08-05-2022 LETTING ITEM 032

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAI 270, FAP 310	60-1, 9SG-1	MADISON	37	1
FAI 270 (I-270), FAP 310 (IL ROUTE 255)	ILLINOIS	CONTRACT NO. 76P66		

D-98-073-21

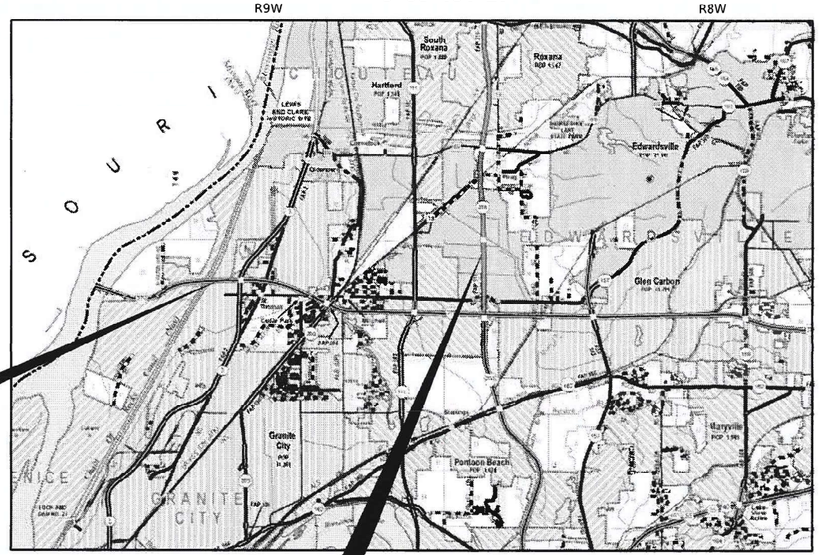
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED HIGHWAY PLANS

FAI 270 (I–270), FAP 310 (IL ROUTE 255)
SECTION 60–1, 9SG–1
PROJECT HSIP–DXAF (431)
SIGN TRUSS AND DMS/CCTV ON
EB I–270 AT MP 1.8
SB FAP 310 AT MP 1.0
MADISON COUNTY

C–98–104–21

INDEX OF SHEETS



FAI 270 DMS
MILEPOST 1.8
LAT: 38.7694591°
LONG: –90.1438175°

FAP 310 DMS
MILEPOST 1.0
LAT: 38.77276°
LONG: –90.044179°

LOCATION OF SECTION INDICATED THUS:–

FUNCTIONAL CLASSIFICATION

I–270 – INTERSTATE – ADT = 49200
P.V. = 82% S.U. = 3% M.U. = 15%

IL RTE 255 – FREEWAY – ADT = 40600
P.V. = 86% S.U. = 3% M.U. = 11%

100' 200' 300' — 1" = 100'
0 10' 20' 30' — 1" = 10'
0 50' 100' — 1" = 50'
0 50' 100' — 1" = 40'
0 50' 100' — 1" = 30'
0 50' 100' — 1" = 20'

FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS
1–800–892–0123
OR 811

PROJECT ENGINEER: BILLIE OWEN
PROJECT MANAGER: MIKE BERG

CONTRACT NO. 76P66

5/6/2022 | 7:15 AM PDT

THOMPSON CIVIL, LLC
906 OLIVE STREET, SUITE 902
ST. LOUIS, MISSOURI 63101
PHONE: (314) 724-3127
Email: lorenzo.thompson@tcivil.com
www.tcivil.com
Corporate License #184.007232-0002
Expires: 4/30/2023

LORENZO THOMPSON
062-049179
LICENSED PROFESSIONAL ENGINEER OF ILLINOIS

DocuSigned by:
Lorenzo Thompson
A7E0181539D445E...
5/6/2022 | 7:15 AM PDT

Signature Date
Lorenzo Thompson, P.E.
License #062-049179
Expires: 11/30/2023

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBMITTED May 13 20 22
REGIONAL ENGINEER
July 1, 2022
ENGINEER OF DESIGN AND ENVIRONMENT
July 1, 2022
DIRECTOR OF HIGHWAYS PROJECT IMPLEMENTATION

PRINTED BY THE AUTHORITY OF THE STATE OF ILLINOIS

HIGHWAY STANDARDS

STANDARD NO.	DESCRIPTION
000001-08	STANDARD SYMBOLS, ABBREVIATIONS & PATTERNS
001001-02	AREAS OF REINFORCEMENT BARS
001006	DECIMAL OF AN INCH & OF A FOOT
630001-12	STEEL PLATE BEAM GUARDRAIL
630301-09	SHOULDER WIDENING FOR TYPE 1 (SPECIAL) GUARDRAIL TERMINALS
631011-10	TRAFFIC BARRIER TERMINAL, TYPE 2
631031-17	TRAFFIC BARRIER TERMINAL, TYPE 6
701101-05	OFF-RD OPERATIONS, MULTILANE 15'(4.5M) TO 24" (600MM) FROM PAVEMENT EDGE
701106-02	OFF-RD OPERATIONS MULTILANE, MORE THAN 15' AWAY
701400-11	APPROACH TO LANE CLOSURE, FREEWAY/EXPRESSWAY
701401-13	LANE CLOSURE, FREEWAY/EXPRESSWAY
701402-12	LANE CLOSURE, FREEWAY/EXPRESSWAY, WITH BARRIER
701406-13	LANE CLOSURE, FREEWAY/EXPRESSWAY, DAY OPERATIONS ONLY
701411-09	LANE CLOSURE, MULTI-LANE, AT FREEWAY ENTRANCE OR EXIT RAMP, FOR SPEEDS> 45 MPH
701428-01	TRAFFIC CONTROL, SETUP & REMOVAL, FREEWAY/EXPRESSWAY
701446-11	TWO LANE CLOSURE, FREEWAY/EXPRESSWAY
701456-05	PARTIAL EXIT RAMP CLOSURE FREEWAY/EXPRESSWAY
701901-08	TRAFFIC CONTROL DEVICES
725001-01	OBJECT & TERMINAL MARKERS
782006-01	GUARDRAIL & BARRIER REFLECTOR MOUNTING DETAILS
814001-03	HANDHOLES
878001-11	CONCRETE FOUNDATION DETAILS
805001-01	ELECTRICAL SERVICE INSTALLATION DETAILS

GENERAL NOTES:

1. UTILITIES KNOWN TO HAVE FACILITIES WITHIN THE PROJECT AREA:
   AMEREN ILLINOIS ELECTRIC — ENABLE - MISSISSIPPI RIVER TRANSMISSION
   SPIRE GAS — AT&T

   THE FOLLOWING FACILITIES ARE NOT MEMBERS OF J.U.L.I.E.:
   IDOT UNDERGROUND ELECTRIC
   IDOT FIBER OPTIC

2. MINIMUM OF SEVENTY -TWO HOURS PRIOR TO ANY PLACEMENT OR RELOCATION OF MAINTENANCE OF TRAFFIC DEVICES, CONTACT ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT) DISTRICT 8 BUREAU OF TRAFFIC. JEFF ABEL (618) 346-3283.

3. NO SURVEY WAS PERFORMED FOR THIS PROJECT AND THE PLANS WERE CREATED USING MICROFILM AND FIELD MEASUREMENTS.

4. THE CONTRACTOR SHALL CONTACT AMEREN'S COREY GOESTENKORS AT (618) 604-9180 PRIOR TO ELECTRICAL SERVICE WORK AT THE I-270 LOCATION, AND CONTACT SCOTT PATTERSON AT (618) 407-7856 PRIOR TO ELECTRICAL SERVICE WORK AT THE IL 255 LOCATION.

COMMITMENTS:

1. NONE

REV. - MS

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THOMPSON CIVIL, LLC
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ST. LOUIS, MISSOURI 63101
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USER NAME = PWICS$	DESIGNED - LT	REVISED -	
	DRAWN - BMM	REVISED -	
PLOT SCALE = 2.0000 ' / in.	CHECKED - LT	REVISED -	
PLOT DATE = 5/13/2022	DATE - 2/25/2022	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

HIGHWAY STANDARDS, GENERAL NOTES, AND COMMITMENTS

SCALE: NTS | SHEET 1 OF 1 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	60-1, 9SG-1	MADISON	37	2
	FAI 270 (I-270), FAP 310 (IL ROUTE 255)	CONTRACT NO. 76P66		
	ILLINOIS	FED. AID PROJECT HSIP-DXAF(431)		

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	CONSTR. CODE 90% FEDERAL / 10% STATE FAI 270 ROADWAY 0044 URBAN	FAP 310 ROADWAY 0044 URBAN
48102100	AGGREGATE WEDGE SHOULDER, TYPE B	TON	15	0	15
* 63000001	STEEL PLATE BEAM GUARDRAIL. TYPE A, 6 FOOT POSTS	FOOT	125	0	125
* 63100045	TRAFFIC BARRIER TERMINAL, TYPE 2	EACH	1	0	1
* 63100085	TRAFFIC BARRIER TERMINAL, TYPE 6	EACH	2	2	0
* 63100167	TRAFFIC BARRIER TERMINAL. TYPE 1 (SPECIAL) TANGENT	EACH	1	0	1
63200310	GUARDRAIL REMOVAL	FOOT	87	87	0
67100100	MOBILIZATION	L SUM	1	0.5	0.5
70100420	TRAFFIC CONTROL PLAN, STANDARD 701411	L SUM	1	0	1
70100700	TRAFFIC CONTROL PLAN, STANDARD 701406	L SUM	1	1	0
70100825	TRAFFIC CONTROL PLAN, STANDARD 701456	L SUM	1	0	1
70103815	TRAFFIC CONTROL SURVEILLANCE	CAL DA	60	30	30
70200100	NIGHTIME WORK ZONE LIGHTING	L SUM	1	0.5	0.5
* 72501000	TERMINAL MARKER - DIRECT APPLIED	EACH	1	0	1
73300300	OVERHEAD SIGN STRUCTURE - SPAN, TYPE III-A (5'-0" X 7'-0")	FOOT	65	65	0
73301805	OVERHEAD SIGN STRUCTURE - BUTTERFLY, TYPE III-F-A	FOOT	38	0	38
73301810	OVERHEAD SIGN STRUCTURE WALKWAY, TYPE A	FOOT	32	32	0
73301900	OVERHEAD SIGN STRUCTURE WALKWAY - BUTTERFLY, TYPE A	FOOT	7.5	0	7.5
* 73400200	DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	46.9	37.5	9.4
78200005	GUARDRAIL REFLECTORS, TYPE A	EACH	4	0	4
80300100	LOCATE UNDERGROUND CABLE	FOOT	500	250	250
80400100	ELECTRIC SERVICE INSTALLATION	EACH	2	1	1

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	CONSTR. CODE 90% FEDERAL / 10% STATE FAI 270 ROADWAY 0044 URBAN	FAP 310 ROADWAY 0044 URBAN
81028360	UNDERGROUND CONDUIT, PVC, 2 1/2" DIA.	FOOT	5858	522	5336
81028390	UNDERGROUND CONDUIT, PVC, 4" DIA.	FOOT	377	0	377
81101005	CONDUIT ATTACHED TO STRUCTURE, 4" DIA., PVC COATED GALVANIZED STEEL	FOOT	113	0	113
81400100	HANDHOLE	EACH	13	2	11
81702130	ELECTRIC CABLE IN CONDUIT, 600V (XLP-TYPE USE) 1/C NO.6	FOOT	900	600	300
86300300	CONTROLLER CABINET TYPE III	EACH	2	1	1
87300925	ELECTRIC CABLE IN CONDUIT, TRACER, NO.14 1C	FOOT	6160	70	6090
87800200	CONCRETE FOUNDATION, TYPE D	FOOT	6	3	3
87900200	DRILL EXISTING HANDHOLE	EACH	4	1	3
X0322227	CLOSED CIRCUIT TELEVISION CAMERA SYSTEM	EACH	2	1	1
X0325077	FIBER OPTIC UTILITY MARKER	EACH	13	1	12
X0325086	CONDUIT ATTACHED TO STRUCTURE, 4" DIA., FIBERGLASS BULLET RESISTANT, MULTI-DUCT	FOOT	139	0	139
X0325482	REMOVE EXISTING ITS EQUIPMENT	EACH	1	1	0
X0325485	TRUSS MOUNTED LED DYNAMIC MESSAGE SIGN	EACH	2	1	1
X0326812	CAT 5 ETHERNET CABLE	FOOT	105	60	45
X0327606	FIBER OPTIC SPLICE-LATERAL	EACH	1	1	0
X7010206	TRAFFIC CONTROL AND PROTECTION, STANDARD 701401 (SPECIAL)	EACH	4	4	0
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1	1	0
X8710050	FIBER OPTIC ETHERNET DROP AND REPEAT SWITCH	EACH	4	2	2
X8710075	FIBER OPTIC CABLE IN CONDUIT, 72 COND. S.M. F.O.	FOOT	6160	70	6090
X9700021	MOBILE BARRIER TRAILER	L SUM	1	1	0

* SPECIALTY ITEM

REV. - MS

HORNER SHIFRIN WWW. HORNERSHIFRIN .COM	USER NAME = PWICSS	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SUMMARY OF QUANTITIES
		DRAWN -	REVISED -		
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	PLOT DATE = 5/6/2022	DATE -	REVISED -		SCALE: NTS SHEET 1 OF 1 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	60-1,9SG-1	MADISON	37	3
FAI 270/FAP 310		CONTRACT NO. 76P66		
	ILLINOIS	FED. AID PROJECT		

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N

0 50' 100'
SCALE IN FEET 1" = 50'

WATERWORKS RD

FAI 270 (I-270) WB

FAI 270 (I-270) EB

PROPOSED TRAFFIC BARRIER TERMINAL, TYPE 6

EX IDOT LIGHTING (TYP)

EX IDOT ITS FIBER

REMOVE EX GUARDRAIL 87'

REMOVE EX ITS EQUIPMENT

PROPOSED CONTROLLER CABINET TYPE III

PROPOSED TRAFFIC BARRIER TERMINAL, TYPE 6

PROPOSED TRUSS MOUNTED LED DMS

PROPOSED CCTV CAMERA SYSTEM

3'x3' BOX CULVERT

24" RCP

18" RCP

890+00

885+00

880+00

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THOMPSON CIVIL, LLC 906 OLIVE STREET, SUITE 902 ST. LOUIS, MISSOURI 63101 PHONE: (314) 724-3127 Email: lorenzo.thompson@tcivil.com www.tcivil.com	USER NAME = PWICS$	DESIGNED - LT	REVISED -
		DRAWN - BMM	REVISED -
	PLOT SCALE = 2.0000 ' / in.	CHECKED - LT	REVISED -
	PLOT DATE = 5/6/2022	DATE - 2/25/2022	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PLAN SHEET
FAI 270 (I–270)

SCALE: 1" = 50' | SHEET 1 OF 2 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	60-1, 9SG-1	MADISON	37	4
FAI 270 (I-270), FAP 310 (IL ROUTE 255)		CONTRACT NO. 76P66		
	ILLINOIS	FED. AID PROJECT HSIP-DXAF(431)		

N

0 50' 100'
SCALE IN FEET 1" = 50'

EX AERIAL POWER LINE
EX FENCE
PROPOSED DMS
PROPOSED DMS CABINET
PROPOSED CCTV CAMERA
PROPOSED STEEL PLATE BEAM GUARDRAIL, TYPE A, 6' POSTS 125'
PROPOSED 4' AGG SHOULDER
PROPOSED TRAFFIC BARRIER TERMINAL TYPE 2
PROPOSED TRAFFIC BARRIER TERMINAL TYPE 1 (SPECIAL) TANGENT
EX 10'W SHOULDER
EX EOP
VAR.
12'
12'
150'
DMS
FO
E
FAP 310 (IL ROUTE 255) SB
FAP 310 (IL ROUTE 255) NB
EX IDOT LIGHTING (TYP)

1667 1668 1669 1670+00 1671 1672 1673 1674 1675+00 1676 1677 1678 1679

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THOMPSON CIVIL, LLC
906 OLIVE STREET, SUITE 902
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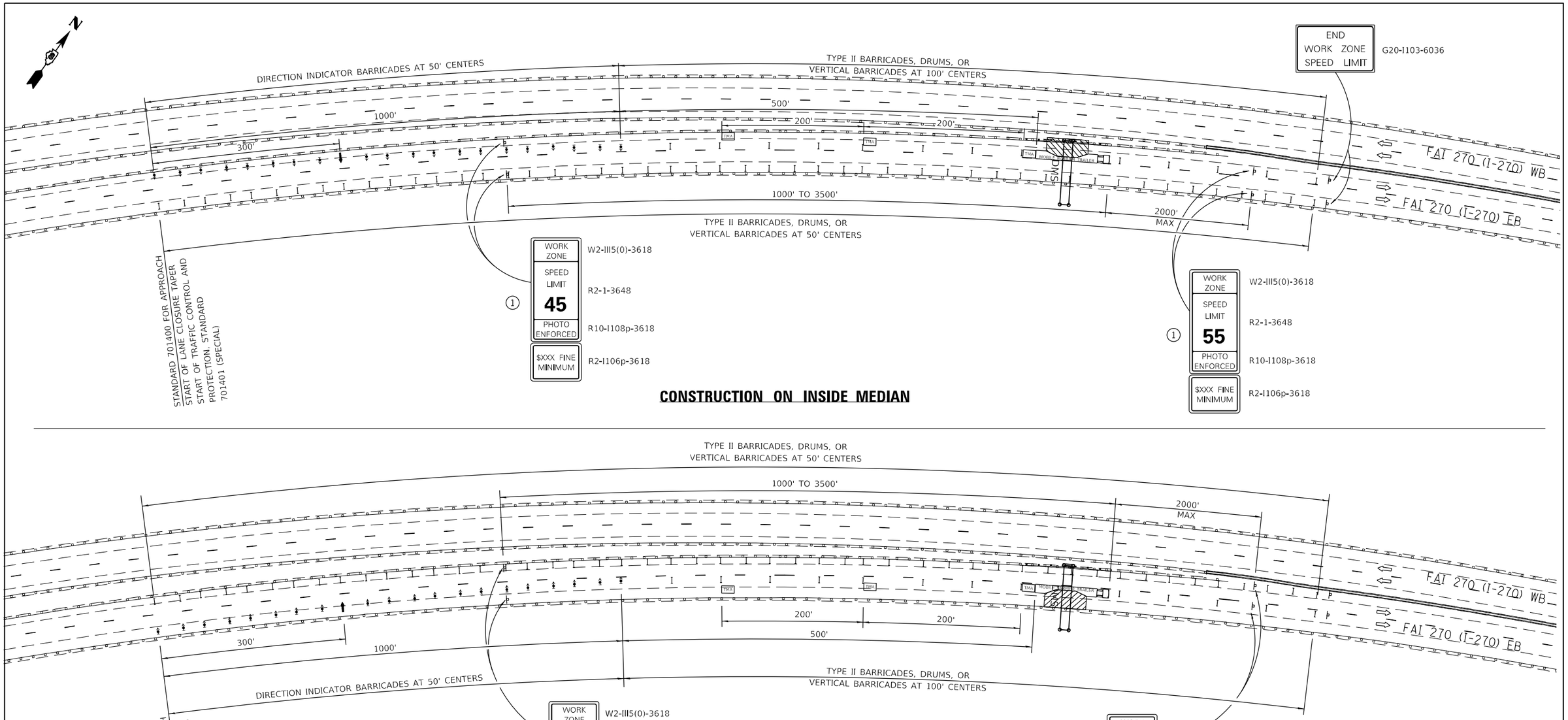
PLOT DATE = 5/6/2022	DATE - 2/25/2022	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PLAN SHEET
FAP 310 (IL ROUTE 255)

SCALE: 1" = 50' | SHEET 2 OF 2 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	60-1, 9SG-1	MADISON	37	5
	FAI 270 (I-270), FAP 310 (IL ROUTE 255)	CONTRACT NO. 76P66		
	ILLINOIS	FED. AID PROJECT HSIP-DXAF-(431)		



CONSTRUCTION ON INSIDE MEDIAN

CONSTRUCTION ON OUTSIDE SHOULDER

LEGEND

- ARROW BOARD
- WORK AREA
- TMA — TRUCK/TRAILER MOUNTED ATTENUATOR
- SIGN
- DIRECTION INDICATOR BARRICADE WITH STEADY BURN MONODIRECTIONAL LIGHT
- TYPE II BARRICADE, DRUM, OR VERTICAL BARRICADE
- MOBILE BARRIER TRAILER — MOBILE BARRIER TRAILER

(1) WORK ZONE SPEED LIMIT SIGNS SHALL BE MOVED AS NECESSARY TO MAINTAIN THE REQUIRED SPACING BETWEEN THE SIGNS AND THE WORKERS IN EACH SEPARATE WORK ACTIVITY. WORK ZONE SPEED LIMIT 55 PHOTO ENFORCED SIGN SHALL BE OMITTED WHEN THE WORK AREA DICTATES PLACEMENT OF THE SIGN ARRAY WITHIN 500' OF THE END WORK ZONE SPEED LIMIT SIGN.

GENERAL NOTES

THIS DETAIL IS USED WHERE AT ANY TIME ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES WILL ENCROACH ON THE LANE ADJACENT TO THE SHOULDER, OR ON THE SHOULDER WITHIN 2' OF THE EDGE OF PAVEMENT.

THIS DETAIL MUST BE USED IN COMBINATION WITH STANDARD 701400.

A CHECK BARRICADE SHALL BE PLACED IN THE MIDDLE OF THE CLOSED LANE AND AT THE SHOULDER AT 1000' CENTERS.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SHOWN.

NOT TO SCALE

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USER NAME = PWICS$	DESIGNED - LT	REVISED -	
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PLOT SCALE = 2.0000 ' / in.	CHECKED - LT	REVISED -	
PLOT DATE = 5/6/2022	DATE - 2/25/2022	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC
FAI 270 LOCATION

SCALE: NTS | SHEET 1 OF 1 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	60-1, 9SG-1	MADISON	37	6
	FAI 270 (I-270), FAP 310 (IL ROUTE 255)	CONTRACT NO. 76P66		
	ILLINOIS	FED. AID PROJECT HSIP-DXAF(431)		

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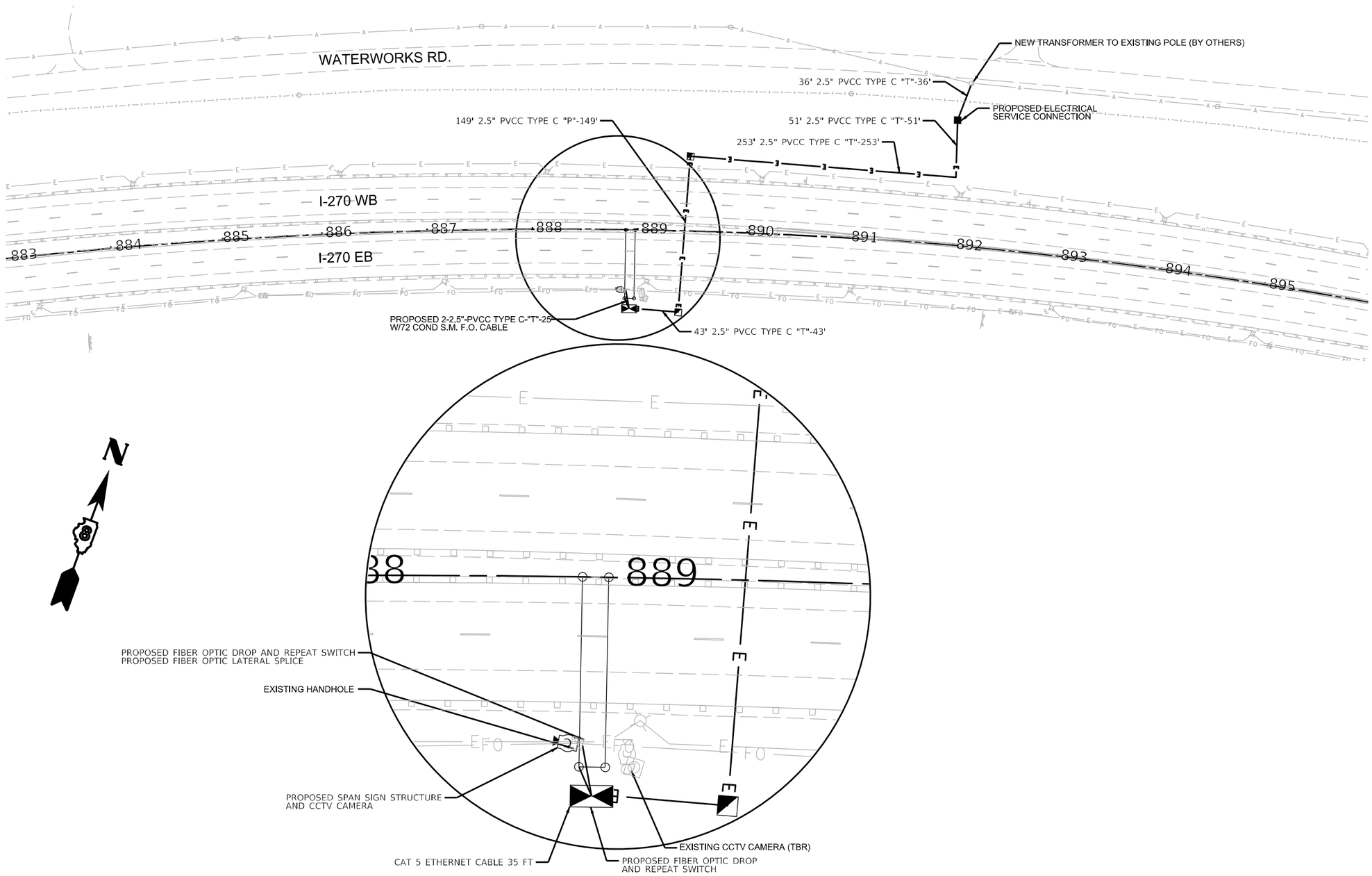

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2IM Group, LLC
118 South Clinton St.
Suite 350
Chicago, IL 60661

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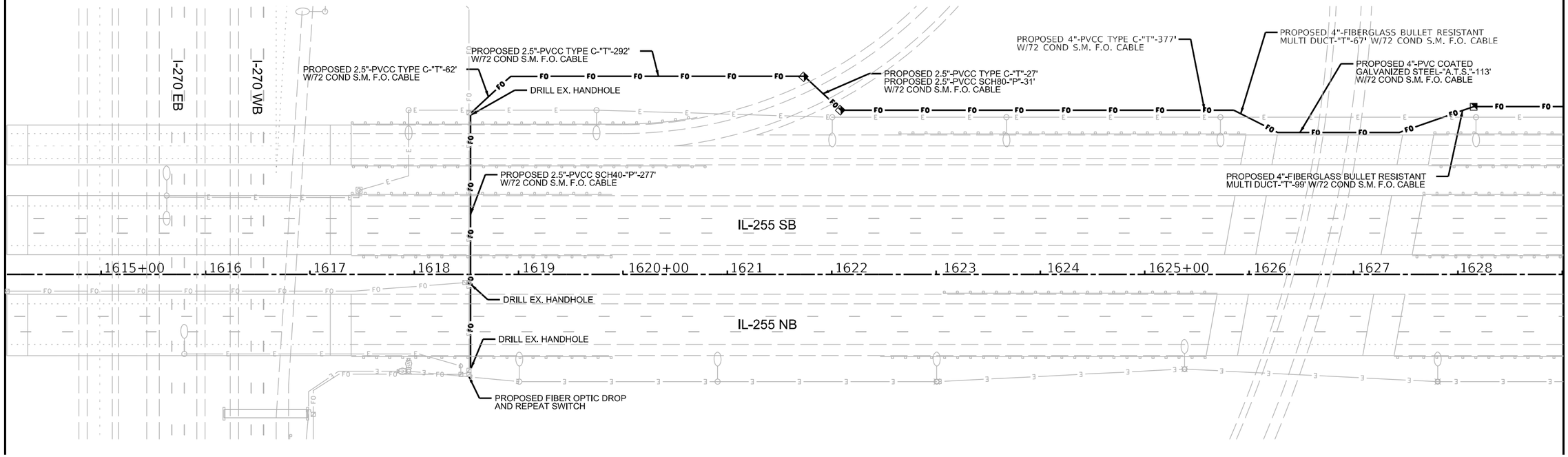
	DRAWN - A.SHABAN	REVISED -
PLOT SCALE = 2.0000 ' / in.	CHECKED - V.BOBADE	REVISED -
PLOT DATE = 5/3/2022	DATE - 02/28/2022	REVISED -

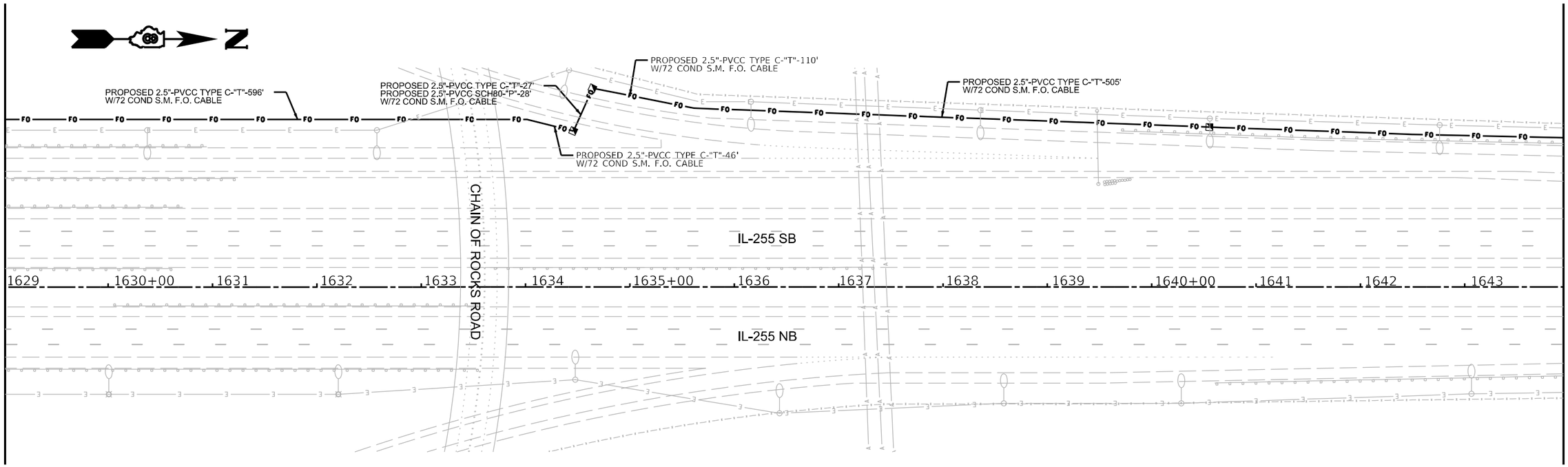
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

I-270 ITS
PLAN

SCALE: 50' / IN | SHEET OF SHEETS | STA. 883+00 | TO STA. 895+00

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
#	60-1, 9SG-1	MADISON	37	7
#FAI 270/FAP 310		CONTRACT NO. 76P86		
	ILLINOIS FED. AID PROJECT			





MODEL: $MODELNAME$
FILE NAME:

2IM Group, LLC
118 South Clinton St.
Suite 350
Chicago, IL 60661

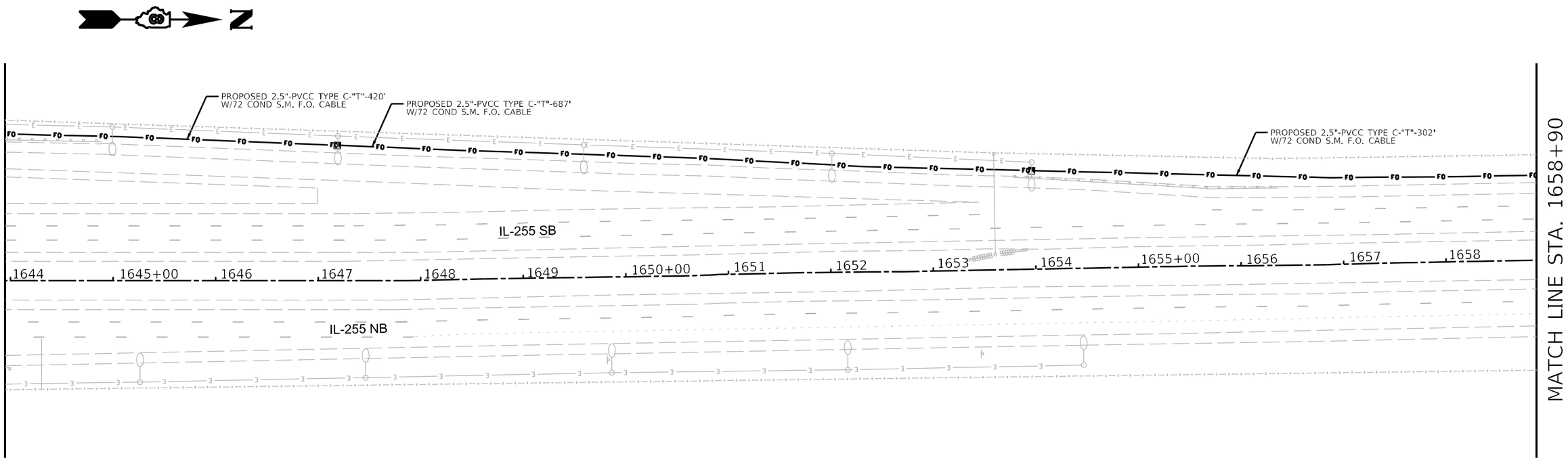
USER NAME = ashaban	DESIGNED - V.BOBADE	REVISED -
	DRAWN - A.SHABAN	REVISED -
PLOT SCALE = 2.0000 ' / In.	CHECKED - V.BOBADE	REVISED -
PLOT DATE = 5/4/2022	DATE - 02/28/2022	REVISED -

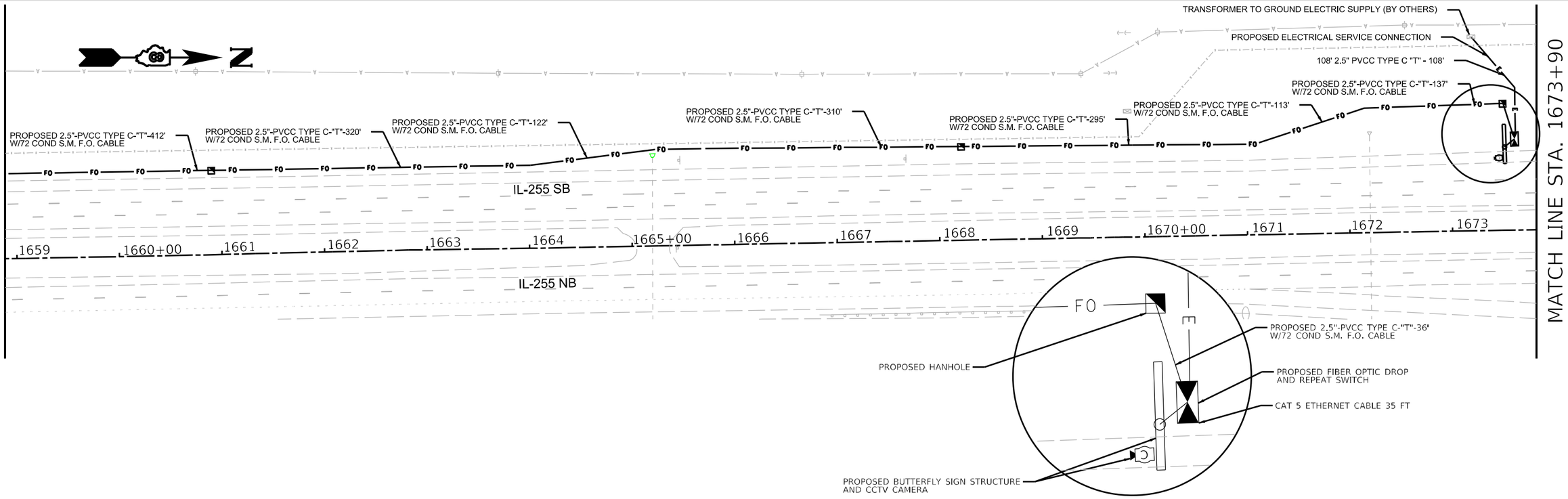
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

IL-255 ITS
PLAN

SCALE: 50' / IN | SHEET OF SHEETS | STA. 1614+18 | TO STA. 1643+95

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
#	60-1, 9SG-1	MADISON	37	8
#FAI 270/FAP 310		CONTRACT NO. 76P66		
	ILLINOIS FED. AID PROJECT			





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FILE NAME:

2IM. 2IM Group, LLC
118 South Clinton St.
Suite 350
Chicago, IL 60661

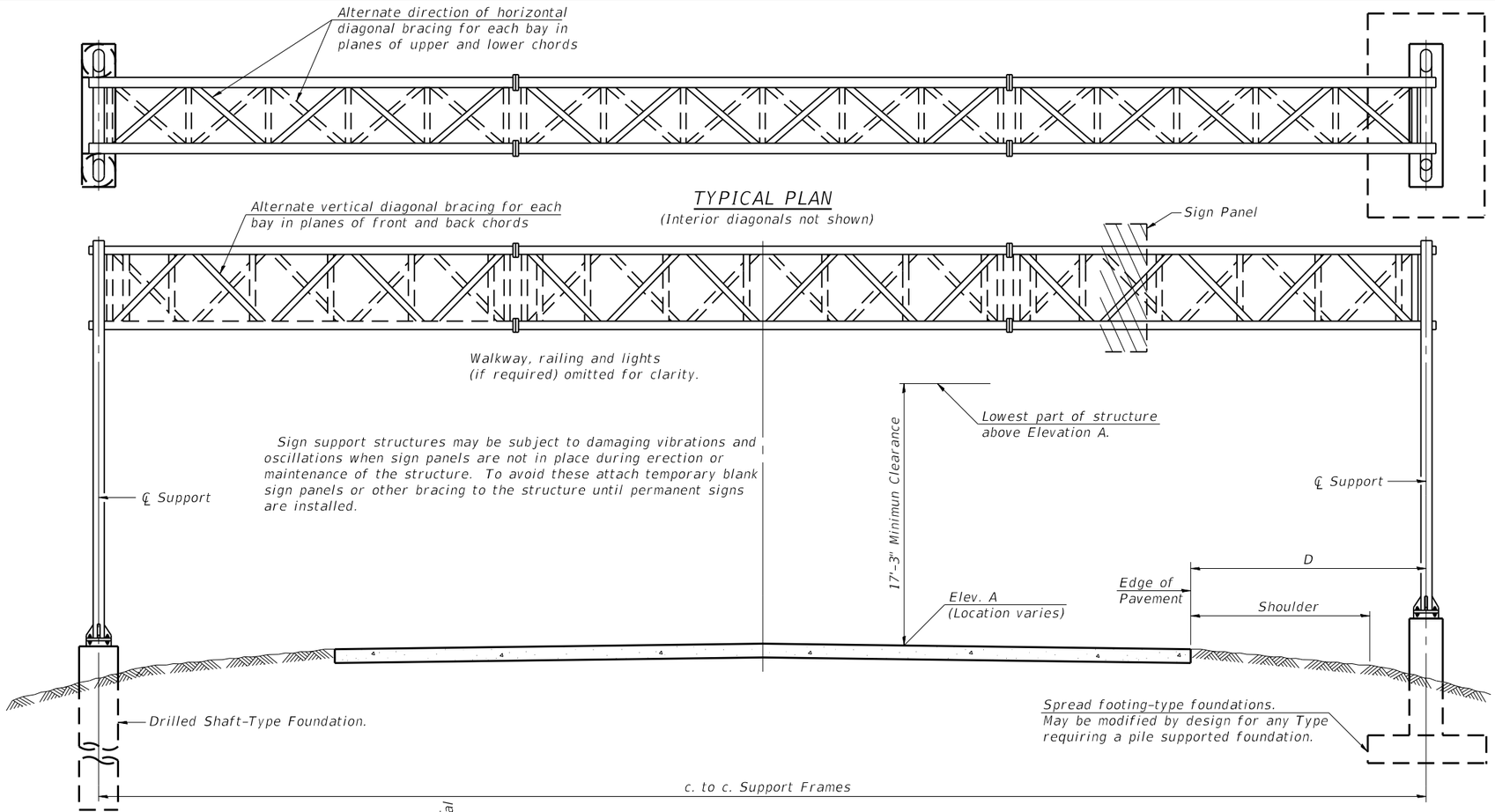
USER NAME = ashaban	DESIGNED - V.BOBADE	REVISED -	
	DRAWN - A.SHABAN	REVISED -	
PLOT SCALE = 2.0000 ' / In.	CHECKED - V.BOBADE	REVISED -	
PLOT DATE = 5/3/2022	DATE - 02/28/2022	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

IL-255 ITS
PLAN

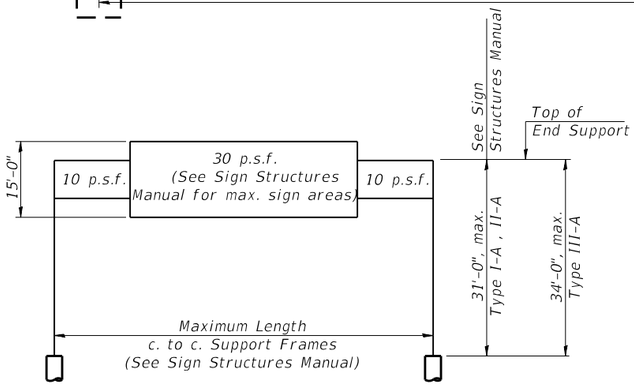
SCALE: 50' / IN | SHEET OF SHEETS | STA. 1643+95 | TO STA. 1658+90

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
#	60-1, 9SG-1	MADISON	37	9
#FAI 270/FAP 310		CONTRACT NO. 76P66		
	ILLINOIS FED. AID PROJECT			



TYPICAL PLAN

(Interior diagonals not shown)



DESIGN WIND LOADING DIAGRAM

Parameters shown are basis for I.D.O.T. Standards and Sign Manual Tables. Installations not within dimensional limits shown require special analysis for all components.

TYPICAL ELEVATION

(Looking at Face of Signs**)

Elev. A = Elevation at point of minimum clearance to sign, walkway support or truss.

Structure Number	Station	Design Truss Type	c. to c. Supports	Elev. A	Dim. D	Height of Tallest Sign	Total Sign Area
8S060I270R1.5	1889+00.00	III-A	65'-0"	447.18	32'-7¾"	9'-0"	279

**Looking upstation for structures with signs both sides.

* If M270 Gr. 50W (M222) steel is proposed, chemistry for plate to be used shall first be approved by the Engineer as suitable for galvanizing and welding.

GENERAL NOTES

DESIGN: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. ("AASHTO Specifications")

CONSTRUCTION: Current (at time of letting) Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, Supplemental Specifications and Special Provisions. ("Standard Specifications")

LOADING: 90 M.P.H. WIND VELOCITY

WALKWAY LOADING: Dead load plus 500 lbs. concentrated live load.

DESIGN STRESSES:
Field Units
f'c = 3,500 p.s.i.
fy = 60,000 p.s.i. (reinforcement)

WELDING: All welds to be continuous unless otherwise shown. All welding to be done in accordance with current AWS D1.1 and D1.2 Structural Welding Codes (Steel and Aluminum) and the Standard Specificiations.

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B or A500 Grade B or C. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53. All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

FASTENERS FOR ALUMINUM TRUSSES: All bolts noted as "high strength" must satisfy the requirements of AASHTO M164 (ASTM A325), or approved alternate, and must have matching lock nuts. Threaded studs for splices (if Members interfere) must satisfy the requirements of ASTM A449, ASTM A193, Grade B7, or approved alternate, and must have matching lock nuts. Bolts and lock nuts not required to be high strength must satisfy the requirements of ASTM A307. All bolts and lock nuts must be hot dip galvanized per AASHTO M232. The lock nuts must have nylon or steel inserts. A stainless steel flat washer conforming to ASTM A240 Type 302 or 304, is required under both head and nut or under both nuts where threaded studs are used. High strength bolt installation shall conform to Article 505.04 (f) (2)d of the IDOT Standard Specifications for Road and Bridge Construction. Rotational capacity ("ROCAP") testing of bolts will not be required.

U-BOLTS AND EYEBOLTS: U-Bolts and Eyebolts must be produced from ASTM A276 Type 304, 304L, 316 or 316L, Condition A, cold finished stainless steel, or an equivalent material acceptable to the Engineer. All nuts for U-Bolts and Eyebolts must be lock nuts equivalent to ASTM A307 with nylon or steel inserts and hot dip galvanized per AASHTO M232. A stainless steel flat washer conforming to ASTM A240, Type 302 or 304, is required under each U-Bolt and Eyebolt lock nut.

GALVANIZING: All Steel Grating, Plates, Shapes and Pipe shall be Hot Dip Galvanized after fabrication in accordance with AASHTO M111. Painting is not permitted.

ANCHOR RODS: Shall conform to ASTM F1554 Gr. 105.

CONCRETE SURFACES: All concrete surfaces above an elevation 6" below the lowest final ground line at each foundation shall be cleaned and coated with Concrete Sealer in accordance with the Standard Specifications.

REINFORCEMENT BARS: Reinforcement Bars designated (E) shall be epoxy coated in accordance with the Standard Specifications.

FOUNDATIONS: The contract unit price for Concrete Foundations and Drilled Shaft Concrete Foundations shall include reinforcement bars complete in place.

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
OVERHEAD SIGN STRUCTURE SPAN TYPE I-A	Foot	0
OVERHEAD SIGN STRUCTURE SPAN TYPE II-A	Foot	0
OVERHEAD SIGN STRUCTURE SPAN TYPE III-A	Foot	65
OVERHEAD SIGN STRUCTURE WALKWAY TYPE A	Foot	32
CONCRETE FOUNDATIONS	Cu. Yds.	0
DRILLED SHAFT CONCRETE FOUNDATIONS	Cu. Yds.	37.5

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OVERHEAD SIGN STRUCTURES – GENERAL PLAN & ELEVATION – ALUMINUM TRUSS & STEEL SUPPORTS

SHEET 1 OF 11 SHEETS

F.A.I./P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	10
		CONTRACT NO. 76P66		
	ILLINOIS	FED. AID PROJECT		

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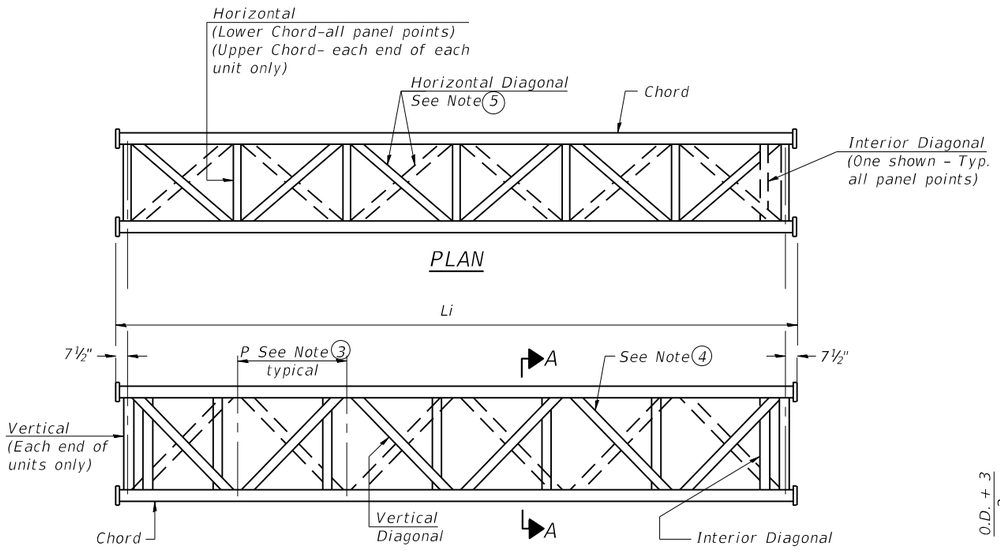
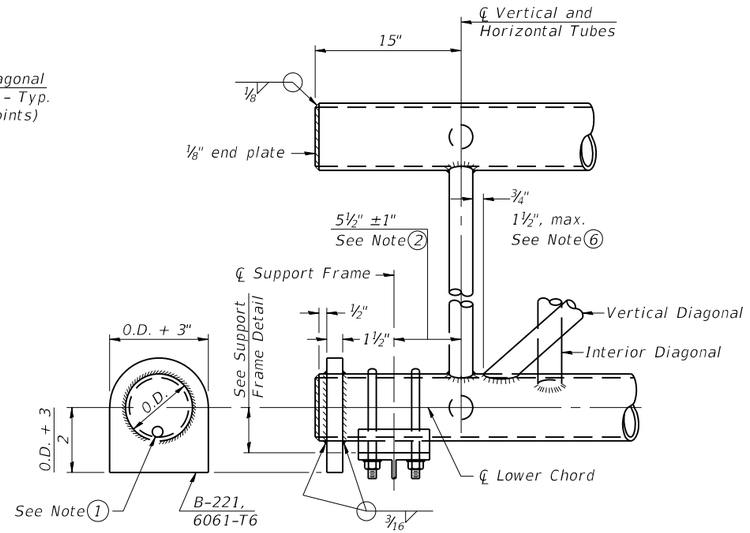
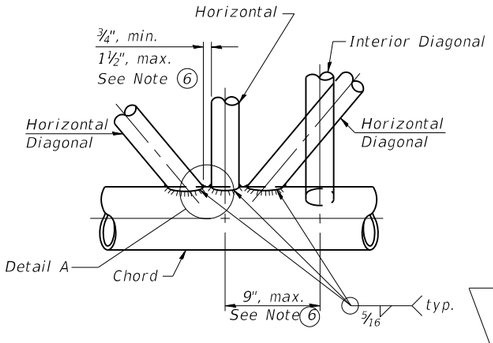


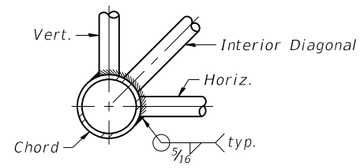
ELEVATION
TYPICAL INTERIOR UNIT

Even number of panels/interior unit required.

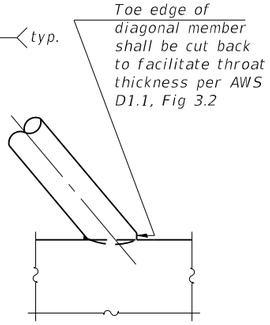


SUPPORT END DETAIL FOR EXTERIOR UNIT

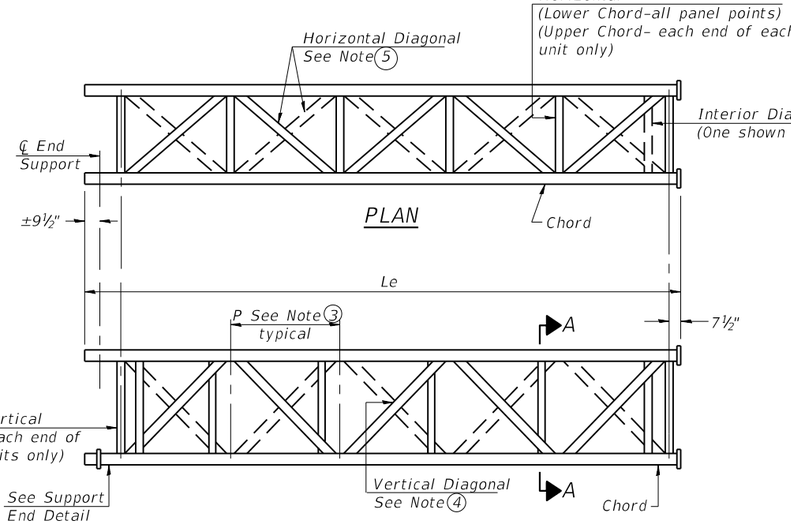




TYPICAL JOINT DETAILS

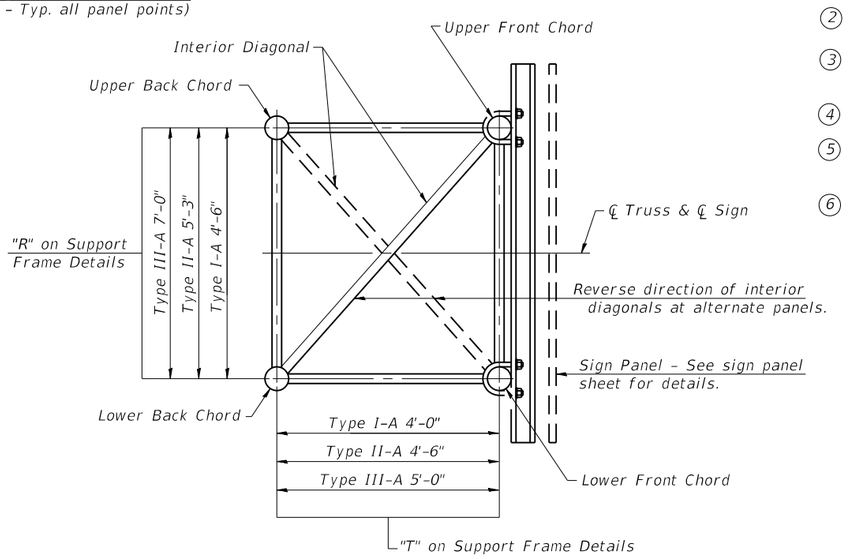


DETAIL A



ELEVATION
TYPICAL EXTERIOR UNIT

Even or odd number of panels/exterior units allowed.



SECTION A-L

1. *Contractor may alternatively use standard aluminum drive-fit cap to close end. ½" Ø drain hole in end plate/drive-fit cap. (Typ. at ends of all chords)*
2. *5½" end dimension may vary by ±1" to provide uniform panel spacing (P).*
3. *Panel spacing (P) shall be uniform for entire truss and between 4'-0" and 5'-0" for Type I-A or 4'-0" and 5'-6" for Types II-A and III-A.*
4. *Vertical Diagonals in front and back face shall alternate.*
5. *Hidden lines show wind bracing alternates direction between planes of top and bottom chords.*
6. *All diagonals shall be detailed for minimum offset from the panel point based on the following: Offset shall be such as to provide a ¾" minimum to 1½" maximum clearance between any diagonal and any horizontal or vertical member, and to provide clearance for U-bolt connections of signs or walkway brackets.*

OS-A-2

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OVERHEAD SIGN STRUCTURES – ALUMINUM TRUSS
DETAILS FOR TRUSS TYPES, I–A, II–A, AND III–A

SHEET 2 OF 11 SHEETS

F.AI/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	11
		CONTRACT NO. 76P66		
	ILLINOIS FED. AID PROJECT			

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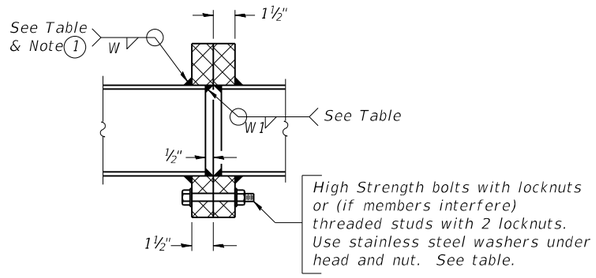
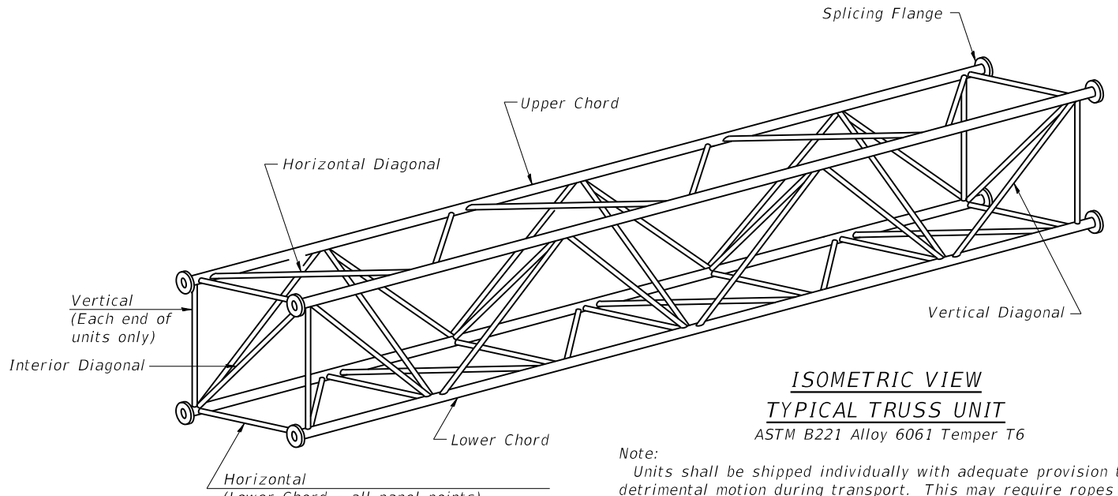
TRUSS UNIT TABLE

Structure Number	Station	Design Truss Type	Exterior Units (2)			Interior Unit				Upper & Lower Chord		Verticals; Horizontals; Vertical,Horizontal, and Interior Diagonals		Camber at Midspan	Splicing Flange					
			No. Panels per Unit	Unit Lgth.(Le)	Panel Lgth.(P)	No. Req'd.	No. Panels per Unit	Unit Lgth.(Li)	Panel Lgth.(P)	O.D.	Wall	O.D.	Wall		Bolts		Weld Sizes		A	B
															No./Splice	Dia.	W	W1		
8S0601270R1.5	1889+00.00	III-A	7	32'-6"	4'-4½"	-	-	-	-	9"	½"	3½"	5/16"	¾"	8	1¼"	9/16"	7/16"	13½"	17"



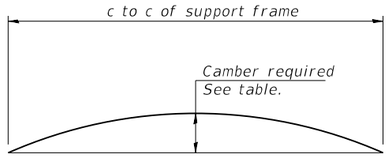
SECTION B-B

(1) Splicing Flanges shall be attached to each truss unit with the truss shop assembled to camber shown. Truss units shall be in proper alignment and flange surfaces shall be shop bolted into full contact before welding. Sufficient external welds or tacks shall be made to secure flanges until remaining welds are made after disassembly. Adjacent flanges shall be "match marked" to insure proper field assembly.



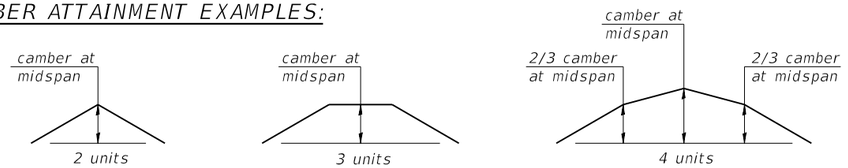
ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

Note:
Units shall be shipped individually with adequate provision to prevent detrimental motion during transport. This may require ropes between horizontals and diagonals or energy dissipating (elastic) ties to the vehicle. The Contractor is responsible for maintaining the configuration and protection of the units.

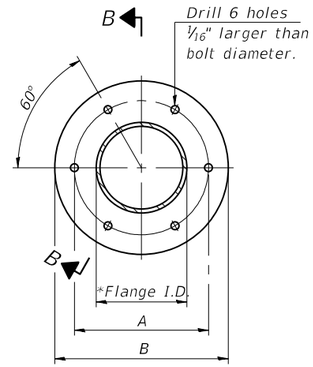


CAMBER DIAGRAM
Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

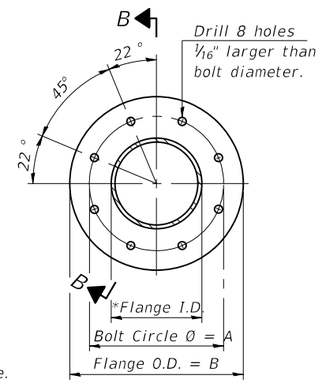
CAMBER ATTAINMENT EXAMPLES:



Camber shown is for fabrication only, measured with truss fully supported. (No-load condition)



TRUSS TYPES I-A, II-A, & III-A



TRUSS TYPES II-A & III-A

SPLICING FLANGES
ASTM B221, Alloy 6061-T6
or ASTM B209, Alloy 6061-T651
*To fit O.D. of Chord with maximum gap of 1/16".

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OVERHEAD SIGN STRUCTURES – ALUMINUM TRUSS DETAILS
DETAILS FOR TRUSS TYPES, I-A, II-A, AND III-A
SHEET 3 OF 11 SHEETS

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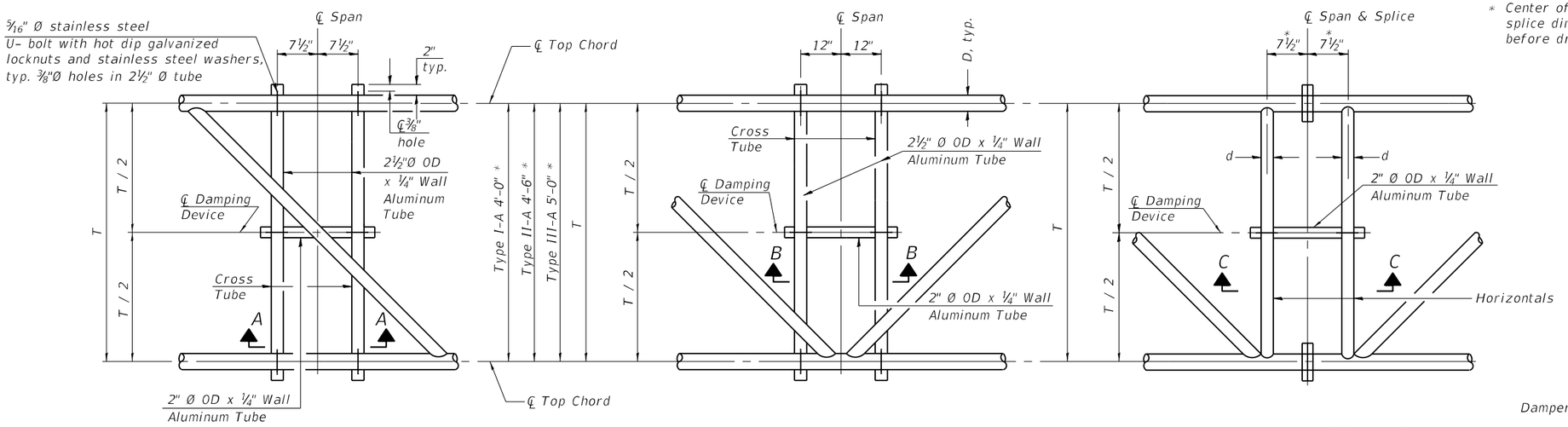
F.AJ/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	12
		CONTRACT NO. 76P66		
	ILLINOIS FED. AID PROJECT			

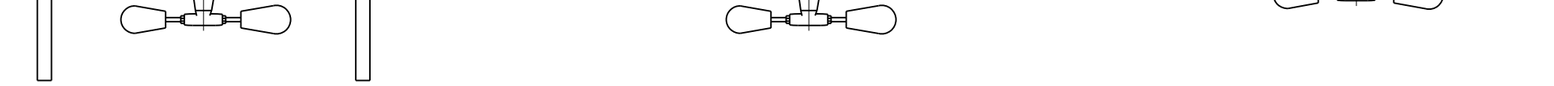


* *Center of horizontal to center of splice dimension may vary. Verify before drilling holes in mounting tube.*

PLAN DETAIL "A"
℄ Span between Panel Points

PLAN DETAIL "B"
℄ Span at Panel Point

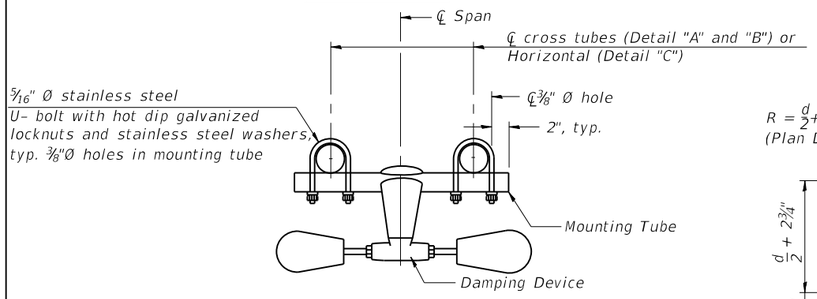
PLAN DETAIL "C"
℄ Span at ℄ Chord Splice



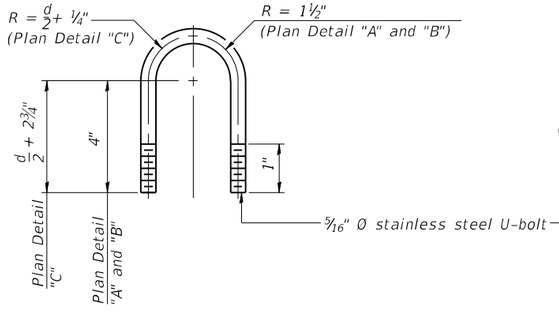
SECTION A-A

SECTION B-B

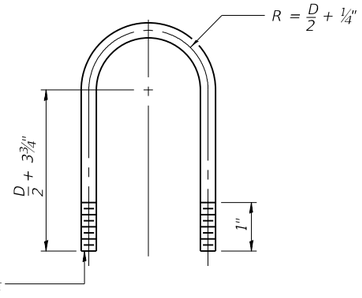
SECTION C-C



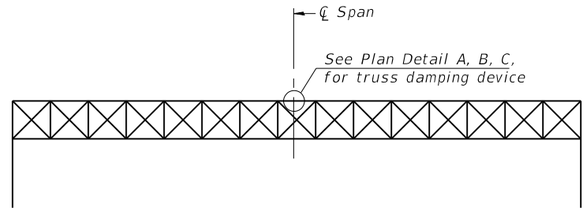
TRUSS DAMPING DEVICE CONNECTION DETAIL
(Typical)



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL
(Typical)



TOP CHORD TO CROSS TUBE U-BOLT DETAIL
(Typical - Detail "A" and "B")



ELEVATION
Aluminum Overhead Sign Truss

NOTES

Damper: One damper per truss. (31 lbs. minimum Stockbridge-Type Aluminum - 29" minimum between ends of weights) Cost included in Overhead Sign Structure...

Materials: Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6. Cost included in Overhead Sign Structure...

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OVERHEAD SIGN STRUCTURE
DAMPING DEVICE
SHEET 4 OF 11 SHEETS

F.AI/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	13
		CONTRACT NO. 76P66		
	ILLINOIS FED. AID PROJECT			

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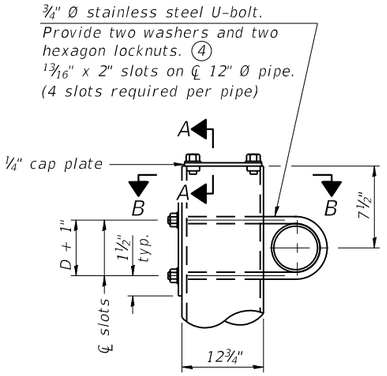
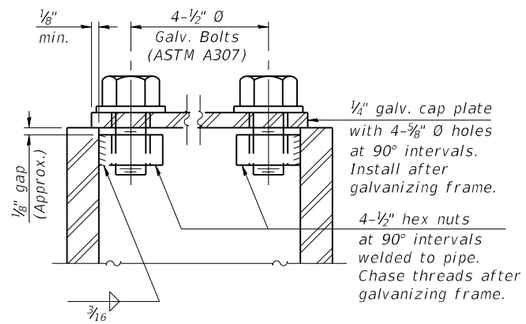
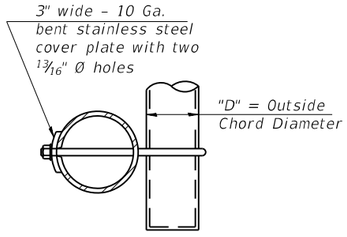


DETAIL A

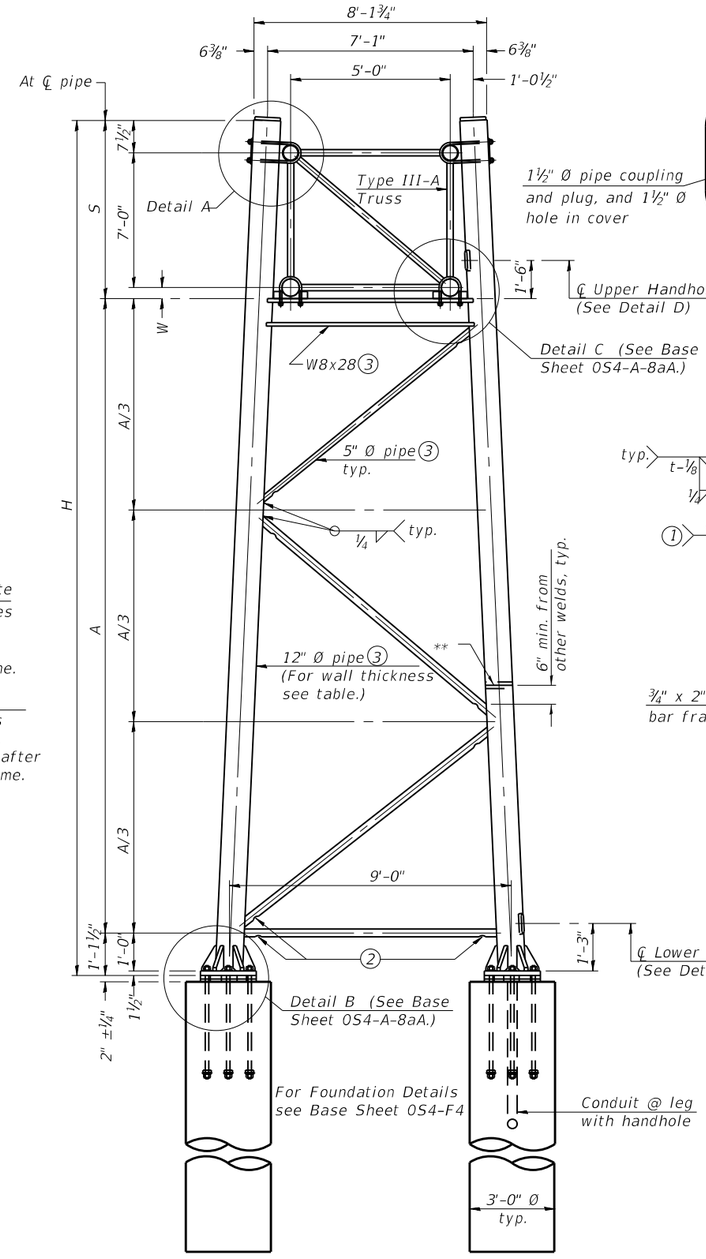


SECTION A-A

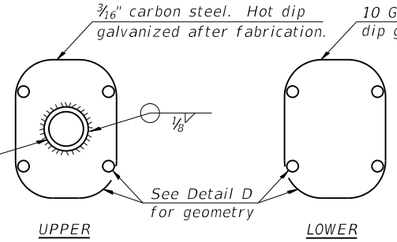
As an alternate to bolts, may use galvanized drive-fit caps installed after galvanizing frame.



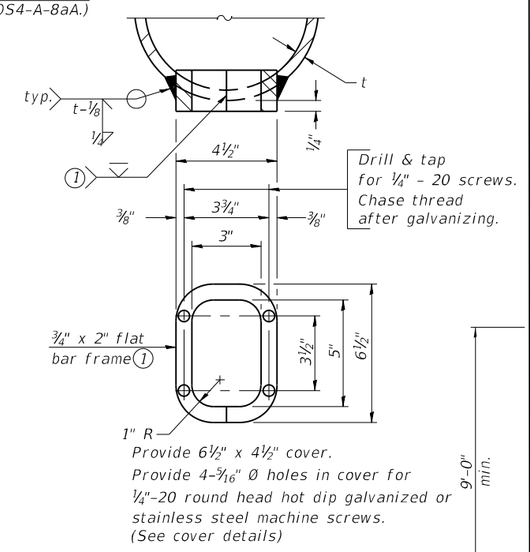
SECTION B-B



SIDE ELEVATION

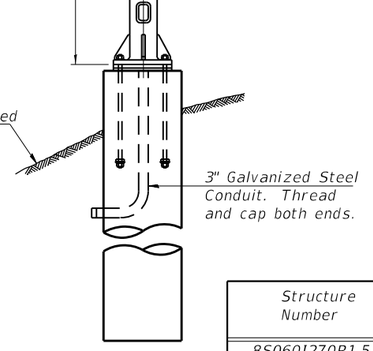


HANDHOLE COVERS



DETAIL D

Dimensions		
Truss Chord Nominal Dia.	W	S
7"	4¾"	8'-0¼"
8½"	5½"	8'-1"
9"	5¾"	8'-1¼"



END ELEVATION

Support Design Loads: See Base Sheet 0S-A-1 for design and loading criteria.

Load combinations checked include deadload plus:
a) 100% wind normal to sign, 20% parallel to sign
b) 60% wind normal to sign, 30% parallel to sign

(1) *In lieu of fabricated handhole frame as shown, may cut from 2" plate (rolling direction vertical). All cut faces to be ground to ANSI Roughness of 500 µin or less.*

(2) *Galvanizing vent holes of adequate size shall be provided on underside at each end of bracing pipes. Alternately, holes may be provided in wall of pipe column. All vent holes shall be drilled and de-burred, typ.*

(3) *Steel pipe, plate, carbon steel handhole covers and rolled sections shall be hot dip galvanized after fabrication. Painting is not permitted. See Base Sheet 0S-A-1.*

(4) *See General Notes for fasteners.*

(5) *Dimensions shown are based on selection criteria in the Sign Structures Manual. Nonstandard applications must have dimensions verified or amended as appropriate.*

(6) *"H" based on 15'-0" or actual sign height, whichever is greater.*

* *For dynamic message sign installations, provide upper and lower handholes in both legs of each support frame.*

TRUSS SUPPORT DETAILS

(12" Ø Pipe-Type III-A Truss

** *One butt welded joint is allowed only on one post per support frame. If used, weld procedure must be pre-approved by Engineer and joint shall receive 100% RT or UT (tension criteria) at Contractor's expense.*

Structure Number	Station	Support		Pipe Wall Thickness	H (6)	A
		Left	Right			
8S060I270R1.5	1889+00.00	X		0.5(XS)	26'-0 3/16"	16'-9 7/16"
8S060I270R1.5	1889+00.00		X	0.5(XS)	30'-3⅞"	21'-1⅛"

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OVERHEAD SIGN STRUCTURES - SUPPORT FRAME FOR TYPE III-A ALUMINUM TRUSS

SHEET 5 OF 11 SHEETS

F.AI/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	14
		CONTRACT NO. 76P66		
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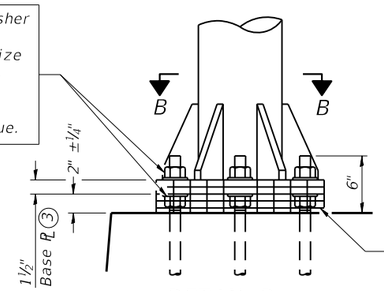
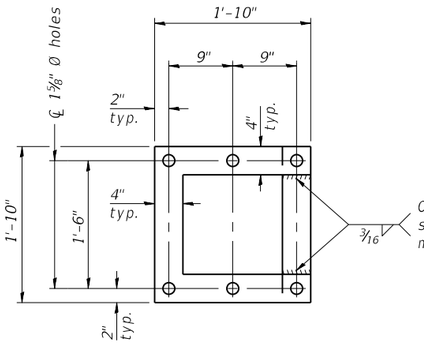
Hexagon locknut and washer (top), leveling nut and washer (bottom). Galvanize per AASHTO M232. Nuts shall each be tightened against base plate with 200 lb.-ft. minimum torque.



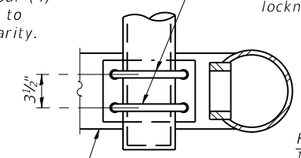
DETAIL B

Ribs shall be cut to fit slope of pipe.

Stainless Steel Standard Grade Wire Cloth, 3" wide, ¼" maximum opening with a minimum wire diameter of AWG. No. 16 with a minimum 2" lap. Secure to base plate after erection with ¾" stainless steel banding.

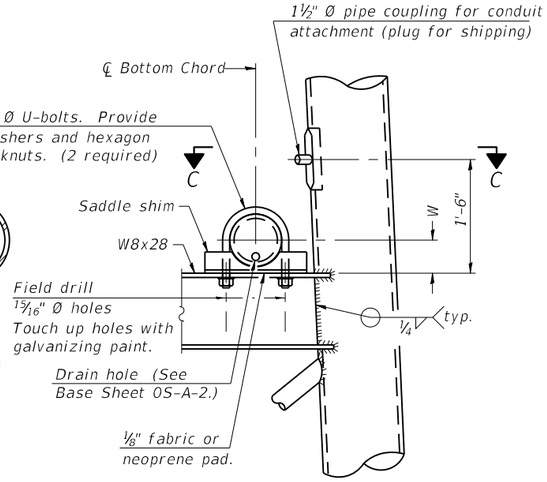


POSITIONING PLATE(S)

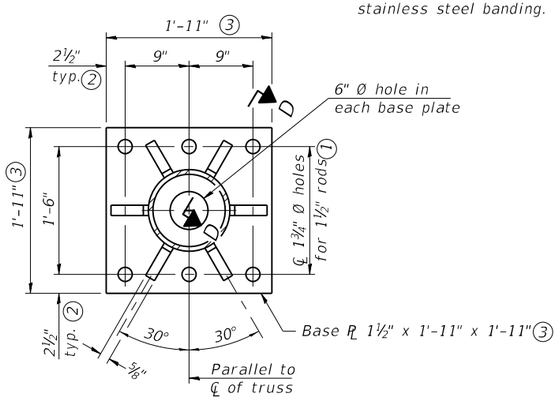


SECTION C-C

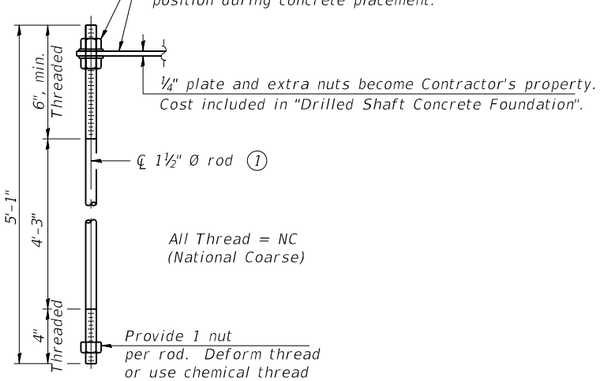
(Handhole cover not shown)



DETAIL C

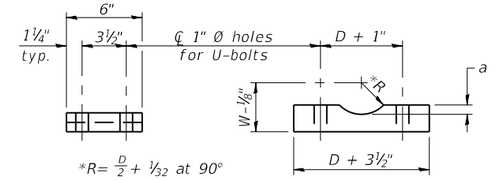


SECTION B-B



ANCHOR ROD DETAIL

Anchor rods shall conform to ASTM F1554 Grade 105 Galvanize upper 12" minimum per AASHTO M232. No welding shall be permitted on rods.



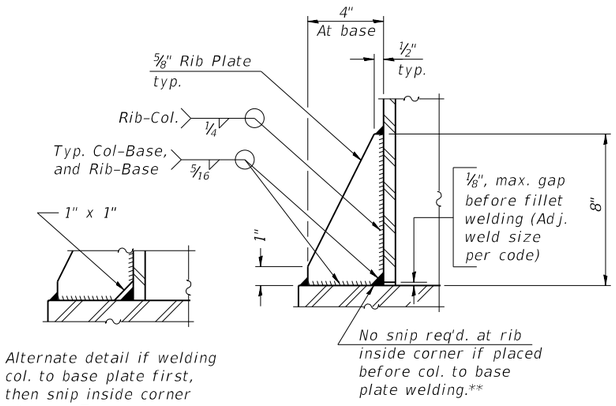
*R= $\frac{D}{2}$ + 1/32 at 90°

D = Outside Diameter of Chord.
For W, see Base Sheet OS-A-6.

Truss Chord Nominal Dia.	a
7"	1"
8½"	1¼"
9"	1⅜"

SADDLE SHIM DETAIL

ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)



** Alternate detail if welding col. to base plate first, then snip inside corner of ribs. Terminate weld on rib ¼" from snip.

SECTION D-D

TYPE III-A TRUSS
12" Ø PIPE SUPPORT FRAME DETAILS

Notes:
For Type III-A Truss spans greater than 150 ft, and up to 160 ft.:

① 1¾" Ø rod, 2" Ø holes

② 2¾" edge distance

③ Base PL 1⅝" x 1'-11½" x 1'-11½"

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HORNER SHIFRIN WWW. HORNERSHIFRIN .COM	USER NAME =	DESIGNED - PMG	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	OVERHEAD SIGN STRUCTURES SUPPORT FRAME FOR TYPE III-A ALUMINUM TRUSS
		CHECKED - SSM	REVISED -		
	PLOT SCALE =	DRAWN - PMG	REVISED -		SHEET 6 OF 11 SHEETS
	PLOT DATE =	CHECKED - SSM	REVISED -		

F.AI/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	15
		CONTRACT NO. 76P66		
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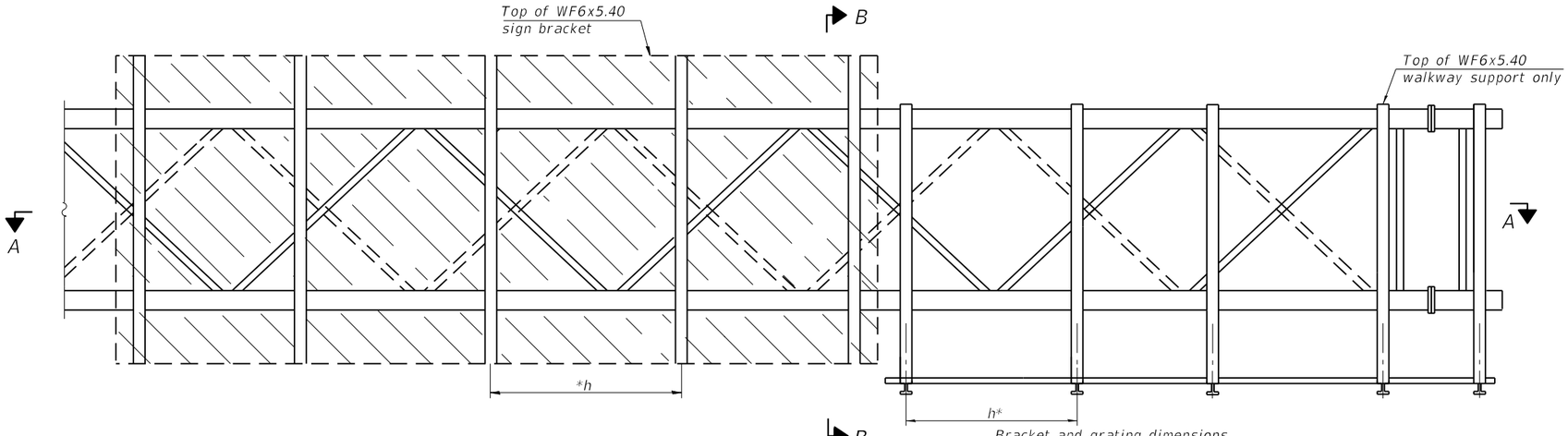
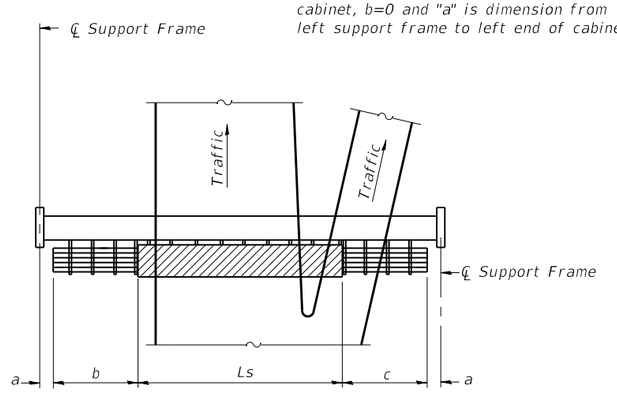


TYPICAL FRONT ELEVATION

With handrail omitted for clarity.

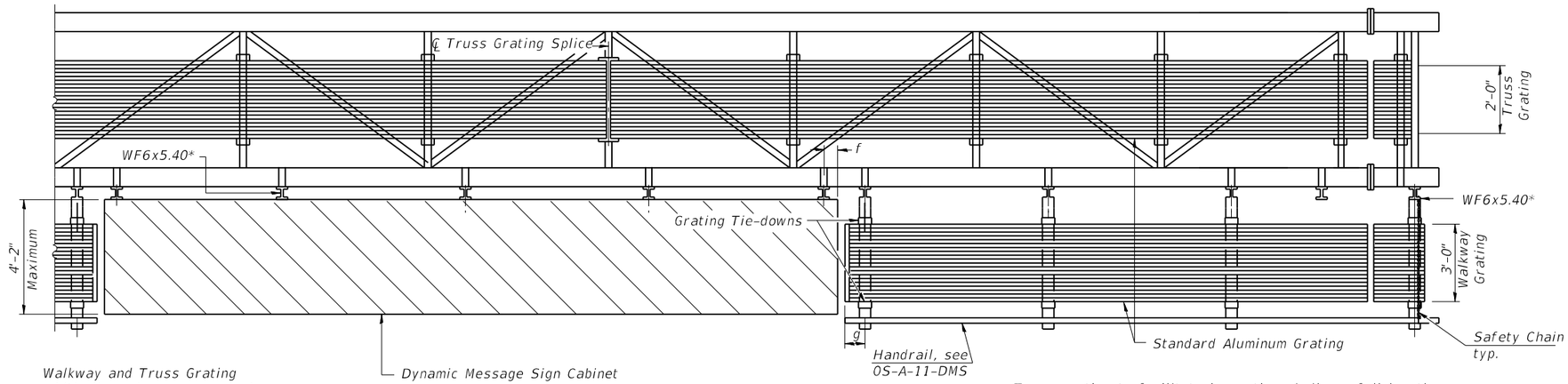
Bracket and grating dimensions are nominal and will vary based on actual DMS cabinet dimensions plus manufacturer's mounting devices.



PLAN
WALKWAY AND HANDRAIL SKETCH

(Road plan beneath truss varies)

① If walkway is required left of the DMS cabinet, a=1'-6" and b=walkway lengths. If walkway is not required left of the DMS cabinet, b=0 and "a" is dimension from left support frame to left end of cabinet.



Walkway and Truss Grating width dimensions are nominal and may vary ±½" based on available standard widths.

Truss grating to facilitate inspection shall run full length (center to center of support frames) ±12" on overhead trusses. Cost of truss grating is included in "Overhead Sign Structure".

BRACKET TABLE

WF6x5.40 ASTM B308, Alloy 6061-T6		
Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

SECTION A-A

Handrail and walkway shall span a minimum of three brackets between splices and/or gap joints.
Place all sign and walkway brackets as close to panel points as practical.
Grating and handrail splices placed as needed.

Structure Number	Station	a	b	c	Ls	Walkway Grating and Handrail Lengths
8S060I270R1.5	1889+00.00	1'-0"	16'-0"	16'-0"	31'-0"	32'-0"

Notes:
* Space walkway brackets WF6x5.40 for efficiency and within limits shown:

f = 12" maximum, 4" minimum (End of sign to ℄ of nearest bracket)
g = 12" maximum, 4" minimum (End of walkway grating to ℄ of nearest support bracket)
h = 6'-0" maximum (℄ to ℄ sign and/or walkway support brackets, WF6x5.40

Maximum DMS weight = 5000 lbs. 4'-2" maximum cabinet depth includes depth of cabinet plus connection to WF6x5.40.
For Section B-B and Grating Splice Details, see Base Sheet OS-A-10-DMS.
For Handrail Splice Details, see Base Sheet OS-A-11-DMS.

OS-A-9-DMS 2-17-2017

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OVERHEAD SIGN STRUCTURES
ALTERNATE ALUMINUM WALKWAY DETAILS FOR DMS
SHEET 7 OF 11 SHEETS

F.AI/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	16
		CONTRACT NO. 76P66		
		ILLINOIS FED. AID PROJECT		

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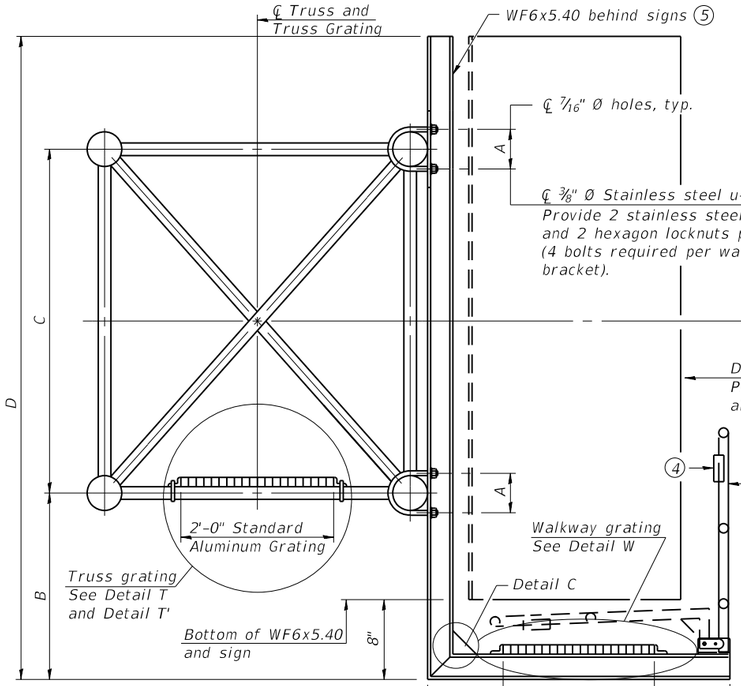
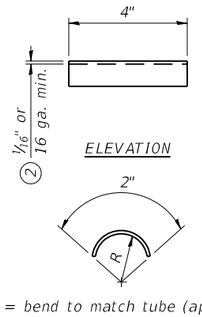
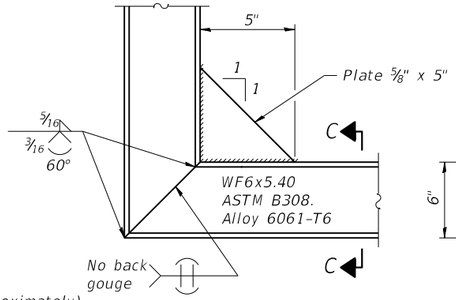


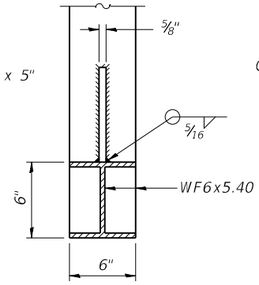
SECTION B-B



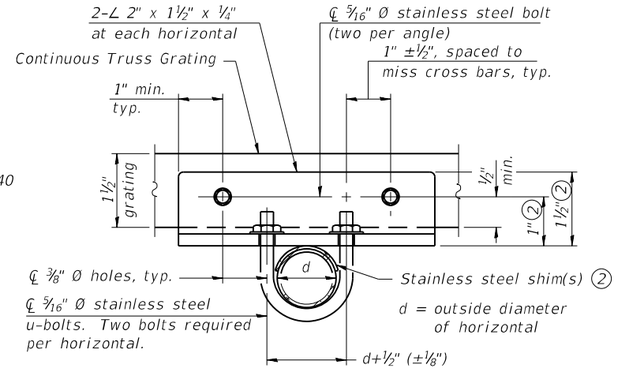
SHIM DETAIL



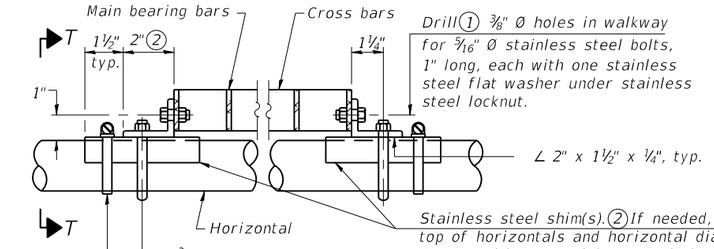
DETAIL C



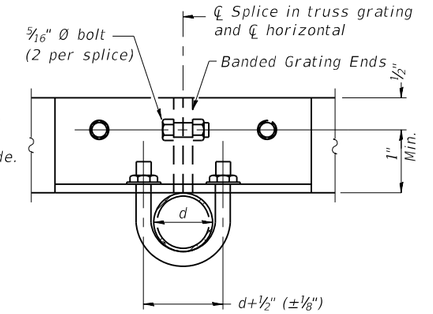
SECTION C-C



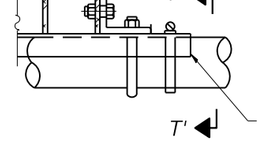
SECTION T-T



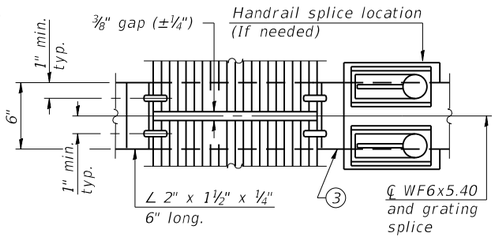
DETAIL T
(Continuous Truss grating)



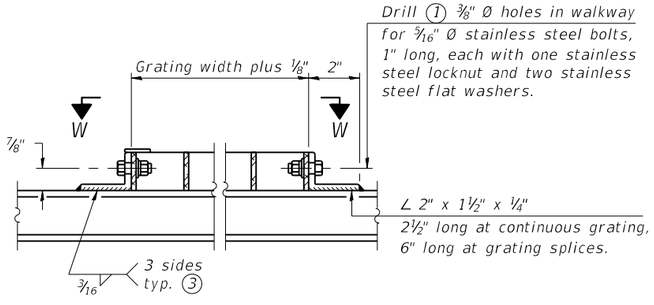
SECTION T'-T'



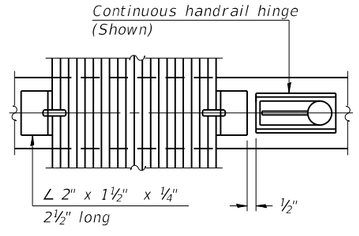
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



(AT WALKWAY GRATING SPLICE)



DETAIL W
(Walkway grating)



(CONTINUOUS WALKWAY GRATING)

SECTION W-W

* Bracket and grating dimensions are nominal and will vary based on actual DMS cabinet dimensions plus manufacturer's mounting devices.

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1½" on 1 3/16" centers and conform to ASTM B211 Alloy 6061-T6.

Cross bars shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

Aluminum Grating with modified "t" sections for main bearing bars shall meet the following requirements:

Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 in.³ per bar, a depth of 1½", spaced on 1 3/16" centers.

Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.

Structure Number	Station	A	⑥ B	C	⑥ D
8S060I270R1.5	1889+00.00	9 3/8"	1'-8"	7'-0"	9'-8"

① Drilling holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.

② Stainless steel shims shall be placed as shown in Detail T if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided by angles. Thicker shims may be used subject to shims performing properly.

③ If Handrail Joint present, weld angle to WF(A-N)4 and ¼" extension bars. (See Base Sheet 0S-A-11.)

④ PL ⅛" x ½" x 2" welded to handrail posts to protect locations that contact grating.

⑤ Cabinet manufacturer must design and supply hardware for connection of cabinet to WF6's. Bolts must be stainless steel or hot dip galvanized high strength per IDOT specifications.

⑥ Based on actual height of tallest sign given on 0S-A-1.

0S-A-10-DMS 2-17-2017

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OVERHEAD SIGN STRUCTURES
ALTERNATE ALUMINUM WALKWAY DETAILS FOR DMS
SHEET 8 OF 11 SHEETS

F.AI/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	17
		CONTRACT NO. 76P66		
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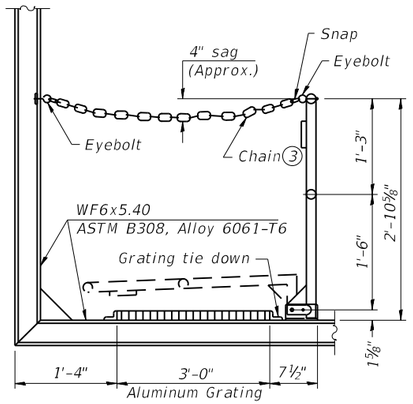
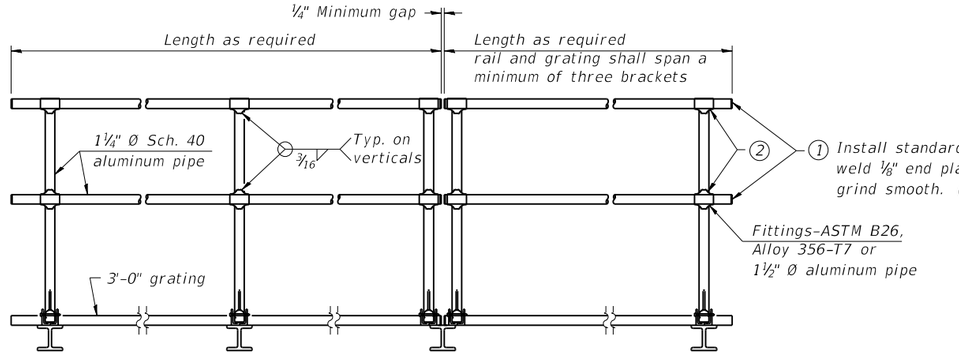
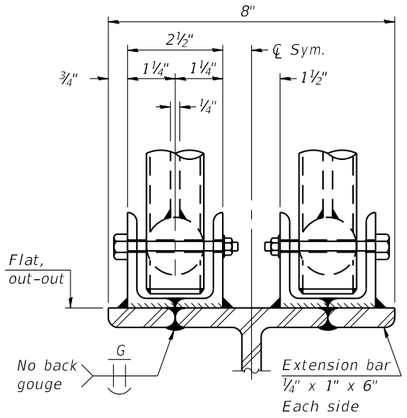


SIDE ELEVATION

(Showing safety chain w/o sign)



FRONT ELEVATION



ELEVATION AT HANDRAIL JOINT (4)

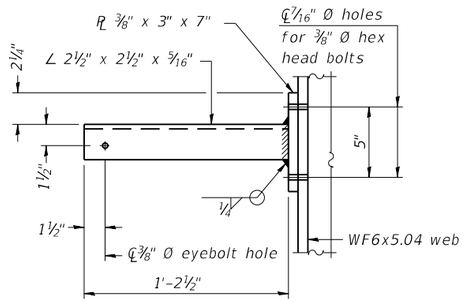
HANDRAIL DETAILS

Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.

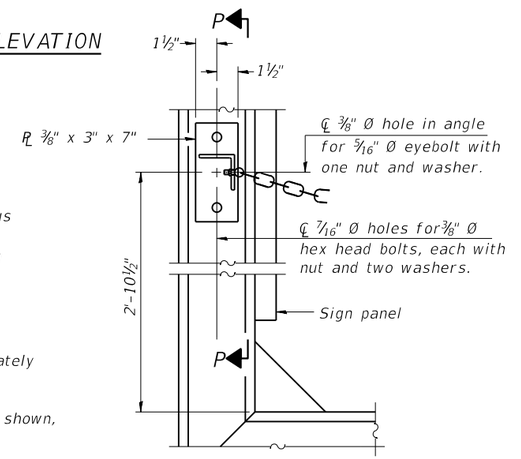
(2) Horizontal handrail member shall be continuous thru fitting. Provide 7/16" Ø hole in fitting for ⅜" Ø bolt. Field drill 7/16" Ø hole in horizontal rail member. Provide washer and locknut for bolt. (Use ⅜" eyebolts in 7/16" Ø holes on top rail at ends only.)

(3) ⅜" type 304L stainless steel chain, approximately 12 links per foot.

(4) Extrusions may be used in lieu of the details shown, with approval of the Engineer.

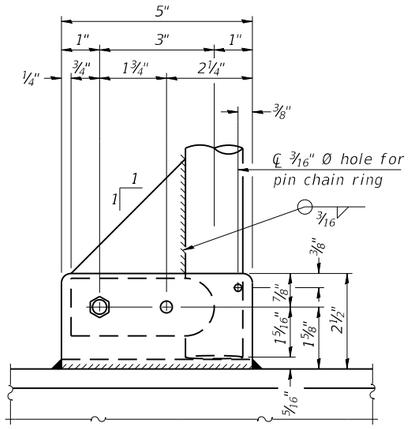


SECTION P-P

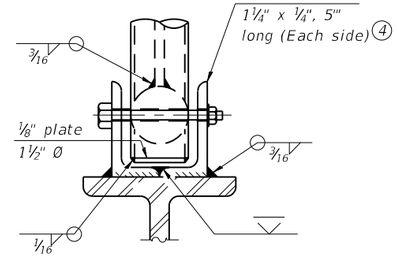


ALTERNATE SAFETY CHAIN ATTACHMENT

(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"

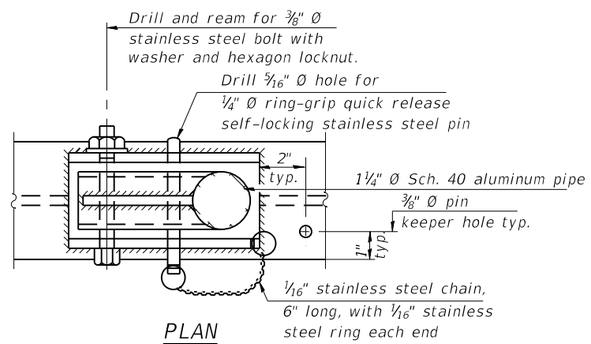


SIDE ELEVATION

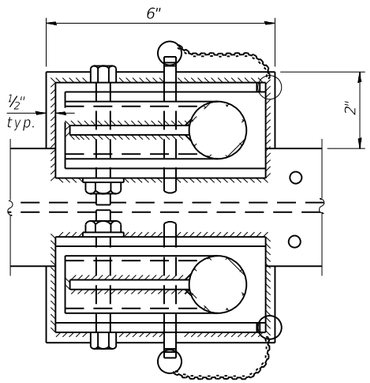


FRONT ELEVATION

See "ELEVATION" at right for dimensions.

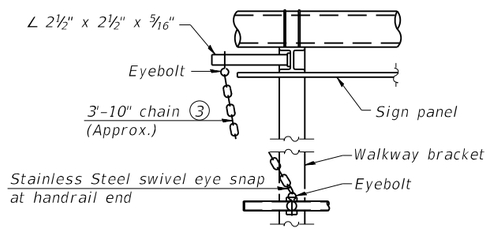


PLAN
DETAIL E HANDRAIL HINGE



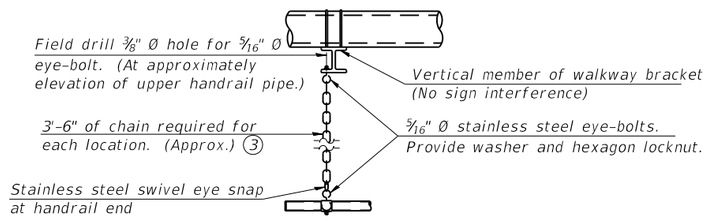
PLAN AT HANDRAIL JOINT

Details not shown same as "PLAN"



ALTERNATE SAFETY CHAIN ATTACHMENT

Details not shown similar to "Safety Chain" Details
(Walkway omitted for clarity)



SAFETY CHAIN

One required for each end of each walkway.

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OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS
SHEET 9 OF 11 SHEETS

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F.A.I./P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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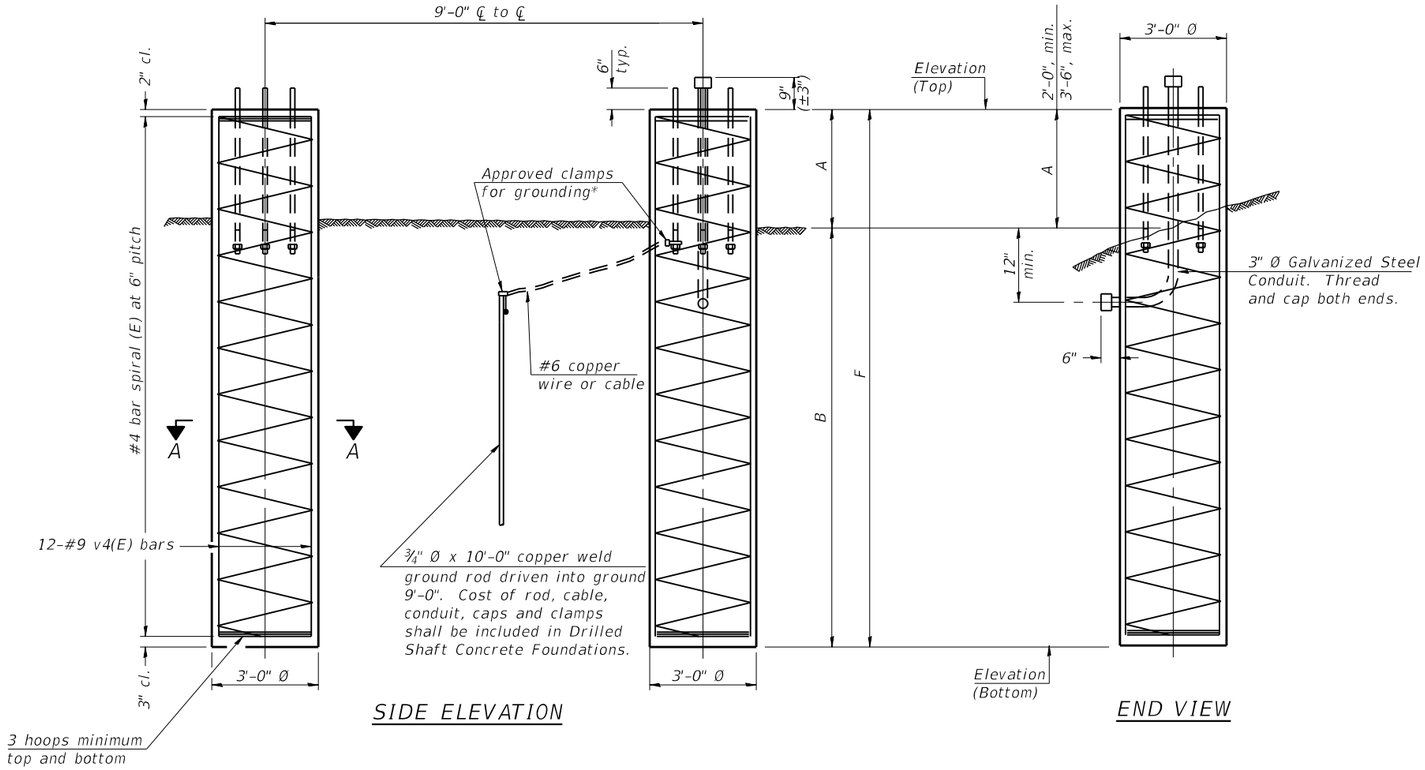
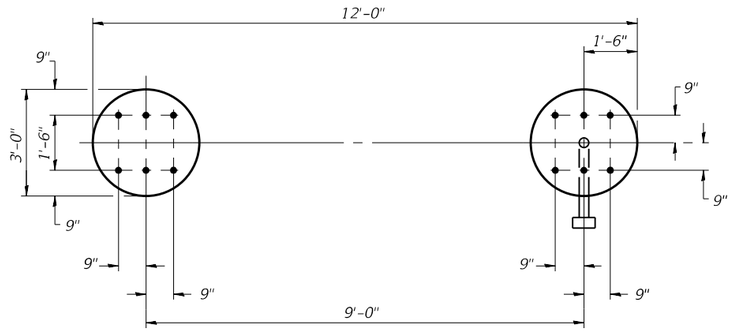
		CONTRACT NO. 76P66		
		ILLINOIS	FED. AID PROJECT	



SIDE ELEVATION

END VIEW



PLAN

For anchor rod size and placement, see Support Frame Detail Sheet.

* Anchor rod shall be ground or filed to bright metal at clamp and cable connection location.

BAR LIST - EACH FOUNDATION

Bar	Number	Size	Length	Shape
v4(E)	24	#9	F less 5"	——
#4 bar spiral (E) - see Side Elevation				

NOTES:

The foundation dimensions shown are based on the presence of mostly cohesive soils with an average Unconfined Compressive Strength (Qu) of at least 1.25 tsf, which must be determined by previous soil investigations at the jobsite. When other conditions are indicated, the boring data will be included in the plans and the foundation dimensions shown will be the result of site specific designs.

If the conditions encountered are different than those indicated, the Contractor shall notify the Engineer to determine if the foundation dimensions need to be modified. If dimensions "B" or "F" are revised by more than 12" by the Contractor, "as-built" plans shall be prepared and submitted to the District Bureau of Operations for future reference.

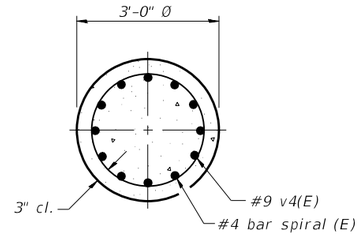
No sonotubes or decomposable forms shall be used below the lower conduit entrance.

Permanent metal forms or other shielding may not be left in place below that elevation without the Engineer's written permission.

Concrete shall be placed monolithically, without construction joints.

Backfill shall be placed per Article 502 of Standard Specification and prior to erection of support column.

A normal surface finish followed by a Concrete Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished ground line. Cost included in Drilled Shaft Concrete Foundation.



SECTION A-A

DETAILS FOR 12" Ø SUPPORT FRAME TYPE III-A TRUSS

Structure Number	Station	Left Foundation					Right Foundation					Class DS Concrete (Cu. Yds.)
		Elevation Top	Elevation Bottom	A	B	F	Elevation Top	Elevation Bottom	A	B	F	
8S060I270R1.5	1889+00.00	-	-	-	-	-	446.23	416.41	2'-9⅞"	27'-0"	29'-9⅞"	15.6

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F.AI/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	19
		CONTRACT NO. 76P66		
		ILLINOIS FED. AID PROJECT		

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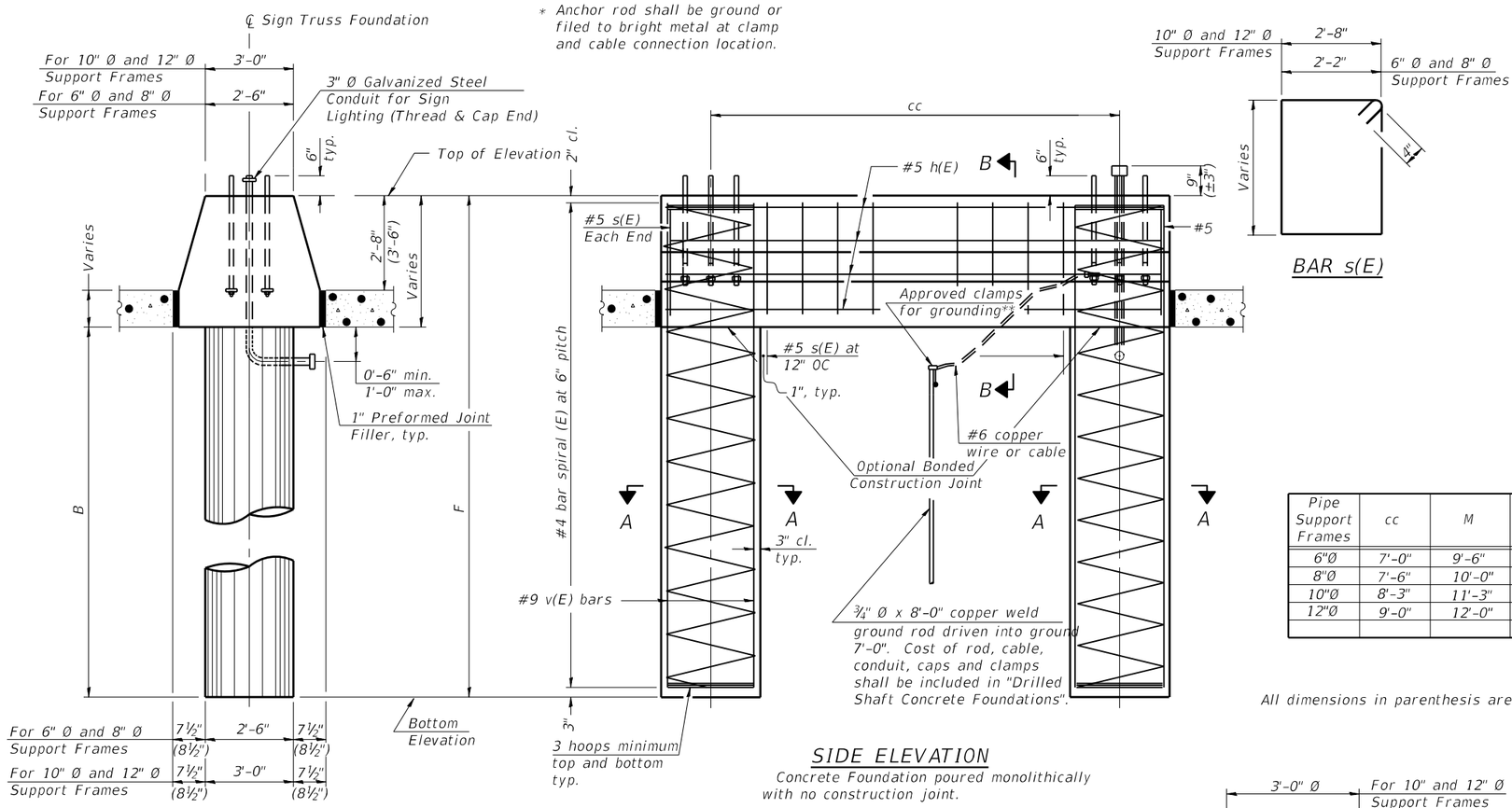
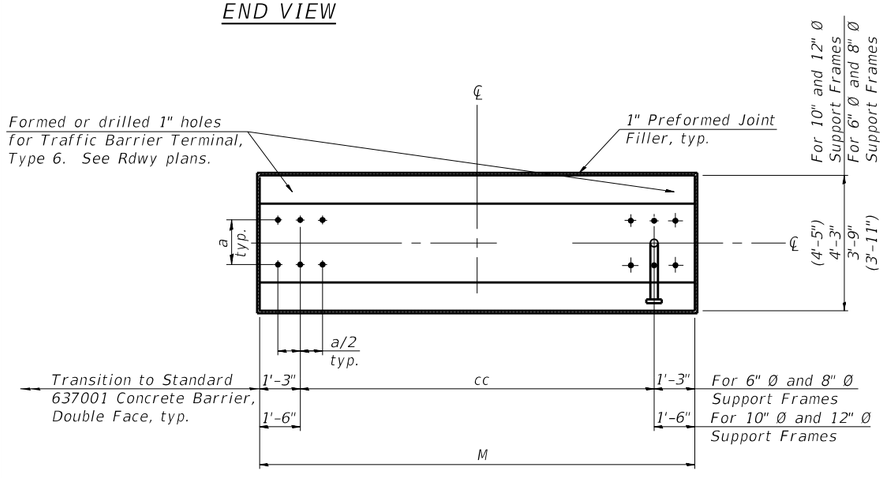


END VIEW

SIDE ELEVATION

Concrete Foundation poured monolithically with no construction joint.



PLAN

NOTES:

The foundation dimensions shown are based on the presence of mostly cohesive soils with an average Unconfined Compressive Strength (Qu) of at least 1.25 tsf, which must be determined by previous soil investigations at the jobsite. When other conditions are indicated, the boring data will be included in the plans and the foundation dimensions shown will be the result of site specific designs.

If the conditions encountered are different than those indicated, the Contractor shall notify the Engineer to determine if the foundation dimensions need to be modified. If dimensions "B" or "F" are revised by more than 12" by the Contractor, "as-built" plans shall be prepared and submitted to the District Bureau of Operations for future reference.

No sonotubes or decomposable forms shall be used below the lower conduit entrance.

Permanent metal forms or other shielding may not be left in place below that elevation without the Engineer's written permission.

Concrete shall be placed monolithically, without construction joints.

Backfill shall be placed per Article 502 of Standard Specification and prior to erection of support column.

A normal surface finish followed by a Concrete Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished ground line. Cost included in Drilled Shaft Concrete Foundation.

Pipe Support Frames	cc	M	a	a/2
6"Ø	7'-0"	9'-6"	0'-11"	5½"
8"Ø	7'-6"	10'-0"	1'-1½"	6¾"
10"Ø	8'-3"	11'-3"	1'-3"	7½"
12"Ø	9'-0"	12'-0"	1'-6"	9"

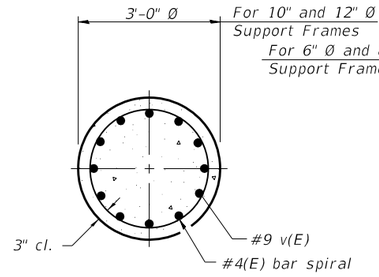
BAR LIST - EACH FOUNDATION

Bar	Number	Size	Length	Shape
h(E)	10	#5	M less 4"	——
s(E)	Varies	#5	Varies	□
v(E)	16	#9	F less 0'-5"	——
v(E)	24	#9	F less 0'-5"	——
#4(E) bar spiral _ see Side Elevation				

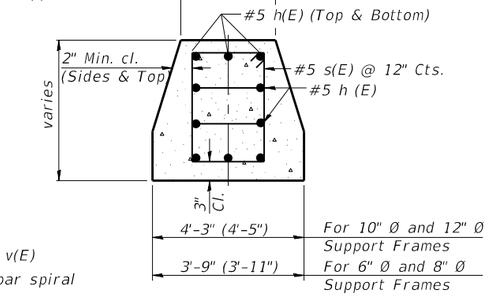
6" Ø and 8" Ø Support Frame

10" Ø and 12" Ø Support Frame

All dimensions in parenthesis are for 42" high barrier.



SECTION A-A



SECTION B-B

Structure Number	Station	Left Foundation				Right Foundation				Class DS Concrete (Cu. Yds.)
		Elevation Top	Elevation Bottom	B	F	Elevation Top	Elevation Bottom	B	F	
8S0601270R1.5	1889+00.00	450.54	419.87	27'-0"	30'-8"	-	-	-	-	21.9

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PLOT DATE =	CHECKED - SSM	REVISED -	

NTS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGN STRUCTURES
MEDIAN SUPPORT FOUNDATION DETAILS

SHEET 11 OF 11 SHEETS

F.A.I./P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	20
		CONTRACT NO. 76P66		
		ILLINOIS	FED. AID PROJECT	

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OSB-1 SOIL BORING LOG

Sheet 1 of 2

COUNTY	Madison
SECTION	N/A
ROUTE	Interstate 270
JOB NO.	MG22001
DATE	2/10/2022

DESCRIPTION	DMS Sign Borings	DISTRICT	8		
LOCATION	I-270 Eastbound Lane-South Shoulder	CONSULTANT	Millennia Professional Services		
DRILLED BY	Geotechnology	LOGGED BY	P. Adhikari	RIG TYPE	CME 550
DRILLING METHOD	Hollow Stem Augers	HAMMER TYPE	Automatic	EFFICIENCY	N/A

BORING NO. OSB-1
Note: Offset due to concrete
Offset: 10 ft West
Northing:
Easting:
Ground Surface Elev. ___ ft

Surface Water Elev. ___ ft
Stream Bed Elev. ___ ft
Groundwater Elev.:
First Encounter 44.0 ft ▼
Upon Completion 45.0 ft ▽
After ___ Hrs. ___ ft

LITHOLOGY	ELEV (ft)	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
CONCRETE (19.0")					
BASE ROCK (11.0")			12		
			12	2.0	17
(FILL) CLAY LOAM: Grey, very stiff, dry			9	P	
			23		
CONCRETE (24.0"), with rebar			18		9
		-5	27		
SANDY LOAM: Grey, stiff, dry			5		
			10		16
			23		
SILT: Grey, very stiff, dry			10		
			13	1.5	19
		-10	19	P	
			9		
			10	1.8	21
			12	P	
			8		
			12	1.5	19
		-15	11	P	
SILTY CLAY LOAM: Grey, stiff to very stiff, dry			4		
			6	2.5	35
			8	B	
- dry unit weight = 104.52 pcf					
- Qu = 1.64 tsf at 18.5 ft.				1.6	17
				S	
		-20			

LITHOLOGY	ELEV (ft)	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
SILTY CLAY LOAM: Grey, stiff to very stiff, dry *(continued)*			6		
			7	4.1	17
			11	B	
SILT: Grey, very stiff, dry			4		
			7	1.8	15
		-25	14	S	
SILT LOAM: Grey, very stiff, dry			7		
			9	4.0	15
			13	P	
SANDY CLAY LOAM: Grey, stiff, dry			7		
			10	2.3	20
		-30	13	S	
			3		
			8	1.0	29
		-35	12	P	
SAND: Grey, fine-grained, medium dense					
- trace silt seams below 38.5 ft.			4		
			4	1.1	
		-40	7	S	

The Unconfined Compressive Strength (UCS) Qu column represents either the IDOT Rimac or AASHTO T 208 Test Procedure. The Qu failure mode is indicated by B for Bulge or S for Shear. P is a Pocket Penetrometer test. The Standard Penetration Test (SPT) N value is the sum of the second and third Blows /6 in. values in each sample using AASHTO T 206.

Printed 2/18/2022

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OSB-1 SOIL BORING LOG

Sheet 2 of 2

COUNTY	Madison
SECTION	N/A
ROUTE	Interstate 270
JOB NO.	MG22001
DATE	2/10/2022

DESCRIPTION	DMS Sign Borings	DISTRICT	8		
LOCATION	I-270 Eastbound Lane-South Shoulder	CONSULTANT	Millennia Professional Services		
DRILLED BY	Geotechnology	LOGGED BY	P. Adhikari	RIG TYPE	CME 550
DRILLING METHOD	Hollow Stem Augers	HAMMER TYPE	Automatic	EFFICIENCY	N/A

BORING NO. OSB-1
Note: Offset due to concrete
Offset: 10 ft West
Northing:
Easting:
Ground Surface Elev. ___ ft

Surface Water Elev. ___ ft
Stream Bed Elev. ___ ft
Groundwater Elev.:
First Encounter 44.0 ft ▼
Upon Completion 45.0 ft ▽
After ___ Hrs. ___ ft

LITHOLOGY	ELEV (ft)	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
SAND: Grey, fine-grained, medium dense *(continued)*					
SILTY CLAY LOAM: Grey, soft, moist	▼		0		
			2	0.3	34
	▽	-45	1	P	
SAND: Grey, fine-grained, loose			1		
			3		
		-50	7		
End of Boring					
		-55			
		-60			

The Unconfined Compressive Strength (UCS) Qu column represents either the IDOT Rimac or AASHTO T 208 Test Procedure. The Qu failure mode is indicated by B for Bulge or S for Shear. P is a Pocket Penetrometer test. The Standard Penetration Test (SPT) N value is the sum of the second and third Blows /6 in. values in each sample using AASHTO T 206.

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OSB-2 SOIL BORING LOG

Sheet 1 of 2

COUNTY: Madison
SECTION: N/A
ROUTE: Interstate 270
JOB NO.: MG22001
DATE: 2/9/2022

DESCRIPTION: DMS Sign Borings
LOCATION: I-270 Eastbound Lane-North Shoulder
DRILLED BY: Geotechnology
DRILLING METHOD: Hollow Stem Augers
DISTRICT: 8
CONSULTANT: Millennia Professional Services
LOGGED BY: P. Adhikari
RIG TYPE: CME 550
HAMMER TYPE: Automatic
EFFICIENCY: N/A

BORING NO.: OSB-2
Note: Drilled in north shoulder
Offset: ft
Northing:
Easting:
Ground Surface Elev.: ft

Surface Water Elev.: ft
Stream Bed Elev.: ft
Groundwater Elev.:
First Encounter: 44.0 ft ▼
Upon Completion: 45.0 ft ▽
After ____ Hrs.: ft

LITHOLOGY	ELEV (ft)	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
CONCRETE (18.0")					
			4		
BASE ROCK: Grey to black, sand and gravel, trace clay			9 13	3.0 P	14
CLAY LOAM: Grey, stiff, dry			4		
		-5	4 5	1.9 B	20
SILT: Grey, very stiff, dry			2		
			10 15	3.0 P	14
			15		
		-10	15 18	1.8 P	19
SILT LOAM: Grey, very stiff, dry			8		
			12 16	1.0 P	21
			5		
		-15	7 14	0.9 S	22
SANDY CLAY: Grey, stiff, dry			6		
			8 10	1.2 S	17
CLAY LOAM: Grey, medium stiff, dry			3		
		-20	4 5	2.1 B	36
CLAY LOAM: Grey, medium stiff, dry *(continued)*			5		
			6 8	1.7 B	21
- dry unit weight = 108.39 pcf - Qu = 1.90 tsf at 23.5 ft.				1.9 S	19
		-25			
SANDY CLAY LOAM: Grey, very stiff, dry			18		
			14 14	3.0 P	17
- soft below 28.5 ft.			4		
SILT LOAM: Grey, very stiff, dry		-30	7 12	2.3 B	21
- medium stiff below 33.5 ft.			3		
		-35	3 7	1.1 S	26
SAND: Grey, fine-grained, loose			4		
SANDY LOAM: Grey, medium stiff, dry			5		
		-40	9	1.2 S	29

The Unconfined Compressive Strength (UCS) Qu column represents either the IDOT Rimac or AASHTO T 208 Test Procedure. The Qu failure mode is indicated by B for Bulge or S for Shear. P is a Pocket Penetrometer test. The Standard Penetration Test (SPT) N value is the sum of the second and third Blows /6 in. values in each sample using AASHTO T 206.

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OSB-2 SOIL BORING LOG

Sheet 2 of 2

COUNTY: Madison
SECTION: N/A
ROUTE: Interstate 270
JOB NO.: MG22001
DATE: 2/9/2022

DESCRIPTION: DMS Sign Borings
LOCATION: I-270 Eastbound Lane-North Shoulder
DRILLED BY: Geotechnology
DRILLING METHOD: Hollow Stem Augers
DISTRICT: 8
CONSULTANT: Millennia Professional Services
LOGGED BY: P. Adhikari
RIG TYPE: CME 550
HAMMER TYPE: Automatic
EFFICIENCY: N/A

BORING NO.: OSB-2 (EB N. Lane)
Note: Drilled in north shoulder
Offset: ft
Northing:
Easting:
Ground Surface Elev.: ft

Surface Water Elev.: ft
Stream Bed Elev.: ft
Groundwater Elev.:
First Encounter: 44.0 ft ▼
Upon Completion: 45.0 ft ▽
After ____ Hrs.: ft

LITHOLOGY	ELEV (ft)	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
SANDY LOAM: Grey, medium stiff, dry *(continued)*			5		
SILTY CLAY LOAM: Grey, soft, moist		▼	1		
		▽ -45	2 1	0.2 B	37
SAND: Grey, fine-grained, medium dense			5		
		-50	10 10		
End of Boring					
		-55			
		-60			

The Unconfined Compressive Strength (UCS) Qu column represents either the IDOT Rimac or AASHTO T 208 Test Procedure. The Qu failure mode is indicated by B for Bulge or S for Shear. P is a Pocket Penetrometer test. The Standard Penetration Test (SPT) N value is the sum of the second and third Blows /6 in. values in each sample using AASHTO T 206.

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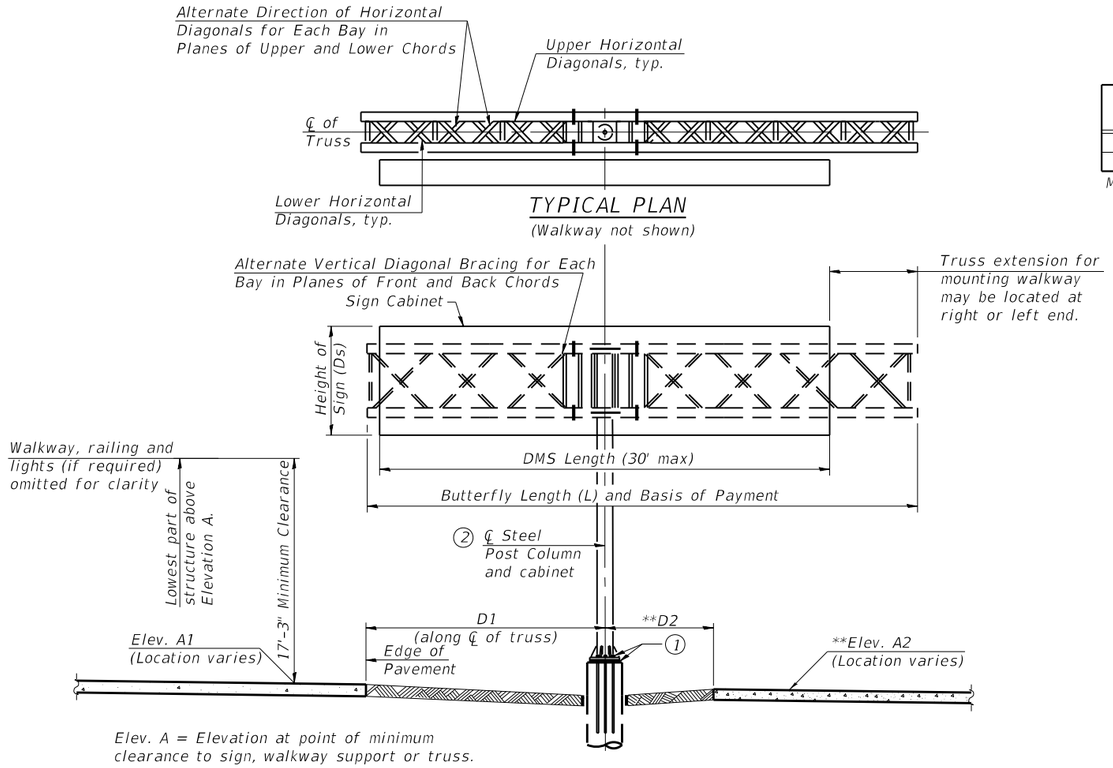
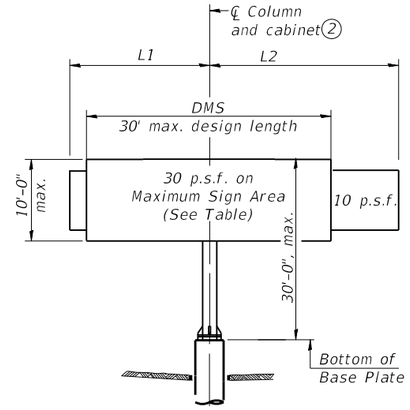


** Elevation A2 and dimension D2 not used when butterfly structure is mounted on right side of the shoulder.

Sign support structures may be subject to damaging vibrations and oscillations when signs are not in place during erection or maintenance of the structure. To avoid these vibrations and oscillations, consideration should be given to attaching temporary blank sign panels to the structure.

TRUSS TYPE	MAXIMUM TOTAL DMS SIGN CABINET AREA
III-F-A	300 Sq. Ft.

Mamimum DMS weight = 5000 LB.



DESIGN WIND LOADING DIAGRAM

Parameters shown are basis for I.D.O.T. Standards Installations not within dimensional limits shown require special analysis for all components.

Structure Number	Station	Total Butterfly Length (L)	Elev. A1	Elev. A2	Dim. D1	Dim. D2	Ds	Total Sign Area	Access door and walkway location (Right or Left end)
8F060S255R1.1	-	38'-0"	429.39	-	10'-0"	-	-	300	RIGHT

TOTAL BILL OF MATERIAL

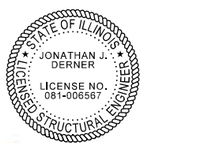
ITEM	UNIT	TOTAL
OVERHEAD SIGN STRUCTURE BUTTERFLY TYPE III-F-A	Foot	38
OVERHEAD SIGN STRUCTURE WALKWAY, TYPE A	Foot	7.5
DRILLED SHAFT CONCRETE FOUNDATIONS	Cu. Yds.	9.4

Note:
Trusses shall be shipped individually with adequate provision to prevent detrimental motion during transport. This may require ropes between horizontals and diagonals or energy dissipating (elastic) ties to the vehicle. The contractor is responsible for maintaining the configuration and protection of the trusses.

① After adjustments to level truss and insure adequate vertical clearance, all top and bottom leveling nuts shall be tightened against the base plate with a minimum torque of 200 lb.-ft. Stainless steel mesh shall then be placed around the perimeter of the base plate. Secure to base plate with stainless steel banding.

② Centerline cabinet must be located at centerline of column.

* If M270 Gr. 50W (M222) steel is proposed, chemistry for plate to be used shall first be approved by the Engineer as suitable for galvanizing and welding.



Expires: 11/30/2022

GENERAL NOTES

DESIGN: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. ("AASHTO Specifications")

CONSTRUCTION: Current (at time of letting) Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, Supplemental Specifications and Special Provisions. ("Standard Specifications")

LOADING: 90 M.P.H. WIND VELOCITY
WIND LOADING: 30 p.s.f. normal to DMS Cabinet Area and truss elements not behind sign Loading Diagram.
WALKWAY LOADING: Dead load plus 500 lbs. concentrated live load.

DESIGN STRESSES
FIELD UNITS
f'c = 3,500 p.s.i.
fy = 60,000 p.s.i. (reinforcement)

WELDING: All welds to be continuous unless otherwise shown. All welding to be done in accordance with current AWS D1.1 and D1.2 Structural Welding Codes (Steel and Aluminum) and the Standard Specifications.

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B or A500 Grade B or C. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53.
All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W* (M183, M223 Gr. 50, or M222). Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

FASTENERS FOR ALUMINUM TRUSSES: All bolts noted as "high strength" must satisfy the requirements of AASHTO M164 (ASTM A325), or approved alternate, and must have matching lock nuts. Threaded studs for splices (if Members interfere) must satisfy the requirements of ASTM A449, ASTM A193, Grade B7, or approved alternate, and must have matching lock nuts. Bolts and lock nuts not required to be high strength must satisfy the requirements of ASTM A307. All bolts and lock nuts must be hot dip galvanized per AASHTO M232. The lock nuts must have nylon or steel inserts. A stainless steel flat washer conforming to ASTM A240 Type 302 or 304, is required under both head and nut or under both nuts where threaded studs are used. High strength bolt installation shall conform to Article 505.04 (f) (2)d of the IDOT Standard Specifications for Road and Bridge Construction. Rotational capacity ("ROCAP") testing of bolts will not be required.

U-BOLTS AND EYEBOLTS: U-Bolts and Eyebolts must be produced from ASTM A276 Type 304, 304L, 316 or 316L, Condition A, cold finished stainless steel, or an equivalent material acceptable to the Engineer. All nuts for U-Bolts and Eyebolts must be lock nuts equivalent to ASTM A307 with nylon or steel inserts and hot dip galvanized per AASHTO M232. A stainless steel flat washer conforming to ASTM A240, Type 302 or 304, is required under each U-Bolt and Eyebolt lock nut.

GALVANIZING: All Steel Grating, Plates, Shapes and Pipe shall be Hot Dip Galvanized after fabrication in accordance with AASHTO M111. Painting is not permitted.

ANCHOR RODS: Shall conform to ASTM F1554 Gr. 105.

CONCRETE SURFACES: All concrete surfaces above an elevation 6" below the lowest final ground line at each foundation shall be cleaned and coated with Concrete Sealer in accordance with the Standard Specifications.

REINFORCEMENT BARS: Reinforcement Bars designated (E) shall be epoxy coated in accordance with the Standard Specifications.

OSF-A-1-DMS 2-17-2017

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PLOT SCALE =	DRAWN - PMG	REVISED -	
PLOT DATE =	CHECKED - SSM	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BUTTERFLY SIGN STRUCTURES - ALTERNATE PLAN & ELEVATION FOR DMS - ALUMINUM TRUSS & STEEL POST

SHEET 1 OF 10 SHEETS

F.A.I./P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	23
		CONTRACT NO. 76P66		
	ILLINOIS	FED. AID PROJECT		

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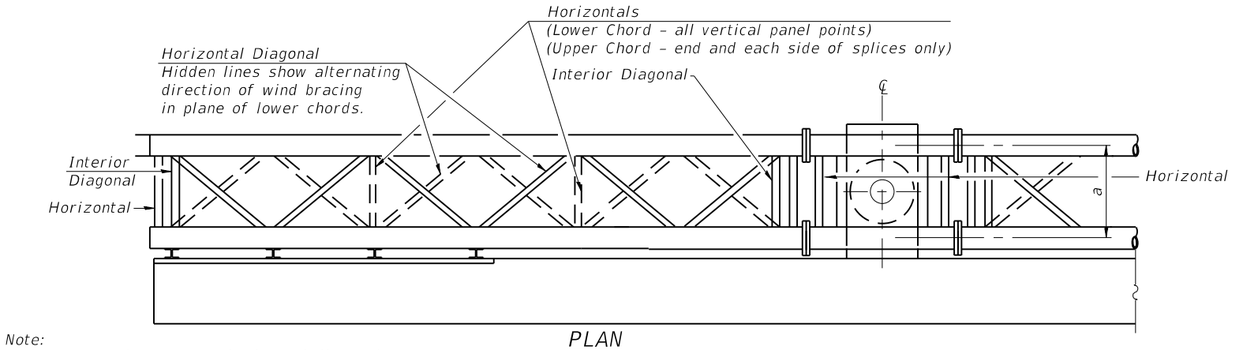
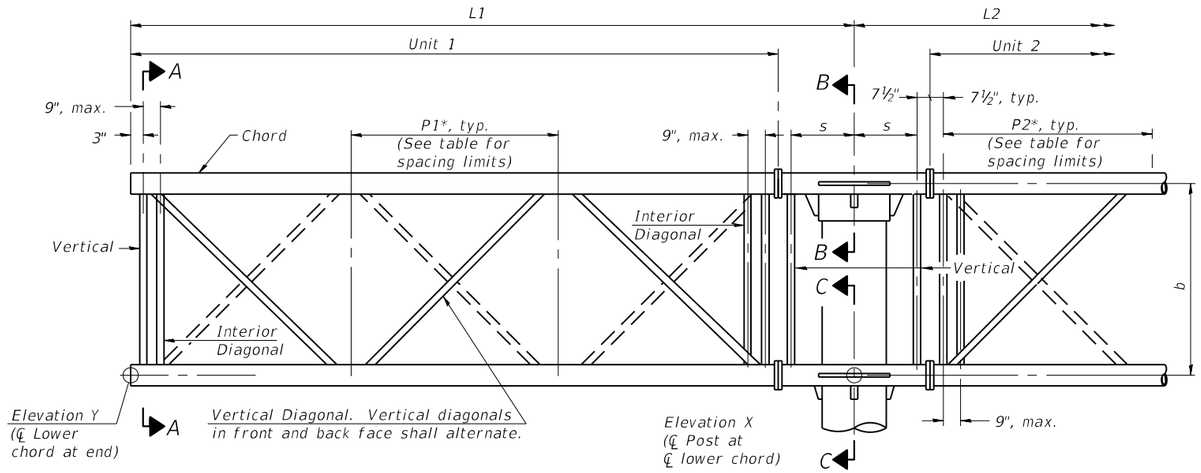


Note:
There are twice as many horizontal diagonals as there are vertical diagonals.

PLAN

(Walkway not shown)



ELEVATION

(Sign and walkway omitted for clarity)

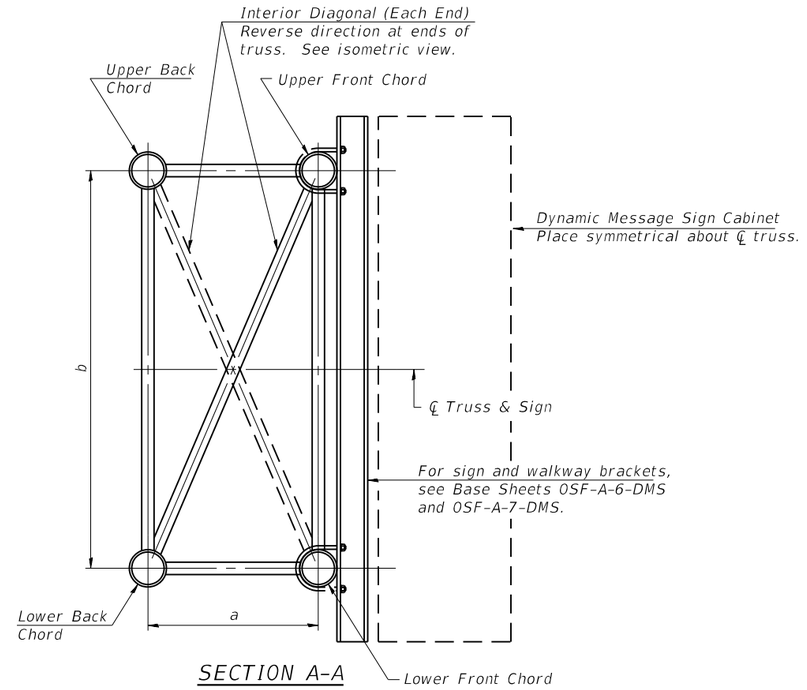
TYPICAL TRUSS UNIT

For Section B-B and Section C-C, see Base Sheet 0SF-A-3-DMS

TRUSS UNIT TABLE

Truss Type	Dimension "a"	Dimension "b"	Dimension "s"	Limits for Panel Spacing (P)*	Up. & Low. Chord O.D.	Up. & Low. Chord Wall	Verticals; Horizontals; Vertical Horizontals; and Interior Diagonals	
III-F-A	36"	84"	21"	48" min. to 66" max.	7"	⅜"	3½"	⅜"

$$*P = \frac{L - s - 1'-6"}{\#\ Panels}$$



SECTION A-A

Structure Number	Station	Truss Type	L1	L2	Number of Panels Unit 1	Panel Length (P1)*	Number of Panels Unit 2	Panel Length (P2)*
8F060S255R1.1	-	III-F-A	15'-6"	22'-6"	3	4'-1"	4	4'-9¾"

0SF-A-2-DMS 2-17-2017

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PLOT SCALE =		DRAWN - PMG	REVISED -
PLOT DATE =		CHECKED - SSM	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BUTTERFLY SIGN STRUCTURES – ALTERNATE TRUSS DETAILS FOR DMS
ALUMINUM TRUSS & STEEL POST

SHEET 2 OF 10 SHEETS

NTS

F.AJ/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	24
		CONTRACT NO. 76P66		
	ILLINOIS FED. AID PROJECT			

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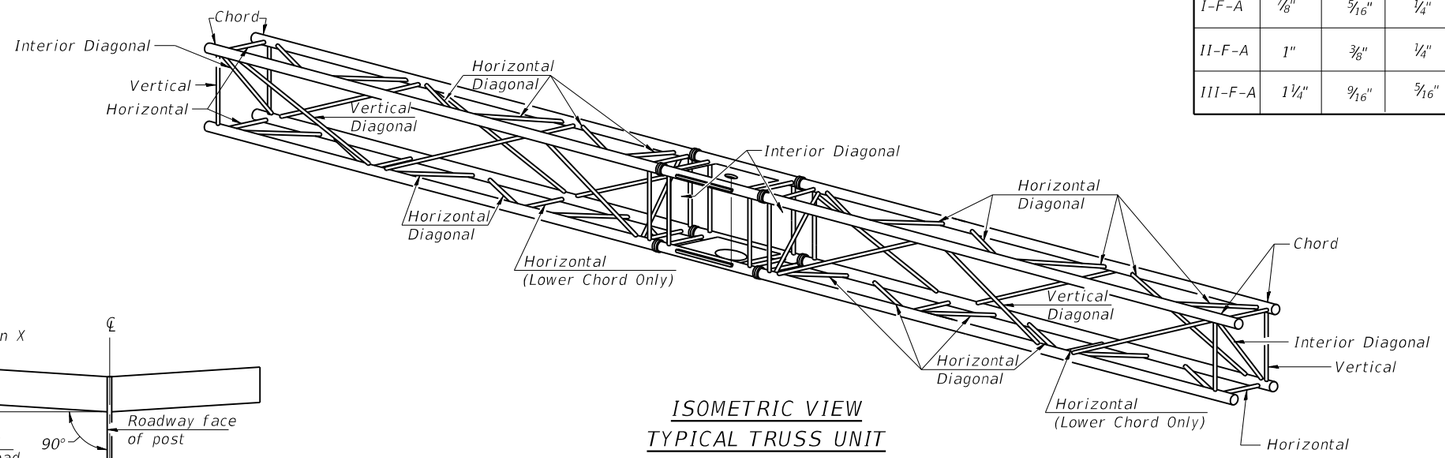
SHOP CAMBER TABLE

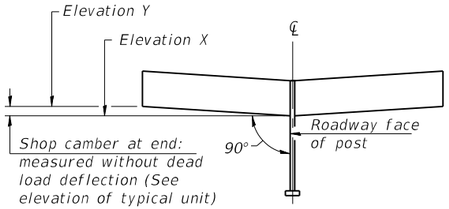
Unit Length L1 or L2	Shop Camber at End
15'	1½"
16'–17'	1¾"
18'–20'	2"
21'–22'	2¼"
23'–25'	2½"
26'–27'	2¾"
28'–30'	3"
31'–32'	3¼"
33'–35'	3½"



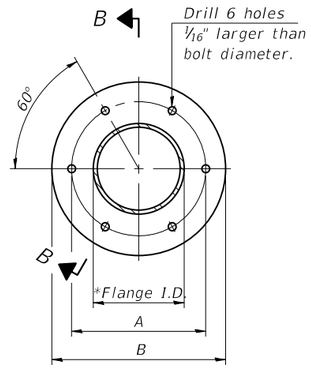
ISOMETRIC VIEW
TYPICAL TRUSS UNIT

ASTM B221 Alloy 6061 Temper T6

Truss Type	Bolts	Weld Sizes		A	B
	Dia.	W	W1		
I-F-A	⅞"	5/16"	¼"	8¾"	11¾"
II-F-A	1"	⅜"	¼"	11"	14½"
III-F-A	1¼"	9/16"	5/16"	11½"	15"

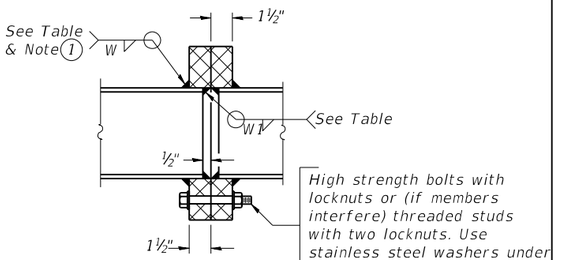


CAMBER DIAGRAM
(For Fabrication Only)



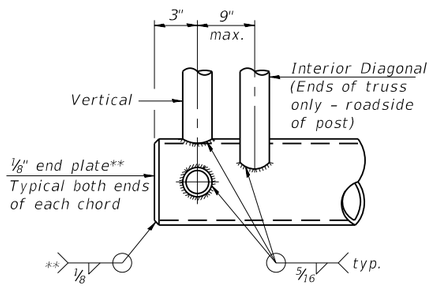
SPLICING FLANGE
ASTM b221, Alloy 6061-T6
or ASTM B209, Alloy 6061-T651

* To fit O.D. of Chord with maximum gap of 1/16".



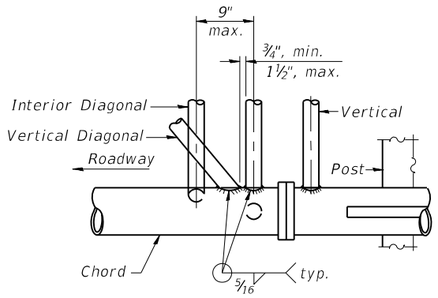
SECTION B-B

(1) Splicing Flanges shall be attached to each truss unit with the truss shop assembled to camber shown. Truss units shall be in proper alignment and flange surfaces shall be shop bolted into full contact before welding. Sufficient external welds or tacks shall be made to secure flanges until remaining welds are made after disassembly. Adjacent flanges shall be "match marked" to insure proper field assembly.

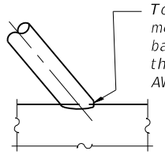


BUTTERFLY END JOINT DETAIL

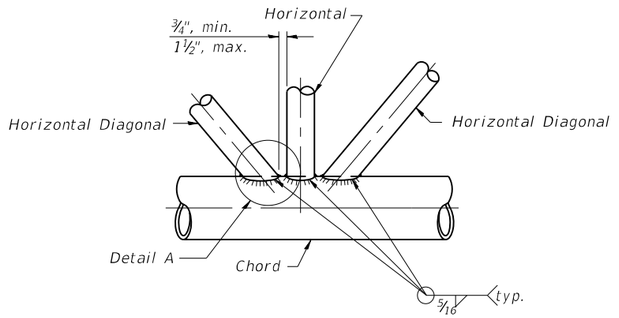
** Contractor may alternatively use standard aluminum drive-fit cap to close ends. ½" Ø Drain hole in end plate / drive-fit cap.



POST END JOINT DETAIL



DETAIL A



TRUSS INTERIOR JOIT DETAIL

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BUTTERFLY SIGN STRUCTURES – TRUSS DETAILS
ALUMINUM TRUSS & STEEL POST

SHEET 3 OF 10 SHEETS

NTS

F.AI/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	25
		CONTRACT NO. 76P66		
		ILLINOIS FED. AID PROJECT		

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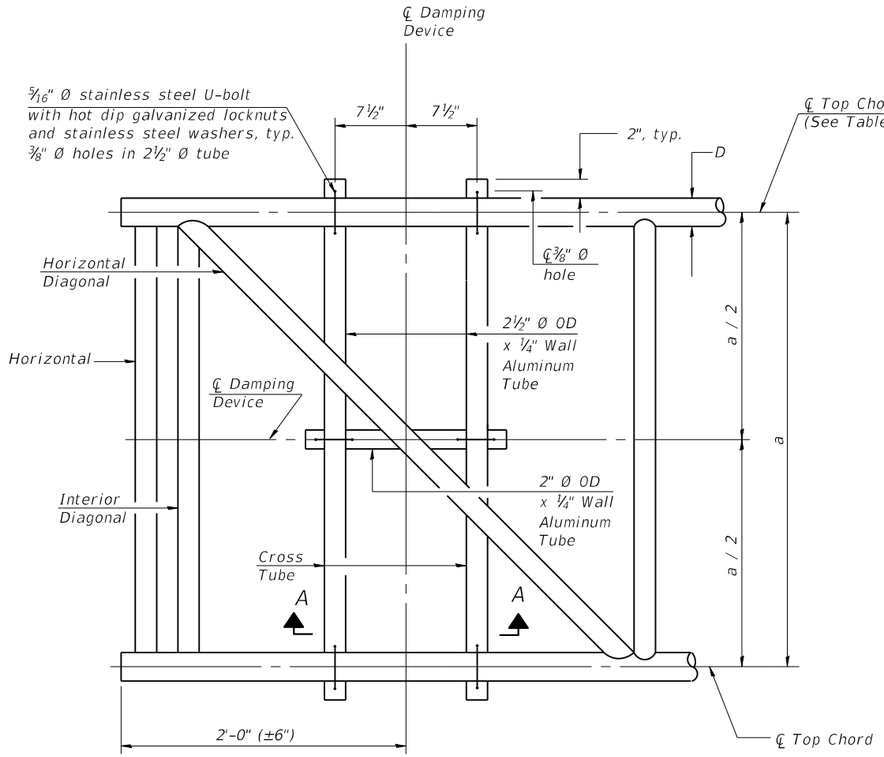
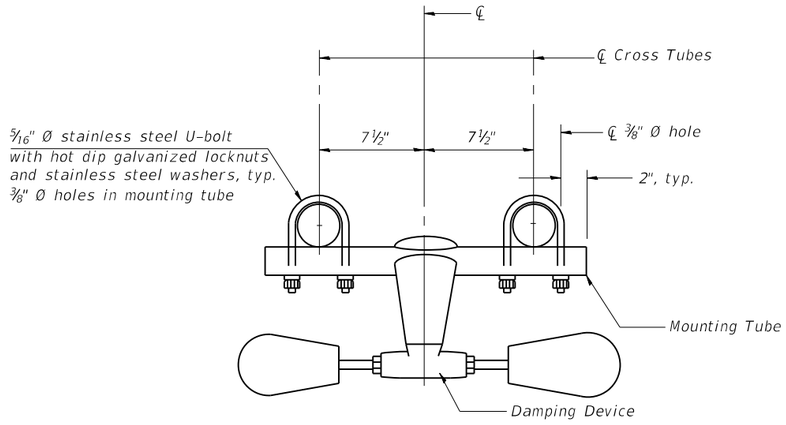
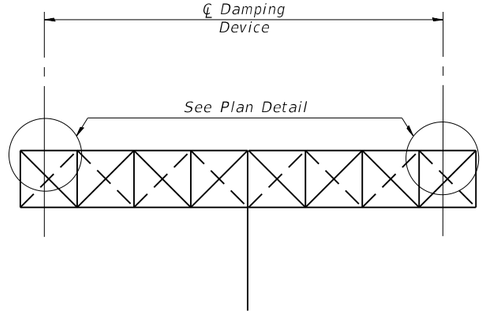


PLAN DETAIL



TRUSS DAMPING DEVICE CONNECTION DETAIL



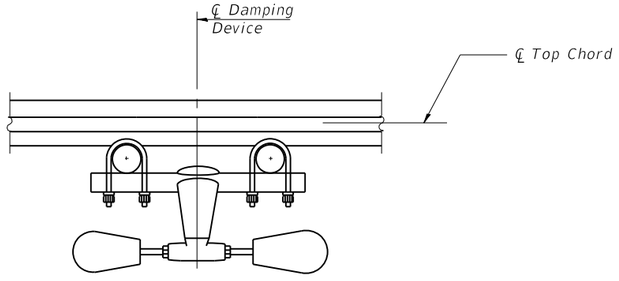
ELEVATION

Aluminum Butterfly Sign Structure

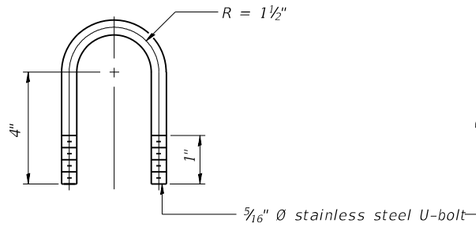
GENERAL NOTES

Damper: One damper per truss. (31 lbs. Stockbridge-Type Aluminum-29" minimum between ends of weights)

Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6

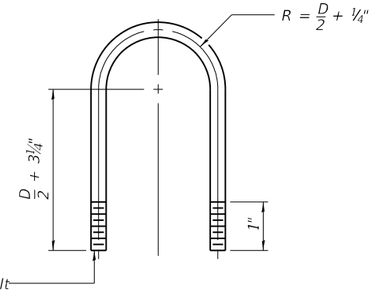


SECTION A-A



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL

(Typical)



TOP CHORD TO CROSS TUBE U-BOLT DETAIL

(Typical)

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BUTTERFLY SIGN STRUCTURES DAMPENING DEVICE

SHEET 4 OF 10 SHEETS

F.AI/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	26
		CONTRACT NO. 76P66		
	ILLINOIS FED. AID PROJECT			

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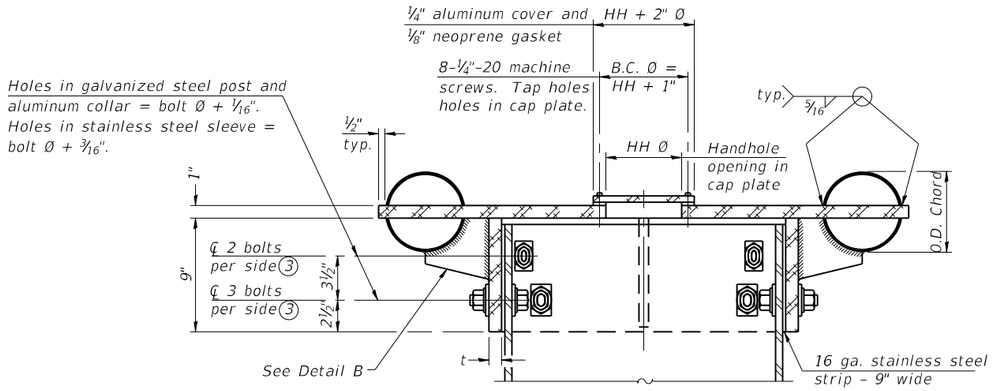
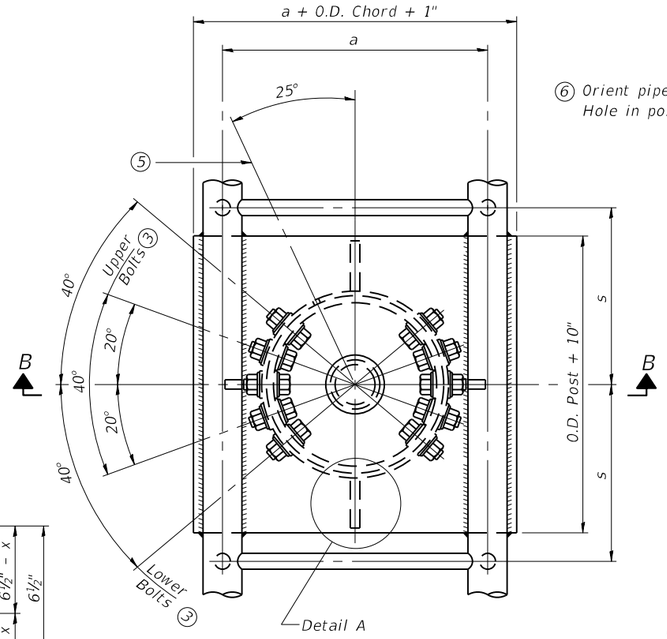


SECTION B-B

Bolts, washers (including contoured washers), and locknuts shall be stainless steel.

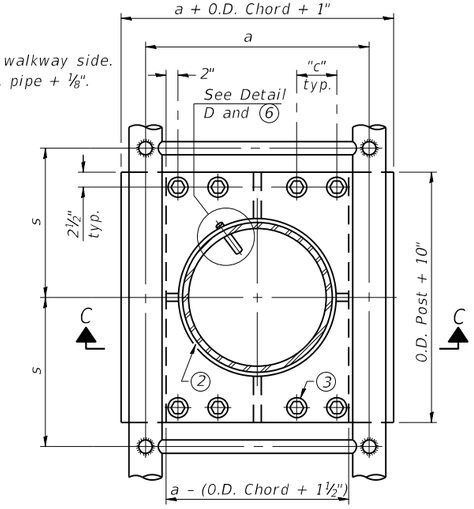
④ Collar I.D. shall be manufactured to correspond to 0.D. of actual galvanized post and stainless steel sleeve plus ⅛" (±1/16"). Maximum gap between post and collar at any location equals ⅛" before tightening bolts.



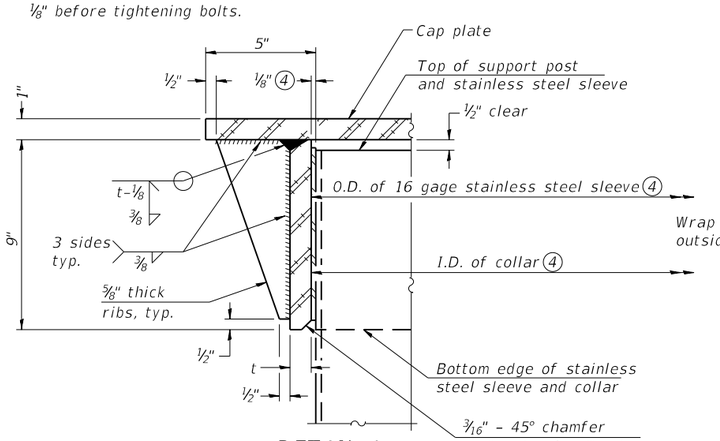
PLAN VIEW - TOP OF COLUMN

⑤ Optional full penetration weld in collar. (Two locations maximum....(180° apart)....X-ray or UT 100%)

⑥ Orient pipe toward walkway side. Hole in post = 0.D. pipe + ⅛".

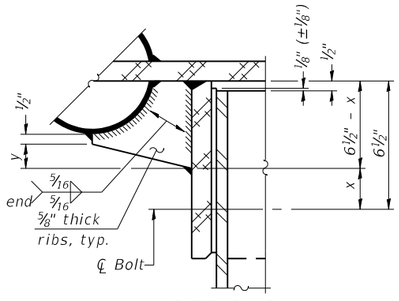


SECTION THRU POST ABOVE LOWER CHORDS



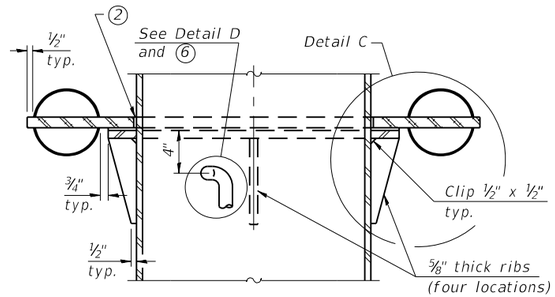
DETAIL A

(Two locations)

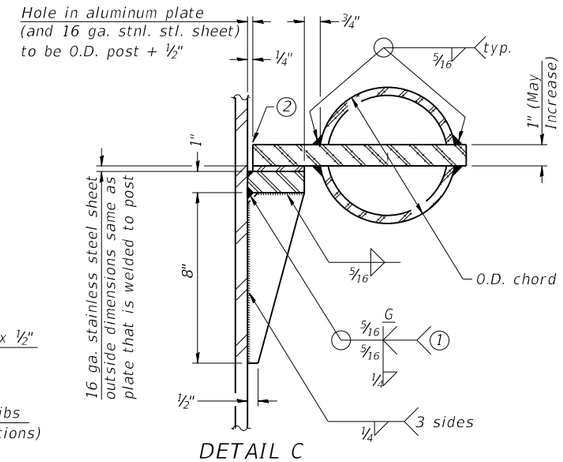


DETAIL B

Two locations
(For details not shown, see Detail C)



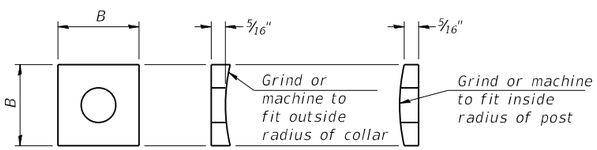
SECTION C-C



DETAIL C

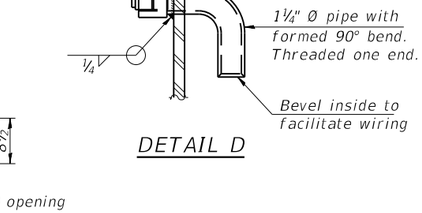
① Grind top if required to fully seat aluminum plate and stainless steel sheet.

② After tightening lower connection bolts, fill gap with non-hardening, silicone caulk suitable for exterior exposure and acceptable to the Engineer. Cost is included in Overhead Sign Structure Butterfly.

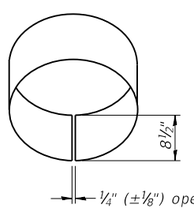


CONTOURED WASHERS

Bolt Size	Contoured Washers	
	Hole Dia.	B
⅞"	1"	2½"
1"	1⅛"	3"
1¼"	1⅜"	3¼"



DETAIL D



DETAIL OF STAINLESS STEEL SLEEVE

Weld to post after galvanizing. (Prepare post surface to insure tight, uniform fit and allow welding.) Welds to be 1½" long at 6" cts. along top edge and at ¼" opening.

Truss Type	Post Size	Upper & Lower Connection Bolt Diameter ③	Lower Juncture Bolt Spacing Dimension "c" ③	Opening in Cap Plate "HH"	Collar Thickness (t)	Side Ribs	
						x	y
I-F-A	16" Ø (83#/')	⅞"	3¼"	8"	⅝"	1¾"	2¼"
II-F-A	24" Ø (125#/')	1"	3½"	12"	⅞"	2"	1¼"
III-F-A	24" Ø (125#/')	1¼"	3½"	12"	⅞"	2"	1"

③ Upper and lower connection bolts in collar and bolts at lower chord connection must be high strength with matching locknuts. Connection bolts shall have two stainless steel flat washers each.

0SF-A-3 2-17-2017

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DEPARTMENT OF TRANSPORTATION

BUTTERFLY SIGN STRUCTURES - ALTERNATE TRUSS DETAILS FOR DMS

SHEET 5 OF 10 SHEETS

F.AI/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	27
		CONTRACT NO. 76P66		
	ILLINOIS FED. AID PROJECT			

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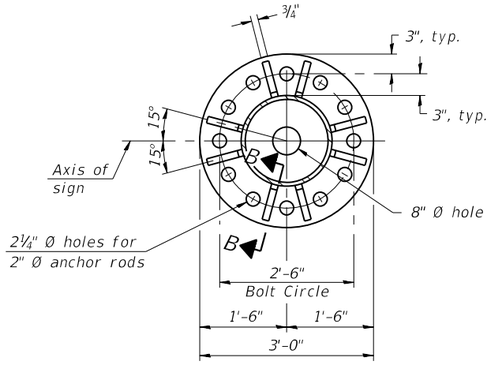
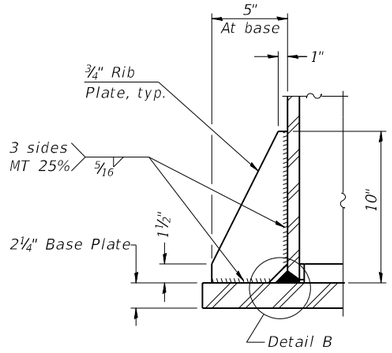
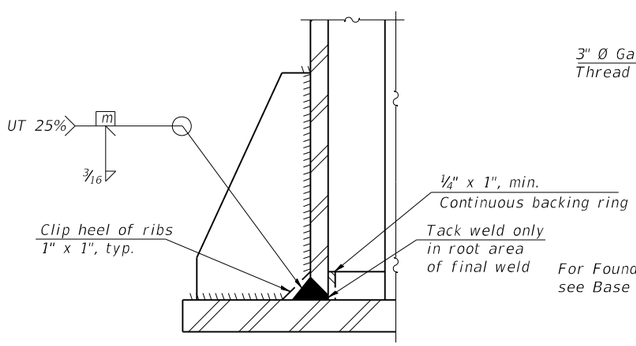


SECTION A-A

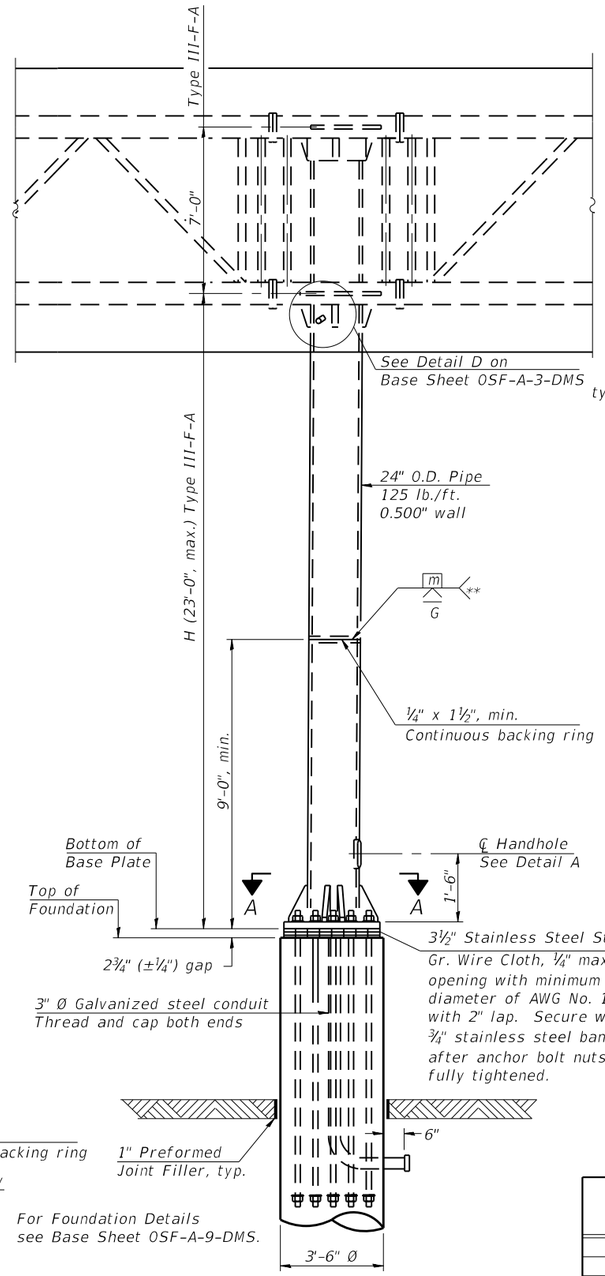


SECTION B-B



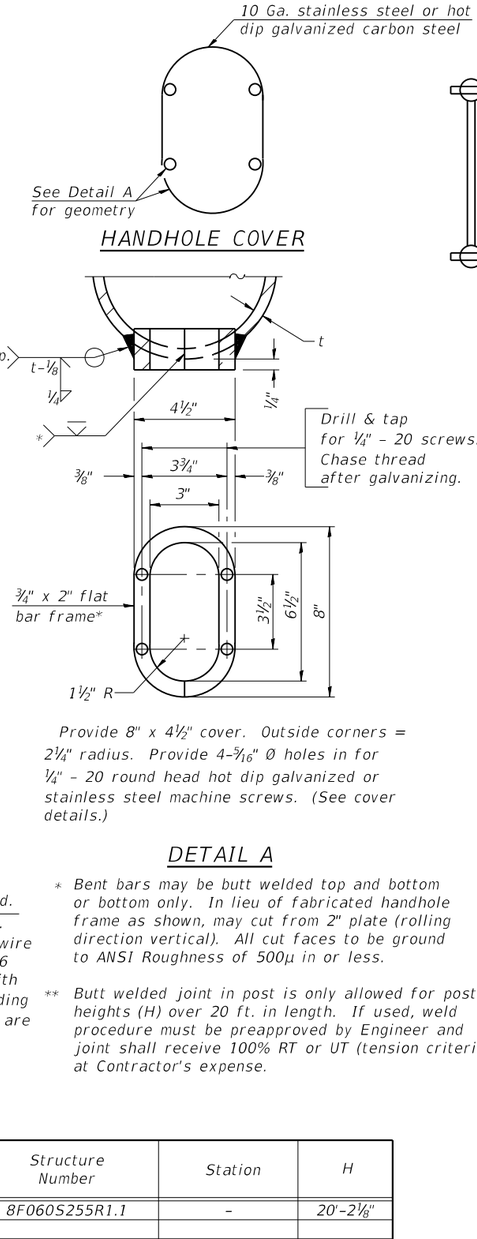
DETAIL B

(Typical rib)



FRONT ELEVATION

For Foundation Details see Base Sheet OSF-A-9-DMS.



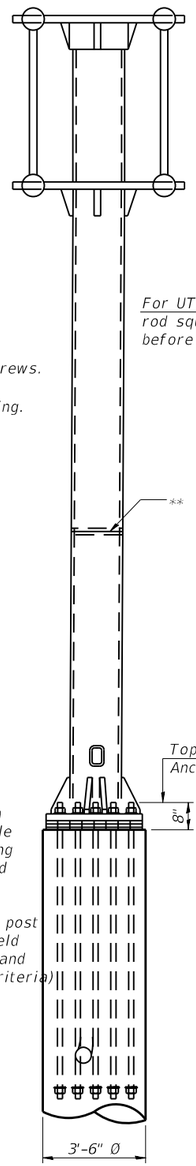
HANDHOLE COVER

Provide 8" x 4½" cover. Outside corners = 2¼" radius. Provide 4-5/16" Ø holes in for ¼" - 20 round head hot dip galvanized or stainless steel machine screws. (See cover details.)

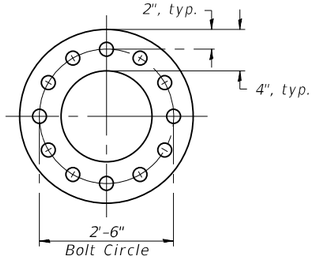
DETAIL A

* Bent bars may be butt welded top and bottom or bottom only. In lieu of fabricated handhole frame as shown, may cut from 2" plate (rolling direction vertical). All cut faces to be ground to ANSI Roughness of 500μ in or less.

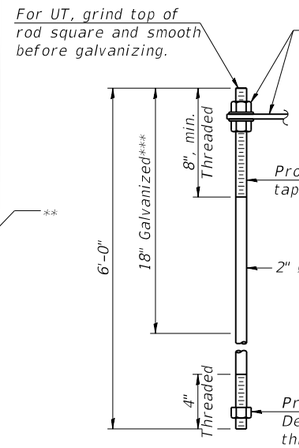
** Butt welded joint in post is only allowed for post heights (H) over 20 ft. in length. If used, weld procedure must be preapproved by Engineer and joint shall receive 100% RT or UT (tension criteria) at Contractor's expense.



SIDE ELEVATION



SUGGESTED POSITIONING PLATE



ANCHOR ROD DETAIL

Anchor rods shall conform to ASTM F1554 Grade 105. Galvanize the upper 18" (minimum***) and associated AASHTO M291, Grade A, C or DH heavy hex nuts and hardened washers per AASHTO M232. No welding shall be permitted on rods. Provide a nut at bottom, a hexagon locknut and washer above base plate and a leveling nut and washer below base plate. Nuts shall each be tightened with 200 lb.-ft. minimum torque against base plate. Before or after threading, but before galvanizing, each anchor rod shall be ultrasonically tested (UT) by a Level II or III inspector, qualified in accord with ANSI guidelines, to insure no rejectable flaws exist in the upper 18" (tension criteria). Cost of testing included in Drilled Shaft Concrete Foundations.

Structure Number	Station	H
8F060S255R1.1	-	20'-2⅛"

Note: "H" based on 15'-0" or actual sign height, whichever is greater.

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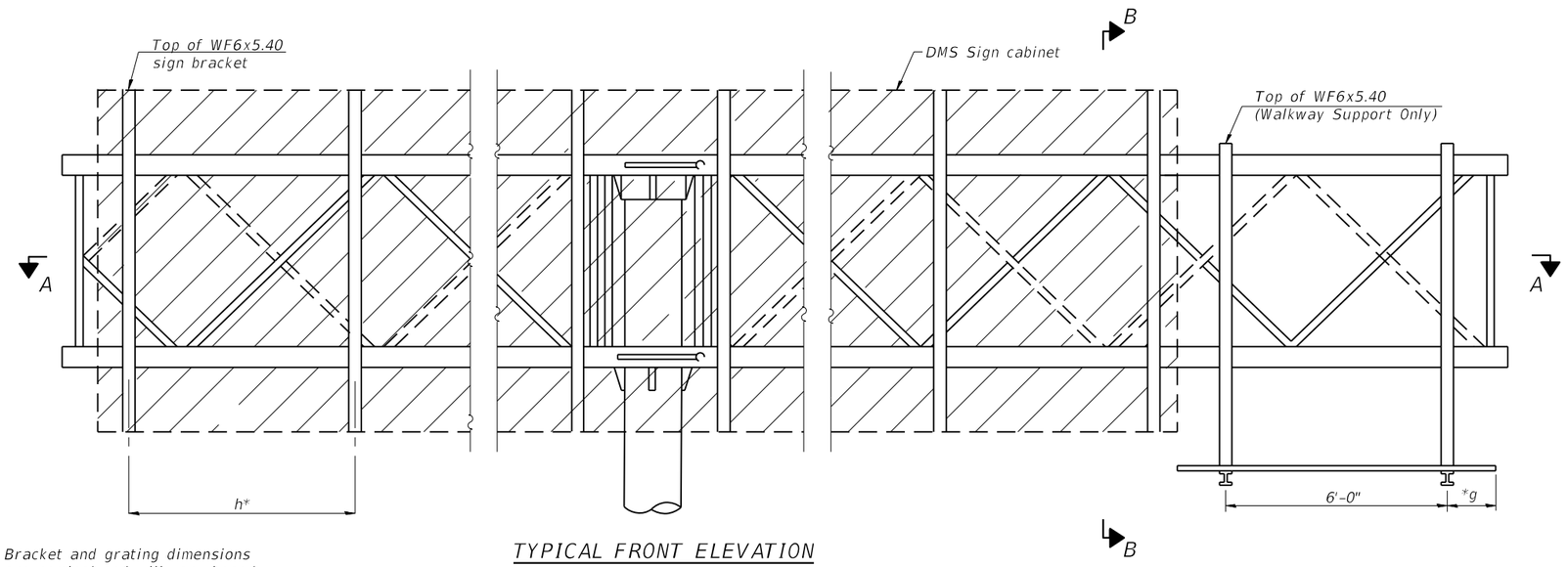
BUTTERFLY SIGN STRUCTURES - TYPE III-F-A TRUSS SUPPORT POST FOR DMS ALUMINUM TRUSS & STEEL POST

SHEET 6 OF 10 SHEETS

NTS

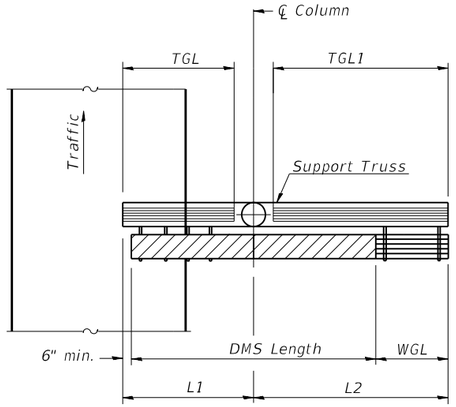
F.AI/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	28
		CONTRACT NO. 76P66		
		ILLINOIS FED. AID PROJECT		



Bracket and grating dimensions are nominal and will vary based on actual DMS cabinet dimensions plus manufacturer's mounting devices.

TYPICAL FRONT ELEVATION

With handrail omitted for clarity.
For section B-B see base sheet 0SF-A-7-DMS



PLAN

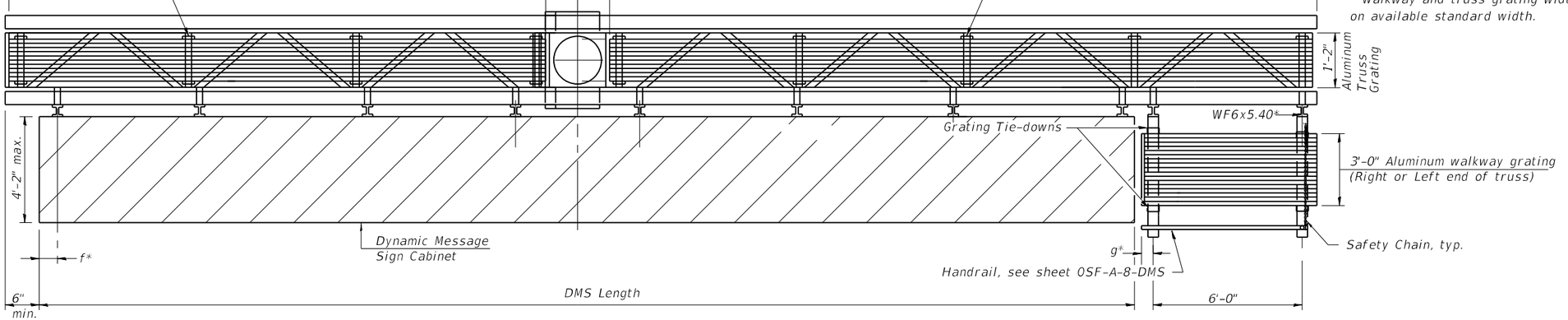
WALKWAY AND HANDRAIL SKETCH

(Road plan beneath truss varies)
Butterfly may be located in shoulder area.
Walkway may be located at right or left end of truss.

Notes:
Space walkway brackets and sign brackets WF6x5.40 for efficiency and within limits shown:

f = 12" maximum, 4" minimum (End of sign to ℄ of nearest bracket)
g = 12" maximum, 4" minimum (End of walkway grating to ℄ of nearest support bracket)
h = 6'-0" maximum (℄ to ℄ sign and/or walkway support brackets, WF6x5.40

Maximun DMS weight = 5000 lbs.
4'-2" maximun cabinet depth includes depth of cabinet plus connection to WF6x5.40
For Section B-B and Grating Splice Details, see Base Sheet 0SF-A-7-DMS.
For Handrail Splice Details, see Base Sheet 0SF-A-8-DMS.
Walkway and truss grating width dimensions are nominal and may vary ±½" based on available standard width.



SECTION A-A

Handrail and walkway shall span a minimum of three brackets between splices and/or gap joints.
Place all sign and walkway brackets as close to panel points as practical.
** Grating splices and handrail joints placed as needed.
Truss grating to facilitate inspection shall run full length (center to center of support frames) ±12" on overhead trusses. Cost of truss grating is included in Butterfly Sign Structure.

$$TGL = L1 \text{ (or } L2) - \left(\frac{Post\ O.D.}{2} + 6"\right)$$

BRACKET TABLE

WF(A-N)4x3.06
ASTM B308, Alloy 6061-T6

Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

Structure Number	Station	DMS Length	TGL	TGL1	Walkway Location (Right or Left end of Truss)
8F060S255R1.1	-	30'-0"	14'-0"	21'-0"	RIGHT

0SF-A-6-DMS 2-17-2017

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BUTTERFLY SIGN STRUCTURES – ALTERNATE
ALUMINUM WALKWAY DETAILS FOR DMS
SHEET 7 OF 10 SHEETS

F.AI/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	29
		CONTRACT NO. 76P66		
		ILLINOIS FED. AID PROJECT		

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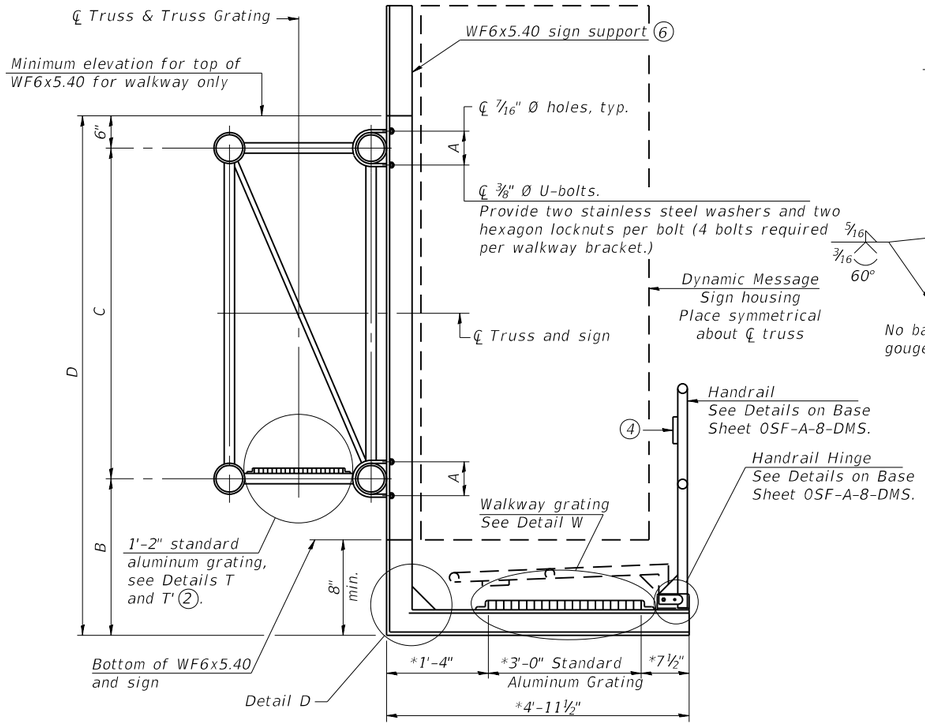
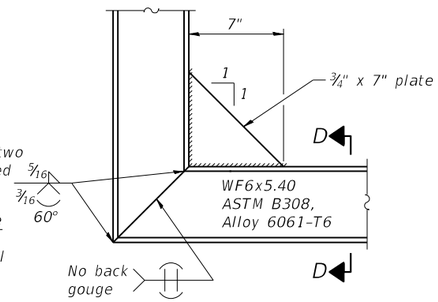
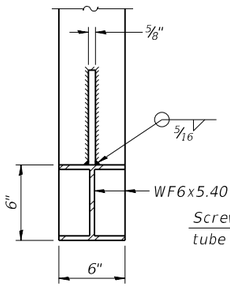


SECTION B-B

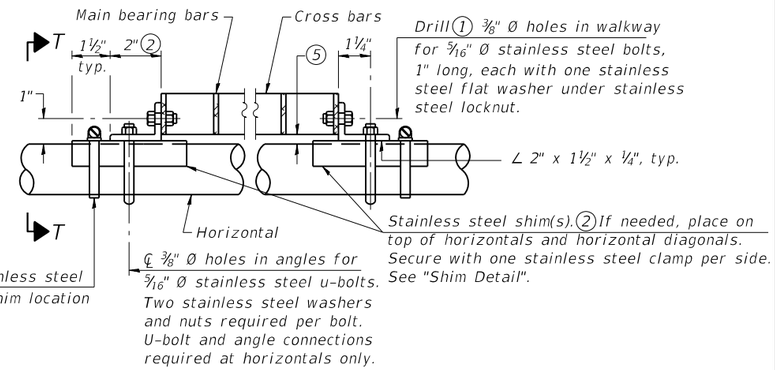
* Bracket and grading dimensions are nominal and will vary based on actual DMS cabinet dimensions plus manufacturers mounting device.



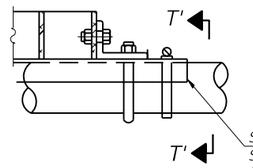
DETAIL D



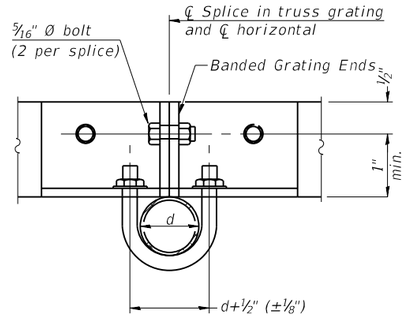
SECTION D-D



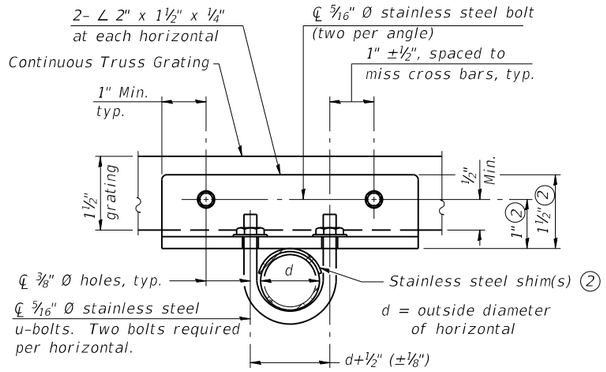
DETAIL T
(Continuous Truss grating)



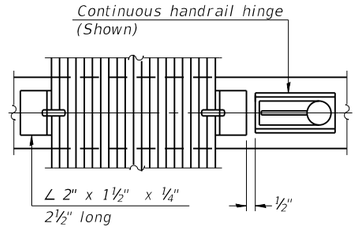
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.



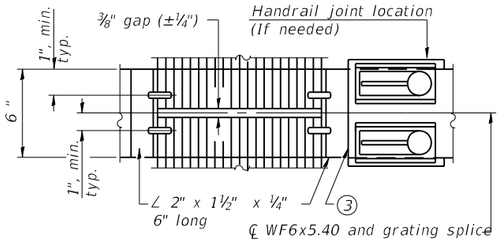
SECTION T'-T'



SECTION T-T

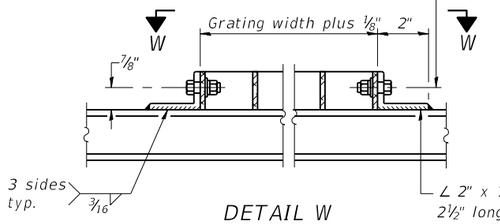


(CONTINUOUS WALKWAY GRATING)



(AT WALKWAY GRATING SPLICE)

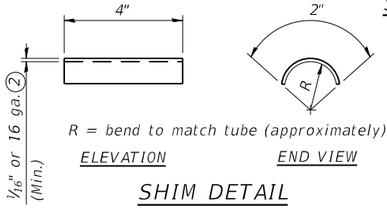
Drill (1) 3/8" Ø holes in walkway for 5/16" Ø stainless steel bolts, 1" long, each with one stainless steel locknut and 2 stainless steel flat washers.



DETAIL W
(Walkway grating)

∠ 2" x 1 1/2" x 1/4" 2 1/2" long at continuous grating. 6" long at grating splices.

SECTION W-W



SHIM DETAIL

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars (MBB) shall be 3/16" x 1 1/2" on 1 3/16" centers and conform to ASTM B211 Alloy 6061-T6.

Cross bars (CB) shall be 3/16" x 1 1/2" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

Aluminum Grating with modified "t" sections for main bearing bars shall meet the following requirements:

Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 in.³ per bar, a depth of 1 1/2", spaced on 1 3/16" centers.

Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.

Structure Number	Station	A	(7) B	C	(7) D
8F060S255R1.1	-	7 1/2"	2'-2"	7'-0"	9'-8"

(1) *Drilling holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.*

(2) *Stainless steel shims shall be placed as shown in Detail T if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided by angles. Thicker shims may be used subject to shims performing properly.*

(3) *If Handrail Joint present, weld angle to WF(A-N)4 and 1/4" extension bars. (See Base Sheet 0SF-A-8)*

(4) *PL 1/8" x 1/2" x 2" welded to handrail posts to protect locations that contact grating.*

(5) *Tube to grating gap may very from 0 to 1/2" max. to align walkway, allow for camber, etc.*

(6) *Cabinet manufacturer must design and supply hardware for connection of cabinet to WF6's. Bolts must be stainless steel or hot dip galvanized high strength per IDOT specifications.*

(7) *Based on actual sign height, Ds, given on 0SF-A-1-DMS.*

OSF-A-7-DMS 2-17-2017

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PLOT SCALE =	DRAWN - PMG	REVISED -	
PLOT DATE =	CHECKED - SSM	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BUTTERFLY SIGN STRUCTURES – ALTERNATE WALKWAY
DETAILS FOR DMS – ALUMINUM TRUSS & STEEL POST
SHEET 8 OF 10 SHEETS

F.AI/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	30
		CONTRACT NO. 76P66		
		ILLINOIS FED. AID PROJECT		

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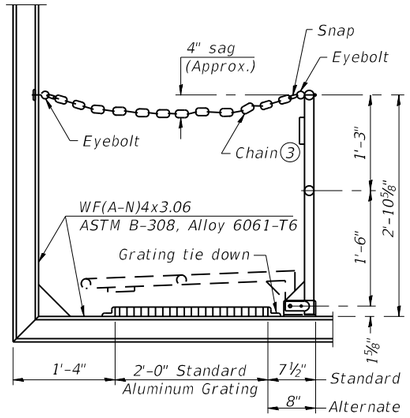
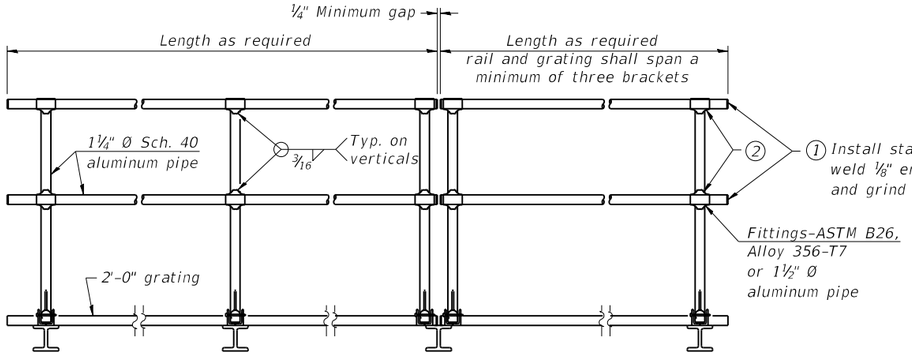


SIDE ELEVATION

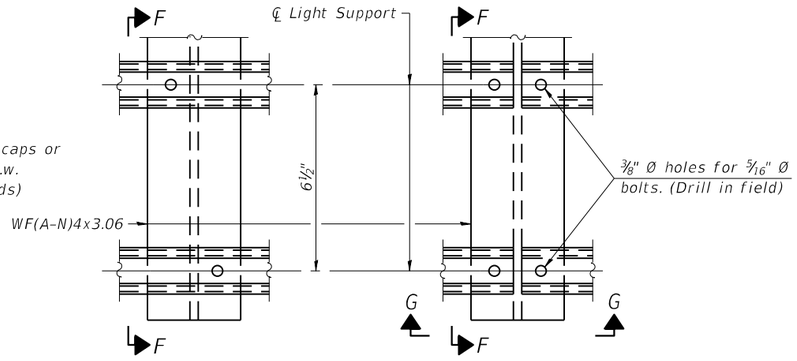
(Showing Safety Chain W/O Sign)



① Install standard force-fit end caps or weld ⅛" end plates with ⅛" c.f.w. and grind smooth. (All rail ends)

FRONT ELEVATION

② Horizontal handrail member shall be continuous thru fitting. Provide 7/16" Ø hole in fitting for ⅜" Ø bolt. Field drill 7/16" Ø hole in horizontal rail member. Provide locknut and two stainless steel washers for bolt. (Use 5/16" eyebolts in 7/16" Ø holes on top rail at ends only.)

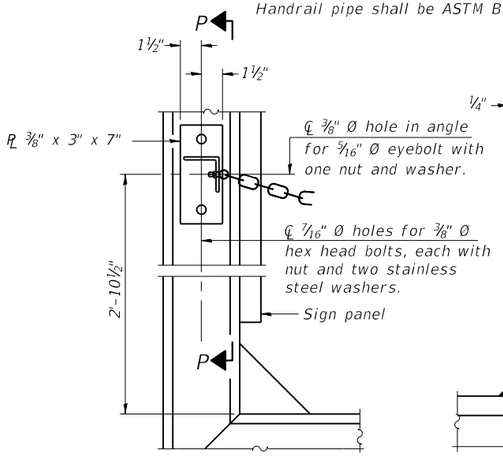


DETAIL F

DETAIL G

HANDRAIL DETAILS

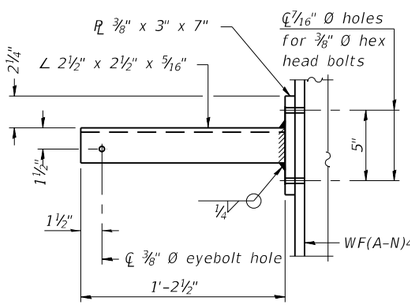
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.



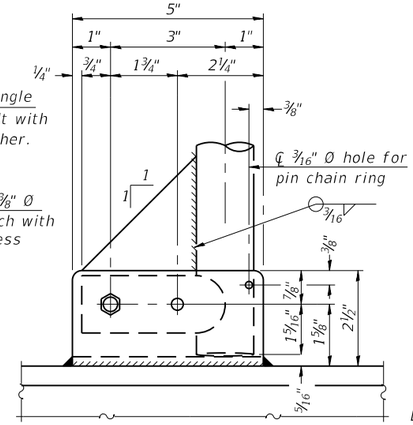
ALTERNATE SAFETY CHAIN ATTACHMENT

(With Sign Present)

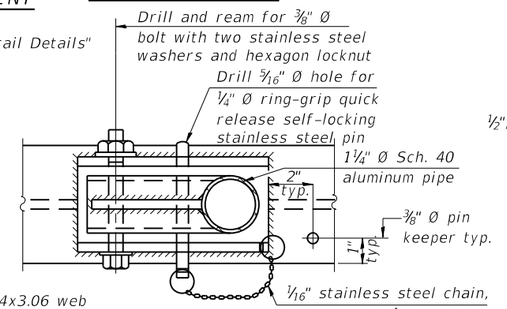
Items not shown same as "Side Elevation" of "Handrail Details"



SECTION P-P

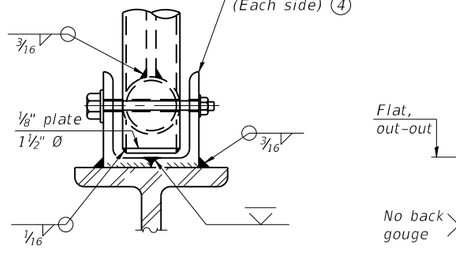


SIDE ELEVATION



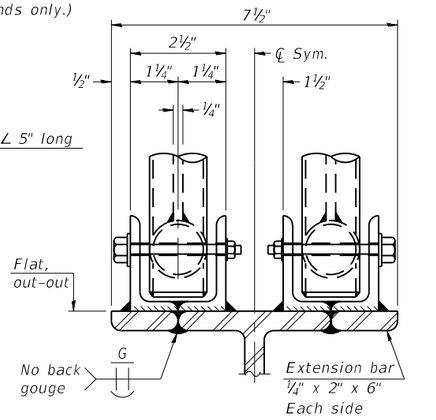
PLAN

DETAIL E HANDRAIL HINGE



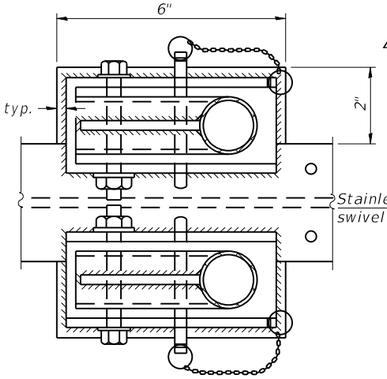
FRONT ELEVATION

Details not shown same as "ELEVATION" at right.



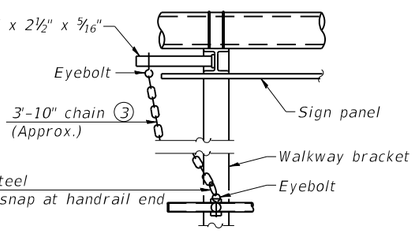
ELEVATION AT HANDRAIL JOINT ④

Details not shown same as "FRONT ELEVATION"



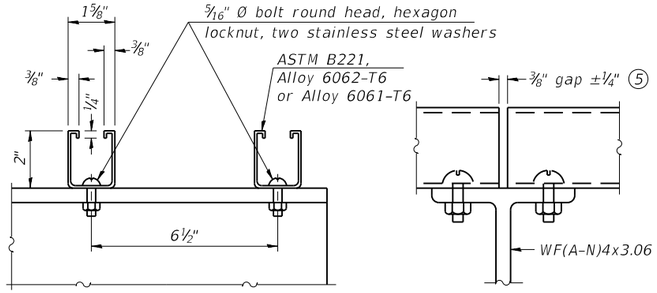
PLAN AT HANDRAIL JOINT

Details not shown same as "PLAN"



ALTERNATE SAFETY CHAIN ATTACHMENT

Details not shown similar to "Safety Chain" Details
(Walkway omitted for clarity)

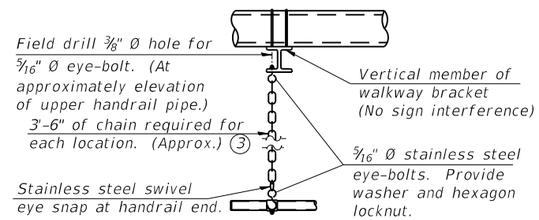


SECTION F-F

SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

⑤ Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



SAFETY CHAIN

One required for each end of each walkway.

③ 3/16" type 304L stainless steel chain, approximately 12 links per foot.

④ Extrusions may be used in lieu of the details shown, with approval of the Engineer.

0SF-A-8 2-17-2017

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BUTTERFLY SIGN STRUCTURES – HANDRAIL DETAILS
ALUMINUM TRUSS & STEEL POST

SHEET 9 OF 10 SHEETS

F.AJ/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	31
		CONTRACT NO. 76P66		
	ILLINOIS FED. AID PROJECT			

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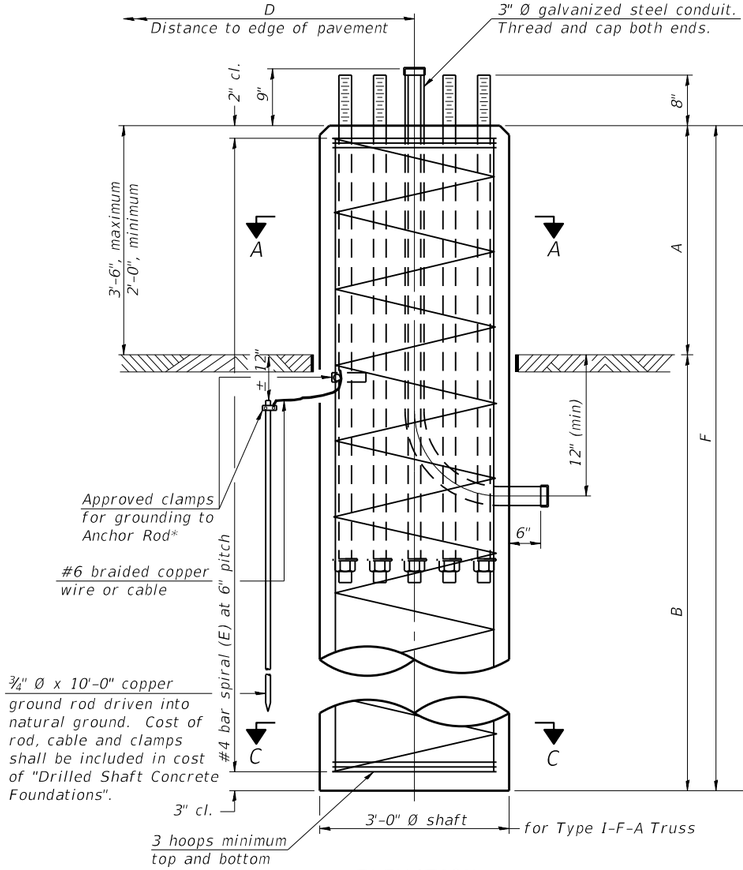
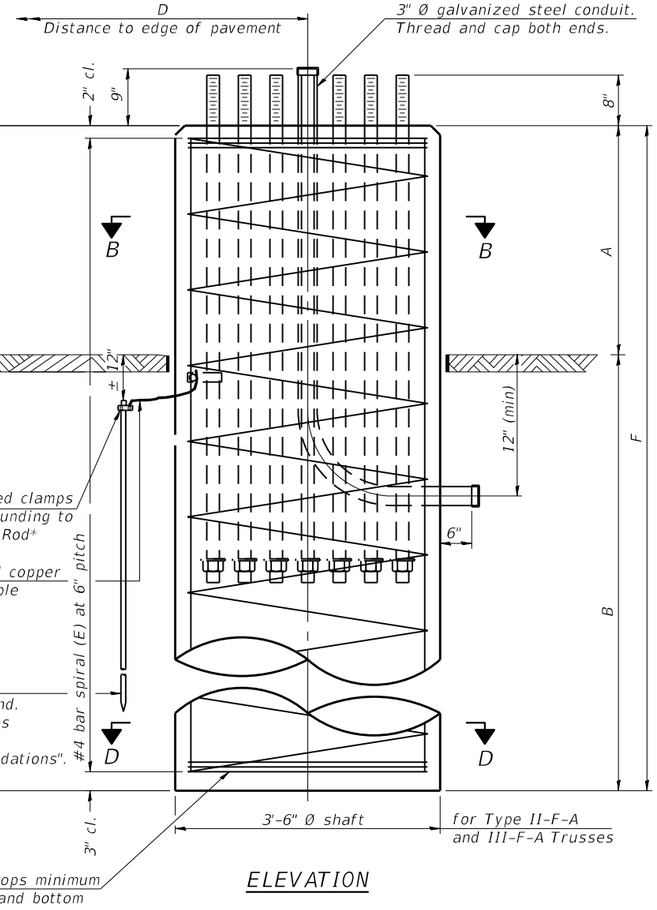
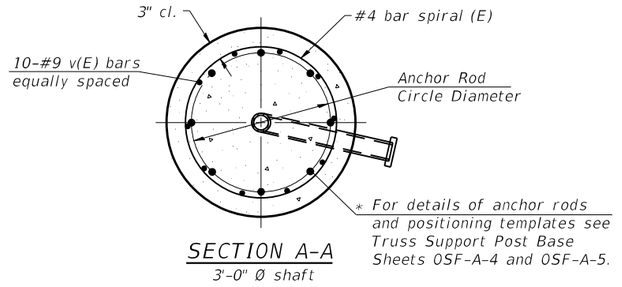
* Grind anchor rod to bright finish at ground clamp location before installing clamp.



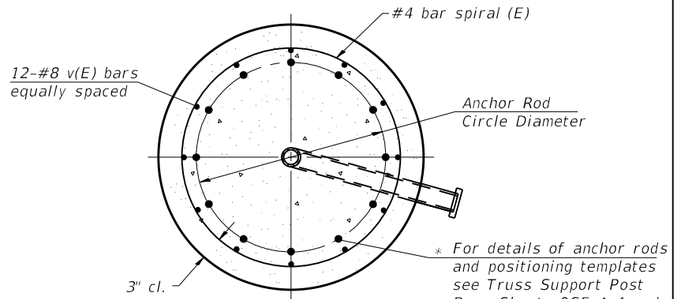
ELEVATION



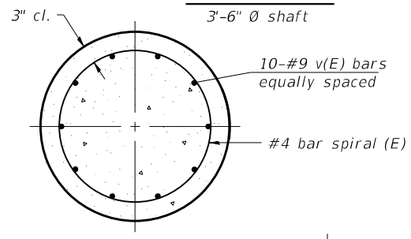
ELEVATION



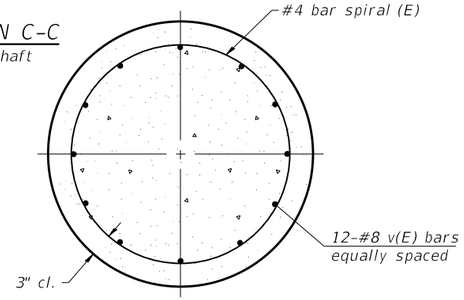
SECTION A-A
3'-0" Ø shaft



SECTION B-B
3'-6" Ø shaft



SECTION C-C
3'-0" Ø shaft



SECTION D-D
3'-6" Ø shaft

NOTES:

The foundation dimensions shown in the Foundation Design Table are based on the presence of mostly cohesive soils with an average Unconfined Compressive Strength (Qu) of at least 1.25 tsf, which must be determined by previous soil investigations at the jobsite. When other conditions are indicated, the boring data will be included in the plans and the foundation dimensions shown in the Foundation Data Table will be the result of site specific designs.

If the conditions encountered are different than those indicated, the Contractor shall notify the Engineer to determine if the foundation dimensions need to be modified. If dimensions "B" or "F" are revised by more than 12" by the Contractor, "as-built" plans shall be prepared and submitted to the District Bureauof Operations for future reference.

No sonotubes or decomposable forms shall be used below the lower conduit entrance. Permanent metal forms or other shielding may not be left in place below that elevation without the Engineer's written permission.

Concrete shall be placed monolithically, without construction joints. Backfill shall be placed per Article 502 of Standard Specification and prior to erection of support column.

A normal surface finish followed by a Concrete Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished ground line. Cost included in "Drilled Shaft Concrete Foundation".

FOUNDATION DESIGN TABLE

Truss Type	Post Base Sheet	Maximum Cantilever Length (ft)	Maximum Total Sign Area (sq ft)	Shaft Diameter (in)	"B" Depth (ft)	Anchor Rods		Anchor Rod Circle Diameter (in)
						No.	Diameter (in)	
I-F-A	0SF-A-4	25	200	3.0	17'-6"	8	2	22
II-F-A	0SF-A-5	30	400	3.5	22'-0"	12	2	30
III-F-A	0SF-A-5	35	400	3.5	24'-0"	12	2	30

FOUNDATION DATA TABLE

Structure Number	Station	Truss Type	Shaft Diameter	Elevation Top	Elevation Bottom	A	B	F	Class DS Concrete Cubic Yards
8F060S255R1.1	-	III-F-A	3'-6'	430.90	404.40	2'-6"	24'-0"	26'-6"	9.4

0SF-A-9 2-17-2017

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DEPARTMENT OF TRANSPORTATION

BUTTERFLY SIGN STRUCTURES – DRILLED SHAFT
ALUMINUM TRUSS & STEEL POST

SHEET 10 OF 10 SHEETS

F.AJ/P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270/310	60-1, 9SG-1	MADISON	37	32
		CONTRACT NO. 76P66		
	ILLINOIS	FED. AID PROJECT		

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OSB-3
SOIL BORING LOG

Sheet 1 of 2

COUNTY: Madison
SECTION: N/A
ROUTE: Illinois Route 255
JOB NO.: MG22001
DATE: 2/10/2022

DESCRIPTION: DMS Sign Borings
LOCATION: Madison County, Illinois
DRILLED BY: Geotechnology
DRILLING METHOD: Hollow Stem Augers, Mud-Rotary
DISTRICT: 8
CONSULTANT: Millennia Professional Services
LOGGED BY: P. Adhikari
RIG TYPE: CME 550
HAMMER TYPE: Automatic
EFFICIENCY: N/A

BORING NO.: OSB-3
Note: Mud-Rotary below 35.0 ft.
Offset: ft
Northing:
Easting:
Ground Surface Elev.: ft

Surface Water Elev.: ft
Stream Bed Elev.: ft
Groundwater Elev.:
First Encounter: 11.0 ft ▼
Upon Completion: Not Available ft
After ____ Hrs.: ft

LITHOLOGY	ELEV (ft)	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
TOPSOIL (3.0")					
CLAY LOAM: Grey, medium stiff, dry, trace organics			1		
			2 3	1.2 B	29
SILT: Grey, medium stiff, dry			2		
		-5	3 4	1.6 B	35
CLAY: Grey, medium stiff, dry			1		
			3 3	1.4 B	35
			1		
		-10	2 3	1.5 B	32
CLAY LOAM: Grey and brown, soft, moist - dry unit weight = 89.04 pcf - Qu = 0.60 tsf at 12.0 ft.	▼			0.6 S	31
SILTY CLAY LOAM: Grey and brown, very soft, wet			1		
		-15	1 1	0.5 B	31
CLAY: Grey and brown, very soft to medium stiff, moist			0		
			0 2	1.1 B	40
- grey below 18.5 ft.			1		
		-20	2 2	1.0 B	40
CLAY: Grey and brown, very soft to medium stiff, moist *(continued)*			1		
			2 2	1.2 B	36
			1		
		-25	1 2	1.2 S	53
- with organics from 24.5 to 25.0 ft.			0		
			0 0	0.5 S	51
- reddish brown below 28.5 ft.			1		
		-30	2 2	1.3 S	50
SANDY CLAY: Grey, soft, moist			2		
SAND: Grey, fine-grained, medium dense		-35	3 13		
			17		
		-40	7 4		

The Unconfined Compressive Strength (UCS) Qu column represents either the IDOT Rimac or AASHTO T 208 Test Procedure. The Qu failure mode is indicated by B for Bulge or S for Shear. P is a Pocket Penetrometer test. The Standard Penetration Test (SPT) N value is the sum of the second and third Blows /6 in. values in each sample using AASHTO T 206.

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OSB-3
SOIL BORING LOG

Sheet 2 of 2

COUNTY: Madison
SECTION: N/A
ROUTE: Illinois Route 255
JOB NO.: MG22001
DATE: 2/10/2022

DESCRIPTION: DMS Sign Borings
LOCATION: Madison County, Illinois
DRILLED BY: Geotechnology
DRILLING METHOD: Hollow Stem Augers, Mud-Rotary
DISTRICT: 8
CONSULTANT: Millennia Professional Services
LOGGED BY: P. Adhikari
RIG TYPE: CME 550
HAMMER TYPE: Automatic
EFFICIENCY: N/A

BORING NO.: OSB-3
Note: Mud-Rotary below 35.0 ft.
Offset: ft
Northing:
Easting:
Ground Surface Elev.: ft

Surface Water Elev.: ft
Stream Bed Elev.: ft
Groundwater Elev.:
First Encounter: 11.0 ft ▼
Upon Completion: Not Available ft
After ____ Hrs.: ft

LITHOLOGY	ELEV (ft)	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
SAND: Grey, fine-grained, medium dense *(continued)*			6		
		-45	6 5		
			8		
		-50	11 13		
End of Boring		-55			
		-60			

The Unconfined Compressive Strength (UCS) Qu column represents either the IDOT Rimac or AASHTO T 208 Test Procedure. The Qu failure mode is indicated by B for Bulge or S for Shear. P is a Pocket Penetrometer test. The Standard Penetration Test (SPT) N value is the sum of the second and third Blows /6 in. values in each sample using AASHTO T 206.

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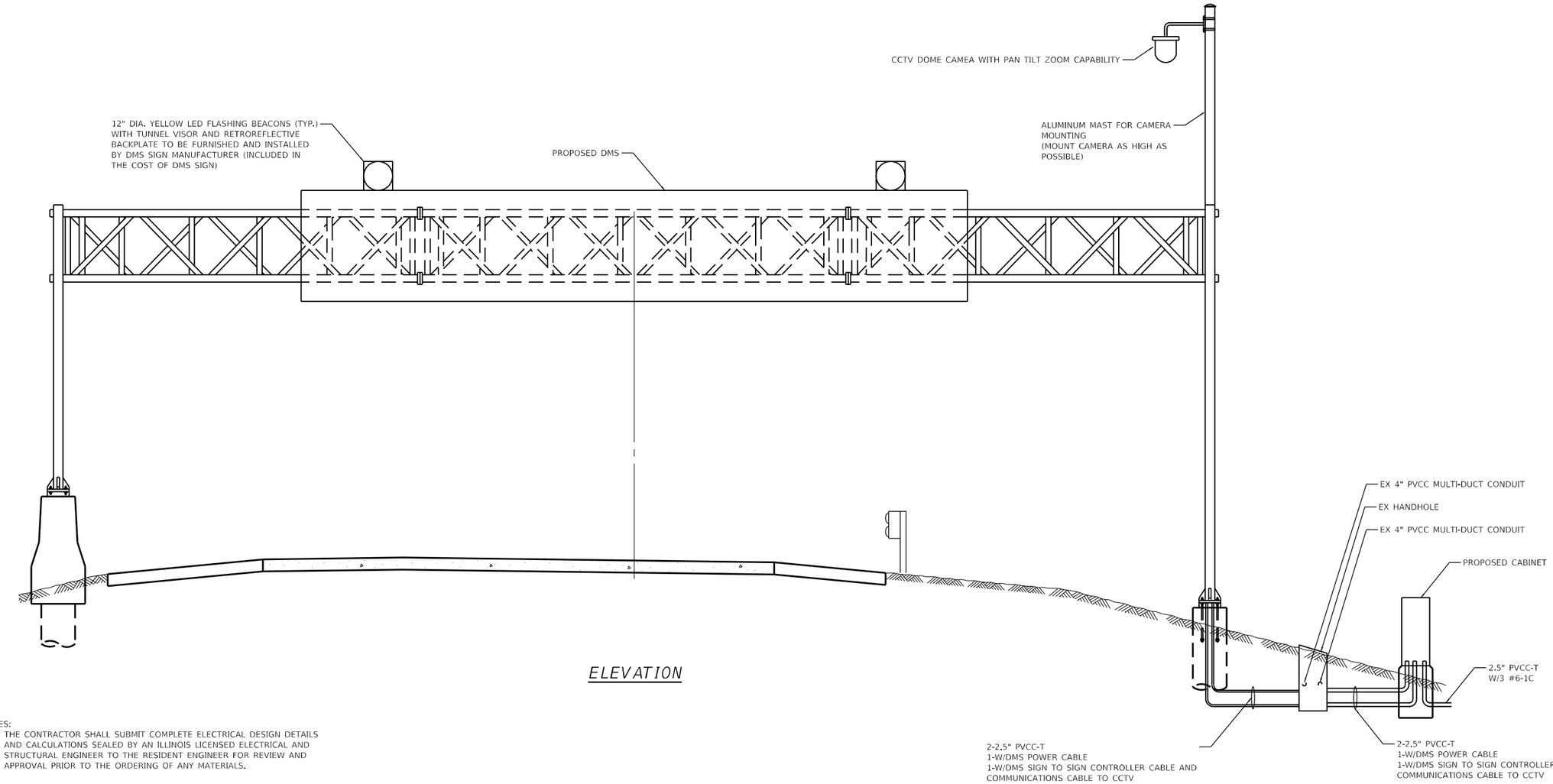

ELEVATION

NOTES:
1. THE CONTRACTOR SHALL SUBMIT COMPLETE ELECTRICAL DESIGN DETAILS AND CALCULATIONS SEALED BY AN ILLINOIS LICENSED ELECTRICAL AND STRUCTURAL ENGINEER TO THE RESIDENT ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE ORDERING OF ANY MATERIALS.

CCTV CAMERA PLACEMENT
OVERHEAD SIGN STRUCTURE
(SEE STRUCTURAL SHEETS FOR SIGN TRUSS PLANS)

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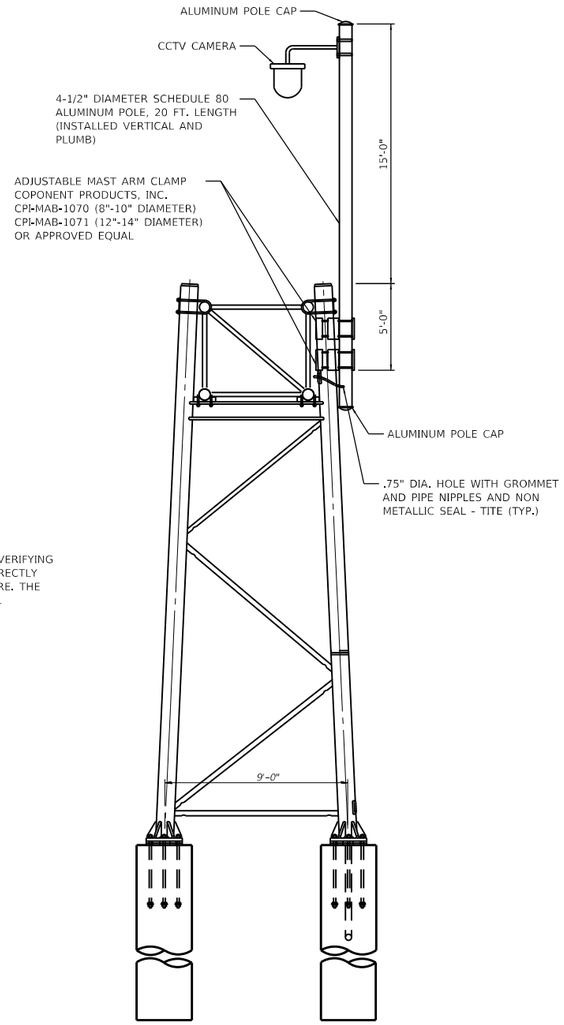
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DMS & CCTV CAMERA DETAIL FOR OVERHEAD SIGN STRUCTURE

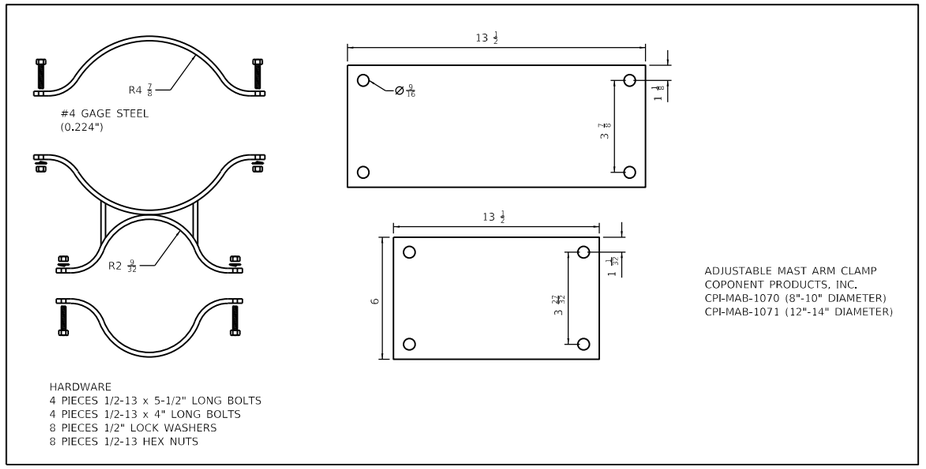
SCALE: NTS | SHEET OF SHEETS | STA. | TO STA.

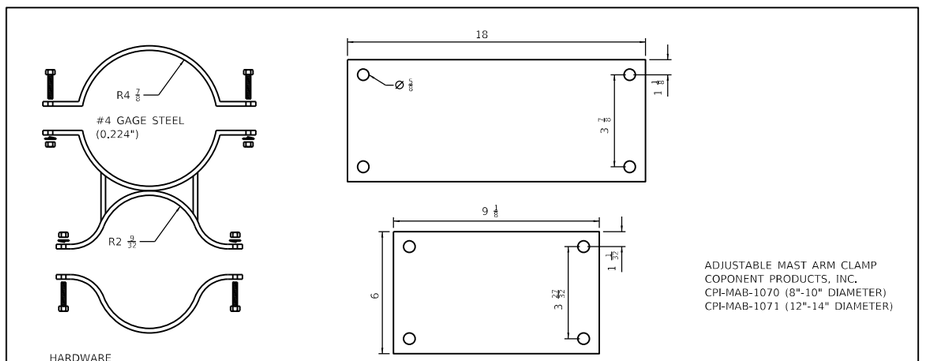
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	60-1,9SG-1	MADISON	37	34
	FAI 270/FAP 310	CONTRACT NO. 76P66		
	ILLINOIS FED. AID PROJECT			



THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE CAMERA MAST COMPONENTS FIT CORRECTLY AND ARE COMPATIBLE WITH THE SIGN STRUCTURE. THE MANUFACTURER OF THE SIGN STRUCTURE SHALL APPROVE THE CAMERA MAST DESIGN.

SIDE ELEVATION





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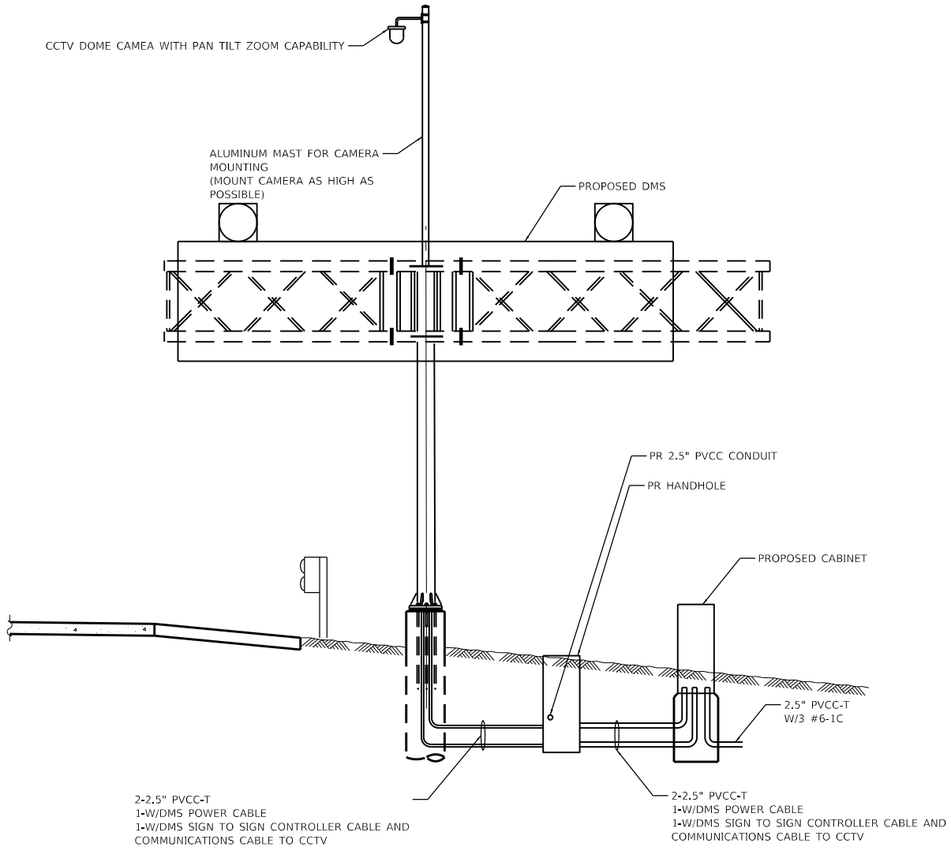
PLOT DATE = 5/6/2022	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

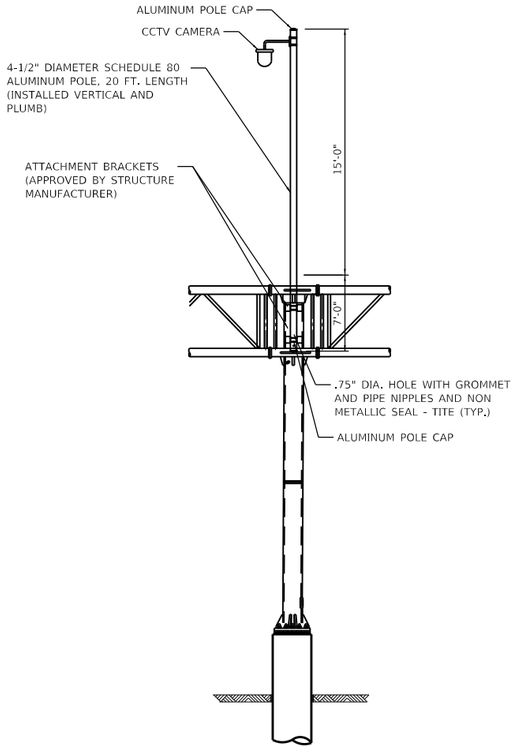
PROPOSED DMS & CCTV CAMERA DETAIL FOR OVERHEAD SIGN STRUCTURE

SCALE: NTS | SHEET OF SHEETS | STA. | TO STA.

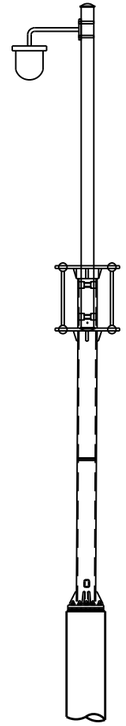
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	60-1,9SG-1	MADISON	37	35
	FAI 270/FAP 310	CONTRACT NO. 76P66		
	ILLINOIS FED. AID PROJECT			



ELEVATION



FRONT ELEVATION



SIDE ELEVATION

THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE CAMERA MAST COMPONENTS FIT CORRECTLY AND ARE COMPATIBLE WITH THE SIGN STRUCTURE. THE MANUFACTURER OF THE SIGN STRUCTURE SHALL APPROVE THE CAMERA MAST DESIGN. THE COST OF FURNISHING AND INSTALLING THE CAMERA MAST SHALL BE INCLUDED IN THE COST OF THE SIGN STRUCTURE.

CCTV CAMERA PLACEMENT
BUTTERFLY SIGN STRUCTURE
(SEE STRUCTURAL SHEETS FOR SIGN TRUSS PLANS)

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

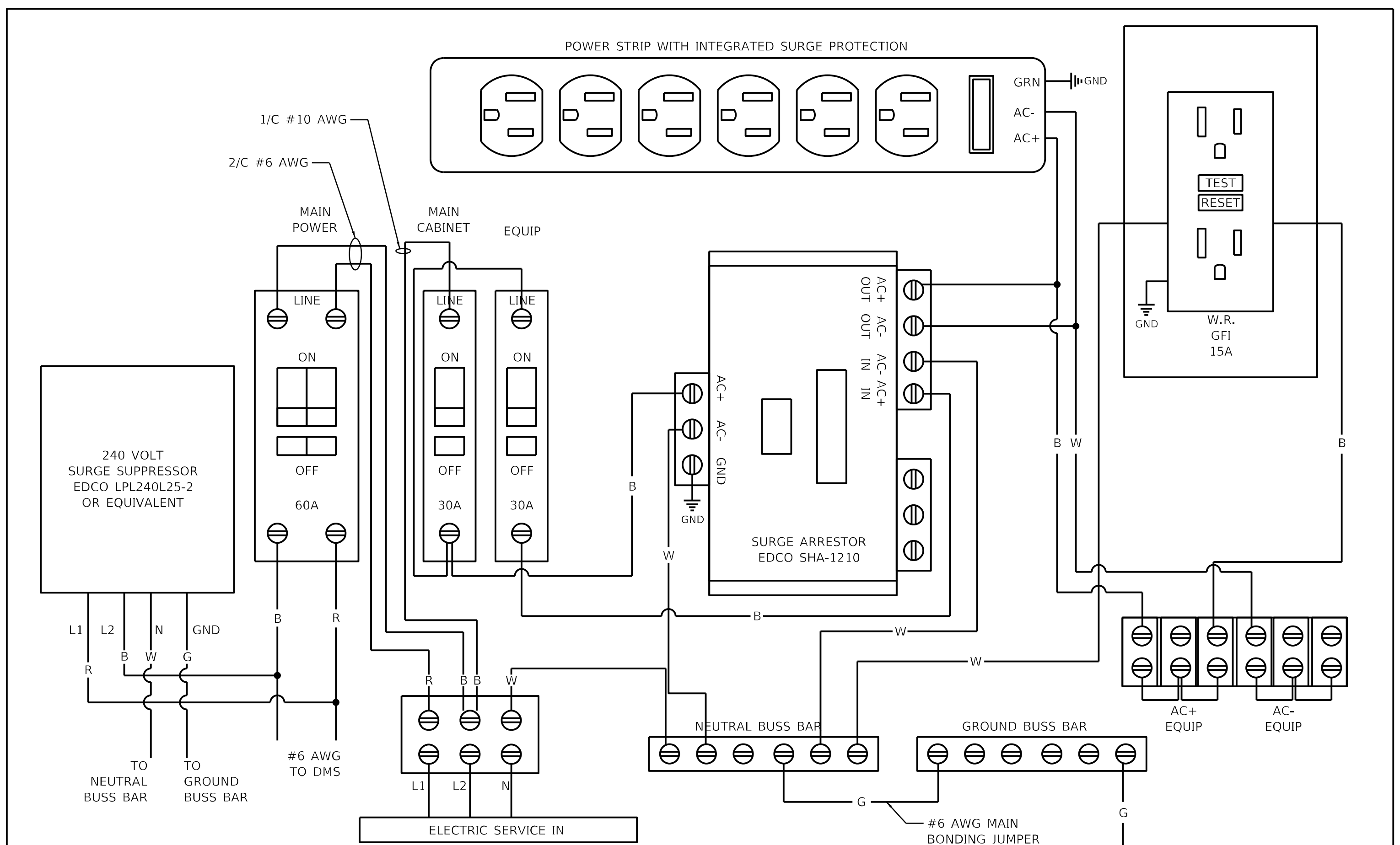
PROPOSED DMS & CCTV CAMERA DETAIL FOR BUTTERFLY TRUSS SIGN STRUCTURE

SCALE: NTS | SHEET OF SHEETS | STA. | TO STA.

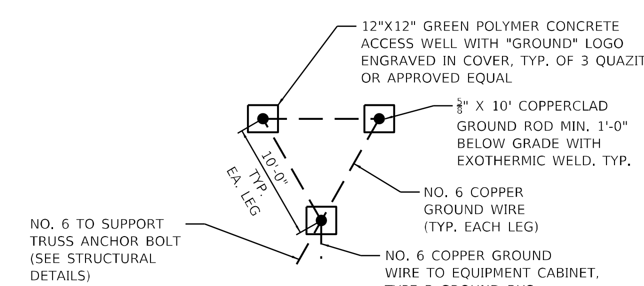
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	60-1,9SG-1	MADISON	37	36
	FAI 270/FAP 310	CONTRACT NO. 76P66		
	ILLINOIS FED. AID PROJECT			

NOTES:

1. THE ITS EQUIPMENT CABINET SHALL BE A NEMA TYPE 3R CABINET. THE CABINET SHALL BE CONSTRUCTED FROM .125" THICK ALUMINUM AND HAVE A NATURAL FINISH.
2. THE CABINET SHALL BE FURNISHED WITH ONE ADJUSTABLE HEIGHT SHELF, THREE POSITION DOOR STOP (90,120,180 DEGREES), NEOPRENE DOOR GASKET, AIR VENT LOUVERS, CONTINUOUS STAINLESS STEEL DOOR HINGE, INTERIOR STIFFENERS FOR MOUNTING, THREE POINT LATCHING MECHANISM WITH #2 CORBIN LOCK, 72 FIBER INTERCONNECT CENTER, POWER PANEL, AND ALL STAINLESS STEEL HARDWARE.
3. THE CABINET SHALL BE EQUIPPED WITH A THERMOSTATICALLY CONTROLLED VENTILATION FAN, 250 WATT HEATER STRIP (WITH GUARD), AND DELUXE PLEATED AIR FILTER.
4. THE CONTRACTOR SHALL INSTALL ALL DIN RAIL MOUNTED EQUIPMENT IN THE CABINET.
5. ALL ITEMS SHOWN ON THIS DRAWING SHALL BE INCLUDED IN THE CONTROLLER CABINET TYPE III PAY ITEM (INCLUDING ALL UNISTRUT, MTG. BRACKETS, CONDUIT/WIRE ATTACHED TO STRUCTURE AND METER FITTING).
6. ALL CONTROL CABINET ITEMS SHALL HAVE SUITABLE IDENTIFICATION. OPEN CIRCUIT BREAKERS, CONTACTORS AND OTHER OPEN DEVICES SHALL HAVE PERMANENT SELF STICKING TAGS. DEVICES IN ENCLOSURES SHALL HAVE ENGRAVED 2-COLOR LAMINATED PLASTIC NAMEPLATES ATTACHED TO ENCLOSURES WITH SCREWS. NAMEPLATES SHALL BE ENGRAVED TO CORRESPOND TO DESIGNATIONS ON THE DRAWINGS. INTERNAL CABINET WIRING SHALL BE IDENTIFIED AS INDICATED OR AS DIRECTED BY THE ENGINEER BY MEANS OF SELF-STICKING TAGS APPLIED AT EACH CONNECTED END. IDENTIFICATION SHALL BE MADE BY THE CABINET MANUFACTURER.
7. ALL WIRING WITHIN THE CABINET SHALL BE COLOR CODED AS INDICATED:
   R = RED BL = BLUE W = WHITE B = BLACK Y = YELLOW G = GREEN
8. PROVIDE SEALING GROMMETS FOR ALL OPEN WIRING EXTENDED FROM DEVICES IN BOXES OR CABINETS WITHIN THE CONTROL CABINET.
9. ALL 120 VOLT SYSTEM AND ALL CONTROL WIRING SHALL BE #12AWG STRANDED UNLESS OTHERWISE INDICATED.
10. ALL WIRING SHALL BE NEATLY DRESSED AND SUPPORTED.
11. THE CONTROLLER SHALL BE CONSTRUCTED TO U.L. STD 508 AND BEAR THE U.L. LABEL "ENCLOSED INDUSTRIAL CONTROL PANEL".



ITS EQUIPMENT CABINET POWER PANEL DETAIL
(POWER PANEL TO BE EQUIPPED WITH PLEX-GLASS SAFETY SHIELD)



GROUND FIELD DETAIL (TYP.)

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DEPARTMENT OF TRANSPORTATION

EQUIPMENT CABINET DETAILS

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F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAI 270/FAP 310	60-1.9SG-1	MADISON	37	37
		CONTRACT NO. 76P66		

ILLINOIS FED. AID PROJECT