

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

FAI Route 72
D 5 OVD SIN STR REPL 2010-01
Champaign County
Sheet 1 of 23
Contract Number 46062

PLANS FOR PROPOSED FEDERAL AID HIGHWAY

FAI ROUTE 72
D 5 OVD SIN STR REPL 2010-01
CHAMPAIGN COUNTY
C-60-001-10

INDEX OF SHEETS

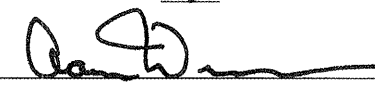
<u>NO.</u>	<u>DESCRIPTION</u>
1	COVER SHEET
2	SUMMARY AND SCHEDULE OF QUANTITIES
3-23	SCHEDULE OF LOCATIONS FOR DISTRICT 5

STANDARDS

701101-02
701106-02
701400-03
701401-05
701406-05
701411-05
701901-01
720021-02

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED 7-9 2009
PASSED


ENGINEER OF OPERATIONS

August 14, 2009


ENGINEER OF DESIGN AND ENVIRONMENT

APPROVED August 14, 2009


DIRECTOR DIVISION OF HIGHWAYS

JOINT UTILITY LOCATING INFORMATION FOR
EXCAVATIONS PHONE: 800-892-0123

CONTRACT NO. 46062

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FAI Route 72
D 5 OVD SIN STR REPL 2010-01
Champaign County
Sheet 3 of 23
Contract Number 46062

District 5
Schedule of Overhead Sign Structure Replacement

Location No.:	5-01	State I.D. No.:	5S010I072R181.52		
County:	Champaign	Route:	I-72	M.P.:	181.52
		Direction:	EB		
Description of Work	Unit	Quantity			
REMOVE AND REINSTALL WALKWAY	FOOT	61.00			
REMOVE AND REINSTALL SIGN PANEL	SQ FT	408.00			
FURNISH AND INSTALL SAFETY CHAIN	EACH	2.00			
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	5.00			
ELECTRICAL SERVICE DISCONNECT	EACH	1.00			
CHANGEABLE MESSAGE SIGN	CAL DAY	35.00			
OVERHEAD SIGN STRUCTURE - SPAN, TYPE I-A (4'-0" x 4' 6")	FOOT	79.00			
DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	21.50			
REMOVE OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00			
REMOVE CONCRETE FOUNDATION OVERHEAD	EACH	2.00			
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE - SPAN	EACH	2.00			

Location No.:	5-02	State I.D. No.:	5C010I072L181.74		
County:	Champaign	Route:	I-72	M.P.:	181.74
		Direction:	WB		
Description of Work	Unit	Quantity			
REMOVE AND REINSTALL WALKWAY	FOOT	18.00			
REMOVE AND REINSTALL SIGN PANEL	SQ FT	153.00			
FURNISH AND INSTALL SAFETY CHAIN	EACH	2.00			
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	1.00			
REPLACE HANDRAIL SUPPORT	EACH	1.00			
ELECTRICAL SERVICE DISCONNECT	EACH	1.00			
CHANGEABLE MESSAGE SIGN	CAL DAY	35.00			
OVERHEAD SIGN STRUCTURE - CANTILEVER, TYPE II-C-A (36" x 5' 6")	FOOT	27.00			
DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	9.00			
REMOVE OVERHEAD SIGN STRUCTURE - CANTILEVER	EACH	1.00			
REMOVE CONCRETE FOUNDATION OVERHEAD	EACH	1.00			

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 Sign Panel 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.
f_y = 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 with a minimum yield of 35,000 p.s.i., or A500 Grade B or C with a minimum yield of 46,000 p.s.i. 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.

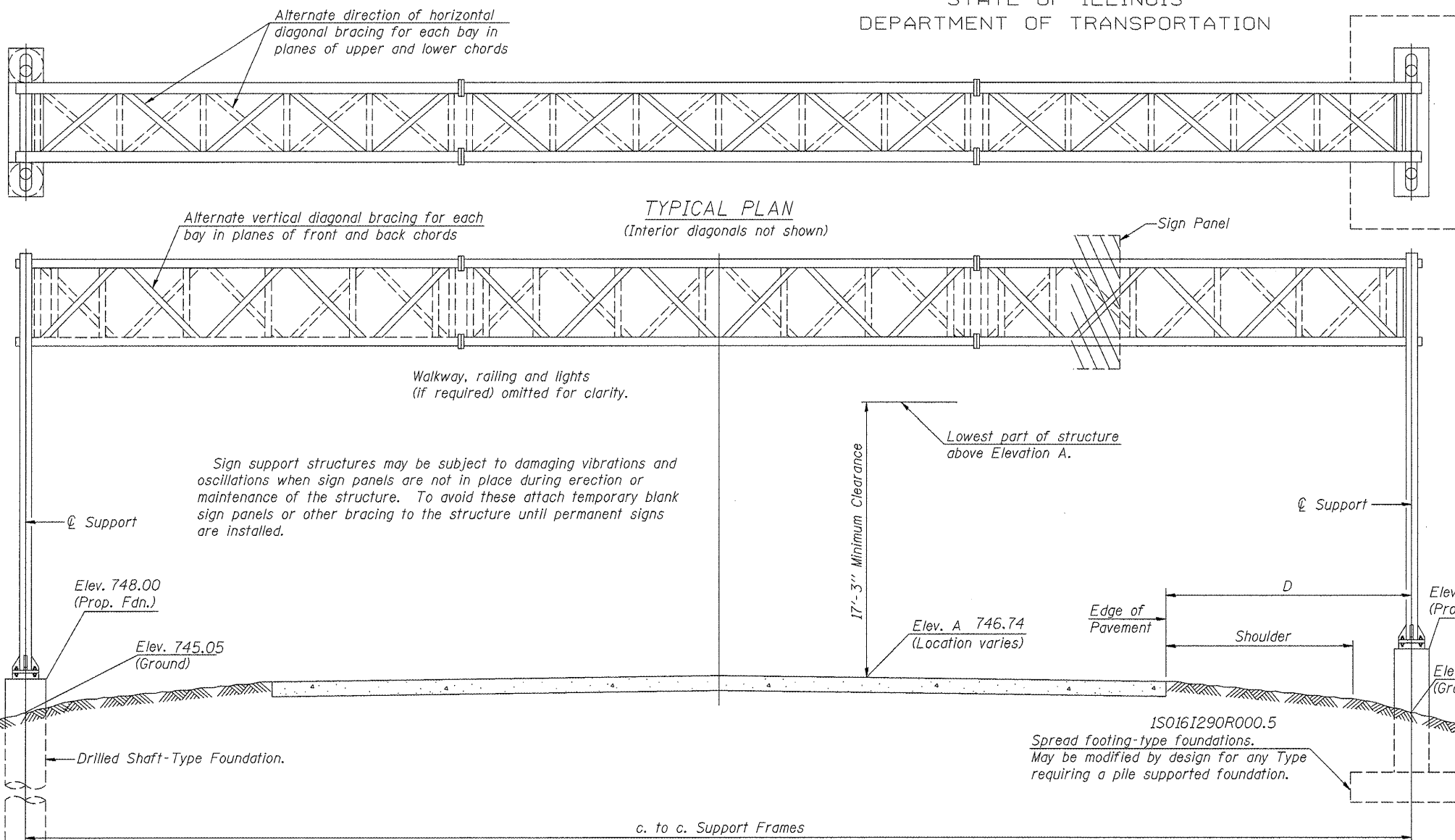
GALVANIZING: All Steel Grating, Plates, Shapes and Pipe shall be Hot Dip Galvanized after fabrication in accordance with AASHTO M111. Painting is not permitted.

ANCHOR RODS: Shall conform to AASHTO M314 Gr. 36 or 55 with a minimum Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F.

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

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

* 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.



TYPICAL ELEVATION
(Looking at Face of Signs)**

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

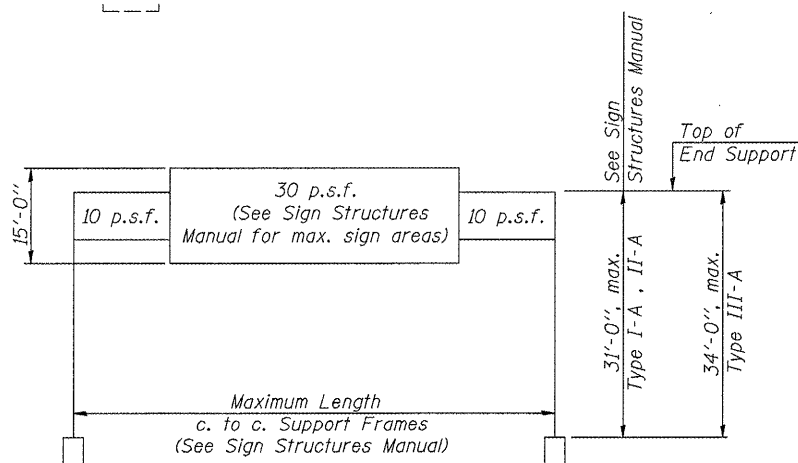
Structure Number	Station	Design Truss Type	c. to c. Supports	Elev. A	Dim. D	Height of Tallest Sign	Total Sign Area
550101072R181.52	1947 + 97	I-A	79'-0"	746.74	16'-0"	14'-0"	408.00

**Looking upstation for structures with signs both sides.

TOTAL BILL OF MATERIAL

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

NUMBER	REVISION	DATE



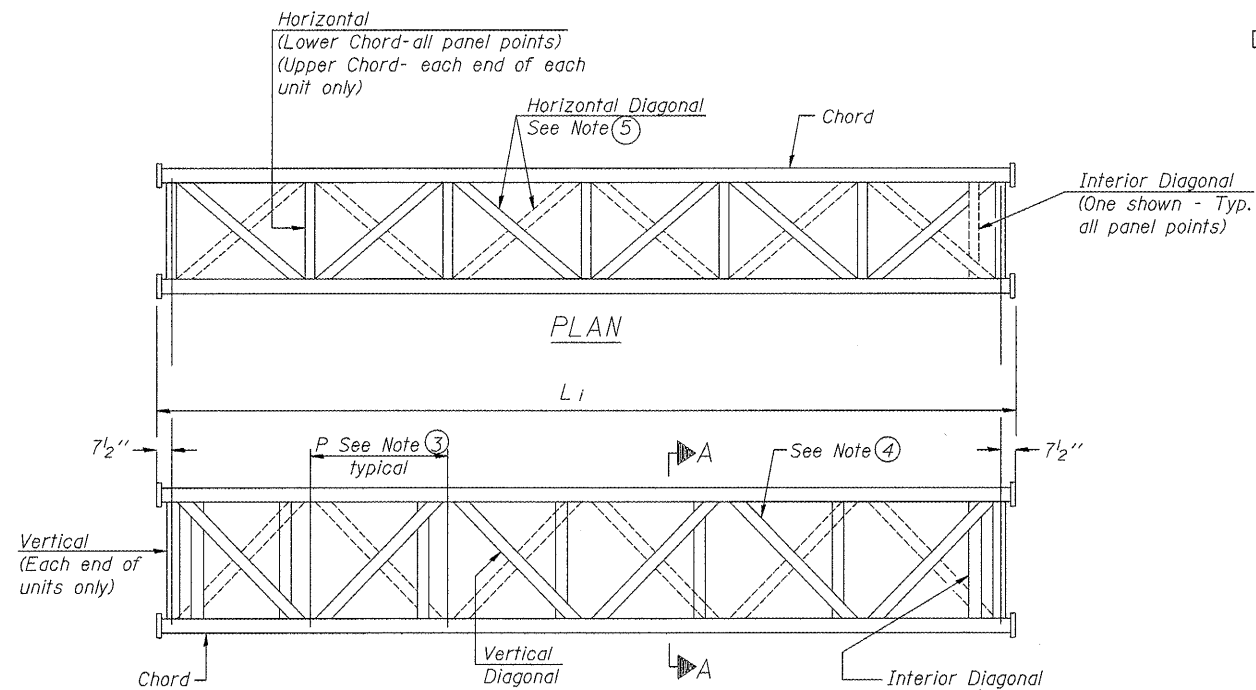
DESIGN WIND LOADING DIAGRAM

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.

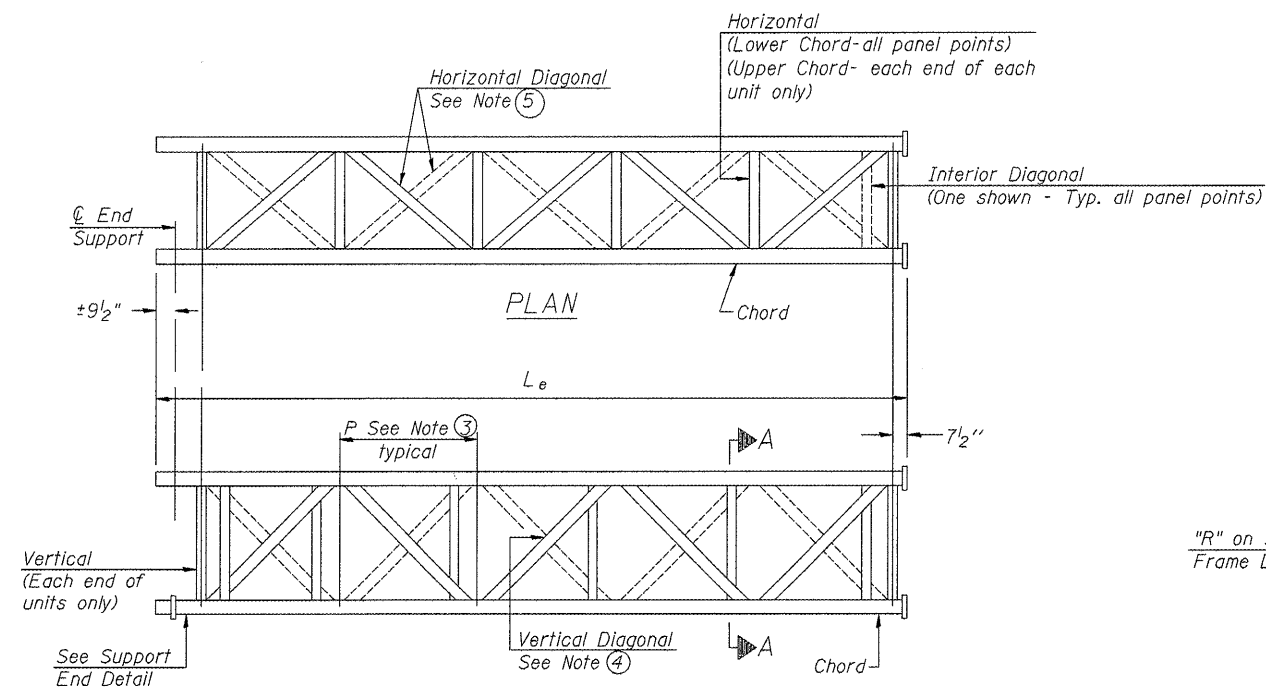
DESIGNED -	20
EXAMINED -	ENGINEER OF BRIDGE DESIGN
CHECKED -	PASSED
DRAWN -	ENGINEER OF BRIDGES AND STRUCTURES
CHECKED -	

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

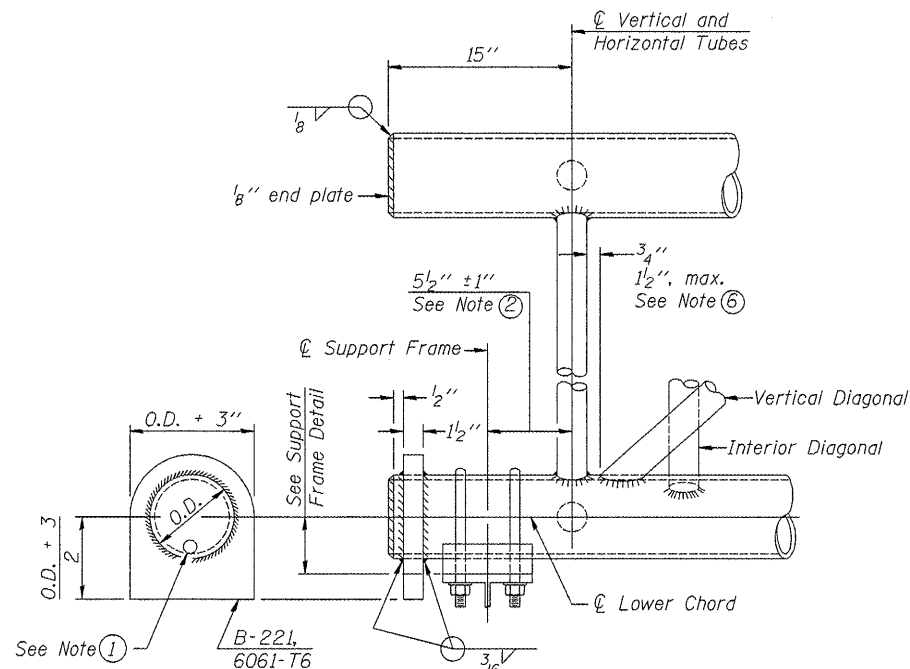
District 5
Overhead Sign
Structure Replacement



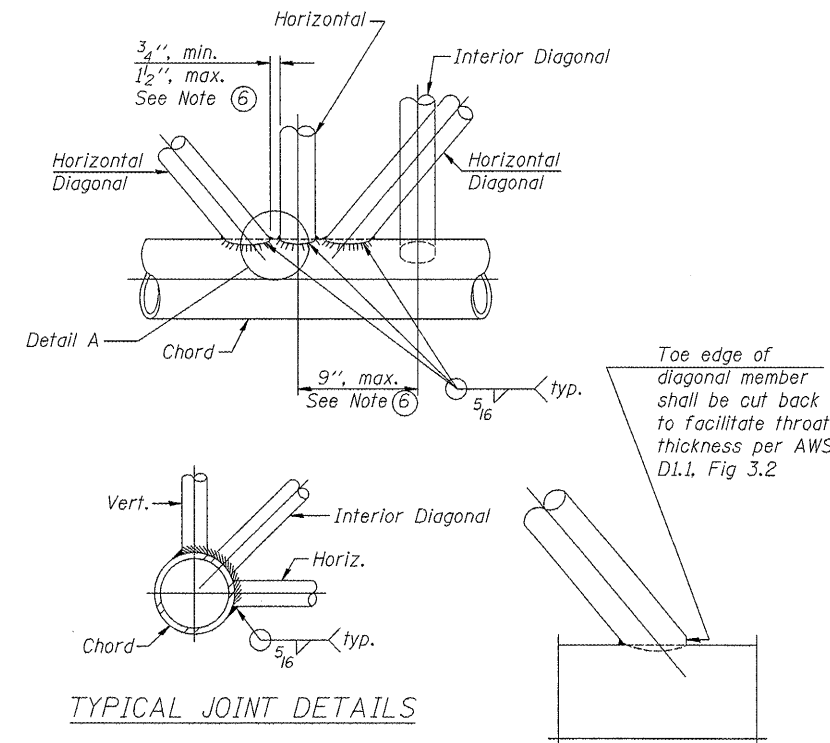
**ELEVATION
TYPICAL INTERIOR UNIT**
Even number of panels/interior unit required.



**ELEVATION
TYPICAL EXTERIOR UNIT**
Even or odd number of panels/exterior units allowed.



SUPPORT END DETAIL FOR EXTERIOR UNIT

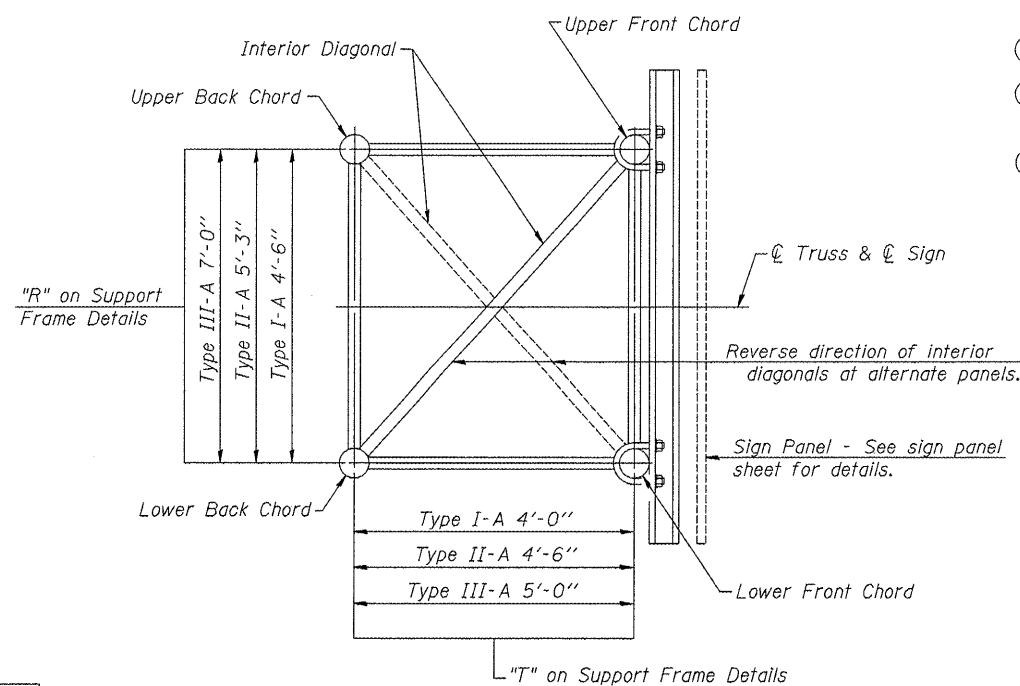


TYPICAL JOINT DETAILS

DETAIL A

NOTES

- ① Contractor may alternatively use standard aluminum drive-fit cap to close end. 1/2" ϕ drain hole in end plate/drive-fit cap. (Typ. at ends of all chords)
- ② 5 1/2" end dimension may vary by $\pm 1"$ 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 3/4" minimum to 1 1/2" maximum clearance between any diagonal and any horizontal or vertical member, and to provide clearance for U-bolt connections of signs or walkway brackets.



SECTION A-A

**OVERHEAD SIGN STRUCTURES
ALUMINUM TRUSS DETAILS
FOR TRUSS TYPES I-A, II-A and III-A**

District 5
Overhead Sign
Structure Replacement

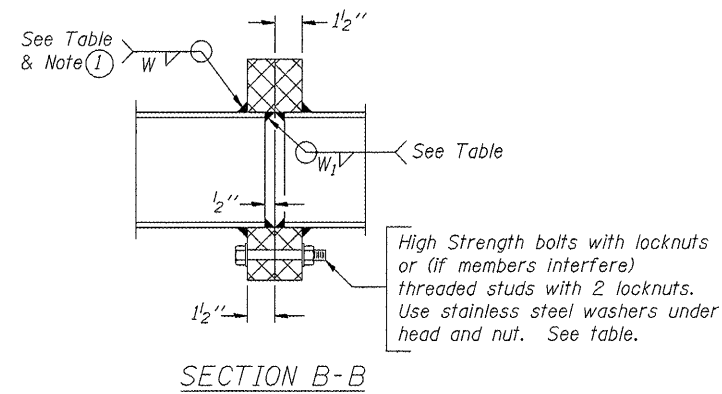
DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

EXAMINED	20
PASSED	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES

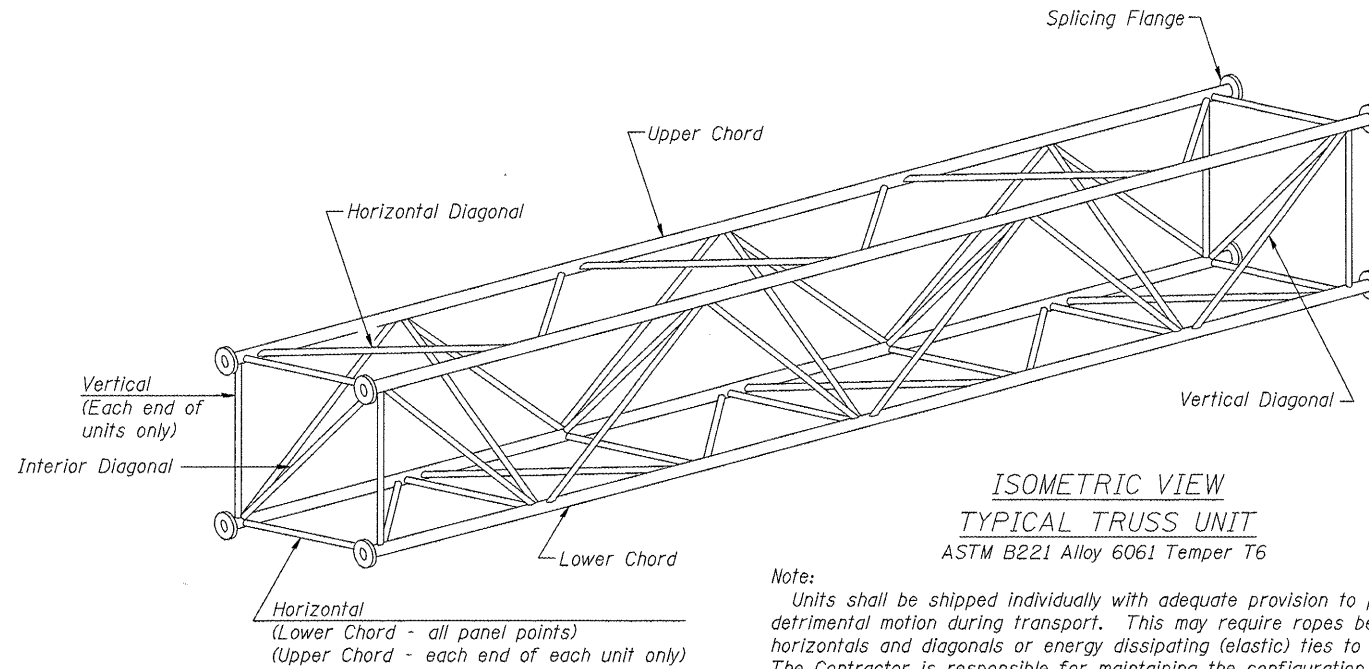
NUMBER	REVISION	DATE

TRUSS UNIT TABLE

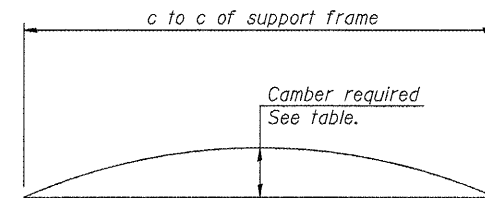
Structure Number	Station	Design Truss Type	Exterior Units (2)			Interior Unit				Upper & Lower Chord		Verticals; Horizontals; Vertical, Horizontal, and Interior Diagonals		Camber at Midspan	Splicing Flange					
			No. Panels per Unit	Unit Lgth.(L _e)	Panel Lgth.(P)	No. Req'd.	No. Panels per Unit	Unit Lgth.(L _i)	Panel Lgth.(P)	O.D.	Wall	O.D.	Wall		Bolts		Weld Sizes		A	B
															No./Splice	Dia.	W	W _i		
5S0101072R181.52	1947 + 97	I-A	5	25'-6 1/4"	4'-8 3/4"	1	6	29'-7 1/2"	4'-8 3/4"	5	5/16"	2 1/2"	5/16"	2 1/4"	6	1/8"	5/16"	1/4"	8 3/4"	11 3/4"



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.

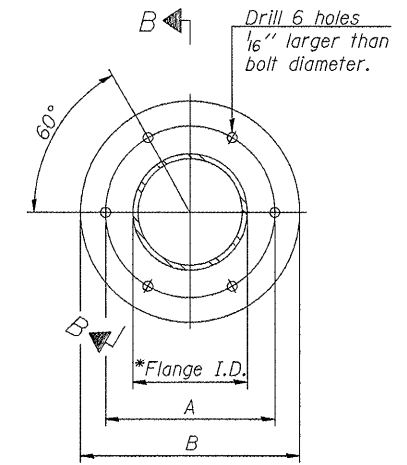
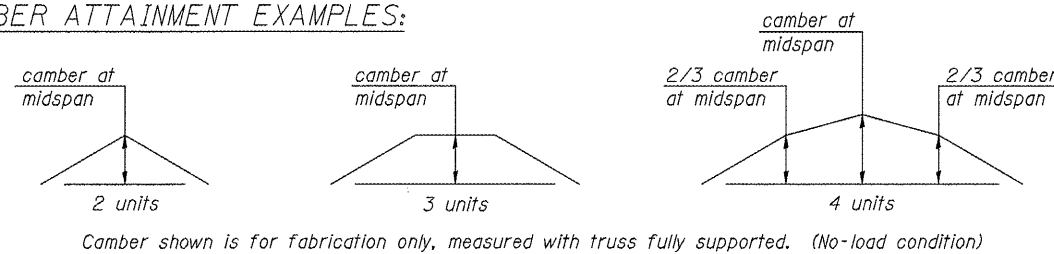


Note:
Units shall be shipped individually with adequate provision to prevent detrimental motion during transport. This may require ropes between horizontals and diagonals or energy dissipating (elastic) ties to the vehicle. The Contractor is responsible for maintaining the configuration and protection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

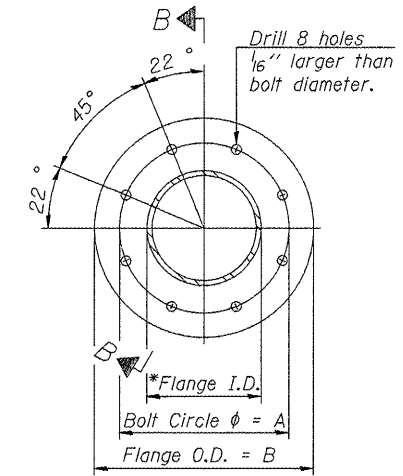


CAMBER DIAGRAM
Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

CAMBER ATTAINMENT EXAMPLES:



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

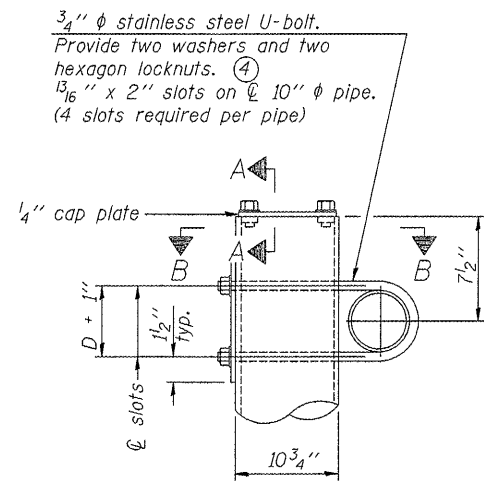
*To fit O.D. of Chord with maximum gap of 1/16".

NUMBER	REVISION	DATE

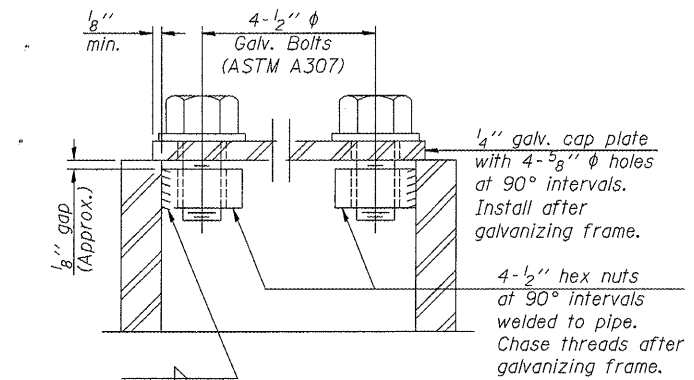
DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

OVERHEAD SIGN STRUCTURES
ALUMINUM TRUSS DETAILS
FOR TRUSS TYPES I-A, II-A and III-A

District 5
Overhead Sign
Structure Replacement

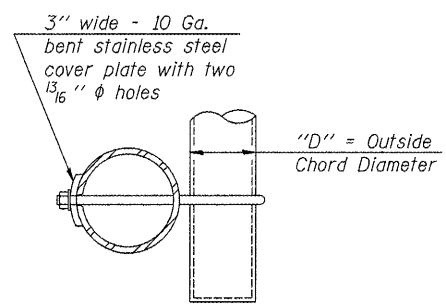


DETAIL A

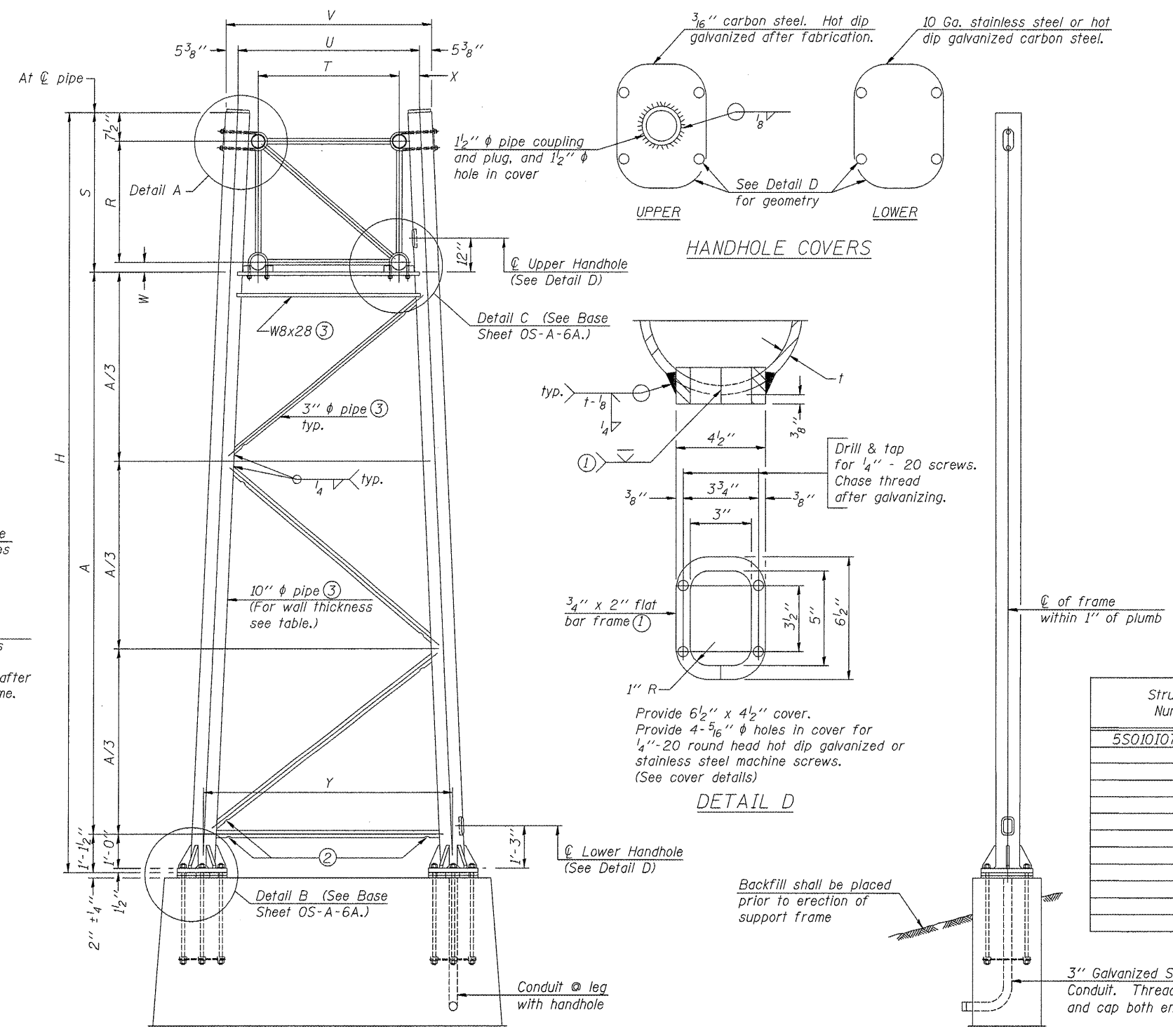


SECTION A-A

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



SECTION B-B



For Foundation Details, see base sheet OS-F3 (Spread Footing) or OS4-F3 (Drilled Shaft).

SIDE ELEVATION

10" φ PIPE TRUSS SUPPORT FRAME

Truss Type	Dimensions							
	R	S	T	U	V	W	X	Y
I-A	4'-6"	5'-5 1/2"	4'-0"	5'-6"	6'-4 3/4"	4"	9"	8'-3"
II-A ⑤	5'-3"	6'-3 1/4"	4'-6"	6'-1"	6'-11 3/4"	4 3/4"	9 1/2"	8'-3"

Support Design Loads: See Base Sheet OS-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 OS-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.

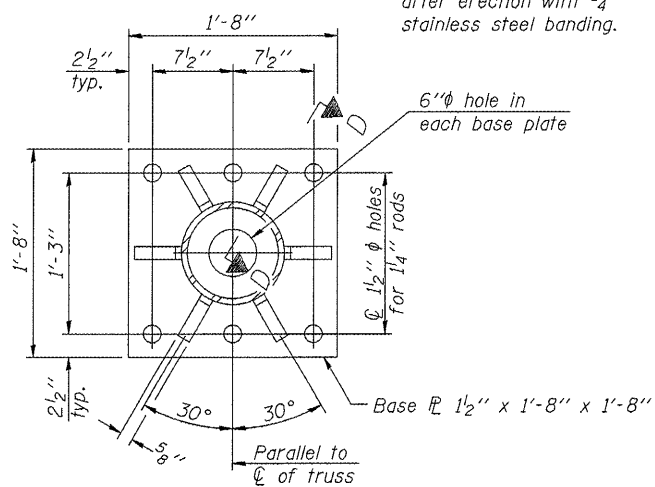
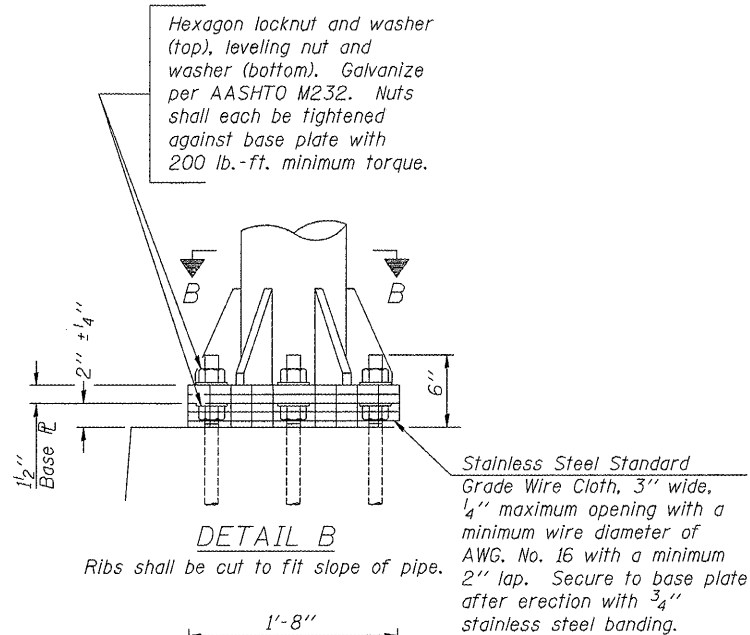
Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H ⑥	A
		Left	Right				
5S0101072R181.52	1947 + 97	X		I-A	0.279	28'-1"	21'-6"
			X	I-A	0.279	30'-1"	23'-6"

DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	

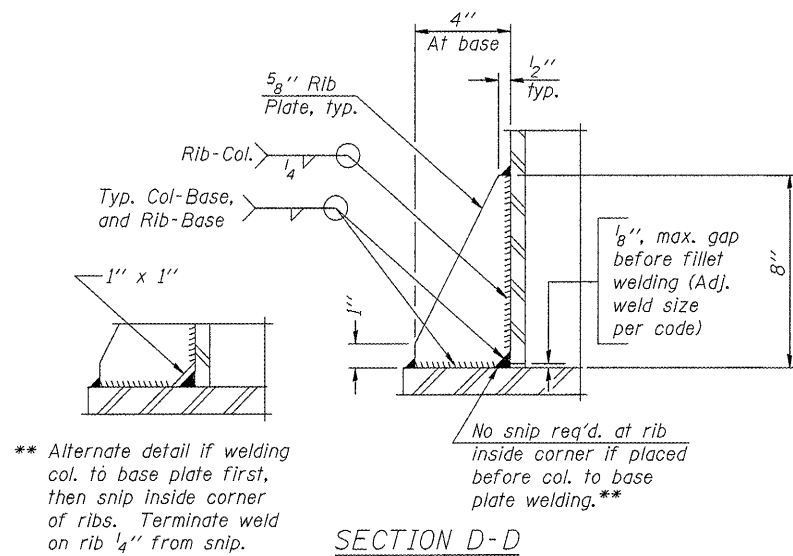
OS-A-6 5/16/08

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for ALUMINUM TRUSS

District 5
Overhead Sign
Structure Replacement

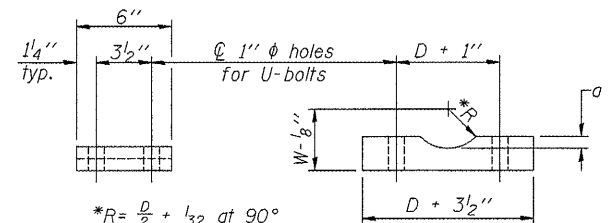


SECTION B-B



SECTION D-D

** Alternate detail if welding col. to base plate first, then snip inside corner of ribs. Terminate weld on rib 1/4" from snip.



SADDLE SHIM DETAIL

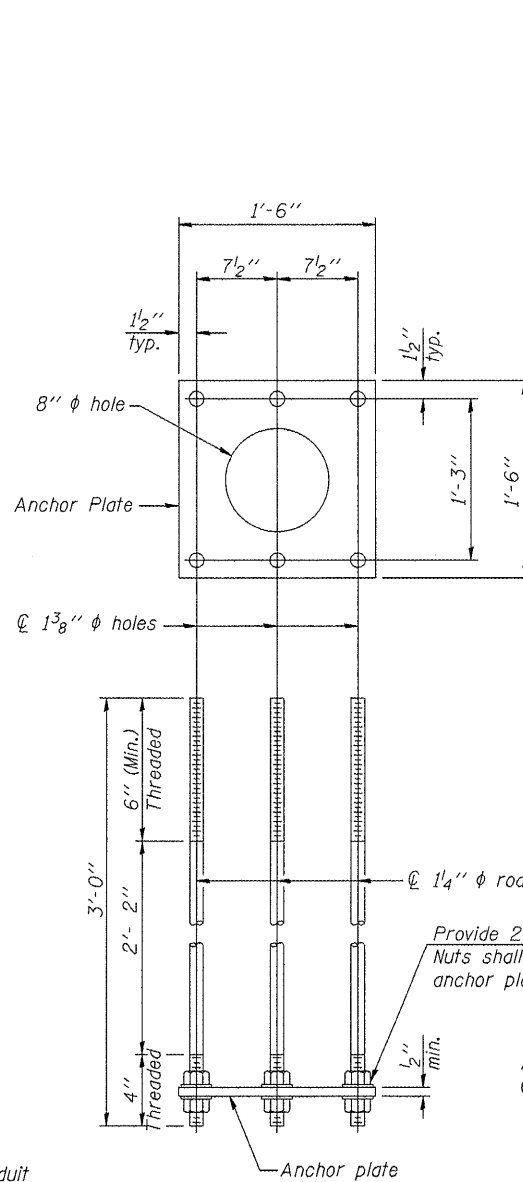
ASTM B26 Alloy 356-F

or

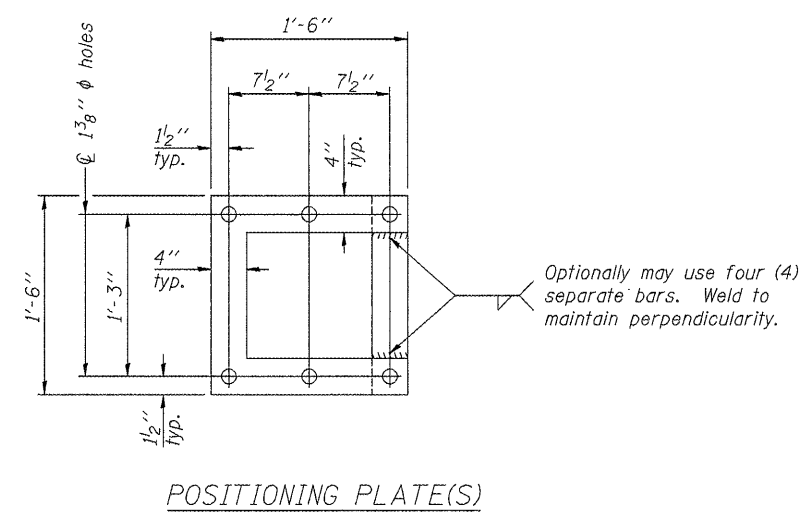
ASTM B209 Alloy 6061-T651

(4 required per sign truss)

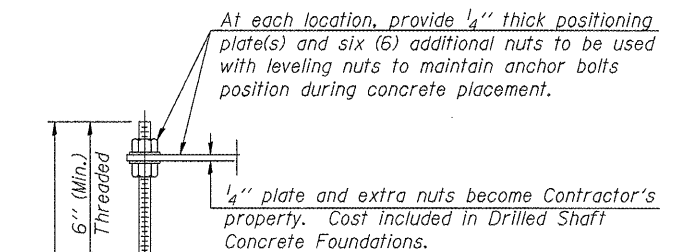
Truss Chord Nominal Dia.	a
5"	3/4"
5 1/2"	13/16"
6"	7/8"
6 1/2"	15/16"
7"	1"



ANCHOR ROD DETAIL
Spread Footing Foundation



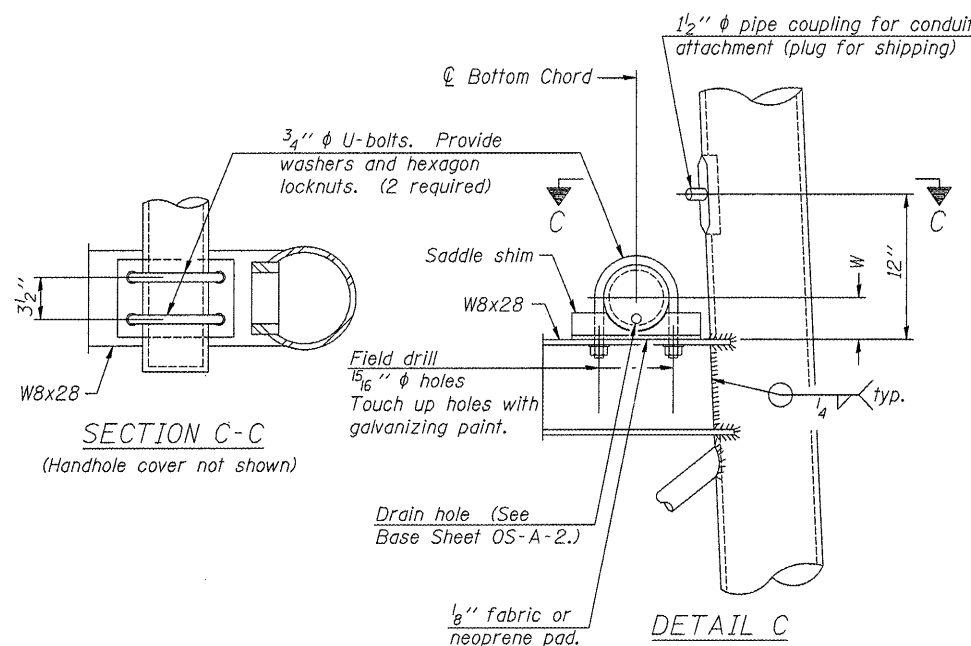
POSITIONING PLATE(S)



ANCHOR ROD DETAIL
Drilled Shaft Foundation

Anchor rods shall conform to AASHTO M314 Grade 36 or 50 and meet Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. Galvanize upper 12" per AASHTO M232. No welding shall be permitted on rods.

10" ϕ PIPE SUPPORT FRAME DETAILS



SECTION C-C

(Handhole cover not shown)

NUMBER	REVISION	DATE

DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

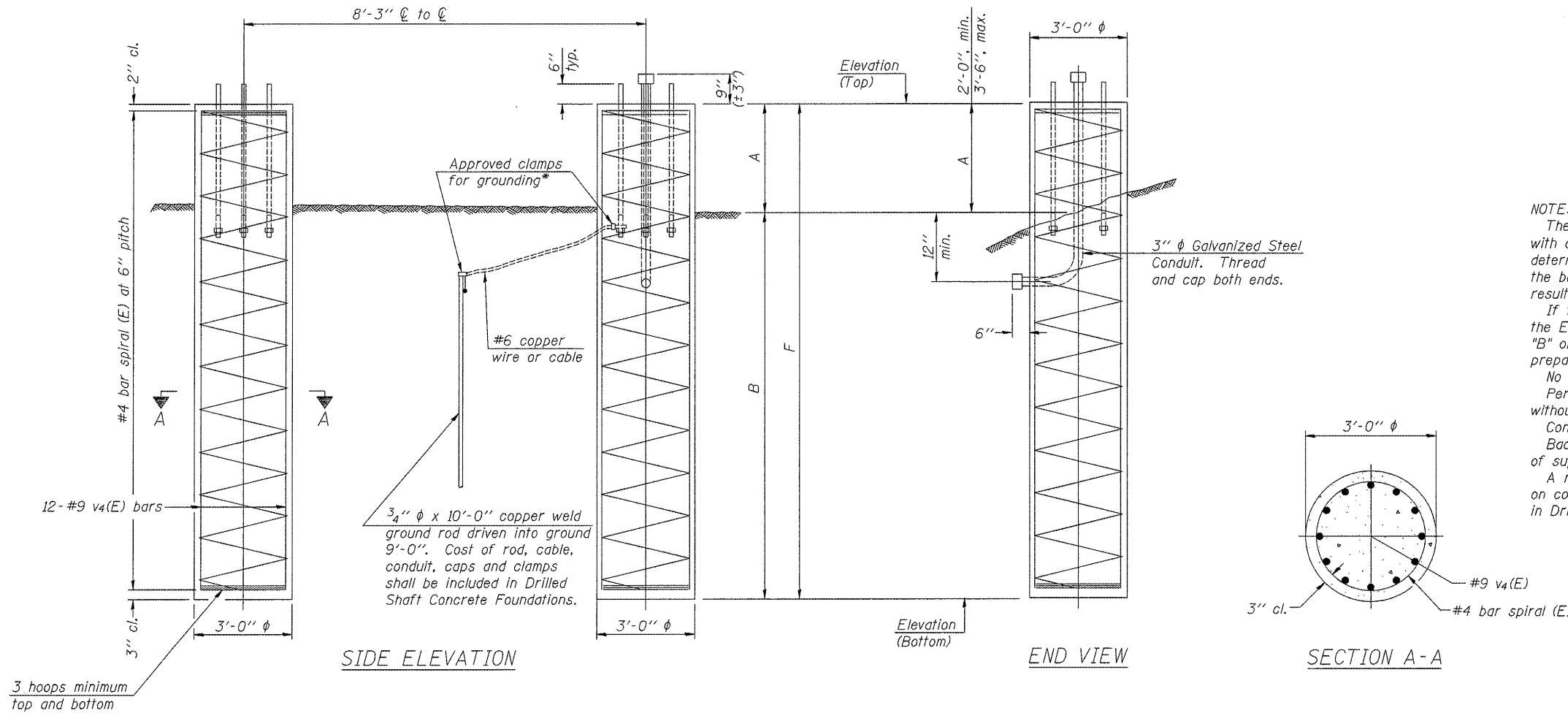
District 5
Overhead Sign
Structure Replacement

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 (Q_u) 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.

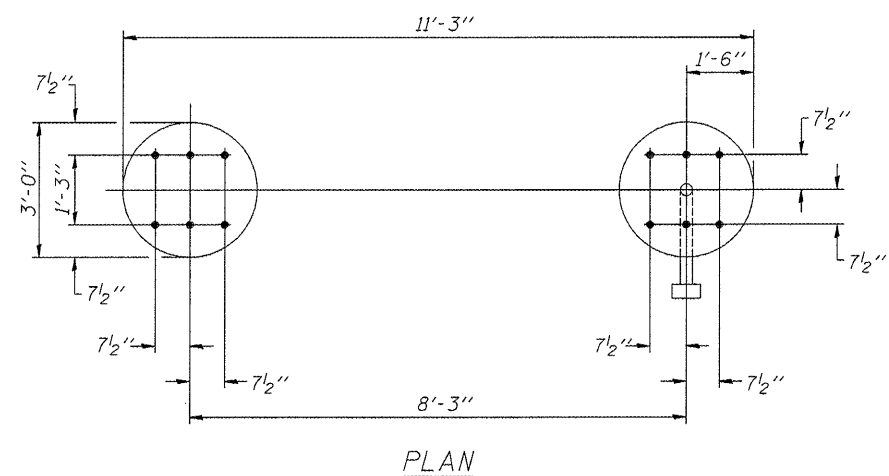
If the conditions encountered are different than those indicated, the Contractor shall notify the Engineer to determine if the foundation dimensions need to be modified. If dimensions "B" or "F" are revised by more than 12" by the Contractor, "as-built" plans shall be prepared and submitted to the District 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 Bridge Seat Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished ground line. Cost included in Drilled Shaft Concrete Foundation.



Structure Number	Station	Left Foundation			Right Foundation			Class SI Concrete (Cu. Yds.)				
		Elevation Top	Elevation Bottom	A	B	F	Elevation Top		Elevation Bottom	A	B	F
5S0101072R181.52	1947 + 97	748.00		3'-0"	17'-6"	20'-6"	746.00		3'-0"	17'-6"	20'-6"	21.50

DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

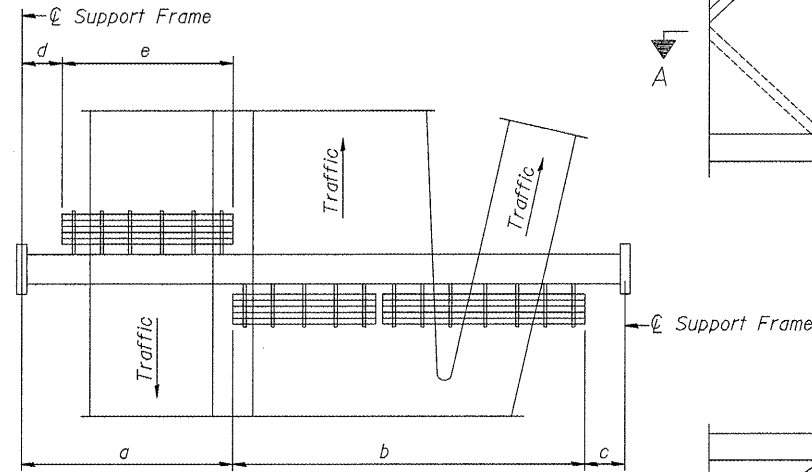
NUMBER	REVISION	DATE

DETAILS FOR 10" φ SUPPORT FRAME
TYPE I-A or II-A TRUSS

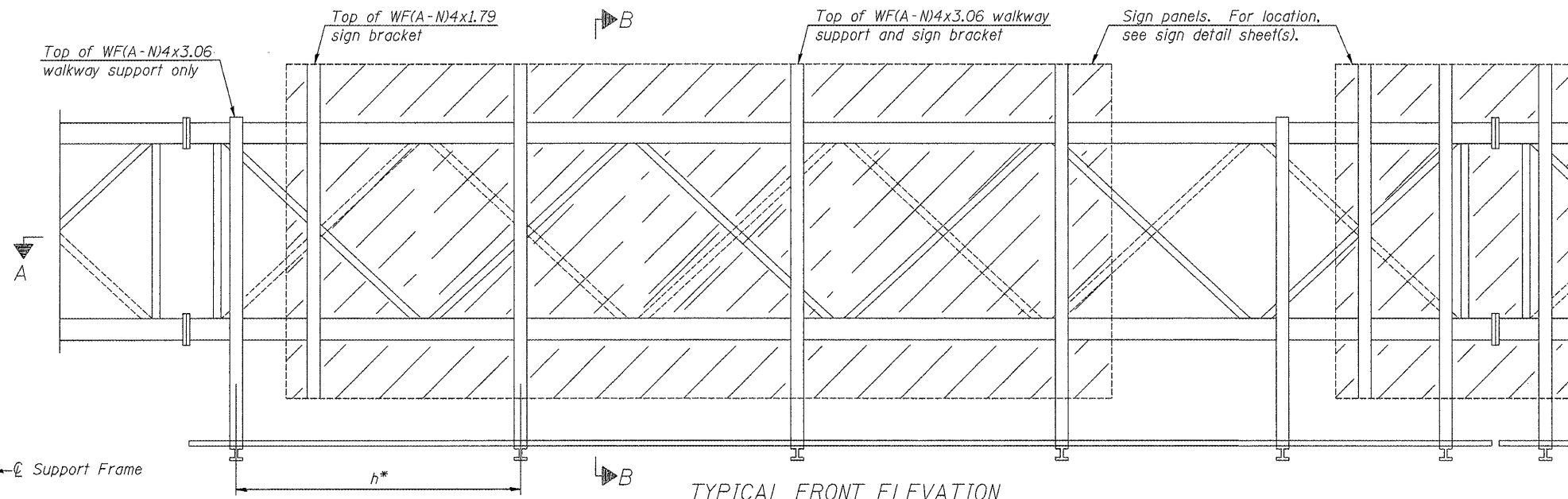
OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

District 5
Overhead Sign
Structure Replacement

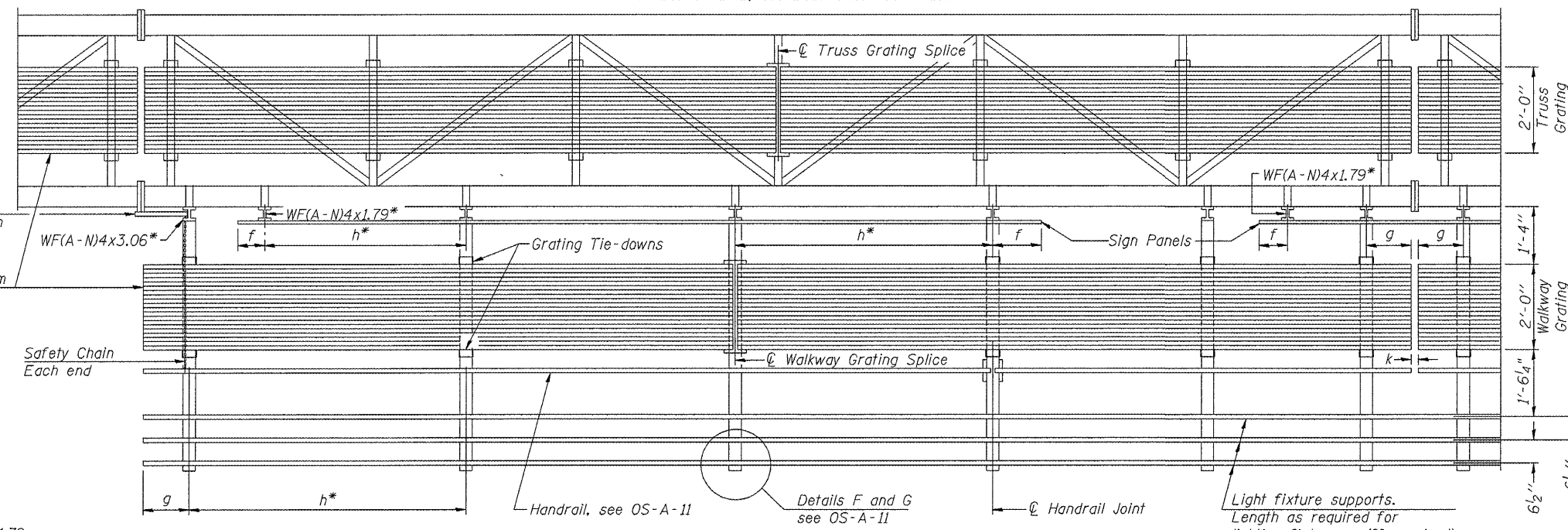
NUMBER	REVISION	DATE



PLAN
WALKWAY AND HANDRAIL SKETCH
(Road plan beneath truss varies)



TYPICAL FRONT ELEVATION
With lights and handrail omitted for clarity.
For Section B-B, see Base Sheet OS-A-10.



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. Handrail joints, grating, and light support splices placed as needed.

Walkway and Truss Grating width dimensions are nominal and may vary $\pm 1/2$ " based on available standard widths.

BRACKET TABLE

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

Notes:
* Space walkway brackets WF(A-N)4x3.06 and sign brackets WF(A-N)4x1.79 for efficiency and within limits shown:

- f = 12" maximum, 4" minimum (End of sign to \mathcal{C} of nearest bracket)
- g = 12" maximum, 4" minimum (End of walkway grating to \mathcal{C} of nearest support bracket)
- h = 6'-0" maximum (\mathcal{C} to \mathcal{C} sign and/or walkway support brackets, WF(A-N)4x1.79 or WF(A-N)4x3.06)
- k = 2" maximum gap between adjacent walkway grating sections and handrail ends

** If walkway bracket at safety chain location is behind sign, add angle to bracket, see Alternate Safety Chain Attachment on Base Sheet OS-A-11.

For Details T and W, Section B-B and Grating Splice Details see Base Sheet OS-A-10.
For Handrail Details see Base Sheet OS-A-11.

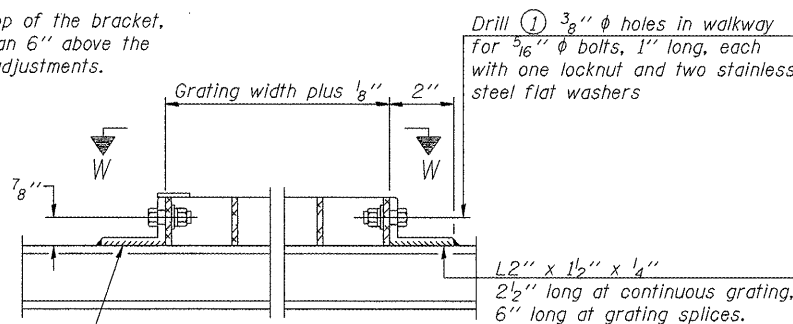
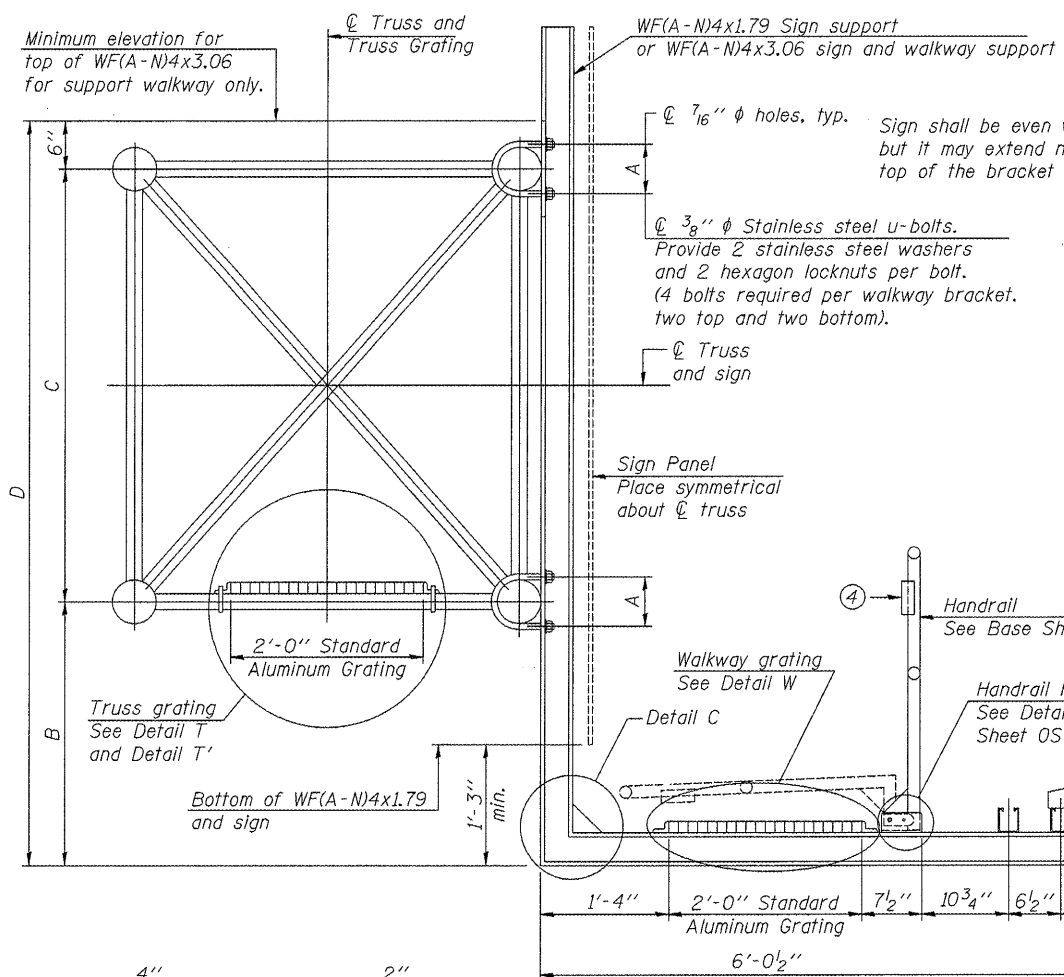
Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
5S010I072R181.52	1947 + 97	N/A	N/A	N/A	N/A	N/A	80'-8" *

* Length shown is for internal truss grating to be installed.

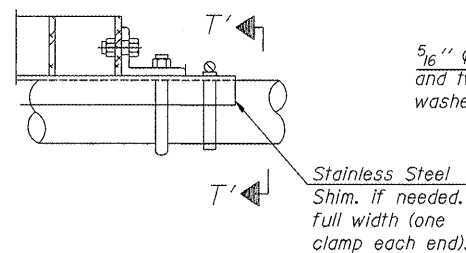
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 5
Overhead Sign
Structure Replacement

DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

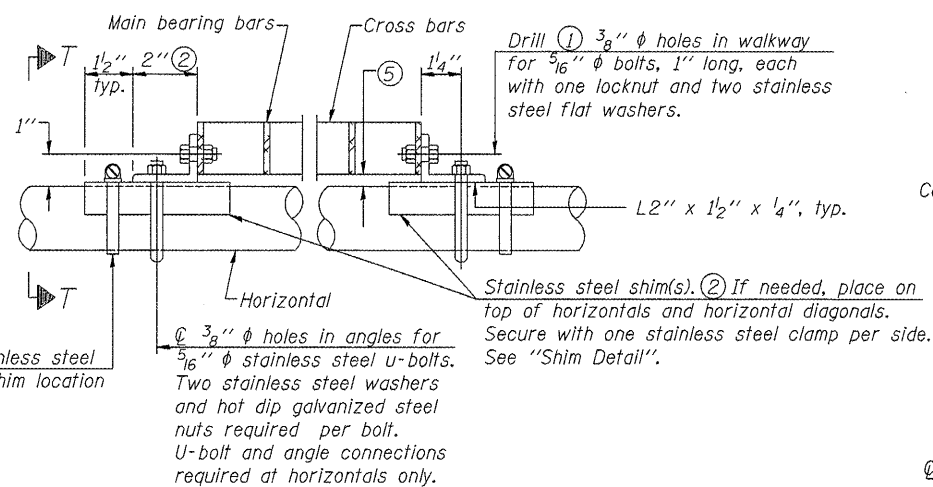


DETAIL W
(Walkway grating)

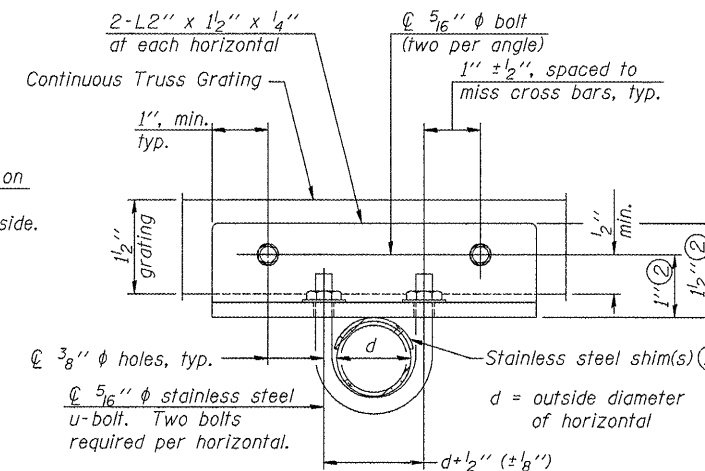


DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.

SECTION T'-T'



DETAIL T
(Continuous Truss grating)



SECTION T-T

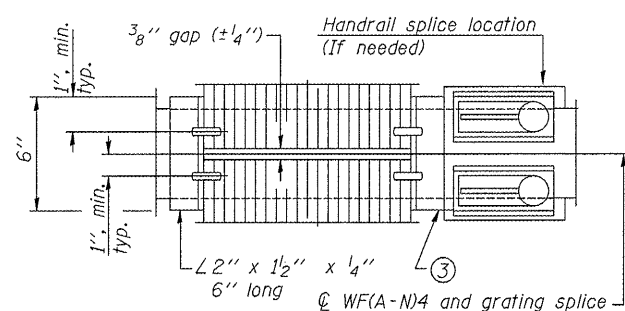
- Drilling holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.
- Stainless steel shims shall be placed as shown in Detail T if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided by angles. Thicker shims may be used subject to shims performing properly.
- If Handrail Joint present, weld angle to WF(A-N)4 and 1/4" extension bars. (See Base Sheet OS-A-11.)
- 1/8" x 1/2" x 2" welded to handrail posts to protect locations that contact grating.
- Tube to grating gap may vary from 0 to 1/2", max. to align walkway, allow for camber, etc.

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

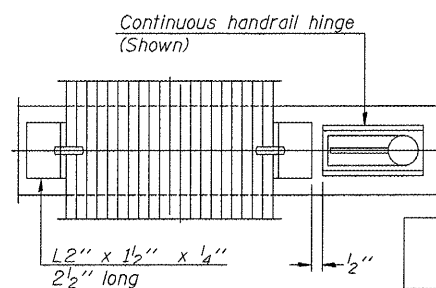
Main Bearing Bars shall be 3/16" x 1 1/2" on 1 3/16" centers and conform to ASTM B221 Alloy 6061-T6.
Cross bars shall be 3/16" x 1 1/2" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

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.



(AT WALKWAY GRATING SPLICE)



(CONTINUOUS WALKWAY GRATING)
SECTION W-W

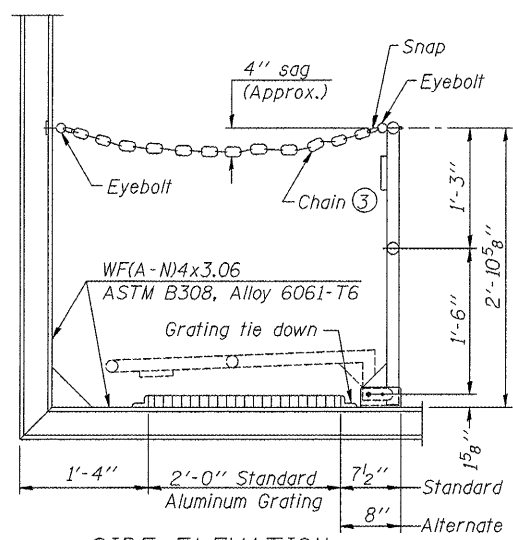
Structure Number	Station	A	B	C	D

NUMBER	REVISION	DATE

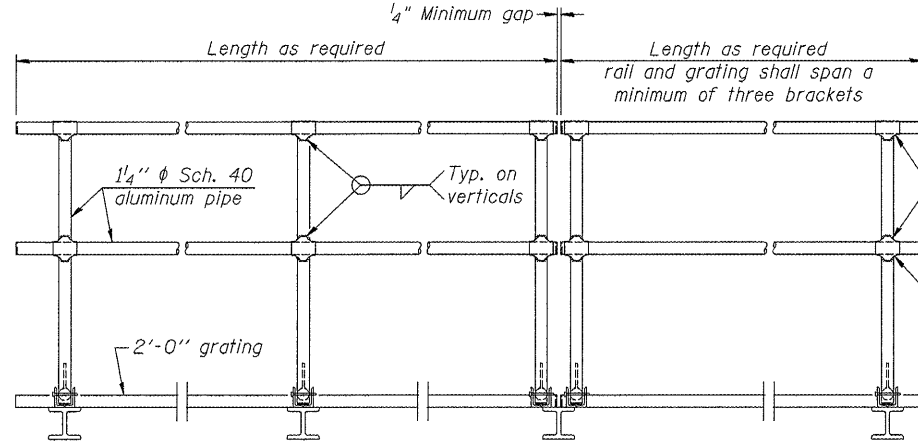
DESIGNED -	20
CHECKED -	ENGINEER OF BRIDGE DESIGN
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 5
Overhead Sign
Structure Replacement



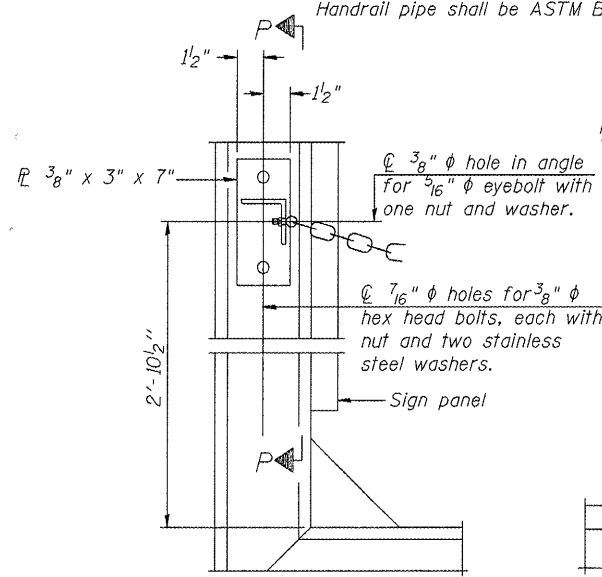
SIDE ELEVATION
(Showing safety chain w/o sign)



FRONT ELEVATION

HANDRAIL DETAILS

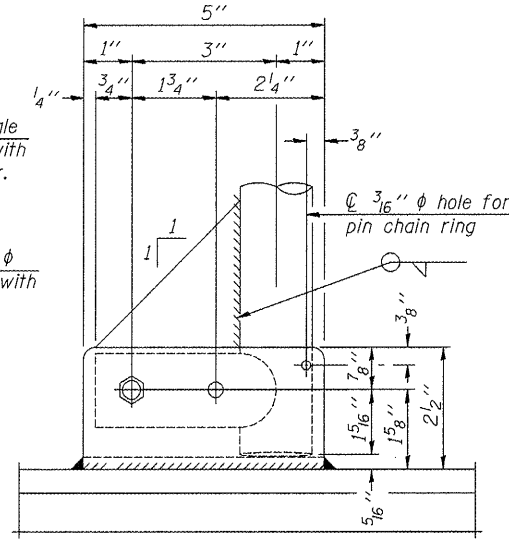
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.



ALTERNATE SAFETY CHAIN ATTACHMENT

(With Sign Present)

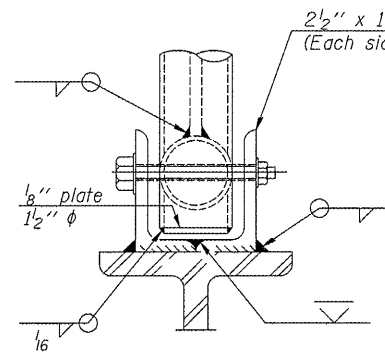
Items not shown same as "Side Elevation" of "Handrail Details"



SIDE ELEVATION

PLAN

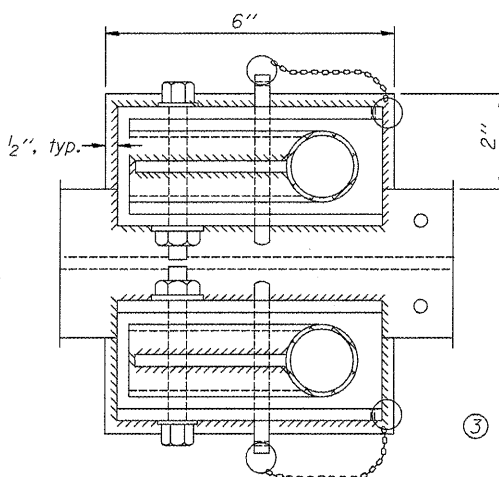
DETAIL E HANDRAIL HINGE



FRONT ELEVATION

See "Elevation" at right for dimensions.

ELEVATION AT HANDRAIL JOINT



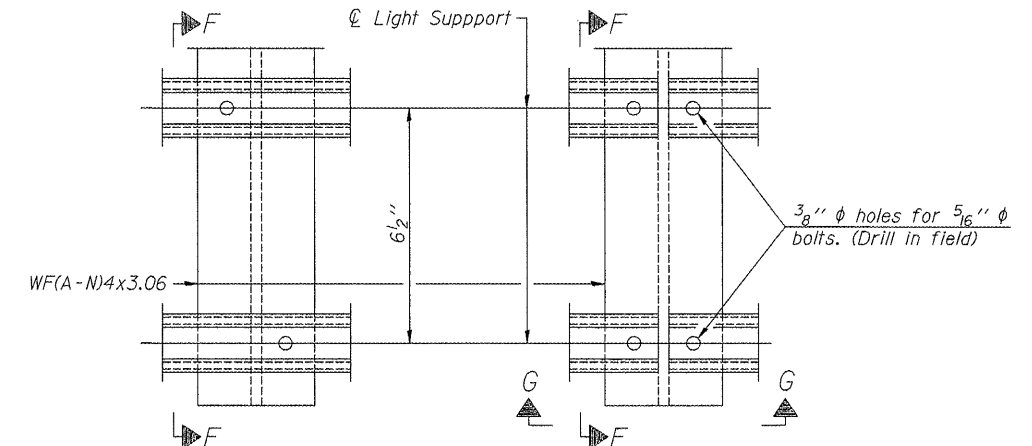
PLAN AT HANDRAIL JOINT

Details not shown same as "PLAN"

① Install standard force-fit end caps or weld 1/8" end plates with 1/8" c.f.w. and grind smooth. (All rail ends)

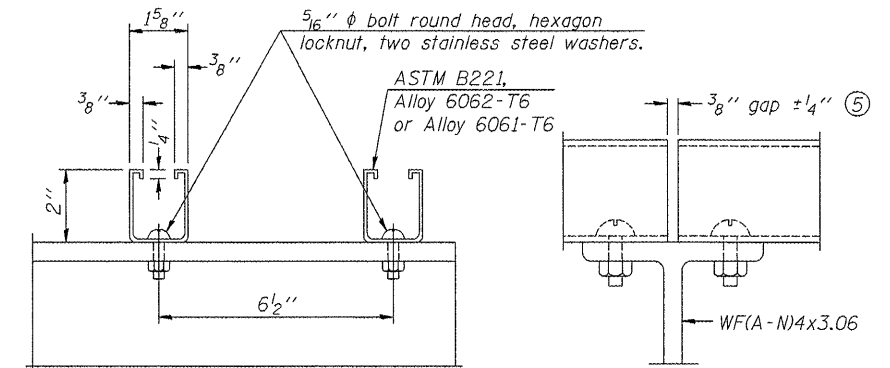
Fittings-ASTM B26, Alloy 356-T7 or 1/2" diameter aluminum pipe

② Horizontal handrail member shall be continuous thru fitting. Provide 7/16" diameter hole in fitting for 3/8" diameter bolt. Field drill 7/16" diameter hole in horizontal rail member. Provide locknut and two stainless steel washers for bolt. (Use 5/16" eyebolts in 7/16" diameter holes on top rail at ends only.)



DETAIL F

DETAIL G

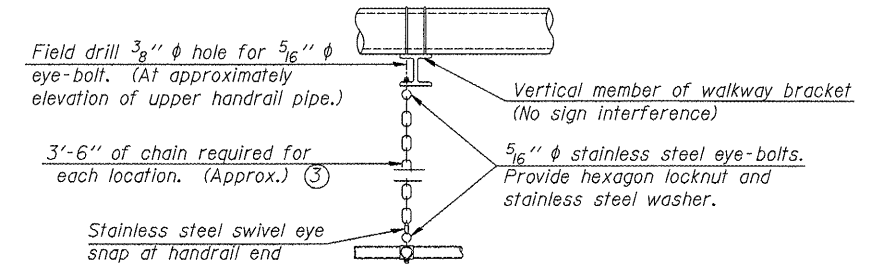


SECTION F-F

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.

This Sheet For Information Only

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 5
Overhead Sign
Structure Replacement

DESIGNED -	20
CHECKED -	ENGINEER OF BRIDGE DESIGN
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

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.

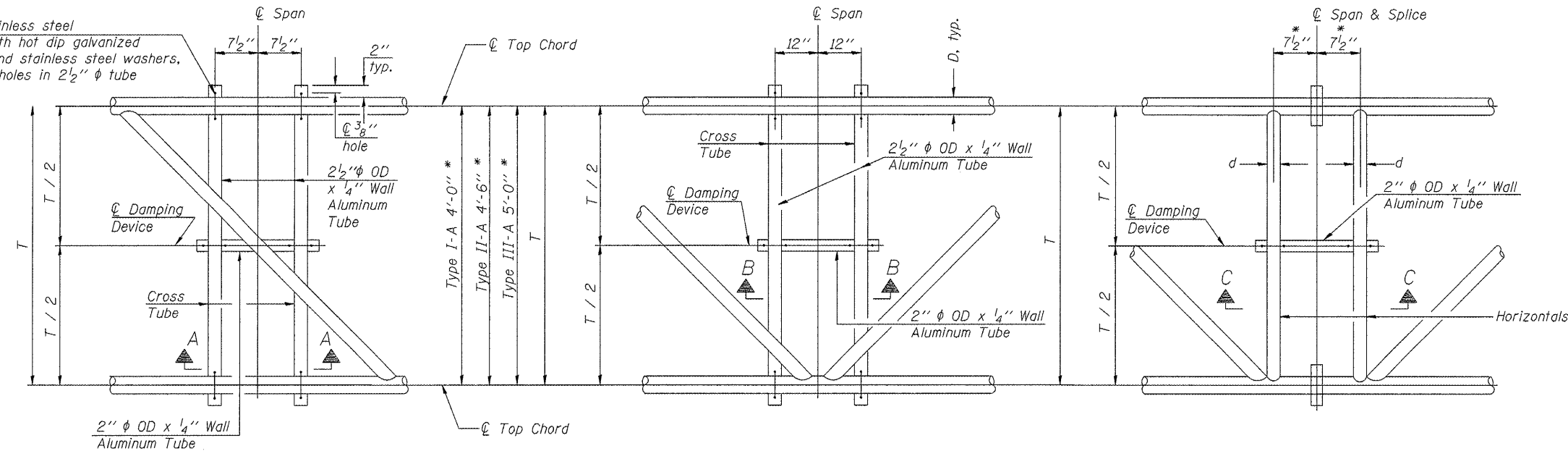
ALTERNATE SAFETY CHAIN ATTACHMENT

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

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

FAI Route 72
D 5 OVD SIN STR REPL 2010-01
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Sheet 13 of 23
Contract Number 46062

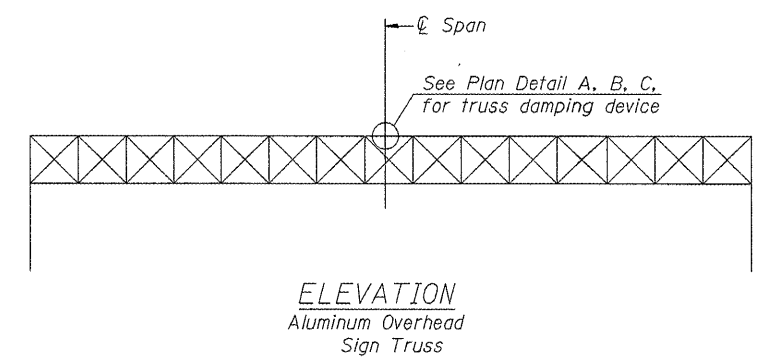
5/16" φ stainless steel
U-bolt with hot dip galvanized locknuts and stainless steel washers, typ. 3/8" φ holes in 2 1/2" φ tube



PLAN DETAIL "A"
Span between Panel Points

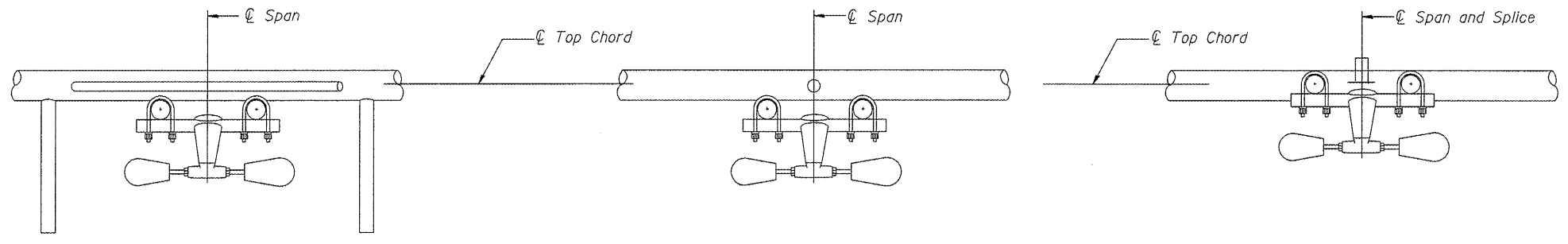
PLAN DETAIL "B"
Span at Panel Point

PLAN DETAIL "C"
Span at Chord Splice



ELEVATION
Aluminum Overhead Sign Truss

NOTES
Damper: One damper per truss.
(31 lbs. Stockbridge-Type Aluminum)
Cost included in Overhead Sign Structure...
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6. Cost included in Overhead Sign Structure...

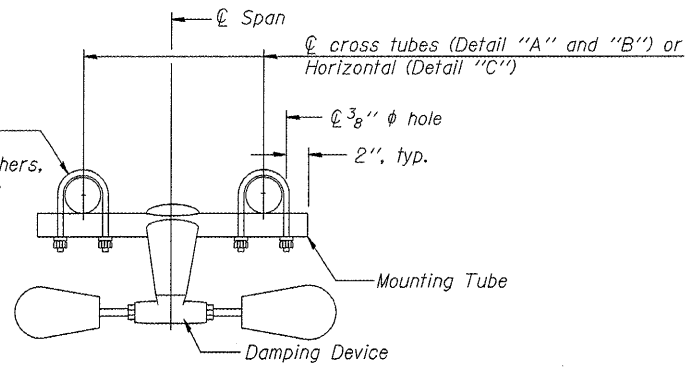


SECTION A-A

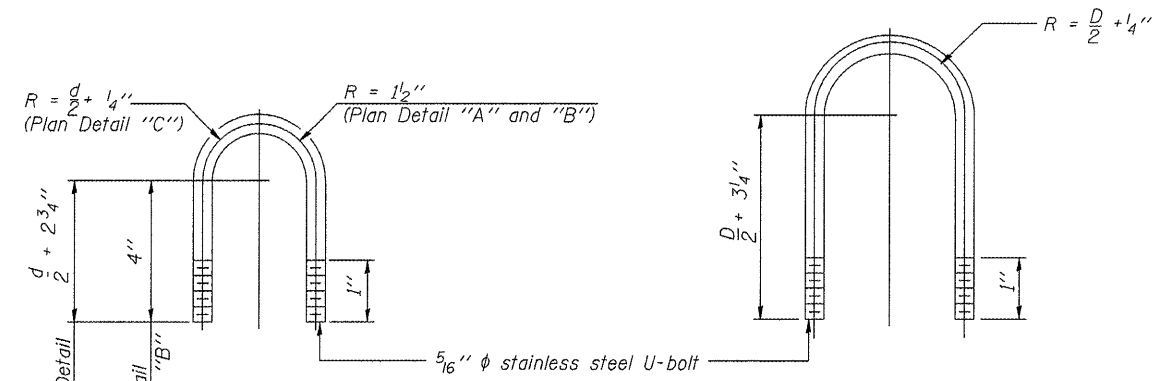
SECTION B-B

SECTION C-C

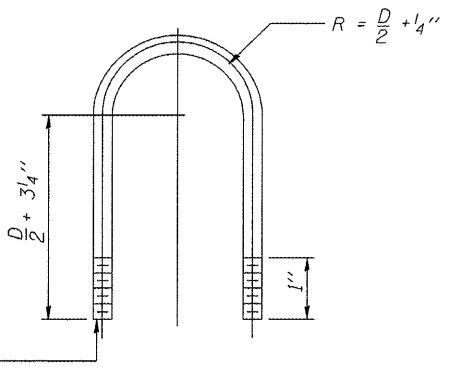
5/16" φ stainless steel
U-bolt with hot dip galvanized locknuts and stainless steel washers, typ. 3/8" φ holes in mounting tube



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")

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 5
Overhead Sign
Structure Replacement

DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

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.

$f_y = 60,000$ 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 with a minimum yield of 35,000 p.s.i., or A500 Grade B or C with a minimum yield of 46,000 p.s.i. 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 AASHTO M314 Gr. 55 with a minimum Charpy V-Notch (CVN) energy of 15 lb.-ft. at 10° F.

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

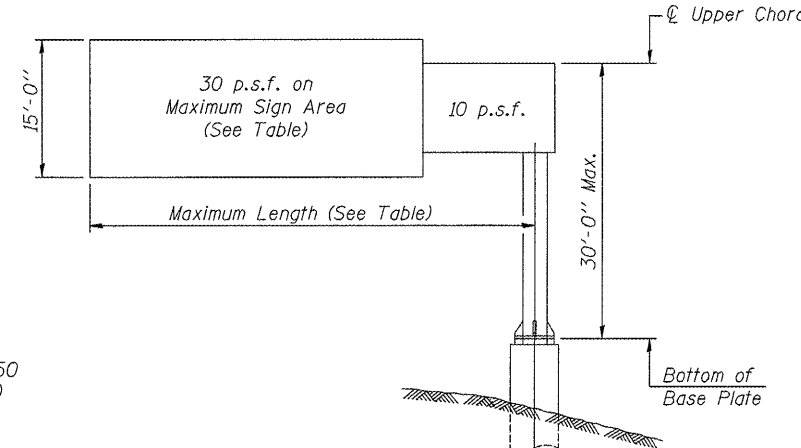
REINFORCEMENT BARS: Reinforcement Bars designated (E) shall be epoxy coated in accordance with the Standard Specifications.

CANTILEVER SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL POST

District 5
Overhead Sign
Structure Replacement

Structure Number	Station	Design Truss Type	Cantilever Length (L)	Elev. A	Dim. D	D _s	Total Sign Area
5C0101072L181.74	1958 + 85	II-C-A	27'-0"	760.90	13'-0"	10'-6"	153.00

Truss Type	Maximum Sign Area	Maximum Length
I-C-A	170 Sq. Ft.	25 Ft.
II-C-A	340 Sq. Ft.	30 Ft.
III-C-A	400 Sq. Ft.	40 Ft.



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.

- ① After adjustments to level truss and insure adequate vertical clearance, all top and 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.

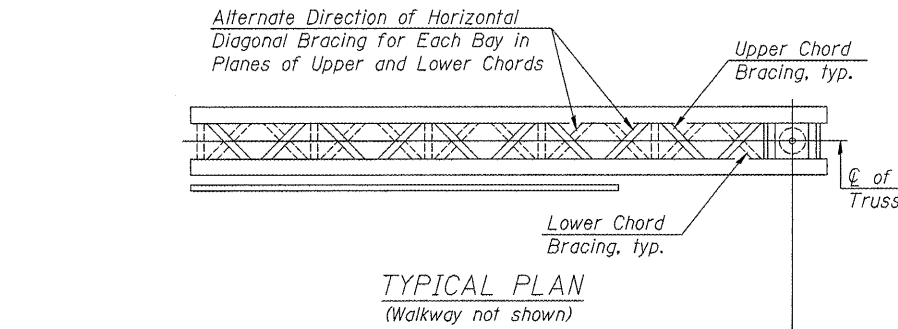
Note:

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.

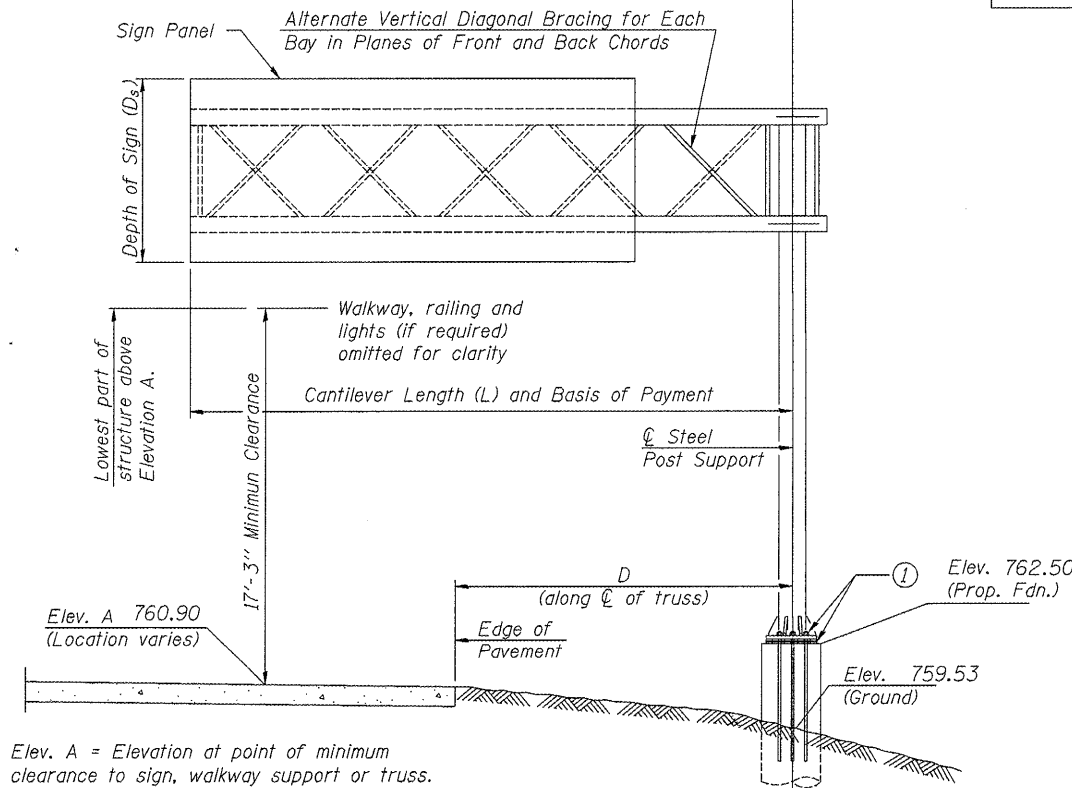
TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
OVERHEAD SIGN STRUCTURE CANTILEVER TYPE I-C-A	Foot	
OVERHEAD SIGN STRUCTURE CANTILEVER TYPE II-C-A	Foot	
OVERHEAD SIGN STRUCTURE CANTILEVER TYPE III-C-A	Foot	
OVERHEAD SIGN STRUCTURE WALKWAY, TYPE A	Foot	
DRILLED SHAFT CONCRETE FOUNDATIONS	Cu. Yds.	

NUMBER	REVISION	DATE



TYPICAL PLAN
(Walkway not shown)



TYPICAL ELEVATION
Looking in Direction of Traffic

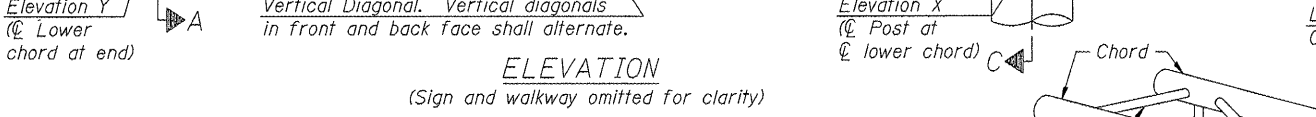
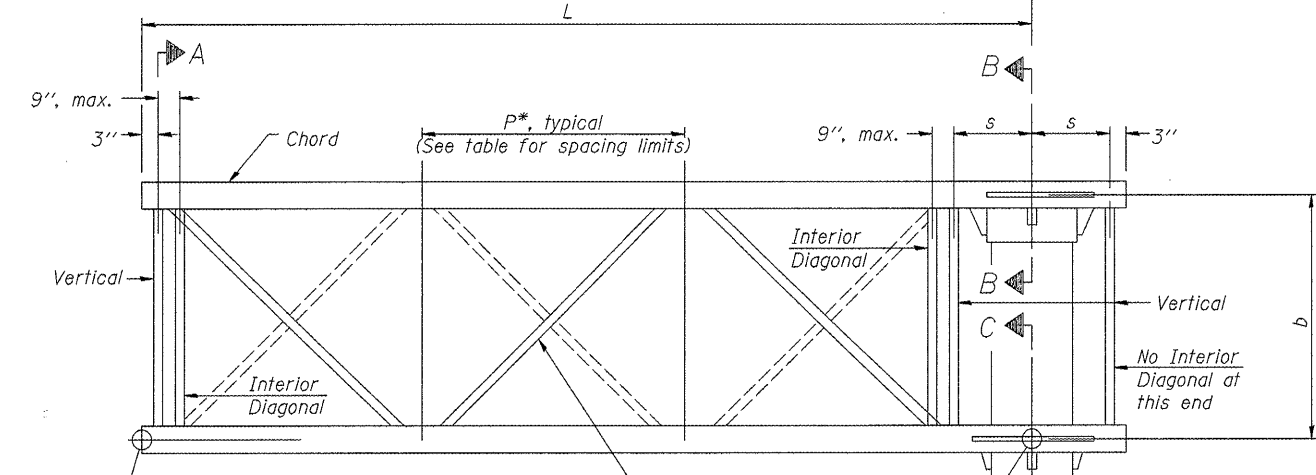
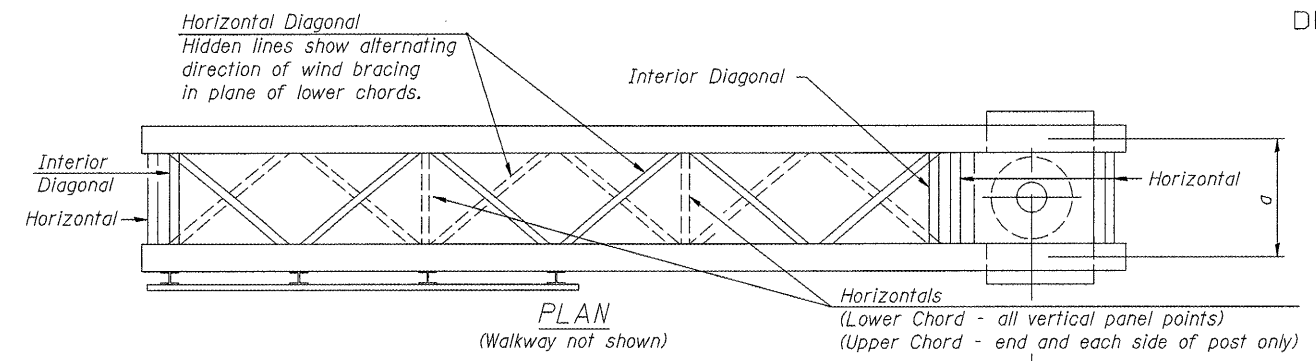
Sign support structures may be subject to damaging vibrations and oscillations when sign panels are not in place during erection or maintenance of the structure. To avoid these vibrations and oscillations, consideration should be given to attaching temporary blank sign panels to the structure.

* 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.

DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

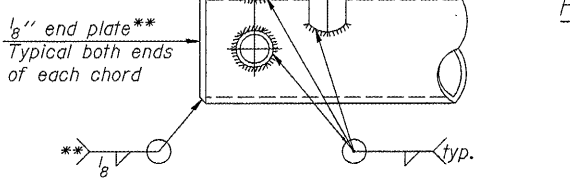
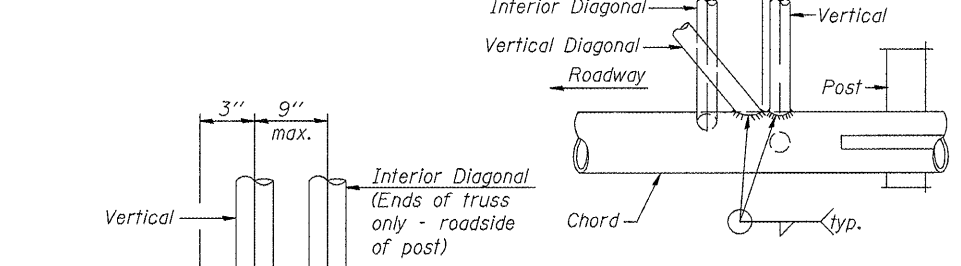
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FAI Route 72
D 5 OVD SIN STR REPL 2010-01
Champaign County
Sheet 15 of 23
Contract Number 46062



TYPICAL TRUSS UNIT
For Section B-B and Section C-C, see Base Sheet OSC-A-3.

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



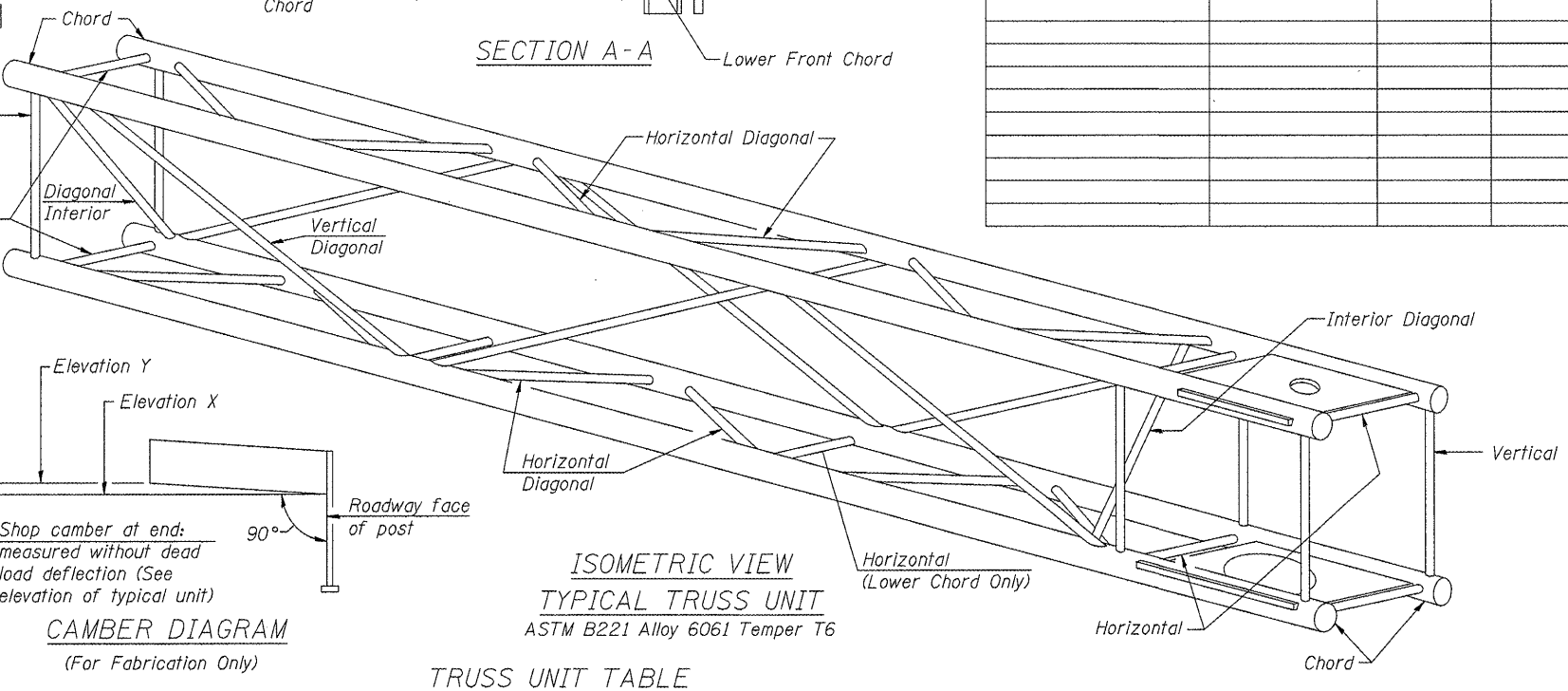
CANTILEVER END JOINT DETAIL
** Contractor may alternatively use standard aluminum drive-fit cap to close ends.

DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-2 5/16/08

SHOP CAMBER TABLE

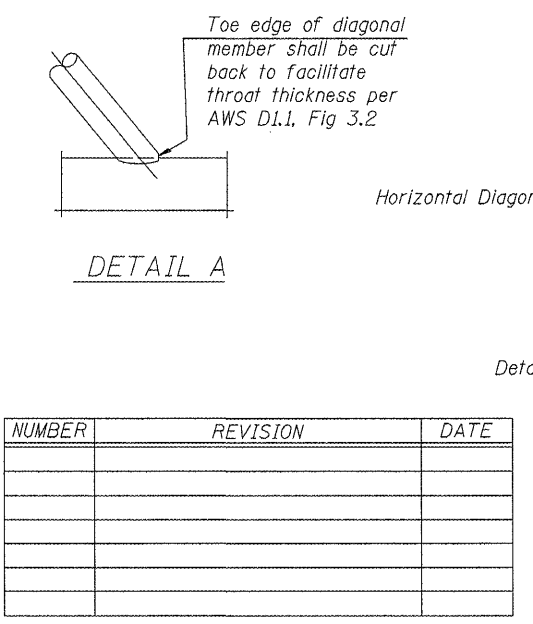
Unit Length (L)	Shop Camber at End
15'	1 1/2"
16'-17'	1 3/4"
18'-20'	2"
21'-22'	2 1/4"
23'-25'	2 1/2"
26'-27'	2 3/4"
28'-30'	3"
31'-32'	3 1/4"
33'-35'	3 1/2"
36'-37'	4"
38'-40'	4 1/2"



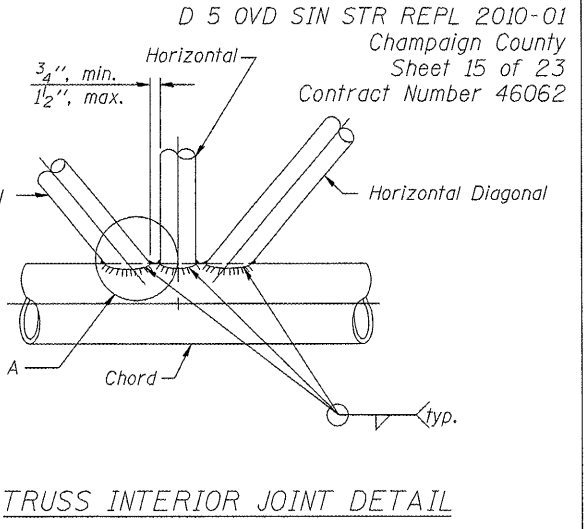
TRUSS UNIT TABLE

Truss Type	Dimension "a"	Dimension "b"	Dimension "s"	Limits for Panel Spacing (P)*	Up. & Low. Chord		Verticals; Horizontal; and Interior Diagonals O.D.	Vertical; Horizontal; and Interior Diagonals Wall
					O.D.	Wall		
I-C-A	24"	54"	16"	36" min. to 48" max.	5"	5/16"	2 1/2"	5/16"
II-C-A	36"	66"	21"	42" min. to 54" max.	6 1/2"	5/16"	3 1/4"	5/16"
III-C-A (35' Max.)	36"	84"	21"	48" min. to 66" max.	7"	3/8"	3 1/2"	3/8"
III-C-A (>35' to 40')	36"	84"	21"	48" min. to 66" max.	8"	3/8"	3 1/2"	3/8"

*P = $\frac{L-s-3''}{\# \text{ Panels}}$



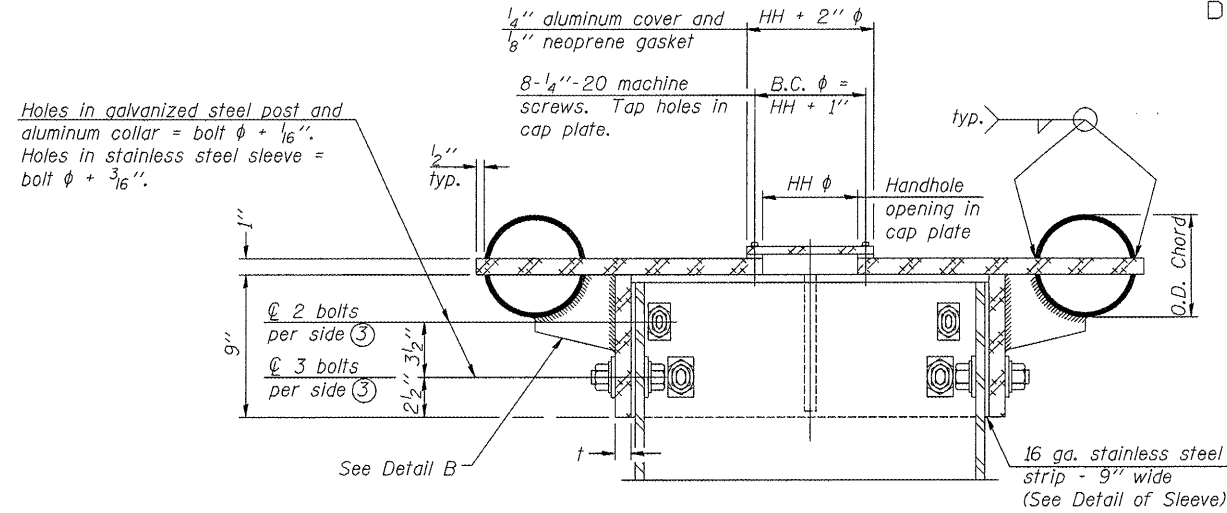
NUMBER	REVISION	DATE



TRUSS INTERIOR JOINT DETAIL

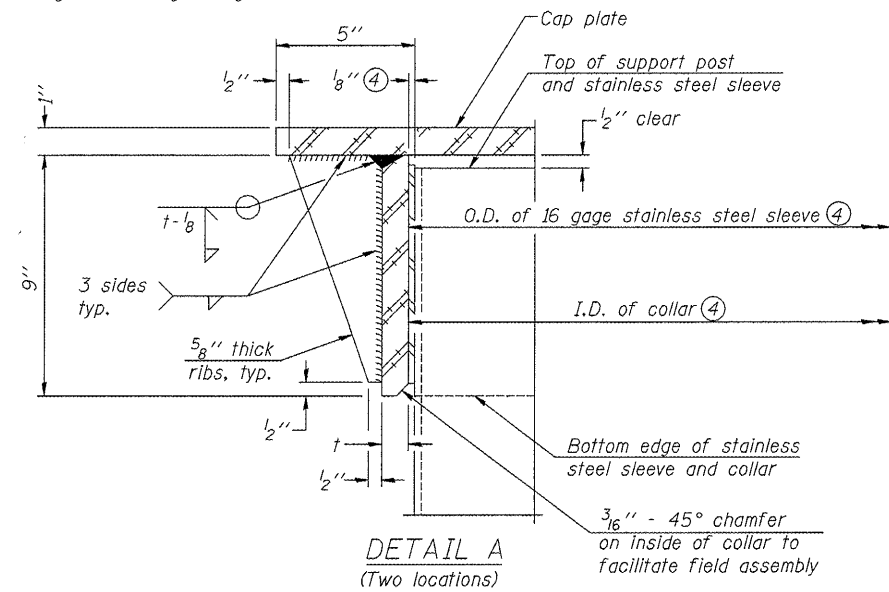
CANTILEVER SIGN STRUCTURES
TRUSS DETAILS
ALUMINUM TRUSS & STEEL POST

District 5
Overhead Sign
Structure Replacement

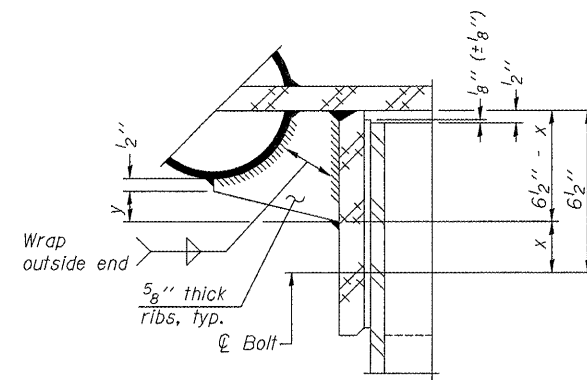


④ Collar I.D. shall be manufactured to correspond to O.D. of actual galvanized post and stainless steel sleeve plus 1/8" (±1/16"). Maximum gap between post and collar at any location equals 1/8" before tightening bolts.

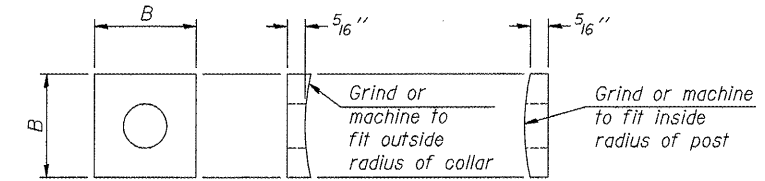
SECTION B-B
Bolts, washers (including contoured washers), and locknuts shall be stainless steel.



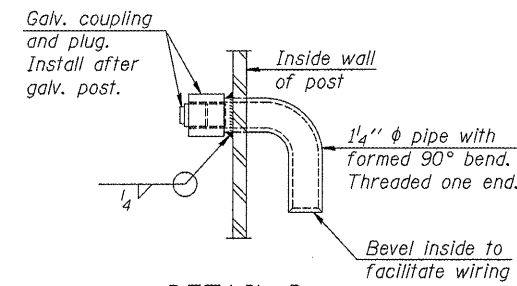
DETAIL A
(Two locations)



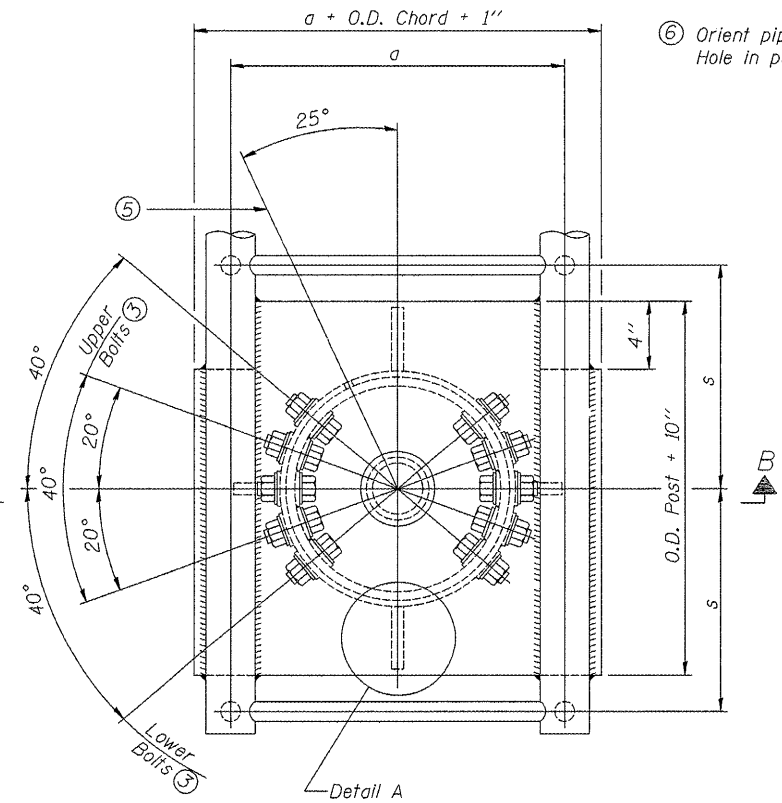
DETAIL B
Two locations
(For details not shown, see Detail C)



DETAIL C

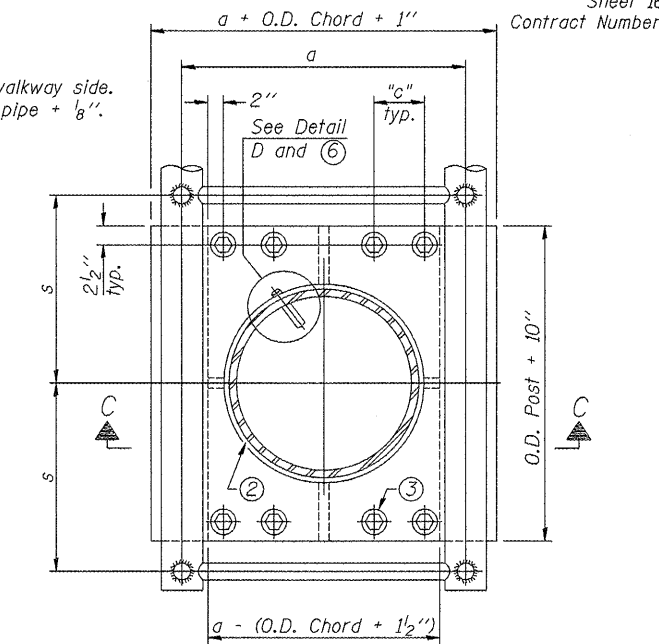


DETAIL D

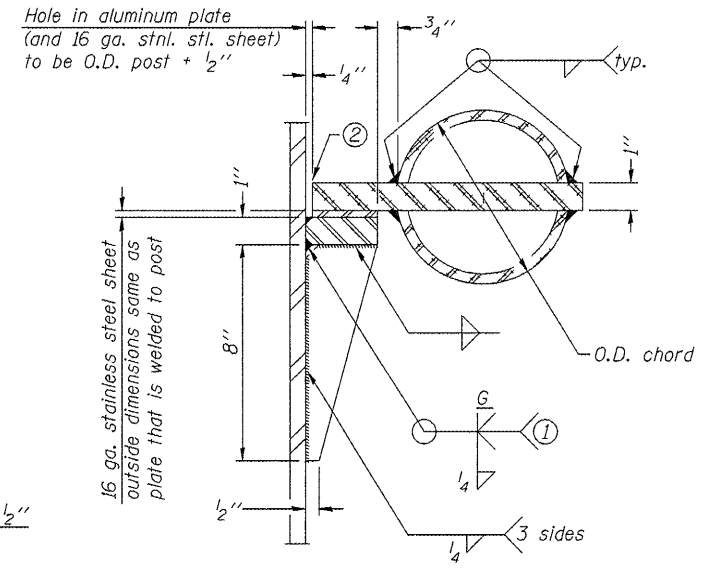


PLAN VIEW - TOP OF COLUMN
⑤ Optional full penetration weld in collar.
(Two locations maximum....180° apart)....X-ray or UT 100%)

⑥ Orient pipe toward walkway side.
Hole in post = O.D. pipe + 1/8 inch.



SECTION THRU POST ABOVE LOWER CHORDS



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 Cantilever.

CONTOURED WASHERS

Bolt Size	Contoured Washers	
	Hole Dia.	B
7/8"	1"	2 1/2"
1"	1 1/8"	3"
1 1/4"	1 3/8"	3 1/4"

DETAIL OF STAINLESS STEEL SLEEVE

Weld to post after galvanizing. (Prepare post surface to insure tight, uniform fit and allow welding.) Welds to be 1/2" long at 6" cts. along top edge and at 1/4" opening.

NUMBER	REVISION	DATE

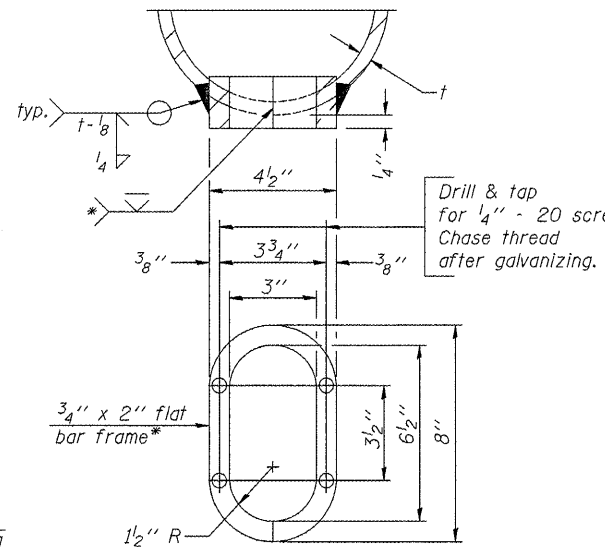
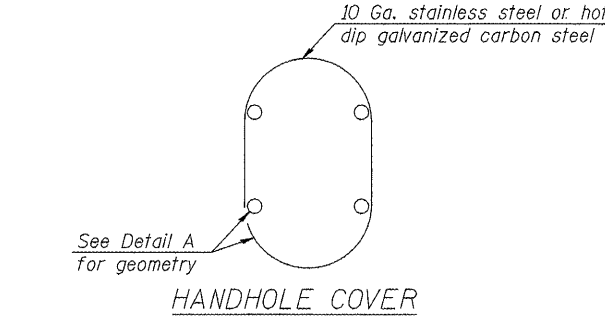
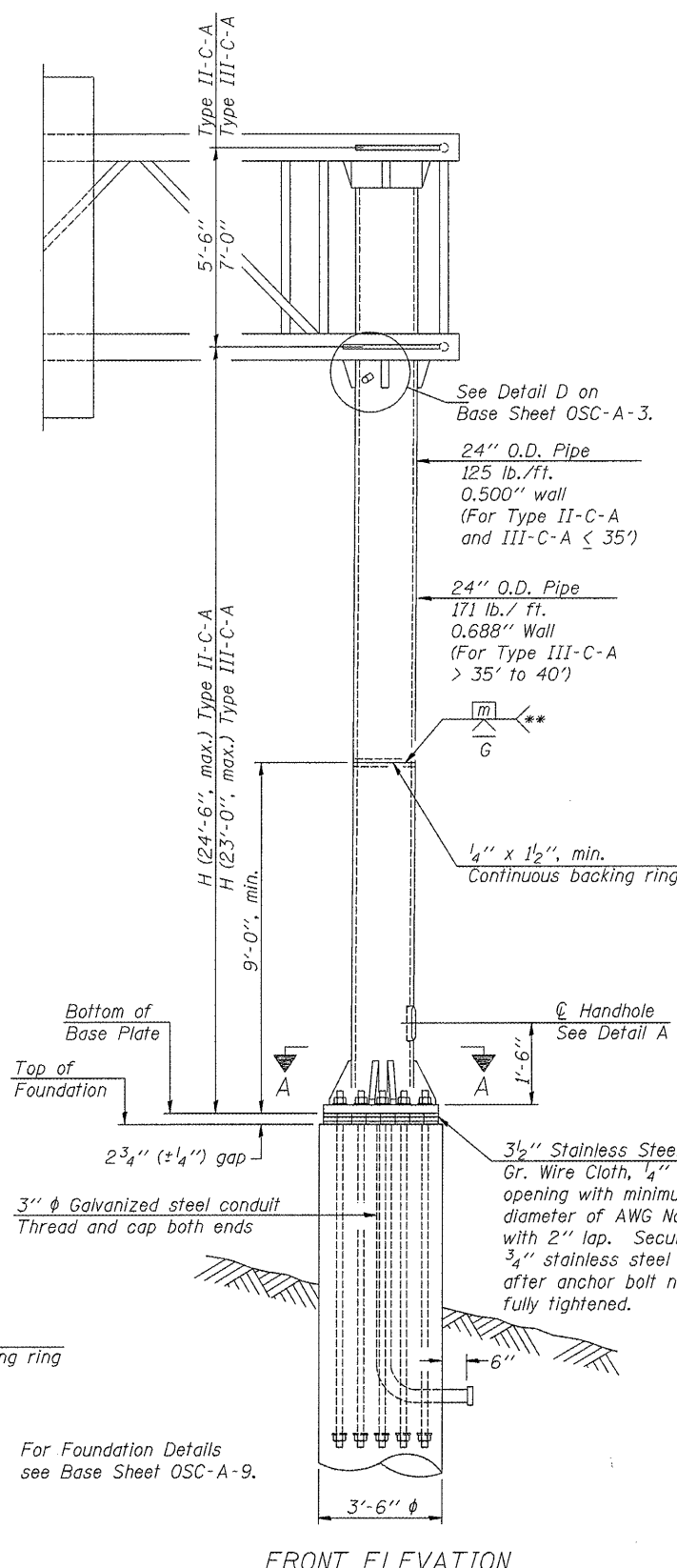
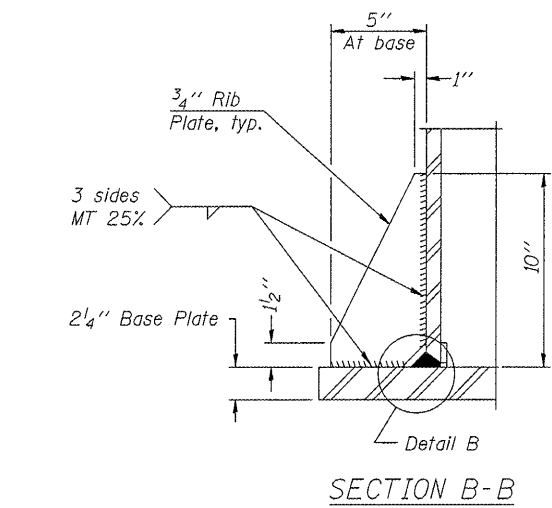
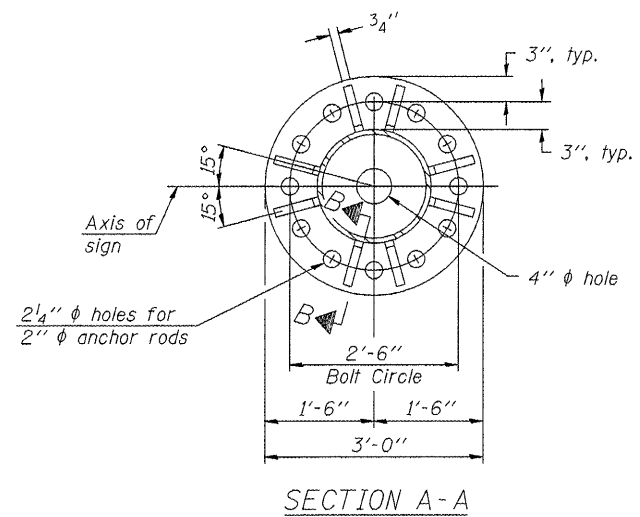
Truss Type	Post Size	Upper & Lower Connection Bolt Diameter ③	Lower Juncture Bolt Spacing Dimension "c" ③	Opening in Cap Plate "HH"	Collar Thickness (t)	Side Ribs	
						x	y
I-C-A	16" φ (83#/')	7/8"	3 1/4"	8"	5/8"	1 3/4"	2 1/4"
II-C-A	24" φ (125#/')	1"	3 1/2"	12"	7/8"	2"	1 1/4"
III-C-A (35' max.)	24" φ (125#/')	1 1/4"	3 1/2"	12"	7/8"	2"	1"
III-C-A (>35' to 40')	24" φ (171#/')	1 1/4"	3 1/2"	12"	7/8"	2"	1"

③ Upper and lower connection bolts in collar and bolts at lower chord connection shall be high strength with matching locknuts. Connection bolts shall have 2 stainless steel flat washers each.

DESIGNED -	20
CHECKED -	ENGINEER OF BRIDGE DESIGN
DRAWN -	PASSED ENGINEER OF BRIDGES AND STRUCTURES
CHECKED -	

CANTILEVER SIGN STRUCTURES
JUNCTURE DETAILS
ALUMINUM TRUSS & STEEL POST

District 5
Overhead Sign
Structure Replacement



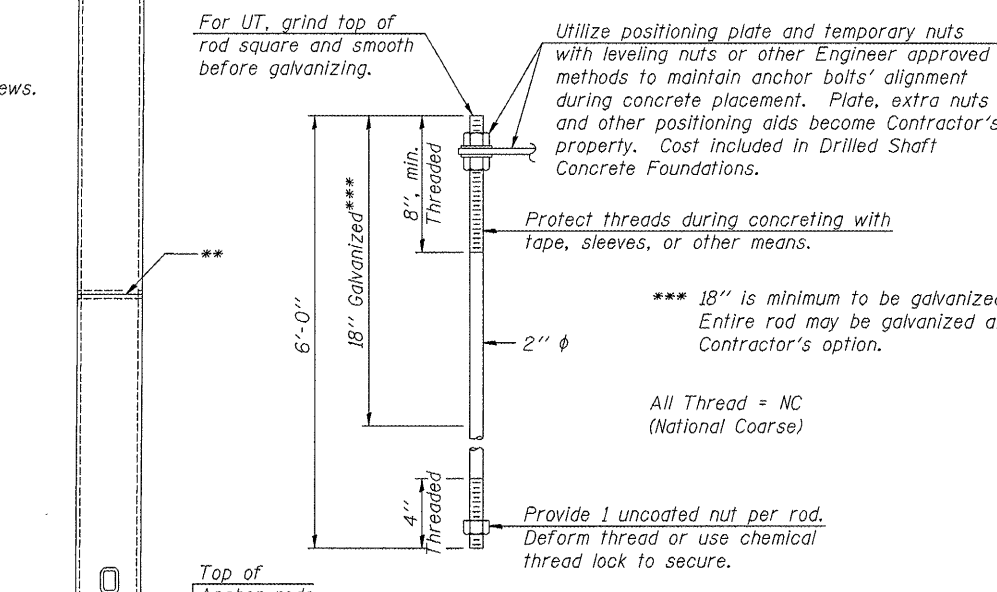
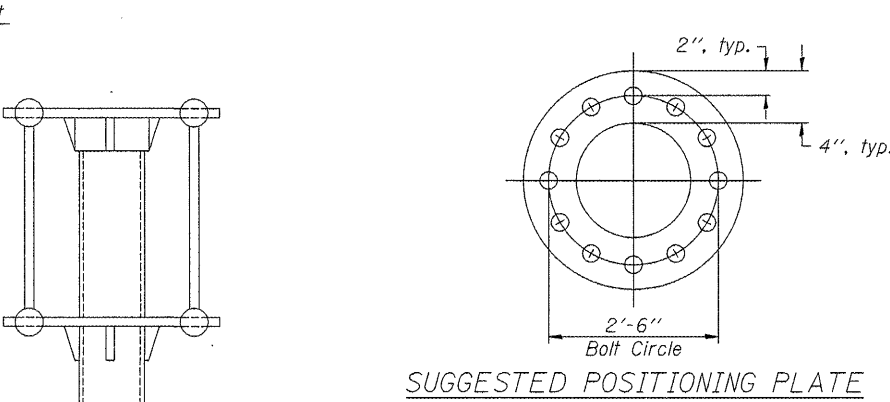
Provide 8" x 4 1/2" cover. Outside corners = 2 1/4" radius. Provide 4-5/16" φ holes in cover for 1/4" - 20 round head hot dip galvanized or stainless steel machine screws. (See cover details.)

* 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 500 μin 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.

Structure Number	Station	H
5C0101072L181.74	1958 + 85	22'-0"

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



Anchor rods shall conform to AASHTO M314 Grade 55 and meet Charpy V-Notch (CVN) energy of 15 lb.-ft. at 10° F. before galvanizing. Galvanize the upper 18" (minimum***) and associated M291, Grade A, C or DH heavy hex nuts and hardened washers per AASHTO M232. No welding shall be permitted on rods. Provide an unfinished 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, using a straight beam, 1/2" φ 3.5 mhz. transducer, to insure no rejectable flaws exist in the upper 18" (tension criteria). Cost of testing included in Drilled Shaft Concrete Foundations.

CANTILEVER SIGN STRUCTURES
TYPE II-C-A & III-C-A TRUSS SUPPORT POST
ALUMINUM TRUSS & STEEL POST

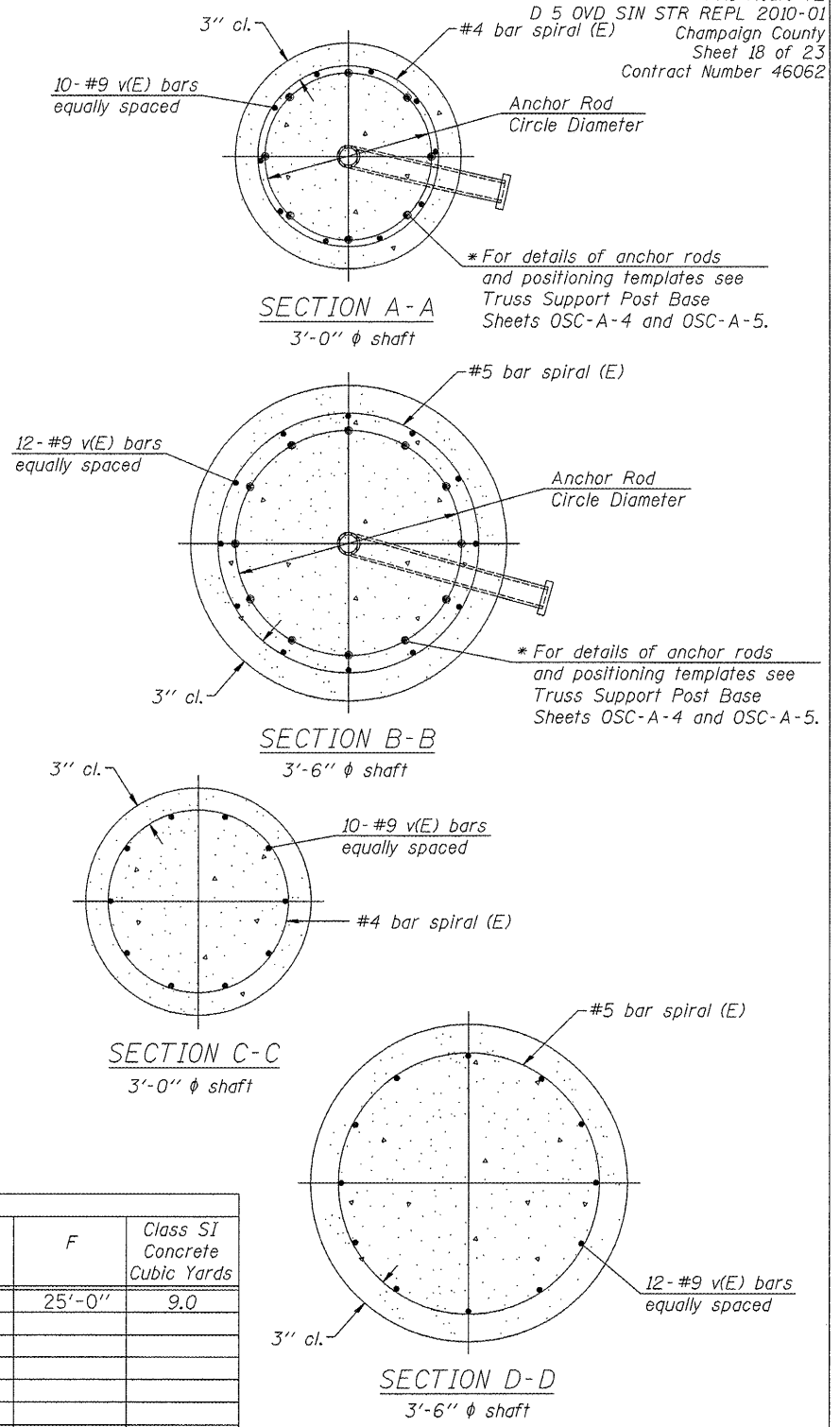
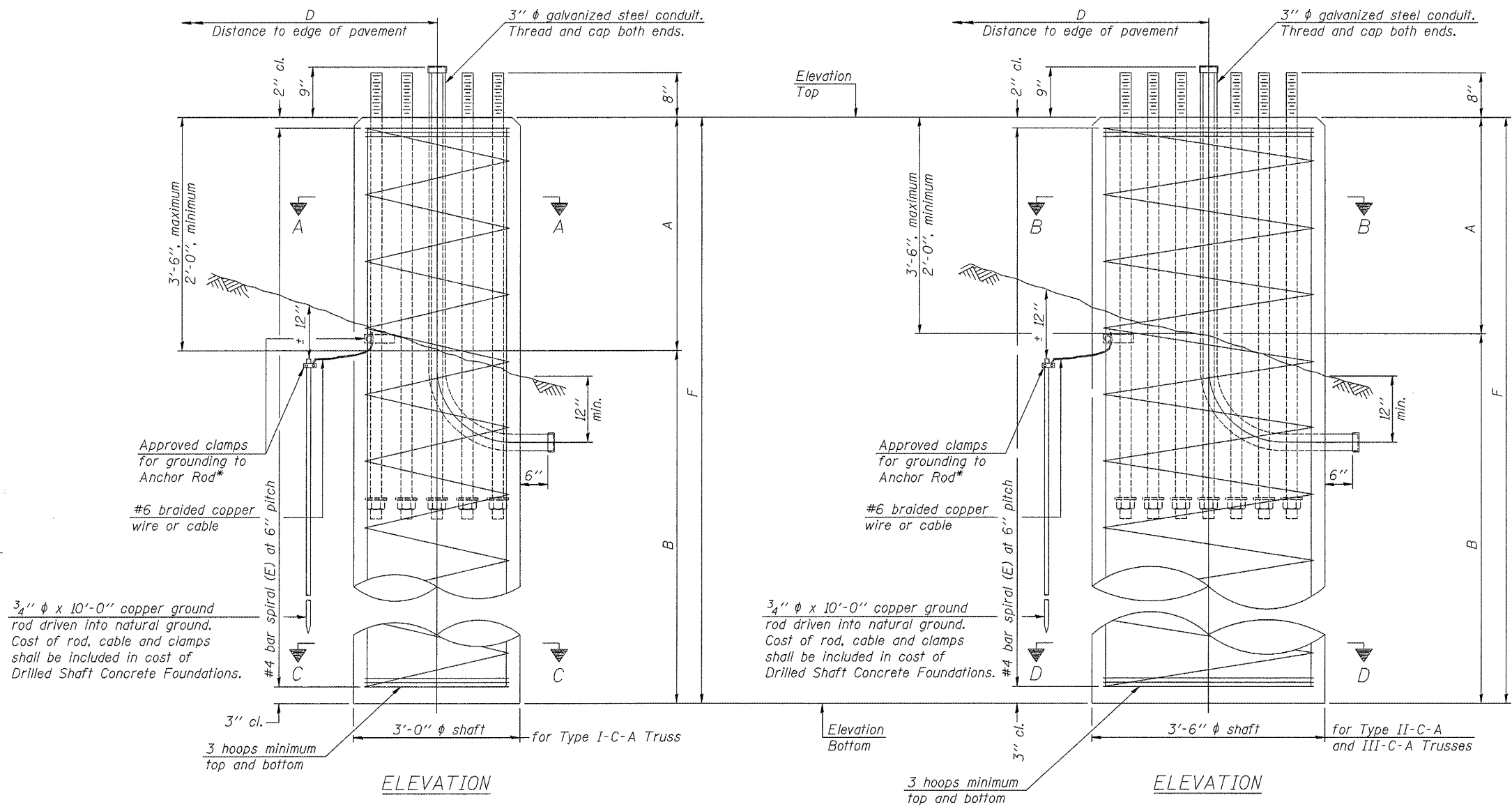
District 5
Overhead Sign
Structure Replacement

DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

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



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 (Q_u) of at least 1.25 tsf, which must be determined by previous soil investigations at the job site. 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 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 Bridge Seat Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished ground line. Cost included in "Drilled Shaft Concrete Foundation".

Structure Number	Station	Truss Type	Shaft Diameter	Elevation Top	Elevation Bottom	Q_u	A	B	F	Class SI Concrete Cubic Yards
5C0101072L181.74	1958 + 85	II-C-A	3'-6"	762.50			3'-0"	22'-0"	25'-0"	9.0

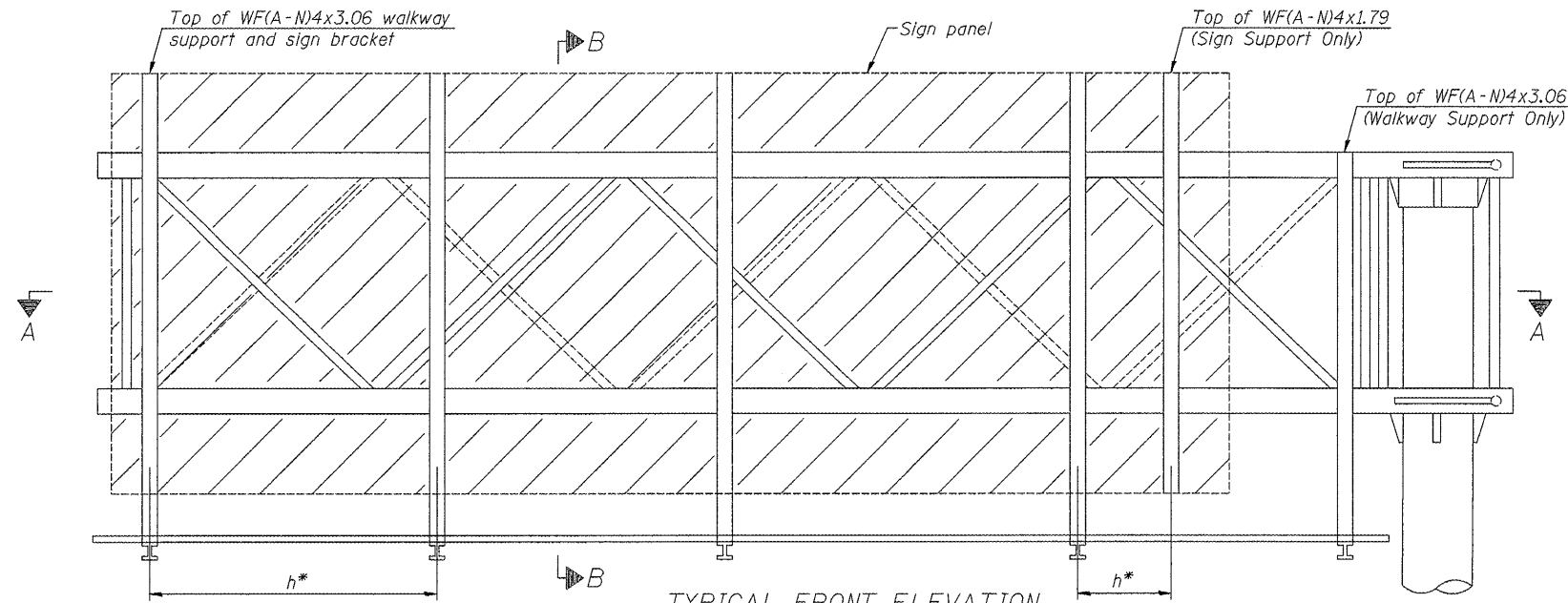
Truss Type	Post Base Sheet	Maximum Cantilever length (ft)	Maximum Total Sign Area (sq ft)	Shaft Diameter (in)	"B" Depth (ft)	Anchor Rods		Anchor Rod Circle Diameter (in)
						No.	Diameter (in)	
I-C-A	OSC-A-4	25	170	3.0	16.0	8	2	22
II-C-A	OSC-A-5	30	170	3.5	17.0	12	2	30
II-C-A	OSC-A-5	30	340	3.5	21.5	12	2	30
III-C-A	OSC-A-5	35	170	3.5	19.0	12	2	30
III-C-A	OSC-A-5	35	250	3.5	22.5	12	2	30
III-C-A	OSC-A-5	35	400	3.5	26.5	12	2	30
III-C-A	OSC-A-5	40	400	3.5	32.0	12	2	30

DESIGNED -		20
CHECKED -	EXAMINED	
DRAWN -	PASSED	ENGINEER OF BRIDGE DESIGN
CHECKED -		ENGINEER OF BRIDGES AND STRUCTURES

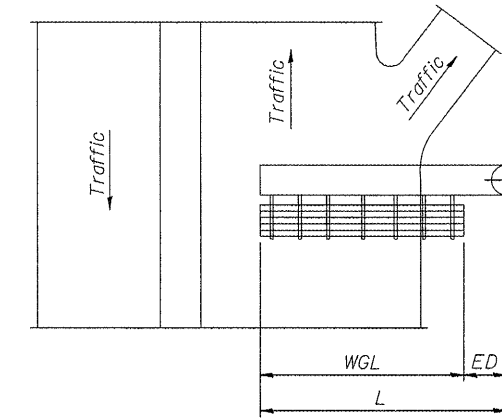
OSC-A-9 5/16/08

CANTILEVER SIGN STRUCTURES
DRILLED SHAFT
ALUMINUM TRUSS & STEEL POST

District 5
Overhead Sign
Structure Replacement



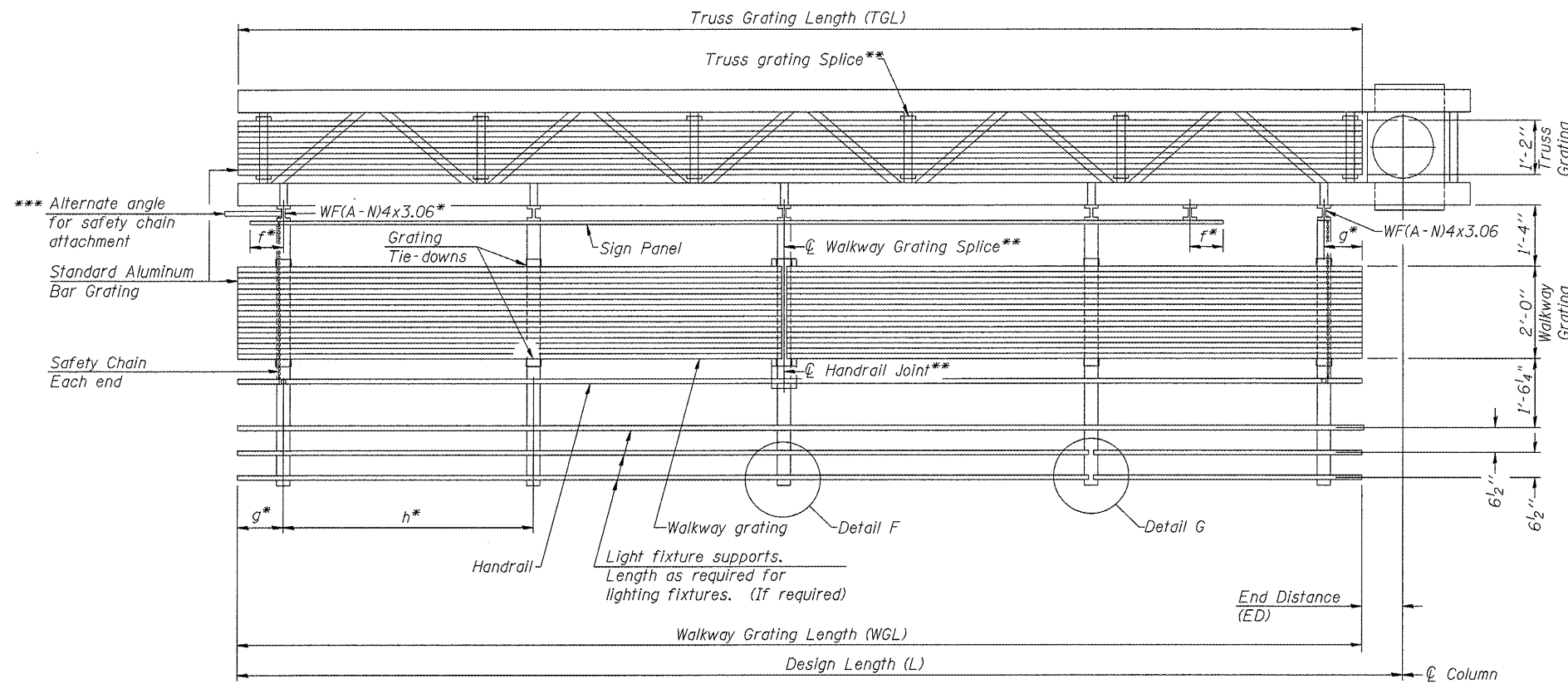
TYPICAL FRONT ELEVATION
With lights and handrail omitted for clarity.



PLAN
WALKWAY AND HANDRAIL SKETCH
(Road plan beneath truss varies)

Walkway and truss grating dimensions are nominal and may vary (width ±1/2", depth ±1/2") based on available standard widths.

Structure Number	Station	WGL	ED	TGL
5C0101072L181.74	1958 + 85			25'-6"



SECTION A-A

Truss grating to facilitate inspection shall run full length of cantilevers. Cost of truss grating is included in Overhead Sign Structure Cantilever.

Handrail and walkway grating shall span a minimum of three brackets between splices.
** Use and location of handrail joints or grating splices are optional, based on lengths needed and material availability.

$$TGL = L - \left(\frac{\text{Post O.D.}}{2} + 6'' \right)$$

NUMBER	REVISION	DATE

BRACKET TABLE

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

WF(A-N)4x1.79 or WF(A-N)4x3.06
ASTM B308, Alloy 6061-T6

CANTILEVER SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

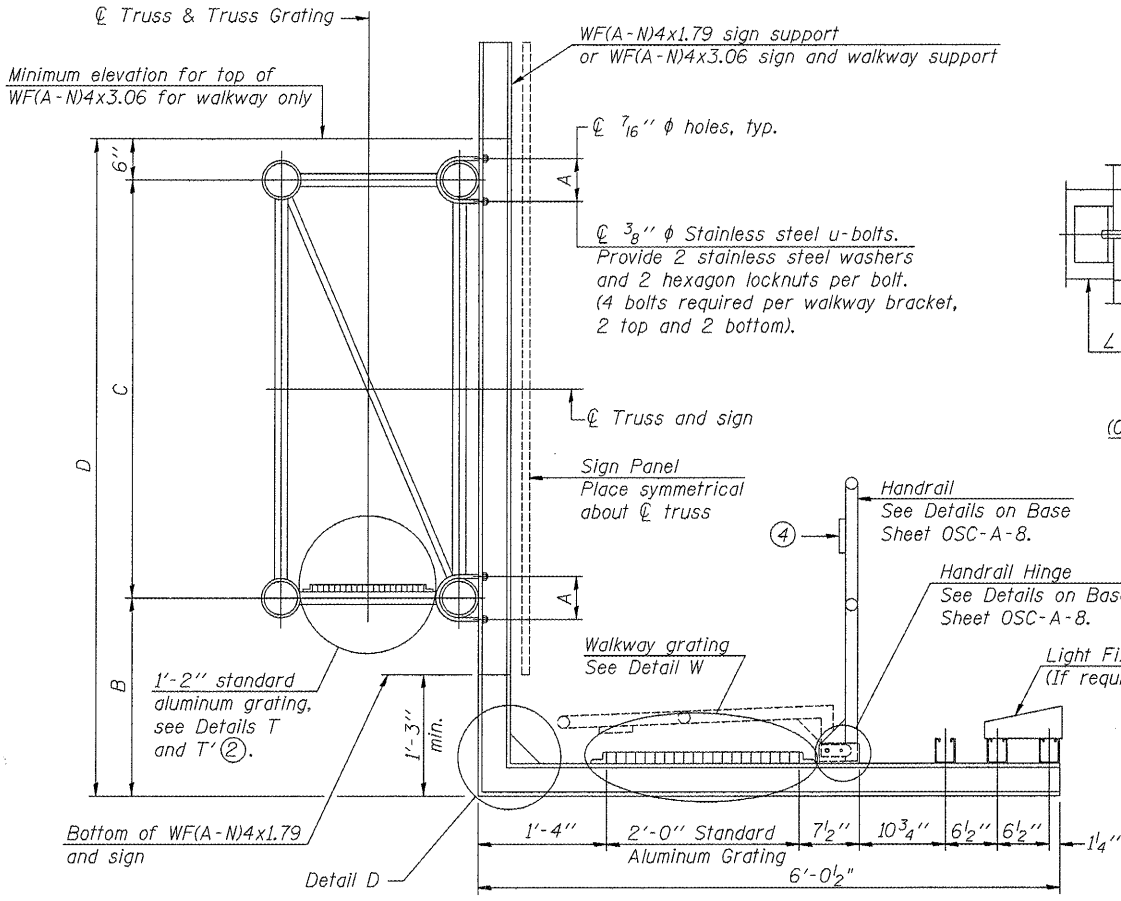
District 5
Overhead Sign
Structure Replacement

DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

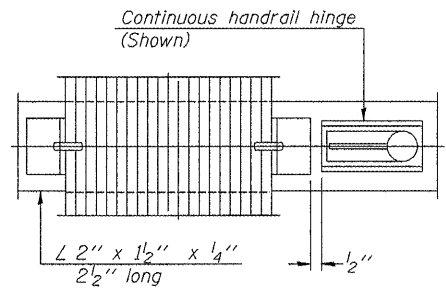
Main Bearing Bars (MBB) shall be $\frac{3}{16}'' \times 1\frac{1}{2}''$ on $1\frac{3}{16}''$ centers and conform to ASTM B211 Alloy 6061-T6.
Cross bars (CB) shall be $\frac{3}{16}'' \times 1\frac{1}{2}''$ on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR
Aluminum Grating with modified "I" 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 $\frac{1}{2}$ ", spaced on $1\frac{3}{16}''$ centers.
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.

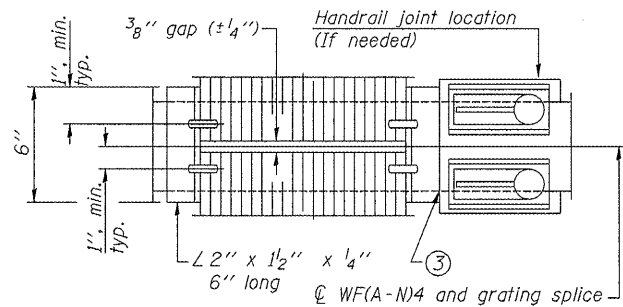


SECTION B-B

Sign shall be even with the top of the bracket, but it may extend no more than 6" above the top of the bracket for field adjustments.

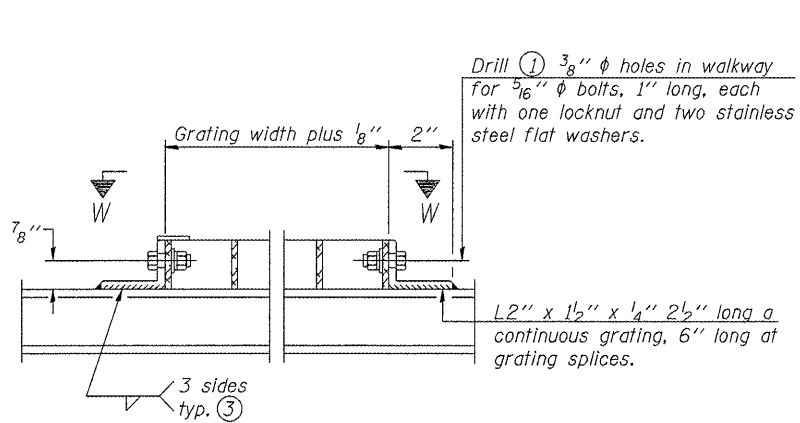


(CONTINUOUS WALKWAY GRATING)

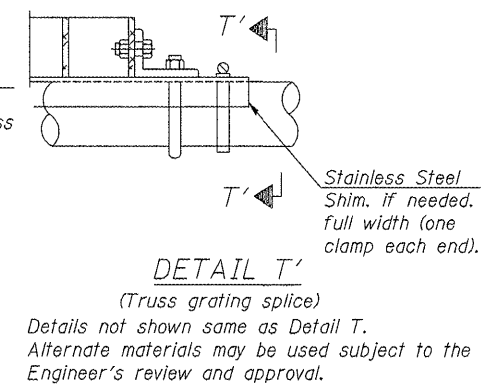


SECTION W-W

(AT WALKWAY GRATING SPLICE)

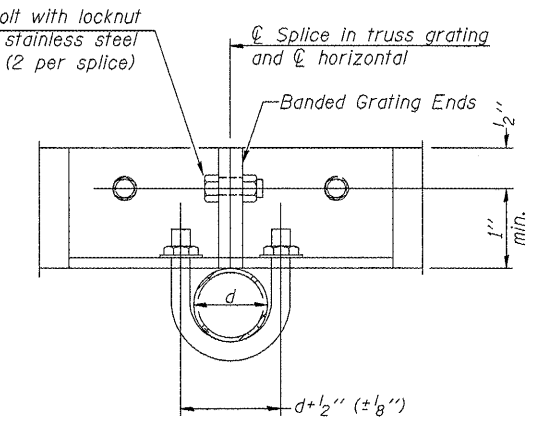


DETAIL W
(Walkway grating)

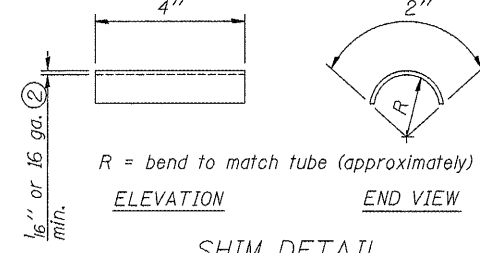


DETAIL T'

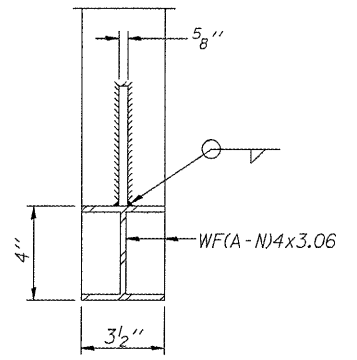
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



SECTION T'-T'

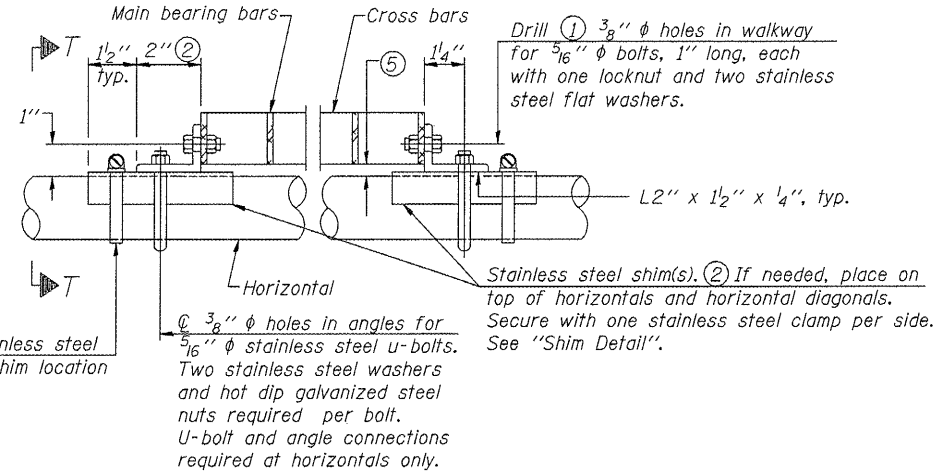


SHIM DETAIL



SECTION D-D

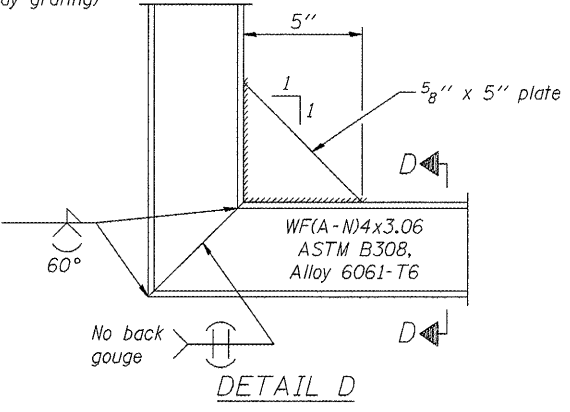
Screw type stainless steel tube clamp at shim location



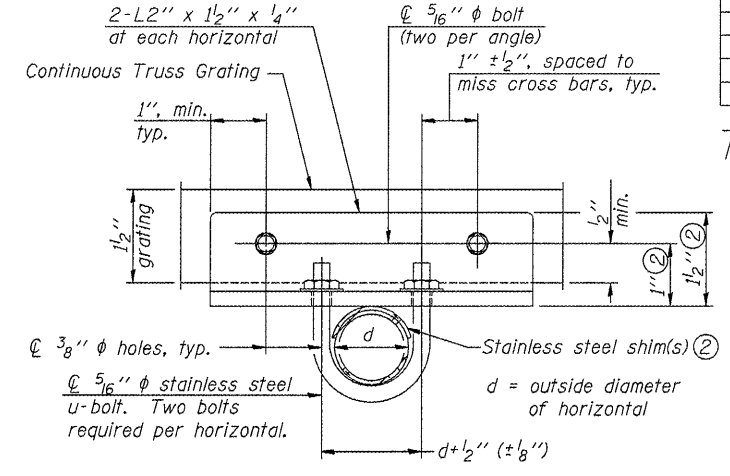
DETAIL T

(Continuous Truss grating)

- Drilling holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.
- 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.
- If Handrail Joint present, weld angle to WF(A-N)4 and 1/4" extension bars. (See Base Sheet OSC-A-8.)
- 1/8" x 1/2" x 2" welded to handrail posts to protect locations that contact grating.
- Tube to grating gap may vary from 0 to 1/2", max. to align walkway, allow for camber, etc.



DETAIL D



SECTION T-T

Structure Number	Station	A	B	C	D

This Sheet For Information Only

CANTILEVER SIGN STRUCTURES
WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 5
Overhead Sign
Structure Replacement

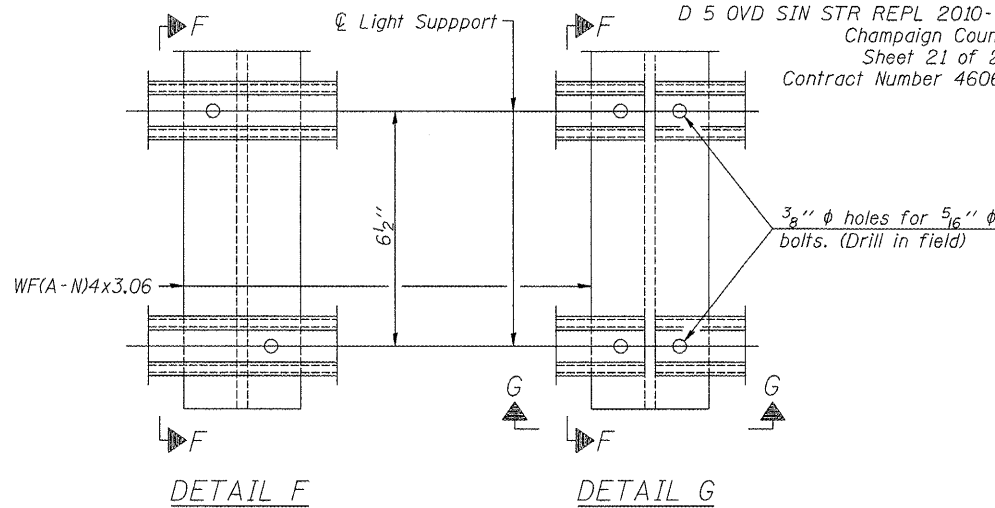
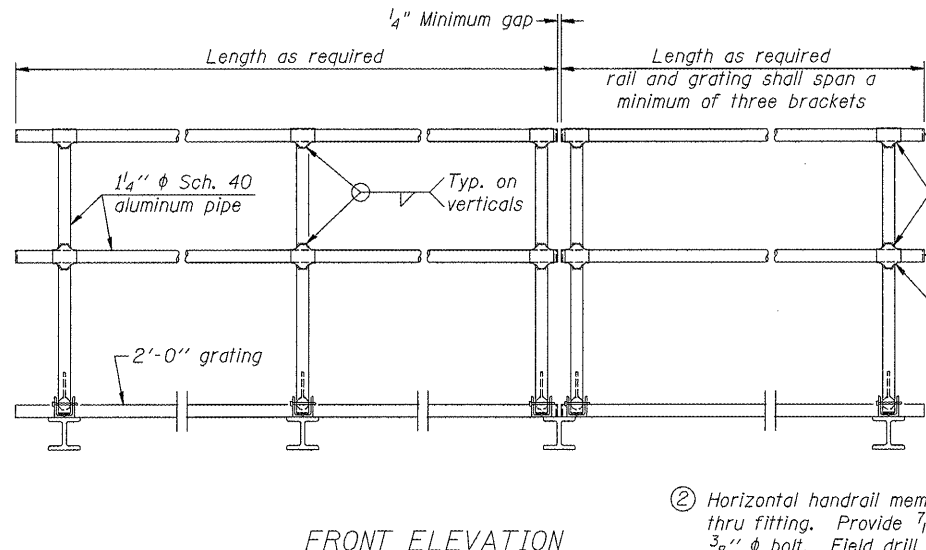
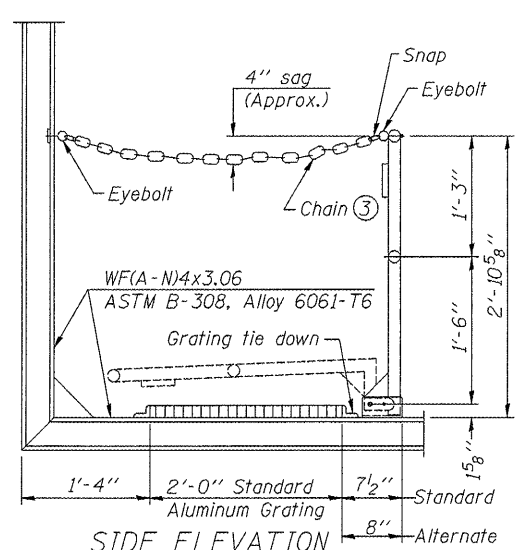
NUMBER	REVISION	DATE

DESIGNED		20
CHECKED		
DRAWN		
CHECKED		

EXAMINED
PASSED
ENGINEER OF BRIDGE DESIGN
ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FAI Route 72
D 5 OVD SIN STR REPL 2010-01
Champaign County
Sheet 21 of 23
Contract Number 46062



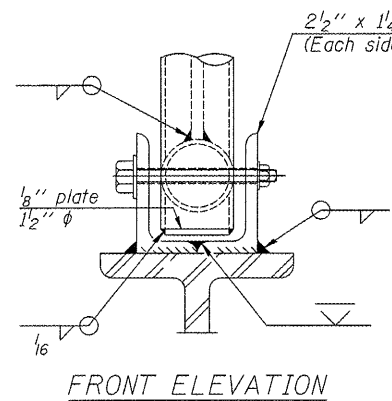
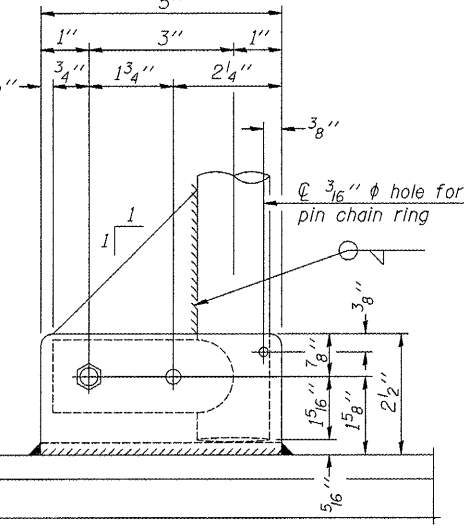
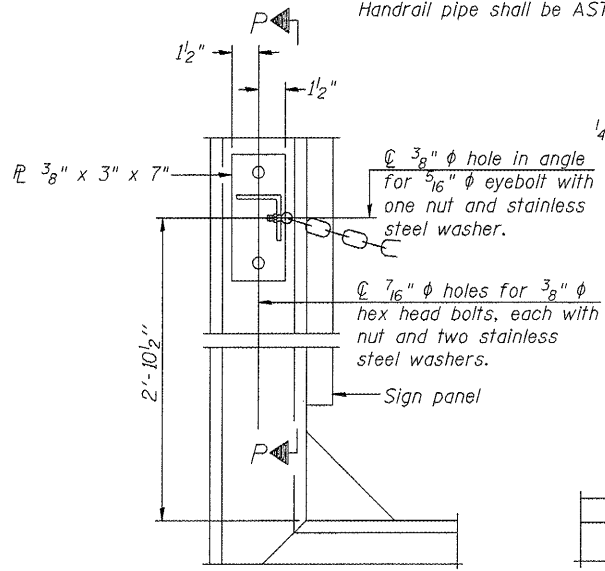
SIDE ELEVATION
(Showing Safety Chain W/O Sign)

HANDRAIL DETAILS

FRONT ELEVATION

- ① Install standard force-fit end caps or weld 1/8" end plates with 1/8" c.f.w. and grind smooth. (All rail ends)
- ② Horizontal handrail member shall be continuous thru fitting. Provide 1/16" hole in fitting for 3/8" bolt. Field drill 1/16" hole in horizontal rail member. Provide locknut and two stainless steel washers for bolt. (Use 5/16" eyebolts in 7/16" holes on top rail at ends only.)

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

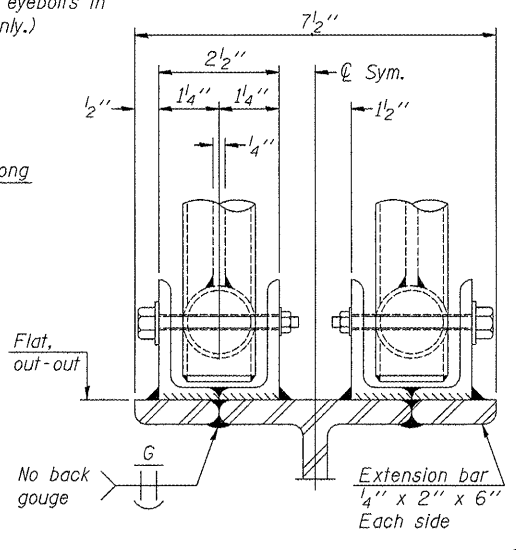


ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)

SIDE ELEVATION

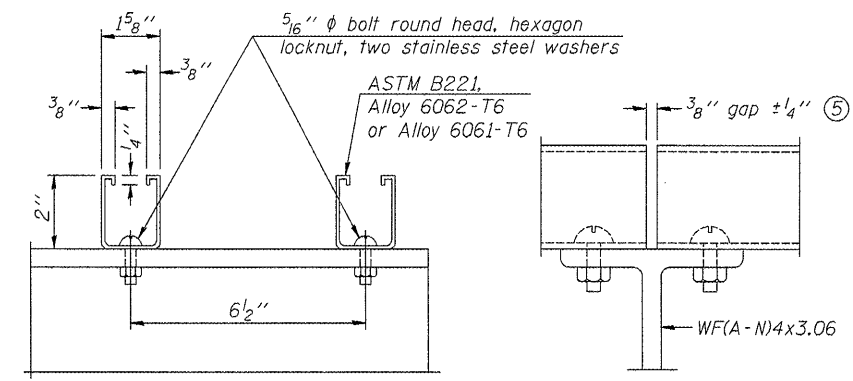
FRONT ELEVATION

Details not shown same as "ELEVATION" at right.



ELEVATION AT HANDRAIL JOINT

Details not shown same as "FRONT ELEVATION"



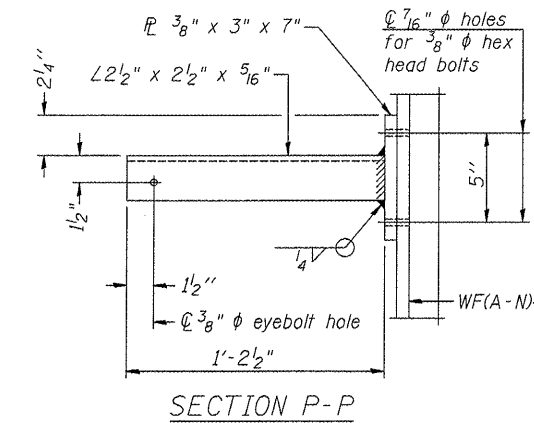
SECTION F-F

SECTION G-G

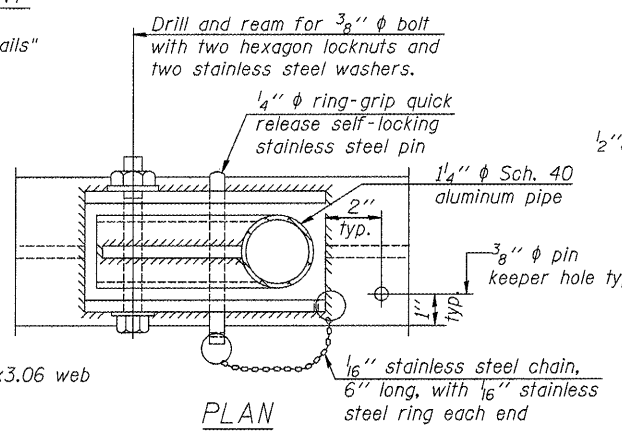
LIGHTING FIXTURE MOUNTS (IF REQUIRED)

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

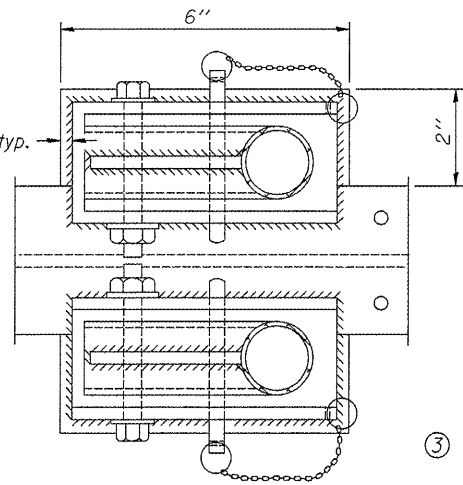
Items not shown same as "Side Elevation" of "Handrail Details"



SECTION P-P

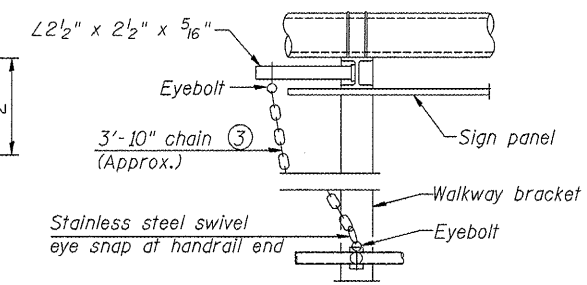


DETAIL E HANDRAIL HINGE



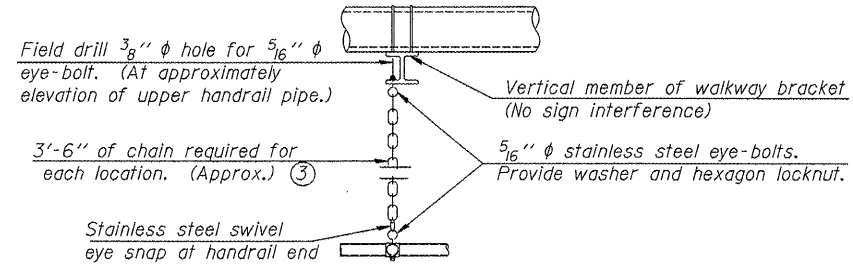
PLAN AT HANDRAIL JOINT

Details not shown same as "PLAN"



ALTERNATE SAFETY CHAIN ATTACHMENT
(Walkway omitted for clarity)

- 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.



SAFETY CHAIN

One required for each end of each walkway.

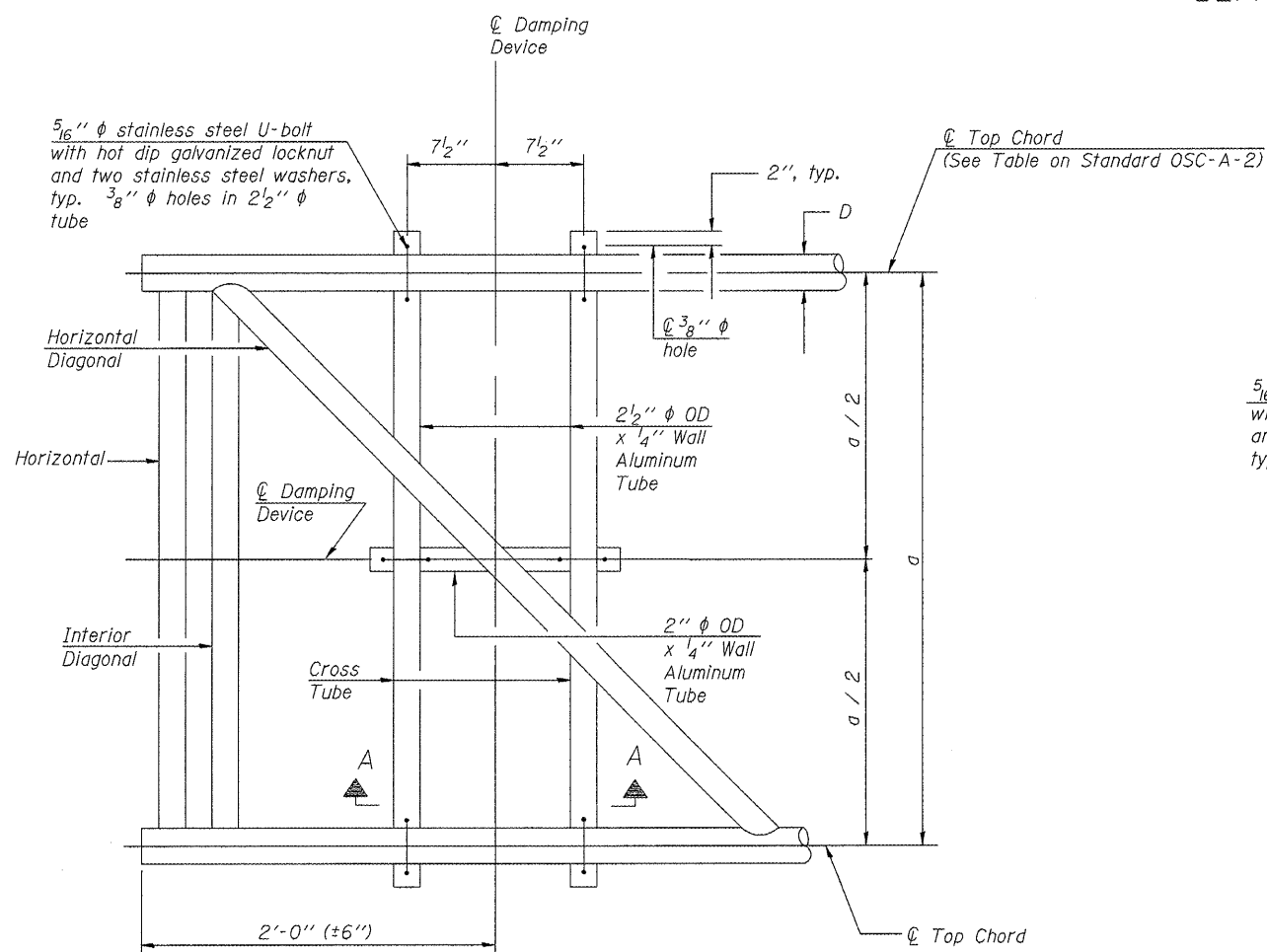
DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	

NUMBER	REVISION	DATE

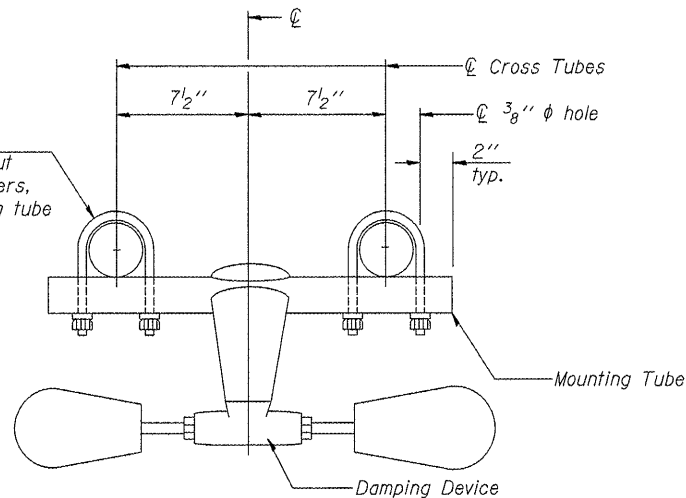
This Sheet For Information Only

CANTILEVER SIGN STRUCTURES
HANDRAIL DETAILS
ALUMINUM TRUSS & STEEL POST

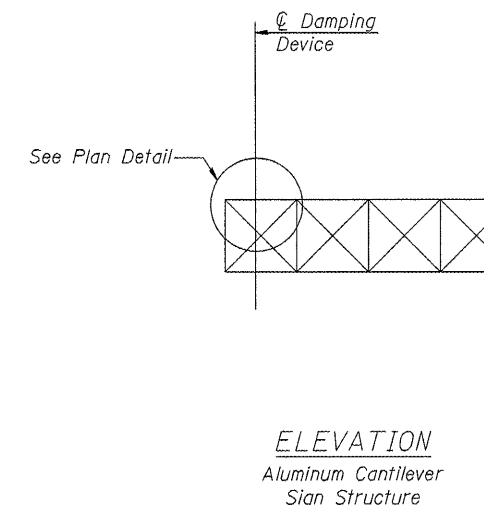
District 5
Overhead Sign
Structure Replacement



PLAN DETAIL

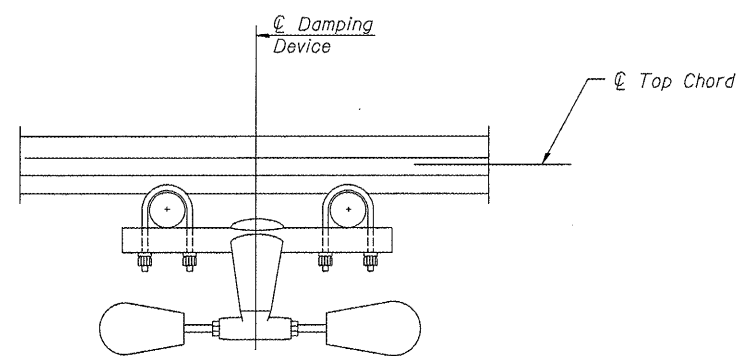


TRUSS DAMPING
DEVICE CONNECTION DETAIL

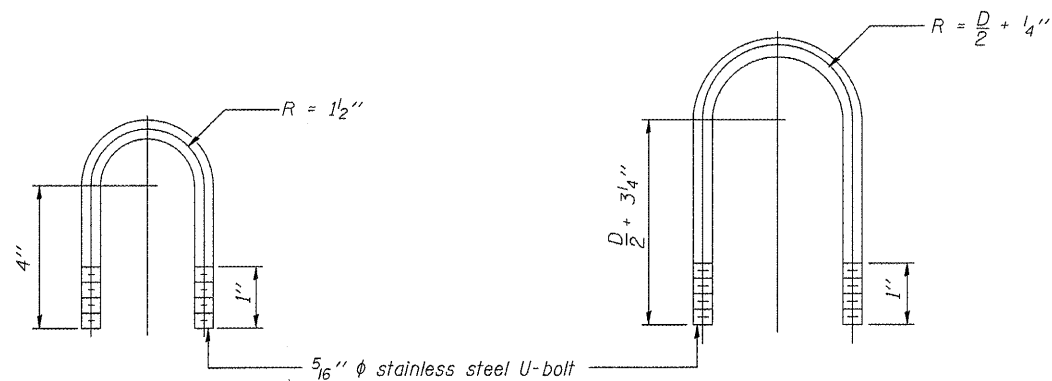


ELEVATION
Aluminum Cantilever
Sign Structure

- GENERAL NOTES**
- Damper: One damper per truss. (31 lbs. Stockbridge-Type Aluminum)
 - 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)

CANTILEVER SIGN STRUCTURE
DAMPING DEVICE

District 5
Overhead Sign
Structure Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

EXAMINED	20
PASSED	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES

