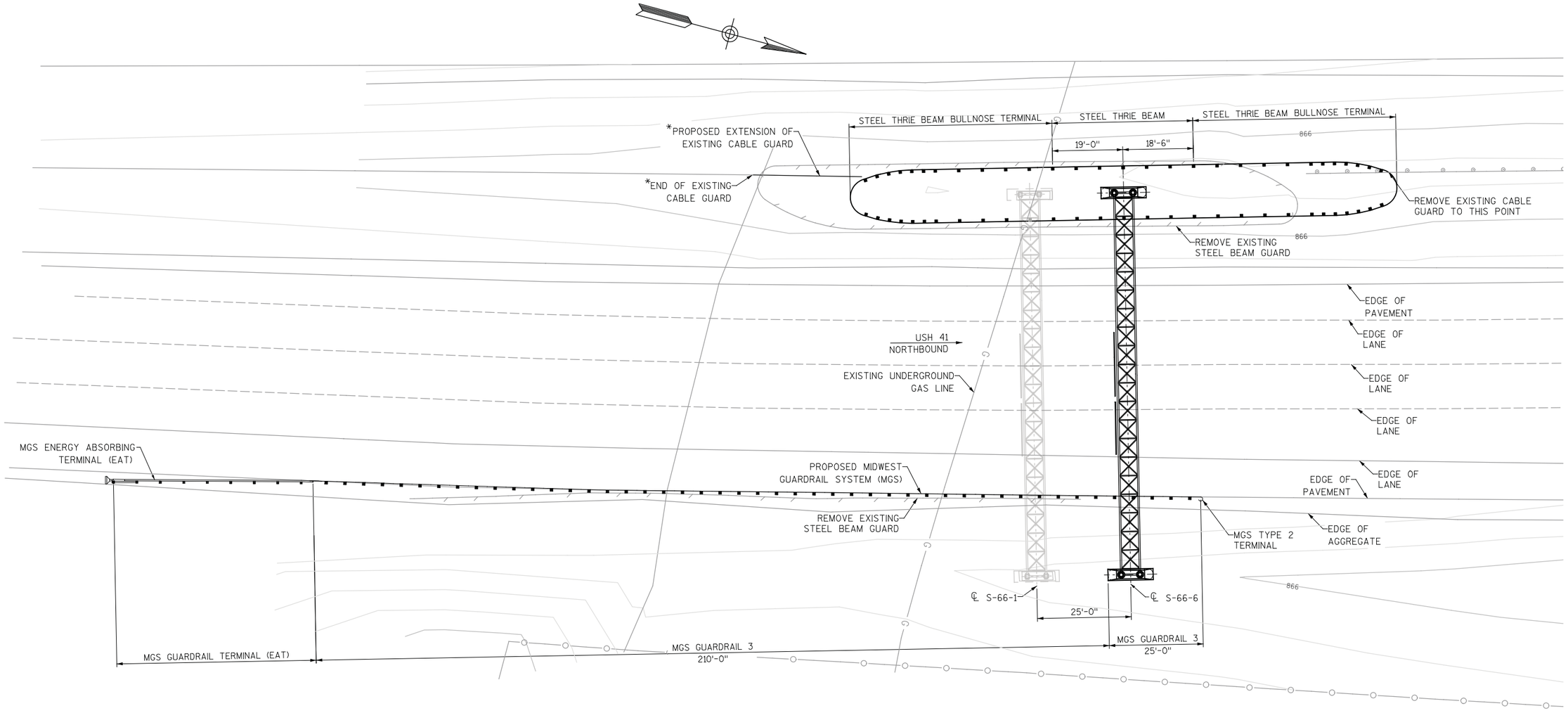
2

2



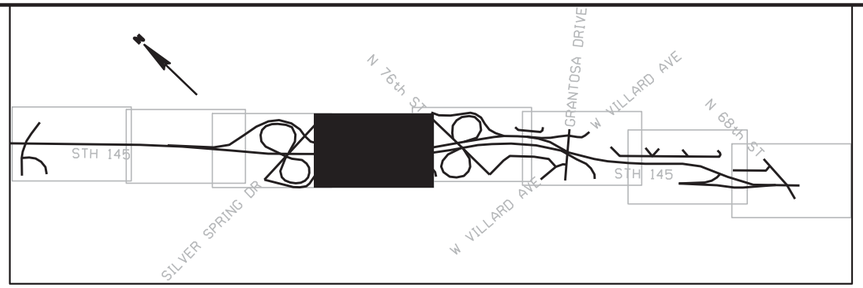
PROJECT NO:1000-19-89	HWY: USH 12	COUNTY: WALWORTH	CONSTRUCTION DETAILS - SIGN BRIDGE S-64-18	SHEET NO: 15	E

2



* REMOVAL OF EXISTING CABLE GUARD AND INSTALLATION OF THE PROPOSED CABLE GUARD IS INCIDENTAL TO "SIGN BRIDGE S-66-6".

PROJECT NO:1000-19-89	HWY:USH 41	COUNTY:WASHINGTON	CONSTRUCTION DETAILS - SIGN BRIDGE S-66-6	SHEET NO: 16	E



LEGEND

- CID (CABLE IN DUCT)
- CONDUIT - 2" UNLESS OTHERWISE SHOWN
- LIGHT POLE, ARM MOUNTED LUMINAIRE
- CONDUIT STUBOUT
- PULLBOX 24" x 42"
- PULLBOX 24" x 36"

W LEON TER

STH 145

163+55 2SP10 — 1SP10

166+25 1SP11 — 2SP11

168+95 2SP17 — 1SP17

171+65 1SP18 — 2SP18

173+40 NB S-40-369 3MV-2/SP

174+00 5RA27 (1SP10)

174+35 4RA20 — 3RA20

175+40 5RA26 (1SP11)

176+60 5RA25 (1SP12)

177+05 3RA21 — 4RA21

164 166 168 170 172 174 176 178

S-40-847 NO LIGHTING

LPB101

6+00 2SP12

165+55 2SP16

S-40-74 2MV-2SP REMOVE

4+80 2SP13

3+30 2SP14

173+75 2SP23

175+65 2SP24

PI 176+59.01

6+60 2SP25

PROJECT NO: 1000-19-89	HWY: STH 145	COUNTY: MILWAUKEE	LIGHTING PLAN	SHEET	E

2

LEGEND

- CID (CABLE IN DUCT)
- CONDUIT - 2" UNLESS OTHERWISE SHOWN
- LIGHT POLE, ARM MOUNTED LUMINAIRE
- CONDUIT STUBOUT
- PULLBOX 24" x 42"
- PULLBOX 24" x 36"

6+40 BRKWY
5RA12

8+32
5RA11

12+16
5RA9

10+24 BRKWY
5RA10

14+08
5RA8

4+80
5RA20

6+35
5RA19

S.D.

3+40
5RA21

7+90
5RA18

16+00
5RA7

2+00
5RA22

9+00
5RA16

14+00
5RA15

15+60
5RA14

17+60
5RA6

19+20
5RA5

20+80
5RA4

4UDL
5RA

182+20
5RA17

179+80 *
5RA23
(1SP14)

178+20 *
5RA24
(1SP13)

176+60 *
5RA25
(1SP12)

175+40 *
5RA26
(1SP11)

2UDL
4RA

183+35
3RA23

184

182

180

179+75
4RA22

3RA22

177+05
3RA21

178

176

4RA21

4RA23

6TH ST

2UDL
3RA

180+60
3RA9

2UDL
3RA

8+80
3RA10

2+80
3RA14

6+60
2SP25

175+65
2SP24

7+40
3RA11

8+50
2SP26

4+40
3RA13

6+00
3RA12

S.D.

S-40-846
NO LIGHTING

LPB202

S-40-76
1MV-4RA
REMOVE

186+05
4RA24

186

188

145

188+75
3RA25

190

1MV-3RA
REMOVE

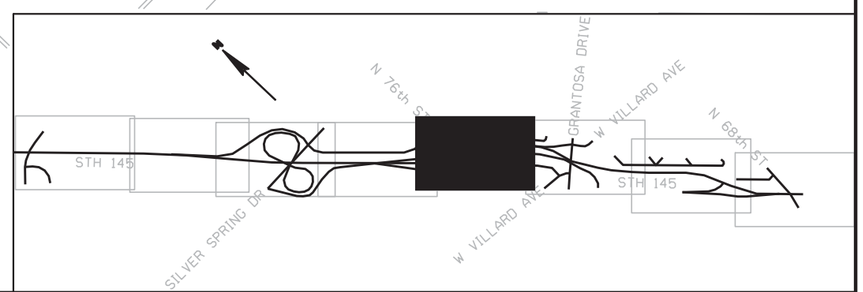
3RA24

4RA25

S-40-845
NO LIGHTING

LPB201

N

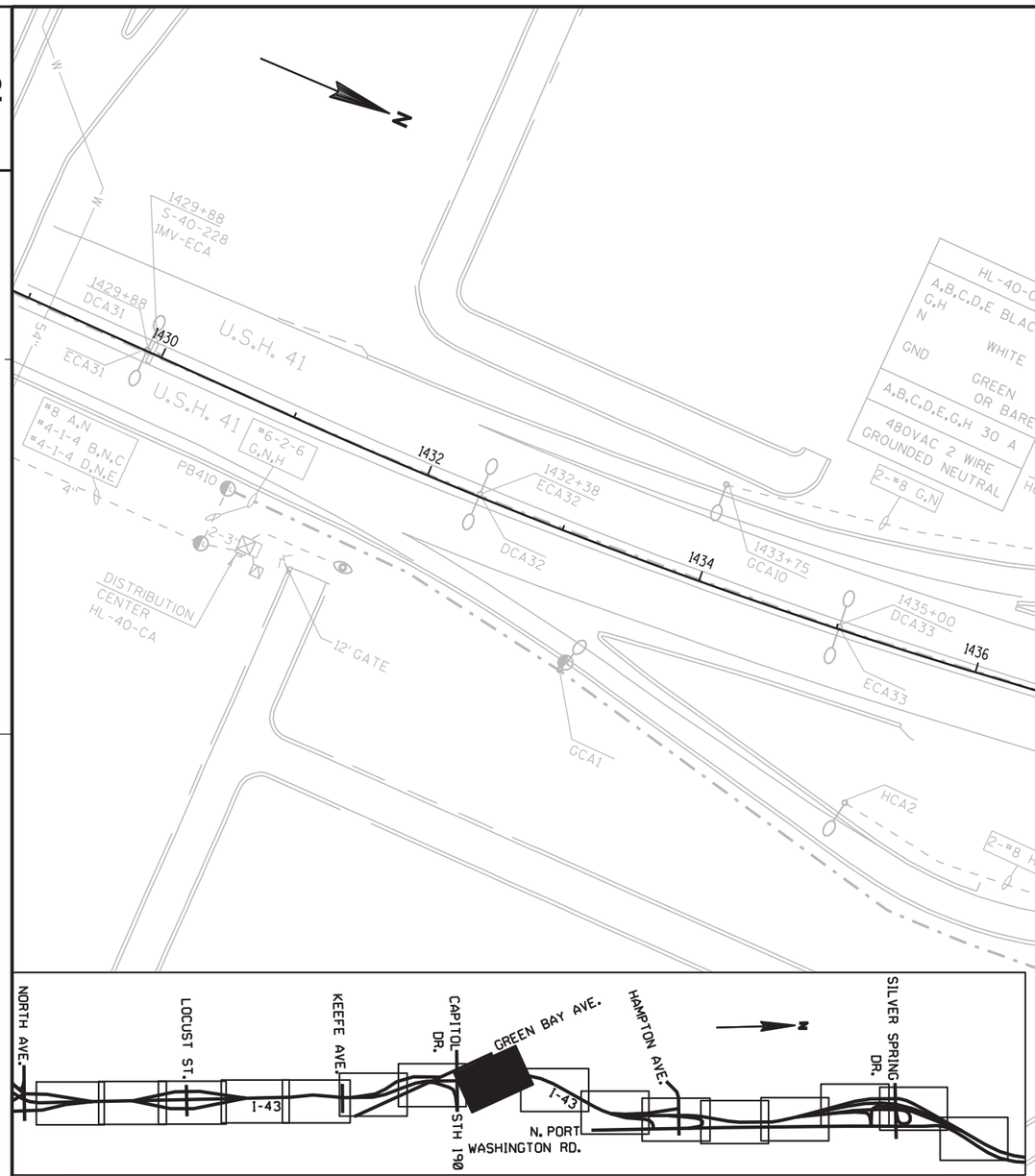


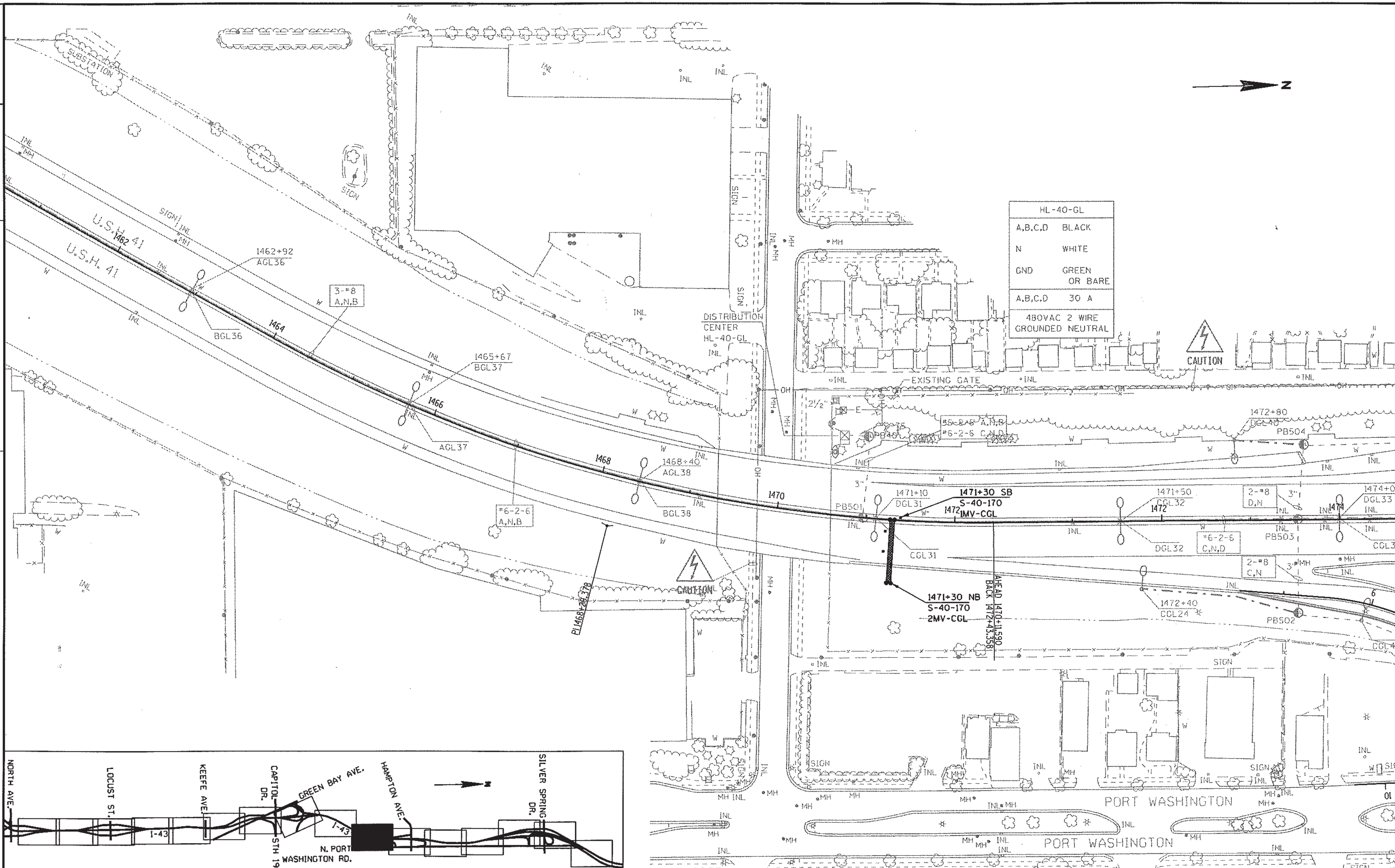
PROJECT NO: 1000-19-89	HWY: STH 145	COUNTY: MILWAUKEE	LIGHTING PLAN	SHEET	E

LEGEND

- CID (CABLE IN DUCT)
- CONDUIT - 2" UNLESS OTHERWISE SHOWN
- LIGHT POLE, ARM MOUNTED LUMINAIRE
- CONDUIT STUBOUT
- PULLBOX 24" × 42"
- PULLBOX 24" × 36"

MEDIAN
REMOVE EXISTING CABLE 1440+56 TO 1443+28 REPLACE WITH 3-8AWG C.I.D.
SPLICE IN STEM OF S-40-894





PROJECT NO:1000-19-89	HWY:I-43	COUNTY:MILWAUKEE	LIGHTING REMOVAL PLAN	SHEET 20	E

DATE 14MAR13 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	1000-19-89 QUANTITY
0010	204.0150	REMOVING CURB & GUTTER	LF	78.500	78.500
0020	204.0157	REMOVING CONCRETE BARRIER	LF	140.000	140.000
0030	204.0165	REMOVING GUARDRAIL	LF	556.500	556.500
0040	204.9090.S	REMOVING (ITEM DESCRIPTION) 01. CONCRETE BARRIER	LF	6.500	6.500
0050	204.9105.S	REMOVING (ITEM DESCRIPTION) 01. SAND BARRELS AND CONCRETE PAD	LS	1.000	1.000
0060	603.0105	CONCRETE BARRIER SINGLE-FACED 32-INCH	LF	137.000	137.000
0070	614.0220	STEEL THRIE BEAM BULLNOSE TERMINAL	EACH	2.000	2.000
0080	614.0230	STEEL THRIE BEAM	LF	75.000	75.000
0090	614.0700	SAND BARRELS ARRAYS	EACH	1.000	1.000
0100	614.2300	MGS GUARDRAIL 3	LF	319.500	319.500
0110	614.2610	MGS GUARDRAIL TERMINAL EAT	EACH	2.000	2.000
0120	614.2620	MGS GUARDRAIL TERMINAL TYPE 2	EACH	2.000	2.000
0130	619.1000	MOBILIZATION	EACH	1.000	1.000
0140	636.0100	SIGN SUPPORTS CONCRETE MASONRY	CY	116.000	116.000
0150	636.1000	SIGN SUPPORTS STEEL REINFORCEMENT HS	LB	5,280.000	5,280.000
0160	636.1500	SIGN SUPPORTS STEEL COATED REINFORCEMENT HS	LB	5,840.000	5,840.000
0170	637.0101	SIGNS TYPE I	SF	1,711.650	1,711.650
0180	638.2101	MOVING SIGNS TYPE I	EACH	1.000	1.000
0190	638.2102	MOVING SIGNS TYPE II	EACH	3.000	3.000
0200	638.2601	REMOVING SIGNS TYPE I	EACH	10.000	10.000
0210	641.0100	SIGN BRIDGE SINGLE POLE SIGN SUPPORT ONE SIGN (STRUCTURE) 01. S-40-849	LS	1.000	1.000
0220	641.1200	SIGN BRIDGE CANTILEVERED (STRUCTURE) 01. S-40-845	LS	1.000	1.000
0230	641.1200	SIGN BRIDGE CANTILEVERED (STRUCTURE) 02. S-40-847	LS	1.000	1.000
0240	641.1200	SIGN BRIDGE CANTILEVERED (STRUCTURE) 03. S-40-848	LS	1.000	1.000
0250	641.1200	SIGN BRIDGE CANTILEVERED (STRUCTURE) 04. S-64-18	LS	1.000	1.000
0260	641.6600	SIGN BRIDGE (STRUCTURE) 01. S-40-846	LS	1.000	1.000
0270	641.6600	SIGN BRIDGE (STRUCTURE) 02. S-40-981	LS	1.000	1.000
0280	641.6600	SIGN BRIDGE (STRUCTURE) 03. S-66-6	LS	1.000	1.000
0290	643.0100	TRAFFIC CONTROL (PROJECT) 01. 1000-19-89	EACH	1.000	1.000
0300	652.0225	CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH	LF	85.000	85.000
0310	655.0128	CABLE IN DUCT 3-8 AWG	LF	290.000	290.000
0320	SPV.0060	SPECIAL 01. PULL BOXES STEEL 24X36-INCH GROUNDED	EACH	3.000	3.000
0330	SPV.0060	SPECIAL 02. LAMP DISPOSAL HIGH INTENSITY DISCHAR	EACH	9.000	9.000
0340	SPV.0105	SPECIAL 01. REMOVNG SIGN BRIDGE S-40-74	LS	1.000	1.000
0350	SPV.0105	SPECIAL 02. REMOVNG SIGN BRIDGE S-40-76	LS	1.000	1.000
0360	SPV.0105	SPECIAL 03. REMOVNG SIGN BRIDGE S-40-169	LS	1.000	1.000
0370	SPV.0105	SPECIAL 04. REMOVNG SIGN BRIDGE S-64-7	LS	1.000	1.000
0380	SPV.0105	SPECIAL 05. REMOVNG SIGN BRIDGE S-40-170	LS	1.000	1.000
0390	SPV.0105	SPECIAL 06. REMOVNG SIGN BRIDGE S-66-1	LS	1.000	1.000

3

SIGN BRIDGES AND SIGN BRIDGE REMOVALS

SIGN BRIDGE NO. PROPOSED	SIGN BRIDGE NO. REMOVED	REMOVING SIGN BRIDGE (EXISTING STRUC. NO.) LS	REMARKS
S-40-845 (C)	S-40-76 (F)	1	ITEM 641.1200.01, ITEM SPV.0105.02
S-40-846 (F)	N/A	0	ITEM 641.6600.01
S-40-847 (C)	S-40-74 (F)	1	ITEM 641.1200.02, ITEM SPV.0105.01
S-40-848 (C)	S-40-169 (F)	1	ITEM 641.1200.03, ITEM SPV.0105.03
S-40-849 (B)	N/A	0	ITEM 641.0100
S-40-981 (F)	S-40-170 (F)	1	ITEM 641.6600.02, ITEM SPV.0105.05
S-64-18 (C)	S-64-7 (C)	1	ITEM 641.1200.04, ITEM SPV.0105.04
S-66-6 (F)	S-66-1 (F)	1	ITEM 641.6600.03, ITEM SPV.0105.06

(C) = SIGN BRIDGE CANTILEVERED
(F) = SIGN BRIDGE FULL SPAN
(B) = SIGN BRIDGE SINGLE POLE

SIGN BRIDGE MISCELLANEOUS QUANTITIES

	204.0150 REMOVING CURB AND GUTTER	204.0157 REMOVING CONCRETE BARRIER	204.9090.S REMOVING CONCRETE BARRIER	204.0165 REMOVING GUARDRAIL	204.9105.S REMOVING SAND BARRELS AND CONCRETE PAD	603.0105 CONCRETE BARRIER SINGLE-FACED 32 INCH	614.0700 SAND BARREL ARRAYS	614.0220 STEEL THRIE BEAM BULLNOSE TERMINAL	614.0230 STEEL THRIE BEAM	614.2300 MGS GUARDRAIL 3
	LF	LF	LF	LF	LS	LF	EACH	EACH	LF	LF
S-40-845	0	0	0	0	0	0	0	0	0	0
S-40-846	0	40	0	0	1	0	1	0	0	0
S-40-847	0	0	0	0	0	0	0	0	0	0
S-40-848	0	0	0	0	0	0	0	0	0	0
S-40-849	0	24	0	0	0	0	0	0	0	0
S-40-981	78.5	76	6.5	0	0	137	0	0	0	0
S-64-18	0	0	0	76.5	0	0	0	0	0	84.5
S-66-6	0	0	0	480	0	0	0	2	75	235
TOTALS	78.5	140	6.5	556.5	1	137	1	2	75	319.5

PROPOSED SIGN BRIDGE NO.	614.2610 MGS GUARDRAIL TERMINAL EAT	614.2620 MGS GUARDRAIL TERMINAL TYPE 2	*637.0101 SIGNS TYPE I	638.2101 MOVING SIGNS TYPE I	638.2102 MOVING SIGNS TYPE II	638.2601 REMOVING SIGNS TYPE I	REMARKS
	EACH	EACH	SF	EACH	EACH	EACH	
S-40-845	0	0	167.75	0	0	1	NONE
S-40-846	0	0	154.75	0	0	1	NONE
S-40-847	0	0	191.75	0	1	1	MOVE TYPE II SIGN FROM S-40-74 TO S-40-847
S-40-848	0	0	245	0	1	1	MOVE TYPE II SIGN FROM S-40-169 TO S-40-848
S-40-849	0	0	157.50	0	0	1	NONE
S-40-981	0	0	446	0	0	3	NONE
S-64-18	1	1	0	1	1	0	MOVE TYPE I AND TYPE II SIGNS FROM S-64-7 TO S-64-18
S-66-6	1	1	348.90	0	0	2	NONE
TOTALS	2	2	1711.65	1	3	10	

*ALL ALUMINUM VERTICAL SIGN SUPPORT BEAMS SHALL BE INCIDENTAL TO "SIGNS TYPE I"

3

SIGN STRUCTURE FOUNDATION CONDUIT NEEDS
FOR INFORMATION ONLY - DOES NOT AFFECT PAYMENT

STRUCTURE	CONDUIT SWEEPS
S-40-847	1 2-INCH EAST (ELECTRICAL PLAN) A/K/A SOUTH (SIGN PLAN)
S-40-845	1 2-INCH EAST (ELECTRICAL PLAN) A/K/A SOUTH (SIGN PLAN)
S-40-846	1 2-INCH EAST (ELECTRICAL PLAN) A/K/A SOUTH (SIGN PLAN)
s-40-848	1 2-INCH SOUTH
S-40-849	1 3-INCH NORTH AND 1-3-INCH SOUTH
S-40-981	1 2-INCH NORTH

CATEGORY 0010
LIGHTING BRANCH CIRCUIT CABLE IN DUCT QUANTITIES - GROUNDED NEUTRAL SYSTEM
480 VAC 2-WIRE

655.0128 CABLE IN DUCT 3-8 AWG

SYSTEM	NETWORK	LOCATION TO LOCATION	DISTANCE	655.0128 C.I.D. 3-8 AWG LF
HL-40-CA	D/E/N	DCA35/ECA35 TO S-40-849	150	160
HL-40-CA	D/E/N	S-40-849 TO DCA36/ECA36	120	130
	TOTAL			290

LIGHTING PULL BOXES
CATEGORY 0010

SPV.0060.01 PULL BOXES STEEL 24x36-INCH GROUNDED

SYSTEM	LOCATION	SEQUENCE	SPV.0060.01 PULL BOXES 24X36-INCH GROUNDED EACH
NONE	VIC. S-40-847	LPB101	1
NONE	VIC. S-40-845	LPB201	1
NONE	VIC. S-40-846	LPB202	1
			3

CATEGORY 0010
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
NONE	S-40-847 TO LPB101	15
NONE	LPB101 TO STUBOUT EAS	10
NONE	S-40-845 TO LPB201	15
NONE	LPB201 TO STUBOUT EAS	10
NONE	S-40-846 TO LPB202	15
NONE	LPB202 TO STUBOUT EAS	10
NONE	S-40-848 TO STUBOUT SOUT	10
	TOTAL	85

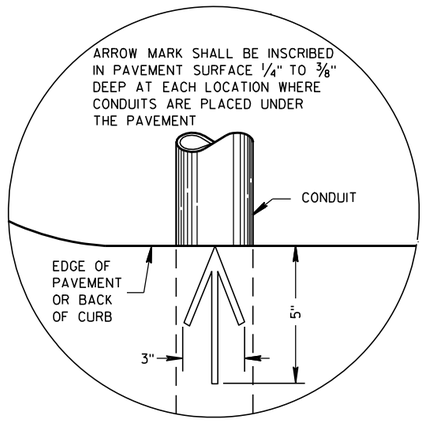
SIGN LIGHTING REMOVALS
CATEGORY 0010

SPV.0060.02 LAMP DISPOSAL HIGH INTENSITY DISCHARGE

STRUCTURE	SYSTEM	SPV.0060.02 LAMP DISPOSAL EACH
S-40-74	HL-40-SP	2
S-40-76	HL-40-RA	2
S-40-169	HL-40-CA	2
S-40-170	HL-40-GL	3
	TOTALS	9

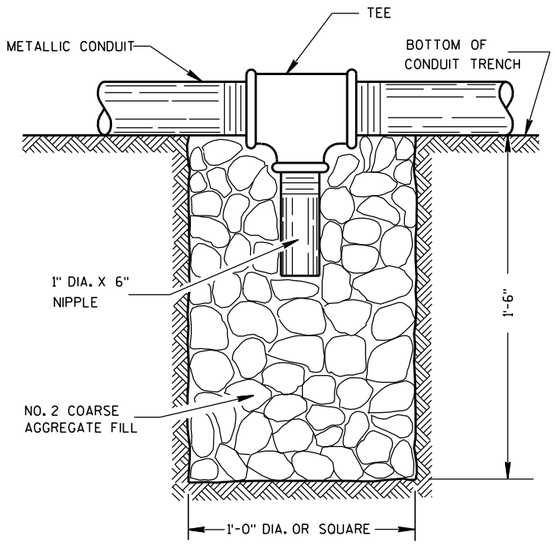
Standard Detail Drawing List

09B02-07	CONDUIT
09B04-10	PULL BOX
12A04-03	STRUCTURE IDENTIFICATION PLAQUES, RAMP GATES, SIGN BRIDGES & OVERHEAD SIGN SUPPORTS & TRAFFIC SIGNALS
14B22-05A	CONCRETE BARRIER, SINGLE-FACED (WITH ANCHORAGE)
14B22-05B	CONCRETE BARRIER, SINGLE-FACED (WITH ANCHORAGE)
14B26-02A	STEEL THRIE BEAM BULLNOSE TERMINAL
14B26-02B	STEEL THRIE BEAM BULLNOSE TERMINAL
14B26-02C	STEEL THRIE BEAM BULLNOSE TERMINAL
14B26-02D	STEEL THRIE BEAM BULLNOSE TERMINAL
14B26-02E	STEEL THRIE BEAM BULLNOSE TERMINAL
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
15D14-01	TRAFFIC CONTROL, TWO LANE CLOSURE ON FREEWAY OR EXPRESSWAY, SHORT-TERM (LESS THAN 24 HOURS)
15D15-01	TRAFFIC CONTROL, EXIT AND ENTRANCE RAMP WITHIN LANE CLOSURE
15D16-01	TRAFFIC CONTROL, EXIT RAMP CLOSURE



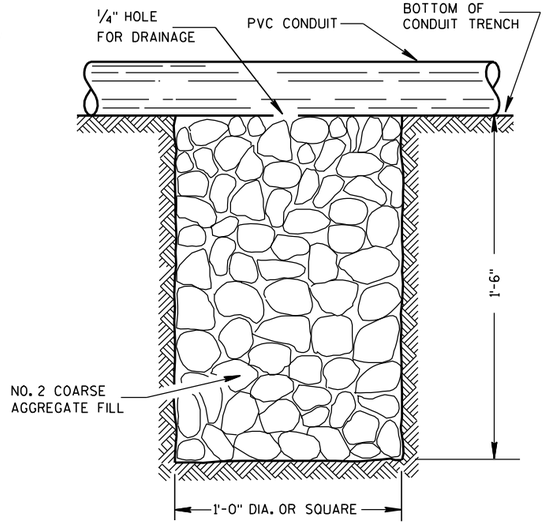
PLAN VIEW

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.

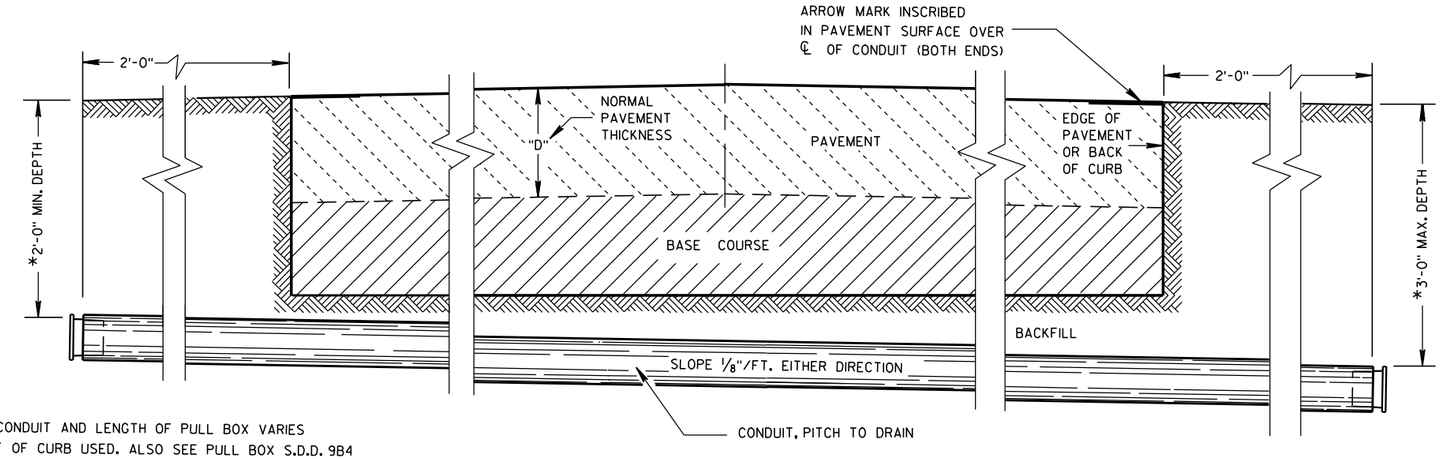
PRIOR TO CONDUIT ACCEPTANCE, CONDUIT CAPS OR PLUGS SHALL BE REMOVED, AND THE CAPS, PLUGS AND CONDUIT ENDS SHALL BE THOROUGHLY CLEANED AND THEN THE CAPS OR PLUGS REINSTALLED TO ENSURE THAT THE CAPS OR PLUGS CAN BE EASILY REMOVED IN THE FUTURE.

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 25 HWYS

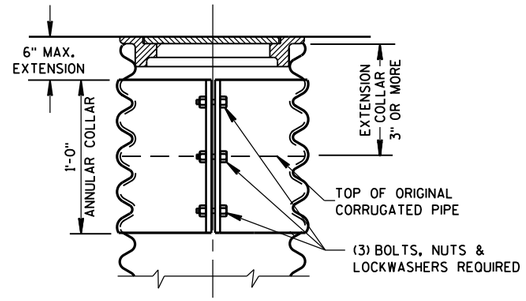
FHWA

TABLE OF NOMINAL DIMENSIONS AND WEIGHTS

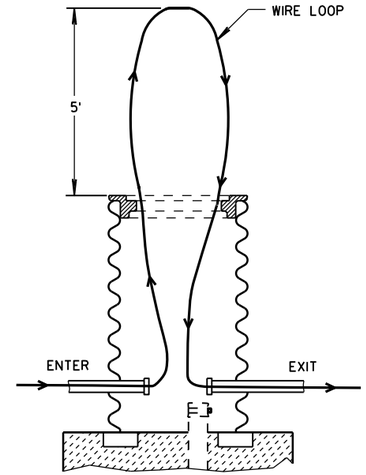
DIMENSION IN INCHES		CORRUGATED STEEL PIPE								
PIPE DIAMETER (INSIDE)	A	12	12	12	18	18	18	24	24	24
PIPE LENGTH **	B	24	30	36	24	30	36	36	42	48
WALL THICKNESS	C	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
COVER	D	10 1/4	10 1/4	10 1/4	16 1/4	16 1/4	16 1/4	22 1/4	22 1/4	22 1/4
FRAME	E	14 1/2	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.

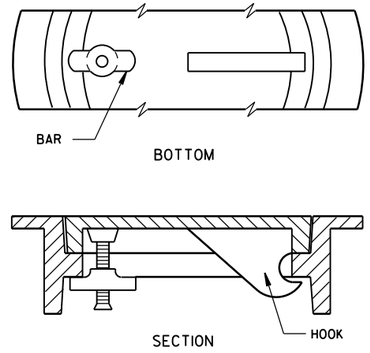
** NORMALLY USED LENGTHS. THE PROJECT ENGINEER SHALL DETERMINE IF PIPE LENGTHS, OTHER THAN THOSE SPECIFIED, SHALL BE USED, TO A MAXIMUM OF 48" (CONTINUOUS LENGTH, NON-SPLICED). THE ADDITIONAL LENGTH SHALL BE INCIDENTAL TO THE PULL BOX BID PRICE.



CORRUGATED PIPE EXTENDER

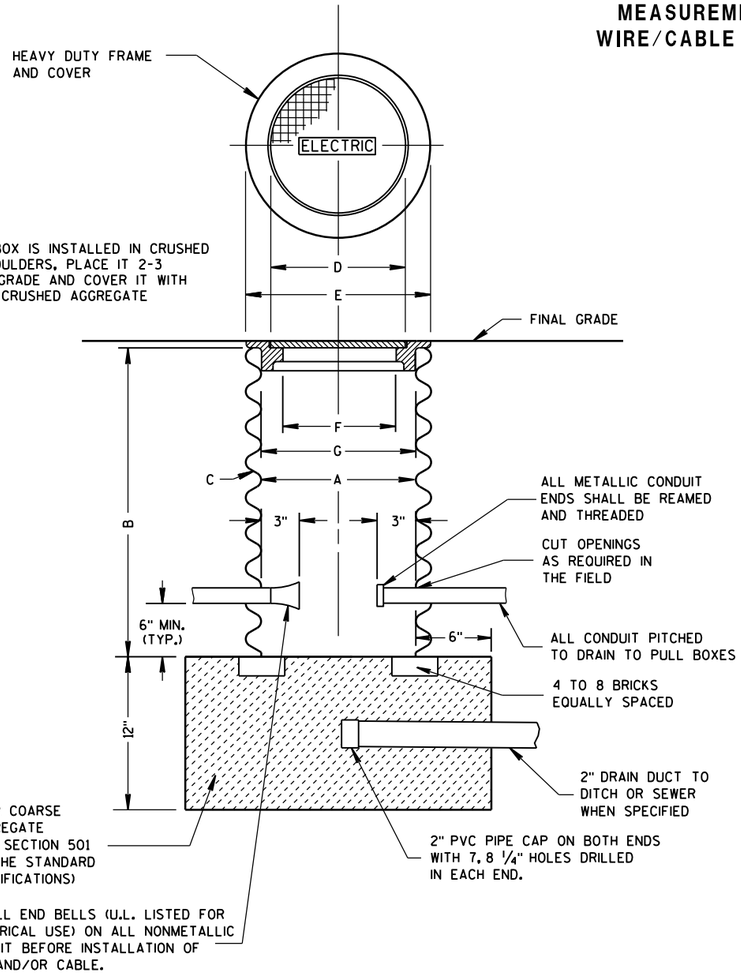


MEASUREMENT DETAIL FOR WIRE/CABLE IN THE PULL BOX



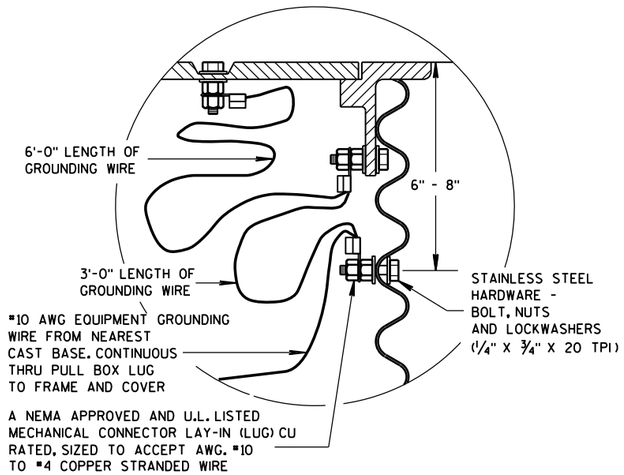
ALTERNATE COVER (LOCKING)

TIGHTENING BAR TYPE

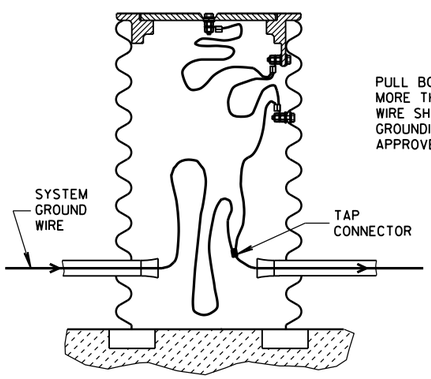


WHEN A PULL BOX IS INSTALLED IN CRUSHED AGGREGATE SHOULDERS, PLACE IT 2-3 INCHES BELOW GRADE AND COVER IT WITH 2-3 INCHES OF CRUSHED AGGREGATE

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.

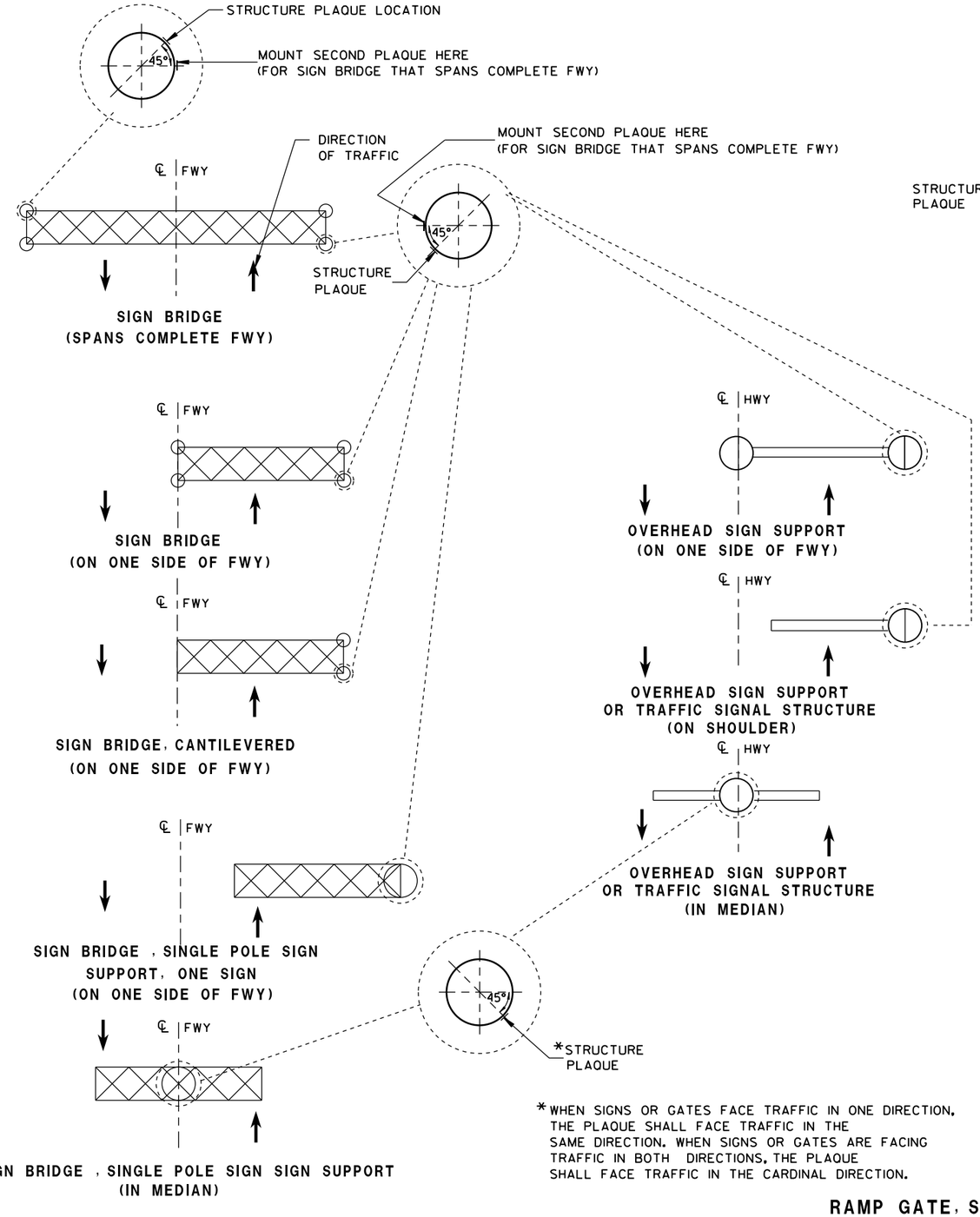
S.D.D. 9B2, "CONDUIT", APPLIES TO THIS DRAWING.

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	

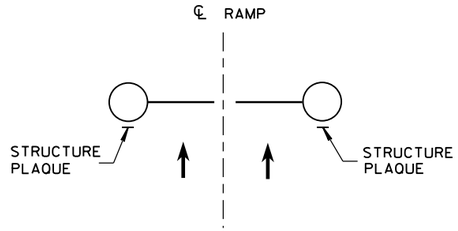
6

S.D.D. 9 B 4-10

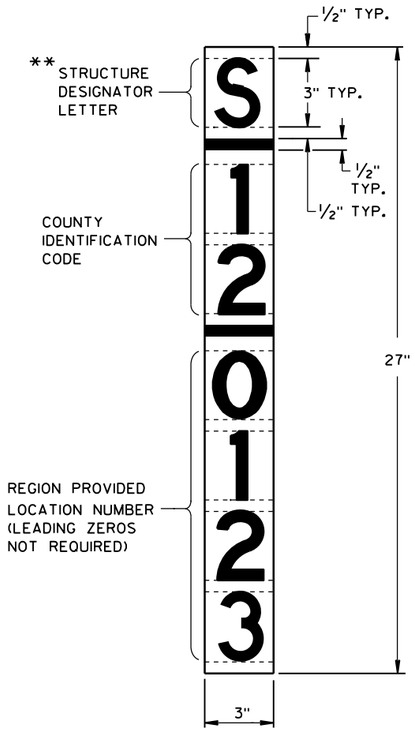


*WHEN SIGNS OR GATES FACE TRAFFIC IN ONE DIRECTION, THE PLAQUE SHALL FACE TRAFFIC IN THE SAME DIRECTION. WHEN SIGNS OR GATES ARE FACING TRAFFIC IN BOTH DIRECTIONS, THE PLAQUE SHALL FACE TRAFFIC IN THE CARDINAL DIRECTION.

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.

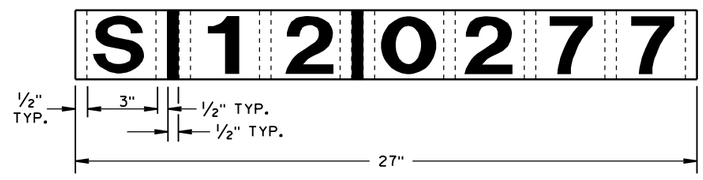
FACE - WHITE, SELF-ADHESIVE VINYL SHEETING, NON-RETROREFLECTIVE

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.

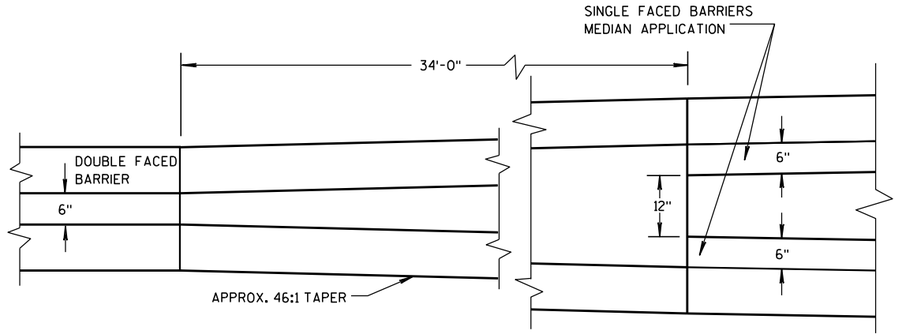


IDENTIFICATION PLAQUE FOR SIGN BRIDGE, STRUCTURE MOUNTED

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



PLAN VIEW

TRANSITION DETAILS OF DOUBLE FACED TO SINGLE FACED CONCRETE MEDIAN BARRIER

(FOOTINGS ARE NOT SHOWN)

GENERAL NOTES

SPLICES OF LONGITUDINAL BARS SHALL BE MADE WITH BARS LAPPED AT LEAST 18-INCHES AND FIRMLY TIED OR FASTENED TOGETHER.

ALL BAR STEEL REINFORCEMENT SHALL CONFORM TO REQUIREMENTS OF AASHTO M31, GRADE 60.

(1) BARRIER SHALL BE INSTALLED ON A CONCRETE SHOULDER INSTEAD OF THE CONCRETE FOOTING WHEN SPECIFIED OR SHOWN ELSEWHERE IN CONTRACT.

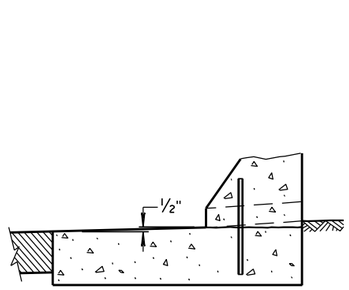
(2) OPENINGS FOR DRAINAGE SHALL BE PLACED AT LOW POINTS OF VERTICAL CURVES OR WHERE DIRECTED BY THE ENGINEER.

(3) ¾-INCH BEVEL OR 1-INCH RADIUS (TYPICAL).

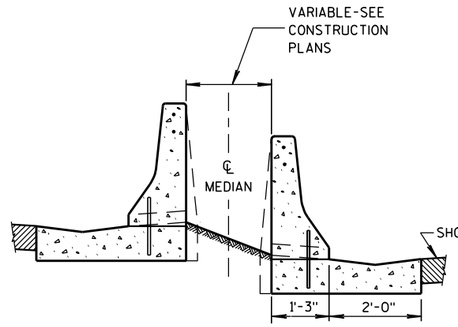
(4) NO. 4 BARS SHALL BE CONTINUED THROUGH CONSTRUCTION JOINTS.

(5) EXPANSION JOINTS SHALL BE PLACED AT EXISTING EXPANSION JOINTS IN THE PAVEMENT AND AT STRUCTURES. SEE REINFORCEMENT AT BARRIER END DETAIL.

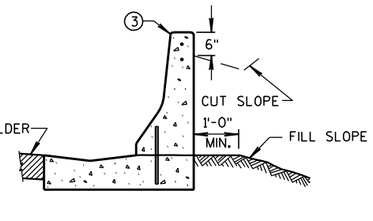
(6) SAWED CONTRACTION JOINTS SHALL BE PROVIDED ACROSS THE FULL WIDTH OF THE BARRIER FOOTING, AND IN FRONT, TOP AND BACK FACE OF THE BARRIER AT EXISTING PAVEMENT JOINTS AND AT UNIFORM INTERVALS BETWEEN WITH A MAXIMUM SPACING OF 25 FEET.



HIGH SIDE
CONCRETE BARRIER DETAIL

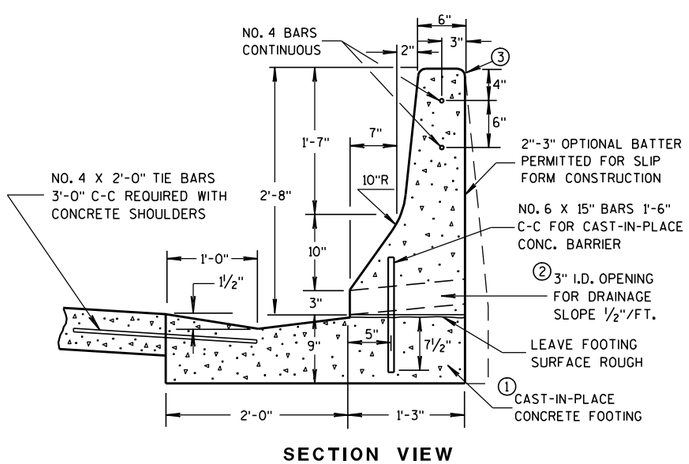


MEDIAN

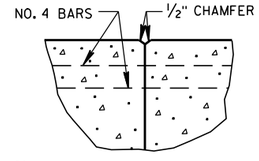


SHOULDER

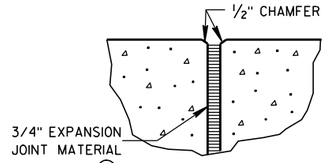
TYPICAL APPLICATIONS



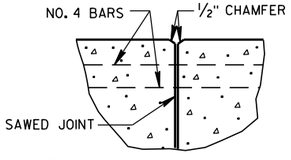
SECTION VIEW



④ **CONSTRUCTION JOINT**



⑤ **EXPANSION JOINT**



⑥ **CONTRACTION JOINT**

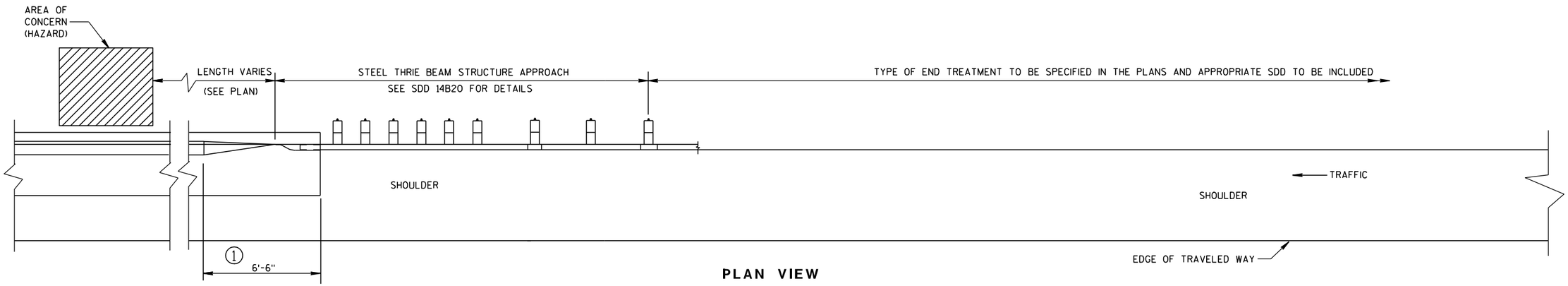
JOINT DETAILS

CONCRETE BARRIER
SINGLE-FACED
(WITH ANCHORAGE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

S.D.D. 14 B 22-5a



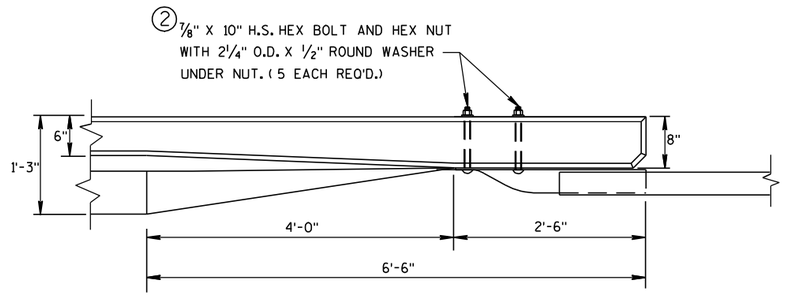
PLAN VIEW

TRANSITION TO STEEL PLATE BEAM GUARD AND END TERMINAL

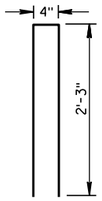
GENERAL NOTES

1. A SPECIAL END IS REQUIRED ON THE CONCRETE BARRIER TO TRANSITION TO A CONNECTION WITH THE STEEL THRIE BEAM STRUCTURE APPROACH. SEE THE DETAILS ON THIS SHEET.
2. HIGH STRENGTH BOLTS SHALL MEET REQUIREMENTS OF ASTM A325.
3. REINFORCEMENT REQUIRED AT EXPANSION JOINTS AND WHERE CONCRETE BARRIER IS TERMINATED.
4. PLACE REINFORCEMENT SUCH THAT IT WILL NOT CONFLICT WITH THE BOLT HOLES IN THE THRIE BEAM TERMINAL CONNECTOR.

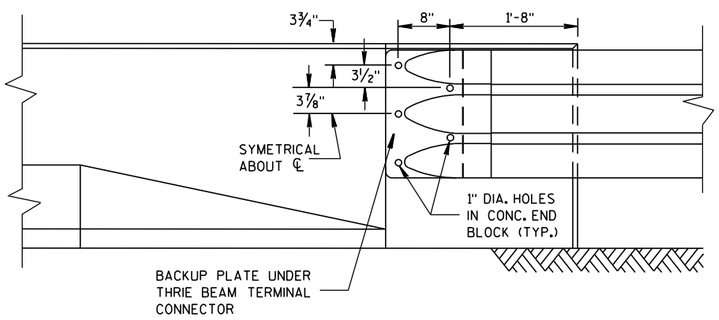
DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.



PLAN VIEW

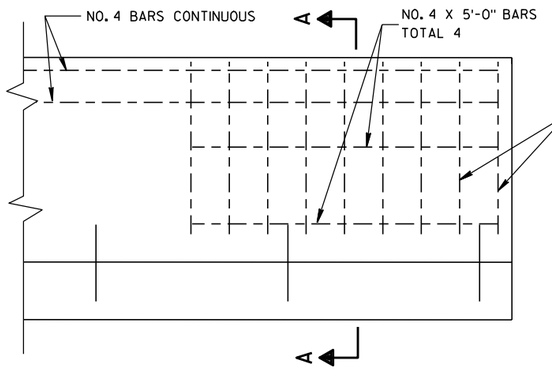


BENT BAR DETAIL

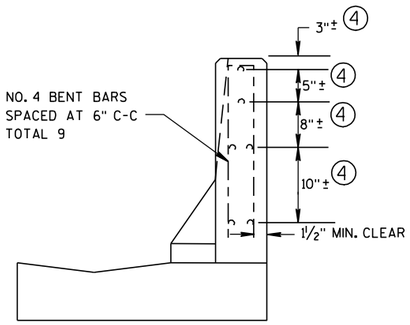


FRONT VIEW

CONCRETE BARRIER TRANSITION TO THRIE BEAM



FRONT VIEW



SECTION A-A

3 REINFORCEMENT AT BARRIER END

CONCRETE BARRIER, SINGLE-FACED (WITH ANCHORAGE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

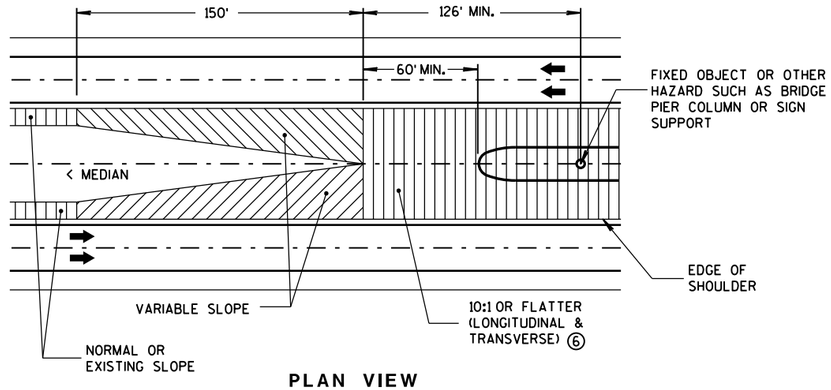
4/12/10 — DATE

/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER

FHWA

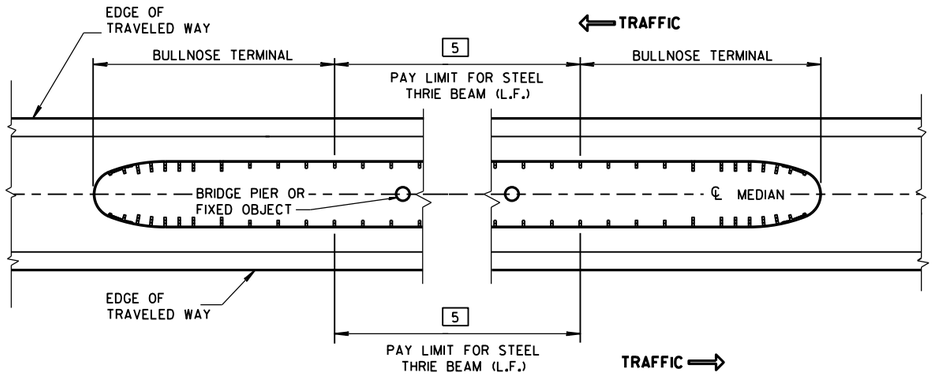
6

S.D.D. 14 B 22-5b

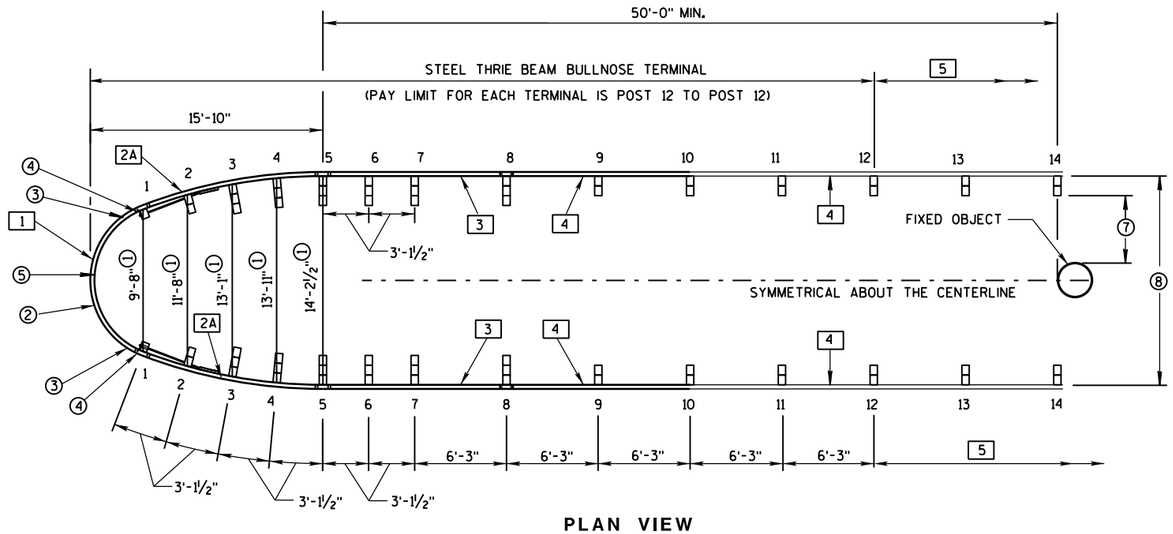


PLAN VIEW

GRADING AT BULLNOSE
(ALL INSTALLATIONS)

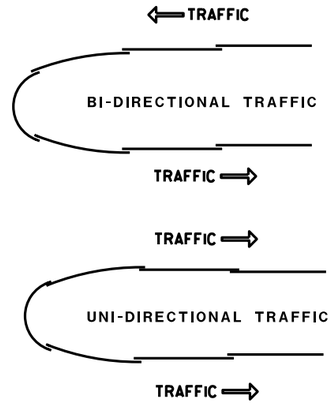


MEDIAN HAZARD PROTECTION PAY LIMITS



PLAN VIEW

TYPICAL BULLNOSE LAYOUT



LAPPING DETAIL
(ALL INSTALLATIONS)

GENERAL NOTES

SEE STANDARD DETAIL DRAWINGS 14 B 26a-e.

PUNCHING, DRILLING, CUTTING OR WELDING IS NOT PERMITTED ON ANY GALVANIZED THRIE BEAM ACCESSORY OR TERMINAL ACCESSORY.

OTHER ANCHOR CABLE ASSEMBLIES HAVING 40,000 LBS. MIN. BREAKING STRENGTH MAY BE USED.

FOR POSTS 2 THROUGH 14, IF POST CANNOT BE INSTALLED AT SPECIFIED LOCATION 1 EXTRA STANDARD WOOD BLOCK MAY BE ADDED.

THE USE OF STEEL POSTS ON THE BULLNOSE IS NOT ALLOWED.

BOLTS AND ALL NECESSARY HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A 153.

ALL THRIE BEAM SHALL BE 12-GAUGE.

[1] SLOTTED THRIE BEAM RAIL NO. 1. (POST 1 TO POST 1)

[2A] SLOTTED THRIE BEAM RAIL NO. 2A. (POST 1 TO POST 5)

[3] SLOTTED THRIE BEAM RAIL NO. 3. (POST 5 TO POST 8)

[4] UNBENT STANDARD THRIE-BEAM RAIL NO.4. (POST 8 TO POST 10 & POST 10 TO POST 12)

[5] BEYOND POST 12: CONSTRUCT STEEL THRIE BEAM - USE UNBENT STANDARD THRIE BEAM RAIL NO. 5.

① DIMENSIONS ARE FROM BACK OF RAIL TO BACK OF RAIL WHERE RAIL IS BOLTED TO POST OR BLOCK.

② U-BOLT CABLE CLIPS (3 PER CABLE) SPACED OUT ON NOSE, TO HOLD CABLE TO BACKSIDE OF THE RAIL.

③ NOSE CABLE W/SWAGGED END BUTTONS.

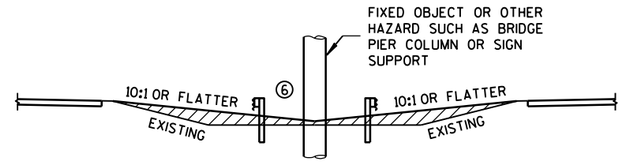
④ NOSE CABLE ANCHOR PLATE (BACKSIDE OF SPLICE).

⑤ THE SLACK IN THE NOSE CABLES SHALL BE EVENLY DISTRIBUTED BETWEEN THE CABLE CLIP FASTENERS AND POST NO. 1 ON EITHER SIDE OF THE NOSE.

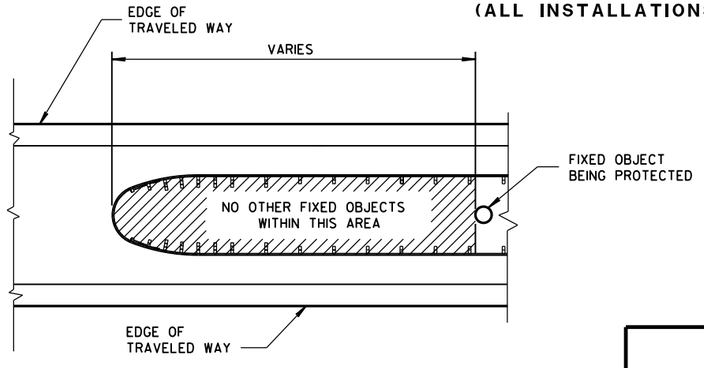
⑥ PROVIDE SUITABLE DRAINAGE WHEN MEDIAN GRADING IMPEDES NORMAL FLOW.

⑦ 2'-6" MINIMUM LATERAL DISTANCE BETWEEN BACK OF POST AND FACE OF FIXED OBJECT.

⑧ MAXIMUM WIDTH OF SYSTEM IS 14'-2½" MEASURED FROM BACK OF RAIL TO BACK OF RAIL WHERE RAIL IS BOLTED TO A POST OR BLOCK.



MEDIAN GRADING SECTION
(ALL INSTALLATIONS)



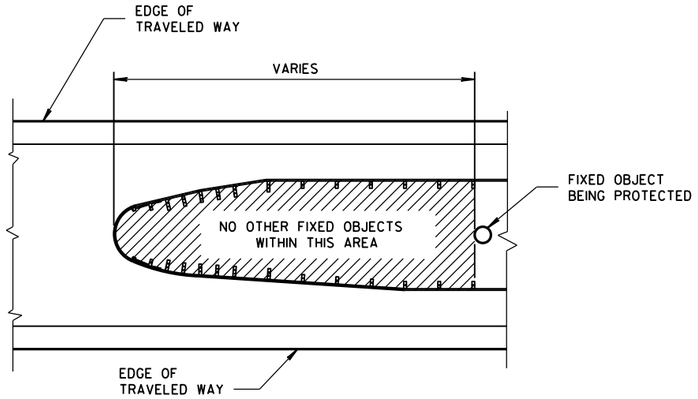
HAZARD FREE AREA INSIDE BULLNOSE

STEEL THRIE BEAM BULLNOSE TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6

S.D.D. 14 B 26-2a



HAZARD FREE
AREA INSIDE BULLNOSE

GENERAL NOTES

SEE STANDARD DETAIL DRAWINGS 14 B 26a-e.

FOR POSTS 2 THROUGH 14, IF POST CANNOT BE INSTALLED AT SPECIFIED LOCATION 1 EXTRA STANDARD WOOD BLOCK MAY BE ADDED.

[1] SLOTTED THRIE BEAM RAIL NO. 1. (POST 1 TO POST 1)

[2A] SLOTTED THRIE BEAM RAIL NO. 2A, (POST 1 TO POST 5)

[2B] SLOTTED THRIE BEAM RAIL NO. 2B, (POST 1 TO POST 5)

[3] SLOTTED THRIE BEAM RAIL NO. 3. (POST 5 TO POST 8)

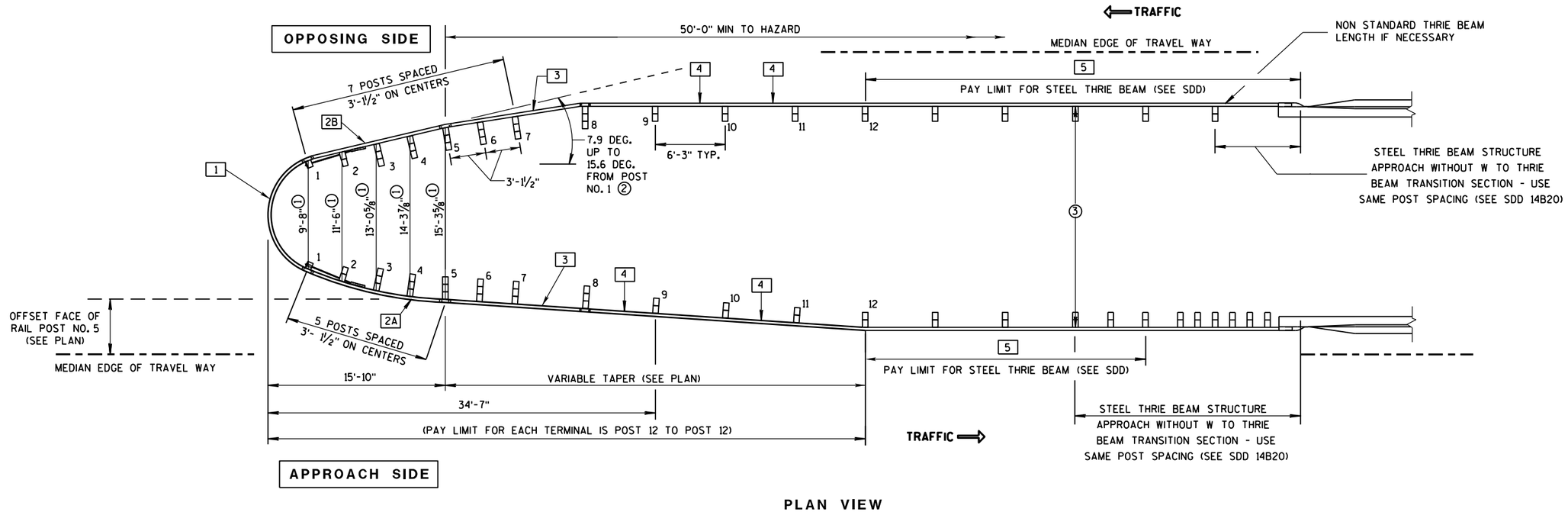
[4] UNBENT STANDARD THRIE-BEAM RAIL NO. 4, (POST 8 TO POST 10 & POST 10 TO POST 12)

[5] BEYOND POST 12: CONSTRUCT STEEL THRIE BEAM - USE UNBENT STANDARD THRIE BEAM RAIL NO. 5.

① DIMENSIONS ARE FROM BACK OF RAIL TO BACK OF RAIL WHERE RAIL IS BOLTED TO POST.

② TAPER BEGINNING AT POST NO. 1 MUST CONTINUE TO POST NO. 5. PAST POST NO. 5 TAPER MAY END OR BE EXTENDED UP TO 15.6 DEGREES TO FIT VARIABLE MEDIAN WIDTHS. (SEE PLAN)

③ FOR MEDIANS WIDER THAN 14'-2½" MEASURED FROM BACK OF RAIL TO BACK OF RAIL WHERE RAIL IS BOLTED TO A POST OR BLOCK.



PLAN VIEW

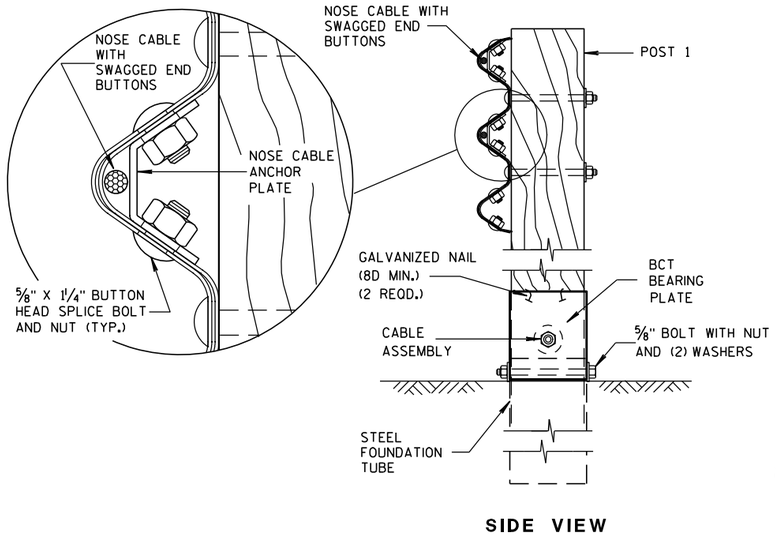
WIDENED BULLNOSE DESIGN

(INSTALLATION AT TWIN BRIDGES WITH BI-DIRECTIONAL TRAFFIC SHOWN)

STEEL THRIE BEAM
BULLNOSE TERMINAL

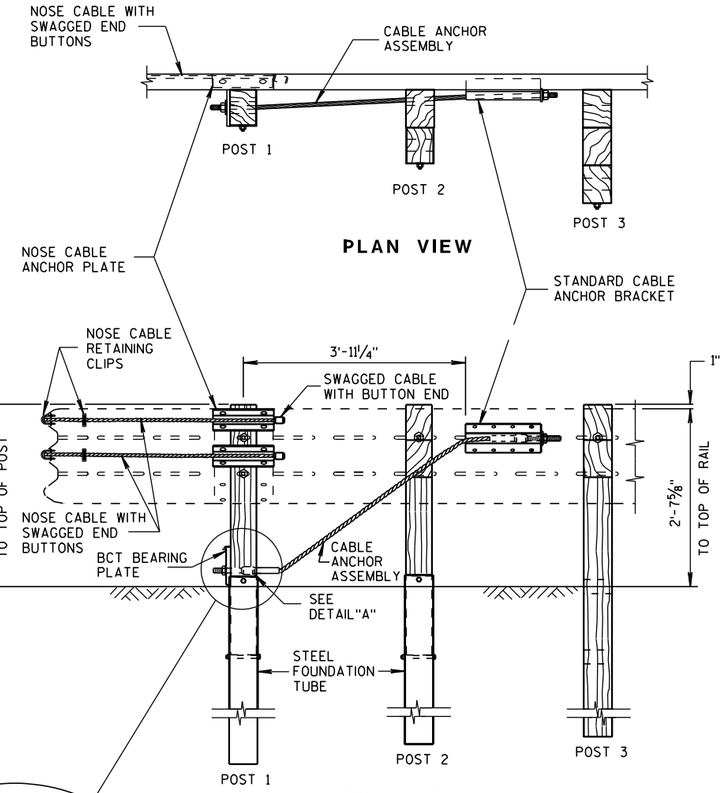
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6
S.D.D. 14 B 26-2b

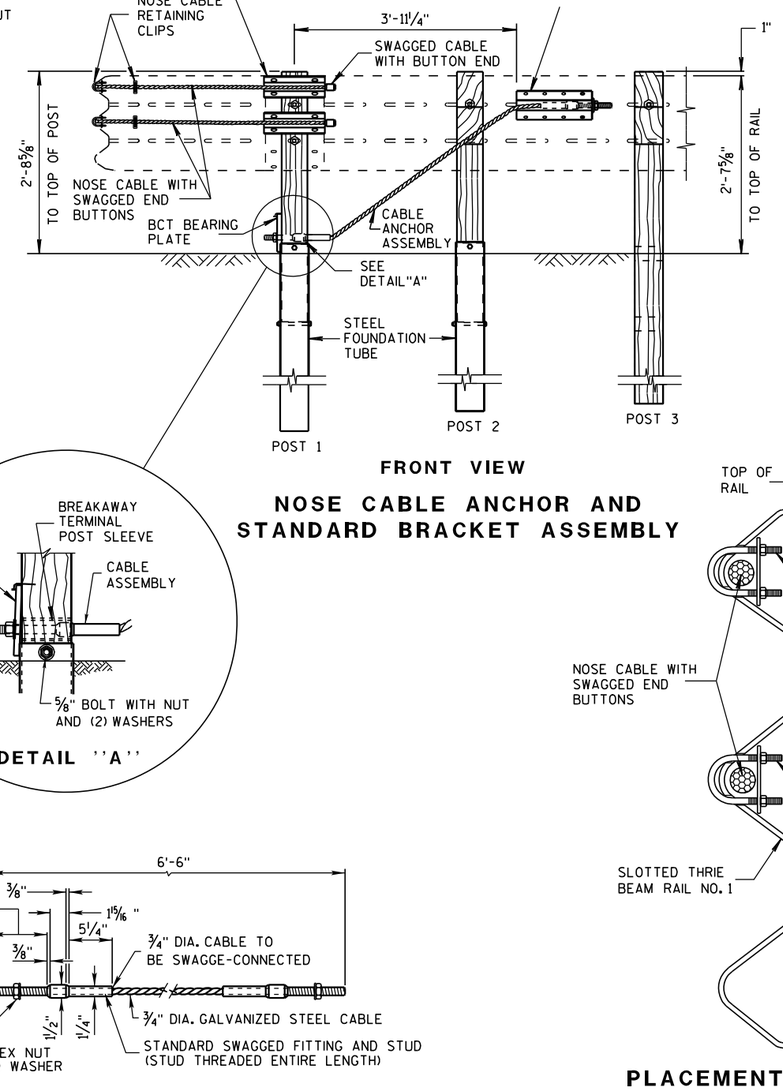


SIDE VIEW

NOSE CABLE ASSEMBLY AT POST NO. 1

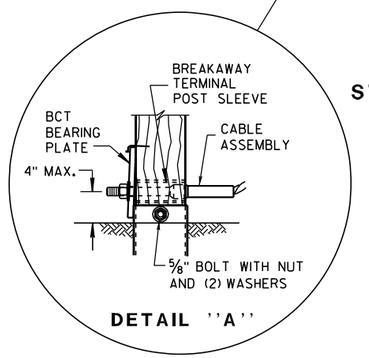


PLAN VIEW



FRONT VIEW

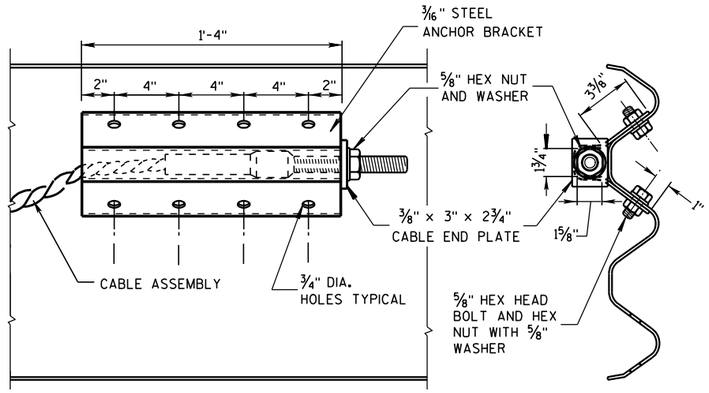
NOSE CABLE ANCHOR AND STANDARD BRACKET ASSEMBLY



DETAIL ''A''

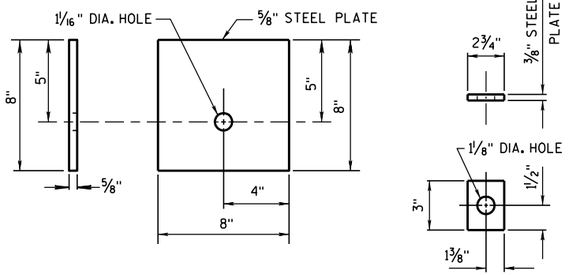
GENERAL NOTES

SEE STANDARD DETAIL DRAWINGS 14 B 26a-e.



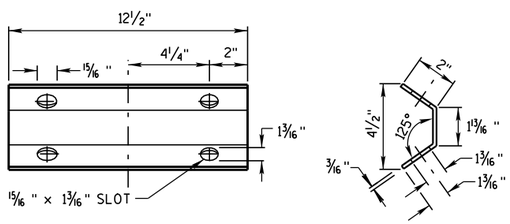
FRONT VIEW END VIEW

DETAILS OF CABLE ANCHOR BRACKET



BCT BEARING PLATE

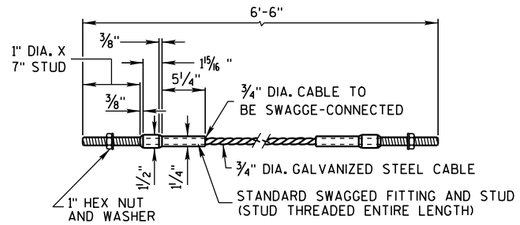
CABLE END PLATE



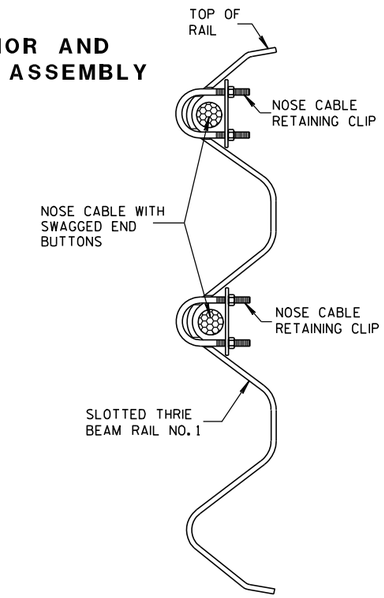
ELEVATION VIEW END VIEW

NOSE CABLE ANCHOR PLATE

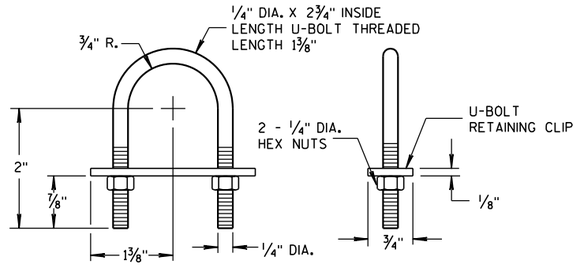
NOTE: 12 1/2" x 5 13/16 " x 3/16" STEEL PLATE (A306)



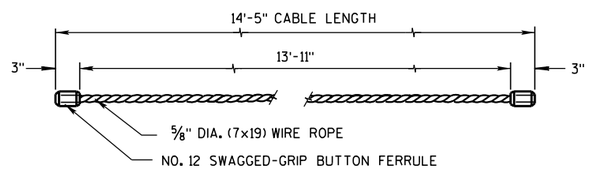
DETAILS OF CABLE ANCHOR ASSEMBLY



PLACEMENT OF NOSE CABLE RETAINING CLIP



NOSE CABLE RETAINING CLIP



NOSE CABLE WITH SWAGGED END BUTTONS

TO PULL OFF SWAGGED GRIP BUTTON FERRULE FROM WIRE ROPE REQUIRES A FORCE EQUAL TO 98% OF THE WIRE ROPE'S BREAKING STRENGHT.

STEEL THRIE BEAM BULLNOSE TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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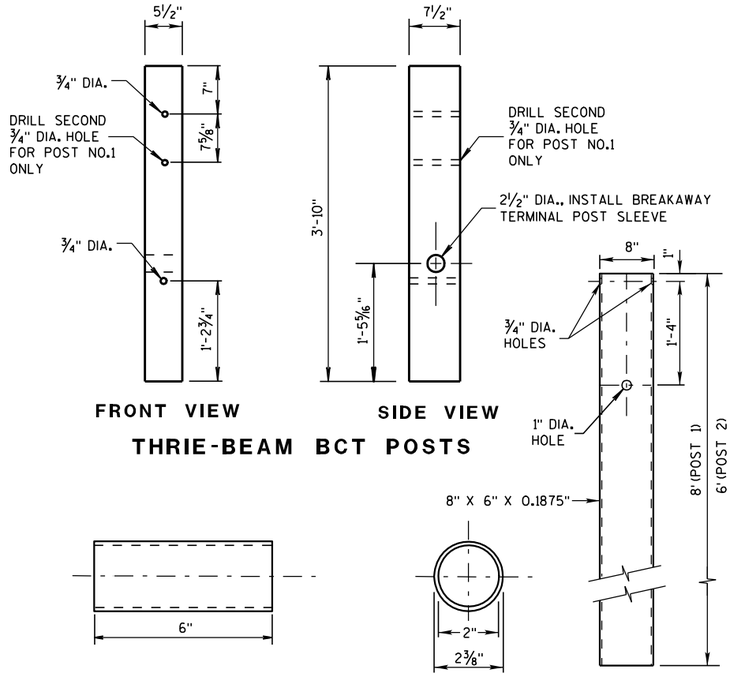
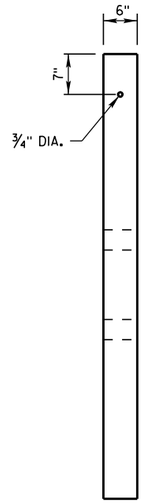
S.D.D. 14 B 26-2c

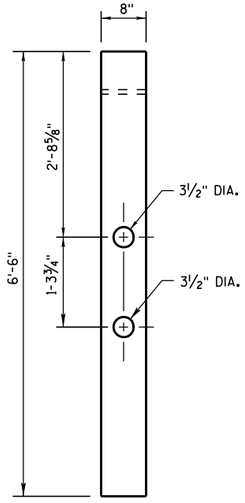


THRIE-BEAM BCT POSTS

BREAKAWAY TERMINAL POST SLEEVE

STEEL FOUNDATION TUBE

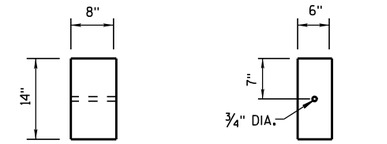




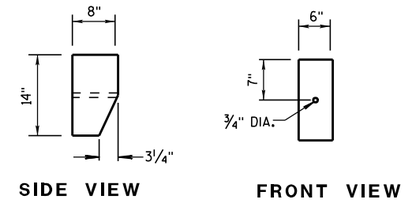
THRIE-BEAM CRT WOOD POSTS

GENERAL NOTES

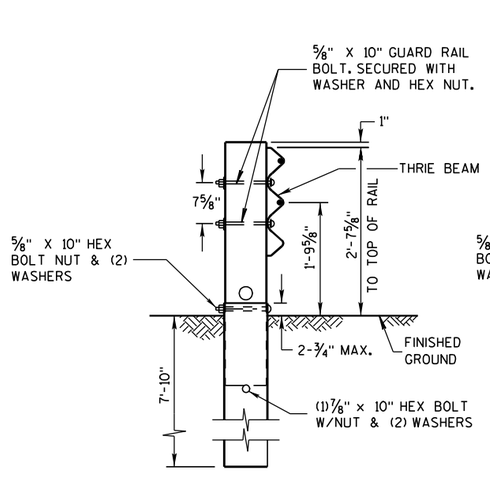
SEE STANDARD DETAIL DRAWINGS 14 B 26a-e.



STANDARD WOOD BLOCK

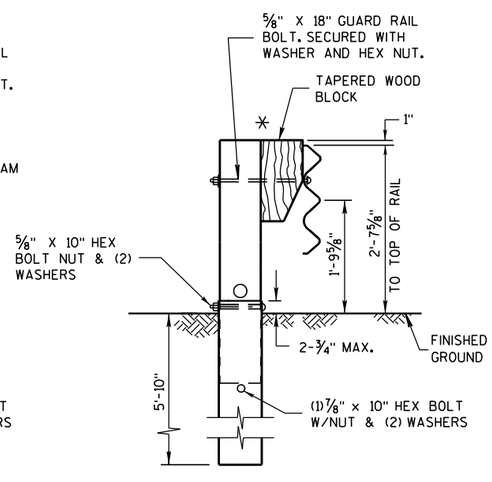


TAPERED WOOD BLOCK



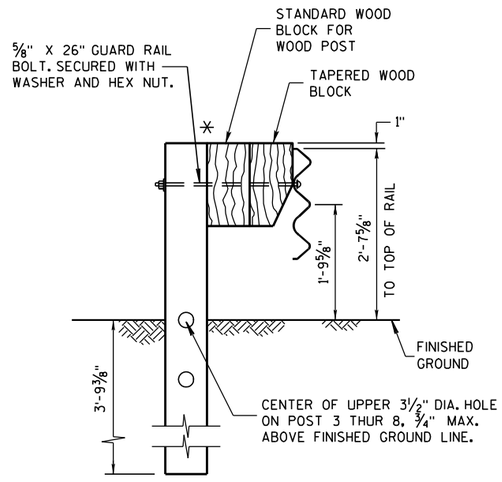
THRIE-BEAM BCT POST
(WITH 8'-0" FOUNDATION TUBE)

POST NO. 1



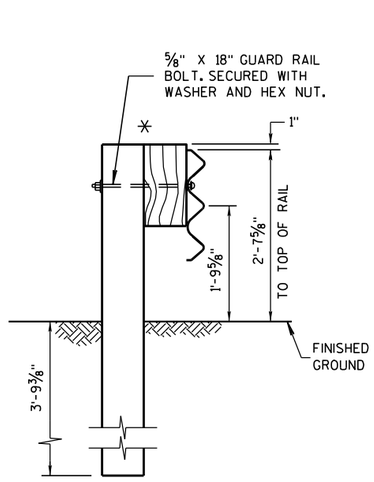
THRIE-BEAM BCT POST
(WITH 6'-0" FOUNDATION TUBE AND 1'-2" TAPERED BLOCK)

POST NO. 2



THRIE-BEAM CRT POST
(6'-6" LONG POST WITH 1'-2" BLOCK AND 1'-2" TAPERED BLOCK)

POST NO. 3,4,5,6,7, & 8



THRIE-BEAM POST
(6'-6" LONG POST WITH 1'-2" BLOCK)

POST NO. 9,10,11,& 12

(ALSO USE FOR STEEL THRIE BEAM BEYOND POST 12)

✳ IF NEEDED DUE TO AN UNDERGROUND OBSTACLE ADD 1 ADDITIONAL STANDARD BLOCKOUT TO POST.

STEEL THRIE BEAM BULLNOSE TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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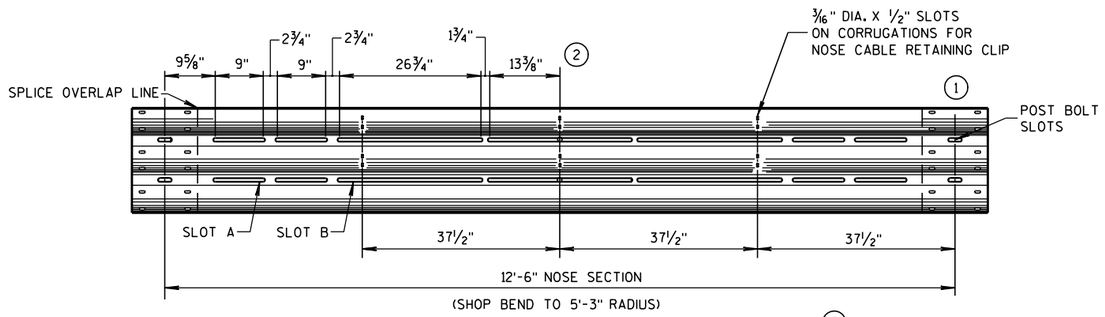
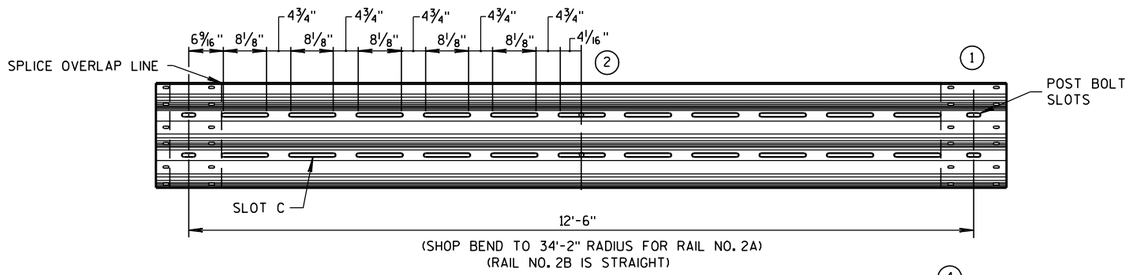
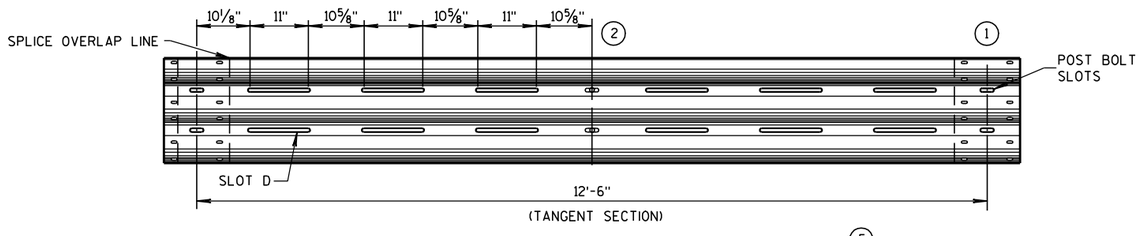
S.D.D. 14 B 26-2d



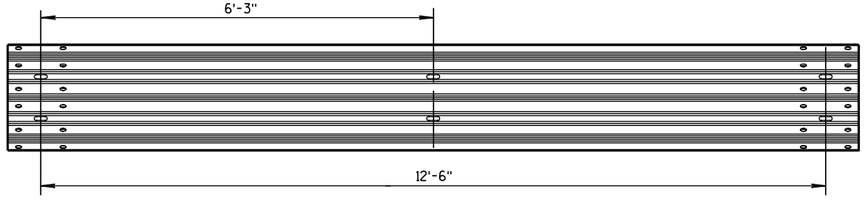
SLOTTED THRIE BEAM RAIL NO. 1 (3)



SLOTTED THRIE BEAM RAILS NO. 2A AND NO. 2B (4)



SLOTTED THRIE BEAM RAIL NO. 3 (5)



UNBENT STANDARD THRIE BEAM RAIL NO. 4 AND NO. 5

GENERAL NOTES

SEE STANADRD DETAIL DRAWINGS 14 B 26a-e.

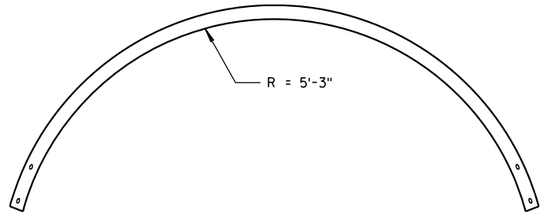
(1) SLOTTED THRIE BEAM RAIL DIMENSIONS SHOWN ARE BEFORE BENDING TO THE RADIUS SHOWN.

(2) SLOT SIZE AND SPACING SYMMETRIC.

(3) SLOTTED THRIE BEAM RAIL NO. 1, 12'-6", SHOP BEND TO R=5'-3".

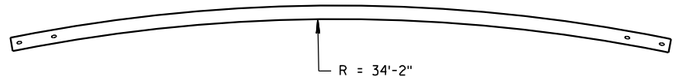
(4) SLOTTED THRIE BEAM RAIL NO. 2A, 12'-6", SHOP BEND TO R=34'-2".
SLOTTED THRIE BEAM RAIL NO. 2B, 12'-6", RAIL IS STRAIGHT.

(5) SLOTTED THRIE BEAM RAIL NO. 3, 12'-6", TANGENT.



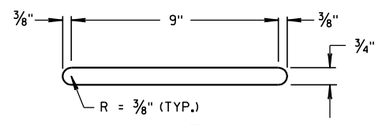
PLAN VIEW

SLOTTED THRIE BEAM RAIL NO. 1

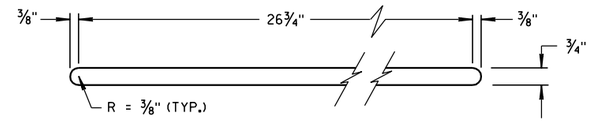


PLAN VIEW

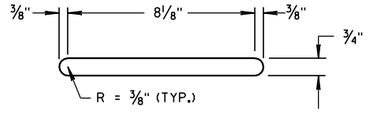
SLOTTED THRIE BEAM RAIL NO. 2A



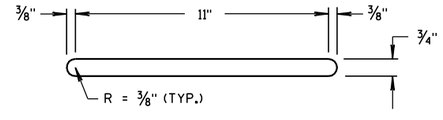
SLOT A



SLOT B



SLOT C



SLOT D

SLOT DETAILS

STEEL THRIE BEAM BULLNOSE TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

9-16-2010 — DATE

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

FHWA

6

S.D.D. 14 B 26-2e

6

S.D.D. 14 B 26-2e

GENERAL NOTES

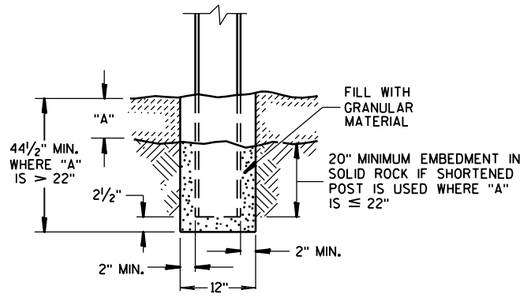
1. WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

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.

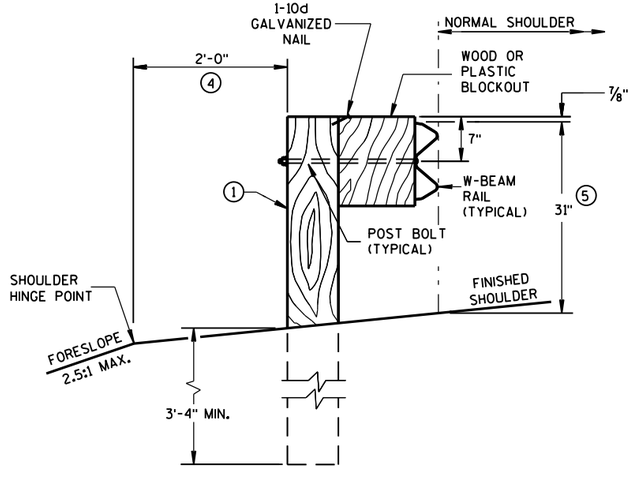
3. IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2½ INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO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

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

5. FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".

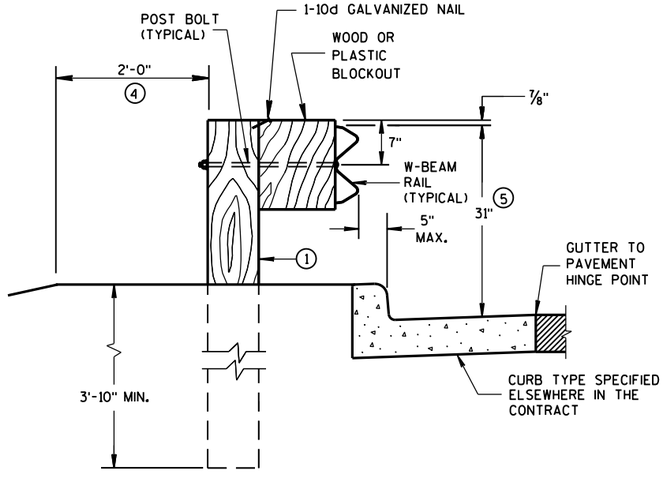


END VIEW
SETTING STEEL OR WOOD POST IN ROCK ③



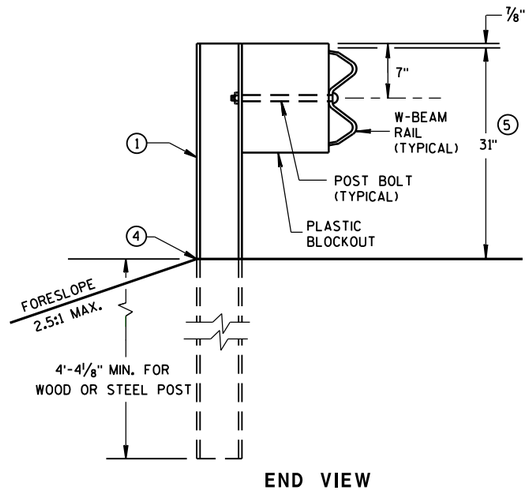
END VIEW

LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



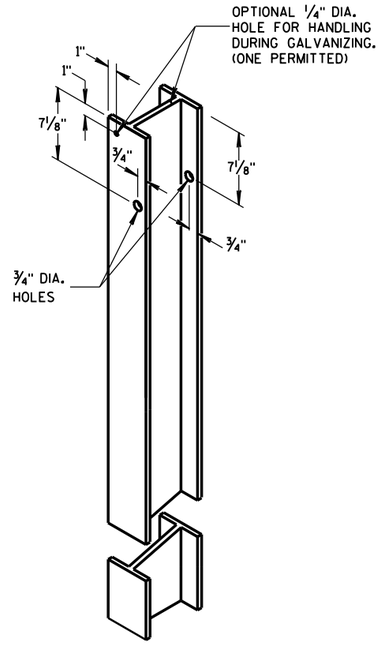
END VIEW

LOCATED ALONG A CURBED ROADWAY

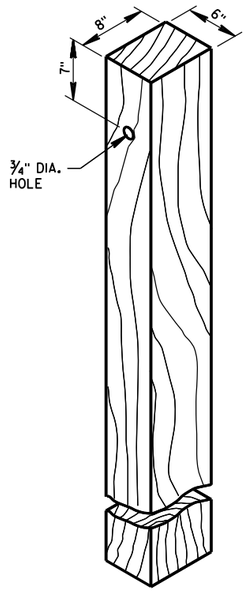


END VIEW

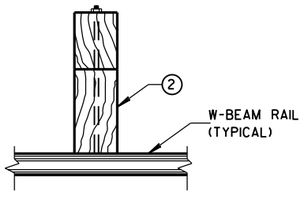
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



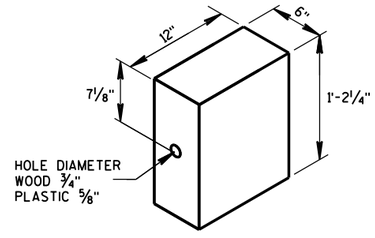
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) ①



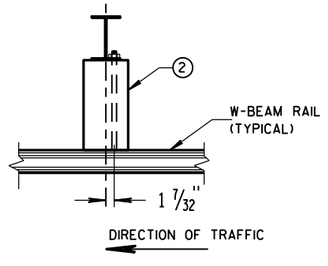
WOOD POST
(6" X 8") NOMINAL ①



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT ②

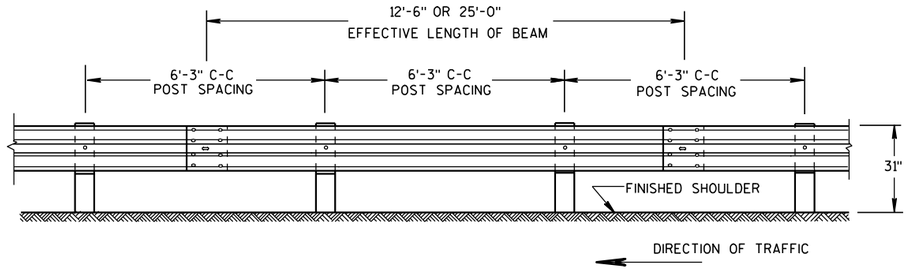


PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

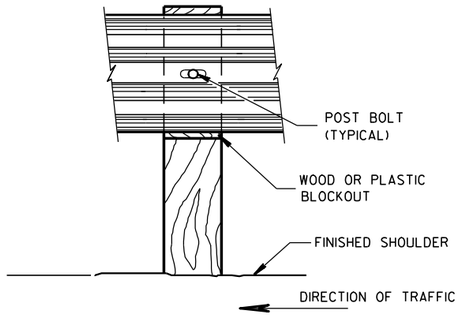
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6
S.D.D. 14 B 42-2a



FRONT VIEW

POST SPACING STANDARD INSTALLATION



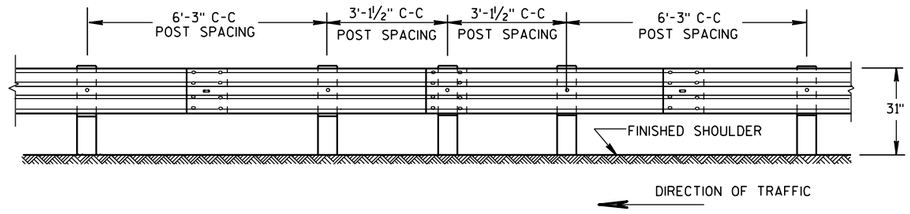
FRONT VIEW AT WOOD POST

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.

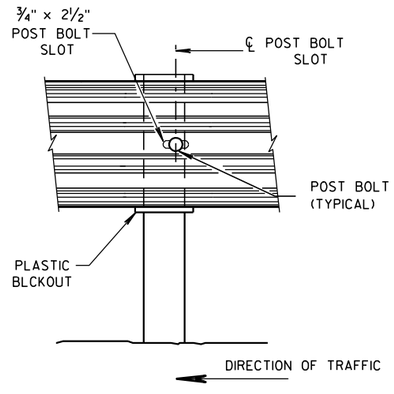
POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

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.

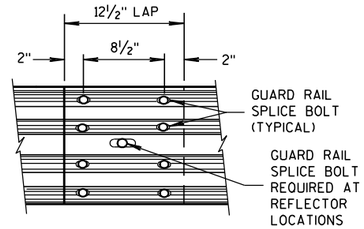


FRONT VIEW

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

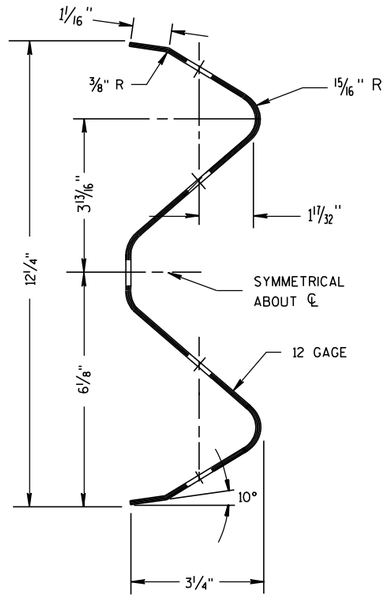


FRONT VIEW AT STEEL POST

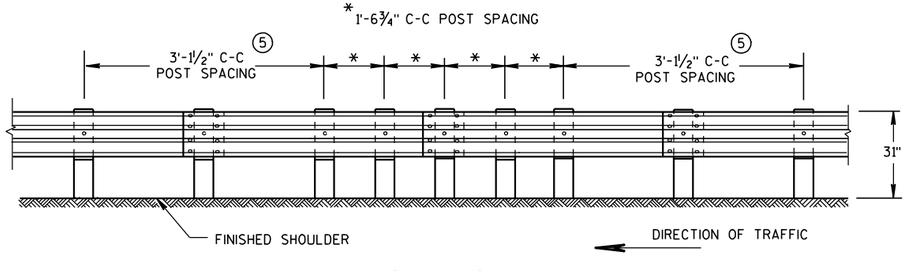


FRONT VIEW

MID-SPAN BEAM SPLICE

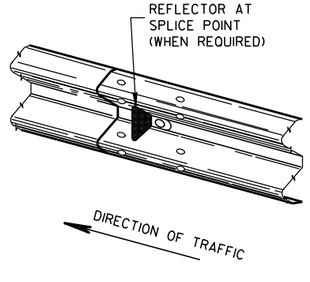


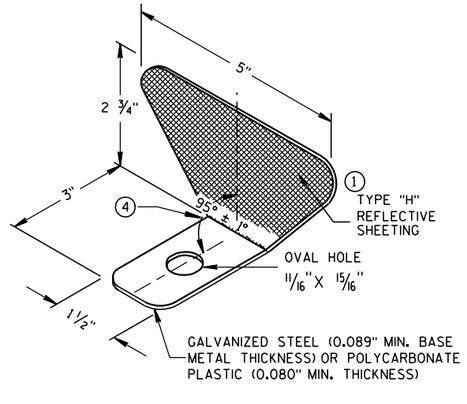
SECTION THRU W-BEAM RAIL



FRONT VIEW

QUARTER POST SPACING (QS)





ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION ①

REFLECTOR SPACING ②

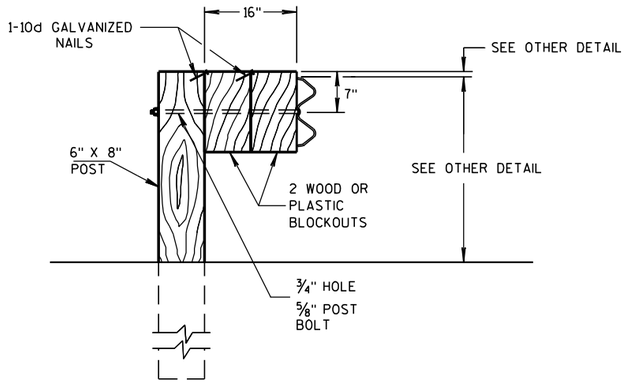
	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	1 1	3
TWO WAY TRAFFIC	< 200' > 200'	25' C-C 50' C-C	1 ③ 1	6
TWO WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	2 ④ 2	3

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

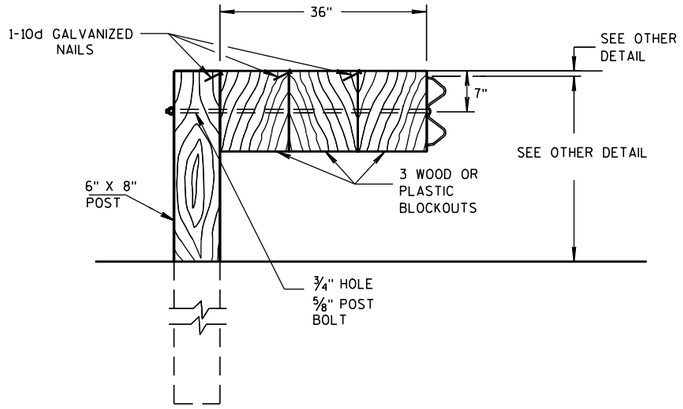
S.D.D. 14 B 42-2b

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.

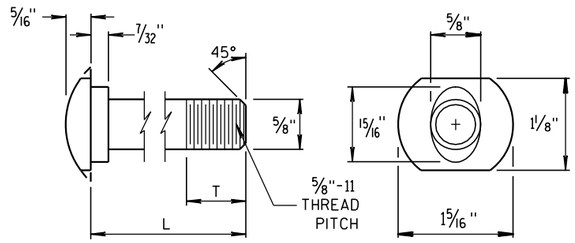


DETAIL FOR 36" BLOCKOUT DEPTH

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.

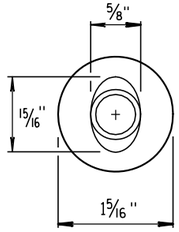
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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.

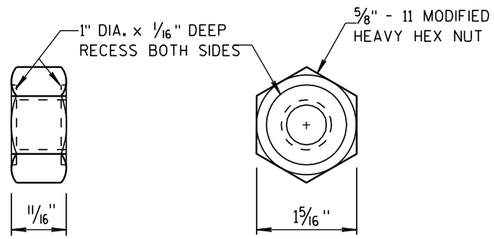


POST BOLT TABLE

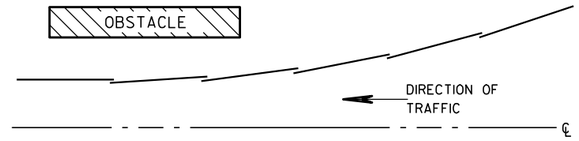
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

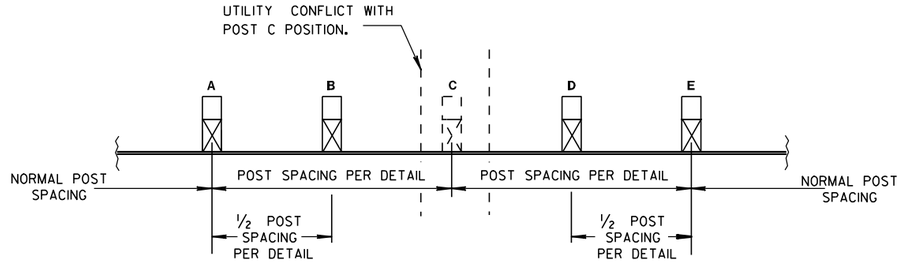


POST BOLT AND RECESS NUT

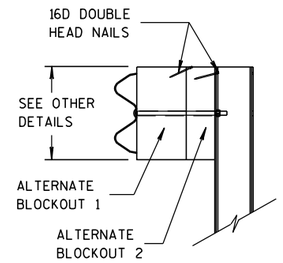


PLAN VIEW

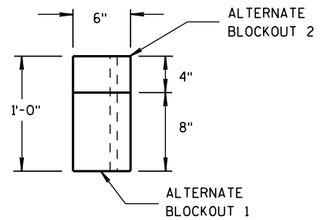
BEAM LAPPING DETAIL



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

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.

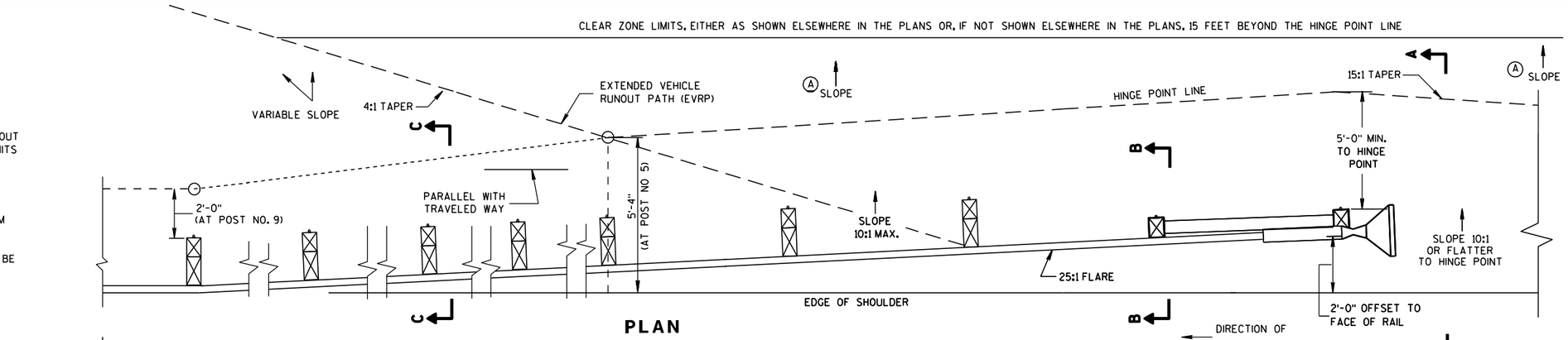
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

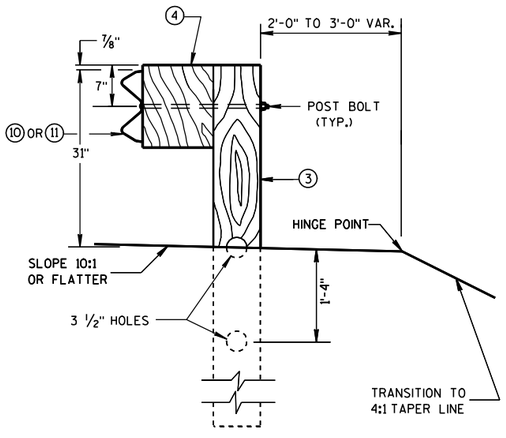
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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.

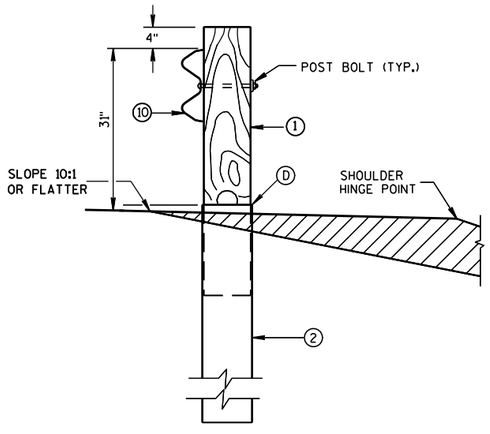
PATTERN AND COLORS ON REFLECTIVE SHEETING TYPE H ARE TO CONFORM TO OM3-L OR OM3-R OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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

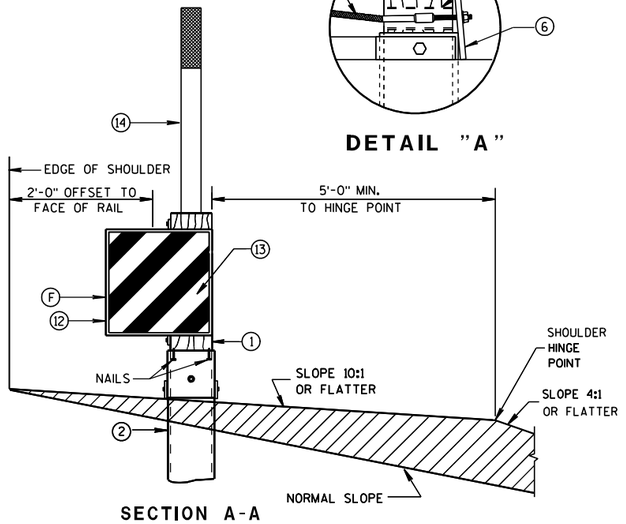




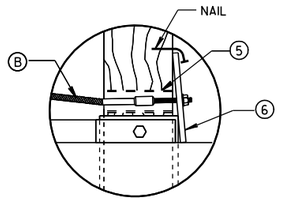
SECTION C-C
TYPICAL AT POST NOS. 3-9



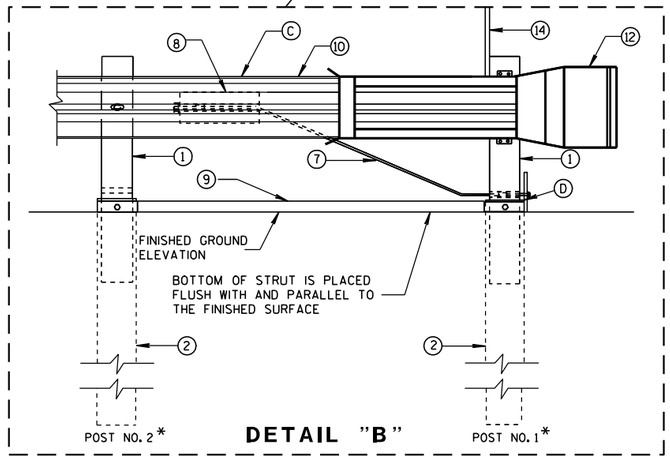
SECTION B-B
TYPICAL AT POST NO. 2*



SECTION A-A
TYPICAL AT POST NO. 1*



DETAIL "A"



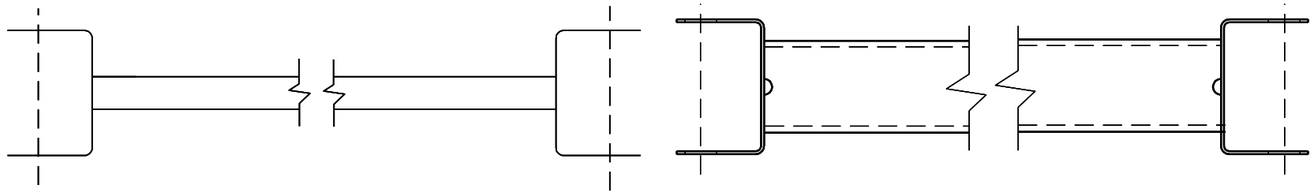
DETAIL "B"

MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

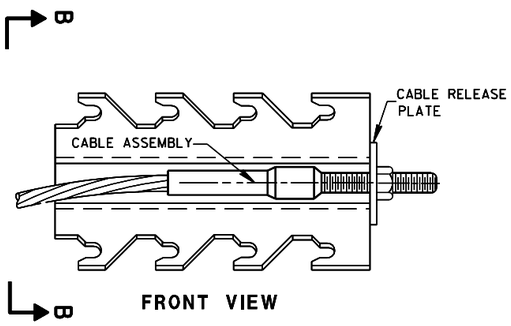
S.D.D. 14 B 44-1a



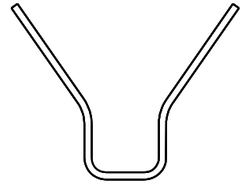
GENERIC GROUND STRUT (9) (H)

BILL OF MATERIALS

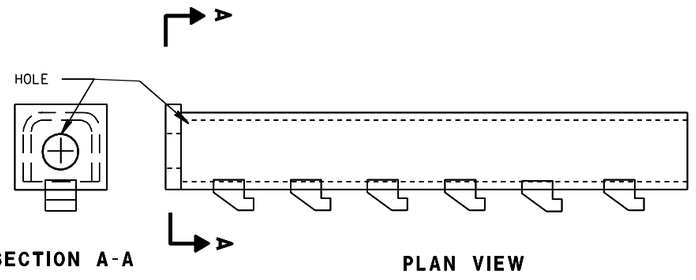
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
(1)	WOOD BREAKAWAY POST
(2)	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
(3)	WOOD CRT
(4)	WOOD BLOCKOUT
(5)	PIPE SLEEVE
(6)	BEARING PLATE
(7)	BCT CABLE ASSEMBLY
(8)	ANCHOR 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)



FRONT VIEW



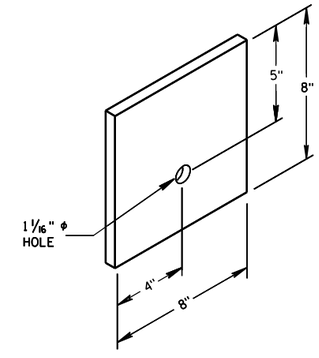
SECTION B-B



SECTION A-A

PLAN VIEW

GENERIC ANCHOR CABLE BOX (8) (H)



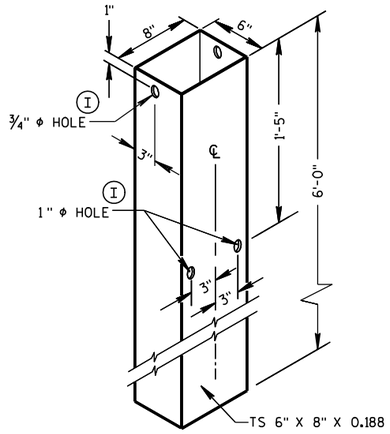
BEARING PLATE (6)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

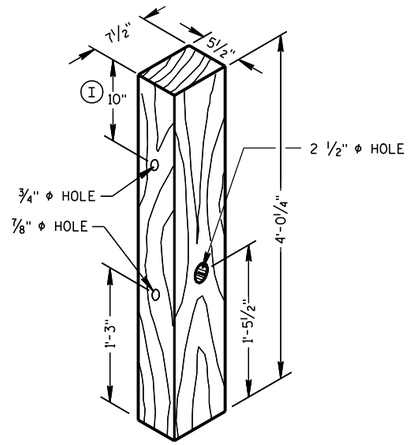
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

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

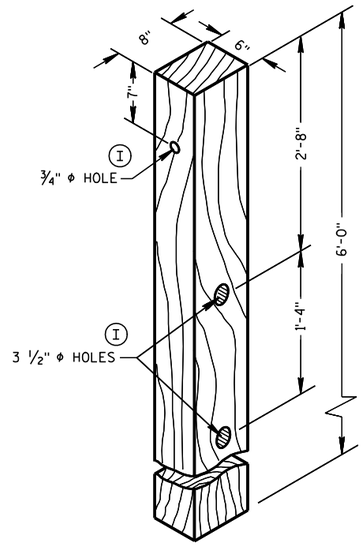


FOUNDATION TUBE (2)



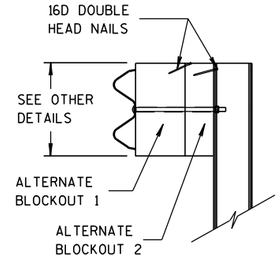
POSTS NUMBER 1 AND 2

WOOD BREAKAWAY POST (1)

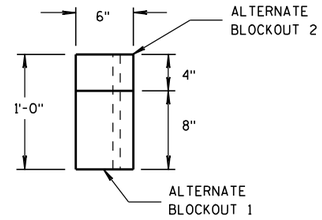


POSTS NUMBER 3-9

WOOD CRT POST (3)

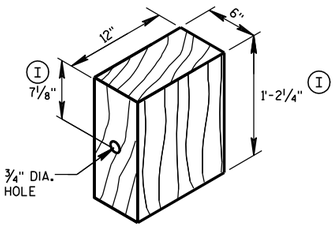


SIDE VIEW



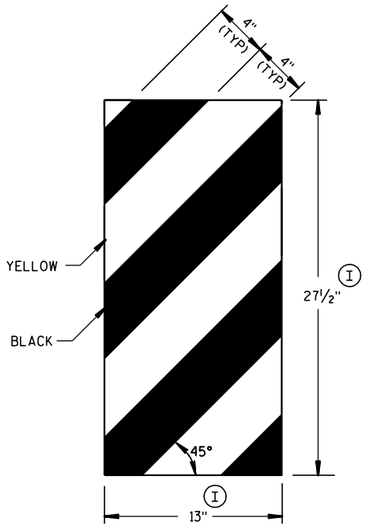
TOP VIEW

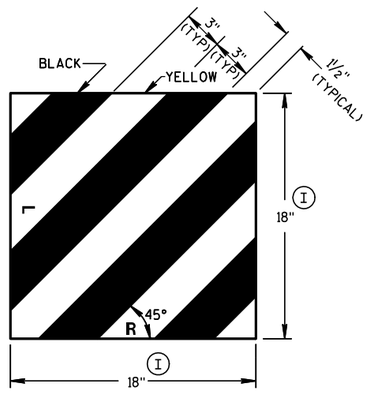
ALTERNATE WOOD BLOCKOUT DETAIL



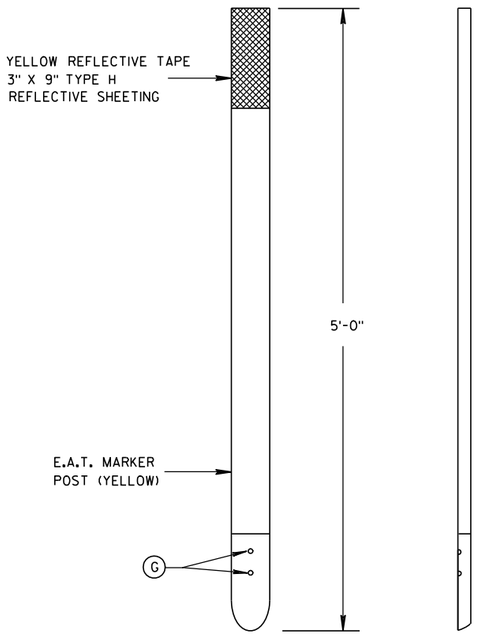
WOOD BLOCKOUT (4)

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





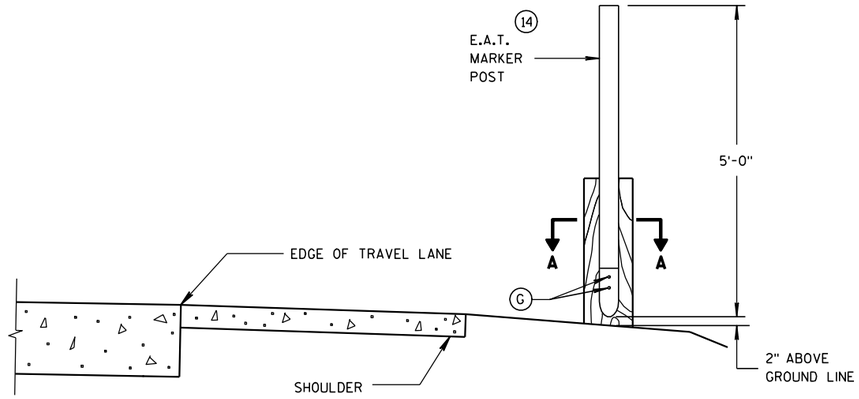
GENERIC REFLECTIVE SHEETING (13) (H)



FRONT VIEW

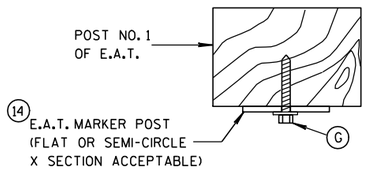
SIDE VIEW

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

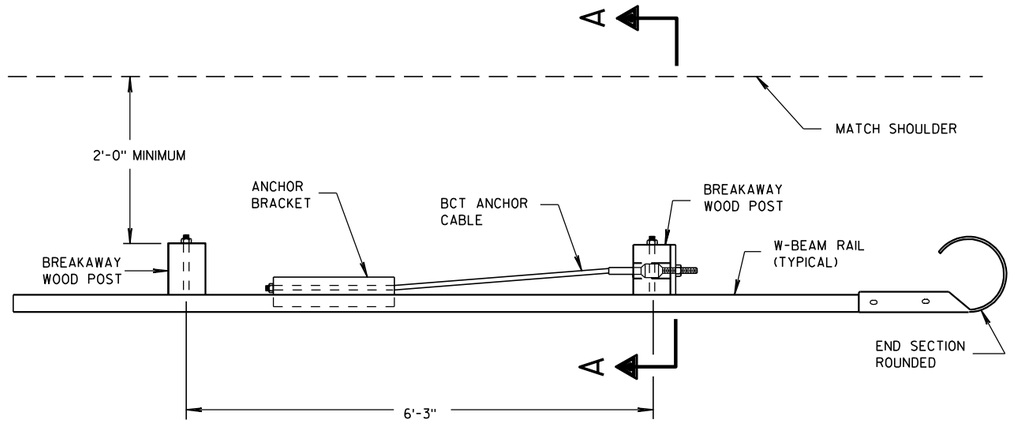
MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

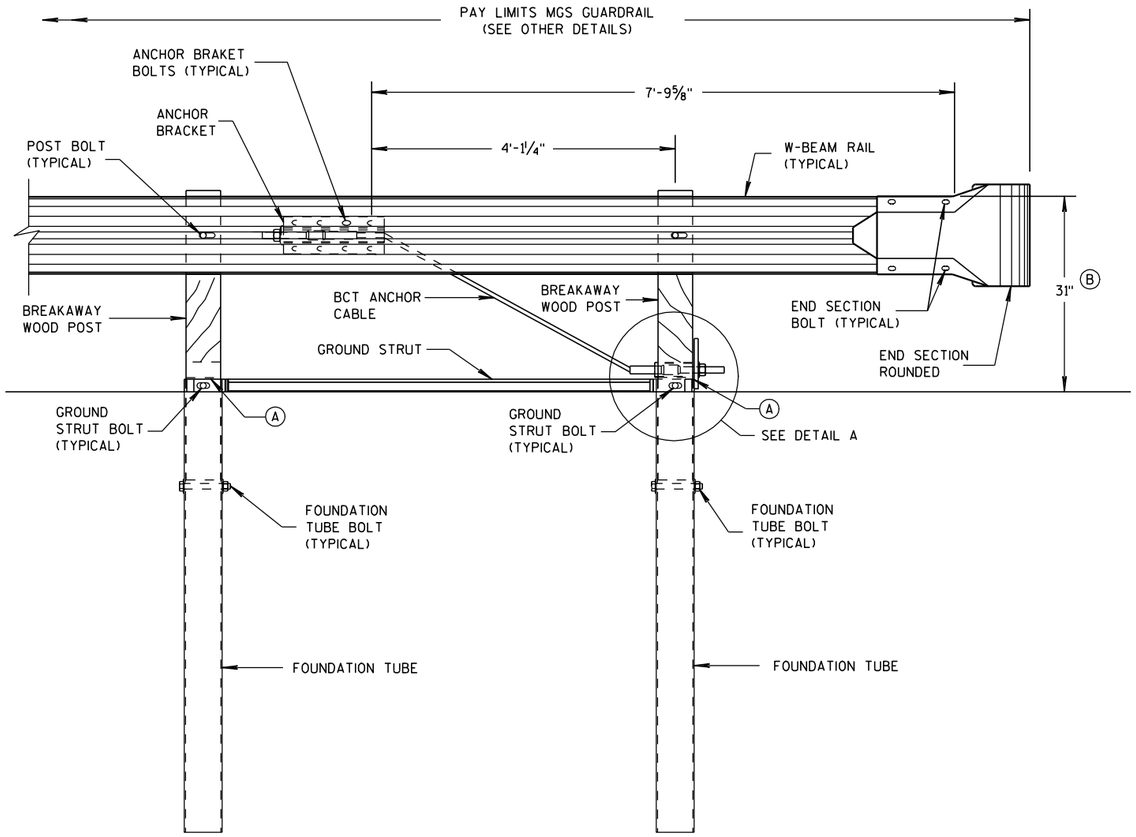
APPROVED
5/23/2011 — DATE
/S/ Jerry H. [illegible] — ROADWAY STANDARDS ENGINEER
FHWA

6

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

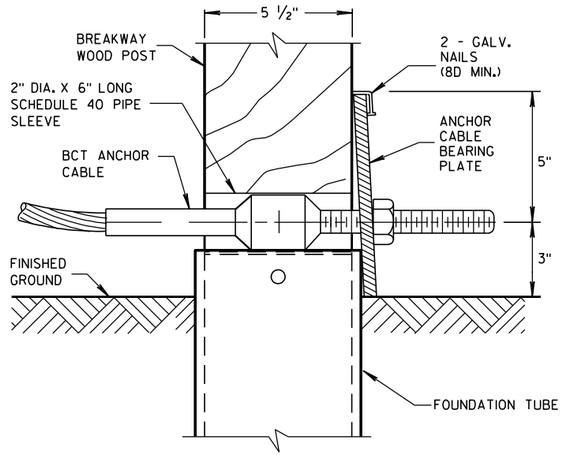


PLAN VIEW



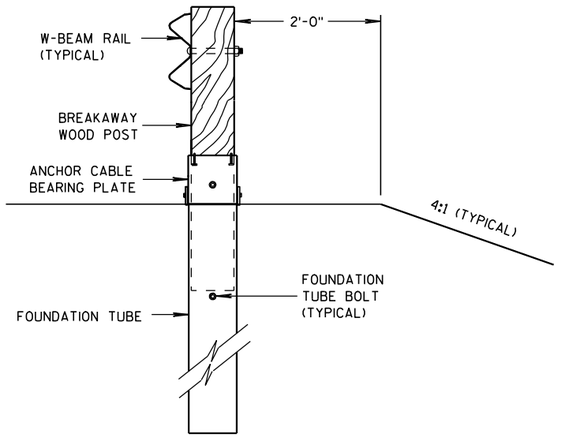
FRONT VIEW

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.

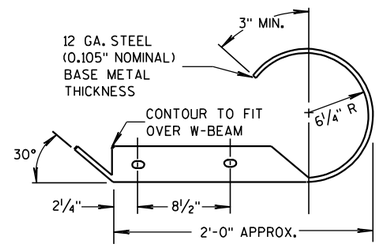
ANCHOR BRAKET BOLTS ARE A ⅝" DIAMETER X 1½" LONG HEAVY HEX HEAD BOLT. AN ANCHOR BRAKET BOLT REQUIRES A ⅝" DIAMETER DH HEAVY HEX NUT AND A FLAT WASHER.

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.

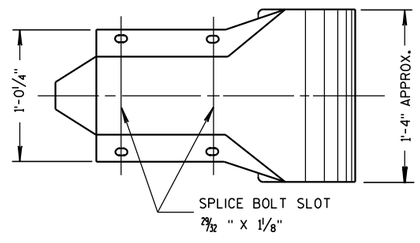
W-BEAM END SECTION ROUNDED HAS THE SAME MATERIAL PROPERTIES AS STANDARD STEEL RAIL.

(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



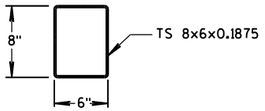
FRONT VIEW

W BEAM END SECTION ROUNDED

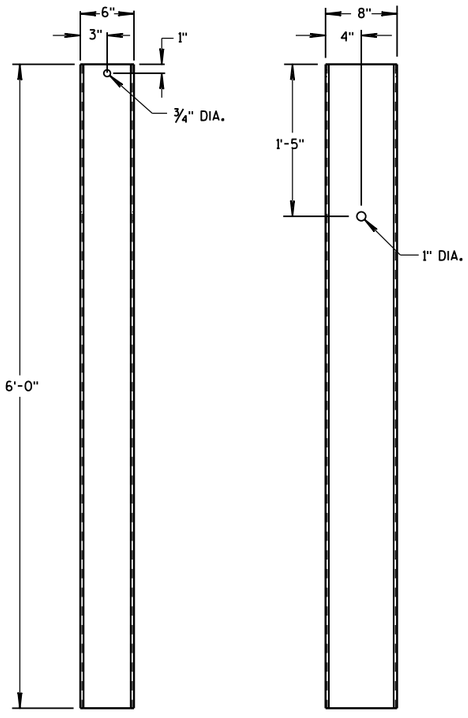
MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6
S.D.D. 14 B 47-1a

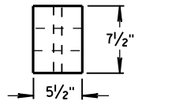


PLAN VIEW

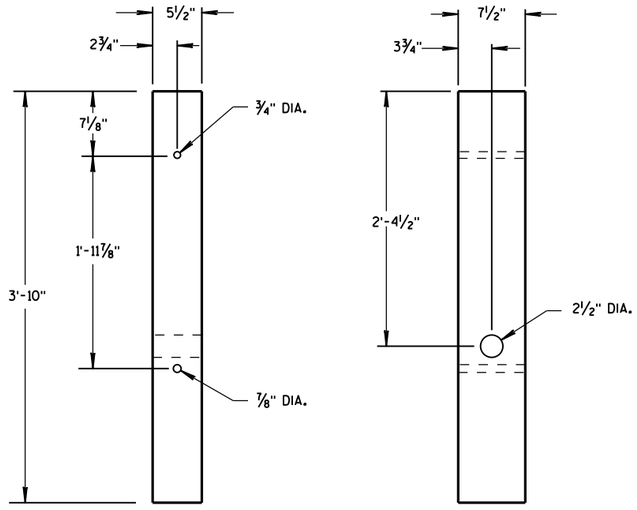


FRONT VIEW SIDE VIEW

FOUNDATION TUBE



PLAN VIEW

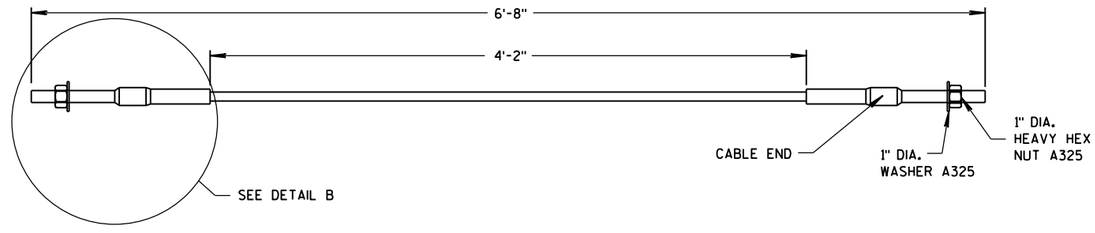


FRONT VIEW SIDE VIEW

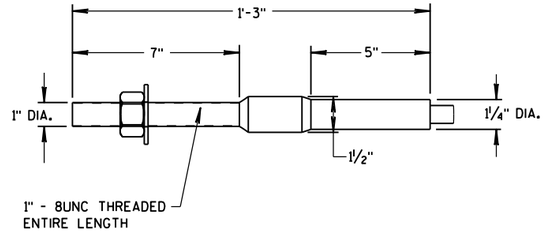
BREAKAWAY WOOD POST

GENERAL NOTES

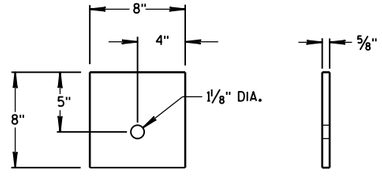
BCT ANCHOR CABLE IS A ⅜" DIAMETER 6X19 IWRC IPS GALVANIZED WIRE ROPE. THE SWAGED FITTINGS AND STUD ARE REQUIRED. THE END FITTING SHALL BE MACHINED FROM HOT-ROLLED CARBON STEEL CONFORMING TO ASTM A576 GRADE 1035 AND GALVANIZED ACCORDING TO ASTM A123. THE TREADED STUD SHOULD CONFORM TO ASTM A325 OR SAE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



BCT ANCHOR CABLE



DETAIL B



SIDE VIEW FRONT VIEW

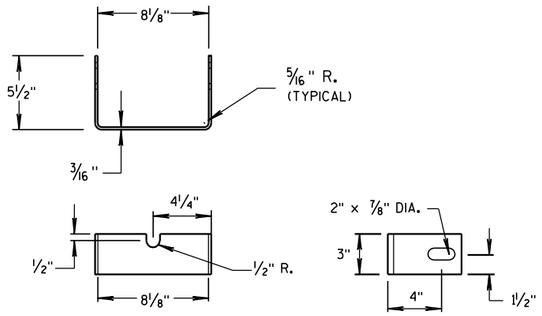
ANCHOR CABLE
BEARING PLATE

MIDWEST GUARDRAIL
SYSTEM (MGS) TYPE 2 TERMINAL

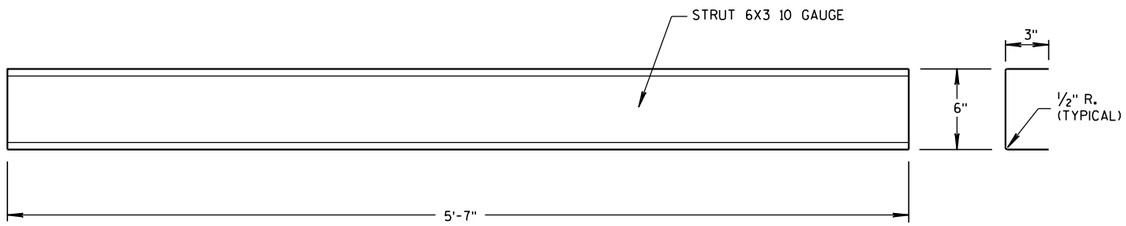
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

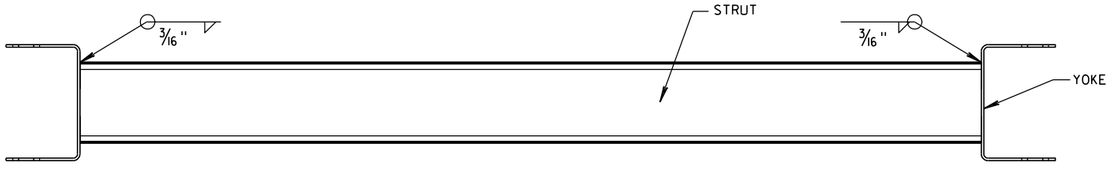
S.D.D. 14 B 47-1b



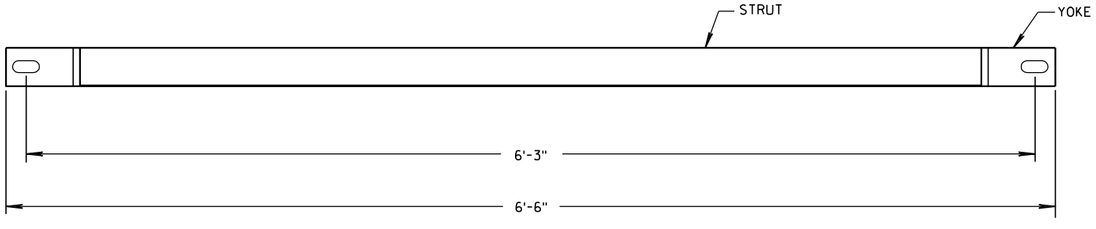
YOKE DETAIL



STRUT DETAIL

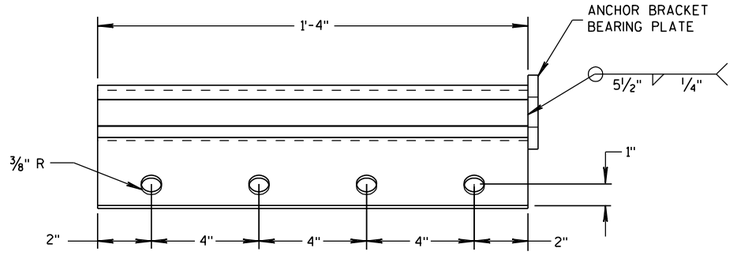


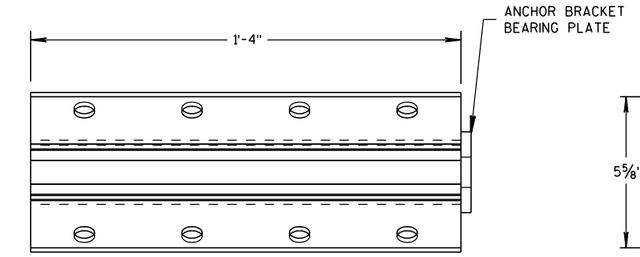
PLAN VIEW

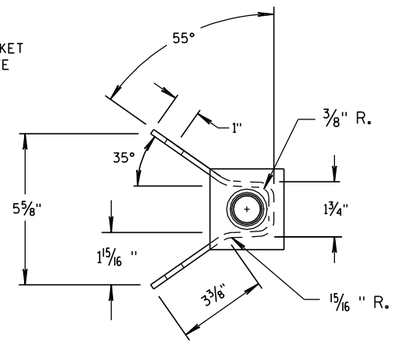


FRONT VIEW

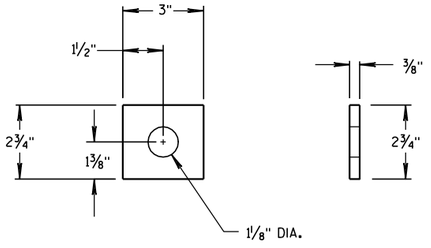
GROUND STRUT DETAIL







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

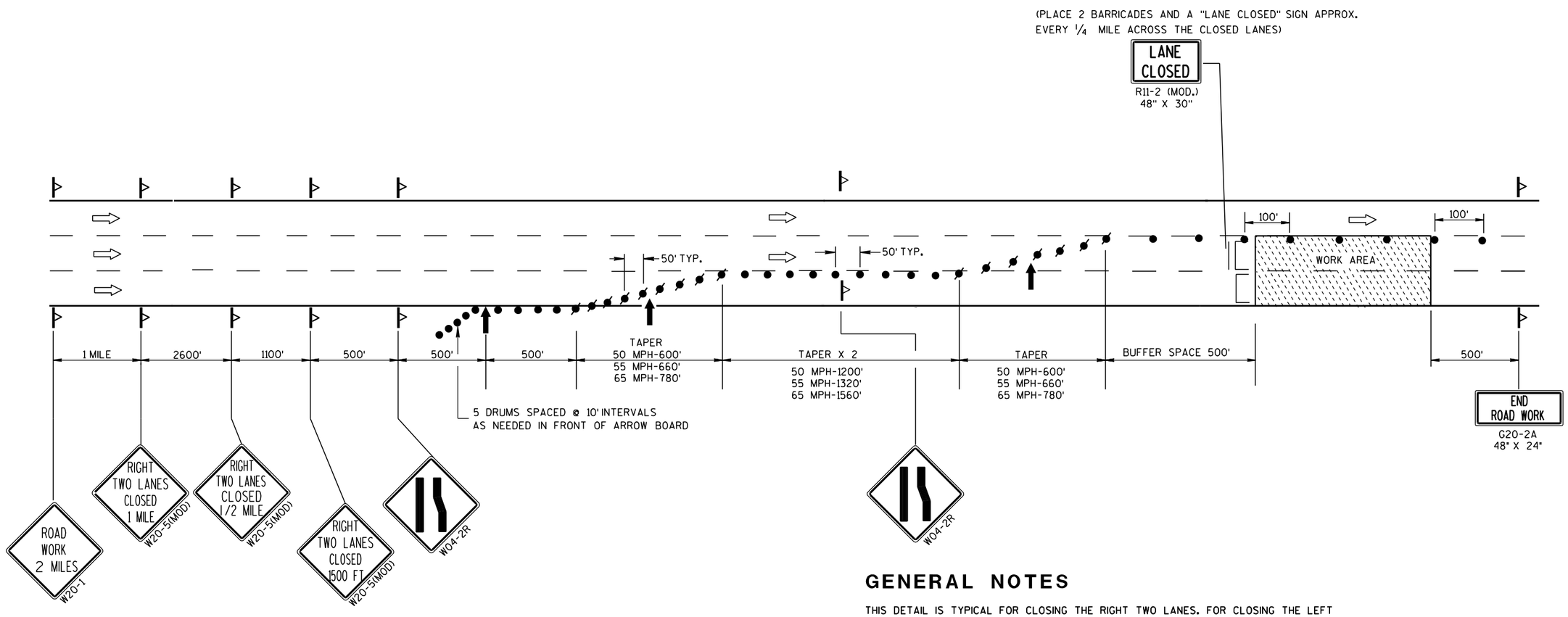
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

5/23/2011
DATE

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

FHWA



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)

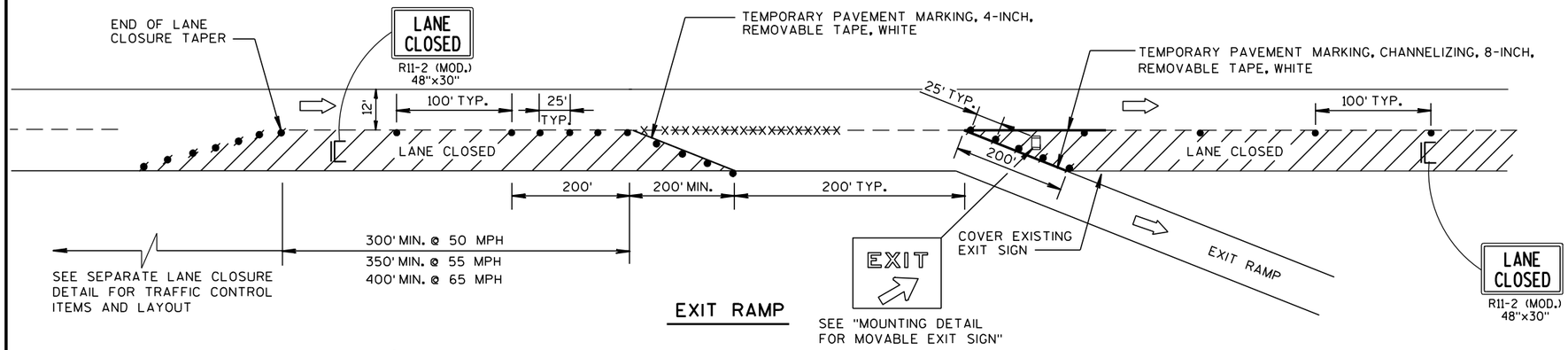
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

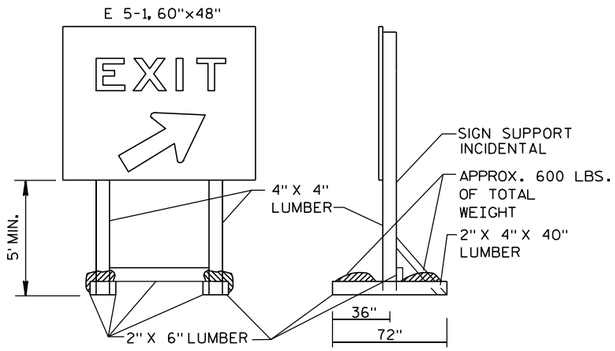
5/23/2000
DATE

/S/ Chester J. [illegible]
CHIEF SIGNS AND MAR 44 INEER

FHWA

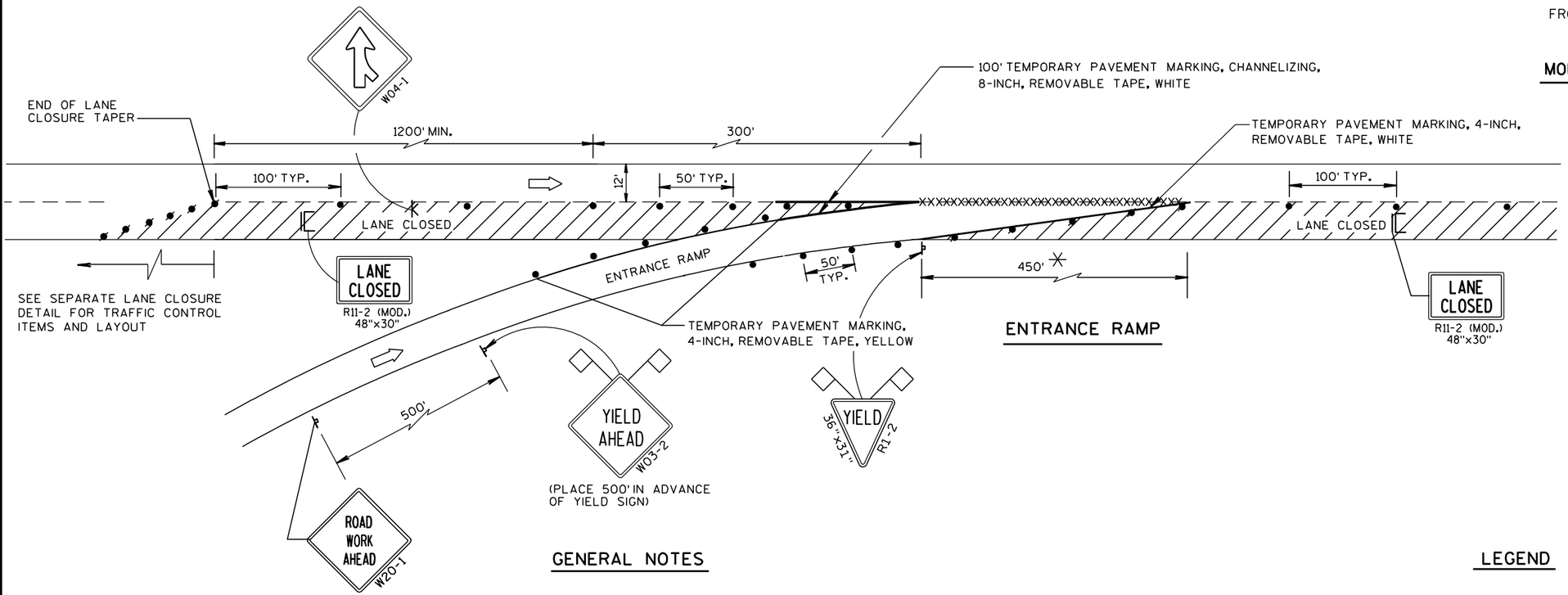


EXIT RAMP



NOTE: ALL LUMBER DIMENSIONS ARE NOMINAL

MOUNTING DETAIL FOR MOVABLE EXIT SIGN



ENTRANCE RAMP

GENERAL NOTES

THE INSTALLATIONS SHOWN ON THIS SHEET ARE TYPICAL EXAMPLES AND ARE NOT INTENDED TO REPRESENT ANY PARTICULAR RAMP. AT SPECIFIC FIELD LOCATIONS, SIMILAR INSTALLATIONS SHALL BE USED AND ADJUSTED TO THE GEOMETRICS OF THE RAMP AS COORDINATED WITH THE ENGINEER.

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

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"x48" UNLESS OTHERWISE NOTED.

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

SEE SEPARATE LANE CLOSURE DETAIL FOR TYPICAL SPACING OF TYPE III BARRICADES AND R11-2 (MOD.) "LANE CLOSED" SIGNS.

YIELD SIGN AND WARNING SIGNS ON ENTRANCE RAMP ARE ALSO APPROPRIATE FOR CLOSURE OF THE MAINLINE LEFT LANE. OMIT THE YIELD SIGN IF MORE THAN ONE LANE REMAINS OPEN ON THE MAINLINE AND THE RAMP TAPER IS AT LEAST AS LONG AS THE NORMAL ENTRANCE RAMP TAPER AT THE SITE.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS.

IF INDICATED IN MISCELLANEOUS QUANTITIES, SUBSTITUTE FLEXIBLE TUBULAR MARKERS FOR DRUMS IN THE GORE BETWEEN THE ENTRANCE RAMP AND MAINLINE TRAFFIC.

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.

REMOVE PAVEMENT MARKINGS AND PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF LANE CLOSURE IS TO BE IN PLACE FOR 7 OR MORE CONTINUOUS DAYS AND NIGHTS.

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

✳ LENGTH OF OPENING MAY BE REDUCED TO 150 FEET DURING STAGING OF WORK IN IMMEDIATE AREA OF RAMP TAPER.

LEGEND

- POST MOUNTED SIGN
- SIGN ON PORTABLE SUPPORT
- TRAFFIC CONTROL, DRUM
- TRAFFIC CONTROL, DRUM WITH WARNING LIGHT, TYPE C (STEADY-BURN)
- REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)
- TYPE III BARRICADE (8' EQUIVALENT) WITH SIGN
- FLAGS, 16"x16" MIN., ORANGE
- DIRECTION OF TRAFFIC FLOW

TRAFFIC CONTROL, EXIT AND ENTRANCE RAMP WITHIN LANE CLOSURE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
5/24/2000 DATE
/S/ Chester J. [illegible]
CHIEF SIGNS AND MARKINGS ENGINEER
FHWA

S.D.D. 15 D 15-1

SYMBOLS

IC/C	TYPE III BARRICADE (8' EQUIVALENT) WITH/WITHOUT SIGN
•	DRUM
⊢	POST MOUNTED SIGN
(A)	WARNING LIGHT, TYPE A (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.

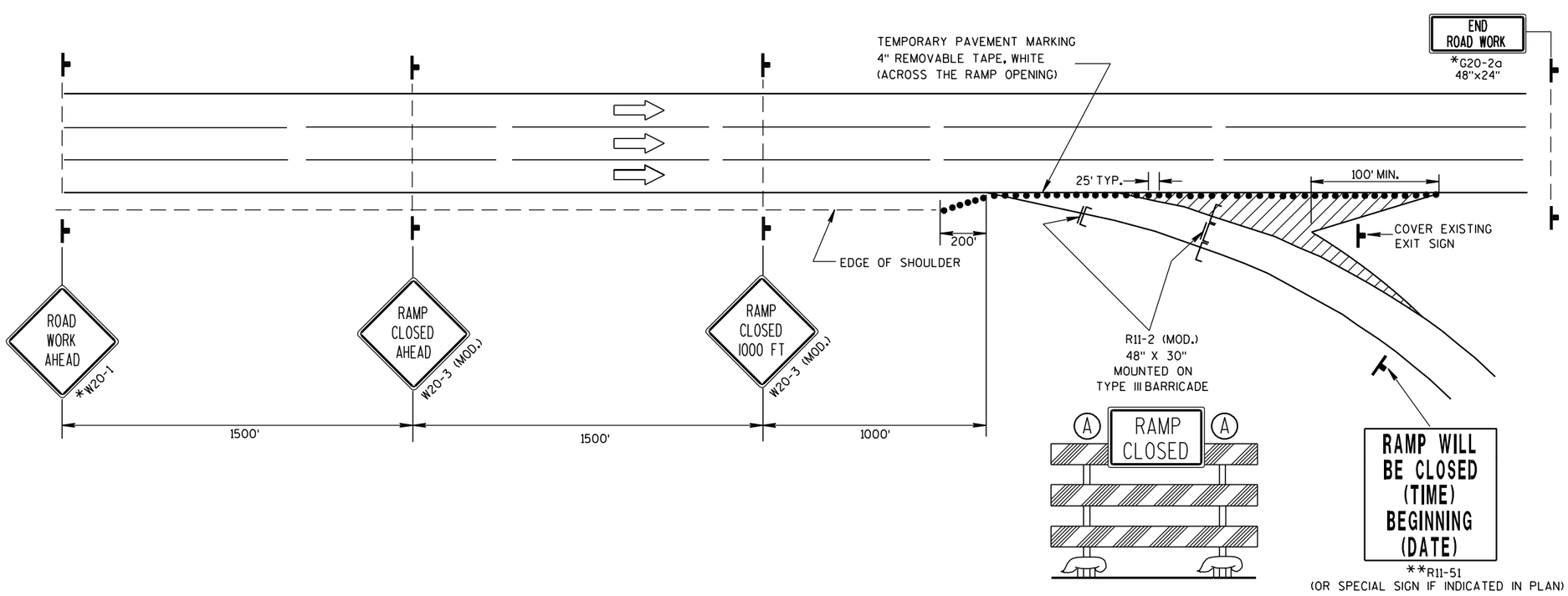
PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF RAMP CLOSURE IS TO BE IN PLACE FOR 7 OR MORE CONTINUOUS DAYS AND NIGHTS.

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.

**USE THE "RAMP WILL BE CLOSED" SIGN IF INDICATED IN MISCELLANEOUS QUANTITIES. PLACE 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

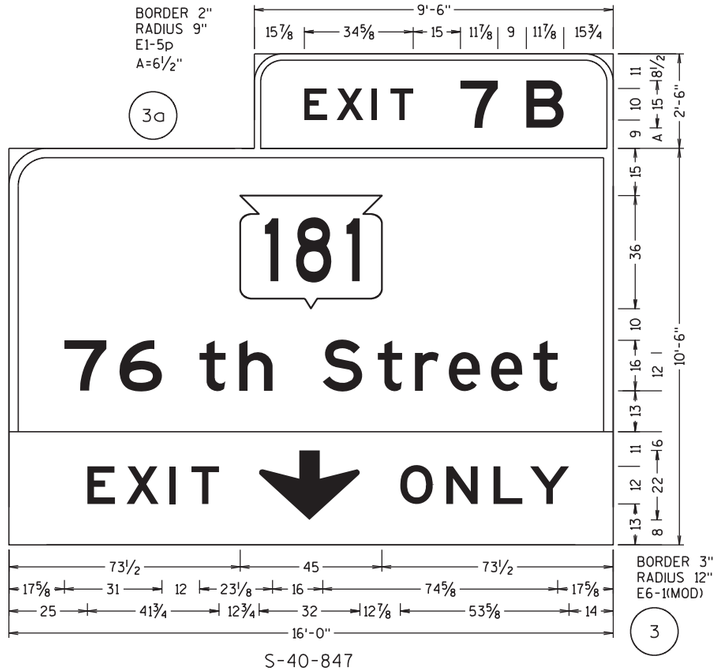
5/23/2000
DATE

/S/ Chester J. [illegible]
CHIEF SIGNS AND MARKINGS ENGINEER

FHWA

6

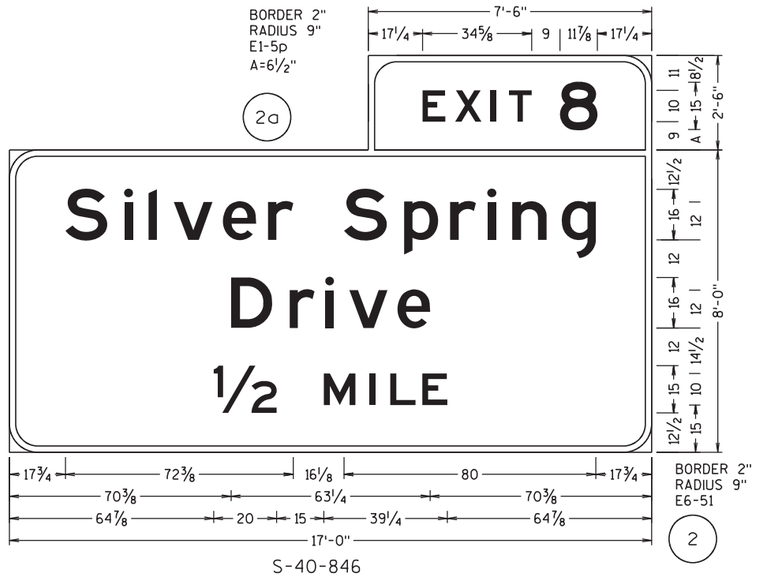
S.D.D. 15 D 16-1



S-40-847

EXIT PANEL E11-1

COLOR:
BACKGROUND- YELLOW
MESSAGE- BLACK-
NON REFLECTIVE



S-40-846

GENERAL NOTES:

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

2. UNLESS OTHERWISE NOTED, ALL SIGNS SHOWN ON THIS SHEET ARE "SIGNS, TYPE I".

3. UNLESS OTHERWISE NOTED, TYPE II SIGNS ON THIS SHEET SHALL HAVE "TYPE H REFLECTIVE SHEETING" AND, "TYPE H MESSAGE MATERIAL". TYPE I SIGNS SHALL HAVE TYPE SH REFLECTIVE SHEETING.

4. UNLESS OTHERWISE NOTED, ALL SIGNS SHOWN ON THIS SHEET SHALL HAVE A GREEN BACKGROUND AND WHITE MESSAGE.

5. TYPE II SIGNS ALL UPPER CASE MESSAGE (EXCEPT ON SHIELDS OR WHERE OTHERWISE NOTED) SHALL BE "SERIES E. ALL LOWER CASE MESSAGE WITH AN INITIAL UPPER CASE LETTER SHALL BE "SERIES E.

6. TYPE I SIGNS - ALL UPPER CASE MESSAGE (EXCEPT ON SHIELDS OR WHERE OTHERWISE NOTED) SHALL BE SERIES "E" MODIFIED. ALL LOWER CASE MESSAGE WITH AN INITIAL UPPER CASE LETTER SHALL BE SERIES "E" MODIFIED. ALL CAP WORDS ARE "SERIES E"

7. UNLESS OTHERWISE NOTED, ALL SIGNS SHOWN ON THIS SHEET SHALL HAVE "TYPE A" OR "TYPE C" ARROWS AS SHOWN. SEE THE STANDARD SIGN PLATES FOR FURTHER DETAILS.

8. SEE THE STANDARD SIGN PLATES FOR FURTHER DETAILS ON ROUTE MARKER SHIELDS.

9. THE SIGN NUMBER IS DENOTED IN THE CIRCLE NEAR EACH DETAIL.

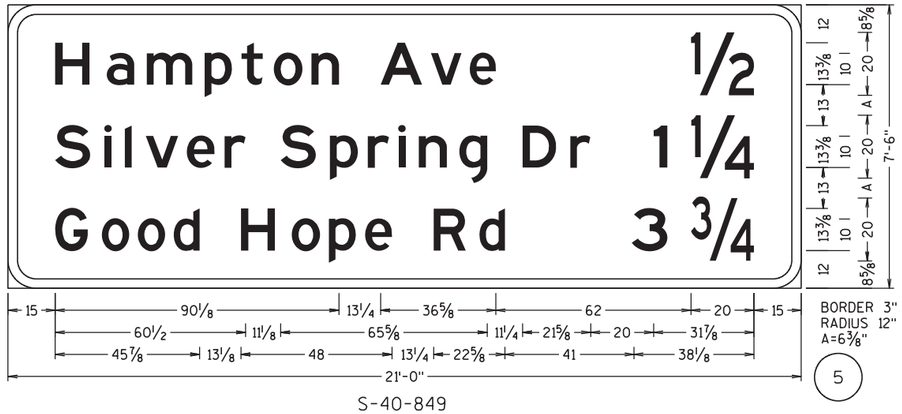
10. NUMBER FRACTIONS FOR INTERCHANGE SEQUENCE SIGNS SHALL BE SERIES "E" PER PLATES A11-7 AND A11-10

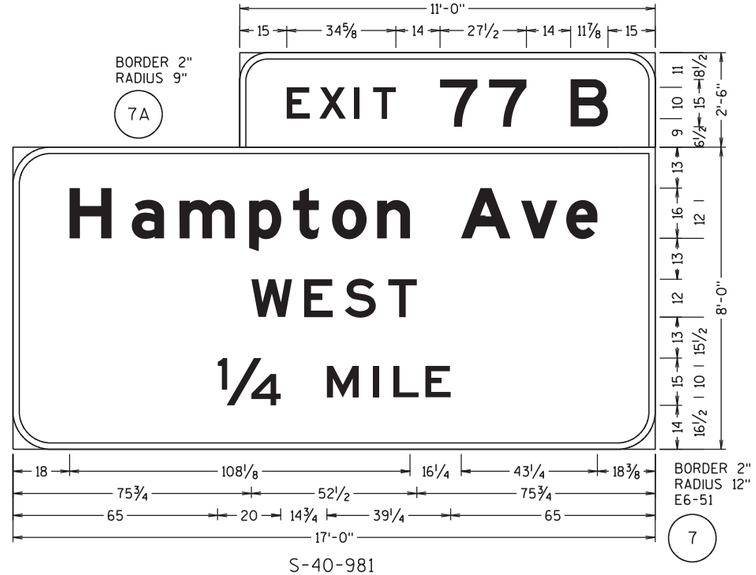
11. DO NOT SCALE.

S-40-845

EXIT PANEL E11-1

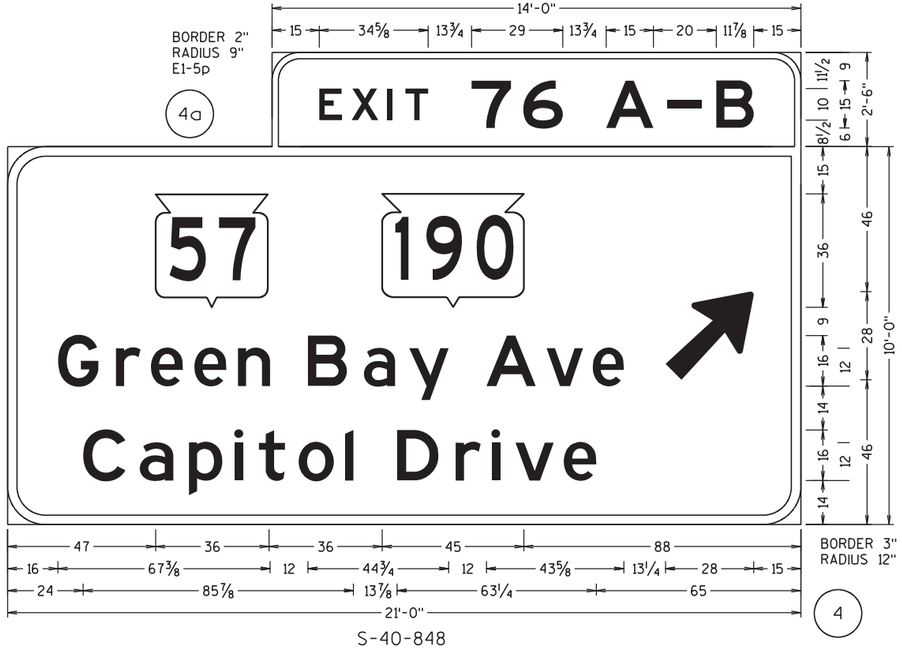
COLOR:
BACKGROUND- YELLOW
MESSAGE- BLACK-
NON REFLECTIVE



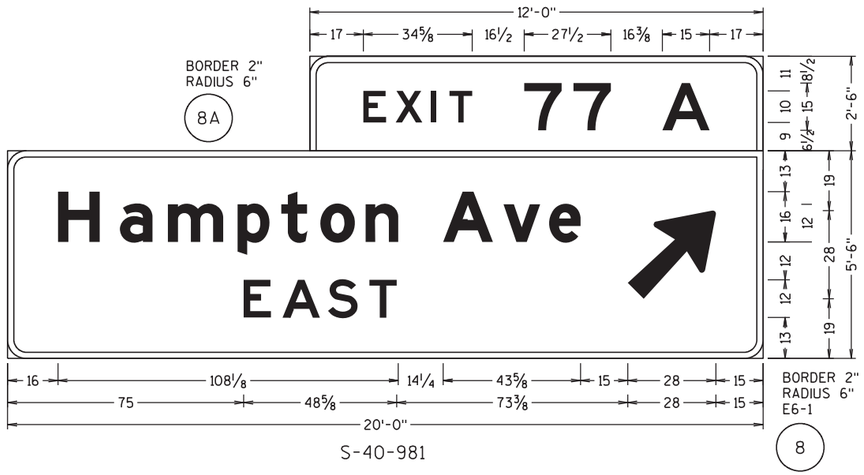


GENERAL NOTES:

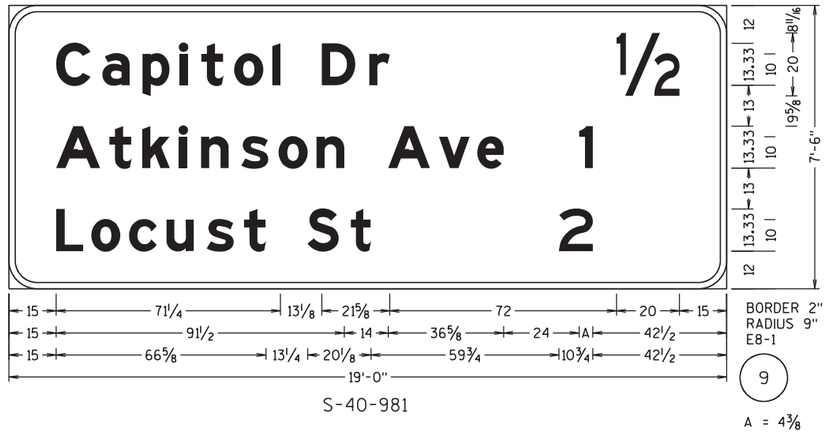
1. DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE PLANS.
2. UNLESS OTHERWISE NOTED, ALL SIGNS SHOWN ON THIS SHEET ARE "SIGNS, TYPE I".
3. UNLESS OTHERWISE NOTED, TYPE II SIGNS ON THIS SHEET SHALL HAVE "TYPE H REFLECTIVE SHEETING" AND, "TYPE H MESSAGE MATERIAL". TYPE I SIGNS SHALL HAVE TYPE SH REFLECTIVE SHEETING.
4. UNLESS OTHERWISE NOTED, ALL SIGNS SHOWN ON THIS SHEET SHALL HAVE A GREEN BACKGROUND AND WHITE MESSAGE.
5. TYPE II SIGNS ALL UPPER CASE MESSAGE (EXCEPT ON SHIELDS OR WHERE OTHERWISE NOTED) SHALL BE "SERIES E. ALL LOWER CASE MESSAGE WITH AN INITIAL UPPER CASE LETTER SHALL BE "SERIES E.
6. TYPE I SIGNS - ALL UPPER CASE MESSAGE (EXCEPT ON SHIELDS OR WHERE OTHERWISE NOTED) SHALL BE SERIES "E" MODIFIED. ALL LOWER CASE MESSAGE WITH AN INITIAL UPPER CASE LETTER SHALL BE SERIES "E" MODIFIED. ALL CAP WORDS ARE "SERIES E"
7. UNLESS OTHERWISE NOTED, ALL SIGNS SHOWN ON THIS SHEET SHALL HAVE "TYPE A" OR "TYPE C" ARROWS AS SHOWN. SEE THE STANDARD SIGN PLATES FOR FURTHER DETAILS.
8. SEE THE STANDARD SIGN PLATES FOR FURTHER DETAILS ON ROUTE MARKER SHIELDS.
9. THE SIGN NUMBER IS DENOTED IN THE CIRCLE NEAR EACH DETAIL.
10. NUMBER FRACTIONS FOR INTERCHANGE SEQUENCE SIGNS SHALL BE SERIES "E" PER PLATES A11-7 AND A11-10
11. DO NOT SCALE.



PROJECT NO: 1000-19-89	HWY: STH 145 & I-43	COUNTY: MILWAUKEE	SIGNING DETAIL - TYPE I SIGNS	SCALE: 0 1/2" 1"	SHEET E



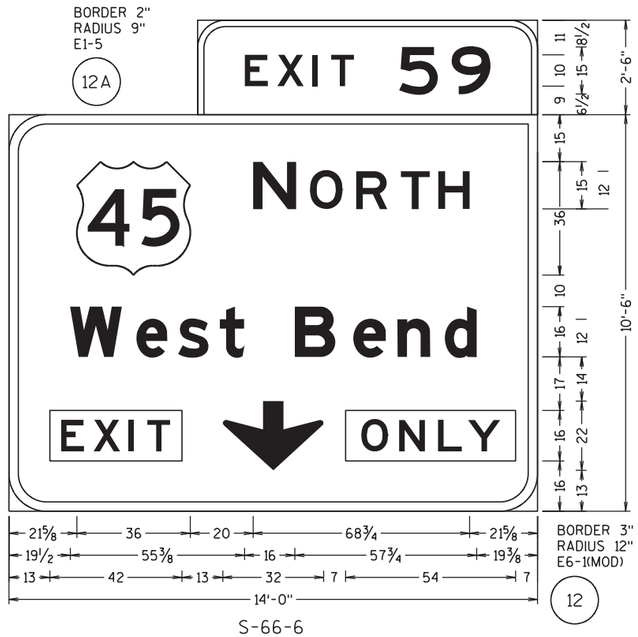
S-40-981



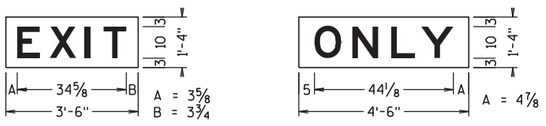
S-40-981

GENERAL NOTES:

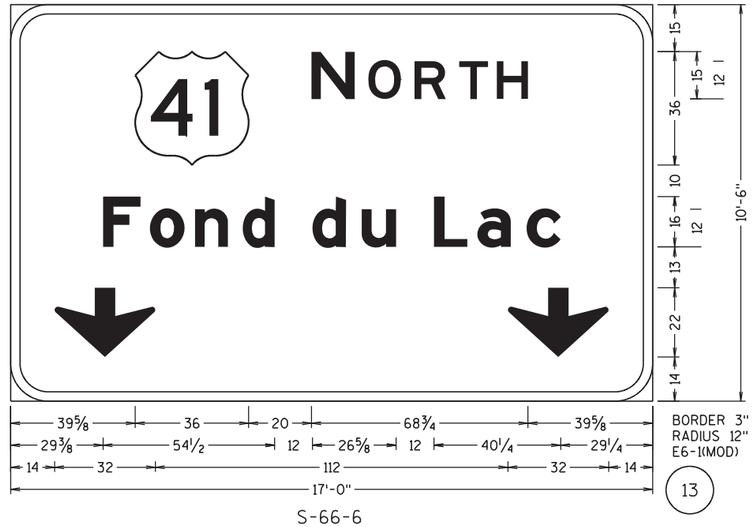
1. DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE PLANS.
2. UNLESS OTHERWISE NOTED, ALL SIGNS SHOWN ON THIS SHEET ARE "SIGNS, TYPE I".
3. UNLESS OTHERWISE NOTED, TYPE II SIGNS ON THIS SHEET SHALL HAVE "TYPE H REFLECTIVE SHEETING" AND, "TYPE H MESSAGE MATERIAL". TYPE I SIGNS SHALL HAVE TYPE SH REFLECTIVE SHEETING.
4. UNLESS OTHERWISE NOTED, ALL SIGNS SHOWN ON THIS SHEET SHALL HAVE A GREEN BACKGROUND AND WHITE MESSAGE.
5. TYPE II SIGNS ALL UPPER CASE MESSAGE (EXCEPT ON SHIELDS OR WHERE OTHERWISE NOTED) SHALL BE "SERIES E. ALL LOWER CASE MESSAGE WITH AN INITIAL UPPER CASE LETTER SHALL BE "SERIES E.
6. TYPE I SIGNS - ALL UPPER CASE MESSAGE (EXCEPT ON SHIELDS OR WHERE OTHERWISE NOTED) SHALL BE SERIES "E" MODIFIED. ALL LOWER CASE MESSAGE WITH AN INITIAL UPPER CASE LETTER SHALL BE SERIES "E" MODIFIED. ALL CAP WORDS ARE "SERIES E"
7. UNLESS OTHERWISE NOTED, ALL SIGNS SHOWN ON THIS SHEET SHALL HAVE "TYPE A" OR "TYPE C" ARROWS AS SHOWN. SEE THE STANDARD SIGN PLATES FOR FURTHER DETAILS.
8. SEE THE STANDARD SIGN PLATES FOR FURTHER DETAILS ON ROUTE MARKER SHIELDS.
9. THE SIGN NUMBER IS DENOTED IN THE CIRCLE NEAR EACH DETAIL.
10. NUMBER FRACTIONS FOR INTERCHANGE SEQUENCE SIGNS SHALL BE SERIES "E" PER PLATES A11-7 AND A11-10
11. DO NOT SCALE.



S-66-6



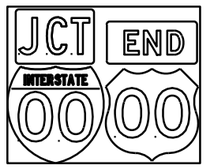
MESSAGE NON-REFLECTIVE BLACK
BACKGROUND TYPE H REFLECTIVE SHEETING YELLOW
0.063 MIN THICKNESS NON-CORROSIVE STEEL



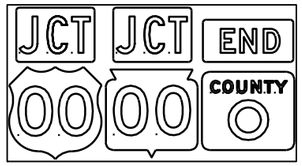
S-66-6

TYPICAL ASSEMBLIES

J1-1

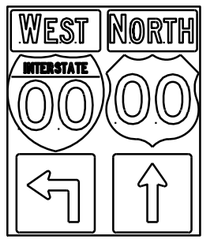


J1-2

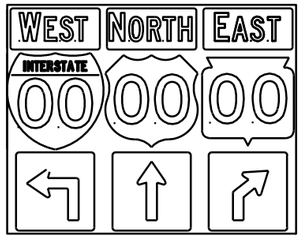


J1-3

J2-1

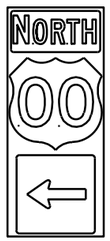


J2-2

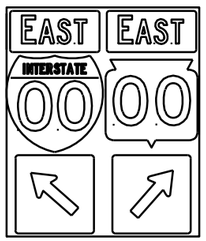


J2-3

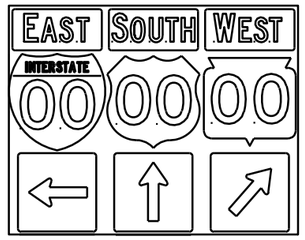
JV



J3-1

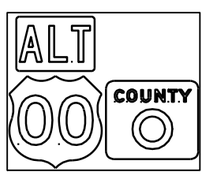


J3-2

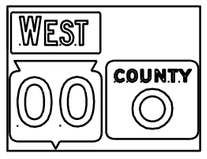


J3-3

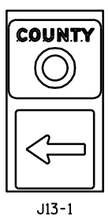
J4-1



J4-2



J4-2



J13-1

J12-1

J32-1

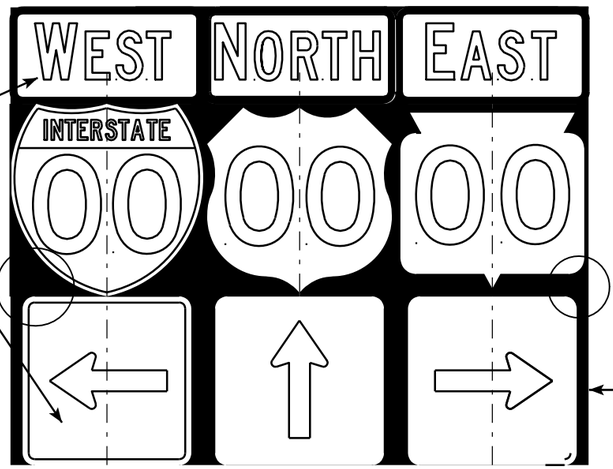
J33-1

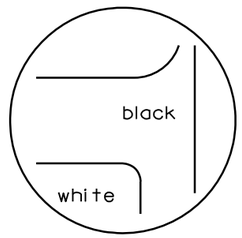
J23-1

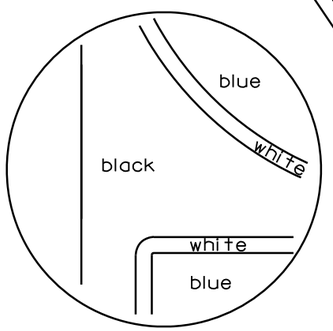
J22-1

NOTES

1. Signs are Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Black Non-reflective
   Message - see Note 5
3. Message Series - See Note 5
4. Corners shall be square since base material is plywood.
5. The colors and message spacing on each marker shall be according to the applicable route marker panel specifications.
6. Certain marker heads require the component pieces to be the same color. As an example, all the components used with an M1-1 Interstate marker shall be blue.
7. Single panel j-assemblies shall only be used with route marker shields that are same size. If the route marker shields are different size use multiple piece component.
8. Route assemblies that have 24 inch route shields and have dimensions greater than 48 inches (both vertical and horizontal) shall have one horizontal splice between the arrows and route shields. Vertical splices shall not be used on route assemblies with a horizontal dimension of 144 inches or less. The contractor shall not use more than one vertical joint per sign and the joint shall be between route shields.
9. Route assemblies that have 36 inch shields and have dimensions greater than 48 inchs (both vertical and horizontal) shall have two horizontal splices. One horizontal splice shall be between the cardinal direction and route shields and the other horizontal splice shall be between the arrows and route shields. Vertical splices shall not be used on route assemblies with a horizontal dimension of 144 or less. The contractor shall not use more than one vertical joint per sign and the joint shall be between route shields.







ROUTE MARKERS & COMPONENTS IN TYPICAL ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch for State Traffic Engineer

DATE 10/21/09 PLATE NO. A2-1S.6

7

7

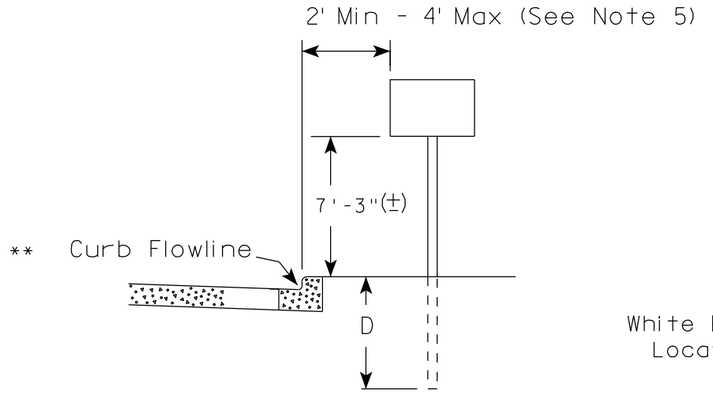
PROJECT NO:

SHEET NO: 50 E

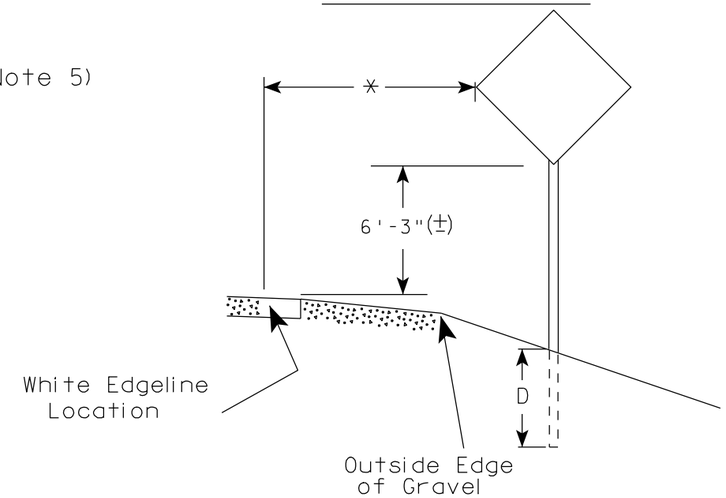
FILE NAME : C:\Users\PROJECTS\tr_stdplate\A21S.DGN PLOT DATE : 21-OCT-2009 09:27 PLOT BY : ditjph PLOT NAME :

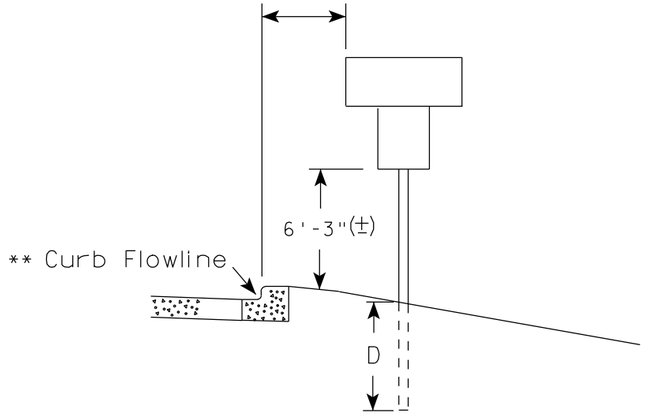
WISDOT/CADDS SHEET 42

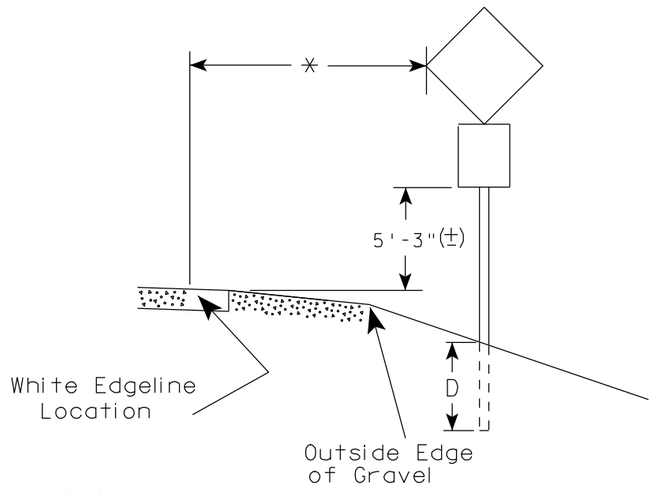
URBAN AREA



RURAL AREA (See Note 2)







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

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

GENERAL NOTES

1. Signs wider than 4 feet or larger than 20 sq. ft. shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on barrier wall, see A4-10 sign plate.
3. For expressways and freeways, mounting height is 7'- 3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
4. Minimum mounting height for J assemblies (A4-5) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
5. Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±).
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. The (±) tolerance for mounting height is 3 inches.
8. Folding stop signs (R1-1F) shall be mounted at a height of 5'-3" (±) or as directed by the Engineer.
9. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (W1-8A), Clearance Markers (W5-52), Mile Markers (D10 series) & End of Road Markers (W5-56 & W5-56A) shall be mounted at a height of 4'-3" (±).

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

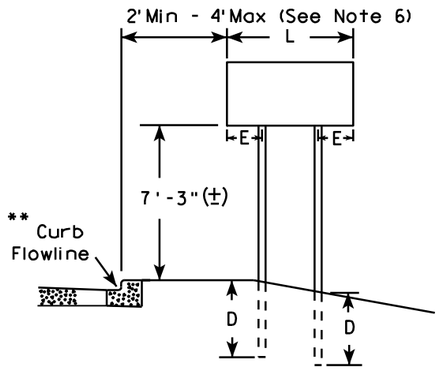
DATE 9/30/09 PLATE NO. A4-3.15

7

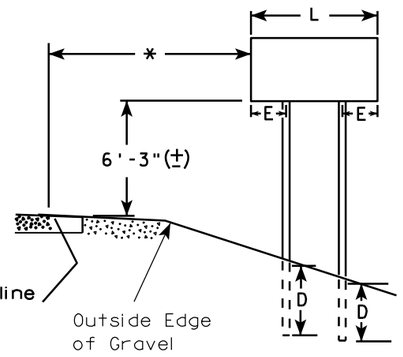
7

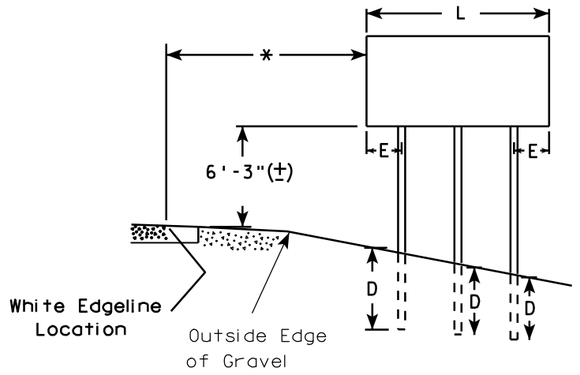
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 51	E

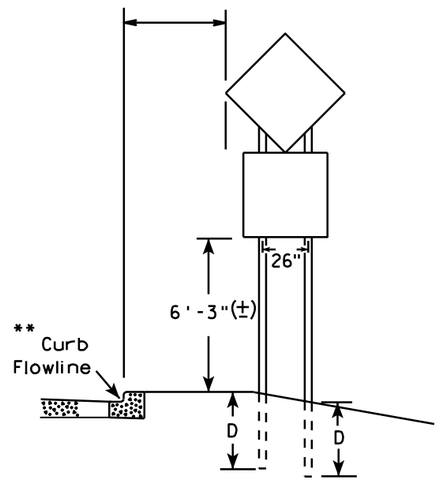
URBAN AREA



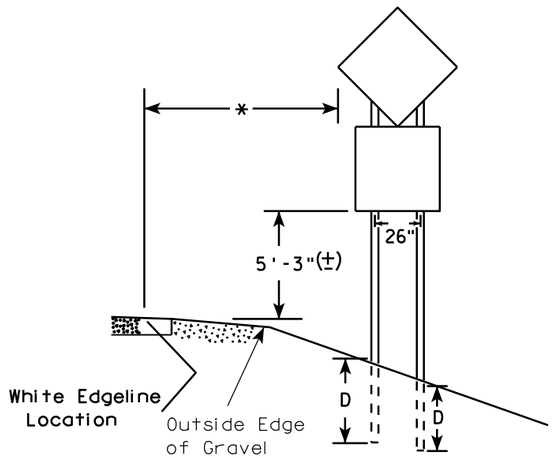
RURAL AREA (See Note 3)







48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

***	SIGN SHAPE OTHER THAN DIAMOND (TWO POSTS REQUIRED)	
	L	E
	Greater than 48" Less than 60"	12"
	60" to 120"	L/5

SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED)	
L	E
Greater than 120" less than 168"	12"

SIGN SHAPE OTHER THAN DIAMOND (FOUR POSTS REQUIRED)	
L	E
168" and greater	12"

POST EMBEDMENT DEPTH

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

GENERAL NOTES

1. For multiple post installations, individual post spacing shall be greater than 3'-6".
2. See tables below for required number of posts.
3. For expressways and freeways, mounting height is 7'-3" (±) or 6'-3" (±) depending upon existence of sub-sign.
4. The (±) tolerance for mounting height is 3 inches.
5. Minimum mounting height for J assemblies (A4-5) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. Folding stop signs (R1-1F) shall be mounted at a height of 5'-3" (±) or as directed by the engineer.
8. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (W1-8A), Clearance Markers (W5-52), Mile Markers (D10 series) & End of Road Markers (W5-56 & W5-56A) shall be mounted at a height of 4"-3" (±).

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

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

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

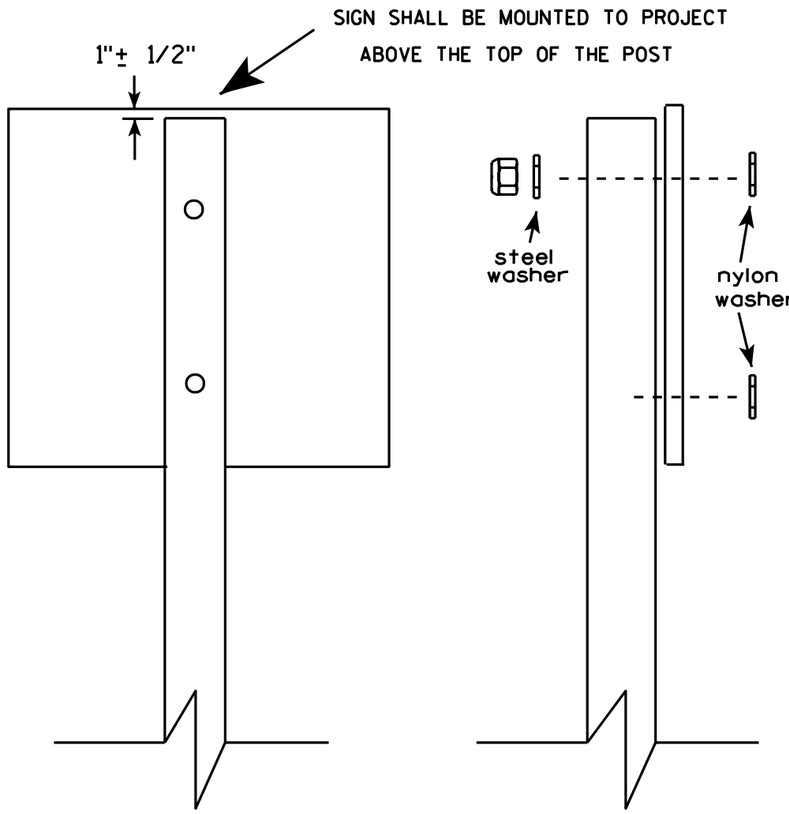
TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS

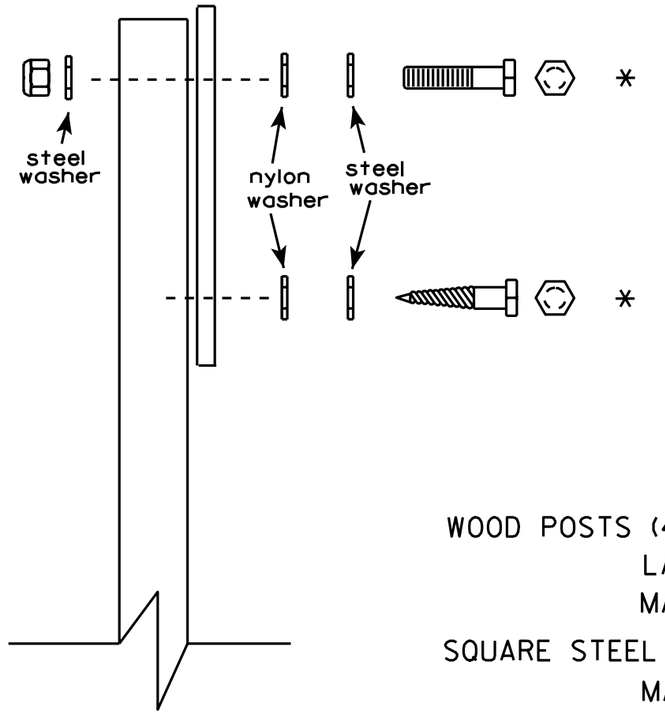
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 9/30/09 PLATE NO. A4-4.10

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 52	E





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

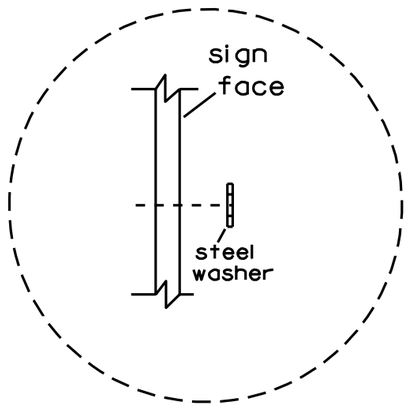
a. Hot dip or mechanically galvanized in accordance with ASTM Designation: A 153, Class D, or
b. Cadmium plated in accordance with ASTM Designation : B 766 TYPE 3, Class 12, or
c. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

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

WOOD POSTS (4" x 4" or 4" x 6")
LAG SCREWS - 3/8" X 3"
MACHINE BOLTS - 5/16" X 6-1/2" or 7" Length w/ nuts

SQUARE STEEL POSTS (2" x 2")
MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts

WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON for all Type H signs.



Washer Placement when Sign Has Other Than Type H or Type F Face

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

ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 8/30/06 PLATE NO. A4-8.6

7

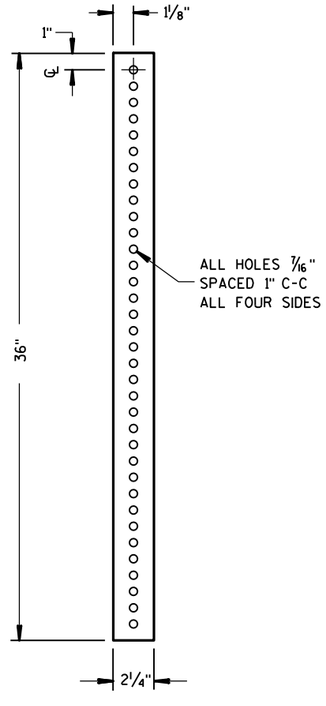
7

PROJECT NO:

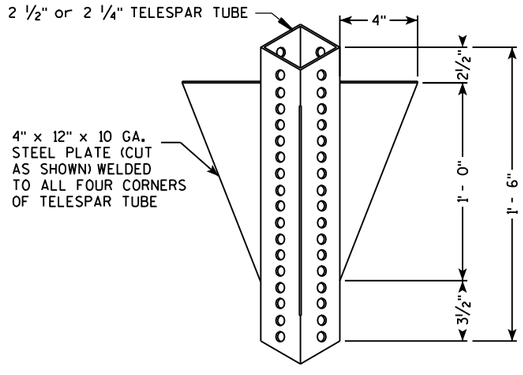
SHEET NO: 53 E

TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM

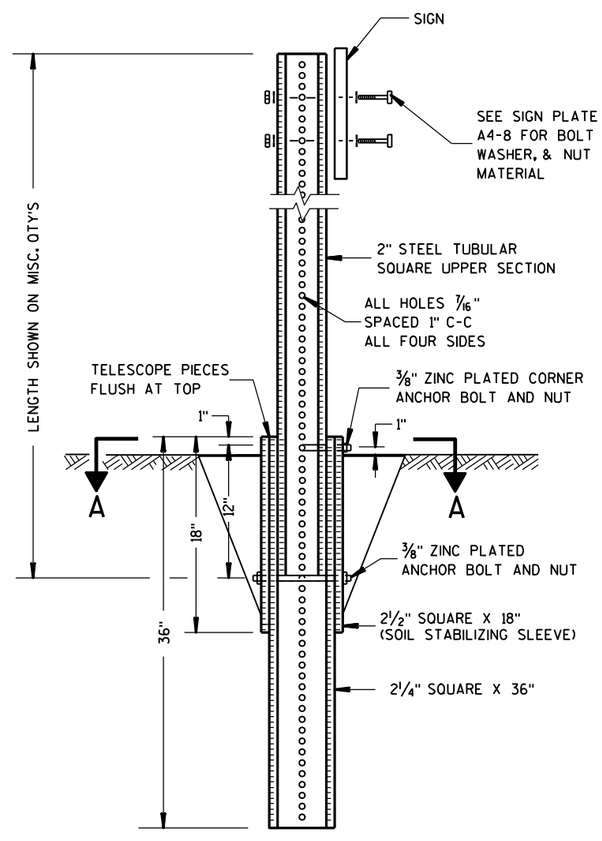
2 1/4 " SQUARE
12 GAUGE
PERFORATED
GALVANIZED FINISH

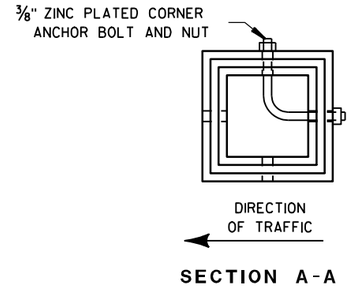


2 1/2 " SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH



DETAIL OF TUBULAR STEEL SIGN POST





SECTION A-A

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

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

TUBULAR STEEL
SIGN POST
A4-9

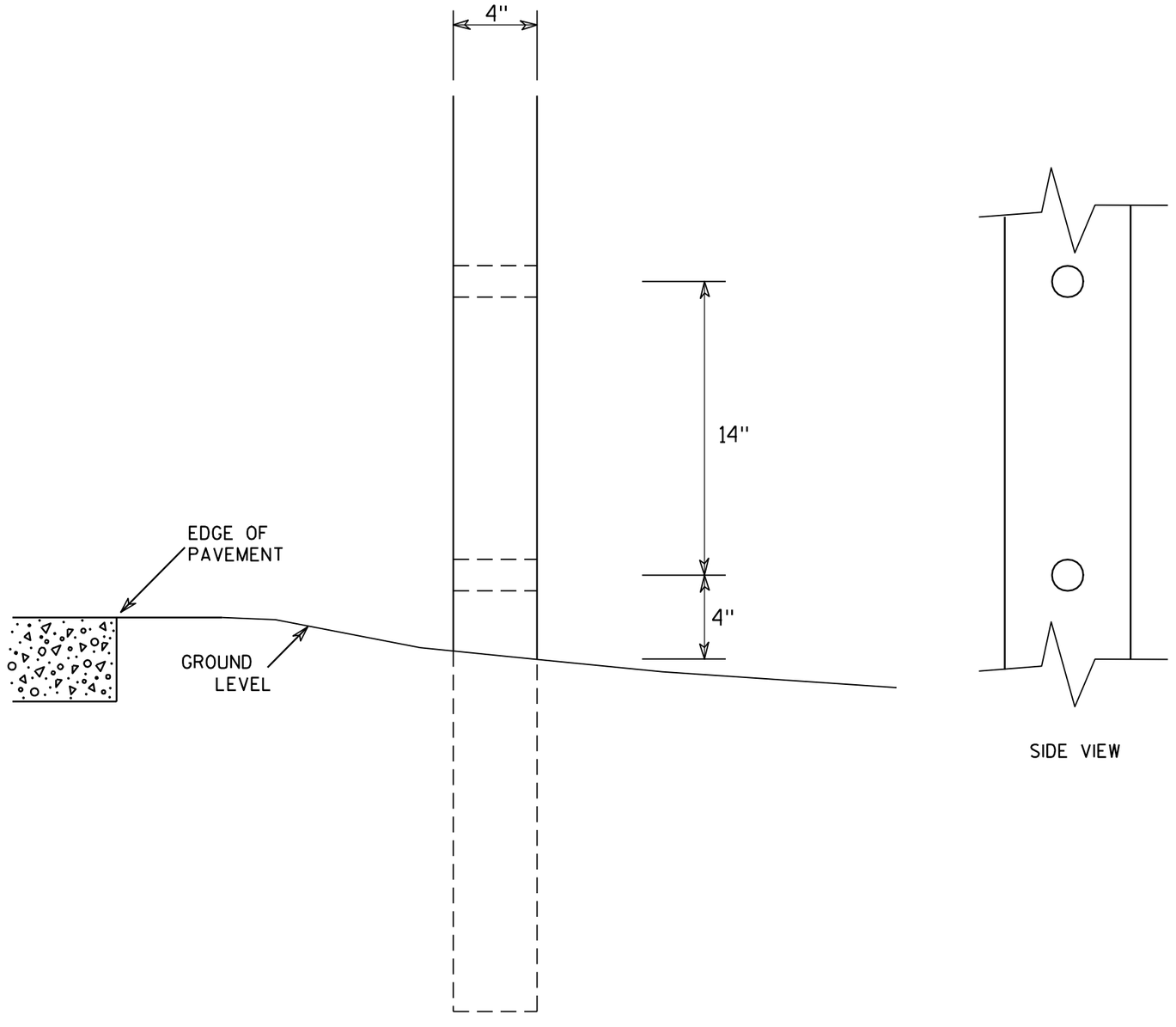
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer
DATE 4/14/09 PLATE NO. A4-9.5

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 54	E

FILE NAME : C:\Users\PROJECTS\tr_stdplate\A49.DGN PLOT DATE : 14-APR-2009 10:17 PLOT BY : dotsja PLOT NAME : PLOT SCALE : 11.620136:1.000000

WISDOT/CADDS SHEET 42



SIDE VIEW

GENERAL NOTES

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

7

7

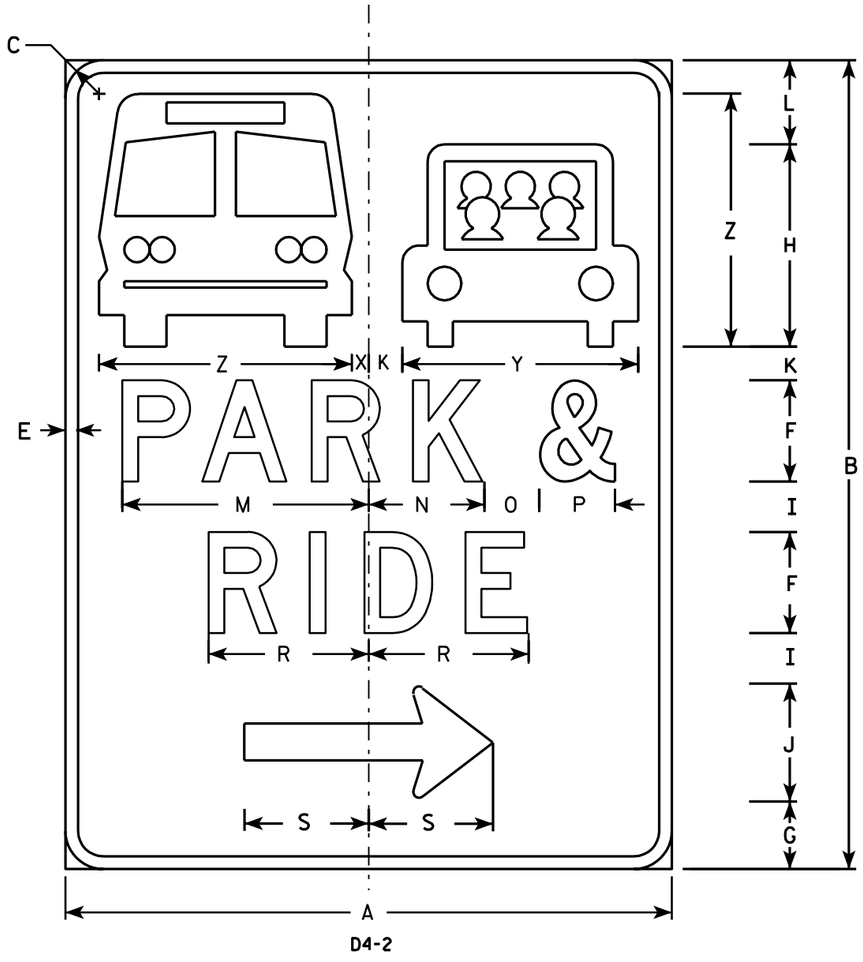
4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Chester J Spang for State Traffic Engineer

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

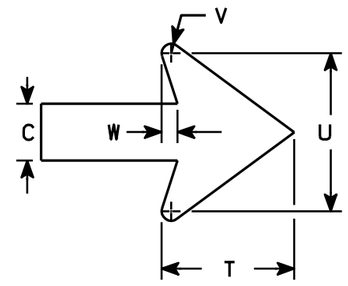
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 55	E



D4-2

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Green
   Message - White - Type H Reflective
3. Message Series - D
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. The D4-2L is the same as a D4-2R except the arrow is reversed.
6. The D4-2 sign may have either symbol or both symbols at the same time.



Arrow Detail

Metric equivalent for this sign is:

SIZE	
1	600 mm X 750 mm
2	750 mm X 900 mm
3	900 mm X 1200 mm
4	
5	

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m2
1	24	30	1 1/8		1/2	4	1 5/8	7 1/2	1 1/2	4 5/8	1 3/8	3 3/8	9 3/4	4 5/8	2 1/8	3		6 3/8	4 7/8	3 1/2	4 1/8	1/4	3/8	5/8	9 3/8	10	5.0	0.45
2	30	36	1 3/8		5/8	5	1 3/8	9	1 1/2	6	1 5/8	4 1/8	12 1/4	5 3/4	2 3/4	3 3/4		8	6 1/8	4 3/8	5 1/4	3/8	1/2	7/8	11 5/8	12 1/2	7.50	0.68
3	36	48	2 1/4		3/4	6	4	12	3	7	2	5	14 5/8	6 7/8	3 1/4	4 1/2		9 1/2	7 1/2	5 1/4	6 1/4	3/8	5/8	1	14	15	12.0	1.08
4																												
5																												

STANDARD SIGN
D4-2

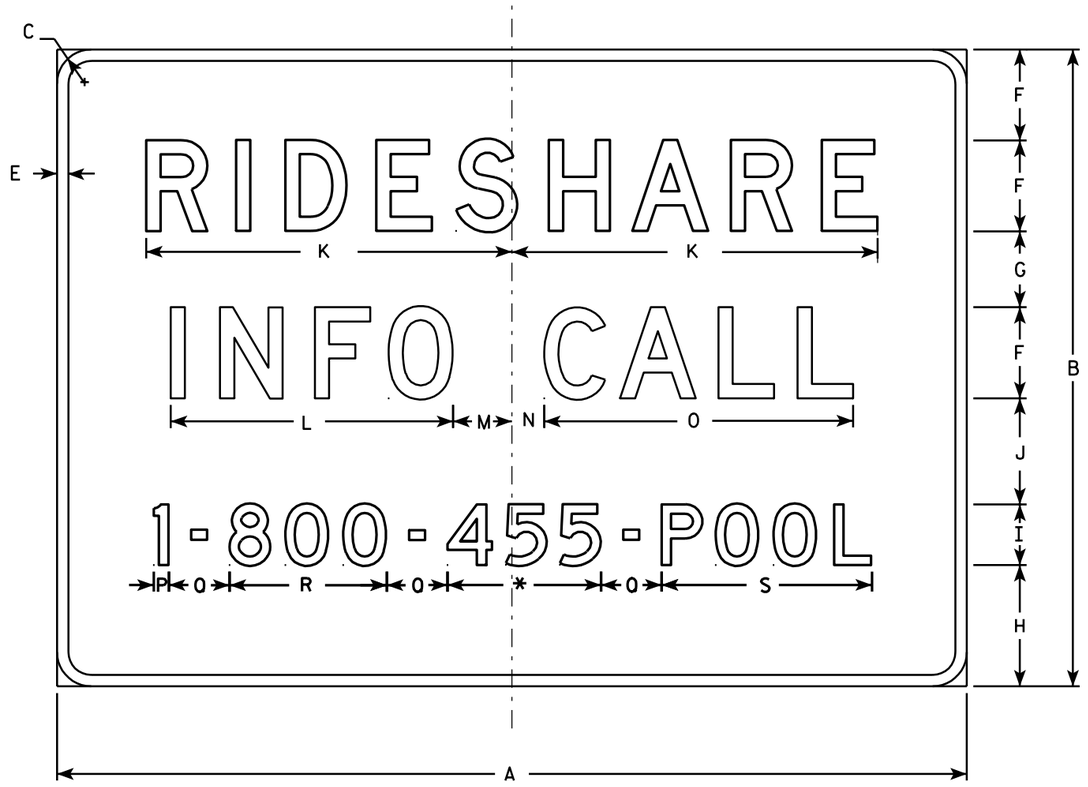
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 12/4/07 PLATE NO. D4-2.4

PROJECT NO:

SHEET NO: 56 E



D12-2A

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Blue
   Message - White - Type H Reflective
3. Message Series - D
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Substitute appropriate numerals and adjust spacing as required to achieve proper balance.

Metric equivalent for this sign is:

SIZE	
1	1200 mm X 525 mm
2	1500 mm X 1050 mm
3	
4	1500 mm X 1050 mm
5	1950 mm X 1350 mm

* Variable (See note 5)

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m2
1	48	21	1 1/2		1/2	3	2 3/4	3 1/2	3	2 3/4	12 1/8	9 3/8	2	1 1/8	10 1/4	3/4	3	7 3/4	10 5/8								7.0	0.63
2	60	42	2 1/4		3/4	6	5	8	4	7	24 1/8	18 5/8	3 1/8	2 1/8	20 1/8	1	4	10 3/8	13 7/8								17.5	1.58
3																												
4	60	42	2 1/4		3/4	6	5	8	4	7	24 1/8	18 5/8	3 1/8	2 1/8	20 1/8	1	4	10 3/8	13 7/8								17.5	1.58
5	78	54	3		1	8	6	10	6	8	30 1/8	23 5/8	4 1/8	2 1/8	26 3/8	1 1/2	5	15 1/2	21 1/4								29.25	2.63

STANDARD SIGN
D12-2A

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Chester J Spacy for State Traffic Engineer

DATE 1/16/02 PLATE NO. D12-2A.3

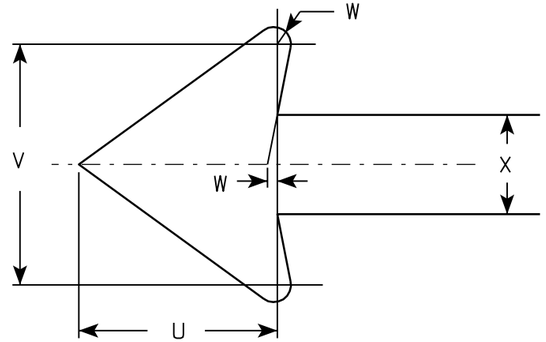
PROJECT NO:

SHEET NO: 57 E

R7-1

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - White
   Message - Red
3. Message Series - See Note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Lines 1, 3 and 4 are series C, line 2 is series B.
6. R7-1D (double arrow)
   R7-1L (left arrow)
   R7-1R (right arrow)



Metric equivalent for this sign is:

SIZE	
1	300 mm X 450 mm
2	450 mm X 600 mm
3	600 mm X 750 mm
4	
5	

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m2
1	12	18	1 1/8	3/8	3/8	3	1 7/8	2	7/8	5/8	1 1/2	2 1/2	2	2	4 7/8	4 7/8	2 1/4	2 1/8	2 1/2	3 7/8	1 1/2	1 3/4	1/8	3/4			1.5	0.14
2	18	24	1 1/8	3/8	1/2	4	2 1/2	2 1/2	1 1/4	1	2	3 1/4	2 3/4	2 5/8	7 1/8	7	2 3/4	2 5/8	3 1/8	5 7/8	2 1/4	2 5/8	1/4	1 1/8			3.0	0.27
3	24	30	1 1/8	3/8	1/2	5	3	3	2	1 1/4	2 1/2	4	3 1/4	3 3/8	9 1/4	9 1/4	3 1/4	3 1/4	3 3/4	7 3/4	3	3 1/2	1/4	1 1/2			5.0	0.45
4																												
5																												

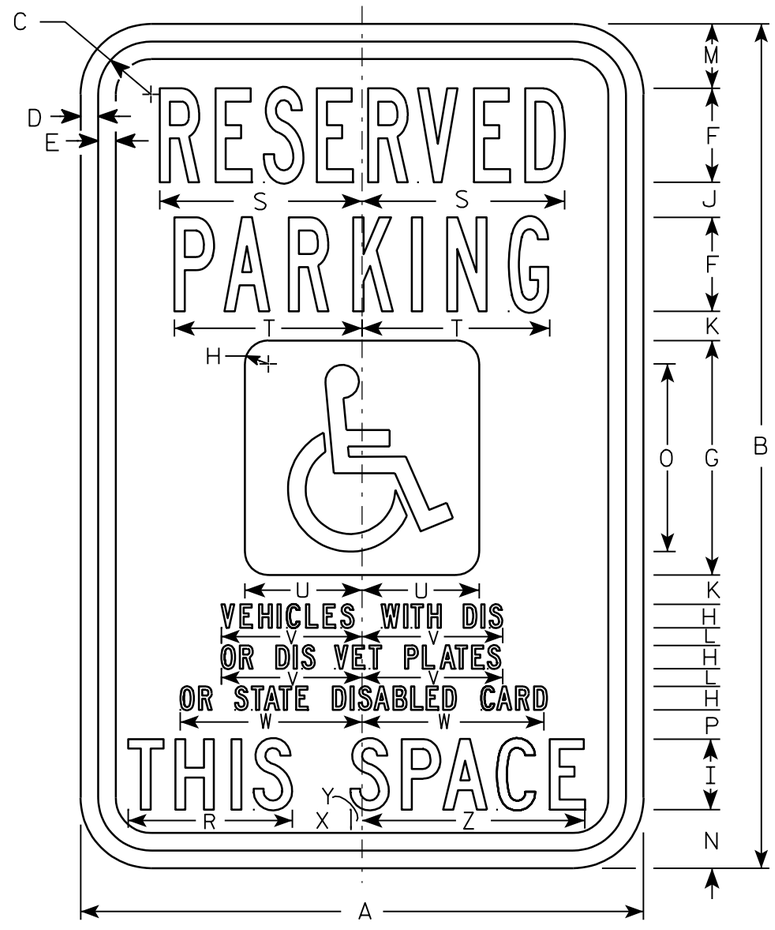
STANDARD SIGN
R7-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Chester J Spong
for State Traffic Engineer

DATE 2/7/02 PLATE NO. R7-1.8

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 58	E



R7-8A

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Sign is white Type H Reflective; paraplegic background is blue.
   Message - Legend and border are green; paraplegic symbol is white
3. Message Series - Lines 1 & 2 are Series B
   Lines 3, 4, 5 & 6 are Series C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

Metric equivalent for this sign is:

SIZE	
1	
2	300 mm X 450 mm
3	450 mm X 600 mm
4	
5	

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m2
1																												
2	12	18	1 1/8	3/8	3/8	2	5	1/2	1 1/2	3/4	5/8	3/8	1 3/8	1 1/4	4	5/8		3 1/2	4 3/8	4	2 1/2	3	3 7/8	1 1/4	1/4	4 3/4	1.5	.14
3	18	24	1 1/8	3/8	1/2	3	6	3/4	2	7/8	5/8	1/2	1 7/8	2	5	3/4		4 5/8	6 1/2	5 3/8	3	4 1/2	5 7/8	1 1/2	1/4	6 3/8	3.0	.27
4																												
5																												

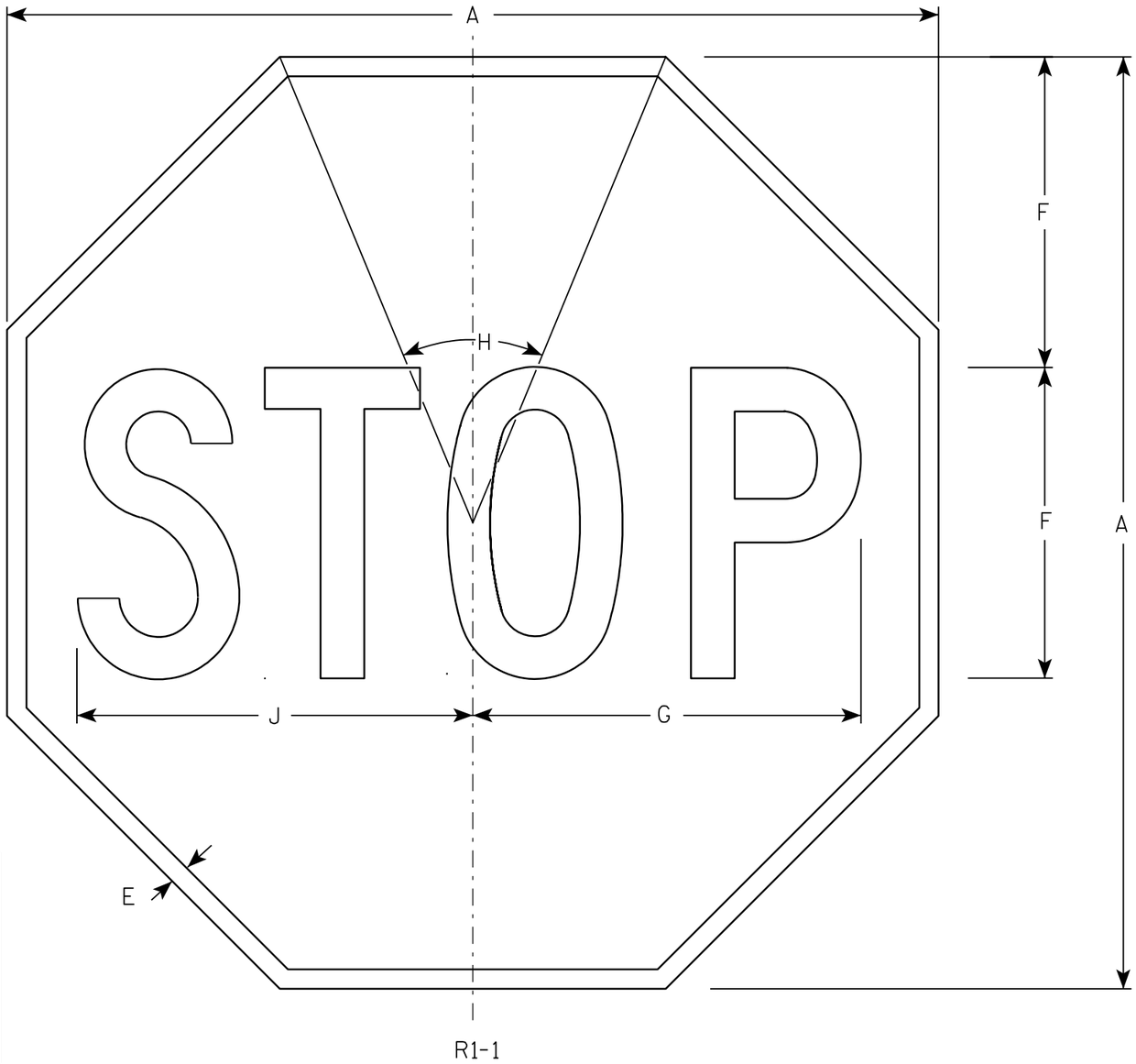
STANDARD SIGN
R7-8A

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Chester J Spacy for State Traffic Engineer

DATE 2/8/02 PLATE NO. R7-8A.5

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 59	E



NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Red
   Message - White
3. Message Series - C

Metric equivalent for this sign is:

SIZE	
1	600 mm X 600 mm
2	750 mm X 750 mm
3	900 mm X 900 mm
4	1200 mm X 1200 mm
5	1200 mm X 1200 mm
6	450 mm X 450 mm
7	300 mm X 300 mm

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m2
1	24				3/8	8	10	45°		10 1/4																	3.31	0.31
2	30				5/8	10	12 1/2	45°		12 3/4																	5.18	0.48
3	36				3/4	12	15	45°		15 3/8																	7.46	0.69
4	48				1	16	20	45°		20 1/2																	13.25	1.23
5	48				1	16	20	45°		20 1/2																	13.25	1.23
6	18				3/8	6	7 3/4	45°		7 3/4																	1.86	0.17
7	12				1/4	4	5	45°		5 1/8																	0.78	0.07

STANDARD SIGN
R1-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Chester J Spagy
for State Traffic Engineer

DATE 10/15/98 PLATE NO. R1-1.11

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 60	E

FILE NAME : C:\Users\Projects\tr_stdplate\R11.DGN PLOT DATE : 03-OCT-2005 14:15 PLOT BY : DITJPH PLOT NAME : PLOT SCALE : 4.470624:1.000000

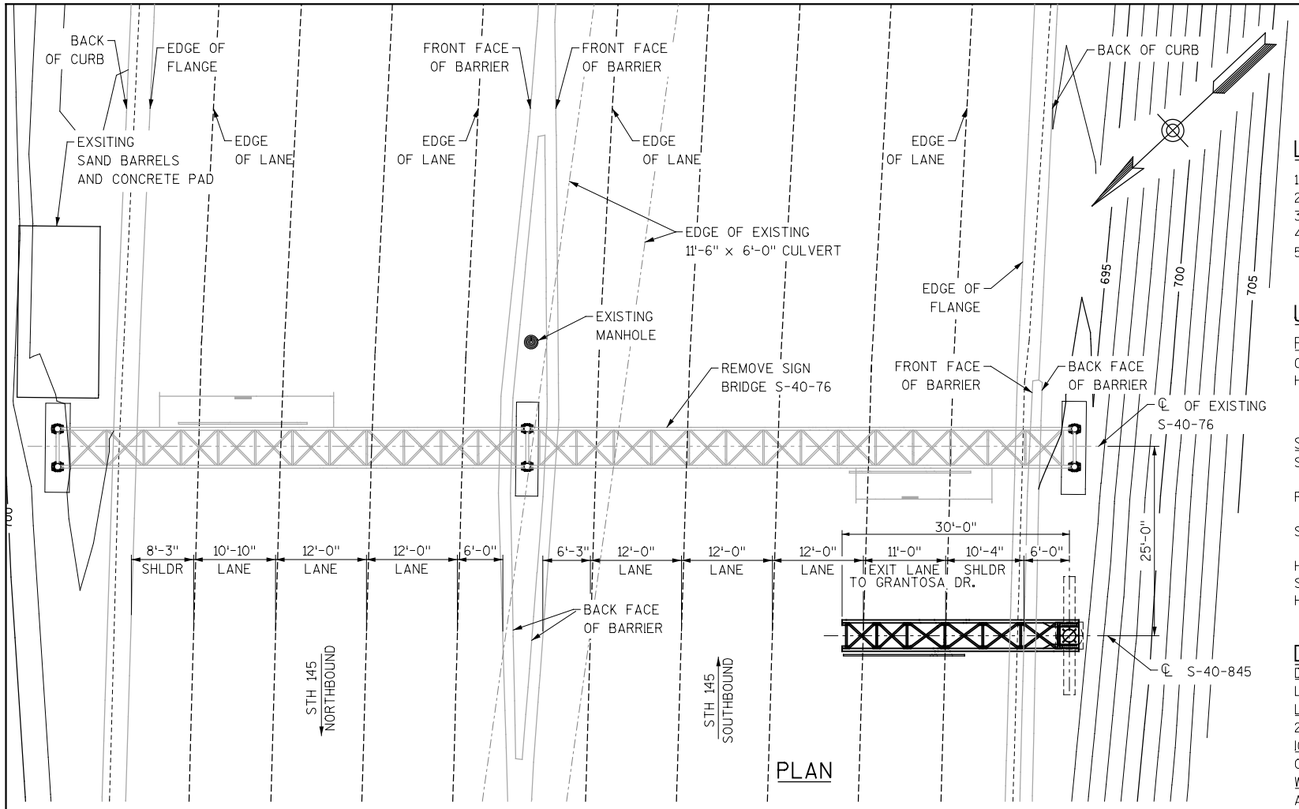
WISDOT/CADDS SHEET 42

7

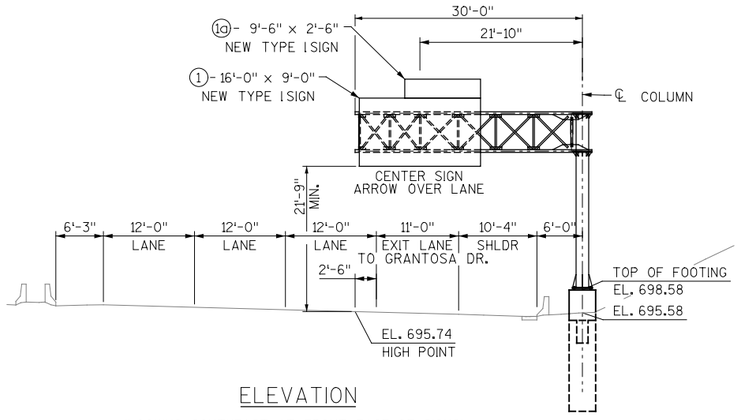
7

STATE PROJECT NUMBER

1000-19-89



PLAN



ELEVATION

(LOOKING SOUTHEAST AT FRONT FACE OF SIGNS)
STH 145 SB 500'SOUTHEAST OF N. 76TH ST.
S-40-845 REPLACES SOUTHBOUND PORTION OF S-40-76
PROPOSED STRUCTURE 25'NORTHWEST OF EXISTING STRUCTURE

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 500LBS. DISTRIBUTED OVER 2'-0" OF CATWALK.
ICE LOAD - 3 P.S.F. TO 1FACE 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"

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 FOUNDATIONS, CONSIDERED INCIDENTAL TO BID ITEM "REMOVING SIGN BRIDGE S-40-76".

PROVIDE VENTILATING RODENT SCREENS AT ALL COLUMN BASES (NO GROUT), CONSIDERED INCIDENTAL TO BID ITEM "SIGN BRIDGE CANTILEVERED S-40-845".

PROVIDE A ¾" 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 ARE REQUIRED FOR SIGNS AND ARE INCIDENTAL TO SIGNS.

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-40-845".

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-40-845 ".

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.

INSTALL CONDUIT PLUGS IN ALL UNUSED CONDUIT HOLES, CONSIDERED INCIDENTAL TO THE BID ITEM "SIGN BRIDGE CANTILEVERED S-40-845 ".

WELD TEST AS PER AWS D1.1

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

CONTACTS

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

CONSULTANT CONTACT, COLLINS ENGINEERS INC.
VERONICA CHAVEZ DE FERNANDEZ: (414) 282-6905

WISCONSIN
VERONICA CHAVEZ DE FERNANDEZ
E-42456
MILWAUKEE
WI
PROFESSIONAL ENGINEER
1/17/2013

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-40-845	LS	1

NO.	DATE	REVISION	BY

COLLINS ENGINEERS INC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher KAR 03/06/13
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE S-40-845

STH 145

COUNTY MILWAUKEE | ~~TOWN/CITY/VILLAGE~~ MILWAUKEE

DESIGN SPEC. AASHTO STANDARD SPECIFICATIONS

DESIGNED BY	VC	DESIGN CK'D.	NJH	DRAWN BY	DW,MJH	PLANS CK'D.	RJW

PLAN & ELEVATION

SHEET 1 OF 5

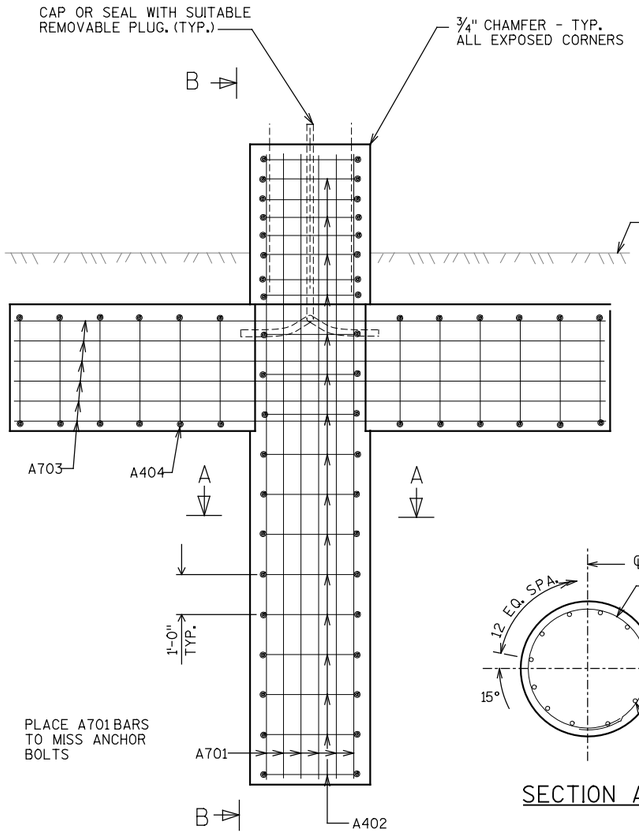
61

8

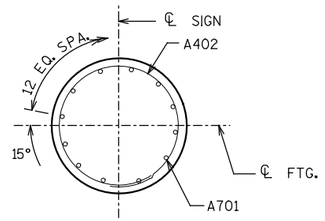
8

STATE PROJECT NUMBER

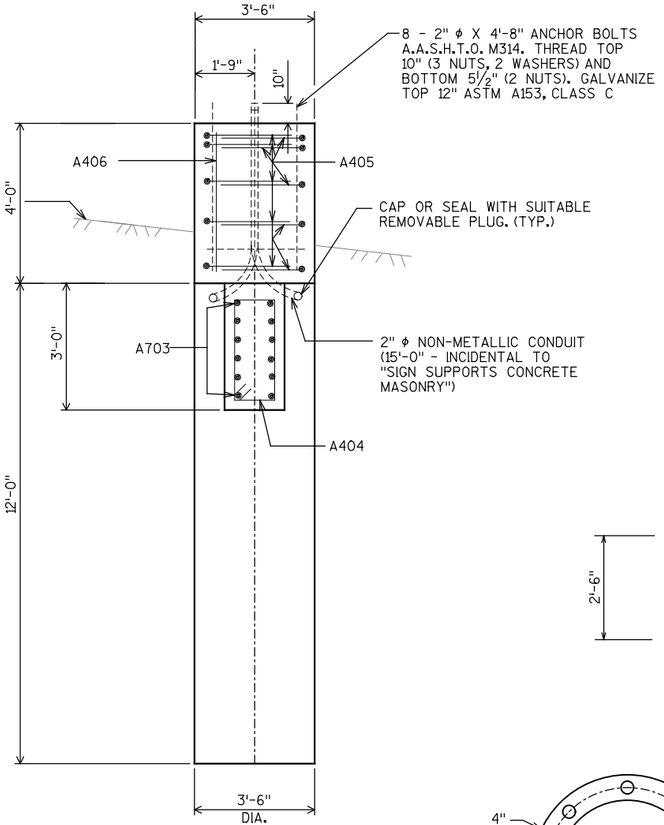
1000-19-89



ELEVATION
(8 C.Y.)



SECTION A



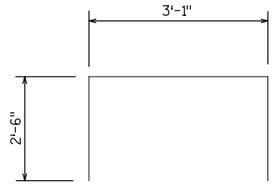
SECTION B

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

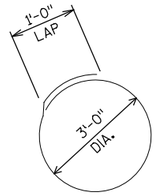
BILL OF BARS

980 LB.

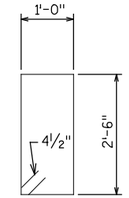
BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	CUT. DIAG.	BUN-DLE	LOCATION
A701		12	15'-6"				FOOTING - COLUMN/TOP
A402		16	10'-6"	X			FOOTING - COLUMN/TOP
A703		12	15'-0"				FOOTING - WINGS
A404		12	7'-6"	X			FOOTING - WINGS
A405		10	7'-11"	X			FOOTING - TOP
A406		4	3'-6"				FOOTING - TOP - COLUMNS



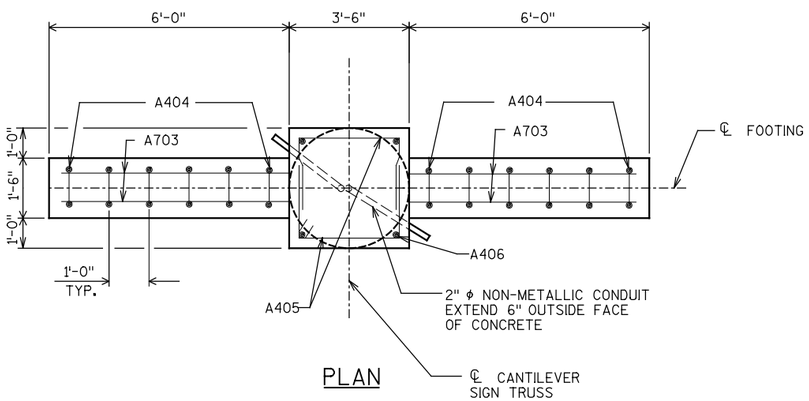
A405



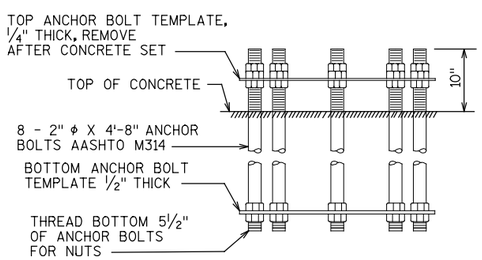
A402



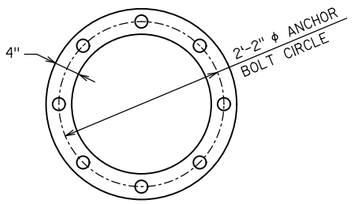
A404
(STIRRUP)



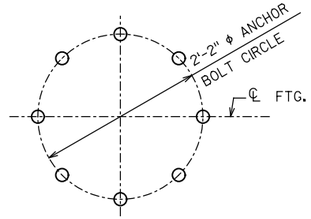
PLAN



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-40-845

DRAWN BY DW | PLANS CK'D. VC

CANTILEVER TRUSS FOOTING

SHEET 2 OF 5

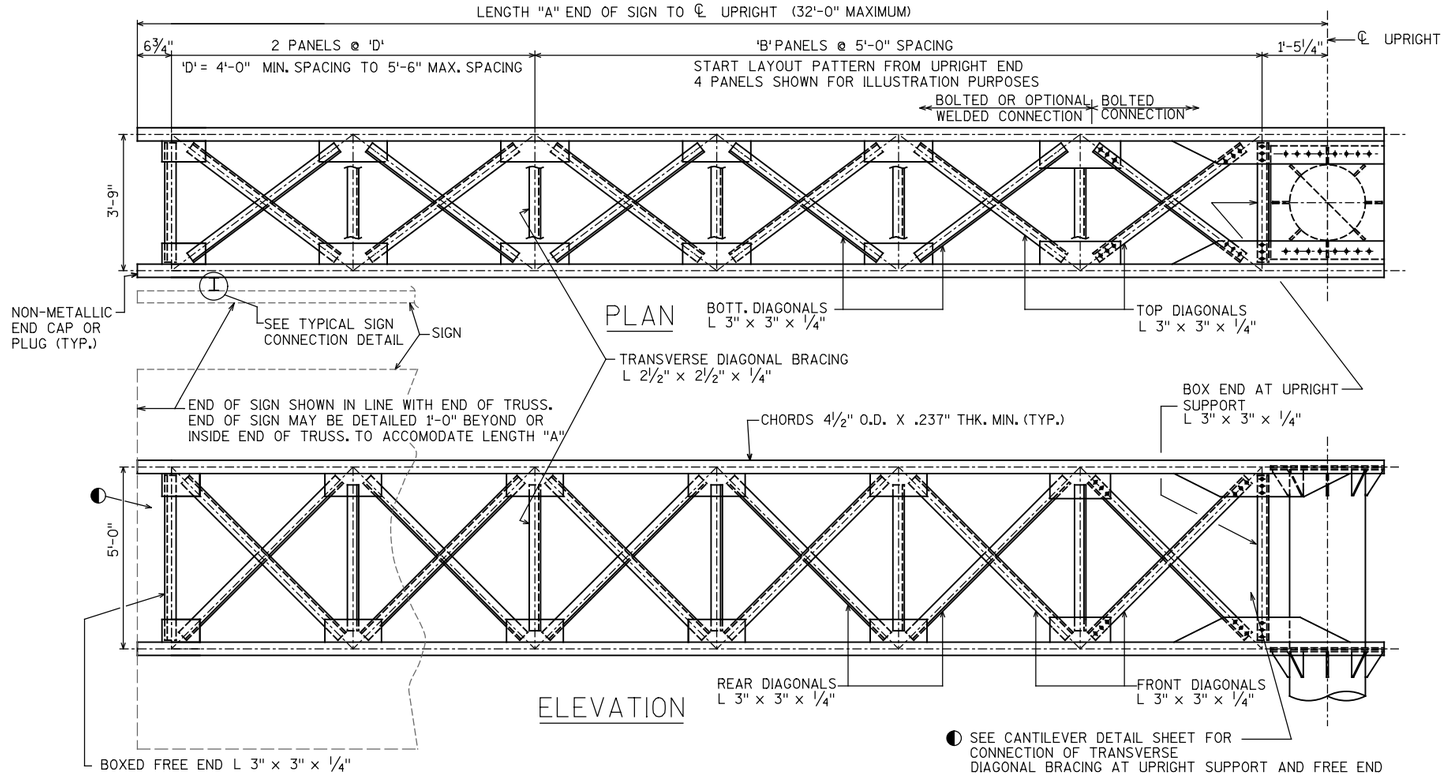
62

8

8

FILE NAME : S-40-0845_pln.dgn PLOT DATE : 1/15/2013 3:19:50 PM PLOT BY : Veronica Chavezv8I

STATE PROJECT NUMBER
1000-19-89



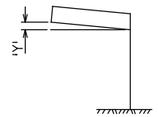
GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

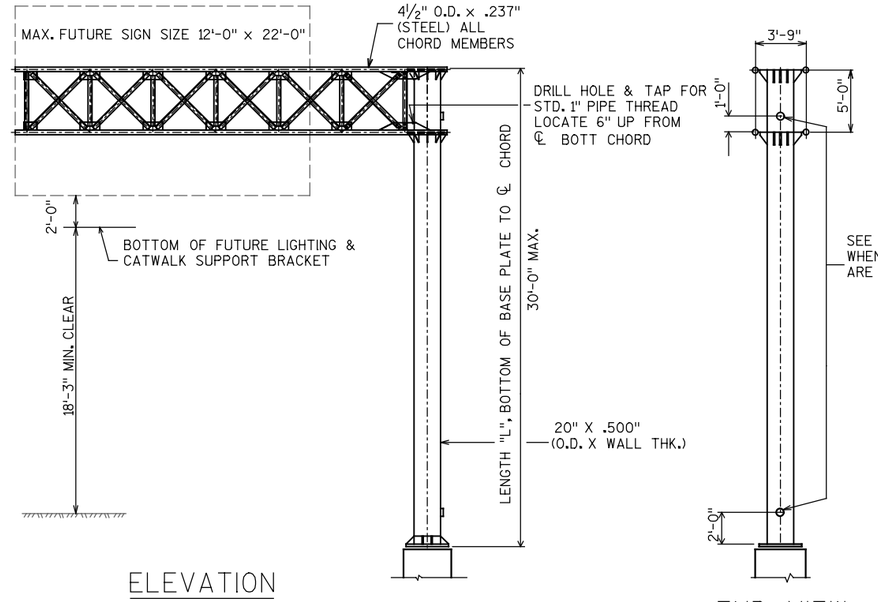
PREFABRICATE CAMBER INTO THE HORIZONTAL SUPPORT PROVIDING AN AMOUNT "Y" AT END OF TRUSS SHOWN IN "CAMBER DIAGRAM". DO NOT RAKE VERTICAL UPRIGHT BY ADJUSTMENT OF LEVELING NUTS.

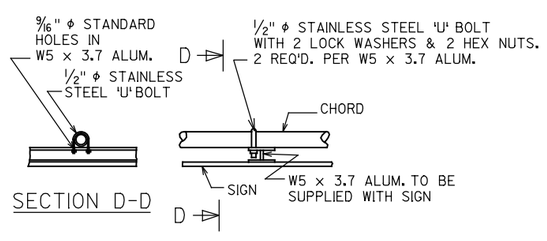
WELDED CONNECTIONS CAN BE USED IN LIEU OF BOLTED CONNECTIONS IF UNIT CAN BE GALVANIZED IN ONE PIECE.

STRUCTURE	"A"	"L"	"B"	"D"	"Y"
S-40-845	30'-0"	25'-9"	4	4'-0"	3"

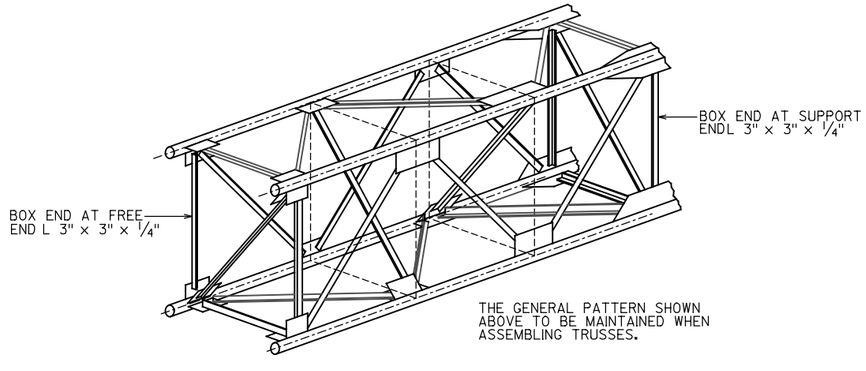


CAMBER DIAGRAM





TYPICAL SIGN CONNECTION



TYPICAL TRUSS SECTION

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-845

DRAWN BY	DW	PLANS CK'D.	VC

GALVANIZED STEEL CANTILEVER SIGN TRUSS

SHEET 3 OF 5

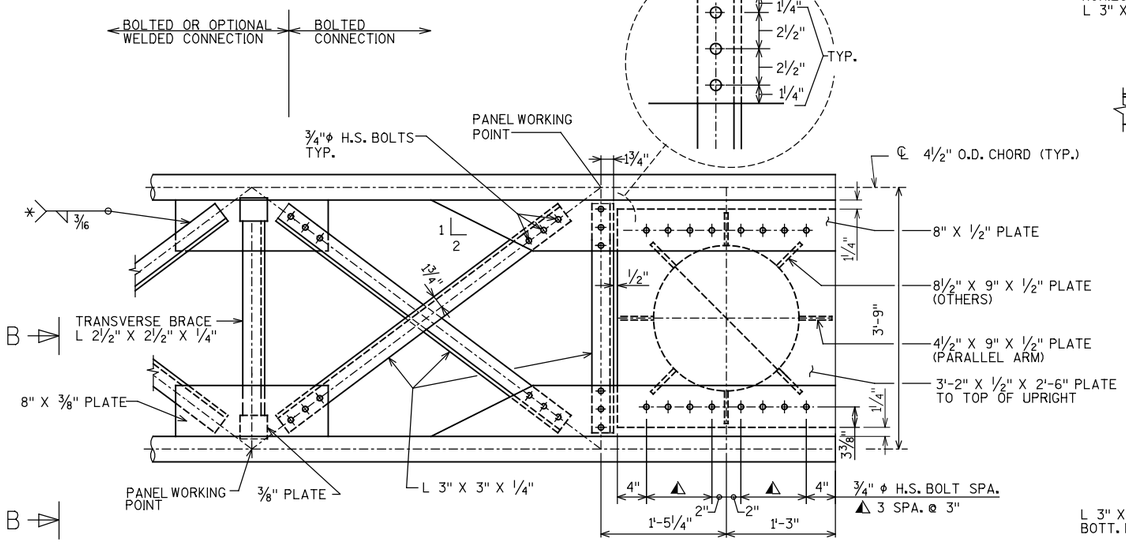
63

FILE NAME : S-40-0845_pln.dgn PLOT DATE : 1/15/2013 3:19:50 PM PLOT BY : Veronica Chavezv8I

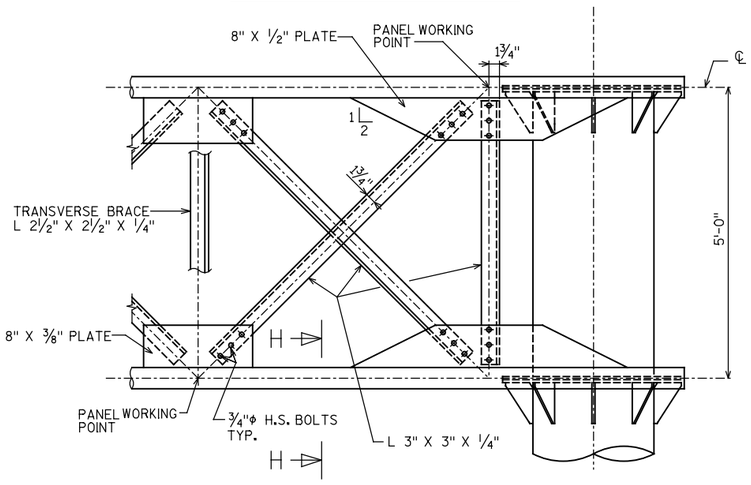
STATE PROJECT NUMBER

1000-19-89

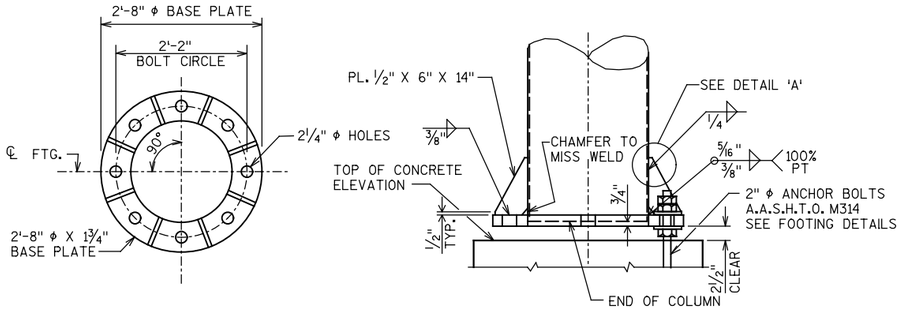
BOLTED OR OPTIONAL WELDED CONNECTION | BOLTED CONNECTION



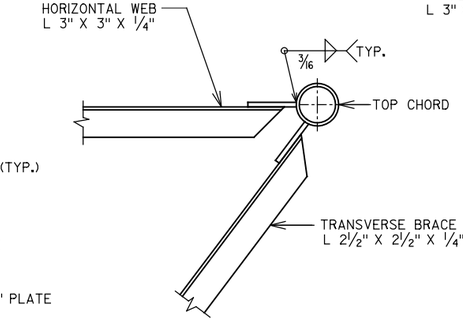
PLAN TRUSS TO UPRIGHT



ELEVATION TRUSS TO UPRIGHT

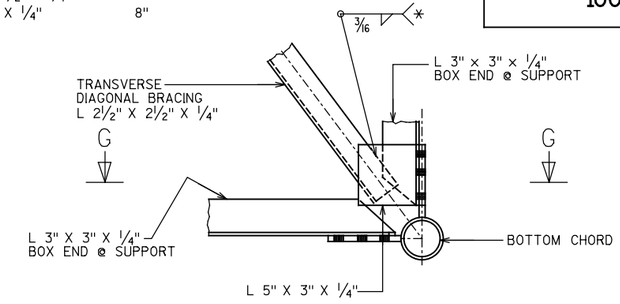


BASE PLATE DETAILS

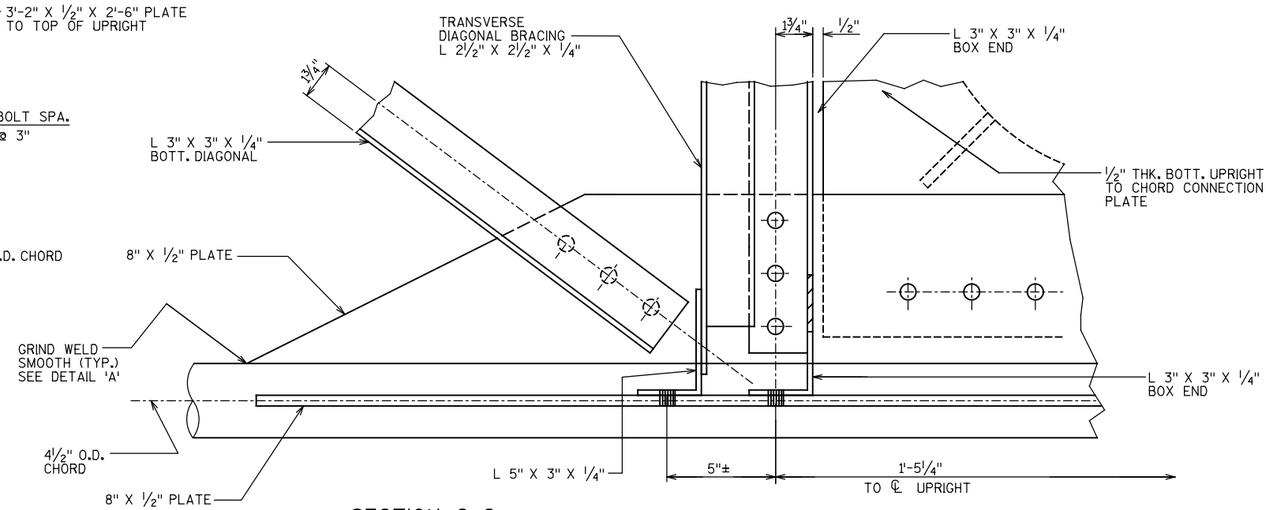


SECTION B-B

* ANGLE	WELD LENGTH (MIN.)
L 2½" X 2½" X ¼"	7"
L 3" X 3" X ¼"	8"

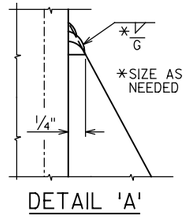


SECTION H-H

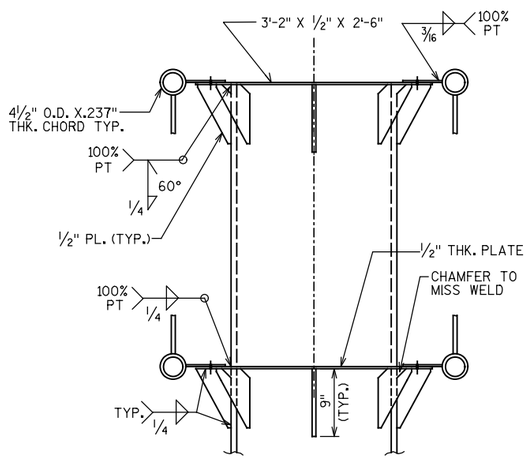


SECTION G-G

(LOOKING DOWN @ BOTT. HORIZ. PLANE @ FRONT CHORD)

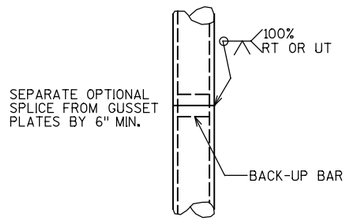


DETAIL 'A'



END VIEW

TRUSS TO UPRIGHT



OPTIONAL COLUMN OR CHORD SPLICE DETAIL

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-845

DRAWN BY	DW	PLANS CK'D.	VC

GALVANIZED STEEL CANTILEVER SIGN TRUSS DETAILS 64

SHEET 4 OF 5

8

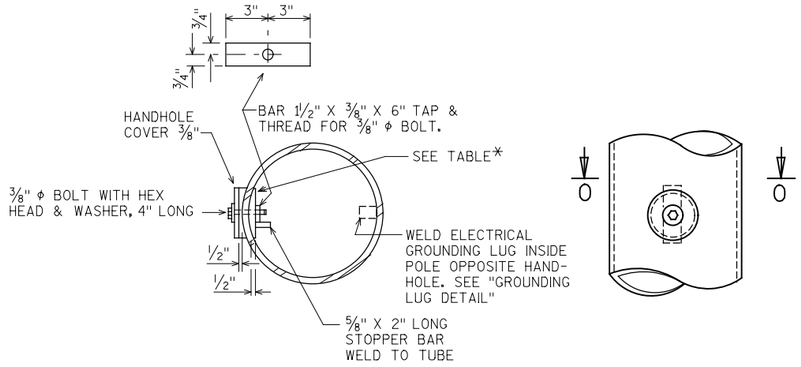
8

FILE NAME : S-40-0845_pln.dgn

PLOT DATE : 1/15/2013 3:19:50 PM PLOT BY : Veronica Chavezv8I

STATE PROJECT NUMBER

1000-19-89

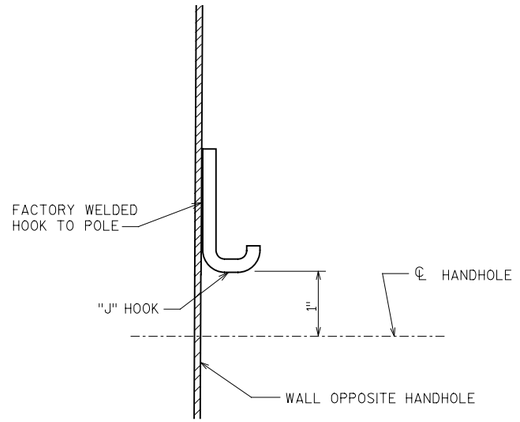


SECTION 'O'

HANDHOLE DETAILS

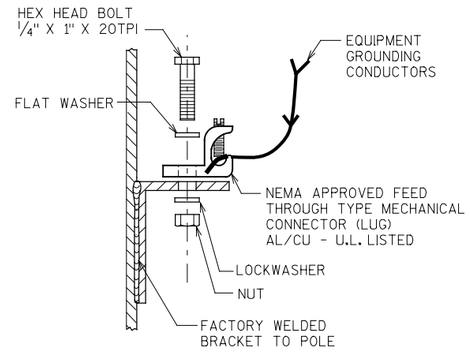
HANDHOLE NOTES

HANDHOLES SHALL BE LOCATED IN ONE COLUMNS 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.



TYPICAL "J" HOOK LOCATION

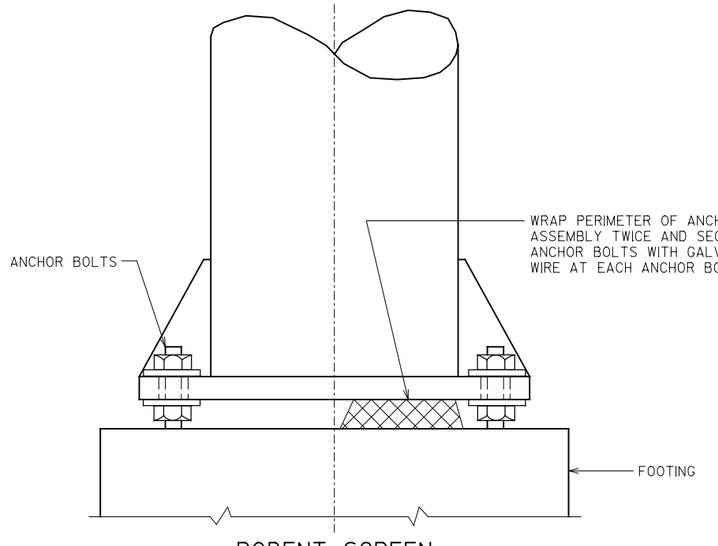
THE "J" HOOK SHALL BE FACTORY WELDED TO THE INSIDE OF ALL COLUMNS CONTAINING ELECTRICAL WIRING. THE "J" HOOK SHALL BE ATTACHED ABOVE THE CENTERLINE OF THE UPPER HANDHOLE AND MOUNTED DIRECTLY OPPOSITE THE HANDHOLE AS SHOWN IN THE DRAWING.



GROUNDING LUG DETAIL

NUT, BOLT AND WASHERS SHALL BE STAINLESS STEEL

✳ UPRIGHT DIAM. SIZE	HANDHOLE PIPE O.D. X MIN. THK.
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-40-845

DRAWN BY DW | PLANS CK'D. VC

HANDHOLE DETAILS

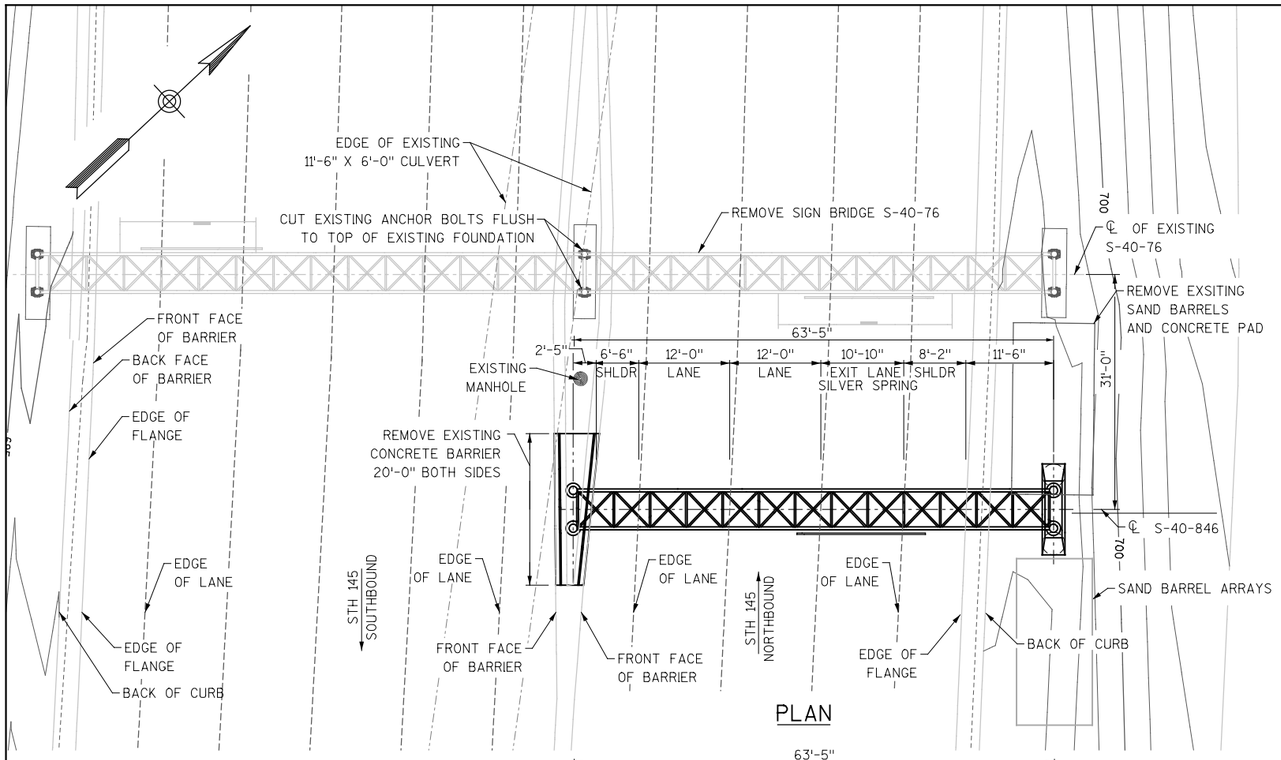
SHEET 5 OF 5

65

FILE NAME : S-40-0845_pln.dgn PLOT DATE : 1/15/2013 3:19:51 PM PLOT BY : Veronica Chavezv8I

STATE PROJECT NUMBER

1000-19-89



ELEVATION

(LOOKING NORTHWEST AT FRONT FACE OF SIGNS)
STH 145 NB 500' SOUTHEAST OF N. 76TH ST.
S-40-846 REPLACES NORTHBOUND PORTION OF S-40-76
PROPOSED STRUCTURE 31' SOUTHEAST OF EXISTING STRUCTURE

*ELEVATIONS SHOWN ARE AT THE CENTER LINE OF S-40-846. REFER TO THE TOWER 1 FOUNDATION DETAILS SHEET FOR TOP OF FOUNDATION ELEVATIONS AT THE EAST AND WEST ENDS OF THE FOUNDATION.

LIST OF DRAWINGS

1. PLAN & ELEVATION
2. TOWER 1 FOUNDATION DETAILS
3. TOWER 2 FOUNDATION DETIALS
4. GALVANIZED STEEL SIGN BRIDGE
5. SIGN BRIDGE DETAILS
6. 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, CATWALK, LIGHTS AND RAILINGS.
LIVE LOAD - SINGLE LINE LOAD OF 500LBS. DISTRIBUTED OVER 2'-0" OF CATWALK.
ICE LOAD - 3 P.S.F. TO 1FACE 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
576	12'-0"

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 SIGNS OVER THEIR 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.

THE LEFT EXISTING MEDIAN BARRIER WALL AND EXISTING FOUNDATION IS TO REMAIN. THE RIGHT FOUNDATION IS TO BE REMOVED AND IS INCIDENTAL TO BID ITEM "REMOVING SIGN BRIDGE S-40-76"

PROVIDE VENTILATING RODENT SCREENS AT ALL COLUMN BASES (NO GROUT), CONSIDERED INCIDENTAL TO BID ITEM "SIGN BRIDGE S-40-846"

PROVIDE A ¾" 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 ARE REQUIRED FOR SIGNS AND ARE INCIDENTAL TO SIGNS.

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-40-846"

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.

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

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 S-40-846"

INSTALL CONDUIT PLUGS IN ALL UNUSED CONDUIT HOLES, CONSIDERED INCIDENTAL TO THE BID ITEM "SIGN BRIDGE S-40-846"

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
1/17/2013

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

CONSULTANT CONTACT, COLLINS ENGINEERS INC.
VERONICA CHAVEZ DE FERNANDEZ: (414) 282-6905

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL
636.0100	SIGN SUPPORTS CONCRETE MASONRY	CY	27
636.1000	SIGN SUPPORTS STEEL REINFORCEMENT HS	LB	100
636.1500	SIGN SUPPORTS STEEL COATED REINFORCEMENT HS	LB	1290
641.6600.01	SIGN BRIDGE S-40-846	LS	1

NO.	DATE	REVISION	BY

COLLINS ENGINEERS INC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher KAR 03/06/13
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE S-40-846

STH 145

COUNTY	~~TOWN~~/CITY/~~VILLAGE~~
MILWAUKEE	MILWAUKEE

DESIGN SPEC.
AASHTO STANDARD SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
VC	NJH	DW,MJH	RJW

PLAN & ELEVATION

SHEET 1 OF 6

66

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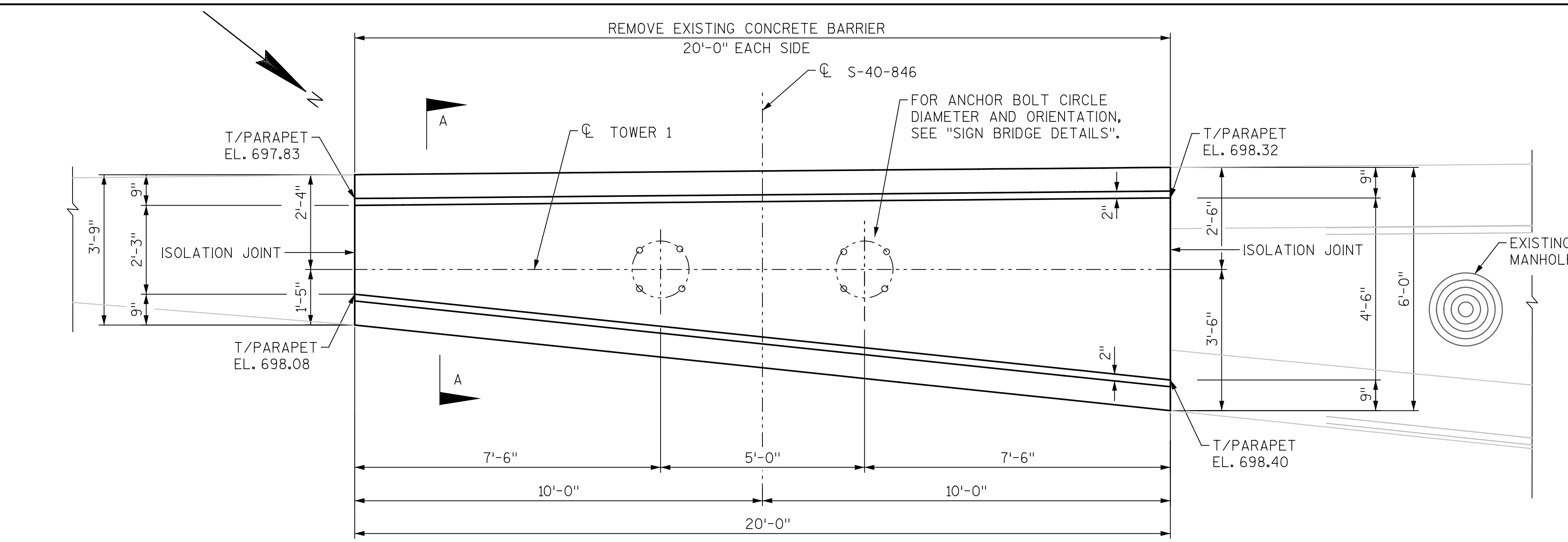
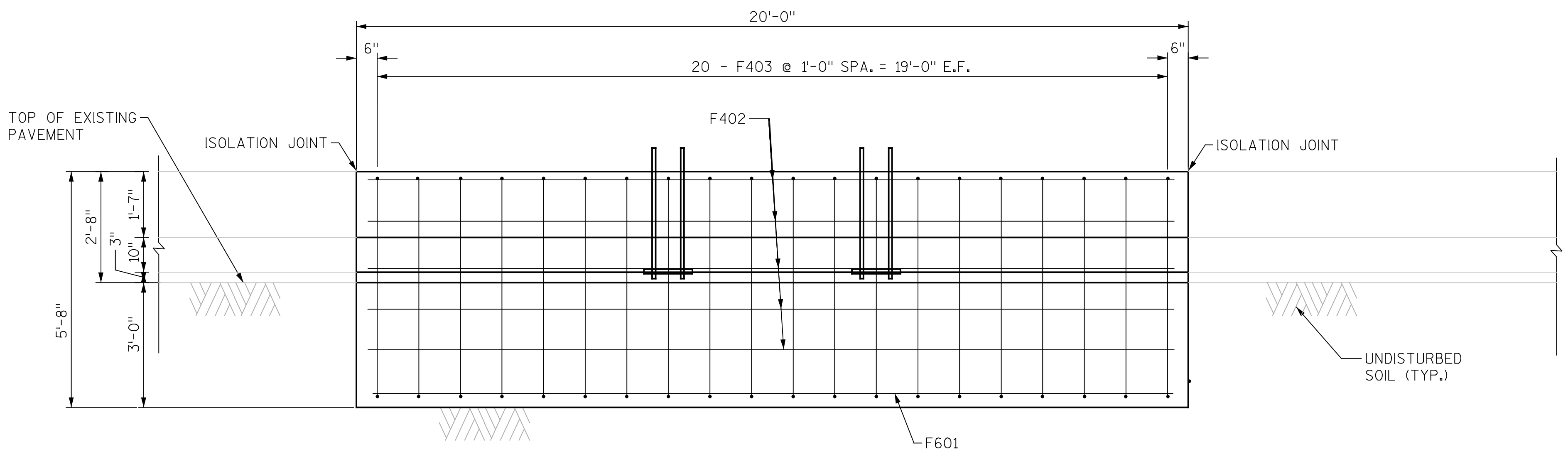
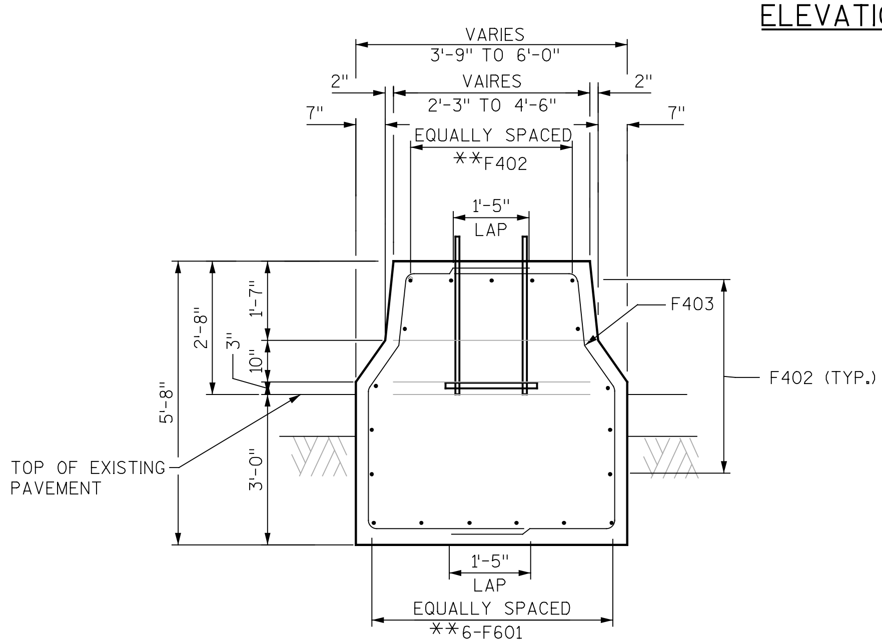


PLAN

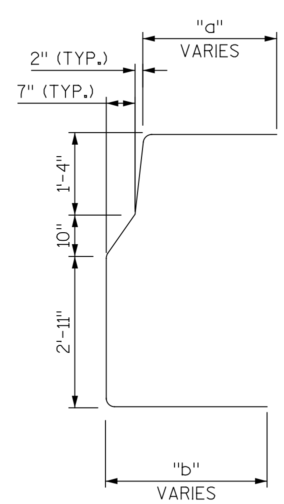


ELEVATION



SECTION A-A

** FAN BARS WITH TAPER



F403

GENERAL NOTES

1. DRAWINGS SHALL NOT BE SCALED.
2. BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 3" CLEAR UNLESS OTHERWISE NOTED.
3. CONCRETE - fc'= 3,500 P.S.I.
4. BAR STEEL REINF. - GRADE 60 fy = 60,000 P.S.I.
5. CONCRETE DIMENSIONS SHALL BE ADJUSTED IF NECESSARY TO MATCH EXISTING TRAFFIC BARRIER. IF DISCREPANCIES ARE FOUND BETWEEN PLAN DIMENSIONS AND FIELD DIMENSIONS THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER FOR RESOLUTION.
6. ENTIRE CONCRETE SURFACE SHALL BE SMOOTHED AND SLOPED TO DRAIN.
7. ISOLATION JOINT ½" PREFORMED JOINT FILLER WITH NON-BITUMINOUS JOINT SEALER. THE PREFORMED JOINT FILLER AND NON-BITUMINOUS JOINT SEALER SHALL MEET THE REQUIREMENTS OF SECTION 502 OF THE STANDARD SPECIFICATIONS. INCIDENTAL TO "SIGN SUPPORTS CONCRETE MASONRY". (TYP.)

FOUNDATION DATA

THE FOLLOWING SOIL PARAMETERS WERE USED FOR THE DESIGN OF THE FOUNDATION SYSTEM.

SOIL UNIT WEIGHT = 120 pcf
COHESION VALUE = 2000 psf
FRICTION ANGLE = 0°
ALLOWABLE SOIL BEARING PRESSURE = 3250 psf

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

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
F601	X	6	19'-6"			CAP BEAM LONGITUDINAL
F402	X	13	19'-6"			CAP BEAM LONGITUDINAL
F403	X	40	10'-4"	▲	△	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.

BAR SERIES TABLE

MARK	NO. REQ'D	LENGTH	"a" DIM VARIES	"b" DIM VARIES
F403	2 SERIES OF 20	9'-1" TO 11'-6"	1'-7" TO 2'-9"	2'-4" TO 3'-6"

BUNDLE AND TAG EACH SERIES SEPARATELY

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-846

DRAWN BY DW PLANS CK'D. VC

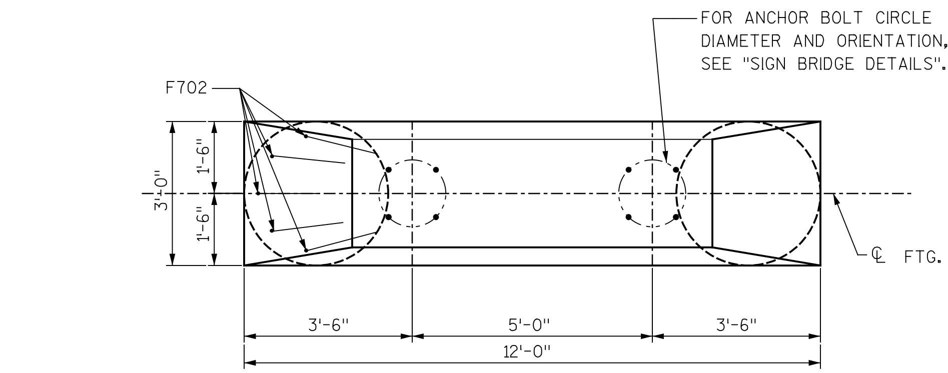
TOWER 1 FOUNDATION DETAILS

SHEET 2 OF 6

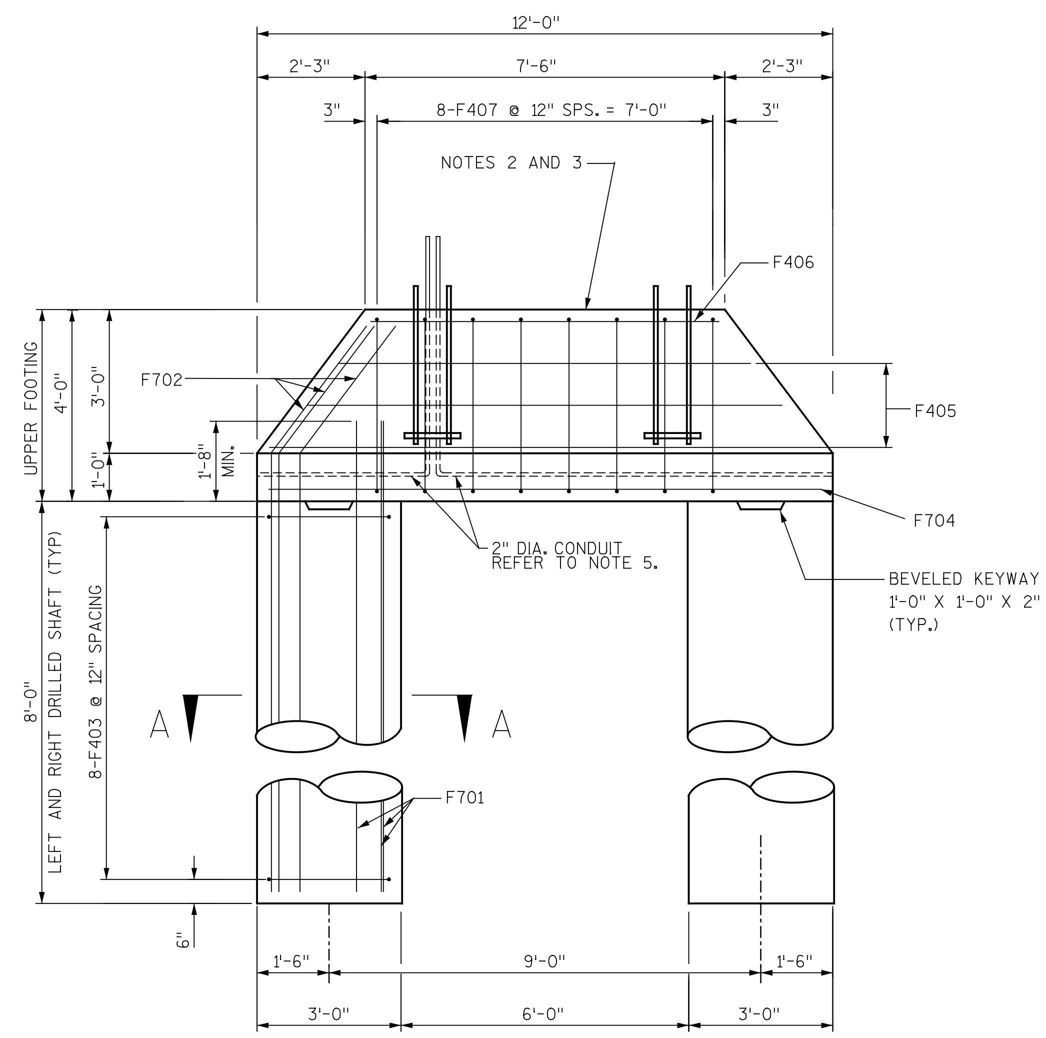
FILE NAME : S-40-0846_pln.dgn PLOT DATE : 1/15/2013 3:20:08 PM PLOT BY : Veronica Chavezv8I

STATE PROJECT NUMBER

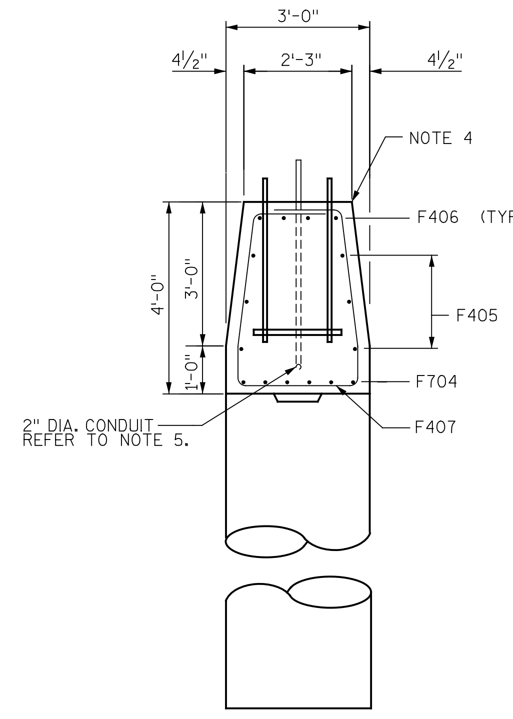
1000-19-89



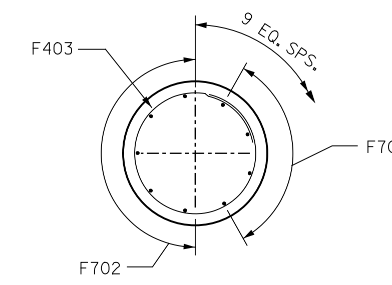
PLAN



ELEVATION



END VIEW



SECTION A-A

GENERAL NOTES

1. DRAWINGS SHALL NOT BE SCALED.
2. BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 3" CLEAR UNLESS OTHERWISE NOTED.
3. THE TOP OF THE FOOTING SURFACE SHALL BE SMOOTHED AND SLOPED TO DRAIN.
4. REFER TO THE PLAN AND ELEVATION SHEET FOR TOP OF FOOTING ELEVATIONS. BOTTOM OF FOOTING TO BE EMBEDDED 1'-0" BELOW GRADE.
5. INSTALL CONDUIT IN FOOTING AND SWEEP CONDUIT PER LIGHTING PLANS. CAP BOTH ENDS OF 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 = 2000 psf
FRICTION ANGLE = 0 °
ALLOWABLE SOIL BEARING PRESSURE = 4000 psf
ALLOWABLE SKIN FRICTION =1000 psf

BAR SERIES TABLE

MARK	NO. REQ'D	LENGTH
F405	2 SERIES OF 3	8'-8" TO 11'-4"

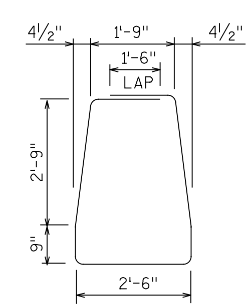
BUNDLE AND TAG EACH SERIES SEPARATELY

BILL OF BARS

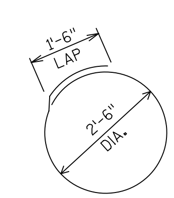
NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
F701	X	8	9'-5"			DRILLED SHAFT VERTICAL
F702	X	10	12'-0"	▲		DRILLED SHAFT VERTICAL
F403		16	9'-4"	▲		DRILLED SHAFT HOOP
F704	X	6	11'-6"			CAP BEAM LONGITUDINAL
F405	X	6	10'-0"		△	CAP BEAM LONGITUDINAL
F406	X	4	7'-4"			CAP BEAM LONGITUDINAL
F407	X	8	12'-4"	▲		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



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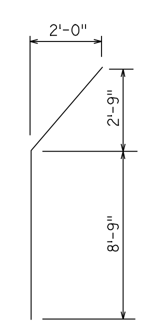

F702

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NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-846

DRAWN BY DW PLANS CK'D. VC

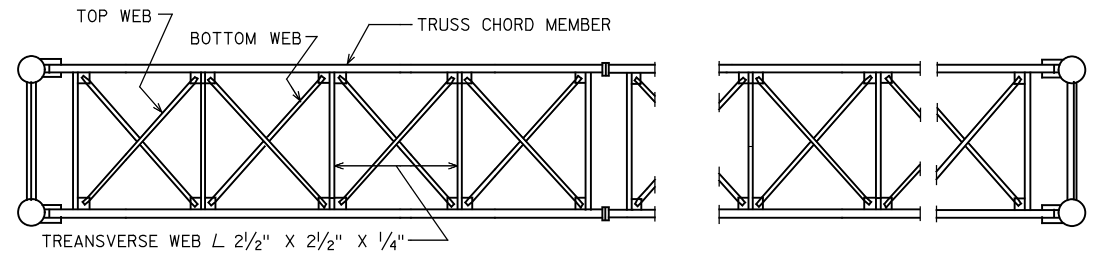
TOWER 2 FOUNDATION DETAILS

SHEET 3 OF 6

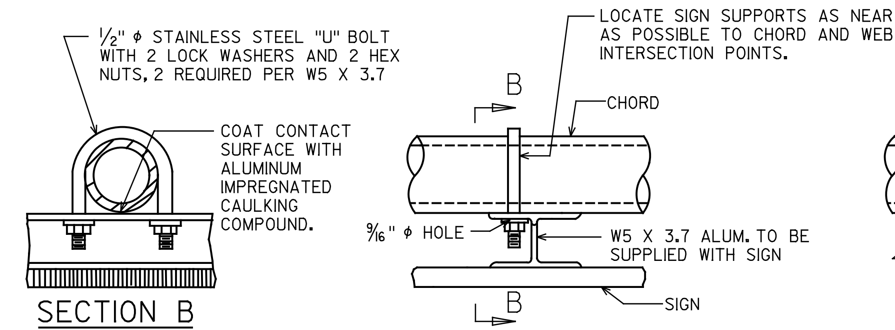
FILE NAME : S-40-0846_pln.dgn PLOT DATE : 1/15/2013 3:32:06 PM PLOT BY : Veronica Chavezv8I

STATE PROJECT NUMBER

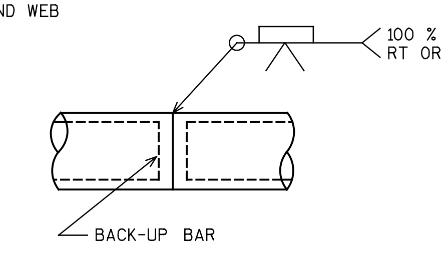
1000-19-89



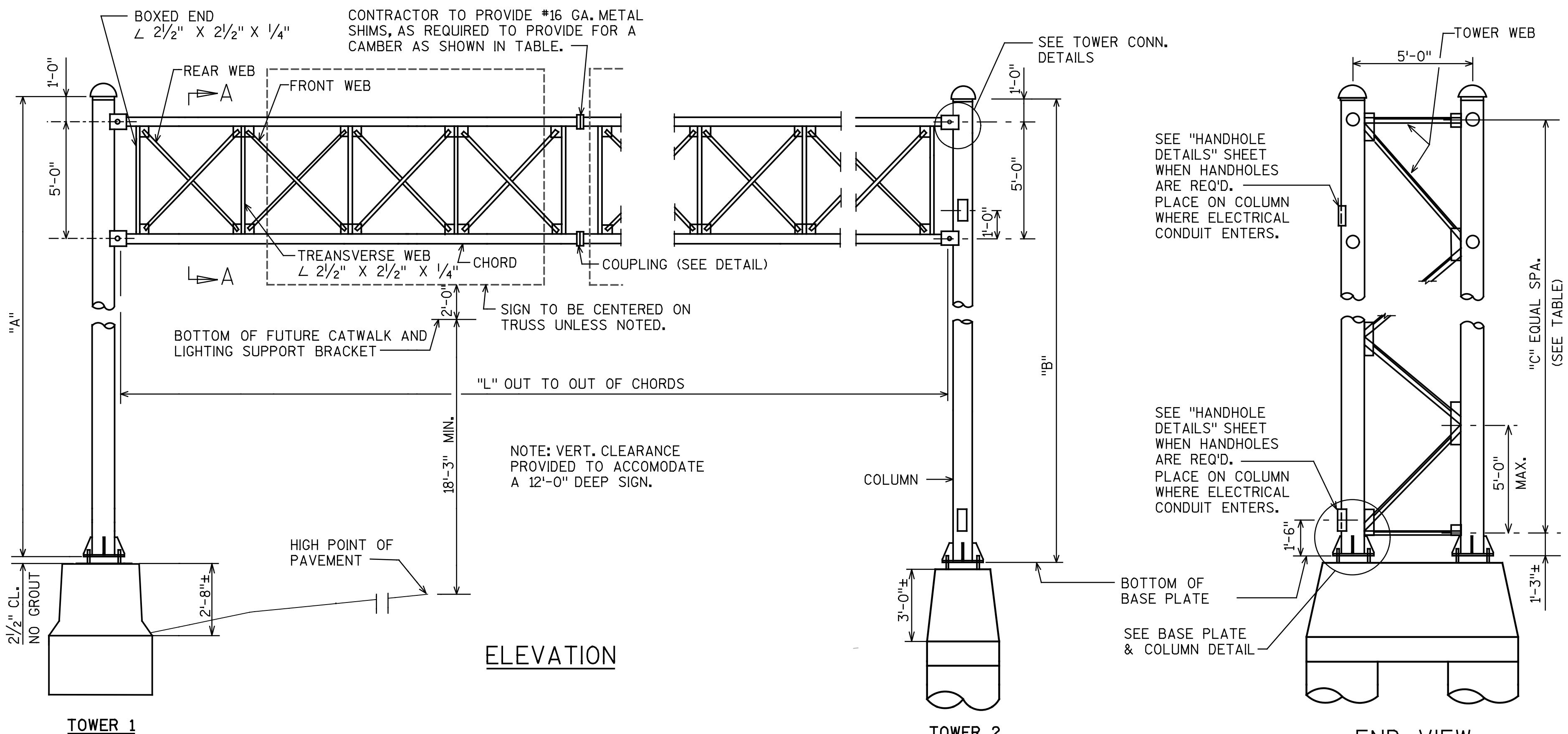
PLAN

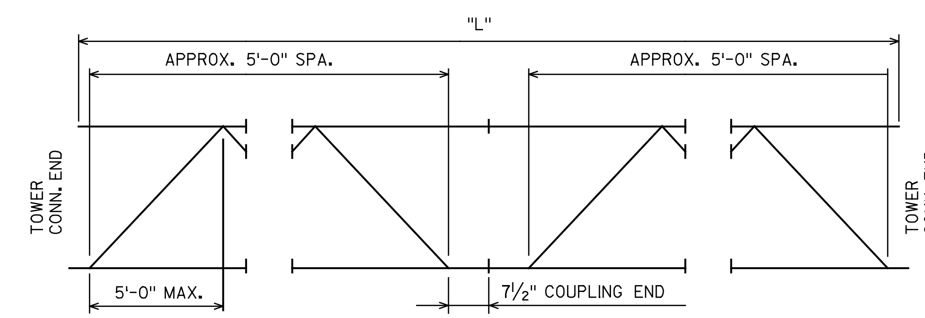


TYPICAL SIGN CONNECTION



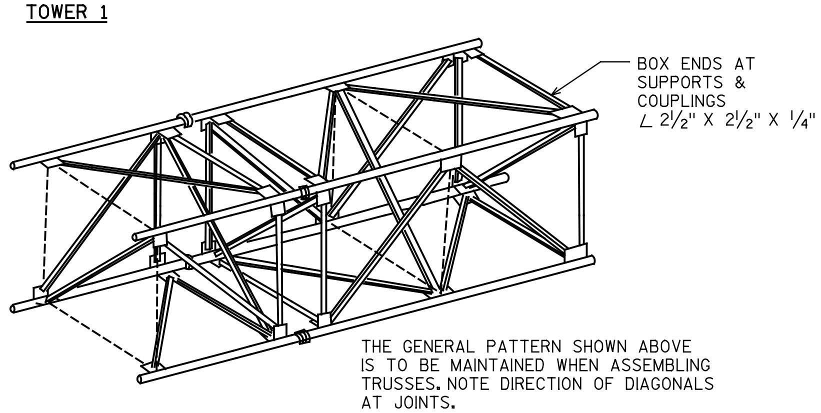
CHORD SPLICE





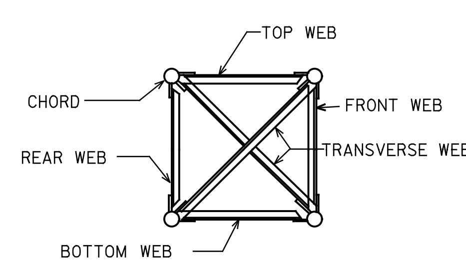
TRUSS ARRANGEMENT

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.



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

TYPICAL TRUSS SECTION



SECTION A

NOTES

DRAWINGS SHALL NOT BE SCALED.

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-40-846	27'-10"	26'-1¾"	6	4" x 0.226"	L 3" x 3" x 1/4"	L 3" x 3" x 1/4"	10" x 1"	7"	6	1 3/16"	10.75" x 0.365"	L 3" x3" x 3/16"	62'-3¼"

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-846

DRAWN BY DW PLANS CK'D. VC

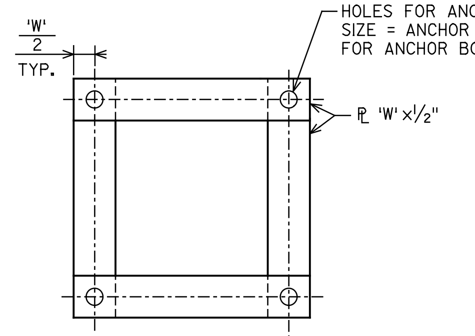
GALVANIZED STEEL SIGN BRIDGE

SHEET 4 OF 6

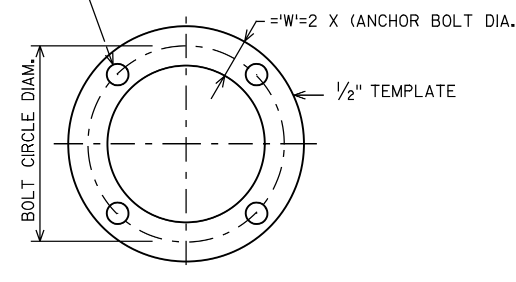
8 8

FILE NAME : S-40-0846_pln.dgn PLOT DATE : 1/15/2013 3:20:09 PM PLOT BY : Veronica Chavezv8I

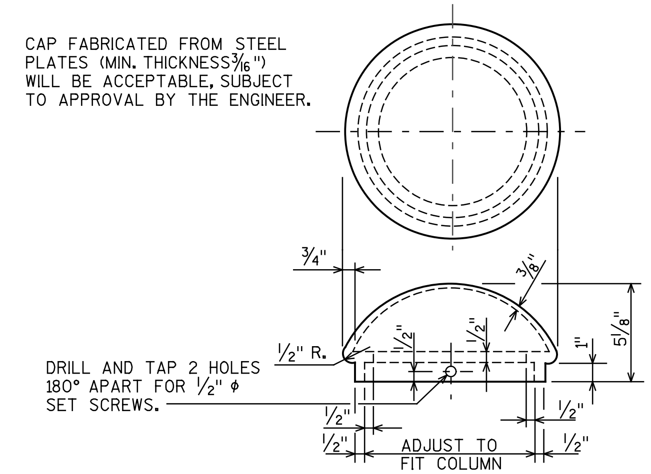
STATE PROJECT NUMBER
1000-19-89



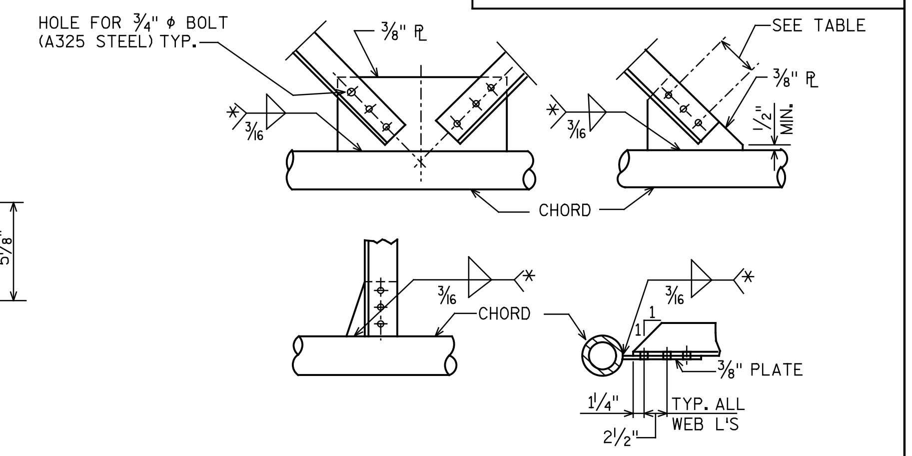
ALTERNATE ANCHOR PLATE/TEMPLATE PLAN



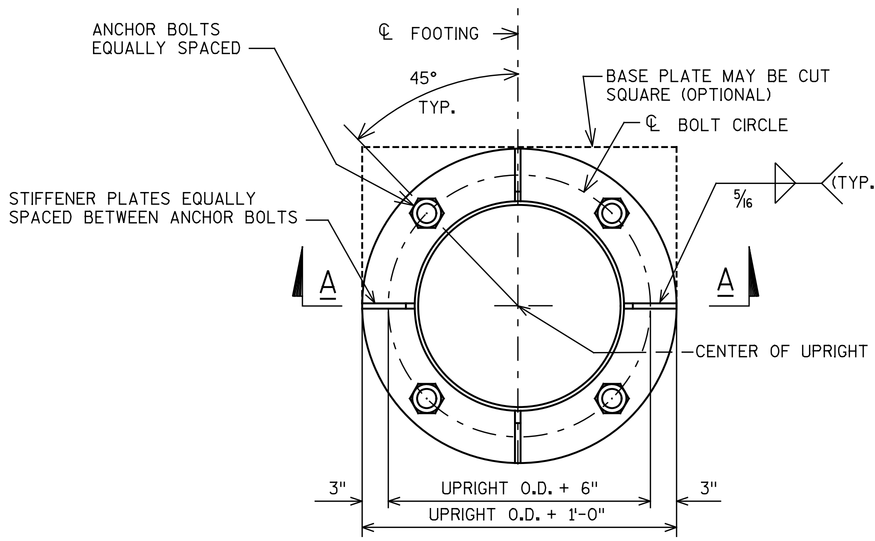
ANCHOR PLATE/TEMPLATE PLAN



TOWER CAP DETAIL

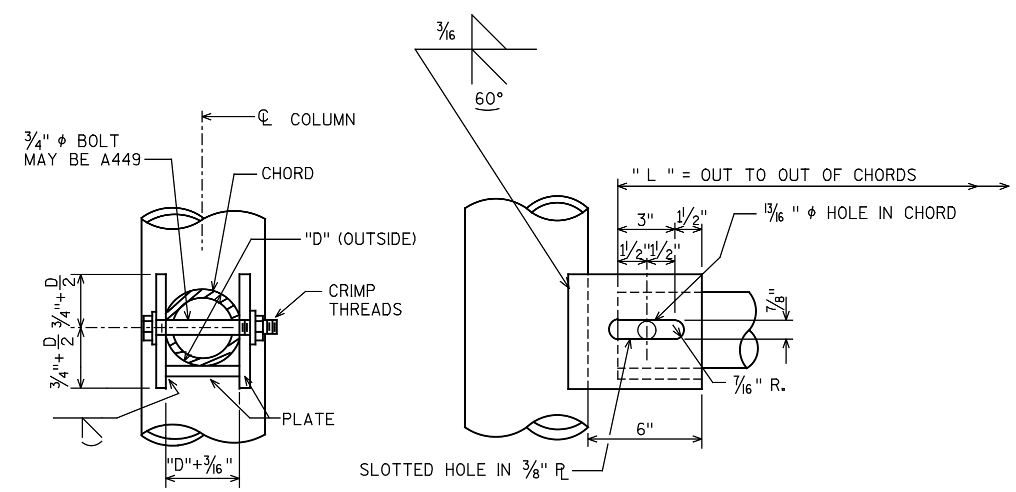


TYPICAL TRUSS CONNECTION DETAILS

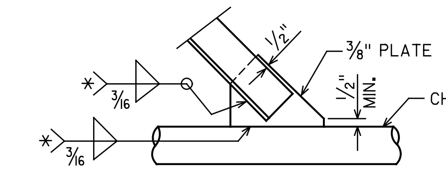


PLAN VIEW

(BASE PLATE)



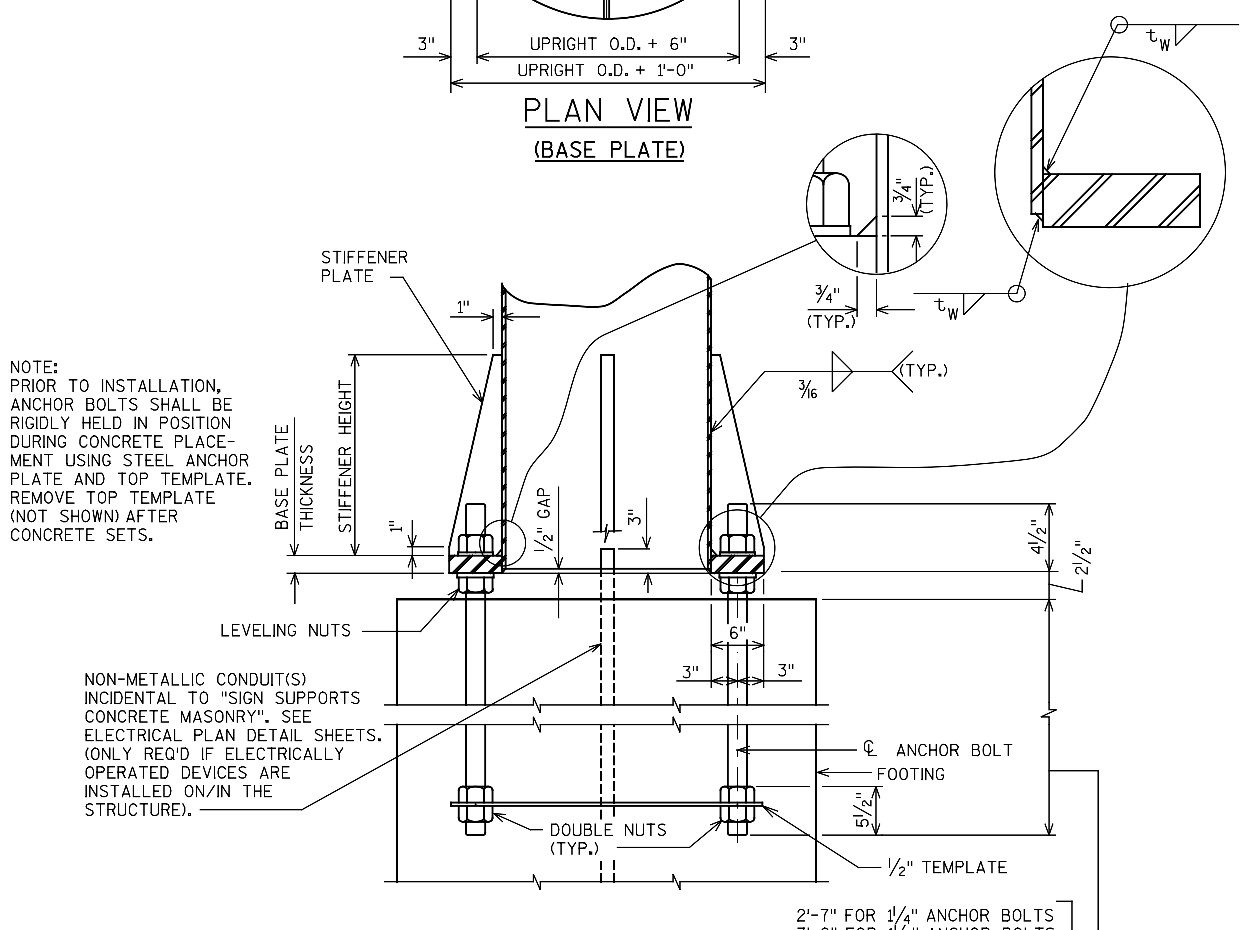
TOWER CONNECTION DETAIL



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

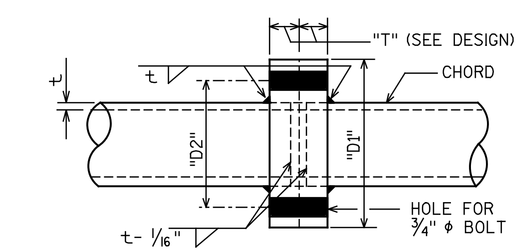
● ONLY USED FOR BOXED END AND TRANSVERSE BRACING.



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.

NON-METALLIC CONDUIT(S) INCIDENTAL TO "SIGN SUPPORTS CONCRETE MASONRY". SEE ELECTRICAL PLAN DETAIL SHEETS. (ONLY REQ'D IF ELECTRICALLY OPERATED DEVICES ARE INSTALLED ON/IN THE STRUCTURE).

SECTION A-A



COUPLING DETAIL

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-40-846	10.75" x 0.365"	1 1/2"	1 1/2"	1/2"	10"	5/16"

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-846

DRAWN BY DW | PLANS CK'D. VC

SIGN BRIDGE DETAILS

SHEET 5 OF 6

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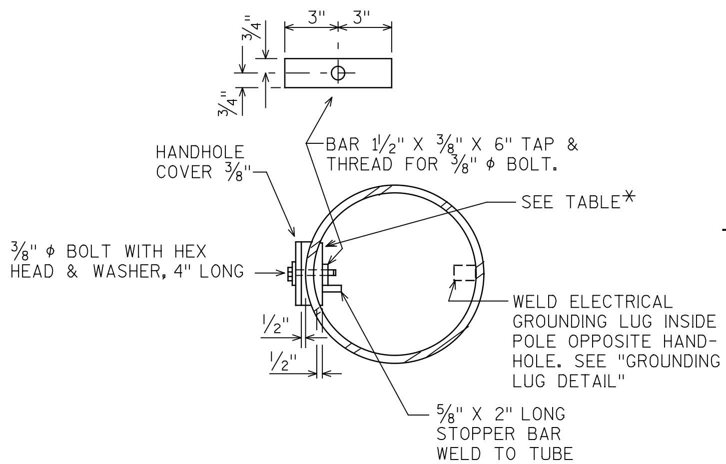
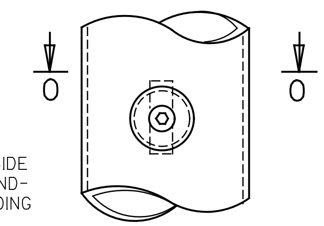
8

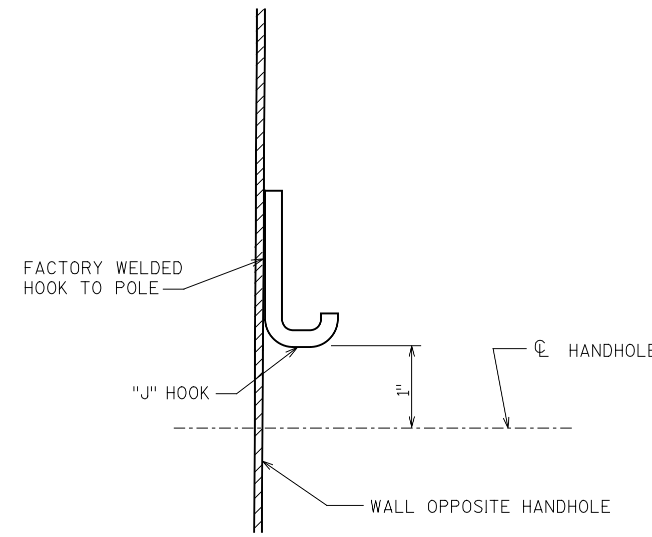
8



SECTION 'O'

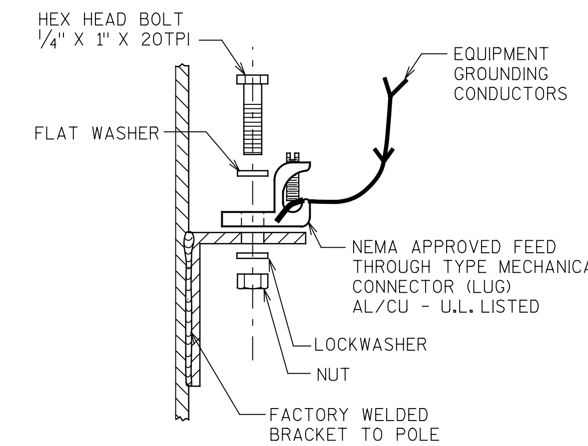


HANDHOLE DETAILS



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

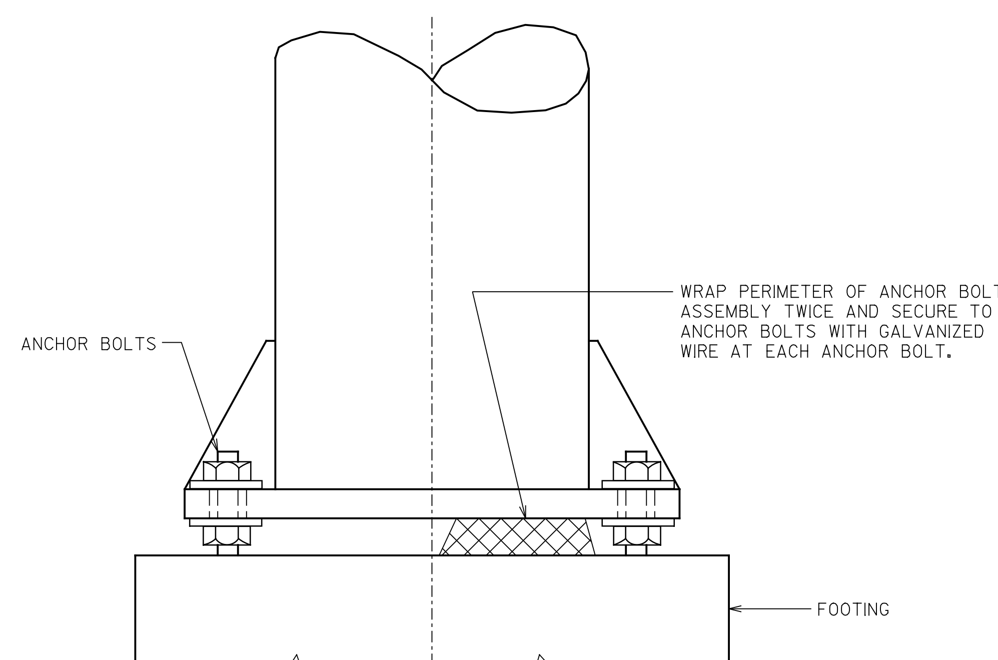
NUT, BOLT AND WASHERS SHALL BE STAINLESS STEEL

HANDHOLE NOTES

HANDHOLES SHALL BE LOCATED IN ONE COLUMNS 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. SIZE	HANDHOLE PIPE O.D. X MIN. THK.
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)

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-846

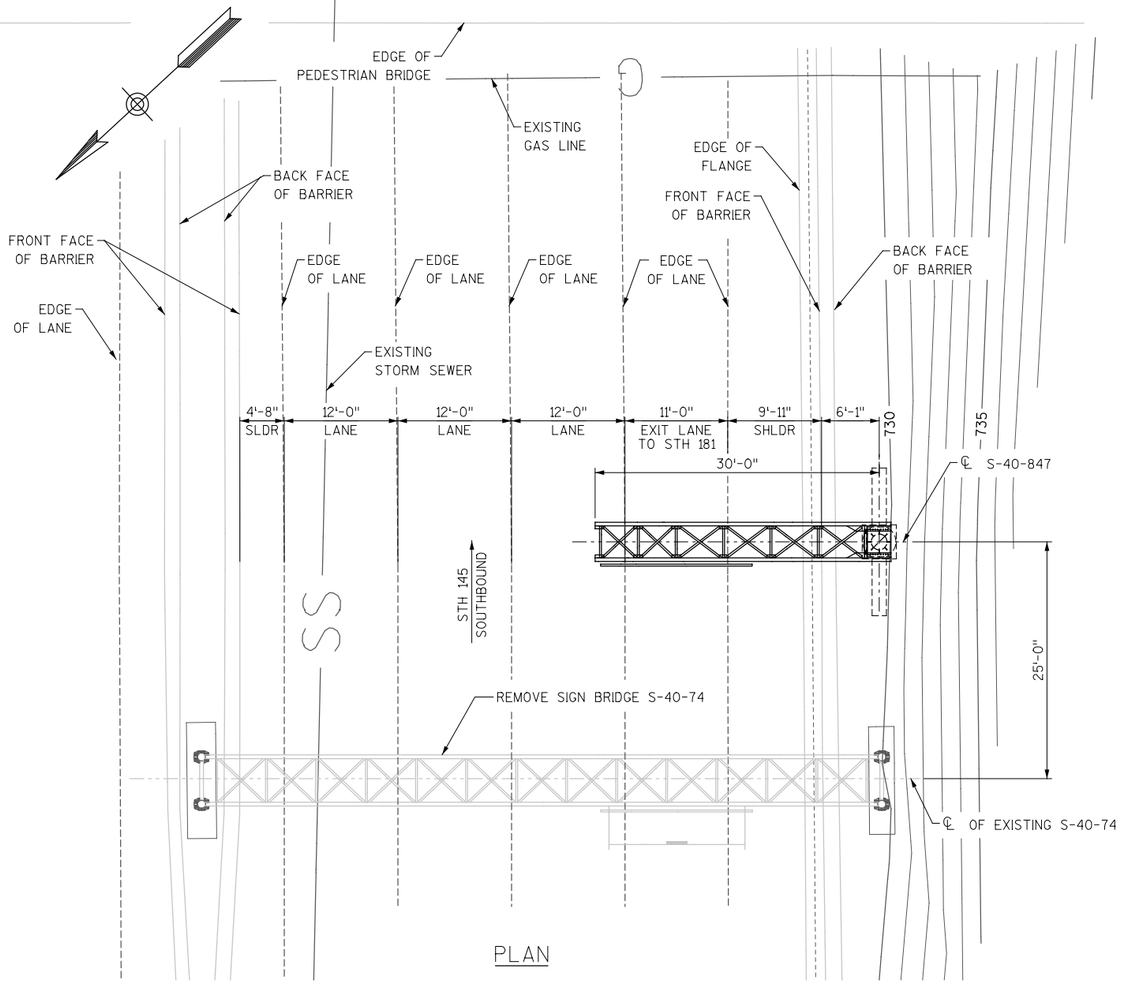
DRAWN BY DW PLANS CK'D. VC

HANDHOLE DETAILS

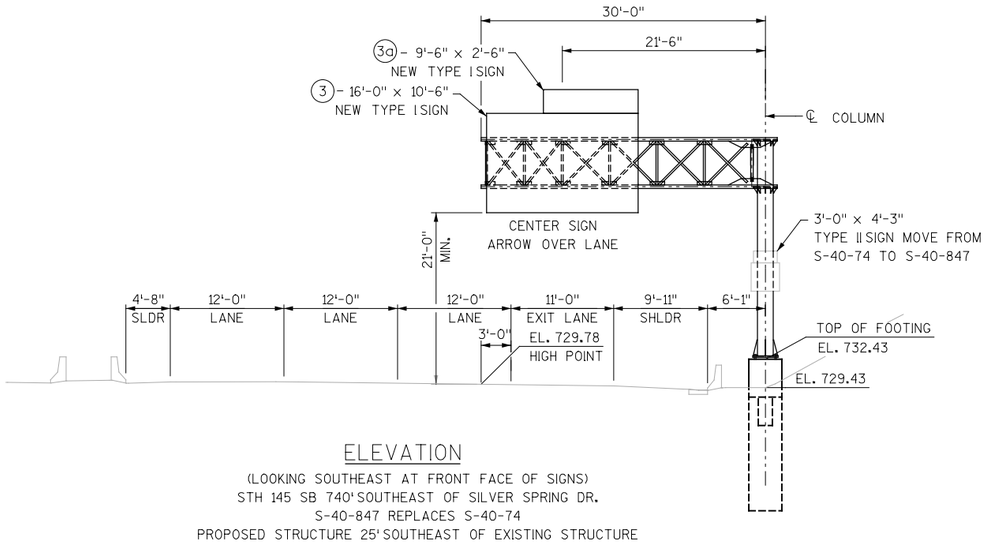
SHEET 6 OF 6

STATE PROJECT NUMBER

1000-19-89



PLAN



ELEVATION

(LOOKING SOUTHEAST AT FRONT FACE OF SIGNS)
STH 145 SB 740'SOUTHEAST OF SILVER SPRING DR.
S-40-847 REPLACES S-40-74
PROPOSED STRUCTURE 25'SOUTHEAST OF EXISTING STRUCTURE

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 500LBS. DISTRIBUTED OVER 2'-0" OF CATWALK.
ICE LOAD - 3 P.S.F. TO 1FACE 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"

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 FOUNDATIONS, CONSIDERED INCIDENTAL TO BID ITEM "REMOVING SIGN BRIDGE S-40-74"

PROVIDE VENTILATING RODENT SCREENS AT ALL COLUMN BASES (NO GROUT), CONSIDERED INCIDENTAL TO BID ITEM "SIGN BRIDGE CANTILEVERED S-40-847".

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 ARE REQUIRED FOR SIGNS AND ARE INCIDENTAL TO SIGNS.

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-40-847".

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-40-847 ".

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.

INSTALL CONDUIT PLUGS IN ALL UNUSED CONDUIT HOLES, CONSIDERED INCIDENTAL TO THE BID ITEM "SIGN BRIDGE CANTILEVERED S-40-847".

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 de Fernandez
1/17/2013

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

CONSULTANT CONTACT, COLLINS ENGINEERS INC.
VERONICA CHAVEZ DE FERNANDEZ: (414) 282-6905

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-40-847	LS	1

NO.	DATE	REVISION	BY

COLLINS ENGINEERS INC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher KAR 03/06/13
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE S-40-847

STH 145

COUNTY	~~TOWN/CITY/VILLAGE~~
MILWAUKEE	MILWAUKEE

DESIGN SPEC.
AASHTO STANDARD SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
VC	NJH	DW,MJH	RJW

PLAN & ELEVATION

SHEET 1 OF 5

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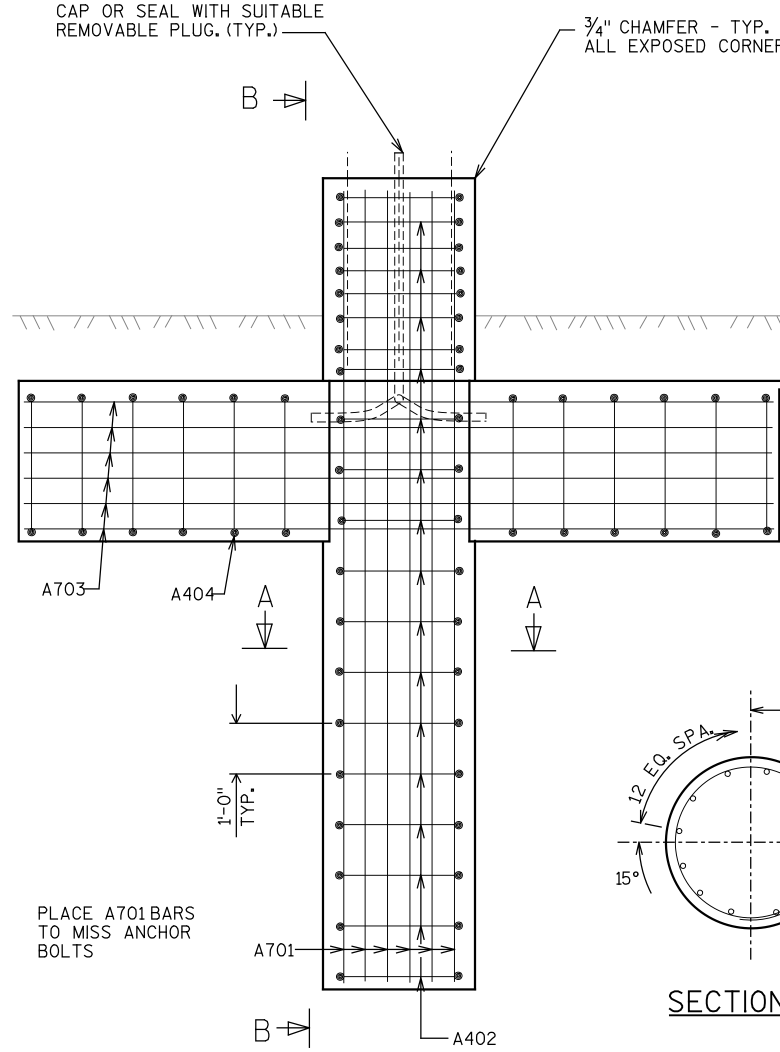
8

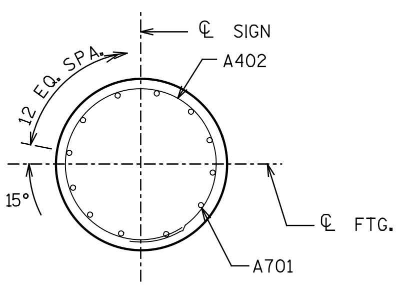
8

STATE PROJECT NUMBER

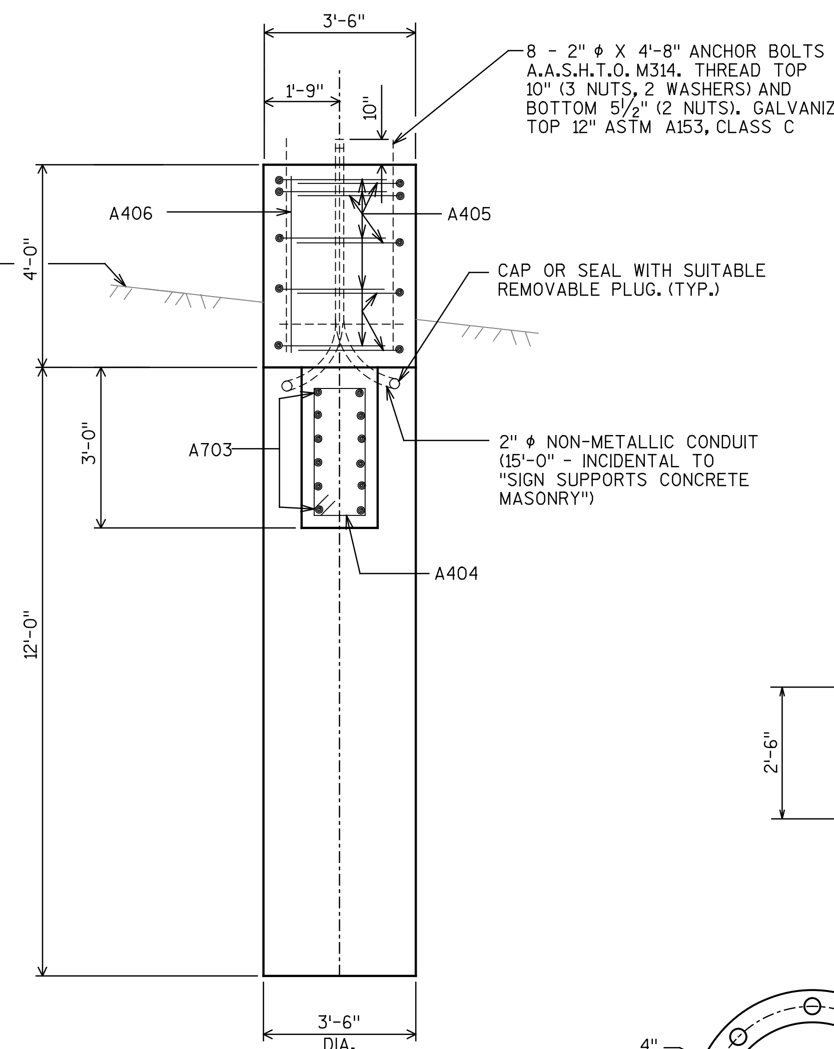
1000-19-89



ELEVATION
(8 C.Y.)



SECTION A



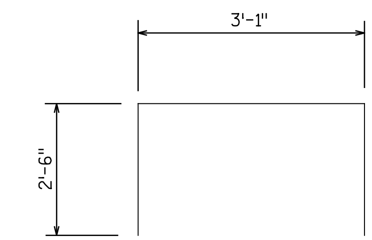
SECTION B

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



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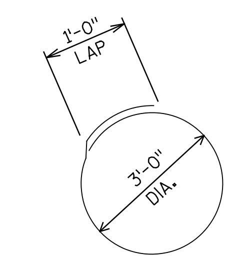

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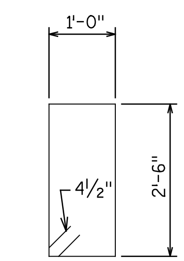
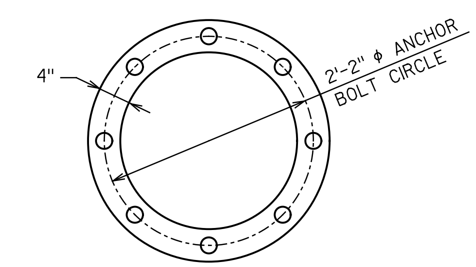
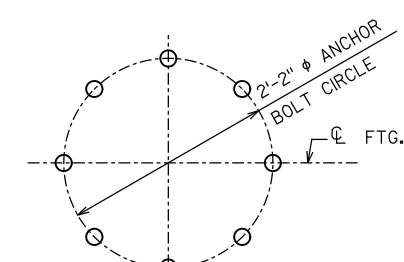


A404
(STIRRUP)



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

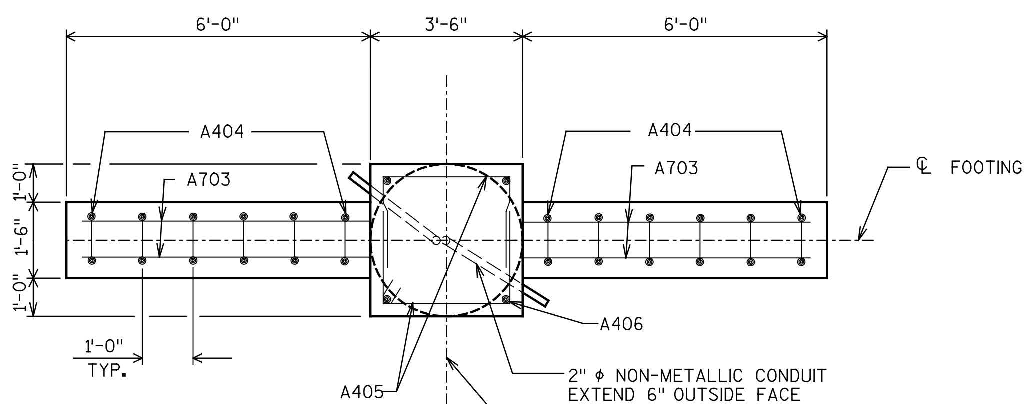
CONCRETE MASONRY — f'c=3,500 P.S.I.
HIGH STRENGTH BAR STEEL REINFORCEMENT, GRADE 60 — fy=60,000 P.S.I.
ANCHOR BOLTS A.A.S.H.T.O. M314 — fy=55,000 P.S.I.

FOUNDATION DATA

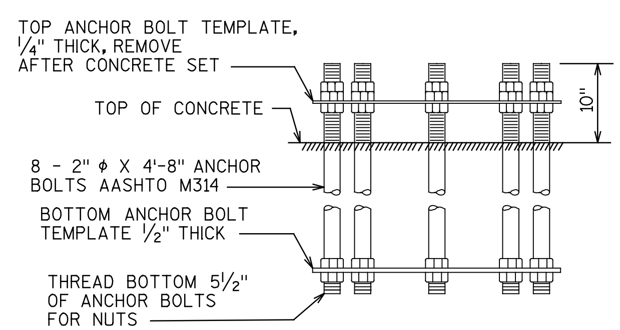
ALLOWABLE SOIL BEARING PRESSURE = 2T/SQ. FT.

TOTAL ESTIMATED QUANTITIES (1 FTG.)

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



PLAN



ANCHOR BOLT DETAILS

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-847

DRAWN BY DW | PLANS CK'D. VC

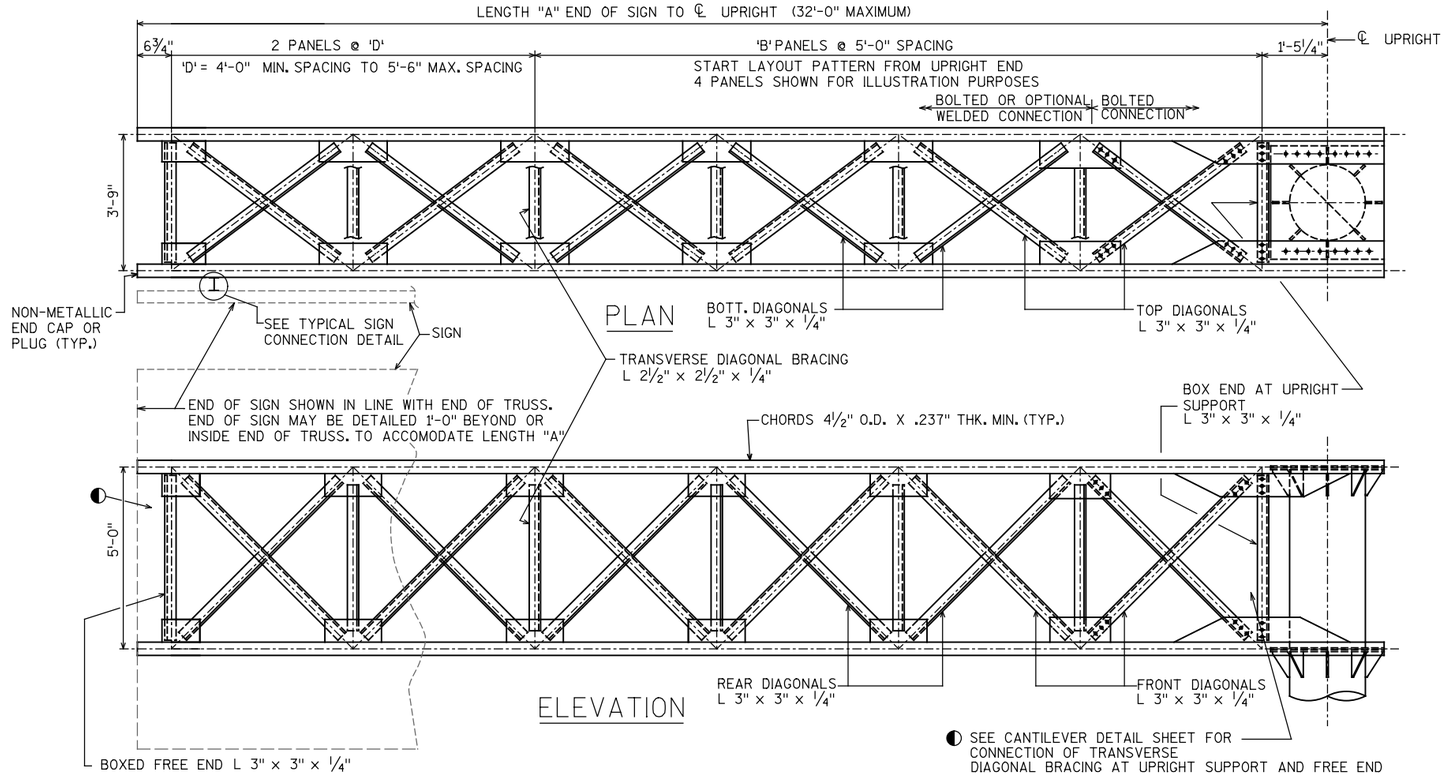
CANTILEVER TRUSS FOOTING

SHEET 2 OF 5

8

8

STATE PROJECT NUMBER
1000-19-89



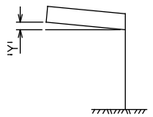
GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

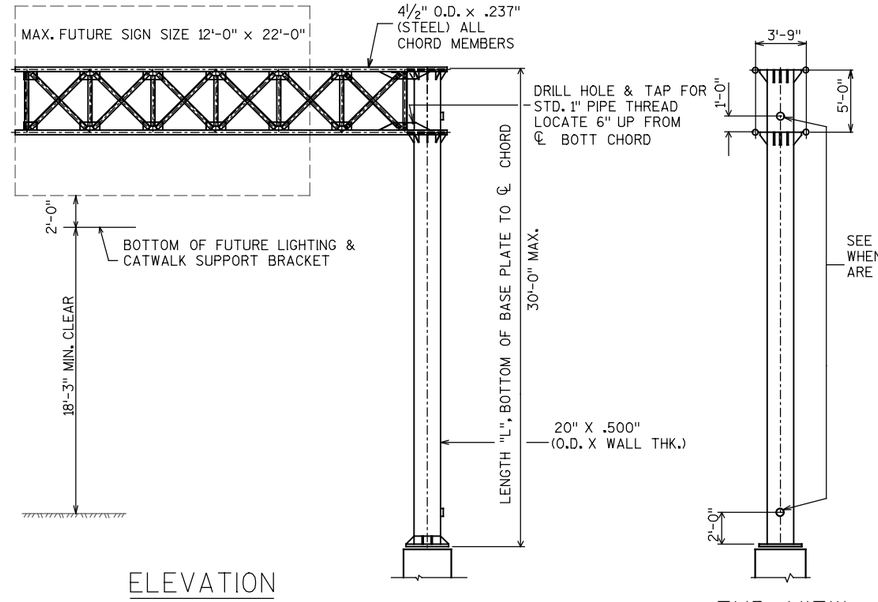
PREFABRICATE CAMBER INTO THE HORIZONTAL SUPPORT PROVIDING AN AMOUNT "Y" AT END OF TRUSS SHOWN IN "CAMBER DIAGRAM". DO NOT RAKE VERTICAL UPRIGHT BY ADJUSTMENT OF LEVELING NUTS.

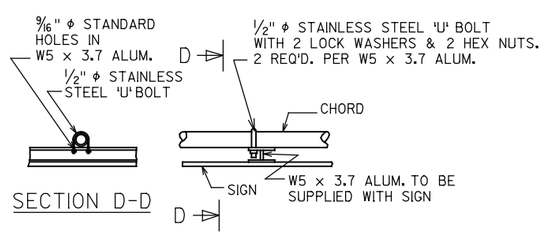
WELDED CONNECTIONS CAN BE USED IN LIEU OF BOLTED CONNECTIONS IF UNIT CAN BE GALVANIZED IN ONE PIECE.

STRUCTURE	"A"	"L"	"B"	"D"	"Y"
S-40-847	30'-0"	25'-11"	4	4'-0"	3"

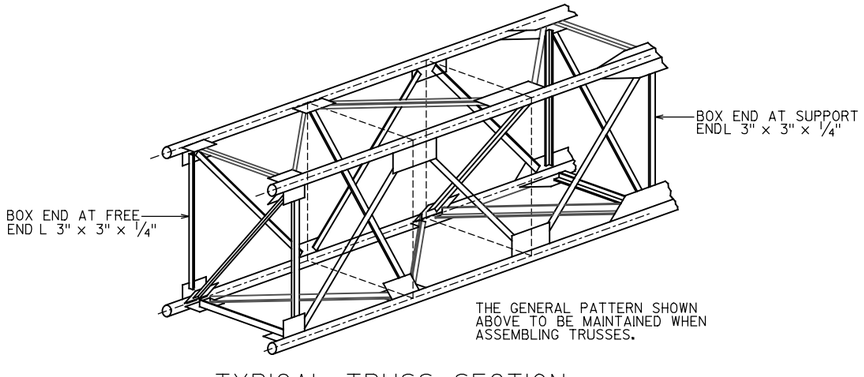


CAMBER DIAGRAM





TYPICAL SIGN CONNECTION



TYPICAL TRUSS SECTION

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-847

DRAWN BY	DW	PLANS CK'D.	VC

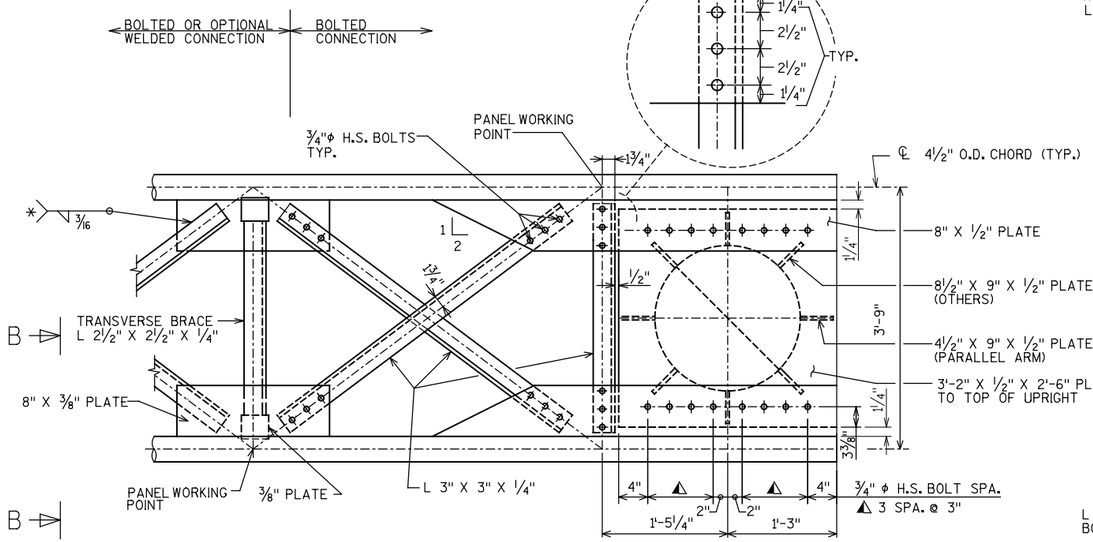
GALVANIZED STEEL CANTILEVER SIGN TRUSS

SHEET 3 OF 5

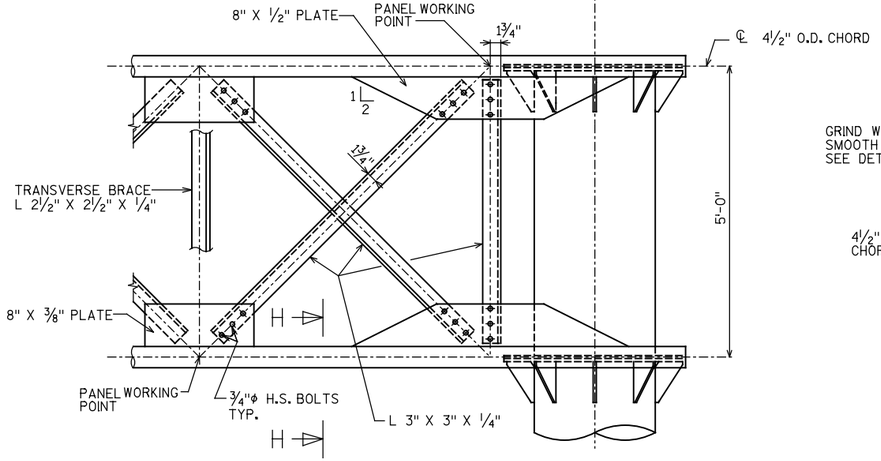
74

STATE PROJECT NUMBER

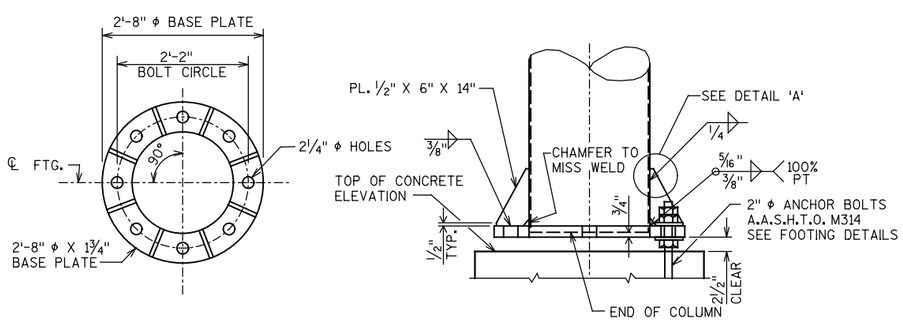
1000-19-89



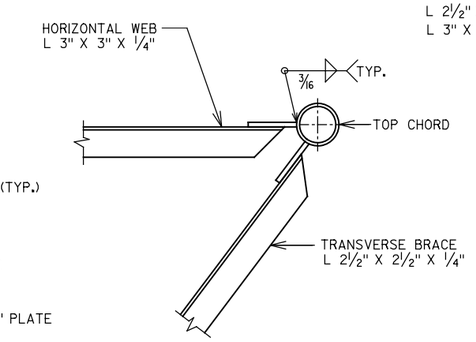
PLAN TRUSS TO UPRIGHT



ELEVATION TRUSS TO UPRIGHT

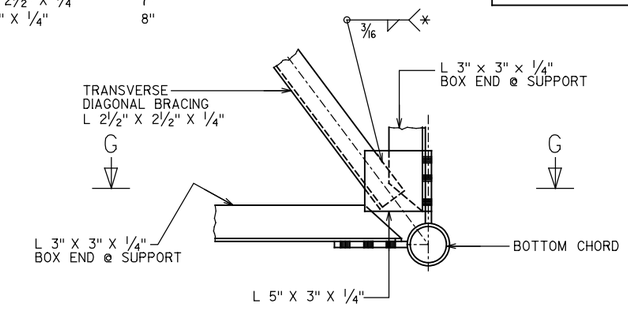


BASE PLATE DETAILS

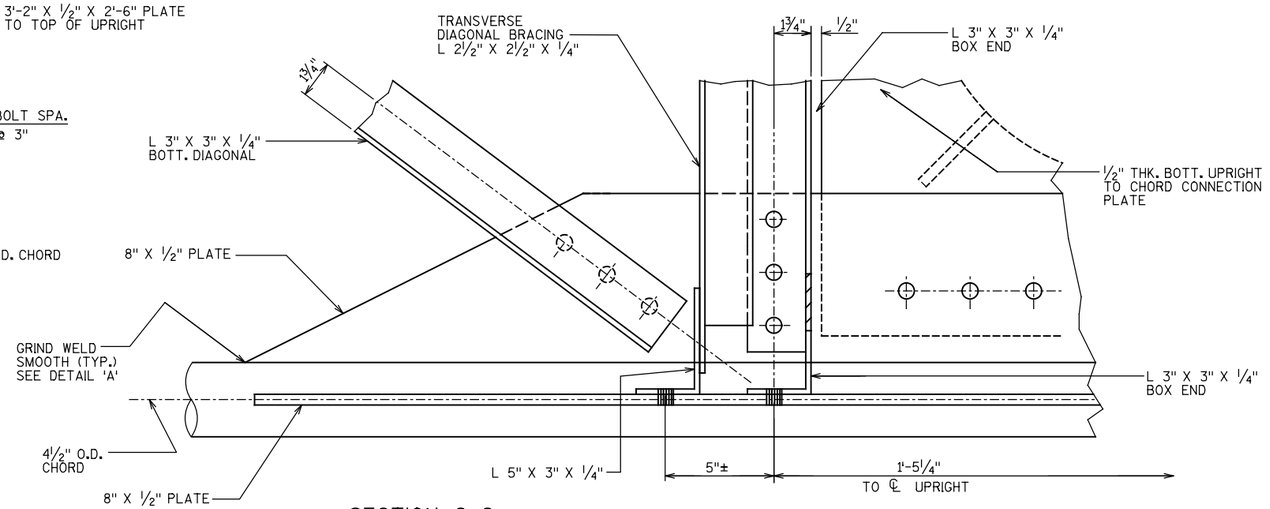


SECTION B-B

* ANGLE	WELD LENGTH (MIN.)
L 2½" X 2½" X ¼"	7"
L 3" X 3" X ¼"	8"

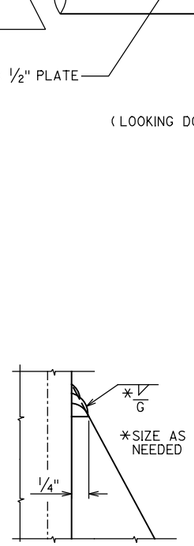


SECTION H-H

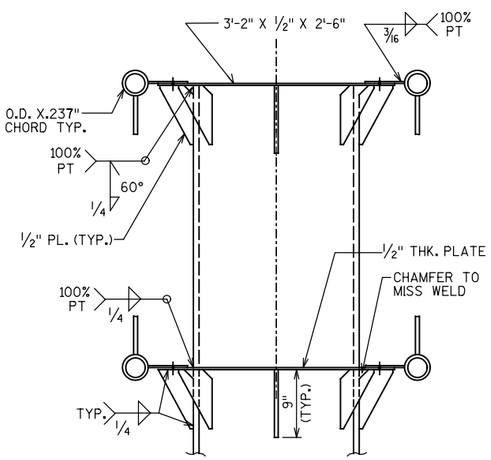


SECTION G-G

(LOOKING DOWN @ BOTT. HORIZ. PLANE @ FRONT CHORD)

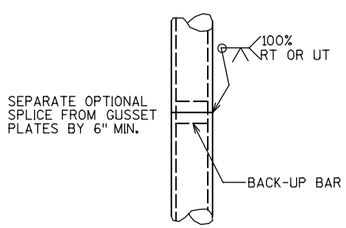


DETAIL 'A'



END VIEW

TRUSS TO UPRIGHT



OPTIONAL COLUMN OR CHORD SPLICE DETAIL

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-847

DRAWN BY DW | PLANS CK'D. VC

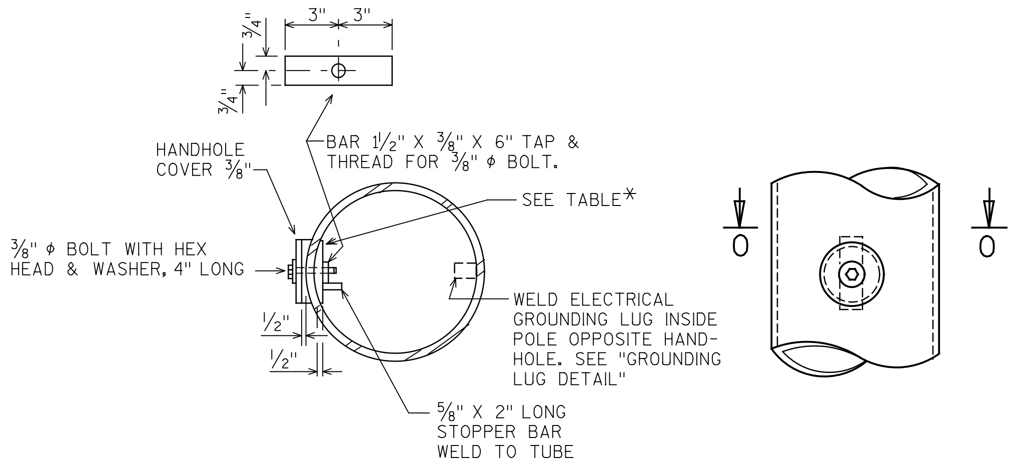
GALVANIZED STEEL CANTILEVER SIGN TRUSS DETAILS

SHEET 4 OF 5

75

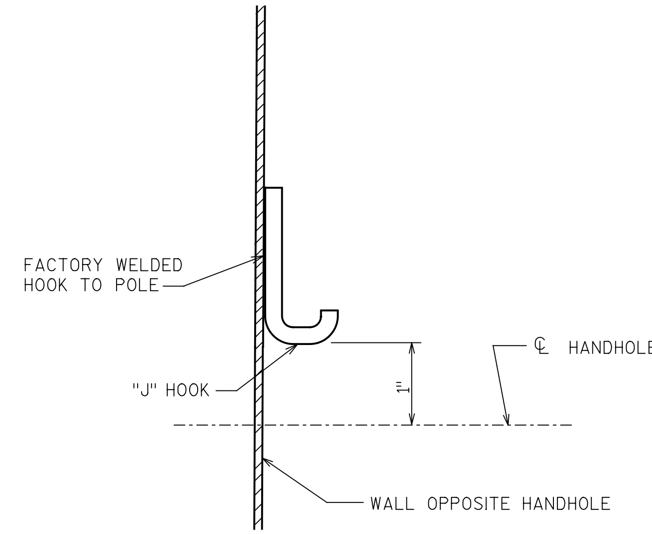
8

8



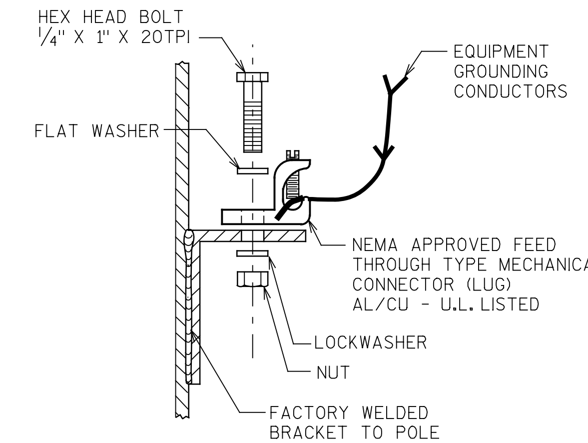
SECTION 'O'

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

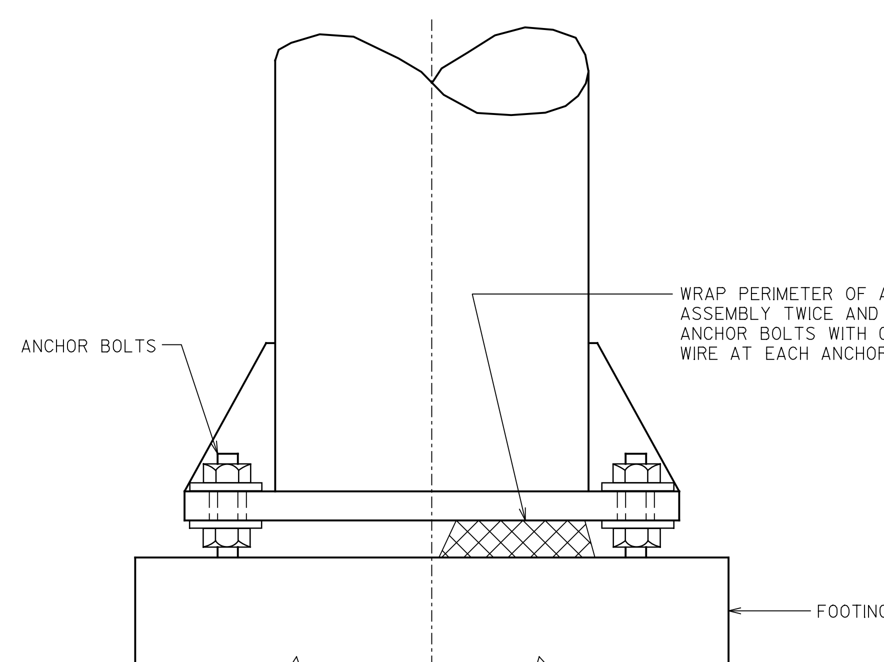
NUT, BOLT AND WASHERS SHALL BE STAINLESS STEEL

HANDHOLE NOTES

HANDHOLES SHALL BE LOCATED IN ONE COLUMNS 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. SIZE	HANDHOLE PIPE O.D. X MIN. THK.
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

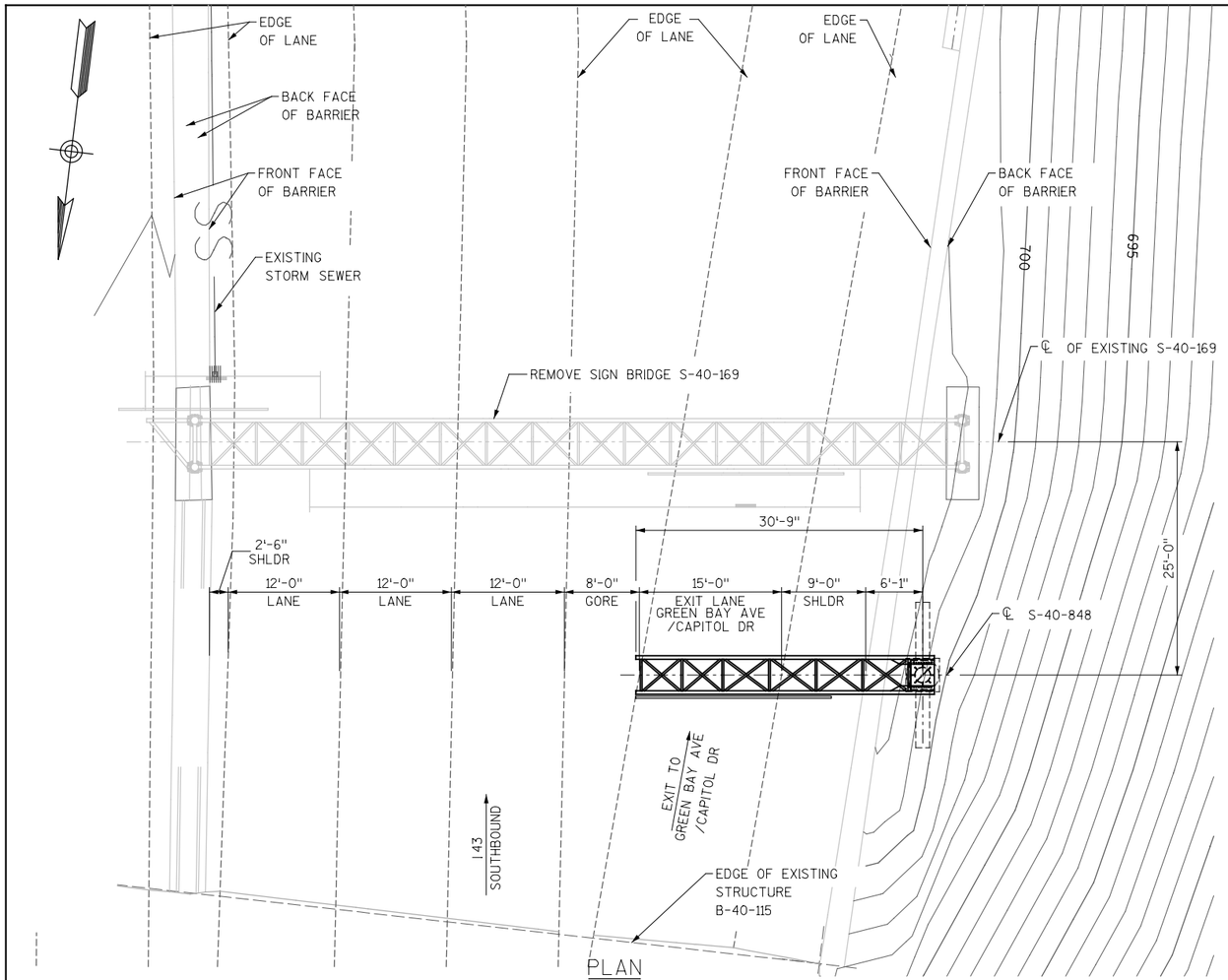
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-847

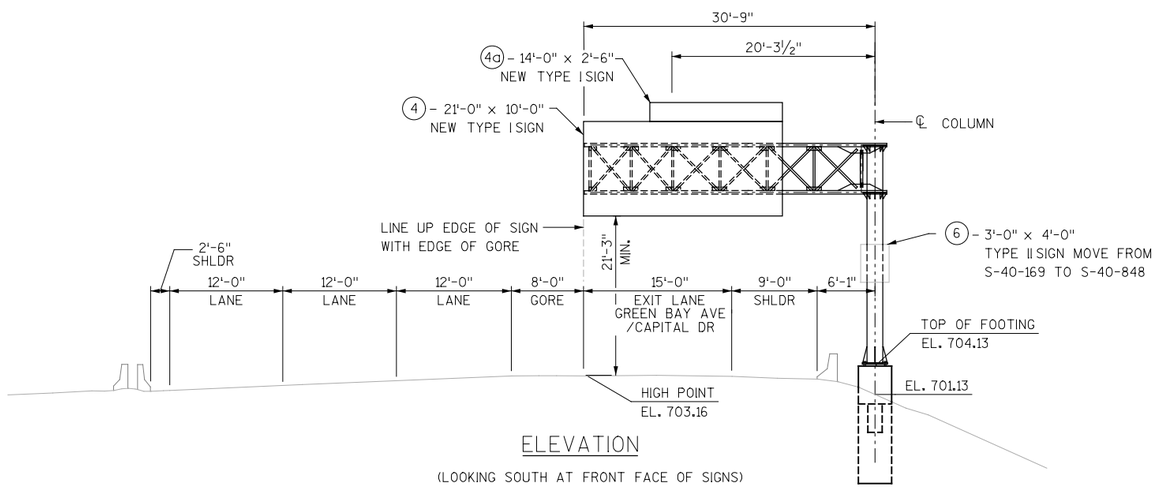
DRAWN BY DW PLANS CK'D. VC

HANDHOLE DETAILS

SHEET 5 OF 5



PLAN



ELEVATION

(LOOKING SOUTH AT FRONT FACE OF SIGNS)
IH 43 SB AT EXIT TO GREEN BAY AVE
S-40-848 REPLACES SOUTHBOUND PORTION OF S-40-169
PROPOSED STRUCTURE 25'NORTH OF EXISTING STRUCTURE

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 500LBS. DISTRIBUTED OVER 2'-0" OF CATWALK.
ICE LOAD - 3 P.S.F. TO 1FACE 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"

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 FOUNDATIONS, CONSIDERED INCIDENTAL TO BID ITEM "REMOVING SIGN BRIDGE S-40-169"

PROVIDE VENTILATING RODENT SCREENS AT ALL COLUMN BASES (NO GROUT), CONSIDERED INCIDENTAL TO BID ITEM "SIGN BRIDGE CANTILEVERED S-40-848".

PROVIDE A ¾" 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 ARE REQUIRED FOR SIGNS AND ARE INCIDENTAL TO SIGNS.

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-40-848".

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-40-848 ".

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.

INSTALL CONDUIT PLUGS IN ALL UNUSED CONDUIT HOLES, CONSIDERED INCIDENTAL TO THE BID ITEM "SIGN BRIDGE CANTILEVERED S-40-848 ".

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 de Fernandez
1/17/2013

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

CONSULTANT CONTACT, COLLINS ENGINEERS INC.
VERONICA CHAVEZ DE FERNANDEZ: (414) 282-6905

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
641.1200.03	SIGN BRIDGE CANTILEVERED S-40-848	LS	1

STATE PROJECT NUMBER
1000-19-89

NO.	DATE	REVISION	BY

COLLINS ENGINEERS INC.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher KAR 03/06/13
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE S-40-848

IH 43

COUNTY MILWAUKEE
~~TOWN~~/CITY/~~VILLAGE~~ MILWAUKEE

DESIGN SPEC. AASHTO STANDARD SPECIFICATIONS

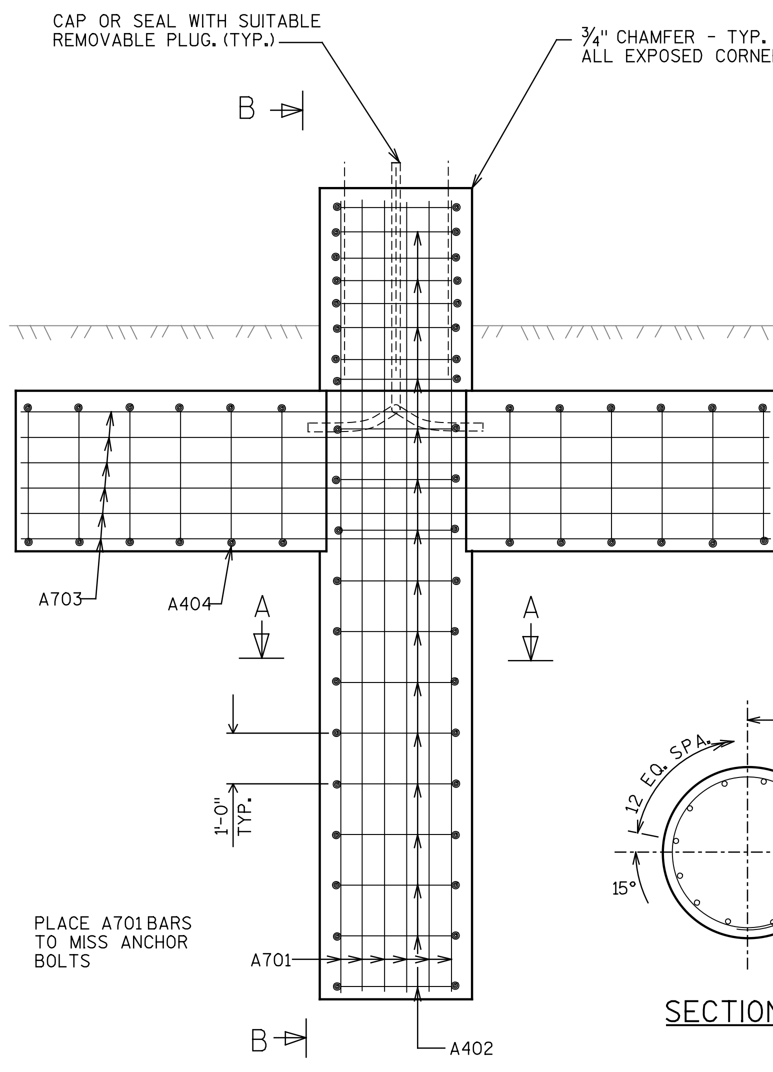
DESIGNED BY	VC	DESIGN CK'D.	NJH	DRAWN BY	DW,MJH	PLANS CK'D.	RJW

PLAN & ELEVATION

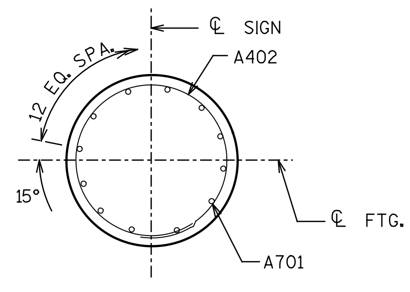
SHEET 1 OF 5
77

8

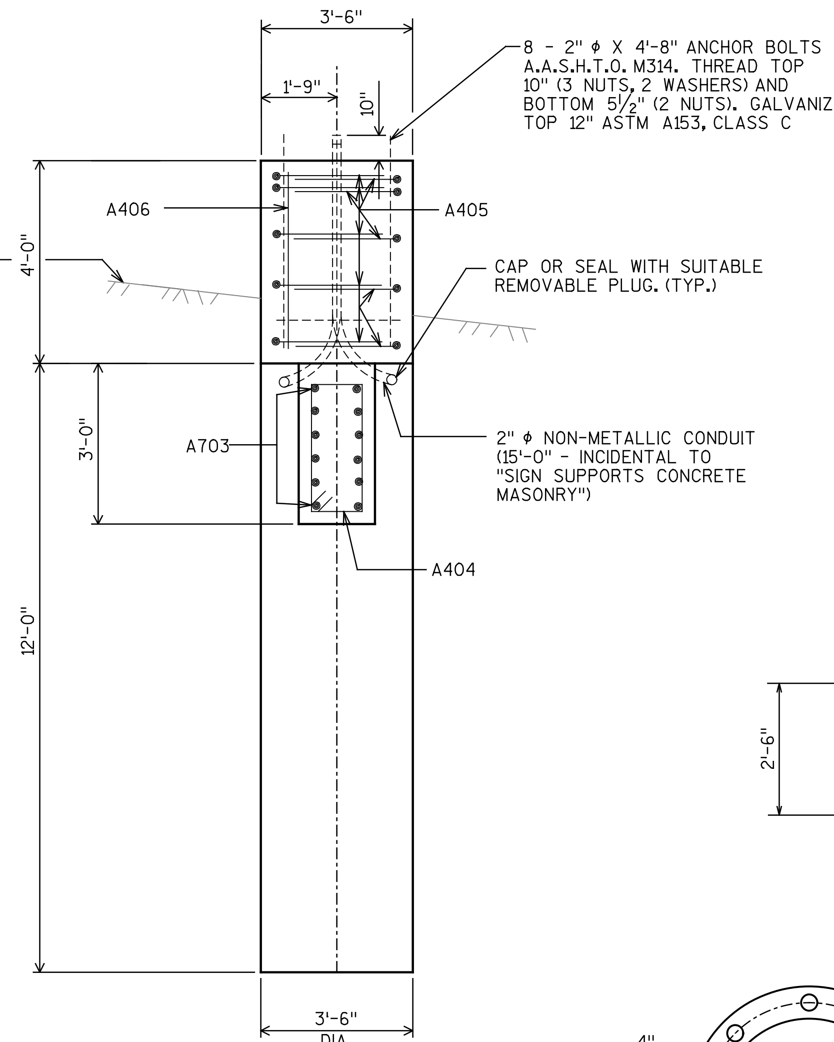
8



ELEVATION
(8 C.Y.)



SECTION A

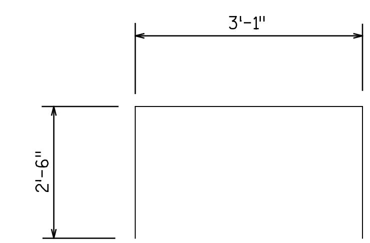


SECTION B

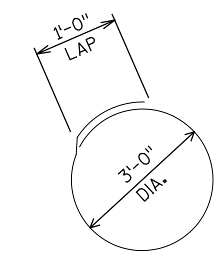
NOTE:
THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE.

BILL OF BARS — 980 LB.

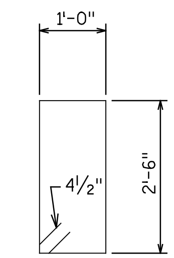
BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	CUT. DIAG.	BUN-DLE	LOCATION
A701		12	15'-6"				FOOTING - COLUMN/TOP
A402		16	10'-6"	X			FOOTING - COLUMN/TOP
A703		12	15'-0"				FOOTING - WINGS
A404		12	7'-6"	X			FOOTING - WINGS
A405		10	7'-11"	X			FOOTING - TOP
A406		4	3'-6"				FOOTING - TOP - COLUMNS



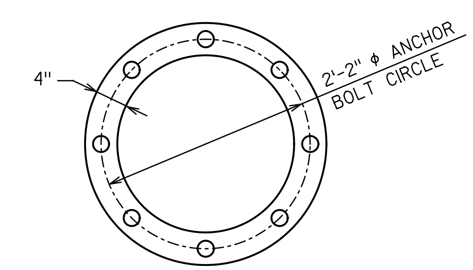
A405



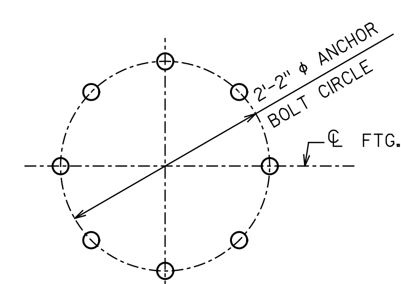
A402



A404
(STIRRUP)



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

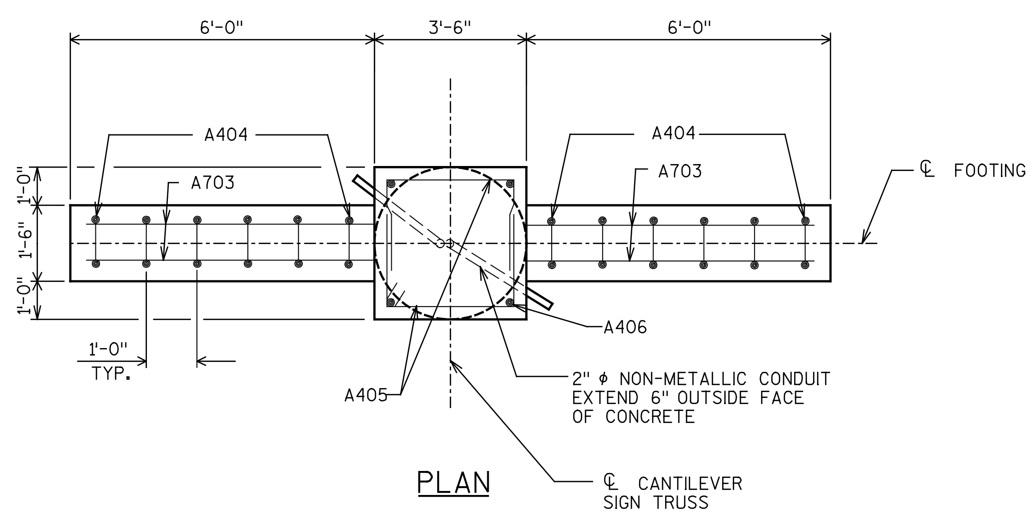
CONCRETE MASONRY — f'c=3,500 P.S.I.
HIGH STRENGTH BAR STEEL REINFORCEMENT, GRADE 60 — fy=60,000 P.S.I.
ANCHOR BOLTS A.A.S.H.T.O. M314 — fy=55,000 P.S.I.

FOUNDATION DATA

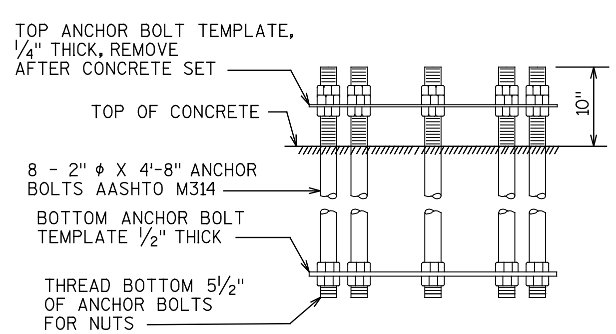
ALLOWABLE SOIL BEARING PRESSURE = 2T/SQ. FT.

TOTAL ESTIMATED QUANTITIES (1 FTG.)

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



PLAN



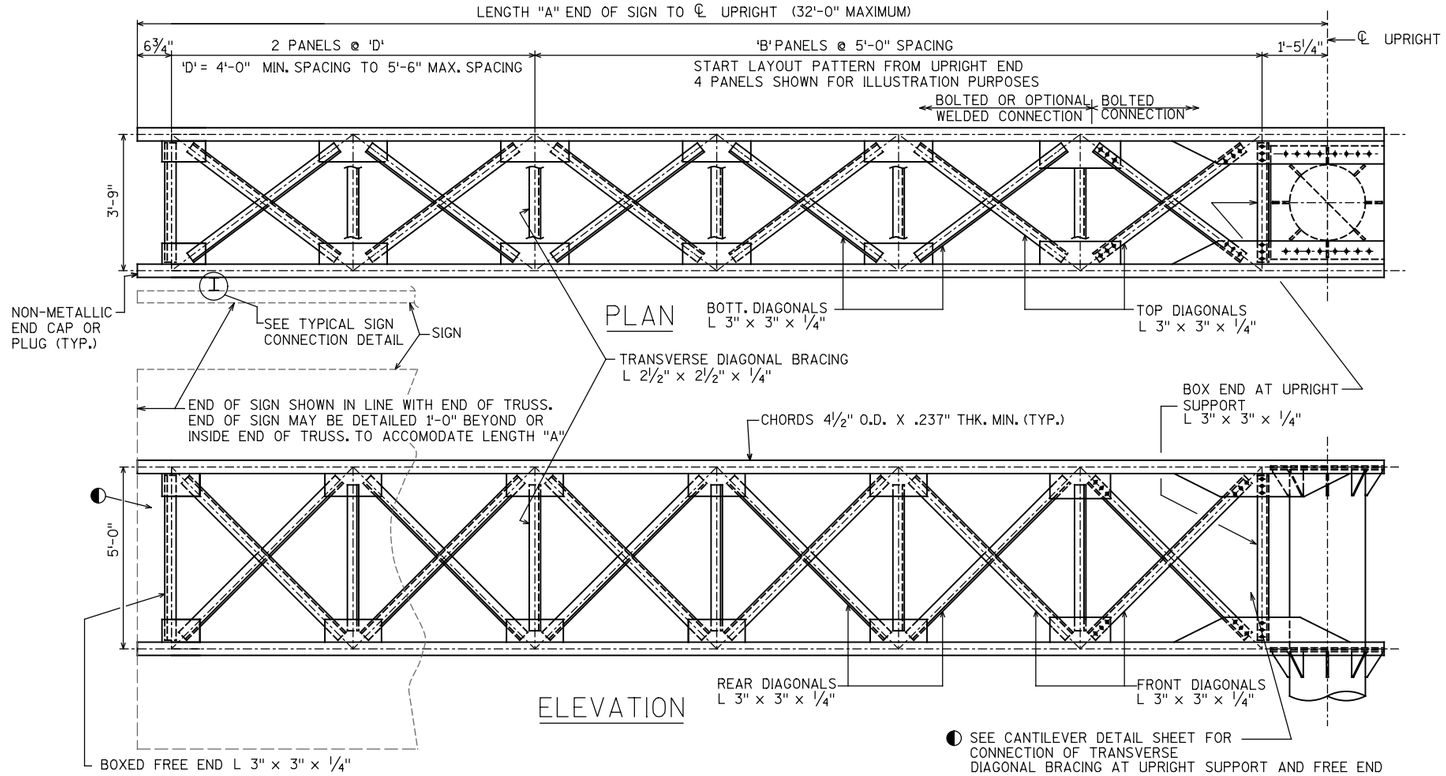
ANCHOR BOLT DETAILS

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION
STRUCTURE S-40-848
DRAWN BY DW — PLANS CK'D. VC
CANTILEVER TRUSS FOOTING
SHEET 2 OF 5

STATE PROJECT NUMBER
1000-19-89



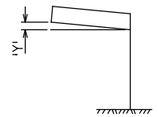
GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

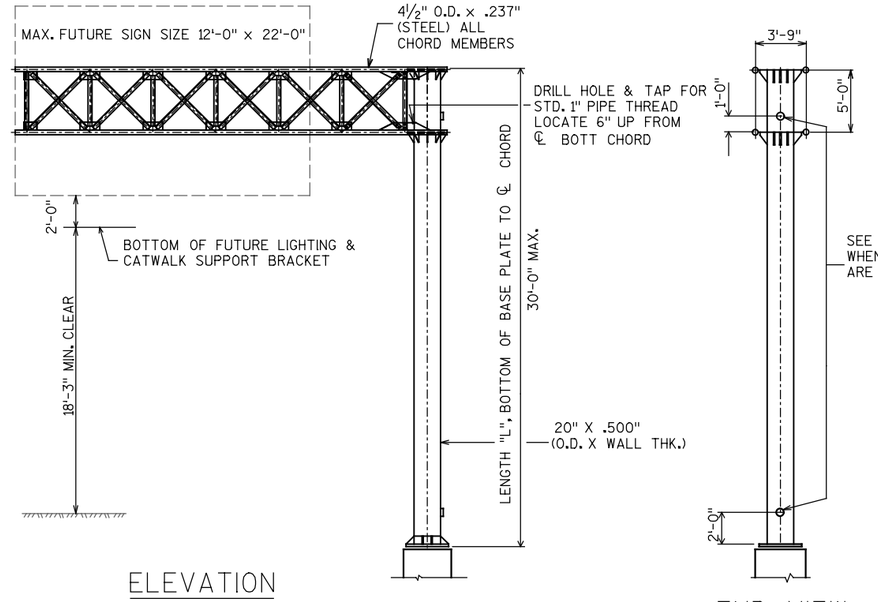
PREFABRICATE CAMBER INTO THE HORIZONTAL SUPPORT PROVIDING AN AMOUNT "Y" AT END OF TRUSS SHOWN IN "CAMBER DIAGRAM". DO NOT RAKE VERTICAL UPRIGHT BY ADJUSTMENT OF LEVELING NUTS.

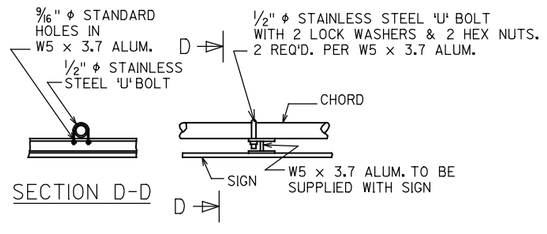
WELDED CONNECTIONS CAN BE USED IN LIEU OF BOLTED CONNECTIONS IF UNIT CAN BE GALVANIZED IN ONE PIECE.

STRUCTURE	"A"	"L"	"B"	"D"	"Y"
S-40-848	30'-9"	27'-7"	4	4 @ 4½"	3½"

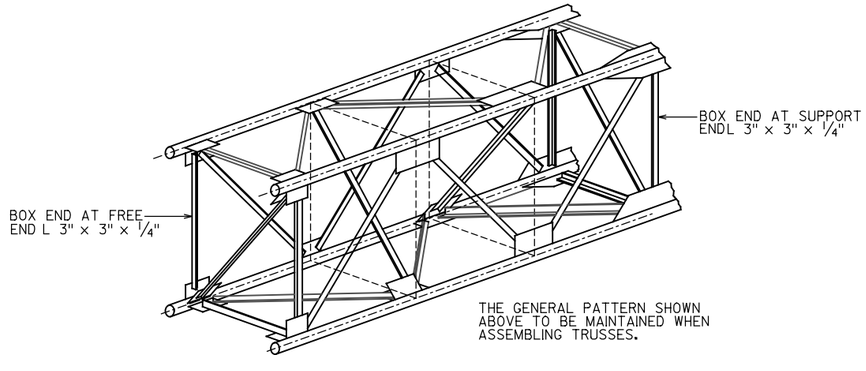


CAMBER DIAGRAM





TYPICAL SIGN CONNECTION



TYPICAL TRUSS SECTION

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-848

DRAWN BY: DW | PLANS CK'D.: VC

GALVANIZED STEEL CANTILEVER SIGN TRUSS

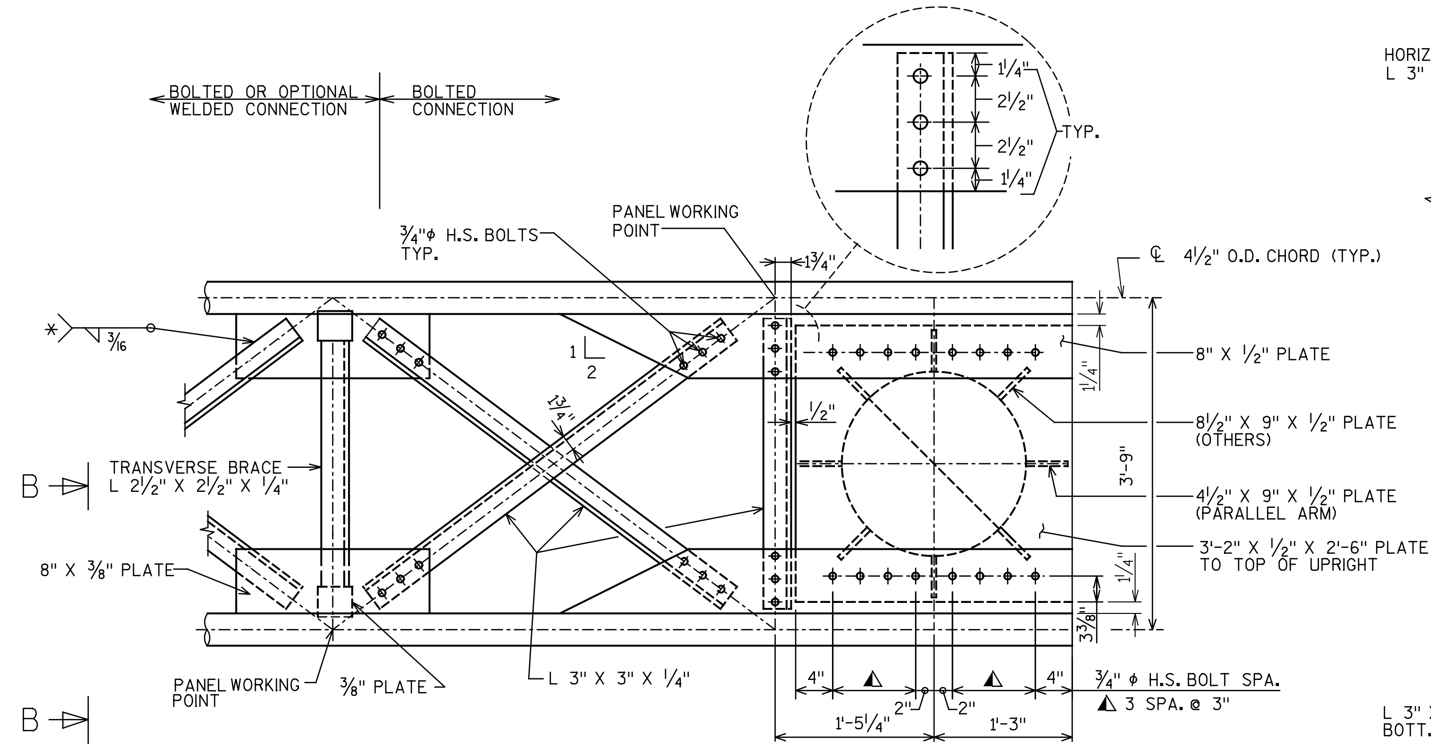
SHEET 3 OF 5

79

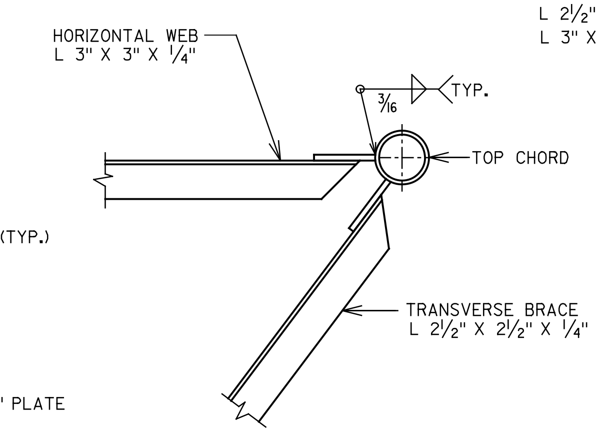
STATE PROJECT NUMBER

1000-19-89

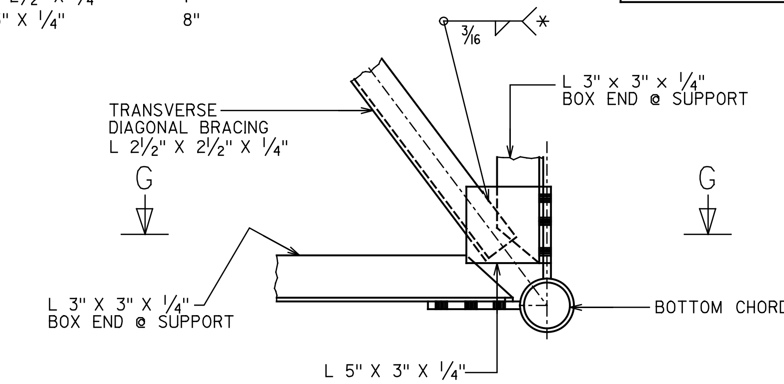
∗ ANGLE	WELD LENGTH (MIN.)
L 2½" X 2½" X ¼"	7"
L 3" X 3" X ¼"	8"



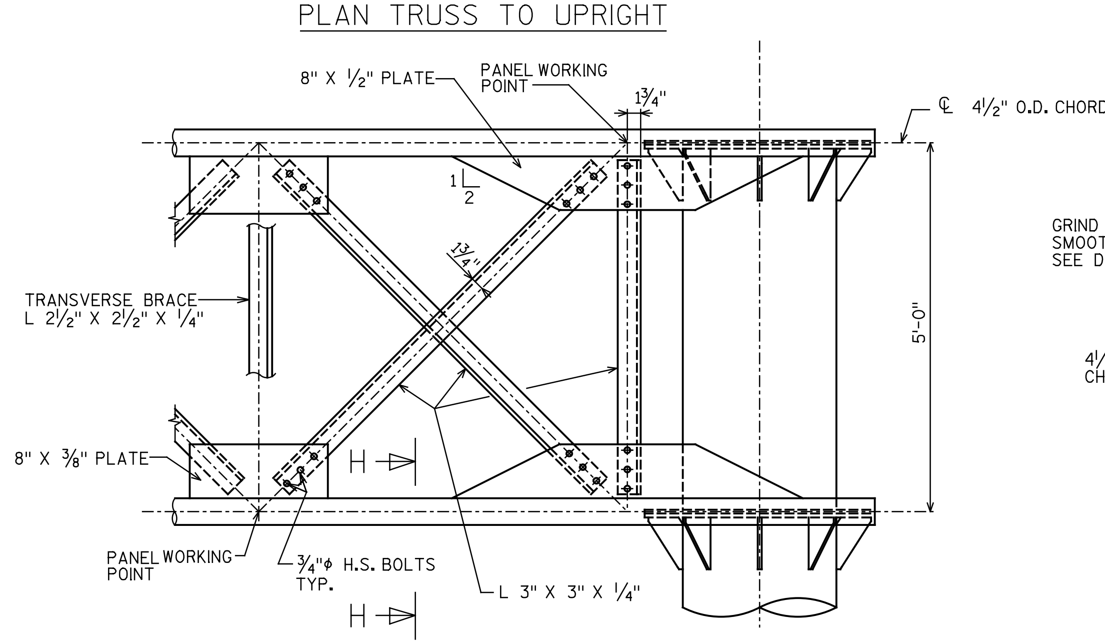
PLAN TRUSS TO UPRIGHT



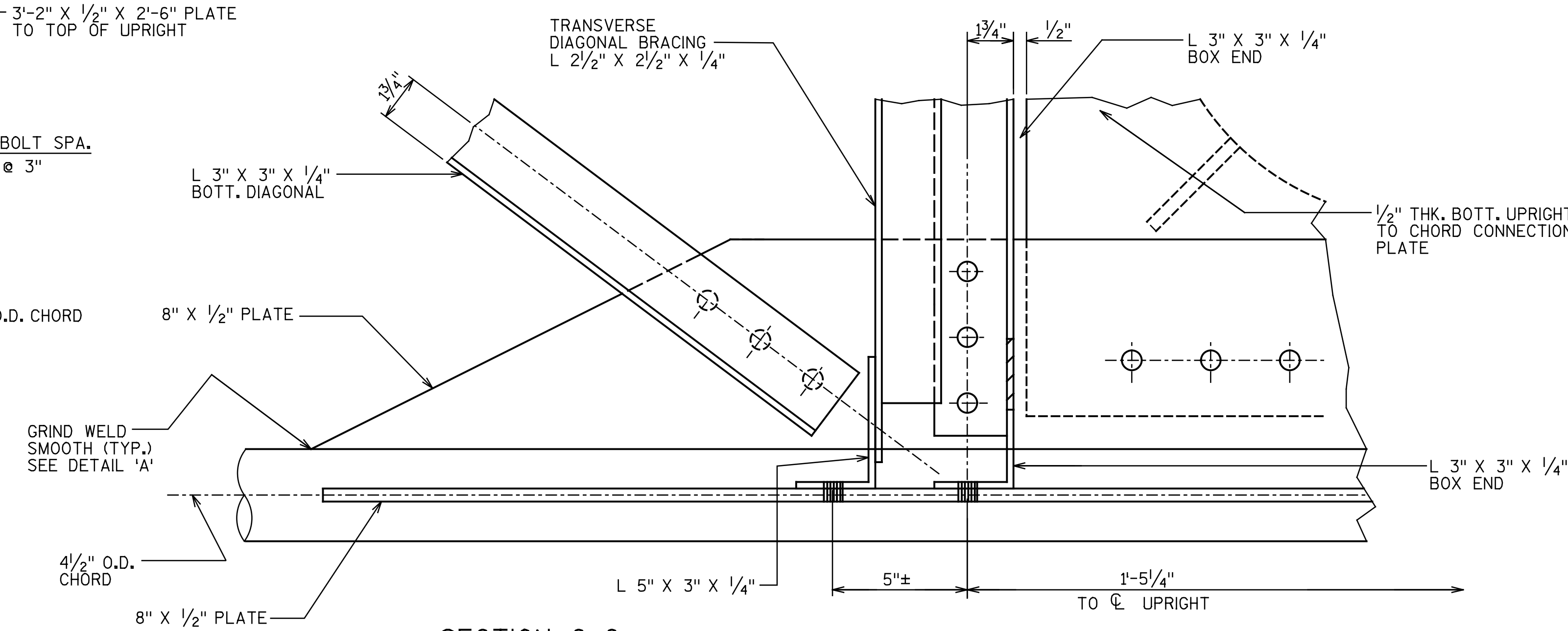
SECTION B-B



SECTION H-H

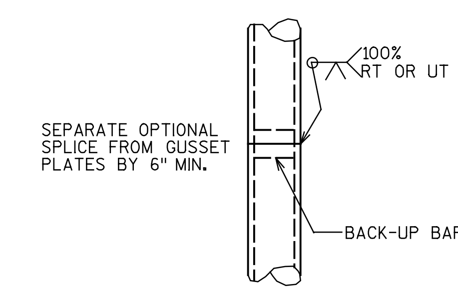


ELEVATION TRUSS TO UPRIGHT

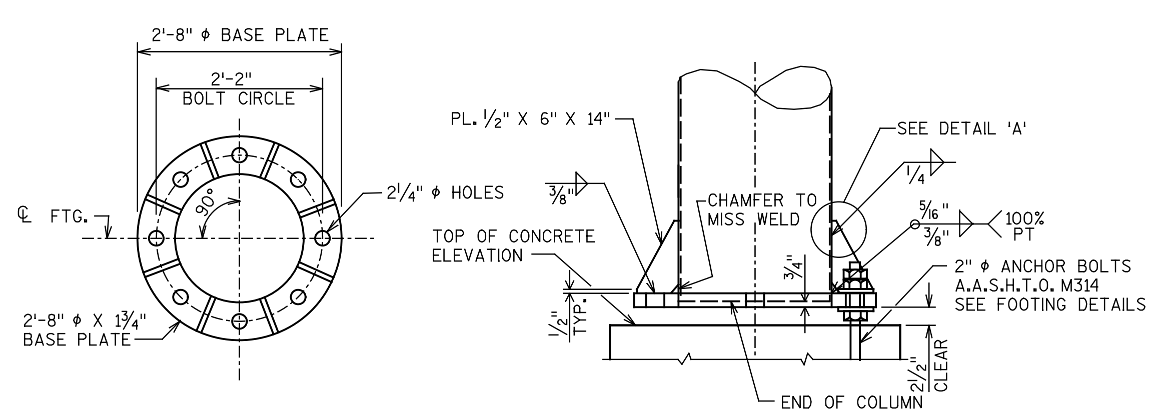


SECTION G-G

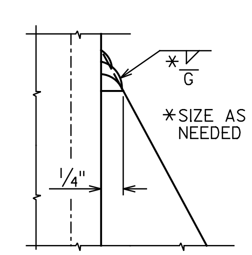
(LOOKING DOWN @ BOTT. HORIZ. PLANE @ FRONT CHORD)



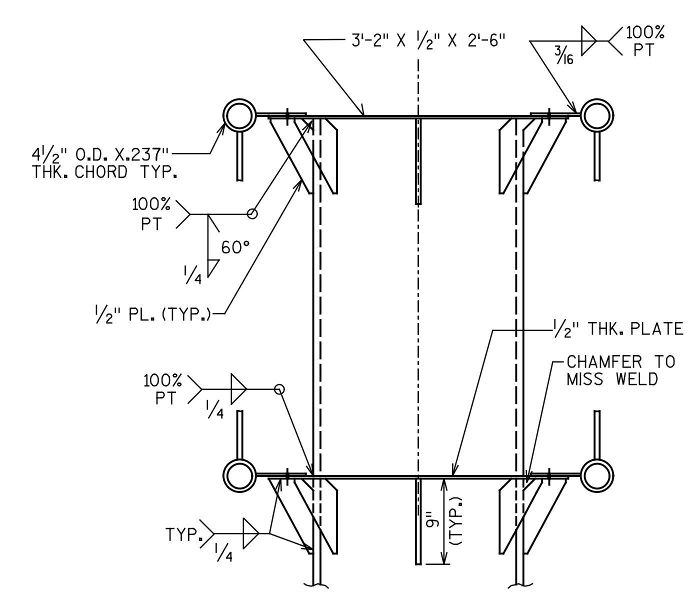
OPTIONAL COLUMN OR CHORD SPLICE DETAIL



BASE PLATE DETAILS



DETAIL 'A'



END VIEW TRUSS TO UPRIGHT

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-848

DRAWN BY DW PLANS CK'D. VC

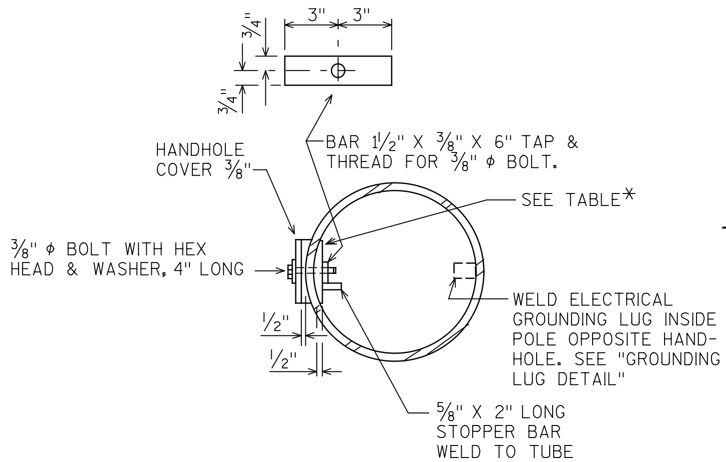
GALVANIZED STEEL CANTILEVER SIGN TRUSS DETAILS

SHEET 4 OF 5

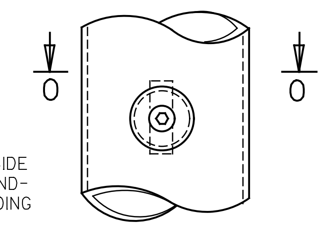
80

8

8



SECTION 'O'



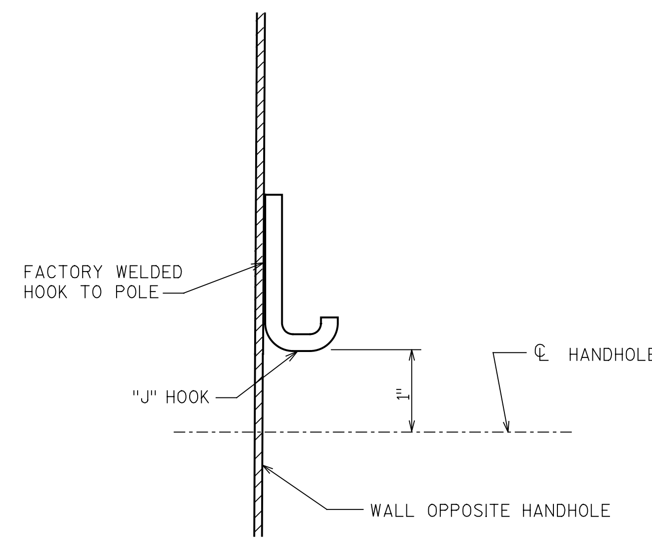
HANDHOLE DETAILS

HANDHOLE NOTES

HANDHOLES SHALL BE LOCATED IN ONE COLUMNS 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.

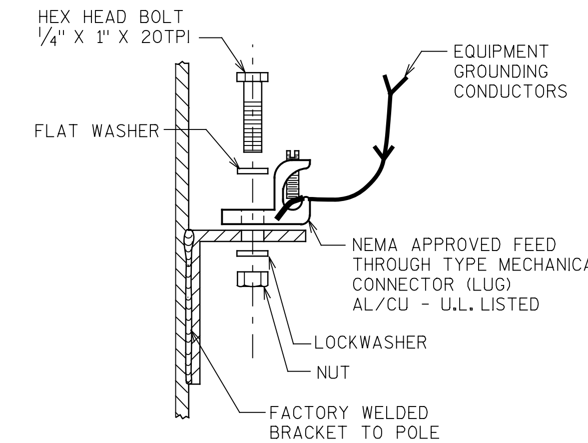
*

UPRIGHT DIAM. SIZE	HANDHOLE PIPE O.D. X MIN. THK.
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"



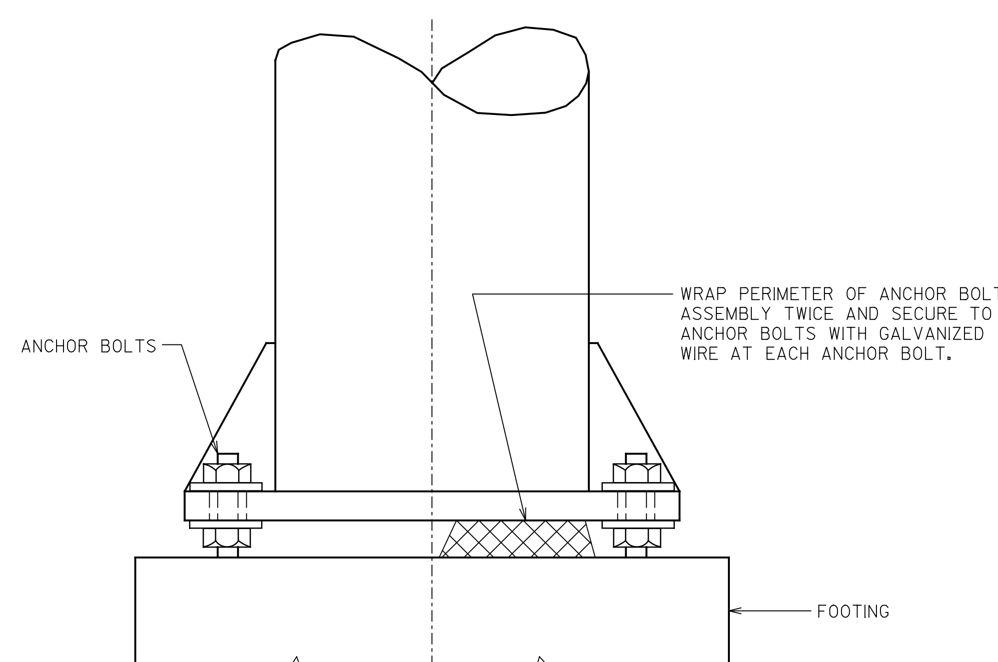
TYPICAL "J" HOOK LOCATION

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



RODENT SCREEN

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

8

8

NO.	DATE	REVISION	BY

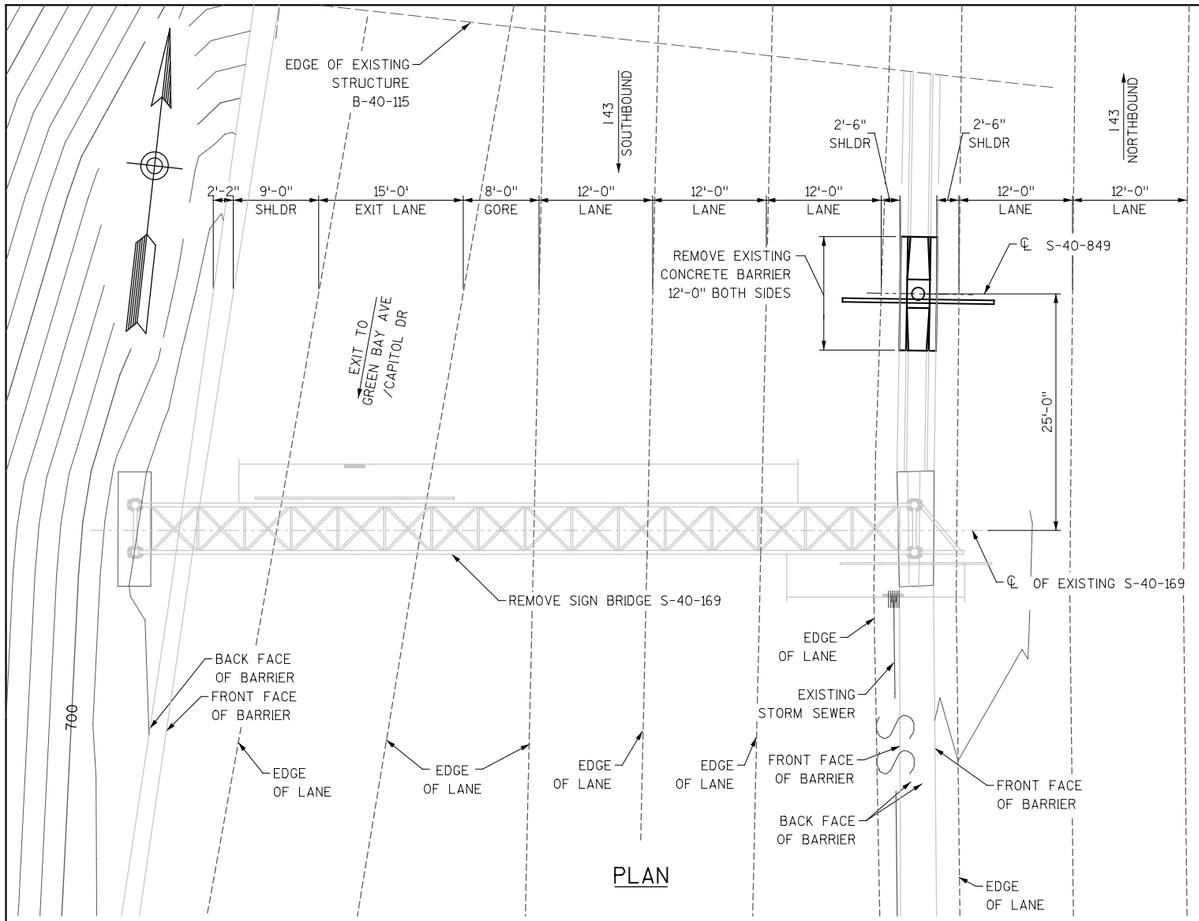
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-848

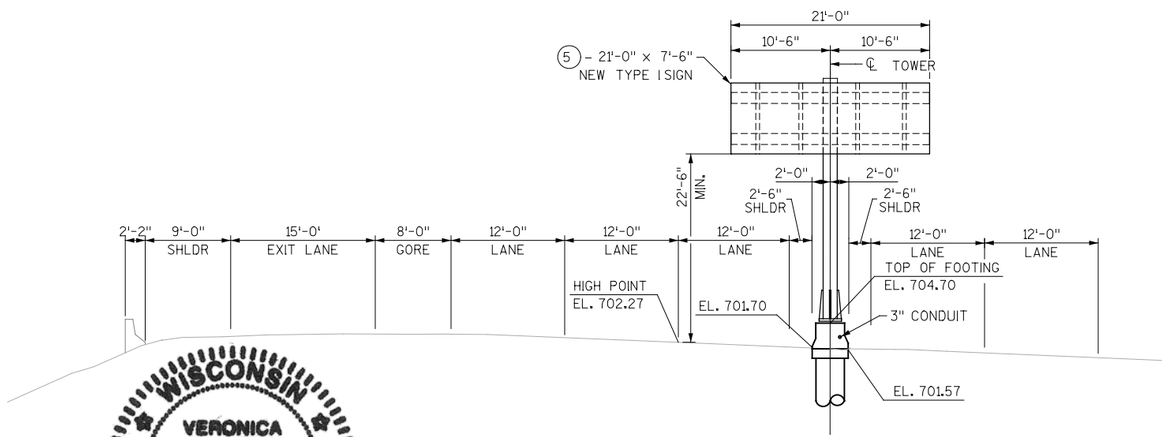
DRAWN BY DW PLANS CK'D. VC

HANDHOLE DETAILS

SHEET 5 OF 5



PLAN



ELEVATION

(LOOKING NORTH AT FRONT FACE OF SIGNS)
IH 43 NB 1380'NORTH OF W. CAPITOL DR.
S-40-849 REPLACES NORTHBOUND PORTION OF S-40-169
PROPOSED STRUCTURE 25'NORTH OF EXISTING STRUCTURE

WISCONSIN
VERONICA CHAVEZ DE FERNANDEZ
E-42456
MILWAUKEE
WI
PROFESSIONAL ENGINEER
V. Chavez de Fernandez
1/17/2013

LIST OF DRAWINGS

1. PLAN & ELEVATION
2. FOOTING DETAILS
3. SIGN BRIDGE SINGLE POLE DETAILS

ULTIMATE DESIGN STRESSES:

FOUNDATION

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

SIGN BRIDGE

STEEL CHORDS & COLUMN: .....fy = 42,000 psi
A.P.I. SPEC 5L GRADE X42
PLATES & BARS: .....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 AND LIGHTS.
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
216	12'-0"

FOUNDATIONA DATA

THE FOLLOWING SOIL PARAMETERS WERE USED FOR THE DESIGN OF THE FOUNDATION SYSTEM.

SOIL UNIT WEIGHT = 120 pcf
COHESION VALUE = 0 psf
FRICTION ANGLE = 24°
ALLOWABLE SOIL BEARING PRESSURE = 4000 psf
ALLOWABLE SKIN FRICTION = 230 psf

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

CONTACTS

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

CONSULTANT CONTACT, COLLINS ENGINEERS INC.
VERONICA CHAVEZ DE FERNANDEZ: (414) 282-6905

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL
636.0100	SIGN SUPPORTS CONCRETE MASONRY	CY	12
636.1000	SIGN SUPPORTS STEEL REINFORCEMENT HS	LB	640
636.1500	SIGN SUPPORTS STEEL COATED REINFORCEMENT HS	LB	300
641.0100	SIGN BRIDGE SINGLE POLE SIGN SUPPORT ONE SIGN S-40-849	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.

ALTERNATE DESIGNS ARE NOT ALLOWED.

VERIFY UTILITY INTERFERENCES PRIOR TO CONSTRUCTION.

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

REMOVE EXISTING FOUNDATION, CONSIDERED INCIDENTAL TO BID ITEM "REMOVING SIGN BRIDGE S-40-169"

PROVIDE VENTILATING RODENT SCREENS AT ALL COLUMN BASES (NO GROUT), CONSIDERED INCIDENTAL TO BID ITEM"SIGN BRIDGE SINGLE POLE SIGN SUPPORT ONE SIGN S-40-849"

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.

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 SINGLE POLE SIGN SUPPORT ONE SIGN S-40-849"

SIGNS OR BLANKS SHALL BE INSTALLED AT THE TIME OF ERECTION. BLANK DIMENSIONS SHALL MATCH THOSE OF THE PROPOSED SIGN AS DESIGNATED IN PLANS. SIGN BLANKS AND MOUNTING HARDWARE SHALL BE INCIDENTAL TO "SIGN BRIDGE SIGNLE POLE SIGN SUPPORT ONE SIGNS-40-849"

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

NEW I-BEAMS ARE REQUIRED FOR SIGNS AND ARE INCIDENTAL TO SIGNS.

INSTALL CONDUIT PLUGS IN ALL UNUSED CONDUIT HOLES, CONSIDERED INCIDENTAL TO THE BID ITEM ""SIGN BRIDGE SINGLE POLE SIGN SUPPORT ONE SIGN S-40-849"

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

PROVIDE HANDHOLES ON UPRIGHT.

WELD TEST AS PER AWS D1.1

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

STATE PROJECT NUMBER
1000-19-89

NO.	DATE	REVISION	BY

COLLINS ENGINEERS INC.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
ACCEPTED William C. Drucker KAR 03/06/13
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE S-40-849

IH 43

COUNTY: MILWAUKEE
~~TOWN/~~CITY~~/VILLAGE~~: MILWAUKEE
DESIGN SPEC.: AASHTO STANDARD SPECIFICATIONS
DESIGNED BY: VC | DESIGN CK'D.: NJH | DRAWN BY: DW,MJH | PLANS CK'D.: RJW

PLAN & ELEVATION

SHEET 1 OF 3
82

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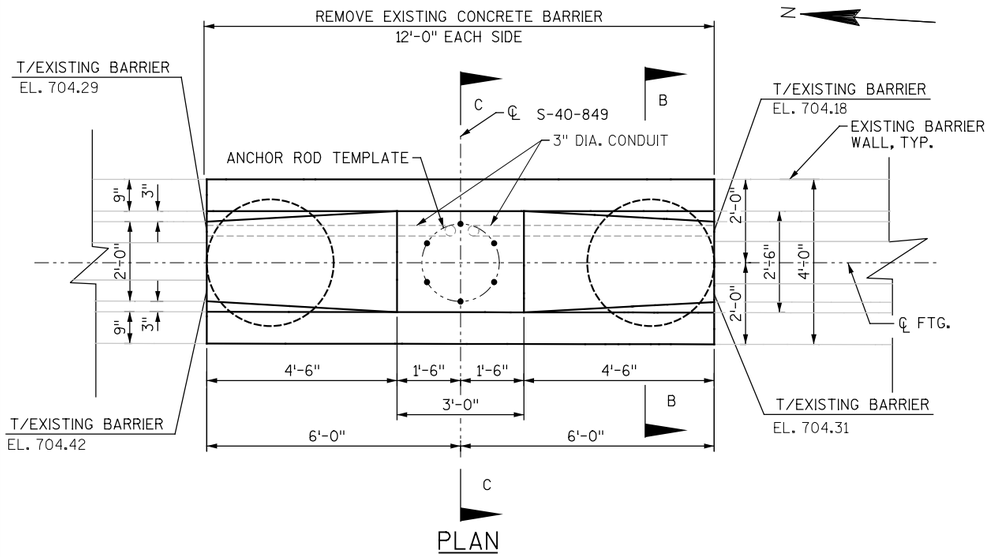
STATE PROJECT NUMBER

1000-19-89



PLAN

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
F601		24	13'-6"			DRILLED SHAFT VERTICAL
F402		24	9'-4"	▲		DRILLED SHAFT HOOP
F503	X	6	11'-6"			CAP BEAM LONGITUDINAL
F404	X	10	11'-6"			CAP BEAM LONGITUDINAL
F405	X	20	7'-4"	▲	△	CAP BEAM STIRRUP
F406	X	8	7'-10"	▲		CAP BEAM STIRRUP
F407	X	4	2'-8"			CAP BEAM LONGITUDINAL

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

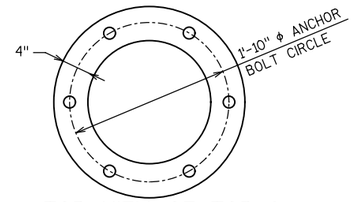
BAR SERIES TABLE

MARK	NO. REQ'D	LENGTH	"a" DIM VARIES
F405	4 SERIES OF 5	7'-2" TO 7'-5"	1'-6" TO 1'-9"

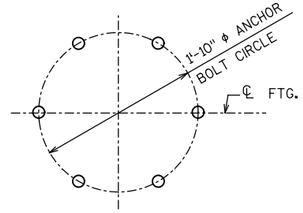
BUNDLE AND TAG EACH SERIES SEPARATELY

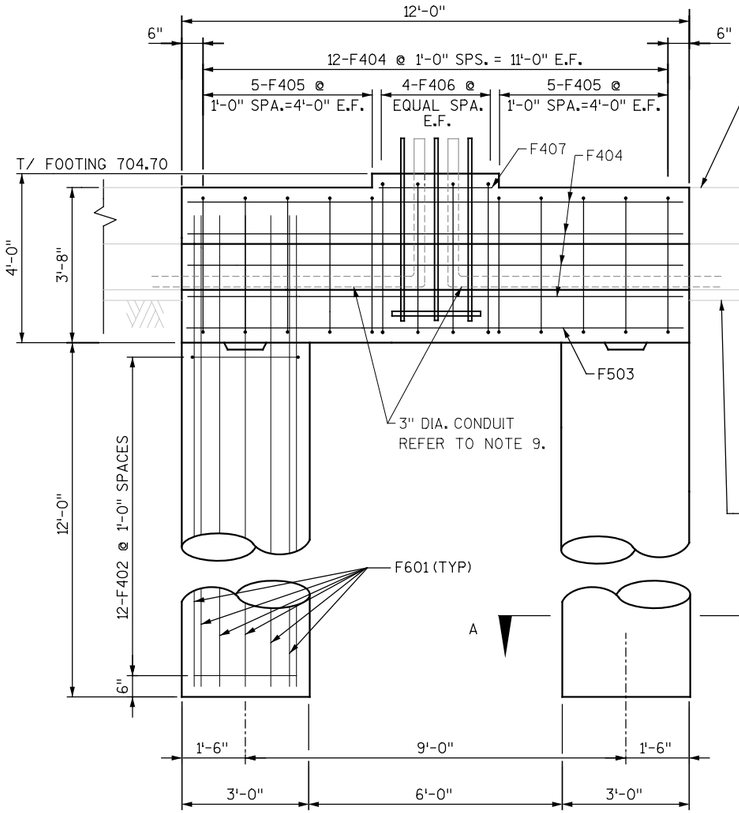
GENERAL NOTES

1. DRAWINGS SHALL NOT BE SCALED.
2. CONCRETE - fc'= 3,500 P.S.I.
3. BAR STEEL REINF. - GRADE 60 - Fy = 60,000 P.S.I.
4. CONCRETE DIMENSIONS SHALL BE ADJUSTED TO MATCH EXISTING TRAFFIC BARRIER.
5. ENTIRE CONCRETE SURFACE SHALL BE SMOOTHED AND SLOPED TO DRAIN.
6. BOTTOM OF FOOTING TO BE EMBEDDED 1'-0" BELOW GRADE, UNLESS OTHERWISE NOTED.
7. ANCHOR BOLTS - AASHTO M314 - Fy = 55,000 psi
8. ISOLATION JOINT ½" PREFORMED JOINT FILLER WITH NON-BITUMINOUS JOINT SEALER. THE PREFORMED JOINT FILLER AND NON-BITUMINOUS JOINTSEALER SHALL MEET THE REQUIREMENTS OF SECTION 502 OF THE STANDARD SPECIFICATIONS. INCIDENTAL TO "SIGN SUPPORTS CONCRETE MASONRY".
9. CAP BOTH ENDS OF THE CONDUITS. THE WORK SHALL BE INCIDENTAL TO BID ITEM "SIGN SUPPORTS CONCRETE MASONRY".

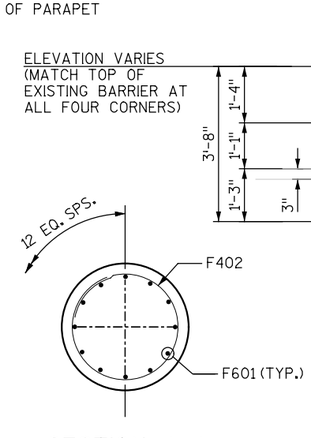


TOP VIEW OF TOP & BOTTOM TEMPLATES

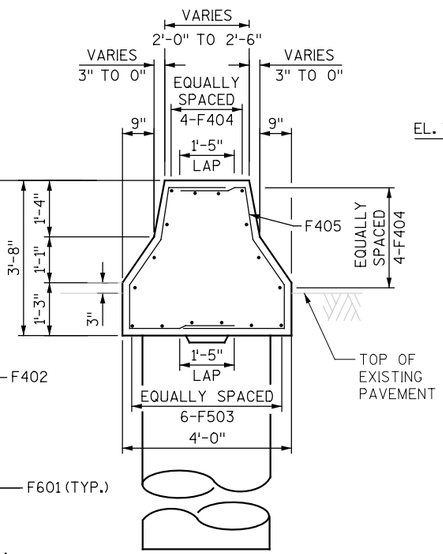




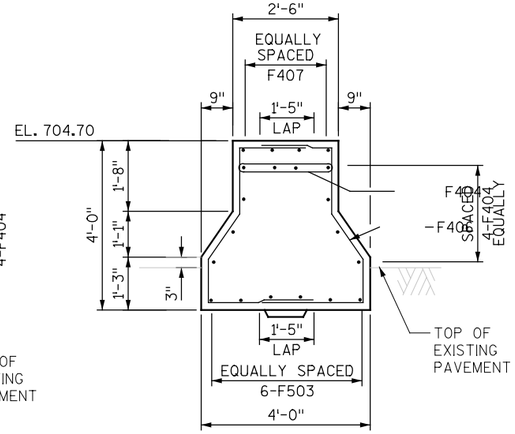
ELEVATION



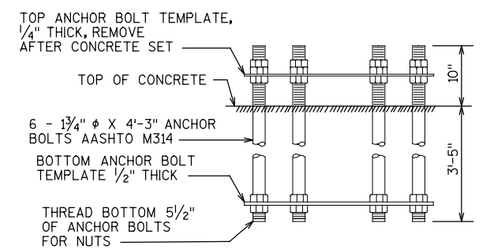
SECTION A-A



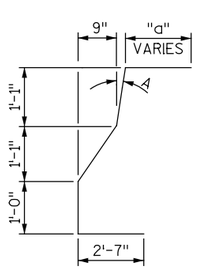
SECTION B-B



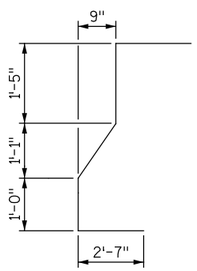
SECTION C-C



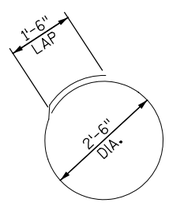
ANCHOR BOLT DETAILS



F405



F406



F402

F405 ANGLE CHART

DISTANCE FROM END OF BARRIER	ANGLE "A"
6"	11°25'
1'-6"	8°45'
2'-6"	6°2'
3'-6"	2°45'
4'-6"	0°0'

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-849

DRAWN BY DW | PLANS CK'D. VC

FOOTING DETAILS

SHEET 2 OF 3

83

8

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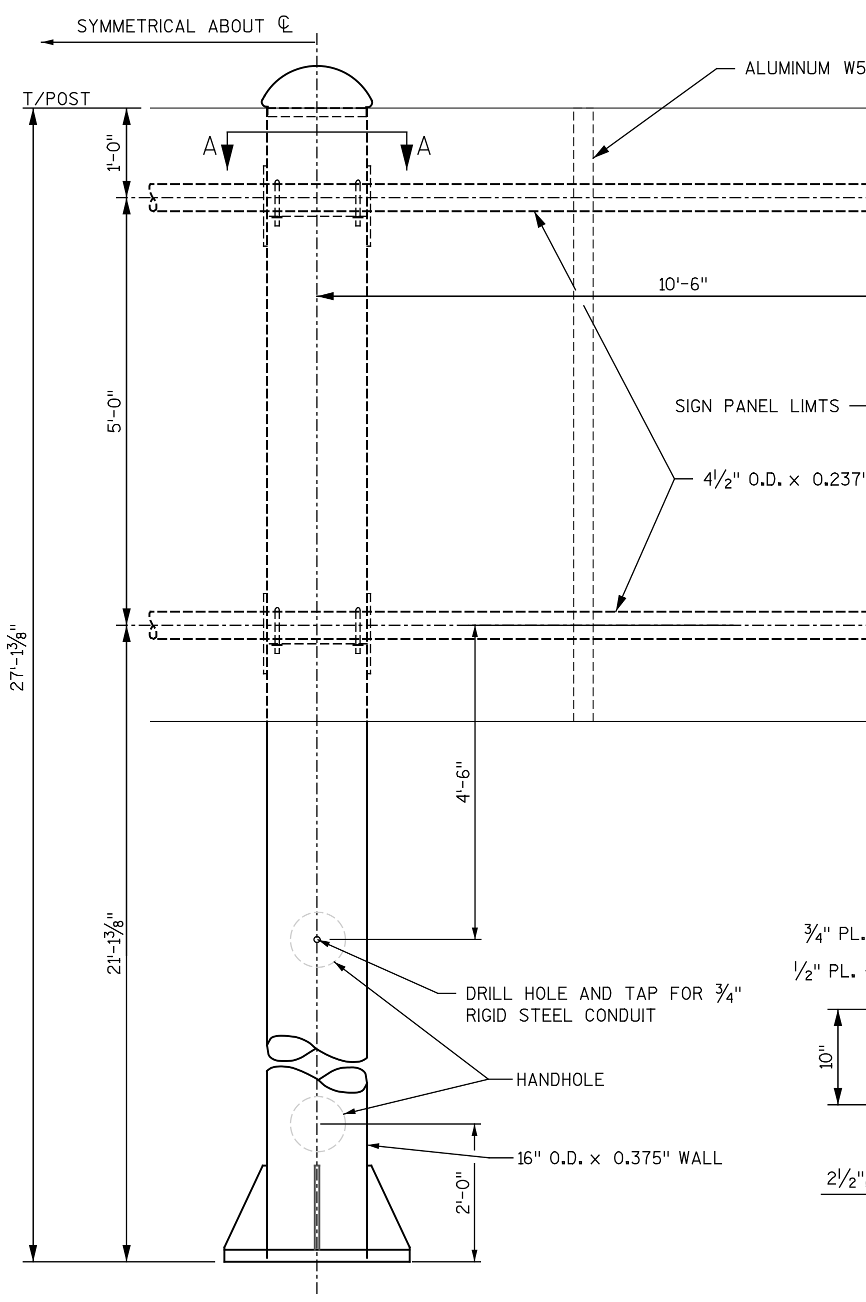
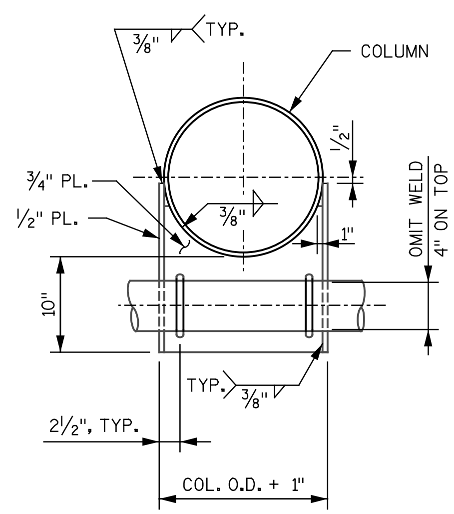
STATE PROJECT NUMBER
1000-19-89

GENERAL NOTES:

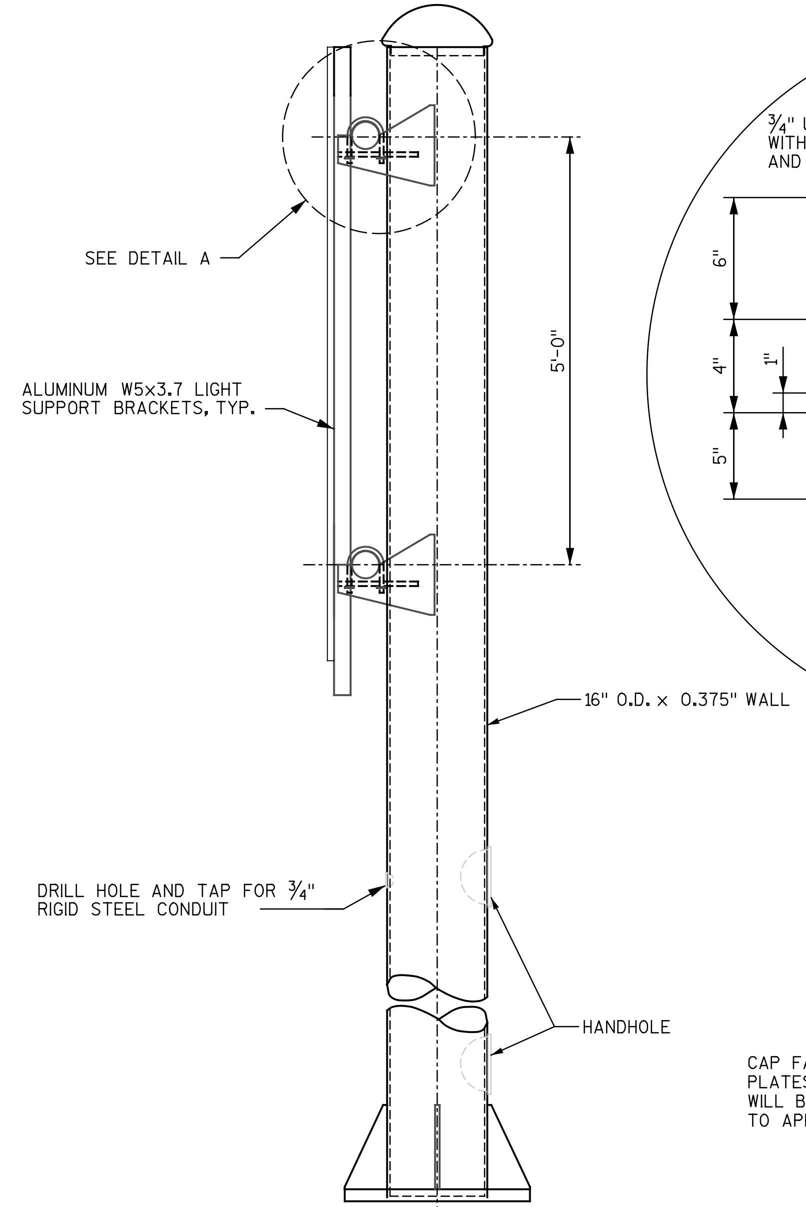
1. THE STRUCTURE MUST BE ASSEMBLED AFTER GALVANIZING AND PRIOR TO SHIPMENT TO THE SITE TO ASSURE PROPER FIT UP.



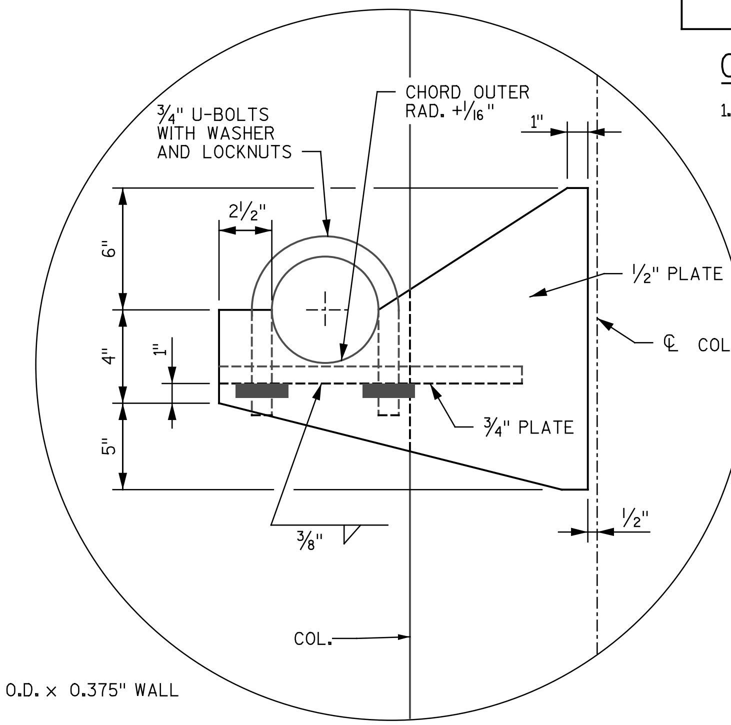
ELEVATION
(SYMETRICAL ABOUT ℄)



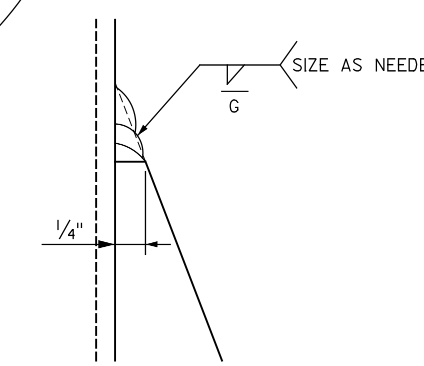
SECTION A-A



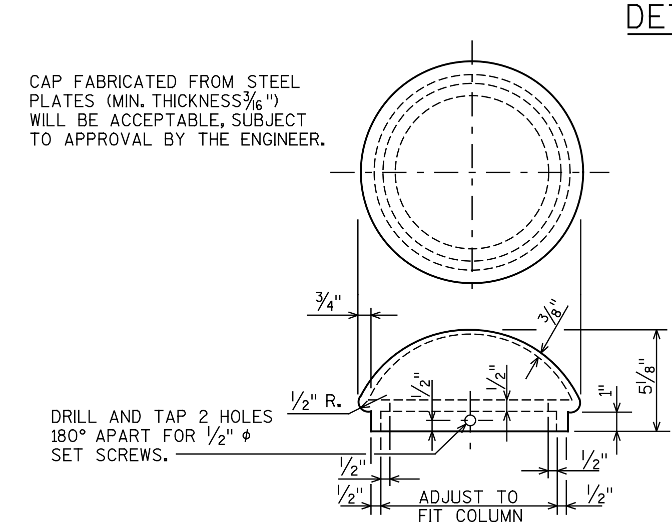
END VIEW



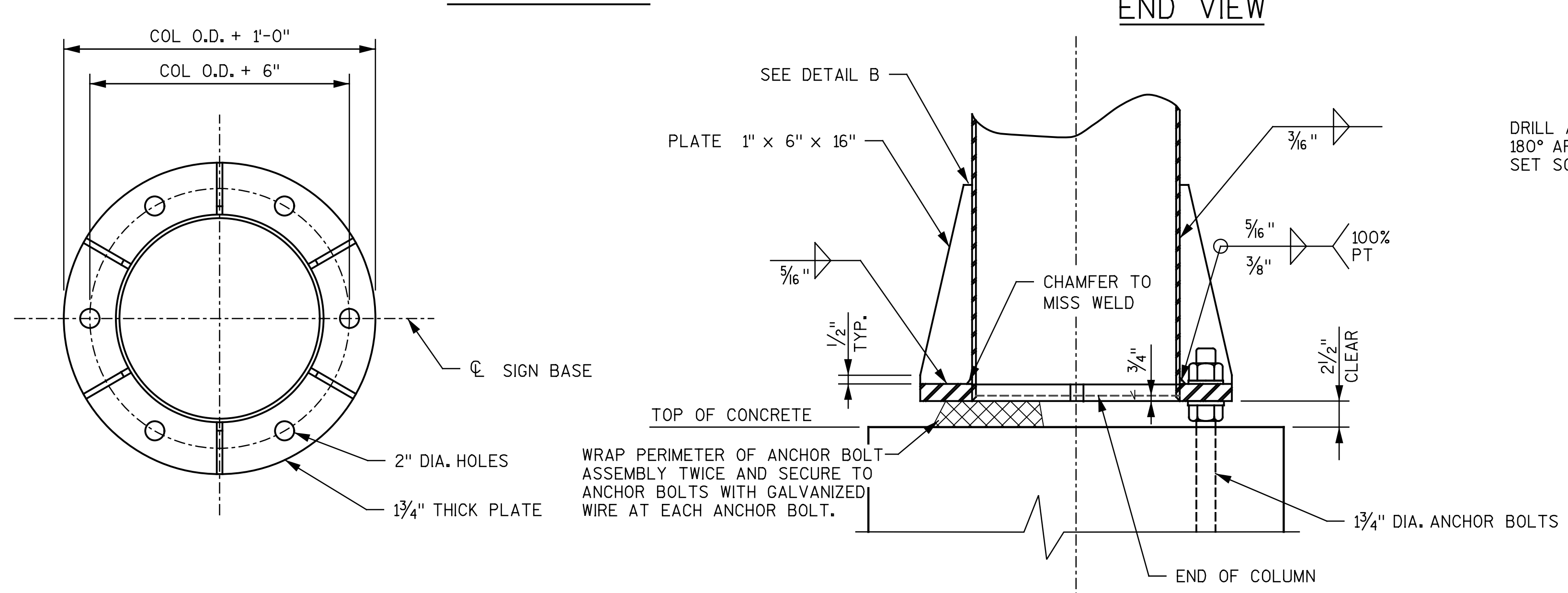
DETAIL A
(W5x3.7 BRACKETS NOT SHOWN)



DETAIL B



TOWER CAP DETAIL



BASE PLATE DETAILS (SOME ANCHOR BOLTS OMITTED FOR CLARITY)

8

NO.	DATE	REVISION	BY

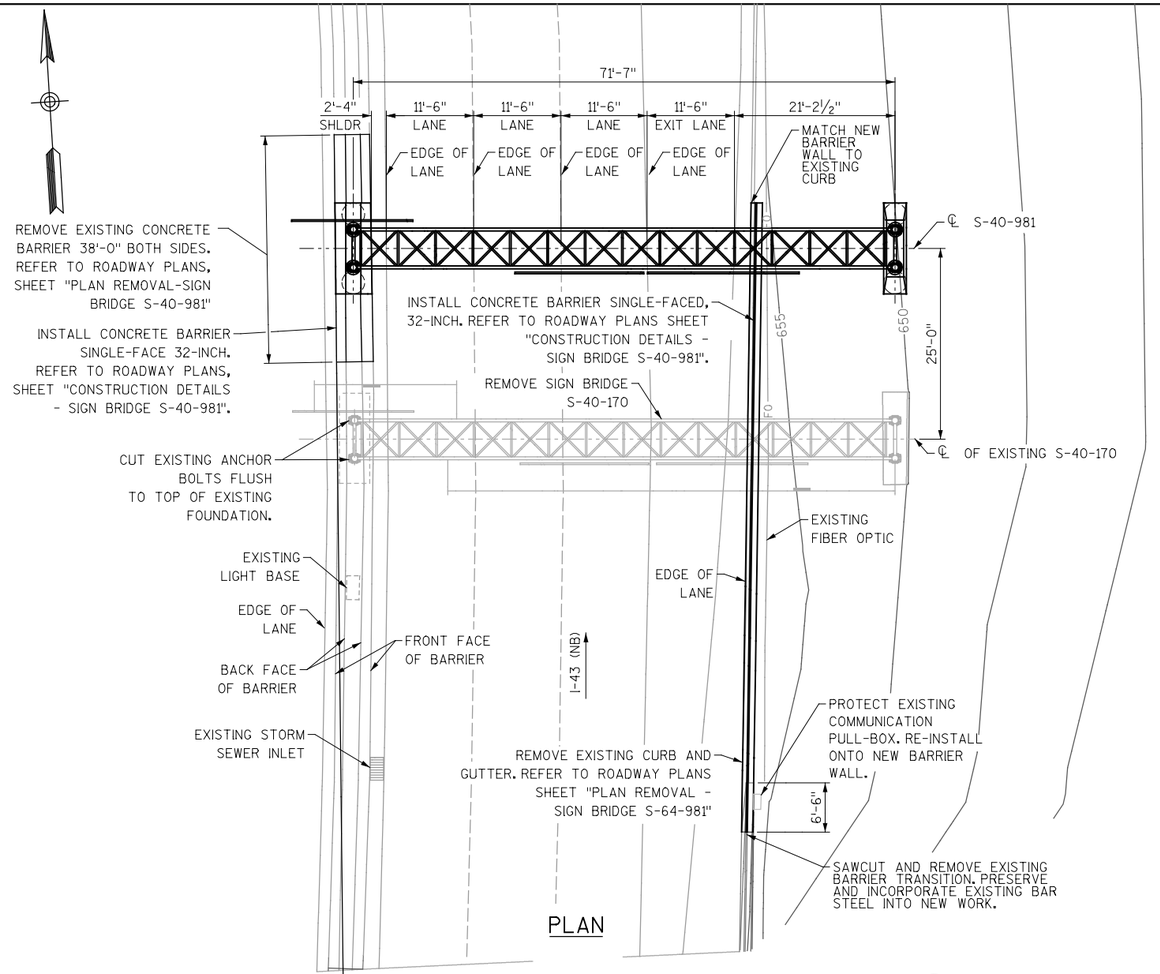
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-849

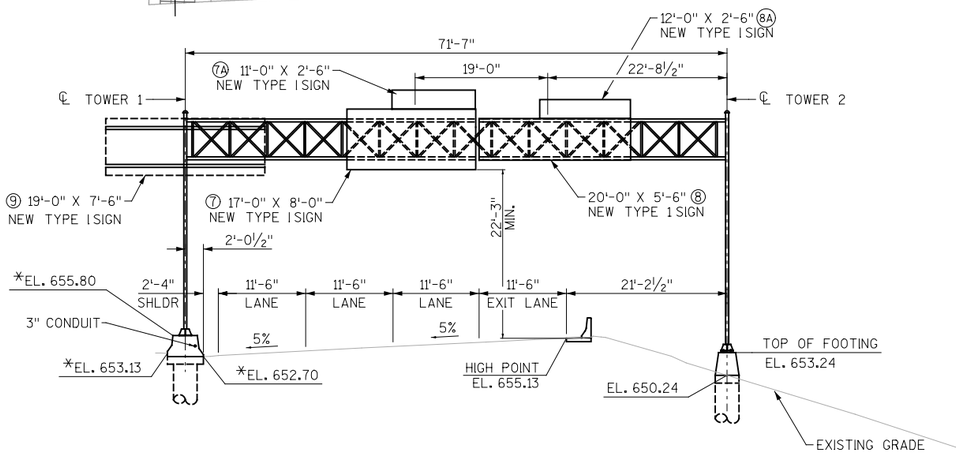
DRAWN BY DW | PLANS CK'D. VC

SIGN BRIDGE SINGLE POLE DETAILS

SHEET 3 OF 3



PLAN



ELEVATION

(LOOKING NORTH AT FRONT FACE OF SIGNS)
IH 43 NB AT EXIT TO HAMPTON AVE. EAST
S-40-981 REPLACES S-40-170
PROPOSED STRUCTURE 25' NORTH OF EXISTING STRUCTURE

*ELEVATIONS SHOWN ARE AT THE CENTER LINE OF S-40-981.

LIST OF DRAWINGS

1. PLAN & ELEVATION
2. TOWER 1 FOUNDATION DETAILS
3. TOWER 2 FOUNDATION DETIALS
4. GALVANIZED STEEL SIGN BRIDGE
5. SIGN BRIDGE DETAILS
6. 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, CATWALK, LIGHTS AND RAILINGS.
LIVE LOAD - SINGLE LINE LOAD OF 500LBS. DISTRIBUTED OVER 2'-0" OF CATWALK.
ICE LOAD - 3 P.S.F. TO 1FACE 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
648	12'-0"

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 SIGNS OVER THEIR 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.

THE LEFT EXISTING MEDIAN BARRIER WALL AND EXISTING FOUNDATION IS TO REMAIN. THE RIGHT FOUNDATION IS TO BE REMOVED AND IS INCIDENTAL TO THE ROADWAY BID ITEM "REMOVING SIGN BRIDGE S-40-170"

PROVIDE VENTILATING RODENT SCREENS AT ALL COLUMN BASES (NO GROUT), CONSIDERED INCIDENTAL TO BID ITEM "SIGN BRIDGE S-40-981"

PROVIDE A ¾" 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 ARE REQUIRED FOR SIGNS AND ARE INCIDENTAL TO SIGNS.

PROVIDE HANDHOLES ON TOWER 1.

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-40-981"

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.

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

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 S-40-981"

INSTALL CONDUIT PLUGS IN ALL UNUSED CONDUIT HOLES, CONSIDERED INCIDENTAL TO THE BID ITEM "SIGN BRIDGE S-40-981"

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
1.29.2013

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

CONSULTANT CONTACT, COLLINS ENGINEERS INC.
VERONICA CHAVEZ DE FERNANDEZ: (414) 282-6905

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL
636.0100	SIGN SUPPORTS CONCRETE MASONRY	CY	24
636.1000	SIGN SUPPORTS STEEL REINFORCEMENT HS	LB	320
636.1500	SIGN SUPPORTS STEEL COATED REINFORCEMENT HS	LB	2260
641.6600.02	SIGN BRIDGE S-40-981	LS	1

STATE PROJECT NUMBER

1000-19-89

NO.	DATE	REVISION	BY

COLLINS ENGINEERS INC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher KAR 03/06/13
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE S-40-981

IH 43

COUNTY MILWAUKEE | ~~TOWN/CITY/VILLAGE~~ GLENDALE

DESIGN SPEC. AASHTO STANDARD SPECIFICATIONS

DESIGNED BY	VC	DESIGN CK'D.	NJH	DRAWN BY	DW,MJH	PLANS CK'D.	RJW

PLAN & ELEVATION

SHEET 1 OF 6

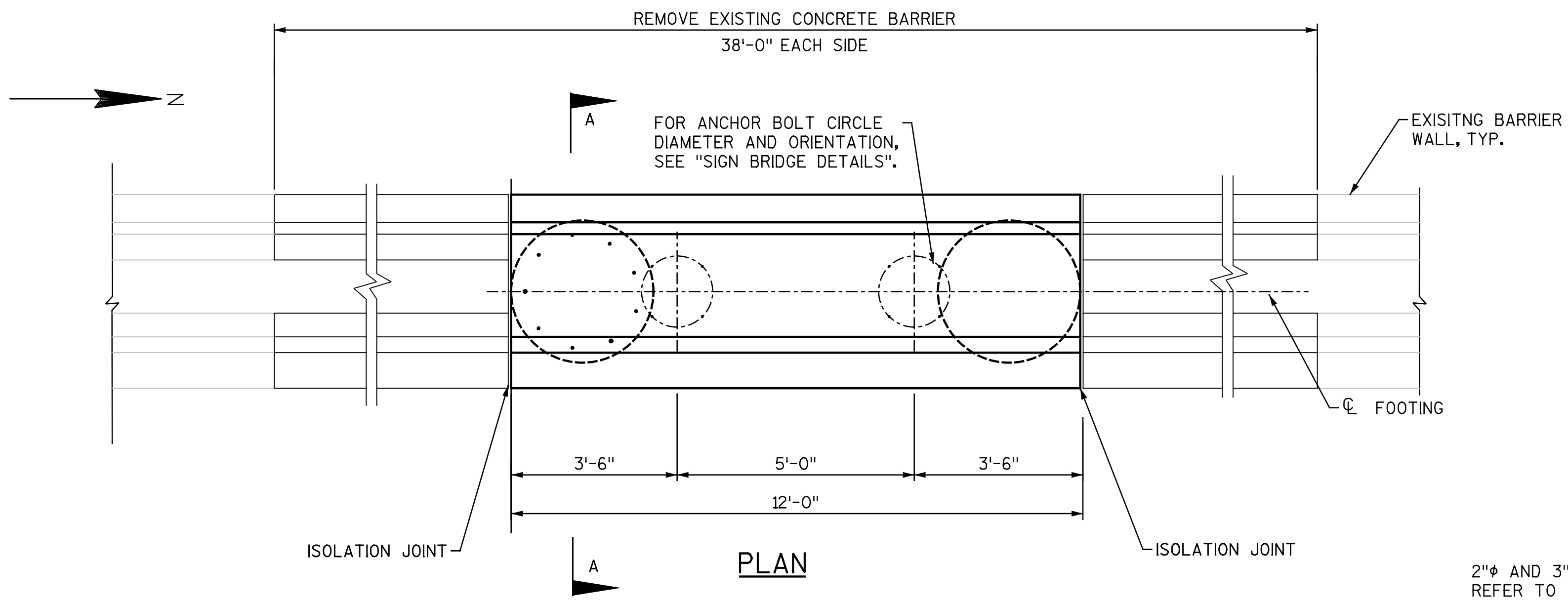
85

8

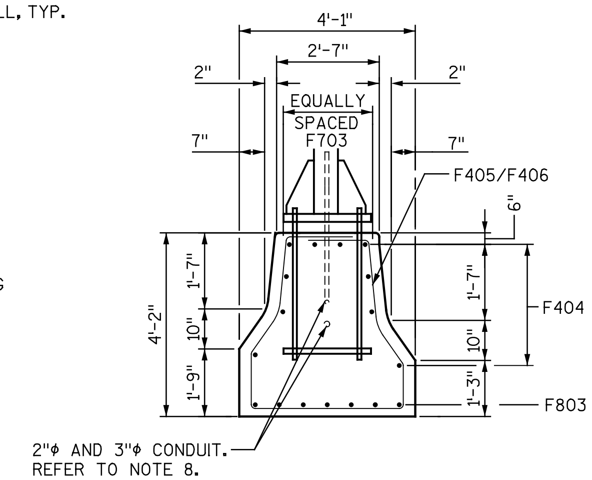
8

STATE PROJECT NUMBER

1000-19-89



PLAN



SECTION A-A

(SHAFT & KEYWAY OMITTED FOR CLARITY)

FOUNDATION NOTES

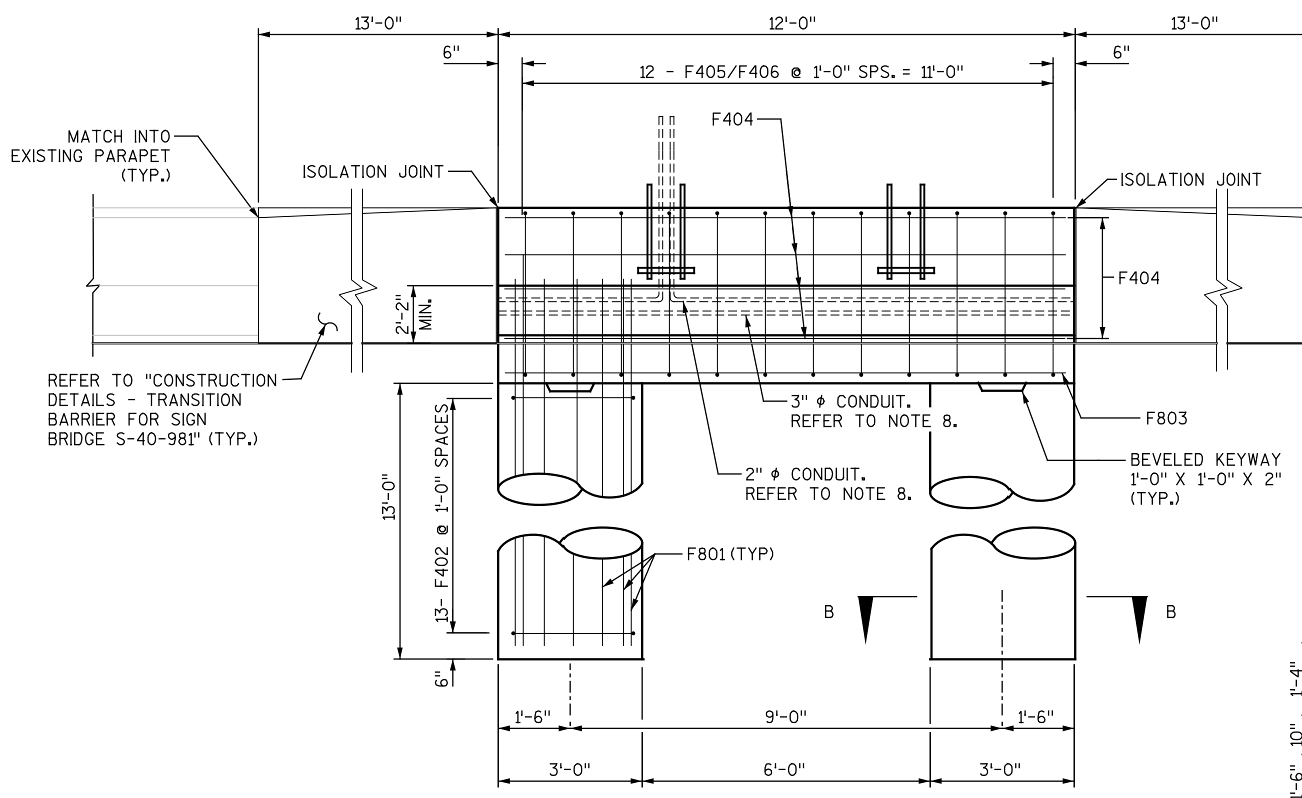
1. DRAWINGS SHALL NOT BE SCALED.
2. BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 3" CLEAR UNLESS OTHERWISE NOTED.
3. CONCRETE - fc'= 3,500 P.S.I.
4. BAR STEEL REINF. - GRADE 60 fy = 60,000 P.S.I.
5. CONCRETE DIMENSIONS SHALL BE ADJUSTED IF NECESSARY TO MATCH EXISTING TRAFFIC BARRIER. IF DISCREPANCIES ARE FOUND BETWEEN PLAN DIMENSIONS AND FIELD DIMENSIONS THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER FOR RESOLUTION.
6. ENTIRE CONCRETE SURFACE SHALL BE SMOOTHED AND SLOPED TO DRAIN.
7. BOTTOM OF FOOTING TO BE EMBEDDED 1'-0" BELOW GRADE, UNLESS OTHERWISE NOTED.
8. INSTALL THE 2" φ CONDUIT IN THE FOOTING AND PROVIDE 3" SWEEPS UPSTREAM AND DOWNSTREAM. CAP BOTH ENDS OF THE CONDUIT. INSTALL THE 3" φ CONDUIT IN THE FOOTING. EXACT LOCATION TO BE DETERMINED IN THE FIELD. VERTICAL PLACEMENT TO MATCH EXISTING CONDUIT LOCATION. THE WORK IS INCIDENTAL TO THE BID ITEM "SIGN SUPPORTS CONCRETE MASONRY".

FOUNDATION DATA

THE FOLLOWING SOIL PARAMETERS WERE USED FOR THE DESIGN OF THE FOUNDATION SYSTEM.

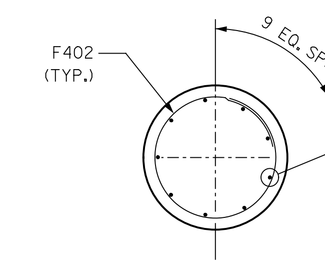
SOIL UNIT WEIGHT = 120 pcf
COHESION VALUE = 1500 psf
FRICTION ANGLE = 0°
ALLOWABLE SOIL BEARING PRESSURE = 4000 psf
ALLOWABLE SKIN FRICTION = 750 psf

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

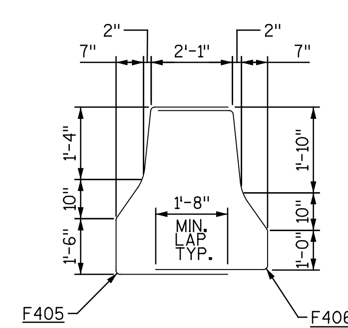


ELEVATION

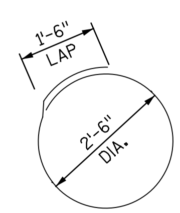
LOOKING WEST



SECTION B-B



F405 & F406



F402

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	18	15'-0"			DRILLED SHAFT VERTICAL
F402		26	9'-4"	▲		DRILLED SHAFT HOOP
F803	X	7	11'-6"			CAP BEAM LONGITUDINAL
F404	X	10	11'-6"			CAP BEAM LONGITUDINAL
F405	X	12	8'-5"	▲		CAP BEAM STIRRUP
F406	X	12	8'-5"	▲		CAP BEAM STIRRUP

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-981

DRAWN BY DW PLANS CK'D. VC

TOWER 1 FOUNDATION DETAILS

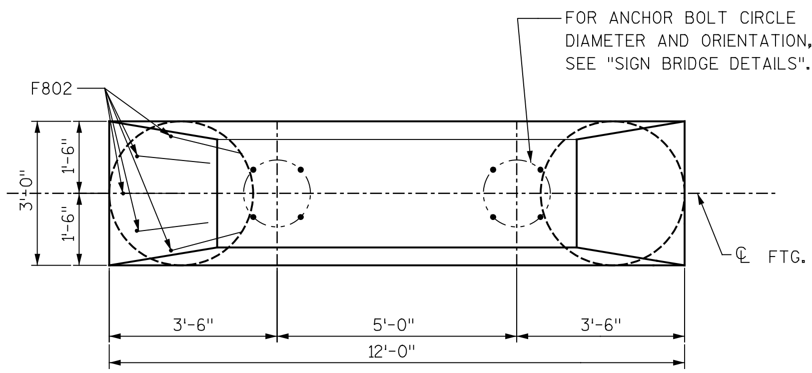
SHEET 2 OF 6

8

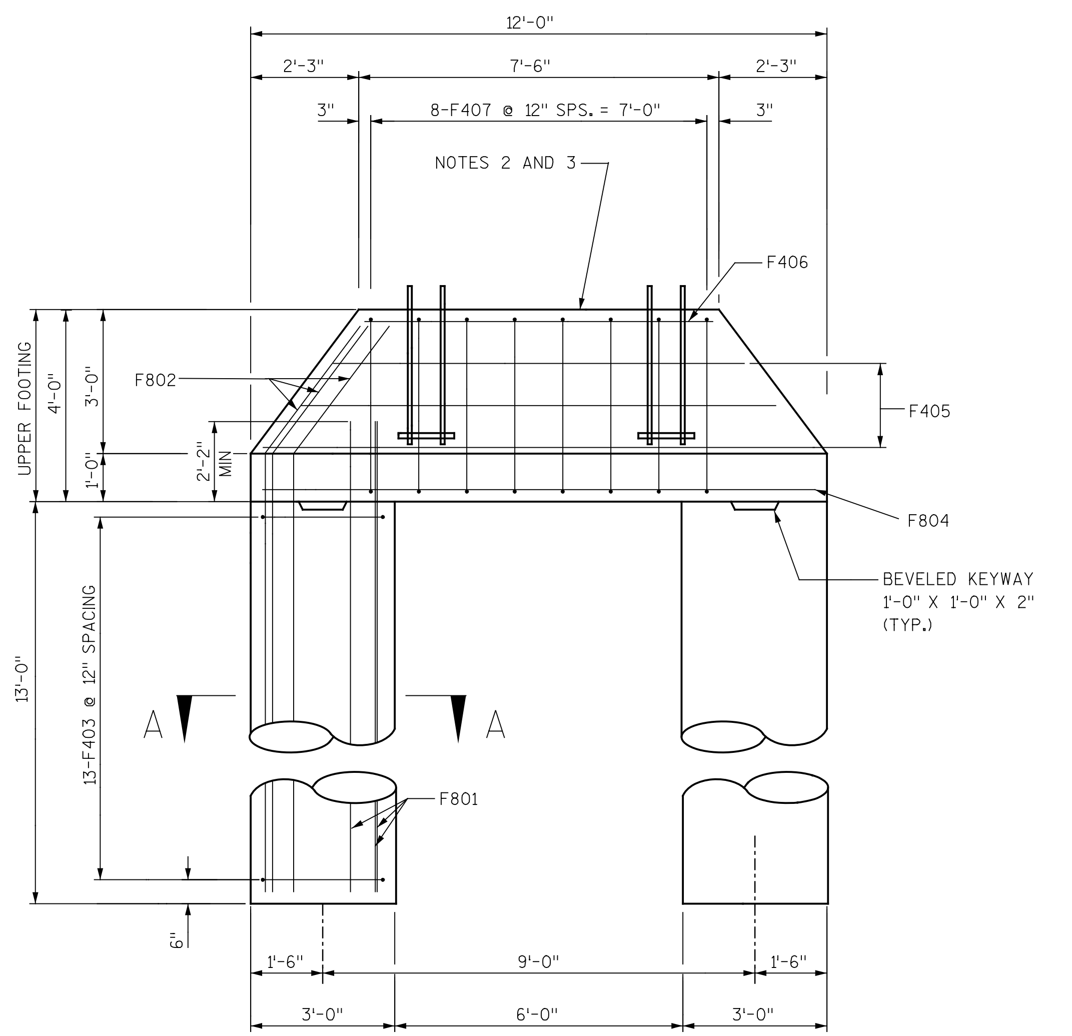
8

FILE NAME : S-40-0981_pln.dgn PLOT DATE : 1/29/2013 10:14:03 AM PLOT BY : Veronica Chavezv8I

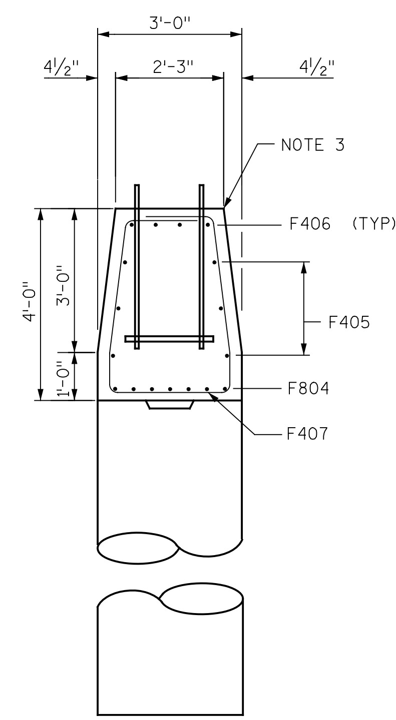
STATE PROJECT NUMBER
1000-19-89



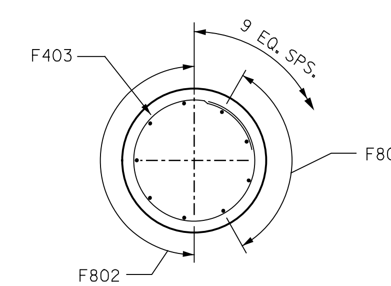
PLAN



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.

FOUNDATION DATA

THE FOLLOWING SOIL PARAMETERS WERE USED FOR THE DESIGN OF THE FOUNDATION SYSTEM.

SOIL UNIT WEIGHT = 120 pcf
COHESION VALUE = 1500 psf
FRICTION ANGLE = 0°
ALLOWABLE SOIL BEARING PRESSURE = 4000psf
ALLOWABLE SKIN FRICTION = 750 psf

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

BAR SERIES TABLE

MARK	NO. REQ'D	LENGTH
F405	2 SERIES OF 3	8'-8" TO 11'-4"

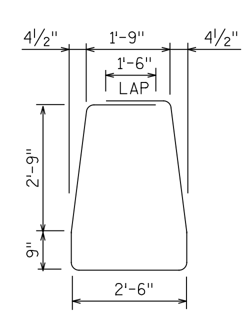
BUNDLE AND TAG EACH SERIES SEPARATELY

BILL OF BARS

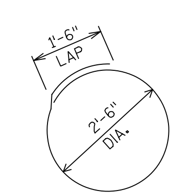
NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
F801	X	8	15'-0"			DRILLED SHAFT VERTICAL
F802	X	10	17'-0"	▲		DRILLED SHAFT VERTICAL
F403		26	9'-4"	▲		DRILLED SHAFT HOOP
F804	X	7	11'-6"			CAP BEAM LONGITUDINAL
F405	X	6	10'-0"		△	CAP BEAM LONGITUDINAL
F406	X	4	7'-4"			CAP BEAM LONGITUDINAL
F407	X	8	12'-4"	▲		CAP BEAM STIRRUP

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



F407



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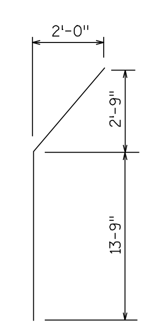


F802

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-981

DRAWN BY DW | PLANS CK'D. VC

TOWER 2 FOUNDATION DETAILS

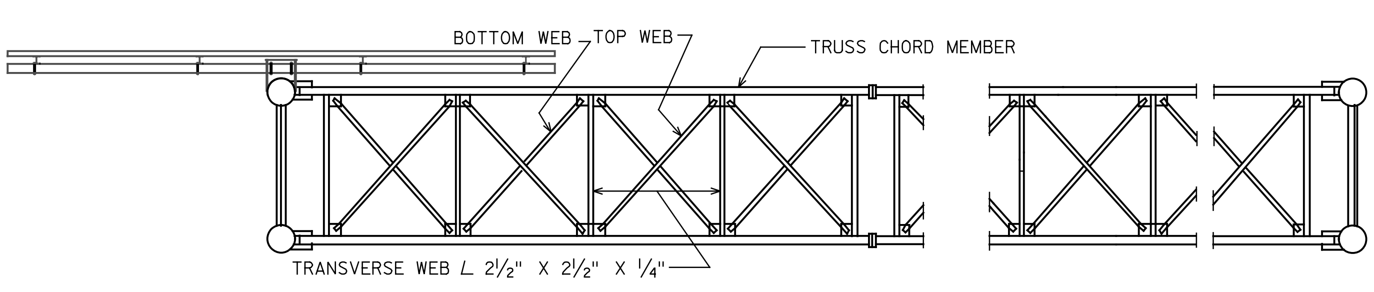
SHEET 3 OF 6

8

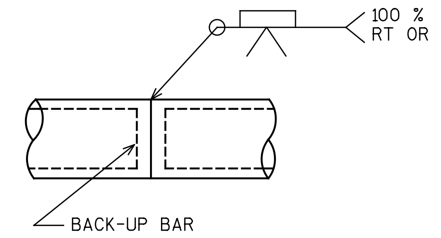
8

FILE NAME : S-40-0981_pln.dgn PLOT DATE : 1/29/2013 10:14:03 AM PLOT BY : Veronica Chavezv8I

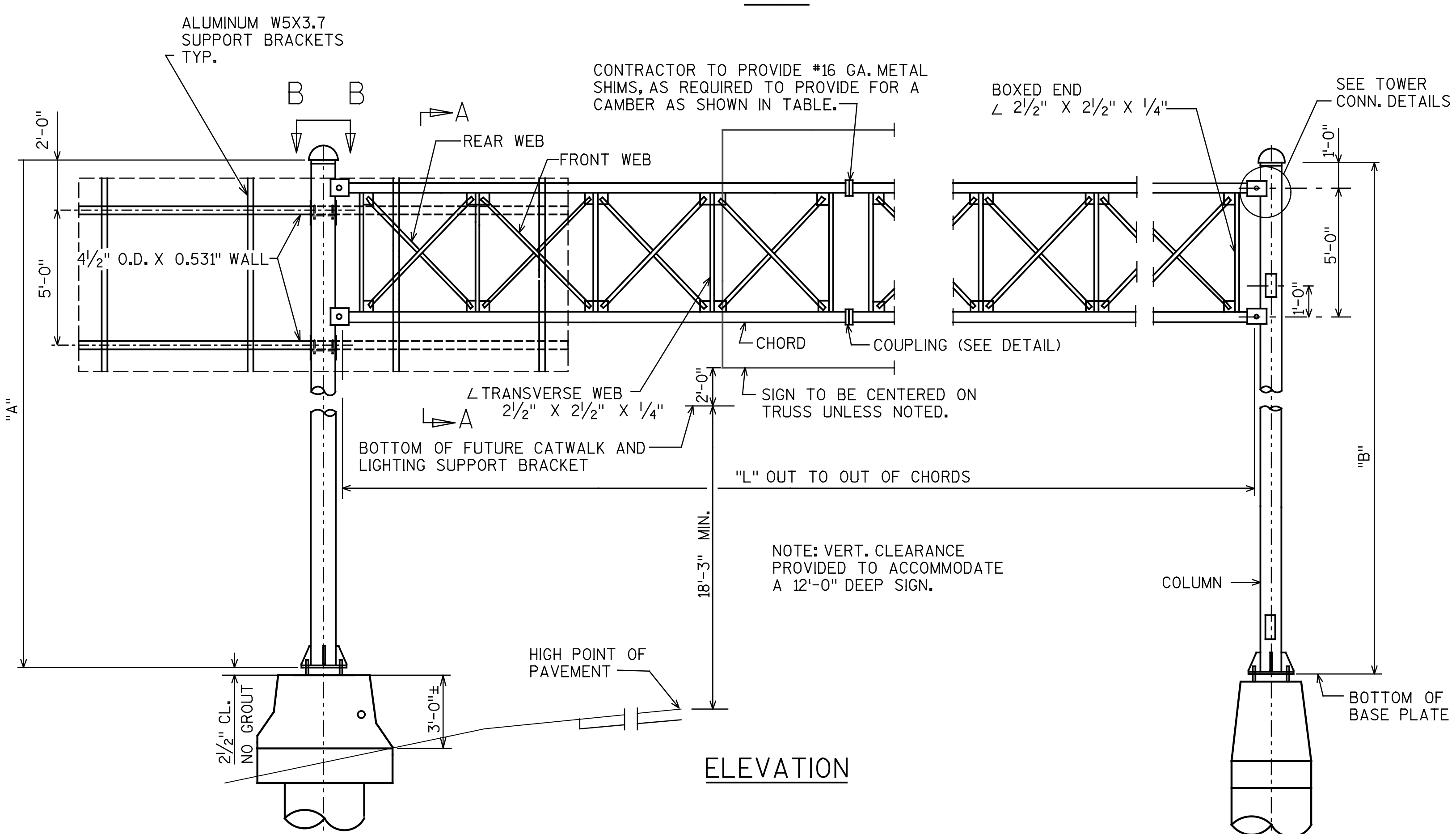
NOTES
DRAWINGS SHALL NOT BE SCALED.



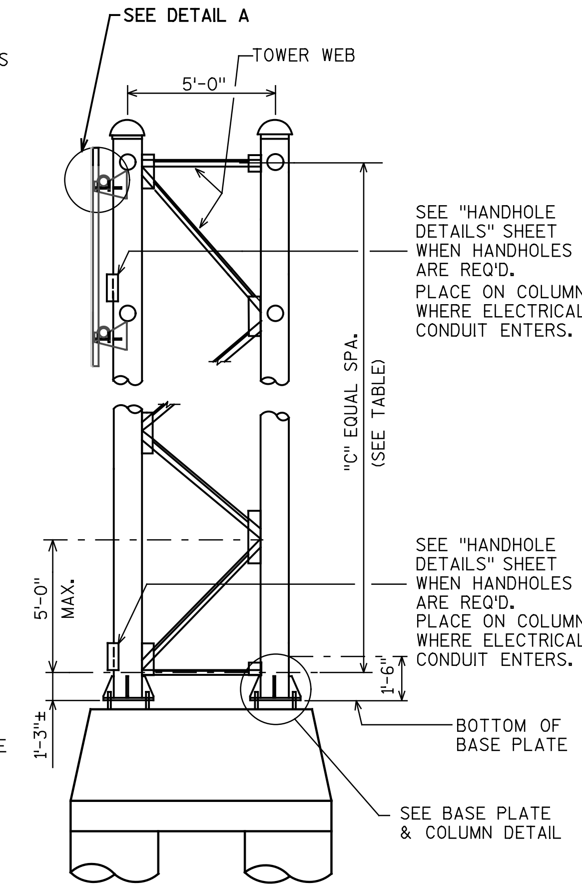
PLAN



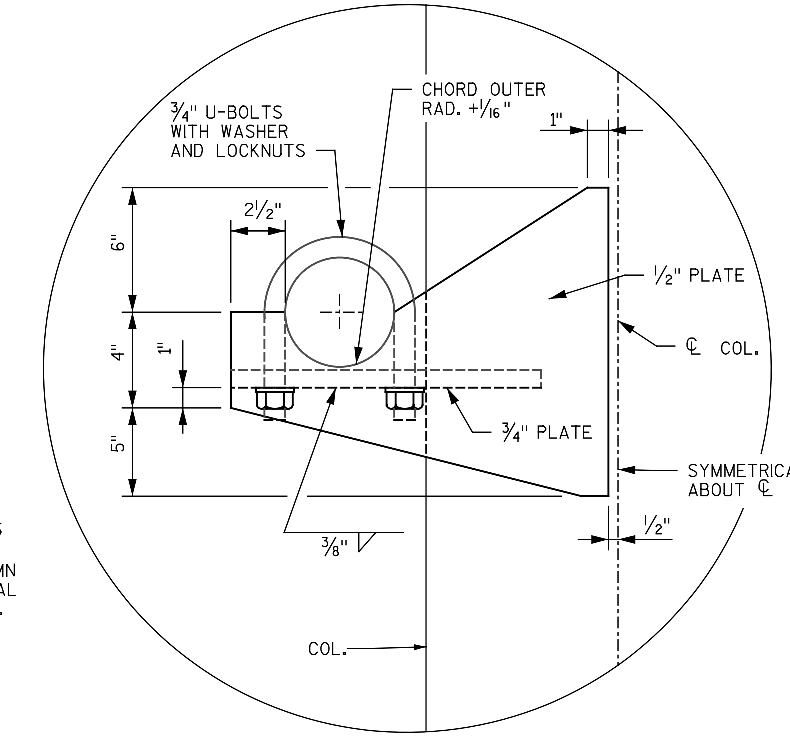
CHORD SPLICE



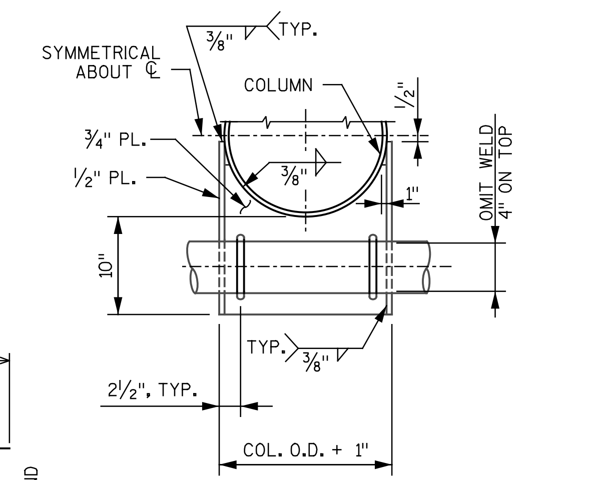
ELEVATION



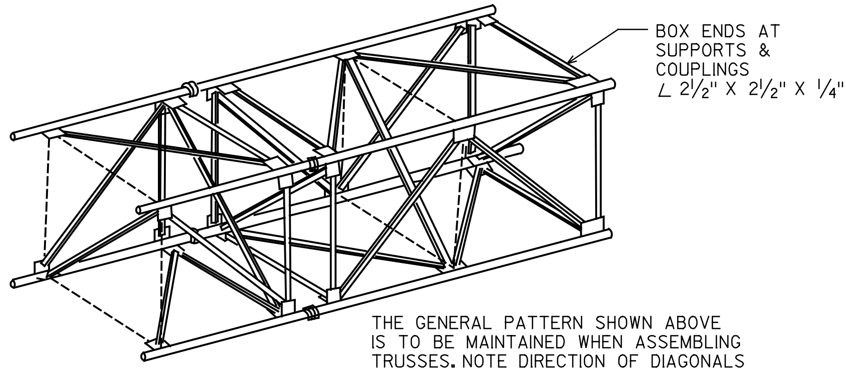
END VIEW



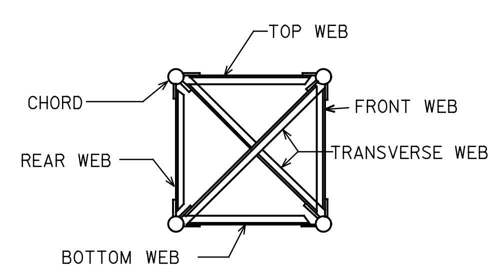
DETAIL A
(BRACKETS NOT SHOWN)



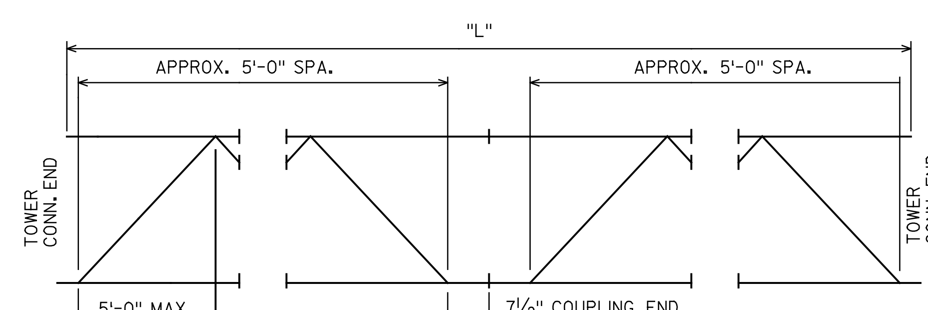
SECTION B-B
(TRUSS TO TOWER BRACKETS OMITTED FOR CLARITY)



TYPICAL TRUSS SECTION



SECTION A



TRUSS ARRANGEMENT

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

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-40-981	28'-10½"	31'-5⅛	6	4" X 0.226"	L 3" x 3" x 3/16"	L 3" x 3" x 3/16"	10" x 1"	7"	6	1¼"	12.75" x 0.5"	L 4" x 4" x ¼"	70'-3 ¼"

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

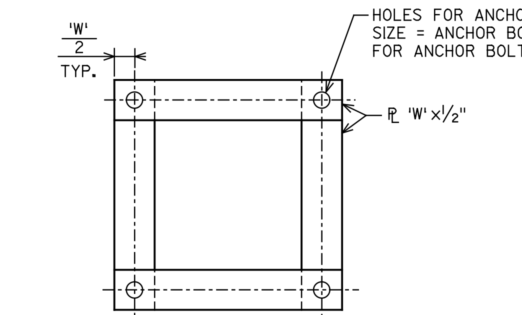
STRUCTURE S-40-981

DRAWN BY DW | PLANS CK'D. VC

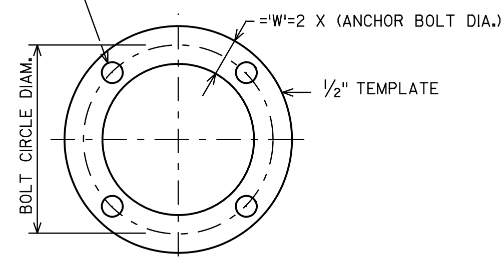
GALVANIZED STEEL SIGN BRIDGE

SHEET 4 OF 6

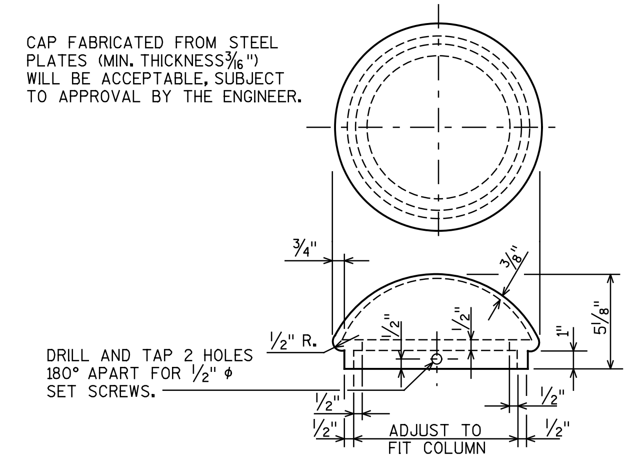
FILE NAME : S-40-0981_pln.dgn
PLOT DATE : 1/29/2013 10:14:04 AM PLOT BY : Veronica Chavezv8I



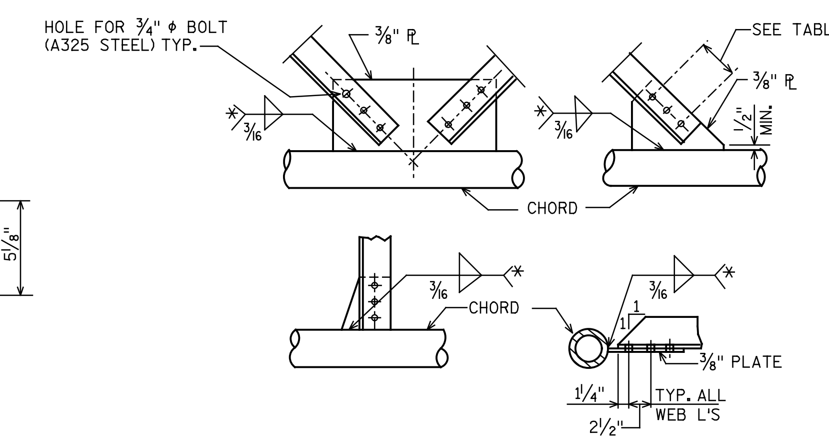
ALTERNATE ANCHOR PLATE/TEMPLATE PLAN



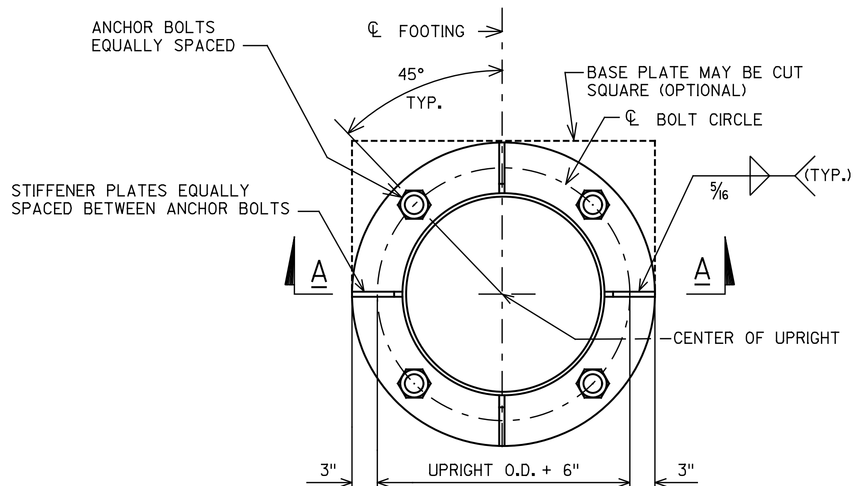
ANCHOR PLATE/TEMPLATE PLAN



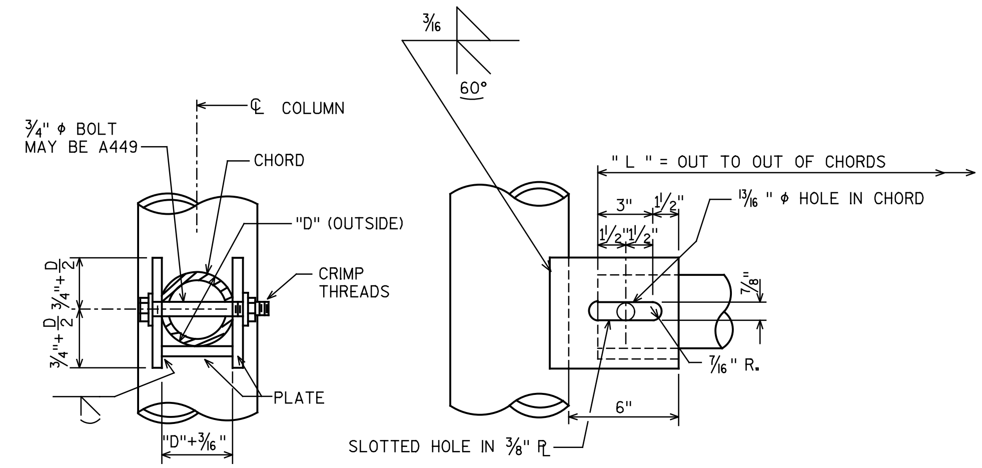
TOWER CAP DETAIL



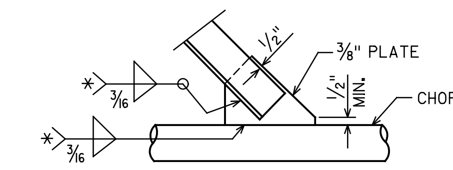
TYPICAL TRUSS CONNECTION DETAILS



PLAN VIEW
(BASE PLATE)



TOWER CONNECTION DETAIL

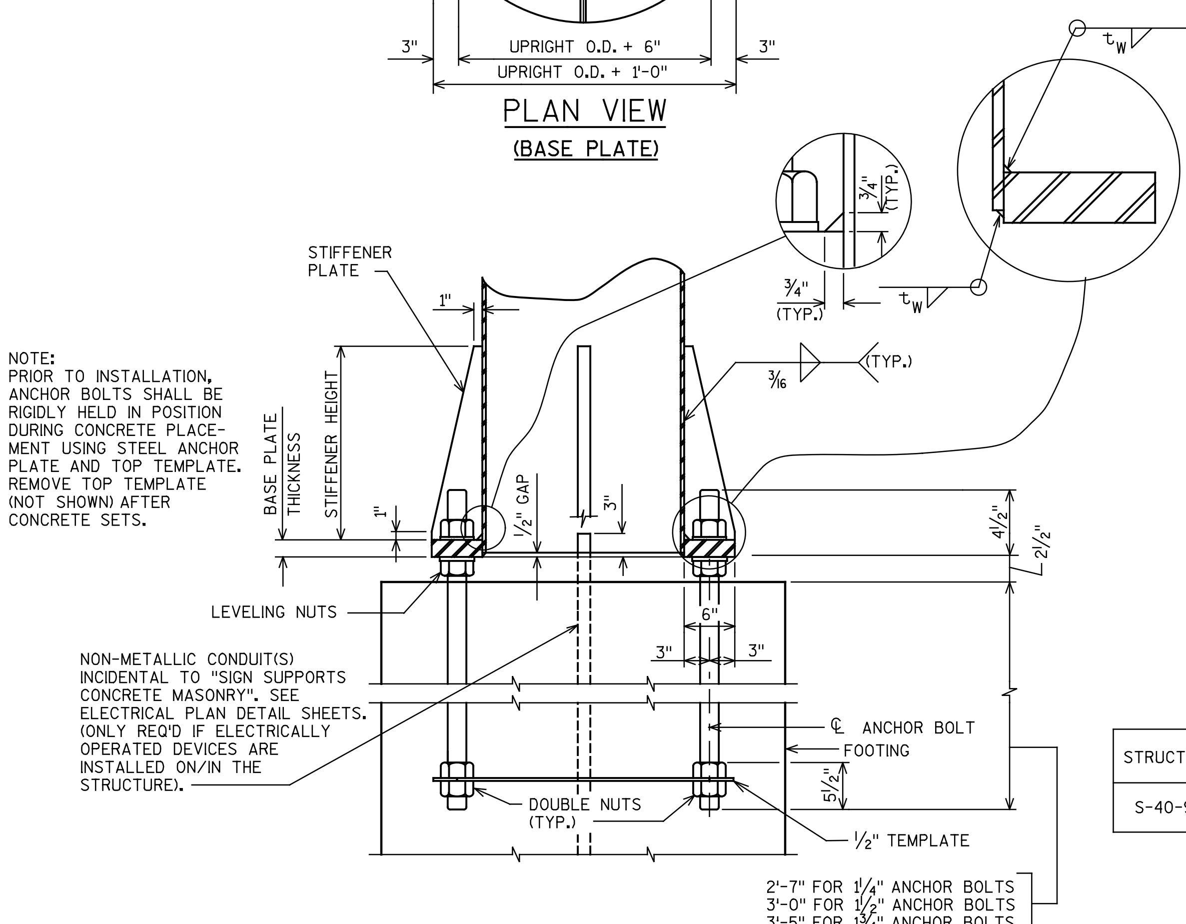


TYPICAL WELDED ALTERNATE

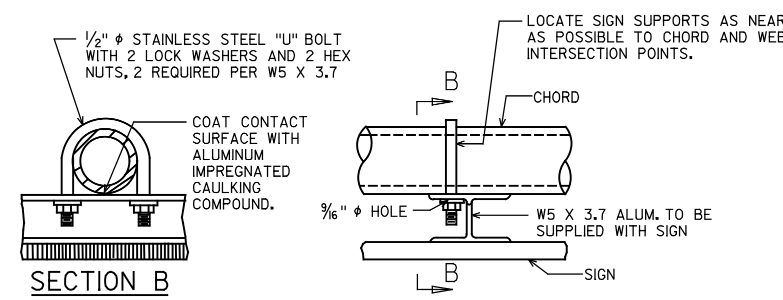
*ANGLE	WELD LENGTH	NO. OF BOLTS
● 2 1/2"x2 1/2"x1/4"	11"	3
3"x3"x3/16"	10"	3
3"x3"x1/4"	13"	4
3"x3"x5/16"	16 1/2"	5
3"x3"x3/8"	19 1/2"	6
4"x4"x1/4"	18"	5
4"x4"x5/16"	22"	6
4"x4"x3/8"	26"	8
4"x4"x7/16"	30"	9
4"x4"x1/2"	34"	10

● ONLY USED FOR BOXED END AND TRANSVERSE BRACING.

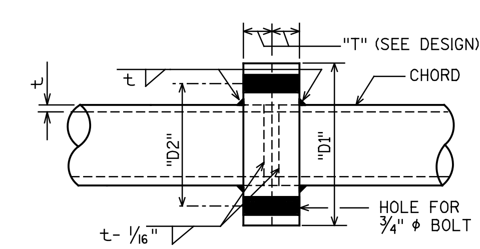
NOTE:
PRIOR TO INSTALLATION, ANCHOR BOLTS SHALL BE RIGIDLY HELD IN POSITION DURING CONCRETE PLACEMENT USING STEEL ANCHOR PLATE AND TOP TEMPLATE. REMOVE TOP TEMPLATE (NOT SHOWN) AFTER CONCRETE SETS.



SECTION A-A



TYPICAL SIGN CONNECTION



COUPLING DETAIL

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.)	t_W (IN.)
S-40-981	12.75"X0.50"	1 1/2"	1 1/2"	3/4"	12"	5/16"

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-981

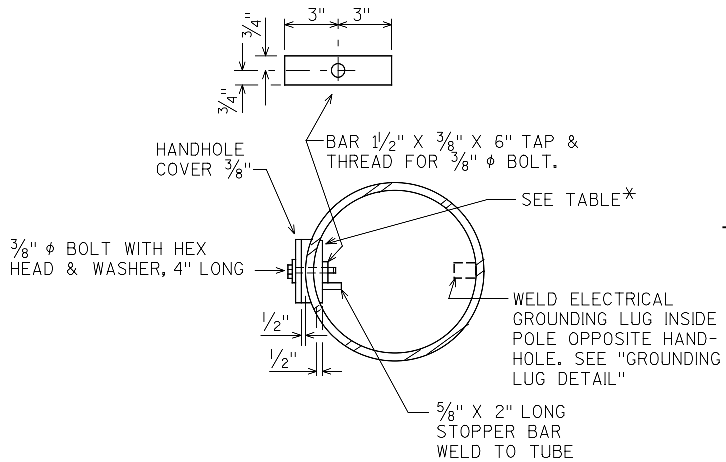
DRAWN BY DW PLANS CK'D. VC

SIGN BRIDGE DETAILS

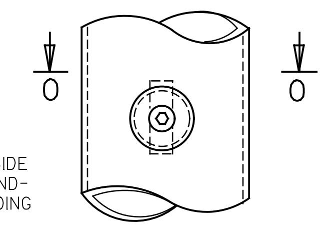
SHEET 5 OF 6

8

8



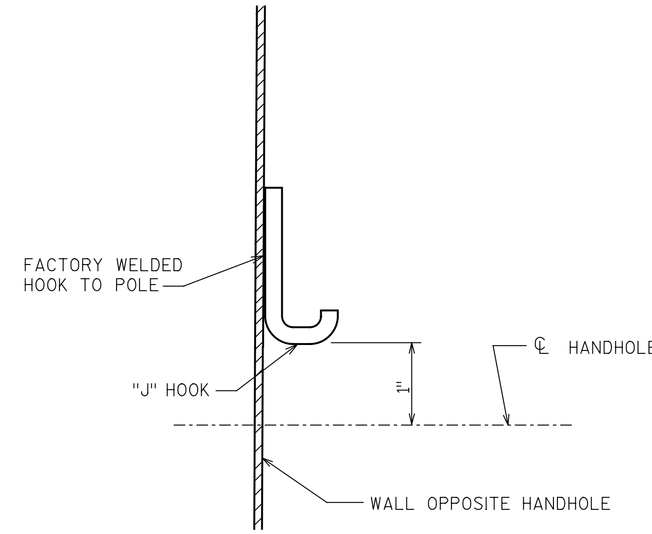
SECTION 'O'



HANDHOLE DETAILS

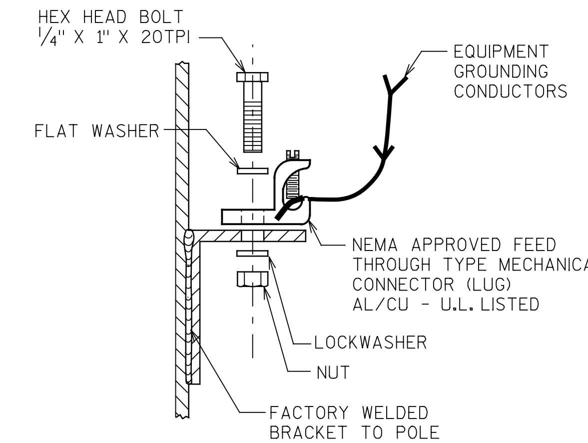
HANDHOLE NOTES

HANDHOLES SHALL BE LOCATED IN ONE COLUMNS 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.



TYPICAL "J" HOOK LOCATION

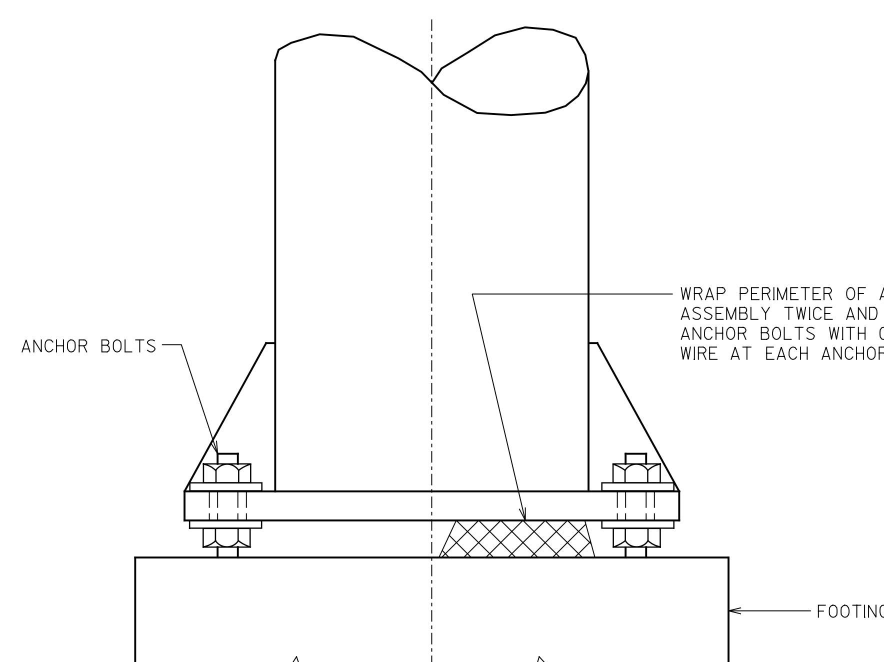
THE "J" HOOK SHALL BE FACTORY WELDED TO THE INSIDE OF ALL COLUMNS CONTAINING ELECTRICAL WIRING. THE "J" HOOK SHALL BE ATTACHED ABOVE THE CENTERLINE OF THE UPPER HANDHOLE AND MOUNTED DIRECTLY OPPOSITE THE HANDHOLE AS SHOWN IN THE DRAWING.



GROUNDING LUG DETAIL

NUT, BOLT AND WASHERS SHALL BE STAINLESS STEEL

* UPRIGHT DIAM. SIZE	HANDHOLE PIPE O.D. X MIN. THK.
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

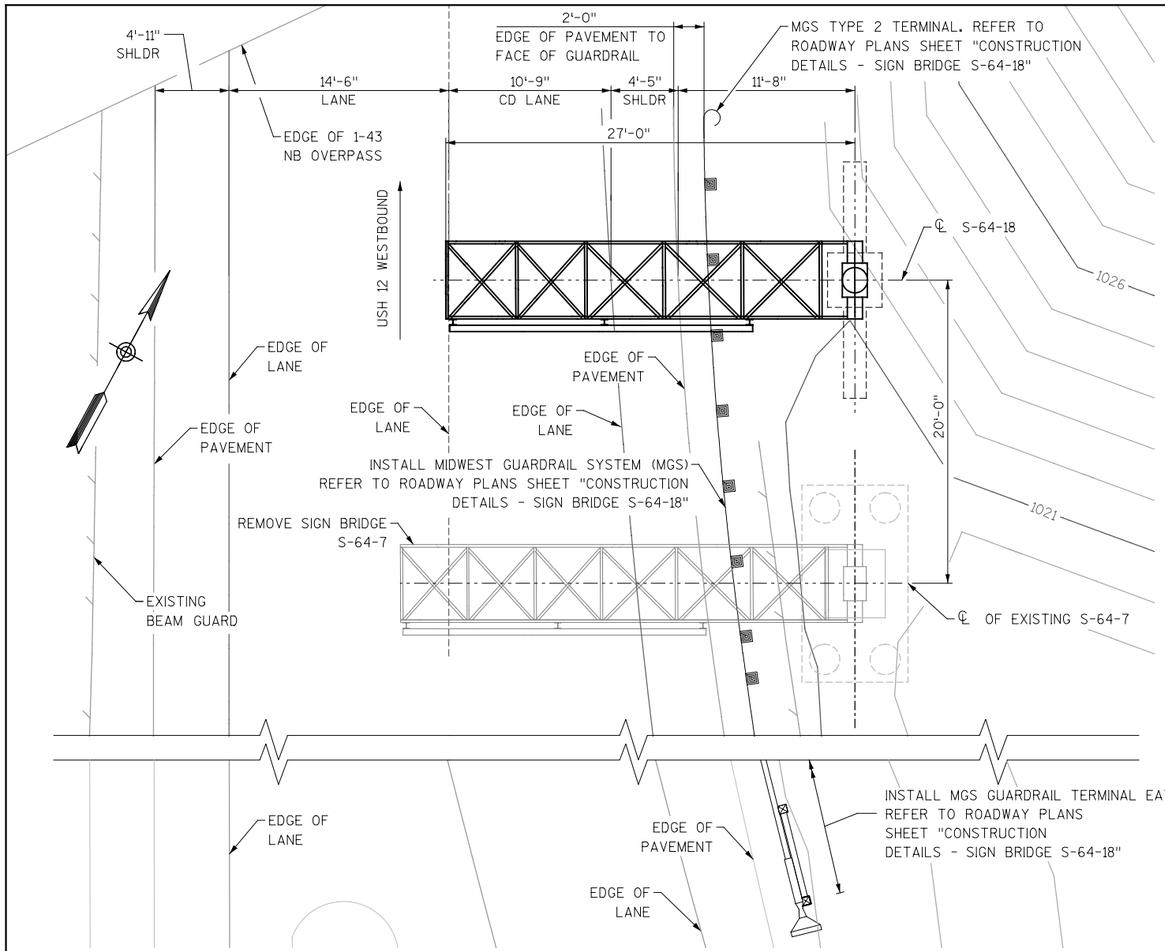
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-40-981

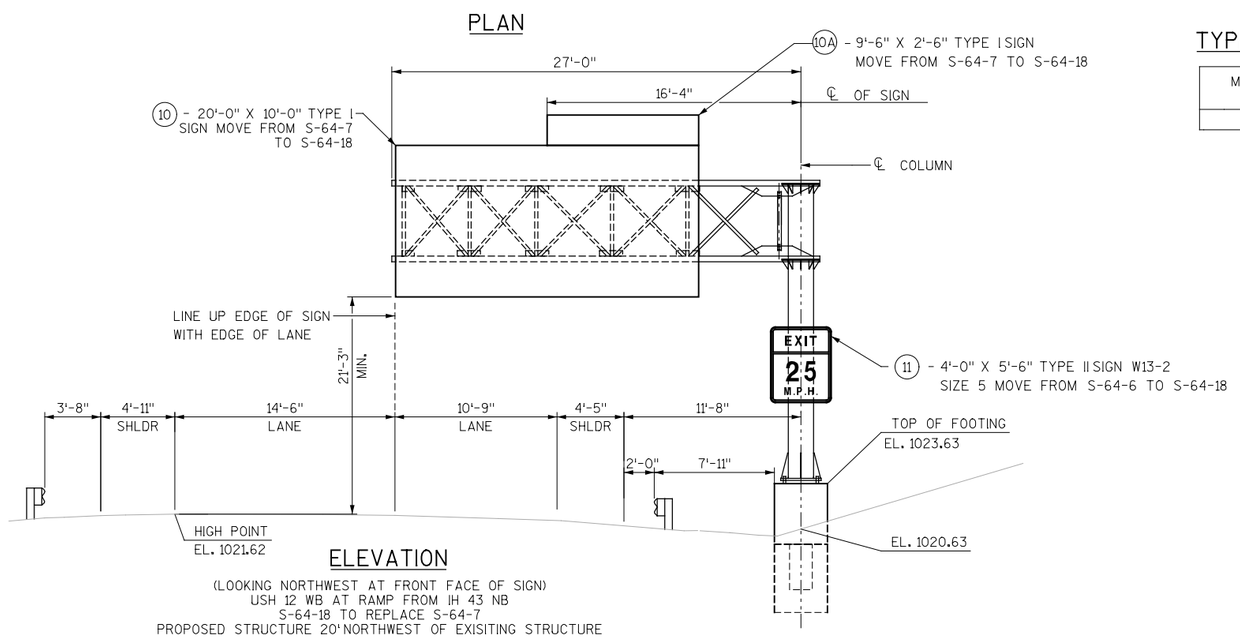
DRAWN BY DW | PLANS CK'D. VC

HANDHOLE DETAILS

SHEET 6 OF 6



PLAN



ELEVATION

(LOOKING NORTHWEST AT FRONT FACE OF SIGN)
USH 12 WB AT RAMP FROM IH 43 NB
S-64-18 TO REPLACE S-64-7
PROPOSED STRUCTURE 20' NORTHWEST OF EXISITING STRUCTURE

LIST OF DRAWINGS

1. PLAN & ELEVATION
2. CANTILEVER TRUSS FOOTING
3. GALVANIZED STEEL CANTILEVER SIGN TRUSS
4. GALVANIZED STEEL CANTILEVER SIGN TRUSS 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 500LBS. 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"

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 FOUNDATIONS, CONSIDERED INCIDENTAL TO THE ROADWAY BID ITEM "REMOVING SIGN BRIDGE S-64-7"

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 ARE REQUIRED FOR SIGNS AND ARE INCIDENTAL TO THE ROADWAY BID ITEM "MOVING SIGNS TYPE I"

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-64-18 ".

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-64-18".

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.

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

1.29.2013

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

CONSULTANT CONTACT, COLLINS ENGINEERS INC.
VERONICA CHAVEZ DE FERNANDEZ: (414) 282-6905

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
641.1200.04	SIGN BRIDGE CANTILEVERED S-64-18	LS	1

STATE PROJECT NUMBER

1000-19-89

NO.	DATE	REVISION	BY

COLLINS ENGINEERS INC.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher KAR 03/06/13
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE S-64-18

USH 12

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

DESIGN SPEC. AASHTO STANDARD SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
VC	NJH	DW,MJH	RJW

PLAN & ELEVATION

SHEET 1 OF 4

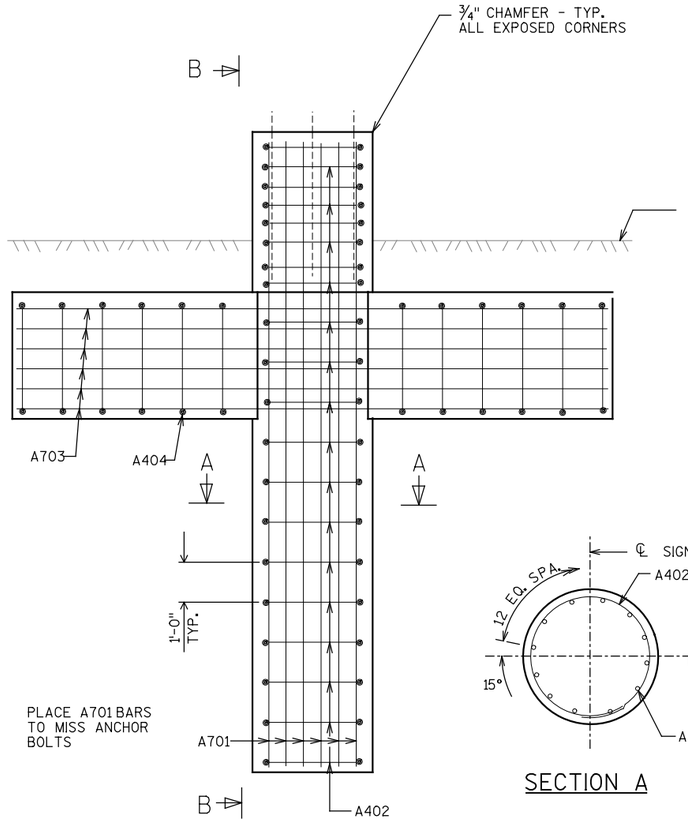
91

8

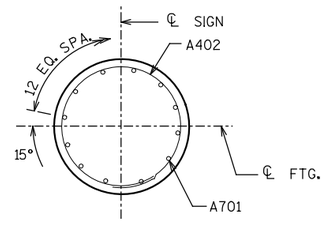
8

STATE PROJECT NUMBER

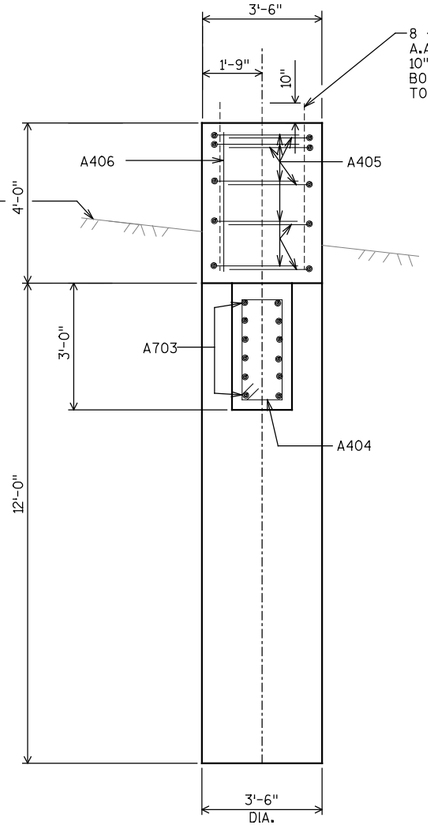
1000-19-89



ELEVATION
(8 C.Y.)



SECTION A



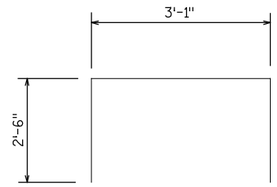
SECTION B

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

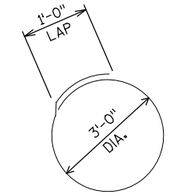
BILL OF BARS

980 LB.

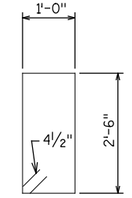
BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	CUT. DIAG.	BUN-DLE	LOCATION
A701		12	15'-6"				FOOTING - COLUMN/TOP
A402		16	10'-6"	X			FOOTING - COLUMN/TOP
A703		12	15'-0"				FOOTING - WINGS
A404		12	7'-6"	X			FOOTING - WINGS
A405		10	7'-11"	X			FOOTING - TOP
A406		4	3'-6"				FOOTING - TOP - COLUMNS



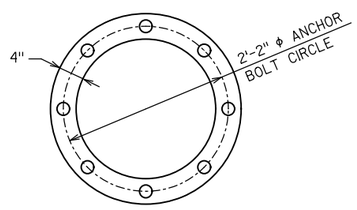
A405



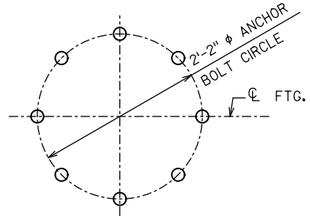
A402



A404
(STIRRUP)



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

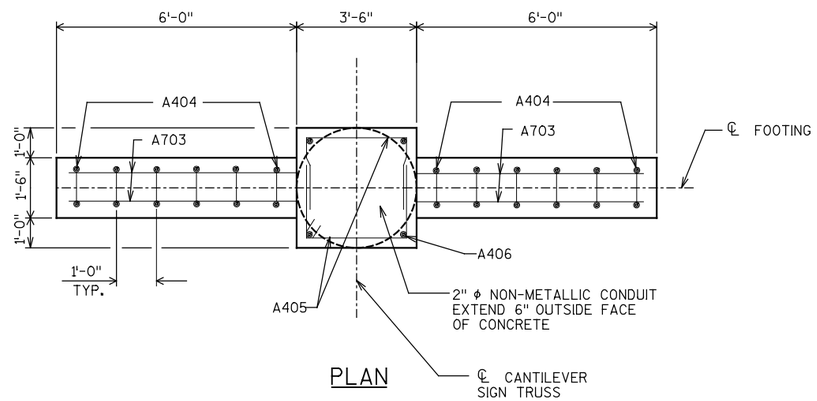
CONCRETE MASONRY — f'c=3,500 P.S.I.
HIGH STRENGTH BAR STEEL REINFORCEMENT, GRADE 60 — fy=60,000 P.S.I.
ANCHOR BOLTS A.A.S.H.T.O. M314 — fy=55,000 P.S.I.

FOUNDATION DATA

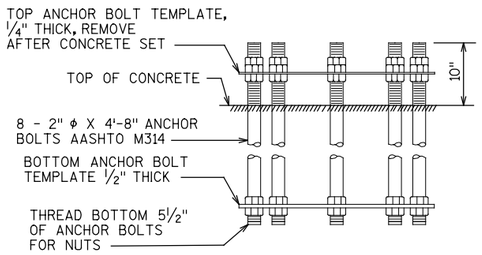
ALLOWABLE SOIL BEARING PRESSURE = 2T/SQ. FT.

TOTAL ESTIMATED QUANTITIES (1 FTG.)

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



PLAN



ANCHOR BOLT DETAILS

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-64-18

DRAWN BY DW | PLANS CK'D. VC

CANTILEVER TRUSS FOOTING

SHEET 2 OF 4

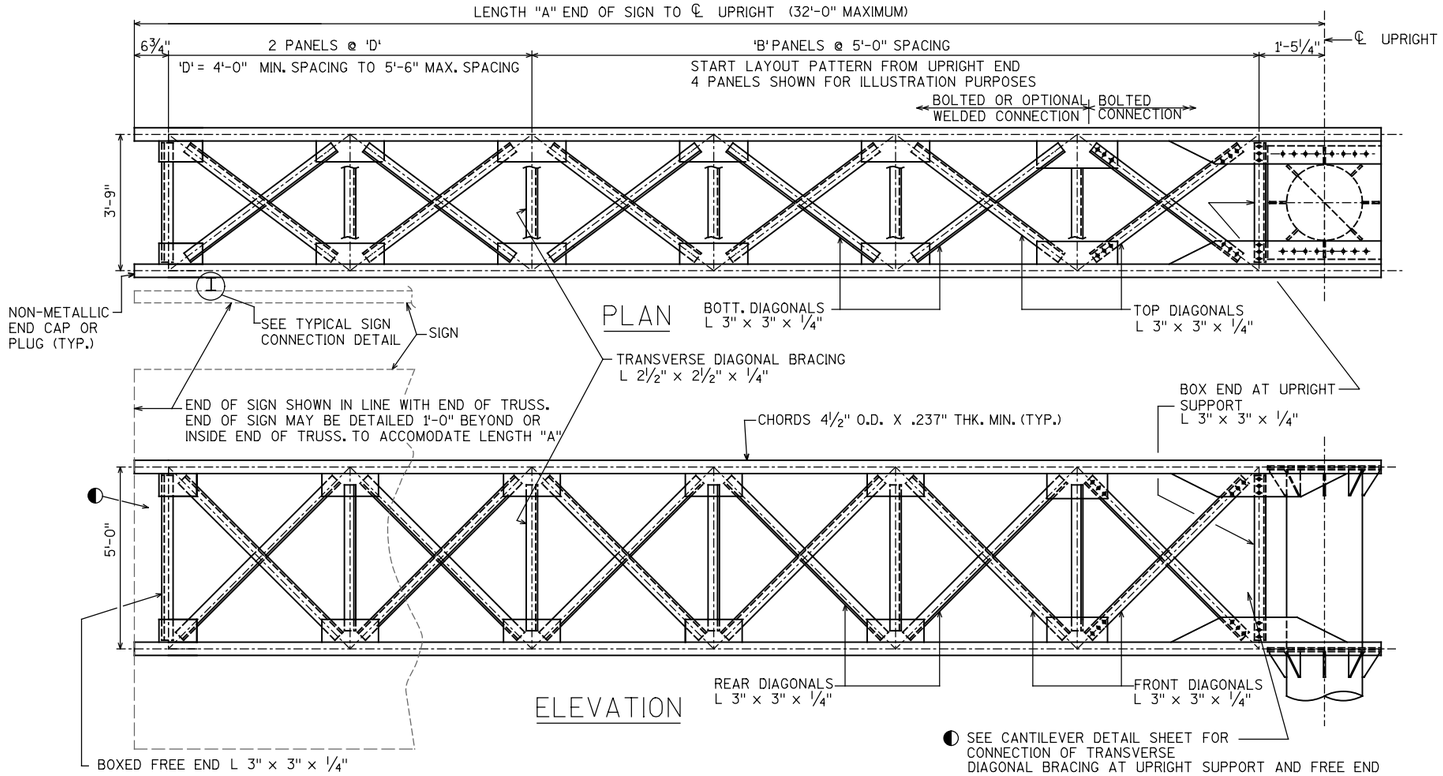
92

8

8

STATE PROJECT NUMBER

1000-19-89



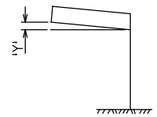
GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

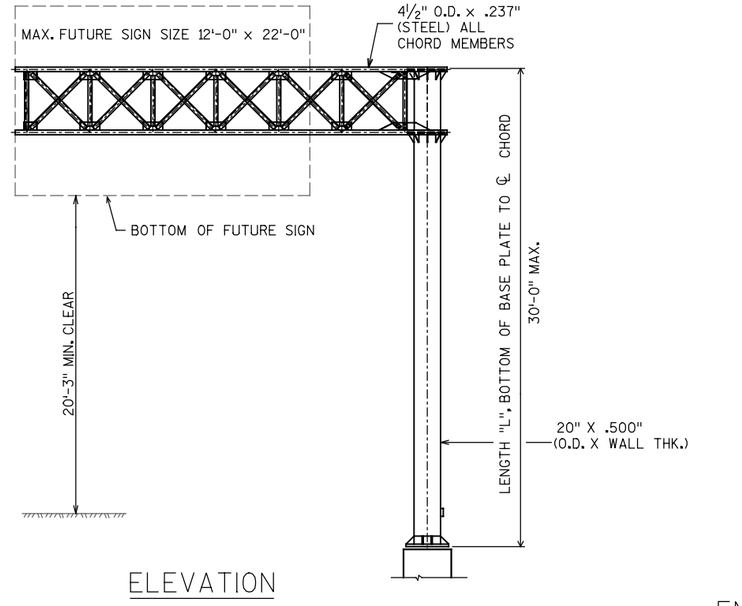
PREFABRICATE CAMBER INTO THE HORIZONTAL SUPPORT PROVIDING AN AMOUNT "Y" AT END OF TRUSS SHOWN IN "CAMBER DIAGRAM". DO NOT RAKE VERTICAL UPRIGHT BY ADJUSTMENT OF LEVELING NUTS.

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

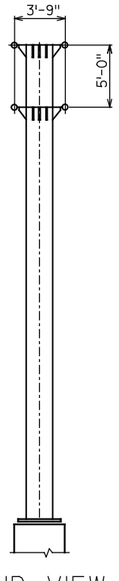
STRUCTURE	"A"	"L"	"B"	"D"	"Y"
S-64-18	27'-0"	26'-7"	3	5'-0"	2⅜"



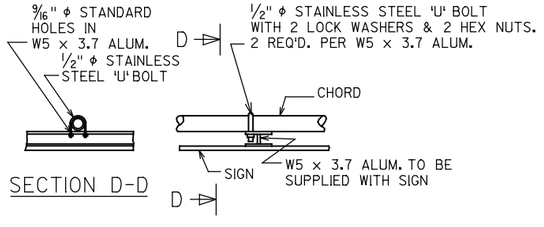
CAMBER DIAGRAM



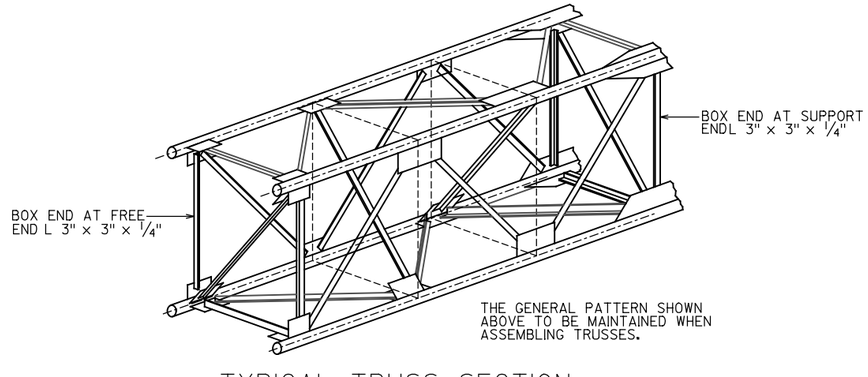
ELEVATION



END VIEW



TYPICAL SIGN CONNECTION



TYPICAL TRUSS SECTION

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-64-18

DRAWN BY DW | PLANS CK'D. VC

GALVANIZED STEEL CANTILEVER SIGN TRUSS

SHEET 3 OF 4

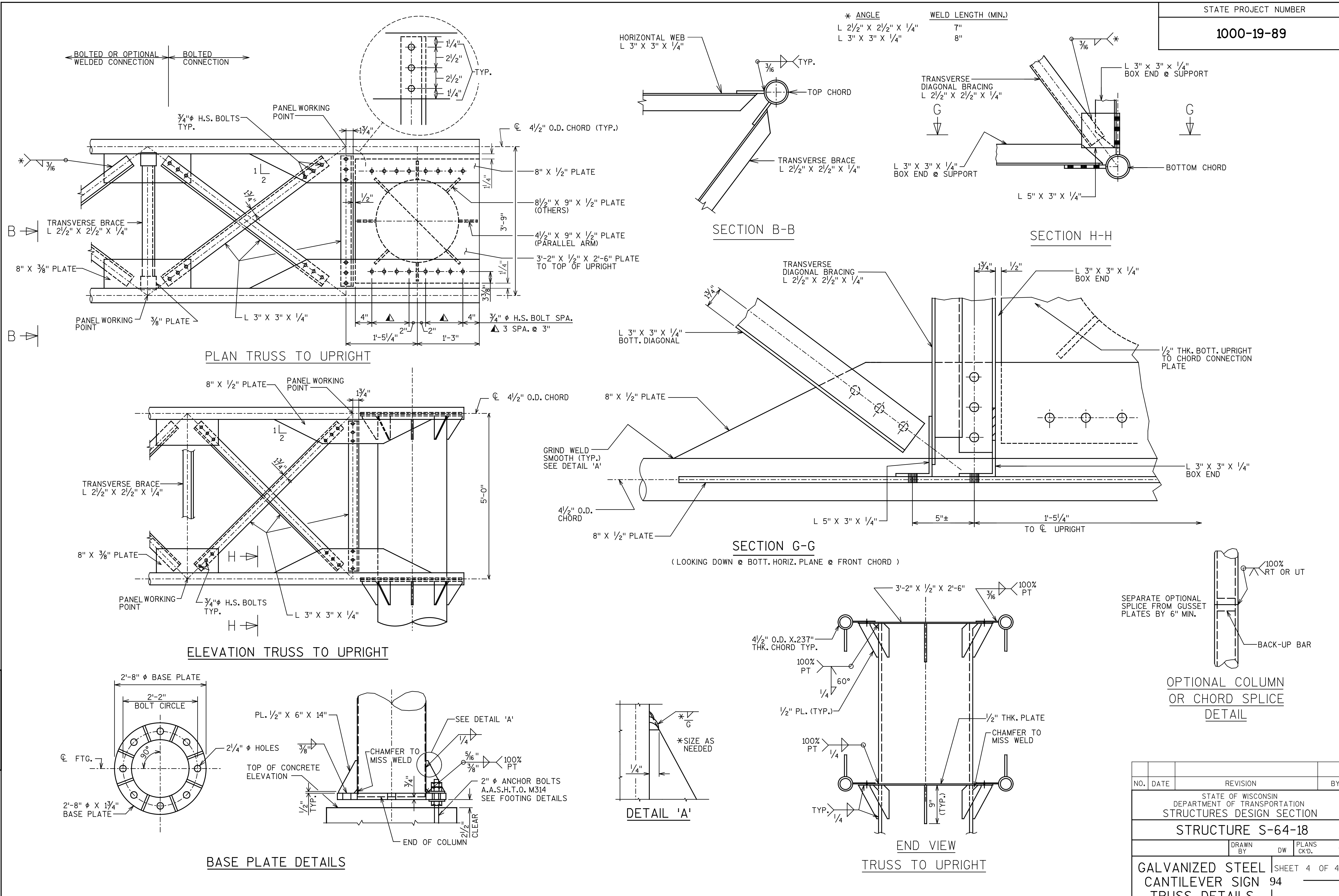
93

8

8

STATE PROJECT NUMBER

1000-19-89



NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-64-18

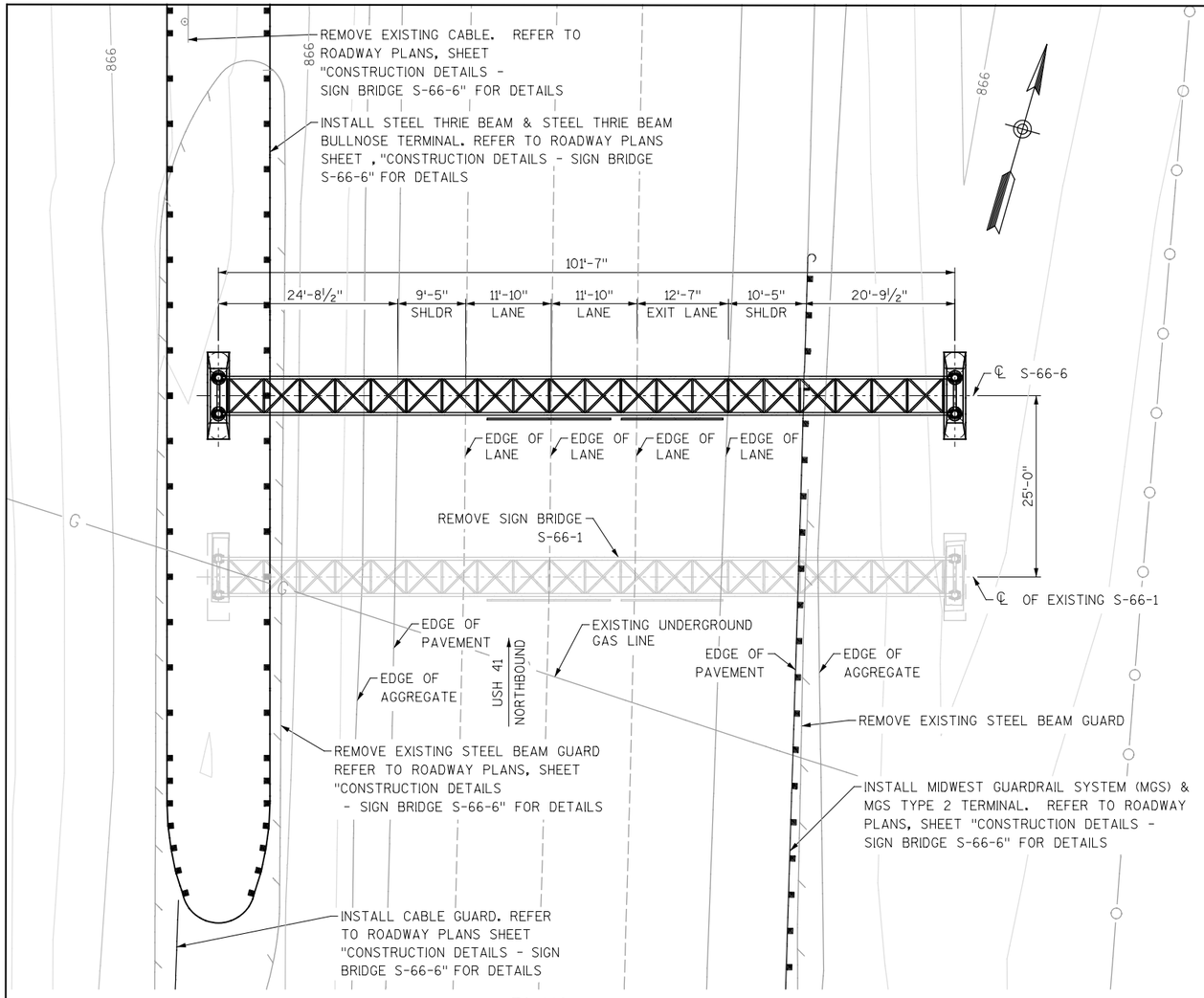
DRAWN BY DW | PLANS CK'D. VC

GALVANIZED STEEL CANTILEVER SIGN TRUSS DETAILS

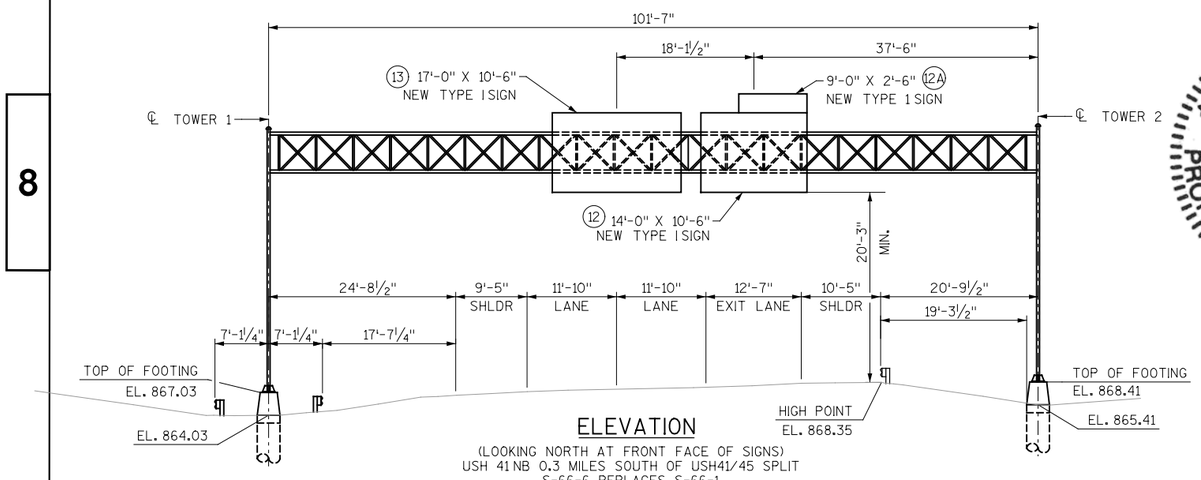
SHEET 4 OF 4

FILE NAME : S-64-0018_pln.dgn   PLOT DATE : 1/30/2013   9:45:46 AM   PLOT BY : Veronica Chavezv8I

STATE PROJECT NUMBER
1000-19-89



PLAN



ELEVATION

(LOOKING NORTH AT FRONT FACE OF SIGNS)
USH 41 NB 0.3 MILES SOUTH OF USH41/45 SPLIT
S-66-6 REPLACES S-66-1
PROPOSED STRUCTURE 25' NORTH OF EXISTING STRUCTURE

LIST OF DRAWINGS

1. PLAN & ELEVATION
2. FOUNDATION DETAILS TOWER 1 & TOWER 2
3. GALVANIZED STEEL SIGN BRIDGE
4. SIGN BRIDGE 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 OR LIGHTING.
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
864	12'-0"

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 SIGNS OVER THEIR 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 FOUNDATIONS, CONSIDERED INCIDENTAL TO THE ROADWAY BID ITEM "REMOVING SIGN BRIDGE S-66-1"

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

NEW I-BEAMS ARE REQUIRED FOR SIGNS AND ARE INCIDENTAL TO SIGNS.

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-66-6 "

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.

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

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 S-66-6 " "

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
1.29.2013

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

CONSULTANT CONTACT, COLLINS ENGINEERS INC.
VERONICA CHAVEZ DE FERNANDEZ: (414) 282-6905

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL
636.0100	SIGN SUPPORTS CONCRETE MASONRY	CY	21
636.1000	SIGN SUPPORTS STEEL REINFORCEMENT HS	LB	300
636.1500	SIGN SUPPORTS STEEL COATED REINFORCEMENT HS	LB	1990
641.6600.03	SIGN BRIDGE S-66-6	LS	1

NO.	DATE	REVISION	BY

COLLINS ENGINEERS INC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher KAR 03/06/13
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE S-66-6

USH 41

COUNTY WASHINGTON
~~TOWN/CITY/~~VILLAGE GERMANTOWN

DESIGN SPEC. AASHTO STANDARD SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
VC	NJH	DW,MJH	RJW

PLAN & ELEVATION

SHEET 1 OF 4

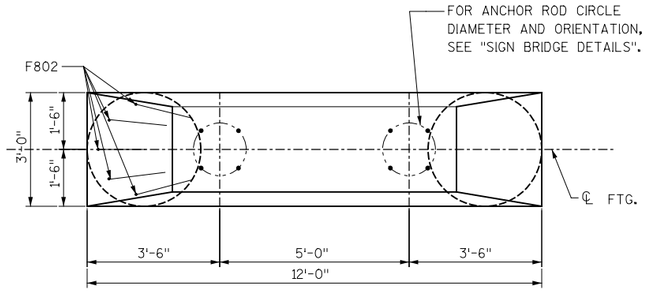
95

8

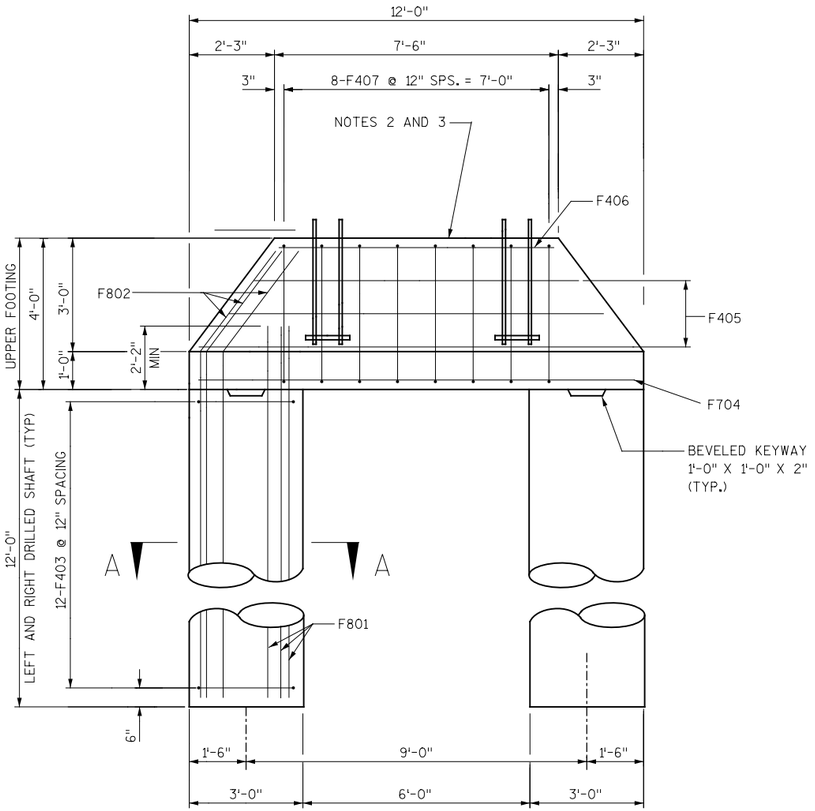
8

STATE PROJECT NUMBER

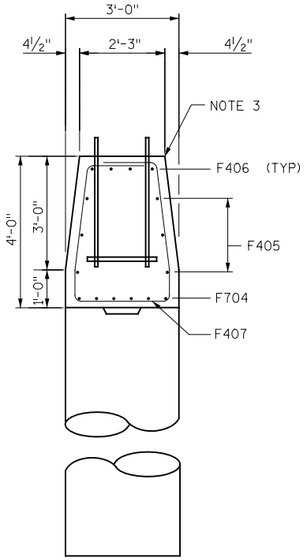
1000-19-89



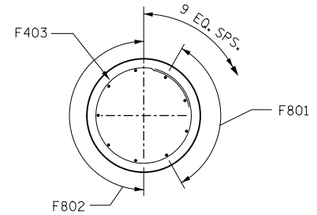
PLAN



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.

FOUNDATION DATA

THE FOLLOWING SOIL PARAMETERS WERE USED FOR THE DESIGN OF THE FOUNDATION SYSTEM.

SOIL UNIT WEIGHT = 120 pcf
COHESION VALUE = 1750 psf
FRICTION ANGLE = 0°
ALLOWABLE SOIL BEARING PRESSURE = 4000 psf
ALLOWABLE SKIN FRICTION = 750 psf

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

BAR SERIES TABLE

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

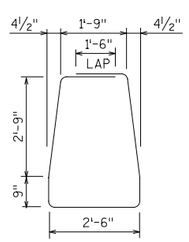
BUNDLE AND TAG EACH SERIES SEPARATELY

BILL OF BARS

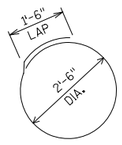
NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
F801	X	16	14'-0"			DRILLED SHAFT VERTICAL
F802	X	20	16'-0"	▲		DRILLED SHAFT VERTICAL
F403		48	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	16	12'-4"	▲		CAP BEAM STIRRUP

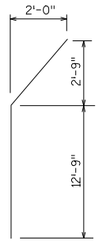
△ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WIEGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.



F407



F403



F802

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-66-6

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FOUNDATION DETAILS TOWER 1 AND TOWER 2

SHEET 2 OF 4

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STATE PROJECT NUMBER

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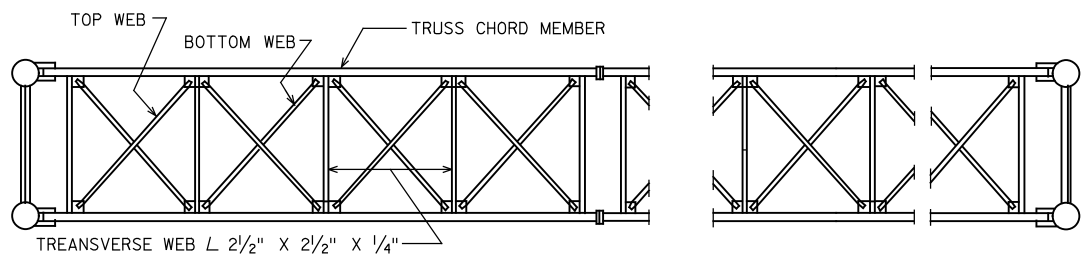
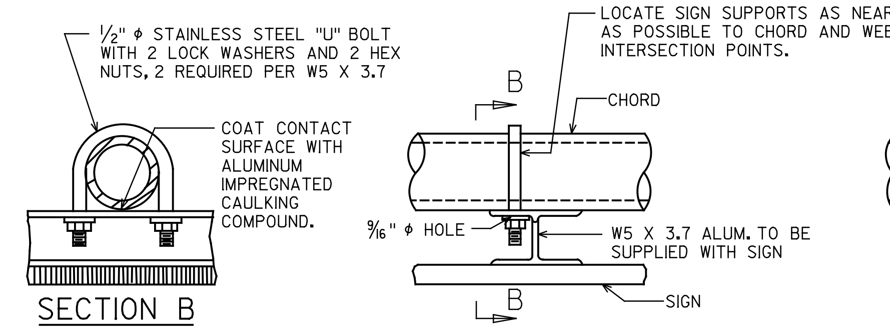
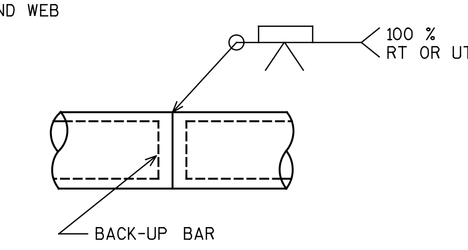


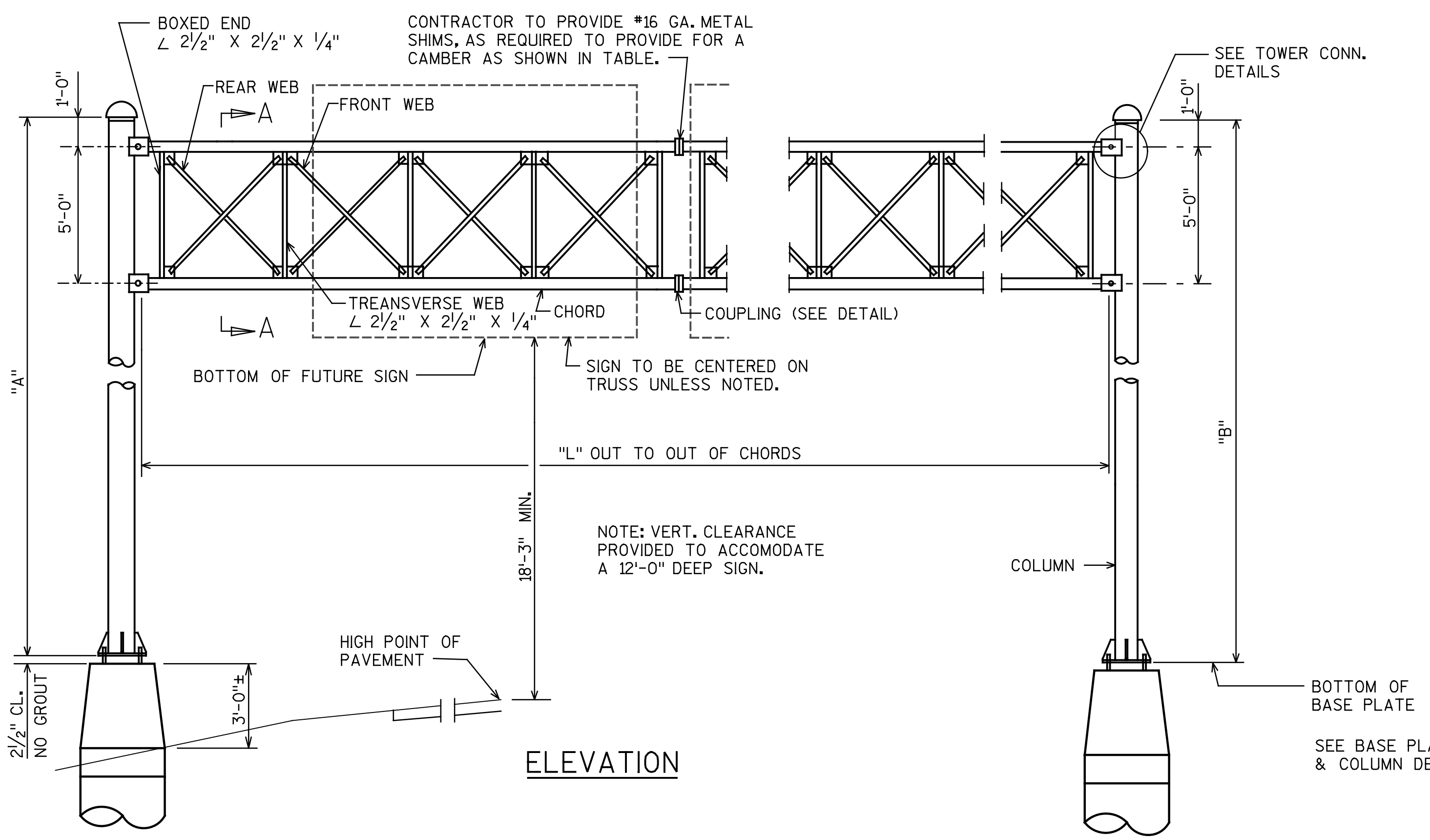
PLAN



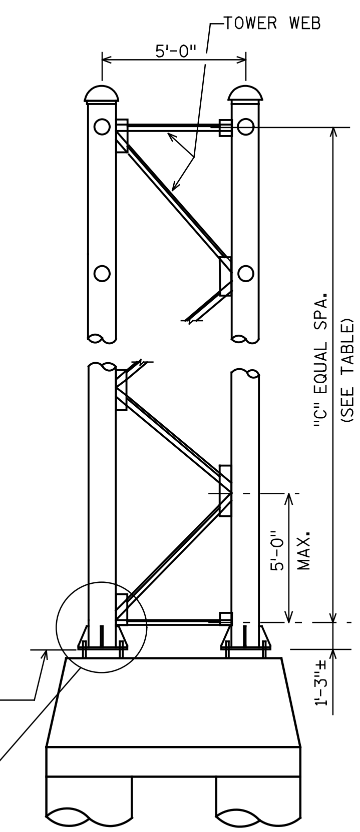
TYPICAL SIGN CONNECTION



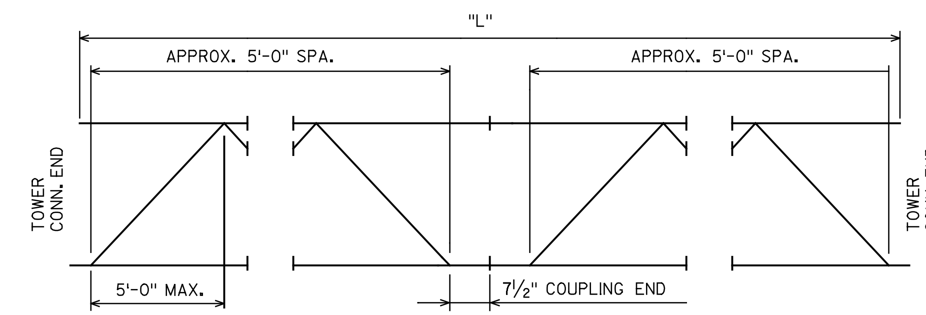
CHORD SPLICE



ELEVATION



END VIEW

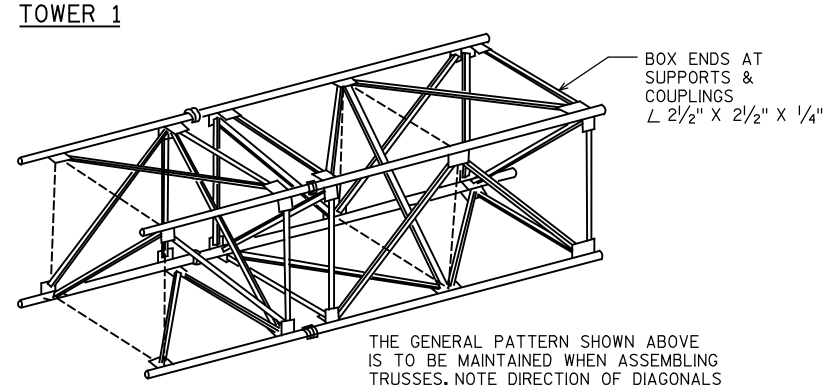


TRUSS ARRANGEMENT

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.

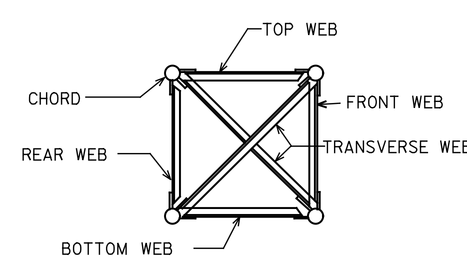
NOTES

DRAWINGS SHALL NOT BE SCALED.



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

TYPICAL TRUSS SECTION



SECTION A

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"
30'-1⅜"	28'-8¾"	6	4"x0.226"	3"x3"x3/16"	3"x3"x3/16"	10.5" x 1.125"	7.0"	6	2"	10.75"x0.5"	3"x3"x¼"	100'-5 1/4"

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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-66-6

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GALVANIZED STEEL SIGN BRIDGE

SHEET 3 OF 4

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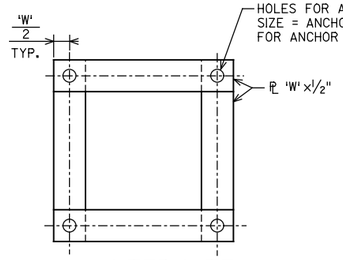
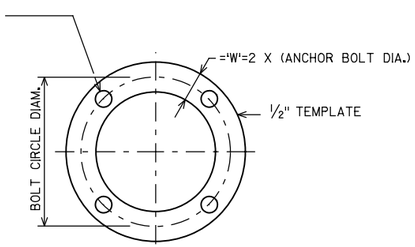
FILE NAME : S-66-0006_pln.dgn PLOT DATE : 1/30/2013 10:33:13 AM PLOT BY : Veronica Chavezv8I

STATE PROJECT NUMBER

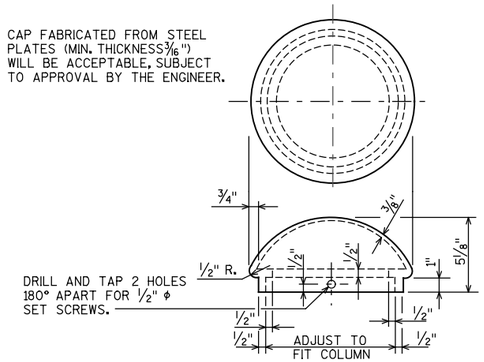
1000-19-89



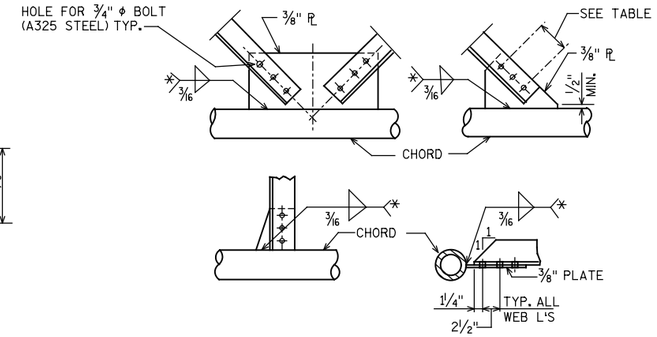
ALTERNATE
ANCHOR PLATE/TEMPLATE PLAN



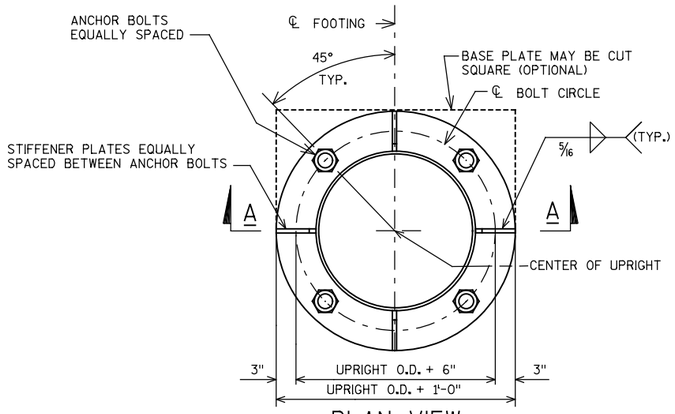
ANCHOR PLATE/TEMPLATE PLAN



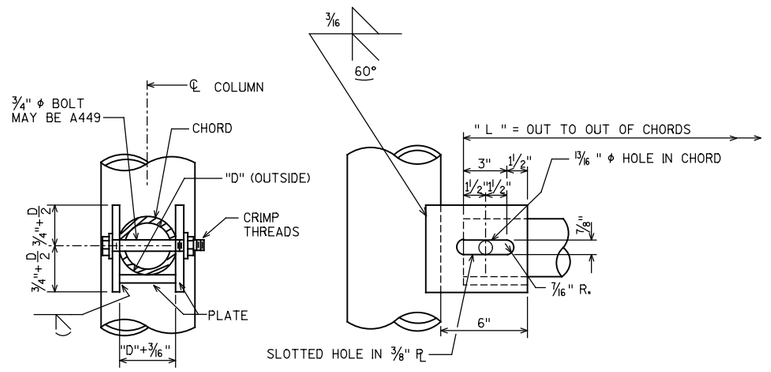
TOWER CAP DETAIL



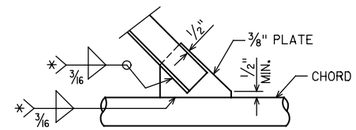
TYPICAL TRUSS CONNECTION DETAILS



PLAN VIEW
(BASE PLATE)



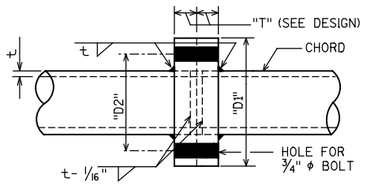
TOWER CONNECTION DETAIL



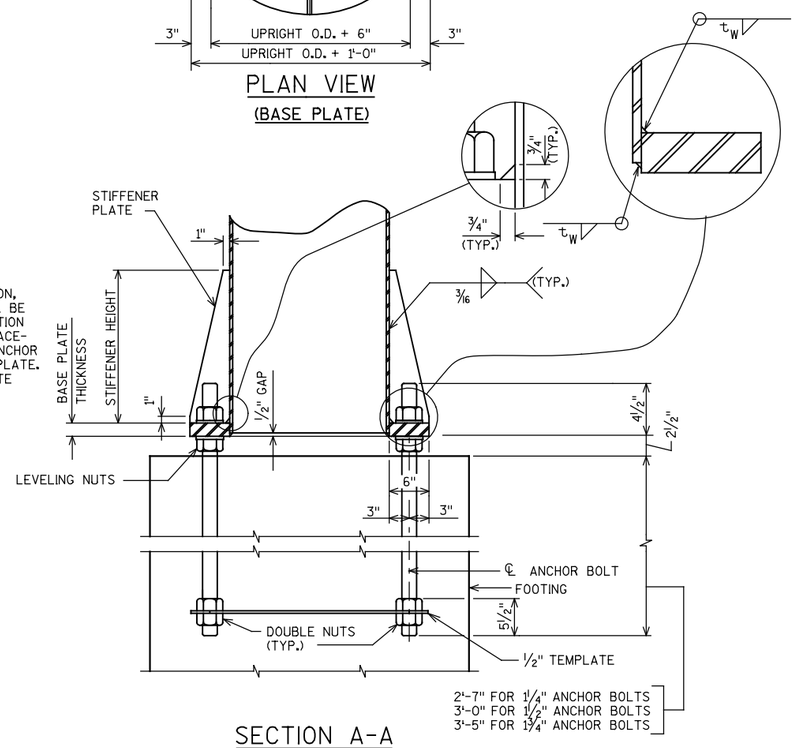
TYPICAL WELDED ALTERNATE

*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

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.)	t_W (IN.)
S-66-6	10.75"X0.5"	1 1/2"	1 1/2"	3/4"	10"	5/16"

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE S-66-6

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SIGN BRIDGE DETAILS

SHEET 4 OF 4

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Notes

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